



PROJECT: COUNTY WIDE TIME AND MATERIAL
MULTIPLE CONTRACTS FOR MULTIPLE TYPES OF WORK

PROJECT NUMBER: 5740-23000

**ATTACHMENT A:
TECHNICAL SPECIFICATIONS FOR
NATIVE PLANTS LANDSCAPING CONTRACT ONLY**

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**SECTION 32 91 00
TOPSOIL, SEEDING AND SODDING**

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil
2. Testing and placing of salvaged and imported topsoil.
3. Sodding
4. Seeding
5. Herbicides/pesticides
6. Mulching.
7. Soil testing and fertilizing.
8. Maintenance.

B. Related Sections:

1. Section 01 20 00 - Price and Payment Procedures: Requirements applicable to unit prices for Work of this section.
2. Section 31 00 00 - Grading and Site Clearing.
3. Section 32 19 16 - Native Plant Plugs
4. Section 32 93 00 - Landscape Plants.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Sodding on Imported Topsoil:** By the square yard. Includes full compensation for providing, excavating, loading, hauling, and placing this material, preparing subsoil, placing imported topsoil to a depth of 6 inches per Section 625.3.3 of the WDOT Standard Specifications, final grading, preparing sod bed, fertilizing, sod placement, watering and maintaining until final acceptance.
- B. Seeding on Imported Topsoil:** By the square yard. Includes full compensation for providing, excavating, loading, hauling, and placing this material, preparing subsoil, placing imported topsoil to a depth of 6 inches per Section 625.3.3 of the WDOT Standard Specifications, final grading, preparing seed bed, fertilizing, seeding, mulching, watering and maintaining until final acceptance.

1.3 REFERENCES

- A. State of Wisconsin Department of Transportation (WDOT) Standard Specifications for Highway and Structure Construction,** current edition with amendments to date, unless otherwise provided for in these specifications and special provisions.
- B. American Society for Testing and Materials:**
1. ASTM C602 - Standard Specification for Agricultural Liming Materials.
- C. Turfgrass Producers International:**
1. TPI - Guideline Specifications to Turfgrass Sodding.

1.4 DEFINITIONS

- A. Weeds: Vegetative species, other than specified species, established in given area.
- B. Acceptable stand of grass: Installed according to this specification and exhibiting vigorous growing condition free of weeds and bare spots and having undergone a minimum of two mowings as specified.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements
- C. Product Data: Submit data for sod grass species, fertilizer, and other accessories.
 - 1. Topsoil: Provide data on imported topsoil. Imported topsoil shall be tested as specified to verify compliance with the specified. The testing results shall include recommended fertilizer application rates.
 - 2. Sod: Provide data on sod showing name of sod supply company, location of sod source, and certification of sod grass species.
 - 3. Seed: Provide data on seed mixture showing name of seed supply company and percentage of seed mix and seed varieties.
 - 4. Fertilizer: Provide data on fertilizer showing type, manufacturer, and composition.
 - 5. Mulch: Provide sample, source and assurance mulch is free of weed seeds.
- D. Submit minimum 10 oz. sample of topsoil proposed. Forward sample to UW Extension or approved equal testing laboratory in sealed bags or containers to prevent contamination.
- E. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and fertilizer application rates. Provide recommendation for fertilizer and lime application rates for specified seed mix.
- F. Analyze topsoil to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
- G. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary for Landscape Architect to determine suitability.
- H. Provide the source of imported topsoil at the discretion of the Landscape Architect. Topsoil can be required to be tested for contamination per the quality requirements of Section 01400-Quality Requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution Requirements: Requirements for closeout submittals.

1.7 QUALITY ASSURANCE

- A. Sod: Minimum age of 12 months, with root development capable of supporting its own weight without tearing, when suspended vertically by holding upper two corners. [Sod grown in peat soil or high organic content is not acceptable.]
- B. Provide seed mix in sealed containers showing name of seed supply company, percentage of seed mix and seed varieties, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

1.8 REGULATORY REQUIREMENTS

- A. Comply with applicable regulations for fertilizer and herbicide composition and application. Include evidence of compliance from applicable agencies having jurisdiction over herbicide/pesticide application and copies of applicator's current license. Persons applying herbicide/pesticide shall be a certified applicator.
- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.9 QUALIFICATIONS

- A. Sod Producer: Company specializing in sod production and harvesting with minimum 3 years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Deliver sod on pallets in rolls. Protect exposed roots from dehydration.
- C. Do not deliver more sod than can be laid within 24 hours.
- D. Deliver grass seed mix in sealed containers. Seed in damaged packaging is not acceptable.
- E. Deliver fertilizer in sealed waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.11 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

PART 2 PRODUCTS

2.1 SOD

- A. Sod:
 - 1. Kentucky Bluegrass Type: 40 percent
 - 2. Fescue Grass Type: 40 percent
 - 3. Perennial Rye Grass Type: 20 percent

- B. Turf Grass Seed Mix: Shall be *Reinders Deluxe 50 Turf Seed Mix* as proportioned below:

Species	Percent Germination	Percent Mixture
Kentucky Bluegrass (sod quality)	85	20
Mercury Kentucky Bluegrass	85	10
Named Kentucky Bluegrass	85	20
Creeping Red Fescue	85	25
Wicked Perennial Ryegrass	85	15
Fiesta 4 Perennial Ryegrass	85	10
Approximate Total		100.00

- C. No-Mow fescue Seed Mix: No Mow Turf Seed Mix shall be composed of the following types of seed. Submit mix showing type and variety of seeds for approval by Landscape Architect.
1. Hard Fescue
 2. Sheep Fescue
 3. Chewings Fescue
 4. Red Fescue
 5. Creeping red Fescue

2.2 SOIL MATERIALS

- A. New or imported topsoil shall meet the requirements of Section 625.2 of the applicable WDOT Standard Specifications; free of objectionable debris such as stones, roots and twigs. Ensure 100% of topsoil passes a one-inch sieve and at least 90% shall pass the No. 10 sieve. Field run topsoil shall only be used with pre-approval of Landscape Architect.
- B. Salvaged topsoil shall meet the requirements of paragraph 625.2 of the applicable WDOT Standard Specifications, and shall be processed to be free of objectionable debris such as sod, stones, roots and twigs. Ensure 100% of salvaged topsoil passes a one-inch sieve and at least 90% shall pass the No. 10 sieve.

2.3 ACCESSORIES

- A. Fertilizer: Application and type of fertilizer will be governed by the recommendations of the soil test.
- B. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- C. Mulch: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- D. Erosion Mat: Erosion Control Mat for coverage or slopes less than 3:1 and as shown on plan: shall be Curlex® Net Free Erosion Control Blanket manufactured by American Excelsior, Erosion Control Blanket S32BD, or equal. (Erosion Mat Urban Class I, Type B) Curlex ® Net Free is a light weight

excelsior blanket made from curled wood excelsior of 80 percent six inch or longer wood fiber lengths weighing 0.975 pounds per square yard. Color of the Curlex® Net Free shall be excelsior wood fibers shall be natural tan. No colored or dyed wood fiber is to be used for this work.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Section 01 70 00 - Execution Requirements: Examine and verify existing conditions before starting work.
- C. Verify prepared soil base is ready to receive the Work of this section.

3.2 PREPARATION OF SUBSOIL

- A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil and debris. Remove stones two inch or larger.
- C. Scarify subsoil to depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil. Prepare subsoil in accordance with Section 625.3.1 of the WDOT Standard Specifications.
- D. Notify Construction Coordinator and Landscape Architect when subsoil grading is complete and at least 24 hours prior to placing topsoil.

3.3 PLACING TOPSOIL

- A. Spread topsoil to minimum depth of 6 inches over area to be seeded. Maintain lines, levels, profiles and contours. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetation and foreign non-organic material from topsoil while spreading. Remove stones 1 inch or larger.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage within ½" of finished elevation.
- E. Place topsoil in accordance with Section 625.3.3 of the WDOT Standard Specifications. Ensure 100% of topsoil passes a one-inch sieve and at least 90% shall pass the No. 10 sieve.
- F. Place topsoil from the top of the back of curb or edge of pavements and extend into abutting areas as directed.
- G. Notify Construction Coordinator and Landscape Architect at least 24 hours prior to placing seed or sod. Topsoil grading requires approval by the Landscape Architect prior to seeding or laying sod.

3.4 FERTILIZING

- A. Apply fertilizer at a rate to comply with recommendations of soil tests.
- B. Apply after smooth raking of topsoil and prior to installation of sod or seed.
- C. Apply fertilizer no more than 48 hours before laying sod.
- D. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- E. Comply with the requirements of Section 629 of the WDOT Standard Specifications.
- F. Follow all manufacturer's warnings and precautions related to the application of fertilizers.
- G. Take all necessary precautions to protect waterways and drain inlets when applying fertilizers containing Phosphorous. Fertilizers containing Phosphorus shall only be used with approval from the Landscape Architect.
- H. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.5 LAYING SOD

- A. Prepared sod bed areas shall be inspected and approved prior to sodding. Failure to comply may result in rejection of the sodding work.
- B. Moisten prepared surface immediately prior to laying sod.
- C. Lay sod immediately after delivery to site after harvesting to prevent deterioration.
- D. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- E. Lay smooth. Align with adjoining grass areas.
- F. Place top elevation of sod 1/2 inch below adjoining paving and curbs.
- G. Do not place sod when temperature is lower than 32 degrees F. Do not lay sod on frozen soils.
- H. Water sodded areas immediately after installation. Saturate sod and topsoil to a depth of 4 inches.
- I. Sodding shall comply with the requirements of Section 631 of the WDOT Standard Specifications.

