October 30, 2024

Eastern Shore Natural Gas Company
500 Energy Lane, Suite 200
Dover, DE 19901
Attn: Nick Bishop
Via email: nbishop@chpk.com

Re: Agency Interest Number: 180556
Tracking Number: 202460100
Water Quality Certification Number: 24-WQC-0027

Dear Mr. Bishop:

After examination and consideration of the documents received and evidence in the file and record for the Delmar Loop portion of the Worcester Resiliency Upgrade, the Water and Science Administration has determined that the project meets the statutory and regulatory criteria necessary for issuance of an individual Water Quality Certification (WQC).

The individual WQC for this project issued by the Maryland Department of the Environment (Department) is attached. Please read and review the WQC for this project to ensure that you understand the limits of the certified project and all of the general and special conditions. The attached WQC is a final agency decision. Any person aggrieved by the Department's decision to issue this WQC may appeal such a decision in accordance with COMAR 26.08.02.10F(4). A request for appeal shall be filed with the Department within 30 days of publication of the final decision and specify in writing the reason why the final decision should be reconsidered. A request for appeal shall be submitted to: Secretary of the Environment, Maryland Department of the Environment, 1800 Washington Boulevard, Baltimore, MD 21230. Any request for an appeal does not stay the effectiveness of this WQC.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please do not hesitate to contact me at danielle.spendiff1@maryland.gov or 410-537-4023 with any questions.

Sincerely,

Danielle A. Spendiff, Chief
Regulatory and Customer Service Division

STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION

WATER QUALITY CERTIFICATION
24-WQC-0027

EFFECTIVE DATE: **October 30, 2024**

CERTIFICATION HOLDER: **Eastern Shore Natural Gas Company**
500 Energy Lane,
Suite 200
Dover, DE 19901
Attn: Mr. Nick Bishop

PROJECT LOCATION: **(38.455333, -75.558035)**
Delmar, MD
(Wicomico County, Maryland)

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH §9-313 THROUGH §9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE WATER AND SCIENCE ADMINISTRATION ("ADMINISTRATION") HAS DETERMINED THAT THE REGULATED ACTIVITY DESCRIBED IN THE REQUEST FOR CERTIFICATION FOR EASTERN SHORE NATURAL GAS COMPANY, WORCESTER RESILIENCY UPGRADE - DELMAR LOOP, WILL NOT VIOLATE MARYLAND'S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION AND WITH ALL TERMS AND CONDITIONS OF THIS CERTIFICATION.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE FEDERAL ENERGY REGULATORY COMMISSION (FERC). THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW:

PROJECT DESCRIPTION

The Eastern Shore Natural Gas Company (ESNG) proposes to construct approximately 0.9 miles of 10-inch pipeline along Sussex Highway (US-13), in the Delmar area of Wicomico County, Maryland. Beginning at the intersection of Line Road and US-13, and ending approximately 790 feet south of Foskey Lane, this project, the Worcester Resiliency Upgrade - Delmar Loop, will

use Horizontal Directional Drilling (HDD) to install the proposed natural gas pipeline. The project will use HDD to cross one intermittent stream and nine ephemeral ditches draining to the Wicomico River watershed, a Use I waterway.

The Administration satisfied statutory and regulatory public notice requirements by placing this Certification on Public Notice from July 15, 2024 to September 1, 2024 on the Maryland Department of the Environment's Public Notice webpage. A virtual public informational hearing was held on the evening of August 27, 2024.

This Water Quality Certification (Certification) is issued under authority of Section 401 of the Federal Water Pollution Control Act and its Amendments, Title 9, Subtitle 3 of the Environment Article, and Code of Maryland Regulations (COMAR) 26.08.02.10. The Maryland Department of the Environment (Department) has determined from a review of the request application file that the project activities described above will not violate Maryland's water quality standards, provided that the following conditions are satisfied.

The Certification Holder shall comply with the following conditions:

SPECIAL CONDITIONS

1. To minimize potential impacts to spawning fish from a potential frac-out of drilling fluids, no HDD crossings of waterways should be performed during the period 1 March through 15 June of any year if the waterway(s) has flowing water at the time.
2. Prior to hydrostatic testing of the utility line, the Certification Holder must provide the Department's Water and Science Administration, Compliance Program, with specific information relative to the source of test water and the manner and location in which the water will be disposed of. If the source or waste location of the water involves other than municipal water and sewer systems, the Department must approve the plan prior to line testing.
3. Comply with the terms of the frac-out plan dated October 11th, 2024 approved by the Department, included as attachment to this Certification. The Certification Holder shall monitor for any inadvertent releases along the path of the HDD and under all streams, wetlands, or water bodies.
4. If an inadvertent return (frac-out) occurs in wetlands or waters, HDD operations must cease immediately. The Certification Holder shall immediately contact the Department's Water and Science Administration Compliance Inspector within two (2) hours of the inadvertent return and document that the HDD Contingency Plan was implemented. The Certification Holder shall coordinate with the drilling contractor until the problem is corrected. Drilling can resume only when the frac-out has been contained and cleanup completed.
    a) Water and Science Administration Compliance: 410-901-4020 (business hours)
    b) Water and Science Administration Compliance: 410-517-3600 (evenings, weekends and holidays)
5. Seal each abandoned drill hole with bentonite or other approved material upon withdrawing the drill stem. The Certification Holder shall submit an abandonment report to the Department's Water and Science Administration Compliance Inspector

within 48 hours after sealing is complete.

6. The drilling fluid used in HDD operations shall consist of water and bentonite clay. No additives are permitted without prior approval from the Administration. The Certification Holder may submit for pre-approval a list of thickening additives to be stored on site in order to prevent delays in the drilling operation. Any additive must be certified in conformance with ANSI/NSF Standard 60 (Drinking Water Treatment Chemicals - Health Effects) and used in the manner indicated in the certification of the additive.

GENERAL CONDITIONS

1. Avoid placing structures or conducting activities that entangle or interfere with the movement of aquatic life, fish, or other wildlife.
2. Implement and comply with all final approved plans, permits, and modifications that are approved by the State. The approved plans, permits and modifications by the Department are incorporated by reference into this Certification.
3. Meet the requirements in Annotated Code of Maryland, Environment Article, Title 4 and COMAR 26.17.01, including obtaining and complying with an approved erosion and sediment control plan, and following the stabilization requirements set forth in COMAR 26.17.01.07 and the "2011 Maryland Standards and Specifications for Soil Erosion and Sediment Control (2011 Standards)" as amended.
4. Limit any disturbance of the substrate to the authorized area and prevent sediment transport into adjacent State waters.
5. Remove and dispose of all unused fill and construction materials in a manner which will prevent their entry into waters of this State.
6. Avoid placing stockpiles of any material in Waters of the U.S. or waters of the state, unless otherwise authorized by the approving authority.
7. Obtain any other authorizations or approvals that the Department requires, including General Permits, and comply with all conditions of such authorizations or approvals.
8. Obtain any required authorizations or approvals from other State, federal, or local agencies.
9. Refrain from causing any injury to private property, invasion of rights, or infringement of federal, State, or local laws or regulations.
10. Inspection and entry. The Certification Holder shall allow the Department, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:
    a. Enter upon the Certification Holder's premises where a certified activity or operation is located or conducted, or where records must be kept under the conditions of this Certification;
    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Certification;
    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Certification; and

d. Sample or monitor at reasonable times, for the purposes of assuring compliance or as otherwise authorized by the Department, any substances or parameters at any location.

e. Allow the Department's authorized representatives access to the Project during normal business hours to conduct inspections and evaluations of operations and records to verify compliance with this Certification.

11. This Certification is valid only for the Delmar Loop project identified herein and the associated FERC Certificate of Public Convenience and Necessity (CPCN) for the Worcester Resiliency Upgrade project (Docket No. CP23-536-000).

STATEMENTS OF NECESSITY AND CITATIONS

1. Statement of Necessity for Special Condition 1: Restrictions on instream construction protect designated uses for propagation and growth of fish, other aquatic life, and wildlife.

   Citations: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.03-3; and COMAR 26.23.02.06.

2. Statement of Necessity for Special Conditions 2-5: Unauthorized discharges may enter regulated waters as result of activity or structural failure. The condition is necessary to ensure that water quality standards are met under unique circumstances for inadvertent discharges and that designated uses of waters are maintained and water quality standards are met. Releases of significant amounts of sediment can impact aquatic environments and if unchecked can alter them to an uninhabitable state and violate numeric standards for turbidity

   Citations: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 & 4; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10G(3); COMAR 26.17.04; COMAR 26.23; COMAR 26.24; COMAR 26.23.02.06, COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.08.02.09C(3); COMAR 26.08.02.03B(1)(b); COMAR 26.08.02.03B(2); COMAR 26.08.02.03-3; COMAR 26.08.02.02B(2); COMAR 26.08.02.02B(4); COMAR 26.08.02.02B(6); COMAR 26.08.02.02B(8); 26.08.02.03-3A(5).

3. Statement of Necessity for Special Condition 6: This condition is necessary to prevent inadvertent discharges that may affect quality of drinking water from groundwater sources.

   Citation: COMAR 26.08.02.09

4. Statement of Necessity for General Conditions 1, 2, 4: The condition is necessary to ensure that water quality standards are met and designated uses are maintained.

Citations: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.08.02.10G(3); COMAR 26.23.02.06; COMAR 26.17.01; COMAR 26.23; COMAR 26.24

5. Statement of Necessity for General Condition 3: Erosion and sediment control plans are necessary to ensure that sediment discharges from construction activities will not enter waters of the United States. Sediment discharges from earth disturbance or discharges at erosive rates within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance; and numeric standards for turbidity.

   Citation: Env. Article, Title 4, Subtitle 1 COMAR 26.17.01; 26.08.02.03B(1)-B(2); COMAR 26.08.02.03-3A(5).

6. Statement of Necessity for General Conditions 4, 5, 6: Fill or construction material within or adjacent to regulated resources may cause discharges resulting in turbidity in excess of water quality standards and interfere with designated uses of growth and propagation of fish, other aquatic life, wildlife; and other designated uses; and fail to meet general water quality criteria that waters not be polluted by substances in amounts sufficient to be unsightly or create a nuisance.

   Citation: 26.08.02.03B(1)-B(2); COMAR 26.23; COMAR 26.24; COMAR 26.17.04

7. Statement of Necessity for General Conditions 7, 8, 9: These conditions are necessary to clarify the scope of this certification to ensure compliance with water quality standards and regulations, without limiting restrictions through other requirements that also affect water quality.

   Citations: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08, COMAR 26.08.02.10E; COMAR 26.23.02.06; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

8. Statement of Necessity for General Condition 10: Conditions of certification involve precise actions to comply with water quality standards. Site inspection may be necessary to ensure that limits, methods, and other requirements are met to ensure that water quality standards are met and designated uses are maintained.

   Citation: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.23.02.06; COMAR 26.23; COMAR 26.24; COMAR 26.17.04

9. Statement of Necessity for General Condition 11: This condition is necessary to qualify the period of applicability of the terms and conditions of this Certification to be protective of Maryland water quality standards.

   Citations: 33 U.S.C. § 1341(a), (b), & (d); 33 U.S.C. § 1251(b); 33 U.S.C. § 1370; 40 C.F.R. 121, 15 C.F.R. 930, Md. Ann. Code, Env. Article, Title 1, Subtitles 3 and 4; Md. Ann. Code, Env. Article, Title 5, Subtitles 5 and 9; Md. Ann. Code, Env. Article, Title 9, Subtitle 3; Md. Ann. Code, Env. Article, Title 16; COMAR 26.08; COMAR 26.17.04; COMAR 26.23; COMAR 26.24

This Certification is valid for the Project identified herein and the associated CPCN until such time that it expires. Failure to comply with these conditions may subject the Certification Holder to criminal and/or civil penalties or other enforcement action in accordance with applicable law.

CERTIFICATION APPROVED: DATE:

D. Lee Currey, Director
Water and Science Administration

Tracking Number: 202460100
Agency Interest Number: 180556

Effective Date: October 30, 2024

Enclosures: Frac Out Contingency Plan (10/11/2024), Plan Sheets 1 through 13

cc: Nina McDaniel, FERC
WSA Inspection & Compliance Program

EASTERN SHORE NATURAL GAS

HORIZONTAL DIRECTIONAL DRILLING INADVERTENT SURFACE RELEASE CONTINGENCY PLAN DELMAR LOOP PROJECT - REVISED 10/11/2024

Purpose and Objective

The purpose of this Horizontal Directional Drilling Inadvertent Surface Release Contingency Plan (Contingency Plan) is to identify procedures to be followed in the event of an inadvertent surface release of drilling fluids during horizontal directional drilling (HDD) operations. An inadvertent surface release (also sometimes referred to as an "inadvertent surface return" or "frac-out") is a condition in which drilling mud used in HDD operations is released through fractures in the soil and migrates toward the surface. Drilling mud consists mainly of a bentonite clay-water mixture, which is not considered to be hazardous or toxic. The company's objective in adopting this plan is to minimize the potential of a surface release and identify response measures in the event that a surface release occurs, in order to mitigate any potential adverse impact to water bodies and associated habitats. Escape of drilling mud from a surface release is most common near the HDD entry and exit locations; however, surface releases can occur at any location along a directional drill.

This Contingency Plan provides operational procedures and responsibilities for the prevention, containment, and cleanup of surface releases associated with HDD operations.

The objectives of this plan are as follows:

- Minimize the potential for a surface release due to HDD operations.
- Identification and timely detection of surface releases.
- Provide for environmental protection of the water bodies and associated habitats.
- Establish response procedures in the event of a surface release.
- Provide for notifications to the applicable parties and regulatory agencies.

Scope of Work for HDD Crossings

The pipeline plan and profile drawings show the targeted entry and exit locations for each proposed HDD. These layouts have been designed to minimize the potential for impact to water bodies. The significant clearance between the bottom of the water bodies/wetlands and the top of the proposed pipeline provides additional protection for the water bodies. Specifically, a minimum clearance of 2 feet will be maintained between the top of the proposed pipeline and the nontidal streambed.

Potential Impacts to Biological Resources

The release of drilling mud during an inadvertent surface release may occur in either upland or aquatic environments. Releases occurring in upland areas can generally be contained relatively quickly, and with minimal difficulty, and therefore typically result in minor impacts to the surrounding environment. Releases occurring in aquatic environments may be more difficult to contain, because bentonite readily disperses in water, and may settle on the bottom quickly, depending on water flow. Although bentonite is non-toxic, it may have several indirect effects on aquatic life. Initially following a surface release, suspended bentonite may inhibit the respiration of fishes. This effect is typically of a short duration. Longer term effects may occur once the bentonite settles. One possible longer-term effect is egg masses of fish being covered by a layer of bentonite, thereby inhibiting the flow of dissolved oxygen to the egg masses. Another possible longer-term effect of a surface release is benthonic invertebrates and the larval stages of pelagic organisms becoming covered by the bentonite and suffocating.

Equipment

The following equipment is proposed to be used during HDD operations:

- Horizontal Directional Drill rig;
- Ancillary tractor trailers associated with the Drill rig;
- Drilling mud reclaimer;
- Multiple water tankers;
- Multiple vacuum trucks and trailers;
- Multiple construction pickup trucks;
- Multiple boom trucks; and a
- Small office trailer

On-Site Monitoring

During HDD operations, visual inspection along the bore path of the alignment will take place. Where the alignment crosses flowing water, trained inspection personnel will be placed approximately 50 feet upstream and downstream of the alignment crossing, access permitting. The names and phone numbers of inspection personnel will be provided to on-site regulatory representatives. During the duration of HDD operations, the contractor will provide the following information to the other inspection personnel.

- Position of the drilling head relative to the drilling point of entry;
- A comparison of the estimated total volume of drilling mud that has been pumped throughout the HDD operation and the estimated current total volume of returns;
- Equipment malfunctions and/or repairs;
- Abnormal changes in drilling mud pressure at the time of occurrence; and
- Changes in drilling mud mixture or contents.

Surface Release Mitigation Measures

- Applicable regulatory agencies will be contacted as required. Prior to construction, a complete list of applicable regulatory agencies will be prepared and available at the job site.

