

## SECTION 02500

### PAVING AND ROADWAY APPURTENANCES RESTORATION

#### PART 1. GENERAL

##### 1.01 SECTION INCLUDES

- A. Provide all labor, material and equipment to restore all areas disturbed or damaged by the construction work. These areas shall include, but are not limited to:
  - 1. Concrete Paved Areas
  - 2. Bituminous Paved Areas
  - 3. Shoulders
  - 4. Sidewalks
  - 5. Gravel Driveways
  - 6. Curb/Curb Gutter

##### 1.02 RELATED SECTIONS

- A. Section 01010 - Summary of Work
- B. Section 01300 - Submittals
- C. Section 01400 - Quality Control: Testing Fill Compaction
- D. Section 01500 - Construction Facilities and Temporary Controls
- E. Section 01570 - Traffic Regulation
- F. Section 02600 - Utility Piping for Sanitary Sewers
- G. Section 03300 - Cast-in-Place Concrete
- H. Appendix A - Standard and Special Construction Detailed Drawings

##### 1.03 REFERENCES

- A. Reference Standards:
  - 1. The "PennDOT Sections" noted herein refer to Sections contained in the current issue of the Commonwealth of Pennsylvania, Department of Transportation Specifications, Publication 408/Latest Edition. The references pertain only to materials, construction equipment, methods and labor. The payment provisions do not apply to work to be performed under this Contract.
  - 2. Commonwealth of Pennsylvania Department of Transportation Publication 408 Specifications:

- a. Section 212, Geotextiles
  - b. Section 305, Bituminous Concrete Base Course
  - c. Section 401, Plant Mix Pavements - General
  - d. Section 420, Bituminous Wearing Course ID-2
  - e. Section 421, Bituminous Binder Course ID-2
  - f. Section 461, Bituminous Prime Coat
  - g. Section 480, Bituminous Surface Treatment
  - h. Section 677, Selected Material Surfacing
  - i. Section 703, Aggregates
  - j. Section 704, Cement Concrete and Ready-mixed Cement Concrete
  - k. Section 721, Calcium Chloride
  - l. Section 735, Geotextiles
- 3. Commonwealth of Pennsylvania, Department of Highways Bulletin 25.
  - 4. Commonwealth of Pennsylvania, Department of Highways Bulletin 27.
  - 5. Commonwealth of Pennsylvania, Department of Transportation, Bureau of Design Standards for Roadway Construction.

1.04 SUBMITTALS

- A. Submit Mix Designs and sources of supply of all materials used under this Section. Submit in accordance with Section 01300, Submittals.

1.05 JOB CONDITIONS

- A. Materials and Installation: These items involving bituminous and concrete paving shall be the same for PennDOT, Township, and private areas.
- B. Qualifications of Workmen: Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of work described for this Section, and who shall be present at all times during progress of the work of this Section and shall direct all work performed under this Section.

For actual finishing of asphalt and concrete surfaces and operations of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required.

- C. Dust Control: Use all means necessary to control dust on and near the Work and on and near all off-site borrow areas if such dust is caused by the Contractor's operations during performance of the Work or is a result of the condition in which the Contractor leaves the site. Thoroughly moisten all surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other Work on the site.
- D. Protection:
  - 1. Protect and maintain cut pavement edges until permanent replacement paving is placed.
  - 2. Protect paved surfaces outside of the pavement removal limits. Repair pavement outside removal limits damaged by constructing operations at no additional expense to the Owner.

3. Use all means necessary to protect and maintain pavement materials before, during, and after installation to protect the installed work and materials of all other contractors.
  4. In the event of damage or failure of the work of this section within the Guarantee Period, immediately make repairs and replacements. Upon failure to perform maintenance or repairs within three (3) days after notice from the Authority, the Authority may perform such maintenance or repairs and deduct the cost thereof from any moneys due or to become due the Contractor.
  5. Assume responsibility for any injury or damage resulting from lack of required maintenance or repairs during Guarantee Period. Indemnify and save harmless the Authority from any and all loss by reason of any suit or action at law based upon any occurrence or omission occurring during this period.
- E. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Authority and at no additional cost to the Authority.
- F. Protection of Utilities: Protect existing facilities.
- G. Testing: The Contractor is advised that the Authority will retain the services of a testing Laboratory to check the densities of subgrade and bituminous material. In addition, cores may be taken to verify the thickness of the paving material. All testing costs will be charged to the Contractor.

