DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 – GENERAL

1.1 SUMMARY

A. The Work under this Contract includes, but is not necessarily limited to, furnishing and installing cured-in-place pipe (CIPP) liner for approximately 3,400 linear feet; leak repairs; heavy cleaning; service lateral connection re-instatement after new CIPP liner installation and in existing defective connections; service lateral connection repairs; manhole repairs and lining; spot excavation repairs; AC pipe abatement; and sewer manhole frame and cover adjustments and replacements. The project also includes sewer bypass, permitting, traffic management, paving and all other appurtenances, materials, equipment, and labor required to complete the project.

1.2 SCOPE OF WORK

A. The Work shall consist of furnishing all labor, equipment, materials, tools, apparatus and all other incidental work required to complete the sewer system rehabilitation work as specified and shown in the figures provided in Appendices. The Work shall include, but not necessarily be limited to the following:

1. Mobilization and demobilization to the Project Site.

2. Furnishing, installation and maintenance of all traffic control and safety measures during the construction period, including signs, barricades, detours, maintenance of safe vehicular and pedestrian access to abutting properties, businesses and commercial establishments and assuring an uninterrupted supply of utility services to all public amenities, businesses and abutters within the project area, at all times.

3. Coordination of all construction activities with the appropriate local and State Authorities, and utility companies.

4. Attending the Pre-construction Conference and the required job progress meetings.

5. Submission of a construction schedule, list of subcontractors, and proposed source locations for off-site materials.

6. Submission of all required shop drawings, in a timely manner, to the Engineer, for review.

7. Perform all field engineering associated with the project.

8. Providing Site Security (temporary fencing and jersey barriers) and other

construction site control measures, as needed.

9. Protection and potential temporary removal of existing on-site structures, utilities and features.

10. On-site and laboratory testing, as specified.

11. Civil/site/structural construction including by-pass pumping, frame and cover resetting and replacement, spot repairs for replacing a short section of defective sewer main or service.

12. Demolition and legal disposal of Asbestos Cement Pipe and contaminanted soils, select concrete, debris, and appurtenances.

13. Obtaining necessary permits and licenses, maintaining all items required by applicable permits, and payment of fees. Including street opening permits, MWRA discharge permits, Asbestos Containing Material etc.

14. Traffic control planning, devices, and coordination of police details, as described in Appendix A, Figures, and Appendix B, MassDOT Traffic Details.

15. The rehabilitation of manholes as required; including manhole cementitious lining, grouting and plugging for crack and leak sealing, and brick and mortar repairs.

16. The furnishing and installation of cured-in-place pipe (CIPP) as required for 8-inch asbestos cement sewer main pipe. Includes a pre-lining CCTV inspection, post lining CCTV inspection, and warranty inspection.

17. Prior to CIPP installation the Contractor shall cut protruding service pipes, remove roots, grease, and other deposits, and grout leaking sewer mains and service connections called out on the Figures in Appendix A and as determined by the Engineer during the pre-lining CCTV inspection.

18. The furnishing and installation of lateral connection repairs (LCR) at each lateral as noted in the Figures in Appendix A.

19. Maintenance and repair of all work for a period of one (1) year following the issuance of the Certificate of Substantial Completion.

20. The Work shall also conform to such additional Figures and Addenda to these Specifications as may be published or exhibited prior to the opening of bid proposals and to such Figures in Appendix A in explanation of details, or as may be furnished by the Engineer from time to time during the construction.

21. Work, materials, equipment, and storage areas, which are necessary for construction, but which are not specifically referred to in the Specifications or shown on the Figures in Appendix A, but implied by the contract, shall be

furnished by the Contractor at his own cost and expense, and shall be such as will correspond with the general character of the Work, as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these Specifications to produce a complete, finished job, whether shown in every detail or not.

1.3 CONTRACTOR'S USE OF PREMISES

A. No more than one work crew will be allowed on site without prior written approval from the Engineer.

B. Contractor shall limit the use of the premises for his/her Work and for storage to allow for:

1. Owner occupancy, including Easements.

2. Public use.

C. Coordinate use of premises with Owner.

D. Contractor shall assume full responsibility for security of all his/her and his/her subcontractors' materials and equipment stored on the site.

E. If directed by the Owner or Engineer, move any stored items which interfere with operations of Owner or other contractors.

F. Obtain and pay for use of additional storage areas or work areas as necessary and required to perform the Work.

1.4 OWNER OCCUPANCY

A. Owner will occupy premises during performance of the Work for the conduct of his/her normal operations. Coordinate all construction operations with Owner to minimize conflict and to facilitate Owner usage.

B. A general description of the Work to be performed under this contract shall include, but will not be limited to, the following construction operations:

1. Coordination of all construction activities with the appropriate local and State authorities and utilities.

2. Attending the pre-construction conference and required job progress meetings.

3. Submission of a construction schedule, list of subcontractors and submission of all required shop drawings, in a timely manner, to the Engineer for review.

4. Mobilization to the site.

5. Protection of existing structures and installation of environmental control measures.

1.5 UTILITIES

A. The utilities shown on the plans have been located primarily from information furnished by others and are considered approximate both as to size and location. It shall be the Contractor's responsibility to locate all existing utilities and to protect same from damage or harm. All utilities interfered with or damaged shall be properly restored, at the expense of the Contractor, to the satisfaction of its Owner.

B. Water, drain, gas, and telecommunication utilities are not shown on the plans. Prior to excavation, contractor shall call DIGSAFE to mark out any additional utilities near the excavation.

C. All utilities shall be supported and protected during excavation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01010

SECTION 01024

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1. SUMMARY

A. Under the price specified to be paid for each item, the Contractor shall furnish all materials and equipment, furnish all labor and plant and perform all operations to complete all work as indicated and specified. Provide all supervision, overhead items, bond and permit costs, protection and precautions and all other costs, incidental to the construction work, complete, and as specified, are also included.

B. A complete, finished, working job, as intended by the general nature of these Specifications, shall be produced whether or not any particular wording or direction is omitted or inadvertently not clearly stated.

C. Measurement for payment shall be by the Engineer, except where noted elsewhere in this Specification. Measurement for payment for lump sum items shall be on the basis of percentage of work complete and in place.

D. Each unit or lump sum price stated in the Bid shall constitute full compensation as herein specified for each item of work completed in accordance with the Drawings and Specifications.

E. The prices for those items which involve excavation shall include compensation for disposal of surplus excavated material, handling of water, and any required shoring or bracing for compliance with OSHA regulations.

F. Unit prices submitted for various items of work will be utilized for determining prices of any additional work necessary during construction.

G. Final payment shall not be issued until the Contractor submits project record drawings approved by the Engineer.

H. In accordance with Chapter 150 of the Acts of 2013 (An Act Relative to Price Adjustments for Certain Materials in Construction Projects), specifically Section 38A, of Massachusetts General Laws Chapter 30, the following materials will be eligible for price adjustments in accordance with the Appendices and applicable Specification Sections: fuel (both diesel and gasoline); liquid asphalt; and, portland cement (contained in cast-in-place concrete). The noted material price adjustments are applicable on a monthly basis only when the monthly cost change in base prices exceeds +/- 5%.

1.2. ITEM DESCRIPTIONS

A. Item 1: Mobilization and Demobilization

1. Measurement: Payment of mobilization and demobilization costs shall be on a lump sum basis but the cost shall not exceed 5 percent of the total of bid items 2 – 23 inclusive.

2. Payment: The lump sum price bid in the Bid Form shall be full compensation for all costs associated with initiation and closeout of the Contract, exclusive of the cost of materials, with 50% payable on completion of mobilization. Payment shall include compensation for all insurance, bonds, site preparation, construction equipment delivery, and in general the costs associated with establishing and terminating the work on site. There shall be no additional costs for any remobilization.

B. Item 2: Heavy Cleaning

1. Measurement: Work under this Item shall be per the actual linear foot of piping heavily cleaned for root, grease, and sediment removal, as directed and accepted by the Engineer. The length shall be measured from the inside face of the upstream manhole to inside face of the downstream manhole for all pipe to be heavy cleaned.

2. Payment: Under the Unit Price for this Item, the Contractor shall include furnishing all labor, tools, materials, and equipment necessary to satisfactorily remove roots, grease deposits, sediment, obstructions, and debris within sanitary sewer by heavy cleaning. Sewer bypass is paid for under Item 3. This item also includes: providing standard and special jetting nozzles, chain cutter nozzles, robotic cutters, and any other equipment required to mechanically clean the pipe; hoses; water for construction; protection of property; restoration and clean-up; vactor of all pipe debris during cleaning and proper disposal of the debris; CCTV work; and all other incidentals required to complete the work.

C. Item 3: Sewer System Bypass

1. Under the lump sum price bid for this Item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to bypass sewer system flow, including: all labor, materials, equipment, tools and incidentals for the development of the bypassing plan, set-up and break down as neededblocking of flow as required; bypass pumps and standby pumps, piping/hose, gasoline/diesel fuel, secondary containment, generator;maintenance, transportation, and storage;confined space entry and equipment; ramps for street and driveway crossings;trenching, plating for diversion piping, excavation, backfill with suitable excavated material, common fill, crushed stone, compaction, saw cutting pavement, placing temporary

pavement for temporary piping, and final surface restoration and cleanup, including 4" final trench paving, and all other incidentals required to complete the work.

2. Measurement for this Item shall be on a percent of the Lump Sum bid calculated by dividing the elapsed time to date by the original Contractual construction time limit as approved by the Engineer.

D. Item 4: CIPP Lining, 8-inch Sewer Pipe

1. Measurement for this Item shall be per the actual linear foot of liner installed and accepted by the Engineer. Length shall be measured from inside face of the upstream manhole to inside face of the downstream manhole.

2. Payment: The Contract Unit Price shall include furnishing all labor, materials, tools, equipment, and incidentals required to install the cured-in-place pipe structural liner including CIPP liner design, cleaning and pre-CCTV inspection, post-lining CCTV Inspection, obtaining MWRA approvals, and all other incidentals required to complete the work.

3. Warranty CCTV inspection is paid for under Item 17. Sewer bypass is paid for under Item 3.

4. Payment will be made for pipe only when it is installed in the ground and post-lining CCTV inspection reports are accepted by the Engineer.

Item 5: Cut Protruding Service Connection

1. Measurement: Work under this Item shall be measured per each protruding service connection and accepted by the engineer.

2. Payment: Under the Unit Price for this Item, the Contractor shall furnish all labor, materials, tools, and equipment required to cut the protruding connection flush with the main line pipe wall, including, post cutting cleaning and CCTV inspection, vactor of all debris and proper disposal of the debris, protection of property, site restoration and clean-up, and all other incidentals required to complete the work. Sewer bypass is paid for under Item 3.

F. Item 6: Grout Opening to Stop Leak at Service Tap

1. Measurement: Work under this Item shall be measured per each leak grouted as determined by the Engineer.

2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to seal leaks with chemical grout, testing, and all incidentals required to complete the work. Sewer bypass is paid for under Item 3.

G. Item 7: Reinstate Service Connection with Cutter

1. Measurement: Reinstatement of service connection with cutter shall be measured per connection reinstated and approved by the Engineer after review of the post-lining CCTV Inspection.

2. Payment: The Contract Unit Price per connection shall include all labor, materials, tools, equipment, and incidentals required to reinstate and inspect the service connection including previously grouted connections that are partially blocked and reinstatement of connections through new CIPP liner. Sewer bypass is paid for under Item 3.

H. Item 8: Lateral Connection Repairs (LCR)

1. Measurement: Work under this Item shall be measured per each LCR insert installed and accepted.

2. Payment: Under the Unit Price for this Item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to install the LCR including preparation of the lateral and removal of sharp edges (except for cutting protruding services covered under Item 5), post-installation CCTV inspection and Warranty Inspection, and all other incidentals required to complete the work. Service connections include all newly re-instated connections and other service connections as determined by the Engineer. Sewer bypass is paid for under Item 3.

3. Payment will be made for LCRs only when it is installed in the ground and post-installation CCTV inspection reports are accepted by the Engineer.

I. Item 9: Full Length Lateral Connection Repair

1. Measurement for this Item shall be per the actual linear foot of liner installed and accepted by the Engineer. Length shall be measured from the sewer main connection to inside face of the upstream manhole.

2. Payment: The Contract Unit Price shall include furnishing all labor, materials, tools, equipment, and incidentals required to install the full length cured-in-place lateral pipe structural liner including CIPP liner design, cleaning and pre-CCTV inspection, preparation of the lateral and removal of sharp edges (except for cutting protruding services covered under Item 5), post-lining CCTV Inspection, obtaining MWRA approvals, and all other incidentals required to complete the work.

3. Warranty CCTV inspection is paid for under Item 17. Sewer bypass is paid for under Item 3.

4. Payment will be made for pipe only when it is installed in the ground and post-lining CCTV inspection reports are accepted by the Engineer.

J. Item 10: Sewer Manhole Cementitious Lining

1. Measurement: Work under this Item shall be measured per vertical foot of manhole lined and accepted, from the manhole invert to the bottom of the manhole frame unless cited to specific limits. Vertical feet lined shall be as measured by the Engineer.

2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to line the manhole interior including surface preparation; parging of holes and joints with patching mix, cementitious lining from the frame to the invert, testing; and all other incidentals required to complete the work. Payment includes lining the bench, invert and pipe connections with a hydraulic cement mortar. Sewer bypass is paid for under Item 3.

Item 11: Manhole Grouting to Stop Leak

1. Measurement: Work under this Item shall be measured per each manhole defect grouted as determined by the Engineer. One manhole defect is defined as a defect confined to one-sixth of the manhole circumference. Full circumference defects are counted as 6 defects for this Item.

3. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to remove and dispose of loose material from leaks, drilling and sealing leaks with exterior grouting, plug and parge opening with mortar, and all other incidentals required to complete the work. Sewer bypass is paid for under Item 3.

L. Item 12: Re-set/Re-mortar Sewer Manhole Chimney

1. Measurement: Work under this Item shall be measured per manhole chimney repaired and accepted.

2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to remove existing material, reset and re-mortar the existing manhole chimneys including replacement and/or resetting of brick, mortar, and all other work required to complete a structurally sound repair.

M. Item 13: Repair Manhole Bench and Invert

1. Measurement: Work under this Item shall be measured per each manhole bench and invert rebuilt as determined by the Engineer.

2. Payment: The Contract Unit Price shall include all labor, materials, tools, equipment, and incidentals required to remove and dispose of defective material, install new bricks and mortar as necessary to rebuild or repair and shape the bench and invert, and all other incidentals required to complete the work. Sewer bypass is paid for under Item 3.

Item 14: Remove and Replace / Raise and Reset Manhole Frames and Covers

1. Work under Item 14a shall be measured per each frame and cover set removed, disposed, replaced with a new frame and cover, and adjusted to existing grade, including furnishing and installing a new frame and cover.

2. Work under Item 14b shall be measured per each existing frame and cover set adjusted to existing grade.

3. Payment: The Contract Unit Price shall constitute full compensation for furnishing all labor, materials, tools, and equipment necessary for the removal and disposal of brick and mortar underneath the frame; furnishing and installing brick and mortar as necessary to bring the frame rim to existing grade; interior and exterior mortar coat; pavement saw cutting a maximum of 2 feet beyond the outside extent of the manhole in a neat square cut; backfill and compaction; and all else incidental thereto for which separate payment is not provided under other items in the Bid Form.

O. Item 15: Gravity Sewer Pipe Dig and Replace Spot Repairs

1. Measurement: This Item shall be measured per linear foot of spot repair performed and accepted by the Engineer. Each spot repair shall include pipe replacement of at least five (5) feet on both sides of the pipe defect or to the manhole or sewer main as specified on figures provided in Appendix A.

