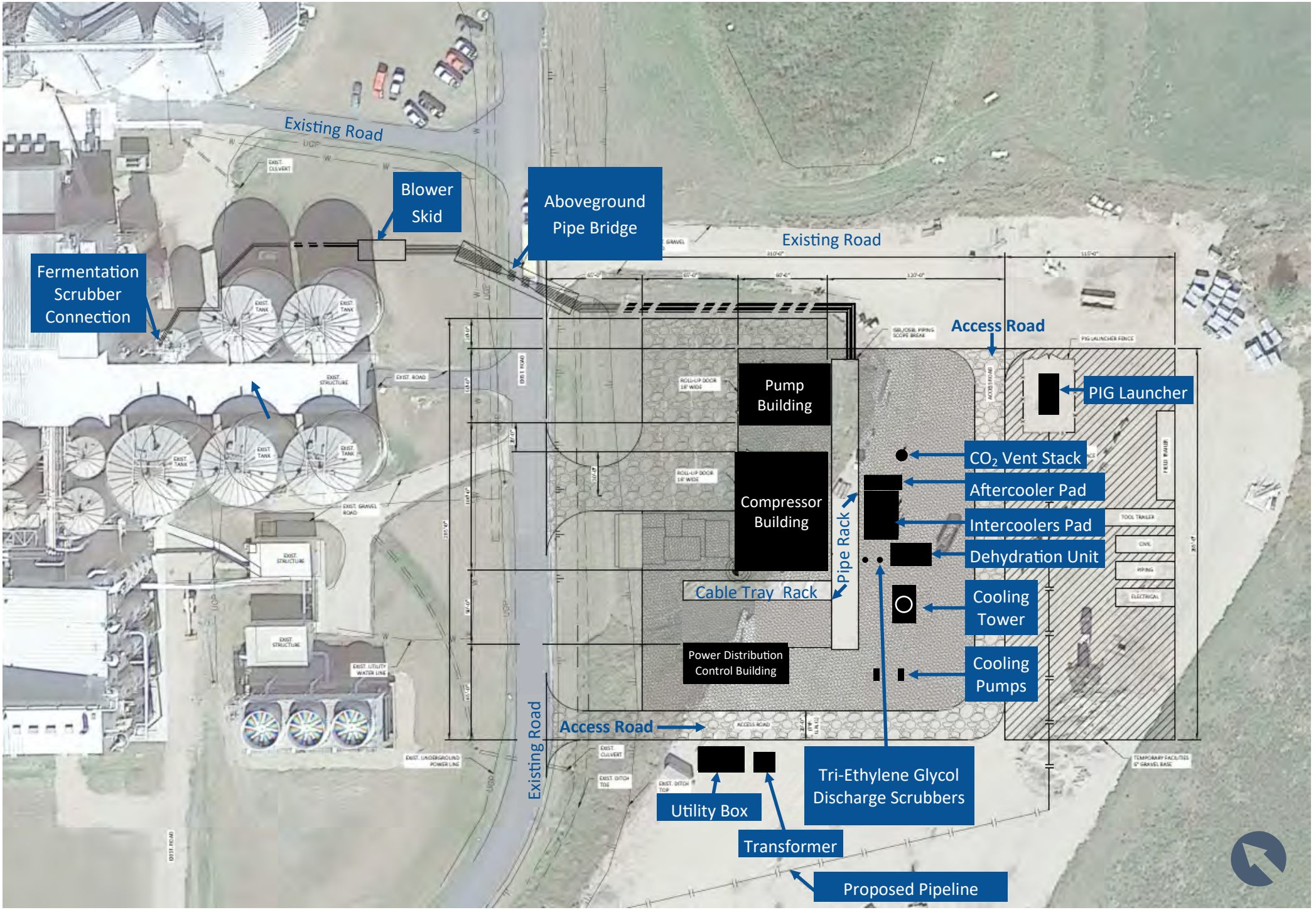
Appendix C

Aboveground Facility Drawings


Existing Road
Blower Skid
Aboveground Pipe Bridge
Fermentation Scrubber Connection
Existing Road
Access Road
Pump Building
PIG Launcher
CO_2 Vent Stack
Aftercooler Pad
Compressor Building
Intercoolers Pad
Pipe Rack
Dehydration Unit
Cable Tray Rack
Cooling Tower
Power Distribution Control Building
Cooling Pumps
Existing Road
Access Road
Tri-Ethylene Glycol Discharge Scrubbers
Utility Box
Transformer
Proposed Pipeline

Appendix D

Minnesota Environmental Construction Plan

Environmental Construction Plan – Minnesota

Summit Carbon Solutions

Project Name:

Summit Carbon Solutions Midwest Carbon Express

MPUC Docket Number:

IP7093/PPL-22-422

Document Control Number:

SCS-0700-ENV-01-PLN-027

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REVISION HISTORY

DATE	REVISION	REVISION DESCRIPTION	PREPARED BY:	REVIEWED BY:	APPROVED BY:
2022-09-12	0	Final	BB/AR	JZ	JS
2023-11-08	1	Corrections in section 7.2.1 and to Figures 11 and 12.	BB/AR	JZ	JS

Environmental Construction Plan

This Minnesota Environmental Construction Plan (ECP) would be applicable to any Midwest Carbon Express pipeline that is constructed by Summit Carbon Solutions in the state of Minnesota. The ECP contains typical drawings which are applicable to a variety of pipeline diameters.

As of March 2024, Summit Carbon Solutions has one project before the Minnesota Public Utilities Commission, the Otter Tail to Wilkin Project in Otter Tail and Wilkin Counties. This pipeline has a 4 inch diameter.

Other potential pipeline infrastructure in Minnesota, by county, includes:

- Kandiyohi, Chippewa – 8 inch diameter
- Renville – 6 and 8 inch diameter
- Yellow Medicine – 8 inch diameter
- Redwood – 8 and 10 inch diameter
- Cottonwood, Jackson – 10 inch diameter
- Martin – 6 and 8 inch diameter

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Acronyms

ATWS	Additional Temporary Workspace
BMP	Best Management Practice
ECD	Erosion Control Devices
EI	Environmental Inspector
HDD	Horizontal Directional Drill
MCE	Midwest Carbon Express
MN APP	Minnesota Agricultural Protection Plan
Minnesota ECP	Minnesota Environmental Construction Plan
MN UDP	Minnesota Unanticipated Discovery Plan
MDNR	Minnesota Department of Natural Resources
Plan	Minnesota Environmental Construction Plan
Project	Midwest Carbon Express Project
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollutant Discharge Elimination System
ROW	Right-of-Way
SCS	Summit Carbon Solutions
SWPPP	Stormwater Pollution Prevention Plan

1 Introduction

The Minnesota Environmental Construction Plan (Minnesota ECP or Plan) will provide the Summit Carbon Solutions' (SCS) Midwest Carbon Express (MCE) Project with procedures to reduce the occurrence of off-site sedimentation and erosion and to increase the success and efficiency of revegetation and restoration methods on lands crossed by the MCE Project in Minnesota (Project). The Minnesota ECP will implement generally recognized best management practices (BMPs) to minimize and mitigate impacts to wetlands, waterbodies, and agricultural areas.

The objective of this Plan is to provide SCS personnel and contractors with instructional information regarding practical approaches to environmental concerns before, during, and after construction. This Plan is primarily focused on pipeline construction; however, it will be applied across the Project footprint inclusive of any aboveground facility in Minnesota. Federal, state, and local agencies having more stringent regulations will supersede this document.

1.1 Environmental Inspector

SCS will employ at least one Environmental Inspector (EI) on each construction spread. The EI will review the Project activities daily for compliance with applicable federal, state, and local regulatory requirements. The EI will have stop work authority when construction activities violate the environmental conditions of applicable federal, state, or local permits or when sensitive resources are threatened. They also have the ability to order corrective action in the event that construction activities violate the provisions of this Plan or any applicable permit requirements.

1.2 Advance Notice

In addition to any other notice required by law, SCS shall, at least one week prior to commencement of construction, notify each landowner of the pending construction.

2 General Mitigation Measures

2.1 Identification of Avoidance Areas

Preconstruction surveys will identify areas to mark or identify the workspace (e.g., wetlands and waterbodies, drain tile and irrigation systems), recreational trails, environmentally sensitive habitats, locations of invasive/noxious species habitats, and sensitive resources. All avoidance areas will have signs posted by the EI, so they are easily recognized by Project personnel.

2.2 Alignment Sheets, Construction Line List, and Permits

Alignment sheets will be prepared by SCS which will depict plan and profile of the pipeline and construction right-of-way (ROW) and include environmental and cultural constraints, restrictions, and/or conditions that will be followed during construction. Notations will be included in the alignments to direct personnel to the appropriate plan, permit, or other document that describes any restrictions as applicable.

SCS will prepare Environmental Plan Sheets that accompany the Stormwater Pollution Prevention Plan (SWPPP) required under the Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) State Disposal System Construction Stormwater General Permit (MNR100001). The Environmental Plan Sheets will identify the temporary and permanent erosion and sediment control and stabilization measures for the Project.

In addition, SCS has prepared a Minnesota Agricultural Protection Plan (MN APP). The MN APP presents proposed measures for minimizing impacts on and restoring agricultural lands during pipeline construction. For agricultural areas, if there is a discrepancy, the MN APP will supersede this document.

Negotiations with landowners will result in construction line lists that define landowner stipulations for construction and installation of line pipe on their land. This line list and required stipulations will be included in the construction contract that must be adhered to by the Contractor. SCS' construction inspectors, including EIs, and Agricultural Inspectors will be responsible for ensuring compliance with the terms of the construction contract including the stipulations of the line list.

2.3 Right-of-way Access

Safe and accessible conditions will be maintained at all access points throughout the duration of construction. The Contractor must have all necessary permits, licenses, bonds, and insurance in their possession prior to starting construction and throughout the duration of the Project. The Contractor must confine all activities to the permitted areas as shown on the construction drawings (i.e., Alignment Sheets). Any requested changes to workspaces and any off-ROW activities must be approved by SCS and any applicable agencies prior to the activity occurring.

SCS will post signs to identify approved roads to be used as haul roads or access roads. Vehicles and equipment will enter and exit the ROW only from permitted entrances or access points. Points of potential unauthorized site access may be physically barricaded, gated, or may utilize signs to prevent entrance if this will not interfere with landowners' use.

BMPs will be implemented to minimize vehicle tracking of soil from construction sites such as reducing equipment/vehicle access to the construction workspace where practicable and installing rock access pads or construction pads in accordance with permits and by federal, state, and/or local specifications.

If BMPs are not adequately preventing soil from being tracked onto paved public roads, self-contained street sweeping, or other equivalent means of collecting soil, will be used.

Where required by regulation, improved roads will be returned to their pre-construction condition after construction. The removal of temporary infrastructure in wetlands will comply with the appropriate regulatory permits, authorizations, and certificates. SCS will maintain permanent access roads to certain facilities during Project operation.

2.4 Workspace Design

The width of the construction workspace will vary depending on adjacent features such as utilities, roads, railroads, cultural, and environmental features such as wetlands and waterbodies. The workspace may be reduced (necked down) when crossing wetlands, waterbodies, or sensitive environmental features. Where it is necessary to reduce the workspace, the boundaries of the feature and workspace will be identified and staked in the field. All equipment and vehicles will be confined to the approved construction footprint except where permissions are granted for dewatering purposes by the landowner or land managing agency and approved by SCS.

2.5 Adverse Weather

2.5.1 Wet-Weather Shutdown

In the event of severe wet weather, SCS and the Contractor may cease work on the Project until it is deemed safe to continue work. The Contractor may restrict certain construction activities and work in

cultivated agricultural areas in excessively wet soil conditions to minimize rutting and soil compaction. Work may be suspended during severe wet weather when the following may occur:

- Anticipation of material mixing soil horizons;
- Anticipation of excessive soil compaction;
- Significant surface ponding; and/or
- Type of activity occurring on that day.

2.6 Management of Undesirable Species

SCS will attempt to minimize the potential for introduction or spread of state identified noxious weeds or invasive species along the construction work area. SCS will coordinate with local weed management boards and landowners if areas within the ROW are identified to contain populations of state identified noxious, invasive species, or soil borne pests.

The Contractor will inspect and clean all equipment prior to bringing it to construction ROW to prevent the introduction and spread of invasive species. The duration between final grading and permanent seeding will be minimized to reduce the potential growth of opportunistic nuisance species.

Weed-free hay or straw will be used for mulch and sediment barriers. Where required by weed control boards for specific species that require treatment ahead of construction, the topsoil will be stripped from the full width of the ROW where isolated weed populations exist and will be stored separately from other topsoil and subsoil. These locations will be identified and marked prior to construction activities by an EI. Alternatively, approved herbicides may be used to prevent the growth and spread of weeds during construction by pre-treating areas of infestation on the construction workspace. If SCS fails to control weeds resulting from construction activities within 45 days after receiving written notice from a landowner, SCS will be responsible for reimbursing all reasonable costs of weed control incurred by owners of adjacent land. Herbicides will not be used within 100 feet of a wetland, waterbody, or native prairie remnant unless approved by the appropriate land management and state agency and needed to control a known infestation.

2.7 Topsoil Management

2.7.1 Topsoil Segregation

When segregating topsoil, the Contractor will strip all topsoil on agricultural lands. Topsoil depth will be determined onsite. Topsoil and subsoil will be separated when stripping the topsoil for construction in most areas. When separated, topsoil piles will be stabilized to reduce loss from erosion by utilizing measures such as sediment barriers, mulch, temporary seeding, or tackifiers, where necessary. Full topsoil stripping and segregation across the ROW will occur in uplands or as dictated by landowner requirements. In unsaturated wetlands, topsoil will be segregated up to a maximum of 12 inches per United States Army Corps of Engineers requirements. Topsoil removal and segregation will not occur in wetlands which are saturated at the time of construction. Typical plan and profile views of topsoil management are provided in Figures 1 and 2 in Appendix A.

Topsoil cannot be used for padding the pipe, temporary erosion control methods such as slope breakers or trench plugs, roads, or as fill material.

Topsoil removal will not be required where the pipeline is installed by plowing, jacking, boring, or other methods that do not require the opening of a trench.

2.7.2 Storage

Topsoil stockpile heights must not exceed 35 feet and slope must be 2:1 or flatter. Where applicable, topsoil and subsoil piles will be placed so that at least a 1-foot of separation will be maintained between the piles to prevent mixing. If a 1-foot separation gap cannot be maintained, approval from the EI may be given to utilize a physical barrier such as a silt fence, geotextile fabric, or thick layer of mulch. Topsoil may be tackified in excessive wind conditions. Once an area or stockpile is disturbed, it should be mulched and/or seeded per temporary stabilization guidelines within 7 days if it will not be re-disturbed within 14 days.

2.8 Temporary Stabilization and Sediment Control

Temporary BMPs will be implemented to minimize erosion and control sediment. Permanent measures are discussed in Section 2.9.

Erosion Control Devices (ECDs) will be installed during or immediately following removal of vegetation, as seasonal conditions warrant. If disturbance activities occur at the base of a sloped area near wetlands, waterbodies, water conveyances, or roads, ECDs will be installed, as needed, prior to any ground disturbing activity to prevent erosion and siltation of waterbodies and wetlands downslope. Temporary ECDs will be placed at the base of slopes in the vicinity of a wetland or waterbody, as needed, and at site-specific locations identified in Project SWPPPs until the area is revegetated.

