

**PETERSON POND
SPILLWAY REPAIR
Project No. 22-4441**

SECTION 02050

DEMOLITION

PART ONE - GENERAL

1.01 DESCRIPTION

- A. This work shall include, but is not necessarily limited to, all labor, materials and equipment required for the complete and satisfactory demolition and removal of all items from the project site as indicated on the drawings and specified herein. This work shall also include the complete and satisfactory demolition of the following items:

- 1. Remove and dispose of existing rip rap stone and geotextile material.

1.02 QUALITY ASSURANCE

- A. General

- 1. The contractor shall provide suitable equipment for the demolition work. Equipment shall be in good working condition and shall be operated by individuals who are properly trained and skilled for such equipment.

- B. Codes and Regulations

- 1. In addition to complying with the specified requirements, the Contractor shall be responsible for obtaining all permits and complying with all pertinent regulations of governmental agencies having jurisdiction.
 - 2. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Engineer.

PART TWO – PRODUCTS

- A. Not Used.

PART THREE - EXECUTION

3.01 EXAMINATION

- A. The Contractor shall thoroughly inspect the premises prior to commencing work. The Contractor shall also determine the extent of work required and the need for temporary shoring and/or permanent structural changes.
- B. The Contractor shall comply with Act 53, P.A. of 1974, by notifying the public utilities of the proposed demolition at least 48 hours prior to the commencement of such activities by contacting MISS DIG.

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- C. It shall be the responsibility of the contractor to determine the exact location of all existing utilities. For those utilities to remain in service, the Contractor shall make temporary and/or permanent relocation, as necessary, to comply with the drawings.

3.02 PREPARATION

- A. The Contractor is responsible to place, post warning signs, and place temporary fencing around any dangerous openings and/or areas as necessary to ensure the safety of the workers, and the public.

3.03 DEMOLITION

A. General-

1. Demolition work shall be executed in an orderly and careful manner and shall not involve undue hazards or risks to the workers.
2. Demolition and removal of all reinforced concrete and miscellaneous structures shall be in accordance with MDOT Standard Specifications Section 2.04, 2003.
3. Reinforced concrete headwall and inlet control structure shall be sawcut to provide a smooth horizontal cut at the elevation shown on the plans.
3. Depressions or holes due to demolition shall be immediately filled job excavated material, and compacted to 95% density.

3.05 REMOVAL OF SURPLUS MATERIAL

- B. Remove all materials, debris and rubbish resulting from the demolition work from the site as soon as practicable. Excess accumulation of materials on site will not be permitted.
- C. All material resulting from the demolition work shall become the property of the Contractor and removed from the site unless otherwise specified. It will be the contractor's responsibility to locate a suitable site for disposal of debris.

END OF SECTION

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SECTION 02213

EXCAVATION

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Excavation shall consist of all the work required to construct the earth grades in conformity with the line, grades, and typical sections shown on the plan or as directed by the Architect/Engineer.

1.02 PERMITS

- A. All work related to this project shall comply with the Michigan Department of Environmental Quality Permit for this project.

PART TWO - MATERIAL

2.01 EARTH FILL

- A. Job excavated material shall be used for earth fill provided it meets with the Architect/Engineer's approval before placement.
- B. Fill material shall contain no topsoil, muck sod, roots, leaf litter, or other unsound material.

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Excavation shall include all necessary salvaging and/or wasting of earth, scarifying, plowing, discing, excavating, moving, hauling, shaping, and compacting the earth to develop the cross sections shown on the plans or as directed by the Architect/Engineer.
- B. Earth Fill ...shall be placed in 15" lifts and each lift shall be fully compacted to 95% unit density.
- C. Shape the surface to within a plus or minus 3/4 inches of grade.
- D. Excess excavated material shall be placed in upland area within 500 feet of the east end of Dike. Material shall be graded as directed by the engineer. Material shall have maximum side slopes of 1 unit rise per 3 units horizontal.
- E. Excess material shall be placed and protected in a manner that will ensure that no sediment will enter the water body.