1.06 TRAFFIC MAINTENANCE

- A. The Contractor shall furnish the necessary guards, watchmen, warning lights and similar items necessary to maintain state highway and other road/street traffic in accordance with PennDOT requirements. In general, the Contractor will not be permitted to interrupt traffic without specific arrangements for detouring traffic in accordance with PennDOT requirements. When traffic cannot be detoured, a minimum of ½ the roadway width shall be open at all times with traffic control.

PART 2. PRODUCTS

2.01 AGGREGATE BASE COURSE FOR PAVED AREAS

- A. Provide aggregate base complying with the applicable PennDOT Specifications, Publication 408, Section 350 - Subbase.

2.02 ASPHALTIC MATERIALS

- A. Mix Design: Provide asphaltic concrete consisting of a mixture of sand, mineral aggregate, and liquid asphalt mixed in such proportions that they meet applicable State Department of Transportation, Publication 408 Specifications.
1. Bituminous Concrete Base Course, Section 305.
  2. Bituminous Binder Course, Section 421.
  3. Bituminous Wearing Course - ID-2, Section 420.

2.03 CEMENT CONCRETE FOR RESTORATION

- A. Cement concrete shall meet the specifications of Section 03300, Cast-In-Place Concrete.
  - 1. Paving - Class AA or Class H.E.S.
  - 2. Plain Cement Concrete Curb Gutter - Class AA
  - 3. Plain Cement Concrete Curb - Class A
  - 4. Cement Concrete Sidewalk - Class A

2.04 GRAVEL DRIVEWAYS AND SHOULDERS

- A. Gravel Driveways - Granular material meeting the specifications of Publication 408, Section 703.3.
- B. Stabilized Shoulders - Paragraph 2.04A.
- C. Paved Shoulders, Type III
  - 1. Aggregate Base - PennDOT #2A
  - 2. Bituminous Prime Coat - MC-30, MC-70
  - 3. Bituminous Surface Treatment
    - a. E2 Emulsified Asphalt
    - b. AASHTO No. 8 and No. 67 Coarse Aggregates

2.05 OTHER MATERIALS

- A. All other materials, not specifically described but required for proper and complete installation of the Work of this Section, shall be selected by the Contractor subject to the approval of the Authority.

PART 3. EXECUTION

3.01 GENERAL

- A. Inspect all areas requiring work under this Section to ensure readiness to receive restoration.
- B. Permanent bituminous paving can only be done between April 1 and October 31 in PennDOT's Rights-of-Way unless otherwise permitted in writing by the District Engineer.

3.02 RAISING MANHOLE COVERS AND VALVE BOXES

- A. Install the adjusting rings in all sewer and storm manholes that require adjusting to meet the elevation of the repaving.
  - 1. Manholes within actual new construction shall meet finished elevation without adjusting rings.
- B. Coordinate the raising of all valve boxes and/or manhole covers belonging to other utilities.
- C. Where adjustments require the resetting of manhole covers, the mortar, Type M, shall consist of waterproof admixtures, portland cement and white sand. After material has set, paint with approved bitumastic coating. Refer to Standard Detail Drawing No. 7.

- D. Contractor shall be responsible to see that all such items as mentioned above are adjusted to the new paving elevation.

3.03 CONCRETE PAVING/PATCHING

- A. Perform all work for this activity as specified in PennDOT Publication 408, Section 501 - Reinforced or Plain Cement Concrete Pavement and RC Standards No. 21 and No. 26.

3.04 SUBGRADE AND AGGREGATE BASE PREPARATION - PENNDOT/TOWNSHIP/PRIVATE

- A. In preparation for permanent repaving, the temporary paving shall be removed.
- B. Prior to the replacement of the aggregate base course, the edges of the existing bituminous base and surface must be sawed a minimum of one (1) foot back from each side of the actual trench width.
- C. If paving is removed or disturbed for a greater width without written authorization of the Authority's Engineer, the Authority will require the Contractor to replace such pavement without compensation.
- D. Remove all material within the trench and "cut back" area to subgrade ready for the base course.
- E. The subgrade for all repaved areas shall be thoroughly compacted to the proper distance below and parallel with the prescribed level of the base course. The subgrade shall be completely compacted in an approved manner prior to placing the aggregate base course. The subbase depth shall be as shown on the Drawings and State or Municipality Standards. Compaction shall conform to the Density Requirements in Section 02225, Sub-Section 3.08.

