OHIO
STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

Bare Steel Pipeline Replacement Project
PIR 293, Cedar Road
South Euclid, Lyndhurst, Beachwood and University Heights, Cuyahoga County

Name of Project/Replacement Segment PIR 293

Planned Construction Start Date: _____
Planned Construction Completion Date: _____

Construction Supervisor: _____
Phone: _____

Project Manager (signature): _____
Construction Contractor (signature): _____
Environmental Inspector (signature): _____

NOTE:
THIS PLAN MUST BE KEPT
AT THE CONSTRUCTION SITE
DURING WORKING HOURS

SWPPP Prepared: June 25, 2011
Prepared by: East Ohio Gas Co. and Davey Resource Group

SIGNATORY REQUIREMENTS
STORM WATER POLLUTION PREVENTION PLAN

COMPANY: The East Ohio Gas Company

LOCATION: 320 Springside Drive, Suite 320
Akron, Ohio 44333

CORPORATE APPROVAL

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE:_____

NAME: _____

TITLE: _____

STORM WATER POLLUTION PREVENTION PLAN

T A B L E O F C O N T E N T S

LIST OF APPENDICES

APPENDIX

STORM WATER POLLUTION PREVENTION PLAN

1.0 PROJECT OVERVIEW

1.1 Introduction

The contents of this document and the accompanying attachments comprise the Storm Water Pollution Prevention Plan (SWPPP) for a natural gas pipeline replacement project performed under East Ohio Gas Company's (EOG) Pipeline Infrastructure Replacement (PIR) Program. This Program's effort consists of replacing approximately 4,000 miles of discontinuous sections of steel pipeline with new pipeline and may continue for 20 years or more. This is a proactive, multi-year program for repairing and maintaining EOG-owned transmission, distribution, and storage pipelines throughout Ohio. The work to be conducted will focus on specific individual pipeline segments, selected for replacement during any given year based on several factors, including pipe viability, location, and potential impacts to protected natural resources.

The purpose of this SWPPP is to present procedures that will be followed during installation of this pipeline to minimize adverse environmental impacts from storm water runoff and sediment pollution. This document was prepared in accordance with the requirements of the Ohio Environmental Protection Agency NPDES General Permit No. OHC000003 (published requirements effective April 2008 through April 20, 2013).

1.2 Project Description

The following segments are proposed for construction/replacement:

PIR 293– Replacement of approximately 16,203 ft of bare steel pipeline (up to 30 inch diameter) with low and high pressure plastic to upgrade the system of the PIR 293 pipeline located in Cuyahoga County. The PIR 293 pipeline is located along the roadways within the public right-of-way (ROW). One stream and no wetlands will be crossed during the pipeline replacement activities. A total of approximately 2.3 acres of ground disturbance is anticipated. These pipeline segments are shown on a United States Geological Survey (USGS) 7½-Minute Series Topographic Map, Chagrin Falls, East Cleveland, Mayfield Heights, Shaker Heights quadrangle, excerpts included in **Appendix A-1**.

1.3 Description of Construction Activities and Areas Disturbed

Some pipeline replacement will involve "lift-and-lay" construction (replacement in place) while some projects require offsetting the new pipeline within the ROW. Site location maps showing the pipeline segment(s) to be replaced are provided in **Appendix A-1**.

All pipeline replacements and construction activities will occur within the existing ROW, with the exception of some additional temporary workspace located adjacent to the ROW. The construction activities will require soil disturbance within the construction corridor to accommodate areas for the trench excavation, side-cast spoil, temporary storage of the new and removed pipe, and equipment/vehicular traffic. In addition, extra workspaces may be required outside but adjacent to this construction corridor in certain areas, to accommodate additional workspace needs associated with crossing features such as waterbodies, roads, and railroads. Similarly, extra workspaces may also be required for crossing certain features including agricultural areas (to allow space for topsoil segregation) and side slope areas (to allow grading for safety). Off-site areas have been designated for pipe, equipment, and materials storage. All work shall be performed within these authorized limits of disturbance.

Typically, the trench will be excavated to facilitate removal of the old pipeline and to allow 3 to 5 feet of cover over the new pipeline after installation and backfilling. The backfill material that will be returned to the trench will consist of the same material removed from the trench, to the extent practicable. Excess soil will be spread onsite but outside of and away from agricultural areas, wetlands, floodplains, streams, drainage ways, or other environmentally sensitive areas. Following pipeline installation, all disturbed areas will be returned to their original slope and contour, stabilized, and seeded.

All vegetated areas that undergo project-related soil disturbance will be seeded and re-vegetated to provide a permanent herbaceous cover to stabilize the soils, and temporary erosion and sediment controls will be maintained until disturbed areas are stabilized.

1.4 New Impervious Areas and Runoff Coefficients

New impervious surfaces will not be created. The majority of areas that will be affected consist of existing, vegetated pipeline ROW. All areas disturbed by the project will be restored to their preconstruction material, condition, and contours.

Accordingly, post-construction runoff will remain essentially the same as pre-construction runoff. Therefore, the calculation of runoff coefficients for pre-construction vs. post-construction conditions is not warranted or applicable to this linear project.

1.5 Delineation of Drainage Watersheds

Delineation of drainage watersheds traversed is not warranted or applicable for this project because the temporary storm water control measures that will be used during construction are adaptable to any size watershed based on field conditions and professional judgment. No permanent storm water management systems will be developed in conjunction with this project. No permanent filling or relocation of wetlands or waterbodies is planned, and no permanent bridges or culverts are planned. Furthermore, there will be no permanent changes in grade, ground surface material, or waterway drainage or wetland contours, as all areas disturbed by the project will be restored to their preconstruction condition.

1.6 Site Conditions

1.6.1 Soils

The soils in the project area are depicted and described by name on maps in **Appendix A-2**.

Soils disturbed during trench excavation for the installation of the pipeline will be replaced within the trench once work activities are complete. Any excess spoil will be redistributed within the project area. All disturbed areas will then be re-vegetated and stabilized.

1.6.2 Prior Land Uses

The existing land use in the project area consists of grass and pavement in the existing ROW where vegetation is maintained in a mowed condition. Extra workspace areas are situated adjacent to the ROW and may consist of open, residential, or commercial/industrial areas. EOG negotiates with the landowners and compensates them as appropriate to gain permission to use these areas.

1.6.3 Surface Waters and Wetlands in Project Area

A waterbody crossing table listing all surface waters that will be traversed by the project is provided in **Appendix A-3**. Maps showing the locations of these surface waters are provided in **Appendix A-5**. Construction methods for crossing waterbodies are described in Section 2.2.1 of this plan. Typical drawings depicting the crossing methods are provided in **Appendix B**.

No wetlands occur on this site so no wetlands will be crossed during the replacement of pipeline for the PIR 293 project. As a contingency for waterbody and wetland crossings that are bored, an HDD Frac-Out Contingency Plan is provided in **Appendix A-6.**

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1.6.4 Discharges to Municipal Separate Storm Sewer Systems

During the course of this pipeline replacement program involving the replacement of approximately 4,000 miles of pipeline over the course of 20 to 25 years, it is possible that some segments of the project will be located within communities that have regulated municipal separate storm sewer systems (MS4s). However, no permanent storm water management systems will be developed as part of this pipeline replacement project; all areas will be re-vegetated and restored to their preconstruction grade. In addition, diligent and proper implementation of this SWPPP should result in the control and retention of construction-related soils and sediments onsite, without the need to use established municipal storm water systems. Therefore, no discharges to MS4 systems are planned or anticipated.

1.6.5 Notes Addressing Site Mapping Requirements

The maps in Appendix A (including A-1, A-2, and A-5) and the narrative of this SWPPP include the required points of information as listed in Part III.G.1.n of the Ohio EPA General permit for Storm Water Discharges from Construction Activities. Specifically, the following information can be found in the following locations:

i. Location/limits of earth disturbing activity – **Appendix A-1** and narrative in SWPPP **Section 1.3**.
ii. Soil types – **Appendix A-2**.
iii. Existing and proposed contours – **Appendix A-1** (planned contours are same as existing). Delineation of drainage watersheds – Not applicable, as explained in **Section 1.5**.
iv. Surface water locations including springs, wetlands, streams, lakes, water wells on or within 200 feet of site, including boundary locations of wetlands and streams – **Appendix A-5**.
v. Existing and planned locations of buildings, roads, parking facilities, utilities – **Appendix A-1 and Appendix A-5**.
vi. Locations of erosion and sedimentation control practices, including the areas likely to require temporary stabilization during the course of site development – Text descriptions in **Section 3.0** and typical figures in **Appendices B and C**.
vii. Sediment and storm water management basins – Not applicable to project.
viii. Permanent storm water management practices – Not applicable, all disturbed soils will be restored to preconstruction contours and permanently stabilized with vegetation.
ix. Areas for storage of waste / dumpsters – Not applicable to project. Waste generated during construction will be removed from construction site.

x. Locations of construction entrances for access – Construction access will be from locations

where the pipeline ROW crosses public roads and via approved existing private access roads. These are shown on the site location maps in **Appendix A-1**.

xi. Locations of in-stream activities/stream crossings – Maps in **Appendix A-1** and **Appendix A-5**.

2.0 CONSTRUCTION ACTIVITIES

This section describes the environmental construction techniques that EOG and its contractors will use to perform the proposed pipeline replacement activities. Best Management Practices (BMPs) will be implemented throughout construction to minimize soil erosion and the transport of sediments from the construction area, and to protect surface waters and wetlands located in and adjacent to the project areas. Detail drawings of specific BMPs are included in Appendices B and C.

2.1 Sequence of Construction Activities

The following general construction sequence provides an overview of the construction process. Wherever practical, construction activities will occur simultaneously and some steps may not occur in the exact order in which they are listed below.

1) Survey and stake existing / proposed pipeline and limits of construction workspaces, as necessary.
2) Install entrance pads at all access points from paved roads, if necessary (see **Detail No. C-8**);
3) Flag/field mark wetland areas, as necessary;
4) Begin clearing and brushing of the ROW;
5) Install filter fence (**Detail No. C-1**), filter socks (**Detail No. C-2**), rock check dams (**Detail No. C-10**) and storm drain inlet protection (**Detail No. C-9**) in areas that are not anticipated to be disturbed by subsequent grading and installation of temporary equipment crossings;
6) Grade the workspace if necessary;
7) Install timber mats for access roads/equipment crossings at stream crossings (**Detail No. B-6 and B-7**);
8) Install timber mats for access roads/equipment stabilization at wetland crossings (**Detail No. B-8**);
9) Install all required filter fence (**Detail No. C-1**), filter socks (**Detail No. C-2**), rock check dams (**Detail No. C-10**) and storm drain inlet protection (**Detail No. C-9**);
10) Install temporary water bars/slope breakers (**Detail No. C-4**);
11) Excavate pipeline trench in upland areas;
12) Remove existing pipeline to be abandoned;
13) String new pipe along ROW;
14) Weld new pipe sections together;
15) Implement BMPs for trench dewatering (if required) (**Detail No. C-3**);
16) Lower pipeline into trench;
17) Install trench plugs (**Detail No. C-5**);
18) Backfill trench;
19) Restore grade to preconstruction contours and install permanent slope breakers where warranted (**Detail No. C-4**);
20) Install stream crossings (install sedimentation controls as necessary for retaining temporary spoil piles) and restore/stabilize stream banks (**Detail No. B-2, B-3, B-4, B-5 and C-6**);
21) Install wetland crossings (**Detail No. B-8 and B-9**);
22) Apply lime and fertilizer as needed. Seed and mulch to all disturbed upland areas, and only the

specified wetland seed mix, if required, in wetlands;

23) Install erosion control blankets on steep slopes (**Detail No. C-7**);

24) Monitor adequacy of erosion control practices; and,

25) After permanent stabilization is achieved, remove temporary erosion and sediment controls.

Note: Steps 20 and 21 should be installed in the order that best suits site and scheduling conditions.

2.2 Timing of Certain Construction Activities

The special timing considerations that apply to construction activities and implementation of BMPs are described below.

2.2.1 Temporary Stabilization/Sediment Control

Sediment controls such as filter fabric fence (see **Detail No. C-1**) and filter socks (see **Detail No. C-2**) will be installed before initial ground disturbance, or immediately following ground disturbance if the nature of the disturbance (e.g., grading) would affect the stability of pre-installed sediment controls.

Disturbed areas must be stabilized (i.e., using vegetative or structural soil cover to control erosion, such as temporary or permanent seed & mulch) during construction as specified in Table 1.

Table 1. Temporary Stabilization Timeframes

Area Requiring Temporary Stabilization	Timeframe to Apply Erosion Controls
Disturbed areas within 50 ft of a Surface Water of the State and before final grade	Within 2 days of the most recent disturbance if the area will remain idle for > 14 days
For all construction areas, disturbed areas that will be idle for > 14 days but < 1 year, and not within 50 ft of a Surface Water of the State	Within 7 days of the most recent disturbance in the area
Disturbed areas that will be idle over the winter	Prior to onset of winter weather

2.2.2 Permanent Stabilization

Following completion of construction activities, disturbed areas must be permanently stabilized (i.e., seeded, mulched, and fertilized) as specified in Table 2.

Table 2. Permanent Stabilization Timeframes

Area Requiring Permanent Stabilization	Timeframe to Apply Erosion Controls
Any areas that will lie dormant for one year or more	Within seven days of the most recent disturbance
Any areas within 50 feet from a surface water of the State and at final grade	Within two days of reaching final grade
Any other areas at final grade	Within seven days of reaching final grade within that area

2.2.3 Timing of Waterbody Crossings

In-stream work will be scheduled to avoid high stream flow conditions, such as immediately following heavy periods of rain, to achieve a dry or low flow condition. The total length of excavated trench open at the stream crossing at any one time will not be greater that the total length of pipeline that can be placed in the trench and backfilled in one working day. Equipment associated with isolation crossing methods (i.e., sand bag dams, flume pipe, pumps, etc) should not be left in the stream overnight. Every effort will be made to cross streams 10 feet in (bottom) width or less, including the trench backfilling, in one working day. Stream banks and the areas 50 feet from the top of each stream bank will be stabilized within 72 hours from the beginning of the stream crossing.

3.0 EROSION AND SEDIMENTATION CONTROL

Project construction activities (e.g., mowing/clearing, grading, trench excavation, spoil storage, backfilling, and restoration) will expose bare soils and increase the potential for erosion and sedimentation. Through adherence to this SWPPP, EOG's objective is to minimize the potential for soil erosion and sedimentation during construction, and to effectively restore and stabilize the ROW and other disturbed areas when construction is completed.

In general, the measures in this plan are designed to minimize erosion and sedimentation by:

- limiting construction work to only the approved areas;
- minimizing the quantity and duration of soil exposure;
- protecting critical areas during construction by reducing the velocity of and redirecting runoff;
- installing and maintaining erosion and sediment control measures in appropriate locations;
- conducting in-stream activities during low-flow periods to the extent practicable;
- limiting the duration of in-stream activities;
- using specialized construction and restoration techniques for wetland and waterbody crossings;
- implementing spill prevention and control measures;
- establishing vegetation as soon as possible following final grading; and,
- inspecting the ROW and other disturbed areas and maintaining erosion and sediment controls as necessary until final stabilization is achieved.

3.1 Inspection and Maintenance

A qualified environmental inspector will inspect all BMPs at least once every 7 days, *and* within 24 hours of a 0.5-inch or greater rainfall within a 24-hour period. The inspector will evaluate whether measures to prevent erosion are adequate and properly implemented or whether additional control measures are required. The inspector will identify and document specific areas that may be contributing to storm water discharges associated with construction activities; and recommend maintenance, supplementation, or replacement of BMPs. All temporary and permanent control practices will be maintained and repaired as needed. A sample inspection report form is shown in **Detail C-11**.

Specifically, disturbed areas and areas used for storage of materials that are exposed to precipitation will be inspected for evidence of, or the potential for, pollutants to enter a surface waterbody, wetland, or existing drainage system. Erosion and sediment control measures will be inspected to determine their effectiveness in retaining soils and sediments. Locations where vehicles enter or exit the site will be inspected to ensure soils are not tracked off-site onto public roadways. Problematic erosion areas will be corrected by EOG in a timely manner, or within 3 days in accordance with the

NPDES General Permit.

The erosion and sediment control measures will continue to be monitored and maintained until all disturbed areas are stabilized.

The site log book and inspection report forms shall be maintained at the construction site during active construction and be made available to permitting authorities upon request. Prior to filing of the Notice of Termination or the end of permit term (such as during the first growing season following project completion), a project environmental inspector or other qualified professional will perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed.

3.2 Temporary Sediment Barriers

Temporary sediment barriers, such as filter fabric fences, filter socks, and waterbars, shall be placed to intercept runoff from the construction site to prevent silt from entering watercourses, municipal storm sewers, road surfaces, off-ROW areas, and other sensitive areas. This section addresses temporary sediment barriers for general ROW areas. The use of sediment barriers at waterbody and wetland crossings is addressed in **Sections 3.3 and 3.4**.

General notes on installation and maintenance of temporary sediment barriers in specific areas are provided in the following subsections, based on the features/areas involved. These areas include: general ROW areas, hillsides, soil stockpile areas, road crossings, and trench dewatering areas. Detail drawings are provided in **Appendices B and C.**

3.2.1 General Right-of-Way Areas

A perimeter sediment control device (i.e. filter fabric fence or filter sock) will be placed downgradient of pipeline construction activities and staging areas, where effective and required to protect adjacent undisturbed wetlands and other water resources, road surfaces, and residential properties from sediment transported by sheet flow runoff. Installation will be in accordance with the details depicted in **Detail C-1** "Filter Fabric Fence Detail" and **Detail C-2 "**Filter Sock Detail". Sediment will be removed when accumulations reach 1/2 the above ground height of the fence. Perimeter sediment control devices that have been undermined or topped should be immediately repaired.

3.2.2 Hillside Pipeline Construction

For pipeline construction parallel to the gradient of a hill (uphill/downhill) areas, where the slope is greater than 1%, EOG will consider installing water bars or other suitable sediment barrier across the ROW if runoff has the potential to adversely affect a waterbody or adjacent property (see **Detail C-4**). Recommended spacing for water bars is listed in **Table 3** on the following page. They should be installed to effectively divert downhill runoff to well vegetated areas adjacent to the ROW, thereby preventing the occurrence of concentrated and erosive flows directly down the disturbed hillside area.

Table 3. Recommended Spacing for Sediment Barriers/Water Bars On Hills

Percent Slope	Spacing (Feet)
1	400
2	250
5	135
10	80
15	60
20	45

For pipeline construction perpendicular to the gradient of a hill (sidehill areas), where the slope is greater than 1%, a perimeter sediment control device shall be installed to protect adjacent water resources, road surfaces, and residential properties from sediment transported by sheet flow runoff. Both ends of the barrier will be extended at least 8 feet up slope at 45 degrees to the main barrier alignment.

3.2.3 Soil Stockpiles

A perimeter sediment control device will be installed adjacent to spoil stockpiles to prevent sedimentation into streams and other surface waters. Refer to **Details C-1** and **C-2** for installation details.

Stockpiles will be placed at existing level grade with both ends of the barrier extending at least 8 feet up slope at 45 degrees to the main barrier alignment. Sediment will be removed when accumulations reach 1/3 the aboveground height of the barrier.

3.2.4 Road Crossings

The types and locations of control measures needed at roadway crossings will depend upon the slope of the land and the type of roadway drainage systems present at that location. Upslope runoff will be diverted around the work area by use of diversion channel or waterbars. For this project, it is not anticipated upslope diversion will be necessary since the terrain at the road crossings is flat. Sediment barriers will be located down slope of trench or boring pit storage piles. Such storage piles will not be located in any roadway swale or ditch. Runoff from existing roadway culverts, storm sewers, swales, and ditches will be safely conveyed over any open trench. When entering any construction area from paved roads, all sediment tracked onto the road will be cleaned as soon as practical. If excessive tracking occurs or equipment will access an area for extended periods (i.e. pipeyards or staging areas), a stabilized construction entrance constructed of rock, timber mats, or other suitable material will be installed. Refer to **Detail C-8** for an example of a rock construction entrance.

3.2.5 Trench Dewatering

Excessive water that accumulates in the trench will be pumped from the trench and filtered prior to discharging onto the ground along the ROW. Filter bags, designed to trap particles larger than 150 microns, will be used to remove sediment from the water. The filter bags will be located on a relatively flat (< 5% slope), well-vegetated area. If the dewatering location is within 50 feet of a stream or wetland, a barrier made of straw bales and geotextile, filter socks, or silt fence should be considered to pool the water and allow sediment to settle. The pump discharge hose will be inserted into the bags in the manner specified by the manufacturer and securely clamped. When the bag is filled to ½ its total capacity, it should be replaced with a new bag and properly disposed. If a well-vegetated area is not available, a geotextile underlayment will be placed under the area discharge area. Refer to **Detail C-3** for filter bag placement and use.

3.2.6 Storm Drain Inlet Protection

Storm drain inlet protection devices will be installed to remove sediment from storm water before it enters storm sewers or downstream areas. Inlet protection devices are sediment barriers that may be constructed of geotextile fabrics and other materials that are supported around or across the storm drain inlets. All storm drain inlet protection requires frequent maintenance and cleaning to maintain sufficient flow rates and prevent clogging. Geotextile inlet protection devices are commonly used for storm drain inlet protection and the installation details are shown in **Detail C-9.** Sediment should be removed from the Geotextile inlet protection when accumulations reach ½ the height of the trap. Sediment will be removed and placed in a location where it is stable and not subject to erosion and should never be washed into an inlet. Filter socks are also acceptable sediment trapping devices. Sediment should be removed from the filter socks when accumulations reach $^1/_3$ the height of the trap. Filter socks will be installed per manufacturer's recommendations.