END OF SECTION

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SECTION 02230

SOIL EROSION AND SEDIMENTATION CONTROL

PART ONE - GENERAL

1.01 DESCRIPTION

- A. The contractor shall be responsible to provide soil erosion and sedimentation control measures as required in the approved Soil Erosion and Sedimentation Control (SESC) Plan and in conformance with state law.

1.02 SOIL EROSION AND SEDIMENTATION CONTROL

- A. The contractor shall take all precautions necessary to prevent soil erosion in areas that are disturbed by construction. The Contractor is required to ensure that all sedimentation is contained within the construction site and shall prevent any sediment from entering sewers or water courses.
- B. The Contractor shall comply with the soil erosion and sedimentation control requirements of Act No. 451 of the Public Acts of 1994, Natural Resource and Environmental Protection Act, Part 91 of the Michigan Compiled Laws.

1.03 MONITORING AND ENFORCEMENT

- 1. Regular inspections and monitoring will be conducted by the Owner. The Contractor shall correct any deficiencies noted by the Owner, Local Enforcement Agency or the MDEQ within 24 hours of receiving written notice that corrections are necessary. If the Contractor failed to make the corrections within the allotted time, the Owner shall have the right to do the work and deduct all costs from the amounts due to the Contractor under this Contract.

1.04 SUBMITTALS

- A. Prior to construction the Contractor shall submit a Soil Erosion and Sedimentation Control (SESC) Plan to the SESC program coordinator within the MDNR Office of Property Management for approval and Authorization to Proceed With Earth Change.
- B. The SESC Plan shall include the following items:
 - 1. The SESC measures that are included in the contract documents or modifications to those SESC measures as required by specific construction means and methods. All modifications shall adhere to the provisions of this section. There will be no additional compensation for modifications to the plan.
 - 2. Schedule of installation, maintenance and removal of SESC measures.

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- a. Contractor shall submit a detailed schedule of installation, maintenance and removal dates for all required SESC measures. A schedule form is included at the end of this section.
- 3. A detailed schedule of values for each temporary and permanent soil erosion measure including but not necessarily limited to silt fence, turbidity curtain, Seeding and Mulching, or any measures submitted by the contractor in lieu of these items.
- 4. Maintenance procedures for Temporary SESC Measures.
- 5. Maintenance Procedures for Permanent SESC measures.
 - a. Contractor will be responsible to maintain these measures until they are permanently established and the soil is stabilized.

1.05 RELATED SPECIFICATIONS

- A. Section 02921 Topsoil, Seeding and Mulching
- B. MDOT Special Provision for Turbidity Curtain dated 1-31-02. This is inserted after end of this section.

PART TWO - MATERIALS

2.01 GENERAL

- A. All materials required for the SESC measures shall be as specified by the following:
 - 1. MDMB Soil Erosion and Sedimentation Control Guidebook 2002,
 - 2. Section 916, and Section 917 of the MDOT Standard Specifications for Construction, 2003 Edition.
 - 3. MDOT Special Provision for Turbidity Curtain dated 1-31-02

PART THREE - EXECUTION

3.01 INSTALLATION AND MAINTENANCE OF CONTROLS

- A. General
 - 1. All SESC measures shown on the plans shall be installed and maintained as specified and in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002, unless otherwise approved by the Engineer.
 - 2. All required SESC measures shall be in place as required by the approved SESC plan prior to construction.
 - 3. Daily inspections shall be made by the contractor to determine effectiveness of erosion and sedimentation measures, and any necessary repairs shall be performed without delay.

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4. Permanent soil erosion control measures over disturbed land area shall be completed within 5 working days after final grading or final earth change has been completed.
- B. Silt Fence
1. Install silt fence as shown in the approved SESC plan and in accordance with the MDMB Soil Erosion and Sedimentation Control Guidebook 2002, unless otherwise shown on the plans or approved by the Engineer.
- C. Seeding and Mulching
1. Seeding and mulching shall be in accordance with Section 02900.

3.02 COMPLETION

- A. The contract will not be considered complete until the Engineer has certified the following items.
1. All disturbed soil is permanently stabilized.
 2. All temporary SESC measures have been removed and the areas are restored and stabilized.