3.05 BITUMINOUS PAVING - PENNDOT/TOWNSHIP/PRIVATE

- A. Place bituminous materials in accordance with PennDOT Publication 408, Specifications:
  - 1. Bituminous Concrete Base Course - Section 305
  - 2. Bituminous Binder Course - Section 421
  - 3. Bituminous Wearing Course - Section 420

3.06 EQUIPMENT

- A. Compacting Equipment: Shall be self-propelled tandem rollers having a minimum weight of ten (10) tons, except that hand-held vibrator compactors may be used in areas not accessible to rollers when specifically approved by the Authority.
- B. Paving Equipment: Shall be spreading, self-propelled asphalt paving machines capable of maintaining line, grade, and the minimum surface thickness specified, except that spreader boxes may be used in areas where specifically approved by the Authority.

3.07 PLACEMENT OF ASPHALTIC CONCRETE (SPECIFICS)

- A. Placement: After completion of the aggregate base course, place base and wearing courses of types and thickness as shown on the Drawings.
- B. Tack coat all vertical joints between existing and new paving with E-1, E-6, or E-8 bituminous

material.

- C. Receipt of Materials: Do not accept material unless it is covered with tarpaulins until unloaded when the temperature is more than 15 degrees F below the minimum temperature shown on the bituminous material suppliers Bill of Lading and when exceeding the maximum specified temperature.
- D. Do not place asphaltic concrete until the atmosphere and surface temperatures are 35 degrees F (and rising) for base course and 40 degrees F (and rising) for wearing; nor during fog, rain, or other unsuitable conditions.
- E. Spreading: Spread material in a manner which requires the least handling. Where thickness of finished pavement will be three (3) inches or less, spread in one (1) layer.
- F. Rolling: After the material has been spread, roll with the specified equipment until the surface is hard, smooth, unyielding, and true to the thickness and elevations shown on the Drawings.
- G. Roll the surface in at least two (2) directions until no roller marks are visible.
- H. Finished surfaces shall be free from birdbaths and irregularities, and shall be smooth.

### 3.08 OVERLAY

- A. Where a surface course is required over existing roads, the surfaces to be covered shall be cleaned of all foreign substances and any irregularities removed or filled in. A tack coat shall be applied in accordance with Section 460, of the PennDOT Publication 408, after which the surface course will be applied in accordance with Section 420, BITUMINOUS WEARING COURSE - ID-2.
- B. Where the overlay meets the existing paving, a neat cut shall be made in the existing surface in accordance with the construction details as shown on Standard RC-28 or as directed by the Authority.
- C. Contractor shall be responsible to see that all such items as mentioned in Section 3.08 A and B are adjusted to the new manhole elevation in such a manner as to provide a smooth, even transition from pavement to manhole cover.

### 3.09 FINISH TOLERANCES

- A. Finish all surfaces to the following tolerances:
  - 1) Base Course: Plus 0.00' to minus 0.04' from line and grade shown on the Drawings.
  - 2) Wearing Course: Plus or minus 0.02' at any point from line and grade shown on the Drawings.
- B. Core Testing
  - 1) Bituminous Concrete Base Course: The Contractor will have the paving cored by an approved laboratory. Two cores will be taken for each day's production. The cores will be tested for thickness and density and the results given to the Authority. Any deficiencies from specified thickness by ½ inch or more will require the section represented to be replaced by the Contractor. The average density of the cores shall be  $\geq 88\%$  of the theoretical density. The Contractor will replace any deficient sections. Core holes shall be properly patched and

sealed.

- 2) Wearing Course: Density testing shall be by nuclear gauge.  $\geq 92\%$  or  $< 97\%$  of theoretical density is required. Deficient sections shall be replaced.