2. Under this Item, payment for the SDR 35 PVC pipe as specified will be made at the Contract price stated in the Bid Proposal for the quantities as measured in place on a linear foot basis. The Contractor shall provide all labor, materials, tools, equipment, and incidentals required for construction of PVC pipe complete. Payment shall be considered full compensation for providing: saw cutting and removing existing pavement; furnishing all SDR 35 PVC pipe for sizes as indicated on the Drawings, including all fittings, bends, wyes for sewer services, and appurtenances; trench excavation and support of excavation;

2. dewatering systems and proper discharge of groundwater; pipe bedding as specified in the Design Drawings; common fill or backfilling with suitable excavated material; removal and disposal of unsuitable excavated material, and procurement of new suitable backfill; compaction and steel plating prior to final paving; paving subbase as specified in the Design Drawings; restoring the trench surface to grade needed for trench pavement; all restoration required within the trench limits; protection or temporary removal and replacement of existing utilities and structures; laying, jointing, cleaning, and testing the pipe;water for construction; temporary plugging open ends or providing a

permanent plug on future service connections, and bracing the plugs; wood markers at the end of service pipe; replacement of any curbing removed or disturbed within trench limits; insulation; flow handling; connection to existing sewer main or sewer manhole including couplings, fittings, restrained joints, saddle connections, compression fit connections, boots, wyes, elbows; access to compacted backfill for compaction testing; providing manhole connections as shown on plans and specified; removal and disposal of excess excavated material from the jobsite, including all material not covered under Item 16; and all else incidental thereto, for which separate payment is not provided under other items in the Bid Form.

3. Item 15a, 6" Gravity Sewer Service Dig and Replace Spot Repair, shall include lateral launch CCTV inspection of the sewer service before and after completing the work.

4. Item 15b, 8" Gravity Sewer Pipe Dig and Replace Spot Repair, shall include CCTV inspection before and after completing the work.

5. Disposal of the existing AC material shall be covered under the appropriate subdivisions of Item 16.

6. Pavement shall be covered under Item 18.

7. Excavation for rock, if encountered, shall be covered under Item 21.

P. Item 16: Asbestos-Cement Pipe Removal and Legal Disposal

1. Asbestos cement pipe removal and legal disposal, Item 16a, will be measured as it exists in place on a linear basis. Measurement of Item 16a for length will be along the horizontal centerline of the pipe with no deduction for fittings.

2. Payment for Item 16a, removal and legal disposal of asbestos cement sewer pipe, will be made at the Contract unit price stated in the Bid Proposal for the quantities as measured in place on a linear foot basis. The Contractor shall provide all labor, materials, tools, equipment, and incidentals required for handling, excavating, managing and disposing of asbestos cement pipe indicated on the Drawings, as specified herein, or as discovered during construction. Handling and disposal shall be according to Section 02080. The linear foot cost for asbestos cement pipe removal and disposal under Item 16a shall include up to one cubic foot of underlying soil for every 12 linear feet of pipe. The work includes, but is not limited to: remove, handle, and dispose of asbestos cement pipe and soil; all controls necessary to maintain compliance with regulatory requirements relative to asbestos; procuring all health and safety equipment; protecting and securing the excavation and storage areas from accidental entry; air monitoring; controlling the spread of airborne contaminants; and, all notifications, fees, permits, and taxes.

3. Asbestos cement pipe excavated and removed will be paid for at a maximum of 50 percent of the unit price bid under Item 16a after it is removed from the Town. The remaining 50 percent will be paid upon receipt of the return manifest or certified weight slip and accompanied by the appropriate MassDEP Waste Shipment Record. Payment shall not be made for soil excavation and disposal if the removal is necessitated by the Contractor's failure to properly protect underlying soil by placement of polyethylene sheeting per Section 02700. No additional payment shall be made under this item for improper pipe removal activities that result in soil contamination. All reductions in payment will be made prior to normal retainage.

4. Payment for Item 16a shall not include handling, excavating, managing and disposing of asbestos cement pipe exposed during excavation and found to have been broken or crushed in place or disposed of in the area of excavation prior to excavation by the Contractor.

5. Measurement for Item 16b, Management and Disposal of Crushed AC Pipe and AC Impacted Soils, will be based on each cubic yard of asbestos contaminated materials and associated soil removed and disposed of as measured in place by the Engineer's Resident Project Representative. Contractor will not be paid any additional costs under this item resulting from improper pipe removal activities that result in soil contamination. Asbestos Contaminated Materials excavated and removed will be paid for at a maximum of 50 percent of the unit price bid under Item 16b of the proposal after it is removed from the Town. The remaining 50 percent will be paid upon receipt of the return fully executed manifest or certified weight slip and accompanied by the appropriate fully executed MassDEP Waste Shipment Record. All reductions in payment will be made prior to normal retainage.

6. Payment for Item 16b shall include furnishing all labor, materials, tools, equipment, and incidentals required for handling, excavating, managing and disposing of asbestos containing material and soil resulting from unforeseen conditions, including asbestos cement pipe exposed during excavation and found to have been broken or crushed in place or disposed of in the area of excavation prior to excavation by the Contractor. This item shall not include pipe broken by the Contractor in the course of removing piping under Item 16a or 16b. The work includes, but is not limited to: remove, handle, and dispose of all asbestos cement pipe and asbestos containing material including soil up to six inches below limits of asbestos containing material and/or asbestos pipe; all controls necessary to maintain compliance with regulatory requirements relative to asbestos in soils; procuring all health and safety equipment; protecting and securing the excavation and storage areas from accidental entry; the spread of airborne contaminants; and, all notifications, fees, permits, and taxes.

Q. Item 17: Sewer Post-Rehabilitation Warranty CCTV Inspection

1. Measurement: This Item shall be measured per the actual linear foot of inspection performed by the Contractor and accepted by the Engineer. Length

shall be measured from inside face of the upstream manhole to inside face of the downstream manhole for all pipe that was rehabilitated for Items 4, 9 and 15, and any additional pipe as determined by the Engineer.

2. Under the unit price for this Item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to perform the cleaning of 6-inch and 8-inch diameter sewer mains and CCTV inspection, inspection report including digital copies, and all other incidentals required to complete the work. Sewer bypass operations are included under Item 3.

3. This Post-Rehab warranty inspection shall be completed during a period of high groundwater as determined by the Engineer.

R. Item 18: Permanent Trench Pavement

1. The quantities of pavement, for roadways, driveways, sidewalks, and parking lots, Type I-1 bituminous pavement, to be measured for payment under this Item will be measured based on the number of tons of pavement installed. The Tonnage shall be calculated by measuring the square yard area of pavement installed as measured in place (approximate coefficient of 0.056 tons per square yard per inch of thickness). Measurement of pavement over trenches shall be limited to a maximum pay limit width listed on the Drawings. The Contractor shall maintain pavement in good repair and flush with the existing pavement at all times during the duration of the Contract. If defects occur in surfacing constructed by the Contractor, remove bituminous concrete and sub-base and replace sub-base material and bituminous concrete as is necessary to properly correct defect. Also included for payment under this Item are the services, labor, equipment and materials required to adjust existing valve, service boxes, castings and structures where required.

2. The unit price listed for this Item shall constitute full compensation for furnishing and placing temporary trench pavement as specified and as indicated on the Drawings to match the existing pavement thickness. The unit prices will include all labor, materials, tools, equipment, and work necessary or incidental to complete the work as specified, including saw cutting and removing existing pavement, matching the existing pavement thickness, compaction, and raising all existing valve and service boxes, and castings to grade. Measurement of pavement for this Item shall be limited to the trench width specified in the drawings.

3. The unit prices listed for work under appropriate subdivisions of this Item will include all road painting conforming to Massachusetts Department of Transportation Standard Specifications M7.01.03 and M9.01.04 and Section 860.

S. Item 19: Police Detail (Allowance)

1. Payment shall be made based on the stated allowance in the Bid Form and the actual amount billed by the police department (Department) and paid by the Contractor. The Department will bill the Contractor directly and the Contractor shall pay the Departments' bills within a ten day working period for uniformed officers provided on the job site. The billing shall include a weekly statement outlining the days worked, hours worked, location of the work and rate for all officers providing service during that billing period. All bills must be signed by the Chief of Police or authorized representative.

2. The Contractor shall be paid by Owner for bills paid to the Department. The Contractor shall submit paid bills from the Department, stamped and signed as paid, to the Engineer, with the Contractor's Application for Payment. **No markup is allowed on this Item.**

3. Uniformed officers required for purposes other than public safety such as blasting and/or control of traffic shall not be eligible for payment.

4. The Contractor shall be responsible to pay for the police detail for improper notice of police detail cancellation (minimum four (4) hours before scheduled start of detail) is given by the Contractor to the Department without reimbursement by the Owner.

T. Item 20: Traffic Management

1. Under the lump sum price bid for this Item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to provide, maintain, relocate, and remove Traffic Management and Control to areas directly or indirectly influenced by construction within the limits of work or outside the limits of work; along truck routes inside or outside the limits of work; as delineated in the approved Traffic Management Plan, by the MUTCD, ADA, and MHD standards; and as further directed by the Owner and Engineer. The work further includes, but is not limited to: obtaining permits; coordination with the Town of Westwood Department of Public Works, and Police and Fire Departments; coordination with private property owners within the limits of work; preparing, submitting, reviewing, implementing, and revising traffic management and control plans; furnishing, installing, relocating and removing construction signs; furnishing, installing, and maintaining traffic management devices based on approved traffic management and control plans including precast concrete barriers with fencing and plywood panels, reflectorized drums, lane delineators, portable barricades, temporary crosswalks, and cones ;temporary pavement markings; removal of temporary and existing pavement markings; furnishing, installing, pinning, maintaining, and removing steel road plates; ordering and coordinating police details; furnishing and installing temporary construction fencing; maintaining roadways and sidewalks inside or outside the limits of work; establishing and dismantling detours; covering existing traffic signs; obtaining, posting and maintaining "No Parking" signs;

1. meeting with police details; coordinating police detail locations; and all incidental work, whether listed here or not, required to provide maintenance and protection of traffic and pedestrians.

2. Measurement for payment for Traffic Management shall be on a percent of the Lump Sum bid calculated by dividing the elapsed time to date by the original Contractual construction time limit as approved by the Engineer.

U. Item 21: Rock Excavation

1. Under the unit price bid for this Item, the Contractor shall excavate, remove, and dispose of ledge and rock from trenches and excavated areas. Included in the price bid per cubic yard shall be related costs such as hoe-ramming, expansive grout or similar materials, drilling, pre-blast survey, blasting, and replacement with suitable and compacted gravel borrow material, removal, and disposal of excavated material. Rock that is excavated by normal excavation methods will not be measured under this Item.

2. Measurement for payment will be on the basis of cubic yards of ledge or rock excavated as measured by the Engineer.

3. Rock in pipe trenches shall be measured from its surface to 6-inches below the outside of the pipe or culvert and with a width as specified in paragraphs 1.1 G and 1.1 H in this specification section. Any rock excavated to a depth or width greater than the above shall be removed and backfilled with common fill at the Contractor's expense.

V. Item 22: Additional Excavation and Backfill Below Normal Grade:

1. Under the unit price bid for this Item, the Contractor shall excavate below the specified depth to clear utilities or match existing mains, or to remove peat or other unsuitable material, below the grade of pipe, when and as directed by the Engineer; load, transport, and waste such material away from the job as directed; furnish and place approved fill material in the place of material removed.

2. Measurement for payment will be on the basis of cubic yards of material excavated within the detailed trench payment width and at authorized depth, as measured by the Engineer.

W. Item 23: Miscellaneous Items

1. Under the lump sum price for this Item, the Contractor shall provide all general construction services, labor, materials, supplies, consumables, and equipment necessary to complete all work required to construct the work identified on the Drawings, which is not included in Bid Items 1 through 22. This shall include, but is not limited to, the following:

a. Field engineering including site layout and control, the establishment of vertical and horizontal site control, construction line and grade, and layout.
b. Attending the pre-construction conference and all required job progress and community meetings, and coordination of all construction activities with the appropriate local authorities and utilities.
c. Submission of all schedules, lists, laboratory test results, materials and sources, survey documentation, and shop drawings, as required, in a timely manner to the Engineer for review and approval.
d. Maintenance and repair of all work for one (1) year period.
e. Providing a Site-Specific Health and Safety Plan for the Contractor's employees in accordance with the minimum standards set forth in OSHA 29 CFR 1910.120 and 29 CFR 1926.
f. Implementation of the Health and Safety Plan.
g. Provide and maintain sanitary facilities during construction.
h. Construction, maintenance, and removal of equipment wash down area, as required.
i. Coordination with utility companies and payments for support of utility poles as to safely perform the work.
j. Coordination of all construction activities with the Town of Westwood.
k. All other project related direct and indirect costs not described above.

2. Payment for this lump sum Item will be based on a percentage of the work completed, as determined by the Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01024

SECTION 01040

PROJECT COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination of all workers, subcontractors, utilities, and others with direct involvement in the work.

2. Coordination of all administrative and supervisory personnel for proper control of the work.

3. General installation provisions.

4. Typical construction sequencing.

5. Cleaning and protection.

B. Progress meetings and preconstruction conferences are included in Section 01200 – Project Meetings.

C. Requirements for the Contractor's Construction Schedule are included in Section 01300 – Submittals and Section 01311 – Construction Progress Schedules.

D. Requirements for Contractor's temporary facility submittals are included in Section 01500 – Temporary Facilities and Controls.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Inspect the conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an

acceptable manner, and at no additional cost to the Owner.

B. Manufacturer's Written Instructions: Comply with manufacturer's written installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in the Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items, and at no additional cost to the Owner.

D. Provide attachment and connection devices and methods for securing work. Secure work true to line and level. Allow for expansion and utility movement.

E. Recheck measurements and dimensions before starting installation or erection.

F. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material to prevent deterioration.

G. Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.2 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Install protective covering to ensure protection from damage or deterioration.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period.

C. Contractor shall be required to sweep public and private roadways to remove all materials related to project activities. The frequency of sweeping shall be based on the condition of the affected roadway.

D. Limiting Exposures: Supervise construction activities to ensure that no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.

2. Excessive internal or external pressures.

3. Excessively high or low temperatures.

4. Air contamination or pollution.
5. Water or ice.
6. Solvents.
7. Chemicals.
8. Heavy traffic.
9. Misalignment.
10. Unprotected storage.
11. Improper shipping or handling.
12. Theft.
13. Vandalism.

END OF SECTION 01040

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SECTION 01046

CONTROL OF WORK

PART 1 – GENERAL

1.1 EQUIPMENT

A. Furnish equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the Contract Time. If at any time such equipment appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he/she may order the Contractor to increase the efficiency, change the character or increase the plant equipment and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his/her obligations to secure the quality of the work and rate of progress required.

1.2 HOURS OF CONSTRUCTION

A. Normal construction activity shall take place only between the hours of 7 a.m. to 4 p.m., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only on an emergency basis and only with the approval of the Owner and Engineer.

B. Work hours are restricted to between 9 a.m. and 2 p.m. on Thatcher Street, Gay Street, and Deerfield Avenue (Figures 3 and 4 in Appendix A).

1.3 PRIVATE LAND

A. The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment any land outside the rights-of-way or property of the Owner.

1.4 HAULING, HANDLING, AND STORAGE OF MATERIALS

A. The Contractor shall, at his own expense, handle, and haul all materials furnished by him and shall remove any and all of his surplus materials at the completion of the work. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by him that are liable to injury, and shall be responsible for any loss or damage to any equipment or materials by theft, breakage, or otherwise. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance, even though partial payments have been made under the Contract.

1.5 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND

UTILITIES

A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, fences, guardrails, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. The Contractor is required to comply with all provisions of General Laws Chapter 353, entitled "Excavations-Public Ways-Notice Requirements", otherwise known as DIGSAFE. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.

B. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including, but not limited to existing water services, drain lines, sewers, and duct banks). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

C. Protection and temporary removal and replacement of existing utilities and structures, as described in this Section, shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit prices established in the Contract.

D. If, in the opinion of the Engineer, permanent relocation of a utility owned by the Owner is required, which is not shown on the Plans or the Specifications, he may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for as extra work under Articles of the General Conditions. If relocation of a privately-owned utility is required, the Owner will notify the utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and utility, and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies, in writing, at least 72 hours (excluding Saturdays, Sundays, and legal holidays) before excavating in any public way.

