
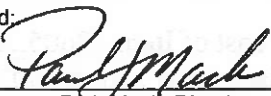
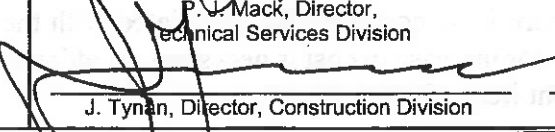


Tr n-30-1-87728- BY au <b>SUPERSEDED</b> EIOZ-039 EFFECTIVE 5/8/03		New York State Department of Transportation <b>ENGINEERING          INSTRUCTION</b>	<b>EI</b> <b>99-022</b>
<b>Title: REVISED SPECIFICATION FOR PRECAST CONCRETE HEADWALLS FOR 100 mm LATERAL OUTLET PIPES</b>			
Distribution: <input type="checkbox"/> Manufacturers (18) <input type="checkbox"/> Surveyors (33) <input checked="" type="checkbox"/> Main Office (30) <input checked="" type="checkbox"/> Consultants (34) <input type="checkbox"/> Local Govt. (31) <input type="checkbox"/> Contractors (39) <input checked="" type="checkbox"/> Regions/Agencies (32) <input type="checkbox"/> _____ ( )	Approved:  <u>7/2/99</u> P. J. Mack, Director, Technical Services Division      Date  <u>7-6-99</u> J. Tynan, Director, Construction Division      Date		

This Engineering Instruction revises and supplements EI 97-005 (see discontinued specifications below).

**EFFECTIVE DATE:**

This Engineering Instruction is effective with Department contracts submitted for letting on or after 11/04/99.

**PURPOSE:**

Replace Items 18605.2501M and 18605.2501 with Items 18605.2502 M and 18605.2502 respectively. The new specification addresses field performance problems of the precast headwall pulling away from the 100 mm outlet pipe and the rodent screen coming out of its slotted opening. To address these problems the following changes have been made:

- addition of two 600 mm long steel bars for securing the headwall to the side slope,
- addition of two holes cast into the headwall to accommodate the steel bars,
- reduction of the size of the slotted opening so the rodent screen fits more securely and,
- specifying the rodent screen be welded wire mesh.

**BACKGROUND:**

Most new and rehabilitated pavements include edge drains to provide positive drainage of the pavement section. The edge drain is outletted at approximate 75 m intervals. Precast headwalls are used to protect the ends of the 100 mm outlet pipes. It is imperative that these outlets remain intact to allow for maintenance cleaning and inspection of the edge drain system. The headwalls have been pulling away and separating from the 100 mm outlet pipe and the rodent screen fit is loose, allowing the entry of rodents.

**TRANSMITTED SPECIFICATIONS:**

- 18605.2502 M - PRECAST CONCRETE HEADWALLS FOR 100 mm LATERAL OUTLET PIPES
- 18605.2502 - PRECAST CONCRETE HEADWALLS FOR 4" LATERAL OUTLET PIPES

**DISCONTINUED SPECIFICATIONS:**

18605.2501 M - PRECAST CONCRETE HEADWALLS FOR 100 mm LATERAL OUTLET PIPES  
18605.2501 - PRECAST CONCRETE HEADWALLS FOR 4" LATERAL OUTLET PIPES

**COST IMPACT:**

The statewide average bid cost of Item 18605.2501 M is approximately \$140.00 each. A minor cost increase is anticipated with the revised Item 18605.2502 M for the purchase and installation of the two 600 mm long steel bars. There is no cost increase associated with the production of the precast concrete headwall. This anticipated minor increase in cost is necessary to address deficiencies and performance problems experienced with the current item 18605.2501 M.

**ACTIONS BY THE MAIN OFFICE DQAB:**

The attached specifications will be Main Office inserts into contract proposals which contain the referenced item numbers.

**IMPLEMENTATION ON PREVIOUSLY LET CONTRACTS:**

On contracts let before 11/4/99 containing Items 18605.2501 M and 18605.2501 the Contractor may elect to substitute Items 18605.2502 M and 18605.2502 respectively. A copy of this Engineering Instruction shall be made part of the project records where this change is implemented, in accordance with the Department's Contract Administration Manual (CAM) Section 104-03 I.4. No order-on-contract is required. No change in the unit bid price will be allowed.

