

Croxton Ditch Improvement  
Lake James Association  
February 28, 2011

SPECIAL PROVISIONS

TABLE OF CONTENTS

CERTIFICATIONS

DIVISION I – GENERAL REQUIREMENTS AND COVENANTS

Note: Division 1 sections included in this document are suggested additions to Division 1 sections that may be developed by the Lake James Association or its partners.

DIVISION II – SPECIAL SPECIFICATIONS

APPENDIX A – PERMITS

CERTIFICATIONS

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Indiana.

Signature: \_\_\_\_\_

Typed or Printed Name: Andrew R. Selle

Date \_\_\_\_\_

Reg. No.: XXX

## Division I – General Requirements and Covenants

Note: Division 1 sections included in this document are suggested additions to Division 1 sections developed by the Lake James Association (the Owner) or their partners The City of Angola that specify the contract and other terms for the project. These sections should not be considered to comprise all General Requirements and Covenants.

### 1.1. Reference Documentation

- a. Reference Documentation shall be the latest edition, including amendments and published updates, issued prior to the date of advertisement for bids or the date of request for quotations, of the following:
  - i. Cities of Angola Ordinances
  - ii. Permits and Conditions Issued by City, County, and State Agencies

### 1.2. Standard Specifications

- a. Standard Specifications shall be the latest edition, including amendments and published updates, issued prior to the date of advertisement for bids or the date of request for quotations. Referenced sections of the Standard Specifications will be identified explicitly in the Sections that follow. The Standard Specifications include:
  - i. Indiana Department of Transportation (INDOT) Standard Specifications for Construction.
- b. For the purposes of this contract, terms that appear in INDOT shall be defined as indicated below:
  - i. 'Department' is redefined as 'Owner'.
  - ii. 'Engineer' is redefined as 'Owner'. For certain designated technical tasks, Engineer shall also refer 'Owner's Representative', designated below.
  - iii. 'Highway' and 'Right-of-Way' is redefined as 'Project Site', insofar as the reference to highway and right-of-way refer to a delimited site under construction.

### 1.3. Owner and Easements

- a. The Lake James Association and the City of Angola are designated as the Owner. All work shall be located on easements to be provided by the Owner. The contractor shall confine his operations at all times within the limits of the easements. Any repairs or restoration outside the easement limits, required due to the contractor's carelessness, shall be made with no compensation allowed.
- b. The Contractor shall coordinate any access to the work sites with the Owner and the Owner's representative.
- c. The Contractor shall coordinate any staging, parking and access to the work sites with the Owner. The Owner will coordinate access issues with private landowners.

### 1.4. Public Convenience and Safety

- a. INDOT Sections 107.08, Public Convenience and Safety, and 107.12, Traffic Control Devices, shall apply to this project. In addition:
  - i. The Contractor is advised that the project is located within numerous parcels of privately held property, each with negotiated easements for access. The utmost care will be taken to avoid conflict and inconvenience of adjacent residents during construction
  - ii. The Contractor shall employ extraordinary measures to ensure safety of the public and to ensure unrestricted vehicle ingress and egress of landowners. Required Traffic Control measures are further described in Section 2.2, Traffic Control.
  - iii. The Contractor shall not use any motor vehicle equipment on this Project having an obstructed view to the rear unless:
    - 1. The vehicle has a reverse signal alarm which is audible above the surrounding noise level; or
    - 2. The vehicle is backed up only when an observer signals that it is safe to do so.
    - 3. A **\$50.00 penalty (per incident)** will be assessed against the Contractor each time failure to comply with these backup requirements is observed on the Project site.
    - 4. None of the penalty(ies) listed above shall be considered by the Contractor as allowance of noncompliance incidents of these backup requirements on this Project. The Contractor is advised that at any time the Contractor is not in compliance, the Engineer may take additional remedial measures which may include, but not be limited to, contacting the Contractor's insurance company and/or MN/OSHA.

