# TECHNCIAL SPECIFICATIONS
# DRAINAGE INFRASTRUCTURE

All work under this Contract shall be done in conformance with the MassDOT *2022 Standard Specifications for Highways and Bridges*, the *Supplemental Specifications*, the *2017 Construction Standard Details*, the *Traffic Management Plans and Detail Drawings*, *MassDOT Work Zone Safety Temporary Traffic Control*, the *1990 Standard Drawings for Signs and Supports*; the *2009 Manual on Uniform Traffic Control Devices (MUTCD)* with Massachusetts Amendments; *The American Standard for Nursery Stock*; the City of Chicopee Department of Public Works Construction Standards*;* the Plans; and these Specifications.

References within the Standard Specifications to MassDOT, the Department, the Owner or the Engineer shall, for the purposes of this Contract, be construed to mean the City of Chicopee or its designated representative.

## ENGINEERING DIRECTIVES

Contractors can access MassDOT, Highway Division Engineering Directives at:
https://www.mass.gov/massdot-engineering-directives

Manuals and Publications
https://www.mass.gov/massdot-highway-division-manuals-and-publications

## DISPOSAL OF EXCESS MATERIAL

Surplus materials obtained from any type of excavation, and all existing and other materials not required to be removed and stacked or needed for use on the project, as determined by the Engineer, shall become the property of the Contractor and disposed of subject to the regulations and requirements of local authorities governing the disposal of such materials, at no additional compensation.

## ORDERING OF MATERIALS AND DRAWINGS

The Contractor shall provide the Engineer within thirty (30) days of receipt of the contract, written evidence that:

1. They have ordered the shop drawings for the materials for which shop drawings are required for this contract; and,
2. They have ordered from a supplier or manufacturer, the catch basin frames, grates and other such castings and materials necessary to complete the project.

The Contractor shall further provide the Engineer written evidence within thirty (30) days of receipt of the Contract that these orders have been confirmed in writing by the manufacturer with delivery dates appropriate for timely completion of the project. These confirmations of orders will become part of the project records.

Failure to comply with any of the ordering requirements shall nullify a request for an extension of the project completion date.

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**SHOP DRAWING SUBMITTAL** (Supplementing Subsection 5.02)
Within 15 days after receipt of an approved shop drawing for any item, the Contractor shall provide the Engineer written proof that they have ordered such approved materials required on the subject contract and a written confirmation of such order and delivery schedule from the manufacturer of the particular item. This delivery schedule shall be appropriate for timely completion of this project.

All shop drawings and related calculations shall be stamped by a Professional Engineer registered in Massachusetts.

**PERMITS AND LICENSES** (Supplementing Subsection 7.03)
The Contractor is responsible to acquire all required permits from the City of Chicopee. Permit fees for all permits will be incidental to the work.

**INVESTIGATION OF UNDERGROUND FACILITIES** The Contractor's attention is directed to the necessity of making their own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etc., will occur. The Contractor shall notify the City and Mass. DIG SAFE and procure a DIG SAFE number for each location prior to disturbing the existing ground in any way.

DIG SAFE Call Center 1-888-344-7233

The Contractor shall notify the City and Dig Safe 72 hours prior to start of construction.

**NOTICE TO OWNERS OF UTILITIES** (Supplementing Subsection 7.13)
Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of their intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Engineer. Before commencing work on service connections, the Contractor shall contact the serving utility to ensure that proper construction procedures are followed.

The following are the names and addresses of some of the agencies which may be affected and must be notified. Completeness of this list is not guaranteed by the City. The Contractor shall assure that all affected agencies are notified. It will be the Contractor's responsibility to verify this contact information and to notify the City of changes to this list.

