

014200 – ABBREVIATIONS, SYMBOLS & ACRONYMS

THE FOLLOWING DEFINITIONS APPLY UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DOCUMENTS:

#	POUNDS
AB	ANCHOR BOLT
ADDL	ADDITIONAL
ADJ	ADJUST
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ARCH	ARCHITECTURAL
BLG	BUILDING
BLKG	BLOCKING
BEAR	BEARING
BN	BOUNDARY NAILING
B.O.	BOTTOM OF
BOTT (B)	BOTTOM
BTWN	BETWEEN
CB	CAMBER
CJ	CAST-IN PLACE
CJ, CP	CONTROL/CONSTRUCTION JOINT
CJP, CP	COMPLETE JOINT PENETRATION
CL	CENTRAL
CEILING	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
CTR(D)	CENTERED
DB	BAR DIAMETER
DBL	DOUBLE
DC	DEMAND CRITICAL
DEMO	DEMOLISH, DEMOLITION
DIA, DIAM	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DM	DITTO
DWG	DRAWING
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EMBED	EMBEDMENT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATION
EN	EDGE NAILING
E.O.	EDGE OF
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXIST, (E)	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FLR	FLOOR
FND	FIELD NAILING
FND	FOUNDATION
F.O.	FACE OF
FT	FOOT
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GLBM	GLUED-LAMINATED BEAM
GR	GROUT
HK	HOOK
HORIZ, (H)	HORIZONTAL
HS	HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SECTION
HT	HEIGHT
ID	INSIDE DIAMETER
IN	INCH
INT	INTERIOR
JOM	JOINT
K, KIPS(S)	KILOPOUND
KLF	KIPS PER LINEAR FOOT
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
L	ANGLE
LB, LBS	POUNDS
LF	LINEAR FEET
LFRS	LATERAL FORCE RESISTING SYSTEM
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LWC	LIGHT WEIGHT (CONCRETE)
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MW	MEDIUM WEIGHT
(N)	NEW
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT (CONCRETE)
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OPP	OPPOSITE
PAF, PDF	POWDER DRIVEN / POWER ACTUATED FASTENER
PJP, PP	PARTIAL JOINT PENETRATION
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
REF	REFERENCE
REINF	REINFORCING, REINFORCEMENT
REQD	REQUIRED
SCHED	SCHEDULE
SM	SIMILAR
SDS, SMS	SELF DRILLING / SHEET METAL SCREW
(S)EOR	(STRUCTURAL) ENGINEER OF RECORD
SN	SILL NAILING
SOG	SLAB ON GRADE
SPECS	SPECIFICATIONS
SS	SQUARE
STD	STANDARD
STIFF	STIFFENER
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
(T)	TOP
T&B	TOP AND BOTTOM
T.O.	TOP OF
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT, (V)	VERTICAL
VF	VERIFY IN FIELD
W, WF	WITH
W/O	WITHOUT
WP	WORK POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

LEGENDS

MATERIALS

	CAST-IN PLACE CONCRETE		NUMBER REFERENCE SECTION OR DETAIL
	CONCRETE BLOCK		SHEET REFERENCE
	EARTH		NUMBER REFERENCE FULL HEIGHT SECTION
	METAL STUD		SHEET REFERENCE
	DEPRESSED/RAISED ELEVATION		NUMBER REFERENCE FULL HEIGHT ELEVATION
			SHEET REFERENCE
			FINISH ELEVATION

