Town of Burlington, Massachusetts
July 22, 2016
Addendum #2 17C-631-0003

The following changes and additional information are hereby made part of the Contract Documents:

- Additional information including drawings

- Online bid documents have been changed from “unofficial” to “official” and the watermark “draft” has been removed.

- **Page 3: First bullet point:** “Sealed bids for CONTRACT will be received by Purchasing Analyst at 29 Center Street, 2nd Floor, Burlington, Massachusetts, 01803 until July 29, 2016 at 10:00AM and will be publicly opened and read out loud. The bids will be opened publicly in the small conference room across from the Town Administrator/Board of Selectmen’s office. The time will be determined based on the clock on the wall above the receptionist desk in the Town Administrator/Board of Selectmen’s office.

- General Bid Deadline is July 29, 2016 at 10:00 AM.
SECTION 101
CLEARING AND GRUBBING

DESCRIPTION

101.20 General.

This work shall consist of clearing, grubbing, cutting, removal and disposal of all vegetation and debris from areas either within or outside of the Right-of-Way as shown on the plans or designated by the Engineer. The work shall also include the preservation from injury or defacement of all vegetation and objects designated by the Engineer to remain.

CONSTRUCTION METHODS

101.60 General.

The burning of trees, brush, stumps, etc., will not be permitted. The Contractor shall provide other satisfactory methods of disposal without additional compensation.

The Contractor shall obtain written permission of the Engineer for use of storage areas within the Right-of-Way requiring clearing and grubbing or selective clearing and thinning. Any clearing for the Contractor's convenience shall be done at his own expense. All such areas shall be restored to a condition acceptable to the Engineer including necessary mulching, seeding, and planting without additional compensation.

The Engineer shall be provided with notarized copies of agreements between the Contractor and owners of land used as disposal or storage areas.

When fencing is installed outside normal clearing areas; every reasonable effort shall be made to preserve trees or shrubs whose removal is not essential to the installation of the fencing.

Acceptable material obtained on the project may be used to produce wood chip mulch. The Contractor shall use an approved chipper and 1/4 inch knife setting as described under Subsection M6.04.3. Wood Chip Mulch. Material obtained from Elm trees shall not be accepted for use.

Wood chips produced on the project from clearing and grubbing shall be stockpiled within the location and used where and as directed.

Except for materials used for making wood chip mulch, the Contractor shall make all arrangements and negotiations necessary for the satisfactory disposal of trees, shrubs, stumps, roots, dead wood and other litter, in areas outside the Right-of-Way and in such manner that no condition or accumulation of material shall be permitted to disfigure or mar the finished landscape.

101.61 Clearing and Grubbing.

The stumps of all trees, brush and major roots shall be grubbed and removed in all excavation areas and under all embankments where the original ground level is within 3 ½ feet of the subgrade or slope of embankments.

All trees, stumps, arid brush shall be cut off within 6 inches of the ground in embankment areas where the original ground level is more than 3 feet below the subgrade or slope of embankments.

Trees and shrubs that are specifically designated by the Engineer not to be cut, removed, destroyed or trimmed shall be saved from harm and injury.

All damage done to trees by the Contractor's operation and all branches of trees extending within the roadway shall be trimmed and painted where cut as directed to provide a 20-foot minimum vertical clearance including selective trimming of such trees as directed.
101.62 Selective Clearing and Thinning.

A. General.

The work under this item shall consist of the removal of hazardous growth and dead, dying or diseased plant material; the removal of groups and individual plants which interfere with the growth of more desirable types of trees and the clearing away of lesser growth that may obscure outstanding trees, tree groups, or scenic views.

Densely wooded areas shall be thinned to provide space for healthy growth by eliminating thinner, weaker trees and the reduction of number of varieties.

The Contractor's attention is called to the requirements for work under this item. The desired appearance to be attained in certain areas of heavy growth may require three or more operations. First, the obvious dead, dying and diseased trees and undergrowth shall be cut and cleared out of the area. This work includes removal of any previously fallen trees, branches, uprooted stumps and other debris as directed. Next, the area is to be thinned out, as directed, by removing the less desirable trees and brush which interfere with the growth of the better plant material. Finally, clear out lesser growth which may obscure outstanding trees, tree groups or scenic views.

Tree up-branching and shaping under this item will be restricted to trees which have limbs and branches restricting sight distance, extending over roadways, shoulders, rum outs, etc. Up-branching or trimming will be required to produce a 20-foot minimum vertical clearance over all locations described hereinbefore, and the removal of limbs and branches involved in this operation shall be accomplished as outlined hereafter.

B. Prosecution of Work

Quality of work must conform with accepted tree trimming practices.

All trimming and pruning shall conform to recognized tree surgery practices, and particular note should be made that painting with an approved tree dressing or paint, will be required on all cuts 2 inches or over in diameter.

The dressing or paint shall be applied no later than two days after the cuts are made.

Recognized tree surgery practices include among many others, the fact that all limbs and branches which require removal and all stubs regardless of age must be cut flush either to a union with the next larger sound limb or branch or flush to the trunk of the tree.

The cutting shall be performed by experienced woodsmen. Trained tree climbers are required for pruning of tall growth. Care shall be exercised by the Contractor to prevent injury to trees and shrubs designed to be preserved. Any injury to limbs, bark or roots of such plants shall be repaired by the Contractor, as directed, or the plants replaced without additional compensation for such repair or replacement.

C. Cutting and Treatment of Stumps and Stubble.

Standing trees, undesirable brush and existing stumps to be removed shall be cut flush with the ground and a 2" tolerance permitted and the resulting stumps or stubble then brushed or sprayed with a chemical spray material conforming to the requirements of M9.02.0 of Division III, Materials.

