

GENERAL STRUCTURAL CRITERIA

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE INTERNATIONAL BUILDING CODE ([2021 EDITION](#)).
2. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS, MEMBER SIZES, AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS ARE INTENDED AS GUIDELINES ONLY AND MUST BE FIELD VERIFIED BY THE CONTRACTOR OR THE CONTRACTOR'S SUBCONTRACTOR.
3. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE PLANS. ERECTION PLANS AND INSTALLATION OF SHORING SYSTEMS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND THE SHORING SUPPLIER. THE SHORING SHALL NOT BE SUPPORTING ON THE EXISTING STRUCTURE.

CHANGES IN FIELD CONDITIONS DURING CONSTRUCTION WILL REQUIRE RE-EVALUATION BY THE CONTRACTOR AND THEIR SHORING INSTALLER.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.
5. CONTRACTOR-INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ONLY ON SHOP DRAWINGS WILL NOT SATISFY THIS REQUIREMENT.

CONCRETE

6. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH [IBC SECTION 1905](#) AND ACI 301. CONCRETE SHALL ATTAIN A 28-DAY STRENGTH OF $F'_c = 3,000$ PSI AND MIX SHALL CONTAIN NOT LESS THAN 5-1/2 SACKS OF CEMENT PER CUBIC YARD AND SHALL BE PROPORTIONED TO PRODUCE A SLUMP OF 6" OR LESS.

THE MINIMUM AMOUNTS OF CEMENT MAY BE CHANGED IF A CONCRETE PERFORMANCE MIX IS SUBMITTED TO THE STRUCTURAL ENGINEER AND THE BUILDING DEPARTMENT FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE PERFORMANCE MIX SHALL INCLUDE THE AMOUNTS OF CEMENT, FINE AND COARSE AGGREGATE, WATER AND ADMIXTURES AS WELL AS THE WATER CEMENT RATIO, SLUMP, CONCRETE YIELD AND SUBSTANTIATING STRENGTH DATA IN ACCORDANCE WITH ACI 318 SECTIONS 19.2 & 26.4. THE USE OF A PERFORMANCE MIX REQUIRES BATCH PLANT INSPECTION, THE COST OF WHICH SHALL BE PAID BY THE GENERAL CONTRACTOR. REVIEW OF MIX SUBMITTALS BY THE ENGINEER OF RECORD INDICATES ONLY THAT INFORMATION PRESENTED CONFORMS GENERALLY WITH CONTRACT DOCUMENTS. CONTRACTOR OR SUPPLIER MAINTAINS FULL RESPONSIBILITY FOR SPECIFIED PERFORMANCE.

ALL CONCRETE WITH SURFACES EXPOSED TO STANDING WATER SHALL BE AIR-ENTRAINED WITH AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260, C494, C618, C989, AND C1017. TOTAL AIR CONTENT SHALL BE IN ACCORDANCE WITH ACI 318 TABLE 19.3.3.1.
7. REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENT S1), GRADE 60, $F_y = 60,000$ PSI. EXCEPTION: ANY BARS SPECIFICALLY NOTED ON THE DRAWINGS AS "GRADE 40", $F_y = 40,000$ PSI. GRADE 60 REINFORCING BARS INDICATED ON DRAWINGS TO BE WELDED SHALL CONFORM TO ASTM A706. REINFORCING COMPLYING WITH ASTM A615(S1) MAY BE WELDED ONLY IF MATERIAL PROPERTY REPORTS INDICATING CONFORMANCE WITH WELDING PROCEDURES SPECIFIED IN A.W.S. D1.4 ARE SUBMITTED.

8. REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI **SP-66** DETAILING MANUAL AND THE LATEST EDITION OF ACI 318. LAP ALL CONTINUOUS REINFORCEMENT 30 BAR DIAMETERS OR 2'-0" MINIMUM. PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS. LAP CORNER BARS 30 BAR DIAMETERS OR 2'-0" MINIMUM. LAP ADJACENT MATS OF WELDED WIRE FABRIC A MINIMUM OF 8" AT SIDES AND ENDS.

NO BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL BE FIELD BENT UNLESS SPECIFICALLY SO DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER.

9. CONCRETE PROTECTION (COVER) FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

FOOTINGS AND OTHER UNFORMED SURFACES, EARTH FACE3"
 FORMED SURFACES EXPOSED TO EARTH (I.E. WALLS BELOW GROUND) OR WEATHER..... (#6 BARS OR LARGER)2"
 (#5 BARS OR SMALLER) 1 1/2"

10. EMBEDDED ITEMS IN CAST-IN-PLACE CONCRETE: EMBEDDED ITEMS IN CAST-IN-PLACE CONCRETE SHALL NOT BE "WET-SET" (I.E. SET INTO RECENTLY POURED CONCRETE) UNLESS SPECIFICALLY APPROVED BY ENGINEER OF RECORD. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO, REINFORCING STEEL, ANCHOR BOLTS, DEFORMED BAR ANCHORS, EMBED PLATES, OR OTHER MISC STEEL SHAPES TO BE CAST INTO CONCRETE.

STEEL

11. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

	<u>TYPE OF MEMBER</u>	<u>ASTM SPECIFICATION</u>	<u>FY</u>
A.	CHANNELS, ANGLES, PLATES AND ALL-THREAD RODS.....	A36.....	36 KSI
B.	ANCHOR BOLTS (EMBEDDED IN MASONRY OR CONCRETE)	F1554 (GRADE 36).....	36 KSI
C.	COMMON BOLTS.....	A307 (GRADE A).....	

