

Part 1 General

1.1 REFERENCES

- .1 Prestressed Rock and Soil Anchors by the Post-Tensioning Institute (PTI), 2004.

1.2 SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for tie-back anchors and rock anchors and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Field Quality Control Submittals:
 - .1 Maintain field drilling records for each tie-back, including date/time, location of bedrock, drilled length of tie-back and rock embedded length.
 - .2 Maintain grout installation records for each tie-back anchor, including, date/time, amount of grout used and Specific Gravity of each grout batch.
 - .3 Provide Departmental Representative with three copies of field records.
 - .4 Submit detailed method statement and procedures for controlling and monitoring angle and alignment of tie-backs before starting tie-back installation.

Part 2 Products

2.1 MATERIALS

- .1 Grout shall have a minimum compressive strength of 35 MPa at 3 days and 50 MPa at 28 days. The grout shall have non-shrink properties.
- .2 Anchors shall be 26 mm diameter, grade 1030 for the concrete wall and 65 mm diameter, grade 1030 MPa for the wedge, with all accessories (caps, centralizers, couplers, bearing plates, wedge washers, nuts, PVC pipe, etc.) required to complete the work as detailed and to the manufacturers specifications.

Part 3 Execution

3.1 EXAMINATION

- .1 Visually inspect substrate in presence of Departmental Representative.
- .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

- .1 Anchor hole drilling, anchor installation, grouting, pre-stressing and related activities shall be carried out only under the supervision of experienced geotechnical personnel.
- .2 Anchor hole diameters shall be minimum:
 - .1 Concrete Wall Tie-Backs – 100 mm.
 - .2 Rock Wedge Anchors – 150 mm.
- .3 Temporary casing should be provided as required to stabilize drill hole sidewalls.
- .4 Anchor holes shall be grouted within 48 hours of the hole being drilled.
- .5 Anchor hole depth shall be approved by Departmental Representative before anchor installation.
- .6 Couplers (if required) shall be installed in a manner which will ensure that they can transfer the required anchor loads.
- .7 For concrete wall tie-back anchors, use PVC sleeve in free length, sealed top and bottom to allow single stage grouting of bond zone and free length. For rock wedge anchors, no PVC shall be used and the grouting shall be carried out in 2 stages. Stage 1 shall consist of grouting the bond length. After testing, stressing and locking off the anchors, 2nd stage grouting of the free length shall be carried out.
- .8 Grout shall be tremied into anchor hole without interruption.
- .9 Grout sampling and testing will be carried out by a certified testing consultant appointed by PWC.
- .10 After grout is cured to at least 35 MPa, bolts shall be tension tested and locked off in accordance with the Post Tensioning Institute (PTI 2004) method for proof testing rock anchors. Design loads and lock off loads are as shown on the drawings.

3.3 DEFECTIVE TIE-BACKS/ROCK ANCHORS

- .1 If tie-backs/rock anchors are deemed to be defective by the departmental representative then contractor must remediate and reinstall anchors at own cost with methods approved in writing from Departmental Representative.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION