

STRUCTURAL GENERAL NOTES

1. GENERAL

- a. Provide construction conforming to the 2012 International Building Code with the 2014, 2015, 2017, and 2018 Georgia amendments. Reference to other standards, specifications, or codes means the latest standard or code published and adopted.
- b. Material tests and inspections are required per Chapter 17 of the 2012 International Building Code. Refer to the project Statement of Special Inspections for required tests and inspections. Special inspection reports and a final report in accordance with Section 1704.2.4 of the 2012 International Building Code with the 2014, 2015, 2017 and 2018 Georgia amendments at the time the building is approved for occupancy.
- c. The structural general notes apply except where indicated otherwise on the drawings or in the specifications. A detail shown for one condition applies for all like or similar conditions even though not specifically indicated on the drawings.
- d. Verify all existing conditions, dimensions, and elevations before starting work. Notify the Architect and Structural Engineer of Record in writing of any discrepancy.
- e. The Contractor is solely responsible for the design, adequacy, and safety of erection bracing, shoring, temporary supports, and all other means, methods, techniques, sequences, and procedures of construction.
- f. Coordinate the structural contract documents with architectural, mechanical, electrical, plumbing, civil, and all other consultants. Notify the Architect and Structural Engineer of Record in writing of any conflict and/or omission.
- g. Coordinate and verify floor and roof opening sizes and locations with architectural, mechanical, plumbing, and electrical drawings. For additional openings not shown on the structural drawings refer to the architectural and mechanical drawings.
- h. Review of the submittals and/or shop drawings by the Structural Engineer of Record is only for general conformance with the contract documents and does not relieve the Contractor of the responsibility to review and check shop drawings before submittal to the Structural Engineer of Record. The Contractor must review and stamp all submittals prior to submission. 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. Do not begin fabrication until shop drawings are completed and reviewed by the Structural Engineer of Record.
- i. Do not make shop drawings using reproductions of the contract documents or referencing the contract documents.

2. EXISTING CONDITIONS

- a. Renovation of existing structures requires thorough coordination of the contract documents with existing conditions. The Contractor must verify all relevant existing conditions, dimensions, and details prior to beginning construction. Report any deviations from conditions or dimensions shown on the contract documents to the Architect and Structural Engineer of Record for review of the design and possible revision of the contract documents.
- b. The nature of structural demolition and stabilization is inherently uncertain. The exact condition and capacity of each structural element cannot be verified prior to the commencement of work. As a result, it is imperative to report any discrepancies between the contract documents and actual field conditions, as well as any element of questionable structural integrity immediately to the Architect and Structural Engineer of Record for review.
- c. No attempt has been made to define each specific structural element that must be removed, enhanced, or replaced. It is the responsibility of the Contractor to review the condition of individual elements, particularly rafters, joists, and structural deck boards, to determine which elements can be salvaged, which elements must be replaced, and which elements are questionable. The Contractor should consult with the Architect and Structural Engineer of Record to determine the appropriate procedure for handling elements in questionable condition.

3. REINFORCED CONCRETE

- a. Provide reinforced concrete conforming to the following standards:
ACI 301-11, Specifications for Structural Concrete for Buildings
ACI 318-11, Building Code Requirements for Reinforced Concrete
ACI 302.1R-04, Guide for Concrete Floor and Slab Construction
ACI 360R-10, Design of Slabs-on-Ground
- b. Unless noted otherwise, provide normal weight concrete with 3,000 PSI compressive strength at 28 days.
- c. Provide 4% to 6% entrained air by volume in concrete permanently exposed to weather.
- d. Provide concrete with a maximum water-to-cementitious materials ratio of 0.50.
- e. Fully document and submit for review the proposed materials and mix design for all concrete. The Contractor is responsible for obtaining the required design strength. All concrete test data must be available at the job site.
- f. The use of calcium chloride, chloride ions, or other salts is not permitted.
- g. Place concrete at a slump of 5" ± 1".
- h. Unless noted otherwise, provide construction or contraction joints in slabs-on-grade such that the maximum area between joints does not exceed 225 square feet with the length not exceeding twice the width.
- i. Unless noted otherwise, provide construction or contraction joints in elevated slabs on metal deck (including joist slabs but not including composite slabs) such that the maximum area between joints does not exceed 225 square feet with the length not exceeding twice the width.
- j. The location of construction joints requires the approval of the Structural Engineer of Record. Unless noted otherwise, thoroughly roughen (by mechanical means) and clean construction joints.
- k. Chamfer or round all exposed corners a minimum of 3/4".
- l. Detail concrete reinforcement according to ACI SP-66 detailing manual. Submit shop drawings for approval, showing all fabrication dimensions and locations for placing concrete reinforcing and accessories. Do not begin fabrication until shop drawings are completed and reviewed by the Structural Engineer of Record. Unless specifically approved otherwise, detail all concrete walls and beams in elevation.
- m. Unless noted otherwise, provide reinforcing steel conforming to ASTM A 615, Grade 60.
- n. Provide welded wire fabric (mesh) in flat slabs (rolls not permitted) conforming to ASTM A 185 and ASTM A 82. Lap welded wire fabric a minimum of 6" at each splice. Place welded wire fabric 1" below the top of slabs-on-grade.
- o. Unless noted otherwise, provide 6x6 - W14xW14 welded wire fabric in 4" thick slabs-on-grade. Place welded wire fabric 1" below the top of the slab.
- p. Tie all reinforcing steel and embedded items securely in place prior to placing concrete. Provide sufficient supports to maintain the position of the reinforcement within specified tolerances during all construction activities. "Sticking" dowels, anchor rods, or other embedded items in wet concrete is not permitted.
- q. Provide corner bars at all corners and intersections of all footings, beams, and walls.
- r. Provide basic class "B" tension laps in all reinforcing bars indicated on the drawings.
- s. The placement of all reinforcing steel must be reviewed by a professional engineer registered in the state of Georgia or by a representative responsible to him. Ref: ACI 308.1R-03.
- t. Unless noted otherwise, provide the following concrete cover for all reinforcing steel:
Concrete against earth (not in contact with earth) = 3"
Formed concrete exposed to earth on bottom = 1 1/2"
Formed concrete not exposed to earth on either side = 1 1/2"
Slabs, joists, and walls = 1 1/2"
- u. Do not place pipes or ducts with a maximum dimension exceeding one-third the slab or wall thickness within the slab or wall unless specifically shown and detailed on the structural drawings.
- v. Do not weld or tack weld reinforcing steel unless approved or directed by the Structural Engineer of Record. Provide reinforcing steel conforming to ASTM A 706, Grade 60 where welding is approved or directed.
- w. Provide an allowance of 5% of reinforcing bars to be fabricated and placed during progress of work as may be directed by the Structural Engineer of Record in addition to all reinforcing steel indicated on the contract documents. Credit any unused quantity at the end of the project.

4. MASONRY

- a. Provide concrete masonry conforming to the following standards:
ACI 530/ASCE 5/TMS 402, Building Code Requirements for Concrete Masonry Structures
ACI 530.1/ASCE 6/TMS 602, Specifications for Concrete Masonry Structures
- b. Load bearing masonry walls are designed in accordance with Chapters 1 and 2 of ACI 530.
- c. Brick veneer is designed in accordance with Chapter 6 of ACI 530.
- d. Provide light-weight, hollow, load bearing concrete masonry units conforming to ASTM C 90 with a compressive strength of masonry (fm) of 1500 PSI and a net strength of 2000 PSI on the net cross-sectional area of CMU determined in accordance with ASTM C 140.
- e. Provide mortar conforming to ASTM C 270, Type M or S. Standard mortar bed joint thickness is 3/8" and must not exceed 5/8".
- f. Unless noted otherwise, provide grout for reinforced masonry conforming to ASTM C 476 with minimum compressive strength of 2500 PSI. Pea gravel concrete with a minimum compressive strength of 3000 PSI may be substituted for grout only with approval of the Structural Engineer of Record.
- g. Unless noted otherwise, lay masonry units in running bond.
- h. Provide ladder type horizontal joint reinforcing conforming to ASTM A 82. Unless noted otherwise, place 9 gage or heavier, zinc coated ladder type horizontal joint reinforcing at 16" on center. Lap horizontal joint reinforcing minimum 12". Use precast L's and T's at corners and intersections.
- i. For grouted walls, the maximum height of grout lifts must not exceed 5'-0". The maximum ungrouted height of 8" or thicker CMU walls prior to grouting must not exceed 12'-0". Refer to Table 7 of ACI 530.1 for the maximum ungrouted height of CMU walls thinner than 8". Consolidate and reconsolidate grout in accordance with paragraph 3.5.E of ACI 530.1. Walls higher than 5'-0" must have inspection holes at the base of the wall.
- j. Lap vertical masonry wall reinforcing as follows:
#4 Bars 25"
#5 Bars 31"
#6 Bars 57"
- k. Provide vertical control joints in all masonry walls not retaining earth. Unless noted otherwise on the architectural drawings, place vertical control joints at three times the wall height but not closer than 25'-0" on center or farther than 50'-0" on center.
- l. Unless noted otherwise, provide minimum (1) #5 vertical bar, grouted full height, at each side of openings and at all corners and ends of walls, including both sides at ends of wall panels at vertical control joints.
- m. Unless noted otherwise, anchor studs and tops of masonry wall panels to the structure by dovetail anchors, metal straps, or equivalent.
- n. Place ties for brick veneers at not more than 16" vertically or 24" horizontally.

