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**OPERATIONS PLANS**

**SOURCE AREA REMOVAL AND TREATMENT**

**FPE Edgefield Site, Edgefield, South Carolina**

May 2023

**RECEIVED**

**MAY 11 2023**

**SITE ASSESSMENT,  
REMEDICATION, &  
REVITALIZATION**

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# **ATTACHMENT I**

## **CCI Primary SART Operations Plan**

# **Operations Plan**

**Prepared for  
FPE Liquidation Trust  
c/o de maximis, inc.**

**Soil Removal and Treatment  
FPE Edgefield Site**

**Edgefield, SC**

**April 27, 2023**

**Prepared by**



**Contaminant Control Inc.**



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## **I. Background**

This site was operated historically by Federal Pacific Electric (FPE) and through the course of plant operations a variety of contaminants, primarily volatile organic compounds were released to onsite soils and subsequently groundwater. Three distinct areas of impact and remediation have been identified and are known as:

- Degreasing Operation Area (DOA)
- Drum Burial Area (DBA)
- Paint Bed Drying Area (PBDA)

There has been significant investigation and a long running groundwater treatment system at the site. The stake holders have determined that the next step is remediation of the source areas. Generally, this effort will include the following steps:

- Deep excavation and removal of impacted soils. Sheetpile shoring will be required for two of the areas and demolition of an existing building will be required to facilitate PBDA excavation
- Establish windrow stockpiles of exhumed soils
- Aeration and physical treatment of impacted soils
- Addition of oxidation chemicals to the excavation (O&M)
- Backfill and restoration of the site

## II. Description of Project Execution

### *Pre-Mobilization Activities*

The project award and initial meeting have occurred. CCI will continue to coordinate with the de maximis project team to confirm the overall schedule and will begin the pre-job preparation and submittal process. Specifically, the following submittals have been or will be completed for review by the pre-construction meeting, currently scheduled for May 16, 2023:

- Operations Plan
- Site Specific Health and Safety Plan
- Stamped Engineered Plans for Proposed Shoring Systems
- Employee Training Certificates
- Any Additional Required Equipment Information
- Site Specific Insurance Certificate
- Demolition Permit
- Documentation of 811 Call

### *Mobilization*

CCI proposes mobilization of the following overall resources:

| <b>Labor</b>      | <b>Equipment</b>               | <b>Materials</b>     |
|-------------------|--------------------------------|----------------------|
| (1) Supervisor    | (3) Service Trucks             | Tools & Expendables  |
| (2) Operators     | (2) 200 Excavators w/thumb     | PPE & Poly           |
| (2) Technicians   | (1) Track Skidsteer            | Fuel                 |
| (2) Truck Drivers | (1) Tow Behind Storage Trailer | Orange Fencing       |
|                   | (1) Long Reach Excavator       | Backfill (if needed) |
|                   | (1) Dozer                      | E&SC Materials       |
|                   | (1) Wheel Loader               | Geotextile Fabric    |
|                   | (1) Trash Pump & hose          | Stone                |
|                   | (1) Frac Tank (if needed)      |                      |
|                   | Shoring Systems                |                      |
|                   | Crane for Installation         |                      |
|                   | Vibratory Hammer (shoring)     |                      |
|                   | Hydraulic Breaker – Concrete   |                      |
|                   | (2) CCI Dump Trucks            |                      |

Two Way Radios  
LEL/O2 Monitor  
CO Monitor  
Water Truck or Buffalo  
Bag Filter Pod (if needed)  
EZ Screen Bucket

### ***Site Setup Activities***

Once on site, the team, including de maximis (project coordinator and construction oversight, O&M, Inc. (oxidant addition and support contractor) and Arcadis (current site operator and Health and Safety oversight) will participate in a detailed kickoff meeting and safety walkdown. Further the team will review the operations and safety plans. The required 811 Utilities call will have already been made. CCI will also subcontract a private utilities location for the site. The Site plan and ingress/egress routes is provided in Attachment A. The following tasks will be part of site setup:

- Setup Sanitation Facilities
- Setup Temporary Office/Storage Trailer
- Property Boundary and excavation layout survey
- Install crane and truck access to the DBA excavation area – specifically fabric and stone
- Setup E&SC Measures – Silt fence
- Removal of trees and grub the site as needed to access the DBA
- Remove necessary fencing to allow expanded access to the DBA
- Establish Exclusion and Contamination Reduction Zone

### ***Project Sequence***

The following description discusses each area in the proposed order of execution.

#### **1 - Drum Burial Area (DBA)**

CCI proposes to begin excavation in this area. Due to the depth (20'), proximity of the excavation to the treatment building and the requirement to expose the entire excavation CCI is proposing installation of an engineered shoring system. The conceptual design of this system is included in Section III. The design drawings and calculations are provided in Attachment A.

The shoring components and the hydraulic hammer will be provided by United Rentals, estimated to arrive on five separate loads. Due to the length of the sheets, an excavator will not be large enough to handle the installation. Therefore, CCI will subcontract a crane, operator and necessary riggers to conduct the actual driving of the sheets. CCI personnel will manage this operation, with the assistance of a United Trench specialist. CCI will prepare the area and develop access for the crane. CCI will then excavate the starter trenches and attach bracing and components.

Once the shoring system is completed, CCI will cut the necessary sloping on the open ends. The long reach excavator will be utilized to access all possible soil from the exterior of the shored area. A 200 excavator and a mini as needed will be utilized within the shoring to reach and remove all possible soil to complete the excavation to the required depth and footprint. Whenever personnel or equipment is inside the shoring system, the safety officer will confirm that O2 and CO levels are acceptable and that all egress meets OSHA standards. Wells will be removed as they are encountered. It is assumed the debris from the wells will be managed as non-hazardous C&D material. CCI will assist de maximis with profile preparation for this material. Transportation and stockpile management will be discussed in a separate section. Generally, the stockpiles will be sampled by de maximis's designee and a determination will be made regarding further management of the soil.

Once this determination is made, CCI will backfill the DBA utilizing stockpiled soils or offsite fill. Soils will be imported via dump truck and placed with the excavator and dozer until the area is brought to reasonable grade. Once this is completed, the crane will return to remove the system with the assistance of CCI. The DBA will be graded for positive drainage and finished with seed, amendment and straw mulch.

## **2 – Degreasing Operations Area (DOA)**

CCI plans to address this area next, primarily because these first two areas have shoring systems proposed. After consideration, CCI estimates this to be the most cost effective sequence as the crane can get in and out and shoring can be implemented, removed and taken off the rental ticket more expeditiously. The schedule provided in Section IV presents the anticipated timeline. CCI will prepare this area for shoring by removal of concrete and pavement and excavation of the starter trenches. This material will be staged in an agreed location and possibly used as “bridge” backfill in the excavations as necessary. The proposed system and the conceptual design are included in Section III. The design drawings and calculations are provided in Attachment B.

The shoring components and the hydraulic hammer will be provided by United Rentals, estimated to arrive on nine separate loads. Due to the length of the sheets, an excavator will not be large enough to handle the installation. Therefore, CCI will subcontract a crane, operator and necessary riggers to conduct the actual driving of the sheets. CCI personnel will manage this operation, with the assistance of a United Trench specialist. CCI will prepare the area and access for the crane, excavate the starter trenches and attach bracing and components.

Once the shoring system is completed, CCI will cut the necessary sloping on the open end. The long reach excavator will be utilized to access all possible soil from the exterior of the shored area. A 200 excavator and a mini as needed will be utilized within the shoring to reach and remove all possible soil to complete the excavation to the required depth and footprint. Whenever personnel or equipment is inside the shoring system, the safety officer will confirm that O2 and CO levels are acceptable and that all egress meets OSHA standards. Wells will be removed as they are encountered. It is assumed the debris from the wells will be managed as non-hazardous C&D material. CCI will assist de maximis with profile preparation for this material. Transportation and stockpile management will be discussed in a separate section. Generally, the stockpiles will be sampled by de maximis's designee

and a determination will be made regarding further management of the soil.

Once this determination is made, CCI will backfill the DOA utilizing stockpiled soils or offsite fill. Soils will be imported via dump truck and placed with the excavator and dozer until the area is brought to reasonable grade. Once this is completed, the crane will return to remove the system with the assistance of CCI. The DOA will be graded to match surrounding surfaces and finished with crusher run stone to allow continued site access.

### **3 – Paint Bed Drying Area (PBDA)**

The warehouse directly adjacent to the PBDA will be demolished to allow safe excavation versus installation of a shoring system. With this building gone, there would be no structures requiring protection.

- ***Building Demolition*** - CCI will obtain the demolition permit prior to mobilization to the project. Any utilities will be identified, disconnected and air gapped. CCI will utilize company equipment and personnel to complete the demolition of the structure. CCI intends to leave the concrete pad. All debris will be managed offsite. If necessary the pad will be sawcut at the estimated distance if a slope or bench was installed or required. Since no personnel entry will be required, CCI will install a double row of orange barricade fence with appropriate exclusion signs.
- ***Excavation*** – CCI plans to initiate excavation at the edge of the now vacant concrete pad on the southwestern side of the area. The team will work from this edge to the northeast terminus, creating the necessary bench and slope as the excavation progresses.

Wells will be removed as they are encountered. It is assumed the debris from the wells will be managed as non-hazardous C&D material. CCI will assist de maximis with profile preparation for this material. Transportation and stockpile management will be discussed in a separate section. Generally, the stockpiles will be sampled by de maximis's designee and a determination will be made regarding further management of the soil.

Once this determination is made, CCI will backfill the PBDA utilizing stockpiled soils or offsite fill. Soils will be imported via dump truck and placed with the excavator and dozer until the area is brought to reasonable grade. Once this is completed, the crane will return to remove the system with the assistance of CCI. The PBDA will be graded to promote positive drainage and will be finished with seed, amendments and straw mulch.

### **Stockpile Management**

The same principals of stockpile management will apply to all removal areas. Prior to use of the concrete pad, CCI will utilize a skidsteer and broom to remove standing water, which is prone to collect in multiple low spots on large pads of this sort. This sweeping will continue throughout the process with the goal being to keep water separated from the soil. CCI will utilize two, company owned dump trucks to handle transportation to the concrete

stockpile area and back to the area as backfill, if deemed acceptable. CCI will begin dumping the soils at the opposite end of the entry point and continue dumping until all soil has been dumped to create a windrow of sorts. CCI will dedicate a loader and an excavator with a rotating screening bucket to the stockpile area. This equipment will manipulate, flip and handle the soil to promote the project goal of aeration. The screening bucket will be used to facilitate additional soil to air contact to facilitate volatilization. In addition, this work will create neat and more easily covered stockpiles. Additional screening bucket information is provided in Attachment B.

CCI will monitor weather and forecasts and the piles will remain uncovered unless rain is forecasted or impending. Based on previous field testing, it is expected that the excavated soil will be suitable for use as backfill. In the event recalcitrant soils are encountered, these soils will be segregated for additional treatment or offsite disposal. In the case of off-site disposal or as needed to minimize schedule impact, certified clean off-site soil will be used for backfill. A preliminary listing of approved, local disposal facilities is provided in Attachment C.

### **Stormwater Management/Erosion Control**

The project team has discussed stormwater management and erosion control for this project. The footprint of the anticipated areas of disturbance, in square footage is provided below:

- DBA – 1,650 Square feet total
- PBDA – 4,125 Square feet total
- DOA – 3,200 Square feet total

The total disturbance square footage of 6,275 square feet falls well below the one acre size requirement for an Erosion and Sediment Control Plan. However the team will implement BMPs throughout the project to manage potential erosion and stormwater runoff. The site is effectively land locked for the most part. The sheet piling for the DBA and DOA will create runoff control for the deep excavations. The PBDA will be sloped and benched and berms will be utilized to manage stormwater.

The CCI team will make every effort to minimize the need to collect and accumulate water during the excavation and restoration process. The team will utilize berms, swales and exterior sumps where practical to divert rainwater from excavations. If rainwater or groundwater becomes an impediment to the excavation, treatment or backfilling process, a frac tank and pump will be mobilized and utilized to remove and collect water. Arcadis and de maximis indicated that it would be likely to run this water back through the site treatment system, possibly utilizing bag filter pods for sediment/turbidity management on the influent side.

### **Backfill and Compaction**

The intent for this project is to utilize on site soil as backfill once contamination levels are confirmed to be acceptable. CCI will utilize an excavator and/or loader to load dump trucks

from the concrete slab stockpile areas and will haul to the appropriate excavation. The team will utilize a dozer and excavator to place the soil, which will be spread in lifts and thoroughly tracked in with the dozer. No compaction testing is anticipated. Should offsite backfill be required, the source will be sampled and confirmed to be clean. Offsite trucks would import the material which would be placed as described above.

### Decontamination/Restoration/Demobilization

Equipment will be decontaminated in lined containment cells prior to demobilization. Any water generated from this process will be containerized and staged in the treatment area for future, onsite management. Any poly, PPE or other general trash will be managed by CCI as non-hazardous, non-regulated debris at CCI's Thomasville facility. CCI will provide a waste profile to de maximis prior to removal of this material, which will be ultimately disposed at an FPE approved, licensed Subtitle D landfill.

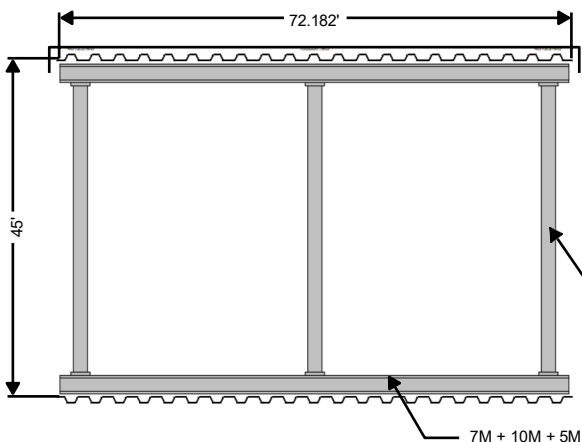
### III. Summary of Shoring Installation Plan

Engineer stamped shoring design and supporting calculations are provided in Attachment D for the DBA and in Attachment E for the DOA.

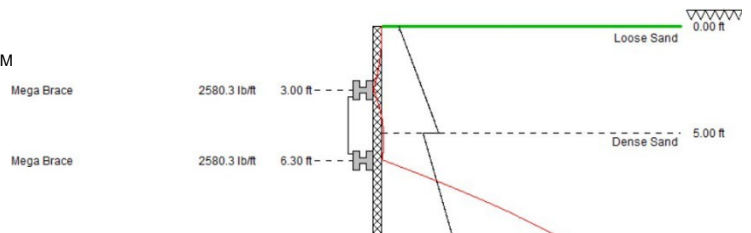
#### Drum Burial Area

##### Shoring System:

- System Type: 2-Sided Sheeting & Bracing Pit application
- System Dimensions: 45' wide x 72' long x 20' deep
- Phasing Required: No
- Bracing Required: (2) rings of hydraulic brace w/ (3) crossing struts per ring of brace
- Sheeting Length: 28' (20' shored + 8' embedded).
- Benching/Sloping Required: Open ends of system are to have a 1.5H:1V slope to grade
- Soil Description: Loose to very dense sand based on bore DBA-22 by O&M Environmental Inc, dated 7/20/2022
- Dewatering Required: Base of excavation.
- Surcharge Setback: HS20-44 vehicular traffic 50', Structures 10' (1-Story Warehouse w/ foundations at grade), All Other Structures 50' (see Note #5 below).
- Additional Notes: The proposed system is based on the information available, adverse site or soil conditions may affect design and engineering. No additional loading may be added to system between edge of excavation and nearby structure.



NOTE:  
 -BORE LOG DOES NOT SHOW SUFFICIENT DATA. SOIL PARAMETERS USED ARE BASED OFF OF BRIEF SOIL DESCRIPTIONS ON BORE LOG, NOT ACTUAL BLOW COUNT DATA. REFUSAL ENCOUNTERED AT 20' BELOW GRADE.





- (4) 7M EXT
- (4) 10M EXT
- (4) 5M EXT
- (6) MP150 HYD STRUTS
- (6) 8M HYD STRUT EXTS
- (6) 1M HYD STRUT EXTS
- (98) 28' PZ-27 SINGLE SHEET PILES - 1372 plf
- (1) JOB BOX
- (1) POWER PACK
- (44) CHAINS

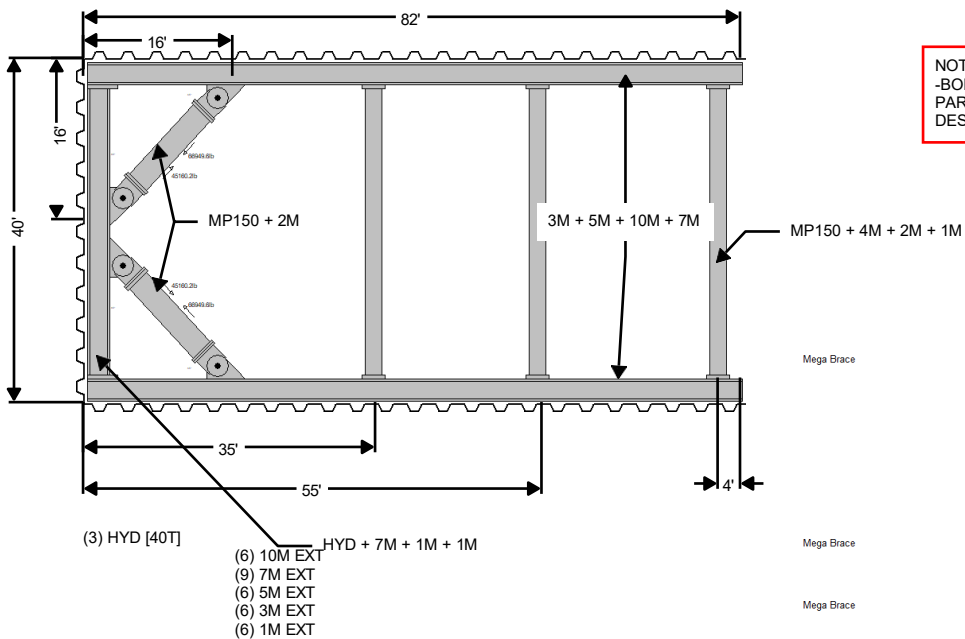
**Design Details:**

- Rankine Earth Pressure Theory Used; Refer to SupportIT file for soil parameters used in design
- Deflection on brace = 1.1"; Deflection on sheets = 0.4"
- (1) 9,000 lb/ft line load added to the system to account for nearby structure loading.

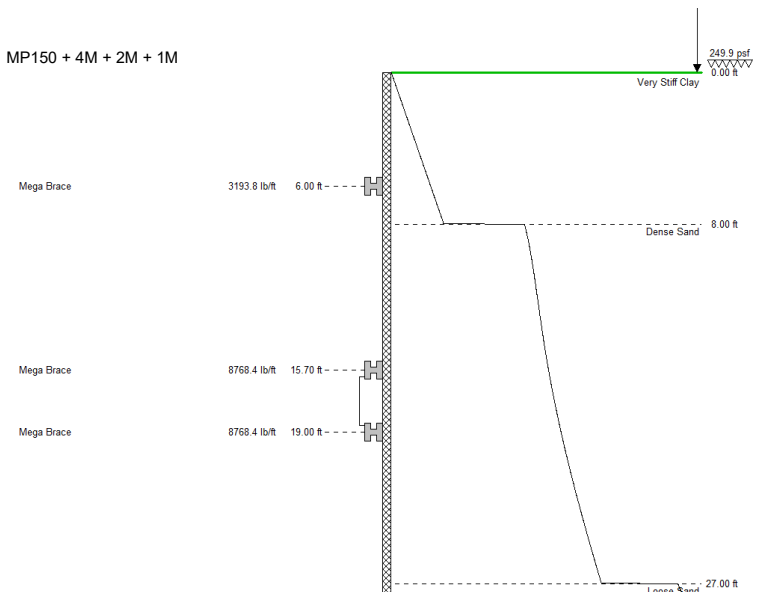
**Degreasing Operations Area**

**Shoring System:**

- System Type: 3-Sided Sheeting & Bracing Pit application
- System Dimensions: 40' wide x 82' long x 30' deep
- Phasing Required: No
- Bracing Required: (3) rings of hydraulic brace w/ (3) crossing struts & (2) corner struts per ring of brace
- Sheeting Length: 30' (30' shored); No Toe
- Benching/Sloping Required: Open end of system is to have a 1.5H:1V slope to grade
- Soil Description: Very stiff clay over dense & loose sand based on bore no DOA-22 by O&M Inc Environmental Services, dated 7/20/22
- Dewatering Required: Base of excavation.
- Surcharge Setback: HS20-44 vehicular traffic 50', Structures 10' (1-Story Warehouse w/ foundations at grade), All Other Structures 50' (see Note #5 below).
- Additional Notes: The proposed system is based on the information available, adverse site or soil conditions may affect design and engineering.



NOTE:  
 -BORE LOG DOES NOT SHOW SUFFICIENT DATA, SOIL PARAMETERS USED ARE BASED OFF OF BRIEF SOIL DESCRIPTIONS ON BORE LOG, NOT ACTUAL BLOW COUNT DATA.



(15) MP150 HYD STRUTS  
(9) 4M HYD STRUT EXTS  
(15) 2M HYD STRUT EXTS  
(9) 1M HYD STRUT EXTS  
(137) 30' PZ-27 SINGLE SHEET PILES - 2055 PLF  
(1) JOB BOX  
(1) POWER PACK  
(102) CHAINS

### **Design Details:**

- Rankine Earth Pressure Theory Used; Refer to SupportIT file for soil parameters used in design
- Deflection on brace = 0.7"; Deflection on sheets = 0.7"
- (1) 9,000 lb/ft line load added to the system to account for nearby structure loading.

## **IV. Reporting**

CCI will maintain a variety of documentation throughout the project. On a daily basis, the following documents will be completed and scanned to the project folder:

- Daily Safety Tailgate Forms
- Daily Operational Form – summarizing activities and resources on site
- Equipment Checklist Form

Additional activities will require specific forms based on site activities. These anticipated forms would include:

- Hot Work Permit
- Confined Space Permit
- Excavation Permit
- Air Monitoring Log

Once excavation begins, the team will record the number of loads removed each day. The stockpiles will be labelled and mapped for tracking purposes. A similar log will be maintained for backfilling once initiated.

For any materials shipped offsite a Waste Manifest will be completed and an executed copy along with weight tickets will be filed and maintained for the project.

Following project completion, CCI will prepare a final report for submission to de maximis to include a summary of the work along with the following Attachments:

- Asbestos Survey of Building
- Demolition Permit
- Site Survey with Excavation Layout and Depths
- Operational Summary
- Photo Log
- Completed Permits and Daily Forms
- Waste Profiles
- Waste Manifests and Weight Tickets

## **V. Project Schedule**

The anticipated schedule for SART activities is provided as Attachment F. With cooperation of the weather and encountering minimal recalcitrant soils, we anticipate project completion in September 2023. Another factor with potential to affect schedule is laboratory turnaround time. The schedule is based on expedited turnaround of 2-4 days. The laboratory has indicated that there may be difficulties in achieving this turnaround on a consistent basis. SCDHEC will be kept informed on schedule progress and any delays encountered.

**Attachment A – Site Plan and Ingress/Egress Routes**



- Muster point will be at Star Road Gate.
- Decontamination will occur at excavation areas and once completed on staging area.

**Attachment B – Screening Bucket Manual**



# **EZ-SCREEN™ SCREENER BUCKET MANUAL**

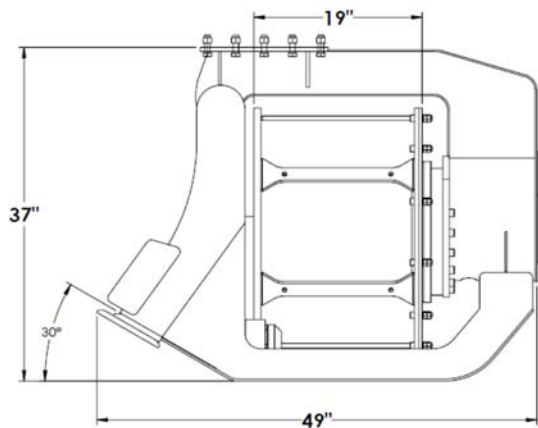
EZ-Screen™  
16 West Huron Street  
Pontiac, MI 48342  
Office: (248) 745-5828  
Fax: (248) 745-5825  
[www.ez-screen.com](http://www.ez-screen.com)  
[sales@ez-screen.com](mailto:sales@ez-screen.com)



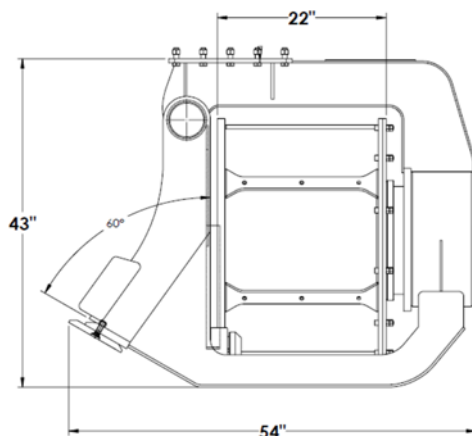
Your EZ-Screen™ Screener Bucket Serial Number: \_\_\_\_\_

Please refer to the serial number when contacting us or ordering parts

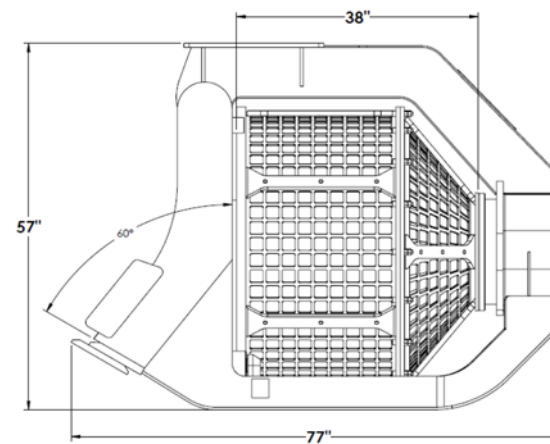




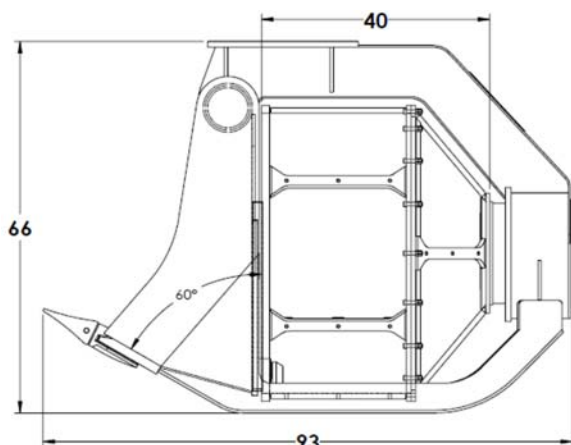
**SB-10**



**SB-12**



**SB-14**



**SB-16**

EZ-Screen™ makes 4 types of screener buckets, the SB-10, 12, 14, and 16.

SB-10 fits 4-6 Ton Excavator Weighs 1091 lbs.

SB-12 fits 7-11 Ton Excavator Weighs 1,359 lbs.

SB-14 fits 12-16 Ton Excavator Weighs 2,640 lbs.

SB-16 fits 18-25 Ton Excavator Weighs 4356 lbs.

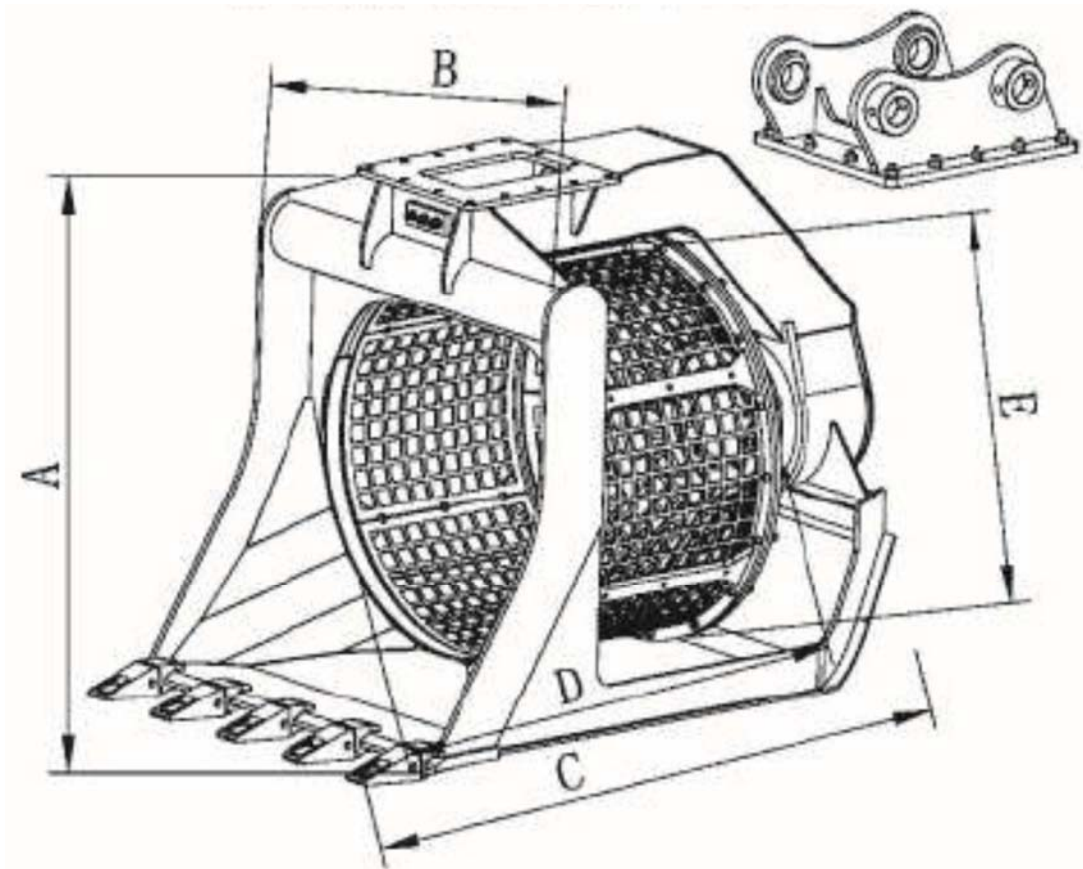
**EZ-SCREEN SCREENER BUCKET**



(248) 745-5828

[www.ez-screen.com](http://www.ez-screen.com)





| Model | Volume (yd <sup>3</sup> ) | A (in) | B (in) | C (in) | D (in) | E (in) | Pressure (psi) | Flow (gal/min) | Weight (lb) |
|-------|---------------------------|--------|--------|--------|--------|--------|----------------|----------------|-------------|
| SB-10 | .18                       | 37     | 32     | 49     | 19     | 25     | 2900           | 5.2            | 1091        |
| SB-12 | .39                       | 43     | 37     | 54     | 22     | 32     | 2900           | 13.2           | 1359        |
| SB-14 | .98                       | 57     | 49     | 77     | 38     | 42     | 2900           | 13.2           | 2640        |
| SB-16 | 1.4                       | 66     | 57     | 93     | 40     | 50     | 2900           | 13.2           | 4356        |

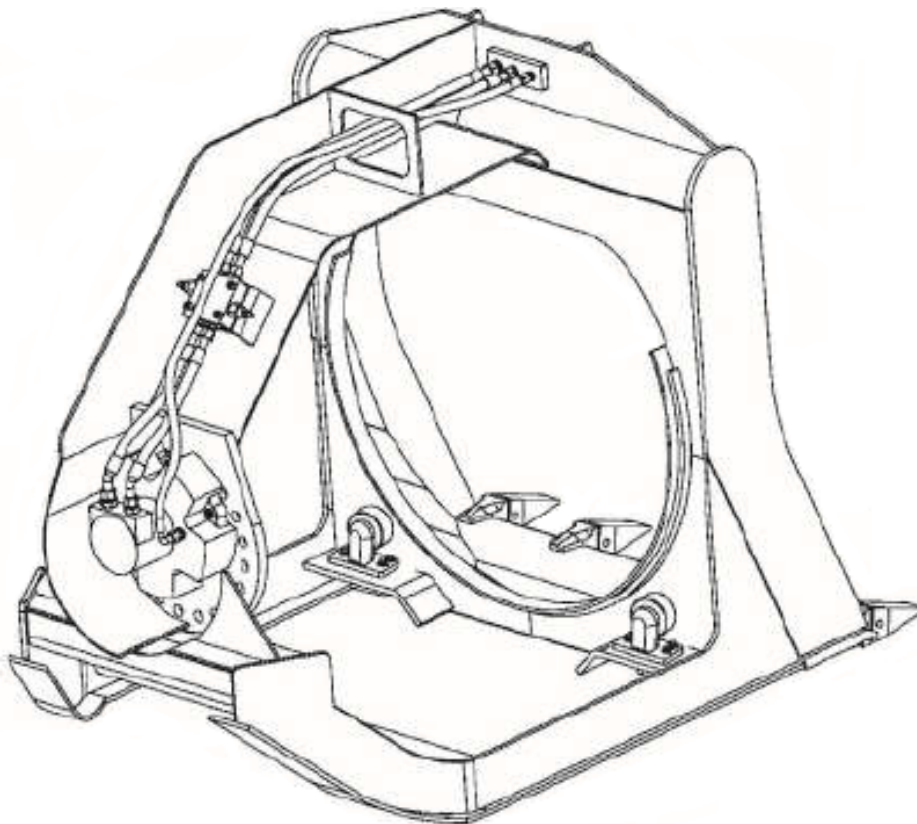
EZ-SCREEN SCREENER BUCKET



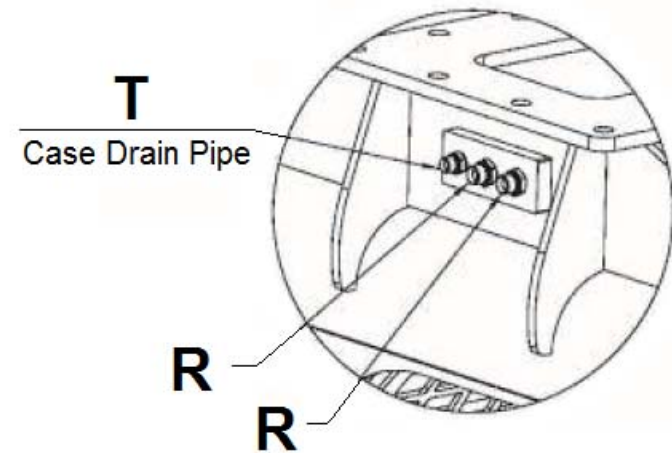
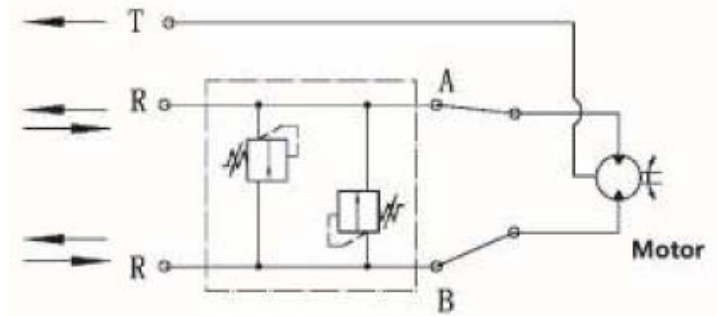
(248) 745-5828

[www.ez-screen.com](http://www.ez-screen.com)

NOTE: Keep hydraulic motor case pressure between 0 to 72.5 PSI (0 to 5 bar). Avoid: 1. Long oil return pipes. 2. Folding, squeezing, or kinked oil return pipes.



