STRUCTURAL NOTES

A. BUILDING CODE

1. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2006 EDITION WITH LOCAL AMENDMENTS.

B. GENERAL

1. FOR LOADING CRITERIA SEE ADJACENT TABLE.

2. THE STRUCTURE HAS BEEN DESIGNED TO WITHSTAND THE SNOW LOADS SPECIFIED IN SECTION 1608.0 OF THE INTERNATIONAL BUILDING CODE AND SECTION 7 OF ASCE 7. SEE THE ATTACHED DESIGN DATA TABLE ON THIS SHEET.
3. IN ADDITION TO THE FLAT ROOF SNOW LOAD STATED ABOVE, A SNOW LOAD PROVISION FOR DRIFTING SNOW HAS BEEN PROVIDED IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, SECTION 1608.7 AND 1608.8 AND ASCE 7, SECTIONS 7.7 AND 7.8.

4. THE STRUCTURE HAS BEEN DESIGNED TO WITHSTAND THE SEISMIC FORCES SPECIFIED IN SECTION 1613.0 OF THE INTERNATIONAL BUILDING CODE. SEE THE SEISMIC DESIGN LOAD AND DATA TABLE ON THIS SHEET.
5. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND ENSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
6. STRUCTURAL MEMBERS HAVE BEEN LOCATED AND DESIGNED TO ACCOMMODATE THE MECHANICAL EQUIPMENT AND OPENINGS SPECIFIED BY THE MECHANICAL CONSULTANT. ANY SUBSTITUTIONS RESULTING IN REVISIONS TO THE STRUCTURE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE STRUCTURAL ENGINEER.
7. THE GENERAL CONTRACTOR AND SUB-CONTRACTORS SHALL DETERMINE THE SCOPE OF THE STRUCTURAL WORK FROM THE CONTRACT DOCUMENTS TAKEN AS A WHOLE. THE STRUCTURAL DRAWINGS SHALL NOT BE CONSIDERED SEPARATELY FOR PURPOSES OF BIDDING THE STRUCTURAL WORK. DUE CONSIDERATION SHALL BE GIVEN TO OTHER STRUCTURAL WORK OR WORK RELATED TO THE STRUCTURE, INCLUDING NECESSARY COORDINATION DESCRIBED OR IMPLIED BY THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
8. WRITTEN PERMISSION MUST BE OBTAINED FROM ADVANCE ENGINEERS/O'DONNELL & NACCARATO, PRIOR TO THE REPRODUCTIVE USE OF THE STRUCTURAL CONTRACT DOCUMENTS IN ANY FASHION AS STRUCTURAL SHOP DRAWING DOCUMENTS.
9. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL INFORMATION ONLY. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.
10. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL RESULTING REVISIONS TO THE STRUCTURAL SYSTEM AS A RESULT OF ACCEPTANCE OF CONTRACTOR PROPOSED ALTERNATIVES OR SUBSTITUTIONS.
11. SHORING OF THE EXISTING STRUCTURE SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR. PROVIDE TEMPORARY SHORING WHERE MODIFICATIONS/ALTERATIONS TO EXISTING STRUCTURE IS REQUIRED. THE SHORING DRAWINGS/CALCULATIONS SHALL BE SIGNED AND STAMPED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF JURISDICTION AND SUBMITTED FOR APPROVAL PRIOR TO START OF DEMO WORK.
12. ALL NON-PRIMARY STRUCTURAL ELEMENTS SUCH AS STAIRS, RAILINGS, METAL STUDS, STOREFRONTS, MULLIONS, ETC. SHALL BE DESIGNED BY A REGISTERED ENGINEER TO MEET THE MINIMUM REQUIREMENTS OF THE LOCAL BUILDING CODES. SUBMIT CALCULATIONS AND SHOP DRAWINGS WITH A SIGNED SEAL OF THE RESPONSIBLE REGISTERED ENGINEER FOR THE LOCAL JURISDICTION.

C. FOUNDATION AND SLAB ON GRADE

1. SOIL BEARING VALUE ASSUMED TO BE 1500 PSF FOR FOOTINGS FOUNDED ON UNDISTURBED NATURAL SOIL OR CONTROLLED STRUCTURAL FILL IN ACCORDANCE WITH SUBSURFACE INVESTIGATION AND GEOTECHNICAL ENGINEERING REPORT . SOIL BEARING CAPACITY SHALL BE FIELD VERIFIED BY A SOILS ENGINEER REGISTERED IN THE STATE OF JURISDICTION.

2. REFER TO THE PROJECT SPECIFICATIONS FOR ALL INFORMATION CONCERNING FOUNDATION CONSTRUCTION. THE CONTRACTOR SHALL PERFORM EXCAVATIONS, FOOTING CONSTRUCTION, AND PREPARATION OF THE SUBGRADE UNDER THE SLAB ON GRADE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. SOIL BEARING CAPACITY SHALL BE FIELD VERIFIED BY A SOILS ENGINEER REGISTERED IN THE STATE OF JURISDICTION.
3. BOTTOM OF ALL FOOTINGS MUST BE INSPECTED AND APPROVED BY A REGISTERED SOILS ENGINEER BEFORE PLACING ANY CONCRETE. APPROVAL IN WRITING MUST INDICATE THE SOIL IS ADEQUATE TO SAFELY SUSTAIN SPECIFIED SOIL BEARING PRESSURE.

4. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE MINIMUM OF 2'-6" (OR 3'-0") BELOW EXTERIOR FINISH GRADE.

5. EXCAVATIONS FOR SPREAD FOOTINGS, COMBINED FOOTINGS, CONTINUOUS FOOTINGS AND/OR MAT FOUNDATIONS SHALL BE CLEANED AND HAND TAMPED TO A UNIFORM SURFACE. FOOTING EXCAVATIONS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 6 MIL VISQUEEN IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF THE EXCAVATION OF THE FOOTING.
6. REINFORCEMENT PLACEMENT SEQUENCE FOR FOOTINGS IS NOTED ONLY FOR MAJOR REINFORCEMENT BAR LAYERS. IN SPREAD FOOTINGS AND MATS THE CONTRACTOR SHALL SEQUENCE ALL OTHER BAR PLACEMENTS AS REQUIRED TO CONFORM TO THE CONTRACT DOCUMENTS.
7. LAP MESH IN SLAB ON GRADE 6" IN EACH DIRECTION. PLACING, LAP, ETC. TO CONFORM TO WRI STANDARDS. MAXIMUM AGGREGATE SIZE FOR UNDERLAYMNET SHALL BE 1.5 INCHES AND NOT MORE THAN 10% OF MATERIAL PASSING THROUGH A NO. 4 SIEVE. PRIOR TO PLACING THE GRANULAR MATERIAL, THE FLOOR SUBGRADE SHALL BE PROPERLY COMPACTED, PROOFROLLED, FREE OF STANDING WATER, MUD AND FROZEN SOIL. BEFORE PLACEMENT OF THE CONCRETE, A 6 MIL POLYETHYLENE VAPOR BARRIER SHALL BE PLACED ON TOP OF THE GRANULAR MATERIAL.
FOR ALL EXTERIOR SLABS ON GRADE, AIR ENTRAINED CEMENT WITH ENTRAINED AIR OF 6% OR EQUIVALENT AIR ENTRAINING AGENT SHALL BE USED.
PROVIDE 1/4" PERIMETER EXPANSION JOINT FILLED WITH COMPRESSIVE MATERIAL WHERE SLABS ABUT VERTICAL SURFACES.

8. WHERE THE SLAB IS TO RECEIVE SENSITIVE ARCHITECTURAL FLOOR FINISHES, SUCH AS CERAMIC TILE, ALL JOINTS IN THE SLAB CONSTRUCTION SHALL BE PLACED TO ALIGN WITH JOINTS IN THE FINISHED MATERIAL.

