SPECIAL PROVISIONS
FOR
NATURAL AREAS INSTALLATION

For

Cedar Lake Road Extension
Section 06-00266-01-FP

Lake County Division of Transportation
(LCDOT)

October 1, 2010

#10-1123②

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GENERAL

The following special provisions supplement the current version of the ***Standard Specifications for Road and Bridge Construction*** ("Standard Specifications") and the ***Supplemental Specifications and Recurring Special Provisions***. These special provisions apply to, and govern the proposed improvements designated in the project improvement plans. In the case of conflict with any part or parts of the "Standard Specifications", these special provisions shall take precedence and shall govern.

References to "The Engineer" in the plans and special provisions shall be as defined in Article 101.34 of the "Standard Specifications" and shall be interpreted to mean the authorized representative of the Lake County Division of Transportation (LCDOT).

References to "The Contractor" shall be as defined in Article 101.12 of the "Standard Specifications". References to "The Subcontractor" shall be as defined in Article 101.46 of the "Standard Specifications".

References to the "Landscaping Contractor" shall be defined as the Contractor or Subcontractor with the requisite knowledge and experience, and the primary responsibility for furnishing, installing, and maintaining the plant materials listed under the Landscaping Performance Guarantee special provision.

DESCRIPTION OF IMPROVEMENT

This work consists of a Natural Area Installation (NAI), within the scope of a larger highway improvement project, on lands owned by the Lake County Forest Preserve District (LCFPD). The work includes the natural area construction, site stabilization activities, and native vegetation installation, according to the project plans and special provisions. A Three Year Maintenance and Monitoring Period (MMP) shall follow the vegetation installation as detailed in the following special provisions, with final turnover based on acceptance criteria for the establishment of the NAI.

TIME OF COMPLETION AND WORK SCHEDULE

The Contractor shall complete all work and applicable erosion control measures concurrently with the completion of construction, except as noted in the following special provisions. Completion dates for various work activities are as noted on the project plans and as specified in this document. Soil erosion shall be prevented by stabilizing exposed soil areas by permanent seeding. If permanent seeding is not possible, temporary seeding shall be applied to all exposed soil areas within seven days of exposure according to the procedures outlined in the ***Illinois Urban Manual*** and NPDES permits.

ACCEPTABLE SEEDING DATES

Temporary Seeding Species, Rates and Dates

Species	RATE Pounds/Acre	Seeding Dates
Oats	90	Early Spring – July 1
Cereal Rye	90	Early Spring – September 30
Wheat	90	Early Spring – September 30
Perennial Rye	25	Early Spring – September 30

Permanent Seeding Dates
March 1 – June 15 (preferred)
September 1 – October 15

Dormant Seeding
October 15 – March 1

LANDSCAPING CONTRACTOR QUALIFICATIONS

The Landscaping Contractor shall have at least five years experience in natural area installation and native planting management, maintenance and monitoring. The Landscaping Contractor shall have completed comprehensive natural area installation and management activities on at least three large sites, encompassing 20 acres or more. The Landscaping Contractor shall have on staff a senior level biologist, botanist, ecologist or equivalent, to oversee the natural area installation and management activities. The Landscaping Contractor shall also have licensed herbicide applicators and staff proficient in on-site natural area maintenance.

It is the Contractor's/Landscaping Contractor's responsibility to become familiar with all site conditions, instructions, contract documents, site conditions, and conditions pertinent to the work involved. Failure to make a site inspection shall not excuse the Contractor/Landscaping Contractor from performance of the duties and obligations imposed under the terms of these special provisions and the contract. Failure to have read all the conditions, instructions, and specifications of this contract shall not be cause to alter the original contract or to request additional compensation.

The Contractor/Landscaping Contractor shall complete the Landscaping Contractor Performance Reference Form included in these special provisions and submit the requested information with the bid proposal.

Failure to complete the
LANDSCAPING CONTRACTOR
PERFORMANCE REFERENCE FORM
and submit it with the Bid Package
may result in rejection of the bid.

LANDSCAPING PERFORMANCE GUARANTEE

The MMP for the NAI will extend beyond the completion date of the whole project. So as not to delay acceptance of the entire project and delay final payment due him/her, the Contractor shall submit a Landscaping Performance Guarantee to the County in the full amount of the installed plant material items.

Landscaping Performance Guarantee	=	Sum of all covered plant material items in the NAI (installed quantity x unit bid price)

In the event that plant materials are added to or deleted from, the NAI, the value of the Landscaping Performance Guarantee shall be adjusted from the original contract amounts accordingly.

The Landscaping Performance Guarantee shall be in the form of a surety bond. The surety bond shall be executed prior to LCDOT acceptance of the project and the issuance of the final payment. The surety bond shall remain in full force and effect until the completion of the MMP; and the final inspection and acceptance of the NAI, including all plant materials and replacements. The terms of inspection and acceptance (acceptance criteria) are defined in these special provisions.

The Engineer shall have the sole authority to determine which plantings or areas meet or do not meet the acceptance criteria.

If the Contractor fails to perform the maintenance work as defined herein, or performs the work unsuitably, as determined by the Engineer, or for any other cause whatsoever does not carry out the work in a suitable manner, the Engineer shall give notice to the Contractor and the Contractor's bank or surety. Said notice shall specify the corrective measures required. If the Contractor, within a period of ten days following said notice, does not proceed in accordance therewith, the County shall draw on the Landscaping Performance Guarantee to have the work completed according to these special provisions.

The plant materials in this contract proposed for the NAI are listed on the following page. These materials including any adjustments will be covered under the Landscaping Performance Guarantee.

Natural Area Installation – Plant Materials

Pay Code	Description	Unit
25000312	Seeding, Class 4A	Acre
A2C05065	Tree, Quercus Bicolor (Swamp White Oak), Container Grown, 5-Gallon	Each
LC200201	Tree, Special I: Quercus Rubra (Red Oak), Container Grown, 5-Gallon	Each
LC200202	Tree, Special II: Celtis Occidentalis (Common Hackberry), Container Grown, 5-Gallon	Each
LC200203	Tree, Special III: Quercus Ellipsoidalis (Northern Pin Oak), Container Grown, 5-Gallon	Each
LC200204	Tree, Special IV: Quercus Macrocarpa (Bur Oak), Container Grown, 5-Gallon	Each
LC200371	Perennial Plantings, Wetland Type, Special I: Mix B Special – Emergent Zone	Unit
LC200372	Perennial Plantings, Wetland Type, Special II: Mix C Special – Upper Wetland Zone	Unit
X2520700	Sodding, Special	Sq Yd

THREE YEAR MAINTENANCE AND MONITORING PERIOD

The Three Year Maintenance and Monitoring Period (MMP) will begin the year after planting, regardless of when planting occurs. In the event that the plantings are not completed in one calendar year, the MMP will begin the year after all the plantings have been completed.

MPP Example

Planting Occurs	1st Year MMP	2nd Year MMP	3rd Year MMP
April 2012	Ends Sept 1, 2013	Ends Sept 1, 2014	Ends Sept 1, 2015
	1st Annual Report Issued	2nd Annual Report Issued	3rd Annual Report Issued
	Sept 30, 2013	Sept 30, 2014	Sept 30, 2015

During the MMP, the Engineer will visit the site a minimum of three times a year in the growing season. The site visits will occur on or about May 1, July 1, and September 1, in the planting year(s) and each of the three years of the MMP. The visits will be conducted to determine the progress and health of the vegetation within the native planting area. The Engineer will evaluate the status of the plantings and the level of the acceptance criteria achieved. Additionally, the Engineer will determine if remedial measures are required and will recommend procedures to correct any deficiencies in the plantings.

The vegetative monitoring will be based on meander surveys of the various disturbed areas. Large community types will have multiple meander surveys completed each year in order to provide a representative evaluation of the overall area and to be able to clearly identify those areas (if any) which are deficient.

At the end of each year of the MMP, the Engineer will evaluate the installed plant materials according to the acceptance criteria contained in these special provisions. An annual report will be issued at the end of each year of the MMP. The report will address, at a minimum, the level of acceptance criteria met and include any applicable remedial recommendations.

At the end of the 3rd year of the MMP, if all of the NAI passes the acceptance criteria, the MMP will be completed.

If, however, the Engineer determines that some areas and/or plant materials do not pass the acceptance criteria, the MMP will be extended for those areas. The Contractor's responsibility for maintenance and monitoring in the areas that meet the acceptance criteria will end. The entire Landscaping Performance Guarantee will remain in full force and effect until all areas and/or plant materials, including replacements meet the acceptance criteria.

