

STRUCTURAL NOTES

GENERAL

1. PRINCIPAL OPENINGS IN THE STRUCTURAL FRAME ARE SHOWN ON THE PLANS. REFER TO APPROPRIATE MECHANICAL, ARCHITECTURAL, OR ELECTRICAL DRAWINGS FOR MISCELLANEOUS WALL AND SLAB PENETRATIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS. LOCATION AND SIZE OF OPENINGS, PIPE PENETRATIONS, PADS, ETC., SHOWN ON STRUCTURAL DRAWINGS ARE TO BE VERIFIED WITH THE MECHANICAL DRAWINGS AND THE MECHANICAL CONTRACTOR. SEE APPROVED SHOP DRAWINGS FOR ANCHORAGE DETAILS.

2. CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY CONSTRUCTION BRACING OF ALL STRUCTURES.

CONCRETE

- ALL CONCRETE IS TO BE CLASS K NORMAL WEIGHT (SAND AND GRAVEL AGGREGATE) UNLESS OTHERWISE NOTED.
- CHANGES IN LOCATION, ADDITIONS OR OMISSIONS OF CONSTRUCTION JOINTS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF CONCRETE.
- PROVIDE CONTINUOUS WATERSTOPS IN CONSTRUCTION AND EXPANSION JOINTS BELOW FINISHED GRADE AND IN HYDRAULIC STRUCTURES BELOW THE WATER LEVEL.
- CHAMFER ALL EXPOSED CORNERS 3/4".
- DESIGN AND CONSTRUCTION OF FORMWORK AND SHORING IS THE RESPONSIBILITY OF THE CONTRACTOR. SHORING AND RESHORING ARE NOT TO BE REMOVED UNTIL THE CONCRETE IS OF SUCH STRENGTH TO SUPPORT ITSELF AND ALL SUPERIMPOSED CONSTRUCTION LOADING.
- TEMPLATES ARE TO BE USED TO SET ANCHOR BOLTS SECURELY AND ACCURATELY.
- ALL UNDERGROUND ITEMS BENEATH STRUCTURES AND ALL EMBEDDED ITEMS ARE TO BE IN PLACE PRIOR TO CASTING CONCRETE UNLESS OTHERWISE NOTED ON PLANS.
- CLEAR COVER ON ALL REINFORCING STEEL TO BE 3 INCHES UNLESS OTHERWISE NOTED ON PLANS.
- INSTALL 6-MIL POLYETHYLENE FILM UNDER BUILDING SLABS.
- PROVIDE TROWELED WATERPROOF COATING ON ALL EXTERIOR CAST-IN-PLACE CONCRETE SURFACES EXPOSED TO VIEW. EXTEND COATING FROM TOP OF STRUCTURE TO 6-INCHES BELOW FINISHED GRADE.

REINFORCING STEEL

- ALL REINFORCING STEEL IS TO CONFORM TO ASTM A615, GRADE 60, INCLUDING S1. WELDED WIRE FABRIC IS TO CONFORM TO ASTM A185.
- DETAILING OF REINFORCING STEEL IS TO BE IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICES FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION. LAP WELDED WIRE FABRIC TWO FEET AT SPLICES.
- LAP REINFORCING STEEL WITH FULL CONTACT SPLICES IN ACCORDANCE WITH DETAIL 1 OF THIS DRAWING UNLESS OTHERWISE NOTED.
- ALL ACCESSORIES TO BE IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", ACI 315, LATEST EDITION. ACCESSORIES FOR EXPOSED CONCRETE SURFACES ARE TO HAVE GALVANIZED OR PLASTIC COATED FEET.

