

## SECTION 305 DENSE GRADED BASE

### 305.1 Description

- (1) This section describes constructing a dense graded base using one of the following aggregates at the contractor's option:

Crushed stone	Reclaimed asphaltic pavement
Crushed gravel	Reprocessed material
Crushed concrete	Blended material

### 305.2 Materials

#### 305.2.1 General

- (1) Provide aggregate conforming to [301.2](#) for crushed stone, crushed gravel, crushed concrete, reclaimed asphaltic pavement, reprocessed material, or blended material.

#### 305.2.2 Gradations

##### 305.2.2.1 General

- (1) Except for reclaimed asphaltic pavement, conform to the following gradation requirements:

SIEVE	PERCENT PASSING BY WEIGHT		
	3-INCH	1 1/4-INCH	3/4-INCH
3-inch	90 - 100	—	—
1 1/2-inch	60 - 85	—	—
1 1/4-inch	—	95 - 100	—
1-inch	—	—	100
3/4-inch	40 - 65	70 - 93	95 - 100
3/8-inch	—	42 - 80	50 - 90
No. 4	15 - 40	25 - 63	35 - 70
No. 10	10 - 30	16 - 48	15 - 55
No. 40	5 - 20	8 - 28	10 - 35
No. 200	2.0 - 12.0	2.0 - 12.0 <sup>[1][3]</sup>	5.0 - 15.0 <sup>[2]</sup>

<sup>[1]</sup> Limited to a maximum of 8.0 percent for base placed between old and new pavement.

<sup>[2]</sup> 8.0 - 15.0 percent if base is  $\geq$  50 percent crushed gravel.

<sup>[3]</sup> 4.0 - 10.0 percent if base is  $\geq$  50 percent crushed gravel.

- (2) Unless the plans or special provisions specify otherwise, do the following:

1. Use 1 1/4-inch base in top 4 or more inches of base. Use 3-inch base or 1 1/4-inch base in the lower base layers.
2. Use 3/4-inch base in the top 3 inches of the unpaved portion of the shoulder. Also, if using 3-inch base in the lower base layers, use 3/4-inch base in the top 3 inches of the shoulder foreslopes. Use 3/4-inch base or 1 1/4-inch base elsewhere in shoulders.

##### 305.2.2.2 Reclaimed Asphaltic Pavement

- (1) For reclaimed asphaltic pavement, furnish material conforming to the following:

- 100 percent passing a 1 1/4-inch sieve.
- 75 percent or less of the aggregate passing a No. 4 sieve.
- Asphalt content between 3 percent and 6.5 percent inclusive.

- (2) The department will assess these properties primarily by visual inspection but may test questionable material. If testing the material, the department will determine the properties as follows:

- For the percent passing the 1 1/4-inch sieve, the department will test without conducting an asphaltic material extraction.
- For the percent passing the No. 4 sieve and percent of asphalt content, the department will test by conducting an asphaltic material extraction as specified in [301.2.3](#).

- (3) The contractor may use reclaimed asphaltic pavement as 3-inch base, or 1 1/4-inch base without regard to the gradation requirements under [305.2.2.1](#).

### **305.3 Construction**

#### **305.3.1 General**

- (1) Construct dense graded base conforming to [301.3](#).

#### **305.3.2 Compaction**

##### **305.3.2.1 General**

- (1) Compact each base layer, including shoulder foreslopes, with equipment specified in [301.3.1](#). Use standard compaction conforming to [301.3.4.2](#), unless the special provisions specify other methods. Final shaping of shoulder foreslopes does not require compaction.

##### **305.3.2.2 Compacting 1 1/4-Inch Base and 3/4-Inch Base**

- (1) If using a pneumatic roller, do not exceed a compacted thickness of 6 inches per layer. For the first layer placed over a loose sandy subgrade, the contractor may, with the engineer's approval, increase the compacted layer thickness to 8 inches.
- (2) If using a vibratory roller, do not exceed a compacted thickness of 8 inches per layer.

##### **305.3.2.3 Compacting 3-Inch Base**

- (1) Compact with a vibratory or pneumatic roller. Do not exceed a compacted thickness of 9 inches per layer.

