General Notes

GN. GENERAL

GN.1 THE STRUCTURAL DRAWINGS AND SPECIFICATIONS ARE A PORTION OF THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR AND SUBCONTRACTORS SHALL REFERENCE AND COORDINATE WITH ALL OTHER DISCIPLINES' DRAWINGS. ANY DISCREPANCIES OR OMISSIONS SHALL BE REPORTED TO THE STRUCTURAL ENGINEER AND ARCHITECT.

GN.2 DESIGN CRITERIA:

A. CODES AND SPECIFICATIONS:

1. GENERAL BUILDING CODE:
INTERNATIONAL BUILDING CODE, 2015 EDITION.

2. DESIGN LOAD CRITERIA:
MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, AMERICAN SOCIETY OF CIVIL ENGINEERS, ASCE 7-10

3. CONCRETE:
BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, AMERICAN CONCRETE INSTITUTE, ACI 318.

4. STRUCTURAL STEEL:
SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AISC 360.

5. STEEL JOISTS:
STANDARD SPECIFICATIONS, LOAD TABLES AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS, STEEL JOIST INSTITUTE, SJI.

6. STEEL DECK:
STEEL DECK INSTITUTE DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS, ROOF DECKS AND CELLULAR METAL FLOOR DECK WITH ELECTRICAL DISTRIBUTION.

7. COLD-FORMED METAL FRAMING:
NORTH AMERICAN SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS, AMERICAN IRON AND STEEL INSTITUTE.

8. MASONRY:
BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, TMS 402/ACI 530/ASCE 5. SPECIFICATION FOR MASONRY STRUCTURES, TMS 602/ACI 530.1/ASCE 6.

B. DESIGN LOADS (PSF):

1. DEAD LOADS:
ANY CHANGES IN CONSTRUCTION MATERIALS FROM THOSE SHOWN ON THE ARCHITECTURAL OR STRUCTURAL DRAWINGS SHALL BE REPORTED BY THE CONTRACTOR TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF LOAD-CARRYING CAPACITY OF THE STRUCTURE.

2. LIVE LOADS:
ROOF (REDUCIBLE)----------20

LIVE LOAD REDUCTIONS HAVE BEEN APPLIED IN ACCORDANCE WITH THE BUILDING CODE, UNLESS NOTED.

3. SNOW LOAD:
GROUND SNOW LOAD (Pg)----------5.0 PSF

4. WIND LOADS:
BASIC WIND SPEED (Vult)----------115 MPH
BASIC WIND SPEED (Vasd)----------90 MPH
WIND IMPORTANCE FACTOR (Iw)----------1.0
BUILDING CATEGORY----------II
WIND EXPOSURE CATEGORY----------B
INTERNAL PRESSURE COEFFICIENT----------0.18

WALL COMPONENT AND CLADDING WIND PRESSURE-SEE DRAWINGS

5. SEISMIC LOADS:
SEISMIC IMPORTANCE FACTOR (Ie)----------1.0

MAPPED SPECTRAL RESPONSE ACCELERATIONS:
Ss----------0.265
S1----------0.12
ASSUMED SITE CLASS----------D
SITE COEFFICIENTS:
Fa----------1.58
Fv----------2.39
DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS:
Sds----------0.281
Sd1----------0.167
SEISMIC DESIGN CATEGORY----------C
BASIC SEISMIC-FORCE-RESISTING SYSTEM: STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE

SEISMIC RESPONSE COEFFICIENT (Cs)----------0.094
RESPONSE MODIFICATION FACTOR(R)----------3
OVER-STRENGTH FACTOR (Wo)----------3
DEFLECTION AMPLIFICATION FACTOR (Cd)----------3

ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE METHOD

GN.3 CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SITE CONDITIONS PRIOR TO FABRICATION/CONSTRUCTION. NOTIFY STRUCTURAL ENGINEER AND ARCHITECT OF ANY DISCREPANCIES PRIOR TO FABRICATION/CONSTRUCTION.

GN.4 SPECIAL INSPECTIONS/STRUCTURAL ENGINEER'S SITE VISITS:

A. SPECIAL INSPECTIONS ARE REQUIRED FOR THIS PROJECT IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE. REFER TO DRAWINGS.