HYDRAULIC MOTOR CASE DRAIN DIAGRAM

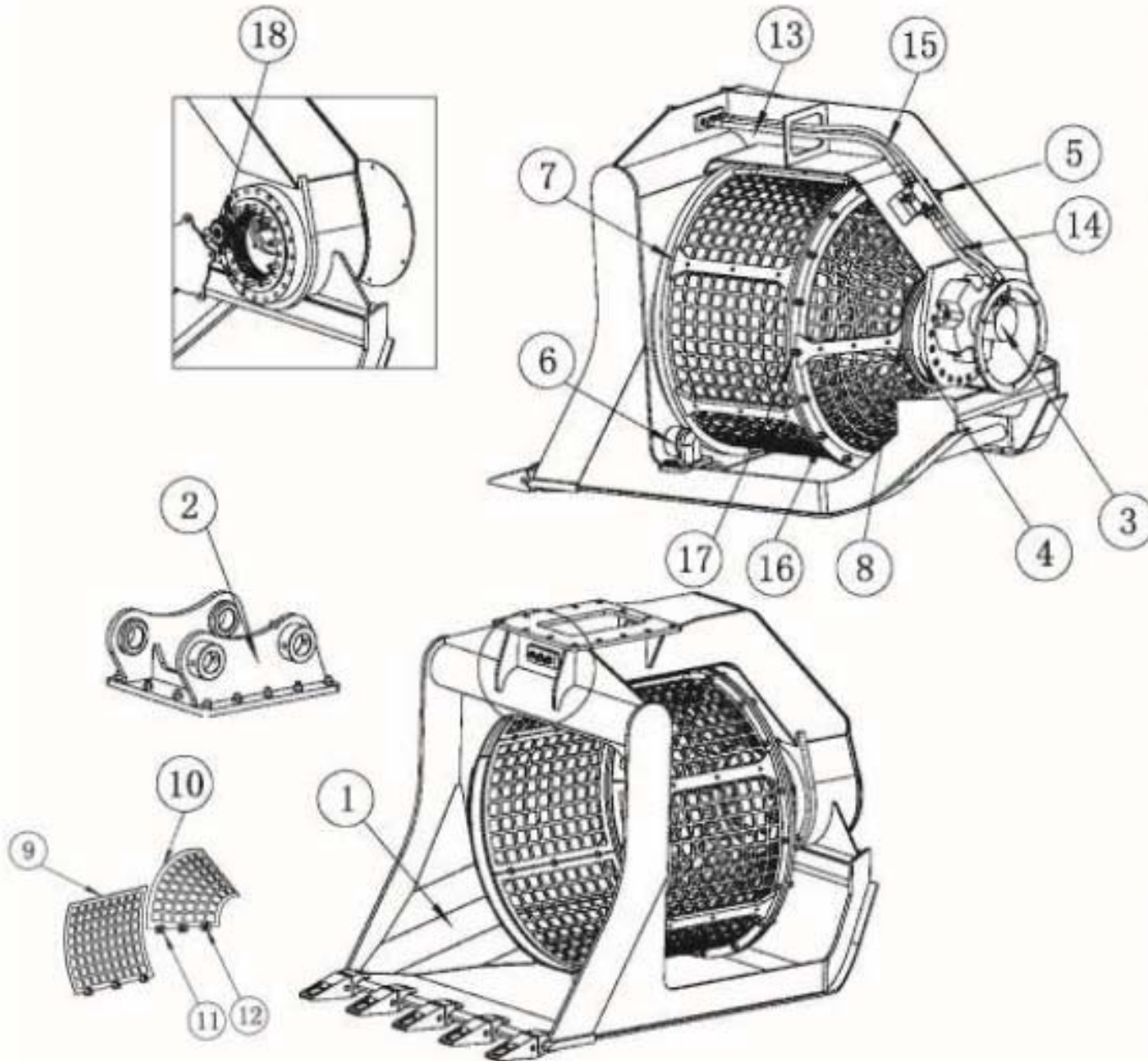


HYDRAULIC MOTOR CASE DRAIN



(248) 745-5828

[www.ez-screen.com](http://www.ez-screen.com)



| ITEM NO: | PART NAME                      | QTY |
|----------|--------------------------------|-----|
| 1        | BUCKET BODY                    | 1   |
| 2        | EAR BRACKET                    | 1   |
| 3        | MOTOR                          | 1   |
| 4        | SLEWING BEARING                | 1   |
| 5        | TWO-WAY RELIEF VALVE GROUP     | 1   |
| 6        | SUPPORTING WHEEL ASSEMBLY      | 6   |
| 7        | VERTICAL ROLLER FRAME ASSEMBLY | 1   |
| 8        | TAPERED ROLLER FRAME ASSEMBLY  | 1   |
| 9        | VERTICAL FILTER SCREEN         | 6   |
| 10       | TAPERED FILTER SCREEN          | 4   |
| 11       | GLAND                          | 30  |
| 12       | INSIDE HEXAGONAL BOLT          | 30  |
| 13       | OIL TUBE                       | 2   |
| 14       | OIL TUBE                       | 2   |
| 15       | OIL RETURN PIPE                | 1   |
| 16       | INSIDE HEXAGONAL BOLT          | 18  |
| 17       | HEXAGON NUTS                   | 36  |
| 18       | GEAR                           | 1   |

**ASSEMBLY DIAGRAM**

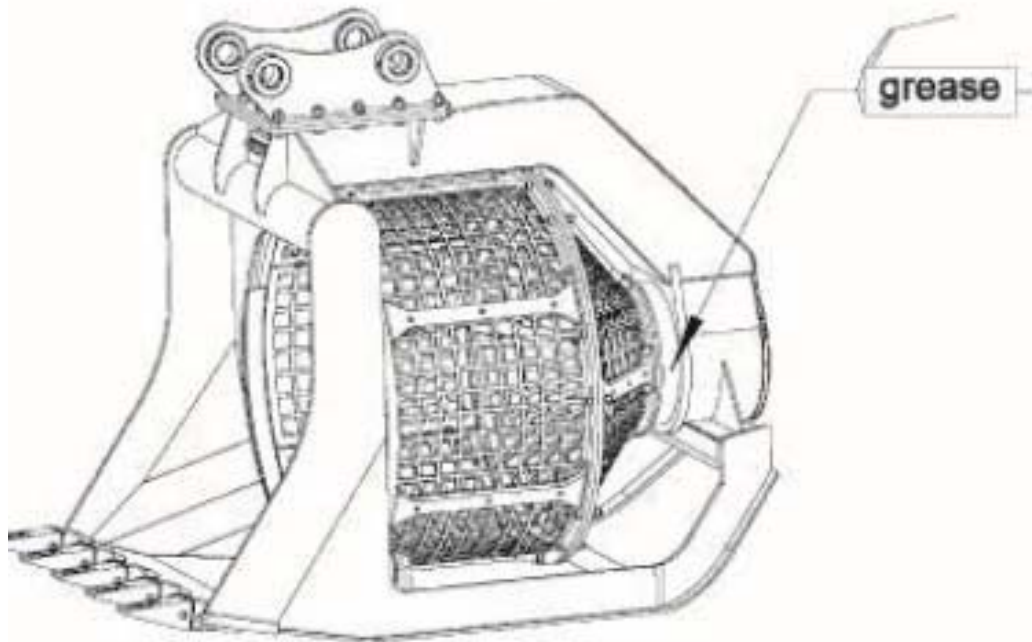
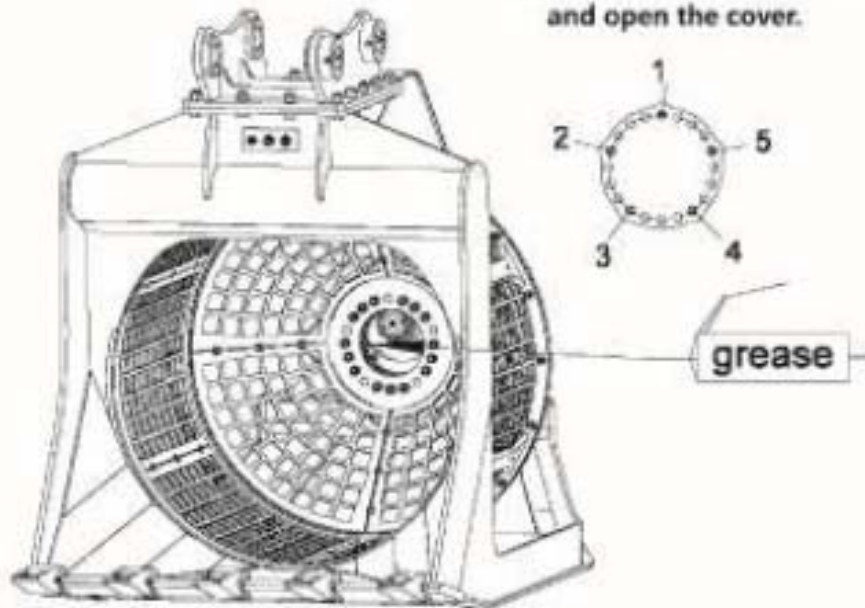


(248) 745-5828

[www.ez-screen.com](http://www.ez-screen.com)

## MAINTENANCE AND PRECAUTIONS

Unscrew the No. 1-5 screws  
and open the cover.



1. Ideal hydraulic fluid operating temperature is 86°F to 122°F (30°C to 50°C). Do not exceed 158°F (70°C)
2. Hydraulic fluid must meet these minimum standards:  
ASTM, SEA, or AIA Standard grade 6  
NAS1638 Standard Grade 9  
ISO/DRW 4406 Standard grade 18/15
3. We recommend using 100 mesh strainers and 7 micron or less hydraulic fluid filters.
4. If screening dry material, the slewing bearing should be greased every 4 hours. If screening wet material or screening in water, the slewing bearing should be greased every hour.
5. Grease rotating gears every 25 hours.
6. Frequently check and tighten the rotating gear cover bolts. Ensuring these are tight will help reduce contamination of the rotating gears.

MAINTENANCE AND PRECAUTIONS



(248) 745-5828

[www.ez-screen.com](http://www.ez-screen.com)

**Attachment C – Preliminary Approved FPE Offsite Waste Disposal Facilities**

| EMID | INACTIV E | Audit Owner | Permit ID     | Waste Class | Facility Name                                      | Parent Name  | Facility Address                | City/County | State | Zip Code | Country | Latitude  | Longitude  | Contact Name                   | Contact Phone | Contact E-mail                   | Facility Type   | Waste Accepted  | Other Comments                                  | Regional AWSL | Added to AWSL | Audited Year |
|------|-----------|-------------|---------------|-------------|--|--|---------------------------------|-------------|-------|----------|---------|-----------|------------|--------------------------------|---------------|----------------------------------|---|---|---|---------------|---------------|--------------|
| 1566 | ACTIVE    | OE-SSHE     | SCD0033 68891 | Haz         | Geocycle LLC                                       | Holcim LaFarge   | 2175 Gardner Blvd               | Holly Hill  | SC    | 29059    | USA     | 33.275208 | -80.434867 | Garfield Robertson             | 803-496-1471  | garfield.robertson@geocycle.com  | WDF Blending  | Combustible Liquids/Used Oil  | Other Waste accepted: Non-haz solids            | US            | 2012          | 2021         |
| 1635 | ACTIVE    | OE-SSHE     | NC0986 214550 | NH          | Republi Services Charlotte Motor Speedway Landfill | Republi Services   | 5105 Morehead Road              | Concord     | NC    | 28207    | USA     | 35.352220 | -80.669440 | John Marston                   | 704-782-2004  | johnmarston@republicservices.com | Landfill/Landfarm/Solidification/Stabilization/The facility is a non-hazardous waste landfill.  | Activated Carbon/Asbestos/Construction Debris/Contaminated Solids/Debris/Drilling/Completion Fluids/Filter Media/Cartridges/Sludges/Biological/Oily, etc./Soil/Tank/Other Bottoms/Soils and sludges are the primary special wastes received.  |   | US            | 2010          | 2019         |
| 1898 | ACTIVE    | OE-SSHE     | NC0986 166338 | Haz         | Veolia ES Technical Solutions                      | Veolia L.L.C.  | 2376 Will South Road            | Creedmoor   | NC    | 27522    | USA     | 36.133056 | -78.728056 | J. Leonard Beck                | 919-529-3996  | leonbeck@veolia.com              | Storage/Transporter   | Acid/Caustics/Asbestos/Amines/Activated Carbon/Batteries/Biological Sludge/Catalyst/Combustible Liquids/Containers/Contaminated Solids/Debris/Construction Debris/Crude Oil/Drilling Fluids/Mud/Filter Media/Cartridges/Glycol/Lamps/E-Waste/mercury/NORM/TENDORM /Oil sludge/Tank/Other Bottoms/Used oil |   | US            | 2010          | 2020         |
| 2121 | ACTIVE    | OE-SSHE     | NC0000 648451 | Haz         | Clean Harbors Redeville LLC                        | Clean Harbors Inc.   | 208 Watling on Industrial Drive | Reidsville  | NC    | 27320    | USA     | 36.320833 | -79.648889 | Douglas Green- General Manager | 336-342-6106  | dgreen@cleanharbors.com          | Storage/Transporter   | Acid/Caustics/Asbestos/Amines/Activated Carbon/Batteries/Biological Sludge/Catalyst/Combustible Liquids/Containers/Contaminated Solids/Debris/Construction Debris/Crude Oil/Drilling Fluids/Mud/Filter Media/Cartridges/Glycol/Lamps/E-Waste/mercury/NORM/TENDORM /Oil sludge/Tank/Other Bottoms/Used oil |   | US            | 2010          | 2019         |
| 2538 | ACTIVE    | OE-SSHE     | NC0048 461370 | NH          | HAZ-MAT Environmental Services, LLC                | Company is privately held.   | 221/210 Dalton Avenue           | Charlotte   | NC    | 28206    | USA     | 35.239581 | -80.820009 | Carrie Reavis                  | 704-332-9600  | carrie@hazmat-nc.com             | Oil Recycler/Solidification/Stabilization/Storage/Transporter/Wastewater Treatment/The facility conducts fuel blending of used oils; used oil filter processing/baling, wastewater pre-treatment; ethylene glycol (anti-freeze) reclaim; solidification of waste; and 10-day transfer operations.             | Containers (drums, IBCs, etc)/Construction Debris/Contaminated Solids/Filter Media/Cartridges/Glycol/Amine Waste/Sludges (Biological/Oil, etc)/Soil/Tank/Other Bottoms/Waste/Used/Crude Oil/Wastewaters/Other wastes not listed are for 10 day transfer only.   |   | US            | 2010          | 2019         |
| 2542 | ACTIVE    | OE-SSHE     | None          | NH          | Oakridge Landfill, Inc.                            | Waste Management Cementos Portland Valderrivas (CPV), of Madrid, Spain | 2175 Highway 79                 | Dorchester  | SC    | 29417    | USA     | 33.133000 | -80.365000 | Mark Muckenfus                 | 843-563-3607  | mmuckenfus@oivn.com              | Landfill/Landfarm   | Acid/Caustics/Asbestos/Amines/Activated Carbon/Batteries/Biological Sludge/Catalyst/Combustible Liquids/Containers/Contaminated Solids/Debris/Construction Debris/Crude Oil/Drilling Fluids/Mud/Filter Media/Cartridges/Glycol/Lamps/E-Waste/mercury/NORM/TENDORM /Oil sludge/Tank/Other Bottoms/Used oil |   | US            | 2010          | 2021         |
| 2586 | ACTIVE    | OE-SSHE     | SCD0033 51699 | Haz         | Giant Resource Recovery                            |  | 654 Judge Street                | Harleyville | SC    | 29448    | USA     | 33.238333 | -80.443333 | Tammy Hamilton                 | 803-496-2200  | tammy.hamilton@gcrv.com          | Cement Kiln   | Combustible Liquids/Contaminated Solids/Debris/Oily Sludge/Tank/Other Bottoms   |   | US            | 2012          | 2021         |
| 2594 | ACTIVE    | OE-SSHE     | SC00007 70297 | Haz         | Waste Management (WM) Lamp Tracker                 | Waste Management Inc.  | 109 Twenty Nine Court           | Williamston | SC    | 29697    | USA     | 34.639433 | -82.529102 | Bill Messer                    | 864-843-7700  | bmesser@wm.com                   | Metals/Materials Recycler/Storage/Transfer/WM Lamp Tracker operates a fluorescent lamp, ballast, electronic waste, and battery recycling facility. The facility primarily processes universal waste lamps to physically separate metal, glass, and calcium phosphate powder containing mercury for recycling. | Batteries/Lamps/E-Waste/Mercury Waste/PCB Waste/Fluorescent Lamps/Ballasts/Electronic Wastes  | Facility type: LAMP crushing (Mercury recovery) | US            | 2010          | 2019         |
| 2606 | ACTIVE    | OE-SSHE     | None          | NH          | Sampson County Disposal (Sia Waste Industrial)     | Green For Life   | 7434 Roseboro Highway           | Roseboro    | NC    | 28382    | USA     | 35.352015 | -80.667616 | Veronica Leer                  | 910-525-4132  | veronica.leer@sew.com            | Landfill/Landfarm/Solidification/Stabilization/Sampson County Disposal operates as a non-hazardous waste landfill, which accepts municipal solid waste (MSW); construction & demolition wastes (C&D); and various special wastes. They also conduct solidification of some incoming wastes prior to disposal. | Asbestos/Containers (drums, IBCs, etc)/Construction Debris/Contaminated Solids/Debris/Sludges (Biological/Oily, etc)/Soil/Other: Non-Hazardous wastes only. No hazardous or radioactive wastes.   |   | US            | Unknown       | 2020         |

**Attachment D – DBA Shoring Drawings and Calculations**



**GENERAL NOTES**

**SOIL CLASSIFICATION: LOOSE TO VERY DENSE SAND BASED ON BORE DBA-22 BY O&M ENVIRONMENTAL INC. DATED 7/20/2022.**

1. SHORING DESIGN BASED ON SOIL CLASSIFICATION ABOVE. CONTACT SHORING ENGINEER IF LESS COMPETENT MATERIALS ARE ENCOUNTERED.
2. MANUFACTURER'S TABULATED DATA APPLIES EXCEPT AS NOTED HEREIN.
3. ANCILLARY SYSTEM SUPPORTS AND/OR CONNECTORS INCLUDING, BUT NOT LIMITED TO, HANGING CHAINS, STACKING PINS, SPREADER PINS, ETC., ARE NOT SHOWN ON DRAWINGS. REFER TO MANUFACTURER'S PRODUCT TECHNICAL AND INSTALLATION GUIDES FOR SPECIFICATIONS AND CONNECTION DETAILS.
4. PROVIDE ACCESS AND BARRICADING PER OSHA REQUIREMENTS.
5. SHORING MUST BE PROPERLY INSTALLED PRIOR TO WORKERS ENTERING EXCAVATION. WORKERS SHALL ENTER, EXIT, AND WORK ONLY IN SHORED AREAS.
6. ALL STEEL (INCLUDING MANUFACTURER ASSEMBLIES) SHALL BE IN GOOD CONDITION AND FREE OF ANY DAMAGE, HOLES, OR VISUAL DEFECTS. STRUCTURAL STEEL SHAPES TO BE ASTM A992 OR A572 GR. 50 STEEL, MIN FY = 50 KSI. STEEL PIPE TO BE ASTM A53 GR. B, MIN FY = 35 KSI. HSS TUBE TO HAVE MIN FY = 55 KSI. STEEL PLATE TO BE ASTM A36, MIN FY = 36KSI. UNLESS OTHERWISE NOTED, ALL TIMBER LAGGING TO BE ROUGH-CUT WITH MIN FB = 850 PSI. FOR ALL OTHER MODULAR COMPONENTS, REFER TO MANUFACTURER'S TABULATED DATA OR PRODUCT TECHNICAL INFORMATION.
7. ALL VOIDS BETWEEN THE EXCAVATED SOIL AND THE FACE OF THE SHORING SYSTEM MUST BE BACKFILLED WITH EXCAVATED SOIL OR OTHER APPROVED BACKFILL PRIOR TO WORKERS ENTERING EXCAVATION.
8. CONTRACTOR IS RESPONSIBLE FOR INSTALLING A DEWATERING SYSTEM, IF NECESSARY, AND VERIFYING THAT THE GROUNDWATER LEVEL BEHIND THE SHORING WALLS HAS BEEN LOWERED AT LEAST TO THE MINIMUM LEVEL SHOWN ON THE SECTION VIEW(S). IF CONTRACTOR IS UNABLE TO LOWER THE GROUNDWATER TO THE LEVEL SHOWN, CONTACT THE SHORING ENGINEER TO CHECK IF THE HIGHER LEVELS ARE ACCEPTABLE OR TO REDESIGN THE SHORING SYSTEM, IF NECESSARY.
9. UNITED RENTALS WILL NOT SUPERVISE, DIRECT, CONTROL, OR HAVE AUTHORITY OVER, OR BE RESPONSIBLE FOR CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO, OR FOR ANY FAILURE OF CONTRACTOR TO COMPLY WITH LAWS AND REGULATIONS APPLICABLE TO THE FURNISHING OF PERFORMANCE OF WORK.
10. THE CONTRACTOR SHALL VERIFY THAT REQUIRED CLEARANCES ARE OBTAINED PRIOR TO COMMENCEMENT OF THE WORK.
11. THE PURPOSE OF THE SHORING SYSTEM IS TO TEMPORARILY SUPPORT THE TRENCH OR EXCAVATION FOR WORKER PROTECTION. ALL EXISTING OR PROPOSED INFRASTRUCTURE WITHIN THE SHORING SYSTEM INCLUDING, BUT NOT LIMITED TO, STRUCTURES, TANKS, UTILITY LINES, ETC., ARE SEPARATE FROM THE SHORING SYSTEM AND HAVE BEEN OMITTED FROM THE SHORING DESIGN PLAN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING THE EXCAVATION.
12. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL DIMENSIONS FOR BOTH EXISTING AND PROPOSED WORK.
13. UNITED RENTALS SHORING SYSTEMS ARE DESIGNED FOR WORKER PROTECTION ONLY. UNITED RENTALS BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY SETTLEMENT, MOVEMENT, OR DAMAGE OF ANY KIND THAT MAY OCCUR TO EXISTING BUILDING STRUCTURES OR UTILITIES DUE TO THE SHORING, INSTALLATION, DEFLECTION, REMOVAL, OR OTHER CONSTRUCTION ACTIVITIES.
14. THIS PLAN IS SPECIFICALLY DESIGNED TO COMPLY WITH OSHA 29 CFR 1926 SUBPART P RULES AND REGULATIONS.
15. THE CONTRACTOR'S COMPETENT PERSON SHALL ENSURE SETBACK DISTANCE COMPLIES WITH SETBACK TABLE (NOTE: AN EXCAVATOR WITH GROUND BEARING PRESSURE OF 1,000 PSF SHALL MATCH THE SETBACK FOR A 30 TON EXCAVATOR, 1,500 PSF SHALL MATCH THE 70 TON EXCAVATOR, AND 2,000 PSF SHALL MATCH THE 90 TON EXCAVATOR). SETBACK DISTANCES REFLECT MINIMUM SETBACKS AND ARE TO BE MEASURED FROM EDGE OF EXCAVATION. IF SPECIFIED SETBACK FALLS WITHIN A SLOPED AREA, SETBACK MUST BE EXTENDED TO A DISTANCE 2' PAST OUTSIDE OF SLOPE.
16. EDGE OF SHORING SYSTEM WILL REMAIN A MINIMUM OF 10' AWAY FROM AN EXISTING BUILDING (WITH FOUNDATIONS BELOW GRADE). EDGE OF SHORING SYSTEM WILL REMAIN A MINIMUM OF 50' AWAY FROM ANY ADDITIONAL STRUCTURES.



**SHORING DESIGN PLAN**  
**CONTAMINANT CONTROL, INC.**  
**EDGEFIELD, SC**  
**EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA)**



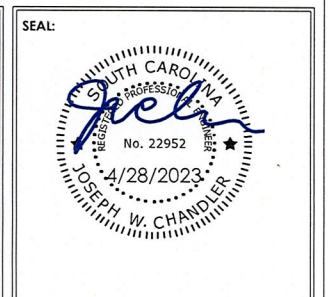
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| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

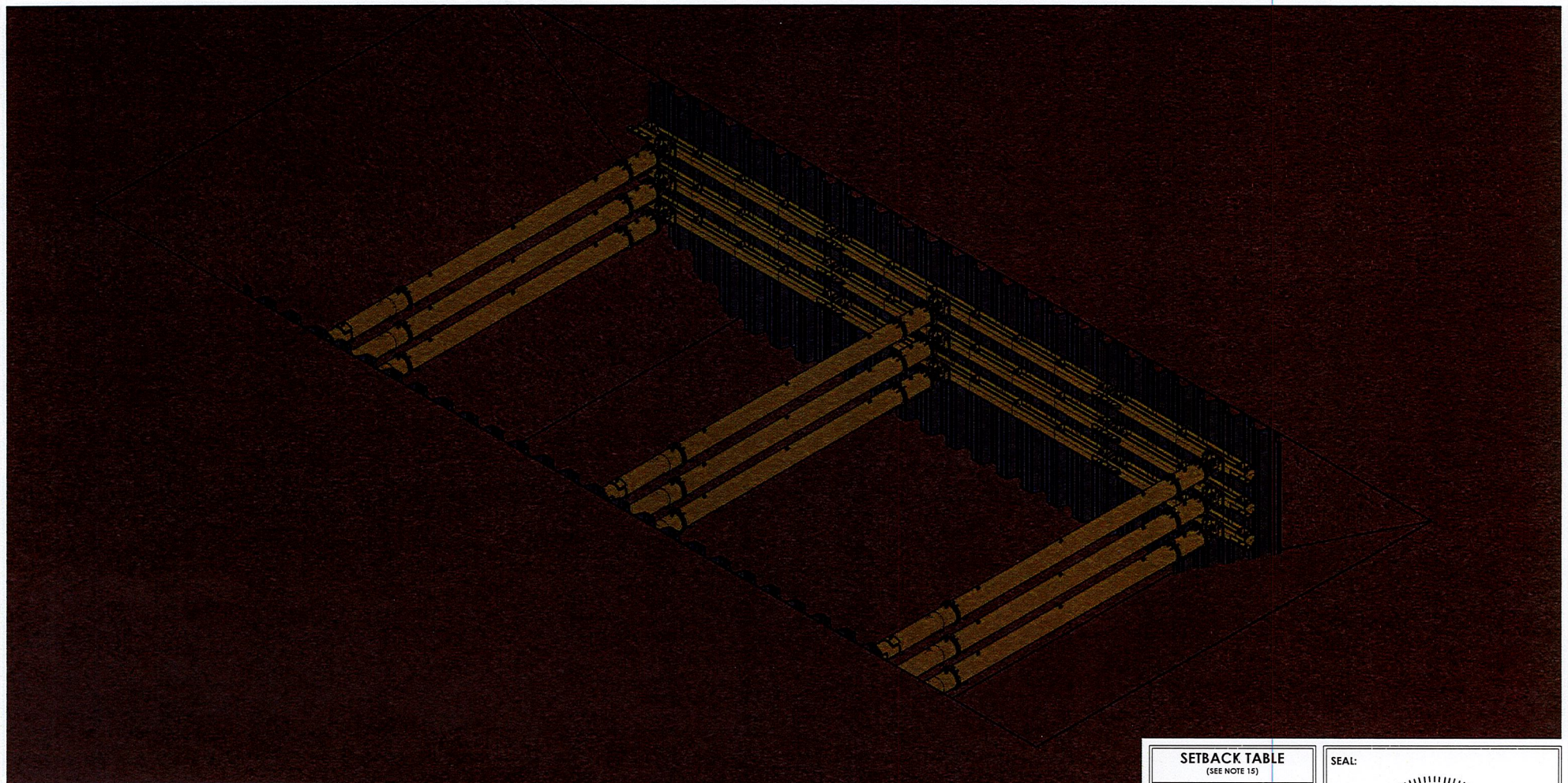
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| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                            |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA) |

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| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| H520-44 VEHICULAR TRAFFIC | 50'         |







**ISOMETRIC VIEW**

3D VIEWS ARE FOR REPRESENTATION ONLY AND ARE NOT INTENDED TO DEPICT ACTUAL SITE CONDITIONS.



|                                     |                          |                      |
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**TITLE**  
 SHORING DESIGN PLAN

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 CONTAMINANT CONTROL, INC.

**PROJECT LOCATION**  
 EDGEFIELD, SC

**PROJECT NAME**  
 EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA)

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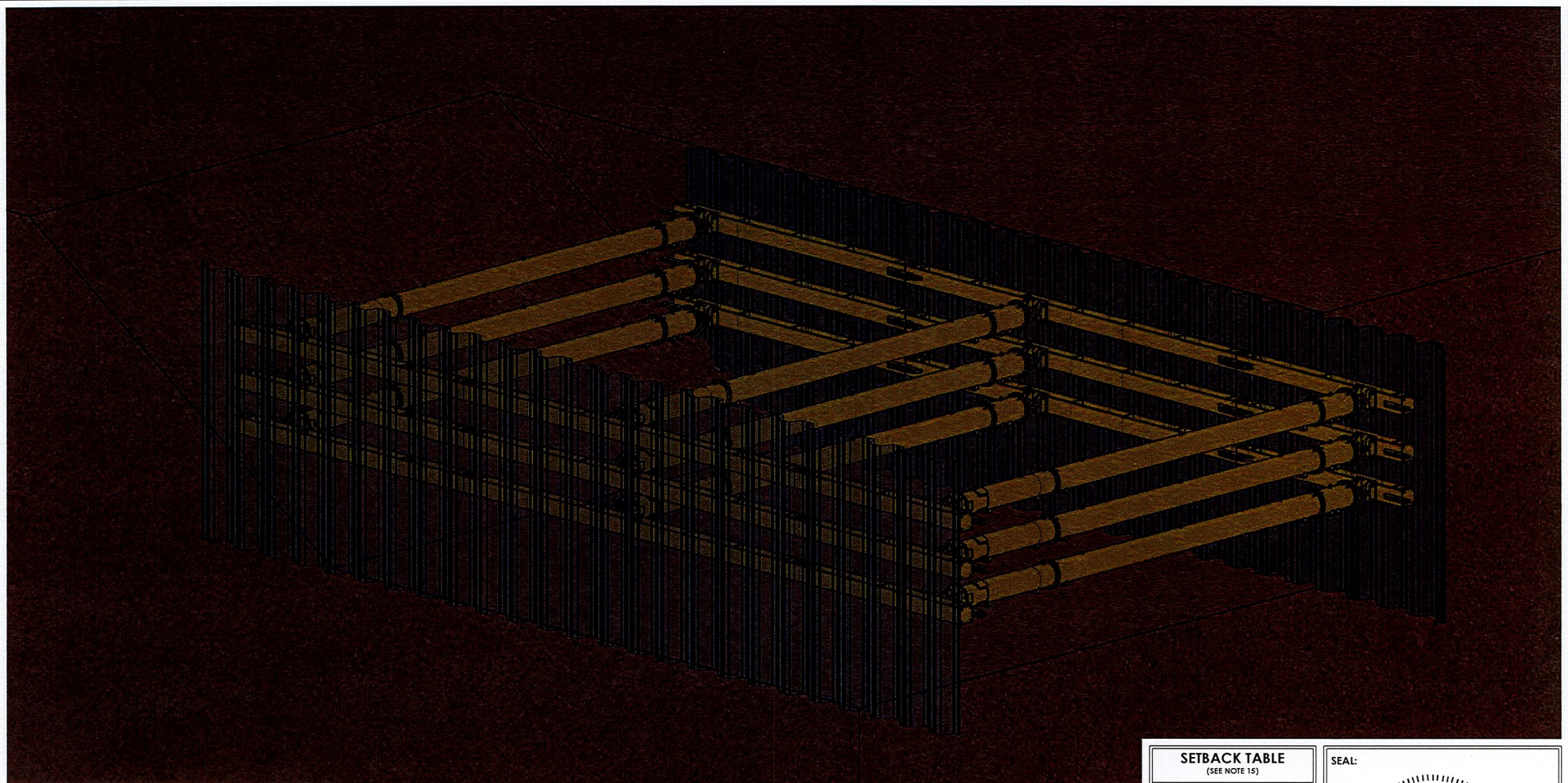
**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 4'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 14 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:

STATE OF SOUTH CAROLINA  
 PROFESSIONAL ENGINEER  
 No. 22952  
 4/28/2023  
 JOSEPH W. CHANDLER





**ISO SECTION VIEW**

3D VIEWS ARE FOR REPRESENTATION ONLY AND ARE NOT INTENDED TO DEPICT ACTUAL SITE CONDITIONS.



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 78 OAK BRANCH DRIVE  
 GREENSBORO, NC 27407  
 PHONE: 336-398-5060

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| <b>SHEET</b><br>3 of 7              | <b>DATE</b><br>4/27/2023 |                      |

**TITLE**  
 SHORING DESIGN PLAN

**CUSTOMER**  
 CONTAMINANT CONTROL, INC.

**PROJECT LOCATION**  
 EDGEFIELD, SC

**PROJECT NAME**  
 EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA)

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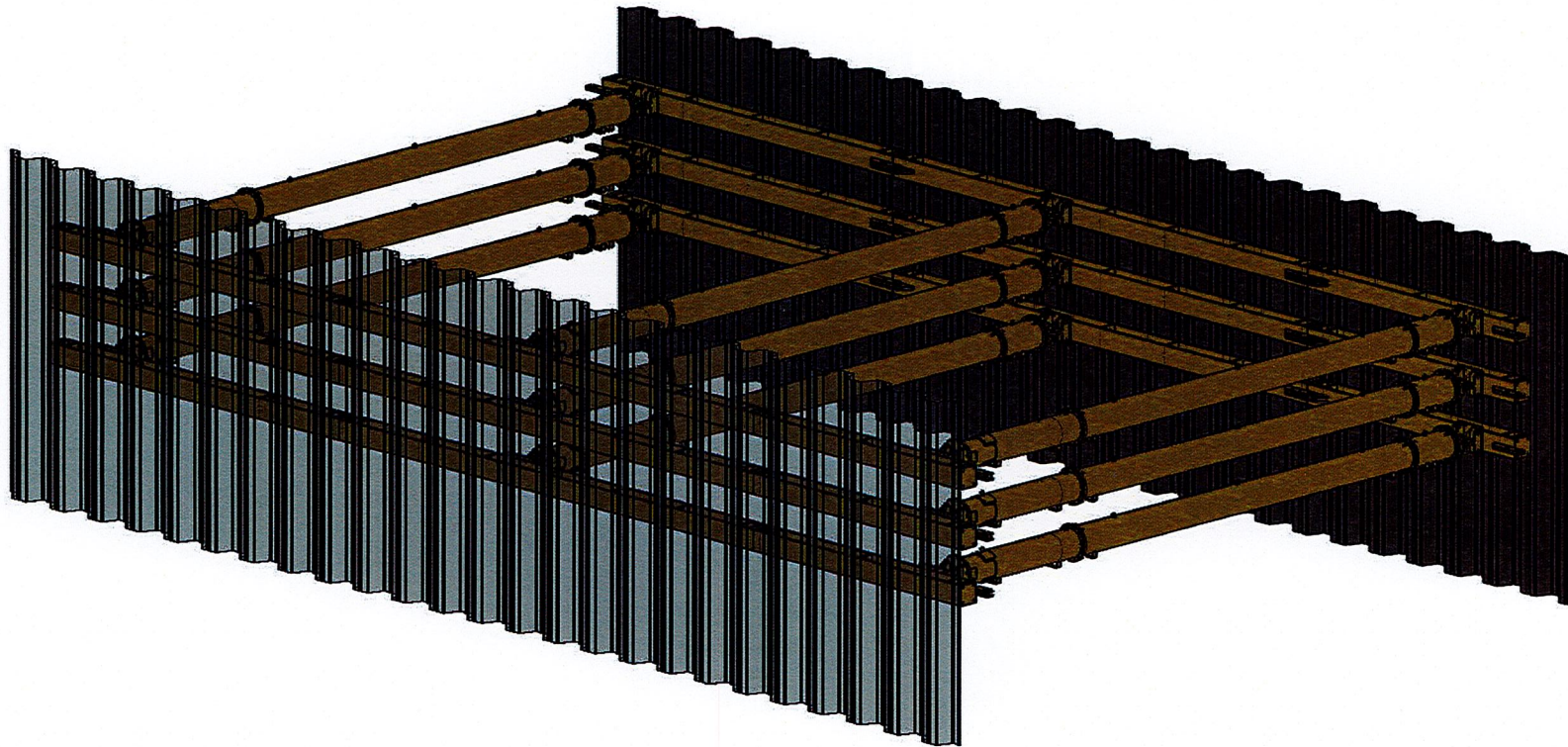
**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 4'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 4'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (4' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 14 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:







**ASSEMBLED COMPONENTS**

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|                                     |                          |                      |
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| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>4 of 7              | <b>DATE</b><br>4/27/2023 |                      |

**TITLE**  
 SHORING DESIGN PLAN

**CUSTOMER**  
 CONTAMINANT CONTROL, INC.

**PROJECT LOCATION**  
 EDGEFIELD, SC

**PROJECT NAME**  
 EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA)

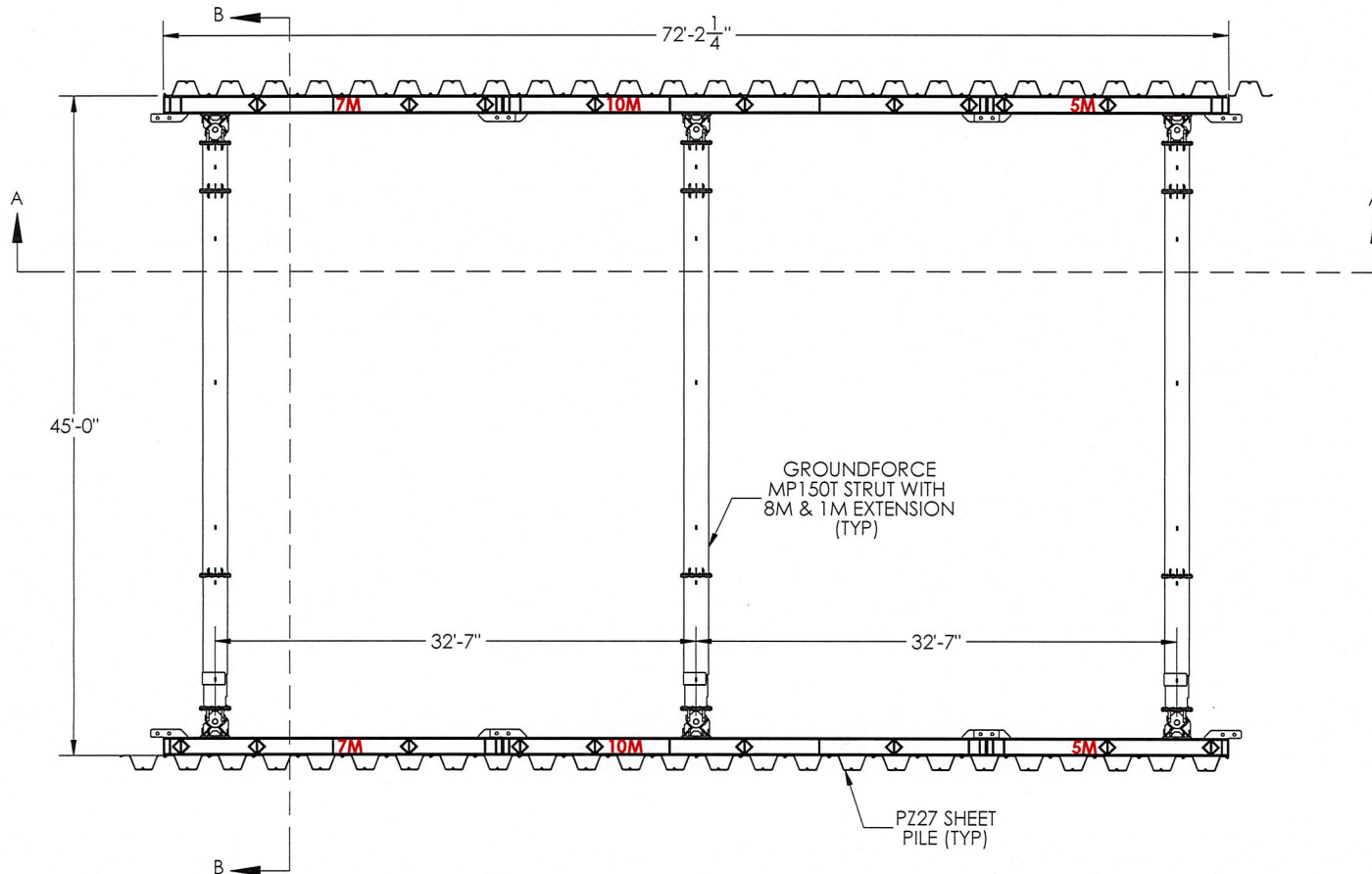
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**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 4'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:

JOSEPH W. CHANDLER  
 No. 22952  
 4/28/2023



**PLAN VIEW**  
SCALE: 1/8" = 1'-0" (1:96)

NOTE: ALL SOIL LINES REMOVED FROM PLAN VIEW(S) FOR CLARITY. WHEN APPLICABLE, SLOPING/BENCHING LINES WILL BE SHOWN IN SECTION VIEW(S).