Application shall be by brush or spray so as to give complete coverage and wetting to the point of runoff. This application shall be completed within two days after the cutting.

As the specified chemical herbicide is harmful to desirable roadside growth, the Contractor shall apply the chemical in such a manner that damage will not occur either from the direct spray or from drift of the chemical to any desirable growth.

The Contractor shall use all necessary precautions to prevent injury to crops or damage to other desirable growth on private abutting property, as well as to those within the Right-of-Way, and shall assume full responsibility for any damage.

D. Disposal of Cuttings.

The Contractor may dispose of cut material by processing into a wood chip mulch as described in Subsection M6.04.3 and spreading uniformly throughout the cleared and thinned areas as directed by the Engineer.
101.63. Disposal of Trees

All trees to be cleared shall become the property of the Contractor, and the satisfactory disposal of the wood in such trees outside the Right-of-Way shall become his responsibility. The trees, including cuttings and slash shall be disposed after cutting as soon as practicable and in such a manner as not to detract from the appearance of the roadside. If the existing ground in the area is disturbed by any of the work or equipment, the Contractor shall rough grade and loam and seed if necessary the disturbed areas, if so directed, without additional compensation.

101.64. Disposal of Stumps and Brush.

After removal, all stumps including the major root system shall be disposed by the Contractor at his own responsibility outside the layout where the material will not cause obstructions to streams and will not detract from the appearance of the roadside.

101.65. Disposal of Dutch Elm Diseased Wood.

Dutch Elm diseased wood shall be disposed of in accordance with the provisions of General Law, Chapter 87, Section 5 and Chapter 132, Sections 8 and 11, as amended; and in accordance with any additional local regulations.

Where the work includes the removal of elm trees or the limbs of elm trees, such trees or limbs thereof shall be disposed of immediately after cutting or removal and in such a manner as to prevent the spread of Dutch Elm disease. This shall be accomplished by covering them with earth to a depth of at least 6 inches in areas outside the site location where the Contractor has arranged for disposal.

Where the work includes the removal and disposal of stumps of elm trees, such stumps shall be completely disposed of immediately after cutting in the manner specified above.

COMPENSATION

101.80 Method of Measurement.

Clearing and grubbing shall be measured by the horizontal plane area and will be the number of square yards within the limiting stations of the project and/or as designated by the Engineer and the outside limits of measurement shall extend to a point 5 feet beyond the top or bottoms of slopes, excluding existing roadway and shoulder surfaces, streams or bodies of water.

Areas outside of the limits specified above, when cleared and grubbed in connection with the construction of fences shall be computed on the basis of a ten foot width multiplied by the total length of fencing installed, and when done in connection with excavating ditches or trenches the width shall be limited to 5 feet beyond the outer edges of the excavation.

Measurement of selective clearing and thinning will be based on the actual number of acres which receive the required attention. Approximate locations will be shown on the plans or detail sheets and as designated in the field by the Engineer.

Only such trees as have a shortest diameter of at least 9 inches and less than 24 inches shall be included in the item of Trees Removed (Diameter Under 24 Inches). Only such trees as have a shortest diameter of 24 inches or more shall be included in the item of Trees Removed (Diameter 24 Inches and Over).

The item of Stumps Removed shall include the removal and satisfactory disposal of all tree stumps which remain in their original position and measure 9 inches or more in shortest diameter at the cutoff point, where the trees have been previously removed by others. A stump shall not be construed as a tree under these specifications unless the trunk extends over 6 feet above the average ground.
Trees or stumps to be removed which have the shortest diameter specified for payment will be measured in place by the following procedure:

Where the tree consists of a single trunk extending more than a 3 foot vertical height above the average natural ground line, the shortest diameter shall be measured at the 3 foot level above the average elevation of the original ground.

Any tree whose main trunk separates into multiple trunks or which has limbs or branches growing out from the main trunk below the 3 foot level defined hereinbefore shall have its shortest diameter measured at the lowest point on the main trunk where multiple growth or branching out begins.

The shortest diameter of a stump shall be measured at the cutoff except that where multiple growth begins below cutoff, the shortest diameter shall be measured at the main trunk where multiple growth begins.

Measurement for payment under the respective items shall be such that any individual growth to be classed as a tree stump shall be measured in a manner to limit payment to one single tree or stump at each particular location of the individual growth. When multiple trunks with a common root system are separated at ground level each separate trunk shall be considered as an individual growth under these specifications.

The quantity of trees or stumps to be paid for will be the number actually removed by the Contractor in the completed and accepted work as determined by count.

Wood chip mulch produced from Clearing and Grubbing will be measured by the cubic yard (truck load measure) at time of spreading.

### 101.81 Basis of Payment.

Clearing and Grubbing and Selective Clearing and Thinning will be paid for at the contract unit price per acre. When Clearing and Grubbing is not included in the Proposal as a payment item, payment for any such work will be included in the items of Earth Excavation or Borrow except as herein provided for the removal of trees and stumps.

The removal of trees, including the stumps thereof and required spray material will be paid for at the contract unit price each for the particular kind of work involved, as defined hereinbefore when a quantity is given in the Proposal under their respective items, otherwise this work will be paid for at the contract unit price for excavation or at the contract unit price per acre of Clearing and Grubbing or Selected Clearing and Thinning, whichever is applicable. The contract unit price shall include the cost of all arrangements and methods required to protect from harm all existing overhead or underground installations. The contract unit price for the respective items shall not include any trees or stumps removed from the area paid for under the item of Clearing and Grubbing or Selected Clearing and Thinning.