3.2.7 Rock Check Dam

This practice is limited to use in small open channels where it is necessary to slow the velocity of flow in order to prevent erosion and allow for sedimentation. While this practice often traps some sediment, its trapping efficiency is extremely poor, thus, it should not be used as a primary sediment trapping device. Applications include temporary swales, which because of their short length of service, are not practical to receive a non-erosive lining or swales which need protection during the establishment of grass linings. Check dams can be small rock dams constructed in ditches, swales, grassed waterways or diversions. Installation details are shown in **Detail C-10.** Filter socks may be used as check dams by staking the socks perpendicular to the flow of the channel. Refer to **Detail C-2** for installation. If a channel is expected to have high flow, filter fabric may be placed in front of the check dam. Sediment shall be removed from behind the check dam once it accumulates to one-half the original height of the check dam. Removal of the check dam can be performed by hand or mechanical means. Stone and sediment should be removed and the area graded and seeded.

3.2.8 Filter Socks

Filter socks may be used as perimeter sediment control devices and function by capturing sediment by ponding and filtering water through the device during rain events. Installation details are shown in **Detail C-2**. They may be a preferred alternative where equipment may drive near or over sediment barriers, as they are not as prone to complete failure as silt fence. Driving over filter socks is not recommended; however, if this occurs, the filter sock should be immediately inspected for damage. If needed, the sock should be repaired or replaced. The use of filter socks is applicable to slopes up to 2:1 (H:V), around inlets, and in other disturbed areas of construction sites requiring sediment control. Typically, filter socks can handle the same water flow or slightly more than silt

fence. For most applications, standard silt fence is replaced with 12" diameter filter socks. When construction is completed on site, the filter socks may be cut open and the compost dispersed across upland ROW. The mesh netting material will be disposed of in a normal trash container or removed by the contractor.

3.3 Permanent Sediment Barriers

3.3.1 Water Bars

The installation of permanent sediment barriers, such as waterbars, will be considered at each slope greater than 1% grade, if in the judgment of EOG, potential runoff as the result of ROW clearing will adversely affect a water-body or adjacent property. Details and spacing requirements for waterbar installation are shown in **Detail C-4**.

3.3.2 Trench Plugs

Trench Plugs are required at each side of streams and wetlands crossings completed by trenching, regardless of trench slope. These requirements supplement EOG's general construction practice for the placement of plugs in trenches on steep slopes. Trench plugs will also be installed if it is determined that flooding at the low point elevation of a pipeline will adversely affect the adjacent property. Installation will be in accordance with the details depicted in **Detail C-5** and **Table 4** below.

Table 4. Required Spacing and Materials for Trench Plugs

Trench Slope (%)	Spacing (FT)	Plug Material
< 5	*	*
5 – 15	500	Sand or Earth** Filled Sacks
15 – 25	300	Sand or Earth** Filled Sacks
25 – 35	200	Sand or Earth** Filled Sacks
35 – 100	100	Sand or Earth** Filled Sacks
> 100	50	Cement Filled Bags (Wetted) or Mortared Stone

***** Trench Plugs are required at each side of all stream, river or water-body crossings completed by trenching, regardless of trench slope. Otherwise not required.

** Topsoil may not be used to fill sacks.

3.4 Waterbody Crossings

Proposed stream-crossing techniques have been selected based on permitting, the technical feasibility of the method at each site, the sensitivity of the fisheries resource, and the ability of the technique to minimize the impact on local fish habitat and the potential for sediment release to downstream habitats. Contingency methods will be used if the preferred technique is assessed to be not practical or too high a risk at the time of construction as determined by stream flows and other on-site conditions.

Typically, minor streams, ≤ 10-feet wide at normal flow depth, will be crossed using "open cut" method. However, crossings of minor streams that are designated high quality fisheries or exceptional value streams shall use "isolation" methods that include using the flume pipe, the dam and pump, or the in-stream diversion method. Intermediate streams, > 10-feet and ≤ 100-feet wide, and major streams, > 100-feet in width, will be crossed using the wet trench method or by horizontal directional drilling.

Hazardous materials, chemicals, fuels, and lubricating oils will not be stored, and concrete coating activities will not be conducted, within 100 feet of any waterbody, wetland, or within any designated municipal watershed area (except at industrial locations designated for these purposes by an appropriate governmental authority). Refueling of construction equipment will be conducted at least 100 feet away from waterbodies and wetlands.

Refer to the appropriate sections below for a description of the crossing methods, and to **Details B-2, B-3, B-4 and B-5** for depictions of the waterbody crossing methods.

3.4.1 Use of Sediment Barriers for Waterbody Crossings

Prior to any construction activities within the stream channel, perimeter sediment control devices (i.e. filter fabric fence or filter socks) will be installed on both sides of the stream banks (see **Details C-1 and C-2**). The general locations where sediment barriers will be installed at waterbody crossings are shown on **Details B-2, B-3, and B-4** (for each applicable waterbody crossing technique).

Spoil piles from the tie-in and trench excavations will be placed behind the barriers to protect the stream from sediment buildup. Assembly areas, temporary equipment and non-hazardous material storage areas will be located a minimum of 50 feet back from the top of the stream bank.

Perimeter sediment control devices shall be installed parallel to the stream bank with both ends extending at least 8 feet upslope at 45 degrees to the main barrier alignment. Sediment shall be removed when accumulations reach ½ the above ground height of the device. Any section of the sediment barrier that has been undermined, topped or damaged will be immediately repaired. The barriers shall remain in place until final stabilization of the area.

3.4.2 Open Cut Method

Open cutting is the standard method for pipe installation in dry watercourses well removed from fish bearing reaches. The pipeline trench is excavated in the bed and banks of the flowing or dry watercourse channel and is backfilled after the pipe is lowered in. The bed and banks of the channel are re-contoured to their original condition and stabilized with seed and mulch. Erosion control matting and/or rip-rap may also be used to further stabilize the watercourse.

After installation of the perimeter sediment control device, excavation activities may commence. The trench will be excavated to the minimum width necessary to accommodate installation of the pipe. The trench will be monitored to ensure proper depth and width. In most instances, streambed substrate should be separated from the subsoil and backfilled last to minimize impact. Excavated material that will subsequently be used as backfill shall be immediately removed from the stream crossing and placed behind the sediment barriers on the stream bank. The pipeline will then be lowered into the trench and backfilled. Trench plugs will be installed at the top of the stream bank as shown in **Detail C-5.** The stream bank will then be stabilized with seed and mulch. Erosion control matting and/or rip-rap may also be applied to further stabilize the stream banks.

3.4.3 Isolation Method

The isolation method is one in which a trench is excavated in the bed and banks of a water body while the surface water in the water body flows uninterrupted and isolated from the excavation area. Isolation techniques include, but are not limited to, fluming, pumped by-pass, and in-channel diversion.

After placement of the perimeter sediment control device, installation of the dam and/or flume will commence. Refer to **Detail B-2** for pumped by-pass installation, **Detail B-3** for flume installation, and **Detail B-4** for in-stream channel diversion.

The structures for stream isolation methods will be installed and functioning prior to any trench excavation within the stream channel. The sand-filled bags will be stacked at least 12 inches above the level of the stream. The trench will be excavated to the minimum width necessary width to accommodate installation of the pipe. The trench will be monitored to ensure proper depth and width. Excavated material that will subsequently be used as backfill will be immediately removed from the stream crossing and placed behind the sediment barriers on the stream bank. The pipeline will then be lowered into the ditch and backfilled. (Pipe will be welded and bent prior to placement in the trench.) Trench plugs will be installed at the top of the streambank as shown in **Detail C-5.** The streambanks will be restored to original contour and stabilized with either riprap or erosion control matting (see **Detail C-6**). The sand bag dams will be removed following complete restoration of the stream channel and banks.

3.4.4 Horizontal Directional Drill Method

Horizontal directional drilling is the preferred crossing method for large river systems with significant fisheries values. However, the geometry and geology of the terrain needs to be appropriate to have a reasonable assurance of success. Due to the topography (steep slopes) and constraints to allow boring equipment to be situated in the ROW, this method may not be practical for all stream crossings.

After placement of filter fabric fence, the launching and receiving holes on both sides of the stream will be excavated. These excavations will be at least 10 feet or more from the stream bank (see **Detail B-5**). As a contingency for waterbody and wetland crossings, an HDD Frac-Out Contingency Plan is provided in **Appendix A-6.**

3.5 Wetland Crossings

Prior to construction, wetland areas will be identified and flagged within the ROW. Extra work and staging areas will be located at least 50 feet from the edge of the wetland, where possible. The width of the disturbance will be limited to the minimum necessary for the actual crossing. Movement of vehicles and equipment across the wetland will be minimized. Where equipment and vehicles must traverse saturated wetlands, the use of pads, mats, or other suitable methods will be used to minimize disturbance.

During trench excavation, the top 6 to 12 inches of topsoil (with the vegetative root mass) will be carefully removed from over the trenchline and stockpiled separately from the trench subsoil (unless standing water or saturated soils make this impracticable to effectively segregate). Topsoil piles should be differentiated from subsoil piles with flagging, ribbons or other effective devices. The pipeline will be installed and trench plugs will be placed as identified in this plan, to prevent the trench from draining the wetland or changing its hydrology. The trench will be backfilled with subsoil first and topsoil on top, and the preconstruction contours will be restored. Excess material, if any, will be removed from the wetland upon completion. Unless required by local agencies, seeding, mulching, and fertilization will not be done in wetlands. Restoration of the previously salvaged topsoil will allow the wetland vegetation indigenous to the wetland to re-vegetate naturally. Disturbed slopes adjacent to the wetland will be stabilized immediately upon pipeline installation.

Refer to the appropriate sections below for a description of the crossing methods and to **Details B-8 and B-9** for depictions of the wetland crossing methods.

3.6 Post Construction Erosion Control Practices

Permanent or temporary soil stabilization shall be applied to disturbed areas within seven (7) days after final grade is reached on any portion of the pipeline. When seasonal conditions prohibit the application of temporary or permanent seeding, dormant seeding (applying seed at 1.5 times permanent seeding rate) or non-vegetative soil stabilization practices such as mulching and matting shall be used.

3.6.1 Seeding

Once backfilling operations are completed, the tie-in excavations will be returned to their original slope and contour. Wetlands will not be seeded, but will be allowed to revegetate naturally from the seed stock and roots retained in the salvaged topsoil. All disturbed areas will be seeded with plant species that have a high germination capacity. Seeding will be performed with broadcast seeding equipment followed by a mulch covering. The following application rates will be used:

Temporary Seeding

Seed	2 pounds per 1,000 square feet (85 pounds per acre) with a winter (annual) rye or wheat dominant mix
Mulch	2-3 bales per 1,000 square feet minimum

Permanent Seeding

Seed	3-5 pounds per 1,000 square feet (130 – 215 pounds per acre) with a Kentucky blue grass and fescue mixture incorporating a perennial rye or similar mix.
Mulch	2-3 bales per 1,000 square feet minimum

In critical areas (e.g. adjacent to or within 50 feet of streams, ponds, or wetlands) consideration will be given to providing a protective blanket for seeded areas. Mulch with netting or protective blankets will be considered for seeded areas on slopes steeper than 3:1. Refer to **Detail C-7** for proper installation of erosion control matting.

3.6.2 Fertilizing

Lime and fertilizer will be applied at recommended amounts, according to the following rates:

Lime	100 pounds per 1000 square feet (2 tons per acre) Agricultural Grade Limestone
Fertilizer	25 pounds per 1000 square feet (1000 pounds per acre) of a 10-10-10 mixture

3.6.3 Post-Construction Monitoring

At the end of construction/restoration activities, a project environmental inspector or other qualified professional will perform a final site erosion control inspection to identify any remaining punch-list items to be completed to ensure long-term soil stability. The project area will be monitored on a regular basis and any needed repairs made during the post-construction period. Temporary erosion and sediment control measures will not be removed until the disturbed area is stabilized. Remedial soil conditioning, fertilization, reseeding and mulching will be performed as needed.

Prior to filing of the Notice of Termination (within 45 days of confirming that final stabilization has been achieved), the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods and that all temporary sediment and erosion controls (such as silt fence) not needed for long-term erosion control have been removed.

3.7 Hydrostatic Discharge

After installation, some pipelines require testing using hydrostatic pressure to ensure integrity of the welds and seams. The subsequent test water is typically discharged on-site or into a sanitary sewer. If discharge into surface waters of the state is expected, EOG will submit a Notice of Intent (NOI) to obtain coverage under General Permit Number OHH000001 from the Ohio EPA. State-designated exceptional value waters, waterbodies which provide habitat for threatened or endangered species, or waterbodies designated as public water supplies will not be used as receiving waters unless appropriate Federal, state and/or local permitting agencies have granted written permission. Discharges into sanitary sewers require approval from the applicable sewer district. Environmental personnel must be notified prior to the hydrostatic discharge release. Sampling required by the OEPA permit or sewer district will be performed by qualified personnel, typically the on-site environmental inspector.

BMPs outlined in the EOG Standard Erosion and Sediment Control Plan and OEPA permit must be used during the hydrostatic discharge. Examples of accepted BMPs include filter bags, filter socks, and dewatering pits made from straw bales lined with geotextile. Every effort will be made to discharge onto a large, well vegetated, non-sloping, upland area. The water will be regulated at the discharge point to prevent excessive flow and scouring. Initially, the release rate is not to exceed 350 gallons per minute; if the EI or other qualified environmental personnel deem that BMPs are functioning well enough to increase the velocity, flow can be raised to a maximum of 500 gallons per minute. Test water is typically obtained from a municipal water source and no chemicals or additives are to be used in the test water. If the discharge conditions require releasing water near a surface water of the state or if high levels of iron or total suspended solids are anticipated, BMPs such as slowing the velocity of the release and/or using treated filter socks to remove suspended solids and metals may be considered to stay in compliance with the NOI.

4.0 ADDITIONAL CONSTRUCTION SITE POLLUTION CONTROL

Sediment is the primary pollutant of concern resulting from construction activities. However, other potential sources of pollution are also present during construction, such as petrochemicals, construction materials and wastes, and leftover hazardous and toxic substances. These materials require proper management and handling. Keeping these substances from polluting runoff can be accomplished to a large extent through good housekeeping and following the manufacturer's recommendations for their use and disposal. The following guidance will help to prevent additional construction site pollutants from leaving the site.

4.1 Waste Disposal Containers

Waste disposal containers shall be provided for the proper collection of all waste materials including construction debris, sanitary garbage, petroleum products, and any hazardous materials to be used on-site. Containers shall be covered and not leaking. All waste material shall be disposed of at facilities approved for that material.

4.2 Construction Related Waste Materials Disposal

No construction related waste materials are to be buried onsite. By exception, clean fill (bricks, hardened concrete, soil) may be utilized in a way that does not encroach upon natural wetlands, streams, or their floodplains. Filling of stream side areas is "fill" and will not be done so no contamination of waters of the state will occur.

4.3 Handling Construction Chemicals

Mixing, pumping, transferring, or other handling of construction chemicals such as fertilizer, lime, asphalt, concrete drying compounds, and all other potentially hazardous materials shall be performed in an area away from any water source, ditch, or storm drain.

4.4 Construction and Demolition Debris (CD&D) Disposal

CD&D waste must be disposed of in accordance with ORC 3714 at an approved Ohio EPA CD&D Landfill. CD&D waste is defined as all materials attached to a structure which is being demolished.

4.5 Equipment Fueling and Maintenance

Equipment fueling and maintenance shall be performed way from watercourses, ditches, or storm drain inlets, in an area designated for that purpose. The designated area shall be equipped for recycling oil and catching spills.

4.6 Concrete Wash Water / Wash Outs

Concrete wash water shall not be allowed to flow to streams, ditches, storm drain inlets, or any other water conveyance. A sump or pit with no potential for discharge shall be constructed if needed to contain concrete wash water. Field tile or other subsurface drainage structure within 10 ft. of the sump shall be cut and plugged.

4.7 Contaminated Soils

If substances such as oil, diesel fuel, hydraulic fluid, antifreeze, etc., are spilled, leaked, or released onto the soil, the soil should be dug up and disposed of at a licensed sanitary landfill, or other approved petroleum contaminated soil remediation facility (not a construction /demolition debris landfill). Storm water runoff associated with contaminated soils is not authorized under the Ohio EPA General Storm Water Permit associated with Construction Activities.

In the event that there area areas of contaminated soils encountered during construction, additional measures above and beyond the conditions of the Ohio EPA's General Storm Water Permit will be required. The soils shall be dug up and disposed of at a licensed facility (not a construction/demolition debris landfill). Depending on the extent of contamination, additional treatment and/or collection and disposal may be required. All storm water discharged associated with the contaminated soils must be authorized under an alternate NPDES permit.

4.8 Spill Reporting Requirements

Spills on pavement shall be absorbed with sawdust, kitty litter, or other absorbent materials and disposed of with the trash at a licensed sanitary landfill and disposed of with the trash at a licensed sanitary landfill. Hazardous or industrial wastes such as most solvents, gasoline, oil-based paints, and cement curing compounds require special handling. Spills shall be reported to Ohio EPA (1-800-282-9378). Spills of 25 gallons or more of petroleum products shall be reported to Ohio EPA (1-800-282-9378), the local fire department, and the Local Emergency Planning Committee within 30 min. of discovery of the release. All spills which result in contact with waters of the state must be reported to Ohio EPA's Hotline.

4.9 Open Burning

Open burning is not allowed within restricted areas such as within municipal corporation limits. No materials containing rubber, grease, asphalt, or petroleum products (such as tires, autoparts, plastic, or plastic coated wire) may be burned (see OAC 3745-19) at any location.

4.10 Dust Control

Dust control is required to prevent nuisance conditions. Dust controls must be used in accordance with the manufacturer's specifications and not be applied in a manner, which would result in a discharge to waters of the state. Isolation distances from bridges, catch basins, and other drainageways must be observed. Application (excluding water) may not occur when precipitation is imminent as noted in the short term forecast. Used oil may not be used as dust control.

4.11 Other Air Permitting Requirements

All contractors and subcontractors must be made aware that certain activities associated with construction will require air permits. Activities including but not limited to mobile concrete batch plants, mobile asphalt plants, concrete crushers, large generators, etc., will require Ohio EPA Air Permits for installation and operation.

4.12 Process Waste Water / Leachate Management

Ohio EPA Construction General Permit only allows discharge of storm water and does not include other waste streams/discharges such as vehicle and or equipment washing, on-site leachate concrete washouts, which are all considered process wastewaters. All process wastewaters must be collected and properly disposed at an approved disposal facility. In the event leachate or septage is discharged, it must be isolated for collection and proper disposal and corrective actions taken to eliminate the source of waster water. Sanitary waste collection facilities such as Port-a-Jons will be provided along the project route.

