

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.1 DESCRIPTION

- A. This project primarily includes repairs to existing pond earthen embankments, filling in rodent holes, removal of woody vegetation, stabilizing spillways with Geotech and installation of Flex-mat erosion protection, with specified equipment at the direction of the Project Representative.

1.2 SUBCONTRACTOR(S)

- A. All subcontractor(s) shall be approved by the Project Representative, prior to any on-site work.

1.3 WORK SEQUENCE

- A. Sequence work activities to complete each site before moving to the next.

1.4 WORK SCHEDULE

- A. Limit on-site work activities to Monday through Friday for the entire contract duration. Any deviations from this specified work schedule shall be agreed upon and approved by the Project Representative.
- B. Submit weekly equipment and operator schedules to Project Representative for review and approval. Notify Project Representative at least a week in advance for equipment and operator changes, modifications, or mobilization/demobilization schedules.
- C. **Work at site 236.3 cannot start until after July 15 and must be completed prior to December 1st.**

END OF SECTION 01010

SECTION 01450

MOBILIZATION/DEMOBILIZATION

PART 1 GENERAL

1.1 DESCRIPTION

- A. The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract.
- B. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.
- C. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of noxious weeds and/or seeds. Equipment removed from the site(s) may not be returned to the site(s) until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

1.1 SITE LOCATIONS

- A. Site 104.2 Latitude 48.75337 Longitude -108.394
Hwy 241 twenty-one miles North of Harlem then East on Liese road for two miles site is one and one quarter miles south.
- B. Site 189.3 Latitude 48.96253 Longitude -108.9143
Hwy two one half mile West of Zurich turn North on Cherry Ridge Road for nineteen miles then turn east on Frenchy road for three miles then North on Cherry Ridge Road for six and one-half miles site is 2.2 miles east.
- C. Site 236.3 Latitude 47.67134 Longitude -107.9835
South of Malta on HWY 191, twenty miles North of Fred Robinson Bridge turn Southeast on to Dryfork Road for twenty five miles to Midale Road then south nine miles, turn east on two track for two and one half miles, site is one half mile South.
- D. Site 250.1 Latitude 48.27262 Longitude -107.5735
One mile East of Malta on HWY 2 turn East on Bowdoin Drive for twelve and one quarter miles, turn South on Lower Harb Road for six miles, take two track Southwest one half mile, site is one half mile West

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT AND PAYMENT

- A. The measurement for mobilization/demobilization will be measured by per each site contained in the contract. Payment of this item will be per each site completed.

END OF SECTION 01450

SECTION 02110

GEOTEXTILES

All applicable portions of this specification section in the MPWSS shall apply with the following additions, deletions and/or modifications.

PART 1 GENERAL

1.1 DESCRIPTION

Add the following:

This work also includes the installation of moderate-survivability, woven geotextile beneath riprap rock and concrete revetment placement and Pyramat 25 TRM geotextile in spillway areas.

1.2 REFERENCES

C. Delete this section and add the following:

Unless otherwise specified, filter fabric shall be utilized, and considered incidental, in the installation of all riprap and revetment. The filter fabric shall be a nonwoven polyester or polypropylene geotextile. This geotextile shall have a minimum grab tensile strength of 150 pounds as determined by ASTM D4632. The geotextile shall have a opening size equivalent to a #70 U.S. standard sieve.

The contractor shall supply all pins and other items necessary to fasten fabric to the ground, so it will not slide or form gaps when placing rock rip rap.

For concrete revetment, the geotextile shall be bonded to the base of the concrete block mats with an overlap of two to three feet incorporated on one end and one side adjacent to each other.

MATERIALS

PYRAMAT® 25 TRM:

Three-dimensional, lofty woven polypropylene RECP specially designed for erosion control applications on steep slopes and vegetated waterways.

Matrix composed of Trilobal monofilament yarns woven into uniform configuration of resilient pyramid-like projections that minimize watering requirements while enhancing vegetation establishment.

Must be a homogeneous matrix, and not comprised of layers, composites, or discontinuous materials, or otherwise loosely held together by stitched or glued netting.

Matrix stabilized against ultraviolet degradation and inert to chemicals normally encountered in natural soil environment.

The TRM should meet the following values:

Property	Test Method	Test Parameter	Units	Property Requirement
Mass Per Unit Area ¹	ASTM D-6566	Minimum	g/m ² (oz/yd ²)	250 (7.5)
Thickness ¹	ASTM D-6525	Minimum	mm (in)	6 (0.25)
Light Penetration ¹ (% Passing)	ASTM D-6567	Maximum	percent	35
Tensile Strength ¹	ASTM D-6818	Minimum	kN/m (lb/ft)	29 x 26 (2000 x 1800)
Tensile Elongation ¹	ASTM D-6818	Maximum	percent	50
Resiliency ¹	ASTM D-6524	Minimum	percent	70
Flexibility ^{2, 3}	ASTM D-6575	Maximum	mg-cm (in-lb)	225,00 (0.195)
UV Resistance ²	ASTM D-4355	Minimum	percent	90 at 1,000 hrs 90 at 3,000 hrs

Note:

- 1. Minimum Average Roll Value (MARV).**
- 2. Typical Value.**
- 3. A smaller value for flexibility denotes a more flexible material.**

Performance Properties: In a vegetated state, the TRM must demonstrate acceptable performance (as defined by the Engineer) when subjected to at least 0.5 hrs of continuous flow producing the following conditions.

