

1 STRUCTURAL DESIGN CRITERIA

STRUCTURAL DESIGN CRITERIA

A. THE DESIGN AND CONSTRUCTION OF THIS PROJECT IS GOVERNED BY THE "INTERNATIONAL BUILDING CODE (GOVERNING CODE)", 2018 EDITION, HEREAFTER REFERRED TO AS THE GOVERNING CODE. THIS INCLUDES ADOPTED AND MODIFIED BY THE LOCAL BUILDING DEPARTMENT WITH AUTHORITY HAVING JURISDICTION.

- REFER TO CHAPTER 305 OF THE GOVERNING CODE FOR ALL CURRENT REFERENCE STANDARDS BASED ON THE GOVERNING CODE. WHERE OTHER STANDARDS ARE NOTED IN THE DRAWINGS, USE THE LATEST EDITION OF THE STANDARD UNLESS A SPECIFIC DATE IS INDICATED. REFERENCE TO A SPECIFIC SECTION IN A CODE DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE ENTIRE STANDARD. ALL SPECIFICATIONS AND CODES NOTED SHALL BE THE LATEST APPROVED EDITIONS AND REVISIONS BY THE AUTHORITY HAVING JURISDICTION OVER THIS PROJECT.
- RISK CATEGORY: = II

B. ROOF DESIGN DATA

- ROOF DEAD LOAD: = 20 PSF
- ROOF LIVE LOAD: = 20 PSF
- GROUND SNOW LOAD, (Pg): = 30 PSF
- FLAT ROOF SNOW LOAD, (Pf): = 21 PSF
- SNOW IMPORTANCE FACTOR, (Is): = 1.0
- SNOW EXPOSURE FACTOR, (Ce): = 1.0
- THERMAL FACTOR, (Ct): = 1.0
- SLOPE FACTORS(S), (Cs): = 1.0
- SEE FRAMING PLANS FOR DRIFT LOCATION, WIDTHS AND LOADS IF APPLICABLE.

C. FLOOR DESIGN DATA

- FLOOR DEAD LOAD: = N/A
- FLOOR LIVE LOAD: = N/A

D. EARTHQUAKE DESIGN DATA

- MAPPED SPECTRAL RESPONSE ACC. FOR SHORT PERIOD, (Ss): = 0.299 G
- MAPPED SPECTRAL RESPONSE ACC. FOR 1-SEC PERIOD, (S1): = 0.062 G
- DESIGN SPECTRAL RESPONSE ACC. FOR SHORT PERIOD, (Sds): = 0.311 G
- DESIGN SPECTRAL RESPONSE ACC. FOR 1 PERIOD, (Sd1): = 0.099 G
- SITE CLASS: = D
- SEISMIC DESIGN CATEGORY: = B
- SEISMIC IMPORTANCE FACTOR, (Ie): = 1.0
- SEISMIC RESPONSE COEFFICIENT(S), (Cs): = N/A
- RESPONSE MODIFICATION COEFFICIENT(S), (R): = 6.0
- BASIC SEISMIC-FORCE-RESISTING-SYSTEM(S): = MECHANICAL UNIT
- DESIGN BASE SHEAR(S): = N/A
- ANALYSIS PROCEDURE USED: = N/A

E. WIND DESIGN DATA

- ULTIMATE DESIGN WIND SPEED (VULT): = 114 MPH
- NOMINAL DESIGN WIND SPEED (VSD): = 88 MPH
- WIND IMPORTANCE FACTOR, (Iw): = 1.0
- WIND EXPOSURE: = B
- INTERNAL PRESSURE COEFFICIENT(S): = 0.18
- UNFACTORED COMPONENTS & CLADDING ROOF PRESSURE: = 32 PSF
- UNFACTORED COMPONENTS & CLADDING WALL PRESSURE: = 32 PSF

F. SOILS DESIGN DATA

- ALLOWABLE SOIL BEARING PRESSURE: = 1500 PSF (ASSUMED)
- MINIMUM FROST/BEARING DEPTH: = 36 IN
- GEOTECHNICAL REPORT PREPARED BY, (REPORT #): = N/A

G. SPECIAL DESIGN DATA

- SEE PLANS FOR ALL EQUIPMENT DESIGN WEIGHTS.

