

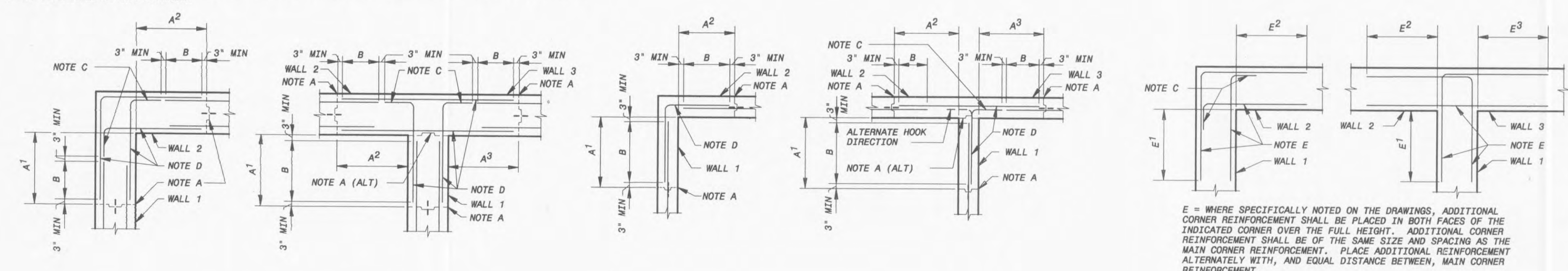
$(f'_c = 4000 \text{ PSI})$											
SPLICE & DEVELOPMENT LENGTHS (UNLESS NOTED OTHERWISE ON THE DRAWINGS)											
BEAMS AND COLUMNS					WALLS, SLABS AND FOOTINGS					CONCRETE COVER FOR REINFORCEMENT	
BAR SIZE	LENGTH OF LAPPED SPLICES FOR REINF (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)		LENGTH OF LAPPED SPLICES FOR REINF (INCHES)		LENGTH OF END ANCHORAGE FOR DEVELOPMENT OF REINFORCEMENT (INCHES)		LOCATION		MINIMUM COVER
	*TOP BARS	OTHERS	*TOP BARS	OTHERS	HOOKED BARS	*TOP BARS	OTHERS	*TOP BARS		OTHERS	
3	19	16	14	12	6	19	18	14	12	6	3
4	24	19	19	15	7	24	19	19	15	7	4
5	31	24	24	18	9	31	24	24	18	9	5
6	40	31	28	22	10	36	28	28	22	10	6
7	54	42	33	25	12	54	42	42	32	12	7
8	71	55	39	30	14	71	55	55	42	14	8
9	90	70	50	38	15	90	70	70	53	15	9
10	115	88	63	49	17	115	88	88	68	17	10
11	141	108	77	60	19	141	108	108	88	19	11
14	---	---	105	81	33	---	---	210	162	33	14
18	---	---	155	119	43	---	---	309	238	43	18

* TOP BARS ARE HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. HORIZONTAL BARS IN WALLS ARE TO BE PROVIDED WITH LAP LENGTHS AS REQUIRED FOR TOP BARS. VERTICAL BARS MAY BE CONSIDERED AS OTHER BARS.

IN WALLS, SLABS AND FOOTINGS: LAPPED SPLICE LENGTH FOR BARS SIZE 8 THROUGH 11 AND STRAIGHT (NON-HOOKED) END ANCHORAGE DEVELOPMENT LENGTH FOR BAR SIZE 11 (IN TABLE ABOVE) PLACED WITH MORE THAN 2 BAR DIAMETER CLEAR SPACING MAY BE MULTIPLIED BY A FACTOR OF 0.7.

IN BEAMS, COLUMNS, WALLS, SLABS AND FOOTINGS: LAPPED SPLICE LENGTH AND STRAIGHT (NON-HOOKED) END ANCHORAGE DEVELOPMENT LENGTH FOR BARS SIZE 7 THROUGH 11 (IN THE TABLE ABOVE) PLACED WITH MORE THAN 6 BAR DIAMETER CLEAR SPACING MAY BE MULTIPLIED BY A FACTOR OF 0.8. THE MULTIPLICATION FACTORS OF 0.7 AND 0.8 MAY BE COMBINED ONLY FOR BARS COMMON TO THIS NOTE AND THE NOTE ABOVE.