No payment shall be allowed for preparation and spreading of wood chip mulch used from areas included under Selective Clearing and Thinning. Wood chip mulch directed to be produced from Clearing and Grubbing shall be paid for complete in place at the contract unit price.

Only such trees or stumps as have a shortest diameter of 9 inches and over, measured as stipulated in Subsection 101.80 shall be included for payment.

### 101.82 Payment Items.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Description</th>
<th>Unit</th>
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<tbody>
<tr>
<td>101</td>
<td>Clearing and Grubbing</td>
<td>Acre</td>
</tr>
<tr>
<td>102</td>
<td>Selective Clearing and Thinning</td>
<td>Acre</td>
</tr>
<tr>
<td>103</td>
<td>Tree Removed (Diameter Under 24 Inches)</td>
<td>Each</td>
</tr>
<tr>
<td>104</td>
<td>Tree Removed (Diameter 24 Inches and Over)</td>
<td>Each</td>
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<tr>
<td>105</td>
<td>Stump Removed</td>
<td>Each</td>
</tr>
<tr>
<td>767.4</td>
<td>Wood Chip Mulch</td>
<td>Cubic Yard</td>
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</tbody>
</table>
SECTION 120
EXCAVATION

DESCRIPTION

120.20 General.

This work shall consist of excavation, disposal or compaction of all materials not being removed under some other item which is encountered within the limits of the Contract in accordance with the specifications and in close conformity with the lines, grades, thicknesses and cross sections shown on the plans or established by the Engineer. All excavation will be classified as "Earth Excavation", "Class A Rock Excavation", “Muck Excavation”, "Topsoil Excavated and Stacked", "Bituminous Concrete Excavation by Cold Planer", and "Unclassified Excavation", as hereafter described.

Materials from all classes of excavation which are unsuitable, and any surplus of suitable materials remaining after completing the formation of embankments, shoulders, approaches, widening of roadway or embankment slopes as directed or backfilling, will be known as waste and shall be disposed of by the Contractor outside the Right-of-Way at his responsibility and expense, unless otherwise directed. Waste material shall not be disposed of in the flood channel areas of any stream.

120.21 Earth Excavation.

Earth Excavation shall consist of all excavation not included as Class A Rock Excavation or excavation which is otherwise classified and paid for.

Unless otherwise provided for in the Contract, Earth Excavation shall also include as incidental to the general work the removal and disposal of abandoned junk cars, trash, signs, fences, guardrail, guide posts, bituminous concrete berms and debris of every nature.

120.60 Earth Excavation.

This work shall be performed in the manner specified in Subsection 120.60 and Subsection 170.60.

120.61 Class A Rock Excavation.

Class A Rock Excavation shall be performed in accordance with the requirements specified in Subsection 120.60, with the following additional requirements:

The Contractor shall prosecute his work so that all rock available for disposal in embankments shall be removed previous to the final embankment formation. Rock shall be partially or completely stripped of overburden, as directed, before removal operations are begun. Loose or shattered fragments of rock which maybe a hazard to traffic shall be removed from the slopes.

120.67 Unclassified Excavation.

This work shall consist of the excavation, removal and satisfactory disposal, in accordance with the relevant provisions of Section 120.60 of all materials listed under Section 120 necessary for the construction of the proposed work as shown on the Plans or as directed, except those materials for which payment is specified under other items of the Contract.
COMPENSATION

120.80 Method of Measurement.

All classes of excavation except topsoil will be measured in their original position by the cross section method except where such measurement is impracticable the volume shall be measured by such other methods as the Engineer may determine.

In any case, payments will be made only for excavation to lines and grades as indicated on the plans or as directed.
SECTION 170
GRADING

DESCRIPTION

170.20 General.

The shaping, trimming, compacting and finishing of the surface of the subgrade, the grading and finishing of all unpaved shoulders and slopes, and the preparation of all areas for topsoil, loam, riprap or slope paving as shown on the plans or as directed, shall be constructed in accordance with these specifications and in close conforming with the lines, grades and typical cross sections shown on the plans or established by the Engineer.

CONSTRUCTION METHODS

170.60 General.

All soft or spongy material below the subgrade shall be removed to a depth to be determined by the Engineer and backfilled with satisfactory material.

All material within a depth of 2 feet below the subgrade in embankment areas shall conform to the requirements of Subsection M1.02.0 for Special Borrow Material except that it shall contain no stone larger than 6 inches in its greatest dimension and shall be placed and compacted in layers not exceeding 8 inches in depth, compacted measurement.

In cut sections (excluding rock excavation) where existing soil within a depth of 2 feet below the subgrade, after testing, is found to comply with the requirements of Subsection M1.02.0 for Special Borrow Material, it shall not be excavated.

In cut sections (excluding rock excavation) where the existing soil within a depth of 2 feet below the subgrade, after testing for gradation requirements, is found to have greater than 14% material passing the #200 mesh, the material shall be excavated.

The replacing material shall conform to the requirements of Subsection M1.02.0 for Special Borrow Material, except that it shall contain no stone larger than 6 inches in its greatest dimension and shall be placed in layers not exceeding 8 inches in depth, compacted measurement.

In the areas described above where Special Borrow is to be used, the plane of the base upon which the material is to be placed shall be compacted and graded until the surface is smooth, without additional compensation. A tolerance of 1 inch above or below the proposed grade will be allowed, provided that this 1 inch above or below grade is not maintained for a distance longer than 50 feet and that the required crown is maintained.

