

SUPERSEDED BY
EB 15-031
EFFECTIVE 9/28/15



New York State
Department of
Transportation
ENGINEERING
INSTRUCTION

EI
13-016

Title: NEW STANDARD SPECIFICATIONS §701-10 DUCT GROUTING MATERIAL (STRUCTURES)

Target Audience:

- | | |
|---|--|
| ☒ Manufacturers (18) | ☐ Surveyors (33) |
| ☒ Local Govt. (31) | ☒ Consultants (34) |
| ☒ Regions/Agencies (32) | ☒ Contractors (39) |

Approved:


Robert L. Sack, P.E.
Deputy Chief Engineer, Research

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Date

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective with projects submitted for the letting of January 9, 2014.
- Superseded Issuances: None.
- 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 issue a new Standard Specification, §701-10 Duct Grouting Material (Structures).

TECHNICAL INFORMATION:

- §701-10 Duct Grouting Material (Structures) is generally used in post-tensioning ducts and is mixed in small quantities, mixed accurately, and then pumped into the post-tensioning duct before it sets. It must also meet strict chemical requirements, so that it does not provide a corrosive medium for the post-tensioning steel. Prepackaged mixes are ideal for this application.
- The purpose of this specification is to establish acceptance criteria for these materials.
- This specification will have no cost impact.

IMPLEMENTATION:

- Main Office Design Quality Assurance Bureau will insert the revision to the Standard Specifications into contract proposals beginning with projects submitted for the letting of January 9, 2014.
- The following special specifications are disapproved:
 - 563.96 01M - Furnish and Install Precast Concrete Towers
 - 563.0001 05 - Post Tensioning Pier Cap Beam
 - 563.1001NN 16 - Precast Concrete Bridge System
 - 563.96000001 - Furnish and Install Precast Concrete Towers
 - 551.6510nn 01 - Prestressed Concrete Cylinder Test Piles
 - 551.6610nn 01 - Prestressed Concrete Cylinder Piles

El 13-016 Page 2 of 2

TRANSMITTED MATERIALS:

- New section: §701-10 Duct Grouting Material (Structures) of the Standard Specifications.
- Metric and US Customary versions are attached.

BACKGROUND:

- Currently, there is no standard specification for grout for post-tensioning ducts. This need is normally met by special specifications or a note in the plans. The number of structures which use post-tensioning is increasing, making a standard specification necessary.
- §701-10 Duct Grouting Material (Structures) will be referenced in the next version of the Prestressed Concrete Construction Manual (P.C.C.M.).

CONTACT:

- Direct any questions concerning this EI to:
 - William Goss of the Field Engineering 1 Office of the Materials Bureau at (518) 457-4592 (William.Goss@dot.ny.gov.)
 - Duane Carpenter of the Structures Design and Construction Division at (518) 457- 5715 (Duane.Carpenter@dot.ny.gov.)

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

Make the following changes to the Standard Specifications of May 4, 2006:

Page 726 Delete §701-10 (Vacant) and replace it with the following:

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

SCOPE. Requirements for grout used to fill the post-tensioning ducts in concrete bridge elements.

GENERAL. For field use, follow the manufacturer's mixing and curing recommendations. Material meeting the requirements of this specification when tested will be placed on the Approved List.

MATERIAL REQUIREMENTS. Prepackaged, cementitious material containing no metallic expansion aides that, when mixed with water at manufacturer's stated water/cement material ratio ($w/c \leq 0.40$), and meets the requirements of Table 701-10. The Department will test the material according to NYSDOT Test Method 701-18 P,C, following the manufacturer's proportioning and mixing instructions printed on the package.

TABLE 701-10 DUCT GROUTING MATERIAL (STRUCTURES)		
TEST REQUIREMENT	Min.	Max.
Initial Set (hours)	1½	12
Expansion (%)	0.0	0.40
Contraction (%)	-	0.0
24 Hour Compressive Strength (MPa)	15	-
7 Day Compressive Strength (MPa)	25	-
28 Day Compressive Strength (MPa)	35	-
Bleed Water (%)	-	0.0
Permeability (coulombs)	-	2000
Fluidity efflux time, seconds	11	30
Total Chloride Content (% by weight)	-	0.05
Total Sulfate Content (% by weight)	-	5.0

THIXOTROPIC GROUTS. If used, modify the fluidity test as follows:

- A) Fluidity efflux time - 5 to 30 seconds for a 1 liter discharge of grout.
- B) Allow the grout to idle for 30 minutes; then remix it for 30 seconds. Efflux time immediately after remixing ≤ 30 seconds.

