

GENERAL NOTES

DESIGN CRITERIA:

- DESIGN CODE:
- The structural design is in accordance with the 2018 International Building Code.

- DESIGN LIVE LOADS
- Roof: 20 psf
 - Floor: 100 psf

- DESIGN WIND LOAD
- Building Risk Category II
 - Exposure Category C
 - Wind Speed (3 sec gust) 115 mph

GENERAL:

The structure has been designed to resist design loads only as a completed structure. Applications of construction loads to the partially completed structure shall be considered by the contractor and so included in the design of shoring, bracing, formwork, and any other supporting elements provided for construction of the structure. During erection and until all permanent connections are made, the contractor must provide temporary bracing to brace the structure in all directions.

The engineer shall not have control or charge of, and shall not be responsible for, construction means, methods techniques, sequences, or procedures for safety precautions and programs in connection with the work, for the acts or omission of the contractor, subcontractor, or any other persons performing any of the work, or for the failure of any of them to carry out the work in accordance with the contract documents.

The Contractor shall verify all existing conditions prior to the start of work. On-site survey is required to verify as-built dimensions, structural conditions, and dimensional requirements for supplied equipment prior to fabrication of any new elements. Notify Architect/Engineer of any potential conflicts arising from the as-built survey.

Where a section is cut on the drawings, it shall apply to all like or similar conditions (U.N.O).

See architectural drawings for the following:

- Size & location of all doors and windows
- Size & location of all roof openings
- Floor and Roof finishes
- Details of veneer attachment
- Location & extent of insulation

See mechanical, plumbing, electrical and civil drawings for the following:

- Pipe runs, sleeves, hangers, trenches, wall and floor openings, etc.
- Electrical conduit runs, boxes, outlets in walls and floors
- Concrete inserts for electrical, mechanical, or plumbing fixtures
- Underground concrete ducts, trenches, pits, or manholes
- Concrete and asphalt site paving.

The structural engineer is not responsible for the design of steel stairs, handrails, curtain wall/window systems, cold-formed metal framing, or other systems not shown in the structural documents. Such systems shall be designed, furnished, and installed as required by other consultants in the contract documents.

Any inspections, special or otherwise, that are required by the building codes, local Building Departments, or these plans, shall be done by a qualified independent inspection company. Job site visits by the Engineer do not constitute, or substitute, inspections.

The drawings in the structural documents are not to be scaled for any purpose, including the determination of quantities and the fit up of materials.

The roof structure and its supporting elements have been designed with the assumption that sufficient drainage has been provided to prevent any ponding of water.

The slab on grade has not been designed for crane loads, which could require an increase in slab strength, thickness, and reinforcing. The contractor is cautioned against loading the slab on grade (as shown on these drawings) with crane loads. Should construction sequencing require the slab on grade to resist crane loads, the contractor is required to produce and submit a complete design for the necessary slab on grade, including calculations signed and sealed by a professional engineer registered in the State of Texas.

SHOP DRAWINGS:

All work is to be done using material from approved shop drawings. The contractor shall submit an electronic PDF copy for review by the Engineer of Record [EOR]. Work may begin using materials from shop drawings marked "no exceptions taken" or "exceptions as noted" only.

The General Contractor shall pre-check all shop drawings before submission to the Engineer for review. All submittal materials must bear the Review Stamp of the General Contractor.

The General Contractor shall schedule submittals sufficiently in advance of the date required to allow reasonable time for delivery, processing and review by the Design Team. This shall include a minimum of ten (10) working days, excluding delivery time, for Engineer's processing and review of shop drawings. Include time for Contractor's resubmission and subsequent review if necessary.

The review of the shop drawings by the EOR is only for general compliance with the structural drawings and specifications. This review does not guarantee in any way that the shop drawings are correct or complete, nor does it infer that they supersede the structural drawings. Corrections or comments made (or not made) on the shop drawings during this review do not relieve the contractor from compliance with the requirements of the plans, general notes, or specifications. Approval of a specified item shall not include approval of an assembly of which the item is a component.

Signed and sealed calculations for a particular system submitted as part of a shop drawing are reviewed for load criteria and general conformance with the contract documents. Calculation review and comments do not infer a detailed check of the calculations, nor do they relieve the system engineer or the contractor of responsibility.

The use of reproductions or electronic files of the structural drawings for the preparation of shop drawings is not acceptable without prior written authorization of the EOR.

Omission from the shop drawings of any requirements of the contract documents shall not relieve the contractor of the responsibility of complying with the omitted requirements, even if the shop drawings have been reviewed and returned.

FOUNDATION NOTES:

Foundation Design basis: Geotechnical Report No. 398-11-33 prepared by CMJ Engineering, Inc. dated April 18, 2011 in conjunction with Addendum 1 dated October 5, 2011.

