

**CITY OF COLUMBUS, OHIO
DEPARTMENT OF PUBLIC UTILITIES**

**SUPPLEMENTAL SPECIFICATION 1609
GREEN INFRASTRUCTURE ESTABLISHMENT ACTIVITIES
DATED ~~JANUARY 10, 2020~~DECEMBER 21, 2022**

1609.01	DESCRIPTION
1609.02	APPLICABLE STANDARDS
1609.03	SUBMITTALS
1609.04	CONTRACTOR QUALIFICATIONS
1609.05	SUMMARY OF WORK
1609.06	INSPECTION AND REPORTING
1609.07	WARRANTY
1609.08	METHOD OF PAYMENT
1609.09	BASIS OF PAYMENT

GREEN INFRASTRUCTURE ESTABLISHMENT ACTIVITIES

1609.01 Description. This specification details the activities and procedures that the Contractor must follow after Green Infrastructure (GI) components have been completed and shall be in effect until the project has received Final Acceptance by the City. Activities include, but are not limited to, plant establishment, temporary protections, site stabilization and trash collection, repair/replacement, and inspections/reporting. CMSC 661 Planting Trees, Shrubs, and Vines requirements shall apply when Section SS 1609 is specified.

1609.02 Applicable Standards

- A. City of Columbus CMSC (current standards)
 - 1. Section 659: Seeding and Mulching
 - 2. Section 660: Sodding
 - 3. Section 661: Planting Trees, Shrubs and Vines
 - ~~4. Section 662: Landscape Watering~~
 - ~~5.4.~~ Section 666: Pruning Existing Trees
 - ~~6.5.~~ SS 1601: Site Activity Plan for Projects Containing Green Infrastructure Facilities
 - ~~7.6.~~ SS 1604: Bioretention Soils for Green Infrastructure Projects

1609.03 Submittals

- A. Prior to the start of the Period of Establishment provided for in CMSC 661.18, as amended in this and other supplemental specifications or special provisions, the Contractor shall submit material data, testing results, certifications and other submittal data that has been updated or revised since the date of initial submittals as required by the following specifications:
 - 1. CMSC 659, Seeding and Mulching
 - 2. CMSC 660, Sodding
 - 3. CMSC 661, Planting Trees, Shrubs, and Vines
 - 4. SS 1604, Bioretention Soils
- B. Prior to the start of the Period of Establishment, Contractor shall submit to the City/Engineer a list of the anticipated site visit dates and total number of visits in accordance with the Applicable Standards defined in SS 1601.
- C. Contractor qualifications as described in SS 1609.04.
- D. Certifications for new materials and plants that are installed during the Period of Establishment.

1609.04 Contractor Qualifications

- A. The Contractor shall provide documentation of no less than two representative GI projects within the greater Columbus area, including contact information for references for the City to confirm that work was provided in an acceptable manner.
 - 1. The representative experience must specifically relate to the type of GI installed under this contract, including the installation and establishment of bioretention devices.
 - 2. The representative experience must demonstrate the Contractor's knowledge and experience of the different types of GI that has been maintained. The representative experience shall include experience in the identification and removal of Ohio native, noxious, and invasive plant species.
- B. Other documentation confirming that the Contractor has general knowledge of GI plant care, stormwater features, and the theory of stormwater quality practices may be submitted to support the Contractor's qualifications.

1609.05 Summary of Work

- A. Period of Establishment Timeframes

The period of establishment for GI facilities, shall consist of two consecutive seasons of establishment as follows:

- 1. ~~The timeframe of Period of Establishment Season 1 shall be per CMSC 661.18.~~ The minimum period of establishment is one growing season, June 1 through October 1.
- 2. The timeframe of Period of Establishment Season 2, shall begin on October 1 immediately upon completion of Period of Establishment Season 1 as defined above in CMSC 661.18 and shall continue through October 1 of the second full growing season following installation of the plants.

- B. General

In addition to the requirements in CMSC 661, as amended in this and other supplemental specifications or special provisions, the following activities shall be performed throughout both Season 1 and 2 periods of establishment as defined in 1609.05.A.

