

SECTION 32 12 16
ASPHALT PAVING (Bituminous Paving and Surfacing)

PART 1 GENERAL**1.1 DESCRIPTION**

- A. The work of this section includes, but is not limited to:
1. Bituminous concrete base course construction.
 2. Placement and compaction of bituminous binder and wearing surface.
 3. Placement of bituminous seal coat and surface treatment.
 4. Surface preparation.
- B. Related Work Specified Elsewhere:
1. Earth Moving (Site excavation and placement of fill material): Section 31 20 00.00
 2. Earth Moving (Roadway excavation, fill, and compaction): Section 31 20 00.01
- C. Definitions: NONE
- D. Applicable Standard Details:
As shown on the Contract Drawings, in accordance with Publication 408 Specifications.

1.2 QUALITY ASSURANCE

- A. Reference Standards:
1. Pennsylvania Department of Transportation (PennDOT), latest revision:
Publication 408, Specifications
Publication 213, Temporary Traffic Control Guidelines
Publication 27, Specification for Bituminous Mixtures (Bulletin 27)
Publication 37, Specification for Bituminous Materials (Bulletin 25)
 2. American Society for Testing and Materials (ASTM):
D2950 Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
 3. Pennsylvania Code
Title 67. Transportation, Chapter 459, Occupancy of Highways by Utilities
- B. Inspections:
1. Inspection by the ENGINEER will, at a minimum, be made of the subgrade prior to placement of the base course, and of the base course prior to placement of the binder surface.

1.3 SUBMITTALS

- A. Certification:
1. Submit certification from bituminous and aggregate suppliers attesting that materials conform to Publication 408, Specifications.
 2. Submit bituminous concrete mix design for approval.
 3. Provide PennDOT certifications (CS-4171 with each load delivered to the job site, as required by ENGINEER).

1.4 JOB CONDITION

- A. Control of Traffic:
1. Take measures to control traffic during paving operations. Do not allow traffic on newly paved areas until adequate stability and adhesion have been attained and the material has cooled to 140° F or less.
 2. Employ traffic control measures in accordance with Publication 213 "Temporary Traffic Control Guidelines".
 3. OWNER, ENGINEER and all appropriate emergency services (police, fire and ambulance) shall be notified by the CONTRACTOR a minimum of 36 hours in advance of any temporary lane enclosure.
- B. Protection of Adjacent Areas:

1. Restore existing surface outside the limits of the work that has been damaged by the CONTRACTOR's operations, to its original condition at the expense of CONTRACTOR.
2. Reasonable access must be maintained for adjacent property owners and commercial properties.

PART 2 PRODUCTS

2.1 BITUMINOUS MATERIALS AND AGGREGATES

- A. All bituminous materials and aggregates used in base course construction, paving, and resurfacing are designated in these specifications by, and shall conform to, the applicable portions of the Publication 408 Specifications. The coarse aggregate used in bituminous wearing surfaces or the fine aggregate in the case of FJ-1 Wearing surfaces, shall have the following aggregate Skid Resistance Level (SRL) letter designation based on the current Average Daily Traffic (ADT) for resurfacing or anticipated initial daily traffic on new facilities:

<u>ADT</u>	<u>SRL</u>	<u>ALTERNATIVES</u>
20,000 and Above	E	None
5,000 to 20,000	H	E, H, Blend of E and M, Blend of E and G
3,000 to 5,000	G	E, H, G, Blend of H and M, Blend of E and L
1,000 to 3,000	M	E, H, G, M, Blend of H and L, Blend of G and L, Blend of E and L
1,000 and Below	L	Any

Note: All blends are 50% by mass and shall be accomplished by an approved method.

- B. All Superpave asphalt mixtures shall conform to applicable sections of Publication 408 Specifications. Aggregate shall be provided by approved sources and have the SRL designation as specified above. Mixture shall have the specified Petroleum Grade (PG) as indicated on Contract Drawings. If no PG is indicated on Contract Drawings, the bituminous mixture shall be PG 64-22.

PART 3 EXECUTION

3.1 BASE COURSES

- A. Superpave Asphalt: Where indicated on the Contract Drawings, construct HMA base course to compacted depth in accordance with Publication 408, Section 309.
- B. Bituminous paver shall be self-propelled with activated screed and shall have a minimum paving width of 18'. All exceptions must be approved by the OWNER and ENGINEER.

3.2 SURFACE COURSES

- A. Superpave Asphalt:
1. HMA Binder Course - Construct HMA binder course with aggregate size, Design ESAL's and PG specified and to the compacted depth shown on the Contract Drawings, in accordance with Publication 408 Specifications, Section 409.
 2. HMA Wearing Course - Construct HMA wearing course with aggregate size, Design ESAL's and PG specified and to the compacted depth shown on the Contract Drawings, in accordance with Publication 408 Specifications, Section 409.
 3. Tack coat shall be applied to ensure bonding between courses and shall conform to Publication 408 Specifications, Section 460.

