Montana Fish, Wildlife & Parks

SPECIFICATIONS FOR WORK
TECHNICAL PROVISIONS

Incorporation of Montana Public Works Technical Specifications.

The Technical Specifications as found in Montana Public Works Standard Specifications (MPWSS), Sixth Edition, April 2010 and/or current Addendums or Revisions; are hereby incorporated by reference and made a part of this Contract:

Incorporation of Montana Fish, Wildlife & Parks Technical Specifications and Modifications to MPWSS Technical Specifications.

In addition to the MPWSS Technical Specifications are the following Montana Fish, Wildlife & Parks Technical Specifications (modifications to MPWSS Technical Specifications).

SECTION 01010 - Summary of Work
SECTION 01450 - Mobilization
SECTION 01750 - Final Cleanup
SECTION 01800 - Erosion and Sediment Control
SECTION 02110 - Geotextiles
SECTION 02207 - Aggregate Materials
SECTION 02240 - Rip Rap
SECTION 02936 - Seeding
SECTION 06150 - Wood Composite Lumber

SECTION 01010 - SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Owner and Contractor Responsibilities

B. Contractor use of site and premises.

C. Scope of Work

1.2 Owner and Contractor Responsibilities

A. Owners Responsibilities:

1. Responding to project questions
2. Final Acceptance and inspections.
3. Submittal and material review.

B. Contractors Responsibilities:

1. Quality control of work.
2. Completion of project as bid.
3. Survey and Layout of Piers and Pathway.
4. Coordination with FWP Personnel

1.3 CONTRACTOR USE OF SITE

A. Limit use of site to allow:

1. Coordinate with FWP to limit public usage in work areas as necessary.

1.3 SCOPE OF WORK

A. Project Objective: The project generally includes installation of three fishing platforms supported by helical piers. The project also includes construction of a small parking area, access trail, and rip rap aprons. An embankment will be constructed to build a trail the eastern fishing platform.

B. Scope of Work:

Work includes the following but is not limited to the general description contained herein:

1. Mobilization

- General: This bid item shall include the costs associated with mobilizing to the project site, insurance, bonding, permitting, and submittals.
- Work Included:
  - All labor, tools, equipment, materials, royalties, and incidentals needed to complete the work as specified;
  - Transport and set up all equipment, materials, and other items needed to complete the project;
  - All permits, coordination, and compliance inspections required for the work;
  - Installation of all BMP's and BMP plans;
  - Insurance and bonding;
  - Prepare and provide submittals, construction schedule, and all other paperwork required by the contract documents prior to construction startup.

- Measurement: No measurement shall be taken for this item.

- Payment: Payment shall be by the price bid for the lump sum bid item listed in the proposal on the schedule shown in Section 01450.

2. Helical Piers

- General: This bid item shall include the costs associated with installation of the helical piers for the fishing structures.

- Work Included:
  - Coordination and scheduling of helical pier contractor;
  - Layout of helical piers;
  - Furnishing and installing helical piers as shown on plans;
  - Installation can occur through ice or on open water;
  - Furnishing and installation of brackets, saddles, and sleeves required to attach bridge timbers;
  - Includes providing stamped drawings for brackets, saddles, and sleeves to install bridge timbers;
  - Ensuring location and angle are within tolerances;
  - Submittals to ensure material meets requirements
  - Ensuring and testing each pile meets or exceeds minimum bearing capacity.

- Measurement: Measurement shall be taken per helical pier installed according to plans and specifications.

- Payment: Payment shall be by the price bid per "Helical Pier" installed as listed in the proposal.

3. Install Bridge Timbers

- General: This bid item shall include the installation of the FWP supplied bridge timbers on the helical piers as shown on the plans.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Transporting bridge timbers from Region 6 headquarters in Glasgow, MT, at 1 Airport Road to the project site;
  - Installation of bridge timbers as shown in plans and drawings provided by helical piers contractor;
  - Submittals to ensure material meets requirements
  - Furnishing and installing of all additional support members required for the installation of the composite decking as shown in the plans;
  - Furnishing and installation of treated timber abutments as shown in the plans;

- Measurement: Measurement shall be per bridge timber installed.

- Payment: Payment shall be by the unit price bid for each bridge timber installed as listed in the proposal.

4. Composite Pier 2x6 Decking

- General: This bid item shall include furnishing and installing the 2x6 composite decking on each fishing platform.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Furnishing and installing of 2x6 composite decking;
  - Ensuring proper fasteners and materials are being used throughout project as shown in plans and Section 06150.

- Submittals to ensure material meets requirements

- Measurement: Measurement shall be per square foot of composite decking installed. Measurement shall be rounded to the nearest square foot.