STRUCTURAL STEEL

- DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL IS TO BE IN ACCORDANCE WITH THE LATEST SPECIFICATION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
- ALL STRUCTURAL SHAPES AND PLATES ARE TO CONFORM TO ASTM A36.
- UNLESS SHOWN OTHERWISE, CONNECTIONS ARE TO BE SHOP WELDED AND FIELD BOLTED AND ARE TO BE IN ACCORDANCE WITH THE STANDARDS OF THE AISC.
- ANCHOR BOLTS ARE TO CONFORM TO ASTM A307 UNLESS OTHERWISE NOTED ON PLANS. ALL OTHER BOLTS ARE TO BE ASTM A325 AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATION FOR STRUCTURAL JOINTS USING A325 AND A490 BOLTS BY THE RESEARCH COUNCIL OF THE ENGINEERING FOUNDATION, LATEST EDITION.
- ALL BEAMS AND COLUMN ARE TO BE FULL LENGTH WITHOUT SPLICES UNLESS OTHERWISE INDICATED ON DRAWINGS.
- SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR REVIEW BY THE ENGINEER AS TO THE TYPE AND LOCATION OF SPLICE. SPLICE IS TO BE DETAILED ON THE SHOP DRAWINGS. BURNING AND/OR TORCH CUTTING OF HOLES IN MEMBERS IS PROHIBITED.
- ERECTION CONNECTORS ARE TO BE PROVIDED IN ORDER TO PROPERLY ALIGN AND BE TRUE AND PLUMB WHEN WELDS ARE MADE.
- ALL SHOP AND FIELD WELDS ARE TO BE MADE BY WELDERS WHO HAVE BEEN QUALIFIED AND CERTIFIED TO MAKE THE REQUIRED WELDS WITHIN THE PREVIOUS SIX MONTHS IN ACCORDANCE WITH THE LATEST AMERICAN WELDING SOCIETY SPECIFICATION (AWS 1.1).
- SUPPLY BACK-UP PLATES AND EXTENSION TABS FOR ALL FULL PENETRATION WELDS.
- ALL FULL PENETRATION WELDS ARE TO BE X-RAYED BY A QUALIFIED TESTING LABORATORY. ANY WELDS FOUND DEFECTIVE ARE TO BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- ALL WELDS TO BE X-RAYED ARE TO BE GROUND SMOOTH.
- HOT DIP GALVANIZE MISCELLANEOUS EMBEDDED STEEL ITEMS AFTER FABRICATION UNLESS OTHERWISE NOTED. DO NOT GALVANIZE EMBEDDED WELD PLATES.
- FIELD VERIFY ELEVATIONS AND DIMENSIONS TO BE USED FOR FABRICATION OF STRUCTURAL STEEL.

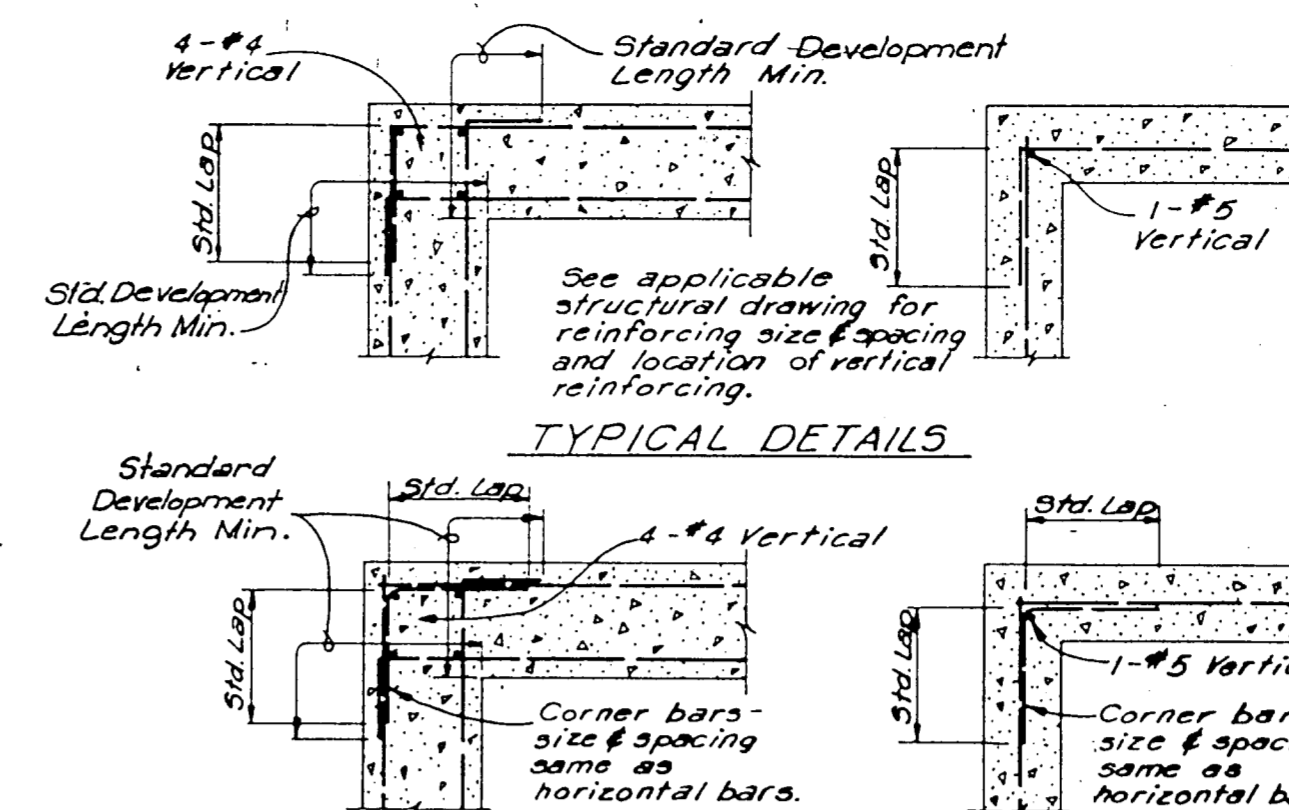
BAR SIZE	BAR POSITION	
	CASE 1	CASE 2
# 3	15	21
# 4	21	29
# 5	26	36
# 6	31	43
# 7	39	54
# 8	51	71
# 9	65	90
# 10	82	115
# 11	101	141