The Contractor will maintain ECDs as required by permits, regulations, and plans. ECDs will be inspected at least once every 7 calendar days and within 24 hours of a rainfall event of 0.5 inch or greater. ECDs unable to function properly will be repaired or replaced within a reasonable time, as specified in Project SWPPPs, or as soon as conditions allow. The inspection frequency may be reduced to at least once per month if the entire site is temporarily stabilized or runoff is unlikely due to weather conditions (e.g., site is covered with snow, ice, or the ground is frozen). A waiver of inspection requirements is typically available until one month before thawing conditions are expected to result in a discharge if all of the following conditions are met:

- The Project is located in an area where frozen conditions are anticipated to continue for extended periods of time;
- Land disturbance activities have been suspended; and
- The beginning and ending dates of the waiver date are documented.

Once a definable area is stabilized, the area will be marked, and no further inspection requirements will apply to that portion of the site. Typical designs of temporary erosion and sediment control BMPs are provided in Figures 3 to 7 in Appendix A.

Stabilization[1] of all exposed areas, including spoil piles, must be initiated immediately[2] to limit soil erosion when construction activity has permanently or temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days. Stabilization must be completed no later than 14 calendar days after the construction activity has ceased.

In areas within 1 mile of, and draining to, a special[3] or MPCA impaired water, stabilization measures will be initiated immediately and completed within 7 calendar days whenever construction activity has permanently or temporarily ceased on any portion of the site. Areas of the Project where this timing restriction applies will be clearly defined on the Environmental Plan Sheets accompanying the SWPPP.

On portions of the Project where work will be occurring during applicable "work in water restrictions" for Public Waters (refer to Section 4.4), all exposed soil areas within 200 feet of the water's edge, and that drain to that water, will be stabilized within 24 hours during the restriction period. Stabilization of all exposed soils within 200 feet of the Public Water's edge, and that drain to that water, will be initiated immediately and completed within 7 calendar days whenever construction activity has permanently or temporarily ceased on any portion of the site outside of the restriction period.

2.8.1 Mulch

Mulch used for the Project will be free of noxious weeds and invasive species and will be made of hay, straw, wood fiber hydro-mulch, erosion control fabric, or a functional equivalent approved by the EI. The Contractor will select wildlife-friendly erosion control fabric that contains biodegradable netting (Category 3N or 4N natural fibers[4]) and will avoid the use of plastic mesh. All hydro-mulch and liquid tackifier products used will be on the Minnesota Department of Transportation product list. Hydro-mulch and liquid tackifier products containing plastic/polypropylene fiber additives and Malachite Green (colorant) will not be used. Mulch will be applied uniformly on slopes identified by an EI and, if the EI allows, on dry, sandy areas that have a risk of washing away through erosion. At least 90 percent of the ground will be covered with mulch unless stipulated by permit conditions. Mulch will not be applied in wetlands.

2.8.2 Sediment Barriers

To help mitigate the flow and deposition of sediments into sensitive habitats, sediment barriers will be utilized and will consist of materials such as silt fence, staked hay or straw bales, wattles, compacted soil, or sandbags.

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1 Stabilization means that the exposed ground surface has been covered by appropriate materials such as mulch, staked sod, riprap, erosion control blanket, mats, or other material that prevents erosion from occurring. Grass seeding, agricultural crop seeding, or other seeding alone is not stabilization. Mulch materials must achieve approximately 90 percent ground coverage (Minnesota Rules 7090).

2 Initiated immediately means taking an action to commence soil stabilization as soon as practicable, but no later than the end of the work day, following the day when the land-disturbing activities temporarily or permanently cease (Minnesota Rules 7090).

3 Special waters are listed in the National Pollutant Discharge Elimination System State Disposal System Construction Stormwater General Permit (MNR100001) under item 23.3 through 23.6.

4 Category 3N or 4N as described in Table 3885-2 (3885.2A Erosion Control Blanket Requirements) in Minnesota Department of Transportation Standard Specifications for Construction, 2018 Edition (http://www.dot.state.mn.us/pre-letting/spec/2018/2018-spec-book-final.pdf).

The Contractor will properly install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at wetlands and waterbodies located within 50 feet of the Project and where stormwater flows to a wetland or waterbody. The Contractor will install perimeter sediment controls at least 5 feet apart unless limited by lack of available space. Redundant controls will not be installed adjacent to road ditches, judicial ditches, county ditches, stormwater conveyance channels, storm drain inlets, sediment basins, and agriculturally farmed wetlands. Sediment barriers will be installed at the following locations:

- At the base of slopes where wetlands, waterbodies, or roads are located at a lower elevation;
- At the edge of the construction ROW adjacent to a wetland, waterbody, or road;
- Between topsoil/spoil stockpiles and streams or wetlands, as needed and if adequate separation cannot be achieved;
- Dewatering or discharge locations were required; and
- As directed by the EI.

The Contractor properly will install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at Minnesota-designated special waters located within 100 feet of the Project and where stormwater flows to the surface water.

The Contractor will be responsible for inspecting, maintaining, and replacing temporary sediment barriers throughout construction. The Contractor will remove sediment barriers only after the area has successfully revegetated as required by permit conditions (i.e., a minimum 70 percent perennial vegetation cover or vegetation similar to natural terrain is established) or if replaced with a permanent sediment barrier, if needed.

2.8.3 Trench Plugs

Temporary trench plugs will be used to prevent trenchline erosion and decrease the rate of flow and volume of trench water at the base of slopes. Trench plugs will also be utilized on either side of a wetland or waterbody crossings. Temporary trench plugs may consist of leaving an unexcavated portion of the trench in place, putting in subsoil, sandbags, or equivalent. Permanent trench breakers are discussed in Section 2.9.1.

2.8.4 Slope Breakers

Temporary slope breakers will consist of soil berms, silt fence, staked straw bales, sandbags, or similar materials approved by SCS that typically span the width of the ROW. The Contractor will install temporary slope breakers on slopes identified by an EI and on all disturbed lands with the following recommended spacing:

Slope (%)	Spacing (feet)
5 – 15	300
>15 – 30	200
>30	100

At the end of each temporary slope breaker, an outfall will direct surface flow into a stable, well-vegetated area or an energy-dissipating device off of the construction ROW as permitted by landowner agreements.

The outfalls will be installed to prevent sediment from discharging into wetlands, waterbodies, or sensitive areas. A typical depiction of slope breakers is found in Figure 5 in Appendix A.

2.9 Permanent Stabilization

Typicals of permanent erosion control measures described below are similar to that described above for temporary measures.

2.9.1 Trench Breakers

Permanent trench breakers will be installed, as necessary, on steep slopes where trench line erosion has the risk of occurring and at slopes adjacent to wetlands and waterbodies. The location of trench breakers will be selected based on field conditions at the time of construction and will consider the degree and length of slope, presence of down-slope sensitive resource areas such as wetland and waterbodies, and proximity to other features such as roads and/or railroads. Trench breakers must be installed at the entry and exit from every designated Public Water, except for at horizontal directional drill (HDD) crossings. Trench breakers will consist of sandbags or another inert material. Foam trench breakers shall not be used. Topsoil will not be used for permanent trench breakers.

2.9.2 Mulch

Outside of active agricultural land and wetlands, mulch will be applied and properly anchored on all slopes immediately after seeding to stabilize the soil and mitigate the effects of erosion. Mulch will be applied on slopes identified by an EI and on dry, sandy areas that may blow or wash away. The application of mulch will cover at least 90 percent of the ground surface.

Mulch shall be anchored immediately to minimize loss by wind or water. Anchoring methods include the following:

- Mechanical – Use a disk, crimper, or similar type tool set straight to punch or anchor the mulch material to the soil. Straw mechanically anchored shall not be finely chopped but to be left at a length of approximately 6 inches.
- Mulch netting – netting shall be used in accordance with the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes. The Contractor will select wildlife-friendly erosion and sediment control BMPs that contain biodegradable netting (Category 3N or 4N natural fibers) and will avoid the use of plastic mesh.
- Synthetic binders – synthetic binders such as Acrylic DLR (Agri-Tac), DCA-70, Petroset, Terra Tack, or equal may be used according to manufacturer's recommendations. Synthetic binders will not be used within 100 feet of a wetland or waterbody unless specifically approved by the EI on a case-by-case basis.
- Wood cellulose fiber.

2.9.3 Slope Breakers

Permanent slope breakers will be constructed across the ROW, where necessary, to limit erosion. Slope breakers divert surface runoff to adjacent stable vegetated areas or to energy-dissipating devices. In cultivated or residential areas, permanent slope breakers will not be installed. The Contractor will follow the recommended spacing as stated in Section 2.8.4 for construction of the permanent breakers.

2.10 Dust Control

Dust control is used to help mitigate the effects of wind erosion and fugitive dust emissions during construction. Fugitive dust is especially a concern on the ROW near residential areas, farm dwellings, roads, or when strong wind conditions are present. The ground may be sprayed by watering trucks or sprinklers to control the dust. Water will not be applied in quantities to cause run off from the ROW.

The Contractor will take appropriate precautions to prevent fugitive emissions caused by sand blasting from reaching any residence or public building. Curtains of suitable material will be placed, if necessary, to prevent wind-blown particles from sand blasting operations reaching residences, roads, or public buildings.

2.11 Noise Control

Construction equipment will be properly muffled and maintained to avoid producing excessive noise near noise sensitive areas. Particular attention will be exercised when working near noise sensitive areas including residential areas, schools, churches, cemeteries, hospitals, camping facilities, and outdoor amphitheaters and playgrounds. SCS will abide by applicable local noise ordinances regarding noise near residential and commercial/industrial areas. The Contractor will seek to minimize noise in the immediate vicinity of herds of livestock or poultry operations, which are particularly sensitive to noise.

2.12 Cultural Resources

SCS will conduct pre-construction cultural surveys to identify culturally significant sites and properties listed or eligible for listing in the National Register of Historic Places. Areas identified as culturally or historically important will be avoided to the extent practical by rerouting the pipeline corridor, reducing ROW workspace, HDD, or other means.

A Minnesota Unanticipated Discovery Plan (MN UDP) has been prepared and describes the procedures in the unlikely event that unanticipated discoveries occur during the course of Project construction and provides direction and guidance to Project personnel as to the proper actions to be followed in the event of an unanticipated discovery. Training will be provided for all construction personnel. This training will cover procedures for unanticipated discovery. In the event of an unanticipated discovery, the Contractor will immediately halt all construction activities within a 100-foot radius; notify the EI; and implement the procedures listed in the MN UDP. Where required, SCS will monitor the construction spread using a cultural resource monitor working under the direction of a professional who meets the standards of the Secretary of the Interior's Historic Preservation Professional Qualification Standards (48 FR 44716, September 29, 1983).

2.13 Winter Construction

Should winter construction be required, then SCS will develop winter construction procedures that will be described in a Winter Construction Plan. If constructing the pipeline in frozen conditions through agricultural lands is necessary, the relevant mitigation measures outlined in the MN APP will be followed to protect the productivity of agricultural lands.

3 Uplands and Agricultural Areas

3.1 Clearing and Grading

Areas to be cleared and graded will be flagged, this includes the ROW, ancillary facilities, roads, and additional temporary workspace (ATWS). Qualified inspection personnel will inspect the clearing and grading activities to ensure the Contractor stays within the authorized limits of disturbance.

Agricultural areas with crops present will be mowed or disced to ground level unless the landowner requests the crops be removed. Bushes and trees will be felled or sheared to prevent damage to adjacent trees and structures. Bushes and trees may be disposed of or chipped and spread on the ROW as mulch if approved by the landowner. Burning will be conducted in accordance with all permits, regulations, and approvals.

In addition, agricultural areas that have terraces will be surveyed to determine pre-construction contours and ensure restoration will be successful when establishing original contours and drainage patterns.

Tree stump removal and grading activities will be limited to directly over the trench or where needed for a safe work area.

For HDDs and bores of waterbodies where there will not be a travel lane within the ROW (e.g., use of a bridge), there will be no clearing over the HDD path. SCS may trim vegetation using hand tools where necessary to access a water source and/or to place the HDD guidewires.

Some clearing may be required along HDDs of waterbodies where a bridge or mats will be installed to allow the transport of construction vehicles and equipment. In this case, clearing will be limited to the width of the travel lane needed to access the bridge or mats. Limited grading may also occur to allow for the safe installation of the bridge. All clearing and grading work will be conducted in accordance with applicable permits.

3.2 Trenching

As described in the MN APP, the pipeline will be constructed with a minimum depth of cover of 54 inches as required by Section 216G.07 of the Minnesota Statutes. Where existing tile systems are present, and where landowners have, prior to construction, consulted with SCS on specific future planned tile[5] systems that may be impacted by construction, the pipeline will be installed at a depth that will achieve at least a 12-inch separation between the pipeline and overlying tiles as described in the MN APP or have an agreed upon separation distance with the landowner. The minimum depth of cover over the pipeline will be increased to 60 inches at waterbody and drainage ditch crossings as well as private road crossings (as measured at the bottom of the road ditch, with a minimum of 60 inches of cover below the road surface). Additional conditions may be implemented if requested by local, state, or federal agencies in areas adjacent to wetlands or waterbodies or in sensitive habitat. Civil surveys will occur post-installation of the pipeline to ensure that the depth of cover meets state and federal requirements.

[5] Locations where the proposed tile installation is made known in writing to SCS by the Landowner either: 1) within 60 days after the signing of an Easement; or 2) before the issuance of a Route Permit to SCS; whichever is sooner.

To allow the passage of wildlife, livestock, and to facilitate the natural drainage pattern, spoil piles will have gaps that align with the breaks of the strung pipe. Plugs of subsoil in the ditch will be left or bridges may also be constructed to allow the passage of wildlife and livestock.

SCS does not anticipate that Blasting will be required in Minnesota. Should this activity be required, SCS will develop a Blasting Plan that contains the necessary procedures (see Section 4.6).

Trenching procedures will be followed closely to ensure the length of time the trench is left open is minimized to the extent practicable. Except at boreholes and tie-ins, the Contractor will limit the amount of excavated open trench in uplands to a maximum of 15 days of anticipated welding production per spread, or 15 miles per spread. For locations along the Project where the USACE Section 404 Utility RGP applies (i.e., waters of the U.S.), this will be limited to 5,280 linear feet of open trench. Within each spread, site-specific activities, such as HDD, bores, and valve work may be performed independent of open trench work.

3.3 Backfilling

Backfilling will commence after the trench is dewatered in accordance with state regulations and the BMPs stated in Section 7.2. The trench will be backfilled using the excavated material from the trenching process (subsoil first followed by topsoil) and then stabilized as soon as possible. Stream bottoms will be restored to pre-construction condition during the backfilling process, with no impediments to normal water flow. Final grading will occur to ensure that the pre-construction contours are matched with the surrounding topography and the disturbed area is stabilized.

3.4 Clean Up

Cleanup will immediately follow the backfilling operation as weather conditions allow. Waste will be disposed of in a manner that meets regulations and the conditions listed in Section 10. Temporary erosion and sediment control structures will be removed in stabilized areas and permanent structures will be installed, if necessary.

Temporary workspace will be returned to pre-construction conditions except for trees and shrubs that exceed 15 feet in height within 15 feet of the pipeline. The pipeline ROW will be returned to pre-construction conditions except where aboveground facilities or ROW access roads are required for safe pipeline operations.

If any excess subsoil remains after the backfilling process, it will be removed and disposed of at an approved location to ensure contours are restored to the pre-construction condition. Subsoil will not be placed on topsoil. Following the cleanup procedure, seed bed preparation will begin. Restoration and seeding methods are listed in Section 8.

