

209 Granular Backfill

209.1 Description

- (1) This section describes furnishing processed or selected granular materials, where the plans designate, as follows:
1. Backfilling excavations for frost heave or other unstable materials.
 2. Backfilling storm sewers removals under [204](#).
 3. Filling marsh areas associated with marsh excavation.
 4. Placing material for subgrade improvement.

209.2 Materials

209.2.1 General

- (1) Conform to the definitions under [301.2](#). Furnish virgin materials consisting of either sand-sized particles or sand-sized particles mixed with gravel, crushed gravel, or crushed stone. Do not use crushed concrete or reclaimed asphalt.
- (2) Ensure that the material provided has a liquid limit less than or equal to 25 and a plasticity index less than or equal to 6. The contractor may substitute grade 1 for grade 2 material.

209.2.2 Gradation

- (1) Furnish granular backfill material with a gradation conforming to the following:

- For the entire sample, conform to the following gradation limits:

PERCENT PASSING BY WEIGHT		
SIEVE	GRADE 1	GRADE 2
6-inch	100	100
3-inch	85 - 100	85 - 100
No. 4	25 - 100	25 - 100

- For the portion of the sample passing the No. 4 sieve, conform to the following gradation limits:

PERCENT PASSING BY WEIGHT		
SIEVE	GRADE 1	GRADE 2
No. 4	100	100
No. 40	0 - 75	—
No. 100	0 - 15	0 - 30
No. 200	0 - 8.0	0 - 15.0

209.2.3 Sampling and Testing

- (1) The department will sample and test material according to the following:

Aggregate Sampling	WTM R90
Material finer than No. 200 sieve	WTM T11
Aggregate Gradation	WTM T27
Liquid limit	WTM T89
Plasticity index and plastic limit	AASHTO T90

209.2.4 Source

- (1) Except as specified for materials used from roadway excavation under [104.8](#), the contractor is responsible for negotiating with property owners to obtain granular material.
- (2) Remove the granular 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 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 quantity 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 or placing embankment, place and compact as specified for embankment construction in [207](#). If granular backfill is specified for other applications, place and compact as specified for those applications.

209.4 Measurement

209.4.1 General

- (1) The department will measure the Backfill Granular bid items by the ton or cubic yard acceptably completed. For minor quantities, the engineer may measure by the cubic yard in the vehicle. The department may convert the measurement between weight and volume as specified in [109.1](#).
- (2) For measurement by the cubic yard, the department will measure material in its original position when backfilling marsh excavation and in its final position for other applications.
- (3) For measurement by the ton, the department will determine weight based on contractor-provided tickets submitted daily. Submit tickets as specified in [109.1.4.2](#). For material with more than 7 percent moisture, the department will reduce the ticket weight by the weight of water exceeding 7 percent. The department will determine moisture content as a percent of dry weight.
- (4) The department will only include material within the limits and in the places the plans show, the contract designates, or the engineer directs.

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 [208.4.2](#). Prepare the pit for measurement as specified in [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.
- (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.

209.5 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>
209.1100	Backfill Granular Grade 1	CY
209.1500	Backfill Granular Grade 1	TON
209.2100	Backfill Granular Grade 2	CY
209.2500	Backfill Granular Grade 2	TON

- (2) Payment for the Backfill Granular bid items is full compensation for providing granular backfill; for stripping, clearing, grubbing, excavating, shaping, trimming, and cleaning up the pits; and for salvaging, stockpiling, rehandling, and spreading salvaged material over excavated pit areas
- (3) Payment also includes water for compaction and dust control except, if the contract contains the Water bid item, the department will pay separately for compaction and dust control water under [624.5](#).
- (4) If the contractor substitutes grade 1 for grade 2 material as allowed under [209.2](#), the department will pay at the contract unit price for grade 2 material.
- (5) 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 under [628.5.1](#).