NAILING SCHEDULE

CONNECTION		
1. JOIST TO SILL OR GIRDER, TOENAIL		3-8d
2. BRIDGING TO JOIST, TOENAIL EACH END		2-8d
3. 1" X 6" SUBFLOOR OR LESS TO EACH JOIST, FACE NAIL		2-8d
4. WIDER THAN 1" X 6" SUBFLOOR TO EACH JOIST, FACE NAIL		3-8d
5. 2" SUBFLOOR TO JOIST OR GIRDER, BLIND AND FACE NAIL		2-16d
6. SOLE PLATE TO JOIST OR BLOCKING, TYPICAL FACE NAIL 16d AT 16" O.C. SOLE PLATE TO JOIST OR BLOCKING, AT BRACED WALL PANELS 3-16d PER 16"		
7. TOP PLATE TO STUD, END NAIL		2-16d
8. STUD TO SOLE PLATE 4-8d, TOENAIL OR 2-16d, END NAIL		
9. DOUBLE STUDS, FACE NAIL		2-16d AT 16" O.C.
10. DOUBLED TOP PLATES, TYPICAL FACE NAIL		16d AT 24" O.C.
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE, TOENAIL		3-8d
12. RIM JOIST TO TOP PLATE, TOENAIL		8d AT 6" O.C.
13. TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL		2-16d
14. CONTINUOUS HEADER, TWO PIECES 16d AT 16" O.C. ALONG EACH EDGE		
15. CEILING JOISTS TO PLATE, TOENAIL		3-8d
16. CONTINUOUS HEADER TO STUD, TOENAIL		4-8d
17. CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL		3-16d
18. CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL		3-16d
19. RAFTER TO PLATE, TOENAIL		3-8d
20. 1" BRACE TO EACH STUD AND PLATE, FACE NAIL		2-8d
21. 1" X 8" SHEATHING OR LESS TO EACH BEARING, FACE NAIL		3-8d
22. WIDER THAN 1" X 8" SHEATHING TO EACH BEARING, FACE NAIL		3-8d
23. BUILT-UP CORNER STUDS 16d AT 24" O.C.		
24. BUILT-UP GIRDER AND BEAMS 20d @ 32" O.C. @ TOP AND BOTTOM AND STAGGERED 2-20d @ ENDS & @ EA SPLICE		
25. 2" PLANKS 2-16d AT EACH BEARING		
26. WOOD STRUCTURAL PANELS AND PARTICLEBOARD: SUBFLOOR AND WALL SHEATHING (TO FRAMING): 1/2" AND LESS 4 6d 3 19/32" - 3/4" 8d OR 6d 4 8d 5 7/8" - 1" 1 1/8" - 1 1/4" COMBINATION SUBFLOOR-UNDERLAYMENT (TO FRAMING): 3/4" AND LESS 6d 5 7/8" - 1" 1 1/8" - 1 1/4" 10d OR 8d 5		
27. PANEL SIDING (TO FRAMING) 1/2" OR LESS 6d 8d 6		
28. FIBERBOARD SHEATHING: 1/2" NO. 11 ga 8 16 ga 9 NO. 11 ga 8 16 ga 9 25/32" NO. 16 ga 9 NO. 11 ga 8 NO. 16d ga 9		
29. INTERIOR PANELING 3/8" 4d 10 1/4" 6d 11		

051220 – STEEL WELDING

- WELDING PROCEDURES, ELECTRODES AND WELDER QUALIFICATIONS SHALL CONFORM TO THE "CODE FOR WELDING IN BUILDING CONSTRUCTION," AMERICAN WELDING SOCIETY (AWS), D1.1 AND THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS"
- ALL WELDERS SHALL HAVE EVIDENCE OF PASSING THE AWS STANDARD QUALIFICATION TESTS, AND SHALL BE CERTIFIED FOR THE WORK THEY ARE PERFORMING IN ACCORDANCE WITH THE AUTHORITY HAVING JURISDICTION.
- PROJECT WELDING SHALL BE PERFORMED ONLY IN ACCORDANCE WITH WELDING PROCEDURE SPECIFICATIONS (WPS) SUBMITTED BY THE CONTRACTOR AND REVIEWED BY THE SEOR AND PROJECT WELDING INSPECTOR. THE WPS SHALL BE IN ACCORDANCE WITH AWS D1.1-D1.4 CURRENT EDITION.
- WELDING OF STRUCTURAL STEEL SHALL BE PERFORMED PER AWS D1.1 USING E70XX ELECTRODES UNLESS OTHERWISE NOTED.
- WELDING OF REINFORCING BARS SHALL BE PERFORMED PER AWS D1.4 USING E90XX ELECTRODES.
- WELDING OF METAL DECK AND LIGHT GAGE STEEL SHALL BE IN ACCORDANCE WITH AWS D1.3.
- WHERE WELDED METAL DECK AT LIGHT GAGE ARE SPECIFIED TO STEEL SUPPORTS USE PUDDLE WELDS OR WELDED STUDS SPACED AS NOTED. EFFECTIVE AREA OF PUDDLE WELDS SHALL BE NOT LESS THAN 1/2" EFFECTIVE DIAMETER AND FOR SEAM WELDS NOT LESS THAN 3/8" WIDE BY 1" LONG.
- WELDS SHALL BE TESTED PER AWS D1.1 WITH MAGNETIC PARTICLE TESTING AT A RATE OF 10% UNLESS NOTED OTHERWISE.
- ALL FULL PENETRATION WELDS SHALL BE TESTED PER AWS D1.1 WITH ULTRASONIC TESTING.
- ALL GROOVE OR BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS. UNO. EXPOSED BUTT WELDS SHALL BE GROUND SMOOTH.
- ALL EXPOSED WELDS ON ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10.
- FIELD WELDS HAVE BEEN INDICATED WHERE THEY ARE EXPECTED TO OCCUR. THE CONTRACTOR SHALL DETERMINE THE ACTUAL FIELD WELDING NECESSARY TO COMPLETE THE PROJECT AND INCLUDE ALL ASSOCIATED COSTS WITHIN THE BASE PRICE.
- REMOVE ALL WELD TABS AND WELD BACKING BARS UNLESS NOTED OTHERWISE. WHERE BACKING IS REMOVED THE WELD ROOT SHALL BE BACKGROUGED TO SOUND METAL AND FILLED WITH WELD METAL.
- ALL WELDING SHALL BE SPECIALLY INSPECTED BY AN AWS-CWI QUALIFIED INSPECTOR APPROVED BY DSA