3.6 SEEDING AND MULCHING

- A. Prepared seedbed areas shall be inspected and approved by Parks Landscape Architect prior to seeding. Failure to comply may result in rejection of seeding work.
- B. Apply seed at rate of 5 lbs. per 1000 sq. ft., evenly, 1/2 in one direction and the other 1/2 in perpendicular direction. Rake in lightly.

- C. Do not seed areas in excess of that which can be mulched on same day.
- D. Planting Seasons: Spring, April-15th through June 1st; Fall, August 15th through September 15th. Seeding outside the specified time periods requires written approval. Dormant seeding will not be allowed unless approved in writing.
- E. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- F. Roll seeded area with roller not exceeding 112 lbs./linear foot.
- G. Immediately following seeding and compacting, apply mulch to minimum thickness of 1/2 inch. Maintain clear of shrubs and trees. All straw mulch material is to be machine crimped into topsoil. Install erosion mat were specified.
- H. Apply water with fine spray immediately after each area has been mulched. Saturate topsoil to a depth of 4 inches.
- I. Seeding shall comply with the requirements of Section 630 of the WDOT Standard Specifications.
- J. Seed may be sown by either Method A or Method B as defined in Section 630.3.3 of the WDOT Standard Specifications. Preferred equipment for Method A shall be a multi-packer type seeder. Light rolling or compacting will be required after seeding by Method A if it is not accomplished by the seeding equipment.
- K. Mulching shall comply with the requirements of Section 627 of the applicable WDOT Standard Specifications. Method C, as defined in Section 627.3.2.3 shall be used for placing the mulch.
- L. Contractor has option of hydroseeding as specified below.

3.7 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 1.5 lbs per 1000 sq. ft. evenly in one pass.
- B. After application, apply water with fine spray immediately after each area has been hydroseeded. Saturate to **4 inches** of soil and maintain moisture levels two to four inches.

3.8 EROSION MAT

- A. Install on side slope greater than 3:1. Area includes, but not limited to the side slopes of bioinfiltration basin.

3.9 MAINTENANCE

- A. Section 01700 - Execution Requirements: Requirements for maintenance service.
- B. Maintain sodded and seeded areas immediately after placement until grass is an Acceptable Stand of Grass. Required maintenance shall include, but not necessarily be limited to, watering, weeding, application of herbicides and pesticides. Provide first 2 mowings (minimum) of newly established grass. Mow grass at regular intervals to maintain at minimum height of 4 inches. Do not cut more than 1/3 of grass blade at each mowing.

Provide maintenance until final acceptance.

- C. Notify Construction Coordinator and Landscape Architect 24 hours prior to mowing grass or applying fertilizer.
- D. Water to prevent grass and soil from drying out. Maximum weight of water truck shall be 250 gallons (2000 pounds). The specified sod and seed mix requires a minimum of one-inch of water per week until acceptance.
- E. Neatly trim edges and hand clip grass where necessary.
- F. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- G. Control growth of weeds. Apply weed control and/or herbicides as needed. Remedy damage resulting from improper use of herbicides.
- H. Immediately replace sod on areas showing deterioration or bare spots.
- I. Re-seed seeded areas showing bare spots. Repair washouts and gullies.
- J. Fill depressions caused from settlement of topsoil so they drain properly and do not cause hold water.
- K. Protect sodded and seeded areas with warning signs during maintenance period.

3.10 FINAL ACCEPTANCE

- A. Payment for sodding and/or seeding will be based on an acceptable stand of grass grown on site. If an acceptable stand of grass is not produced within 45 days of initial sodding and seeding, Owner reserves right to perform sodding and/or seeding and cost of this work will be deducted from the Contract. The 45 days applies to the growing period which is April 15 to November 1.
- B. An acceptable stand of grass shall be defined as follows: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 6 by 6 inches. Sod shall be "knitted" into the topsoil with established root growth.
- C. Damage resulting from erosion (gulleys, washouts) or other causes shall be repaired by Contractor in accordance with original installation at Contractor's expense if damage occurs prior to Owner's acceptance.
- D. Complete sodding and seeding and obtain approval before final acceptance of the project. Include a minimum of two mowings as described under the Maintenance item.

3.11 SCHEDULE

- A. All disturbed grass areas: 6-inch minimum topsoil. Fertilize, sod, and maintain as specified until final acceptance.
- B. No-mow fescue as shown on the plans: 6-inch minimum topsoil. Fertilize, seed, mulch, and maintain as specified until final acceptance.

END OF SECTION

**SECTION 32 91 13
BIO-INFILTRATION BASIN**

PART 1 GENERAL

1.1 Section Includes:

- A. Bio-infiltration Basin Common Excavation
- B. Bio-infiltration Basin, 48" Overflow Structure with R-2561-A Grate & Boulders
- C. Bio-infiltration Basin, 6" Perforated Wrapped PVC Pipe
- D. Bio-infiltration Basin Engineered Soil
- E. Bio-infiltration Basin Pea Gravel
- F. Bio-infiltration Basin 1/2" to 1-1/2" Washed Stone
- G. Bio-infiltration Basin Geotextile Fabric Type DF
- H. Bio-infiltration Basin Erosion Mat, WisDOT Class II, Type B

1.2 RELATED SECTIONS

- A. Section 01 40 00 – Quality Requirements
- B. Section 01 50 00 – Temporary Facilities and Controls
- C. Section 32 10 00 - Asphaltic Paving and Base Courses
- D. Section 31 00 00 – Grading and Site Clearing
- E. Section 33 40 00 – Site Storm Drainage Systems
- F. Section 32 92 16 – Native Plant Plugs

1.3 REFERENCES

- A. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- B. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. Rammer and 18-inch Drop.
- C. State of Wisconsin Department of Transportation (WDOT), Standard Specifications for Highway and Structure Construction, current edition.

1.4 UNIT PRICE – MEASUREMENTS AND PAYMENTS

- A. Measurements for all items including underdrain, overflow structure with rip rap, cleanout, engineered soil, pea gravel, coarse aggregate #2, geotextile fabric and erosion mat will be paid for at the unit price bid and include all labor, equipment, grading, materials, hauling and compaction.

1.5 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal procedures for requirements for submittals
- B. Engineered soil: The contractor shall submit certified reports from the supplier to the construction engineer to show the engineered soil is made of the proper composition and meets all specification
- C. Erosion Control Blanket: Submit minimum 6" x 6" sample of 100% biodegradable erosion control blanket
- D. Closeout Submittals:
 - 1. See Section 01 70 00 – Execution Requirements: Requirements for submittals

PART 2 PRODUCTS

2.1 ENGINEERED SOIL

- A. The engineered soil shall conform to WDNR Technical Standard 1004 for engineered soil mix.
- B. The sand for the bio-infiltration basins shall meet the requirements of the Wisconsin Department of Natural Resources (WDNR) Technical Standard 1004
- C. The compost for the bio-infiltration swales shall meet the requirements of the Wisconsin Department of Natural Resources (WDNR) Technical Standard 1004, Bioretention for Infiltration and WDNR Specifications S100 Compost.
- D. The engineered soil mix shall be free of rocks, stumps, roots, brush, or other material over 1-inch in diameter. No other materials shall be mixed that may be harmful to plant growth or prove a hindrance to planting or maintenance.
- E. The engineered soil mix shall have a pH between 5.5 and 8.0.
- F. The engineered soil shall be underlined by a 4-inch bedding layer of pea gravel.
- G. The contractor shall provide at least one person who shall be present at all times during the preparation and placement of the engineered soil, who shall be thoroughly familiar with the type and operation of equipment being used. Said person shall direct all work performed under this section.

2.2 UNDERDRAIN

- A. The work shall include, but not limited to, installation of polyvinylchloride underdrain pipes, connections of underdrain to unperforated cleanouts, connections to bio-infiltration outlet structures, and all tees, wyes, geotextile fabrics, end caps, and fittings necessary to complete the work.
- B. The 6-inch perforated underdrain shall be made of PVC pipe conforming to "State Specifications" Sections 612.2.5 or 612.2.6 or approved equal.
- C. The pipe should have 3/8-inch perforations, spaced at 6-inch centers, with a minimum of 4 holes per row.

- D. The underdrains should be installed at a 0.5% pitch.
- E. The perforated portion of the underdrain pipe shall be protected from clogging by use of a geotextile filter fabric. The geotextile fabric shall type DF and be placed on top of and centered on the underdrain. The fabric shall extend 1-foot beyond the ends of each pipe.
- F. The openings of the fabric shall be small enough to prevent sand particles from entering the underdrain pipe. The fabric shall meet the "State Specifications" Section 612.2.8(1-3) or approved equal.
- G. An 8-inch non-perforated PVC pipe shall be installed as the outlet pipe for the beehive inlet as shown on the plans.

2.3 CLEANOUT

- A. All cleanouts shall be 6-inch Schedule 40 PVC, and conform to the requirements of ASTM D1784.
- B. Cleanouts shall be cut down to grade upon completion of the bio-infiltration swales and include any tees, wyes, fittings, piping, caps and ends that are necessary.

2.4 RIP RAP (COBBLESTONES)

- A. Rip rap shall be Wisconsin Granite Field Stone Boulders 6 to 8-inch round or equal.
- B. Rip rap shall be placed at a minimum of a 1' radius surrounding the beehive inlet.
- C. Rip rap is to be installed partially submerged in the soil.

2.5 BEDDING LAYER

- A. The bedding layer shall be comprised of 4 inches of pea gravel and installed in conjunction with the placement of the engineered soil.
- B. The pea gravel shall be ½ inch in diameter and dry.

2.6 STORAGE LAYER

- A. The storage layer shall be comprised on 15 inches of gravel that meets the coarse aggregate #2 and other specifications of the Wisconsin Standards and Specifications for Highway and Structure Construction, section 501.2.5, or an equivalent as approved by the engineer.
- B. The gravel shall be double washed and have a porosity of 40%.