Included on this list of contact agencies will be Maryland Department of the Environment's Eastern Region Office (410) 901-4020

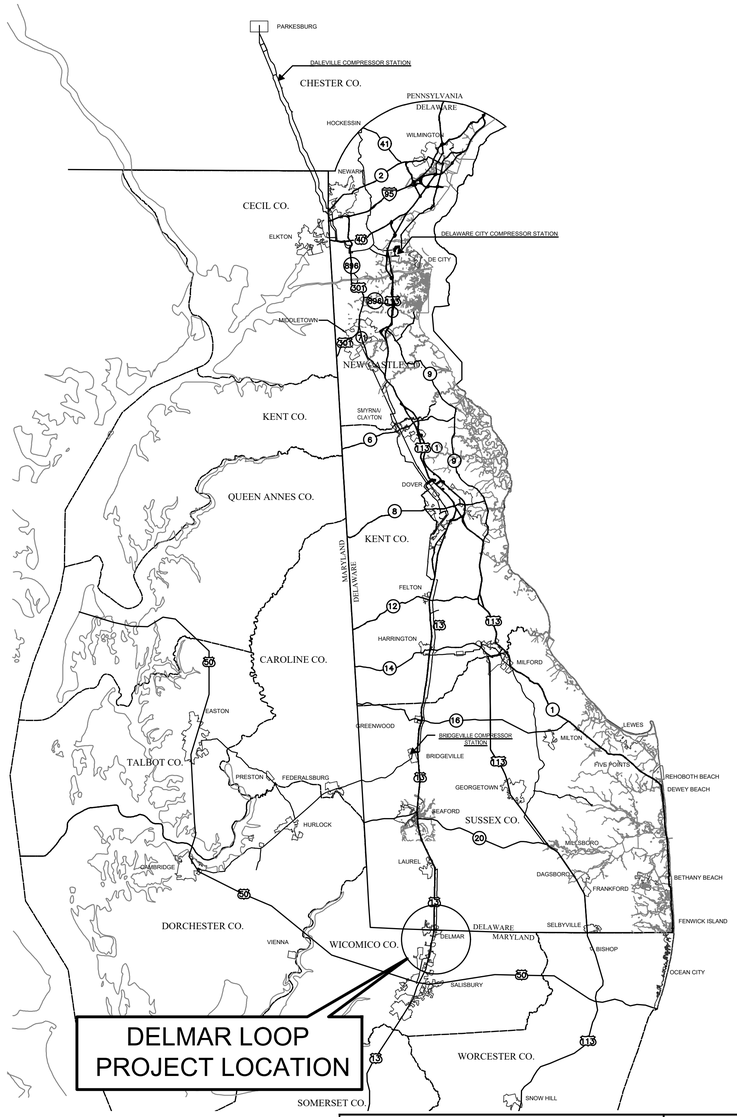
- All equipment will be checked and maintained daily to prevent hazardous material leaks.
- Sufficient supplies of spill containment materials and hay bales will be available on-site at all times. A vacuum truck will also be available at all times.
- A supply of empty barrels will be located on-site at all times.
- Entry and exit drill pits will be contained using berms, silt fence and/or hay bales.
- Tracing dye will be added to the drilling mud to help identify surface releases in waterbodies and wetlands.
- Visual observation (on-land and water bodies) will occur on a regular basis throughout HDD operations so that a potential surface release can be identified.
- The contractor will adjust the thickness of the drilling mud mixture to match the substrate conditions, and will monitor drilling mud pressures and penetration rates, in order to ensure optimal fluid pressure to penetrate the substrate.
- HDD operations will be suspended immediately upon evidence of a drop in drilling pressure, a sudden loss of approximately 75 percent of returns at the entrance pit, or other evidence of a surface release.
- In the event of a surface release, the bore stem will be pulled back to relieve pressure at the leak location, and the on-site inspection personnel will evaluate the situation and provide direction for mitigation actions.
- Cleanup of all surface releases/spills shall begin immediately.
- In the event of a surface release that does not reach a water body or wetland, bentonite shall be contained, removed and disposed at an approved facility.
- In the unlikely event that a surface release reaches a water body or wetland, corrective action will be taken immediately. Clean-up work will be performed by hand to the extent possible. A vacuum truck would be used to vacuum up the associated bentonite and soils as necessary. The materials will be properly disposed at an approved facility. Clean sand would be replaced in the riverbed if necessary.
- All cleanup materials will be disposed on a daily basis as applicable, and at the completion of the project.
- In the event that a drill hole must be abandoned, the bore will be sealed by the injection of a high-viscosity bentonite slurry.
- Documentation will be prepared for any surface releases that occur during HDD operations.

EASTERN SHORE NATURAL GAS COMPANY
WORCESTER RESILIENCY UPGRADE - DELMAR LOOP

PROPOSED 0.9 ± MILES OF 10" NATURAL GAS PIPELINE

WICOMICO COUNTY, MARYLAND

DRAWING INDEX



DELMAR LOOP
PROJECT LOCATION

500 250 0 250 500 1,000

SCALE: 1" = 500'

REVISIONS			
NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

COVER SHEET

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	1 OF 13

GENERAL CONSTRUCTION NOTES

NOTIFICATIONS

THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) SEDIMENT CONTROL INSPECTOR AT 410-901-4020 AT LEAST 7 DAYS PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES AND, UNLESS WAIVED BY THE SEDIMENT CONTROL INSPECTOR, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING AT THE PROJECT SITE. THE CONTRACTOR MUST PROVIDE THE NAME OF THE PERSON ON THE SITE WHO IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND A COPY OF THEIR GREEN CARD TO THE SEDIMENT CONTROL INSPECTOR.

ALL PROJECTS WITH CONSTRUCTION ACTIVITIES DISTURBING 1 ACRE OR MORE ARE REQUIRED TO SUBMIT A GENERAL PERMIT (NOI) TO MDE TO COMPLY WITH THE GENERAL PERMIT FOR CONSTRUCTION ACTIVITY FOR STORMWATER DISCHARGES. THE GENERAL PERMIT (NOI) MUST BE APPROVED PRIOR TO DISTURBANCE ACTIVITIES. TO OBTAIN A GENERAL PERMIT (NOI) FORM, CONTACT THE PERMITS COORDINATOR AT THE MDE COMPLIANCE PROGRAM AT 410-537-3510.

AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE MARYLAND UNDERGROUND FACILITIES AND DAMAGE PREVENTION AUTHORITY (MISS UTILITY) SHALL BE NOTIFIED AT 811 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.

UPON COMPLETION OF EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION HAS BEEN ACHIEVED, THE MDE SEDIMENT CONTROL INSPECTOR SHALL BE NOTIFIED IN ORDER TO SCHEDULE A FINAL INSPECTION. THE INSPECTION SHALL BE PERFORMED AND APPROVAL SHALL BE RECEIVED PRIOR TO THE REMOVAL OF TEMPORARY E&S CONTROL MEASURES.

WORK AREAS

CONSTRUCTION WORK AREAS TO BE CONFINED TO THE LIMITS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL USE MATTING WHEN WORKING OVER EXISTING EASTERN SHORE FACILITIES AT NO ADDITIONAL COST TO EASTERN SHORE. CONTRACTOR SHALL TEST HOLE AND VERIFY EXISTING PIPELINE DEPTH PRIOR TO WORKING OVER EXISTING FACILITIES. CONTRACTOR SHALL PROVIDE BEARING CALCULATIONS TO DETERMINE NEED FOR MATTING OR LOW PRESSURE GROUND TRACKING EQUIPMENT AND CONFIRM WITH EASTERN SHORE THE METHODOLOGY PRIOR TO WORKING IN THAT AREA. ANY DAMAGE TO EXISTING EASTERN SHORE FACILITIES WILL BE REPAIRED AND/OR REPLACED AT THE CONTRACTORS EXPENSE.

MATERIALS

All PIPELINE COATING MATERIAL SHALL BE PROVIDED, STORED AND APPLIED BY CONTRACTOR PER ESNG CONSTRUCTION STANDARDS MANUAL AND APPROVED MATERIAL LIST.

EROSION AND SEDIMENTATION CONTROLS

EROSION AND SEDIMENTATION CONTROL BARRIERS (COMPOST FILTER LOG OR SILT FENCE) WILL BE UTILIZED AS NECESSARY TO ASSURE CONTAINMENT OF EXCAVATED SPOILS AND DISTURBED SOILS ON THE CONSTRUCTION RIGHT-OF-WAY (SEE ENVIRONMENTAL NOTES).

CLEARING OF VEGETATION

TREE CLEARING WILL BE LIMITED TO THE MINIMUM REQUIRED TO CONSTRUCT THE PIPELINE. ALL WOODED AREAS CLEARED FOR TEMPORARY WORK SPACE WILL BE ALLOWED TO NATURALLY REGENERATE. CAREFULLY AND CLEANLY CUT ROOTS AND BRANCHES OF TREES INDICATED TO REMAIN, WHERE SUCH ROOTS AND BRANCHES OBSTRUCT THE CONSTRUCTION.

TRENCH EXCAVATION AND BACKFILLING

THE TRENCH REQUIRED FOR THE PIPELINE INSTALLATION WILL BE EXCAVATED TO ENSURE THE REQUIRED DEPTH OF COVER. IN GENERAL, A MINIMUM OF FOUR (4) FEET OF COVER WILL BE PLACED OVER THE PIPELINE. BACKFILLING WITH COMPACTED PREVIOUSLY EXCAVATED MATERIAL. UPON COMPLETION OF THE PIPELINE INSTALLATION ACTIVITIES, THE GROUND SURFACE WILL BE GRADED TO PRE-CONSTRUCTION CONDITIONS. TRENCH WATER OR OTHER FORMS OF TURBID WATER WILL NOT BE DIRECTLY DISCHARGED ONTO EXPOSED SOIL SURFACES OR INTO ANY WETLAND OR STREAM. GROUNDWATER SEEPAGE WILL BE PUMPED OUT OF THE TRENCH AND DIRECTED TO A PUMPED WATER FILTER BAG (OR EQUIVALENT) SIZED FOR THE EXPECTED VOLUME OF EFFLUENT, WHICH WILL BE PLACED IN AN UPLAND AREA, SURROUNDED BY A HAY BALE ENCLOSURE IF NECESSARY. SILT AND SEDIMENT WILL COLLECT IN THE FILTER BAG WHILE ALLOWING NON-TURBID WATER TO LEACH OUT AND INFILTRATE INTO THE GROUND. THE COLLECTED SILT, SEDIMENT AND USED FILTER BAG WILL BE PROPERLY DISPOSED OFF-SITE IN AN UPLAND AREA.

UNLESS PREVIOUSLY APPROVED BY THE MDE SEDIMENT CONTROL INSPECTOR, THE CONTRACTOR SHALL ONLY OPEN UP A TRENCH FOR THAT LINEAR FOOTAGE OF PIPELINE THAT CAN BE COMPLETELY INSTALLED, BACKFILLED AND STABILIZATION BEGUN WITHIN 30 CALENDAR DAYS.

HYDROSTATIC TESTING OF THE PROPOSED PIPELINE

IN COMPLIANCE WITH U.S. DEPARTMENT OF TRANSPORTATION PIPELINE SAFETY AND INTEGRITY REGULATIONS, EASTERN SHORE NATURAL GAS WILL HYDROSTATICALLY TEST THE PROPOSED NATURAL GAS PIPELINE PRIOR TO PLACING THE PROPOSED PIPELINE IN SERVICE. THE SOURCE OF WATER FOR THE HDYROSTATIC TEST WILL BE DETERMINED BEFORE THE TEST.

THE HYDROSTATIC PRESSURE TESTING WATER WILL BE RELEASED TO A SILT FENCE AND HAY BALE CONTAINMENT AREA USING WORKSPACE IN AN UPLAND AREA (NO TREE CLEARING WILL BE INVOLVED IN THE HYDROSTATIC TEST WATER DISCHARGE). A SPLASH PLATE WILL BE USED TO DIFFUSE THE IMPACT OF THE RELEASED WATER. CHESAPEAKE UTILITIES WILL ENSURE THAT NO EROSION OR WATERBODY/WETLAND SEDIMENTATION OCCURS FROM THE TEST WATER RELEASE ACTIVITIES. THE MAXIMUM ALLOWABLE DISCHARGE WILL BE 50,000 GALLONS PER DAY AT A RELEASE RATE OF 500-1,500 GALLONS PER MINUTE, OR AT A RATE SO AS NOT TO CAUSE ANY SCOURING.

EARTH DISTURBANCE NOTE

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE CONSTRUCTION SCHEDULE AND SEQUENCE. EACH STAGE SHALL BE COMPLETED IN A GIVEN WORK AREA BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE.

ROADWAY CONSTRUCTION NOTES

1. NO OPENING, CUTTING, EXCAVATING, BORING OR DISTURBANCE OF ANY KIND UPON, IN OR UNDER ANY PORTION OF A ROAD OR ANY ROAD RIGHT-OF-WAY MAY BE PERFORMED UNTIL CONDITIONS, RESTRICTIONS AND REGULATIONS AS PRESCRIBED IN THE ORDINANCES, RULES AND REGULATIONS OF THE STATE HIGHWAY ADMINISTRATION (SHA) ARE MET AND PERMITS ARE GRANTED FOR SUCH PURPOSES.
2. TRAFFIC CONTROL MEASURES TO BE PERFORMED IN ACCORDANCE WITH PORTIONS OF THE U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), 2009 EDITION WITH LATEST REVISIONS.
3. NO ROAD SHALL BE CLOSED AND TRAFFIC DETOURED WITHOUT PRIOR PERMITTING FROM THE SHA. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH LOCAL POLICE, FIRE COMPANIES, SCHOOLS AND EMS AS TO THE STATUS OF ALL CLOSURES THAT COULD AFFECT PUBLIC SAFETY. ALL REQUIRED DETOUR SIGNS SHALL BE MAINTAINED FOR THE ENTIRE LENGTH AND DURATION OF THE ROAD CLOSURE AND DETOUR ROUTE.
4. THE CONTRACTOR IS TO PROVIDE CERTIFICATION OF COMPLIANCE WITH THE NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP) REPORT 350 FOR TRAFFIC CONTROL DEVICES OR THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) MANUAL FOR ASSESSING SAFETY HARDWARE (MASH).
5. FOR AREAS OUTSIDE ROADWAYS, REFER TO NOTES AND DETAILS REFERRING TO RESTORATION SEEDING AND MULCHING. RESTORATION IN NON-ROADWAY AREAS (UPLANDS AND WETLANDS) WILL BE PERFORMED WITHIN 7 DAYS OF BACKFILL AND FINAL GRADING. IN STREAM AREAS, RESTORATION WILL BE PERFORMED WITHIN 1-2 DAYS OF PIPELINE INSTALLATION AND BACKFILL. ALL DISTURBED SOILS SHALL BE STABILIZED WITHIN 5 DAYS OF DISTURBANCE.

