

SECTION 02741**PAVEMENT REMOVAL AND REPLACEMENT****PART 1 GENERAL****1.01 SUMMARY****A. Section Includes:**

1. Removal and replacement of exiting bituminous concrete road surfaces, sidewalk, parking lots, and driveways.
2. Removal and replacement of concrete sidewalks, driveways, and aprons.
3. Removal and resetting of granite curbing.
4. Cold planing existing bituminous concrete pavement.
5. Installation of bituminous concrete overlay.
6. Installation of bituminous concrete berm.

1.02 RELATED SECTIONS

- A. Section 01300 – Submittals
- B. Section 01400 – Quality Control Testing
- C. Section 02200 – Earthwork
- D. Section 03450 – Precast Structures

1.03 REFERENCES

- A. Massachusetts Department of Transportation (MassDOT), Highway Division Standard Specifications for Highways and Bridges
 1. Section 403 – Reclaimed Pavement for Base Course and/or Sub-Base
 2. Section 420 - Class I Bituminous Concrete Base Course, Type I-1
 3. Section 430 – Cement Concrete Base Course
 4. Section 460 – Class I Bituminous Concrete Pavement, Type I-1
 5. Section 501 – Curbs, Curb inlets, Curb Corners and Edging

6. Section 701 – Sidewalks, Wheelchair Ramps and Driveways

- B. MassDOT Construction Details.
- C. Americans with Disabilities Act (ADA) Standards and Architectural Barriers Act (ABA) Standards (2015).
- D. American Association of State Highway and Transportation Officials (AASHTO) AASHTO T99 Moisture Density Relations of Soils using a 5.5 lb. Rammer and 12-inch Drop.
- E. Town of Needham Department of Public Works, Street & Sidewalk Opening Regulations.

1.04 SUBMITTALS

- A. Submit the following in accordance with Section 01300 – Submittals
 - 1. Product Data
 - a. Complete data on materials to be used, including gradation tests for granular base.
 - 2. Quality Control Submittals
 - a. Mix for aggregate base course and hot bituminous surface course as specified in Paragraph 2.02.
 - b. Results of laboratory compaction tests as specified in Paragraph 3.03.

PART 2 PRODUCTS

2.01 MATERIALS

- A. All mixes shall conform to MassDOT “Type I” mixes: Base, Binder, and “State Top” (with one-half inch (1/2”) stone size), in accordance with MassDOT Standard Specifications Sections 420 and Section 460.
- B. Pavement Reclamation
 - 1. Meet the requirements of MassDOT Section 403.
- C. Pavement Base Course
 - 1. Meet the requirements of MassDOT Section 405.

D. Curbs, Curb Inlets, Curb Corners and Edging

1. Meet the requirements of MassDOT Section 501.

E. Hot Mix Asphalt Pavement

1. Meet the requirements of MassDOT Section 450.

2.02 MIXES

A. Bituminous Concrete

1. Employ independent testing laboratory to determine proposed mix for aggregate base course and hot bituminous surface course, based upon aggregates furnished.
2. Mix shall include aggregate gradation, percent and type bituminous material, and percent air voids.
3. Use proposed mix as basis for field mixes.

2.03 BITUMINOUS EMULSION FOR TRACK COAT

- A. Bituminous emulsion for tack coat shall be in accordance MassDOT Standard Specifications Section M3.

2.04 DETECTABLE WARNINGS PANELS

- A. The detectable warning panels shall be a prefabricated detectable warning surface tile as manufactured from:
1. "ADA Armor-Tile" by Engineered Plastics Inc., 300 International Drive, Suite 100, Williamsville, NY 14221, (800) 682-2525;
 2. "ADA Detectable Warning Mat" by the Durabak Company, 4064 S. Atchison Way, Suite 301, Aurora, CO 80014, (303) 690-7190;
 3. "Cast in Place Replaceable Tactile Pavers" by ADA Solutions, Inc., 10 Elizabeth Drive, Unit 5, Chelmsford, MA 01824, (978) 262-9900;
 4. Or equal.

2.05 GRAVEL BORROW FOR BASE COURSE

- A. Gravel borrow for base course for all pavements, aprons and walks shall conform to the requirements in SECTION 02200 Earthwork.

2.06 GRAVEL BORROW FOR SUB-BASE

- A. Gravel borrow for Sub-base for all pavements, aprons and walks shall conform to the requirements in SECTION 02200 Earthwork.

2.07 CONCRETE FOR WALKWAYS

- A. Concrete for walkways shall conform to the requirements of Section 03302 – Miscellaneous Cast-In-Place Concrete.

2.08 GRANITE CURB

- A. Granite curb shall conform to Subsection M9.04.1 Type VA2 of the MassDOT Standard Specifications.

PART 3 EXECUTION**3.01 GENERAL****A. Environmental Requirements**

1. No pavement shall be constructed when it is raining or when the temperature is below 32° Fahrenheit.
2. No pavement shall be constructed during the period from November 15 through April 15 without the approval of the Town of Needham. During this time period, no castings shall be left above grade, such that they would interfere with winter road maintenance equipment.
3. Do not place materials when underlying surface is muddy, frozen, or has frost, snow, or water.
4. Do not place concrete when air temperature at time of placement, or forecasted temperature for following 24 hours, is lower than 40° F, or higher than 90° F.

