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TYPICAL WELDED WIRE REINFORCEMENT (WWR) FOR USE IN WALLS ③				
STRUCTURES INSIDE DIA. (ID) (INCHES)	WALL THICKNESS (INCHES)	MIN. AREA OF STEEL REQ'D HORIZONTAL (SQ. IN./FT.)	WWR OPTION A ① ④ ⑤	WWR OPTION B ② ④ ⑤
48	5	0.12	WWR 3x8-W3xW2.1	
60	6	0.15	WWR 3x8-W4.5xW2.5	
72	7	0.18	WWR 3x8-W4.5xW2.5	
84	8	0.21	WWR 3x6-W6xW2.5	WWR 3x8-W3xW2.1 (2 LAYERS)
96	9	0.24	WWR 3x6-W6xW2.5	WWR 3x8-W3xW2.1 (2 LAYERS)
108	10	0.27	WWR 3x6-W7xW2.5	WWR 3x8-W4.5xW2.5 (2 LAYERS)
120	11	0.30	WWR 3x6-W7.5xW3	WWR 3x8-W4.5xW2.5 (2 LAYERS)

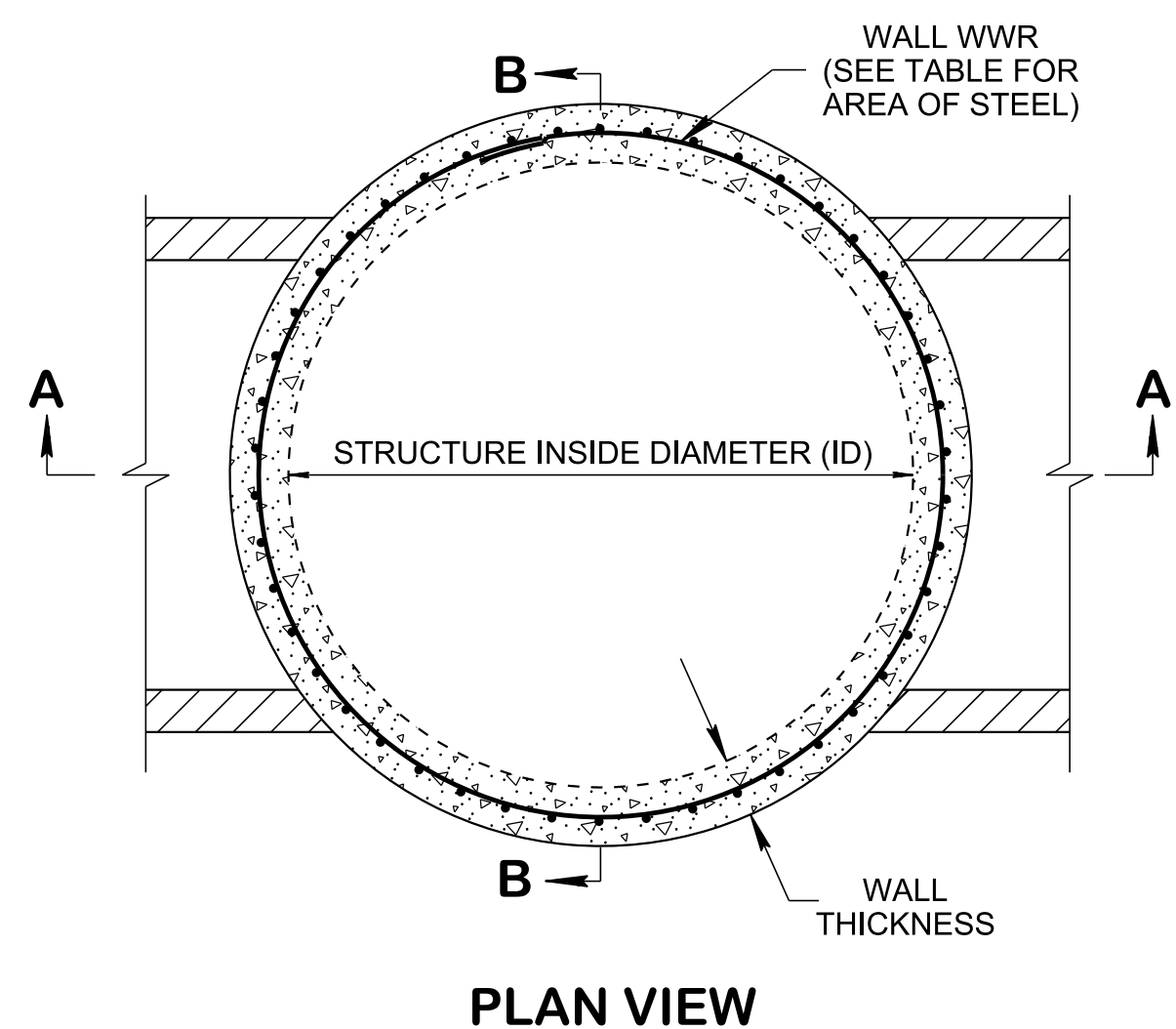
- ① OPTION A SATISFIES SINGLE MAT AND OPTION B DOUBLE MAT
- ② CLOSEST DESIGN WIRE SIZE FOR EQUIVALENT AREA OF STEEL REQUIRED
