

# **TOWN OF BELMONT STANDARD SPECIFICATIONS**



**Town of Belmont, MA  
Prepared by  
Office of Community Development  
Department of Public Works  
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## 1. DEFINITIONS

- Contractor or Person** - shall mean any person, firm partnership, association, corporation, company, or organization of any kind.
- 2.3 Controlled Density Fill (CDF)** – shall meet Massachusetts Highway Department Standard Specifications for Highway and Bridges M4.080 Type 2E, also called flowable fill, and is a mixture of Portland cement, fly ash, sand, water and is hand-tool excavatable.
- 2.4 Curb Cut** – shall mean that portion of the gutter, curb, tree lawn and sidewalk over which vehicular or pedestrian access is allowed to the public way.
- 2.5 Department of Public Works (DPW)** - shall mean the Belmont Department of Public Works
- 2.6 Director of Community Development** - shall mean the Belmont Director of Community Development or his/her designee
- 2.7 Director of Public Works** - shall mean the Belmont Director of Public Works or his/her designee
- 2.8 Dig Safe** – shall mean as defined in Massachusetts Chapter 82 Section 40 through 40 E, inclusive.
- 2.9 Emergency** - shall mean a condition in which the safety of the public is in imminent danger, such as a threat to injury, health, life, property damage or where immediate correction is required to maintain or restore essential public utility service.
- 2.10 Excavation** - shall mean any opening in the surface of a public way made in any manner whatsoever, except an opening in a lawful structure below the surface of a public way, the top of which is flush with the adjoining surface and so constructed as to permit frequent opening without injury or damage to the public way.
- 2.11 Facility** - shall mean any pipe, pipeline tub, main, conduit, tunnel, duct, buried cable or wire, service, service box, trap, vent, manhole, vault, handhole, cleanout, meter, gauge, regulator, valve, riser box, conduit, wire, tower, pole, pole line, anchor, guy wire, cable, junction box, or any other material, structure, similar structures or object of any kind or character, whether enumerated herein or not, which is or may be lawfully constructed, left, placed or maintained in, upon, along, across, under, or over any public way.

- 2.12 MASS DOT** – shall mean the Massachusetts Department of Transportation
- 2.14 MUTCD** – shall mean the United States Department of Transportation, Federal Highway Administration, Manual for Uniform Traffic Control Devices
- 2.17 Office of Community Development (OCD)** – shall mean the Belmont Office of Community Development
- 2.20 Public Shade Tree** – shall be as defined by Massachusetts General Law Chapter 87 Section 1
- 2.21 Public Way** - shall mean any public right of way, street, sidewalk, place, island, delta, square, plaza or any other similar public property owned or controlled by the Town and dedicated to public use.
- 2.22 Town** - shall mean the Town of Belmont, MA
- 2.23 Tree Lawn** – The portion of the public way between private property or the paved sidewalk and the roadway gutter
- 2.25 Belmont Standard Specifications** – shall mean the latest edition of the Town of Belmont Standard Specifications
- 2.26 Tree Warden** – shall mean the Town of Belmont Tree Warden or his/her designee
- 2.27 Utility** – shall mean any corporation, partnership or other organization or any individual engaged in any business which is, or the persons engaged in which are, in any respect made subject to the supervision or regulation by the Department of Public Utilities and the Department of Telecommunications and Cable. For the purposes of these regulations, a Utility shall also mean any person or entity engaged by or on behalf of a Utility to perform a street opening work.

## **SPECIFICATIONS**

In the event that a work method or material is not specified in the Belmont Standard Specifications, the Mass DOT Standard Specifications for Highway Bridges shall govern.

The Town reserves the right to determine the quality and acceptability of materials furnished and/or the means and methods of work performed. The Town also

reserves the right to deviate from these specifications as necessary to obtain the best possible final project result in the opinion of the Town.

## **TRENCH BACKFILLING SPECIFICATIONS**

### **Backfill and Compaction**

In restoring the public ways, the contractor or utility shall utilize approved backfill material compacted to achieve soil density values of 95% modified Proctor density (as described in AASHTO T180), which may include, as the conditions warrant, the required use of Controlled Density Fill ("CDF"). Water jetting of the trench area is prohibited.