D. CONCRETE

1. CONCRETE SHALL HAVE NATURAL SAND FINE AGGREGATE AND NORMAL WEIGHT COARSE AGGREGATES CONFORMING TO ASTM C33, TYPE I PORTLAND CEMENT CONFORMING TO ASTM C150, AND SHALL HAVE A COMPRESSIVE STRENGTH (FC') OF 3000 PSI AT 28 DAYS, EXCEPT SLAB ON GRADE TO BE 3,500 PSI. ALL CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED 5%±1%. ALL STRUCTURAL CONCRETE HAS BEEN DESIGNED BY THE ULTIMATE STRENGTH METHOD AND IN ACCORDANCE WITH THE PROVISIONS OF ACI 318-95.
2. ASH MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX, SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER. FLY ASH, WHEN USED, SHALL CONFORM TO ASTM C618, TYPE C OR F. CONCRETE MIXES USING FLY ASH SHALL BE PROPORTIONED TO ACCOUNT FOR THE PROPERTIES OF THE SPECIFIC FLY ASH USED AND TO ACCOUNT FOR THE SPECIFIC PROPERTIES OF THE FLY ASH CONCRETE THUS RESULTING. THE RATIO OF THE AMOUNT OF THE FLY ASH TO THE TOTAL AMOUNT OF FLY ASH AND CEMENT IN THE MIX SHALL NOT EXCEED 25 PERCENT.
3. GROUND GRANULATED BLAST-FURNACE SLAG MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX, SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER. GROUND GRANULATED BLAST-FURNACE SLAG WHEN USED, SHALL CONFORM TO ASTM C989. CONCRETE MIXES USING GROUND GRANULATED BLAST-FURNACE SLAG SHALL BE PROPORTIONED TO ACCOUNT FOR THE PROPERTIES OF THE SPECIFIC GROUND GRANULATED BLAST-FURNACE SLAG USED. THE RATIO OF THE AMOUNT OF THE GROUND GRANULATED BLAST-FURNACE SLAG TO THE TOTAL AMOUNT OF GROUND GRANULATED BLAST-FURNACE SLAB AND CEMENT IN THE MIX SHALL NOT EXCEED 50 PERCENT.
4. GROUT FOR BASE PLATES SHOULD BE NON-SHRINKABLE, NON-METALLIC CONFORMING TO ASTM C827 AND SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH AT 28 DAYS OF 5,000 PSI. PRE-GROUTING OF BASE PLATES WILL NOT BE PERMITTED.
5. DETAILING OF CONCRETE REINFORCEMENT BARS AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND ACI SP-66 "DETAILING MANUAL". PLACING OF REINFORCING BARS SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 315R "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES" AND CRSI "MANUAL OF STANDARD PRACTICE".
6. MIXING, TRANSPORTING, AND PLACING OF CONCRETE SHALL CONFORM TO ACI 301.
7. PROVIDE STANDARD BAR CHAINS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.
8. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60. REINFORCEMENT BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS OR REVIEWED BY THE STRUCTURAL ENGINEER.
9. WELDING OF REINFORCEMENT BARS, WHEN ACCEPTED BY THE STRUCTURAL ENGINEER, SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STANDARD D1.4. ELECTRODES FOR SHOP AND FIELD WELDING OF REINFORCEMENT BARS SHALL CONFORM TO ASTM A233, CLASS E90XX.
10. REINFORCEMENT DESIGNATED AS "CONTINUOUS" SHALL LAP 48 BAR DIAMETERS AT SPLICES UNLESS NOTED OTHERWISE. REINFORCEMENT BAR SPLICES IN GRADE BEAMS SHALL BE LOCATED AT THE CENTERLINE OF SUPPORTS FOR BOTTOM BARS AND AT MIDSPAN FOR TOP BARS. PROVIDE STANDARD ACI HOOKS FOR TOP AND BOTTOM BARS AT DISCONTINUOUS ENDS OF ALL GRADE BEAMS.
11. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 36 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.
12. CONSTRUCTION JOINTS IN SLABS AND GRADE BEAMS SHALL BE AT MID-SPAN AND KEY JOINTED WITH REINFORCING CONTINUOUS ACROSS JOINT.
13. PROVIDE 2- NO. 4 REINFORCEMENT BARS X 4'-0" AT RE-ENTRANT CORNERS OF SLAB ON GRADE. PLACE BARS CENTERED IN THE SLAB AND DIAGONAL TO THE CORNER WITH 1" CLEARANCE FROM THE SLAB AT THE CORNER.
14. CONCRETE STRENGTH, PROPORTIONS AND TESTING SHALL MEET THE FOLLOWING REQUIREMENTS:
A. THE MIX DESIGN SHALL BE PREPARED BY AN INDEPENDENT TESTING LABORATORY APPROVED BY THE OWNER USING MATERIALS TO BE USED ON THE JOB. THE LABORATORY MIX DESIGN SHALL EXCEED THE DESIRED JOB STRENGTH OF CONCRETE BY 1,200 PSI. FOUR COPIES OF MIX DESIGN SHALL BE SUBMITTED TO THE OWNER BEFORE CONCRETE WORK HAS BEGUN.
B. SLUMP SHALL NOT EXCEED 4 INCHES.
C. ALL COSTS OF CONCRETE TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. TESTING OF CONCRETE SHALL BE ACCOMPLISHED BY TAKING FOUR STANDARD TEST CYLINDERS OF THE CONCRETE FOR EACH DAY CONCRETE IS POURED. ONE SET OF TEST CYLINDERS MAY REPRESENT NO MORE THAN 55 CUBIC YARDS OF CONCRETE NOR ONE DAY'S POUR. CYLINDERS SHALL BE BROKEN TWO AT 7 DAYS AND TWO AT 28 DAYS IN ACCORDANCE WITH ASTM SPECIFICATIONS. FOR ALL CONCRETE, SLUMP CONE TEST SHALL BE RUN AT THE JOB SITE ON EACH TRUCK DELIVERY. CONCRETE USED FOR SLUMP CONE TEST SHALL NOT BE TAKEN FROM FIRST OR LAST 15% OF EACH LOAD. ALL TEST CYLINDERS AND SLUMP CONE TESTS SHALL BE PERFORMED BY A QUALIFIED TECHNICIAN FROM AN APPROVED TESTING FIRM IF DIFFERENT FROM GEOTECHNICAL ENGINEERS USED TO MONITOR SITE GRADING.

15. THE FOLLOWING ENVIRONMENTAL REQUIREMENTS SHALL BE MET AND MAINTAINED:
A. PROVIDE COLD WEATHER AND/OR HOT WEATHER PROTECTION AS RECOMMENDED IN ACI 306 AND ACI 305.UNLESS ADEQUATE PROTECTION IS PROVIDED, CONCRETE SHALL NOT BE PLACED DURING RAIN, SLEET OR SNOW. PROTECT CONCRETE FROM RAIN WATER, MAINTAIN CONCRETE WATER RATIO AND PROTECT CONCRETE SURFACE.
B. ALL CONCRETE SHALL BE ADEQUATELY PROTECTED AFTER POURING TO PREVENT DAMAGE FROM FREEZING, BY THE USE OF SUITABLE COVERS AND ADEQUATE HEATING EQUIPMENT.
C. FROZEN AND DAMAGED CONCRETE MUST BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
D. DO NOT PLACE CONCRETE ON FROZEN EARTH.

16. ADMIXTURES TO RETARD OR ACCELERATE SETTING, REDUCE WATER RATIO OR PREVENT FREEZING SHALL NOT BE USED WITHOUT PRIOR APPROVAL FROM TENANT. NO ADMIXTURES CONTAINING CALCIUM CHLORIDE MAY BE USED.