- ③ ALTERNATIVE WWR OPTIONS ARE ACCEPTABLE. HORIZONTAL SPACING = 4". MAX VERTICAL SPACING = 8". IF REBAR IS USED, MAX. SPACING = 12" EACH DIRECTION. DO NOT EXCEED SPACING REQUIREMENT.
- ④ VERTICAL REINFORCEMENT AREA SHOWN IN TABLE ABOVE IS FOR REFERENCE ONLY. VERTICAL AREA OF STEEL MAY BE LESS PROVIDED EACH LINE OF HORIZONTAL REINFORCEMENT SHALL BE ASSEMBLED INTO A CAGE THAT SHALL CONTAIN SUFFICIENT VERTICAL WIRES OR MEMBERS TO MAINTAIN THE REINFORCEMENT IN SHAPE AND POSITION WITHIN THE FORM. (NOTE, THE VERTICAL WIRES PROVIDE LITTLE TO NO STRUCTURAL STRENGTH AND THE CLOSE SPACING IS CONSERVATIVE IN APPROACH AND MAY NOT ALLOW MOST ECONOMICAL SOLUTION.)
- ⑤ INSTALL DOWELS (L500 BARS) AT MAX. 24" SPACING AVOIDING OPENINGS. SEE NOTE (J). L500 DIMENSIONS SHALL BE A MINIMUM OF 20" x 20".