GENERAL ENVIRONMENTAL NOTES

1. THE LIMIT OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE PRE-CONSTRUCTION MEETING AND ANY GRADING ACTIVITIES TO ENSURE COMPLIANCE WITH THE APPROVED PLAN.
2. THE WSCD MAY REVOKE THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL PLAN IF WORK PERFORMED AT THE PROJECT SITE DOES NOT CONFORM TO THE PROVISIONS OF THE APPROVED PLAN OR TO ANY WRITTEN INSTRUCTIONS FROM MDE, WSCD. CONTRACTOR SHALL NOTIFY WICOMICO COUNTY SCD PRIOR TO START OF CONSTRUCTION.
3. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED SLOPES SHALL BE CONTROLLED BY UTILIZING WATERBARS UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THE FINAL GRADING CAN BE DONE TO PROMOTE SHEET FLOW DRAINAGE. EROSION CONTROL MEASURES MUST BE IMPLEMENTED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
4. EROSION/SEDIMENTATION CONTROL STRUCTURES TO BE INSTALLED AND MAINTAINED AS NECESSARY DURING CONSTRUCTION TO AVOID MIGRATION OF SPOILS OR DISTURBED SOILS OFF THE CONSTRUCTION RIGHT-OF-WAY. BREAKS IN EROSION/SEDIMENT CONTROL STRUCTURES WILL BE NECESSARY AT ROAD CROSSINGS DURING THE WORK DAY. GAPS TO BE CLOSED AS REQUIRED AT THE END OF EACH WORK DAY.
5. TOPSOIL SHALL BE STRIPPED AND SEGREGATED PRIOR TO TRENCHING (MAX. DEPTH 12 INCHES). AFTER COMPLETION OF SUBSOIL BACKFILL, TOPSOIL TO BE RETURNED TO REQUIRED AREAS AND GRADED. TOPSOIL SHALL BE SEGREGATED IN ALL TEMPORARY CONSTRUCTION WORKSPACE AREAS AND ALL AREAS WHERE THE PROPOSED PIPELINE IS INSTALLED IN UNPAVED ROAD RIGHT-OF-WAY AREAS. IF TOPSOIL IS NOT SEGREGATED IN THESE AREAS, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING NEW TOPSOIL TO ACTUAL DEPTH OF EXISTING TOPSOIL (MIN. 6" DEPTH-MAX 12" DEPTH).
6. ANY TRENCH DEWATERING TO BE DIRECTED TO SEDIMENT FILTER BAG AND/OR DEWATERING STRUCTURE IN AN UPLAND AREA TO ENSURE THAT NO EROSION OR SEDIMENTATION OCCURS.
7. PRE-CONSTRUCTION CONTOURS TO BE RE-ESTABLISHED FOR ALL DISTURBED AREAS.
8. ALL DISTURBED AREAS TO BE RESTORED AND/OR REVEGETATED AS APPLICABLE. SEE SITE RESTORATION NOTES, SHEET 5 OF 13.
9. UNLESS OTHERWISE SPECIFIED, ALL SLOPES GREATER THAN 3H:1V SHALL BE STABILIZED WITH AN APPROVED EROSION CONTROL BLANKET. FOR TEMPORARY SEEDING SPECIES, RATES, AND FERTILIZER, SEE THE TEMPORARY SEED SUMMARY, SHEET 3 OF 13.
10. NO EQUIPMENT FUELING OR MAINTENANCE SHALL OCCUR WITHIN 100 FEET OF ANY WETLANDS OR WATERBODIES.
11. EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) MUST BE CONSTRUCTED, STABILIZED AND FUNCTIONAL BEFORE SITE DISTURBANCE BEGINS WITHIN THE AREAS OF THOSE BMP'S.
12. CONSTRUCTION ACTIVITIES WITHIN 50 FEET OF STREAMS SHALL BE LIMITED TO THOSE ACTIVITIES RELATED TO THE CONSTRUCTION OF THE STREAM CROSSING AND THE TIE-IN OF THE PIPELINE. ALL EQUIPMENT SHALL WORK FROM MATS IN SATURATED WETLAND AREAS.
13. BMP'S SHALL BE INSTALLED ON DOWNSLOPE SIDE(S) OF ALL STAGING AREAS.
14. VEHICLES AND EQUIPMENT SHALL ENTER THE PROPOSED CONSTRUCTION RIGHT-OF-WAY AT PROJECT WORK AREAS ADJACENT TO PUBLIC ROAD CROSSINGS USING STABILIZED CONSTRUCTION ENTRANCES - SEE DETAILS AND PLAN & PROFILE SHEETS. CULVERT PIPES TO BE INSTALLED WHERE NECESSARY FOR ACCESS ACROSS DITCHES OR SWALES, TO MAINTAIN EXISTING DRAINAGE PATTERNS.
15. STOCKPILE HEIGHTS (SPOIL PILES) MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST NOT EXCEED 2H:1V.
16. REVIEW AND/OR APPROVAL OF THE SEDIMENT AND STORMWATER MANAGEMENT PLAN SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITIES FOR COMPLIANCE, NOR SHALL IT RELIEVE THE CONTRACTOR FROM ERRORS OR OMISSIONS IN THE APPROVED PLAN.
17. IF THE APPROVED PLAN NEEDS TO BE MODIFIED, ADDITIONAL SEDIMENT AND STORMWATER CONTROL MEASURES MAY BE REQUIRED AS DEEMED NECESSARY.
18. IF THE CONTRACTOR DECIDES THAT CUTTING OR FILLING ACROSS SIDE SLOPES IS REQUIRED DURING CONSTRUCTION, ADDITIONAL E&S CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL LOOSE FILL AND THE STEEPER SLOPE CONDITIONS IN THE VICINITY OF THE PROPOSED PERIMETER CONTROLS. ADDITIONALLY THE DESIGN ENGINEER SHALL BE CONTACTED FOR THE RECOMMENDATION OF ADDITIONAL CONTROLS AND ALL DESIGN CHANGES SHALL BE SUBMITTED TO THE COUNTY CONSERVATION DISTRICT FOR APPROVAL.
19. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION BMP'S MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION BMP'S AFTER EACH STREAM RUNOFF EVENT AND ON A WEEKLY BASIS AS A MINIMUM. ALL SITE INSPECTIONS SHALL BE DOCUMENTED IN AN INSPECTION LOG KEPT FOR THIS PURPOSE. THE COMPLIANCE ACTIONS AND THE DATE, TIME AND NAME OF THE PERSON CONDUCTING THE INSPECTION SHALL BE DOCUMENTED. THE INSPECTION LOG WILL BE KEPT ON SITE AND MADE AVAILABLE TO THE MDE SEDIMENT CONTROL INSPECTOR UPON REQUEST. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENTATION BMP'S FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMP'S OR MODIFICATIONS OF THOSE INSTALLED WILL BE NEEDED. WHERE BMP'S ARE FOUND TO FAIL TO ALLEVIATE EROSION OR SEDIMENT POLLUTION THE PERMITTEE OR CO-PERMITTEE SHALL INCLUDE THE FOLLOWING INFORMATION:
    - THE LOCATION AND SEVERITY OF THE BMP'S FAILURE AND ANY POLLUTION EVENTS.
    - ALL STEPS TAKEN TO REDUCE, ELIMINATE AND PREVENT THE RECURRENCE OF THE NON-COMPLIANCE.
    - THE TIME FRAME TO CORRECT THE NON-COMPLIANCE, INCLUDING THE EXACT DATES WHEN THE ACTIVITY WILL RETURN TO COMPLIANCE. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY.
    - AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT CONTROL BMP'S MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE BMP'S MUST BE STABILIZED IMMEDIATELY.
20. ALL STONE, WITH THE EXCEPTION OF CHECK DAMS, MUST BE UNDERLAIN WITH A GEOTEXTILE FABRIC (E.G. TEMPORARY CONSTRUCTION ENTRANCES). GEOTEXTILE FABRIC SPECIFICATIONS WILL BE PROVIDED FOR VARIOUS APPLICATIONS.
21. THE CONTRACTOR SHALL USE A STREET SWEEPER AS REQUIRED TO MINIMIZE DUST AND SOIL ON ROADWAYS. IF DUST BECOMES A PROBLEM, THE CONTRACTOR SHALL APPLY WATER TO THE CONSTRUCTION RIGHT-OF-WAY TO PROVIDE DUST CONTROL.
22. TRAFFIC FLOW ON PUBLIC ROADWAYS SHALL BE MAINTAINED DURING CONSTRUCTION ACTIVITIES, IN ACCORDANCE WITH MARYLAND SHA UTILITY PERMIT REQUIREMENTS.
23. UPON COMPLETION OR TEMPORARY CESSATION OF THE EARTH DISTURBANCE ACTIVITY, OR ANY STAGE THEREOF (INCLUDING CLEARING AND GRUBBING), THE PROJECT SITE SHALL BE IMMEDIATELY STABILIZED WITH THE APPROPRIATE TEMPORARY OR PERMANENT STABILIZATION. HAY/STRAW MULCH USED FOR TEMPORARY STABILIZATION SHALL BE APPLIED AT A RATE OF 3 TONS/ACRE. THE MDE SEDIMENT CONTROL INSPECTOR SHALL BE CONSULTED TO CONFIRM MEASURES AND SPECIFICATIONS TO BE IMPLEMENTED FOR TEMPORARY STABILIZATION.
24. BEFORE INITIATING ANY REVISION TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN OR REVISIONS TO OTHER PLAN WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, APPROVAL OF THE REVISIONS MUST BE RECEIVED FROM THE COUNTY CONSERVATION DISTRICT. THE OPERATOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, APPROPRIATE BMP'S SHALL BE IMPLEMENTED, TO ELIMINATE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

GENERAL ENVIRONMENTAL NOTES (CONT.)

25. ALL PUMPING OF SEDIMENT LADEN WATER OR POTENTIALLY SEDIMENT LADEN WATER SHALL BE THROUGH A SEDIMENT CONTROL BMP, SUCH AS A PUMPED WATER FILTER BAG DISCHARGING OVER NON-DISTURBED AREAS.
26. THE CONTRACTOR IS ADVISED TO BECOME THOROUGHLY FAMILIAR WITH SECTION D - EROSION CONTROL FROM 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
27. THE CONTRACTOR SHALL REMOVE FROM THE SITE, RECYCLE, OR DISPOSE ALL CONSTRUCTION WASTE MATERIALS AND WASTES IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS. THE CONTRACTOR SHALL NOT ILLEGALLY BURY, DUMP OR DISCHARGE ANY CONSTRUCTION MATERIAL OR WASTES AT THE SITE.
28. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 85% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A UNIFORM DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENT. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE, THE CONTRACTOR SHALL STABILIZE ANY AREAS DISTURBED BY THE ACTIVITIES. DURING NON-GERMINATING PERIODS, MULCH MUST BE APPLIED AT THE SPECIFIED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISH GRADE OR WHICH WILL NOT BE RE-DISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH THE PERMANENT VEGETATIVE STABILIZATION SPECIFICATIONS.
29. SHOULD ANY OF THE PROPOSED EROSION AND SEDIMENTATION CONTROL MEASURES FAIL OR UNFORESEEN EROSIVE CONDITIONS ARISE THE CONTRACTOR SHALL IMMEDIATELY IMPLEMENT CONTROLS TO MINIMIZE EROSION AND SEDIMENTATION.
30. LOCATIONS FOR EROSION CONTROL DEVICES ARE APPROXIMATE. DEVICES WILL BE FIELD VERIFIED AND PLACED UNDER THE OVERSIGHT OF THE ENVIRONMENTAL INSPECTOR. IF IT IS FOUND THAT E&S CONTROLS ON THIS PLAN ARE INSUFFICIENT OR MISSING, ADDITIONAL E&S CONTROLS THAT ARE PROPERLY SIZED ARE TO BE INSTALLED UNDER THE DIRECTION OF THE ENVIRONMENTAL INSPECTOR AND MDE SEDIMENT CONTROL INSPECTOR. ALL AREAS OF EARTH DISTURBANCE ACTIVITIES MUST FIRST DISCHARGE THROUGH AN EROSION AND SEDIMENTATION CONTROL BMP PRIOR TO LEAVING THE PROJECT SITE.
31. IF AN AREA HAS LESS THAN 40 PERCENT GROUNDCOVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
32. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUNDCOVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
33. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN ON SHEET 3 OF 13.

CONSTRUCTION SCHEDULE AND SEQUENCE

CONSTRUCTION IS SCHEDULED TO BEGIN IN THE **SUMMER OF 2025** WITH AN ANTICIPATED DURATION OF APPROXIMATELY 6 MONTHS. WORK WILL CONSIST OF THE FOLLOWING SEQUENTIAL OR CONCURRENT ACTIVITIES:

1. CONTRACTOR SHALL FOLLOW THE NOTIFICATION STEPS OUTLINED ON THIS PLAN.
2. IF CHANGES TO THE EROSION AND SEDIMENT CONTROLS ARE NECESSARY, THE CONTRACTOR SHALL IMMEDIATELY COORDINATE WITH THE ENVIRONMENTAL INSPECTOR FOR APPROVAL.
3. INSTALL ROCK CONSTRUCTION ENTRANCES, INCLUDING SILT FENCE AND INLET PROTECTION WHERE NEEDED.
4. DELINEATE LIMITS OF CLEARING IN THE FIELD PRIOR TO COMMENCEMENT OF CLEARING OPERATIONS.
5. CLEAR AND GRUB WOODED AREAS BY HAND. IF MACHINERY IS REQUIRED OR EARTH DISTURBANCE IS ANTICIPATED, INSTALL PERIMETER CONTROLS OUTLINED BELOW PRIOR TO THIS ACTIVITY.
6. TOPSOIL STRIPPING AND SEGREGATION WILL BE PERFORMED. INSTALLATION OF TOPSOIL DIVERSION BERMS AND TOPSOIL CUT DIVERSIONS SHALL BE INSTALLED IN CONJUNCTION WITH THE CLEARING AND STRIPPING EFFORTS. COMPOST SOCKS & SILT FENCE SHOULD ALSO BE INSTALLED AT THIS TIME, WHERE INDICATED.
7. TRENCHING/ DITCHING WILL BE PERFORMED TO ENSURE REQUIRED DEPTH OF COVER OVER THE PIPELINE, 4 FEET TYPICALLY OR 2 FEET IN CONSOLIDATED ROCK, AND SUBSOIL WILL BE STOCKPILED ADJACENT TO THE TRENCH, SEPARATE FROM TOPSOIL. CONTRACTOR SHALL FOLLOW TRENCH DEWATERING PROCEDURES AS NECESSARY, WHICH INCLUDES FILTER BAGS WHICH DISCHARGE TO STABLE, WELL VEGETATED UPLAND AREAS.
8. CONTRACTOR TO CONTINUE WITH PIPELINE STRINGING ALONG THE EXPOSED TRENCH, PIPE BENDING, WELDING AND COATING.
9. EQUIPMENT WILL BE UTILIZED TO LOWER THE PIPE INTO THE TRENCH. CONTRACTOR WILL THEN CONTINUE WITH PADDING, BACKFILL AND COMPACTION. ALONG SLOPED AREAS AND ALSO ALONG ALL WETLAND AND WATERBODIES, PERMANENT TRENCH PLUGS SHALL BE INSTALLED PRIOR TO BACKFILLING ACTIVITIES.
10. UPON COMPLETION OF A BACKFILLING ACTIVITY OR ANY STAGE OR PHASE OF A RESTORATION ACTIVITY, THE IMMEDIATE VICINITY SHALL BE SEEDED, MULCHED OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.
11. FILLING THE PIPE WITH WATER FOR HYDROSTATIC PRESSURE TESTING WILL BE PERFORMED. FINAL DEWATERING WILL BE DISCHARGED INTO A WELL VEGETATED UPLAND AREA.
12. FINAL TIE-IN OF THE PIPELINE AT BOTH ENDS, CONSTRUCTION CLEANUP, RESTORATION, FINAL GRADING, PAVEMENT RESURFACING AND FINAL REVEGETATION WILL BE PERFORMED IN ORDER TO COMPLETE PIPELINE INSTALLATION ACTIVITIES.
13. CONTRACTOR SHALL SEE TO IT THAT ALL DISTURBED AREAS ARE RESTORED PER THE PROCEDURES AND NOTES OUTLINED WITHIN THE SITE RESTORATION NOTES CONTAINED WITHIN THESE CONSTRUCTION PLANS, SEE SHEET 5 OF 13.
14. EROSION CONTROL MEASURES WILL BE REQUIRED TO REMAIN AND BE MAINTAINED UNTIL AFTER PERMANENT STABILIZATION IS ACHIEVED. PERMANENT STABILIZATION IS DEFINED AS A UNIFORM 85% PERENNIAL VEGETATED COVER FOR ALL VEGETATED AREAS.
15. ONCE THE SITE IS COMPLETE AND PERMANENTLY STABILIZED A NOTICE OF TERMINATION MUST BE SUBMITTED TO MDE SEDIMENT CONTROL INSPECTOR IN ORDER TO SCHEDULE FINAL INSPECTION. UPON FINAL INSPECTION AND RECEIVING APPROPRIATE APPROVAL NOTIFICATION, TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES MAY BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH SOLID WASTE MANAGEMENT REGULATIONS.

LEGEND

PROPOSED PIPELINE

STATION LABELS 1

PERMANENT EASEMENT

TEMPORARY WORKSPACE (TWS) — SWL / TWS

PROPERTY LINE

RIGHT-OF-WAY LINE

EXISTING CONTOUR (10 FOOT MAJOR) 300

EXISTING CONTOUR (2 FOOT MINOR) 302

EDGE OF PAVEMENT

EDGE OF GRAVEL

EDGE OF CONCRETE

CURB LINE

ROAD MARKINGS

TREELINE

RIP-RAP

GUIDERAIL

CHAINLINK FENCE

OVERHEAD ELEC. TRANSMISSION LINES OHE

UNDERGROUND ELEC. TRANSMISSION LINES UGE

UNDERGROUND TELE. TRANSMISSION LINES UGT

SANITARY SEWER SAN

WATER LINE W

STORM DRAIN SD

SILT FENCE SF

LIMITS OF DISTURBANCE LOD

WATERS OF U.S. US

WETLANDS BUFFER WB

100-YEAR FLOODPLAIN FP

TIDAL WETLAND AREA TW

NON-TIDAL WETLAND AREA NW

STREAM CENTERLINE

BUILDINGS/STRUCTURE

TREES / BUSHES / SHRUBS

LIGHT POLE

UTILITY POLE

SIGN

MAILBOX

COORDINATE SYSTEM AND VERTICAL DATUM

HORIZONTAL COORDINATE SYSTEM: MARYLAND STATE PLANE, NORTH AMERICAN DATUM OF 1983 (NAD 83), U.S. SURVEY FOOT

VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), U.S. SURVEY FOOT

OWNER'S CERTIFICATION:

I, NICK BISHOP, CERTIFY THAT ALL LAND CLEARING, CONSTRUCTION AND/OR DEVELOPMENT SHALL BE DONE PURSUANT TO THE APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL INVOLVED IN THE LAND DISTURBANCE WILL HAVE A CERTIFICATION OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

I HEREBY AUTHORIZE THE RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION BY THE WICOMICO SOIL CONSERVATION DISTRICT OR THEIR REPRESENTATIVES AND THE STATE OF MARYLAND, DEPARTMENT OF THE ENVIRONMENT, COMPLIANCE INSPECTORS.

I HEREBY CERTIFY THAT DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN OF EROSION AND SEDIMENT CONTROL.