DRILLED AND UNDERREAMED PIER FOUNDATIONS:

Allowable end bearing 6,000 psf

Bearing Stratum: Tan, Reddish Tan, and Grayish Brown Shaly Clays

Depth of Bearing Stratum: 17 feet below existing grade

Piers not specifically located on the plan shall be located on centerline of the column above. Where no column occurs, locate pier on centerline of wall or beam.

Elevation of top of pier is noted on drawings.

Reference plans and pier schedule for pier size, bell diameter, and reinforcing.

Provide dowels from piers into concrete above per the typical pier detail or sections.

The contractor shall verify depths of piers before pier steel is cut. Pier steel may be delivered to the jobsite in standard lengths and cut as required. Provide minimum 64 bar diameter laps in all vertical pier reinforcing.

All piers shall be inspected by a representative of a qualified geotechnical laboratory in order to ensure that the proper bearing material has been reached in accordance with the recommendations given in the geotechnical report.

Cast concrete for all drilled shafts within 8 hours of drilling completion.

Do not allow tops of piers to "mushroom". The top of pier shall be of the specified diameter.

CONCRETE:

Unless noted otherwise, all concrete shall be normal weight, with a maximum aggregate size of 1", a maximum slump of 5' (6" +/- 1" for piers), and the following 28 day compressive strength:

Drilled and Underreamed Shafts	3000 psi
Grade Beams	4000 psi
Pier Caps	4000 psi
Slabs on Void Cartons	4000 psi

Provide normal weight concrete with cured density of 145 ± 5 pcf, and aggregate conforming to ASTM C33, UNO.

All concrete work shall conform to the requirements of the latest edition of ACI 301 Specification for Structural Concrete and ACI 318 Building Code Requirements for Structural Concrete unless noted otherwise in the Contract Documents.

Concrete mix designs shall be prepared by a qualified testing agency or material supplier in accordance with ACI 318. Contractor to submit mix designs for each concrete strength and intended use for review by the Engineer prior to placement. Air entrained admixture is not allowed for concrete to receive a steel trowel finish.

Unless indicated on drawings, concrete beam or wall sections are not designed for construction imposed lateral earth pressures. Provide temporary bracing as required to prevent damage from lateral pressures from earth fill operations or equipment surcharge loads.

Placement of sleeves or openings through beams is not permitted unless indicated on the structural drawings or approved in writing from the Architect

REINFORCING STEEL:

Reinforcing steel shall be new deformed billet steel conforming to ASTM A615, Grade 60.

Detailing of reinforcing steel and accessories shall conform to ACI 315.

Required minimum reinforcing cover:

Concrete cast against soil	3"
Grade Beams on void carton	1 1/2" top, 2" sides, 2" bottom
Drilled Shafts	3"
Slabs on void carton	3/4" top [not exposed to weather], 2" bottom

Lap all reinforcing bar splices 30 bar diameters or 2'-0" whichever is greater unless noted otherwise.

Reinforcing call-out legend: #4(2-0,2-0)@12

(2-0,2-0)	@12
Length of bar from bend to bend	Spacing of bars
or length of bar from bend to end	

Provide #4 (2-0,2-0) corner bars to match grade beam exterior reinforcing longitudinal bars.

Hook top and bottom beam reinforcing bars at discontinuous ends.

STRUCTURAL SLAB ON VOID CARTONS:

Insure that void cartons are stored in a dry location prior to use. When individual carton forms are aligned for a section of slab to be cast, fasten a top sheet of carton form material to tie together the forms below. On top of the carton forms and top sheet, place sheets of 1/4" masonite board to be used as a working top surface. Replace / discard all forms which have become moistened by ground based moisture or precipitation

STRUCTURAL STEEL:

Materials:

Wide Flange Shapes	ASTM A992	Fy = 50 ksi
Other Rolled Shapes and Plates	ASTM A36	Fy = 36 ksi
Rectangular HSS Shapes	ASTM A500 Gr. C	Fy = 50 ksi
Round HSS Shapes	ASTM A500 Gr. C	Fy = 46 ksi
Structural Pipe	ASTM A53	Fy = 35 ksi
Structural Bolts	ASTM A325	Fy = 92 ksi
Anchor Rods	ASTM F1554 Gr. 36	Fy = 36 ksi
Headed Stud Anchors	ASTM 108	Fu = 65 ksi
Welding Electrodes	AWS D1.1	E70XX

Steel connections for this project are a delegated design and shall be designed, detailed, and fabricated in accordance with Option 3A in the AISC Code of Standard Practice, sections 3.1.1(3) and 3.1.2(2)(a).

Connections shall be designed by a Connection Design Specialty Engineer (CDSE) working for the fabricator. The CDSE shall be licensed to practice engineering in the State of Texas.