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ENGINEERING DEPARTMENT  
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GREENSBORO, NC 27407  
PHONE: 336-398-5060

| DRAWING NUMBER |           | REVISION DATE |
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| EGR230680B     |           |               |
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| SHEET          | DATE      |               |
| 5 of 7         | 4/27/2023 |               |

| TITLE                     |
|---------------------------|
| SHORING DESIGN PLAN       |
| CUSTOMER                  |
| CONTAMINANT CONTROL, INC. |

| PROJECT LOCATION                             |
|--|
| EDGEFIELD, SC                                |
| PROJECT NAME                                 |
| EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA) |

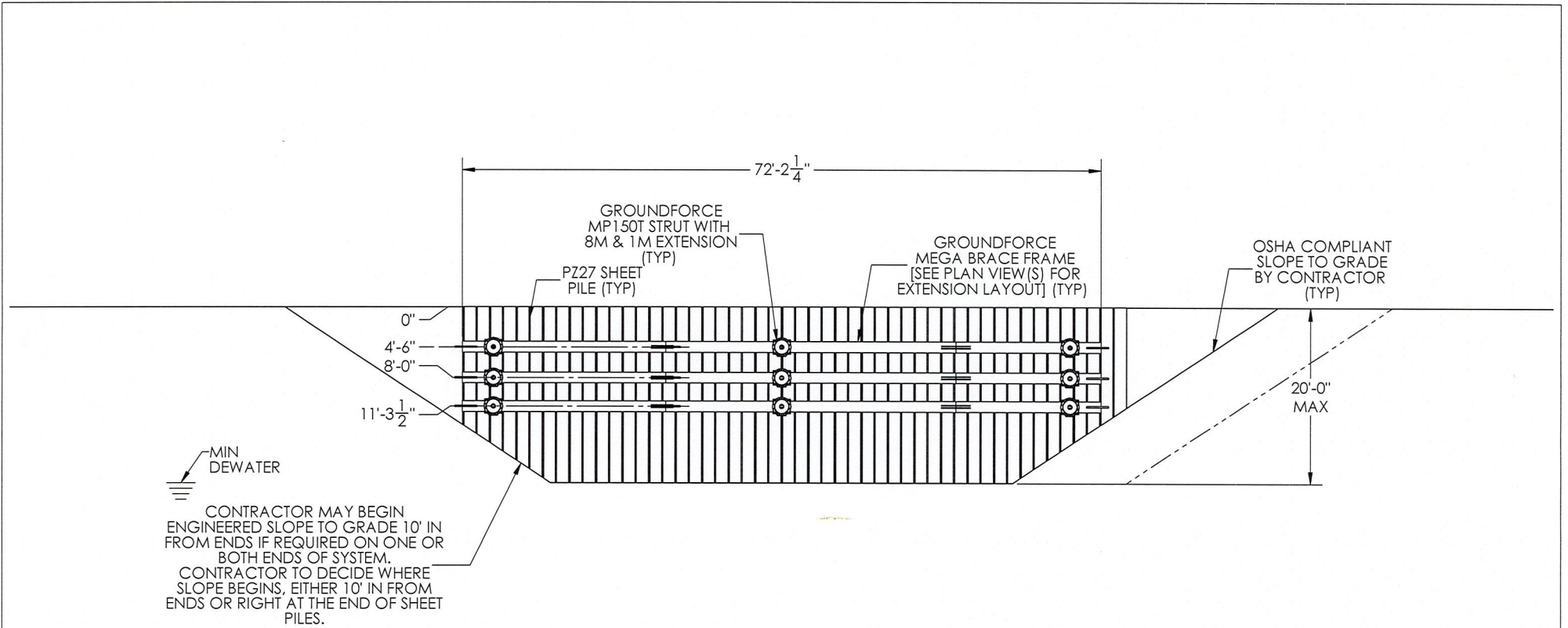
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| SETBACK TABLE<br>(SEE NOTE 15) |             |
|--------------------------------|-------------|
| DESCRIPTION                    | DISTANCE    |
| CRANE TO 30 TON MAX            | 8'          |
| 30 TON EXCAVATOR               | 6'          |
| 70 TON EXCAVATOR               | 10'         |
| 90 TON EXCAVATOR               | 12'         |
| 3 CY LOADER                    | 4'          |
| 5 CY LOADER                    | 6'          |
| DUMP TRUCK                     | 5'          |
| SPOIL PILE (6' TALL)           | 4'          |
| CONCRETE TRUCK                 | 10'         |
| RAILROAD TRACK                 | 100'        |
| EXISTING STRUCTURES            | SEE NOTE 16 |
| H520-44 VEHICULAR TRAFFIC      | 50'         |

SEAL:

JOSEPH W. CHANDLER  
4/28/2023  
No. 22952  
SOUTH CAROLINA PROFESSIONAL ENGINEER





**SECTION A-A VIEW**  
SCALE: 1/8" = 1'-0" (1:96)



|                                     |                          |                      |
|-------------------------------------|--------------------------|----------------------|
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| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>6 of 7              | <b>DATE</b><br>4/27/2023 |                      |

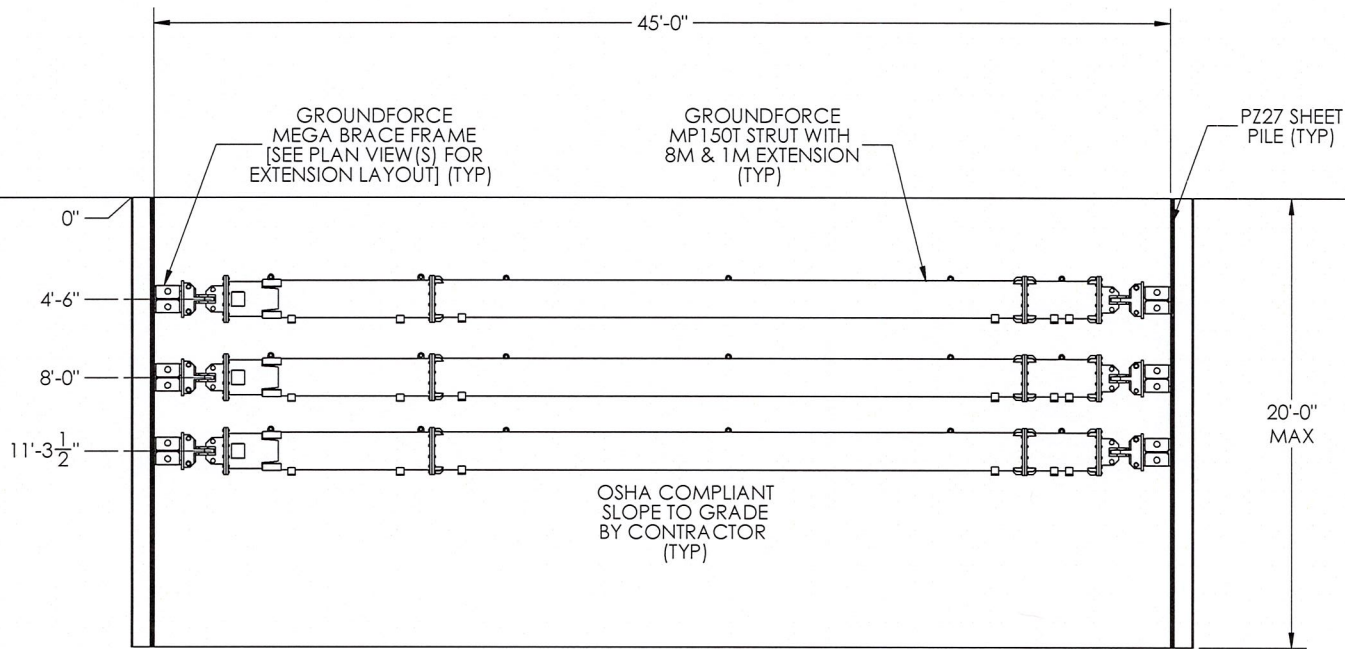
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| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

|   |
|---|
| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                            |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA) |

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| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| H520-44 VEHICULAR TRAFFIC | 50'         |

SEAL:



**SECTION B-B VIEW**  
SCALE: 3/16" = 1'-0" (1:64)



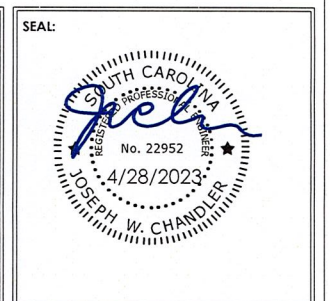
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| TVC            | MM        |               |
| SHEET          | DATE      |               |
| 7 of 7         | 4/27/2023 |               |

| TITLE                     |
|---------------------------|
| SHORING DESIGN PLAN       |
| CUSTOMER                  |
| CONTAMINANT CONTROL, INC. |

| PROJECT LOCATION                             |
|--|
| EDGEFIELD, SC                                |
| PROJECT NAME                                 |
| EDGEFIELD REMEDIATION DRUM BURIAL AREA (DBA) |

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| SETBACK TABLE<br>(SEE NOTE 15) |             |
|--------------------------------|-------------|
| DESCRIPTION                    | DISTANCE    |
| CRANE TO 30 TON MAX            | 8'          |
| 30 TON EXCAVATOR               | 6'          |
| 70 TON EXCAVATOR               | 10'         |
| 90 TON EXCAVATOR               | 12'         |
| 3 CY LOADER                    | 4'          |
| 5 CY LOADER                    | 6'          |
| DUMP TRUCK                     | 5'          |
| SPOIL PILE (6' TALL)           | 4'          |
| CONCRETE TRUCK                 | 10'         |
| RAILROAD TRACK                 | 100'        |
| EXISTING STRUCTURES            | SEE NOTE 16 |
| HS20-44 VEHICULAR TRAFFIC      | 50'         |





EGR230680B Loading Calculations  
April 27, 2023

Customer: Contaminant Control, Inc.  
Project: Edgefield Remediation - Drum Burial Area (DBA)  
Location: Edgefield, SC

The excavation is to be approximately 45' wide x 72' long with a maximum shored depth of 20'. Soils are expected to be loose to very dense sand based on bore DBA-22 by O&M Environmental Inc, dated 7/20/2022. A 250 psf surcharge on the ground surface was added for surface loading from equipment and/or materials adjacent to excavation. HS20-44 vehicular traffic will remain a minimum of 50' away from edge of excavation. Edge of excavation will remain a minimum of 10' away from an existing 1-story warehouse with foundations at grade. No additional loading may be added to system between edge of excavation and nearby structure loading. Edge of excavation will remain a minimum of 50' away from any additional structures. System must be dewatered to base of excavation. System is specifically designed to comply with OSHA 29 CFR 1926 Subpart P Rules and Regulations.

System Description:

45' wide x 72' long x 20' deep; 2-Sided Sheet Piling & Bracing Pit application; System will consist of (3) levels of hydraulic brace extensions with (3) crossing struts per level of brace.

Soil:

|                       |                        |                      |
|-----------------------|------------------------|----------------------|
| <u>Layer 1: 0'-5'</u> | <u>Layer 2: 5'-19'</u> | <u>Layer 3: 19'+</u> |
| Loose Sand            | Dense Sand             | Very Dense Sand      |
| $\gamma = 118$ pcf    | $\gamma = 125$ pcf     | $\gamma = 130$ pcf   |
| $\phi = 28^\circ$     | $\phi = 35^\circ$      | $\phi = 41^\circ$    |
| $K_a = 0.361$         | $K_a = 0.26$           | $K_a = 0.21$         |

Rankine Earth Pressure Theory Used

Max pressure applied to system at Base of Excavation = 712 psf (refer to attached SupportIT Design Report)

Check PZ-27 Sheet Piles:

Applied moment = 17,368 ft-lb/ft < Allowable moment = 75,500 ft-lb/ft, O.K.

Check Groundforce Standard Mega Brace Frame:

Applied sagging moment = 300 k-ft < Allowable sagging moment = 655 k-ft, O.K.

Applied hogging moment = 530 k-ft < Allowable hogging moment = 590 k-ft, O.K.

\*\*Reference attached SPAN File for joint check\*\*

Check Groundforce MP150T Hydraulic Strut:

Applied load = 163 k < Allowable load = 337 k, O.K.

Max calculated Brace deflection = 1.0 in.

Max calculated Sheet Pile deflection = 0.2 in.

Min required Sheet Pile embedment = 0 ft. (No Toe Design)



Trench Safety Engineering Department  
7B Oak Branch Drive, Greensboro, NC 27407  
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Client: Containment Control, Inc.  
 Site: Edgefield, SC

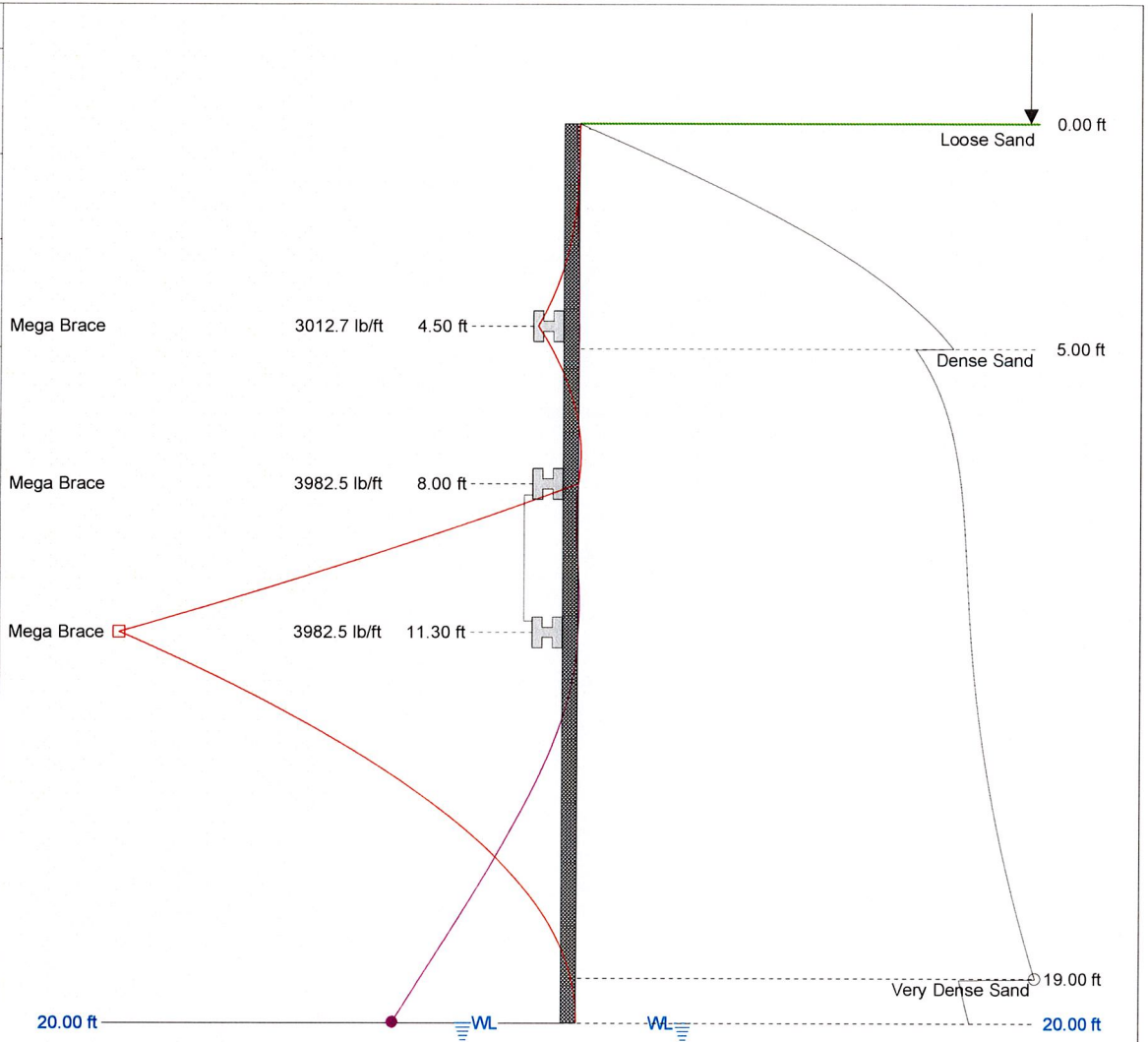
Title: Edgefield Remediation Drum  
 Burial Area (DBA)

Designer: MBM  
 Ref: DBA-22  
 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

|   | Maximum         | d (ft) |
|---|-----------------|--------|
| ○ | 711.7 psf       | 19.00  |
| □ | 24607.7 ftlb/ft | 11.30  |
| ● | 0.2 in          | 19.98  |

EGR230680B  
 45'Wx72'Lx20'D  
 2-Sided S&B Pit



United Rentals Trench Safety

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 Web: www.GTSOFT.org



Client: Containment Control, Inc.  
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 Title: Edgefield Remediation Drum  
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 Designer: MBM  
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 Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680B  
 45'Wx72'Lx20'D  
 2-Sided S&B Pit

**Input Data**

Depth Of Excavation = 20.00ft  
 Surcharge = 0.0psf  
 Depth Of Active Water = 20.00ft  
 Depth Of Passive Water = 20.00ft  
 Water Density = 62.43pcf  
 Minimum Fluid Density = 31.82pcf

**Soil Profile**

| Depth (ft) | Soil Name       | $\gamma$ (pcf) | $\gamma'$ (pcf) | C (psf) | $C_a$ (psf) | $\phi$ (°) | $\delta$ (°) | $K_a$ | $K_{ac}$ | $K_p$ | $K_{pc}$ |
|------------|-----------------|----------------|-----------------|---------|-------------|------------|--------------|-------|----------|-------|----------|
| 0.00       | Loose Sand      | 118.00         | 55.60           | 0.0     | 0.0         | 28.0       | 0.0          | 0.36  | 0.00     | 2.77  | 0.00     |
| 5.00       | Dense Sand      | 125.00         | 62.60           | 0.0     | 0.0         | 35.0       | 0.0          | 0.26  | 0.00     | 3.85  | 0.00     |
| 19.00      | Very Dense Sand | 130.00         | 67.60           | 0.0     | 0.0         | 41.0       | 0.0          | 0.21  | 0.00     | 4.81  | 0.00     |

**Surcharges**

| Position (ft) | Width (ft) | Length (ft) | Depth (ft) | Magnitude   | Type |
|---------------|------------|-------------|------------|-------------|------|
| 10.00         |            |             | 0.00       | 9000.0lb/ft | Line |

**Solution**

| Sheet Name | E (psi) | I (in <sup>4</sup> /ft) | f (psi) | Z (in <sup>3</sup> /ft) | Allowed $M_{max}$ (ftlb/ft) | b (in) | A (in <sup>2</sup> /ft) | W (lb/ft) | Upstand (ft) | Toe (ft) | Length (ft) |
|------------|---------|-------------------------|---------|-------------------------|-----------------------------|--------|-------------------------|-----------|--------------|----------|-------------|
| PZ27       | 2.9E+07 | 184.20                  | 30000.0 | 30.20                   | 75500.1                     | 17.99  | 7.93                    | 40.5      | 0.00         | 0.00     | 20.00       |

Load Model: Hinge Method

**Supports**

| d (ft) | Type       | L (ft) | B (ft) | Load (lb/ft) |
|--------|------------|--------|--------|--------------|
| 4.50   | Mega Brace | 72.00  | 45.00  | 3012.7       |
| 8.00   | Mega Brace | 72.00  | 45.00  | 3982.5       |
| 11.30  | Mega Brace | 72.00  | 45.00  | 3982.5       |

‡ - Load sharing

**Maxima**

|                | Maximum         | Depth (ft) |
|----------------|-----------------|------------|
| Pressure       | 711.7 psf       | 19.00      |
| Bending Moment | 24607.7 ftlb/ft | 11.30      |
| Deflection     | 0.2 in          | 19.98      |
| Shear Force    | 8493.4 lb/ft    | 11.30      |



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Client: Containment Control, Inc.  
 Site: Edgefield, SC

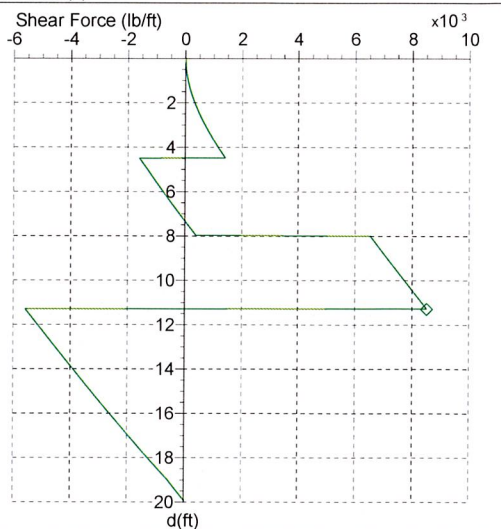
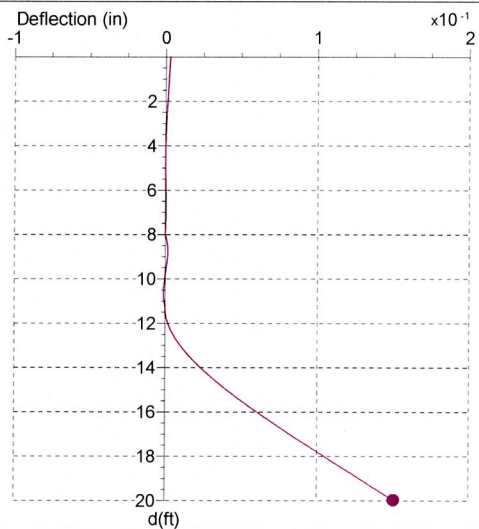
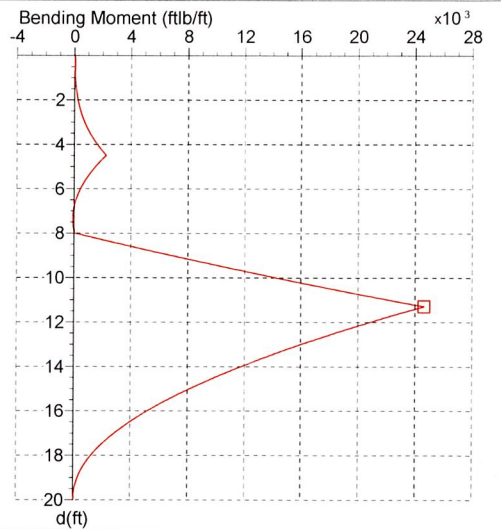
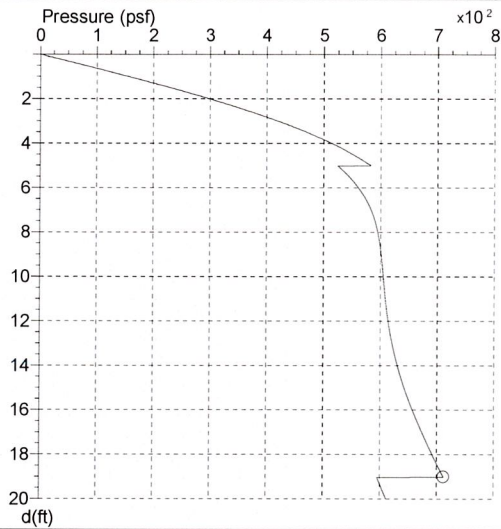
Title: Edgefield Remediation Drum  
 Burial Area (DBA)

Designer: MBM  
 Ref: DBA-22  
 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

|   | Maximum         | d (ft) |
|---|-----------------|--------|
| ○ | 711.7 psf       | 19.00  |
| □ | 24607.7 ftlb/ft | 11.30  |
| ◇ | 8493.4 lb/ft    | 11.30  |
| ● | 0.2 in          | 19.98  |

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 2-Sided S&B Pit



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Title: Edgefield Remediation Drum  
 Burial Area (DBA)

Designer: MBM  
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 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680B  
 45'Wx72'Lx20'D  
 2-Sided S&B Pit

| depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) | depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) | depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) |
|------------|---------|-------------|--------|-----------|------------|---------|-------------|--------|-----------|------------|---------|-------------|--------|-----------|
| 0.00       | 0.0     | 0.0         | 0.0    | 0.0       | 6.71       | 577.7   | 0.4         | 0.0    | -370.6    | 13.43      | 624.8   | 14066.9     | 0.0    | -4275.4   |
| 0.14       | 23.6    | 0.0         | 0.0    | 1.9       | 6.86       | 580.2   | -44.5       | 0.0    | -293.4    | 13.57      | 626.1   | 13501.8     | 0.0    | -4192.0   |
| 0.29       | 44.6    | 0.5         | 0.0    | 6.6       | 7.00       | 582.7   | -82.7       | 0.0    | -206.1    | 13.71      | 627.6   | 12879.2     | 0.0    | -4098.0   |
| 0.43       | 68.2    | 2.1         | 0.0    | 15.3      | 7.14       | 585.1   | -107.8      | 0.0    | -118.5    | 13.86      | 629.0   | 12337.7     | 0.0    | -4014.2   |
| 0.57       | 89.0    | 4.7         | 0.0    | 25.9      | 7.29       | 586.9   | -119.0      | 0.0    | -40.4     | 14.00      | 630.5   | 11741.9     | 0.0    | -3919.7   |
| 0.71       | 112.2   | 9.6         | 0.0    | 41.2      | 7.43       | 588.9   | -119.2      | 0.0    | 47.8      | 14.14      | 632.2   | 11160.2     | 0.0    | -3825.0   |
| 0.86       | 132.7   | 16.0        | 0.0    | 57.7      | 7.57       | 590.4   | -108.3      | 0.0    | 126.4     | 14.29      | 633.7   | 10655.2     | 0.0    | -3740.6   |
| 1.00       | 155.5   | 26.1        | 0.0    | 79.5      | 7.71       | 592.0   | -83.6       | 0.0    | 215.1     | 14.43      | 635.4   | 10100.4     | 0.0    | -3645.4   |
| 1.14       | 178.0   | 39.6        | 0.0    | 104.7     | 7.86       | 593.3   | -50.5       | 0.0    | 294.2     | 14.57      | 637.0   | 9619.3      | 0.0    | -3560.5   |
| 1.29       | 197.7   | 55.0        | 0.0    | 129.9     | 8.00       | 594.6   | -0.7        | 0.0    | 6512.9    | 14.71      | 638.9   | 9091.6      | 0.0    | -3464.8   |
| 1.43       | 219.6   | 76.6        | 0.0    | 161.4     | 8.14       | 595.9   | 976.7       | 0.0    | 6602.2    | 14.86      | 640.5   | 8634.6      | 0.0    | -3379.5   |
| 1.57       | 238.7   | 99.9        | 0.0    | 192.1     | 8.29       | 596.8   | 1856.6      | 0.0    | 6681.7    | 15.00      | 642.5   | 8134.1      | 0.0    | -3283.3   |
| 1.71       | 259.7   | 131.1       | 0.0    | 229.7     | 8.43       | 597.8   | 2859.2      | 0.0    | 6771.3    | 15.14      | 644.5   | 7648.0      | 0.0    | -3186.7   |
| 1.86       | 278.1   | 163.8       | 0.0    | 265.7     | 8.57       | 598.6   | 3761.5      | 0.0    | 6851.1    | 15.29      | 646.3   | 7228.2      | 0.0    | -3100.7   |
| 2.00       | 298.3   | 206.5       | 0.0    | 309.1     | 8.71       | 599.5   | 4789.4      | 0.0    | 6941.0    | 15.43      | 648.4   | 6769.5      | 0.0    | -3003.6   |
| 2.14       | 317.9   | 256.0       | 0.0    | 355.5     | 8.86       | 600.2   | 5714.3      | 0.0    | 7020.9    | 15.57      | 650.3   | 6374.1      | 0.1    | -2917.0   |
| 2.29       | 335.0   | 305.9       | 0.0    | 399.2     | 9.00       | 600.9   | 6767.4      | 0.0    | 7111.0    | 15.71      | 652.5   | 5943.1      | 0.1    | -2819.2   |
| 2.43       | 353.6   | 369.2       | 0.0    | 451.0     | 9.14       | 601.6   | 7834.1      | 0.0    | 7201.2    | 15.86      | 654.5   | 5572.2      | 0.1    | -2732.1   |
| 2.57       | 369.7   | 432.1       | 0.0    | 499.3     | 9.29       | 602.1   | 8793.5      | 0.0    | 7281.5    | 16.00      | 656.8   | 5169.0      | 0.1    | -2633.7   |
| 2.71       | 387.3   | 510.8       | 0.0    | 556.2     | 9.43       | 602.7   | 9885.5      | 0.0    | 7371.8    | 16.14      | 659.1   | 4780.5      | 0.1    | -2535.0   |
| 2.86       | 402.4   | 588.0       | 0.0    | 609.0     | 9.57       | 603.3   | 10867.6     | 0.0    | 7452.3    | 16.29      | 661.2   | 4447.6      | 0.1    | -2447.0   |
| 3.00       | 418.9   | 683.4       | 0.0    | 670.8     | 9.71       | 603.8   | 11985.1     | 0.0    | 7542.8    | 16.43      | 663.6   | 4087.2      | 0.1    | -2347.6   |
| 3.14       | 434.7   | 788.3       | 0.0    | 734.9     | 9.86       | 604.3   | 12989.8     | 0.0    | 7623.3    | 16.57      | 665.8   | 3779.4      | 0.1    | -2258.9   |
| 3.29       | 448.2   | 889.7       | 0.0    | 793.9     | 10.00      | 604.8   | 14132.9     | 0.0    | 7714.0    | 16.71      | 668.3   | 3447.2      | 0.1    | -2158.9   |
| 3.43       | 463.0   | 1013.3      | 0.0    | 862.4     | 10.14      | 605.4   | 15289.5     | 0.0    | 7804.8    | 16.86      | 670.6   | 3164.5      | 0.1    | -2069.6   |
| 3.57       | 475.6   | 1131.9      | 0.0    | 925.1     | 10.29      | 605.9   | 16328.9     | 0.0    | 7885.6    | 17.00      | 673.2   | 2860.8      | 0.1    | -1968.8   |
| 3.71       | 489.1   | 1275.5      | 0.0    | 997.5     | 10.43      | 606.4   | 17511.1     | 0.0    | 7976.5    | 17.14      | 675.8   | 2572.2      | 0.1    | -1867.6   |
| 3.86       | 500.7   | 1412.4      | 0.0    | 1063.6    | 10.57      | 606.9   | 18573.4     | 0.0    | 8057.4    | 17.29      | 678.2   | 2328.5      | 0.1    | -1777.3   |
| 4.00       | 513.2   | 1577.0      | 0.0    | 1139.8    | 10.71      | 607.5   | 19781.2     | 0.0    | 8148.5    | 17.43      | 680.9   | 2068.7      | 0.1    | -1675.3   |
| 4.14       | 525.0   | 1753.1      | 0.0    | 1217.8    | 10.86      | 608.1   | 20866.2     | 0.0    | 8229.5    | 17.57      | 683.4   | 1850.6      | 0.1    | -1584.4   |
| 4.29       | 535.1   | 1919.6      | 0.0    | 1288.5    | 11.00      | 608.7   | 22099.7     | 0.0    | 8320.8    | 17.71      | 686.2   | 1619.8      | 0.1    | -1481.6   |
| 4.43       | 545.9   | 2118.3      | 0.0    | 1369.7    | 11.14      | 609.4   | 23346.9     | 0.0    | 8412.1    | 17.86      | 688.7   | 1427.6      | 0.1    | -1389.9   |
| 4.57       | 555.1   | 2104.3      | 0.0    | -1569.5   | 11.29      | 610.0   | 24466.9     | 0.0    | 8493.4    | 18.00      | 691.6   | 1226.0      | 0.1    | -1286.4   |
| 4.71       | 564.9   | 1874.5      | 0.0    | -1485.5   | 11.43      | 610.7   | 23867.0     | 0.0    | -5509.6   | 18.14      | 694.5   | 1040.0      | 0.1    | -1182.4   |
| 4.86       | 573.2   | 1680.8      | 0.0    | -1409.5   | 11.57      | 611.4   | 23137.1     | 0.0    | -5428.1   | 18.29      | 697.1   | 887.7       | 0.1    | -1089.6   |
| 5.00       | 582.0   | 1475.2      | 0.0    | -1322.8   | 11.71      | 612.2   | 22329.0     | 0.0    | -5336.4   | 18.43      | 700.1   | 731.3       | 0.1    | -984.8    |
| 5.14       | 529.9   | 1282.0      | 0.0    | -1243.8   | 11.86      | 613.0   | 21622.2     | 0.0    | -5254.7   | 18.57      | 702.8   | 605.4       | 0.1    | -891.3    |
| 5.29       | 535.6   | 1120.3      | 0.0    | -1172.7   | 12.00      | 613.8   | 20840.2     | 0.0    | -5162.7   | 18.71      | 705.8   | 478.8       | 0.1    | -785.6    |
| 5.43       | 541.6   | 949.8       | 0.0    | -1091.8   | 12.14      | 614.8   | 20071.9     | 0.0    | -5070.5   | 18.86      | 708.6   | 379.5       | 0.1    | -691.3    |
| 5.57       | 546.6   | 808.4       | 0.0    | -1019.3   | 12.29      | 615.6   | 19408.6     | 0.0    | -4988.5   | 19.00      | 711.7   | 282.9       | 0.1    | -584.7    |
| 5.71       | 551.8   | 661.0       | 0.0    | -936.8    | 12.43      | 616.7   | 18658.5     | 0.0    | -4896.0   | 19.14      | 597.0   | 201.5       | 0.1    | -492.0    |
| 5.86       | 556.2   | 540.4       | 0.0    | -862.9    | 12.57      | 617.6   | 18010.5     | 0.0    | -4813.7   | 19.29      | 599.2   | 140.6       | 0.1    | -410.7    |
| 6.00       | 560.7   | 416.5       | 0.0    | -779.1    | 12.71      | 618.8   | 17294.6     | 0.0    | -4721.0   | 19.43      | 601.6   | 85.1        | 0.1    | -319.0    |
| 6.14       | 564.8   | 305.3       | 0.0    | -694.7    | 12.86      | 619.8   | 16670.0     | 0.0    | -4638.4   | 19.57      | 603.8   | 47.4        | 0.1    | -237.2    |
| 6.29       | 568.3   | 217.1       | 0.0    | -619.1    | 13.00      | 621.0   | 15980.4     | 0.0    | -4545.4   | 19.71      | 606.3   | 18.0        | 0.1    | -144.7    |
| 6.43       | 571.8   | 129.9       | 0.0    | -533.5    | 13.14      | 622.3   | 15304.8     | 0.0    | -4452.1   | 19.86      | 608.6   | 3.5         | 0.1    | -62.2     |
| 6.57       | 574.7   | 63.2        | 0.0    | -457.1    | 13.29      | 623.5   | 14716.1     | 0.0    | -4369.0   | 20.00      | 610.8   | 0.0         | 0.2    | 0.0       |



