

PART 1 – GENERAL

1.1 RELATED SECTIONS

- A. Section 31 20 00 – Earth Moving
- B. Section 32 12 16 – Asphalt Paving
- C. Section 32 13 13 – Concrete Paving
- D. Section 32 14 13 – Asphaltic Concrete Paving
- E. Section 32 91 23 – Turf and Grasses
- F. Section 01 33 00 – Submittal Procedures
- G. Section 01 45 00 – Quality Control
- H. Section 01 78 00 – Closeout Submittals

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. AASHTO M 140 – Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses
 - 2. AASHTO T 99 – Moisture-Density Relations of Soils Using a 5.5-lb Rammer and 12-in. Drop
 - 3. AASHTO T 180 – Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in. Drop
 - 4. AASHTO T 27 – Sieve Analysis of Fine and Coarse Aggregates
 - 5. AASHTO T 88 – Particle Size Analysis of Soils
- B. ASTM International (ASTM)
 - 1. ASTM D698 – Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³)
 - 2. ASTM D1557 – Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³)
 - 3. ASTM D4318 – Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 4. ASTM D2487 – Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - 5. ASTM D2940 – Graded Aggregate Material for Bases or Subbases for Highways or Airports
- C. Federal Highway Administration (FHWA)
 - 1. FHWA Technical Advisory T 5040.27 – Quality Assurance for Construction Materials Testing
- D. Occupational Safety and Health Administration (OSHA)
 - 1. OSHA 29 CFR Part 1926 – Safety and Health Regulations for Construction

1.3 SUBMITTALS

A. Action Submittals

1. Product Data: Submit manufacturers' technical data, including material compositions, physical properties, and installation instructions for aggregate base materials.
2. Mix Design: Submit proposed aggregate gradation and mix design certified by a qualified testing laboratory.
3. Quality Control Plan: Submit a detailed plan outlining testing procedures, frequency, and acceptance criteria for compaction and material quality.
4. Samples: Submit representative samples of aggregate material in sizes specified for approval.
5. Construction Schedule: Submit a schedule indicating anticipated start and completion dates of base course placement and compaction activities.

B. Informational Submittals

1. Test Reports: Submit results of laboratory and field tests including gradation, compaction, moisture content, and density testing.
2. Certifications: Submit certificates of compliance for materials used, including verification of aggregate source and compliance with specified standards.
3. Inspection Reports: Submit inspection and monitoring reports documenting compliance with specified quality assurance requirements.

1.4 QUALITY ASSURANCE

A. Qualifications

1. Installer Qualifications: Engage experienced installers with a minimum of five years documented experience in placing and compacting asphaltic base courses similar in material and scope to this project.
2. Testing Laboratory: Use an independent testing agency qualified in performing soil and aggregate testing according to ASTM and AASHTO standards.

B. Pre-Installation Conference

1. Conduct a pre-installation meeting to review project requirements, quality control procedures, and coordination with other trades.

C. Mock-Up

1. Provide a mock-up section of base course not less than 100 square feet to demonstrate compliance with density, thickness, and surface tolerances.

D. Field Quality Control

1. Conduct in-place density testing at a frequency not less than one test per 1,000 square yards or as required by the Engineer.
2. Perform moisture content testing to ensure material is within optimum moisture range for compaction.
3. Verify thickness and surface tolerances using approved measuring devices.

E. Nonconformance

1. Remove and replace or rework base course material failing to meet specified requirements.

F. Regulatory Compliance

1. Comply with all applicable federal, state, and local environmental, health, and safety regulations related to materials, handling, and placement.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery

1. Deliver aggregate base materials in clean, dry condition, free of foreign materials or contaminants.
2. Deliver materials in quantities and at times to avoid delays in construction.

B. Storage

1. Stockpile aggregate materials on well-drained surfaces to prevent contamination or segregation.
2. Protect materials from exposure to excessive moisture or freezing conditions.

C. Handling

1. Handle materials to prevent segregation of particle sizes and contamination.
2. Use equipment and methods that do not degrade the quality or gradation of aggregate base materials.