170.61 Fine Grading and Compacting.

Before surfacing or sub-base is spread, the subgrade shall be shaped to a true surface conforming to the proposed cross section of the highway and compacted in accordance with the provisions of Subsections 150.60 and 150.62. All depressions and high spots shall be filled with suitable material or removed and such areas again compacted until the surface is smooth and satisfactorily compacted. A tolerance of 1/2 inch above or below the finished subgrade will be allowed provided that this 1/2 inch above or below grade is not maintained for a distance longer than 50 feet and that the required crown is maintained in the subgrade. Any portion of the subgrade which is not accessible to a roller shall be thoroughly compacted with the mechanical tampers or by other adequate methods approved as satisfactory by the Engineer.
COMPENSATION

170.80 Method of Measurement.

The grading and compaction of the subgrade will be measured by the horizontal square yard at the plane at the bottom of subgrade in all areas where a subgrade was placed.

Grading and finishing for the entire project will include all grading work not included under the item of Loam Borrow Rehandled.
SECTION 259

CRUSHED STONE FOR BLEEDERS

DESCRIPTION

259.20 General.

The work under this item consists of constructing foundation drains, using crushed stone filter material, in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

MATERIALS

259.40 General.

Crushed Stone shall comply with the provisions of Subsections M2.01.0 and M2.02.4.

CONSTRUCTION METHODS

259.60 General.

The trench for crushed stone bleeder shall be excavated to the specified line and grade. The width and the depth shall be as shown on the plans. The sides of the trench shall be vertical. Crushed stone shall be placed and rough graded after the Special Borrow has been placed but before the subbase or surface course, except as otherwise directed.

COMPENSATION

259.80 Method of Measurement.

Measurement of the above work shall be the quantity of Crushed Stone actually used. The weight slips shall be countersigned on delivery by the Engineer, and no weight slip not so countersigned shall be included for payment.

259.81 Basis of Payment.

Payment for the above work is included in the bid price for masonry wall to be rebuilt.
SECTION 644
CHAIN LINK FENCE AND GATES

DESCRIPTION

644.20 General.

This work shall consist of the construction of chain link fence and gates in accordance with these specifications, and in close conformity with the lines and grades shown on the plan or established by the Engineer. Chain link fence shall be either Type 1 Zinc-Coated Steel or Type 2 Aluminum-Coated Steel.

MATERIALS

644.40 General.

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:
- Chain Link Fences and Gates M8.09.0
- Bonded Vinyl Coated Chain Link Fences, Posts, Rails, Fabric, Gates and Accessories M8.09.2
- 4000 psi, 1 1/2 ", 565 Cement Concrete Bases M4.02.00
- Paint, High Zinc Dust Content -Galvanizing Repair M7.04.11

CONSTRUCTION METHODS

644.60 General.

The posts shall be set true to the line and grade of the proposed fence.
End, Corner and Intermediate Brace Posts shall be set in concrete bases as shown in the Construction Standards.
The posts in masonry walls shall be set in pipe sleeves or sockets.
All line posts, except those which are unstable due to soil condition as described hereinafter, shall have drive anchor assemblies as shown in the Construction Standards.
Line Posts, which in the opinion of the Engineer are unstable due to soil condition, (such as in swamps or seasonal wet areas) shall be placed in a concrete base as shown in the Construction Standards.
Where solid rock is encountered without an overburden of soil, line posts shall be set a minimum depth of 8 inches, and end, corner, gate and intermediate posts a minimum of 12 inches in the solid rock. The hole shall have a minimum width or diameter of one inch greater than the largest dimension of the post section to be set. The posts shall be cut, before installation to lengths which will give the required length of post above ground, or if the Contractor so elects he may use an even length of post set at greater depth into the solid rock.
After the post is set and plumbed the hole shall be filled with grout consisting of one part Portland cement and one part clean, well graded sand. The grout shall be thoroughly worked into the hole so as to leave no voids. Where posts are set in the above manner, concrete footings will not be required.
Where solid rock is covered by an overburden of soil or loose rock, the posts shall be set to the full depth shown on the standard drawing unless the penetration into solid rock reaches the minimum depths specified above, in which case the depth of penetration may be terminated. Concrete footings shall be constructed from the solid rock to the top of the ground as designated. Grouting will be required on the portion of the posts in solid rock.

Intermediate Brace Posts as used in these specifications, shall be spaced at 500-foot maximum intervals.

Gate, end, corner, and intermediate brace posts shall be braced as shown on the standard drawing. Changes in line of 30 degrees or more shall be considered as corners.

644.61 Foundation Bases.

Forms for placing concrete bases will not be required. Chamfer or bevel edges will not be required.

Where chain link fences are used to enclose Engineers field office and material buildings, the posts shall be set in ground without concrete bases to facilitate ease in removal later.

644.62 Top Rail.

Top rails shall pass through the ornamental tops of line posts, forming a continuous brace from end to end of each stretch of fence. Lengths of top rail shall be jointed by sleeve type couplings. Top rails shall be securely fastened to terminal posts by pressed steel fittings.

On curves with a radius of less than 500 feet the top rail shall be bent true to the curve.

644.63 Top Tension cable.

Top tension cable shall pass through the ornamental top of the line posts. One continuous length of cable shall be used between pull posts. The cable shall pass through the pull post top and down to the base of the next line post where it shall be attached to the base of line post with a turnbuckle. Sufficient tension shall be applied to the cable to allow a maximum sag of 1/4 inch between posts after the chain link mesh has been attached to the cable. The Contractor shall provide temporary bracing on intermediate brace posts when applying tension to one length of cable at a time, to prevent undue stresses in the intermediate brace post.

After tension has been applied to the cables, a wire rope clip shall be placed around both cables one on each side of the intermediate brace posts, and the clips securely tightened. Clips shall be placed as close to the posts as possible to minimize the deflection of the post if one of the cables should be parted.