- Payment: Payment shall be by the price bid for the square foot as listed in the proposal.

5. Crushed Stone Surfacing

- General: This bid item shall include installation of 4" lift of crushed stone surfacing on all ADA compliant pathways.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Furnishing and Installing 4" lift of crushed stone surfacing in ADA parking space and pathway to east platform;
  - Compaction of crushed stone surfacing to meet ADA requirements;
  - Submittals to ensure material meets requirements listed in Section 02207;

- Measurement: Measurement shall be per square yard of crushed stone surfacing installed. Measurement shall be rounded to the nearest square yard.

- Payment: Payment shall be by the unit price bid for the square yard of "Crushed Stone Surfacing" as listed in the proposal.

6. Crushed Base Course

- General: This bid item shall include installation of 6" lift of crushed base course on all constructed pathways and parking areas.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Furnishing and Installing 6" lift of crushed base course;
  - Grading, watering, and dust control;

- Compaction of crushed stone surfacing to 95% of modified proctor density;
- Submittals to ensure material meets requirements listed in Section 02207;

- Measurement: Measurement shall be per square yard of crushed base course installed. Measurement shall be rounded to the nearest square yard.
- Payment: Payment shall be by the unit price bid for the square yard of "Crushed Base Course" as listed in the proposal.

7. Unclassified Excavation

- General: This bid item shall include excavation required for the construction of the ADA accessible pathway to the east fishing platform.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - All excavation required to meet the ADA requirements of trails.
  - Removal of existing bridge timbers on the north and west fishing platforms, these will be inclusive to this bid item and not measured for payment;
  - Salvaging of material to be used as embankment;
  - Excavating slopes to ensure no slopes are greater than 2:1;
  - Survey and layout of pathway grades;
  -
- Measurement: Measurement shall be per cubic yard of unclassified excavation. Measurement shall be rounded to the nearest cubic yard.

- Payment: Payment shall be by the unit price bid for the cubic yard of "Unclassified Excavation" as listed in the proposal.

8. Embankment

- General: This bid item shall include construction of embankment required to build the east access pathway. The work will include embankment for the access path.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - All embankment installed to meet ADA requirements;
  - Grading, compaction, and preparation of existing soils and installed embankment for the base course;
  - Preparing and sorting material to be used from Unclassified Exacavtion;
  - No material is to be imported into the project site unless approved by the project manager;
  - Salvaging and placing the current stockpiled materials on site;
  - Survey and layout of pathway grades;
  -
- Measurement: Measurement shall be per cubic yard of Embankment Installed. Measurement shall be rounded to the nearest cubic yard.

- Payment: Payment shall be by the unit price bid for the cubic yard of "Embankment" as listed in the proposal.

9. Class II Rip Rap

- General: This bid item shall include furnishing and installing class II rip rap as shown on the plans.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Furnishing and Installing Class II rip rap.
  - Furnishing and Installing non-woven geotextile underneath rip rap as shown in the plans.
  - Material submittals for fabric and rip rap.

- Measurement: Measurement shall be per cubic yard of Class II Rip Rap installed. Measurement shall be to the nearest cubic yard.
- Payment: Payment shall be by the price bid per cubic yard of Class II Rip Rap as listed in the proposal.

10. Revegetation

- General: This bid item shall include salvaging topsoil, seeding,

fertilizer, and erosion control blanket installed.

- Work Included:
  - All labor, tools, equipment, materials, and incidentals needed to complete the work as specified;
  - Stripping and salvaging existing top soil;
  - Seeding and fertilizing all areas disturbed by construction according to Section 02936;
  - Installation of erosion control blankets on all slopes greater than 3:1 according to Section 02936;
  - Material submittals for seed, fertilizer, and erosion control blanket;

- Measurement: No direct measurement shall be taken for this item.
- Payment: Payment shall be by the price bid for the lump sum of "Revegetation" as listed in the proposal.

C. CONTRACTS:

All work shall be done under one general contract provided by the Montana Department of Fish Wildlife and Parks Design and Construction.

D. PROPOSAL:

1. Proposal shall include all costs to complete the work as described in the plans and specifications, utility locates, required insurance costs and 1% MDOR Contractor Gross Receipts Tax of 1%.

END OF SECTION

SECTION 01450

MOBILIZATION/DEMOBILIZATION

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This item shall consist of the prepatory work and operations necessary performed by the Contractor for the movement of personnel, equipment, supplies, and incidentals to and from the work site. The work includes those actions necessary for obtaining necessary permits required for mobilization; for the establishment of all offices and facilities necessary to work on the project; for premiums on contract bonds; for insurance for the contract; and for other work on the various items on the project site. Mobilization costs for subcontracted work shall be considered to be included.

