PTI / ASBI Grouted Post-Tensioning Specifications

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Guide Specification for Grouted Post-Tensioning
The Joint Task Group
Designers, Contractors, Suppliers, Academia, Owners
Why Do We Need a Grouted Post-Tensioning Specification?

- To Create a Uniform Standard for the Application of Grouted Post-Tensioning
- To Create Uniform Acceptance Standards for Post-Tensioning Systems
Specification Goals

• Set a Minimum Standard for All Grouted Post-Tensioning
• Define the Design and Testing Requirements Before a Post-Tensioning Systems Can be Used
• Give the Owner/Engineer a Choice of Performance Levels in a Post-Tensioning System
• Ensure the Installed Systems Meet the Approved System Description
• Ensure the System is Installed in a Technically Sound Manner
• Ensure the Durability Goals Will be Achieved
• Give the Suppliers an Avenue for Innovation Beyond Current Best Practices
• Ensure That Post-Tensioned Construction Methods Remain Competitive
• Keep the Specification as Brief as Possible
Documents Reviewed for Consideration

- PTI – Acceptance Standards for Post-Tensioning Systems
- PTI – Specifications for Grouting of Post-Tensioned Structures
- AASHTO LRFD Bridge Construction Specification
- *fib* Bulletin 33 – Durability of Post-Tensioning Tendons
Specification TOC

1.0 Introduction
2.0 Definitions and Abbreviations
3.0 Post-Tensioning System Tendon Protection Levels
4.0 Material and Performance Requirements
5.0 Installation Drawings and Stressing Calculations
6.0 Quality Assurance and Quality Control
7.0 Personnel Qualifications
8.0 Shipping and Storage of Materials
Specification TOC

9.0  Bearing Plate and Duct Installation
10.0 Placing Concrete
11.0 Prestressing Steel Installation
12.0 Stressing Operations
13.0 Grouting Operations
14.0 Protection of Post-Tensioning Anchorages
15.0 Repair of Holes and Access Openings
16.0 References
Post-Tensioning System Tendon Protection Levels (PL)

*fib Bulletin 33*, PL1 – Defined as a Duct with Grout Providing Durable Corrosion Protection

**PTI-ASBI**, PL1a – Defined as a Duct with Grout Providing Durable Corrosion Protection

**PTI-ASBI**, PL1b – Defined as PL1a Plus Engineered Grout and Permanent Grout Cap
Post-Tensioning System Tendon Protection Levels (PL)

fib Bulletin 33, PL2 – Defined as PL1 Plus a Watertight, Impermeable Envelope Providing a Leak Tight Barrier

PTI-ASBI, PL2 – Defined as PL-1B Plus an Envelope, Enclosing the Tensile Element Bundle Over Its Full Length, and Providing a Permanent Leak Tight Barrier
Protection Level 2
Post-Tensioning System Tendon Protection Levels (PL)

*fib Bulletin 33*, PL3 – Defined as PL2 Plus
  Integrity of Tendon or Encapsulation to be Inspectable or Monitorable

*PTI-ASBI*, PL3 – Defined as PL-2 Plus Electrical Isolation of Tendon or Encapsulation to be Monitorable or Inspectable at Any Time
Grouting

• Refer To PTI M55.1-12
  - PL1a - Basic Grout
  - PL1b - Engineered Grout
  - PL2 - Engineered, Thix
  - PL3 - Engineered, Thix
Material and Performance Requirements

- Material Standards – Strand and Bar
- Component Standards – Anchorages, Grout Caps, Duct, Duct Connections/Couplers, Inlet/Outlets
- System Approval Tests – By Independent Testing Lab
  - Assembly Pressure Test for All Sizes and Configurations
- New Systems and Materials
Segmental Couplers
Quality Assurance and Quality Control

- PT Supplier Shall Have a QA Program
  - Secondary Suppliers Must Follow
- Project Quality Plan
  - Performance Requirements
  - Standards, Practices, Processes, Procedures
  - Testing, Inspection, Examination, Audit
  - Authority and Responsibilities
  - Changes and Modifications
  - Methods for Measuring Performance Objectives
Personnel Qualifications

• Direct Supervisor
  ▫ PTI Level 2 Bonded PT Field Specialist
• Foreman of Installation and Stressing Crew
  ▫ PTI Level 2 Bonded PT Field Specialist
• Foreman of Grouting Crew
  ▫ PTI Level 2 Bonded PT Field Specialist
  ▫ ASBI Certified Grouting Technician
• Crew (at Least 25%)
  ▫ PTI Level 1 Bonded PT – Field Installation
Future Enhancements

• Prequalification of PTS
  ▫ Information Available Online
• Development of Specification Commentary
• Other???
Thanks!

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