_____ DATE

NICK BISHOP, P.E., SENIOR PROJECT MANAGER
EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200
DOVER, DE 19901
PHONE - (302) 222-5734

EROSION & SEDIMENT CONTROL GENERAL NOTES

REVISIONS

NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	N/A
DESIGN/CHECK BY:	JTH/CWB	SHEET:	2 OF 13

STANDARD EROSION AND SEDIMENT CONTROL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) SEDIMENT CONTROL INSPECTOR AT 410-901-4020 AND WICOMICO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) AT 410-548-4812 AT LEAST 48 HOURS PRIOR TO COMMENCING ANY LAND DISTURBING ACTIVITIES AND, UNLESS WAIVED BY THE SEDIMENT CONTROL INSPECTOR, SHALL BE REQUIRED TO HOLD A PRE-CONSTRUCTION MEETING AT THE PROJECT SITE. THE CONTRACTOR MUST PROVIDE THE NAME OF THE PERSON ON THE SITE WHO IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES AND A COPY OF THEIR GREEN CARD TO THE SEDIMENT CONTROL INSPECTOR.
2. ALL PROJECTS WITH CONSTRUCTION ACTIVITIES DISTURBING 1 ACRE OR MORE ARE REQUIRED TO SUBMIT A GENERAL PERMIT (NOI) TO MDE TO COMPLY WITH THE GENERAL PERMIT FOR CONSTRUCTION ACTIVITY FOR STORMWATER DISCHARGES. THE GENERAL PERMIT (NOI) MUST BE APPROVED PRIOR TO DISTURBANCE ACTIVITIES. TO OBTAIN A GENERAL PERMIT (NOI) FORM, CONTACT THE PERMITS COORDINATOR AT THE MDE COMPLIANCE PROGRAM AT 410-537-3510.
3. THE LIMIT OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO THE PRE-CONSTRUCTION MEETING AND ANY GRADING ACTIVITIES TO ENSURE COMPLIANCE WITH THE APPROVED PLAN.
4. THE APPROVED EROSION AND SEDIMENT CONTROL PLAN MUST BE KEPT AT THE PROJECT SITE.
5. THE WICOMICO SOIL CONSERVATION DISTRICT (WSCD) RESERVES THE RIGHT TO MODIFY THE EROSION AND SEDIMENT CONTROL PLANS.
6. THE WSCD MAY REVOKE THE APPROVAL OF THE EROSION AND SEDIMENT CONTROL PLAN IF WORK PERFORMED AT THE PROJECT SITE DOES NOT CONFORM TO THE PROVISIONS OF THE GRADING PERMIT, TO THE APPROVED PLAN OR TO ANY WRITTEN INSTRUCTIONS FROM MDE, WICOMICO COUNTY DPW OR THE WSCD.
7. THE CONTRACTOR MUST REQUEST THAT THE SEDIMENT CONTROL INSPECTOR APPROVE WORK COMPLETED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, THE GRADING OR BUILDING PERMIT AND THE WICOMICO COUNTY EROSION AND SEDIMENT CONTROL ORDINANCE AT THE FOLLOWING POINTS OF PROJECT DEVELOPMENT:
   A. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROL MEASURES BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY MDE IS MADE.
   B. PRIOR TO REMOVAL OR MODIFICATION OF ANY SEDIMENT CONTROL STRUCTURE(S).
   C. UPON FINAL STABILIZATION OF THE SITE AND PRIOR TO THE REMOVAL OF ANY SEDIMENT CONTROL MEASURES.
8. THE CONTRACTOR SHALL CONSTRUCT ALL EROSION AND SEDIMENT CONTROL MEASURES PER THE APPROVED PLAN AND CONSTRUCTION SEQUENCE AND SHALL HAVE THEM INSPECTED AND APPROVED BY THE SEDIMENT CONTROL INSPECTOR PRIOR TO BEGINNING ANY OTHER LAND DISTURBANCES.
9. THE CONTRACTOR SHALL ENSURE THAT ALL RUNOFF FROM DISTURBED AREAS IS DIRECTED TO THE SEDIMENT CONTROL DEVICES AND SHALL NOT REMOVE ANY EROSION OR SEDIMENT CONTROL MEASURE WITHOUT PRIOR PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR.
10. THE FOLLOWING MINOR PLAN MODIFICATIONS MAY BE APPROVED BY THE SEDIMENT CONTROL INSPECTOR IN THE FIELD:
    A. SEDIMENT CONTROL STRUCTURES (EXCEPT BASINS AND TRAPS) MAY BE MOVED TO MEET THE EXISTING CONTOURS AND FIELD CONDITIONS, WHEN MOVING THESE STRUCTURES WOULD HAVE NO IMPACT ON THEIR FUNCTION OR DESIGN CRITERIA. SUBSTITUTION OF PERIMETER CONTROL MEASURES MAY BE MADE PROVIDED THE MEASURE SUBSTITUTED IS EQUIVALENT (I.E., SILT FENCE FOR STRAW BALES) OR IS AN UPGRADE OF THE ORIGINAL MEASURE (I.E., SILT FENCE TO A PERIMETER BERM WITH PROPERLY SIZED OUTLET).
    B. ADDITION AND EXTENSION OF PERIMETER CONTROLS (INCLUDING STONE CONSTRUCTION ENTRANCES) MAY BE MADE TO MEET FIELD CONDITIONS. ANY MODIFICATIONS TO THE PLAN WHICH ARE NOT LISTED ABOVE REQUIRE THE PLAN TO BE SUBMITTED TO THE WSCD FOR REVIEW AND APPROVAL.
11. THE CONTRACTOR SHALL PROTECT ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS TO PREVENT THE DEPOSITION OF MATERIALS ONTO PUBLIC ROADS. ALL MATERIALS DEPOSITED ONTO PUBLIC ROADS SHALL BE REMOVED IMMEDIATELY.
12. ON-SITE TEMPORARY STOCKPILE AREAS MUST BE PLACED AS SHOWN ON THE APPROVED PLAN. IF THE CONSTRUCTION SCHEDULE IS TO EXCEED 3 DAYS, THE STOCKPILE AREAS MUST BE STABILIZED. STOCKPILE AREAS SHOULD NOT EXCEED FIFTEEN FEET IN HEIGHT. IF A STOCKPILE IS TO EXCEED FIFTEEN FEET IN HEIGHT, IT MUST BE SHOWN ON THE PLAN TO BE TERRACED WITH PIPE SLOPE DRAINS INSTALLED AND APPROVED BY WSCD. UPON THE COMPLETION OF THE USE OF THE STOCKPILE AREA, EXISTING GROUND SURFACES SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS AND PERMANENTLY STABILIZED.
13. VARIOUS STEPS IN THE SEQUENCE OF CONSTRUCTION MAY REQUIRE THE CONTRACTOR TO REMOVE EXCESS EXCAVATED MATERIAL TO AN APPROVED LOCATION OR TO IMPORT MATERIAL FROM AN APPROVED LOCATION. FOR PURPOSES OF THIS PLAN, AN APPROVED LOCATION SHALL BE ONE WHICH IS OPERATING UNDER AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AND AN ACTIVE GRADING PERMIT AT THE TIME OF CONSTRUCTION.
14. THE CONTRACTOR SHALL INSPECT DAILY AND MAINTAIN CONTINUOUSLY IN AN EFFECTIVE OPERATING CONDITION ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL SUCH TIME AS THEY ARE REMOVED WITH PRIOR PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR.
15. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
    A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES EQUAL TO OR GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1),
    B. SEVEN (7) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE. THE ABOVE REQUIREMENTS DO NOT APPLY TO THOSE AREAS WHICH ARE SHOWN ON THE PLAN AND ARE CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS ON WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED OR TO INTERIOR AREAS OF A SURFACE MINE SITE WHERE THE STABILIZATION MATERIAL WOULD CONTAMINATE THE RECOVERABLE RESOURCE. MAINTENANCE SHALL BE PERFORMED AS NECESSARY TO ENSURE THAT THE STABILIZED AREAS CONTINUOUSLY MEET THE APPROPRIATE REQUIREMENTS OF THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.
16. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL THE ENTIRE CONTRIBUTING AREA TO THE PRACTICE HAS BEEN PERMANENTLY STABILIZED AND MEETS THE SATISFACTION OF THE SEDIMENT CONTROL INSPECTOR. SEDIMENT CONTROLS MAY ONLY BE REMOVED WITH THE AUTHORIZATION OF THE SEDIMENT CONTROL INSPECTOR.
17. ALL AREAS DISTURBED BY THE REMOVAL OF SEDIMENT CONTROL DEVICES MUST BE IMMEDIATELY STABILIZED.
18. SURFACE DRAINAGE FLOWS OVER UNSTABILIZED CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER PREVENTING DRAINAGE FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING PROTECTIVE DEVICES TO CONVEY THE WATER DOWNSLOPE WITHOUT CAUSING EROSION. DIKES SHALL BE INSTALLED AND MAINTAINED AT THE TOP OF CUT OR FILL SLOPES UNTIL THE SLOPE AND DRAINAGE AREA TO IT ARE FULLY STABILIZED, AT WHICH TIME THE DIKES MUST BE REMOVED AND FINAL GRADING DONE TO PROMOTE SHEET FLOW DRAINAGE. EROSION CONTROL MEASURES MUST BE IMPLEMENTED AT POINTS OF CONCENTRATED FLOW WHERE EROSION IS LIKELY TO OCCUR.
19. NO PERMANENT CUT OR FILL SLOPE WITH A GRADIENT STEEPER THAN 3:1 WILL BE PERMITTED IN LAWN MAINTENANCE AREAS. A SLOPE GRADIENT OF UP TO 2:1 WILL BE PERMITTED IN NON-MAINTENANCE AREAS PROVIDED THAT THOSE AREAS ARE INDICATED ON THE EROSION AND SEDIMENT CONTROL PLANS WITH A LOW-MAINTENANCE GROUND COVER SPECIFIED FOR PERMANENT STABILIZATION. SLOPE GRADIENT STEEPER THAN 2:1 WILL NOT BE PERMITTED WITH VEGETATION STABILIZATION.
20. ALL FLOW LINES ARE TO BE STABILIZED WITH SOD OR SEED WITH EROSION CONTROL MATTING TO A DEPTH OF FLOW OF 1 FOOT.
21. SEDIMENT TRAPS OR BASINS ARE NOT PERMITTED WITHIN 20 FEET OF A FOUNDATION WHICH IS EXISTING OR UNDER CONSTRUCTION. NO STRUCTURE MAY BE CONSTRUCTED WITHIN 20 FEET OF AN ACTIVE SEDIMENT TRAP OR BASIN.
22. TEMPORARY SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE CLEANED OUT AND RESTORED TO THE ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO ONE HALF (1/2) THE WET STORAGE DEPTH OF THE TRAP OR BASIN.
23. SEDIMENT REMOVED FROM TRAPS (AND BASINS) SHALL BE PLACED AND STABILIZED IN APPROVED AREAS, BUT NOT WITHIN A FLOODPLAIN, WETLAND OR FOREST RETENTION AREA. WHEN PUMPING SEDIMENT LADEN WATER, THE DISCHARGE MUST BE DIRECTED TO A SEDIMENT TRAPPING DEVICE PRIOR TO RELEASE FROM THE SITE.
24. FOR APPROVED DEWATERING STRATEGIES FOR TRAPS AND BASINS, SEE SECTION F OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. PUMPING SEDIMENT LADEN WATER INTO THE WATERS OF THE STATE WITHOUT FILTRATION IS STRICTLY FORBIDDEN.
25. SEDIMENT CONTROL DEVICES PLACED IN INFILTRATION AREAS MUST HAVE BOTTOM ELEVATIONS AT LEAST TWO (2) FEET HIGHER THAN THE FINISHED GRADE ELEVATION OF THE INFILTRATION PRACTICE. WHEN CONVERTING A SEDIMENT TRAP TO AN INFILTRATION DEVICE, ALL ACCUMULATED SEDIMENT MUST BE REMOVED AND DISPOSED OF PRIOR TO FINAL GRADING OF INFILTRATION DEVICE.
26. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO ANY CONSTRUCTION ACTIVITIES. FURTHER, THE ISSUANCE OF A GRADING PERMIT DOES NOT RELIEVE THE DEVELOPER OF THE RESPONSIBILITY TO OBTAIN ANY ADDITIONAL LOCAL, STATE OR FEDERAL PERMITS.
27. ALL STABILIZATION OF SLOPES 3:1 OR GREATER AS WELL AS ANY FLOW CHANNELS MUST BE STABILIZED WITH EROSION CONTROL MATTING UNLESS OTHERWISE NOTED.

REQUIREMENTS FOR EMERGENCY RESPONSE PLANNING & WORK SITE FIRE PROTECTION

9.1 EMERGENCY RESPONSE
- CONTRACTORS MUST:
- KNOW THE STREET ADDRESS OR WORK OR OTHER IDENTIFIABLE POINT OF REFERENCE FOR THE WORK SITE.
- KNOW THE CONTACT PROCEDURES OR THE NEAREST EMERGENCY SERVICE DEPARTMENT SERVING THE WORK SITE.
- HAVE A WORKING MEANS OF MAKING CONTACT WITH EMERGENCY SERVICES READILY AVAILABLE ON-SITE.
- ESTABLISH A CLEAR EMERGENCY ALARM/SIGNAL FOR WORKERS AT THE WORK SITE, IDENTIFY A PLANNED EVACUATION ROUTE, AND A DESIGNATED A REASSEMBLY POINT.

9.2 FIRE EXTINGUISHERS
- CONTRACTORS MUST:
- HAVE THE APPROPRIATE TYPE OF DEVICE AVAILABLE ON-SITE FOR THE TYPE WORK BEING PERFORMED.
- HAVE AN APPROPRIATE NUMBER OF DEVICES AVAILABLE FOR THE VOLUME OF WORK BEING PERFORMED.
- ENSURE WORKERS KNOW WHERE THE NEAREST FIRE EXTINGUISHER IS LOCATED, HOW TO OPERATE IT, AND WHAT TYPE OF FIRE ON WHICH IT SHOULD BE USED.

9.3 COMBUSTIBLES
- COMBUSTIBLE MATERIAL UNDER OR NEAR WELDING, CUTTING OR GRINDING OPERATIONS MUST BE MOVED A SAFE DISTANCE AWAY, OR COVERED WITH FIRE RETARDANT MATERIAL. WHERE THIS IS NOT POSSIBLE, ALL SPARKS AND SLAG MUST BE CONTAINED IN AN APPROVED SPARK CATCHER.
- WORK AREAS MUST BE ORDERLY AND MAINTAINED FREE OF TRASH AND SCRAP MATERIAL AS NECESSARY TO HELP PREVENT FIRES.

9.4 FLAMMABLE LIQUIDS & REFUELING
- SMOKING OR OPEN FLAMES SHALL NOT BE ALLOWED WITHIN 25 FEET OF AREAS WHERE FUEL IS BEING DISPENSED.
- EQUIPMENT MUST NOT BE REFUELED WHILE RUNNING OR WHEN HOT.
- IF NECESSARY TO TRANSPORT GASOLINE OR OTHER FLAMMABLE LIQUIDS, CONTRACTORS MUST:
  - USE SAFETY CANS BEARING UNDERWRITERS LABORATORIES OR FACTORY MUTUAL LOGOS.
  - HAVE A FIRE EXTINGUISHER READILY AVAILABLE.
  - MAINTAIN VENTILATION AND
  - ENSURE PROTECTION AGAINST FIRE.

9.5 FLAMMABLE GAS USAGE & HANDLING
- THE USE OF MATCHES, CIGARETTE LIGHTERS, OR OPEN FLAMES TO LIGHT TORCHES IS PROHIBITED. OPERATOR SHOULD LIGHT HIS OWN TORCH USING ONLY A FRICTION SPARK LIGHTER OR HOT METAL.
- GAS CYLINDER VALVES AND REGULATORS MUST BE CLOSED WHEN MOVING EQUIPMENT FROM ONE AREA OF THE WORK SITE TO ANOTHER, OR WHEN LEAVING EQUIPMENT UNATTENDED.
- THROWING, DROPPING OR ROUGHLY HANDLING LOADED OR EMPTY OXYGEN, ACETYLENE OR OTHER GAS CYLINDERS, OR CARBOYS, IS PROHIBITED.
- HOISTING GAS CYLINDERS WITHOUT CRADLE IS PROHIBITED. GAS CYLINDERS MUST NOT BE HANDLED BY A MAGNET.

SOILS DATA TABLE

SYMBOL	SOIL SERIES	SLOPE	NATURAL DRAINAGE CLASS	HYDROLOGIC CLASSIFICATION	HYDRIC	DEPTH TO WATER TABLE	WATER HOLDING CAPACITY
PrA	PEPPERBOX-ROCKAWALKIN COMPLEX	0-2%	MODERATELY WELL DRAINED	A	NO	~ 20" - 40"	8.2
PrB	PEPPERBOX-ROCKAWALKIN COMPLEX	2-5%	MODERATELY WELL DRAINED	A	NO	~ 20" - 40"	8.2
LfA	LENNI SANDY LOAM	0-2%	POORLY DRAINED	D	YES	MORE THAN 80"	7.2
RkB	ROCKAWALKIN LOAMY SAND	2-5%	MODERATELY WELL DRAINED	A	NO	~ 20" - 40"	5.0
KfA	KEYPORT FINE SANDY LOAM	0-2%	MODERATELY WELL DRAINED	D	NO	MORE THAN 80"	9.5
LgA	LENNI LOAM	0-2%	POORLY DRAINED	D	YES	MORE THAN 80"	8.2

TEMPORARY SEEDING SUMMARY

NO.	PLANT SPECIES	SEEDING RATE [1] LBS/AC	SEEDING RATE [1] LBS/1000 SF	SEEDING DEPTH [2] (INCHES)	SEEDING DATES BY PLANT HARDINESS ZONE [3] 7b	FERTILIZER RATE (10-20-20)	LIME RATE
	COOL-SEASON GRASSES					436 LBS./AC. (10 LB/ 1000 SF)	2 TONS/AC. (90 LB/ 1000 SF)
	ANNUAL RYEGRASS	40	1.0	0.5	FEB. 15 TO APRIL 30 | AUG. 15 TO NOV. 30		
	BARLEY	96	2.2	1.0	FEB. 15 TO APRIL 30 | AUG. 15 TO NOV. 30		
	OATS	72	1.7	1.0	FEB. 15 TO APRIL 30 | AUG. 15 TO NOV. 30		
	WHEAT	120	2.8	1.0	FEB. 15 TO APRIL 30 | AUG. 15 TO NOV. 30		
	CEREAL RYE	112	2.8	1.0	FEB. 15 TO APRIL 30 | AUG. 15 TO NOV. 30		
	WARM-SEASON GRASSES						
	FOXTAIL MILLET	30	0.7	0.5	MAY 1 TO AUG. 14		
	PEARL MILLET	20	0.5	0.5	MAY 1 TO AUG. 14		

PERMANENT SEEDING SUMMARY

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES*	SEEDING DEPTHS	FERTILIZER RATE (10-20-20) N	P205	K20	LIME RATE
6	TALL FESCUE	40 lbs/ac	FEB. 15 TO APRIL 30 AND ** AUG. 15 TO OCT. 31	1/4-1/2 IN.	45 LBS./AC. (1.0 LB/ 1000 L.F.)	90 LBS./AC. (2 LB/ 1000 L.F.)	90 LBS./AC. (2 LB/ 100 L.F.)	2 TONS/AC. (90 LB/ 1000 L.F.)
	PERENNIAL RYEGRASS	25 lbs/ac 0.57 lbs/1000 sf		1/4-1/2 IN.				
	WHITE CLOVER	5 lbs/ac 0.11 lbs/1000 sf		1/4-1/2 IN.				
7	CREEPING FESCUE	60 lbs/ac 1.38 lbs/1000 sf	FEB. 15 TO APRIL 30 AND ** AUG. 15 TO OCT. 31	1/4-1/2 IN.	45 LBS./AC. (1.0 LB/ 1000 L.F.)	90 LBS./AC. (2 LB/ 1000 L.F.)	90 LBS./AC. (2 LB/ 100 L.F.)	2 TONS/AC. (90 LB/ 1000 L.F.)
	KENTUCKY BLUEGRASS	15 lbs/ac 0.34 lbs/1000 sf		1/4-1/2 IN.				

