

STRUCTURAL GENERAL NOTES

GENERAL

- A. THESE DRAWINGS ARE COPY RIGHTED INSTRUMENTS OF SERVICE OF FOR USE ONLY ON THIS PROJECT.
- B. CONTRACTOR RESPONSIBILITY - CONSTRUCTION DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCES AND SAFETY PRECAUTIONS, INCLUDING BUT NOT LIMITED TO SHORING AND TEMPORARY BRACING.
- C. DIMENSIONS - USE WRITTEN DIMENSIONS ONLY. VERIFY ALL DIMENSIONS AT JOB SITE BEFORE COMMENCING WORK AND REPORT ANY DISCREPANCIES. WHERE NO DIMENSIONS ARE PROVIDED, OBTAIN CLARIFICATION PRIOR TO PROCEEDING WITH WORK. DO NOT SCALE DRAWINGS.
- D. COORDINATION - OPENINGS THROUGH WALLS AND FLOORS FOR MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE COORDINATED BY CONTRACTOR AND CONSTRUCTED PER TYPICAL DETAILS SHOWN IN THESE DOCUMENTS. NO MECHANICAL OR ELECTRICAL SYSTEM COMPONENTS SHALL BE EMBEDDED IN SLABS OR WALLS UNLESS SPECIFICALLY DETAILED IN THESE DOCUMENTS.
- E. OMISSIONS AND CONFLICTS - OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE CONSTRUCTION DOCUMENTS SHOULD BE BROUGHT TO THE ATTENTION OF THE DESIGN TEAM. IF CERTAIN FEATURES ARE NOT FULLY DELINEATED IN THE CONSTRUCTION DOCUMENTS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS FOR SIMILAR CONDITIONS THAT ARE DELINEATED.
- F. STRUCTURAL DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING SUCH REQUIREMENTS INTO THEIR SHOP DRAWINGS AND WORK.
- G. THERE SHALL BE NO CHANGE IN SIZE OR DIMENSION OF A STRUCTURAL MEMBER, NOR SHALL ANY OPENINGS BE MADE IN ANY STRUCTURAL MEMBER, WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
- H. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON THE STRUCTURE. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF THE STRUCTURE AT THE TIME THE LOADS ARE IMPOSED.
- I. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS.
- J. SEE DRAWINGS OTHER THAN STRUCTURAL FOR: TYPES OF FLOOR FINISH AND THEIR LOCATION, DEPRESSIONS IN FLOOR SLABS, OPENINGS IN WALLS AND FLOORS REQUIRED BY ARCHITECTURAL AND MECHANICAL FEATURES, AND ROADWAY PAVING, WALKS, RAMPS, STAIRS, CURBS, ETC.
- K. TYPICAL DETAILS - DETAILS NOTED AS TYPICAL ARE APPLICABLE WHERE SPECIFIED ON THE STRUCTURAL DRAWINGS AND WHEREVER THE CONDITION OCCURS THROUGHOUT THE PROJECT, INCLUDING LOCATIONS WHERE THE DETAIL IS NOT EXPLICITLY SPECIFIED OR REFERENCED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY LOCATIONS WHERE TYPICAL DETAILS ARE APPLICABLE PRIOR TO CONSTRUCTION.

EXISTING CONSTRUCTION CONDITIONS

- A. SHORING: THE CONTRACTOR SHALL PROVIDE SHORING WHEREVER NECESSARY TO ALLOW INSTALLATION OF THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION AND MAINTENANCE OF ALL SHORING AND TEMPORARY WORK REQUIRED THROUGHOUT THE PROGRESS OF THE WORK.
- B. EXISTING CONSTRUCTION: EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS WAS OBTAINED FROM LIMITED VISUAL OBSERVATIONS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND SHALL NOTIFY THE STRUCTURAL ENGINEER OF RECORD OF ALL EXCEPTIONS AND RECEIVE DIRECTION PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
- C. DEMOLITION: THE REMOVAL, CUTTING, DRILLING, ETC. OF EXISTING WORK SHALL BE PERFORMED WITH GREAT CARE AND WITH APPROPRIATE TOOLS IN ORDER TO NOT JEOPARDIZE THE STRUCTURAL INTEGRITY OF THE BUILDING. SEE ARCHITECTURAL DRAWINGS FOR REQUIRED DEMOLITION.

DESIGN BASIS

- A. APPLICABLE CODE: PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE PROJECT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, U.O.N.
- INTERNATIONAL BUILDING CODE, 2018 EDITION
 - VA PG 18-1, MASTER CONSTRUCTION SPECIFICATIONS
 - VA PG 18-3, DESIGN AND CONSTRUCTION PROCEDURES

- B. VERTICAL LOAD - LIVE LOADS:
- DATA CENTER: 40 psf
 - STAIRS/EKITS: 100 psf
 - LIGHT STORAGE: 125 psf
 - ROOF: VARIES WITH SLOPE (20 psf max.)

- C. VERTICAL LOAD - SUPERIMPOSED DEAD LOADS:
- DATA CENTER: 150 psf

- D. VERTICAL LOAD - ROOF SNOW LOAD: 42 psf

- E. LATERAL LOADS:
- DESIGN WIND CRITERIA (STRENGTH LEVEL): PER ASCE 7-16
BASIC DESIGN WIND SPEED: 124 mph
WIND EXPOSURE: B
 - DESIGN SEISMIC CRITERIA:
SITE CLASS: II
 $S_{DS} = 0.05g$
 $S_{D1} = 0.03g$
IMPORTANCE FACTOR, $I_p = 1.5$
SEISMIC DESIGN CATEGORY = A
LATERAL SYSTEM DESCRIPTION: STEEL LATERAL FRAMES NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
RISK CATEGORY = IV

CONCRETE

- A. CONCRETE SHALL BE SUPPLIED AND PLACED IN ACCORDANCE WITH ACI 318.
- B. CONCRETE SHALL BE AS FOLLOWS:

CONCRETE USE	STRENGTH AT 28 DAYS U.O.N.	W/C RATIO	MAX. AGGREGATE SIZE	WEIGHT	SHRINKAGE
SLAB ON GRADE	3000 PSI	0.45 MAX.	3/4" TO 1" (LS)	145pcf	.045%
FOUNDATIONS	4000 psi	0.50 MAX.	3/4" TO 1"	145pcf	-
HSS COLUMN FILL	3000 PSI	0.45 MAX.	1/2"	145pcf	-
CAST-IN PLACE WALLS	4000 psi	0.45 MAX.	3/4" (LS)	145pcf	.045%

