

GENERAL STRUCTURAL NOTES

A. DESIGN CRITERIA

- BUILDING CODE: INTERNATIONAL BUILDING CODE (IBC), 2006 EDITION, INCLUDING LOCAL SUPPLEMENTS.
- GRAVITY LOADS:

LOCATION	LIVE LOAD	DEAD LOAD*
VAULT COVER	200 PSF	5 PSF

*DEAD LOAD WHICH IS SUPERIMPOSED ONTO ACTUAL STRUCTURAL WEIGHTS.

3. SOIL LOADS

SOIL WEIGHT:	120 PCF
EXTERNAL SOIL PRESSURE	90 PCF (SATURATED)

B. SOIL PREPARATION AND FOUNDATIONS

- THE FOUNDATION SYSTEM IS DESIGNED AS RECOMMENDED IN THE GEOTECHNICAL INVESTIGATION PREPARED BY ALLIED LABORATORIES JOB NO. 74-14229-001-0147. A COPY IS IN THE SPECIFICATIONS OR IS AVAILABLE FOR INSPECTION AT THE ENGINEER'S PLACE OF BUSINESS.
- REMOVE TOP SOIL CONTAINING ORGANIC MATERIAL AND PREPARE THE BUILDING PAD IN ACCORDANCE WITH THE CIVIL ENGINEERING PLANS, SPECIFICATIONS, AND GEOTECHNICAL INVESTIGATION.
- REMOVE SOIL AS REQUIRED TO ALLOW FOR A LOW VOLUME CHANGE ZONE 18" THICK UNDER SLABS. FILL TO SUBGRADE ELEVATION SHOWN ON THE DRAWINGS WITH NON-EXPANSIVE FILL OR STABILIZED SOIL PER SPECIFICATION.
- SOIL SUPPORTED FOUNDATIONS:
 - DESIGN BEARING PRESSURE (NET) IS 1500 PSF FOR FOUNDATIONS BEARING ON UNDISTURBED SOIL OR APPROVED ENGINEERED FILL MATERIAL.
 - ALL FOUNDATIONS ARE DESIGNED WITH EARTH FORMED SIDES; THE TOP 7/4" OF THE FOUNDATION SHALL BE FORMED TO THE DESIGN DIMENSION WHEN VISIBLE AFTER CONSTRUCTION IS COMPLETE. THE CONSTRUCTED FOUNDATION DIMENSION SHALL BE NO LESS THAN THE DESIGN DIMENSION, AND NO MORE THAN 6" GREATER THAN THE DESIGN DIMENSION.
- DO NOT BACKFILL FOUNDATION WALLS UNTIL THE RESTRAINING COVER SLAB OR ADEQUATE BRACING ARE IN PLACE AND CONCRETE STRENGTH HAS REACHED 75% OF DESIGN STRENGTH. ALL BACKFILL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION.

C. CONCRETE

- ALL STRUCTURAL CONCRETE HAS BEEN DESIGNED IN ACCORDANCE WITH THE ACI 318 AND THE BUILDING CODE, AND IN CONFORMANCE WITH THE CURRENT "ACI MANUAL OF CONCRETE PRACTICE."
- THE CONCRETE REQUIREMENTS ARE:
 - CEMENT SHALL BE TYPE I OR II CONFORMING TO ASTM C150. FLY ASH CONFORMING TO ASTM C618 TYPE C OR F MAY BE USED TO REPLACE A MAXIMUM OF 20% OF THE CEMENT.
 - FINE AND COARSE AGGREGATES FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. COARSE AGGREGATES SHALL BE NO LESS THAN 50% OF THE TOTAL AGGREGATE BY WEIGHT, UNLESS APPROVED BY THE ENGINEER PRIOR TO MIX DESIGN SUBMITTAL.
- MIX REQUIREMENTS ARE:

LOCATION	MIN. F'C	MIN. CEM. W/C	MAX. COARSE AGGREGATE	AIR ENT.	SLUMP§
FOUNDATION	4000	470	0.45 #67	5%+/-1%	2-5

§ PRIOR TO THE ADDITION OF HIGH RANGE WATER REDUCERS, IF APPROVED BY ENGINEER, AFTER ADDITION THE SLUMP MAY NOT EXCEED 8".

