

**1.0 PURPOSE**

A native plant community shall be established within graded areas along Indian Creek. The vegetation shall provide bank stabilization as well as water quality benefits.

**2.0 CONTRACTOR QUALIFICATIONS**

The Native Landscape Contractor chosen for the establishment and enhancement of the natural area must be experienced in the restoration, installation, and management of said areas. They must have a minimum of five years experience in the field. There shall be a supervisor available at all times that can identify non-native and native plants by genus and species. The goal of installing successful native plant communities is a long-term process. Therefore, it is imperative that a qualified Native Landscape Contractor perform the initial installation and maintenance.

**3.0 QUALITY AND CONDITION**

- Native seed shall be obtained from sources east of the Mississippi River within the same EPA Level III Ecoregion as the project site (Central Corn Belt Plains).
- Native seeds shall be blended by the vendor, and the mixture and ratio shall be guaranteed in writing to be as specified. The amount of seed indicated on the specifications shall mean the total amount of pure live seed (PLS) per acre for all species listed. It is the sole responsibility of the Native Landscape Contractor to provide approved seed that meets industry-standard PLS requirements.
- Native Landscape Contractor shall provide the Aurora Township with the name and location of the seed supplier, origin of the various kinds of plants, and a statement of the purity of the seed.
- Seed shall conform to applicable State and Federal regulations as in effect on the date of letting. Unless otherwise specified, seed shall not contain in excess of 1 percent weed seeds; 0 percent is desirable.
- All storage requirements, stratification, and scarification considerations shall be the sole responsibility of the Native Landscape Contractor.
- Mycorrhizal inoculants shall be palletized and mixed at 1 lb. per acre with the fine seeds before installation. The inoculants shall contain a diverse mixture of Glomales fungal species (*Glomus* spp.) in palletized form.
- Under no circumstances shall Wheat (*Triticum aestivum*), Cereal Rye (*Secale cereale*), Perennial Rye (*Lolium perenne*), or Barley (*Hordeum vulgare*) be used as a temporary cover crop.

**4.0 HANDLING**

- Native Landscape Contractor shall be solely responsible for the proper handling and storage of the seed according to the best seed handling and storage practices, including fungicide treatments and stratification considerations. Owner shall make no compensation for damage to the seed because of improper storage, cleaning, threshing, or screening operations.
- All native seeds shall be packed and covered in such a manner as to ensure adequate protection against damage and maintain dormancy while in transit, storage, or during planting operations.
- Seed shall be kept dry and unopened until needed for use. Seed shall not be stored or temporarily stored in locations or vehicles where the temperature will be in excess of 90 degrees F.

**5.0 SITE PREPARATION**

- The General Contractor and Native Landscape Contractor shall be responsible for performing all work necessary to achieve and maintain an acceptable seedbed prior to seeding. All areas must be properly prepared before seeding begins. Underground utility location maps and plans should be reviewed prior to work. Equipment having low unit pressure ground contact shall be utilized within the planting areas.
- Unless the Aurora Township agrees to another approach, the seedbed shall be prepared by working the topsoil to a depth of 3 inches. Site preparation equipment shall be of a design that can be utilized efficiently by the Native Landscape Contractor to meet the requirements for the work specified.
- Prior to seeding, at least 6 inches of topsoil shall be present and free of all clods, stones, roots, rivulets, gullies, crusting, and cracking. The soil aggregate size will be no greater than 2 inches in the largest diameter.
- If present, compacted soils shall be disked or raked prior to seeding. Remedial measures for the access area may, at the direction of the Aurora Township, involve ripping from 12 to 18 inches of the soil horizon prior to diskings. If compaction is not a concern and the seedbed needs to be loosened prior to seeding to ensure good seed-soil contact, diskings or raking shall be performed using equipment and the approach recommended by the Native Landscape Contractor, subject to approval by the City of Aurora.
- If needed, cultivation shall occur within 24 hours prior to seeding. Seeding should occur immediately after the last cultivation preferably before a rain.