**CONTACT:**

Questions regarding the MATERIALS sections of the transmitted specifications should be directed to Jim Reidy, Field Engineering I Section of the Materials Bureau at (518) 457-5956.

Questions regarding the use of HEADWALLS FOR LATERAL OUTLET PIPES should be directed to Gary Douglas of the Geotechnical Engineering Bureau at (518) 457-4724.

**ITEM 18605.2502 PRECAST CONCRETE HEADWALLS FOR 4" LATERAL OUTLET PIPES**

**DESCRIPTION**

Furnish and install precast concrete headwalls at lateral outlet pipes where shown in the contract documents.

**MATERIALS**

1. **Precast Headwall:** Notify the Materials Bureau of the name and location of the precast headwall fabricator at least 30 days before the start of production. Supply precast headwalls meeting the requirements of §704-03, except as noted herein. The requirements for concrete inspection facilities, automated batching controls and recordation do not apply. Use concrete batching, mixing methods and inspection facilities approved by the Materials Bureau.

Use the dimensions shown on page 2 of this specification. Proposed changes to these dimensions, other than minor changes approved by the Engineer, require submission of three complete sets of working drawings to the Engineer for review and approval.

When headwalls are fabricated by a manufacturer whose name appears on the Department's Approved List, under Precast Concrete Drainage Units, acceptance will be based on a manufacturer's certification that the units shipped conform to specification requirements. Mark the name or trademark of manufacturer, the date of manufacture, and the unit identification number on the certified units with permanent waterproof paint.

2. **Rodent Screen:** Use screens of #2 or #3 welded wire mesh, 16 gauge or heavier, made of Type 304 stainless steel wire or carbon steel wire, hot dipped galvanized in accordance with §719-01. A manufacturer's certification to these requirements will serve as the evidence of acceptability.
3. **Steel Bars:** Use ½" diameter, 24" long deformed or plain billet-steel bar meeting the requirements of ASTM A615 (such that it will fit in holes in head wall). The steel bar shall be either hot dipped galvanized in accordance with ASTM A123 or epoxy coated in accordance with 709-04. A manufacturer's certification to these requirements will serve as the evidence of acceptability.

**CONSTRUCTION DETAILS**

Install each headwall with a rodent screen and two steel bars as specified. Install headwalls flush with the finished slope and orient to allow the headwall apron to drain. Extend outlet pipes into the headwall fitting until flush with the installed rodent screen. Install a steel bar in each of the two holes, driven to a minimum of ½" and a maximum of 2" below the top surface of the headwall.