F'C SPECIFIED IS BASED ON THE 28 DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH ACI 318 ACCEPTANCE CRITERIA

PURPOSE	ASTM	TYPE
WATER REDUCER (NORMAL, MID, & HIGH RANGE)	C-494	A, F, & G
AIR ENTRAINING	C-260	
SET RETARDING	C-494	B & D
SET ACCELERATING	C-494	C & E
CORROSION INHIBITING	C-494	C

- AD MIXTURES, HARDENERS, & CURING COMPOUNDS
 - ALL CONCRETE ADMIXTURES SHALL, WHEN MIXED INTO CONCRETE, BE NON-CHLORIDE AND NON-CHLORIDE FORMING.
 - THE FOLLOWING ADMIXTURES MAY BE USED TO MEET THE CONCRETE MIX DESIGNS SPECIFIED:

PURPOSE	ASTM	TYPE
WATER REDUCER (NORMAL, MID, & HIGH RANGE)	C-494	A, F, & G
AIR ENTRAINING	C-260	
SET RETARDING	C-494	B & D
SET ACCELERATING	C-494	C & E
CORROSION INHIBITING	C-494	C
- CONCRETE CURING COMPOUND AND SEALERS SHALL MEET ASTM C-309 TYPE 1 OR 1D
- THE CONTRACTOR SHALL VERIFY THAT ALL ADMIXTURES, HARDENERS, CURING COMPOUNDS, AND FLOOR COVERING ADHESIVES ARE COMPATIBLE WITH EACH OTHER.

4. MISCELLANEOUS CONCRETE DETAILS:

- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS UNLESS NOTED OTHERWISE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING AND SHORING. SHORING FOR ELEVATED SLABS SHALL BE SET SO THAT ANY LOAD DUE TO THE CONCRETE OPERATIONS DOES NOT CAUSE THE FORMS TO SETTLE (SLACK, TAKE-UP, ETC.).
- NO ALUMINUM SHALL BE EMBEDDED IN CONCRETE. CONDUITS AND PIPING EMBEDDED IN CONCRETE WALLS, SLABS, OR BEAMS SHALL BE SPACED A MINIMUM OF FOUR DIAMETERS AND THE OUTSIDE DIAMETER SHALL BE LESS THAN 30% OF THE MEMBER THICKNESS AND PLACED BETWEEN LAYERS OF REINFORCING.
- WATERSTOP AT CAST IN PLACE JOINTS SHALL BE PVC WATERSTOP MODEL NO. 702 BY GREENSTREAK OR APPROVED EQUAL.
- PROVIDE EXTERIOR WATERPROOFING AT ALL CONCRETE SURFACES BELOW GRADE. USE 2 COATS OF SEAL MASTIC BY W.R. MEADOWS OR APPROVED EQUAL. APPLY PER MANUFACTURER'S RECOMMENDATIONS.

D. CONCRETE REINFORCING (CAST-IN-PLACE)

1. MATERIALS:	ASTM	GRADE
REINFORCING BARS:	A615	60

2. DETAILS:

- WELDING OF REINFORCING BARS IS PROHIBITED.

3. PLACEMENT

- ALL REINFORCING (BARS, ANCHOR RODS, EMBEDMENTS, WWF, ETC.) SHALL BE SUPPORTED ON CHAIRS/BOLSTERS TO THE DESIGN DIMENSIONS. SPACING SHALL BE SUFFICIENTLY CLOSE TO PREVENT DISPLACEMENT OR PERMANENT DEFORMATION DUE TO CONCRETE PLACEMENT, FOOT TRAFFIC, OR VIBRATION. "PUDDLING IN" OR "PULLING UP" REINFORCING IS NOT AN ACCEPTABLE METHOD FOR PLACING REINFORCING. CHAIRS/BOLSTERS SHALL HAVE PLASTIC COATED FEET OR BE MADE OF STAINLESS STEEL. CHAIRS/BOLSTERS IN CONTACT WITH EARTH SHALL HAVE BOTTOM PLATES AND BE COATED TO PREVENT CORROSION. ANCHOR RODS SHALL BE HELD IN PLACE WITH TEMPLATES SUFFICIENTLY STRONG TO PREVENT DISPLACEMENT OR TILTING.

- MAINTAIN ACI CLEAR COVER ON REINFORCING AS LISTED BELOW UNLESS NOTED OTHERWISE.

CAST AGAINST EARTH (BOTTOM OR SIDES):	3"
FORMED - EXPOSED TO SOIL, WEATHER OR LIQUIDS:	2"

- PROVIDE CORNER BARS OF THE SAME SIZE AND SPACING AS ADJACENT REINFORCING. REFERENCE DETAILS. CONTINUOUS WALL FOOTING REINFORCING NEED ONLY TO OVERLAP.