(LS) CRUSH LOW SHRINKAGE ROCK

- C. STRENGTH: COMPRESSIVE STRENGTH IN PSI WHEN TESTED IN ACCORDANCE WITH ASTM C39
- D. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150, TYPE II OR TYPE I.
- E. AGGREGATE FOR STONE CONCRETE SHALL CONFORM TO ASTM C-33. FOR LOW SHRINKAGE AGGREGATE: USE LIMESTONE OR GRANITE. AGGREGATE FOR LIGHTWEIGHT CONCRETE SHALL CONFORM TO ASTM C-330.
- F. FLY ASH: ASTM C 618, CLASS F OR CLASS C. MINIMUM RECOMMENDED FLY ASH F. CONTENT BY MASS OF CEMENTITIOUS MATERIAL IS 20%. MAXIMUM RECOMMENDATION IS 25%.
- G. ADMIXTURES: MIX SHALL CONTAIN POLYMER BASED, WATER REDUCING ADMIXTURE. THE FOLLOWING TYPES OF ADMIXTURES ARE ALLOWED AS PLASTICIZERS AND/OR SET ACCELERATORS TO IMPROVE WORKABILITY. 1. ASTM C494, TYPES A, C, E, G. HIGH RANGE WATER REDUCERS SHALL ALSO MEET REQUIREMENTS OF ASTM C 1017, 2. THE INITIAL SLUMP OF THE CONCRETE BEFORE INTRODUCING ADMIXTURES SHOULD BE MINIMUM 2" INCHES
- H. SHRINKAGE - CONTRACTOR TO PROVIDE CONCRETE MIX HISTORY DATA OR PROVIDE TESTING REPORT.
- I. MINIMUM REINF. COVER FOR CAST-IN-PLACE CONCRETE:
- CONC. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
 - CONC. FORMED BELOW GRADE OR EXPOSED TO WEATHER:
NO. 6 AND GREATER: 2"
NO. 5 AND SMALLER: 1 1/2"
 - CONC. NOT EXPOSED TO WEATHER NOR IN CONTACT WITH GROUND:
SLABS, WALLS, AND JOISTS NO. 11 AND SMALLER: 1"
BEAMS AND COL. PRIMARY REINF., TIES, STIRRUPS, SPIRALS: 1 1/2"

PLACEMENT

- ALL REINFORCING BARS, ANCHOR BOLTS, AND ALL OTHER CONC. INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
 - CHAMFER ALL CORNERS OF CONCRETE TO PREVENT DAMAGE.
 - CONSTRUCTION TOLERANCE SHALL COMPLY TO ACI 117.
 - CONCRETE SHALL BE PLACED IN A CONTINUOUS OPERATION BETWEEN PREDETERMINED CONSTRUCTION JOINTS.
 - USE VIBRATORS TO CONSOLIDATE CONCRETE. DO NOT USE VIBRATORS TO MOVE CONCRETE.
 - CONCRETE SHALL BE CONTINUOUSLY CURED FOR 7 DAYS AFTER PLACEMENT IN ANY APPROVED MANNER. FOOTINGS ARE EXEMPTED FROM THIS REQUIREMENT.
 - PATCHING OF CONCRETE: ALL INSERT HOLES AND OTHER IMPERFECTIONS ON THE SURFACES OF THE CONCRETE SHALL BE FILLED WITH GROUT, BRUSHED AND SACKED TO A UNIFORM FINISH.
- K. PIPES - PLASTIC OR METAL (NON-ALUMINUM) CONDUITS MAY BE EMBEDDED IN THE SLAB PROVIDED THAT THE FOLLOWING CRITERIA ARE MET:
- NO PIPES OR CONDUITS, OTHER THAN ELECTRICAL, SHALL BE EMBEDDED IN STRUCTURAL CONCRETE.
 - THE MAXIMUM CONDUIT SIZE SHALL BE 1 3/4 INCH OUTSIDE DIAMETER.
 - CONDUITS TO BE LIMITED TO TEN (10) CONDUITS EVERY TEN (10) FEET.
 - LOCATE CONDUITS WITHIN THE MIDDLE THIRD OF THE SLAB THICKNESS.
 - PROVIDE A MINIMUM OF SIX (6) INCHES CLEAR SPACING BETWEEN ADJACENT CONDUIT OR WITHIN A THREE (3) FOOT RADIUS OF A COLUMN.
 - AVOID INTERSECTING CONDUITS WHERE POSSIBLE. INTERSECTING CONDUITS ARE TO BE INSTALLED PERPENDICULAR TO EACH OTHER. NO MORE THAN TWO (2) CONDUITS PER INTERSECTION. DO NOT INTERSECT CONDUIT AT POST-TENSIONING TENDON OR REINFORCEMENT INTERSECTIONS.
 - IF DENSER AMOUNTS OF CONDUIT OCCURS, CONTACT THE ENGINEER FOR ASSISTANCE. SEE DETAILS FOR ALLOWABLE CONDUIT GROUPS AND LAYOUTS.
 - DO NOT COIL EXCESS CONDUITS IN SLAB.

- L. PENETRATIONS - PENETRATIONS SHALL NOT BE PERMITTED IN BEAMS OR DROP CAPS EXCEPT AS SHOWN IN TYPICAL DETAILS.

- M. INSERTS - ALL INSERTS AND SLEEVES SHALL BE CAST IN PLACE WHENEVER POSSIBLE. DRILLED AND POWER-DRIVEN FASTENERS WILL BE PERMITTED ONLY WHEN IT CAN BE SHOWN THAT THE INSERTS WILL NOT SPALL THE CONCRETE.

CONSTRUCTION JOINTS

- CONSTRUCTION JOINTS SHOWN MAY BE PROVIDED AT CONTRACTORS OPTION. ANY PROPOSED CONSTRUCTION JOINTS NOT SHOWN MUST BE SUBMITTED TO THE DESIGN PROFESSIONAL OF RECORD FOR APPROVAL.
- ROUGHENED CONSTRUCTION JOINTS (R.C.J.): WHERE NOTED ON DRAWINGS R.C.J. ROUGHEN JOINT TO MINIMUM 1/4 INCH AMPLITUDE.

- P. ALL CONC. TO BE REINFORCED UNLESS SPECIFICALLY MARKED "NOT REINFORCED".

- Q. SOME DEGREE OF CRACKING IS TO BE EXPECTED FOR CAST-IN-PLACE CONCRETE. CONCRETE SURFACES EXPOSED TO WEATHER AND/OR TEMPERATURE VARIATIONS DURING CONSTRUCTION AND/OR FINAL CONDITION SHALL BE TREATED AND REGULARLY MAINTAINED TO PREVENT PROPAGATION OF CRACKS AND WATER PENETRATION. THE CONTRACTOR SHALL DEVELOP A REGULAR MAINTENANCE PROGRAM AND SUBMIT IT TO THE OWNER.

REINFORCING STEEL

- A. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315 AND ACI 318.
- B. REINFORCING STEEL SHALL BE AS FOLLOWS:

REINF.	TYPE
BARSTIES/SPIRALS	ASTM A615, GRADE 60, U.O.N.
WELDED REINF.	ASTM A708, GRADE 60 OR 80 AS NOTED
TIE AND SPIRAL WIRE REINF.	ASTM A1064, GRADE 60
BAR (WHERE NOTED ON DRAWING)	GLASS FIBER REINFORCED POLYMER (GFRP), ASTM D 7597
REINF. USE	TYPE
SLAB-ON-GRADE	ASTM A615, GRADE 60
FOUNDATIONS	ASTM A615, GRADE 60

* THE ACTUAL YIELD STRENGTH BASED ON MILL TESTS DOES NOT EXCEED F_y BY MORE THAN 18,000 PSI, AND THE RATIO OF THE ACTUAL TENSILE STRENGTH TO THE ACTUAL YIELD STRENGTH IS NOT LESS THAN 1.25.