The cable shall be fastened to the top of the end intermediate brace post with an eye bolt through the post and a turn-buckle connecting the eye bolt to the cable. The end intermediate post shall be braced to the bottom of the end post with a short length of cable attached. A length of cable shall connect the end intermediate brace post and the end post at the top.

Eye bolts shall have a shoulder on the eye end and shall be provided with a nut and lock washer. Where the eye bolt is to be installed through a pipe section, 2 lead washers shall be placed against the shoulder of the eye, and a lead washer backed and the nut tightened sufficiently to seal the hole in the pipe.

A galvanized iron strap 1/4 inch in thickness by 2 inches in width, formed as shown on the standard drawing, shall be provided for the attachment of eye bolts to the base of "H" column post in order to take the strain of the cable tension off the web of the "H" column.

All holes drilled in steel post sections shall be cleaned and painted before the eye bolts are installed with coats of paint, High Zinc Dust Content- Galvanizing Repair (M7.04.11).

The ends of all cables shall be seized with annealed iron wire passed around the end of cable and the line cable. The seizing shall be at least 1 inch in width.
644.64 Spring Tension Wire.

Spring tension wires shall be placed ten inches (10") from the top and bottom of the line posts, corner posts, end posts and intermediate brace posts. The spring tension wire shall be fastened to each line post with No. 6 gauge steel clip.

The wires shall be fastened to end posts, corner posts and intermediate brace posts with an end band and minimum of five (5) turns around the spring tension wire to end the installation. One continuous length of spring tension wire shall be used between intermediate brace posts (500').

Sufficient tension shall be applied to create a tension in the spring tension wire so that no sag is visible. On completion of the installation the spring tension wire shall be attached to the fence fabric with hog rings of No. 11 gauge placed every twelve (12) inches ± top and bottom.

644.65 Fence Fabric.

Chain link fabric over 5 foot fence shall be placed on the face of the post away from the highway, and or fence 5 feet or less, erect fabric on the face of the posts designated by the Engineer, except that on curves the fabric on all types of fence shall be placed on the face of the post which is on the outside of the curve.

The chain link fabric shall be placed approximately 2 inches above the ground and on a straight grade between posts.

The fabric shall be stretched taut and securely fastened to the posts. Stretching by motor vehicle will not be permitted. Fastening to end, gate, corner, and intermediate brace posts shall be with stretcher bars and fabric bands spaced at one foot intervals. The fabric shall be cut and each span attached independently at all intermediate brace and corner posts. Fastening to post, top rail, top tension cable or spring tension wire shall be with wire, metal bands, hog rings, or by other approved method.

Rolls of wire fabric shall be joined by weaving a single strand into the ends of the rolls to form a continuous mesh.

644.66 Gates.

Chain link fabric shall be fastened to the end bars of the gate frame by stretcher bars and fabric bands, and to the top and bottom bars of the gate frames by tie wires in the same manner as specified for the chain link fence fabric; or by other standard methods if approved by the Engineer.

The height of the gate frame shall be approximately as follows:

6’ Fence 5’6”  4’ Fence 3’6”
5’ Fence 4’6”  3’ Fence 2’6”

COMPENSATION

644.80 Method of Measurement.

Chain link fence will be measured, approximately parallel to the ground by the linear foot of completed fence, exclusive of openings from outside of to outside of end posts.

Gates with gate posts will be measured between centers of the gate posts.

644.81 Basis of Payment.

Chain Link Fence will be paid for at the contract unit price per linear foot, complete in place, except for rock
excavation, which shall include all drive anchors, line posts, fabric, top rail, cable or wire, fasteners, clips and all material and equipment necessary to complete the work in a satisfactory manner. Allowance for rock excavation will be as specified under Class B Rock Excavation.

Gates with Gate Posts will be paid for at the contract unit price per linear foot of the height specified and the respective widths shown on the plans complete in place. Allowance for rock excavation will be made as specified under Class B Rock Excavation.

End post including brace will be paid for at the contract unit price each under item for Chain Link Fence End Post, complete in place. Corner and intermediate brace post will be paid for at the contract unit price each for Chain Link Fence Corner and Intermediate Brace Post, complete in place. The chain link fence posts shall be of the type used throughout the installation.

Concrete bases for line posts, if required, shall be paid for under Item 901.3 4000 psi, 1 1/2", 565 Cement Concrete Masonry for Post Foundation, which shall include the excavation, except rock excavation, which shall be paid under Class B Rock Excavation.

644.82 Payment Items.

The 18 foot high chain link fence to be paid for complete in place including all posts, fittings and fence per linear foot.
SECTION 665
FENCES AND GATES REMOVED AND
RESET: REMOVED AND STACKED

DESCRIPTION

665.20 General.
This work shall consist of removing present fences and gates and resetting or stacking them in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer.

MATERIALS

665.40 General.
The materials removed shall be utilized in the fence and gates for resetting except, where necessary, new posts and bases shall be furnished by the Contractor. Any materials missing, damaged or lost during or subsequent to removal shall be replaced by the Contractor without additional compensation.
All new materials required shall be equal in quality and design to the materials in the present fence or gates.

CONSTRUCTION METHODS

665.60 Removal.
The present fences and gates together with all appurtenances shall be carefully removed and satisfactorily stored and protected until required for resetting. Old postholes shall be backfilled with suitable material properly compacted.

665.61 Erection.
Fences shall be reset plumb on the new line and grade as required and shall conform to the original fence or as the Engineer directs. Backfilling around the posts shall consist of suitable material satisfactorily compacted. If the fence posts were originally set in concrete bases they shall be reset in their new locations in concrete bases, conforming to M4.02.00 for 4000 psi, 1 1/2", 565 Cement Concrete.
If repainting of fences which have been painted originally is required, such work shall be done as directed. Gates shall be reset where and as directed. Painting, if required, shall be done as directed.