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

BASIS OF APPROVAL. Application for material approval shall be submitted to the Materials Bureau by the manufacturer. The application shall be accompanied by a labeled 23 kg production sample of the product; however the Materials Bureau will approve other packaging quantities on a case-by-case basis. The Department will test the material according to Test Method NY 701-18P,C following the manufacturer's proportioning and mixing instructions printed on the package. Upon approval, the product brand name, manufacturing location and shelf life will be placed on the Approved List. The Department must receive a letter from the manufacturer annually certifying that no changes have been made in the formulation, manufacturing process, or manufacturing location. In the event that a letter is not received, the product may be removed from the Approved List. Furthermore, the material may be removed from the Approved List at any time if the Department is not notified in writing of any material changes as stated above. The Department reserves the right to sample and test the material at any time.

BASIS OF ACCEPTANCE. Products will be accepted on the basis of the brand name and manufacturing location appearing on the Approved List. Such products will then be accepted on the basis of the brand name and manufacturing location printed on the sealed, non reusable container along with the month and year (i.e. 05/2011) of when the material was manufactured. The manufacturer is required to print the shelf life on the container if it is less than 12 months. The expiration date of acceptance for this material shall be one calendar year from the date of manufacture or as stated in the Approved List, whichever is less.

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

Make the following changes to the Standard Specifications of May 1, 2008:

Page 762 Delete §701-10 (Vacant) and replace it with the following:

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

SCOPE. Requirements for grout used to fill the post-tensioning ducts in concrete bridge elements.

GENERAL. For field use, follow the manufacturer's mixing and curing recommendations. Material meeting the requirements of this specification when tested will be placed on the Approved List.

MATERIAL REQUIREMENTS. Prepackaged, cementitious material containing no metallic expansion aides that, when mixed with water at manufacturer's stated water/cement material ratio ($w/c \leq 0.40$), and meets the requirements of Table 701-10. The Department will test the material according to NYSDOT Test Method 701-18 P,C, following the manufacturer's proportioning and mixing instructions printed on the package.

TABLE 701-10 DUCT GROUTING MATERIAL (STRUCTURES)		
TEST REQUIREMENT	Min.	Max.
Initial Set (hours)	1½	12
Expansion (%)	0.0	0.40
Contraction (%)	-	0.0
24 Hour Compressive Strength (psi)	2000	-
7 Day Compressive Strength (psi)	3500	-
28 Day Compressive Strength (psi)	5000	-
Bleed Water (%)	-	0.0
Permeability (coulombs)	-	2000
Fluidity efflux time, seconds	11	30
Total Chloride Content (% by weight)	-	0.05
Total Sulfate Content (% by weight)	-	5.0

THIXOTROPIC GROUTS. If used, modify the fluidity test as follows:

- A) Fluidity efflux time - 5 to 30 seconds for a 0.264 gallon (34 fl oz.) discharge of grout.
- B) Allow the grout to idle for 30 minutes; then remix it for 30 seconds. Efflux time immediately after remixing ≤ 30 seconds.

§701-10 DUCT GROUTING MATERIAL (STRUCTURES)

BASIS OF APPROVAL. Application for material approval shall be submitted to the Materials Bureau by the manufacturer. The application shall be accompanied by a labeled 50 lb production sample of the product; however the Materials Bureau will approve other packaging quantities on a case-by-case basis. The Department will test the material according to Test Method NY 701-18P,C following the manufacturer's proportioning and mixing instructions printed on the package. Upon approval, the product brand name, manufacturing location and shelf life will be placed on the Approved List. The Department must receive a letter from the manufacturer annually certifying that no changes have been made in the formulation, manufacturing process, or manufacturing location. In the event that a letter is not received, the product may be removed from the Approved List. Furthermore, the material may be removed from the Approved List at any time if the Department is not notified in writing of any material changes as stated above. The Department reserves the right to sample and test the material at any time.

BASIS OF ACCEPTANCE. Products will be accepted on the basis of the brand name and manufacturing location appearing on the Approved List. Such products will then be accepted on the basis of the brand name and manufacturing location printed on the sealed, non reusable container along with the month and year (i.e. 05/2011) of when the material was manufactured. The manufacturer is required to print the shelf life on the container if it is less than 12 months. The expiration date of acceptance for this material shall be one calendar year from the date of manufacture or as stated in the Approved List, whichever is less.