Attachment H

Stormwater Pollution Prevention Plan

Storm Water Pollution Prevention Plan

3885-138kV East Provident Loop – New Build
Butler County, Ohio

Cardno Project J156720M58

July 31, 2017

Prepared for: **Duke Energy**
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Document Information

Project Site Owner	Duke Energy
Duke Energy Contact	Amanda Sheehe, Duke Energy
Project(s) Name	3885 – 138kV East Provident Loop – New Build
Project(s) Number	Cardno #J156702M58 Duke #P7594
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This plan was prepared in accordance with the Rainwater and Land Development: Ohio's Standards for Stormwater Management, Land Development and Urban Stream Protection published December 2006 by the Ohio Department of Natural Resources Division of Soil and Water Conservation and in compliance with ORC Chapter 1511, ORC Chapter 6111, and OAC Chapter 3745-38. In Ohio, responsibility for regulating storm water is held by both local and state authorities. Locally, municipalities, townships, and counties have the authority to regulate storm water. Ohio EPA administers the National Pollutant Discharge Elimination System (NPDES) program which regulates wastewater discharges that are associated with construction and/or land disturbing activities by limiting the quantities of pollutants to be discharged and imposing monitoring requirements and other conditions.

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Acronyms

SWPPP Storm Water Pollution Prevention Plan
NWP Nationwide Permit
OEPA Ohio Environmental Protection Agency
USACE United States Army Corps of Engineers

SECTION A – Basic Plan Elements

A1 Plan Index showing locations of required items

See Table of Contents

A2 11 X 17 inch plat showing building lot numbers/boundaries and road layout/names

Please refer to Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A3 Narrative describing project nature and purpose

The project involves work to create a new transmission line that is approximately 0.27 miles long, and contains a 150-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW), and includes 12 structures. The 3885 Transmission Line begins north of Provident Drive (39.31430, -84.45795), and terminates south of Provident Drive (39.31245, -84.45778) as it enters the existing Duke Energy right-of-way (ROW).

The proposed project is necessary to accommodate the construction of East Provident Substation which will be built to ensure dependable, cost effective, and reliable service to meet the growing energy demand in Butler County, Ohio.

Construction will be accomplished largely through the use of bucket trucks with truck-mounted augers for structure installation and other construction vehicles transporting cable spools to install the transmission cable along the route. Excavation will be restricted to the locations where the installation of new structures will occur. Earth moving activities are anticipated to be minimal, if any. The extent of access disturbance can vary widely dependent upon many factors, including density and type of surface, vegetative cover, weather conditions, and the type of vehicles moving over the area. The existing vegetation will be preserved to the maximum extent practicable.

Project construction is expected to begin in Fall, 2017.

A4 Vicinity map showing project location

Please refer to Appendix A, Figure 1, Project Vicinity map, which provides a simplified layout of Project activities and adjacent land features and information.

A5 Legal description of the project site

The Project is located within the below section:

Monroe Quad
Section 2, Township 2N, Range 2E, Civil Township: Union

A6 Location of all lots and proposed site improvements

The proposed project is linear in scope and will take place within new and existing transmission line ROW. Only approved areas beyond the ROW will be used for equipment storage, temporary access routing, and laydown areas. Where feasible, construction activities at structure locations will be performed from roadways to minimize soil disturbance. Maps of the project site including structure locations, parcel boundaries, and water resources can be found in Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A7 Hydrologic Unit Code (HUC)

The project lies within the boundaries of the following 14-Digit USGS Hydrologic Unit Code watersheds:

Mill Creek Headwaters below East Fork Mill Creek– (05090203010010)

A8 Notation of any State or Federal water quality permits

A total of three potentially regulated waters including one unnamed intermittent stream (Stream 1), one palustrine emergent/scrub-shrub wetland complex (Wetland 1) and one palustrine emergent wetland (Wetland 2) were identified within the Project Study Area. Eight proposed structures and two access roads are located within or immediately adjacent to a potentially jurisdictional wetland. A permit must be obtained from the U.S. Army Corps of Engineers (USACE) and the Ohio Environmental Protection Agency (OEPA) prior to any filling, dredging, or mechanical land clearing that occurs within the boundaries of any 'waters of the U.S.' or 'waters of the State'.

A9 Specific points where storm water discharge will leave the site

All discharges are planned to consist solely of storm water runoff through sheet flow leading to existing water courses. There are no planned non-storm water discharges associated with the proposed project.

A10 Location and names of all wetlands, lakes, and watercourses on and adjacent to the site

Wetlands, watercourses, and other waters have been delineated with respect to pole placement. These locations are shown in Appendix A, Figure 4, Environmental Access and Erosion Control Plan. The National Wetland Inventory (NWI) mapped wetlands are shown in Appendix A, Figure 1, Project Vicinity.

A11 Identification of all receiving waters

The storm water runoff from this project will ultimately discharge into the Ohio River via an unnamed tributary to the Mill Creek in Butler County, Ohio.

A12 Identification of potential discharges to groundwater

The proposed site does not contain any known sinkholes, active or abandoned wells, or any other direct groundwater recharge points. Any recharging of the groundwater supply by water from the proposed site will be by natural means of infiltration through the soil.

A13 100 year floodplains, floodways, and floodway fringes

There are no designated 100-year floodplains, floodways, or floodway fringes identified within the Study Area.

A14 Pre-construction and post-construction estimate of peak discharge

Based on the nature of this project, there will be no impounded storm water. There is no anticipated significant change in peak discharge from this project site between pre-construction and post-construction site conditions or new or impervious surfaces.

A15 Adjacent land use, including upstream watershed

Adjacent land use consists of a mix between commercial development, secondary growth forest, and industrial development.

A16 Locations and approximate boundaries of all disturbed areas

The majority of ground disturbance will occur within off-road sections of construction vehicle access routes and the structure installation locations. The expected disturbance for this project is conservatively estimated at 0.3 acres (20-foot wide access footprint for proposed 100 feet of off-road construction access routes).

A17 Identification of existing vegetative cover

The existing vegetative cover is mixture of secondary growth forest, palustrine emergent wetland, palustrine emergent/scrub-shrub complex, and maintained turf/industrial land.

A18 Soils map including descriptions and limitations

According to the NRCS Soil Survey Geodatabase data collected for Butler County, 4 different soil types are present within the Study Area. A Soil Map of the project area with descriptions and limitations is shown on Figure 3.

Fincastle silt loam (FcA) is the most common soil type in the Study Area and is typically characterized by deep, poorly drained soils with slope ranging from 0 to 6 percent. It is not considered a hydric soil. Patton silty clay loam (Pa) is characterized by deep, poorly drained soils with slopes ranging from 0 to 2 percent and is considered a hydric soil. Russell-Miamian silt loam is characterized by deep, well drained soils with slopes ranging from 2 to 6 percent, is moderately eroded, and is not considered a hydric soil. Dana silt loam consists of deep, moderately well drained, moderately slow permeability with 0 to 6 percent slopes, and is not considered a hydric soil.

A19 Locations, size, and dimensions of proposed storm water systems

There is no proposed construction of any permanent storm water systems.

A20 Plan for any off-site construction activities associated with this project

No off-site construction activities are planned for this project.

Temporary staging and laydown areas for both new and used structures and other equipment are identified near the time of construction. Typically, Duke Energy substations are utilized for storage, and used structures are taken off-site. Storm water protection will be integrated as necessary at laydown areas and amended into the plan and routine inspections by the Construction Supervisor.

A21 Locations of proposed soil stockpiles, borrow and/or disposal areas

It is anticipated that no soil fill will be brought in. However, gravel backfill will be used at structure locations. Where wetland or stream impacts may occur, spoils management protocol will be followed during structure installation. Where appropriate, any excavated soil, gravel backfill, or other construction material will be stored on construction matting within a wetland area and erosion control measures will be implemented. Excess soil from boring or auguring operations will be permanently relocated to an upland location away from surface drainage ways and wetland areas adjacent to structure replacement locations.

A22 Existing site topography at an interval appropriate to show detailed drainage patterns

Given the project corridor runs through variable terrain, the existing drainage patterns are best depicted and evaluated with 2 foot contours shown in Appendix A, Figure 4, Environmental Access and Erosion Control Plan.

A23 Proposed final topography at an interval appropriate to show detailed drainage patterns

Final post-construction contours will match pre-construction condition to the extent practicable. The construction scope is limited to the replacement of utility structures and overhead facilities.

SECTION B – Active Construction Component

B1 Description of potential pollutant sources associated with the construction activities

The anticipated pollutants to be generated by this type of construction include the following:

- Sediment carried off-site by storm water runoff
- Vegetation debris generated during onsite vegetation removal
- Concrete washout and dewatering operations for projects with foundations
- Domestic garbage from construction workers
- Potential for petroleum spills from heavy equipment operation and refueling

Clearing and/or maintenance trimming will involve mowing and limb cutting with standard forestry equipment and hand cutting where required. In instances where tree or large limbs are removed entirely for access or maintenance they will be cut into appropriate lengths for use by the landowner, or otherwise chipped within the ROW. Digging, grubbing, and any other disturbance will be restricted to locations where the installation of new structures will occur. All excavated materials will be distributed in approved upland locations away from surface drainage ways. Wood chippings and other low-height vegetation will be distributed within the ROW to the maximum extent possible to assist in soil stabilization and sediment runoff control.

Any and all domestic garbage generated onsite such as disposable food and drink containers and other items shall be either carried off-site and properly disposed or deposited into a construction dumpster provided onsite. The project site shall be monitored on a daily basis for the proper disposal of such waste.

The erosion of exposed soils by storm water runoff shall be controlled through the installation of best management practices (BMPs) such as silt fence, fiber rolls, or similar barriers, followed by seeding and mulching. All such practices shall be installed and maintained in accordance with Appendix B, Storm Water Pollution Prevention Plan Typical Details.

Equipment cleaning will be limited to water washing in sediment and erosion controlled areas as required to insure reliable equipment operations while preventing the tracking of excessive dirt and mud from the project site. Soil materials that may need to be removed from the Project ROW will be taken to an upland area or other designated disposal area.

Concrete washout will be completed on projects with foundations at designated concrete washout stations for containment of this waste in accordance with Appendix B, Storm Water Pollution Prevention Plan Typical Details. Any dewatering associated with the excavation for the placement foundations will be conducted through an approved dewatering bag or other upland means of filtering dewatering point discharges.

B2 Sequence describing storm water quality measure implementation relative to land disturbing activities

Due to the nature of the Project, multiple construction stages may take place simultaneously within the Project area. Below is the general sequence of construction activities and storm water quality measures implementation:

The general sequence of construction activities includes the following:

1) Installation of temporary construction entrances
2) Installation of temporary erosion and sediment control measures
3) Construction equipment access
4) Removal of existing pole and conductors
5) Installation of new poles and conductors

6) Final restoration (final grading, seeding, and stabilization)
7) Removal of temporary erosion and sediment control measures
8) Removal of temporary construction entrances

The storm water pollution prevention measures described within this SWPPP will be installed and inspected before soil disturbing activities commence. Structural erosion controls may also need to be installed along equipment access routes dependent upon site condition. These needs will be assessed as the project progresses. Any erosion controls that need to be moved for equipment transfers will be restored, to the extent practical, before significant rainfalls occur. All storm water quality control measures shall be inspected regularly. At the completion of the project all disturbed areas will be stabilized with vegetation and straw mulch. All measures will be in accordance with guidelines provided in the *Rainwater and Land Development* and this Plan.

