

## 600 INCIDENTALS

### ITEM 605 - UNDERDRAINS

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**605.01 Description.** This work shall consist of constructing pipe underdrains with granular filter, and aggregate drains, all in accordance with these specifications, and in conformity with lines, grades and locations shown on the plans or established by the Engineer. The item shall include: all necessary excavation and backfill; furnishing and placing pipe, granular filter material, drain aggregate, and all other materials necessary to complete the designated drains; and the removal and disposal of all surplus excavation and discarded materials in accordance with Item 203.

**605.02 Materials.** Pipe shall be of the size and kind shown on the Plan. When the kind of pipe is not specifically itemized in the proposal, any of the following types may be used:

Extra quality clay drain tile.....	706.08
Polyvinyl chloride plastic pipe (4 inches (102 mm) only).....	720.07
Corrugated polyethylene drainage tubing or pipe (4 inches (102 mm) only) .....	720.12
Other materials shall be as follows:	
Granular filter material.....	605.03 (c)
Aggregate for drains .....	605.05

**605.03 Pipe Underdrains.** Construction shall be as follows:

- (a) **Trench Excavation.** Trench excavation shall be of such dimensions in all cases as will give ample room for construction. In no case shall the trench widths be less than 2 inches (50 mm) no more than 4 inches (102 mm) (1 to 2 inches (25-50 mm) on each side) wider than the outside diameter of the pipe, in accordance with details shown on City of Columbus Standard Drawings. The trench shall be excavated to permit proper placing of the pipe, in accordance with details shown on City of Columbus Standard Drawings. The excavation for the underdrains shall include the removal of any obstructions encountered. In case the flow line is changed by an amount not to exceed 1 foot (0.3 m), no adjustment will be made in the contract bid price. If the flow line is changed more than 1 foot (0.3 m), an

adjustment, based on changes from planned flow line, will be made to the contract bid price by supplemental agreement. Where pipe underdrains are to be placed within or beneath an embankment, the embankment shall be constructed to the elevation of the top of the subgrade before trenching for the pipe.

- (b) **Laying Pipe.** The pipe shall be laid true to line and grade. The pipe shall rest on a solid bed shaped to fit the pipe throughout its entire length. Lateral connections shall be made with suitable branches and bends. The upper ends of pipe underdrains shall be closed with suitable plugs. Perforated pipe shall be laid with perforations in the lower half of the pipe. When flexible pipe is used, the joints shall be connected using a snap coupling specified by the pipe manufacturer.
- (c) **Backfilling.** The underdrains shall be inspected before any granular filter material is placed. The granular filter material shall consist of durable No. 57 aggregate in accordance with Section 703.01. It shall be placed around the pipe for full width of the trench, and shall extend to the bottom of the pavement or subbase as shown on the plans. When underdrains are placed outside of the pavement or sub-base area, the granular filter shall extend to within 4 inches (102 mm) of the finished grade. The remainder of the trench shall be backfilled with soil, placed in accordance with Item 203.

**605.04 Underdrain Outlets.** Pipe outlets for underdrains will be constructed and paid for as Item 603 Conduits, Corrugated Metal Pipe.

**605.05 Aggregate Drains.** Aggregate drains shall be constructed after completion of pavement and shoulders and prior to completion of berms.

- (a) **Excavation.** Trenches for aggregate drains shall be excavated to a minimum width of 12 inches (305 mm) and to the depth shown on the plans or ordered by the Engineer. The bottom of the trench shall be sloped to drain and shall be free from loose particles of soil. The trench shall be excavated so as to make a clean exposure of the granular pavement courses to be drained.
- (b) **Placing and Backfilling.** Aggregate for the drains shall be durable No. 8 or No. 9 size gravel, stone or slag, in accordance with Section 703. The aggregate shall be placed to a minimum depth of 8 inches (203 mm) above the bottom of the trench. The remaining depth of trench shall be filled with suitable embankment material in accordance with Item 203. Downstream ends of aggregate drains shall be maintained open during and after subsequent berm and slope construction.

**605.06 Method of Measurement.** The footage of pipe underdrains to be paid for will be the actual number of linear feet (meters) of pipe with granular filter complete in place, measured from end to end of each run of pipe. The footage of aggregate drains to be paid for will be the actual number of linear feet (meters) of trench, filled and complete in place, measured along the bottom of the trench.

**605.07 Basis of Payment.** Payment will be made at the contract price for:

<b>Item</b>	<b>Unit</b>	<b>Description</b>
605	Linear Foot (Meter)	____ Inch (mm) Pipe Underdrain
605	Linear Foot (Meter)	Aggregate Drains