B. SITE VISITS BY STRUCTURAL ENGINEER:

1. STRUCTURAL ENGINEER'S SITE VISITS ARE FOR VISUAL OBSERVATION OF THE IN-PLACE STRUCTURE FOR GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS AT THE TIME OF THE OBSERVATION.

2. CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER AND ARCHITECT, PER THE SCHEDULE STATED BELOW, WHEN SUCH ITEMS HAVE PROGRESSED TO THE POINT WHERE THEY WILL BE IN PLACE AND READY FOR REVIEW. FAILURE TO NOTIFY MAY REQUIRE REMOVAL OF COMPLETED CONSTRUCTION.

NOTIFY PRIOR TO THE FOLLOWING SCHEDULED TASKS	REQUIRED DAYS NOTIFICATION
FIRST FOUNDATION POUR	2 DAYS
COVERING METAL ROOF DECK	2 DAYS
SHEATHING LOAD BEARING METAL WALL STUDS	2 DAYS

C. SITE VISITS BY THE STRUCTURAL ENGINEER'S OFFICE DO NOT REPLACE INSPECTIONS AND TESTING BY THE TESTING AGENCY OR SPECIAL INSPECTOR.

GN.5 SUBMITTALS:

A. REVIEW OF SHOP DRAWINGS AND OTHER SUBMITTALS BY THE STRUCTURAL ENGINEER DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO REVIEW AND CHECK SHOP DRAWINGS BEFORE SUBMITTING TO THE STRUCTURAL ENGINEER. THE CONTRACTOR REMAINS SOLELY RESPONSIBLE FOR ERRORS AND OMISSIONS ASSOCIATED WITH THE PREPARATION OF SHOP DRAWINGS AS THEY PERTAIN TO MEMBER SIZES, DETAILS, AND DIMENSIONS SPECIFIED IN THE CONTRACT DOCUMENTS. ALL SHOP DRAWINGS MUST BE REVIEWED AND "APPROVED" BY THE CONTRACTOR PRIOR TO SUBMITTAL.

B. ELECTRONIC SHOP DRAWING SUBMITTALS: SUBMIT ALL ELECTRONIC SHOP DRAWINGS IN .PDF FORMAT. REVIEWED SHOP DRAWINGS WILL BE RETURNED IN .PDF FORMAT. ALL PRINTS REQUIRED BY THE CONTRACTOR ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MADE AFTER APPROVED SHOP DRAWINGS ARE RETURNED.

C. SHOP DRAWINGS: THE CONTRACTOR SHALL SUBMIT FOR STRUCTURAL ENGINEER REVIEW SHOP DRAWINGS FOR THE FOLLOWING ITEMS. ITEMS MARKED (*) SHALL HAVE SHOP DRAWINGS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED. ITEMS MARKED (#) SHALL BE SUBMITTED FOR STRUCTURAL ENGINEER'S RECORD ONLY.

1. CONCRETE MIX DESIGNS
2. CONCRETE REINFORCING
3. STRUCTURAL STEEL (*)
4. STEEL DECK
5. COLD-FORMED METAL FRAMING (*)

D. DESIGN CALCULATIONS: THE CONTRACTOR SHALL SUBMIT FOR STRUCTURAL ENGINEER'S RECORD, DESIGN CALCULATIONS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED FOR THE FOLLOWING ITEMS.

1. STRUCTURAL STEEL CONNECTIONS
2. COLD-FORMED METAL FRAMING

GN.6 ALL DETAILS SHOWN ARE TYPICAL. SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS, UNLESS NOTED.

GN.7 THE CONTRACTOR IS RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES OF CONSTRUCTION.

GN.8 CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS/ROOFS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT LOADS DO NOT EXCEED THE ALLOWABLE LOAD.

FD. FOUNDATION

FD.1 A GEOTECHNICAL ENGINEER, EMPLOYED BY THE CONTRACTOR, SHALL PROVIDE COMPACTED FILL REQUIREMENTS FOR THE BUILDING PAD AND REVIEW THE FOUNDATION BEARING SURFACE TO VERIFY THE BASIS OF DESIGN BEARING PRESSURE NOTED. DO NOT PLACE CONCRETE PRIOR TO GEOTECHNICAL ENGINEER'S APPROVAL.

