

SECTION 32 11 23

AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

- A. Provide all labor, material, equipment, and services required to complete the work specified in this section, and as shown on the drawings.
- B. The work of this section includes but is not necessarily limited to:
 - 1. Preparation of subgrade.
 - 2. Construction of base and subbase course materials under, pavements, curbs, walks including pavers, and exterior slabs.
 - 3. Geotextile installation as necessary.
 - 4. Material testing and compaction retesting as required.
- C. Related Work is specified in other sections include, but are not necessarily limited to, the following:
 - 1. Section 31 02 00 - Development Permits
 - 2. Section 31 02 00- Subsurface Investigations
 - 3. Section 31 10 00 - Site Preparation
 - 4. Section 31 20 00 - Earthwork
 - 5. Section 31 25 13 - Erosion Control
 - 6. Section 33 31 00 - Sanitary Sewer System
 - 7. Section 33 41 00 - Storm Drainage
 - 8. Section 32 12 16 - Pavement, Walks & Curbs

1.2 SUBMITTALS

- A. Comply with Section 01 33 00 - Submittal Procedures.
- B. Comply with Section 01 40 00 - Quality Requirements.
- C. Test Reports: Submit the following reports:
 - 1. Reports on material gradations (ASTM D422).
 - 2. Field density test reports (ASTM D2922) for retesting.
 - 3. One optimum moisture-maximum density curve for each type of material used in the Work (ASTM D-1557 modified).
 - 4. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.
- D. Materials Source: Submit name of imported materials source.
- E. Material Certifications: Submit materials certificate signed by the material supplier and Contractor, certifying that materials comply with, or exceed, the requirements herein.
- F. Product Data: Submit data for geotextile fabric indicating fabric and construction.

- G. A mechanical analysis test and moisture-density curve test shall be submitted and approved by the Engineer for all materials used in this section prior to placement of the material.
- H. Product Data: Submit manufacturer's data for geotextile fabric.

1.3 QUALITY ASSURANCE

- A. Comply with the requirements of Section 01 40 00 – Quality Requirements.
- B. Furnish each aggregate material from single source throughout the Work.
- C. All materials used for the Work in this Section must be reviewed and approved by the Engineer prior to delivery to the Site.
- 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. All Work shall comply with the requirements of the Maine Department of Environmental Protection, the [Cumberland](#) County Soil & Conservation District Standards, and U.S. Environmental Protection Agency NPDES Permit 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.
- G. All Work shall comply with the conditions of the enclosed permits.
- 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. The Contractor shall protect structures, utilities, sidewalks, pavements, property monuments, monitoring wells, and other facilities from damages caused by settlement, lateral movement, undermining, washout, and other hazards created from earthwork operation.
- J. The Contractor shall bear all cost associated with correcting any Work that does not meet the requirements of this Section or any damaged items due to construction activities. These costs include any professional services required for inspection of repairs or replacements.
- K. Costs related to retesting due to unacceptable qualities of work and failures discovered by testing shall be paid for by the Contractor at no additional expense to Owner, and the costs thereof will be deducted by the Owner from the Contract Sum.
- L. Paved surfaces: Do not operate equipment on paved surfaces. Paved surfaces outside the limits of Work which become damaged shall be repaved by the Contractor.
- M. Contractor shall be responsible for notifying all affected utility companies and Dig Safe before starting work.

- N. Field Measurements:
1. Verify that survey horizontal and vertical control reference points are present and correct as indicated. Protect these points from disturbance during the course of the Work, or correctly re-establish as necessary.
 2. During construction, provide all necessary line and grade staking to properly control the Work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Screened or Crushed Gravel for Pavement Base: Maine DOT Standard Specification, Highways and Bridges; Section 703.06a, Type A conforming to the following gradation:

Sieve Size	Percent Finer by Weight
6 inches	100
½ Inch	40 to 70
¼ Inch	30 to 55
No. 40	0 to 20
No. 200	0 to 5

- B. Sand or Gravel for Pavement Subbase: Maine DOT Standard Specification, Highways and Bridges; Section 703.06b, Type D conforming to the following gradation:

Sieve Size	Percent Finer by Weight
6 Inches	100
¾ Inch	25 to 70
No. 40	0 to 30
No. 200	0 to 7

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 73 00 - Execution: Verification of existing conditions before starting work.
- B. Verify substrate has been inspected, gradients and elevations are correct, and are dry.