- C. DO NOT FIELD BEND OR STRAIGHTEN IN ANY MANNER THAT WILL DAMAGE REINFORCING.
- D. PROVIDE SPLICES IN REINFORCING ONLY WHERE SHOWN ON DRAWINGS OR APPROVED IN WRITING BY ENGINEER OF RECORD.
- E. WELDING TO CONFORM TO AWS D14

STEEL

- A. STRUCTURAL STEEL TO BE SUPPLIED DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS.
- B. U.O.N. STEEL SHALL BE AS FOLLOWS:
- WIDE FLANGE SHAPES: ASTM A992
 - HOLLOW STRUCTURAL SECTIONS: ASTM A500 GRADE C ($F_y = 50$ ksi), U.O.N.
 - PIPS: ASTM A53, GR. B
 - OTHER SHAPES AND PLATES: ASTM A36, ASTM A572 GR. 50 AS NOTED.
 - BOLTS: ASTM A307
 - HIGH STRENGTH BOLTS: ASTM F1554 GRADE A325, U.O.N.
 - THREADED RODS: ASTM A36, U.O.N.
 - ANCHOR RODS: F1554 GR. 36 TYP., U.O.N.
 - WELDED ELECTRODES: E-70W U.O.N.
 - WELDED STUDS: FLUX FILLED HEADED STUDS CONFORMING TO ASTM A108 BY NELSON OR EQUAL.
- "NOTE: REFERENCE TYPICAL DETAIL SHEETS FOR OTHER GRADES OF STEEL REQUIRED AT SEISMIC LOAD RESISTING SYSTEMS (SRS) WHERE OCCURS.
- C. WELDING TO CONFORM TO AWS AND TO BE PERFORMED BY CERTIFIED WELDERS.
- D. BUTT WELDS ARE TO BE COMPLETE PENETRATION U.O.N. ALL FILLET WELDS SHOWN ARE MINIMUM REQUIRED BY STRESS. INCREASE WELDS TO A.I.S.C. MINIMUM SIZES BASED ON THICKNESS OF MATERIAL JOINED U.O.N.
- E. STEEL BEAMS ARE EQUALLY SPACED BETWEEN DIMENSION POINTS OR GRID LINES, U.O.N.
- F. STEEL NOT RECEIVING FIRE PROOFING SHALL BE SHOP PRIMED.
- G. ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIP ZINC GALVANIZED U.O.N.
- H. NON SHRINK GROUT: 7500 psi COMPRESSIVE STRENGTH, NON METALLIC CONFORMING TO ASTM C1107, MASTERFLOW 928 OR EQUAL.
- I. INTUMESCENT PAINT TO MEET REQUIREMENTS OF ASTM E119.

EPOXY ANCHORS (CMU INSTALLATION ONLY)

- A. EPOXY ADHESIVE SHALL BE SIMPSON SET-XP ADHESIVE ANCHOR (IAPMO USE ESR-265) OR EQUAL PRODUCT. ALTERNATE PRODUCTS MUST BE SUBMITTED TO E.O.R. FOR SUBSTITUTION PRIOR TO INSTALLATION PER SPECIFICATIONS.
- B. INSTALLATION: INSTALL THE EPOXY ANCHORS IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC ANCHOR.
- C. SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 1704 OF THE IBC.

MIN. $f_{cr} = 1500$ PSI MINIMUM (LIGHTWEIGHT, MEDIUM-WEIGHT OR NORMAL-WEIGHT CMU) *						
REINF.	THREADED ROD DIAMETER	HOLE DIAMETER	MIN. DEPTH OF EMBEDMENT	MIN. EDGE DISTANCE	MIN. SPACING	TENSION TEST VALUE **
#4	1/2" DIA.	5/8"	4 1/2"	12"	8"	3,650 #
#5	5/8" DIA.	3/4"	5 5/8"	12"	8"	3,790 #
N/A	3/4" DIA.	7/8"	6 1/2"	12"	8"	3,790 #

- * FOR SINGLE ANCHOR WITH NO EDGE DISTANCE OR SPACING REDUCTIONS. FOR OTHER CASES REFER TO IAPMO USE REPORT.
- ** TENSION TESTS VALUES ONLY AND CORRESPOND WITH 2x ALLOWABLE TENSION LOADS.

CONTRACTOR SUBMITTALS

THE FOLLOWING IS A LISTING OF REQUIRED ITEMS TO BE SUBMITTED TO STRUCTURAL ENGINEER OF RECORD (TO BE PROVIDED IF MARKED):

SUBMITTAL	CERTIFICATE	SHOP DRAWINGS (2)	CALCS W/ ENG. STAMP	DEFERRED SUBMITTAL (1)
CONCRETE REINF. STEEL	X	X		
CONCRETE MIX DESIGN		X		
STRUCTURAL STEEL	X	X		

- (1) DEFERRED SUBMITTALS SHALL FIRST BE SUBMITTED TO THE PROJECT ARCHITECT AND/OR ENGINEER FOR REVIEW AND COORDINATION, THEN SUBMITTED TO THE APPROPRIATE JURISDICTION FOR APPROVAL. THIS SUBMITTAL SHALL INCLUDE HOHBACH-LEWIN'S SHOP DRAWING STAMP INDICATING THE STRUCTURAL REVIEW HAS BEEN COMPLETED AND THAT THE PLANS AND CALCULATIONS FOR THE DEFERRED APPROVAL ITEMS ARE IN GENERAL COMPLIANCE WITH THE INFORMATION PROVIDED WITHIN THE CONTRACT DOCUMENTS.
- (2) ELECTRONIC SHOP DRAWINGS ARE TO BE SUBMITTED TO HOHBACH-LEWIN FOR REVIEW. AT HOHBACH-LEWIN'S REQUEST, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HARD COPIES OF SHOP DRAWINGS FOR REVIEW.

EPOXY ANCHORS (CONCRETE INSTALLATION ONLY)

- A. EPOXY ADHESIVE SHALL BE SIMPSON SET-XP ADHESIVE ANCHOR (ESR-250) OR EQUAL PRODUCT. ALTERNATE PRODUCTS MUST BE SUBMITTED TO E.O.R. FOR SUBSTITUTION PRIOR TO INSTALLATION PER SPECIFICATIONS.
- B. INSTALLATION: INSTALL THE EPOXY ANCHORS IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC ANCHOR. CONTRACTOR TO NOTIFY E.O.R. OF ANY ANCHOR/DOWEL LOCATIONS TO BE REPAIR. E.O.R. TO REVIEW AND APPROVE ANCHORAGE LOCATIONS PRIOR TO THE EPOXY ANCHORAGE INSTALLATION.
- C. SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 1704 OF THE IBC.
- D. NOTIFY ARCHITECT IMMEDIATELY IF ELEMENTS WITH EXISTING STRUCTURE PREVENT DRILLING IN THE LOCATIONS SHOWN ON THE DRAWINGS.
- E. DO NOT SUBSTITUTE EPOXIED DOWELS FOR HOOKED BARS.
- F. ALL EPOXY ANCHORS SHALL BE TENSION TESTED. WHEN EPOXY ANCHORS ARE USED FOR NON-STRUCTURAL APPLICATIONS, 50% OF ANCHORS SHALL BE TENSION TESTED. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE NOT PREVIOUSLY TESTED UNTIL 20 CONSECUTIVE ANCHORS PASS.
- G. CONCRETE AT TIME OF INSTALLATION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AND SHALL HAVE A MINIMUM AGE OF 21 DAYS