2 FOUNDATIONS AND SLAB ON GRADE

- ALL FOOTING AND FOUNDATION DESIGNS ARE BASED ON AN ALLOWABLE SOIL BEARING CAPACITY OF 1,500 PSF. ALL BUILDING SHALLOW SPREAD FOUNDATIONS SYSTEMS SHALL BEAR ON COMPETENT NATIVE SOILS. IF THE SITE HAS A LOWER BEARING CAPACITY THAN LISTED, THEN FOUNDATION PLAN WILL NEED TO BE REDESIGNED.
- ALL CONTINUOUS SPREAD AND ISOLATED FOOTINGS SHALL BE FOUNDED ON COMPETENT NATIVE SOIL OR STRUCTURAL FILL. IT IS RECOMMENDED THAT ALL GRADING, EXCAVATION, PLACEMENT OF STRUCTURAL FILL AND INSTALLATION OF FOUNDATIONS BE PERFORMED UNDER THE INSPECTION AND TESTING OF A QUALIFIED GEOTECHNICAL CONSULTANT DURING THE CRITICAL STAGES OF CONSTRUCTION.
- ALL CONCRETE SLABS SHALL HAVE REINFORCING PER PLANS & CONTROL JOINTS @ 10'-0" O.C. SPACING MAX RE: 2 / S2.0, AND SHALL BE FOUNDED ON MATERIALS COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY A STANDARD PROCTOR AT OPTIMUM MOISTURE AND PLACED IN 8" LIFTS.
- FOR ANY PIPING OR OTHER SITE RELATED UTILITIES RUNNING ALONG SIDE OR PENETRATING THROUGH THE FOUNDATIONS OR STEMWALLS, RE: 4 / S2.0 .
- PROVIDE ADEQUATE TEMPORARY BRACING OF FOUNDATION RETAINING WALLS DURING BACKFILL PRIOR TO INSTALLATION OF MAIN FLOOR FRAMING. WALL DESIGNS ARE BASED ON TOP OF WALL RESTRAINED BY FINISHED FLOOR SYSTEM.
- PROVIDE ADEQUATE DRAINAGE BEHIND ALL WALLS TO ALLEVIATE ANY STANDING WATER.
- MINIMUM CONCRETE SLAB THICKNESS IS 4".
- A MINIMUM FROST DEPTH 36" FROM LOWEST ADJACENT FINISH GRADE TO BOTTOM OF FOOTING SHALL BE MAINTAINED FOR ALL EXTERIOR FOOTINGS, CONTRACTOR SHALL COORDINATE AND VERIFY.

3 CONCRETE

- ALL CONCRETE CONSTRUCTION SHALL CONFORM TO REQUIREMENTS SET FORTH IN ACI 318, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", AND ACI 301, "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
- CAST-IN-PLACE AND PRECAST CONSTRUCTION TOLERANCES FOR MEMBER SIZE AND LOCATION SHALL BE IN CONFORMANCE WITH ACI 117 AND ACI ITG-7, RESPECTIVELY.
- NORMAL WEIGHT CONCRETE SHALL BE IN CONFORMANCE WITH ASTM C33 WITH A NOMINAL MAXIMUM AGGREGATE SIZE OF "N".
- LIGHTWEIGHT CONCRETE SHALL BE IN CONFORMANCE WITH ASTM C330 AND RESULTS OF ASTM C330 SHALL BE SUBMITTED TO E.O.R. FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT. THE VOLUMETRIC FRACTIONS OF THE AGGREGATE SHALL ALSO BE SUBMITTED TO E.O.R. FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT.
- PORTLAND CEMENT SHALL BE TYPE (II) IN CONFORMANCE WITH ASTM C150.
- OTHER CEMENTITIOUS MATERIALS SHALL CONFORM TO THE FOLLOWING:
 - BLENDED HYDRAULIC CEMENTS: ASTM C595
 - EXPANSIVE HYDRAULIC CEMENT: ASTM C845
 - HYDRAULIC CEMENT: ASTM C1157
 - FLY ASH AND NATURAL POZZOLAN: ASTM C618
 - SLAG CEMENT: ASTM C989
 - SILICA FUME: ASTM C1240
- MIXING WATER SHALL CONFORM TO ASTM C1602.
- ADMIXTURES MAY BE USED TO INCREASE WORKABILITY OF THE CONCRETE UPON WRITTEN APPROVAL OF THE CONCRETE MANUFACTURER OR THE PROJECT TESTING LABORATORY. TESTING ON CONCRETE SHALL BE DONE PRIOR TO THE ADDITION OF ADMIXTURES.
- ADMIXTURES SHALL CONFORM TO THE FOLLOWING:
 - WATER REDUCTION AND SETTING TIME MODIFICATION: ASTM C494
 - PRODUCING FLOWING CONCRETE: ASTM C1017
 - AIR ENTRAINMENT: ASTM C260
 - INHIBITING CHLORIDE-INDUCED CORROSION: ASTM C1528
- CONCRETE MIXTURE PROPORTIONS SHALL CONFORM WITH ARTICLE 4.2.3 OF ACI 301 AND ESTABLISHED SO CONCRETE CAN BE PLACED READILY WITHOUT SEGREGATION INTO FORMS AND AROUND REINFORCEMENT.
- DOCUMENTATION OF CONCRETE MIXTURE CHARACTERISTICS SHALL BE SUBMITTED TO E.O.R. FOR REVIEW AND APPROVAL PRIOR TO USING THE MIXTURE AND PRIOR TO MAKING CHANGES TO MIXTURES ALREADY IN USE.
- ALL CONCRETE MIXING AND TRANSPORTATION OF CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ATM C94 AND ASTM C685.
- STAIN AND TEXTURE OF EXPOSED CONCRETE SURFACES PER OWNER'S DIRECTION, IF APPLICABLE.
- THE SLUMP OF THE CONCRETE SHALL BE BETWEEN:
 - BEAMS/COLUMNS: 3" ± 1"
 - WALLS/FOUNDATIONS: 5" ± 1"
 - SLABS-ON-GRADE: 4" ± 1"
- THE CONCRETE SHALL MEET THE MOST STRINGENT REQUIREMENTS FROM THE FOLLOWING EXPOSURE CLASSES:
 - ALL FOOTINGS, FOUNDATIONS, AND STEM WALLS: F2, S0, W0, C1
 - INTERIOR SLABS-ON-GRADE: F2, S0, W0, C1
 - EXTERIOR SLABS-ON-GRADE: F2, S0, W0, C1

