RESPONSE AND DEVELOPMENT WORK PLAN

AREA A: SUB-PARCEL A4-2 TRADEPOINT ATLANTIC SPARROWS POINT, MARYLAND

Prepared For:



TRADEPOINT ATLANTIC 1600 Sparrows Point Boulevard Sparrows Point, Maryland 21219

Prepared By:



ARM GROUP LLC 9175 Guilford Road Suite 310 Columbia, Maryland 21046

ARM Project No. 21010104

Respectfully Submitted:

Same MW

Joshua M. Barna, G.I.T. Project Geologist

Kay Sull

Kaye Guille, P.E., PMP Senior Engineer

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Soil Data Validation Reports	Electronic Attachment
Groundwater Laboratory Certificates of Analysis	Electronic Attachment
Groundwater Data Validation Reports	Electronic Attachment
ProUCL Input Tables (formatted soil analytical data)	Electronic Attachment
ProUCL Output Tables	Electronic Attachment
Lead Evaluation Spreadsheet	Electronic Attachment
Health and Safety Plan	Electronic Attachment



1.0 INTRODUCTION

ARM Group LLC (ARM), on behalf of Tradepoint Atlantic, has prepared this Response and Development Work Plan (RADWP) for a portion of the Tradepoint Atlantic property that has been designated as Area A: Sub-Parcel A4-2 (the Site). Tradepoint Atlantic submitted a letter (dated March 23, 2022; **Appendix A**) requesting an expedited plan review to achieve construction deadlines for the proposed development on this Site. As shown on **Figure 1**, Sub-Parcel A4-2 consists of approximately 8.05 acres located primarily within Parcel A4, but extending slightly into Parcel A1, Parcel B6, Parcel B8, and Parcel B14 (not within the Humphreys Impoundment), of the approximately 3,100-acre former steel plant property.

As shown on **Figure 2** and **Figure 3**, Sub-Parcel A4-2 is slated for development and occupancy as a vehicle storage and laydown area. Associated water lines, stormwater lines, electric lines, and sanitary sewer lines are also proposed. The planned development activities will generally include paving, installation of utilities, and installation of a guard shack and 5,000 square foot garage. Subsequent site-use will involve truck drivers entering and leaving the Site.

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (MDE), effective September 12, 2014; and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (USEPA), effective November 25, 2014.

An application to enter the full Tradepoint Atlantic property (3,100 acres) into the MDE Voluntary Cleanup Program (MDE-VCP) was submitted to the MDE on June 27, 2014. The property's current and anticipated future use is Tier 3 (Industrial) and plans for the property include demolition and redevelopment over the next several years.

A portion of Sub-Parcel A4-2 is part of the acreage that was removed (Carveout Area) from inclusion in the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from USEPA on September 12, 2014. Based on this agreement, USEPA determined that no further investigation or corrective measures will be required under the terms of the Consent Decree for the Carveout Area. However, the SA reflects that the property within the Carveout Area will remain subject to the USEPA's Resource Conservation and Recovery Act (RCRA) Corrective Action authorities.



The other portion of Sub-Parcel A4-2 is part of the acreage that remains subject to the requirements of the Multimedia Consent Decree between Bethlehem Steel Corporation, the USEPA, and the MDE (effective October 8, 1997) as documented in correspondence received from the USEPA on September 12, 2014.

In consultation with the MDE, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the MDE and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (Code of Maryland Regulations (COMAR) 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Sub-Parcel B21-1 and complement the statutory requirements of the VCP (Section 7-501 of the Environment Article). Upon submission of a RADWP and completion of any remedial activities for the sub-parcel, the MDE shall issue a No Further Action Letter (NFA) upon a recordation of an Environmental Covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the MDE a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic or other entity may elect to submit an application for a specific sub-parcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this RADWP are implemented and a NFA is issued by the MDE pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the RADWP, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this RADWP.

This RADWP provides a Site description and history; summary of environmental conditions identified by the Phase I Environmental Site Assessment (ESA); summary of relevant findings and environmental conditions identified by the relevant Phase II Investigations; a human health Screening Level Risk Assessment (SLRA) conducted for the identified conditions; and any necessary engineering and/or institutional controls to facilitate the planned development and address the impacts and potential human health exposures. These controls include work practices and applicable protocols that are submitted for approval to support the development and use of the Site. Engineering/institutional controls approved and installed for this RADWP shall be described in closure certification documentation submitted to the MDE demonstrating that exposure pathways on the Site are addressed in a manner that protects public health and the environment.



The entirety of Parcel A4 have been previously developed under the Cold Mill Building Redevelopment Work Plan (Revision 0 dated November 23, 2016; as amended by the RADWP Addendum dated November 29, 2016 and two Comment Response Letters dated November 14, 2017 and January 15, 2018). Development of Parcel A4 was completed and a Development Completion Report (Revision 1 dated September 13, 2021) and Intuitional Controls and Operations & Maintenance Plan (Revision 1 dated September 13, 2021) was submitted. Subsequently, the Supplemental Construction Plan Letter (Revision 1 dated September 24, 2021) proposed construction of a drop lot and realignment of Cold Mill Road. This RADWP will supersede the previous Parcel A4 RADWP for the portion of Parcel A4 that is within this proposed Sub-Parcel (A4-2).

The remainder of Parcel A1, Parcel B6, Parcel B8, and Parcel B14 will be addressed in separate development plans in accordance with the requirements of the ACO, which may include RADWPs, if necessary. This work will include assessments of risk and, if necessary, RADWPs to address unacceptable risks associated with future land use. As discussed below, temporary external construction worker areas with a total area of 3.75 acres will be utilized to install subgrade utility connections for the project outside of the sub-parcel. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction is covered by this RADWP.



2.0 SITE DESCRIPTION AND HISTORY

2.1 SITE DESCRIPTION

The Sub-Parcel A4-2 development project consists of approximately 8.05 acres comprising a significant portion of Parcel A4 as well as small portions of Parcel A1, Parcel B6, Parcel B8, and Parcel B14 (**Figure 1**). The development will include completion of an automotive parking lot or laydown area. (**Figure 2** and **Figure 3**). Outside of the main development area designated as Sub-Parcel A4-2, temporary external construction worker areas (not intended for permanent occupancy) with a total area of approximately 3.75 acres within the construction LOD will be utilized to install the facility entrance and subgrade utility connections for the project. The Site is currently zoned Manufacturing Heavy-Industrial Major (MH-IM), and is not occupied. There is no groundwater use on-site or within the surrounding Tradepoint Atlantic property.

Ground surface elevations at the Site range from approximately 0 to 14 feet above mean sea level (amsl), with the majority of the Site being relatively flat, but with southeast corner running along the northside of the Humphrey Impoundment berm. According to Figure B-2 of the property Stormwater Pollution Prevention Plan (SWPPP) Revision 9 dated September 27, 2021, surface water runoff from the Site flows through National Pollutant Discharge Elimination System (NPDES) permitted Outfall 014 beyond the Humphrey Creek Wastewater Treatment Plant (HCWWTP), which discharges to Bear Creek.

2.2 SITE HISTORY

From the late 1800s until 2012, the production and manufacturing of steel was conducted at Sparrows Point. Iron and steel production operations and processes at Sparrows Point included raw material handling, coke production, sinter production, iron production, steel production, and semi-finished and finished product preparation. In 1970, Sparrows Point was the largest steel facility in the United States, producing hot and cold rolled sheets, coated materials, pipes, plates, and rod and wire. The steel making operations at the facility ceased in fall 2012.

Parcel A4 was formerly occupied by the New Cold Mill Complex (NCMC) which contained numerous steel manufacturing processes. The NCMC was constructed in 2000. Former operations at the NCMC delivered cold flat-rolled sheeting for either sale or further coating operations conducted elsewhere on the property. The western portion of Parcel A4 historically operated as a pipe production facility (Pipe Mill) beginning in the 1940s. In May 1984, the Pipe Mill was closed under a Closure Plan approved by the MDE on December 12, 1983. Closure activities occurred on the Site and surrounding area through the 1980s and 1990s. In 1998, the Pipe Mill was demolished. More information regarding previous steel finishing activities can be found in the Phase II Investigation Work Plan – Area A: Parcel A4 (Revision 2 dated October 29, 2015).



3.0 ENVIRONMENTAL SITE ASSESSMENT RESULTS

3.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT RESULTS

A Phase I ESA was completed by Weaver Boos Consultants for the entire Sparrows Point property on May 19, 2014. Weaver Boos completed site visits of Sparrows Point from February 19 through 21, 2014, for the purpose of characterizing current conditions at the former steel plant. The Phase I ESA identified particular features across the Tradepoint Atlantic property which presented potential risks to the environment. These Recognized Environmental Conditions (RECs) included buildings and process areas where releases of hazardous substances and/or petroleum products potentially may have occurred. The Phase I ESA also relied upon findings identified during a previous visual site inspection (VSI) conducted in 1991 as part of the RCRA Facility Assessment (RFA) prepared by A.T. Kearney, Inc. dated August 1993, for the purpose of identifying Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) on the property. This VSI is regularly cited in DCC Report.

Weaver Boos' distinction of a REC or Non-REC was based upon the findings of the DCC Report (which was prepared when the features remained on-site in 1998) or on observations of the general area during their site visit. Weaver Boos made the determination to identify a feature as a REC based on historical information, observations during the site visit, and prior knowledge and experience with similar facilities. There were no RECs identified within the Parcel A4 development boundaries. The following SWMUs/AOCs were identified within the Development Area:

- Pipe Mill Trenches/Sumps (SWMU 49)
- Hydraulic Oil Storage Area (AOC O)

3.2 PHASE II INVESTIGATION RESULTS – SUB-PARCEL A4-2

Phase II Investigations specific to soil and groundwater conditions were performed for the property area including Sub-Parcel A4-2 in accordance with the requirements outlined in the ACO as further described in the following agency-approved Phase II Investigation Work Plans:

- Area A: Parcel A4 (Revision 2) dated October 29, 2015
- Area B: Parcel B14 (Revision 0) dated August 3, 2017

All soil samples and groundwater samples were collected and analyzed in accordance with agencyapproved protocols during the Phase II Investigations, the specific details of which can be reviewed in each agency-approved Work Plan. Each Phase II Investigation was developed to target specific features which represented a potential release of hazardous substances and/or petroleum products to the environment, including RECs, SWMUs, and AOCs, as applicable, as well as numerous other targets identified from former operations that would have the potential for environmental



contamination. Samples were also collected at site-wide locations to ensure full coverage of each investigation area. The full analytical results and conclusions of each investigation have been presented to the agencies in the following Phase II Investigation Reports:

- Area A: Parcel A4 (Revision 3) dated December 20, 2019
- Area B: Parcel B14 (Revision 0) dated March 27, 2018

This RADWP summarizes the relevant soil and groundwater findings from these Phase II Investigations with respect to the proposed development of Sub-Parcel B21-1.

3.2.1 **Phase II Soil Investigation Findings**

Based on the scope of development for Sub-Parcel B4-2, 15 soil samples collected from seven soil borings (including three soil borings from the Parcel A4 Phase II Investigation and four soil borings from the Parcel B14 Phase II Investigation) were included in this evaluation of Sub-Parcel A4-2. The seven boring locations are shown on **Figure 4**, and the samples obtained from these borings provided relevant analytical data for discussion of on-site conditions.

Soil samples collected during the Phase II Investigation were analyzed for the Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-volatile organic compounds (SVOCs) and polynuclear aromatic hydrocarbons (PAHs), Oil & Grease, Target Analyte List (TAL) metals, hexavalent chromium, and cyanide. Shallow soil samples (0 to 1 foot below ground surface (bgs)) were analyzed for polychlorinated biphenyls (PCBs). Soil sampling targets with potential petroleum contamination were also analyzed for total petroleum hydrocarbon (TPH) diesel range organics (DRO) and gasoline range organics (GRO). The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

Soil sample results were screened against the Project Action Limits (PALs) established in the property-wide Quality Assurance Project Plan (QAPP) dated April 5, 2016, or based on other direct agency guidance. Several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 1** and **Table 2** provide summaries of the detected organic compounds and inorganics in the soil samples collected from the soil borings relevant for this Site evaluation. **Figure S1** and **Figure S2** present the soil sample results that exceeded the PALs among these soil borings. PAL exceedances consisted of two SVOCs (benzo[a]pyrene, dibenz[a,h]anthracene) and five inorganics (arsenic, cadmium, hexavalent chromium, lead, and manganese).

Non-aqueous phase liquid (NAPL) was not observed in any of the Phase II soil boring location.



3.2.2 Phase II Groundwater Investigation Findings

Groundwater conditions were investigated as reported in the A4 Phase II Investigation Report (Revision 3 dated December 20, 2019) and the B14 Phase II Investigation Report (Revision 0 dated March 27, 2018). These reports included aqueous sample data from two wells sampled during A4 Phase II Investigation (A4-012-PZ and A4-013-PZ) and one well sampled during the B14 Phase II Investigation (HI04-PZM006) and one well sampled as part of the Humphrey Impoundment Corrective Measure Study Investigation (HI19-MWS). The four monitoring points provide relevant analytical data for the proposed Sub-Parcel A4-2 development project and are shown on **Figure 5**. There is no direct exposure risk for future Composite Workers at the Site because there is no use of groundwater on the Tradepoint Atlantic property; however, groundwater may be encountered in the sub-parcel during some construction tasks. If groundwater is encountered, it will be managed to prevent exposures in accordance with the dewatering requirements outlined in Section 5.2. Additionally, vapor intrusion (VI) risks are evaluated in Section 3.2.3.

Each groundwater monitoring point was inspected for evidence of NAPL using an oil-water interface probe prior to sampling. None of the monitoring points relevant for the proposed development project showed evidence of NAPL during these checks. The groundwater samples were analyzed for TCL-VOCs, TCL-SVOCs and PAHs. Parcel A4 piezometers were also sampled for Oil & Grease, TAL-dissolved metals, and total cyanide. Parcel B14 wells were also sampled for TPH-DRO/GRO, Oil & Grease, TAL-dissolved/total metals, hexavalent chromium, and total/available cyanide. The laboratory Certificates of Analysis (including Chains of Custody) and Data Validation Reports are included as electronic attachments. The Data Validation Reports contain qualifier keys for the flags assigned to individual results in the attached summary tables.

The Phase II Investigation groundwater results were screened against the PALs established in the property-wide QAPP dated April 5, 2016, or based on other direct agency guidance. Similar to the evaluation of soil data, several PALs have been adjusted based on revised toxicity data published by the USEPA (May 2021). **Table 3** and **Table 4** provide summaries of the detected organic compounds and inorganics in the groundwater samples submitted for laboratory analysis, and **Figure GW1** presents the groundwater results that exceeded the PALs. PAL exceedances in the Phase II Investigation groundwater samples collected in the vicinity of the proposed development project consisted of one VOC (benzene), three SVOCs (benz[a]anthracene, naphthalene, and pentachlorophenol), and two total and/or dissolved metals (manganese and vanadium). For simplicity, the inorganic PAL exceedances shown on **Figure GW1** do not include duplicate exceedances of total/dissolved metals. If both total and dissolved concentrations exceeded the PAL, the value for total metals is displayed.

3.2.3 Locations of Potential Concern

The Parcel A4 Phase II investigation identified an elevated concentration of cadmium (33,600 mg/kg) within the subsurface soil sample collected from the 3 to 4 feet bgs interval from A4-013-



SB, located within the Sub-Parcel A4-2. Excavation of the soil containing elevated concentrations of cadmium was selected as the preferred remedial response action to address the impacts in the vicinity of A4-013-SB. To delineate the elevated cadmium impacts at location A4-013-SB, a total of 67 supplemental borings (including resampling at the original location) were completed between December 8, 2016 and December 20, 2016. **Figure K1** shows these delineation boring locations, as well as the locations that yielded soil concentrations above the delineation criterion. Delineation boring data are included in **Table 2B**. Following delineation, remedial excavation was implemented on October 3, 2019 in accordance with the approved Work Plan entitled Delineation Activities and Proposed Excavation of Cadmium Impacted Soil for Parcel A4 (dated April 21, 2017).

The completed excavation activities were documented in the Response Action Completion Report: A4-013 Cadmium Response Area (dated July 14, 2020 and approved on September 14, 2020). As shown on Figure K2, a total of approximately 26 cubic yards (bank) of soil was removed from two locations designated as "northern" and "southern" during excavation. Waste characterization sample results indicated that approximately 11 cubic yards (bank) of the excavated material, all of which originated from the southern excavation, was hazardous (with a reported cadmium Toxicity Characteristic Leaching Procedure concentration of 10 milligrams per liter [mg/L]) and was hauled offsite on for disposal at Envirite of Pennsylvania, Inc. in York, PA. The non-hazardous excavated material was disposed of onsite at Greys Landfill. Additional details, including the disposal manifest and Land Disposal Restriction and Certification forms are provided in the Response Action Completion Report. As shown on Figure K3, post-excavation sidewall and bottom samples were collected to confirm removal above the excavation criterion (determined through preliminary risk screening) of 550 mg/kg. Confirmation sample data are included in Table 2B. Both the northern and southern excavations were backfilled to the existing grade with clean fill. Backfilling was conducted on February 21, 2020 by ECLS. Figure K4 shows that no utilities are proposed near the cadmium excavation areas.

Groundwater data were screened to determine whether any sample results exceeded the USEPA Vapor Intrusion TCR (Target Cancer Risk; carcinogen) or THQ (Target Hazard Quotient; non-carcinogen) Screening Levels. The VI risk evaluation is summarized in **Table 5**. When the aqueous results were summed by sample location, none of the cumulative VI cancer risks exceeded 1E-5. However, one cumulative VI non-cancer Hazard Index (HI) value (A4-012-PZ) exceeded 1. This exceedance was driven by total cyanide. Elevated total cyanide concentrations have previously been identified at the Site, and sampling for available cyanide was previously completed at various locations, including at HI04-PZM006, to show that a significant portion of the observed total cyanide is not bioavailable. Additionally, the location of the exceedance at A4-012-PZ is within the external construction area, significantly south of the Sub-Parcel boundary. Furthermore, no permanent structures are proposed as part of the development of the Site.



Other locations of potential concern which are subject to special requirements could include elevated lead, PCBs, or TPH/Oil & Grease in soil. The soil data for Sub-Parcel A4-2 were evaluated to determine the presence of any such locations of potential concern including: lead concentrations above 10,000 mg/kg, PCB concentrations above 50 mg/kg, or TPH/Oil & Grease concentrations above 6,200 mg/kg. There were no soil concentrations of lead, PCBs, or TPH/Oil & Grease concentrations of lead, PCBs, or TPH/Oil & Grease concentrations above 6,200 mg/kg.

Locations with physical evidence of NAPL are also considered to be locations of potential concern with respect to proposed development. NAPL was not detected in any soil borings or on the water table in any piezometers or monitoring wells within the proposed development area.

3.3 HUMAN HEALTH SCREENING LEVEL RISK ASSESSMENT

3.3.1 Analysis Process

A human health Screening Level Risk Assessment (SLRA) has been completed based on the analytical data obtained from the characterization of surface and subsurface soils. The SLRA was conducted to evaluate the existing soil conditions to determine if any response measures are necessary. It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline SLRA, Sub-Parcel A4-2 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials.

The SLRA included the following evaluation process:

Identification of Exposure Units (EUs): The SLRA was evaluated using a single sitewide Exposure Unit (EU1) with an area of 8.05 acres. The Construction Worker SLRA was evaluated using a slightly expanded EU (EU1-EXP), covering 11.8 acres in total which includes the 3.75 acres of additional construction worker areas incorporated within the LOD to include the facility entrance and utility connections outside of the sub-parcel. Note that the SLRA does not include soil data from boring locations A4-013-SB or A4-013Q-SB because these areas were excavated as part of the cadmium excavation as described in Section 3.2.3.

Identification of Constituents of Potential Concern (COPCs): For the project-specific SLRA, COPC screening was completed assuming a Target Risk (TR) of 1E-6 and Target Hazard Quotient (THQ) of 0.1. The initial screening also identified parameters detected at a frequency greater than 5%. Based on that data set, parameters were identified as COPCs if:

• The compound was detected in soil at a frequency of greater than 5%;



• The maximum detection exceeded the USEPA's Composite Worker Soil Regional Screening Levels (RSLs).

A COPC screening analysis is provided in **Table 6** to identify all compounds above the relevant screening levels.

All aroclor mixtures (e.g., Aroclor 1248, Aroclor 1260) are taken into account for the reported concentrations of total PCBs. The total PCBs concentrations are used to evaluate the carcinogenic risk associated with PCBs.

Exposure Point Concentrations (EPCs): The COPC soil datasets for the site-wide EU were divided into surface (0 to 2 feet bgs), subsurface (>2 feet bgs), and pooled depths for estimation of potential EPCs. Thus, there are three soil datasets associated with both site-wide EUs. A statistical analysis was performed for each COPC dataset using the ProUCL software (version 5.0) developed by the USEPA to determine representative reasonable maximum exposure (RME) values for the EPC for each constituent. The RME value is typically the 95% Upper Confidence Limit (UCL) of the mean. For lead, the arithmetic mean for each depth was calculated for comparison to the Adult Lead Model (ALM)-based values (presented in Table 7).

Risk Ratios: The surface soil EPCs, subsurface soil EPCs, and pooled soil EPCs were compared to the USEPA RSLs for the Composite Worker and to site-specific Soil Screening Levels (SSLs) for the Construction Worker based on equations derived in the USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (OSWER 9355.4-24, December 2002). Risk ratios were calculated with a cancer risk of 1E-6 and a non-cancer HQ of 1. The risk ratios for the carcinogens were summed to develop a screening level estimate of the baseline cumulative cancer risk. The risk ratios for the non-carcinogens were segregated and summed by target organ to develop a screening level estimate of the baseline cumulative non-cancer Hazard Index (HI).

For the Construction Worker, site-specific risk-based evaluations were completed for a range of potential exposure frequencies to determine the maximum allowable exposure frequency for the site-wide EU that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for the individual target organs. This analysis indicated that the allowable exposure frequency before additional worker protections or more detailed job safety evaluations might be needed is 40 days.

There is no potential for direct human exposure to groundwater for a Composite Worker since groundwater is not used on the Tradepoint Atlantic property (and is not proposed to be utilized). In the event that construction/excavation leads to a potential Construction Worker exposure to groundwater during development, health and safety plans and management procedures shall be followed to limit exposure risk.



Assessment of Lead: For lead, the arithmetic mean concentrations for surface soils, subsurface soils, and pooled soils for the site-wide EU were compared to the applicable RSL (800 mg/kg) as an initial screening. If the mean concentrations for the EU were below the applicable RSL, the EU was identified as requiring no further action for lead. If a mean concentration exceeded the RSL, the mean values were compared to calculated ALM values (ALM Version dated 6/21/2009 updated with the 5/17/2017 OLEM Directive) with inputs of 1.8 for the geometric standard deviation and a blood baseline lead level of 0.6 ug/dL. The ALM calculation generates a soil lead concentration of 1,050 mg/kg, which is the most conservative (i.e., lowest) concentration which would yield a probability of 5% of a blood lead concentration of 5 ug/dL. If the arithmetic mean concentrations for the EU were below 1,050 mg/kg, the EU was identified as requiring no further action for lead. The lead averages are presented for surface, subsurface, and pooled soils in **Table 7**. Neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Assessment of TPH/Oil & Grease: EPCs were not calculated for TPH/Oil & Grease. Instead, the individual results were compared to the PAL set to a HQ of 1 (6,200 mg/kg). There were no soil sampling results with concentrations above the PAL.

Risk Characterization Approach: Generally, if the baseline risk ratio for each noncarcinogenic COPC or cumulative target organ does not exceed 1, and the sum of the risk ratios for the carcinogenic COPCs does not exceed a cumulative cancer risk of 1E-5, then a no further action determination will be recommended. If the baseline estimate of cumulative cancer risk exceeds 1E-5 but is less than or equal to 1E-4, then capping of the EU will be considered to be an acceptable remedy for the Composite Worker. The efficacy of capping for elevated non-cancer hazard will be evaluated in terms of the magnitude of exceedance and other factors such as bioavailability. For the Construction Worker, cumulative cancer risks exceeding 1E-5 (but less than or equal to 1E-4) or HI values exceeding 1 will be mitigated via site-specific health and safety requirements.

It should be noted that industrial fill including processed slag aggregate sourced from the Tradepoint Atlantic property will be used at the Site; therefore, regardless of the findings of the Composite Worker baseline assessment, Sub-Parcel A4-2 will be subject to surface engineering controls (i.e., capping) unless separate approvals are received from the MDE following appropriate laboratory testing of the industrial fill materials. The goal of the SLRA is therefore to determine whether additional response actions beyond capping may be needed due to current conditions at the Site.

The USEPA's acceptable risk range is between 1E-6 and 1E-4. If the sum of the risk ratios for carcinogens exceeds a cumulative cancer risk of 1E-4, further analysis of site conditions will be required including the consideration of toxicity reduction in any proposal for a remedy. The magnitude of any non-carcinogen HI exceedances and bioavailability of the



COPC will also dictate further analysis of site conditions including consideration of toxicity reduction in any proposal for a remedy.

3.3.2 SLRA Results and Risk Characterization

Soil data were divided into three datasets (surface, subsurface, and pooled) for Sub-Parcel A4-2 to evaluate potential exposure scenarios. Due to the grading activities including cut and fill which will be implemented during development at the Site, each of these potential exposure scenarios is relevant for the SLRA.

EPCs were calculated for each soil dataset (i.e., surface, subsurface, and pooled soils) in the sitewide EU. ProUCL output tables (with computed UCLs) derived from the data for each COPC in soils are provided as electronic attachments, with computations presented and EPCs calculated for COPCs within each of the datasets. The ProUCL input tables are also included as electronic attachments. The results were evaluated to identify any samples that may require additional assessment or special management based on the risk characterization approach. The calculated EPCs for the surface, subsurface, and pooled exposure scenarios are provided in **Table 8**.

As indicated above, the EPCs for lead are the average (i.e., arithmetic mean) values for each dataset. A lead evaluation spreadsheet, providing the computations to determine lead averages for each dataset, is also included as an electronic attachment. The average and maximum lead concentrations are presented for each dataset in **Table 7**, which indicates that neither surface, subsurface, nor pooled soils exceeded an average lead concentration of 800 mg/kg.

Composite Worker Assessment:

Risk ratios for the estimates of potential EPCs for the Composite Worker baseline scenario prior to the placement of industrial fill at the Site are shown in **Table 9** (surface), **Table 10** (subsurface), and **Table 11** (pooled). The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
		Surface Soil	none	4E-6
Composite Worker	EU1 (8.05 acres)	Subsurface Soil	none	3E-6
WOIKCI	(0.05 deres)	Pooled Soil	none	5E-6

Based on the risk ratios for Sub-Parcel A4-2, capping is not necessary to be protective of future Composite Workers for the surface, subsurface, and pooled exposure scenarios. None of the cancer risk values exceeded 1E-5 and none of the non-carcinogenic HI values exceeded 1. However, slag aggregate will be used as the primary fill material and pavement subbase at the Site. Therefore, environmental capping will be required to be protective of future Composite Workers.



Construction Worker Assessment:

Ground intrusive activities which could result in potential Construction Worker exposures are expected to be limited primarily to utility installation tasks performed by specific work crews. Construction Worker risks were evaluated for several different exposure scenarios to determine the maximum exposure frequency for the site-wide EU1-EXP that would result in risk ratios equivalent to a cumulative cancer risk of 1E-5 or HI of 1 for any individual target organ. Risk ratios for the Construction Worker scenario using the selected duration (40 days) are shown in **Table 12** (surface), **Table 13** (subsurface), and **Table 14** (pooled). The variables entered for calculation of the site-specific Construction Worker SSLs (EU area, input assumptions, and exposure frequency) are indicated as notes on the tables. The spreadsheet used for computation of the site-specific Construction Worker SSLs is included as **Appendix B**. The results are summarized as follows:

Worker Scenario	Exposure Unit	Medium	Hazard Index (>1)	Total Cancer Risk
Construction Worker	EU1-EXP (11.8 acres) (40 exposure days)	Surface Soil	none	2E-7
		Subsurface Soil	none	2E-7
		Pooled Soil	none	2E-7

Using the selected exposure duration for the site-wide EU1-EXP (40 days), the carcinogenic risks were all less than 1E-5, and none of the non-carcinogens caused a cumulative HI to exceed 1 for any target organ system. These findings are below the acceptable limits for no further action established by the agencies. This evaluation indicates that additional site-specific health and safety requirements (beyond standard Level D protection) would be required only if the allowable exposure duration of 40 days were to be exceeded for an individual worker.

No activities at the Site are expected to exceed the allowable duration; however, upgraded Personal Protective Equipment (PPE) beyond standard Level D protection will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied immediately and throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE Standard Operational Procedure (SOP) provided as **Appendix C**.

Institutional controls will be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities. The anticipated institutional controls, including notification requirements, health and safety requirements, and materials management requirements, are specified in Section 5.4.



3.3.3 Evaluation of RCRA Criteria

Tradepoint Atlantic will be using industrial fill (including processed slag aggregate) throughout the Site. Therefore, environmental capping is required within the development area to mitigate potential Composite Worker risks. The entirety of the Site (8.05 acres) will therefore require a remedy of capping with institutional controls to mitigate potential Composite Worker risks.

Site-specific health and safety controls will be implemented to mitigate Construction Worker risks within the sub-parcel. This includes using modified Level D PPE. The modified Level D PPE requirements will be implemented throughout the project duration in accordance with the PPE SOP provided as **Appendix C**. Institutional controls will also be required to be established for the protection of future Construction Workers in the event of any future long-term construction projects which could include intrusive activities.

The proposed VCP capping remedy with institutional controls was evaluated for consistency with the RCRA Threshold Criteria and Balancing Criteria. The Threshold Criteria assess the overall protection of human health and the environment, as well as achievement of media cleanup objectives and control of sources of releases at the Site. The Balancing Criteria assess long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost effectiveness; and community and State acceptance.

Threshold Criteria:

Protect Human Health and the Environment: The assessment against this criterion evaluates how the remedy, as a whole, protects and maintains protection of human health and the environment. This criterion is satisfied when response actions are complete. The purpose of this remedy is to provide a protective barrier between human site users and impacted materials, and to protect the environment by preventing surface water from contacting potentially impacted materials in place. The capping and institutional control remedy would eliminate risk to current and future industrial workers by preventing exposure to areas of the Site where processed slag aggregate has been placed or where soil concentrations exceed a cancer risk of 1E-5 or a HI of 1. Groundwater does not present a direct human health hazard since there is no groundwater use on the property. Implementation of the proposed use restrictions will address the residual risk and will also protect future workers by eliminating or controlling potential exposure pathways, thus, reducing potential intake and contact of soil/groundwater COPCs by human receptors.

Achieve Media Cleanup Objective: The assessment against this criterion describes how the remedy meets the cleanup objective, which is risk reduction, appropriate for the expected current and reasonably anticipated future land use. The objective is to protect current/future Composite Workers and Construction Workers from potential exposures to COPCs present in soil or groundwater at levels that may result in risks of adverse health



effects. Given the controlled access and use restrictions, the proposed remedy will attain soil and groundwater objectives. The activity use restrictions will eliminate current and future unacceptable exposures to both soil and groundwater.

Control the Source of Releases: In its RCRA Corrective Action proposed remedies, USEPA seeks to eliminate or reduce further releases of hazardous wastes or hazardous constituents that may pose a threat to human health and the environment. Controlling the sources of contamination relates to the ability of the proposed remedy to reduce or eliminate, to the maximum extent practicable, further releases. Sampling results did not indicate localized, discernible source areas associated with the soil conditions observed at the Site. The control measures included in the proposed remedy, such as Materials Management Plan requirements and groundwater use restrictions, provide a mechanism to control and reduce potential further releases of COPCs. This is achieved by eliminating the potential for groundwater use and requiring proper planning for intrusive activities.

Balancing Criteria:

Long-Term Reliability and Effectiveness: The assessment against this criterion evaluates the long-term effectiveness of the remedy in maintaining protection of human health and the environment after the response objectives have been met. The primary focus of this criterion is the extent and effectiveness of the controls that may be required to manage the risk posed by slag aggregate, treatment residuals, and/or untreated wastes. The proposed capping remedies have been proven to be effective in the long-term at similar sites with similar conditions. The capping remedy will permanently contain the slag aggregate and other potentially contaminated media in place. In order for the cap to effectively act as a barrier, regular inspections will be performed pursuant to the Institutional Control Operations and Maintenance Plan (O&M Plan).

Institutional controls will be implemented to protect future Composite and Construction Workers against inadvertent contact with potentially impacted media. The anticipated institutional controls are specified in Section 5.4. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. The proposed remedy will maintain protection of human health and the environment over time by controlling exposures to the hazardous constituents potentially remaining in slag aggregate or existing on-site media. The long-term effectiveness is high, as use restrictions are readily implementable and easily maintained. Given the historical, heavily industrial uses of the Site and the surrounding area, including the presence of landfills, land and groundwater use restrictions are expected to continue in the long term.

Reduction of Toxicity, Mobility, or Volume of Waste: The assessment against this criterion evaluates the anticipated performance of specific technologies that a remedial action alternative may employ. The capping remedy will prevent the spread of contaminants in wind-blown dust or stormwater and will prevent infiltration through the



unsaturated zone from carrying contaminants to the groundwater. Thus, the mobility of contaminants will be reduced by the capping remedy.

Short-term Effectiveness: The assessment against this criterion examines how well the proposed remedy protects human health and the environment during the construction and implementation until response objectives have been met. This criterion also includes an estimate of the time required to achieve protection for either the entire site or individual elements associated with specific site areas or threats. The risks to the Construction Worker during remedy implementation are mitigated by executing the modified Level D PPE requirements outlined in **Appendix C**. The short-term risk to site workers following these upgraded health and safety measures during implementation of the remedy will be low, leading to a high level of short-term effectiveness for protection of future site users and the environment. Short-term effectiveness in protecting on-site workers and the environment will be achieved through establishing appropriate management, construction, health and safety, and security procedures. Proper water management protocols will be implemented to prevent discharges offsite. Security and fences will be used to maintain controlled access during construction.

Implementability: The assessment against this criterion evaluates the technical and administrative feasibility, including the availability of trained and experienced personnel, materials, and equipment. Technical feasibility includes the ability to construct and operate the technology, the reliability of the technology, and the ability to effectively monitor the technology. Administrative feasibility includes the capability of obtaining permits, meeting permit requirements, and coordinating activities of governmental agencies. The proposed capping remedy for the Composite Worker area will use readily available, typically acceptable, and proven technologies.

Cost Effectiveness: The assessment against this criterion evaluates the capital costs, annual O&M costs, and the net present value (NPV) of this remedy relative to alternatives. The capping remedy remedial costs would be incurred as part of the proposed site development, regardless of the findings of the SLRA.

State Support / **Agency Acceptance:** MDE has been involved throughout the Site investigation process. The proposed use restrictions included in the proposed remedy are generally recognized as commonly employed measures for long-term stewardship.

A capping remedy with institutional controls would satisfy the CERCLA Threshold Criteria and the Balancing Criteria and would do so in a manner that ensures reliable implementation and effectiveness. The remedy is cost-effective and consistent with the proposed development plan.



4.0 PROPOSED SITE DEVELOPMENT PLAN

Tradepoint Atlantic is proposing a vehicle storage and laydown area on Sub-Parcel A4-2. The proposed development will include permanent improvements on approximately 8.05 acres of land intended for occupancy. The proposed future use of Sub-Parcel A4-2 is Tier 3 – Industrial. The remainder of Parcel A1, Parcel B6, Parcel B8, and Parcel B14 will be addressed in separate development plans in accordance with the requirements of the ACO that will include RADWPs, if necessary. Outside of the main development area, temporary external construction worker areas with a total area of approximately 3.75 acres will be utilized to install subgrade utility connections for the project. The temporary work outside of the boundary of the Site is not intended to be the basis for the issuance of a NFA or a COC, although the scope of construction work is covered by this RADWP. The Site (8.05 acres encompassing Sub-Parcel A4-2; excluding the temporary construction worker areas) will be fully capped by surface engineering controls.

Certain compounds are present in the soils located near the surface and in the subsurface at concentrations in excess of the PALs. Therefore, soil is considered a potential media of concern. Potential risks to future adult workers associated with impacts to soil and groundwater exceeding the PALs will be addressed through a remedy consisting of surface engineering controls (capping of the entire area) and institutional controls (deed restrictions). The development plan provides for a containment remedy and institutional controls that will mitigate future adult workers from contacting impacted soil at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase at the Site. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls regardless of the existing soil conditions.

Future Construction Workers may contact impacted surface and/or subsurface soil during earth movement activities associated with construction activities, including within the temporary external construction worker areas outside of the primary development area. The findings of the Construction Worker SLRA indicated that using the site-specific 40-day exposure frequency for the site-wide EU1-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action).

No activities at the Site are expected to exceed the allowable duration; however, upgraded PPE beyond standard Level D protection will be used in conjunction with the property-wide Health and Safety Plan (HASP) for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.



A restriction prohibiting the use of groundwater for any purpose at the Site will be included as an institutional control in the NFA and COC issued by the MDE, and a deed restriction prohibiting the use of groundwater will be filed. The groundwater use restriction will protect future Composite Workers from potential direct exposures. Proper water management is required to prevent unacceptable discharges or risks to Construction Workers during development. Work practices and health and safety plans governing groundwater encountered during excavation activities will provide protection for Construction Workers involved with development at the Site.

The development plan for the Site is shown on **Figure 2** and **Figure 3**. The process of constructing the proposed vehicle storage and laydown area will involve the tasks listed below. Documentation of the outlined tasks and procedures will be provided in a Sub-Parcel A4-2 Development Completion Report.

4.1 RESPONSE PHASE – GROUNDWATER NETWORK MODIFICATION

Permanent groundwater monitoring wells HI04-PZM006, HI04-034, and HI19-MWS, shown on **Figure 5**, are the only three existing wells located inside of the development boundary. These wells are proposed to be maintained in order to be used for future groundwater monitoring. The wells will be converted to flush mounts during the course of development. No further groundwater network abandonment is necessary as part of this redevelopment.

4.2 DEVELOPMENT PHASE

4.2.1 Erosion and Sediment Control Installation

Installation of erosion and sediment controls will be completed in accordance with the requirements of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control prior to any construction at the Site. Any soils which are disturbed during the installation of erosion and sediment controls will be placed on-site below the cap.

4.2.2 Grading and Site Preparation

Grading activities including both cut and fill will occur within the Sub-Parcel A4-2 boundary. Any material that is not suitable for compaction will be excavated and replaced with subbase material, although it is not anticipated that poor soils will be encountered. Borrow materials will be obtained from MDE-approved sources and will be documented prior to transport to the Site. Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as fill. Other materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Fill sources shall be free of organic material, frozen material, or other deleterious material. In the case that there is excess material (not anticipated), the spoils will be stockpiled at a suitable location and dealt with in accordance with the Materials Management Plan (MMP) for the Sparrows Point Facility (Jenkins Environmental, Inc., August 17, 2021). This work



will be coordinated with MDE accordingly. No excess material will leave the 3,100-acre property without prior approval from MDE.

4.2.3 Installation of Structures and Underground Utilities

The lots and other infrastructure associated with the development of Sub-Parcel A4-2 will be installed as shown on the **Figure 2** and **Figure 3**. Details for the fabric building structure shown on these figures are included as **Appendix D**. Soils relocated or removed during construction or utility trenches may be replaced on-site below the cap based on field observations by the Environmental Professional (EP). Additional protocols for soil monitoring during the installation of utilities at the Site are provided in Section 5.1.2. Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site Humphrey Creek Wastewater Treatment Plant (HCWWTP).

4.2.4 Paving

The entirety of the Site will be covered with paving. The paved areas will receive a layer of subbase material which will consist of compacted aggregate base, which may include processed slag aggregate sourced from the Tradepoint Atlantic property. The placement of processed slag aggregate or materials other than MDE-approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping).

The required minimum thicknesses of all site-wide pavement sections which will serve as surface engineering controls are shown in the minimum capping section details provided in **Appendix E**. According to the development plans, all paved areas at the Site will be installed with a minimum of 4 inches of compacted aggregate base and a minimum of 4 inches of overlying pavement surface (asphalt or concrete), which meet these required minimum thicknesses.

4.2.5 Stormwater Management

New stormwater infrastructure will be installed throughout the Site and will discharge to the Tin Mill Canal. Based on the shallow groundwater elevation measurements collected during the sitewide groundwater elevation investigation, excavations may encounter groundwater. As shown on **Figure 7**, the shallow groundwater elevations range from approximately 6 feet amsl (in the northwest) to 0 ft amsl (in the east). Any water removed will be sampled (if necessary) as described in Section 5.2 and (if acceptable) sent to the on-site HCWWTP.

Tradepoint Atlantic is working with the MDE Industrial & General Permits Division to renew the property-wide NPDES permit. The stormwater management systems for each parcel are reviewed and approved by Baltimore County for each individual development project.



Tradepoint Atlantic

5.0 DEVELOPMENT IMPLEMENTATION PROTOCOLS

5.1 DEVELOPMENT PHASE

This plan presents protocols for the handling of soils and fill materials in association with the development of Sub-Parcel A4-2. In particular, this plan highlights the minimum standards for construction practices and managing potentially contaminated materials to reduce potential risks to workers and the environment.

Several exceedances of the PALs were identified in soil samples across the Site. The PALs are set based on USEPA's RSLs for industrial soils, or other direct guidance from the MDE. Because PAL exceedances can present potential risks to human health and the environment at certain concentrations, this plan presents material management and other protocols to be followed during the work to adequately mitigate potential risks from such materials remaining on-site during the development phase. There were no locations in the proposed Site boundary with soil exceedances of the special management criteria for PCBs (50 mg/kg), lead (10,000 mg/kg), or TPH/Oil & Grease (6,200 mg/kg). NAPL was not detected in any soil borings or on the water table in any piezometers or monitoring wells within the proposed development area.

Following completion of the SLRA, the findings of the Construction Worker evaluation indicated that using the site-specific 40-day exposure frequency for the site-wide EU1-EXP, the screening level estimates of Construction Worker cancer risk were less than 1E-5 and no HI values above 1 were identified for any target organ system (the acceptable thresholds for no further action). Certain activities at the Site may exceed the allowable duration of 40 days, and if that were the case, Construction Worker risks must be mitigated to facilitate the proposed construction. Upgraded PPE beyond standard Level D protection will be used in conjunction with the HASP for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied throughout this project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**.

Based on the characterization of surface and subsurface soils and the associated SLRA findings, surface engineering controls are an acceptable remedy to be protective of future adult Composite Workers at the Site. In addition, Tradepoint Atlantic has proposed the use of processed slag aggregate as the primary fill material and pavement subbase at the Site. The placement of materials other than approved clean fill, such as slag aggregate, requires the installation of surface engineering controls (i.e., capping) regardless of the existing soil conditions. The proposed capping sections will meet the required minimum thicknesses for surface engineering controls, which are provided in **Appendix E**.



5.1.1 Erosion/Sediment Control

Erosion and sediment controls will be installed prior to commencing work in accordance with the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. The erosion and sediment controls will be approved by the MDE. In addition, the following measures will be taken to prevent contaminated soil from exiting the Site:

- Stabilized construction entrance will be placed at site entrance.
- A dry street sweeper will be used as necessary on adjacent roads, and the swept dust will be collected and properly managed.
- Accumulated sediment removed from silt fence, and sediment traps if applicable, shall be periodically removed and returned to the Site.

5.1.2 Soil Excavation and Utility Trenching

A pre-excavation meeting shall be held to address proper operating procedures for working on-site and monitoring excavations and utility trenching in potentially contaminated material. This meeting shall include the construction manager and the EP providing oversight on the project. During the meeting, the construction manager and the EP shall review the proposed excavation/trenching locations and any associated utility invert elevations. The construction manager will be responsible for conveying all relevant information regarding excavation/grading and/or utility work to the workers who will be involved with these activities. The HASP and PPE SOP for the project shall also be reviewed and discussed.

The EP will provide oversight of soil excavation/trenching activities as described in Section 5.6. Soil excavation/trenching will occur during various phases of construction. In general, and based on the existing sampling information, all excavated materials are expected to be suitable for replacement on the Site. However, the EP will monitor the soil excavation activities for signs of significantly contaminated material which may not be suitable for reuse (as described below). The EP will also be responsible for monitoring organic vapor concentrations in the worker breathing zone within utility trenches and excavations to determine whether any increased level of health and safety protection is required.

To the extent practical, all excavation activities should be conducted in a manner to minimize double or extra handling of materials. Stockpiles shall be stored in a location that is not subjected to concentrated stormwater runoff. Stockpiles shall be managed as necessary to prevent the erosion and off-site migration of stockpiled materials, and in accordance with the applicable provisions of the 2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control. Soil designated for replacement on-site which does not otherwise exhibit evidence of contamination (as determined by the EP) may be managed in large stockpiles (no size restriction) as long as they remain within the erosion and sediment controls.



All utility trenches will be backfilled with bedding and backfill materials approved by the MDE for industrial use. A general utility cross section is provided as **Appendix F**. Additional preventative measures will be required if evidence of petroleum contamination is encountered, to prevent the discharge to, or migration of, petroleum product along a utility conduit. Contingency measures have been developed to ensure that utilities will be constructed in a manner that will prevent the migration of any encountered NAPL, and that excavated material will be properly managed. The Utility Excavation NAPL Contingency Plan (**Appendix G**) provides protocols to be followed if NAPL is encountered during the construction activities. Preventative measures to inhibit the spread of petroleum product will be conducted in accordance with this plan.

The EP will monitor all soil excavation and utility trenching activities for signs of potential contamination. In particular, soils will be monitored with a hand-held photoionization detector (PID) for potential VOCs and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e., sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management.

Excavated material exhibiting evidence of significant contamination shall be placed in stockpiles (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting to minimize potential exposures and erosion when not in use. Materials stockpiled due to evidence of contamination will be sampled in accordance with waste disposal requirements and transported to an appropriate permitted disposal facility. Plans for analysis of segregated soils for any use other than disposal must be submitted to the MDE for approval.

Excavated material that is visibly impacted by NAPL will be segregated and managed in accordance with the requirements specified in the Utility Excavation NAPL Contingency Plan. Excavated material with indications of possible NAPL contamination will also be containerized or placed in a stockpile (not to exceed 500 cubic yards) on polyethylene sheeting and covered with polyethylene sheeting until the material can be analyzed for TPH/Oil & Grease and PCBs (total) to characterize the material for appropriate disposal. The MDE will be notified if such materials are encountered during excavation or utility trenching activities.

5.1.3 Soil Sampling and Disposal

Excavated materials that are determined by the EP to warrant sampling and analysis because of elevated PID readings or other indications of potential contamination shall be sampled and analyzed to determine how the materials should be managed. If excavated and stockpiled, such materials should be placed on a polyethylene or equivalent tarp and covered with the same to minimize potential exposures and erosion. All stockpiled soil may be considered for use as fill at this Site or on other areas of the property depending on the analytical results. A summary of sampling including a description of the material, estimated volume, and sampling parameters will



be submitted to the MDE for approval to determine the suitability of the material for reuse. If the MDE determines that the materials are unsuitable for reuse, the materials will be sampled to determine alternative disposal options.

Soil material may be taken to an appropriate non-hazardous landfill (including Greys Landfill) for proper disposal if the concentrations of excavated sampled materials indicate that the materials are not hazardous, but still are not suitable for reuse. Soil material that is determined to be a hazardous waste shall be shipped off-site in accordance with applicable regulations to an appropriate and permitted RCRA disposal facility. The quantities of all materials that require disposal, if any, will be recorded and identified in the Development Completion Report.

