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Structural Engineer

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- GENERAL NOTES**
- Contractor shall compare structural drawings and architectural drawings. Any omissions or discrepancies between plans, details, and specifications shall be brought to the attention of the Architect or Engineer before bidding. In all cases, more stringent requirement governs. Architectural dimensions and elevations will control.
 - Structural drawings or parts of the structural drawings may not be used as shop drawings without prior written approval.
 - All or parts of these drawings were produced with computer aided drafting. Drawings are available from the Engineer in DWG format on request.
 - Contractor proposed changes to details must be clearly noted on the first sheet of all shop drawings.
 - Construction shown is stable after the building is complete including interior and exterior finishes. The Contractor is responsible for temporary bracing of the structure during construction.
 - Review of submittal information shall be for general compliance with the contract documents and shall not include checking of detailed dimensions or detailed quantities.
 - Site visits by Engineer of Record are not considered inspections or special inspections, rather are observations for general compliance with contract documents.

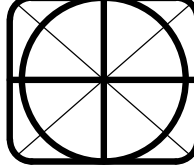
- DESIGN LOADS**
- Reference code for loading 2018 IBC.
 - Building Classification II
 - Wind Load
 - Basic Wind Speed (3 sec gust) 105 mph
 - Wind Exposure C
 - Internal Pressure Coefficient +/- 0.18
 - Velocity Pressure (qz) 24.0 psf
 - Roof Snow Load
 - Flat Roof Snow Load (Pf) 10 psf
 - Snow Exposure (Ce) 1.0
 - Importance Factor 1.0
 - Thermal Factor (Ct) 1.0
 - Seismic Load
 - Importance Factor 1.0
 - Mapped Spectral Response Accelerations
 - Ss 0.498
 - S1 0.207
 - Site Class D
 - Spectral Response Coefficients
 - Sds 0.465
 - Sd1 0.302
 - Seismic Design Category D
 - Base Seismic-Force-Resisting System(s) and Response Modification Factor
 - Light-Framed Walls Sheathed with Rated Wood Panels 6.5
 - Design Base Shear 8.5 Kips
 - Seismic Response Coefficient (Cs) 0.072
 - Analysis Procedure = Equivalent Lateral Force
 - Live Load
 - Roof Load 20 psf
 - Slabs on grade 100 psf

- FOUNDATIONS**
- Foundation design for this project was based on assumed soil conditions. Information for design of foundations has not been provided by the Owner. Design to be verified once a Geotechnical Report is supplied. Any changes in foundation design as a result of the supplied Geotechnical Report will be the responsibility of the Owner
 - Assumed bearing value of soil: 2500psf
 - All footings are to bear on undisturbed soil or engineered fill.
 - Provide 8'-0" long top steel reinforcing, same size as bottom steel, at transitions between engineered fill and undisturbed soil locations.
 - Install corner bars at all footing intersections and corners (Provide lap length e.w.)
 - Step all footings where necessary to provide a minimum of 1'-0" below the finish grade or 0'-8" below finish floor.
 - All footing elevations are given to the top of the footings.
 - Footing steps shown on the plans are furnished as a guide for estimating quantities. Final elevations are to be set in the field. Bearing elevations must be approved by a Soils Engineer before any concrete is placed.
 - Coordinate foundation elevations with plumbing requirements. Step footings as required to clear plumbing lines.
 - Provide drainage for all retaining walls, see architectural for notes and details.

- MASONRY**
- All masonry work to be in accordance with "Building Code Requirements for Concrete Masonry Structures" ACI 530-11 and "Specifications for Masonry Structures" ACI 530.1-11
 - Fill all concrete masonry units with concrete or grout from the top of the footing to the finish floor or to 8" above finish grade whichever is higher.
 - Use ladder type joint reinforcement (Dun-O-Wall SW DA3100 or better) at 16" on center in all cavity walls where brick is used for one or more of the wythes.
 - Use truss type joint reinforcement (Dun-O-Wall SW DA3100 or better) at 16" o/c. in all other masonry walls.
 - Provide joint reinforcement at 8" o/c. for all walls constructed with stack bond.
 - Use Type "M" or Type "S" mortar in accordance with IBC Table 2103.7(1).
 - Minimum compressive strength of concrete masonry f'm = 1500 psi. Submit for review test data on strength of units before starting any masonry work.
 - Minimum compressive strength of grout f'm = 2000 psi. Use 3/8" max size aggregate. See Special Inspection Schedule for any testing requirements. Grout slump shall be 8" to 11".
 - Use "Fine" grout for all reinforced piers and reinforced wall in accordance with ASTM C 476.
 - Each grout lift shall not exceed 5'-0" unless cleanouts are provided in the bottom course.
 - Fill cells under all lintels with grout.
 - Provide lintels over all openings through wall. See lintel details for reinforcement.
 - Extend all horizontal steel and bond beams thru control joints.
 - Vertical Reinforcement shall extend into the bond beam.
 - Unless noted, all bars are to be located at the center of cell. Where bars are specified at each face, provide minimum 1/2" clear space between reinforcement and CMU face shell.
 - Anchor bolt into grouted cell locations only, unless noted otherwise.