TYPICAL WELDED WIRE REINFORCEMENT (WWR) FOR USE IN BOTTOM SLABS				
	BOTTOM SLAB THICKNESS (INCHES)		WWR OPTION A ① ④	WWR OPTION B ② ④
48	6	0.26	WWR 3x3-W6.5xW6.5	WWR 4x4-W4.5xW4.5 (2 LAYERS)
60	8	0.33	WWR 3x3-W8.5xW8.5	WWR 4x4-W5.5xW5.5 (2 LAYERS)
72	8	0.39	WWR 3x3-W10xW10	WWR 4x4-W6.5xW6.5 (2 LAYERS)
84	8	0.46	WWR 3x3-W12xW12	WWR 4x4-W8xW8 (2 LAYERS)
96	8	0.52	WWR 2x2-W9xW9	WWR 4x4-W9xW9 (2 LAYERS)
108	12	0.59	WWR 2x2-W10xW10	WWR 4x4-W10xW10 (2 LAYERS)
120	12	0.65	WWR 2x2-W11xW11	WWR 4x4-W11xW11 (2 LAYERS)

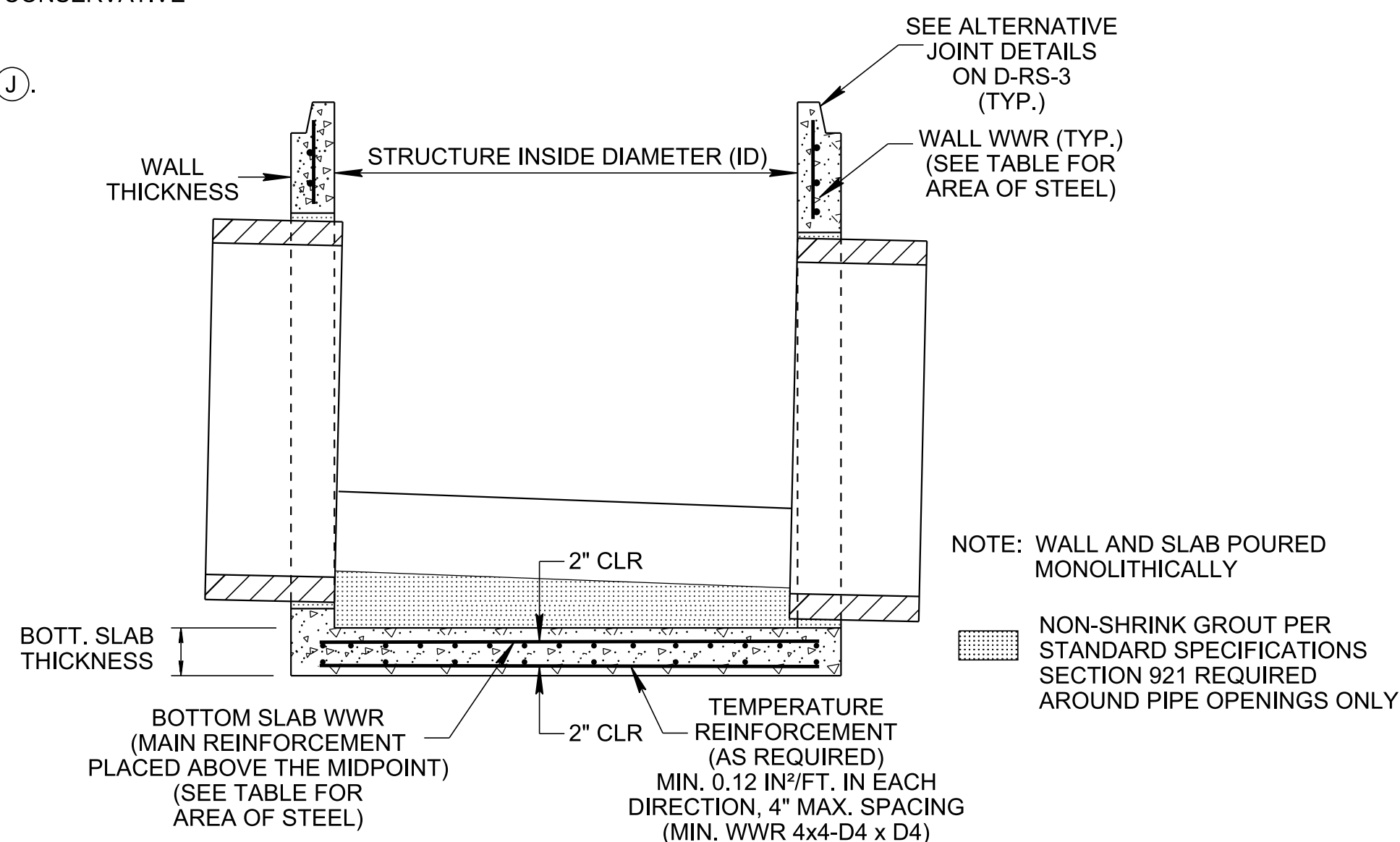
**WELDED WIRE REINFORCEMENT LEGEND**

WWR A x B - WCxWD

A = SPACING OF HORIZONTAL WIRES, IN.  
 B = SPACING OF VERTICAL WIRES, IN.  
 C = HORIZONTAL WIRE SIZE (SQ. INCHES OF WIRE X 100)  
 D = VERTICAL WIRE SIZE (SQ. INCHES OF WIRE X 100)