CASE 1 - HORIZONTAL BARS WITH LESS THAN 12" OF CONC BELOW BARS, AND ALL VERTICAL BARS

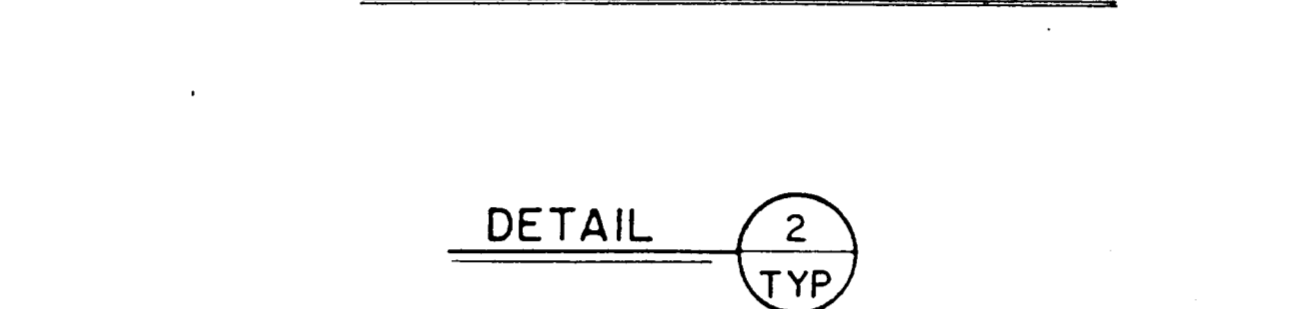
CASE 2 - HORIZONTAL BARS WITH 12" OR MORE CONCRETE BELOW BARS.

NOTE: FOR BARS SPACED GREATER THAN 6" ON CENTER AND WITH MIN 3" CLEAR COVER, MULTIPLY LAP LENGTH SHOWN BY 0.8. USE LAP LENGTH OF LARGER BAR SIZE WHEN TWO UNEQUAL BAR SIZES OVERLAP.