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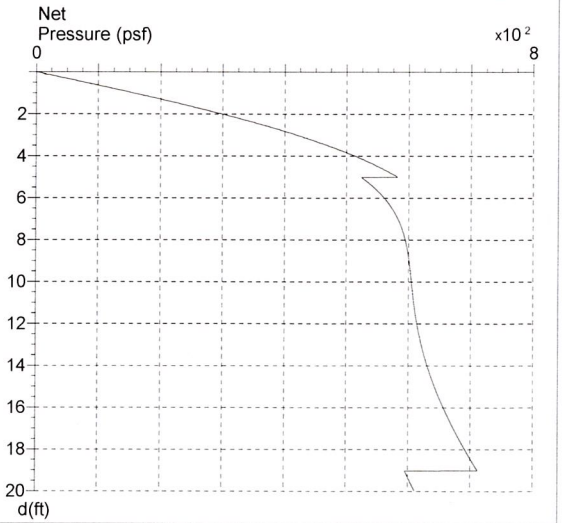
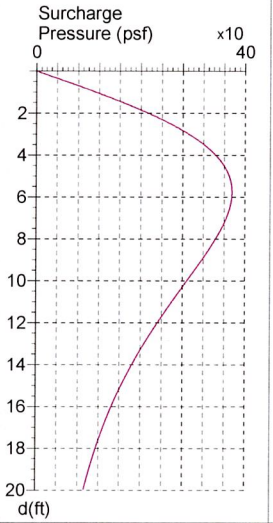
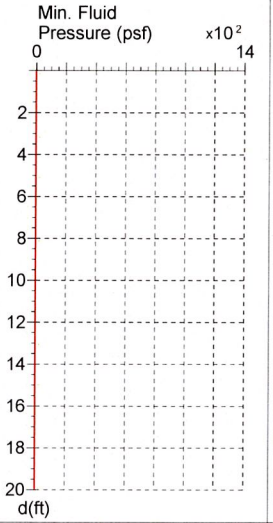
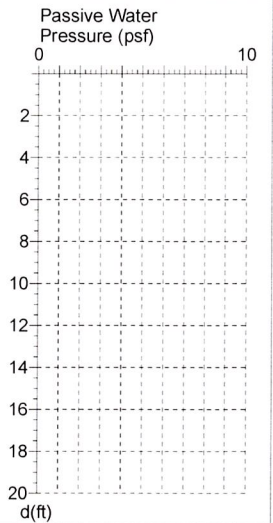
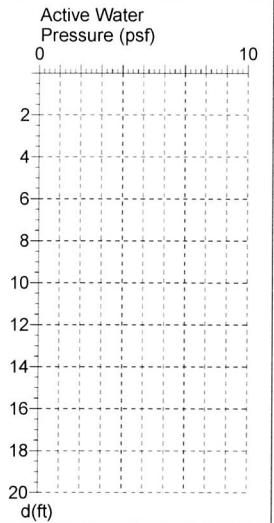
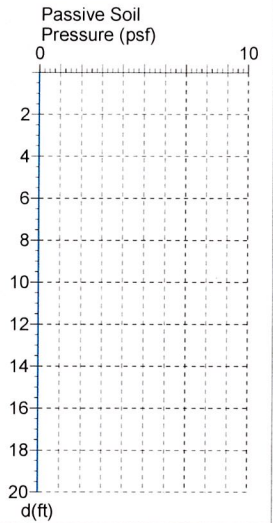
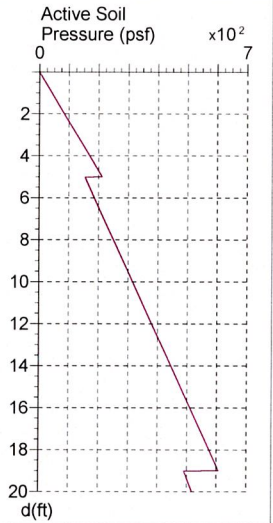
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 Site: Edgefield, SC  
 Title: Edgefield Remediation Drum  
 Burial Area (DBA)  
 Designer: MBM  
 Ref: DBA-22  
 Date: 4.27.23  
 Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680B  
 45'Wx72'Lx20'D  
 2-Sided S&B Pit



United Rentals Trench Safety

7B Oak Branch Drive  
 Greensboro, NC 27407  
 Tel: (336) 398-5060  
 Fax: (336) 292-9909

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 Web: www.GTSoft.org



Client: Containment Control, Inc.  
 Site: Edgefield, SC

Title: Edgefield Remediation Drum  
 Burial Area (DBA)

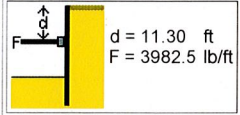
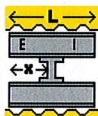
Designer: MBM  
 Ref: DBA-22  
 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

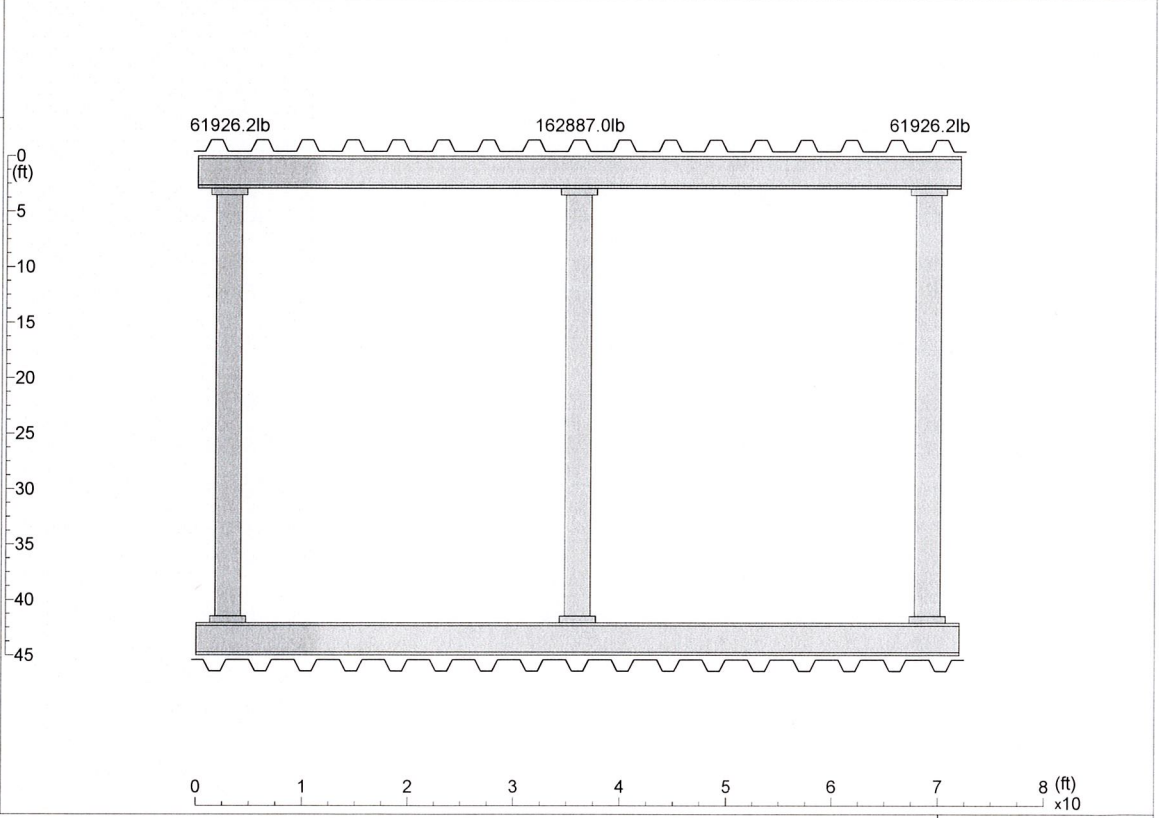
|                                | x (ft) | R (lb)   | M (ftlb) |
|--------------------------------|--------|----------|----------|
| L = 72.00 ft                   | 3.00   | 61926.2  | 17916.5  |
| E = 2.9E+07 psi                | 36.00  | 162887.0 | 533137.9 |
| I = 1372.00 in <sup>4</sup>    | 69.00  | 61926.2  | 17916.5  |
| M <sub>x</sub> = 685749.8 ftlb |        |          |          |

|                       | Maximum  | x (ft) |
|-----------------------|----------|--------|
| Bending Moment (ftlb) | 533137.9 | 35.94  |
| Shear Force (lb)      | 81682.5  | 35.88  |
| Deflection (in)       | 1.1      | 16.92  |



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Site: Edgefield, SC

Title: Edgefield Remediation Drum  
Burial Area (DBA)

Designer: MBM

Page: 1

Date: 4.27.23

Beam: Mega Brace

L = 72.18 ft

I = 1372.00 in<sup>4</sup>

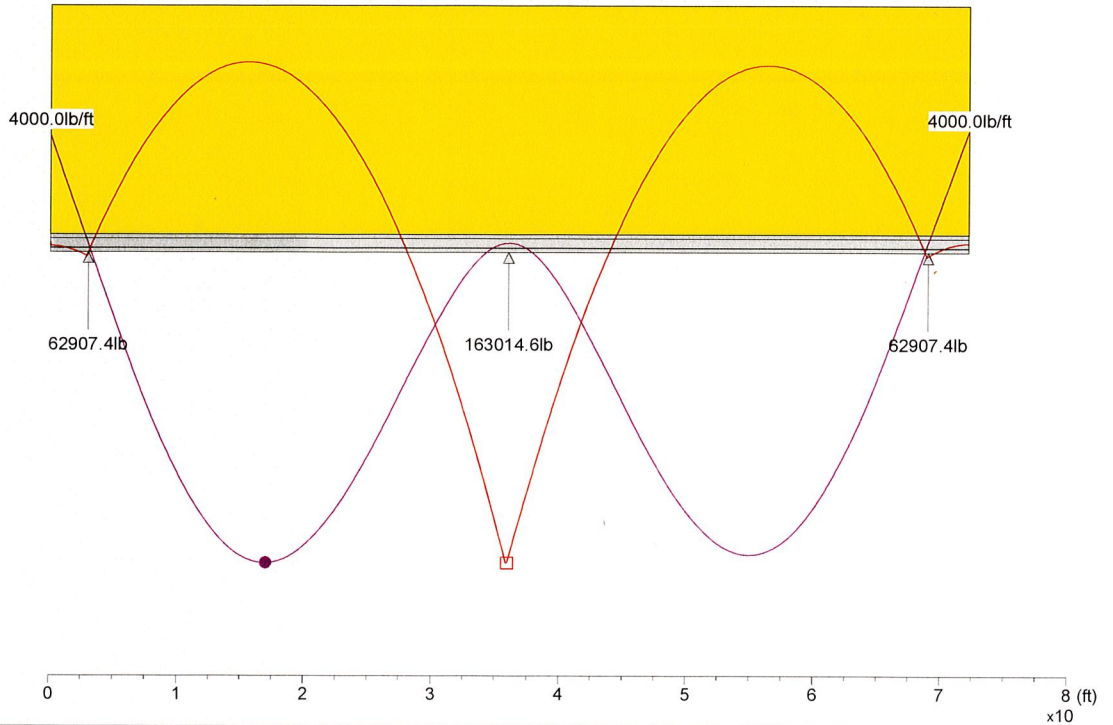
E = 2.9E+07 psi

EI = 3.98E+10 lb in<sup>2</sup>

| Maximum         | x (ft) |
|-----------------|--------|
| □ 529765.9 ftlb | 35.98  |
| ● 1.090 in      | 17.03  |
| R 163014.6 lb   | 36.00  |

EGR230680B

72' Megabrace Check



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Client: Containment Control, Inc.  
Site: Edgefield, SC

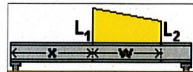
Input Data

Title: Edgefield Remediation Drum  
Burial Area (DBA)  
Designer: MBM  
Page: 2  
Date: 4.27.23

Beam

| Name       | L<br>(ft) | b<br>(in) | h<br>(in) | A<br>(in <sup>2</sup> ) | W<br>(lb/ft) | E<br>(psi) | I <sub>xx</sub><br>(in <sup>4</sup> ) | EI<br>(lb in <sup>2</sup> ) | f<br>(psi) | Z<br>(in <sup>3</sup> ) | M<br>(ftlb) | S<br>(lb) |
|------------|-----------|-----------|-----------|-------------------------|--------------|------------|---------------------------------------|-----------------------------|------------|-------------------------|-------------|-----------|
| Mega Brace | 72.18     | 14.670    | 14.500    | 34.880                  | 120.00       | 2.9E+07    | 1372.00                               | 3.98E+10                    | 38999.99   | 211.000                 | 685749.9    | 213000.0  |

Distributed Loads



| x (ft) | w (ft) | L <sub>1</sub> (lb/ft) | L <sub>2</sub> (lb/ft) |
|--------|--------|------------------------|------------------------|
| 0.00   | 72.18  | 4000.0                 | 4000.0                 |

EGR230680B  
72' Megabrace Check

Solution

Supports

| x (ft) | R (lb)   | M (ftlb) |
|--------|----------|----------|
| 3.00   | 62907.4  | 18004.5  |
| 36.00  | 163014.6 | 530955.4 |
| 69.00  | 62907.4  | 20248.8  |

Maxima

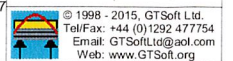
|                    | Maximum        | x (ft) |
|--------------------|----------------|--------|
| Reaction           | 163014.6 lb    | 36.00  |
| Shear Force        | 81796.1 lb     | 36.02  |
| Sagging Moment     | 299445.0 ftlb  | 15.45  |
| Hogging Moment     | -529765.9 ftlb | 35.80  |
| Sagging Deflection | 1.090 in       | 16.89  |
| Hogging Deflection | -0.380 in      | 72.04  |



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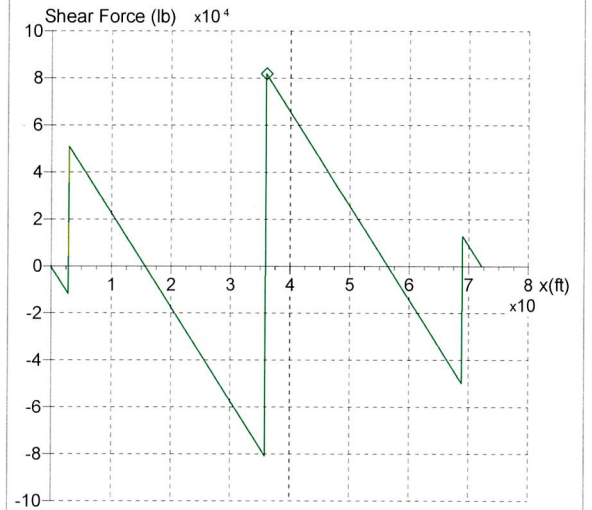
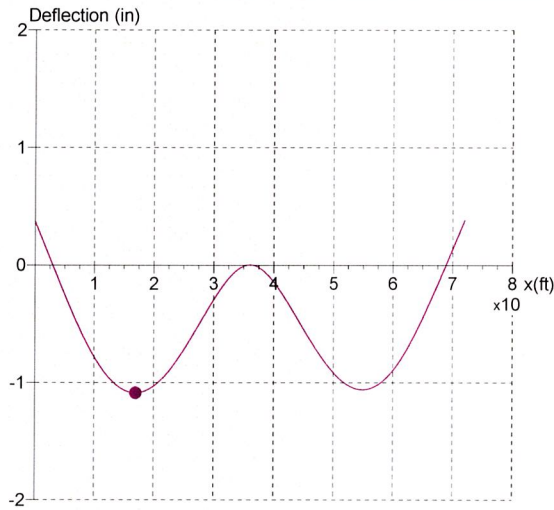
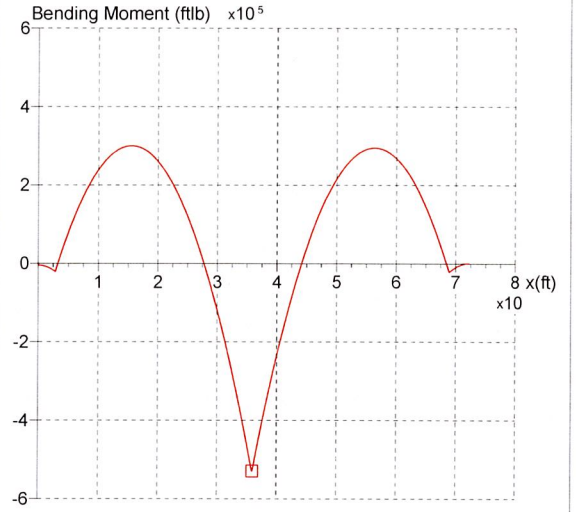
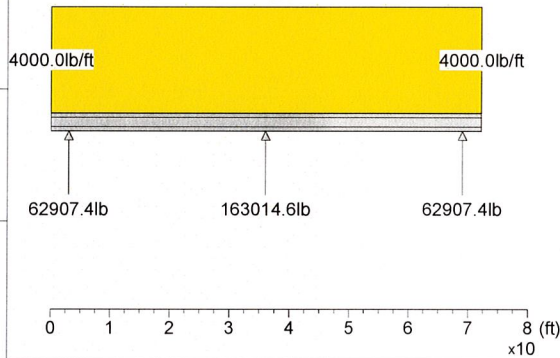
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Client: Containment Control, Inc.  
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 Title: Edgefield Remediation Drum  
 Burial Area (DBA)  
 Designer: MBM  
 Page: 3  
 Date: 4.27.23  
 Beam: Mega Brace  
 L = 72.18 ft  
 I = 1372.00 in<sup>4</sup>  
 E = 2.9E+07 psi  
 EI = 3.98E+10 lb in<sup>2</sup>

|   | Maximum       | x (ft) |
|---|---------------|--------|
| □ | 529765.9 ftlb | 35.98  |
| ◇ | 81796.1 lb    | 36.02  |
| ● | 1.090 in      | 17.03  |
| R | 163014.6 lb   | 36.00  |

EGR230680B  
 72' Megabrace Check



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Date: 4.27.23  
Beam: Mega Brace  
L = 72.18 ft  
I = 1372.00 in<sup>4</sup>  
E = 2.9E+07 psi  
EI = 3.98E+10 lb in<sup>2</sup>

EGR230680B  
72' Megabrace Check

JOINT LOCATION  
APPLIED MOMENT = 295 K-FT <  
ALLOWABLE MOMENT = 492 K-FT

JOINT LOCATION  
APPLIED MOMENT = 200 K-FT <  
ALLOWABLE MOMENT = 492 K-FT

|  | 7M EXTENSION |          |        |          | 10M EXTENSION |           |        |          | 5M EXTENSION |          |        |          |
|--|--------------|----------|--------|----------|---------------|-----------|--------|----------|--------------|----------|--------|----------|
|  | x (ft)       | M (ftlb) | D (in) | F (lb)   | x (ft)        | M (ftlb)  | D (in) | F (lb)   | x (ft)       | M (ftlb) | D (in) | F (lb)   |
|  | 0.00         | 0.0      | 0.365  | -288.8   | 24.23         | 149732.0  | -0.790 | -34139.3 | 48.47        | 169203.7 | -0.812 | 32117.5  |
|  | 0.52         | -5284.3  | 0.312  | -2021.8  | 24.75         | 131732.1  | -0.751 | -36161.1 | 48.98        | 186816.8 | -0.851 | 29806.8  |
|  | 1.03         | -6743.7  | 0.250  | -4043.6  | 25.26         | 112710.7  | -0.711 | -38182.9 | 49.50        | 201133.8 | -0.883 | 27785.0  |
|  | 1.55         | -9224.7  | 0.187  | -6065.4  | 25.78         | 92667.7   | -0.669 | -40204.7 | 50.01        | 214429.2 | -0.913 | 25763.2  |
|  | 2.06         | -13311.0 | 0.116  | -8376.1  | 26.29         | 71603.2   | -0.627 | -42226.5 | 50.53        | 226702.9 | -0.940 | 23741.4  |
|  | 2.58         | -17981.1 | 0.054  | -10397.9 | 26.81         | 49517.0   | -0.583 | -44248.3 | 51.04        | 237955.2 | -0.965 | 21719.6  |
|  | 3.09         | -13129.6 | -0.009 | 50487.8  | 27.33         | 23024.8   | -0.533 | -46559.0 | 51.56        | 248185.8 | -0.987 | 19697.8  |
|  | 3.61         | 11630.9  | -0.072 | 48466.0  | 27.84         | -1250.4   | -0.489 | -48580.8 | 52.07        | 257394.9 | -1.007 | 17676.0  |
|  | 4.12         | 35369.9  | -0.135 | 46444.2  | 28.36         | -26547.3  | -0.444 | -50602.6 | 52.59        | 266658.2 | -1.026 | 15365.4  |
|  | 4.64         | 58087.2  | -0.197 | 44422.4  | 28.87         | -52865.7  | -0.401 | -52624.4 | 53.11        | 273678.2 | -1.039 | 13343.5  |
|  | 5.16         | 79783.0  | -0.259 | 42400.5  | 29.39         | -80205.7  | -0.357 | -54646.2 | 53.62        | 279676.6 | -1.050 | 11321.7  |
|  | 5.67         | 103327.3 | -0.328 | 40089.9  | 29.90         | -108567.2 | -0.315 | -56668.0 | 54.14        | 284653.4 | -1.057 | 9299.9   |
|  | 6.19         | 122834.0 | -0.387 | 38068.1  | 30.42         | -137950.4 | -0.273 | -58689.8 | 54.65        | 288608.6 | -1.061 | 7278.1   |
|  | 6.70         | 141319.1 | -0.446 | 36046.3  | 30.94         | -172782.0 | -0.228 | -61000.4 | 55.17        | 291542.3 | -1.062 | 5256.3   |
|  | 7.22         | 158782.7 | -0.502 | 34024.5  | 31.45         | -204354.2 | -0.191 | -63022.2 | 55.68        | 293454.3 | -1.060 | 3234.5   |
|  | 7.73         | 175224.7 | -0.557 | 32002.7  | 31.97         | -236948.0 | -0.155 | -65044.0 | 56.20        | 294388.6 | -1.054 | 923.9    |
|  | 8.25         | 190645.0 | -0.610 | 29980.9  | 32.48         | -270563.4 | -0.123 | -67065.8 | 56.71        | 294111.6 | -1.044 | -1097.9  |
|  | 8.76         | 205043.9 | -0.661 | 27959.1  | 33.00         | -305200.4 | -0.093 | -69087.7 | 57.23        | 292813.0 | -1.032 | -3119.7  |
|  | 9.28         | 220248.7 | -0.716 | 25648.4  | 33.51         | -340859.0 | -0.067 | -71109.5 | 57.75        | 290492.9 | -1.016 | -5141.5  |
|  | 9.80         | 232458.4 | -0.761 | 23626.6  | 34.03         | -377539.1 | -0.044 | -73131.3 | 58.26        | 287151.1 | -0.997 | -7163.4  |
|  | 10.31        | 243646.6 | -0.805 | 21604.8  | 34.54         | -420710.1 | -0.023 | -75441.9 | 58.78        | 282787.7 | -0.975 | -9185.2  |
|  | 10.83        | 253813.1 | -0.845 | 19583.0  | 35.06         | -459579.4 | -0.010 | -77463.7 | 59.29        | 277402.8 | -0.950 | -11207.0 |
|  | 11.34        | 262958.1 | -0.883 | 17561.2  | 35.58         | -499470.2 | -0.002 | -79485.5 | 59.81        | 269997.7 | -0.917 | -13517.6 |
|  | 11.86        | 271081.5 | -0.917 | 15539.4  | 36.09         | -526354.0 | 0.000  | 81507.3  | 60.32        | 262423.7 | -0.885 | -15539.4 |
|  | 12.37        | 278183.3 | -0.949 | 13517.6  | 36.61         | -485913.9 | -0.002 | 79485.5  | 60.84        | 253828.1 | -0.850 | -17561.2 |
|  | 12.89        | 285048.8 | -0.982 | 11207.0  | 37.12         | -446495.3 | -0.010 | 77463.7  | 61.35        | 244210.9 | -0.813 | -19583.0 |
|  | 13.41        | 289961.5 | -1.007 | 9185.1   | 37.64         | -408098.3 | -0.023 | 75441.9  | 61.87        | 233572.2 | -0.773 | -21604.8 |
|  | 13.92        | 293852.6 | -1.028 | 7163.3   | 38.15         | -365466.8 | -0.044 | 73131.3  | 62.39        | 221911.9 | -0.730 | -23626.6 |
|  | 14.44        | 296722.2 | -1.047 | 5141.5   | 38.67         | -329258.9 | -0.066 | 71109.5  | 62.90        | 209230.0 | -0.684 | -25648.4 |
|  | 14.95        | 298570.2 | -1.062 | 3119.7   | 39.18         | -294072.6 | -0.092 | 69087.6  | 63.42        | 193485.5 | -0.630 | -27959.1 |
|  | 15.47        | 299396.6 | -1.074 | 1097.9   | 39.70         | -259907.8 | -0.121 | 67065.8  | 63.93        | 178614.5 | -0.580 | -29980.9 |
|  | 15.98        | 299201.4 | -1.083 | -923.9   | 40.22         | -226764.6 | -0.153 | 65044.0  | 64.45        | 162721.9 | -0.527 | -32002.7 |
|  | 16.50        | 297727.4 | -1.089 | -3234.5  | 40.73         | -194643.0 | -0.188 | 63022.2  | 64.96        | 145807.7 | -0.473 | -34024.5 |
|  | 17.01        | 295343.2 | -1.090 | -5256.3  | 41.25         | -163542.9 | -0.225 | 61000.4  | 65.48        | 127872.0 | -0.418 | -36046.3 |
|  | 17.53        | 291937.3 | -1.088 | -7278.1  | 41.76         | -129250.9 | -0.270 | 58689.8  | 65.99        | 108914.6 | -0.361 | -38068.1 |
|  | 18.05        | 287509.8 | -1.083 | -9299.9  | 42.28         | -100340.0 | -0.310 | 56668.0  | 66.51        | 88935.7  | -0.302 | -40089.9 |
|  | 18.56        | 282060.8 | -1.075 | -11321.7 | 42.79         | -72450.6  | -0.352 | 54646.2  | 67.03        | 64851.8  | -0.234 | -42400.6 |
|  | 19.08        | 275590.3 | -1.064 | -13343.6 | 43.31         | -45582.8  | -0.394 | 52624.4  | 67.54        | 42683.8  | -0.174 | -44422.4 |
|  | 19.59        | 268087.7 | -1.050 | -15365.4 | 43.82         | -19736.6  | -0.438 | 50602.6  | 68.06        | 19494.2  | -0.113 | -46444.2 |
|  | 20.11        | 258274.3 | -1.030 | -17676.0 | 44.34         | 5088.0    | -0.481 | 48580.7  | 68.57        | -4716.9  | -0.052 | -48466.0 |
|  | 20.62        | 248593.0 | -1.009 | -19697.8 | 44.86         | 28891.1   | -0.524 | 46558.9  | 69.09        | -20171.0 | 0.009  | 12419.7  |
|  | 21.14        | 237890.2 | -0.986 | -21719.6 | 45.37         | 54843.6   | -0.574 | 44248.3  | 69.60        | -14260.4 | 0.069  | 10397.9  |
|  | 21.65        | 226165.8 | -0.960 | -23741.4 | 45.89         | 76457.6   | -0.616 | 42226.5  | 70.12        | -9371.4  | 0.130  | 8376.0   |
|  | 22.17        | 213419.8 | -0.931 | -25763.2 | 46.40         | 97049.9   | -0.658 | 40204.7  | 70.64        | -5034.9  | 0.199  | 6065.4   |
|  | 22.69        | 199652.2 | -0.901 | -27785.0 | 46.92         | 116620.8  | -0.698 | 38182.9  | 71.15        | -2335.0  | 0.260  | 4043.6   |
|  | 23.20        | 184863.0 | -0.868 | -29806.8 | 47.43         | 135170.0  | -0.738 | 36161.1  | 71.67        | -656.7   | 0.320  | 2021.8   |
|  | 23.72        | 166710.2 | -0.827 | -32117.5 | 47.95         | 152697.6  | -0.775 | 34139.3  | 72.18        | 0.0      | 0.380  | 0.0      |



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**Attachment E – DOA Shoring Drawings and Calculations**



**GENERAL NOTES**

**SOIL CLASSIFICATION: VERY STIFF CLAY OVER DENSE & LOOSE SAND BASED ON BORE NO DOA-22 BY O&M INC ENVIRONMENTAL SERVICES, DATED 7/20/22.**

1. SHORING DESIGN BASED ON SOIL CLASSIFICATION ABOVE. CONTACT SHORING ENGINEER IF LESS COMPETENT MATERIALS ARE ENCOUNTERED.
2. MANUFACTURER'S TABULATED DATA APPLIES EXCEPT AS NOTED HEREIN.
3. ANCILLARY SYSTEM SUPPORTS AND/OR CONNECTORS INCLUDING, BUT NOT LIMITED TO, HANGING CHAINS, STACKING PINS, SPREADER PINS, ETC., ARE NOT SHOWN ON DRAWINGS. REFER TO MANUFACTURER'S PRODUCT TECHNICAL AND INSTALLATION GUIDES FOR SPECIFICATIONS AND CONNECTION DETAILS.
4. PROVIDE ACCESS AND BARRICADING PER OSHA REQUIREMENTS.
5. SHORING MUST BE PROPERLY INSTALLED PRIOR TO WORKERS ENTERING EXCAVATION. WORKERS SHALL ENTER, EXIT, AND WORK ONLY IN SHORED AREAS.
6. ALL STEEL (INCLUDING MANUFACTURER ASSEMBLIES) SHALL BE IN GOOD CONDITION AND FREE OF ANY DAMAGE, HOLES, OR VISUAL DEFECTS. STRUCTURAL STEEL SHAPES TO BE ASTM A992 OR A572 GR. 50 STEEL, MIN FY = 50 KSI. STEEL PIPE TO BE ASTM A53 GR. B, MIN FY = 35 KSI. HSS TUBE TO HAVE MIN FY = 55 KSI. STEEL PLATE TO BE ASTM A36, MIN FY = 36KSI. UNLESS OTHERWISE NOTED, ALL TIMBER LAGGING TO BE ROUGH-CUT WITH MIN FB = 850 PSI. FOR ALL OTHER MODULAR COMPONENTS, REFER TO MANUFACTURER'S TABULATED DATA OR PRODUCT TECHNICAL INFORMATION.
7. ALL VOIDS BETWEEN THE EXCAVATED SOIL AND THE FACE OF THE SHORING SYSTEM MUST BE BACKFILLED WITH EXCAVATED SOIL OR OTHER APPROVED BACKFILL PRIOR TO WORKERS ENTERING EXCAVATION.
8. CONTRACTOR IS RESPONSIBLE FOR INSTALLING A DEWATERING SYSTEM, IF NECESSARY, AND VERIFYING THAT THE GROUNDWATER LEVEL BEHIND THE SHORING WALLS HAS BEEN LOWERED AT LEAST TO THE MINIMUM LEVEL SHOWN ON THE SECTION VIEW(S). IF CONTRACTOR IS UNABLE TO LOWER THE GROUNDWATER TO THE LEVEL SHOWN, CONTACT THE SHORING ENGINEER TO CHECK IF THE HIGHER LEVELS ARE ACCEPTABLE OR TO REDESIGN THE SHORING SYSTEM, IF NECESSARY.
9. UNITED RENTALS WILL NOT SUPERVISE, DIRECT, CONTROL OR HAVE AUTHORITY OVER, OR BE RESPONSIBLE FOR CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO, OR FOR ANY FAILURE OF CONTRACTOR TO COMPLY WITH LAWS AND REGULATIONS APPLICABLE TO THE FURNISHING OF PERFORMANCE OF WORK.
10. THE CONTRACTOR SHALL VERIFY THAT REQUIRED CLEARANCES ARE OBTAINED PRIOR TO COMMENCEMENT OF THE WORK.
11. THE PURPOSE OF THE SHORING SYSTEM IS TO TEMPORARILY SUPPORT THE TRENCH OR EXCAVATION FOR WORKER PROTECTION. ALL EXISTING OR PROPOSED INFRASTRUCTURE WITHIN THE SHORING SYSTEM INCLUDING, BUT NOT LIMITED TO, STRUCTURES, TANKS, UTILITY LINES, ETC., ARE SEPARATE FROM THE SHORING SYSTEM AND HAVE BEEN OMITTED FROM THE SHORING DESIGN PLAN. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING THE EXCAVATION.
12. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL DIMENSIONS FOR BOTH EXISTING AND PROPOSED WORK.
13. UNITED RENTALS SHORING SYSTEMS ARE DESIGNED FOR WORKER PROTECTION ONLY. UNITED RENTALS BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY SETTLEMENT, MOVEMENT, OR DAMAGE OF ANY KIND THAT MAY OCCUR TO EXISTING BUILDING STRUCTURES OR UTILITIES DUE TO THE SHORING, INSTALLATION, DEFLECTION, REMOVAL, OR OTHER CONSTRUCTION ACTIVITIES.
14. THIS PLAN IS SPECIFICALLY DESIGNED TO COMPLY WITH OSHA 29 CFR 1926 SUBPART P RULES AND REGULATIONS.
15. THE CONTRACTOR'S COMPETENT PERSON SHALL ENSURE SETBACK DISTANCE COMPLIES WITH SETBACK TABLE (NOTE: AN EXCAVATOR WITH GROUND BEARING PRESSURE OF 1,000 PSF SHALL MATCH THE SETBACK FOR A 30 TON EXCAVATOR, 1,500 PSF SHALL MATCH THE 70 TON EXCAVATOR, AND 2,000 PSF SHALL MATCH THE 90 TON EXCAVATOR). SETBACK DISTANCES REFLECT MINIMUM SETBACKS AND ARE TO BE MEASURED FROM EDGE OF EXCAVATION. IF SPECIFIED SETBACK FALLS WITHIN A SLOPED AREA, SETBACK MUST BE EXTENDED TO A DISTANCE 2' PAST OUTSIDE OF SLOPE.
16. EDGE OF SHORING SYSTEM WILL REMAIN A MINIMUM OF 10' AWAY FROM AN EXISTING BUILDING (WITH FOUNDATIONS BELOW GRADE). EDGE OF SHORING SYSTEM WILL REMAIN A MINIMUM OF 50' AWAY FROM ANY ADDITIONAL STRUCTURES.



**SHORING DESIGN PLAN**  
**CONTAMINANT CONTROL,**  
**INC.**  
**EDGEFIELD, SC**  
**EDGEFIELD REMEDIATION -**  
**DEGREASING**  
**OPERATIONAL AREA**



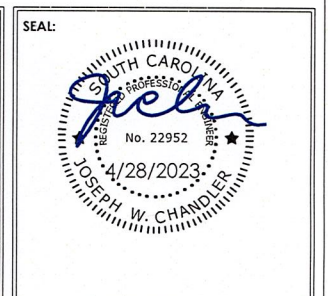
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|-------------------------------------|--------------------------|----------------------|--|
| <b>DRAWING NUMBER</b><br>EGR230680A |                          | <b>REVISION DATE</b> |  |
| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |  |
| <b>SHEET</b><br>1 of 7              | <b>DATE</b><br>4/28/2023 |                      |  |

|  |
|--|
| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

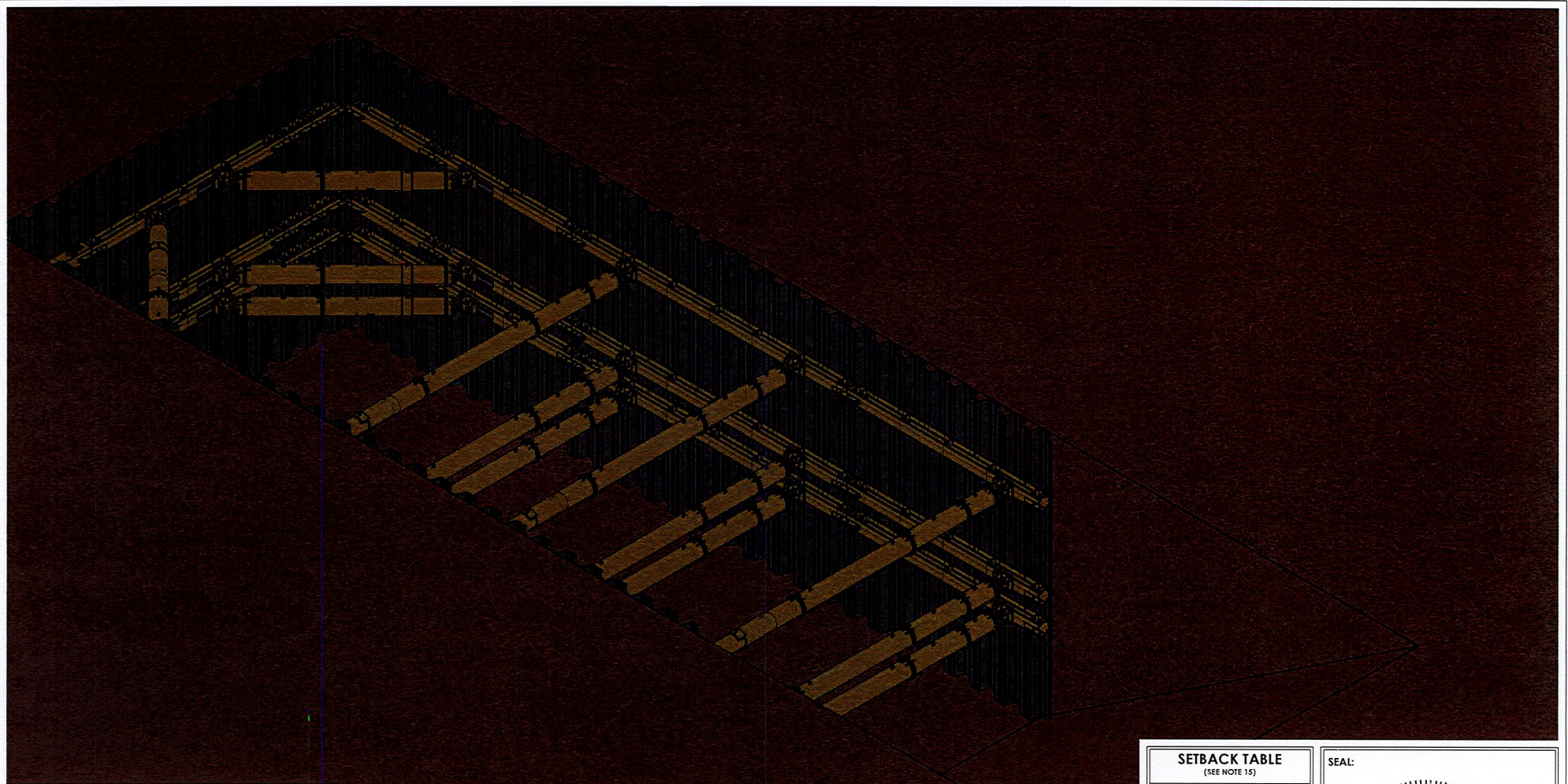
|   |
|---|
| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                                      |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION -<br>DEGREASING OPERATIONAL AREA |

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| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |







**ISOMETRIC VIEW**

3D VIEWS ARE FOR REPRESENTATION ONLY AND ARE NOT INTENDED TO DEPICT ACTUAL SITE CONDITIONS.