3.5 Interference with Irrigation Systems

SCS will work with landowners to locate and address issues with irrigation systems within the construction footprint until restoration is achieved. Water flow will be maintained during construction unless impractical and if so, coordinated with and documented with the landowner, including any associated damage payments.

3.6 Drain Tiles

SCS will work with landowners to locate drain tile systems within the ROW prior to construction. Drain tiles will be marked and will receive appropriate erosion and sediment control BMPs for those with

potential to receive stormwater discharge due to the Project's activities. If drain tiles are out of the construction workspace, SCS will install sediment control measures along the edge of the ROW if access to the inlet site if unauthorized by the landowner.

Tile disturbed or damaged by pipeline construction will be repaired to its original or better condition. Any underground drain tile damaged, cut, or removed will be marked by placing a highly visible flag in the trench spoil bank directly over or opposite such tile. This marker will not be removed until the tile has been permanently repaired and the repairs have been approved and accepted by the county inspector or landowner. If proper notice to the county inspector is provided, construction will not be delayed due to an inspector's failure to be present on the site. Any underground drain tile damaged, cut, or removed and found to be flowing or which subsequently begins to flow will be temporarily repaired as soon as practicable, and the repair will be maintained as necessary to allow for its proper function during construction of the pipeline. The temporary repairs will be maintained in good condition until permanent repairs are done. If tile lines are dry and water is not flowing, temporary repairs are not required.

Any underground drain tile damaged, cut, or removed and found to be flowing or which subsequently begins to flow will be temporarily repaired as soon as practicable, and the repair will be maintained as necessary to allow for its proper function during construction of the pipeline. The temporary repairs will be maintained in good condition until permanent repairs can be completed. If tile lines are dry and water is not flowing, temporary repairs are not required.

As described in the MN APP, tile disturbed or damaged by pipeline construction will be repaired to its original or better condition. Permanent repairs will be completed within 21 days after the pipeline is installed. As described in Section 3.2, where underground drain tile is encountered in the Project profile, the pipeline will be installed at a depth that will achieve at least 12-inch separation between the pipeline and overlying tiles or as agreed upon with landowner.

3.7 Terraces

SCS will work with landowners to ensure restoration of terraces to their pre-construction condition. If requested by the landowner, SCS may hire a local contractor to restore the terraces.

Civil surveys will be conducted to document the terraces and contours before disturbance occurs. The pre-construction drainage along the terrace channel will be maintained and additional BMPs may be installed if necessary. SCS will perform post-construction monitoring and inspection to ensure restoration methods of the terraces are sufficient and that they are to their pre-construction elevation and condition. If the terraces require further work, SCS will either compensate the landowner or arrange for a local contractor to perform the work.

4 Waterbodies

Waterbodies will be surveyed ahead of construction, and along with existing hydrology and USGS information categorized as perennial (year-round water flow), intermittent (contain flow during wet seasons), or ephemeral (contains flow during or immediately after rain or snowmelt event). SCS will obtain permits as necessary involving waterbodies and comply with the conditions and commitments set forth by the agency or permit.

4.1 Workspace

Additional work areas will be minimized and limited in size when located adjacent to the waterbody banks. To ensure any riparian cover is maintained, markers will be placed by an EI at the banks of waterbodies until post-construction seeding has completed.

4.2 Bridges and Culverts

Temporary bridges and culverts may be used when crossing waterbodies (see Figure 8 in Appendix A). Soil will not be used to construct or stabilize equipment bridges. Equipment crossing a bridge will be limited to one piece of clearing equipment at a time per waterbody crossing. Bridges will be designed in a way to limit erosion, sediment into a waterbody, and to withstand the highest expected flow of the time the bridge is in place. At public waters, bridge headers will be placed at least 5 feet back from Top of Bank on either side of the waterbody. Bridges will be removed as soon as practicable after permanent seeding, except for if that period falls within an in-stream timing restriction for work within the ordinary high-water mark). Once the bridge is removed, SCS will conduct additional grading to restore the banks to as near as practicable to pre-construction conditions as needed. Additional seeding and/or installation of erosion and sediment control measures will also be implemented as required.

Fording of waterbodies is prohibited (i.e., civil survey, potholing, or other equipment are not permitted to ford waterbodies prior to bridge placement).

4.3 Clearing and Grading

SCS will comply with regulations and permit constraints to reduce the workspace needed to cross waterbodies. The Contractor will properly install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at waterbodies located within 50 feet of the Project and where stormwater flows to a waterbody and at special waters located within 100 feet of the Project and where stormwater flows to the surface water. SCS will follow applicable permit conditions for any limitations related to length of linear open trench allowable at any given time.

For HDD and bore crossing of waterbodies where there will not be a travel lane within the ROW (i.e., use of a bridge), there will be no clearing over the HDD/bore path. SCS may trim vegetation using hand tools where necessary to access a water source and/or to place the HDD guidewires.

Some clearing may be required along HDDs of waterbodies where a bridge or mats will be installed to allow the transport of construction vehicles and equipment. In this case, clearing will be limited to the width of the travel lane needed to access the bridge or mats. Limited grading may also occur to allow for the safe installation of the bridge.

4.4 Time Window for Construction

All in-stream work activities (installation of dams, sheet piling, etc.) will be minimized to the extent practicable on an area and time duration basis. In-stream trenching will be conducted during periods permitted by the appropriate regulatory agencies and applicable permits and certifications.

SCS will adhere to the following work-exclusion dates for Minnesota Public Water Inventory cool- and warm-water fisheries that require in-channel work,[6] or will seek a waiver from the Minnesota Department of Natural Resources (MDNR):

- Northwest Region: Non-Trout Streams: March 15 – June 15; and
- South Region: Non-Trout Streams: Ice-Out (approx. March 1) – June 15.

Unless otherwise specified in applicable permits or certifications and with exception for bore or HDD crossings, in-stream construction activities (specifically trenching, pipeline installation, backfill, and restoration of the streambed contours) for open cut (non-isolated) crossing methods will occur within the following timeframes:

- Minor Waterbodies (all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing): 24 hours.
- Intermediate Waterbodies (all waterbodies greater than 10 feet wide but less than 100 feet wide at the water's edge at the time of crossing): 48 hours.
- Major Waterbodies (all waterbodies greater than 100 feet wide at the time of crossing): As specified by SCS or in the applicable permits.

These timeframes apply regardless of the presence or absence of flow. These timeframes also apply to dry crossing methods as a guideline and can be extended based on site-specific conditions with approval from SCS and the EI in conformance with the required regulatory authorizations and all applicable federal, state, and local regulations governing this activity.

4.5 Crossing Methods

4.5.1 Nonflowing Open Cut

Waterbody features that have no flow or when flow is unlikely between initial disturbance and final stabilization, the nonflowing open cut method will be utilized. Figure 9 in Appendix A depicts the construction method in plan and profile view for the nonflowing open cut crossing method. If sufficient flow appears during the time of construction of the crossing, then the Flowing Open Cut method will be used.

4.5.2 Flowing Open Cut

Where water flow is expected during construction across the waterbody, the flowing open cut construction method will be used (see Figure 10 in Appendix A). This method entails staging the crossing equipment outside the waterbody, make up the pipe for the crossing in adjacent uplands, trenching across the waterbody, carrying the made-up pipe into the trench, and then backfilling the trench and restoring the stream banks. The Contractor will complete in-stream construction activities as expediently as practicable.

4.5.3 Flowing Dry Flume

Where required, the flowing dry flume method will be utilized at flowing streams (see Figure 11 in Appendix A). Flumes will be installed before trenching activity. Sandbags and plastic sheeting diversion

[6] In-channel work that results in the alteration of the course, current, or cross-section of the public water; this restriction does not apply to the trenchless crossing method or water appropriation activities.

structure, or an equivalent structure will be utilized to create a seal and to divert stream flow through the flume. Flumes will be constructed in a way to prevent erosion and scour from occurring.

4.5.4 Flowing Dry Dam and Pump

The dam and pump method will be utilized at waterbody crossings where required (see Figure 12 in Appendix A). Sheet piling will be used to create a dam to provide a dry workspace. There will be sufficient pumps to be able to maintain the stream flow around the excavation area at the time of construction. Back up pumps will be available at the site of the crossing. Pumps will be equipped with a 3/16-inch mesh screen to prevent the buildup of sediment and fish entrapment. Dams will be constructed to prevent sediment and other pollutants from entering the waterbody. Monitoring will occur throughout the construction of the crossing to ensure the crossing techniques are properly operating.

4.5.5 Bore

This trenchless method is used for installation of small diameter pipelines under waterways, roadways, railways, existing structures, and in congested areas. A typical configuration of a bore crossing is provided in Figure 13 in Appendix A. The bore uses a smaller footprint than a conventional HDD rig and is launched from either a small pit or the surface of the ground. Construction workspace on either side of the feature to be crossed will be utilized to establish the small pit, if needed, and to provide area to string and stage the pipe and equipment. In some instances, based on length, depth, and diameter, pressurized water or drilling mud may be used to hold the hole open. The same contingency and monitoring measures will apply as for the conventional HDD, below.

4.5.6 Horizontal Directional Drill

Where required, the HDD method will be utilized for designated major and sensitive waterbodies. The Contractor will construct each directional drill waterbody crossing in accordance with a site-specific plan. A typical configuration of an HDD crossing is provided in Figure 14 in Appendix A. Construction of the HDD method includes staging the drilling equipment on one or both sides of the stream/river and the made-up pipe string for the crossing length on the other side. After the hole has been drilled, and the pipe string has been welded up and hydrostatically tested, the pipe will be pulled back through the hole using the drill rig to pull the welded-up pipe section. Water for mud make up and hydrotesting of the HDD pipe segment may be acquired from the stream/river crossed or an alternate source.

Drilling fluids and additives utilized during implementation of a directional drill will be non-toxic to the aquatic environment and humans. The Contractor will develop a contingency plan to address an inadvertent return during a directional drill. The contingency plan will include instructions for monitoring during the directional drill and mitigation in the event that there is a release of drilling fluids. Containment, response, and clean-up equipment will be available at both sides of an HDD crossing location and one side of a guided or road bore prior to commencement to assure a timely response in the event of an inadvertent release of drilling fluid. The Contractor will dispose of all drill cuttings and drilling mud either by spreading over the construction right-of-way in an approved upland location or hauling to an approved landfill or other approved site.

4.6 Blasting

SCS does not anticipate that blasting will be required in Minnesota. If blasting is needed, SCS will ensure that the Project will be in compliance with local, state, and federal regulations during the blasting process. The Contractor will produce a site-specific Blasting Plan to include procedures, safety, use, storage, and transportation of equipment. The Contractor and its blasting supervisor will be licensed and thoroughly

familiar with and comply with the rules and regulations of Occupational Safety and Health Administration and all federal, state, county and local regulations governing blasting operations. Blast materials will be contained and collected to ensure proper disposal of the materials. Containers used will be covered to prevent impacts to stormwater runoff.

4.7 Clean Up

Debris and trash will be sorted, removed, and/or disposed of properly as discussed in Section 10. Bridges will be removed during cleanup or following permanent restoration methods. Additional grading may be required to restore the banks to pre-construction conditions or a stable angle of repose. Once cleanup is complete, additional seeding and erosion control methods may be utilized to ensure restoration is accomplished.

4.8 Permanent Restoration

Waterbody banks will be restored to pre-construction contour as practical or to a stable angle if the EI agrees that the pre-construction contour was unstable. If the slope was considered unstable, the Contractor will reshape the banks to prevent slumping. For public waters, SCS will return the bank to pre-construction contours, unless otherwise directed by a site-specific restoration plan. If SCS cannot restore to pre-construction contours at a public water, SCS will consult with the MDNR before proceeding further. Topsoil will be replaced on top of the subsoil. Waterbody banks will be stabilized by installing permanent ECDs and revegetation during final clean up. Permanent slope breakers will be installed across the construction ROW at the base of slopes when slopes are greater than 5% and are less than 50 feet away from a waterbody or as needed to prevent sediment transportation into a waterbody. Typical BMPs to restore stream banks are provided in Figures 3, 4, and 5 in Appendix A. Mechanical stabilization measures (e.g., riprap, bioengineering techniques, etc.) could be required in certain areas where the final soil grade would be unstable and result in erosion and inadequate vegetative stabilization or where required by site-specific waterbody restoration plans, provided that appropriate agency approvals and authorizations have been obtained. However, the use of mechanical stabilization should be limited to only those areas where conventional means (e.g., seeding, erosion control fabric, etc.) would not be sufficient or successful. Any use of rip rap will be in compliance with applicable regulations and authorizations.

Minnesota's Buffer Law requires perennial vegetative buffers of up to 50 feet adjacent to lakes, rivers, and streams and buffers of 16.5 feet adjacent to ditches. Project post-construction vegetation maintenance will be limited adjacent to waterbodies to promote the growth of the riparian filter strip (buffer). However, vegetation along a 10-foot-wide corridor centered over the pipeline will be maintained to facilitate visual inspection of the pipeline and allow corrosion and leak surveys to occur. Vegetation between HDD entry and exit points will not be routinely cleared or mowed.

5 Wetlands

Wetland delineations will occur before construction and captured with GPS for mapping on the construction alignment drawings.

5.1 Workspace

The construction ROW may be reduced to a width of 75 feet or less within a wetland. ATWS will be sited outside of wetlands to the extent practicable and based on site-specific conditions. Ancillary facilities such as pump stations, pipe yards, construction yards, and contractor camps will not be located within a

wetland. Markers will be placed at wetland boundaries until post-construction seeding and stabilization is completed.

5.2 Clearing and Grading

SCS will comply with regulations and permit conditions to reduce the impact when crossing wetlands. The Contractor will properly install and maintain redundant sediment control measures immediately after clearing and prior to initial ground disturbance at wetlands located within 50 feet of the Project and where stormwater flows to a wetland. Vegetation clearing will be limited to cutting trees across the ROW in forested wetlands but leaving stumps in place except over the ditch line. Grading of wetlands will be dictated by the soil saturation as described below. Burning of vegetative material is not allowed in wetlands.

5.3 Wetland Crossing Methods

For all methods described below, only that equipment necessary to clear/grade the wetland, trench, and install the pipeline will work in the wetland. Where a wetland cannot support construction equipment (e.g., in wetlands with saturated soils), all construction activities will be accomplished from construction mats or using low ground pressure equipment, thus limiting disturbance to the wetland. ECDs will be installed at the base of slopes adjacent to wetlands, and where run-off from construction in the wetland could impact adjacent wetlands or upland. Temporary trench breakers will be installed on each side of the wetland to ensure overland flow does not enter the wetland. SCS will follow applicable permit conditions for any limitations related to length of linear open trench allowable at any given time.

5.3.1 Standard

Wetlands that have saturated soils, but do not have standing water will utilize the standard wetland crossing method. This method will use pre-assembled and positioned pipe lined up adjacent to a trench and pushed into the pre-cut trench.

5.3.2 Dry Crossing

The dry crossing method will be utilized when crossing wetlands that have no standing water and no water present below the surface so that topsoil can be segregated easily. Pipe-stringing may occur within the wetland or adjacent to the wetland depending on site conditions and designated workspace. Figure 15 in Appendix A depicts the dry crossing method.

5.3.3 Flooded Push/Pull Crossing

Wetlands that cannot be crossed by conventional wetland construction methods because of the depth of water will utilize the push-pull wetland construction method. This method entails having pre-positioned and assembled weight-coated (if required) pipe with floats pushed or pulled through a pre-cut trench that has standing water. Once the pipe is in position, the floats are removed, and the pipe is sunk into the trench. Topsoiling is not possible with saturated wetland soils or where there is standing water, and the ROW is limited to that necessary to dig the trench and store spoil. Equipment required to weld the pipe and push or pull the pipe will be set up outside the boundaries of the wetlands. The pipe is then floated into the trench.