1.6 WATER SYSTEM

A. The Contractor shall interrupt water services and disrupt the normal functioning of the distribution system as little as possible. He/she shall notify the Owner and Engineer 24 hours in advance of any requirement for unwatering or isolating a section of the main, so that water customers may be notified and the necessary arrangements may be made with the Department of Public Works and the Fire Department. The Owner reserves the right to limit the amount of system piping that may be shut down at any one time.

B. When water or fire services are to be interrupted for an extended period (longer than 8 hours), the Contractor will provide temporary bypass service lines. Inconvenience

of water users shall be kept at a minimum. The safety and integrity of the system is of prime importance in scheduling work.

C. Water service locations and sizes shall be obtained from the Water Department records as required.

1.7 SEWER SYSTEM

A. The Contractor shall interrupt and disrupt the normal functioning of the sewer system, including any force main, as little as possible. He shall notify the Owner and Engineer 72 hours in advance of any requirement for isolating or tapping a section of the main, so that the necessary arrangements may be made. The Owner reserves the right to limit the amount of system piping that may be shut down at any one time.

B. When a force main is to be interrupted for an extended period (longer than 30 minutes), the Contractor will provide temporary provisions to maintain full flow. Inconvenience of sewer users shall be kept at a minimum. The safety and integrity of the system is of prime importance in scheduling work.

1.8 PIPE LOCATIONS

A. Pipelines shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him/her from laying and jointing different or additional items where required. Additional fittings ordered by the Owner or Engineer shall be paid for under the additional fittings bid item.

1.9 DIMENSIONS OF EXISTING STRUCTURES

A. Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the Work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

1.10 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. The Contractor shall, at his/her own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen or residents to their driveways. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may

require special construction procedures such as limiting the length of the open trench, prohibiting stacking excavated material in the street and requiring that the trench shall not remain open overnight.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

C. Contractor shall obtain proper trench and road opening permits as required by M.G.L C.82A and Title 520 of the CMR and the Town of Westwood.

1.11 TEST PITS/EXPLORATORY EXCAVATION

A. Test pits for the purpose of locating underground pipeline, utilities or structures in advance of the construction shall be excavated and backfilled by the Contractor. Test pits shall be backfilled and compacted immediately after their purpose has been satisfied and the surface restored and maintained in accordance with the Contract Documents. All test pits shall be closed at the end of each working day with backfill or steel plating.

B. Refer to Contract Drawings for location of test pits to be completed in advance of construction.

1.12 DUST CONTROL

C. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of water as necessary, so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use calcium chloride, and it is allowed by local authorities, for more effective dust control, the Contractor shall furnish and apply the material as directed.

D. Calcium chloride shall be commercial grade, stored under weatherproof cover and stacked alternately for ventilation. Application for dust control shall be at the rate of about 1/2 pound per square yard, unless otherwise directed by the Engineer.

E. Within buildings, the Contractor shall provide suitable materials and methods of dust control, containment, and clean up during construction. Methods, materials, and schedule shall be approved by the Engineer.

1.13 MAINTENANCE OF TRAFFIC

A. Refer to Section 01850 – Traffic Management for requirements, and Appendix B for MassDOT traffic management details.

1.14 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly-constructed work shall be carefully protected from injury in any way. No placing of heavy loads on it shall be allowed, and all portions injured shall be reconstructed by the Contractor at its own expense.

B. All structures shall be protected in a manner approved by the Engineer. All such damaged portions of the work shall be completely repaired and made good by the Contractor, at his own expense, and to the satisfaction of the Engineer.

C. If, in the final inspection of the work, any defects, faults, or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship, without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction, and other work undertaken herein, for at least the guarantee period described in the Contract Documents.

D. The Contractor shall take all necessary precautions to prevent damage to any work during and after construction, and until such work is accepted and taken over by the Owner.

E. After the buildings have been made watertight and ready for the installation of pumps, motors, piping and other equipment, the interior temperature shall be maintained at a minimum of 50 degrees F and thereafter, until the completion of the Contract, the temperature shall not be allowed to drop below 50 degrees F.

1.15 CARE AND PROTECTION OF PROPERTY AND SURVEY MONUMENTS

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property, by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in another manner acceptable to the Engineer.

B. Along the location of this work, all fences, walks, bushes, trees, shrubbery, and other physical features shall be protected and restored in a thoroughly workmanlike manner. Fences and other features removed by the Contractor shall be replaced in the location indicated on the Drawings as soon as conditions permit. All grass areas beyond the limits of construction, which have been damaged by the Contractor, shall be graded and seeded at the Contractor's expense.

C. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are liable to damage because of his operations, but in no case shall any trees be cut or removed without prior notification of the Owner or other person in charge. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing, cutting, and painting according to approved methods using only approved tools and materials.

D. The protection, removal, and replacement of existing physical features along the line of work shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the Bid Proposal. The Contractor is responsible for protecting and, if required, re-setting survey monuments (bounds). If a bound is in the way of required excavation, the Contractor will notify the Engineer/Inspector and/or the Town Engineering Division with as much notice as possible prior to performing excavation near the bound.

1.16 REJECTED MATERIALS AND DEFECTIVE WORK

A. Materials furnished by the Contractor and condemned by the Engineer as unsuitable or not in conformity with the Specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work. Any errors, defects, or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor, and in a manner satisfactory to the Engineer. The Contractor shall reimburse the Owner for any expenses, losses, or damages incurred in consequence of any defect, error, omission, or act of the Contractor or his employees, as determined by the Engineer, occurring previous to the final payment.

1.17 COORDINATION WITH LOCAL AGENCIES

A. The Contractor shall attend a Pre-Construction Meeting to be held at the **Westwood Department of Public Works, 50 Carby Street, Westwood, MA 02090** approximately one week prior to start of work. Town departments who will also be invited to this meeting include Police, Fire, Planning, and Conservation. Electric, gas and phone utility companies may also be invited. The contractor will provide the proposed schedule at that time (see Submittals, Section 1300). Any proposed detours will be reviewed with all parties at the Pre-Construction Meeting. If any additional detours are considered after the Pre-Construction Meeting, the Contractor must first get approval from the Engineer.

B. The Contractor will immediately notify the utility owner of any utility main breaks. In the case of Owner water, the emergency contact number for the **Department of Public Works** during business hours is **781-320-1070**.

C. The Contractor will be required to reimburse the Owner for the actual cost of the services of **Department of Public Works** required during other than regular working hours. This includes the cost of the Engineer/ Site Inspectors when inspection is required outside the normal business hours. This cost shall be at the rate of time and one-half of the Inspector's pay rate, to be paid to the Owner by the Contractor.

D. The Contractor shall notify the **Department of Public Works** at least 72 hours prior to the construction of any public improvement so that the Owner can have an inspector present if work requires inspection. In general, inspection will be required:

1. For Road and Driveway Construction:

    a. When the subgrade is established,
    b. While placing gravel,
    c. When final grade of base course is established, and
    d. During paving operations.

2. For Water or Sewer Construction:

    a. While laying pipe, but before backfilling,
    b. During backfilling operations,
    c. During paving operations, and
    d. Pressure and leakage tests.

E. The Engineer will have the authority to reject any work or materials that do not constitute approval by the Owner and shall not relieve the Contractor of his obligations to perform the work in accordance with the Plans and Specifications.

F. If applicable, the Contractor shall maintain pavement as specified in Section 02576 and shall provide the Owner with contact information at which he/she can be contacted when he/she is not at the site. Upon notification by the Owner or the Engineer the Contractor shall promptly make repairs to the construction site as may be necessary.

G. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, curbing, electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him/her at his/her expense.

H. Assistance will be given the Contractor in determining the location of existing services. The Contractor, however, shall bear full responsibility for obtaining all locations of underground structures and utilities (including existing water services, drain lines, gas lines and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.

I. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Total Price Bid in the Bid Form.

J. The Contractor shall coordinate the removal and replacement of traffic loops and signals, if required for the performance of the work, at no additional cost to the Owner.

K. When applicable, in the opinion of the Engineer, permanent relocation of a utility owned by the Owner is required, he/she may direct the Contractor, in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 11 of the Supplementary Conditions. If relocation of a privately owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and the Utility and shall have no claim for delay due to such relocation. The Contractor shall notify all utility companies in writing at least 72 hours (excluding Saturdays, Sundays and Legal holidays) before excavating in any public way. Contractor shall also notify Massachusetts Dig Safe, telephone 811 at least 72 hours prior to start of work.

1.18 WATER FOR CONSTRUCTION PURPOSES

A. The Contractor may be allowed to purchase water from the Dedham-Westwood Water District for construction testing and start-up purposes.

B. The express approval of the Dedham-Westwood Water District shall be obtained before water is used. Water shall be metered as specified by the Division and shall only be operated under the supervision of the Division.

C. The Contractor will immediately notify the Dedham-Westwood Water District of any utility main breaks. The emergency contact number for the Dedham-Westwood Water District during business hours is 781-329-7090. The office if open from 8:30AM to 4:30PM Monday through Friday. Excluding holidays. The emergency phone number for the Dedham-Westwood Water District after hours is 781-326-1250.

D. No direct cross connections will be permitted between the public water supply and the new water mains, or any other point where the possibility of backflow of contaminated water exists. All connections to points where there is the possibility of backflow shall be arranged to prevent backflow and shall be approved by the Division's Inspector before they are put into operation.

E. No separate measurement and payment shall be made for temporary water and all costs shall be incidental to and included with each applicable item.

1.19 MAINTENANCE OF FLOW

A. The Contractor shall maintain the flow in all watercourses, whether open channels or in pipes, in all sewers and other pipes interfered with in the line of work and convey the flow to a suitable point of discharge so as not to flow upon the work or create a nuisance. In the discharge of water removed from the excavations by pumping or by gravity similar precautions shall be observed.

1.20 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his/her Subcontractors or trades and shall assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

1.21 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

A. During the course of the work, the Contractor shall keep the site of his/her operations in as clean and neat a condition as is possible. He/She shall dispose of all residues resulting from the construction work and, at the conclusion of the work, he/she shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction operations and shall leave the entire site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his/her subcontractors shall comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.

C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his/her own expense and restore the area impacted.

D. Outdoor burning of rubbish and waste material on the site will not be permitted.

E. Disposal of volatile fluid wastes (such as mineral spirits, oil, gasoline, or paint thinner) in storm or sanitary sewer systems or into streams or waterways is not permitted.

F. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as

promptly as practicable as work progresses and shall not be left until the end of the contract period.

END OF SECTION 01046

SECTION 01063

MISCELLANEOUS REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. The Contractor shall conform to all miscellaneous requirements as herein specified.

1.3 INTERFERENCE WITH EXISTING WORKS

A. The Contractor shall at all times conduct his operations so as not to interfere with existing works. The Contractor shall develop a program, in cooperation with the Engineer and Owner, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as deviations therefrom are expressly permitted. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permit such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand. The Contractor shall make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

1.4 SEQUENCE OF WORK

A. Refer to Drawing Sheet G-1.

1.5 WORK CREWS

A. No more than one work crew will be allowed on site at any time during the project. Additional work crew will not be allowed without prior written approval from the Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01063

SECTION 01095

REFERENCE STANDARDS AND DEFINITIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1, Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Engineer, requested by the Engineer, and similar phrases.

D. Approve: The term approved, when used in conjunction with the Engineer's action on the Contractor's submittals, applications, and requests, is limited to the Engineer's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulation: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the work.

F. Furnish: The term furnish means supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. Install: The term install describes operations at the project site, including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Replace: The term replace means dismantle, remove, and dispose of existing equipment and materials and furnish and install new specified item.

I Provide: The term provide means to furnish and install, complete and ready for the intended use.

1. The term experienced, when used with the term Installer, means having a minimum of five previous projects similar in size and scope to this project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such a carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

J Project Site is the space available to the Contractor for performing construction activities, either exclusively or in conjunction with others performing other work as part of the project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the project is to be built.

K Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified, and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Engineer for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Engineer for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as of date of Contract Documents.

ACI
American Concrete Institute
P.O. Box 19150
Detroit, Michigan 48219-0150
Telephone: (313) 532-2600

Al
Asphalt Institute
Research Park Drive
P.O. Box 14052
Lexington, Kentucky 40512-4052
Telephone: (606) 288-4960

ANSI
American National Standards Institute
11 West 42nd Street
13th Floor
New York, New York 10036
Telephone: (212) 642-3300

ASTM
American Society for Testing and Materials
1916 Race Street
Philadelphia, Pennsylvania 19103
Telephone: (215) 299-5400

AWWA
American Water Works Association
6666 West Quincy Avenue
Denver, Colorado 80235
Telephone: (303) 794-7711

MSS
Manufacturers Standardization Society of
the Valve and Fittings Industry
127 Park Street, N.E.
Vienna, Virginia 22180
Telephone: (703) 281-6613

NAPA
National Asphalt Pavement Association

6811 Kenilworth Avenue
Calvert Building
Suite 620
Riverdale, Maryland 20737
Telephone: (301) 779-4880

NFPA National Fire Protection Association
One Batterymarch Park
Quincy, MA 02169
Telephone: (617)- 770-3000

WSC Water Systems Council
600 South Federal Street
Suite 400
Chicago, Illinois 60605
Telephone: (312) 922-6222

F. Federal Government Agencies: Names and titles of Federal Government standard- or specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard- or specification-producing agencies of the Federal Government. Names and addresses are subject to change and are believed, but not assured, to be accurate and up-to-date as of the date of the Contract Documents.

CFR Code of Federal Regulations
(available from the Government Printing Office)
North Capitol Street between G and H Streets, N.W.
Washington, D.C. 20402
Telephone: (202) 783-3238
(Material is usually first published in the "Federal Register)

EPA Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460
Telephone: (202) 382-2090

NIST National Institute of Standards and Technology
(U.S. Department of Commerce)
Gaithersburg, Maryland 20899
Telephone: (301) 975-2000

OSHA Occupational Safety and Health Administration
(U.S. Department of Labor)
Government Printing Office
Washington, D.C. 20402
Telephone: (202) 523-6091

1.4 GOVERNING REGULATIONS AND AUTHORITIES

A. The Engineer has contacted authorities having jurisdiction where necessary to obtain information to prepare Contract Documents. Contact authorities having jurisdiction directly for information and decisions regarding the work.

Town of Westwood, Department of Public Works
Telephone: (781) 326-8661

1.5 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, warranties, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01095

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SECTION 01110

ENVIRONMENTAL PROTECTION MEASURES

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The work covered by this Section consists of furnishing all labor, materials and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise and solid waste, as well as other pollutants.

C. The Contractor shall take sufficient precautions during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens and calcium chloride into the supplies and surface waters of the State.

D. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.

E. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

F. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Massachusetts Department of Environmental Protection.

G. The Contractor shall pay particular attention to the drainage, and the sedimentation to limit sediment transport.

H. Contractor shall be responsible for maintenance of the erosion control structures and devices, and replacing as needed to maintain the required protection and performance.

1.2 APPLICABLE REGULATIONS

A. Comply with all applicable Federal, State and local laws, regulations, and orders of conditions concerning environmental pollution control and abatement.

1.3 NOTIFICATIONS

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his/her authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.4 IMPLEMENTATION

A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 – PRODUCTS

2.1 EROSION CONTROLS

A. Non-woven Filter Fabric, Silt Socks or Silt Sacks to be used where inserted into existing catch basins to prevent siltation of the existing drainage system, as necessary.

B. Where silt fence is required, provide the following woven geotextile fabric for silt fence:

1. Mirafi 100X as manufactured by Mirafi, Pendergrass, GA.

2. GEOTEX 2130 as manufactured by Propex, Chattanooga, TN.

3. Or acceptable equivalent product.

2.2 MATERIALS

A. Physical Properties of Minimum Average Roll of the woven geotextile fabric for silt fence shall be:

	Property	ASTM Test Method	Units	Value
1.	Grab Strength	D4632	lbs [N]	100 [450](min.)
2.	Permissivity	D4491	sec - 1	0.10 (min.)
3.	Apparent Opening Size	D4751	Sieve #	20-30
4.	Ultraviolet Stability	D4355	%	70 (min.)