#### 1.5. Permits

- a. The Contractor is advised that several permits have been or need to be obtained for the Project. Previously obtained permits and a list of permits to be obtained by the contractor are included in the Appendix of these Special Provisions. The Contractor is fully responsible for complying with terms and conditions of all permits.
- b. The Contractor is responsible for submitting an application for and receiving the IDEM General Stormwater (NPDES) Permit for Construction Activity for this project (327 IAC 15-5, Rule 5). See also Section 2.3, Erosion and Pollution Control.
- c. Pollution of natural resources of air, land and water by operations under this Contract shall be prevented, controlled, and abated in accordance with the rules, regulations, and standards adopted and established by IDEM, and in accordance with the permits listed above.
- d. The Contractor shall be responsible for providing all inspections, documentation, record keeping, maintenance, remedial actions, repairs required by the permit. All inspections, maintenance, and records required in the General Permit. The word "Permittee" or derivation thereof, in these paragraphs shall mean "Contractor". Standard forms for logging all required inspection and maintenance activities shall be used by the Contractor. All inspection and maintenance forms used on this Project shall be turned over to the owner
- e. The Contractor shall review and abide by the instructions contained in the permit package. The Contractor shall hold the Owner harmless for any fines or sanctions caused by the Contractor's actions or inactions regarding compliance with the permit or erosion control provisions of the Contract Documents.

#### 1.6. Submittals: The following submittals are required

- a. Construction Schedule

- i. Prior to the pre-construction conference, the Contractor shall submit to the Owner a schedule illustrating the anticipated commencement date and duration of each of the major work tasks. The schedule should address the phasing of construction in a manner that will provide good project coordination and minimize the exposure of erodible material. The Contractor will be required to update or modify the written construction schedule as necessary to accurately reflect the rate and progress on the project.
- b. Construction Operations Plan
  - i. At the pre-construction conference, the Contractor shall submit to the Owner a Construction Operations Plan. The plan will detail the Contractor's approach to the project, including but not limited to:
    1. Construction sequencing plan
    2. Erosion and pollution control plan
    3. Dewatering plan
    4. Details related to the Contractor's anticipated means and methods.

The Construction Operations Plan shall be reviewed by the Owner, and approved if acceptable. The Contractor shall not mobilize equipment to the site before the Construction Operations Plan is approved.
- c. Materials Submittals – ALL materials intended for use should be submitted to the owner for approval prior to ANY material being delivered to the site. Origin of seed and plants shall be included in the submittals of these items.
- d. Vegetation Maintenance Plan

#### 1.7. Survey Control

- a. Survey control has been established at the site and is noted on the Plans. Initial layout will be accomplished by the Owner or Owner's Representative. All subsequent surveying incidental to the initial layout or construction staking shall be the responsibility of the Contractor. Stakes and markers shall be provided by the contractor as necessary to control the work and assure construction is in conformance to the plans and standard specifications, and as otherwise directed by the Engineer. Following staking of the work, the Owner may make field-based adjustments to the layout as necessary to meet current site conditions. In addition, the Owner or Owner's Representative will provide assistance during layout and construction to confirm the configuration of the work. This includes transitions between bank treatments and pool features. Full compensation for conforming to the requirements of this section shall be considered as included in the prices paid for the various Contract items of work involved and no additional compensation will be allowed therefore.

#### 1.8. Dust and Spillage Control

- a. The contractor shall at all times limit migration of dust away from the project site by means of sweeping, sprinkling or other approved methods. The contractor shall be responsible for the alleviation or prevention of dust nuisance caused by his own operations. In order to minimize traffic hazards and public nuisance arising out of the contractor's operations, contractor shall ensure that adjacent properties and improved surfaces of surrounding streets stay free and clean of silt, tracked mud, dust, etc., coming from or in any way related to construction. At a minimum, such cleanup shall occur prior to termination of each day's work. The Owner may determine that such a traffic hazard or public nuisance requires an immediate cleanup. Such immediate corrective measures shall be at the expense of the contractor. Full compensation for any water or other method used for dust and spillage control required of this section, shall be considered as included in the prices paid for the various Contract items of work involved and no additional compensation will be allowed therefore.

1.9. Site Repair

- a. It will be the responsibility of the contractor to verify site conditions with the Owner prior to the start of work. Following completion of work, a similar inspection with the owner will occur to ensure no damages or impacts to property outside of the limits of disturbance. Any such impacts will be repaired by the contractor at no cost to the owner. Digital photos of the site shall be used for documentation both before and after completion of work.