053100 – STEEL DECK

- LIGHT GAGE STEEL DECKING AND ACCESSORIES SHALL BE FABRICATED OF SHEET METAL CONFORMING TO ASTM A653 / A1063 SS GRADE 33 WITH GALVANIZED G60 COATING, OR ASTM A1008 / A1039 SS GRADE 33 WITH A SHOP-PRIMER AND FINISH COATING AS SPECIFIED BY THE ARCHITECT.
- SEE STEEL DECK SCHEDULE FOR DECK TYPE, GAGE, MINIMUM SECTION PROPERTIES, AND ATTACHMENT.
- SEE TYPICAL DETAILS FOR REINFORCEMENT AND SUPPLEMENTAL STEEL REQUIREMENTS AT DECK OPENINGS. OPENINGS SHOWN ON THE STRUCTURAL DRAWINGS INDICATE THE GENERAL LAYOUT. ARRANGEMENT ONLY. THE CONTRACTOR SHALL COORDINATE AND VERIFY THE FINAL SIZE AND LOCATIONS OF DECK OPENINGS WITH OTHER CONSTRUCTION DRAWINGS AND VARIOUS TRADES.
- EDGE OF DECK CLOSURE PLATES SHALL BE HELD WITHIN ± 1/2" OF THE DIMENSIONS REQUIRED ON THE ARCHITECTURAL DRAWINGS. CONFIRM THE CUT LENGTH OF DECK AND EDGE OF DECK LOCATIONS FROM FIXED SURVEY REFERENCE LINES.
- PROVIDE 2" MINIMUM FULL BEARING AT ALL SUPPORTS PERPENDICULAR TO THE DECK DIRECTION. AT SUPPORTS PARALLEL TO DECK OR GIRDER DECK SHALL BE ALIGNED. OR GIRDER FILLER. IF INSTALLED FOR REQUIRED ATTACHMENTS. END LAPS SHALL BE 2" MINIMUM AND OCCUR AT SUPPORTS.
- DECK SHALL BE INSTALLED CONTINUOUS OVER 3 OR MORE EQUALLY SPACED SUPPORTS WHERE FRAMING PERMITS. UNFILLED DECK SHALL HAVE A 2 SPAN MINIMUM.
- PROVIDE ALL NECESSARY ACCESSORIES INCLUDING POUR STOPS, GIRDER FILLERS, COLUMN CLOSURES, SUMP PANS, CELLULOSE/DECK EDGE CLOSURES, INSULATION, ETC. AS INDICATED ON THE CONSTRUCTION DOCUMENTS AND ACCORDING TO SDI PUBLICATION No. 31. METAL ACCESSORIES SHALL HAVE THE SAME GAGE AS DECKING UNO.
- SPECIAL INSPECTIONS AND QUALIFICATION OF WELDING SPECIAL INSPECTORS FOR COLD-FORMED STEEL FLOOR AND ROOF DECK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STEEL DECK INSTITUTE (SDI) QA/QC STANDARDS.