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install sedimentation barriers in all locations as directed, surrounding base of all deposits of stored excavated material outside of disturbed area, and where directed by the Engineer.

B. Install all erosion controls and environmental protection measures in accordance with manufacturer's printed instructions.

C. Overlap silt fence 18 inches minimum for unsewn lap joint. Overlap fabric 6 inches at seam for sewn joint.

D. Construct earth berms or diversions to intercept and divert runoff water from critical areas.

E. Protect catch basins and drainage swales from sedimentation by installing inlet protection under catch basin grating casting as shown on the Drawings.

F. Do not place excavated soil material adjacent to water-course in manner that will cause it to wash away by high water or runoff.

G. Prevent damage to vegetation by excessive watering or silt accumulation in the discharge area.

H. Do not dump spoiled material into any streams, wetlands, surface waters, or unspecified locations.

I. Prevent indiscriminate, arbitrary, or capricious operation of equipment in streams, wetlands or surface waters.

J. Do not pump silt-laden water from trenches or excavations into surface waters, streams, wetlands, or natural or man-made channels leading thereto.

K. Prevent damage to vegetation adjacent to or outside of construction area limits.

L. Do not dispose of trees, brush, debris, paints, chemicals, asphalt products, concrete curing compounds, fuels, lubricants, insecticides, washwater from concrete trucks or hydroseeders, or any other pollutant in streams, wet-lands, surface waters, or natural or man-made channels leading thereto, or unspecified locations.

M. Do not alter flow line of any stream unless indicated or specified.

N. Clean and dispose of debris from sedimentation barriers on a weekly basis.

O. Upon completion of work and upon approval of Engineer, remove and legally dispose of sedimentation barriers and environmental protection measures.

3.2 PROTECTION OF WETLANDS RESOURCE AREAS

A. Care shall be taken to prevent or reduce to a minimum any disturbance to the adjacent wetlands, drainage ditch, surface water body, storm drain or sewer from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the receiving body shall not be directly returned to the surface water body. Such water will be diverted through a settling basin or filter before being directed into the surface water body.

B. The Contractor shall not discharge water from dewatering or pipe cleaning or llining operations directly into a wetland, surface water, or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels. All dewatering discharges shall also include energy dissipation to prevent scouring.

C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action drawing or plan approved by the Massachusetts Department of Environmental Protection. Contractor shall submit two copies (2) of approved contingency drawings or plans to the Engineer.

D. Equipment refueling operations must take place in a supervised area with appropriate secondary containment measures in place and spill response materials accessible on-site for the duration of construction.

3.3 PROVISIONS FOR CONTROL OF EROSION

A. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion. Erosion control measures, such as siltation basins,

hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented.

B. Disposal of drainage shall be in an area approved by the Owner. The Contractor shall prevent the flow or seepage of drainage back into the drainage area. Drainage shall not be disposed of until silt and other sedimentary materials have been removed. Particular care shall be taken to prevent the discharge of unsuitable drainage to a water supply or surface water body.

C. As a minimum, the following shall apply:

1. Silt fence shall be provided at points where drainage from the work site may contain polluting substances. The point of control shall be within the limits of the new construction and shall be contained in such a way as to not allow sediment to pass. Other methods which reduce the sediment content to an equal or greater degree may be used as approved by the Engineer.

2. Drainage leaving the site shall flow to water courses in such a manner to prevent erosion.

D. Measures for control of erosion must be adequate to assure that turbidity in the receiving water will not be increased more than 10 standard turbidity units (s.t.u.), or as otherwise required by the State or other controlling body, in waters used for public water supply or fish unless limits have been established for the particular water. In surface water used for other purposes, the turbidity must not exceed 25 s.t.u. unless otherwise permitted.

3.4 PROTECTION OF STREAMS

A. Care shall be taken to prevent, or reduce to a minimum, any damage to any stream from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Such waters will be diverted through a settling basin or filter before being directed into the streams.

B. The Contractor shall not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Massachusetts Department of Environmental Protection.

3.5 PROTECTION OF LAND RESOURCES

A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction, that appears to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

D. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.

E. All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

F. Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.

G. The locations of the Contractor's storage, and other construction buildings, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.

H. If the Contractor proposes to construct temporary roads or embankments and excavations for plant and/or work areas, he/she shall submit the following for approval at least ten days prior to scheduled start of such temporary work.

1. A layout of all temporary roads, excavations and embankments to be constructed within the work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

4. A landscaping drawing showing the proposed restoration of the area. Removal of any trees and shrubs outside the limits of existing clearing area shall be indicated. The drawing shall also indicate location of required guard posts or barriers required to control vehicular traffic passing close to trees and shrubs to be maintained undamaged. The drawing shall provide for the obliteration of construction scars as such and shall provide for a natural appearing final condition of the area. Modification of the Contractor's approved drawings shall be made only with the written approval of the Engineer. No unauthorized road construction, excavation or embankment construction including disposal areas will be permitted.

I. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as approved by the Engineer.

J. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.6 PROTECTION OF AIR QUALITY

A. Burning. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. Dust Control. The Contractor will be required to maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides may be permitted with approval from the Engineer.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient

competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.7 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.8 NOISE CONTROL

A. The Contractor shall make every effort to minimize noises caused by his/her operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal regulations.

B. Contractor should note local residences within proximately of the work and shall make all efforts to minimize noise disruptions.

C. Noise limits shall confirm to the Westwood Zoning Bylaws.

END OF SECTION 01110

SECTION 01170

SPECIAL PROVISIONS

PART 1 – GENERAL

1.1 GENERAL OBLIGATIONS OF THE CONTRACTOR

A. General obligations of the Contractor shall be as set forth in the Contract Documents. Unless special payment is specifically provided in the payment paragraphs of the specifications, all incidental work and expense in connection with the completion of work under the Contract will be considered a subsidiary obligation of the Contractor and all such costs shall be included in the appropriate items in the Bid Form in connection with which the costs are incurred.

1.2 SITE INVESTIGATION

A. The Contractor shall satisfy himself/herself as to the conditions existing within the project area, the type of equipment required to perform the work, the character, quality and quantity of the subsurface materials to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Drawings and Specifications. Any failure of the Contractor to acquaint himself/herself with the available information will not relieve him/her from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusions or interpretation made by the Contractor on the basis of the information made available by the Owner.

1.3 CONTRACTOR'S EMERGENCY CONTACT AND RESPONSE REQUIREMENT

A. The Contractor will be required to designate a contact person as well as an emergency response crew who can be notified by the Owner and the Engineer during Contract related emergencies, 7 days a week, 24 hours a day throughout the length of this Contract.

B. The name of the designated person, a daytime contact telephone number, an evening contact telephone number, and a portable cellular telephone number must be furnished to the Owner at the pre-construction meeting. The Contractor must also provide a mobile cellular telephone that will remain at the construction site during the hours of construction. The phone will be in a location that will allow the Contractor to respond to calls as well as the Owner or Engineer.

C. The contact person shall be required to respond to any **Westwood Department of Public Works** notification in this regard within one hour of such notice by calling **(781) 326-8661** during normal working hours or the **Westwood Police Department (781) 326-1903** after hours. Upon being advised by the **Westwood Department of Public Works** of the location and nature of the emergency, the Contractor will be required to provide an emergency coordinator or contact at the site within one hour of

the initial notification and to mobilize the necessary response crew(s) and have them at the site of the emergency within two hours of the initial notification.

D. The Contractor's failure to comply with the above notification and response requirements shall result in a **one thousand five hundred dollar ($1,500.00)** fine for each failure to respond as indicted in 1.3.C. In addition the Contractor shall be liable for any and all damages, liabilities and costs which result from his/her failure to respond to any emergency within the designated time periods. The Owner assumes no responsibility or costs for the Contractor's negligence in complying with these requirements. If the subject fine or other liabilities are not paid by the Contractor upon request, it shall be deducted from any payment(s) which may be due the Contractor by the Owner, solely at the discretion of the Owner.

E. The Contractor shall not use any Owner personnel to fulfill these requirements.

F. This requirement shall be considered an incidental part of the Contract, no matter how many times the Contractor is alerted during this Contract, and no payment will be made for any costs incurred or associated with the emergency contact and response requirements.

1.4 PUBLIC UTILITIES

A. The Contractor shall comply with the requirements of the Commonwealth of Massachusetts Statute - Chapter 82, Section 40, for excavations in public and private property. Compliance shall include the following:

1. The Contractor shall notify public utility companies in writing at least 72 hours (excluding Saturdays, Sundays and legal holidays) but not more than 30 days before excavating in areas where underground utility plant (pipes, cables, manholes, etc) exist.

2. The Contractor shall be responsible for providing the Utility Companies with a schedule of his/her activities in areas where the utilities exist.

3. The Contractor shall immediately notify utility companies of any damage to their utilities resulting from construction operations.

4. The express approval of the Owner and the Dedham-Westwood Water District shall be obtained before public water is used. Hydrants shall only be operated under the supervision of the Owner's personnel. The water is to be metered. A meter must be attained by the Dedham-Westwood Water District. The Contractor will be responsible for all associated fees and charges for water use.

B. The Contractor shall notify DIGSAFE and all others included with the road opening permit at least 72 hours before digging, trenching, blasting, demolishing, boring, backfilling, grading, landscaping or other earth moving operations in any public ways, rights of way and easements.

1.5 PERMITS

A. The Contractor shall obtain all necessary permits for proper execution of certain phases of the project. The Contractor shall fill out all forms and furnish all drawings required to obtain the permits. A copy of the approved permit shall be submitted to the Engineer. Work shall not commence on any phase of the work requiring a permit until the permit is obtained.

B. The Contractor shall obtain the required street opening permits from the Westwood Department of Public Works excavations within the street or sidewalk area. There is no permit fee for each street opening.

1.6 PAVING REQUIREMENTS

A. The Contractor shall maintain all trench pavements for the duration of the Contract, and ensure that the roadway has a uniform surface passable for all traffic until the end of the warranty period.

B. The project area shall be swept following installation of temporary pavement

1.7 MASSDOT REQUIREMENTS (NOT USED)

1.8 CONSERVATION COMMISSION REQUIREMENTS (NOT USED)

1.9 MWRA

A. The Contractor shall obtain and fully comply with the required MWRA Discharge Permit, as show in Appendix F.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01170

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SECTION 01200

PROJECT MEETINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 COORDINATION WITH THE OWNER

A. As part of this Contract, the Contractor shall coordinate his activities with the Owner. In addition, the Contractor will give the Owner significant notice on any work that may be required to meet the contract schedule.

1.3 PRECONSTRUCTION CONFERENCE

A. A pre-construction conference will be held between the Contractor, the Engineer, the Owner, and applicable agency representatives to review the Contractor's proposed methods of complying with the requirements of the Contract Documents.

B. Contractor will be notified of the time, date and place where the pre-construction conference will be held.

1.4 PROGRESS MEETINGS WITH ENGINEER

A. In addition to other regular project meetings for other purposes (as indicated elsewhere in the Contract Documents), hold general progress meetings twice each month with times coordinated with preparation of payment requests. Meeting dates shall be established by the Engineer. Require every entity then involved in the planning, coordination or performance of work to be properly represented at each meeting. Include (when applicable) consultants, separate contractors (if any), principal subcontractors, suppliers/ manufacturers/fabricators, governing authorities, insurers, special supervisory personnel and others with an interest or expertise in the progress of the work. Review each entity's present and future needs including interface requirements, time, sequence, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, submittals, change orders, and documentation of information for payment requests. Discuss whether each element of current work is ahead of schedule. Determine how behind-time work will be expedited and secure commitments from the entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within the Contract Time. Review everything of significance which could affect the progress of the work.

B. Within seven days after each progress meeting date, the Engineer will forward copies of the minutes-of-the-meeting to the Contractor.

C. Immediately following each progress meeting where revisions to the Progress Schedule/Critical Path Schedule have been made or recognized (regardless of whether agreed to by each entity represented), revise the Schedule. Reissue revised Schedule within 10 days after meeting. At intervals matching the preparation of payment requests, revise and reissue the Schedule to show actual progress of the work in relation to the latest revision of the Schedule.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01200

SECTION 01300

SUBMITTALS

PART 1 – GENERAL

1.1 DESCRIPTION OF REQUIREMENTS

A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals: Shop Drawings, Product Data, Samples, Construction Photographs, and Construction Schedules. Additional general submission requirements are contained in Article 7 of the General Conditions. Detailed submittal requirements will be specified in the technical specifications sections.

B. All submittals shall be clearly identified by reference to Specification Section, Paragraph, Drawing No. or Detail as applicable. Submittals shall be clear and legible and of sufficient size for sufficient presentation of data.

1.2 SHOP DRAWINGS, PRODUCT DATA, SAMPLES

A. Shop Drawings

1. Shop drawings, as defined in the General Conditions, and as specified in individual work Sections include, but are not necessarily limited to, custom-prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications, as applicable to the Work.

2. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

3. The Contractor shall check all subcontractors' shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

4. All details on shop drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the drawings before being submitted for approval.

5. Submittals for equipment specified under Division 2 shall include a listing of all installations where identical or similar equipment has been installed and been in operation for a period of at least one year.

B. Product Data

1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, manufacturer's printed statements of compliance's and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing and printed product warranties, as applicable to the Work.

C. Samples

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

1.3 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements

2. Field construction criteria

3. Catalog numbers and similar data

4. Conformance with the Specifications

B. Each shop drawing, sample and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable

approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Resident Project Representative a copy of each submittal transmittal sheet for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the Engineer.

C. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his/her responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therefor.

D. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

E. Project work, materials, fabrication, and installation shall conform to approved shop drawings, applicable samples, and product data.

1.4 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.

B. Each submittal, appropriately coded, will be returned within 30 working days following receipt of submittal by the Engineer.

C. Number of submittals required:

1. Shop Drawings as defined in Paragraph 1.2 A: Five copies.

2. Product Data as defined in Paragraph 1.2 B: Three copies.

3. Samples: Submit the number stated in the respective Specification Sections.

D. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The Project title and number.

3. Contractor identification.

4. The names of:

a. Contractor

b. Supplier

c. Manufacturer

5. Identification of the product, with the specification section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the Work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Identification of deviations from Contract Documents.

10. Identification of revisions on resubmittals.

11. An 8-in x 3-in blank space for Contractor and Engineer stamps.

1.5 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The review of shop drawings, data, and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:

1. as permitting any departure from the Contract requirements;

2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.

B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the following codes.

Code 1 - "NO EXCEPTION TAKEN" is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

Code 2 - "MAKE CORRECTIONS AS NOTED". This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3 - "SUBMIT SPECIFIED ITEM". This combination of codes is assigned when a confirmation of the notations and comments IS required by the Contractor. This confirmation shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the Engineer within 10 calendar days of the date of the Engineer's transmittal requiring the confirmation.

Code 4 - "REVISE AND RESUBMIT". This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the Engineer within 10 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

Code 5 - "REJECTED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.

F. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may, at his/her option, provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

G. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.

H. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.6 DISTRIBUTION

A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed 6.

1.7 RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:

1. Drawings

2. Specifications

3. Addenda

4. Change orders and other modifications to the Contract

5. Reviewed shop drawings, Product Data, and Samples

6. Manufacturer’s instruction for assembly, installation, and adjusting

B. Record information concurrent with construction progress, not less than weekly. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:

1. Manufacturer’s name and product model and number.

2. Product substitutions or alternates used.

3. Changes made by Addenda and modifications.

E. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, including fire hydrants, gate valves, and service boxes, referenced to permanent surface structures.

2. Field changes of dimension and detail.

3. Details not on original Contract drawings.

1.8 SCHEDULES

A. Provide all schedules required by Articles 2, 4 and 11, and elsewhere in the General Conditions.

B. The Contractor shall submit a progress schedule before starting any work, in accordance with Articles 2 and 4 of the General Conditions. The Contractor shall review the progress schedule with the Engineer periodically. Such review shall be made on a monthly basis or more frequently as required by the Engineer. The progress schedule shall be updated as required by the Engineer.