EVENTS BEYOND CONTRACTOR CONTROL

Over the Three Year Maintenance and Monitoring Period, there may be events that are beyond the Contractor's control that will affect his/her ability to achieve the required performance standards. Loses due to fire, flood, lighting or storm (winds greater than 75 mph) are examples of such events. If such an event occurs that damages or kills the seeding, wetland plants, or trees and shrubs, prior to the end of the Three Year Maintenance and Monitoring Period, the Contractor shall immediately contact LCDOT. LCDOT will evaluate the situation and, if LCDOT concurs that the event was in fact beyond the Contractor's control, the Contractor will be compensated for reseeding and replanting at the contract unit prices for the items involved.

SPECIAL PROJECT REQUIREMENTS

Construction Limits: The Contractor shall work within the project limits as shown on the plans. The approximate location of Contractor's access to the work site will be as shown on plans and/or as designated by the Engineer. LCDOT reserves the right to alter the project limits to avoid damage to environmentally sensitive areas. The Contractor may maintain uncovered storage and parking only in those areas designated by Engineer.

Layout of Work: The Engineer shall provide the Contractor with a planting plan that indicates locations for the installation of trees and shrubs. The planting locations will be staked by the Engineer. Trees will be planted individually, while shrubs will generally be planted in groups of three to five, or as directed by Engineer.

Site Access: Work site access shall be limited to the designated site access point as shown on the plans or as determined in the field by the Engineer and the Contractor. The site access shall not cross a regulated waterway or wetland without the approval of the U.S. Army Corps of Engineers and/or the Lake County Stormwater Management Commission, and then only after obtaining all necessary regulatory permits. The Contractor shall maintain access to the work site at no additional cost to LCDOT.

If access to the site is directly from a public highway, the Contractor shall not park any vehicles on or block traffic on the roadway. The Contractor shall provide warning signs for vehicles entering and leaving the site. All public highways shall be kept clean of any debris from the site work. If dirt and debris are tracked onto adjacent public streets, highways, or LCFPD trails, drives, or parking areas, the Contractor shall thoroughly clean the pavement by 3:00 p.m. each workday or as often as required by Engineer. If any municipality or public agency, including LCDOT and/or LCFPD, is called to clean the pavement, all associated expenses shall be paid by the Contractor.

The Contractor shall follow posted weight limits along public roadways; the Contractor shall bear any and all associated expenses necessary to comply with this requirement.

The Contractor's vehicles, equipment, and supplies shall be stored at staging area(s) identified on the engineering plans or as designated by the Engineer. Following the project completion, the staging area(s) shall be restored to its original condition by the Contractor, at no additional cost to LCDOT. Any damage to equipment during movement and storage shall be the responsibility of the Contractor.

Construction Noise: To minimize the effect of construction noise in the area surrounding the work site, the Contractor shall comply, and cause its subcontractors to comply, with the following requirements:

1. All engines and engine-driven equipment used for hauling or construction shall be:

    a. Equipped with an adequate muffler in constant operation.

    b. Properly maintained to prevent excessive or unusual noise.

2. Any machine or device or part thereof, which is regulated by or becomes regulated by government noise standards, shall conform to those standards.

Incidental Site Restoration: Upon completion of the work, the Contractor shall:

1. Remove all debris and excess materials from the Site.

2. Smooth over, restore, fine grade, and seed with seed mix approved by Engineer any disturbed areas identified by Engineer to ensure positive drainage in a manner acceptable to the Engineer.

The Contractor shall take all necessary and reasonable precautions to prevent any damage to existing trees, foliage, plant materials, wetlands, structures, roads, parking lots, trails, turf areas, finished topsoil areas, and property owned by LCDOT, LCFPD, or other public or private entities.

Any area(s) disturbed by the Contractor shall be restored to its original condition by the Contractor, at the Contractor's expense. The opinion of Engineer shall be final in determining acceptability of restored areas.

Protection and Care of Trees and Shrubs that are to Remain: The Contractor shall not:

1. Damage, cut, prune, transplant or remove any tree.

2. Attach any rope, wire, nail or other object to any tree.

3. Allow any gaseous, liquid or solid substance or equipment to contact any tree or the soil located within the dripline of any tree.

4. Impair normal surface drainage around any tree.

5. Allow any fire to burn which could injure any tree.

6. Act in any way to affect the vigor or appearance of any tree.

Protection of Streams, Lakes, and Reservoirs: The Contractor shall provide adequate planning and supervision during all work including construction methods, processes and clean-up procedures, necessary to prevent water pollution and to control erosion.

If spoil material is excavated, dredged or otherwise produced out of a waterway, the Contractor shall not return or discharge such material into the waterway or any other body of water (unless discharge has been approved in accordance with applicable laws), but shall deposit it in a self-contained area in compliance with all applicable laws. The Contractor shall perform all backfilling with clean material and in a manner so as to prevent any violation(s) of applicable water quality standards.

TOPSOIL FURNISH AND PLACE

Description: This work shall consist of placing topsoil, where required, to the depth shown on the plans.

Materials: The topsoil shall be furnished from outside the right-of-way and shall be according to Article 1081.05(a) of the "Standard Specifications".

General: The work shall conform to Section 211 of the "Standard Specifications". The Contractor shall obtain the topsoil from a local source.

Topsoil placement shall be according to Articles 211.03, 211.04, 211.05, and 211.06 of the "Standard Specifications" except as modified herein.

The Contractor shall place the topsoil in such a manner as to minimize compaction. Once the topsoil has been placed, no vehicles except scarifiers and seed installation equipment shall be permitted on the topsoil.

The work shall also comply with the "Illinois State Agency Historic Resources Preservation Act" (Public Act 86-707, effective January 1, 1990). Under this Act:

1. The Contractor shall complete an Environmental Survey Request Form for Borrow/Waste/Use Areas (BDE2289 - Rev 11/06, included herein), along with all required attachments, and submit them to the Engineer at the earliest possible date.

2. The Engineer shall submit the Environmental Survey Request to the Illinois Department of Transportation for review and approval. Any costs incurred associated with said review and approval will be borne by the Contractor.

3. The Contractor shall not begin work on any Borrow/Use areas until the Environmental Survey Request has been approved.

Method of Measurement: Topsoil Furnish and Place will be measured for payment in square yards, according to Article 211.07 of the "Standard Specifications".

Basis of Payment: This work will be paid for at the contract unit price per square yard for TOPSOIL FURNISH AND PLACE of the depth specified. The unit price shall include all labor, materials, and equipment required to complete the work as specified.

LOW GROUND PRESSURE EQUIPMENT

Due to the sensitivity of organic topsoil to compaction, the Contractor shall use equipment classified by the manufacturer as Low Ground Pressure (LGP) for work in the construction area. This does not apply to the designated staging area. This equipment includes track type tractors, pan scrapers, excavators, haulers, seeders, and any field assistance vehicles. Where available, tracked equipment is preferred; unless a rubber tired vehicle can be shown to have a lower ground pressure for a particular application.

Ground Pressure Requirements: Track type equipment shall not exceed a ground pressure of 6 pounds per square inch. Wheel type equipment must not exceed a ground pressure of 12 pounds per square inch. The Engineer may approve exceptions to the requirement for LGP equipment for specific activities.

Submittal Requirements: If requested, the Contractor shall submit the equipment manufacturer's specification for total weight and ground pressure for approval by the Engineer.

Method of Measurement and Basis of Payment: This work will not be measured for payment. The cost of providing and operating Low Ground Pressure Equipment shall be included in the appropriate seeding/planting work item.

SEEDING

Description: The work shall consist of preparing the seed bed and placing the seed and other materials in the seed bed. Seeding will consist of graminoids tolerant of Transline® herbicide.

Materials:

1. General:

   a. The classes of seed mixtures and combinations of mixtures are designated on the plans. When IDOT seed mixtures are designated they shall consist of the classes and seeds listed in Article 250.07, Table 1 – Seeding Mixtures, of the "Standard Specifications. The source of seeds shall be from within IEPA Ecoregion 54, preferably within a 150 mile radius of the project site. The Engineer will approve any variations in seed mixture in writing.

   b. The seeds shall meet the requirements of Article 1081.04 of the "Standard Specifications". All seed materials shall conform to the Standards of the American Association for Nursery Stock (ANSI Z60.1-1980). In the event there is a discrepancy between ANSI Z60.1-1980 and this special provision, the more restrictive requirement shall govern.

   c. All seeds shall be of straight species. No horticultural varieties shall be acceptable.

   d. Forb seeds shall have undergone a period of appropriate stratification at the source of supply.

   e. Seed containing noxious weeds shall not be accepted, nor shall seed collected from the wild.

   f. All native seed shall be provided on a pure live seed (PLS) basis where available. PLS shall be defined as (purity) x (total germination). Total germination is defined as (germination + hard seeds + dormant seeds). TZ can be substituted in lieu of total germination, if necessary. Actual seed amounts used on the project will vary with the actual percent of PLS in the seed lot. Seed supplied to the site shall contain documentation of PLS testing and, if required, adjustment of the seed weights in order to provide 100 percent PLS standards. PLS adjustment must be based on seed test results no older than 12 months. For prairie cordgrass and prairie dropseed, test results should be no older than 6 months.