665.62 Stacking.
The fencing, posts, braces and gates shall be carefully removed from their present locations, transported and stacked neatly on wooden planks at the locations directed on the project, to be available and convenient or final removal from the project by the owner.
The Contractor will be held responsible for the fencing, posts, braces and gates, and any damage to same prior to final removal from the project, but the Contractor's responsibility will cease upon final
acceptance, of the work, or 60 days from the time a certified notice (with copy to the Engineer) is sent by Contractor to owner of material that all material is available for removal.

COMPENSATION

665.80 Method of Measurement.

The measurement of Fences Removed and Reset, shall be made in the final position from outside to outside of end posts or top rail whichever is the greater. Any remaining fence not required to be stacked shall become the property of the Contractor and shall be removed from the work without additional compensation.

Fences Removed and Stacked will be measured in its original position and the quantity to be paid for will be the length actually removed and stacked, including wooden gates.

Gates with gate posts removed and reset, complete in place, will be considered as a unit.

Chain Link Gates with gate posts removed and stacked will be considered as a unit.

665.81 Basis of Payment

Removing and resetting fences will be paid for at the contract unit price per linear foot of Fences Removed and Reset, complete in their final positions.

Removal and resetting of gates with gate posts will be paid for at the contract unit price each under the respective item.

Removing and stacking fencing will be paid for at the contract unit price per linear foot of fences removed and stacked.

Removing and stacking of chain link gates with gate posts will be paid for under the item for Chain Link gates (*inch) with Gate Posts Removed and Stacked.

Allowance for rock, if not already paid for under previous rock excavation, shall be made in accordance with the provisions as stipulated under Class B Rock Excavation.

665.82 Payment Items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>665.</td>
<td>Fence Removed and Reset</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>666.</td>
<td>Inch Chain Link Fence. Removed and Reset</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>*667.</td>
<td>In. Chain Link Fence Gate with Gate Posts Removed and Reset</td>
<td>Each</td>
</tr>
<tr>
<td>668.</td>
<td>Iron Fence Removed and Reset</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>669.</td>
<td>Stock Fence Gate Removed and Reset</td>
<td>Each</td>
</tr>
<tr>
<td>670.</td>
<td>Wood Gate Removed and Reset</td>
<td>Each</td>
</tr>
<tr>
<td>671.</td>
<td>Fence Removed and Stacked</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>*672.</td>
<td>In. Chain Link Fence Removed and Stacked</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>*673.</td>
<td>In. Chain Link Gate with Gate Posts Removed and Stacked</td>
<td>Each</td>
</tr>
<tr>
<td>144.</td>
<td>Class B Rock Excavation</td>
<td>Cubic Yard</td>
</tr>
</tbody>
</table>

*Height to be inserted.
SECTION 690
WALLS REMOVED AND REBUILT

DESCRIPTION

690.20 General

This work shall consist of the removing and rebuilding of present stone masonry and balance stone walls in accordance with these specifications, and in close conformity with the lines and grades shown on the plans or established by the Engineer.

MATERIALS

690.40 General.

The stone shall consist of those in the present wall and its foundation and such new stones as may be required. Mortar shall meet the requirement of Subsection M4.02.15 of Division III, Materials.

CONSTRUCTION METHODS

690.60 Stone Masonry Walls.

A. Laying Stone in Mortar.

All the stones from the present walls to be rebuilt, shall be removed and used to rebuild the new walls in addition to furnishing such new stones as may be necessary to provide rebuilt walls of uniform appearance and cross sectional dimensions throughout their length.

The stones shall be laid so as to break joints and in full mortar beds. All vertical spaces shall be flushed with cement mortar and shall be packed full with spalls. No spalls shall be allowed in the beds-except if the bed requires more than 1 inch of mortar. At least 1/4 of the stones in the face shall be headers evenly distributed throughout the walls. Weep holes shall be constructed as directed.

B. Laying Stone Dry.

The stone shall be laid so as to break joints and all vertical spaces shall be packed full with spalls. No spalls shall be allowed in the beds and at least 1/4 of the stones in the face shall be headers evenly distributed throughout the wall.

690.61 Balance Stone Walls.

A trench for rebuilding the balance stone walls shall be excavated to a minimum depth of 12 inches as directed and to a width sufficient to place the largest bottom stones of the present wall.

All the stones from the present walls to be rebuilt, shall be removed and used to rebuild the new wall in addition to furnishing such new stones as may be necessary to provide rebuilt walls of uniform appearances and cross sectional dimensions throughout their length. The open spaces about the base of the wall shall be filled with the materials excavated from the trench and all surplus excavation shall be used as directed on the slopes of the new embankment.
COMPENSATION

690.80 Method of Measurement.
Stone Masonry Walls, Removed and Rebuilt as specified herein including precast concrete cap will be measured by the cubic yard and the pay quantity shall be only that quantity of masonry wall actually laid and approved.

690.81 Basis of Payment.

All classes of excavation will be paid for at the contract unit price per yard of the particular type of excavation as defined.

In Contracts where ordinary borrow is required, excavated material taken by the Contractor with the prior written permission of the Engineer, and used on the project for purposes other than for forming embankments will be paid for at the contract price for the purpose of which it is used, in addition to the payment to be made for excavation, provided that any additional filling material made necessary by such use shall be replaced except Bituminous Concrete excavated by Cold Planner.

The amount of borrow to be replaced shall be as follows:
1. If Class A Rock Excavation is used in revetment, the revetment shall be measured in its final position, and this computed quantity shall be divided by 1.20 and the resulting quantity shall be the amount of borrow to be replaced.
2. If Earth Excavation is unused for gravel borrow, special borrow, etc., the amount of gravel borrow, special borrow, etc., as computed (including any percentage added to in place measurement) shall be the amount of borrow to be replaced.