17. DO NOT PLACE CONCRETE WHEN TEMPERATURE IS 40 DEGREES F. AND FALLING OR WHEN FREEZING WEATHER IS PREDICTED WITHIN 24 HOURS. "RECOMMENDED PRACTICE FOR WINTER CONCRETING", ACI 604, MAY BE FOLLOWED FOR PLACING CONCRETE IN COLD WEATHER.

18. NO CALCIUM CHLORIDE OR OTHER ACCELERATORS OR ANTI-FREEZES SHALL BE USED.

E. MASONRY

1. MASONRY UNITS SHALL BE TYPE N-1
A. ASTM C90 SOLID OR ASTM C90 HOLLOW GROUTED SOLID BELOW GRADE.
B. ASTM C90 HOLLOW ABOVE GRADE
C. WITH MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI
D. ALL CMU SHALL BE LAID IN A FULL BED OF MORTAR.

2. ALL MORTAR SHALL BE ASTM C270 TYPE S A WITH A MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI AT 28 DAYS.

3. GROUT SHALL BE A HIGH SLUMP MIX
A. IN ACCORDANCE WITH ASTM SPECIFICATION C476
B. HAVING A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
C. FROM FIELD OBTAINED TEST CYLINDERS.

4. LAID UP MASONRY DESIGN F'M IS 1350 PSI FOR STANDARD CONCRETE MASONRY.

5. ALL CONCRETE MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES ACI 530-95/ASCE 5-95/TMS 402-95" AND "SPECIFICATIONS FOR MASONRY STRUCTURES ACI 530.1-95/ASCE 6-95/TMS 602-95 AND INSPECTED BY A QUALIFIED ENGINEER.

6. ALL BRICK MASONRY UNITS SHALL BE GRADE SW IN ACCORDANCE WITH ASTM C216 WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AND BONDED TOGETHER WITH TYPE S MORTAR.

7. CELLS TO BE GROUTED SHALL BE CLEAN AND FREE OF EXCESS MORTAR AND FOREIGN MATERIALS.
8. LINTELS SHALL BEAR ON MASONRY WALLS A MINIMUM OF 8" AT EACH END.
9. TEMPORARY SHORING OF LINTELS MUST BE PROVIDED UNTIL MASONRY HAS CURED. CONTROL JOINTS IN MASONRY SHALL NOT BE LOCATED WITHIN A DISTANCE EQUAL TO 50% OF THE LINTEL SPAN ADJACENT TO EACH SIDE OF THE OPENING.
10. CONTROL JOINTS SHALL BE PLACED IN THE MASONRY CONSTRUCTION SUCH THAT THE PANEL LENGTH TO HEIGHT RATIO OF THE WALL DOES NOT EXCEED 2.5, AND THAT THE MAXIMUM PANEL LENGTH OF WALL DOES NOT EXCEED 45 FEET. ADDITIONAL JOINTS SHALL BE PLACE WHERE ABRUPT CHANGES IN WALL SECTIONS OCCUR.

F. TIMBER FRAMING

1. ALL STRUCTURAL TIMBER SHALL BE HEM FIR #2 MINIMUM, STRESS GRADE LUMBER OR APPROVED EQUAL. THE MINIMUM ALLOWABLE PROPERTIES ARE AS FOLLOWS:
A. FB = 850 PSI FV = 75 PSI E = 1,300,000 PSI
2. ALL STRUCTURAL TIMBER TO BE STAMPED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION'S "CONSTRUCTION MANUAL".
3. ALL WOOD TRUSS MEMBERS SHALL BE FABRICATED FROM KILN DRIED SOUTHERN PINE STRESS GRADE LUMBER OR EQUAL.
4. ALL TIMBER AND TIMBER CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND CODES AS SPECIFIED BELOW:
A. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION: TIMBER CONSTRUCTION MANUAL.
B. NATIONAL FOREST PRODUCTS ASSOCIATION: NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION.
C. AMERICAN PLYWOOD ASSOCIATION: PLYWOOD DESIGN SPECIFICATION.
D. AMERICAN WOOD-PRESERVERS ASSOCIATION STANDARDS.
E. NATIONAL LUMBER MANUFACTURERS ASSOCIATION: NATIONAL DESIGN SPECIFICATION FOR STRESS-GRADE LUMBER AND ITS FASTENINGS.

5. DESIGN, FABRICATION AND INSTALLATION OF WOOD TRUSSES AND SHEET METAL CONNECTORS SHALL BE IN ACCORDANCE WITH THE FOLLOWING TRUSS PLATE INSTITUTE STANDARDS:
A. DESIGN SPECIFICATION FOR METAL PLATE CONNECTED WOOD TRUSSES, TPI-85 FOR ROOFS.
B. DESIGN SPECIFICATION FOR METAL PLATE CONNECTED PARALLEL CHORD WOOD TRUSSES, PCT-80 FOR FLOORS.
C. RECOMMENDED DESIGN SPECIFICATION FOR TEMPORARY BRACING OF METAL PLATE CONNECTED WOOD TRUSSES, DSB-89.
D. HANDLING, INSTALLING AND BRACING METAL PLATE CONNECTED WOOD TRUSSES, HIB-91.

