

SPECIFICATIONS

INSTALLATION, MONITORING, AND MANAGEMENT WITHIN CONSERVATION AREAS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

- A. General: Provide all landscape installation work and short-term monitoring/management within the conservation areas of the Project, as shown on the Drawings and specified herein.
- B. Extent of the Work: The required landscape work shall include, but shall not necessarily be limited to, the following specific items of work:
1. Soil Preparation
 2. Planting
 3. Seeding
 4. Erosion Control
 5. Selective Clearing
 6. Selective Herbicide Application
 7. Prescribed Mowing
 8. Prescribed Burning
 9. Monitoring
 10. Reporting
 11. Debris Removal

1.02 JOB CONDITIONS:

- A. General: Specific activities shall be conducted only at suitable times as approved by the LRMG specialist. LRMG's written approval shall first be obtained for the installation and management work schedule as submitted by the conservation area contractor before work can begin.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Topsoil: Topsoil shall be a natural friable loam of the region, rich in organic matter, without any material toxic to plant growth, reasonably free of plants and their roots, sticks, clods of hard clay, stones over one inch in diameter, or other extraneous material. It shall contain no decomposed stone, salts, or alkali, and not less than 15 parts per million of available nitrates, three parts per million of available phosphorus, 15 parts per million of potash, and having a pH of not less than 6 nor more than 7.2 at a depth of 8 inches below the surface of the field from which it is removed. It shall have a mechanical analysis as follows:

Sieve	Percent Passing
1 inch	100
1/2 inch	97-100
No. 100	40-60

- B. Seed: All seed must be identified with a tag indicating species, producer's guarantee as to year grown and source of seed. Seed source must be within a 200 mile radius of the Project. All seed must meet a minimum of 75% PLS [Pure Live Seed] per species as verified by independent laboratory test results. Test results can be no more than 12 months old.
- C. Plug: All plugs must be identified per species and location of original source.

PART 3 - CONTRACTOR PREQUALIFICATION

3.01 CONSERVATION AREA CONTRACTOR PREQUALIFICATION:

- A. Landscapes within conservation areas are to be installed and managed by individuals/companies with qualifications and/or experience with such landscapes.
- B. Qualifications are to be provided to LRMG through submittal of references, photographs, resumes, and/or other means that demonstrate the ability to install and/or manage naturalized landscapes.

PART 4 - TOPSOIL INSTALLATION

4.01 INSTALLATION:

At least 12 inches of topsoil shall be placed over all disturbed areas scheduled for planting. The topsoil shall be incorporated into the subsoil by placing half of the depth, discing it in, and placing the remaining depth of the soil. A soil ripping/decompaction process shall be utilized to achieve the acceptable compaction parameters.

4.02 COMPACTION:

Soil compaction shall be measured with a penetrometer to a depth of 12". One measurement shall be made for every 400 square feet. If readings average greater than 250 psi, then the soil shall be ripped again to a depth of 12" using methods approved by the site supervisor. All disturbed areas shall be covered with the required topsoil and meet the maximum compaction criteria prior to completion of the mass excavation.

PART 5 - NOTIFICATION/INSPECTION

5.01 START-UP NOTIFICATION:

The developer is to provide LRMG with notification 24 hours prior to the start of planting installation within the conservation easement.

5.02 SEED AND PLUG INSPECTION:

Seed and plugs shall be subject to inspection and approval by LRMG prior to installation. Rejected seed and plugs shall be immediately removed from the site.

PART 6 - SHORT-TERM MANAGEMENT

6.01 TYPICAL FIRST-YEAR MANAGEMENT ACTIONS:

- A. Prescribed Mowing: Vegetation shall be mowed to a height immediately above native seedlings when it exceeds 12 inches. (Note: Weekly mowing at turf lawn height will not be performed, as mowing too often can setback native planting development.) A rotary or flail-type mower is preferred because it finely chops the cut material. If clippings shade the ground or smother the remaining plants, they will be bagged for off-site disposal or otherwise dispersed. Incidental top-cutting and crushing of native seedlings does not harm them at this stage of development. The last mow should be timed so that vegetation can grow to a height of eight to 10 inches before winter.

- B. Weed Management: Weeding practices will avoid damaging the native plantings and be timed to prevent development of weed seeds. For aggressive biennial and perennial weeds, herbicide will be selectively applied. Turf management chemicals will not be used on native plantings except as directed by LRMG.