*FOR STANDARD AND SPECIFICATION FOR VEGETATIVE STABILIZATION, SEE SECTION B-4 IN THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL."

**THE PLANTING DATES LISTED ARE AVERAGES FOR EACH ZONE. THESE DATES MAY REQUIRE ADJUSTMENT TO REFLECT LOCAL CONDITIONS, ESPECIALLY NEAR THE BOUNDARIES OF THE ZONES. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM TABLE B.1 TEMPORARY SEEDING FOR SITE STABILIZATION AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.

NOTES:
1. SEEDING RATES FOR THE WARM-SEASON GRASSES ARE IN POUNDS OF PURE LIVE SEED (PLS). ACTUAL PLANTING RATES SHALL BE ADJUSTED TO REFLECT PERCENT SEED GERMINATION AND PURITY, AS TESTED. ADJUSTMENTS ARE USUALLY NOT NEEDED FOR THE COOL-SEASON GRASSES, LEGUMES, OR WILDFLOWERS. ALL LEGUME SEEDS MUST BE INOCULATED BEFORE PLANTING WITH THE APPROPRIATE RHIZOBIUM BACTERIA. WHEN FEASIBLE, HARD-SEASON LEGUMES SHOULD BE SCARIFIED TO IMPROVE GERMINATION.
2. THE MAXIMUM HEIGHT IS 4-6 INCHES FOR SEED MIXTURE NO. 6.
3. THE MAINTENANCE LEVEL FOR SEED MIXTURE NO. 6 IS "C" - PERIODIC MOWING (EVERY 7-14 DAYS), OCCASIONAL FERTILIZATION AND LIME.

EROSION & SEDIMENT CONTROL GENERAL NOTES

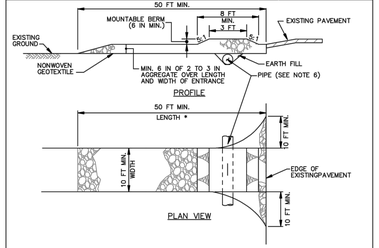
REVISIONS			
NO.	DATE	DESCRIPTION	BY

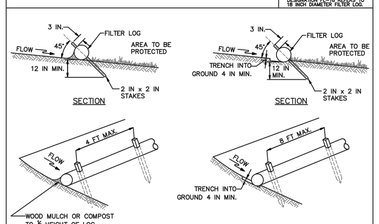
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

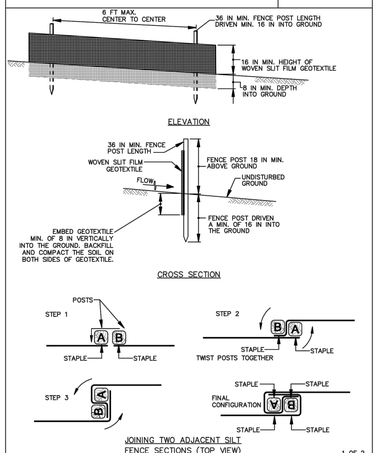
EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

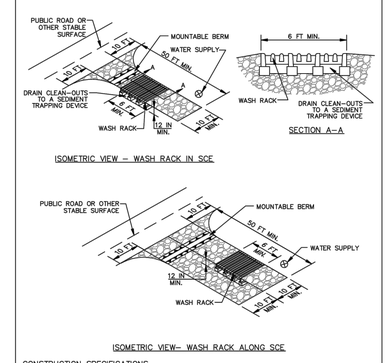
10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

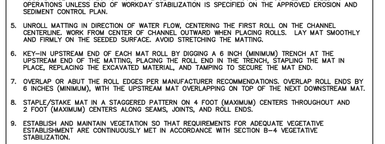
ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	N/A
DESIGN/CHECK BY:	JTH/CWB	SHEET:	3 OF 13

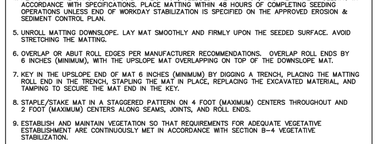


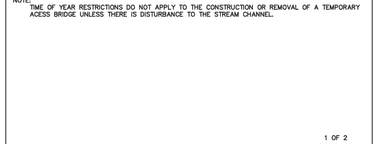


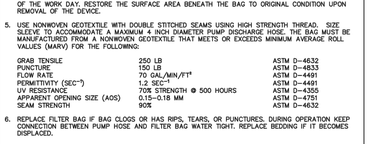


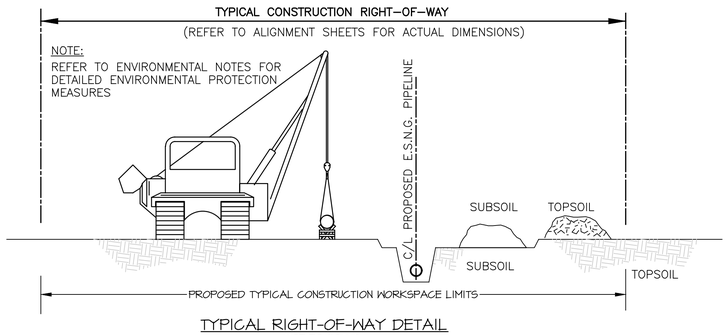


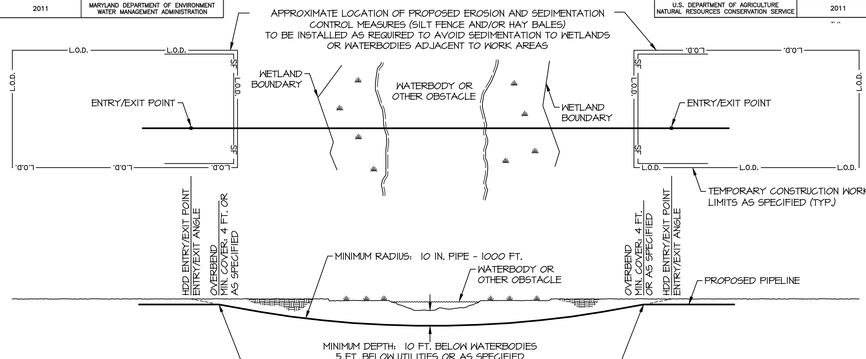












DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL
SCE

CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H–1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL
FL–18
DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-6 FILTER LOG

STANDARD SYMBOL
FL–18
DESIGNATION FL–18 REFERS TO 18 INCH DIAMETER FILTER LOG.

CONSTRUCTION SPECIFICATIONS

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H–1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF ½ THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN. REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
SF

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-1 SILT FENCE

STANDARD SYMBOL
SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H–1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID–SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H–1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-2 WASH RACK OPTION

STANDARD SYMBOL
WR

CONSTRUCTION SPECIFICATIONS

1. USE A WASH RACK DESIGNED AND CONSTRUCTED/MANUFACTURED FOR THE ANTICIPATED TRAFFIC LOADS. CONCRETE, STEEL, OR OTHER MATERIALS ARE ACCEPTABLE. PRE–FABRICATED UNITS SUCH AS CATTLE GUARDS ARE ACCEPTABLE. USE MINIMUM DIMENSION OF 6 FEET x 10 FEET. ORIENT DIRECTION OF RIBS AS SHOWN ON THE DETAIL.
2. INSTALL PRIOR TO, ALONG SIDE OF, OR AS PART OF THE SCE.
3. DIRECT WASH WATER TO AN APPROVED SEDIMENT TRAPPING DEVICE.
4. KEEP AREA UNDER WASH RACK FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, REPAIR OR REPLACE WASH RACK.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-A TEMPORARY SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL
TSSMC – * lb/ft²
(* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTERLINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MAT SMOOTHLY AND FIRMLY ON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. KEY–IN UPSTREAM END OF EACH MAT ROLL BY DIGGING A 6 INCH (MINIMUM) TRENCH AT THE UPSTREAM END OF THE MATTING, PLACING THE ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END.
7. OVERLAP OR ABUT THE ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL
TSSMS – * lb/ft²
(* INCLUDE SHEAR STRESS)

CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN–MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON–LEACHING AND NON–TOXIC TO VEGETATION AND SEED GERMINATION AND NON–INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH–SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL
TB

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL
TB

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
2. PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
3. CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
4. USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
5. SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
6. SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
7. INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
8. ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
9. AREAS DISTURBED DURING BRIDGE INSTALLATION AND\OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
10. STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B–4 VEGETATIVE STABILIZATION.
11. AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL F-4 FILTER BAG

STANDARD SYMBOL
☒FB

CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D–4632
PUNCTURE	150 LB	ASTM D–4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D–4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D–4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D–4355
APPARENT OPENING SIZE (AOS)	0.15–0.18 MM	ASTM D–4751
SEAM STRENGTH	90%	ASTM D–4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

NOTE:
REFER TO ENVIRONMENTAL NOTES FOR DETAILED ENVIRONMENTAL PROTECTION MEASURES

TYPICAL RIGHT-OF-WAY DETAIL

NOT TO SCALE

NOTES:

1. RIGHT OF WAY CONFIGURATION VARIES, SEE PLAN AND PROFILE SHEETS
2. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE FOR STAGING, CROSSINGS AND PIPE STORAGE.

TYPICAL HORIZONTAL DIRECTIONAL DRILL DETAIL

NOT TO SCALE

NOTES:

THE CONTRACTOR SHALL PERFORM SOIL BORES AND/OR TEST PITS AS REQUIRED TO ASSURE THE FEASIBILITY OF DRILLING OPERATIONS. ONCE FEASIBILITY HAS BEEN DETERMINED, THE CONTRACTOR ASSUMES RESPONSIBILITY FOR ANY ADDITIONAL EXPENSES DUE TO UNFORESEEN SOIL OR BEDROCK CONDITIONS.

NO WETLAND OR WATERBODY SHALL BE IMPACTED BY A HORIZONTAL DIRECTIONAL DRILLING (HDD) OPERATION.

ALL DRILLING MUD IS TO BE CONTAINED DURING CONSTRUCTION WITH BERMS, MUD PITS AND EROSION AND SEDIMENTATION CONTROLS DEEMED APPROPRIATE FOR THE SITE. ALL DRILLING MUD SHALL BE PROPERLY DISPOSED OF AT AN APPROVED FACILITY.

THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING TRAFFIC CONTROL DEVICES FOR THE MAINTENANCE AND PROTECTION OF TRAFFIC, WHILE SEGREGATING TRAVEL LANES FROM WORK AREAS UTILIZED FOR HDD OPERATIONS.

EROSION & SEDIMENT CONTROL DETAILS

REVISIONS

NO.	DATE	DESCRIPTION	BY

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399

MRAGTA.COM

EASTERN SHORE
NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	N/A
DESIGN/CHECK BY:	JTH/CWB	SHEET:	4 OF 13

SITE RESTORATION NOTES

STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

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.
2. 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:
      I. 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.
   B. 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.

B. TOPSOILING

1. 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.
2. 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.
3. 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 1½ 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 OTHERS 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 TOPSOIL.
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 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. 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.
3. 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.
4. 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 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

A. SEEDING

1. SPECIFICATIONS
   A. 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 ¼ INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
      II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

SITE RESTORATION NOTES (CONT.)

B. MULCHING

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 EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS 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.

STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE ARE FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND TEMPORARY SEEDING SPECIFICATIONS WITHIN THESE PLANS.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

RESIDENTIAL/COMMERCIAL RESTORATION

1. ESNG WILL MAKE EVERY EFFORT TO ENSURE THAT ALL CONSTRUCTION ACTIVITIES MINIMIZE ADVERSE IMPACTS TO RESIDENCES AND BUSINESSES. CLEANUP SHALL BE QUICK AND THOROUGH.
2. THROUGHOUT CONSTRUCTION, TRAFFIC LANES AND ACCESS TO HOMES WILL BE MAINTAINED EXCEPT FOR THE BRIEF PERIODS ESSENTIAL FOR LAYING THE NEW PIPELINE.
3. ESNG MAY USE TECHNIQUES SUCH AS STOVEPIPE AND DRAG SECTION CONSTRUCTION IN ORDER TO MINIMIZE THE IMPACTS OF CONSTRUCTION IN RESIDENTIAL AND COMMERCIAL AREAS ON A SITE-SPECIFIC BASIS.
4. THE MIXING OF TOPSOIL WITH SUBSOIL WILL BE PREVENTED BY STRIPPING AND SEGREGATING TOPSOIL FROM THE FULL WORK AREA IN RESIDENTIAL AND COMMERCIAL AREAS.
5. IN RESIDENTIAL AND COMMERCIAL AREAS, TOPSOIL REPLACEMENT (I.E., IMPORTATION OF TOPSOIL) MAY BE EMPLOYED AS AN ALTERNATIVE TO TOPSOIL SEGREGATION. WHERE TOPSOIL SEGREGATION IS CONDUCTED, ESNG WILL MAINTAIN SEPARATION OF TOPSOIL AND SUBSOIL THROUGHOUT ALL CONSTRUCTION ACTIVITIES. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE OR FILLING SANDBAGS.
6. THE SUBSOIL SHALL BE DE-COMPACTED PRIOR TO REPLACEMENT OF THE SEGREGATED TOPSOIL.
7. DURING RESTORATION, THE FILTER LOGS WILL BE REMOVED AND REPLACED WITH SILT FENCE WHERE INDICATED ON THE PLANS ALONG THE LON SPOTS OF ALL RESIDENTIAL AREAS.
8. IMMEDIATELY AFTER BACKFILLING, RESIDENTIAL AND COMMERCIAL AREAS WILL BE RESTORED AND ALL CONSTRUCTION DEBRIS WILL BE REMOVED. LAWNS WILL BE RAKED, TOPSOIL ADDED AS NECESSARY AND LAWNS RESTORED PER AGREEMENTS WITH LANDOWNERS. ORNAMENTAL SHRUBS WILL BE REPLACED WHERE POSSIBLE. CONTRACTORS WILL RESTORE FENCES, MAILBOXES AND OTHER STRUCTURES REMOVED DURING CONSTRUCTION.
9. LAWN AREAS SHALL BE SEEDED AS PER AGREEMENTS WITH LANDOWNERS, OTHERWISE SEEDING MIXTURES SHALL CONSIST OF THE FOLLOWING SPECIES: TALL FESCUE 85% AND ANNUAL RYEGRASS 15%. RECOMMENDED SEED MIXTURE 6 & 7 FROM TABLE PROVIDED.

ROADWAY CROSSING RESTORATION

1. ROCK CONSTRUCTION ENTRANCES SHALL BE USED TO REDUCE OFF-SITE SEDIMENTATION BY ELIMINATING THE TRACKING OF EXCESS SOIL ONTO PAVED PUBLIC ROADWAYS.
2. ESNG SHALL STRIP AND SEGREGATE TOPSOIL FOR ROCK ENTRANCES IN AGRICULTURAL (CROP AND HAY/PASTURE) LANDS.
3. IF CRUSHED STONE ACCESS PADS ARE USED IN RESIDENTIAL OR ACTIVE AGRICULTURAL AREAS, ESNG SHALL PLACE THE STONE ON DURABLE SYNTHETIC FABRIC TO FACILITATE REMOVAL.
4. CLEANUP OPERATIONS SHALL COMMENCE IMMEDIATELY FOLLOWING BACKFILL OPERATIONS.
5. SEEDING OF ROADWAY SHOULDERS SHALL CONSIST OF THE FOLLOWING SPECIES UNLESS STATE OR LOCAL ROADWAY AUTHORITIES REQUEST OTHERWISE: FINE FESCUE 77% AND ANNUAL RYEGRASS 23%. RECOMMENDED SEED MIXTURE 6 & 7 FROM TABLE PROVIDED.
6. MONITORING WILL BE PERFORMED FOR NOT LESS THAN TWO GROWING SEASONS FOLLOWING THE PROJECTS COMPLETION OF INITIAL RESTORATION, OR EXTENDED UNTIL RESTORATION IS DEEMED SUCCESSFUL.
7. REVEGETATION SHALL BE CONSIDERED SUCCESSFUL WHEN THE VEGETATION COVER IS SUFFICIENT TO PREVENT EROSION OF SOILS ON THE DISTURBED RIGHT-OF-WAY AND DENSITY AND COVER ARE SIMILAR TO THAT IN ADJACENT UNDISTURBED AREAS. SUFFICIENT COVERAGE FOR UPLAND AREAS IS DEFINED WHEN VEGETATION HAS A UNIFORM 70 PERCENT VEGETATIVE COVERAGE.
8. RESTORATION SHALL BE CONSIDERED SUCCESSFUL WHEN THE RIGHT-OF-WAY SURFACE CONDITION IS SIMILAR TO ADJACENT UNDISTURBED LANDS, CONSTRUCTION DEBRIS IS REMOVED, REVEGETATION IS SUCCESSFUL AND PROPER DRAINAGE HAS BEEN RESTORED.

SITE RESTORATION NOTES (CONT.)

STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

A. SEED MIXTURES

1. GENERAL USE
   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 SUMMARY IS TO BE PLACED ON THE PLAN.
   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 3½ 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.
2. TURFGRASS MIXTURES
   A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
   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.
      I. 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 THREE 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 45 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. SEEDING RATE: 1½ TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

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

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
   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)

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 SEEDBED. REMOVE STONES AND DEBRIS OVER 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (½ 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, OR ON ADVERSE SITES.

STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

1. 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 SEEDINGS.
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.