P. CONCRETE EXPOSURE CLASSES AND REQUIREMENTS:

EXPOSURE CATEGORY: F									
EXPOSURE CLASS	MAXIMUM w/cm	MINIMUM f'c (psi)	AIR CONTENT (%)	LIMITS ON MAXIMUM PERCENT OF TOTAL CEMENTITIOUS MATERIALS BY MASS					
F0	N/A	2500	N/A	N/A					
F1	0.55	3500	5	N/A					
F2	0.45	4500	6	N/A					
F3	0.40	5000	6	ASTM C618	ASTM C989	ASTM C1240	TOTAL OF ASTM C618 & ASTM C1240	TOTAL OF ASTM C618 & ASTM C989 & ASTM C1240	
				25%	50%	10%	35%	50%	

EXPOSURE CATEGORY: S						
EXPOSURE CLASS	MAXIMUM w/cm	MINIMUM f'c (psi)	CEMENTITIOUS MATERIALS			
S0	N/A	2500	N/A	N/A	N/A	N/A
S1	0.50*	4000	II	IP(MS), IS(MS), OR IT(MS)	MS	N/A
S2	0.45	4500	V	IP(HS), IS(HS), OR IT(HS)	HS	NOT PERMITTED
S3	0.45	4500	V + POZZOLAN OR SLAG CEMENT	IP(HS), IS(HS), OR IT(HS) + POZZOLAN OR SLAG CEMENT	HS + POZZOLAN OR SLAG CEMENT	NOT PERMITTED

EXPOSURE CATEGORY: W		
EXPOSURE CLASS	MAXIMUM w/cm	MINIMUM f'c (psi)
W0	N/A	2500
W1	0.50	4000

EXPOSURE CATEGORY: C			
EXPOSURE CLASS	MAXIMUM w/cm	MINIMUM f'c (psi)	MAXIMUM WATER-SOLUBLE CHLORIDE ION (Cl ⁻) CONTENT IN NONPRESTRESSED CONCRETE, PERCENT BY WEIGHT OF CEMENT
C0	N/A	2500	1.00
C1	N/A	2500	0.30
C2	0.40	5000	0.15

*FOR SEAWATER EXPOSURE THE MAXIMUM w/cm RATIO SHALL BE 0.40.