B. Sequence of Pavement Work

1. Place the temporary trench pavement after utility installation, at a minimum of once per week.
2. Place the permanent trench pavement following any winter shutdown(s) and the minimum settlement duration herein specified.
3. Perform milling operations.
4. Raise/adjust castings as needed.

5. Repair/Build all ramps and sidewalks.
6. Complete final pavement overlay and painting.

3.02 PREPERATION

A. Protection

1. Existing Roadway

- a. Sawcut existing pavement to trench width and full pavement depth as indicated.
- b. All edges of excavation made in existing pavement and sidewalks shall be squared to provide a clean edge for joining new pavement as indicated.
- c. Sawcutting shall be complete to the existing sub-base by a motorized saw.
- d. Do not damage adjacent pavement, curbs, gutters, roadway bridges, or other structures.
- e. Ragged, uneven edges will not be accepted.
- f. Areas which have been broken or undermined shall be repaired by providing a clean edge for joining new pavement at no additional cost to the Authority.

2. Care when excavating for sidewalks

- a. Restore of all excavations to the sidewalk or road to the satisfaction of the Needham Department of Public Works. Excavations must be patched within 24- hours of completion of the Work. Sidewalks must be restored with the same material as the pre-existing sidewalk. Any existing concrete sidewalk panels that are disturbed, damaged, or otherwise impacted by the work must be removed, disposed of, and replaced with a new concrete pour. Cement concrete sidewalks shall be removed in full-width panels (i.e. from scoreline to scoreline) unless otherwise approved by the Town of Needham Department of Public Works. If restoration of concrete sidewalk is not feasible at the completion of the Work, such panels shall be patched with temporary asphalt, and the concrete restoration completed no later than one (1) week from the completion of Work unless otherwise approved by the Town of Needham Department of Public Works.

B. Surface Preparation

1. Subgrade

- a. Complete subgrade separation, including dynamic compaction for full width, in accordance with Section 02200 – Earthwork before placing surface materials.

3.03 INSTALLATION

A. Temporary Asphalt Pavement

1. After the trenches have been backfilled and compacted, the Contractor shall install pavement as indicated, upon a prepared subgrade or gravel sub-base. Prior to installation, the original pavement on either side of the trench shall be cut back as necessary to achieve clean, straight lines. All loose material shall then be removed to the depth as indicated and legally disposed of off-site and the trench subgrade rerolled, reshaped and recompact as specified in Section 02200 - Earthwork to receive temporary pavements. The edges of abutting pavements shall be coated with an asphalt emulsion to bond new and existing pavements. The finished grade of pavements shall match the adjoining undisturbed pavement. Surface Preparation
2. Place temporary pavement above the trench, between the edges of the existing pavement at the end of each work week that the installation of individual pits or pipeline segments occurs.
3. Maintain the temporary trench pavement a minimum of 90 days, and through one (1) winter shutdown (November 15 through April 15). Remove the temporary trench pavement to the limits indicated, regrade and compact the subbase, and install permanent pavement.

B. Bituminous Concrete Pavement

1. Replace bituminous concrete roads, shoulders, driveways, parking lots and sidewalks.
2. Repair all damage to bituminous concrete roads, shoulder, driveways, parking lots and sidewalks outside the limits indicated at no additional cost to the Authority.
3. Compact and finish pavement replacement to provide a smooth transition between new and existing surfaces.
4. Binder Course Pavement
 - a. Immediately prior to installing the binder course, the trimmed edges shall be

cutback and made stable and unyielding, free of loose or broken pieces and all edges shall be clean. Contact surfaces of trench sides, curbs, manholes, catch basins, or other structures in the pavement shall be painted with a uniform coating of bitumen (rapid setting RS-1 type) just before any mixture is placed against them.

5. Pavement Placement

- a. Pavement shall be placed and compacted only when the Authority is present.
- b. Immediately after placement of the overlay, all joints between the existing and new overlay pavements shall be sealed with bitumen RS-1 and sanded.
- c. Where there is no backing for the edges of the curb-to-curb pavement, provide a gravel transition. The gravel transition shall be installed immediately after the pavement is placed, shall be feathered and extend a minimum of 18 inches, and shall be compacted using the same equipment as for pavement compaction. The gravel shall be uniformly graded material with a maximum size of 3/8 to 1/2 inch.
- d. Furnish and install pavement to provide transition between driveways and walkways and new curb-to-curb pavement installation.

C. Compaction

1. After the paving mixture has been spread as specified, compaction shall be obtained by the use of power rollers of acceptable design and weight per inch of roller.
2. Along curbs, structures and all places not accessible with a roller, the mixture shall be thoroughly compacted. The surface of the mixture after compaction shall be smooth and true to the established line and grade.
3. The densities of the completed pavement shall be not less than 95 percent of the density obtained from laboratory compaction of a mixture composed of the same materials in like proportions.