APPENDIX A

Project/Segment-Specific Maps & Tables

A-1: Site Location Map

A-2: Soils Map

A-3: Waterbody Crossing Table

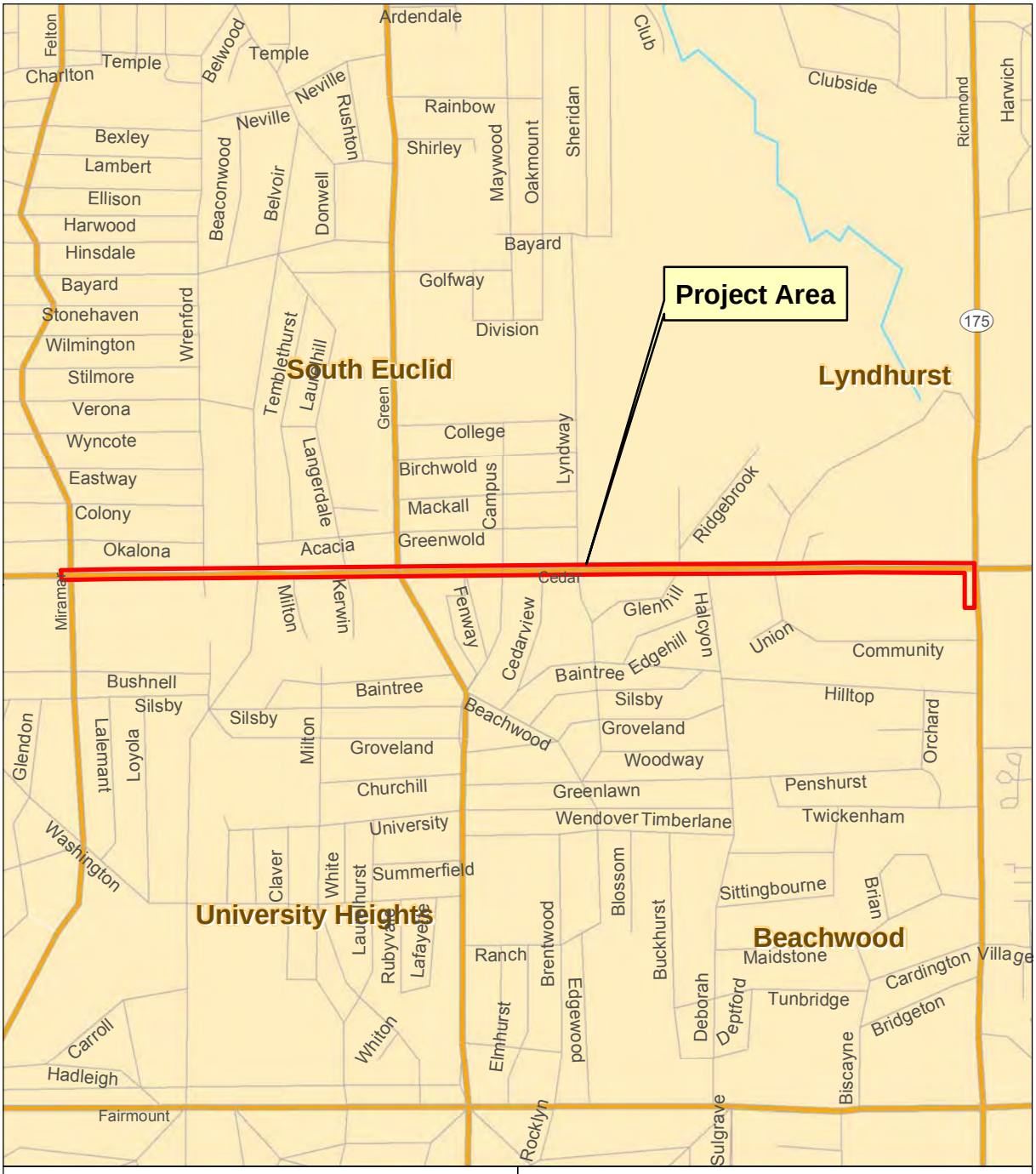
A-4: Wetland Crossing Table

A-5: Wetland & Waterbody Study Area Map

A-6: HDD Frac-Out Contingency Plan

A-1: Site Location Map

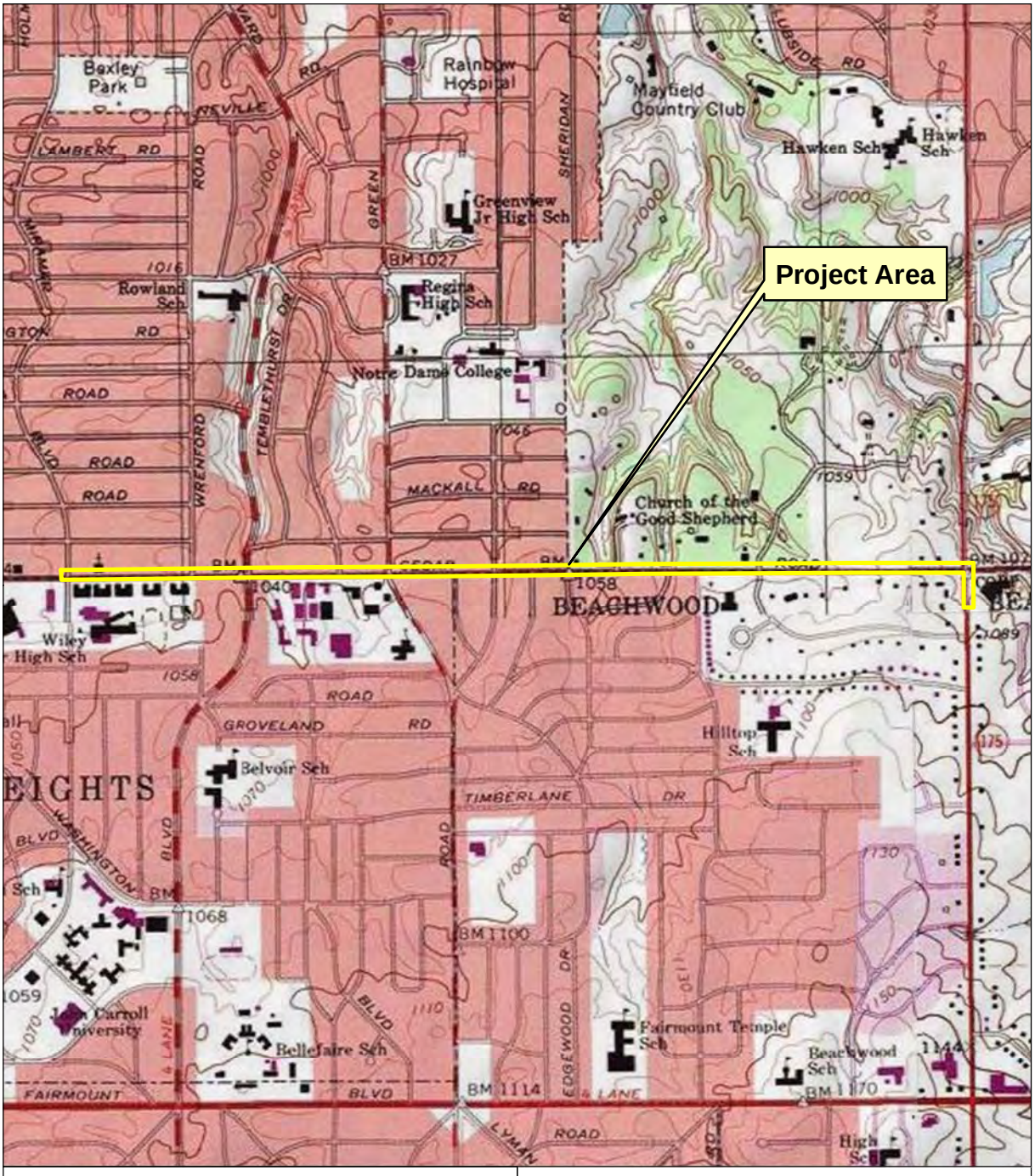
Location of Project Area on Highway Map



Site Location: PIR-293 Pipeline Replacement Project
1.6 Miles, Cedar Road
Beachwood, Lyndhurst,
South Euclid, and University Heights
Cuyahoga County, Ohio

Source: ESRI
Redlands, California

Location of Project Area on USGS 7.5-Minute Topographic Map (Chagrin Falls, East Cleveland, (Mayfield Heights, and Shaker Heights Quadrangles)



Site Location: PIR-293 Pipeline Replacement Project
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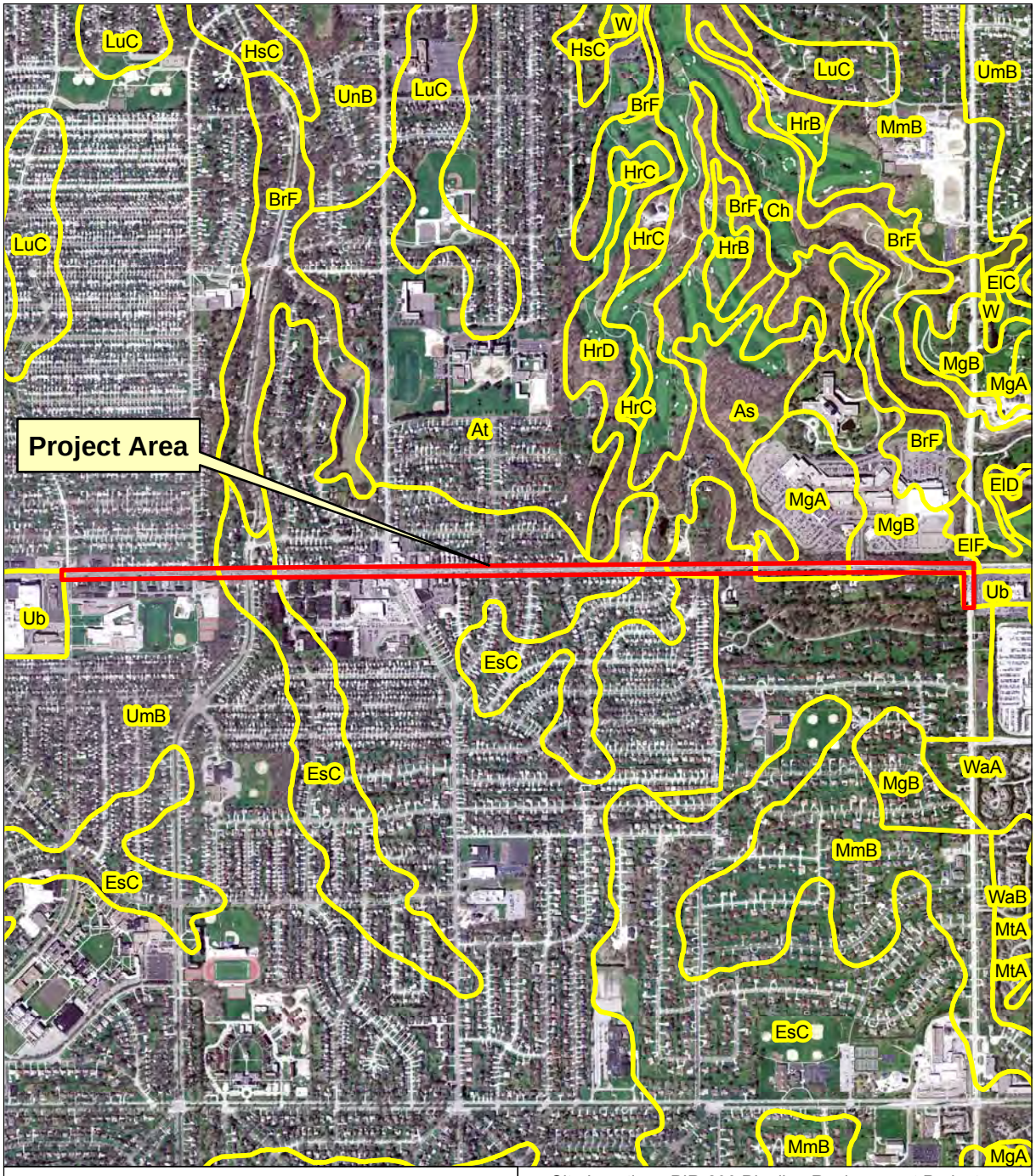
Cuyahoga County, Ohio

Source: U.S. Geological Survey
Reston, Virginia

A-2: Soils Map

Soils Information for Project Area



N
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S

1,000 500 0 1,000 2,000
Feet

Site Location: PIR-293 Pipeline Replacement Project
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Cuyahoga County, Ohio

Source: U.S. Department of Agriculture
Natural Resources Conservation Service
Web Soil Survey
OIT OGRIP Orthophotograph from 2006

A-3: Waterbody Crossing Table

Table 1. Summary of Waterbodies for PIR 293 – Cedar Road Project

Stream ID	Length (within ROW)	Flow Regime	Bankfull Width	Substrate Types	HHEI	Class	Crossing Method [1,2]	Impact Area
1	3.0 lf	Intermittent	4.6 ft	sand/gravel	60	mod 2	HDD	0 ft^2

[1] Project managers must approve changes to crossing methods

[2] Horizontal directional drilling (HDD) is a widely used trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the surface of streams and wetlands. Trench excavation (Trench) removes the top 6 to 12 inches of topsoil. The trench is backfilled with subsoil first and topsoil on top. These crossing methods will be in accord with SWPPP details.

[3] Impact area based on trench width

A-4: Wetland Crossing Table

Table 2. Summary of Wetlands for PIR 293 – Cedar Road Project

Wetlands ID	*Vegetation Cover Type*	*Area within ROW (Acres)*	*ORAM Score*	*ORAM Category*	*Crossing Method [1,2]*	*Impact Area*
- No Wetlands Crossings -						

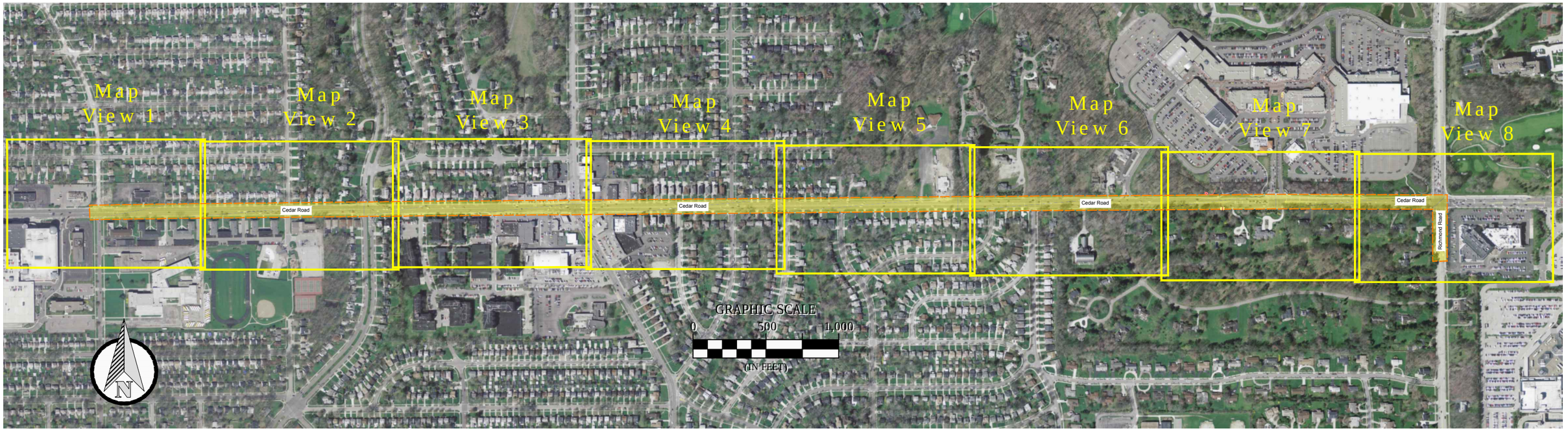
[1] Project managers must approve changes to crossing methods

[2] Horizontal directional drilling (HDD) is a widely used trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the surface of streams and wetlands.

A-5: Wetland and Waterbody Location Maps

Cuyahoga County, Ohio

Map View Location Map



= Approximate study area

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Dominion East Ohio

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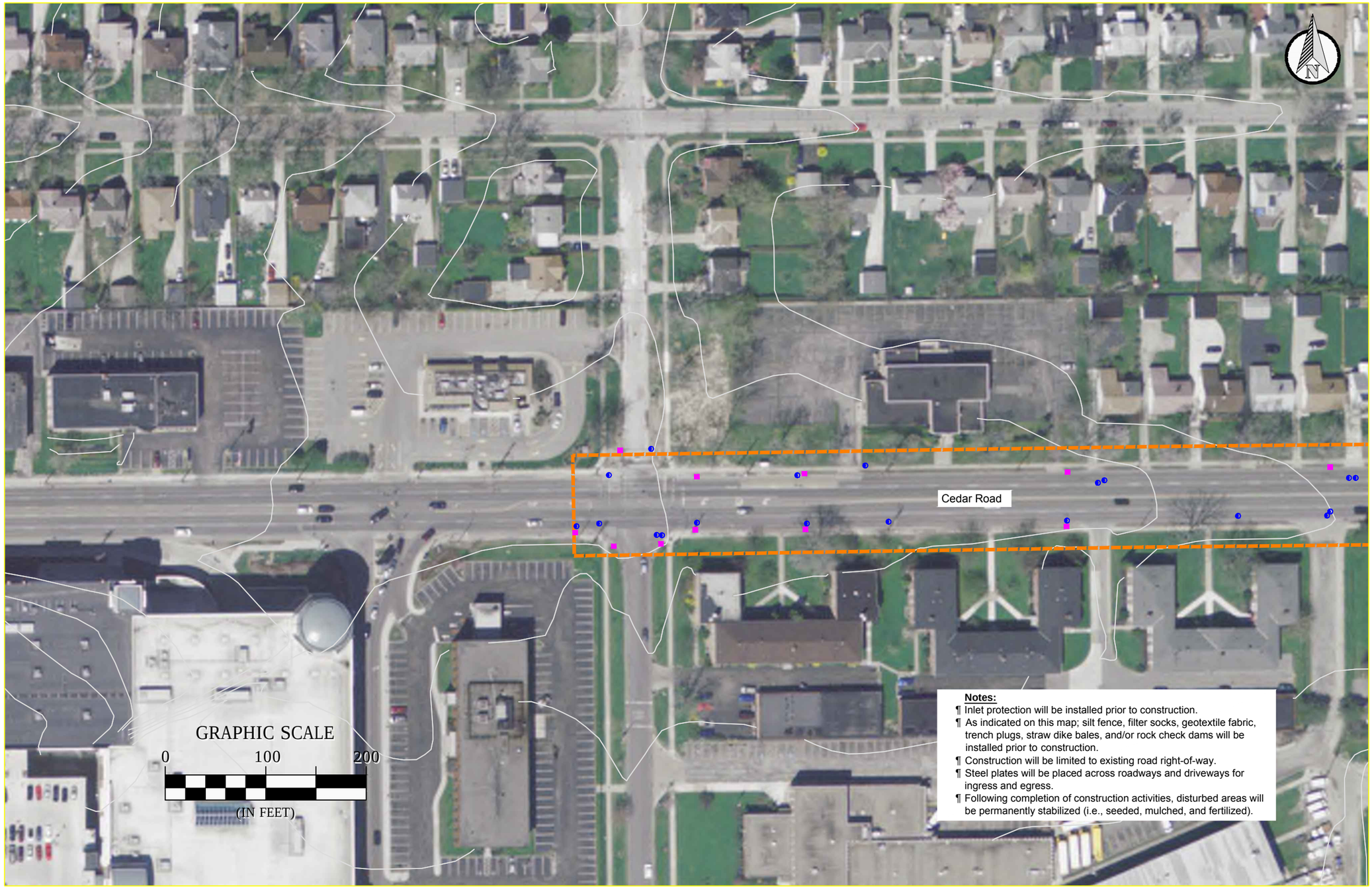
1.6 Miles, Cedar Road
Beachwood, Lyndhurst, South Euclid, and University Heights
Cuyahoga County, Ohio

Data used to produce this map were collected on March 10, 2011

Sheet **1** of **9**

Map View
1 of 8



= Inlet (slotted drain)
= Inlet (curbside and/or grate)
= Manhole
= Straw bale dikes/check dams
= Silt fence

Notes:

¶ Inlet protection will be installed prior to construction.
¶ As indicated on this map; silt fence, filter socks, geotextile fabric, trench plugs, straw dike bales, and/or rock check dams will be installed prior to construction.
¶ Construction will be limited to existing road right-of-way.
¶ Steel plates will be placed across roadways and driveways for ingress and egress.
¶ Following completion of construction activities, disturbed areas will be permanently stabilized (i.e., seeded, mulched, and fertilized).

= Approximate study area
= Intermittent stream
= Direction of flow

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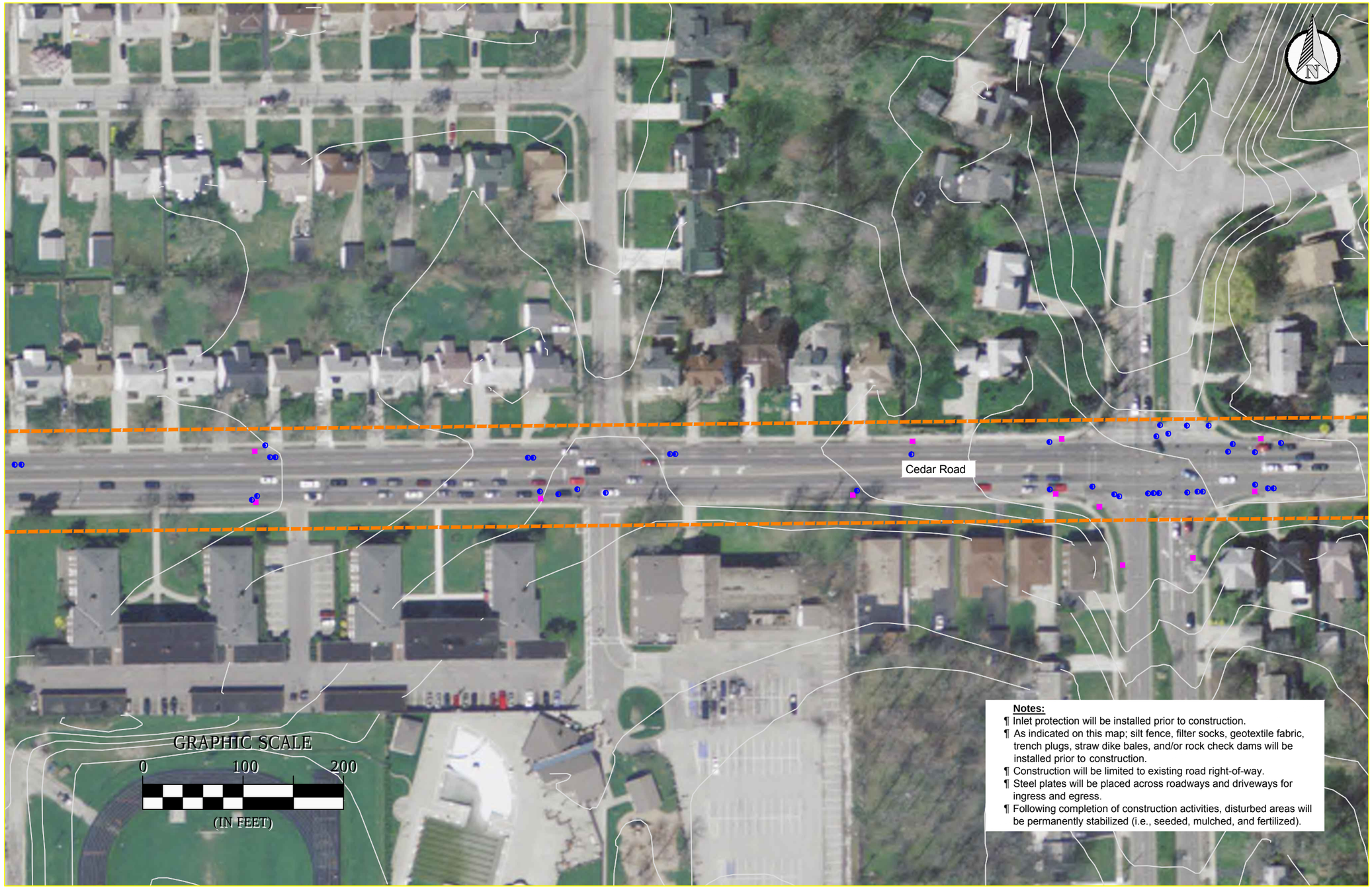
Sheet **2** of **9**