B. Contractor's cost for administration, bonding, insurance, and site documents shall be included in mobilization and shall not be paid as a separate item.

C. All equipment moved to the project sites shall be in good mechanical condition and free of fuel, oil, lubrication, or other fuel leaks. The Contractor shall immediately remove any equipment potentially or actually discharging environmentally damaging fluids.

D. All equipment moved to the project sites shall be thoroughly cleaned before it is brought to the sites to prevent the introduction of weed seeds. Equipment removed fro the sites may not be returned to the sites again until it is thoroughly cleaned again.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. There will be no direct measurement of this item.

4.2 PAYMENT

B. Partial payments for mobilization/demobilization will be made based on the lump sum bid price as follows:

- 25% of the amount bid for mobilization/demobilization when the Contractor has moved on-site and begun construction activities.
- 50% of the amount bid for mobilization/demobilization when 25% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 75% of the amount bid for mobilization/demobilization when 50% of the contract amount (exclusive mobilization/demobilization) has been completed.
- 100% of the amount bid for mobilization/demobilization when 75% of the contract amount (exclusive mobilization/demobilization) has been completed.

END OF SECTION 01450

SECTION 01750

FINAL CLEANUP

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of final cleanup of the project site prior to final acceptance.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 CONTRACTOR RESPONSIBILITES

The contractor shall be responsible for final clean up at the end of the project to a level satisfactory to the owner. All construction debris, no mater how small, shall be collected and removed from the site. All wheel ruts shall be filled in and be leveled to match the adjacent grade and material. Re-seeding or re-sodding, or other re-surfacing may be necessary to repair any construction related impacts or damage.

All survey markings, stakes, temporary paint marks, flagging and other devices shall be removed regardless of who installed them. All excess pavement, concrete, gravel, soil, or other construction materials not intended for permanent use shall be removed.

All final slopes shall be dressed manually to remove woody debris, accumulated trash and oversized material. Any new slope or topsoil surfaces shall be hand raked to provide a uniform appearance. The contractor shall dress all gravel, pavement and concrete edges to eliminate abrupt edges and provide a smooth transition. All construction related temporary sediment control devices shall be removed as soon as practical.

PART 4 MEASUREMENT AND PAYMENT

4.1 PAYMENT

Unless specifically noted otherwise, all final cleanup work shall be incidental to other work items in the contract and no separate payment shall be made.

END OF SECTION 01750

SECTION 01800

EROSION AND SEDIMENT CONTROL

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, constructing, and maintaining permanent and temporary erosion control and sediment control measures as shown on the project drawings and/or project related construction permits, or as directed by the Owner during construction as BMPs are needed.

PART 2 PRODUCTS

2.1 GENERAL

A. Temporary and erosion control products utilized include but are not limited to backfill material; berms; brush barriers; erosion control blankets, bales, wattles, logs, rolls; erosion control culvert pipe; detention basins; fertilizer; geotextile; mulch; plastic lining; riprap; sandbags; seed; silt fence; and water.

2.2 EROSION CONTROL WATTLES

A. Where designated, provide a sediment retention product made from straw and coconut fiber reinforced with a 100% bio-degradable netting. Use wood stakes to secure sediment retention product in place, spacing per the manufacturer's recommendations. An acceptable product is *Sediment Stop*, manufactured by *North American Green*, or approved equal.

2.2 EROSION CONTROL BLANKETS

A. Where designated, provide a sediment retention product made from straw and coconut fiber reinforced with a 100% bio-degradable netting. Use wood stakes to secure sediment retention product in place, spacing per the manufacturer's recommendations. An acceptable product is *BioNet® S150BN™*, manufactured by *North American Green*, or approved equal.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide permanent and temporary erosion control measures to minimize erosion and sedimentation during and after construction according to the contract erosion control plan, environmental permits, and as directed by the Project Representative. These

erosion control measures shall be designed, implemented, and maintained by the Contractor in accordance with Best Management Practices (BMPs) to control erosion and sediment release from the work site.

B. Install permanent and temporary erosion control measures according to the Storm Water Pollution Prevention Plan (SWPPP), if applicable, approved construction permits, and erosion control drawings.

C. When erosion control measures are not functioning as intended, immediately take corrective action.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT AND PAYMENT

A. Unless specifically noted otherwise, Erosion and Sediment controls shall be incidental to other work items in the contract and no separate payment shall be made.