MIN. WITH $f_{cr} = 2500$ PSI CONCRETE (NORMAL WEIGHT CONCRETE) VERIFY MINIMUM EXISTING CONCRETE STRENGTH IN FIELD. **						
REINF. DOWEL	THREADED ANCHOR ROD	HOLE DIAMETER	MIN. EMBED.	MIN. EDGE DISTANCE *	MIN. SPACING	TENSION TEST VALUE **
#3	1/2" DIA.	5/8" DIA.	2 3/4"	1 3/4"	8"	1,675#
#4	1/2" DIA.	5/8" DIA.	4"	4 1/2"	12"	3,890#
#5	5/8" DIA.	3/4" DIA.	5"	4 3/4"	15"	3,750#
#6	3/4" DIA.	7/8" DIA.	6"	5 1/2"	18"	6,475#
#7	7/8" DIA.	1" DIA.	8"	7"	24"	6,400#
#8	1" DIA.	1 1/8" DIA.	8 1/2"	7"	26"	10,260#

MIN. WITH $f_{cr} = 3000$ PSI CONCRETE (NORMAL WEIGHT CONCRETE) VERIFY MINIMUM EXISTING CONCRETE STRENGTH IN FIELD. **						
REINF. DOWEL	THREADED ANCHOR ROD	HOLE DIAMETER	MIN. EMBED.	MIN. EDGE DISTANCE *	MIN. SPACING	TENSION TEST VALUE **
#3	1/2" DIA.	5/8" DIA.	2 3/4"	1 3/4"	8"	1,840#
#4	1/2" DIA.	5/8" DIA.	4"	4 1/2"	12"	3,890#
#5	5/8" DIA.	3/4" DIA.	5"	4 3/4"	15"	3,750#
#6	3/4" DIA.	7/8" DIA.	6"	5 1/2"	18"	7,100#
#7	7/8" DIA.	1" DIA.	8"	7"	24"	6,400#
#8	1" DIA.	1 1/8" DIA.	8 1/2"	7"	26"	11,240#

- * MINIMUM EDGE DISTANCE LIMITATION ASSUMED FROM ONE EDGE ONLY.
- ** FOR SINGLE ANCHORS WITH NO ADDITIONAL EDGE DISTANCE OR SPACING REDUCTIONS. FOR OTHER CASES, REDUCTION OF VALUES CALCULATED PER ACI 318 IS REQUIRED.
- *** TENSION TEST VALUES CORRESPOND WITH 1.5x CRACKED CONCRETE SEISMIC TENSION LOADS (STRENGTH).

EXPANSION ANCHORS

- A. EXPANSION BOLTS SHALL BE HILTI KWIK-BOLT T2-CARBON STEEL ANCHOR (ESR-1917) OR EQUAL PRODUCT. ALTERNATE PRODUCTS MUST BE SUBMITTED TO E.O.R. FOR SUBSTITUTION PRIOR TO INSTALLATION PER SPECIFICATIONS.
- a. PROVIDE HILTI KWIK-BOLT 3 ANCHOR (ICC ESR-1385) AT MASONRY APPLICATION
- B. INSTALLATION: INSTALL THE EXPANSION ANCHORS IN ACCORDANCE WITH THE REQUIREMENTS GIVEN IN MANUFACTURER'S RECOMMENDATIONS FOR THE SPECIFIC ANCHOR. CONTRACTOR TO NOTIFY E.O.R. OF ANY ANCHOR/DOWEL LOCATIONS TO BE REPAIR. E.O.R. TO REVIEW AND APPROVE ANCHORAGE LOCATIONS PRIOR TO THE EXPANSION ANCHORAGE INSTALLATION.
- C. SPECIAL INSPECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 1704 OF THE IBC.
- D. ALL EXPANSION ANCHORS SHALL BE TENSION TESTED. WHEN EXPANSION ANCHORS ARE USED FOR NON-STRUCTURAL APPLICATIONS, 50% OF ANCHORS SHALL BE TENSION TESTED. IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE NOT PREVIOUSLY TESTED UNTIL 20 CONSECUTIVE ANCHORS PASS.
- E. CONCRETE AT TIME OF INSTALLATION SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AND SHALL HAVE A MINIMUM AGE OF 21 DAYS

VERIFY MINIMUM EXISTING CONCRETE STRENGTH IN FIELD. MIN. $f_{cr} = 2500$ PSI (NORMAL WEIGHT CONCRETE) *					
DIA.	MIN. EMBED	MIN. HOLE DEPTH	MIN. EDGE DISTANCE	MIN. SPACING	TENSION TEST VALUE **
3/8"	2 1/4"	2 5/8"	4"	6"	1,509#
1/2"	3 5/8"	4"	6"	9 3/4"	3,267#
5/8"	4 1/2"	4 3/4"	6 3/4"	12"	4,656#
3/4"	5 3/8"	5 3/4"	9"	13 1/4"	5,850#

- * FOR SINGLE ANCHORS WITH NO EDGE DISTANCE OR SPACING REDUCTION. FOR OTHER CASES, REDUCTION OF VALUES CALCULATED PER ACI 318 IS REQUIRED.
- ** TENSION TEST VALUES ONLY AND CORRESPOND WITH 1.5x CRACKED CONCRETE SEISMIC TENSION LOADS.

SYMBOLS

	DETAIL NUMBER	SHEET NUMBER
	DROP IN FLOOR ELEVATION, S.A.D.	
	SLOPED FINISH SEE ARCHITECTURAL DRAWING	
	CONCRETE CURB OR HIGH STEM	
	ELEVATION AT BOTTOM OF FOOTING WITH RESPECT TO BUILDING DATUM 0'-0".	
	STEP IN FOOTING. SEE 10/S501	
	CONCRETE WALLS ABOVE	
	VERTICAL WALL JOINT. SEE DET. 10/S503	
	STRUCTURAL STEEL COLUMN SEE SHEET S701. "X" DENOTES LEVEL OF COLUMN TERMINATION "R" = ROOF, "P" = PARAPET	
HCA	HEADED CONC. ANCHOR (STUD)	U.O.N. UNLESS OTHERWISE NOTED
HD	HOLD-DOWN	VERT. VERTICAL
HDR	HEADER	V.I.F. VERIFY IN FIELD
HGR	HANGER	
HORIZ.	HORIZONTAL	W WEST
HT.	HEIGHT	WI WITH
H.S.	HIGH STRENGTH	WF WIDE FLANGE
H.S.B.	HIGH STRENGTH BOLTS	WH.S. WELDED HEADED STUD
HSS	HOLLOW STEEL SECTION	W.I. WALL JOINT
HSSH	HOLLOW STEEL SHORT	W/O WITHOUT
	SLOTTED HOLES	W.P. WORK POINT
INT.	INTERIOR	
J.H.	JOIST HANGER	
LLH	LONG LEG HORIZ.	
LLV	LONG LEG VERT.	
LSH	LONG SLOTTED HOLE	
LSL	LAMINATED STRAND LUMBER	
LONG.	LONGITUDINAL	
L.V.F.	LOW-VELOCITY FASTENER	
LVL	LAMINATED VENEER	