Q. TEMPERATURE REQUIREMENTS:

- CONCRETE SHALL BE MAINTAINED AT A TEMPERATURE MINIMUM OF 50°F AND IN A MOIST CONDITION FOR AT LEAST THE FIRST 7 DAYS AFTER PLACEMENT.
- ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING FREEZING OR NEAR-FREEZING WEATHER.
- FROZEN MATERIALS OR MATERIALS CONTAINING ICE SHALL NOT BE USED.
- FORMS, FILLERS, AND GROUND WITH WHICH CONCRETE IS TO COME IN CONTACT SHALL BE FREE FROM FROST AND ICE.
- CONCRETE SHALL NOT EXCEED A TEMPERATURE MAXIMUM OF 95°F AT THE TIME OF PLACEMENT.
- HANDLING, PLACING, PROTECTION, AND CURING PROCEDURES SHALL LIMIT CONCRETE TEMPERATURES OR WATER EVAPORATION THAT COULD REDUCE STRENGTH SERVICEABILITY, AND DURABILITY OF THE MEMBER OR STRUCTURE.
- HOT WEATHER AND COLD WEATHER CONCRETING SHALL BE DONE IN COMPLIANCE WITH THE LATEST EDITION OF ACI 305.1 AND ACI 306.1, RESPECTIVELY.
- CONCRETE MATERIALS AND PRODUCTION METHODS SHALL BE SELECTED SO THAT THE CONCRETE TEMPERATURE AT DELIVERY COMPLIES WITHIN THE SPECIFIED TEMPERATURE LIMITS.

R. THESE PROVISIONS DO NOT PROTECT CONCRETE AGAINST CHEMICALLY AGGRESSIVE SOLUTIONS, CONTACT E.O.R. IF SUCH CONDITIONS APPLY.

S. CONCRETE PLACEMENT:

- STANDING WATER SHALL BE REMOVED FROM PLACE OF DEPOSIT BEFORE CONCRETE IS PLACED UNLESS A TREMIE IS USED.
- MASONRY FILLER UNITS THAT WILL BE IN CONTACT WITH CONCRETE SHALL BE PRE-WETTED PRIOR TO PLACING CONCRETE.
- CONCRETE SHALL NOT BE CONVEYED WITH PIPES, TREMIES, OR CHUTES MADE OF ALUMINUM OR ALUMINUM ALLOYS. CONCRETE SHALL BE PLACED:
 - AT A RATE SO CONCRETE AT ALL TIMES HAS SUFFICIENT WORKABILITY TO BE CONSOLIDATED APPROPRIATELY.
 - WITHOUT SEGREGATION OR LOSS OF MATERIALS.
 - WITHOUT INTERRUPTIONS TO MAINTAIN WORKABILITY BETWEEN SUCCESSIVE PLACEMENTS TO PREVENT AN UNINTENTIONAL COLD JOINT.
- DEPOSITED AS NEAR TO ITS FINAL LOCATION AS PRACTICABLE TO AVOID SEGREGATION DUE TO REHANDLING OR FLOWING.
- CONCRETE THAT HAS BEEN CONTAMINATED OR HAS LOST ITS INITIAL WORKABILITY TO THE EXTENT THAT IT CAN NO LONGER BE CONSOLIDATED APPROPRIATELY SHALL NOT BE USED.
- RETEMPERING CONCRETE IN ACCORDANCE WITH ASTM C94 SHALL BE PERMITTED AS LONG AS THE LIMITS ON MAXIMUM MIXING TIME AND w/cm ARE NOT VIOLATED.
- AFTER STARTING, CONCRETING SHALL BE A CONTINUOUS OPERATION UNTIL THE COMPLETION OF A PANEL OR SECTION, AS DEFINED BY ITS BOUNDARIES OR PREDETERMINED JOINTS.
- CONCRETE SHALL BE CONSOLIDATED APPROPRIATELY DURING PLACEMENT AND SHALL BE WORKED AROUND REINFORCEMENT AND EMBEDMENTS AND INTO CORNERS OF FORMS.
- TOP SURFACES OF VERTICALLY FORMED LIFTS SHALL BE GENERALLY LEVEL.
- JOINT LOCATIONS OR JOINT DETAILS NOT SHOWN OR THAT DIFFER FROM THOSE INDICATED IN THE CONSTRUCTION DOCUMENTS SHALL BE SUBMITTED FOR REVIEW BY THE E.O.R.
- CONSTRUCTION JOINTS SHALL BE CLEANED AND LAITANCE REMOVED BEFORE NEW CONCRETE IS PLACED.
- SURFACE OF CONCRETE CONSTRUCTION JOINTS SHALL BE INTENTIONALLY ROUGHENED.
- IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, CONSTRUCTION JOINTS SHALL BE PRE-WETTED AND STANDING WATER REMOVED.
- BEAMS, GIRDERS, OR SLABS SUPPORTED BY COLUMNS OR WALLS SHALL NOT BE CAST UNTIL CONCRETE IN THE VERTICAL SUPPORT MEMBERS IS NO LONGER WORKABLE AND SOFT.
- BEAMS, GIRDERS, HAUNCHES, DROP PANELS, SHEAR CAPS, AND CAPITALS SHALL BE PLACED MONOLITHICALLY AS PART OF A SLAB SYSTEM, U.N.O.
- SAW CUTTING IN SLABS-ON-GRADE IDENTIFIED IN THE CONSTRUCTION DOCUMENTS AS STRUCTURAL DIAPHRAGMS OR PART OF THE SEISMIC-FORCE-RESISTING SYSTEM SHALL NOT BE PERMITTED U.N.O.
- ALUMINUM EMBEDMENTS SHALL BE COATED OR COVERED TO PREVENT ALUMINUM-CONCRETE REACTION AND ELECTROLYTIC ACTION BETWEEN ALUMINUM AND STEEL.
- IN SOLID SLABS, PIPING, EXCEPT FOR RADIANT HEATING OR SNOW MELTING, SHALL BE PLACED BETWEEN TOP AND BOTTOM REINFORCEMENT.
- CONDUIT AND PIPING SHALL BE FABRICATED AND INSTALLED SO THAT CUTTING, BENDING, OR DISPLACEMENT OF REINFORCEMENT FROM ITS SPECIFIED LOCATION IS NOT REQUIRED.

