General Structural Notes

(THE FOLLOWING APPLY UNLESS SHOWN OTHERWISE ON THE DRAWINGS.)

CRITERIA:

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE UNIFORM BUILDING CODE (UBC), 1997 EDITION.

2. DESIGN LOADING CRITERIA:

ROOF LIVE LOAD	25 PSF
FLOOR LIVE LOAD (OFFICES)	50 PSF
FLOOR LIVE LOAD (COMMONS)	100 PSF
FLOOR LIVE LOAD (LIGHT STORAGE)	125 PSF
STAIR AND CORRIDOR LIVE LOAD	100 PSF
PARTITION LOADING	20 PSF
GUARDRAILS/BALCONY RAILS	50 PLF
MECHANICAL UNITS	WEIGHTS FURNISHED BY MANUFACTURER
WIND	80 MPH, EXPOSURE "C"
EARTHQUAKE	ZONE 3, R =4.5, SOIL PROFILE TYPE = S_E

SEE DRAWINGS FOR ADDITIONAL LOADING CRITERIA

3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS FOR COMPATIBILITY AND SHALL NOTIFY ARCHITECT OF ALL DISCREPANCIES PRIOR TO CONSTRUCTION.

4. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE DRAWINGS.

5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

6. CONTRACTOR-INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ON SHOP DRAWINGS ONLY WILL NOT SATISFY THIS REQUIREMENT.

7. DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND THE STRUCTURAL ENGINEER.

8. ALL STRUCTURAL SYSTEMS COMPOSED OF COMPONENTS TO BE FIELD ERECTED SHALL BE SUPERVISED BY THE SUPPLIER DURING MANUFACTURING, DELIVERY, HANDLING, STORAGE AND ERECTION IN ACCORDANCE WITH INSTRUCTIONS PREPARED BY THE SUPPLIER.

9. SHOP DRAWINGS FOR REINFORCING STEEL (FOR BOTH CONCRETE AND MASONRY CONSTRUCTION), STRUCTURAL STEEL, OPEN WEB STEEL JOISTS, METAL DECKING, AND GLUED LAMINATED MEMBERS SHALL BE SUBMITTED TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION OF THESE ITEMS.

   AFTER REVIEW BY ENGINEER OF RECORD, DRAWINGS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT FOR REVIEW AND APPROVAL PER SECTION 106.3.4.2. APPROVED PLANS AND SPECIFICATIONS SHALL NOT BE CHANGED MODIFIED OR ALTERED WITHOUT AUTHORIZATION FROM THE BUILDING OFFICIAL PER SECTION 106.4.1.

10. SHOP DRAWING REVIEW: DIMENSIONS AND QUANTITIES ARE NOT REVIEWED BY THE ENGINEER OF RECORD, AND THEREFORE MUST BE VERIFIED BY THE CONTRACTOR. THE CONTRACTOR SHALL REVIEW AND STAMP DRAWINGS PRIOR TO REVIEW BY ENGINEER OF RECORD. SUBMITTALS SHALL INCLUDE A REPRODUCIBLE AND ONE COPY. THE REPRODUCIBLE SHALL BE MARKED AND RETURNED.

    SHOP DRAWING SUBMITTALS PROCESSED BY THE ENGINEER ARE NOT CHANGE ORDERS. THE PURPOSE OF SHOP DRAWING SUBMITTALS BY THE CONTRACTOR IS TO DEMONSTRATE TO THE ENGINEER THAT THE CONTRACTOR UNDERSTANDS THE DESIGN CONCEPT BY INDICATING WHICH MATERIAL IS INTENDED TO BE FURNISHED AND INSTALLED AND BY DETAILING THE INTENDED FABRICATION AND INSTALLATION METHODS. IF DEVIATIONS, DISCREPANCIES, OR CONFLICTS BETWEEN SHOP DRAWING SUBMITTALS AND THE CONTRACT DOCUMENTS ARE DISCOVERED EITHER PRIOR TO OR AFTER SHOP DRAWING SUBMITTALS ARE PROCESSED BY THE ENGINEER, THE DESIGN DRAWINGS AND SPECIFICATIONS SHALL CONTROL AND SHALL BE FOLLOWED.