Connections shall be designed for the reactions shown on the contract documents. Where shear reactions are not specified, connections shall be designed for the reactions specified in the "Beam Reaction Schedule".

Loads provided on the drawings are Service Load level forces to be used with Allowable Strength Design.

Connections shall be designed in accordance with the Specification for Structural Steel Buildings (AISC 360-10) and the AISC Steel Construction Manual (14th Edition).

The CDSE shall review the contract documents, including drawings and specifications, to determine the delegated connection scope of work and connection design criteria.

The Contract Documents should provide sufficient information for the CDSE to perform the delegated connection design. If the CDSE determines that there are conflicts between the framing plans and the conceptual connection details specified, the CDSE shall notify the Structural Engineer of Record in a timely manner so that these conflicts may be resolved.

The connection details contained in the Contract Documents represent conceptual details and represent the intended connection arrangement. Final arrangement of the connection, including plate or angle thicknesses, bolt grade, bolt diameter and quantity, and weld sizes shall be determined by the CDSE.

Column stiffeners, web double plates, beam bearing stiffeners, and all other member reinforcement required to satisfy strength and equilibrium of forces through the connection are shown in the connection details and shall be provided as specified. These items have been designed by the Structural Engineer of Record and are not a delegated design.

The CDSE shall submit sealed calculations for structural steel connections which are delegated for connection design. These include, but are not limited to, beam shear connections (including those with axial loads and transfer forces), column splices, moment connections, vertical and horizontal bracing connections, girder and truss splices, truss to column and truss to truss connections, and truss web to chord and web to gusset connections.

All approval drawings which include connections that have been delegated to the Fabricator for design shall be reviewed by the CDSE for conformance with the CDSE's connection design. The CDSE shall submit a sealed letter to attest and confirm in writing that the approval drawings have been reviewed and properly incorporate the CDSE's sealed connection calculations. The sealed letter shall accompany all approval drawings submitted for approval and shall include an index of applicable approval drawings, including erection and shop drawings numbers, dates, and revision numbers.

The approval drawings shall clearly identify the CDSE's connection calculation identification and connection capacity on each end of each member for each connection designed by the CDSE.

If alternate connections to the specified conceptual connection details are desired by the Fabricator, the Fabricator shall request written authorization from the Structural Engineer of Record. If accepted, the CDSE shall provide sealed calculations indicating that the alternate connections satisfy the requirements of the Contract Documents.

Unless noted otherwise, all structural steel shall be shop primed in accordance with the "Steel Structures Painting Manual", Volumes 1 and 2, as published by the steel Structures Painting Council (SSPC).

Full and partial penetration welds performed in the field shall be ultrasonically tested.

All welding shall be performed by welders certified within the last 6 months.

CURTAIN WALL METAL STUD FRAMING:

The design of the light gauge metal stud curtain wall framing is not included in the structural scope. The general contractor is required to provide shop drawings documenting the curtain wall stud sizes, layout, headers etc. designed in accordance with the architectural performance specifications. Calculations should be included in the shop drawing submittal that are signed and sealed by a professional engineer registered in the State of Texas. The shop drawings should be submitted for record only. The EOR will not stamp nor approve the submittal. We will provide a cursory review for coordination with the project design parameters and will provide comments if necessary.

STEEL JOISTS:

Steel joist, connections, bridging, and other details shall conform to the standards of Steel Joist Institute.

Provide chord extensions where indicated. Do not weld bottom chord connection to supporting members unless indicated.

All roof joists are to be designed for a minimum net uplift pressure of 12 pounds per square foot.

Provide erection bolts for all joist which frame into columns. Where joists are not located on column centerlines, provide erection bolts for the joist nearest the column.

Hangers supporting mechanical equipment from joist chords shall be located within 6 inches of the joist panel points or the joist shall be reinforced per the "Typical Point Load Bracing Detail." Hanger loads greater than 150 pounds shall not be attached to the edge of chord angles and shall be centered on the joist chord.

METAL DECK:

Metal deck has been designed for a two or more span condition. No single span conditions are allowed.

Section properties for metal deck are to be found using the procedures given in the American Iron and Steel Institute "Cold Formed Steel Design Manual".

Roof Deck: Metal roof deck shall be Type B, 1 1/2" deep x 22 gauge with the following properties - Ip = 0.155 in⁴/ft, Sp = 0.186 in³/ft, Sn = 0.192 in³/ft, design thickness = 0.0295 in.

Roof Deck Connections (B deck): After deck panels have been adjusted to final position, fasten to all supporting members w/ 5/8" diam. puddle welds @ 12" o.c. Connect to perimeter supports parallel to deck w/ 5/8" diam welds @ 12" o.c. Fasten sidelaps w/ (2) #10 self drilling screws at third points.