Map View
2 of 8



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Sheet **3** of **9**

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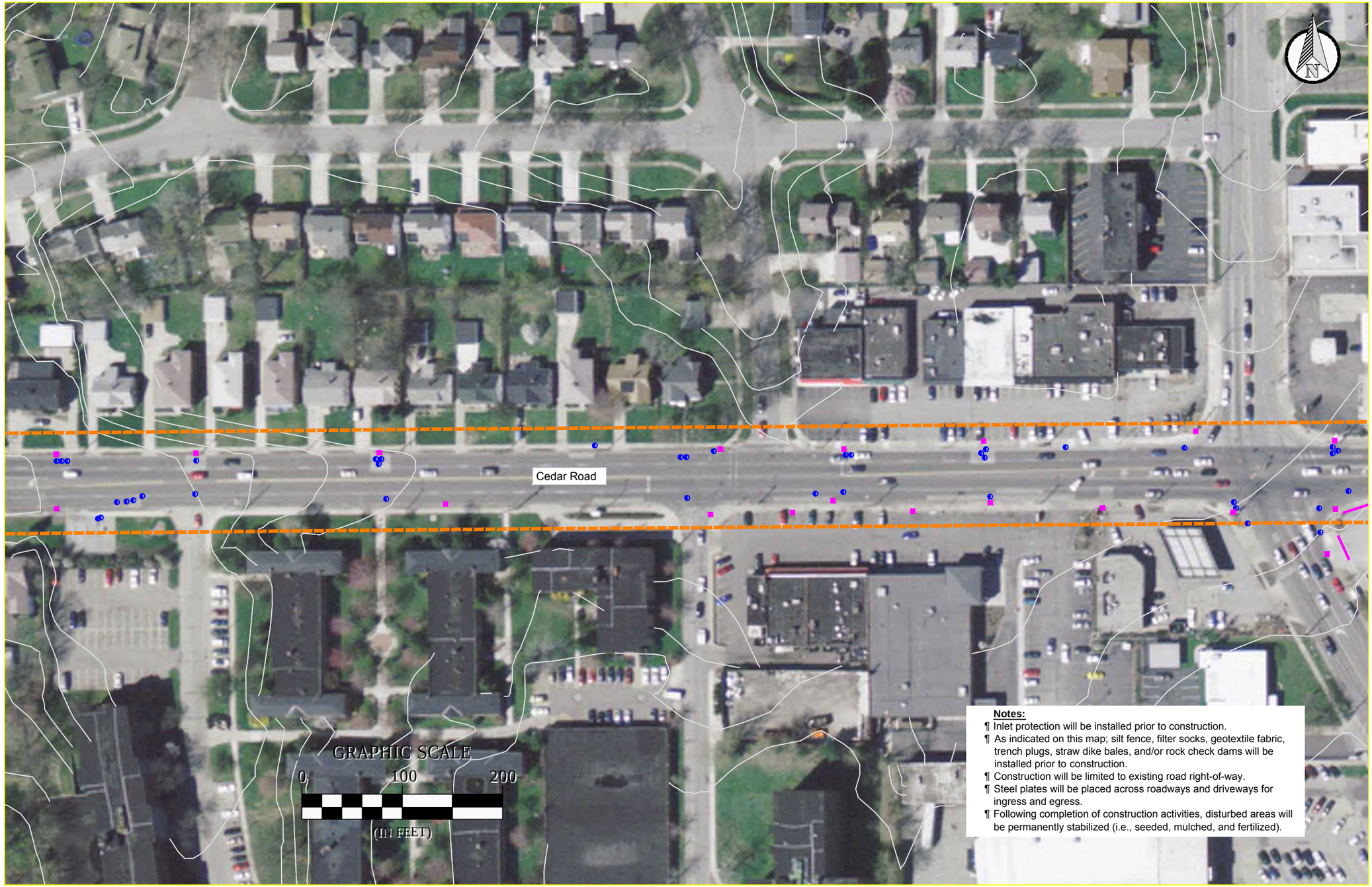
3 of 8



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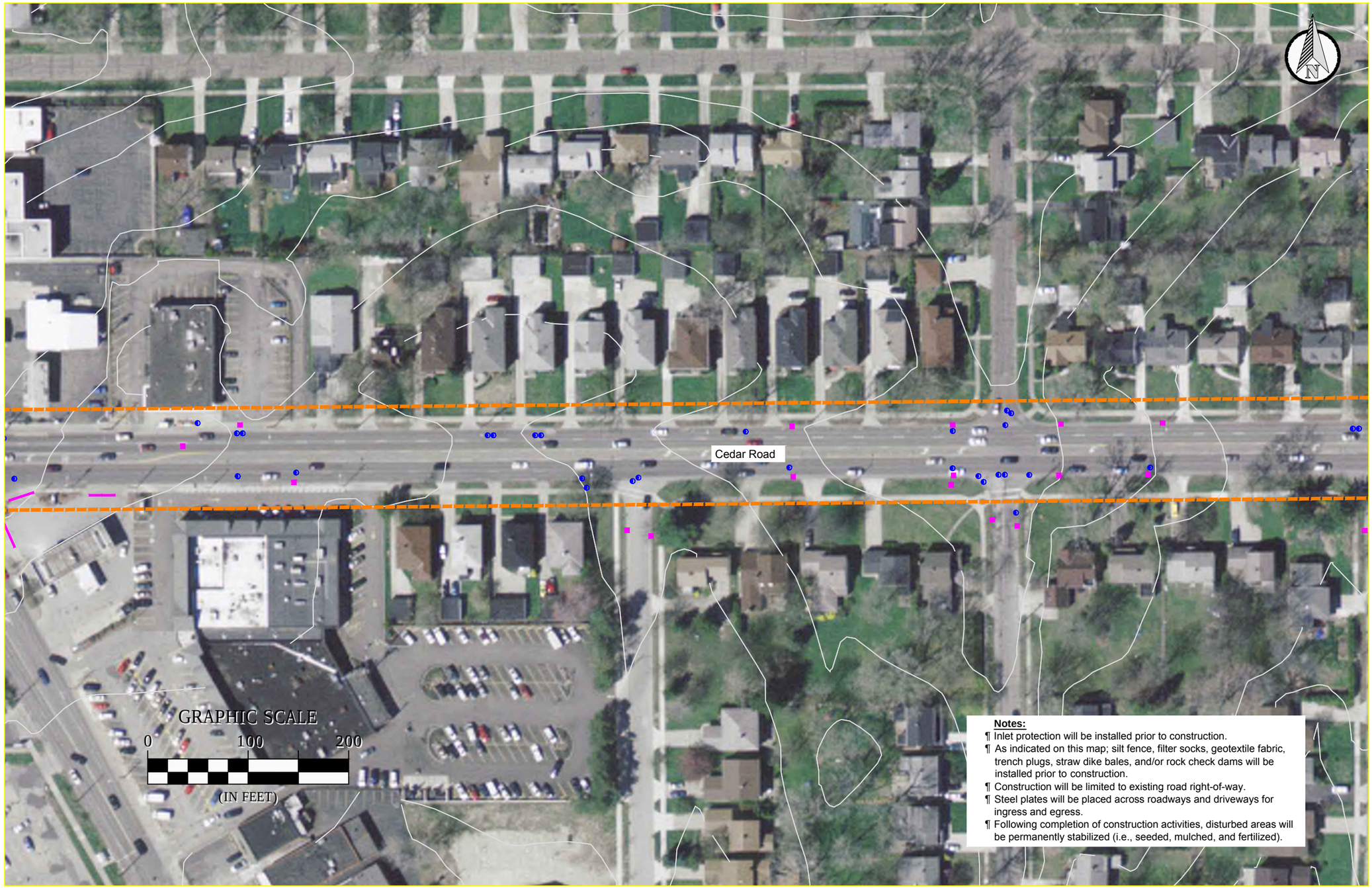
4 of 8



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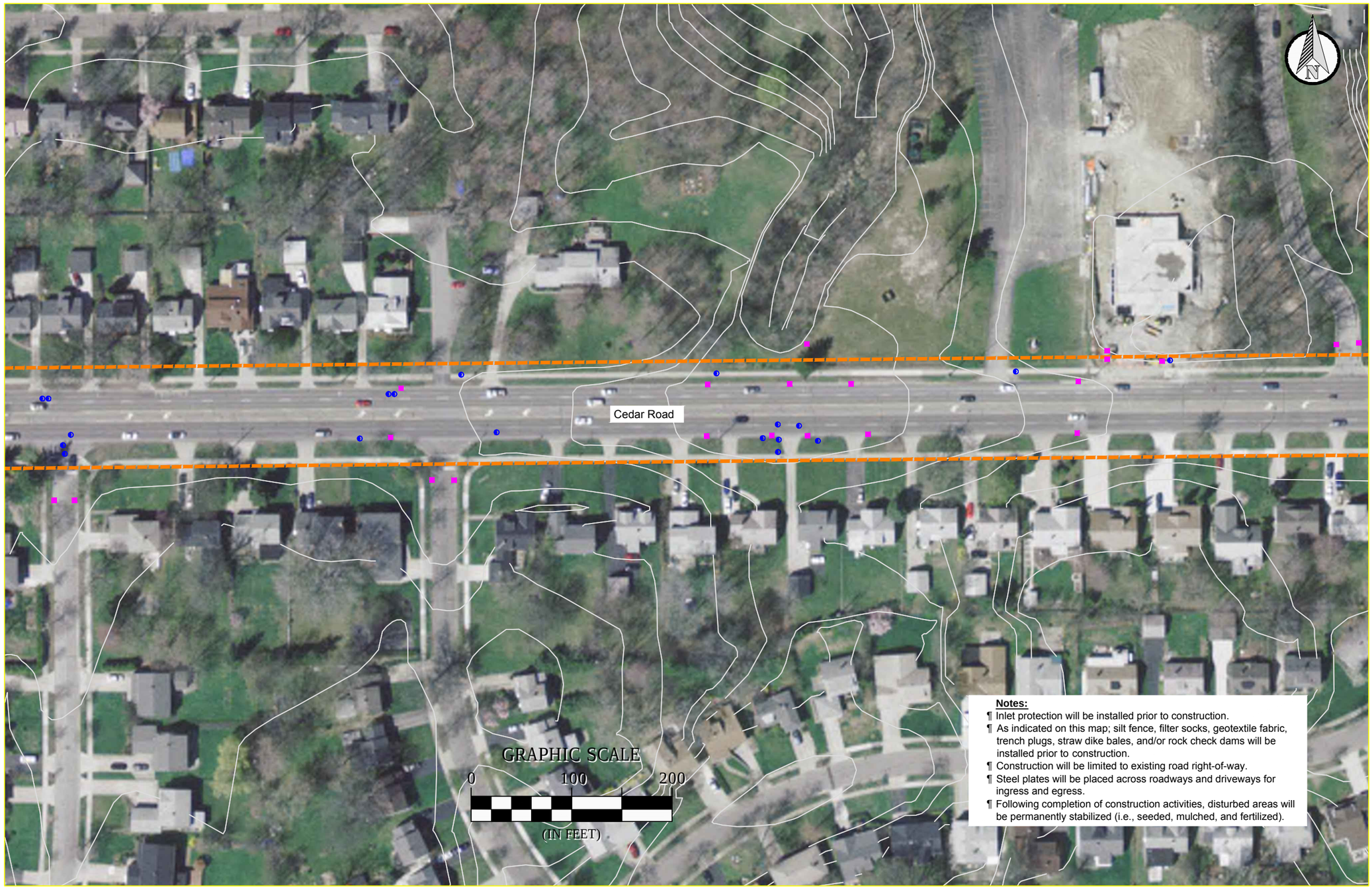
5 of 8



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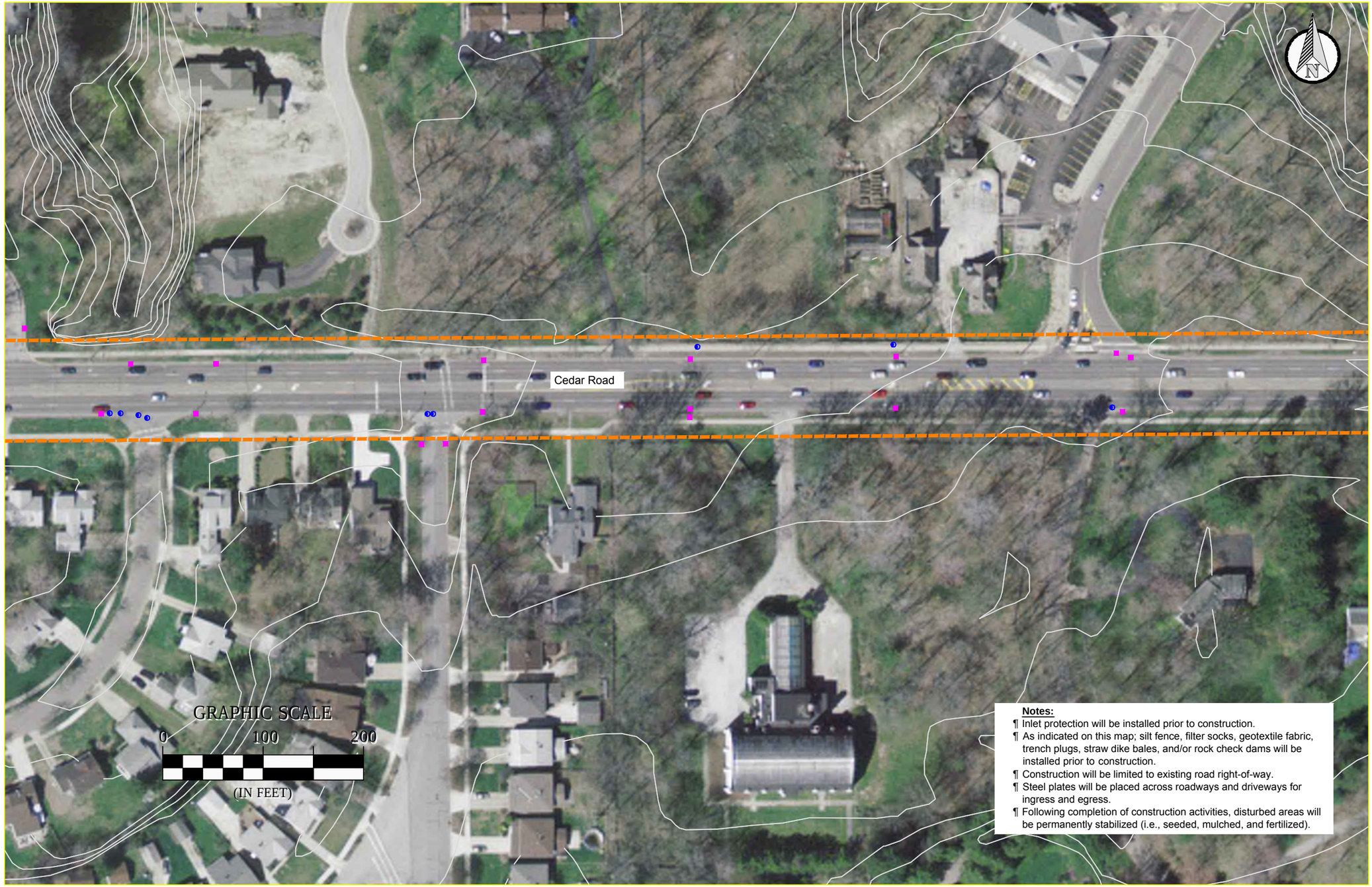
6 of 8



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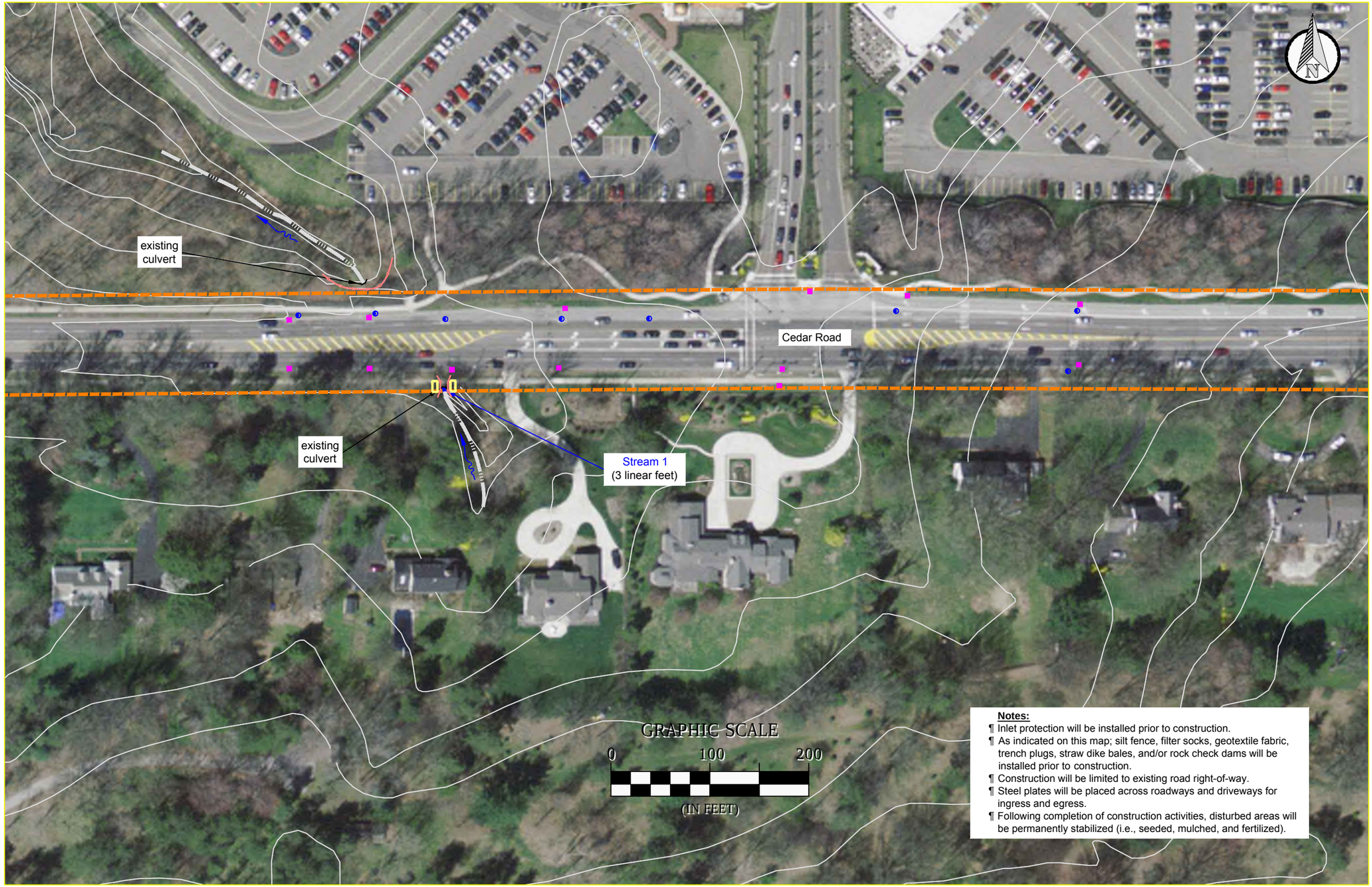

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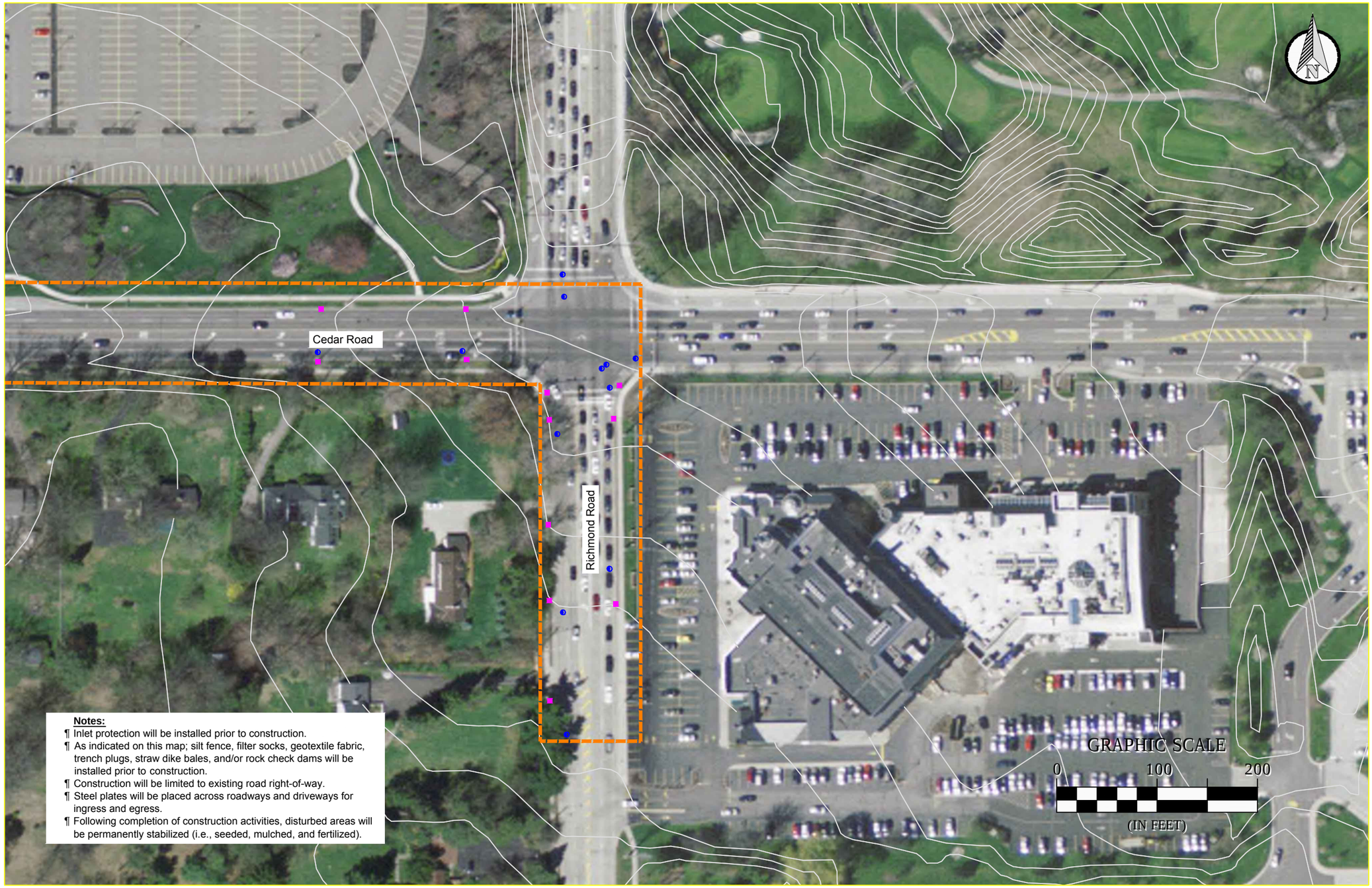
Sheet **8** of **9**

Map View
8 of 8



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Sheet **9** of **9**

A-6: HDD Frac-Out Contingency Plan

HDD Frac-out Contingency Plan – Dominion East Ohio Gas

Last updated: May 25, 2010

Preface: This document is the result of coordination between Dominion's East Ohio Gas Company (EOG) and the three U.S Army Corps of Engineers (USACE) Districts which have regulatory jurisdiction in the state of Ohio (Buffalo, Huntington, Pittsburgh). It is in response to EOG's initial inquiry regarding steps they should take in regards to coordinating with the USACE when encountering a frac-out in an area regulated by the USACE. EOG provided a "draft" frac-out contingency plan which serves as the foundation of this document. After review by the involved USACE Districts, modifications were incorporated into the submitted plan and Addendum A was added which includes identification of specific steps to be taken by EOG when encountering a frac-out in an area regulated by the USACE. The plan includes notification procedures and actions to be taken by EOG in the event of a frac-out.