6. ALL TIMBER CONNECTIONS SHALL BE MADE USING PREFABRICATED CONNECTORS. TOE-NAILING IS NOT PERMITTED. SUBMIT MANUFACTURER'S DATA FOR REVIEW. FASTENERS SHALL BE AS MANUFACTURED BY HECKMANN, KANT SAG, SIMPSON OR APPROVED EQUAL.
7. PROVIDE MINIMUM CONTINUOUS SOLID BLOCKING OR CROSS BRIDGING LINES AT 8'-0" O/C MAX SPACING FOR ALL
A. WOOD JOISTS
B. ROOF TRUSSES
C. PROVIDE ADDITIONALLY X-BRIDGING AS REQUIRED BY FABRICATOR. PROVIDE A MINIMUM OF ONE LINE BLOCKING/CROSS BRIDGING FOR ALL SPANS.

8. PROVIDE PRESSURE TREATED LUMBER WHERE LUMBER IS IN CONTACT WITH CONCRETE OR OUTSIDE OF BUILDING.
9. DESIGN AND DETAILING OF GLUE-LAMINATED MEMBERS AND ROUGH SAWN TIMBER MEMBERS, CONNECTIONS AND ACCESSORIES SHALL BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE AITC "TIMBER CONSTRUCTION MANUAL" AND THE NFPA "NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION".
10. SAWN TIMBERS SHALL BE SOUTHERN PINE OR DOUGLAS FIR, MEDIUM GRAIN WITH THE FOLLOWING MINIMUM ALLOWABLE DESIGN VALUES:

BENDING	1200 PSI
TENSION PARALLEL TO GRAIN	625 PSI
HORIZONTAL SHEAR STRESS	90 PSI
COMPRESSION PERPENDICULAR TO GRAIN	565 PSI
COMPRESSION PARALLEL TO GRAIN	1000 PSI
MODULUS OF ELASTICITY	1600000 PSI

11. SAWN TIMBERS SHALL BE TREATED AND FINISHED AS REQUIRED BY THE ARCHITECTURAL SPECIFICATIONS. WEATHER EXPOSED ENDS SHALL BE TREATED WITH C.C.A.
12. PLYWOOD FOR ROOF SHALL BE 5/8" THICK AND SHALL CONFORM TO APA PS 1 RATED SHEATHING 48/24, EXTERIOR, 48" X 96". PLYWOOD SHALL BE TWO SPAN (MINIMUM) CONTINUOUS. FACE GRAIN SHALL BE PERPENDICULAR TO SUPPORTS WITH A STAGGERED LAY-UP. PROVIDE TWO PANEL EDGE CLIPS BETWEEN SUPPORTS. NAIL PLYWOOD TO SUPPORTING MEMBERS WITH 8D NAILS AT 6" O.C. AT PANEL EDGES AND 12 O.C. AT INTERMEDIATE SUPPORTS. MINIMUM MODULUS OF ELASTICITY SHALL BE 1800000 PSI.
13. WOOD TRUSSES SHALL BE DESIGNED TO CONFORM TO NATIONAL FOREST PRODUCTS ASSOCIATION "NATIONAL DESIGN SPECIFICATION FOR STRESS GRADED LUMBER AND ITS FASTENINGS" AND THE TRUSS PLATE INSTITUTE "DESIGN SPECIFICATIONS FOR LIGHT METAL PLATE CONNECTED WOOD TRUSSES". THE DESIGN CALCULATIONS AND DRAWINGS SHALL BEAR THE SEAL OF THE RESPONSIBLE REGISTERED PROFESSIONAL ENGINEER. ALL CHORDS MUST BE CUT FROM LUMBER BEARING THE PROPER GRADE MARK FOR THE MATERIAL SPECIFIED. CHORD LUMBER SHALL HAVE A COEFFICIENT OF VARIATION FOR THE MODULUS OF ELASTICITY OF 0.11 OR LESS. DESIGN DRAWINGS SHALL BE SUBMITTED FOR ALL TRUSSES INDICATING THE SPECIES, SIZES, AND STRESS GRADES OF LUMBER AND CONNECTOR PLATE SIZES TO BE USED IN THE FABRICATION OF THE TRUSSES. BEARING, ANCHORAGE AND BRACING DETAILS SHALL BE SHOWN. CONNECTOR PLATES SHALL BE MANUFACTURED FROM MATERIAL CONFORMING TO ASTM A446, GRADE A, AND SHALL GALVANIZED IN ACCORDANCE WITH ASTM A525, COATING DESIGNATION G60. IN HIGHLY CORROSIVE ENVIRONMENTS OR WHERE FIRE RETARDANT LUMBER IS SPECIFIED, STAINLESS STEEL CONNECTOR PLATES SHALL BE USED.