1.9 "OR EQUAL"

A. Should the Contractor seek approval of a product other than the brand or brands named in these specifications, it shall furnish written evidence that such product conforms in all respects to the specified requirements, and that it has been used successfully elsewhere under similar conditions. Where the specified requirements involve conformance to recognized codes or standards the Contractor shall furnish evidence of such conformance in the form of test or inspection reports, prepared by a recognized agency, and baring an authorized signature.

B. Manufacturers' standard data and catalog cut sheets will not be considered sufficient in themselves, and the Engineer will not be responsible for seeking further data from the manufacturer, or for otherwise researching the product. Failure to provide complete data will be cause for rejection of the product.

C. The Contractor shall be responsible for all additional costs including license fees, foundation, piping, and electrical work necessary to accommodate the proposed "or equal" equipment. Items which result in a cost reduction shall be presented and a change order reflecting 65% of the cost savings will be prepared and the contract price modified.

1.10 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

A. If specifically required in other Sections of these Specifications, the Contractor shall submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.11 GENERAL PROCEDURES FOR SUBMITTALS

A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01300

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the Commonwealth of Massachusetts and that he/she has been employed by (Name of Contractor) _____ to design _____ in accordance with Specification Section _____. The undersigned further certifies that he/she has performed the design of the _____, that said design is in conformance with all applicable local, state and federal codes, rules, and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the Owner or the Owner's representative with seven days following written request therefor by the Owner.

_____
P.E. Name

_____
Signature

_____
Address

_____
Contractor's Name

_____
Signature

_____
Title

_____
Address

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SECTION 01311

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

B. Section 01040 – Project Coordination

C. Section 01170 – Special Provisions

1.2 SUMMARY

A. Prepare and submit to Engineer for review projected construction schedules. Update and revise schedules periodically to reflect progress ofwork.

1.3 FORM OF SCHEDULES

A. Prepare in form of network analysis system using the Critical Path Method.

B. Perform data preparation, analysis, charting and updating in accordance with pertinent recommendations contained in current edition of "CPM in Construction" manual of the Associated General Contractors.

C. The network analysis system shall consist of a detailed network, mathematical analysis and a network diagram.

1. The network diagram shall show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned by the Contractor. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the completion of preceding activities and its completion restricts the start of followingactivities.

2. Detailed network activities shown on the network diagram shall include, in addition to environmental protection and construction activities, the submittal for review of samples and shop drawings, the procurement of critical materials and equipment and their installation and testing.

3. Related activities shall be grouped on the network. The activities on the critical paths shall be highlighted. The network shall be time scaled using units of approximately one-half inch equals one week or other suitable scale approved by the Engineer. Weekends and holidays shall be indicated. Where slack exists, the activities shall be shown at the earliest time they are scheduled to be accomplished. Sheet size shall be 11" x 17" minimum.

4. The mathematical analysis of the network diagram shall include a tabulation of each activity shown on the detailed network diagram. The following information shall be furnished as a minimum for each activity.

   a. Preceding and following event numbers.
   b. Activity description.
   c. Estimated duration of activities in units of working days (being the best estimate available at time of computation).
   d. Earliest start date (by calendar date).
   e. Earliest finish date (by calendar date).
   f. Scheduled or actual start date (by calendar date).
   g. Scheduled or actual finish date (by calendar date).
   h. Latest start date (by calendar date).
   i. Latest finish date (by calendar date).
   j. Slack or float.
   k. Monetary value of activity.
   l. Responsibility for activity (Prime Contractor, subcontractors, suppliers).
   m. Manpower required by trade and by total. Graphic representatives will be allowed.
   n. Equipment required.

5. The mathematical analysis shall list the activities in sorts or groups as follows:

   a. By the preceding event number from lowest to highest and then in the order of the following event number.
   b. By the amount of slack, then in order of activity number.
   c. By responsibility in order of earliest start date.

1.4 REVIEW OF SYSTEM

A. Participate in a review and evaluation of the proposed network diagrams and analysis by the Engineer. Revisions necessary as a result of this review shall be resubmitted to the Engineer within 10 days after the joint review. Ten days will be allowed for checking and further action by the Engineer. Progress payments will be withheld pending attainment of a mutually acceptable schedule. The mutually acceptable schedule shall then be the schedule to be used by the Contractor for planning, organizing, directing and executing the Work and for reporting progress.

If the Contractor thereafter desires to make changes in his method of operating and scheduling he shall notify the Engineer in writing stating the reasons for the change. If the Engineer considers these changes to be of a major nature he may require the Contractor to revise and submit, without additional cost to the Owner, all of the affected portion of the network diagram and mathematical analysis to show the effect on the entire project. A change may be considered of a major nature if the time estimated to be required or actually used for an activity or the logic of sequence of activities is varied from the original plan to a degree that there is reasonable doubt as to the effect on the Contract completion date or dates. Changes which effect activities with adequate slack time shall be considered as minor changes, except that an accumulation of minor changes may be considered as a major change when their cumulative effect might affect the Contract completion date.

1.5 UPDATES

A. Submit at intervals of 30 days a report of the actual construction progress by updating the mathematical analysis. All contract changes, including pending and approved change orders and field orders shall be included in the update schedule. Revisions causing changes in the detailed network shall be noted on the network or a revised issue of the affected portions of the detailed network furnished. The network shall be revised as necessary for the sake of clarity.

B. The report shall show the activities or portions of activities completed during the reporting period and their total value as basis for the Contractor's periodic request for payment. Coordinate with the schedule of breakdown of lump sum items. The report shall state the percentage of the Work actually completed and schedule as of the report date and the progress along the critical path in terms of days ahead or behind the allowable dates. If the project is behind schedule, progress along other paths with negative slack shall be reported. Percentage of work actually completed will be reviewed by the Engineer. If the Contractor fails to submit the required monthly reports and updates within the time prescribed, the Engineer may withhold approval of progress payment estimates until such time as the Contractor submits the required reports and updates. Three copies of the report shall be submitted for each update.

C. Simultaneously submit a narrative report with the updated analysis which shall include but not be limited to a description of the problem areas, current and anticipated delaying factors, their impact, and an explanation of corrective actions taken or proposed.

1.6 SUBMITTALS

A. Within 10 days after execution of the AGREEMENT, submit 3 copies of a preliminary schedule indicating planned operations during first 60 days. Include cost of activities expected to be completed before submission and approval of the complete schedule.

B. Within 30 days after execution of the AGREEMENT, submit 3 copies of the complete network analysis system. After review, submit 3 copies of the mutually acceptable system.

C. Submit 3 copies of monthly reports and updates by the tenth day of the month.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01311

SECTION 01350

HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall, prior to the start of work on the site, prepare and submit for review, a site-specific health and safety plan. Work may not proceed at the project site until the Owner and/or Engineer have reviewed and approved the Contractor's health and safety plan. Any delays incurred by the Contractor relating to reviews of the health and safety plan shall be the responsibility of the Contractor and constitute no additional costs or claims to the Owner.

B. Individuals involved in the excavation of potentially impacted soils shall be properly informed and trained in the recognition and response strategies involved with the hazards posed by these contaminants. The excavation of contaminated soils areas is not anticipated. However, the Contractor shall provide appropriate equipment (e.g., temporary fencing, drums) in the event hazardous materials are spilled or encountered.

C. The Contractor shall be cognizant of the minimum standards set forth in OSHA 29 CFR 1910.120. The health and safety plan shall include, but not be limited to the following:

1. Identification of Contractor's Site Safety Officer.

2. Identification of Contractor's Designated Field Personnel.

3. Type of Medical Surveillance Program.

4. Identification of Hazard and Risks Associated with Project.

5. Contractor's Standard Operating Procedures including Personnel Training and Field Orientation; Personal Hygiene Requirements & Guidelines; Field Monitoring Requirements of Site Contaminants; Respiratory Protection Training & Requirements; Levels of Protection and Selection of Equipment Procedures; Zone Delineation of the Project Site; Site Security and Entry Control Procedures; Contingency and Emergency Procedures; and Listing of Emergency Contacts.

6. The Contractor must be aware of site specific requirements such as site security during non-working hours, limited work space, and minimizing the effects of soil excavation to adjacent structures.

7. The Contractor shall make available complete sets of personal protective equipment and clothing to the Owner and Engineer for use during site

inspections by the Owner and Engineer. These shall be supplied and maintained at no cost to the Owner, and shall be returned to the Contractor upon completion of the Work, except for expendable disposal protective clothing. Contractor shall provide a repository for collection of disposable health and safety materials. Collection and disposal of contaminated expendable supplies shall be at cost to the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01350

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section includes the following:

1. Provide schedule of values covering each bid item.

1.3 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:

1. Schedule of values.

a. Revise and resubmit schedule until acceptable to the Engineer.

2. Itemize separate line item cost for work involving each lump sum item.

a. Ensure that the sum of the items listed in the schedule of values for each bid item equals the price bid for the respective bid item.

b. For "Miscellaneous Items", items such as Bond premium and temporary construction facilities may be listed separately in the schedule, provided amounts can be substantiated.

3. Breakdown installed costs into:

a. Delivered cost of product, material, equipment.

b. Total installed cost with overhead and profit.

(1) Do not list overhead and profit as separate items.

(2) An unbalanced schedule of values providing for overpayment on items of work performed first will not be accepted.

1.4 SEQUENCING AND SCHEDULING

A. Prepare schedule of values covering each bid item after review of tentative schedule at pre-construction conference, but before submission of first application for payment.

B. Before submitting any application for payment, obtain the Engineer's approval of the Schedule of Values.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01370

SECTION 01400

QUALITY ASSURANCE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section covers Quality Assurance and Control requirements for this Contract.

B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors and suppliers and for assuring the quality specified in the Technical Specifications is achieved.

C. Refer to the Article 7 - Contractor's Responsibilities, of the GENERAL CONDITIONS.

1.3 TESTING LABORATORY SERVICES

A. All tests which require the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Engineer. The laboratory must be certified by the Commonwealth of Massachusetts for the parameters tested and required under the project. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

B. Preliminary Testing Services: Unless otherwise specified, the Contractor shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for structural and embankment fills, backfill materials, and all other tests and engineering data required for the Engineer's review of materials and equipment proposed to be used in the Work. The Contractor shall obtain the Engineer's acceptance of the testing laboratory before having services performed, and shall pay all costs for services.

C. Quality Control Testing Services: Perform all quality control tests in the field or in the laboratory on concrete, asphalt mixtures, moisture-density (Proctor) and gradation tests on structural and embankment fills, and backfill materials, in-place field density tests on structural and embankment fills, and other materials and equipment, during and after their incorporation in the Work. Field sampling and testing shall be performed in the general manner indicated in the Specifications,

with minimum interference with construction operations. The Engineer shall determine the exact time and location of field sampling and testing, and may require such additional sampling and testing as necessary to determine that materials and equipment conform with data previously furnished by Contractor and with the Contract Documents.

D. Arrangements for delivery of samples and test specimens to the testing laboratory will be made by the Contractor. The laboratory tests shall be performed within a reasonable time consistent with the specified standards. Furnish a written report of each test to the Engineer.

E. Contractor shall furnish all sample materials and cooperate in the sampling and field testing activities, interrupting the Work when necessary. When sampling or testing activities are performed in the field, the Contractor shall furnish personnel and facilities to assist in the activities.

F. The Contractor shall not retain any testing laboratory against which the Owner or the Engineer have reasonable objection, and if at any time during the construction process the services become unacceptable to the Owner, or the Engineer, either the Owner or the Engineer may direct in writing that such services be terminated. The request must be supported with evidence of improper testing or unreasonable delay. If the Engineer determines that sufficient cause exists, the Contractor shall terminate the services and engage a different testing laboratory.

G. Transmittal of Test Reports: Written reports of testing and engineering data furnished by the Contractor for the Engineer's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.

H. The testing laboratory shall furnish four copies of a written report of each test performed by laboratory personnel in the field or laboratory to the Contractor. Distribution shall be two copies of each test report to the Engineer's Representative, one copy to the Owner, and one copy for the Contractor within three days after each test is completed.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Refer to Article 3 - Contract Documents, Intent, Requirements, Reuse, of the General Conditions.

B. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer.

C. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable

standards and Specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. Material and equipment shall not be used by the Contractor for any purpose other than that intended or specified unless such use is authorized by the Engineer.

D. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

E. Where so specified, Contractor shall provide the services of Professional Engineers licensed in the State of Massachusetts in the engineering discipline specified. Qualifications of the Professional Engineer shall be provided upon the Engineer's request. Submittals prepared by the Professional Engineer shall be signed and sealed as specified. Engineering submittals shall include the necessary calculations, design criteria, and professional certification to support the product selection and/or design where so specified.

1.5 OFFSITE INSPECTION

A. When the Specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by an independent testing laboratory, or inspection organization acceptable to Engineer in conjunction with or by the Engineer.

B. The Contractor shall give appropriate written notice to the Engineer not less than 30 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

C. The inspection organization shall submit a written report to the Contractor who shall provide copies to the Engineer.

1.6 MATERIALS AND EQUIPMENT

A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.

B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and operation. Should circumstances occur where the contract documents are more stringent than the manufacturer's printed instructions, the Contractor shall comply with the Specifications. In cases where the manufacturer's printed instructions are more stringent than the Contract Documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer's printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless approved otherwise by the Engineer.

1.7 SHOP AND FIELD TESTING

A. The Contractor is also responsible for providing the shop and field testing specified in the Technical Specification Sections.

B. The Contractor and its Subcontractor shall perform inspections, tests, and other services as required by the Contract Documents.

C. Contractor shall provide twenty one day's notice to the Engineer so that the Engineer may witness Contractor and/or Subcontractors off site and on site tests. The Engineer's witnessing of tests does not relieve the Contractor and/or Subcontractors of their obligation to comply with the requirements of the Contract Documents.

1.8 MANUFACTURER'S FIELD SERVICES

A. When specified in the Technical Specifications Sections, the Contractor shall arrange for and provide technical representation from manufacturers of respective equipment, items or components. The manufacturer's representative shall be a factory trained service engineer/technician with the type and length of experience specified in the Technical Specifications.

B. Services Furnished Under This Contract: An experienced, competent, and authorized factory trained service engineer/technician representative of the manufacturer of each item of equipment for which field services are indicated in the Specifications shall visit the site of the Work and inspect, operate, test, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer's service representative shall be present when the equipment is placed in operation. The manufacturer's service representative shall revisit the jobsite as often as necessary until all problems are corrected and the equipment installation and operation are satisfactory to the Engineer.

1.9 CERTIFICATION FORMS AND CERTIFICATES

A. The Contractor shall be responsible for submitting the certification forms and certificates in conformance with the requirements specified in Section 01300 - Submittals.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 QUALITY CONTROL

A. Quality control is the responsibility of the Contractor, and the Contractor shall

maintain control over construction and installation processes to assure compliance with specified requirements.

B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, pipe fusing, cable splicing, instrument calibration, surveying) shall be maintained in the Contractor's field office, available for inspection by the Engineer. Copies will be made available to the Engineer upon request.

C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer or Owner to supersede or void that responsibility.

END OF SECTION 01400

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SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 INTERFERENCE WITH AND PROTECTION OF STREETS

A. Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

B. Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

C. The Contractor shall, at least 24 hours in advance, request approval of the Police, DPW, Fire and School Departments in writing, with a copy to the Engineer, if the closure of a street or road is necessary. Contractor must receive approval from Owner prior to the closure. He shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, in order to minimize confusion.

1.3 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

1.4 INSTALLATION OF EQUIPMENT

A. Special care shall be taken to ensure proper alignment to all equipment with particular reference to the pumps and electric drives. The units shall be carefully aligned on their foundations by qualified millwrights after their sole plates have been shimmed to true alignment at the anchor bolts. The anchor bolts shall be set in place and the nuts tightened against the shims. After the foundation alignments have been approved by the Engineer, the bed plates or wing feet of the equipment shall be securely bolted in place. The alignment of equipment shall be further checked after securing to the foundations, and after confirmation of all alignments, the sole plates shall be firmly grouted in place. The Contractor shall be responsible for the exact alignment of equipment with associated piping, and under no circumstances, will "pipe springing" be allowed.