The Contractor will limit the amount of construction equipment operating within a saturated wetland to the extent needed to construct the trench and restore the ROW. If equipment is required to be operated

within a wetland with standing water, the Contractor will use low ground pressure construction equipment or another approved method.

5.3.4 HDD and Bore Crossing

For HDD and bore crossings that include wetlands between entry and exit, if there will not be a travel lane within the ROW (i.e., use of a bridge), there will be no clearing over the HDD/bore path. SCS may trim vegetation using hand tools where necessary to access a water source and/or to place the HDD guidewires.

Some clearing may be required along HDDs and bores of waterbodies and wetlands where a bridge or mats will be installed to allow the transport of construction vehicles and equipment. In this case, clearing will be limited to the width of the travel lane needed to access the bridge or mats. Limited grading may also occur to allow for the safe installation of the bridge.

5.4 Clean Up

Once the pipe has been installed and the trench backfilled with the proper sequence of soils (if segregated), mats will be removed (if used) and final grading and seeding will occur. Mulch will not be used in wetlands. Seeding requirements are listed in Section 8.1.2.

5.5 Wetland Permanent Restoration

Wetland edges will be restored to the pre-construction contour to maintain the hydrology of the wetland and will be stabilized by installing permanent ECDs and revegetation during final clean up.

Trench breakers will be installed at wetland boundaries where the pipeline trench may cause a wetland to drain, or the trench bottom will be sealed to maintain wetland hydrology.

The use of mulch, lime, and fertilizers will not be utilized unless approved by the appropriate land management and state agency. In addition, the use of pesticides and herbicides will be prohibited within 100 feet of a wetland, waterbody, or a native prairie remnant unless approved by the appropriate land management and state agency and needed to control a known infestation.

Routine vegetation mowing or clearing will not occur within the permanent ROW in a forested wetland. However, vegetation along a 10-foot corridor centered over the pipeline will be maintained to facilitate pipeline inspection and allow corrosion and leak surveys to occur. Trees will not be cleared unless the roots may compromise the integrity of the pipeline coating. Post-construction mowing and clearing of wetland areas will be limited. Vegetation between HDD entry and exit points will not be routinely cleared or mowed.

6 Highway, Road, And Rail Crossings

Conventional bore or HDD methods will be used to cross highway, road, and rail crossing features (see description of activities in Sections 4.5.5 and 4.5.6). Because watercourses, such as ditches, often occur parallel to these features, HDDs/bores may be extended to bore under multiple features. Bore methods involve construction of a bore pit on each side of the feature (e.g., highway, road, railroad, watercourse) and boring a carrier pipe underneath the feature(s) without use of pressurized drilling fluid. The specific equipment utilized to execute the bore is dictated by the length of the bore and soil conditions. Water and bentonite clay can be introduced if soil conditions dictate to lubricate the drill head and carrier pipe and allow it to move through the ground more freely. With this construction practice at no time is pressurized water or drilling mud being used to hold the hole open as it will during an HDD, and therefore

there is no risk for an inadvertent release at these locations. If drilling mud is needed at these locations, any release will travel back along the path of the pipe and into the bore pit. Refer to Section 4.5.5 for a description of the HDD crossing method.

7 Water Management

7.1 Water Appropriations

7.1.1 Water Withdraw Procedures

Water may be withdrawn from agency approved surface waters such as rivers, streams, lakes, or ponds, or through agreements with municipalities for their source water, and private surface or ground water wells to use for Project related activities. SCS will obtain applicable permits and comply with the conditions set by those permits. To prevent fish entrainment, a 3/16-inch mesh screen will be installed on the intake hose and sized per permitting requirements.

The following procedures will be implemented during the intake of water of the Project:

- Intake pumps will be placed in an upland area at least 100 feet away from the wetland or waterbody, or within an enclosed structure at the edge of the waterbody, to prevent erosion or the transport of sediments into the feature.
- Intake screens will be designed with 3/16-inch mesh to reduce impingement and entrainment of aquatic life and sizes/design will be as per permit requirements.
- Refueling will follow the conditions listed in Section 9.2.2.
- Erosion and sediment control devices will be installed, as necessary, at test manifolds.

Typical arrangements for water intake into trucks and into the pipeline for hydrotesting are provided in Figures 16 and 17 in Appendix A.

7.1.2 Intake Flow Rates

Waterbody flow rates and volumes will be maintained to protect aquatic life and to minimize sediment intake. Downstream uses will not be impacted from the Project's water intake and use. If a water source has low flow at the time of withdrawal, a backup source will be utilized.

The withdrawal rate and total volume of the water appropriated will be monitored and recorded by using a flow meter or equivalent device. The flow rate and total volume withdrawn will not exceed the specified amount in the applicable permits. If water sampling is required by permit conditions, SCS will obtain samples during appropriation and test for the parameters listed in the permit conditions.

7.1.3 Reporting

SCS will submit reports and notifications to the applicable federal, state, or local agencies as required by permit conditions.

7.2 Construction Trench Dewatering

7.2.1 Procedures

The Contractor may use a well point system for dewatering when traditional dewatering techniques are or would not be adequate. This system will consist of a series of small diameter wells installed via hydro-jetting that are connected by a header pipe to a well point pump (see Figure 18 in Appendix A). The well

point system will be installed within the construction workspace following topsoil segregation. Adequate temporary erosion and sediment control BMPs will be installed to prevent the migration of subsoil slurry produced during the well point installation process.

For dewatering open excavations, including the trench, the Contractor will use a hose which is attached to a portable pump. The number and size of pumps used during trench dewatering will depend on the volume of water needed to be removed from the trench. Pumps used during dewatering will be placed within secondary containment if within 100 feet of a wetland, waterbody, water supply well, or sensitive habitat (see Section 9.2.1). Pumps will be controlled and monitored to ensure that the discharge does not overwhelm the dewatering structure. The hose will be a floating suction hose or have a floating intake to prevent sediment from being sucked from the bottom of trench (see Figure 19 in Appendix A).

All water pumped from an open excavation be directed through a discharge hose to a dewatering structure or a filter bag as described below and in construction typicals presented as Figures 20 and 21 in Appendix A. Ideally, these will be placed in well-vegetated uplands. The placement of the dewatering structure will be coordinated with the EI to ensure that structures are placed to avoid sensitive resources. The EI will consult pre-construction environmental resource survey data for lands adjacent to and outside of the construction workspace when siting the dewatering structure. Dewatering structures will be placed to avoid sensitive habitats or other environmental resources that may be affected by the discharge. Erosion and sediment control BMPs will be installed at the discharge point to mitigate impacts to waterbodies, wetlands, or sensitive habitats. The EI will monitor the installation of erosion and sediment BMPs at trench dewatering outfalls to ensure proper construction and configuration to minimize the potential of water containing sediment from reaching a waterbody or wetland.

Discharges will be monitored to ensure they are not causing flooding damage to agricultural land, crops, and pastures or result in visible turbidity, material discoloration, or other nuisance conditions,[7] or violations of other applicable water quality standards beyond the treatment area. If the Contractor observes that such conditions exist, the Contractor will stop the discharge and will implement alternative or supplemental actions. Discharge of trench water will occur in a manner to prevent scouring, erosion, or sediment transport from the discharge location.

7.2.2 Sampling and Reporting

If required by trench dewatering permits, daily monitoring logs will be maintained by the Contractor to record the volume, duration, and flow rate. SCS will submit the flow data collected by the Contractor to the applicable agencies. Reporting, if required, will be as outlined in permits received.

7.3 Hydrostatic Test Procedures and Discharges

Prior to hydrostatic testing the pipeline, SCS will prepare the pipe by removing accumulated construction debris, mill scale, dirt, and dust using a cleaning pig[8] that is moved by compressed air. Cleaning water and debris removed from the pipe will be disposed of off-site in accordance with applicable permits.

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[7] Minnesota Administrative Rules 7050.0210, subp. 2.

[8] Internal maintenance and inspection device (commonly referred to as a "pig"), which is designed to travel through the pipeline to detect certain internal and external anomalies in the pipe such as corrosion, dents, and scratches or to clean the pipeline and remove liquids.

7.3.1 Discharge Procedures

Hydrostatic testing will be conducted in accordance with applicable appropriation and discharge permits and leases obtained by SCS. Discharge of hydrostatic test water may apply through overland flow in an upland area or returned to the source after use. State requirements will be followed regarding movement or reuse of water prior to finalization of a hydrotest plan.

Discharge locations will be determined and approved by applicable agencies prior to use. Energy dissipation devices may be used to help mitigate the possibility of erosion while discharging, suspended sediments in the waterbody or wetland, or scour. Devices used for energy dissipation may include:

- Splash Pup
  - A splash pup consists of a piece of large diameter pipe (usually over 20-inch outside diameter) of variable length with both ends partially blocked that is welded perpendicularly to the discharge pipe. As the discharge hits against the inside wall of the pup, the velocity is rapidly reduced, and the water is allowed to flow out either end. A variation of the splash pup concept, commonly called a diffuser, incorporates the same design, but with capped ends and numerous holes punched in the pup to diffuse the energy.
- Splash Plate
  - The splash plate is a quarter section of 36-inch pipe welded to a flat plate and attached to the end of a 6-inch discharge pipe. The velocity is reduced by directing the discharge stream into the air as it exits the pipe. This device is also effective for most overland discharge.
- Plastic Liner
  - In areas where highly erodible soils exist or in any low flow drainage channel, it is a common practice to use layers of Visqueen (or any of the new construction fabrics currently available) to line the receiving channel for a short distance. One anchoring method may consist of a small load of rocks to keep the fabric in place during the discharge. Additional best management practices, such as the use of plastic sheeting or other material to prevent scour will be used as necessary to prevent excessive sedimentation during dewatering.
- Straw Bale Dewatering Structure
  - Straw bale dewatering structures are designed to dissipate and remove sediment from the water being discharged. Straw bale structures are used for on land discharge of wash water and hydrostatic test water and in combination with other energy dissipating devices for high volume discharges (see Figure 20 in Appendix A). A dewatering filter bag may be used as an alternative to straw bale dewatering structures (see Figure 21 in Appendix A).

7.3.2 Sampling and Reporting

Flow will be measured and monitored as required to ensure the volume discharged does not exceed permit conditions. When discharging the hydrostatic test water, the rate of flow will be in accordance

with applicable water quality requirements and will be monitored and logged into discharge monitoring reports. The total volume discharged will be recorded and submitted to applicable agencies to comply with permits, as required. Sampling parameters will be in compliance with permit conditions.

7.4 Management of Infested Waters

To minimize the spread of invasive aquatic species in Minnesota, SCS will implement the following procedures when working in waterbodies in compliance with Minnesota Statute 84D.10 Subd. 4, and consistent with the *Recommended Uniform Minimum Protocols and Standards for Water Craft Interception Programs for Dreissenid Mussels in the Western United States* (Zook and Phillips, 2012 as cited by Minnesota Statutes 84D.01), MDNR, and best management practices[9].

At all waters, regardless of current infestation status, SCS will commit to the following BMPs:

- Equipment intended for use at the Project site will be free of invasive species prior to being transported to the worksite. Equipment (e.g., hoe stick and bucket, pumps, hoses) used in any state watercourses, regardless of designated infestation status, will be inspected for invasive aquatic species prior to and following in-water work.
- Pumps, hoses, and other equipment with water intakes will be drained of water after use. SCS will remove plants, mud, debris, and organisms from the exterior of the equipment (e.g., hoe stick and bucket). Hoses will be flushed with clean water and thoroughly drained to further mitigate potential transmittal of infestations.
- For crossings of completely frozen waterbodies during winter, if no liquid water comes in contact with equipment, no decontamination will occur.
- Decontamination water will be allowed to infiltrate in an upland area at least 300 feet from any watercourse, or within 300 feet of the aquatic invasive species source in accordance with applicable permits.
- Felt-soled waders will not be allowed for use in any state watercourse because felt can easily trap, and thus potentially transport, invasive species.
- If personnel enter any state watercourse, personnel will scrub clothes, waders, boots, and other personal gear with a stiff brush to remove debris.
- SCS will notify the MDNR if any aquatic invasive species are identified in a watercourse not previously designated as an infested water.

At locations known to be infested, or if aquatic invasive species are identified during inspection of the equipment, SCS will implement one or more of the following decontamination procedures before use in another waterbody:

- clean with heated high-pressure washer;
- heated water contact from the pressure water will be maintained for the duration prescribed in the Table 1 below;

[9] https://www.dnr.state.mn.us/invasives/preventspread_watercraft.html

- rinse or soak equipment (e.g., pumps) with heated water at the temperature and duration prescribed in the table below;
- dry for 5 days prior to using at another waterbody; or
- freeze for 6 to 8 hours prior to using at another waterbody.

Table 1: Temperature and Duration for Decontamination using Heated Water

Water Temperature (degrees Fahrenheit)	Duration
Pressure Washing Activities	
140	10 seconds
130	20 seconds
120	40 seconds
100	80 seconds
Soaking Decontamination Activities and Pre-Treatment	
130	10 minutes
115	15 minutes
These guidelines were provided by the MDNR (G. Montz, MDNR Aquatic Invertebrate Biologist) on March 27 and March 30, 2020.	

Infested waters cannot be appropriated, diverted, or transported without a permit from the MDNR. In all cases where infested waters are used or appropriated, SCS will discharge back to the source water or infiltrate the discharge to control potential spread of aquatic invasives.

8 Reclamation and Revegetation

Reclamation and seeding measures described below do not apply to actively farmed crop land. For actively farmed crop land, refer to SCS' MN APP.

8.1 Site Preparation and Seeding

8.1.1 Site Preparation

A subsoiler, plow, or other implement shall be used to reduce soil compaction and allow maximum infiltration. Maximizing infiltration will help control both runoff rate and water quality. Subsoiling will be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling will not be done in slip prone areas where soil preparation should be limited to what is necessary for establishing vegetation.

Before seeding commences, a firm seed bed will be prepared. The site will be graded as needed to permit the use of conventional equipment for seedbed preparation and seeding. Debris including large stones, logs, and stumps will be removed from the seed bed per landowner agreements. Topsoil will be spread across the workspace as required to establish vegetation.

8.1.2 Seeding

Project seed mixes will be developed based on Minnesota Board of Water and Soil Resources seed mixes. The species and types of seeds will be determined by consultations with the local Natural Resources Conservation Service, the MDNR for seeding at public waters, and landowner preferences and will be

sourced in advance of the Project. Seeding will be conducted either in the spring, late summer, or dormant periods to allow the greatest chance of successful growth. Seed mixes will be previously tested and approved by the manufacturer to meet the requirements of regulations and be certified weed free.

Seeding will be applied uniformly with a cyclonic seeder, drill, cultipacker seeder, or hydroseeder, when feasible. Seed that has been broadcast will be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on site and the seeding shall be done immediately and without interruption. Hydroseeding will not occur within 100 feet of a waterbody.

8.1.3 Temporary Cover

If it is not possible to plant the selected species during the first year of reclamation and restoration, temporary cover may be used until the next seeding period.

8.1.4 Mulching

Mulch material shall be applied and anchored immediately after seeding to minimize loss by wind or water. Dormant seeding shall be mulched.

8.1.5 Winter Seeding

Winter seeding will occur during early or late winter when it is possible for a seed to firmly be set in the soil surface. An agency approved seed mix will be used if winter seeding is necessary. If a winter seed mix cannot be used or is not available, temporary cover will be utilized over the disturbed areas.