2. Delivery, Handling, and Temporary Storage:

    a. All seed shall be furnished in sealed containers.

    b. Seed packaging shall be protected from moisture and extreme heat. Seed that has become wet, moldy, or otherwise damaged in transit or storage shall not be acceptable.

    c. All seed shall be shipped in single-species containers directly from the supplier and shall be mixed at the time of planting by the Contractor. Seed species mixed by the supplier shall not be acceptable.

    d. The seed packaging for all species shall be clearly labeled on the outside with the following information:

        i. The scientific name of species.

        ii. The PLS value, PLS weight, and bulk weight.

        iii. The pure weight and bulk weight if seed is not available as PLS.

        iv. The year of seed production and the date of seed tests.

        v. All Seed tests shall be attached to the packaging for all species at time of delivery.

    e. The seed shall be stored in a temperature-controlled environment.

    f. Seed containers shall be stored off the ground and indoors. Onsite storage of seed shall be at the Contractor's own risk. Any damage incurred to seed stock while stored on-site shall not relieve the Contractor from his/her responsibility for furnishing and installing all materials in strict accordance with the contract documents, nor will any additional compensation be allowed.

3. Seed Mixes: All native seeding shall be accompanied by a cover crop, as specified within the plans.

4. Accessories:

    a. Endomycorrhizal Inoculant: All native seed mixes shall be combined with an appropriate endomycorrhizal inoculant such as AM 120 Mycorrhizal Inoculum (or comparable). The inoculant application rate shall be a minimum of 40 lbs/acre.

    b. Fertilizer: No fertilizers shall be used for this work.

c. Erosion Control Blanket: Erosion control blanket will be installed as shown on the plans.

Construction Requirements:

1. Seeding Time:

   a. Seed shall be installed from March 1 through June 15 or as dormant and/or frost seed installation from October 15 through March 1.

   b. Soil in the graded upland and wetland restoration/creation locations shall be disked or raked to a depth of three inches with a disk tiller or other equipment approved by the Engineer, in order to loosen the soil and ensure good seed-soil contact. The Engineer may determine that disking or rototilling soils is not needed as this process could bring additional weed seeds to the surface.

   c. For planting areas that have not been disturbed by grading operations, the Contractor shall not disk or rototill the soils prior to planting unless the areas have been heavily compacted by traffic and/or as directed by the Engineer. Seedbed preparation in such areas may involve the application of a broad-spectrum herbicide followed by thatch removal, repeat herbicide application, and seed installation.

   d. If compaction is present in graded areas, chisel plowing the upper three to six inches will be performed using a construction ripper or similar equipment.

   e. The prepared surface shall be relatively free from weeds, clods, stones, and rivulets, gullies, crusting and caking. All soil particles shall be reduced to a size not larger than 0.5 inch in the largest dimension.

   f. If the long-term (i.e., permanent) seed matrix is not installed with the temporary cover crop, the permanent matrix will be planted in the first available growing season.

2. Methods:

   a. Seed shall be installed via a rangeland-type drill designed to install native grass and wildflower (e.g., Truax No-Till drill) on surfaces where the soil is sufficiently firm to support such equipment. Hydraulic seeding or hand broadcast seeding shall only be allowed when approved by the Engineer and only in inaccessible areas where using the specified equipment would be physically impossible. The Contractor shall determine the optimal method and equipment for seed installation in each area.

b. Ungraded areas shall be interseeded (or other method as determined appropriate by the Contractor) following the control of more aggressive species such as goldenrod. Broadcast application shall not be used in areas that lack exposed soils.

c. The seed shall be mixed with a granular form of endomycorrhizal inoculant at a rate of 40 lbs/acre.

d. The equipment shall be operated in a manner to ensure complete coverage of the entire area to be seeded. Seed shall be drilled in two separate runs, with each application of seed overlapping the previous application by one-half the weight to ensure double coverage of seeded areas (e.g., half of the seed in a north-to-south direction, then overlapping the seed with an application in an east-to-west direction). Each planting run shall overlap by a minimum of one planting row.

e. Prior to starting work, seeders shall be calibrated and adjusted to sow seeds at the required seeding rate and at the proper depth. Grass/sedge seed shall be installed at a depth no greater than 0.25 inches. The machine used to seed shall be reset to drill the forb mixture at the depth recommended by the seed supplier or as specified by the Engineer. If the seeded species require exposure to sunlight for germination, such species shall be planted separately, after drilling, using a broadcast application method.

f. Where soil conditions are too wet or slopes are too steep for drilling, broadcasting the seed is acceptable on exposed soils only. Broadcast seed methods will use 1.5 times the drill-seed rate. Broadcast seed shall be mixed with an equal amount of inert filler (e.g., perlite, ground corn cobs, or vermiculite) to ensure even distribution. Hydraulic application of native upland seed shall not be accepted. A mechanical broadcast seeder (e.g., Cyclone or Seed Slinger) may be used. The seed shall be broadcast in two separate applications, with each application of seed overlapping the previous application by one-half the weight to ensure double coverage of the seeded area. For example, half the weight of seed would be installed in a north-south direction and the remaining half would be installed in an east-west direction. Within 12 hours following broadcast seeding or as soon as site conditions permit, the Contractor shall rake, drag, or roll broadcast seeded areas perpendicular to the slope.

g. The last areas to be seeded/re-seeded will be the equipment access points.

h. Ideally, seeding shall occur when the soil is moist to dry-damp and shall be timed such that rainfall occurs within 48 hours of seeding (particularly if seeding in early spring). No seed shall be sown when winds exceed a

velocity of ten miles per hour or when the ground is not in proper condition for seeding. No seed shall be sown until the purity testing has been completed for the seeds to be used. Only seeds meeting the noxious weed requirements shall be used.

i. LCDOT shall be notified 48 hours prior to the commencement of seeding operations.
j. All areas seeded shall be protected from erosion and sedimentation. The Engineer may reduce erosion and sediment control requirements based on site conditions and/or planting season which would result in a cost savings to LCDOT. Erosion and sediment control measures shall be installed as detailed in the plans and special provisions. The erosion control blanket shall be according to the special provision for Erosion Control Blanket (Special) included herein.

k. Those areas in which mulch or seed has been disturbed prior to final acceptance by LCDOT shall be re-mulched at no additional cost to LCDOT.

Method of Measurement: Seeding will be measured for payment in acres of surface area seeded. The Erosion Control Blanket will be measured for payment in place in square yards of actual area covered.

Basis of Payment: This work will be paid for at the contract unit price per acre of SEEDING of the type specified, according to Article 250.10 of the "Standard Specifications". The unit price shall include all labor, equipment and materials necessary to complete the work as specified. The EROSION CONTROL BLANKET will be paid for at the contract unit price per square yard.

MMP: This pay item is covered under the Three Year Maintenance and Monitoring Period. As described in the NAI special provisions, release of the Landscaping Performance Guarantee will be based on meeting the acceptance criteria for all included pay items.

Acceptance Criteria: For acceptance, seeded areas shall meet the following conditions at the end of the Three Year Maintenance and Monitoring Period:

1. No seeded area shall have more than one square yard (areal coverage) devoid of vegetation.

2. No more than 25 percent of the total species present within the NAI, may be comprised of non-native or invasive species as measured by areal coverage. The non-native or invasive species include, but are not limited to, the species listed below. If this standard is not met, remedial activities shall be implemented, as soon as possible (i.e., as soon as weather conditions allow) in order to control the non-native or invasive species.

Non-Native & Invasive Species

Garlic Mustard	(Alliaria petiolata)
Common Buckthorn	(Rhamnus cathartica and frangula)
Reed Canarygrass	(Phalaris arundinacea)
Purple Loosestrife	(Lythrum salicaria)
White Sweetclover	(Melilotus alba)
Yellow Sweetclover	(Melilotus officinalis)
Multiflora Rose	(Rosa multiflora)
Canada Thistle	(Cirsium arvense)
Crownvetch	(Coronilla varia)
Cutleaf Teasel	(Dipsacus laciniatus)
Fuller's Teasel	(Dipsacus sylvestris)
Bush Honeysuckles	(Lonicera spp.)
Common Reed	(Phragmites australis)
Canada & Kentucky Bluegrass	(Poa compressa and pratensis)
Sandbar Willow	(Salix interior)
Sericea Lespedeza	(Lespedeza cuneata)
Leafy Spurge	(Euphorbia esula)
Spotted Knapweed	(Centaurea biebersteinii)
Japanese Knotweed	(Polygonum cuspidatum)

EROSION CONTROL BLANKET (SPECIAL)

Description: This work shall consist of furnishing and placing erosion control blanket over seeded areas in the constructed natural area, where designated on the project plans.