L 11/04/99

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Rev. 1/24/97

Rev. 06/15/99

EI 99-022

**ITEM 18605.2502 PRECAST CONCRETE HEADWALLS FOR 4" LATERAL OUTLET PIPES**

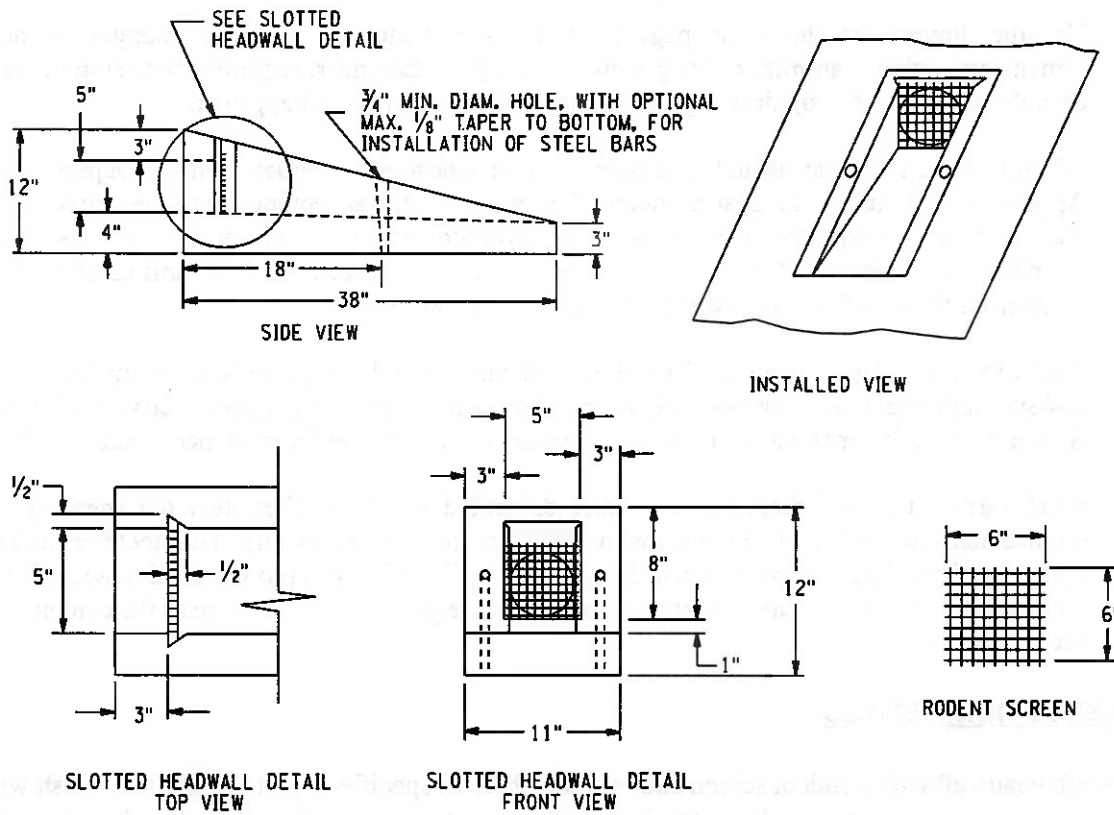
**METHOD OF MEASUREMENT**

Headwalls will be measured by the number of units supplied and installed according to the contract documents.

**BASIS OF PAYMENT**

Include the cost of labor, materials and equipment required to fabricate and install the headwalls in the unit price bid per headwall. Headwalls damaged during construction shall be replaced at contractor's expense.

**DESCRIPTION**



**PRECAST CONCRETE OUTLET HEADWALL**

**English Version**

L 11/04/99

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Rev. 1/24/97  
Rev. 06/15/99  
EI 99-022

**ITEM 18605.2502 M PRECAST CONCRETE HEADWALLS FOR 100 mm LATERAL  
OUTLET PIPES**

Furnish and install precast concrete headwalls at lateral outlet pipes where shown in the contract documents.

**MATERIALS**

1. **Precast Headwall:** Notify the Materials Bureau of the name and location of the precast headwall fabricator at least 30 days before the start of production. Supply precast headwalls meeting the requirements of §704-03, except as noted herein. The requirements for concrete inspection facilities, automated batching controls and recordation do not apply. Use concrete batching, mixing methods and inspection facilities approved by the Materials Bureau.

Use the dimensions shown on page 2 of this specification. Proposed changes to these dimensions, other than minor changes approved by the Engineer, require submission of three complete sets of working drawings to the Engineer for review and approval.

When headwalls are fabricated by a manufacturer whose name appears on the Department's Approved List, under Precast Concrete Drainage Units, acceptance will be based on a manufacturer's certification that the units shipped conform to specification requirements. Mark the name or trademark of manufacturer, the date of manufacture, and the unit identification number on the certified units with permanent waterproof paint.

2. **Rodent Screen:** Use screens of #2 or #3 welded wire mesh, 16 gauge or heavier, made of Type 304 stainless steel wire or carbon steel wire, hot dipped galvanized in accordance with §719-01. A manufacturer's certification to these requirements will serve as the evidence of acceptability.
3. **Steel Bars:** Use 13 mm diameter, 600 mm long deformed or plain billet-steel bar meeting the requirements of ASTM A615 (such that it will fit in holes in head wall). The steel bar shall be either hot dipped galvanized in accordance with ASTM A123 or epoxy coated in accordance with 709-04. A manufacturer's certification to these requirements will serve as the evidence of acceptability.