Permissible velocity: 6.1 m/sec (20 ft/sec)

Permissible tractive force (shear stress): 575 Pa (12 psf)

Performance may be demonstrated by:

Flume testing at an independent facility under conditions similar to this project provided that the manufacturer can demonstrate that the material tested is functionally equivalent to the material being supplied. This may be demonstrated by providing index property test results (listed in 2.2.A.4) from a GAI-LAP accredited laboratory for both the tested and supplied materials.

A documented case history of successful performance (as defined by the Engineer) at an installation similar to this project where (documented) hydraulic forces met or exceeded the requirements listed above provided that the manufacturer can demonstrate that the case history material is functionally equivalent to the material being supplied. This may be demonstrated by providing index property test results (listed in 2.2.A.4) from a GAI-LAP accredited laboratory for both the case history and supplied materials.

END OF SECTION 02110

SECTION 02240

RIPRAP

PART 1 GENERAL

1.1 DESCRIPTION

- A. This work consists of supply and placement of rock riprap, filter stone, concrete revetment or other aggregate as protective covering along the side slopes, bases of channels, slopes around culverts and on embankments or such other places as may be indicated on the plans, as specified herein, or as directed by the engineer, or the Project Representative.

PART 2 PRODUCTS

2.1 RIPRAP GRADATION

- A. Furnish rock, which will consist of fieldstone or rough, unhewn quarry rock containing hard, durable, angular rock that is resistant to weathering and water action and free of organic or other unsuitable material. Do not use shale, rock with shale seams, or other fissured rock that may break into smaller pieces in the process of handling and placing. Incorporate the following gradation for riprap installations as shown in Table 1:

Table 1. DU Riprap Gradation

Riprap Class	Percent of total Weight Smaller Than Given Size						
	30"	24"	18"	12"	9"	6"	3"
Class I	100	100	100	100	100	35-80	0-20
Class II	100	100	100	50-75	10-50	0-10	
Class III	100	100	50-75	10-50	0-10		
Class IV	100	85-100	60-80	20-40		0-20	

PART 3 EXECUTION

3.1 GENERAL

- A. Riprap shall be placed by equipment capable of controlling the drop of the rock riprap. The maximum drop of the rock shall be three (3) feet. Pushing or rolling rocks over the geotextile will not be allowed. Placement will be in such a manner that the smaller will be uniformly distributed throughout the mass. Sufficient handwork shall be done to provide a neat and uniform surface, with the depth being as specified herein and as shown on the plans. The surface may not vary from the theoretical surface by more than 4" at any point for riprap unless otherwise specified.

- B. Install conserved and/or imported riprap according to the project drawings or as directed by the Project Representative.

PART 4 MEASUREMENT AND PAYMENT

4.1 GENERAL

- A. Shoreline Protection – Imported Riprap Placement over Geotextile Fabric will be measured and paid for per the Cubic yard (CY) in place, including geotextile fabric installation.

END OF SECTION 02240

SECTION 99999

EQUIPMENT

PART 1 GENERAL

1.1 DESCRIPTION

- A. This item shall consist of the specific equipment utilized on the MBSF wetland repair project, as approved by the Project Representative.
- B. Contractor's cost for mobilization, administration, bonding, insurance, and other costs shall be included in equipment hourly rates and shall not be paid as a separate item.

PART 2 PRODUCTS

2.1 HYDRAULIC EXCAVATOR Equipment

- A. Furnish a hydraulic excavator meeting the minimum requirements:
 - 1. Minimum Komatsu 130 Class or Cat 312 Class
 - 2. Tracked, crawler type
 - 3. Bucket: min 1 cubic yard capacity, equipped with hydraulic thumb
 - 4. Max undercarriage width 10 ft
 - 5. Minimum digging depth 18 ft
- B. Furnish a dump truck meeting the minimum requirements:
 - 1. Minimum 10 cubic yard capacity.
- C. Dozer minimum size Caterpillar D4, John Deere 550 or Other manufacture of comparable size.
- A. Vibratory soil compaction equipment Minimum Single Drum 2-3 ton

PART 3 EXECUTION

3.1 MAINTENANCE

- A. See Specification 01450 for washing equipment and mechanical leakage prevention.

PART 4 MEASUREMENT AND PAYMENT

4.1 EQUIPMENT

- A. Hydraulic Excavator, 1 Cubic Yard Minimum w/Thumb Attachment will be measured and paid by the hour (HOUR) of operation, including operator, equipment,

- materials, and incidentals required for the completion of the work. Equipment idle time will not be measured.
- B. Dump Truck, 10 Cubic Yard Capacity Minimum will be measured and paid by the hour (HOUR) of operation, including driver, equipment, materials, and incidentals required for the completion of the work. Equipment idle time will not be measured.
 - C. Utility truck and trailer will be measured and paid by the hour (HOUR) of operation, including driver, equipment, materials, and incidentals required for the completion of the work. Equipment idle time will not be measured.
 - D. Dozer Cat D4, JD 550 Minimum will be measured and paid by the hour (HOUR) of operation, including operator, equipment, materials, and incidentals required for the completion of the work. Equipment idle time will not be measured
 - E. Vibratory Soil Compaction Equipment minimum single drum 2-3 ton, will be measured and paid by the hour (HOUR) of operation, including operator, equipment, materials, and incidentals required for the completion of the work. Equipment idle time will not be measured

END OF SECTION 99999