

ROCK DRAIN

**\*\*From Townshend STP 015-1(22)**

- xx. DESCRIPTION. This work shall consist of installing rock drains at the locations indicated in the Plans and as directed by the Engineer and Agency Geologist (Geologist).

The work includes high-angle installation of rock drains to be completed using industrial rope access methods.

- xx. GENERAL. Rock drains consist of drilled boreholes with a minimum diameter of 3<sup>1/2</sup> inches and a minimum length of 25 feet, drilled up from horizontal at a minimum angle of 10 degrees.

- xx. SUBMITTALS.

- (a) Qualifications. Not less than two weeks prior to beginning any rock drain installation, the Contractor shall provide qualifications of Contractor's personnel in writing to the Engineer and Geologist. The supervisors and drill operators shall have a minimum of two years of demonstrated experience in the installation of rock drains.
- (b) Work Plan. Not less than two weeks prior to beginning rock drain installation the Contractor shall submit a detailed work plan for rock drain installation.

The plan shall include:

- (1) The proposed construction sequence and schedule.
- (2) The proposed rope access methods and safety plan.
- (3) The proposed drilling method and equipment.
- (4) The proposed drill hole diameter.

Work shall not begin until the appropriate submittals have been approved in writing by the Engineer and Geologist.

- (c) Field Reports. The Contractor shall submit a field report on a daily basis to the Engineer and Geologist for approval. The field report shall include the location and description of rock drains installed, including length, diameter, and installation angle and direction.
- xx. Construction Requirements.
- (a) General. Work shall proceed according to the approved Work Plan and schedule submitted by the Contractor prior to the beginning of work.
- (b) Drilling. The orientation of the drill hole shall be determined in the field by the Engineer and Geologist. Unless otherwise specified, the angle of installation shall be, at a minimum, 10 degrees down from horizontal as shown

on the plants. The rock drains shall be installed within 5 degrees of the specified angle.

The Contractor shall flush the drill hole of all drill cuttings and debris with compressed air prior to the installation of the rock dowel.

The Contractor's drillers shall keep and provide a borehole log for each borehole drilled for rock drains. The log shall include, but not be limited to, the following:

- (1) Hole location, diameter, length, and angle from horizontal.
- (2) Date/time of drilling, drilling equipment used, encountered subsurface conditions (ground water, joints, voids, soil/weak rock, etc.), and name of driller.

The Contractor shall submit the logs to the Engineer and Geologist on a daily basis.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Rock Drain) to be measure for payment will be the number of meters (linear feet)of rock drain installed in the complete and accepted work, as obtained from the Contractor's daily field reports approved by the Engineer and the Geologist.

xx. BASIS FOR PAYMENT. The accepted quantity of Special Provision (Rock Drain) will be paid for at the Contract unit price per meter (linear foot). Payment will be full compensation for drilling and installing the rock drain and for furnishing all labor, tools, equipment, and incidentals to complete the work.

Payment for preparing and making required submittals will not be made separately, but will considered incidental to the work under this Section.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
900.640 Special Provision (Rock Drain)	Meter (Linear Foot)