

SECTION 32 12 16

PAVEMENT, WALKS & CURBS

PART 1 GENERAL

1.1 SUMMARY

- A. Description of Work: Provide labor, materials, equipment, and services necessary for proper and complete installation of all paving, walks, curbing and related items as indicated on the drawings and as herein specified including the following items:
 - 1. Bituminous concrete paving, base and top course.
 - 2. Granite curbing.
 - 3. Testing.
 - 4. Pavement repair.
 - 5. Accessible curb cuts/ramps.

- B. Related Sections:
 - 1. Section 31 02 00 - Development Permits
 - 2. Section 31 25 13 - Erosion Control
 - 3. Section 32 11 23 - Aggregate Base Courses
 - 4. Section 32 90 10 - Seeding
 - 5. Section 32 90 00 - Planting

1.2 REFERENCES

- A. State of Maine, Department of Transportation Standard Specifications latest edition. Substitute all references to the "Department" with "Owner" and all references to "Resident" with "Engineer".

1.3 SUBMITTALS

- A. Comply with the requirements of Section 01 33 00 - Submittal Procedures.

- B. Product Data: Before any paving is constructed, submit actual design mix to the Engineer for review and approval.

- C. Manufacturer's Certificate: Submit materials certificate signed by the material producer and Contractor, to the independent testing laboratory certifying that materials comply with, or exceed, the requirements herein.

- D. Test Reports: Submit test reports as required according to the following standards:
 - 1. Mechanical analysis ASTM D421
 - 2. Asphalt content ASTM D2172
 - 3. In-place density ASTM D2041 and ASTM D2726

1.4 QUALITY ASSURANCE

- A. Comply with the requirements of Section 01 40 00 - Quality Requirements.

- B. Perform Work in accordance with the following, unless otherwise noted herein:
 1. American Society for Testing and Materials (ASTM), Standard Specifications and Methods of Testing.
 2. State of Maine, Department of Transportation, Standard Specifications, Highways and Bridges, Latest Edition.
- C. Obtain materials from same source throughout.
- D. Documents affecting Work of this Section include, but are not necessarily limited to; the Conditions of the Contract, General Conditions, Supplementary Conditions, Addenda, and all Sections of Division 1 are hereby made a part of this Section.
- E. Coordinate Work with that of other trades affecting or affected by Work of this Section. Cooperate with such trades to assure the steady progress of the Work.
- F. The Contractor shall coordinate paving with all other work, especially underground utility construction, to prevent covering up unfinished or uninspected work and loss of time or labor by improper scheduling. Any repaving required shall be done at no cost to Owner.
- G. All Work shall comply with the requirements of the Maine Department of Environmental Protection standards, the Cumberland County Soil & Conservation District Standards, U.S. Environmental Protection Agency NPDES, and City of Portland, Maine requirements, to minimize adverse environmental impacts. Reference is made to the Erosion and Sedimentation Control Report and Plan included in the Plan set for this project. Strict adherence to the Specifications and Plans is required in order to prevent adverse downstream impacts
- H. Work shall be accomplished in accordance with regulations of local, county and state agencies and national or utility company standards as they apply.
- I. Maintain one copy of the Construction Documents on Site including the Drawings and Specifications.
- J. The Contractor shall bear all cost associated with correcting any Work that does not meet the requirements of this Section or any damages to property outside the limits of Work.

1.5 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Store materials properly to prevent damage, deterioration and inclusion of foreign matter. Aggregates shall be stockpiled in a well-drained location.
- C. All asphalt materials and mixes shall be applied at temperatures within their optimum range as defined by MDOT Standard Specifications.

- D. Weather Limitations for Bituminous Placement: Apply asphalt prime and tack coats when ambient temperature is above 50 degrees F (10 degrees C), and when temperature has not been below 40 degrees F (1 degree C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
- E. Construct asphalt concrete surface course or leveling course when atmospheric temperature is above 50 degrees F (4 degrees C) and when base is dry. Base course may be placed when air temperature is above 40 degrees F (1 degrees C) and rising. Do not place pavement on frozen gravel base.