T. FORMWORK:

- FORMWORK SHALL BE DESIGNED, FABRICATED, INSTALLED, AND REMOVED BY CONTRACTOR.
- DESIGN OF FORMWORK SHALL TAKE INTO CONSIDERATION:
 - METHOD OF CONCRETE PLACEMENT.
 - RATE OF CONCRETE PLACEMENT.
 - CONSTRUCTION LOADS, INCLUDING VERTICAL, HORIZONTAL, AND IMPACT.
 - AVOIDANCE OF DAMAGE TO PREVIOUSLY CONSTRUCTED MEMBERS.
- FORMWORK FABRICATION AND INSTALLATION SHALL RESULT IN A FINAL STRUCTURE THAT CONFORMS TO SHAPES, LINES, AND DIMENSIONS OF THE MEMBERS AS REQUIRED BY THE CONSTRUCTION DOCUMENTS.
- FORMWORK SHALL BE SUFFICIENTLY TIGHT TO INHIBIT LEAKAGE OF PASTE OR MORTAR.
- FORMWORK SHALL BE BRACED OR TIED TOGETHER TO MAINTAIN POSITION AND SHAPE.
- PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL DEVELOP A PROCEDURE AND SCHEDULE FOR REMOVAL OF FORMWORK AND INSTALLATION OF RESHOES AND SHALL CALCULATE THE LOADS TRANSFERRED TO THE STRUCTURE DURING THIS PROCESS.
- STRUCTURAL ANALYSIS AND CONCRETE STRENGTH REQUIREMENTS USED IN PLANNING AND IMPLEMENTING THE FORMWORK REMOVAL AND RESHORE INSTALLATION SHALL BE GIVEN BY THE CONTRACTOR TO THE E.O.R. AND TO THE BUILDING OFFICIAL, WHEN REQUESTED.
- NO CONSTRUCTION LOADS SHALL BE PLACED ON, NOR ANY FORMWORK REMOVED FROM, ANY PART OF THE STRUCTURE UNDER CONSTRUCTION EXCEPT WHEN THAT PORTION OF THE STRUCTURE IN COMBINATION WITH REMAINING FORMWORK HAS SUFFICIENT STRENGTH TO SUPPORT ITS WEIGHT AND LOADS PLACED ON IT SAFELY AND WITHOUT IMPAIRING SERVICEABILITY.
- NO CONSTRUCTION LOADS EXCEEDING THE COMBINATION OF SUPERIMPOSED DEAD LOAD PLUS LIVE LOAD INCLUDING REDUCTION SHALL BE PLACED ON ANY UNSHORED PORTION OF THE STRUCTURE UNDER CONSTRUCTION, UNLESS ANALYSIS INDICATES ADEQUATE STRENGTH TO SUPPORT SUCH ADDITIONAL LOADS AND WITHOUT IMPAIRING SERVICEABILITY.