SITE RESTORATION

REVISIONS			
NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	5 OF 13

MARYLAND TIE-IN

REVISIONS			
NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399

MRAGTA.COM

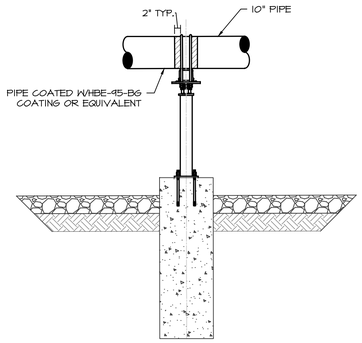
EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

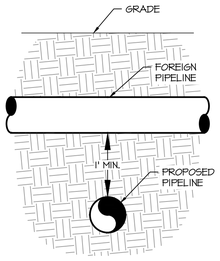
ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	6 OF 13

COATING APPLICATION FOR R95, TWO PART EPOXY COATING, OR AS APPROVED BY ESNG

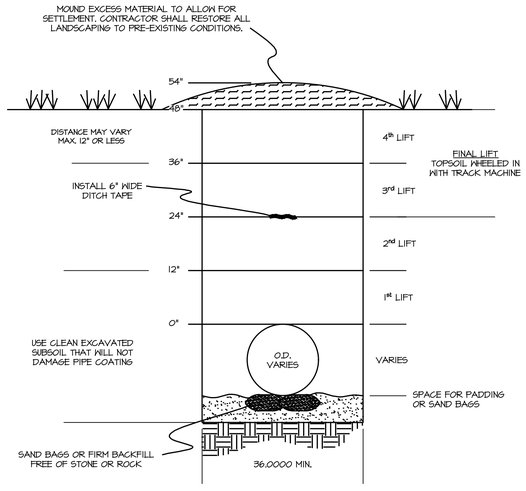
1. VERIFY PIPE TEMPERATURE IS AT LEAST 5°F ABOVE THE DEW POINT BEFORE CLEANING OF PIPE . (IF APPLICABLE).
2. POWER BRUSH OR ABRASIVE BLAST PIPE UNTIL FREE OF RUST, DIRT, AND OTHER FOREIGN MATTER (NEAR WHITE; SSPC-SP-10; NACE No.2 FINISH).
3. CLEAN TOTAL DESIRED SECTION OF PIPE THAT WILL BE COATED.
4. APPLY R95, TWO PART EPOXY COATING ON ALL SIDES OF PIPE SUPPORT 2" TYPICAL.
5. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURE RECOMMENDATION.



PIPE SUPPORT WITH COATING DETAIL
NOT TO SCALE

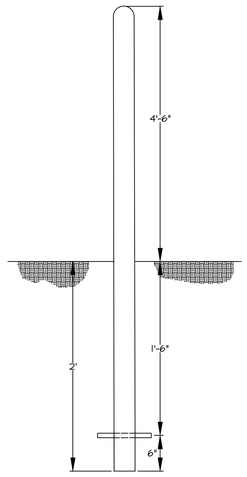


FOREIGN LINE CROSSING DETAIL
NOT TO SCALE



NOTE: BELL HOLES AND BORE PITS TO BE POWER TAMPED TO TOP OF PIPE OR ANY AREAS WHERE PIPE IS SUSPENDED.

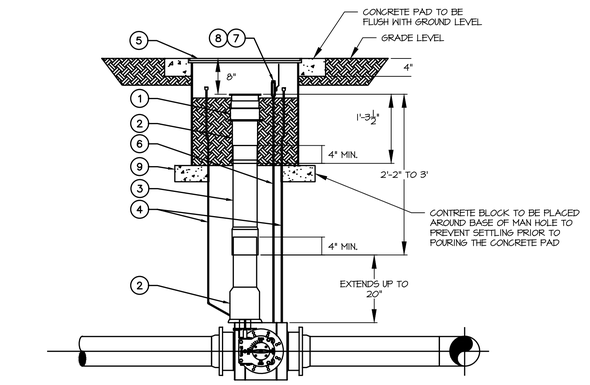
TRENCH BACK FILL DETAIL
N.T.S.



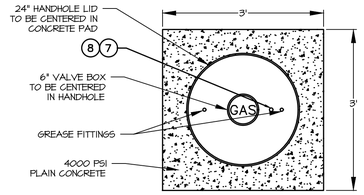
NOTES:

1. COMPANY TO FURNISH MARKER POSTS, TYPICALLY 3-1/2" x 6'-6" POLY PIPE WITH 3/4" x 9" ANCHOR BAR 6" FROM BOTTOM.
2. POLY PIPE TO BE PLACED 2'-0" UNDER FINISH GRADE WITH 4'-6" OF POLY PIPE EXPOSED ABOVE GROUND.
3. LOCATION OF PIPELINE MARKER POSTS TO BE PROVIDED BY ESNG.
4. PIPE LINE MARKERS SHOULD INCLUDE "CAUTION GAS PIPELINE DO NOT DIG." IN ADDITION THE 811 LOGO AND NUMBER SHOULD BE ABOVE THE EASTERN SHORE NATURAL GAS LOGO.

PIPELINE MARKER POST
NOT TO SCALE

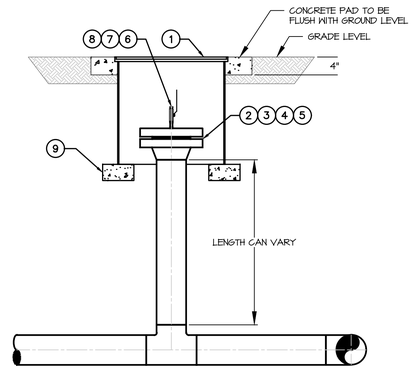


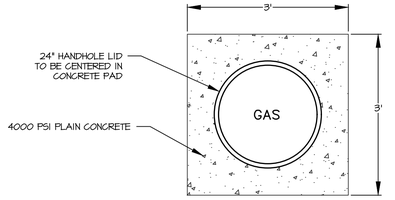
NOTES:
1) MUST HAVE A 4" OVERLAP JOINING EXTENSION WITH VALVE BOX.
2) USE TOP AND BOTTOM OF VALVE BOX FIRST. IF NOT LONG ENOUGH ADD EXTENSION No. P-65 TO THE MIDDLE OF ORIGINAL VALVE BOX.



VALVE BOX DETAIL

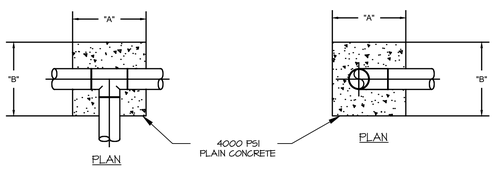
PART #	PART NAME	DESCRIPTION
1	No. P-11B	CAST IRON LID ATTACHED TO No. 8250.
2	No. 8250	6" PLASTIC VALVE BOX. COMES IN TWO PARTS. BELL NUMBER 101.
3	No. P-65	6" PLASTIC VALVE BOX EXTENSION. IF NEEDED. INSTALL INBETWEEN THE TOP AND BOTTOM PIECES OF No. 8250.
4	GREASE FITTINGS	GREASE FITTINGS ATTACHED TO THE VALVE AND EXTENDS INTO THE PEMCO VALVE BOX.
5	PEMCO 24" VALVE BOX	PEMCO 24" X 24" ROUND VALVE BOX.
6	BODY BLEED TUBING	TUBING TIES INTO THE BACK SIDE OF THE VALVE.
7	APOLLO 1/2" BALL VALVE	1/2" BALL VALVE FOR BODY BLEED.
8	1/2" PLUG	1/2" PLUG ATTACTED TO THE BALL VALVE.
9	CONCRETE BLOCK	COMMON: 4" X 8" X 16" OR EQUIVALENT BLOCK

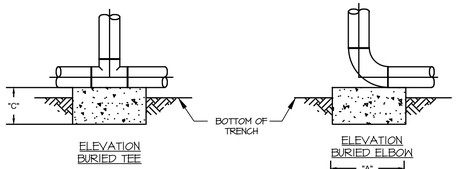


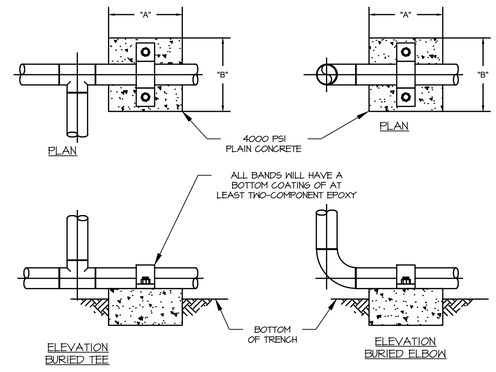


BLOW OFF VALVE BOX DETAIL

PART #	PART NAME	DESCRIPTION
1	PEMCO 24" VALVE BOX	PEMCO 24" X 24" ROUND VALVE BOX.
2	WN FLANGE	WN FLANGE CAN BE UP TO 20".
3	BLIND FLANGE	BLIND FLANGE CAN BE UP TO 20".
4	GASKET	SPIRAL WOUND GASKET CAN BE UP TO 20"
5	STUDS	VARIES BASED ON FLANGE SIZE AND ANSI RATING
6	PIPE NIPPLE	PIPE, NIPPLE, 3" DIAMETER X 3", 0.147" WALL THICKNESS, ASTM A-106 GRADE B
7	APOLLO 1/2" BALL VALVE	1/2" BALL VALVE FOR BODY BLEED.
8	1/2" PLUG	1/2" PLUG ATTACTED TO THE BALL VALVE.
9	CONCRETE BLOCK	COMMON: 4" X 8" X 16" OR EQUIVALENT BLOCK







NOTE: CONTRACTOR TO SUPPLY ALL MATERIAL REQUIRED TO FABRICATE SUPPORTS ON THIS DRAWING.

NOMINAL PIPE SIZE	"A"	"B"	"C"
2"	12"	12"	6"
3"	12"	12"	6"
4"	12"	12"	6"
6"	18"	18"	9"
8"	18"	18"	9"
10"	24"	24"	12"
12"	24"	24"	12"
14"	30"	30"	18"
16"	30"	30"	18"
18"	36"	36"	18"
20"	36"	38"	18"
24"	42"	42"	24"

CONCRETE FOOTER DETAILS
NOT TO SCALE

GENERAL NOTES:

1. CONTRACTOR TO FURNISH ALL MATERIALS.
2. CLEAN, COAT AND WRAP FITTINGS AND PIPE WHICH WILL COME IN CONTACT WITH CONCRETE.
3. PIPE AND FITTINGS SHALL BE WRAPPED WITH "CONWED PIPE SAVER" OR EQUAL POLYETHYLENE MESH.
4. CONCRETE TO BE POURED TO CENTERLINE OF PIPING.
5. NO BACKFILL SHALL BE PLACED ON TOP OF CONCRETE UNTIL THE CONCRETE HAS HAD TIME TO SET UP.
6. BOTTOM OF CONCRETE SHALL BE PLACED ON SOLID FOOTING.
7. RIGID FORM WORK WILL NOT BE REQUIRED.
8. THIS SUPPORT IS NOT DESIGNED NOR INTENDED FOR A THRUST BLOCK.
9. CONTRACTOR TO USE 4000 PSI PLAIN CONCRETE OR "QUIKCRETE".

TIE-IN DETAILS

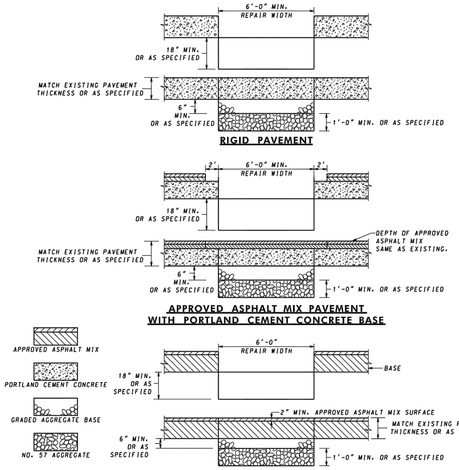
REVISIONS			
NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	7 OF 13



NOTES

1. THIS STANDARD IS TO BE USED IN ACCORDANCE WITH SECTIONS 505 AND 522. THE ROADWAY SHALL BE PATCHED WITH THE SAME TYPE MATERIAL REMOVED UNLESS NOTED IN THE SPECIFICATIONS. PORTLAND CEMENT CONCRETE PAVEMENT REPAIR SHALL BE IN ACCORDANCE WITH STANDARDS 577.02, 577.03, 577.04, 577.05, 577.06, OR 577.10.
2. THE TOP 1 FT. OF THE TRENCH SHALL BE FILLED WITH NO. 57 AGGREGATE. TRENCH TO BE EXTENDED TO DITCH LINE.
3. WHEREVER A TRENCH CROSSES A CONCRETE ROADWAY THAT HAS JOINT INSTALLATIONS THE ENTIRE SLAB BETWEEN THE EDGE OF THE TRENCH AND NEAREST JOINT SHALL BE REMOVED IF THE DISTANCE IS LESS THAN 6 FT.
4. CLEAN AND WET EDGES OF CUT AND SUBBASE BEFORE PLACING CONCRETE. MATERIAL CONFORMING TO SECTION 303, CR-6, NO. 57 AGGREGATE WRAPPED IN SE GEOTEXTILE, CLSM OR CAB.
5. ALL WORK SUCH AS TRENCH BACKFILL, CURING OF CONCRETE, MATERIALS USED, ETC. SHALL BE IN ACCORDANCE WITH SECTIONS 201, 505 AND 522 OF THE SPECIFICATIONS OR AS SPECIFIED IN THE PERMIT.
6. ALL COSTS FOR SAWCUTS, TRENCH EXCAVATION, BACKFILL, APPROVED ASPHALT MIX, CONCRETE, MATERIAL CONFORMING TO SECTION 303, CR-6, NO. 57 AGGREGATE WRAPPED IN SE GEOTEXTILE, CLSM OR CAB, MATERIALS, TOOLS, LABOR AND INCIDENTALS SHALL BE INCLUDED IN THE PRICE OF THE UTILITY ITEMS.
7. CLSM - CONTROLLED LOW STRENGTH MATERIAL.
8. NO. 57 AGGREGATE SHALL BE COMPLETELY WRAPPED IN SE GEOTEXTILE AS DIRECTED BY THE ENGINEER.

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	

APPROVAL SHA REVISIONS		APPROVAL FEDERAL HIGHWAY ADMINISTRATION	
APPROVAL	3-6-86	APPROVAL	3-18-86
REVISED	2-25-16	REVISED	2-23-16
REVISED	10-27-22	REVISED	8-26-22
REVISED		REVISED	

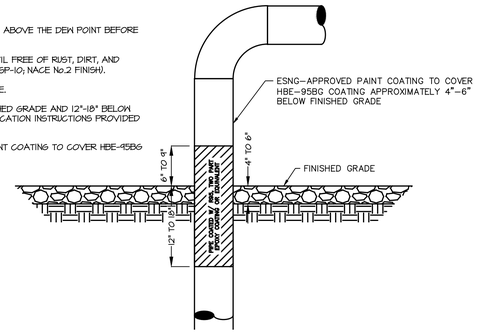
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

REPAIRING PAVEMENT OPENINGS FOR UTILITY TRENCHES

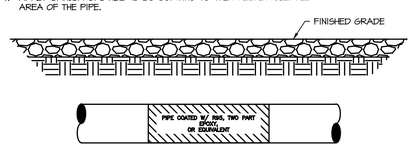
STANDARD NO. MD 578.01

1. VERIFY PIPE TEMPERATURE IS AT LEAST 5° F ABOVE THE DEW POINT BEFORE CLEANING OF PIPE. (IF APPLICABLE).
2. POWER BRUSH OR ABRASIVE BLAST PIPE UNTIL FREE OF RUST, DIRT, AND OTHER FOREIGN MATTER (NEAR WHITE; SSPC-SP-10; NACE No.2 FINISH).
3. CLEAN TOTAL OF 18" TO 27" SECTION OF PIPE.
4. COATING TO BE APPLIED 6"-8" ABOVE FINISHED GRADE AND 12"-18" BELOW FINISHED GRADE. FOLLOW MIXING AND APPLICATION INSTRUCTIONS PROVIDED BY MANUFACTURER.
5. SAFETY WHITE OR COMPANY APPROVED PAINT COATING TO COVER HBE-95BG TO BELOW STONE GRADE



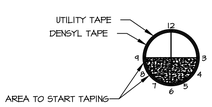
COATING APPLICATION FOR RISER
NOT TO SCALE

1. VERIFY PIPE TEMPERATURE IS AT LEAST 5° F ABOVE THE DEW POINT BEFORE CLEANING OF PIPE. (IF APPLICABLE).
2. POWER BRUSH OR ABRASIVE BLAST PIPE UNTIL FREE OF RUST, DIRT, AND OTHER FOREIGN MATTER (NEAR WHITE; SSPC-SP-10; NACE No.2 FINISH).
3. CLEAN TOTAL OF 18" TO 27" SECTION OF PIPE.
4. APPLY CANUSA-CPS HBE-95-BG COATING TO THE FRESHLY CLEANED AREA OF THE PIPE.