5.1.4 Fill

Processed slag aggregate sourced from the Tradepoint Atlantic property will be used as the primary fill material for this project. The placement of processed slag aggregate or materials other than approved clean fill will necessitate that the Site will be subject to surface engineering controls (i.e., capping). Soil excavated on the Sub-Parcel has been determined to be suitable for re-use at the Site below the surface engineering controls (capping), unless such materials are determined by the EP/MDE to be unsuitable for use as outlined in Section 5.1.2 and Section 5.1.3.

All over-excavated utility trenches will be backfilled with bedding and backfill approved by the MDE for industrial use. Soil removed from utility trenches cannot be used as fill within the utility trenches unless such materials are approved for this use by the VCP. As with structural fill, processed slag aggregate and other materials approved for industrial use can be used as backfill in utility trenches if the area will be covered by a VCP cap. Any utility backfill which will extend into the cap (i.e., top 2 feet of backfill in landscaped areas) must meet the VCP clean fill requirements, and a geotextile marker fabric will be placed between the VCP clean fill and any underlying material. Materials permanently placed in areas outside of the Site boundary (i.e., within the temporary external construction worker areas outside of Sub-Parcel A4-2) must meet the VCP clean fill requirements or be otherwise approved by the MDE prior to placement. A general utility detail drawing is provided as **Appendix F**. Material imported to the Site will be screened according to MDE guidance for suitability.

5.1.5 **Dust Control**

General construction operations, including soil excavation and transport, and trenching for utilities will be performed at the Site. These activities are anticipated to be performed in areas of soil impacted with COPCs. Best management practices should be undertaken at the Sparrows Point property as a whole to prevent the generation of dust which could impact other areas of the property outside of the immediate work zone. To limit worker exposure to contaminants borne on dust and windblown particulates, dust monitoring will be performed in the immediate work zone and at the upwind and downwind perimeter of the Site, and dust control measures will be implemented if



warranted based on the monitoring results. The action level proposed for the purpose of determining the need for dust suppression techniques (e.g. watering and/or misting) during the development activities at the Site will be 3.0 mg/m³. The lowest of the site-specific dust action levels, OSHA Permissible Exposure Limits (PELs), and ACGIH Threshold Limit Value (TLV) was selected as the proposed action level.

The EP will be responsible for the dust monitoring program. Air monitoring will be performed using Met One Instruments, Inc. E-Sampler dust monitors or equivalent real-time air monitoring devices. The EP will set-up dust monitoring equipment at the outset of ground intrusive work or other dust-generating activities, and continuous dust monitoring will be performed during this work. In addition to work area monitoring, a dust monitor will be placed at selected perimeter locations that will correspond to the upwind and downwind boundaries based on the prevailing wind direction predicted for that day. The prevailing wind direction will be assessed during the day, and the positions of the perimeter monitors will be adjusted if there is a substantial shift in the prevailing wind direction.

Once all dust-generating activities are complete (which may occur at a later stage of the project once ground intrusive work has been completed or after the Site has been capped), the dust monitoring program may be discontinued. If additional dust-generating activities commence, additional dust monitoring activities will be performed.

If sustained dust concentrations exceed the action level (3.0 mg/m³) at any of the monitoring locations as a result of conditions occurring at the Site, operations will be stopped temporarily until dust suppression can be implemented. Operations may be resumed once monitoring indicates that dust concentrations are below the action level. The background dust concentration will be utilized to evaluate whether Site activities are the source of the action level exceedance. The background dust concentration will be based on measurements over a minimum of a 1-hour period at the upwind Site boundary. The upwind data will be used to calculate a time weighted average background dust concentration. As noted above, the locations of the perimeter dust monitors may be adjusted periodically if there is a substantial shift in the prevailing wind direction.

As applicable, air monitoring will be conducted during development implementation activities to assess levels of exposure to Site workers, establish that the work zone designations are valid, and verify that respiratory protection being worn by personnel, if needed, is adequate. Concurrent with the work zone air monitoring, perimeter air monitoring will also be performed at the upwind and downwind Site boundaries to ensure contaminants are not migrating off-site. The concentration measured at the downwind perimeter shall not exceed the action level of 3.0 mg/m³, unless caused by background dust from upwind of the Site. If exceedances of the action level are identified downwind for more than five minutes, the background dust concentration shall be evaluated to determine whether the action level exceedances are attributable to Site conditions. If on-site activities are the source of the exceedances, dust control measures and additional monitoring will



be implemented. The dust suppression measures may include wetting or misting using a hose connected to a water supply or a water truck stationed at the Site.

Dust control measures will be implemented as described above to address dust generated as a result of construction activities conducted at the Site. However, based on the nature of the area and/or ongoing activities surrounding the Site, it is possible that windblown particulates may come from surrounding areas. As discussed above, the dust concentration in the upwind portion of the Site will be considered when monitoring dust levels in the work area. A pre-construction meeting will be held to discuss the potential of windblown particulates from other activities impacting the air monitoring required for this RADWP. Site contact information will be provided to address the possibility of upwind dust impacts. If sustained dust is observed above the action level (3.0 mg/m³) and it is believed to originate from off-site (i.e., upwind) sources, this will immediately be reported to TPA and the MDE-VCP team, as well as the MDE Air and Radiation Administration (ARA).

5.2 WATER MANAGEMENT

This plan presents the protocols for handling any groundwater or surface water that needs to be removed to facilitate construction of the proposed Sub-Parcel A4-2 development.

5.2.1 Groundwater PAL Exceedances

Groundwater samples were collected during the preceding Phase II Investigations from ten temporary piezometers and monitoring wells within and surrounding the Site. Aqueous PAL exceedances in groundwater in the vicinity of the development LOD included both inorganics and organic compounds. The aqueous PAL exceedances obtained during the Phase II Investigations are summarized on **Figure GW1**. There are no concerns related to potential VI risks/hazards at the Site.

While the concentrations of PAL exceedances are not deemed to be a significant human health hazard for future workers since there is no on-site groundwater use which could lead to direct exposures, proper water management is required during construction to prevent unacceptable discharges or risks to Construction Workers.

5.2.2 **Dewatering**

Dewatering may be necessary to facilitate the placement and compaction of structural fill and during the stormwater pond construction, installation of underground utilities, and within excavations/trenches. **Figure 7** displays the groundwater elevations underlying the Site for the shallow aquifer zone, based on prior investigation data. If dewatering is required during construction, it shall be done in accordance with all local, state, and federal regulations. Water that collects in excavations/trenches due to intrusion of groundwater, stormwater, and/or dust control waters will be transported to the HCWWTP via the TMC, following any pretreatment, if



necessary. The water will be treated and discharged in accordance with NPDES Permit No. 90-DP-0064A; I. Special Conditions; A.4; Effluent Limitations and Monitoring Requirements.

It is the intent that any water that must be removed will be ultimately sent (via pumping or trucking) to the HCWWTP via the TMC, following any pretreatment, if necessary. Water in the TMC feeds into the HCWWTP where it is treated prior to release into Bear Creek. Dewatering fluids will be evaluated and then tested (if required) pursuant to the HCWWTP Constituent Threshold Limits for Dewatering Activities related to Remediation, Development, and Capping Protocol. If the groundwater does not meet the constituent threshold limits specified in the protocol, the groundwater will be pre-treated. Any water discharged to the TMC will be pumped through a filter bag or equivalent to remove suspended solids prior to discharge.

Note that additional analyses could be required if warranted based on field observations by the EP. The EP will inspect any water that collects in the excavations/trenches. If the water exhibits indications of significant contamination (sheen, odor, discoloration, presence of product), the water may be sampled and analyzed for some or all of the analyses listed below. In such case, the analyses run will be dependent on the suspected source of contamination and local site conditions. The EP will oversee oil/water separation and disposal of NAPL as necessary.

The results of the analyses will be reviewed by the HCWWTP operator to determine if any wastewater treatment system adjustments are necessary. If the results of the analyses are above the threshold levels listed below, the water will be further evaluated to confirm acceptable treatment at the HCWWTP, or will be evaluated to design an appropriate pre-treatment option. Alternatively, the water may be disposed of at an appropriate off-site facility.

	Analysis	Threshold Levels
•	Total metals by USEPA Method 6020A	1,000 ppm
•	PCBs by USEPA Method 8082	>Non-Detect
•	SVOCs by USEPA Method 8270C	1 ppm
٠	VOCs by USEPA Method 8260B	<u>1 ppm</u>
•	Oil & Grease by USEPA Method 1664	200 ppm
•	TPH-DRO by USEPA Method 8015B	200 ppm
•	TPH-GRO by USEPA Method 8015B	200 ppm

Documentation of any water testing, as well as the selected disposal option, will be reported to the MDE in the Development Completion Report. Any permits or permit modifications related to dewatering will be provided to the agencies as addenda to this RADWP.



5.3 HEALTH AND SAFETY

A property-wide HASP has been developed and is provided with this RADWP (as an electronic attachment) to present the minimum requirements for worker health and safety protection for all development projects. All contractors working on the Site must prepare their own HASP that provides a level of protection at least as much as that provided by the attached HASP. Alternately, on-site contractors may elect to adopt the HASP provided.

General health and safety controls (level D protection) are adequate to mitigate potential risk to Construction Workers conducting ground intrusive activities for a duration of up to 40 exposure days. However, certain ground intrusive activities at the Site (utility installations for specific crews) may exceed the allowable duration. Therefore, modified Level D PPE will be used for the entire scope of intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. Health and safety controls outlined in the HASP and PPE SOP will mitigate any potential risk to Construction Workers from contacting impacted soil and groundwater during development. The modified Level D PPE requirements planned for this development project, including specific PPE details, planning, tracking/supervision, enforcement, and documentation, are outlined in the PPE SOP provided as **Appendix C**. The EP will be responsible for monitoring organic vapor concentrations in the worker breathing zone within the utility trenches and excavations to determine whether any increased level of health and safety protection (including engineering controls and/or PPE) is required.

Prior to commencing work, the contractor must conduct an on-site safety meeting for all personnel. All personnel must be made aware of the HASP and the PPE SOP. Detailed safety information shall be provided to personnel who may be exposed to COPCs. Workers will be responsible for following established safety procedures to prevent contact with potentially contaminated material.

5.4 INSTITUTIONAL CONTROLS (FUTURE LAND USE CONTROLS)

Long-term conditions related to future use of the Site will be placed on the RADWP approval, NFA, and COC. These conditions are anticipated to include the following:

- A restriction prohibiting the use of groundwater for any purpose at the Site and a requirement to characterize, containerize, and properly dispose of groundwater in the event of deep excavations encountering groundwater.
- Notice to the MDE at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy (i.e., through the pavement cap or marker fabric in landscaped areas).
- Notice to the USEPA at least 30 days prior to any future soil disturbances that are expected to breach the approved capping remedy, only if the proposed duration of ground intrusive



activity would exceed the allowable exposure duration determined in the SLRA and the contractor will not use the modified Level D PPE specified in the approved SOP.

- Requirement for a HASP in the event of any future excavations at the Site.
- Complete appropriate characterization and disposal of any material excavated/pumped at the Site in accordance with applicable local, state, and federal requirements.
- Implementation of inspection procedures and maintenance of the containment remedies.

The owner/operator will file the above deed restrictions as defined by the MDE-VCP in the NFA and COC. The Tenant will be required to sign onto the Environmental Covenant with restriction in the NFA. Tradepoint Atlantic will notify the Tenant of this requirement and will provide MDE with contact information for the Tenant prior to issuance of the NFA.

5.5 POST REMEDIATION REQUIREMENTS

Post remediation requirements will include compliance with the conditions specified in the NFA, COC, and the deed restrictions recorded for the Site. Deed restrictions will be recorded within 30 days after receipt of the final NFA. In addition, the MDE and USEPA will be provided with a written notice of any future excavations (as applicable) in accordance with the requirements given in Section 5.5. Written notice of planned excavation activities will include the proposed date(s) for the excavation, location of the excavation, health and safety protocols (as required), clean fill source (as required), and proposed characterization and disposal requirements. Written notice may consist of email correspondence and/or hard copy correspondence.

Additional requirements will include inspection procedures and maintenance of the containment remedies to minimize degradation which could lead to future exposures, as well as continued perimeter groundwater monitoring. An O&M Plan will be submitted for MDE approval and will include long-term inspection and maintenance requirements for the capped areas of the Site. The responsible party will perform cap inspections, perform maintenance of the cap, and retain inspection records, as required by the O&M Plan.

5.6 CONSTRUCTION OVERSIGHT

Construction Oversight by an EP will ensure and document that the project is built as designed and appropriate environmental and safety protocols are followed. Upon completion, the EP will certify that the project is constructed in accordance with this RADWP.

The EP will monitor all soil excavation and utility trenching activities for signs of contamination that may indicate materials that are not suitable for reuse. In particular, soils will be monitored with a hand-held PID for potential VOC impacts, and will also be visually inspected for staining, petroleum waste materials, or other indications of significant contamination. If screening of excavated materials by the EP indicates the presence of conditions of potential concern (i.e.,



sustained PID readings greater than 10 ppm, visual staining, unsuitable waste materials, etc.), such materials shall be segregated for additional sampling and special management (as described in Section 5.1.2; Soil Excavation and Utility Trenching). The EP will also perform routine periodic breathing zone monitoring and PPE spot checks during ground intrusive activities. The EP will also inspect any water that collects in the excavations/trenches on an as-needed basis to coordinate appropriate sampling prior to disposal (as described in Section 5.2.2; Dewatering).

Daily inspections, as necessary, will be performed during general site grading and cap construction activities to verify that appropriate fill materials are being used (as described in Section 5.1.4; Fill), dust monitoring and control measures are being implemented as appropriate (as described in Section 5.1.5; Dust Control), the requirements of the HASP and the PPE SOP are being enforced by the designated Site Safety Officer (as described in Section 5.4; Health and Safety), and surface engineering controls are being installed with the appropriate thicknesses (shown on the RADWP attachments). Oversight by an EP will not be required during construction activities which do not have a significant environmental component, such as above-grade construction.

Records will be developed by the EP to document:

- Compliance with soil screening requirements
- Proper water management, including documentation of any testing and water disposal
- Observations of construction activities during site grading and cap construction
- Proper cap thickness and construction



6.0 PERMITS, NOTIFICATIONS AND CONTINGENCIES

The participant and their contractors will comply with all local, state, and federal laws and regulations by obtaining any necessary approvals and permits to conduct the activities contained herein. Any permits or permit modifications from State or local authorities will be provided as addenda to this RADWP.

A grading permit is required if the proposed grading disturbs over 5,000 square feet of surface area or over 100 cubic yards of earth. A grading permit is required for any grading activities in any watercourse, floodplain, wetland area, buffers (stream and within 100 feet of tidal water), habitat protection areas or forest buffer areas (includes forest conservation areas). Based on the scope of proposed earth disturbance, a grading permit will be required as part of this development project. Erosion and Sediment Control Plans will be submitted to, and approved by, the MDE prior to initiation of land disturbance for development.

Contingency measures will include the following:

- 1. The MDE will be notified immediately of any previously undiscovered contamination, previously undiscovered storage tanks and other oil-related issues, and citations from regulatory entities related to health and safety practices.
- 2. Any significant change to the implementation schedule will be noted in the progress reports to MDE.
- 3. Modified Level D PPE will be used for the entire scope of ground intrusive work covered by this RADWP as a protective measure to ensure that there are no unacceptable exposures for Construction Workers during project implementation. The modified Level D PPE requirements which will be applied during this project are outlined in the PPE SOP provided as **Appendix C**. If it is not possible to implement the PPE SOP as provided, the agencies will be notified and a RADWP Addendum will be submitted to detail any appropriate mitigative measures.



7.0 IMPLEMENTATION SCHEDULE

Progress reports will be submitted to the MDE on a quarterly basis. Each quarterly progress report will include, at a minimum, a discussion of the following information regarding tasks completed during the specified quarter:

- Development Progress
- Soil Management (imported materials, screening, stockpiling)
- Soil Sampling and Disposal
- Water Management
- Dust Monitoring
- Notable Occurrences (if applicable)
- Additional Associated Work (if applicable)

The proposed implementation schedule is shown below:

Task	Proposed Completion Date
Anticipated RADWP Approval	April 2022
Groundwater Well Modifications	April 2022
Development:	
Installation of Erosion and Sediment Controls	April 2022 (start)
Slag (or Alternative Fill) Delivery and Placement	April 2022 (start)
Site Preparation / Grading	May 2022 (start)
Utility Installations	May 2022 (start)
Submittal of Development Completion Report/ Notice of Completion of Remedial Actions*	September 2022
Request for NFA from the MDE	September 2022
Recordation of institutional controls in the land records office of Baltimore	Within 30 days of receiving the



Tradepoint Atlantic

County

approval of NFA from the MDE

Submit proof of recordation with Baltimore County

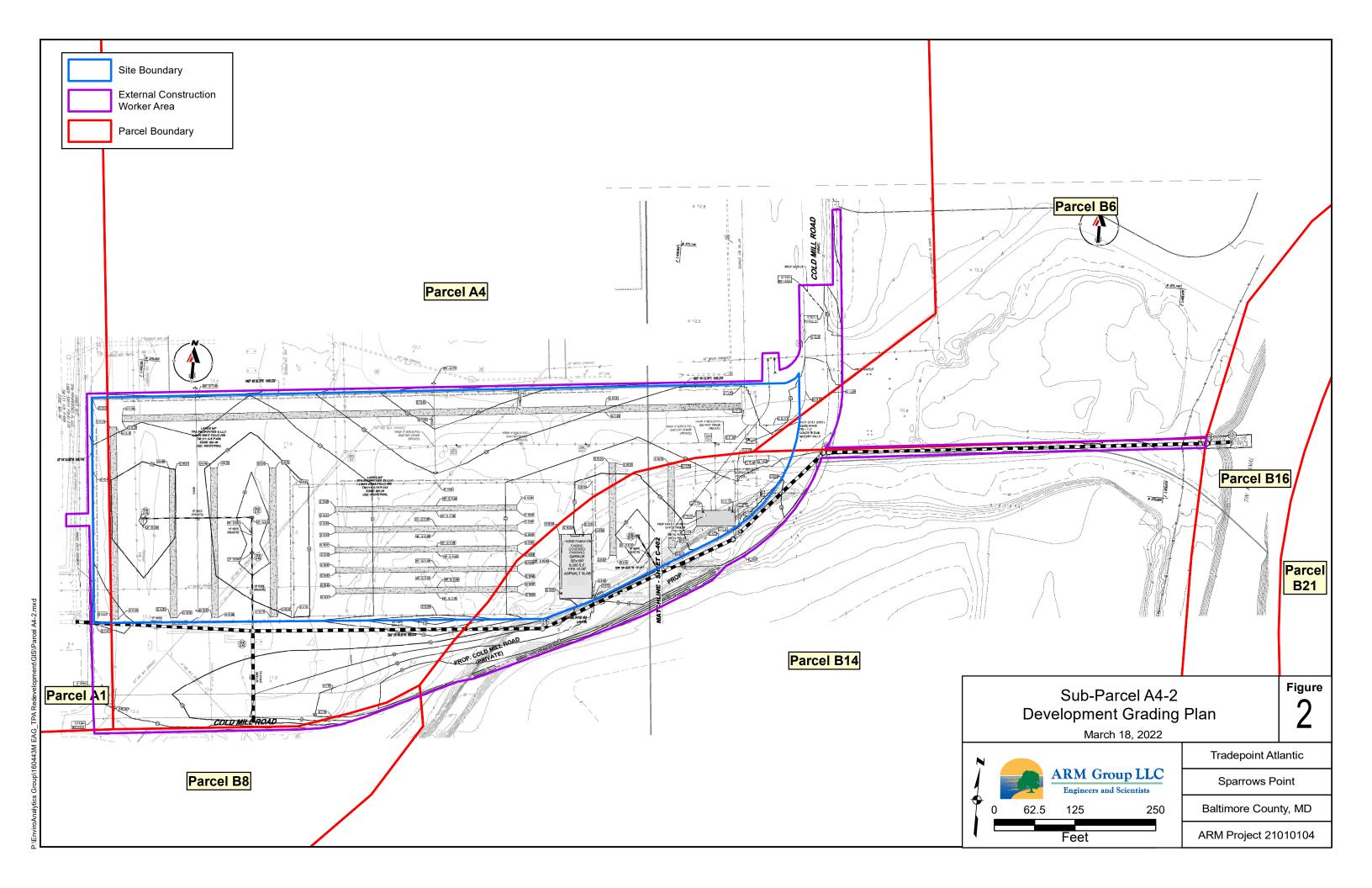
Upon receipt from Baltimore County

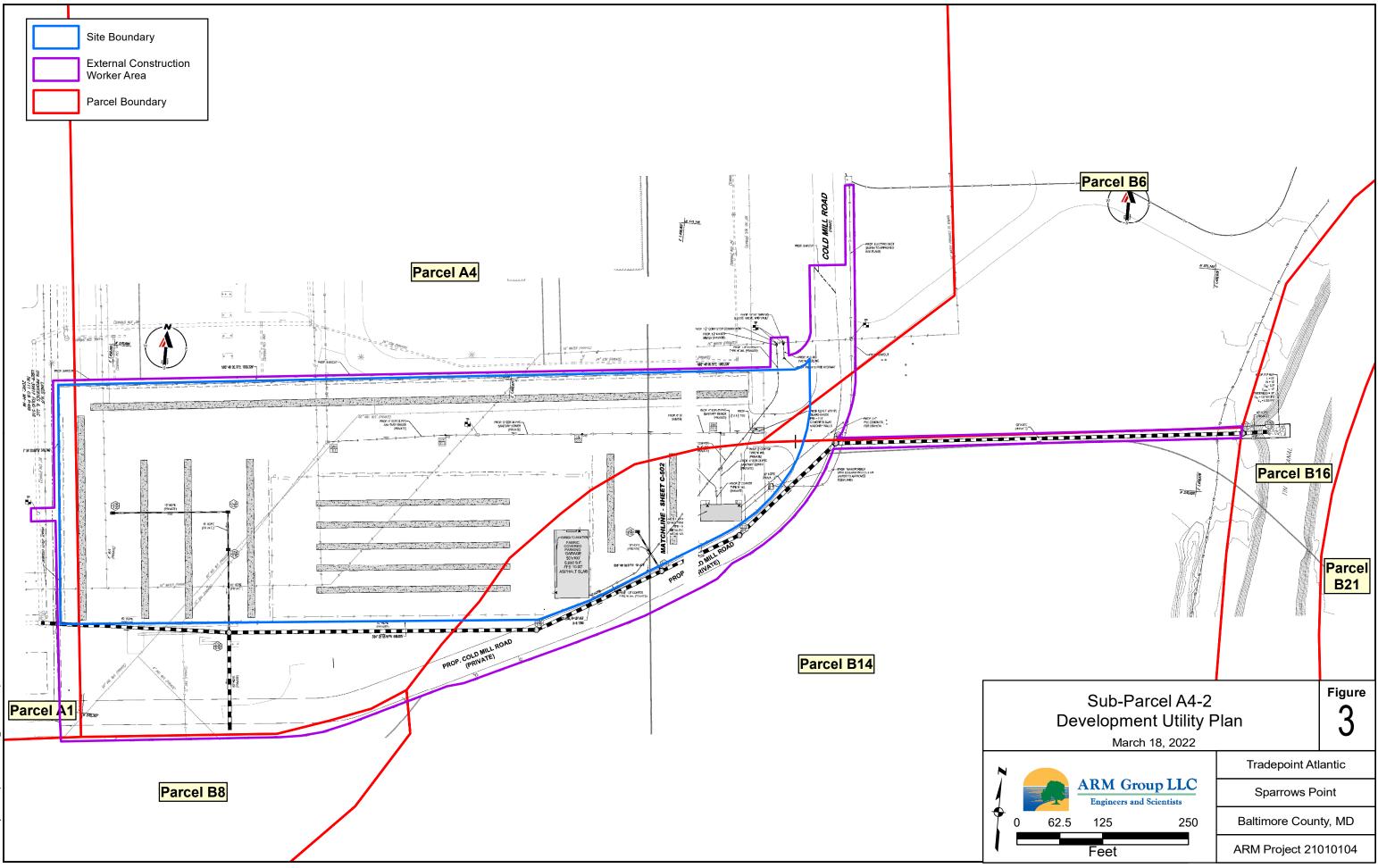
*Notice of Completion of Remedial Actions will be prepared by Professional Engineer registered in Maryland and submitted with the Development Completion Report to certify that the work is consistent with the requirements of this RADWP and the Site is suitable for occupancy and use.