    SHOP DRAWINGS OF DESIGN BUILD COMPONENTS INCLUDING STAIRS SHALL INCLUDE THE DESIGNING PROFESSIONAL ENGINEER'S STAMP, STATE OF WASHINGTON, AND SHALL BE APPROVED BY THE COMPONENT DESIGNER PRIOR TO CURSORY REVIEW BY THE ENGINEER OF RECORD FOR LOADS IMPOSED ON THE BASIC STRUCTURE. THE COMPONENT DESIGNER IS RESPONSIBLE FOR CODE CONFORMANCE AND ALL NECESSARY CONNECTIONS NOT SPECIFICALLY CALLED OUT ON ARCHITECTURAL OR STRUCTURAL DRAWINGS. SHOP DRAWINGS SHALL INDICATE MAGNITUDE AND DIRECTION OF ALL LOADS IMPOSED ON BASIC STRUCTURE. DESIGN CALCULATIONS SHALL BE MADE AVAILABLE UPON REQUEST.

11. SPECIAL INSPECTION: CONCRETE CONSTRUCTION, MASONRY CONSTRUCTION, STRUCTURAL STEEL FABRICATION AND ERECTION (INCLUDING FIELD WELDING AND HIGH-STRENGTH FIELD BOLTING), METAL DECK INSTALLATION (INCLUDING FIELD WELDING), EXPANSION BOLTS, THREADED EXPANSION INSERTS, EPOXY GROUTED INSTALLATIONS, SHEAR WALL FASTENING, DIAPHRAGM NAILING, HOLDOWN INSTALLATION, AND DRIVEN PILE INSTALLATION SHALL BE SUPERVISED IN ACCORDANCE WITH SECTION 1701 OF THE UBC AND THE PROJECT SPECIFICATIONS BY A QUALIFIED TESTING AGENCY DESIGNATED BY THE ARCHITECT. THE ARCHITECT, STRUCTURAL ENGINEER, AND THE BUILDING DEPARTMENT SHALL BE FURNISHED WITH COPIES OF ALL INSPECTION REPORTS AND TEST RESULTS. (1)

GEOTECHNICAL:

12. FOUNDATION NOTES: SUBGRADE PREPARATION INCLUDING DRAINAGE, EXCAVATION, COMPACTION, AND FILLING REQUIREMENTS, SHALL CONFORM STRICTLY WITH RECOMMENDATIONS GIVEN IN THE SOILS REPORT OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER. BACKFILL BEHIND ALL RETAINING WALLS WITH FREE DRAINING, GRANULAR FILL AND PROVIDE FOR SUBSURFACE DRAINAGE AS NOTED IN THE GEOTECHNICAL REPORT.

LATERAL EARTH PRESSURE (RESTRAINED/UNRESTRAINED)	55 PCF/35 PCF
PILE CAPACITY (COMPRESSION/TENSION/LATERAL)	70 TONS/58 TONS/ 23 KIPS
SOIL PROFILE TYPE	S_E

    GEOTECHNICAL REPORT REFERENCE: AGRA EARTH & ENVIRONMENTAL, INC. REPORT #8-91M-12347-0, DATED JULY 22, 1998.

13. DRIVEN PIPE PILING INSPECTION BY THE GEOTECHNICAL ENGINEER SHALL BE PERFORMED DURING PLACEMENT. MAXIMUM PILE ECCENTRICITY SHALL BE 3" LATERALLY. PILE LENGTH SHALL BE ESTIMATED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS. ACTUAL LENGTH SHALL BE DETERMINED IN FIELD BY THE GEOTECHNICAL ENGINEER. THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO DRILLING PILES.

CONCRETE:

14. CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED AND PLACED IN ACCORDANCE WITH UBC SECTION 1905 AND ACI 301. STRENGTHS AT 28 DAYS AND MIX CRITERIA SHALL BE AS FOLLOWS:

TYPE OF CONSTRUCTION	28 DAY STRENGTH (f'c)	MAXIMUM SLUMP	MINIMUM CEMENTITIOUS MATERIAL CONTENT PER CUBIC YARD
A. ALL CONCRETE	3,000 PSI*	5"	5½ SACKS

    * MIXES SHALL BE PROPORTIONED SO AS NOT TO EXCEED THE MAXIMUM SLUMPS INDICATED.

    THE MINIMUM AMOUNTS OF CEMENTITIOUS MATERIAL MAY BE CHANGED IF A CONCRETE PERFORMANCE MIX IS SUBMITTED TO THE ENGINEER AND BUILDING OFFICIAL 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 318-89, CHAPTER 5. 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-CONTENT CONFORMING TO UBC TABLE 19-A-1.

15. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, f_y = 60,000 PSI.

    GRADE 60 REINFORCING BARS WHICH ARE TO BE WELDED SHALL CONFORM TO ASTM A706. REINFORCEMENT 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.

16. REINFORCING STEEL SHALL BE DETAILED (INCLUDING HOOKS AND BENDS) IN ACCORDANCE WITH ACI 315-92 AND 318-89. LAP ALL CONTINUOUS REINFORCEMENT IN ACCORDANCE WITH THE "REINFORCEMENT SPLICE AND DEVELOPMENT LENGTH SCHEDULE" OF 26/S3.2 FOR CONCRETE AND 12/S4.1 FOR MASONRY. PROVIDE CORNER BARS AT ALL WALL AND FOOTING INTERSECTIONS PER 20/S3.1. 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 OTHERWISE NOTED ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

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

FOOTINGS AND OTHER UNFORMED SURFACES CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
FORMED SURFACES EXPOSED TO EARTH (i.e. WALLS BELOW GROUND) OR WEATHER (#6 BARS OR LARGER)	2"
(#5 BARS OR SMALLER)	1½"
SLABS AND WALLS (INTERIOR FACE) . . . GREATER OF (BAR DIAMETER PLUS ⅛") or	¾"

18. FIBROUS REINFORCEMENT: POLYPROPYLENE FIBROUS REINFORCEMENT ("FIBERMESH", "GRACE FIBERS", OR EQUIVALENT) SHALL BE USED WHERE NOTED ON THE DRAWINGS. SUBMIT PROPOSED PRODUCT DATA AND SPECIFICATIONS TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL. ADD FIBERS TO THE CONCRETE MIX AND FINISH IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

19. NON-SHRINK GROUT SHALL BE FURNISHED BY AN APPROVED MANUFACTURER AND SHALL BE MIXED AND PLACED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. GROUT STRENGTH SHALL BE AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED (3000 PSI MINIMUM).

MASONRY:

20. CONCRETE MASONRY UNIT WALLS SHALL BE CONSTRUCTED OF GRADE "N", TYPE "I" UNITS, CONFORMING TO ASTM C90, LAID IN A STACK BOND. MORTAR SHALL BE TYPE "S" PER UBC TABLE 21-A. GROUT SHALL CONFORM TO UBC REQUIREMENTS AND ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS, DESIGN F'm = 1500 PSI. STRENGTH SHALL BE VERIFIED BY PRISM TESTING IN ACCORDANCE WITH UBC SECTION 2105.3.2 OR 2105.3.3, OR SHALL BE VERIFIED BY THE UNIT STRENGTH METHOD IN ACCORDANCE WITH UBC SECTION 2105.3.4. FULL STRESSES ARE REQUIRED.

    UNLESS OTHERWISE NOTED, PROVIDE THE FOLLOWING REINFORCEMENT:

    8" WALLS #5 @ 48"oc. VERT. (2) #5 @ 48"oc. HORIZ.

    IN ADDITION, PROVIDE (1) #5 VERT. AT EACH SIDE OF OPENINGS, AT WALL CORNERS AND INTERSECTIONS, AND AT FREE ENDS OF WALLS, AND (2) #5 HORIZONTAL AT ELEVATED FLOOR AND ROOF LEVELS, AT TOPS OF WALLS, AND ABOVE AND BELOW ALL OPENINGS. ALL HORIZONTAL REINFORCEMENT SHALL BE PLACED IN BOND BEAMS. EXTEND REINFORCEMENT AROUND OPENINGS 2'-0" BEYOND FACE OF OPENING. IF 2'-0" IS UNAVAILABLE EXTEND REINFORCEMENT AS FAR AS POSSIBLE AND HOOK. PROVIDE CORNER BARS TO LAP HORIZONTAL REINFORCEMENT AT CORNERS AND INTERSECTIONS.

    FILL ALL CELLS WITH GROUT. USE OPEN-END UNITS. PROVIDE CLEANOUT HOLES AT BOTTOM OF ALL CELLS CONTAINING REINFORCEMENT.

