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ARCH D A B C D E F G H J K L M

GENERAL NOTES

- Structural drawings are intended to be used in close coordination with the civil, architectural, mechanical, plumbing and electrical drawings. Any discrepancies or omissions shall be brought to the attention of the Architect and resolved prior to the beginning of construction.
- Submit written request to the Architect for approval of any proposed change to the requirements of the contract documents. Splicing, cutting, notching or other alterations to structural members are not permitted without written authorization of the Structural Engineer. Any unauthorized deviation from the contract documents, and correction thereof, is the responsibility of the Contractor.
- The Contractor is responsible for the means and methods of construction in regards to job site safety.
- The Contractor shall verify all dimensions and conditions. The Architect shall be notified of any discrepancies.
- The Contractor is responsible for bracing the structure prior to the completion of all roof, floor, and wall diaphragms.
- The Contractor shall coordinate the structural foundation and framing layouts with other trades.

SUBMITTALS

- The Structural Engineer's review is only for general conformance with the design concept, the construction documents and specifications. Corrections or comments made on this review do not relieve the contractor from compliance with the plans and specifications. Comments on this review do not authorize an increase in the construction budget.
- Approval of shop drawings does not indicate acceptance of deviations from the contract documents, unless accepted by the Engineer in writing prior to submission of shop drawings. Conflicts resulting from such deviations, conflicts between this work and the work of other trades due to such deviations, and dimensional conflicts as a result of such deviations shall be deemed the Contractor's responsibility.
- Any changes to the details shown in these contract documents shall be submitted in writing by RFI and approved by the Architect and Engineer prior to submitting shop drawings. All such changes shall be "bubbled" on the shop drawings and referenced to the proper RFI.
- Submittals shall conform to the requirements of the contract documents. Non-conforming or non-reviewed submittals will be returned without review.
- Submittals shall be checked and marked "Reviewed - No Exceptions Taken" by the Contractor prior to submittal to the Architect. Submittals that have not been reviewed by the Contractor prior to submittal will be returned without review.
- Submittals shall not contain reproductions of the contract documents. Submittals containing such reproductions will be returned without review.
- Submit the following items for the Engineer's review:
  - Concrete mix designs
  - Reinforcing steel
  - Post-tensioned slab on grade (2)
  - Engineered wood truss (1)(2)Footnotes:
  - See material specific notes for items to be reviewed by a Specialty Engineer
  - Calculations shall be submitted and signed/sealed by the Specialty Engineer

DESIGN CODES AND SPECIFICATIONS

Building Code	2017 Florida Building Code
Design Loads	ASCE 7-10: Minimum Design Loads for Buildings and Other Structures
Concrete	ACI 318-11: Building Code Requirements for Structural Concrete ACI 315-99: Manual of Standard Practice for Detailing Concrete Structures ACI 301-10: Specifications for Structural Concrete ACI 305.1-06: Specifications for Hot Weather Concrete ACI 306.1-90: Standard Specification for Cold Weather Concreting ACI 302.1R-04: Guide for Concrete Floor and Slab Construction ACI 304.R-00: Guide for Measuring, Mixing, Transporting and Placing Concrete CRSI 8th Edition: Placing Reinforcing Bars AWS D1.4/D1.4M-2011: Structural Welding Code - Reinforcing Steel
Wood	2012 NDS: National Design Specification for Wood Construction

DESIGN LOADS

1. Dead Load	
Roof	20 psf
Apartments	22 psf
Breezeway and Balconies	45 psf
2. Live Load	
Apartments	40 psf
Balconies	40 psf
Stairs and Breezeways	100 psf
Roof (unreducible)	20 psf
3. Snow Load	
Ground Snow Load, Pg	0 psf
Risk Category	II
Importance Factor, I	1.0
Exposure Factor, Ce	1.0
Thermal Factor, Ct	1.0
Flat Roof Snow Load, Pf	0 psf
4. Wind Load	
Ultimate Wind Speed	137 mph
Nominal Wind Speed	106 mph
Risk Category	II
Exposure Category	C
Enclosure Classification	Enclosed
Internal Pressure Coefficient	±0.18
Mean Roof Height, h	36.5 ft
Velocity Pressure, qh	25.1 psf
Wall C&C Pressure (zone 5)	
Effective Area < 50 sf	+29.6 / -39.6 psf
50 sf ≤ Effective Area < 100 sf	+26.5 / -33.4 psf
Effective Area ≥ 100 sf	+25.2 / -30.8 psf
Roof C&C Pressure (flat roof, zone 3)	
Effective Area < 50 sf	+17.1 / -49.7 psf
50 sf ≤ Effective Area < 100 sf	+13.6 / -59.2 psf
Effective Area ≥ 100 sf	+12.0 / -54.7 psf