The CDF shall flow under and around the pipe, conduit, facility or bedding material providing uniform support without leaving voids. CDF shall be discharged from the mixer by a reasonable means into the trench area to be filled. Filling operations shall proceed simultaneously on both sides of the pipe, conduit or facility so that the two fills are kept at approximately the same elevation at all times. An external load shall be applied to the pipe or conduit, sufficient to hold it in place before filling.

The trench in all cases shall be filled to the bottom of the existing pavement to provide space for the pavement restoration.

CDF shall be utilized for those excavations where compaction cannot be readily accomplished with normal compaction or if the roadway pavement is less than five (5) years old.

The following subsections provide general guidelines and criteria to determine whether a soil is suitable as backfill for excavations in the public way. They prescribe proper procedures for backfilling and compaction to achieve soil density values of 95% modified Proctor density. The ultimate objective is to obtain a finished road surface repair which will undergo settlements only within acceptable performance limits as defined within these standards for the functional life of the existing road. The guidelines are based on good engineering practice and testing of both materials and equipment. Compliance with these standards will insure satisfactory compaction. These standards are to be used in the field when there is an absence of sieve analysis of materials, Proctor values of the soils and the corresponding inability to utilize a nuclear density gauge or sand cone field density test. The Town reserves the right to require the contractor or utility, at their expense, to utilize other accepted testing methods to verify compaction. In the event of test failure the contractor or utility shall be responsible for re-compacting the excavation to meet the required standards.

### **Suitability of Backfill Material**

Suitable backfill material shall be free of stones larger than half the size of the compacted lift as provided for in Mass DOT Standard Specifications for Highway Bridges, construction debris, trash, frozen soil and other foreign material.

It consists of the following:

- a. Well graded gravel and sand;
- b. Poorly graded gravel and sand;
- c. Gravel-sand mixtures with a small amount of silt;
- d. Gravel-sand mixtures with a small amount of silt and trace amounts of clay.

Unsuitable backfill materials consist of the following:

- a. Inorganic silts and clays;
- b. Organic silts;
- c. Organic soils including peat, humus, topsoil, swamp soils, mulch, and soils containing leaves, grass, branches, and other fibrous vegetable matter.

### Evaluation of Excavated Soil

The soil excavated from a trench shall be evaluated by experienced personnel to determine whether or not it is suitable as a backfill in accordance with the above section. An excavated soil that has been evaluated as suitable for backfill shall be reused provided its moisture content has been determined to be "suitable" in accordance with standards for proper moisture content.

### Unsuitable Backfill Material

An excavated soil that has been evaluated as unsuitable for backfill shall be removed from the site and disposed of properly. New material, which meets the requirements of these standards, shall be brought in to replace excavated soil found to be unsuitable.

### Proper Moisture Content for Backfill Material

Proper moisture content (i.e., ratio of moisture to mineral solid by weight in a soil) in a backfill is essential for effective compaction. Soils with too much moisture (wet) or too little moisture (dry) would not yield an adequate level of compaction. All material used as backfill shall be examined by testing a sample prior to backfilling. This requirement applies to excavated soil to be reused as backfill and to new replacement material.

### Field Determination of Moisture Content

Experienced personnel will conduct the following field test of moisture content, also referred to as a "soil ball" test.

The personnel conducting the soil ball test must do the following:

- a. First take a handful of the particular soil from beneath the surface of a stockpile (i.e., excavated from a trench or obtained from a borrow area) and then;
- b. Squeeze the sample firmly making a closed fist;
- c. Open the hand and observe the condition of the soil ball;
- d. If the soil ball is loose and crumbly, the soil is too dry for compaction;
- e. If the soil ball drips water, the soil is too wet for compaction;

f. If the soil ball holds together firmly or breaks into large chunks, the soil has suitable moisture content for compaction.

**Corrective Treatment When Moisture Content is Not Suitable**

- a. If the soil is too dry, small amounts of water may be added by sprinkling;
- b. If the soil is too wet, the soil may be dried out by spreading it out and exposing it to the atmosphere;
- c. After the remedial treatment, the soil shall be tested again;
- d. If the corrective treatment is not effective, the soil shall be removed from the site and disposed of properly.