- 1. The Contractor shall furnish all labor, materials, equipment and incidentals required to provide GI Period of Establishment, as detailed in the CMSC 661.18, as amended in this and other supplemental specifications or special provisions.
- 2. Debris shall be hand removed from structures, grates, under-drain access points, observation ports/cleanouts.

3. Contractor is responsible for proper disposal of all vegetative debris, litter and other waste material.
4. Contractor shall protect and maintain all trees, shrubs, ground cover, and plants alive and thriving for the duration of the Period of Establishment. This includes from the time the plantings are installed, through the Period of Establishment, until Final Acceptance.

C. Additional Requirements for Period of Establishment

In addition to the requirements in CMSC 661, as amended in this and other supplemental specifications or special provisions, the following activities shall be performed throughout both Season 1 and 2 periods of establishment as defined in 1609.05.A.

1. Weeding: Weeding shall occur at a frequency and intensity as to completely rid the planted and mulched areas of weeds, shrubs, grasses trees, or any other vegetation not shown on the planting schedule before they go to seed. Removal shall include the root and shall be accomplished by hand pulling with or without the use of small hand tools.
 - a. Application of chemicals is discouraged. In the event that chemical application is the only viable option, the Contractor shall submit a request to the City that includes the type of chemical to be applied, the application rate, proposed application dates, and procedures. The Contractor shall not apply chemicals until written approval has been granted by the City. Certain chemicals may require a State Licensed Operator to apply chemicals such as herbicides. The City will request a copy of the license from the operator before any work is performed.
2. Erosion and Sediment Control: If erosion is evident, Contractor shall seek source of erosion and stabilize exposed soil immediately. Any visible rills or gullies shall be filled with specified bioretention soil and stabilized with mulch per the Contract Documents.

3. Activity and Frequency Schedule

The following activities shall be performed at the frequency and time of year specified for the establishment of GI during Season 1 and Season 2.

Activity	Frequency	Duration of Year
Remove sedimentation from upstream contributing area within project limits	Monthly	April 1 through March 31
Remove trash	Monthly	April 1 through March 31
Remove leaf and tree debris	Monthly	April 1 through March 31
Remove weeds	Monthly	April 1 through March 31
Prune trees and shrubs in accordance with CMSC 666	Annually	March
Replace bioretention soil due to erosion or settling	Annually	April and as needed
Replace mulch due to erosion or decay	Annually	April and as needed
Inspection by Certified Arborist	Semi-Annually	April/May & September/October
Remove/replace dead or diseased plants	Semi-Annually	Trees and Shrubs: March 1 through May 31 & September 15 through November 30 Grasses and Perennials: April 1 through May 31 & September 1 through October 1
Watering in accordance with CMSC 662 -661.14 and conducted in a manner that does not cause erosion of soil around plants	Weekly	Between May 1 and October 1
Prune Asters & other fall bloomers (cut back by 1/3)	Twice During Growing Season	May and June/July
Perennials & Sedges: remove unsightly dormant foliage	Annually	November
Cut back grasses	Annually	Late February/Early March
Treat or remove diseased foliage	Monthly	April 1 through March 31
Inspect structures	Semi-annually	May and November
Lawn Maintenance	Weekly	As Needed

1609.06 Inspection and Reporting

- A. The Contractor shall inspect the GI facility monthly throughout Season 1 and Season 2 to assess that the condition of the GI facility is in accordance with design standards and the requirements of this Supplemental Specification.
- B. Wet Weather Inspection: Contractor shall inspect the site once annually between the months of April and November during a rain event to evaluate surface infiltration of each GI facility.

C. Monthly Establishment Inspection: Contractor shall inspect monthly to evaluate plant health and overall condition of the GI facility. Contractor shall not perform monthly establishment inspections during times when site activity may result in damage or compaction to bioretention soil, or when the site is covered with trash, debris, snow, or standing water such as during large rain events or within 48 hours after a one half inch (1/2") or greater measurable rain event unless directed by the city.