Note: Wind pressures above are reported at nominal level (0.6W)

5. Seismic Load	
Risk Category	II
Importance Factor, I	1.0
Site Class	D
Mapped Acceleration Parameters	
Ss	7.0 %
S1	3.5 %
Design Spectral Acceleration Parameters	
Sds	0.079
Sd1	0.054
Seismic Design Category	A
Analysis Method	Equivalent Lateral Force
Basic Seismic Force Resisting System	
Bearing Wall System: Light Frame Walls With Wood Shear Panels	
Response Modification Coefficient, R	6.5
System Overstrength Factor, Do	2.5
Deflection Amplification Factor, Cd	4
Seismic Base Shear Coefficient, Cs	0.011

SPECIALTY ENGINEER REQUIREMENTS

- Steel pan stairs shall be designed by the steel fabricator's specialty engineer. The design shall include stringers, treads, hand railings, platforms, pan inserts, miscellaneous supports and connections. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. A minimum design live load of 100 psf shall be used.
- Handrails, posts and support connections shall be designed by the steel fabricator's specialty engineer. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. Design loads shall conform to all requirements of the governing building code. Handrail assemblies guards shall also be designed for the following minimum criteria:
  - 50 lbs per linear foot in any direction
  - Single concentrated load of 200 lb applied in any direction
  - Intermediate rails designed to withstand a horizontal applied normal load of 50 lbs on an 1'-0" x 1'-0" area
  - Grab bars to resist a single concentrated load of 250 lbs applied in any direction
- Post-tensioned slab on grade shall be designed by the subcontractor's specialty engineer. The Design shall include slab, grade beams, reinforcing, tendons and connections necessary to support the provided structure loads and transmit them to the underlying soils. Shop drawings shall be submitted for review and must be signed and sealed by a Professional Engineer registered in the same state as the project location. Shop drawings not signed and sealed will be rejected without review. Design loads shall conform to all requirements to the governing building code.

FOUNDATION NOTES

- Foundation design parameters have been assumed and should be verified by a Geotechnical Engineer prior to construction.
- Foundation design parameters:
  - Minimum Frost Protection Depth = 18"
  - Allowable Soil Bearing Pressure = 3000 psf
  - Subgrade Modulus = 150 pci
- All footings shall bear on firm undisturbed residual soil and/or engineered earth fill compacted to 95% of its maximum dry density as per ASTM D698-70 (Standard Proctor), unless noted otherwise. THE SOIL BEARING CAPACITY IS TO BE VERIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.
- Provide the minimum frost depth protection depth from finished grade to the bottom of any exterior footing or turn down building slab. Also provide a minimum of 1'-0" cover from finished grade to the top of any exterior footing. Contractor to coordinate the location and depths of footing steps as required by finished grade conditions.
- Contractor to coordinate the location and depths of footing steps as required to allow for the passage of underground plumbing and utilities.
- Contractor shall treat soil under slabs, footings and crawl spaces with EPA approved chemical vermin control or as required per the building code.
- Refer to the mechanical, plumbing or electrical drawings for concrete pads and foundations not shown on the structural drawings.