END OF SECTION 01800

SECTION 02110

GEOTEXTILES

PART 1 GENERAL

1.1 DESCRIPTION

Add the following:

This work also includes the installation of high-survivability, non-woven geotextile beneath gravel surfacing throughout the parking area.

1.2 REFERENCES

C. Delete this section and add the following:

Provide geotextile meeting the strength requirements from Table 1.

Table 1. High Survivability, Non-Woven Geotextile Requirements

	TEST METHODS	UNITS	REQUIREMENTS
Grab Elongation	ASTM D 4632	%	>50
Grab Strength	ASTM D 4632	lbs	>200
Sewn Seam Strength	ASTM D 4632	lbs	>180
Tear Strength	ASTM D 4533	lbs	>80
Puncture Strength	ASTM D 4833	lbs	>80
Permittivity	ASTM D 4491	Sec^{-1}	≥0.02
Apparent Opening Size	ASTM D 4751	Sieve Size (in)	#30 (≤0.024)
Ultraviolet Stability (Retained Strength)	ASTM D 4355	%	≥50 after 500 hours of exposure

PART 2 MEASUREMENT AND PAYMENT

2.1 MEASUREMENT

A. No Measurement will be taken for this item.

2.2 PAYMENT

A. Payment will be included in the unit cost for installation of rip rap.

END OF SECTION 02110

SECTION 02207

AGGREGATE MATERIALS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Related Sections

B. Submittals

C. Aggregate materials

D. Source quality control

E. Stockpiling

F. Stockpile clean up

1.2 RELATED SECTIONS

A. Section 02211 - Rough Grading.

1.3 SUBMITTALS

A. Submit laboratory test results for each type of aggregate material 5 days prior to installation, for Project Manager approval.

1. Each aggregate material used as a base or surfacing material shall have as a minimum the following laboratory tests completed:

I. Sieve Analysis
II. Proctor
III. Atterberg Limit Test (crushed top surfacing only)
VI. Fracture Analysis (crushed materials only)

B. Materials Source: Submit name of imported materials suppliers. Provide materials from same source throughout the work.

C. Change of source requires Engineer's approval.

PART 2 PRODUCTS

2.1 AGGREGATE MATERIALS

A. Crushed Stone Surfacing, 4" lift of Angular or crushed stone, free of shale, clay, friable material and debris; graded in accordance with AASHTO T-11 and T-27, within the following limits:

TABLE OF GRADATIONS
Percentage of Weights Passing Square Mesh Sieves

	Grade 1
5/8 Inch Sieve	75-100%
3/8 Inch Sieve	55-100%
No. 4 Sieve	35-60%
No. 16 Sieve	15-35%
No. 40 Sieve	10-25%
No. 200 Sieve	5-10%

1. Material shall be evenly graded.
2. 5% oversized material is permitted.

B. Crushed Base Course, 3" (-) free of shale, clay, friable material and debris; graded in accordance with AASHTO T-11 and T-27, within the following limits:

TABLE OF GRADATIONS
Percentage of Weights Passing Square Mesh Sieves

	Grade 1
3 Inch Sieve	95-100%
No. 4 Sieve	35-65%
No. 40 Sieve	10-30%
No. 200 Sieve	2-10%

1. Material shall be evenly graded.
2. 5% oversized material is permitted.

The aggregate for all grades, including added binder or filler, shall meet the following supplemental requirements.

(1) Dust Ration. The portion passing the No. 200 Sieve shall not be greater than 2/3 of the portion passing the No. 40 Sieve.

(2) No intermediate sizes for cover aggregate, or for other purposes, shall be removed from the material in the course of production unless authorized in writing by the Architect/Engineer.

B. Embankment, shall be material salvaged from "UNCLASSIFIED EXCAVATION", all deleterious materials shall be removed from excavated material. Topsoil shall be separated from embankment and used to cover disturbed soils. Embankment shall be free of organic materials.

2.2 SOURCE QUALITY CONTROL

A. Field inspection and testing will be the responsibility of the contractor.

B. Tests and analysis of aggregate material will be performed in accordance with AASHTO T-11 and T-27 and as specified in this Section.

C. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site at locations approved by Engineer.

B. Separate differing materials with dividers or stockpile apart to prevent mixing.

C. Stockpile in sufficient quantities to meet project schedule and requirements.

C. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean, neat condition reseed as necessary. Grade site surface to prevent freestanding surface water.

PART 4 MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Crushed Stone Surfacing– Measurement will be taken by the square yard of 4" surfacing installed.
B. Crushed Base Course– Measurement will be taken by the square yard of 6" base course installed.
C. Embankment– Measurement will be taken by the cubic yard of embankment material installed.