8.2 Management and Monitoring

SCS will monitor areas where stabilization and restoration methods are implemented in accordance with requirements in state permits and landowner agreements. Monitoring will identify areas where remedial measures are required to establish a stable surface for reclamation to be successful. This may include re-grading, re-seeding, re-mulching, and additional monitoring.

8.3 Roads

Temporary roads used for the Project will be removed and the area will be restored to its pre-construction condition.

9 Spill Prevention, Containment, and Response

Spill prevention and containment applies to the use and management of hazardous materials on the construction ROW and all ancillary areas during construction. This includes the refueling or servicing of all equipment with diesel fuel, gasoline, lubricating oils, grease, and hydraulic and other fluids. The Contractor will develop a contingency plan to address an inadvertent return during a directional drill; these plans will identify BMPs for an inadvertent return and requirements following the incident.

If applicable, the Contractor will provide site-specific data that meets the requirements of 40 CFR (Code of Federal Regulations) Part 112 for every location used for staging fuel or oil storage tanks and for every location used for bulk fuel or oil transfer.

9.1 Roles and Responsibility

9.1.1 Environmental Inspector

The EI will monitor the notification procedure that the Spill Coordinator will follow, monitor containment procedures, and ensure cleanup is accomplished according to agency requirements.

9.1.2 Authorized Personnel

Personnel authorized to handle hazardous materials or substances will be trained accordingly to ensure safe handling practices are utilized and the requirements of this section are followed.

9.1.3 Spill Coordinator

A Spill Coordinator will be assigned to inform SCS about spill related incidents. The following incidents must be reported to SCS immediately:

- material released that creates a sheen in water;
- any spill of oil, oil products, or hazardous material that reaches a waterbody or wetland; and/or
- incidents on public highways.

9.1.3.1 Spill Notifications

A SCS representative will be identified to serve as a contact in the event of a spill during construction activities. In the event of a spill, the Spill Coordinator will immediately notify the SCS representative who will then report to the appropriate regulatory agencies. For all construction related spills, SCS will:

- Report spills immediately to the Minnesota Duty Officer by contacting 800-422-0798 or 651-649-5451.
- Complete Spill Report Forms required from agencies and SCS within 24 hours of the occurrence of a spill.

If a spill occurs on or reaches a navigable water of the Unites States, SCS will notify the National Response Center at 1-800-424-8802. For spills that occur on public lands that meet the necessary reporting thresholds, into other surface waters, or into sensitive areas, the appropriate governmental agency's district office will also be notified.

9.2 Spill Prevention

9.2.1 Handling/Storage of Fuels and Hazardous Liquids

Each construction spread will consist of a staging area within a contractor yard to store bulk fuel and storage tanks. Bulk fuel and storage tanks will not be placed within the construction ROW and will be stored in compliance with state and federal laws.

Hazardous materials such as fuels, lubricating oils, or chemicals will typically not be stored within 100 feet of a wetland, waterbody, designated municipal watershed area, or sensitive habitat. All equipment will be parked overnight at least 100 feet from a waterbody or in an upland area at least 100 feet away from a wetland unless an EI confirms there is no reasonable alternative. If this is determined to be necessary, the following precautions will apply:

- kiddie pools will be placed underneath vehicles and equipment to capture potential leaks;
- adequate amounts of absorbent materials and containment booms will be kept on hand to enable the rapid cleanup of any spill which may occur; and
- adequate lighting will be provided for these locations and activities.

Secondary containment systems will be utilized to prevent spills when storing fuels and when pumps are operating within 100 feet of a wetland, waterbody, water supply well, or sensitive habitat. Secondary containment structures will be lined with suitable plastic sheeting, provide a containment volume of at least 150 percent of the storage vessel, and allow for at least 1 foot of freeboard.

9.2.2 Refueling

Fueling will not occur withing 100 feet of a wetland, waterbody, designated municipal watershed area, or sensitive habitat unless the EI confirms there is no reasonable alternative. If this is determined to be necessary, the following precautions will apply:

- adequate amounts of absorbent materials and containment booms will be kept on hand to enable the rapid cleanup of any spill which may occur; and
- adequate lighting will be provided for these locations and activities.

All equipment handling fuels will be inspected regularly to ensure it is in good operating condition. Equipment will not be washed in streams or wetlands to prevent incidental contamination. The procedure for the disposal of fuel, oil, or hazardous material is described in Section 10.2.

9.2.3 Inspection and Maintenance

The Contractor will ensure that all equipment is property maintained and free of leaks prior to use on the Project and prior to working near waterbodies, wetlands, or sensitive habitats. Regular maintenance and inspections of the equipment will be conducted to reduce the potential for spills or leaks. Emergency equipment will be inspected weekly and maintained regularly.

9.3 Equipment

The following equipment will be kept where fuel is stored during construction to ensure the cleanup of a spill is handled efficiently and successfully:

- Adequate absorbent materials and containment booms will be on hand for each construction crew.
- Spill Kits containing absorbent and barrier materials such as straw bales, absorbent clay, absorbent pads, sawdust, spill containment barriers, plastic sheeting, skimmer pumps, and holding tanks to contain a potential spill will be located near each waterbody or wetland crossing and fuel storage areas.
- Fueling vehicles will contain materials necessary to control spills and will only travel on approved access roads.

9.4 Contingency Plans

Emergency response procedures will be developed for incidents including but not limited to spills, leaks, fires, or other accidents involving hazardous material. The Contactor will identify response contractors in

their Contingency Plans, if applicable. The procedures will address activities that take place on the construction ROW or that may involve travel to or from the construction ROW.

9.5 Spill Response

In the event of a spill of a hazardous material, Contractor personnel will follow the procedures listed below if it is deemed safe to do so:

- Notify the identified SCS representative after making regulatory notifications;
- Identify the product hazards relating to the spilled material and implement appropriate safety procedures;
- Implement spill contingency plans and mobilize appropriate resources;
- Isolate or shut down the source of the spill;
- Block manholes and culverts to limit the travel of the spill;
- Initiate containment procedures to limit the spill as much as possible;
- Commence recovery and cleanup of the spill; and
- Ensure hazardous material is disposed of properly.

9.6 Spill Containment

Berms will be constructed with available equipment to physically contain the spill on land. Personnel entry and travel on contaminated soils will be minimized. If necessary, sorbent materials will be applied. Spills on pavement shall be absorbed with sawdust or kitty litter and disposed of with the trash. Contaminated soils, sorbent materials, and vegetation will be removed and disposed of at an approved facility as stated in Section 10.2.

If a spill has the potential to flow into a waterbody, berms, or trenches will be constructed to contain the spill prior to entry into the waterbody. If a spill reaches the water, the deployment of booms, skimmers, and sorbent materials will be utilized to contain the spill. The spilled product will be recovered, and the contaminated area will be cleaned up in consultation with the appropriate regulating agencies.

9.7 Remediation

SCS will follow applicable regulations and guidelines following a spill to remediate and restore the site. Remediation of a site will vary depending on size, location, hazardous material involved, and current weather. The Contractor will make appropriate calls and reports to applicable agencies to ensure compliance is met on the site.

10 Waste Management

10.1 Non-Hazardous Waste Disposal

Construction debris will be removed from the construction ROW and disposed of at regulated facilities that abide by state and federal regulations. Waste will be disposed of at a licensed waste disposal facility. Waste that contains or has previously contained oil, grease, solvents, or other petroleum products will be segregated for handling and disposal of hazardous wastes.

The Contractor will be responsible for ensuring all trash is removed from the ROW on a daily basis unless approved or directed by SCS. The Contractor will remove all trash and waste from Contractor yards, and

Pipe Stockpile Sites, and staging areas when work is completed at each location. Extraneous vegetative, rock, and other natural debris will be removed before the completion of cleanup.

Woody debris will be mowed, chipped, grinded, or hauled off site to an approved location and will be managed in accordance with applicable permits and regulations. Woody debris may also be used as mulch, to stabilize slopes, or to stabilize construction ROW access entry or exit points. Burning within 100 feet of a wetland or waterbody is prohibited without site-specific approval from an EI and permitting regulations.

If concrete coating of the pipe is required, the Contractor will collect and retain all the concrete washout water and solids in a leak proof containment. Concrete wash water, grindings, or slurry will not come in contact with the ground or be disposed of on the ground surface as prohibited in MPCA Construction Stormwater General Permit MNR100001.

10.2 Hazardous Waste Disposal

The Contractor will ensure that all hazardous and potentially hazardous waste are transported, stored, and handled in accordance with all applicable regulations. Workers exposed to or required to handle dangerous materials will be trained in accordance with the applicable regulatory agency and the manufacturer's recommendations on Safety Data Sheets.

Hazardous waste will be disposed of at licensed waste disposal facilities. All hazardous wastes being transported off-site will be manifested. The transporter will be licensed and certified to handle hazardous waste on the public highways. The vehicles as well as the drivers must conform to all applicable vehicle codes for transporting hazardous waste. The manifest will conform to 49 CFR Sections 172.101, 172.202, and 172.203 and applicable state agency requirements. If suspected toxic or hazardous waste materials or containers are encountered during construction, the Contractor will stop work immediately to prevent disturbing or further disturbing the waste material and will notify SCS immediately. The Contractor will not start work until clearance is granted by SCS.

10.3 Water Disposal

Water will be discharged at approved locations and tested according to applicable permit regulations. Water that exceeds limitations of parameters will be treated to be at or under the limitations and discharged or transported at an approved facility. Cleaning water generated will be hauled and disposed of at an approved facility.

10.4 HDD Mud and Fluid Disposal

The Contractor will dispose of HDD drill cuttings and drilling mud at a SCS-approved location. If the HDD mud is disposed on landowner-approved lands, testing of the HDD mud may be required by the landowner or state agency prior to disposal.

Appendix A – Typicals

Figure 1: Typical 100' Construction R.O.W. Conventional Lay

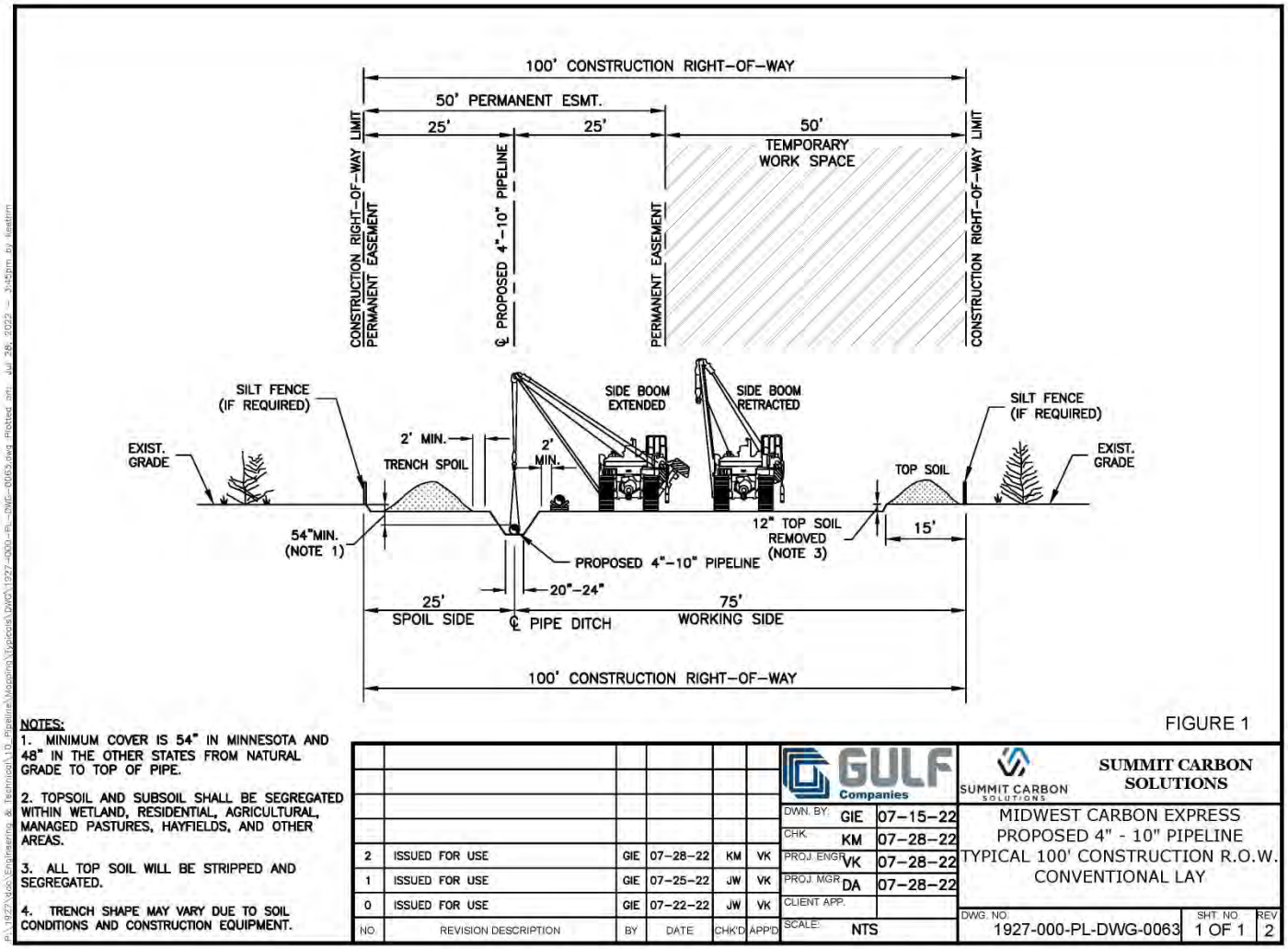


FIGURE 1

NOTES:
1. MINIMUM COVER IS 54" IN MINNESOTA AND 48" IN THE OTHER STATES FROM NATURAL GRADE TO TOP OF PIPE.
2. TOPSOIL AND SUBSOIL SHALL BE SEGREGATED WITHIN WETLAND, RESIDENTIAL, AGRICULTURAL, MANAGED PASTURES, HAYFIELDS, AND OTHER AREAS.
3. ALL TOP SOIL WILL BE STRIPPED AND SEGREGATED.
4. TRENCH SHAPE MAY VARY DUE TO SOIL CONDITIONS AND CONSTRUCTION EQUIPMENT.

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
2	ISSUED FOR USE	GIE	07-28-22	KM	VK
1	ISSUED FOR USE	GIE	07-25-22	JW	VK
0	ISSUED FOR USE	GIE	07-22-22	JW	VK

GULF Companies

DWN. BY:	GIE	07-15-22
CHK.	KM	07-28-22
PROJ. ENGR.	VK	07-28-22
PROJ. MGR.	DA	07-28-22
CLIENT APP.		
SCALE:	NTS	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED 4" - 10" PIPELINE
TYPICAL 100' CONSTRUCTION R.O.W.
CONVENTIONAL LAY

DWG. NO.	SHT. NO.	REV
1927-000-PL-DWG-0063	1 OF 1	2

P:\1927\dgn\Engineering & Technical\10 Pipeline\Mapping\Typicals\DWG\1927-000-PL-DWG-0063.dwg Plotted on: Jul 28, 2022 - 3:45pm by ileatrim

Figure 2: Standard Wetland 75' Construction R.O.W.