As conditions may vary from pre-project condition during construction, sediment control measures may be altered and additional locations for such measures may be needed depending upon changing field conditions. Additional measures may be required and implemented as they become warranted and should be documented in Appendix D, SWPPP Amendment Log. Recognizing the increased potential for erosion, special care will be taken to seed and mulch construction travel ways in highly erodible or steep slope areas. Additional measures such as water bars, erosion matting, or other appropriate measures may be employed as necessary to protect the land surface from erosion.

Stabilized construction entrances or other means of limiting the tracking of sediment and debris off-site will be used at roadway intersections whenever possible. All debris or sediment tracked onto road ways will be removed at the end of the day to the maximum extent possible. Large equipment movement to each structure associated with, but not limited to, disassembly, framing, and clipping-in of line will be limited to the maximum extent possible to further reduce ground disturbance.

Temporary or permanent seeding stabilization will adhere to specifications in Subsections B11 and B12. Vegetated areas with a density of less than seventy percent (70%) shall be re-stabilized using appropriate methods to minimize the erosion potential. No structural erosion controls will be removed until construction has permanently stopped and reseeding and mulching has occurred. After the entire project is complete and vegetated coverage is at least 70%; any accumulated sediment, fiber rolls, silt fence, or other specified erosion and sediment control measures will be removed.

Wherever equipment crossing drainage ways in steeply, sloping areas will result in soil disturbances, a combination of temporary timber matting bridges and water bars to divert runoff to sediment controls or vegetative filter areas can help reduce impacts from concentrated flows to receiving streams.

B3 Stable construction entrance locations and specifications

Stabilized construction entrances will be installed when warranted based on project duration or varying site conditions impacted by wet weather patterns. Special consideration shall be given for installation of a stable construction entrance in the event of wet weather or high ingress and egress traffic. Stable construction entrances and other means of limiting the tracking of sediment and debris off-site will be used. Additional construction entrances, other than the ones indicated in the Plans, may be required and implemented as they become warranted based on variable site conditions. All debris or sediment tracked onto road ways will be removed at the end of the day to the maximum extent possible. The existing construction entrances will be evaluated and modified to be in accordance with *Rainwater and Land Development* and this Plan as deemed necessary.

B4 Sediment control measures for sheet flow areas

Runoff and sediment control practices will include a combination of fiber roll (or other plant fiber-based barrier) and/or silt fencing. These sedimentation and erosion control measures will be located at specific locations along the construction route to prevent sediment runoff into streams, wetlands, and other open waters. The placement and use of erosion control structures indicated in Appendix A, Figure 4,

Environmental Access and Erosion Control Plan will be installed in accordance with Appendix B, Storm Water Pollution Prevention Plan Typical Details and be in compliance with the *Rainwater and Land Development* manual. If required, additional appropriate structural controls will be implemented as the Project progresses. Plan changes require approval of Duke Energy.

B5 Sediment control measures for concentrated flow areas

No areas of concentrated flow are expected for this project. If conditions necessitate fiber roll or rock check dams will be used, as appropriate, within the ephemeral drainages along the route to limit sedimentation within the drainage and off-site. At locations where equipment crosses drainage ways in steeply-sloping areas, which could result in soil disturbance, a combination of temporary timber matting bridges and water bars to divert runoff to sediment controls or vegetative filter areas can help reduce impacts from concentrated flows to receiving streams.

B6 Storm sewer inlet protection measure locations and specifications

Where applicable, BMPs (fiber rolls, temporary matting, or other catch basin protection) will be installed to prevent erosion from storm water runoff from areas of construction to enter directly into the storm sewer.

B7 Runoff control measures

Water bars can be used to prevent runoff flows from occurring in wheel rutting on steep slopes which will impact receiving streams.

B8 Storm water outlet protection specifications

Not applicable for this project.

B9 Grade stabilization structure locations and specifications

Not applicable for this project.

B10 Location, dimensions, specifications and construction details of each storm water quality measure

The locations of the sediment control structures are indicated in Appendix A, Figure 4, Environmental Access and Erosion Control Plan. The general specifications for each practice are located in Appendix B, SWPPP Typical Details. As construction progresses Duke Energy will consider modification to or addition of erosion control structures depending on changing site conditions with respect to slope and proximity to adjacent water bodies.

B11 Temporary surface stabilization methods appropriate for each season

In the event temporary stabilization is required (when construction activity has ceased but will resume in twenty-one (21) days or more), either seeding or mulch application or other stabilization measure will be implemented within seven (7) days of the most recent disturbance. Mulch alone is acceptable temporary cover and may be use in lieu of temporary seeding, provided that it is appropriately anchored. A high potential for fertilizer, seed, and mulch to wash exists on steep banks, cuts, and in channels and areas of concentrated flow.

Table 1. Temporary Seed Mixture

Species	Application Rate
Annual Ryegrass	40 lbs./acre
Oats	128 lbs./acre
Tall Fescue	40 lbs./acre

Straw mulch should be used at a rate of 2 tons/acre or 90 lbs./1,000 sq. ft. for seed protection and additional erosion control. It should be spread by hand or machine and be crimped or anchored, as appropriate. If slopes necessitate the use of a mulch cover, then erosion control blanketing shall be

substituted. No hay should be used as it may introduce invasive non-native species to adjacent undisturbed habitats (such as hardwood forests or wetland areas).

B12 Permanent surface stabilization specifications

Areas within fifty (50) feet of a stream will require permanent surface stabilization within two (2) days of the last disturbance. Stream bank and riparian floodplain areas shall be mulched and seeded with the Stream Bank and Riparian Areas Restoration Seed Mix as recommended by Ohio DNR staff as follows.

Table 2. Stream Bank and Riparian Areas Restoration Seed Mix

Grass and Sedge Species	Application Rate
Andropogon gerardii (Big Bluestem)	24 oz./acre
Bouteloua curtipendula (Sideoats Grama)	1 oz./acre
Carex bicknellii (Prairie Oval Sedge)	2 oz./acre
Elymus canadensis (Canada Wild Rye)	2 oz./acre
Dactylis glomerata (Orchard grass)	24 oz./acre
Panicum virgatum, (Switchgrass)	4 oz./acre
Schizachyrium scoparium (Little Bluestem)	3 oz./acre
Sorghastrum nutans (Indian Grass)	0.5 oz./acre
Cover Crop Species	Application Rate
Avena sativa (Seed Oats)	800 oz./acre
Lolium multiflorum (Annual Ryegrass)	160 oz./acre

All other areas of soil disturbance will be seeded and mulched for permanent surface stabilization within seven (7) days in areas where construction has ceased and the site is at final grade or will lay dormant for more than one (1) year. Any permanent seeding should consist of a seed mixture appropriate for the area that has been disturbed and conducted during the season appropriate for its installation.

Non-agricultural areas including access and other vegetated ROW areas shall be permanently mulched and seeded with a general use permanent seed mix consisting of the following:

Table 3. General Use Permanent Seed Mixture

Species	Application Rate
Kentucky Bluegrass	20-40 lb/acre
Perennial Ryegrass	10-20 lb/acre
Creeping Red Fescue	20-40 lb/acre

Permanent seeding should consist of a seed mixture outlined in Table 7.10.2 from the *Rainwater and Land Development* manual. The seed mixture selected should be appropriate for the area that has been disturbed and conducted during the season appropriate for its installation. This will include non-agricultural areas including access and other vegetated Right-of-Way areas.Site Preparations for installing both seed mixes are as follows:

Site Preparation: Use appropriate equipment to level disturbed areas and return to original grades focusing on reinforcing positive drainage. Avoid compaction during construction by placing equipment on mats to access wet or saturated areas. Soil amendments are acceptable in non-native seeding areas.

Seed Preparation: Thoroughly mix the seed prior to planting as many of the heavier seeds may have settled during shipping. The seed mix will contain a temporary cover of Common Spring Oat and Annual Ryegrass to accelerate re-vegetation.

Planting: Seed will be worked into the soil no greater than a ¼ inch in depth. For smaller areas a hand broadcaster and rake can be used. For larger areas the seed can be installed mechanically with a seed box

no-till drill (Truax™ Trillion Broadcast Seeder or equivalent). Areas that are too wet for mechanical seeding will be installed via the hand broadcasting method.

Mulching: Straw mulch should be used at a rate of 2 tons/acre for all natural areas, non-maintained areas, for seed protection and additional erosion control. Swales and other areas of concentrated flow should be stabilized with erosion control blanketing.

B13 Material handling and spill prevention plan

Unlikely incidents involving spills or releases of other non-sediment pollutants are expected to be limited to small quantities of petroleum products from construction vehicles, including but not limited to motor oil, transmission fluids, and hydraulic oils. Spill clean-up kits and personnel trained in their use will be at each construction location. No vehicle maintenance activities that could result in storm water contamination (oil changes or engine repairs) will be permitted outside of stabilized construction areas. Appropriate spill control measures (oil absorbent pads or booms) must be in place before maintenance activities occur.

Spills of any amount of petroleum product or polluting materials are to be prevented. The following list details general requirements necessary to avoid spills and minimize the impact of spills which occur accidentally:

- No bulk quantities of diesel fuel and gasoline will be stored on the site. No bulk quantities of hazardous materials including solvents and lubricants will be stored on the site.
- Vehicles and equipment are expected to be re-fueled off-site. Fuel carriers (if applicable) and transported equipment will be inspected on a daily basis for leaks prior to entering the site and will not be allowed on site until leaks are repaired.
- The equipment staging area will be located away from surface waters and any private and municipal water wells.
- All construction equipment will be inspected daily for leaks prior to start of work. Any leaking equipment will be repaired, as necessary.
- If any soil is contaminated with hydrocarbons or other objectionable material, it will be segregated and properly disposed of off-site.
- If concrete materials are used on-site, concrete washouts should be used. No washout of concrete materials should occur within wetland areas or other drainage ways.

Project related solid wastes will be collected regularly and transferred to a licensed solid waste disposal site. No construction waste materials will be buried onsite. Portable sanitary waste units will be utilized and available for the project. A licensed sanitary waste management contractor will collect sanitary waste from the portable units as necessary. It will be the responsibility of the Construction Supervisor to ensure that all construction personnel are instructed regarding the correct procedure for waste disposal and that these practices are followed.

Contractors shall provide all necessary labor, materials, equipment, and response capabilities to prevent oil releases. Contractors causing an oil release must take appropriate actions to minimize the environmental impacts of the release.

