

Kiewit Infrastructure West Co.
Klamath River Renewal Project
Technical Specifications

03 20 00 CONCRETE REINFORCEMENT

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REVISION INDEX

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SECTION 03 20 00 – CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section describes the reinforcement steel for concrete shown or indicated on the Drawings.
- B. This specification applies to:
 - 1. Design, supply, fabrication, installation of reinforcing steel.
 - 2. Dowels and anchors.

1.2 RELATED SECTIONS

- A. Section 03 10 00 – Concrete Forming and Accessories.
- B. Section 03 30 00 – Cast-in-Place Concrete.
- C. Section 03 37 13 – Shotcrete.
- D. Section 03 60 00 – Grouting.

1.3 REFERENCE STANDARDS

- A. Applicable Federal or State Building Code.
- B. American Concrete Institute (ACI):
 - 1. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.
 - 2. ACI SP-66 - ACI Detailing Manual.
- C. ASTM International (ASTM):
 - 1. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - 2. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

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D. Concrete Reinforcing Steel Institute (CRSI):

1. CRSI 10-MSP - Manual of Standard Practice.
2. CRSI 10-PLACE - Placing Reinforcing Bars.

1.4 REINFORCEMENT DETAILING

- A. Detailing of reinforcement and preparing shop drawings, comprising bar schedules and placement drawings, is the responsibility of the Contractor. Notwithstanding the review of these shop drawings by the Engineer and site inspections of reinforcing performed by the Engineer, the design Drawings will govern.

1.5 SUBMITTALS

- A. Items listed in this section are to be submitted to the Engineer for information prior to the start of any Works.
- B. Provide shop/placing drawings in conformance with ACI SP-66 or CRSI 10-MSP detailing:
1. Indicate bar sizes, spacings, locations, splice locations, and quantities of reinforcing steel.
 2. Lists and quantities of reinforcement.
 3. Bar bending details.
 4. Placing drawings, indicating sizes, spacings, locations and quantities of reinforcement.
- C. Materials Certificate: Certify that products meet or exceed specified requirements, mill test report.

PART 2 - PRODUCTS

2.1 REINFORCEMENT

- A. Deformed Reinforcing Steel conforming with ASTM A615, Grade 60.
- B. Welded wire fabric conforming with ASTM A1064.
- C. Plain Dowels: ASTM A615/A615M, round, smooth surface, Grade 40.

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- D. Reinforcement Dowels: ASTM A615/A615M, deformed, new billet steel, Grade 60.
- E. Surface Coatings: unfinished, unless otherwise indicated.
- F. All reinforcement shipped on site shall be identified.
- G. Use new reinforcement, free from loose scale, rust, oil, or other coatings which will decrease the bond to concrete at the time of placing concrete.
- H. Bending of reinforcement:
 - 1. All steel reinforcement shall be bent cold using purpose-made equipment to the recommended dimensions shown in ACI 318.
 - 2. Do not bend partially embedded bars without the prior approval of the Engineer.
 - 3. Do not straighten or re-bend in a manner which will damage the reinforcement bars.
 - 4. Bars showing cracks (metal fatigue) shall be rejected and remedial measures carried out the Contractor to replace the damaged bars.

2.2 REINFORCEMENT ACCESSORIES

- A. Chairs, bolsters, bar supports, spacers: Use only non-rusting, galvanized, plastic coated steel, or plastic supports and accessories. Use chairs of sufficient strength to suit construction activities.
- B. Wire for tying reinforcement: No. 16 AWG or heavier black soft-annealed wire.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Accurately place reinforcement steel in position and adequately secure in position using chairs or spacers. Reinforcement placement must meet the requirements of CRSI 10-PLACE.
- B. Bracing Reinforcement: All reinforcement shall be placed in accordance with Plans for Construction and shall be held so securely in position by wiring and blocking from the forms and by wiring together at intersections that it will not be displaced during the depositing and compacting of the concrete. Tack welding of bars will not be permitted.

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- C. Support of the Work: Piping and conduits shall not be supported or tied directly to the steel. They shall be supported by bar chairs or support bars provided for piping or conduits only.
- D. Ensure that concrete cover is not reduced by reinforcement, embedded items, anchor bolts and tie wires.
- E. Maintain minimum concrete cover around reinforcement according to ACI 301 and ACI 350 or, as shown on Drawings.
 - 1. Concrete cast on/against soil, rock, or concrete blinding: 3 inch.
 - 2. Concrete exposed to flowing water: 3 inch.
 - 3. Concrete exposed to weather, standing water and soil backfill:
 - a. Primary reinforcement: 2 inches.
 - b. Stirrups, ties, and spirals: 1-1/2 inches.
 - 4. Concrete exposed to air and standing water: 1-1/2 inch.

3.2 FIELD QUALITY CONTROL

- A. Reinforcement as indicated on the Drawings may be checked and approved by the Engineer before closing of forms and concrete placement.

3.3 TOLERANCES

- A. Install reinforcement within following tolerances for flexural members, walls, and compression members:
 - 1. On concrete cover: -0 Inch, +3/8 inch.
 - 2. On embedment and splice length: -0 inch, No upper limit.
 - 3. On standard hook dimensions: -0 inch, No upper limit.
 - 4. On lateral spacing of reinforcement: $\pm 1/2$ inch.
 - 5. On rebar dimension length: ± 1 inch.

3.4 PROTECTION AND CLEAN-UP

- A. At completion and during progress of the Work maintain premises in a neat and orderly manner. Dispose of all rubbish, construction debris and surplus materials at least on a weekly basis.
- B. Cover and protect the work from damage by Work of other sections.

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- C. Protect the Work of other sections from damage resulting from the work of this section.

END OF SECTION 03 20 00