

SECTION 209 GRANULAR BACKFILL

209.1 Description

- (1) This section describes furnishing processed or selected materials for backfilling, where the plans designate, as follows:
1. Excavations for frost heave or other unstable materials.
 2. Trenches for pipe culverts, storm sewers, underdrains, and similar structures.

209.2 Materials

209.2.1 General

- (1) Furnish natural sand or a mixture of sand with gravel, crushed gravel, crushed stone, or other broken or fragmented material.
- (2) For backfill for trench excavation, use a maximum size of any gravel, stone, or other broken or fragmented material so that 100 percent passes a 6-inch sieve, not less than 85 percent by weight passes a 3-inch sieve, and not less than 25 percent by weight passes a No. 4 sieve. For bedding under a culvert pipe, use granular backfill that consists substantially of sand with all particles retained on a one-inch sieve removed.
- (3) Conform to the definitions under [301.2](#).
- (4) Use either grade 1 or grade 2 material, unless the contract specifies otherwise.
- (5) Do not use materials with a liquid limit greater than 25 and a plasticity index greater than 6.

209.2.2 Gradation of Material Passing the No. 4 Sieve

- (1) For material passing the No. 4 sieve, conform to the following:

SIEVE	MAXIMUM PERCENT PASSING BY WEIGHT	
	GRADE 1	GRADE 2
No. 4	100	100
No. 40	75	_____
No. 100	15	30
No. 200	8.0	15.0

209.2.3 Sampling and Testing

- (1) The department will sample and test granular backfill conforming to the following:
- | | |
|--|------------|
| Sampling ^[1] | AASHTO T2 |
| Percent passing the 200 sieve ^[1] | AASHTO T11 |
| Gradation ^[1] | AASHTO T27 |
| Liquid limit | AASHTO T89 |
| Plasticity index and plastic limit | AASHTO T90 |

^[1] As modified in [CMM 8-60](#).

- (2) The department may sample and test using other engineer-approved field methods.

209.2.4 Source

- (1) Except as specified for materials utilized from roadway excavation under [104.8](#), the contractor is responsible for negotiating with property owners to obtain structure backfill material.
- (2) Remove the granular backfill material and restore the pit to a final condition as specified for final cleanup and material disposal under [104.9](#) and [208.3](#).
- (3) In addition to removing the topsoil, substantially remove any overburden of soil, or earthy materials passing the No. 200 sieve before excavating the granular backfill material.
- (4) If the department measures granular material for payment in its original position, trim and shape pits after removing overburden and before removing granular material to allow taking accurate measurements. After removing the required amount of granular material, repeat trimming and shaping of the areas to allow taking accurate measurements.
- (5) Restore the site by replacing or disposing of the removed overburden and ensure that disposal sites are neatly constructed.

209.3 Construction

- (1) If backfilling subgrade excavations, place and compact granular backfill as specified for the construction of embankments in [section 207](#).
- (2) If granular backfill is specified or required for backfilling trenches, place and compact as specified for the construction of work under the applicable specification section.

209.4 Measurement

209.4.1 General

- (1) The department will measure Backfill Granular by the cubic yard acceptably completed. The department will measure this volume in its original position when backfilling marsh excavation and in its final position for other applications. The department may convert the measurement method from volume to weight as specified in [109.1](#). For minor quantities, the engineer may measure by the cubic yard in the vehicle.
- (2) The department will not measure granular backfill placed outside the designated fill limits or specifically designated as incidental to other contract bid items.

209.4.2 Measured in Original Position

- (1) If measured in its original position, the department will calculate the quantity as specified for borrow in [208.4](#). Prepare the pit for measurement as specified for source under [209.2.4](#).

209.4.3 Measured in Final Position

- (1) If measured in its final position, the department will calculate the quantity by the average end area or truncated prism method. The department will measure material in its final position and compacted condition. The department will only include material within the limits and in the places the plans show, the contract designates, or the engineer directs.
- (2) For areas where the contractor excavates and removes frost heave or unstable materials from the subgrade, the department will compute volume using the dimensions of the plane of the earth subgrade, the depth of the excavation, and the limits of the area that the engineer requires excavated and backfilled.
- (3) For backfilling pipe culverts, the department will compute the volume from the dimensions of the limits of excavation and depth of backfill the plans show or the engineer requires, less the included structure volume.

209.5 Payment

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

<u>ITEM NUMBER</u>	<u>DESCRIPTION</u>	<u>UNIT</u>
209.0100	Backfill Granular	CY

- (2) Payment for Backfill Granular is full compensation for providing all granular backfill material; for excavating, loading, hauling, placing, compacting, and finishing the material; for stripping, clearing, grubbing, shaping, trimming and cleaning up the pits; for salvaging, stockpiling, rehandling, and spreading salvaged material over excavated pit areas; and for disposing of surplus materials.
- (3) The department will not pay separately for granular backfill material specifically designated as incidental to other contract bid items.
- (4) The department will pay for erosion control, fertilizing and seeding of pits and associated areas separately as specified for borrow sites and material disposal sites in [628.5.1](#).