4 REINFORCING STEEL

- ALL ARRANGEMENT AND DETAILING OF REINFORCING STEEL, INCLUDING BAR SUPPORTS AND SPACERS, SHALL BE IN ACCORDANCE WITH THE LATEST ACI 315 DETAILING MANUAL.
- ASTM A615, GRADE 40 (#3 REBAR OR SMALLER), ASTM A615, GRADE 60 (#4 REBAR OR LARGER), ASTM A185, GRADE 60 (WELDED WIRE FABRIC SHEETS), BARS TO BE WELDED SHALL BE ASTM A706, GRADE 60.
- DIMENSIONS OF REINFORCING ARE TO BAR CENTERLINES U.N.O. IN DRAWINGS.
- MINIMUM CLEAR PROTECTION FOR REINFORCEMENT SHALL BE AS FOLLOWS:
 - CONCRETE PLACED DIRECTLY AGAINST EARTH: = 3"
 - FORMED SURFACES AND EXPOSED TO EXTERIOR (#5 BARS OR SMALLER): = 2"
 - INTERIOR FACE OF WALLS: = 1 1/2"
- ALL REINFORCEMENT SHALL BE COLD BENT, UNLESS OTHERWISE PERMITTED BY THE BUILDING OFFICIAL AND ENGINEER OF RECORD. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE OR MASONRY SHALL NOT BE FIELD BENT, UNLESS PERMITTED BY THE BUILDING OFFICIAL AND ENGINEER OF RECORD RE: 1 / S2.0
- MINIMUM REINFORCING LAP SPOCS/DEVELOPMENT LENGTHS (F'c = 3,000 PSI):

BAR SIZE	HOOK LENGTH (IN)	DEV./SPUCE LENGTH (IN)
3	6	21
4	8	28
5	10	36
6	12	48

5 STRUCTURAL STEEL

- ALL STEEL CONSTRUCTION SHALL CONFORM TO REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF AISC, "AMERICAN INSTITUTE OF STEEL CONSTRUCTION", AISC 341-10, "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS, INCLUDING SUPPLEMENT NO. 1, DATED 2010" AND AISC 360-10, "SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS".
- STEEL DESIGNATIONS:
 - WIDE FLANGE SHAPES (BEAMS & COLUMNS) = ASTM A992 (GRADE 50)
 - OTHER ROLLED SHAPES & PLATE = ASTM A36 (U.N.O.) PIPE
 - COLUMNS = ASTM A53, GRADE 'B'
 - STRUCTURAL HSS TUBING = ASTM A500, GRADE 'B' 46 KSI
- ALL ANCHOR BOLTS, BOLTS AND LAGS IN WOOD SHALL CONFORM TO ASTM A307 STEEL U.N.O. AND SHALL HAVE STEEL WASHERS BENEATH ALL NUTS AND BOLT HEADS. IF A CERTAIN SITUATION IS NOT DETAILED USE A SIMILAR DETAIL. ALL STRUCTURAL BOLTS SHALL CONFORM TO ASTM A325-N. CONNECTIONS SHALL GENERALLY FOLLOW THE TYPES SHOWN IN AISC MANUAL OF STEEL CONSTRUCTION.
- STEEL FABRICATOR SHALL ALSO INCLUDE AND COORDINATE ALL STRUCTURAL STEEL SHOWN ON ARCHITECTURAL SHEETS WITH THAT OF THE STRUCTURAL SHEETS, COORDINATE ANY STEEL NOT SHOWN ON STRUCTURAL DRAWINGS, CONTRACTOR TO VERIFY.
- ALL BEAMS ELEVATIONS FOR JOISTS, BEAMS, AND COLUMN HEIGHTS SHALL BE COORDINATED AND VERIFIED BY THE CONTRACTOR. c/w ARCH. ALL ELEVATIONS MUST BE APPROVED BY ENGINEER AND ARCHITECT OF RECORD IN THE SHOP DRAWING REVIEW PROCESS.
- ALL STEEL WELDING SHALL CONFORM TO AWS D1.1 WITH E70XX ELECTRODES.
- PROVIDE HIGH STRENGTH GROUT UNDER ALL STEEL BASE PLATES, F'c = 5,000 PSI, MIN.