- OPENINGS IN WALLS OR STRUCTURAL SLABS SHALL BE REINFORCED PER DETAIL.

- ALL REINFORCING BARS ARE TO BE MADE CONTINUOUS OR LAPPED PER TABLE A.

E. POST INSTALLED ANCHORING SYSTEMS

- ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AND THE EVALUATION REPORT (ER/ESR) SPECIFIED INCLUDING HOLE PREPARATION, TEMPERATURE AND MOISTURE CONDITIONS.

2. ADHESIVE ANCHORS:

- THE CONTRACTOR SHALL ARRANGE AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL ANCHOR PRODUCTS SPECIFIED. THE CONTRACTOR MUST MAINTAIN TRAINING RECORDS OF ALL CONTRACTOR PERSONNEL INSTALLING ANCHORS AND SUBMIT TO THE ENGINEER OF RECORD PRIOR TO INSTALLING ANCHORS UPON REQUEST.
- ADHESIVE ANCHORS SHALL BE USED IN CONJUNCTION WITH THE APPROPRIATE ADHESIVE SYSTEM.
- APPROVED ADHESIVE ANCHORS FOR PREVIOUSLY CAST CONCRETE:

MANUFACTURER/PRODUCT	REPORT NUMBER
HILTI HIT-HY200 SSS* WITH HIT-Z ROD	ICC-ES ESR-3187
HILTI HIT-HY200 SSS* WITH HOLLOW BIT & HAS-E ROD	ICC-ES ESR-3187
*SAFE SET SYSTEM	

F. CONTRACT/CONSTRUCTION DOCUMENTS

- THE CONTRACT DOCUMENTS SHALL INCLUDE ALL PLANS, SPECIFICATIONS, ADDENDAS, AND SUPPLEMENTAL INSTRUCTIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN A FULL SET OF THE MOST RECENT REVISIONS OF EACH DOCUMENT.
- THE CONTRACTOR SHALL REVIEW THE DOCUMENTS PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY MATERIALS FOR CONFLICTS. IF CONFLICTS OCCUR THE CONTRACTOR SHALL USE THE MOST STRINGENT REQUIREMENT. ALTERNATELY, THE CONTRACTOR MAY REQUEST A CLARIFICATION THROUGH A REQUEST FOR INFORMATION (RFI).
- THE DOCUMENTS MAY NOT BE REPRODUCED IN WHOLE OR IN PART FOR USE ON PROJECTS OTHER THAN IDENTIFIED IN THE TITLE BLOCK. SHOULD THE CONTRACTOR USE THE DOCUMENTS AS A PORTION OF A SHOP DRAWING SUBMITTAL, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY CONSEQUENCES RESULTING FROM ERRORS IN THE REPRODUCED DOCUMENTS.

- DETAILS LABELED TYPICAL ARE INTENDED TO REPRESENT A CONDITION THAT OCCURS AT SEVERAL LOCATIONS IN THE PLANS WHETHER OR NOT THE DETAIL IS REFERENCED.

- DO NOT SCALE THE PLANS AND DETAILS FOR THE PURPOSE OF ESTABLISHING DIMENSIONS.

G. CONSTRUCTION MEANS AND METHODS ISSUES

- SLABS ON GRADE AND ELEVATED SLABS ARE NOT DESIGNED TO SUPPORT CRANES, FORKLIFTS, TRUCKS, MANLIFTS, OR OTHER CONSTRUCTION RELATED EQUIPMENT UNLESS NOTED AS SUCH. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE IF CONSTRUCTION EQUIPMENT CAN BE SAFELY OPERATED ON THESE SLABS AND TO REPAIR ANY DAMAGE THE EQUIPMENT MAY CAUSE.
- THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY BRACING AND/OR SHORES TO SAFELY CONSTRUCT THE STRUCTURE AND PREVENT DAMAGE DURING CONSTRUCTION.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS OF EXISTING CONSTRUCTION THAT MAY AFFECT THE PROJECT AND REPORT DISCREPANCIES TO THE ENGINEER. EXISTING BUILDING ELEMENTS THAT ARE TO BE ABANDONED THAT INTERFERE WITH NEW CONSTRUCTION SHALL BE REMOVED.
- WHEN A PIECE OF EQUIPMENT IS PROVIDED THAT IS DIFFERENT THAN THE EQUIPMENT THAT THE STRUCTURE WAS DESIGNED FOR EITHER BY SIZE, WEIGHT OR CONFIGURATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE REMEDY OF THE SITUATION.