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**SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
INSTALLATION, MAINTENANCE AND REMOVAL SCHEDULE**

SESC MEASURE	INSTALLATION DATE	REMOVAL DATE	MAINTENANCE FREQUENCY

END OF SECTION

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SECTION 02274

RIPRAP

PART ONE - GENERAL

1.01 DESCRIPTION

This work shall consist of constructing a protective covering of riprap, on a prepared foundation covered with a geotextile liner.

PART TWO - PRODUCTS

2.01 HEAVY RIPPRAP

- A. Shall be as specified by the MDOT standard specification section 916.01 (2003 Edition).

2.02 GEOTEXTILE

- A. Geotextile liner for riprap shall meet the requirements of the MDOT Standard Specifications Section 910 (2003 Edition).

PART THREE - EXECUTION

3.01 EARTHWORK

- A. Construct earth grades as shown on the plans and in the typical sections, and compact to ensure stability.

3.02 GEOTEXTILE

- A. Geotextile liner shall be placed in strict accordance with manufacturers directions. Any portion of the filter fabric damaged or displaced before or during placement of overlaying layers shall be replaced or repaired to the satisfaction of the Architect/Engineer at the Contractor's expense.
- B. Geotextile shall not be placed until the subgrade meets with the approval of the Architect/Engineer.

3.03 HEAVY RIPRAP

- A. Heavy Riprap shall be constructed in accordance with MDOT Standard Specifications 813.03E, (2003 Edition).
- B. Riprap shall be thoroughly compacted as it is installed and finished surface shall be even and tight.

END OF SECTION

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SECTION 02484

STEEL SHEET PILING

PART ONE - GENERAL

1.01 SCOPE

- A. This work consists of furnishing and installing new steel sheeting and related items as shown on the plans and specified herein.

1.02 SUBMITTALS

- A. Mill reports...Contractor shall submit a certified copy of all mill reports covering the chemical and physical properties of new steel piling used in the work under this Section of the specifications.

PART TWO - PRODUCTS

2.01 NEW STEEL SHEET PILING

- A. General...Steel sheet piling shall conform to the requirements of ASTM A328 with a minimum yield strength of 36,000 psi.
- B. Sections...Piles shall be of the types indicated on the drawings and shall be of a design, such that when in place they will be continuously interlocked throughout their entire length.
- C. The types and dimensions of the piles the Contractor proposes to furnish shall be submitted for approval, and no order for delivery of such piles shall be given by the Contractor prior to receipt of written approval of the Architect/Engineer. Piles shall have the properties listed in the following table.

PROPERTIES OF SECTIONS

<u>Thickness (in.)</u>	<u>Modulus (in³/ft wall)</u>	<u>Section Weight (lbs/ft²)</u>
0.164	3.30	9.17

- D. Each steel pile shall be free from any kinks and shall not possess camber, twist, or warp of a degree which will, in any manner, prevent easy and ready driving of a pile. The interlock of each pile shall be straight throughout its entire length and shall be of such shape and dimensions as will permit free and easy threading of the pile.

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- E. Fabrication of special piles...The Contractor shall fabricate and furnish special corner piles as required. Special piles shall be constructed using plates and angles utilizing standard welding practices.
- F. Connectors...Nuts and washers and threaded tie rod shall be standard strength, conforming to ASTM A307 and be hot dipped galvanized.
- G. Welding Electrodes...E60 or E70 series.

2.02 PILE CAP

- A. General...Steel pile cap material shall conform to the requirements of ASTM A36.
- B. The types and dimension of the pile caps the Contractor proposes to furnish shall be submitted for approval, and no order for delivery of such pile caps shall be given by the Contractor prior to receipt of written approval of the Architect/Engineer. Piles caps shall meet the following: table.