4.2 PAYMENT

A. Payment will be made under the unit price included in the proposal for "CRUSHED STONE SURFACING". Include all costs incidental to the placement of this item in the unit price.
B. Payment will be made under the unit price included in the proposal for "CRUSHED BASE COURSE". Include all costs incidental to the placement of this item in the unit price.
C. Payment will be made under the unit price included in the proposal for "EMBANKMENT". Include all costs incidental to the placement of this item in the unit price.

SECTION 02240

RIPRAP

Added Section.

PART 1 GENERAL

1.1 DESCRIPTION

A. This work consists of furnishing, placing, and finishing riprap rock placement at designated areas on the project drawings.

PART 2 PRODUCTS

2.1 RIPRAP GRADATION

A. Furnish 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 fissle or 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. Riprap Gradation

Percent of Rock by Mass	Approximate Cubic Dimension (inches)
<10	16 to 24
<50	6 to 12
<10	0 to 6

PART 3 EXECUTION

3.1 GENERAL

A. Place riprap to form a well-graded mass to its full thickness in operation to avoid displacing the underlying geotextile or other material. Do not place riprap material by methods that cause segregation or damage to the prepared surface. Place or rearrange individual rocks by mechanical or hand methods to obtain a dense uniform blanket with a reasonably smooth surface.

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 MEASUREMENT

A. Measurement will be taken by the cubic yard of rip rap placed according to the plans or as directed by the project manager. Measurement will not be taken for rip rap installed not according to the plans or as directed by the project manager.

3.2 Payment

B. Payment will be at the unit price listed in the proposal for Class II Rip rap. Payment will be made for completed work.

END OF SECTION 02240

SECTION 02936

SEEDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. References
B. Definitions
C. Quality assurance
D. Regulatory requirements
E. Delivery storage and handling of seed and fertilizer
F. Coordination
G. Seed mixture
H. Soil materials
I. Fertilizer
J. Examination of soil base
K. Substrate preparation
L. Placing topsoil
M. Fertilizing
N. Seeding
O. Erosion Control
P. Maintenance

1.2 RELATED SECTIONS

A. Section 02205 - Soil Materials

B. Section 02923 – Landscape Grading

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Grassed Areas:

1. Basis of Measurement: Not measured. Lump Sum. Seed and Fertilize only those areas disturbed by construction.
2. Basis of Payment: Lump Sum. Includes preparation of topsoil and seeding.

1.4 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.5 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Knapweed, Horsetail, Morning

Glory, Rush Grass, Mustard, Leafy Spurge, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel and Brome Grass.

1.6 QUALITY ASSURANCE

A. If not supplied by the Owner, provide seed mixture in containers showing percentage of pure live seed, seed mix, year of production, net weight, date of packaging, and location of packaging. Provide weed free certification statement from seed supplier.

1.7 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer composition.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products such that they are stored in a weatherproof, dry, rodent free location in such a manner that it will not be damaged or its usefulness impaired.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 COORDINATION

A. Coordinate work under provisions of Section 01039.

1.10 SEED MIXTURE (By Weight) (if not supplied by Owner)

A.

Native Grass Seed Shall Be:	% By Weight
Western Wheatgrass*	30%
**substitute Thickspike for sandy soils*	
Streambank Wheatgrass	20%
Hard Fescue*	20%
**substitute Green Needlegrass for silty and clay soils*	
Slender Wheatgrass	15%
Smooth Bromegrass	15% to 10%
-others-	+/-10%

B. All seed shall comply with and be labeled in accordance with the Montana Seed Law. Seed shall have been grown in the North American Continent, in an area having climatic conditions and elevation similar to area of use. All seed should be of standard grade. The

seed may be rejected by the Project Manager if the point of origin and production is not suitable.

1.11 SOIL MATERIALS

A. Topsoil: Excavated from site and free of excess vegetation.

1.12 FERTILIZER

A. Fertilizer: Recommended for native grass in proportions to meet requirements for actual nitrogen and phosphate as outlined in Section 2.4.A.

B. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

PART 2 EXECUTION

2.1 EXAMINATION

A. Verify substrate base has been contoured and compacted.

B. If there is not enough topsoil for total area, the Project Manager shall prioritize areas of topsoil.

2.2 SUBSTRATE PREPARATION

A. (See Section 02923)

2.3 PLACING TOPSOIL

A. (See Section 02923)

2.4 FERTILIZING

A. Furnish fertilizer at the rate of 30 pounds actual nitrogen and phosphate per acre. Fertilizer shall be evenly applied to native grass areas which are to receive seed at the rate of 30 pounds of actual nitrogen and phosphate per acre and worked lightly into the top one inch of soil in such a way as to make a finely pulverized seedbed approximately 48 hours prior to seeding. This operation may be accomplished by broadcast and hand raking or drilling with a fertilizer drill.