FD.2 ASSUMED DESIGN BEARING PRESSURES (PSF):----------2000

FD.3 ALL FOUNDATION BEARING SURFACES SHALL BE INSPECTED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING CONCRETE TO ENSURE COMPLIANCE WITH PRESSURES NOTED. THE FINAL BEARING ELEVATIONS MAY VARY AS REQUIRED TO PROVIDE PROPER BEARING CAPACITY IN AN APPROVED BEARING STRATUM AS DETERMINED BY THE GEOTECHNICAL ENGINEER.

FD.4 FOOTINGS SHALL BE PLACED THE SAME DAY AS INSPECTION BY THE GEOTECHNICAL ENGINEER UNLESS EXTENDED TIME IS APPROVED BY THE GEOTECHNICAL ENGINEER.

FD.5 FOOTINGS SHALL BE NEATLY EXCAVATED WHERE POSSIBLE WITH SIDES AND TOP EDGES FREE OF LOOSE OR WET MATERIALS. WHERE NEAT EXCAVATION IS NOT POSSIBLE, FOOTING EXCAVATION SHALL BE FILLED WITH CONCRETE TO THE TOP OF FOOTING. THE BOTTOM EXCAVATION SHALL BE CLEAN AND DRY WITH ALL LOOSE MATERIAL REMOVED FOR AN ESSENTIALLY FLAT BEARING SURFACE. WHERE SOFT OR UNSUITABLE BEARING SURFACES ARE ENCOUNTERED, THE AREA SHALL BE UNDERCUT AS REQUIRED AND REPLACED WITH LEAN CONCRETE OR COMPACTED DENSE GRADED CRUSHED STONE AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

FD.6 FOUNDATIONS SHALL BE CENTERED ABOUT COLUMN LINES, UNLESS NOTED.

CN. CONCRETE

CN.1 CONCRETING OPERATIONS SHALL COMPLY WITH ACI STANDARDS.

CN.2 MINIMUM CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS (PSI), TYPE OF CONCRETE, MAXIMUM W/C (WATER/CEMENTITIOUS MATERIALS RATIO), TOTAL AIR CONTENT, SLUMP AND CONCRETE USE:

STRENGTH	TYPE	W/C	AIR	SLUMP	USE
3000	NORMAL WT.	0.57	4-6%	3" TO 5"	UNLESS NOTED

CN.3 REINFORCING BARS: ASTM A615 GRADE 60.

CN.4 WELDED WIRE REINFORCEMENT (WWR): ASTM A185. MINIMUM LAP AND EMBEDMENT TO BE THE GREATER OF ONE CROSS WIRE SPACING PLUS 2" OR 6".

CN.5 REINFORCING STEEL SHOWN IN SECTIONS AND DETAILS IS A SCHEMATIC INDICATION THAT REINFORCING EXISTS. SEE SCHEDULES, SECTION NOTES AND GENERAL NOTES FOR ACTUAL REINFORCING REQUIRED.

CN.6 REINFORCING BAR PLACING ACCESSORIES TO BE INSTALLED IN ACCORDANCE WITH ACI MANUAL OF STANDARD PRACTICE. WHERE CONCRETE IS EXPOSED IN FINISHED BUILDING, PROVIDE ACCESSORIES WITH RUSTPROOF LEGS.

CN.7 DETAIL REINFORCEMENT IN ACCORDANCE WITH ACI 315. REINFORCEMENT SHALL NOT BE WELDED UNLESS NOTED OR APPROVED BY THE STRUCTURAL ENGINEER.

CN.8 SPLICES SHALL BE CLASS "B" TENSION LAP SPLICE, UNLESS NOTED.

CN.9 REINFORCING MARKED "CONTINUOUS" SHALL BE SPLICED WITH CLASS "B" TENSION LAP SPLICE, UNLESS NOTED.