1.7 WARRANTIES

A. Material Warranty

1. Provide a minimum one-year warranty for materials used in the base course from the date of substantial completion, ensuring they meet specified gradation and quality requirements.

B. Workmanship Warranty

1. Provide a minimum one-year warranty for workmanship covering defects in placement, compaction, and adherence to thickness and density specifications.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Aggregate Base Course Material

1. Aggregate base course shall consist of crushed stone, crushed slag, crushed gravel, or natural gravel conforming to ASTM D2940 and AASHTO M 140.
2. Material shall be free from organic matter, clay lumps, or other deleterious substances.
3. Gradation requirements:
 - a) 100% passing 1-inch sieve
 - b) 50-85% passing 3/8-inch sieve
 - c) 25-60% passing No. 4 sieve
 - d) 10-35% passing No. 200 sieve

4. Plasticity Index (PI) shall not exceed 6 as determined by ASTM D4318.
- B. Water
1. Water used for moisture conditioning and compaction shall be potable and free from harmful salts or impurities.

2.2 MANUFACTURERS

- A. Aggregate Producers
1. Vulcan Materials Company
 2. Martin Marietta Materials
 3. Oldcastle Materials
 4. Lehigh Hanson, Inc.
 5. Local approved quarry sources as verified by Engineer
- B. Testing Agencies
1. SGS North America
 2. Intertek Group plc
 3. Bureau Veritas
 4. Local state-certified laboratories

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade is prepared in accordance with Section 31 20 00 – Earth Moving, with final grading complete and acceptable to Engineer.
- B. Confirm that drainage provisions are in place and functioning to prevent water accumulation beneath base course.
- C. Notify Engineer of unsatisfactory conditions prior to placement.

3.2 PREPARATION

- A. Scarify and compact subgrade to minimum 95% of maximum dry density as determined by ASTM D698 or AASHTO T 99 unless otherwise specified.
- B. Remove soft, unstable, or unsuitable materials and replace with approved fill.
- C. Verify moisture content of subgrade is within $\pm 2\%$ of optimum for compaction.

3.3 PLACEMENT

- A. Place aggregate base course in uniform layers not exceeding 8 inches loose thickness.
- B. Spread material evenly using mechanical spreaders or approved equipment to avoid segregation.
- C. Maintain moisture content within $\pm 2\%$ of optimum for maximum compaction during placement.

- D. Compact each layer to at least 98% of maximum dry density as determined by ASTM D698 or AASHTO T 99.
- E. Shape surface to required grade and cross-section with tolerance of ± 0.1 foot in elevation and ± 0.1 foot in lateral alignment.
- F. Remove and replace any base course material that does not meet thickness, density, or moisture requirements.

3.4 FIELD QUALITY CONTROL

- A. Testing
 - 1. Perform in-place density tests at a minimum frequency of one test per 1,000 square yards per layer or as directed by Engineer.
 - 2. Conduct moisture content tests at a minimum of one test per 500 square yards during placement.
 - 3. Submit test results to Engineer within 24 hours of testing.
- B. Acceptance Criteria
 - 1. Minimum in-place density shall be 98% of laboratory maximum dry density.
 - 2. Thickness tolerance shall be within ± 0.5 inches of design thickness per lift.
 - 3. Surface tolerance for finished base course shall not deviate more than 0.1 foot from specified grade.
- C. Noncompliance
 - 1. Base course failing to meet specified density, thickness, or grading tolerances shall be removed and replaced or re-compacted to meet requirements.
 - 2. Additional testing shall be performed after corrective work.

3.5 PROTECTION

- A. Protect completed base course from traffic, erosion, and contamination until subsequent paving or surfacing is placed.
- B. Do not allow construction equipment to operate on base course unless approved by Engineer.
- C. Repair damage resulting from construction operations at no additional cost.

3.6 CLEANING

- A. Remove excess and waste materials from site in accordance with Section 01 74 19 – Construction Waste Management and Disposal.
- B. Leave base course surface clean, uniform, and ready for subsequent construction.

END OF SECTION 32 11 26

BUILDING FOR ROGERS FACILITIES DEPARTMENT
ROGERS, AR

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DEMX ARCHITECTURE
FAYETTEVILLE, AR