Payment shall be made only for the purpose the borrow was used until such time as replacement borrow is supplied, at which time an equal volume of excavation will be paid for.

690.81 Payment Items.

690. Stone Masonry Wall Removed and Rebuilt in Cement Motor Cubic Yards
691. Balance Stone Wall Removed and Rebuilt Linear Foot
SECTION 751
LOAM BORROW AND TOPSOIL
REHANDLE AND SPREAD

DESCRIPTION

751.20 General.

The work under this item consists of furnishing and placing loam and related items on an approved area in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Engineer. The work includes the placing, spreading and grading of loam borrow for seeded and planted areas, preparation of soil for plant material, amendment of loam as required to produce planting soil mix, and provision of soil additives required to adjust for pH requirements of specific plants.

MATERIALS

751.40 General.

Material shall meet the requirements specified in the following Subsections of Division III, Materials:

- Loam Borrow M1.05.0
- Topsoil M1.07.0
- Organic Soil Additives M1.06.0
- Inorganic Amendments M6.01.0

Samples and Submittals

At least 30 days prior to ordering, the Contractor shall submit to the Engineer representative samples, certifications, and certified test results for materials as specified below. No materials shall be delivered until the required submittals have been reviewed and approved by the Engineer. Delivered materials shall closely match the approved samples. Approval of test results does not constitute final acceptance. The Engineer reserves the right to reject on or after delivery any material which does not meet the Specifications.

Soil Additives for Loam

Additives shall be used to counteract soil deficiencies as recommended by the soil analysis. Organic matter used as an amendment to soil shall be manufactured compost. Lime or sulfur shall be used to bring soil to acceptable pH levels, per soil test reports. For soils with more than 20 percent passing the No. 200 sieve (75 µm), gypsum shall be added at a rate of 3.2 pounds per cubic foot (5kg/m³).

Soil amendments shall be incorporated thoroughly into loam to meet the specified requirements for loam prior to delivering the material on site.

CONSTRUCTION METHODS

751.60 Preparation of Areas on which Loam or Topsoil are to be Placed.

All areas to receive loam shall be free of construction debris, refuse, compressible or decayable materials and standing water. The area upon which the above materials are to be placed shall be raked, harrowed or dragged to form a smooth surface. All stones, undesirable growth and debris larger than 2 inches (50 mm) in diameter shall be removed from the area and disposed of by the Contractor outside the location.

When directed by the Engineer, additional suitable material available from excavation or furnished under
Item 150, Ordinary Borrow, shall be spread as required to repair gullies or depressions. The labor, equipment and materials necessary to place, compact and grade the additional material shall be paid for under the respective item from which the material is obtained.

751.61 Placing Loam or Topsoil.

The Contractor shall notify the Engineer when areas to receive loam are ready for inspection and approval. Placement of loam fill material shall not begin until the Engineer has approved the subgrade.

Loam shall not be handled or placed when the subgrade or the loam is frozen or saturated, i.e. when squeezed sample shows any sign of free moisture.

The Engineer shall approve the use of the Contractor's equipment. Any equipment or procedures that are likely to damage or over-compact underlying structure or materials shall be rejected.

Loam shall be placed in lifts not to exceed 4 inches (100 mm). After each lift, the soil shall be thoroughly mixed into the soil layer beneath it. Compaction of each lift shall be minimal, sufficient only to achieve the required grades. Over-compaction of existing soils or fills that would be detrimental to planting objectives shall be corrected by tilling or other means at no additional cost.

Grade stakes shall be set to check finished grades. Deviation from lines and grades that are greater than 1 inch (25 mm) shall not be permitted.

The Contractor shall supply additional loam as necessary so that following finish the grading and compaction operations, the placed loam shall conform to the depth required.

Finish grades shall exhibit no abrupt changes, and shall blend in evenly with the undisturbed grade of the ground at the limits of work.

During hauling operations, the roadway surfaces shall be kept clean and any loam or other dirt which may be brought upon the surface shall be removed promptly and thoroughly before it becomes compacted by traffic. If necessary, the wheels of all vehicles used for hauling shall be cleaned frequently and kept clean to avoid bringing any dirt upon the surface. The Contractor shall take all reasonable precautions to avoid injury to existing or planted growth.

751.62 Topsoil Rehandled and Spread.

Topsoil which is obtained on the site from piles of topsoil previously excavated and stacked in accordance with the relevant provisions of Section 120 and designated as topsoil to be rehandled and spread shall be used as required, and as directed by the Engineer, on areas to be seeded or planted.

The topsoil must meet the requirements of M1.07.0 and be approved before it is spread. The Contractor will be required, without additional compensation, to take corrective action as directed, in order to make the topsoil suitable for its intended use.

The Contractor is required under the item of seeding to adjust the acidity by the addition of limestone as determined by testing as required under Subsection 765.61 and to apply the fertilizer as required under Subsection 765.62.

COMPENSATION

751.80 Method of Measurement.

The quantity of Loam Borrow, or Topsoil Rehandled and Spread shall be determined by measurement in place after compaction to the depth specified on the plans or as directed, and to the volume so ascertained there shall be added 20% to compensate for such loss as may be due to settlement, shrinkage and penetration into the underlying
material.

The volume of Topsoil Rehandled and Spread including added percentage for settlement shall not exceed the total volume of Item 125, Topsoil Excavated and Stacked, less any waste.