LAPPED SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS UNLESS OTHERWISE INDICATED ON THE DRAWINGS OR AS DETERMINED BY THE ENGINEER.



A = VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER.
 A(ALT) = ALTERNATE VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER IN T WALL JOINT WHICH DOES NOT REQUIRE WATERSTOP.
 A^x = DISTANCE FROM INSIDE CORNER FACE TO NEAREST VERTICAL CONSTRUCTION JOINT IN SIMILARLY NUMBERED WALL. A SHALL NOT BE LESS THAN DIMENSIONS INDICATED BY THESE DETAILS; NOR GREATER THAN INDICATED ON PLAN DRAWINGS; BUT IN ANY CASE SHALL NOT EXCEED 50 FEET IN LIQUID CONTAINMENT STRUCTURES OR 40 FEET IN OTHER STRUCTURES. IN T WALL JOINTS WHICH DO NOT REQUIRE WATERSTOP, A MAY BE ZERO.

B = OPTIONAL SPLICE LOCATION UNLESS SPECIFICALLY NOTED ON PLAN DRAWINGS. SPLICE LENGTH SHALL NOT BE LESS THAN THAT REQUIRED FOR TOP BARS AS SHOWN IN TABLE ON THIS SHEET. USE SPLICE LENGTH FOR THE SMALLER OF THE TWO BARS BEING SPLICED.

C = STANDARD HOOK
 D = TYPICAL CORNER REINFORCEMENT. SIZE SHALL MATCH LARGEST ADJACENT WALL HORIZONTAL REINFORCEMENT; SPACING SHALL MATCH MINIMUM ADJACENT WALL HORIZONTAL REINFORCEMENT SPACING.

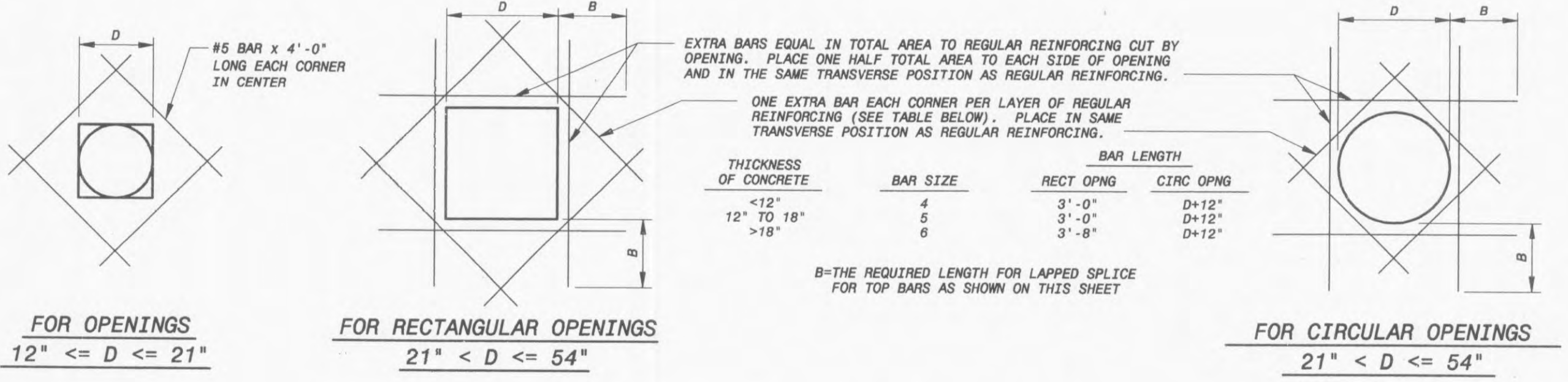
E = WHERE SPECIFICALLY NOTED ON THE DRAWINGS, ADDITIONAL CORNER REINFORCEMENT SHALL BE PLACED IN BOTH FACES OF THE INDICATED CORNER OVER THE FULL HEIGHT. ADDITIONAL CORNER REINFORCEMENT SHALL BE OF THE SAME SIZE AND SPACING AS THE MAIN CORNER REINFORCEMENT. PLACE ADDITIONAL REINFORCEMENT ALTERNATELY WITH, AND EQUAL DISTANCE BETWEEN, MAIN CORNER REINFORCEMENT.

