

Section 2312. Granular Surfacing

2312.01 DESCRIPTION.

- A.** Deliver granular material, consisting of crushed stone or pit run or screened gravel, along the shoulder of an existing road in the quantity specified in the contract.
- B.** Apply this specification to new construction or to resurfacing of a previously surfaced road.

2312.02 MATERIALS.

Use material that either meets requirements of [Section 4120](#) for the class of material specified, or is pit run material from designated locations.

2312.03 CONSTRUCTION.

A. General.

- 1. Unless otherwise specified, furnish granular material to be spread by the Contracting Authority and consolidated under traffic. The Contracting Authority may furnish granular material from designated pits.
- 2. Spread all material furnished as Granular Surfacing on Road and intended as:
 - a. Temporary surfacing.
 - b. Temporary winter surfacing.
 - c. Temporary surfacing of drives and side roads.
 - d. Surfacing for local access.
- 3. Blading and shaping, as well as any other work in preparation for or maintaining a suitable surface will be required. This may include some excavation adjacent to paved surfaces. Place material used for local access at the locations the Engineer designates. The intention is to provide continuous, all weather access as needed and as directed by the Engineer. Payment for this work is incidental to the payment for the item of Granular Surfacing on Road. The Contractor is not responsible for continuing this work when the operation is suspended during the winter.
- 4. Special Winter Granular Surfacing is intended to be the same type of material furnished for Granular Surfacing on Road. The material is to be placed in a stockpile prior to winter suspension in an amount and at a location within the project limits as designated by the Engineer. With reasonable notice, the Engineer may require additional material to be added to the stockpile while the Contractor's operation is suspended during the winter.

B. Contract Schedule.

- 1. A contract may involve any of the following:
 - a. Furnishing and delivering surfacing material to the road.
 - b. Preparing and delivering material to the road furnished by the Contracting Authority at locations specified in the contract documents.
 - c. Preparing material furnished by the Contracting Authority at locations specified in the contract documents. If hauling is required, it shall be bid in 1 mile (1 km) units of haul.
- 2. Prepare material the Contracting Authority furnishes by:
 - Removing the material from the deposit, and
 - Sorting, crushing, screening, and washing (as may be necessary) to produce finished material which will comply with the specifications for the class of material required by the contract documents.
- 3. Delivering or hauling includes loading, transporting, and depositing the prepared material.
- 4. In gravel furnished by the Contracting Authority, crush particles 7 inches (175 mm) or less in diameter to pass a 3/4 inch (19 mm) sieve. The Contractor may remove particles greater than 7 inches (175 mm) in diameter or crush them to pass a 3/4 inch (19 mm) sieve.

5. When the Contracting Authority furnishes material in deposits, furnish right-of-way necessary for a suitable road from the deposit to a public highway. The Contractor assumes responsibility for any construction or maintenance work that may be required on the road from the deposit to the public highway.

C. Equipment.

Use equipment meeting the requirements of [Section 2001](#) and the following:

1. **Weighing Equipment.**

Apply [Article 2001.07](#).

2. **Spreading.**

Apply [Article 2001.13](#).

D. Preparation of Subgrade.

Unless otherwise specified, the Contracting Authority will shape the subgrade. The subgrade will be shaped to a smooth surface having proper grade and cross section.

E. Stripping and Removal of Unsuitable Material.

1. Remove materials not permitted in the surfacing material from the materials the Contracting Authority furnishes. Removal includes removing and transporting material:
 - Which occurs intermingled with satisfactory surfacing material, and
 - Which is removed from the surfacing material in the process of preparation.
2. Stripping includes removal and disposition of material:
 - Not permitted in the prepared surfacing material, and
 - Occurs in the material deposited in continuous layers 6 inches (150 mm) or more in thickness overlying, or included between layers of, satisfactory surfacing material.
3. When stripping overburden from material taken from pits controlled by or through the Contracting Authority (whether stripping is included as a pay item or not), conduct the operation as directed by the Engineer. Construct slopes so that when the excavation is complete the slopes will maintain themselves without caving or sloughing. Leave material removed for surfacing, below the stripped area, with slopes that provide stability to the overburden.
4. When stripping deposits, do not produce an unsightly appearance of the land. Remove stripped material and transport as directed by the Engineer.

F. Combining Materials on Road.

Under normal conditions, material delivered to the road will be a finished mixture meeting requirements for the class of material specified in the contract documents. With approval of the Engineer, pit run gravel which does not comply with the specified gradation may be furnished and combined on the road with coarser gravel or crushed stone to produce a mixture which complies with the specified gradation. Deliver these combinations according to the following provisions:

1. **Measurement.**

Whether the contract unit of measurement is 1 ton (1 Mg) or 1 cubic yard (1 m³), weigh both materials. If the unit of measurement is 1 cubic yard (1 m³), the Engineer will determine the weight (mass) per unit volume of the mixture as follows:

- a. Representative samples of the two materials are to be thoroughly mixed in the proportions in which they are to be delivered to the work.
- b. The weight (mass) per unit volume of the mixture shall be determined by the rodding procedure and by the shoveling procedure described in AASHTO T 19M.
- c. The average of the two values thus determined shall be taken as the weight (mass) per unit volume of the mixture. Use this value when converting the total weight (mass) of material delivered to cubic yards (cubic meters).