Introduction

EOG utilizes horizontal directional drilling (HDD) to install pipeline crossings on construction projects, depending on site specific conditions. HDD is a widely used trenchless construction method which accomplishes the installation of pipelines and buried utilities with minimal disturbance to the surface or streams and wetlands. However, HDD is not totally without impact. The primary environmental impact associated with HDD revolves around the use of drilling fluids. The purpose of this document is to present EOG's plan for minimizing environmental impact associated with drilling fluids that inadvertently escape to the ground surface (known as a frac out). This document may require additional site specific information depending on the sensitivity of the project and requests from the permitting agencies.

If a site specific contingency plan is developed for a particular bore the plan should be submitted to the appropriate USACE District as described in Addendum A of this document.

Background

An awareness of the function and composition of HDD drilling fluids (also referred to drilling mud) is imperative in producing a permittable and constructable HDD crossing design. The principal functions of drilling fluid in HDD pipeline installation are listed below.

- **Transportation of Spoil.** Drilled spoil, consisting of excavated soil or rock cuttings, is suspended in the fluid and carried to the surface by the fluid stream flowing in the annulus between the bore hole and the pipe.

- **Cooling and Cleaning of Cutters.** Drilled spoils build-up on bit or reamer cutters is removed by high velocity fluid streams directed at the cutters. Cutters are also cooled by the fluid.

- **Reduction of Friction.** Friction between the pipe and the hole wall is reduced by the lubricating properties of the drilling fluid.

- **Hole Stabilization.** Stabilization of the drilled hole is accomplished by the drilling fluid building up a "wall cake" which seals pores and holds soil particles in place. This is critical in HDD pipeline installation as holes are often in soft soil formations and are uncased.

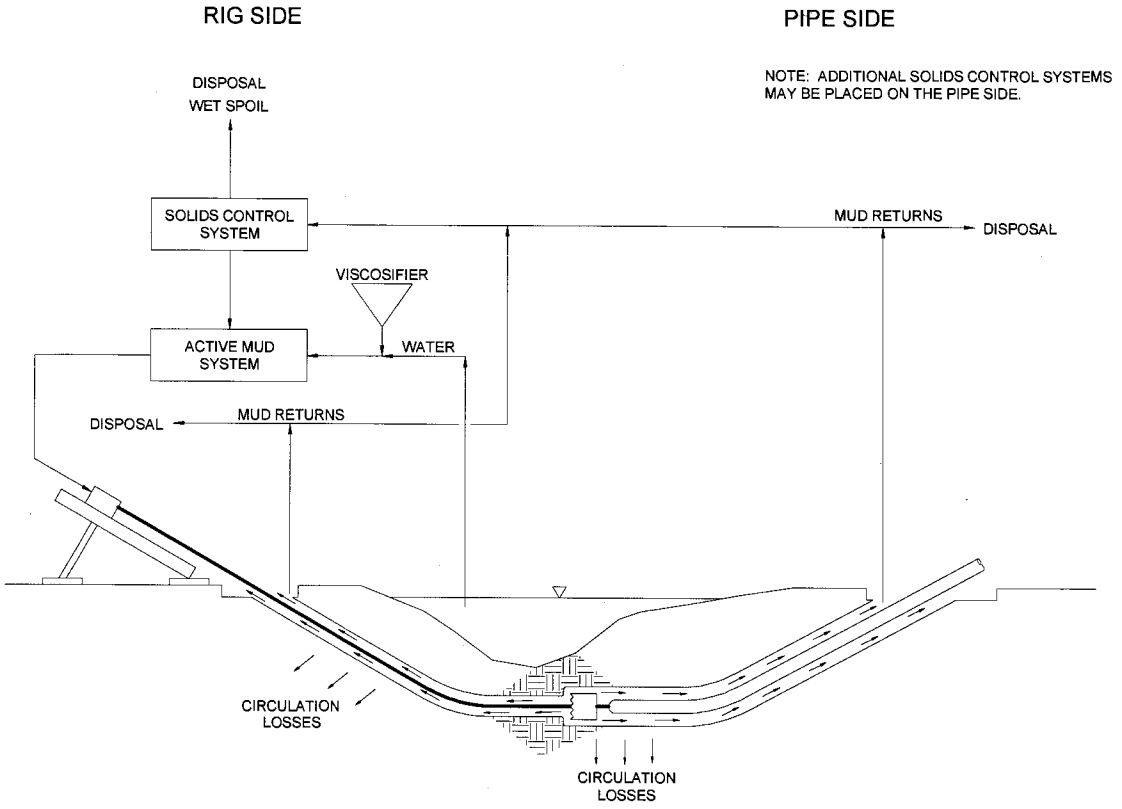
- **Transmission of Hydraulic Power.** Power required to turn a bit and mechanically drill a hole is transmitted to a downhole motor by the drilling fluid.

- **Hydraulic Excavation.** Soil is excavated by erosion from high velocity fluid streams directed from jet nozzles on bits or reaming tools.

- **Soil Modification.** Mixing of the drilling fluid with the soil along the drilled path facilitates installation of a pipeline by reducing the shear strength of the soil to a near fluid condition. The resulting soil mixture can then be displaced as a pipeline is pulled into it.

The major component of drilling fluid used in HDD pipeline installation is fresh water, typically obtained at the crossing location. In order for water to be fully functional, it is generally necessary to modify its properties by adding a viscosifier. The viscosifier used almost exclusively in HDD drilling fluids is naturally occurring bentonite clay, which is principally sodium montmorillonite. It is not listed as a hazardous material/substance as defined by the U.S. Environmental Protection Agency's EPCRA or CERCLA regulatory criteria. If the product becomes a waste, it does not meet the criteria of a hazardous waste, as defined by USEPA (see attached MSDS).

All stages of HDD involve circulating drilling fluid from equipment on the surface, through a drill pipe, and back to the surface through a drilled annulus. Drilling fluid returns collected at the entry and exit points are stored in a steel tank and processed through a solids control system which removes spoil from the drilling fluid allowing the fluid to be reused. The cleaned fluid is trucked back to the entrance point for reuse. The basic method used by the solids control system is mechanical separation using shakers, desanders, and desilters. The excess spoil and drilling fluid are transported to, and disposed of, at an approved permitted solid waste landfill. A typical HDD drilling fluid flow circuit is illustrated schematically below.



Drilling fluid expended downhole will flow in the path of least resistance. In the drilled annulus, the path of least resistance may be an existing fracture or fissure in the soil or rock substrate. When this happens, circulation can be lost or reduced. This is a common occurrence in the HDD process, but does not prevent completion. However, the environment may be impacted if the fluid inadvertently returns to the surface at a location on a waterway's banks or within a waterway or wetland.

Frac out Minimization

The risk of a frac out can be mitigated through profile design and implementation of specific measures throughout the installation process.

The HDD profile is designed to minimize the potential for the release of drilling fluid in sensitive areas. Cohesive soils, such as clays, dense sands, and competent rock are considered ideal materials for containment of drilling fluids. Case by case analysis of the overburden will be conducted to determine the depth of the bore to provide a margin of safety against frac outs in a sensitive area. In non cohesive soils, such as gravel, a greater depth of cover will be used.

During the design phase, substrate test bores if required, should be a minimum of 20' from the HDD centerline where practical. The bore holes should be filled with concrete prior to the HDD process.

Key preventative measures implemented during installation are geared toward keeping the drill fluid contained in the borehole and preventing its escape to the surface. This is accomplished through monitoring and management of drill fluid pressures and drill fluid volumes. A key to containing and controlling an inadvertent return is early detection and quick response by the HDD crew.

Minimization of Environmental Impact

The most effective way to minimize environmental impact associated with HDD drilling fluids is to maintain fluid circulation to the extent practical. Maintenance of fluid circulation is the responsibility of EOG's HDD contractor. EOG's construction specifications defining this responsibility is presented below.

> CONTRACTOR shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at locations other than the entry and exit points shall be minimized. In the event that annular circulation is lost, CONTRACTOR shall take steps to restore circulation.

However, it should be recognized that restoration of circulation may not be practical or possible, and that environmental impact will be minimized by completing construction as soon as possible. Therefore, absent a threat to public health and safety, drilling operations will continue in the event of lost circulation if deemed to reduce the duration of construction operations.

Drilling fluid is easily contained by standard erosion and sedimentation control measures within upland areas. Within the boundaries of the worksite drilling fluid is controlled through the use of pits at the crossing entry and exit points and typical fluid handling equipment such as trash pumps.

The environmental impact of a release of drilling fluid into a water body is a temporary increase in local turbidity until the drilling fluid dissipates with the current and settles to the bottom. In the immediate vicinity of a release, benthic organisms may be smothered if sufficient quantities of bentonite settles upon them.

Response to Frac out

Refer to Addendum A of this document for notification procedures to the USACE if a frac-out occurs in a water of the U.S (i.e. regulated wetland, stream, river, etc.).

The HDD contractor shall immediately notify the lead Construction Inspector (CI) and Environmental Inspector (EI) of any sudden losses in returns or any inadvertent return to the surface. If a frac out is observed, the HDD contractor will take certain reasonable measures to eliminate, reduce, or control the release. The actions to be taken will depend on the location and time of release, site specifc geologic conditions, and the volume of the release.

If a release occurs in an upland area, the HDD contractor will take appropriate reasonable actions to reduce, eliminate, or control the release. The actions shall include:

- constructing a small pit or sandbag coffer around the release point, installing a section of silt fence and/or straw bales to trap as much sediment as possible, and placing a pump hose in the pit to pump the drilling fluid back to the bore site
- reducing drilling fluid pressures
- thickening drilling fluid mixture

- adding pre-approved loss circulation materials to the fluid mixture, such as wood fibers or shredded paper.

The HDD contractor in consultation with the CI and EI, will determine which methods are the most appropriate to eliminate, reduce or control the release. Prior to the end of the shift, the EI or CI will notify the local Dominion Environmental Department concerning the frac out event. Drilling fluid that is recovered will be recycled and reused to the extent that is practical. Waste drilling fluid will be disposed of in a permitted solid waste landfill.

If inadvertent surface returns occur on a stream's bank or within a stream or wetland, it will be the responsibility of the HDD contractor to contain and collect drilling fluid, and ultimately restore the disturbed area, as practical. Drilling operations will be temporarily suspended to allow contractor to set up a containment and collection system. EOG's construction specifications defining this responsibility is presented below.

> If inadvertent surface returns of drilling fluids occur, they shall be immediately contained with hand placed barriers (i.e. straw bales, sand bags, silt fences, etc.) and collected using pumps as practical. If the amount of the surface return is not great enough to allow practical collection, the affected area shall be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally. If the amount of the surface return exceeds that which can be contained with hand placed barriers, small collection sumps may be used. If the amount of the surface return exceeds that which can be contained and collected using small sumps, drilling operations shall be suspended until surface return volumes can be brought under control.

If the release occurs in a **wetland, or in close proximity to a stream**, where there is imminent danger of the drilling fluid flowing into the body of water, then drilling operations will cease until the HDD personnel, CI and EI have had an opportunity to examine the site and evaluate the threat to the waterbody. **If a release occurs in an area regulated by the USACE, within 24 hours of the release the USACE shall be notified as described in Addendum A of this document. Based on review of the information submitted, the action taken by EOG, and the aquatic resource impacted, the responsible USACE District will determine what the appropriate USACE response/action will be on a case by case basis.** In addition, Dominion's local Environmental Department needs contacted immediately, or as soon as practical. A plan for avoiding additional impacts, which may include some or all of the action items listed above will be implemented. Efforts will be made to minimize ground disturbance in wetlands while accessing the frac out area by utilizing swamp mats and lightweight equipment, such as bobcats and pick-up trucks, and minimizing the travel into and out of the wetland. The cutting of shrubs and trees will be minimized, as much as practical, in order to reach the frac out area. The HDD activity may be resumed only after it has been determined with reasonable certainty that any additional release of drilling fluid will be minimal and can be adequately contained without posing additional impact to wetlands and streams. The release site(s) will be closely monitored for any additional frac out activity until the HDD work in the area is completed. For longer stretches of ROW that are not within site of the HDD personnel, the pipeline right-of-way will be walked at least on an hourly basis.

If a release occurs in a **stream or river**, then drilling operations will cease until the HDD personnel, CI and EI have had an opportunity to examine the site and evaluate the threat to the waterbody. **Within 24 hours of the release the USACE shall be notified as described in Addendum A of this document. Based on review of the information submitted, the action taken by EOG, and the aquatic resource impacted, the responsible USACE District will determine what the appropriate USACE response/action will be on a case by case basis.** In addition, Dominion's local Environmental Department needs contacted immediately, or as soon

as practical. A plan for avoiding additional impacts, which may include a pump or flume bypass with secondary secondary containment, in addition to all of the action items listed above will be implemented. The HDD activity may be resumed only after it has been determined with reasonable certainty that any additional release of drilling fluid will be minimal and can be adequately contained without posing further impacts to wetlands and streams. The release site(s) should continue to be closely monitored for any additional further frac out activity until the HDD work in the area is completed. For frac-out situations in stream and wetlands only, the Environmetal Inspector may conduct stream monitoring/sampling such as pH and turbidity, comparing upstream conditions with downstream conditions. Also, the stream will be walked to verify the extent of drilling fluid sediment dispersal and settling.

One **exception to ceasing drilling operations** until containment is developed would be a release of drilling fluids during the pipe pullback process. Ceasing operations would pose significant risk of causing the pull to be stuck and not able to resume.

Containment & Clean-up Material and Equipment

The HDD contractor will be required to have the necessary containment and clean-up equipment onsite and readily available to use. At a minimum, the following material and equipment should be on site and in ample supply depending on the extent of sensitive areas:

- Spill sorbent pads and booms
- Straw bales (certified weed-free)
- Wood stakes
- Sand bags
- Silt fence
- Plastic sheeting
- Corrugated plastic pipe
- Shovels
- Push brooms
- Centrifugal, trash and sump pumps
- Vacuum trucks
- Rubber tired or wide track back hoe
- Bobcat (if needed)
- Storage tanks (if needed)
- Floating turbidity curtain (may be considered for use on large streams)

If necessary, a 24 hour outside emergency response company may be called in for assistance.
Enviroserve – 1-800-642-1311

Agency Notifications

Typically, the local Dominion Environmental Department personnel supporting EOG will make the necessary calls to any regulatory agency.

- Ohio EPA spill hotline – 1-800-282-9378 (not considered a spill, but unpermitted discharge)
- USACE – Refer to Addendum A of this document. (phone number will be provided per project location)

- Other agencies that may have to be notified dependent upon permit approvals and site conditions may include Ohio PSB, Ohio DNR and the USF&W Service.

Frac out site restoration

All areas impacted will be restored to pre-existing condition and contour. Impacted upland areas will be restored through normal right-of-way practices of seeding and mulching.

Restoration of wetlands will vary depending on the extent of disturbance to the upper soil layer and vegetation during the initial frac out response. Residual frac mud will be washed off the vegetation as much as practical. Upon review of the submitted information as identified in Addendum A of this document, the respective USACE District will review the restoration activities performed in any regulated wetland and determine if further action is warranted.

All perennial, intermittent and ephemeral streams will have as much residual frac out mud pumped out as is practical, so as not to disturb the original streambed. This may include a light wash of the streambed utilizing upstream water and collecting the wash water immediately downstream. Similar to frac outs occurring in wetlands, upon review of the submitted information as identified in Addendum A of this document, the respective USACE District will review the restoration activities performed in any regulated streams and determine if further action is warranted.

Addendum A

Coordination Procedures between the U.S Army Corps of Engineers (USACE) and Dominion East Ohio Gas (EOG) for Frac-Outs:

If specific frac-out contingency/corrective action plans have been developed for particular Horizontal Directional Drills (HDD), these should be provided to the appropriate USACE District prior to initiation of the HDD. Of particular importance is for EOG to identify any potential corrective actions that may require USACE authorizations to implement the corrective actions (i.e. temporary access roads to facilitate containment/clean-up in areas regulated by the USACE).

FRAC-OUT OCCURS:

The procedures outlined below shall be implemented when a frac-out occurs in an area regulated the USACE in the state of Ohio:

1. Identify the responsible USACE District (Buffalo, Huntington, Pittsburgh) based on the geographical location of the frac-out.

2. Within 24 hours of the frac-out occurrence, notify the point of contact at the responsible USACE District.
   -Harold Keppner (Buffalo): 716-879-4120, harold.t.keppner@usace.army.mil
   -Mark Taylor (Huntington): 304-399-6903, mark.a.taylor@usace.army.mil
   -Nancy Mullen (Pittsburgh): 412-395-7170, nancy.j.mullen@usace.army.mil
*Notification shall occur via e-mail with potential phone contact as the situation warrants.

3. The notification shall include the following information:
   - USGS location map depicting the frac-out location.
   -Identify the regulated water of the U.S. and provide a brief description of that resource (i.e. stream/river name, forested wetland, etc).
   -Characterize the scope of the frac-out. Identify the approximate quantity of material discharged and area impacted by that discharge.
   -Provide the date the frac-out occurred and status of the situation (i.e. stopped, on-going).
   -State corrective actions and restoration measures taken or to be taken by EOG to address the situation. This should include but is not limited to any "washing", earthwork and/or seeding/plantings performed to restore the area to pre-existing condition and contour.
   -Representative photos of the area impacted by the frac-out and representative photos of the area after corrective/restoration efforts.
   -Identify the potential for any additional USACE authorizations required to perform corrective actions (i.e. temporary access road in areas regulated by the USACE).

Based on review of the information submitted, the action taken by EOG, and the aquatic resource impacted, the responsible USACE District will determine what the appropriate USACE response/action will be on a case by case basis. Action taken by the USACE District may

include, but is not limited to issuance of a "cease and desist" order and/or permit suspension/modification/revocation.

NOTE: The USACE may update this guidance at any time based on an assessment of the situations which are encountered and how they are handled by EOG.

EOG FRAC-OUT NOTIFICATION FORM:

Project: _____

Date of Release: _____

Current Status: _____

Location of Release (City, County, State – **Attach USGS Topographic Map**) and Corps District:

Estimated Quantity of Release: _____

Scope of frac-out. Describe General Area Impacted by Release:

Identify and describe wetland(s) and/or stream(s) impacted by release:
(Attach Delineation Map and photographs)

Corrective actions taken or to be taken **(Attach photographs of area after corrective actions)**:

Will additional authorization by the Corps be required to perform corrective actions?