E^x = DISTANCE FROM INSIDE CORNER FACE TO TERMINATION OF ADDITIONAL CORNER REINFORCEMENT IN SIMILARLY NUMBERED WALL. E^x SHALL NOT BE LESS THAN 0.20 THE CLEAR SPAN DISTANCE MEASURED HORIZONTALLY BETWEEN THIS CORNER AND THE NEXT OR 0.40 THE CLEAR SPAN DISTANCE OR CANTILEVERED DISTANCE MEASURED VERTICALLY, WHICHEVER IS SMALLER, BUT NOT LESS THAN 3'-0".

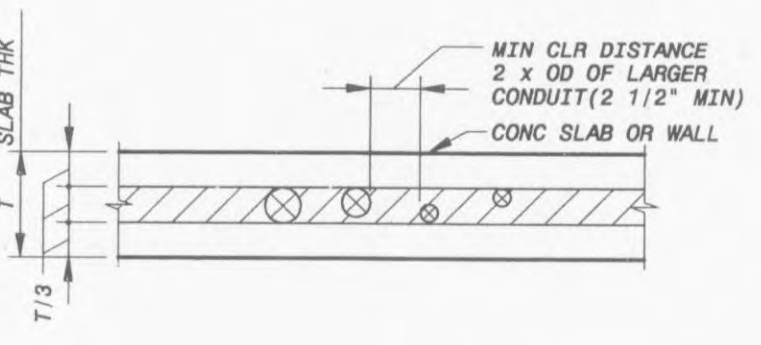
CONTRACTORS OPTION:
 E BAR TAILS MAY BE SPLICED USING LAPPED SPLICE LENGTHS FOR TOP BARS. SPLICES SHALL NOT BE LOCATED IN THE CORNER AREA COMMON TO BOTH WALLS AND SHALL CLEAR HOOK ENDS BY 3" MIN.

MAIN REINFORCEMENT FOR ALL STRUCTURES
 TYPICAL HORIZONTAL CORNER REINFORCING DETAILS

NOTES: 1. VERTICAL REINFORCING NOT SHOWN
 2. THESE DETAILS SHALL BE APPLICABLE TO ALL WALL CORNERS UNLESS NOTED OTHERWISE ON THE DRAWINGS.



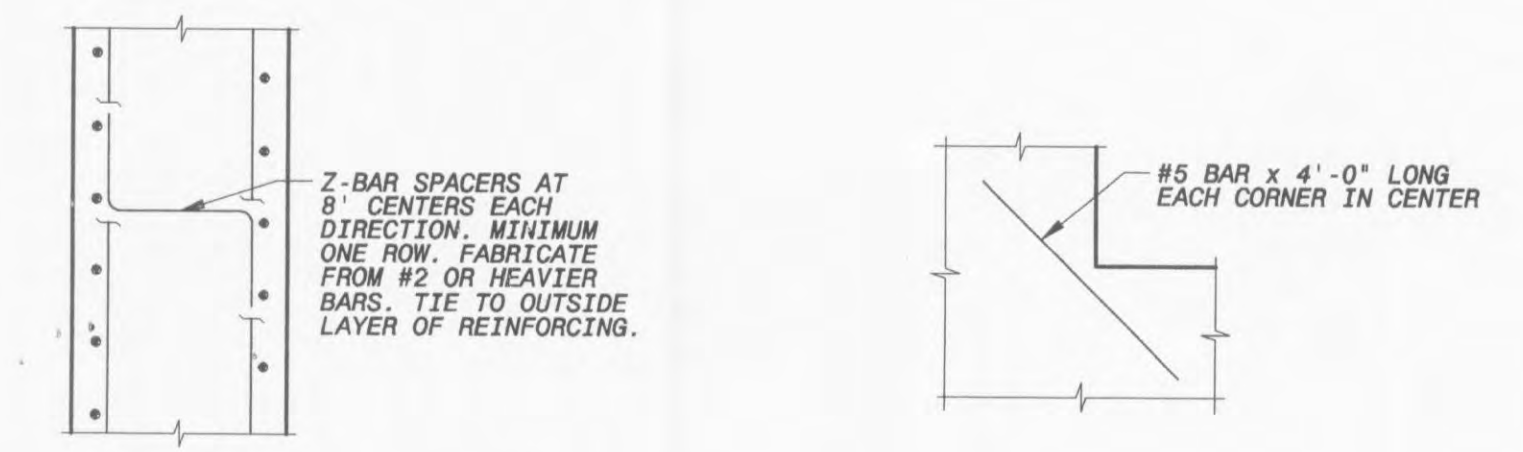
TYPICAL EXTRA REINFORCING AT OPENINGS 12" TO <= 54"
 (TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS)