B. Apply after smooth raking of topsoil.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Lightly water to aid the dissipation of fertilizer.

2.5 SEEDING

A. Grass seed shall be sown at the rate of 25 pounds pure live seed per acre on native grass areas using broadcast methods. Seed shall be lightly tilled by rake or other means into first inch of topsoil depth. Solid rock embankments may be left exposed where erosion will not become an issue. The Project Manager shall be the final authority in deciding where seeding shall occur.

B. Planting Season: Fall, after September 15th or spring prior to June 30.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods. Wind speed shall not exceed 5 mph, or Contractor shall re-seed at his own expense.

D. All disturbed areas shall be fertilized and seeded unless otherwise directed.

2.6 EROSION CONTROL

A. Coverage of seeded areas with weed free straw crimped (pushed into topsoil) by square bladed tool such as square shovel or ice scraper shall be performed where exposed cut slopes do not exceed 3 horizontal to1 vertical. This shall be performed over all disturbed areas not being graveled as specified.

B. For areas of cut slope exceeding 3 horizontal to 1 vertical (steep slopes), Contractor shall apply bio-degradable erosion control blankets to prevent washout. Prepare soil free of large clods and stones, do not over compact. Seed and fertilizer shall be applied before installing erosion control material.

Where erosion control material is required, follow manufacturer's installation recommendations or the following whichever is greater. Secure erosion control material at top by keying at least 12" of material below grade at least 12 " deep and secure with staples, spacing staples every 18" minimum. The steeper the slope, the closer the staples should be placed. Apply material by unrolling it down the slope and terminate at level area. At bottom of slope, bury 6 " of material under soil and secure with staples. Overlap all seams at least 3 ".

PART 3 MEASUREMENT AND PAYMENT

3.1 MEASUREMENT

A. Placing conserved topsoil will not be measured for payment and is considered incidental to other work items in this Contract. Distributing seed, fertilizer, and erosion control blanket will not be measured for payment.

3.2 PAYMENT

A. Payment will be made at the lump sum price given for the revegetation as listed in the proposal.

END OF SECTION

SECTION 06150

WOOD DECKING
(WOOD COMPOSITE LUMBER)

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Wood Composite Lumber, consisting of the following:

1. Wood plastic composite made primarily from equal parts of claimed hardwood sawdust and reclaimed/recycled polyethylene plastic, not used for framing or structural members.
2. Fasteners.

B. Related Sections:
1. Division 6 Section: Rough Carpentry.

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A123 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
3. ASTM C177 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
4. ASTM D143 Standard Methods of Testing Small Clear Specimens of Timber.
5. ASTM D198 Standard Test Methods of Static Tests of Lumber in Structural Sizes.
6. ASTM D1037 Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
7. ASTM D1413 Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.
8. ASTM D1761 Standard Test Methods for Mechanical Fasteners in Wood.
9. ASTM D1929 Standard Test Method for Determining Ignition Temperature of Plastics.
10. ASTM D2047 Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
11. ASTM D2394 Standard Method for Simulated Service Testing of Wood and Wood-Base Finish Flooring.

12. ASTM D2395 Standard Test Methods for Specific Gravity of Wood and Wood-Based Materials.
13. ASTM D4761 Standard Test Methods for Mechanical Properties of Lumber and Wood-Base Structural Material.
14. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.
15. ASTM F1667 Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. Federal Specifications (FS):

1. FS FF-S-111D Screws, Wood.
2. FF-S-325 Expansion Shields.

C. American National Standards Institute (ANSI):

1. ANSI B18.2.1 Square and Hex Bolts and Screws, Inch Series.

D. International Conference of Building Officials (ICBO):

1. ICBO Report ER-5747 Plastics (188) - Trex Wood-Polymer Composite Lumber.
2. Uniform Building Code, 1997.
3. International Building Code, 2000.
4. International Residential Code, 2000.