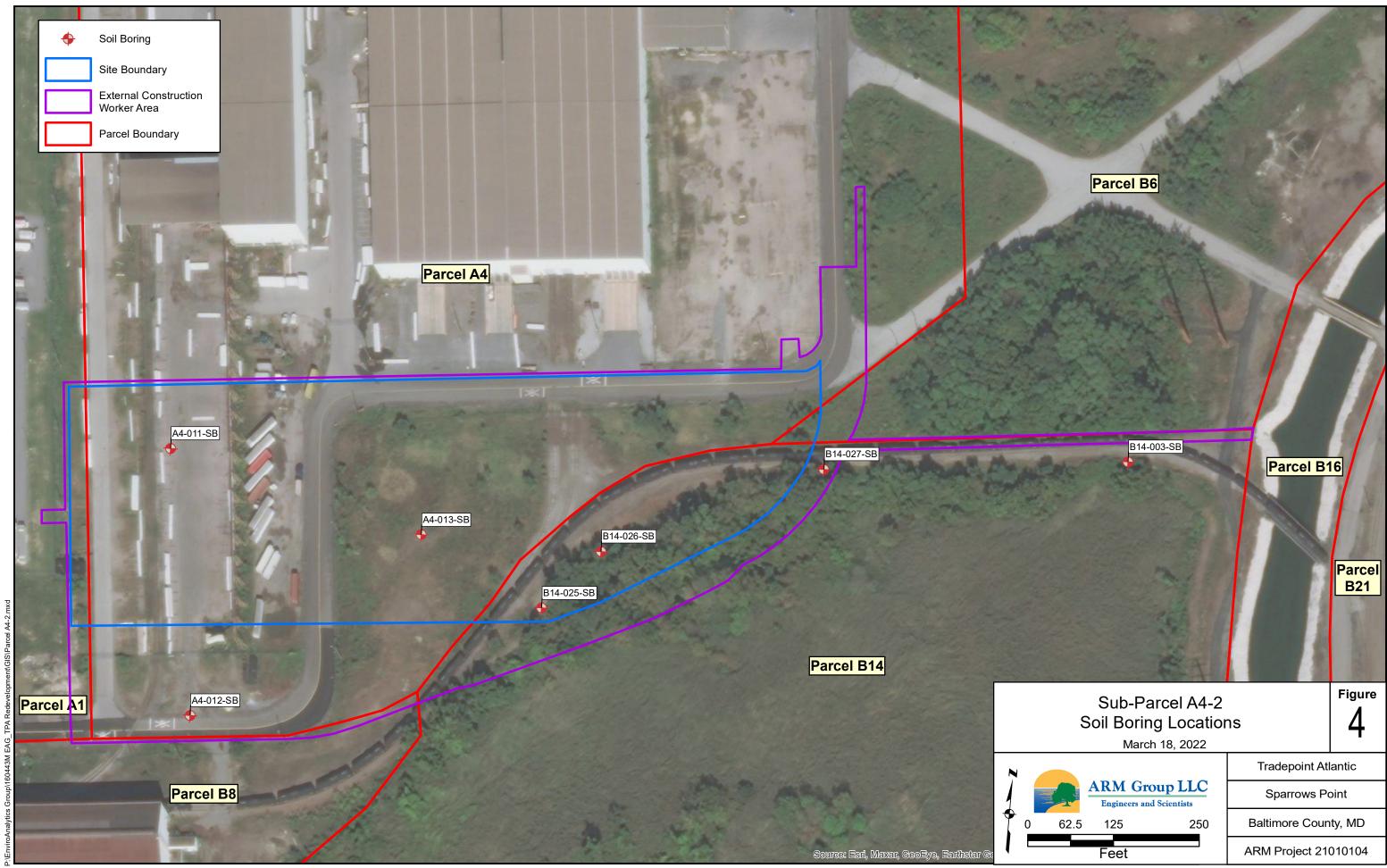


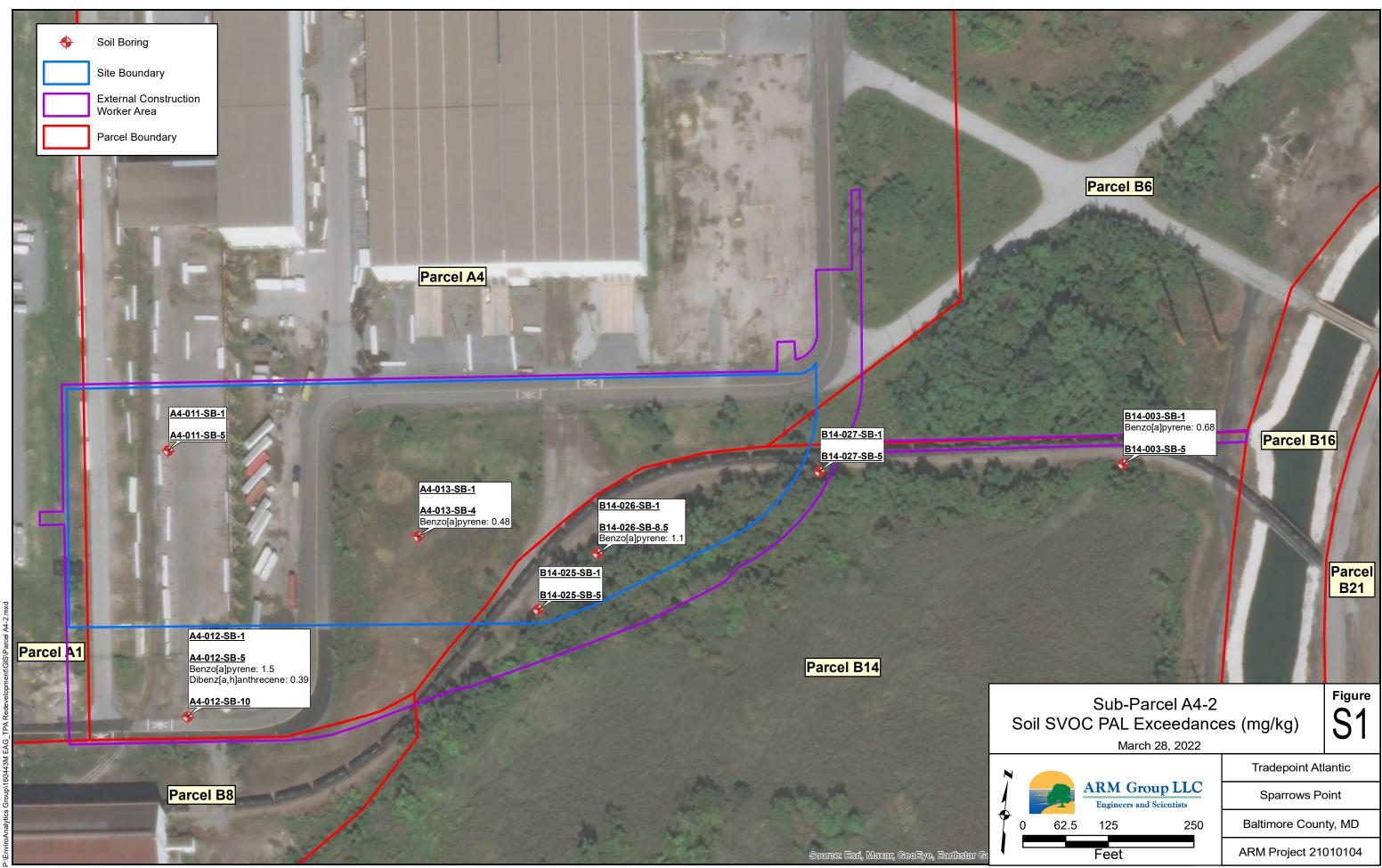
FIGURES

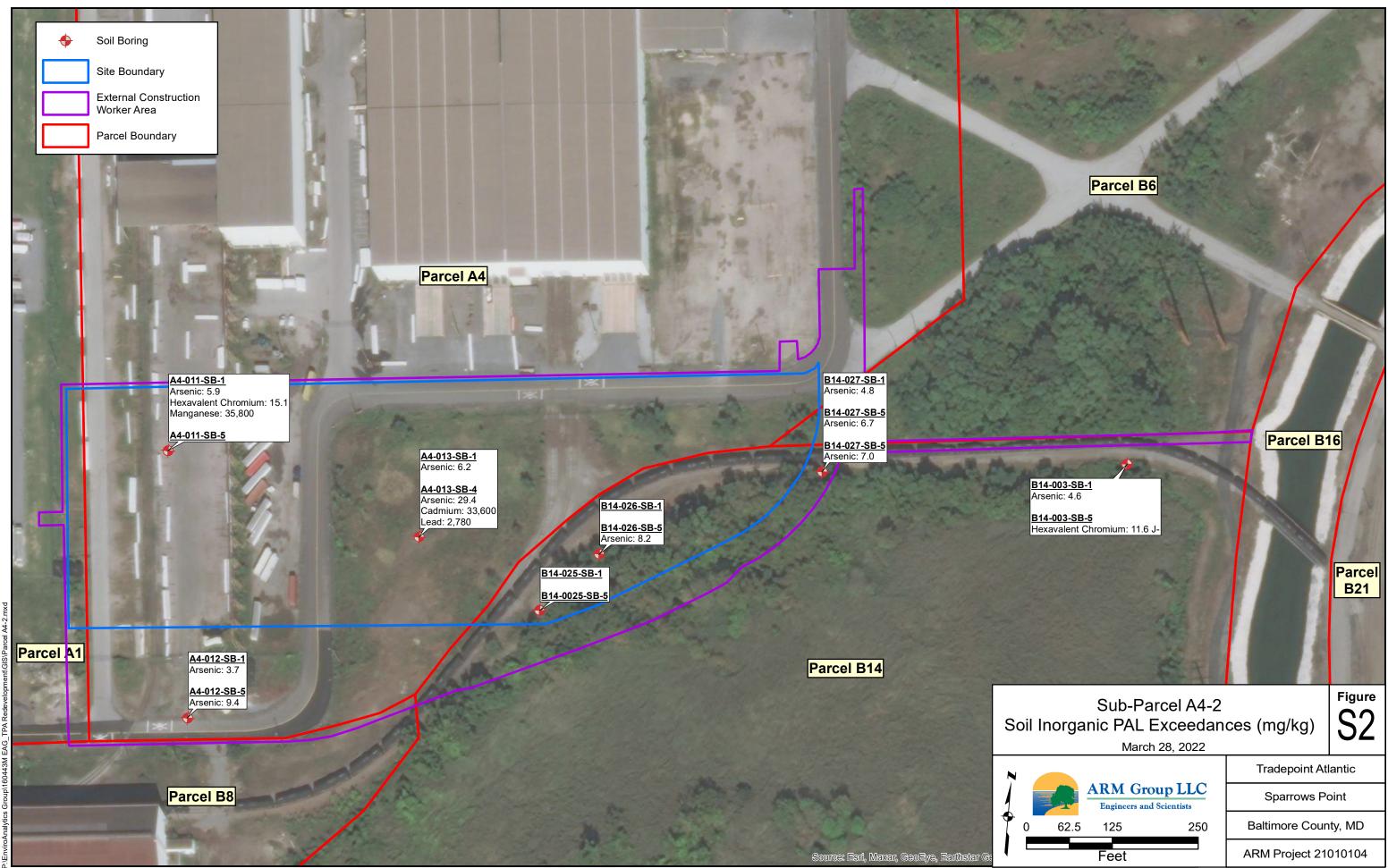


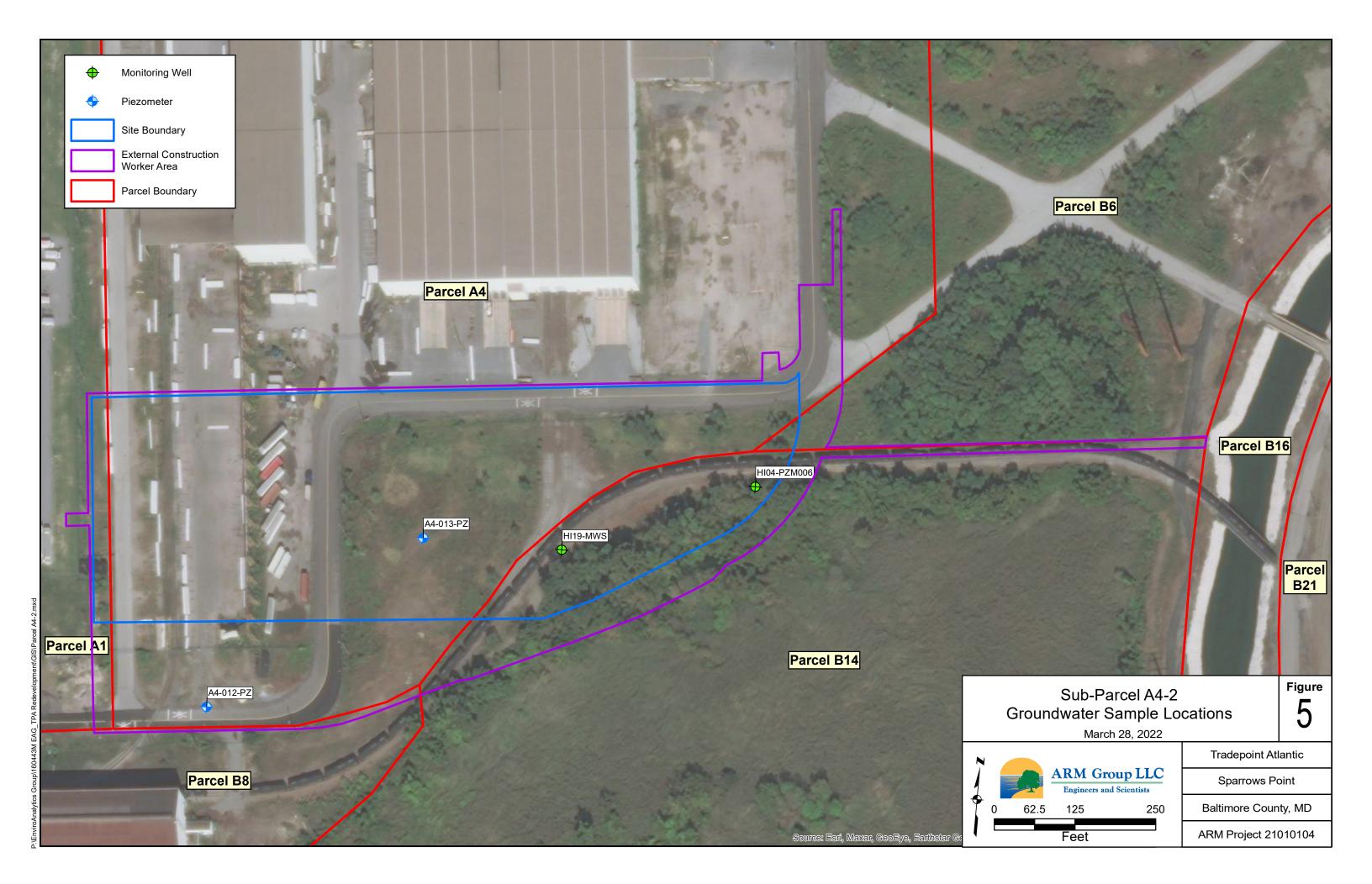


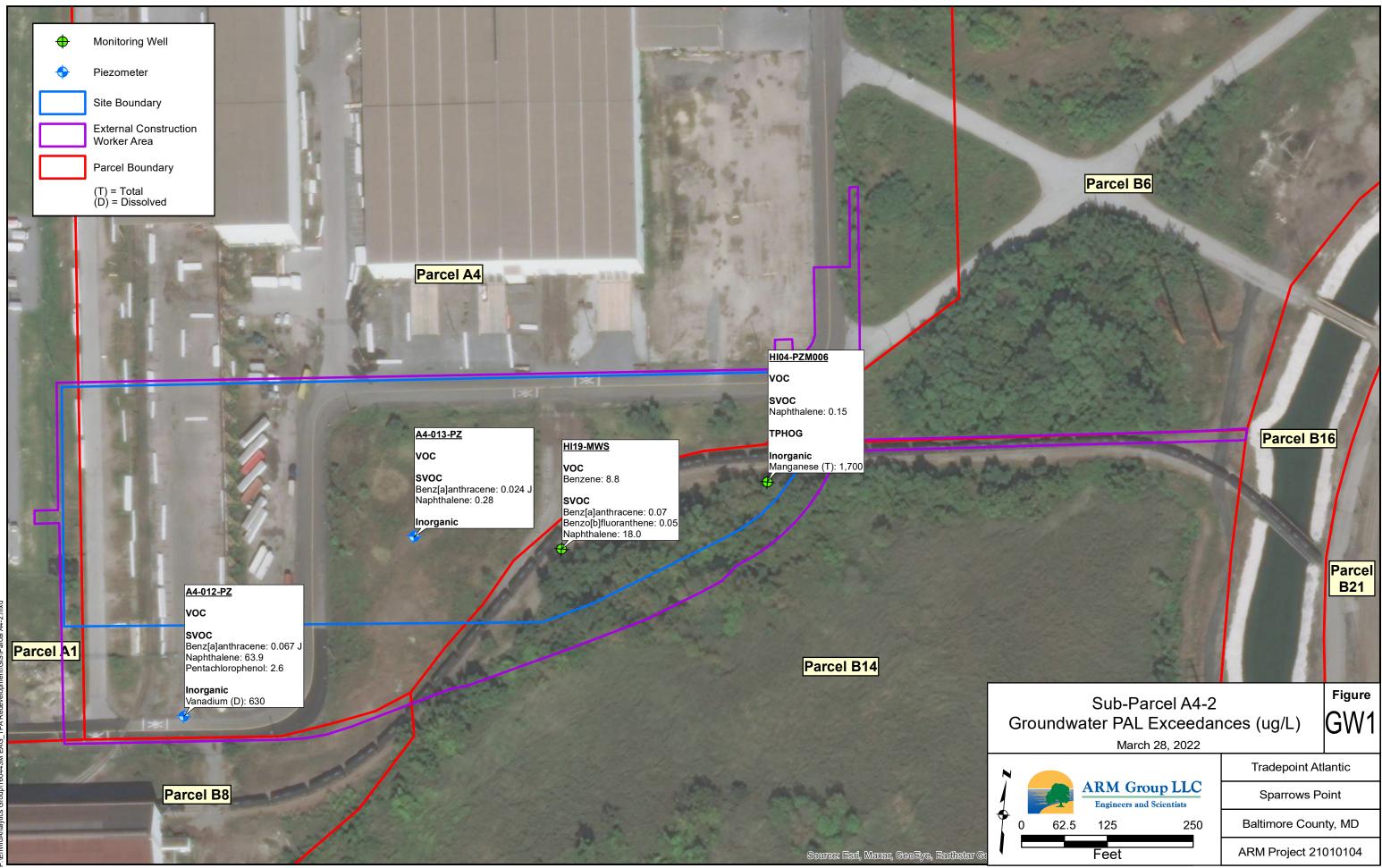


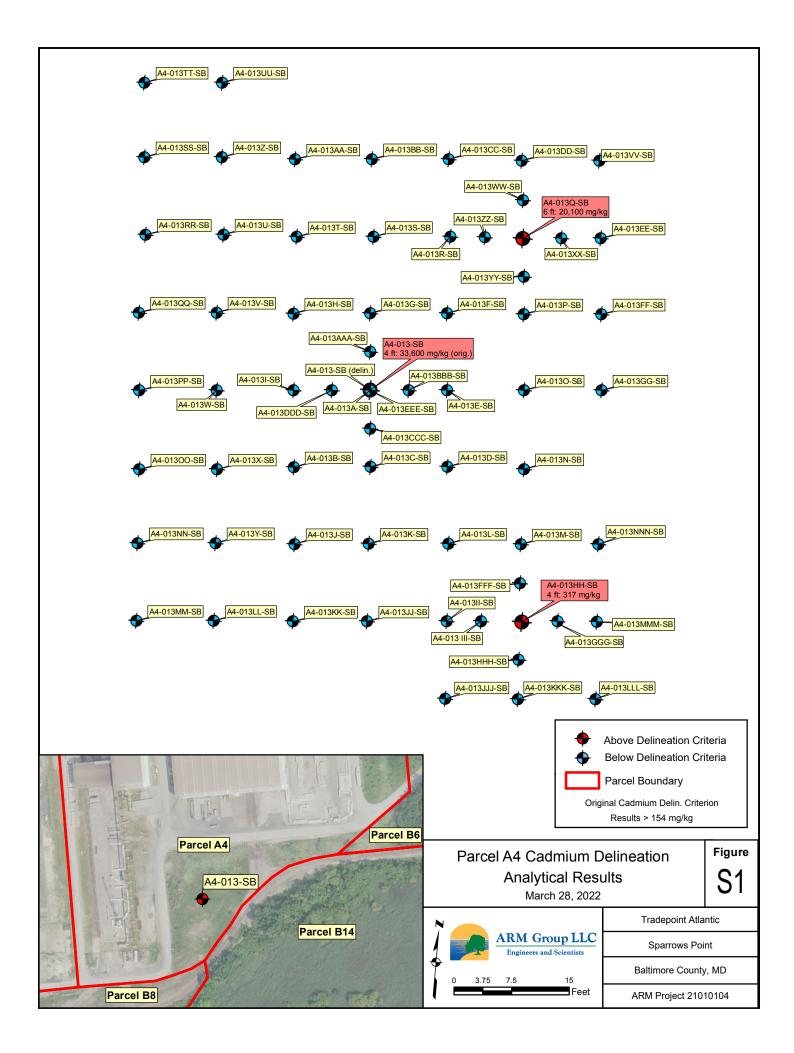


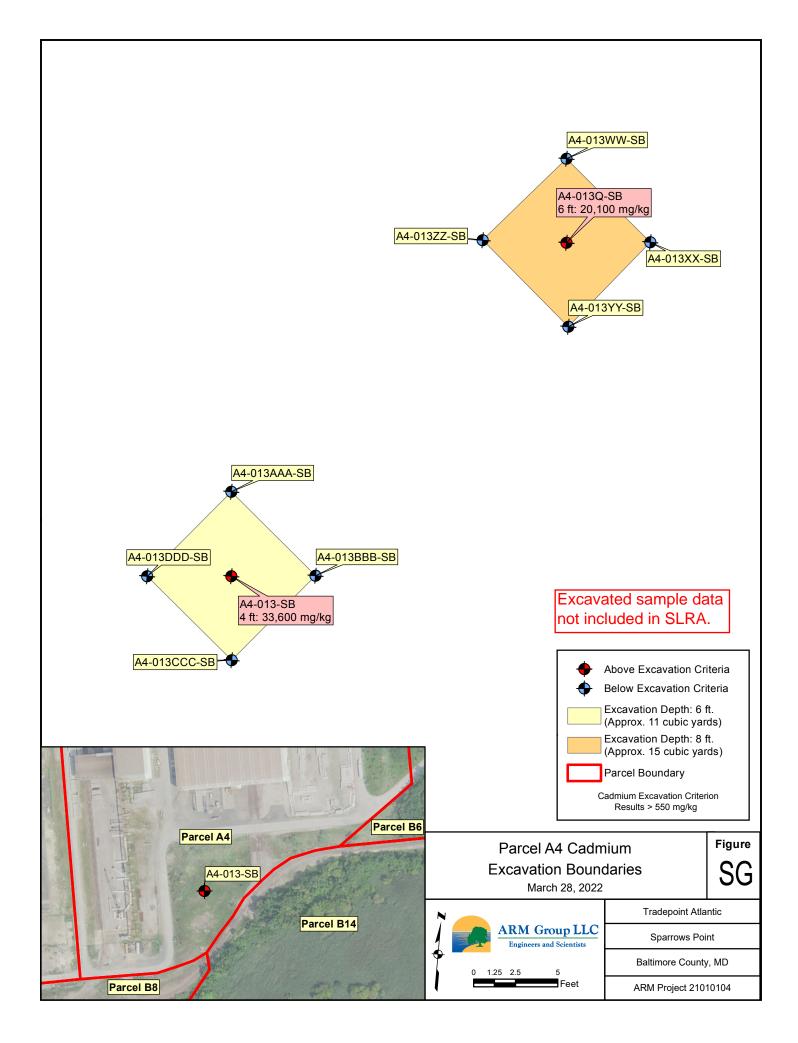


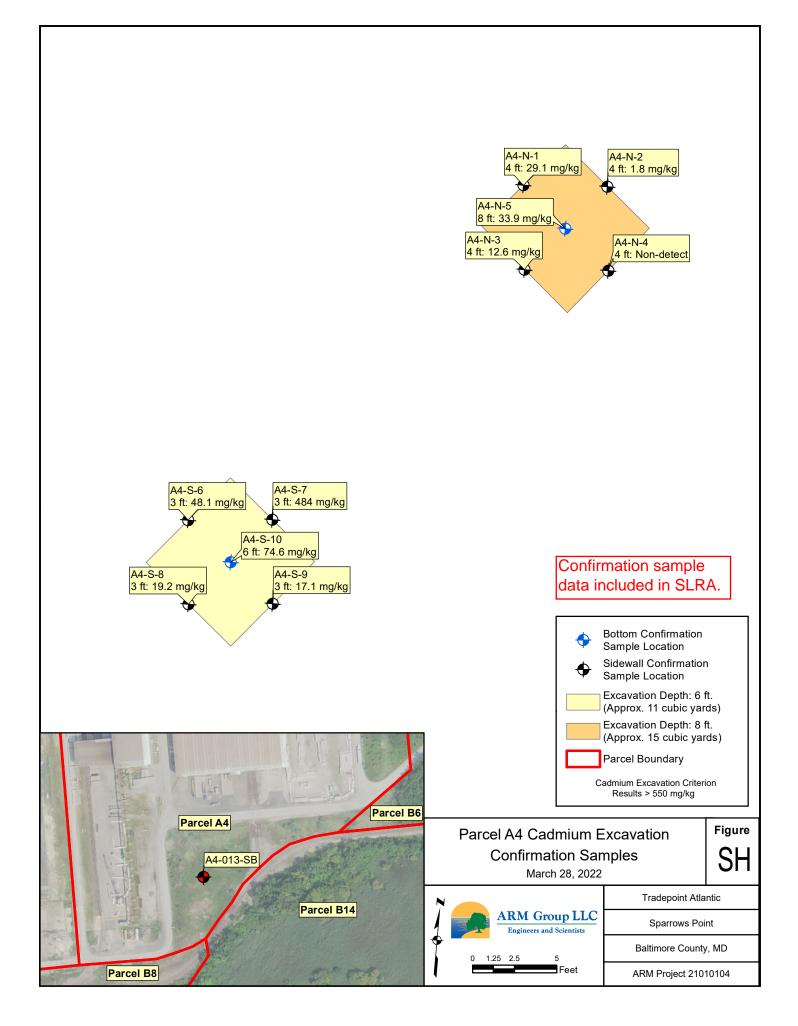


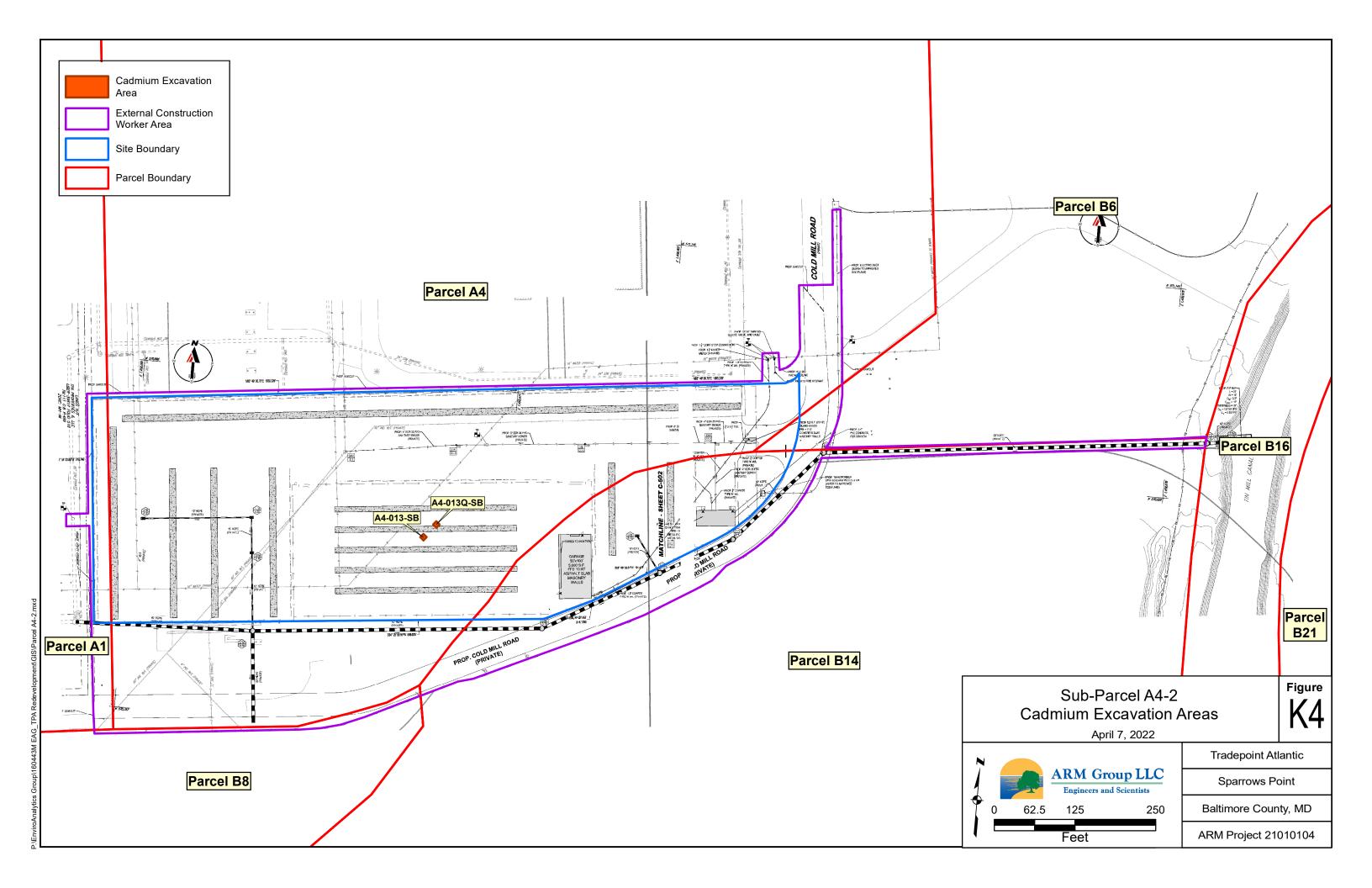


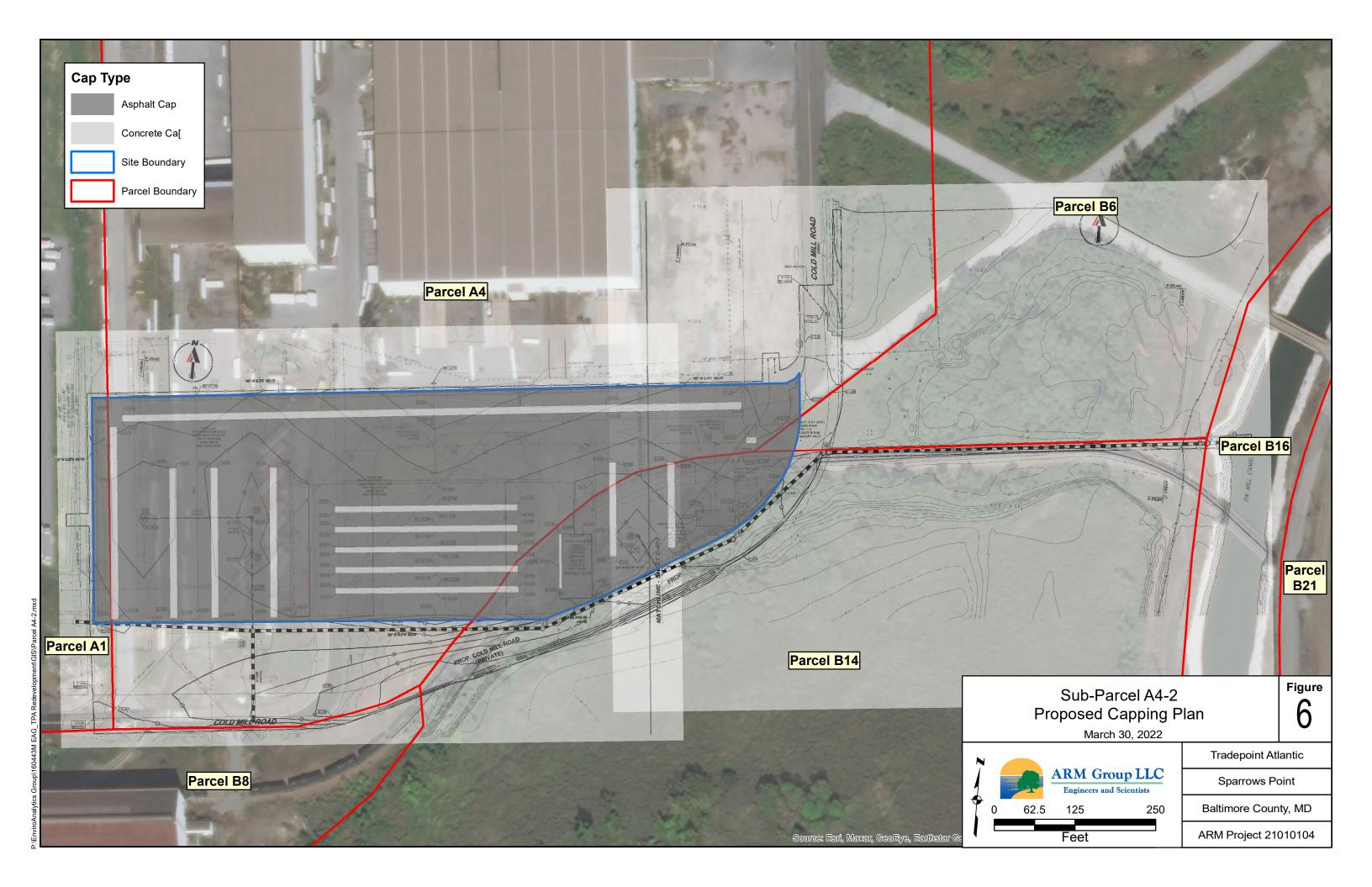


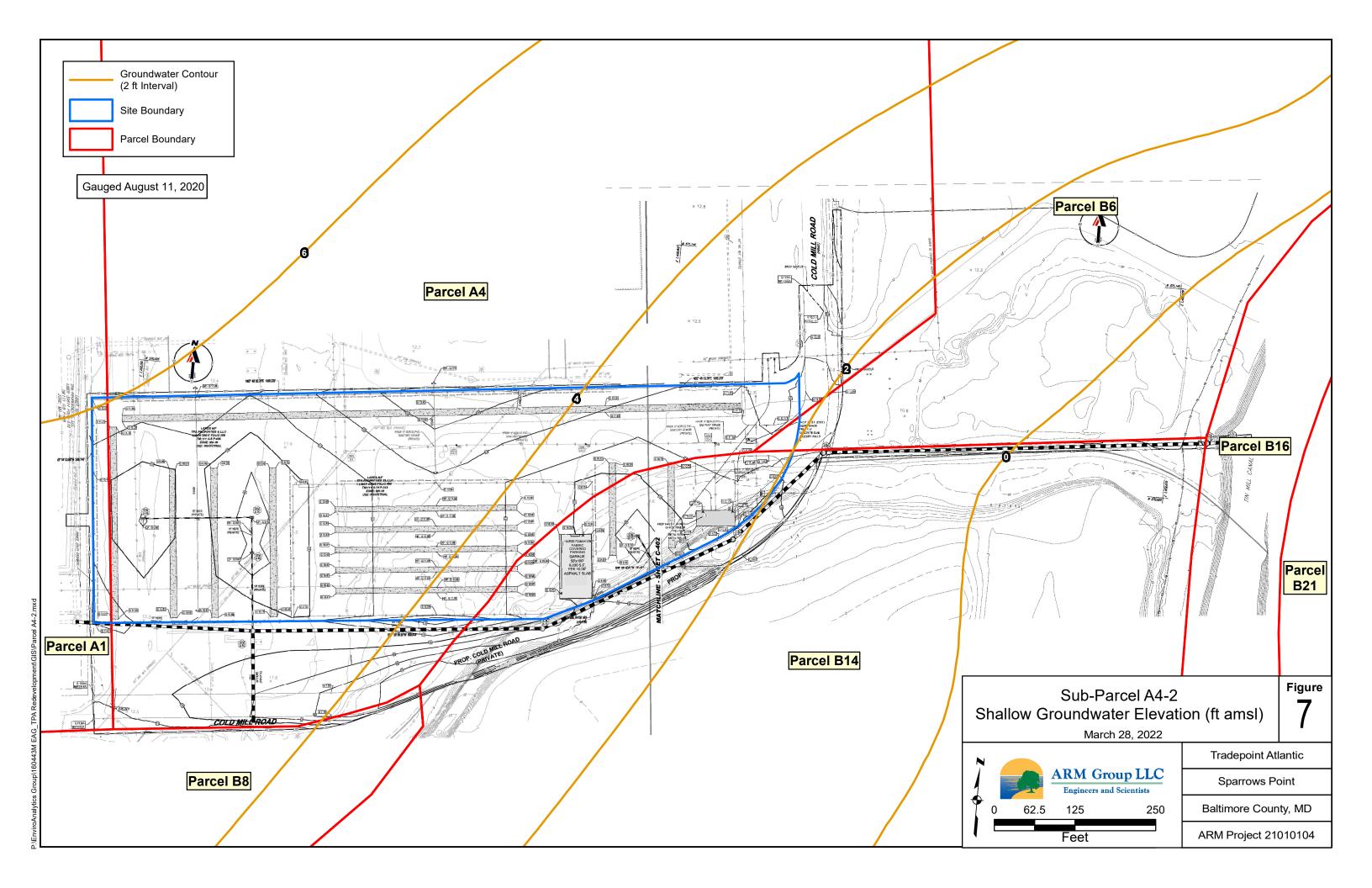












TABLES

Table 1 - Sub-Parcel A4-2Summary of Organics Detected in Soil

r	1		A4-011-SB-1	A4_011_SR_5	A4-012-SB-1	A4-012-SB-5	A4-012-SB-10	A4-013-SB-1	A4-013-SB-4	B14-003-SB-1	B14-003-SB-5	B14-025-SB-1	B14-025-SB-5	B14-026-SB-1	B14-026-SB-8.5	B14_027_SR_1	B14-027-SB-5
Parameter	Units	PAL	11/2/2015	11/2/2015	11/5/2015	11/5/2015	11/3/2015	11/5/2015	11/5/2015	9/13/2017	9/13/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017
Volatile Organic Compounds	I II		11/2/2015	11/2/2015	11/5/2015	11/5/2015	11/5/2015	11/5/2015	11/5/2015	9/13/2017	9/15/2017	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	<i>y</i> , 1 , 2 , 1 ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1.2-Dichlorobenzene	mg/kg	9,300	0.0044 U	0.0059 U	0.0021 J	0.0052 U	N/A	0.0087 UJ	0.007 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Butanone (MEK)	mg/kg	190,000	0.0043 J	0.0037 J	0.0041 J	0.0058 J	N/A	0.017 U	0.011 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acetone	mg/kg	670,000	0.029 J	0.046 J	0.036 J	0.046 J	N/A	0.081 J	0.069 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	mg/kg	5.1	0.0044 U	0.0059 U	0.005 U	0.0052 U	N/A	0.0087 U	0.002 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cyclohexane	mg/kg	27,000	0.0087 U	0.00072 J	0.01 UJ	0.0017 J	N/A	0.017 UJ	0.002 J	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	mg/kg	25	0.005 J	0.0059 U	0.005 U	0.0052 U	N/A	0.0087 U	0.007 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	mg/kg	47,000	0.08	0.0059 U	0.005 U	0.0052 U	N/A	0.0087 U	0.0015 B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Xylenes	mg/kg	2,800	0.028 J	0.018 U	0.015 U	0.016 U	N/A	0.026 U	0.021 U	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Semi Volatile Organic Compounds		,				•			•								
1,1-Biphenyl	mg/kg	200	0.071 U	0.019 J	0.14 U	0.079 J	0.039 J	0.075 U	0.073 U	1.5 U	0.072 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U	1.5 U
2-Chloronaphthalene	mg/kg	60,000	0.071 U	0.079 U	0.14 U	0.079 U	0.078 U	0.075 U	0.024 J	1.5 U	0.072 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U	1.5 U
2-Methylnaphthalene	mg/kg	3,000	0.007 U	0.051	0.14 U	0.11	N/A	0.027	0.14	0.045 J	0.005 J	0.0066 B	0.0062 B	0.02 B	2.5	0.0061 B	0.016 B
3&4-Methylphenol(m&p Cresol)	mg/kg	41,000	0.14 R	0.16 U	0.29 UJ	0.036 J	0.16 UJ	0.15 U	0.15 U	2.9 U	0.14 R	0.14 U	2.8 U	2.9 U	3.3 U	0.15 U	3.1 U
Acenaphthene	mg/kg	45,000	0.007 U	0.0072 U	0.14 U	0.092	N/A	0.033	0.011	0.0054 J	0.00087 J	0.0093 J	0.0067 J	0.023 J	11.4	0.0058 J	0.0067 J
Acenaphthylene	mg/kg	45,000	0.007 U	0.0096	0.14 U	0.2	N/A	0.023	0.092	0.14	0.002 J	0.0064 J	0.0053 J	0.053 J	0.39	0.02	0.044 J
Acetophenone	mg/kg	120,000	0.071 U	0.031 J	0.14 U	0.037 J	0.078 U	0.075 U	0.073 U	1.5 U	0.072 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U	1.5 U
Anthracene	mg/kg	230,000	0.007 U	0.016	0.14 U	0.5	N/A	0.024	0.14	0.097	0.0046 J	0.027 J	0.031	0.098	2.9	0.035	0.036 J
Benz[a]anthracene	mg/kg	2.9	0.0026 J	0.043	0.31	1.5	N/A	0.094	0.63	0.25	0.037	0.14	0.12	0.4	1.5	0.24	0.17
Benzaldehyde	mg/kg	120,000	0.071 R	0.057 J	0.14 R	0.054 J	0.018 J	0.075 R	0.073 R	1.5 R	0.072 R	0.07 R	1.4 R	1.4 R	1.6 R	0.074 R	1.5 R
Benzo[a]pyrene	mg/kg	0.29	0.007 U	0.059	0.23	1.5	N/A	0.12	0.48	0.68	0.057	0.17	0.14	0.4	1.1	0.23	0.18
Benzo[b]fluoranthene	mg/kg	2.9	0.011	0.12	0.45	2.5	N/A	0.3	1.1	0.93	0.098	0.18	0.27	0.82	2.6	0.45	0.37
Benzo[g,h,i]perylene	mg/kg		0.0039 J	0.068	0.16	0.85	N/A	0.077	0.21	0.58	0.048	0.11	0.099	0.26	0.44	0.14	0.12
Benzo[k]fluoranthene	mg/kg	29	0.009	0.042	0.17	1.3	N/A	0.083	1.4	0.72	0.076	0.14	0.21	0.63	2	0.35	0.29
Carbazole	mg/kg		0.071 U	0.079 U	0.14 U	0.27 J	0.16	0.027 J	0.073 U	1.5 U	0.072 U	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U	1.5 U
Chrysene	mg/kg	290	0.0072	0.07	0.28	1.5	N/A	0.12	0.69	0.26	0.042	0.15	0.11	0.37	1.5	0.21	0.16
Dibenz[a,h]anthracene	mg/kg	0.29	0.007 U	0.026	0.14 U	0.39	N/A	0.033	0.095	0.13	0.011	0.033 J	0.026	0.08	0.18	0.048	0.035 J
Fluoranthene	mg/kg	30,000	0.012	0.071	0.46	2.1	N/A	0.15	1.2	0.36	0.045	0.19	0.2	0.65	6.1	0.36	0.33
Fluorene	mg/kg	30,000	0.007 U	0.0024 J	0.14 U	0.12	N/A	0.0066 J	0.016	0.014 J	0.00074 J	0.008 J	0.0064 J	0.014 J	3.7	0.005 J	0.077 U
Indeno[1,2,3-c,d]pyrene	mg/kg	2.9	0.007 U	0.06	0.14 U	1	N/A	0.078	0.23	0.48	0.039	0.062 J	0.084	0.24	0.48	0.13	0.11
Naphthalene	mg/kg	17	0.0023 B	0.036	0.14 U	0.19	N/A	0.044	0.46	0.27 J	0.0083 J	0.071 U	0.011	0.045 J	1.3	0.013	0.17
Phenanthrene	mg/kg		0.007 U	0.071	0.14 U	1.3	N/A	0.072	0.69	0.28	0.022	0.1	0.11	0.29	4.8	0.11	0.11
Phenol	mg/kg	250,000	0.071 R	0.079 U	0.14 UJ	0.031 J	0.078 UJ	0.075 U	0.073 U	1.5 U	0.072 R	0.07 U	1.4 U	1.4 U	1.6 U	0.074 U	1.5 U
Pyrene	mg/kg	23,000	0.0065 J	0.06	0.43	1.9	N/A	0.14	0.95	0.36	0.045	0.2	0.17	0.57	4.3	0.3	0.28
Polychlorinated Biphenyls																	
Aroclor 1254	mg/kg	0.97	0.018 U	N/A	0.018 U	N/A	N/A	0.019 U	N/A	0.097 J	N/A	0.017 UJ	N/A	0.018 UJ	N/A	0.019 UJ	N/A
Aroclor 1260	mg/kg	0.99	0.018 U	N/A	0.018 U	N/A	N/A	0.044	N/A	0.18 U	N/A	0.017 UJ	N/A	0.08 J	N/A	0.092 J	N/A
PCBs (total)	mg/kg	0.97	0.12 U	N/A	0.12 U	N/A	N/A	0.044 J	N/A	1.7 U	N/A	0.16 U	N/A	0.08 J	N/A	0.092 J	N/A
TPH / Oil & Grease																	
Diesel Range Organics	mg/kg	6,200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	56.2 J	9.9 J	15.9 J	42 J	110 J	144 J	30.4 J	29.7 J
Oil & Grease	mg/kg	6,200	549	598	1,290	567	N/A	469	1,240	736 J-	124 J-	477 J-	247 J-	761 J-	2,990 J-	673 J-	307 J-

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

N/A: This parameter was not analyzed for this sample

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

UJ: This analyte was not detected in the sample. The quantitative/detection limit may be higher than reported.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

J: The positive result for this analyte is a quantitative estimate.

J-: The positive result for this analyte is a quantitative estimate but may be biased low.

R: The result for this analyte is unreliable.

A4-013-SB has been excavated due to elevated levels of cadmium and is not included in the SLRA

Table 2A - Sub-Parcel A4-2Summary of Inorganics Detected in Soil

D (T T •/	DAL	A4-011-SB-1	A4-011-SB-5	A4-012-SB-1	A4-012-SB-5	A4-013-SB-1	A4-013-SB-4	B14-003-SB-1	B14-003-SB-5	B14-025-SB-1	B14-025-SB-5	B14-026-SB-1	B14-026-SB-8.5	B14-027-SB-1	B14-027-SB-5	B14-027-SB-10
Parameter	Units	PAL	11/2/2015	11/2/2015	11/5/2015	11/5/2015	11/5/2015	11/5/2015	9/13/2017	9/13/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017	9/14/2017
Metals																	
Aluminum	mg/kg	1,100,000	8,040	20,600	15,600	11,800	12,100	4,840	11,300	4,700	43,400	21,900	16,600	25,400	13,200	18,200	N/A
Antimony	mg/kg	470	3.1 UJ	2.4 UJ	3.1 UJ	2 UJ	3.3 UJ	7.8 J	1.7 J	4.4 J	2.4 UJ	2.4 UJ	2.6 UJ	3 UJ	2.7 UJ	2.7 UJ	N/A
Arsenic	mg/kg	3.0	5.9	2.8	3.7	9.4	6.2	29.4	4.6	2.4	2 U	2.2	2.6	8.2	4.8	6.7	7.0
Barium	mg/kg	220,000	41.5 J	214 J	124	173	157	90.8	135	63.4	461 J	267 J	92.9 J	359 J	70.5 J	132 J	N/A
Beryllium	mg/kg	2,300	1 U	1.2	1.1	1.0	1.6	0.28 J	1.2	0.87 U	7.5	3.6	0.86 B	3.5	0.72 B	1.1	N/A
Cadmium	mg/kg	980	0.7 J	0.65 J	0.76 B	11.7	1.4 B	33,600	0.73 J	0.56 J	1.2 U	1 J	1.9	3	0.85 J	0.62 J	N/A
Chromium	mg/kg	120,000	1,810	31.3	687	399	89	126	611 J	1,050 J	48.6 J	502 J	236 J	35.3 J	84.4 J	77.7 J	N/A
Chromium VI	mg/kg	6.3	15.1	1.1 U	1 UJ	1.1 UJ	1.1 UJ	1.3 UJ	0.62 B	11.6 J-	0.52 B	0.57 B	0.55 B	0.63 B	0.57 B	0.53 B	N/A
Cobalt	mg/kg	350	5.2 U	9.1	4.7 B	14.2	9.5	70.9	3 J	1.3 J	0.89 J	4.2	5.1	12.5	6.2	8.1	N/A
Copper	mg/kg	47,000	17.5 J	72.4 J	23.5 J	70.7 J	49.4 J	10,700 J	34.2	18.3	5.1	42.6	28.5	36.8	30.9	26.2	N/A
Iron	mg/kg	820,000	177,000	25,700	79,600	73,100	38,700	255,000	94,800	124,000	20,100	98,700	43,800	33,900	27,500	35,200	N/A
Lead	mg/kg	800	3.4	235	68	228	115	2,780	43.5	24.6	6.7 J	116 J	111 J	393 J	162 J	79.3 J	N/A
Manganese	mg/kg	26,000	35,800	1,370	16,100 J	9,020 J	3,060 J	3,580 J	12,600	17,700	3,820	10,800	5,160	2,240	1,340	1,650	N/A
Mercury	mg/kg	350	0.1 UJ	0.017 J	0.031 J	0.054 J	0.027 J	0.89 J	0.073 J	0.1 U	0.11 U	0.065 J	0.11 J	1 J	0.12 J	0.033 J	N/A
Nickel	mg/kg	22,000	13.8 J	14.9 J	13	35.8	24.4	213	19.8	13.3	4.8 J	21.5	13.6	12.4	14	14.5	N/A
Silver	mg/kg	5,800	2.9 J	2.4 U	3.1 U	2 U	3.3 U	14.3	22.5	24.2	10.8 J	15.6 J	7.4 J	10.7 J	4.5 J	4.4 J	N/A
Vanadium	mg/kg	5,800	630	121	324 J	1,060 J	228 J	106 J	462 J	564 J	30.8 J	302 J	212 J	60 J	147 J	145 J	N/A
Zinc	mg/kg	350,000	29.8	236	208	1,250	308	62,400	220 J	151 J	48.2	613	1,160	567	299	275	N/A
Other																	
Cyanide, Total	mg/kg	150	0.65 U	0.59 U	0.18 J	0.49 J	0.28 J	0.72 U	0.53 J	1 U	0.84 J-	0.45 J-	0.41 J-	0.5 J-	1.1 UJ	0.95 UJ	N/A

Detections in bold

N/A: This parameter was not analyzed for this sample

Values in red indicate an exceedance of the Project Action Limit (PAL)

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

UJ: This analyte was not detected in the sample. The quantitation/detection limit may be higher than reported.

B: The analyte was not detected substantially above the level of the associated method blank or field blank.

J-: The positive result for this analyte is a quantitative estimate but may be biased low.

J: The positive resulte for this analyte is a quantitative estimate.

A4-013-SB has been excavated due to elevated levels of cadmium and is not included in the SLRA

Boring ID	A4-013-SE	B (original)	A4-01	13-SB	A4-01.	3A-SB	A4-01	3B-SB	A4-01	3C-SB	A4-01.	3D-SB
Sample Date	11/5/	2016	12/8/	2016	12/8/	2016	12/8/	2016	12/8/	2016	12/8/	2016
Included In SLRA?	N	ю	N	lo	Y	es	Y	es	Y	es	Y	es
Depth (ft)	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag
1	1.4	В					1.2	J				
2									1.3		22	
3					72.3				7.5			
4	33,600		0.51	J			0.72	J			4	
5			101						11.9			
6					13.7						11.8	
7					0.77	J						
8												
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-01.	3E-SB	A4-01.	3F-SB	A4-01.	3G-SB	A4-01.	3H-SB	A4-01	3I-SB	A4-01	3J-SB
Sample Date	12/8/	2016	12/8/2	2016	12/8/	2016	12/8/	2016	12/8/	2016	12/8/	2016
Included In SLRA?	Ye	es	Ye	es	Y	es	Y	es	Y	es	Ye	es
Depth (ft)	Result (mg/kg)	Flag										
1			1.2	J			1.3	В				
2					4						4.3	
3	6.3								13.2			
4					4.5		3.3		0.59	В	10.1	
5			46.9						0.98	J		
6	6.8				2.3		3.9					
7	8.3											
8			61									
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-01.	3K-SB	A4-01	3L-SB	A4-013	3M-SB	A4-01	3N-SB	A4-01	3O-SB	A4-01	3P-SB
Sample Date	12/8/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016
Included In SLRA?	Y	es										
Depth (ft)	Result (mg/kg)	Flag										
1			1.1	J					0.41	J		
2					1.1	J	0.64	J				
3	0.83	J	4.3				0.92	J	0.83	J		
4											8.1	
5	6.2				49.5		4.9				6.1	
6			7.1						8.9			
7					5.8						1.7	
8												
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-01.	3Q-SB	A4-01.	3R-SB	A4-01	3S-SB	A4-01	3T-SB	A4-01	3U-SB	A4-01.	3V-SB
Sample Date	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016
Included In SLRA?	N	0	Y	es								
Depth (ft)	Result (mg/kg)	Flag										
1	1	J					0.74	В			5	
2			2.6				5		12.4			
3					54.5				14.9		8	
4	15.5											
5			1.8		0.86	В					0.85	J
6	20,100		1	J	16				36.2			
7							39.3					
8												
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	3W-SB	A4-013	3X-SB	A4-01.	3Y-SB	A4-01	3Z-SB	A4-013	AA-SB	A4-013	BB-SB
Sample Date	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016	12/9/	2016
Included In SLRA?	Ye	es	Y	es	Y	es	Y	es	Y	es	Ye	es
Depth (ft)	Result (mg/kg)	Flag										
1							6.1		2.9			
2			2.7									
3	3										4.7	
4					51		35.7					
5									37.9			
6	13.8		5.7		1.3							
7					4.1						2.8	
8									9.8		1.6	
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	CC-SB	A4-013	DD-SB	A4-013	EE-SB	A4-013	FF-SB	A4-013	GG-SB	A4-013	HH-SB
Sample Date	12/9/	2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016
Included In SLRA?	Ye	es	Y	es	Y	es	Y	es	Y	es	Ye	es
Depth (ft)	Result (mg/kg)	Flag										
1	1.2	J	1.5	В			1.4	В				
2					2.9				0.53			
3			1.4	В							0.84	В
4	3.9				1.8		9.1				317	
5									3.9			
6	1.2	В	81.7						6.2			
7					1.5	В					4.8	
8							12.7					
9												
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-01.	3II-SB	A4-013	3JJ-SB	A4-013	KK-SB	A4-013	SLL-SB	A4-013	MM-SB	A4-013	NN-SB
Sample Date	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016
Included In SLRA?	Y	es	Ye	es	Y	es	Y	es	Y	es	Y	es
Depth (ft)	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag	Result (mg/kg)	Flag
1			1.1	В	0.85	В			1.7	В		
2	1.4	В					8.7				0.94	В
3					8							
4	4		14.2						1.1	В		
5							27					
6											14.7	
7					5.9							
8												
9											6.2	
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	OO-SB	A4-013	PP-SB	A4-013	QQ-SB	A4-013	RR-SB	A4-013	SS-SB	A4-013	TT-SB
Sample Date	12/12/	/2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016	12/12	/2016
Included In SLRA?	Y	es	Ye	es	Y	es	Y	es	Y	es	Y	es
Depth (ft)	Result (mg/kg)	Flag										
1							10.7					
2			50.5						10.4			
3	10.1		1.7	В							8.4	
4	9.8											
5					52.3		69.4		52.6			
6					25.8							
7	0.54	В			38.6						139	
8			7.9				28.9					
9									2.1		2	
10												

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	UU-SB	A4-013	VV-SB	A4-013	WW-SB	A4-013	XX-SB	A4-013	YY-SB
Sample Date	12/12	/2016	12/20	/2016	12/20	/2016	12/20	/2016	12/20	/2016
Included In SLRA?	Y	es								
Depth (ft)	Result (mg/kg)	Flag								
1	4.6		0.2	В	3.9		0.69	В	1.4	В
2	5.5									
3	28.5		3.6						1.2	U
4										
5			6.4		1.8	U	2.3		21.6	
6										
7							1.4	U		
8					1.2	U				
9										
10										

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	SZZ-SB	A4-013A	AA-SB-1	A4-0131	BBB-SB	A4-0130	CCC-SB	A4-013I	DDD-SB
Sample Date	12/20	/2016	12/20	/2016	12/20	/2016	12/20	/2016	12/20	/2016
Included In SLRA?	Y	es	Y	es	Y	es	Y	es	Y	es
Depth (ft)	Result (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Result (mg/kg)	Flag	Results (mg/kg)	Flag
1	1.5	В	0.71	В	1	В	1.4		0.54	J
2										
3							11.1			
4										
5	3.2		1.2	U	48.5		1	J	0.26	J
6										
7					9				7	
8	0.73	В	2.2							
9										
10										

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	EEE-SB	A4-013	FFF-SB	A4-0130	GGG-SB	A4-013H	HH-SB	A4-013	3III-SB
Sample Date	12/20/2016		12/20	/2016	12/20	/2016	12/20	/2016	12/20	/2016
Included In SLRA?	Yes		Y	es	Y	es	Y	es	Y	es
Depth (ft)	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag
1	0.37	J	1.2	U	0.33	J	2.2		0.56	В
2										
3							1.2	U		
4										
5	0.44	J	2.8		1.3	U	1.4	U	3.7	
6										
7			9.1						2.9	
8	1	J			56.7					
9										
10										

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-013	BJJJ-SB	A4-013F	KKK-SB	A4-013	LLL-SB	A4-013N	IMM-SB	A4-0131	NNN-SB
Sample Date	12/20/2016		12/20/2016		12/20	/2016	12/20	/2016	12/20	/2016
Included In SLRA?	Yes		Y	Yes Yes Yes Results		Y	Yes			
Depth (ft)	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag
1	0.99	В	0.62	В	1.2	U	1.3	U	0.26	В
2										
3										
4										
5	0.85	В	0.38	В	0.54	J	1.3	U	0.35	В
6										
7	99.1				0.39	J	0.19	В		
8			0.21	В						
9									2.8	
10										

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-	N-1	A4-	N-2	A4-	N-3	A4-	N-4	A4-	N-5	
Sample Date	10/3/2019		10/3/2019		10/3/	2019	10/3/	2019	10/3/2019		
Included In SLRA?	Yes		Y	es	Y	es	Y	es	Y	Yes	
Depth (ft)	Results (mg/kg)	Flag									
1											
2											
3											
4	29.1		1.8		12.6		1.2	U			
5											
6											
7											
8									33.9		
9											
10											

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Boring ID	A4-	-S-6	A4-	A4-S-7 A4-S-8 A		A4-	-S-9	A4-3	S-10	
Sample Date	10/3/2019		10/3/2019		10/3/	2019	10/3/	2019	10/3/2019	
Included In SLRA?	Yes		Y	Yes Yes Yes		Yes				
Depth (ft)	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag	Results (mg/kg)	Flag
1										
2										
3	48.1		484		19.2		17.1			
4										
5										
6									74.6	
7										
8										
9										
10										

Grey cells indicate that analytical data is not available (collected/analyzed) at this depth

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit

J: The positive result reported for this analyte is a quantitative estimate

B: This analyte was not detected substantially above the level of the associated method blank/preparation or field blank

Table 3 - Sub-Parcel A4-2
Summary of Organics Detected in Groundwater

		0	A4-012-PZ	A4-013-PZ	HI04-PZM006	HI19-MWS
Parameter	Units	PAL	11/10/2015	11/11/2015	10/16/2017	2/16/2022
Volatile Organic Compounds			11/10/2015	11/11/2013	10/10/2017	2,10,2022
2-Butanone (MEK)	μg/L	5,600	10 U	10 U	936	0.75 U
Acetone	μg/L	14,000	10 U	10 U	1,080	5 U
Benzene	μg/L	5.0	2.1	1 U	1 U	8.8
Bromomethane	μg/L	7.5	1 U	1 U	1.3	1 U
Ethylbenzene	μg/L	700	0.56 J	1 U	1 U	0.5 U
Toluene	μg/L	1,000	1.6	0.31 J	1 U	3.0
Xylenes	μg/L	10,000	3.6	3 U	3 U	2 J
Semi-Volatile Organic Compounds*						
1,1-Biphenyl	μg/L	0.83	0.39 J	1 U	0.98 U	2 U
2,3,4,6-Tetrachlorophenol	μg/L	240	0.33 J	1 U	0.98 U	5 U
2,4-Dimethylphenol	μg/L	360	1.2	1 U	3.1	6.4
2-Methylnaphthalene	μg/L	36	2.9	0.064 J	0.098 U	1.9
2-Methylphenol	μg/L	930	0.3 J	1 U	0.26 J	5 U
3&4-Methylphenol(m&p Cresol)	μg/L	930	1.4 J	2 U	0.26 J	3.1 J
Acenaphthene	μg/L	530	2.3	0.056 J	0.63	0.38
Acenaphthylene	μg/L	530	0.41	0.02 J	0.098 U	0.26
Anthracene	μg/L	1,800	0.6	0.057 J	0.24	0.17
Benz[a]anthracene	μg/L	0.012	0.067 J	0.024 J	0.098 U	0.07
Benzo[a]pyrene	μg/L	0.20	0.0082 J	0.0097 J	0.098 U	0.04 J
Benzo[b]fluoranthene	μg/L	0.034	0.026 J	0.1 U	0.098 U	0.05
Benzo[k]fluoranthene	μg/L	0.34	0.023 J	0.1 U	0.098 U	0.02 J
Benzaldehyde	μg/L	1,900	1 U	1 U	0.76 J	5 U
bis(2-Ethylhexyl)phthalate	μg/L	6.0	0.26 J	1 U	0.41 J	3 U
Carbazole	μg/L		4.7	1 U	0.98 U	0.64 J
Chrysene	μg/L	3.4	0.067 J	0.011 J	0.098 U	0.05 J
Di-n-ocytlphthalate	μg/L	200	1 U	1 U	0.18 J	5 U
Fluoranthene	μg/L	800	0.77	0.054 J	0.082 J	0.38
Fluorene	μg/L	290	2.3	0.085 J	0.096 J	0.56
Naphthalene	μg/L	0.12	63.9	0.28	0.15	18.0
Pentachlorophenol	μg/L	1.0	2.6	2.5 U	2.5 U	10 U
Phenanthrene	μg/L		4.4	0.17	0.038 J	0.89
Phenol	μg/L	5,800	1 U	1 U	0.1 J	0.83 J
Pyrene	μg/L	120	0.51	0.047 J	0.076 J	0.27
ТРН						
Diesel Range Organics	μg/L	47	N/A	N/A	1,570	N/A

Detection in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

*PAH compounds were analyzed via SIM

N/A: this parameter was not analyzed for this sample

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result for this analyte is a quantitative estimate.

Table 4 - Sub-Parcel A4-2
Summary of Inorganics Detected in Groundwater

	TT • (DAT	A4-012-PZ	A4-013-PZ	HI04-PZM006	HI19-MWS
Parameter	Units	PAL	11/10/2015	11/11/2015	10/16/2017	2/16/2022
Metals, Total			•			•
Aluminum	μg/L	20,000	N/A	N/A	461	N/A
Arsenic	μg/L	10	N/A	N/A	3.1 J	N/A
Barium	μg/L	2,000	N/A	N/A	208	N/A
Cadmium	μg/L	5.0	N/A	N/A	0.92 J	N/A
Chromium	μg/L	100	N/A	N/A	23.7	N/A
Copper	μg/L	1,300	N/A	N/A	3.5 J	N/A
Iron	μg/L	14,000	N/A	N/A	7,260	N/A
Lead	μg/L	15	N/A	N/A	9.3	N/A
Manganese	μg/L	430	N/A	N/A	1,700	N/A
Nickel	μg/L	390	N/A	N/A	4.5 J	N/A
Vanadium	μg/L	86	N/A	N/A	9.3	N/A
Zinc	μg/L	6,000	N/A	N/A	108	N/A
Metals, Dissolved						
Aluminum, Dissolved	μg/L	20,000	677	31.3 J	817	N/A
Arsenic, Dissolved	μg/L	10	5.0	5 U	5 U	N/A
Barium, Dissolved	μg/L	2,000	38.1	29.2	208	N/A
Chromium, Dissolved	μg/L	100	1 B	0.91 B	30.3	N/A
Copper, Dissolved	μg/L	1,300	1.5 B	5 U	4 J	N/A
Iron, Dissolved	μg/L	14,000	22.3 B	326	7,810	N/A
Lead, Dissolved	μg/L	15	5 U	5 U	7.9	N/A
Manganese, Dissolved	μg/L	430	0.88 B	282	1,660	N/A
Nickel, Dissolved	μg/L	390	10 U	10 U	5.7 J	N/A
Vanadium, Dissolved	μg/L	86	630	63.7	9.9	N/A
Zinc, Dissolved	μg/L	6,000	10 U	10 U	116	N/A
Other						
Cyanide, Available	μg/L	200	N/A	N/A	4.5	N/A
Cyanide, Total	μg/L	200	20.6	4.9 J	8.3 J	N/A

Detections in bold

Values in red indicate an exceedance of the Project Action Limit (PAL)

N/A: this parameter was not analyzed for this sample

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

B: This analyte was not detected substantially above the level of the associated method blank or field blank.

J: The positive result for this analyte is a quantitative estimate.

Table 5 - Sub-Parcel A4-2Cumulative Vapor Intrusion Comparison

				A	4-012-PZ	A4-013-PZ		HI04-PZM006		HI19-MWS	
					/10/2015	11/11/2015		10/16/2017		2/16/2022	
Parameter	Туре	Organ Systems	VI Screening Criteria (ug/L)	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard	Conc. (ug/L)	Risk/ Hazard
Cancer Risk											
Benzene	VOC	Immune	69	2.1	3.04E-07	1 U	0	1 U	0	8.8	1.28E-06
Ethylbenzene	VOC	Developmental; Hepatic; Urinary	150	0.56 J	3.73E-08	1 U	0	1 U	0	0.5 U	0
Naphthalene	SVOC	Nervous; Respiratory	200	63.9	3.20E-06	0.28	1E-08	0.15	7.5E-09	18	9E-07
	Cumulati	ve Vapor Intrusion Cancer Risk			4E-06		1E-08		8E-09		2E-06
Non-Cancer Risk											
Cyanide, Available		Reproductive	3.5	N/A	0	N/A	0	4.5	1.29	N/A	0
Cyanide, Total		Reproductive	3.5	20.6	5.89	4.9 J	1.40	N/A	0	N/A	0
Cur	nulative V	Vapor Intrusion Non-Cancer Hazard			6		1		1		0

Yellow highlighted values indicate exceedances of the cumulative vapor intrusion criteria: TCR>1E-05 or THI>1 Conc. = Concentration

U: This analyte was not detected in the sample. The numeric value represents the sample quantitation/detection limit.

J: The positive result reported for this analyte is a quantitative estimate.

Table 6 - Sub-Parcel A4-2COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
1,1-Biphenyl	92-52-4	A4-012-SB-5	0.079	J	0.019	0.05	13	23.08	410	20	no
1,2-Dichlorobenzene	95-50-1	A4-012-SB-1	0.0021	J	0.0021	0.002	4	25.00		930	no
2-Butanone (MEK)	78-93-3	A4-012-SB-5	0.0058	J	0.0037	0.004	4	100.00		19,000	no
2-Methylnaphthalene	91-57-6	B14-026-SB-8.5	2.5		0.005	0.54	12	41.67		300	no
Acenaphthene	83-32-9	B14-026-SB-8.5	11.4		0.00087	1.283	12	75.00		4,500	no
Acenaphthylene	208-96-8	B14-026-SB-8.5	0.39		0.002	0.087	12	83.33			no
Acetone	67-64-1	A4-011-SB-5	0.046	J	0.029	0.04	4	100.00		67,000	no
Acetone	67-64-1	A4-012-SB-5	0.046	J	0.029	0.04	4	100.00		67,000	no
Acetophenone	98-86-2	A4-012-SB-5	0.037	J	0.031	0.03	13	15.38		12,000	no
Aluminum	7429-90-5	B14-025-SB-1	43,400		4,700	17,562	12	100.00		110,000	no
Anthracene	120-12-7	B14-026-SB-8.5	2.9		0.0046	0.37	12	83.33		23,000	no
Antimony	7440-36-0	B14-003-SB-5	4.4	J	1.7	3.05	12	16.67		47	no
Aroclor 1254	11097-69-1	B14-003-SB-1	0.097	J	0.097	0.10	6	16.67	0.97	1.5	no
Aroclor 1260	11096-82-5	B14-027-SB-1	0.092	J	0.08	0.09	6	33.33	0.99		no
Arsenic	7440-38-2	A4-012-SB-5	9.4		2.2	5.03	13	92.31	3	48	YES (C)
Barium	7440-39-3	B14-025-SB-1	461	J	41.5	178	12	100.00		22,000	no
Benz[a]anthracene	56-55-3	A4-012-SB-5	1.5		0.0026	0.39	12	100.00	21		no
Benz[a]anthracene	56-55-3	B14-026-SB-8.5	2		0.003	0.39	12	100.00	21		no
Benzaldehyde	100-52-7	A4-011-SB-5	0.057	J	0.018	0.04	3	100.00	820	12,000	no
Benzo[a]pyrene	50-32-8	A4-012-SB-5	1.5		0.057	0.43	12	91.67	2.1	22	no
Benzo[b]fluoranthene	205-99-2	B14-026-SB-8.5	2.6		0.011	0.73	12	100.00	21		no
Benzo[g,h,i]perylene	191-24-2	A4-012-SB-5	0.85		0.0039	0.24	12	100.00			no
Benzo[k]fluoranthene	207-08-9	B14-026-SB-8.5	2		0.009	0.49	12	100.00	210		no
Beryllium	7440-41-7	B14-025-SB-1	7.5		1	2.53	12	66.67	6,900	230	no
Cadmium	7440-43-9	A4-S-7	484		0.26	17.9	206	79.61	9,300	98	YES (C/NC)
Carbazole	86-74-8	A4-012-SB-5	0.27	J	0.16	0.22	13	15.38			no
Chromium	7440-47-3	A4-011-SB-1	1,810		31.3	464	12	100.00		180,000	no

Table 6 - Sub-Parcel A4-2COPC Screening Analysis

Parameter	CAS#	Location of Max Result	Max Detection (mg/kg)	Final Flag	Min Detection (mg/kg)	Average Detection (mg/kg)	Total Samples	Frequency of Detection (%)	Cancer TR=1E-06 (mg/kg)	Non-Cancer HQ=0.1 (mg/kg)	COPC?
Chromium VI	18540-29-9	A4-011-SB-1	15.1		11.6	13.4	12	16.67	6.3	350	YES (C)
Chrysene	218-01-9	A4-012-SB-5	1.5		0.0072	0.39	12	100.00	2100		no
Chrysene	218-01-9	B14-026-SB-8.5	1.5		0.0072	0.39	12	100.00	2,100		no
Cobalt	7440-48-4	A4-012-SB-5	14.2		0.89	6.46	12	83.33	1,900	35	no
Copper	7440-50-8	A4-011-SB-5	72.4	J	5.1	33.9	12	100.00		4,700	no
Cyanide	57-12-5	B14-025-SB-1	0.84	J-	0.18	0.49	12	58.33		120	no
Cyclohexane	110-82-7	A4-012-SB-5	0.0017	J	0.00072	0.001	4	50.00		2,700	no
Dibenz[a,h]anthracene	53-70-3	A4-012-SB-5	0.39		0.011	0.10	12	83.33	2		no
Ethylbenzene	100-41-4	A4-011-SB-1	0.005	J	0.005	0.01	4	25.00	25	2,000	no
Fluoranthene	206-44-0	B14-026-SB-8.5	6.1		0.012	0.91	12	100.00		3,000	no
Fluorene	86-73-7	B14-026-SB-8.5	3.7		0.00074	0.43	12	75.00		3,000	no
Indeno[1,2,3-c,d]pyrene	193-39-5	A4-012-SB-5	1		0.039	0.27	12	83.33	21		no
Iron	7439-89-6	A4-011-SB-1	177,000		20100	69,450	12	100.00		82,000	YES (NC)
Lead^	7439-92-1	B14-026-SB-8.5	393	J	3.4	123	12	100.00		800	no
Manganese	7439-96-5	A4-011-SB-1	35,800		1340	9,800	12	100.00		2,600	YES (NC)
Mercury	7439-97-6	B14-026-SB-8.5	1	J	0.017	0.17	12	75.00		35	no
Naphthalene	91-20-3	B14-026-SB-8.5	1.3		0.0083	0.23	12	75.00	8.6	59	no
Nickel	7440-02-0	A4-012-SB-5	35.8		4.8	15.95	12	100.00	64,000	2,200	no
PCBs (total)*	1336-36-3	B14-027-SB-1	0.092	J	0.08	0.09	6	33.33	0.94		no
Phenanthrene	85-01-8	B14-026-SB-8.5	4.8		0.022	0.72	12	83.33			no
Phenol	108-95-2	A4-012-SB-5	0.031	J	0.031	0.03	11	9.09		25,000	no
Pyrene	129-00-0	B14-026-SB-8.5	4.3		0.0065	0.72	12	100.00		2,300	no
Silver	7440-22-4	B14-003-SB-5	24.2		2.9	11.4	12	75.00		580	no
Toluene	108-88-3	A4-011-SB-1	0.08		0.08	0.08	4	25.00		4,700	no
Vanadium	7440-62-2	A4-012-SB-5	1,060	J	31	338	12	100.00		580	YES (NC)
Xylenes	1330-20-7	A4-011-SB-1	0.028	J	0.028	0.03	4	25.00		250	no
Zinc	7440-66-6	A4-012-SB-5	1,250		29.8	421	12	100.00		35,000	no

J: The positive result reported for this analyte is a quantitative estimate.