- C. Cattail Control: When provided with proper hydrology and substrate conditions, emergent plantings require only minimal maintenance activities. The most critical action is cattail control. Cattail removal should occur according to the following procedure:

1. Existing stands shall be first treated in mid to late May. All cattails shall be cut low to the ground. A systemic herbicide shall be applied to the cut cattail stumps with a wicking applicator or backpack sprayer.
2. The recommended herbicide and application rate is 3% aquatic glyphosate (Rodeo® or equivalent) and 1% non-ionic surfactant mixed with water.
3. If standing water is present, cattails shall be cut as low as possible below the water line to kill the plant by suffocation. Herbicide shall not be applied to plants that are cut below the water line. Cattail plants shall not be allowed to progress beyond the early flowering stage.

Cattail control shall continue through the first growing season, as directed by the wetland consultant. If necessary, subsequent annual treatment will consist of wick or backpack sprayer application of standing cattails during early summer utilizing the same Glyphosate mix described above.

- D. Debris: Debris and litter (e.g., paper, plastic, metal, concrete, grass clippings, brush, etc.) will be removed every other month to prevent floating materials from clogging the outlet. Debris will be disposed of off-site.

- E. Other Activities: Other potential responsibilities may include, but are not limited to, access restriction enforcement, insect/pest control, erosion repairs, and wildlife management (e.g., control of carp, muskrats, geese, etc. as needed). The need for other management actions will be determined on a quarterly basis when performing general maintenance visits. Insecticide application and wildlife management activities must be approved by applicable local, state and federal agencies.

6.02 TYPICAL SECOND-YEAR MANAGEMENT ACTIONS:

- A. Prescribed Mowing: During the second growing season, the seeded area should be mowed as close to the ground as possible in early spring. If annual weeds remain a problem, an additional mow will be performed during mid- to late June, with the mow height set to 12 inches. Short mowing at this time or later in the summer can harm native wildflowers. See 7.01A for disposal of clippings.
- B. Weed Management: Weed management will emphasize control of biennial and perennial weeds. Biennial weeds targeted for control include Sweetclovers (*Melilotus* spp.), Queen Anne's Lace (*Daucus carota*), and Teasel (*Dipsacus* spp.). See 8.01 A9-10 for other targeted weeds. Proper weed control may require multiple treatments and will be performed at times that will provide maximum treatment effectiveness.
- C. Other Activities: Other management practices will include debris/litter removal and access restriction enforcement. Additional management tasks may include erosion control and repairs, insect/pest control, reseeding/replanting in targeted areas, and wildlife management as determined on a quarterly basis when performing general maintenance visits.

6.03 TYPICAL THIRD-YEAR MANAGEMENT ACTIONS:

- A. Prescribed Mowing: During the third growing season, the seeded area should be mowed as close to the ground as possible in early spring. See 7.01A for disposal of clippings.
- B. General: As in the first two years, management of aggressive weeds will continue. Other management practices will include debris/litter removal and access restriction enforcement. Additional management tasks may include erosion control and repairs, insect/pest control, reseeding/replanting in targeted areas, and wildlife management as determined on a quarterly basis when performing general maintenance visits.
- C. Prescribed Burn: If there is sufficient fuel, a prescribed burn may be attempted at the end of the third growing season, provided proper permits from the Illinois Environmental Protection Agency are obtained and notice is provided to local authorities. They are typically conducted between mid-October and April, as weather and site conditions permit. If prescribed burning is not practical, mowing in early spring will be substituted for burning. The burn-replacement mow should be as close to the ground as possible.

PART 7 - LANDSCAPE ACCEPTANCE CRITERIA

7.01 CONSERVATION AREA LANDSCAPE ACCEPTANCE CRITERIA:

- A. General: The following acceptance criteria shall apply to each individual plant community area. The attainment of these items will result in acceptance of the landscape improvement by the ACOE and the Village of Orland Park.
1. Within three months of seed installation (or three months after the start of the growing season following dormant seeding), at least 90% of the seeded area, as measured by cover, will be vegetated or otherwise stabilized against erosion.
 2. Conservation area landscapes shall have no more than 0.25 square-meters devoid of vegetation, as measured by cover unless otherwise indicated per accepted restoration plan.
 3. Seeded areas shall have no rills or gullies greater than four inches wide by four inches deep.
 4. Emergent areas shall have an average minimum of 50% ground cover and all other plant communities shall have an average minimum of 65% ground cover by species in the approved plant list and/or native species with native C values ≥ 2 (per Swink and Wilhelm 1994 or more current version).