STEEL:

21. STRUCTURAL STEEL DESIGN, FABRICATION, AND ERECTION SHALL BE BASED ON THE LATEST EDITIONS OF THE A.I.S.C. SPECIFICATIONS AND CODES:

    1. SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS-ALLOWABLE STRESS DESIGN.

    2. CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, AMENDED BY THE DELETION OF THE FOLLOWING SENTENCE IN PARAGRAPH 4.2.1: "THIS APPROVAL CONSTITUTES THE OWNER'S ACCEPTANCE OF ALL RESPONSIBILITY FOR THE DESIGN ADEQUACY OF ANY DETAIL CONFIGURATION OF CONNECTIONS DEVELOPED BY THE FABRICATOR AS PART OF HIS PREPARATION OF THESE SHOP DRAWINGS."

    3. SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.

22. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	ASTM SPECIFICATION	Fy
A. PLATES, ANGLES, AND RODS	A36	36 KSI
B. SHAPES	A572	50 KSI
C. PIPE COLUMNS	A53 (TYPE E OR S, GRADE B)	35 KSI
D. PIPE PILES	A252 (GRADE 2)	35 KSI
E. STRUCTURAL TUBING (SQUARE OR RECTANGULAR)	A500 (GRADE B)	46 KSI
F. ANCHOR BOLTS & BOLTS TO WOOD MEMBERS	A307	
G. CONNECTION BOLTS (¾" ROUND, UNLESS OTHERWISE NOTED)	A325-N	

(1)

23. NOT USED.

24. OPEN WEB STEEL JOISTS (INCLUDING BRIDGING) SHALL CONFORM TO THE SPECIFICATIONS OF THE STEEL JOIST INSTITUTE, LATEST EDITION, FOR THE JOIST SERIES DESIGNATED ON THE DRAWINGS. ENDS OF BRIDGING ROWS SHALL BE FIELD WELDED TO STRUCTURAL STEEL MEMBERS OR TO PLATES EMBEDDED IN CONCRETE OR MASONRY UNLESS OTHERWISE NOTED. JOIST MANUFACTURER SHALL CHECK ROOF JOIST AND PROVIDE UPLIFT BRIDGING AS REQUIRED TO ADEQUATELY BRACE THE BOTTOM CHORD AGAINST LATERAL MOVEMENT UNDER WIND UPLIFT PRESSURES (SEE DESIGN CRITERIA NOTE FOR WIND CRITERIA).

    SUBMIT SHOP DRAWINGS AND DESIGN CALCULATIONS TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION. DESIGN SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A REGISTERED PROFESSIONAL ENGINEER, STATE OF WASHINGTON.

25. ALL WELDING SHALL BE IN CONFORMANCE WITH A.I.S.C. AND A.W.S. STANDARDS AND SHALL BE PERFORMED BY W.A.B.O. CERTIFIED WELDERS USING E70XX ELECTRODES. ONLY PREQUALIFIED WELDS (AS DEFINED BY A.W.S.) SHALL BE USED. WELDING OF GRADE 60 REINFORCING BARS (IF REQUIRED) SHALL BE PERFORMED USING LOW HYDROGEN ELECTRODES. WELDING OF GRADE 40 REINFORCING BARS (IF REQUIRED) SHALL BE PERFORMED USING E70XX ELECTRODES. WELDING WITHIN 4" OF COLD BENDS IN REINFORCING STEEL IS NOT PERMITTED. SEE REINFORCEMENT NOTE FOR MATERIAL REQUIREMENTS OF WELDED BARS.

26. METAL FLOOR AND ROOF DECKING: PROVIDE SIZE, TYPE, GAGE, AND ATTACHMENT TO THE SUPPORTING STRUCTURE AS SHOWN ON THE DRAWINGS. ALTERNATES MUST BE CONNECTED ACCORDING TO PUBLISHED ICBO CRITERIA FOR DIAPHRAGM SHEARS SHOWN. ALL DECKING SHALL CONFORM TO THE REQUIREMENTS OF THE STEEL DECK INSTITUTE.