2. Division 2 – SPECIAL SPECIFICATIONS

2.1. Mobilization

- a. Description:
  - i. Mobilization shall consist of the following work:
    - 1. Mobilization of materials and equipment to the site.
    - 2. Preparation of all necessary permits, submittals, notifications and other documentation.
    - 3. Demobilization of all of materials and equipment from the site.
    - 4. Final site clean up and restoration of staging and access areas.
    - 5. Final repair or restoration of any damages to property outside the limits of disturbance
    - 6. Any other items required to complete the construction not otherwise measured and paid for.
- b. Incorporation of Standard Specification:
  - i. Mobilization shall be performed in accordance with the provisions of INDOT Section 110, Mobilization, and as described below.
- c. Materials: NOT USED
- d. Execution:
  - i. Contractor shall provide a billboard for displaying the project permits.
- e. Measurement and Payment:
  - i. Mobilization will be paid at the contract lump sum price, which shall be compensation in full for all labor, materials, equipment and other expenses required to complete the work for this Item. Payment for Mobilization shall also include payment in full for incidental item, Traffic Control, and Erosion and Pollution Control.

2.2. Traffic Control

- a. Description:
  - i. Traffic Control shall consist of the following work:
    - 1. Install, maintain and remove signs, lights, flares, barricades and other traffic safety and directive devices as needed for the convenience, safety and direction of public vehicular and pedestrian traffic.
    - 2. Furnish competent flaggers as needed for the convenience, safety and direction of public vehicular and pedestrian traffic.
- b. Incorporation of Standard Specification:
  - i. Traffic Control shall be performed in accordance with the provisions of INDOT Section 801, Traffic Controls for Construction and Maintenance Operations, and as described below.
- c. Materials: NOT USED
- d. Execution:

- i. The Contractor shall employ extraordinary measures to ensure safety of the public and to ensure unrestricted vehicle and/or pedestrian ingress and egress to properties both public and private in and around the work area; these may include;
  - 1. Maintenance of site closures during construction and minimization of dust and noise in areas adjacent to the project site.
  - 2. Provision of flaggers during periods of frequent ingress and egress to the site, including during hauling operations.
  - 3. Owner reserves the right to require the Contractor to supply at no additional cost supplemental signage and flaggers if it is determined that the installed measures do not satisfactorily ensure public safety and access to property
- e. Measurement and Payment:
  - i. Payment for Traffic Control will be incidental to Mobilization, which will be considered compensation in full for all labor, materials, equipment and other expenses required to complete the work for this Item. No separate payment will be made for this Item.

### 2.3. Erosion and Pollution Control

- a. Description:
  - i. Erosion and pollution control shall consist of providing construction operations that prevent water, air and noise pollution, and otherwise prevent damage to natural resources at the site and at off-site locations. Erosion and pollution control shall also cover
- b. Incorporation of Standard Specification:
  - i. Erosion and Pollution Control shall be performed in accordance with the provisions of INDOT Section 206, Temporary Erosion and Sediment Control, and as described below.
- c. Materials:
  - i. Erosion Control materials as shown on the Plans and as described in the Standard Specification.
  - ii. Contractor is required to maintain an oil boom and spill cleanup kit on site at all times
  - iii. Materials required for dewatering and excluding flow from active construction areas
  - iv. Materials required for construction entrance
- d. Execution:
  - i. The Contractor shall furnish, install, maintain and remove erosion and sediment control devices in accordance with the Standard Specification referenced above, as shown in the Plans, in accordance with the provisions of the NPDES Permit and the Storm Water Pollution Prevention Plan. If any of the installed measures require repair or are rendered ineffective during construction, these measures shall be replaced or repaired by the Contractor and brought back to effective condition at no extra cost.
  - ii. Silt fence shall be installed prior to beginning excavation work to control sediment from leaving the project limits. The Contractor may submit alternate methods of establishing perimeter sediment control in locations where silt fence installation is deemed impractical or problematic. The Contractor shall not make this substitution without prior approval of the Engineer.
  - iii. Sediment controls shall be installed before beginning work to control sediment from leaving the project limits (silt fence, straw bales (if needed). The Contractor may submit

alternate methods of establishing perimeter sediment control in locations where silt fence installation is deemed impractical or problematic. The Contractor shall not make this substitution without prior approval of the Engineer.