### 3.10 SEALING

- A. All joints between the new paving and the existing paving and where the new paving abuts other materials such as curbs, manhole frames, and inlets shall be sealed with PennDOT asphalt cement AC-20. Width shall be twelve (12) inches for pavement joints and where curb acts as a gutter. Others shall be six (6) inches.

### 3.11 MAINTENANCE

- A. The Contractor shall maintain the final pavement for a period of two (2) years following the date of acceptance of project. In general, depressions in the final pavement in excess of one-half inch below the normal road grade shall be corrected. Corrections in the pavement shall be made within fifteen (15) days after the Contractor has been notified of the need for corrective action. In the event of the failure or refusal of the Contractor to make such corrections, the Authority reserves the right to have the necessary work performed and to charge the cost to the Owner under the Maintenance Bond.

### 3.12 BITUMINOUS DRIVEWAYS AND SIDEWALKS

- A. The materials and construction practices shall be as specified in Sub-Sections - Part 2 and 3.04 through 3.11.
- B. Aggregate base shall be as specified in Sub-Section 2.04 using six (6) inch depth for driveways and four (4) inch depth for sidewalks.
- C. Bituminous material shall be minimum two (2) inch depth for both or "in-kind" where existing is greater.
- D. Lighter, smaller compaction equipment may be used in these operations.

### 3.13 BITUMINOUS CURB

- A. The material and construction of bituminous curb replacement shall be in accordance with PennDOT Publication 408 - Section 636.

### 3.14 CEMENT CONCRETE CURB/CURB GUTTER/SIDEWALKS

- A. General
  1. Remove minimal lengths for restoration, normally, to a scoring or joint.
- B. Grade areas to allow respective depths of aggregate base in kind with minimum being four (4) inches.
- C. Place ½ inch expansion material between new and old concrete and other existing rigid structures.
- D. Place required class of concrete to the same cross-section as existing. Refer to PennDOT Standard RC-64 for sizing where original cross-section is indefinite.

1. Driveways shall be minimum six (6) inches thick.
  2. Sidewalks shall be minimum four (4) inches thick with 6"x6"xw1.4"/w1.4" wire mesh on four (4) inch base of compacted select granular material.
- E. Surfaces shall be given a light broom finish with all edges tooled.
- F. Curing may be with wet burlap or liquid membrane.
- G. Contraction joints may be tooled or saw-cut. Twenty (20) feet maximum for curb/curb gutter and five (5) feet for sidewalk.
- H. Mold four (4) test cylinders for each day's placement. When day's placement is over fifty (50) cubic yards, mold four (4) test cylinders for each fifty (50) cubic yards or part thereof.

3.15 GRAVEL DRIVEWAYS AND STABILIZED SHOULDERS

- A. Place six (6) inches of granular material meeting the requirements of Sub-Section 2.04 A.
- B. Grade shoulders to a minimum of ½ inch per foot or existing slope and properly compact.
1. If the length of the facility exceeds fifty (50) feet, the shoulder shall be graded, rolled, and penetrated with RT-2C or MC-30 bituminous material at a minimum rate of .25 gallon per square yard and chipped or lightly sanded to prevent tracking of oil onto the pavement.

3.16 PAVED SHOULDERS, TYPE III

- A. This work is construction of shoulders on a prepared surface and consists of the following:
1. Place PennDOT No. 2A material to the depths of bituminous base and wearing courses allowing ½ inch for depth of surface treatment after compaction.
  2. Apply prime coat of MC-30 on MC-70 bituminous material at the rate of .20 to .50 gallon per square yard and allow to cure 24 hours. Protect surface during this period.
  3. Apply E-2 bituminous material at the rate of .25 to .50 gallon per square yard. Then spread 25 to 45 pounds of AASHTO No. 67 coarse aggregate and roll thoroughly to set aggregate.
  4. After first application has cured, apply E-2 at a rate of .25 to .50 gallons per square yard. Then spread 15 to 30 pounds of AASHTO No. 8 coarse aggregate and roll thoroughly to set aggregate.
  5. Use pneumatic-tire and steel wheel tandem rollers (non-vibratory) for rolling. Do minimal backrolling.
  6. Protect from traffic until areas have cured.
- B. For this Work in the PennDOT Rights-of-Way, adhere to PennDOT Publication 408, Section 653 and Highway Occupancy Permit.