061000 – ROUGH CARPENTRY WOOD FRAMING

- ALL WOOD MEMBERS SHALL BE GRADED PER ASTM D245 AND COMPLY WITH USDOC PS 20. DOUGLAS FIR-LARCH (DF) SHALL BE FACTORY MARKED WITH WMPA OR WCLB STAMP. OTHER SPECIES SHALL BE GRADED BY AN AGENCY CERTIFIED BY THE ALSO BOARD OF REVIEW.
- GRADES SHALL BE AS SPECIFIED IN THE WOOD FRAMING GRADE SCHEDULE UNLESS NOTED OTHERWISE.
- ALL LUMBER SHALL BE STAMPED "S-DRY" AND MOISTURE CONTENT OF SAWN LUMBER SHALL NOT EXCEED 19% WHEN FRAMING STARTS OR SHEATHING IS APPLIED. ANY NONCOMPLIANT WORK SHALL BE REJECTED AND REFRAMED WITH ACCEPTABLE LUMBER.
- SILL PLATES, NAILERS, AND SIMILAR MEMBERS IN CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESERVATIVE TREATED (PT) PER THE APPLICABLE AWWA STANDARD U1 AND M4 REQUIREMENTS FOR THE SPECIES, PRODUCT, PRESERVATIVE AND END USE. PT WOOD SHALL BE QUALITY MARKED WITH AN ALSTWP ACCREDITED INSPECTION AGENCY STAMP.
- CUTS AND PENETRATIONS IN TREATED WOOD FRAMING SHALL BE FIELD TREATED.
- SEE TYPICAL DETAILS FOR ACCEPTABLE WOOD FRAMING PENETRATION, NOTCHING AND SPLICES. ANY OTHER FIELD MODIFICATIONS TO WOOD FRAMING NOT SHOWN ON THE DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE SEOR AND WRITTEN APPROVAL OBTAINED PRIOR TO WORK.
- NAILS SHALL BE FULL HEAD STANDARD COMMON TYPE UNO, CONFORMING TO ASTM F1667. NAIL SPACING, EDGE AND END DISTANCES SHALL BE SUFFICIENT TO PREVENT SPLITTING OF THE WOOD. SEE THE WOOD FRAMING NAILING SCHEDULE FOR MINIMUM CONNECTION REQUIREMENTS.
- SHEATHING NAILS SHALL BE DRIVEN WITH HEAD OF THE NAIL FLUSH TO THE SURFACE OF PANEL, AND LOCATED AT LEAST 3/8" FROM EDGES OF PANELS. 8d AND 10d SHEATHING NAILS MAY BE SHORTER THAN STANDARD LENGTH, BUT NOT LESS THAN 1-1/2" + SHEATHING THICKNESS.
- BOLTS IN WOOD SHALL BE ASTM A307 STANDARD UNO. BOLTS AND LAG SCREWS SHALL BE TIGHTENED AT TIME OF ERECTION, AND RETIGHTENED BEFORE CLOSING IN AND COMPLETION OF THE WORK. HOLES IN WOOD AND STEEL FOR BOLTS SHALL NOT EXCEED THE NOMINAL BOLT DIAMETER PLUS 1/16".
- HOLES IN WOOD FOR LAG SCREWS GREATER THAN 3/8" DIAMETER SHALL BE FIRST BORED TO THE SAME DIAMETER AND DEPTH AS THE SHANK, AND THEN BORED THE LENGTH OF THE THREADED PORTION TO 2/3 THE DIAMETER OF THE SHANK. PROVIDE LEAD HOLES FOR WOOD SCREWS WHERE REQUIRED TO AVOID SPLITTING. DO NOT HAMMER SCREWS INTO PLACE.
- STANDARD CUT STEEL WASHERS SHALL BE PROVIDED UNDER HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS WHICH BEAR ON WOOD UNO. ANCHOR BOLTS IN SILL PLATES OF SHEAR WALLS AND EXTERIOR WALLS SHALL HAVE A STEEL PLATE WASHERS UNDER EACH NUT NOT LESS THAN 0.229"x3" x3" IN SIZE, EXTENDING TO WITHIN 1/2" OF THE EDGE OF SILL PLATE ON THE SIDES WITH WOOD SHEATHING.
- NAILS PLACED INTO PT WOOD OR USED FOR ATTACHMENT OF EXTERIOR WALL SHEATHING SHALL BE HOT-DIPPED ZINC-COATED GALVANIZED STEEL PER ASTM A153 OR STAINLESS STEEL. SCREWS AND OTHER FASTENERS IN TREATED WOOD SHALL BE MECHANICALLY GALVANIZED STEEL PER ASTM B665 CLASS S5 MINIMUM.
- PROVIDE BLOCKING AND BRIDGING AS REQUIRED BY THE BUILDING CODE AND ERECTION STABILITY.
- TYPICAL WOOD FRAMING HARDWARE SHALL BE BY SIMPSON STRONG-TIE OR SEOR APPROVED EQUAL.
- ALL STRUCTURAL PLYWOOD PANELS SHALL HAVE EXTERIOR EXPOSURE 1 AND SHALL BE MANUFACTURED USING EXTERIOR GLUE.
- CUTTING OR NOTCHING OF WOOD MEMBERS IS NOT PERMITTED UNLESS SPECIFICALLY DETAILED ON THESE PLANS.
- ALL NAILS SHALL BE COMMON NAILS UNLESS NOTED OTHERWISE.
- RETIGHTEN BOLTS BEFORE CLOSING IN.

WOOD FRAMING GRADE SCHEDULE

FRAMING USE	MINIMUM GRADE, UNO
LOAD BEARING STUDS < 12 FEET TALL	DF #2
LOAD BEARING STUDS > 12 FEET TALL	DF #1
JOISTS, RAFTERS, PURLINS, BEAMS AND STRINGERS	DF #1
LEDGERS	DF #1
POST AND TIMBER	DF #1
NON-LOAD BEARING STUDS, BLOCKING, BRACING AND FURRING	DF #2
SILL PLATES AND NAILERS	DF #2

