SUPERSEDED BY EB 15-031 EFFECTIVE 9/28/15		*New York State Department of Transportation* **ENGINEERING INSTRUCTION**	**EI 11-004**

Title: **REVISIONS TO STANDARD SPECIFICATION 562 - REINFORCED CONCRETE THREE-SIDED STRUCTURES AND 706-17 PRECAST CONCRETE BOX CULVERTS**

Target Audience:		Approved:
☒ Manufacturers (18)	☒ Surveyors (33)	
☒ Main Office (30)	☒ Consultants (34)	
☒ Local Govt. (31)	☒ Contractors (39)	5-19-11
☒ Regions/Agencies (32)	_____( )	Arthur P. Yannotti, P.E. Date
		Acting Deputy Chief Engineer (Structures)

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of January 12, 2012.
- This EI does not supersede any other issuance.
- The revisions issued with this EI will be incorporated into the next update of the Standard Specifications

PURPOSE: The purpose of this EI is to issue revisions to Standard Specifications Section 562 Reinforced Concrete Three-Sided Structures and Section 706-17 Precast Concrete Box Culverts.

TECHNICAL INFORMATION:

- Section 562 is being revised to comply with FHWA requirements for buried structures. FHWA is requiring that buried structures, including their wingwalls and headwalls, on which States initiate preliminary engineering after October 1, 2010, be designed by the Load and Resistance Factor Design (LRFD) Specification. Buried structures include box culverts, three-sided frames, and pipes.
- Section 706-17 Precast Concrete Box Culverts is subject to the same requirement and is being updated accordingly.
- Revisions to *Highway Design Manual,* Chapter 19 - Reinforced Box Culverts and Similar Structures, is being issued concurrently via EB 11-015.

IMPLEMENTATION:

- Main Office Design Quality Assurance Bureau will insert the revisions to the standard specification into contract proposals beginning with projects submitted for the letting of January 12, 2012.

TRANSMITTED MATERIALS:

Both metric and US Customary versions of Standard Specification changes for Section 562 Reinforced Concrete Three-Sided Structures and for Section 706-17 Precast Concrete Box Culverts.

CONTACT: Direct questions regarding this issuance to Duane Carpenter of the Office of Structures at (518) 457-5715 or via e-mail at dcarpenter@dot.state.ny.us.

REINFORCED CONCRETE THREE-SIDED STRUCTURES

Make the following change to Standard Specifications Construction and Materials of May 4, 2006:

Page 371, Section 562-2 MATERIALS **delete** the second sentence and **replace** with the following:
Materials for cast-in-place concrete shall be Class HP concrete meeting the requirements of Section 555 and modified to include corrosion inhibitor meeting the requirements of 711-13. The penetrating type protective sealer shall meet the requirements of 717-03. Reinforcement shall meet the requirements of Section 556.

Page 372, Section 562-3.01, **delete** the second paragraph and **replace** with the following:

The Load Rating shall be determined in accordance with the current AASHTO *"Manual for Bridge Evaluation"* with all interim provisions in effect. The contractor shall show which method (allowable stress or load factor) was used in load rating computations. Load ratings shall also be computed by the Load and Resistance Factor Rating (LRFR) method. The load ratings shall be shown on the Production Note Sheet of the shop drawings. The contractor shall include all load rating computations in the design calculation submittal.

Page 372, Section 3.02 Design Parameters, **replace** 1, 2, 8, and 10, and **add** 12, shown below:

1. Design Specification : NYSDOT LRFD Bridge Design Specifications.
2. Live Load : HL-93 and the NYSDOT Design Permit Vehicle.
8. Railing or Barrier : The railing anchorages or barrier anchorages on the structure shall be designed to develop adequate global and local capacities required to resist the loads in Section 13 of the NYSDOT LRFD Bridge Design Specifications.
10. Allowable Concrete Stress: As per the provisions of the NYSDOT LRFD Bridge Design Specifications, except that maximum tensile stress in concrete for handling and erection loads when analyzed according to the proposed handling and installation procedures, shall not exceed $0.40\sqrt{f'ci}$, where $f'ci$ is the concrete compressive strength at the time being considered.
12. Cover to Reinforcing : NYSDOT Bridge Manual, Chapter 15

Page 373, Section 3.07 Installation, **add** the following new paragraph:

Cast-in-place elements shall have laitance removed by blasting and shall be coated with penetrating type protective sealer.

Page 374, Section 562-4 Method of Measurement, **add** the following at the end of the paragraph:

The quantity to be paid under this work for the Reinforced Concrete Span Units, Invert Slab with Cut-Off Wall and Concrete Apron with Cut-Off Wall shall be the number of square meters of plan area. The quantity to be paid under this work for the Wing Wall with Footing shall be the number of square meters of face area.