1.7 TRAFFIC CONTROL

- A. Maintain access for vehicular and pedestrian traffic as required for normal activities and other construction activities.
- B. Utilize flagmen, barricades, warning signs and warning lights as may be required. Two uniformed flaggers required when working in Alumni Drive.
- C. The construction of all pavements within public rights-of-way shall be in accordance with the rules, regulations and requirements of the Public Agency having control and ownership of such rights-of-way.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Asphalt Cement for Base Course, Top Course, and Sidewalks: Bituminous material conforming to Maine DOT Specifications, Section 702.01, Viscosity Grade AC-20.
- B. Asphalt Cement for Curbs: Bituminous material conforming to Maine DOT Specifications, Section 712.36, Viscosity Grade AC-20.
- C. Aggregate for Base Course Mix: In accordance with MDOT Specifications, 19.0mm Superpave HMA.
- D. Aggregate for Top Course Mix: In conformance with MDOT Specifications, 9.5mm Superpave HMA.
- E. Aggregate for Sidewalk Top Course: In conformance with MDOT specifications, 9.5mm Superpave.
- F. Mineral Filler: Shall conform to the requirements of AASHTO M17.
- G. Tack Coat: Shall conform to MDOT Specifications Section 702.04, AE-90.

2.2 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Nominal Asphalt content shall be 6% for base course, top course, curbing, and sidewalk courses.

- C. Curbing mix shall meet the requirements of MDOT Specifications, Section 609.04.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 73 00 – Execution Requirements: Verification of existing conditions before starting work.
- B. Verify compacted subgrade, Subbase, and base is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.
- D. Verify gutter drainage grilles and frames, manhole frames and water valve boxes are installed in correct position and elevation.

3.2 SUBBASE

- A. Aggregate Base and Subbase: Install as specified in Section 32 11 23 – Aggregate Base Courses.

3.3 PLACING ASPHALT PAVEMENT

- A. Install Work in accordance with MDOT Specifications, Section 401.16, 401.17, 401.18, and 401.20.
- B. Construct pavement to lines, grades, sections, compacted thicknesses as shown on the Drawings.
- C. Edge of pavement shall be clean and true. Raveled edges are not acceptable. Hand tamp edged and bevel if forms or screed strips are not used.
- D. Spread and strike-off asphalt concrete mix with a self-propelled finishing machine. At inaccessible or irregular areas, pavement may be placed by hand methods. If hand methods are used, the hot mixture shall be spread uniformly to the required depth with hot shovels and rakes. After spreading, the hot mixture shall be carefully smoothed to remove all segregated coarse aggregate and rake marks. Rakes and lutes used for hand spreading shall be of the type designed for this use. Material loads shall not be dumped faster that they can be properly spread. Workers shall not stand on the loose mixture while spreading.
- E. Paving Machine Placement: In the larger parking fields, the binder course shall be placed in a transverse direction to the top course. The top course shall be placed in the direction of surface-water flow. Place in typical strips not less than 10 feet wide.
- F. Spread mixture at Minimum temperature of 225 degrees F (107 degrees C).
- G. Joints: Make joints between old and new pavements, and between successive days' work, to ensure continuous bond between adjoining work. Construction joints shall have

same texture, density, and smoothness as other sections of paving. Clean contact surfaces and apply tack coat.

- H. Place top course within 24 hours of placing and compacting the base course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
- I. If a tack coat is required, place top course within 24 hours of applying tack coat.

3.4 ROLLING

- A. After the pavement has been spread as described in 3.3 of this Section, it shall be thoroughly compacted by rolling with a powered steel wheel tandem roller weighing not less than 2 or more than 10 tons. Begin rolling as soon as mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
- C. Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.
- D. Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.
- E. Any displacement or irregularities occurring as the result of the reversing of the direction of a roller, or from other causes, shall be corrected once by the use of rakes or lutes and addition of fresh mixture when required. Care shall be exercised in rolling not to displace the line and grade of the edges of the bituminous mixture.
- F. Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.
- G. Compaction Tests: After construction, the Project Representative will designate locations for removal of pavement cores to determine compaction and thickness. Remove and properly replace pavement in any areas showing deficiencies in required compaction or thickness, with new material properly laid.
- H. Remove and replace paving areas mixed with foreign materials and defective areas and fill with fresh, hot top or binder course material. Compact by rolling to maximum surface density and smoothness.
- I. Protect the asphaltic concrete paved areas from traffic until the sealer is set and cured and does not pick up under foot or wheeled traffic.