2. **Quality.**

- a. Use materials from each separate source meeting the requirements of [Section 4120](#) for the kind of material used, except the gradation.

- b. In addition to the gradation specified, blend the final mixture to be well graded from coarse to fine.
 - c. Ensure the percent passing the No. 30 (600 µm) sieve is no more than 2/3 the percent passing the No. 8 (2.36 mm) sieve.
- 3. **Proportioning.**
 - a. From tests of representative samples of the two materials, the Engineer will compute the quantity of each material required to produce a mixture within the specified gradation. Neither material shall be less than 10% of the total quantity.
 - b. Deliver the materials in the proportions established.
- 4. **Delivery.**

Deliver each material into a separate windrow. Make each windrow uniform using a motor grader or windrow equalizer.
- 5. **Mixing.**
 - a. Mix the windrows by blading one windrow against the other and blading the single windrow formed across the roadbed at least once.
 - b. Coordinate delivery and mixing of materials so there will not be more than 2 miles (3 km) of roadway in a partially completed state.
 - c. Leave mixed material in a windrow near one shoulder of the road, as directed by the Engineer.

2312.04 METHOD OF MEASUREMENT.

The Engineer will determine the work involved for granular surfacing as follows:

A. Granular Surfacing on Road.

- 1. The quantity of granular surfacing of the class specified, delivered on the road, in cubic yards (cubic meters) or in tons (megagrams), will be measured as indicated in the contract documents.
- 2. Measurement may be converted from tons to cubic yards (megagrams to cubic meters) or cubic yards to tons (cubic meters to megagrams) with the Engineer's approval. The Engineer will determine the conversion factor.
- 3. When measurement is the cubic yard (cubic meter), level all loads and fill corners at the loading point. Measurement will be checked at the point of delivery. Deductions will not be made for natural settlement in transit. The tops of end gates on transporting vehicles are not to be lower than the adjacent sides.
- 4. Weight (mass) measurements are to be on Contractor's weighing equipment, according to [Article 2001.07](#). Load vehicles to prevent loss of material between the scales and the point of delivery. Deduction will not be made for the weight (mass) of moisture naturally occurring in the material. When the unit of measurement is cubic yards (cubic meters) and these materials are mixed on the road surface, the Engineer will compute the number of cubic yards (cubic meters) to be paid for as outlined in [Article 2312.03, F, 1](#).

B. Preparing and Hauling Granular Surfacing Material Furnished by the Contracting Authority.

- 1. Determined according to [Article 2312.04, A](#).
- 2. When the contract provides compensation to the Contractor on the basis of 1 mile (1 km) haul units in addition to the contract price for preparation, the haul will be measured over the shortest practical route from point of loading to point of delivery. Beginning at the loading point, each mile (kilometer) section will be numbered consecutively toward the point of delivery.
- 3. The number of additional mile (kilometer) units of haul will be computed by multiplying the number of units of material (cubic yards or tons (cubic meters or megagrams)) delivered in each mile (kilometer) section by the number of that section and adding the products thus obtained.

C. Stripping (Overburden).

1. Will not be measured for payment unless the contract involves a unit price for stripping. Stripping, to be paid for as a separate item, will be measured by cross sectioning before and after excavation. The volumes will be computed by the average-end-area method.
2. Payment will not be made for material excavated prior to cross sectioning by the Engineer.
3. When removal and transportation of stripping involves a haul of more than 1000 feet (300 m), overhaul will be computed and paid according to [Section 2108](#).

2312.05 BASIS OF PAYMENT.

Payment for the quantities of various items of work, as measured above, will be at the contract unit price as described below. Payments are full compensation for furnishing all tools, equipment, and labor and for performance of work necessary to complete the contract in conformance with the contract documents.

A. Granular Surfacing on Road.

1. Per cubic yard or ton (cubic meter or megagram), as specified in the contract for furnishing and delivering granular surfacing material on the road.
2. Payment is full compensation for furnishing, preparing, handling, transporting, and depositing the material on the road according to the contract documents.

B. Preparing and Hauling Granular Surfacing Material Furnished by the Contracting Authority.

1. Per cubic yard or ton (cubic meter or megagram) for preparing and hauling material furnished at locations by the Contracting Authority.
2. Payment is full compensation for removing, sorting, crushing, screening, washing, and transporting the material according to the contract and these specifications. The number of additional 1 mile (1 km) haul units, computed as specified above, will be paid for at the contract unit price.

C. Stripping (Overburden).

1. No payment. Incidental to the contract unit price for preparing and hauling the material.
2. If the contract provides a separate contract unit price for stripping, payment will be for the cubic yards (cubic meters) of excavation and the number of station-yards (cubic meters per metric station) of overhaul, computed as specified above.

D. Removal and Transportation.

Removal and transportation of materials which are not permitted in surfacing material will not be paid for as a separate item. This material shall be included in the payment for preparing and hauling the material.