STRUCTURAL OBSERVATION NOTES

- THE STRUCTURAL ENGINEER SHALL PERFORM "STRUCTURAL OBSERVATION" FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AND COMPLETION OF INTERIM VERIFIED REPORTS PER DSA REQUIREMENTS AT SIGNIFICANT CONSTRUCTION STAGES AND AT COMPLETION OF THE STRUCTURAL SYSTEM. THE FOLLOWING SIGNIFICANT CONSTRUCTION STAGES REQUIRE A SITE VISIT AND AN OBSERVATION REPORT FROM THE STRUCTURAL ENGINEER:
 - THE PLACEMENT OF REINFORCING STEEL BEFORE THE FIRST CONCRETE SPREAD FOOTING POUR.
 - THE PLACEMENT OF REINFORCING STEEL AND EMBEDS PRIOR TO THE FIRST GROUT POUR.
 - THE PLACEMENT OF STRUCTURAL STEEL BEFORE INSTALLATION OF ROOF METAL DECK.
- SITE OBSERVATIONS BY THE GEOTECHNICAL ENGINEER AND COMPLETION OF INTERIM VERIFIED REPORTS PER DSA REQUIREMENTS ARE REQUIRED FOR THE FOLLOWING:
 - ALL FOUNDATION BEARING AND FILL MATERIALS PRIOR TO THE PLACING OF CONCRETE.
 - PRIOR TO THE CONTRACTOR REQUESTING A FOUNDATION INSPECTION, THE GEOTECHNICAL ENGINEER SHALL ADVISE THE BUILDING OFFICIAL IN WRITING THAT THE BUILDING PAD WAS PREPARED IN ACCORDANCE WITH THE SOILS REPORT AND
 - THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILL, RECOMPACTED AND COMPACTED AND
 - THE FOUNDATION EXCAVATIONS COMPLY WITH THE INTENT OF THE GEOTECHNICAL REPORT AND
 - THE SOILS CONDITIONS ARE SUBSTANTIALLY IN CONFORMANCE WITH THE GEOTECHNICAL INVESTIGATION REPORT AND
 - THE FOUNDATION EXCAVATIONS EXTEND TO THE PROPER DEPTH AND BEARING STRATA.
- COPIES OF EACH "STRUCTURAL OBSERVATION" REPORT, STAMPED AND SIGNED BY THE STRUCTURAL ENGINEER (LICENSED IN CALIFORNIA) SHALL BE SENT TO THE ARCHITECT FOR DISTRIBUTION TO THE CONTRACTOR, BUILDING OFFICIAL, AND OWNER.
- A FINAL "STRUCTURAL OBSERVATION" REPORT WILL BE SENT TO THE ARCHITECT FOR DISTRIBUTION TO THE CONTRACTOR, BUILDING OFFICIAL, AND OWNER THAT STATES THAT THE SITE VISITS HAVE BEEN MADE AND REPORT ANY DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

013300 – STRUCTURAL SUBMITTALS

- REVIEW OF SHOP DRAWINGS AND SUBMITTALS BY THE SEOR IS FOR GENERAL CONFORMANCE WITH THE INFORMATION GIVEN IN THE CONTRACT DOCUMENTS. SEE THE STRUCTURAL SUBMITTAL SCHEDULE AND PROJECT SPECIFICATIONS FOR REQUIREMENTS.
- SHOP DRAWINGS FOR ITEMS SPECIFIED ON THE STRUCTURAL DOCUMENTS SHALL BE SUBMITTED TO THE SEOR FOR REVIEW PRIOR TO FABRICATION. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING DIMENSIONS, AND ALL ERRORS OF DETAILING, FABRICATION, AND FIT UP OF STRUCTURAL MEMBERS INCLUDING COORDINATION WITH OTHER TRADES.
- SHOP DRAWINGS SUBMITTED TO THE SEOR SHALL CONSIST OF ELECTRONIC FILES AND/OR TWO HARDCOPY SETS. ALLOW 10 BUSINESS DAYS FOR REVIEW BY THE SEOR UPON RECEIPT UNLESS ADVANCE NOTICE IS PROVIDED AND A REDUCED TIMEFRAME AGREED UPON. THE SEOR WILL RETURN ONE SET OF REVIEWED ELECTRONIC FILES OR HARDCOPY. SCHEDULE ALLOWANCE FOR REVIEWS AND PROCESSING TIME BY THE ARCHITECT, OWNER OR OTHER DISCIPLINES MAY BE REQUIRED.
- SHOP DRAWINGS AND SUBMITTALS DO NOT CONSTITUTE CHANGE ORDERS. ANY PROPOSED DEVIATION FROM THE STRUCTURAL DOCUMENTS MUST BE SUBMITTED IN WRITING AS A REQUEST FOR SUBSTITUTION FOR APPROVAL BY THE SEOR.
- SUBSTITUTION REQUESTS FOR MATERIALS SPECIFIED ON THE STRUCTURAL DOCUMENTS MAY BE CONSIDERED WITH MATERIALS HAVING EQUIVALENT OR GREATER CAPACITY AND PERFORMANCE. CURRENT EVALUATION REPORTS AND PRODUCT INFORMATION SHALL BE PROVIDED TO THE SEOR DEMONSTRATING EQUIVALENT QUALITIES OF THE MATERIAL TO BE SUBSTITUTED.
- EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND- OR SEISMIC- LATERAL FORCE RESISTING SYSTEM (LFRS), DESIGNATED SEISMIC SYSTEM, OR A WIND- OR SEISMIC-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.
- THE STRUCTURAL SUBMITTAL SCHEDULE BELOW IS A SUMMARY LIST AND MAY NOT BE ALL INCLUSIVE OF SUBMITTALS REQUIRED FOR THIS PROJECT. PROVIDE ALL SUBMITTALS NOTED ON THE CONTRACT DOCUMENTS AND AS REQUIRED BY THE ARCHITECT, BUILDING OFFICIAL AND OWNER'S REPRESENTATIVE.