~~D. The Contractor shall provide a detailed record of activities performed during the Period of Establishment Season 1 and Season 2 by the 15th of the following month.~~

E.D. At a minimum, the establishment schedule shall include a spring clean-up, fall clean-up, and monthly visits throughout the growing season. Additional visits are required as necessary in order to maintain the life and viability of plant materials according to this Section.

F.E. The detailed schedule shall include two plant survival inspections each year and should be done jointly with the City and Contractor in accordance with the requirements of CSMC 661.19.

G.F. The Contractor shall submit a monthly report of activities during the previous month including:

1. Inspection report found in the Inspection and Maintenance Guidance Manual for Stormwater Control Practices. This includes a detailed record of activities performed during the Period of Establishment Season 1 and Season 2 by the 15th of the following month.
2. Dates and times of maintenance.
3. Weather conditions during establishment activities.
4. Summary of plant establishment activities performed including watering, fertilizing, pruning, chemical applications, etc.
5. General description of plant conditions during each activity.
6. Report from semi-annual arborist inspection of the health of the trees and shrubs.
7. List dates and times for replacement plant installation in monthly reports.
8. Description, location, and quantity of replacement plants.
9. Photographs documenting activities performed. If no deficiencies are observed Contractor shall take photographs at each facility as proof of inspection.

1609.07 Warranty

- A. ~~This section shall amend the warranty requirements of CMS 109.13. The warranty period shall commence at the completion of the first establishment period and shall end at the completion of the second establishment period. The City may elect subsequent replacement or credit for a replacement plant deemed unacceptable during or at the end of the warranty period. Upon successful completion of the second establishment period, Final Acceptance as defined in 109.11.E will be granted, and the Contractor shall be relieved of maintenance responsibilities for any portions of the Work accepted. The guarantee period will end at the completion of the second establishment period and Final Acceptance. The City may elect subsequent replacement or credit for a replacement plant deemed unacceptable during or at the end of the guarantee period.~~
- B. The contractor shall guarantee healthy and flourishing plant material through the end of Period of Establishment Season 2.
- C. At the end of the ~~guarantee warranty~~ and Period of Establishment Season 2, reset grades that settled below the proposed grades on the drawings.
- D. Perform a survival inspection, jointly with the City, in the first growing season before the end of summer. Meet with the City in the fall to compare lists, reconcile differences and develop a spring replacement list.
- E. Replace all plants determined by the Engineer to be dead or in an unacceptable condition that would result in abnormal growth. Replacement shall occur during and at the end of the warranty period as soon as weather conditions permit, and within the specified planting period listed above, at no cost to the City. The City will consider acceptable plants free of dead or dying branches and branch tips and bearing foliage of normal density, size, and color. Replace dead or unacceptable plants with plants that closely match adjacent specimens of the same species. Provide replacements that satisfy all requirements stated in CMSC 661.
- F. Perform a survival inspection, jointly with the City, at the beginning of the second growing season in April. Meet with the City in April to amend the original replacement list. Upon the final survival inspection, all dead or diseased plants are to be replaced before final acceptance.
- G. Plant all replacements by the end of May of the second growing season of the original planting.
- H. Make periodic inspections during the guarantee period to monitor the condition of the trees. Water the trees as needed to maintain the trees alive and in an acceptable condition. If the Contractor fails to replace the trees by the designated date, provide the City with a credit for the cost of the tree.

1609.08 Method of Payment

- A. Period of Establishment Season 1, including all requirements of CMSC 661.18 and 661.19, as amended in this and other supplemental specifications or special provisions, shall be incidental to CMSC 661.
- B. The City will measure Green Infrastructure Period of Establishment Season 2 as a lump sum activity. Monthly payments shall be based on the lump sum value of the bid item divided by 12.

1609.09 Basis of Payment

- A. The City will pay for accepted Green Infrastructure Period of Establishment Season 2 at contract price as follows.

Item	Unit	Description
1609	Lump Sum	Green Infrastructure Period of Establishment Season 2