J-: The positive result reported for this analyte is a quantitative estimate, but may be biased low.

COPC = Constituent of Potential Concern

C = Compound was identified as a cancer COPC

TR = Target Risk

NC = Compound was identified as a non-cancer COPC

HQ = Hazard Quotient

*PCBs (total) include the sum of all detected aroclor mixtures, including those without RSLs (e.g. Aroclor 1262, Aroclor 1268) which are not displayed. ^Lead is assessed separately through the ALM and IEUBK models.

Table 7 - Sub-Parcel A4-2Assessment of Lead

Exposure Unit	Surface/Sub-Surface	Maximum Concentration (mg/kg)	Arithmetic Mean (mg/kg)
EU1	Surface	111	40.4
	Sub-Surface	393	248
(8.05 ac.)	Pooled	393	144
EU1-EXP	Surface	162	65.8
	Sub-Surface	393	179
(11.8 ac.)	Pooled	393	123

		EU1 (8.05 ac.)								
	EPCs - Surfac	e Soils	EPCs - Sub-Sur	face Soils	EPCs - Pooled Soils					
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)				
Arsenic	Maximum Value	5.90	Maximum Value	8.20	Maximum Value	8.20				
Cadmium	95% H-UCL	3.68	KM H-UCL	32.1	KM H-UCL	20.3				
Chromium VI	Maximum Value	15.1	Maximum Value	1.10	Maximum Value	15.1				
Iron	Maximum Value	177,000	Maximum Value	98,700	Maximum Value	177,000				
Manganese	Maximum Value	35,800	Maximum Value	10,800	Maximum Value	35,800				
Vanadium	Maximum Value	630	Maximum Value	302	Maximum Value	630				

Table 8 - Sub-Parcel A4-2Soil Exposure Point Concentrations

Bold indicates maximum value used as the EPC

		EU1-EXP (11.8 ac.)					
	EPCs - Surfac	ce Soils	EPCs - Sub-Sur	face Soils	EPCs - Pooled Soils		
Parameter	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	EPC Type	EPC (mg/kg)	
Arsenic	Maximum Value	5.90	Maximum Value	11.7	95% KM (t) UCL	5.90	
Cadmium	KM H-UCL	3.76	KM H-UCL	31.0	KM H-UCL	19.0	
Chromium VI	Maximum Value	15.1	Maximum Value	11.6	Maximum Value	15.1	
Iron	Maximum Value	177,000	Maximum Value	124,000	95% Student's-t UCL	94,343	
Manganese	Maximum Value	35,800	Maximum Value	17,700	95% Student's-t UCL	15,010	
Vanadium	Maximum Value	630	Maximum Value	1,060	95% Student's-t UCL	493	

Table 8 - Sub-Parcel A4-2Soil Exposure Point Concentrations

Bold indicates maximum value used as the EPC

Table 9 - Sub-Parcel A4-2 Surface Soils Composite Worker Risk Ratios

			EU1 (8.05 ac.)					
				Composite	e Worker			
			RSLs	(mg/kg)	Risk Ratios			
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ		
Arsenic	Cardiovascular; Dermal	5.90	3.00	480	2.0E-06	0.01		
Cadmium	Urinary	3.68	9,300	980	4.0E-10	0.004		
Chromium VI	Respiratory	15.1	6.30	3,500	2.4E-06	0.004		
Iron	Gastrointestinal	177,000		820,000		0.2		
Manganese	Nervous	35,800		26,000		1		
Vanadium	Dermal	630		5,800		0.1		
					4E-06	\checkmark		

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search **Bold indicates maximum value** EPC: Exposure Point Concentration

HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
10tal 111	Nervous	1
	Urinary	0
	Respiratory	0

Table 10 - Sub-Parcel A4-2 Subsurface Soils Composite Worker Risk Ratios

			EU1 (8.05 ac.)				
				Composite	e Worker		
			RSLs	s (mg/kg)	Risk Ratios		
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	
Arsenic	Cardiovascular; Dermal	8.20	3.00	480	2.7E-06	0.02	
Cadmium	Urinary	32.1	9,300	980	3.5E-09	0.03	
Chromium VI	Respiratory	1.10	6.30	3,500	1.7E-07	0.0003	
Iron	Gastrointestinal	98,700		820,000		0.1	
Manganese	Nervous	10,800		26,000		0.4	
Vanadium	Dermal	302		5,800		0.1	
					3E-06	\checkmark	

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search Bold indicates maximum value

EPC: Exposure Point Concentration HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
10(a) 111	Nervous	0
	Urinary	0
	Respiratory	0

Table 11 - Sub-Parcel A4-2 Pooled Soils Composite Worker Risk Ratios

			EU1 (8.05 ac.)				
				Composit	te Worker		
			RSLs	(mg/kg)	Risk Ratios		
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	
Arsenic	Cardiovascular; Dermal	8.20	3.00	480	2.7E-06	0.02	
Cadmium	Urinary	20.3	9,300	980	2.2E-09	0.02	
Chromium VI	Respiratory	15.1	6.30	3,500	2.4E-06	0.004	
Iron	Gastrointestinal	177,000		820,000		0.2	
Manganese	Nervous	35,800		26,000		1	
Vanadium	Dermal	630		5,800		0.1	
					5E-06	\checkmark	

RSLs were obtained from the EPA Regional Screening Levels at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search **Bold indicates maximum value** EPC: Exposure Point Concentration

HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
Total III	Nervous	1
	Urinary	0
	Respiratory	0

Table 12 - Sub-Parcel A4-2Surface SoilsConstruction Worker Risk Ratios

40 Day		EU1-EXP (11.8 ac.)					
				Constructio	on Worker		
			SSLs	(mg/kg)	Risk]	Ratios	
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ	
Arsenic	Cardiovascular; Dermal	5.90	94.5	598	6.2E-08	0.01	
Cadmium	Urinary	3.76	90,328	1,820	4.2E-11	0.002	
Chromium VI	Respiratory	15.1	131	4,992	1.2E-07	0.003	
Iron	Gastrointestinal	177,000		1,503,383		0.1	
Manganese	Nervous	35,800		24,054		1	
Vanadium	Dermal	630		9,836		0.06	
					2E-07	\checkmark	

SSLs calculated using equations in 2002 EPA Supplemental Guidance <u>Guidance Equation Input Assumptions:</u>

5 cars/day (2 tons/car)

5 trucks/day (20 tons/truck)

3 meter source depth thickness

EPC: Exposure Point Concentration

HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
Total HI	Nervous	1
	Urinary	0
	Respiratory	0

Table 13 - Sub-Parcel A4-2 Subsurface Soils Construction Worker Risk Ratios

	40 Day	EU1-EXP (11.8 ac.)									
		Г		n Worker							
		[SSLs	(mg/kg)	Risk]	Ratios					
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ					
Arsenic	Cardiovascular; Dermal	11.7	94.5	598	1.2E-07	0.02					
Cadmium	Urinary	31.0	90,328	1,820	3.4E-10	0.02					
Chromium VI	Respiratory	11.6	131	4,992	8.9E-08	0.002					
Iron	Gastrointestinal	124,000		1,503,383		0.08					
Manganese	Nervous	17,700		24,054		0.7					
Vanadium	Dermal	1,060		9,836		0.1					
					2E-07	\checkmark					

SSLs calculated using equations in 2002 EPA Supplemental Guidance <u>Guidance Equation Input Assumptions:</u>

5 cars/day (2 tons/car)

5 trucks/day (20 tons/truck)

3 meter source depth thickness

EPC: Exposure Point Concentration

HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
Total HI	Nervous	1
	Urinary	0
	Respiratory	0

Table 14 - Sub-Parcel A4-2Pooled SoilsConstruction Worker Risk Ratios

	40 Day	EU1-EXP (11.8 ac.)									
			Construction Worker								
			SSLs	(mg/kg)	Risk 1	Ratios					
Parameter	Target Organs	EPC (mg/kg)	Cancer	Non-Cancer	Risk	HQ					
Arsenic	Cardiovascular; Dermal	5.90	94.5	598	6.2E-08	0.01					
Cadmium	Urinary	19.0	90,328	1,820	2.1E-10	0.01					
Chromium VI	Respiratory	15.1	131.00	4,992	1.2E-07	0.003					
Iron	Gastrointestinal	94,343		1,503,383		0.06					
Manganese	Nervous	15,010		24,054		0.6					
Vanadium	Dermal	493		9,836		0.05					
					2E-07	\checkmark					

SSLs calculated using equations in 2002 EPA Supplemental Guidance <u>Guidance Equation Input Assumptions:</u>

5 cars/day (2 tons/car)

5 trucks/day (20 tons/truck)

3 meter source depth thickness

EPC: Exposure Point Concentration

HQ: Hazard Quotient

	Cardiovascular	0
	Dermal	0
Total HI	Gastrointestinal	0
Total HI	Nervous	1
	Urinary	0
	Respiratory	0

APPENDIX A



March 23, 2022

Maryland Department of Environment 1800 Washington Boulevard Baltimore MD, 21230

Attention: Ms. Barbara Brown

Subject: Request to Enter Temporary CHS Review Tradepoint Atlantic Parcel A4-2

Dear Ms. Brown:

The conduct of any environmental assessment and cleanup activities on the Tradepoint Atlantic property, as well as any associated development, is subject to the requirements outlined in the following agreements:

- Administrative Consent Order (ACO) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the Maryland Department of the Environment (effective September 12, 2014); and
- Settlement Agreement and Covenant Not to Sue (SA) between Tradepoint Atlantic (formerly Sparrows Point Terminal, LLC) and the United States Environmental Protection Agency (effective November 25, 2014).

On September 11, 2014, Tradepoint Atlantic submitted an application to the Maryland Department of the Environment's (Department) Voluntary Cleanup Program (VCP).

In consultation with the Department, Tradepoint Atlantic affirms that it desires to accelerate the assessment, remediation, and redevelopment of certain sub-parcels within the larger site due to current market conditions. To that end, the Department and Tradepoint Atlantic agree that the Controlled Hazardous Substance (CHS) Act (Section 7-222 of the Environment Article) and the CHS Response Plan (COMAR 26.14.02) shall serve as the governing statutory and regulatory authority for completing the development activities on Parcel A4-2 and complement the statutory requirements of the Voluntary Cleanup Program (Section 7-501 of the Environment Article). Upon submission of a Site Response and Development Work Plan and completion of the remedial activities for the sub-parcel, the Department shall issue a "No Further Action" letter upon a recordation of an environmental covenant describing any necessary land use controls for the specific sub-parcel. At such time that all the sub-parcels within the larger parcel have completed remedial activities, Tradepoint Atlantic shall submit to the Department a request for issuing a Certificate of Completion (COC) as well as all pertinent information concerning completion of remedial activities conducted on the parcel. Once the VCP has completed its review of the

-



submitted information it shall issue a COC for the entire parcel described in Tradepoint Atlantic's VCP application.

Alternatively, Tradepoint Atlantic, or another entity may elect to submit an application for a specific subparcel and submit it to the VCP for review and acceptance. If the application is received after the cleanup and redevelopment activities described in this work plan are implemented and a No Further Action letter is issued by the Department pursuant to the CHS Act, the VCP shall prepare a No Further Requirements Determination for the sub-parcel.

If Tradepoint Atlantic or other entity has not carried out cleanup and redevelopment activities described in the work plan, the cleanup and redevelopment activities may be conducted under the oversight authority of either the VCP or the CHS Act, so long as those activities comport with this work plan.

Engineering and institutional controls approved as part of this Site Response and Development Work Plan shall be described in documentation submitted to the Department demonstrating that the exposure pathways on the sub-parcel are addressed in a manner that protects public health and the environment. This information shall support Tradepoint Atlantic's request for the issuance of a COC for the larger parcel.

Please do not hesitate to contact Tradepoint Atlantic for further information.

Thank you,

and Peter Haid

Vice President Environmental TRADEPOINT ATLANTIC 1600 Sparrows Point Boulevard Baltimore, Maryland 21219 T 443.649.5055 C 732.841.7935 phaid@tradepointatlantic.com

APPENDIX B

Construction Worker Soil Screening Levels Maximum Allowable Work Day Exposure Calculation Spreadsheet - Sub-Parcel A4-2

Description	Variable	Value
Days worked per week	DW	5
Exposure duration (yr)	ED	1
Hours worked per day	ET	8
A/constant (unitless) - particulate emission factor	Aconst	12.9351
B/constant (unitless) - particulate emission factor	Bconst	5.7383
C/constant (unitless) - particulate emission factor	Cconst	71.7711
Dispersion correction factor (unitless)	FD	0.185
Days per year with at least .01" precipitation	Р	130
Target hazard quotient (unitless)	THQ	1
Body weight (kg)	BW	80
Averaging time - noncancer (yr)	ATnc	1
Soil ingestion rate (mg/d)	IR	330
Skin-soil adherence factor (mg/cm2)	AF	0.3
Skin surface exposed (cm2)	SA	3300
Event frequency (ev/day)	EV	1
Target cancer risk (unitless)	TR	01E-06
Averaging time - cancer (yr)	ATc	70
A/constant (unitless) - volatilization	Aconstv	2.4538
B/constant (unitless) - volatilization	Bconstv	17.566
C/constant (unitless) - volatilization	Cconstv	189.0426
Dry soil bulk density (kg/L)	Pb	1.5
Average source depth (m)	ds	3
Soil particle density (g/cm3)	Ps	2.65
Total soil porosity	Lpore/Lsoil	0.43
Air-filled soil porosity	Lair/Lsoil	0.28

Construction Worker Soil Screening Levels Maximum Allowable Work Day Exposure Calculation Spreadsheet - Sub-Parcel A4-2

Area of site (ac)	Ac	11.8	→ EU1-EXI
Overall duration of construction (wk/yr)	EW	8	
Exposure frequency (day/yr)	EF	40	
Cars per day	Ca	5	
Tons per car	CaT	2	
Trucks per day	Tru	5	
Tons per truck	TrT	20	
Mean vehicle weight (tons)	w	11	
Derivation of dispersion factor - particulate emission factor (g/m2-s per kg/m3)	Q/Csr	15.0	
Overall duration of construction (hr)	tc	1,344	
Overall duration of traffic (s)	Tt	1,152,000	
Surface area (m2)	AR	47,753	
Length (m)	LR	219	
Distance traveled (km)	ΣVKT	87	
Particulate emission factor (m3/kg)	PEFsc	84,848,482	
Derivation of dispersion factor - volatilization (g/m2-s per kg/m3)	Q/Csa	8.19	
Total time of construction (s)	Tcv	1,152,000	1

Input	
Calculation	

Chemical	RfD & RfC Sources	^Ingestion SF (mg/kg-day) ⁻ ¹	[^] Inhalation Unit Risk (ug/m ³) ⁻¹	^Subchronic RfD (mg/kg-day)	^Subchronic RfC (mg/m ³)	^GIABS	Dermally Adjusted RfD (mg/kg-day)	^ABS	^RBA	*Dia	*Diw	*Henry's Law Constant (unitless)	*Kd	*Кос	DA	Volatilization Factor - Unlimited Reservoir (m ³ /kg)	Carcinogenic Ingestion/ Dermal SL (SLing/der)	Carcinogenic Inhalation SL (SLinh)	Carcinogenic SL (mg/kg)	Non- Carcinogenic Ingestion/ Dermal SL (SLing/der)	Non- Carcinogenic Inhalation SL (SLinh)	Non- Carcinogenic SL (mg/kg)
Arsenic, Inorganic	I/C	1.50E+00	4.30E-03	3.00E-04	1.50E-05	1	3.00E-04	0.03	0.6			-	2.90E+01				94.7	37,812	94.5	609	34,841	598
Cadmium	A/I	-	1.80E-03	1.00E-03	1.00E-05	0.025	2.50E-05	0.001	1			-	7.50E+01					90,328	90,328	1,975	23,227	1,820
Chromium(VI)	A/C/I	5.00E-01	8.40E-02	5.00E-03	3.00E-04	0.025	1.25E-04	0.01	1			-	1.90E+01				141	1,936	131	5,028	696,818	4,992
Iron	Р	-	-	7.00E-01	-	1	7.00E-01	0.01	1			-	2.50E+01							1,503,383		1,503,383
Manganese (Non-diet)	I	-	-	2.40E-02	5.00E-05	0.04	9.60E-04	0.01	1			-	6.50E+01							30,338	116,136	24,054
Vanadium and Compounds	A	-	-	1.00E-02	1.00E-04	0.026	2.60E-04	0.01	1			-	1.00E+03							10,271	232,273	9,836

*chemical specific parameters found in Chemical Specific Parameters Spreadsheet at https://www.epa.gov/risk/regional-screening-levels-rsls

^chemical specific parameters found in Unpaved Road Traffic calculator at https://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search

I: chemical specific parameters found in the IRIS at https://www.epa.gov/iris

C: chemical specific parameters found in Cal EPA at https://www.dtsc.ca.gov/AssessingRisk

A: chemical specific parameters found in Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) at https://www.atsdr.cdc.gov/mrls/pdfs/atsdr_mrls.pdf

P: chemical specific parameters found in the Database of EPA PPRTVs at https://hhpprtv.ornl.gov/quickview/pprtv.php

APPENDIX C

<u>Sparrows Point Development - PPE Standard</u> <u>Operational Procedure, Revision 3</u>

Planning, Tracking/Supervision, Enforcement, and Documentation

<u>Planning</u>

- Response and Development Work Plan (RDWP) for each individual redevelopment subparcel identifies and documents site conditions.
- RDWP is reviewed and approved by regulators.
- Contractor HASP to address site-specific conditions and PPE requirements:
 - Contractor H&S professional to sign-off on PPE requirements for site workers;
 - Job Safety Analysis (JSA) to be performed for ground intrusive work.
- Project Environmental Professional (EP) assigned to each construction project monitors project during environmentally sensitive project phases and is available to construction contractor on an as needed basis. EP responsibilities include the following:
 - Dust monitoring
 - Routine ground intrusive breathing space air monitoring
 - Soil tracking
 - Water handling oversight
 - Ground intrusive work observation
 - Notification for unexpected conditions
- Pre-construction meeting identifies EP roles and responsibilities and reviews site conditions.
- Contractor to perform job-site HazCom. HazCom to be addressed in Contractor HASP and include:
 - PPE requirements,
 - Exposure time limits,
 - Identification of chemicals of concern and potential effects of over-exposure (adverse reactions),
 - Methods and routes of potential exposure.
- All personnel that will be performing ground intrusive work within impacted soils shall sign-off on HazCom.
- If, based on a thorough review of Site conditions, it is expected that construction workers will have the potential to encounter materials considered hazardous waste under RCRA or DOT regulations, HAZWOPER-trained personnel will be utilized.

Tracking/Supervision

- Contractor to record any day that there is ground intrusive work and confirm that proper PPE is being worn.
- EP will note ground intrusive work on daily work sheets and perform at least one spot check per day.
- EP will log on daily work sheets PPE compliance for all intrusive work areas at least once per day.

• EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically.

Work Zones Delineation

- Exclusion Zone The Exclusion Zones will include the areas proposed for excavation or with active trenches, excavations, or ground intrusive work, at a minimum. Personnel working within the exclusion zone will be required to wear Modified Level D PPE as described in this SOP. EP to take example photos of Exclusion Zones/Contamination Reduction Zones periodically. The Exclusion Zones will be identified each work day.
- Contamination Reduction Zone This work zone is located outside of the exclusion zone, but inside of the limits of development (LOD). The Contamination Reduction Zone will be located adjacent to the Exclusion Zone, and all personal decontamination including removal of all disposable PPE/removal of soil from boots will be completed in the Contamination Reduction Zone.

Documentation

- Contractor HASP and HazCom.
- Contractor ground intrusive tracking record.
- HASP and HazCom sign-in sheets.
- EP pre-con memos.
- EP daily work sheets.
- Records documenting intrusive work and proper PPE use to be provided in completion report.

Enforcement

• Non-compliance of PPE requirements will result in disciplinary action up to and including prohibition from working on Sparrows Point.

Unknown and/or Unexpected Conditions

If unknown and/or unexpected conditions are encountered during the project that the EP determines to have a reasonable potential to significantly impact construction worker health and safety, the following will be initiated:

- 1. Job stoppage,
- 2. TPA and MDE notification,
- 3. Re-assessment of conditions.

Work will not continue until EP has cleared the area. If hazardous waste is identified, a HAZWOPER contractor will be brought in to address. The approved contingency plan will be implemented, where appropriate.

Modified Level D PPE

Modified Level D PPE will include, at a minimum, overalls such as polyethylene-coated Tyvek or clean washable cloth overalls, latex (or similar) disposable gloves (when working in wet/chemical surroundings) or work gloves, steel-toe/steel-shank high ankle work boots with taped chemical-protective over-boots (as necessary), dust mask, hard hat, safety glasses with

side shields, and hearing protection (as necessary). If chemical-protective over-boots create increased slip/trip/fall hazardous, then standard leather or rubber work boots could be used, but visible soils from the sides and bottoms of the boots must be removed upon exiting the Exclusion Zone.

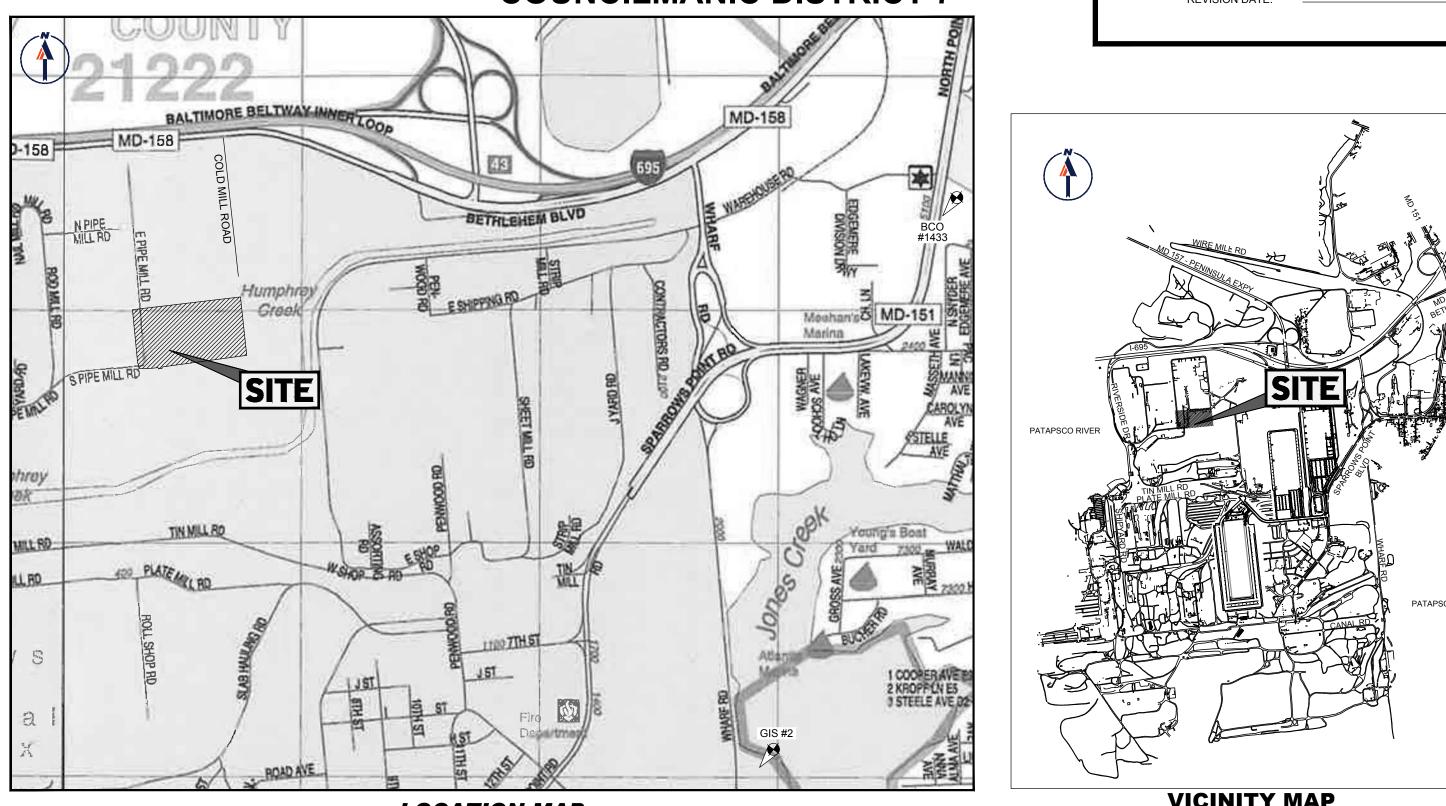
SP Development PPE Procedure 4-3-19

APPENDIX D

STANDAR	RD DRAWING FOR ENTIRE PLAN SET	LEGEND		STANDARD BBREVIATIONS
LIMIT OF WORK		LOW		JERE VIA HONS
LIMIT OF DISTU	RBANCE	LODLOD	-	
			AC ADA	ACRES AMERICANS WITH
EXISTING NOTE	TYPICAL NOTE TEXT ONSITE PROPERTY	PROPOSED NOTE	ARCH	DISABILITY ACTARCHITECTURAL
	LINE / R.O.W. LINE		BC	BOTTOM OF CURB
	NEIGHBORING PROPERTY LINE / INTERIOR PARCEL LINE		BF	BASEMENT FLOOR
	EASEMENT	·	BK BL	BLOCK BASELINE
	LINE		BLDG	BUILDING
	LINE		BM BRL	BUILDING BENCHMARK
			CF	CUBIC FEET
		CURB AND GUTTER	CL	
	CONCRETE CURB &	SPILL TRANSITION	CMP CONN	CORRUGATED METAL PIPE CONNECTION
	GUTTER	DEPRESSED CURB AND GUTTER	CONC	CONCRETE
			CPP CY	CORRUGATED PLASTIC PIPE
	UTILITY POLE WITH LIGHT		DEC	DECORATIVE
O	POLE	 0	DEP	
₽€	LIGHT		DIP DOM	DUCTILE IRON PIPE DOMESTIC
	LIGHT		ELEC	ELECTRIC
0	UTILITY POLE	0	ELEV EP	ELEVATION EDGE OF PAVEMENT
	TYPICAL LIGHT		ES	EDGE OF SHOULDER
\$	ACORN	¢	EW	
	TYPICAL		EX FES	EXISTING FLARED END SECTION
	SIGN		FF	FINISHED FLOOR
	PARKING COUNTS		FH FG	FIRE HYDRANT FINISHED GRADE
			G	GRADE
<i>170</i>	CONTOUR	190	GF	GARAGE FLOOR (AT DOOR)
169	LINE	187	GH GL	GRADE HIGHER SIDE OF WALL
TC 516.4 OR 516.4	SPOT ELEVATIONS	TC 516.00 BC 515.55 (518.02 ±)	GRT	GRATE
			GV	GATE VALVE HIGH DENSITY
SAN	SANITARY	SAN	HDPE	POLYETHYLENE PIPE
	STORM	# X #	HP HOR	HIGH POINT HORIZONTAL
	LABEL	#	HW	HEADWALL
	SANITARY SEWER LATERAL	SL	INT	
W	UNDERGROUND WATER LINE	W	INV LF	INVERT LINEAR FOOT
E	UNDERGROUND ELECTRIC LINE	Е	LOC	LIMITS OF CLEARING
G	UNDERGROUND	G	LOD	LIMITS OF DISTURBANCE
	GAS LINE		LP	LOW POINT
OH	OVERHEAD WIRE	ОН	L/S	
<i>T</i>	UNDERGROUND TELEPHONE LINE	T	MAX MIN	MAXIMUM MINIMUM
C	UNDERGROUND CABLE LINE	C	MH	MANHOLE
	STORM		MJ OC	MECHANICAL JOINT ON CENTER
ς	SEWER		PA	POINT OF ANALYSIS
	SANITARY SEWER MAIN	S	PC	
V	HYDRANT	Ø	PCCR	POINT OF COMPOUND CURVATURE, CURB RETURN
(S)	SANITARY MANHOLE	(\bigcirc)	PI POG	POINT OF INTERSECTION
	STORM		PROP	PROPOSED
	MANHOLE		PT	POINT OF TANGENCY
⊗ ^{WM}	WATER METER	0	PTCR	POINT OF TANGENCY, CURB RETURN
WV M	WATER VALVE	•	PVC	
	GAS		PVI	
	GAS		PVT R	POINT OF VERTICAL TANGENCY RADIUS
	METER		RCP	
	TYPICAL END SECTION		RET WALL	
or	HEADWALL OR ENDWALL	D or	R/W S	RIGHT OF WAY SLOPE
	GRATE		SAN	SANITARY SEWER
	CURB		SF STA	SQUARE FEET
	INLET		STA	STORM
0	CLEAN OUT	0	S/W	
Ē	ELECTRIC MANHOLE	E	TBR TBRL	TO BE REMOVED TO BE RELOCATED
(7)	TELEPHONE	Ū	TC	TOP OF CURB
	ELECTRIC		TELE	TELEPHONE TREE PROTECTION FENCE
EB	BOX	EB	TW	TOP OF WALL
EP	ELECTRIC PEDESTAL	EP	TYP	TYPICAL
			UG UP	UNDERGROUND UTILITY POLE
	MONITORING	\land	W	WIDE
	WELL		W/L	WATER LINE
	TEST PIT		W/M ±	WATER METER PLUS OR MINUS
	BENCHMARK		0	DEGREE
Q	BORING	\bullet	Ø #	DIAMETER NUMBER
	1	I T		

S





OWNERS TRADEPOINT DEVELOPMENT, LLC 1600 SPARROWS POINT BLVD TPA PROPERTIES 4, LLC. **TPA PROPERTIES 6, LLC TPA PROPERTIES 23, LLC** 1600 SPARROWS POINT BLVD BALTIMORE, MD 21219 CONTACT: MIKE HURWITZ PHONE: 410-935-4443

T IS THE RESPONSIBILITY OF THE CONTRACTOR TO REVIEW ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THIS PROJEC ORK SCOPE PRIOR TO THE INITIATION OF CONSTRUCTION. SHOULD THE CONTRACTOR FIND A CONFLICT WITH THE DOCUMENTS RELATIVE THE SPECIFICATIONS OR APPLICABLE CODES, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE PROJECT ENGINEER OF RECORD IN WRITING PRIOR TO THE START OF CONSTRUCTION. FAILURE BY THE CONTRACTOR TO NOTIFY THE PROJECT ENGINEER SHALL CONSTITUTE

CEPTANCE OF FULL RESPONSIBILITY BY THE CONTRACTOR TO COMPLETE THE SCOPE OF THE WORK AS DEFINED BY THE DRAWINGS AND



– FOR **–** TRADEPOINT ATLANTIC

EAST COAST WAREHOUSE (ECW) **SCAN YARD**

F.K.A COLD MILL "DROP LOT" LOCATION OF SITE 6151 COLD MILL ROAD **BALTIMORE, MD 21219** TM 111, GRID 14, PARCEL 318 **ELECTION DISTRICT 15 COUNCILMANIC DISTRICT 7**

LOCATION MAP COPYRIGHT ADC THE MAP PEOPLE PERMIT USE NO. 20602153-5

DEVELOPER

BALTIMORE, MD 21219

CONTACT: MIKE HURWITZ PHONE: 410-935-4443





VICINITY MAP SCALE: 1"=3000'

CONTACT: MICHAEL J. GESELL, P.E.

REFEREN	ICES	GOVERNING	G AGENCIES	₽			WRITTEN
EXISTING CONDI	TIONS D BY TRADEPOINT ATLANTIC	BALTIMORE COUNTY OF PUBLIC WORKS	DEPARTMENT				THE INFORMATION DESIGN AND CONTENT OF THIS PLAN ARE PROPRIETARY AND SHALL NOT BE COPIED OR USED FOR ANY PURPOSE WITHOUT PRIOR WRITTE AUTHORIZATION FROM BOHLER, ONLY APPROVED, SIGNED AND SEALED PLANS SHALL BE UTILIZED FOR CONSTRUCTION PURPOSES © BOHL ER
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TOWSON, MD 21204 CONTACT: D'ANDRE/		CONTACT: LLOYD MOXLE PHONE: (410) 887-3321	Y				N, DESIGN HORIZAT
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PHONE: (410) 850-462 ♦ CABLE:	8				RE	VISIONS	
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BALTIMORE, MD 2121 PHONE: (800) 391-300							
◆ <u>TELEPHONE</u>							
VERIZON 99 SHAWAN ROAD							
COCKEYSVILLE, MD 2 PHONE: (410) 393-579							
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TOWSON, MD 21204							
CONTACT: D'ANDREA PHONE: (410) 887-330							
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ΊΟΝ	S	HEET INDEX					
	SHEET TITLE		SHEET NUMBER		Knoww	that's below.	
	COVER SHEET		C-101 (ESC 1 OF 9)			ll before you dig.	
	GENERAL NOTES		C-102		ALW/	AYS CALL 811	
	SITE PLAN		C-301 - C-302		It's fast. It'	s free. It's the law.	
	FINAL GRADING PLAN		C-401 - C-402				
DATE	UTILITY PLAN		C-501 - C-502				
		-	C-601 - C-602 (ESC 2-3 OF 9) C-603 (ESC 4 OF 9)				
5	PHASE I EROSION AND SEDIMENT CONT PHASE II EROSION AND SEDIMENT CONT		C-604 - C-605 (ESC 5-6 OF 9)	REVIEW ANI	D APPROVAL. IT	DED FOR MUNICIPAL AND/OR A	
	PHASE II EROSION AND SEDIMENT CONT		C-606 (ESC 7 OF 9)			ESS INDICATED OTHERWISE.	
	EROSION AND SEDIMENT CONTROL NOT	ES AND DETAILS	C-607 - C-608 (ESC 8-9 OF 9)	PROJEC DRAWN		MD16	206641 MJG
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	STORM DRAIN PROFILES		C-802	CAD I.D.	.:	MD16206641 - C	
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÷	OWNER'S/DEVELOPI			IB	OH	ILER	
	I/WE HEREBY CERTIFY THAT ANY CLEARING PURSUANT TO THIS PLAN AND THAT ANY RE	SPONSIBLE PERSONNEL INVO	OLVED IN THIS CONSTRUCTION				
	PROJECT WILL HAVE A CERTIFICATE OF ATT APPROVED TRAINING PROGRAM FOR THE C PROJECT. I/WE ALSO CERTIFY THAT THE SIT	ONTROL OF SEDIMENT AND E	ROSION BEFORE BEGINNING THE			ALLEY ROAD, SUIT MARYLAND 21204	E 801
	THAT ANY NEEDED MAINTENANCE WILL BE (PRACTICES ARE LEFT IN OPERATIONAL CON	COMPLETED SO AS TO INSUR	E THAT ALL SEDIMENT CONTROL		Phone: Fax:	(410) 821-7900 (410) 821-7987	
	ON-SITE EVALUATION BY THE BALTIMORE C OR THEIR AUTHORIZED AGENTS				-	ohlerEng.com	
PSCO RIVER	SIGNATURE OWNER/DEVELOPER	DATE			ΜJ	GESELL	
	PRINT NAME	TITLE					
	CONSULTANT'S CEI						
	I CERTIFY THAT THIS PLAN OF EROSION AND) SEDIMENT CONTROL REPRE	SENTS A PRACTICAL AND	- - -		ND LICENSE No. 44097	:
	WORKABLE PLAN BASED ON MY PERSONAL PREPARED IN ACCORDANCE WITH THE REC	UIREMENTS OF THE BALTIMO	RE COUNTY SOIL	· · · · ·	PROFESSIC CHAEL J. GESEL	ONAL CERTIFICATION L, HEREBY CERTIFY THAT TH	
	CONSERVATION DISTRICT AND THE CURREN AND SEDIMENT CONTROL. I HAVE REVIEWE			THAT I	AM A DULY LIC	EPARED OR APPROVED BY M ENSED PROFESSIONAL ENGI	NEER
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]				SHEET	FITLE:		
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	MICHAEL J. GESELL, PE		44097		0\/E		-
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GENERAL NOTES

(Rev. 2/2021)

- THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING VALUE (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE ENGINEER OF RECORD AND BOHLER PREPARED THESE PLANS. THE CONTRACTOR MUST FIELD VERIFY ALL EXISTING CONDITIONS AND IMMEDIATELY NOTIFY BOHLER, IN WRITING, IF ANY ACTUAL SITE CONDITIONS DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY OTHER SITE FEATURES.
- THE CONTRACTOR MUST STRICTLY COMPLY WITH THESE NOTES AND ALL SPECIFICATIONS/REPORTS CONTAINED HEREIN. THE CONTRACTOR MUST ENSURE THAT ALL SUBCONTRACTORS FULLY AND COMPLETELY CONFORM TO AND COMPLY WITH THESE REQUIREMENTS. THESE NOTES, AND THE REQUIREMENTS ARTICULATED IN THE NOTES CONTAINED IN ALL THE OTHER DRAWINGS THAT COMPRISE THE PLAN SET OF DRAWINGS. ADDITIONAL NOTES AND SPECIFIC PLAN NOTES MAY BE FOUND ON THE INDIVIDUAL PLANS. THESE GENERAL NOTES APPLY TO THIS ENTIRE DOCUMENT PACKAGE IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL CONSTRUCTION CONTRACT DOCUMENTS INCLUDING, BUT NOT LIMITED TO, ALL OF THE DRAWINGS AND SPECIFICATIONS ASSOCIATED WITH THE PROJECT WORK SCOPE, PRIOR TO THE INITIATION AND COMMENCEMENT OF
- CONSTRUCTION. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST CONFIRM WITH THE ENGINEER OF RECORD AND BOHLER THAT THE LATEST EDITION OF THE DOCUMENTS AND/OR REPORTS REFERENCED WITHIN THE PLAN REFERENCES ARE BEING USED FOR CONSTRUCTION. THIS IS THE CONTRACTOR'S SOLE AND COMPLETE RESPONSIBILITY PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST ENSURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN
- OBTAINED. NO CONSTRUCTION OR FABRICATION IS TO BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED THE CONDITIONS OF APPROVAL TO ALL PLANS AND OTHER DOCUMENTS REVIEWED AND APPROVED BY THE PERMITTING AUTHORITIES AND HAS ALSO CONFIRMED THAT ALL NECESSARY AND REQUIRED PERMITS HAVE BEEN OBTAINED. THE CONTRACTOR MUST HAVE COPIES OF ALL PERMITS AND PPROVALS ON SITE AT ALL TIMES. THE CONTRACTOR MUST ENSURE THAT ALL WORK IS PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS/REPORTS AND CONDITIONS OF APPROVAL, AND ALL APPLICABLE REQUIREMENTS. RULES. REGULATIONS. STATUTORY REQUIREMENTS. CODES, LAWS AND
- STANDARDS OF ALL GOVERNMENTAL ENTITIES WITH JURISDICTION OVER THIS PROJECT. AND ALL PROVISIONS IN AND CONDITIONS OF THE CONSTRUCTION CONTRACT WITH THE OWNER/DEVELOPER INCLUDING ALL EXHIBITS. ATTACHMENTS AND ADDENDA TO SAME. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR MUST COORDINATE THE BUILDING LAYOUT BY CAREFULLY REVIEWING THE MOST CURRENT ARCHITECTURAL, CIVIL AND STRUCTURAL CONSTRUCTION DOCUMENTS (INCLUDING, BUT NOT LIMITED TO, MECHANICAL, ELECTRICAL, PLUMBING AND FIRE SUPPRESSION PLANS. WHERE APPLICABLE), THE CONTRACTOR MUST IMMEDIATELY NOTIFY OWNER, ARCHITECT AND ENGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY CONFLICTS, DISCREPANCIES OR AMBIGUITIES WHICH EXIST BETWEEN THESE PLANS
- AND ANY OTHER PLANS THAT COMPRISE THE CONSTRUCTION DOCUMENTS. CONTRACTOR MUST REFER TO AND ENSURE COMPLIANCE WITH THE APPROVED ARCHITECTURAL/BUILDING PLANS OF RECORD FOR EXACT OCATIONS AND DIMENSIONS OF ENTRY/EXIT POINTS, ELEVATIONS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY LOCATIONS. THE CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND MEASUREMENTS SHOWN ON THESE PLANS, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR MUST IMMEDIATELY NOTIFY ENGINEER OF RECORD AND BOHLER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION, NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE RE-DONE OR REPAIRED DUE TO DIMENSIONS. MEASUREMENTS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO BOTH (A) THE CONTRACTOR GIVING ENGINEER OF RECORD AND BOHLER WRITTEN NOTIFICATION OF SAME AND (B) ENGINEER OF RECORD AND BOHLER, THEREAFTER, PROVIDING THE CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH
- ADDITIONAL WORK THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND MEASUREMENTS INCLUDED ON DESIGN DOCUMENTS HEREIN AND MUST NOT SCALE OFF THE DRAWINGS DUE TO POTENTIAL PRINTING INACCURACIES. ALL DIMENSIONS AND MEASUREMENTS ARE TO BE CHECKED AND CONFIRMED BY THE GENERAL CONTRACTOR PRIOR TO PREPARATION OF SHOP DRAWINGS. FABRICATION/ORDERING OF PARTS AND MATERIALS AND COMMENCEMENT OF SITE WORK. SITE PLAN DRAWINGS ARE NOT INTENDED AS SURVEY DOCUMENTS. DIMENSIONS SUPERSEDE GRAPHICAL REPRESENTATIONS. THE CONTRACTOR MUST MAKE CONTRACTOR'S OWN MEASUREMENTS FOR LAYOUT OF IMPROVEMENTS THE OWNER AND CONTRACTOR MUST BE FAMILIAR WITH AND RESPONSIBLE FOR THE PROCUREMENT OF ANY AND ALL CERTIFICATIONS REQUIRED
- FOR THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY WHEN INCLUDED AS ONE OF THE REFERENCED DOCUMENTS. THE GEOTECHNICAL REPORT. SPECIFICATIONS AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND IN CASE OF CONFLICT. DISCREPANCY OR AMBIGUITY, THE MORE STRINGENT REQUIREMENTS AND/OR RECOMMENDATIONS CONTAINED IN: (A) THE PLANS: AND (B) THE GEOTECHNICAL REPORT AND RECOMMENDATIONS, MUST TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR MUST NOTIFY THE INGINEER OF RECORD AND BOHLER, IN WRITING, OF ANY SUCH CONFLICT, DISCREPANCY OR AMBIGUITY BETWEEN THE GEOTECHNICAL REPORT AND PLANS AND SPECIFICATIONS, PRIOR TO PROCEEDING WITH ANY FURTHER WORK. IF A GEOTECHNICAL REPORT WAS NOT CREATED, THEN THE CONTRACTOR MUST FOLLOW AND COMPLY WITH ALL OF THE REQUIREMENTS OF ANY AND ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS AND APPLICABLE SPECIFICATIONS WHICH HAVE JURISDICTION OVER THIS PROJECT.
- ENGINEER OF RECORD AND BOHLER ARE NEITHER LIABLE NOR RESPONSIBLE FOR ANY SUBSURFACE CONDITIONS AND FURTHER, HAS NO LIABILITY FOR ANY HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES, OR POLLUTANTS ON, ABOUT OR UNDER THE PROPERTY. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN AND WHERE SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES. ALL OF THIS WORK IS TO BE PERFORMED AT CONTRACTOR'S SOLE COST AND EXPENSE.
- THE CONTRACTOR MUST EXERCISE EXTREME CAUTION WHEN PERFORMING ANY WORK ACTIVITIES ADJACENT TO PAVEMENT, STRUCTURES, ETC. WHICH ARE TO REMAIN EITHER FOR AN INITIAL PHASE OF THE PROJECT OR AS PART OF THE FINAL CONDITION. THE CONTRACTOR IS RESPONSIBLE FOR TAKING ALL APPROPRIATE MEASURES REQUIRED TO ENSURE THE STRUCTURAL STABILITY OF SIDEWALKS AND PAVEMENT, UTILITIES, BUILDINGS, AND INFRASTRUCTURE WHICH ARE TO REMAIN, AND TO PROVIDE A SAFE WORK AREA FOR THIRD PARTIES, PEDESTRIANS AND ANYONE INVOLVED WITH THE PROJECT DEBRIS MUST NOT BE BURIED ON THE SUBJECT SITE. ALL DEMOLITION AND CONSTRUCTION WASTES, UNSUITABLE EXCAVATED MATERIAL, EXCESS
- SOIL AND DEBRIS (SOLID WASTE) MUST BE DISPOSED OF IN ACCORDANCE WITH THE REQUIREMENTS OF ANY AND ALL MUNICIPAL. COUNTY, STATE. AND FEDERAL LAWS AND APPLICABLE CODES WHICH HAVE JURISDICTION OVER THIS PROJECT OR OVER THE CONTRACTOR. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN RECORDS TO DEMONSTRATE PROPER AND FULLY COMPLIANT DISPOSAL ACTIVITIES TO BE PROMPTLY PROVIDED TO THE OWNER UPON REQUEST. THE CONTRACTOR MUST REPAIR, AT CONTRACTOR'S SOLE COST, ALL DAMAGE DONE TO ANY NEW OR EXISTING CONSTRUCTION OR PROPERTY
- DURING THE COURSE OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO DRAINAGE, UTILITIES, PAVEMENT, STRIPING, CURB, ETC, AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME TO INCLUDE. BUT NOT BE LIMITED TO, REDESIGN, RE-SURVEY, RE-PERMITTING AND CONSTRUCTION, THE CONTRACTOR IS RESPONSIBLE FOR AND MUST REPLACE ALL SIGNAL INTERCONNECTION CABLE, WIRING CONDUITS, AND ANY UNDERGROUND ACCESSORY EQUIPMENT DAMAGED DURING CONSTRUCTION AND MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE REPAIR OF ANY SUCH NEW OR EXISTING CONSTRUCTION OR PROPERTY MUST RESTORE SUCH CONSTRUCTION OR PROPERTY TO A CONDITION EQUIVALENT TO OR BETTER THAN THE CONDITIONS PRIOR TO COMMENCEMENT OF THE CONSTRUCTION, AND IN CONFORMANCE WITH APPLICABLE CODES, LAWS, RULES, REGULATIONS, STATUTORY REQUIREMENTS AND STATUTES. THE CONTRACTOR MUST BEAR ALL COSTS ASSOCIATED WITH SAME. THE CONTRACTOR MUST, PROMPTLY, DOCUMENT ALL EXISTING DAMAGE AND NOTIFY. IN WRITING, THE OWNER AND THE CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
- THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR AND HAVE NO CONTRACTUAL, LEGAL OR OTHER RESPONSIBILITIES FOR JOB SITE SAFETY JOB SITE SUPERVISION, OR ANYTHING RELATED TO SAME. THE ENGINEER OF RECORD AND BOHLER HAVE NOT BEEN RETAINED TO PERFORM OR TO BE RESPONSIBLE FOR JOB SITE SAFETY. SAME BEING WHOLLY OUTSIDE OF ENGINEER OF RECORD'S AND BOHLER SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES OR ANY JOB SITE CONDITIONS, AT ANY TIME. THE CONTRACTOR MUST IMMEDIATELY IDENTIFY IN WRITING, TO THE ENGINEER OF RECORD AND BOHLER , ANY DISCREPANCIES THAT MAY OR COULD AFFECT THE PUBLIC SAFETY, HEALTH OR GENERAL WELFARE, OR PROJECT COST. IF THE CONTRACTOR PROCEEDS WITH CONSTRUCTION WITHOUT PROVIDING PROPER WRITTEN NOTIFICATION AS DESCRIBED ABOVE, IT WILL BE AT THE CONTRACTOR'S OWN RISK AND, FURTHER, THE
- CONTRACTOR MUST INDEMNIFY, DEFEND AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER FOR ANY AND ALL DAMAGES, COSTS, INJURIES, ATTORNEY'S FEES AND THE LIKE WHICH RESULT FROM OR ARE IN ANY WAY RELATED TO SAME INCLUDING, BUT NOT LIMITED TO, ANY THIRD PARTY AND FIRST PARTY CLAIMS. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY INJURY OR DAMAGES RESULTING FROM THE CONTRACTOR'S FAILURE TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH THE APPROVED PLANS, AND CURRENT CODES, RULES, STATUTES AND THE LIKE. IF THE CONTRACTOR AND/OR OWNER FAIL TO BUILD OR CONSTRUCT IN STRICT ACCORDANCE WITH APPROVED PLANS, RULES, STATUTES, CODES AND THE LIKE, THE CONTRACTOR AND/OR OWNER AGREE TO AND MUST JOINTLY, INDEPENDENTLY, SEPARATELY, AND SEVERALLY INDEMNIFY AND HOLD THE
- ENGINEER OF RECORD AND BOHLER HARMLESS FOR AND FROM ALL INJURIES. CLAIMS AND DAMAGES THAT ENGINEER AND BOHLER SUFFER AND ANY AND ALL COSTS THAT ENGINEER AND BOHLER INCUR AS RELATED TO SAME. ALL CONTRACTORS MUST CARRY AT LEAST THE MINIMUM AMOUNT OF THE SPECIFIED AND COMMERCIALLY REASONABLE STATUTORY WORKER'S COMPENSATION INSURANCE, EMPLOYER'S LIABILITY INSURANCE AND COMMERCIAL GENERAL LIABILITY INSURANCE (CGL) INCLUDING ALSO ALL ORS MUST HAVE THEIR CGL POLICIES ENDORSED TO NAME BOHLER , AND ITS RESENT AND FUTURE WNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFEILIATES SUBSIDIARIES AND RELATED ENTITIES AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AS ADDITIONAL NAMED INSUREDS AND TO PROVIDE CONTRACTUAL LIABILITY COVERAGE SUFFICIENT TO INSURE (DEFEND, IF APPLICABLE) AND HOLD HARMLESS AND INDEMNITY OBLIGATIONS ASSUMED AND AGREED TO BY THE CONTRACTOR HEREIN. ALL CONTRACTORS MUST FURNISH BOHLER WITH CERTIFICATIONS OF INSURANCE OR CERTIFICATES OF INSURANCE AS EVIDENCE OF THE REQUIRED INSURANCE COVERAGES PRIOR TO COMMENCING ANY WORK AND UPON RENEWAL OF EACH POLICY DURING THE ENTIRE PERIOD OF CONSTRUCTION AND FOR TWO YEARS AFTER THE COMPLETION OF CONSTRUCTION AND AFTER ALL PERMITS ARE ISSUED, WHICHEVER DATE IS LATER. IN ADDITION, ALL CONTRACTORS AGREE THAT THEY WILL, TO THE FULLEST EXTENT PERMITTED UNDER THE LAW. INDEMNIFY, DEFEND AND HOLD HARMLESS BOHLER AND ITS PAST, PRESENT AND FUTURE OWNERS, OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES, SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS FROM AND AGAINST ANY DAMAGES, INJURIES, CLAIMS, ACTIONS, PENALTIES, EXPENSES, PUNITIVE DAMAGES, TORT DAMAGES, STATUTORY CLAIMS, STATUTORY CAUSES OF ACTION, LOSSES, CAUSES OF ACTION, LIABILITIES OR COSTS, INCLUDING, BUT NOT LIMITED TO, REASONABLE ATTORNEYS' FEES AND DEFENSE COSTS, ARISING OUT OF OR IN ANY WAY
- CONNECTED WITH OR TO THE PROJECT, INCLUDING ALL CLAIMS BY EMPLOYEES OF THE CONTRACTOR(S), ALL CLAIMS BY THIRD PARTIES AND ALL CLAIMS RELATED TO THE PROJECT. THE CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, AT LEAST THIRTY (30) DAYS PRIOR TO ANY TERMINATION. SUSPENSION OR CHANGE OF ITS INSURANCE HEREUNDER. THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS IN SCOPE AND REVISIONS THAT RESULT FROM SAME. THE CONTRACTOR IS FULLY AND SOLELY RESPONSIBLE FOR DETERMINING THE MEANS AND METHODS FOR COMPLETION OF THE WORK, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. NEITHER THE PROFESSIONAL ACTIVITIES OF BOHLER, NOR THE PRESENCE OF BOHLER AND/OR ITS PAST, PRESENT AND FUTURE OWNERS. OFFICERS, DIRECTORS, PARTNERS, SHAREHOLDERS, MEMBERS, PRINCIPALS, COMMISSIONERS, AGENTS, SERVANTS, EMPLOYEES, AFFILIATES,
- SUBSIDIARIES, AND RELATED ENTITIES, AND ITS SUBCONTRACTORS AND SUBCONSULTANTS AT A CONSTRUCTION/PROJECT SITE (HEREIN "BOHLER PARTIES"), RELIEVES OR WILL RELIEVE THE CONTRACTOR OF AND FROM CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, OVERSEEING, SUPERINTENDING AND COORDINATING THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLIANCE WITH ALL HEALTH AND SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES WITH JURISDICTION OVER THE PROJECT AND/OR PROPERTY. BOHLER PARTIES HAVE NO AUTHORITY TO EXERCISE ANY CONTROL OVER (OR ANY RESPONSIBILITY FOR) ANY CONSTRUCTION THE CONTRACTOR OR ITS EMPLOYEES RELATING TO THEIR WORK AND ANY AND ALL HEALTH AND SAFETY PROGRAMS OR PROCEDURES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SITE SAFETY. THE CONTRACTOR MUST INDEMNIFY DEFEND, PROTECT AND HOLD HARMLESS BOHLER PARTIES FOR AND FROM ANY LIABILITY TO BOHLER PARTIES RESULTING FROM THE CONTRACTOR'S WORK. SERVICES AND/OR VIOLATIONS OF THIS NOTE. THESE NOTES OR ANY NOTES IN THE PLAN SET AND, FURTHER. THE CONTRACTOR MUST NAME BOHLER AS AN ADDITIONAL INSURED UNDER THE GENERAL CONTRACTOR'S POLICIES OF GENERAL LIABILITY INSURANCE
- AS DESCRIBED ABOVE WHEN IT IS CLEARLY AND SPECIFICALLY WITHIN BOHLER'S SCOPE OF SERVICES CONTRACT WITH THE OWNER/DEVELOPER, BOHLER WILL REVIEW OR TAKE OTHER APPROPRIATE ACTION ON THE CONTRACTOR SUBMITTALS, SUCH AS SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND OTHER DATA. WHICH THE CONTRACTOR IS REQUIRED TO SUBMIT, BUT ONLY FOR THE LIMITED PURPOSE OF EVALUATING CONFORMANCE WITH THE DESIGN INTENT AND THE INFORMATION SHOWN IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONSTRUCTION MEANS AND METHODS AND/OR TECHNIQUES OR PROCEDURES, COORDINATION OF THE WORK WITH OTHER TRADES, AND CONSTRUCTION SAFETY PRECAUTIONS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND BOHLER HAS NO RESPONSIBILITY OR LIABILITY FOR SAME. BOHLER WILL PERFORM ITS SHOP DRAWING REVIEW WITH REASONABLE PROMPTNESS, AS CONDITIONS PERMIT, ANY DOCUMENT, DOCUMENTING BOHLER'S REVIEW OF A SPECIFIC ITEM OR
- LIMITED SCOPE, MUST NOT INDICATE THAT BOHLER HAS REVIEWED THE ENTIRE ASSEMBLY OF WHICH THE ITEM IS A COMPONENT, BOHLER IS NOT RESPONSIBLE FOR ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR MUST, IN WRITING, PROMPTLY AND IMMEDIATELY BRING ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS TO BOHLER'S ATTENTION. BOHLER IS NOT REQUIRED TO REVIEW PARTIAL SUBMISSIONS OR THOSE FOR WHICH SUBMISSIONS OF CORRELATED ITEMS HAVE NOT BEEN RECEIVED. . IF THE CONTRACTOR DEVIATES FROM THESE PLANS AND/OR SPECIFICATIONS, INCLUDING THE NOTES CONTAINED HEREIN, WITHOUT FIRST OBTAINING THE PRIOR WRITTEN AUTHORIZATION OF THE ENGINEER OF RECORD AND BOHLER FOR ALL DEVIATIONS WITHIN ENGINEER'S SCOPE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PAYMENT OF ALL COSTS INCURRED IN CORRECTING ANY WORK PERFORMED WHICH DEVIATES FROM THE PLANS, ALL FINES AND/OR PENALTIES ASSESSED WITH RESPECT THERETO AND ALL COMPENSATORY OR PUNITIVE DAMAGES RESULTING HEREFROM AND, FURTHER, MUST DEFEND, INDEMNIFY, PROTECT, AND HOLD HARMLESS THE ENGINEER OF RECORD AND BOHLER PARTIES TO THE FULLEST EXTENT PERMITTED UNDER THE LAW, FOR AND FROM ALL FEES, ATTORNEYS' FEES, DAMAGES, COSTS, JUDGMENTS, CLAIMS, INJURIES,
- PENALTIES AND THE LIKE RELATED TO SAME. THE CONTRACTOR IS RESPONSIBLE FOR A MAINTAINING AND PROTECTING THE TRAFFIC CONTROL PLAN AND FLEMENTS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REQUIREMENTS, FOR ALL WORK THAT AFFECTS PUBLIC TRAVEL EITHER IN THE RIGHT OF WAY OR ON SITE, THE COST FOR THIS ITEM MUST BE INCLUDED IN THE CONTRACTOR'S PRICE AND IS THE CONTRACTOR'S SOLE RESPONSIBILITY OWNER MUST MAINTAIN AND PRESERVE ALL PHYSICAL SITE FEATURES AND DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS IN STRICT ACCORDANCE WITH THE APPROVED PLAN(S) AND DESIGN; AND, FURTHER, THE ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR ANY FAILURE TO SO MAINTAIN OR PRESERVE SITE AND/OR DESIGN FEATURES. IF OWNER FAILS TO MAINTAIN AND/OR PRESERVE ALL PHYSICAL SITE FEATURES AND/OR DESIGN FEATURES DEPICTED ON THE PLANS AND RELATED DOCUMENTS. OWNER AGREES TO INDEMNIEY
- AND HOLD THE ENGINEER OF RECORD AND BOHLER PARTIES. HARMLESS FOR ALL INJURIES. DAMAGES AND COSTS THAT ENGINEER OF RECORD AND BOHLER INCUR AS A RESULT OF SAID FAILURE OR FAILURE TO PRESERVE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ENSURING THAT ALL CONSTRUCTION ACTIVITIES AND MATERIALS COMPLY WITH AND CONFORM TO APPLICABLE FEDERAL, STATE AND LOCAL RULES AND REGULATIONS, LAWS, ORDINANCES, AND CODES, AND ALL APPLICABLE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, (29 U.S.C. 651 ET SEQ.) AS AMENDED, AND ANY MODIFICATIONS, AMENDMENTS OR REVISIONS TO SAME
- THE CONTRACTOR MUST STRICTLY COMPLY WITH THE LATEST AND CURRENT OSHA STANDARDS AND REGULATIONS. AND/OR ANY OTHER AGENCY WITH JURISDICTION OVER EXCAVATION AND TRENCHING PROCEDURES. ENGINEER OF RECORD AND BOHLER HAS NO RESPONSIBILITY FOR OR AS RELATED TO EXCAVATION AND TRENCHING PROCEDURES AND WORK. THE CONTRACTOR AND THE OWNER MUST INSTALL ALL ELEMENTS AND COMPONENTS IN STRICT COMPLIANCE WITH AND IN ACCORDANCE WITH MANUFACTURER'S STANDARDS AND RECOMMENDED INSTALLATION CRITERIA AND SPECIFICATIONS. IF THE CONTRACTOR AND/OR OWNER FAIL TO DO SO, THEY AGREE TO JOINTLY, INDEPENDENTLY, SEPARATELY, COLLECTIVELY, AND SEVERALLY INDEMNIFY, DEFEND, PROTECT AND HOLD ENGINEER OF RECORD AND BOHLER PARTIES HARMLESS FOR ALL INJURIES AND DAMAGES THAT ENGINEER SUFFERS AND COSTS THAT ENGINEER
- INCURS AS A RESULT OF SAID FAILURE. THE CONTRACTOR IS RESPONSIBLE TO MAINTAIN AN ON-SITE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IN COMPLIANCE WITH THE ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS OR LOCAL GOVERNING AGENCY FOR SITES WHERE ONE (1) ACRE OR MORE IS DISTURBED BY CONSTRUCTION ACTIVITIES (UNLESS THE LOCAL JURISDICTION REQUIRES A DIFFERENT THRESHOLD). THE CONTRACTOR MUST ENSURE THAT ALL ACTIVITIES, INCLUDING THOSE OF ALL SUBCONTRACTORS, ARE IN COMPLIANCE WITH THE SWPPP, INCLUDING BUT NOT LIMITED TO LOGGING ACTIVITIES (MINIMUM ONCE PER WEEK AND AFTER RAINFALL EVENTS) AND CORRECTIVE MEASURES, AS APPROPRIATE AND FURTHER THE CONTRACTOR IS SOLELY AND COMPLETELY RESPONSIBLE FOR FAILING TO DO SO. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED DOCUMENTS PREPARED BY THE ENGINEER OF RECORD AND BOHLER, THE USE OF THE WORDS 'CERTIFY' OR 'CERTIFICATION' CONSTITUTE(S) AN EXPRESSION ONLY OF PROFESSIONAL OPINION REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE ENGINEER OF RECORD'S AND BOHLER KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON AND ACCEPTED

PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE OF ANY

NATURE OR TYPE, EITHER EXPRESSED OR IMPLIED, UNDER ANY CIRCUMSTANCES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY

DEMOLITION NOTES

- WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES. THE CONTRACTOR MUST CONDUCT DEMOLITION/REMOVALS ACTIVITIES IN SUCH A MANNER AS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND ALL OTHER AD JACENT FACILITIES, THE CONTRACTOR MUST OBTAIN ALL APPLICABLE PERMITS FROM THE APPROPRIATE GOVERNMENTAL AUTHORITY(IES) PRIOR TO THE COMMENCEMENT OF ANY ROAD OPENING OR DEMOLITION ACTIVITIES IN OR AD IACENT TO THE RIGHT-OF-WAY
- WHEN DEMOLITION-RELATED ACTIVITIES IMPACT ROADWAYS AND/OR ROADWAY RIGHT-OF-WAY. THE CONTRACTOR MUST PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH THE CURRENT FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD), AND THE FEDERAL, STATE, AND LOCAL REGULATIONS. THE DEMOLITION (AND/OR REMOVALS) PLAN IS INTENDED TO PROVIDE GENERAL INFORMATION AND TO IDENTIFY ONLY
- CONDITIONS REGARDING ITEMS TO BE DEMOLISHED. REMOVED. AND/OR TO REMAIN. A. THE CONTRACTOR MUST ALSO REVIEW ALL CONSTRUCTION DOCUMENTS AND INCLUDE WITHIN THE DEMOLITION ACTIVITIES ALL INCIDENTAL WORK NECESSARY FOR THE CONSTRUCTION OF THE NEW SITE IMPROVEMENTS. B. THIS PLAN IS NOT INTENDED TO AND DOES NOT PROVIDE DIRECTION REGARDING THE MEANS, METHODS, SEQUENCING, TECHNIQUES AND PROCEDURES TO BE EMPLOYED TO ACCOMPLISH THE WORK. ALL MEANS, METHODS, SEQUENCING,
- TECHNIQUES AND PROCEDURES TO BE USED MUST BE IN STRICT ACCORDANCE AND CONFORMANCE WITH ALL STATE FEDERAL, LOCAL, AND JURISDICTIONAL REQUIREMENTS, THE CONTRACTOR MUST COMPLY WITH ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE FOR THE CONTRACTOR AND THE PUBLIC. 5. THE CONTRACTOR MUST PROVIDE ALL "METHODS AND MEANS" NECESSARY TO PREVENT MOVEMENT. SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES, AND ANY OTHER IMPROVEMENTS THAT ARE REMAINING ON OR OFF SITE. THE CONTRACTOR, AT THE CONTRACTOR'S SOLE COST, MUST REPAIR ALL DAMAGE TO ALL ITEMS AND FEATURES THAT ARE TO
- REMAIN. CONTRACTOR MUST USE NEW MATERIAL FOR ALL REPAIRS. CONTRACTOR'S REPAIRS MUST INCLUDE THE RESTORATION OF ALL ITEMS AND FEATURES REPAIRED TO THEIR PRE-DEMOLITION CONDITION, OR BETTER. CONTRACTOR MUST PERFORM ALL REPAIRS AT THE CONTRACTOR'S SOLE EXPENSE 6. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. THE CONTRACTOR MUST
- . THE CONTRACTOR IS RESPONSIBLE FOR JOB SITE SAFETY, WHICH MUST INCLUDE, BUT IS NOT LIMITED TO, THE INSTALLATION AND MAINTENANCE OF BARRIERS, FENCING, OTHER APPROPRIATE AND/OR NECESSARY SAFETY FEATURES AND ITEMS NECESSARY TO PROTECT THE PUBLIC FROM AREAS OF CONSTRUCTION AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR MUST SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE ENTRY OF
- ALL UNAUTHORIZED PERSONS AT ANY TIME, TO OR NEAR THE DEMOLITION AREA. PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY AND ANY DEMOLITION ACTIVITY, THE CONTRACTOR MUST, IN WRITING, QUESTIONS REGARDING THE APPLICABLE SAFETY STANDARDS, AND/OR THE SAFETY OF THE CONTRACTOR AND/OR THIRD PARTIES IN PERFORMING THE WORK ON THIS PROJECT. ANY SUCH CONCERNS MUST BE CONVEYED TO THE ENGINEER OF RECORD AND BOHLER . IN WRITING AND MUST ADDRESS ALL ISSUES AND ITEMS RESPONDED TO. BY THE ENGINEER OF RECORD
- STATUTES, ORDINANCES AND CODES. THE CONTRACTOR MUST BECOME FAMILIAR WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AND/OR DISCONNECTION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR MUST PROVIDE THE OWNER WITH WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED, REMOVED AND/OR ABANDONED IN ACCORDANCE WITH THE JURISDICTION AND UTILITY
- PRIOR TO COMMENCING ANY DEMOLITION. THE CONTRACTOR MUST: A. OBTAIN ALL REQUIRED PERMITS AND MAINTAIN THE SAME ON SITE FOR REVIEW BY THE ENGINEER AND ALL PUBLIC
- LEAST 72 BUSINESS HOURS PRIOR TO THE COMMENCEMENT OF WORK. SAID CONTROLS UNTIL SITE IS STABILIZED
- UTILITY MARK OUT. IN ADVANCE OF ANY EXCAVATION.
- AND STORM SEWER. TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC, WITHIN AND ADJACENT TO THE LIMITS OF PROJECT ACTIVITIES. THE CONTRACTOR MUST USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL UNDERGROUND UTILITIES
- DEMOLITION ACTIVITIES G. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) FOR THE TEMPORARY OR PERMANENT TERMINATION OF SERVICE REQUIRED BY THE PROJECT PLANS AND SPECIFICATIONS REGARDING THE OF ABANDONMENT, THE CONTRACTOR MUST PROVIDE THE UTILITY ENGINEER AND OWNER WITH IMMEDIATE WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTIONAL AND UTILITY COMPANY REQUIREMENTS.
- H. ARRANGE FOR AND COORDINATE WITH THE APPLICABLE UTILITY SERVICE PROVIDER(S) REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS NECESSARY OR AS REQUIRED TO MINIMIZE THE IMPACT ON, OF, AND TO THE AFFECTED IN THE EVENT THE CONTRACTOR DISCOVERS ANY HAZARDOUS MATERIAL, THE REMOVAL OF WHICH IS NOT ADDRESSED IN IMMEDIATELY CEASE ALL WORK IN THE AREA OF DISCOVERY, AND IMMEDIATELY NOTIFY, IN WRITING AND VERBALLY, THE
- COMPLIANT REMOVAL OF SAME. THE CONTRACTOR MUST NOT PERFORM ANY EARTH MOVEMENT ACTIVITIES, DEMOLITION OR REMOVAL OF FOUNDATION WALLS, OOTINGS, OR OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE, UNLESS SAME IS IN STRICT ACCORDANCE AND CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS, OR PURSUANT TO THE WRITTEN DIRECTION OF THE OWNER'S STRUCTURAL OR GEOTECHNICAL ENGINEER.
- 2 DEMOLITION ACTIVITIES AND EQUIPMENT MUST NOT USE OR INCLUDE AREAS OUTSIDE THE DEFINED PROJECT LIMIT LINE WITHOUT SPECIFIC WRITTEN PERMISSION AND AUTHORITY OF AND FROM THE OWNER AND ALL GOVERNMENTAL AGENCIES WITH JURISDICTION. . THE CONTRACTOR MUST BACKFILL ALL EXCAVATION RESULTING FROM. OR INCIDENTAL TO, DEMOLITION ACTIVITIES, BACKFIL MUST BE ACCOMPLISHED WITH APPROVED BACKFILL MATERIALS AND MUST BE SUFFICIENTLY COMPACTED TO SUPPORT ALL NEW IMPROVEMENTS AND MUST BE PERFORMED IN COMPLIANCE WITH THE RECOMMENDATIONS AND GUIDANCE ARTICULATED IN THE GEOTECHNICAL REPORT BACKEILLING MUST OCCUR IMMEDIATELY AFTER DEMOLITION ACTIVITIES AND MUST BE PERFORMED SO AS TO PREVENT WATER ENTERING THE EXCAVATION. FINISHED SURFACES MUST BE GRADED TO PROMOTE
- POSITIVE DRAINAGE. THE CONTRACTOR IS RESPONSIBLE FOR COMPACTION TESTING AND MUST SUBMIT SUCH REPORTS AND RESULTS TO THE ENGINEER OF RECORD AND THE OWNER 4. EXPLOSIVES MUST NOT BE USED WITHOUT PRIOR WRITTEN CONSENT FROM BOTH THE OWNER AND ALL APPLICABLE NECESSARY AND REQUIRED GOVERNMENTAL AUTHORITIES. PRIOR TO COMMENCING ANY EXPLOSIVE PROGRAM AND/OR ANY DEMOLITION ACTIVITIES THE CONTRACTOR MUST ENSURE AND OVERSEE THE INSTALLATION OF ALL OF THE REQUIRED PERMIT AND EXPLOSIVE CONTROL MEASURES THAT THE FEDERAL. STATE, AND LOCAL GOVERNMENTS REQUIRE, THE CONTRACTOR IS
- ALSO RESPONSIBLE TO CONDUCT AND PERFORM ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES AND THE LIKE. TO LIMIT AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR. AFTER THE DEMOLITION IS COMPLETE, THE CONTRACTOR MUST CLEAN ALL ADJACENT STRUCTURES AND IMPROVEMENTS TO REMOVE ALL DUST AND DEBRIS WHICH THE
- "PRE-DEMOLITION" CONDITION AT CONTRACTOR'S SOLE COST 6. PAVEMENT MUST BE SAW CUT IN STRAIGHT LINES. ALL DEBRIS FROM REMOVAL OPERATIONS MUST BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS OUTSIDE OF APPROVED AREAS WILL NOT BE PERMITTED, INCLUDING BUT NOT LIMITED TO. THE PUBLIC RIGHT-OF-WAY 17 THE CONTRACTOR MUST MAINTAIN A RECORD SET OF PLANS WHICH INDICATES THE LOCATION OF EXISTING UTILITIES THAT ARE
- CAPPED, ABANDONED IN PLACE, OR RELOCATED DUE TO DEMOLITION ACTIVITIES, THIS RECORD DOCUMENT MUST BE PREPARED IN A NEAT AND WORKMAN-LIKE MANNER AND TURNED OVER TO THE OWNER/DEVELOPER UPON COMPLETION OF THE WORK, ALL OF WHICH IS AT THE CONTRACTOR'S SOLE COST. 18. THE CONTRACTOR MUST EMPTY, CLEAN AND REMOVE FROM THE SITE ALL UNDERGROUND STORAGE TANKS, IF ENCOUNTERED, IN ACCORDANCE WITH FEDERAL, STATE, COUNTY AND LOCAL REQUIREMENTS, PRIOR TO CONTINUING CONSTRUCTION IN THE

(Rev. 2/2021) COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY

PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, COMPLYING WITH ALL OSHA REQUIREMENTS, TO ENSURE PUBLIC AND CONTRACTOR SAFETY AND SAFETY TO ALL PROPERTY ON THE SITE OR ADJACENT OR NEAR TO THE SAME

RAISE ANY QUESTIONS CONCERNING THE ACCURACY OR INTENT OF THESE PLANS AND/OR SPECIFICATIONS, ALL CONCERNS OR AND BY BOHLER, IN WRITING, ALL DEMOLITION ACTIVITIES MUST BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS AND ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, RULES, REQUIREMENTS,

COMPANY REQUIREMENTS AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.

AGENCIES WITH JURISDICTION THROUGHOUT THE DURATION OF THE PROJECT. SITE WORK AND DEMOLITION WORK B. NOTIFY, AT A MINIMUM, THE MUNICIPAL ENGINEER, DESIGN ENGINEER, AND LOCAL SOIL CONSERVATION JURISDICTION, AT C. INSTALL THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO SITE DISTURBANCE, AND MAINTAIN

D. IN ACCORDANCE WITH STATE LAW, THE CONTRACTOR MUST CALL THE STATE ONE-CALL DAMAGE PROTECTION SYSTEM FOR E. LOCATE AND PROTECT ALL UTILITIES AND SERVICES. INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY

PROTECT AND MAINTAIN IN OPERATION, ALL ACTIVE UTILITIES AND SYSTEMS THAT ARE NOT BEING REMOVED DURING ANY

METHODS AND MEANS TO CONSTRUCT SAME. THESE ARE NOT THE ENGINEER OF RECORD'S RESPONSIBILITY. IN THE EVENT

PARTIES. WORK REQUIRED TO BE PERFORMED "OFF-PEAK" IS TO BE PERFORMED AT NO ADDITIONAL COST TO THE OWNER. THE PROJECT PLANS AND SPECIFICATIONS OR THE CONTRACT WITH THE OWNER/DEVELOPER, THE CONTRACTOR MUST OWNER AND ENGINEER OF RECORD AND BOHLER, THE DISCOVERY OF SUCH MATERIALS TO PURSUE PROPER AND

DEMOLITION OPERATIONS CAUSE. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR

AREA AROUND THE TANK WHICH EMPTYING, CLEANING AND REMOVAL ARE AT THE CONTRACTOR'S SOLE COST.

SITE LAYOUT NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS, THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES. IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

- PRIOR TO THE COMMENCEMENT OF GENERAL CONSTRUCTION, THE CONTRACTOR MUST INSTALL SOIL EROSION CONTROL AND ANY STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MEASURES NECESSARY, AS INDICATED ON THE APPROVED SOIL EROSION AND SEDIMENT CONTROL PLAN AND IN ACCORDANCE WITH APPLICABLE AND/OR APPROPRIATE AGENCIES' GUIDELINES TO PREVENT SEDIMENT AND/OR LOOSE DEBRIS FROM WASHING ONTO ADJACENT PROPERTIES OR THE RIGHT OF WAY 3. ALL DIRECTIONAL/TRAFFIC SIGNING AND PAVEMENT STRIPING MUST CONFORM TO THE LATEST STANDARDS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND ANY APPLICABLE STATE OR LOCALLY APPROVED SUPPLEMENTS.
- GUIDELINES, RULES, REGULATIONS, STANDARDS AND THE LIKE. THE LOCATIONS OF PROPOSED UTILITY POLES AND TRAFFIC SIGNS SHOWN ON THE PLANS ARE SCHEMATIC AND PRELIMINARY THE CONTRACTOR IS SOLELY RESPONSIBLE FOR FIELD-VERIFYING THEIR LOCATION. THE CONTRACTOR MUST COORDINATE THE RELOCATION OF TRAFFIC SIGNS WITH THE ENTITY WITH JURISDICTION OVER THE PROJECT.
- ALL DIMENSIONS SHOWN ARE TO BOTTOM FACE OF CURB, EDGE OF PAVEMENT, OR EDGE OF BUILDING, EXCEPT WHEN DIMENSION IS TO A PROPERTY LINE, STAKE OUT OF LOCATIONS OF INLETS, LIGHT POLES, ETC. MUST BE PERFORMED IN STRICT ACCORDANCE WITH THE DETAILS, UNLESS NOTED CLEARLY OTHERWISE.

GRADING NOTES

- 1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
- SITE GRADING MUST BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AS REFERENCED IN THIS PLAN SET. IF NO GEOTECHNICAL REPORT HAS BEEN REFERENCED. THE CONTRACTOR MUST HAVE A GEOTECHNICAL ENGINEER PROVIDE WRITTEN SPECIFICATIONS AND RECOMMENDATIONS PRIOR TO THE CONTRACTOR COMMENCING THE GRADING WORK. THE CONTRACTOR MUST FOLLOW THE REQUIREMENTS OF ALL MUNICIPAL, COUNTY, STATE, AND FEDERAL LAWS, WHICH HAVE JURISDICTION OVER THIS PROJECT. THE CONTRACTOR IS REQUIRED TO SECURE ALL NECESSARY AND/OR REQUIRED PERMITS AND APPROVALS FOR ALL OFF-SITE
- MATERIAL SOURCES AND DISPOSAL FACILITIES. THE CONTRACTOR MUST SUPPLY A COPY OF APPROVALS TO THE ENGINEER OF RECORD AND THE OWNER PRIOR TO THE CONTRACTOR COMMENCING ANY WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING EXISTING TOPOGRAPHIC INFORMATION AND UTILITY INVERT ELEVATIONS PRIOR TO COMMENCING ANY CONSTRUCTION. SHOULD DISCREPANCIES BETWEEN THE PLANS AND INFORMATION OBTAINED THROUGH FIELD VERIFICATIONS BE IDENTIFIED OR EXIST, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE
- ENGINEER OF RECORD IN WRITING THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REPLACING ALL UNSUITABLE MATERIALS WITH SUITABLE MATERIALS AS SPECIFIED IN THE GEOTECHNICAL REPORT. THE CONTRACTOR MUST COMPACT ALL EXCAVATED OR FILLED AREAS IN STRICT ACCORDANCE WITH THE GEOTECHNICAL REPORT'S GUIDANCE. MOISTURE CONTENT AT TIME OF PLACEMENT MUST B SUBMITTED IN A COMPACTION REPORT PREPARED BY A QUALIFIED GEOTECHNICAL ENGINEER, REGISTERED WITH THE STATE WHERE THE WORK IS PERFORMED. THIS REPORT MUST VERIFY THAT ALL FILLED AREAS AND SUBGRADE AREAS WITHIN THE BUILDING PAD AREA AND AREAS TO BE PAVED HAVE BEEN COMPACTED IN ACCORDANCE WITH THESE PLANS. SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS. RULES. STATUTES, LAWS, ORDINANCES AND CODES WHICH ARE IN EFFECT AND WHICH ARE APPLICABLE TO THE PROJECT. SUBBASE
- MATERIAL FOR SIDEWALKS, CURB, OR ASPHALT MUST BE FREE OF ORGANICS AND OTHER UNSUITABLE MATERIALS. SHOULD SUBBASE BE DEEMED UNSUITABLE BY OWNER/DEVELOPER, OR OWNER/DEVELOPER'S REPRESENTATIVE, SUBBASE MUST BE REMOVED AND FILLED WITH APPROVED FILL MATERIAL. COMPACTED AS THE GEOTECHNICAL REPORT DIRECTS. EARTHWORK ACTIVITIES INCLUDING. BUT NOT LIMITED TO, EXCAVATION, BACKFILL, AND COMPACTING MUST COMPLY WITH THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND ALL APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES. EARTHWORK ACTIVITIES MUST COMPLY WITH THE STANDARD STATE DOT SPECIFICATIONS FOR
- ROADWAY CONSTRUCTION (LATEST EDITION) AND ANY AMENDMENTS OR REVISIONS THERETC IN THE EVENT OF A DISCREPANCY(IES) AND/OR A CONFLICT(S) BETWEEN PLANS, OR RELATIVE TO OTHER PLANS, THE GRADING PLAN TAKES PRECEDENCE AND CONTROLS. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCY(IES) AND/OR CONFLICT(S).
- THE CONTRACTOR IS RESPONSIBLE TO IMPORT FILL OR EXPORT EXCESS MATERIAL AS NECESSARY TO CONFORM TO THE PROPOSED GRADING, AND TO BACKFILL EXCAVATIONS FOR THE INSTALLATION OF UNDERGROUND IMPROVEMENTS.

ACCESSIBILITY DESIGN GUIDELINES

- ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET. AT A MINIMUM. THE MORE STRINGENT OF: (A) THE REQUIREMENTS OF THE "AMERICANS WITH DISABILITIES ACT" (ADA) CODE (42 U.S.C. § 12101 ET SEQ. AND 42 U.S.C. § 4151 ET SEQ.); AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AND ALL AMENDMENTS TO BOTH, WHICH ARE IN EFFECT WHEN THESE PLANS WERE COMPLETED. THE CONTRACTOR MUST REVIEW ALL DOCUMENTS REFERENCED IN THESE NOTES FOR ACCURACY, COMPLIANCE AND CONSISTENCY WITH INDUSTRY GUIDELINES.
- THE CONTRACTOR MUST EXERCISE APPROPRIATE CARE AND PRECISION IN CONSTRUCTION OF ACCESSIBLE (ADA) COMPONENTS AND ACCESSIBLE ROUTES FOR THE SITE. FINISHED SURFACES ALONG THE ACCESSIBLE ROUTE OF TRAVEL FROM PARKING SPACES, PUBLIC TRANSPORTATION, PEDESTRIAN ACCESS, AND INTER-BUILDING ACCESS, TO POINTS OF ACCESSIBLE BUILDING ENTRANCE/EXIT, MUST COMPLY WITH THE ACCESSIBLE GUIDELINES AND REQUIREMENTS WHICH INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING.
- ACCESSIBLE PARKING SPACES AND ACCESS AISLES SLOPES MUST NOT EXCEED 1:50 (2.0%) IN ANY DIRECTION PATH OF TRAVEL ALONG ACCESSIBLE ROUTE MUST PROVIDE A 36-INCHES MINIMUM WIDTH (48-INCHES PREFERRED), OR AS PECIFIED BY THE GOVERNING AGENCY. UNOBSTRUCTED WIDTH OF TRAVEL (CAR OVERHANGS AND/OR HANDRAILS) MUST NOT REDUCE THIS MINIMUM WIDTH. THE SLOPE MUST NOT EXCEED 1:20 (5.0%) IN THE DIRECTION OF TRAVEL AND MUST NOT EXCEED 1:50 (2.0%) IN CROSS SLOPE. WHERE ACCESSIBLE PATH OF TRAVEL IS GREATER THAN 1:20 (5.0%), AN ACCESSIBLE RAMP MUST BE PROVIDED ALONG THE ACCESSIBLE PATH OF TRAVEL OPENINGS MUST NOT EXCEED 1/2-INCH IN WIDTH VERTICAL CHANGES OF UP TO 1/2-INCH ARE PERMITTED ONLY IF THEY INCLUDES A 1/4-INCH BEVEL AT A SLOPE NOT
- STEEPER THAN 1:2. NO VERTICAL CHANGES OVER 1/4-INCH ARE PERMITTED. ACCESSIBLE RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%) AND A RISE OF 30-INCHES. LEVEL LANDINGS MUST BE OVIDED AT EACH END OF ACCESSIBLE RAMPS, LANDING MUST PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES. AND MUST NOT EXCEED 1:50 (2.0%) SLOPE IN ANY DIRECTION. RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS MUST HAVE A CLEAR LANDING OF A MINIMUM OF 60-INCHES BY 60-INCHES. HAND RAILS ON BOTH SIDES OF THE RAMP MUST BE PROVIDED ON AN ACCESSIBLE RAMP WITH A RISE GREATER THAN 6-INCHES.
- ACCESSIBLE CURB RAMPS MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). WHERE FLARED SIDES ARE PROVIDED, THEY MUST NOT EXCEED 1:10 (10%) SLOPE. LEVEL LANDING MUST BE PROVIDED AT RAMPS TOP AT A MINIMUM OF 36-INCHES LONG (48-INCHES PREFERRED). IN ALTERATIONS, WHEN THERE IS NO LANDING AT THE TOP, FLARE SIDES SLOPES MUST NOT EXCEED A SLOPE OF 1:12 (8.3%). DOORWAY LANDINGS AREAS MUST BE PROVIDED ON THE EXTERIOR SIDE OF ANY DOOR LEADING TO AN ACCESSIBLE PATH. E TRAVEL THIS LANDING MUST BE SLOPED AWAY FROM THE DOOR NO MORE THAN 1:50 (2.0%) FOR POSITIVE DRAINAGE
- THIS LANDING AREA MUST BE NO FEWER THAN 60-INCHES (5 FEET) LONG. EXCEPT WHERE OTHERWISE CLEARLY PERMITTED BY ACCESSIBLE STANDARDS FOR ALTERNATIVE DOORWAY OPENING CONDITIONS. (SEE ICC/ANSI A117.1-2009 AND OTHER REFERENCES INCORPORATED BY CODE) F. WHEN THE PROPOSED CONSTRUCTION INVOLVES RECONSTRUCTION, MODIFICATION, REVISION OR EXTENSION OF OR TO CESSIBLE COMPONENTS FROM EXISTIN ELEVATIONS SHOWN ON THE PLAN, NOTE THAT TABLE 405.2 OF THE DEPARTMENT OF JUSTICE'S ADA STANDARDS FOR
- ACCESSIBLE DESIGN ALLOWS FOR STEEPER RAMP SLOPES. IN RARE CIRCUMSTANCES, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, OF ANY DISCREPANCIES AND/OR FIELD CONDITIONS THAT DIFFER IN ANY WAY OR IN ANY RESPECT FROM WHAT IS SHOWN ON THE PLANS BEFORE COMMENCING ANY WORK. CONSTRUCTED IMPROVEMENTS MUST FALL WITHIN THE MAXIMUM AND MINIMUM LIMITATIONS IMPOSED BY THE BARRIER FREE REGULATIONS AND THE ACCESSIBLE GUIDELINES. THE CONTRACTOR MUST VERIFY ALL OF THE SLOPES OF THE CONTRACTOR'S FORMS PRIOR TO POURING CONCRETE. IF ANY NON-CONFORMANCE EXISTS OR IS OBSERVED OR DISCOVERED. THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE
- ENGINEER OF RECORD, IN WRITING, PRIOR TO POURING CONCRETE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL COSTS TO REMOVE. REPAIR AND/OR REPLACE NON-CONFORMING CONCRETE AND/OR PAVEMENT SURFACES 4. IT IS STRONGLY RECOMMENDED THAT THE CONTRACTOR REVIEW THE INTENDED CONSTRUCTION TO ENSURE SAME IS CONSISTENT WITH THE LOCAL BUILDING CODE PRIOR TO COMMENCING CONSTRUCTION.

DRAINAGE AND UTILITY NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS, THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES. IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

- 2. LOCATIONS OF ALL EXISTING AND PROPOSED SERVICES ARE <u>APPROXIMATE</u>, AND THE CONTRACTOR MUST INDEPENDENTLY /ERIFY AND CONFIRM THOSE LOCATIONS AND SERVICES WITH LOCAL UTILITY COMPANIES PRIOR TO COMMENCING ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR MUST INDEPENDENTLY VERIFY AND CONFIRM ALL SANITARY CONNECTION POINTS AND ALL OTHER UTILITY SERVICE CONNECTION POINTS IN THE FIELD. PRIOR TO COMMENCING ANY CONSTRUCTION, THE CONTRACTOR MUST REPORT ALL DISCREPANCIES. ERRORS AND OMISSIONS IN WRITING. TO THE ENGINEER OF RECORD. THE CONTRACTOR MUST VERTICALLY AND HORIZONTALLY LOCATE ALL UTILITIES AND SERVICES INCLUDING, BUT NOT LIMITED
- O, GAS, WATER, ELECTRIC, SANITARY AND STORM, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE OR WORK SPACE, WHICHEVER IS GREATER. THE CONTRACTOR MUST USE, REFER TO, AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL OF THE UNDERGROUND UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ALL DAMAGE TO ANY EXISTING UTILITIES WHICH OCCUR DURING CONSTRUCTION, AT NO COST TO THE OWNER AND AT CONTRACTOR'S SOLE COST AND EXPENSE. THE CONTRACTOR MUST BEAR
- ALL COSTS ASSOCIATED WITH DAMAGE TO ANY EXISTING UTILITIES WHICH OCCURS DURING CONSTRUCTION. 4. THE CONTRACTOR MUST FIELD VERIFY THE PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND UTILITIES BY USING A TEST PIT TO CONFIRM EXACT DEPTH, PRIOR TO COMMENCEMENT OF CONSTRUCTION. STORMWATER ROOF DRAIN LOCATIONS ARE BASED ON ARCHITECTURAL PLANS. THE CONTRACTOR IS RESPONSIBLE FOR
- VERIFYING LOCATIONS OF SAME BASED UPON FINAL ARCHITECTURAL PLANS. 6. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SITE PLAN DOCUMENTS AND ARCHITECTURAL PLANS FOR EXACT BUILDING UTILITY CONNECTION LOCATIONS; GREASE TRAP REQUIREMENTS; AND DETAILS, DOOR ACCESS, AND EXTERIOR GRADING. THE ARCHITECT WILL DETERMINE THE UTILITY SERVICE SIZES. THE CONTRACTOR MUST COORDINATE INSTALLATION OF UTILITY SERVICES WITH THE INDIVIDUAL COMPANIES TO AVOID CONFLICTS AND TO ENSURE THAT PROPER DEPTHS ARE ACHIEVED. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT INSTALLATION OF ALL IMPROVEMENTS COMPLIES WITH ALI UTILITY REQUIREMENTS OF THE APPLICABLE JURISDICTION AND REGULATORY AGENCIES AND ALL OTHER APPLICABLE REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES AND, FURTHER, IS RESPONSIBLE FOR COORDINATING THE UTILITY TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO THE EXISTING UTILITY/SERVICE. WHERE A CONFLICT(S) EXISTS BETWEEN THESE DOCUMENTS AND THE ARCHITECTURAL PLANS, OR WHERE ARCHITECTURAL PLAN UTILITY CONNECTION
- POINTS DIFFER, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE ENGINEER OF RECORD, IN WRITING, AND PRIOR TO CONSTRUCTION. MUST RESOLVE SAME. 7 ALL FILL COMPACTION AND BACKFILL MATERIALS REQUIRED FOR UTILITY INSTALLATION MUST BE EXACTLY AS PER THE RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND THE CONTRACTOR MUST COORDINATE SAME WITH THE APPLICABLE UTILITY COMPANY SPECIFICATIONS. WHEN THE PROJECT DOES NOT HAVE GEOTECHNICAL RECOMMENDATIONS, FILL AND COMPACTION MUST COMPLY WITH APPLICABLE REQUIREMENTS AND SPECIFICATIONS. ENGINEER OF RECORD AND BOHLER ARE NOT RESPONSIBLE FOR DESIGN OF TRENCH BACKFILL OR FOR COMPACTION REQUIREMENTS
- 8. DURING THE INSTALLATION OF SANITARY, STORM, AND ALL UTILITIES, THE CONTRACTOR MUST MAINTAIN A CONTEMPORANEOUS AND THOROUGH RECORD OF CONSTRUCTION TO IDENTIFY THE AS-INSTALLED LOCATIONS OF ALL UNDERGROUND INFRASTRUCTURE. THE CONTRACTOR MUST CAREFULLY NOTE ANY INSTALLATIONS THAT DEVIATE. IN ANY RESPECT FROM THE INFORMATION CONTAINED IN THESE PLANS. THIS RECORD MUST BE KEPT ON A CLEAN COPY OF THE APPROPRIATE PLAN(S), WHICH THE CONTRACTOR MUST PROMPTLY PROVIDE TO THE OWNER IMMEDIATELY UPON THE COMPLETION OF WORK. THE CONTRACTOR MUST ENSURE THAT ALL UTILITY TRENCHES LOCATED IN EXISTING PAVED ROADWAYS INCLUDING SANITARY,
- WATER AND STORM SYSTEMS, ARE REPAIRED IN ACCORDANCE WITH REFERENCED MUNICIPAL, COUNTY AND OR STATE DOT DETAILS AS APPLICABLE. THE CONTRACTOR MUST COORDINATE INSPECTION AND APPROVAL OF COMPLETED WORK WITH THE AGENCY WITH JURISDICTION OVER SAME 10. FINAL LOCATIONS OF PROPOSED UTILITY POLES, AND/ OR POLES TO BE RELOCATED ARE AT THE SOLE DISCRETION OF THE RESPECTIVE UTILITY COMPANY, REGARDLESS OF WHAT THIS PLAN DEPICTS.
- WATER SERVICE MATERIALS, BURIAL DEPTH, AND COVER REQUIREMENTS MUST BE SPECIFIED BY THE LOCAL UTILITY COMPANY. THE CONTRACTOR MUST CONTACT THE APPLICABLE MUNICIPALITY TO CONFIRM THE PROPER WATER METER AND VAULT, PRIOR TO COMMENCING CONSTRUCTION 12. THE TOPS OF EXISTING MANHOLES, INLET STRUCTURES, AND SANITARY CLEANOUT MUST BE ADJUSTED, AS NECESSARY, TO MATCH PROPOSED FINISHED GRADES WITH NO TRIPPING OR SAFETY HAZARD IN ACCORDANCE WITH ALL APPLICABLE

STANDARDS, REQUIREMENTS, RULES, STATUTES, LAWS, ORDINANCES AND CODES.