Project Contact for the Corps (**Dominion Environmental** will call only if necessary):

Buffalo District: Mr. Harold Keppner Harold.t.keppner@usace.army.mil 1-716-879-4120

Huntington District: Mr. Mark Taylor mark.a.taylor@usace.army.mil 1-304-399-6903

Pittsburgh District: Ms. Nancy Mullen nancy.j.mullen@usace.army.mil 1-412-395-7170

Ohio EPA Spill Hotline:

1-800-282-9378

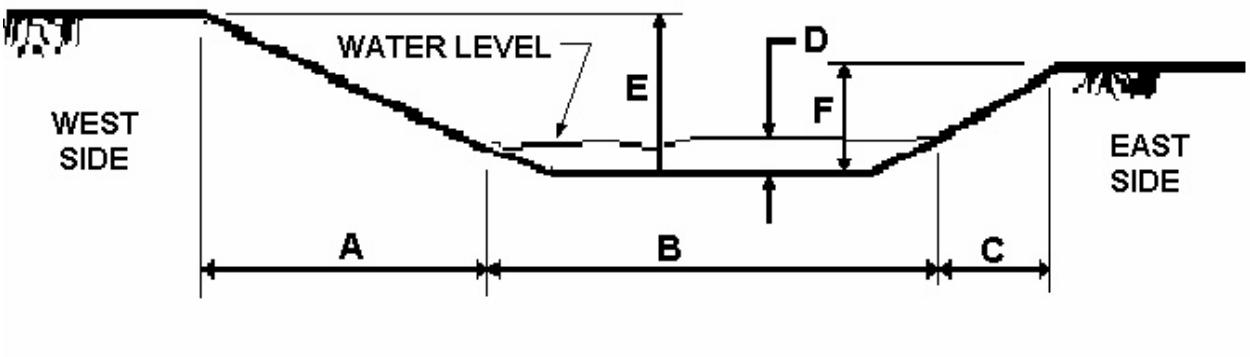
APPENDIX B

APPENDIX B

Surface Water Crossing Detail Drawings

DETAIL B-1

SURFACE WATER DIMENSION DETAILS



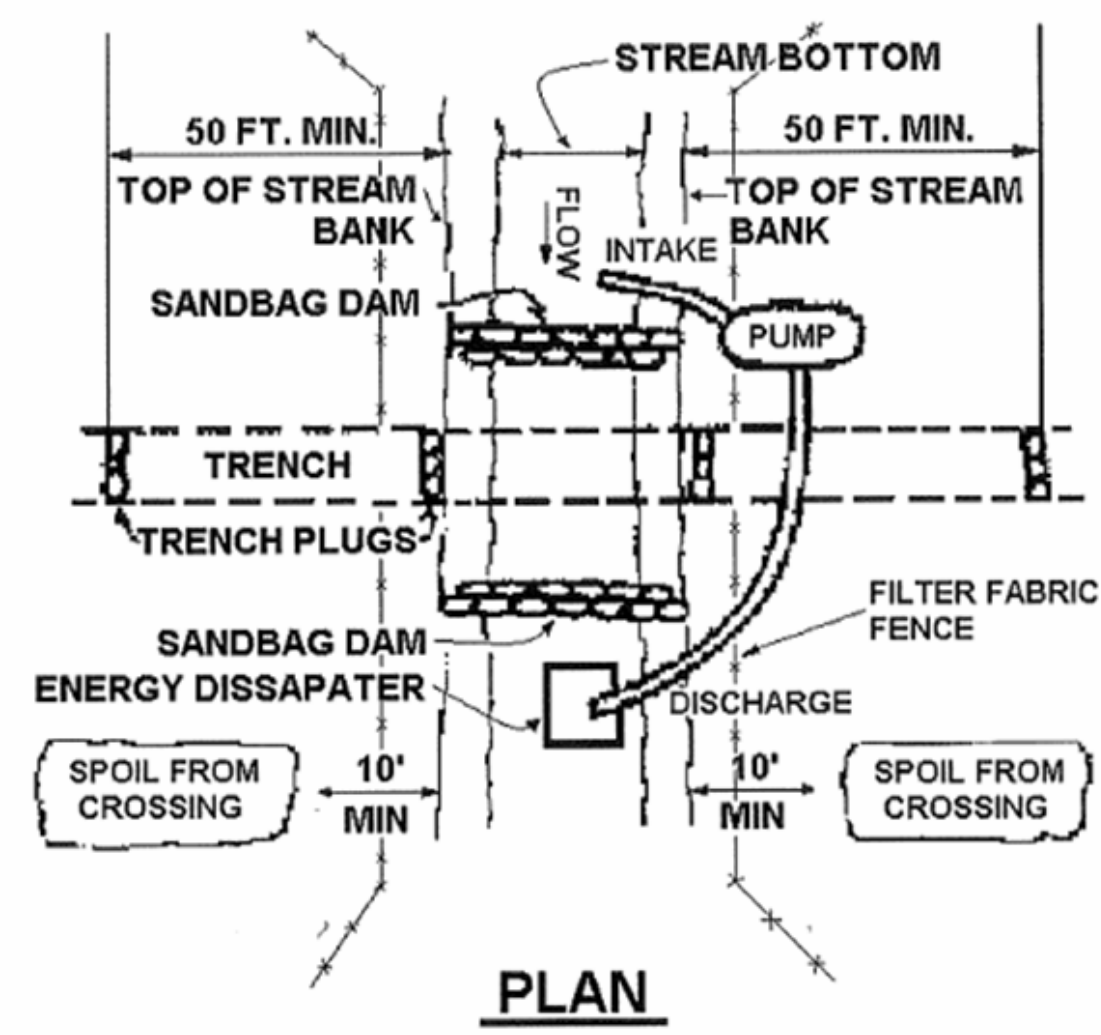
The following table is to be completed with information collected during civil surveys, if available:

CHANNEL CROSS-SECTION

Crossing Number	Name	A	B	C	D	E	F

DETAIL B-2

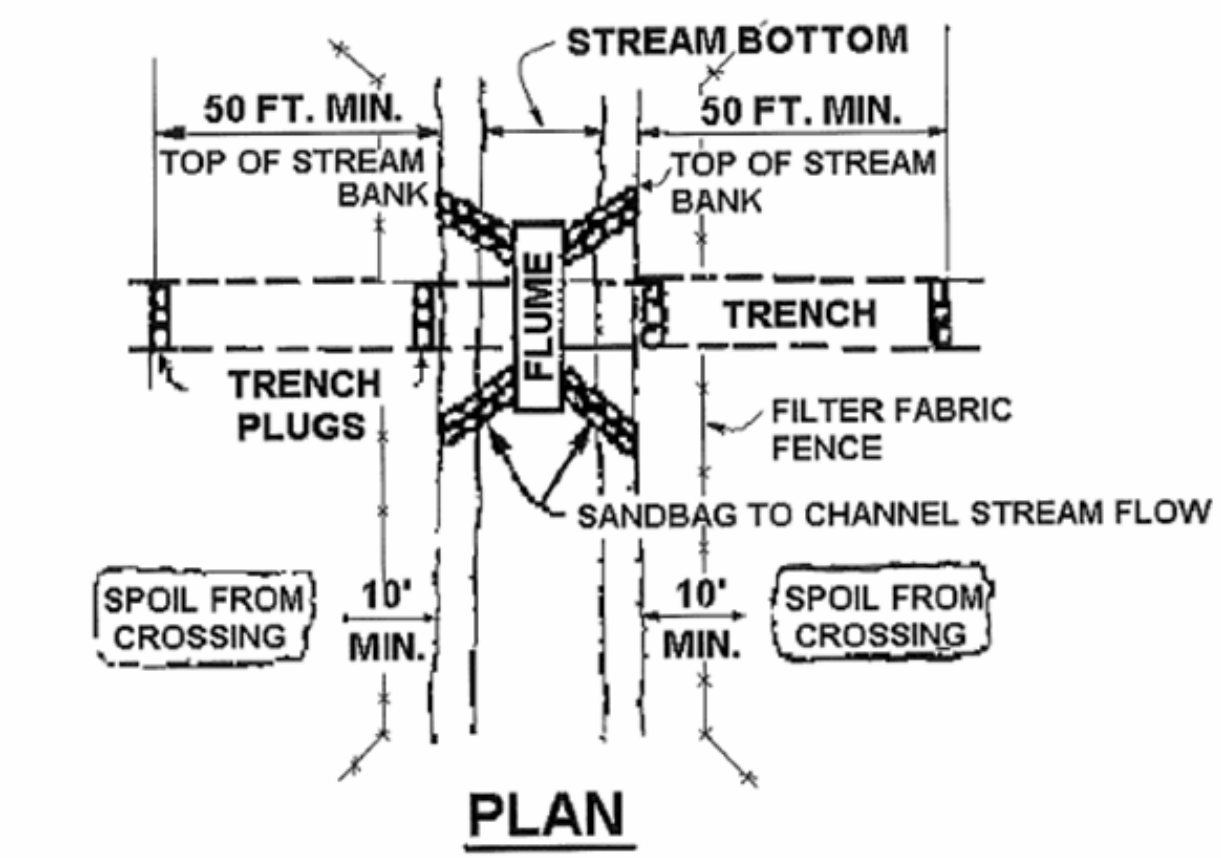
TYPICAL STREAM CROSSING WITH PUMPED BYPASS



Note: A secondary dam may be needed to completely dry the streambed. A sump pump pumping behind the primary dam can usually handle this task.

DETAIL B-3

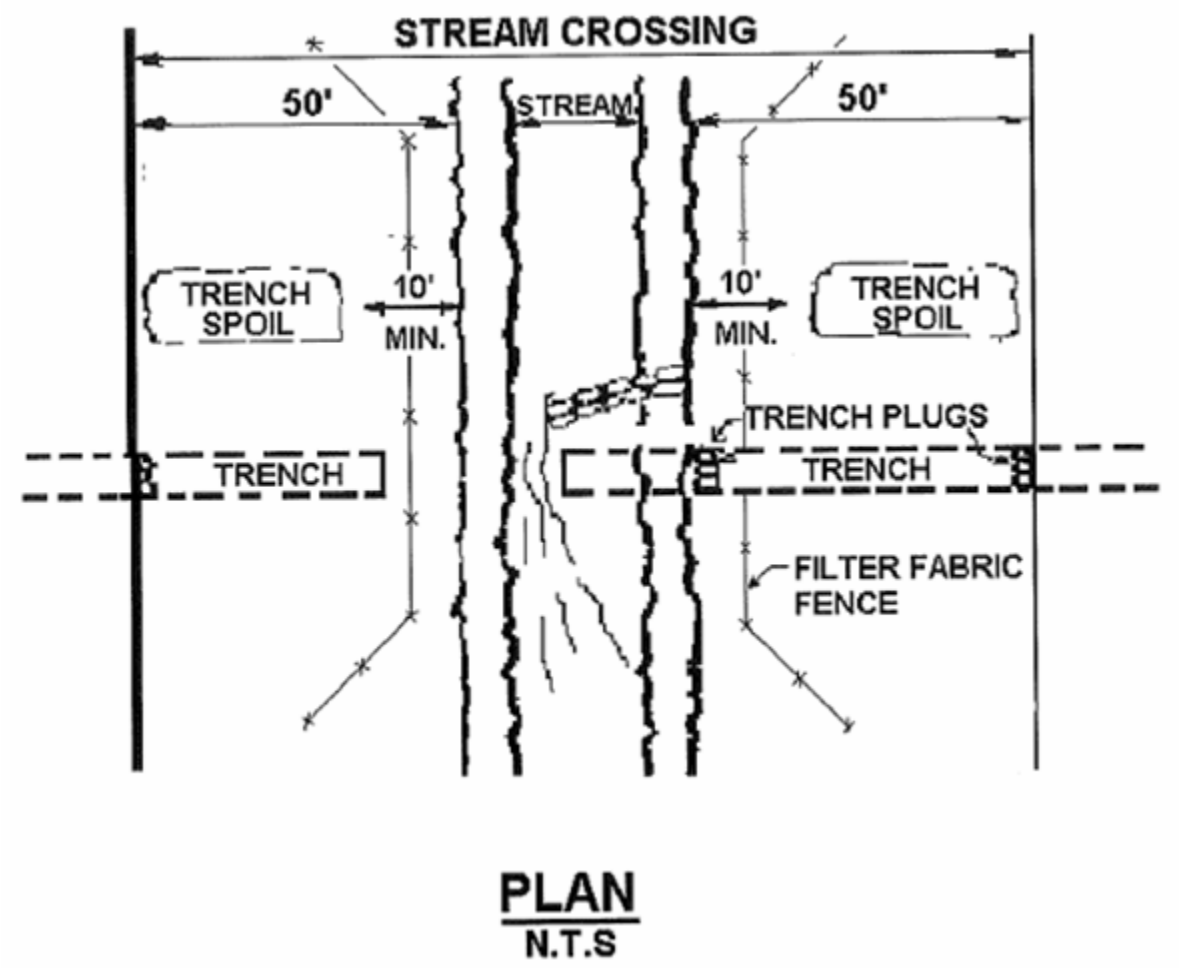
TYPICAL FLUMED STREAM CROSSING



Note: Scour prevention at the downstream end of the flume pipe should be considered.

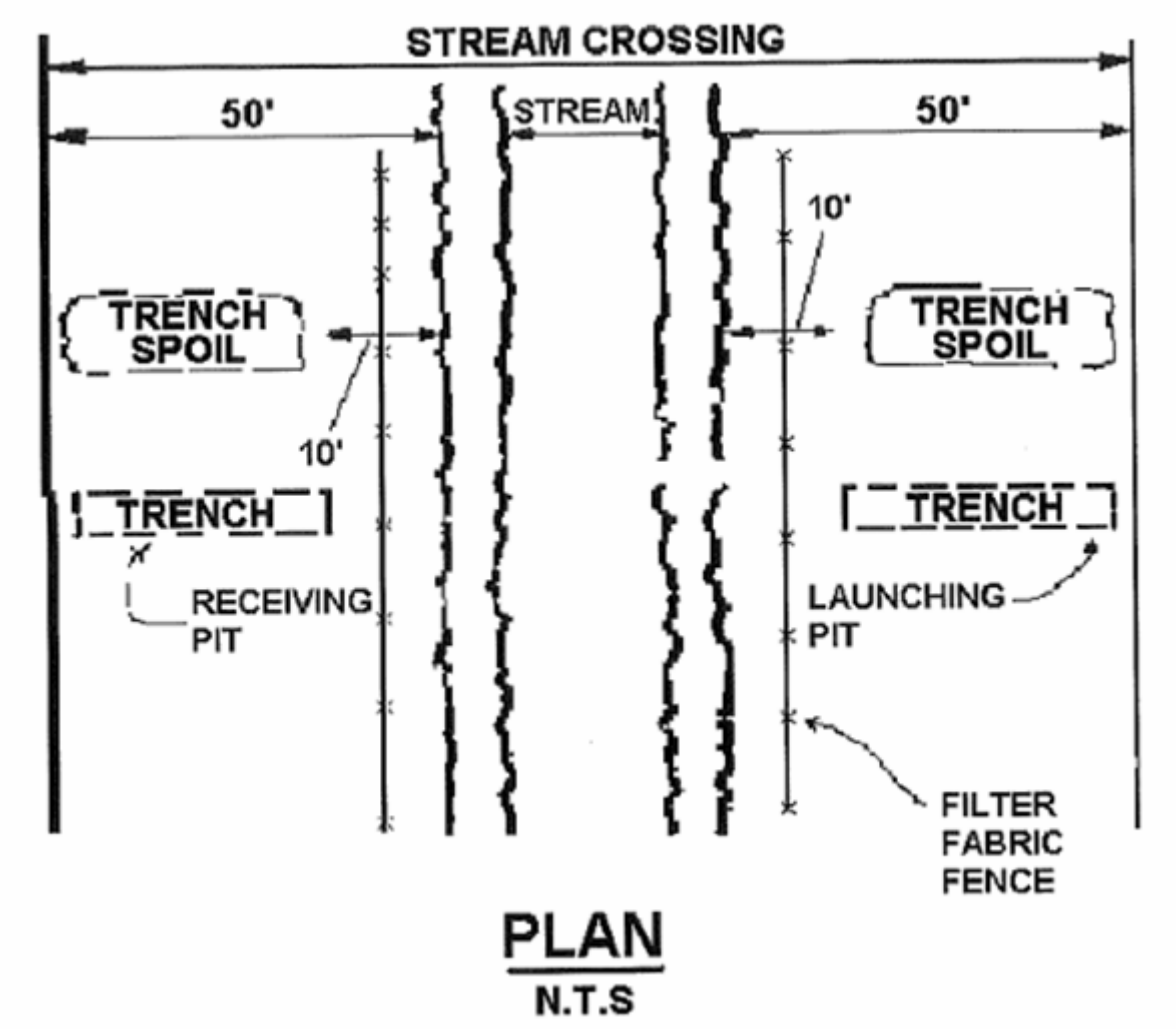
DETAIL B-4

TYPICAL DIVERSION BARRIER STREAM CROSSING



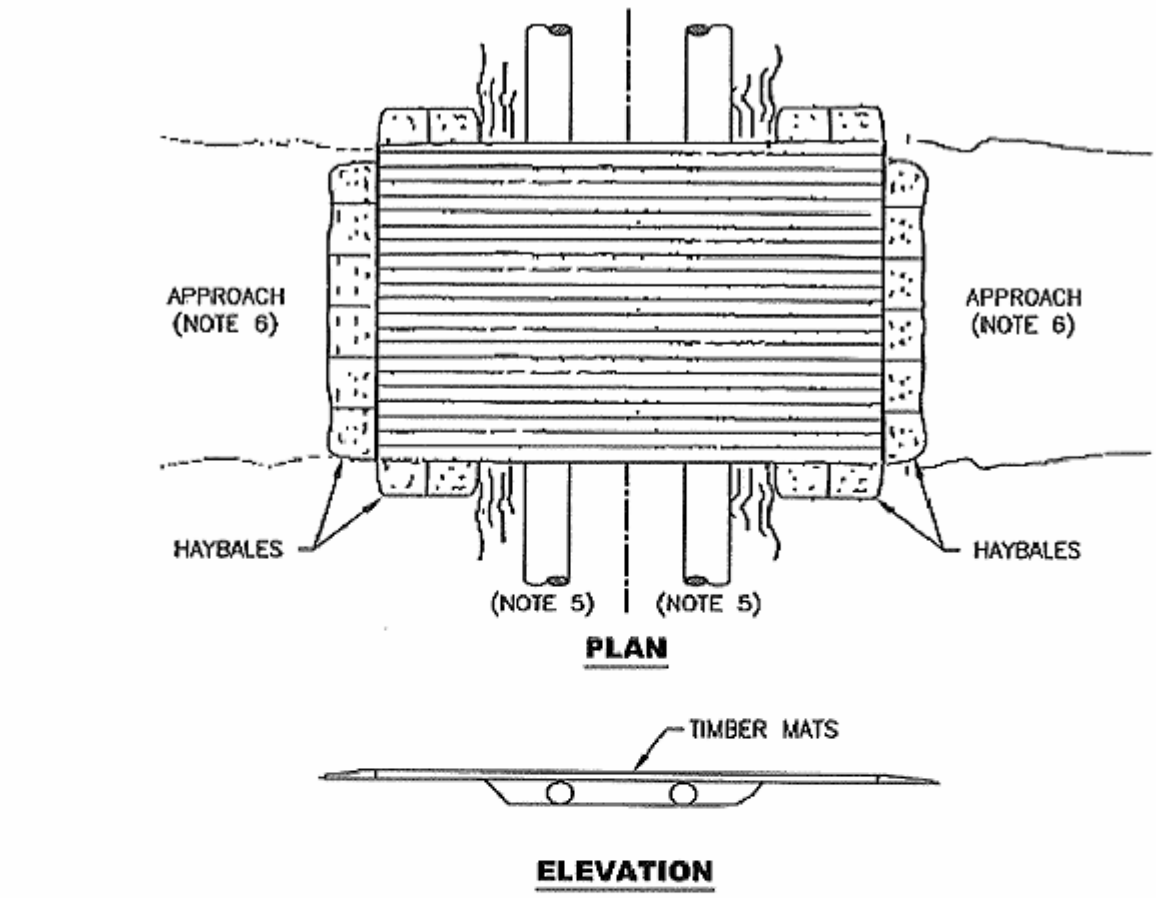
DETAIL B-5

TYPICAL BORED STREAM CROSSING



DETAIL B-6

TYPICAL TIMBER MAT BRIDGE FOR STREAM CROSSINGS

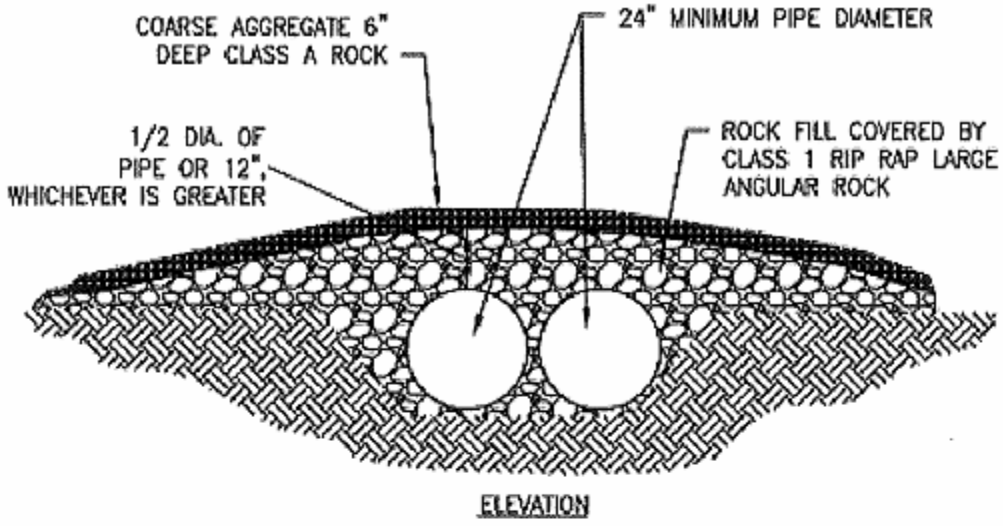


NOTES:

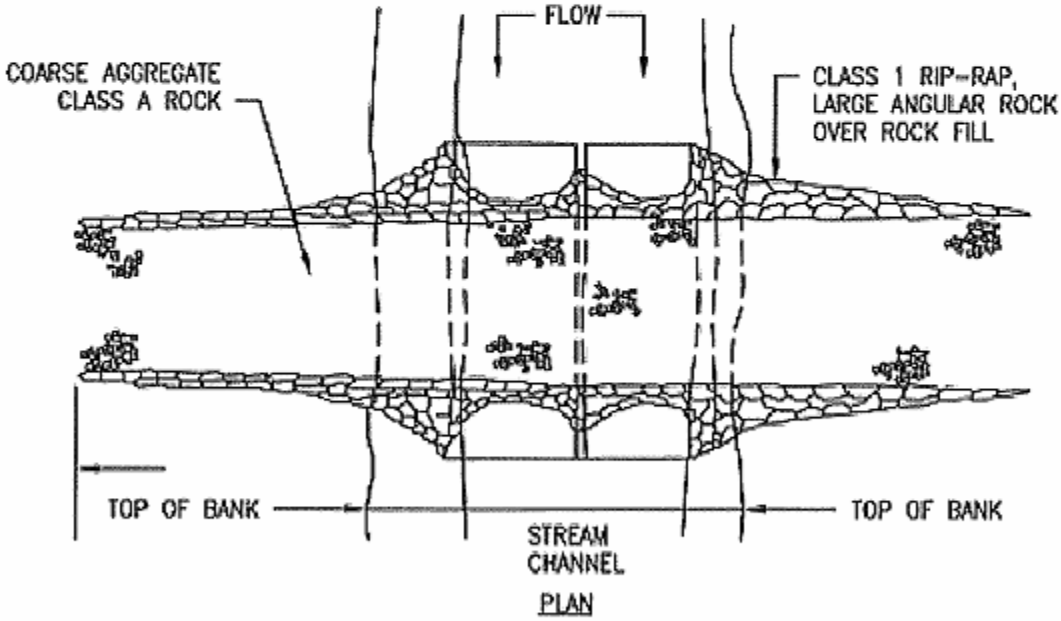
1. THIS TYPE OF BRIDGE IS GENERALLY USED FOR SMALL STREAM CROSSINGS LESS THAN 20 FEET IN WIDTH IN COMBINATION WITH A PROPER STREAM BANK CONFIGURATION.
2. BRIDGE WILL BE TEMPORARILY REMOVED IF HIGH WATER RENDERS IT UNSAFE FOR CROSSING.
3. BRIDGE TO REMAIN IN PLACE UNTIL THE COMPLETION OF FINAL RESTORATION.
4. FILTER SOCKS ARE RECOMMENDED IN LIEU OF STRAW BALES, SAND BAGS, AND SILT FENCE. REMOVE DURING USE; REPLACE AT NIGHT AND WHEN CROSSING IS NOT BEING USED.
5. CULVERT PIPES MAY BE UTILIZED IF ADDITIONAL SUPPORT IS REQUIRED.
6. RAMP APPROACHES CAN BE EITHER GRADED OR DUG INTO GROUND IF NECESSARY, STONE MAY BE USED ON APPROACHES.
7. MAINTAIN PADS TO PREVENT SOIL FROM ENTERING STREAM.