If a hazardous substance release or oil spill requiring attention shall occur during construction, the responsible party shall immediately contact the Duke Energy Construction Supervisor, who will then contact Duke Energy Health and Safety or Environmental Services to report the spill as necessary and ensure that the spill is cleaned up properly by the responsible party or an approved remediation contractor.

In an emergency, immediately report all spills to the appropriate Duke Energy Distribution Control Center (DCC). All spill notifications shall follow Duke Energy procedures.

Ohio DCC 1-513-621-2028

B14 Monitoring and maintenance guidelines for each proposed pollution prevention measure

To maintain the storm water management system in effective operating condition, erosion and sedimentation control structures will be inspected daily if construction personnel are actively working in the area. In addition, each installed erosion and sedimentation control structure, and areas contributing to storm water discharges at the locations of these structures, will also be regularly inspected at least weekly and again after each rainfall/precipitation event exceeding ½ inch in 24 hours by qualified personnel under the direction of Duke Energy.

Any damage or deficiency noted during routine or regular inspections will be recorded on a Storm Water Evaluation Form for Construction (Appendix C) and corrected as directed by the Construction Supervisor. The written inspection records will be kept on file and will include notes on any corrective actions taken. If requested, these records will be made available for review by the 'inspecting authority within 48 hours' per OAC Chapter 3745-38 (NPDES). Inspection records will be kept onsite with the SWPPP to the greatest extent possible.

Any deficiencies will be corrected by repair of damaged or deteriorated controls or by modifying structural or operational practices to achieve the desired results. If needed, the SWPPP shall be revised following such modifications.

Maintenance of stabilization and erosion control measures will include the following:

- "Qualified Inspection Personnel" under the direction and designation of the Construction Supervisor will be responsible for inspections of the erosion controls and completion of the Storm Water Evaluation Form for Construction.
- It is the responsibility of the Construction Supervisor that all personnel selected for maintenance responsibilities are trained in repairs as necessary to keep the erosion and sedimentation controls in good working order.
- Fiber rolls, silt fence, or other specified erosion control measure will be inspected for proper installation and function to include the following; proper anchoring of all controls, depth of sediment, separation from adjacent structures, and to see that stakes are firmly in the ground. Built up sediment will be removed when it has reached one-half (1/2) the height of the control and placed in previously stabilized and upland area.
- Seeded areas shall be checked regularly for bare spots, washouts, and healthy growth to assure that a good stand of grass is being maintained. Areas that fail to establish vegetation cover will be re-seeded as soon as such areas are identified.
- Sediment tracking from temporary construction entrances onto roadways should be minimized and will be the responsibility of the Construction Supervisor. When sediment is observed on roadways it shall be removed at the end of each workday.

B15 Erosion & sediment control specifications for individual building lots

Not applicable for this project.

SECTION C – Post Construction Component

C1 Description of pollutants and their sources associated with the proposed land use

The proposed project is a new transmission line installation project consisting of improvements made solely to Duke Energy transmission ROW. No post construction pollutants are expected.

C2 Sequence describing storm water quality measure implementation

Seeding and vegetation establishment are the only long-term storm water quality measures proposed for the Project. See Subsection B11 and B12 for a description of seeding implementation.

C3 Description of proposed post construction storm water quality measures

The site will be returned to its previous use and condition. Post-construction pollutant controls are addressed by establishment of permanent vegetative cover in all areas.

C4 Location, dimensions, specifications and construction details of each storm water quality measure

See Subsection C3.

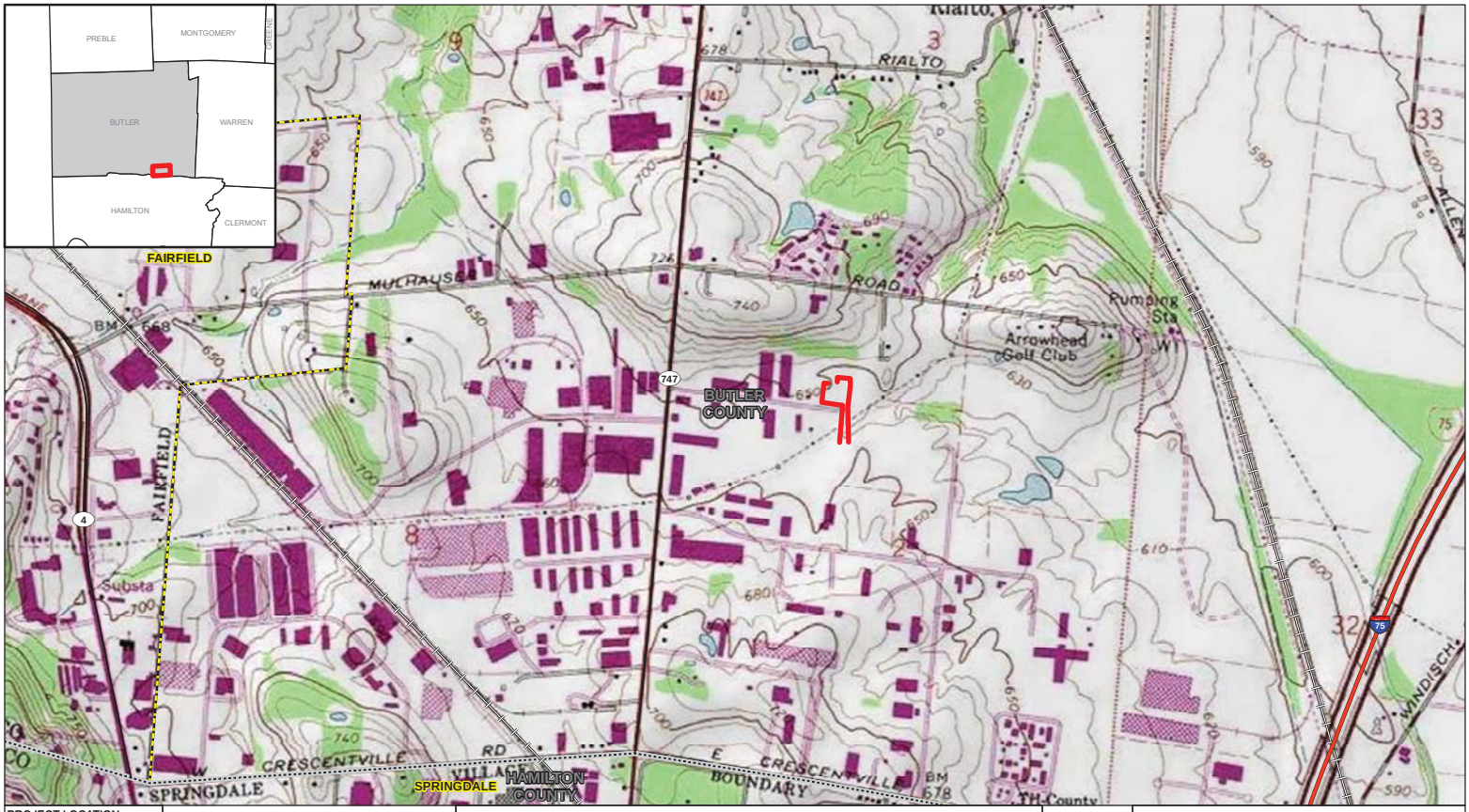
C5 Description of maintenance guidelines for proposed post construction water quality measures

Seeded areas will be inspected to ensure adequate vegetative establishment and coverage. Adequate coverage shall be defined as greater than or equal to 70% areal coverage by visual estimation. Reseeding, watering or fertilization shall be utilized to meet this goal. Fertilizer should not be used in areas requiring native seeding. The ROW will be maintained in accordance with easement guidelines and consist of vegetative mowing and/or woody removal.

Routine inspections and monitoring of erosion control structures will end and structures removed, once the disturbed soil areas are permanently re-established with a vegetative cover of at least 70% or greater density (final stabilization). Final stabilization in agricultural areas is defined as returning the disturbed land to it pre-construction agricultural use.

Appendix A

Figures



PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

N

- Project Centerline
- Railroad
- Interstate
- County Boundary
- State Highway
- Municipal Boundary
- US Highway

DUKE ENERGY.

Cardno

FIGURE 1
STORMWATER POLLUTION PREVENTION PLAN
3885 – 138kV EAST PROVIDENT LOOP
DUKE ENERGY
PROJECT VICINITY MAP

DRAWN BY: COD DATE: 7/28/2017
CHECKED: CJ APPROVED: JT

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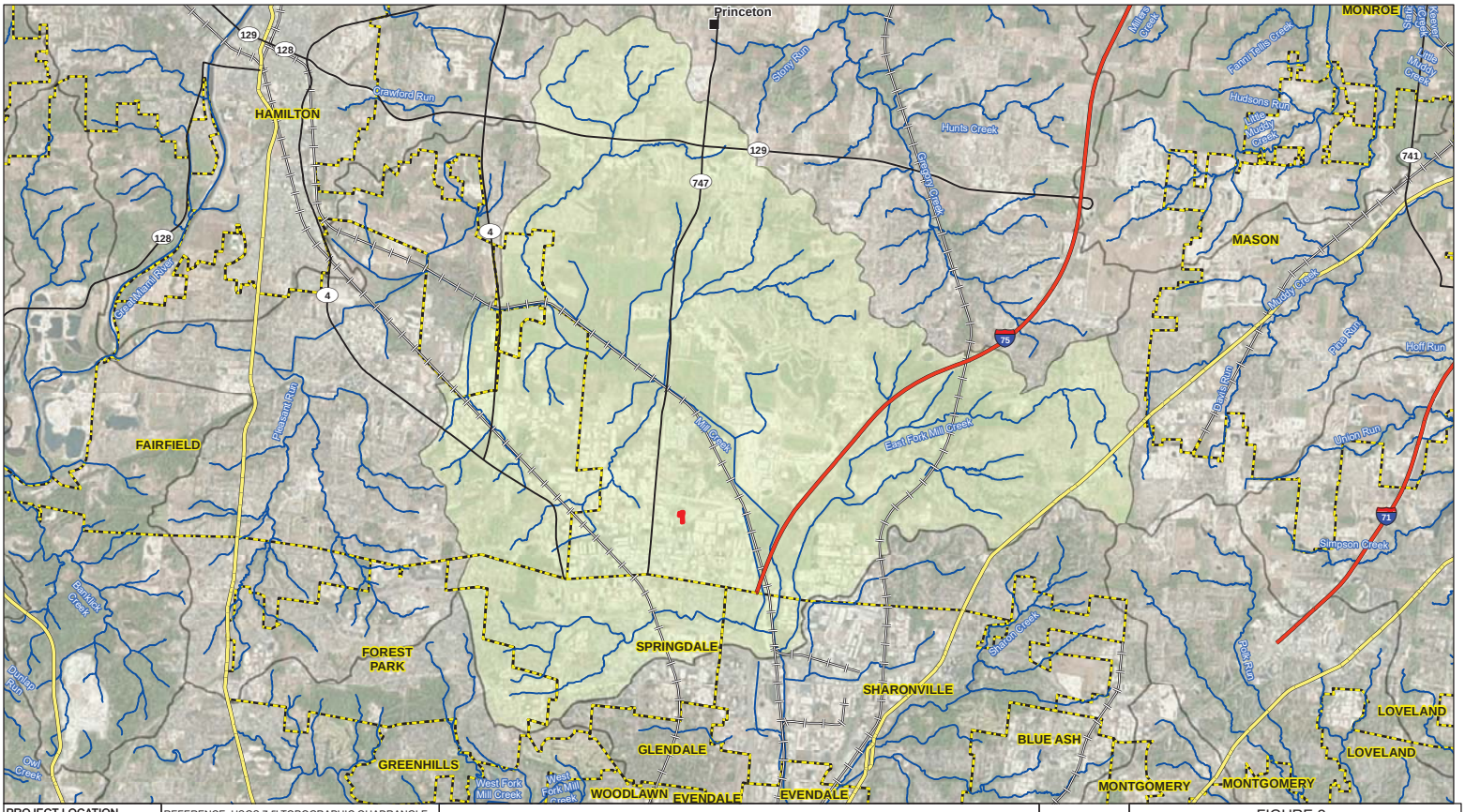

PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 Feet

- Project Centerline
- Interstate
- State Highway
- US Highway
- Railroad
- Existing Facility
- NHD Flowline
- Municipal Boundary
- Adjacent Watersheds
- Mill Creek headwaters to below E. Fk. Mill Cr.