**Backfill and Compaction of Excavations**

Backfill and compaction shall be performed in accordance with the following subsections. All pipe, conduit or facilities shall be properly bedded with materials prior to backfilling to obtain compaction values of 95% modified Proctor density. Compaction equipment which may be used is specified in Table A. Compactors shall be operated in approximately the vertical position. Care should be exercised when compacting near a buried facility to avoid damage to the facility. The bottom of the excavation shall be level, free of stones and compacted prior to commencement of backfilling. Compaction shall be performed by making a minimum of four (4) passes per lift with the compactor. The passes shall start around the perimeter of the excavation and move toward the center in an inward spiral. Backfill material shall be placed in lifts with the loose thickness (i.e., prior to compaction) as specified in Table A. The effectiveness of any compaction method used other than that specified in this Section, including Table A, shall be determined by testing to establish the precompacted or loose thickness of lifts, the number of passes with the compactor required to obtain the desired results, the type of compacting tool used and the soil type. All maintenance work shall be compacted in 6" lifts. Construction work shall, based on the specific compaction equipment used, utilize Table A to determine appropriate lifts. Construction work shall be defined as the installation of new or replacement facilities.

**TABLE A**

Tool Thickness of Lifts

Pneumatic Air Tamper 6"

Percussive Wacker Rammer 6" – 12"

Vibratory Compactor 6" – 12"

(7000lb)

Pavement Breaker Tamping Foot 6"

(60-90lb)

Well graded gravel that may exist immediately under the paved surface shall be replaced in like-compacted depth.

**Compaction Verification**

The Town reserves the right to require compaction verification at the contractors or utilities expense. Compaction verification shall be performed in accordance with the following to assure that 95% modified Proctor density has been achieved:

- a. The compaction of each lift shall be verified using a Dynamic Cone Penetrometer (DCP), or equivalent as approved by the Town. For standard maintenance excavations, each lift shall be verified at one location. For longer excavations (e.g., trenches), a DCP test shall be made approximately every 25 feet for each lift.
- b. A DCP test shall be considered acceptable if, after 15 drops, the pass/fail reference line on the DCP is above the soil surface.
- c. An unacceptable DCP test shall require that corrective measures be taken until an acceptable DCP test is achieved. This may include making additional passes with the compactor or, in some cases, removing the backfill material and starting over.

### Training

Field personnel performing backfill and compaction operations shall be trained in the implementation of this procedure.

## **STREET PATCHING SPECIFICATIONS**

1. On all primary roads, as determined and designated by the Town, the Contractor shall excavate and complete both Bituminous Concrete courses (binder and top) during the same work day. Under no circumstances will the Contractor be allowed to leave a trench on a primary road unfinished at the conclusion of the work day. On other roads, the Contractor shall excavate and complete the Bituminous Binder Course on the same work day. The Bituminous Concrete Top will be completed within three (3) consecutive working days thereafter. The Contractor will notify the responsible Town Department prior to each work day of the location of the work. At the end of each work day, the Contractor will notify the responsible Town Department of the progress of the work.
2. All materials, paving and rolling shall conform to standards established by the Mass DOT Standard Specifications for Highway Bridges.
3. All joints prior to excavation will be cut by either jack hammer or saw. Permanent patches for trenched will be cut six (6) inches larger in each direction than the original trench. Excavation and disposal of any and all materials encountered for permanent patching to a minimum depth of twelve (12) inches below finished grade. If backfill material is unsuitable, furnish a gravel base foundation of not less than twelve (12) inches thick after thorough compaction. Pavement depth and type shall match the existing bituminous concrete or, if less than four (4) inches in depth, the new trench patch shall be a minimum of the following: Class I Bituminous Concrete will consist of Type I-1 and be a total of four (4") inches in thickness with two and one half (2 ½") inches of binder and