3.5 CURBS

- A. Curbing to be installed in conformance with MDOT Specifications.
- B. Installation shall conform to ANSI A117.1, latest edition for accessible standards.

- C. Protect curbing from damage during construction operations, taking care not to mar surfaces while curing or backfilling.

3.6 TOLERANCES

- A. Smoothness:
 1. Top Course: maximum variation of 1/4 inch measured with 10 foot straight edge.
 2. Base Course: maximum variation of 3/8 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from Indicated Elevation: Within 1/2 inch.

3.7 FIELD QUALITY CONTROL

- A. Comply with Section 01 40 00 - Quality Requirements.
- B. Comply with Section 01 73 00 - Execution Requirements.
- C. See item 1.3 - Submittals of this Section for required tests and reports.
- D. Test in-place bituminous concrete courses for compliance with requirements of this Section.
- E. After Construction, the Engineer will designate locations for removal of pavement cores to determine compaction and thickness.
- F. Contractor will pay for all proposed material gradation testing. Owner will pay for initial field compaction tests.
- G. In-place compacted thickness shall not be less than thickness specified on the drawings within a tolerance of 1/4 inch as determined by ASTM D-3549. Areas of deficient paving thickness shall be cleaned and receive a tack coat a minimum 1 inch compacted thickness overlay; or shall be removed and replaced to the proper thickness, at the discretion of the Engineer, until specified thickness of the course is met or exceeded, at no additional cost to the Owner.
- H. Field density test for in-place materials shall be performed by examination of the field cores and shall have a compacted density of between 92% and 97% of the theoretical maximum density as determined by ASTM D-2041.
- I. Areas of insufficient compaction shall be delineated, removed, and replaced in compliance with the specifications.
- J. Check all finished surfaces of each asphalt concrete course for smoothness using 10-foot straightedge applied parallel with, and at right angles to centerline of paved area. The results of these tests shall be made available to the Owner upon request. Surfaces will not be acceptable if they exceed the tolerances listed in 3.6 - Tolerances of this Section. Remove and replace unacceptable paving as directed by Engineer.

- K. Check surface areas at intervals necessary to eliminate ponding areas. Remove and replace unacceptable paving as directed by Engineer.
- L. If, at any time before the final acceptance of the Work, any damaged, soft, or imperfect places, or spots shall develop in the surface, all such places shall be removed and replaced with new materials and then compacted until the edges at which the new Work connects with the old become invisible.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 73 00 - Execution Requirements: Protecting finished work.
- B. Protect all pavement areas including curbs from damage during construction operations.

3.9 MEETING EXISTING PAVEMENTS

- A. Full-Depth Pavement: Sawcut by approved method to the full depth of the pavement prior to placement of any new pavement. The sawcut surface shall be a neat true line with straight vertical edges free from irregularities. The sawcut surface shall be tack coated immediately prior to the installation of the new abutting bituminous concrete material to provide a bond between the old and new pavement. The new compacted pavement surface shall be finished flush with the abutting pavement.
- B. Bituminous Concrete Overlays: The existing bituminous pavement shall be sawcut to a neat true line with straight vertical edges free of irregularities for a minimum depth of one and one half inches. Prior to completing overlays, existing pavements shall be tapered by grinding. The taper, along the entire length of the joint, shall be one and one-half inches deep at the sawcut face and shall taper to zero inches deep at a distance of two feet from the sawcut face in driveways and at a distance of six feet in roadways and parking areas. The taper shall be cleaned and shall receive an asphalt emulsion tack coat immediately prior to placement of the overlay. The new compacted surface at the joint shall be flush with the abutting existing pavement.
- C. Immediately prior to the placement of the bituminous concrete overlay, the sawcut edges of the existing pavement shall be tack coated to bond the new pavement to the old pavement. The new pavement surface shall be finished flush with the abutting pavement. The surface seam of the pavement joint shall be sealed with tack coat and back sanded.

END OF SECTION