D. Cold-Planing

1. The bituminous surfaces being planed and profiled shall be removed to a depth as indicated on the Contract Drawings. Width, grade, and cross-section shall be as indicated. Loose material resulting from the operation shall be removed and disposed of off-site.
2. The planed surface shall provide a smooth riding surface free from gouges,

continuous grooves, ridges and oil film, and shall have a uniform surface appearance exclusive of broken or cracked underlying pavement.

3. All existing pavement around castings shall be removed. Any castings damaged or disturbed shall be removed and replaced at no additional cost to the Authority.
4. Before placing any pavement on a planed surface, a bituminous tack coat shall be applied.

E. Raising and Adjusting Castings

1. In areas of overlay paving, all existing Authority, local utility or municipally owned catch basin and manhole castings and valve boxes indicated shall be raised to grade.
2. Raise castings as follows: Cut around catch basin or manhole castings a minimum of eight (8) inches from casting. Excavate and rebuild the 12 inches of masonry below the bottom of the casting. Backfill and compact to bottom of casting. Place high, early strength cement or bituminous concrete collar to approximately two (2) inches below the raised casting grade.
3. Raise valve boxes as follows: Cut around valve box a minimum of eight (8) inches from valve box. Excavate and raise the valve box. Pour high early strength cement or bituminous concrete collar to approximately two (2) inches below the top of the valve box.

F. Granite Curbing Replacement

1. Remove and store granite curbing prior to excavating trench.
2. Prior to placing permanent pavement, reset stored granite curbing to the same alignment that was used prior to removal of granite curbing.
3. Provide one-inch wide expansion joints at each intersection with existing curb sections.
 - a. Fill with expansion joint material and cut to shape of curb section.

G. Concrete Base Course

1. Concrete used for roadway base course shall be placed in accordance with the MassDOT Standard Specifications Section M4.08.0 – Controlled Density Fill.

H. Sidewalk and Driveway Replacement

1. All sidewalk panels/driveways affected by work shall be replaced in kind.

2. All sidewalk and driveway aprons shall be replaced so as to be in accordance with all current ADA & AAB standards/regulations.
3. Gravel sidewalks
 - a. Gravel sidewalks shall be restored to original condition.
4. Bituminous concrete sidewalks and driveways
 - a. Construct in accordance with MassDOT Standard Specifications Section 701 – Sidewalks, Wheelchair Ramps and Driveways, and with details shown in the Contract Drawings.
 - b. The subgrade shall be shaped parallel to the surface of the sidewalk or driveway and shall be rolled and tamped until the surface is smooth and hard in order for a gravel foundation to be placed.
 - c. The sidewalk or driveway shall be a minimum of three (3) compacted inches thick, laid in two (2) equal courses. The sidewalk pitch shall match the existing sidewalk.
5. Cement concrete sidewalks and driveways
 - a. Construct in accordance with MassDOT Standard Specifications Section 701 - Sidewalks, Wheelchair Ramps, and Driveways and with details shown in the Drawings and Specifications.
 - b. Use 6x6, W10xW10 welded wire reinforcement.
 - c. Concrete shall be four (4) inches thick except at driveways where concrete shall be 6 inches thick.
 - d. The subgrade for the sidewalk or driveway shall be shaped to a true surface conforming to the slope of the sidewalk, rolled and tamped until the surface is smooth and hard.
 - e. After the subgrade has been prepared, a subbase of gravel shall be placed, rolled and tamped. The gravel shall be a minimum of eight (8) inches in thickness.
 - f. The forms shall be smooth, free from warp, strong enough to resist springing out of shape, and deep enough to conform to the thickness of the proposed sidewalk or driveway. All mortar or dirt shall be completely removed from forms that have been previously used. The forms shall be staked, braced, and set to the established lines with their upper edge conforming to the grade of

the finished walk or driveway.

- g. The finished surface shall have pitch from the outside edge to provide for surface drainage. This pitch shall be 1/4 of an inch per foot. Before the concrete is placed, the subbase for sidewalks shall be dampened until it is moist throughout but without puddles of water.

6. Casting

- a. Water boxes, manhole frames, and all other castings shall be set to the finished grades.

3.04 DETECTABLE WARNING PANELS

- A. The detectable warning panels for new construction shall be set directly in poured concrete according to the plans and the manufacturer's specifications or as directed by the Authority. The Contractor shall place two (2) - twenty five (25) pound concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

3.05 PROTECTION

- A. Protect restored pavement until completion of work on site and repair damage at no additional cost to the Authority.
- B. Road plates used for excavation protection shall be steel. Road plates shall be securely fastened and ramped at all times. No bouncing of road plates will be permitted.
- C. The length of road plates in use at one time shall be kept to a minimum, i.e., to cover the open excavation where work has been completed for the shift.
- D. Road plates will not be permitted for use during the weekends.
- E. After each working day, inspect and remove pavement millings and other debris from nearby bridge expansion joints within or abutting the work zone.
- F. Protect installed reflectorized pavement markings from the traveling public until dry.

**** END OF SECTION ****