City of Chicopee
115 Baskin Drive
Chicopee, MA 01020

Mr. Douglas E. Ellis, P.E.
City Engineer
(413)-594-3416

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| Chicopee Water Department<br>115 Baskin Drive<br>Chicopee, MA 01020 | Mr. Jim Deni<br>Superintendent of Water<br>(413)-594-3420 |
| MWRA (Water)<br>2 Griffin Way<br>Chelsea, MA 02150 | Mr. Ralph Francesconi<br>(617) 305-5827 |
| Chicopee Water Pollution Control<br>80 Medina Street<br>Chicopee, MA 01020 | Mr. Eric Kerr<br>Chief Operator<br>(413) 594-3585 |
| Chicopee Fire Department<br>80 Church Street<br>Chicopee, MA 01020 | Mr. Daniel P. Stamborski<br>Fire Chief<br>(413)-594-1630 |
| Chicopee Police Department<br>110 Church Street<br>Chicopee, MA 01013 | Mr. Patrick Major<br>Chief of Police<br>(413)-594-1700 |
| Chicopee Electric Light<br>725 Front Street<br>Chicopee, MA 01020 | Mr. Erik Morgan<br>(413)-598-8311 |
| Eversource Gas<br>2025 Roosevelt Avenue<br>Springfield, MA 01101 | Mr. Bryan Meccariello<br>(413)-784-2208 |
| Verizon<br>385 Myles Standish Blvd.<br>Taunton, MA 02780 | Ms. Karen Mealey<br>(774) 409-3160 |

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Full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in protecting or repairing property as specified in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed therefore.

The Contractor shall be required to furnish all labor, materials, and equipment necessary to protect underground structures and electrical vaults within the project site from construction debris and water penetration. When underground structures or electrical vault roofs are excavated, the Contractor shall be responsible for maintaining security of these structures or electrical vaults against unauthorized access. The Contractor shall be responsible for leaving the structures and vaults in a state of water tightness equal to that existing at the commencement of the contract.

**PROTECTION OF UTILITIES AND PROPERTY** (Supplementing Subsection 7.13)

The Contractor, in constructing or installing facilities alongside or near sanitary sewers, storm drains, water or gas pipes, electric or telephone conduits, poles, railroad, sidewalks, walls or other structures, shall, at their own expense, sustain them securely in place, cooperating with the officers and agents of the various utility companies and municipal departments which control them, so that the services of these structures shall be maintained.

They shall also be responsible for the repair or replacement, at their own expense, of any damage to such structures caused by their acts or neglect and shall leave them in the same condition as they existed prior to the commencement of work. In case of damage to utilities, the Contractor shall promptly notify the owner and shall, if requested by the Engineer, furnish laborers to work temporarily under the owner's direction in providing access to the utility. Pipes or other structures damaged by the operation of the Contractor may be repaired by the City or by the utility company which suffers the loss. The cost of such repairs shall be borne by the Contractor, without compensation therefore.

If, as the work progresses, it is found that any of the utility structures are so placed as to render it impracticable, in the judgment of the Engineer, to do the work called for under this Contract, the Contractor shall protect and maintain the services in such utilities and structures and the City will, as soon thereafter as it reasonably can, cause the position of the utilities to be changed or take such other action as it deems suitable and proper.

Full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in protecting or repairing property as specified in this section shall be considered as included in the prices paid for the various contract items of work and no additional compensation will be allowed, therefore.

The Contractor will cooperate fully with all utility companies private or public and will notify all such companies at least twenty-four hours prior to excavating in the vicinity of any utility. It is understood that the Contractor has considered in their bid the existence of the various utilities and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference by said utilities.

The Contractor shall pay the serving utility for their services rendered for the connection of underground service connection.

**MAINTENANCE OF EXISTING TREES**

Caution shall be taken by the Contractor not to damage plants by burning, by pumping of water, by cutting live roots or branches, or by any other means. No plants to be saved shall be used for crane stay, guys or other fastenings. Vehicles shall not be parked where damage may result to trees to be saved. Construction materials shall not be stored beneath trees to be saved.

Existing shrubs, vines, and groundcover to be saved that are damaged, as determined by the Engineer, shall be replaced with plants of equal size. All costs incurred shall be paid for by the Contractor at their own expense.

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**ENVIRONMENTAL CONTROLS**

All construction equipment shall be fitted with suitable muffling devices so that the noise from construction operation shall be properly controlled.

The Contractor shall control all dirt, dust erosion and other related construction emissions from the project to the satisfaction of the Engineer.

**FAILURE TO COMPLETE WORK ON TIME** (Supplementing Subsection 8.11)

In case work has not been physically completed by the time stipulated in the contract, and temporary provisions must be made to satisfactorily close out work as determined by the Engineer, the Contractor shall provide such temporary provisions at no cost to the Owner. This may include, and is not limited to structure adjustments, temporary pavement markings, temporary driveway apron adjustments, and any other temporary provisions determined necessary by the Engineer.