Materials: The erosion control blanket shall consist of North American Green S150BN as manufactured by North American Green, Inc., or an approved equal.

General: The blanket shall be placed over the areas specified, immediately after seeding operations have been completed. Prior to placing the blanket, the areas to be covered shall be relatively free of all rocks and/or clods over 1½" in diameter, and all sticks or other foreign material which will prevent the close contact of the blanket with the seed bed. If, as a result of rain, the prepared seed bed becomes crusted or eroded, or if eroded areas, ruts or depressions exist for any reason, the Contractor shall be required to rework the soil until it is smooth and to reseed such areas which are reworked at no additional cost to LCDOT. After the area has been properly shaped and seeded, the blanket shall be laid out flat, evenly and smoothly, without stretching the material. The blanket shall be placed lengthwise or parallel to the shoreline.

The downslope and top of slope ends of erosion blankets shall be trenched in according to the manufacturer's instructions.

Each blanket model shall be installed according to the manufacturer's recommendations.

Method of Measurement: This work will be measured in place and the area computed in square yards.

Basis of Payment: The work will be paid for at the contract unit price per square yard for EROSION CONTROL BLANKET (SPECIAL). The unit price shall include all labor, equipment, and materials necessary to complete the work as specified. Seeding and Perennial Plantings, Wetland Type will be measured and paid according to their respective special provisions included herein.

PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL

Description: This work shall consist of the installation and maintenance of all native perennials, wetland plugs, tubers and/or rootstock. At a minimum, maintenance shall consist of watering, weeding, and plant replacement when determined necessary by the Engineer.

Materials:

1. General:

    a. Containerized plant materials shall be inoculated with vesicular arbuscular mycorrhizae endomycorrhizal fungi.

    b. All plants shall have a native source within 150 miles of the project site and shall be of straight species; no horticultural varieties shall be acceptable.

    c. The plants shall meet the requirements of Article 1081.02 of the "Standard Specifications" and the applicable section(s) of the following references:

        i. American Association of Nurserymen, Inc. (AAN) Standard; American Standard for Nursery Stock (ANSI Z60.1-1990).

        ii. American Joint Committee on Horticultural Nomenclature "Standardized Plant Names," second edition, 1942.

        iii. F. Swink and G. Wilhelm, ***Plants of the Chicago Region***, 1994.

    d. In the event there is a discrepancy between these reference standards and this special provision, the more restrictive requirement shall govern.

    e. The planting stock shall be nursery propagated according to good horticultural practices. Collected stock or nursery grown wild plants will not be permitted. Planting stocks from which plant propagation is taken may have been wild collected.

    f. All live plugs shall be legibly tagged with the scientific name and shall be true to the species specified in the plans.

2. Delivery, Handling, and Temporary Storage:

    a. Plant materials provided by the Contractor shall be subject to approval by the Engineer at the project site prior to installation.

b. All planting stock shall be alive, healthy, properly hydrated, and free of all fungi (except arbuscular mycorrhizae endomycorrhizal fungi), bacterial discoloration; and deformities. Containerized materials shall have well-developed root systems.

c. On-site storage of live plugs shall be at the Contractor's own risk. Any damage to plant stock while stored onsite shall not relieve the Contractor of his/her responsibility to furnish and install native herbaceous plant material according to the contract documents, nor will any additional compensation be allowed.

d. Live plugs shall be protected from grazing animals (e.g., geese) and from frost during temporary storage.

e. Live plugs may require regular watering and supplemental nutrition while in temporary storage. The Contractor shall ensure that live plugs are in a healthy, vigorous state upon inspection.

f. All flower buds, seed heads, and dead leaves shall be removed from the transplants to ensure the plant's energies go to producing roots and new leaves.

g. To provide prompt stabilization in areas that will experience more frequent flood events, the containerized plant materials shall be installed at the density shown on the plans in year one of the installation.

3. Plant Lists: The areas to be planted are shown on the plans as Perennial Plantings, Wetland Type, Special I (Mix B Special) and Perennial Plantings, Wetland Type, Special II (Mix C Special). The mixture of plants shall be as follows: plant names, scientific and common, from the USDA website, http://plants.usda.gov/index.html.

   a. **Wetland Type Mixes:** For all Wetland Type Mixes, the mix is to be equally distributed among the group. Each species shall be planted in pods of 32, 38 or 49 plants. These pods are to be placed randomly within the locations for each mix, as shown on the Landscape Plan. The plantings shall be placed at average two foot spacing. The plants shall be stored properly upon receipt in a cool, moist location, where exposure to sun is minimized.

b. **Perennial Plantings, Wetland Type, Special I**
(Mix B Special) – Emergent Zone

Acorus calamus (Calamus)
Alisma subcordatum (American Water Plantain)
Carex comosa (Longhair Sedge)
Carex crinita (Fringed Sedge)
Carex stipata (Awlfruit Sedge)
Cicuta maculata (Spotted Water Hemlock)
Iris virginica shrevei (Shreve's Iris)
Pontederia cordata (Pickerelweed)
Sparganium eurycarpum (Broadfruit Bur-reed)
Scirpus americanus (Chairmaker's Rush)
Scirpus validus (Softstem Bulrush)
Sagittaria latifolia (Broadleaf Arrowhead)

c. **Perennial Plantings, Wetland Type, Special II**
(Mix C Special) – Upper Wetland Zone

Asclepias incarnata (Swamp Milkweed)
Aster novae-angliae (New England Aster)
Calamagrostis canadensis (Bluejoint)
Carex buxbaumii (Buxbaum's Sedge)
Carex lacustris (Hairy Sedge)
Carex stricta (Upright Sedge)
Eupatorium maculatum (Spotted Joe Pye Weed)
Eupatorium perfoliatum (Common Boneset)
Helenium autumnale (Common Sneezeweed)
Lobelia cardinalis (Cardinalflower)
Lobelia siphilitica (Great Blue Lobelia)
Phlox glaberrima (Smooth phlox)
Physostegia virginiana (Obedient Plant)
Pycnanthemum virginianum (Virginia Mountainmint)
Rudbeckia laciniata (Cutleaf Coneflower)
Spartina pectinata (Prairie Cordgrass)
Veronicastrum virginicum (Culver's root)

4. Accessories:

a. Herbivory Protection: Protective Planting Enclosures, described herein and detailed on Lake County Standard LC2102, shall be installed for protection against herbivores.

b. Erosion Control Blanket (Special): The erosion control blanket will be installed as shown on the plans.

Construction Requirements:

1. Planting Time:

    a. Plugs, tubers, and rootstock shall be installed during the last week of March through June 15. With written approval from the Engineer, plug installation may also occur from August 15 through September 30.

    b. Plugs will be installed within one week of seeding, unless an alternate planting time is approved by the Engineer.

    c. Delivery and Storage of Plants:

        i. The Contractor shall provide the Engineer 48 hours notice prior to delivery of the plantings to the site. If, following delivery, delays occur in planting, the Contractor shall be responsible for storing the plants on site. The plants shall be kept appropriately watered and protected from sun, wind and mechanical damage. Dormant materials shall be stored in refrigerated compartments or environmentally controlled structures, approved by the Engineer, until the plants can be installed.

        ii. The plants shall be handled at all times according to best horticultural practices. Plants shall not be bent, stacked or bound in a manner that deforms roots or destroys the natural shape of the plants. Mishandled plants may be subject to rejection by the Engineer. The Contractor shall replace rejected plants at his/her own expense.

        iii. The plants shall be shipped with legible labels stating the scientific name and the size of the plant. The labels shall be securely attached to the individual plants or plant bundles of like variety and size. Containers of plant tubers and rootstock shall be individually labeled, as specified.

        iv. The Contractor shall schedule shipping so as to minimize on site storage of plants. Planting stock shall not be shipped until the planting preparations have been completed. The Engineer shall be notified at least 48 hours prior to shipping.

2. Planting:

    a. Plants will be installed by species in full flats, creating groupings (pods) of 32, 38, or 49 plants of the same species. Plant spacing within each grouping will depend on the species being planted. Plug spacing will average two feet on center.

b. Plug holes may be drilled with an auger or dug by hand with a trowel, spade, planting bar or other implement approved by the Engineer. Holes shall have the same diameter and depth to accommodate the live plug's root massing without damage (within +0.75"/-0.25").

c. Plugs will be set such that the final position of the root crown following planting, soil settlement, and initial watering is slightly (⅛" to ¼") below the soil surface. The crown shall be covered with native soil.

d. The Contractor shall ensure that live plugs are not loose after planting. If frost is a possibility, each plug shall be secured with a biodegradable stake like those used for the installation of the erosion control blanket.

e. Plant tubers and rootstocks shall be installed by hand. For spring installation, these materials will be planted under one inch of soil or mud. For early fall installation, the materials will be placed three to four inches below the soil surface. Once planted, the holes shall be backfilled with soil.

f. The planting area shall be watered upon completion if dry conditions exist.

g. When the planting of an area has been completed, the area shall be cleared of all debris, soil piles, and containers within 24 hours.