G. LIGHT GAGE FRAMING

1. LIGHT GAGE STUDS AND/OR JOISTS AND ACCESSORIES SHALL BE OF THE TYPE, SIZE, GAUGE AND SPACING SHOWN IN THE DOCUMENTS. STUDS, RUNNERS (TRACK), BRACING AND BRIDGING SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C955. THIS INFORMATION IS PROVIDED FOR BIDDING PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A COMPLETE SYSTEM DESIGNED TO SATISFY THE REQUIREMENTS IDENTIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS.
2. PHYSICAL PROPERTIES AND ALLOWABLE LOAD CAPACITIES OF MEMBERS SHALL BE DEVELOPED IN ACCORDANCE WITH AISI "SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION. DESIGN, DETAILING AND CONNECTIONS FOR LIGHT GAGE STEEL FRAMING SHALL CONFORM TO THE REQUIREMENTS OF THIS ANSI SPECIFICATION.
3. GALVANIZED STUDS, JOISTS AND ACCESSORIES OF 16 GAUGE THICKNESS OR HEAVIER SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A653, WITH A YIELD OF EITHER 50 KSI OR 33 KSI, AS SPECIFIED AND AS SET FORTH IN THE ABOVE REFERENCED AISI SPECIFICATION.
4. GALVANIZED STUDS, JOISTS AND ACCESSORIES OF 18 GAUGE THICKNESS OR LIGHTER SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A653, WITH A YIELD OF 33 KSI AND AS SET FORTH IN THE ABOVE REFERENCED AISI SPECIFICATION.
5. GALVANIZED STUDS, JOISTS AND ACCESSORIES SHALL HAVE A MINIMUM G-60 COATING CONFORMING TO THE REQUIREMENTS OF ASTM A525.
6. WELDING OF LIGHT GAGE STEEL MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1, AWS D1.3, AND THE ANSI MANUAL SECTION E2. WELDERS AND WELDING PROCEDURES SHALL BE QUALIFIED AS SPECIFIED IN AWS D1.3. WELDS MAY BE BUTT, FILLET, SPOT OR GROOVE TYPE, THE APPROPRIATENESS OF WHICH SHALL BE DETERMINED BY DESIGN CALCULATIONS. ALL WELDS SHALL BE TOUCHED-UP USING A ZINC RICH PAINT.
7. MAKE CONNECTIONS WITH SELF-TAPPING SCREWS OR WELDING SO THAT THE CONNECTIONS MEET OR EXCEED THE DESIGN LOADS. ALWAYS USE WELDS WHERE SHOWN ON DRAWINGS.
8. THE LIGHT GAGE STEEL FRAMING SUPPLIER AND ERECTOR SHALL HAVE A MINIMUM 5 YEARS EXPERIENCE IN THE FABRICATION AND ERECTION OF LIGHT GAGE STEEL FRAMING SYSTEMS.
9. CUT ALL LIGHT GAGE STEEL FRAMING MEMBERS WITH SAW OR SHEARS. FLAME CUTTING IS NOT PERMITTED. THE CUTTING OF ANY MEMBER SUPPORTING LOADS IS PROHIBITED.
10. ALL INTERSECTIONS OF LIGHT GAGE STEEL FRAMINGCOMPONENTS ARE TO BE WELDED. IF THE LENGTH OF THE WELD IS NOT SHOWN ON THE DRAWINGS, THE WELD IS FOR THE FULL LENGTH OF THE INTERSECTION OF THE MEMBERS JOINED.
11. LIGHT GAGE STEEL FRAMING COMPONENTS MAY BE PREASSEMBLED INTO PANELS PRIOR TO ERECTING. PREASSEMBLY SHALL TAKE PLACE UNDER CONDITIONS EQUAL TO PLANT CONDITIONS. PREASSEMBLED PANELS AND TRUSSES SHALL BE SQUARE AND TRUE WITH COMPONENTS ATTACHED IN A MANNER SO AS TO PREVENT RACKING, TORQUING, DISTORTION OR DISPLACEMENT OF THE MEMBERS OR JOINTS DURING FABRICATION, HANDLING, TRANSPORTATION OR ERECTION.
12. LIGHT GAGE STEEL FRAMING COMPONENTS SHALL BE CUT SQUARELY FOR ATTACHMENT TO PERPENDICULAR MEMBERS OR AS REQUIRED FOR A FULL ANGULAR FIT AGAINST ABUTTING MEMBERS. MEMBERS SHALL BE SECURED IN PLACE UNTIL PROPERLY ATTACHED.
13. STUDS SHALL HAVE FULL BEARING AGAINST THE INSIDE (WEB) OF THE RUNNER (TRACK) MEMBER PRIOR TO STUD-RUNNER ATTACHMENT AT THE TOP AND BOTTOM OF THE STUD. STUDS SHALL BE ATTACHED TO EACH TRACK LEG AT THE TOP AND BOTTOM OF THE STUD WITH WELDS OR SCREWS. A MINIMUM OF 10 INCHES OF UN-PUNCHED STEEL IS REQUIRED AT BOTH ENDS OF STUDS (NO PUNCHING HOLES OF ANY SIZE IS PERMITTED IN THE 10 INCHES).
14. SPLICING OF LIGHT GAGE METAL STUD OR JOIST MEMBERS SHALL NOT BE PERMITTED, UNLESS OTHERWISE NOTED. AT TRACK BUTT JOINTS, THE ABUTTING PIECES OF TRACK SHALL BE SECURELY ANCHORED TO A COMMON STRUCTURAL ELEMENT OR THEY SHALL BE BUTT WELDED OR SPLICED TOGETHER.
15. JACK STUDS, CRIPPLES, TRACK, ETC. SHALL BE PROVIDED BELOW WINDOW SILLS AND ABOVE WINDOW AND DOOR HEADS AS REQUIRED TO FRAME OPENINGS. HEADERS SHALL BE INSTALLED WHENEVER THE OPENING WIDTH EXCEEDS THE TYPICAL STUD SPACING. CONTINUOUS STUDS EACH SIDE OF HEADERS SHALL BE EQUAL TO ONE HALF OF THE INTERRUPTED STUDS PLUS ONE STUD AT EACH SIDE.
16. ALL LINTELS INDICATED ON DRAWINGS AS METAL STUD LINTELS ARE TO BE PROVIDED BY STUD MANUFACTURER/SUPPLIER.
17. MISCELLANEOUS FRAMING SHALL BE PROVIDED AS REQUIRED TO FURNISH A COMPLETE INSTALLATION.
18. HOLES THAT ARE FIELD CUT THROUGH LIGHT GAGE STEEL FRAMING MEMBERS SHALL BE MADE WITHIN THE LIMITATIONS OF THE PRODUCT AND THE PRODUCT DESIGN. HOLES SHALL BE REINFORCED AS RECOMMENDED BY THE MANUFACTURER.
19. SHOP DRAWINGS SHALL BE DOCUMENTS ILLUSTRATING MATERIALS, SHOP COATINGS, STEEL THICKNESS, DETAILS OF FABRICATION, DETAILS OF ATTACHMENT TO ADJOINING WORK, SIZE, LOCATION AND SPACING OF FASTENERS FOR ATTACHMENT TO ADJOINING WORK.
20. VOIDS BENEATH TRACKS SHALL NOT BE PERMITTED. CONTRACTOR SHALL PROVIDE A LEVEL SLAB WITH A TOLERANCE OF 1/8 INCHES IN TEN FEET. WHERE UNEVENNESS OF SUPPORTING FLOOR PREVENTS CONTINUOUS SOLID BEARING, THE PANEL OR TRACK SHALL BE LEVELED BY PLACING MORTAR OR GROUT BENEATH THE TRACK.