CONCRETE NOTES

- All concrete elements shall be installed and detailed in accordance with the appropriate ACI documents. Contractor to have copies of the ACI documents at the job site during construction.
- Concrete compressive strength, fc, at 28-days shall be as follows at minimum unless noted otherwise:
  - Footings: 3000 psi (2500 psi used in design)
  - Interior Slabs on Grade Less Than 6" Thick: 3000 psi (non air entrained)
  - CMU Core Fill: 3000 psi
  - Breezeway, Porches, and Stairs: 4000 psi (w/ 4%-6% air entrainment)
- The maximum water-to-cement ratios shall be as follows:
  - Concrete exposed to freezing and thawing: 0.50
  - Concrete subject to deicers and/or required to be watertight: 0.45
  - All other concrete types: 0.58
- Concrete mix designs shall be submitted as follows:
  - Each mix design shall be labeled to indicate the area in which the concrete is to be placed (i.e. foundations, slab on grade, columns, etc.). Failure to do so will cause delay and/or rejection of submittals.
  - Proposed mix design shall be in accordance with Method 1 or Method 2 of ACI 301. Provide supporting data in tabular form for each separate proposed mix.
  - Submit concrete mix designs for each proposed class of concrete.
- Fly ash, meeting ASTM C618 Class C or Class F may be used to replace up to 25% of Portland cement. Contractor and supplier shall coordinate set times for replacement. Concrete are not adversely affected by use of fly ash. Contractor and all concrete subcontractors shall have experience with handling, placing and finishing concrete with fly ash.
- Grout used in grout beds under column base plates shall be cement based, non-shrink grout. The grout shall exhibit no shrinkage in accordance with ASTM C827, "Test Method for Early Volum Change of Cementitious Mixtures" and shall have a minimum 28-day compressive strength of 5000 psi when tested in accordance with ASTM C109, "Test Method for Compressive Strength of Hydraulic Cement Mortars."
- The following minimum concrete cover shall be provided for reinforcing bars:
  - Cast against and permanently exposed earth: 3"
  - Formed and exposed to earth or weather (#6 thru #18 bars): 2"
  - Formed and exposed to earth or weather (#5 bars, W31 wire and smaller): 1-1/2"
  - Slabs, walls & joists formed and not exposed to weather or in contact with the ground (#11 bar and smaller): 3/4"
  - Beams, girders & columns formed and not exposed to weather or in contact with the ground: 1-1/2"
- Unless noted otherwise, slabs on grade shall be 4" thick with 6x6-W1.4xW1.4 W.W.F. on 20 mil polyethylene vapor barrier on 4" thick compacted base.
- Slab on grade contraction joints may be saw cuts 1/8" wide x 1/4 slab thickness as detailed or other submitted and approved method. Joints shall be placed at 24'-0" o.c. maximum spacing. Areas created by joints shall have a maximum aspect ratio of 1.5:1.
- Slab on grade construction joints shall be as detailed or other submitted and approved method.
- See architectural, mechanical, plumbing, fire protection and electrical drawings for drips, changers, reglets, slots, sleeves, rustications, inserts and anchors not noted on structural drawings. Unless shown on structural drawings, no openings larger than 12" x 12" shall be placed in slabs or walls without prior approval from the Architect or Engineer. Approvals must be obtained prior to fabrication of steel and placement of concrete.

REINFORCING STEEL NOTES

- Reinforcing steel and accessories shall be detailed, fabricated and placed in accordance with the latest edition of the ACI Detailing Manual. Provide shop drawings for reinforcing steel prior to fabrication.
- Bar reinforcing shall conform to ASTM A615, Grade 60.
- Welded bar reinforcing shall conform to ASTM A706, Grade 60.
- Bar reinforcing lap splices shall be Class "B" but not less than 24", unless noted otherwise.
- Reinforcing shall be held securely in position with standard accessories in accordance with ACI 315 and CRSI Manual of Standard Practice.
- Welded wire fabric shall conform to ASTM A185.
- Welded wire fabric lap splices shall be the cross wire spacing plus 6" but not less than 10"
- Welded wire fabric located in concrete slabs shall be located in the center of the slab unless noted otherwise. Supports used shall be spaced at a maximum of 3'-0" o.c. in any direction.
- Provide top steel reinforcing, same size and spacing as bottom steel, in footings at any location where the soil changes from residual to engineered fill. Top steel shall extend 8'-0" minimum each side of the soil transition area. Use #3 stirrups at 18" o.c. at these locations to tie top and bottom steel.
- Provide top steel reinforcing, same size and spacing as bottom steel, in footings at any corner in load bearing walls. Top steel shall extend 8'-0" minimum each way from the wall corner. Use #3 stirrups at 18" o.c. at these locations to tie top and bottom reinforcing.
- Provide (2) #4 bars x 4'-0" long in slabs on grade at all re-entrant corners, contraction joint terminations and isolation joint terminations.
- Provide 2'-6" x 2'-6" corner bars at the corners of all continuously reinforced elements such as footings, walls, bond beams, etc. Corner bars shall be the same size, spacing, location and quantity as the continous reinforcing.