27. COLD-FORMED STEEL FRAMING MEMBERS SHALL BE OF THE SHAPE, SIZE, AND GAGE SHOWN ON THE DRAWINGS. NOTATIONS ON THE DRAWINGS, RELATING TO MEMBER TYPES AND SIZES OR MISCELLANEOUS FRAMING ITEMS, REFER TO CATALOG NUMBERS OF MEMBERS MANUFACTURED BY KNORR STEEL FRAMING SYSTEMS, KIRKLAND, WA. PRODUCTS BY OTHER MEMBERS OF THE "METAL STUD MANUFACTURER'S ASSOCIATION" MAY BE SUBSTITUTED FOR FRAMING SHOWN, PROVIDED THEY ARE EQUIVALENT IN SHAPE, SIZE, STIFFNESS, AND STRENGTH, AND CONFORM TO ICBO REPORT NO. 4943. ALTERNATE FRAMING SHALL BE SUBJECT TO REVIEW BY THE ARCHITECT AND STRUCTURAL ENGINEER PRIOR TO FABRICATION. ALL COLD-FORMED STEEL FRAMING SHALL ALSO CONFORM TO THE A.I.S.C. "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS."

28. HEADED STUDS FOR CONNECTION OF STRUCTURAL STEEL TO CAST-IN-PLACE CONCRETE AND THREADED CPL STUDS FOR CONNECTION OF STRUCTURAL STEEL TO OTHER ELEMENTS SHALL BE MANUFACTURED FROM MATERIAL CONFORMING TO ASTM A108 AND SHALL BE WELDED IN CONFORMANCE WITH A.W.S. REQUIREMENTS.

29. DEFORMED BAR ANCHORS SHALL BE TYPE D2L ANCHORS BY NELSON STUD WELDING DIVISION, TRW ASSEMBLIES AND FASTENERS GROUP, OR EQUIVALENT. ANCHORS SHALL BE MADE FROM COLD ROLLED, DEFORMED STEEL CONFORMING TO ASTM A-496.

ANCHORAGE:

30. EXPANSION BOLTS INTO CONCRETE AND SOLID GROUTED MASONRY BLOCKS SHALL BE "KWIK BOLT II", AS MANUFACTURED BY HILTI CORPORATION AND INSTALLED IN STRICT ACCORDANCE WITH ICBO REPORT NO. 4627, INCLUDING MINIMUM EMBEDMENT REQUIREMENTS. SUBSTITUTES PROPOSED BY CONTRACTOR SHALL BE SUBMITTED FOR REVIEW WITH ICBO REPORTS INDICATING EQUIVALENT OR GREATER LOAD CAPACITIES. IN ADDITION, FOR WIND OR SEISMIC APPLICATIONS, SUBSTITUTIONS SHALL MEET ICBO ACCEPTANCE CRITERIA AC01. SPECIAL INSPECTION IS REQUIRED FOR ALL EXPANSION BOLT INSTALLATION. EXPANSION BOLTS SHALL NOT BE USED AS SUBSTITUTES FOR EMBEDDED ANCHOR BOLTS UNLESS SPECIFICALLY APPROVED BY THE STRUCTURAL ENGINEER.

31. DRIVE PINS AND OTHER POWDER-ACTUATED FASTENERS SHALL BE HILTI LOW-VELOCITY TYPE (0.145" DIAMETER UNLESS OTHERWISE NOTED), OR AN APPROVED EQUIVALENT IN STRENGTH AND EMBEDMENT. INSTALL IN STRICT ACCORDANCE WITH ICBO REPORT NO. 2388. MINIMUM EMBEDMENT IN CONCRETE SHALL BE 1" UNLESS OTHERWISE NOTED. MAINTAIN AT LEAST 3" TO NEAREST CONCRETE EDGE.

32. EPOXY-GROUTED RODS OR REBAR TO CONCRETE OR CMU SPECIFIED ON THE DRAWINGS SHALL BE GROUTED WITH "SET EPOXY-TIE ADHESIVE" AS MANUFACTURED BY SIMPSON STRONG-TIE COMPANY, INC. INSTALL IN STRICT ACCORDANCE WITH ICBO REPORT NO. 5279, INCLUDING MINIMUM EMBEDMENT REQUIREMENTS. SUBSTITUTES PROPOSED BY CONTRACTOR SHALL BE SUBMITTED FOR REVIEW WITH ICBO REPORTS INDICATING EQUIVALENT OR GREATER LOAD CAPACITIES. IN ADDITION, FOR WIND OR SEISMIC APPLICATIONS, SUBSTITUTIONS SHALL MEET ICBO ACCEPTANCE CRITERIA AC58. SPECIAL INSPECTION OF EPOXY-GROUTED ANCHOR INSTALLATION IS REQUIRED. SCREEN TUBES ARE NOT REQUIRED AT CONCRETE OR SOLID CMU. HOLES IN CONCRETE AND SOLID CMU MAY BE DRILLED BY CORING OR ROTO-HAMMER UNLESS NOTED OTHERWISE.