**United Rentals**  
 ENGINEERING DEPARTMENT  
 78 OAK BRANCH DRIVE  
 GREENSBORO, NC 27407  
 PHONE: 336-398-5060

|                                     |                          |                      |
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| <b>DRAWING NUMBER</b><br>EGR230680A |                          | <b>REVISION DATE</b> |
| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>2 of 7              | <b>DATE</b><br>4/28/2023 |                      |

**TITLE**  
**SHORING DESIGN PLAN**

**CUSTOMER**  
**CONTAMINANT CONTROL, INC.**

**PROJECT LOCATION**  
**EDGEFIELD, SC**

**PROJECT NAME**  
**EDGEFIELD REMEDIATION -  
 DEGREASING OPERATIONAL AREA**


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**SETBACK TABLE**  
(SEE NOTE 15)

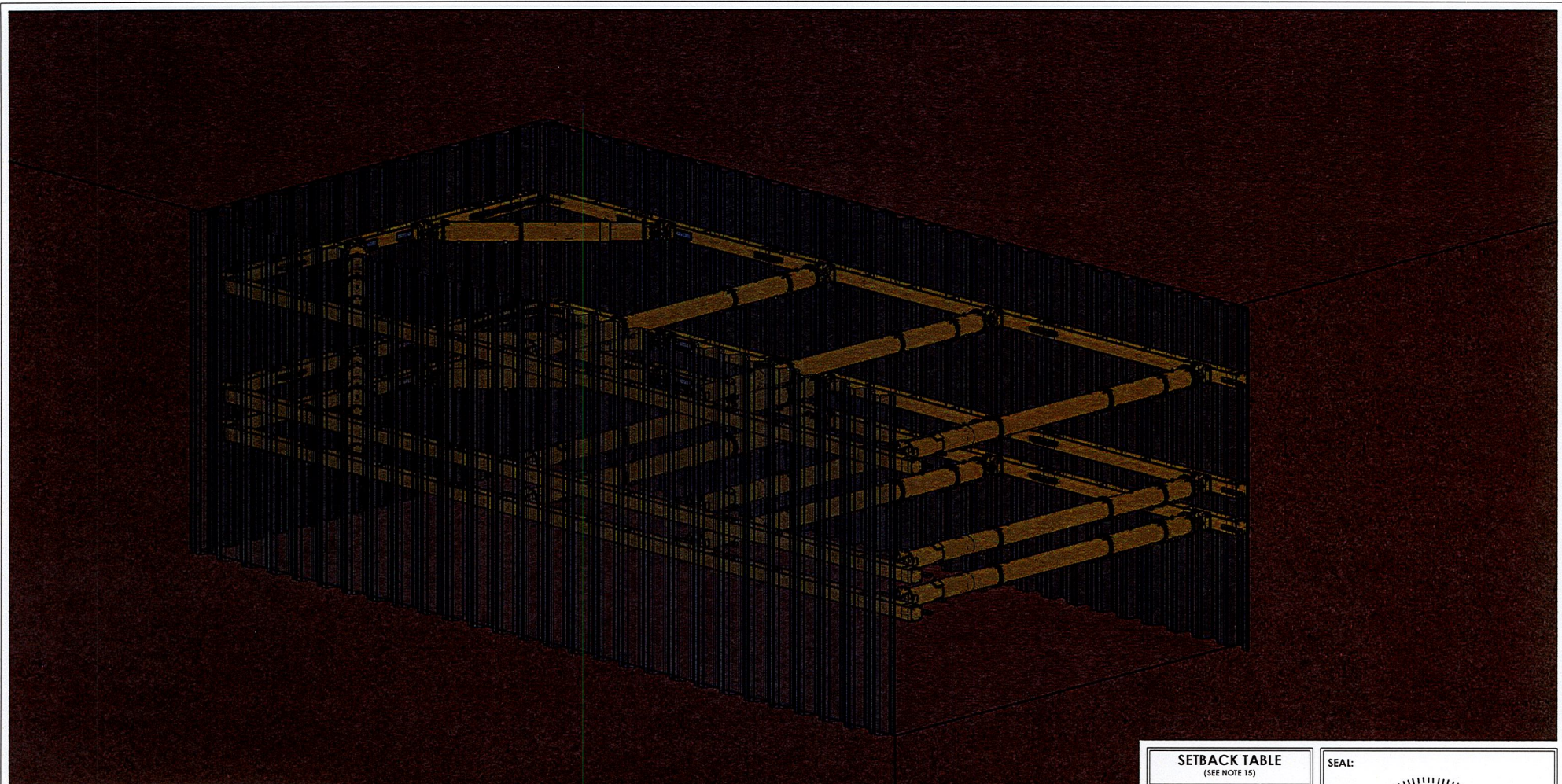
| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
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| 5 CY LOADER               | 6'          |
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| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 14 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:



JOSEPH W. CHANDLER





**ISO SECTION VIEW**

3D VIEWS ARE FOR REPRESENTATION ONLY AND ARE NOT INTENDED TO DEPICT ACTUAL SITE CONDITIONS.



|                                     |                          |                      |
|-------------------------------------|--------------------------|----------------------|
| <b>DRAWING NUMBER</b><br>EGR230680A |                          | <b>REVISION DATE</b> |
| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>3 of 7              | <b>DATE</b><br>4/28/2023 |                      |

|  |
|--|
| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

|   |
|---|
| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                                      |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION -<br>DEGREASING OPERATIONAL AREA |

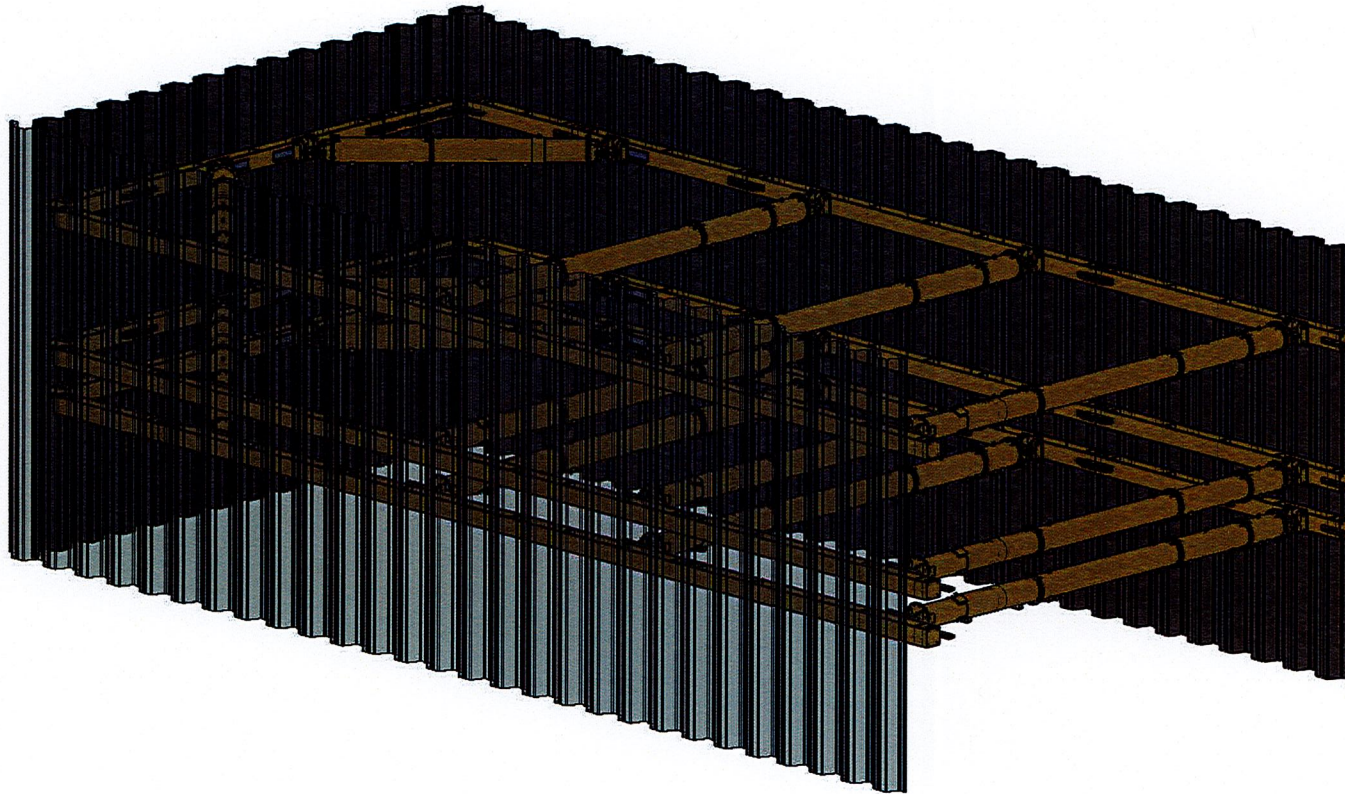
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**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
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| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 14 |
| H520-44 VEHICULAR TRAFFIC | 50'         |

SEAL:





**ASSEMBLED COMPONENTS**

3D VIEWS ARE FOR REPRESENTATION ONLY AND ARE NOT INTENDED TO DEPICT ACTUAL SITE CONDITIONS.

**United Rentals**  
 ENGINEERING DEPARTMENT  
 78 OAK BRANCH DRIVE  
 GREENSBORO, NC 27407  
 PHONE: 336-398-5060

|                                     |                          |                      |
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| <b>DRAWING NUMBER</b><br>EGR230680A |                          | <b>REVISION DATE</b> |
| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>4 of 7              | <b>DATE</b><br>4/28/2023 |                      |

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| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

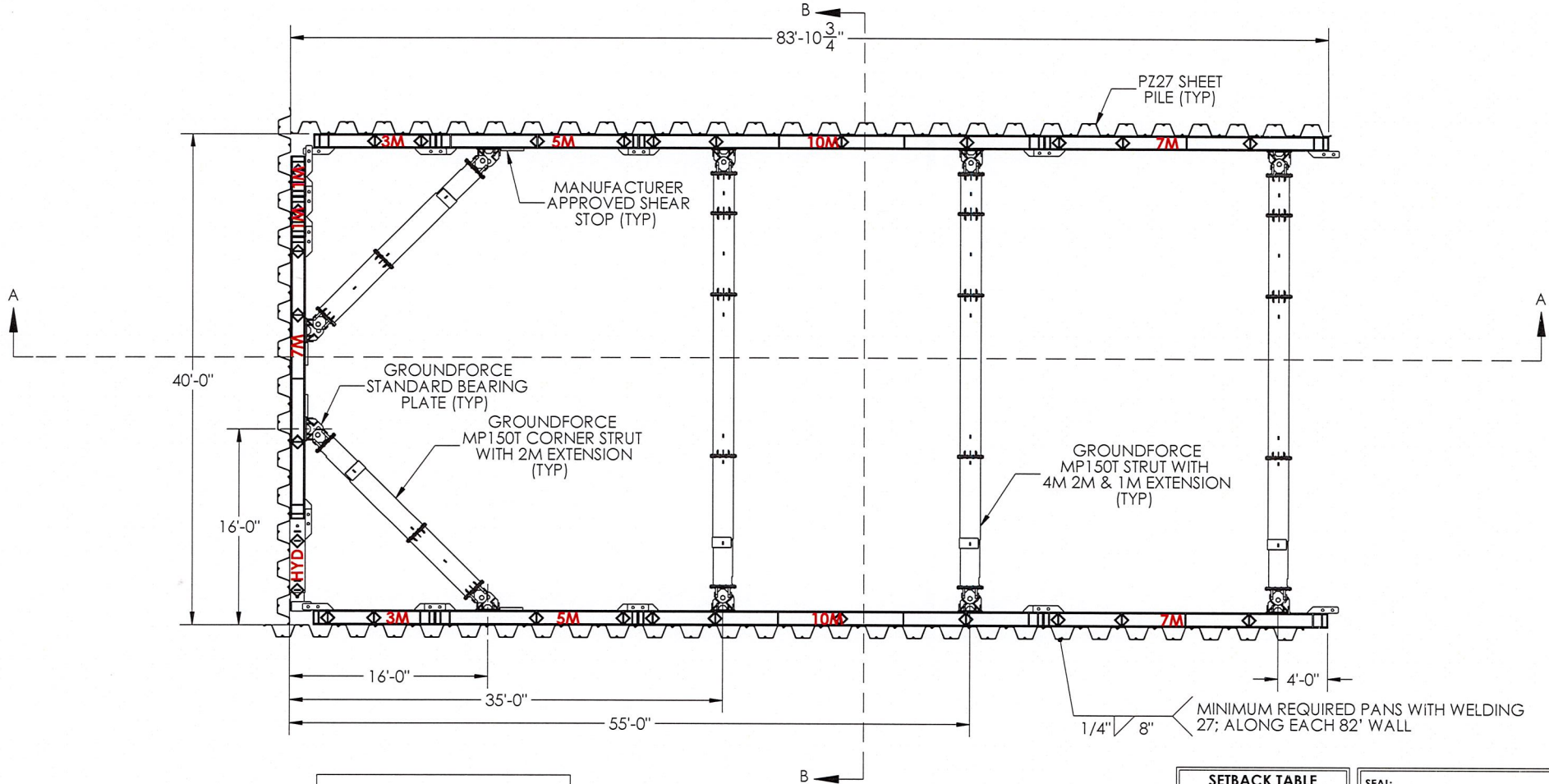
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|---|
| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                                      |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION -<br>DEGREASING OPERATIONAL AREA |

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| <b>SETBACK TABLE</b><br>(SEE NOTE 15) |             |
|---------------------------------------|-------------|
| DESCRIPTION                           | DISTANCE    |
| CRANE TO 30 TON MAX.                  | 8'          |
| 30 TON EXCAVATOR                      | 6'          |
| 70 TON EXCAVATOR                      | 10'         |
| 90 TON EXCAVATOR                      | 12'         |
| 3 CY LOADER                           | 4'          |
| 5 CY LOADER                           | 6'          |
| DUMP TRUCK                            | 5'          |
| SPOIL PILE (6' TALL)                  | 4'          |
| CONCRETE TRUCK                        | 10'         |
| RAILROAD TRACK                        | 100'        |
| EXISTING STRUCTURES                   | SEE NOTE 14 |
| HS20-44 VEHICULAR TRAFFIC             | 50'         |

SEAL:

STATE OF SOUTH CAROLINA  
 PROFESSIONAL ENGINEER  
 No. 22952  
 4/28/2023  
 JOSEPH W. CHANDLER



**PLAN VIEW**  
SCALE: 1/4" = 1'-0" (1:48)

 HANGING - CHAIN LOCATIONS (SEE NOTE 3)

NOTE: ALL SOIL LINES REMOVED FROM PLAN VIEW(S) FOR CLARITY. WHEN APPLICABLE, SLOPING/BENCHING LINES WILL BE SHOWN IN SECTION VIEW(S).



|                                     |                   |               |
|-------------------------------------|-------------------|---------------|
| DRAWING NUMBER<br><b>EGR230680A</b> |                   | REVISION DATE |
| DRAWN<br>TVC                        | CHECKED<br>MM     |               |
| SHEET<br>5 of 7                     | DATE<br>4/28/2023 |               |

**TITLE**  
SHORING DESIGN PLAN

**CUSTOMER**  
CONTAMINANT CONTROL, INC.

**PROJECT LOCATION**  
EDGEFIELD, SC


**PROJECT NAME**  
EDGEFIELD REMEDIATION -  
DEGREASING OPERATIONAL AREA

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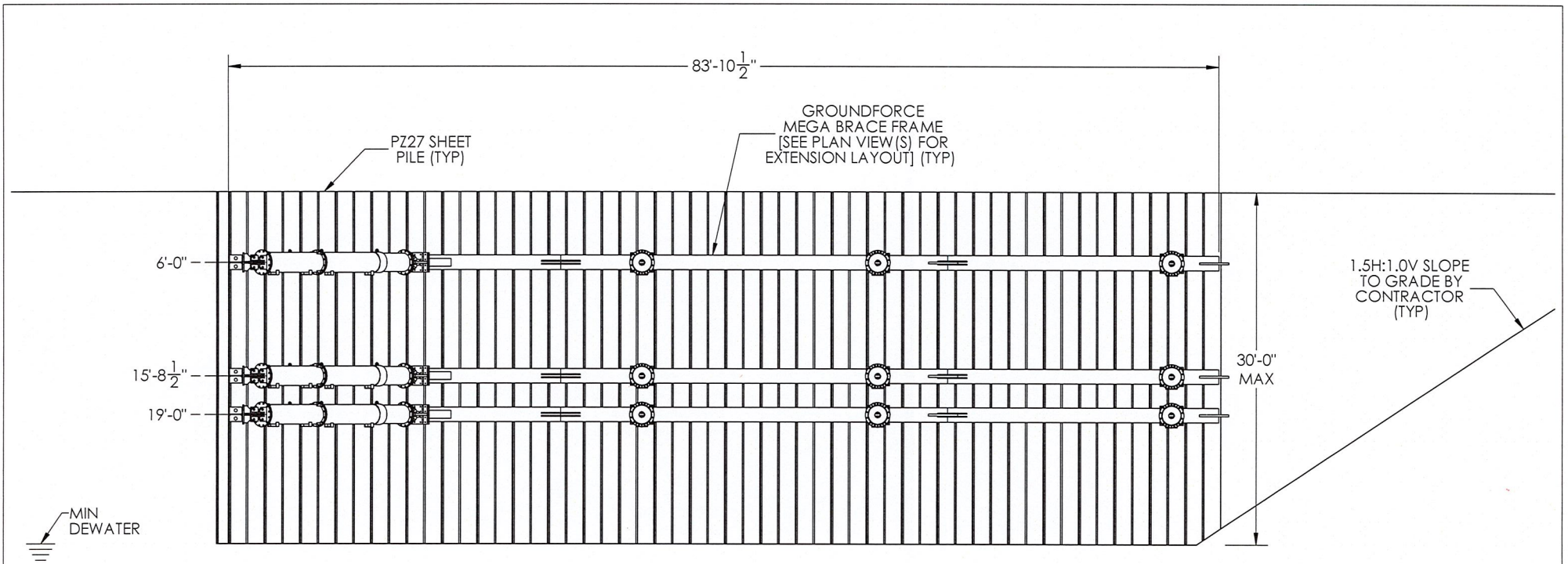
**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
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| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:







**SECTION A-A VIEW**  
SCALE: 1/4" = 1'-0" (1:48)



|                                     |                          |                      |
|-------------------------------------|--------------------------|----------------------|
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| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>6 of 7              | <b>DATE</b><br>4/28/2023 |                      |

|  |
|--|
| <b>TITLE</b><br>SHORING DESIGN PLAN          |
| <b>CUSTOMER</b><br>CONTAMINANT CONTROL, INC. |

|   |
|---|
| <b>PROJECT LOCATION</b><br>EDGEFIELD, SC                                      |
| <b>PROJECT NAME</b><br>EDGEFIELD REMEDIATION -<br>DEGREASING OPERATIONAL AREA |

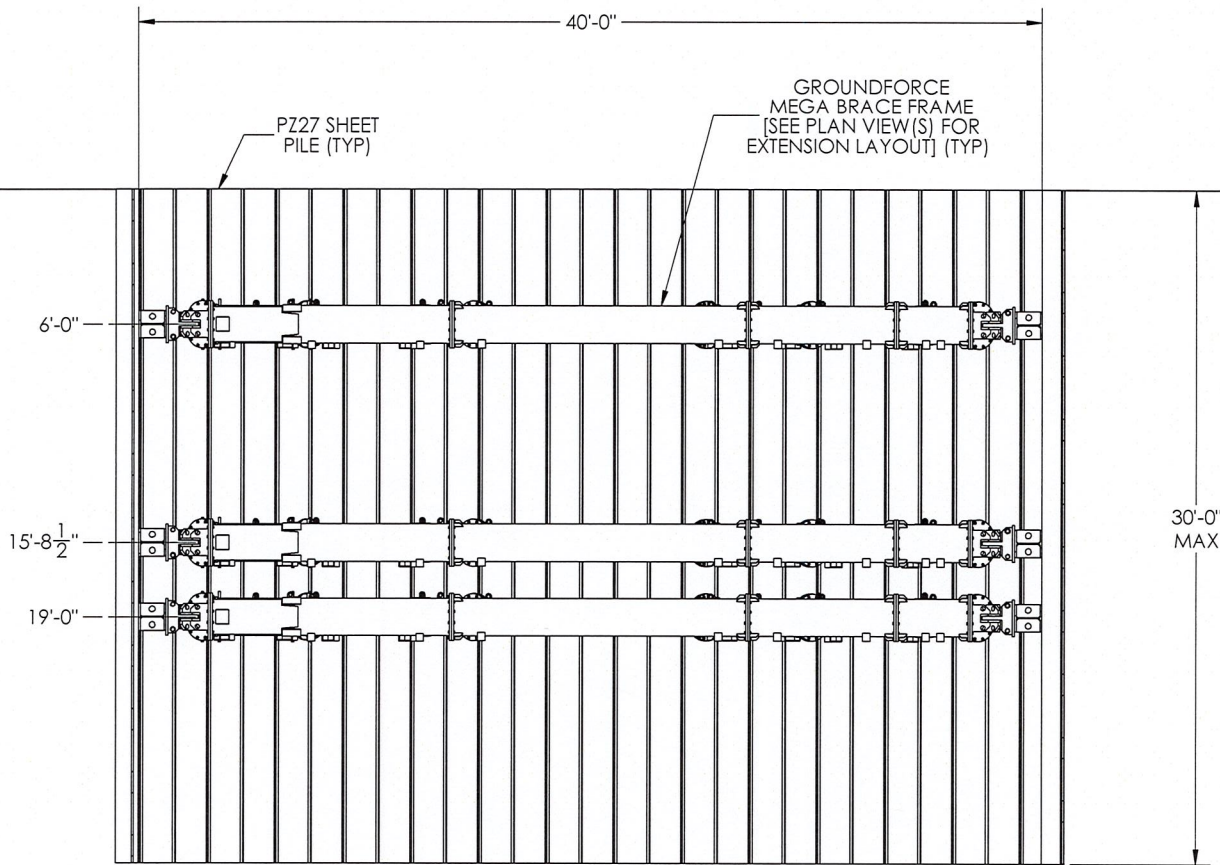
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**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 6'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
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| 5 CY LOADER               | 4'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| HS20-44 VEHICULAR TRAFFIC | 50'         |

SEAL:





**SECTION B-B VIEW**  
SCALE: 3/16" = 1'-0" (1:64)



|                                     |                          |                      |
|-------------------------------------|--------------------------|----------------------|
| <b>DRAWING NUMBER</b><br>EGR230680A |                          | <b>REVISION DATE</b> |
| <b>DRAWN</b><br>TVC                 | <b>CHECKED</b><br>MM     |                      |
| <b>SHEET</b><br>7 of 7              | <b>DATE</b><br>4/28/2023 |                      |

**TITLE**  
SHORING DESIGN PLAN

**CUSTOMER**  
CONTAMINANT CONTROL, INC.

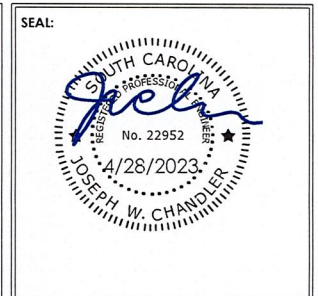
**PROJECT LOCATION**  
EDGEFIELD, SC

**PROJECT NAME**  
EDGEFIELD REMEDIATION -  
DEGREASING OPERATIONAL AREA

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**SETBACK TABLE**  
(SEE NOTE 15)

| DESCRIPTION               | DISTANCE    |
|---------------------------|-------------|
| CRANE TO 30 TON MAX       | 8'          |
| 30 TON EXCAVATOR          | 4'          |
| 70 TON EXCAVATOR          | 10'         |
| 90 TON EXCAVATOR          | 12'         |
| 3 CY LOADER               | 4'          |
| 5 CY LOADER               | 6'          |
| DUMP TRUCK                | 5'          |
| SPOIL PILE (6' TALL)      | 4'          |
| CONCRETE TRUCK            | 10'         |
| RAILROAD TRACK            | 100'        |
| EXISTING STRUCTURES       | SEE NOTE 16 |
| H520-44 VEHICULAR TRAFFIC | 50'         |





EGR230680A Loading Calculations  
April 27, 2023

Customer: Contaminant Control, Inc.  
Project: Edgefield Remediation - Degreasing Operational Area  
Location: Edgefield, SC

The excavation is to be approximately 40' wide x 82' long with a maximum shored depth of 30'. Soils are expected to be very stiff clay over dense & loose sand based on bore no DOA-22 by O&M Inc Environmental Services, dated 7/20/22. A 250 psf surcharge on the ground surface was added for surface loading from equipment and/or materials adjacent to excavation. HS20-44 vehicular traffic will remain a minimum of 50' away from edge of excavation. Edge of excavation will remain a minimum of 10' away from an existing 1-story warehouse with foundations at grade. Edge of excavation is to remain a minimum of 50' from any additional structures. System must be dewatered to base of excavation. System is specifically designed to comply with OSHA 29 CFR 1926 Subpart P Rules and Regulations.

System Description:

40' wide x 82' long x 30' deep; 3-Sided Sheet piling & Bracing Wall Application.

Check PZ-27 Sheet Piles:

Applied moment = 71,258 ft-lb/ft < Allowable moment = 75,500 ft-lb/ft, O.K.

Check Groundforce Mega Brace Frame:

Applied Sagging Moment = 336 k-ft < Allowable Sagging Moment = 655 k-ft, O.K.

Applied Hogging Moment = 434 k-ft < Allowable Hogging Moment = 590 k-ft, O.K.

\*\*Reference attached SPAN File for joint check\*\*

Check Groundforce MP150T Hydraulic Crossing/Corner Strut:

Applied Maximum Load = 244 k < Allowable Load = 337 k, O.K.

\*\*Maximum Axial Load Occurs at Crossing Strut Along 82' Wall\*\*

Check 4/16" (1/4") Fillet Welds on 82' Long Walls:

- Determine Available Strength for 4/16"x8" Long Fillet Weld
  - D = weld size in sixteenths of an inch
  - l = length of weld
  - $\Omega = 2.00$  (ASD)
  - $R_n/\Omega = 0.928 \text{ kip/in.} * (D * l) \rightarrow [8-2b \text{ AISC Steel Construction Manual } 15^{\text{th}} \text{ Ed.}]$
  - $R_n/\Omega = 0.928 \text{ kip/in.} * (4 * 8) = 29.7 \text{ kips/3 ft wide sheeting pan}$
  - Assume 27 pairs of sheets share the load along 82' wall; Total Cap. =  $29.7 * 27 = 802 \text{ kips}$
  - Contractor is to weld 1/4" fillet welds, 8" long; from brace to each pan location to prevent shifting of system laterally towards open slope.
- Applied Line Load on Brace for Weld to Prevent from Shifting = 8.8 kip/ft
- Unbalanced load applied along brace =  $8.8 \text{ kip/ft} * 82 = 721.6 \text{ kips}$
- Applied Load = 721.6 kips < Allowable Strength = 802 kips, O.K.

Max calculated Brace deflection = 0.7 in.

Max calculated Sheet Pile deflection = 0.7 in.

Min required Sheet Pile embedment = 0 ft. (No Toe Design)

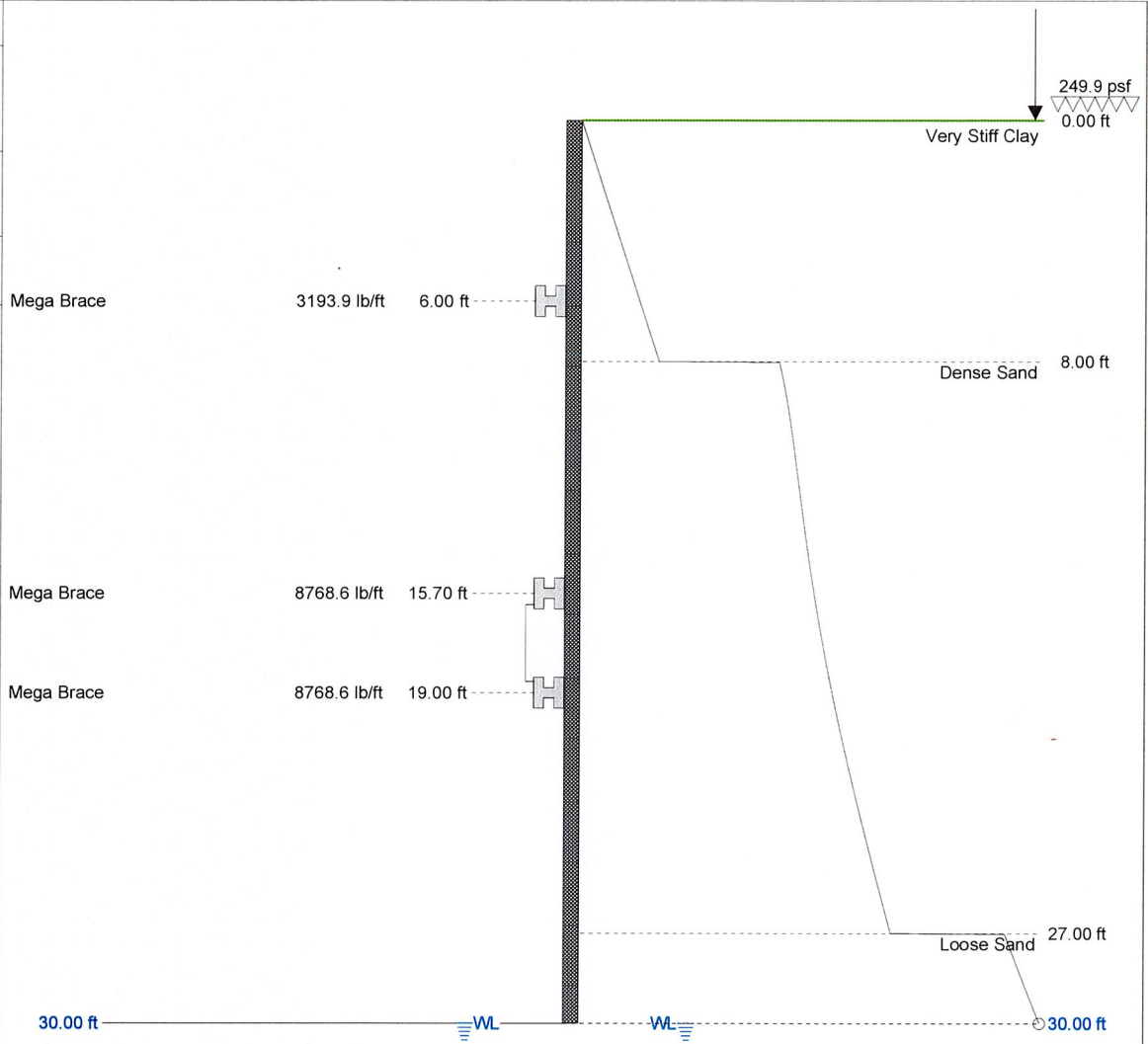


Trench Safety Engineering Department  
7B Oak Branch Drive, Greensboro, NC 27407  
(336) 398-5060

Client: Containment Control, Inc.  
 Site: Edgefield, SC  
 Title: Edgefield Remediation -  
 Degreasing Operation Area  
 Designer: MBM  
 Ref: DOA - 22  
 Date: 4.27.23  
 Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

| Maximum    | d (ft) |
|------------|--------|
| 1506.0 psf | 30.00  |

EGR230680A  
 40"Wx80'Lx30"D  
 Sheeting & Brace Pit



United Rentals Trench Safety

7B Oak Branch Drive  
 Greensboro, NC 27407  
 Tel: (336) 398-5060  
 Fax: (336) 292-9909

SupportIT, v2.37

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 Toll/Fax: +44 (0)1292 477754  
 Email: GTSOFT@aol.com  
 Web: www.GTSOFT.org



Client: Containment Control, Inc.  
 Site: Edgefield, SC  
 Title: Edgefield Remediation -  
 Degreasing Operation Area  
 Designer: MBM  
 Ref: DOA - 22  
 Date: 4.27.23  
 Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680A  
 40'Wx80'Lx30'D  
 Sheeting & Brace Pit

**Input Data**

Depth Of Excavation = 30.00ft  
 Surcharge = 249.9psf  
 Depth Of Active Water = 30.00ft  
 Depth Of Passive Water = 30.00ft  
 Water Density = 62.43pcf  
 Minimum Fluid Density = 31.82pcf

**Soil Profile**

| Depth (ft) | Soil Name       | $\gamma$ (pcf) | $\gamma'$ (pcf) | C (psf) | $C_a$ (psf) | $\phi$ (°) | $\delta$ (°) | $K_a$ | $K_{ac}$ | $K_p$ | $K_{pc}$ |
|------------|-----------------|----------------|-----------------|---------|-------------|------------|--------------|-------|----------|-------|----------|
| 0.00       | Very Stiff Clay | 135.00         | 72.60           | 2500.0  | 0.0         | 0.0        | 0.0          | 1.00  | 2.00     | 1.00  | 2.00     |
| 8.00       | Dense Sand      | 125.00         | 62.60           | 0.0     | 0.0         | 35.0       | 0.0          | 0.26  | 0.00     | 3.85  | 0.00     |
| 27.00      | Loose Sand      | 118.00         | 55.60           | 0.0     | 0.0         | 28.0       | 0.0          | 0.36  | 0.00     | 2.77  | 0.00     |

**Surcharges**

| Position (ft) | Width (ft) | Length (ft) | Depth (ft) | Magnitude        | Type |
|---------------|------------|-------------|------------|------------------|------|
| 10.00         |            |             | 0.00       | 9000.0lb/ft Line | ▼    |

**Solution**

| Sheet Name | E (psi) | I (in <sup>4</sup> /ft) | f (psi) | Z (in <sup>3</sup> /ft) | Allowed M <sub>max</sub> (ftlb/ft) | b (in) | A (in <sup>2</sup> /ft) | W (lb/ft) | Upstand (ft) | Toe (ft) | Length (ft) |
|------------|---------|-------------------------|---------|-------------------------|------------------------------------|--------|-------------------------|-----------|--------------|----------|-------------|
| PZ27       | 2.9E+07 | 184.20                  | 30000.0 | 30.20                   | 75500.1                            | 17.99  | 7.93                    | 40.5      | 0.00         | 0.00     | 30.00       |

Pressure Model: Rankine; Assume full hydrostatic pressure to 30.00ft in cohesive soils on active side

Load Model: Hinge Method

**Supports**

| d (ft) | Type       | L (ft) | B (ft) | Load (lb/ft) |
|--------|------------|--------|--------|--------------|
| 6.00   | Mega Brace | 82.02  | 40.00  | 3193.9       |
| 15.70  | Mega Brace | 82.02  | 40.00  | 8768.6       |
| 19.00  | Mega Brace | 82.02  | 40.00  | 8768.6       |