4. Gravel Base and Class I Bituminous Concrete Type I-1 shall meet Mass DOT Standard Specifications for Highway Bridges.

## **EXPANDED REQUIREMENTS FOR PERMANENT RESTORATION OF SIDEWALKS AND ROADWAYS**

- 4.1 Expanded pavement restoration is required when the construction project falls into any one or more of the following categories:
- The building of two or more dwelling units, attached or unattached, are next to each other
  - The project requires connection to utilities in a street that was rebuilt or resurfaced within the last five (5) years.
- 4.2 The requirements listed below are intended to insure proper restoration of the street and sidewalk once all work and utility connections are complete. In performing work for the project, it may be required to do some or all of the following:
- Provide additional bonding to insure that the work will be performed per these requirements. The contractor, not the owners, will be responsible for this bonding.
  - For the street, perform a curb to curb or curb to centerline, grind and overlay that encompasses all utility trenches.
  - Replace the paved sidewalk and adjacent areas to current specifications.
  - Replace and/or adjust the berm or curb where impacted by construction.
  - Use Controlled Density Fill for trench backfill.
  - Construct or reconstruct curb cut openings in accordance with the Belmont Standard Specifications.
  - Have a qualified company provide infrared treatment for the permanent utility patch.
  - Repair all street and sidewalk areas damaged during the course of the project's construction, even if outside the utility trench area.

## **TEMPORARY ROADWAY AND SIDEWALK REPAIRS**

- 32.1 After the excavation has been backfilled and compacted, as specified in the Belmont Standard Specifications, a temporary surface repair shall be made prior to the end of the work day. Temporary asphalt paving shall be Class I Bituminous Concrete Type I-1 hot asphalt conforming to Mass DOT Standard

Specifications for Highway Bridges and shall be placed in a minimum three (3) inch thick course in two (2) equal lifts. Each lift shall be compacted by power roller or vibratory plate compactor with the top course evenly matching the surrounding existing pavement so that it is compacted and smooth enough for pedestrian and vehicular traffic to pass over the area quietly and safely. The Permittee shall be responsible for maintaining the temporary paving for a minimum period of ninety (90) days after backfilling is completed and until the permanent paving is completed.

32.2 In cold weather during emergencies, if hot bituminous concrete is unavailable, temporary surface repairs may use either plant prepared or modified asphalt cold patch.

32.3 Non-paved surfaces shall be backfilled and compacted as specified and restored to the original grade evenly matching the surrounding surface. Restoration, as required, to the original condition of the work areas shall be the responsibility of the Permittee.

32.4 In the event that the maintenance of temporary repairs is unacceptable, the Permittee will be notified and is required to complete the improvement(s) within twenty-four (24) hours of said notification.

## **SIDEWALKS, HANDICAP RAMPS AND DRIVEWAY APRONS**

### Description

This work shall consist of excavation and the construction, repair or replacement of bituminous concrete or cement concrete sidewalks, handicap ramps and driveway aprons in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Town.

### Materials

Materials shall meet the requirements as specified in the Mass DOT Standard Specifications for Highway Bridges, Subsections of Division III, Materials, latest edition:

Gravel Borrow.....M1.03.0 (Type b)  
Cement Concrete (Air-Entrained 4000 psi,3/4",6I0).....M4.02.00  
Preformed Expansion Joint Filler.....M9.14.0  
Class I Bituminous Concrete.....M3.11.00

### Construction Methods

A. Excavation: All excavating shall be done in a manner satisfactory to the Town. Excavation shall consist of the removal of all asphalt, concrete, soil or foreign matter in close conformity with the lines and grades shown on the plans or established by the Town.

- B. Subgrade: The subgrade for the sidewalks, handicap ramps and driveway aprons shall be shaped parallel to the proposed surface of the sidewalks, handicap ramps and driveway aprons and thoroughly compacted. All depressions occurring shall be filled with suitable material and again compacted until the surface is smooth and hard.
- C. Foundation: After the subgrade has been prepared, a foundation of gravel shall be placed upon it. After being compacted thoroughly, the foundation shall be at least eight (8) inches in thickness and parallel to the proposed surface of the walk.
- D. Cleaning: On completion of the work the contractor shall remove and dispose of all temporary structures, debris, surplus materials, tools and waste caused by or left after his operations and leave the site of the work in a condition satisfactory to the Town.