LIGHTING NOTES

(Rev. 1/2020)

(Rev. 2/2021)

(Rev. 1/2020)

(Rev.2/2021)

- WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.
- GOVERNMENTAL REGULATIONS
- AND OTHER RELATED VARIABLE FIELD CONDITIONS.
- CONTRACTOR'S RESPONSIBILITY, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THE LIGHTING CONTRACTOR
- ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES.

- OMITTED OMITTED. 4 OMITTED OMITTED OMITTED OMITTED OMITTED OMITTED OMITTED OMITTED LANDSCAPE AND/OR DEMOLITION PLAN(S) FOR TREE PROTECTION. FENCE LOCATIONS AND DETAILS.
- PROJECT
- OMITTED
- PROPOSED FOR THIS SITE
- BEST MANAGEMENT PRACTICES.
- SILT-LADEN RUNOFF FROM EXITING THE SITE
- RESPONSIBLE FOR ALL SUCH COSTS.
- SEDIMENT CONTROL INSPECTOR. EROSION AND SEDIMENT CONTROL INSPECTOR
- WITHOUT WRITTEN APPROVAL OF THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) OR LOCAL SOIL APPROVED BY MDE OR THE LOCAL SCD.

(Rev. 1/2020) 1 THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN. AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY THE LIGHTING CONTRACTOR MUST COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE PLANS, INCLUDING BUT NOT LIMITED TO GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL AGENCY AND

THE LIGHTING PLAN DEPICTS PROPOSED. SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURER. ACTUAL SUSTAINED SITE ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES

THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT GROUND LEVEL UNLESS OTHERWISE NOTED. ILLUMINATION LEVELS ARE SHOWN IN FOOT-CANDLES (FC). THE LUMINAIRES. LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY, THIS WORK SHOULD INCLUDE, BUT IS NOT LIMITED TO, VISUAL OBSERVATION, CLEANING OF LENSES, AND RE-LAMPING ACCORDING TO MANUFACTURER RECOMMENDATIONS. FAILURE TO FOLLOW THE ABOVE STEPS COULD RESULT IN IMPROPER LIGHT DISTRIBUTION AND FAILURE TO COMPLY WITH THE APPROVED DESIGN. UPON COMPLETION AND OWNER'S ACCEPTANCE OF THE WORK, THE ABOVE RESPONSIBILITIES BECOMES SOLELY THE OWNER'S. THE LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES. POWER SYSTEM, CONDUITS, WIRING AND OTHER ELECTRICAL COMPONENTS ARE SOLELY THE ARCHITECT'S. MECHANICAL ENGINEER'S AND/OR LIGHTING

MUST COORDINATE WITH THE PROJECT ARCHITECT AND/OR ELECTRICAL ENGINEER REGARDING ANY AND ALL POWER SOURCES AND TIMING DEVICES NECESSARY TO MEET THE DESIGN INTENT. THESE ITEMS MUST BE INSTALLED AS REQUIRED BY STATE AND LOCAL REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF LIGHTING FIXTURES AND APPURTENANCES IN THE CONTRACTOR MUST BRING IMMEDIATELY, IN WRITING, ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES,

OR OTHER STRUCTURE(S) TO THE ENGINEER OF RECORD'S ATTENTION, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT SHIELDING AND OR ROTATED OPTICS ARE INSTALLED AS INDICATED ON THE PLAN IN ORDER TO ACHIEVE THE LIGHTING LEVELS THE REVIEWING AGENCY APPROVED.

SOIL EROSION & SEDIMENT CONTROL PLAN NOTES

(Rev. 1/2019)

THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES. IN THEIR ENTIRETY, THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

THIS PLAN REPRESENTS THE MINIMUM LEVEL OF IMPLEMENTATION OF TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES, MEASURES AND STRUCTURES. ADDITIONAL FACILITIES, MEASURES AND STRUCTURES MUST BE INSTALLED WHERE NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS AND/OR TO PREVENT ANY, INCLUDING THE INCIDENTAL DISCHARGE OF SILT-LADEN RUNOFF FROM EXITING THE SITE. 13. THE CONTRACTOR MUST PROTECT ALL EXISTING TREES AND SHRUBS. THE CONTRACTOR MUST REFER TO THE

14. THE CONTRACTOR MUST REFER TO GRADING PLANS FOR ADDITIONAL INFORMATION. THE CONTRACTOR MUST CLEAN EXISTING AND PROPOSED DRAINAGE STRUCTURES AND INTERCONNECTING PIPES ON OR OFF-SITE AS THE JURISDICTIONAL AGENCY REQUIRES, BOTH AT THE TIME OF SITE STABILIZATION AND AT END OF

16. SOIL EROSION CONTROL MEASURES MUST BE ADJUSTED OR RELOCATED BY THE CONTRACTOR AS IDENTIFIED DURING SITE OBSERVATION IN ORDER TO MAINTAIN THE COMPLETE EFFECTIVENESS OF ALL CONTROL MEASURES.

18. EROSION CONTROL MEASURES MUST CONFORM TO THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL UNLESS OTHERWISE NOTED, OR AS UNLESS OTHERWISE CLEARLY AND SPECIFICALLY DIRECTED BY ENGINEER. INSTALLATION OF EROSION CONTROL, CLEARING, AND SITE WORK MUST BE PERFORMED EXACTLY AS INDICATED IN THE EROSION CONTROL CONSTRUCTION NOTES. 19. REFER TO THE APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR THE DISTURBED LAND AREA OF THIS SITE 20. REFER TO THE APPROVED EROSION AND SEDIMENT CONTROL PLANS FOR THE EROSION CONTROL MEASURES

INSTALLATION OF EROSION CONTROL DEVICES MUST BE IN ACCORDANCE WITH ALL OF THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED DETAILS AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL

22. CONTRACTOR MUST INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EVERY RAIN EVENT. CONTRACTOR MUST IMMEDIATELY CLEAR AND REMOVE ANY SILT AS RECOMMENDED BY THE APPROVED DETAILS ON THE APPROVED FROSION AND SEDIMENT CONTROL PLANS OR AS OUTLINED IN THE SPECIFICATIONS LISTED IN NOTE #18 23. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, CONTRACTOR MUST COMPLETE PERMANENT OR TEMPORARY STABILIZATION WITHIN: A) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL (3:1). AND B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING. WHEN AREAS ARE DISTURBED AFTER THE GROWING SEASON CONTRACTOR MUST STABILIZE SAME WITH GEOTEXTILE FABRIC AND MAINTAIN SAME IN STRICT ACCORDANCE WITH

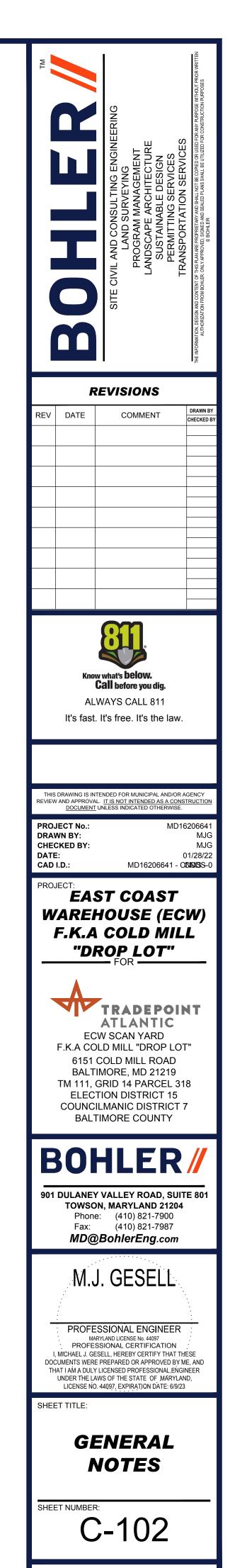
24. CONTRACTOR MUST INSTALL ADDITIONAL EROSION CONTROL MEASURES IF REQUIRED BY THE ENGINEER OR THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR, TO PREVENT THE INCIDENTAL AND ANY DISCHARGE OF

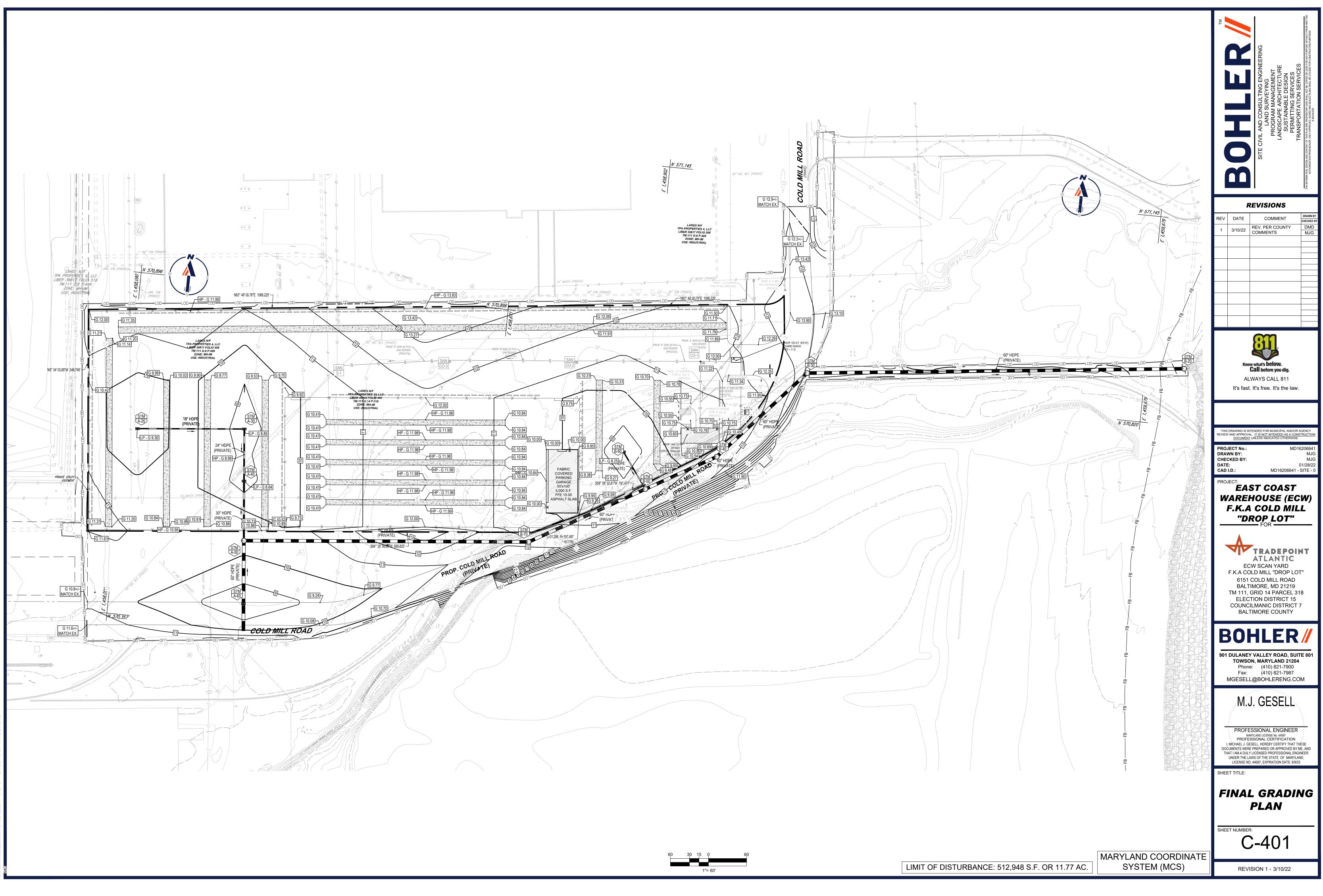
THE CONTRACTOR MUST BE RESPONSIBLE FOR ALL INSPECTING AND MAINTAINING ALL EROSION CONTROL MEASURES ON THE SITE UNTIL PERMANENT PAVING AND TURE/LANDSCAPING IS ESTABLISHED AND UPON APPROVAL OF THE LOCAL EROSION AND SEDIMENT CONTROL INSPECTOR. THE COSTS OF INSTALLING AND MAINTAINING THE EROSION CONTROL MEASURES MUST BE INCLUDED IN THE BID PRICE FOR THE SITE WORK AND THE CONTRACTOR IS

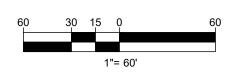
26. CONTRACTOR MUST CONTINUE TO MAINTAIN ALL EROSION CONTROL MEASURES UNTIL THE COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF VEGETATION AND UPON THE APPROVAL OF THE LOCAL EROSION AND 27. CONTRACTOR MUST REMOVE EROSION CONTROL MEASURES, SILT AND DEBRIS AFTER ESTABLISHING PERMANENT

VEGETATION COVER OR OTHER SPECIFIED METHOD OF STABILIZATION AND UPON THE APPROVAL OF THE LOCAL

CONSERVATION DISTRICT (SCD), UNSTABILIZED AREAS OF DISTURBANCE THROUGHOUT THE SITE MUST NOT BE MORE THAN AS APPROVED BY MDE OR THE LOCAL SCD AT ANY TIME, ADDITIONAL INSPECTION REQUIREMENTS AS STIPULATED BY THE JURISDICTIONAL AGENCY MUST BE ADOPTED AS REQUIRED FOR DISTURBANCE MORE THAN AS







B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL

CONDITIONS WHERE PRACTICE APPLIES

ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTIT TABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS. PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH

VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE. SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT NSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

- . ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUNDCOVER. 2. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND
- SEEDING 3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED. 4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

O PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES

ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

- A. INCREMENTAL STABILIZATION CUT SLOPES 1. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES 2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
- a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
- b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
- d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

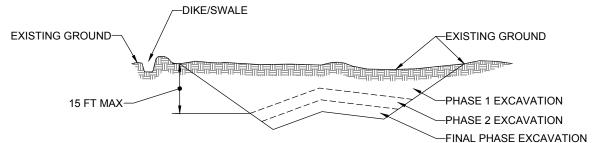
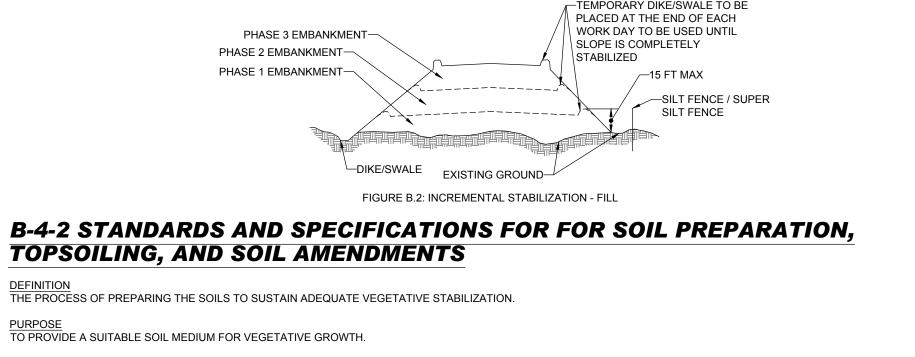


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

- B. INCREMENTAL STABILIZATION FILL SLOPES 1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE
- WORK PROGRESSES 2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS. 3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-FROSIVE MANNER
- 4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
- a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
- c PLACE PHASE 1 FILL. PREPARE SEEDBED. AND STABILIZE. d PLACE PHASE 2 FILL PREPARE SEEDBED AND STABILIZE

e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION



CONDITIONS WHERE PRACTICE APPLIES WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

A. SOIL PREPARATION 1. TEMPORARY STABILIZATION

- a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT, AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
- c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
- PERMANENT STABILIZATION a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE
- ESTABLISHMENT ARE: . SOIL PH BETWEEN 6.0 AND 7.0.
- ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM). iii. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
- iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT V. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
-). APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
- c. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES
- d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST. e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
- TOPSOILING TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION
- . TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
- . TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE: a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
- b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS. c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH
- d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE. 4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
- 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
- a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 11/2 INCHES IN DIAMETER.
- b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR THERS AS SPECIFIED c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL

DEFINITION

REQUIRED.

- SEEDING

6. TOPSOIL APPLICATION a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL. b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS. c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION. WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) 1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES

2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME. TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCES 3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE. 4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. 5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

PURPOSE TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES

O THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING

1. SPECIFICATIONS

A. SEEDING

B. MULCHING

ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE. b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE

APPLIED WHEN THE GROUND THAWS. c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE. d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS

ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS 2. APPLICATION a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED

ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT. b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL. i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PI ANTING

ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER). I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE. ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.

iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION. iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED. b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS. iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED. FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER. ON APPLICATION. HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC. V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS. DIAMETER APPROXIMATELY 1 MILLIMETER. PH RANGE OF 4.0 TO 8.5. ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM 2. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE. c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO

ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. 3 ANCHORING a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING

METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD: i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR

ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER. iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70. PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED. iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4

TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG. TEMPORARY SEEDING SUMMARY

	HARDINESS SEE	FERTILIZER RATE	LIME RATE					
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	(10-20-20)				
			COOL SEASON GRAS	SES				
1	ANNUAL RYEGRASS	40	2/15 - 4/30 8/15 - 11/30	0.5"				
2	BARLEY	96	2/15 - 4/30 8/15 - 11/30	1"				
3	OATS	72	2/15 - 4/30 8/15 - 11/30	1"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)		
4	WHEAT	120	2/15 - 4/30 8/15 - 11/30	1"				
5	CEREAL RYE	112	2/15 - 4/30 8/15 - 12/15	1"				
			WARM SEASON GRAS	SES				
6	FOXTAIL MILLET	30	5/1 - 8/14	0.5"	436 LB/AC	2 TONS/AC		
7	PEARL MILLET	20	5/1 - 8/14	0.5"	(10 LB/1000 SF)	(90 LB/1000 SF)		
ERMINATIO EEDING RA ATE LISTED EIGHT) OF IE SEEDING	RATES FOR THE WARM-SEASON GR N AND PURITY, AS TESTED. ADJUS TES LISTED ABOVE ARE FOR TEMP ABOVE FOR BARLEY, OATS, AND V THE OVERALL PERMANENT SEEDIN 3 DATES FOR OTHER TEMPORARY A NURSE CROP, SEED AT 1/3 OF TH	TMENTS ARE USUALLY NOT N ORARY SEEDINGS, WHEN PL/ VHEAT. FOR SMALLER-SEEDE NG MIX. CEREAL RYE GENERA SEEDINGS. CEREAL RYE HAS	IEEDED FOR THÈ COOL-SEAS ANTED ALONE. WHEN PLANTI ED GRASSES (ANNUAL RYEGF ALLY SHOULD NOT BE USED A	SON GRASSES. ED AS A NURSE CROP RASS, PEARL MILLET, I AS A NURSE CROP, UN	WITH PERMANENT SEED MIXES FOXTAIL MILLET), DO NOT EXCEE ILESS PLANTING WILL OCCUR IN	, USE 1/3 OF THE SEEDIN ED MORE THAN 5% (BY VERY LATE FALL BEYON		

3. THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE AND MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS. ESPECIALLY NEAR THE BOUNDARIES OF THE ZONE.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE

SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED. THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN. 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY 3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS

CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

A. SEED MIXTURES 1. GENERAL USE

- SUMMARY IS TO BE PLACED ON THE PLAN.
- 2 TUREGRASS MIXTURES
- MAINTENANCE

- SEEDING RATE: 11/2 TO 3 POUNDS PER 1000 SQUARE FEET NOTES.
- **RECOMMENDATIONS FOR MARYLAND"**
- c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
- d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER
- WILL POSE NO DIFFICULTY OR ON ADVERSE SITES.

		HARDINESS SEED
	NO.	SPECIES
	9	TALL FESCUE KENTUCKY BLUEGRAS PERENNIAL RYE GRAS
	5	HARD FESCUE PERENNIAL RYE GRAS FLAT PEA
	1	SWITCH GRASS CREEPING RED FESCU PARTRIDGE PEA
	ESPEC EXPEC PLANT 2. WHI PLANT • ADD ADDIN • WAF THAN PLANT * ADDI * ADDI	S: PLANTING DATES LISTE CIALLY NEAR THE BOUN CTED TO BE LESS THAN TOGETHER WITH THE F EN PLANTED DURING TH ING. BARE-ROOT GRAS ITIONAL PLANTING DATE IG A NURSE CROP, AS N RM-SEASON GRASSES N 50 DEGREES, OR MOIST ING DURING THE LATTE SELECTING A PLANTING TINGS, ESPECIALLY ON I TIONAL PLANTING DATE QUENT FREEZING AND CIENTLY NOETED IN PL/ ISUALLY NEEDS 4 TO 6 N TED INTO THE WINTER N & THE PERIOD 5/1 - 8/14 /
 GENERA GENERA CLAS SOD EXCL STAN WITH SOD SOD AGRC SOD INS a. DURI LAY 1 JOIN ORDI c. WHE SOD 	AL SPEC S OF TI MUST E UDE TC IDARD S I A FIRM MUST N MUST E DNOMIS STALLAT NG PER TS TO F ER TO F REVER TO PRE	QUICK COVER ON DIST CIFICATIONS JRFGRASS SOD MUST E E MACHINE CUT AT A UP OP GROWTH AND THATC SIZE SECTIONS OF SOD I GRASP ON THE UPPER IOT BE HARVESTED, DELIVER TOR SOIL SCIENTIST P FION CIODS OF EXCESSIVELY ST ROW OF SOD IN A ST OROMOTE MORE UNIFOR OREVENT VOIDS WHICH OP POSSIBLE, LAY SOD WIT VENT SLIPPAGE ON SLO SOD IMMEDIATELY FOL

- 3. SOD MAINTENANCE
- MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

B-4-6 STANDARDS AND SPECIFICATIONS FOR SOIL STABILIZATION MATTING

MATERIAL USED TO TEMPORARILY OR PERMANENTLY STABILIZE CHANNELS OR STEEP SLOPES UNTIL GROUNDCOVER IS ESTABLISHED.

<u>PURPOSE</u> TO PROTECT THE SOILS UNTIL VEGETATION IS ESTABLISHED.

CONDITIONS WHERE PRACTICE APPLIES ON NEWLY SEEDED SURFACES TO PREVENT THE APPLIED SEED FROM WASHING OUT; IN CHANNELS AND ON STEEP SLOPES WHERE THE FLOW HAS EROSIVE VELOCITIES OR CONVEYS CLEAR WATER; ON TEMPORARY SWALES, EARTH DIKES, AND PERIMETER DIKE SWALES AS REQUIRED BY THE RESPECTIVE DESIGN STANDARD; AND, ON STREAM BANKS WHERE MOVING WATER IS LIKELY TO WASH OUT NEW VEGETATIVE PLANTINGS.

DESIGN CRITERI

- RUNOFF VELOCITY EXCEEDS FOUR FEET PER SECOND (4 EPS)

- SLOPE, THE SLOPE LENGTH, AND THE SOIL-ERODIBILITY K FACTOR.

MAINTENANCE VEGETATION MUST BE ESTABLISHED AND MAINTAINED SO THAT THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR

AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING. c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY. d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 ½ POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY

a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF

b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF FHREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT. iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES; CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED. IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES; CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT.

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR CHOOSE CERTIFIED MATERIAL, CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE

WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A) CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)

SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

SEEDBED. REMOVE STONES AND DEBRIS OVER 11/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES e. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS,

	PERMANENT SEEDING SUMMARY											
3 ZONE (from Figure B.3): ZONE 7A D MIXTURE (from Table B.3)												
	APPLICATION RATE (LB/AC)	*SEEDING DATES	SEEDING DEPTHS	Ν	P2O5	K2O	LIME RATE					
SS SS	60 40 20	2/15 - 4/30 8/15 - 10/31	1/4" - 1/2"									
S	20 10 15	3/1 - 5/15 8/1 - 10/15	1/4" - 1/2"	45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)					
JE	10 15 4	2/15 - 5/31	1/4" - 1/2"									

ED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, DARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES. OR WHEN CONDITIONS ARE OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND

PERMANENT SEEDING MIX IE GROWING SEASON, MOST OF THESE MATERIALS MUST BE PURCHASED AND KEPT IN A DORMANT CONDITION UNTIL SES ARE THE EXCEPTION—THEY MAY BE SUPPLIED AS GROWING (NON-DORMANT) PLANTS. ES FOR THE LOWER COASTAL PLAIN, DEPENDENT ON ANNUAL RAINFALL AND TEMPERATURE TRENDS. RECOMMEND OTED ABOVE IF PLANTING DURING THIS PERIOD IEED A SOIL TEMPERATURE OF AT LEAST 50 DEGREES F IN ORDER TO GERMINATE. IF SOIL TEMPERATURES ARE COLDER URE IS NOT ADEQUATE, THE SEEDS WILL REMAIN DORMANT UNTIL CONDITIONS ARE FAVORABLE. IN GENERAL,

R PORTION OF THIS PERIOD ALLOWS MORE TIME FOR WEED EMERGENCE AND WEED CONTROL PRIOR TO PLANTING. G DATE, CONSIDER THE NEED FOR WEED CONTROL VS. THE LIKELIHOOD OF HAVING SUFFICIENT MOISTURE FOR LATER DROUGHTY SITES. ES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT. THAWING OF WET SOILS MAY RESULT IN FROST-HEAVING OF MATERIALS PLANTED IN LATE FALL, IF PLANTS HAVE NOT

VEEKS TO BECOME SUFFICIENTLY ROOTED. LARGE CONTAINERIZED AND BALLED-AND-BURLAPPED STOCK MAY BE IONTHS AS LONG AS THE GROUND IS NOT FROZEN AND SOIL MOISTURE IS ADEQUATE. ADD EITHER FOXTAIL OR PEARL MILLET - 6 LBS/AC. TO MIX NO. 9, 2.25 LBS/AC. TO MIX NO. 5

URBED AREAS (2:1 GRADE OR FLATTER).

E MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR. NIFORM SOIL THICKNESS OF ¾ INCH, PLUS OR MINUS ¼ INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST CH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY 10 PERCENT OF THE SECTION. TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL

RED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN RIOR TO ITS INSTALLATION HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL. LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

RAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL RM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN WOULD CAUSE AIR DRYING OF THE ROOTS. TH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP. PEG OR OTHERWISE SECURE THE OPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE. LOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS

a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING. b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT. c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ½ OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS.

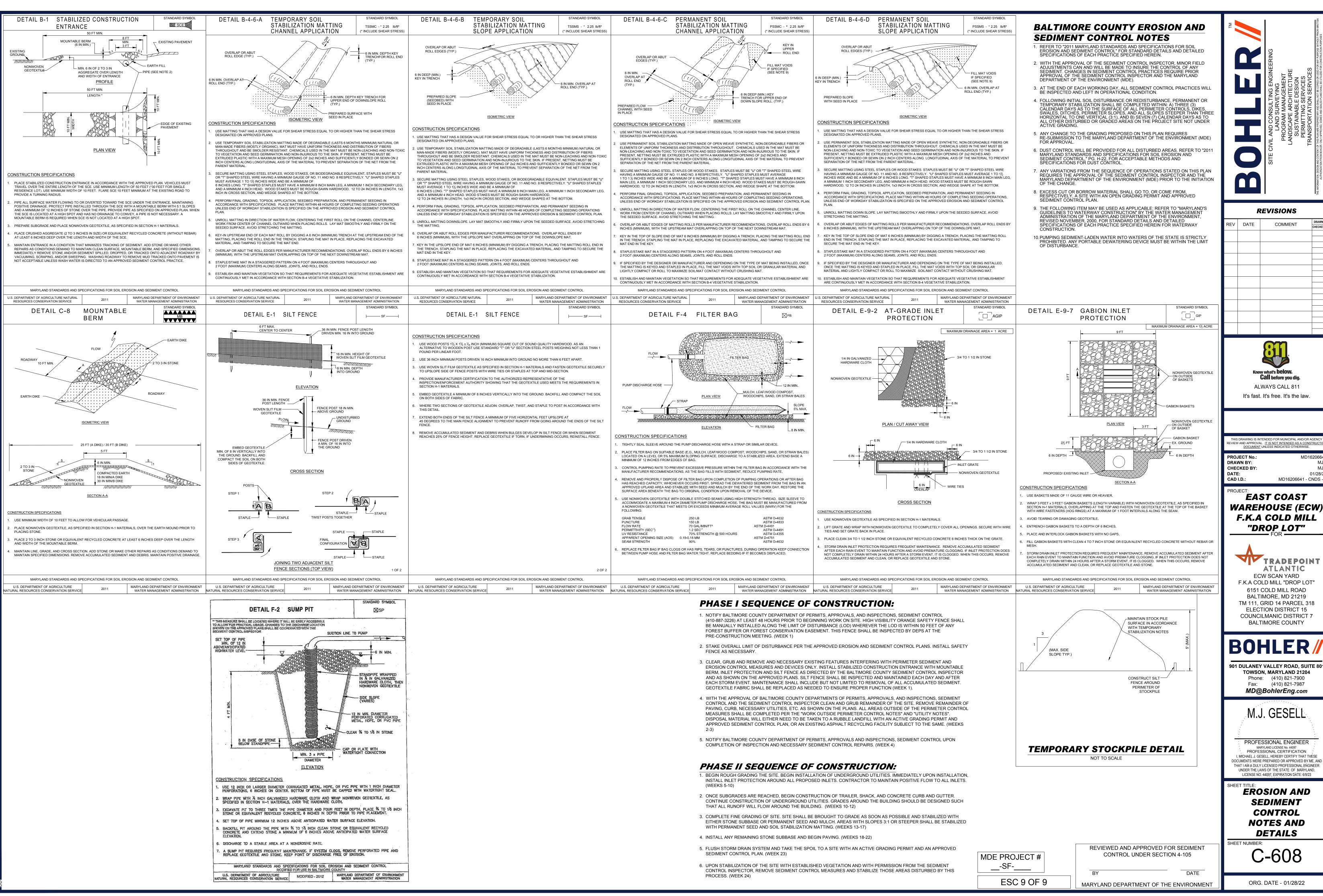
. THE SOIL STABILIZATION MATTING THAT IS USED MUST WITHSTAND THE FLOW VELOCITIES AND SHEAR STRESSES DETERMINED FOR THE AREA, BASED ON THE 2-YEAR, 24-HOUR FREQUENCY STORM FOR TEMPORARY APPLICATIONS AND THE 10-YEAR, 24-HOUR FREQUENCY STORM FOR PERMANENT APPLICATIONS. DESIGNATE ON THE PLAN THE TYPE OF SOIL STABILIZATION MATTING USING THE STANDARD SYMBOL AND INCLUDE THE CALCULATED SHEAR STRESS FOR THE RESPECTIVE TREATMENT

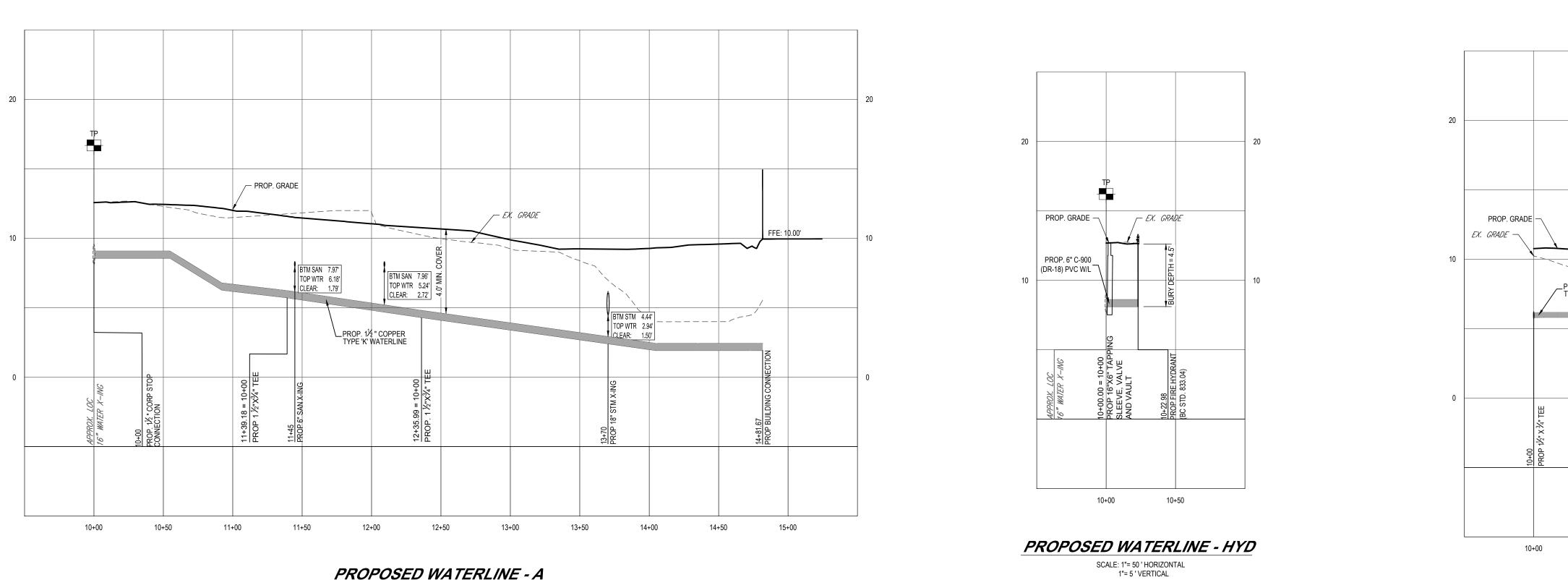
2. MATTING IS REQUIRED ON PERMANENT CHANNELS WHERE THE RUNOFF VELOCITY EXCEEDS TWO AND HALF FEET PER SECOND (2.5 FPS) OR THE SHEAR STRESS EXCEEDS TWO POUNDS PER SQUARE FOOT (2 LBS/FT2). ON TEMPORARY CHANNELS DISCHARGING TO A SEDIMENT TRAPPING PRACTICE, PROVIDE MATTING WHERE THE 3. TEMPORARY SOIL STABILIZATION MATTING IS MADE WITH DEGRADABLE (LASTS 6 MONTHS MINIMUM), NATURAL, OR MANMADE FIBERS OF UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND IS SMOLDER RESISTANT. THE MAXIMUM PERMISSIBLE VELOCITY FOR TEMPORARY MATTING IS 6 FEET PER SECOND. 4. PERMANENT SOIL STABILIZATION MATTING IS AN OPEN WEAVE, SYNTHETIC MATERIAL CONSISTING OF NONDEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS

AND DISTRIBUTION OF WEAVE THROUGHOUT. THE MAXIMUM PERMISSIBLE VELOCITY FOR PERMANENT MATTING IS 8.5 FEET PER SECOND. 5. CALCULATE CHANNEL VELOCITY AND SHEAR STRESS USING THE PROCEDURE OUTLINED ON PAGE B:36 OF THE MDE MANUAL 6. USE TABLE B.7 ON PAGE B.37 OF THE MDE MANUAL TO ASSIST IN SELECTING THE APPROPRIATE SOIL STABILIZATION MATTING FOR SLOPE APPLICATIONS BASED ON THE

		DETAILS
MDE PROJECT # SF	REVIEWED AND APPROVED FOR SEDIMENT CONTROL UNDER SECTION 4-105	SHEET NUMBER: C-607
ESC 8 OF 9	MARYLAND DEPARTMENT OF THE ENVIRONMENT	ORG. DATE - 01/28/22

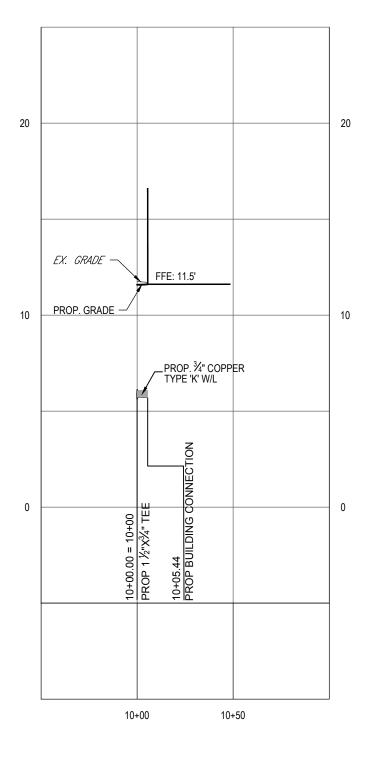
•	<text><text><text></text></text></text>
	REVISIONS REV DATE COMMENT DRAWN BY CHECKED BY
	Know what's below. Call before you dig. ALWAYS CALL 811 It's fast. It's free. It's the law.
	THIS DRAWING IS INTENDED FOR MUNICIPAL AND/OR AGENCY REVIEW AND APPROVAL. I <u>T IS NOT INTENDED AS A CONSTRUCTION</u> DOCUMENT UNLESS INDICATED OTHERWISE.
	PROJECT No.: MD16206641 DRAWN BY: MJG CHECKED BY: MJG DATE: 01/28/22 CAD I.D.: MD16206641 - CNDS - 0
	PROJECT: EAST COAST WAREHOUSE (ECW) F.K.A COLD MILL "DROP LOT" FOR
	ECW SCAN YARD F.K.A COLD MILL "DROP LOT" 6151 COLD MILL ROAD BALTIMORE, MD 21219 TM 111, GRID 14 PARCEL 318 ELECTION DISTRICT 15 COUNCILMANIC DISTRICT 7 BALTIMORE COUNTY
	BOHLER //
	901 DULANEY VALLEY ROAD, SUITE 801 TOWSON, MARYLAND 21204 Phone: (410) 821-7900 Fax: (410) 821-7987 MD@BohlerEng.com
	M.J. GESELL
	PROFESSIONAL ENGINEER MARYLAND LICENSE No. 44097 PROFESSIONAL CERTIFICATION I, MICHAEL J. GESELL, HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 44097, EXPIRATION DATE: 6/9/23
	SHEET TITLE: EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
	SHEET NUMBER: C-607





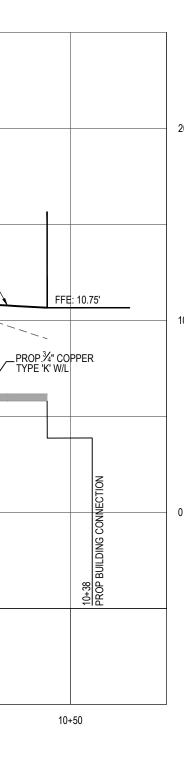
PROPOSED WATERLINE - A SCALE: 1"= 50 ' HORIZONTAL 1"= 5 ' VERTICAL



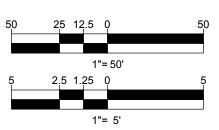


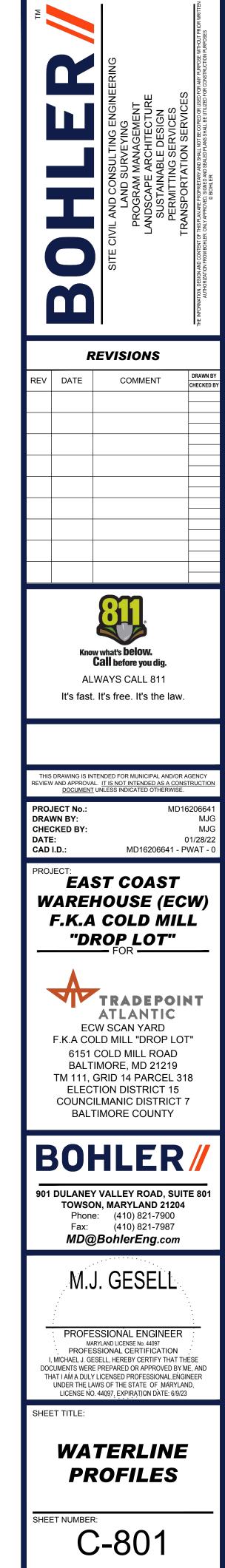
PROPOSED WATERLINE - GUARD SHACK SCALE: 1"= 50 ' HORIZONTAL 1"= 5 ' VERTICAL

> TEST PIT NOTE TP CONTRACTOR TO TEST PIT 2 FEET BELOW PROPOSED UTILITY OR UNTIL EXACT LOCATION OF EXISTING UTILITY IS IDENTIFIED AND SUBMIT ANY DISCREPANCIES TO BOHLER IN WRITING.