2.7 OVERFLOW STRUCTURE

- A. The beehive inlet shall be a Neenah R-2561-A Inlet Frame and Grate and set at the location and elevations as shown on the plans.

2.8 GEOTEXTILE FABRIC

- A. Provide geotextile fabric type DF per Section 645 of the WisDOT Standard Specifications.

2.9 EROSION MAT

- A. The surface shall be stabilized with Curlex® Net Free Erosion Control Blanket manufactured by American Excelsior with compatible biodegradable stakes or approved equal WisDOT Class II, Type B, 100% Biodegradable, 24 month life-span that meets the specifications of the State of Wisconsin Department of Transportation (WDOT), Standard Specifications for Highway and Structure Construction, current edition and WDNR technical standard 1004, Bioretention for Infiltration or an equivalent as approved by the engineer.

PART 3 EXECUTION

3.1 CONSTRUCTION METHODS

- A. The Contractor shall construct the bio-filtration basin as shown on the plans and the details located in the appendix including:
 - 1. Excavation of and disposal of existing soils in accordance with Section 02211 of these Specifications.
 - 2. Installing geotextile fabric, coarse aggregate #2 washed stone, washed pea gravel and engineered soil.
 - 3. Installing underdrain system and inlet/outlet structures.
 - 4. Erosion mat per the plan and section detail.
 - 5. Site Restoration
- B. Construction shall be suspended during periods of rainfall. Construction shall remain suspended if ponded water is present or residual soil moisture contributes significantly to the potential for soil smearing, clumping, or other forms of compaction.
- C. Compaction and smearing of soils on the bottom and side slopes of the infiltration basin and the compaction of the soils used for backfill in the soil planting bed shall be avoided.
- D. Washed stone, pea gravel and engineered soil shall not be compacted after placement. Geotextile fabric conforming to Section 645.2.4 of the "State Specifications" shall be used to separate soil layers as shown on the plans.
- E. Installation of geotextile fabric for the underdrain shall be Type DF and conform to Section 645.3.4 of the "State Specifications."
- F. Installation of the underdrain shall conform to Section 612.3 of the "State Specifications."
- G. Prior to placement in the bio-infiltration area, the engineered soil shall be pre-mixed and the moisture content shall be low enough to prevent clumping and compaction during placement.

- H. After installation of engineered soil mix, protect soil mix from contamination by sediment and topsoil runoff, or other construction debris from adjacent construction areas. Protect with silt socks or similar measures as needed.

3.2 INSTALLATION OF BIO FILTRATION BASIN EROSION MAT

- A. Install biodegradable erosion control blanket on side slopes of basins or all slopes 3:1 or steeper after seeding and mulching is completed. Install per manufacturer's recommendations.
- B. Place erosion mat parallel to the slope fall line. Overlap ends a minimum of 6 inches or per manufacturer's recommendations. Bury uphill ends in soil filled trench a minimum of 6 inches deep. Anchor in place using compatible biodegradable stakes per manufacturer's spacing recommendations.
- C. Minimize disturbance to prepared planting area when installing erosion control. Re-level any disturbed areas.

END OF SECTION

**SECTION 32 92 16
NATIVE PLANT PLUGS**

PART 1 GENERAL

1.1 SUMMARY

Section includes:

- A. Bio Filtration Basin, Native Plant Plugs
 - 1. Preparation of planting areas
 - 2. Installation of Native Plugs
 - 3. Pesticides & Herbicides
 - 4. Erosion Control Blanket
 - 5. Bioswale Protection
 - 6. Initial Maintenance

- B. Bio Filtration Basin Protection Fencing
 - 1. Protection of planted areas.

- C. Related Sections
 - 1. Section 32 91 13 – Bio-infiltration Basins
 - 2. Section 32 91 00 – Topsoil, Seed and Sod
 - 3. Section 32 93 00 - Landscape Plants
 - 4. Section 32 97 00 - Plant Maintenance and Extended Warranty

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Bio Filtration Basin Native Plant Plugs shall be measured and paid per each. Furnished and installed including preparation of planting areas, planting, watering, mulching, and maintaining for the specified period for each plant specified and installed.

- B. Bio Filtration Basin Protection Fencing – By the lineal foot. Includes labor, materials, equipment and supervision needed for installation of protective fencing at perimeter of bio-infiltration basins

1.3 REFERENCES

- A. State of Wisconsin Department of Transportation (WDOT) Standard Specifications for Highway and Structure Construction, latest edition.

- B. Association of Official Seed Analysts (AOSA) Journal of Seed Technology; "Rules for Testing Seeds" for purity and germination tolerances.

- C. Fossett N.C. 1975. A Manual of Aquatic Plants. University of Wisconsin Press, Madison, WI.

- D. Fossett N.C. 1976. Spring Flora of Wisconsin. University of Wisconsin Press, Madison, WI.

1.4 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- C. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; engineered soil or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a growing medium best for plant growth.
- D. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- E. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.
- F. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.
- G. Initial Acceptance: Approval of all plug installation upon correction of punch list items from first planting inspection. Initial acceptance shall not be granted until the first maintenance mowing has occurred, and establishment is achieved as outlined in Part 3.7 of this section. Extended maintenance and warranty period begins upon initial acceptance.

1.5 COORDINATION

- A. Coordination with Turf Areas (Lawns):
 - 1. Adjacent turf areas disturbed from the construction of the bio-infiltration basins shall be reestablished with the necessary seed, soil, materials, labor, and equipment necessary to be restored.

1.6 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for requirements for submittals.
- B. Product Data: Provide the following:
 - 1. Plugs: Submit list indicating nursery source(s) of native plugs, species and quantities to be provided. Submit within 4 weeks following Notice to Proceed.
 - 2. Pesticide & Herbicide product data and manufacturer's application instructions specific to Project.
 - 3. Fence Protection product data for fence material, stakes and fence ties to be used.

C. Closeout Submittals:

1. See Section 01 70 00 – Execution Requirements: Requirements for submittals

1.7 QUALIFICATIONS

A. Plug supplier: company specializing in growing, cultivating and supplying native plants and/or seed with a minimum of five years documented experience.

B. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plugs. The Owner reserves the right to approve the contractor that is in the best interest of Milwaukee County. Prior to start of work related to this section, the Contractor and any sub-contractors who will be performing work in this section must present satisfactory evidence of their experience and ability to supply the necessary labor, materials, and equipment to execute work in this section to the satisfaction of the Owner.

1. Contractor or Subcontractor shall be a company specializing in native landscaping installation.
2. Planting shall be performed by personnel familiar with accepted plug installation procedures. Qualified foreman, representing Subcontractor, shall be on-site during planting procedures.

C. Additional Installer Qualifications:

1. Submittal of qualification data as described under Submittals article above.
2. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
3. Experience: Five years' experience in native landscape installation in addition to requirements in Section 01400 "Quality Requirements."
4. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

D. Pesticide Applicator: State licensed, commercial.

1.8 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 60 00 – Product Requirements: Product Storage and handling requirements.

B. Native Plugs: Take precautions to ensure delivery of plugs to site in good condition and without injury; protect from drying, freezing or similar damage that could damage the viability of the plant.

1. Schedule delivery of plugs for the day of planting.
2. Notify Engineer minimum of 2 days before intended delivery of plugs.
3. Each shipment of plugs shall be accompanied by an invoice showing species and quantities in shipment. Provide invoice to Engineer upon delivery of plugs.
4. Plugs not planted within 4 hours shall be protected from drying by watering or protection with peat, soil, mulch or similar material.

- C. Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- D. Bulk Materials:
 - 1. Deliver materials at time of application. Do not store on site.
 - 2. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 3. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
- E. Equipment: All equipment brought into the project site shall be free of weed seed or seed from previous applications. The intent is reducing the spread of noxious and invasive plants and weeds within the State of Wisconsin.

1.9 FIELD CONDITIONS

- A. Planting operations shall be performed during one of the following periods:
 - 1. Fall Planting Season: August 15 to October 1. Spring Planting Season: April 15 to June 15.
 - 2. If special conditions exist that warrant a variance in the above, a written request shall be submitted to the Landscape Architect. Permission will be granted if need for variance is justified and approved by Owner.
- B. Weather Limitations: Proceed with planting operations only when existing and forecasted weather conditions permit operations to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.10 MAINTENANCE

- A. Maintain areas of plug installation, immediately after placement until initial acceptance by Owner. Required initial maintenance shall include, but not necessarily be limited to, watering, weeding, application of pesticides and herbicides, and mowing as suggested by Owner.
- B. Refer to Specification Section 32 97 00 for extended maintenance requirements.

1.11 WARRANTY

- A. Refer to Specification Section 32 97 00 for native plug warranty requirements.

PART 2 PRODUCTS

2.1 NATIVE PLUGS

- A. Plants shall be material shall be nursery grown unless otherwise specified or approved in writing by Engineer. Plants shall have been grown within same hardiness zone as Project site. Hardiness zones shall conform to "Zones of Plant Hardiness" as provided by U.S. Department of Agriculture.

- B. Unless specifically noted otherwise, plants shall be sound, healthy plants with healthy roots, free of disease, insect pests, their eggs or larvae, and injuries.
- C. All plugs shall be at least one (1) year old and a minimum plug size of 2-1/2 x 3 inches. Plugs should be selected and planted evenly according to their square footage. Plugs shall be spaced at 18-inch on center from one another. Selected plants must include a minimum of one grass and one sedge.
- D. Contractor shall provide 75% or more of the following species (using only listed species) to be installed in a mix to achieve approximately 40% grasses and sedges, and 60% flowering forbs. Any substitutes from the following species list shall be approved by the project Landscape Architect. Submit final list of species and quantities to Landscape Architect for review and approval.