6 STRUCTURAL WELDS

- ALL WELDS ON MEMBERS COMPRISING THE SEISMIC-FORCE-RESISTING SYSTEM (MOMENT AND BRACE FRAMES) SHALL EMPLOY WELD FILLER METALS CLASSIFIED FOR NOMINAL 70 KSI TENSILE STRENGTH, REFERRED TO AS E70 ELECTRODES, MEETING THE FOLLOWING MINIMUM MECHANICAL PROPERTY REQUIREMENTS:
 - CVN TOUGHNESS OF 20 FT-LB AT 0°F, USING AWS AS CLASSIFICATION TEST METHODS.
 - CVN TOUGHNESS OF 40 FT-LB AT 70°F, USING THE TEST PROCEDURES PRESCRIBED IN APPENDIX A.
 - YIELD STRENGTH: 58 KSI MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST (FOR E70 CLASSIFICATION ELECTRODES) AND THE TEST PROCEDURES PRESCRIBED IN APPENDIX A.
 - TENSILE STRENGTH: 70 KSI MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST (FOR E70 CLASSIFICATION ELECTRODES) AND THE TEST PROCEDURES PRESCRIBED IN APPENDIX A.
 - ELONGATION: 22% MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST AND THE TEST PROCEDURES PRESCRIBED IN APPENDIX A.

7 PLYWOOD SHEATHING

- ALL PLYWOOD SHEATHING AT BUILDING SHALL BE APA RATED EXPOSURE 1 AND THICKNESS SHOWN ON DRAWINGS w/ SPAN INDEX 48/24 AND SHALL BE APA CD EXPOSURE 1 GRADE. ALL PLYWOOD ROOF PANELS SHALL BE BONDED w/ INTERMEDIATE OR EXTERIOR GLUE. ORIENTED STRAND BOARD (OSB) CAN BE SUBSTITUTED FOR PLYWOOD.
- SHEATHING SHALL HAVE THE FOLLOWING MINIMUM FASTENING AT ALL HORIZ. DIAPHRAGMS AND VERT. SHEAR WALL LOCATIONS. 8d NAILS 6" O.C. AT PANEL EDGES w/ HORIZ. BLOCKING AND AT 12" O.C. AT INTERMEDIATE SUPPORTS. PLYWOOD SHEATHING SHALL BE PLACED PERPENDICULAR TO FRAMING AND STAGGERED END JOINTS AT 4'-0".
- PROVIDE 1/4" SPACE AT ALL PANEL EDGES FOR EXPANSION, AT ALL ROOF AND WALLS.
- EXT. WALL SHEATHING: 5/8" CDX MIN. (24/0) SPAN RATING w/ 8d NAILS @ 6" O.C. EDGE. 12" O.C. FIELD U.N.O. ALL SPAN RATINGS TO MEET LOCAL CODES ORIENTED STRAND BOARD (OSB) WITH THE SAME SPAN RATINGS MAY BE SUBSTITUTED.
- SHEAR WALL SHEATHING SHALL CONSIST OF 7/16" MINIMUM APA RATED SHEATHING WITH A SPAN RATING OF 24/0, WITH FASTER SIZE AND SPACING AS SHOWN ON PLANS. SEE SHEAR WALL SCHEDULE FOR ALL ADDITIONAL REQUIREMENTS.
- ALL PLYWOOD FINISH, RE: ARCH.