DUKE ENERGY.

Cardno

FIGURE:2

STORMWATER POLLUTION PREVENTION PLAN
3885 – 138kV EAST PROVIDENT LOOP
DUKE ENERGY
PROJECT AREA WATERSHEDS

DRAWN BY: COD DATE: 7/28/2017
CHECKED: CJ APPROVED: JT

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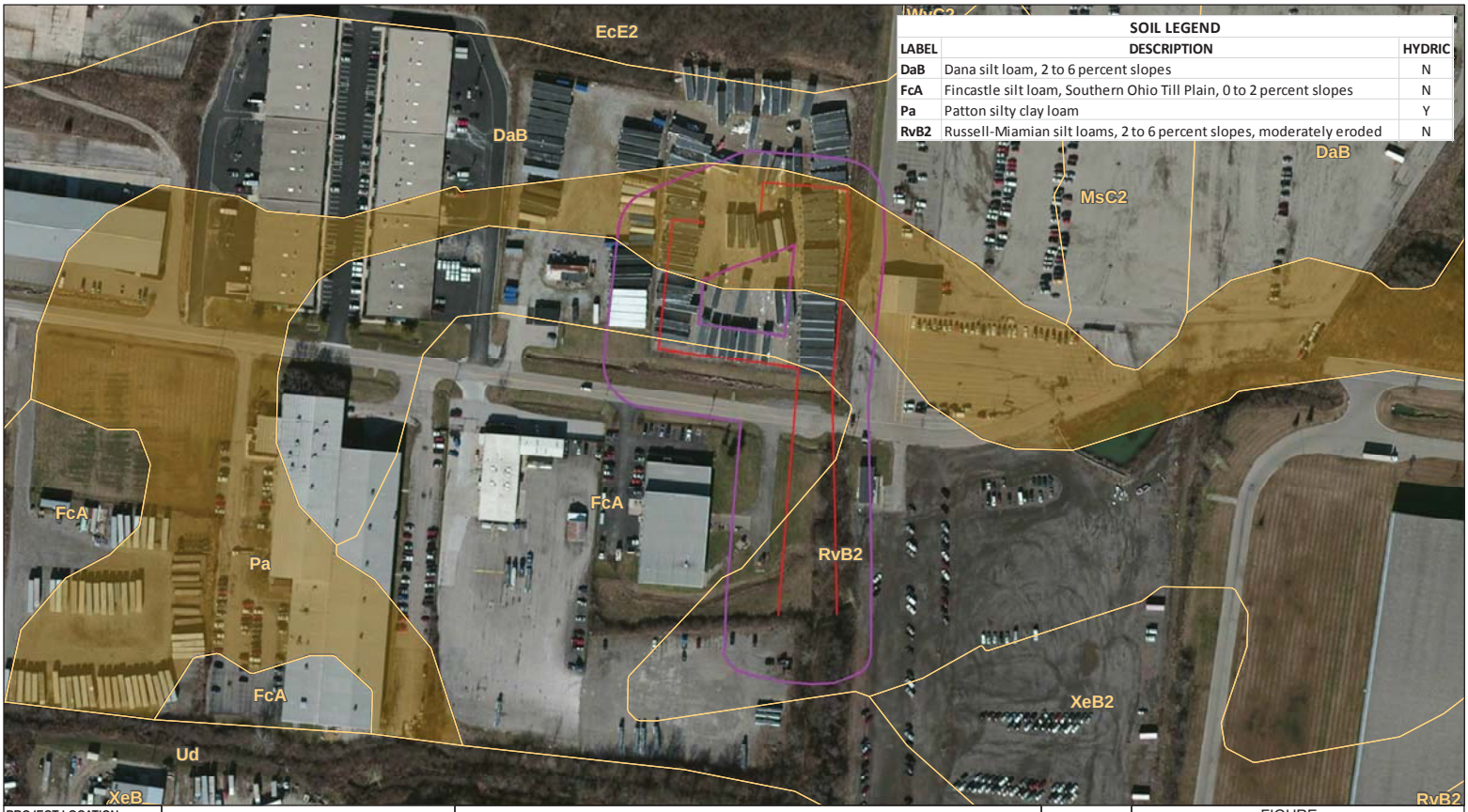

SOIL LEGEND

LABEL	DESCRIPTION	HYDRIC
DaB	Dana silt loam, 2 to 6 percent slopes	N
FcA	Fincastle silt loam, Southern Ohio Till Plain, 0 to 2 percent slopes	N
Pa	Patton silty clay loam	Y
RvB2	Russell-Miamian silt loams, 2 to 6 percent slopes, moderately eroded	N

PROJECT LOCATION

BUTLER COUNTY, OH

REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE: GLENDALE, OHIO. OBTAINED VIA ESRI USA TOPO, NATIONAL GEOGRAPHIC TOPO, AND USGS, ACCESSED 01/2017.

0 90 180 270 360 Feet

Municipal Boundary
150ft Corridor
Project Centerline
Interstate
State Highway
US Highway
Railroad
Soil Unit
Soil Unit - Hydric

DUKE ENERGY.
Cardno

FIGURE:
STORMWATER POLLUTION PREVENTION PLAN
3885 – 138kV EAST PROVIDENT LOOP
DUKE ENERGY
SOIL CLASSIFICATIONS

DRAWN BY: COD DATE: 7/28/2017
CHECKED: CJ APPROVED: JT

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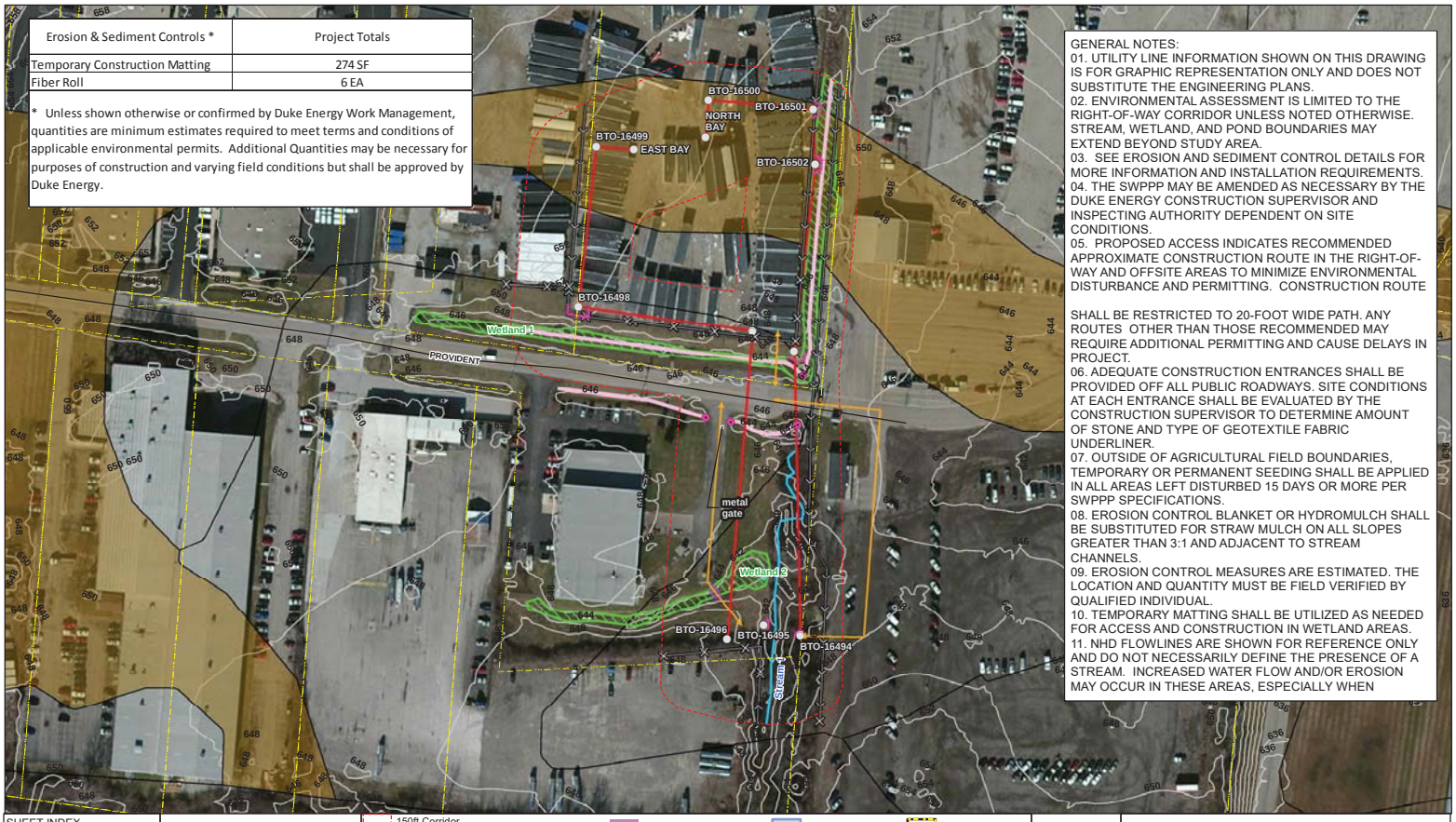
Erosion & Sediment Controls *	Project Totals
Temporary Construction Matting	274 SF
Fiber Roll	6 EA

* Unless shown otherwise or confirmed by Duke Energy Work Management, quantities are minimum estimates required to meet terms and conditions of applicable environmental permits. Additional Quantities may be necessary for purposes of construction and varying field conditions but shall be approved by Duke Energy.