STRUCTURAL SUBMITTAL SCHEDULE

CONCRETE REINFORCEMENT	MANUFACTURER'S PRODUCT DATA, SPECIFICATIONS AND INSTALLATION PROCEDURES FOR PROPRIETARY MATERIALS AND REINFORCEMENT STEEL PRODUCERS CERTIFICATES OF MILL ANALYSIS, TENSILE AND BEND TESTS
REQD:	SHOP DRAWINGS FOR FABRICATION, BENDING AND PLACEMENT
REQD:	
C&I IN-PLACE CONCRETE	DESIGN MIX FOR EACH CONCRETE MIXTURE, INDICATING LOCATION OF USE MATERIAL, CERTIFICATES FOR CEMENT, AGGREGATES AND ADMIXTURES
REQD:	TEST CERTIFICATES FOR NON-POTABLE MIX WATER
REQD:	SHOP DRAWINGS FOR PROPOSED LOCATIONS OF CONSTRUCTION AND CONTROL JOINTS
REQD:	SHOP DRAWINGS FOR OVERHEAD ADHESIVE ANCHORS
REQD:	SHOTCRETE CONTRACTOR AND NOZZLEMENT QUALIFICATIONS
MASONRY	DESIGN MIX FOR GROUT
REQD:	MATERIAL TEST REPORTS
STRUCTURAL STEEL	MANUFACTURER'S MILL CERTIFICATES
REQD:	MILL TEST REPORTS
REQD:	SHOP DRAWINGS FOR FABRICATION AND ASSEMBLY OF MEMBERS
REQD:	ERECTION PLAN SEQUENCE AND PROCEDURES
REQD:	TEST REPORTS FOR SHOP AND FIELD WELDED AND BOLTED CONNECTIONS
STEEL DECK	SHOP DRAWINGS INDICATING TYPE, LAYOUT, DETAILS AND OPENINGS LARGER THAN 1 FOOT
COLD-FORMED METAL FRAMING	SHOP DRAWINGS INDICATING LAYOUT AND DETAILS
WELDING	WELDING PROCEDURE SPECIFICATIONS (WPS)
REQD:	CERTIFICATES FOR ALL WELDERS VERIFYING CURRENT AWS QUALIFICATIONS
M/E/P COORDINATION	SHOP DRAWINGS OF PROPOSED LAYOUT OF PIPES, DUCTS AND CONDUIT INDICATING DETAILS OF PENETRATIONS THROUGH STRUCTURE, GRAVITY AND SEISMIC FORCES OF SUPPORTS AND BRACING ON STRUCTURE
DEFERRED APPROVALS	DRAWINGS, AND AS APPLICABLE, STRUCTURAL DESIGN CALCULATIONS
REQD:	STOREFRONT.

016000 – PRODUCT SPECIFICATION

THE STRUCTURAL PRODUCT SCHEDULE INDICATES BASIS-OF-DESIGN MANUFACTURERS AND PRODUCTS FOR USE ON THIS PROJECT. WHERE STRUCTURAL PRODUCTS ARE NOT EXPLICITLY NAMED IN THE CONSTRUCTION DOCUMENTS, PROVIDE A LISTED PRODUCT.

PRODUCTS SHALL BE INSTALLED PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AS AMENDED BY THE REFERENCED PRODUCT ACCEPTANCE REPORTS (ICC, IAPMO, ETC.) FOR THE INTENDED USE.

AT CONTRACTOR'S OPTION, SUBSTITUTION REQUESTS MAY BE MADE FOR LIKE PRODUCTS WHICH DEMONSTRATE QUALITIES THAT EQUAL OR EXCEED THOSE OF SPECIFIED PRODUCTS.

STRUCTURAL PRODUCT SCHEDULE

TYPE	PRODUCT	ICC / IAPMO
EXPANSION ANCHOR TO CONCRETE	HILTI KWIK BOLT-1Z DEWALT/POWERS - STUD + SD2 HILTI HIT - RE 500-V3 SIMPSON STRONG - BOLT 2	ESR-2427 ESR-2502 ESR-2502 ESR-3037
ADHESIVE ANCHOR TO CONCRETE	HILTI HIT - HY 200 HILTI HIT - RE 500-V3 SIMPSON AT - XP SIMPSON SET - XP DEWALT/POWERS PURE+110	ESR-3187 ESR-3814 ESR-0263 ESR-3037 ESR-3298
SCREW ANCHOR TO CONCRETE	HILTI KWIK HUS-EZ, -EZ 1 SIMPSON TITEN HD DEWALT/POWERS WEDGE-BOLT+	ESR-3027 ESR-2713 ESR-2526
SCREW ANCHOR TO CONCRETE	ITW RED HEAD TAPOON DEWALT/POWERS TAPPER+	ESR-2202 ESR-3068
SHOTPIN	HILTI LOW VELOCITY X-1 ITW RAMSEY POWER-DRIVEN DEWALT/POWERS POWER DRIVEN	ESR-2269 ESR-1799 ESR-2024
WELD STUD	DEWALT/POWERS TAPPER+ NELSON CONNECTOR STUDS	ESR-2138 ESR-2866
WELD BAR ANCHORS	TFP TRU-WELD HEADED STUDS NELSON D2L DEFORMED BAR ANCHOR	ESR-2577 ESR-2907