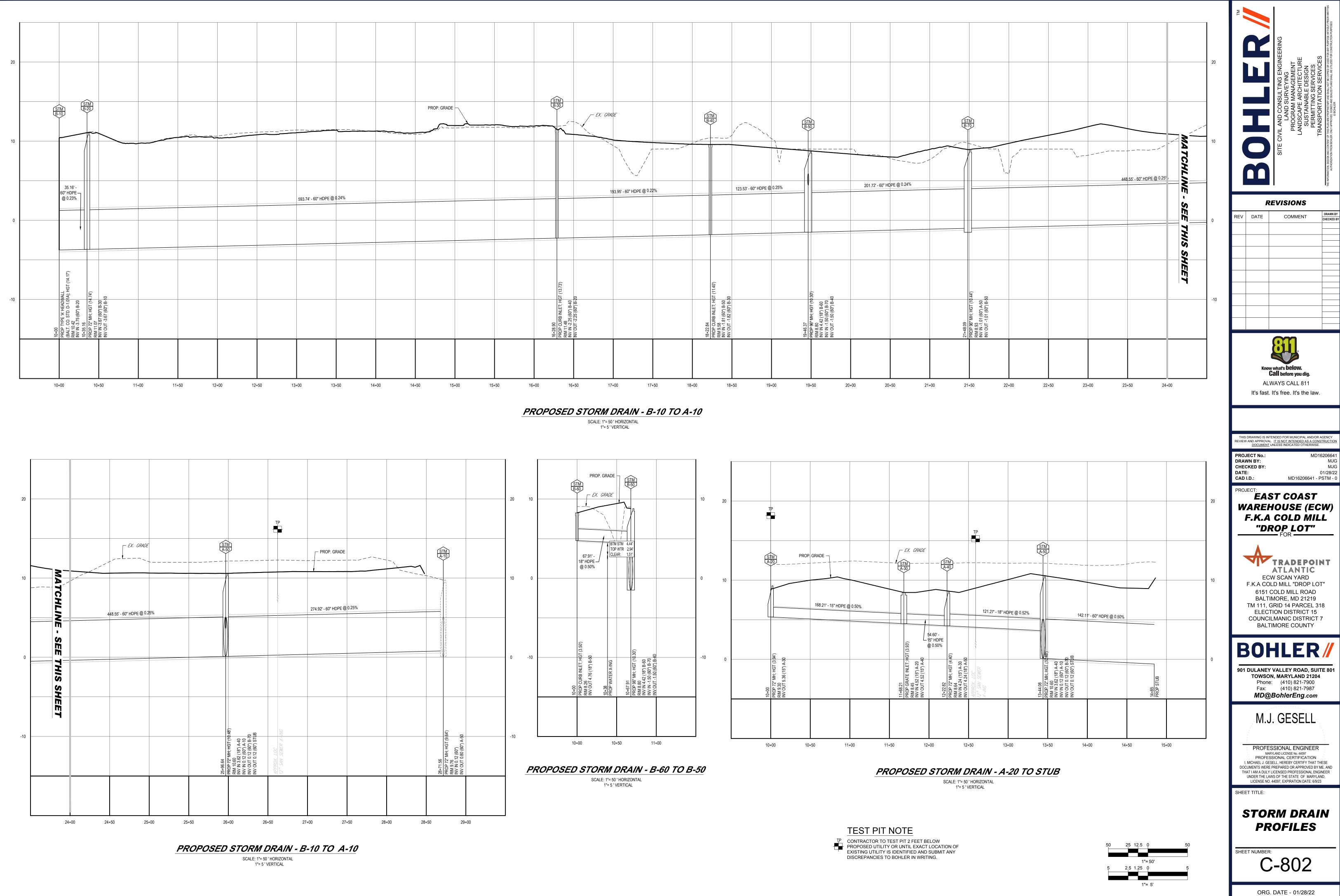


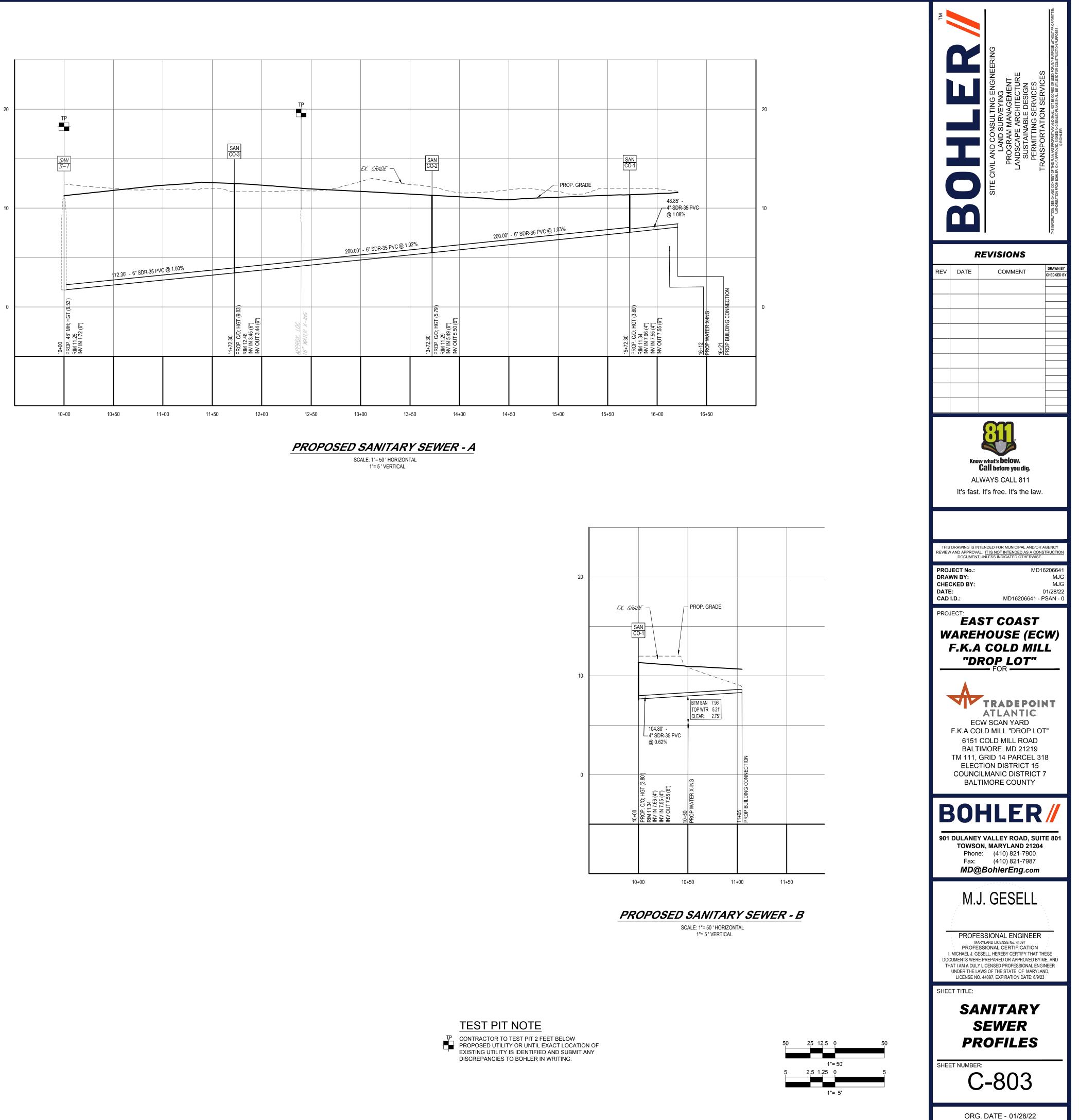


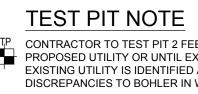


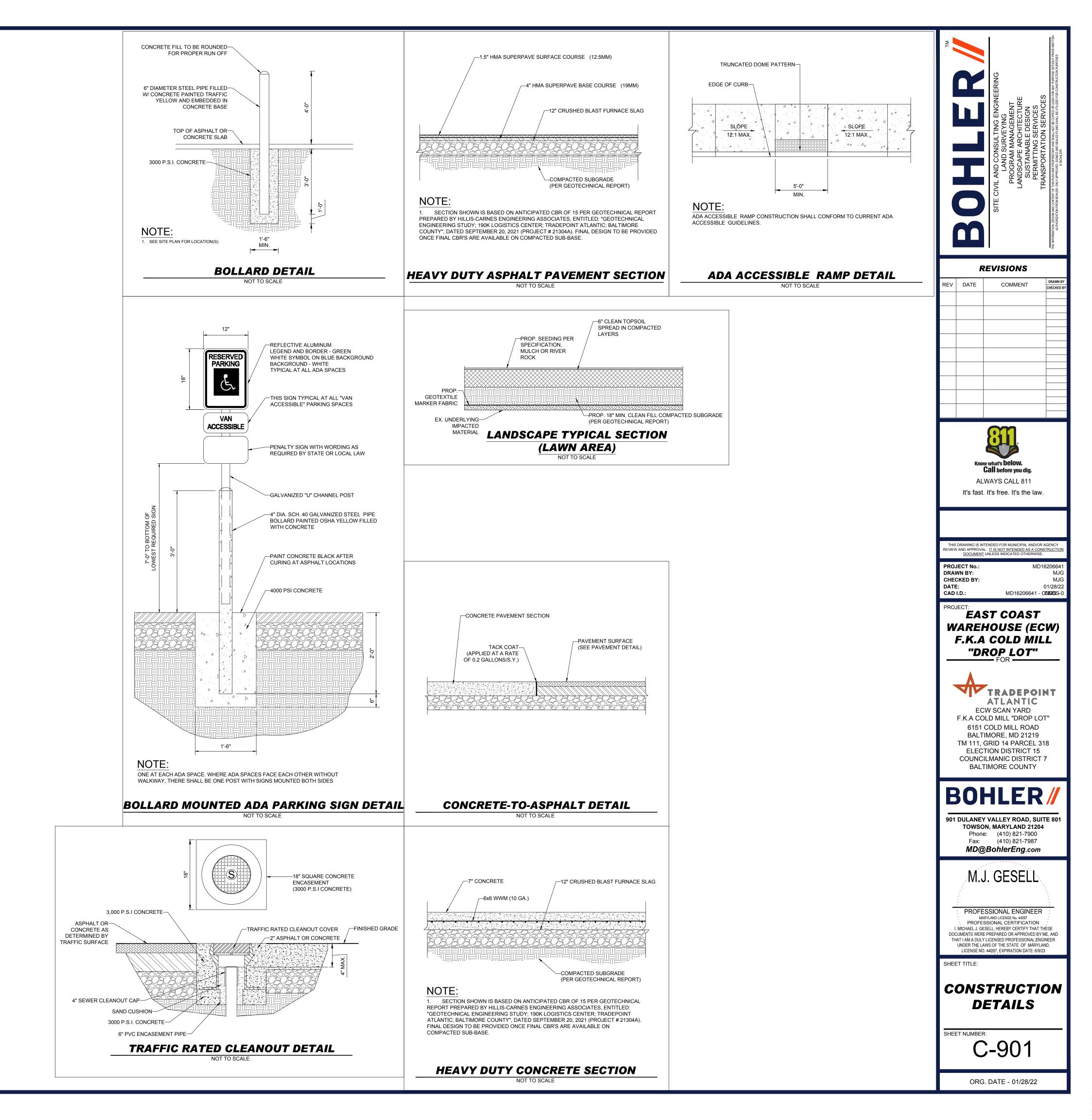


ORG. DATE - 01/28/22









DWG ;	# DRAWING TITLE	REV	DATE	REV	DATE	REV	DATE	REV	DATE	REV	DATE
SECTIO	ÓN 1 – PROJECT INFORMATION								•		
1.0	DRAWING SCHEDULE	1	26 NOV 21	2	07 DEC 21	3	15 DEC 21				
1.1	PROJECT LAYOUT	1	26 NOV 21	2	07 DEC 21	3	15 DEC 21				
1.2	DESIGN CRITERIA	1	26 NOV 21								
1.3	STRUCTURE SPECIFICATIONS	1	26 NOV 21								
SECTIO	ON 2 – FOUNDATION INTERFACE										
2.0	BASE PLATE LAYOUT	1	26 NOV 21								
2.1	BASE PLATE DETAILS	1	26 NOV 21								
SECTIO	ON 3 – PRIMARY STRUCTURE										
3.0	BUILDING PROFILE	1	26 NOV 21								
3.1	BRACING LAYOUT	1	26 NOV 21								
3.2	STANDARD DETAILS 1	1	26 NOV 21								
3.3	STANDARD DETAILS 2	1	26 NOV 21								
3.4	STANDARD DETAILS 3	1	26 NOV 21								
SECTIO	ON 4 - ENDWALLS										
4.0	ENDWALL 1	1	26 NOV 21		07 DEC 21	3	15 DEC 21				
4.1	ENDWALL 2	1	26 NOV 21	2	15 DEC 21						
4.2	ENDWALL DETAILS	1	26 NOV 21								

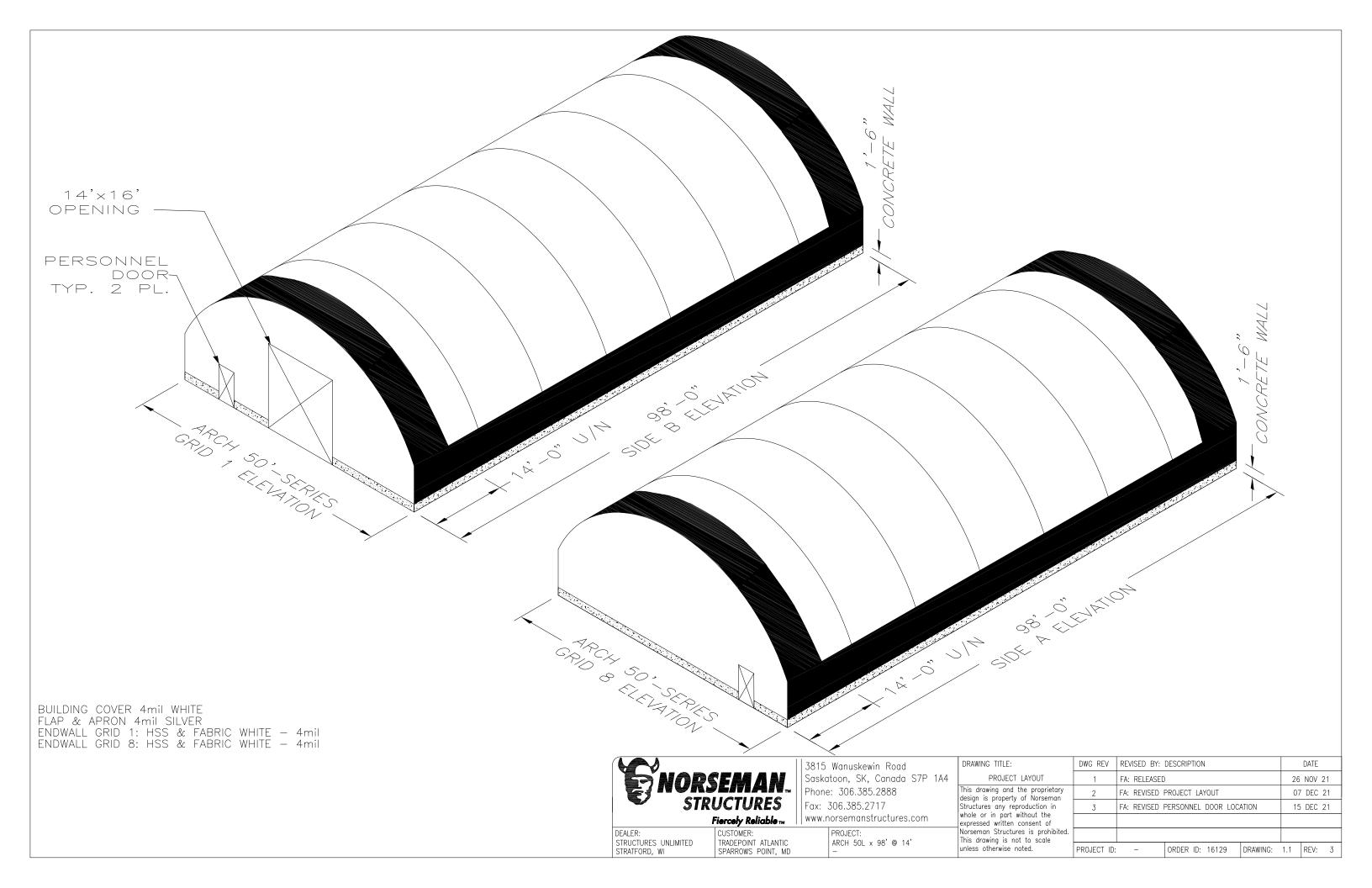
Reviewed for record only as building is proprietary design. Foundations and structural design resposiblilty of structure vendor

REVIEWED

By Rob Hofmann at 5:00 pm, Dec 27, 2021

			3815 Wanuskewin Road	DRAWING TITLE:	DWG REV	REVISED BY:	DESCRIPTION			DATE	
NORSEMAN STRUCTURES			Saskatoon, SK, Canada S7P 1A4	DRAWING SCHEDULE	1 FA: RELEASED			26	NOV 2	21	
	E MAN		Phone: 306.385.2888	This drawing and the proprietary design is property of Norseman	2	FA: REVISED I	DRAWING SCHEDULE		07	DEC 2	21
	STR	UCTURES	Fax: 306.385.2717	Structures any reproduction in	3	FA: REVISED I	DRAWING SCHEDULE		15	DEC 2	21
	l	Fiercely Reliable 🚥	www.norsemanstructures.com	whole or in part without the expressed written consent of							
	DEALER:	CUSTOMER:	PROJECT: ARCH 50L x 98' @ 14'	Norseman Structures is prohibited. This drawing is not to scale							
	STRUCTURES UNLIMITED STRATFORD, WI	TRADEPOINT ATLANTIC SPARROWS POINT, MD	AKCH DUL X 98 @ 14 -		PROJECT ID:	-	ORDER ID: 16129	DRAWING:	1.0	REV:	3





This project has been designed and fabricated in accordance with the following: 1. DESCRIPTION Tradepoint Atlantic Owner's Name and Address: 6200 Cold Mill Rd Sparrow Point, MD 21219 Structures Unlimited LLC Building Supplier's Name and Address: Stratford, WI 54484 Norseman Structures Manufacturer's Name and Address: 3815 Wanuskewin Rd. Saskatoon, SK Building Size: 50'-3" x 98'-4 1/4" Truss Spacing: 14'-0" S-2 - Storage Low hazard Intended Use and Occupancy: Construction Type: Type V B Non-FR Fabric Type: 2. DESIGN STANDARDS International Building Code 2015 (IBC 2015), Chapter 16: Structural Design ANSI/AISC 360-05, Specification for Structural Steel Buildings AISI-Truss, North American Specification for the Design of Cold-Formed Steel Structural Members ASCE 7-10 Minimum Design Loads for Buildings and Other Structures Maryland Building Code 3. MANUFACTURING STANDARDS Fabrication in accordance with ANSI/AISC 360-05 and AISI-Truss, as applicable. Welding in accordance with AWS D1.3 Structural Welding Code and AISI-Truss, as applicable Norseman Structures is a AWS approved fabricator as per B5.17 and QC17 standards Welders have been qualified in accordance with QC7-93 4. DESIGN CRITERIA Exposure Category: Exposure C - Fully Exposed Enclosure Category: Fully Enclosed Risk Category: П A) DEAD LOADS I) Self-weight of building components II) Collateral (hanging) load, not to exceed 0.25 psf as an allowance for mechanical, electrical, ceiling, sprinklers, etc, or any combination thereof B) LIVE LOADS Live loads determined in accordance with Section 1607 of IBC 2015 Minimum roof live load 12.0 psf C) SNOW LOADS Snow loads determined in accordance with Section 1608 of IBC 2015 Ground Snow Load, Pg (1/50) 25.0 psf Roof Snow, Pf Exposure Factor, Ce 18.9 psf 0.9 Thermal Factor, Ct 1.2 1.0 Importance Factor, Is D) WIND LOADS Wind loads determined in accordance with section 1609 of IBC 2015 115 mph Wind Speed (3-sec Gust) Basic Wind Pressure, gh 26.2 psf Exposure Coefficient, Kh 0.91 Topographic Factor, Kzt 1.0 Directionality Factor, Kd 0.85 E) LOAD COMBINATIONS Load combinations determined in accordance with section 1605 of IBC 2015 F) SEISMIC LOADS

By inspection, wind loads govern over seismic loads by a wide margin, therefore no further seismic calculations are necessary $% \left({{{\left[{{{c_{\rm{m}}}} \right]}_{\rm{max}}}} \right)$

5. FOUNDATION LOADS

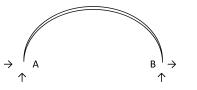
The maximum forces at the foundation/supports due to the site loads listed are as follows: Foundation loads listed below are unfactored and have not been combined with any other load case.

Foundation designer to combine and factor as necessary.

	SIDE A			SIDE B
	HORIZONTAL	VERTICAL	HORIZONTAL	VERTICAL
LOAD CASE:	X _A (kips)	Y _A (kips)	X _B (kips)	Y _B (kips)
DEAD	0.15	0.53	-0.15	0.53
COLLATERAL	0.04	0.14	-0.04	0.14
LIVE	1.89	5.27	-1.89	5.27
SNOW BALANCED	2.19	4.50	-2.19	4.50
SNOW UNBALANCED	1.34	1.58	-1.34	4.45
WIND: PERPENDICULAR	-5.70	-5.91	0.12	-5.57
WIND: PARALLEL	1.00	-5.20	-1.00	-5.20
WIND: INTERNAL (+)	0.01	-1.64	-0.01	-1.64
WIND: INTERNAL (-)	-0.01	1.64	0.01	1.64

Note:

Negative values of Y reactions indicates uplift forces.



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	Fiercely Reliable 🚥 🗌	www.r	norsemanstructures.com		whole or in part w expressed written c
DEALER: STRUCTURES UNLIMITED STRATFORD, WI	CUSTOMER: TRADEPOINT ATLANTIC SPARROWS POINT, MD		PROJECT: ARCH 50L x 98' @ 14' -		Norseman Structure This drawing is not unless otherwise no
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	PROJECT ID:	-	ORDER ID:	16129	DRAWING:	1.2	REV:	1

GENERAL

THIS DRAWING INCLUDING INFORMATION HEREON, REMAINS THE PROPERTY OF NORSEMAN STRUCTURES, IT IS PROVIDED SOLELY FOR ERECTING THE BUILDING DESCRIBED IN THE SALES ORDER AND SHALL NOT BE MODIFIED, REPRODUCED OR USED FOR ANY OTHER PURPOSE WITHOUT PRIOR WRITTEN APPROVAL OF NORSEMAN STRUCTURES

THE GENERAL CONTRACTOR AND/OR THE ERECTOR IS SOLELY RESPONSIBLE FOR ACCURATE, GOOD QUALITY WORKMANSHIP IN ERECTING THIS BUILDING IN CONFORMANCE WITH THIS DRAWING, DETAILS REFERENCED IN THIS DRAWING AND INDUSTRY STANDARDS PERTAINING TO PROPER ERECTION INCLUDING THE PROPER USE OF TEMPORARY BRACING.

THIS BUILDING IS NOT DESIGNED TO BE LIFTED AS AN ASSEMBLED UNIT. NORSEMAN STRUCTURES IS NOT RESPONSIBLE FOR LOSSES AND/OR DAMAGE AS A RESULT OF LIFTING THIS BUILDING. IF, HOWEVER, IT HAS BEEN DETERMINED TO LIFT THIS BUILDING IT IS THE RESPONSIBILITY OF THE PERSON, FIRM OR COMPANY CONTRACTED TO LIFT THE BUILDING TO SECURE THE SERVICES OF A QUALIFIED ENGINEER TO ENSURE THE LIFT DOES NOT DAMAGE THE BUILDING AND TO DETERMINE AND FINALIZE ALL ASPECTS OF THE LIFT INCLUDING ALL PARTS/CONNECTIONS TO BE ADDED TO THE BUILDING TO FACILITATE THE LIFT.

NORSEMAN STRUCTURES IS NOT RESPONSIBLE FOR ERRORS, OMISSIONS OR DAMAGES INCURRED IN THE ERECTION OF THE COMPONENTS SHOWN ON THIS DRAWING, NOR FOR THE INSPECTION OF ERECTED COMPONENTS TO DETERMINE SAME.

THIS CERTIFICATION AND ENGINEERING SEAL APPLIES ONLY TO PRODUCTS DESIGNED AND FABRICATED BY NORSEMAN STRUCTURES FOR THE LOADING CONDITIONS DESIGNATED ON THESE DRAWINGS. CONCRETE FOUNDATIONS, STEEL COMPONENTS BY OTHERS AND ERECTION SUPERVISION ARE NOT THE RESPONSIBILITIES OF NORSEMAN STRUCTURES OR THE CERTIFYING ENGINEER. ALL DOORS, WINDOWS AND ROLL-UP CURTAINS MUST BE DESIGNED TO SUPPORT THE SITE WIND LOADING AND ARE RELIED ON TO BE CLOSED IN THE EVENT OF HIGH WINDS.

ANCHOR BOLTS

ANCHOR BOLT DIAMETERS ARE DETERMINED IN ACCORDANCE WITH AISC OR ASTM F1554 STANDARD USING Fy = 36 KSI (248 MPa). ANCHOR BOLT LENGTHS AND LOAD TRANSFER TO THE FOUNDATION ARE TO BE DETERMINED BY OTHERS.

ANCHOR BOLT PROJECTIONS BASED ON NO GROUT ARE AS FOLLOWS: MIN. 2" - MAX. 3 1/2"

FOUNDATION MUST BE LEVEL, SQUARE AND SMOOTH. ANCHOR BOLTS MUST BE ACCURATELY PLACED AS SHOWN ON THE DRAWINGS.

FINISHED FLOOR ELEVATIONS AND UNDERSIDE OF BASE PLATE IS 100'-0" (1000.000mm) UNLESS NOTED. ERECTION

THE ERECTOR MUST PROVIDE SAFE WORKING CONDITIONS AND PRACTICES CONFORMING TO ALL SAFETY REGULATIONS. ALL LIFTING DEVICES ARE TO BE SPECIFICALLY DESIGNED TO LIFT THE VARIOUS BUILDING COMPONENTS. SLINGS AND SPEADERS BARS TO BE USED TO PREVENT PERMANENT DEFORMATION OF ALL STRUCTURAL COMPONENTS.

ERECTION SHOULD START AT A BRACED BAY. ERECT AND TEMPORARILY SUPPORT TRUSSES. USE TEMPORARY BRACING AS REQUIRED TO ENSURE STABILITY OF THE FRAMES. INSTALL PURLINS AND CROSS BRACING. PLUMB AND SQUARE TRUSSES IN ACCORDANCE WITH CAN/CSA-S16.1 AND OSHA 29 CFR PART 1926 - SAFETY STANDARD FOR STEEL ERECTION.

ENSURE ALL PURLINS REMAIN PARALLEL

STRUCTURAL FRAMING MEMBERS ARE CONSIDERED PLUMB, LEVEL AND ALIGNED WHEN VARIANCE DOES NOT EXCEED 1:500.

STRUCTURAL BOLTS. BOLTS IN CONNECTIONS NOT SUBJECT TO TENSION LOADS, OR WHERE LOOSENING DUE TO VIBRATION OR LOAD FLUCTUATIONS ARE NOT DESIGN CONSIDERATIONS NEED ONLY BE SNUG TIGHTENED, WHICH IS DEFINED AS THE TIGHTNESS THAT EXISTS WHEN ALL PLIES IN A JOINT ARE IN FIRM CONTACT.

BOLTS IN CONNECTIONS SUBJECT TO TENSION LOADS REQUIRE PRE-TENSIONING TO MINIMUM TENSION. ALL OTHER DIA BOLTS CONFORM TO SAE GR.5 OR EQUIVALENT. ALL BOLTS SHALL BE PLATED / GALVANIZED OR SUNSEAL COATED. ALL BOLT REFERENCES REQUIRE BOTH BOLT AND NUT.

-VALUES AS SHOWN IN THE TABLE BELOW-.

TABLE	A –	BOLT T	ENSION	
SIZ	ZE	Gr 5/A325		
in	mm	kips	kN	
5/8	16	18	80	
3/4	19	28	125	
7/8	22	39	174	
1.0	25	51	227	
1 1/8	29	56	249	
1 1/4	32	71	316	

TABLE B - BOLTED CONNECTION TORQUE VALUES

SIZE		Grade 5	
Dia. Inch	Threads Per Inch	Min Tensile ksi	Torque Dry ft-Ibs
1/2	13	120	68
1/2 5/8	11	120	135
3/4 7/8	10	120	240
7/8	9	120	386

MATERIAL SPECIFICATIONS.

STRUCTURAL STEEL CONFORMS TO THE FOLLOWING SPECIFICATIONS: PLATES – CSA G40.21 44W ASTM A 36 – GR 44W DESIGNED TO Fy 44ksi H.S.S. > 3/16" WALL – ASTM A500 BUILDING DESIGNED TO Fy 50ksi Fu 60ksi

< 3/16" WALL (GATORSHIELD) – ASTM A500 GRADE C Fy 50ksi STRUCTURAL CABLES CONFORM TO THE FOLLOWING SPECIFICATIONS: THIMBLE – FEDERAL SPECIFICATION (USA) FF-T-276b

TURNBUCKLES – FEDERAL SPECIFICATION (USA) FF-T-791b GALVANIZED CARBON STEEL CABLE – FEDERAL SPECIFICATION (USA) RR-W410D

PLATES & HSS VERTICALS

COATINGS OF STRUCTURAL PLATES AND HSS ARE HOT-DIPPED GALVANIZED TO A NORMAL COATING ZINC WEIGHT OF 2.0oz/sq ft (600g/sq m) (3.4mil).

GATORSHIELD

H.S.S. ARE IN-LINE GALVANIZED TO A NOMINAL COATING ZINC WEIGHT OF 0.6oz/sq ft (180g/sq m)(1.0mil).

CHROMATE CONVERSION COATING APPLIED OVER GALVANIZED SURFACE TO PROVIDE ADDITIONAL CORROSION PROTECTION.

CLEAR ORGANIC POLYMER APPLIED AS THE TOP SURFACE COAT TO RETARD OXIDATION, ENHANCE SURFACE APPEARANCE FA

RECONDITIONING OF TRUSS SURFACE AT WELD LOCATION AS PER NACE NO.1/SSPC-SP5 WHITE METAL BLAST CLEANING THERMAL ZINC SPRAY AS PER SSPC-CS 23.00 / AWS C2.23 / NACE #12, SPECIFICATION FOR APPLICATION OF THERMAL SPRAY COATINGS.

ALL GATORSHIELD WILL DEMONSTRATE THE ABILITY TO WITHSTAND 1800 HOURS OF ACCELERATED SALT FOG TESTING TO THE CONDITION OF 5 % SURFACE RED RUST, WHEN TESTED IN ACCORDANCE WITH ASTM B117 STANDARDS. FARRIC / LINER NOTES

REMOVAL OF FABRIC OF ALTERATION WITHOUT PRIOR AUTHORIZATION IS PROHIBITED. ALL TEARS MUST BE PATCHED IMMEDIATELY TO AVOID WARRANTY PROBLEMS.

LARGE SCALE FLAME TEST CHAR: 104mm AV.

EXTERIOR FABRIC WILL DEFLECT UNDER LOAD, THEREFORE ALL BUILDING ACCESSORIES (LIGHTING, HVAC, SPRINKLERS, ETC) MUST BE LOCATED BENEATH THE INNER CHORD OF THE TRUSS. ANYTHING ABOVE THIS MUST BE REVIEWED AND APPROVED IN WRITING BY NORSEMAN STRUCTURES OR SEVERE DAMAGE TO THE BUILDING AND ACCESSORIES MAY RESULT FROM FAILURE TO COMPLY WITH THIS REQUIREMENT.

ALL POLYETHYLENE MEMBRANES WILL POSSESS THE FOLLOWING MINIMUM SPECIFICATIONS: FABRIC SPECIFICATIONS

PHYSICAL	PROPERTIES		DESCRIPTION	<u>l</u>
BASE SCRIM	WOVEN HDPE SCRIM	C/W UV/FR	HIGH DESITY	POLYETHYLENE, WITH UV/FR
COATING THICKNESS	4 mil (94 gsm) EA.	SIDE	AVERAGE 4 SIDE OF BA	mil EXTERIOR COATING ON EACH SE SCRIM
SURFACE TYPE	MODIFIED LDPE C/W	UV/FR		DW DENSITY POLYETHYLENE COATING
TOTAL FABRIC WEIGHT	12.0 oz. / sq yd. (4	107 gsm)	AVERAGE ±	
STRENGTH				TEST STANDARD
THICKNESS GRAB TENSILE STRENGTH TONGUE TEAR STRENGTH STRIP TENSILE STRENGTH MULLEN BURST COLD CRACK % LIGHT TRANSMISSION UV & WEATHERING WATER VAPOR TRANSMISSION	240 lbs/inch (2100N 675 psi (4657 KPa)		20001110	ASTM D-5199 ASTM D-5034 ASTM D-2261 ASTM D-5035 ASTM D-3786 ASTM D-2136 ASTM E-903 ASTM C-151 ASTM E-96
FIRE			<u>test</u> sta	NDARD
	FSCI: 5 CHAR: 98mm AV.			S-102-07 S-109-03

DRIP: NO

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CAN/ULC S-109-09

UNLESS NOTED, USE $\phi 5/8$ " (16mm) BOLTS FOR PURLIN TO TRUSS, CABLE OR ROD BRACING TO TRUSS AND ANGLES TO TRUSS FOR ALL CONNECTIONS.

CABLE / ROD AND PURLIN BRACING ARE AN INTEGRAL PART OF THE TRUSS STRUCTURAL SYSTEMS AND SHOULD BE PROPERLY INSTALLED PRIOR TO ERECTION OF FABRIC ROOF AND ENDWALL PANELS. REMOVAL OR ALTERATION OF ANY BRACING WITHOUT PRIOR AUTHORIZATION FROM NORSEMAN STRUCTURES INC. IS PROHIBITED.

ELEVATION NOTES HOLES REQUIRED IN HSS COLUMNS AND HEADERS FOR FRAMED OPENINGS, DOOR OR WINDOW POST CONNECTIONS TO BE BY ERECTOR.

WALK DOOR, WINDOW AND FRAMED OPENING POSTS TO BE FIELD ANCHORED TO CONCRETE, IN ACCORDANCE WITH "HILTI KWIK-BOLTS" SPECIFICATIONS OR SIMILAR.

FIELD INSTALLATION OF PARTITION WALL TO UNDERSIDE OF ANY ARCH FRAMING MEMBERS MUST ALLOW FOR VERTICAL BUILDING DEFLECTION. CONTACT NORSEMAN STRUCTURES INC. FOR REQUIRED CLEARANCES.

GALVANIZED, ALUMINIZED, AND COLORED MATERIALS ARE SUBJECT TO CORROSION AND DISCOLORATION IF THEY ARE IMPROPERLY STORED. SHORT TERM JOB SITE STORAGE OF STEEL COMPONENTS MAY BE TOLERATED, PROVIDED CARE IS TAKEN TO KEEP MATERIALS DRY AT ALL TIMES. WHEN TRUSSES ARE TO BE STORED OUTDOORS, THEY SHOULD BE PLACED AT AN ANGLE SUFFICIENT TO PROMOTE GOOD DRAINAGE. IN ADDITION, SEVERAL INCHES OF CLEARANCE MUST BE PROVIDED BETWEEN THE LOWER END AND THE GROUND TO ALLOW

NOTE: NORSEMAN STRUCTURES WILL NOT BE HELD RESPONSIBLE FOR MATERIALS WHICH ARE IMPROPERLY PROTECTED AFTER DELIVERY.

MANUFACTURING STANDARDS.

ROOF PLAN NOTES

PARTITION WALL NOTE

MATERIAL STORAGE

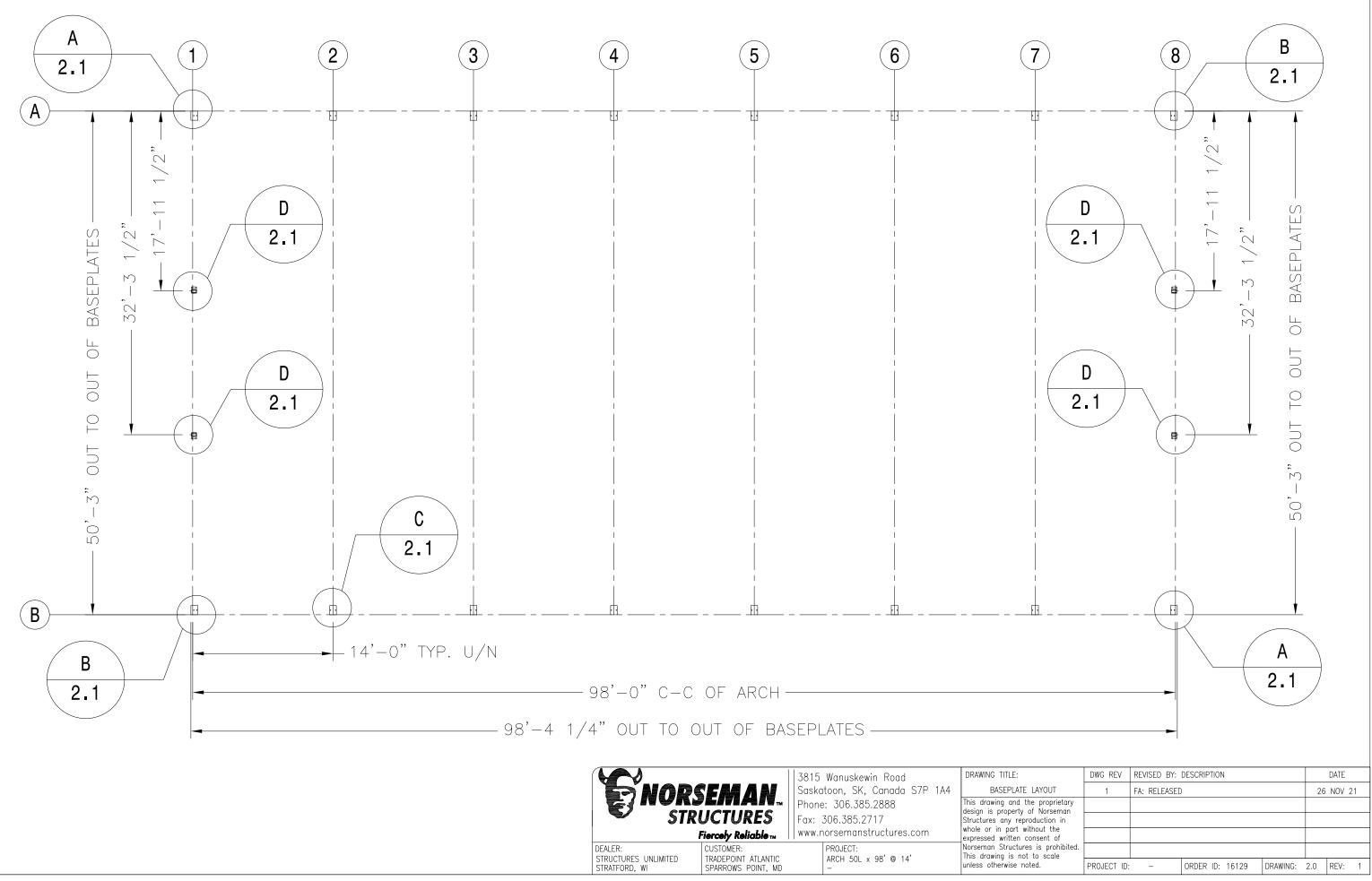
VENTILATION

FABRICATION IS IN ACCORDANCE WITH CAN/CSA-S16.1 AND CAN/CSA-S136, AS APPLICABLE.

MINIMUM FILLET WELD SIZE IS 3/16"

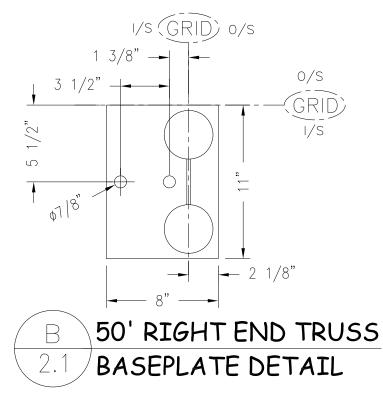
NORSEMAN STRUCTURES IS A CWB CERTIFIED DIVISION 2.1 MANUFACTURER. ALL WELDS ARE COMPLETED IN SHOP AS PER CWB INDEPENDENT THIRD PARTY TESTS OUR WELDERS AND PROCEDURES AND AUDITS OUR FACILITIES. THIS CERTIFICATION MEETS WITH AWS D1.1 AND D1.3 CRITERIA.

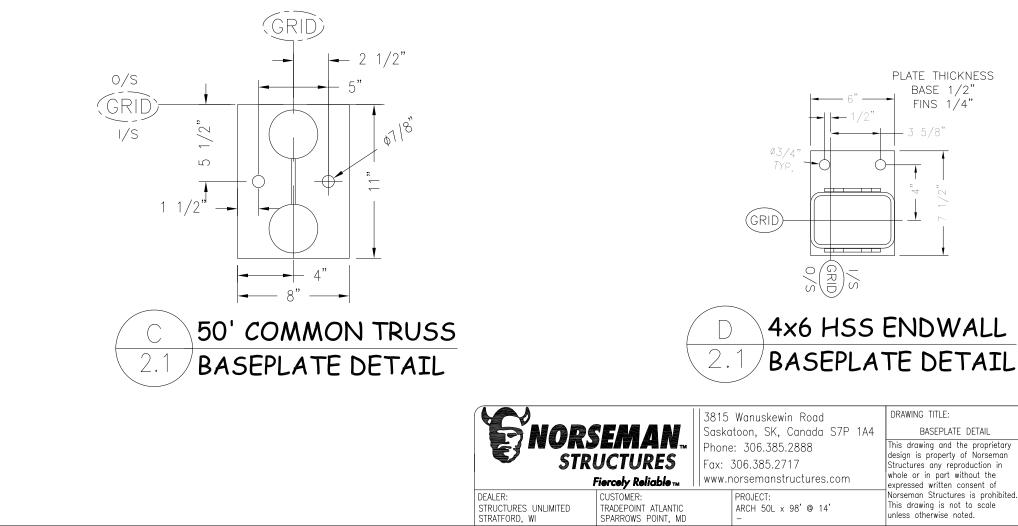
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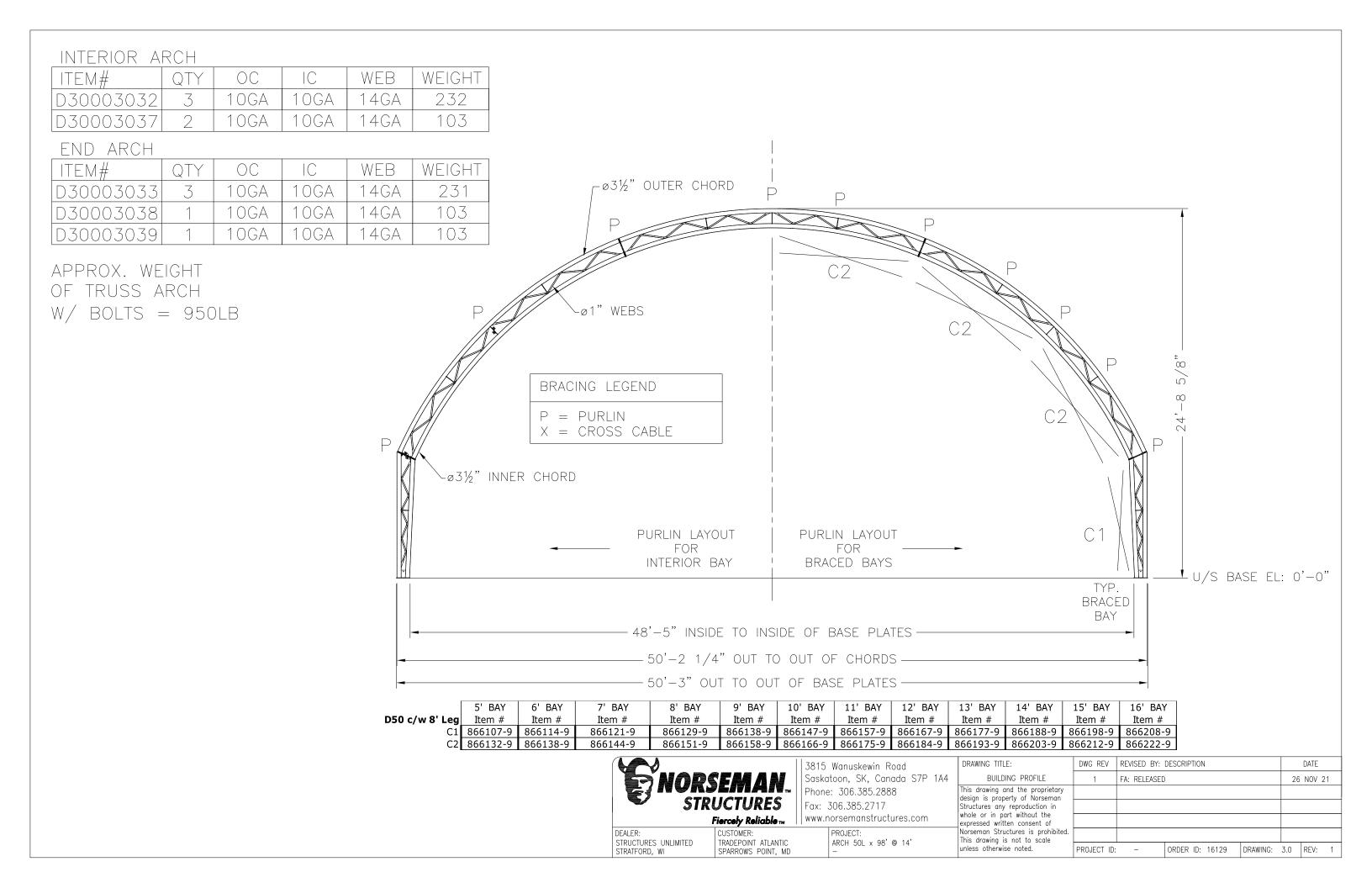
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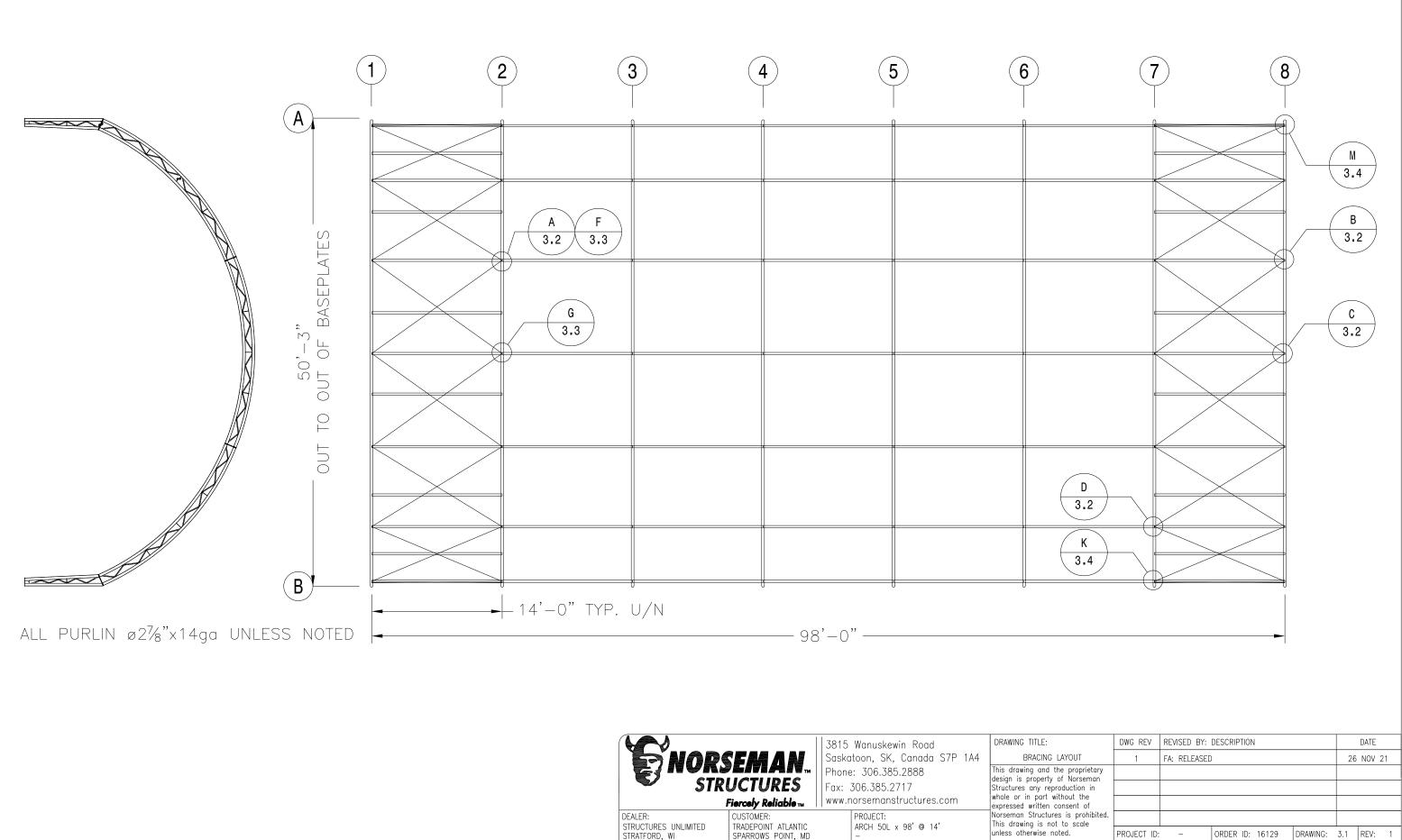
o/s (GRID) i/s**-** 1 3/8" 0/S GRID I/S 1/2' ß 1. Ø) | Ø., 2 1/8" ---8" 50' LEFT END TRUSS А 2. BASEPLATE DETAIL



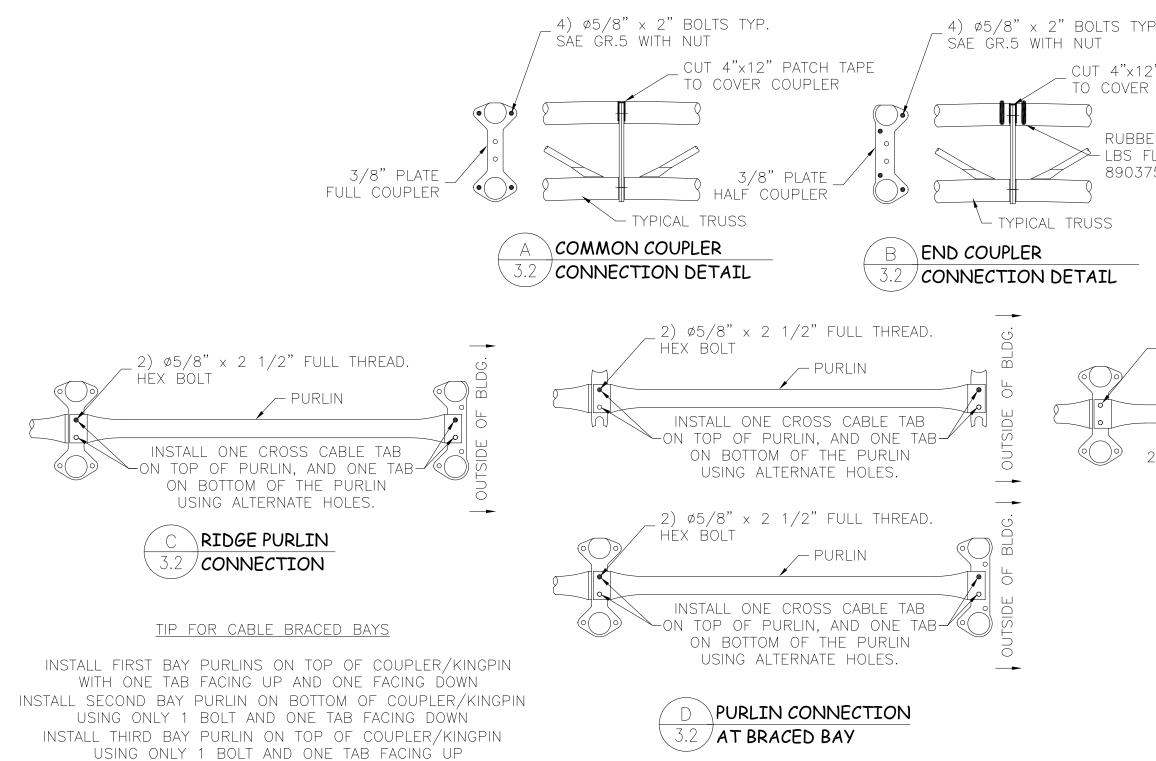


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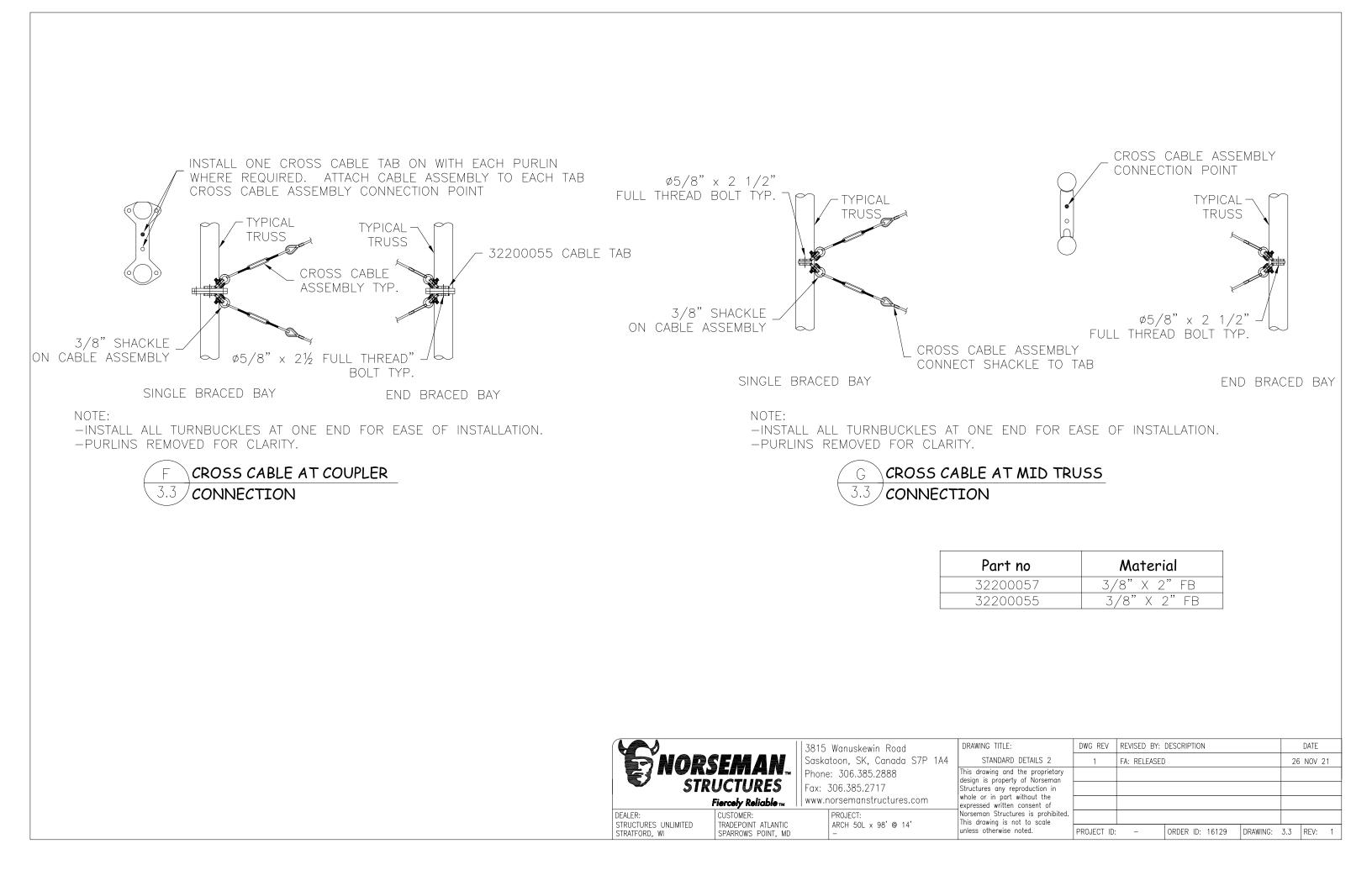