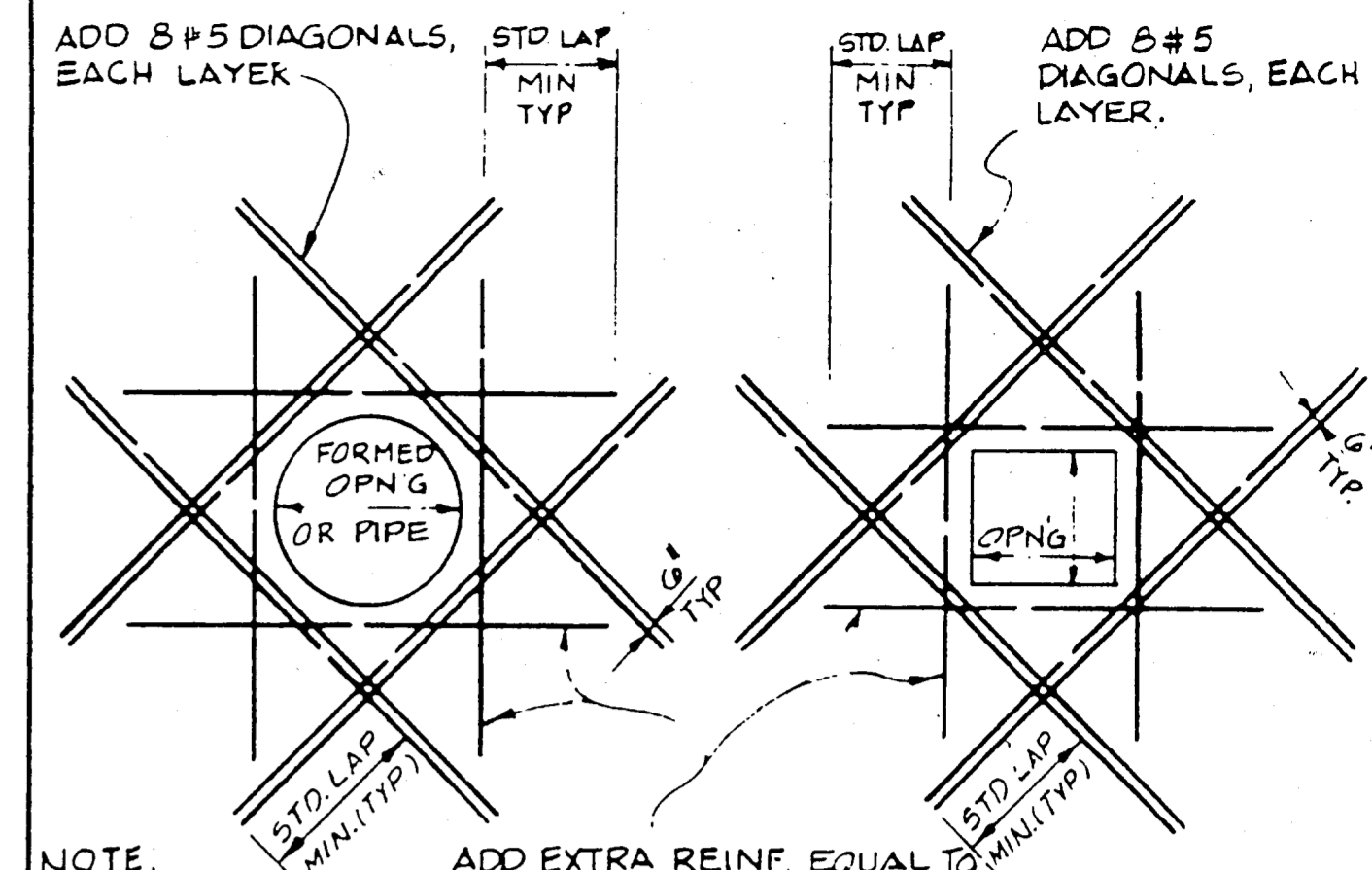
DETAIL 1 TYP



TYPICAL DETAILS



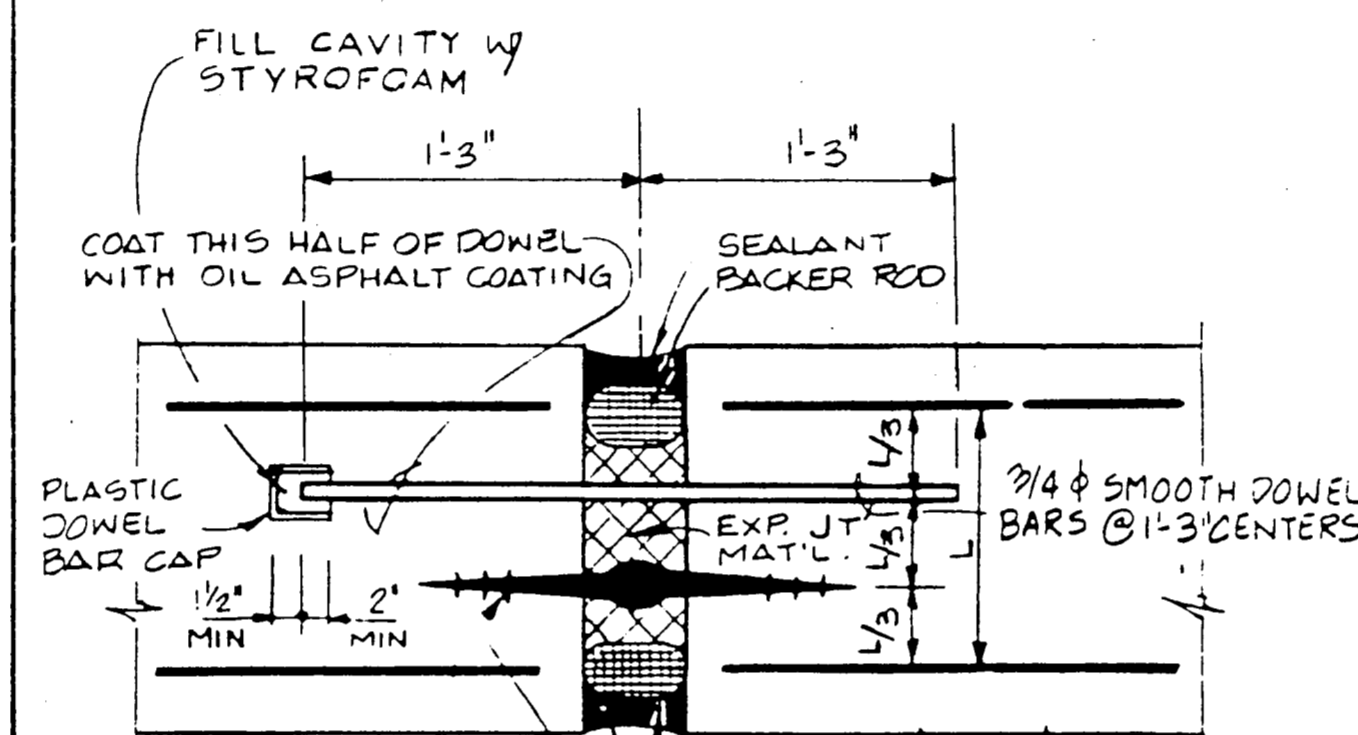
DETAIL 2 TYP



NOTE: SPREAD AND/OR CUT REINFORCING AT OPENINGS. SPREAD BARS NO MORE THAN ONE HALF TYPICAL BAR SPACE.