050500 – POST INSTALLED ANCHORS

- UNLESS OTHERWISE NOTED ON THE DRAWINGS, THE FOLLOWING APPLIES TO ALL POST INSTALLED ANCHORAGE INTO HARDENED CONCRETE OR MASONRY WHICH INCLUDES TYPES SUCH AS EXPANSION, WEDGE, SLEEVE, ADHESIVE/EPOXY, PRINT, PIN, SCREW AND UNDERCUT.
- INSTALL PER THE MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPI) EXCEPT AS OTHERWISE STATED IN THE SPECIFIED PRODUCT REPORTS. USE INSTALLATION PROCEDURES FOR CRACKED CONCRETE CONDITIONS. DO NOT USE CORE DRILL BITS FOR ANCHOR HOLES WITHOUT PRIOR SEOR APPROVAL. COPIES OF INSTALLATION INSTRUCTIONS SHALL BE MAINTAINED ON SITE.
- PROVIDE GALVANIZED CARBON STEEL ANCHORS AT DRY INTERIOR LOCATIONS AND STAINLESS STEEL TYPE 304 OR 316 AT EXTERIOR / DAMP INTERIOR LOCATIONS. DOWELS TO RECEIVE CONCRETE COVER MAY BE PLAIN CARBON STEEL. ANCHORS SHALL BE CLEAN AND FREE OF DEFORMING SUBSTANCES.
- UNLESS OTHERWISE NOTED, THE SPECIFIED EMBEDMENT REFERS TO THE FINAL INSTALLED EFFECTIVE DEPTH "H", AS DEFINED IN THE PRODUCT REPORT. MINIMUM ANCHOR HOLE DEPTH FOR INSTALLATION MAY BE DEEPER. FOR EXPANSION ANCHORS PROVIDE A MINIMUM ANCHOR HOLE DEPTH PER THE MPI, BUT NOT LESS THAN THE SPECIFIED EMBEDMENT + THE SMALLER OF 1.5x DIAM OR 1 INCH, WHERE EMBEDMENT IS NOT SPECIFIED. PROVIDE AN EMBEDMENT DEPTH OF THE SMALLER OF 8 TIMES THE ANCHOR DIAMETER AND 2/3 THE THICKNESS OF THE MEMBER THE ANCHOR IS PLACED INTO.
- MAINTAIN A MINIMUM OF 2 INCHES FROM EXISTING REINFORCEMENT, CONDUIT, POST TENSIONING (WHERE OCCURS), ETC. PRIOR TO DRILLING, CORING OR SHOOTING PINS INTO EXISTING CONCRETE OR MASONRY USE NON DESTRUCTIVE TESTING TO LOCATE SUCH ITEMS. FOR INSTALLATION DEEPER THAN 3 INCHES USE GROUND PENETRATING RADAR OR X-RAY METHODS.
- WHERE THE SPECIFIED ANCHOR EMBEDMENT DEPTH, SPACING OR EDGE DISTANCE CANNOT BE PROVIDED, NOTIFY THE SEOR AND/OR:
- PATCH ABANDONED HOLES AND SPALLS USING NON-SHRINK GROUT AND REPAIR FINISHES AS REQUIRED. ANCHORS PENETRATING THROUGH WATER PROOFING OR VAPOR MEMBRANES SHALL BE SEALED OR FLASHED.
- INSTALL IN DRY CONCRETE OR MASONRY HAVING A MINIMUM AGE OF 21 DAYS UNLESS SPECIFICALLY APPROVED BY THE SEOR.
- ADHESIVE/EPOXY ANCHORS ON THIS PROJECT ARE NOT DESIGNED TO SUPPORT, OR INTENDED TO RESIST SUSTAINED TENSION LOADS.
- INSTALLERS PLACING OVERHEAD ADHESIVE ANCHORS SHALL BE CERTIFIED BY ACI OR APPROVED EQUIVALENT.
- DO NOT PLACE POST INSTALLED ANCHORS IN CMU WITHIN 1 1/2" OF HEAD JOINTS OR INTO UNGROUTED CELLS UNLESS SPECIFICALLY INDICATED ON THE STRUCTURAL DOCUMENTS.
- POWER ACTUATED FASTENER NOTES AND TESTING
 - POWER ACTUATED FASTENERS (SHOTPINS) DRIVEN INTO HARDENED CONCRETE SHALL BE HILTI "DS" 0.177 INCH DIAMETER WITH 1 INCH MINIMUM EMBEDMENT, SPACED AT LEAST 4 INCHES ON CENTER, AND AT LEAST 3 INCHES FROM EDGES UNLESS NOTED OTHERWISE. REFER TO ICC REPORT ESR-1063.
 - SHOT PINS MAY BE USED FOR SHEAR LOADS AND THEY MAY BE USED IN TENSION TO SUPPORT LOADS LESS THAN 100 POUNDS FOR MINOR LOADS LIKE ACOUSTICAL CEILINGS, DUCT WORK, CONDUIT, ETC. ANY SHOT ANCHORS MUST HAVE ICC APPROVAL FOR THE TYPE OF CONCRETE USED ON THE JOB. SHOT PINS MAY NOT BE USED IN CONCRETE CURBS. THE ALLOWABLE LOADS SHALL BE 100 POUNDS OR 80% OF ICC APPROVED VALUES WHICHEVER IS LESS. QUALIFICATION FOR USE OF ALL POWER-ACTUATED TOOLS MUST MEET ANSI A10.3 STANDARD AS REQUIRED BY THE MANUFACTURER AND ALL OSHA REQUIREMENTS.
 - TESTING: THE OPERATOR, TOOL, AND FASTENER SHALL BE PRE-QUALIFIED BY THE PROJECT INSPECTOR. HE SHALL OBSERVE THE TESTING OF THE FIRST 10 FASTENER INSTALLATIONS. A TEST "CUT" LOAD OF NOT LESS THAN TWICE THE DESIGN LOAD SHALL BE APPLIED TO THE FASTENER THEREAFTER. RANDOM TESTS UNDER THE PROJECT INSPECTOR'S SUPERVISION SHALL BE MADE APPROXIMATELY 1 IN 10 PINS. IF ANY PIN FAILS TESTING, TEST ALL PINS OF THE SAME CATEGORY NOT PREVIOUSLY TESTED UNTIL TWENTY (20) CONSECUTIVE PINS, THEN RESUME THE INITIAL TESTING FREQUENCY.
 - THE TEST LOAD SHALL BE APPLIED TO THE PIN IN SUCH A MANNER AS NOT TO RESIST THE SPALLING TENDENCY OF THE CONCRETE SURROUNDING THE PIN.