GENERAL NOTES:
01. UTILITY LINE INFORMATION SHOWN ON THIS DRAWING IS FOR GRAPHIC REPRESENTATION ONLY AND DOES NOT SUBSTITUTE THE ENGINEERING PLANS.
02. ENVIRONMENTAL ASSESSMENT IS LIMITED TO THE RIGHT-OF-WAY CORRIDOR UNLESS NOTED OTHERWISE. STREAM, WETLAND, AND POND BOUNDARIES MAY EXTEND BEYOND STUDY AREA.
03. SEE EROSION AND SEDIMENT CONTROL DETAILS FOR MORE INFORMATION AND INSTALLATION REQUIREMENTS.
04. THE SWPPP MAY BE AMENDED AS NECESSARY BY THE DUKE ENERGY CONSTRUCTION SUPERVISOR AND INSPECTING AUTHORITY DEPENDENT ON SITE CONDITIONS.
05. PROPOSED ACCESS INDICATES RECOMMENDED APPROXIMATE CONSTRUCTION ROUTE IN THE RIGHT-OF-WAY AND OFFSITE AREAS TO MINIMIZE ENVIRONMENTAL DISTURBANCE AND PERMITTING. CONSTRUCTION ROUTE

SHALL BE RESTRICTED TO 20-FOOT WIDE PATH. ANY ROUTES OTHER THAN THOSE RECOMMENDED MAY REQUIRE ADDITIONAL PERMITTING AND CAUSE DELAYS IN PROJECT.
06. ADEQUATE CONSTRUCTION ENTRANCES SHALL BE PROVIDED OFF ALL PUBLIC ROADWAYS. SITE CONDITIONS AT EACH ENTRANCE SHALL BE EVALUATED BY THE CONSTRUCTION SUPERVISOR TO DETERMINE AMOUNT OF STONE AND TYPE OF GEOTEXTILE FABRIC UNDERLINER.
07. OUTSIDE OF AGRICULTURAL FIELD BOUNDARIES, TEMPORARY OR PERMANENT SEEDING SHALL BE APPLIED IN ALL AREAS LEFT DISTURBED 15 DAYS OR MORE PER SWPPP SPECIFICATIONS.
08. EROSION CONTROL BLANKET OR HYDROMULCH SHALL BE SUBSTITUTED FOR STRAW MULCH ON ALL SLOPES GREATER THAN 3:1 AND ADJACENT TO STREAM CHANNELS.
09. EROSION CONTROL MEASURES ARE ESTIMATED. THE LOCATION AND QUANTITY MUST BE FIELD VERIFIED BY QUALIFIED INDIVIDUAL.
10. TEMPORARY MATTING SHALL BE UTILIZED AS NEEDED FOR ACCESS AND CONSTRUCTION IN WETLAND AREAS.
11. NHD FLOWLINES ARE SHOWN FOR REFERENCE ONLY AND DO NOT NECESSARILY DEFINE THE PRESENCE OF A STREAM. INCREASED WATER FLOW AND/OR EROSION MAY OCCUR IN THESE AREAS, ESPECIALLY WHEN

SHEET INDEX

REFERENCE:
ESRI WORLD IMAGERY, OBTAINED THROUGH ESRI WORLD IMAGERY MICROSOFT CORPORATION, ACCESSED 01/2017

N

0 50 100 Feet

150ft Corridor
Identified Feature
Proposed Structure
Existing Culvert
Parcels
Interstate
State Highway
US Highway
Railroad
Local Road
Local Road
Road Centerline
Fiber Roll
Proposed Access
Temp Construction Matting
Fence Line
Project Centerline
Tree in ROW
Sewer Inlet
Ditch
Delineated Stream
Open Water
Delineated Wetland
NWI Wetland
NHD Flowline
100 yr and Floodway
Soil Unit
Soil Unit - HYDRIC
Municipal Boundary
Existing Contour

DUKE ENERGY.
Gardno

FIGURE: 4
STORMWATER POLLUTION PREVENTION PLAN
3885 – 138kV EAST PROVIDENT LOOP
DUKE ENERGY
ENVIRONMENTAL ACCESS/ EROSION CONTROL PLAN

DRAWN BY: COD DATE: 7/28/2017
CHECKED: CJ APPROVED: JT

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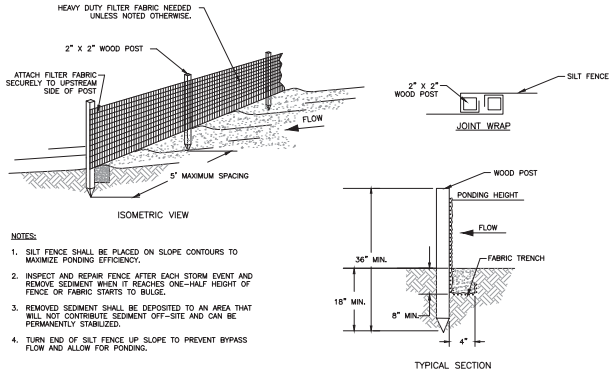
Appendix B

Storm Water Pollution Prevention Plan Typical Details

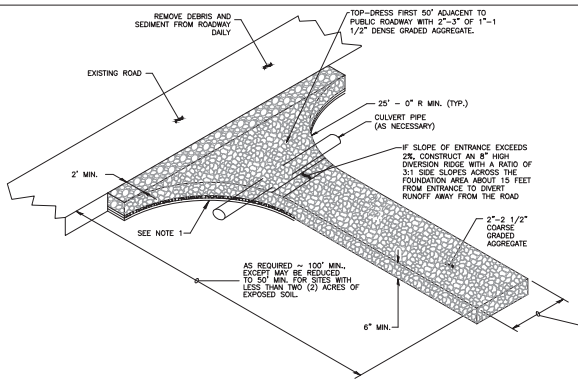


NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN IT REACHES ONE-HALF HEIGHT OF FENCE OR FABRIC STARTS TO BULGE.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
4. TURN END OF SILT FENCE UP SLOPE TO PREVENT BYPASS FLOW AND ALLOW FOR PONDING.

SILT FENCE

001

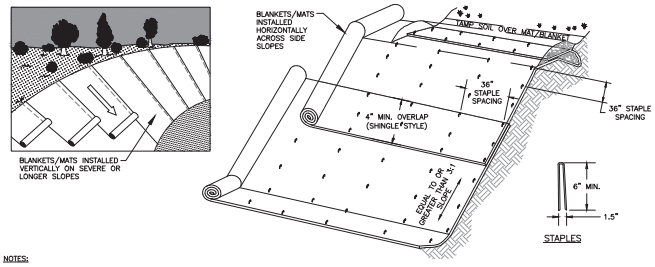


NOTES:

1. PLACE 8 OZ/SY NON-WOVEN GEOTEXTILE FABRIC UNDERLINER TO STABILIZE FOUNDATION (ESPECIALLY WHEN WET CONDITIONS ARE EXPECTED) TO EXTEND 2' FROM OUTSIDE EDGE. GEOGRID CAN ALSO BE ADDED FOR INCREASED STABILITY.
2. COUNTY OR STATE HIGHWAY ACCESS PERMITTING MAY BE REQUIRED FOR PLACEMENT OF ENTRANCE.
3. CULVERT PLACEMENT MAY BE REQUIRED TO MAINTAIN FLOW.
4. TEMPORARY CONSTRUCTION MATTING MAY BE SUBSTITUTED WITH FIELD VERIFICATION AND APPROVAL (SEE DETAIL 016).

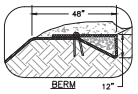
TEMPORARY CONSTRUCTION ENTRANCE

002



NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. USE ON SIDE SLOPES EXCEEDING A 3:1 SLOPE AND DISTURBED STREAMBANKS.
5. THE FOLLOWING BLANKET TYPES SHALL BE UTILIZED:
   A. LONG-TERM BIODEGRADABLE DOUBLE-NET COCONUT BLANKET ON STREAMBANKS.
   B. SHORT-TERM BIODEGRADABLE DOUBLE-NET STRAW BLANKET ON 3:1 SLOPES OR GREATER.
   C. SHORT-TERM BIODEGRADABLE SINGLE-NET STRAW ON LESSER SLOPES, FLAT FLOODPLAIN, AND WORKSPACE AREAS.
6. FOR STREAMBANK STABILIZATION:
   A. TUCK/UNDERLAP BASE OF BLANKET TO PREVENT HIGH WATER FROM REMOVING BLANKET AND SEED.
   B. STAPLE SPACING MAY NEED TO BE DECREASED.
   C. PREPARE SUBGRADE PRIOR TO INSTALLING BLANKET BY REMOVING DISPLACED ROCKS AND WOODY DEBRIS.

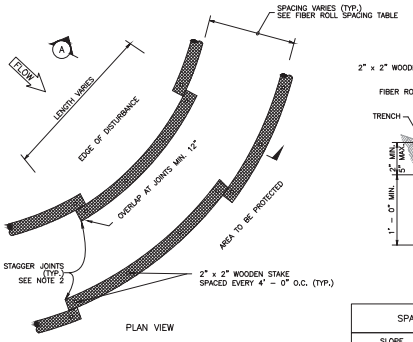


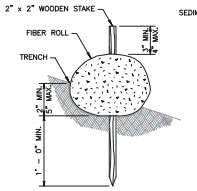
EROSION CONTROL BLANKET

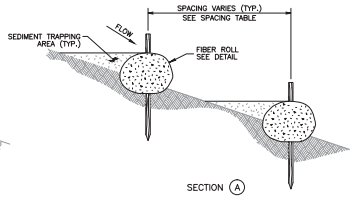
003

INTENTIONALLY LEFT BLANK

004







SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10' - 0"
2:1	20' - 0"
3:1	30' - 0"
4:1	40' - 0"

* INSTALL FIRST ROW AT TOP OF BANK.
INSTALL LAST ROW 10' FROM TOE OF SLOPE.

NOTES:

1. INSTALL FIBER ROLLS ALONG CONTOURS DURING FINAL RESTORATION TO CHECK FLOW TO ALLOW ADEQUATE REVEGETATION.
2. ABUT ADJACENT FIBER ROLLS TIGHTLY WHILE OVERLAPPING THE ENDS. STAGGER JOINTS WITH THE NEXT PARALLEL ROW.
3. PILOT HOLES MAY BE DRIVEN THROUGH THE FIBER ROLLS AND INTO THE SOIL WHEN SOIL CONDITIONS REQUIRE.
4. FIBER ROLLS SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RAINFALL PRODUCES RUNOFF, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
5. A SINGLE ROW MAY BE INSTALLED ON FLAT SLOPES.