5. STRUCTURAL STEEL

- a. Provide structural steel conforming to the following standards:
AISC Manual of Steel Construction, 14th Edition
AISC 360-10, Specification for Structural Steel Buildings
AISC 303-10, Code of Standard Practice for Structural Steel Buildings and Bridges
AISC 326-09, Detailing for Steel Construction, 2nd Edition
- b. Unless noted otherwise, provide steel shapes made of material conforming to the following standards:
Wide flange and WT shapes: ASTM A 992
Angles, plates, and channels: ASTM A 36
Hollow Structural Sections (HSS): ASTM A 500, Grade B
Headed studs: ASTM A 29
- c. Unless noted otherwise, provide anchor rods conforming to ASTM F 1554, Grade 36.
- d. Unless noted otherwise, make all connections with 3/4" diameter ASTM A 325 bolts. Assemble and inspect bolted connections in accordance with AISC "Specification for Joints Using ASTM A 325 or ASTM A 490 Bolts", 2009.
- e. Make all welded connections in accordance with AWS D1.1-10 "Structural Welding Code", using type E70XX electrodes. Use only certified welders. Proof of certification must be maintained at the job site.
- f. Unless specifically detailed on the contract documents, provide the following beam connections:
• Where beam reactions are shown, provide connections to develop the reaction shown.
• Where beam reactions are not shown, provide connections to develop one-half the total uniform load capacity shown in the Maximum Total Uniform Load Tables, in Part 3 of the AISC Manual.
• Where reactions are subject to eccentricity, the eccentricity must be accounted for.
- g. Submit shop drawings prepared in accordance with AISC 326-09. Provide complete welding information using AWS symbols. Use prequalified welded joints per AISC and AWS D1.1-10 "Structural Welding Code". Do not begin fabrication until shop drawings are completed and reviewed by the Structural Engineer of Record.
- h. Do not use gas cutting torches to correct fabrication errors in structural steel framing.
- i. Provide temporary bracing for structural steel framing until permanent bracing, moment connections, and floor/roof decks (diaphragms) are completely installed.
- j. Paint structural steel in accordance with the project specifications. Do not paint steel surfaces to be encased in concrete, surfaces to receive fireproofing, connection design surfaces, friction type, surfaces to be welded, or surfaces receiving weld studs or DBA's in the field.
- k. Provide an allowance of 3% of structural miscellaneous steel to be fabricated and placed during progress of work as may be directed by the Structural Engineer of Record in addition to all steel indicated on the contract documents. Credit any unused quantity at the end of the project.