E. National Evaluation Service, Inc., Reports (NER):

1. NER-508 Trex Composite Lumber.

F. Building Officials and Code Administrators (BOCA):

1. BOCA National Building Code, 1999.

G. Southern Building Code Congress International (SBCCI):

1. Standard Building Code, 1999.

H. Trex Company:

1. Trex Contractors Handbook.
2. Trex Decking Span Chart.

I. U.S. Environmental Protection Agency (EPA):

1. EPA Toxicity Test TCLP1113.

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Structural Properties: Ultimate Value/Design Value:

a. Compression Parallel to Length (ASTM D198): 1806 psi/550 psi.
b. Compression Perpendicular to Length (ASTM D143): 1944 psi/625 psi.
c. Tensile Strength (ASTM D198): 854 psi/250 psi.
d. Shear Strength (ASTM D143): 561 psi/200 psi.
e. Modulus of Rupture (ASTM D4761): 1423 psi/250 psi.
f. Modulus of Elasticity (ASTM D4761): 175,000 psi/100,000 psi.

1.04 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.

B. Product Data: Submit manufacturer’s product data and installation instructions including details of anchors, hardware and fasteners.

C. Samples: Submit selection and verification samples of decking in color and thickness as selected by Architect.

1. Color samples shall be faded by exposure to weathering.

D. Quality Assurance/Control Submittals: Submit the following:

1. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

E. Closeout Submittals: Submit the following:

1. Warranty documents specified herein.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Utilize an installer having demonstrated experience on projects of similar size and complexity.

B. Regulatory Requirements and Approvals:

1. The National Evaluation Service Committee:

a. BOCA National Building Code, 1999.
b. Standard Building Code, 1999.
c. International Building Code, 2000.
d. International Residential Code, 2000, subject to Report No. NER-508 Conditions of Use.

2. The International Conference of Building Officials:

a. Uniform Building Code, 1997.
b. International Building Code, 2000.
c. International Residential Code, 2000, subject to Report No. ICBO ES ER-5747 Conditions of Use.

1.06 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirement Section.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged palletized units with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

1. Immediately upon delivery to jobsite, place materials in area protected from weather.
2. Take special care when handling.
3. Store composite lumber decking on a flat surface.
4. When stacking palleted units, start supports at each end and spaced 24" (610 mm) oc.
5. Line up supports vertically. Specifier Note: Coordinate article below with Conditions of the Contract and with Division 1 Closeout

Submittals (Warranty) Section. Use this article to require special or extended warranty or bond covering the work of this section.

1.07 WARRANTY

A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under contract documents.

1. Provide manufacturer's fully transferable limited warranty against splintering, splitting, checking, rot, decay and termite damage. Specifier Note: Coordinate subparagraph below with manufacturer's warranty requirements.
2. Warranty Period: 10 years beginning with date of substantial completion.

PART 2 PRODUCTS

2.01 WOOD COMPOSITE LUMBER

A. Manufacturer: Trex Company.

1. Contact: 160 Exeter Drive, Winchester, VA 22603-8605; Telephone: (800) 289-8739; Fax: (540) 542-6890; E-mail: marketing@trex.com; website: www.trex.com. B. Proprietary Products/Systems: Wood composite lumber, including the following: Specifier Note: Composite material is manufactured by a continuous extrusion process per manufacturer's quality control manual, producing comparable solid sawn lumber-sized members up to a nominal thickness of 6" (152 mm) and a nominal depth (width) of 10" (254 mm).
2. Trex Wood Composite Lumber Decking:

    a. Material Description: Solid composite material consists of approximately 50% wood fibers by weight with the remainder of the material being a thermoplastic polymer plastic material.
    b. Size(s): [Specify size(s) of material required.].
    c. Color: [Natural] [Winchester Grey] [Woodland Brown] [Madeira].
    d. Flash Point (ASTM D1929): > 698 degrees F (370 degrees C).

e. Flammability (ASTM E84): Flamespread index 80, smoke developed index 285.
f. Auto Flammability: > 743 degrees F (395 degrees C).
g. Solubility in Water: Negligible.
h. Toxicity (EPA Test TCLP1113): Passes.
i. Abrasion Resistance (ASTM D2394): 0.01" (0.25 mm) wear/1000 revs.
j. Hardness (ASTM D143): 1124 lb (510 kg).
k. Self-Ignition Temperature (ASTM D1929): 743 degrees F (395 degrees C).
l. Flash Ignition Temperature (ASTM D1929): 698 degrees F (370 degrees C).
m. Flamespread (ASTM E84): 80.
n. Water Absorption (sanded surface) (ASTM D1037, 24 hour immersion): 4.3%.
o. Water Absorption (unsanded surface)(ASTM D1037, 24 hour immersion): 1.7%.
p. Expansion/Contraction Properties: Thermal Typical Trex Wood Polymer lumber values for Coefficient of Thermal Expansion/Contraction (36" (914 mm) long samples) Width: 35.2 × 10-6 to 42.7 × 10-6, Length: 16.1 × 10-6 to 19.2 × 10-6.
q. Expansion/Contraction Properties: Moisture typical Trex Wood Polymer lumber values for Long Term Water Immersion (36" (914 mm) long samples): Width -3%. Constant High Humidity (6" (152 mm) long samples): Width -1%.
r. Nail Withdrawal, 8d common wire nail (ASTM D1761): 163 lb/in (198 N/m).
s. Screw Withdrawal, No. 10 wood screw (ASTM D1761): 558 lb/in (679 N/m).
t. Static Coefficient of Friction - Dry (ASTM D2047): 0.53/0.55.
u. Static Coefficient of Friction - Dry (ASTM D1679): 0.59/0.70.
v. Static Coefficient of Friction - Wet (ASTM D1679): 0.70/0.75.
w. Fungus Resistance (White/Brown Rot) (ASTM D1413): Rating = No decay.
x. Termite Resistance (AWPAE1-72): Rating = 9.6.
y. Specific Gravity (typical) (ASTM D2395): 0.91 - 0.95.
z. Thermal Conductivity (ASTM C177): 1.57 Btu-in/hr-ft@ 85 degrees F. Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions need to be approved by Project Engineer.