751.81 **Basis of Payment.**

Loam Borrow and Topsoil Rehandled and Spread will be paid for at the contract unit price per square yard, complete in place, which prices shall include all testing, analysis and the grading of areas where stockpiles of topsoil are removed.
SECTION 850
TRAFFIC CONTROLS
FOR CONSTRUCTION AND
MAINTENANCE OPERATIONS

DESCRIPTION

850.20 General.

Work under this Section consists of furnishing, installing and maintaining in proper operating condition various traffic control devices for the protection of the traveling public and working personnel during construction and maintenance operations. The design, application, and installation of all devices shall conform to MassDOT's "Standard Details and Drawings for the Development of Temporary Traffic Control Plans" and the "Manual on Uniform Traffic Control Devices" latest edition, Part VI, hereinafter referred to as MUTCD, and/or as directed.

The Contractor shall be responsible for the installation of adequate safety precautions for the protection of the traveling public and all project personnel.

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.

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.

All work under this Section shall conform to the approved Temporary Traffic Control Plan.

850.22 Traffic Cones for Traffic Management.

Traffic Cones for Traffic Management consists of furnishing, positioning, repositioning, maintaining and removing, as needed and/or as directed, traffic cones and necessary ballast for the purpose of closing a lane, shifting traffic, channelizing, or otherwise re-directing traffic.

850.23 Safety Signing for Traffic Management.

Safety Signing for Traffic Management consists 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.

Signs over 50 square feet (5 m²) will require approval of design calculations and shop drawings of the breakaway support system if the signs are installed at an unprotected location.

850.42 Traffic Cones for Traffic Management.

Traffic cones shall meet the requirements of M9.30.11.

850.43 Safety Signing for Traffic Management.

Rigid signs shall be fabricated from plywood, aluminum or approved alternate substrate material.
Plywood sign material shall be 5/8 inch Exterior MOO- General (one sided).
Aluminum sign material shall be Type A, 0.080 inch thick, as specified in Subsection 828.42. The entire sign face shall be retro-reflectorized. Reflective sheeting shall conform to M9.30.0.
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

MATERIALS

850.40 General.

Devices required under this Section need not be new but must be in first class condition and acceptable to the 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 Engineer, are unsatisfactory in appearance and/or performance shall be removed and immediately replaced by acceptable devices.

850.46 Reflectorized Drums.

Reflectorized drums shall conform to Subsection M9.30.9. Warning lights shall conform to the MUTCD Type A. All drums shall be maintained in a satisfactory manner including the removal of dirt and road film that causes a reduction in sheeting retroreflective efficiency.

COMPENSATION

850.80 Method of Measurement.

Construction Vehicle Warning Devices and Personal Protective Safety Equipment shall be incidental to the work of the Contract and shall not be measured for payment.

850.62 Traffic Cones for Traffic Management.

Traffic Cones shall be in good condition and sufficiently ballasted as determined by the Engineer. Any cones damaged by traffic shall be immediately replaced. The Contractor shall keep an adequate supply of spare cones on hand to replace any damaged cones.

The Contractor shall take steps to prevent cones from being blown over or displaced by wind or moving vehicular traffic. Cones shall not be left in position or on the highway when the construction operations have ceased. If it becomes necessary for the Department to remove any cones from the project due to negligence by the Contractor, all costs for this work will be charged to the Contractor.
<table>
<thead>
<tr>
<th>Item of Work</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Excavate existing pavers and bench from dugout. Stockpile pavers for reuse after wall has been repaired and drainage installed.</td>
<td>SY</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Excavate existing masonry stone wall and save for rebuilding (including removal of excess material from site) Limit of masonry wall depth to be removed will depend upon Engineer review of existing base wall section.</td>
<td>CY</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Excavate 40 of masonry wall and re-grade at a 3:1 slope (section noted on drawing)</td>
<td>CY</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Existing 6 foot chain-link fence to be removed and reset. (Includes any and all materials needed to relocate)</td>
<td>LF</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Removal and disposal of 18 foot high chain link fence fabric.</td>
<td>LF</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Proposed new 18 foot chain-link fence. (Includes any and all materials needed to install new fence complete in place including any end posts and bracing needed)</td>
<td>LF</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Masonry Wall to be rebuilt complete in place. (Includes 4 inch weep holes 10 feet on center, crushed stone behind wall and under base with filter fabric and precast concrete curb cap as noted on the wall detail).</td>
<td>CY</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Masonry wall to be built around tree, leaving two feet between tree and wall</td>
<td>CY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Loam Borrow Rehandled and Spread (Includes seeding all exposed areas)</td>
<td>SY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Base wall 6 Inch SDR 35 PVC under drain connection to existing drain complete in place. (Includes all patching, tree and lawn repair)</td>
<td>LS</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Traffic Control for Construction.</td>
<td>EA</td>
<td>2 days</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Updated 7/22/16
NOTES:
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS TO CURB, SIDEWALK, STREET AND LAWN AREAS.
2. SUBMITTALS FOR ALL FENCE REPLACEMENT TO BE PROVIDED AND APPROVED PRIOR TO INSTALLATION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS, SIZES AND ELEVATIONS OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DESIGN AND THE APPROPRIATE REMEDIAL ACTION PRIOR TO PROCEEDING WITH THE WORK. DIG SAFE PHONE NUMBER: 811 OR (888) DIG-SAFE.
4. EXISTING TOPOGRAPHY SHOWN ON THIS PLAN IS FROM AN ACTUAL FIELD SURVEY PERFORMED BY HAYES ENGINEERING, INC. DURING IN JANUARY AND MARCH OF 2013.

LEGEND:
- Masonry stone wall to be removed
- Section to be regarded at 3:1 slope
- Chain link fence
- Dugout with pavers

TO BEDFORD ST