**CONCURRENT WORK BY OTHERS WITHIN PROJECT LIMITS**

Concurrent work may be in progress in the project area by others, including but not limited to, the City, remediation contractors, private development of adjacent lots, and various utility companies. The Contractor is required to coordinate their activities with all work by others within and adjacent to the project limits.

No additional payments will be allowed for any disruption of work schedule caused by or required to coordinate work in this contract and work to be performed by others.

**MATERIALS REMOVED AND STACKED** (Supplementing Subsections 580.64, 630.63)

Materials directed to be removed and stacked, which are privately owned, shall be removed, transported to, and stacked on the property where materials have been removed, as directed by the Engineer.

If the Engineer determines that any part of the stacked materials are unsuitable for re-use by the City, or if other owners decide to abandon part or all of their materials, such materials shall become the property of the Contractor and they shall dispose of them away from the site.

The contract prices for the various items shall include full compensation for the services noted above.

**DISPOSAL OF SURPLUS MATERIALS**

All existing and other materials not required or needed for use on the project, and not required to be removed and stacked, shall become the property of the Contractor and shall be removed from the site during the construction period and legally disposed of. No separate payment will be made for this work, but all costs in connection there with shall be included in the prices bid for various contract items.

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**TEMPORARY FENCE**

Contractor shall erect temporary fencing as required to secure the work site for the purpose of public safety. The work shall include furnishing, installing, maintaining, removing, resetting, and final removal of fencing. The fence shall be used to close off the construction area from adjacent pathways, whose use conflicts with the construction activities.

All work to furnish, install, relocate, and remove temporary fencing shall be considered incidental to and no separate payment will be made.

**SURVEY CONTROL AND STAKING**

Survey control data for project baselines shall be furnished to the Contractor. The Contractor, without additional compensation, shall maintain all such controls throughout the prosecution of the work and shall perform all required construction layout. Finished surfaces in all cases shall conform, as near as practical, in accordance with the grades and guidelines provided in the Contract Documents.

**END OF SECTION**

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# SECTION 2550
# CONSTRUCTION SPECIFICATIONS

## ITEMS

All Items of work in this Contract shall be governed by the "Commonwealth of Massachusetts, Highway Department (MassDOT) Standard Specifications for Highway and Bridges", dated 2022, including the latest supplements and addendum thereto.

The following items reflect special conditions particular to this Project. As such, they amend and/or supplement the provisions governing the Item, as described in the Standard Specifications.

## ITEM 101. CLEARING AND GRUBBING ACRE

The work under this item shall conform to the relevant provisions of Section 101 of the Standard Specifications and the following:

The work shall include, but not be limited to, the removal and proper disposal of existing bushes, trees, brush and other materials not included for payment under other items necessary for the prosecution of the work as shown on the plans or directed by the Engineer.

Prior to performing clearing and grubbing operations, the Contractor and the Engineer shall review the site to identify areas requiring site clearing. No clearing operations shall be undertaken without prior approval of the limits by the engineer. Removal of stumps, roots, brush and other vegetation in areas to be cleared shall be removed as part of this item.

Clearing and Grubbing will be paid for at the contract unit price bid per Acre and shall include all labor, material and equipment required to complete the item to the satisfaction of the Engineer.

## ITEM 120.1 UNCLASSIFIED EXCAVATION CUBIC YARD

The work to be done under this Item shall be undertaken in accordance with the relevant provisions of Section 120 “Excavation” of the Standard Specifications.

The work under this Item shall include the satisfactory removal and disposal of all the materials obstructing the execution of required work as shown on the plans and as directed, except for those materials for which payment is made inclusive with complete work specified to be performed under other items of this Contract.

Work shall include (but is not limited to) removal, if necessary, of the following: boxes, buried foundations, demolition debris, rock excavation, posts, bollards, isolated tree stumps not included in Item 101, curbing (all types), concrete slabs, reinforced concrete, asphalt concrete pavement, roadway base, gutters, stone and brick walls, cobblestones, unsuitable material, muck, brick, and

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existing pipe of all types, if not specifically included for payment under another Item of the contract.