ABBREVIATIONS

(E)	EXISTING	HVAC	HEATING VENTILATING AND AIR
(F)	FUTURE		CONDITIONING
(N)	NEW	I.D.	INSIDE DIAMETER
(R)	RENOVATE	IN.	INCH
∅	CENTERLINE DIAMETER OR ROUND	INSUL	INSULATION
1	PERPENDICULAR	INT.	INTERIOR
□	SQUARE	JT.	JOINT
#	NUMBER OR POUND	K.O.	KNOCK OUT
@	AT	L.F.	LINEAL FEET OR FOOT
A.B.	ANCHOR BOLT	L.L.V.	LONG LEG VERTICAL
A.F.F.	ABOVE FINISH FLOOR	L.L.H.	LONG LEG HORIZONTAL
ABV.	ABOVE	L.P.	LOW POINT
ADJ.	ADJUSTABLE	LSL	LAMINATED STRAND LUMBER
AGG.	AGGREGATE	LAM.	LAMINATE
ALT.	ALTERNATIVE	LVL	LAMINATED VENEER LUMBER
ALUM.	ALUMINUM	LBS.	POUNDS
APPROX.	APPROXIMATE	M.B.	MACHINE BOLT
ARCH.	ARCHITECTURAL	M.H.	MANHOLE
B.O.	BOTTOM OF	M.O.	MASONRY OPENING
B.O.C.	BOTTOM OF CONCRETE	MAX.	MAXIMUM
B/T	BETWEEN	MECH.	MECHANICAL
B.N.	BOUNDARY NAILING)	MET.	METAL
B.U.	BUILT UP	MFR.	MANUFACTURER
BD.	BOARD	MIN.	MINIMUM
BLDG.	BUILDING	MISC.	MISCELLANEOUS
BLK.	BLOCK	MTD	MOUNTED
BM	BEAM	MTRL	MATERIAL
BOT.	BOTTOM	N	NORTH
C.C.	CENTER TO CENTER	N.I.C.	NOT IN CONTRACT
C.I.	CAST IRON	N.S.	NEAR SIDE
C.I.P.	CAST IN PLACE	N.T.S.	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT	NUMBER	NUMBER
CMU	CONCRETE MASONRY UNIT	NOM.	NOMINAL
CLG.	CEILING	N.S.	NEAR SIDE
CLR.	CLEAR	O/H	OVERHEAD
CNTRSK.	COUNTERSUNK	OJ	OVER JOIST
COL.	COLUMN	O.A.	OVER ALL
CONC.	CONCRETE	O.C.	ON CENTER
CONT.	CONTINUOUS	O.D.	OUTSIDE DIAMETER
CORR.	CORRIDOR	O.H.	OPPOSITE HAND
CW/	COORDINATE WITH	OPNG.	OPENING
D.	DEEP	OPP.	OPPOSITE
DIA.	DIAMETER	OZ	OUNCE
DIAG.	DIAGONAL	PART.	PARTICLE
DN.	DOWN	P/L	PROPERTY LINE
DWG.	DRAWING	PL	PLATE
E.B.	ECCENTRICALLY BRACED FRAME	PLYWD.	PLYWOOD
E.J.	EXPANSION JOINT	PRE-ENG.	PRE-ENGINEERED METAL BUILDING
E.N.	EDGE NAILING)	PT.	POINT
E.O.R.	ENGINEER OF RECORD	P.S.L.	PARALLEL STRAND LUMBER
ES.	EDGE SCREW	R.	RADIUS OR RISER
EQ.	EQUAL	R.D.	ROOF DRAIN
ELEV.	ELEVATOR	R.O.	ROUGH OPENING
EOR	ENGINEER OF RECORD	RE.	REFERENCE (C/W)
EQ.	EQUAL	RENF.	REINFORCED
EQUIP.	EQUIPMENT	RECD.	REQUIRED
EXP.	EXPANSION	RM.	ROOM
EXT.	EXTERIOR	S.C.	SOLID CORE
F.B.	FLAT BAR	S.F.	SQUARE FEET OR FOOT
F.D.	FLOOR DRAIN	S.S.	STAINLESS STEEL
F.O.	FACE OF	SCHED.	SCHEDULE
F.O.C.	FACE OF CURB/CONCRETE	SECT.	SECTION
F.O.F.	FACE OF FINISH	SHT.	SHEET
F.O.M.	FACE OF MASONRY	SIM.	SIMILAR OR SIMILAR TO
F.O.S.	FACE OF STUDS	SIM.	SPECIFICATIONS
F.O.T.	FACE OF TREAD	SO.	SOULARE
FDN.	FOUNDATION	STD.	STANDARD
FIN.	FINISH	STRUC.	STRUCTURAL
FL.	FLOORING)	SUSP.	SUSPENDED
FLASH.	FLASHING	SYM.	SYMMETRICAL
F.S.	FACE SIDE	T&G	TONGUE & GROOVE
FT.	FOOT OR FEET	T.O.B.	TOP OF BEAM
FTG.	FOOTING	T.O.C.	TOP OF CURB/CONCRETE
FTW.	FIRE TREATED WOOD	T.O.D.	TOP OF DECK
FURR.	FURRING	T.O.M.	TOP OF MASONRY
G.A.	GAUZE OR GAGE	T.O.S.	TOP OF SLAB
GALV.	GALVANIZED	T.O.W.	TOP OF WALL
GSN	GENERAL STRUCTURAL NOTES	THK.	THICKNESS
G.P.	GIPSUM	TJI	TRUSS JOIST-JOIST
H.	HIGH	TYP.	TYPICAL
H.C.A.	HEADED CONCRETE ANCHOR	U.B.C.	UNIFORM BUILDING CODE