Roof Deck Connections (B deck) (L1 Ga. Steel): After deck panels have been adjusted to final position, fasten to all supporting members w/ #12 SDS @ 12" o.c. Connect to perimeter supports parallel to deck w/ #12 SDS @ 12" o.c. Fasten sidelaps w/ (2) #10 self drilling screws at third points

COLD FORMED STEEL FRAMING:

STANDARDS AND MATERIALS:

Fabrication and installation of light gage framing shall meet the following standards:

American Iron and Steel Institute (AISI) "Specification for the Design of Cold-Formed Structural Members", latest edition.

ASTM C 955 - Standard Specification for Load Bearing (Traverse and Axial) Steel Studs, Runners (Tracks), and Bracing and Bridging.

ASTM C 1007 - Standard Specification for Installation of Load Bearing (Traverse and Axial) Steel Studs and Related Accessories.

MATERIALS:

The cold-formed structural members and accessories shall be manufactured from structural quality steel having minimum yield strength of 33 KSI, for all design thicknesses, or optional 50 KSI for 16 GA. and heavier members and have minimum protective coating equal to G-60 galvanized finish. The steel shall conform to the following ASTM Standard: ASTM A 1003.

Member sizes use the following SSMA (Steel Stud Manufacturers Association) nomenclature:

MEMBER SECTION LEGEND:		Design Thickness Table			Return Lip Dim's	
		Gage	Mills	Inches	Flange Width	Return Lip
800 S 162 - 43						
Member Depth	Member Type	Flange Width	Design Thickness			
Inches	S-stud	Inches	In mills			
x 100	T-track	x 100				
		20	33	0.0346	1.25 in.	0.188 in.
		18	43	0.0451	1.375 in.	0.375in.
		16	54	0.0566	1.625 in.	0.5 in.
		14	68	0.0713	2.00 in.	0.625 in.
		12	97	0.1017	2.50 in.	0.625 in.

FASTENERS:

Welds: All welded connections shall be performed in accordance with the latest edition of the AWS D1.3 Specification for the welding of sheet metal.

Screws: (SMS - sheet metal screws) #10 self drilling screws by Hilti installed per manufacturer's specifications.

Powder Actuated Fasteners (P.A.F.): 0.145 minimum shank diameter manufactured by Hilti or Ramset installed per the manufacturer's specifications. Provide minimum 1/2" long P.A.F. for light gage connections to structural steel.

Concrete Anchors: Kwik-Conit Fastening System by Hilti. Use 1/4" diameter anchor with 1" minimum embedment installed per the manufacturer's specifications.

INSTALLATION:

All members shall be cut for square fit or slope cut as indicated. Field cutting of light gage members by torch cutting is not allowed. Do not splice light gage members (except track) unless indicated on the drawings.

It is the responsibility of the Contractor to provide any temporary bracing or shoring that may be required during stages of light gage framing installation.

PREFABRICATED LIGHT GAGE METAL ROOF TRUSSES:

Prefabricated light gage metal roof trusses and their connections shall be designed by a registered professional engineer in accordance with the IBC and the latest edition of the American Iron and Steel Institute "Cold Formed Steel Design Manual". Section properties for light gage truss components shall be determined by using the procedures given in the AISI manual.

Submit truss drawings, sealed and signed by a qualified professional engineer registered in the State of Texas verifying the trusses are designed to meet Code and design requirements. Specifically include the engineering and design for all of the following:

- Design Criteria.
- Engineering analysis depicting member stresses and truss deflections.
- Truss member sizes, gauges, and connections at truss joints; truss to truss attachment details.
- Truss reactions at all bearing locations; truss to bearing attachment details.
- Top chord, bottom chord and web permanent bracing requirements; design and provide construction and temporary bracing per the Light Gage Steel Engineer's Association (LGSEA) "Field Installation Guidelines".
- Eave edge, valley, hip and ridge structural support for roof plywood decking.

Truss members shall be designed, with a maximum allowable stress increase, for the following loads:

ROOF TRUSSES:	
Top Chord	DL = 15 psf LL = 20 psf
Bottom Chord	DL = 5 psf LL = 5 psf (typical)

Fabrication and installation drawing shall be submitted to the Contractor for approval of size, shape, and layout, prior to fabrication of materials.

It is the responsibility of the installer (builder, building contractor, licensed contractor, erector, or erection contractor) to safely install and brace light gage metal roof trusses to protect life and property.

Truss manufacturer shall be responsible for calculating anchorage forces to resist code required uplift for roof trusses and shall provide connection design and material adequate for the required anchorage.

Prior to fabrication of roof trusses obtain all required mechanical opening requirements from the General Contractor and/or the Mechanical Contractor. Provide final trusses designed, detailed, and fabricated with the required mechanical openings.

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BID SET

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