6. STRUCTURAL LUMBER

- a. Provide structural members conforming to the following standards:
NDS-2012, National Design Specification, 2012 Edition
- b. Unless noted otherwise, provide #2 Grade Southern Yellow Pine or equivalent for dimensional framing lumber. Unless noted otherwise, provide #3 SPF or #3 Hem-Fir or equivalent for stud lumber and other miscellaneous framing/blocking.
- c. Provide American Plywood Association (APA) rated sheathing with an exposure classification of exposure 1, unless noted otherwise. Refer to the construction documents for thickness and span rating. Store structural sheathing in accordance with the manufacturer's recommendations.
- d. Wood fasteners must conform to Part 10 of the National Design Specification.
- e. Fasteners not indicated on plans and details must be in accordance with Table Z304.9.1 of the 2012 International Building Code.
- f. Unless noted otherwise, toe nailing and end nailing are acceptable for bearing type connections. Provide metal connectors for all other connections.
- g. Provide common wire nails unless noted otherwise on the drawings or recommended otherwise by the framing connector manufacturer.
- h. Provide fasteners and metal framing hardware with a corrosion resistant metal or with a minimum G90 galvanized finish. For metal in contact with pressure treated lumber provide stainless steel or G185 galvanized finish.
- i. Unless noted otherwise, provide blocking or bridging 6'-0" on center maximum and at all bearing points for all joists and rafters.
- j. Unless noted otherwise, provide solid horizontal blocking 6'-0" on center maximum for all load bearing stud walls.
- k. Provide solid wood blocking behind all horizontal panel joints of exterior wall sheathing and interior shear wall sheathing.
- l. Provide reinforcement (wood or steel side pieces) for any member cut for the installation of plumbing or wiring such that the member is of equal strength to the member prior to cutting.
- m. Provide joists and rafters cut to have horizontal contact for the full width of the supporting member.
- n. Unless noted otherwise, fasten multiple-ply beams together with 16d nails at 12 inches on center (staggered).
- o. Provide ASTM A 36 steel plates with bolting as indicated on the contract documents for all fitch beams noted as multiple 2x or LVL members with one or more plates.
- p. Submit shop drawings for all manufactured wood framing. Do not begin fabrication until shop drawings are completed and reviewed by the Structural Engineer of Record.

7. PLATE CONNECTED WOOD TRUSSES

- a. Provide wood trusses connected with light gage metal plates designed and fabricated in accordance with the following standards:
ANSI/TPI 1-2014, National Design Standards for Metal-plate-connected Wood Truss Construction
- b. The maximum allowable duration factor for short term loading is 1.25.
- c. Truss Design Loads:
Roof Trusses:
Top Chord LL = 20 PSF
Top Chord DL = 15 PSF
Mechanical LL = 10 PSF
Bottom Chord DL = 10 PSF
Total Load = 55 PSF
Design Trusses to accommodate the loads indicated above with the following deflection criteria:
Total Load Deflection L/240
Live Load Deflection L/360
Design trusses for wind and seismic loads (in addition to the loads indicated above) acting in the plane of the truss (calculated per sections 1609 and 1613 of the 2012 International Building Code) and/or any axial forces specified on the drawings.
- d. Handle, install, and brace plate connected wood trusses in accordance with Building Component Safety Information (BCSI) Summary Sheets B1, B2, and B3.
- e. Provide 'X' or 'V' bridging at 8'-0" on center for all floor trusses and roof trusses. Provide 2x4 bridging material on roof trusses, and provide 1x4 bridging material on floor trusses.
- f. Coordinate the location of roof mechanical units, access doors, and duct runs with individual truss geometry. Design trusses for the weight of mechanical units in addition to the loads indicated above.
- g. The design of connections between wood trusses and the supporting structure is based on preliminary design. Connectors are shown for informational purposes only. Final sizes and spacing will be based on final reactions provided by the truss manufacturer. Unless the truss manufacturer specifies a stronger connector, provide the connector indicated in the contract documents.
- h. Provide double top chords for flat trusses at wells.
- i. Where truss member sizes specifically indicated on plans, sections, or details exceed the size required by analysis, provide the larger member indicated in the contract documents.
- j. Submit shop drawings for each truss indicating the design loads and spacing sealed by a professional engineer registered in the state of Georgia. Provide a layout plan indicating the location of each truss and all bridging. The layout plan must conform to the layout indicated on the structural contract documents. Do not begin fabrication until shop drawings are completed and reviewed by the Structural Engineer of Record.