**CONSTRUCTION DETAILS**

Install each headwall with a rodent screen and two steel bars as specified. Install headwalls flush with the finished slope and orient to allow the headwall apron to drain. Extend outlet pipes into the headwall fitting until flush with the installed rodent screen. Install a steel bar in each of the two holes, driven to a minimum of 15 mm and a maximum of 50 mm below the top surface of the headwall.

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Rev. 1/24/97

Rev. 06/15/99

EI 99-022

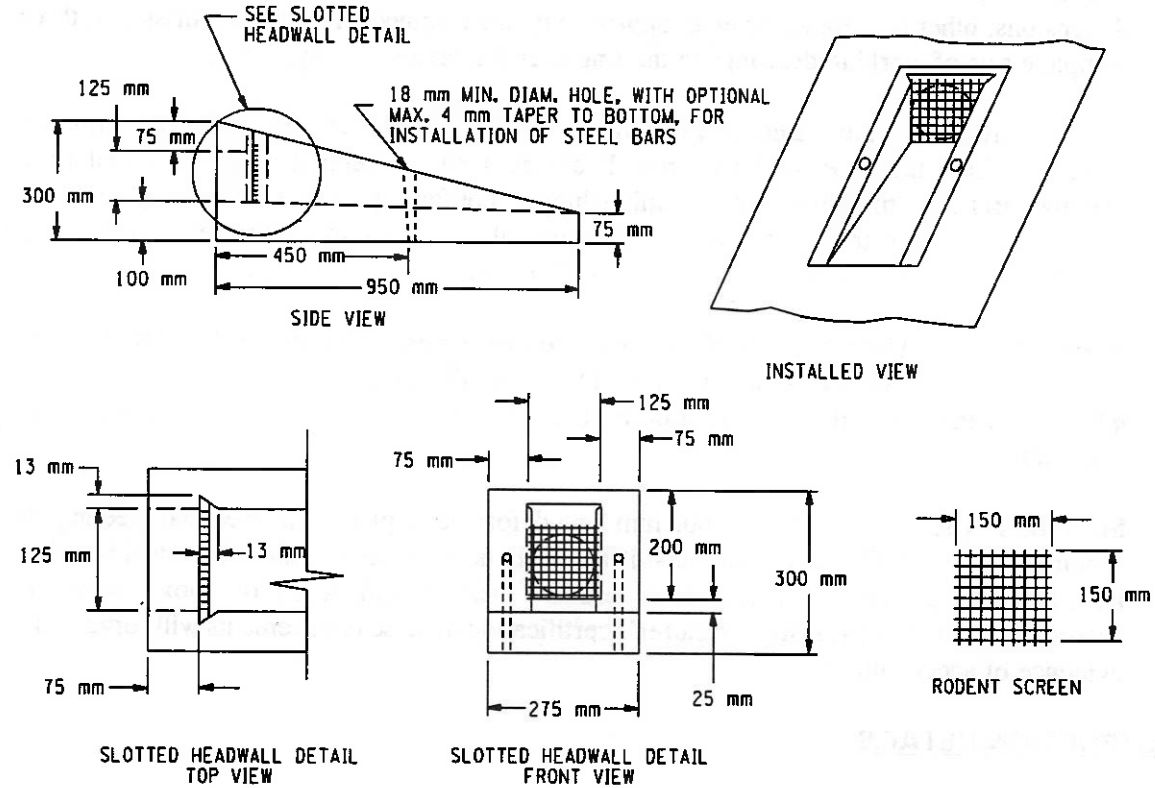
**ITEM 18605.2502 M PRECAST CONCRETE HEADWALLS FOR 100 mm LATERAL  
OUTLET PIPES**

**METHOD OF MEASUREMENT**

Headwalls will be measured by the number of units supplied and installed according to the contract documents.

**BASIS OF PAYMENT**

Include the cost of labor, materials and equipment required to fabricate and install the headwalls in the unit price bid per headwall. Headwalls damaged during construction shall be replaced at contractor's expense.



**PRECAST CONCRETE OUTLET HEADWALL**

**Metric Version**