B. All wedges, shims, filling pieces, keys, packing, red or white lead grout, or other materials necessary to properly align, level and secure apparatus in place shall be furnished by the Contractor. All parts intended to be plumb or level must be proven exactly so. Any grinding necessary to bring parts to proper bearing after erection shall be done at the expense of the Contractor.

1.5 TEMPORARY UTILITIES

A. Temporary Light and Power: The Contractor shall at his own expense, provide his own temporary light and power as required for the prosecution and completion of work.

B. Temporary Heat: The Contractor shall, at his own expense, provide sufficient temporary heat to maintain a minimum temperature of 50 degrees F at all times in all areas designated elsewhere in these documents.

C. Temporary Telephone: The Contractor shall have installed at his own expense a job telephone for his use and for the use of the Engineer. The Contractor shall pay all phone charges.

D. Sanitary Provisions: The Contractor shall provide and maintain sanitary accommodations for the use of his employees, as may be necessary to comply with the requirements and regulations of the local and state departments of health.

E. Maintaining Operation of the Existing Facilities:

1. The Contractor shall be responsible for careful consideration of the construction, scheduling and anticipation of potential interference with existing utilities, operations and structures. The Contractor shall maintain close communications with the Engineer and provide the Engineer with a detailed description of each proposed activity sufficiently in advance of its commencement for review and comments to be made.

2. Temporary facilities which may be required include, but are not limited to, electrical power; lighting; heating; cooling; ventilating; telephone; potable water; fire protection; drainage; sanitary facilities; trench covers; protection of existing

utilities; structures; streams; trees and shrubs; access roads; sewage conveyance; piping.

1.6 ACCESS TO THE WORK

A. The Contractor shall provide sufficient and proper facilities at all times for inspection of all work under this project in preparation or in progress, by the Owner, the agents and employees of the Owner, by authorized representatives of the State of Massachusetts and the Federal Government and by the Engineers.

B. The Contractor shall furnish the Engineer or his authorized representative and other personnel mentioned above with such facilities and assistance as are necessary to ascertain performance of the work in accordance with the plans and specifications.

1.7 PRECAUTIONS DURING ADVERSE WEATHER

A. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01500

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SECTION 01610

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

B. Section 01850 – Traffic Management.

1.2 SUMMARY

A. This section specifies the general requirements for the delivery, handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.3 TRANSPORTATION AND DELIVERY

A. Transport and handle items in accordance with manufacturer's printed instructions.

B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.

C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

D. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.

E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Owner’s normal operations, the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

F. Provide equipment and personnel to unload all items delivered to the site.

G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e. Owner, Manufacturers, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.4 STORAGE AND PROTECTION

A. Store and protect products in accordance with the manufacturer's printed instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him. Instructions shall be carefully followed and a written record of this kept by the Contractor. Arrange storage to permit access for inspection.

B. Store loose granular materials on solid flat surface in a well-drained area. Prevent mixing with foreign matter.

C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulation of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in manner to reduce breakage, cracking and spalling to a minimum.

D. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere (even though covered by canvas) shall be stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the Engineer. Building shall be provided with ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01610

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Closeout procedures.

2. Final cleaning.

3. Adjusting.

4. Record Documents.

1.3 CLOSEOUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.

B. Provide submittals to Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payment, and sum remaining due.

D. Submit all warranties.

E. Submit written notice that all subcontractors and suppliers have been paid in full.

F. Submit written notice showing the disparition of all insurance filings and claims.

G. Copy of “Statement of Compliance” filed with the Division of Labor and Workforce Development, as required under the State Wage Rate Provisions.

1.4 RECORD DOCUMENTS

A. Maintain on site, one set of the following documents; actual revisions to the Work shall be recorded in these documents:

1. Contract Drawings

2. Specifications

3. Addenda

4. Change orders and other Modifications to the Contract

5. Reviewed shop drawings, product data, and samples.

6. Written interpretations and clarifications.

7. Field orders.

8. Field test reports properly verified.

9. Upon completion of the project Record Drawings shall be submitted to the Engineer.

B. Store As-built Documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:

1. Manufacturer's name, address and telephone number and product model and serial number.

2. Product substitutions or alternates utilized.

3. Changes made by Addenda and Modifications.

E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured horizontal and vertical location of excavation limits referenced to permanent surface bounds.

2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension of detail.

5. Details not on original Contract Drawings.

1.5 FINAL CLEANING

A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

1.6 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 01700

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SECTION 01710

CLEANING UP

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. During its progress, the work and the adjacent areas affected thereby shall be cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

D. The Contractor shall thoroughly clean all materials and equipment installed by him and his sub-contractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.

E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01710

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS and other DIVISION 1 Specification Sections, apply to this section.

1.2 SUMMARY

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1.3 RELATED WORK

A. Refer to General Conditions of the Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01700 - Contract Closeout.

C. Specific requirements for warranties for the Work and products and installations that are specified to be under warranty are included in the individual Sections of Division 2, inclusive.

D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.4 SUBMITTALS

A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement data for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the Work.

C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document

that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Engineer for approval prior to final execution.

D. Refer to individual Sections of Divisions 2 for specific content requirements, and particular requirements for submittal of special warranties.

E. At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the "Warranties and Bonds" binder.

F. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-in. by 11-in. paper.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the "Warranties and Bonds" binder, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.

H. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer, supplier, and manufacturer.

I. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name, address, and telephone numbers of the Contractor and equipment supplier.

J. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.5 WARRANTY REQUIREMENT

A. Related Damages and Losses: When correcting Work under warranty that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of Work under warranty.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding; reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or

rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.6 DEFINITION

A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION 01740

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SECTION 01850

TRAFFIC MANAGEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

B. The Massachusetts Department of Transportation Construction Standards, most recent version, shall apply to all materials furnished under this section. When conflicts arise between this specification and the Construction Standards, the Contractor shall coordinate with the Owner and/or Engineer for a final decision.

C. Appendix B includes relevant Massachusetts Department of Transportation traffic management details. **These details shall be followed for all work set-ups, regardless of amount of time spent at each location.**

1.2 SUMMARY

A. This section includes the following:

1. Pedestrian, vehicular traffic and other safety control devices, construction signs, requirements, and management for the protection of the traveling public and working personnel during construction and related operations.

2. Establishing, maintaining, and removing detour routes as shown on the Plans or as directed by the Owner and/or Engineer in order to perform the proposed construction.

3. The design, application, and installation of all devices required by this section shall conform to the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) latest edition, Part VI, published by the Federal Highway Administration (FHWA), the Massachusetts Amendments to the MUTCD latest edition, MassDOT Work Zone Safety Guidelines for Massachusetts Municipalities and Contractors, MassDOT Construction and Traffic Standard Details (1996), Americans with Disabilities Act (ADA), and the Massachusetts Department of Transportation Standard Specifications for Highways and Bridges with all subsequent Special Provisions and Supplemental Specifications, hereinafter referred to as the "MassDOT Standard Specifications", Section 850, and MassDOT "Standard Details and Drawings for the Development of Temporary

Traffic Control Plans", except as modified herein.

4. Traffic management during construction and maintenance operations includes installing and maintaining temporary vehicular, pedestrian and construction facilities, furnishing, installing, inspecting, positioning, repositioning, and removing channelization devices necessary to maintain pedestrian and vehicular traffic during construction and fencing of excavations as required for the protection of the public and all project personnel.

5. All construction vehicles not protected by any form of traffic control device on a project which is open to traffic shall have an amber flashing light mounted on the cab roof or on the highest practical point of the machinery. The light shall be in operation whenever the equipment is working on the highway or travelway. Amber flashers must be a minimum of 40 candelas and have a flashing frequency of 50 to 60 times per minute. Either rotating beacons or strobe lights meeting these requirements are acceptable.

6. All materials provided by the Contractor under the items of this section shall remain the property of the Contractor upon completion of the project, unless otherwise specified below.

7. Any traffic management and traffic detours proposed by the Contractor shall be subject to approval by the Owner and/or the Engineer. The Contractor shall provide detailed Traffic Management Plans and detour maps indicating the proposed detour routes, all proposed signs, the proposed hours of operation, the proposed locations of police detail officers and barricades for each phase of construction two weeks before the intended implementation date for approval by the Owner and/or the Engineer. Work shall not proceed without specific notice to and approval of the Owner and/or the Engineer. Any detours or changes in normal traffic patterns or road closures shall be coordinated by the Contractor with the Owner and/or Engineer, local Police Department, and Fire Department.

8. "Approved by the Owner" throughout this Section shall mean the approval of the Town of Westwood.

1.3 HOURS OF OPERATION

A. Daily restricted hours of operation shall be between 7:00 am and 4:00 pm Monday through Friday. Construction shall be coordinated around other nearby construction projects, heavy seasonal traffic which may further prohibit construction in the streets during certain periods to retain adequate circulation.

B. The Contractor can request permission for construction on Saturdays during

off peak seasons. Such work cannot be performed without permission from the Owner and/or the Engineer.

1.4 SUBMITTALS

A. Shop Drawings: Contractor shall submit the following in accordance with Section 01300 – SUBMITTAL PROCEDURES:

1. Traffic Management Plans: Where designs for pedestrian and traffic control devices are not specifically indicated on the Contract Drawings or for any variations from the Traffic Management Plans on the Contract Drawings, the Contractor shall prepare and submit to the Owner and/or Engineer for approval, a traffic management plan, complete with details of the proposed methods, including materials for approval two weeks before implementation. This includes but is not limited to road closures and detour routes for each phase of construction including time periods of work, temporary pedestrian and construction facilities, locations of signage, portable changeable message signs, police and other traffic control devices to maintain traffic and access to abutting properties.

2. Shop Drawings

a. Submit complete shop drawings for traffic management plans, including temporary pedestrian sidewalks and driveways, as needed, certified by a Professional Engineer registered in the Commonwealth of Massachusetts.

b. Show on the shop drawings all materials, including traffic control devices, signs and methods of installation.

c. Include with the shop drawings alignment tapers, lane widths, police detail locations, temporary pavement markings, barriers and traffic control device spacing.

d. The Contractor shall submit in writing proposed road closures and anticipated detour routes and signage based on the provided information for approval two weeks prior to implementation.

3. Safety Signing for Construction Operations. Where not indicated on the Contract Drawings, the Contractor shall submit temporary traffic management plans and sign placement and size sketches showing the proposed sign setups he intends to use to provide the necessary traffic control and protection during the progress of the work, plus the sign and legend size and layout. These sketches shall also be submitted to the Owner and/or Engineer for review and approval two weeks before work begins. Particular care shall be taken to establish and maintain

methods and procedures that will not create unnecessary or unusual hazards to public safety. Traffic control devices required only during working hour operations shall be removed and the appropriate signs shall be covered at the end of each working day.

4. The Contractor shall submit to the Owner and/or Engineer the information required by this section a minimum of two weeks prior to the start of construction and prior to the start of construction at any new location throughout the duration of work under this contract for approval. Work shall not proceed without specific notice to and approval of the Owner and/or Engineer.

1.5 QUALITY ASSURANCE

A. Provide in accordance with Section 01400.

1.6 DELIVERY, STORAGE AND HANDLING

A. Provide in accordance with Section 01600 and as specified.

B. No material shall be stored within the work area or on adjacent roadways or residential streets except which is needed for work being performed for that day.

1.7 TRAFFIC CONTROL REQUIREMENTS

A. The Contractor shall meet the following conditions, unless otherwise specifically approved by the Owner and/or Engineer:

1. All work shall be prosecuted with proper regard for the convenience of the public and in a manner to permit unimpeded traffic flow whenever possible. The interruption of traffic will not be permitted unless specifically allowed by the Owner and in accordance with the requirements of the Owner and/or Engineer and in conformance with MUTCD requirements.

2. Traffic control devices and signs shall be removed, demounted or properly covered for those periods of the day not in use or not applicable.

3. The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, he/she shall make such repairs or provide such temporary ways or guards without delay that are acceptable to the Owner and/or Engineer.

4. Streets, roads, private ways, and walks under construction and not

closed shall be maintained passable and safe at all times by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

5. The Owner and/or Engineer shall be notified of any re-routing of traffic two weeks in advance. Approval for streets must be obtained from the Owner and/or Engineer prior to any rerouting of traffic (except emergencies). Following receiving approval form the Owner and/or Engineer, it will be the Contractors responsibility to coordinate with other agencies or departments including Police and Fire Department in writing a minimum of 72 hours prior to road closures. This will include providing the Police Department, Fire Department and Department of Public Works with the following information:

   a. A list of streets and intersections where work will be in progress to be supplied at intervals as required by the Owner and/or Engineer.

   b. Immediate notification of any utility breaks.

6. The Contractor is responsible for notifying abutters of anticipated construction adjacent to their property and the anticipated temporary alterations in circulation through distribution of written notices 72 hours in advance.

7. No operations shall be conducted, including the loading or unloading of vehicles, on or near the traveled lanes or road shoulders without first erecting warning signs and channelizing devices as directed. These precautions shall be maintained at all times while work is in progress.

8. Construction signs and channelizing devices shall be used to separate traffic from the work areas and for traffic control. Placement, other than as shown in the Contract Drawings or the MUTCD, will require prior approval from the Owner and/or Engineer.

9. Temporary signs and channelizing devices shall not be set up until there is adequate visibility or appropriate construction lighting. The Contractor shall schedule his work so that temporary signs and channelizing devices are removed and traffic is returned to its normal pattern before the end of the work period.

9. Work operations shall not be performed on the roadway in such a manner that traffic is obstructed or endangered from either side of the roadway.

10. The Contractor shall keep all roadway areas open to traffic as clear as possible at all times. Materials shall not be stored on any roadway

area or within 10 ft. of the traveled way. Material shall be delivered to the installation areas as they are needed to provide a continuous installation. Location of storage areas shall be subject to approval.

11. The Contractor shall remove all equipment and construction vehicles from the traveled way and shoulders open to traffic during non-work hours. Vehicles shall be parked no closer than 10 feet from the traveled way in pre-approved areas unless specifically permitted.

12. Temporary signs and channelizing devices shall not be set up in inclement weather.

13. The Contractor shall provide necessary, unimpeded access for fire apparatus and other emergency vehicles through the work zones to abutting properties at all times.

14. Sweeping and cleaning of surfaces beyond the limits of the project required cleaning up material caused by spillage or vehicular tracking during the various phases of the work shall be considered as incidental to the work being performed under the Contract and there will be no additional compensation. Sweeping and cleaning shall be done daily.

1.8 EXCAVATIONS

A. The Contractor shall excavate for the amount of work to be completed and subsequently backfilled that same day (except for drilling, jacking and receiving pits). Open excavations shall not remain open through non-work hours, unless prior approval is obtained from the Owner and/or Engineer (except for drilling, jacking and receiving pits).

B. All open excavations shall be adequately safe guarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Owner and/or Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, special construction procedures shall be taken, such as limiting the length of open trench.

C. The Contractor shall not enter upon or occupy with men, tools, equipment or materials any property outside the rights-of-way or property of the Owner, except after the written consent of the Owner and/or Engineer.

D. The Contractor shall erect substantial barriers at the ends of open ditches; stockpiled construction materials or other obstructions and shall erect warning signs and provide adequate lights or flares to guard the barriers, trenches, and excavation.

E. At the end of each work day the Contractor shall fill in or cover with steel

plates of adequate strength to carry traffic all open trenches, test pits or other excavations. The roadway shall be free of construction debris and excavated material and shall be relatively smooth to provide safe passage.

F. At the end of each work week, backfilled excavations shall be paved with hot mix asphalt in accordance with the Drawings and Section 02576 of these specifications. Temporary paint pavement markings that match the existing markings disturbed by the excavation shall be applied to the new pavement in accordance with the MassDOT Standard Specifications and MUTCD.

1.9 COORDINATION OF WORK AREAS

A. The Contractor shall be responsible for the coordination of his/her work with all utility or roadway work being performed by the Town and/or utility owners in relation to this project or projects near this project in order to retain adequate circulation throughout the area. The Contractor shall phase all work in a manner that will provide positive and safe through movement of traffic passing the construction site.

1.10 ACCESS TO PROPERTIES

A. At least one serviceable driveway access to all residences and businesses within the project shall be maintained at all times.