STRUCTURAL SHEET INDEX

S100	STRUCTURAL GENERAL NOTES
S200	ENCLOSURE FOUNDATION PLAN
S201	PARTIAL 2ND FLOOR ROOF FRAMING PLAN
S202	PARTIAL 3RD FLOOR ROOF FRAMING PLAN
S203	PARTIAL 4TH FLOOR FRAMING PLAN
S501	CONCRETE DETAILS
S502	CONCRETE DETAILS
S701	STEEL DETAILS
S702	STEEL DETAILS

ABBREVIATIONS

&	AND	MAX.	MAXIMUM
@	AT	MECH.	MECHANICAL
A.B.	ANCHOR BOLT	MANUF.	MANUFACTURER
ADD.	ADDITIONAL	M.B.	MACHINE BOLTS
ARCH.	ARCHITECTURAL	MIN.	MINIMUM
		MISC.	MISCELLANEOUS
		MTL.	METAL
BLDG.	BUILDING		
BLKG.	BLOCKING		
BM.	BEAM	N	NORTH
B.N.	BOUNDARY NAIL	(N)	NEW
B.O.C.	BOTTOM OF CONCRETE	NO.	NUMBER
BOT.	BOTTOM	N.S.	NEAR SIDE
		N.T.S.	NOT TO SCALE
CL.	CENTER LINE		
CANT.	CANTILEVER	O.C.	ON CENTER
CBC	CALIFORNIA BUILDING CODE	OPG.	OPENING
		OPP.	OPPOSITE
C.D.F.	CONTROLLED DENSITY FILL	O.H.	OPPOSITE HAND
C.G.S.	CENTER OF GRAVITY OF POST-TENSIONING STRAND	OSSC	OREGON STRUCTURAL SPECIALTY CODE
C.I.P.	CAST-IN-PLACE	O.W.S.J.	OPEN WEB STEEL JOIST
C.J.	CONTROL JOINT	O.W.W.J.	OPEN WEB WOOD JOIST
CLR.	CLEAR		
CMU	CONCRETE MASONRY UNIT	PL.	PLATE
COL.	COLUMN	PERP.	PERPENDICULAR
COMP.	COMPRESSION	PLY.	PLYWOOD
CONC.	CONCRETE	P.T.	PRESERVATIVE TREATED
CONN.	CONNECTION	PIT	POST-TENSIONS
CONT.	CONTINUOUS	PSL	PARALLEL STRAND LUMBER
CTR.	CENTER		
DBL	DOUBLE	R.C.J.	ROUGHENED CONSTRUCTION JOINT
DET.	DETAIL		
D.F.	DOUGLAS FIR	REINF.	REINFORCEMENT
DIA.	DIAMETER	RECD.	REQUIRED
DO	DITTO		
DWG.	DRAWINGS	S.	SOUTH
		S.A.D.	SEE ARCHITECTURAL DRAWINGS
E	EAST		
(E)	EXISTING	S.C.	SLIP CRITICAL
EA.	EACH	S.C.D.	SEE CIVIL DRAWINGS
E.B.M.	EXTERIOR BUILDING MAINTENANCE	SCHED.	SCHEDULE
		SDS	SELF-DRIVING SCREW
E.F.	EACH FACE	SM.	SIMILAR
E.J.	EXPANSION JOINT	S.J.	SEISMIC JOINT
EL.	ELEVATION		
E.N.	EDGE NAIL	S.M.D.	SEE MECHANICAL DRAWINGS
E.W.	EACH WAY		
EXP.	EXPANSION	SMS	SHEET METAL SCREW
EXT.	EXTERIOR	S.O.G.	SLAB-ON-GRADE SPECIFICATION
		SG.	SQUARE
FDN.	FOUNDATION	S.S.	STAINLESS STEEL
FIN.	FINISH	STD.	STANDARD
F.F.	FINISH FLOOR	SYM.	SYMMETRICAL
F.G.	FINISHED GRADE		
FLR.	FLOOR		
F.N.	FIELD NAIL	T&B	TOP AND BOTTOM TONGUE AND GROOVE
F.O.C.	FACE OF CONCRETE	T&G	TONGUE AND GROOVE
F.O.S.	FACE OF STUD	TD	TIEDOWN
F.R.T.	FIRE RETARDANT TREATED	T.O.C.	TOP OF CONCRETE
		T.O.F.	TOP OF FOOTING
		T.O.P.	TOP OF PLATE/ TOP OF
GA.	GAUGE		
GB	GRADE BEAM		
G.C.			

STRUCTURAL GENERAL NOTES

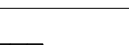
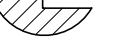

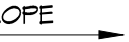
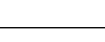
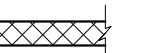

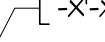


CONTRACTOR SUBMITTALS

THE FOLLOWING IS A LISTING OF REQUIRED ITEMS TO BE SUBMITTED TO STRUCTURAL ENGINEER OF RECORD (TO BE PROVIDED IF MARKED):

SUBMITTAL	CERTIFICATE	SHOP DRAWINGS (2)	CALCS W/ ENG. STAMP	DEFERRED SUBMITTAL (1)
CONCRETE REINF. STEEL	X	X		
CONCRETE MIX DESIGN		X		
STRUCTURAL STEEL	X	X		


- (1) DEFERRED SUBMITTALS SHALL FIRST BE SUBMITTED TO THE PROJECT ARCHITECT AND/OR ENGINEER FOR REVIEW AND COORDINATION, THEN SUBMITTED TO THE APPROPRIATE JURISDICTION FOR APPROVAL. THIS SUBMITTAL SHALL INCLUDE: HOHBACH-LEWIS SHOP DRAWING STAMP INDICATING THE STRUCTURAL REVIEW HAS BEEN COMPLETED AND THAT THE PLANS AND CALCULATIONS FOR THE DEFERRED APPROVAL ITEMS ARE IN GENERAL COMPLIANCE WITH THE INFORMATION PROVIDED WITHIN THE CONTRACT DOCUMENTS.
- (2) ELECTRONIC SHOP DRAWINGS ARE TO BE SUBMITTED TO HOHBACH-LEWIS FOR REVIEW. AT HOHBACH-LEWIS'S REQUEST, THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING HARD COPIES OF SHOP DRAWINGS FOR REVIEW.

SYMBOLS

	DETAIL NUMBER
	SHEET NUMBER
	DROP IN FLOOR ELEVATION, S.A.D.
	SLOPED FINISH SEE ARCHITECTURAL DRAWING
	CONCRETE CURB OR HIGH STEM
	ELEVATION AT BOTTOM OF FOOTING WITH RESPECT TO BUILDING DATUM 0'-0".
	STEP IN FOOTING, SEE 10/S501
	CONCRETE ABOVE
	VERTICAL JOINT, SEE DET. 10/S503
	STRUCTURAL STEEL COLUMN SEE SHEET S701. "X" DENOTES LEVEL OF COLUMN TERMINATION "R" = ROOF, "P" = PARAPET


[illegible]

CONSULTANT



HOHBACH-LEWIN, INC.
STRUCTURAL CIVIL ENGINEERS
545 Sansome Street, Suite 850
San Francisco, CA 94111
(415) 318-8520