FIBER ROLL

005

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY CAM/MRW	DATE 12/18/2015
DRAWN BY KTH	JOB NO. - -
CHECKED BY MRW	APPROVED CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE N.T.S.	
DRAWING NO.	
SHEET 1	OF 5

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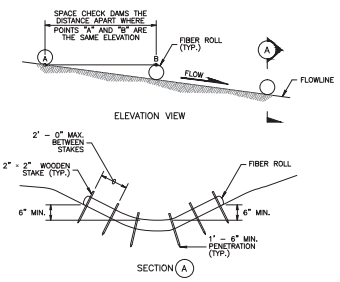
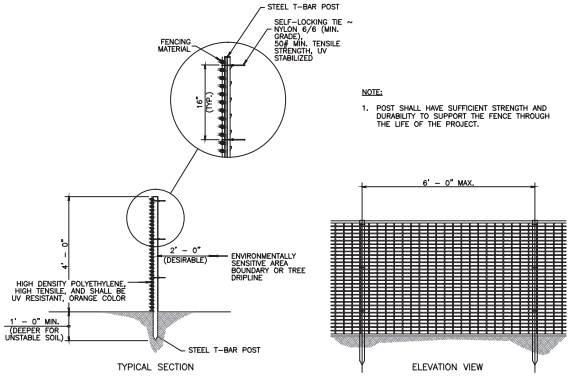


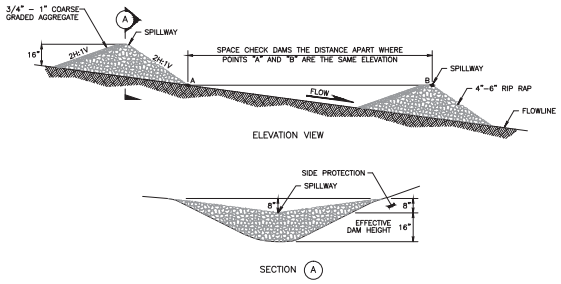
NOTE:
1. STRAW WATTLE SHALL NOT BE USED IN A CHECK DAM APPLICATION.

FIBER ROLL CHECK DAM 006

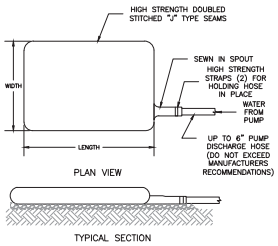


NOTE:
1. POST SHALL HAVE SUFFICIENT STRENGTH AND DURABILITY TO SUPPORT THE FENCE THROUGH THE LIFE OF THE PROJECT.

CONSTRUCTION BARRIER FENCING 007



ROCK CHECK DAM 008



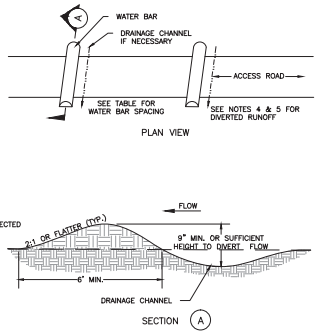
NOTES:

1. THE NECK OF THE FILTER BAG SHALL BE TIGHTLY STRAPPED (MINIMUM TWO STRAPS) TO THE DISCHARGE HOSE.
2. THE FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE.
3. FLOW RATES VARY DEPENDING ON THE SIZE OF THE DEWATERING DEVICE, AMOUNT OF SEDIMENT DISCHARGED INTO THE DEWATERING DEVICE, THE TYPE OF GROUND, ROCK, OR OTHER SUBSTANCE UNDER THE BAG AND THE DEGREE OF THE SLOPE ON WHICH THE BAG LIES. THE FILTER BAG SHOULD BE SIZED TO ACCOMMODATE THE ANTICIPATED FLOW RATES FROM THE TYPE OF PUMP USED. TYPICALLY FILTER BAGS CAN HANDLE FLOW RATES OF UP TO 1000 GALLONS PER MINUTE, BUT IN ALL CASES FOLLOW THE MANUFACTURERS RECOMMENDATIONS FOR FLOW RATES.
4. USE OF EXCESSIVE FLOW RATES OR OVERFILLING THE DEWATERING DEVICE WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAG OR FAILURE OF THE HOSE ATTACHMENT STRAPS.
5. THE FILTER BAG SHALL BE REMOVED AND DISPOSED OF OFFSITE..
6. EACH STANDARD DEWATERING DEVICE SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE THE DISCHARGE HOSE. USE TWO STAINLESS STEEL STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
7. THE DEWATERING DEVICE SHALL BE A NONWOVEN BAG, WHICH IS SEWN WITH A DOUBLE NEEDLE STITCHING USING A HIGH STRENGTH THREAD.
8. THE DEWATERING DEVICE SEAMS SHALL HAVE AN AVERAGE WIDE WITH STRENGTH PER ASTM D 4884 OF 100 LB/IN.
9. THE GEOTEXTILE FABRIC SHALL BE A NONWOVEN FABRIC WITH THE FOLLOWING PROPERTIES:

PROPERTIES	TEST METHOD	ENGLISH	METRIC
GRAB TENSILE	ASTM D – 4632	250 LBS.	113 KG
PUNCTURE	ASTM D – 4833	165 LBS.	75 KG
FLOW RATE	ASTM D – 4491	70 GAL/MIN/SQ FT	25 LITERS/MIN/SQ METER
PERMITIVITY	ASTM D – 4491	1.3 SEC. – 1	1.3 SEC. – 1
MULLEN BURST	ASTM D – 3786	550 LBS./SQ INCH	3.79 Mpa
UV RESISTANT	ASTM D – 4355	70%	70%
AOS % RETAINED	ASTM D – 4751	100%	100%

*ALL PROPERTIES ARE MINIMUM AVERAGE ROLL VALUE

DEWATERING BAG 009



NOTES:

1. SIDE SLOPES OF WATER BAR SHALL BE CONSTRUCTED SUFFICIENTLY FLAT TO ACCOMMODATE THE EXPECTED TRAFFIC.
2. THE SPACING BETWEEN WATER BARS SHALL BE AS NOTED (SEE SPACING TABLE):

WATER BAR SPACING TABLE

ROAD GRADE (%)	DISTANCE (FT.)
1	400
2	250
5	135
10	80
15	60
20	45

3. THE FIELD LOCATION SHALL BE ADJUSTED AS NEEDED TO PROVIDE A STABILIZED SAFE OUTLET.
4. DRAINAGE CHANNELS SHALL BE DIRECTED ONTO STABLE VEGETATIVE AREA OR A SEDIMENT TRAP OR A BASIN IF CONTRIBUTING AREA IS NOT STABLE.
5. DRAINAGE CHANNELS SHALL BE CONSTRUCTED WITH ≤ 2% WITH POSITIVE OUTLET TO STABLE AREA.
6. DIVERSIONS/WATER BARS SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT DURING CONSTRUCTION.
7. THE WATER BARS SHALL BE ANGLED SLIGHTLY DOWNSLOPE ACROSS THE CENTERLINE OF THE TRAVEL LANE.

WATER BAR 010

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY	CAM/MRW
DATE	12/18/2015
DRAWN BY	KTH
JOB NO.	– –
CHECKED BY	MRW
APPROVED	CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE N.T.S.
DRAWING NO.
SHEET 2 OF 5

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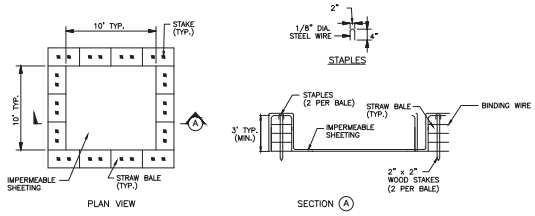
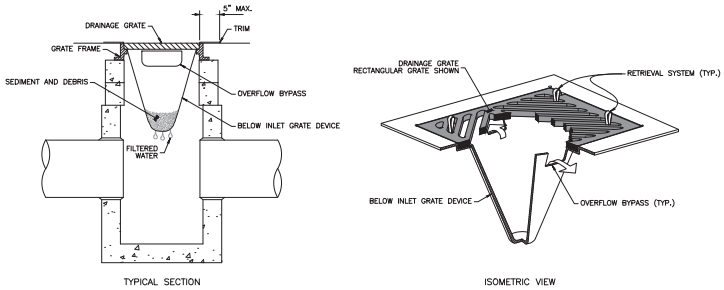


NOTES:

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET-VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.
6. BALES CAN BE TWO STACKED OR PARTIALLY EXCAVATED TO REACH 3FT DEPTH (MIN.).
7. PREFABRICATED UNITS MAY BE USED WITH APPROVAL.

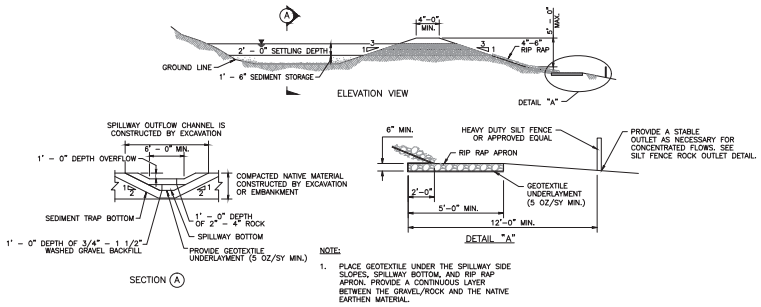
CONCRETE WASHOUT

011



PAVED AREA INLET PROTECTION

013

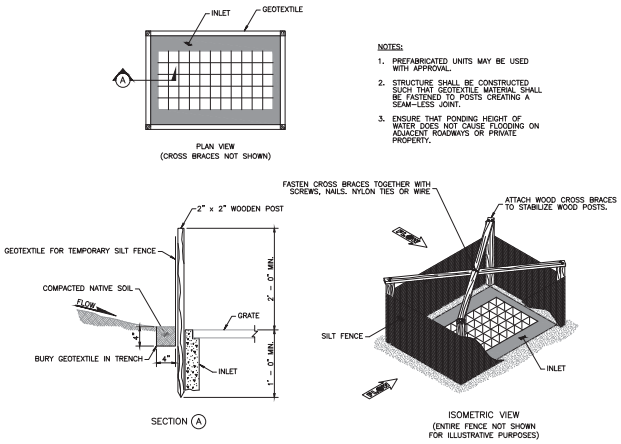


NOTE:

1. PLACE GEOTEXTILE UNDER THE SPILLWAY SIDE SLOPES, SPILLWAY BOTTOM, AND RIP RAP APRON. PROVIDE A CONTINUOUS LAYER BETWEEN THE GRAVEL/ROCK AND THE NATIVE EARTHEN MATERIAL.

TEMPORARY SEDIMENT TRAP

012



NOTES:

1. PREFABRICATED UNITS MAY BE USED WITH APPROVAL.
2. STRUCTURE SHALL BE CONSTRUCTED SUCH THAT GEOTEXTILE MATERIAL SHALL BE FASTENED TO POSTS CREATING A SEAM-LESS JOINT.
3. ENSURE THAT PONDING HEIGHT OF WATER DOES NOT CAUSE FLOODING ON ADJACENT ROADWAYS OR PRIVATE PROPERTY.

NON-PAVED AREA INLET PROTECTION

014

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY CAM/MRW	DATE 12/18/2015
DRAWN BY KTH	JOB NO. – –
CHECKED BY MRW	APPROVED CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE N.T.S.