WOOD:

33. FRAMING LUMBER SHALL BE KILN DRIED OR MC-19, AND GRADED AND MARKED IN CONFORMANCE WITH W.C.L.B. STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17. FURNISH TO THE FOLLOWING MINIMUM STANDARDS:

JOISTS: (2x MEMBERS)	DOUGLAS FIR NO. 2 MINIMUM BASIC DESIGN STRESS, Fb = 875 PSI, Fv = 95 PSI
STUDS, PLATES, LEDGERS & MISCELLANEOUS LIGHT FRAMING:	DOUGLAS FIR NO. 3 OR STUD GRADE MINIMUM BASIC DESIGN STRESS, Fb = 500 PSI, E = 1400 KSI Fc = 750 PSI

    NOTE: FINGER JOINTED STUDS MAY BE SUBSTITUTED ONLY IF THEY MEET PRESCRIBED STRESS CRITERIA.

34. ROOF, FLOOR & WALL SHEATHING SHALL BE APA RATED, EXTERIOR OR EXPOSURE 1 PLYWOOD, IN CONFORMANCE WITH UBC STANDARD NO. 23-2. APA RATED, EXTERIOR OR EXPOSURE 1 ORIENTED STRAND BOARD (OSB), IN CONFORMANCE WITH UBC STANDARD NO. 23-3 MAY BE USED IN LIEU OF PLYWOOD AT INTERIOR VERTICAL SURFACES ONLY. SHEATHING SHALL BE MANUFACTURED UNDER THE PROVISIONS OF VOLUNTARY PRODUCT STANDARDS PS1-83 OR PS2-92, OR APA PRP-108 PERFORMANCE STANDARDS AND POLICIES FOR STRUCTURAL USE PANELS. SEE DRAWINGS FOR THICKNESS, SPAN RATING, AND NAILING REQUIREMENTS. UNLESS OTHERWISE NOTED, WALL SHEATHING SHALL BE 1/2" (NOMINAL) WITH SPAN RATING OF 24/0. GLUE FLOOR SHEATHING TO ALL SUPPORTING MEMBERS WITH ADHESIVE CONFORMING TO APA SPECIFICATION AFG-01.

35. ALL WOOD PLATES IN DIRECT CONTACT WITH CONCRETE OR MASONRY SHALL BE PRESSURE-TREATED WITH AN APPROVED PRESERVATIVE. PROVIDE 2 LAYERS OF ASPHALT-IMPREGNATED BUILDING PAPER BETWEEN UNTREATED LEDGERS, BLOCKING, ETC., AND CONCRETE OR MASONRY.

36. TIMBER CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, AS SPECIFIED IN THEIR CATALOG NO. C-98. EQUIVALENT DEVICES BY OTHER MANUFACTURERS MAY BE SUBSTITUTED, PROVIDED THEY HAVE ICBO APPROVAL FOR EQUAL OR GREATER LOAD CAPACITIES AND ARE SUBMITTED TO THE ENGINEER FOR APPROVAL. PROVIDE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, CENTER STRAP ON JOINT AND PROVIDE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY MANUFACTURER, WITH EQUAL NUMBER AND SIZE OF FASTENERS 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. ALL NAILS SHALL BE COMMON UNLESS OTHERWISE NOTED. ALL SHIMS SHALL BE SEASONED AND DRIED AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED. ALL JOISTS AND MULTIPLE JOIST BEAMS SHALL BE CONNECTED TO FLUSH BEAMS WITH "U" SERIES JOIST HANGERS, UNLESS OTHERWISE NOTED.

37. WOOD FRAMING NOTES: THE FOLLOWING APPLY UNLESS OTHERWISE NOTED ON THE DRAWINGS:

    A. ALL WOOD FRAMING DETAILS SHALL BE CONSTRUCTED TO THE MINIMUM STANDARDS OF THE UBC. MINIMUM NAILING SHALL CONFORM TO UBC TABLE 23-II-B-I AS SHOWN IN DETAIL 8/S6.1. 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 BOLTS BEARING ON WOOD. INSTALLATION OF LAG BOLTS SHALL CONFORM TO 1991 NDS SECTION 9.1.2, AND INSTALLATION OF BOLTS SHALL CONFORM TO 1991 NDS SECTION 8.1.2.