ARCHITECT/ENGINEER OF RECORD

 **BANCROFT ARCHITECTS & ENGINEERS**
VA CONTRACT NO. 36C26319D0044

3300 Dundee Road
Northbrook, IL 60062
T: 847.952.9362
www.bancroft-ae.com
BAE PROJECT NO. 18-121

Office of
Construction
and Facilities
Management

VA | U.S. Department
of Veterans Affairs

Drawing Title	GENERAL STRUCTURAL NOTES
Approved: Project Director	

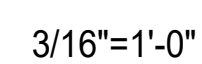
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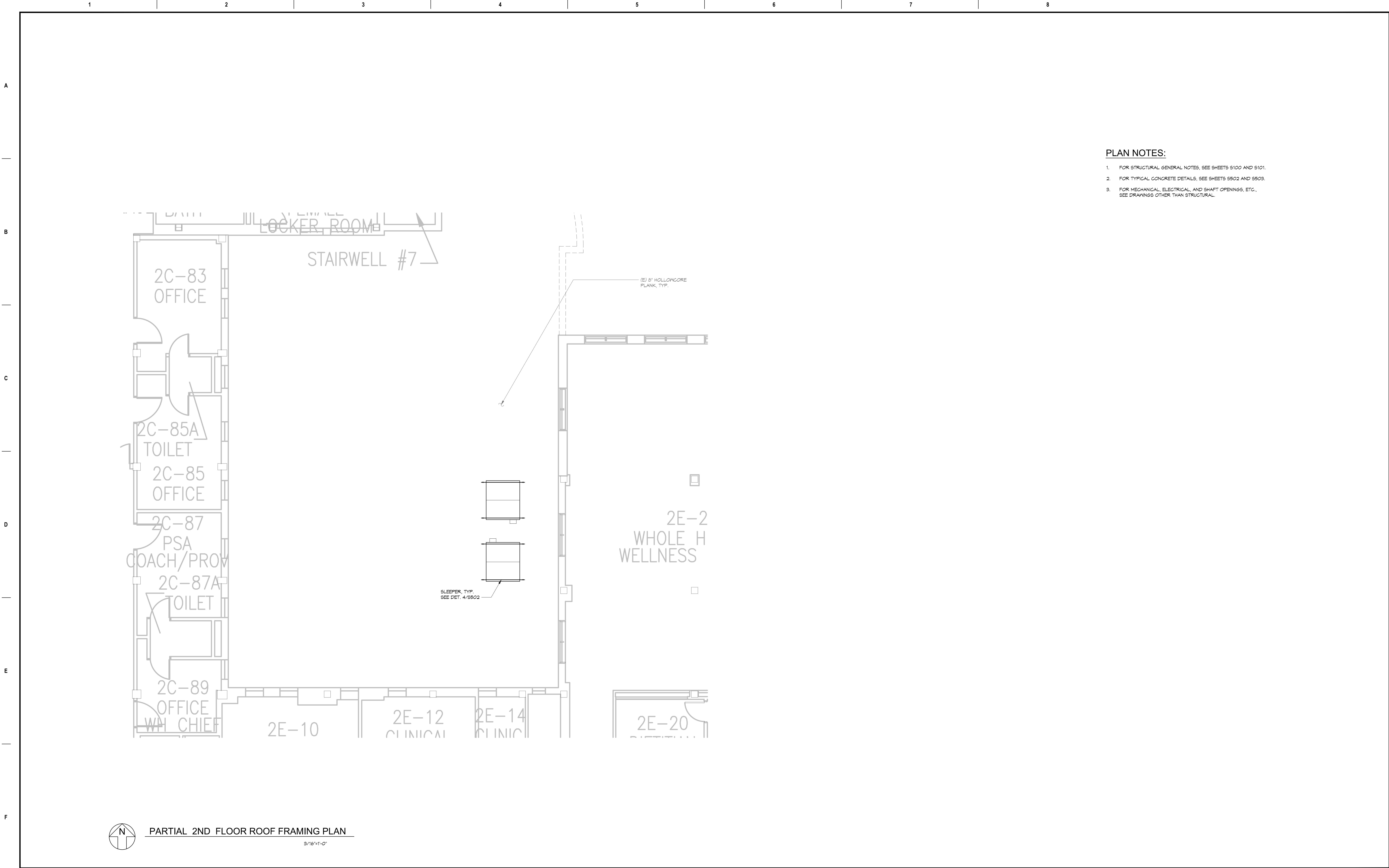
BUILDING FULLY
SPRINKLERED

Project Title		
EHRM INFRASTRUCTURE UPGRADES - TIER 2		
Location		
FARGO VA HEALTH CARE SYSTEM		
Issue Date	Checked	Drawn
01/16/2024		

Project Number
437-21-210
Building Number
Drawing Number
S101




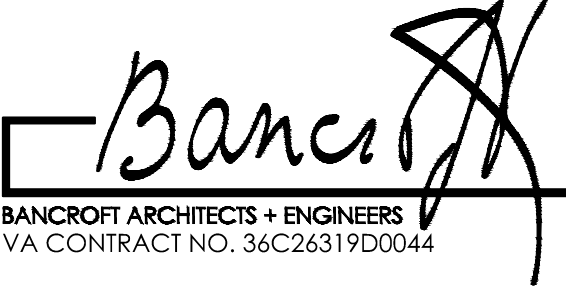
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Building Number	
Drawing Number	S200




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ISSUE FOR BID	01-16-24
Revisions:	Date:

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ARCHITECT/ENGINEER OF RECORD
 Bancroft ARCHITECTS + ENGINEERS VA CONTRACT NO. 36C26319D0044 3300 Dundee Road Northbrook, IL 60062 T: 847.952.9362 www.bancroft-ae.com BAE PROJECT NO. 18-121

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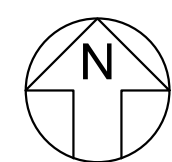
Drawing Title
PARTIAL 2ND FLOOR ROOF FRAMING PLAN
Approved: Project Director

Phase
ISSUE FOR BID
BUILDING FULLY SPRINKLERED

Project Title
EHRM INFRASTRUCTURE UPGRADES - TIER 2
Location
FARGO VA HEALTH CARE SYSTEM
Issue Date
01/16/2024
Checked
Drawn

ISSUE FOR BID - 01/16/2024
Project Number
437-21-210
Building Number
Drawing Number
S201


1. FOR STRUCTURAL GENERAL NOTES, SEE SHEETS S100 AND S101.
2. FOR TYPICAL CONCRETE DETAILS, SEE SHEETS S502 AND S503.
3. FOR MECHANICAL, ELECTRICAL, AND SHAFT OPENINGS, ETC., SEE DRAWINGS OTHER THAN STRUCTURAL.