DRAWING NO.

SHEET 3 OF 5

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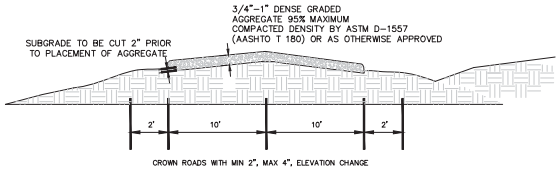
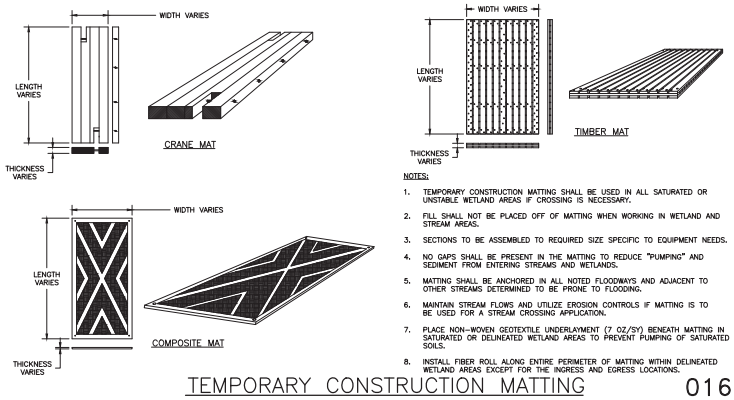


NOTE:

1. VARYING FIELD CONDITIONS MAY WARRANT ALTERNATE AGGREGATE GRADATIONS.

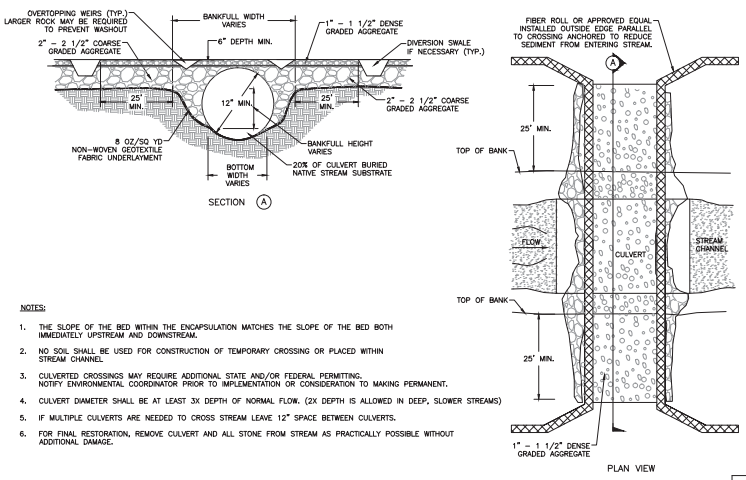
TEMPORARY ACCESS DRIVE 015



NOTES:

1. TEMPORARY CONSTRUCTION MATTING SHALL BE USED IN ALL SATURATED OR UNSTABLE WETLAND AREAS IF CROSSING IS NECESSARY.
2. FILL SHALL NOT BE PLACED OFF OF MATTING WHEN WORKING IN WETLAND AND STREAM AREAS.
3. SECTIONS TO BE ASSEMBLED TO REQUIRED SIZE SPECIFIC TO EQUIPMENT NEEDS.
4. NO GAPS SHALL BE PRESENT IN THE MATTING TO REDUCE "PUMPING" AND SEDIMENT FROM ENTERING STREAMS AND WETLANDS.
5. MATTING SHALL BE ANCHORED IN ALL NOTED FLOODWAYS AND ADJACENT TO OTHER STREAMS DETERMINED TO BE PRONE TO FLOODING.
6. MAINTAIN STREAM FLOWS AND UTILIZE EROSION CONTROLS IF MATTING IS TO BE USED FOR A STREAM CROSSING APPLICATION.
7. PLACE NON-WOVEN GEOTEXTILE UNDERLAYMENT (7 OZ/SY) BENEATH MATTING IN SATURATED OR DELINEATED WETLAND AREAS TO PREVENT PUMPING OF SATURATED SOILS.
8. INSTALL FIBER ROLL ALONG ENTIRE PERIMETER OF MATTING WITHIN DELINEATED WETLAND AREAS EXCEPT FOR THE INGRESS AND EGRESS LOCATIONS.

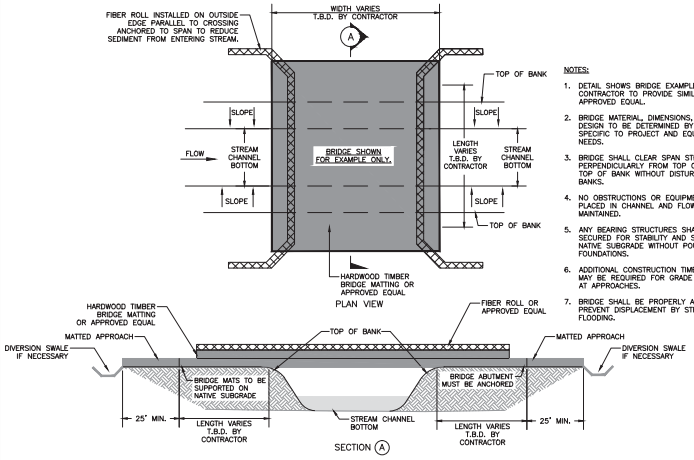
TEMPORARY CONSTRUCTION MATTING 016



NOTES:

1. THE SLOPE OF THE BED WITHIN THE ENCAPSULATION MATCHES THE SLOPE OF THE BED BOTH IMMEDIATELY UPSTREAM AND DOWNSTREAM.
2. NO SOIL SHALL BE USED FOR CONSTRUCTION OF TEMPORARY CROSSING OR PLACED WITHIN STREAM CHANNEL.
3. CULVERTED CROSSINGS MAY REQUIRE ADDITIONAL STATE AND/OR FEDERAL PERMITTING. NOTIFY ENVIRONMENTAL COORDINATOR PRIOR TO IMPLEMENTATION OR CONSIDERATION TO MAKING PERMANENT.
4. CULVERT DIAMETER SHALL BE AT LEAST 3X DEPTH OF NORMAL FLOW. (2X DEPTH IS ALLOWED IN DEEP, SLOWER STREAMS)
5. IF MULTIPLE CULVERTS ARE NEEDED TO CROSS STREAM LEAVE 12" SPACE BETWEEN CULVERTS.
6. FOR FINAL RESTORATION, REMOVE CULVERT AND ALL STONE FROM STREAM AS PRACTICALLY POSSIBLE WITHOUT ADDITIONAL DAMAGE.

TEMPORARY CULVERT STREAM CROSSING 017



NOTES:

1. DETAIL SHOWS BRIDGE EXAMPLE ONLY. CONTRACTOR TO PROVIDE SIMILAR OR APPROVED EQUAL.
2. BRIDGE MATERIAL, DIMENSIONS, AND LOAD DESIGN TO BE DETERMINED BY CONTRACTOR SPECIFIC TO PROJECT AND EQUIPMENT NEEDS.
3. BRIDGE SHALL CLEAR SPAN STREAM PERPENDICULARLY FROM TOP OF BANK TO TOP OF BANK WITHOUT DISTURBING STREAM BANKS.
4. NO OBSTRUCTIONS OR EQUIPMENT SHALL BE PLACED IN CHANNEL AND FLOW MUST BE MAINTAINED.
5. ANY BEARING STRUCTURES SHALL BE SECURED FOR STABILITY AND SUPPORTED ON NATIVE SUBGRADE WITHOUT POURED FOUNDATIONS.
6. ADDITIONAL CONSTRUCTION TIMBER MATTING MAY BE REQUIRED FOR GRADE COMPENSATION AT APPROACHES.
7. BRIDGE SHALL BE PROPERLY ANCHORED TO PREVENT DISPLACEMENT BY STREAM FLOODING.

TEMPORARY CLEAR SPAN BRIDGE CROSSING 018

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY CAM/MRW	DATE 12/18/2015
DRAWN BY KTH	JOB NO. - -
CHECKED BY MRW	APPROVED CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE N.T.S.

DRAWING NO.

SHEET 4 OF 5

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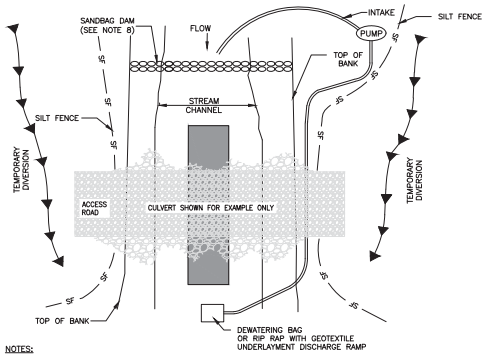
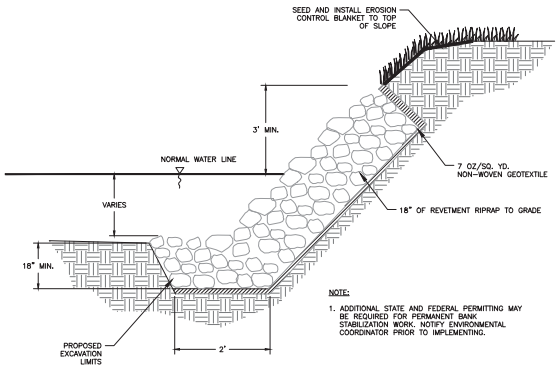


NOTES:

1. INSTALL SILT FENCE, PUMP, DEWATERING BAG, AND SANDBAG DAM BEFORE TRENCHING STREAM.
2. PUMP MUST BE OF SUFFICIENT CAPACITY TO CONVEY NORMAL AND/OR EXISTING STREAM FLOW OVER SANDBAG DAM. A BACK-UP PUMP OF EQUAL CAPACITY MUST BE AVAILABLE ON-SITE DURING CONSTRUCTION OF THE CROSSING.
3. ANY SOIL PILES TO BE PLACED A MINIMUM OF 10 FEET FROM TOP OF BANK.
4. INSTALL DIVERSIONS AT APPROACHES TO STREAM CROSSING AND SILT FENCE (AS INDICATED ON PLAN SHEETS).
5. MAINTAIN SURFACE OF TEMPORARY EQUIPMENT CROSSING TO PREVENT SOIL DISCHARGES TO STREAM.
6. APPROACHES TO CROSSINGS ARE NOT TO EXCEED A DEPTH OF 6 INCHES ABOVE ORIGINAL GRADE.
7. RESTORE AREA TO APPROXIMATE ORIGINAL CONTOURS.
8. ADJUST HEIGHT AS NEEDED BASED ON FLOW CONDITIONS AND PUMP INTAKE.