**6.0 PLANT MATERIALS**

Table 1. Streambank Stabilization Seed Mix

Scientific Name	Common Name	Lbs/Ac	Plugs
Allisma subcordatum	Water Plantain	0.250	100
Andropogon gerardi	Big Bluestem	5.000	
Andropogon scoparius	Little Bluestem	5.000	
Aster novae-angliae	New England Aster	0.125	
Bouteloua curtipendula	Side Oats Gramma	5.000	
Carex vulpinoidea	Fox Sedge	0.500	200
Eleocharis spp	Spike Rush	0.125	
Elymus canadensis	Canadian Wild Rye	8.000	
Elymus villosus	Silky Wild Rye	4.000	
Elymus virginicus	Virginia Wild Rye	8.000	
Glyceria striata	Fowl Manna Grass	1.000	
Helenium autumnale	Sneezeweed	0.125	
Juncus spp	Rush Species	0.125	
Leersia oryzoides	Rice Cut Grass	1.000	200
Panicum virgatum	Switch Grass	1.000	200
Scirpus validus	Great Bulrush	0.125	100
Sorghastrum nutans	Indian Grass	10.00	
Spartina pectinata	Prairie Cord Grass	0.500	200
Agrostis alba	Red Top Grass	1.000	
Avena sativa	Seed Oats	30.00	
Lolium multiflorum	Annual Rye	10.00	
<b>Total</b>		<b>90.875</b>	<b>1000</b>

**7.0 SEED INSTALLATION**

- Except where site conditions preclude their use, seeding shall be performed using a Truax drill, Truax Trillion seeder, or comparable equipment designed specifically for installation of native seed. For areas where site conditions preclude the use of specialized equipment, seed may be installed through hand broadcasting and lightly raking in the seed. **Hand broadcast seed shall be spread at twice the specified rate.** Other methods of seed installation may be used with prior approval from the City of Aurora.
- Seasonal Considerations:
  - November 1 through February 28: Less cover crop will be observed during the following spring due to frost damage.
  - March 1 through June 29: Seeding during this period is appropriate but germination of a portion of the seed may not occur until the following season due to lack of cold stratification to break seed dormancy. Cover crop generally germinates within 2-3 weeks of seeding operation.
  - June 30 through September 15: Installation of native seed should be suspended unless irrigation can be provided or unseasonably cool conditions persist. Also, any annual forbs planted with the mix during this time period may germinate but not have sufficient time to flower before fall senescence.
  - September 15 through October 31: Less cover crop will be observed during the following spring due to frost damage.
- Prior to starting work, all seeding equipment shall be calibrated and adjusted to sow seeds at the proper seeding rate. In general, the optimum seeding depth is 0.25 inch below the soil surface. Areas where the seed has not been incorporated into the soil to the proper depths will not be accepted, and no compensation for materials or labor for the rejected work will be made by the City of Aurora.
- Equipment shall be operated in a manner to ensure complete, uniform coverage of the entire area to be seeded and to avoid damage to existing woody plants. Any area inadequately covered, as solely determined by the City of Aurora, shall be retreated at no additional cost to the City.
- Seeding and soil tracking/firming shall not be done during periods of rain, severe drought, high winds, excessive moisture, frozen ground, or other conditions that preclude satisfactory results.
- To achieve best results, seed boxes should be kept more than one-quarter full at all times and ground speed should be no more than 2 to 3 mph.
- Seeding operations must occur when soil moisture is appropriate for seeding operation.
- Native plant seed shall not receive fertilizer.
- Wet seed that is moldy or otherwise damaged in transit or storage shall not be used.
- After seeding operation is completed, install erosion control blanket per manufacturer's specifications as necessary.
- Nursery packing lists indicating the species and quantities of material installed must be provided to the City of Aurora upon request.