### **305.3.3 Constructing Aggregate Shoulders**

#### **305.3.3.1 General**

- (1) Construct aggregate shoulders to the elevations and typical sections the plans show, except for minor modifications needed to conform to other work.
- (2) Use equipment that does not damage or mar the pavement surface, curbs, or appurtenances.
- (3) Place aggregate directly on the shoulder area between the pavement edge and the outer shoulder limits. Recover uncontaminated material deposited outside the limits and place within the limits.
- (4) Do not deposit aggregate on the pavement during placement, unless the engineer specifically allows. Do not leave aggregate on the pavement overnight. After placing the shoulder aggregate, keep the pavement surface free of loose aggregate.
- (5) Spread and compact the aggregate in compacted layers of 6 inches or less. Use standard compaction conforming to [301.3.4.2](#), unless the special provisions specify otherwise.
- (6) After final compaction, shape the shoulders to remove longitudinal ridges to ensure proper drainage.

#### **305.3.3.2 Shoulders Adjacent to Concrete Pavement or Base**

- (1) Construct shoulders along concrete pavement or concrete base so the completed shoulder is at the approximate grade and cross-section before opening the pavement to public traffic.

#### **305.3.3.3 Shoulders Adjacent to Asphaltic Pavement or Surfacing**

- (1) If the roadway is closed to through traffic during construction, construct the aggregate shoulders before opening the road.
- (2) If the roadway remains open to through traffic during construction and a 2-inch or more drop-off at the pavement edge exists, eliminate the drop-off within 48 hours after completing the asphalt work. Unless the special provisions specify otherwise, provide aggregate shoulder material compacted to a 4:1 or flatter cross slope from the surface of the pavement edge.
- (3) Provide and maintain signing and other traffic protection and control devices, as specified in [section 643](#), until completing shoulder construction to the required cross-section and flush with the asphaltic pavement or surfacing.

#### **305.3.4 Shaping Shoulders**

- (1) Under the Shaping Shoulders bid item, blade, shape, and compact the existing shoulder aggregate, before the end of the day's work, to ensure proper drainage while salvaging existing pavement and constructing new pavement. Do not contaminate the shoulder aggregate with deleterious material. Incorporate material obtained from shaping shoulders in the new shoulder, in widening the roadbed, or as the plans show.

### 305.3.5 Constructing Detours

- (1) Under the Aggregate Detours bid item, provide aggregate on the designated detour at the locations the plans show or the engineer directs. Use 3/4-inch base unless the plans or special provisions specify otherwise.

### 305.4 Measurement

- (1) The department will determine weight or volume, adjust for moisture, and convert between weight and volume as specified in [301.4](#). The department may deduct for contaminated aggregate or unrecovered aggregate deposited outside the outer shoulder limits.
- (2) The department will measure the Base Aggregate Dense and Aggregate Detours bid items under this section by the ton or cubic yard acceptably completed.
- (3) The department will measure Shaping Shoulders by the station acceptably completed, measured along the centerline for each shoulder separately.

### 305.5 Payment

- (1) The department will pay for measured quantities at the contract unit price under the following bid items:

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
305.0110	Base Aggregate Dense 3/4-Inch	TON
305.0115	Base Aggregate Dense 3/4-Inch	CY
305.0120	Base Aggregate Dense 1 1/4-Inch	TON
305.0125	Base Aggregate Dense 1 1/4-Inch	CY
305.0130	Base Aggregate Dense 3-Inch	TON
305.0135	Base Aggregate Dense 3-Inch	CY
305.0410	Aggregate Detours	TON
305.0415	Aggregate Detours	CY
305.0500	Shaping Shoulders	STA

- (2) Payment for the Base Aggregate Dense bid items is full compensation for preparing the foundation; and for stockpiling, placing, shaping, compacting, and maintaining the base.
- (3) Payment for Shaping Shoulders is full compensation for blading, shaping, compacting, and maintaining the existing aggregate shoulders.
- (4) For the bid items under this section except for Aggregate Detours, the department will pay for EBS in areas of placed base, dust control water, and compaction water as specified in [301.5](#).
- (5) Payment for Aggregate Detours is full compensation for preparing the foundation; and for stockpiling, placing, shaping, and compacting aggregate on detours. The department will pay for EBS in areas of placed base, and compaction water as specified in [301.5](#).
- (6) If the contractor uses 3-inch material in the lower base layer, as allowed under [305.2.2.1](#), and the special provisions do not require 3-inch material, the department will pay for that material at the contract unit price for Base Aggregate Dense 1 1/4-Inch.