5. All plant communities shall have a minimum of 30% presence by species seeded or planted for the permanent matrix and/or native species with C values ≥ 2 (per Swink and Wilhelm 1994 or more current version).
6. No individual plant community area shall have more than 25% cover of non-native or weedy species.
7. None of the three-most dominant species may be non-native or weedy, including but not limited to Common Burdock (*Arctium minus*), Smooth Brome (*Bromus inermis*), Canada Thistle (*Cirsium arvense*), Common Teasel (*Dipsacus sylvaticus*), Barnyard Grass (*Echinochloa crus-galli*), Purple Loosestrife (*Lythrum salicaria*), Sweetclover (*Melilotus* spp.), Reed Canarygrass (*Phalaris arundinacea*), Common Reed (*Phragmites australis*), Kentucky Bluegrass (*Poa pratensis*), Multiflora Rose (*Rosa multiflora*), or Sandbar Willow (*Salix interior*) unless otherwise indicated on the approved planting plan.
8. Cattails (*Typha* spp.) do not count towards the 25% weed criterion provided they represent no more than 20% cover.
- B. Annual Guidelines: To determine the need for and level of management appropriate to achieve the acceptance requirements, the following milestones are offered. Average minimum percent ground cover by community in the approved plant list and/or native species with C-value of 2 or greater shall be the following in the applicable year:

Monitoring Year	Average Minimum Percent Native Ground Cover	
	Emergent	All Other Plant Communities
Year 2	35 %	35 %
Year 3	40 %	45 %
Year 4	45 %	55 %

Minimum percent presence by species seeded or planted for the permanent matrix and/or native species with C-value of 2 or greater shall be the following in the applicable year:

Monitoring Year	Minimum Percent Presence
Year 2	15%
Year 3	20%
Year 4	25%

The native mean C-value for the area should increase each year or stabilize over the five-year establishment monitoring period.

- C. Unmet Criteria: If success criteria are not met within three years, management shall continue until such criteria are met and accepted by the ACOE and the Village of Orland Park.

PART 8 - MONITORING

8.01 MONITORING METHODOLOGY:

- A. General: Monitoring shall be performed for three years after planting is substantially complete, or until acceptance standards are met, subject to acceptance of conservation areas by the ACOE and the Village of Orland Park.
- B. Meander Survey: Annual vegetation monitoring will occur in August, September, or early October. It shall incorporate photography and meander survey methodology to provide items 1-9 listed below. Five to ten photographs (total) should be taken to depict general conditions as well as small-scale conditions or areas of particular concern. Meander surveying should cover a minimum of 20% of each plant community as listed in the construction documents and shall include:
1. Delineation of each plant community and dominant (>10% cover) species found within each
 2. All plant species (native and non-native) within each community
 3. The five most dominant species within each community
 4. The percent survival of planted species
 5. The percent ground cover by native species within each community
 6. The percent ground cover by non-native or invasive species within each community
 7. Erosion and sedimentation problems
 8. Water level or drainage problems
 9. Areas of bare soil larger than 0.25 square-meters
 10. Observations on specific management strategies necessary to achieve acceptance requirements.

PART 9 - REPORTING

9.01 SUBSTANTIAL COMPLETION:

- A. General: Within ten working days following substantial completion, Celtic Development (the current developer, if the site developer changes, or their designated representative) is to submit documentation to LRMG and the Village of Orland Park that conservation area landscape installation has been completed. If LRMG and/or the Village of Orland Park find the work consistent with the approved plan, they will issue a letter indicating the start of the short-term management period.

9.02 ANNUAL MONITORING REPORT:

- A. General: Celtic Development (the current developer, if the site developer changes, or their designated representative) is to submit an annual monitoring report to the ACOE, The Village of Orland Park and LRMG by February 28th for the prior monitoring year. The report is to include a location map, a summary of annual monitoring observations, a description of management performed during the year, a tabular summary of annual progress relative to acceptance standards and a list of recommendations for management during the upcoming year.

PART 10 - LONG-TERM MANAGEMENT

10.01 LONG-TERM MANAGEMENT:

- A. General: The Landscape conservation/Restoration area shall be deeded to the Village of Orland Park after acceptance of Short term management. Long-term management will be the responsibility of the Village of Orland Park.

SHEET: 2 of 6
DATE: 5/12/05
REV: 04-05-06 PLS-2 PER VILLAGE
REV: 11-05-06 PER VILLAGE
REV: 11-05-07 PER VILLAGE REVIEW

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