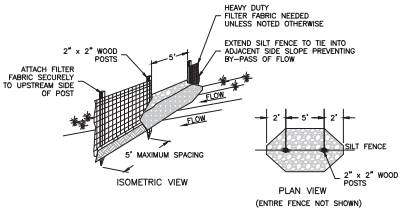
TEMPORARY STREAM CROSSING PUMP DIVERSION 019



NOTE:

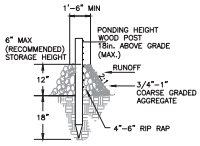
1. ADDITIONAL STATE AND FEDERAL PERMITTING MAY BE REQUIRED FOR PERMANENT BANK STABILIZATION WORK. NOTIFY ENVIRONMENTAL COORDINATOR PRIOR TO IMPLEMENTING.

HARD ARMAMENT BANK STABILIZATION 020



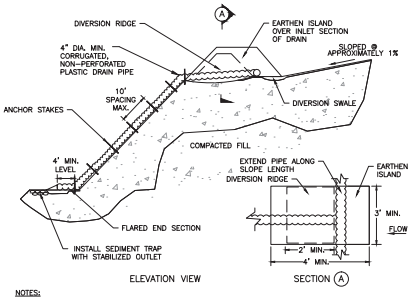
NOTES:

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. INSPECT AND REPAIR AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN IT REACHES ONE-HALF HEIGHT OF FENCE OR FABRIC STARTS TO BULGE.
3. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
4. TURN END OF SILT FENCE UP SLOPE TO PREVENT BYPASS FLOW AND ALLOW FOR PONDING.
5. SEE TYPICAL SILT FENCE DETAIL FOR ADDITIONAL INFORMATION.



TYPICAL SECTION

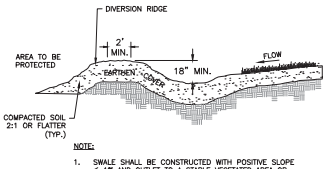
SILT FENCE ROCK OUTLET 021



NOTES:

1. THE SLOPE DRAIN SHALL BE CONSTRUCTED/LENGTHENED WITH THE CONSTRUCTION OF THE FILL SLOPE, AS A RESULT, INLET ELEVATIONS WILL VARY ACCORDING TO GRADE ELEVATIONS AT THE TIME OF CONSTRUCTION.
2. INSPECT SLOPE DRAIN AND SUPPORTING DIVERSIONS AFTER EVERY RAINFALL EVENT AND MAKE NECESSARY REPAIRS FOR PROPER OPERATION OF THE SYSTEM.
3. UPON PROJECT COMPLETION, REMOVE THE SLOPE DRAIN AND PROPERLY STABILIZE ALL DISTURBED AREAS.

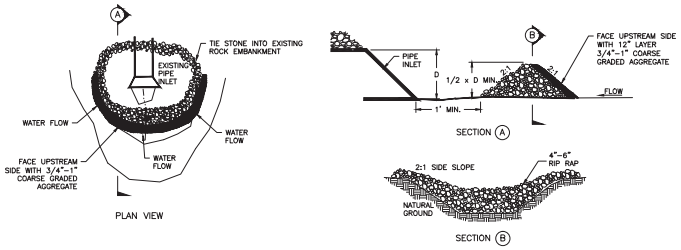
TEMPORARY SLOPE DRAIN 022



NOTE:

1. SWALE SHALL BE CONSTRUCTED WITH POSITIVE SLOPE ≤ 1% AND OUTLET TO A STABLE VEGETATED AREA OR SEDIMENT TRAP OR BASIN.

DIVERSION SWALE 023



ROCK PIPE INLET PROTECTION 024

REVISIONS			
NO.	DATE	DESCRIPTION	APPROVED BY

DESIGN BY CAM/MRW	DATE 12/18/2015
DRAWN BY KTH	JOB NO. - -
CHECKED BY MRW	APPROVED CAM

DUKE ENERGY.

STORM WATER POLLUTION PREVENTION PLAN
TYPICAL DETAILS

SCALE N.T.S.

DRAWING NO.

SHEET 5 OF 5

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Appendix C

Storm Water Evaluation Form for Construction

Storm Water Evaluation Form for Construction

(Complete at least once per week and after each storm event of 0.5 inches or more.)

Project Name: 3885 – 138kV East Provident Loop	**Evaluation Date:**
Construction Supervisor:	**Evaluated By:**
Reason for Evaluation: ☐ **Routine** ☐ **Post Rain Event** ☐ **Non-Routine**	
Location and Phase of Construction:	**Conditions at time of evaluation?** ☐ Dry ☐ Wet ☐ Frozen

OBSERVATIONS	INSTALLED	CORRECTIVE ACTION NEEDED
Silt Fence	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Fiber Rolls/Filter Socks	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Check Dams	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Seeding/Mulching	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Erosion Control Blanket	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Construction Entrances	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Stream Crossings	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Wetland Crossings	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		
Concrete Washout Areas	☐ Yes ☐ No ☐ N/A	☐ Yes ☐ No
Comment/Action:		

Is sediment or other pollutants leaving the site?	☐ Yes ☐ No	If yes, corrective action is needed.
Is sediment being tracked onto public roadways?	☐ Yes ☐ No	If yes, corrective action is needed.
Have any areas been left disturbed for 21 days or more?	☐ Yes ☐ No	If yes, corrective action is needed.

See Reverse Side for More Information and Additional Space for Comments

Storm Water Evaluation Form for Construction

(Complete at least once per week and after each storm event of 0.5 inches or more.)

General Information:

- This storm water evaluation program is intended to comply with self-monitoring requirements and the project specific Storm Water Pollution Prevention Plan (SWPPP).
- A Storm Water Evaluation is required by a trained individual at a minimum of one (1) time per week and by the end of the next business day following each measurable storm event (total rainfall accumulation equal to one-half (0.5) inches or greater.
- Observed erosion and sediment control deficiencies shall be corrected within 7 days. Modifications to erosion and sediment control structures and/or locations shall be recorded in the SWPPP Amendment Log within 10 days.
- Areas that are scheduled to be inactive for 21 days or more must be temporarily or permanently stabilized with appropriate measures within 7 days of last disturbance.
- Erosion and sediment control structures shall be maintained until a vegetative cover of 70% or greater density in all disturbed, non-agricultural areas is achieved. At which time, all temporary erosion and sediment control structures shall be removed and Notice of Termination (NOT) will be filed with Ohio Environmental Protection Agency (OEPA).
- Completed Evaluation Forms to be submitted to Amanda Sheehe at 1000 East Main Street, Plainfield, IN 46168, (317) 838-2447, Amanda.Sheehe@Duke-Energy.com
- Upon request, Evaluation Forms must be provided to inspecting authorities within 48 hours and must be retained for 3 years after project completion.

Additional Comments/Actions (attach photographs and additional pages as necessary):

Appendix D

SWPPP Amendment Log

SWPPP Amendment Log

Project: 3885 138 kV East Provident Loop – New Build

Date	Description/Location	Initials

Attachment I

Letters to Officials

Duke Energy Ohio
139 East Fourth Street
Cincinnati, Ohio 45202

DATE

MidPointe Library West Chester
9363 Centre Pointe Dr.
West Chester Township, Ohio 45069

Via Electronic Mail

Letter of Notification
Duke Energy Ohio 3885 – 138kV East Provident Loop

Dear Sir or Madam:

Please find below a link to an electronic copy of a Letter of Notification that Duke Energy Ohio, Inc., has submitted to the Ohio Power Siting Board regarding the planned construction of approximately 0.27 miles of 138 kV transmission line between the planned East Provident Substation and the existing Duke 138kV transmission line located in West Chester Township, Butler County, Ohio. The Letter of Notification submittal is required in accordance with Chapter 4906 of the Ohio Administrative Code (O.A.C.). The proposed project area consists of approximately 0.27 miles of new and existing 100-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW), and includes the placement of ten structures. The Project begins at the proposed East Provident Substation located north of Provident Drive, and terminates south of Provident Drive as it enters the existing Duke Energy ROW.

In accordance with O.A.C. 4906-1-01 Appendix A, we are required to prepare this Letter of Notification for the Ohio Power Siting Board and, in compliance with O.A.C. 4906-11-01(D)(4), we are hereby providing you with a link to an electronic copy.

A copy of the application is available for public inspection at the main office of Duke Energy Ohio at 139 E. Fourth Street, Cincinnati, Ohio, and at the offices of the Ohio Power Siting Board, 180 East Broad Street, Columbus, Ohio 43215. The Application is also available on the Duke Energy Ohio website, at: https://www.duke-energy.com/our-company/about-us/electric-transmission-projects, and on the Ohio Power Siting Board's website, at: http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=17-2057-EL-BLN.

Cordially,
Duke Energy Ohio, Inc.

Moses Muci
Project Manager I, Trans Proj Mgmt - OH

Duke Energy Ohio
139 East Fourth Street
Cincinnati, Ohio 45202

DATE

ADDRESS *Via Electronic Mail*

Letter of Notification
Duke Energy Ohio 3885 – 138kV East Provident Loop

Dear Public Official:

Please find attached a link to an electronic copy of a Letter of Notification that Duke Energy Ohio, Inc. has submitted to the Ohio Power Siting Board regarding the planned construction of an approximately 0.27 miles of 138 kV transmission line between the planned East Provident Substation and the existing Duke 138kV transmission line located in West Chester Township, Butler County, Ohio. The Letter of Notification submittal is required in accordance with Chapter 4906 of the Ohio Administrative Code (O.A.C.). The proposed project area consists of approximately 0.27 miles of new and existing 100-foot wide Duke Energy transmission line corridor Right-Of-Way (ROW), and includes the replacement of ten (10) structures. The Project begins at the proposed East Provident Substation located north of Provident Drive, and terminates south of Provident Drive as it enters the existing Duke Energy ROW.

In accordance with O.A.C. 4906-1-01 Appendix A, we are required to prepare this Letter of Notification for the Ohio Power Siting Board and in compliance with O.A.C. 4906-11-01(D)(4), we are hereby providing you with an electronic copy.

A copy of the application is available for public inspection at the main office of Duke Energy Ohio at 139 E. Fourth Street, Cincinnati, Ohio, and at the offices of the Ohio Power Siting Board, 180 East Broad Street, Columbus, Ohio 43215. The Application is also available on the Duke Energy Ohio website, at: https://www.duke-energy.com/our-company/about-us/electric-transmission-projects, and on the Ohio Power Siting Board's website, at: http://dis.puc.state.oh.us/CaseRecord.aspx?CaseNo=17-2057-EL-BLN.

Cordially,
Duke Energy Ohio, Inc.

Moses Muci
Project Manager I, Trans Proj Mgmt - OH

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/27/2017 1:32:47 PM

in

Case No(s). 17-2057-EL-BLN

Summary: Application Letter of Notification for the Duke Energy Ohio 3885 - 138kv East Provident Loop Newbuild electronically filed by Ms. Emily Olive on behalf of Duke Energy Ohio and Spiller, Amy B. Ms. and Kingery, Jeanne W. Ms.