PARTIAL 3RD FLOOR ROOF FRAMING PLAN


ISSUE FOR BID	01-16-24
Revisions:	Date:

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HOHBACH-LEWIN, INC.
STRUCTURAL & CIVIL ENGINEERS
545 Sansome Street, Suite 850
San Francisco, CA 94111
(415) 319-8520

ARCHITECT/ENGINEER OF RECORD


 *Bancroft*

BANCROFT ARCHITECTS + ENGINEERS
VA CONTRACT NO. 36C28319D0044

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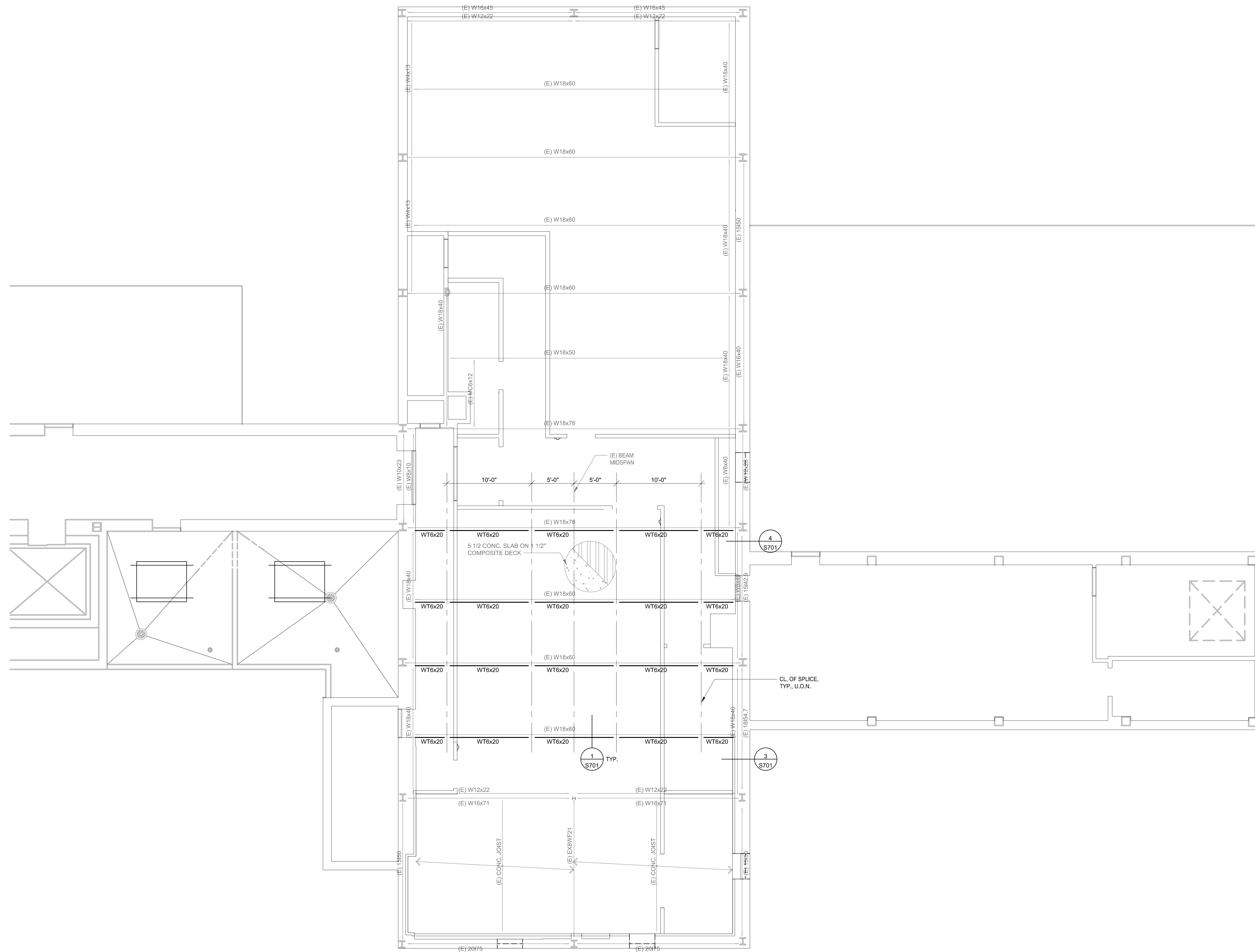
VA | U.S. Department
of Veterans Affairs

Drawing Title
Approved: Project Director

Phase	ISSUE FOR BID
	BUILDING FULLY SPRINKLERED

Project Title			
EHRM INFRASTRUCTURE UPGRADES - TIER 2			
Location			
FARGO VA HEALTH CARE SYSTEM			
Issue Date	Checked	Drawn	
01/16/2024			

Project Number
437-21-210
Building Number
Drawing Number
S202




PLAN NOTES:


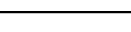
1. FOR STRUCTURAL GENERAL NOTES, SEE SHEETS S100 AND S101.
2. FOR TYPICAL CONCRETE DETAILS, SEE SHEETS S502 AND S503.
3. FOR MECHANICAL, ELECTRICAL, AND SHAFT OPENINGS, ETC.,
SEE DRAWINGS OTHER THAN STRUCTURAL.


PARTIAL 4TH FLOOR FRAMING PLAN

ISSUE FOR BID	01-16-24
Revisions:	Date:

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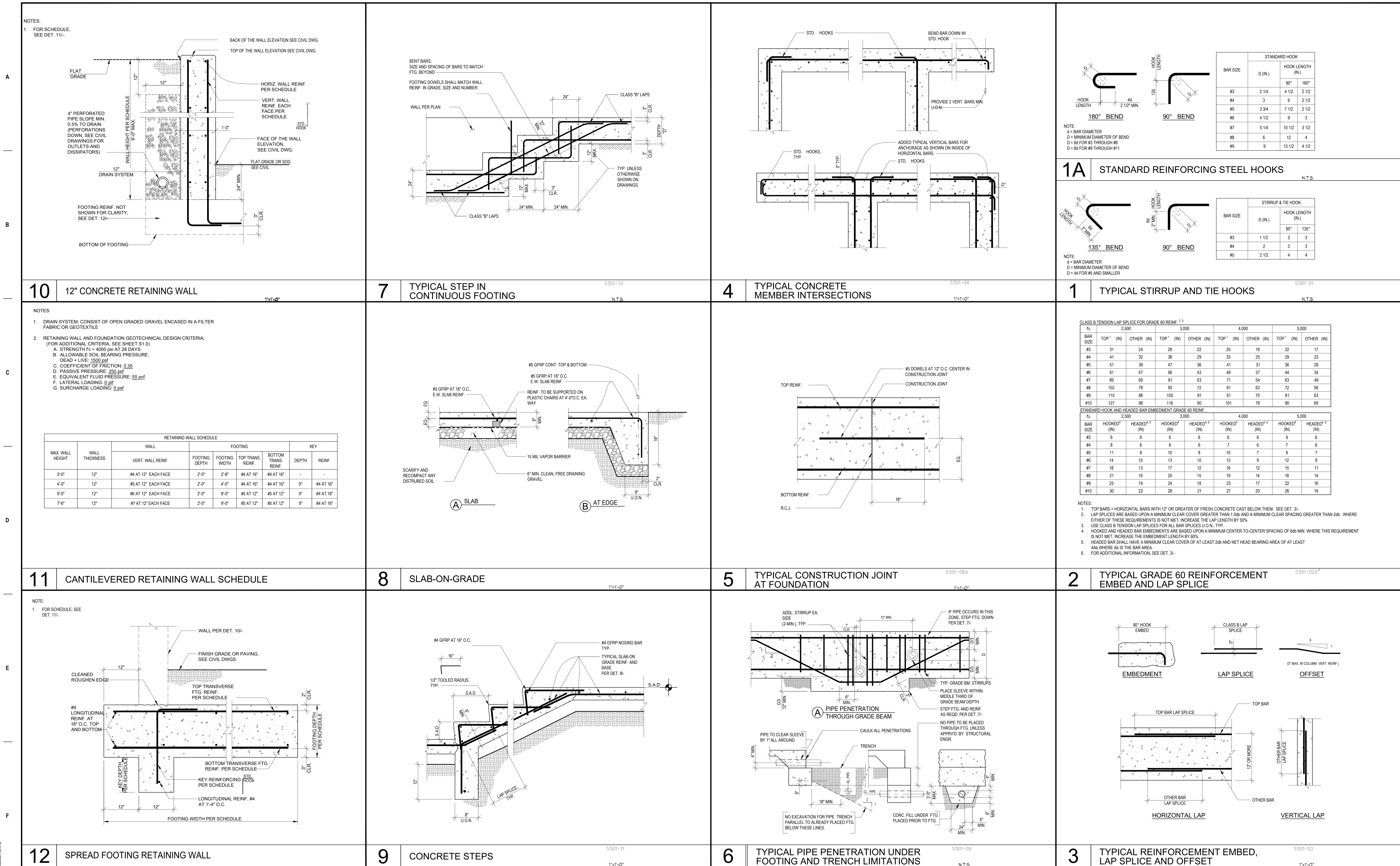
VA | U.S. Department
of Veterans Affairs