B. The Contractor shall coordinate the work with the schedules of delivery trucks to the adjacent stores and property owners so as not to impede their access.

1.11 HAULING

A. The Contractor is advised that all roads and bridges within or adjacent to the project shall be subject to legal loads and vehicles.

B. The Contractor is advised that no agreements have been made by the Town of Westwood or MassDOT with surrounding cities or towns to relieve the Contractor of liability for damage to local roads and bridges caused by the Contractor's operation. The Contractor shall contact appropriate officials of the surrounding cities or towns concerning hauling over city or town roads and bridges.

C. The Contractor shall furnish 60" x 30" approved signs reading "CONSTRUCTION VEHICLE - DO NOT FOLLOW" to be used on trucks hauling to the project, when such signs are deemed necessary by the Engineer. The color, type of sheeting and size of lettering shall conform to that of the permanent construction signs.

D. Each driver of any vehicle used on this contract shall have furnished written instructions concerning the manner of operation for that vehicle. Specifically,

these instructions shall warn against stopping on the traveled portions of the roadway, against passing other vehicles, and against traveling in close proximity to other vehicles. A copy of these instructions shall be given to the Engineer.

1.12 DETOUR ROUTE

A. Once specific staged work zones have been established by the Contractor, the Contractor shall submit detour routes and Traffic Management Plans to the Owner and/or Engineer for approval a minimum of two weeks prior to anticipated implementation.

B. The Contractor shall coordinate and time construction with other construction projects nearby to maintain adequate circulation.

C. The Contractor is permitted to install construction signage and other traffic control devices prior to opening the detour. Temporary traffic control devices installed prior to the detour shall be covered or rendered inoperative until the detour begins. Temporary traffic control devices no longer needed after the last day of the detour shall be covered until they are removed.

D. Portable Changeable Message Signs (PCMS) will be in place and operational one week prior to anticipated construction to warn drivers of altered circulation patterns. Locations and messages for PCMS's will be shown on the Contractor's submitted Traffic Management Plans and as approved by the Owner and/or Engineer.

E. The Contractor shall cover all existing traffic signs that are in conflict with the detour route. Existing pavement markings that conflict with detour traffic shall be removed in accordance with the MassDOT Standard Specifications, Section 850.

F. Upon completion of the detour, the Contractor shall restore all pavement markings to the existing conditions and uncover existing traffic signs.

1.13 PEDESTRIAN TRAFFIC

A. Sidewalks shall be maintained at all times throughout the construction period. Temporary sidewalks, pedestrian detours, and pedestrian and construction facilities shall be constructed as needed to maintain pedestrian traffic and business access, as shown on the Plans or as directed by the Owner and/or Engineer. Walkways of 5 feet minimum width (not including curb width) will be provided at all times unless otherwise approved by the Owner and/or Engineer. All permanent and temporary sidewalk construction shall be in accordance with ADA requirements including clearance around obstructions, slopes, and alignments.

B. Pedestrian access will be provided to abutting land uses such as residences

and businesses at all times, as approved by the Owner and/or Engineer and in accordance with ADA requirements.

C. Temporary pedestrian walkways shall be separated from roadway and constructed areas by barricades as approved by the Owner and/or Engineer.

1.14 CONSTRUCTION AND ADVANCE WARNING SIGNS

A. Construction and advance warning signs shall be in accordance with the MUTCD, MassDOT Standard Specifications, Section 850 – Traffic Controls for Construction and Maintenance Operations and the provisions of this Section.

B. Construction and advance warning signs shall be replaced, covered, uncovered, furnished, positioned, repositioned, inspected, maintained, and removed as often as necessary and or directed by the Owner and/or Engineer, including regulatory, warning, and guide signs and temporary bus stop signs and taxi stop signs and their supports.

C. All signs which are damaged or are missing from their location will be replaced by the Contractor without additional compensation.

D. All signs will be maintained by the Contractor in a satisfactory manner including the removal of dirt or road film that causes a reduction in sign retroreflectivity.

E. Special construction signs will be furnished and installed by the Contractor during the work to improve traffic flow or safety, as directed by the Owner and/or Engineer.

1.15 PORTABLE CHANGEABLE MESSAGE SIGN

A. Portable Changeable Message Signs shall be in accordance with the MassDOT Standard Specifications, Section 850 and the provisions of this Section.

B. All messages signs location and displayed shall be submitted by the Contractor to the Owner and/or Engineer two weeks prior to construction for approval.

C. Message signs shall be installed one week prior to detours being in place to warn drivers and shall be kept fully operational by the Contractor throughout the duration of the work.

D. The Contractor shall be responsible for positioning, repositioning, operating, maintaining, revising messages, and removing the message signs as needed or as directed by the Owner and/or Engineer.

1.16 TRAFFIC CONTROL DEVICES

A. Install, inspect, maintain, reposition and remove all temporary traffic control devices and construction elements as often as necessary and as directed by the Owner and/or Engineer in accordance with an approved construction staging sequence and traffic management plan.

B. Materials required for the work of this Section need not be new, but must be in first-class condition and acceptable to the Owner and/or Engineer and meeting requirements set for the MUTCD and MassDOT standards. Any materials, that in the judgment of the Owner and/or Engineer, are unsatisfactory in appearance or performance shall be removed and immediately replaced by the Contractor with acceptable units.

C. All traffic control devices shall be in accordance with MassDOT Standard Specifications, Section 850 and the provisions of this Section.

D. Temporary Safety Signing

1. Safety Signing shall consist of furnishing, positioning, repositioning, covering and uncovering, maintaining and removing, as needed and/or as directed: regulatory, warning, and guide signs together with their supports. If additional supports are needed due to site conditions they will be considered incidental to the work.

2. Any temporary safety sign no longer applicable shall either be removed or covered as soon as possible.

3. No temporary safety sign shall be visible to traffic that may conflict with actual roadway conditions.

4. Signs over 50 square feet will require approval of design calculations and shop drawings of the breakaway support system if the signs are installed at an unprotected location.

5. Site conditions including signage will be returned to pre-construction conditions at the completion of that phase of construction.

E. Sign Covers

1. Cover any existing regulatory and warning signs as necessary and as directed by the Owner and/or Engineer.

2. Use a cover approved by the Owner, which shall be securely fastened to the existing sign and shall completely cover the legend of the existing sign. The cover shall remain in place as long as necessary at which time it shall be promptly removed.

3. Signs shall be covered without causing any damage to the existing sign. Damaged signs will be replaced by Contractor at no additional cost to the Owner.

F. Temporary Pavement Markings

1. Temporary Pavement Markings shall consist of furnishing, applying, maintaining and removing temporary white and yellow reflectorized pavement markings during construction and maintenance operations.

2. Temporary markings shall be effective for a period of 90 days. Re-application or replacement within the 90 day period shall be done at no additional cost to the Owner.

G. Pavement Marking Removal

1. Pavement Marking Removal shall consist of removing existing pavement markings no longer applicable as required to support the Traffic Management Plan through the approved techniques outlined, or as directed by the Owner and/or Engineer.

H. Arrow Board

1. Arrow Board shall consists of providing, operating, positioning, repositioning, maintaining and removing a portable truck-mounted or trailer-mounted flashing arrow unit on the project at designated locations as shown on the approved traffic management plans or as directed.

I. Reflectorized Drums

1. Reflectorized Drums consists of furnishing, positioning, repositioning, maintaining, and removing reflectorized plastic drums and necessary ballast, as needed and/or as directed by the Engineer including locations of lane closures, shifting traffic, road closures, channelizing or otherwise re-directed traffic. The use of cones will not be permitted.

2. Traffic Drums shall conform to Drawing No. TR.7.1 of the MassDOT Construction and Traffic Standard Details, 1996 edition and MUTCD.

J. Pavement Marking Removal

1. Pavement Marking Removal shall consist of removing existing pavement markings as required to support the Traffic Management Plan or as directed through the approved techniques, outlined.

K. Temporary Barrier

1. Temporary Barrier shall consist of furnishing, installing, maintaining and final removal of temporary barriers, including delineation, for traffic control or work zone protection in construction zones. This barrier shall be continuous as a unit across bridges and other limited construction areas unless designated on the plans as "Temporary Restrained Barrier."

2. Vehicular traffic within 30 feet of the travelled way shall not be exposed to blunt ends of barrier without acceptable impact attenuators with delineation.

3. Temporary Barrier shall be removed, transported and reset from the alignments established along the roadway to new alignments as required by the construction and staged construction operations for the control of traffic or work zone protection.

4. Temporary Barrier shall be installed where required by the Owner to protect the work zones and excavations, which cannot be completed and backfilled within a daily work period. Barriers shall be removed when no longer required.

5. Temporary barrier for use for temporary pedestrian and construction facilities shall have three (3) sleeves cast in each section of barrier to receive a post for panel and fence installations.

6. Temporary barrier shall conform to Drawing Nos. E403.1.0 to E403.7.0 of the MassDOT Construction Standard Details dated June 2014 with the latest revision.

L. Temporary Restrained Barrier

1. Temporary Restrained Barrier shall consist of furnishing, installing, removing, transporting, resetting, maintaining and final removal of temporary restrained barriers on bridge decks and other locations including delineation, in accordance with details as shown on the traffic management plans and/or bridge plans and as directed by the Owner and/or Engineer.

2. The work shall also include furnishing and installing all hardware and associated materials necessary to restrain the barriers in position, or attach the barriers to the roadway or the bridge deck.

3. Only barrier systems that have been crash tested and approved by FHWA are acceptable for the intended use.

M. Portable Breakaway Barricades Type III

1. Portable Breakaway Barricades Type III shall consist of furnishing, positioning, transporting, repositioning, maintaining, and final removal of portable barricades as shown on the approved traffic management plan or as directed by the Owner and/or Engineer.

2. Barricades shall be maintained in good and serviceable condition throughout the duration of the Contract.

N. Temporary Impact Attenuators

1. Temporary Impact Attenuators shall consist of furnishing, installing, removing, relocating, reinstalling, maintaining, and final removal of temporary impact attenuators in conformance with the specifications of the manufacturer and MassDOT.

O. Truck Mounted Attenuator

1. Truck Mounted Attenuator shall consist of furnishing a moveable impact attenuator equipped with a flashing arrow board. The impact attenuator can be either a truck-mounted or a tow-behind unit and shall conform with the specifications of the manufacturer and MassDOT.

P. Temporary Fence

1. Temporary fence shall consist of furnishing and installing, removing and resetting and the dismantling of 6-foot high temporary fence to separate construction activities from public access and as determined and required by the Owner and/or Engineer.

2. The temporary fence shall be constructed at locations as directed by the Owner and/or Engineer. The Contractor shall install and maintain temporary construction fences around the construction site, stockpile areas, and any and all exposed excavations located outside the defined roadway area, accessible to the public until such time it is no longer necessary as determined by the Owner and/or Engineer. Carefully protect all areas of the site from intrusion and trespass. Protect Public Health Safety and Welfare at all times.

3. The Contractor is responsible for relocating the fence as many times as required to properly protect construction activities.

1.17 POLICE DETAILS

A. The Contractor shall coordinate with the Owner, Police Department, and Engineer to determine daily uniformed police detail requirements for the

control of pedestrians and vehicular traffic within the project area for each stage of construction.

B. The decision to use a police detail at a specific project location shall be shown on the traffic management plans approved by the Owner and/or Engineer or as directed by the Owner and/or Engineer.

C. Contractor is responsible for scheduling of all uniformed police details. The Police Department will invoice the Owner directly for accepted Police Details.

D. It is the Contractor's responsibility to cancel Police Details a minimum of four hours in advance of the start of the shift if conditions so warrant. The Contractor will be responsible to reimburse the Police when the cancellation notice is not given by the Contractor in a timely fashion. Lateness or failure to show on the part of the Contractor or inclement weather shall not excuse the Contractor from the obligation to give adequate notice to the Police Department. Payment for Police Details not cancelled as required will be the responsibility of the Contractor.

E. Road closures shall not be allowed without prior permission of the Owner, Police Department, and Fire Department.

1.18 PERMITS

A. The Contractor shall be responsible for obtaining any permits to perform the work.

PART 2 - PRODUCTS

2.1. GENERAL

A. Devices required under this Section need not be new but must be in first class condition and acceptable to the Owner and/or Engineer. The condition of the work zone traffic control devices shall meet the quality standards set forth in the Quality Standards for Work Zone Traffic Control Devices compiled by the American Traffic Safety Services Association (ATSSA). Any devices that, in the judgment of the Owner, are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by the Contractor with acceptable devices.

2.2. PORTABLE CHANGEABLE MESSAGE SIGN

A. The Portable Changeable Message Sign shall be capable of performing all functions at ambient temperatures ranging from -31º to 165 º F (–35 º to 74 º C). There shall be no degradation of operation due to fog, rain or snow. A radar detector activator meeting the requirements shall be considered part of this item.

B. Maintenance shall include periodic cleaning. When not being used the sign shall be stored in a secure area approved by the Owner and/or Engineer.

C. The Portable Changeable Message Sign shall consist of the following major components:

1. Message Sign:

a. Type – The technology can be LED or a combination of both Flip Disk and LED (Hybrid).

b. Matrix Displays – Shall be character, line or full matrix.

c. Size – The message sign shall have a minimum height of 6 feet, maximum height of 6.5 feet and a minimum width of 8 feet, maximum width of 12 feet.

d. Colors – The display shall be either fluorescent yellow or ITE amber.

e. Lines – The message sign shall have the capability of displaying at least three lines of 18 inch characters with a minimum of 8 characters per line.

f. The sign shall be illuminated for nighttime visibility.

2. Operator Interface: A means of creating and controlling the display message(s) on–site and remotely through an NTCIP compatible IP addressable modem, shall be provided with each sign. The operator interface shall contain as a minimum the following:

a. Display terminal with keyboard to allow previewing the message content and format before it is sent to the sign panel. The keyboard shall be of a standard design.

b. Controller (CPU).

c. Lockable weatherproof enclosure for interface components.

3. Controller: The Controller shall possess, at a minimum, the following features:

a. Full 32K user memory with the option for additional archive memory.

b. Capacity to store a minimum of 50 messages.

c. Changeable message flash rate capability.

d. A minimum of 24 hour battery back-up.

e. Password activation shall be software available.

4. Power Supply: The sign shall be capable of operation from a diesel powered generator, a battery or solar power. The power supply shall be protected from the weather and be locked for security.

5. Trailer: The trailer shall have at least the following features:

a. A current Registry of Motor Vehicles registration.

b. Swivel jacks capable of leveling the trailer on a 1:6 (1 vertical to 6 horizontal) slope and capable of stabilizing the trailer in winds of up to 80 miles per hour.

c. The sign shall be capable of being locked in a stowed position while being towed.

d. A lift mechanism shall be provided to elevate the sign to its operating position.

e. The capability to lock the sign panel in several off-angle positions with respect to the trailer axis.

2.3. TRAFFIC CONTROL DEVICES

A. Temporary Safety Signing

1. Rigid signs shall be fabricated from plywood, aluminum or approved alternate substrate material.

2. Plywood sign material shall be 5/8 inch Exterior MDO – General (one sided).

3. Aluminum sign material shall be Type A, 0.08 inches thick as specified in MassDOT Standard Specification Subsection 828.42.

4. Route marker overlay on directional sign panels shall be fabricated from Aluminum Alloy 5052-H38 0.08 inches thick.

5. The entire sign face shall be retro-reflectorized. Reflective sheeting shall meet the requirements of ASTM D4956 and AASHTO M268, and as Flexible High Intensity Prismatic (HIP) Sheeting to ASTM Type VII or better.

6. Rollup signs shall be fabricated from vinyl microprismatic

retroreflective material.

7. Background sheeting for all construction warning signs shall be of a fluorescent orange color. The minimum spectral radiance factor, in accordance with Section 5.1 of ASTM E991, for the fluorescence shall be as follows:

New	110% minimum
Weathered	60% minimum

B. Temporary Pavement Markings

1. Glass beads, tapes and paints used for temporary pavement markings shall be lead free, conform to MassDOT Standard Specification, Subsections M7.01.07, M7.01.16, M7.01.23 and M7.01.24, and meet the retroreflectivity requirements of the MUTCD for a period of 90 days. Final determination as to pavement marking quality shall be made by the Engineer. The Contractor shall supply a retroreflectometer for this purpose.

