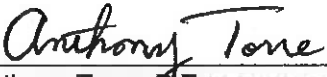


SUPERSEDED BY EB 15-031 EFFECTIVE 9/28/15	Modified By EI 12-021 Effective 1/10/13		New York State Department of Transportation ENGINEERING INSTRUCTION	EI 12-011
Title: STANDARD SPECIFICATIONS §701-12 CONCRETE REPAIR MATERIAL - HIGH EARLY STRENGTH. REVISIONS TO STANDARD SPECIFICATIONS §502, §555, §569, §602, §603, §604, §606, §609, §704-03, §706-02, AND §706-04.				
Target Audience: ☒ Manufacturers (18) ☒ Local Govt. (31) ☒ Regions/Agencies (32)		☐ Surveyors (33) ☒ Consultants (34) ☒ Contractors (39)		
		Approved:  Anthony Torre, E.E. Acting Deputy Chief Engineer, Research		
		06-15-2012 Date		

ADMINISTRATIVE INFORMATION:

- This Engineering Instruction (EI) is effective with projects submitted for the letting of January 10, 2013.
- Superseded Issuances: None.
- The information transmitted by this issuance will be incorporated into a future revision to the Standard Specifications.

PURPOSE:

- Issue a new Standard Specification, §701-12 Concrete Repair Material - High Early Strength.
- Revisions to §502, §555, §569, §602, §603, §604, §606, §609, §704-03, §706-02, and §706-04.

TECHNICAL INFORMATION:

- §701-12 Concrete Repair Material - High Early Strength is generally used in repair of portland cement concrete and it can accept loads within 3 hours of placement.
- Revisions were made to §502, §555, §569, §602, §603, §604, §606, §609, §704-03, §706-02, and §706-04 to incorporate the new item 701-12 Concrete Repair Material- High Early Strength.

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 10, 2013.

TRANSMITTED MATERIALS:

- New §701-12 Concrete Repair Material - High Early Strength of the Standard Specifications.
- Revisions to §502, §555, §569, §602, §603, §604, §606, §609, §704-03, §706-02, and §706-04.
- Both Metric and US Customary versions are attached.

BACKGROUND:

This EI establishes a performance based specification for §701-12 Concrete Repair

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Material - High Early Strength. A material is needed to bridge the gap between the §701-04 Concrete Repair Material and §701-09 Concrete Repair Material - Rapid Hardening. When using §701-04 to repair concrete, loading cannot be re-established until 24 hours. §701-09 allows for loading to be re-established within 1 hour but it also has a minimum of 5 minutes of working time which may not be enough to properly repair the damaged area. §701-12 allows for loading more rapidly than when a §701-04 product is used and also provides greater working time to make repairs as compared to a §701-09 product.

CONTACT:

- Direct any questions concerning this EI to William Goss of the Field Engineering 1 Office of the Materials Bureau at (518) 457-4592 or via email at William.Goss@dot.ny.gov.

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

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

Page 727 Add the following:

§701-12 CONCRETE REPAIR MATERIAL - HIGH EARLY STRENGTH

SCOPE. This specification covers a high early strength repair material, consisting of a dry component made up of cementing medium and fine aggregate to which water or an emulsified compound is added. The resulting mixture is generally used in repair of portland cement concrete pavement.

GENERAL. This material is intended for partial or full depth repairs, has the ability to be extended with Department approved CA1 aggregate, and provides at least 30 minutes of working time. This product must provide the ability to accept traffic loads within 3 hours of placement. For field use, follow the manufacturer's mixing and curing recommendations. Material meeting the requirements of this specification when tested (neat and extended), will be placed on the Approved List.

MATERIAL REQUIREMENTS. The material shall be a prepackaged, multi-component powdered material, used for concrete repair, containing no metallic expansion aides. The product must remain workable when extended with up to 60% by weight with coarse aggregate, and meet the requirements of Table 701-12. When being used for aesthetic purposes the material's color shall be within the Munsell Neutral Scale range stated in Table 701-12.