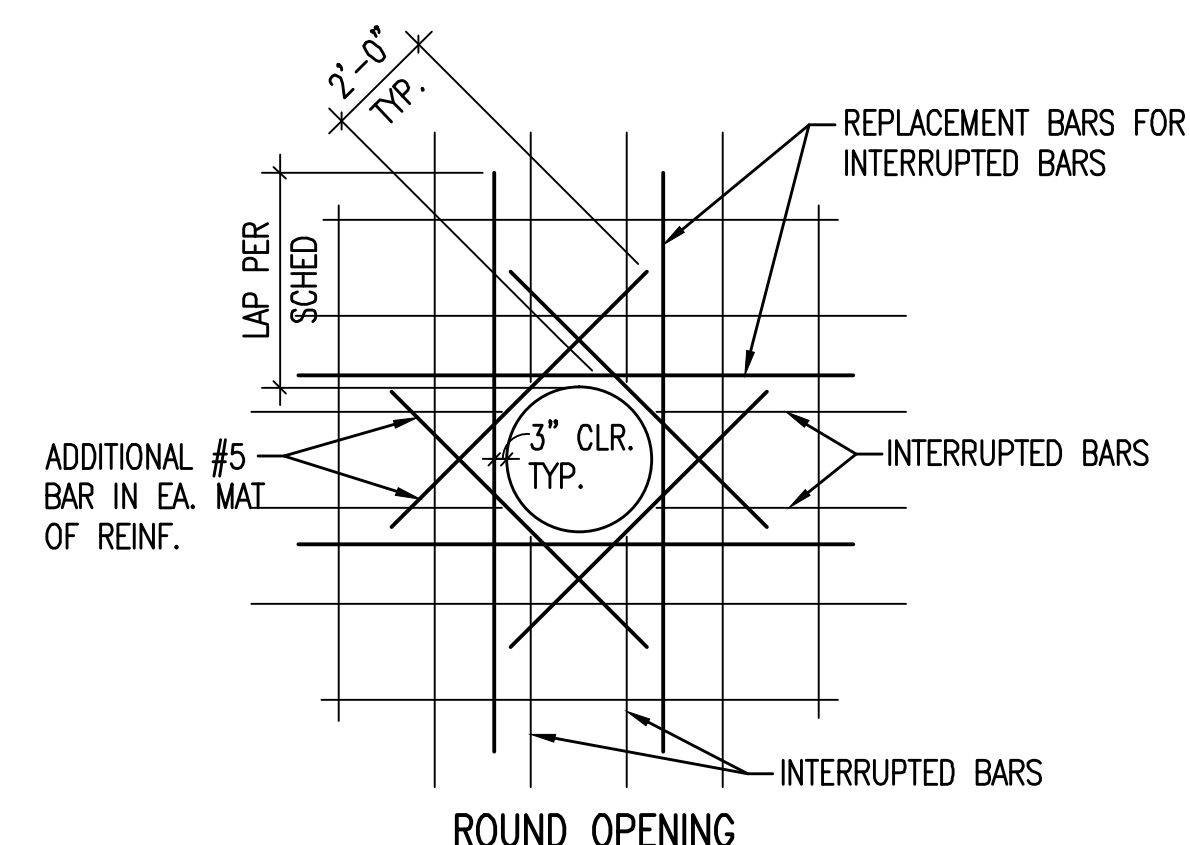
H. STRUCTURAL TESTS, INSPECTIONS, AND QUALITY ASSURANCE

- ALL STRUCTURAL TESTS AND INSPECTIONS SHALL BE PERFORMED PER CHAPTER 17 OF THE BUILDING CODE WITH LOCAL SUPPLEMENTS, UNLESS MORE STRINGENT REQUIREMENTS ARE SPECIFIED.