    B. WALL FRAMING: UNLESS OTHERWISE NOTED, TWO STUDS MINIMUM SHALL BE PROVIDED AT THE ENDS OF ALL WALLS, AT EACH SIDE OF ALL OPENINGS, AND AT THE ENDS OF ALL BEAMS AND HEADERS. SOLID BLOCKING FOR WOOD COLUMNS SHALL BE PROVIDED THROUGH FLOORS TO SUPPORTS BELOW.

    INDIVIDUAL MEMBERS OF BUILT-UP STUD POSTS SHALL BE NAILED TO EACH OTHER WITH 16d @ 12"oc STAGGERED.

    C. FLOOR AND ROOF FRAMING: PROVIDE DOUBLE JOISTS AROUND ALL OPENINGS IN FLOORS OR ROOFS. TOENAIL JOISTS TO SUPPORTS WITH TWO 16d NAILS. ATTACH TIMBER JOISTS TO FLUSH HEADERS OR BEAMS WITH SIMPSON METAL JOIST HANGERS IN ACCORDANCE WITH NOTES ABOVE. NAIL ALL MULTI-JOIST BEAMS TOGETHER WITH 16d @ 12"oc STAGGERED.

    ROOF AND FLOOR SHEATHING SHALL BE LAID UP WITH GRAIN PERPENDICULAR TO SUPPORTS. PROVIDE PANEL EDGE CLIPS CENTERED BETWEEN JOISTS AT UNBLOCKED ROOF SHEATHING EDGES. ALL FLOOR SHEATHING EDGES SHALL HAVE APPROVED TONGUE-AND-GROOVE JOINTS OR SHALL BE SUPPORTED WITH SOLID BLOCKING. ALLOW ⅛" SPACING AT ALL PANEL EDGES AND ENDS OF FLOOR AND ROOF SHEATHING. TOENAIL BLOCKING TO SUPPORTS WITH 16d @ 12"oc. AT BLOCKED FLOOR AND ROOF DIAPHRAGMS, PROVIDE FLAT 2x BLOCKING AT ALL UNFRAMED PANEL EDGES AND NAIL WITH EDGE NAILING SPECIFIED.

    D. NAILING: ALL NAILS SPECIFIED ON THE DRAWINGS WERE DESIGNED TO BE COMMON. POWER DRIVEN NAILS OF THE SAME LENGTH MAY BE SUBSTITUTED FOR COMMON NAILS PROVIDED THEIR NUMBER IS INCREASED (SPACING IS DECREASED) ACCORDING TO THE FOLLOWING FORMULA:

    $S' = S \times C$

    S' = NEW REQUIRED SPACING
    S = DESIGN SPACING SHOWN ON THE DRAWINGS
    C = CONVERSION FACTOR

NAILS	DIAMETER	POWER DRIVEN NAIL (DIAMETER x LENGTH)	C
8d	0.131"	0.092" x 2¼"	0.6
		0.099" x 2¼"	0.6
		0.113" x 2⅜"	0.8
		0.131" x 2½"	1.0
10d	0.148"	0.120" x 3"	0.7
		0.131" x 3"	0.8
		0.148" x 3"	1.0
12d	0.148"	0.120" x 3¼"	0.7
		0.131" x 3¼"	0.8
16d	0.162"	0.131" x 3½"	0.7
		0.162" x 3½"	1.0

(1)

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MITHUN PARTNERS

SUN HEALTHCARE SYSTEMS, INC.
CAMPUS: PHASE ONE
ANACORTES, WASHINGTON

NO.	DATE	REVISION
1	5/18/99	CONSTRU. SET

JEC
PARTNER IN CHARGE
BTL
PROJECT MANAGER
CSD
PROJECT ENGINEER
HRB
DRAWN
JEC
CHECK

COUGHLIN PORTER LUNDEEN
A CONSULTING STRUCTURAL AND CIVIL ENGINEERING CORPORATION
217 PINE STREET · SUITE 300
SEATTLE, WA 98101
P: 206/343-0460
F: 206/343-5691

JAMES E. COUGHLIN · STATE OF WASHINGTON · 21282 · REGISTERED · PROFESSIONAL ENGINEER
EXPIRES 7/25/99

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