Botanical Name	Common Name
<u>Flowering Forbs/Wildflowers</u>	
Allium cernuum	Nodding Wild Onion
Asclepias tuberosa	Butterfly Weed
Aster laevis	Smooth Blue Aster
Echinacea Pallida	Pale Purple Coneflower
Eryngium yuccifolium	Rattlesnake Master
Geum triflorum	Prairie Smoke
Liatris Pycnostachya	Prairie Blazingstar
Lobelia siphilitica	Great Blue Lobelia
Minulus ringens	Monkey Flower
Monarda fistulosa	Wild Bergamot
Penstenom digitalis	Foxglove Beard Tongue
Physostegia virginiana	Obedient Plant
Pycnanthemum virginianum	Mountain Mint
Ratibida Pinnata	Yellow Coneflower
Rudbeckia subtomentosa	Sweet Black-eyed Susan
Rudbeckia fulgida speciosa	Showy Black-eyed Susan
Silene regia	Royal Catchfly
Solidago graminifolia	Grass leaved Goldenrod
Tradescantia ohiensis	Common Spiderwort
Zizia aurea	Golden Alexanders

<u>Grasses and Sedges</u>	
Bouteloua curtipendula	Side Oats Gramma
Carex brevior	Plains Oval Sedge
Carex scorparia	Lance Fruited Oval Sedge
Carex sprigellii	Long-beaked Sedge
Elymus virginicus	Virginia Wild Rye
Panicum virgatum	Switchgrass
Schizachyrium scorparium	Little Bluestem

2.2 SOIL MATERIALS

- A. If it is determined that additional topsoil is needed in addition to the prepared engineered soil mix, topsoil shall meet the requirements as stated in Section 32 91 13 – Bio-infiltration Basins.

2.3 PESTICIDES & HERBICIDES

- A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.4 MISCELLANEOUS PRODUCTS

- A. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grasses and wildflowers.

2.5 BIO-INFILTRATION BASIN PROTECTION FENCING

- A. Bio-infiltration basin protection shall consist of the following:
 - 1. Fence Material: Fence shall be High Density Polyethylene fabric manufactured by Resenit Products, Inc. or approved equal with a tensile strength of 140 lbs/ft. (or 2600 psi), 4 feet in height with a mesh size of 1.5-inch x 1.5-inch and shall be UV resistant. Color shall be black or as approved by Owner.
 - 2. Stakes: Fence stakes shall be 2-inch by 2-inch hardwood stakes or steel U-channel (green) stakes of sufficient length to securely hold fence material in place. Alternatives stakes may be used if approved by the Landscape Architect or Engineer.
 - 3. Fence Ties: Ties shall be heavy duty plastic zip ties of sufficient length to properly secure fence material to stakes.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Section 01 70 00 – Execution Requirements: Verify existing conditions before starting work.
- C. Verify prepared planting soil and planting bed is ready to receive the Work of this section.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within planting area.

2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 3. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- D. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Owner and replace with new planting soil.
 - E. Proceed with installation only after unsatisfactory conditions have been corrected.
 - F. No planting shall occur on frozen ground or at temperatures lower than 32 degrees F.
 - G. Ideally, the engineered soil mix should be allowed to settle before planting by allowing several months between installation of engineered soil mix and planting; spring planting of plugs and other basin vegetation is encouraged.

3.2 PRELIMINARY INSTALLATION MEETING

A pre-installation meeting at the project site with the contractor, Project Engineer and Landscape Architect is mandatory. The Project Engineer and the Landscape Architect will conduct this meeting. Planting operations and procedures will be reviewed. Any discrepancies, problems, or questions shall be reviewed and solved before commencement of planting operations.

3.3 INSTALLING NATIVE PLUGS

- A. Receive shipments of plants in no more than can be installed on day of receipt.
- B. Set out plugs 18" O.C. throughout basin including sides and bottoms of basin.
- C. To install plugs into erosion blanket cut a small 'X' into blanket, pull back corners and dig a hole 2 times the width of the plug roots to the depth of root mass. Install and backfill with soil mix, folding blanket fabric under to create opening at sides of plug.
- D. Prior to planting remove containers and spread roots by hand.
- E. Plants shall be firmly embedded into the soil. Pull mulch layer back so that the crown and main stems of plant are not buried. Water in plugs after planting.
- F. Replant any plugs that become dislodged or float during watering and finish operations. Inspect plugs periodically for two weeks after planting to verify conditions.

3.4 INSTALLATION OF BIO-INFILTRATION BASIN PROTECTION FENCING

- A. Upon completion of all planting operations in the bio-infiltration basin, install specified protective fencing around the perimeter of all Bio-infiltration basins.
- B. Install fencing on shoulders at top of basins; set back two feet from top edge of planted slopes

- C. Be sure all finish grading adjacent to basin has been completed before installation of protective fencing. Coordinate with work of Section 02925 – Topsoil, Seed and Sod.

3.5 CLEANING & REPAIR

- A. Waste and excess material from the planting operations shall be promptly removed.
- B. Adjacent paved areas are to be cleaned, and any damage to existing adjacent turf areas shall be repaired.
- C. The contractor shall repair any damages that occurred during the completion of the work outlined in this section. The damaged areas are to be restored to the conditions outlined on the plans at no additional cost to the Owner.

3.6 INITIAL MAINTENANCE PERIOD

- A. Initial maintenance period begins immediately upon completion of plug installation until initial acceptance by owner.
- B. Water just enough to keep the soil moist, every other day for 15 minutes to half an hour to maintain adequate surface soil moisture for proper germination. Watering shall continue for not less than 30 days following planting.
- C. Correct damage resulting from erosion, gullies, rills, or other causes by filling with topsoil, tamping, and replanting.
- D. Control growth of weeds by hand pulling and/or application of herbicides. Selectively treat with a broad spectrum, non-persistent glyphosate-based herbicide aggressive weeds such as Canada Thistle and Horsenettle. Treat only on cool windless days preferably by gloved hand wiping method.
- E. Remedy damage resulting from improper use of herbicides.
- F. Protect seeded areas with warning signs during maintenance period.

3.7 ACCEPTANCE OF WORK

- A. Landscape Architect and Engineer shall inspect all work for initial acceptance upon written request of the Contractor. The request shall be received at least seven calendar days before the anticipated date of inspection.
- B. Acceptance of work shall be for general conformance to these specifications and shall not relieve the Contractor of responsibility for full conformance to the contract documents.
- C. Contractor shall address any punch list items from initial inspection within two calendar weeks of receipt of punch list.

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- D. Upon completion and re-inspection of any repairs and replacement plantings necessary in the judgement of the Landscape Architect, the Landscape Architect shall certify in writing that the work has received initial acceptance. Planting shall conform to the following conditions:
 - 1. Planted live plants are established upright, green and exhibit healthy growing condition.
- E. The three-year extended maintenance and warranty period begins upon initial acceptance.

3.8 EXTENDED MAINTENANCE & WARRANTY

- A. See Plant Maintenance and Extended Warranty – Section 32 97 00

END SECTION

**SECTION 32 93 00
LANDSCAPE PLANTS**

PART 1 - GENERAL

1.1 SUMMARY

- A. The work in this section includes, but is not necessarily limited to, providing the labor, materials, equipment and supervision required to install trees, shrubs, ornamental perennials and grasses, as well as maintenance during the establishment of plantings as specified. It shall also include related work as specified such as fertilizing, mulching, pruning, tree staking, rodent protection and maintaining plants until initial and final acceptance.
- B. Related Sections:
 - 1. Section 32 91 13 – Bio-infiltration Basins
 - 2. Section 32 92 16 - Native Plant Plugs
 - 3. Section 32 91 00 - Topsoil, Seeding and Sodding

1.2 MEASUREMENT AND PAYMENT:

- A. Trees: Per each. Furnished and installed including planting excavations, planting, backfilling with specified soil mix, pruning, fertilizing, watering, mulching, staking and maintaining for the specified period for each plant specified herein.
- B. Shrubs: Per each. Furnished and installed including preparation of planting beds, planting, backfilling with specified soil mix, pruning, fertilizing, watering, mulching, and maintaining for the specified period for each plant specified herein.
- C. Perennials and Ornamental Grasses: Per Each. Furnished and installed including preparation of planting bed, planting, watering, mulching, and maintaining for the specified period for each plant as specified herein.

1.3 REFERENCES

- A. American Standards for Nursery Stock, ANSI Z60.1 current edition.
- B. American National Standards for Tree Care Operations, ANSI A300, current edition.
- C. "State Specifications": State of Wisconsin Department of Transportation, "Standard Specifications for Road and Bridge Construction," 2003 Edition, including any subsequent Supplemental Specifications.

1.4 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.
- B. Plants: Living trees, shrubs and other plant material specified in this section and described in ANSI Z60.1.
- C. Initial Acceptance of Work: Approval of all plantings upon correction of punch list items from first planting inspection. 1-year warranty period begins at initial acceptance.
- D. Final Acceptance: Occurs at end of 1 year warranty period and all plants are thriving and healthy.

1.5 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 – Submittal Procedures.
- B. Submit lists indicating nursery sources for each type and species of plant material to be provided. Provide within 4 weeks after Notice to Proceed.
- C. Product Data:
 - 1. Submit samples of topsoil, organic compost, soil amendments, fertilizers and mulches to be used. Samples shall weigh two lbs. and be submitted in plastic bags. Samples shall be typical of the lot of materials to be delivered to the site and provide an accurate indication of color, texture and organic makeup of material.
 - 2. Submit samples of staking and guying products and rodent protection to be used.
- D. Certificates: Inspection certificates required by federal, state, or other governing agency shall accompany each shipment of plant material. Plant material shall comply with State of Wisconsin and federal laws with respect to inspection for plant diseases and insect infestation. Submit to Landscape Architect prior to approval of plant sources.