\* - Load sharing

**Maxima**

|                | Maximum         | Depth (ft) |
|----------------|-----------------|------------|
| Pressure       | 1506.0 psf      | 30.00      |
| Bending Moment | 71258.1 ftlb/ft | 19.00      |
| Deflection     | 0.7 in          | 29.97      |
| Shear Force    | 23024.8 lb/ft   | 19.00      |



**United Rentals Trench Safety**

7B Oak Branch Drive  
 Greensboro, NC 27407  
 Tel: (336) 398-5060  
 Fax: (336) 292-9909

SupportIT, v2.37

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 Toll/Fax: +44 (0)1292 477754  
 Email: GTSoftLtd@aol.com  
 Web: www.GTSoft.org

Client: Containment Control, Inc.  
 Site: Edgefield, SC

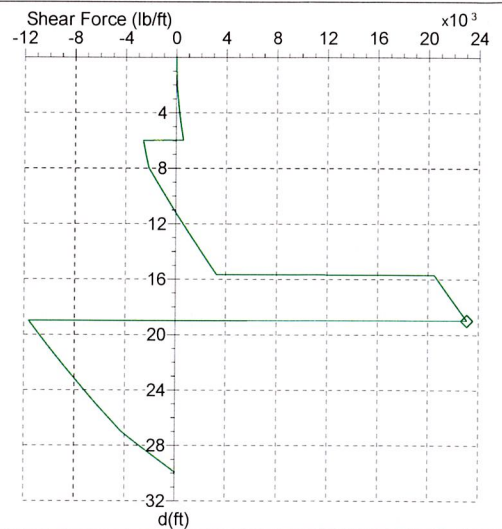
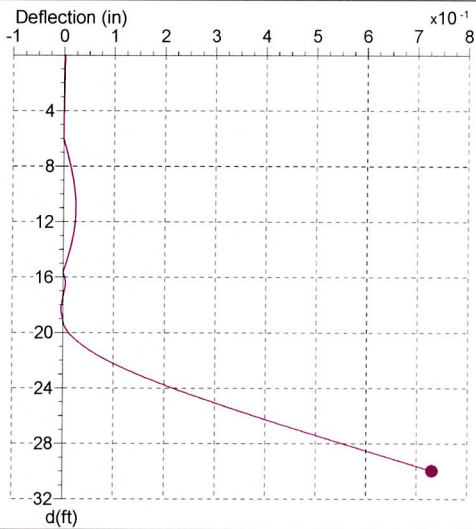
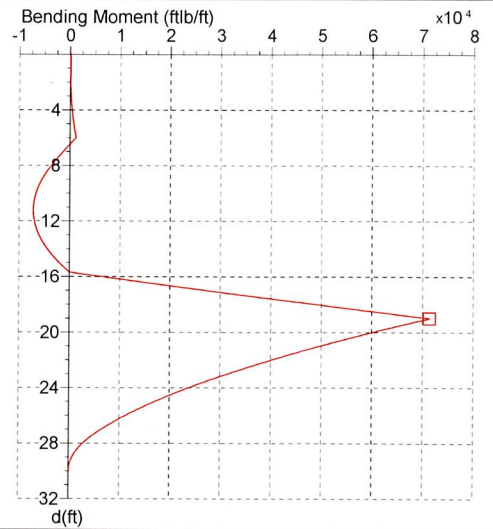
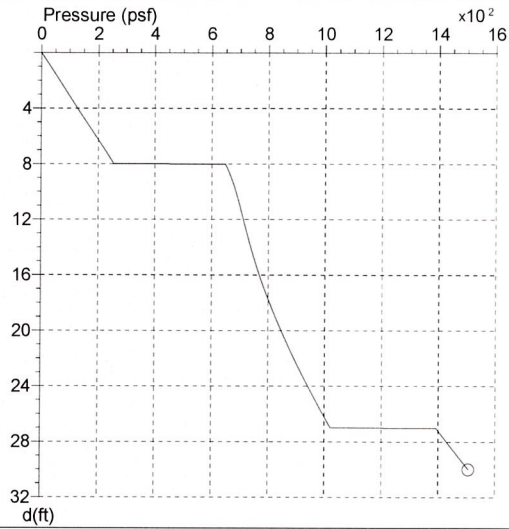
Title: Edgefield Remediation -  
 Degreasing Operation Area

Designer: MBM  
 Ref: DOA - 22  
 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

|   | Maximum         | d (ft) |
|---|-----------------|--------|
| ○ | 1506.0 psf      | 30.00  |
| □ | 71258.1 ftlb/ft | 19.00  |
| ◇ | 23024.8 lb/ft   | 19.00  |
| ● | 0.7 in          | 29.97  |

EGR230680A  
 40'Wx80'Lx30'D  
 Sheeting & Brace Pit



United Rentals Trench Safety

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SupportIT, v2.37

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Client: Containment Control, Inc.  
 Site: Edgefield, SC

Title: Edgefield Remediation -  
 Degreasing Operation Area

Designer: MBM  
 Ref: DOA - 22  
 Date: 4.27.23

Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680A  
 40'Wx80'Lx30'D  
 Sheeting & Brace Pit

| depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) | depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) | depth (ft) | P (psf) | M (ftlb/ft) | D (in) | F (lb/ft) |
|------------|---------|-------------|--------|-----------|------------|---------|-------------|--------|-----------|------------|---------|-------------|--------|-----------|
| 0.00       | 0.0     | 0.0         | 0.0    | 0.0       | 10.07      | 685.2   | -6770.4     | 0.0    | -786.3    | 20.14      | 849.0   | 58414.3     | 0.0    | -10674.5  |
| 0.21       | 7.2     | 0.0         | 0.0    | 0.9       | 10.29      | 688.1   | -6915.7     | 0.0    | -648.9    | 20.36      | 853.4   | 56294.3     | 0.0    | -10504.2  |
| 0.43       | 13.5    | 0.4         | 0.0    | 3.0       | 10.50      | 691.3   | -7046.2     | 0.0    | -493.7    | 20.57      | 858.4   | 53950.1     | 0.0    | -10311.6  |
| 0.64       | 20.7    | 1.4         | 0.0    | 7.0       | 10.71      | 694.4   | -7141.7     | 0.0    | -337.8    | 20.79      | 862.9   | 51902.8     | 0.0    | -10139.4  |
| 0.86       | 27.1    | 3.2         | 0.0    | 11.8      | 10.93      | 697.1   | -7197.1     | 0.0    | -198.6    | 21.00      | 868.1   | 49640.9     | 0.0    | -9944.6   |
| 1.07       | 34.2    | 6.6         | 0.0    | 18.8      | 11.14      | 700.1   | -7226.1     | 0.0    | -41.4     | 21.21      | 873.2   | 47423.0     | 0.0    | -9748.6   |
| 1.29       | 40.6    | 11.0        | 0.0    | 26.4      | 11.36      | 702.8   | -7222.1     | 0.0    | 99.0      | 21.43      | 877.9   | 45488.6     | 0.1    | -9573.4   |
| 1.50       | 47.8    | 17.9        | 0.0    | 36.4      | 11.57      | 705.7   | -7184.2     | 0.0    | 257.5     | 21.64      | 883.2   | 43354.4     | 0.1    | -9375.3   |
| 1.71       | 54.9    | 27.2        | 0.0    | 48.1      | 11.79      | 708.3   | -7120.6     | 0.0    | 398.9     | 21.86      | 887.9   | 41494.8     | 0.1    | -9198.1   |
| 1.93       | 61.3    | 37.8        | 0.0    | 59.8      | 12.00      | 711.2   | -7015.4     | 0.0    | 558.6     | 22.07      | 893.3   | 39445.2     | 0.1    | -8997.6   |
| 2.14       | 68.5    | 52.7        | 0.0    | 74.5      | 12.21      | 714.1   | -6874.4     | 0.0    | 719.0     | 22.29      | 898.1   | 37661.4     | 0.1    | -8818.4   |
| 2.36       | 74.8    | 68.8        | 0.0    | 88.9      | 12.43      | 716.7   | -6718.9     | 0.0    | 862.1     | 22.50      | 903.5   | 35697.5     | 0.1    | -8615.7   |
| 2.57       | 82.0    | 90.6        | 0.0    | 106.6     | 12.64      | 719.6   | -6509.8     | 0.0    | 1023.7    | 22.71      | 909.1   | 33779.3     | 0.1    | -8411.7   |
| 2.79       | 88.4    | 113.4       | 0.0    | 123.7     | 12.86      | 722.2   | -6293.5     | 0.0    | 1167.9    | 22.93      | 914.0   | 32112.9     | 0.1    | -8229.3   |
| 3.00       | 95.5    | 143.3       | 0.0    | 144.5     | 13.07      | 725.2   | -6015.8     | 0.0    | 1330.8    | 23.14      | 919.6   | 30281.9     | 0.2    | -8023.0   |
| 3.21       | 102.7   | 178.0       | 0.0    | 166.9     | 13.29      | 727.9   | -5738.3     | 0.0    | 1476.1    | 23.36      | 924.6   | 28693.5     | 0.2    | -7838.5   |
| 3.43       | 109.1   | 213.2       | 0.0    | 188.1     | 13.50      | 730.9   | -5391.5     | 0.0    | 1640.3    | 23.57      | 930.2   | 26950.6     | 0.2    | -7629.8   |
| 3.64       | 116.2   | 258.1       | 0.0    | 213.6     | 13.71      | 734.0   | -5007.8     | 0.0    | 1805.1    | 23.79      | 935.3   | 25441.0     | 0.2    | -7443.2   |
| 3.86       | 122.6   | 302.8       | 0.0    | 237.6     | 13.93      | 736.8   | -4635.8     | 0.0    | 1952.2    | 24.00      | 941.0   | 23787.4     | 0.2    | -7232.0   |
| 4.07       | 129.8   | 359.1       | 0.0    | 266.0     | 14.14      | 740.0   | -4182.2     | 0.0    | 2118.4    | 24.21      | 946.8   | 22181.4     | 0.2    | -7019.6   |
| 4.29       | 136.1   | 414.6       | 0.0    | 292.7     | 14.36      | 742.8   | -3747.7     | 0.0    | 2266.7    | 24.43      | 952.0   | 20794.1     | 0.2    | -6829.6   |
| 4.50       | 143.3   | 483.6       | 0.0    | 324.2     | 14.57      | 746.1   | -3223.5     | 0.0    | 2434.3    | 24.64      | 957.8   | 19278.9     | 0.3    | -6614.7   |
| 4.71       | 150.5   | 559.9       | 0.0    | 357.4     | 14.79      | 749.1   | -2726.0     | 0.0    | 2583.8    | 24.86      | 963.1   | 17972.8     | 0.3    | -6422.5   |
| 4.93       | 156.8   | 634.0       | 0.0    | 388.2     | 15.00      | 752.5   | -2130.7     | 0.0    | 2752.8    | 25.07      | 969.0   | 16549.4     | 0.3    | -6205.1   |
| 5.14       | 164.0   | 724.9       | 0.0    | 424.4     | 15.21      | 756.0   | -1497.5     | 0.0    | 2922.5    | 25.29      | 974.3   | 15325.4     | 0.3    | -6010.7   |
| 5.36       | 170.4   | 812.7       | 0.0    | 457.9     | 15.43      | 759.1   | -902.7      | 0.0    | 3074.1    | 25.50      | 980.2   | 13994.9     | 0.3    | -5790.8   |
| 5.57       | 177.5   | 919.6       | 0.0    | 497.1     | 15.64      | 762.7   | -197.4      | 0.0    | 3245.3    | 25.71      | 986.2   | 12714.1     | 0.4    | -5569.5   |
| 5.79       | 183.9   | 1022.2      | 0.0    | 533.3     | 15.86      | 766.0   | 3021.0      | 0.0    | 20543.2   | 25.93      | 991.6   | 11617.5     | 0.4    | -5371.6   |
| 6.00       | 191.1   | 1146.3      | 0.0    | -2618.3   | 16.07      | 769.7   | 7637.8      | 0.0    | 20716.0   | 26.14      | 997.7   | 10431.3     | 0.4    | -5147.7   |
| 6.21       | 198.2   | 561.6       | 0.0    | -2574.4   | 16.29      | 773.1   | 11774.1     | 0.0    | 20870.4   | 26.36      | 1003.1  | 9419.2      | 0.4    | -4947.6   |
| 6.43       | 204.6   | 50.2        | 0.0    | -2534.1   | 16.50      | 776.9   | 16464.3     | 0.0    | 21044.8   | 26.57      | 1009.2  | 8328.6      | 0.4    | -4721.1   |
| 6.64       | 211.8   | -515.3      | 0.0    | -2487.1   | 16.71      | 780.9   | 21193.6     | 0.0    | 21220.1   | 26.79      | 1014.7  | 7402.1      | 0.4    | -4518.7   |
| 6.86       | 218.1   | -1009.0     | 0.0    | -2444.1   | 16.93      | 784.4   | 25430.4     | 0.0    | 21376.7   | 27.00      | 1020.8  | 6408.3      | 0.5    | -4289.6   |
| 7.07       | 225.3   | -1553.9     | 0.0    | -2394.1   | 17.14      | 788.5   | 30234.2     | 0.0    | 21553.7   | 27.21      | 1399.8  | 5474.8      | 0.5    | -3971.8   |
| 7.29       | 231.7   | -2028.8     | 0.0    | -2348.3   | 17.36      | 792.2   | 34537.6     | 0.0    | 21711.8   | 27.43      | 1407.3  | 4705.3      | 0.5    | -3687.3   |
| 7.50       | 238.8   | -2551.9     | 0.0    | -2295.3   | 17.57      | 796.4   | 39416.6     | 0.0    | 21890.5   | 27.64      | 1415.8  | 3907.8      | 0.5    | -3365.3   |
| 7.71       | 246.0   | -3062.9     | 0.0    | -2240.6   | 17.79      | 800.1   | 43787.1     | 0.0    | 22050.2   | 27.86      | 1423.4  | 3259.9      | 0.5    | -3077.6   |
| 7.93       | 252.4   | -3506.7     | 0.0    | -2190.7   | 18.00      | 804.5   | 48742.1     | 0.0    | 22230.8   | 28.07      | 1431.9  | 2600.0      | 0.6    | -2752.0   |
| 8.14       | 259.1   | -3990.2     | 0.0    | -2074.4   | 18.21      | 808.8   | 53737.5     | 0.0    | 22412.3   | 28.29      | 1439.5  | 2075.0      | 0.6    | -2460.9   |
| 8.36       | 265.4   | -4393.6     | 0.0    | -1943.9   | 18.43      | 812.8   | 58212.2     | 0.0    | 22574.6   | 28.50      | 1448.1  | 1554.2      | 0.6    | -2131.6   |
| 8.57       | 269.3   | -4816.2     | 0.0    | -1796.0   | 18.64      | 817.3   | 63284.8     | 0.0    | 22758.0   | 28.71      | 1456.7  | 1107.7      | 0.6    | -1800.4   |
| 8.79       | 263.2   | -5163.9     | 0.0    | -1663.7   | 18.86      | 821.4   | 67828.4     | 0.0    | 22921.9   | 28.93      | 1464.4  | 773.5       | 0.6    | -1504.3   |
| 9.00       | 267.5   | -5523.3     | 0.0    | -1513.9   | 19.07      | 826.0   | 70386.9     | 0.0    | -11575.0  | 29.14      | 1473.1  | 468.5       | 0.7    | -1169.3   |
| 9.21       | 271.5   | -5848.8     | 0.0    | -1363.2   | 19.29      | 830.2   | 68086.4     | 0.0    | -11409.3  | 29.36      | 1480.8  | 260.8       | 0.7    | -869.9    |
| 9.43       | 274.9   | -6109.7     | 0.0    | -1228.6   | 19.50      | 834.9   | 65538.0     | 0.0    | -11221.9  | 29.57      | 1489.5  | 98.9        | 0.7    | -531.2    |
| 9.64       | 278.6   | -6370.9     | 0.0    | -1076.2   | 19.71      | 839.7   | 63031.9     | 0.0    | -11033.5  | 29.79      | 1497.2  | 19.1        | 0.7    | -228.5    |
| 9.86       | 281.8   | -6574.3     | 0.0    | -940.1    | 19.93      | 844.1   | 60839.9     | 0.0    | -10865.0  | 30.00      | 1506.0  | 0.0         | 0.7    | 0.0       |



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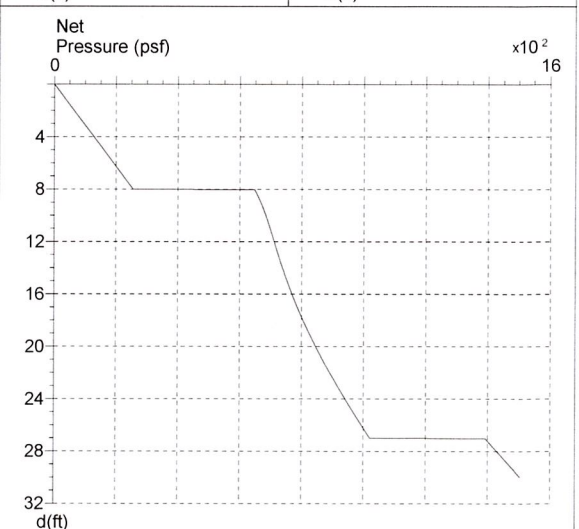
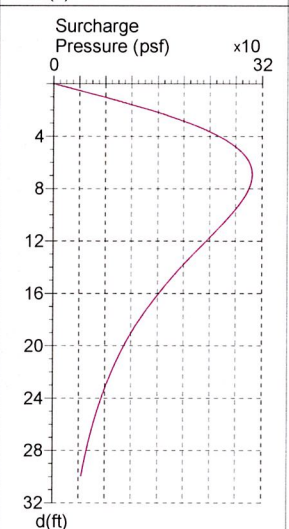
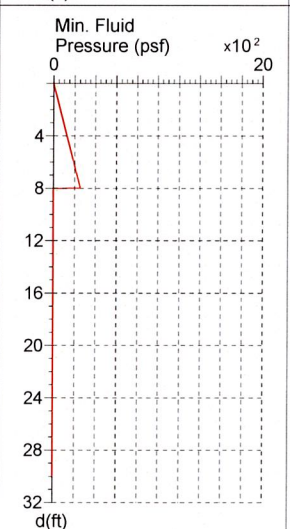
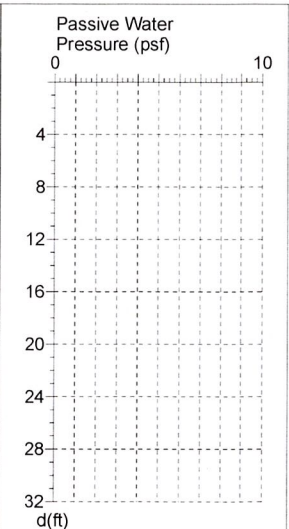
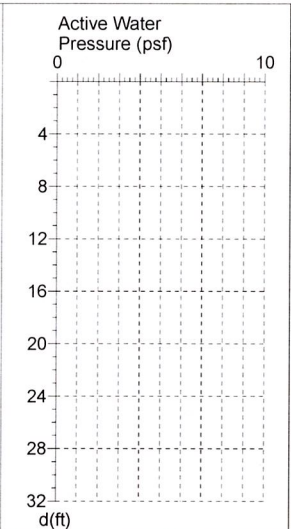
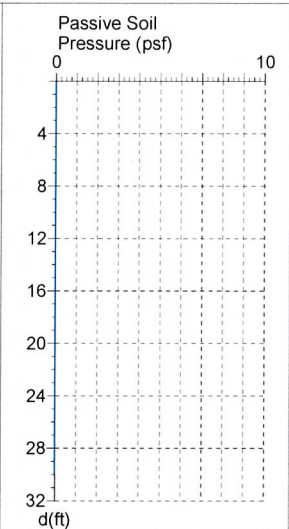
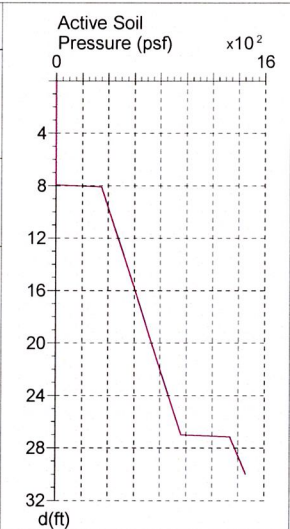
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 Degreasing Operation Area  
 Designer: MBM  
 Ref: DOA - 22  
 Date: 4.27.23  
 Sheet: PZ27  
 Works: Temporary  
 Pressure: Rankine  
 Toe: No Earth Support

EGR230680A  
 40'Wx80'Lx30'D  
 Sheeting & Brace Pit



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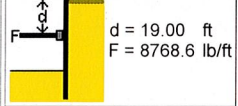


Client: Containment Control, Inc.  
 Site: Edgefield, SC

Title: Edgefield Remediation -  
 Degreasing Operation Area

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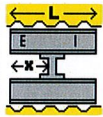


EGR230680A  
 40'Wx80'Lx30'D  
 Sheeting & Brace Pit

|                                | x (ft) | R (lb)   | M (ftlb) |
|--------------------------------|--------|----------|----------|
| L = 82.02 ft                   | 0.00   | 51631.3  | -20.5    |
| E = 2.9E+07 psi                | 16.00  | 173422.4 | 277097.8 |
| I = 1372.00 in <sup>4</sup>    | 35.00  | 159539.4 | 238126.6 |
| M <sub>x</sub> = 685749.8 ftlb | 55.00  | 215080.8 | 438058.9 |
|                                | 78.00  | 119574.5 | 71002.0  |

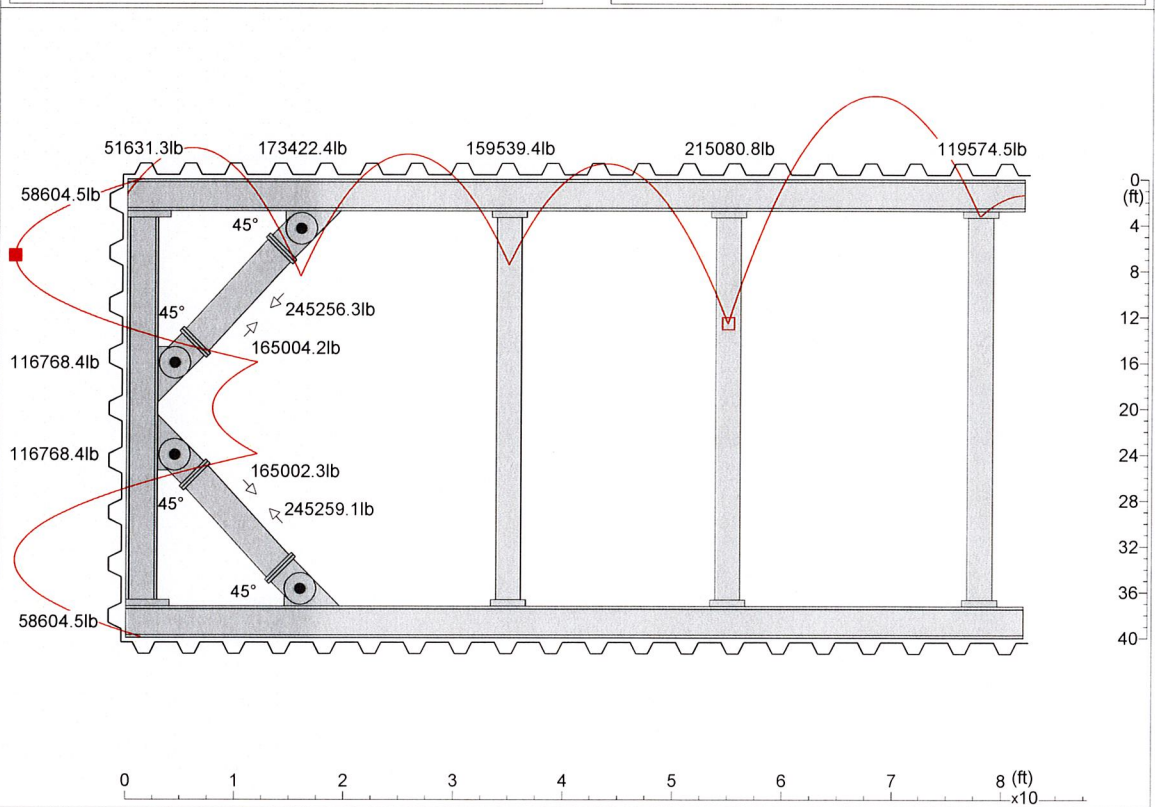
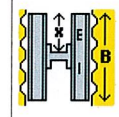
|                       | Maximum  | x (ft) |
|-----------------------|----------|--------|
| Bending Moment (ftlb) | 438058.9 | 55.00  |
| Shear Force (lb)      | 117777.5 | 54.89  |
| Deflection (in)       | 0.7      | 67.53  |



|                                | x (ft) | R (lb)   | M (ftlb) |
|--------------------------------|--------|----------|----------|
| B = 40.00 ft                   | 0.00   | 58604.5  | 0.0      |
| E = 2.9E+07 psi                | 16.00  | 116768.4 | 180044.2 |
| I = 1372.00 in <sup>4</sup>    | 24.00  | 116768.4 | 180044.2 |
| M <sub>x</sub> = 685749.8 ftlb | 40.00  | 58604.5  | 0.0      |

|                       | Maximum  | x (ft) |
|-----------------------|----------|--------|
| Bending Moment (ftlb) | 198016.2 | 6.67   |
| Shear Force (lb)      | 81986.1  | 23.93  |
| Deflection (in)       | 0.2      | 7.37   |



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Client: Containment Control, Inc.  
 Site: Edgefield, SC

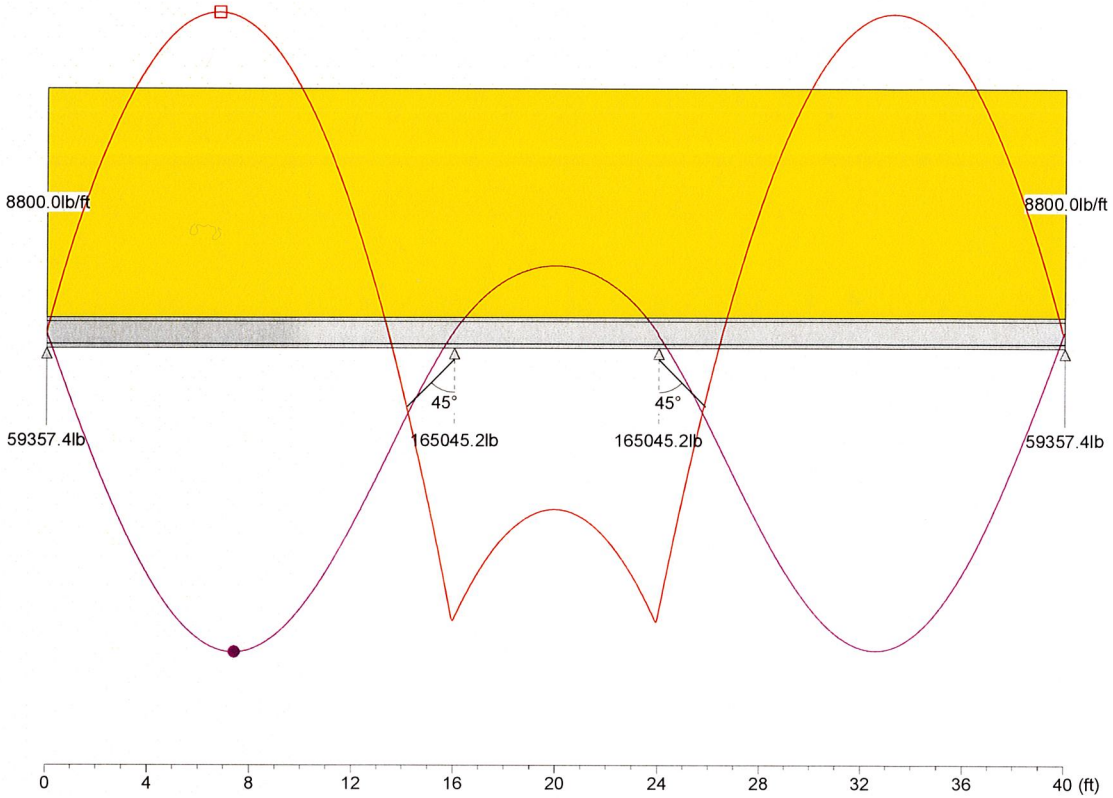
Title: Edgefield Remediation -  
 Degreasing Operation Area

Designer: MBM  
 Page: 1  
 Date: 4.27.23

Beam: Mega Brace  
 L = 40.00 ft  
 I = 1372.00 in<sup>4</sup>  
 E = 2.9E+07 psi  
 EI = 3.98E+10 lb in<sup>2</sup>

| Maximum         | x (ft) |
|-----------------|--------|
| □ 197937.4 ftlb | 6.74   |
| ● 0.201 in      | 7.40   |
| R 116704.5 lb   | 16.00  |

EGR230680A  
 40' Leg - Megabrace Loading



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Designer: MBM  
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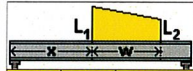
EGR230680A  
40' Leg - Megabrace Loading

Input Data

Beam

| Name       | L (ft) | b (in) | h (in) | A (in <sup>2</sup> ) | W (lb/ft) | E (psi) | I <sub>xx</sub> (in <sup>4</sup> ) | EI (lb in <sup>2</sup> ) | f (psi)  | Z (in <sup>3</sup> ) | M (ftlb) | S (lb)   |
|------------|--------|--------|--------|----------------------|-----------|---------|------------------------------------|--------------------------|----------|----------------------|----------|----------|
| Mega Brace | 40.00  | 14.670 | 14.500 | 34.880               | 120.00    | 2.9E+07 | 1372.00                            | 3.98E+10                 | 38999.99 | 211.000              | 685749.9 | 213000.0 |

Distributed Loads



| x (ft) | w (ft) | L <sub>1</sub> (lb/ft) | L <sub>2</sub> (lb/ft) |
|--------|--------|------------------------|------------------------|
| 0.00   | 40.00  | 8800.0                 | 8800.0                 |

Solution

Supports

| x (ft) | Angle (°) | R (lb)   | M (ftlb) |
|--------|-----------|----------|----------|
| 0.00   | 0.0       | 59357.4  | -7.0     |
| 16.00  | -45.0     | 165045.2 | 178488.4 |
| 24.00  | 45.0      | 165045.2 | 178488.4 |
| 40.00  | 0.0       | 59357.4  | 7.0      |

Maxima

|                    | Maximum        | x (ft) |
|--------------------|----------------|--------|
| Reaction           | 116704.5 lb    | 16.00  |
| Shear Force        | 81492.1 lb     | 24.00  |
| Sagging Moment     | 197937.4 ftlb  | 6.68   |
| Hogging Moment     | -179196.2 ftlb | 23.88  |
| Sagging Deflection | 0.201 in       | 7.32   |
| Hogging Deflection | -0.042 in      | 19.92  |



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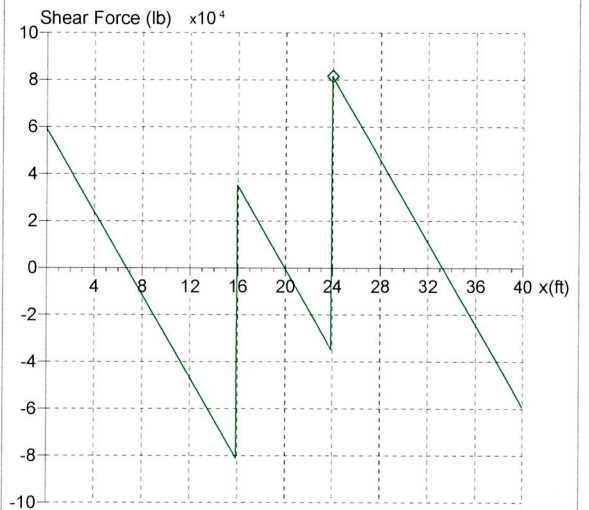
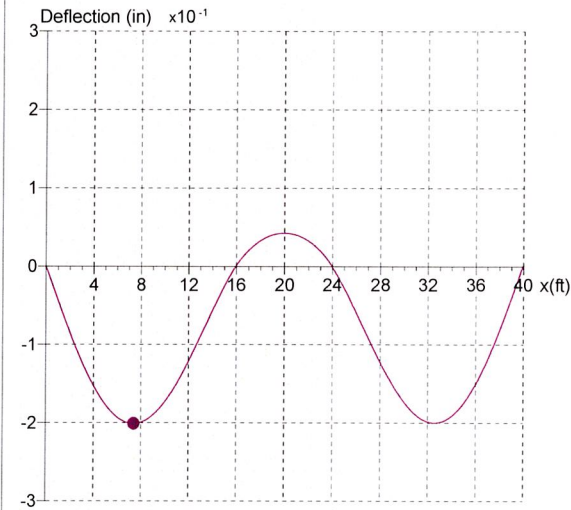
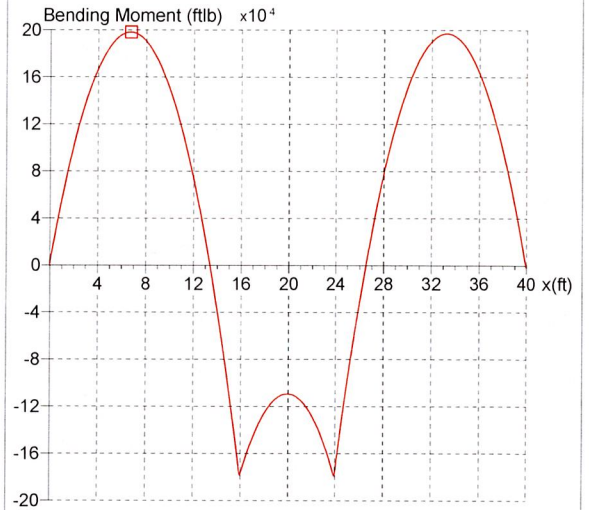
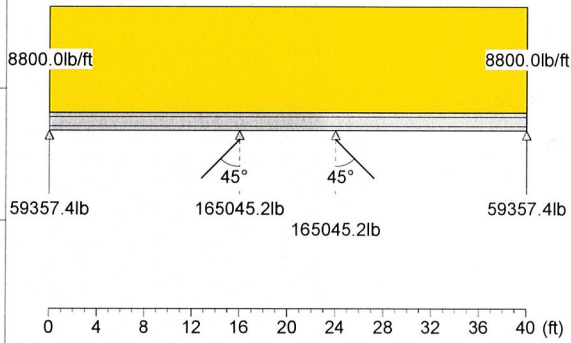
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Degreasing Operation Area

Designer: MBM  
Page: 3  
Date: 4.27.23

Beam: Mega Brace  
L = 40.00 ft  
I = 1372.00 in<sup>4</sup>  
E = 2.9E+07 psi  
EI = 3.98E+10 lb in<sup>2</sup>

|   | Maximum       | x (ft) |
|---|---------------|--------|
| □ | 197937.4 ftlb | 6.74   |
| ◇ | 81492.1 lb    | 24.00  |
| ● | 0.201 in      | 7.40   |
| R | 116704.5 lb   | 16.00  |

EGR230680A  
40' Leg - Megabrace Loading



United Rentals Trench Safety

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Client: Containment Control, Inc.  
Site: Edgefield, SC

Title: Edgefield Remediation -  
Degreasing Operation Area  
Designer: MBM  
Page: 4  
Date: 4.27.23  
Beam: Mega Brace  
L = 40.00 ft  
I = 1372.00 in<sup>4</sup>  
E = 2.9E+07 psi  
EI = 3.98E+10 lb in<sup>2</sup>