TABLE A - REINFORCEMENT LAPS, EMBEDMENTS, AND HOOK LENGTHS

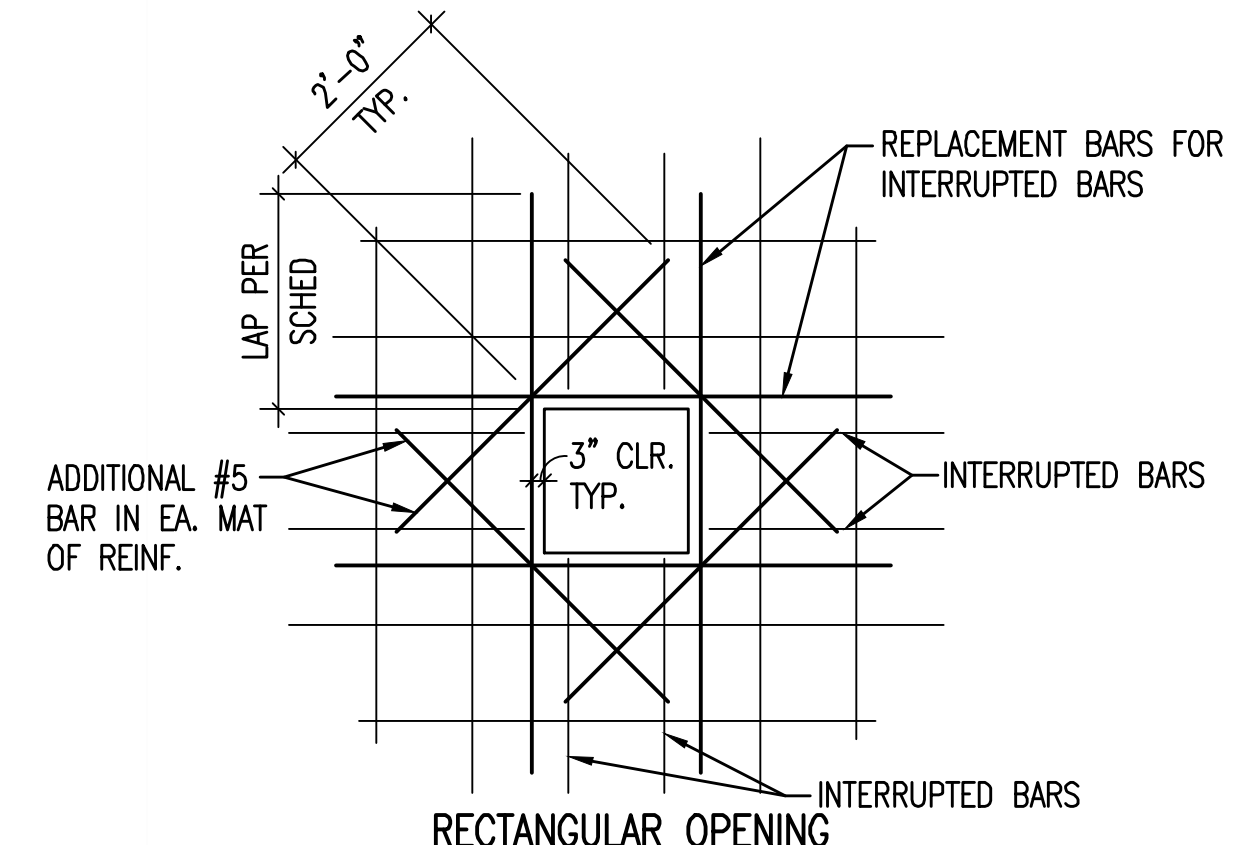
		f _y = 60000 PSI			f'c = 4000 PSI											
BAR SIZE (d)	CLEAR SPACING (s) (in)	EMBEDMENT & CLASS A LAP (in)			CLASS B LAP (in)			HOOK (in)								
		TOP BAR		OTHER BARS	TOP BAR		OTHER BARS									
		P<3<S>P2	P<3<S	P<3<S>P2	P<3<S>P2	P<3<S	S ≥ 5d									
2d	3d	5d	2d<S>P2	P<3<S	P<3<S>P2	P<3<S>P2	P<3<S	S ≥ 5d								
3	3/4	1 1/8	1 1/8	28	18	12	21	14	12	36	24	14	28	18	12	8
4	1	1 1/2	2 1/2	37	25	15	28	19	12	48	32	19	37	25	15	10
5	1 1/4	1 7/8	3 1/8	46	31	18	36	24	14	60	40	24	46	31	18	12
6	1 1/2	2 1/4	3 3/4	55	37	22	43	28	17	72	48	29	55	37	22	15
7	1 3/4	2 5/8	4 3/8	81	54	32	62	42	25	105	70	42	81	54	32	18
8	2	3	5	92	62	37	71	47	28	120	80	48	92	62	37	20
9	2 1/4	3 3/8	5 5/8	104	70	42	80	54	32	136	90	54	104	70	42	22
10	2.54	3.81	6.35	117	78	47	90	60	36	153	102	61	117	78	47	25
11	2.82	4.23	7.05	130	87	52	100	67	40	170	113	68	130	87	52	27