NOTES:
 1. PLACE CONDUIT ONLY IN SHADED AREA
 2. FOR CONDUIT REQUIREMENTS SEE THE ELECTRICAL DRAWINGS AND SPECIFICATIONS.

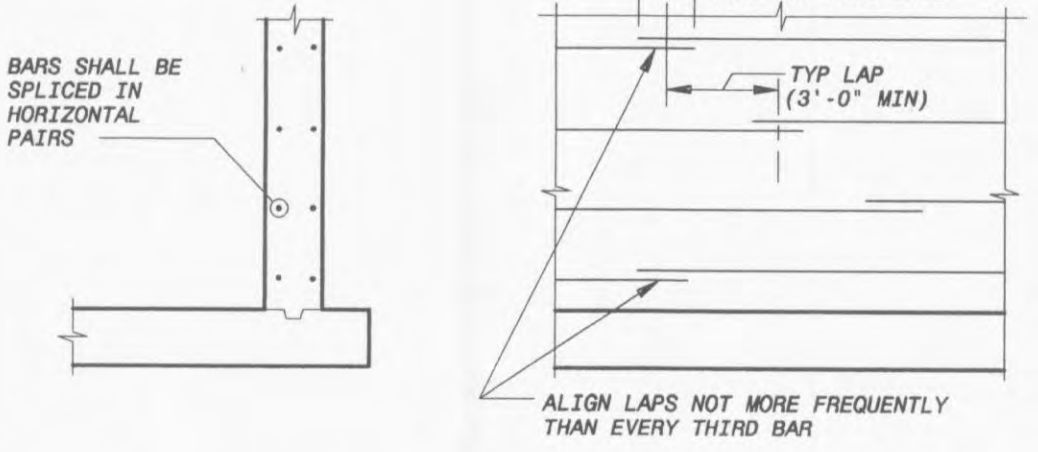
CONDUIT PLACING DETAIL
 NO SCALE

NOTES
 1. DETAILS ON THIS DRAWING APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED.
 2. WORK THIS DRAWING WITH THE STANDARD CONCRETE JOINT DETAILS.



SPACERS FOR WALL REINFORCEMENT

TYPICAL EXTRA REINFORCING AT ISOLATED RE-ENTRANT CORNERS
 (TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS)



WALL SECTION
 WALL ELEVATION
 TYPICAL RING WALL REINFORCING SPLICE DETAIL

CONFORMED TO CONSTRUCTION RECORDS	2	NO. BY	CK	APP
ADDENDUM	1	DATE		
REVISIONS AND RECORD OF ISSUE		CYBNET ID:	97515-300-S-70000001	XREF1 ID:
		SAVED:	BOW#4813, 3/26/2003 3:08:40 PM	XREF2 ID:
		DWG VER #:	7.0	XREF3 ID:
		PLOTTED:	1/14/2004 10:14:15 AM	XREF4 ID:
		USER:	BOW#4813	XREF5 ID:
			SW: ACAD-2000L	

THIS DRAWING WAS ORIGINALLY APPROVED BY WILLIAM F. RILEY ON 10/08/01 AND SEALED BY WILLIAM F. RILEY, A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI, NO. E-20756

BLACK & VEATCH Corporation
 St. Louis, Missouri

CITY OF O'FALLON, MISSOURI
 WATER TREATMENT PLANT
 STRUCTURAL
 STANDARD CONCRETE REINFORCING DETAILS

DESIGNED: WFR
 DETAILED: EAJ
 CHECKED: MER
 APPROVED: WFR
 DATE: OCT. 8, 2001

PROJECT NO.
 97515

I1
 SHEET
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