Drawing Title	
Approved: Project Director	

Phase	ISSUE FOR BID
	BUILDING FULLY SPRINKLERED

Project Title		
EHRM INFRASTRUCTURE UPGRADES - TIER 2		
Location		
FARGO VA HEALTH CARE SYSTEM		
Issue Date	Checked	Drawn
01/16/2024		

Project Number
437-21-210
Building Number
Drawing Number
S203



A					NOTES: 1. CONTRACTOR TO X-RAY SLAB TO FIND REINFORCEMENT PRIOR TO DRILLING.			
	10		7		4	EQUIPMENT SUSPENDED FROM HOLLOW CORE PLANKS	1	HSS ENCLOSURE BASE CONNECTION
B								
C							2A	
D								
E								
F								
	12		9		6		3	ENCLOSURE FOOTING

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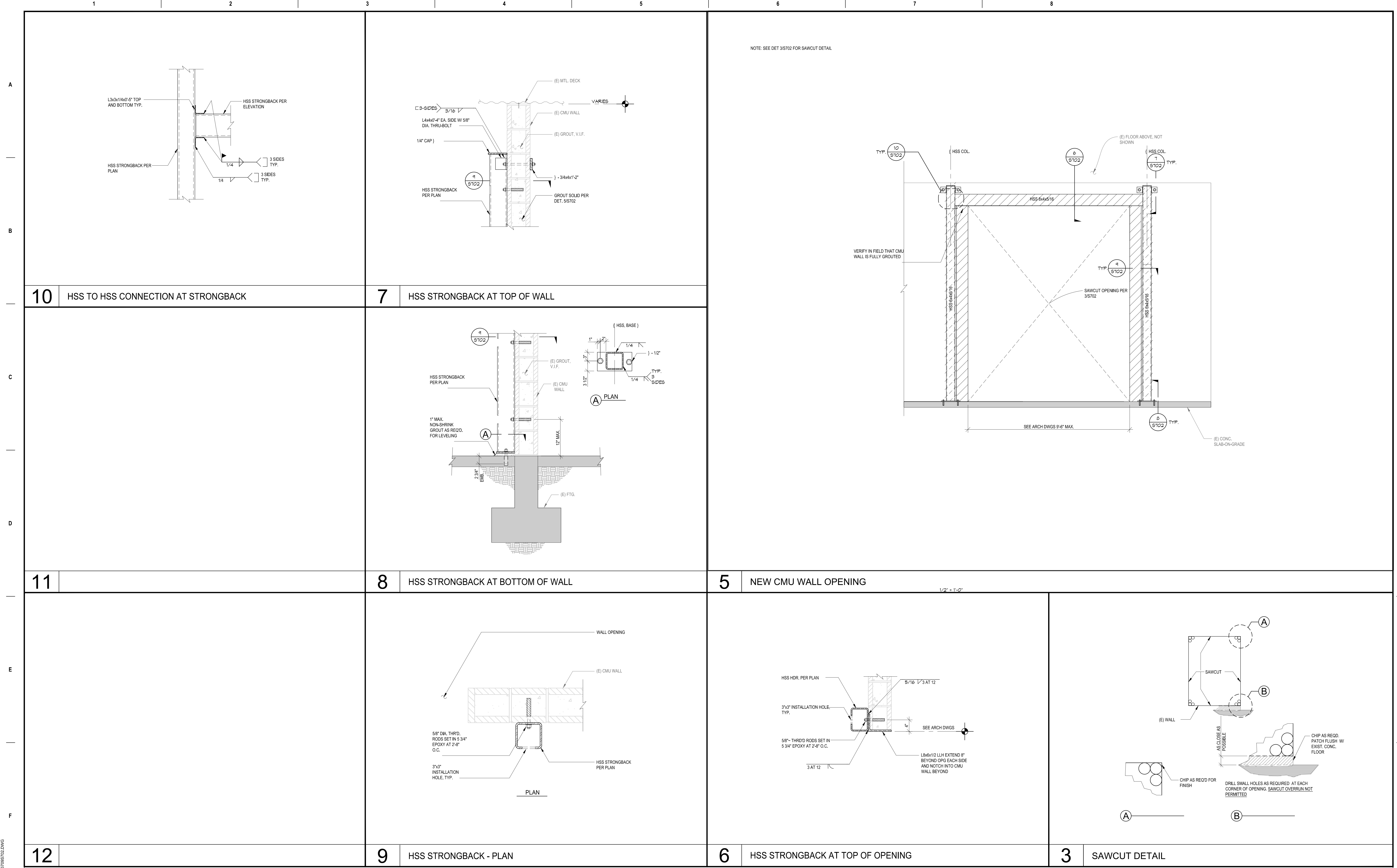
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ISSUE FOR BID	01-16-24														
Revisions:	Date:														
VA FORM 08 - 6231		1	2	3	4	5	6	7	8	9					

A							<p>NOTES:</p> <p>1. WELD LAST 8' OF WT, TYP EA. END.</p>	
	10		7		4	EXISTING BEAM / COLUMN CONN. N.T.S.	1	EXISTING BEAM RETRO FIT N.T.S.
C							<p>NOTES:</p> <p>1. SPLICE SHALL NOT BE LOCATED WITHIN 5FT OF EXISTING BEAM MIDSPAN.</p>	
	11				5	METAL DECK TO HSS JAMB N.T.S.	2	SPLICE DETAIL 1\"/>
E								
	12		9	GENERATOR EXHAUST SUPPORT FRAME N.T.S.	6		3	EXISTING BEAM TO BEAM CONNECTION 1\"/>

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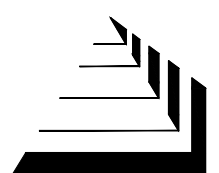
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Revisions:	Date:


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 U.S. Department of Veterans Affairs

Drawing Title

STEEL DETAILS

Approved: Project Director

Phase

ISSUE FOR BID

BUILDING FULLY SPRINKLERED

Project Title

EHRM INFRASTRUCTURE UPGRADES - TIER 2

Location

FARGO VA HEALTH CARE SYSTEM

Issue Date

01/16/2024

Checked

Drawn

ISSUE FOR BID - 01/16/2024

Project Number

437-21-210

Building Number

Drawing Number

S702