- iv. The Contractor shall be responsible for the removal of temporary erosion control devices once the project is completed.
  - v. Disturbed areas, as shown in the plans, shall be seeded and mulched according to the revegetation plan as soon as practical after completion of grading operations, but within the period specified for germination of seed.
  - vi. A dewatering plan is required for the site. The plan may include site specific dewatering or dewatering of the entire length of the construction area. In addition, methods to separate active construction areas from flowing water will be required. Owner or owner's representative will assist in forming this plan.
- e. Measurement and Payment:
- i. Payment for Erosion and Pollution Control will be considered incidental to Mobilization. It will include compensation in full for all labor, materials, equipment and other expenses required to complete the work for this Item. No separate payment will be made for this Item.

#### 2.4. Earthwork

- a. Description:
  - i. Earthwork shall consist of excavation and fill placement to the lines and grades shown on the Plans. Earthwork includes, but is not limited to:
    - 1. Excavation of channel bed, banks, and floodplain as shown on the plans
    - 2. Rough and Fine grading.
    - 3. Offsite transportation and disposal of excess and/or unsuitable material
- b. Incorporation of Standard Specification:
  - i. Earthwork shall be performed in accordance with the provisions of INDOT Section 203, Excavation and Embankment, and as described below.
- c. Materials
  - i. Topsoil may be any silty loam excavated during project construction, sufficiently dried, free from vegetation and all rocks 2 inches or greater in diameter and other deleterious material not suitable for use in backfill applications. Material should be approved by the Owner's Representative prior to use as top dressing in areas where surface bank treatments and seeding is applied.
- d. Execution:
  - i. Excavated materials will be classified according to INDOT Section 203.04, Unclassified Excavation. All materials excavated from existing ground shall be considered unclassified excavation.
  - ii. Excavated materials suitable for use as topsoil in bank construction shall be identified during excavation operations by the Owner's Representative and designated as 'topsoil'. Excavated materials not reused as topsoil shall be stockpiled and reused for filling the existing channel as shown on the Plans. Excavated materials shall be stockpiled in a

manner and location approved by the Owner's Representative that facilitates reuse of the material.

- iii. Excavated materials remaining after fill operations are complete to the lines and grades shown on the Plans shall become the property of the Contractor and shall be disposed of at an offsite location approved by the Owner and in accordance with any and all relevant laws and regulations.
- iv. Contractor is advised that moist soils will likely be encountered and dewatering will likely be required. Sediment laden water pumped from the work area will be filtered using a DIRT BAG or equivalent, to ensure sediment laden water does not re-enter the ditch.
- v. Contractor shall endeavor to compact fill to 90% relative compaction. All other fill placed at the site shall be compacted to 85% relative compaction.
- vi. Topsoil shall be utilized to complete the upper 6 inches of all areas requiring seed or fabric treatment.
- viii. The Owner's Representative may make adjustments to the design grades based on field conditions at the time of construction prior to finish grading.
- vii. Tolerance for grading shall be +/- 0.1 feet on the channel bed and +0.3 feet (no low grades) in bank areas.
- viii. Quality Control
  - 1. The Contractor shall verify that all design grades have been achieved per the Plans.
- ix. Quality Assurance
  - 1. The Owner's Representative will review finished areas of grading and check for conformance with the plans.
- e. Measurement and Payment:
  - i. Earthwork will be paid at the contract lump sum price, which shall be compensation in full for all labor, materials, equipment and other expenses required to complete the work for this Item. The estimated volume of excavation is shown in the plans. These estimates assume in-place volume. Quantity estimates are provided for the Contractor's reference only, and shall be verified independently by the Contractor.

## 2.5. Surface Fabric Treatment

- a. Description:
  - i. Contractor shall furnish all materials, equipment, and labor necessary to construct the Surface Fabric Treatment as shown on the Plans.
- b. Incorporation of Standard Specification: NOT USED
- c. Materials
  - i. Non-woven Coir Fabric

1. The single layer bank stabilization fabric will be C125BN fabric or approved equivalent. Fabric with plastic netting will be rejected. Fabric shall be delivered in roll widths sufficient to minimize seams. Fabric shall meet or exceed the following criteria:

<u>Parameter</u>	<u>Procedure/Test</u>	<u>Criterion</u>
Weight	ASTM D3776	7.0 oz/yd
Roll Width	Measured	60 inches
Roll Length	Measured	Minimum 100 ft