EGR230680A  
40' Leg - Megabrace Loading

JOINT CHECK:  
APPLIED MOMENT = 197 K-FT <  
ALLOWABLE MOMENT = 492 K-FT

JOINT CHECK:  
APPLIED MOMENT = 142 K-FT <  
ALLOWABLE MOMENT = 492 K-FT

| x (ft) | M (ftlb) | D (in) | F (lb)   | x (ft) | M (ftlb)  | D (in) | F (lb)   | x (ft) | M (ftlb) | D (in) | F (lb)   |
|--------|----------|--------|----------|--------|-----------|--------|----------|--------|----------|--------|----------|
| 0.00   | 0.0      | 0.000  | 59357.4  | 13.43  | -277.2    | -0.077 | -58956.2 | 26.86  | 16240.4  | -0.085 | 56491.3  |
| 0.29   | 14841.1  | -0.011 | 56892.5  | 13.71  | -17162.8  | -0.067 | -61421.1 | 27.14  | 33838.8  | -0.095 | 53674.3  |
| 0.57   | 30393.5  | -0.023 | 54427.7  | 14.00  | -34738.6  | -0.058 | -63885.9 | 27.43  | 48498.0  | -0.104 | 51209.5  |
| 0.86   | 45255.8  | -0.035 | 51962.8  | 14.29  | -53004.5  | -0.049 | -66350.8 | 27.71  | 62466.9  | -0.113 | 48744.6  |
| 1.14   | 61396.1  | -0.049 | 49145.8  | 14.57  | -71960.7  | -0.040 | -68815.7 | 28.00  | 75745.8  | -0.121 | 46279.7  |
| 1.43   | 74779.4  | -0.061 | 46680.9  | 14.86  | -91607.0  | -0.032 | -71280.5 | 28.29  | 88334.4  | -0.130 | 43814.9  |
| 1.71   | 87472.5  | -0.072 | 44216.1  | 15.14  | -114905.0 | -0.022 | -74097.5 | 28.57  | 100232.8 | -0.138 | 41350.0  |
| 2.00   | 99475.5  | -0.084 | 41751.2  | 15.43  | -136030.3 | -0.014 | -76562.4 | 28.86  | 111441.1 | -0.145 | 38885.1  |
| 2.29   | 110788.3 | -0.095 | 39286.3  | 15.71  | -157845.7 | -0.007 | -79027.3 | 29.14  | 123405.5 | -0.154 | 36068.1  |
| 2.57   | 121410.9 | -0.105 | 36821.5  | 16.00  | -178488.4 | 0.000  | 35212.4  | 29.43  | 133134.8 | -0.160 | 33603.3  |
| 2.86   | 131343.4 | -0.115 | 34356.6  | 16.29  | -169723.9 | 0.006  | 32745.5  | 29.71  | 142174.0 | -0.167 | 31138.4  |
| 3.14   | 141849.6 | -0.126 | 31539.6  | 16.57  | -160948.9 | 0.012  | 30282.6  | 30.00  | 150523.0 | -0.173 | 28673.5  |
| 3.43   | 150303.2 | -0.135 | 29074.7  | 16.86  | -152864.0 | 0.017  | 27817.8  | 30.29  | 158181.8 | -0.178 | 26208.7  |
| 3.71   | 158066.5 | -0.144 | 26609.9  | 17.14  | -144469.3 | 0.022  | 25000.8  | 30.57  | 165150.5 | -0.183 | 23743.8  |
| 4.00   | 165139.7 | -0.152 | 24145.0  | 17.43  | -137863.3 | 0.026  | 22535.9  | 30.86  | 171429.0 | -0.187 | 21278.9  |
| 4.29   | 171522.7 | -0.160 | 21680.1  | 17.71  | -131947.6 | 0.029  | 20071.0  | 31.14  | 177759.3 | -0.191 | 18461.9  |
| 4.57   | 177215.5 | -0.167 | 19215.3  | 18.00  | -126722.0 | 0.032  | 17606.2  | 31.43  | 182558.8 | -0.195 | 15997.1  |
| 4.86   | 182218.2 | -0.173 | 16750.4  | 18.29  | -122186.6 | 0.035  | 15141.3  | 31.71  | 186668.2 | -0.197 | 13532.2  |
| 5.14   | 187090.4 | -0.180 | 13933.4  | 18.57  | -118341.4 | 0.037  | 12676.4  | 32.00  | 190080.4 | -0.199 | 11067.3  |
| 5.43   | 190614.1 | -0.185 | 11468.5  | 18.86  | -115186.3 | 0.039  | 10211.6  | 32.29  | 192809.4 | -0.200 | 8602.5   |
| 5.71   | 193447.7 | -0.189 | 9003.7   | 19.14  | -112425.6 | 0.040  | 7394.6   | 32.57  | 194848.3 | -0.200 | 6137.6   |
| 6.00   | 195591.0 | -0.193 | 6538.8   | 19.43  | -110749.5 | 0.041  | 4929.7   | 32.86  | 196197.0 | -0.200 | 3672.7   |
| 6.29   | 197044.2 | -0.196 | 4073.9   | 19.71  | -109763.5 | 0.042  | 2464.9   | 33.14  | 196893.3 | -0.199 | 855.8    |
| 6.57   | 197807.3 | -0.198 | 1609.1   | 20.00  | -109474.8 | 0.042  | 0.0      | 33.43  | 196763.0 | -0.197 | -1609.1  |
| 6.86   | 197880.1 | -0.200 | -855.8   | 20.29  | -109869.2 | 0.042  | -2464.9  | 33.71  | 195942.6 | -0.195 | -4074.0  |
| 7.14   | 197118.3 | -0.201 | -3672.8  | 20.57  | -110953.7 | 0.041  | -4929.7  | 34.00  | 194432.0 | -0.192 | -6538.8  |
| 7.43   | 195712.3 | -0.201 | -6137.6  | 20.86  | -112728.5 | 0.040  | -7394.6  | 34.29  | 192231.3 | -0.189 | -9003.7  |
| 7.71   | 193616.0 | -0.201 | -8602.5  | 21.14  | -115601.8 | 0.039  | -10211.6 | 34.57  | 189340.4 | -0.184 | -11468.6 |
| 8.00   | 190829.6 | -0.200 | -11067.4 | 21.43  | -118855.5 | 0.037  | -12676.5 | 34.86  | 185759.2 | -0.179 | -13933.4 |
| 8.29   | 187346.0 | -0.198 | -13532.2 | 21.71  | -122799.3 | 0.035  | -15141.3 | 35.14  | 180821.5 | -0.173 | -16750.4 |
| 8.57   | 183179.2 | -0.196 | -15997.1 | 22.00  | -127433.3 | 0.032  | -17606.2 | 35.43  | 175761.4 | -0.167 | -19215.3 |
| 8.86   | 178322.3 | -0.193 | -18462.0 | 22.29  | -132757.5 | 0.029  | -20071.1 | 35.71  | 170011.2 | -0.160 | -21680.2 |
| 9.14   | 171926.4 | -0.189 | -21279.0 | 22.57  | -138771.8 | 0.026  | -22535.9 | 36.00  | 163570.8 | -0.152 | -24145.0 |
| 9.43   | 165590.6 | -0.184 | -23743.8 | 22.86  | -145476.4 | 0.022  | -25000.8 | 36.29  | 156440.3 | -0.144 | -26609.9 |
| 9.71   | 158564.5 | -0.180 | -26208.7 | 23.14  | -153983.8 | 0.017  | -27817.8 | 36.57  | 148619.6 | -0.136 | -29074.8 |
| 10.00  | 150848.3 | -0.174 | -28673.6 | 23.43  | -162167.2 | 0.012  | -30282.7 | 36.86  | 140108.7 | -0.127 | -31539.6 |
| 10.29  | 142441.9 | -0.168 | -31138.4 | 23.71  | -171040.9 | 0.006  | -32747.5 | 37.14  | 129536.9 | -0.116 | -34356.6 |
| 10.57  | 133345.4 | -0.162 | -33603.3 | 24.00  | -178488.4 | 0.000  | 81492.1  | 37.43  | 119547.0 | -0.106 | -36821.5 |
| 10.86  | 123558.7 | -0.155 | -36068.2 | 24.29  | -156998.9 | -0.008 | 79027.2  | 37.71  | 108867.0 | -0.095 | -39286.4 |
| 11.14  | 111528.8 | -0.147 | -38885.2 | 24.57  | -135240.9 | -0.015 | 76562.4  | 38.00  | 97496.9  | -0.085 | -41751.2 |
| 11.43  | 100263.1 | -0.139 | -41350.0 | 24.86  | -114173.0 | -0.022 | 74097.5  | 38.29  | 85436.5  | -0.073 | -44216.1 |
| 11.71  | 88307.3  | -0.131 | -43814.9 | 25.14  | -90940.6  | -0.032 | 71280.5  | 38.57  | 72686.0  | -0.062 | -46681.0 |
| 12.00  | 75661.3  | -0.123 | -46279.8 | 25.43  | -71351.6  | -0.040 | 68815.7  | 38.86  | 59245.3  | -0.050 | -49145.8 |
| 12.29  | 62325.1  | -0.114 | -48744.6 | 25.71  | -52452.9  | -0.049 | 66350.8  | 39.14  | 43039.5  | -0.037 | -51962.8 |
| 12.57  | 48298.8  | -0.105 | -51209.5 | 26.00  | -34244.3  | -0.058 | 63885.9  | 39.43  | 28119.8  | -0.024 | -54427.7 |
| 12.86  | 33582.2  | -0.096 | -53674.4 | 26.29  | -16725.9  | -0.067 | 61421.1  | 39.71  | 12510.0  | -0.012 | -56892.5 |
| 13.14  | 15918.3  | -0.086 | -56491.3 | 26.57  | 102.4     | -0.076 | 58956.2  | 40.00  | 0.0      | 0.000  | -59357.4 |



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Client: Containment Control, Inc.  
 Site: Edgefield, SC

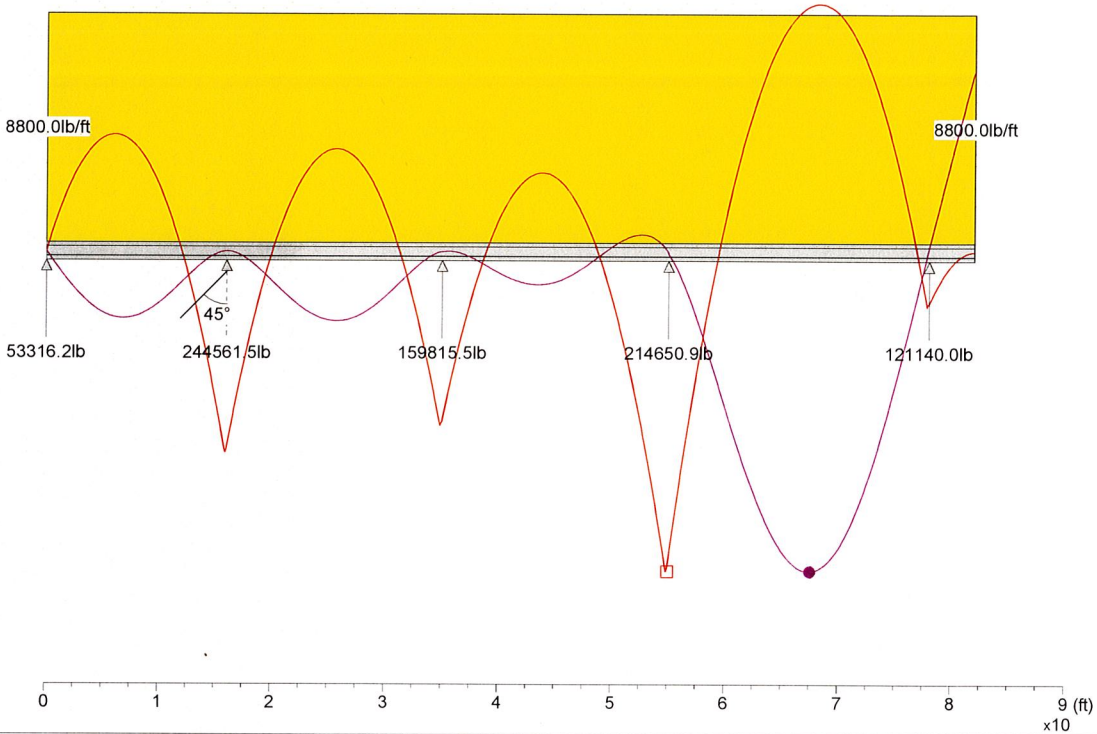
Title: Edgefield Remediation -  
 Degreasing Operation Area

Designer: MBM  
 Page: 1  
 Date: 4.27.23

Beam: Mega Brace  
 L = 82.00 ft  
 I = 1372.00 in<sup>4</sup>  
 E = 2.9E+07 psi  
 EI = 3.98E+10 lb in<sup>2</sup>

| Maximum         | x (ft) |
|-----------------|--------|
| □ 433990.8 ftlb | 55.00  |
| ● 0.653 in      | 67.57  |
| R 214650.9 lb   | 55.00  |

EGR230680A  
 82' Leg - Megabrace Loading



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Client: Containment Control, Inc.  
Site: Edgefield, SC

Title: Edgefield Remediation -  
Degreasing Operation Area  
Designer: MBM  
Page: 2  
Date: 4.27.23

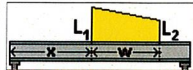
EGR230680A  
82' Leg - Megabrace Loading

Input Data

Beam

| Name       | L (ft) | b (in) | h (in) | A (in <sup>2</sup> ) | W (lb/ft) | E (psi) | I <sub>xx</sub> (in <sup>4</sup> ) | EI (lb in <sup>2</sup> ) | f (psi)  | Z (in <sup>3</sup> ) | M (ftlb) | S (lb)   |
|------------|--------|--------|--------|----------------------|-----------|---------|------------------------------------|--------------------------|----------|----------------------|----------|----------|
| Mega Brace | 82.00  | 14.670 | 14.500 | 34.880               | 120.00    | 2.9E+07 | 1372.00                            | 3.98E+10                 | 38999.99 | 211.000              | 685749.9 | 213000.0 |

Distributed Loads



| x (ft) | w (ft) | L <sub>1</sub> (lb/ft) | L <sub>2</sub> (lb/ft) |
|--------|--------|------------------------|------------------------|
| 0.00   | 82.00  | 8800.0                 | 8800.0                 |

Solution

Supports

| x (ft) | Angle (°) | R (lb)   | M (ftlb) |
|--------|-----------|----------|----------|
| 0.00   | 0.0       | 53316.2  | -29.6    |
| 16.00  | -45.0     | 244561.5 | 273005.6 |
| 35.00  | 0.0       | 159815.5 | 232883.2 |
| 55.00  | 0.0       | 214650.9 | 430365.3 |
| 78.00  | 0.0       | 121140.0 | 70381.4  |

Maxima

|                    | Maximum        | x (ft) |
|--------------------|----------------|--------|
| Reaction           | 214650.9 lb    | 55.00  |
| Shear Force        | 116349.9 lb    | 55.00  |
| Sagging Moment     | 336024.4 ftlb  | 68.06  |
| Hogging Moment     | -433990.8 ftlb | 54.78  |
| Sagging Deflection | 0.653 in       | 67.40  |
| Hogging Deflection | -0.366 in      | 81.84  |



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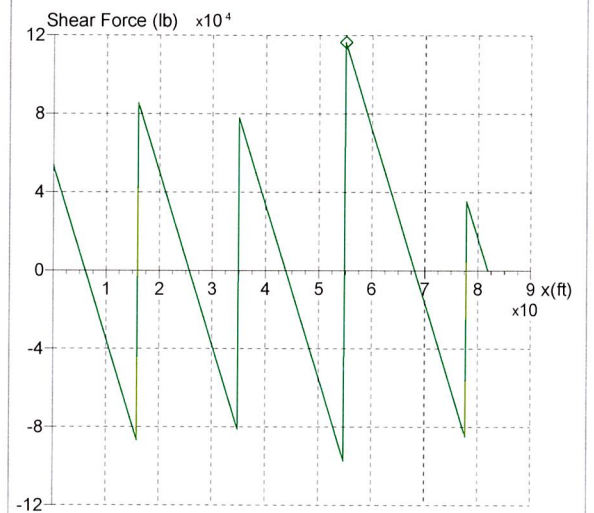
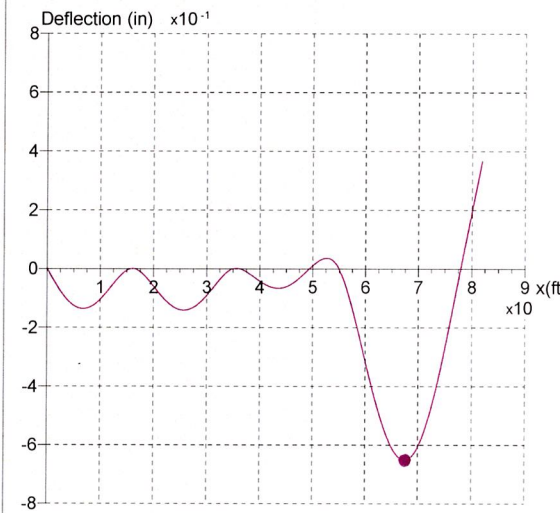
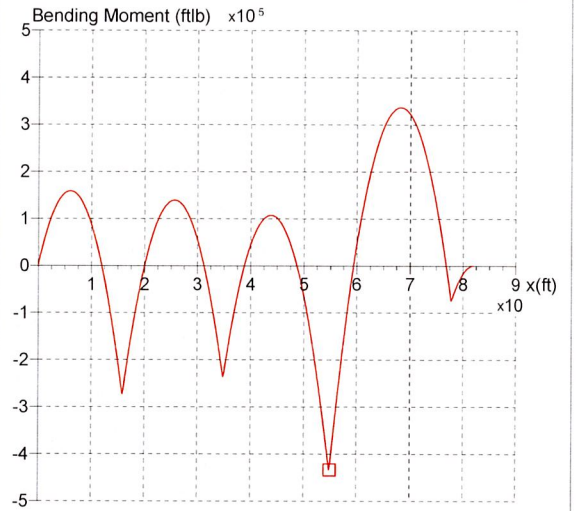
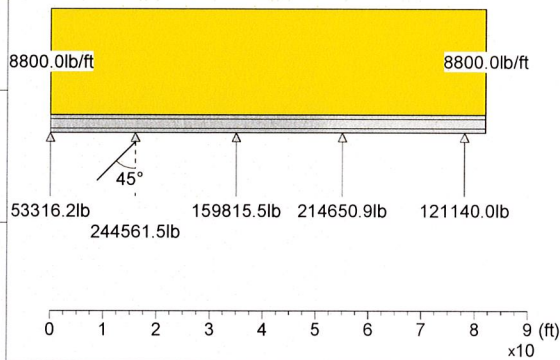
Client: Containment Control, Inc.  
Site: Edgefield, SC

Title: Edgefield Remediation -  
Degreasing Operation Area  
Designer: MBM  
Page: 3  
Date: 4.27.23

Beam: Mega Brace  
L = 82.00 ft  
I = 1372.00 in<sup>4</sup>  
E = 2.9E+07 psi  
EI = 3.98E+10 lb in<sup>2</sup>

| Maximum         | x (ft) |
|-----------------|--------|
| □ 433990.8 ftlb | 55.00  |
| ◇ 116349.9 lb   | 55.00  |
| ● 0.653 in      | 67.57  |
| R 214650.9 lb   | 55.00  |

EGR230680A  
82' Leg - Megabrace Loading



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Site: Edgefield, SC

Title: Edgefield Remediation -  
Degreasing Operation Area  
Designer: MBM  
Page: 4  
Date: 4.27.23

Beam: Mega Brace  
L = 82.00 ft  
I = 1372.00 in<sup>4</sup>  
E = 2.9E+07 psi  
EI = 3.98E+10 lb in<sup>2</sup>

EGR230680A  
82' Leg - Megabrace Loading

JOINT CHECK  
APPLIED MOMENT = 100 K-FT <  
APPLIED MOMENT = 492 K-FT

JOINT CHECK  
APPLIED MOMENT = -- 0 K-FT <  
APPLIED MOMENT = 492 K-FT

JOINT CHECK  
APPLIED MOMENT = 137 K-FT <  
APPLIED MOMENT = 492 K-FT

|               | x (ft) | M (ftlb)  | D (in) | F (lb)   |               | x (ft)    | M (ftlb) | D (in)   | F (lb)   |          | x (ft) | M (ftlb)  | D (in) | F (lb)   |
|---------------|--------|-----------|--------|----------|---------------|-----------|----------|----------|----------|----------|--------|-----------|--------|----------|
| 3M EXTENSION  | 0.00   | 0.0       | 0.000  | 53316.2  | 10M EXTENSION | 27.53     | 123681.9 | -0.132   | -16295.6 | 10M EXT  | 55.06  | -430365.3 | 0.000  | 116349.9 |
|               | 0.59   | 26241.0   | -0.017 | 48263.3  |               | 28.11     | 112876.4 | -0.126   | -21348.6 |          | 55.64  | -358758.1 | -0.028 | 110575.0 |
|               | 1.17   | 52437.6   | -0.035 | 43210.3  |               | 28.70     | 99170.4  | -0.117   | -26401.5 |          | 56.23  | -296721.9 | -0.057 | 105522.1 |
|               | 1.76   | 75733.7   | -0.053 | 38157.3  |               | 29.29     | 82564.0  | -0.107   | -31454.5 |          | 56.81  | -237586.0 | -0.089 | 100469.1 |
|               | 2.34   | 98806.3   | -0.072 | 32382.5  |               | 29.87     | 63057.2  | -0.096   | -36507.5 |          | 57.40  | -181350.7 | -0.125 | 95416.1  |
|               | 2.93   | 115887.2  | -0.086 | 27329.5  |               | 30.46     | 40649.8  | -0.084   | -41560.5 |          | 57.99  | -128015.7 | -0.164 | 90363.1  |
|               | 3.51   | 130067.6  | -0.100 | 22276.5  |               | 31.04     | 11489.9  | -0.069   | -47335.3 |          | 58.57  | -77581.2  | -0.204 | 85310.2  |
|               | 4.10   | 141347.6  | -0.111 | 17223.6  |               | 31.63     | -17132.6 | -0.056   | -52388.3 |          | 59.16  | -30047.2  | -0.246 | 80257.2  |
|               | 4.69   | 149727.2  | -0.121 | 12170.6  |               | 32.21     | -48655.6 | -0.044   | -57441.2 |          | 59.74  | 20725.9   | -0.295 | 74482.3  |
|               | 5.27   | 155206.3  | -0.128 | 7117.6   |               | 32.80     | -83079.0 | -0.032   | -62494.2 |          | 60.33  | 62044.7   | -0.337 | 69429.4  |
| 5M EXTENSION  | 5.86   | 157785.0  | -0.133 | 2064.6   | 33.39         | -120402.9 | -0.020   | -67547.2 | 60.91    | 100463.1 | -0.378 | 64376.4   |        |          |
|               | 6.44   | 157180.5  | -0.136 | -3710.2  | 33.97         | -160627.2 | -0.011   | -72600.2 | 61.50    | 135981.0 | -0.418 | 59323.4   |        |          |
|               | 7.03   | 153544.0  | -0.136 | -8763.2  | 34.56         | -203752.0 | -0.004   | -77652.2 | 62.09    | 168598.5 | -0.457 | 54270.4   |        |          |
|               | 7.61   | 147007.0  | -0.135 | -13816.2 | 35.14         | -224641.8 | 0.000    | 76367.5  | 62.67    | 198315.6 | -0.492 | 49217.5   |        |          |
|               | 8.20   | 137539.9  | -0.131 | -18869.1 | 35.73         | -182242.8 | 0.000    | 71334.6  | 63.26    | 225132.2 | -0.525 | 44164.5   |        |          |
|               | 8.79   | 125202.1  | -0.125 | -23922.1 | 36.31         | -142744.2 | -0.001   | 66281.6  | 63.84    | 252228.1 | -0.559 | 38389.7   |        |          |
|               | 9.37   | 109963.7  | -0.117 | -28975.1 | 36.90         | -106146.0 | -0.005   | 61228.6  | 64.43    | 272829.5 | -0.585 | 33336.7   |        |          |
|               | 9.96   | 91825.0   | -0.107 | -34028.1 | 37.49         | -72448.4  | -0.011   | 56175.6  | 65.01    | 290530.4 | -0.607 | 28283.7   |        |          |
|               | 10.54  | 67543.4   | -0.095 | -39802.9 | 38.07         | -41651.1  | -0.017   | 51122.7  | 65.60    | 305330.9 | -0.625 | 23230.7   |        |          |
|               | 11.13  | 43189.4   | -0.083 | -44855.9 | 38.66         | -13754.3  | -0.025   | 46069.7  | 66.19    | 317230.9 | -0.639 | 18177.8   |        |          |
| 7M EXTENSION  | 11.71  | 15934.9   | -0.070 | -49908.8 | 39.24         | 14576.2   | -0.033   | 40294.9  | 66.77    | 326200.9 | -0.648 | 13124.8   |        |          |
|               | 12.30  | -14219.9  | -0.057 | -54961.8 | 39.83         | 36257.7   | -0.041   | 35241.9  | 67.36    | 332300.1 | -0.652 | 8071.8    |        |          |
|               | 12.89  | -47275.3  | -0.045 | -60014.8 | 40.41         | 55038.9   | -0.048   | 30188.9  | 67.94    | 335719.0 | -0.651 | 2297.0    |        |          |
|               | 13.47  | -83231.0  | -0.032 | -65067.8 | 41.00         | 70919.5   | -0.054   | 25135.9  | 68.53    | 335602.9 | -0.645 | -2756.0   |        |          |
|               | 14.06  | -122087.3 | -0.021 | -70120.7 | 41.59         | 83899.8   | -0.059   | 20083.0  | 69.11    | 332586.4 | -0.635 | -7809.0   |        |          |
|               | 14.64  | -170046.0 | -0.011 | -75895.6 | 42.17         | 93979.6   | -0.063   | 15030.0  | 69.70    | 326669.4 | -0.619 | -12862.0  |        |          |
|               | 15.23  | -215117.4 | -0.004 | -80948.6 | 42.76         | 101158.9  | -0.066   | 9977.0   | 70.29    | 317852.0 | -0.599 | -17914.9  |        |          |
|               | 15.81  | -263089.3 | 0.000  | -86001.5 | 43.34         | 105812.3  | -0.067   | 4202.2   | 70.87    | 306134.1 | -0.575 | -22967.9  |        |          |
|               | 16.40  | -241942.4 | -0.001 | 81876.5  | 43.93         | 106776.5  | -0.067   | -850.8   | 71.46    | 291515.8 | -0.546 | -28020.9  |        |          |
|               | 16.99  | -196396.5 | -0.004 | 76823.5  | 44.51         | 104840.1  | -0.065   | -5903.8  | 72.04    | 271257.7 | -0.507 | -33795.7  |        |          |
| 9M EXTENSION  | 17.57  | -153751.0 | -0.011 | 71770.6  | 45.10         | 99973.8   | -0.061   | -10956.8 | 72.63    | 250424.1 | -0.470 | -38848.7  |        |          |
|               | 18.16  | -114006.0 | -0.020 | 66717.6  | 45.69         | 92236.5   | -0.057   | -16009.7 | 73.21    | 226690.1 | -0.428 | -43901.7  |        |          |
|               | 18.74  | -72134.6  | -0.033 | 60942.8  | 46.27         | 81598.9   | -0.050   | -21062.7 | 73.80    | 200055.7 | -0.384 | -48954.6  |        |          |
|               | 19.33  | -38604.8  | -0.045 | 55889.8  | 46.86         | 68060.8   | -0.043   | -26115.7 | 74.39    | 170520.8 | -0.336 | -54007.6  |        |          |
|               | 19.91  | -7975.4   | -0.058 | 50836.8  | 47.44         | 49037.1   | -0.033   | -31890.5 | 74.97    | 138085.5 | -0.286 | -59060.6  |        |          |
|               | 20.50  | 19753.5   | -0.070 | 45783.8  | 48.03         | 29283.8   | -0.024   | -36943.5 | 75.56    | 102749.8 | -0.234 | -64113.6  |        |          |
|               | 21.09  | 44582.0   | -0.083 | 40730.9  | 48.61         | 6630.0    | -0.014   | -41996.5 | 76.14    | 58814.5  | -0.172 | -69888.4  |        |          |
|               | 21.67  | 66510.0   | -0.095 | 35677.9  | 49.20         | -18924.2  | -0.004   | -47049.4 | 76.73    | 17263.5  | -0.118 | -74941.4  |        |          |
|               | 22.26  | 85537.6   | -0.106 | 30624.9  | 49.79         | -47378.9  | 0.005    | -52102.4 | 77.31    | -27187.9 | -0.063 | -79994.4  |        |          |
|               | 22.84  | 103731.9  | -0.118 | 24850.1  | 50.37         | -78734.0  | 0.014    | -57155.4 | 77.90    | -74539.8 | -0.008 | -85047.3  |        |          |
| 11M EXTENSION | 23.43  | 116544.2  | -0.126 | 19797.1  | 50.96         | -112989.6 | 0.022    | -62208.4 | 78.49    | -57298.6 | 0.046  | 31039.7   |        |          |
|               | 24.01  | 126456.2  | -0.133 | 14744.1  | 51.54         | -155690.3 | 0.030    | -67983.2 | 79.07    | -40517.4 | 0.099  | 25986.7   |        |          |
|               | 24.60  | 133467.6  | -0.138 | 9691.1   | 52.13         | -196161.1 | 0.034    | -73036.2 | 79.66    | -26636.7 | 0.152  | 20933.7   |        |          |
|               | 25.19  | 137578.7  | -0.141 | 4638.2   | 52.71         | -239532.3 | 0.035    | -78089.2 | 80.24    | -14324.6 | 0.211  | 15158.9   |        |          |
|               | 25.77  | 138759.7  | -0.142 | -414.8   | 53.30         | -285804.0 | 0.033    | -83142.1 | 80.83    | -6659.2  | 0.263  | 10105.9   |        |          |
|               | 26.36  | 137069.8  | -0.141 | -5467.8  | 53.89         | -334976.1 | 0.027    | -88195.1 | 81.41    | -1894.2  | 0.314  | 5053.0    |        |          |
|               | 26.94  | 131587.0  | -0.137 | -11242.6 | 54.47         | -387048.7 | 0.016    | -93248.1 | 82.00    | 0.0      | 0.366  | 0.0       |        |          |



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**Attachment F – Project Schedule**





# **ATTACHMENT II**

## **O & M, Inc. Support Activity Operations Plan**

**O&M, Inc. OPERATIONS PLAN  
SOURCE AREA REMEDIATION ACTIVITIES  
FORMER FEDERAL PACIFIC ELECTRIC COMPANY SITE  
EDGEFIELD, SOUTH CAROLINA**

**Prepared for**

de maximis, inc.  
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Prepared by

**O & M, Inc.**  
Knoxville, TN

April 25, 2023



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- Figure 1** Temporary Vault Detail – Top View  
**Figure 2** Temporary Vault Detail – Side View  
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**Figure 5** Tentative Locations for New Monitoring and Chem Ox Wells

**Attachment 1** Drawing C-5, Site Plan D

## **1.0 Introduction**

This is the operations plan for the Source Area Remediation Tasks (SART) being completed by O&M, Inc. (O&M). The tasks to be completed are:

- Temporary Discharge System Piping
- Excavation Soil Pile Sampling
- Chemical Oxidation Addition
- Abandonment, Replacement of On-Site Monitoring Wells, and Installation of Injection Points

## **2.0 Temporary Discharge System Piping**

### **2.1 Scope of Work**

The excavation activities will require the removal of the current discharge lines for the toe drain, off-site wells, and the treatment system line to the sewer. A temporary reconfiguration of the piping system that allows for the continued discharge of the toe drain and off-site wells to the sewer during the excavation activities is planned.

### **2.2 Field Activities**

- All work will be completed per the O&M site-specific health and safety plan. A daily tailgate safety meeting will be conducted each morning that provides the day's activities and the potential hazards with the associated work activities.
- Activities will be documented with pictures during their various stages.
- Per drawing C-5, Site Plan D (Arcadis April 2022) there is a location where the current discharge lines for the toe drain, off-site wells and the treatment system line to the sewer come together. There is an existing clean out vault for the toe drain and off-site well discharge lines at this location. The drawing is presented in Attachment 1.
- The clean out vault location is approximately 240 feet south of Star Road, and 60 feet northwest of the edge of the former manufacturing building.
- Approximately five (5) feet east of the existing clean out vault, complete an excavation down to the location of the three (3) lines. The pipes are estimated to be between three (3) and five (5) feet below ground surface (bgs).
- The excavation will be completed to allow the safe entry of personnel for work activities.
- Cut and plug each line. The toe drain and off-site well discharge lines are double wall HDPE, while the sewer discharge line is single wall HDPE.
- The toe drain discharge line has a 4-inch outside pipe with a 2-inch diameter interior pipe. The off-site wells discharge line has a 4-inch outside pipe with a 1 ½-inch diameter interior pipe. The sewer discharge line is an 8-inch pipe.
- Install a 90° HDPE to Schedule 80 PVC fitting to the discharge side of all three (3) pipes.
- Install a vertical riser section to each line up to approximately two (2) feet bgs using Schedule 80 PVC.

- The toe drain and off-site well discharge lines will be tied together via a common manifold and connected to the discharge line to the sewer. The toe drain and off-site well discharge lines will be outfitted with a sample port, isolation valve and check valve prior to being tied together into a single line. The common line to the sewer discharge will be outfitted with a flow meter/totalizer. Details are presented in Figures 1 and 2.
- A four (4) foot by four (4) foot square well vault with a lift assisted lid will be placed around the lines for protection.
- Excavated soil will be placed around the vault sides.
- A safety barrier will be placed around the vault to prevent vehicles from driving over it.

### 2.3 Implementation Schedule

The temporary discharge piping will be completed prior to the excavation contractor beginning subsurface activities. The activities are anticipated to take two (2) to three (3) days to complete.

### 2.4 Report

A brief report will be completed that summarizes the activities.

## 3.0 Excavation Soil Pile Sampling

### 3.1 Scope of Work

Soil excavation activities will be conducted in three (3) areas at the Site.

- Drum Burial Area (DBA)
- Degreasing Operational Area (DOA)
- Former Paint Bed Drying Area (PBDA)

The volume of soils to be excavated in the PBDA, DBA, and DOA, is approximately 7,000 cubic yards, 3,000 cubic yards, and 4,000 cubic yards respectively. The 14,000 cubic yards includes an estimated 6,000 cubic yards of contaminated soil and 8,000 cubic yards of over-excavated soils (required to reach and remove the contaminated volume).

The excavation contractor (CCI) will transport excavated soil to the manufacturing building slab where it will be placed into daily piles for treatment using physical agitation. Each daily pile will be spread into a thin layer and agitated twice daily by the excavation contractor (CCI). The expected pile size is approximately 300 to 500 cubic yards, potentially organized into windrows. At end of day, each daily pile will be consolidated and covered for protection from the elements and controlled for runoff. Daily PID readings of each daily pile will be recorded by O&M. When PID readings reach ND, sampling will be performed by O&M, the pile will be consolidated and covered awaiting approval for backfill. When treated soils achieve Regional Screening Levels for groundwater protection, or with the concurrence of SCDHEC, Industrial Soil Screening Levels, the excavation contractor (CCI) may consolidate approved piles awaiting backfill.



### 3.2 Field Activities

- All work will be completed per the O&M site-specific health and safety plan. A daily tailgate safety meeting will be conducted each morning that provides the day's activities and the potential hazards with the associated work activities.
- The excavation contractor (CCI) will excavate the soil from a single source location at a time, contingent on soil analytical results turnaround and other site conditions.
- The excavated soil will be placed in discreet piles in the designated area. Each excavation location will generate from 6 to 12 soil piles.
- As a pile is generated during the excavation, O&M will complete a field screening of each soil pile with a PID for the presence of the specified chlorinated hydrocarbon contaminants (CHCs) and recorded in the O&M field logs.
- When the results of the field screening indicate non-detect (ND) for CHCs in the soil pile, confirmatory soil samples will be collected for laboratory analysis.
- Three (3) soil samples from different areas of each pile will be collected using a dedicated sampling instrument and placed into a container. A non-homogenized sample will be collected from this container as a representative sample with a Terra Core sampling kit.
- Soil samples will be sent offsite and delivered to Pace Analytical Laboratories in Columbia, SC. The soil samples will be analyzed via USEPA Method 8260D for the CHCs, 1,2-DCE, PCE, TCE, and VC. Soils will be analyzed at a rapid turnaround time.
- If the soil meets the required cleanup level, they will be placed back into the excavation. If soil samples do not meet the cleanup levels the treatment and monitoring process will be repeated.

### 3.3 Implementation Schedule

There will be three (3) separate excavation events, one for each excavation area. The timing of the soil screening and sampling will be contingent on the excavation progress and will require significant coordination with the excavation contractor (CCI).

### 3.4 Report

A brief report will be completed that summarizes the activities, including an analytical data presentation.

## **4.0 Chemical Oxidation Addition**

### 4.1 Scope of Work

A chemical oxidation addition event will be completed using sodium persulfate, activated by sodium hydroxide, to destroy residual contaminants following the removal of soil from the excavation areas. The chemical oxidant will be applied to the base of the excavations/surface of the partially weathered rock. This will allow for treatment of residual contaminants at the bedrock surface and provide a solution that would migrate into any bedrock fractures and mitigate potential recontamination from water level rise after shutdown of the on-site groundwater extraction system.

The following are the assumptions used in designing the chemical oxidation addition activities:

- There are three (3) areas for excavation:
  - Paint Bed Drying Area (PBDA)
  - Drum Burial Area (DBA)
  - Degreasing Operational Area (DOA)
- The estimated area at the bottom of each excavation is:
  - Paint Bed Drying Area (PBDA) - 4,125 ft<sup>2</sup>.
  - Drum Burial Area (DBA) - 1,650 ft<sup>2</sup>.
  - Degreasing Operational Area (DOA) – 3,200 ft<sup>2</sup>.
- Assume a depth of 0.25 feet of a sodium persulfate solution in each excavation. This will determine the approximate quantity of a 20% solution to be added to each location:
  - Paint Bed Drying Area (PBDA) –10,200 gallons.
  - Drum Burial Area (DBA) – 4,100 gallons.
  - Degreasing Operational Area (DOA) – 8,000 gallons.
- A 20% solution will require the following quantity of sodium persulfate:
  - Paint Bed Drying Area (PBDA) – 19,100 lbs.
  - Drum Burial Area (DBA) – 7,700 lbs.
  - Degreasing Operational Area (DOA) –15,100 lbs.
- The quantity of 30% sodium hydroxide to activate the sodium persulfate solution:
  - Paint Bed Drying Area (PBDA) – 3,000 gallons.
  - Drum Burial Area (DBA) – 1,200 gallons.
  - Degreasing Operational Area (DOA) – 2,100 gallons.

The chemical oxidation addition equipment is a mobile based system that can be configured and moved as required for varying addition requirements.