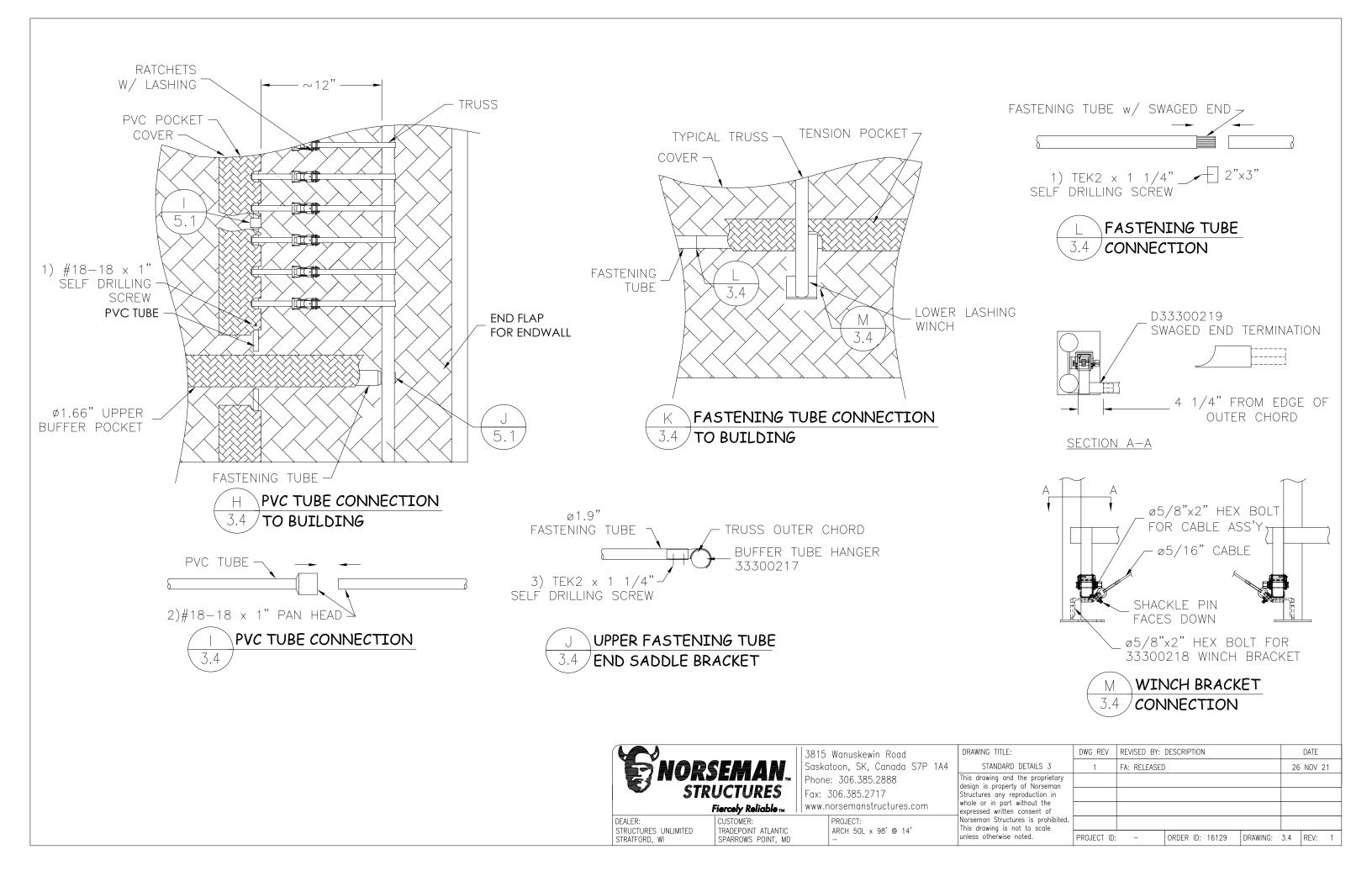
NORSEMAN STRUCTURES Fiercely Reliable TM		3815 Wanuskewin Road Saskatoon, SK, Canada S7P 1A4 Phone: 306.385.2888 Fax: 306.385.2717 www.norsemanstructures.com	BRACING IIILE: BRACING I This drawing and th design is property of Structures any repr whole or in part wi expressed written c
DEALER:	CUSTOMER:	PROJECT:	Norseman Structure
STRUCTURES UNLIMITED	TRADEPOINT ATLANTIC	ARCH 50L x 98' @ 14'	This drawing is not
STRATFORD, WI	SPARROWS POINT, MD	-	unless otherwise no



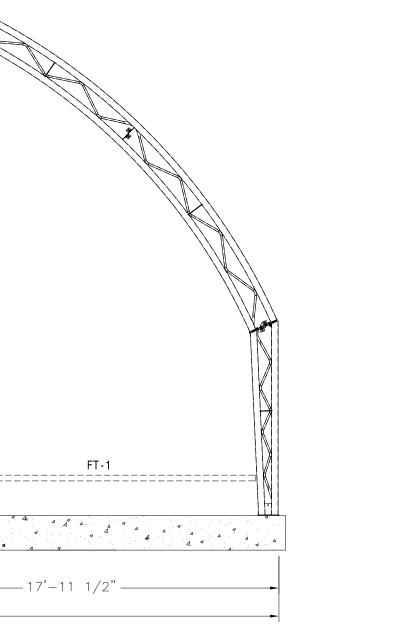
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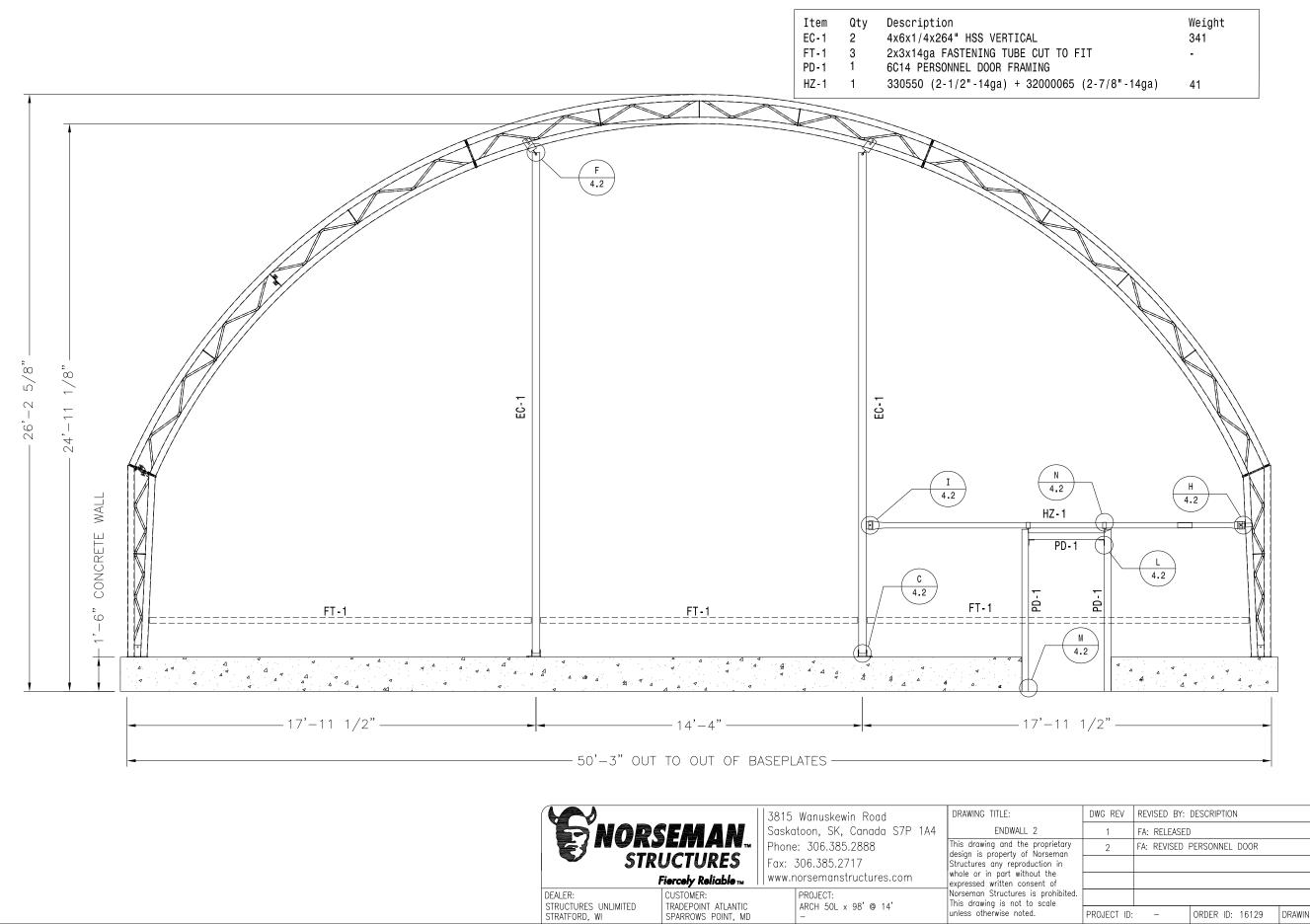




-		H-1 2 3x6x3/16x16 HZ-1 1 330550 (2- FT-1 2 2x3x14ga F/	h Weight 4" HSS VERTICAL 341 58" HSS HEADER 171 1/2"-14ga) + 32000065 (2-7/8"-14ga) 41 ASTENING TUBE CUT TO FIT - NNEL DOOR FRAMING -
	F 4.2 H-1 (FIELD LOCATE)		
26'-2 5/8" - 24'-11 1/8" 	H-1		
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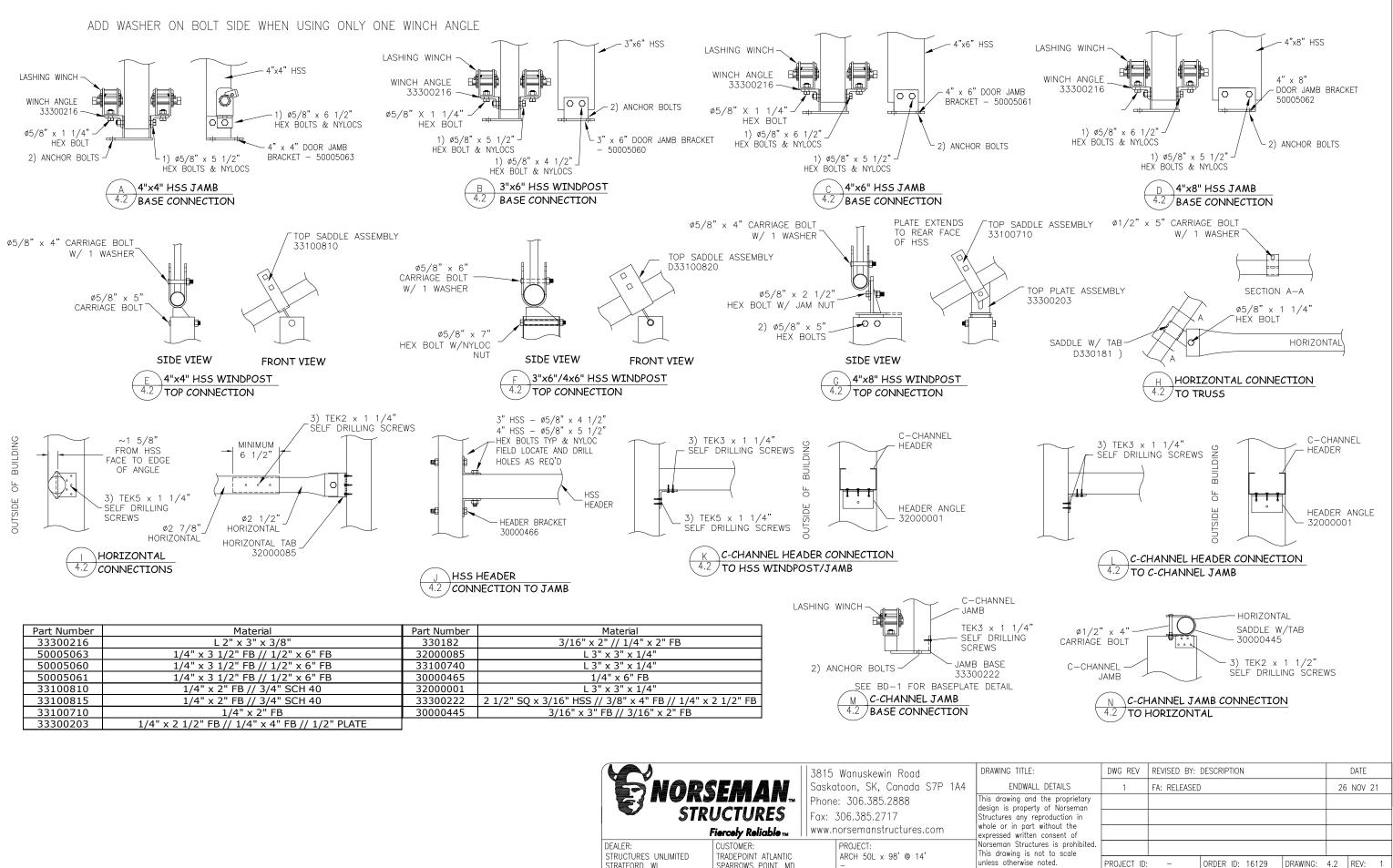
DEALER: STRUCTURES UNLIMITED STRATFORD, WI

CUSTOMER: TRADEPOINT ATLANTIC SPARROWS POINT, MD

PROJECT: ARCH 50L x 98'@ 14'

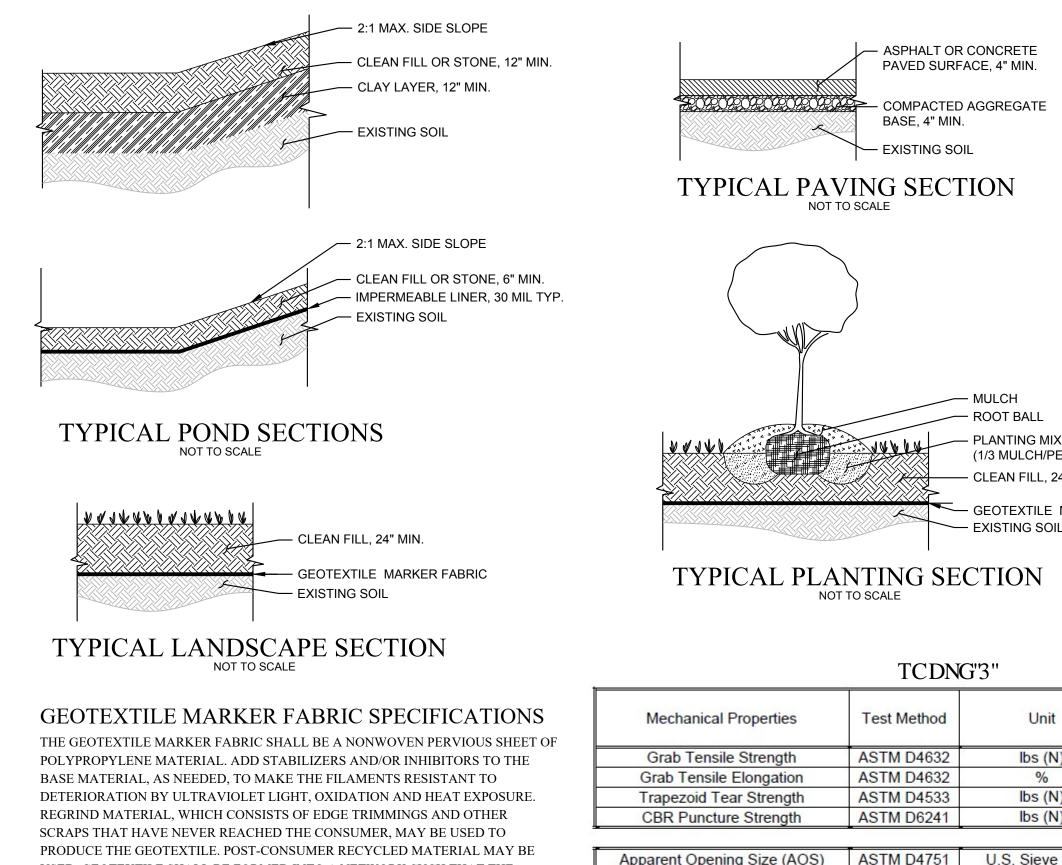
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APPENDIX E



USED. GEOTEXTILE SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING THE EDGES. GEOTEXTILES SHALL MEET THE REQUIREMENTS SPECIFIED IN TABLE 1. WHERE APPLICABLE, TABLE 1 PROPERTY VALUES REPRESENT THE MINIMUM AVERAGE ROLL VALUES IN THE WEAKEST PRINCIPAL DIRECTION. VALUES FOR APPARENT OPENING SIZE (AOS) REPRESENT MAXIMUM AVERAGE ROLL VALUES

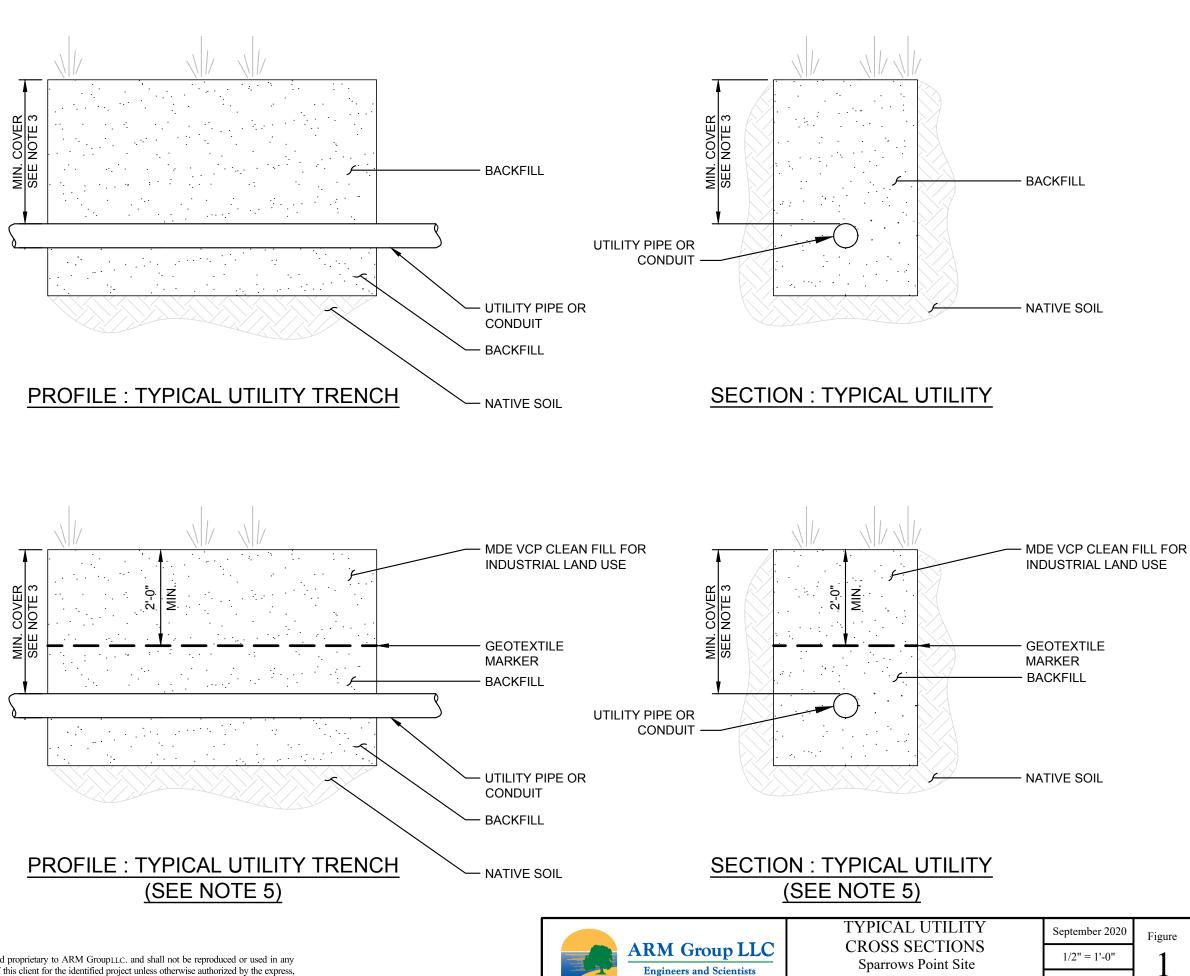
	PAVED SURF COMPACTEE BASE, 4" MIN EXISTING SC) AGGREGATE I. DIL	PSOIL)			designed RJC scale N/A checked TNP date 9/8/2020 drawn RJC project no. 160433M	
TYPICAL PLA	NTING SE TO SCALE		ABRIC			O R KO WO "CAPPING SECTION DETAILS	SPARROWS POINT BALT. COUNTY, MARYLAND
			Minimum		1	ING	
Mechanical Properties	Test Method	Unit	Roll V MD	/alue CD		APP	7)
Grab Tensile Strength	ASTM D4632	lbs (N)	120 (534)	120 (534)		Ŋ	¹⁶ SPARROWS POINT TRADEPOINT ATLANTIC
Grab Tensile Elongation	ASTM D4632	%	50	50		Q	SPARROWS POINT ADEPOINT ATLAN
Trapezoid Tear Strength	ASTM D4533	lbs (N)	50 (223)	50 (223)	-	0	S P(
CBR Puncture Strength	ASTM D6241	lbs (N)	310 (1			₽ I	MC
		in the second	Maximum O	pening Size		0	POI
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.				PA DE
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Permittivity	ASTM D4491	sec-1	1.			drawing title	at title T
Flow Rate	ASTM D4491	gal/min/ft ² (l/min/m ²)	135 (5			drawii	project title
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UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	0		Sheet	
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MIX
/PEAT; 2/3 TOPSOIL)
24" MIN

APPENDIX F

GENERAL NOTES:

- 1. ALL PIPES OR CONDUIT SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.
- 2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.
- 3. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.
- TRENCHES SHALL BE BACKFILLED WITH 4. BEDDING AND MATERIALS APPROVED BY MDE.
- 5. FOR ANY UTILITY SEGMENT WHICH GOES THROUGH AN AREA WHICH IS DESIGNATED TO RECEIVE A LANDSCAPED CAP, THE UPPER 2 FEET OF BACKFILL MUST MEET THE REQUIREMENTS OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE. IN THIS CASE THE MDE VCP CLEAN FILL WILL BE UNDERLAIN BY A GEOTEXTILE MARKER FABRIC. UTILITY SEGMENTS WHICH GO THROUGH AREAS WHICH DO NOT REQUIRE CAPPING OR ARE DESIGNATED TO RECEIVED A PAVED CAP WILL BE BACKFILLED WITH MATERIALS APPROVED BY MDE FOR THIS USE.



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TYPICAL UTILITY	September 2020	Figure
CROSS SECTIONS Sparrows Point Site	1/2" = 1'-0"	1
Tradepoint Atlantic	160443M	L

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Utility Excavation NAPL Contingency Plan

Revision 4 – June 19, 2017

Introduction:

Proposed underground utilities and excavations necessary for the redevelopment of the Tradepoint Atlantic property may encounter areas of petroleum and/or Oil & Grease contamination in soil. The assessment of total petroleum hydrocarbons (TPH) diesel range organics (DRO), gasoline range organics (GRO), Oil & Grease, and/or non-aqueous phase liquid (NAPL) completed as part of each Phase II Investigation includes the following:

- Each soil boring with evidence of NAPL (i.e., containing a sheen or free oil in the soil core), whether located near utilities or not, is investigated via the installation of a piezometer to assess mobility to groundwater. If measureable NAPL is present in the initial piezometer, additional soil borings and shallow temporary piezometers are installed surrounding the initial detection to delineate the impacts. Each piezometer installed to delineate the presence or absence of NAPL is checked with an oil-water interface probe immediately after installation, 48 hours after installation, and at least 30 days after installation.
- TPH-DRO/GRO and Oil & Grease data, once received, are assessed in their magnitude and location respective to subsurface utilities, stormwater conveyances, and surface waters.
- Locations that exhibit elevated detections of TPH/Oil & Grease or evidence of NAPL, that are within reasonable proximity (i.e. 25 feet) to subsurface utilities or stormwater conveyances and/or within reasonable proximity (i.e. 100 feet) to surface waters, are identified for further delineation and selective removal (if warranted).

Any NAPL identified in soil borings or piezometers during the Phase II Investigation would be noted on relevant logs and identified in Response and Development Work Plans for construction planning purposes. Despite these planning efforts, unidentified pockets of contamination (including NAPL) may still be encountered during construction. This contingency plan provides the procedures to be utilized during construction work to properly address response and construction techniques if any materials impacted with NAPL are encountered.

Objectives:

The purpose of this plan is to describe procedures to be followed in the event that NAPL is encountered in utility trenches or other excavations during development of the Tradepoint Atlantic property. The specific objectives of this plan and the procedures outlined herein are:

- 1. To ensure identification and proper management of Oil & Grease and petroleumcontaminated soils.
- 2. To ensure proper worker protection for working in areas of Oil & Grease and petroleum contamination.
- 3. To ensure that the installation of new utilities does not create new preferential flow paths for the migration of free-phase hydrocarbons (Oil & Grease, TPH-DRO/GRO, etc.) or soil vapors.

Identification of Oil & Grease and Petroleum Contaminated Soil:

An Environmental Professional (EP) will be on-site to determine if soils show evidence of the presence of Oil & Grease or TPH present as NAPL during installation of utility trenches or other excavation activities completed during development. Oil & Grease or petroleum-contaminated soils can be identified by the presence of free oil, oil staining, a petroleum odor, or any combination of these conditions. Free oil (NAPL) is liquid oil which could potentially be drained or otherwise extracted from the soil, and is the focus of this contingency plan, although severe staining accompanied by odors should be addressed via the same contingency measures provided herein (based on the judgement of the EP). The appearance of oil staining is not always consistent, but varies depending on the nature of the oil, the soil type, and the age of the release. Staining associated with old petroleum contamination often has a greenish hue, but may also be brown or black. The olfactory sense is the most sensitive instrument for identifying petroleum contamination in the field. Therefore, a petroleum odor may be noted although there is no visible sign of oil or staining. In some instances, decaying organic matter can produce an odor similar to petroleum, but this is rare.

If NAPL is encountered during construction, the extent of impacts shall be delineated by excavating trenches or installing four soil borings (two in each direction) perpendicular to the utility alignment or excavation to examine the soil for physical evidence of NAPL. Perpendicular transects will be investigated every 50 feet along the section of the utility trench or excavation where there is physical evidence of NAPL. Each transect will extend to a distance of 10 feet from the edge of the utility trench or excavation. This represents the maximum distance which would require mandatory excavation to mitigate potential migration risks (see below).

NAPL delineation will be guided primarily by screening observations from the perpendicular borings or trenches, and samples will be collected to test for extractable Oil & Grease or petroleum-contaminated soil using the Oil Sticks[™] test kit. This test kit provides a determination of whether hydrocarbons are present in soil and extractable (i.e. could mobilize as a NAPL). Oil Sticks[™] change from a pale blue to a deep blue color when they come in contact with free product. This instantaneous change in color occurs even when miniscule amounts of product come in contact with the strip. The sensitivity of Oil Sticks[™] to determine the presence/absence of oil is reported by the manufacturer to be about 1,000 to 2,000 mg/kg. The

field test is performed by placing approximately 3 tablespoons of soil in a clean sample cup and adding enough water to cover the sample. After stirring the sample and waiting ~1 minute, the Oil SticksTM test strip should be swished through the water, making sure to touch the strip to the sides of the cup where product may collect at the interface (meniscus) between the cup, water, and air. If the strip turns deep blue, or deep blue spots appear, oil or hydrocarbon is present. However, the MDE has observed that the Oil SticksTM method may produce inconsistent results. Therefore, documentation of all screening methods is necessary during boring/trenching work. This documentation shall include an accurate record of visual and olfactory screening, along with a narrative with photographs. Field screening will be aided by photoionization detector (PID) results, and Oil SticksTM samples should be biased to target elevated PID readings, if any. The agencies have requested that all soil samples prepared for the Oil SticksTM field test be photographed for evidence of sheen/residue on the cup sides. Detailed records are required to be submitted with the project-specific Completion Report.

If petroleum or Oil & Grease impacts are identified in Site soils based on use of the Oil SticksTM test kit or other field screening methods, disposal requirements will be determined using the quantitative PetroFLAGTM hydrocarbon analysis system or fixed laboratory analysis (see following section). The PetroFLAGTM hydrocarbon analysis system is a broad spectrum field test kit suitable for TPH contamination regardless of the source or state of degradation (Dexsil Corporation). PetroFLAGTM field test kits do not distinguish between aromatic and aliphatic hydrocarbons, but quantify all fuels, oils, and greases as TPH. Dilutions can be used to determine concentrations of TPH/Oil & Grease above the normal calibration range. Dexsil notes that positive results for TPH may occur if naturally occurring waxes and oils, such as vegetable oils, are present in the sample. Additional detail regarding the procedure for the PetroFLAGTM kit is given in **Attachment 1**.

Soil Excavation, Staging, Sampling and Disposal:

The EP will monitor all utility trenching and excavation activities for signs of potential contamination. In particular, soils will be monitored with a hand-held PID for potential VOCs, and will also be visually inspected for the presence of staining, petroleum waste materials, or other indications of NAPL contamination that may be different than what was already characterized. Excavated material that is visibly stained or that exhibits a sustained PID reading of greater than 10 ppm will be segregated and containerized or placed in a stockpile on polyethylene or impervious surface until the material can be analyzed using the PetroFLAGTM test kit to characterize the material for appropriate disposal. If a PetroFLAGTM test kit is not available to the contractor, or if the contractor prefers to use fixed laboratory analysis, samples may be characterized via submittal to a laboratory for TPH/Oil & Grease analysis. However, any excavated material containing NAPL (i.e., containing free oil) cannot be characterized for waste disposal using the PetroFLAGTM test kit and must instead be characterized via fixed laboratory analysis, as described in the final paragraph of this section. In addition, any hydrocarbon contaminated soil discovered during construction activities that was not previously

characterized must also be analyzed for PCBs prior to removal and transport to an appropriate disposal facility. If excavated and stockpiled, such materials will be covered with a plastic tarp so that the entire stockpile is encapsulated, and anchored to prevent the elements from affecting the integrity of the containment. The MDE will be notified if such materials are encountered during utility work.

Soil exhibiting physical evidence of NAPL contamination or elevated TPH/Oil & Grease with detections in the low percentage range, which is located within 10 feet of a proposed new utility or subsurface structure (i.e., foundation, sump, electrical vault, underground tank, etc.), will be excavated and segregated for disposal at the on-site nonhazardous landfill (Greys Landfill) or an off-site facility pending the completion of any required PCB analytical testing. Impacted soil which is located greater than 10 feet away from the proposed utility or subsurface structure may be left in place and undisturbed. The extent of the excavation will be determined in the field following visual/olfactory screening supplemented by the PID and Oil SticksTM test kit, but soil disposal requirements will be determined with the PetroFLAGTM test kit (since the Oil SticksTM method is not quantitative) or via fixed laboratory analysis for TPH/Oil & Grease (if preferred by the contractor or if the PetroFLAGTM test kit is unavailable to the contractor).

Any recovered NAPL will be collected for off-site disposal. As required by the appropriate and MDE approved facility, samples impacted by NAPL (i.e., containing free oil) will be collected for profiling/waste characterization and submitted to a fixed laboratory, as mentioned above, for the following analyses: metals, VOCs, TPH-DRO/GRO, and/or additional analysis required by the selected disposal facility. Upon receipt of any additional characterization analytical results, the MDE will be notified of the proposed disposal facility. Non-impacted material with no evidence of NAPL (i.e. soils that may contain measureable concentrations of TPH/Oil & Grease but below percentage levels) may be placed on the Site in areas to be paved or capped as long as all other requirements specified in the Response and Development Work Plan (or similar governing document) are met.

Initial Reporting:

If evidence of NAPL in soil or groundwater is encountered during excavation, it will be reported to the MDE within two hours. Information regarding the location and characteristics of any NAPL contaminated soil will be documented as follows:

- Location (exact stationing);
- Extent of contamination (horizontally and vertically prepare a sketch including dimensions);
- Relative degree of contamination (i.e. free oil with strong odor vs. staining); and
- Visual documentation (take photographs and complete a photograph log)

Utility Installations in Impacted Areas:

Underground piping or conduits installed through areas of Oil & Grease or petroleum contamination shall be leak proof and water tight. All joints will be adequately sealed or gasketed, and pipes or conduits will be properly bedded and placed to prevent leakage. All trench backfill will meet the MDE definition of clean fill, or otherwise be approved by the MDE. Pipe bedding will be installed to minimize the potential for accumulation of water and concentrated infiltration. This can be achieved by using a relatively small amount of low-permeability pipe bedding; open-graded stone will be avoided or only used in thicknesses of 6 inches or less. Bedding must be properly placed and compacted below the haunches of the pipe. Clay, flowable fill, or concrete plugs will be placed every 100 feet across any permeable bedding to minimize the preferential flow and concentration of water along the bedding of such utilities.

If required, each trench plug will be constructed with a 2-foot-thick clay plug or 1-foot-thick flowable fill or concrete plug, perpendicular to the pipe, which extends at least 1 foot in all directions beyond the permeable pipe bedding. The plug acts as an anti-seep collar, and will extend above the top of the pipe. Installation of each trench plug will follow the completion of the trench excavation, installation of granular pipe bedding (because dense-graded aggregate or soil or other pipe bedding is difficult to properly compact below the haunches of the pipe), and seating of the pipe. The trench plug will then be installed by digging out a 1-foot trench below and around the pipe corridor, and placing clay, flowable fill, or concrete to construct the plug. A specification drawing for installation of the trench plug has been provided as **Figure 1**.

Attachment 1 - PetroFLAGTM Procedure

PetroFLAGTM field test kits use a proprietary turbidimetric reaction to determine the TPH concentration of solvent extracted samples (USEPA). Calibration standards provided with the unit are used to perform a two-point calibration for the PetroFLAGTM. A blank and a 1,000 ppm standard are run by the analyzer unit to create an internal calibration curve.

Analysis of a soil sample is performed using three simple steps: extraction, filtration, and analysis. The PetroFLAGTM analysis is performed as follows:

- Place a 10 gram soil sample in a test tube.
- Add extraction solvent to the tube.
- Shake the tube intermittently for four minutes.
- Filter the extract into a vial that contains development solution
- Allow the solution to react for 10 minutes.

The filtration step is important because the PetroFLAG[™] analyzer measures the turbidity or "optical density" of the final solution. Approximately 25 samples can be analyzed per hour. The vial of developed solution is placed in the meter, and the instrument produces a quantitative reading that reveals the concentration of hydrocarbons in the soil sample. The PetroFLAG[™] method quantifies all fuels, oils, and greases as TPH between 15 and 2000 ppm (Dexsil Corporation). A 10x dilution of the filtered extraction solvent will be completed to allow for quantification of soil concentrations in excess of 10,000 ppm. The specially designed PetroFLAG[™] analyzer allows the user to select, in the field, the response factor that is appropriate for the suspected contaminant at each site. Vegetable-based oils have been shown to exhibit a response factor of 18% (EPA Method 9074). Using the selected response factor, the analyzer compensates for the relative response of each analyte and displays the correct concentration in parts per million (ppm).

References:

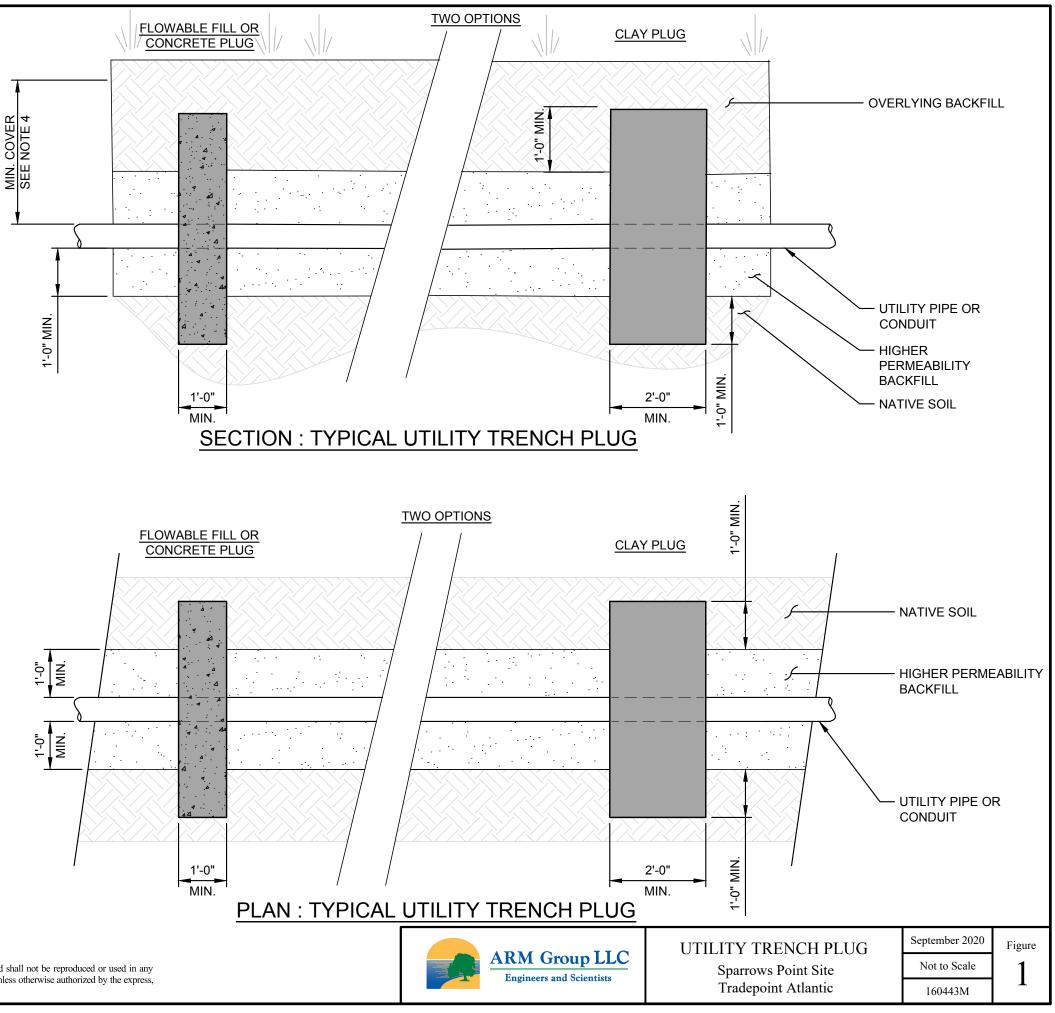
U.S. Environmental Protection Agency (EPA). Contaminated Site Clean-up Information (Clu-IN): Test Kits. Office of Superfund Remediation and Technology Innovation. <u>http://www.clu-in.net/characterization/technologies/color.cfm</u>

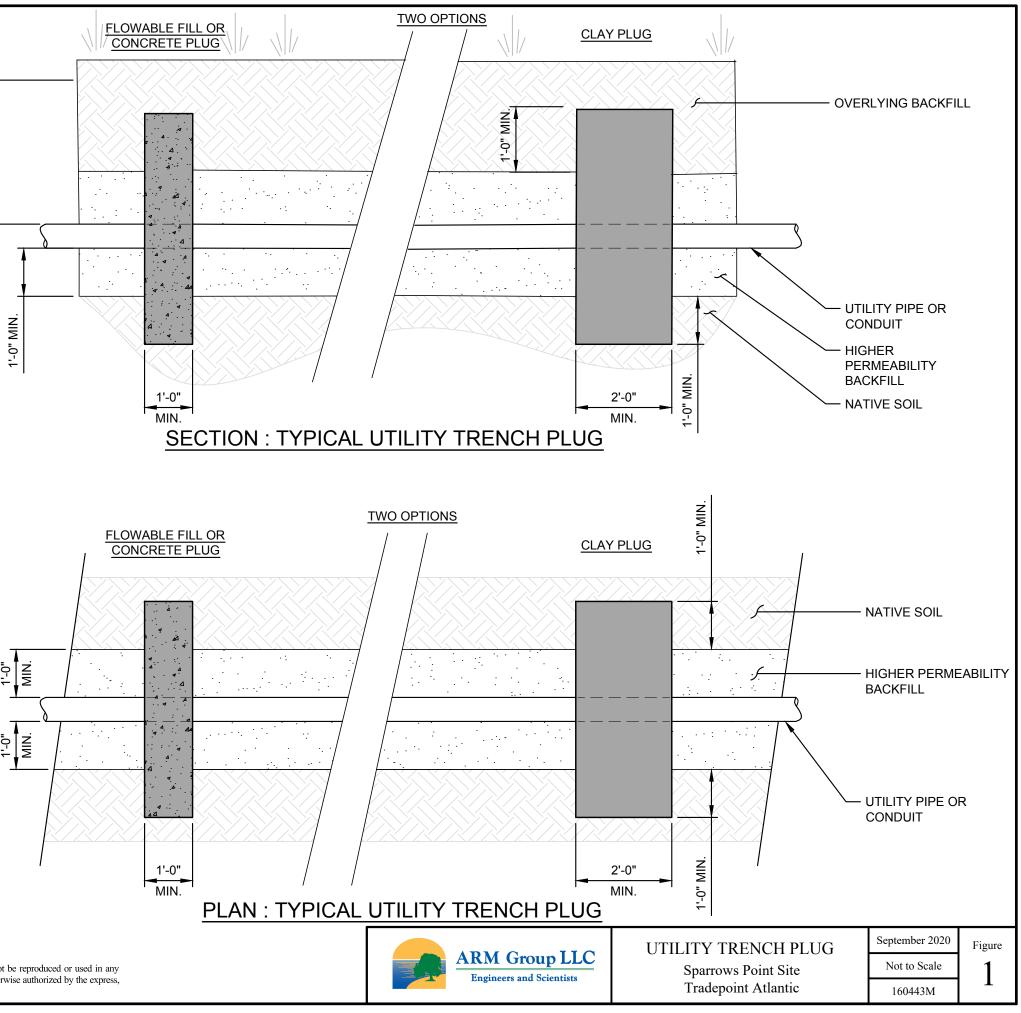
Dexsil Corporation. 2016. PetroFLAG Analyzer System (PF-MTR-01). http://www.dexsil.com/products/detail.php?product_id=23

EPA SW-846 Method Number 9074 - Turbidimetric Screening Procedure for Total Recoverable Hydrocarbons in Soil

GENERAL NOTES:

- 1. ALL PIPES OR CONDUIT PASSING THROUGH AREAS OF PETROLEUM CONTAMINATION SHALL BE LEAK-PROOF AND WATERTIGHT. ALL JOINTS SHALL BE SEALED OR GASKETED.
- 2. ALL PIPES SHALL BE PROPERLY PLACED AND BEDDED TO PREVENT MISALIGNMENT OR LEAKAGE. PIPE BEDDING SHALL BE INSTALLED IN SUCH A MANNER AS TO MINIMIZE THE POTENTIAL FOR ACCUMULATION OF WATER AND CONCENTRATED INFILTRATION.
- 3. ANTI-SEEP COLLARS FROM THE PIPE MANUFACTURER, THAT ARE PRODUCED SPECIFICALLY FOR THE PURPOSE OF PREVENTING SEEPAGE AROUND THE PIPE, ARE ACCEPTABLE IF INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND ONLY WITH PRIOR APPROVAL BY TPA.
- 4. MINIMUM COVER ABOVE UTILITY SHALL BE BASED ON SPECIFIC UTILITY REQUIREMENTS.
- 5. TRENCHES SHALL BE BACKFILLED WITH BEDDING AND MATERIALS APPROVED BY MDE.
- 6. FOR ADDITIONAL REQUIREMENTS, INCLUDING THE USE OF MDE VCP CLEAN FILL FOR INDUSTRIAL LAND USE AND INSTALLATION OF GEOTEXTILE MARKER FABRIC, REFER TO NOTE 5 ON THE TYPICAL UTILITY CROSS SECTIONS.
- 7. ALL UTILITIES INSTALLED THROUGH AREAS CONTAINING NAPL OR ELEVATED CHEMICAL IMPACTS WITH THE POTENTIAL TO TRANSMIT VAPORS ALONG PREFERENTIAL FLOW PATHWAYS SHALL BE EITHER 1) BACKFILLED WITH LOW PERMEABILITY BACKFILL MATERIAL (LESS THAN OR EQUAL TO THE PERMEABILITY OF THE EXISTING SUBGRADE), OR 2) INSTALLED WITH TRENCH PLUGS ALONG THE ALIGNMENT IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN AND THE FOLLOWING NOTES:
 - A.) UTILITY TRENCH PLUGS SHALL BE INSTALLED AT 100-FOOT (MAX.) INTERVALS THROUGH ALL AREAS OF NAPL CONTAMINATION.
 - B.) UTILITY TRENCH PLUGS SHALL EXTEND A MINIMUM OF 1-FOOT IN ALL DIRECTIONS BEYOND ANY HIGHER PERMEABILITY BACKFILL MATERIALS (I.E., MATERIALS EXCEEDING THE PERMEABILITY OF THE EXISTING SUBGRADE).





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