**8.0 PLUGGING IMPLEMENTATION**

- Plugs shall be installed in the spring or other date guaranteed by the Native Landscape Contractor.
- Plugs shall be installed on one foot centers from the toe of slope to three feet up slope.
- Plugs shall be planted in a hole dug with a trowel, spade, planting bar, or suitable instrument such that the hole is of a minimum diameter and depth to accommodate the plug, with its roots, without damage.

- The soil excavated from the planting hole should be used to backfill around the plant and lightly packed to secure the roots in the soil.
- If planting is delayed more than six hours after delivery, store plugs in the shade, protect from the weather and mechanical damage, and keep them moist and cool. All plugs should be planted within 24 hours of delivery.
- Plugs shall be obtained from a reputable nursery or grown from seed. Plugs shall not be collected from wild populations of plants.

**9.0 EROSION CONTROL**

- Bank grading and stabilization shall occur during periods of low flow. All areas are recommended to be covered with erosion control blanket. North American Green C-125 or equivalent will be used at a minimum within the area seeded Class 1A seed. The area seeded with the Streambank Stabilization Mix shall be covered with North American Green C-125 or equivalent. Erosion control blanket shall be installed within 24 hours after an area is seeded and trenched in at the toe of slope (or up to the edge of water if the water level is above the toe of slope at the time of planting). See manufacturer's specifications for erosion control blanket composition and installation instructions.
- Use existing stone toe whenever possible.

**10.0 "No Mowing and/or Dumping" Signage**

- "No Mowing and/or Dumping" or other signage approved by the Aurora Township shall be installed along the perimeter of the native plantings as indicated on the plan to define the boundary of the naturalized area.

**11.0 CLEAN-UP AND PROTECTION**

- During landscape work, store materials and equipment where directed. Keep pavements clean and work areas and adjoining areas in an orderly condition.
- Protect landscape work and materials from damage due to landscape operations or operations by other trades and trespassers. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged landscape work as directed by the Aurora Township.

**12.0 INSPECTIONS AND ACCEPTANCE**

- The City of Aurora reserves the right to inspect all seeds and plants either at place of growth or at site before planting for compliance with requirements for name, variety, size, quantity, quality or mix proportion.
- Native Landscape Contractor is to keep records of the certificates of composition or invoices of seed mixtures and integrity of plant materials with respect to species, variety, and source after purchase.
- Native Landscape Contractor is to notify the Aurora Township within five days after completing initial and/or supplemental plantings in each area.

**MONITORING AND MANAGEMENT PLAN**

**1.0 MONITORING METHODOLOGY**

The planted area will be monitored annually for a one-year period to ensure successful establishment of the vegetation. The primary objective of the monitoring program is to track the success of the planted species over the 1-year period of regularly scheduled spring and fall monitoring sessions. The monitoring documents changes in plant community composition and reveals the need for management changes to improve floristic quality. Specific goals of the monitoring are to determine the vegetative species present, the percent cover by vegetation, and identify hydrology and erosion problems.

Monitoring within the planted area shall be conducted semi-annually utilizing a meander survey methodology. The monitoring shall identify 1) the dominant vegetative species, 2) the approximate percent vegetative coverage by native species and 3) water level or drainage problems. Observations shall be made during the monitoring to identify specific management strategies necessary to reach design goals. Site conditions shall be photo documented during monitoring sessions.