4. Compaction testing for in-place density shall be conducted during placement of the material, in accordance with PennDOT Publication 408, Section 409. Alternatively, pavement cores, in accordance with Section 409.4, may be substituted. Acceptable density shall be within 90-97% of the maximum theoretical density, as per ASTM D698.
 5. Do not allow vehicular traffic on newly compacted Superpave HMA materials until the temperature cools below 140°F.
 6. Bituminous paver shall be self-propelled with activated screed and shall have a minimum paving width of 18'. All exceptions to paver requirement shall be approved by the OWNER and ENGINEER.
- B. Compaction:
1. Compact by rolling with steel-wheel, vibration or pneumatic tire rollers or a combination of these to obtain specified layer thickness and until non-movement of material under compaction equipment is achieved, unless other density requirements are specified on Contract Drawings.
 2. The roller pattern and speed shall be monitored by the CONTRACTOR and ENGINEER to avoid roller marks, pattern segregation and displacement of hot mixtures.
- C. Bituminous Seal Coat (single application)
1. Construct bituminous seal coat in accordance with Publication 408 Specifications, Section 470.
- D. Bituminous Surface Treatment (double application):
1. Construct bituminous surface treatment in accordance with Publication 408 Specifications, Section 480.

3.3 JOINTS

- A. Notch:
Where specified on Contract Drawings, the edge of the overlay shall be saw cut to a depth of 1-1/2" for the entire length of the joint and the detached material removed to a minimum notch width of 12". Notch shall be skewed a minimum 6:1 unless otherwise noted. A cold planer may be used. The vertical face must be painted with PG 64-22 or the same asphalt material used in mix design (Publication 408, Section 401.3(j)).
- B. Sealing:
All joints shall be sealed rubberized joint sealing material. When wearing course is placed adjacent to curb to form bituminous gutter, seal with hot bituminous material of the class and type designated for wearing course and extend to 6 inches from the curb, applied evenly. The use of PG 64-22 may be permitted when approval is obtained from the ENGINEER.

3.4 FIELD QUALITY CONTROL

- A. Proof of Product:
At the time of material delivery to the site, the OWNER's Representative or ENGINEER shall be furnished with a delivery ticket indicating material specifications. The tickets shall include, but not limited to, vehicle identification, date, time, product identification, product quantity (Petroleum Grade, Equivalent Single, Axle Loading (ESAL's), aggregate size and Skid Resistance Level (SRL) (for bituminous wearing course).
- B. Surface Tolerance of Base and Binder Course:
After the base course has been completed as specified, the surface smoothness shall be checked with approved templates, string lines, or straightedges.
1. Templates. The CONTRACTOR shall furnish and use approved templates of required length and cut to the required crown of the finished surface of the base course, for checking the crown and contour thereof. The templates shall be equipped with metal or other approved vertical extensions attached to each end, so that the bottom of the template will be at the elevation of the top of the aggregate. At least 3 such templates shall be furnished, and used at intervals of not more than 25 feet.

2. String Lines. String lines, for controlling the finished elevation of the base course, shall be furnished with ample supports and offset along each side of the base course, and shall be maintained until all irregularities have been satisfactorily corrected.
 3. Straightedges. Approved straightedges 10 feet in length shall also be furnished and used for testing longitudinal irregularities in the surface of the base course.
Any surface irregularities that exceed ½ inch shall be remedied by removing or adding bituminous material as required, after which the entire area, including the surrounding surface, shall be rolled until satisfactorily compacted.
- C. Tests for Depth of Finished Base Course:
During the progress of the work, the depth of the base course will be measured by the ENGINEER and unsatisfactory work shall be repaired, corrected, or replaced. The OWNER will not be liable for payment for any excess depth of base course.
1. The depth will be determined by cutting or coring holes to the full depth of the completed base course. One depth measurement may be required for each 1500 square yards, or less, of completed base course. Any section in which the depth is ½ inch or more deficient in specified depth shall be satisfactorily corrected at no expense to the OWNER.
 2. All test holes shall be backfilled with similar material and satisfactorily compacted by and at the expense of the CONTRACTOR. This operation shall be performed under the observation of the ENGINEER who will check the depth for record purposes.
- D. Surface Tolerance of Wearing Course:
After the wearing course has been completed as specified, the surface smoothness shall be checked with straightedges.
1. Straightedges. Approved straightedges 10 feet in length shall be furnished and used for testing longitudinal irregularities in the surface of the wearing course.
Any surface irregularities that exceed 3/16 inch shall be remedied by removing or adding wearing material as required, after which the entire area, including the surrounding surface, shall be rolled until satisfactorily compacted.
- E. Tests for Depth of Finished Wearing Course:
During the progress of the work, the depth of the wearing course may be measured by the ENGINEER and unsatisfactory work shall be repaired, corrected, or replaced. The OWNER will not be liable for payment for any excess depth of wearing course.
1. The depth will be determined by cutting or coring holes to the full depth of the completed wearing course. Test holes to be excavated by the CONTRACTOR at no expense to the OWNER. One depth measurement may be required for each 1500 square yards of completed wearing course. Any section in which the depth is 1/4 inch or more deficient in specified depth shall be satisfactorily corrected at no expense to the OWNER.
 2. All test holes shall be backfilled with similar material and satisfactorily compacted by and at the expense of the CONTRACTOR. This operation shall be performed under the observation of the ENGINEER who will check the depth for record purposes.

END OF SECTION