#### Cement Concrete Sidewalks & Handicap Ramps

- A. Forms: Side forms and transverse forms shall be smooth, free from warp, of sufficient strength to resist springing out of shape, of a depth to conform to the thickness of the proposed sidewalk or handicap ramp and of a type satisfactory to the Town. All mortar or dirt shall be completely removed from forms that have been previously used. The forms shall be well staked and thoroughly graded and set to the established lines with their upper edge conforming to the grade of the finished walk or ramp which shall have sufficient pitch to the roadside edge to provide for surface drainage but not to exceed one-quarter (1/4) of an inch per foot of width to provide for proper drainage unless otherwise directed by the Town.  
  
All forms shall be wet with water or oiled before placing concrete.

#### Placing and Finishing Cement Concrete

The concrete shall be placed in alternate slabs thirty (30) feet in length except as otherwise ordered. These concrete slabs shall be separated by transverse preformed expansion joint filler one-half (1/2") inch in thickness.

Preformed expansion joint filler shall be placed adjacent to or around existing structures as necessary and/or as directed by the Town.

On the foundation as specified above, the concrete for sidewalks shall be placed in such quantity that after being thoroughly consolidated in place it shall be four (4) inches in depth. The concrete for handicap ramps shall be placed in such quantity that after being thoroughly consolidated in place it shall be six (6) inches in depth. At curb cuts for driveway access locations, the concrete for sidewalks and driveway aprons shall be placed in such quantity that after being thoroughly consolidated in place it shall be six (6) inches in depth. No finishing operation shall be performed while free water is present. Finishing operations shall be delayed until all bleed water and water sheen has left the surface and the concrete has started to stiffen. After water sheen has disappeared, edging operations, where required, shall be completed. After edging and joining operations, the surface shall be floated. Immediately following floating, the surface shall be steel-trowled. If necessary, tooled joints and edges shall be rerun before and after troweling to maintain uniformity. After troweling, the surface shall be brushed by drawing a soft-bristled pushbroom with a long handle over the surface of the concrete to produce a nonslip surface.

In conveying the concrete from the place of mixing to the place of deposit, the operation shall be conducted in such a manner that no mortar will be lost, and the concrete shall be so handled that the concrete will be of uniform composition throughout, showing neither excess nor lack of mortar in any one place.

The surface of all concrete sidewalks shall be uniformly scored into block units of areas not more than thirty-six (36) square feet. The depth of the scoring shall be at least one-quarter (1/4) of the thickness of the sidewalk.

The application of neat cement to surfaces in order to hasten hardening is prohibited.

The finishing of concrete surface shall be done by experienced and competent cement finishers approved by the Town.

When completed the walks shall be kept moist and protected from traffic and weather for at least three (3) days in accordance with the applicable provisions of Subsection 476.74 of the Mass DOT Standard Specifications for Highway Bridges.

Bituminous Concrete Sidewalks & Handicap Ramps

A. Forms: Where walls, curbing or other suitable permanent supports are not present or where an approved mechanical spreader is not used, satisfactory forms shall be installed to assist in securing proper alignment and adequate compaction of the base and surface courses.

B. Placing Bituminous Concrete: The bituminous concrete sidewalk shall be laid in two (2) courses to a depth after rolling of two and one-half (2 1/2") inches. The bottom course shall be one and a quarter (1 1/4") inches in thickness, and its surface after rolling shall be one and a quarter (1 1/4") inches below and parallel to the proposed grade of the finished surfaces. The top course shall be one and a quarter (1 1/4") inches in thickness after rolling.

Unless otherwise directed, the surface shall have a pitch of three-sixteenths (3/16) of an inch per foot of width to provide for proper drainage unless otherwise directed by the Town.

The courses shall be constructed in accordance with the applicable requirements of Section 460 of the Mass DOT Standard

Specifications for Highway Bridges and the following provisions:

- I. Spreading Mixture - The mixture shall be dumped, as needed, in wheelbarrows or on approved steel dump sheets outside the areas on which it is to be placed. It shall then immediately be distributed into place by means of shovels and raked into a uniformly loose layer to the full width required and of such depth that, when the work is completed, it shall conform to the grade and surface contour required. An approved mechanical spreader may be used.
2. Rolling - The surface shall be rolled with a self-propelled tandem roller weighing not less than one and a half (1 1/2) tons and not more than five (5) tons. In places inaccessible to a power roller, compaction shall be obtained by means of mechanical rammers or by hand tampers weighing not less than fifty (50) pounds and having a tamping face not exceeding one hundred (100) square inches.

