

# EXPECTED IMPLEMENTATION JULY 2016

## **960 POST-TENSIONING COMPONENTS.** **(REV 10-14-15) (FA 1-26-16) (7-16)**

SUBARTICLE 960-2.2.2.1 is deleted and the following substituted:

### **960-2.2.2.1 Anchorage Caps:**

1. Provide permanent anchorage caps made of stainless steel, nylon, polyester, or Acrylonitrile Butadiene Styrene (ABS).
2. Seal Anchorage cap with "O"-ring seals or precision fitted flat gaskets placed against the bearing plate.
3. Place a vent hole of 3/8 inch minimum diameter suitable for filler venting and inspection of the content inside the anchorage cap from the top or front of the anchorage cap as appropriate (e.g. anchorage caps not accessible after filler injection must have a vent at the top of the cap). Anchorage caps may be fabricated to facilitate both inspection locations.
4. Anchorage caps shall have a minimum pressure rating of 150 psi.
5. Stainless steel bolts shall be used to attach cap to anchorage.
6. Certified test reports documenting steel chemical analysis shall be submitted when stainless steel anchorage caps are used.

SUBARTICLE 960-2.4 is deleted and the following substituted:

### **960-2.4 PT System Materials:**

1. Use material specifications in this Section for all PT system components and subcomponents.
2. Use only virgin material for all non-ferrous components. Do not use any components manufactured from recycled material unless the manufacturer submits data supporting the material performance and oxidation properties meet or exceed that of virgin material.
3. Test only samples taken from finished product as applicable.

#### **960-2.4.1 Nylon:**

Use one of the following cell classes according to ASTM D5989:

1. S-PA0141 – weather resistant.
2. S-PA0231 – heat stabilized.
3. S-PA0401 – ultimate strength not less than 10,000 psi with UV stabilizer added.

#### **960-2.4.2 Polyolefin:**

Conforms to both of the following:

1. Contains antioxidants with a minimum Oxidation Induction Time (OIT) according to ASTM D3895 of not less than 20 minutes.
2. Remolded finished material has a minimum failure time of three hours when tested for stress crack resistance using ASTM F2136 at an applied stress of 348 psi.

#### **960-2.4.3 Stainless Steel:**

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Conforms to the following:

1. ASTM A240 Type 316 - for metallic components other than bolts.
2. ASTM F593 Type 316 - for bolts.

## **960-2.4.4 Polypropylene:**

Conforms to all of the following:

1. Non-colored, unfilled polypropylene according to ASTM D4101 with a cell class range of PP0340B44541 to PP0340B67884.
2. Contains antioxidants with a minimum Oxidation Induction Time (OIT) according to ASTM D3895 of not less than 20 minutes.
3. Contains a non-yellowing light stabilizer.

## **960-2.4.5 Polyethylene Resin:**

Conforms to all of the following:

1. Meets requirements of ASTM D3350 with a minimum cell class of 445574C.
2. Contains antioxidants with a minimum Oxidation Induction Time (OIT) according to ASTM D3895 of 40 minutes.

## **960-2.4.6 Elastomer Sleeves:**

1. Meet requirements of ASTM D1171 using Ozone Chamber Exposure Method B (no cracks permitted under 2X magnification).
2. Constructed of an elastic polymeric material that is compatible with the in-situ conditions and PT system components including the filler material and filler material installation process.

SUBARTICLE 960-3.1 is deleted and the following substituted:

## **960-3.1 Independent Testing:**

Use independent laboratories meeting the credentials described in this Section to perform all testing and to submit certified test reports for materials and components. Certification may be performed by a qualified independent laboratory outside of the United States, only if the facility is pre-approved by the State Materials Office.

Conform all testing procedures used for materials or components to applicable American Society of Testing and Materials (ASTM) and International Federation of Structural Concrete (fib) Specifications or as modified in this Section.

SUBARTICLE 960-3.2.1.1 is deleted and the following substituted:

## **960-3.2.1.1 Filler Containment Assembly Pressure Test:**

1. Assemble anchorage and anchorage cap with all required filler injection attachments (e.g., grout tube, valves, plugs, etc.).
2. Seal opening in anchorage where duct connects.
3. Condition assembly by maintaining a pressure of 150 psi in system for three hours.
4. After conditioning, assembly must sustain 150 psi internal pressure for five minutes with no more than 15 psi, or 10%, reduction in pressure.

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5. Filler Containment Assembly Pressure Test requirement will be considered satisfied for systems using same anchorages, anchorage caps, and filler injection attachments as a previously approved system as long as appropriate documentation from the previous submittal and written certification is submitted by system Supplier stating that identical components are used in both assemblies.

SUBARTICLE 960-3.6 is deleted and the following substituted:

## **960-3.6 Calculations, Drawings, and Certification:**

Show fully detailed drawings of all component configurations, connections, anchorages, inlets, outlets, drains, high point outlet inspection details, anchorage inspection details, permanent anchorage caps and application limits of the PT system for approval and posting on the SDO's website for Approved Post-Tensioning Systems. Submit details of typical local zone reinforcement in system drawings signed and sealed by a Specialty Engineer. Indicate that all PT system components are stamped with the following:

1. Manufacturer's name
2. Trademark model number
3. Size corresponding to catalog description on PT system drawings.

Submit an application package cover letter signed by an officer of the PT system vendor certifying that the submitted PT system, as a whole and all of its individual components, meet or exceed all material and component/system requirements of this Section, as demonstrated by the submittal. Indicate in this certification that all testing required by this Section was performed by a certified independent laboratory (or laboratories), as defined in 960-3.1, and that all tests were performed to applicable ASTM and fib Specifications. Submit proof of current laboratory accreditation specifically indicating applicable accreditation categories related to PT systems. Submit all material and component certifications required throughout this Section.