1.6 CLOSEOUT SUBMITTALS

- A. Submit in accordance with Section 01 70 00 - Execution Requirements: Closeout Procedures.

1.7 QUALIFICATIONS

- A. Plant supplier: Nursery company specializing in growing, cultivating, and supplying plants with a minimum of five years documented experience.
- B. Installer Qualifications: The Contractor or Subcontractor must be a qualified landscape plant installer with a minimum five years' experience doing the types of work in this section. Prior to the start of work, the Contractor and any sub-contractors must present satisfactory evidence of their experience and ability to supply the necessary labor, materials, and equipment to execute work in this section to the satisfaction of the Owner.
- C. Pesticide Applicator: State licensed, commercial.
- D. Tree Pruner: Contractor or company specializing in pruning trees with proof of International Society of Arboriculture, Arborist Certification or National Arborist Association, Certified Tree Care Specialist.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Conform with Section 01 60 00 – Product Requirements
- B. Store fertilizer, humus, soil amendments and spray materials in weatherproof storage areas and in such manner their effectiveness will not be impaired.
- C. All plant stock shall be handled with care and skill to prevent injuries to the trunk, branches and roots, and shall be packed in an approved manner to ensure arrival at the project site in good condition. The plant stock shall be transported in enclosed vehicles, or in lieu of enclosed vehicles, the plant tops shall be suitably protected from sun and drying wind. Plants shall not be bound with wire or rope at any time so as to damage the bark or break tree branches. Plants shall be lifted with suitable support of the soil ball to avoid damaging it. Plant material damaged as a result of delivery, storage or handling will be rejected.

- D. At least two days prior to each delivery of plant material to the project site, the Contractor shall notify the Landscape Architect of such planned delivery. Insofar as possible, deliver plant materials immediately prior to placement. Keep plants moist. Those plants that cannot be planted immediately shall be kept in the shade, well protected with soil, wet mulch, or other suitable material and kept well-watered. All plants shall be installed on the day of delivery.
- E. Each plant shipment shall be accompanied by invoice showing sizes and varieties included. Provide copy of invoice to Landscape Architect upon delivery of plant material.

1.9 QUALITY ASSURANCE

A. Ability to Deliver:

- 1. Investigate sources of supply and confirm they can supply plants shown on plans and plant schedule in sizes, varieties, and quantities noted and specified before submitting bid. Failure to take this precaution will not relieve responsibility for furnishing and installing plant material in accordance with Contract requirements.
- 2. Provide plants shown on Drawings in quantities and sizes designated.
- 3. Substitutions may be permitted upon written authorization by the Landscape Architect. Adjustments will be made at no additional cost to Owner.

B. Plant Inspection and Approval:

- 1. Contractor shall submit a list of all nurseries from which they propose to obtain plant material per section 1.5 Submittals.
- 2. Landscape Architect may inspect plant material at nursery. Such inspection shall be in addition to inspection at job site.
- 3. Upon delivery and before planting, Landscape Architect will inspect plants.
- 4. Inspection and approval is for quality, size, and variety only, and in no way impairs right of rejection for failure to meet other requirements during progress of Work.
- 5. Contractor shall be present during required inspections or as may be required by Landscape Architect.

C. Plant when weather and soil conditions are suitable in accordance with best practices of industry. Do not plant when temperatures are below 32 F or above 90F, or when winds exceed 20 MPH.

D. When landscape work is executed in conjunction with construction of other work, coordinate schedules to permit execution of landscape work in proper sequence.

1.10 WARRANTY

A. Section 01 70 00 – Execution Requirements: product warranties and product bonds.

B. All plants shall be warranted for a period of one-year from initial acceptance (substantial completion). During 1-year warranty period Contractor shall replace plants which have died, or are in dying condition, or which have failed to flourish so that a plants usefulness or appearance has been impaired.

1.Replacement and Damages:

- a. Decisions of Landscape Architect and Owner for required replacements shall be conclusive and binding upon Contractor.
- b. Contractor is responsible for repairing damage to property caused by plant replacement operations.

2. Exclusions:

- a. Contractor is not liable for replacement cost of plants damaged by adverse weather conditions, by relocating or removal by others, by acts of God, or by vandalism and losses due to activities of others not operating under contract with the contractor.

1.11 REPLACEMENTS

- A. Plants which have died prior to inspection for substantial completion shall be replaced.
- B. Plants which die or require replacement for other reasons during 1-year warranty period shall be replaced as soon as possible within specified planting seasons.
- C. Procedure:
 1. Dispose of plants off-site.
 2. Replacements shall be of same size and species and meet initial specified requirements as original plant unless otherwise approved by Landscape Architect.
 3. Replacements shall be supplied and installed in accordance with these specifications.
 4. Restore areas damaged by replacement operations to original condition.
 5. Notify Landscape Architect at conclusion of replacement program.
 6. Landscape Architect will conduct inspection of replacements for determining final acceptance.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

- A. General:
 1. Plant material shall be nursery grown in accordance with good horticultural practices and shall have been dug during the most recently favorable harvest season. Plants shall have been grown within same hardiness zone and climate conditions as the Project site. Hardiness zones shall conform to "Zones of Plant Hardiness" as provided by U.S. Department of Agriculture.
 2. Unless specifically noted otherwise, plants shall be of selected specimen quality; have normal habit of growth; and be sound, healthy, vigorous plants with well developed root systems. Plants shall be free of injury including mechanical wounds and broken branches, decay, disease, insect pests, their eggs or larvae.
 3. Plants shall be grown and harvested and exhibit proper characteristics as outlined in ANSI Z60.1 American Standards for Nursery Stock.
 4. Plant Size and Measurement:
 - a. Measure plants when branches are in normal position.
 - b. If range of size given, no plant shall be less than minimum size and not less than 50% of plants shall be as large as upper half of range specified.
 - c. Measurements specified are minimum size acceptable and are measurements after pruning, where pruning required. Plants meeting measurements specified, but not producing normal balance between

height and spread, shall be rejected.

- d. Trees with multiple leaders, unless specified, shall be rejected.
 - e. Plants shall be true to species and variety and conform to measurement specified in Plant Schedule, except plants larger than specified may be used if approved by Landscape Architect. Use of such plants shall not result in increase in Contract Price. If larger plants are approved, root balls of each shall be increased in proportion to size of plant.
 - f. Where plants larger than specified have been submitted in writing for approval and approved in writing by the Landscape Architect, Contractor shall assume responsibility of guarantee for plant in size as planted.
5. All plant materials must be labeled by plant name. Labels shall be securely attached to all plants, bundles and containers of plant materials when delivered. Plant labels must be durable and legible, with information given in weather-resistant ink or embossed process lettering.

B. Container Plants:

- 1. Container grown plants shall have heavy fibrous root system, or well developed tap root, developed by proper horticultural practice including transplanting and root pruning, and shall have grown in container for at least one growing season.
- 2. Root system shall have developed sufficiently long for new fibrous roots to develop so root mass will retain its shape and hold together when removed from container.
- 3. Container shall not strangle or girdle natural growth of plant. Plants, other than ground covers, over-established in container as evidenced by pot-bound root ends, will be rejected.

2.2 MULCH

- A. Mulch for areas planted with trees, shrubs and prepared plant beds with ornamental perennials and/or grasses shall be twice shredded hardwood bark of a natural color that meets the requirements of subsection 632.2.6 of State of Wisconsin Department of Transportation, "Standard Specifications for Road and Bridge Construction". Dyed mulch products are not acceptable.

2.3 SOIL MATERIALS

- A. Topsoil for all planting operations shall meet the requirements of Section 32 91 00 – Topsoil, Seeding and Sodding.
- B. Planting soil mix for planting beds, prepared planting areas and for backfilling excavations for trees, shrubs all planting areas shall be comprised of three parts approved topsoil, one part peat moss and one organic compost.
- C. Planting soil shall meet the requirements of this specification accept as follows:
 - 1. Woody plant materials planted in bio-infiltration basins shall be backfilled with engineered soil mix as specified in part 2.1 of Section 32 91 13 – Bioinfiltration Basins.

2.4 SOIL AMENDMENT MATERIALS

- A. ORGANIC COMPOST: Compost shall be commercially prepared, consisting of leaf litter and yard waste composted sufficiently to break down all woody fibers, seeds and leaf structures and free of toxic and non-organic matter. Do not use manure or mushroom compost.
- B. PEAT MOSS: Peat moss shall be shredded, loose sphagnum moss, free of lumps, roots, inorganic material or acidic materials; minimum 85 percent organic material measured by oven dry weight, ph 4.0 to 5.0 and moisture content of at least 30 but no

more than 60 percent. Humus peat is not acceptable.

2.5 FERTILIZERS

- A. Trees and Shrubs shall be fertilized using Nutri-Pak, 2 ounce, 16-8-8 slow-release fertilizer packets at the following rates:
 - 1. Trees: two fertilizer packets per caliper inch installed per manufacturer's instructions.
 - 2. Shrubs: one fertilizer packet per 12 inches of plant height installed per manufacturer's instructions.

