SKILLING-HELLE-CHRISTIANSEN-ROBERTSON — Civil & Structural Engineers

PROJECT THE WORLD TRADE CENTER | TITLE CONCRETE GENERAL NOTES | DATE 3-1-68

REVISIONS

8-20-68

REINFORCING STEEL

1. Reinforcing bars shall conform to ASTM A432 (60 ksi), unless specifically noted in the Drawings. #2 smooth reinforcing bars shall conform to ASTM A15, Intermediate Grade.

2. All welded wire fabric shall conform to ASTM A185 unless specifically noted in the Drawings.

3. Detailing of reinforcement and accessories (such as [illegible] shall conform to "Standard Practice for Detailing Reinforced Concrete Structures" (ACI 315-65).

4. Subject to the Engineer's approval of relevant details and construction procedures, the Contractor may replace reinforcing bars in whole or in part with welded wire fabric as follows:

   a) Where the Contractor elects to exercise the option to replace reinforcing bars with welded wire fabric, A432 bars may be replaced by an equal sectional area of welded wire fabric complying with the Specifications. Smooth welded wire fabric and deformed welded wire fabric without certifying tests shall be considered to have a yield point of 60 ksi after fabrication.

   b) Where deformed welded wire fabric is shown by certified test to possess a strain of 0.003 or less at 70 ksi and exhibits a crack width of 0.015" or less at 56 ksi, in conformance with ACI Code Section 1508 (b), deformed welded wire fabric may be regarded as more efficient than A432 bars in the ratio of 70 to 60, and the required sectional areas for replacement of A432 reinforcement may be calculated on this basis.

   c) In no case shall less than the minimum reinforcement required in ACI Code Section 807 (a) be furnished. This requirement applies to both the longitudinal and the transverse directions.

   d) Area of reinforcement cut at "knuckles" of floor trusses or other obstructions shall be restored by providing additional reinforcement equal to the area cut.

5. Reinforcing bars shall be spliced by lapping. Splices shall be staggered, with centers of adjacent splices longitudinally separated a minimum of 44 bar diameters. Minimum length of lap shall be as shown in the Drawings. Welded wire fabric shall be spliced in accordance with ACI Code Section 805 (f) 1, wherever specific splicing provisions are not shown in the Drawings or included in the Specifications.

6. Welding of reinforcing bars, where permitted by the Engineer, or shown in the Drawings, shall conform to the provision of AWS D12.1 and shall be performed by approved, certified welders.

7. Minimum concrete cover at all openings, sleeves, "knuckles" of floor trusses, structural steel penetrating through or into slabs, and other obstructions shall conform to ACI 318-63. The amount of reinforcement placed in a given band or strip, at an obstruction, shall be at least equal to that calculated from the full band width and the spacing shown, unless otherwise noted.

8. Where different spacings are shown for adjacent bands or strips of reinforcement, the distance between the first bar in adjacent bands or strips shall not exceed the average of the spacings in the adjacent bands or strips.

9. Reinforcement parallel to P/T (Power/Telephone) cells shall be placed outside the width of the P/T cell, except where approved by the Engineer.

10. Bar spacings shown in the Drawings (such as "#3 @ 12") are nominal and minimum requirements. For specific required spacings, see the applicable details or sections in the Drawings.

11. Lengths of bars shown in the Drawings do not include additional length needed for hooks or bends, where required.

12. The symbol "T" means "top" and the symbol "B" means "bottom". All bars shown in plan view without a symbol "T" or "B" are bottom bars, except where specifically noted or shown in details. The designation "10#5 T & B", and similar designations, shall mean 10 top bars and 10 bottom bars, not 10 bars total.

LICENSED PROFESSIONAL ENGINEER — LESLIE E. ROBERTSON — No. 34360 — UNIVERSITY OF THE STATE OF NEW YORK