

DIVISION 300 - BASES

SECTION 301 Through 303 - VACANT

SECTION 304 - AGGREGATE BASE AND SUBBASE COURSE

304.01 Description This work shall consist of furnishing and placing one or more courses of aggregates on a prepared surface in accordance with the specifications in reasonably close conformity with the lines, grades, thickness and typical cross sections, as shown on the plans or established.

304.02 Aggregate Aggregates shall conform to the requirements specified in the following Subsections of Division 700 - Materials:

Aggregate Base	703.06 a
Aggregate Subbase	703.06 b

Aggregate for subbase or base courses shall be material meeting the aggregate type requirements specified in the following table.

Material	Aggregate Type (Subsection 703.06)
Aggregate Subbase Course, Gravel Top 225 mm [9 in]	D
Aggregate Subbase Course, Gravel Below 225 mm [9 in]	¹ D or E
Aggregate Subbase Course, Granular	G
Aggregate Subbase Course, Sand	F
Aggregate Base, Course, Crushed	² A or B
Aggregate Base, Course, Screened	² B or C

¹. Contractor's option

². Will be designated on the plans

The portion of material passing a 75 mm [3 in] sieve, for the various classes of aggregate base and aggregate subbase, at the time it is deposited on the roadbed shall conform to the gradation requirements of the contract. Oversized stones shall be removed from the aggregate before depositing on the roadway. Oversized stones are stones that will not pass a 150 mm [6 in] square mesh sieve.

304.03 Placing The maximum compacted thickness of any aggregate subbase or aggregate base course layer shall not exceed 300 mm [12 in] unless the Contractor demonstrates by a test section that the required compaction can be obtained. If compacted layers more than 300 mm

[12 in] are allowed, the Contractor shall agree to make the necessary excavations and backfilling in the course for the Resident to determine the density.

When layers are constructed of differently graded aggregate, fine grading of the lower layer will not be required.

Each layer of aggregate shall be placed over the full width of the section except, the Resident may authorize the Contractor to place less than full width layers, when existing traffic or other conditions restrict operations over the full width of the section. When the Contractor places material to complete the full width, the exposed edge of the previously placed aggregate shall be cleaned of all contamination before additional base or subbase aggregate is placed adjacent to it.

Aggregate base and subbase courses may be placed upon frozen surfaces when such surfaces have been properly constructed.

The material as spread shall be well mixed with no pockets of either fine or coarse material. Segregation of large or fine particles will not be allowed.

304.04 Shaping, Compacting and Stabilizing Compaction of each layer shall continue until a density of not less than 95% of the maximum density has been achieved for the full width and depth of the layer. The maximum density shall be determined in accordance with AASHTO T180, Method C or D, corrected by the Soils Laboratory Adjustment Chart available at the MDOT Central Laboratory Bangor, Maine. Field density tests will be made by the Department. The surface, compaction and stability, shall be satisfactorily maintained until the pavement course has been placed. If required, additional water and fine material shall be applied to prevent checking, raveling or rutting.

Fine material added to the base shall be uniformly blended into the top 225 mm [9 in] of the course being stabilized. The blended material shall meet the requirements of Section 304.02 - Aggregate.

If the top of any layer becomes contaminated by degradation of the aggregate or addition of foreign material, the contaminated material shall be removed and replaced with the specified material.

All layers of aggregate subbase course shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed unless otherwise authorized.

The Contractor shall bear full responsibility for and make all necessary repairs to the subbase course and the subgrade until the full depth of the subbase course is placed and compacted. Repairs shall be considered incidental to other contract items.

The top of any aggregate base or subbase course layer shall be scarified and loosened for a minimum depth of 25 mm [1 in] immediately prior to the placing of the next layer of aggregate

base or subbase. This scarifying shall be considered incidental to placing the course, and no separate payment will be made.

The surface of each layer shall be maintained during compaction operations in such a manner that a uniform texture is produced and the aggregate firmly keyed. The moisture content of the material shall be maintained at the proper percent to attain the required compaction and stability.

If voids remain on the surface after the subbase course has been constructed to grade, compacted, checked and approved, sand-leveling material shall be dumped and spread as directed. The quantity of sand leveling material shall be limited to the amount necessary to fill the voids and the minor low areas on the subbase surface. After the sand leveling material has been spread, it shall be completely rolled by a rubber-tired roller with water applied, if necessary. The surface of this material shall be maintained in its compacted and graded condition until the bituminous pavement has been placed. The furnishing, spreading, compacting and maintaining of sand leveling material will be considered included in the measurement and payment of the subbase course and no separate payment will be made.