ALL STRUCTURAL STEEL FULLY EXPOSED TO WEATHER OR DISSIMILAR METALS SHALL BE HOT-DIPPED GALVANIZED TO MEET ASTM A123 or ASTM A153 STANDARDS. ALTERNATE RUST-INHIBITIVE COATINGS MAY BE SUBMITTED TO THE ARCHITECT & STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.

12. ALL STEEL IN DIRECT CONTACT WITH SOIL SHALL BE PAINTED WITH 3 LAYERS OF ASPHALTIC PAINT.

WOOD

13. FRAMING LUMBER SHALL BE KILN DRIED, AND GRADED AND MARKED IN CONFORMANCE WITH W.C.L.B. STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17, LATEST EDITION. FURNISH TO THE FOLLOWING MINIMUM STANDARDS, UNLESS OTHERWISE NOTED ON THE PLANS:

JOISTS: (2 X MEMBERS).....HEM FIR #2
 MINIMUM BASIC DESIGN STRESS, Fb = 850 PSI
 (3 X AND 4 X MEMBERS).....HEM FIR #1

MINIMUM BASIC DESIGN STRESS, Fb = 900 PSI

BEAMS AND STRINGERS:

(INCLUDING 6 X 10 AND LARGER MEMBERS)DOUG FIR #1
MINIMUM BASIC DESIGN STRESS, Fb = 1350 PSI

POSTS AND TIMBERS: (6 X 6 AND LARGER)...DOUG FIR #2
MINIMUM BASIC DESIGN STRESS, Fb = 750 PSI

PLATES & MISCELLANEOUS LIGHT FRAMING:HEM FIR STUD GRADE
MINIMUM BASIC DESIGN STRESS, Fb = 700 PSI

FRAMING MEMBERS NOTED AS PRESSURE TREATED (PT)

(LEDGERS, STUDS, POSTS, PLATES JOISTS & BEAMS)HEM FIR #2
MINIMUM BASIC DESIGN STRESS, Fb = 850 PSI

14. ALL WOOD MEMBERS EXPOSED TO WEATHER OR IN DIRECT CONTACT WITH SOIL SHALL BE PRESSURE-TREATED WITH ALKALINE COPPER QUATERNARY (ACQ). ALL WOOD MEMBERS (INCLUDING PLATES) IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE-TREATED WITH SODIUM BORATE (SBX).

15. TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, AS SPECIFIED IN THEIR CATALOG NO. **C-2024**. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED, PROVIDED THEY HAVE ICC APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES. PROVIDE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, PLACE ONE-HALF OF THE NAILS OR BOLTS IN EACH MEMBER. ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A307. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. UNLESS NOTED OTHERWISE, ALL NAILS SHALL BE COMMON. ALL SHIMS SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED.

ALL METAL CONNECTORS IN CONTACT WITH PRESSURE-TREATED LUMBER SHALL HAVE MECHANICALLY APPLIED ZINC COATING IN ACCORDANCE WITH ASTM B695 CLASS 55. THIS INCLUDES WASHERS, SCREWS, NAILS, HANGERS, AND ANY OTHER MISCELLANEOUS LT. GAGE METAL CONNECTORS IN CONTACT WITH PRESSURE-TREATED LUMBER. WHERE CONNECTORS ARE USED AT EXTERIOR CONDITIONS IN PRESSURE TREATED LUMBER, CONNECTORS SHALL BE COATED TO G185 ("HOT-DIP" GALVANIZED TO 1.85 OUNCES PER SQUARE FOOT) MINIMUM. AT ANY CONDITION, METAL CONNECTORS CONSISTING OF STAINLESS STEEL TYPE 316 MAY BE USED IN LIEU OF ZINC COATED CONNECTORS DESCRIBED ABOVE.

16. EXISTING ROT OR DETERIORATION IS TO BE TREATED WITH THE APPLICATION OF A FUNGAL GROWTH INHIBITOR TO STOP FUNGAL GROWTH FOLLOWED BY A SEALANT TO PROTECT THE REMAINING WOOD. FUNGAL GROWTH INHIBITOR SHALL BE BORA-CARE AND MOLD-CARE AS MANUFACTURED BY NISUS, INC, OR AN APPROVED EQUIVALENT PRODUCT. SEALANT IS TO BE SIKAGARD 277 ENVIROSEAL, OR AN APPROVED EQUIVALENT. ALL SEALANT AND FUNGAL GROWTH PRODUCTS ARE TO BE APPLIED IN ACCORDANCE WITH ALL MANUFACTURER'S RECOMMENDATIONS.

17. WOOD FRAMING NOTES-- THE FOLLOWING APPLY UNLESS OTHERWISE SHOWN ON THE PLANS:

A. ALL WOOD FRAMING DETAILS NOT SHOWN OTHERWISE SHALL BE CONSTRUCTED TO THE MINIMUM STANDARDS OF THE INTERNATIONAL BUILDING CODE. MINIMUM NAILING, UNLESS OTHERWISE NOTED, SHALL CONFORM TO [TABLE 2304.10.1](#) OF THE INTERNATIONAL BUILDING CODE. UNLESS NOTED OTHERWISE, ALL NAILS SHALL BE COMMON. COORDINATE THE SIZE AND LOCATION

OF ALL OPENINGS WITH MECHANICAL AND ARCHITECTURAL DRAWINGS. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD.

B. NAILING: MINIMUM NAIL DIAMETER AND LENGTH SHALL BE AS FOLLOWS:

	<u>NAIL SIZE ON DRAWINGS OR DETAILS</u>	<u>DIAMETER AND LENGTH</u>
SHEATHING NAILS	8d	0.131" x 2.25"
	10d	0.148" x 2.5"
FRAMING NAILS	8d	0.131" x 2.5"
	10d	0.148" x 3"
	16d	0.161" x 3.5"