REINFORCING AT WALL AND SLAB PENETRATION

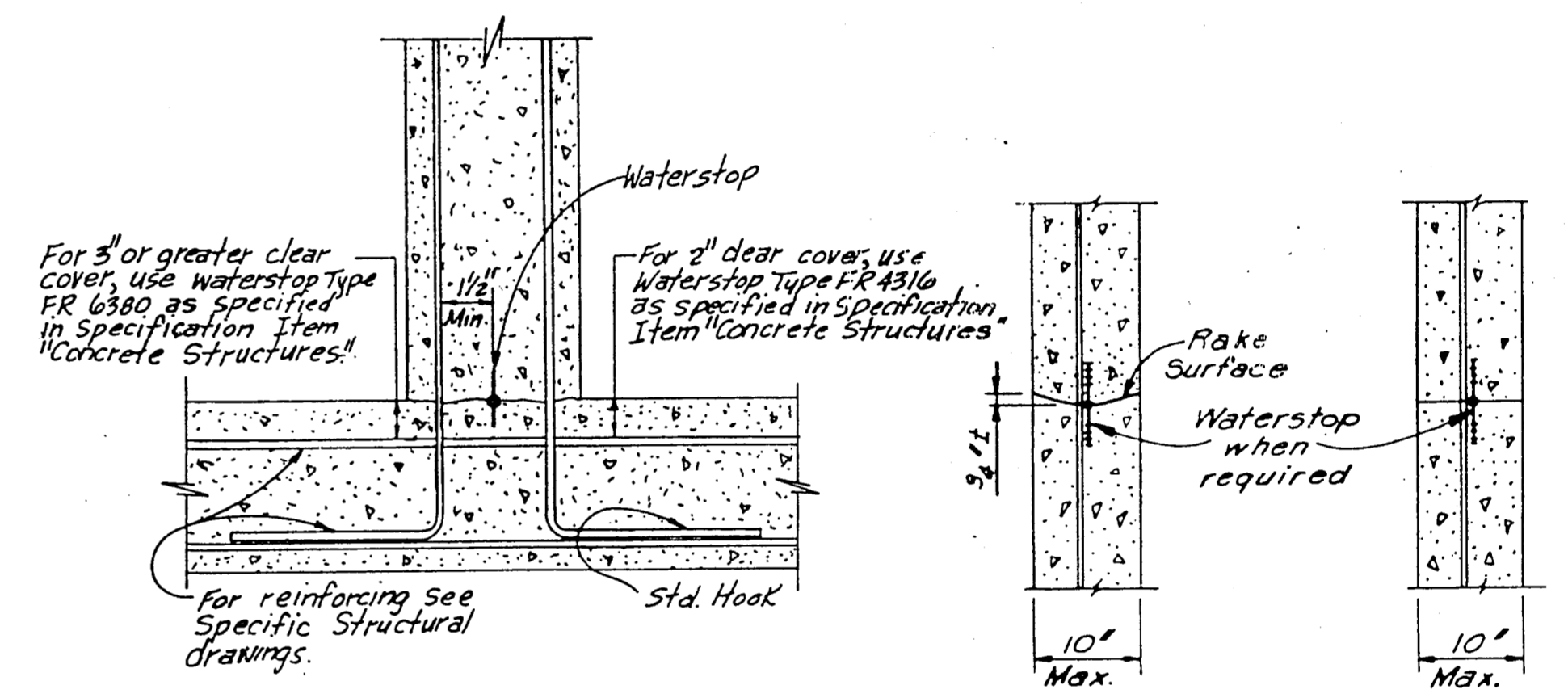
DETAIL 3 TYP



WATERSTOP REQUIRED FOR ALL JOINTS BELOW GRADE AND ALL JOINTS IN HYDRAULIC STRUCTURES UNLESS OTHERWISE NOTED. NOTE: CUT ALL REINFORCEMENT AT JOINT. NOTE: PLACE WATERSTOP NEAREST WATER RETAINING FACE OF WALL OR SLAB. FOR WALLS RETAINING WATER ON BOTH SIDES, WATERSTOP MAY BE PLACED NEAR EITHER FACE.