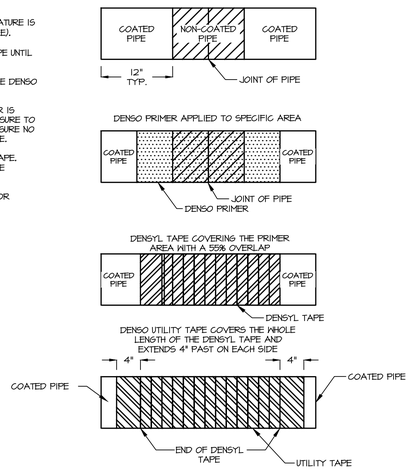


COATING APPLICATION FOR HBE-95-BG OR ESNG APPROVED EQUIVALENT
NOT TO SCALE

1. BEFORE CLEANING OF PIPE MAKE SURE PIPE TEMPERATURE IS AT LEAST 5° F ABOVE THE DEW POINT. (IF APPLICABLE).
2. POWER BRUSH OR SAND BLAST (NACE No.3 FINISH) PIPE UNTIL FREE OF RUST, DIRT, AND OTHER FOREIGN MATTER.
3. APPLY DENSO PRIMER TO SPECIFIED AREA WHERE THE DENSO DENSYL TAPE WILL BE APPLIED.
4. APPLY DENSO DENSYL TAPE UNTIL THE DENSO PRIMER IS COMPLETELY COVERED BY THE DENSYL TAPE. MAKE SURE TO APPLY THE TAPE WITH A 55% OVERLAP. ALSO MAKE SURE NO PRIMER CAN BE SEEN AFTER APPLYING THE WAX TAPE.
5. APPLY DENSO UTILITY TAPE OVER THE DENSO WAX TAPE. START WRAPPING THE TAPE 4" BEFORE THE WAX TAPE STARTS AND END 4" AFTER IT ENDS.
6. REFER TO DENSO PRODUCT SPECIFICATIONS GUIDE FOR SPECIFICATION & INSTALLATION DETAILS.

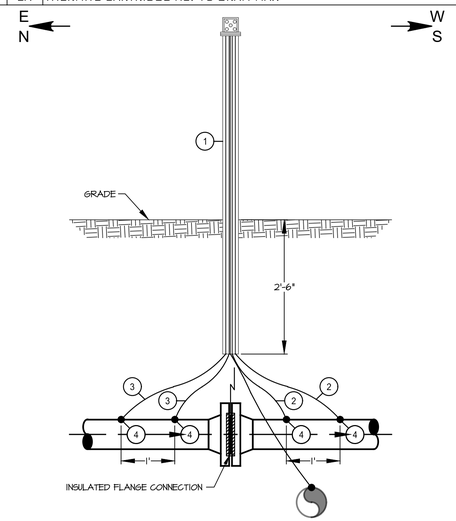


SECTION VIEW
N.T.S.



COATING APPLICATION FOR DENSO TAPE COATING
NOT TO SCALE

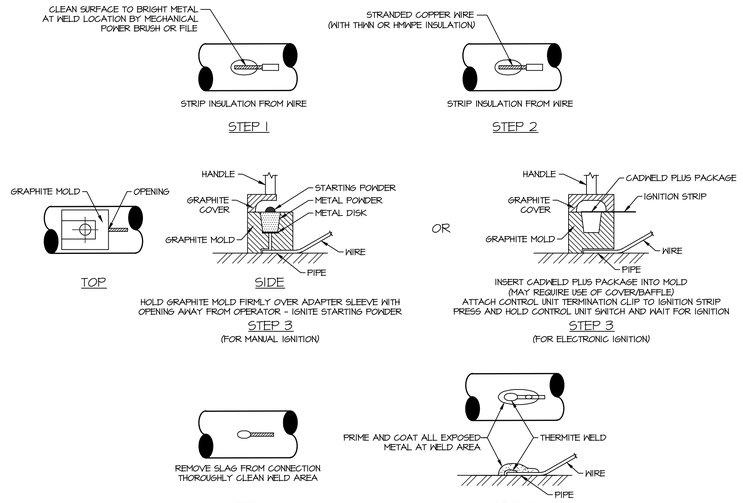
Material Schedule			
Item #	Quantity	Units	Description
1	1	EA	SERIES 503S116 UTILITY MARKER W/ ESNG GRAPHIC #2622, 3" OD X 72" LENGTH, BISON 11-TERMINAL STAINLESS STEEL TEST STATION AND CAP #CTCUL30385YEL
2	40	FT	WIRE No. 8 AWG STRANDED COPPER BLACK, THHN
3	40	FT	WIRE No. 8 AWG STRANDED COPPER WHITE, THHN
4	4	EA	THERMITE CARTRIDGE No. 15 GRAM MAX



TEST STATION TS-03A-1

NOTES:

1) No. 8 AWG STRANDED COPPER WIRES THERMITE WELDED (MAX SIZE No. 15 CARTRIDGE).
2) 3-PART WAX TAPE OR COMPANY APPROVED EQUIVALENT.
3) ALL TEST WIRES TO EXTEND 2' BEYOND TOP OF TEST BOX.
4) ANY AND ALL CHANGES TO BE APPROVED BY EASTERN SHORE NATURAL GAS.

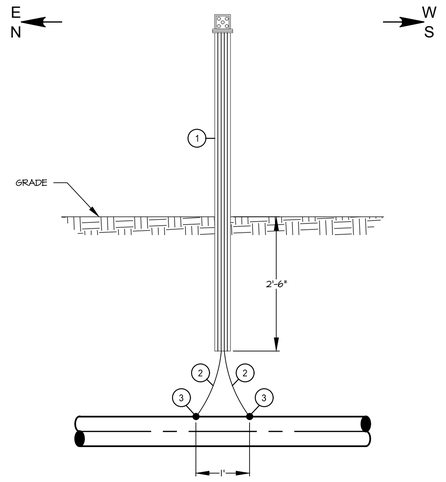


NOTES:

1. THERMITE WELDS MADE TO GAS MAIN SHALL BE COATED WITH A PREFABRICATED ONE PIECE PLASTIC CAP FILLED WITH ELASTOMERIC MATERIAL, USE TWO PART EPOXY, THREE PART WAX TAPE OR APPROVED EQUAL.
2. REPAIR PIPE COATING WITH MANUFACTURERS RECOMMENDATIONS.

THERMITE WELD DETAIL
NOT TO SCALE

Material Schedule			
Item #	Quantity	Units	Description
1	1	EA	SERIES 503S116 UTILITY MARKER W/ ESNG GRAPHIC #2622, 3" OD X 72" LENGTH, BISON 11-TERMINAL STAINLESS STEEL TEST STATION AND CAP #CTCUL30385YEL
2	40	FT	WIRE No. 8 AWG STRANDED COPPER BLACK, THHN
4	2	EA	THERMITE CARTRIDGE No. 15 MAX, OR PIN BRAZE



TEST STATION TS-02A

NOTES:

1) No. 8 AWG STRANDED COPPER WIRES THERMITE WELDED (MAX SIZE No. 15 CARTRIDGE) OR PIN BRAZED TO STEEL CARRIER PIPE.
2) WELD TO BE COATED WITH 2-PART EPOXY, 3-PART WAX TAPE OR COMPANY APPROVED EQUIVALENT.
3) ALL TEST WIRES TO EXTEND 2' BEYOND TOP OF TEST BOX.
4) WIRES TO BE PLACED AT A NOMINAL DEPTH OF 3' FROM GRADE AND PROTECTED BY 3/4" CONDUIT PROVIDED BY ESNG.

TIE-IN DETAILS

REVISIONS			
NO.	DATE	DESCRIPTION	BY

MRA
MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	8 OF 13

PIPING & INSTRUMENTATION DETAIL

REVISIONS			
NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399

MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJ. CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	9 OF 13

OWNERSHIP

SUSSEX HIGHWAY (U.S. 13) 0+00 – 2+47

OCEAN HIGHWAY (U.S. 13) 2+47 – 14+00

ANGLES

1+00 2° DEFLECTION LEFT

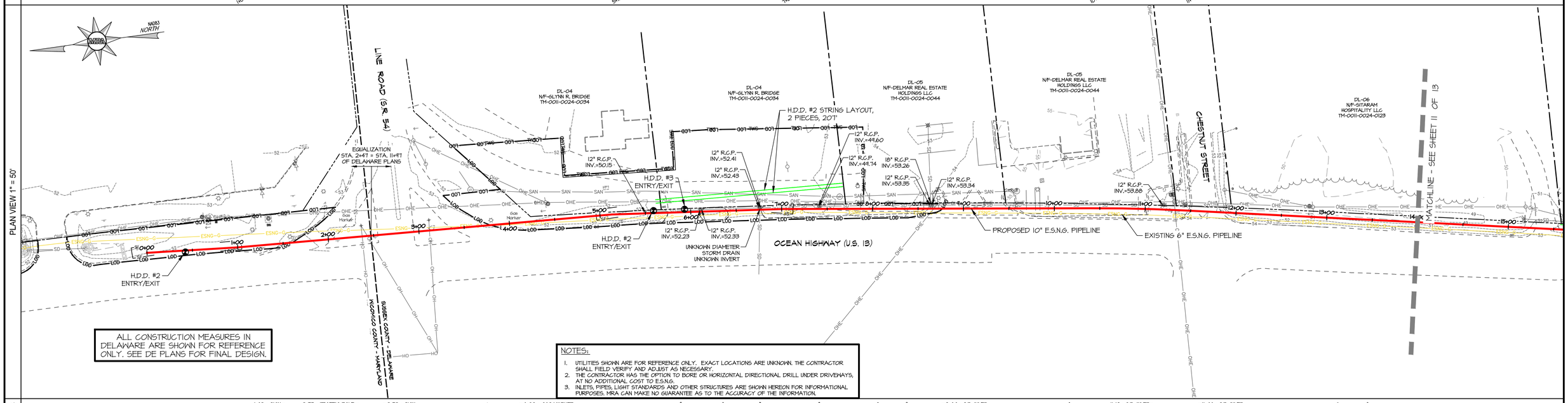
5+13 3° DEFLECTION RIGHT

7+00 2° DEFLECTION RIGHT

10+14 BEGIN 2,000' RADIUS RIGHT

11+45 END 2,000' RADIUS

PLAN VIEW 1" = 50'



ALL CONSTRUCTION MEASURES IN DELAWARE ARE SHOWN FOR REFERENCE ONLY. SEE DE PLANS FOR FINAL DESIGN.

NOTES:

1. UTILITIES SHOWN ARE FOR REFERENCE ONLY. EXACT LOCATIONS ARE UNKNOWN. THE CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NECESSARY.
2. THE CONTRACTOR HAS THE OPTION TO BORE OR HORIZONTAL DIRECTIONAL DRILL UNDER DRIVEWAYS, AT NO ADDITIONAL COST TO E.S.N.G.
3. INLETS, PIPES, LIGHT STANDARDS AND OTHER STRUCTURES ARE SHOWN HEREON FOR INFORMATIONAL PURPOSES. MRA CAN MAKE NO GUARANTEE AS TO THE ACCURACY OF THE INFORMATION.

STATIONS

1+62 – SIGN, 5.4' LT OF PROPOSED 10"
1+28 – SIGN, 3.4' RT OF PROPOSED 10"
1+58 – LIGHT POLE, 6.7' LT OF PROPOSED 10"
2+37 – TRAFFIC POLE, 12.0' LT OF PROPOSED 10"
2+52 – SIGN, 2.6' RT OF PROPOSED 10"
2+40 – SIGN, 2.8' RT OF PROPOSED 10"
3+12 – TRAFFIC POLE, 11.5' LT OF PROPOSED 10"
4+00 – GAS MARKER, 5.5' LT OF PROPOSED 10"
4+36 – GUY WIRE, 10.2' LT OF PROPOSED 10"
3+80 – LIGHT POLE, 5.2' LT OF PROPOSED 10"
5+23 – SIGN(S), 7.0' RT OF PROPOSED 10"
5+71 – MAILBOX, 8.4' LT OF PROPOSED 10"
6+11 – S.D. INLET, 0.6' LT OF PROPOSED 10"
6+78 – S.D. INLET, 0.6' LT OF PROPOSED 10"
7+41 – S.D. INLET, 2.3' LT OF PROPOSED 10"
7+72 – SIGN, 6.5' RT OF PROPOSED 10"
8+64 – S.D. INLET, 2.9' LT OF PROPOSED 10"
8+72 – UTILITY POLE, 5.8' LT OF PROPOSED 10"
9+60 – SIGN, 3.2' LT OF PROPOSED 10"
11+19 – S.D. INLET, 3.8' LT OF PROPOSED 10"
11+33 – GUY WIRE, 2.6' RT OF PROPOSED 10"
11+44 – S.D. INLET, 4.6' LT OF PROPOSED 10"
11+45 – SIGN, 0.2' RT OF PROPOSED 10"
12+47 – SIGN, 1.7' RT OF PROPOSED 10"
12+78 – GUY WIRE, 2.8' LT OF PROPOSED 10"

MATERIAL

0+00 – 1+00	1+00 – 5+13	5+13 – 5+50	5+50 – 6+90	6+90 – 7+00	7+00 – 14+00
100.0' (A)	413.0' (B)	37.1' (A)	140.0' (B)	10.0' (A)	700.0' (B)

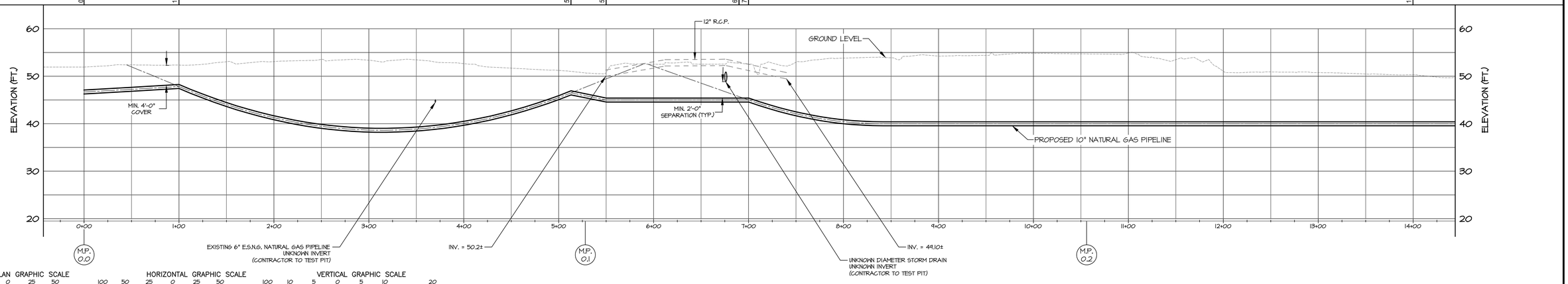
TERRAIN

0+00 – 1+54	1+54 – 2+05	2+05 – 2+55	2+55 – 2+94	2+94 – 3+37	3+37 – 3+79	3+79 – 5+74	5+74 – 6+12	6+12 – 6+40	6+40 – 6+77	6+77 – 8+77	8+77 – 9+50	9+50 – 9+69	9+69 – 11+03	11+03 – 11+47	11+47 – 11+84	11+84 – 14+00
CLEARED ROAD R.O.W.	PAVED ROAD R.O.W.	PAVED ROAD R.O.W. / CLEARED ROAD R.O.W.		CLEARED ROAD R.O.W. / PAVED ROAD R.O.W.	CLEARED ROAD R.O.W.	CLEARED ROAD R.O.W. / PAVED ROAD R.O.W.	CLEARED ROAD R.O.W.		PAVED ROAD R.O.W.	CLEARED ROAD R.O.W. / PAVED ROAD R.O.W.	CLEARED ROAD R.O.W. / PAVED ROAD R.O.W.		PAVED ROAD R.O.W. / CLEARED ROAD R.O.W.	PAVED ROAD R.O.W.		CLEARED ROAD R.O.W.

CONSTRUCTION METHOD

0+00 – 1+00	1+00 – 5+13	5+13 – 5+50	5+50 – 6+90	6+90 – 7+00	7+00 – 14+00
OPEN TRENCH	H.D.D. #2	OPEN TRENCH	BORE	OPEN TRENCH	H.D.D. #3

PROFILE 1" = 50' HORIZONTAL & 1"=10' VERTICAL



PLAN GRAPHIC SCALE
50 25 0 25 50 100
SCALE: 1" = 50'

HORIZONTAL GRAPHIC SCALE
50 25 0 25 50 100
SCALE: 1" = 50'

VERTICAL GRAPHIC SCALE
10 5 0 5 10 20
SCALE: 1" = 10'

PLAN & PROFILE

MATERIAL SPECIFICATIONS

ITEM	DESCRIPTION	QTY
A	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE	47'
B	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE & 40 MILS POWERCRETE	1106'
C	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 90° BEND, SEGMENTABLE	N/A
D	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 45° BEND	N/A

TEST LEAD/STATIONS

STATION	TYPE	STATION	TYPE

REFERENCE DRAWINGS

DESCRIPTION	DRAWING NUMBER

REVISIONS

NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

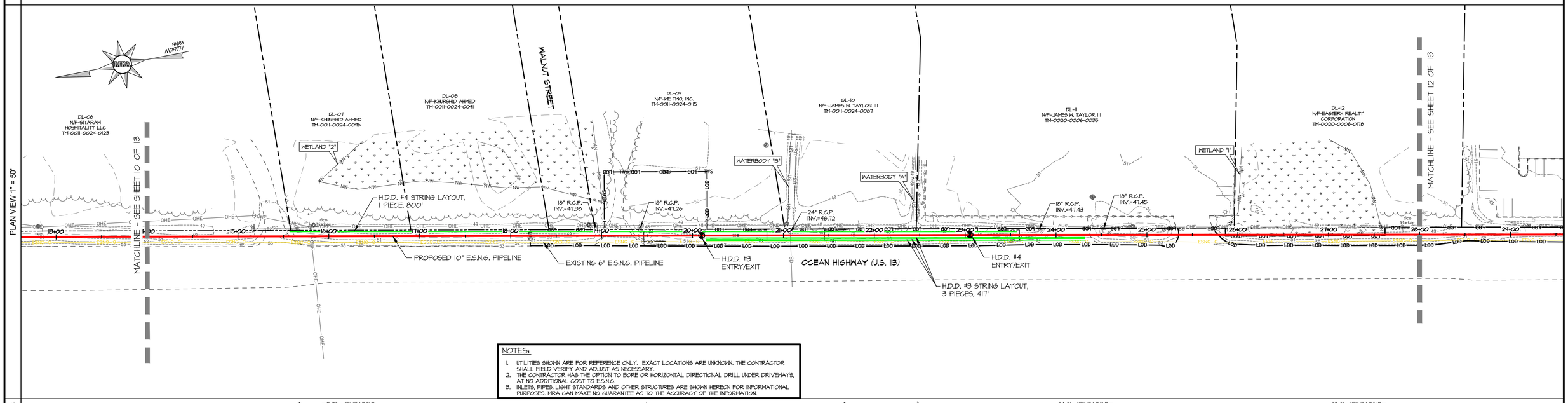
10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJECT CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	10 OF 13

OWNERSHIP

ANGLES

PLAN VIEW 1" = 50'



NOTES:

1. UTILITIES SHOWN ARE FOR REFERENCE ONLY. EXACT LOCATIONS ARE UNKNOWN. THE CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NECESSARY.
2. THE CONTRACTOR HAS THE OPTION TO BORE OR HORIZONTAL DIRECTIONAL DRILL UNDER DRIVEWAYS, AT NO ADDITIONAL COST TO E.S.N.G.
3. INLETS, PIPES, LIGHT STANDARDS AND OTHER STRUCTURES ARE SHOWN HEREON FOR INFORMATIONAL PURPOSES. MRA CAN MAKE NO GUARANTEE AS TO THE ACCURACY OF THE INFORMATION.