Period of Establishment: The period of establishment shall be as defined in Article 254.09 of the "Standard Specifications".

Method of Measurement: This work will be measured for payment in units of 100 perennial plants (1 unit = 100 perennial plants) of the type specified, according to Article 254.10 of the "Standard Specifications".

Basis of Payment: This work will be paid for at the contract unit price per each per unit for PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL I and PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL II. The unit price shall include the cost of handling, storing, preparation, and planting; watering before and after planting; plant care and all labor, tools, and incidentals necessary to complete the work specified.

MMP: This pay item is covered under the Three Year Maintenance and Monitoring Period. As described in the NAI special provisions, release of the Landscaping Performance Guarantee will be based on meeting the acceptance criteria for all included pay items.

Acceptance Criteria: For acceptance, areas primarily established by installation of plugs shall meet the following conditions at the end of the Three Year Maintenance and Monitoring Period:

1. Emergent communities shall have achieved 25 percent surface coverage, with the exception of areas designated as being open water by the third year.

2. Emergent and shoreline communities may contain cattail species. However, cattails may not constitute more than 30 percent of the species present, based on an ocular estimate.

SODDING, SPECIAL

Description: This work shall consist of preparing the ground surface and furnishing and placing sod and other materials required in the sodding operations.

Materials: The sod shall consist of wetland plants, of the mixes specified, grown in fiber blankets and placed on site. The material shall be EcoPatch™ as supplied by Hild & Associates, or an approved equal.

Contact Information for Hild & Associates:

326 Glover Road South
River Falls, WI 54022
(715) 426-5131
sales@hildandassociates.com

The wetland plant mixes shall consist of the mixes detailed in the special provision for PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL. No substitutions from these plant types shall be made without prior approval of the Engineer and the Lake County Forest Preserve District. Each mix shall be used for 50 percent of the SODDING SPECIAL area.

General: The work shall be performed according to Sections 250 and 252 of the "Standard Specifications" and the following:

The sod shall be placed in the wetland area in the detention basin. The sod shall bridge the boundary between the plantings for Perennial Plantings, Wetland Type, Special I (Mix B Special) – Emergent Zone and the plantings for Perennial Plantings, Wetland Type, Special II (Mix C Special) – Upper Wetland Zone. One roll of sod of each mix, three feet wide, shall be placed at the border between the two zones, as shown on the plans.

Method of Measurement: Sodding Special will be measured for payment in place and the area computed in square yards, according to Article 252.12 of the "Standard Specifications". To be acceptable for payment, the sod shall be growing in place for a minimum of 30 days in a live, healthy condition.

Basis of Payment: This work will be paid for at the contract unit price per square yard for SODDING, SPECIAL according to Article 252.13 of the "Standard Specifications". The unit price shall include all labor, equipment, and materials necessary to complete the work as specified. No additional price adjustment will be made for the different plant mixes in SODDING, SPECIAL.

MMP: This pay item is covered under the Three Year Maintenance and Monitoring Period. As described in the NAI special provisions, the release of the Landscaping Performance Guarantee will be based on meeting the acceptance criteria for all included pay items.

Acceptance Criteria: For acceptance, SODDING SPECIAL shall meet the acceptance criteria of PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL at the end of the Three Year Maintenance and Monitoring Period.

PROTECTIVE PLANTING ENCLOSURES

Description: This work shall consist of furnishing, installing, and removing Protective Planting Enclosures within the emergent plug planting zones and according to the special provisions, plan details, and the Engineer's recommendation.

General: Protective Planting Enclosures shall consist of four foot long steel "U" posts, 18 gauge chicken wire, and monofilament line (minimum 30 lb test) as detailed on Lake County Standard LC2102. The Contractor shall not use snow fence.

Protective Planting Enclosures shall be installed around the floating aquatics and emergent & aquatic plugs planted material at the direction of the Engineer.

The Contractor shall monitor the condition of the fence and string monthly, making any repairs or replacements as necessary. Additionally, the Contractor shall make repairs and/or replace the enclosure when notified by the Engineer that such action is necessary. LCDOT will monitor the fencing via LCDOT maintenance patrols.

The Protective Planting Enclosures shall remain in place for the duration of the Three Year Maintenance and Monitoring Period. Maintenance shall continue until the acceptance criteria are met, at which time all fencing shall be removed unless directed to remain by the Engineer. The Enclosures shall be removed and disposed of without damage to the protected plants or the surrounding area. The removed materials shall be disposed of, outside the right-of-way, according to Article 202.03 of the "Standard Specifications".

Method of Measurement and Basis of Payment: PROTECTIVE PLANTING ENCLOSURES shall not be measured separately, but shall be included in the contract unit price for PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL I and PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL II. Repairs/replacement (maintenance) as are necessary shall not be paid for separately, but shall be included in the contract unit price for PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL I and PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL II.

TREE AND SHRUB PLANTING

Description: This work shall consist of the procurement, transportation, installation, and maintenance of all trees and shrubs as specified herein and at the direction of the Engineer. This work shall also include herbiciding, mulching, pruning, watering, fertilizing, inoculating, weeding, and replacing of plants when required. A certified arborist or forester shall specify and oversee pruning and other techniques deemed necessary to preserve the trees.

Materials: Plant material shall comply with Section 253 and Section 1081 of the "Standard Specifications" and the following:

1. Substitutions: Substitutions shall not be permitted unless authorized by the Engineer. If proof is submitted that any plant specified is not obtainable, a proposal shall be considered for the use of the nearest equivalent size or variety with a corresponding and equitable adjustment to the contract price. The proof and proposal shall be submitted in writing and shall be subject to verification by the Engineer.

2. Measurements: All plants shall be measured before pruning, with their branches in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from root tip to top. Tree caliper measurement shall be taken at a point on the trunk ten inches above natural ground line for trees up to four inches in diameter. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.

3. Planting Stock: All tree and shrub stock shall conform to container size and type; caliper size; and/or height requirements, as shown on the plans and special provisions. Plants shall conform to the most recent version of the American Standard for Nursery Stock ANSI Z60.1 (American Nursery and Landscape Association, Washington D.C.) when not superseded by specifications herein. Any deviations shall be approved by the Engineer in writing prior to shipment.

   Tree and shrub stock shall be of a size and structure as considered reasonable and normal for that particular size or caliper size, as shown on the plans and special provisions. All stock may be rejected if the root system does not fill the container. Conversely, the root mass shall not be excessively "root-bound" or contain excessive circular growth of roots. All stock shall conform to one of the four growing methods described below, depending on the size and type requested. Refer to the Whitcomb System® for more information (www.rootmaker.com).

a. Container-grown Five Gallon Stock: Container-grown five gallon stock shall be grown and supplied in either RootMaker® Grounder™ hard-sided containers (RMI-5G), or RootTrapper® soft-sided containers (RT5, five gallon).

b. Field-grown Five Gallon Stock: Field-grown stock shall be grown in knit fabric in ground containers (i.e., "root bags"). In-ground containers shall be eight to ten inches in diameter. Field-grown stock shall be spring dug, with the knit fabric in ground containers removed and shall be immediately transplanted into above ground containers. Roots shall be pruned so as to accommodate the transplanting into above ground containers. No tree or shrub stock shall be accepted if the soil mass is cracked or broken. Five gallon stock shall be supplied in either RootMaker® Grounder™ hard-sided containers (RMI-5G), or RootTrapper® soft-sided containers (RT5, five gallon).

c. Container-grown Larger Stock: Trees of one to four inch caliper and larger shrubs. Container-grown stock shall be supplied in RootTrapper® soft-sided containers only. Containers shall be RT15, 15 gallon size (i.e. 15 inches tall by 18 inches wide), unless otherwise specified.

d. Field-grown Larger Stock: Trees of one to four inch caliper and larger shrubs. Field-grown stock shall be grown in knit fabric in ground containers (i.e. "root bags"). In-ground containers shall be 12 to 16 inches in diameter. Field-grown stock shall be spring dug, with the knit fabric in-ground containers removed and immediately transplanted into above ground containers. Roots shall be pruned so as to accommodate transplanting into above ground containers. No tree or shrub stock shall be accepted if the soil mass is cracked or broken. Stock shall be supplied in RootTrapper soft-sided containers only. Containers shall be the RT15, 15 gallon size (i.e. 15 inches tall by 18 inches wide), unless otherwise specified.

4. Character, Appearance, and Quality: Plants shall be true to genus and species and shall have a normal habit of growth. They shall be sound, healthy, and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae, and shall have healthy and well-developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving with the specified result. All trees shall have straight trunks and all old abrasions completely calloused over. They shall be free of objectionable disfigurements. Under grown, overgrown, or root-bound plants shall be rejected.