Payment under this Item shall be at the Contract Unit Price per cubic yard, which price shall include all labor, materials, and equipment necessary to complete the Item.

**ITEM 145. DRAINAGE STRUCTURE ABANDONED EACH**
**ITEM 146. DRAINAGE STRUCTURE REMOVED EACH**

The work under this item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

The work shall include abandonment or removal of existing drainage structures within the limit of work as noted on the Site Plans and as directed by the Engineer.

All drainage structures to be abandoned shall be backfilled in place with suitable soil borrow as determined by the Engineer. Existing inverts shall be sealed with a masonry plug meeting the provisions of Section 270 of the Standard Specifications.

Items 145 and 146 will be measured and paid for at the contract unit price per each drainage structure abandoned or removed, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work including but not limited to all excavation, alterations to structures, installation of masonry plugs, and backfill as shown on plans and details.

**ITEM 156. CRUSHED STONE TON**

The work under this item shall conform to the relevant provisions of Section 150 of the Standard Specifications and the following:

The work shall include the provision of crushed stone as bedding material for proposed drainage structures as well as crushed stone around proposed perforated piping as indicated on the plans and details.

Crushed stone shall meet the material requirements of M2.01.4.

Item 156 will be measured and paid for at the contract unit price per ton of crushed stone complete in place, which price shall include all labor, materials, equipment, tools, and incidental costs

required to satisfactorily complete the work including but not limited to all excavation, placement of material, grading, and compacting, as shown on plans and details.

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| **ITEM 201.5** | **CATCH BASIN-MUNICIPAL STANDARD** | **EACH** |
| **ITEM 202.01** | **MANHOLE – MUNICIPAL STANDARD** | **EACH** |
| **ITEM 202.21** | **MANHOLE (9 TO 14 FOOT DEPTH) – MUNICIPAL STANDARD** | **EACH** |
| **ITEM 202.4** | **MANHOLE (18 FOOT DEPTH AND OVER)** | **EACH** |

The work to be done under these items shall conform to the relevant provisions of Section 201 of the Standard Specifications and as the following:

The Contractor shall construct manholes and other drainage structures in the locations and of the types called for on the plans or as directed by the Engineer and in accordance with the City of Chicopee standard drawings. Shop drawings shall be submitted.

All structures shall be built without weep holes and all manholes shall be complete with steps, installed and coated as noted on the plans.

Lowering structures, including plating as may be required, shall be considered incidental to the general work of the contract and no additional payment shall be made thereto.

Hoods shall be installed at locations noted on the plans and paid for under Item 224.12.

Excavation support and excavation techniques such as vacuum excavation may be required for installation of structures. All work to install drainage structures complete in place shall be considered part of work of this section.

New structures shall be considered complete in place when frames and covers are set to grade. Adjustments, if needed, shall be considered incidental to these items.

Crushed stone used for bedding shall be paid for under Item 156. Frames and grates or covers shall be paid for under Items 222.3.

Items 201.5, 202.01, 202.02, and 202.4 will be measured and paid for at the contract unit price per drainage structure complete in place, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work including but not limited to all excavation, installation of drainage structure, backfill, grading, and compacting, as shown on plans and details.

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| **ITEM 220.** | **DRAINAGE STRUCTURE ADJUSTED** | **EACH** |
| **ITEM 220.2** | **DRAINAGE STRUCTURE REBUILT** | **FOOT** |
| **ITEM 220.3** | **DRAINAGE STRUCTURE CHANGE-IN-TYPE** | **EACH** |
| **ITEM 220.5** | **DRAINAGE STRUCTURE REMODELLED** | **EACH** |

The work under this item shall conform to the relevant provisions of Section 220 of the Standard Specifications and the following:

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The work shall include the adjustment, rebuilding, change-in-type, and/or remodeling of existing drainage structures to remain, as indicated on the plans and details or as directed by Engineer.

Where existing pipe connecting to the structure is to be abandoned, as indicated on the plans, the end of existing pipe shall be plugged as specified in Section 200. Plug shall be considered incidental to these items.