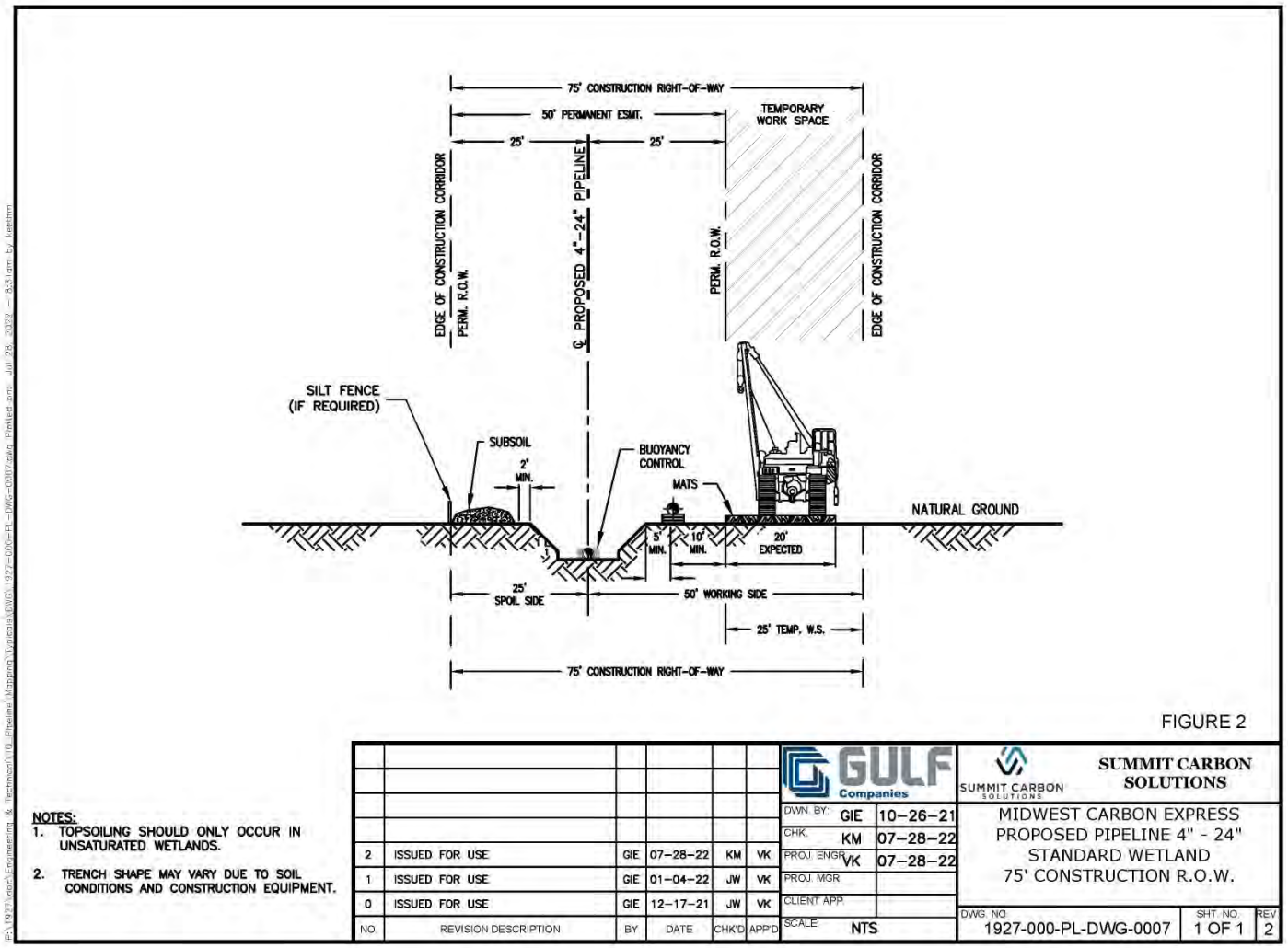


FIGURE 2

NOTES:
1. TOPSOILING SHOULD ONLY OCCUR IN UNSATURATED WETLANDS.
2. TRENCH SHAPE MAY VARY DUE TO SOIL CONDITIONS AND CONSTRUCTION EQUIPMENT.

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
2	ISSUED FOR USE	GIE	07-28-22	KM	VK
1	ISSUED FOR USE	GIE	01-04-22	JW	VK
0	ISSUED FOR USE	GIE	12-17-21	JW	VK

GULF Companies

DWN. BY:	GIE	10-26-21
CHK.	KM	07-28-22
PROJ. ENGR.	VK	07-28-22
PROJ. MGR.		
CLIENT APP.		
SCALE:	NTS	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED PIPELINE 4" - 24"
STANDARD WETLAND
75' CONSTRUCTION R.O.W.

DWG. NO.	SHT. NO.	REV.
1927-000-PL-DWG-0007	1 OF 1	2

Figure 3: Typical Riprap Detail

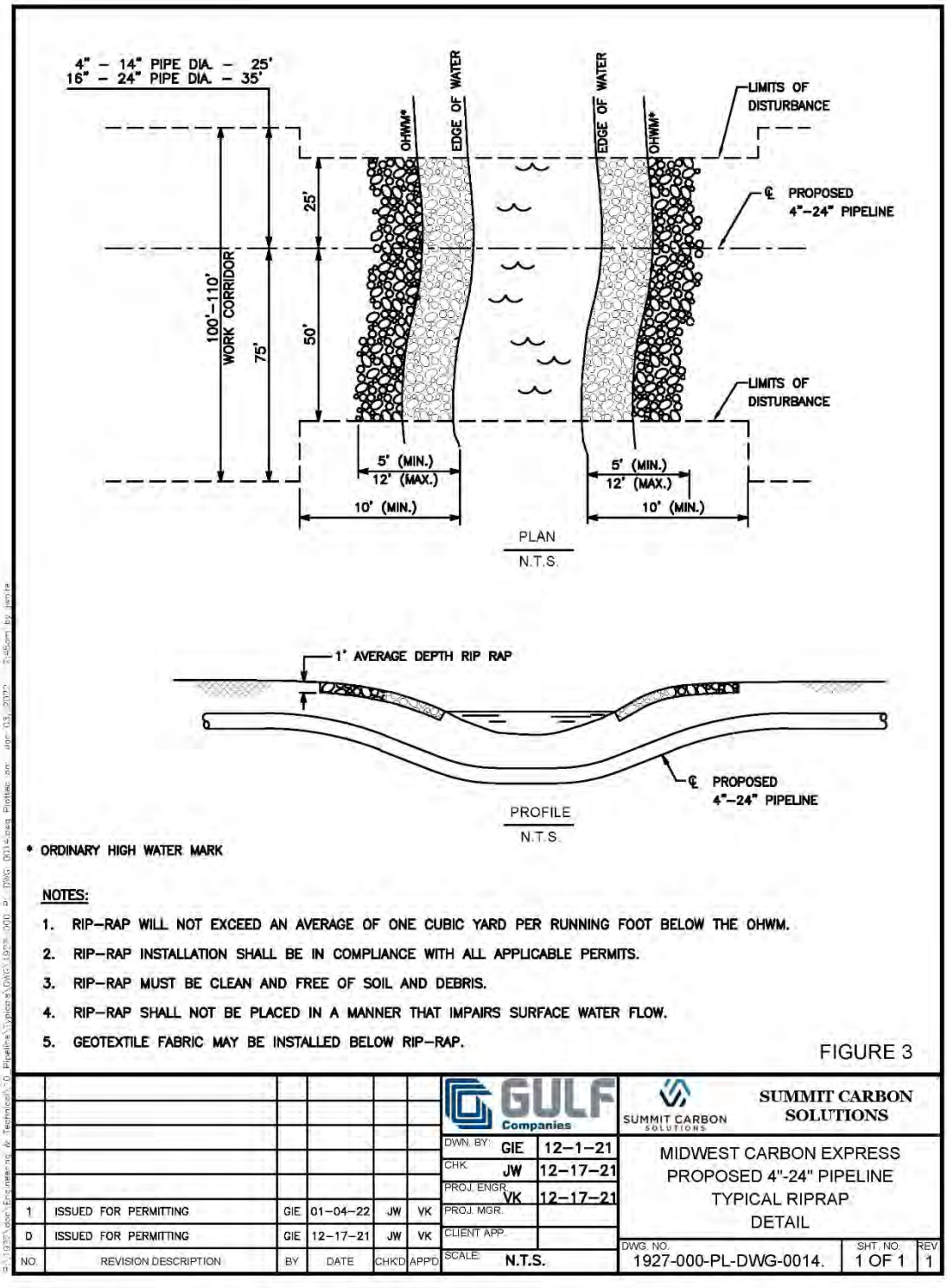
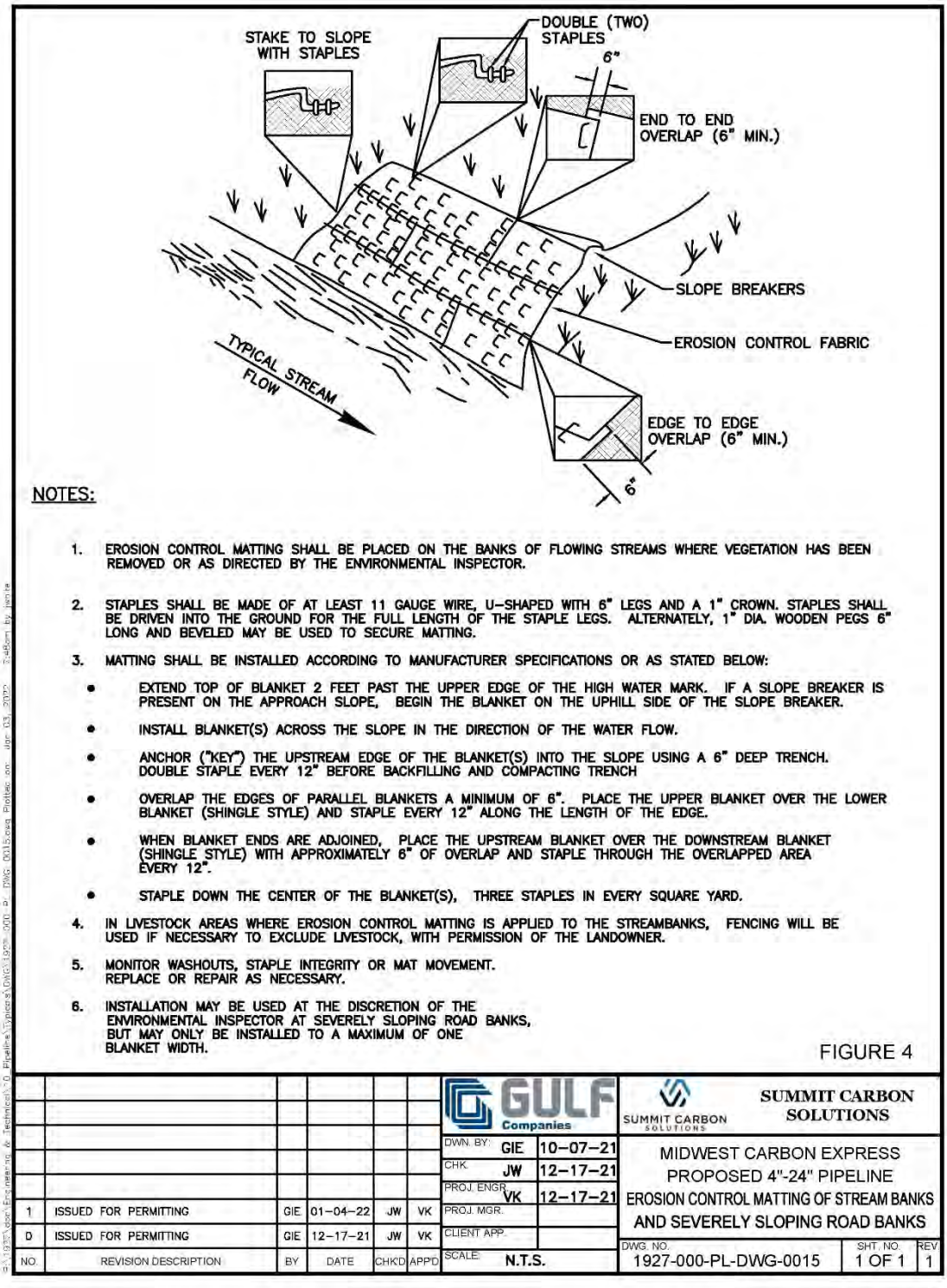


Figure 4: Erosion Control Matting of Stream Banks and Severely Sloping Road Banks



NOTES:

1. EROSION CONTROL MATTING SHALL BE PLACED ON THE BANKS OF FLOWING STREAMS WHERE VEGETATION HAS BEEN REMOVED OR AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
2. STAPLES SHALL BE MADE OF AT LEAST 11 GAUGE WIRE, U-SHAPED WITH 6" LEGS AND A 1" CROWN. STAPLES SHALL BE DRIVEN INTO THE GROUND FOR THE FULL LENGTH OF THE STAPLE LEGS. ALTERNATELY, 1" DIA. WOODEN PEGS 6" LONG AND BEVELED MAY BE USED TO SECURE MATTING.
3. MATTING SHALL BE INSTALLED ACCORDING TO MANUFACTURER SPECIFICATIONS OR AS STATED BELOW:
   - EXTEND TOP OF BLANKET 2 FEET PAST THE UPPER EDGE OF THE HIGH WATER MARK. IF A SLOPE BREAKER IS PRESENT ON THE APPROACH SLOPE, BEGIN THE BLANKET ON THE UPHILL SIDE OF THE SLOPE BREAKER.
   - INSTALL BLANKET(S) ACROSS THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
   - ANCHOR ("KEY") THE UPSTREAM EDGE OF THE BLANKET(S) INTO THE SLOPE USING A 6" DEEP TRENCH. DOUBLE STAPLE EVERY 12" BEFORE BACKFILLING AND COMPACTING TRENCH
   - OVERLAP THE EDGES OF PARALLEL BLANKETS A MINIMUM OF 6". PLACE THE UPPER BLANKET OVER THE LOWER BLANKET (SHINGLE STYLE) AND STAPLE EVERY 12" ALONG THE LENGTH OF THE EDGE.
   - WHEN BLANKET ENDS ARE ADJOINED, PLACE THE UPSTREAM BLANKET OVER THE DOWNSTREAM BLANKET (SHINGLE STYLE) WITH APPROXIMATELY 6" OF OVERLAP AND STAPLE THROUGH THE OVERLAPPED AREA EVERY 12".
   - STAPLE DOWN THE CENTER OF THE BLANKET(S), THREE STAPLES IN EVERY SQUARE YARD.
4. IN LIVESTOCK AREAS WHERE EROSION CONTROL MATTING IS APPLIED TO THE STREAMBANKS, FENCING WILL BE USED IF NECESSARY TO EXCLUDE LIVESTOCK, WITH PERMISSION OF THE LANDOWNER.
5. MONITOR WASHOUTS, STAPLE INTEGRITY OR MAT MOVEMENT. REPLACE OR REPAIR AS NECESSARY.
6. INSTALLATION MAY BE USED AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR AT SEVERELY SLOPING ROAD BANKS, BUT MAY ONLY BE INSTALLED TO A MAXIMUM OF ONE BLANKET WIDTH.