PROPERTIES OF SECTION

<u>Thickness (in.)</u>	<u>Modulus (in³/ft wall)</u>	<u>Section Weight (lbs/ft²)</u>
0.250	4.5	9.9

PART THREE - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Removing Obstructions...Remove any hidden rocks or other items that would prevent driving of the proposed sheeting.
- B. Placing and Driving...Piles shall be carefully located as shown on the drawings and driven in a plumb position, each pile interlocked with adjoining piles for its entire length, so as to form a continuous diaphragm, throughout the length of each run of wall. The Contractor shall drive all piles as true to lines as practicable and shall provide suitable temporary walers or guide structures to insure that the piles are driven in correct alignment. All piles shall be driven to the depths shown on the drawings and shall extend to the elevations indicated for the tops of the piles. After driving the piles shall be cut off to the required top elevation as shown on the drawings. The tops of the piles shall all be at the required elevation after cutting off.

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- C. The horizontal alignment of the sheet pile wall shall be within three (3) inches of the required location shown on the Plans
- D. Boulders and Obstructions...If boulders or obstructions are encountered they shall be removed, split, or dislodged to allow driving to continue.
- E. Alignment...Contractor to brace and hold in alignment sheet piling while driving.

3.02 OTHER STEEL WORK

- A. Pile cap shall be attached to each pile section in accordance with manufacturer's recommendation for this application.

END OF SECTION

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SECTION 02900

SITE RESTORATION

PART ONE - GENERAL

1.01 DESCRIPTION

A. This work shall consist of furnishing all labor and equipment required for surface restoration, earth stabilization, and final cleanup of all items removed or damaged by the Contractor, and shall include but not be limited to:

1. All areas disturbed during construction, but not including proposed riprap areas shall be restored as specified in Section 02921, or as directed by the Architect/Engineer.

1.02 RELATED SECTIONS

- A. Section 02230 – Soil Erosion and Sedimentation Control.
- B. Section 02921 – Topsoil, Seeding and Mulching

PART TWO - MATERIALS, See Related Specifications

PART THREE –EXECUTION, See Related Specifications

END OF SECTION

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SECTION 02921

TOPSOIL SURFACE AND SEEDING

PART ONE - GENERAL

1.01 DESCRIPTION

- A. This work shall consist of furnishing all labor and equipment required to prepare the subgrade, place topsoil at a 3-inch depth, and to fertilize, seed, mulch on the designated areas as specified and other disturbed areas and as directed by the Architect/Engineer.

PART TWO - PRODUCTS

2.01 MATERIALS

A. Topsoil

1. Dark, organic, natural surfaced soil shall be free of clay lumps, peat or muck, subsoil, noxious weeds or other foreign matter such as roots, sticks, rocks over 1-1/2 inches in diameter; not frozen or muddy. Material shall meet with the Architect/Engineers approval at the source before commencing removal operations.
2. Topsoil as needed to meet job requirements shall be furnished by the Contractor.

B. Grass Seed:

1. Seed shall be MDOT Mixture TDS meeting the requirements of MDOT (2003 Ed.) Standard Specifications, Section 917.

C. Fertilizers:

1. Chemical Fertilizer...Chemical Fertilizer shall be in accordance with MDOT Standard Specification 917 (2003 Edition).

D. Mulch

1. Shall be straw mulch blankets. Mulching materials and anchoring materials shall be in accordance with MDOT Standard Specification 917 (2003 Edition).

E. Water:

1. Water shall be from a clean source approved by the Engineer.

PART THREE - EXECUTION

3.01 INSTALLATION

A. Seeding:

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1. Earthbed preparation and placing topsoil shall be accomplished in accordance with MDOT Standard Specification 816 (2003 Edition).
2. Fertilizer shall be applied to all areas to be seeded, at a rate of 228 pounds per acre in accordance with MDOT Standard Specification 816 (2003 Edition).
3. MDOT TDS Seed Mixture shall be used in accordance with MDOT Standard Specification 816 (2003 Edition).
4. Mulch Blankets shall be installed, in accordance with MDOT Standard Specification 816 (2003 Edition).
5. The whole area within the construction limits of work, not covered by buildings, structures, paving, or otherwise designated areas, and all areas disturbed by construction outside the limit of work, shall be fine graded and seeded.
6. Immediately before seeding, the topsoil surface shall be reworked until seed bed is a fine, pulverized, smooth seed bed.
7. Seeding to be accomplished between May 1 and October 1.

END OF SECTION