8. FOUNDATIONS

- a. The Owner must commission a geotechnical exploration of the site by a properly insured professional engineer registered in the state of Georgia and forward the Geotechnical Engineer's report to the Structural Engineer of Record. The Geotechnical Engineer's report must conform to section 1802.5 of the 2012 International Building Code. The design of foundations is based on the following assumed soil criteria:
Allowable Soil Bearing Pressure: 2,000 PSF
Redesign of foundations may be required if the recommendations in the Geotechnical report are different than the values listed above. The following conditions could also result in redesign of foundations: presence of expansive soils, high water table potential for large settlements, or any other recommendations stated in the Geotechnical Engineer's report.
- b. The Geotechnical Engineer must verify the location and/or accuracy of all subgrades, fills, and backfills prior to the placement of foundations, footings, slabs, walls, etc.
- c. If any interference exists between existing foundations and the proposed design, notify the Architect so that the foundations may be redesigned as needed.
- d. Coordinate all footing locations with the requirements of other trades (plumbing, electrical, etc.).
- e. Place all column, wall, and wall footings monolithically with adjacent footings at the same elevation.
All footings must bear on natural undisturbed soil where possible.
Remove all organic soils and replace with clean structural fill at the direction of the Geotechnical Engineer. Place fill bolts in 6" maximum (loose) lifts at moisture contents as described in the geotechnical report. Compact all fill within 10'-0" of the building limit to 95% Standard Proctor. Field density tests must be made as described in the geotechnical report to verify adequate compaction and design bearing pressure.
- f. Sides of foundations must be formed unless conditions permit earth forming. Foundations placed against the earth require the following precautions: slope sides of excavations as approved by the Geotechnical Engineer and clean up slothing before and during concrete placement.
- g. Where footing steps are necessary, slope no steeper than one vertical to two horizontal.
- h. Unless noted otherwise, place all slabs on grade on a 10 mil polyethylene vapor retarder and a crushed stone base over a properly compacted subgrade.

9. DESIGN LOADS

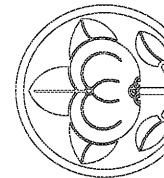
- a. Live Loads:
Roof 20 PSF
- b. Wind Design Data:
Ultimate Wind Speed 115 MPH
Risk Category Category II
Wind Exposure Exposure B
Internal Pressure Coefficient ± 0.18
Components & Cladding Pressures See Table
- c. Seismic Design Data:
Seismic Importance Factor I = 1.0
Risk Category Category II
Mapped Spectral Response Accelerations Ss = 0.180
S1 = 0.089
Site Class Site Class D
Spectral Response Coefficients Sds = 0.192
Sd1 = 0.142
Seismic Design Category Category C
Basic Seismic Force Resisting System Ordinary Reinforced Masonry Shear Walls
(Response Modification Factor) (R = 2.0)
Design Base Shear V = 2.0W kips
Analysis Procedure Equivalent Lateral Force Procedure
- d. Snow Loads:
Ground Snow Load Pg < 5 PSF

ENCLOSED STRUCTURE COMPONENTS & CLADDING DESIGN WIND PRESSURES

	A	B	C	D
ROOF	1	10	16.0	-23.8
	1	20	16.0	-23.2
	1	50	16.0	-22.4
	1	100	16.0	-21.8
	2	10	16.0	-39.9
	2	20	16.0	-35.7
WALL	2	50	16.0	-30.1
	2	100	16.0	-25.8
	3	10	16.0	-60.1
	3	20	16.0	-49.8
	3	50	16.0	-36.1
	3	100	16.0	-25.8
	4	10	21.8	-23.6
	4	20	20.8	-22.6
	4	50	19.5	-21.3
	4	100	18.6	-20.4
WALL	4	500	16.3	-18.1
	5	10	21.8	-29.0
	5	20	20.8	-27.1
	5	50	19.5	-24.6
	5	100	18.6	-22.6
5	500	16.3	-18.1	

ZONE WIDTH: a = 9.8 FEET
 COLUMN A: Zone per Figure 30.5-1 in ASCE 7-10
 COLUMN B: Effective Wind Area in square feet
 COLUMN C: Maximum Positive Pressure in LBS/FT². Positive pressure indicates pressure toward the building.
 COLUMN D: Maximum Negative Pressure in LBS/FT². Negative pressure indicates pressure away from the building.
 Pressures shown are Ultimate Loads. To convert to an Allowable Load, multiply value by 0.6.

IGARASHI
DESIGNS



Issue date/revisions
12-18-18 FOR CONSTRUCTION



project name
ANIMAL CONTROL ADDITION
1506 ROCKBRIDGE ROAD
CONYERS, GA 30012

sheet title
GENERAL NOTES

drawn by MKG
checked by BMR
project no. ---
date 12-04-18
sheet no. S1.0

PM&A
P. Marshall & Associates
1000 Holcomb Woods Pkwy
Suite 210
Roswell, GA 30076
678.280.2325