New frames and grates or covers shall be provided for all affected drainage structures and all existing frames and grates or covers shall be removed and discarded, unless otherwise required by Engineer. Frames and grates or covers shall be paid for under Item 222.3 and frames and grates or covers removed shall be paid for under Item 223.2.

Items 220, 220.3, and 220.5 will be measured and paid for at the contract unit price per each structure modified. Item 220.2 will be measured and paid for at the contract unit price per height of rebuilt masonry. These prices shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work including but not limited to excavation, alterations to structures, and installation of masonry plugs as shown on plans and details.

**ITEM 222.3 FRAME AND GRATE (OR COVER) MUNICIPAL STANDARD EACH**

The work to be performed under these items shall conform to the relevant provisions of Section 200 the Standard Specifications and the following:

New frames, grates and covers shall be in conformance with City of Chicopee standards and the plans. Fabrication shall be by a MassDOT approved Fabricator.

Item 222.3 will be measured and paid for at the contract unit price per each frame and grate or cover complete in place modified, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work.

**ITEM 223.2 FRAME AND GRATE (OR COVER) REMOVED AND DISCARDED EACH**

The work to be performed under these items shall conform to the relevant provisions of Section 200 the Standard Specifications and the following:

The work shall include removal and legal disposal of existing frame and grates or covers from structures designated to be adjusted, remodeled, or changed in type.

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Item 223.2 will be measured and paid for at the contract unit price per each frame and grate or cover removed, transported, and discarded, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work.

**ITEM 224.12 12 INCH HOOD EACH**

The work to be performed under these items shall conform to the relevant provisions of Section 200 the Standard Specifications and the following:

The work shall include provision of a hood at drainage structures as indicated on the plans and details.

Item 224.12 will be measured and paid for at the contract unit price per each hood complete in place, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work.

**ITEM 227.4 MASONRY PLUG EACH**

The work to be performed under these items shall conform to the relevant provisions of Section 270 of the Standard Specifications and the following:

The work shall include provision of a masonry plug at existing inverts designated to be plugged as noted on the plans or as required by Engineer.

Masonry plugs installed within existing drainage structures to be abandoned, adjusted, changed-in-type, or remodeled shall be considered incidental to those pay items and no separate payment shall be made.

Item 227.4 will be measured and paid for at the contract unit price per each masonry plug complete in place, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work.

**ITEM 228.01 INFILTRATION BASIN LUMP SUM**

The work under this item shall conform to the relevant provisions of Section 100 of the Standard Specifications and the following:

The work shall include constructing the infiltration basins along the landward side of the flood control levee to the lines and grades shown on the plans, in accordance with these specifications and as directed by the Engineer. The work shall also include excavation for basin construction, installation of basin subbase, seed mix along basin side slopes and bottom, and other construction elements as shown on the plans and details.

It is important to minimize compaction of the infiltration basin subgrade soils. The contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of

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equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction and is not acceptable. Compaction will significantly contribute to design failure.

The material used for the basin subbase shall consist of sand and gravel with a maximum clay composition of 20% and maximum silt composition of 50% at detailed in the Construction Plans. Prior to installation of each basin subbase, the Contractor shall submit at least one sample per 500 cubic yards of subbase material for geotechnical soil testing to confirm that the material meets required criteria. Following placement of subbase, Contractor shall conduct exfiltration rate testing via a methodology approved by the Engineer, to verify that exfiltration rates meet or exceed 1.02 in/hr. within the basin footprint. Material that does not meet these criteria shall be removed from the Site at the expense of the Contractor.

Item 228.01 will be paid for at the Contract unit price per Lump Sum, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the infiltration basins including but not limited to all excavation, fine grading and compaction, soil borrow for subbase, soil testing, and seed mix shown on plans and details.

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| **ITEM 252.30** | **30 INCH HIGH DENSITY POLYETHYLENE (HDPE) PIPE** | **FOOT** |
| **ITEM 252.121** | **12 INCH PERFORATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE** | **FOOT** |
| **ITEM 252.181** | **18 INCH PERFORATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE** | **FOOT** |
| **ITEM 252.241** | **24 INCH PERFORATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE** | **FOOT** |
| **ITEM 252.301** | **30 INCH PERFORATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE** | **FOOT** |

This work under this Item shall conform to the relevant provisions of Section 230 of the Standard Specifications and shall include the furnishing and installation of Perforated High Density Polyethylene (HDPE) pipe for storm water drainage. HDPE Pipe shall meet the requirements of Subsection M5.03.10 of the Standard Specifications. Prior to installation, pipe materials shall be submitted to the Engineer for approval.