2. Fabric shall be in good condition and free of rot, weak spots or mold.

ii. Wood Stakes

1. Wood Stakes shall be used to anchor all coir fabrics along seams and along terminal edges. Stakes shall be solid and free of knots or defects. Stakes shall be 18" in length. Stakes shall be wedge shaped with a minimum equivalent diameter equal to 1.5" at the top and should come to a point at the bottom. Stakes should be constructed by cutting a standard grade 2" x 4" lumber lengthwise along the diagonal to create wedge shaped stakes, or by some other method resulting in a stake of dimensions approved by the Owner's Representative.

iii. Wood staples (eco-Stakes)

1. Wood staples shall be used to secure fabric in a pattern consistent with the Plans. Additional staples should be used to ensure the fabrics are securely held in contact with the underlying soil
2. Staples shall be the The North American Green Eco-STAKE or approved equivalent. Eco-stake is a 100 % biodegradable "1"- shaped hardwood pin designed to safely and effectively secure erosion control blankets. The wood stake must exhibit ample rigidity to enable being driven into hard ground, with sufficient flexibility to resist breakage. The wood stake shall be the North American Green Eco-STAKE or approved equal, with the following dimensions:  
 Leg Length: 11.00 in. (27.94 cm)  
 Head Width: 1.25 in. (3.18 cm)  
 Head Thickness: 0.40 in. (1.02 cm)  
 Leg Width: 0.60 in. (1.52 cm) (tapered to point)  
 Leg Thickness: 0.40 in. (1.02 cm)  
 Total Length: 12.00 in. (30.48 cm)

iv. Seed

1. Material requirements for Seed are specified in Section 2.6, Seeding and Planting of these Specifications.

d. Execution:

- i. Surface Fabric Treatment shall be constructed in the locations shown on the Plans.
- ii. The subgrade and toe key trench for Surface Fabric Treatment shall be graded to a smooth condition free from depressions and protruding rocks, sticks, and other debris which may prevent a smooth application or that may damage the fabric. Care shall be taken to remove all objects that would interfere with application or damage the coir fabrics.

- iii. Apply Seed per Section 2.6, Seeding and Planting of these Specifications to the prepared subgrade prior to placement of coir fabrics.
  - iv. The coir fabric shall be placed and anchored as shown on the Plans using a combination of wood stakes and staples at spacing as indicated on the plans. Wood stakes shall be placed through both layers of coir fabrics when 2 or more are present. Cutting of the coir fabrics to facilitate wooden stake placement will not be allowed.
  - v. Damaged coir fabric shall be repaired or replaced. If damaged coir fabric has a tear of 6 inches or less, scrap fabric may be placed beneath damaged woven coir fabric such that it extends 18 inches beyond the damaged area in all directions. Stake around the tear with 4 wooden stakes on 12-inch centers. Coir fabrics with tears greater than 6 inches shall be replaced at the Contractor's expense.
  - vi. Following completion of each Surface Fabric Treatment bank installation, review the installation for areas of loose fabric or locations of voids between fabrics and soil. Secure these areas with supplemental wood stakes or wood staples to ensure that fabrics are tight and in solid contact with the underlying soil. The Owner's Representative will review fabric staking prior to project completion, and may request additional staking in identified areas of loose fabric or voids. To verify proper securing of fabric, fabric should not be pulled greater than 1" above the underlying soil at any location by hand.
  - vii. Maintenance: Seed placed in Surface Fabric Treatment shall be watered by Contractor in accordance with Section 2.6, Seeding and Planting, of these Specifications.
- e. Measurement and Payment:
- i. Payment for Surface Fabric Treatment will be made on the basis of per square yard of surface treated determined by measuring the exposed length of coir fabric following completion of each installation. Payment shall include trench excavation, subgrade preparation, treatment installation, fabric overlaps and burial, and trench backfill, complete and in place. Payment shall include full compensation for all labor, materials, tools, equipment, expenses and incidentals required to complete the work for this Item.