- REINFORCING STEEL AND CONCRETE**
- All concrete work is to be in accordance with the "Building Code Requirements for Reinforced Concrete" (ACI 318-11).
 - All detailing is to be in accordance with "ACI Detailing Manual" SP-66
 - Use of Calcium Chloride, Chloride Ions, or other salts in concrete are prohibited.
 - Concrete Properties: See Schedule
 - All concrete must obtain 7 day strength of 70% of design strength.
 - Concrete mixes may replace cement with other cementitious materials, submit for approval.
 - Combined weight of all replacement cementitious materials may not exceed 25% of the total cementitious weight.
 - Concrete mixes may use water reducers, accelerators or retarders with prior approval.
 - Do not provide air entrainment in concrete mixes for interior slabs.
 - All steel reinforcement shall be of deformed bars of billet steel conforming to ASTM A615, Grade 60 in all concrete.
 - Welded wire fabric shall be ASTM 185 and shall lap 2 cross wires or 6" whichever is greater on all sides. All laps shall be wired together.
 - Provide (2) #4 bars x 4'-0" at re-entrant corner locations Typical. Locate 3" away from corner and space 1'-0" apart.
 - All slabs on grade are 4", unless noted. Slabs are to be placed on 10 Mil PVC vapor barrier over 4" of porous fill. Reinforce slabs with 6x6 W1.4 x W1.4 WWF placed 1" from top of slab. Unless otherwise noted slabs shall have joints placed at a maximum of 12'-0" on center. The aspect ratio of the joint layout should not exceed 1.5. Joints may be control joints or construction joints. See Architectural Plans for floor slopes and recesses for hard tile.
 - Minimum concrete cover for reinforcement:
 - Footings 3"
 - Cast-In-Place Walls
 - Surfaces exposed to weather or soil 2" - #6 and greater, 1-1/2" - #5 and smaller
 - Other surfaces 3/4"
 - Provide corner bars at all wall and footing intersections.
 - No openings shall be allowed to penetrate any concrete work, unless it is shown on the structural framing plans without prior written approval. Contractor shall submit for review locations of proposed openings not shown 30 days prior to pouring any concrete.
 - Do not run conduit or pipe in slabs or beams unless noted on the plans or specific prior approval from the engineer.
 - Use 3/4" chamfer for all exposed corners unless noted.

- WOOD (STRUCTURAL)**
- All floor framing and roof framing shall be #2KD SYP or approved equal.
 - All floor framing shall be horizontally braced/blocked at midspan unless noted otherwise.
 - All vertical framing shall be Spruce-Pine-Fir, #2, provide blocking @ 48" vertically between studs.
 - All wood exposed to weather or in contact with CMU or concrete shall be pressure treated in accordance with American Wood Preservers Association Manual of Recommended Practice.
 - All Fasteners and Nails in contact with pressure treated lumber shall be stainless steel Type 304. Submit all alternates for approval.
 - Furnish design calculations sealed by a Professional Engineer licensed in the State of Project for all truss members. Design trusses for a 0.6(d+w) uplift of 15psf.
 - Truss Supplier shall be certified by Truss Plate Institute's Quality Assurance Program and submit documents along with shop drawings and calculations.
 - Truss connections to walls and framing shall be Designed and Specified by Truss Supplier.
 - Field Modification or Fabrication of trusses is not allowed unless written approval is provided by Truss Supplier.
 - All framing noted as "LVL" shall have the following minimum properties:
 - Modulus of Elasticity "E" = 1,900,000 psi
 - Allowable Bending Stress "Fb" = 2,900 psi
 - Allowable Shear Stress "Fv" = 270 psi
 - Allowable Compression Perp to Grain "Fc-perp" = 845 psi
 - All multiple ply LVL beams are to be fastened together per the manufacturer's requirements for top-loaded and side-loaded beams. Beams that support joists with top flange joist hangers shall receive the side-loaded beam fastening pattern.
 - All headers shall be (3) 2x8's for exterior walls and (2) 2x8's for interior walls. Header at 10'-0" exterior span shall be 7"x9.25" LVL
 - Provide (4) studs at all beam and girder truss bearing locations. Nail stud packs together with 16d nails @ 6" o.c.
 - Roof decking shall be 3/4" APA rated sheathing, Exposure 1 with 32/16 span rating. Provide plyclips at all roof sheathing connections, unless noted otherwise.
 - Floor and roof sheathing shall be nailed with 8d rinkshank nails at 6" o.c.
 - All bolts connecting continuous horizontal sill plates to concrete, masonry, or steel shall have 3" flat washers.



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Structural Isometric and General Notes

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