STATIONS

- 15+04 - MAILBOX, 8.9' RT OF PROPOSED 10"
- 15+79 - UTILITY POLE, 10.5' LT OF PROPOSED 10"
- 15+84 - GAS MARKER, 12.3' LT OF PROPOSED 10"
- 18+81 - UTILITY POLE, 11.3' LT OF PROPOSED 10"
- 21+04 - CABLE PED, 12.4' LT OF PROPOSED 10"
- 21+69 - UTILITY POLE, 10.6' LT OF PROPOSED 10"
- 24+81 - UTILITY POLE, 8.4' LT OF PROPOSED 10"
- 24+84 - CABLE PED, 9.3' LT OF PROPOSED 10"
- 27+81 - UTILITY POLE, 8.5' LT OF PROPOSED 10"
- 27+82 - GAS MARKERS, 8.1' LT OF PROPOSED 10"

MATERIAL

14+00 – 19+50	19+50 – 20+75	20+75 – 21+50	21+50 – 23+50	23+50 – 28+00
550.0' (B)	125.0' (A)	75.0' (B)	200.0' (A)	450.0' (B)

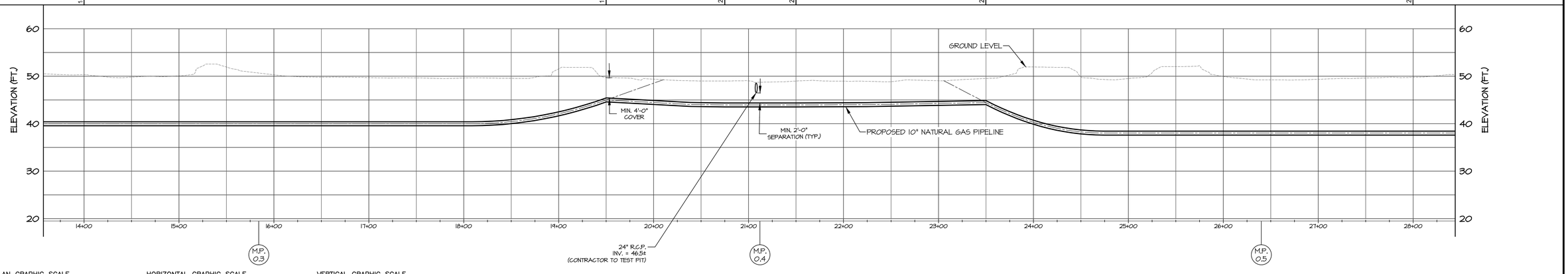
TERRAIN

14+00 – 15+30	15+30 – 15+57	15+57 – 19+03	19+03 – 19+34	19+34 – 23+92	23+92 – 24+37	24+37 – 25+35	25+35 – 25+78	25+78 – 25+89	25+89 – 27+13	27+13 – 28+00
PAVED ROAD R.O.W. / CLEARED ROAD R.O.W.	CLEARED ROAD R.O.W.	PAVED ROAD R.O.W.	CLEARED ROAD R.O.W.	PAVED ROAD R.O.W.	CLEARED ROAD R.O.W.	CLEARED ROAD R.O.W. / PAVED ROAD R.O.W. / CLEARED ROAD R.O.W.			WETLANDS	CLEARED ROAD R.O.W.

CONSTRUCTION METHOD

14+00 – 19+50	19+50 – 20+75	20+75 – 21+50	21+50 – 23+50	23+50 – 28+00
H.D.D. #3	OPEN TRENCH	BORE	OPEN TRENCH	H.D.D. #4

PROFILE 1" = 50' HORIZONTAL & 1"=10' VERTICAL



PLAN GRAPHIC SCALE: 50 25 0 25 50 100 — SCALE: 1" = 50'

HORIZONTAL GRAPHIC SCALE: 50 25 0 25 50 100 — SCALE: 1" = 50'

VERTICAL GRAPHIC SCALE: 10 5 0 5 10 20 — SCALE: 1" = 10'

PLAN & PROFILE

MATERIAL SPECIFICATIONS

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY.
A	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE	325'			
B	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE & 40 MILS POWERCRETE	1075'			
C	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 90° BEND, SEGMENTABLE	N/A			
D	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 45° BEND	N/A			

TEST LEAD/STATIONS

STATION	TYPE	STATION	TYPE

REFERENCE DRAWINGS

DESCRIPTION	DRAWING NUMBER

REVISIONS

NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILIENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJECT CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	11 OF 13

OWNERSHIP
OCEAN HIGHWAY (U.S. 13)
OCEAN HIGHWAY (U.S. 13)
ANGLES
PLAN VIEW 1" = 50'
MATCHLINE - SEE SHEET 10 OF 13
MATCHLINE - SEE SHEET 13 OF 13
DL-12 N/F-EASTERN REALTY CORPORATION TM-0020-0006-0178
DL-13 N/F-DELMARVA MEDICAL VENTURES LLC TM-0020-0006-0450
DL-14 N/F-IMAD ABU-AHMADEH TM-0020-0006-0288
DL-15 N/F-DELMARVA HOLDINGS LLC. TM-0020-0006-0097
DL-16 N/F-DELMARVA HOLDINGS LLC. TM-0020-0006-0304
H.D.D. #6 STRING LAYOUT, 1 PIECE, 425'
H.D.D. #4 ENTRY/EXIT
H.D.D. #5 ENTRY/EXIT
H.D.D. #5 STRING LAYOUT, 1 PIECE, 300'
H.D.D. #6 ENTRY/EXIT
EXISTING 6" E.S.N.G. PIPELINE
PROPOSED 10" E.S.N.G. PIPELINE
OCEAN HIGHWAY (U.S. 13)
FOSKEY LANE
24" R.C.P. INV.=46.57
NOTES:
1. UTILITIES SHOWN ARE FOR REFERENCE ONLY. EXACT LOCATIONS ARE UNKNOWN. THE CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NECESSARY.
2. THE CONTRACTOR HAS THE OPTION TO BORE OR HORIZONTAL DIRECTIONAL DRILL UNDER DRIVEWAYS, AT NO ADDITIONAL COST TO E.S.N.G.
3. INLETS, PIPES, LIGHT STANDARDS AND OTHER STRUCTURES ARE SHOWN HEREON FOR INFORMATIONAL PURPOSES. MRA CAN MAKE NO GUARANTEE AS TO THE ACCURACY OF THE INFORMATION.
STATIONS
MATERIAL
350.0' B
350.0' A
300.0' B
225.0' A
175.0' B
TERRAIN
CLEARED ROAD R.O.W.
PAVED ROAD R.O.W.
PAVED D/W
CONSTRUCTION METHOD
H.D.D. #4
OPEN TRENCH
H.D.D. #5
OPEN TRENCH
H.D.D. #6
PROFILE 1" = 50' HORIZONTAL & 1"=10' VERTICAL
ELEVATION (FT.)
GROUND LEVEL
MIN. 4'-0" COVER
PROPOSED 10" NATURAL GAS PIPELINE
18" R.C.P.
MIN. 2'-0" SEPARATION (TYP.)
INV. = 47.6±
INV. = 47.5±
INV. = 47.4±
INV. = 47.2±
UNKNOWN DIAMETER WATER
UNKNOWN INVERT
(CONTRACTOR TO TEST PIT)
M.P. 0.6
M.P. 0.7
M.P. 0.8
PLAN GRAPHIC SCALE
SCALE: 1" = 50'
HORIZONTAL GRAPHIC SCALE
SCALE: 1" = 50'
VERTICAL GRAPHIC SCALE
SCALE: 1" = 10'

PLAN & PROFILE

MATERIAL SPECIFICATIONS

ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY.
A	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE	575'			
B	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE & 40 MILS POWERCRETE	825'			
C	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 90° BEND, SEGMENTABLE	N/A			
D	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 45° BEND	N/A			

TEST LEAD/STATIONS

STATION	TYPE	STATION	TYPE

REFERENCE DRAWINGS

DESCRIPTION	DRAWING NUMBER

REVISIONS

NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

10" PROPOSED PIPELINE
DELMAR LOOP
WORCESTER RESILENCY PROJECT
WICOMICO COUNTY, MD

ESNG PROJECT CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	12 OF 13

OWNERSHIP

OCEAN HIGHWAY (U.S. 13)

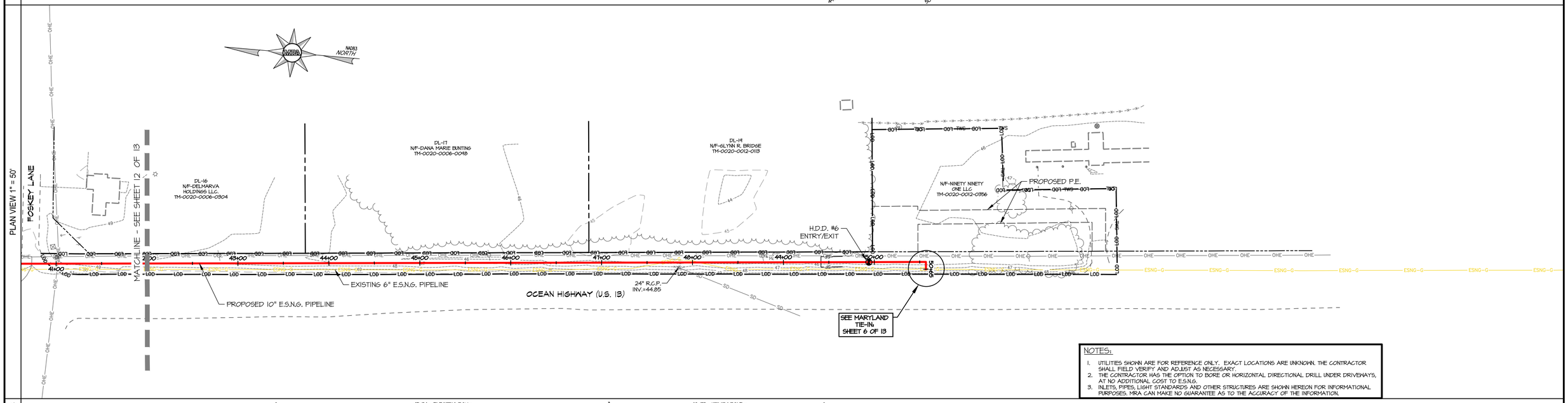
42+00 — 50+65

ANGLES

49+50 17° DEFLECTION LEFT

50+57 90° BEND RIGHT

PLAN VIEW 1" = 50'



NOTES:

1. UTILITIES SHOWN ARE FOR REFERENCE ONLY. EXACT LOCATIONS ARE UNKNOWN. THE CONTRACTOR SHALL FIELD VERIFY AND ADJUST AS NECESSARY.
2. THE CONTRACTOR HAS THE OPTION TO BORE OR HORIZONTAL DIRECTIONAL DRILL UNDER DRIVEWAYS, AT NO ADDITIONAL COST TO E.S.N.G.
3. INLETS, PIPES, LIGHT STANDARDS AND OTHER STRUCTURES ARE SHOWN HEREON FOR INFORMATIONAL PURPOSES. MRA CAN MAKE NO GUARANTEE AS TO THE ACCURACY OF THE INFORMATION.

STATIONS

42+78 - UTILITY POLE 8.5' LT OF PROPOSED 10"

45+74 - ELECTRIC BOX 8.8' LT OF PROPOSED 10"

45+76 - UTILITY POLE 8.4' LT OF PROPOSED 10"

46+44 - SIGN 0.8' RT OF PROPOSED 10"

48+77 - UTILITY POLE 7.2' LT OF PROPOSED 10"

48+82 - GAS MARKER 5.8' LT OF PROPOSED 10"

MATERIAL

750.0' (B) — 42+00 to 49+50

105.9' (A) — 49+50 to 50+57

7.2' (A) — 50+57 to 50+65

TERRAIN

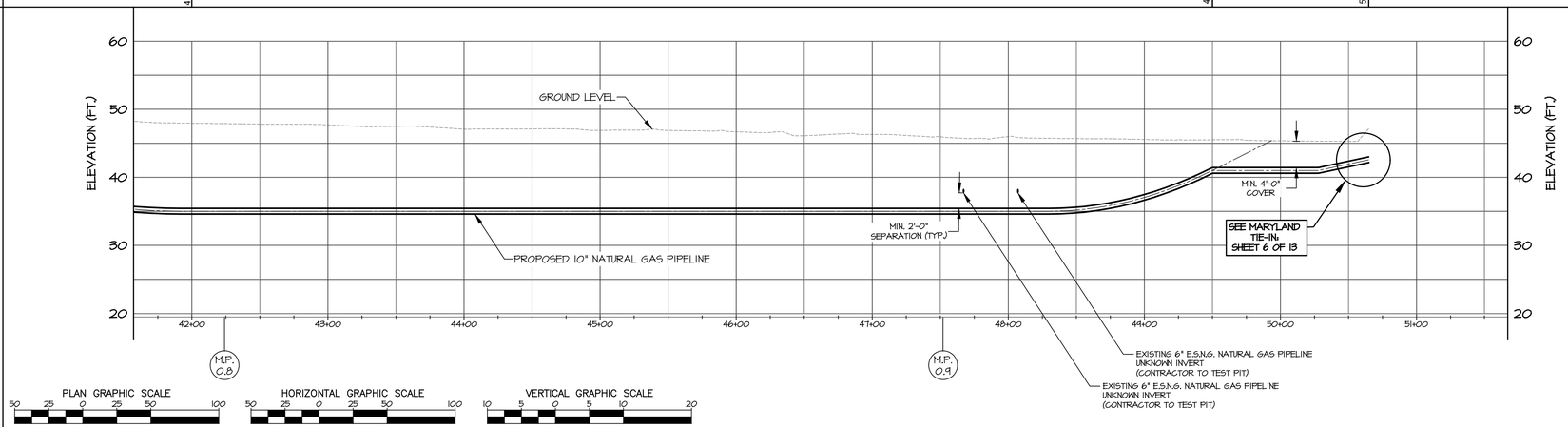
CLEARED ROAD R.O.W. — 42+00 to 50+65

CONSTRUCTION METHOD

H.D.D. #6 — 42+00 to 49+50

OPEN TRENCH — 49+50 to 50+65

PROFILE 1" = 50' HORIZONTAL & 1"=10' VERTICAL



PLAN GRAPHIC SCALE — 50 25 0 25 50 100 — SCALE: 1" = 50'

HORIZONTAL GRAPHIC SCALE — 50 25 0 25 50 100 — SCALE: 1" = 50'

VERTICAL GRAPHIC SCALE — 10 5 0 5 10 20 — SCALE: 1" = 10'

MATERIAL SPECIFICATIONS

ITEM	DESCRIPTION	QTY
A	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE	113'
B	PIPE, 10.750" x 0.365" X-60 W/ 14-16 MILS FBE & 40 MILS POWERCRETE	750'
C	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 90° BEND, SEGMENTABLE	N/A
D	ELBOW, 10.750" x 0.365" W.T., Y-60 3R, 45° BEND	N/A

ITEM	DESCRIPTION	QTY.

TEST LEAD/STATIONS

STATION	TYPE	STATION	TYPE

REFERENCE DRAWINGS

DESCRIPTION	DRAWING NUMBER

REVISIONS

NO.	DATE	DESCRIPTION	BY

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
111 RUTHAR DRIVE
NEWARK, DE 19711
(302) 326-2200
FAX: (302) 326-2399
MRAGTA.COM

EASTERN SHORE NATURAL GAS
500 ENERGY LANE, SUITE 200 DOVER, DE 19901
TELEPHONE (302) 734-6710 - FAX (302) 734-6745

PLAN & PROFILE

10" PROPOSED PIPELINE DELMAR LOOP WORCESTER RESILIENCY PROJECT

WICOMICO COUNTY, MD

ESNG PROJECT CODE:		DATE:	2/26/2024
MRA PROJECT NO:	22154	SCALE:	AS SHOWN
DESIGN/CHECK BY:	JTH/CWB	SHEET:	13 OF 13