## 2.6. Seeding and Planting

- a. Description:
- i. Work shall include, but not be limited to purchase, storage, installation and maintenance of seed and plugs as shown on the Plans. Engineer or Owner will provide guidance on location of seeding and plug installation
  - ii. All plugs and seed are to be of documented northern Indiana or southern Michigan genotype. All seed is to be either collected from wild sources in northern Indiana/southern Michigan or harvested from first generation seed plots whose foundational source was from wild collection in northern Indiana/southern Michigan. Documentation of source (county of origin) and generation for all plants and seed is required with the Planting Submittal. If seed is nursery produced, the source(s) of the foundation stock shall be revealed.
  - iii. Seed is to be tested pure live seed (PLS). Seed in the "Compositae" family is to have the pappus removed. Seed in the "Leguminosae" family is to have the pod removed. All seed submitted is to be packaged by individual species with species name, weight, and source(s) and generation clearly marked on the package.
- b. Incorporation of Standard Specification:

- i. Seeding and Planting shall be performed in accordance with the provisions of INDOT Section 621, Seeding and Sodding; Section 622, Planting Trees, Shrubs, and Vines, and as described below.
  - ii. American Standard for Nursery Stock (ASNS).
- c. Materials
- i. Seed Mixes:

VEGETATION ZONE 2  
(mesic prairie mix)

VEGETATION ZONE 1  
(wet prairie mix)

LBS/acre	Species	LBS/acre	Species
<b>Grasses</b>		<b>Grasses</b>	
1.0000	Andropogon gerardii	0.1250	Calamagrostis canadensis
0.0625	Carex vulpinoidea	0.1250	Carex frankii
1.0000	Elymus canadensis	0.1250	Carex stricta
2.0000	Elymus virginicus	0.1875	Carex vulpinoidea
0.2500	Panicum virgatum	2.0000	Elymus virginicus
1.7500	Sorghastrum nutans	0.1250	Glyceria striata
0.5000	Spartina pectinata	0.0469	Juncus effusus
<b>Totals</b>		0.0625	Leersia oryzoides
<b>6.5625</b>		0.1250	Scirpus atrovirens
		0.0200	Scirpus cyperinus
<b>Forbs</b>		0.5000	Spartina pectinata
0.0625	Aster laevis	<b>Totals</b>	
0.0625	Aster novae-angliae	<b>3.4419</b>	
0.5000	Cassia hebecarpa		
0.0938	Coreopsis tripteris	<b>Forbs</b>	
0.0625	Heliopsis helianthoides	0.2500	Asclepias incarnata
0.1250	Liatris spicata	0.0625	Aster firmus
0.0625	Monarda fistulosa	0.0625	Eupatorium maculatum
0.0313	Penstemon digitalis	0.0625	Eupatorium perfoliatum
0.0313	Pycnanthemum virginianum	0.5000	Iris virginica shrevei
0.0625	Ratibida pinnata	0.0313	Lobelia siphilitica
0.0313	Rudbeckia hirta	0.0625	Lycopus americanus
0.3750	Silphium terebinthinaceum	0.0156	Mimulus ringens
0.0625	Solidago ridellii	0.0156	Penthorum sedoides
0.1250	Tradescantia ohiensis	0.1250	Sagittaria latifolia
0.1250	Vernonia altissima	0.0625	Verbena hastata
0.0156	Veronicastrum virginicum	<b>Totals</b>	
0.0625	Zizia aurea	<b>1.2500</b>	
<b>Totals</b>		<b>Grand Totals</b>	
<b>1.8906</b>		<b>4.6919</b>	
<b>Grand Totals</b>			
<b>8.4531</b>			

- ii. Herbaceous Plugs:

VEGETATION ZONE 1

Plugs	Species
Qty	
100	Calamagrostis canadensis
50	Carex comosa
50	Carex lacustris
100	Juncus effusus
100	Iris virginica shrevei
100	Scirpus acutus
100	Scirpus cyperinus
100	Scirpus fluviatilis
100	Scirpus pungens
100	Scirpus validus
100	Spartina pectinata
<b>Totals</b>	
<b>1000</b>	