FIGURE 4

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
1	ISSUED FOR PERMITTING	GIE	01-04-22	JW	VK
0	ISSUED FOR PERMITTING	GIE	12-17-21	JW	VK

GULF Companies

DWN. BY: GIE	10-07-21
CHK. JW	12-17-21
PROJ. ENGR. VK	12-17-21
PROJ. MGR.	
CLIENT APP.	
SCALE: N.T.S.	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED 4"-24" PIPELINE
EROSION CONTROL MATTING OF STREAM BANKS AND SEVERELY SLOPING ROAD BANKS

DWG. NO.	SHT. NO.	REV
1927-000-PL-DWG-0015	1 OF 1	1

Figure 5: Typical Slope Breaker Installation and Maintenance

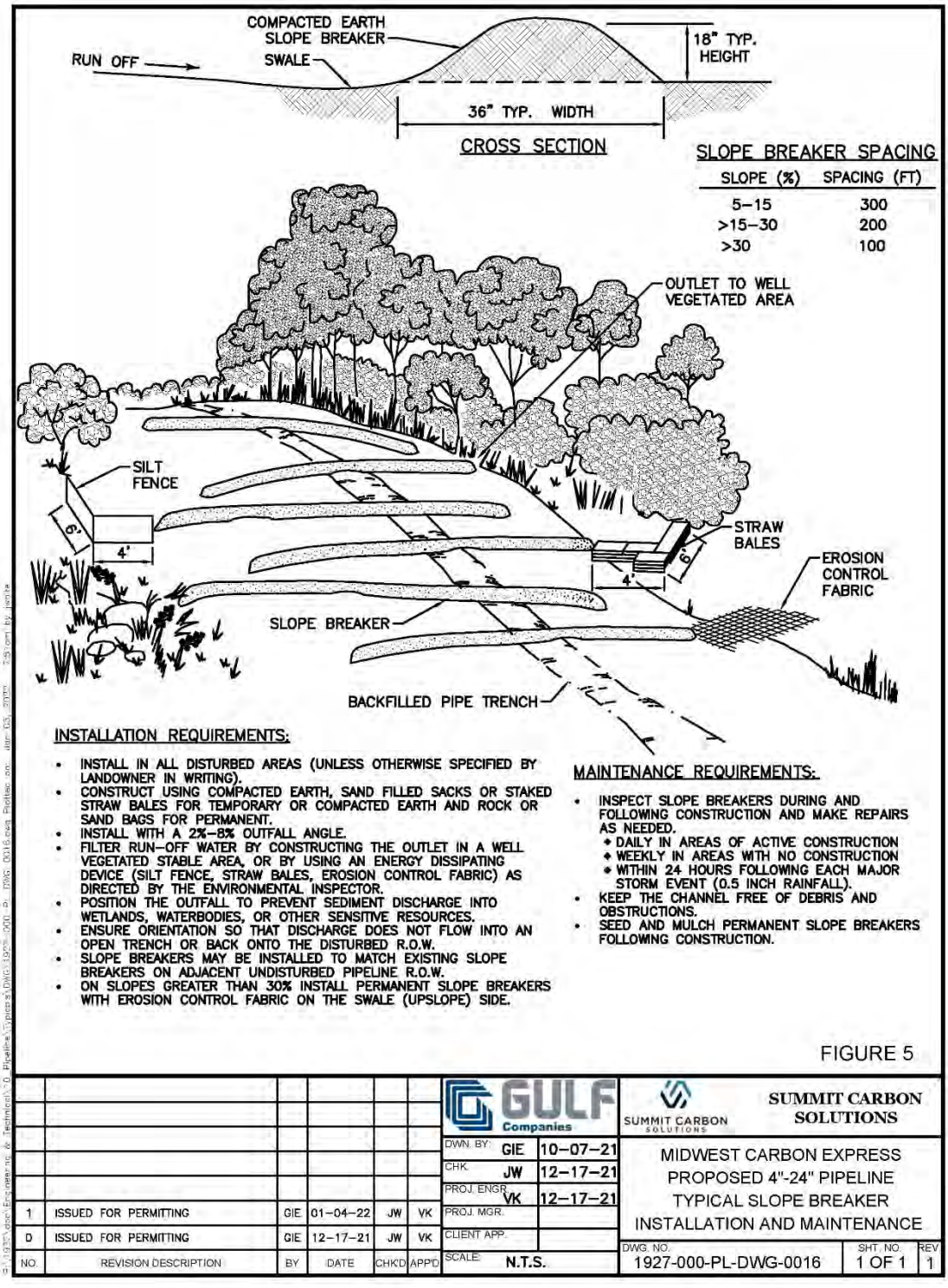
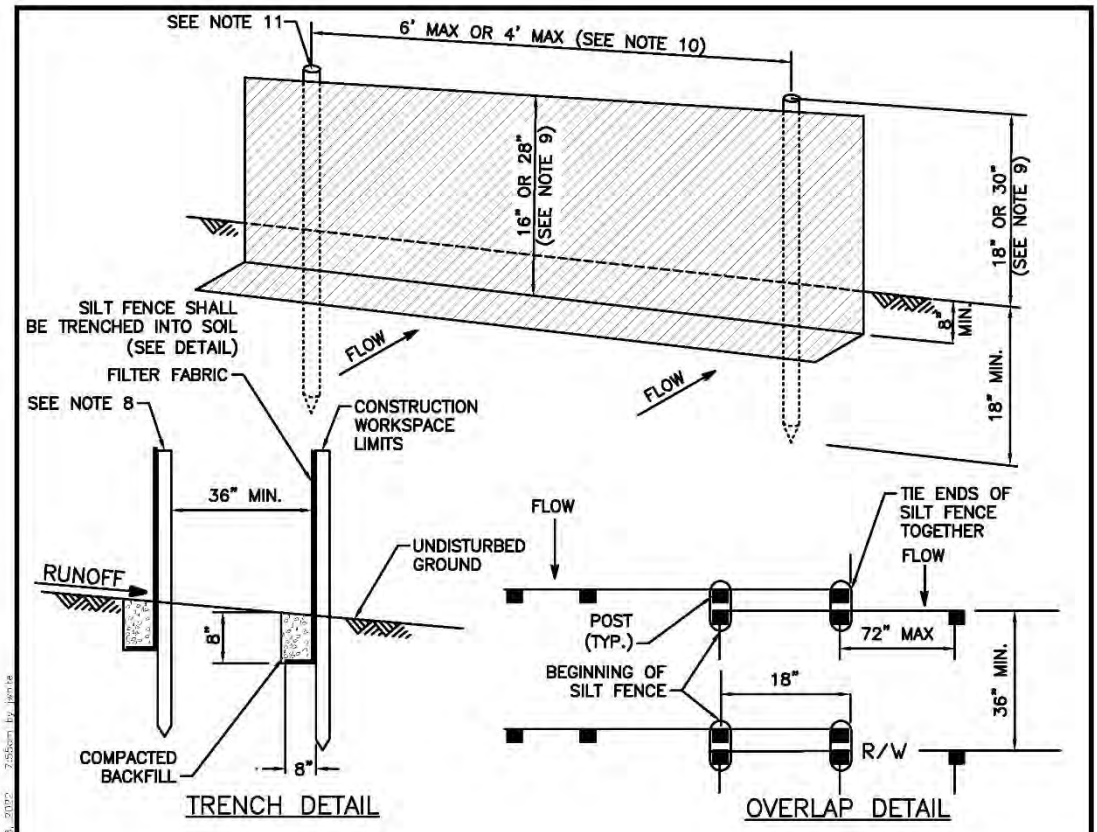


Figure 6: Silt Fence and Sediment Barrier Installation and Maintenance



NOTES:

1. SILT FENCE SHALL BE INSTALLED TO FILTER SEDIMENT FROM SURFACE RUNOFF.
2. INSTALLATIONS SHALL BE PERIODICALLY CHECKED, THE SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE–THIRD THE HEIGHT OF THE SILT FENCE.
3. SILT FENCE SHALL BE LEFT IN PLACE UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED.
4. SILT FENCE SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT IT REDUCES THE EFFECTIVENESS OF THE SILT FENCE.
5. AREA DISTURBED AS A RESULT OF REMOVING THE SILT FENCE SHALL BE RESTABILIZED BY BACKFILLING, COMPACTING, AND SEEDING IN ACCORDANCE WITH THE REVEGETATION PLAN.
6. SILT FENCE SHALL BE PLACED TO FOLLOW (RUN PARALLEL TO) THE CONTOURS.
7. ON UPSLOPE INSTALLATIONS, BOTH ENDS OF THE SILT FENCE SHALL BE TURNED AND EXTENDED UPSLOPE.
8. FOR SILT FENCES PROTECTING SENSITIVE AREAS, A SECOND SILT FENCE SHALL BE INSTALLED A MINIMUM OF 3 FEET AWAY, INSIDE THE IMPACTED WORKSPACE. SILT FENCE PROTECTING SENSITIVE AREAS SHALL BE TYPE C.
9. FOR SILT FENCES USED TO PROTECT SENSITIVE AREAS, THE FABRIC MUST BE 28" ABOVE GROUND POST SHALL BE 30" OR 18" RESPECTIVELY. ALL OTHER AREAS MAY BE 16" CORRESPONDING.
10. POST SPACING SHALL BE A MAXIMUM OF 4' FOR ENVIRONMENTALLY SENSITIVE AREAS AND A MAXIMUM OF 6' AT ALL OTHER AREAS.
11. POSTS FOR TYPE C SILT FENCE SHALL BE STEEL.

FIGURE 6

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
1	ISSUED FOR PERMITTING	GIE	01–04–22	JW	VK
0	ISSUED FOR PERMITTING	GIE	12–17–21	JW	VK

GULF Companies

DWN. BY:	GIE	10–07–21
CHK.	JW	12–17–21
PROJ. ENGR.	VK	12–17–21
PROJ. MGR.		
CLIENT APP.		
SCALE:	N.T.S.	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED 4"-24" PIPELINE
SILT FENCE AND SEDIMENT BARRIER
INSTALLATION AND MAINTENANCE

DWG. NO.	SHT. NO.	REV
1927-000-PL-DWG-0018	1 OF 1	1

Figure 7: Straw Bale and Sediment Barrier Installation and Maintenance

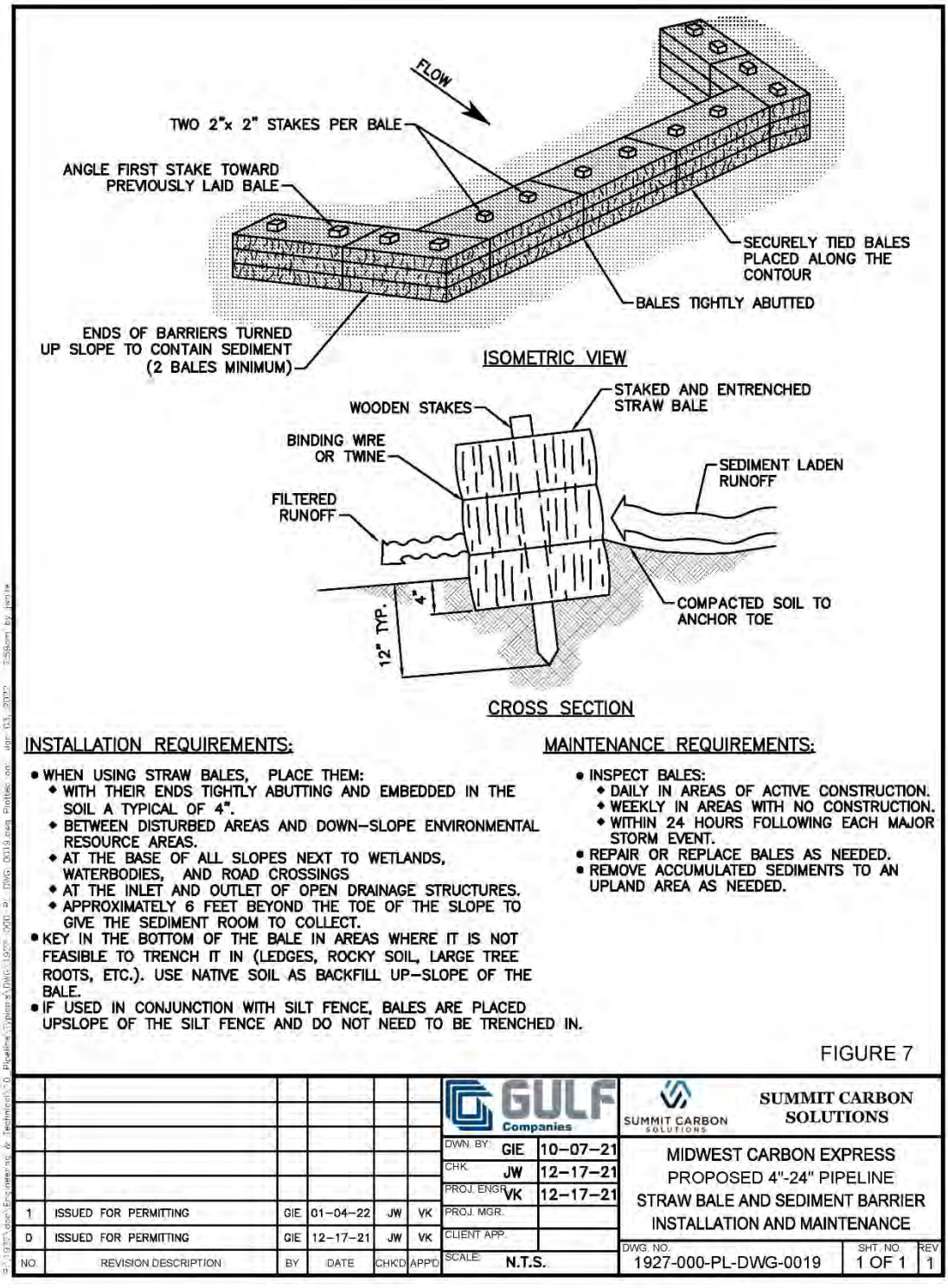


Figure 8: Typical Waterbody Equipment Bridge (Equipment Mats)