H. MASONRY VENEER ON METAL STUDS

1. MASONRY SHALL CONFORM TO ASTM C-145. MORTAR SHALL CONFORM TO ASTM C270, TYPE S.
2. PROVIDE GALVANIZED STUDS AS SHOWN ON THE DRAWINGS.
3. PROVIDE STUD LATERAL BRIDGING CHANNELS AT 5'0" ON CENTER. WELD ALL BRIDGING TO STUDS USING BRIDGE CLIPS.
4. WELD ALL STUDS TO CHANNELS TOP AND BOTTOM. DOUBLE ALL STUDS AT JAMBS OF WINDOWS, DOORS, AND OTHER OPENINGS.
5. PROVIDE CORROSION RESISTANT 9 GAGE ADJUSTABLE WIRE TIES @ 16" O.C. EACH STUD. PROVIDE 1/2" GYPSUM WALL BOARD OR RIGID SHEATHING ON FACE OF STUDS. ATTACH WIRE TIES DIRECTLY TO STUDS AND NOT TO THE SHEATHING ALONE. PROVIDE FLEXIBLE ANCHORS ON ALL VENEER ADJACENT TO STRUCTURAL STEEL (BEAMS, COLUMNS, ETC.) AT 16" O.C. CORRUGATED TIES WILL NOT BE PERMITTED.
6. ALL STUDS SHALL HAVE BRACING PER MANUFACTURER'S RECOMMENDATIONS.
7. STEEL STUD SUPPLIER SHALL SUBMIT STUD DESIGN AND SHOP DRAWINGS FOR REVIEW AND APPROVAL. DESIGN EXTERIOR STUDS FOR WIND LOAD PER WIND LOADS PROVIDED AND A DEFLECTION LIMITATION OF L/600 OR 0.3", WHICHEVER IS LESS.
8. ALL 16 GAGE AND HEAVIER GALVANIZED STRUCTURAL MEMBERS SHALL BE FORMED FROM STEEL THAT CORRESPONDS TO THE REQUIREMENTS OF ASTM A446, GRADE D (MINIMUM YIELD OF 50 KSI). ALL 18 GAGE AND LIGHTER GALVANIZED STRUCTURAL MEMBERS SHALL BE FORMED FROM STEEL THAT CORRESPONDS TO THE REQUIREMENTS OF ASTM A446, GRADE A (MINIMUM YIELD 33 KSI).

I. STEEL STUD BEARING WALL

1. MANUFACTURER TO DESIGN STUD BEARING WALL TO RESIST WIND AND GRAVITY LOADING AS INDICATED.
2. PROVIDE ALL NECESSARY BRIDGING, WIND BRACING AND TEMPORARY BRACING AS REQUIRED.
3. SUBMIT COMPLETE DESIGN CALCULATIONS, SHOP DRAWINGS AND CONNECTION DETAILS SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF JURISDICTION. ALL EXTERIOR STUDS TO BE GALVANIZED.
4. DOUBLE ALL STUDS AT JAMBS OF WINDOWS, DOORS AND OTHER OPENINGS.
5. ALL 16 GAGE AND HEAVIER GALVANIZED STRUCTURAL MEMBERS SHALL BE FORMED FROM STEEL THAT CORRESPONDS TO THE REQUIREMENTS OF ASTM A-446, GRADE D (MINIMUM YIELD OF 50 KSI).