TABLE 701-12 CONCRETE REPAIR MATERIAL - HIGH EARLY STRENGTH		
TEST REQUIREMENT	Min.	Max.
Initial Set (minutes)	30	-
Expansion (%)	-	0.4
Contraction (%)	-	0.0
3 Hour Compressive Strength (MPa) **	14	-
7 Day Compressive Strength (MPa) **	42	-
1 Day Bond Strength (MPa)	1.5	-
Freeze-Thaw Loss % (25 cycles)	-	1.0
Total Chloride Content (% by weight)	-	0.05
Total Sulfate Content (% by weight)	-	5.0
Color, Munsell Neutral Scale	4.0	8.5

** Neat and Extended.

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

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 701-21P,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.

Page 295 Add the following to the list of materials of **§502-2 Materials and Equipment:**

“Concrete Repair Material - High Early Strength 701-12”

Page 334 Add the following to the list of materials of **§555-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

Page 401 Add the following to the list of materials of **§569-2.01 Fabrication:**

“Concrete Repair Material - High Early Strength 701-12”

Page 402 Add the following text after §701-04 of **§569-3.02 C. Repair:**

“or §701-12.”

Page 479 Add the following to the list of materials of **§602-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

Page 484 Add the following to the list of materials of **§603-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

Page 484 Add the following text after (§701-04 of §603-3.02 C. Bell and Spigot Type Pipe:

“or §701-12).”

Page 491 Add the following to the list of materials of §604-2.01 Drainage Structures and Manholes:

“Concrete Repair Material - High Early Strength 701-12”

Page 493 Delete the 3rd sentence under §604-3.10 B. Precast Interceptors: and Replace it with the following:

“Six (6) millimeter thick Premoulded Resilient Joint Filler shall be placed in the joint between the units, and the lifting hole and dowels shall be grouted with material conforming to §701-04, §701-05 or §701-12.”

Page 508 Add the following text after §701-04 of §606-3.05 C 12 a. Minor Defect Repair:

“or §701-12.”

Page 529 Add the following to the list of materials of §609-2 Materials:

“Concrete Repair Material - High Early Strength 701-12”

Page 531 Add the following text after §701-04 Concrete Repair Material of §609-3.02 B. Hot Mix Asphalt (Flexible) Pavement:

“, §701-12 Concrete Repair Material - High Early Strength,”

Page 531 Delete the last sentence of §609-3.03 Stone Curb and Granite Curb - Bridge Type: and Replace it with the following:

“Mortar used for bedding and filling of joints shall conform to §705-21 Masonry Mortar, §701-04 Concrete Repair Material or §701-12 Concrete Repair Material - High Early Strength.”

Page 744 Add the following to the list of materials of §704-03 Precast Concrete - General Materials Requirements:

“Concrete Repair Material - High Early Strength 701-12”

Page 749 Add the following text after §701-04 of Repair B. Minor Defects:

“or §701-12.”

Page 775 Add the following to the list of materials of §706-02 Reinforced Concrete Pipe Classes II, III, IV, V - Materials Requirements - A. Materials:

“Concrete Repair Material - High Early Strength 701-12”

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

Page 777 Add the following text after §701-04 Concrete Repair Material of §706-02 Reinforced Concrete Pipe Classes II, III, IV, V - Repair - A. Machine Made Pipe:

“or §701-12 Concrete Repair Material - High Early Strength.”

Page 780 Delete the 6th sentence under §706-04 Precast Drainage Units - Steps for Drainage Units: and Replace it with the following:

“If the steps are grouted, the grouting material shall conform to §701-04 Concrete Repair Material, §701-05 Concrete Grouting Material or §701-12 Concrete Repair Material - High Early Strength.”

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

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

Page 763 Add the following:

§701-12 CONCRETE REPAIR MATERIAL - HIGH EARLY STRENGTH

SCOPE. This specification covers a high early strength repair material, consisting of a dry component made up of cementing medium and fine aggregate to which water or an emulsified compound is added. The resulting mixture is generally used in repair of portland cement concrete pavement.

GENERAL. This material is intended for partial or full depth repairs, has the ability to be extended with Department approved CA1 aggregate, and provide at least 30 minutes of working time. This product must provide the ability to accept traffic loads within 3 hours of placement. For field use, follow the manufacturer's mixing and curing recommendations. Material meeting the requirements of this specification when tested (neat and extended), will be placed on the Approved List.