3. Testing Surface - When tested with a ten (10) foot straightedge placed parallel to the center line of the courses, there shall be no deviation from a true surface in excess of one quarter (1/4) of an inch.

## **RESTORATION OF NON-PAVED SURFACES**

Non-paved surfaces shall be backfilled and compacted as specified in these standards and restored to the original grade evenly matching the surrounding surface. Tree lawns and similar areas shall have a minimum of six (6) inches of loam supplied and restored to the disturbed areas and be seeded with an approved grass seed mix in the proper growing season. The contractor or utility may be required to re-loam and re-seed any area not acceptable to the Town. Restoration, as required, to the original condition or better of the work areas shall be the responsibility of the contractor or utility.

## **GRANITE CURBING, CURB INLETS, CURB CORNERS AND EDGING**

### Description

This item of work shall consist of excavating, furnishing and setting granite curb, curb inlets, curb corners and edging on a gravel foundation, placement of concrete gutter support in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Town.

### Materials

Materials shall conform to the requirements specified in the Mass DOT Standard Specifications for Highway Bridges in the following Subsection of Division III, Materials:

Granite Curb	M9.04.1
Granite Curb Inlets	M8.4.5
Granite Curb Corners	M9.04.6
Granite Edging	M9.04.2
Mortar	M4.02.15
Gravel	M1.03.0 Type c
Concrete	M4.00.00

### Construction Methods

- A. Excavating Trench: The trench for the curb shall be excavated to a width of eighteen (18") inches. The subgrade of the trench shall be a depth below the proposed finished grade of the curb equal to six (6") inches plus the depth of the curbstone.
- B. Preparing Foundation: The foundation for the curb shall consist of gravel spread upon the subgrade and after being thoroughly compacted by tamping shall be six (6") inches in depth. The gravel foundation for edging shall be as shown on the plans and shall be thoroughly rammed or tamped until firm and unyielding. The foundation for the curb inlet shall consist of a full bed of Portland cement mortar on the supporting back wall of the catch basin or gutter inlet and sufficient gravel on each side to support the overhang. The trench for the gravel foundation shall be at least six (6") inches in depth and eighteen (18") inches in width. This trench shall be filled with gravel thoroughly tamped to the required grade. The trench for the curb corner shall be excavated so that there shall be constructed a foundation of gravel which when thoroughly compacted will be six (6") inches in depth, and extending six (6") inches beyond the front and back of curb corner to the full depth of foundation. Other acceptable material may be used for backing.
- C. Setting Curb and Edging: Curbing, curb corners or edging shall be set on additional gravel spread upon the foundation. All spaces under the curb, curb corners or edging shall be filled with gravel thoroughly compacted so that the curb, curb corners or edging will be completely supported throughout their length. The curb shall be set at the line and grade required as shown on the plans or directed by the Town. Curb, curb corners or edging shall be fitted together as closely as possible except for VA5 curb which shall not fit closer to each other than one quarter (1/4) inch. If curb, curb corners, curb inlets or edging of different quarries is used on the same project, curbing of each particular quarry shall be segregated and set to give uniform appearance.

- D. Concrete Gutter Support: Prior to backfilling curbing a cement concrete gutter support will be placed on the street side of the curbing. The cement concrete will be 2,500 psi 3/4 inch aggregate. The cement concrete support will be four (4") inches in depth, six (6") inches wide and be placed along the front face of the curbing. The finished top of the cement concrete will be two (2") inches below the finished grade of the roadway.
- E. Filling About Trench: After the curb, curb corners, curb inlets, edging and concrete gutter support is set, the space between it and the wall of the trench shall be filled with gravel thoroughly tamped to the depth directed, care being taken not to affect the line or grade of the curb, curb corners, curb inlets and edging.
- F. Pointing: The joints between curbstones (both front and back) or edging shall be carefully filled with cement mortar and neatly pointed on the top and front exposed portions. After pointing, the curbstones or edging shall be satisfactorily cleaned of all excess mortar that may have been forced out of the joints.
- G. Transition Curb for Handicap Ramps: Transitions from normal curb settings to wheelchair ramps shall be accomplished with transition curb as directed. Transitions shall be of the same type curb and similar to that abutting and, if on a curve, of the same radius.
- H. Cleaning: On completion of the work the contractor shall remove and dispose of all temporary structures, debris, surplus materials, tools and waste caused by or left after the operations, and leave the site of the work in a condition satisfactory to the Town.