2. The colors of the marking materials shall be the standard highway colors of white or yellow and as outlined in the MUTCD.

C. Arrow Board

1. The unit shall consist of a black background panel meeting the requirements of MUTCD Type C and shall contain at least 15 amber lamps of approximately 8,000 initial maximum candelas each.

2. Panels shall have the capability of the following mode selections: (1) left or right flashing or sequential arrows; (2) left or right sequential chevrons; (3) flashing double arrow; (4) flashing caution and (5) alternating diamond caution.

3. Panels shall automatically provide for a minimum of 50 percent dimming from their rated lamp voltage at night. The flashing rate of the lamps shall not be less than 25 or more than 40 flashes per minute.

4. Minimum mounting height should be 7 feet above the roadway to the bottom of the panel, except on vehicle-mounted panels, which should be as high as practicable.

5. The arrow board shall include a radar detector activator meeting its requirements.

D. Reflectorized Drums

1. Reflectorized drums shall be plastic and shall meet the applicable

requirements of the MUTCD.

2. Reflective sheeting for drums shall meet the requirements of ASTM D4956 and AASHTO M268, and the Flexible High Intensity (H/I) Sheeting for ASTM Type VI and shall be six inches wide.

3. Reflectorized drums are listed on the MassDOT Qualified Construction Materials list.

4. The first five drums used for any taper or as designated on the Traffic Management Plan shall be equipped with flashing lights, or as directed by the Owner and/or Engineer.

E. Temporary Barrier

1. Temporary barriers shall be precast and manufactured in accordance with the plans and Section 629 of the MassDOT Standard Specifications.

2. The Contractor shall supply a barrier and anchorage system that was crash tested in accordance with NCHRP 350, TL-3 or MASH, TL-3 and accepted by FHWA.

F. Temporary Restrained Barrier

1. Temporary restrained barriers for use on roadways or on bridges shall be restrained by blocking or other system, affixed to the roadway by pinning, set into the roadway surface or other tested system or bolted down to the bridge deck, and shall be manufactured in accordance with the plans and Section 629 of the MassDOT Standard Specifications.

2. The Contractor shall supply a barrier and anchorage system that was crash tested in accordance with NCHRP 350, TL-3 or MASH, TL-3 and accepted by FHWA. The Contractor shall provide evidence of FHWA acceptance.

G. Portable Breakaway Barricades Type III

1. Portable Breakaway Barricades shall conform to the plans and the following requirements:

a. Portable breakaway barricades shall comply with the latest version of the MUTCD.

b. Reflectorized sheeting conforming to M9.30.0. Type VI. Pipe shall be Polyvinyl Chloride (PVC) pressure rated SDR 21 or SDR 26 ASTM D2241. Fittings may be PVC ASTM D2665 or

Acrylonitrile Butadiene Styrene (ABS) ASTM D2661 (Drainage Waste and Vent).

c. The alternating 6 inch wide reflectorized diagonal stripe shall be orange and white and shall slope downward at 45º toward the end by which the traffic is to pass. Barricades that block the passage of traffic or designate the end of the traveled way shall have alternating vertical orange and white stripes on the rails.

H. Temporary Impact Attenuators

1. Only those Temporary Impact Attenuators previously approved for the purpose intended and listed on the Qualified Construction Materials List may be used.

2. The temporary impact attenuator shall be designed to fit within reasonably close tolerance of the dimensions given on the plans or in the special provisions for a given location.

3. The Contractor shall provide a design for temporary impact attenuator at the design speed shown on the plans or other speed designated by the Engineer.

I. Truck-Mounted Attenuator

1. Only those truck mounted attenuators previously approved for the purpose intended and listed on the Qualified Construction Materials List may be used. Since most approvals are conditional, any associated issues including but not limited to anticipated conditions, model, variations, modifications, proper installation of truck-mounted units and tow-vehicle specifications shall be resolved to the satisfaction of the Engineer before use in the field. The submitted information shall include estimated displacement characteristics for a variety of impacts (assumptions regarding both impacting vehicle weight and speed) so that appropriate temporary traffic control set-ups can be undertaken in the field.

2. The flashing arrow board shall conform to the requirements of Section 2.3, Subsection C.

J. Temporary Fence

1. The type of temporary Chain link fence shall be the Contractor's option with approval from the Owner.

2. The Contractor shall submit the type of temporary chain link fence to the Owner for approval prior to placing at the construction area. Following types are acceptable:

a. New materials or previously used salvaged chain link fencing in good condition.

b. Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with steel base plates, or inserting in precast concrete blocks.

c. Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

d. Gates:

i. Provide personnel and vehicle gates of the quantity and size required for functional access to site.

ii. Fabricate of same material as used for fencing.

3. Fence fabric shall be fastened to posts by means of No. 6 gauge zinc coated wire clips. No post tops are required.

PART 3 - EXECUTION

3.1. PORTABLE CHANGEABLE MESSAGE SIGN

A. The changeable message units shall be available for use one week prior to and throughout the duration of the project and be positioned in accordance with the traffic management plans approved by the Owner and/or Engineer for each phase of construction and/or at the direction of the Owner and/or Engineer. The signs shall be visible from a minimum distance of 900 feet with a viewing angle of no less than 30 degrees. The Contractor shall take appropriate measures as needed within the roadway layout to provide the required minimum sight distance. The Contractor shall be responsible for the maintenance of each device and appurtenance. If the unit is found to be defective in any way it shall be replaced immediately at the Contractor's expense.

3.2. TRAFFIC CONTROL DEVICES

A. Temporary Safety Signing

1. Signs which are damaged or are missing from their locations shall be replaced by the Contractor without additional compensation.

2. All signs shall be maintained in a satisfactory manner including the removal of dirt or road film that causes a reduction in sign retroreflectivity.

3. All signs shall be mounted in compliance with the requirements of the MUTCD.

4. All signs not consistent with the use of the roadway shall be removed, completely covered, or turned away from traffic each day. In no case shall signs or their portable supports be left in the traveled way when the traffic management set-up has been removed.

5. Rollup signs shall only be used for single work shift setups.

B. Temporary Pavement Markings

1. The Contractor shall install all necessary temporary pavement markings prior to opening the roadway to traffic following the completion of each day's operations. The Contractor shall make all necessary arrangements for this work beforehand so that it may be properly coordinated with construction operations. Temporary pavement markers shall be installed in accordance with the requirements of the MUTCD.

C. Arrow Board

1. The arrow board shall be deployed as shown on the approved Traffic Management Plan or as directed. The unit shall be properly maintained throughout its use on the project.

D. Reflectorized Drums

1. Reflectorized drums are to be used as channeling devices in roadway work zones. The first five drums used for any taper or as designated on the Traffic Management Plan shall be equipped with flashing lights.

E. Temporary Barrier

1. The Temporary Barrier shall be installed where needed to provide protection of work zone and as directed by the Owner and/or Engineer in accordance with these provisions.

2. Each run of temporary barrier units shall be fastened together to form a continuous chain.

3. Temporary impact attenuators with delineation shall be installed at ends of barriers within 30 feet of the travelled way. The Contractor shall not leave a barrier leading-end unprotected.

4. Delineators shall be installed in conformance with manufacturer's

recommendations on the barriers at their termini; at 20-foot intervals on tangent sections; and 10 foot intervals on curved sections depending on radius as determined by the Owner and/or Engineer.

5. Delineators mounted on top of barriers separating opposing traffic shall have two sided amber reflectors delineating the left edge. Side mounted delineators shall have amber delineating the left edge, white delineating the right edge and have red as the back color. If mounted on the sides they shall be 6 inches below the top and on the side of traffic. Delineators shall be mounted at angles that provide maximum reflectorization.

6. Temporary Barriers shall be removed from existing locations, transported, and reset as needed in accordance with above requirements, as directed by the Owner and/or Engineer.

F. Temporary Restrained Barrier

1. The Contractor shall ensure that where the restrained barrier is to be pinned to the roadway, the pin holes are filled with a sand mortar mix upon removal of the barrier. If the barrier is to be restrained by setting it into the roadway in a planned slot, the roadway surface shall be restored by appropriate full depth HMA or Cement Concrete roadway reconstruction.

2. The Contractor shall ensure that the restrained barrier is required or directed by the Owner and/or Engineer to be bolted to the bridge deck, the deck reinforcement will not be damaged during the installation of the proposed barrier anchor bolts. Any damage to the deck reinforcement, which occurs during the course of the Contractor's operations, shall be repaired to the satisfaction of the Engineer at the Contractor's expense.

3. Impact or percussion drills are allowed if no distress occurs to the existing concrete. Their use is subject to the approval of the Owner and/or Engineer.

4. If core drilling, the holes may be cored using either a carbide or diamond bit. The diameter of the cored holes shall be in accordance with the recommendations of the resin manufacturer. If a diamond bit is used to core the holes in the proposed deck, a sandblast, high-pressure water blast, or other mechanical means must be used to properly roughen the inner surface of the holes. The type of abrasive surface roughening used shall be approved by the Owner and/or Engineer.

5. On the concrete deck all holes shall be blown clear of any debris prior to placement of resin. The Contractor shall have the approval of the

Engineer signifying that the holes are clean prior to placing the resin adhesive. The Contractor shall strictly follow the recommendations of the manufacturer for mixing and placing the adhesive material prior to the placement of the bolts. The Contractor shall not place adhesive material when the existing concrete temperature is below 40°F. Any excessive resin adhesive around the hole after placement of the bolt shall be struck off smooth while the resin adhesive is still workable.

6. The anchor bolt holes shall be repaired as needed by methods acceptable to the Engineer at no additional cost to Owner. Damage to the concrete-to-remain shall be repaired to a condition equal to or better than that prior to the beginning of these operations, at no additional cost to the Owner.

7. High strength bolts shall be installed through pockets formed in the barriers and bonded in holes drilled in either the existing or proposed concrete deck. The bolts shall be suitably coated to facilitate removal from the mating threads of the cured resin adhesive once the barriers are no longer needed. The process of removing the bolts shall cause no distress to the proposed deck concrete.

8. The bolt embedment length and resin adhesive shall be adequate to develop a minimum of 36 Kips of tension in the bolts. The embedment length shall not be less than 6½" in concrete and shall not extend below the bottom of the proposed deck.

9. Where the condition of the existing deck is unsuitable due to deterioration or insufficient embedment depth, bolts extending through the deck and fastened to an appropriately sized steel member which will provide the required pull strength may be used.

10. The details of the proposed bolted anchorage system and all installation and removal procedures shall be in accordance with the recommendations of the manufacturer, and shall be submitted to the Engineer for approval.

11. Field tests shall be performed to verify the effectiveness of the anchorage detail including the drilled hole diameter, embedment length, and the resin adhesive capacity. Two test bolts in both the existing concrete and the new concrete shall be installed and tested by the Contractor for pullout as required by the system manufacturer. If the desired strength is not achieved, the Contractor shall adjust the hole size, embedment length, bolt size, and/or adhesive material to meet this test requirement. Retesting as required by the Engineer shall be performed by the Contractor, at no additional cost to the Owner.

12. All testing shall be performed by the Contractor and is incidental to the work under this item. The method of applying the tension test

load to the bolts shall be in accordance with ASTM E488. The testing equipment used and the locations and details of the test bolts shall be submitted to the Engineer for approval. The Contractor shall perform this test as soon as possible in order to eliminate delays in construction due to the approval process. Bolts shall not be ordered until the embedment lengths have been approved.

13. The delineators shall be single units, with yellow or white lenses on both sides, placed 6" below the top and on the traffic side of the median barrier at 20' on center. The delineators shall be the type designed expressly for this type of attachment and may be made entirely of plastic.

14. Temporary impact attenuators with delineation shall be installed at ends of barriers within 30 feet of approaching traffic. The Contractor shall not leave a barrier leading end unprotected.

15. Temporary Barriers on Bridge shall be removed from existing locations and reset in accordance with above requirements, as directed by the Engineer.

G. Portable Breakaway Barricades Type III

1. The Contractor shall furnish, set up, move and remove Portable Breakaway Barricades Type III as required or directed by the Engineer. Portable Breakaway Barricades Type III shall be maintained in a good and serviceable condition throughout the project and shall be moved from place to place as required during construction and as directed by the Owner and/or Engineer.

H. Temporary Impact Attenuators

1. Excavation for temporary attenuator foundations and anchorage shall be made to the required depth and to a width that will permit the installation and bracing of forms where necessary. All soft and unsuitable material shall be replaced with compacted gravel borrow.

2. The temporary impact attenuator shall be installed in accordance with the manufacturers' specifications and recommendations. Copies of these specifications and recommendations shall be provided to the Owner and/or Engineer.

3. Temporary Impact Attenuators damaged by traffic shall be replaced by the Contractor within 24 hours or as directed by the Owner and/or Engineer.

4. Temporary Impact Attenuators Removed and Reset consists of removing temporary impact attenuators furnished above, relocating

and re-installing it at new locations in accordance with the specifications and recommendations of the manufacturer.

I. Truck-Mounted Attenuator

1. The truck-mounted attenuator shall be utilized as shown on the plans or as directed by the Owner and/or Engineer, at the proper orientation and height above the paved surface.

2. A damaged truck-mounted attenuator shall not be used. Any repairs to the attenuator shall be accompanied by a statement from the product manufacturer certifying the repairs that were performed. Any work that becomes delayed due to the lack of a properly functioning truck-mounted attenuator will not constitute justification for an extension of time.

J. Pavement Marking Removal

1. The existing pavement markings shall be removed to the fullest extent possible by an approved method. Pavement marking removal methods shall not cause damage to the pavement or cause drastic change in texture, which could be construed as delineation at night, and shall be approved by the Engineer. It is not permissible to paint over existing markings with black paint in lieu of removal. Approved methods include but are not limited to:

   a. High pressure air.

   b. High pressure water (cold weather use not permitted)

   c. Sand blasting,

   d. Mechanical devices such as grinders, sanders, scrapers, scarifiers and wire brushes.

2. Painting over a pavement marking line by use of asphaltic liquids or paints will not be permitted.

3. Conflicting pavement markings shall be removed before any change is made in the traffic pattern.

4. Material deposited on the pavement as a result of removing markings shall be removed as the work progresses. Accumulations of sand or other material, which might interfere with drainage or could constitute a hazard to traffic, will not be permitted.

5. Any damage to the pavement or surfacing caused by pavement marking removal shall be satisfactorily repaired by the Contractor at

no additional cost to the Owner.

6. Where the removal operation is being performed near a lane occupied by traffic, a vacuum attachment operating concurrently with the removal operation must be in use. All residue shall be removed immediately from the surface being treated.

7. Existing raised pavement markers shall be removed by a method approved by the Engineer. Any damage to the pavement or surfacing caused by pavement marking removal shall be repaired at no additional cost by methods acceptable to the Engineer. Voids in the pavement shall be filled with like materials with adhesive bonding to the substrate.

8. Following completion of construction, permanent pavement markings shall be installed to replace pre-construction makings to comply with MUTCD.

K. Temporary Fence

1. The Contractor shall install and maintain temporary construction fences at the location as directed by the Owner and/or Engineer.

2. Gates shall be fabricated using welded construction or heavy pressed steel or malleable corner fitting securely riveted. Gates shall be properly braced and diagonally trussed to eliminate any possible sagging. Hinges shall be of sufficient strength and design to permit easy and trouble free operation. All single swing gates shall be equipped with two H.O. hinges and one yoke latch per gate. All double swing gates shall be equipped with a positive type latching device with padlock fitting.

3. Installation of temporary fencing shall not deter or hinder access to existing or proposed fire hydrants. Maintain 3 feet diameter clear space around fire hydrants. Where fire hydrant is blocked by fencing, provide access gate markings with black paint in lieu of removal.

4. The Contractor shall replace fence due to construction accidents, vandalism and/or any other manner by the Contractor at no additional cost to the Owner.

END OF SECTION 01850