J. METAL STAIRS

1. STAIR ASSEMBLY SHALL BE DESIGNED TO SUPPORT A MINIMUM LIVE LOAD OF 100 PSF. STAIR TREADS SHALL BE DESIGNED TO SUPPORT A CONCENTRATED LOAD OF 300 POUNDS ON AN AREA OF 4 SQUARE INCHES APPLIED AT THE CENTER OF THE TREAD.
2. SHOP DRAWINGS SHALL BE SUBMITTED INDICATING LAYOUT OF STAIRS, PROFILES, ANCHORAGE AND CONNECTION DETAILS. DRAWINGS SHALL BEAR THE SEAL OF THE RESPONSIBLE REGISTERED PROFESSIONAL ENGINEER.
3. TREADS AND RISERS SHALL BE FORMED FROM STEEL THAT CONFORMS TO THE REQUIREMENTS OF ASTM A611, GRADE B, MINIMUM 12 GAGE THICKNESS. FABRICATE STAIRS WITH CLOSED RISERS AND TREADS OF PAN CONSTRUCTION TO RECEIVE CONCRETE FILL. ATTACH TREAD PANS TO STRINGERS WITH CLIP ANGLES WELDED IN PLACE.

DESIGN LOAD SCHEDULE
(ALL LOADS SHOWN ARE IN POUNDS PER SQ. FT.)

COMPONENT \ AREA	SLAB ON GRADE	MEZZANINE	ROOF			
CONCRETE SLAB	50					
ROOF & INSULATION		6	6			
JOIST & TRUSS		7	7			
CEILING		2	2			
COLLATERAL		5	5			
TOTAL DEAD LOAD	50	20	20			
TOTAL LIVE LOAD	100	40	30			
TOTAL LOAD	150	60	50			

SNOW DESIGN LOAD SCHEDULE
INTERNATIONAL BUILDING CODE (2006)

ITEM	SYMBOL	VALUE	REFERENCE
GROUND SNOW LOAD	P_g	30	FIGURE 1608.2
SNOW EXPOSURE FACTOR	C_e	1.0	TABLE 1608.3.1
SNOW LOAD IMPORTANCE FACTOR	I_s	1.1	TABLE 1604.5
THERMAL FACTOR	C_t	1.0	TABLE 1608.3.2
FLAT-ROOF SNOW LOAD	P_f	21	SECTION 1608.3

LATERAL LOAD DESIGN SCHEDULE
INTERNATIONAL BUILDING CODE (2006)

WIND LOAD			
ITEM	SYMBOL	VALUE	REFERENCE
BASIC WIND SPEED (3 SEC. GUST)	V	90	FIGURE 1609
WIND LOAD IMPORTANCE FACTOR	I_w	1.15	TABLE 1604.5
WIND EXPOSURE CATEGORY	-	B	SECTION 1609.4
SEISMIC LOAD			
ITEM	SYMBOL	VALUE	REFERENCE
IMPORTANCE FACTOR	I_E	1.25	TABLE 1604.5
SHORT PERIOD SPECTRAL ACCELERATION	S_{DS}	0.2	SECTION 1615.1
(1) SECOND PERIOD SPECTRAL ACCELERATION	S_{D1}	0.1	SECTION 1615.1
SEISMIC USE GROUP	-	II	SECTION 1616.2
SEISMIC DESIGN CATEGORY	-	B	TABLE 1616.3
SITE CLASSIFICATION	-	D	TABLE 1615.1.1
BASIC STRUCTURAL SYSTEM	-	BEARING WALL	TABLE 1617.6
BASIC SEISMIC-RESISTING SYSTEM	-	LIGHT FRAMED WALLS W/ SHEAR PANELS	TABLE 1617.6
RESPONSE MODIFICATION FACTOR	R	2	TABLE 1617.6
DEFLECTION AMPLIFICATION FACTOR	C_d	2	TABLE 1617.6
SEISMIC BASE SHEAR	V	24.5k	SECTION 1617.4.1
ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE PROCEDURE		SECTION 1617.4

WALL COMPONENTS & CLADDING: DESIGN WIND PRESSURES (LB/SQ. FT.)
(INTERNAL PRESSURE COEFFICIENTS, GCpi=±?)

TRIBUTARY AREA (SQ. FT.)	LESS THAN 10	10 TO 20	20 TO 50	50 TO 100	100 TO 500	GREATER THAN 500
MAIN FIELD (ZONE 4)	±18.9	±18.0	±16.8	±16.0	±14.1	±14.1
CORNER (ZONE 5)	±18.9	±18.0	±16.8	±16.0	±14.1	±14.1

POSITIVE PRESSURE: ACTING TOWARD SURFACE
NEGATIVE PRESSURE: ACTING AWAY FROM SURFACE

CORNER ZONE: WITHIN ? FROM BUILDING CORNERS ALONG NORTH/SOUTH/EAST/WEST FACES.
WITHIN ? FROM BUILDING CORNERS ALONG NORTH/SOUTH/EAST/WEST FACES.

NOTE: 1) ZONE DESIGNATIONS AS PER ASCE7.

PERMIT SET
10-13-10

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Date:

Revisions:

Consultants:

Certification: STATE OF MARYLAND SEAN P. KENNEDY 31559 PROFESSIONAL ENGINEER 10/13/10

Project Title: MIRACLE TEMPLE ASSEMBLY OF GOD
14111 ALDERTON ROAD
SILVER SPRING, MARYLAND 20906

STRUCTURAL NOTES/LOAD TABLES

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Date: 5-9-06
Scale: AS NOTED
Drawn:
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of

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