MATERIAL REQUIREMENTS. The material shall be a prepackaged, multi-component powdered material, used for concrete repair, containing no metallic expansion aides. The product must remain workable when extended with up to 60% by weight with coarse aggregate, and meet the requirements of Table 701-12. When being used for aesthetic purposes the material's color shall be within the Munsell Neutral Scale range stated in Table 701-12.

TABLE 701-12 CONCRETE REPAIR MATERIAL - HIGH EARLY STRENGTH		
TEST REQUIREMENT	Min.	Max.
Initial Set (minutes)	30	-
Expansion (%)	-	0.4
Contraction (%)	-	0.0
3 Hour Compressive Strength (psi) **	2000	-
7 Day Compressive Strength (psi) **	6000	-
1 Day Bond Strength (psi)	200	-
Freeze-Thaw Loss % (25 cycles)	-	1.0
Total Chloride Content (% by weight)	-	0.05
Total Sulfate Content (% by weight)	-	5.0
Color, Munsell Neutral Scale	4.0	8.5

** Neat and Extended

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

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 701-21P,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.

Page 299 Add the following to the list of materials of **§502-2 Materials and Equipment:**

“Concrete Repair Material - High Early Strength 701-12”

Page 338 Add the following to the list of materials of **§555-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

Page 406 Add the following to the list of materials of **§569-2.01 Fabrication:**

“Concrete Repair Material - High Early Strength 701-12”

Page 407 Add the following text after §701-04 of **§569-3.02 C. Repair:**

“or §701-12.”

Page 483 Add the following to the list of materials of **§602-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

Page 488 Add the following to the list of materials of **§603-2.01 General:**

“Concrete Repair Material - High Early Strength 701-12”

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

Page 488 Add the following text after (§701-04 of §603-3.02 C. Bell and Spigot Type Pipe:

“or §701-12).”

Page 495 Add the following to the list of materials of §604-2.01 Drainage Structures and Manholes:

“Concrete Repair Material - High Early Strength 701-12”

Page 497 Delete the 3rd sentence under §604-3.10 B. Precast Interceptors: and **Replace** it with the following:

“Six (6) ¼ inch thick Premoulded Resilient Joint Filler shall be placed in the joint between the units, and the lifting hole and dowels shall be grouted with material conforming to §701-04, §701-05 or §701-12.”

Page 513 Add the following text after §701-04 of §606-3.05 C 12 a. Minor Defect Repair:

“or §701-12.”

Page 536 Add the following to the list of materials of §609-2 Materials:

“Concrete Repair Material - High Early Strength 701-12”

Page 537 Add the following text after §701-04 Concrete Repair Material of §609-3.02 B. Hot Mix Asphalt (Flexible) Pavement:

“, §701-12 Concrete Repair Material - High Early Strength,”

Page 537 Delete the last sentence under §609-3.03 Stone Curb and Granite Curb - Bridge Type: and **Replace** it with the following:

“Mortar used for bedding and filling of joints shall conform to §705-21 Masonry Mortar, §701-04 Concrete Repair Material or §701-12 Concrete Repair Material - High Early Strength.”

Page 782 Add the following to the list of materials of §704-03 Precast Concrete - General Materials Requirements:

“Concrete Repair Material - High Early Strength 701-12”

Page 787 Add the following text after §701-04 of Repair B. Minor Defects:

“or §701-12.”

Page 816 Add the following to the list of materials of §706-02 Reinforced Concrete Pipe Classes II, III, IV, V - Materials Requirements - A. Materials:

§701-12 CONCRETE REPAIR MATERIAL – HIGH EARLY STRENGTH

“Concrete Repair Material - High Early Strength 701-12”

Page 818 Add the following text after §701-04 Concrete Repair Material of §706-02 Reinforced Concrete Pipe Classes II, III, IV, V - Repair - A. Machine Made Pipe:

“or §701-12 Concrete Repair Material - High Early Strength.”

Page 821 Add the following text after §701-05 Concrete Grouting Material of §706-04 Precast Drainage Units - Steps for Drainage Units:

“, or §701-12 Concrete Repair Material - High Early Strength.”