2.03 ACCESSORIES

A. Hardware: Provide all necessary nails, spikes, screws, clips and bolts required for proper installation of wood composite lumber decking. Sizes and quantities as required by code authority having jurisdiction, unless more stringent requirements specified elsewhere.

1. Bolts, Exterior Use:
   a. Material Standard: Comply with ASTM A307, with standard washers.
   b. Finish: Galvanized, ASTM A123.
   c. Size: Diameter less than or equal to 1/2" (12.7 mm).
2. Lag Screws:
   a. Material Standard: Comply with ANSI B18.2.1.
   b. Finish: Hot dipped galvanized for exterior use.
3. Expansion Shields:
   a. Material Standard: Comply with Fed Spec. FF-S-325, Type 1, Group III, Self-drilling.
4. Nails, General:
   a. Material Standard: Comply with ASTM F1667.
   b. Type: Common unless otherwise indicated.
   c. Finish: Hot dipped galvanized for exterior use.
   d. Size: Nails shall have a diameter less than or equal to 16d common wire [0.162" (4 mm)] diameter.
5. Wood Screws:
   a. Material Standard: Comply with FS FF-S-111.
   b. Size: Screws shall have a diameter less than or equal to No. 12 [0.216" (5.5 mm)] diameter.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Comply with the instructions and recommendations of the wood composite lumber manufacturer.

1. Comply with the methods detailed in manufacturer's Trex Contractors Handbook. Specifier Note: Specify actions to physically determine that conditions are acceptable to receive primary products of the section.

3.02 EXAMINATION

A. Site Verification of Conditions:

1. Verify that site conditions are acceptable for installation of wood composite lumber.

2. Do not proceed with installation of wood composite lumber until unacceptable conditions are corrected.
Specifier Note: Coordinate article below with manufacturer's recommended installation requirements.

3.03 INSTALLATION

A. Decking shall be spaced a maximum of ½" apart perpendicular to travel.

B. There shall be a smooth transition from decking to access path with no more than ½" difference.

C. Framing:

1. Erect framing true, plumb and level.
2. Provide temporary bracing as required to maintain lines and levels until permanent members are in place.
3. Install miscellaneous connectors, anchors and accessories as indicated and required for a complete installation.

E. Gapping:

1. Ensure boards are gapped end to end and width to width as described in the Trex Contractors Handbook.
2. Use manufacturer's gapping guidelines to calculate end spacing.
3. Work in which board is incorrectly gapped will be rejected.
Specifier Note: Manufacturer's span charts are for decking installed perpendicular to the joists. When installing decking at a 45 degree angle to the joist, joist spacing must be reduced by a minimum of 4" (102 mm). When using Trex as stair treads, the minimum size allowed is 2 × 6 and the maximum center-to-center spacing between joists is 12" (305 mm).

F. Spans:

1. Ensure decking spans do not exceed the requirements of the Trex Decking Span Chart.
2. Work in which boards are incorrectly spanned will be rejected.

3.04 CLEANING

A. Comply with cleaning instructions as described in the Trex Contractors Handbook. Specifier Note: Specify provisions for protecting work after installation but prior to acceptance by the owner. Coordinate article below with Division 1 Execution Requirements Section.

3.05 PROTECTION

A. Protect installed work from damage due to subsequent construction activity on the site.

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Measurement shall be taken by the square foot of 2x6 composite decking installed.

4.02 PAYMENT

A. Payment will be made at the unit price listed in the proposal for the composite decking installed.

END OF SECTION