A bedding of 1” – 3” crushed stone conforming to M2.01.4 and as indicated on the plans shall be placed around all perforated HDPE Pipe including Geotextile Fabric for Subsurface Drainage meeting the material requirements of AASHTO M 288.

Crushed stone shall be paid under Item 156. Geotextile Fabric shall be paid under Item 698.1.

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Where proposed pipe connects to proposed structures, the Contractor shall provide all materials, equipment and labor to make connections to structures, including flexible couplings per recommendations of the manufacturer.

Items 252.30, 252.121, 252.181, 252.241, and 252.301 will be measured and paid for at the contract unit price per linear foot of pipe complete in place, which price shall include all labor, materials, equipment, tools, and incidental costs required to satisfactorily complete the work.

**ITEM 697.1 SILT SACK EACH**

Work under this item shall conform to the relevant provisions of Sections 227 and 670 of the Standard Specifications and the following:

The work under this item includes the furnishing, installation, maintenance, and removal of a reusable fabric sack to be installed in drainage structures for the protection of wetlands and other resource areas and the prevention of silt and sediment from the construction site from entering the storm water collection system. Devices shall be ACF Environmental (800)-448-3636; Reed & Graham, Inc. Geosynthetics (888)-381-0800; The BMP Store (800)-644-9223; or approved equal.

Silt sacks shall be installed in existing catch basins and drop inlets within the project limits and as required by the Engineer. Silt sacks shall also be installed in the next set of downstream catch basins beyond all project limits.

The silt sack shall be as manufactured to fit the opening of the drainage structure under regular flow conditions and shall be mounted under the grate. The insert shall be secured from the surface such that the grate can be removed without the insert discharging into the structure. The filter material shall be installed and maintained in accordance with the manufacturer's written literature and as directed by the Engineer.

Silt sacks shall remain in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth. All materials used for the filter fabric will become the property of the Contractor and shall be removed from the site.

The Contractor shall inspect the condition of silt sacks after each rainstorm and during major rain events. Silt sacks shall be cleaned periodically to remove and disposed of accumulated debris as required. Silt sacks, which become damaged during construction operations, shall be repaired or replaced immediately at no additional cost to the Department.

When emptying the silt sack, the contractor shall take all due care to prevent sediment from entering the structure. Any silt or other debris found in the drainage system at the end of construction shall be removed at the Contractors expense. The silt and sediment from the silt sack shall be legally disposed of offsite. Under no condition shall silt and sediment from the insert be deposited on site and used in construction.

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All curb openings shall be blocked to prevent stormwater from bypassing the device.

All debris accumulated in silt sacks shall be handled and disposed of as specified in Section 227 of the Standard Specifications

Silt sacks will be measured and paid at the Contract unit price per each, complete in place, which price shall include all labor, materials, equipment, and incidental costs required to complete the work. No separate payment will be made for removal and disposal of the sediment from the insert, but all costs in connection therewith shall be included in the Contract unit price bid.

**ITEM 698.1 GEOTEXTILE FABRIC SQUARE YARD**

This work under this Item shall conform to the relevant provisions of Section 260 of the Standard Specifications and shall include the furnishing and installation of Geotextile fabric around crushed stone for subsurface drainage systems and as required be Engineer.

Geotextile Fabric shall conform to requirements of AASHTO M 288 and M9.50.0.

Compensation shall be at the contract unit price bid per square yard complete in place, and shall include the fabric, all labor, tools, materials, and any necessary incidental items to provide complete in place installation.

**ITEM 751. LOAM BORROW CUBIC YARD**

The work under these Items shall conform to the relevant provisions of Section 751, 765, 767, 770 and as supplemented below. Work includes the placement of approved loam borrow, lime, fertilizer, and seed to restore all disturbed grassed areas as authorized by the Engineer.

Loam Borrow shall meet with Material Specifications M1.07.0. Loam Borrow shall pass a 3/8" screen and laid in a minimum depth of 4" after compacted and shall be free of grass and other unsuitable materials. The placement of new loam borrow shall be as follows.

