

To: SUPERSEDED BY EC 13-004 EFFECTIVE 9/5/13 EC 10-005		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 10-005
Title: NEW STANDARD SPECIFICATION §731-03 ROCK BOLT ASSEMBLY			
Distribution: ☐ Manufacturers (18) ☒ Local Govt. (31) ☒ Agencies (32) ☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39) ☐ _____ ()		Approved:  Robert L. Sack, P.E. Deputy Chief Engineer (Research) 27 JAN 10 Date	

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective beginning with projects submitted for the letting of May 6, 2010.
- Superseded issuance(s): This EI does not supersede any previous issuances.
- The information transmitted by this issuance will be incorporated into a future revision to the Standard Specifications.

PURPOSE: The purpose of this EI is to revise Standard Specification Section 731 *Subsurface Tensile Elements*.

TECHNICAL INFORMATION:

- Standard Specification §731-03 *Rock Bolt Assembly* is created and assigned the material specifications relating to rock bolts.

IMPLEMENTATION:

- The Main Office Design Quality Assurance Bureau will insert these standard specification shelf notes beginning with projects submitted for the letting of May 6, 2010.

TRANSMITTED MATERIALS:

- Standard Specification shelf notes for *Section 731 Subsurface Tensile Elements*. Both metric and US Customary shelf notes are attached.

BACKGROUND: The NYS Department of Transportation is implementing Trns-port SiteManager, including both Construction and Materials functionality. Implementation of standard AASHTO software enables SiteManager to allow revising this agency's practices to be more consistent with industry-accepted best practices. The revisions to the Standard Specifications are to minimize the overall quantity of special specifications.

CONTACT: Questions or comments regarding this issuance should be directed to Randall J. Romer, P.E. of the Geotechnical Engineering Bureau at (518) 457-4714, rromer@dot.state.ny.us. Questions or comments regarding the technical aspects of the Standard Specifications should be directed to Yves Nazon, of the Geotechnical Engineering Bureau at (518) 457-4729, ynazon@dot.state.ny.us.

SUBSURFACE TENSILE ELEMENTS

Make the following changes to the Standard Specifications dated May 4, 2006 as modified by EI 08-047:

Add the following:

§731-03 – ROCK BOLT ASSEMBLY

SCOPE. This specification covers the material requirements for the components for assembling a rock bolt generally used in reinforcing a rock slope or as part of a rock catchment system. The following materials are evaluated in this specification:

731.0301 – Rock Bolt Assembly, 26 mm Diameter Steel Bar

731.0302 – Rock Bolt Assembly, 32 mm Diameter Steel Bar

MATERIAL REQUIREMENTS.

A. Bolts. Provide bolts of at least Grade 1035 (ASTM A722M) prestressing steel of the diameter shown in the contract documents. Bolts must have rolled thread-like deformations over the entire length.

B. Appurtenances. Provide appurtenances as recommended by the bolt manufacturer for the size and grade bolt supplied, consisting of a steel bearing plate, a hardened washer, if required, and a convex bottom anchor nut. Two beveled or wedge washers per bolt may be required. The upper, or bearing washer, shall be countersunk on the side opposite the bevel to match the bottom of the anchor nut.

C. Resin. Provide resin of the two-component type, and of two different setting times, specifically manufactured for rock bolting. Use only resin that is within the unexpired shelf life designated on the package by the manufacturer.

Provide cartridges of the appropriate diameter as recommended by the manufacturer for the bolt/drill hole/cartridge diameter combination used. Furnish sufficient fast setting resin to fill 900 mm of annular space in the bottom of the hole. Greater amounts of fast setting resin will be necessary in some rock types to meet the pull test requirements. Furnish slower setting resin with a setting time of no less than fifteen minutes. Install enough slow setting resin in the remainder of the hole to fully encapsulate the bolt.

BASIS OF ACCEPTANCE. Rock bolts and appurtenances will be accepted on the basis of a material certification that the product conforms to this specification and certified mill test results from each heat specifying the ultimate strength, yield strength, elongation, and composition indicating conformance to the specification. Larger diameter bolts are acceptable if supplied at no additional cost to the State.

Rock bolt resin will be accepted on the basis of a material certification that the product conforms to this specification.

SUBSURFACE TENSILE ELEMENTS

Make the following changes to the Standard Specifications dated May 1, 2008 as modified by EI 08-047:

Add the following:

§731-03 – ROCK BOLT ASSEMBLY

SCOPE. This specification covers the material requirements for the components for assembling a rock bolt generally used in reinforcing a rock slope or as part of a rock catchment system. The following materials are evaluated in this specification:

731.0301 – Rock Bolt Assembly, 1 in. Diameter Steel Bar

731.0302 – Rock Bolt Assembly, 1 ¼ in. Diameter Steel Bar

MATERIAL REQUIREMENTS.

A. Bolts. Provide bolts of at least Grade 150 (ASTM A722) prestressing steel of the diameter shown in the contract documents. Bolts must have rolled thread-like deformations over the entire length.

B. Appurtenances. Provide appurtenances as recommended by the bolt manufacturer for the size and grade bolt supplied, consisting of a steel bearing plate, a hardened washer, if required, and a convex bottom anchor nut. Two beveled or wedge washers per bolt may be required. The upper, or bearing washer, shall be countersunk on the side opposite the bevel to match the bottom of the anchor nut.

C. Resin. Provide resin of the two-component type, and of two different setting times, specifically manufactured for rock bolting. Use only resin that is within the unexpired shelf life designated on the package by the manufacturer.

Provide cartridges of the appropriate diameter as recommended by the manufacturer for the bolt/drill hole/cartridge diameter combination used. Furnish sufficient fast setting resin to fill 3 ft. of annular space in the bottom of the hole. Greater amounts of fast setting resin will be necessary in some rock types to meet the pull test requirements. Furnish slower setting resin with a setting time of no less than fifteen minutes. Install enough slow setting resin in the remainder of the hole to fully encapsulate the bolt.

BASIS OF ACCEPTANCE. Rock bolts and appurtenances will be accepted on the basis of a material certification that the product conforms to this specification and certified mill test results from each heat specifying the ultimate strength, yield strength, elongation, and composition indicating conformance to the specification. Larger diameter bolts are acceptable if supplied at no additional cost to the State.

Rock bolt resin will be accepted on the basis of a material certification that the product conforms to this specification.