304.05 Surface Tolerance The completed surface of the subbase or base course shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 10 mm [$\frac{3}{8}$ in].

304.06 Method of Measurement Except as otherwise provided, aggregate base course and aggregate subbase to the level of subgrade will be measured by the cubic meter [cubic yard] in place unless designated by pay item to be measured by truck measure. When measured in place, the width and thickness for measurement will be the width and thickness of aggregate base or subbase as shown on the plans or as modified. The length will be along the centerline unless modified by other methods generally recognized as conforming to good engineering practice. All measurements will be in accordance with Section 108.1 - Measurement of Quantities for Payment. When designated by pay item to be measured by truck measure, the measurement will be made in vehicles at the point of delivery as shown on delivery slips in accordance with Section 108.1.3 F - Delivery Slips.

As an alternative to in-place measurement, the Contractor and the Resident may agree in writing that the quantities of aggregate base and subbase for payment will be that shown in the Schedule of Items. If such an agreement is reached, no further measuring and computing of quantities will be required and the quantity referred to herein will be final.

Aggregate base course and aggregate subbase course designated by pay item to be measured in place and used for driveways and other locations difficult to accurately measure in place, may be measured in vehicles at 80% of the number of cubic meters [cubic yards] accepted and used, at the point of delivery as shown by "Delivery Slips" in accordance with Section 108.1.3 F. The quantity so measured shall not exceed 1,000 m³ [1,250 yd³] per contract, after shrinkage.

Pit measured items will be measured by the cubic meter [cubic yard] in its' original position by ground modeling or other approved surveying methods. The final quantity will be the

amount actually removed from the pit and used on the Project. Tailings, screenings, overburden, material used as other pay items, waste, and unauthorized use of the material will be deducted from the final quantity amount.

304.07 Basis of Payment The accepted quantities of aggregate base course and aggregate subbase course of the type specified will be paid for at the respective contract unit price per cubic meter [cubic yard].

When aggregate is required for slope blanket backfill, bedding under drainage structures and other foundations, it shall be paid for at twice the contract unit price for the respective aggregate base or subbase course item used.

Payment for aggregate base and subbase courses shall be full compensation for purchasing material, stripping pits, excavating, crushing, screening, hauling, placing, compacting and other necessary processes which are required to furnish acceptable material under this item.

Water and/or fines added to material to aid compaction and stabilization to prevent raveling and rutting shall be incidental to the work.

The quantity for payment of aggregate subbase or aggregate base placed on rock subgrade shall include only that material placed above the normal subgrade line.

Furnishing and placing aggregate subbase or aggregate base backfill material between the rock and the normal subgrade line will not be paid for directly but shall be considered incidental to the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
304.08 Aggregate Base Course-Screened	cubic meter [Cubic Yard]
304.083 Aggregate Base Course-Screened, Truck Measure	cubic meter [Cubic Yard]
304.09 Aggregate Base Course-Crushed	cubic meter [Cubic Yard]
304.093 Aggregate Base Course-Crushed, Truck Measure	cubic meter [Cubic Yard]
304.10 Aggregate Subbase Course-Gravel	cubic meter [Cubic Yard]
304.102 Aggregate Subbase Course-Gravel, Pit Measure	cubic meter [Cubic Yard]
304.103 Aggregate Subbase Course-Gravel, Truck Measure	cubic meter [Cubic Yard]
304.104 Aggregate Subbase Course-Gravel, Plan Quantity	cubic meter [Cubic Yard]
304.11 Aggregate Subbase Course-Granular	cubic meter [Cubic Yard]
304.113 Aggregate Subbase Course-Granular, Truck Measure	cubic meter [Cubic Yard]

304.12	Aggregate Subbase Course-Sand	cubic meter [Cubic Yard]
304.123	Aggregate Subbase Course-Sand, Truck Measure	cubic meter [Cubic Yard]

SECTION 305 - PREMIXED BITUMINOUS BASE

Reserved

SECTION 306 - RECLAIMED MATERIAL FOR STABILIZED BASE

Reserved

SECTION 307 - FULL DEPTH RECYCLED PAVEMENT

307.01 Description This work shall consist of pulverizing a portion of the existing roadway structure into a homogenous mass, placing and compacting this material to the lines, grades, and dimensions shown on the plans or established by the Resident.

307.02 Pulverized Material Pulverized material shall consist of the existing bituminous pavement and, if specified, a designated portion of the underlying gravel, pulverized, and blended into a homogenous mass. Pulverized material will be processed to 100% passing a 50 mm [2 in] square mesh sieve.