2.6 TREE STAKING AND GUYING MATERIALS

- A. Stakes shall be 2-inch by 2-inch hardwood stakes, free of knots, holes and warping and of sufficient length to guy trees as noted in the project plan planting details. Alternatives to hardwood stakes may be used if approved by the Landscape Architect.
- B. Plant support straps shall be 1-1/2 inch or wider bands of polypropylene, or nylon webbing or straps with grommets reinforced holes in sufficient length to install as noted in the project plan planting details.
- C. Guying wire for trees shall be galvanized, stainless steel or similar non-corrosive material of sufficient strength to withstand wind conditions and resultant movement of trees. Garden hose installed over guy wire will not be allowed.
 - 1. Use 14-gauge wire for trees less than 2-1/2-inch caliper.
 - 2. Use 12-gauge wire for trees greater than or equal to 2-1/2" caliper.
- D. Optional turnbuckles, eyebolts and clamps used shall be galvanized, stainless steel or similar non-corrosive materials appropriately sized for the application.

2.7 RODENT PROTECTION (IF SPECIFIED)

- A. Rodent protection if specified shall be aluminum or other metal commercial screen material, tubing or protection sleeves designed for such purpose and approved by the Landscape Architect.

2.8 HERBICIDES

- A. Vegetation Control Herbicide: vegetation control herbicide, when specified, shall be a post-emergence herbicide which, when applied to leaves and stems of vegetation is absorbed and translocated to all parts of the plant including roots and underground stems and thereby capable of killing the entire plant. It shall be water-soluble and deactivate upon contact with soil, leaving no harmful residue.
- B. Selective Pre-emergence Herbicide: the selective pre-emergence herbicide, when specified, shall be a type which controls plants emerging from seed, but has no harmful effect on established plants when applied at recommended rates. The material shall resist leaching and remain effective throughout one growing season.

2.9 WATER

- A. Water for maintenance and watering requirements shall be clean, fresh, and free of substances and pollutants that could inhibit the healthy growth of plant material.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Contractor shall contact Digger's Hotline at (1-800- 242-8511) and Milwaukee County Park Maintenance at (blakeprusak@milwaukeecountywi.gov) for verification of the locations of all underground utility lines. Contractor shall be responsible for assuring that all utility marking is complete before excavation begins. Contractor will be responsible for all damage resulting from neglect or failure to comply with this requirement.
- C. Examine areas and conditions under which tree, shrub and perennial planting is to be performed and notify Landscape Architect, in writing, of conditions detrimental to proper and timely completion of Work. Do not proceed with Work until any unsatisfactory conditions are corrected.
- D. Starting Work constitutes acceptance of conditions under which Work is to be performed. After such acceptances, Contractor shall be responsible for correcting unsatisfactory and defective Work resulting from such unsatisfactory conditions.
- E. Locations for trees and shrubs and the outlines of individual plant beds are to be staked or marked on the site. Written or verbal approval of the plant and bed locations by the Landscape Architect is required before excavation begins.

3.2 PLANTING TIMES

- A. Trees, Shrubs and Ornamental Perennials and Grasses:
 - 1. Fall Planting: September 15 until December 1.
 - 2. Spring Planting: April 15 until June 1.

3.3 EXCAVATIONS FOR TREES, SHRUBS, AND PLANTING BED AREAS

- A. Excavations for Individual Trees and Shrubs:
 - 1. Excavated planting holes shall be a minimum of three (3) times the diameter of the root ball.
 - 2. The soil pad on which the root ball will be placed shall be undisturbed or firmly compacted soil. The depth of the pad shall correspond to the distance from the bottom of the root ball to the root collar, or slightly less. In areas of poorly draining soils, the root collar will be set two-inches above the ground level after planting.
 - 3. Slope the sides of the excavation at a 45 degree angle up and away from the bottom of the excavation. Glazed planting hole surfaces shall be roughened prior to backfilling.
 - 4. On steep slopes, the depth of the excavation shall be measured at the center of the hole.
 - 5. See planting details on the drawings and in this specification.
- B. Planting Beds: excavate planting beds that have been marked and approved by Landscape Architect to a minimum of 18-inches below finish grade to accommodate 15 inches of topsoil and three inches of mulch.
- C. All excavated soil materials shall be disposed of off-site. Only specified planting soil shall be used for planting beds and backfilling excavations for plants.

- D. Contractor shall notify the Landscape Architect, in writing, of soil conditions or other obstructions the Contractor considers detrimental to plant growth. Such conditions shall be described, as well as suggestions for correcting them. Proper drainage must be assured.
- E. Where soil conditions or below ground obstructions which cannot be remedied are encountered, the Landscape Architect shall designate alternate planting locations.
- F. Excavated planting holes that will be left open when work is not in progress or pose an immediate and considerable hazard to pedestrians or vehicles shall be adequately barricaded with appropriate warning devices.
- G. Shovel cut edges of all planting beds where abutting sod or turf areas with a 6-inch deep, 45 cut and where indicated on planting plan and per planting plan installation details. Backfill shovel cut edge with mulch and tamp in place.

3.4 INSTALLATION TREES AND SHRUBS IN BIOINFILTRATION BASIN

- A. Coordinate planting of trees and shrubs in bio infiltration basins with construction of basins and installation of engineered soil mix to be used in basins.
- B. Allow for final specified depth of engineered soil mix when determining any depth needed for root ball excavations. Depending on depth of root ball, no excavation may be needed.
- C. Assure that bottom of root balls are placed on firm, stable subsoil to avoid future settling of plants. Contractor will be responsible to correct any conditions that arise from settling and shifting of plants from their final position
- D. Engineered soil mix shall be used for backfilling around trees and shrubs in bioinfiltration basins.

3.5 INSTALLATION OF PLANTING BED MIX

- A. Backfill excavated planting beds to two-inches below finish grade with specified planting soil mix.
- B. Backfill and compact planting soil mix in 8 to 10-inch lifts to avoid excessive settling.

3.6 INSTALLATION OF PLANT MATERIAL

- A. Plants must be protected from excessive vibrations. Plants shall not be thrown or bounced off a truck or loader to the ground. Plants shall not be dragged, lifted or pulled by the trunk or foliage parts in a manner that will loosen the roots in the ball.
- B. Plants must be centered in their hole and set plumb. Place plants to north orientation and/or for best appearance for review and final orientation by Landscape Architect.
- C. Remove, plastic, paper, fiber or other non-biodegradable pots from containerized plant material. Pull roots out from the root mat, and cut circling roots with a clean, sharp knife. Loosen the potting medium and shake away from the root mat. Immediately after removing the container, install the plant such that the roots do not dry out. Pack planting mix around exposed roots while planting.
- D. Bare root plants, if specified for this project, shall have their roots spread into a natural position, free of bunching, kinking, or circling. All broken or damaged roots shall be cut back to a point where they are clean and free of rot. Planting-

soil backfill shall be worked firmly into and around the roots, with care taken to fill in completely with no air pockets.

- E. For all plants moved with a tree spade, all holes and cavities between the ball and the surrounding soil shall be filled. Glazed planting hole surfaces shall be sufficiently roughened prior to backfilling. The ball shall be thoroughly soaked with water after planting.
- F. B & B Material: after plant has been set and stabilized, ropes, strings, wire baskets, burlap and other wrappings shall be removed completely from the top and sides of the root ball. If the root collar is deep in the ball, carefully remove excess soil away from the trunk.
- G. Planting holes shall be backfilled with approved planting soil mix. The soil shall be placed in layers around the roots or ball. Each layer shall be carefully tamped in place in a manner to avoid injury to the roots or ball or disturbing the position of the plant. When approximately two-thirds of the plant hole has been backfilled, the hole shall be filled with water and the soil allowed to settle around the roots. After the water has been absorbed, the plant hole shall be filled with topsoil and tamped lightly to grade. Any settlement shall be brought to grade with topsoil.
- H. In planting beds, compact planting soil backfill if required to ensure firm planting ground under root ball in order to avoid future settling of plants. After setting plants backfill with specified planting soil as noted above.
- I. After the plantings have been in place for at least two days, but not more than five, an inspection of such plantings shall be made. Plant depths and plumbness shall be adjusted as necessary and any additional required backfill shall be placed.

3.7 FERTILIZING

- A. During planting operations and before mulching, install specified Nutri-Pak fertilizer packets around the root balls of all trees and shrubs in numbers as specified and according to manufacturer's instructions.

3.8 MULCHING

- A. All trees, shrubs and other plantings shall be mulched with hardwood mulch previously approved by the Landscape Architect. Place mulch to a three-inch depth for trees and shrubs and two-inch depth for perennials and ornamental grasses as indicated in the planting details. Mulch must not be placed nearer than three- inches to the trunks of trees or shrubs.
- B. Avoid covering the base stems of shrubs and perennials to avoid stem rot.

3.9 PLANT SUPPORT AND PROTECTION

- A. Staking and Guying:
 - 1. Contractor shall stake or guy all trees per planting details unless otherwise directed by the Landscape Architect.
 - 2. Stakes and guys shall be installed immediately upon approval of planting, and shall be removed at the end of the one-year warranty period. Any tree that is not stable at the end of this time may be rejected.
- B. Rodent Protection (If Specified by Landscape Architect):
 - 1. Provide rodent protection when necessary for specific conditions encountered or on susceptible species and with the approval of the Landscape Architect.

2. Rodent protection material, as specified in subsection 2.5-B of this Section, shall be placed around each tree trunk with the bottom of the material resting on the soil surface and the top a minimum of 4-feet above the surrounding earth surface, or up to the lowest branches on small trees. The rodent protection material shall be wrapped loosely around the tree trunk and stapled to itself with three rows of staples spaced at a maximum of six-inch intervals along the seam.
- C. Keep site clean and orderly. Protect installed plants from damage due to site work of other contractors and trades.