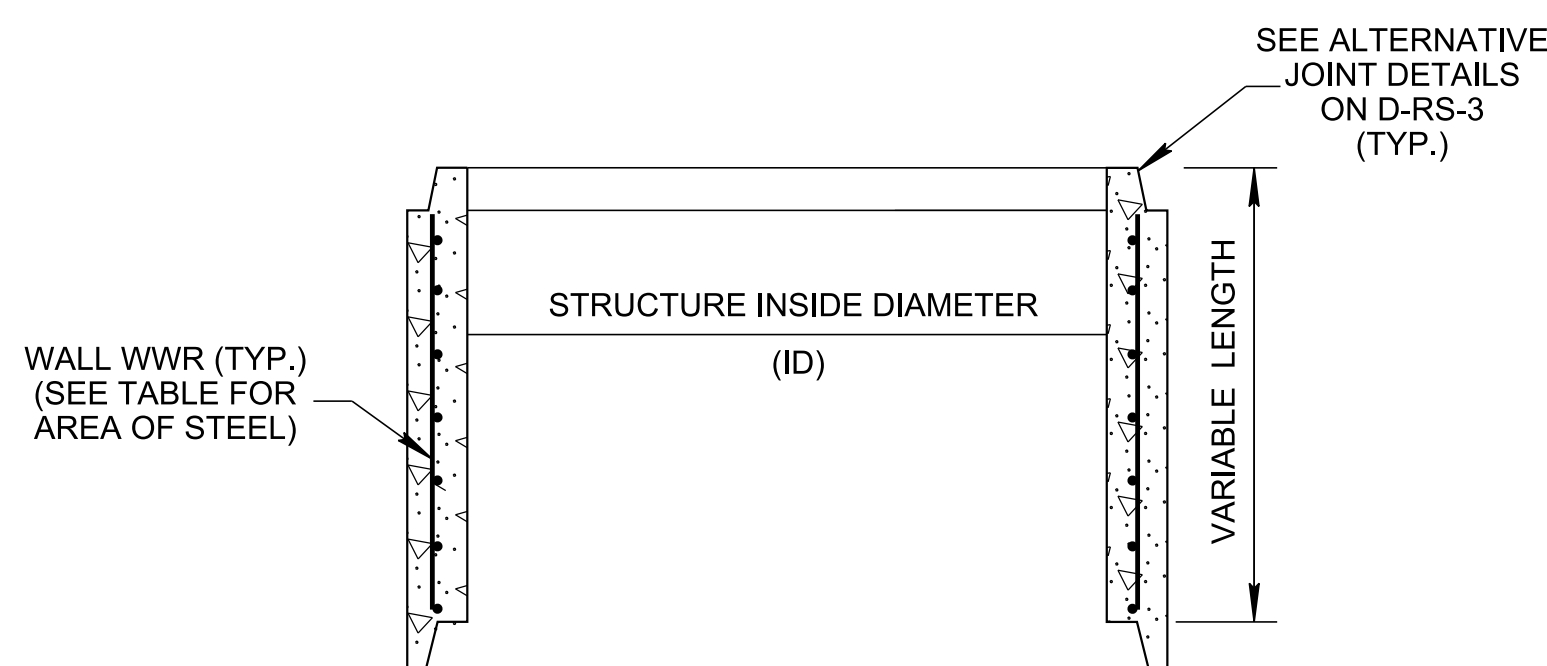


**PLAN VIEW**

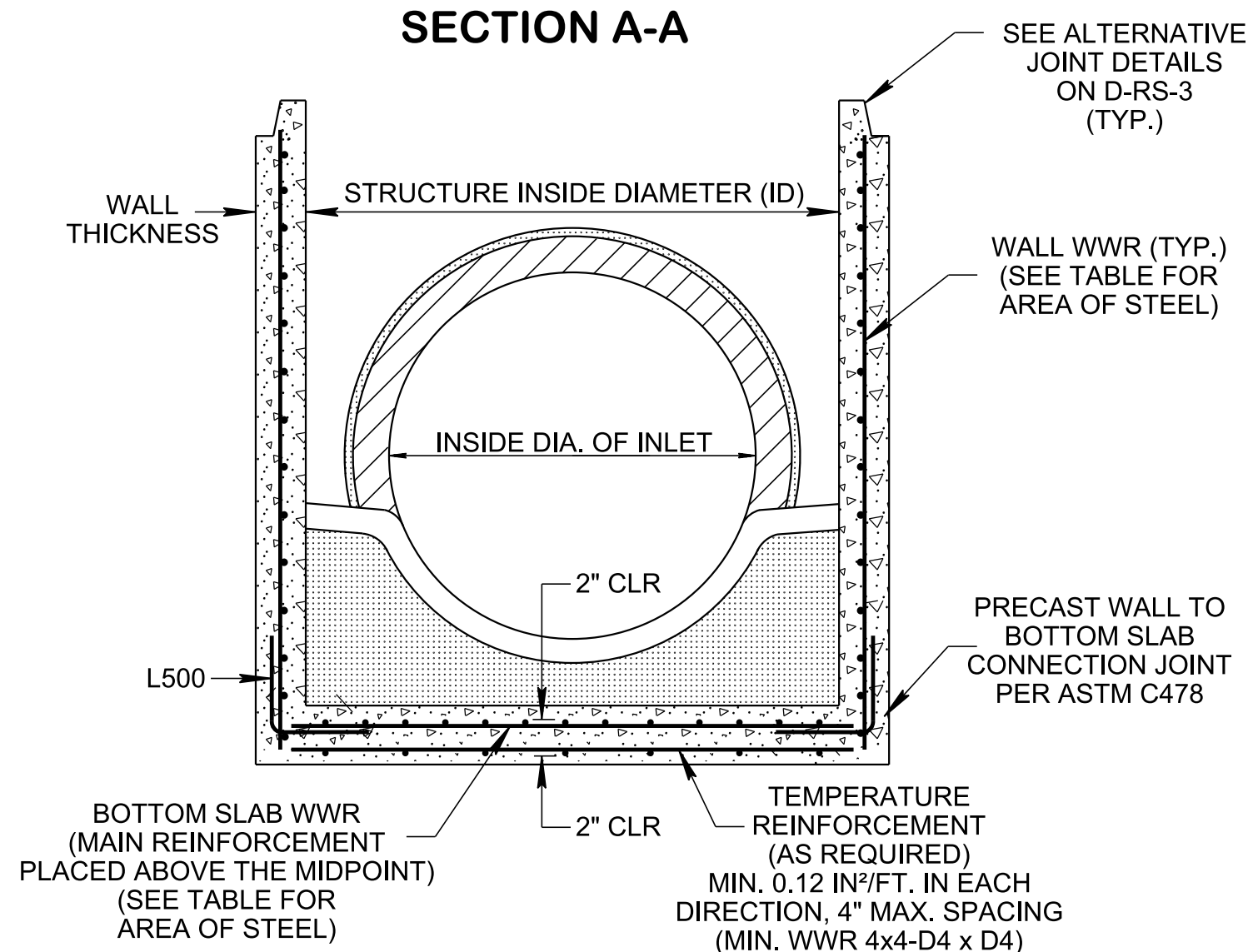


**SECTION A-A**

NOTE: WALL AND SLAB POURED MONOLITHICALLY  
 NON-SHRINK GROUT PER STANDARD SPECIFICATIONS SECTION 921 REQUIRED AROUND PIPE OPENINGS ONLY