- iii. Cover crop shall be sown at a rate and with species consist with recommendations from seed supplier for the season and site and as reviewed by the Owner.
  - iv. Fertilizer shall be – Phosphorus Free Fertilizer. Fertilizer shall be applied at a rate of 200 pounds per acre.
  - v. Mulch shall be straw applied at a rate of 2 tons/acre
- d. Execution:
- i. Seeding
    - 1. Dry seed shall be broadcast on the soil under the fabric layer (under coir fabric) or mulch
    - 2. Do not walk on seeded areas after germination period has commenced.
  - ii. Re-Seeding:
    - 1. All re-seeding activities shall be in accordance with these special specifications.
    - 2. Dry seed shall be broadcast on re-seeding areas in the same densities as the original seeding.
  - iii. Herbaceous Plugs
    - 1. Plugs shall be removed from containers with root ball intact and installed in appropriate locations based on moisture preference (i.e. inundated, emergent, etc)
    - 2. Plugs will be placed in “pods” of 50 plants each interspersed throughout planting Zone 1 as directed by the owner or owner’s representative.
    - 3. Subsurface conditions: The Owner shall be notified immediately of all subsurface drainage or soil conditions which the Contractor shall consider detrimental to growth or survival of plant material. Contractor shall state condition and submit proposal for correction, including the cost of the correction. No work shall be performed on the affected portion until approval of the correction method is obtained from the Owner in writing.
    - 4. Small cuts may be made in the coir fabric to allow for plant installation. Cuts shall be a single slit no longer than 12 inches and parallel to the river bank and shall be sealed with stakes, sewing or other means as approved by the Engineer.
  - iv. Mulching

1. Areas to be covered by coir fabrics will not be mulched. All other disturbed areas shall be mulched with straw, free of unwanted seed, and applied at a minimum rate of 2 tons / acre.
- v. Irrigation
1. Fall and Winter Irrigation – If seeding is completed between April 1 and September 30, irrigation shall be applied in an analogous manner as is described in INDOT 621.10, Watering Sod, following seed germination.
  2. If planting is completed between October 1 and March 31, planted areas shall receive irrigation after April 1 of the spring following fall construction, applied in an analogous manner as is described in INDOT 621.10, Watering Sod, following seed germination. This plan may be altered given unusually warm weather forecasted conditions, but must be prior approved by the Engineer.
- vi. Plant protection
1. Plants are not required to have protection but must meet guarantee requirements. The contractor may choose to ensure against animal damage as deemed necessary.
- vii. Quality Control and Assurance
1. General
    - a. The Contractor shall provide all equipment, labor, materials, and technical expertise to install, maintain and irrigate site plantings through the completion of the project, demobilization, and for a minimum 2-year period.
  2. Maintenance Plan
    - a. Within 30 days of the project start date, the Contractor shall develop a 2-year *Vegetation Maintenance Plan* to be approved by the Owner. This maintenance plan will address vegetation management and weed control and shall consider provision of a prior approved water source, materials to be used for irrigation, and schedule for site maintenance inspections and activities
    - b. Vegetation management and weed control in all seeded areas will be the sole responsibility of the Contractor during the 2-year warranty period for vegetation, and shall be detailed in the Project Maintenance Plan. This may include, but is not limited to, irrigation and weed control.
  2. Minimum guarantee requirements
    - a. Seeded areas guarantee: Areas that do not meet seed success criteria for native seed mix establishment on July 1<sup>st</sup> after the Substantial Completion Date shall be re-seeded during the first available seeding period, as determined by the Owner. Re-seeding shall be performed at the Contractor's expense, and in conformance with re-seeding specifications.
    - b. Seeding success criteria: The Owner will conduct surveys to verify seeding success. It is understood that some native grasses and forbs sometimes require 2-5 years to become established in a planting, and thus overall coverage will be the dominant criteria, not species assemblage. An area will be considered satisfactory if it meets the following criteria:

- A minimum of 80 percent intended vegetative cover (noxious weeds and undesirable non-native species will not be considered to be intended vegetation);
  - Not more than 10% of the seeded area with bare spots larger than 1 square foot; and
  - Vegetation in healthy condition.
- b. Herbaceous Plug guarantee: The Contractor shall replace all potted plants judged by the Owner, within 1 and 2 years of the Substantial Completion Date, to be dead or in less than vigorous health. Plant replacements shall be of the same species, quality and size as originally installed, or with substitutes pre-approved in writing by the Owner. Replanting shall be performed at the Contractor's expense.
- c. Replanting shall be conducted according to the original planting specifications.
- d. The Owner will conduct inspections at 1 and 2 year dates following Substantial Completion Date, and will notify Contractor of plants needing replacement.
- e. Measurement and Payment:
- i. Payment for the Seeding will be made on the basis of the acre of surface treated, complete and in place. Payment shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals required to complete the work for this Item.
  - ii. Payment for Planting will be made on the basis of the number of plugs installed, complete and in place. Payment shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals required to complete the work for this Item.

## **APPENDIX A – PERMITS**