CN.10 CONCRETE COVERAGE OF REINFORCEMENT, UNLESS NOTED:

FOOTINGS----------2" TOP, 3" BOTTOM & SIDES
WWR IN SLABS ON GRADE----------2" TOP
PEDESTALS----------1 1/2" CLEAR OF TIES

SS. STRUCTURAL STEEL

SS.1 FABRICATE AND ERECT ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

SS.2 LATERAL FORCE RESISTING SYSTEM / STABILITY OF THE BUILDING IN THE COMPLETED STRUCTURE IS PROVIDED AS FOLLOWS:
A. ROOF DIAPHRAGM: STEEL ROOF DECKING

B. COLLECTOR ELEMENTS/DRAG STRUTS: NONE

C. LATERAL FORCE RESISTING SYSTEM: MASONRY SHEAR WALLS AND STEEL BRACING.

SS.3 STRUCTURAL STEEL AND STRUCTURAL STEEL CONNECTIONS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE:

W SHAPES	ASTM A992
CHANNELS	ASTM A36
STIFFENER PLATES, BASE PLATES, CAP PLATES, CONNECTION PLATES, AND ANGLES	ASTM A36
HOLLOW STRUCTURAL SECTIONS	ASTM A500, GRADE C
WELDED CONNECTIONS	E70XX ELECTRODES, MINIMUM SIZE FILLET WELD 3/16"
HEADED ANCHOR RODS	ASTM F1554 GRADE 36 ANCHOR AND HEAVY HEX NUT, UNLESS INDICATED.
BOLTS	ASTM A325 OR A490
NUTS	ASTM A563
WASHERS	ASTM F436

SS.4 FABRICATE BRACING MEMBERS WITH SUFFICIENT DRAW TO PREVENT SAGGING.

SS.5 BEAMS SHALL BE EQUALLY SPACED IN BAYS, UNLESS NOTED.

SS.6 HSS MEMBERS SHALL HAVE A 1/4" CLOSURE PLATE.

SS.7 FOUR ANCHOR RODS MINIMUM FOR BASE PLATES UNDER COLUMNS.

SS.8 GROUT UNDER BEARING PLATES SHALL BE NON-SHRINK, NON-METALLIC TYPE. GROUT SHALL HAVE A SPECIFIED DESIGN COMPRESSIVE STRENGTH TWO TIMES THAT OF THE SUPPORTING CONCRETE.

SS.9 STRUCTURAL STEEL MEMBERS SHALL NOT BE CUT, SPLICED, OR MODIFIED IN THE FIELD UNLESS NOTED ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

SS.10 STRUCTURAL STEEL NOT EXPOSED TO VIEW SHALL BE PRIMED WITH MANUFACTURER'S STANDARD SHOP PRIMER. STRUCTURAL STEEL EXPOSED TO WEATHER IN ITS FINAL POSITION SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. FOR STRUCTURAL STEEL EXPOSED TO VIEW, REFER TO PROJECT SPECIFICATIONS FOR FINISHED COATING SYSTEM.

SS.11 DRAIN HOLES SHALL BE PROVIDED IN ALL STEEL AS REQUIRED TO PREVENT WATER ACCUMULATION. HOLES THROUGH STRUCTURAL STEEL MEMBERS SHALL BE GROUND SMOOTH AND NOT EXCEEDING 1/2" DIAMETER. DRAIN HOLES SHALL BE LEFT CLEAN AND UNOBSTRUCTED.

SC. STRUCTURAL STEEL CONNECTIONS

SC.1 ALL LOADS GIVEN ON THE DRAWINGS FOR THE DESIGN OF STRUCTUAL STEEL CONNECTIONS ARE IN ACCORDANCE WITH "LOAD AND RESISTANCE FACTOR DESIGN" (LRFD).

SC.2 CONNECTION DETAILS SHOWN ON THE DRAWINGS ARE CONCEPTUAL UNLESS COMPLETELY DETAILED.

SC.3 ALL STRUCTURAL STEEL CONNECTIONS NOT COMPLETELY DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED BY THE CONTRACTOR TO RESIST FORCES INDICATED. THE CONTRACTOR'S CONNECTION DESIGN SHALL BE UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. LBYD CAN CONTRACT WITH THE CONTRACTOR TO PROVIDE CONNECTION DESIGN SERVICES IF REQUESTED.

SC.4 ALTERNATE CONNECTION DETAILS MAY BE UTILIZED BY THE CONTRACTOR WITH PRIOR APPROVAL BY THE ARCHITECT AND STRUCTURAL ENGINEER. THE CONTRACTOR'S ALTERNATE CONNECTION DESIGN SHALL BE UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.

