

SECTION 00568 – STRUCTURAL RODS

(Follow all instructions and make all edits with “Track Changes” turned on. This Section is not published in the Oregon Standard. If there are no instructions [purple text] above a subsection, paragraph, sentence, or bullet, then include it in the Project, unless the item(s) that are included in the subsection, paragraph, sentence, or bullet are not required on the Project and then they should be deleted. In general do not re-number or re-letter subsections when item(s) are deleted. Delete all purple text before preparing the final document. All other modifications to this Section will require ODOT Technical Resource and State Specifications Engineer approval.)

Section 00568 is not a Standard Specification and is included in this Project by Special Provision.

Description

00568.00 Scope - This Work consists of furnishing and installing structural rods as shown or specified. This Work also includes forming holes in concrete with ducts, drilling holes in steel or concrete, and furnishing and installing items necessary for structural rod installations including but not limited to anchorage plates, washers, nuts, ducts, grout for bedding of anchor plates, and grout for filling annular voids around structural rods.

00568.01 Plans - Plans of existing Structures are available from the Engineer upon request.

Materials

00568.10 Materials - Furnish Materials meeting the following requirements:

Polypropylene Pipe	02415.40
Polyvinyl Chloride Pipe	02415.50
Steel Pipe	02810.30
Structural Steel for Non-Bridge Structures	02530.20
Structural Grout.....	02080.60
Tie Rods, Anchor Bolts, and Anchor Rods.....	02560.30
Tendon Duct.....	02515.50
Tendon Grout.....	02080.50

00568.11 Ducts:

(a) UngROUTED Ducts - Furnish ungrouted ducts for structural rod installations as steel pipe, Polyvinyl Chloride (PVC) pipe, High Density Polyethylene (HDPE) pipe, or tendon duct suitable for forming a straight annular hole in concrete during concrete placement and until the concrete has hardened.

(b) Grouted Ducts - When grouting ducts to fill annular voids around structural rods is shown or specified, furnish tendon ducts according to 02515.50. Furnish suitable injection ports, grout tubes, venting, anchor plates with keyways or ports, as necessary to pump or gravity feed the grout into the void. Furnish liquid tight pipes, tubes, and connections. Furnish valves or other means to retain all grout placed in the hole.

00568.12 Centralizers - Furnish centralizers made from non-metallic materials.

Equipment

00568.21 Concrete Core Drilling Equipment - Unless shown or specified, provide concrete core drills having a drill motor mounted on and guided by a rigid rail or track system, adjustable in alignment to match the detailed orientation of the hole, and able to maintain that alignment throughout drilling. Provide a rigid base for the rail or track system that can be secured to the concrete surface. Provide core drill bits having an embedded diamond leading edge.

Construction

00568.41 Drilled Holes - Mark entrance and exit locations of drilled holes on the bridge member entirely before drilling holes. Locate reinforcement by using an electronic rebar mapping device. Mark locations of reinforcing bars on the concrete surface at each end of the drilled hole. Obtain the Engineer's approval of hole locations before drilling holes. If conflicts are likely or reinforcement is encountered during drilling, adjust the hole location by no more than 2 inches to avoid conflicts. When hole location adjustments exceed 2 inches, adjust hole locations as shown or directed. Fill abandoned holes with a PCC repair material meeting the requirements of Section 02015 and according to the manufacturer's recommendations.

Drill holes for rod installations using core drilling equipment.

Drill holes for rod installations so that any deviation from the specified alignment in any direction is less than 1/2 inch per 10 feet of hole length.

When core-drilled holes to be grouted are shown as having a roughened inside surface, core drill holes to a diameter 1/4 to 1/2 inch smaller than the required diameter. Roughen the inside surface of the core-drilled hole by reaming to the required diameter using a 4-point carbide star tipped rotary drill bit. Reaming may be done using guided or non-guided drills.

00568.42 Formed Holes - Install ducts to be embedded in concrete as shown. For ducts to be grouted, install ducts according to 00555.41. Install metallic anchor plates, and ducts, without contact with metallic reinforcing to prevent electrical continuity.

00568.43 Loose Anchor Plate - Bed loose anchor plates or steel bracket plates bearing against existing or previously hardened concrete using a layer of trowelable consistency structural grout. Make the bedding a minimum of 1/4 inch thickness above the highest protrusions or the location of closest clearance under the anchor plate footprint. Squeeze out excess bedding grout using minimal tightening of nuts while maintaining alignment of anchor plates and brackets. Install steel shims as necessary to align the anchor plate perpendicular to the axis of the rod. Do not tighten the nuts further until bedding grout has attained a minimum compressive strength of 3,000 psi.

00568.44 Embedded Anchor Plate - Locate and secure anchor plates to be fully encased in concrete. Do not tighten the nuts on rods until concrete has attained the minimum specified compressive strength.

00568.45 Structural Rod - Install structural rod as shown and the following:

- Galvanize rods, plates, nuts, and washers according to 02530.70 or 02560.40, unless otherwise shown.
- Clean and lubricate rods and nuts before installation.
- Lubricate rods and nuts with a lubricant from the QPL containing dye that visibly contrasts with the color of galvanizing or coating.
- Tighten the nuts to a snug tight condition then mark the position of one nut with a felt tip pen or similar marker. Tighten the nut, while preventing the rod from rotating, by 1/6 turn.

00568.46 Grouted Hole - When annular voids of holes are to be grouted, grout the voids according to Section 00555.

Measurement

00568.80 Measurement - No measurement will be made for the quantities of Work to be performed under this Section. The estimated quantity is based on a density of 490 pounds/cubic foot for the structural rods. The estimated quantity does not include the weight of anchorage plates, washers, nuts, and ducts.

The estimated quantity of structural rods are:

Type	Quantity (Pounds)
UngROUTED Structural Rods	_____
Grouted Structural Rods	_____

Payment

00568.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

Pay Item	Unit of Measurement
(a) UngROUTED Structural Rods	Lump Sum
(b) Grouted Structural Rods	Lump Sum

Payment will be payment in full for furnishing and placing all Materials, and for providing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

No separate or additional payment will be made for locating and marking of reinforcement and holes and for preparation and testing of grout.