3.10 TREE PRUNING

- A. Plants shall not be heavily pruned at time of planting. Pruning is required at planting time to correct defects in the tree structure, including removal of injured or dead branches, branches competing with the dominant central leader, watersprouts, suckers, and interfering branches.
- B. All required pruning shall conform to **American National Standards for Tree Care Operations, ANSI A300** (Pruning Standards for Woody Plants).
1. Pruning shall be completed using clean, sharp tools. All cuts shall be clean and smooth, with the bark intact with no rough edges or tears.
 2. Prune using scissors-style cutting devices, and not anvil-style hand pruners, pole pruners or loppers.
 3. Except in circumstances dictated by the needs of specific pruning practices, tree paint shall not be used. Tree paint, when required, shall be paint specifically formulated and manufactured for horticultural use and approved by the Landscape Architect.
 4. All pruning of ornamental trees, shrubs and ground covers should aim to retain their natural shapes. With multiple leader plants, preserve the leader that best promote the plant's symmetry. Prune branches of deciduous stock to improve the branch structure of the plant.
 5. Trim Oaks only during the low Oak wilt risk period between November 1 and March 15.
 6. Trim Honeylocusts, and Elms while dormant to reduce disease risk. Other trees may be trimmed at other times of the year, except during leaf-out, or at the time of leaf drop.
 7. Plants that flower before late spring should be pruned immediately after flowering. Those that flower in summer or fall should be pruned in winter or spring before new growth emerges.
 8. Where necessary, repairs to damaged wood shall be performed under the direction of Owner, or a certified arborist.
 9. The Maintenance Provider shall remove all trimmed branches and other debris from the site at the end of each work day.
- C. Pruning of large trees shall be done from a hydraulic man-lift, or in an approved alternative manner, such that it is not necessary to climb the tree.

3.11 APPLICATION OF HERBICIDE

- A. Vegetation Control Herbicide: when required, prior to installation of plant materials or during guarantee period, vegetation control herbicide shall be applied according to manufacturer's instructions to unwanted vegetation (weeds) and in plant bed areas as designated on the plans. A minimum of 10 days shall be allowed between application and disturbance of the area. Use of herbicides must first be approved by the Landscape Architect.
- B. Selective Pre-emergence Herbicide: the selective pre-emergence herbicide, when specified, shall be applied in accordance with manufacturer's instructions

for surface application to plant bed areas as designated on the plans just before applying mulch.

3.12 CLEANUP

- A. Soil, branches, binding and wrapping material, rejected plants, or other debris resulting from any tree planting shall be promptly cleaned up and removed. The work area shall be kept safe and neat at all times until the project is completed. Under no condition shall the accumulation of soil, branches, or other debris be allowed upon a public property in such a manner as to result in a public hazard.

PART 4 - MAINTENANCE, GUARANTEE AND ACCEPTANCE

4.1 MAINTENANCE OF PLANTED MATERIAL

A. Related Sections:

- 1. Section 01 70 00 - Execution Requirements: maintenance service

- B. Required maintenance shall begin immediately after installation of all plants and continue until final acceptance of plantings has been confirmed in writing by the Landscape Architect at the conclusion of the warranty period.
- C. Maintenance shall consist of pruning, watering, cultivating, weeding, mulching, tightening and repairing guys and stakes, resetting plants to proper grades or upright position, restoring of plant saucers, and furnishing and applying sprays or other materials as necessary to keep plantings free of insects and diseases and in vigorous condition.
- D. Contractor shall make a reasonable effort to protect planting areas and plants against trespassing and damage of all kinds for the duration of the warranty period. Contractor is not responsible for acts of vandalism.
- E. Watering: Contractor shall irrigate as required to maintain vigorous and healthy tree growth. Over watering or flooding shall not be allowed. Contractor shall monitor, adjust, and use existing irrigation facilities, if available, and furnish additional material, equipment, or water to ensure adequate irrigation. Root balls of all trees and large shrubs shall be spot watered using handheld hoses during the first four months after planting, as required to ensure adequate water within the root zone.

4.2 ACCEPTANCE OF WORK

- A. Landscape Architect shall inspect all work for initial acceptance upon written request of the Contractor. The request shall be received at least seven calendar days before the anticipated date of inspection.
- B. Acceptance of planted material shall be for general conformance to the specified size, character, and quality and shall not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
- C. Contractor shall address any punch list items from initial inspection within two calendar weeks of receipt of punch list.
- D. Upon completion and re-inspection of any repairs and replacement plantings necessary in the judgement of the Landscape Architect, the Landscape Architect shall certify in writing that the work has received initial acceptance.
- E. Acceptance in Part: work may be accepted in parts when the Landscape Architect and Contractor deem that practice to be in their mutual best interest. Approval must be

given in writing by the Landscape Architect to the Contractor verifying that the work is to be completed in parts. Acceptance of work in parts shall not waive any other provisions of this contract.

4.3 WARRANTY PERIOD AND REPLACEMENTS

- A. Warranty period for plant materials provided in this contract shall begin at the date of initial acceptance of work. The warranty does not include vandalism or damage unrelated to contractor activities.
- B. Contractor shall warranty all plant materials to be in healthy and flourishing condition for a minimum of 12 months from the date of acceptance of work.
- C. Should the work be accepted in parts, the warranty periods extend from each of the partial acceptances to the terminal date of the warranty of the last acceptance. Thus, all warranty periods terminate at one time.
- D. Contractor shall remove and replace, without cost, and as soon as weather conditions permit within a specified planting period, all plants not in a healthy and flourishing condition as determined by the Landscape Architect at any time during the warranty period. Replacements shall be subject to requirements stated in this specification.
- E. Warranty period for replacement plants shall extend for an additional 12 months from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of said extended warranty period, the Landscape Architect may elect subsequent replacement or credit for that item.

4.4 FINAL INSPECTION AND ACCEPTANCE

- A. At the end of the 12 month warranty period and upon written request of the Contractor, the Landscape Architect will inspect all warranted work for final acceptance. The request shall be received at least 10 calendar days before the anticipated final inspection. Upon completion and re-inspection of all repairs or replacement plantings necessary in the judgement of the Landscape Architect at that time, the Landscape Architect shall certify, in writing, that the project has received final acceptance.

END OF SECTION

**SECTION 32 97 00
MAINTENANCE AND EXTENDED WARRANTY**

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes those items necessary for and incidental to the maintenance of the bio-infiltration basin, native seeding and plug plantings as specified in the contract.
- B. Related Sections
 - 1. Section 32 92 16 - Native Plant Plugs
 - 2. Section 32 93 00 – Landscape Plants
 - 3. Section 32 91 13 – Bio-infiltration Basins
- C. Unit Price – Measurement and Payment
 - 1. Work of this Section is affected by unit prices specified in Section 01 20 00 "Price and Payment Procedures."
 - 2. Measure extended maintenance and warranty by lump sum.
 - 3. Include full compensation for all labor, material, equipment, and supervision required for all maintenance activities and extended warranty as described herein.
- D. Definitions:
 - 1. Landscape Maintenance Provider – The landscape contractor shall be the Landscape Maintenance Provider.

1.2 REFERENCES

- A. Association of Official Seed Analysts (AOSA) Journal of Seed Technology; "Rules for Testing Seeds" for purity and germination tolerances.
- B. ANSI Z60.1 American Standards for Nursery Stock
- C. WisDOT Standard Specifications for Highway and Structure Construction
- D. Standardized Plant Names, Second Edition (1942). American Joint Committee on Horticulture Nomenclature, Horace McFarland Company, Harrisburg, PA.

1.3 QUALIFICATIONS

- A. Landscape Maintenance Provider shall comply with all installer qualifications stated in Specification Sections 32 92 16 Native Plant Plugs.

1.4 SUBMITTALS

- A. Refer to Section 01 33 00 – Submittal Procedures for requirements for submittals.
- B. Product data and manufacturer's recommendations for herbicides and pesticides.
- C. Proposed maintenance schedule and field logs documenting maintenance activities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with all seed, plants, and miscellaneous materials specified in related sections listed above.

PART 3 - MAINTENANCE

3.1 GENERAL REQUIREMENTS

- A. Part of Contract: This maintenance specification is part of the contract. Compliance with the requirements herein is mandatory. In the event of question or dispute over applicability of any requirement, the requirement shall be assumed to apply, unless the Owner provides written clarification stating that it does not.
- B. Maintenance and Guarantee Period: The start date for the maintenance period and warranty period for all areas is the date (month, day, and year) that the seeding/planting is considered substantially complete, has been inspected, and has initial acceptance by the Owner. The maintenance period will continue for exactly three (3) years from the start date.
- C. Protection of Existing Surfaces and Property: The Landscape Maintenance Provider shall take proper precautions to protect existing vegetation, structures, infrastructure and utilities. Injuries to any person or damage to the Owner's property or any property not belonging to the Landscape Maintenance Provider shall be reported immediately to the Owner. Damage or destruction as a result of the Landscape Maintenance Provider's operations shall be repaired or replaced at the Landscape Maintenance Provider's expense and to the satisfaction of the Owner.
 - 1. Damage to items covered by this provision include, but are not limited to, curbs, sidewalks, lawns (including scalped areas), plantings, trees, signs, and refuse containers. Damages may be the result of, but not limited to power equipment damage to plantings or structures, improper pruning, over or under watering of plant materials, or chemical overspray.
 - 2. Replacement of damaged or destroyed plant material shall be of the same size and species or cultivar. Replacement shall occur within two (2) weeks of identification of damage. Substitute or alternative replacement, and scheduling of replacement shall be allowed only by the Owner's written permission.
 - 3. The Landscape Maintenance Provider is not responsible for losses, repair or replacement of damaged property due to extreme weather, vandalism, theft, or the acts of others over whom they have no reasonable control.
 - 4. The Landscape Maintenance Provider shall inform the Owner of such losses and provide the Owner with the cause and extent of the loss and recommendations for repair or replacement.
- D. Interference with Intended Use: The Landscape Maintenance Provider shall not interfere with the use of the Owner's facilities and adjacent properties and shall conduct its operations so that there is the least possible obstruction and inconvenience to the public and owner.
- E. The Landscape Maintenance Provider shall provide forty-eight (48) hour advance notice to the Owner whenever maintenance activities prevent normal access for a time exceeding two (2) hours. It is the Owner's responsibility to provide notice to users. The Owner will inform the Landscape Maintenance Provider of any special events or circumstances that will limit the Landscape Maintenance Provider's ability to perform maintenance activities.
- F. Owner/Landscape Maintenance Provider Communication: The Landscape Maintenance Provider shall provide the Owner with a phone number where a message can be left for

the Landscape Maintenance Provider twenty-four (24) hours a day. The Landscape Maintenance Provider shall respond to messages at this number within twenty-four (24) hours.