The equipment consists of the following components:

- 1,500-gallon polyethylene cone bottom sodium persulfate mix tank with stand and a secondary containment.
- An air operated double diaphragm mixing pump.
- Air compressor.
- 263-gallon sodium hydroxide totes (provided by Univar) and a secondary containment.
- Water provided from an on-site fire hydrant.
- The 1,500-gallon polyethylene cone bottom tank and the sodium hydroxide tote are fitted with discharge valves.
- A length of reinforced chemical resistant hosing is attached to the cone bottom tank and tote discharge valve via a cam lock fitting. These two (2) hoses are then tied together

with a T-fitting. The outlet of the T-fitting has an inline static mixer and a length of hose that extends to the bottom of the excavation.

- The sodium persulfate will be delivered in 2,204 lb. super sacks. The sodium hydroxide will be delivered in 263-gallon totes.
- A Process Flow Diagram is presented in Figure 3.

#### 4.2 Field Activities

All work will be completed per the O&M site-specific health and safety plan and the Sodium Persulfate Addition Addendum. A daily tailgate safety meeting will be conducted each morning that provides the day's activities and the potential hazards with the associated work activities.

After the excavation has reached its terminal depth in each area, the sodium persulfate mix tank and sodium hydroxide tote will be placed near the excavation location.

The sodium persulfate solution will be produced on a batch basis. Approximately 1,200 gallons of water will be pumped into the 1,500-gallon sodium persulfate mix tank. A 2,204 lb. super sack of sodium persulfate will be fed into the mix tank and the solution recirculated through the double diaphragm injection pump and static inline mixer until all the sodium persulfate solids are dissolved.

After the sodium persulfate solution has been mixed, the valves at the bottom of sodium persulfate mix tank and tote will be opened. Each solution will drain via gravity flow to be combined for addition into the excavation via a hose. This provides for an optimum activated solution being added into each excavation.

- Paint Bed Drying Area (PBDA) - 10,200 gallons – nine (9) addition batches.
- Drum Burial Area (DBA) - 4,100 gallons – four (4) addition batches.
- Degreasing Operational Area (DOA) - 8,000 gallons – six (6) addition batches.

#### 4.3 Post Addition Monitoring

To evaluate if the sodium persulfate solutions achieved migration into the bedrock fractures, select downgradient monitoring wells will be monitored for ORP and pH. The wells chosen for monitoring are known to have concentrations of CHCs and have indicated a connection to the excavation areas. The monitoring will be completed monthly for approximately three (3) months after completion of the chemical oxidation addition event. See Figure 4 for the preliminary wells selected for the post SART monitoring.

#### 4.4 Implementation Schedule

There will be three (3) separate addition events, one for each excavation area. The timing of each addition event will be contingent on the excavation progress and will require significant coordination with the excavation contractor.

Each addition event will require approximately one (1) week of on-site time, including mobilization/spotting of equipment, set up of equipment and hosing, oxidant addition and cleanup.

#### 4.5 Report

A brief report will be completed that summarizes the activities.

### **5.0 Abandonment, Replacement of On-Site Monitoring Wells, and Installation of Injection Points**

#### 5.1 Scope of Work

Due to the excavation activities most of the on-site wells will be removed. It has been assumed that there will be an additional five (5) wells that may be damaged or rendered unusable that will need to be abandoned per SCDHEC regulations.

There will be three (3) new monitoring wells installed to replace the ones that were removed. The exact locations of these wells have not been determined. The preliminary locations are presented in Figure 5.

There will be five (5) injection points installed for future Chem Ox injections. The preliminary locations are presented in Figure 5.

These activities will be completed after all excavation related field activities have been completed and the excavated areas have settled.

#### 5.2 Field Activities

- All work will be completed per the O&M site-specific health and safety plan. A daily tailgate safety meeting will be conducted each morning that provides the day's activities and the potential hazards with the associated work activities.
- All work will be conducted by a South Carolina licensed driller in accordance with South Carolina regulations.
- An O&M geologist will oversee all abandonment and drilling activities.

#### 5.3 Well Abandonment

Wells that may be damaged or rendered unusable will need to be abandoned per SCDHEC regulations. It has been assumed that there will be five (5) wells that will be required to be abandoned.

- The wells will be abandoned by filling the well casing with grout. The grout will be introduced using a tremie pipe starting at the bottom of the well and moving to the top.
- The South Carolina licensed driller will complete the abandonment paperwork and submit it to the state.

#### 5.4 New Monitoring Well Installation

The new monitoring wells will be completed per SCDHEC regulations. The locations of the new monitoring wells will be determined after completion of the excavation activities. The wells will be installed with a hollow stem auger rig using 4 ¼-inch augers.



- The wells will be 2-inch diameter PVC with a 10-foot screened interval and 0.10-inch slotted screen. They will be completed above grade in a lockable square aluminum well protector.
- As these will be completed in disturbed soils no soil profiling will be completed.
- O&M's geologist will complete well logs describing the completion details.
- The South Carolina licensed driller will complete the installation paperwork and submit it to the state.

#### 5.5 Installation of Chem Ox Injection Points

The locations of the injection points will be determined after completion of the excavation activities. The injection points will be installed with a hollow stem auger rig using 4 1/4-inch augers.

- The wells will be 2-inch diameter PVC with a 5-foot screened interval and 0.20-inch slotted screen. They will be completed above grade in a lockable square aluminum well protector.
- As these will be completed in disturbed soils no soil profiling will be completed.
- O&M's geologist will complete well logs describing the completion details.
- The South Carolina licensed driller will complete the installation paperwork and submit it to the state.

#### 5.6 Implementation Schedule

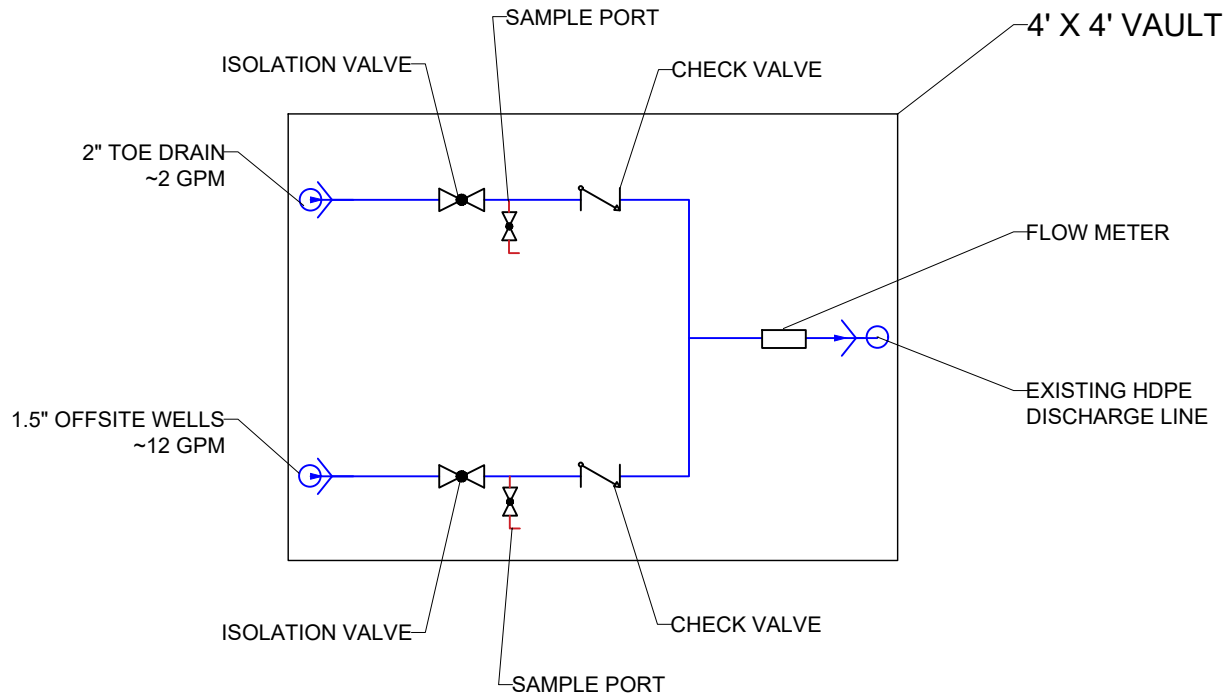
These activities will be completed after all excavation related field activities have been completed and the excavated areas have settled. Well activities will take five (5) days to complete.

#### 5.7 Report

A brief report will be completed that summarizes the activities.

# Figures

# TOP VIEW OF VAULT



**General Notes**



Prepared For

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**O&M, Inc.**  
**Environmental Solutions**  
 450 Montbrook Lane  
 Knoxville, TN 37919

| No. | Revision/Issue | Date |
|-----|----------------|------|
|     |                |      |

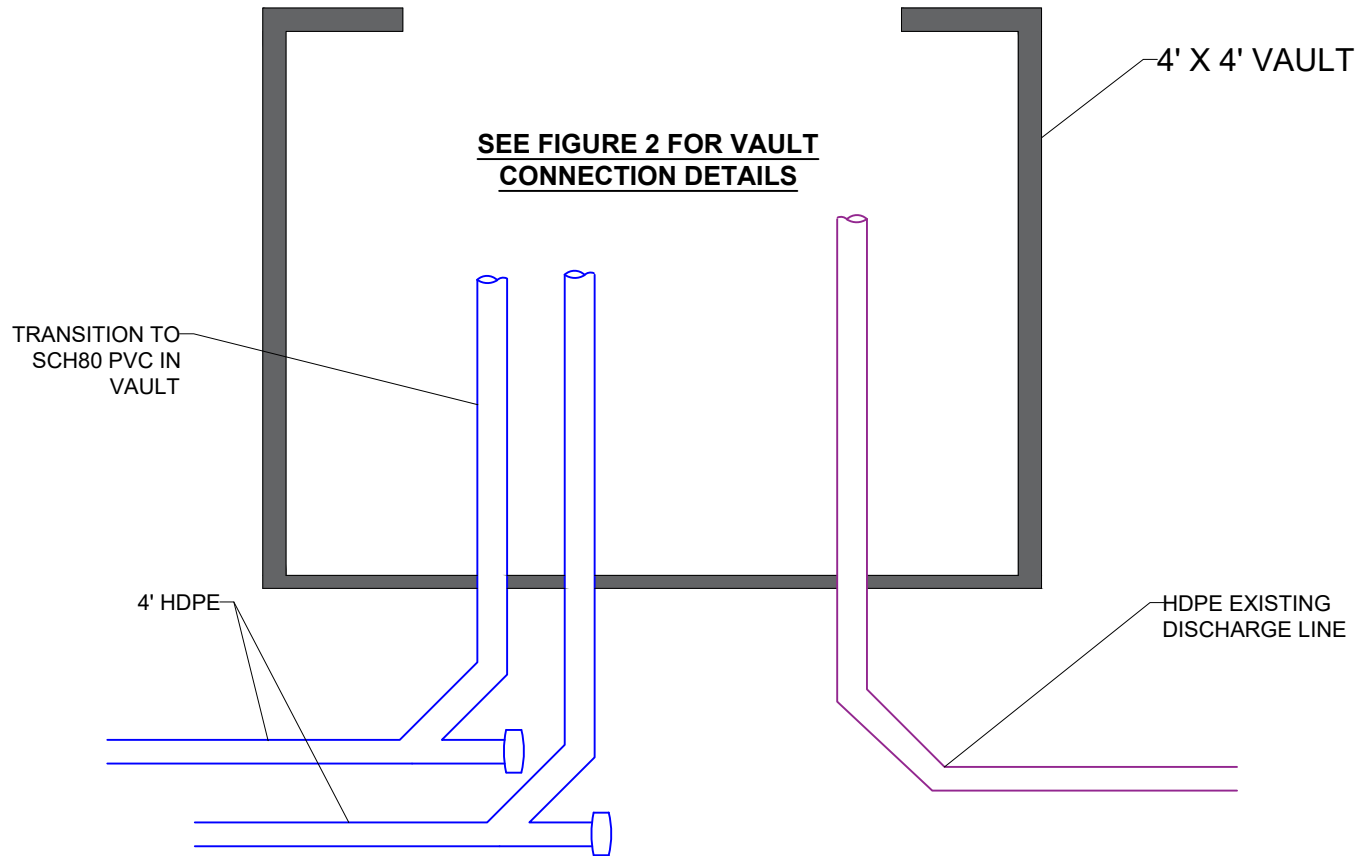
**DRAWING NAME**  
 FIGURE 1  
 TEMPORARY VAULT  
 DETAIL - TOP VIEW

**PROJECT NAME & LOCATION**  
 FPE EDGEFIELD  
 EDGEFIELD, SC

**DRAWING**  
 FIGURE 1  
**DATE**  
 04/11/2023  
**AUTHOR**  
 G. FUERST

**STAMP**

# SIDE VIEW OF VAULT



**General Notes**



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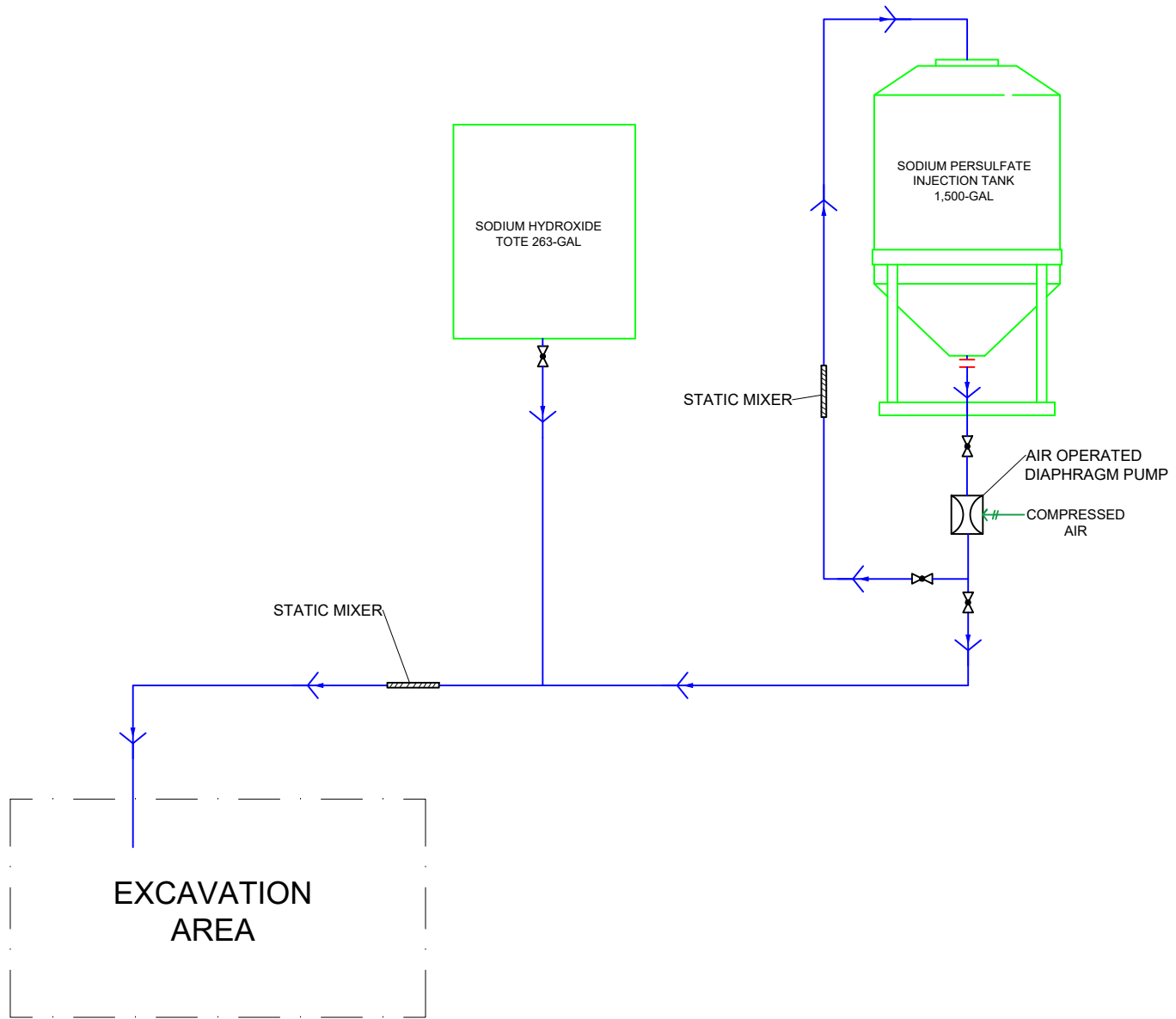
| No. | Revision/Issue | Date |
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|     |                |      |

**DRAWING NAME**  
 FIGURE 2  
 TEMPORARY VAULT  
 DETAIL - SIDE VIEW

**PROJECT NAME & LOCATION**  
 FPE EDGEFIELD  
 EDGEFIELD, SC

|                     |       |
|---------------------|-------|
| DRAWING<br>FIGURE 2 | STAMP |
| DATE<br>04/11/2023  |       |
| AUTHOR<br>G. FUERST |       |





**General Notes**



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| No. | Revision/Issue | Date |
|-----|----------------|------|
|     |                |      |

**DRAWING NAME**

FIGURE 3  
CHEM OX ADDITION PFD

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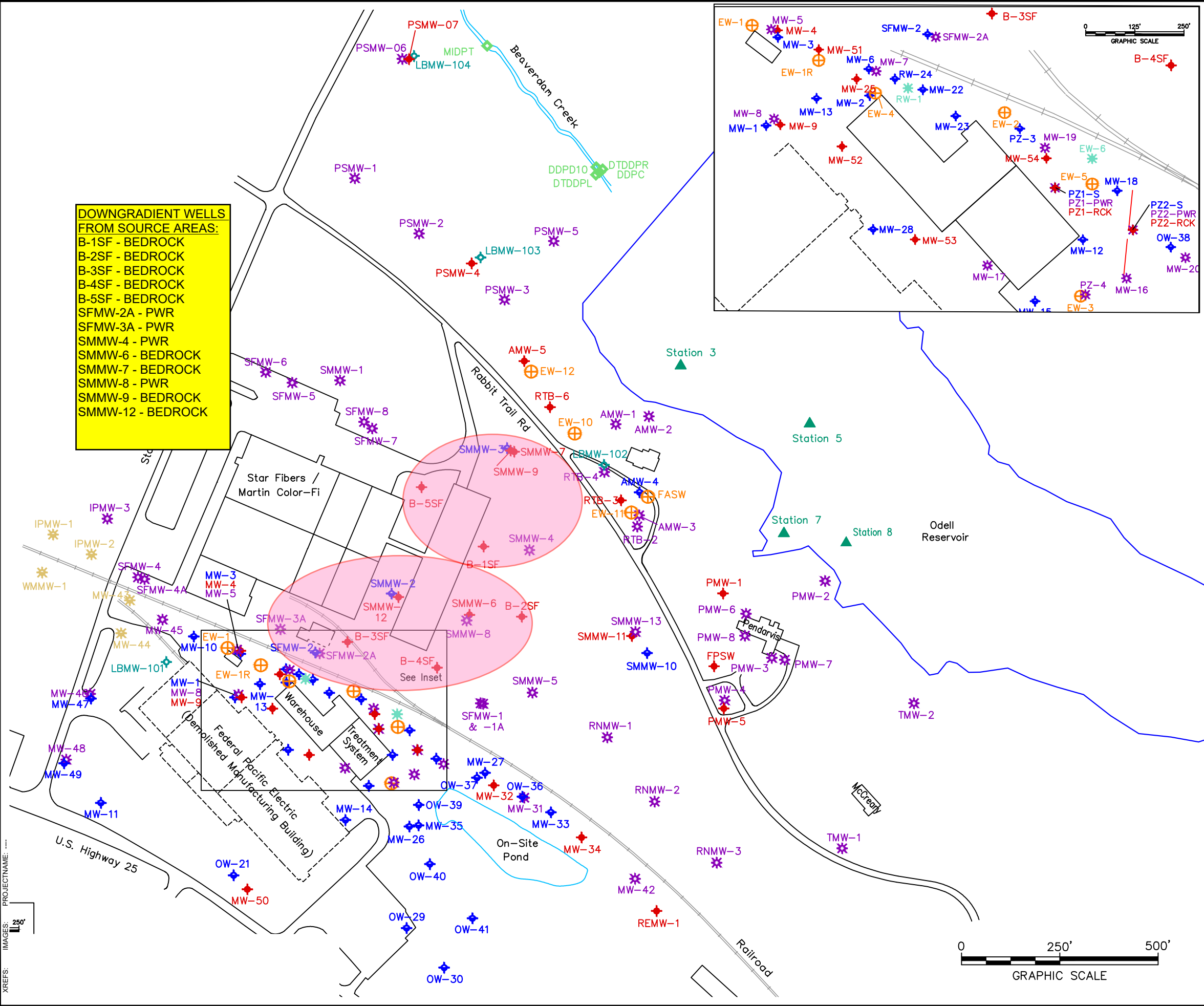
**PROJECT NAME & LOCATION**

FPE EDGEFIELD  
EDGEFIELD, SC

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|                     |       |
|---------------------|-------|
| DRAWING<br>FIGURE 3 | STAMP |
| DATE<br>02/06/2023  |       |
| AUTHOR<br>G. FUERST |       |

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 XREFS: PROJECTNAME: " " IMAGES: 250'



**DOWNGRADIENT WELLS FROM SOURCE AREAS:**  
 B-1SF - BEDROCK  
 B-2SF - BEDROCK  
 B-3SF - BEDROCK  
 B-4SF - BEDROCK  
 B-5SF - BEDROCK  
 SFMW-2A - PWR  
 SFMW-3A - PWR  
 SMMW-4 - PWR  
 SMMW-6 - BEDROCK  
 SMMW-7 - BEDROCK  
 SMMW-8 - PWR  
 SMMW-9 - BEDROCK  
 SMMW-12 - BEDROCK

- LEGEND**
- ◆ SAPROLITE MONITOR WELL
  - ★ PARTIALLY WEATHERED ROCK (PWR) MONITOR WELL
  - ◆ BEDROCK MONITOR WELL
  - ★ SAPROLITE / PWR MONITOR WELL
  - ★ SAPROLITE / PWR / BEDROCK MONITOR WELL
  - ⊕ EXTRACTION WELL
  - ▲ APPROXIMATE REINJECTION TRENCH LOCATION
  - ▲ ODELL RESEVOIR SAPMLING STATION
  - ◆ TOE DRAIN SAMPLING LOCATION (ODELL PROGRAM)
  - ◆ LOWER BEDROCK MONITORING WELLS

- NOTES**
1. SITE MAP BASED ON FILES PROVIDED BY CDM, INC., MAY 2011.
  2. HORIZONTAL DATUM IS SOUTH CAROLINA STATE PLANE, (NAD83, FEET).

UPSTREAM  
 (Approximately 2,700 feet to the southeast)

FORMER FEDERAL PACIFIC ELECTRIC SITE  
 EDGEFIELD, SOUTH CAROLINA  
**SEMIANNUAL REMEDIAL ACTION REPORT**  
 3Q21-4Q21

**Downgradient Wells from Source Area Excavations**

**ARCADIS** Design & Consultancy  
 For cultural and built assets

FIGURE  
**4**





- LEGEND**
- SOURCE AREA
  - 1 DRUM BURIAL AREA
  - 2 DRUM STORAGE AREA #1
  - 3 DRUM STORAGE AREA #2
  - 4 DRUM STORAGE AREA #3
  - 5 DRUM STORAGE AREA #4
  - 6 DRUM STORAGE AREA #5
  - 7 DEGREASING OPERATIONAL AREA
  - 8 PAINT BED DRYING AREA
  - 9 STORM WATER POND
  - ABANDONED RAILROAD GRADE

X - New Monitoring Wells  
 I - Chem Ox Wells

**NOTES**

1. SITE MAP BASED ON FILES PROVIDED BY CDM, INC., MAY 2011.
2. HORIZONTAL DATUM IS SOUTH CAROLINA STATE PLANE, (NAD83, FEET).

0      70'      140'

GRAPHIC SCALE

FORMER FEDERAL PACIFIC ELECTRIC SITE  
 EDGEFIELD, SOUTH CAROLINA

---

**Tentative Locations for New Monitoring  
 and Chem Ox Wells**

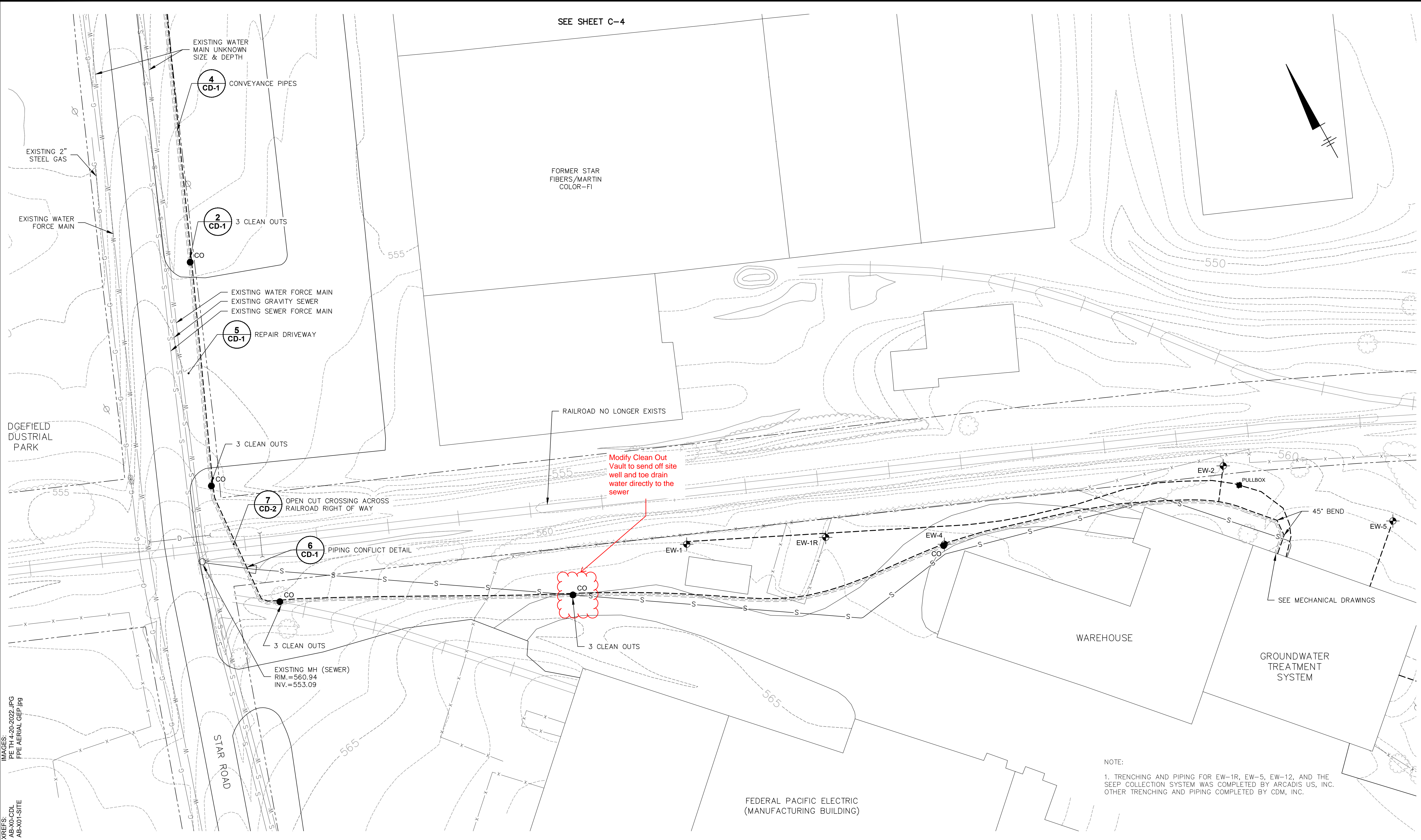
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**O&M, Inc.**      **FIGURE 5**

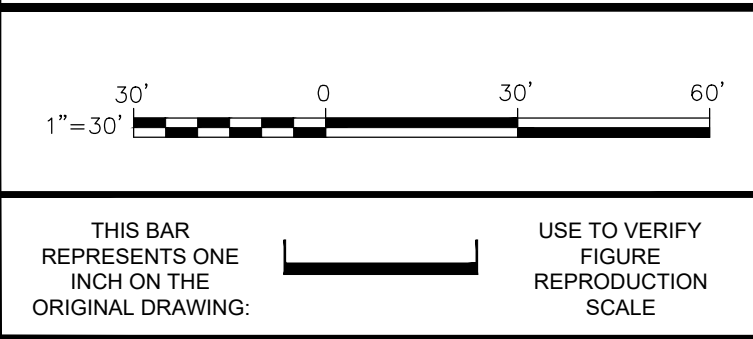
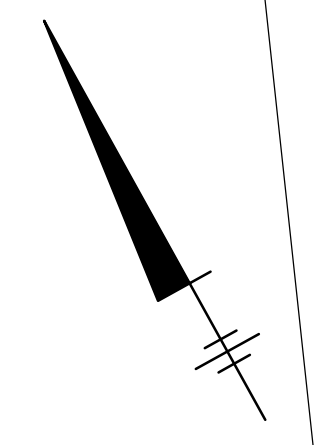
## Attachments



C:\Users\kdavis\ACD\Projects\ARCADIS\EXXON MOBIL FEDERAL PACIFIC ELECTRIC-EDGEFIELD\_South Carolina\Project Files\2022\01-1-in Progress\01-DWG\AB-GWRS-F17-F20-SITE PLAN A-D.dwg LAYOUT: C-5 SAVED: 4/20/2022 4:50 PM ACADVER: 24.1S (LMS TECH) PAGES: 1-4  
 PLOT STYLE TABLE: AUS-NCSMOD FULL MONO.CTB PLOTTED: 4/20/2022 5:07 PM BY: DAVIS, KATHI  
 XREFS: ABXX-CDL ABX01-SITE  
 IMAGES: PETH 4-20-2022.JPG PFE AERIAL GEP.jpg

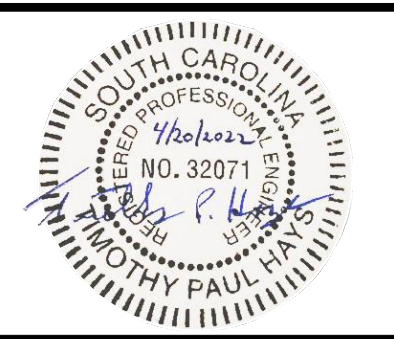


SEE SHEET C-4



| No. | Date | Revisions | By | Ckd |
|-----|------|-----------|----|-----|
|     |      |           |    |     |

Professional Engineer's Name  
**TIMOTHY P. HAYS**  
 Professional Engineer's No.  
 32071  
 State SC Date Signed Project Mgr:  
 JSB  
 Designed by Drawn by Checked by  
 AJE BOWB JSB



FORMER FEDERAL PACIFIC ELECTRIC SITE • EDGEFIELD, SOUTH CAROLINA  
 RECORD DRAWINGS  
**SITE PLAN D**

ARCADIS Project No.  
 30067293  
 Date  
 APRIL 2022  
 ARCADIS  
 1450 GREENE STREET  
 SUITE 220  
 AUGUSTA, GEORGIA  
 TEL. 708.828.4421

**C-5**

NOTE:  
 1. TRENCHING AND PIPING FOR EW-1R, EW-5, EW-12, AND THE SEEP COLLECTION SYSTEM WAS COMPLETED BY ARCADIS US, INC. OTHER TRENCHING AND PIPING COMPLETED BY CDM, INC.

THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REUSED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME.

# **ATTACHMENT III**

## **Arcadis Operations and Decommissioning Operations Plan**

**SUBJECT**  
 Offsite Groundwater Recovery System Discharge  
 Modification and Onsite Recovery/Treatment System  
 Shutdown and Decommission Plan

**TO**  
 Bennie Underwood, de maximis  
 David Fuerst, O&M Inc.

**DATE**  
 May 2, 2023

**OUR REF**  
 Federal Pacific Electric Co, Edgefield, SC

**PROJECT NUMBER**  
 30169548

**COPIES TO**  
 Nicole Barkasi, de maximis, inc.

**NAME**  
 Jeff Beckner, jeff.beckner@arcadis.com  
 Lucas Cullen, lucas.cullen@arcadis.com

The following plan has been developed to support the SCDHEC approved Source Area Removal and Treatment (SART), and outlines the necessary and anticipated tasks for 1) establishing a new discharge point of recovered groundwater from the Toe Drain (TD) and offsite extraction wells EW-10, EW-11, EW-12, and FASW to the Aiken County Public Services Authority (ACPSA) sewer main, 2) decommissioning of on-site extraction wells EW-1/1R, EW-2, EW-4, and EW-5, and 3) temporary shutdown and maintenance of the groundwater treatment system (GWTS). Tasks 1, 2 and 3 (temporary shutdown of GWTS) are anticipated to be conducted 5/1/23 to 5/30/23. Preventative maintenance of the GWTS during the temporary shutdown period is expected to occur during the implementation of the SART and will continue until restart of GWTS operation or permanent decommissioning.

| TASK   | TASK COMPONENT   | ANTICIPATED SCHEDULE |
|--|--|----------------------|
| 1. Decommissioning of on-site extraction wells EW-1/1R, EW-2, EW-3, EW-4, and EW-5 | a. Lockout/tagout of extraction well power in GWTS control room; disconnect conductors in power disconnects; lockout/tagout onsite extraction well influent piping in GWTS   | Week of 5/1/23       |
|  | b. Disconnect and remove all downhole equipment (pump/motor/safety cable, transducer, power/comm wiring, and discharge piping) and above ground equipment (junction boxes, piping) from extraction wells; clean and store salvageable pumps, motors, transducers, and stainless junction boxes | Week of 5/1/23       |
|  | c. Deactivate extraction well PLC inputs (i.e., remove fuses)  | Week of 5/1/23       |
|  | d. Disconnect extraction well power and communication lines at location nearest point of exit from GWTS building   | Week of 5/1/23       |



| TASK  | TASK COMPONENT   | ANTICIPATED SCHEDULE                |
|---|--|-------------------------------------|
| 2. Offsite Recovered Groundwater Discharge Modification | a. Shutdown extraction wells EW-10, EW-11, EW-12, and FASW   | Just prior to task 1.b              |
|   | b. Excavate to and expose the TD influent, extraction well influent, and ACPSA conveyance lines at the location of the new discharge structure location                              | Sometime during 5/15/23-5/30/23     |
|   | c. Provide for temporary (~12 hrs) containment of accumulating groundwater in the TD sump (e.g., vac truck)  | Just prior to task 1.d              |
|   | d. Temporary shutdown of TD sump pumps (during ~12-hr discharge structure install)   | Just prior to task 1.e              |
|   | e. Shutdown of the GWTS (see Task 3) and vent/drain offsite influent and ACPSA conveyance lines  | Just prior to task 1.f              |
|   | f. Installation of new offsite groundwater discharge structure; restart TD sump pumps  | Sometime during 5/15/23-5/30/23     |
|   | g. Discharge contained TD sump water to ACPSA manhole on Starr Rd ROW  | Following re-start of TD sump pumps |
| 3. Temporary shutdown of GWTS                           | a. Lockout/tagout GWTS effluent discharge to sewer and NPDES outfalls and direct effluent from tank T-105 to influent tank T-102   | Following task 2.e.                 |
|   | b. Backwash multimedia (MMF) and granular activated carbon (GAC) media; pump down free liquids in spent backwash tank T-108 to sludge tank T-106A                                    | Following task 3.a.                 |
|   | c. Drain contained liquids in MMF vessels, remove media, and clean vessels; valve off MMF vessels to allow bypass of circulating water to air stripper; profile and dispose of media | Following task 3.b.                 |
|   | d. Valve off GAC vessels; drain contained liquids; refill/saturate media with potable water; vent vessels to atmosphere  | Following task 3.b.                 |
|   | e. After one week settling time following final MMW and GAC backwash, decant free liquids from sludge tank T-106A to filtrate tank T-107, and pump to influent tank T-102            | Following task 3.b.                 |
|   | f. Remove waste from and clean tanks T-108, T-107, and T-106A; profile and dispose of waste  | Following task 3.b.                 |



Mr. Bennie Underwood  
 de maximis, inc.  
 5/2/23

| TASK   | TASK COMPONENT  | ANTICIPATED SCHEDULE   |
|--|---|--|
| 3. Temporary shutdown of GWTS (continued)  | g. Clean air stripper   | Following task 3.a.  |
|  | h. Install small bag filter between influent tank and air stripper  | Following task 3.a.  |
|  | i. Dose all contained water in tanks T-102 and T-105, with chlorine   | Following task 3.e.  |
| 4. Offsite groundwater recovery/discharge system OMM and GWTS preventative maintenance | a. OMM of offsite recovery systems in accordance with SOP   | Once per week and as needed for alarm callouts   |
|  | b. Periodic circulation of contained water through GWTS, excluding MMF and GAC vessels; monitor residual chlorine in contained water and redose as necessary; exercise valves not utilized in maintenance circulation | Every four weeks for duration of SART implementation until GWTS restart or permanent decommissioning; to be conducted during one of the weekly offsite system OMM events |