5. Inspection: The Engineer reserves the right to inspect and approve plant material for quality, size and species at the place of growth or upon delivery to the site. The Contractor shall provide the Engineer with the opportunity to inspect all plant material before installation. Rejected plants shall be removed from the site immediately and replaced with acceptable material at Contractor's expense. All plants shall comply with current federal, state, and county laws and quarantines requiring inspection for plant diseases and pest infestations. Certificates of inspection shall accompanying shipments and shall be furnished as may be required by Federal, State, County or other authorities.

6. Plant Hardiness: All plants shall be grown under climate conditions similar to those in the locality of the project for at least one growing season.

7. Guarantee for Growth and Quality: Unless otherwise specified, the Contractor shall guarantee all plant material until acceptance by Owner. Unacceptable plant material will be rejected and replaced at no additional cost to the Owner.

    a. During the guarantee period, and upon written notice from the Engineer, following field inspection by the Contractor and Engineer, the Contractor shall promptly replace any trees or shrubs that are unacceptable at no additional cost to LCDOT.

    b. Plant material, which upon inspection is found to be alive but not possessing the character and/or quality as originally specified, shall be replaced by the Contractor at no additional cost to LCDOT.

    c. All replacement plant material shall meet or exceed the standards set forth in this Contract for the original plantings in size and quality. If mutually agreed upon and approved by the Engineer, replacement plantings of size and quantity differing from the original plant material may satisfy this guarantee for growth.

    d. Replacement plant material shall be supplied and/or installed upon the first opportunity to do so with respect to season, weather, and availability.

8. Planting Seasons: The Contractor shall recognize that field-grown plant stock being requested in this Contract are considered a "spring dig" only (within the industry), and cannot be dug from the nursery during the summer, fall or winter seasons without prior approval of the Engineer.

9. Digging and Handling: No plants, other than samples, shall be dug or delivered to the project until inspections have been made; or until the plants or samples have been approved; or until the Engineer has authorized delivery. This authorization shall not relieve the Contractor from inspections or rejections of materials by the Engineer at a later date. Plants are to be handled in such a manner so that roots, stems and branches are adequately protected at all times

from drying and other injury. Any plants showing results of desiccation due to any cause such as digging, transporting, handling or planting practice shall be rejected. No plant shall be bound with wire or rope at any time. Plants shall be lifted and handled without causing damage to the plants. Plants shall be protected from sun or drying winds.

Unless otherwise specified, all field-grown stock shall be dug in the spring only and immediately transplanted in the specified above-ground container. Field-grown stock shall be dug with a firm, natural soil masses of sufficient diameter and depth so as to include all fibrous and feeding roots. No plant with soil masses that are broken or cracked before or during planting operations will be accepted unless approved by the Engineer.

10. Shipping and Delivery:

    a. Plants shall be shipped with legible labels, stating the correct name and size, and securely attached to individual plants.

    b. The Contractor shall coordinate with the Engineer in order to develop a mutually agreeable approximate delivery schedule and delivery locations. The Contractor shall contact the Engineer, via phone, a minimum of 24 hours prior to each delivery with the approximate arrival time. Deliveries will not be accepted on Fridays unless prior approval has been obtained from the Engineer.

    c. The Engineer shall approve the location for plant delivery.

11. Ash Tree (*Fraxinus* spp.): Due to infestations and quarantines of ash trees resulting from the introduction of the Emerald Ash Borer, LCDOT will not be planting Ash species in any natural areas.

Installation: For this Contract, all tree and shrub materials are to be grown and delivered to the project site in five gallon containers.

1. Layout and Planting:

    a. Plants shall be planted only when the air temperature exceeds 35 degrees Fahrenheit.

    b. Trees shall be spaced a minimum of ten feet apart. Trees and shrubs shall be planted in the areas as shown on the plans.

2. Planting Pit:

    a. The diameter of the plant pit for trees, shrubs, and herbaceous plants shall be twice the diameter of the root ball to facilitate proper root growth. The

pit depth of pit shall be sufficient for the bottom of the root ball to rest on firm native soil at the bottom of the pit. Any deviation in the size of the planting pit shall be approved by Engineer.

b. If an auger type apparatus is utilized to excavate a plant pit, the Contractor shall scarify the sides of the plant pit sufficiently to eliminate any glazing of the soil due to the use of an auger.

c. If a backhoe or similar apparatus is utilized to excavate the plant pit, the Contractor shall break all large clods of soil from excavation into smaller bits no larger than two inch size prior to backfilling.

d. Unless otherwise specified, all excess excavated clay and soil shall be spread evenly around the planting area.

3. Normal and reasonable care shall be given to each plant during planting so as not to damage any limbs or the trunk, or to break the root ball. Any plants that are mishandled and damaged shall immediately be replaced with identical specified material at the Contractor's expense.

4. All trees shall be placed at a depth so that the trunk flare remains one to two inches above the natural surrounding finished grade. Excess soil shall be removed from the top of the root ball to properly identify the natural trunk flare. Adventitious roots growing above the trunk flare and potential girdling roots shall be properly pruned. Care shall be given to each tree to avoid damaging the trunk.

5. All shrubs shall be placed at a depth so that the top of the root ball remains one to two inches above the natural surrounding finish grade.

6. Shrubs will be installed in groupings of three to ten shrubs per group, or as directed by the Engineer.

7. The Contractor shall backfill trees with the native topsoil from the excavation. The backfill shall be placed around the root system. All trees shall be set plumb and braced rigidly in position until the planting soil has been tamped solidly around the ball and roots. During backfilling, the Contractor shall periodically and thoroughly tamp the backfill to eliminate air pockets to reduce the potential for future settling.

8. All trees should have a soil ring, two to five inches above surrounding grade, installed at a diameter approximately twice the root ball diameter to facilitate watering.

9. All tags and ropes shall be removed and disposed of from each plant after planting.

Mulching: The Contractor is responsible for the supply, delivery, and installation of the mulch.

1. The mulch material for planting shall consist of shredded tree bark, or other approved organic material. The mulch shall be approved by the Engineer prior to placement.

2. The Contractor shall mulch all newly installed individual plants. Trees and shrubs shall be mulched to a depth of four to six inches from the finished grade.

3. The mulch rings for solitary trees shall be six feet in diameter and the mulch rings for individual shrubs shall be five feet in diameter. For clumped shrubs, the mulch ring shall extend three feet from the outermost shrubs in the clump. The mulch shall not contact the tree trunk and flare.

4. The Contractor shall leave a four-to-six-inch mulch-free gap around the tree/shrub to prevent moist bark conditions and to prevent decay.

Pruning: Pruning shall be performed after planting, if necessary. Remove only dead and/or damaged branches. Trees and shrubs shall be pruned by a professional arborist in conformance with the Tree Care Industry Association's (formerly National Arborist Association) Pruning Standards. The pruning shall comply with Article 253.09 of the "Standard Specifications".

Deer Protection: The Contractor shall furnish, install, and maintain fencing to protect trees and shrubs from deer.

1. The Contractor shall protect each individual tree and groupings of shrubs with a circle of fencing with the following minimum dimensions:

    a. The fence height shall be a minimum of five feet. The diameter of the fencing circle shall be four to five feet for individual trees and 12 to 15 feet for shrub groups, depending on the number of shrubs in the group.

    b. Fence openings shall be no larger than two inches by four inches.

2. The fencing shall be secured in place with a sufficient number of metal light-duty "T-posts," "U-posts," rebar or similar material and wire fasteners that will secure the fence in all weather conditions (typically one to three posts, depending on the "stiffness" or gauge of the metal fencing). Plastic, wood or any other non-metal post materials are not permitted.

3. The fencing material shall be metal welded wire, woven wire, poultry fence or similar material. Plastic, fabric, and/or other fencing non-metal materials are not permitted.

4. Alternative methods used by the Contractor to protect trees from "buck rubs" (not twig browsing) may be considered by the Engineer and may be implemented by the Contractor upon approval by the Engineer. Shrubs shall be protected from deer browse and "buck rubs".

5. The Contractor shall monitor the condition of the fence monthly, making any repairs or replacements as necessary. Additionally, the Contractor shall make repairs and/or replace fencing when notified by the Engineer that such action is necessary. LCDOT will monitor the fencing via LCDOT maintenance patrols.

6. Deer protection fencing shall remain in place for the duration of the Three Year Maintenance and Monitoring Period. Maintenance shall continue until the acceptance criteria are met, at which time all fencing shall be removed unless otherwise directed to remain by the Engineer. The fencing shall be removed and disposed of without damage to the protected trees, shrubs or surrounding area. The removed materials shall be disposed of outside the right-of-way, according to Article 202.03 of the "Standard Specifications".