In new areas or areas of significant disturbance, loam borrow shall be placed with a minimum depth of 4 inches after compaction. In existing grass areas to remain, or where there is minimal disturbance to the surface, depressions shall be filled and a top dressing of loam borrow shall be applied to a general depth of 1 inch after compaction. Prior to the application of the top dressing, the Contractor shall be required to mechanically aerate these areas by a means acceptable to the Engineer. Loam Borrow shall be used to fill depressions and shape the surface to provide for proper flow of drainage, as well as enhance the general appearance of these grassed areas. Areas

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adjacent to curbs and other such hard surfaces shall be pre-worked and tapered down 1 to 2 inches so as to allow the top dressing to end up flush with the hard surface.

Lime shall meet M6.01.0. Lime shall be applied at a rate of 75 to 100 lbs. per 1,000 square feet prior to seeding.

Refer to Item 765.412 for seed mix requirements.

Payment under Item 751 shall be the Contract Unit Price bid per Cubic Yard, based on a 4 inch depth, which price shall be full compensation for preparing surfaces; fine grading and compaction the sub base, furnishing, placing, raking, shaping and compacting new loam borrow; and furnishing and applying lime.

Unless otherwise approved by the Engineer, surfaces disturbed outside the Limits of Work line shown for the Contractor's convenience, shall be restored as specified herein, at the Contractor's own expense.

**ITEM 765. SEEDING – LOW UPLAND MIX – FULL SUN SQUARE YARD**

The work under this item shall conform to the relevant provisions of Section 765 of the Standard Specifications and the following:

The work shall consist of planting and establishing a stand native grass in the areas shown on the plans or as required by the Engineer.

Seed mix shall be Low Upland Mix – Full Sun.

For the purposes of these specifications, the term “grass” shall apply to all the forbs, grasses, sedges, and rushes included in the materials.

All seeding shall be done by a company having a minimum of five years of experience with native grass establishment. Prior to beginning work, the applicator shall furnish proof of qualifications to the Engineer for approval. Proof of qualifications includes providing documentation to demonstrate knowledge and expertise with native seeding and proof of having completed successful native seeding projects.

SEEDING SEASON
Seeding seasons shall be April 1 through May 15 and October 1 through November 15 for dormant seeding. For seeding that occurs outside of these periods, the seed rate shall be increased by 50%.

MATERIALS

Seed

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Samples and Submittals

1) Certificate of Materials. Prior to ordering, the Contractor shall submit to the Engineer the manufacturer or supplier's notarized Certificate of Materials. This document shall not be used as proof of purchase, proof of material delivered, or proof of material seeded, but simply to verify supplier availability of seed listed on the date certified. The species listed shall match those specified on the plans or herein, however, cultivars may vary due to availability. Substantial substitutions or changes in the mix from that specified on the plans or herein shall be approved by the Engineer.

2) Seed Tag Certification. All seed lots have a seed analysis tag as required by State and Federal law. The contractor shall submit seed tags for each bag of seed used on the project site or ensure that each tag is photo documented by the Engineer. Number of tags shall match number of bags sent by the supplier to meet rate of Pure Live Seed specified on the plans. Tag must include: kind and variety of seed; lot number; origin of seed; net weight; % purity; germination; dormant seed; germination test date; inert matter; weed, noxious and other crop seed; and name and address of company responsible for the analysis. Seeding may be considered unacceptable for payment if no tags are submitted.

3) Certificate of Compliance. Prior to payment, contractor shall submit a signed, dated and notarized Certificate of Compliance from the Supplier that serves as proof of purchase or bill of lading. This document shall include kind and variety of seed, lot number, net weight shipped, date of sale, invoice number under which seed was purchased, and name and address of Supplier or Manufacturer. All information must be included on the notarized form, including lot number and net weight shipped for specified job. This information shall match Seed Tag Certification and quantity of seed applied on the job. Seeding may be considered unacceptable for payment if information is incomplete.

4) Seed Sample. Contractor may be asked, prior to seeding, to submit a seed sample for testing. Testing shall be incidental to this item.

