

ITEM 563.0001 05 - POST TENSIONING PIER CAP BEAM

DESCRIPTION

This work shall consist of furnishing, installing, and stressing post-tension prestressing steel and grouting the post-tensioning ducts in accordance with the details shown on the plans and the requirements of these specifications.

It shall also include the installation of any appurtenant items necessary for the particular post-tension system required to resist stresses caused by anchorage assemblies.

MATERIAL REQUIREMENTS

Materials for post-tensioning shall meet the requirement of Section 4-6 of the PCCM and the following:

- A. Steel prestressing systems shall meet the requirements of ASTM-A722 M and Grade 150. Minimum ultimate steel stress > 1030 MPa.
- B. Steel anchorage plates shall meet the requirements of NYS DOT Standard Specifications Section 715-01.

Material for grouting the post-tensioning duct shall meet the following:

Grout. Prepackaged, cementitious material containing no metallic expansion aides that, when mixed with water at the proposed water/cementitious material ratio ($w/c \leq 0.40$), meets the requirements below.

DUCT GROUTING MATERIAL

Test Requirement	Min.	Max.
Initial Set, hours	1½	12
Expansion, (%)	0.0	0.40
24 Hour Compressive Strength, MPa	15	-
7 Day Compressive Strength, MPa	25	-
28 Day Compressive Strength, MPa	35	-
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 testing as follows:

- a) Efflux time - 9 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.

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SAMPLING AND TESTING. All testing shall be done in accordance with ASTM Specifications. The following samples of materials and devices selected at locations designated by the Inspector shall be furnished by the Contractor at his expense:

1. Three 2.25 m long samples of prestressing bar for each size from each heat number or production lot.
2. One unit of each prestress anchorage to be used.

The State reserves the right to reject any material or device which is obviously defective or was damaged subsequent to testing.

Testing of prestress anchorage devices shall be performed using samples of the type of prestressing steel to be used in the work. The test specimen shall be assembled in an unbonded state and the anticipated set shall not be exceeded in testing.

Anchorage devices shall be arranged so that the prestressing force in the bar may be verified prior to removal of the stressing equipment.

3. One set of three 50 mm cubes of duct grout cast according to ASTM C109 and NYSDOT Test Method 701-19E will be cast from the first post-tensioning duct grouted each day and a second set of 50 mm cubes shall be cast for the first post-tensioning duct for which grouting starts more than 4 hours after the first set of cubes is cast. The samples shall be forwarded to the Materials Bureau for testing of 7 day strength.

MANUFACTURER'S LOTS. The manufacturer of prestressing steel shall assign an individual number to each lot of bar or devices at the time of manufacture. Each bundle or package shipped to the project shall be identified by tag or other acceptable means as to Manufacturer's lot number. The Contractor shall be responsible for establishing and maintaining a procedure by which all prestressing materials and devices can be continuously identified with the Manufacturer's lot number.

The Contractor shall furnish manufacturer's certified reports covering the tests required by this Specification. A certified test report stating the guaranteed minimum ultimate tensile strength, yield strength, elongation and composition shall be furnished for each lot of prestressing steel. Stress-strain curves for prestressing steel shall be furnished. A certified test report stating strength when tested using the type of prestressing steel to be used in the work shall be furnished for each lot of prestress anchorage devices.

Basis of Acceptance

The post-tensioning system shall be accepted for incorporation in the respective pier capbeam based on the approved installation drawings for the bridge.

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CONSTRUCTION DETAILS

The Contractor shall submit detailed installation drawings meeting the requirements of the PCCM.

Construction shall meet the applicable provisions of the PCCM, including Section 8 for post-tensioning and grouting.

METHOD OF MEASUREMENT

The quantity to be paid for under this item shall be the number of pier cap beams post tensioned in accordance with the details shown on the plans and the requirements of these specifications.

BASIS OF PAYMENT

Payment will be made at the unit price bid for each pier capbeam post-tensioned in accordance with this specification and enclosed in concrete (paid for under a separate item).

The unit bid price per pier capbeam shall include the cost of all labor and materials necessary to complete this work.

DISAPPROVED - E132016