**STANDARD CONCRETE RISER SECTION**



**SECTION B-B**

**GENERAL NOTES**

- (A) THIS DRAWING TO BE USED FOR ALL PRECAST CONCRETE ROUND STRUCTURES, ROUND MANHOLES, ROUND JUNCTION BOXES AND ROUND SPRING DRAINS BOXES.
- (B) ALL PRECAST ELEMENTS TO MEET ASTM C478 (CURRENT EDITION) AND AASHTO M199 (CURRENT EDITION) AND AASHTO LRFD UNLESS SUPERSEDED BY THE STANDARD DRAWINGS.
- (C) THE FOLLOWING MATERIAL PROPERTIES ARE REQUIRED FOR PRECAST STRUCTURES:  
 CONCRETE:  $f_c = 4,000$  POUNDS PER SQUARE INCH AT 28 DAYS.  
 WWR MEETING ASTM A1064,  $F_y = 70,000$  POUNDS PER SQUARE INCH. PLAIN OR DEFORMED WIRE MAY BE USED FOR BASE SECTIONS.  
 AS AN ALTERNATIVE, REBAR MEETING ASTM A615 OR A706,  $F_y = 60,000$  POUNDS PER SQUARE INCH MAY BE USED. (USING REBAR CAGES IN LIEU OF WWR IS ALLOWED. HOWEVER, WELDED REBAR SHOULD MEET ASTM A706 ONLY (ASTM A615 BARS SHOULD NOT BE WELDED). IF THE FABRICATOR ELECTS TO TIE THE CAGES TOGETHER WITHOUT WELDING, THEN A615 REBAR WOULD BE FINE AS WELL).  
 ALL REINFORCING TO BE INSTALLED AS DETAILED.
- (D) WELDED WIRE REINFORCEMENT (WWR) SHALL BE PLACED AS DESCRIBED IN ASTM C478 LATEST EDITION. WWR TABLE IS PROVIDED FOR REFERENCE ONLY. TABLE SHOWS MINIMUM WWR, OTHER WWR SIZES THAT MEET OR EXCEED GRID SPACING MAY BE UTILIZED TO OBTAIN THE REQUIRED AREA OF CIRCUMFERENTIAL STEEL REINFORCEMENT. A MAXIMUM OF TWO LAYERS MAY BE UTILIZED.
- (E) PROVIDE MINIMUM LAP SPLICES FOR WELDED WIRE FABRIC EQUAL TO THE LARGER TWO GRID SPACING OR 12".
- (F) REFER TO STANDARD DRAWING D-RS-1 FOR PRECAST ROUND STRUCTURES GENERAL NOTES, ITEM NUMBERS AND DIMENSION INFORMATION.
- (G) REFER TO STANDARD DRAWING D-RS-3 FOR PIPE CUT-OUT DIMENSIONS, NON-MONOLITHIC STRUCTURE COLD JOINT DETAILS, MULTIPLE PIPE CONNECTION DETAILS AND ALTERNATIVE JOINT DETAILS.
- (H) REFER TO STANDARD DRAWINGS D-RL-1 THRU D-RL-4 FOR ROUND STRUCTURE LID SECTIONS AND CURB INLET DETAILS.
- (I) SEE STANDARD DRAWINGS D-RMH-1 FOR PRECAST MANHOLE STRUCTURES, D-RJB-1 FOR PRECAST ROUND JUNCTION BOX STRUCTURES AND D-RSB-1 FOR PRECAST ROUND SPRING DRAIN BOX STRUCTURES.
- (J) FOR NON-MONOLITHIC CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE L500 BARS TO CONNECT CIRCULAR BASE SLAB TO WALL SECTIONS OF THE DRAINAGE STRUCTURE. SEE STANDARD DRAWING D-RS-3 FOR DETAILS.