7. The Contractor shall apply a deer and rodent repellent, e.g. Deer Off® or an approved equal, to all tree and shrub materials immediately upon delivery to the project site. The repellent may be applied prior to delivery to the project site. Additional applications may be necessary if there is precipitation prior erecting the fencing.

Watering of Trees and Shrubs:

1. If the trees and shrubs cannot be installed (including installation of deer protection) on the day of delivery, the Contractor shall be responsible for successive watering, as required until plants are installed, to maintain adequate soil moisture around the root ball of each plant.

2. Thorough watering of trees shall follow backfilling and be performed on the day of planting. Trees and shrubs shall be watered slowly and evenly to allow saturation of the entire root zone to a six-inch minimum depth. The rate of application shall limit runoff and maximize saturation. Watering shall be completed without injury to the tree or the work site. Once the ground settles, following watering, additional backfill shall be placed to match the level of the finished grade. Approved watering equipment shall be present at the work site, in a fully operational condition prior to the start of planting.

3. Until final payment for all work under this contract is made, the Contractor shall be responsible for successive watering as required to maintain adequate soil moisture around the root ball of each plant and even moisture throughout sodded areas.

Additional Watering – First Growing Season:

1. The Contractor shall provide additional watering during the first growing season (June – October) following planting.

2. The watering equipment and method shall be approved by the Engineer in advance. At least two additional applications of water shall be required for each tree and clump of shrubs during the growing season. The watering shall be completed at the discretion of the Engineer. It is the Engineer's responsibility to monitor the site and local weather conditions and to notify the Contractor when watering is necessary. The watering shall be completed within seven days following the Engineer's notification to the Contractor that watering is necessary.

3. The additional two applications of water shall typically be required during the months of June through August, when precipitation has not occurred during a two week period. Under drought conditions, up to three additional applications of water may be required during the first growing season. The timing of additional water applications is entirely dependent on local weather conditions, however, the first watering is typically necessary by mid-to late June, with a second watering required in late July.

4. For each additional watering, the Contractor shall apply ten gallons of water per tree and ten gallons of water per shrub. A pick-up truck with a large water tank in the bed or the equivalent shall be allowed in the planting area for purposes of watering. The Contractor shall monitor the intensity of the water pressure so that mulch around the trees and shrubs is not dislodged. The Contractor shall flag each tree and clump of shrubs after watering to ensure that all trees and shrubs are watered. Flags shall be removed after each watering.

5. The Contractor shall be responsible for replacing (including material and labor costs), at a 1:1 ratio, any tree or shrub damaged during the watering process and shall guarantee all replacements until they "leaf out" in the spring following planting.

Inspection and Acceptance: Once all plants have been installed, the Contractor shall notify the Engineer. The Engineer will then inspect the plantings, at which time all trees and shrubs planted according to Section 253 of the "Standard Specifications" that are in a live, healthy condition will be accepted for payment. Plants not in a live and healthy condition shall be replaced at the Contractor's expense.

Period of Establishment: The period of establishment shall be as defined in Article 253.14 of the "Standard Specifications". Plant care during the period of establishment shall be according to Article 253.15 of the "Standard Specifications".

Method of Measurement: Trees and shrubs will be measured for payment per each in place, of the species, type and size specified. The Watering, Additional Watering and Deer Protection shall not be measured separately, but shall be included in the unit cost of the Trees and Shrubs to be planted.

Basis of Payment: This work will be paid for at the contract unit price per each for TREE and SHRUB planting of the species, type and size specified, according to Article 253.17 of the "Standard Specifications". The unit price shall include all labor, tools, and materials necessary to complete the work as specified. The unit price shall also include furnishing; handling; storing; preparation and planting; excavation; backfill; additional watering; deer protection; mulching; post-planting pruning, weeding and watering; and plant care.

MMP: This pay item is covered under the Three Year Maintenance and Monitoring Period. As described in the NAI special provisions, release of the Landscaping Performance Guarantee will be based on meeting the acceptance criteria for all included pay items.

Acceptance Criteria: For acceptance, 100 percent of all trees and shrubs shall be alive and successfully rooted at the end of the Three Year Maintenance and Monitoring Period.

NOTES:

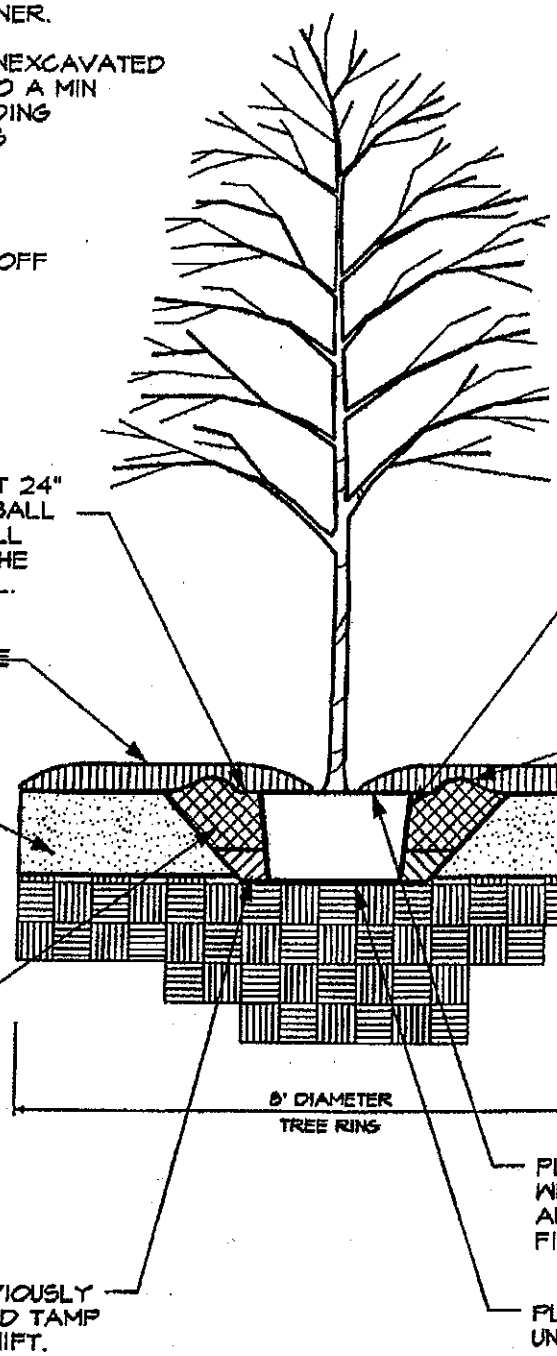
1. PLEASE REFER TO PLANTING PROCEDURE IN THE SPECIFICATIONS PRIOR TO USING THIS DETAIL.

2. PRUNE ONLY DEAD OR DAMAGED BRANCHES. ALL OTHER PRUNING SHALL BE PERFORMED ONLY AT THE DIRECTION OF THE OWNER.

3. LOOSEN SOIL AT ALL UNEXCAVATED PORTIONS OF TREE RING TO A MIN DEPTH OF 8" USING A SPADING FORK OR BY OTHER MEANS APPROVED BY THE OWNER.

4. NO STAKING REQUIRED.

5. REMOVE AND DISPOSE, OFF SITE, ANY TURF OR OTHER VEGETATION WITHIN THE MULCH RING.



TREE PLANTING DETAIL

ROOT BAG AND CONTAINER TREES — **NO SCALE**

RETURN WITH BID

LANDSCAPING CONTRACTOR
PERFORMANCE REFERENCE FORM

Each **CONTRACTOR/LANDSCAPING CONTRACTOR** shall supply 3 names, addresses, telephone numbers and persons to contact as performance references.

PROJECT			
Name		Client	
Location		City	
Size of Site		Reference	
Scope			
REFERENCE			
NAME		Phone	

PROJECT			
Name		Client	
Location		City	
Size of Site		Reference	
Scope			
REFERENCE			
NAME		Phone	

PROJECT			
Name		Client	
Location		City	
Size of Site		Reference	
Scope			
REFERENCE			
NAME		Phone	

EXHIBIT C

MAINTENANCE PLAN

County Section 06-00266-01-FP

DRAFT

NATURAL AREA INSTALLATION
THREE (3) YEAR MAINTENANCE AND MONITORING PLAN
LAKE COUNTY DIVISION OF TRANSPORTATION
LAKE COUNTY, ILLINOIS
OCTOBER 1, 2010

Project: Cedar Lake Road Extension
Section: 06-00266-01-FP

INTRODUCTION

As part of the above highway construction project, the Lake County Division of Transportation (LCDOT) will construct a natural area, consisting of a naturalized detention and compensatory storage area, on Lake County Forest Preserve District (LCFPD) property. The LCFPD has agreed to allow LCDOT to perform this work on LCFPD property with the understanding that LCDOT will be responsible for installing and maintaining native vegetation until establishment in all areas disturbed by the associated earthwork.