SC.5 DESIGN CALCULATIONS FOR THE CONNECTIONS SHALL BE PROVIDED BY THE CONTRACTOR AND ASSIGNED BY A PROFESSIONAL ENGINEER. CALCULATIONS SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED AND SUBMITTED FOR THE FILES OF THE ARCHITECT AND STRUCTURAL ENGINEER. THE CONNECTION DESIGNER'S ENGINEERING SEAL ON THE DESIGN CALCULATIONS SHALL REPRESENT THAT THE CONNECTIONS INDICATED ON THE SHOP DRAWINGS HAVE BEEN REVIEWED AND ARE IN ACCORDANCE WITH THE SUBMITTED DESIGN CALCULATIONS. SHOP DRAWINGS CONTAINING CONNECTIONS FOR WHICH CALCULATIONS HAVE NOT BEEN RECEIVED OR REQUIRED CONNECTION INFORMATION IS NOT INDICATED WILL BE RETURNED UNCHECKED AS AN INCOMPLETE SUBMITTAL.

SC.6 REQUIRED CONNECTION INFORMATION SHALL BE SHOWN AT EACH DETAILED CONNECTION ON THE SUBMITTAL DRAWINGS AS FOLLOWS:

A. DESIGN REACTION.

B. CALCULATION PAGE NUMBER.

C. CONNECTION CAPACITY.

SC.7 ALL NON-COMPOSITE BEAM CONNECTIONS SHALL BE "SIMPLE SHEAR CONNECTIONS", UNLESS NOTED. WHERE BEAM REACTIONS AND/OR DESIGN FORCES ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS, THE CONNECTIONS SHALL BE DESIGNED TO SUPPORT A REACTION EQUAL TO ONE-HALF THE TOTAL UNIFORM LOAD CAPACITY FROM THE MAXIMUM TOTAL UNIFORM LOAD TABLE MULTIPLIED BY A FACTOR OF 1.2 FOR GIVEN SHAPE, SPAN, AND GRADE OF STEEL.

SC.8 TO THE NONCOMPOSITE AND COMPOSITE REACTIONS ABOVE, ADD ANY LOADS OR REACTIONS OF MEMBERS SUPPORTED BY THE BEAM WITHIN THREE FEET OF BEAM END AND THE VERTICAL COMPONENTS OF FORCES IN BRACE MEMBERS FRAMING INTO THE BEAM.

SC.9 WHERE BEAM REACTIONS ARE SHOWN ON THE DRAWINGS, THE CONNECTIONS SHALL DEVELOP THE REACTIONS SHOWN. WHERE CONNECTIONS ARE SUBJECT TO ECCENTRICITY, SUCH ECCENTRICITY SHALL BE TAKEN INTO ACCOUNT WHEN DESIGNING AND DETAILING THE CONNECTION.

SC.10 ERECTION AIDS ARE NOT SHOWN ON THESE DRAWINGS. CONTRACTOR IS TO PROVIDE ERECTION AIDS AS REQUIRED AND REMOVE THEM ONCE WORK IS COMPLETE.

SC.11 AXIAL LOADS AND MOMENTS ARE TO BE CONSIDERED REVERSIBLE AND CONCURRENT WITH SHEAR REACTIONS, UNLESS NOTED.

SC.12 FOR CONNECTION DESIGN AND DETAILING, MEMBER WORK LINES ARE TO BE CONSIDERED ALONG THE MEMBERS' NEUTRAL AXES, UNLESS NOTED.

SC.13 ALL WELDS SHALL CONFORM TO THE AMERICAN WELDING SOCIETY (ANSI/AWS D1.1) STANDARDS AND MUST BE PERFORMED BY AN ANSI/AWS CERTIFIED WELDER.

SC.14 ALL WELD SIZES ARE TO BE CONSIDERED AS EFFECTIVE WELD SIZES AND MUST BE INCREASED TO ACCOUNT FOR ANY GAPS OR SKEWS BETWEEN MEMBERS AS REQUIRED BY ANSI/AWS D1.1.

SC.15 ALL BOLTS SHALL BE 3/4" DIAMETER OR GREATER, UNLESS NOTED. USE SNUG TIGHT BEARING CONNECTIONS FOR ALL BOLTED CONNECTIONS UNLESS NOTED.

SC.16 BOLTS THROUGH 4" WIDE BEAM FLANGES SHALL BE 5/8" DIAMETER.

SC.17 BOLTS LOADED IN TENSION SHALL BE FULLY PRETENSIONED ACCORDING TO RCSC.

SC.18 DO NOT REUSE PRETENSIONED BOLTS.

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