DETAIL B-7

TYPICAL FLUMED EQUIPMENT CROSSING



ELEVATION



PLAN

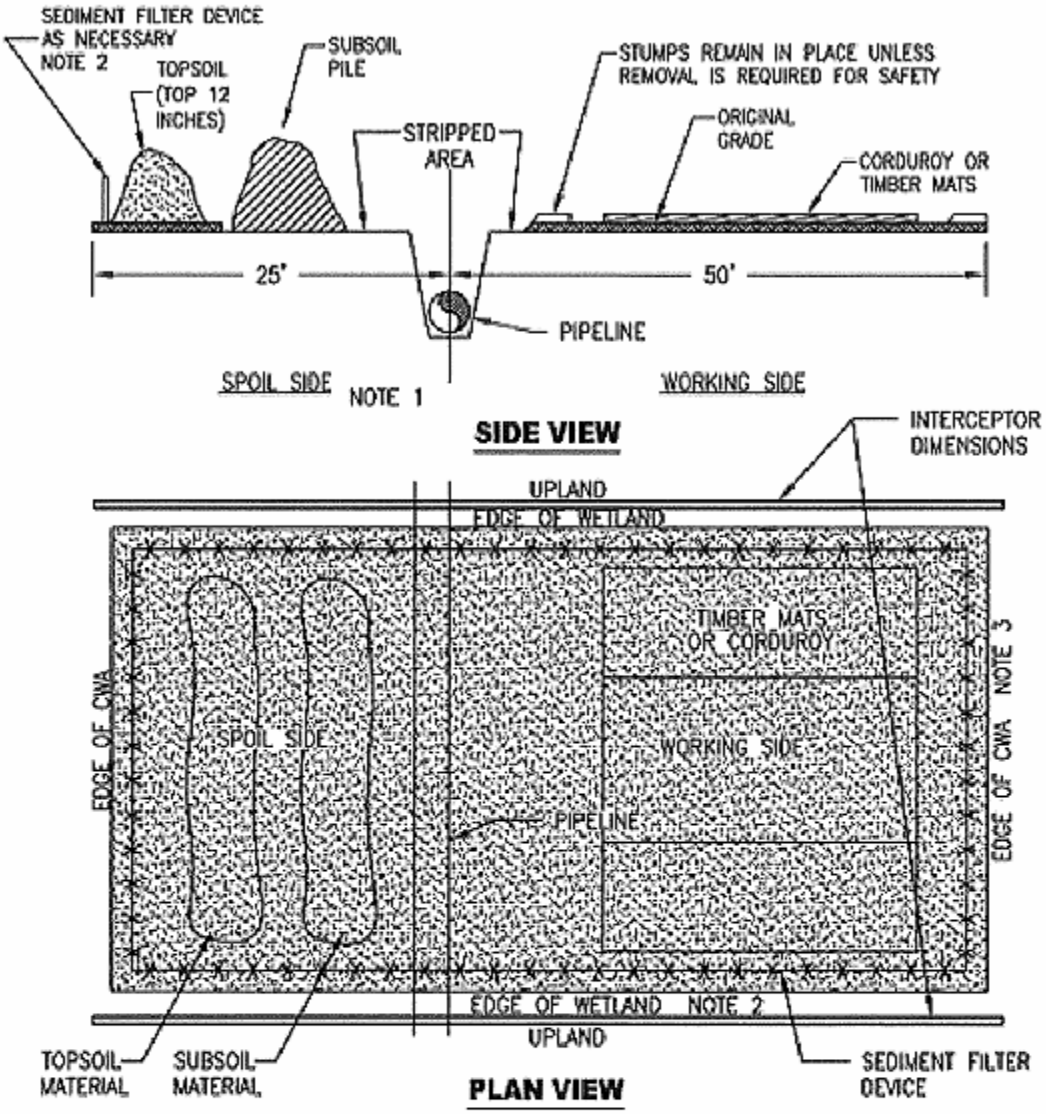
GENERAL NOTES:

1. NOT TO SCALE
2. THIS TYPE OF CROSSING CAN BE INSTALLED IN BOTH WET OR DRY WEATHER STREAM CONDITIONS WHERE THE DRAINAGE AREA EXCEEDS 10 ACRES.
3. A CULVERTED CROSSING MAY NOT BE APPROVED IN HIGH FISHERY VALUE STREAMS.

FLUMED EQUIPMENT CROSSING

DETAIL B-8

TYPICAL CONVENTIONAL WETLAND CROSSING



NOTES:

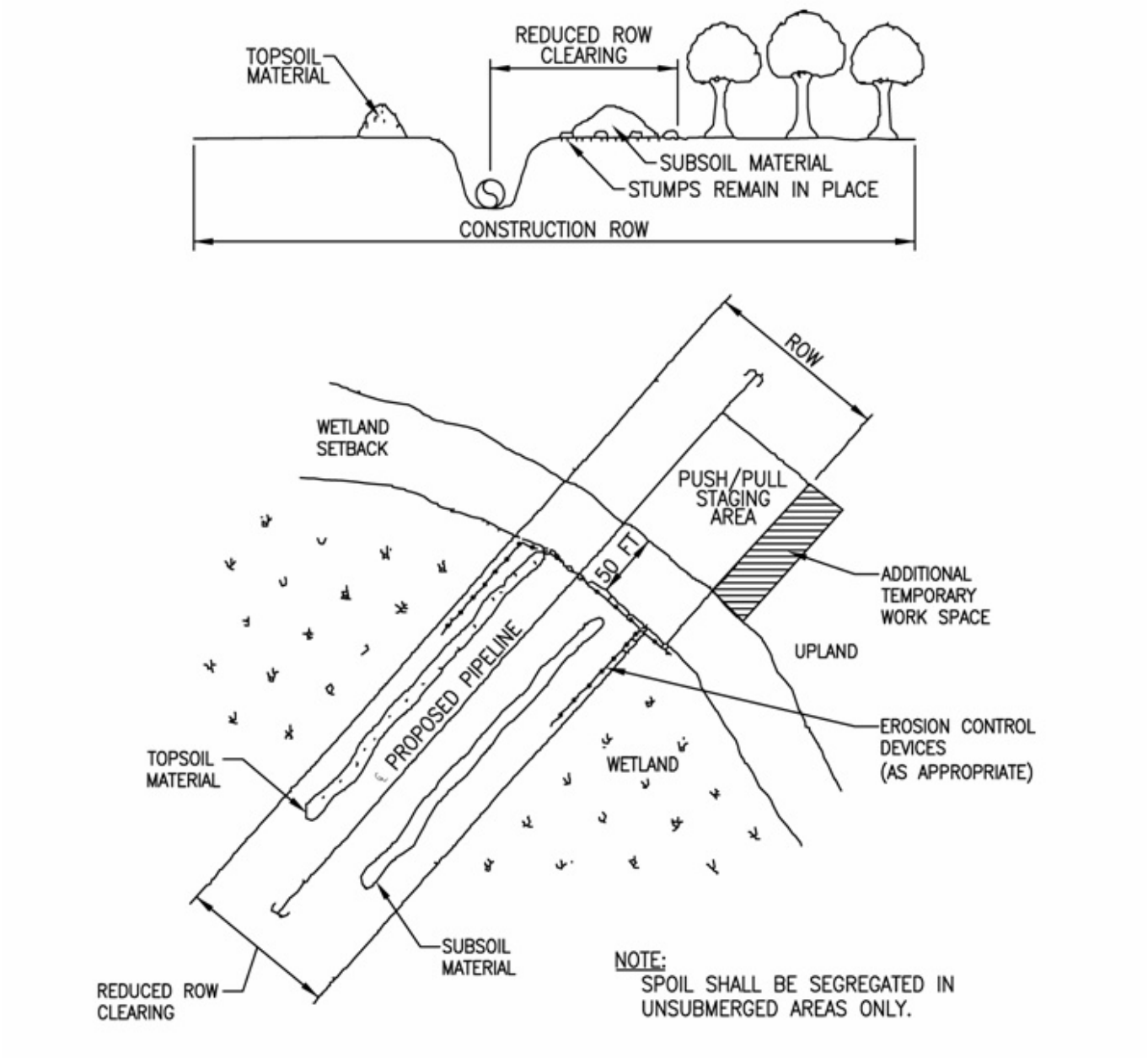
1: IN WETLAND AREAS WHICH CONTAIN NO STANDING WATER OR SATURATED SOILS, TOPSOIL (TOP 12 INCHES) AND SUBSOIL SHOULD BE STOCKPILED SEPARATELY WITHIN THE WETLAND CWA. TOPSOIL SHOULD BE DISTINGUISHED FROM SUBSOIL BY A COMMUNICATING DEVICE (FLAGGING, RIBBON, OR OTHER EFFECTIVE DEVICE).

2: A SEDIMENT FILTER DEVICE WILL BE PLACED ACROSS THE CWA AT THE WETLAND'S EDGE.

3: A SEDIMENT FILTER DEVICE WILL BE PLACED AT THE EDGE OF THE CWA AND AROUND TOPSOIL AND SUBSOIL PILES AS NECESSARY.

DETAIL B-9

TYPICAL PUSH PULL WETLAND CROSSING

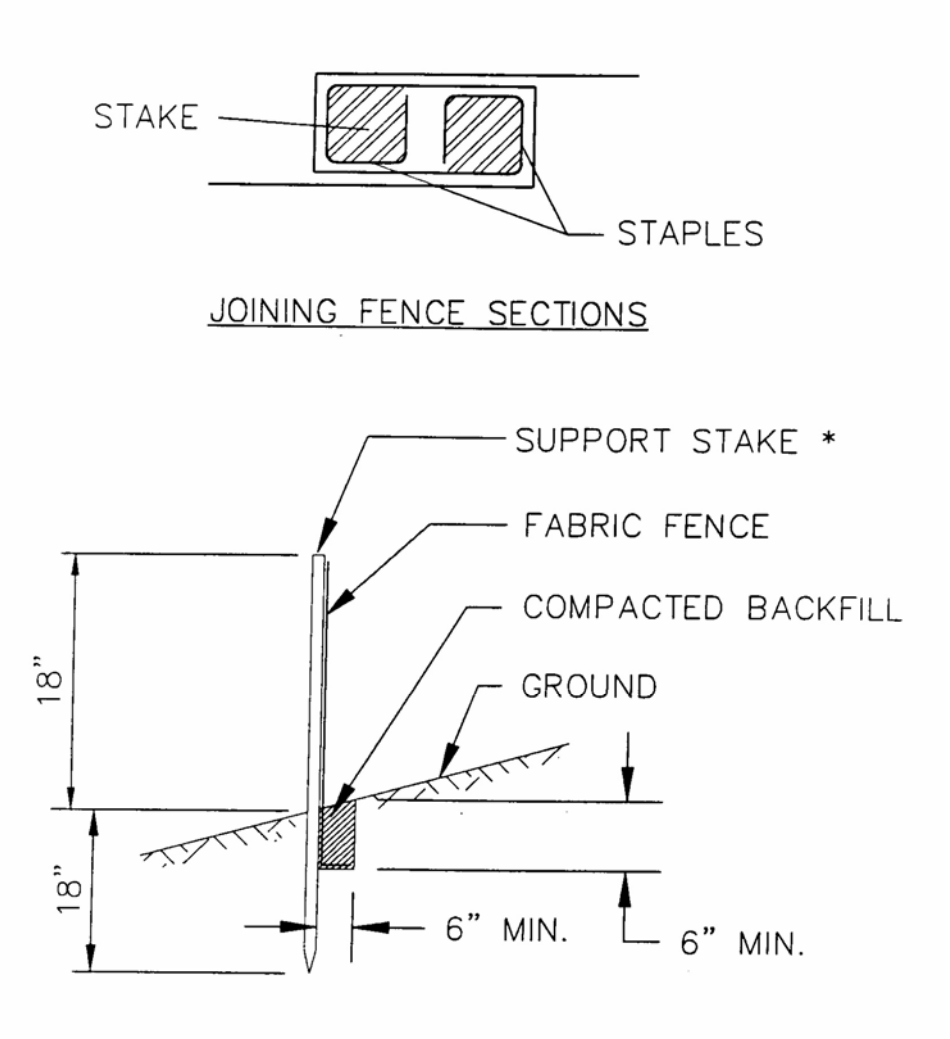


APPENDIX C

Sediment Control Detail Drawings

DETAIL C-1

FILTER FABRIC FENCE DETAIL



*Stakes spaced @ 8’ maximum. Use 2"x 2" wood or equivalent steel stakes.

Filter Fabric Fence must be placed at level existing grade. Both ends of the barrier must be extended at least 8 feet up slope at 45 degrees to the main barrier alignment.

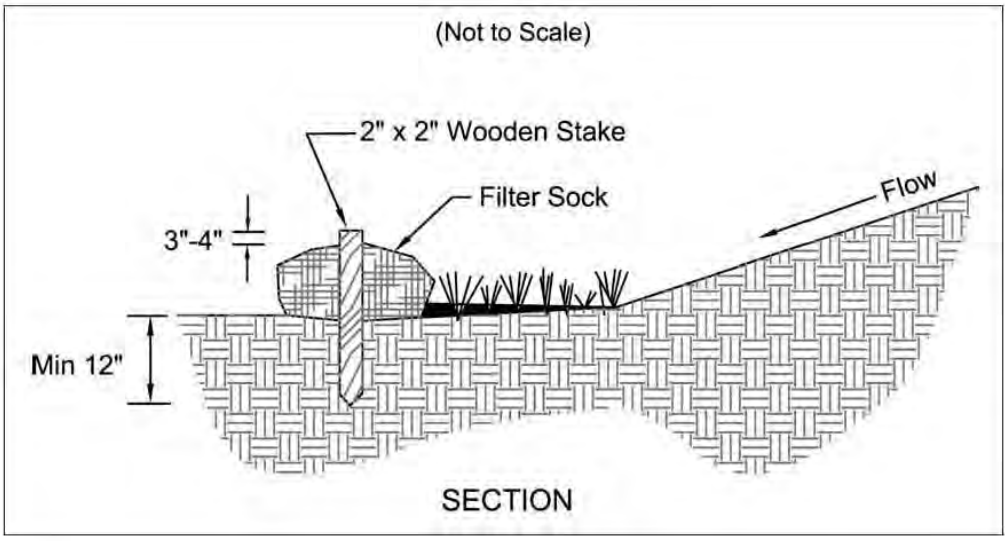
Trench shall be backfilled and compacted to prevent runoff from cutting underneath the fence.

Sediment must be removed when accumulations reach 1/2 the above ground height of the fence.

Any section of Filter fabric fence that has been undermined or topped should be immediately replaced.

DETAIL C-2

FILTER SOCK DETAIL



1. Materials – Compost used for filter socks shall be weed, pathogen and insect free and free of any refuse, contaminants or other materials toxic to plant growth. They shall be derived from a well-decomposed source of organic matter and consist of a particles ranging from 3/8" to 2".
2. Filter Socks shall be 3 or 5 mil continuous, tubular, HDPE 3/8" knitted mesh netting material, filled with compost passing the above specifications for compost products.

INSTALLATION:

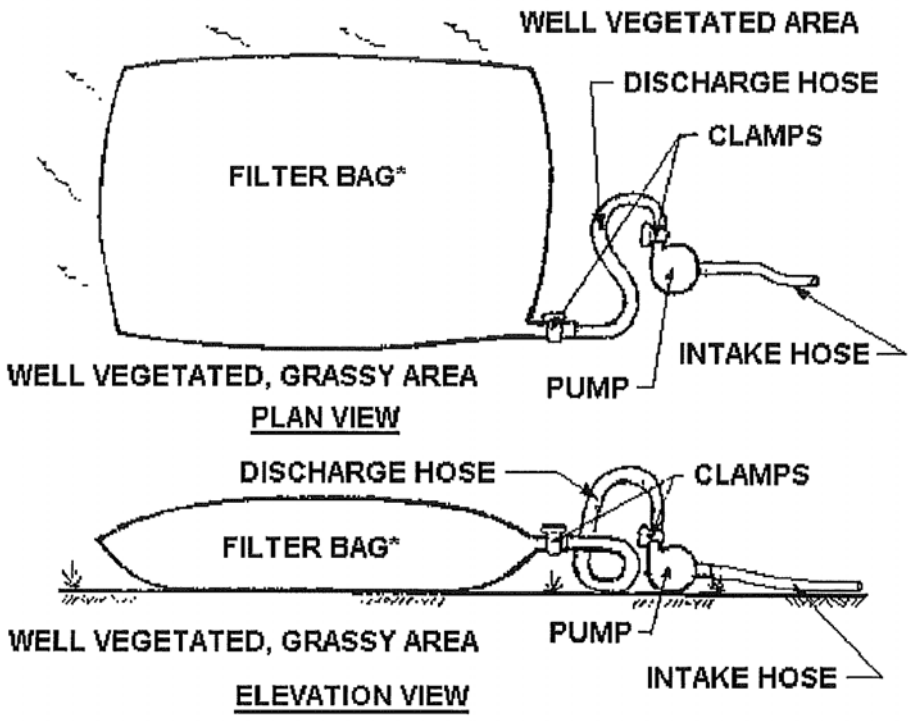
3. Filter socks will be placed on a level line across slopes, generally parallel to the base of the slope or other affected area. On slopes approaching 2:1, additional socks shall be provided at the top and as needed mid-slope.
4. Filter socks intended to be left as a permanent filter or part of the natural landscape, shall be seeded at the time of installation for establishment of permanent vegetation.
5. Filter Socks are not to be used in concentrated flow situations or in runoff channels.

MAINTENANCE:

6. Routinely inspect filter socks after each significant rain, maintaining filter socks in a functional condition at all times.
7. Remove sediments collected at the base of the filter socks when they reach 1/3 of the exposed height of the practice.
8. Where the filter sock deteriorates or fails, it will be repaired or replaced with a more effective alternative.
9. Removal – Filter socks will be dispersed on site when no longer required in such as way as to facilitate and not obstruct seedings.

DETAIL C-3

PUMPED WATER FILTER BAG DETAIL



Filter bags shall be made from non-woven geotextile material sewn with high strength, double stiched "J" type seams. They shall be capable of trapping particles larger than 150 microns.

A suitable means of accessing the bag with machinery required for disposal purposes must be provided. Filter bags shall be replaced when they become 1/2 full. Spare bags shall be kept available for replacement of those that have failed or are filled.

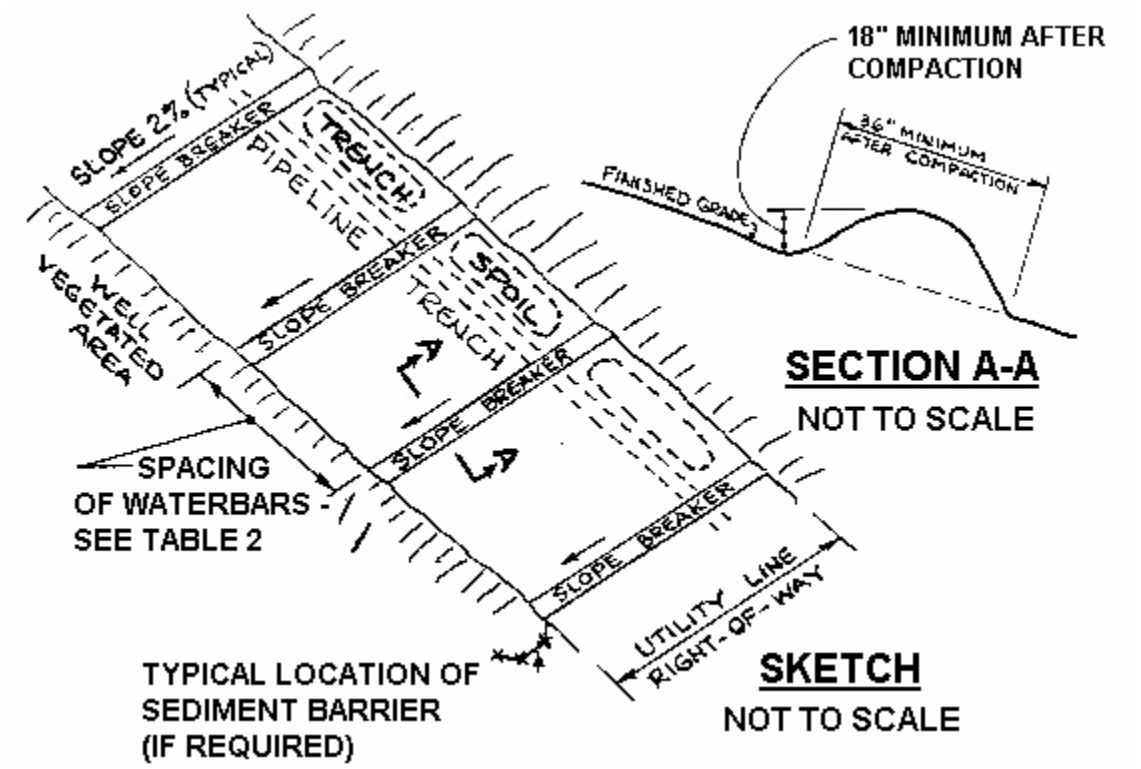
Bags shall be located in a well-vegetated (grassy) area, and discharge onto stable, erosion resistant areas. Where this is not possible, a geotextile flow path shall be provided. Bags should not be placed on slopes greater than 5%.

For hydrostatic discharge, the pumping rate is 350-500 gallons per minute (gpm). For trench dewatering, the pumping rate shall be no more than 750 gpm. Floating pump intakes should be considered to allow sediment-free water to be discharged during dewatering.

Filter bags shall be inspected daily. If any problem is detected, pumping shall cease immediately and not resume until the problem is corrected.