Quantities specified are Pure Live Seed (PLS). Greater quantities of ordered seed may be required to achieve actual specified seeding rates. Pure Live Seed is defined as the fraction of pure seed species within the mix that, by standard seed testing practices, will germinate. This is determined by multiplying the percent of seed purity by the percent of seed germination.

Seed mix shall be a custom blend as shown on the plans or shall be as specified below. Seed cultivars shall be those that are as regional to New England or the local ecotype as possible.

**ITEM 767.121 SEDIMENT CONTROL BARRIER FOOT**

The work under this item shall conform to the Standard Specifications and Section 670 of the Standard Supplemental Specifications and shall include the furnishing and placement of a

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sediment control barrier. Sediment Control Barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) composter filter rubes are intended to be the primary sedimentation control barrier. For small areas of disturbance with minimal slope and slope length, the Engineer may approve tubes which shall be trenched.

Additional barriers (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

Where specified or required by permits, silt fence shall be used in addition to straw wattles or straw bales and shall be incidental to the item.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans to ensure that the placement will provide maximum effectiveness.
Barriers shall be staked, trenched and/or wedged as specified herein and shall be securely in contact with existing soil such that there is no flow beneath the barrier.

Compost Filter Tube
Compost material inside the filter tube shall meet M1.06.0, except for the following: no manure or bio-solids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be a knitted mesh with 1/8 - 3/8” openings and made of 100% biodegradable materials (i.e., cotton, hemp or jute).

Compost filter tubes shall be a minimum of 12 inches in diameter installed. Tubes shall be placed, filled, and staked in place as required to ensure stability against water flows. All tubes shall be tamped, but not trenched, to ensure good contact with soil.

Where reinforcement is necessary, additional tubes shall be installed as shown on the plans.

Silt Fence
Materials and Installation shall be per Section 670.40 of the Standard Supplemental Specifications and the following:

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Silt fence shall be used when specified by Orders of Condition or other permitting.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch-wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be driven 16 inches into the ground on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch-high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

Stakes

Stakes for anchoring Compost Filter Tubes, Straw Wattles, and Straw Bales shall be as shown on the plans and shall be a minimum of 1x1 inch diameter x 4 feet hardwood stakes.

When used with Silt Fence, stakes for Compost Filter Tubes shall be driven 12 inches into the ground, Stakes for Straw Bales shall be driven 16 inches into the ground.

Stakes of other material of equivalent strength may be used if approved by the Engineer.

MAINTENANCE

Maintenance of Sediment Control Barriers shall be per Section 670.40 of the Standard Supplemental Specifications or per the Stormwater Pollution Prevention Plan (SWPPP).

The contractor shall inspect the sediment barrier after each rain event and as specified in relevant permits to ensure that they are working effectively and as intended. Contractor shall be responsible for ensuring that an effective barrier is in place for all phases of the contract.

Barriers that decompose naturally due to weatherization over time such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact and continues to provide water and sediment control, barrier does not necessarily require replacement.

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed when construction work is complete and when site conditions are sufficiently stable to prevent surface erosion and after receiving permission to do so from the Engineer.

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For all instances, all nonbiodegradable material, including photo-biodegradable fabric, plastic netting, nylon twine, and silt fence, shall be removed and disposed off-site by the Contractor regardless of site context.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose on-site. Compost filter tubes may be left as they are with stakes removed. Straw bales shall be broken down and spread evenly. All nylon or nonbiodegradable twine shall be removed along with silt fence. Wooden stakes may be left on site, placed neatly and discretely.

In urban, residential, and other locations where aesthetics is a concern, the following shall apply:

- Filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (similar to a soil amendment or mulch). Not more than a 2-inch depth shall be left on soil substrate.
- Silt fence, stakes, and other debris shall be removed and disposed off-site. Site shall look neat and clean upon completion.

BASIS OF PAYMENT

Item 767.121 will be measured and paid for at the contract unit price per foot of sediment control barrier which price shall include all labor, equipment, materials, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Silt fence, when used in conjunction with compost filter tubes or straw bales, will be incidental to this item.

Additional barrier, such as double or triple stacking of compost filter tubes, shall be paid for per foot of tube installed.

Barriers that have been driven over or otherwise damage by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

**END OF SECTION**

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