To ensure the establishment of the plant materials, LCDOT will include a Three Year Maintenance and Monitoring Period (MMP) following the installation of the natural area as shown on plans. At the end of the MMP, the planted native vegetation areas shall meet specific acceptance criteria before the areas are turned over to LCFPD for long term maintenance. The details of the MMP and the acceptance criteria are provided below. They are also included in the LCDOT Natural Area Installation (NAI) special provisions included in the contract specifications.

At the completion of the MMP, LCDOT and LCFPD will jointly inspect the natural area to determine what areas have met the acceptance criteria and what areas have not. Following the inspection and issuance of the final monitoring report, areas meeting the acceptance criteria will be turned over to LCFPD. Unsuccessful areas will remain the responsibility of LCDOT. As part of the joint inspection corrective action(s), if any, will be determined. The corrective action(s) may require LCDOT to extend the MMP.

Additional maintenance and monitoring beyond the three year period shall only be required for those specific portions of the NAI which fail to meet the acceptance criteria. Exhibits shall be prepared by LCDOT to document the areas in compliance and the areas in non-compliance. Any areas turned over shall be clearly defined in the field. Staking will be used to delineate which areas fall under each agency's management.

QUALIFIED LANDSCAPING CONSULTANT

On behalf of LCDOT, a Consultant will be engaged to oversee the NAI from the initial delivery of seed, sod, wetland plants, trees and shrubs through the final acceptance by LCFPD. The Consultant will act as the LCDOT representative for all aspects concerning the preparation, planting, monitoring and maintaining of the NAI.

The Qualified Landscaping Consultant shall be defined as an individual or company with at least five years of demonstrated experience in natural area management. The Qualified Landscaping Consultant shall have at a minimum:

- Staff experienced in native plant identification
- Licensed herbicide applicators
- Training in the completion of prescribed burns.

MONITORING

The Consultant will visit the site during the MMP a minimum of three times a year during the growing season. The visits will occur on or about May 1, July 1, and September 1, in the planting year(s) and each of the three years of the MMP. The visits will be conducted to determine the progress and health of the vegetation within the native planting area. The consultant will evaluate the status of the plantings and the level of the acceptance criteria achieved. Additionally, the Consultant shall determine if remedial measures are required and recommend procedures to correct any deficiencies in the plantings.

The vegetative monitoring shall be based on meander surveys of the various disturbed areas. Large community types will have multiple meander surveys completed each year to provide a better representative evaluation of the overall area and to be able to clearly identify those areas which are deficient.

THREE YEAR MAINTENANCE AND MONITORING PERIOD

The Three Year Maintenance and Monitoring Period will begin the calendar year after planting, regardless of when planting occurs. In the event that the plantings are not completed in one calendar year, the MMP will begin the year after all the plantings have been completed.

MPP Example

Planting Occurs	1st Year MMP	2nd Year MMP	3rd Year MMP
April 2012	Ends Sept 1, 2013	Ends Sept 1, 2014	Ends Sept 1, 2015
	1st Annual Report Issued	2nd Annual Report Issued	3rd Annual* Report Issued
	Sept 30, 2013	Sept 30, 2014	Sept 30, 2015

At the end of each year of the MMP the Consultant shall evaluate the installed plant materials according to the acceptance criteria listed below and contained in the NAI special provisions. An annual report will be issued following the completion of each year of the MMP. The report will, at a minimum, address the level of acceptance criteria met and include any applicable remedial recommendations.

At the end of the 3rd year of the MMP, if all of the NAI passes the acceptance criteria, the MMP will be completed.

ACCEPTANCE CRITERIA

The acceptance criteria are predetermined goals for guiding and measuring success. Native plant communities of various types will be created throughout the NAI. This project is being established under adaptive management principals; therefore, the community type established is flexible. Regardless of the proposed community type(s), the areas will be assessed based on the community type present. Community type(s) shown on the engineering plans are for illustrative purposes and reflect the designer's best estimate as to the community type that will establish. Deviations in community type are acceptable, and management will proceed accordingly to achieve the acceptance criteria of the established community. Creation of specific acres/areas of the various community types is not important, only that each established community meets the following minimum performance standards.

The acceptance criteria listed are goals. Failure to meet the standard does not automatically require remedial action if the area in question is in substantial conformance.

1. **Wet Prairie and Prairie Community Acceptance Criteria**: LCDOT will establish wet prairie and prairie native areas with native grasses. Therefore, no Floristic Quality Index (FQI) or mean coefficient of conservatism (C) *(Swink and Wilhelm, 1994)* will be calculated due to limited species diversity. Limiting the plantings to grasses will improve success and maintenance effectiveness.

2. **Seeding**: For acceptance, seeded areas shall meet the following conditions at the end of the Three Year Maintenance and Monitoring Period:

   a. No seeded area shall have more than one square yard (areal coverage) devoid of vegetation.

   b. No more than 25 percent of the total species present within the NAI, may be comprised of non-native or invasive species as measured by areal coverage. The non-native or invasive species include, but are not limited to, the species listed below. If this standard is not met, remedial activities shall be implemented, as soon as possible (i.e., as soon as weather conditions allow) in order to control the non-native or invasive species.

Non-Native & Invasive Species

Garlic Mustard	(Alliaria petiolata)
Common Buckthorn	(Rhamnus cathartica and frangula)
Reed Canarygrass	(Phalaris arundinacea)
Purple Loosestrife	(Lythrum salicaria)
White Sweetclover	(Melilotus alba)
Yellow Sweetclover	(Melilotus officinalis)
Multiflora Rose	(Rosa multiflora)
Canada Thistle	(Cirsium arvense)
Crownvetch	(Coronilla varia)
Cutleaf Teasel	(Dipsacus laciniatus)
Fuller's Teasel	(Dipsacus sylvestris)
Bush Honeysuckles	(Lonicera spp.)
Common Reed	(Phragmites australis)
Canada & Kentucky Bluegrass	(Poa compressa and pratensis)
Sandbar Willow	(Salix interior)
Sericea Lespedeza	(Lespedeza cuneata)
Leafy Spurge	(Euphorbia esula)
Spotted Knapweed	(Centaurea biebersteinii)
Japanese Knotweed	(Polygonum cuspidatum)

3. **Perennial Plantings, Wetland Type, Special**: For acceptance, areas primarily established by installation of plugs shall meet the following conditions at the end of the Three Year Maintenance and Monitoring Period:

    a. Emergent communities shall have achieved 25 percent surface coverage, with the exception of areas designated as being open water by the third year.

    b. Emergent and shoreline communities may contain cattail species. However, cattails may not constitute more than 30 percent of the species present, based on an ocular estimate.

4. **Sodding, Special**: For acceptance, SODDING SPECIAL shall meet the acceptance criteria of PERENNIAL PLANTINGS, WETLAND TYPE, SPECIAL at the end of the Three Year Maintenance and Monitoring Period.

5. **Tree and Shrub Planting**: For acceptance, 100 percent of all trees and shrubs shall be alive and successfully rooted at the end of the Three Year Maintenance and Monitoring Period.

ANNUAL MONITORING REPORT

An annual monitoring report summarizing the sampling data will be prepared by the Consultant and submitted to LCFPD by September 30 for each of the three years of the MMP. The report will include a discussion of the progress made towards meeting the acceptance criteria and proposed actions to deal with any deficiencies. Representative photographs of the restoration areas taken at the time of sampling will be included in the report. Particular attention will be given to the progress of the vegetation at the end of the second full growing season, as the relative success of the plantings may be reasonably predicted at that time.

MAINTENANCE RESPONSIBILITY

It will be LCDOT's responsibility to correct any deficiencies in the native vegetation planting areas during the Three Year Maintenance and Monitoring Period or until such time as the final written approval for the restoration is received from LCFPD. This includes, but is not limited to, replanting and selective herbicide use. If an area fails to meet or exceed the acceptance criteria, additional remedial work may be required for that specific area until the performance standards are substantially met.

EXHIBIT D

General Depiction of the BIKE PATH

EXHIBIT D

General Depiction of the BIKE PATH

Legend

Forest Preserve Property

LCDOT Bike Path Location

N

Lake County Forest Preserve District
Department of Land Preservation & Special Projects
21900 Riverwoods Road
Deerfield, Illinois 60015
847-968-3351

Courtesy Copy Only.
Property boundaries indicated are provided for general location purposes. Wetland and flood limits shown are approximate and should not be used to determine setbacks for structure or as a basis for purchasing property.

Prepared using information from:
Lake Co Dept of Information and Technology
GIS/Mapping Division
18 North County Street
Waukegan, Illinois 60085-4357
847-360-6373

0 375 750 1,500 Feet

2007 Aerial Photo

Map Prepared 21 October 2010