# SECTION 032015 – CONCRETE REINFORCEMENT FOR STEAM UTILITY DISTRIBUTION

1. GENERAL
	1. RELATED DOCUMENTS
		1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.
	2. SUMMARY
		1. This section includes the furnishing and placement of concrete reinforcement.
		2. Related sections include the following:
			1. Division 03 Section "Concrete Formwork for Steam Utility Distribution.”
			2. Division 03 Section "Concrete Accessories for Steam Utility Distribution."
			3. Division 03 Section "Cast-In-Place Concrete for Steam Utility Distribution."
	3. REFERENCES
		1. Except as herein specified or as indicated on the Drawings, the work of this section shall comply with the following:
			1. ACI:
				1. 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
				2. 315 - Details and Detailing of Concrete Reinforcement.
				3. 315R - Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.
				4. 318 - Building Code Requirements for Reinforced Concrete.
			2. ASTM Specifications:
				1. A 185 - Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
				2. A 615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
			3. AWS:
				1. D1.4: Structural Welding Code - Reinforcing Steel.
			4. CRSI:
				1. Manual of Standard Practice.
				2. Placing Reinforcing Bars.
	4. SUBMITTALS
		1. Shop Drawings for concrete reinforcement to include:
			1. Number, size, length, mark, and location of concrete reinforcement.
			2. Bending diagrams.
			3. Prepare Shop Drawings in accordance with ACI 315 and 315R.
	5. DELIVERY, STORAGE AND HANDLING
		1. Deliver reinforcement free of loose rust, scale, paint, oil and structural defects, and store on the site so as to maintain that condition.
2. PRODUCTS
	1. MATERIALS
		1. General:
			1. All concrete reinforcement and accessories shall be new, free from rust, scale, paint, oil and structural defects.
			2. Reinforcement shall be the sizes indicated on the Drawings.
		2. Reinforcing bars:
			1. ASTM A 615.
			2. Yield stress: Fy = 60,000 psi.
		3. Welded wire fabric:
			1. ASTM A 185.
			2. Yield stress: Fy = 65,000 psi.
			3. Plain, cold drawn, electrically welded fabric.
		4. Accessories:
			1. Chairs, bolsters, anchors, spacers, stirrups, ties and all other devices as required for spacing and fastening reinforcement in place shall conform to CRSI Manual of Standard Practice.
			2. At exposed underside of concrete, use plastic-tipped chairs and bolsters.
	2. FABRICATION
		1. General:
			1. Fabricate reinforcement to the dimensions indicated on the Drawings and the reviewed Shop Drawings.
			2. Tolerances: As indicated in ACI 117.
			3. Bundle and tag reinforcement with suitable identification to permit checking, sorting and placing.
			4. Welding:
				1. Not permitted, unless specifically indicated on the Drawings.
				2. When permitted, comply with AWS D1.4.
		2. Hooks:
			1. Bend hooks in accordance with ACI 318. Extension on 90 degree hook shall satisfy the requirements of a standard hook unless indicated longer on the Drawings.
			2. Cold bend bars in such a way that will not damage the reinforcement.
		3. Unacceptable materials:
			1. Reinforcement with any of the following defects will not be permitted in the Work:
				1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
				2. Bends or kinks not indicated on Drawings or final Shop Drawings.
				3. Bars with reduced cross-section due to excessive rusting or other cause.
3. EXECUTION
	1. PLACEMENT
		1. Place concrete reinforcement in accordance with:
			1. Shop Drawings reviewed by Engineer.
			2. CRSI Placing Reinforcing Bars.
			3. ACI 117.
		2. Clearance:
			1. Preserve clear space between bars of not less than 1 times the normal diameter of round bars.
			2. In no case let the clear distance be less than 1-inch or less than 1-1/3 times the maximum size of aggregate.
			3. In the absence of specific cover requirements on the Drawings, provide the following minimum concrete cover for reinforcement:
				1. Cast against and permanently exposed to earth: 3 inches.
				2. Exposed to earth, weather or water:

No. 6 through No. 18 bars: 2 inches.

No. 5 bars, 5/8-inch wire and smaller: 1-1/2 inches.

* + - * 1. Not exposed to weather or in contact with the ground:

Slabs, walls, and joists:

No. 11 bars and smaller: 3/4-inch.

Beams, girders, and columns: 1-1/2 inches.

* + 1. Splices:
			1. Comply with ACI 318 and this section.
			2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.
		2. Corner bars:
			1. Provide corner bars for horizontal wall steel.
			2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.
		3. Field cutting and bending: Permitted only under special conditions approved by Engineer.
		4. Field welding:
			1. In accordance with AWS D1.4.
			2. Only when specifically indicated on the Drawings.
		5. Welded wire fabric:
			1. Block up, lap and tie welded wire fabric reinforcement.
			2. Lap welded steel fabric 6 inches at sides and ends.
		6. Slabs on grade:
			1. For chairs or bolsters supported on soil, use either:
				1. Chairs with sand plates.
				2. Concrete bricks set flush with soil to provide bearing surface for chairs or bolsters.
	1. FIELD QUALITY CONTROL
		1. Notification:
			1. Notify Engineer when reinforcing is in place so Engineer may review the reinforcement placement.
			2. Provide a minimum of 24 hours notice prior to placement of concrete.

END OF SECTION 032015