1 TABLE A
S0.1 NO SCALE

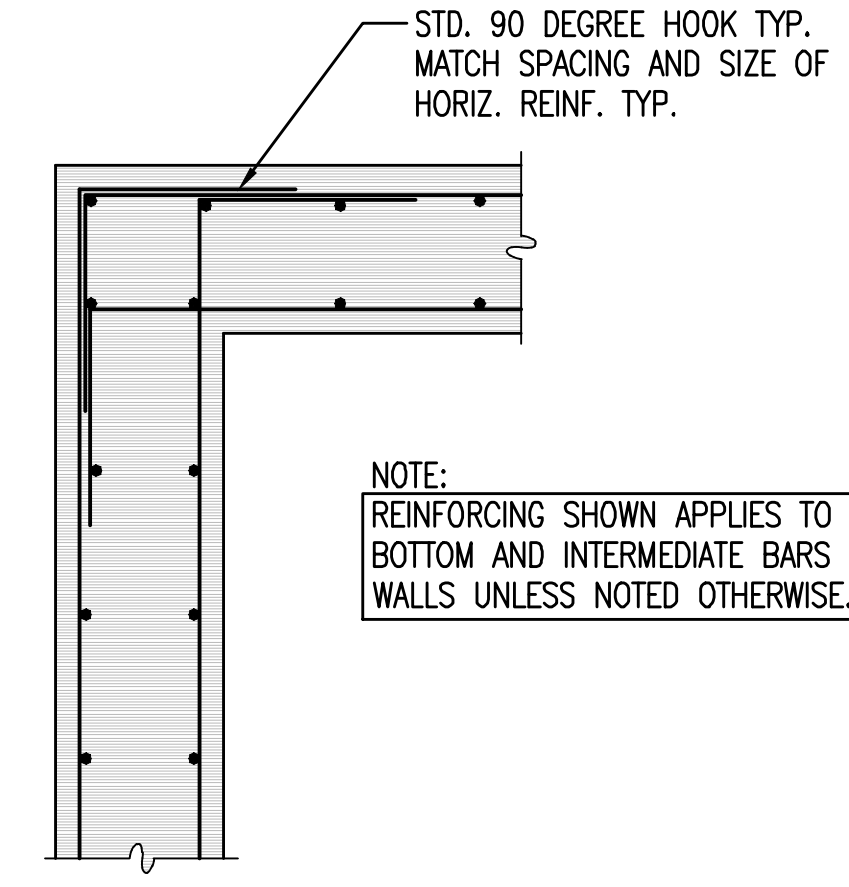


- NOTES:
- USE THIS DETAIL FOR ALL OPENINGS GREATER THAN 8" IN CONCRETE WALLS AND ELEVATED SLABS, PROVIDE #5 ON DIAGONAL AT EACH CORNER AS SHOWN. EXTEND BARS 2'-0" PAST OPENING. REPLACE ALL VERTICAL AND HORIZONTAL BARS INTERRUPTED BY THE OPENING WITH AN EQUAL NUMBER AND SIZE BARS EVENLY DIVIDED ON EACH SIDE OF THE OPENING UNLESS NOTED OTHERWISE.
 - REFER TO ARCHITECTURAL, STRUCTURAL & MECHANICAL PLANS FOR ALL OPENING LOCATIONS.

2 TYP. WALL/ELEVATED SLAB OPENING REINF.
S0.1 NO SCALE



3 TYP. CORNER AND INTERSECT. REINF.
S0.1 NO SCALE



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No.	Revision	By	Date
CITY OF WICHITA, KANSAS			
STRUCTURAL GENERAL NOTES & DETAILS			
WTP #2 EMERGENCY POWER PROJECT C.O.W. PROJECT NO. 468-84956			
PROFESSIONAL ENGINEERING CONSULTANTS, P.A. 303 SOUTH TOPEKA WICHITA, KS 67202 316-262-2691 www.pec1.com			
Designed by	DKC	Job No. 34-14229-001-0042	Sht. S0.1 of 36
Drawn by	JTR	Date February 2015	