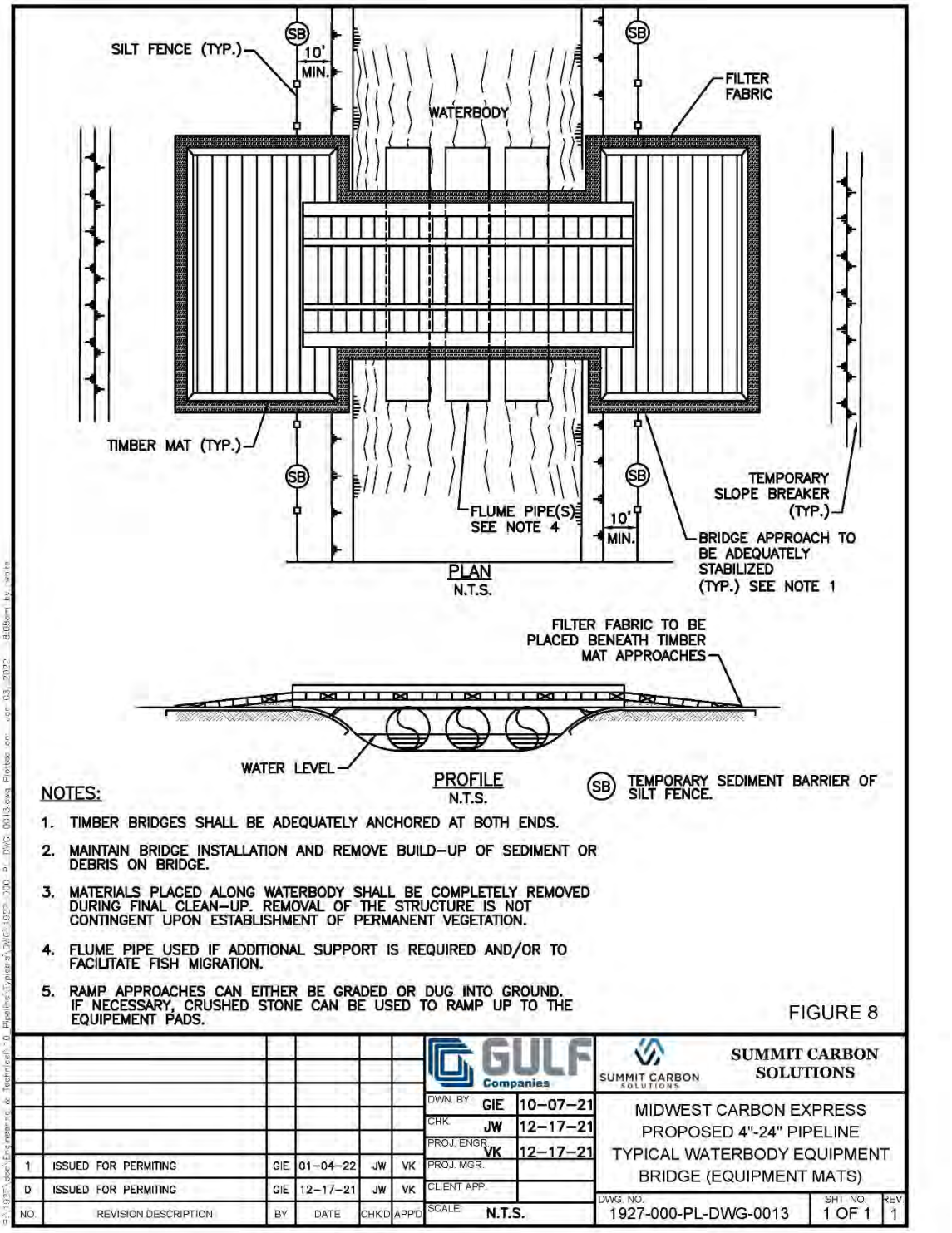
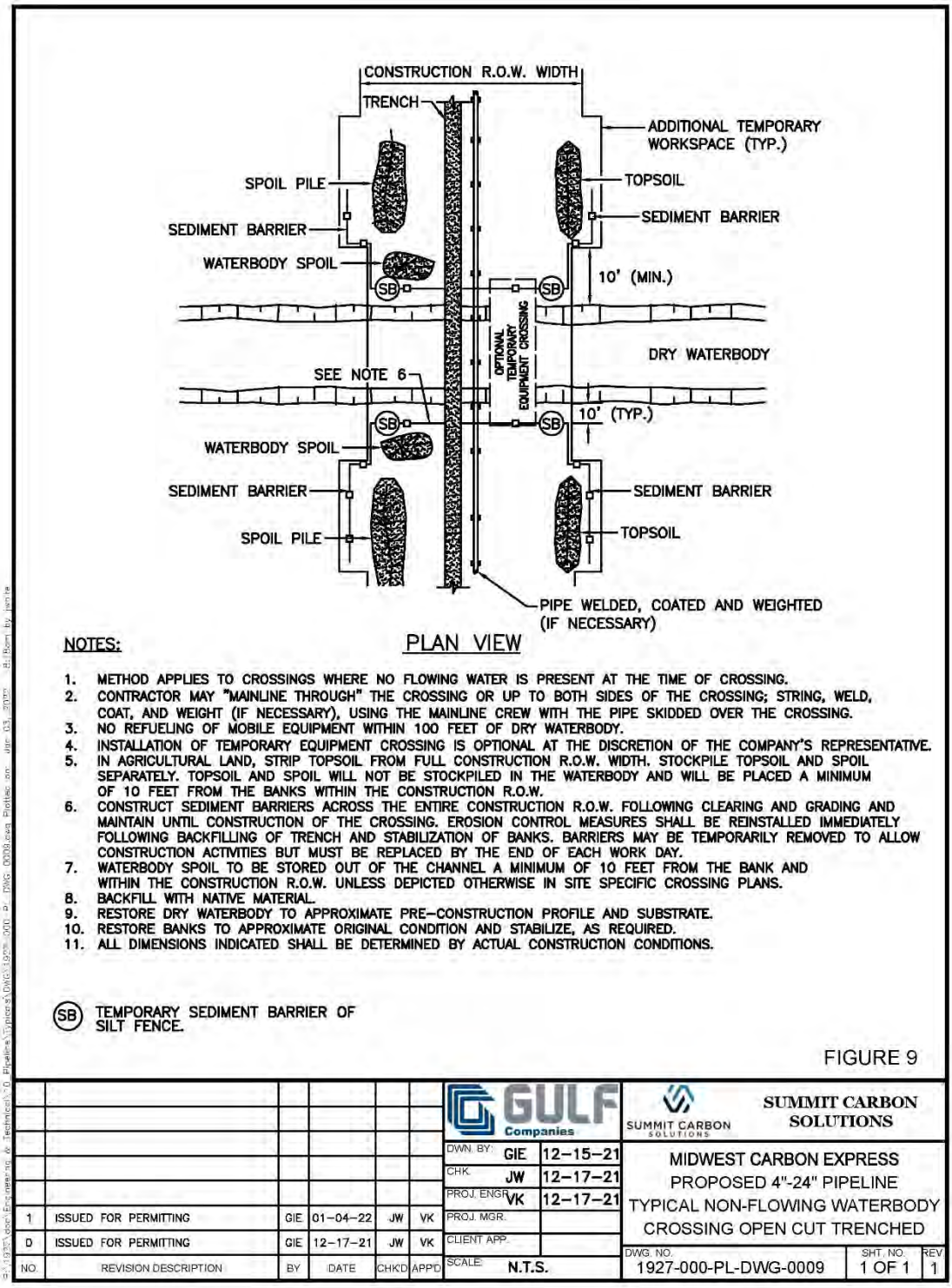


Figure 9: Typical Non-Flowing Waterbody Crossing Open Cut Trenched



PLAN VIEW

NOTES:

1. METHOD APPLIES TO CROSSINGS WHERE NO FLOWING WATER IS PRESENT AT THE TIME OF CROSSING.
2. CONTRACTOR MAY "MAINLINE THROUGH" THE CROSSING OR UP TO BOTH SIDES OF THE CROSSING; STRING, WELD, COAT, AND WEIGHT (IF NECESSARY), USING THE MAINLINE CREW WITH THE PIPE SKIDDED OVER THE CROSSING.
3. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF DRY WATERBODY.
4. INSTALLATION OF TEMPORARY EQUIPMENT CROSSING IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S REPRESENTATIVE.
5. IN AGRICULTURAL LAND, STRIP TOPSOIL FROM FULL CONSTRUCTION R.O.W. WIDTH. STOCKPILE TOPSOIL AND SPOIL SEPARATELY. TOPSOIL AND SPOIL WILL NOT BE STOCKPILED IN THE WATERBODY AND WILL BE PLACED A MINIMUM OF 10 FEET FROM THE BANKS WITHIN THE CONSTRUCTION R.O.W.
6. CONSTRUCT SEDIMENT BARRIERS ACROSS THE ENTIRE CONSTRUCTION R.O.W. FOLLOWING CLEARING AND GRADING AND MAINTAIN UNTIL CONSTRUCTION OF THE CROSSING. EROSION CONTROL MEASURES SHALL BE REINSTALLED IMMEDIATELY FOLLOWING BACKFILLING OF TRENCH AND STABILIZATION OF BANKS. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPOIL TO BE STORED OUT OF THE CHANNEL A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS.
8. BACKFILL WITH NATIVE MATERIAL.
9. RESTORE DRY WATERBODY TO APPROXIMATE PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
10. RESTORE BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.
11. ALL DIMENSIONS INDICATED SHALL BE DETERMINED BY ACTUAL CONSTRUCTION CONDITIONS.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE.

FIGURE 9

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
1	ISSUED FOR PERMITTING	GIE	01-04-22	JW	VK
0	ISSUED FOR PERMITTING	GIE	12-17-21	JW	VK

GULF Companies

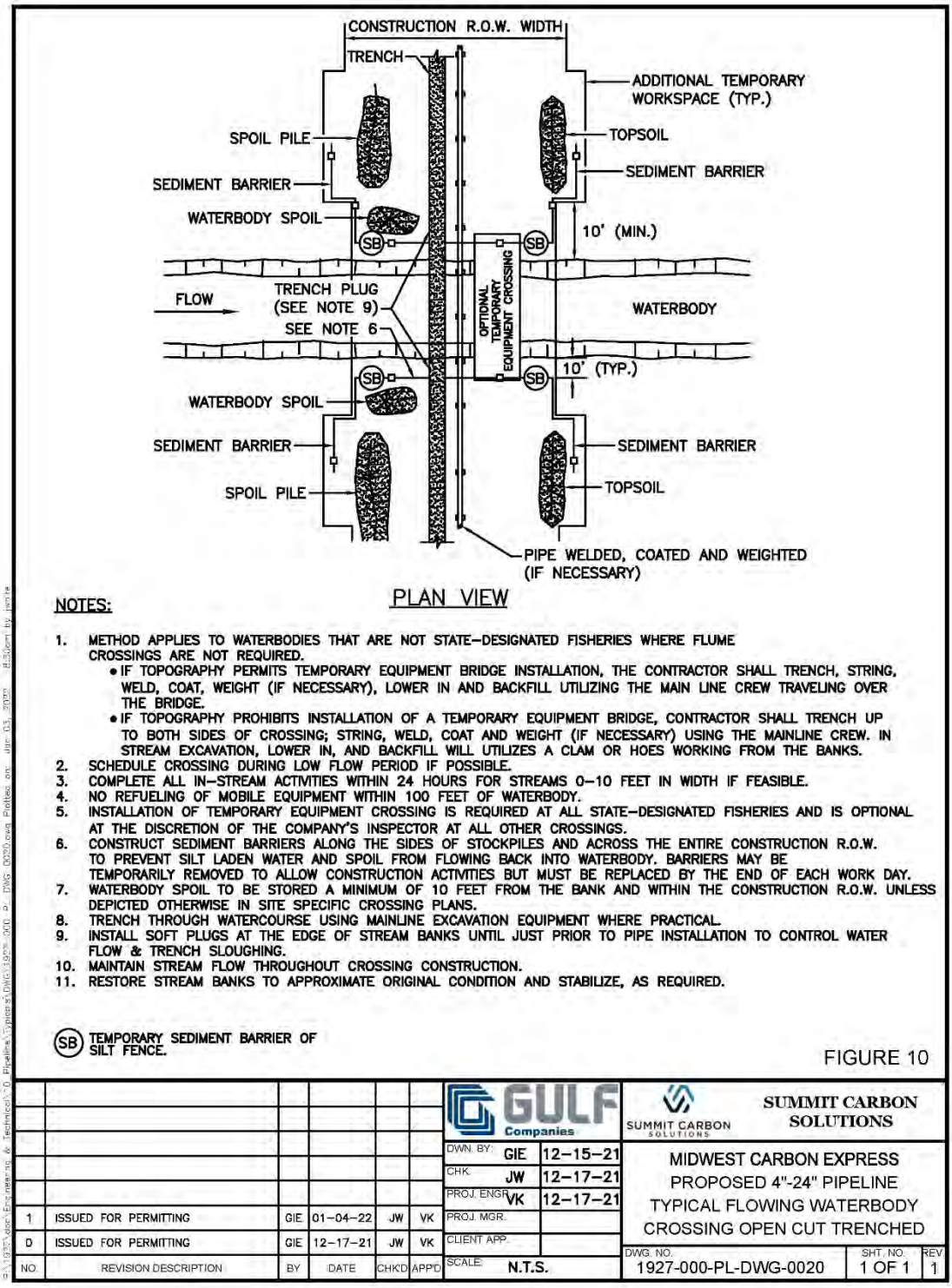
DWN. BY:	GIE	12-15-21
CHK.	JW	12-17-21
PROJ. ENGR.	VK	12-17-21
PROJ. MGR.		
CLIENT APP.		
SCALE:	N.T.S.	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED 4"-24" PIPELINE
TYPICAL NON-FLOWING WATERBODY
CROSSING OPEN CUT TRENCHED

DWG. NO.	SHT. NO.	REV
1927-000-PL-DWG-0009	1 OF 1	1

Figure 10: Typical Flowing Waterbody Crossing Open Cut Trenched



PLAN VIEW

NOTES:

1. METHOD APPLIES TO WATERBODIES THAT ARE NOT STATE–DESIGNATED FISHERIES WHERE FLUME CROSSINGS ARE NOT REQUIRED.
   - IF TOPOGRAPHY PERMITS TEMPORARY EQUIPMENT BRIDGE INSTALLATION, THE CONTRACTOR SHALL TRENCH, STRING, WELD, COAT, WEIGHT (IF NECESSARY), LOWER IN AND BACKFILL UTILIZING THE MAIN LINE CREW TRAVELING OVER THE BRIDGE.
   - IF TOPOGRAPHY PROHIBITS INSTALLATION OF A TEMPORARY EQUIPMENT BRIDGE, CONTRACTOR SHALL TRENCH UP TO BOTH SIDES OF CROSSING; STRING, WELD, COAT AND WEIGHT (IF NECESSARY) USING THE MAINLINE CREW. IN STREAM EXCAVATION, LOWER IN, AND BACKFILL WILL UTILIZES A CLAM OR HOES WORKING FROM THE BANKS.
2. SCHEDULE CROSSING DURING LOW FLOW PERIOD IF POSSIBLE.
3. COMPLETE ALL IN–STREAM ACTIVITIES WITHIN 24 HOURS FOR STREAMS 0–10 FEET IN WIDTH IF FEASIBLE.
4. NO REFUELING OF MOBILE EQUIPMENT WITHIN 100 FEET OF WATERBODY.
5. INSTALLATION OF TEMPORARY EQUIPMENT CROSSING IS REQUIRED AT ALL STATE–DESIGNATED FISHERIES AND IS OPTIONAL AT THE DISCRETION OF THE COMPANY'S INSPECTOR AT ALL OTHER CROSSINGS.
6. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF STOCKPILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND SPOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED BY THE END OF EACH WORK DAY.
7. WATERBODY SPOIL TO BE STORED A MINIMUM OF 10 FEET FROM THE BANK AND WITHIN THE CONSTRUCTION R.O.W. UNLESS DEPICTED OTHERWISE IN SITE SPECIFIC CROSSING PLANS.
8. TRENCH THROUGH WATERCOURSE USING MAINLINE EXCAVATION EQUIPMENT WHERE PRACTICAL.
9. INSTALL SOFT PLUGS AT THE EDGE OF STREAM BANKS UNTIL JUST PRIOR TO PIPE INSTALLATION TO CONTROL WATER FLOW & TRENCH SLOUGHING.
10. MAINTAIN STREAM FLOW THROUGHOUT CROSSING CONSTRUCTION.
11. RESTORE STREAM BANKS TO APPROXIMATE ORIGINAL CONDITION AND STABILIZE, AS REQUIRED.

(SB) TEMPORARY SEDIMENT BARRIER OF SILT FENCE.

FIGURE 10

NO.	REVISION DESCRIPTION	BY	DATE	CHK'D	APP'D
1	ISSUED FOR PERMITTING	GIE	01–04–22	JW	VK
0	ISSUED FOR PERMITTING	GIE	12–17–21	JW	VK

GULF Companies

DWN. BY:	GIE	12–15–21
CHK.	JW	12–17–21
PROJ. ENGR.	VK	12–17–21
PROJ. MGR.		
CLIENT APP.		
SCALE:	N.T.S.	

SUMMIT CARBON SOLUTIONS

MIDWEST CARBON EXPRESS
PROPOSED 4"-24" PIPELINE
TYPICAL FLOWING WATERBODY
CROSSING OPEN CUT TRENCHED

DWG. NO. 1927-000-PL-DWG-0020 | SHT. NO. 1 OF 1 | REV 1