## **CURB OR EDGING REMOVED AND RESET**

### Description

This work shall consist of excavating and removing the present curb, edging, curb corners and curb inlets of every type and cross section made of granite, concrete or granite-faced and resetting them in accordance with these specifications and in close conformity with the lines and grades shown on the plans or established by the Town.

## Materials

Materials shall meet the requirements as specified in the Mass DOT Standard Specifications for Highway Bridges, Subsections of Division III, Materials.

Curb, edging, curb inlets and curb corners shall consist of so much of the same as is suitable, in the Town's judgment to reset.

Gravel shall conform to the requirements of Subsection M1.03.0 Type C of Division III, Materials.

## Construction Methods

- A. Removal: A trench of sufficient width and depth shall be excavated so that the present curb, edging, curb corners and curb inlets can be removed without damage.
- B. Protection: The Contractor shall protect all curb or edging and keep it in satisfactory condition until the acceptance of the entire Contract. Particular care will be required to prevent any unsatisfactory discoloration of the curb or edging. The contractor shall replace any existing curb, edging, curb corners and curb inlets that are to be reset, which are lost or damaged as a result of his operations, or because of his failure to store and protect them in a manner that would eliminate their loss or damage.
- C. Adjustment: The length of any section of curb or edging shall be altered by cutting in order to fit closures as necessary. The ends of all stones shall be square with the planes of the top and face so that when the stones are placed end-to-end as closely as possible, no space shall show in the joint at the top and face of more than three quarters (3/4) of one (1) inch for the full width of the top and for eight (8) inches down on the face.
- D. Relaying: The construction methods for resetting all curbing or edging, in the final location shall conform to the requirements of the previous section, Specifications for Granite Curb, Curb Inlets, Curb Corners and Edging, Sections A through G as applicable.
- E. Cleaning: On completion of the work the contractor shall remove and dispose of all temporary structures, debris, surplus materials, tools and waste caused by or left after the operations, and leave the site of the work in a condition satisfactory to the Town.

## **23.4 Temporary Steel Plating**

23.4.2 The contractor may temporarily place a structural steel plate(s) over an open trench with the prior approval of the Town. All steel plate(s) must have a thickness sufficient to resist bending, vibration and support all legal traffic loads, be a minimum of ¾ inches thick and meet the American Society of Testing (ASTM) Materials standard of A36 / A36M. It is the Contractors sole responsibility to ensure that the steel plate(s) are structurally adequate for their intended use. Steel plates must completely cover the open trench and have a minimum overlap, on each side, of two (2) feet for the entire length and width of the trench. The Contractor shall also secure the plate(s) with spikes or similar devices to prevent any movement of the

plate(s) and use cold or hot asphalt patch material for smooth traffic transition over the steel plate(s). All steel plate(s) used to cover an unattended trench must be no less than ¾ inch thick, to comply with 520 CMR 14.04(2).

23.4.3 The Contractor is responsible for any plate movements and will be billed for all costs with an administrative fee if the Town is required to reset any moved or out of position plates. The Contractor is responsible for insuring that excessive noise is not caused by traffic traveling over the steel plate(s). Any location with a steel plate for more than five (5) days will be required to recess the plate so that it is flush with the surrounding surface.

23.4.4 Steel plates, in general, will not be allowed if winter weather is expected. In the event that placement of the steel plate(s) is unavoidable and allowed by the Director of Public Works the Permittee will, at all times, notify the DPW prior to the steel plate installation. The Permittee may be required to recess the plates and place warning devices on the plate(s) as necessary at the sole discretion of the Director of Public Works. The Permittee shall be solely responsible for any charges for additional warning devices deemed necessary in the opinion of the Director of Public Works and erected by the DPW.

23.4.5 The Permittee shall be solely responsibility for the liability associated with all steel plate use.

## **STREET PAINTING SPECIFICATIONS**

## **CROSSWALK SPECIFICATIONS**