1. The Landscape Maintenance Provider shall provide the Owner with names and phone numbers of maintenance supervisors and other key personnel and further advise the Owner of personnel substitutes or replacements.
- G. General Practice Guidelines: The Landscape Maintenance Provider shall furnish all labor, equipment, materials, and transportation necessary to complete the maintenance of landscape improvements as specified herein. The Landscape Maintenance Provider shall provide services at whatever frequency is necessary to meet the specified standards.
1. The Landscape Maintenance Provider shall acquaint himself with the location of utilities, which may be encountered or be affected by the work, and shall be responsible for damage caused by failure to provide proper precautions or protection. Consult with the Owner and contact Parks Maintenance and Digger's Hotline to locate existing underground utilities prior to performing any work requiring subsurface excavation.
 2. Equipment shall be properly maintained to operate at "normal" operating sound levels. Equipment that is generating excessive noise or is otherwise objectionable to the Owner or neighboring properties shall be discontinued from use, at the Owner's request, until repairs can be affected.
 3. The Landscape Maintenance Provider is encouraged to use non-polluting devices like rakes and brooms when feasible. The Owner prefers low-decibel, low-fossil fuel consumption, and low-emissions models of blowers, trimmers, and other power equipment. Do not use blowers around parked cars to avoid scratching vehicle paint with blowing sand and debris. Do not blow trash or debris onto the property of others.

3.2 BIOINFILTRATION BASIN MAINTENANCE

- A. Comply with general maintenance requirements as described above.
- B. Inspect for sediment deposits
 1. Frequency: monthly during growing season, and after snow-melt, flooding, and heavy rainfall events
 2. Scrape or rake to loosen deposits; remove and dispose of excess.
- C. Inspect for erosion or other damage to soil areas
 1. Frequency: monthly during growing season.
 2. Repair as needed.
- D. Replenish mulch
 1. Frequency: once per year and as needed after replanting or soil repair.
- E. Re-cut edging
 1. Frequency: once per year in spring or fall.
- F. Clean-up trash and debris
 1. Frequency: monthly or as needed
- G. Maintain Protective Fencing
 1. Frequency: monthly

3.3 MAINTENANCE OF NATIVE PLUGS AND RELATED PLANT MATERIAL

- A. The warranty period shall coincide with the maintenance period.
 - 1. All plants shall be warranted to be in healthy and flourishing condition after the end of the maintenance and extended warranty period.
 - 2. Track maintenance activities performed (including date, herbicide applications, weeding methods, plant replacement, watering, etc.) using the form provided at the end of this section (or similar company form). Submit the completed form to the Parks Landscape Architect or Project Engineer after each maintenance visit. Provide a written report, to be given to a Parks Landscape Architect the end of each full growing season documenting the completed maintenance activities.
 - 3. At any time during the warranty period, the Maintenance Provider shall remove or replace, without cost to the Owner, and within a specified planting period, all plants not in a healthy and flourishing condition as determined by the Owner or Landscape Architect.
 - 4. Replacement plants shall be subject to the same specified requirements of the contract. Immediately remove dead or visibly unhealthy plants and replace unless required to plant in the succeeding planting season.
- B. Watering: During first growing season, water all plants if rainfall is less than 1-inch per week, wetting soil thoroughly and deeply to encourage deep rooting; water during dry periods during the following growing seasons.
 - 1. Water Source: The Landscape Maintenance Provider shall be responsible for providing the watering source.
 - 2. Water used shall be of sufficient quality for irrigation and free of materials harmful to plant growth.
- C. Inspect plantings for insects and disease
 - 1. Frequency: monthly during growing season.
 - 2. Treat as needed per maintenance instructions stated in this section.
- D. Inspect plantings for weeds and perform needed invasives maintenance
 - 1. Frequency: bi-monthly during growing season or at a frequency to ensure weeds do not reseed themselves.
 - 2. Remove weeds/invasives/pioneer woody vegetation selectively by hand-pulling or selective cutting. Hand pulling should include removal of all above ground and below ground stems, roots and flower masses prior to development of seeds. Care should be taken to disturb as little soil as possible during the hand pulling to avoid exposure of additional weed seed in the soil layer and protect adjacent plantings.
 - 3. Do not spray with herbicides as drift could damage adjacent plants; spot treat only. Selectively treat aggressive weeds such as Canada thistle and teasel with a broad spectrum, non-persistent glyphosate-based herbicide. Treat only on cool windless days, preferably by gloved hand wiping method.
 - 4. If a large-scale inhabitation of weeds or invasives is documented, contact Owner and establish a course of correction to eliminate the invasives before they can spread further.
 - 5. Typical weeds include but are not limited to: buckthorn, boxelder, reed canary grass, teasel, wild parsnip, crown vetch, purple loosestrife, thistle, burdock, purslane and those listed on the NR40 prohibited list.
 - 6. During the final year of the 3-year maintenance period, one mowing is required. Mow to a height of 6 inches.
 - a. Perform mowing with flail type mower or proper equipment, taking care not to disturb or rut engineered soil or adjacent turf/vegetated areas. Restore any disturbed areas to original condition.

- b. Spring mowings are preferred to allow vegetation to serve as wildlife habitat and cover over the winter months.
- E. Pesticides: Any use of pesticides during the contracted maintenance period, as determined by the Owner, shall utilize the minimum amount of approved pesticide needed to control pests on plant materials installed under the contract. Pesticide applications are to be performed in accordance with current federal, state and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator. Apply at the specified rate, and as per manufacturer's recommendations.
- F. Wildlife Control Measures: Maintenance Provider shall monitor the plantings during the warranty period to identify predation by wildlife and take all reasonable measure to protect the plant material from predation. These measures may include fencing, barriers, repellents, and frightening devices.

3.4 INTEGRATED PEST MANAGEMENT AND PESTICIDE APPLICATIONS

- A. The Landscape Maintenance Provider shall adhere to the principals of Integrated Pest Management (IPM) during landscape maintenance.
- B. General Concepts: Integrated Pest Management is an approach to weed, insect, and disease control that uses regular monitoring to determine if and when treatments are needed, and employs physical, mechanical, cultural, biological, and educational tactics to keep pest numbers low enough to prevent unacceptable damage or annoyance. Chemical treatments are made only when and where monitoring has indicated that the pest will cause unacceptable economic, medical, or aesthetic damage. Treatments are chosen and timed to be most effective and least hazardous to non-target organisms and the general environment.
- C. Pest Monitoring: The Landscape Maintenance Provider shall visually inspect all landscape areas once monthly throughout the contract period to identify potential pest problems. Pest problems include insect, disease, and weed infestations. The presence of a pest does not necessarily mean there is a problem. The Landscape Maintenance Provider shall keep written records of pests identified, areas where problems may be developing, and controls implemented. The Landscape Maintenance Provider shall educate himself regarding pest identification, pest life cycle, and best control methods including cultural, physical, and biological means.
 - 1. The Landscape Maintenance Provider shall notify the Owner if a pest problem appears to be developing. The Landscape Maintenance Provider and Owner shall jointly inspect problem areas, review monitoring records, and identify control methods.
- D. Pesticide Applications: Pesticides include all herbicides, insecticides, fungicides, and various other substances used to control pests.
 - 1. All pesticide applications shall be preceded by monitoring and positive pest identification. Combination products (for example, "weed and feed" or insect control plus fertilizer) shall not be used. Regular calendar-based or preventative applications of pesticides are not allowed unless approved by the Owner.
 - 2. All pesticides used shall be used in strict accordance with federal, state, county, and local regulations, and applied by a State of Wisconsin certified Commercial Pesticide Applicator per the label directions. All applications must be posted for twenty-four (24) hours after application. All chemicals must have a MSDS filed with the owner. Pesticide application records shall be kept by the Landscape Maintenance Provider and copies provided to the Owner.
 - 3. The Landscape Maintenance Provider is responsible for verifying that the pesticide used is appropriate for use with the respective plant material.
 - 4. Landscape Maintenance Provider is responsible for any damages incurred as a result of improper pesticide application and shall repair or replace any such damage at no cost to the Owner

3.5 PERFORMANCE GOALS

- A. Maintenance of vegetation shall limit weed coverage to at no more than 10 percent of the native planted area.
- B. The maintenance Provider shall meet on site with Parks Landscape Architect to perform an end of year review of conditions after the first full growing season, and at the end of the 3-year maintenance period.
- C. If the Contractor fails to meet the Warranty performance goals at the end of the first full growing season, Milwaukee County Parks and the Contractor shall agree to an approach for increasing the density of the planted species and/or decreasing the density of weeds, which may include but not be limited to:
 - 1. Herbiciding portions of, or the entire planted area.
 - 2. Re-planting portions of, or the entire planted area.
 - 3. More frequent site visits for a specified period of time.
- D. If significantly over 10 percent of the planted area contains weed species at the end of the maintenance period, the Contractor shall provide additional Maintenance for one full growing season following the Warranty period for the re-seeded areas.

End of Section