307.021 New Aggregate and Additional Recycled Material New aggregate shall meet the requirements of Subsection 703.10 - Aggregate for Untreated Surface Course and Leveling Course.

Recycled material, if required, shall consist of material from the project or from off-site stockpiles that has been processed before use to 100% passing a 50 mm [2 in] square mesh sieve. Recycled material shall be conditionally accepted at the source by the Resident. It shall be free of winter sand, granular fill, construction debris, and other materials not generally considered bituminous pavement.

307.03 Pulverizer The pulverizer shall be a self-propelled machine, specifically manufactured for cold in-place recycled type work and capable of reducing the required existing materials to a size that will pass a 50 mm [2 in] square mesh sieve. The machine shall be equipped with standard automatic depth controls and must maintain a consistent cutting depth and width. The machine also shall be equipped with a gauge to show depth of material being processed.

307.04 Placement Equipment Placement of the Full Depth Reclamation recycled material to the required slope and grade shall be done with an approved highway grader or by another method approved by the Resident.

307.05 Rollers The Full Depth Reclamation recycled material shall be rolled with a vibratory pod/tamping foot roller with a minimum 1.4 m [54 in] diameter single drum. The drum shall have a minimum of 112 tamping feet, 75 mm [3 in] in height, and a minimum contact area per foot of 110 cm² [17 in²]. Final rolling shall be accomplished by a minimum 2.15 m [84 in] width single drum vibratory soil compactor.

307.06 Pulverizing The entire depth of existing pavement shall be pulverized together with approximately 25 mm [1 in] of the underlying gravel into a homogenous mass. All pulverizing shall be done with equipment that will provide a homogenous mass of pulverized material, processed in-place, which will pass a 50 mm [2 in] square mesh sieve.

307.07 Weather Limitations Full Depth Reclamation work shall not be performed when weather conditions are such that proper pulverizing, spreading, or compaction of the pulverized material cannot be accomplished.

307.08 Surface Tolerance The complete surface of the Full Depth Reclamation course shall be shaped and maintained to a tolerance, above or below the required cross sectional shape, of 10 mm [$\frac{3}{8}$ inch].

307.09 Full Depth Reclamation Procedure 50 mm [2 in] square mesh sieve and then shaped and compacted to the cross-slope and grade shown on the plans, typicals, or as directed by the Resident.

Extra material will be added if required by the contract or Resident to restore cross-slope and/or profile grade before pulverizing; locations will be shown on the plans or described in the construction notes. The Resident may add or delete locations while construction of the project is in progress. All extra material, whether shown on the plans or added, will meet the requirements of Subsection 307.021 - New Aggregate and Additional Recycled Material, of this Special Provision. The Contractor will use recycled pavement to the extent it is available, in lieu of untreated aggregate surface course. The Contractor shall be responsible for re-establishing the existing profile grade as directed by the Resident.

In areas where a variable gravel course is called for or required, the contractor shall pulverize, grade, and compact the existing pavement to allow for a consistent thickness of gravel.

Density of the Full Depth Reclamation material will be determined by the Department using Nuclear Density Gauges. A 90 m [300 ft] section at the start of the pulverizing operations will be designated as the control section. The control section will be pulverized, have water added until testing indicates that optimum moisture has been obtained, and rolled as directed until the nuclear density readings show an increase in dry density of less than 16 kg/m³ [1 lb/ft³] for the final 4 vibratory roller passes. This density will be used as the target density for the recycled material. The remaining Full Depth Reclamation material shall be compacted to a minimum density of 98% of the target density as determined in the control section.

307.10 Method of Measurement Full Depth Reclamation will be measured by the square meter [square yard].

307.11 Basis of Payment The accepted quantity of Full Depth Reclamation will be paid for at the contract unit price per square meter [square yard], complete in-place which price will be full compensation for furnishing all equipment and labor for pulverizing, blending, placing, grading, compacting, and for all incidentals necessary to complete the work.

The addition of materials to restore profile grade and/or cross-slope in areas shown on the plans or described in the construction notes will be paid separately under designated pay items within the contract.

Payments will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
307.32 Full Depth Recycled Pavement (Untreated Mainline Travelway)	Square Meter [Square Yard]
307.33 Full Depth Recycled Pavement (Untreated Shoulder)	Square Meter [Square Yard]

SECTION 308 - FULL DEPTH RECLAMATION WITH STABILIZING ADDITIVES

Reserved

SECTION 309 - FOAMED ASPHALT

Reserved

SECTION 310 - BITUMINOUS STABILIZED BASE

Reserved