PRECAST CONCRETE BOX CULVERTS

Make the following change to Standard Specifications Construction and Materials of May 4, 2006:

Page 786, Section 706-17, **Delete** the paragraph titled "Design" and **replace** it with the following:

DESIGN. When the contract plans contain complete design details for the culvert, alternate designs will not be considered. When the contract plans do not contain complete design details for the culvert the Contractor shall be responsible for providing them. Precast concrete box culvert designs shall meet the requirements of Highway Design Manual Section 19.5 "*Design Guidelines for Reinforced Concrete Culverts*". Design details for bridge size culverts shall also include load rating information. The Load Rating shall be determined in accordance with the current AASHTO "*Manual for Bridge Evaluation*," with all interim provisions in effect. The contractor shall show which method (allowable stress or load factor) was used in load rating computations. Load ratings shall also be computed by the Load and Resistance Factor Rating (LRFR) method. The contractor shall include all load rating computations in the design calculation submittal. Design calculations shall be stamped by a Professional Engineer. The transmittal, processing and approval of box culvert designs will be in accordance with procedural directives of the Materials Bureau.

REINFORCED CONCRETE THREE-SIDED STRUCTURES

Make the following change to Standard Specifications Construction and Materials of May 1, 2008:

Page 376, Section 562-2 MATERIALS **delete** the second sentence and **replace** with the following:
Materials for cast-in-place concrete shall be Class HP concrete meeting the requirements of Section 555 and modified to include corrosion inhibitor meeting the requirements of 711-13. The penetrating type protective sealer shall meet the requirements of 717-03. Reinforcement shall meet the requirements of Section 556.

Page 376, Section 562-3.01, **delete** the second paragraph and **replace** with the following:

The Load Rating shall be determined in accordance with the current AASHTO *"Manual for Bridge Evaluation"* with all interim provisions in effect. The contractor shall show which method (allowable stress or load factor) was used in load rating computations. Load ratings shall also be computed by the Load and Resistance Factor Rating (LRFR) method. The load ratings shall be shown on the Production Note Sheet of the shop drawings. The contractor shall include all load rating computations in the design calculation submittal.

Page 377, Section 3.02 Design Parameters, **replace** 1, 2, 8, and 10, and **add** 12, shown below:

1. Design Specification : NYSDOT LRFD Bridge Design Specifications.
2. Live Load : HL-93 and the NYSDOT Design Permit Vehicle.
8. Railing or Barrier : The railing anchorages or barrier anchorages on the structure shall be designed to develop adequate global and local capacities required to resist the loads in Section 13 of the NYSDOT LRFD Bridge Design Specifications.
10. Allowable Concrete Stress: As per the provisions of the NYSDOT LRFD Bridge Design Specifications, except that maximum tensile stress in concrete for handling and erection loads when analyzed according to the proposed handling and installation procedures, shall not exceed $0.15\sqrt{f'ci}$, where $f'ci$ is the concrete compressive strength at the time being considered.
12. Cover to Reinforcing : NYSDOT Bridge Manual, Chapter 15

Page 378, Section 3.07 Installation, **add** the following new paragraph:

Cast-in-place elements shall have laitance removed by blasting and shall be coated with penetrating type protective sealer.

Page 378, Section 562-4 Method of Measurement, **add** the following at the end of the paragraph:

The quantity to be paid under this work for the Reinforced Concrete Span Units, Invert Slab with Cut-Off Wall and Concrete Apron with Cut-Off Wall shall be the number of square yards of plan area. The quantity to be paid under this work for the Wing Wall with Footing shall be the number of square yards of face area.

PRECAST CONCRETE BOX CULVERTS

Make the following change to Standard Specifications Construction and Materials of May 1, 2008:

Page 827, Section 706-17, **Delete** the paragraph titled "Design" and **replace** it with the following:

DESIGN. When the contract plans contain complete design details for the culvert, alternate designs will not be considered. When the contract plans do not contain complete design details for the culvert the Contractor shall be responsible for providing them. Precast concrete box culvert designs shall meet the requirements of Highway Design Manual Section 19.5 "*Design Guidelines for Reinforced Concrete Culverts*". Design details for bridge size culverts shall also include load rating information. The Load Rating shall be determined in accordance with the current AASHTO "Manual for Bridge Evaluation," with all interim provisions in effect. The contractor shall show which method (allowable stress or load factor) was used in load rating computations. Load ratings shall also be computed by the Load and Resistance Factor Rating (LRFR) method. The contractor shall include all load rating computations in the design calculation submittal. Design calculations shall be stamped by a Professional Engineer. The transmittal, processing and approval of box culvert designs will be in accordance with procedural directives of the Materials Bureau.