042200 - CONCRETE MASONRY UNIT

- CONCRETE MASONRY UNIT (CMU) BLOCK WALLS SHALL BE OF MATERIALS AND CONSTRUCTION IN CONFORMANCE WITH CHAPTER 21A OF THE BUILDING CODE, INCLUDING THE PROVISIONS OF TMS 402.602 AS ADOPTED.
- THE 28 DAY COMPRESSIVE STRENGTH OF CMU SHALL BE Fm = 2500 PSI MINIMUM AS DETERMINED USING THE UNIT STRENGTH METHOD, OR THE PRISM TEST METHOD PER ASTM C1314.
- CONCRETE MASONRY UNIT BLOCK SHALL CONFORM TO ASTM C90 MEDIUM WEIGHT.
- MORTAR SHALL CONFORM TO ASTM C270, TYPE M (1800 PSI), AND PROPORTIONED TO ACHIEVE THE SPECIFIED CMU Fm.
- GROUT SHALL CONFORM TO ASTM C478. GROUT 28-DAY COMPRESSIVE STRENGTH SHALL BE DETERMINED PER ASTM C019, WHICH SHALL EQUAL OR EXCEED THE SPECIFIED CMU Fm AND 2500 PSI. SLUMP SHALL BE BETWEEN 8 AND 11 INCHES, EXCEPT FOR SELF-CONSOLIDATING GROUT TEST SLUMP FLOW AND VISUAL STABILITY INDEX PER ASTM C1611.
- ALL CONCRETE BLOCK CELLS, BOTH VERTICAL AND HORIZONTAL SHALL BE FILLED SOLID WITH GROUT. VERTICAL CELLS TO BE GROUTED ARE TO BE ALIGNED AND UNOBSTRUCTED. REMOVE MORTAR PROTRUSIONS EXTENDING 1/2 INCH OR MORE INTO CELLS OR CAVITIES TO BE GROUTED.
- VERTICAL REINFORCING SHALL BRACED AT 6'-8" MAXIMUM AND AS REQUIRED TO PREVENT MOVEMENT WHILE GROUTING. HORIZONTAL BARS SHALL BE PLACED IN BOND BEAM UNITS AND TIED SECURELY TO VERTICAL BARS.
- ALL DOWELS, ANCHORS AND OTHER EMBEDMENTS TO BE SET IN CMU SHALL BE SECURED IN POSITION PRIOR TO GROUTING. NO WET SETTING, STABBING, RODDING OR OTHER MOVEMENT OF EMBEDDED ITEMS SHALL BE ALLOWED.
- UNLESS NOTED OTHERWISE, CONSTRUCT CMU USING HOLLOW PRECISION BLOCK 8" HIGH x 12" WIDE x 16" LONG NOMINAL PLACED IN RUNNING BOND WITH FACE SHELLS AND WEBS