**2.0 PERFORMANCE CRITERIA**

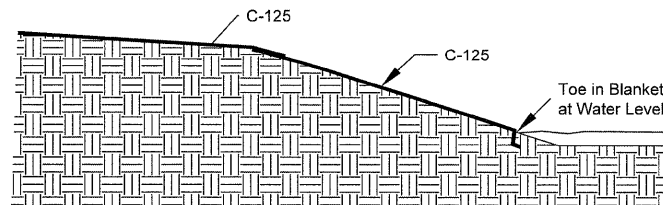
- By the end of the first full growing season, the planted area shall exhibit 90% vegetative cover, primarily by species contained in the temporary erosion control seed mix. There shall be no areas greater than 0.25 square meters devoid of vegetation and 25% of the species present as measured by aerial coverage shall be native and non-invasive.
- By the end of the second growing season, 90% of the ground as measured by aerial coverage shall be vegetated and 50% of the species present as measured by aerial coverage shall be native and non-invasive.
- By the end of the third growing season, 90% of the ground as measured by aerial coverage shall be vegetated and 75% of the species present shall be native and non-invasive. The native floristic quality index value (native FQI) must be greater than or equal to 15 as measured over the planted area. The floristic quality assessment method is described in Swink and Wilhelm, *Plants of the Chicago Region*.
- At the end of each growing season, none of the three most dominant species within the planted area shall be non-native or invasive species, including but not limited to: Purple Loosestrife (*Lythrum salicaria*), Reed Canary Grass (*Phalaris arundinacea*), White Sweet Clover (*Meillotus alba*), Common Buckthorn (*Rhamnus cathartica*), Kentucky Blue Grass (*Poa pratensis*), Canada Thistle (*Cirsium arvense*), Honeysuckle (*Lonicera* sp.), Common Reed (*Phragmites australis*), Cattails (*Typha* spp.), or Sandbar Willow (*Salix exigua*).

**3.0 REPORTING**

An annual vegetation monitoring report will be submitted to the Aurora Township and the U.S. Army Corps of Engineers by January 31st following the monitoring season each year. This report will be used to determine if the planted area is meeting performance standards. The report shall include a summary of the annual monitoring observations; a description of the management performed during the year; a list of recommendations for management during the upcoming year; and representative photographs of the planted area.

Herbicide should be applied by a trained and licensed applicator. Non-selective **4.0 MANAGEMENT PLAN**

- First Year.** Mow the planted area to a height of 6-8 inches 2-4 times during the early growing season and as needed to control non-native and invasive species. Mowing (including weed whipping) shall take place prior to or when non-native and invasive species are flowering so as to prevent seed set. Control undesirable plant species, when present in small quantities, by hand pulling prior to the development and maturity of the plant. Hand removal shall include the removal of all aboveground and belowground stems, roots and flower masses prior to development of seeds. Apply herbicide (as necessary) to non-native and invasive species within the naturalized areas with appropriate herbicide. Herbicides can be used but with utmost caution. Non-selective herbicides are absorbed through the plant tissues and work their way into the root system, effectively killing the plant. The only acceptable non-selective herbicides are glyphosate based such as RoundUp, Rodeo, or Razor. The only acceptable selective herbicides (i.e. targeting broad leaf and woody plants) are 2,4-D (2,4-Dichlorophenoxyacetic acid) based or triclopyr based such as Garlon 4.
- Second Year.** Control of undesirable plant species during the second growing season shall consist primarily of herbicide application. Mowing (including weed whipping) shall be conducted two to four times during the early growing season and as needed to a height of 6 to 8 inches to prevent annual weeds from producing seed. This work is not part of the construction contract and will be completed by Aurora Township.
- Long Term.** Undesirable plant species will be controlled (as necessary) by mowing (including weed whipping), to prevent seed set of undesirable species and spot herbicide application when and where applicable. This work is not part of the construction contract and will be completed by Aurora Township.



TYPICAL CROSS SECTION N.T.S.



DESIGNED -	JJT	REVISED -	
DRAWN -	ASK	REVISED -	
CHECKED -	JJT	REVISED -	
DATE -	10/7/2011	REVISED -	

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

NATIVE LANDSCAPE II  
AUSTIN AVE OVER INDIAN CREEK

SCALE: NONE	SHEET NO. 2 OF 2	STA. 11+83.56 TO STA. 13+88.72	F.A.P. RTE.	SECTION 03-01130-00-BR	COUNTY KANE	TOTAL SHEETS 33	SHEET NO. 11
			D-91-352-04		CONTRACT NO. 63660		
			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				