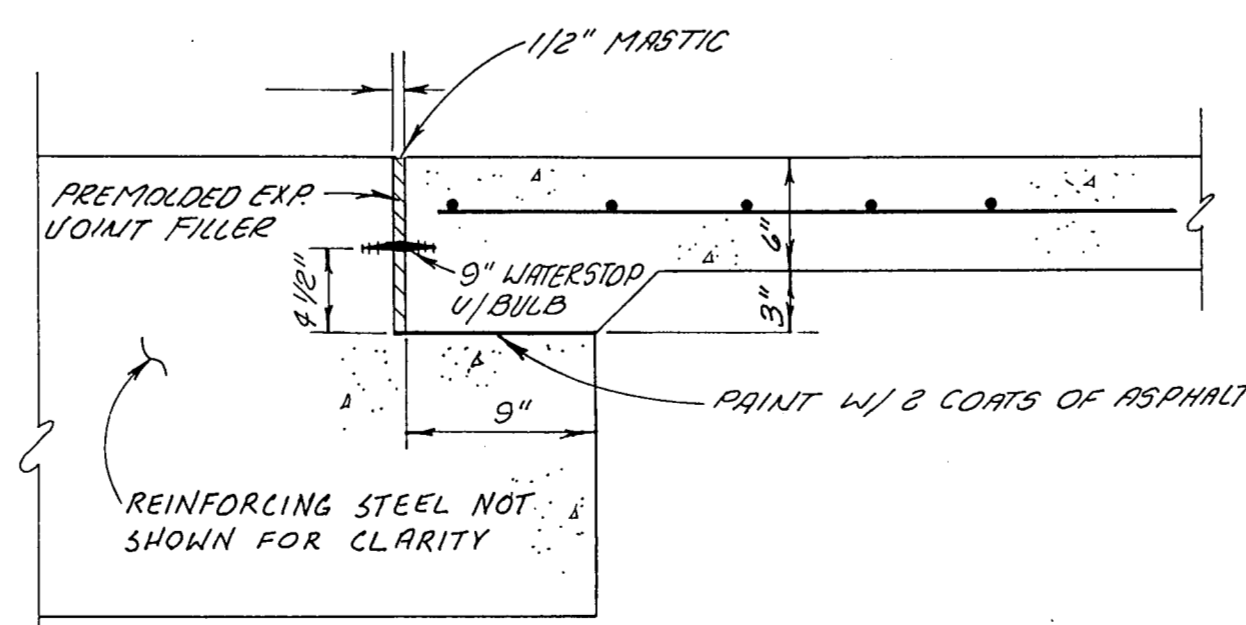
EXPANSION JOINT

DETAIL 4 TYP

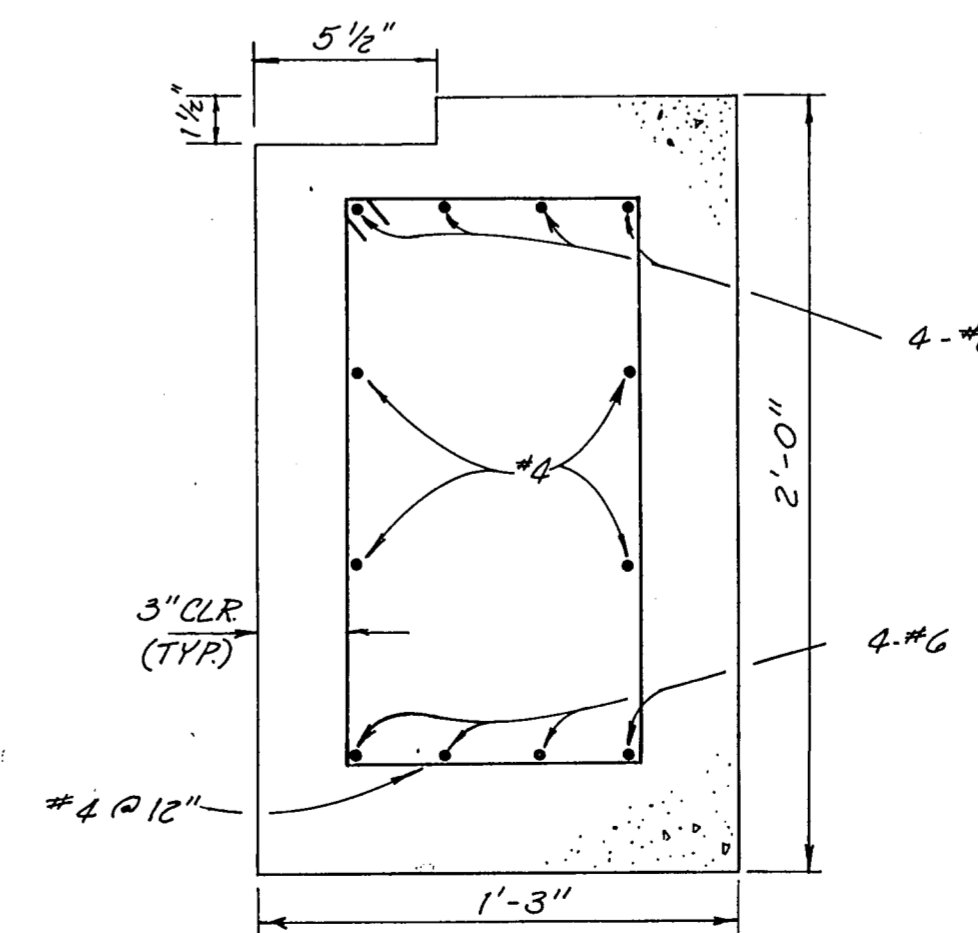


HORIZONTAL OR VERTICAL CONSTRUCTION JOINT

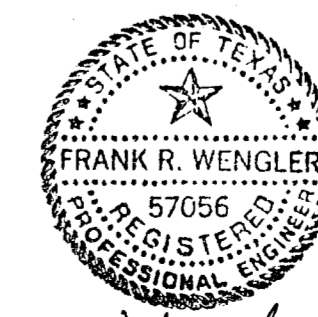
DETAIL 5 TYP



DETAIL 6 TYP



DETAIL 7 TYP



NO.	DATE	REVISION	APPROVED
BELTWOOD RESERVOIR EXPANSION			
RESERVOIR - MISC. STRUCTURAL DETAILS			
DALLAS WATER UTILITIES CITY OF DALLAS, TEXAS			
Turner Collie & Braden Inc.			
DESIGN	FRW	CONTRACT NO.	89-79
DRAWN	WJT	FILE NO.	630 Q 700 F
TRACED			
CHECKED			
DATE	5/89		
		SHEET NO.	34
		OF	44