DETAIL C-4

WATERBAR INSTALLATION

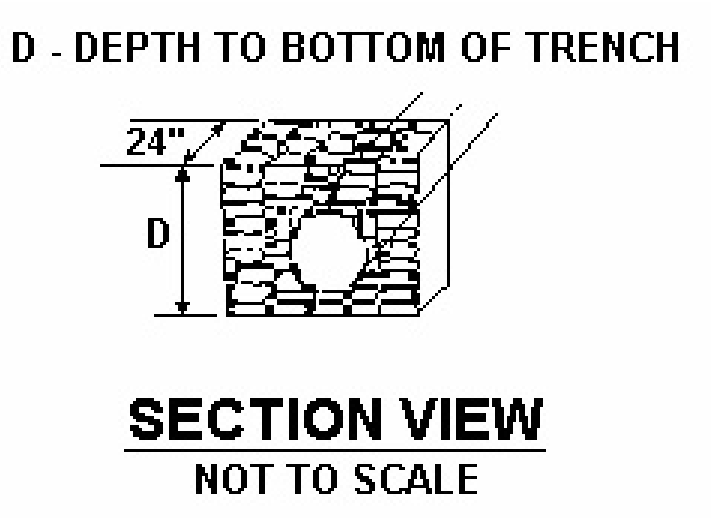


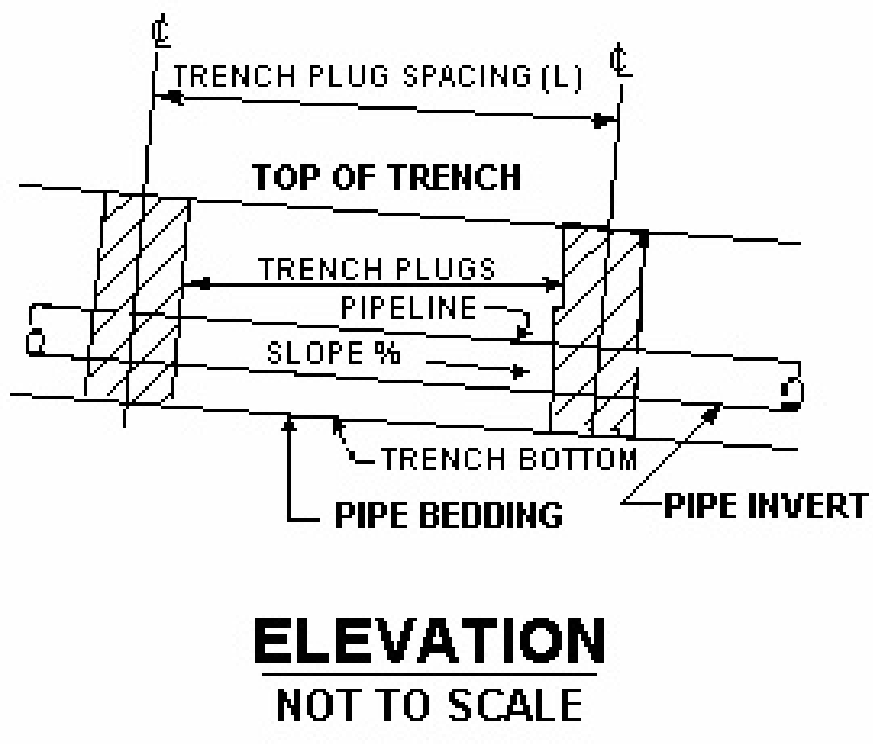
Required Spacing for Temporary and Permanent Waterbars	
Percent Slope	**Spacing (FT)**
1	400
2	250
5	135
10	80
15	60
20	45

Waterbars should be constructed at a slope of 1% and discharge to a well-vegetated area. Waterbars should not discharge into an open trench. Waterbars should be oriented so that the discharge does not flow back onto the ROW. Obstructions, (e.g. silt fence, rock filters, etc.) should not be placed in any waterbars. Where needed, they should be located below the discharge end of the waterbar.

DETAIL C-5

TRENCH PLUG INSTALLATION DETAIL

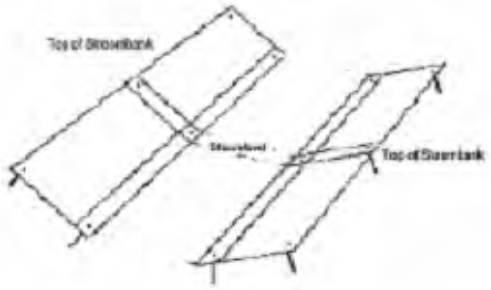




DETAIL C-6

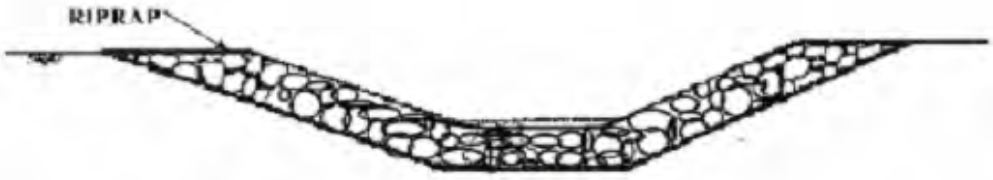
STREAM BANK RESTORATION DETAIL

Erosion Control Mat Details



Refer to matting manufacturer's installation detail for overlap, embedment, staple patterns, and vegetative stabilization specifications

Stream Rip-Rap Details



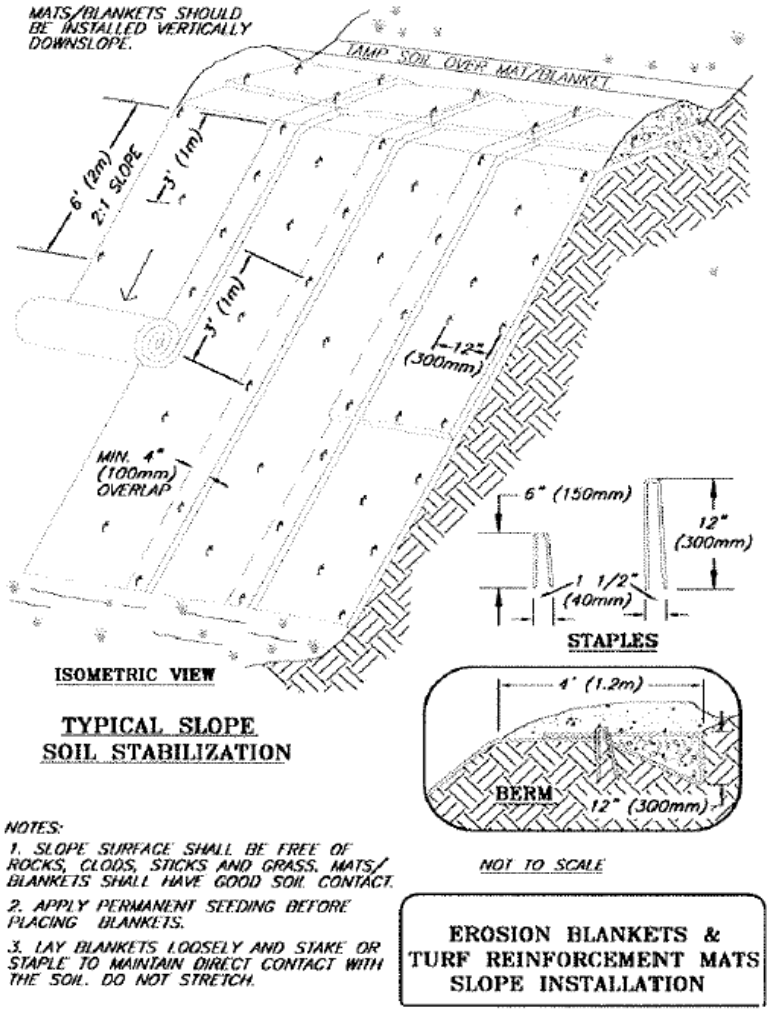
The following guidelines will be used to select riprap size and thickness:

- For channels with water depth > 3 feet, use R-5 at 6" thick.
- For channels with water depth between 2 and 3 feet, use R-4 at 4" thick
- For channels with water depth between 1 and 2 feet, use R-3 at 3" thick
- For channels with water depth < 1 feet, use R-2 at 3" thick

DETAIL C-7

EROSION CONTROL MATTING DETAIL

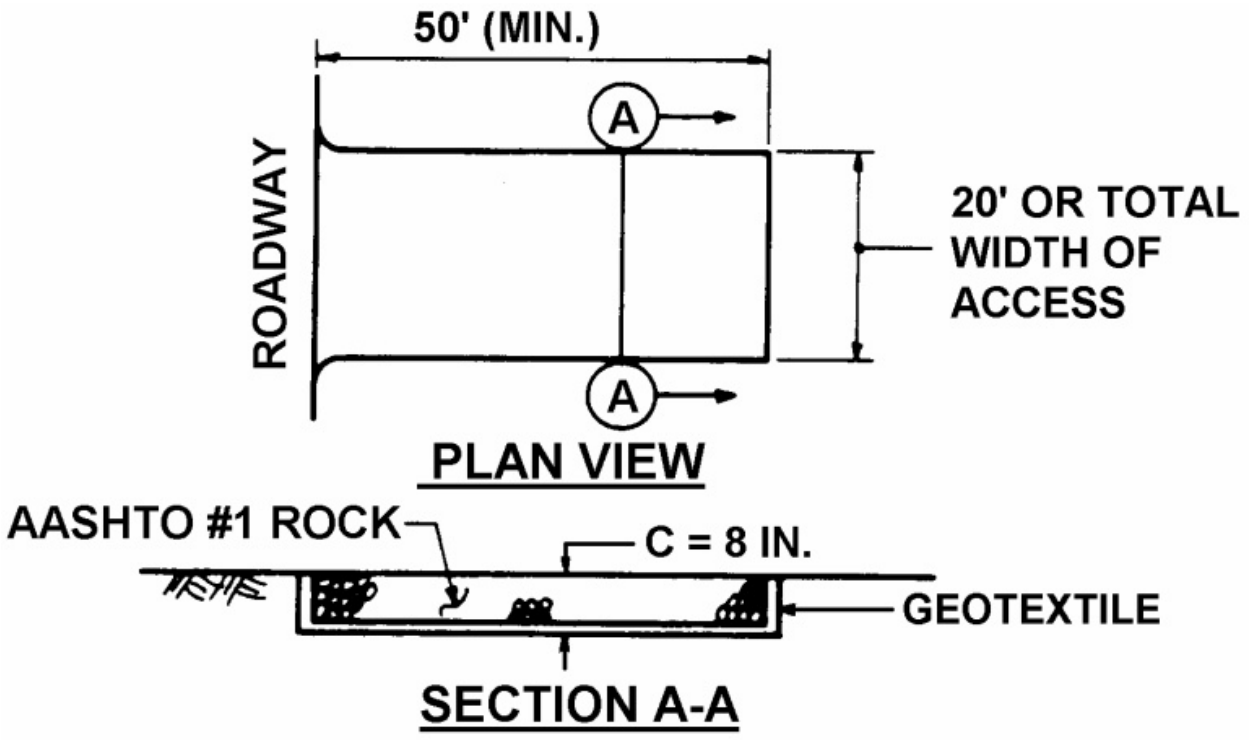
EROSION CONTROL BLANKET DETAIL



Refer to manufacturer's lining installation detail for overlap, embedment, staple patterns, and vegetative stabilization specifications

DETAIL C-8

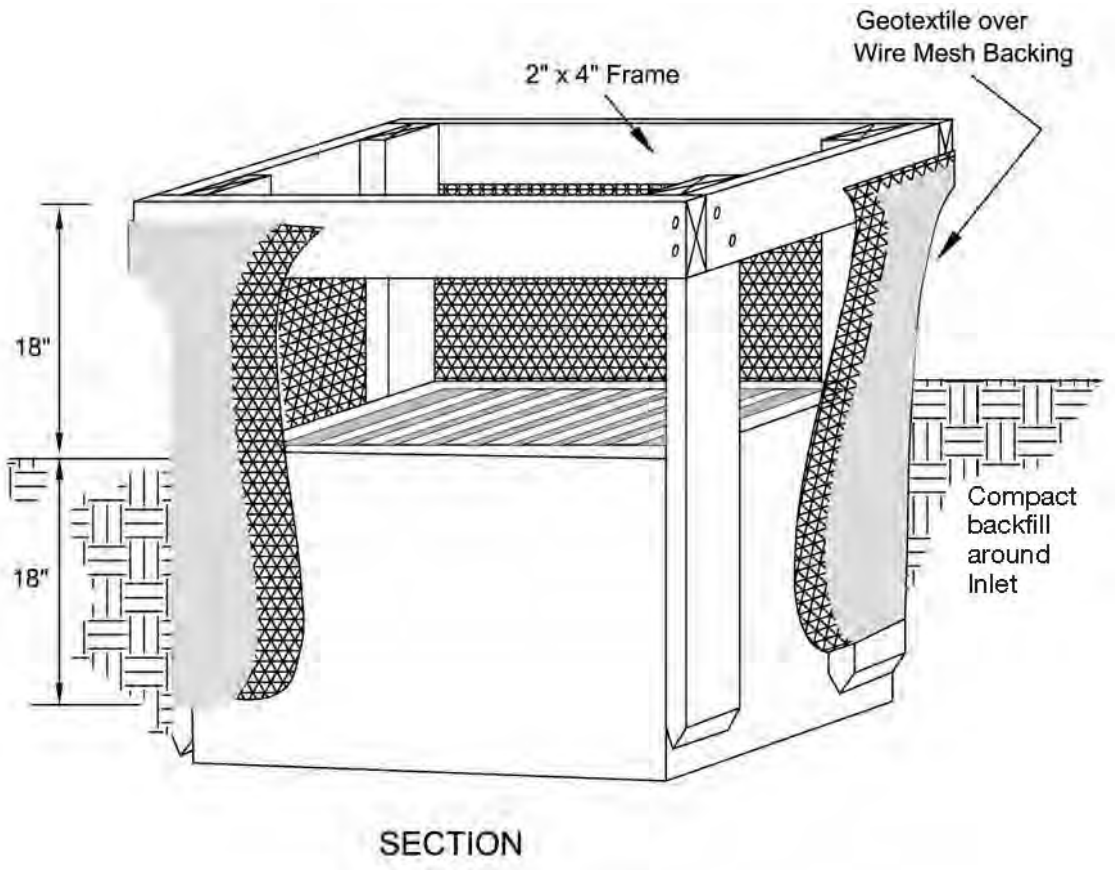
ROCK CONSTRUCTION ENTRANCE DETAIL



MAINTENANCE: Rock Construction Entrance thickness shall be constantly maintained to the specified dimensions by adding rock. A stockpile shall be maintained on site for this purpose. At the end of each construction day, all sediment deposited on paved roadways shall be removed and returned to the construction site. Steel plates, timber mats, and tires are also acceptable materials for short-term construction entrances.

DETAIL C-9

GEOTEXTILE INLET PROTECTION DETAIL



1. Inlet protection shall be constructed either before upslope land disturbance begins or b efore the inlet becomes functional.

2. The earth around the inlet shall be excavated completely to a depth at least 18 inches.

3. The wooden frame shall be constructed of 2-inch by 4-inch construction grade lumber. The 2-inch by 4-inch posts shall be driven one (1) ft. into th e ground at four corners of the inlet and th e top portion o f 2-inch b y 4-inch frame assembled using the overlap jo int shown. The top of the frame shall be at least 6 inc hes below adjacent roads if ponded water will pose a safety hazard to traffic.

4. Wire mesh shall be of sufficient strength to support fabric with water fully impounded against it. It shall be stretched tightly around the frame and fastened securely to the frame.

5. Geotextile material shall have an equivalent opening size of 20-40 sieve and be resistant to sunlight. It shall be stretched tightly around the fram e and fastened securely . It shall extend from the top of the frame to 18 inches below the inlet notch elevation. The geotextile shall overlap across one side of the inlet so the ends of t he cloth are not fastened to the same post.

6. Backfill shal l be placed aro und the inlet in compacted 6inch layers until the earth is even with notch el evation on

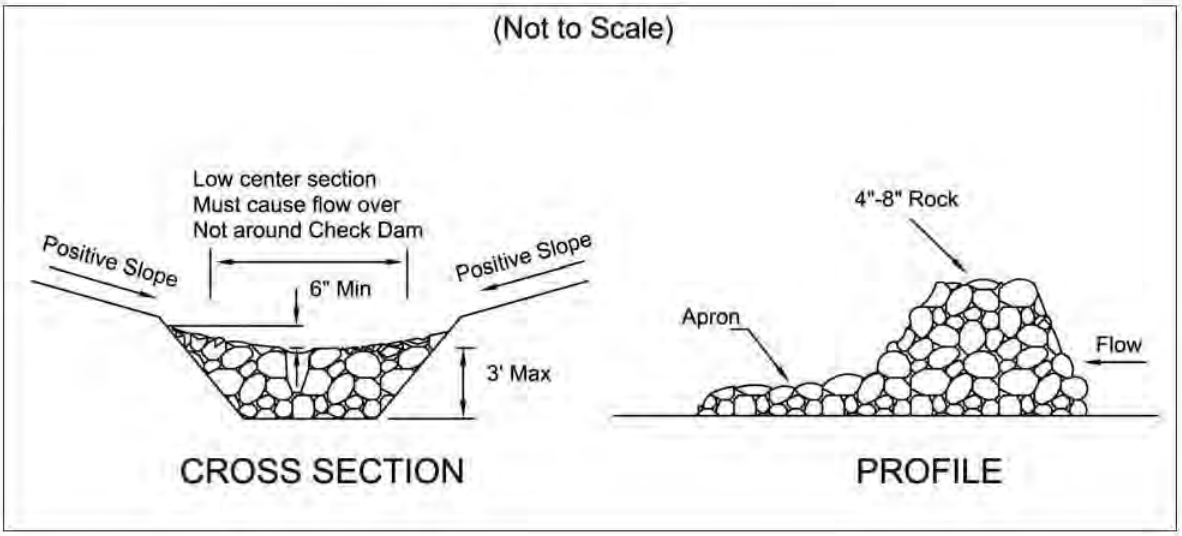
ends and top elevation on sides.

7. A compacted earth dike or check dam shall be constructed in the ditch line below the inlet if the inlet is not in a depression. The top of the dike shall be at least 6 inches higher than the top of the frame.

8. Filter fabric and filter socks can also be used as inlet protection.

DETAIL C-10

ROCK CHECK DAM DETAIL



1. The check dam shall be constructed of 4-8 inch diameter stone, placed so that it completely covers the width of the channel. ODOT Type D stone is acceptable, but should be underlain with a gravel filter consisting of ODOT No. 3 or 4 or suitable filter fabric.
2. Maximum height of check dam shall not exceed 3.0 feet.
3. The midpoint of the rock check dam shall be a minimum of 6 inches lower than the sides in order to direct across the center and away from the channel sides.
4. The base of the check dam shall be entrenched approximately 6 inches.
5. Spacing of check dams shall be in a manner such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
6. A Splash Apron shall be constructed where check dams are expected to be in use for an extended period of time, a stone apron shall be constructed immediately downstream of the check dam to prevent flows from undercutting the structure. The apron should be 6 in. thick and its length two times the height of the dam.
7. Stone placement shall be performed either by hand or mechanically as long as the center of check dam is lower than the sides and extends across entire channel.
8. Side slopes shall be a minimum of 2:1.

DETAIL C-11

SWPPP INSPECTION CHECKLIST

Detail C-11 begins on the following page and is provided as a sample SWPPP Inspection Form. The forms will be completed weekly and kept onsite as a log throughout construction.

SWPPP INSPECTION FORM

Site: Date:

Inspector: Signature:

Routine Inspection **Precipitation Event >0.5”** **Other** _____

(circle all applicable)

Has it rained since last inspection? *(circle one)*

Yes: Date(s) & Approx. Amount_____ **No**

Current Conditions: _____

Soil Conditions: **Dry** **Wet** **Saturated** **Frozen**

(circle applicable conditions)

Feature ID	BMP, ECD, SCD Applied	Recommendations

SCD: SEDIMENT CONTROL DEVICE ECD: EROSION CONTROL DEVICE BMP: BEST MANAGEMENT PRACTICE
ECM: EROSION CONTROL MATTING SF: SILT FENCE SB: STRAW BALES W: WETLAND S: STREAM

Date Site

Storm Water Pollution Prevention Plan Inspection Form

Inspector(s) On Site:

Unresolved issues from previous inspections:

Are the SWPPP, NOI and General Permit Letter on-site? **Yes** **No**

List newly disturbed areas likely to lie dormant for more than 21 days:

Have soil stockpiles been placed at least 50 ft from drainageways?

List construction entrances and SCDs used to prevent tracking into roadway:

Are E/SCDs of appropriate design for area they are controlling?

Are E/SCDs properly installed?

Are E/SCDs being maintained?

List any areas at final grade:

Is the inlet protection of appropriate design?

Note person(s) notified of noncompliance and expected date of correction:

Notes:

APPENDIX D

Site Drawing Checklist
SWPPP Amendment Log
Grading and Stabilization Activities Log

D-1 SITE DRAWING CHECKLIST **

- **Location of solid waste dumpsters**

- **Location designated for waste drums of oil soaked absorbent pads/rags; solids, sludge, or oil collected from pipeline**

- **Locations of sanitary facilities such as Port-a-Jons (update these locations on drawings as project progresses)**

- **Locations of diesel and gasoline storage tanks (secondary containment provided)**

- **Locations of pipe and equipment storage yards**

- **Locations of cement truck washout**

***** *These locations can be hand drawn on the site drawings.***

SWPPP Amendment Log

Project Name: **PIR 293, Cedar Road, South Euclid, Lyndhurst, Beachwood and University Heights, Cuyahoga County**

Construction Inspector: _____

Amendment Number	Description of Amendment	Date of Amendment	Amendment Prepared by (name and title)

SWPPP Amendment Log

Project Name: **PIR 293, Cedar Road, South Euclid, Lyndhurst, Beachwood, University Heights, Cuyahoga County**

Construction Inspector: _____

Date Grading Activity Initiated	Description of Grading	Date Grading Activity Ceased (Indicate temporary or permanent)	Date when Stabilization Measures were Initiated	Description of Stabilization Measure and Location

Summary: Text Dominion East Ohio Construction Notice for the PIR #293, Cedar Road Project - Part 4 of 5 electronically filed by Teresa Orahood on behalf of Sally Bloomfield