3.2 PREPARATION

- A. Verify subgrade has been inspected, gradients and elevations are correct, and is dry.
- B. Prior to placement of subbase, the Engineer shall review subgrade conditions.

- C. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- D. Do not place fill on soft, muddy, or frozen surfaces.
- E. Verify that subgrade has been prepared according to Section 31 20 00.
- F. Refer to Section 31 20 00 for testing requirements.

3.3 FIELD QUALITY CONTROL

- A. Comply with Section 01 40 00 - Quality Requirements.
- B. Comply with Section 01 73 00 - Execution Requirements.
- C. Testing and Field Observations:
 1. The Owner may retain and pay for the services of an independent testing and inspection firm and/or a Geotechnical Consultant to perform on-site observation and testing during the various phases of the construction operations. The scope of services will be determined by the Owner and the independent testing and inspection firm and/or the Geotechnical Consultant and will be provided to the contractor. The Owner reserves the right to modify or waive the services of the independent testing and inspection firm and/or the Geo-technical Consultant. The services of a Geotechnical Consultant/Inspection and testing firm may include, but not necessarily be limited to, the following:
 - a. Observation during backfilling and compacting operations.
 - b. Laboratory testing and analysis of fill materials as specified herein and proposed by the Contractor for incorporation into the Work.
 - c. Observation of construction and performance of water content, gradation and compaction tests at a frequency and locations that he shall select. The results of these tests will be submitted to the Owner, Engineer, and Contractor on a timely basis so that action can be taken to remedy indicated deficiencies. During the course of construction, the Geotechnical Consultant will advise the Owner in writing if at any time in his opinion the Work hereunder is of unacceptable quality. Failure of Geotechnical Consultant to give notice, shall not excuse the Contractor from latent defects discovered in his work.
 2. The contractor shall make provisions for allowing observations and testing of contractor's Work by the independent testing and inspection firm and/or the Geotechnical Consultant. The Contractor shall assist the testing agency as required and shall deliver samples of all materials required to the testing agency at the Contractor's expense.
 3. The presence of the independent testing and inspection firm and/or the Geotechnical Consultant does not include supervision or direction of the actual work of the Contractor, his employees or agents. Neither the presence of the independent testing and inspection firm and /or the Geotechnical Consultant, nor any observations and testing performed by them, nor failure to give notice of defects shall excuse the Contractor from defects discovered in his work.
 4. Costs related to retesting due to unacceptable qualities of work and failures discovered by testing shall be paid for by the Contractor at no additional expense to Owner, and the costs thereof will be deducted by the Owner from the Contract Sum.

- D. Contractor will pay for all proposed material gradation testing. Owner will pay for initial field compaction tests.
- E. Minimum Number of Tests:
 - 1. Paved Areas and Slab Subgrades: In each compacted fill layer, make one field density test for every 2,000 square feet of overlaying slab or paved area, but in no case less than 3 tests for each.

3.4 AGGREGATE PLACEMENT

- A. Place aggregate in maximum 8 inch layers and compact each course to 95 percent of the maximum dry density as determined by ASTM D-1557 with self-propelled vibratory compaction equipment.
- B. Course thicknesses shown on the Drawings are compacted thicknesses.
- C. Construction methods shall conform to MDOT Standard Specifications, Section 304.03 and 304.04.
- D. Coordinate aggregate placement with curb installation.
- E. Level and contour surfaces to elevations and gradients indicated.
- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation From Flat Surface: 1/2 inch measured with 10 foot straight edge.
- C. Maximum Variation From Thickness: 1/4 inch.
- D. Maximum Variation From Elevation: 1/2 inch.

END OF SECTION