TONGUE-AND-GROOVE (T&G) HEAVY TIMBER ROOF DECKING NOTES

- Tongue-and-groove heavy timber roof decking to be fabricated and installed in accordance with AITC 112-93.
- Decking material shall be Eastern White Pine Commercial Quality with a minimum bending stress of 1100 psi and a minimum elasticity modulus of 1100 ksi.
- Decking shall be 2x6 sawn lumber with a maximum moisture content of 15%. Decking shall be machined with a double tongue-and-groove pattern.
- Each piece of decking shall be toenailed at each support with one 40d common nail and facenailed with one 60d common nail. Courses shall be spiked to each other with 8" spikes at a maximum interval of 30" through predrilled edge holes penetrating to a depth of approximately 4". One spike shall be installed at a distance not exceed 10' from the end of each piece.
- Decking shall be placed in a controlled random pattern. There shall be a minimum distance of 48" between end joints in adjacent courses. Pieces not bearing on a support are permitted to be located in interior bays provided the adjacent pieces in the same course continue over the support for at least 24". This condition shall not occur more than once in every six courses in each interior bay.

HEAVY TIMBER NOTES

- Heavy timber shall be designed, detailed and installed per the latest edition of the 2012 NDS: National Design Specification for Wood Construction
- Truss materials shall be as follows:
  - Timber: Douglas Fir #1
  - Steel Plates: ASTM A36
  - Bolts: ASTM A307
- Provide temporary bracing as required and leave in place until all permanent bracing, framing and sheathing is in place and securely fastened.

WOOD NOTES

- All wood in contact with concrete or masonry shall be pressure treated in accordance with AWP4U1 section 2. Pressure treated wood shall not be in direct contact with steel and should be separated by 15 mil poly. All fasteners in contact with pressure treated wood should be stainless steel or have approved coating by manufacturer.
- All framing lumber shall be #2 SYP except studs and plates may be stud grade SYP unless noted otherwise. Blocking may be stud grade SYP
- Provide 3/4" CDX T & G plywood subfloor glued and nailed on all of the joists, u.n.o.
- Roof sheathing on a flat roof to be 3/4" CDX plywood, u.n.o.
- Roof sheathing on a sloped roof to be 5/8" CDX plywood with plyclips between rafters, u.n.o.
- The floor and roof trusses shall be designed by an engineer registered in the same state as project location and the design drawings shall bear the said engineer's seal per current state law. Submit design drawings per specifications section 013300 including design loads, member stresses, uplift and bearing loads at supports, required permanent bridging or bracing, and layout plan.
- Design of wood floor trusses, including bridging and all necessary framing for roof mounted equipment, shall be provided by the truss manufacturer, and shall conform to the following minimum requirements:
  - Live Load : 40 PSF
  - Dead Load: (Top Chord) 10 PSF
  - Dead Load: (Bottom Chord): 10 PSF
  - Total: 60 PSF + Partition Allowance
- Design of sloped roof wood trusses, including bridging and all necessary framing for roof mounted equipment, shall be provided by the truss manufacturer, and shall conform to the following minimum requirements:
  - Live Load : 20 PSF
  - Dead Load: (Top Chord) 10 PSF
  - Dead Load: (Bottom Chord): 10 PSF
  - Total: 40 PSF
- Limit floor truss live load deflection to 1" or length (in.)/480 whichever is less.
- Limit roof truss live load deflection to 1" or length (in.)/240 whichever is less.
- Each roof truss shall be anchored to bearing supports as required by the truss manufacturer. At a minimum, use a Simpson H2.5 hurricane tie or approved equal. Joist hangers for attaching trusses to truss girder shall be sized and provided by the truss manufacturer.
- Where "Piggy Back" trusses are used, provide 2x4's at 24" O.C. (or as otherwise required by the truss manufacturer), nailed to the top chord of the structural truss below before installing the "Piggy Back" truss.
- Provide 2x4 blocking at all hips.
- Provide all temporary and permanent truss bracing per truss manufacturer's requirements, but as a minimum provide (1) run of 2x4 "X" bracing continuous at or near mid span of all trusses.
- Moisture content at the time of installation not to exceed 19%.
- Treated glulam to be Anthony Forest Products Power Preserved Glulam EWS 24F-V5M1/SP. Other suppliers may be used with prior approval of Engineer of Record.
- Grade, species, and grading agency should be marked on each piece of lumber.
- LVL, LSL, and PSL to be Weyerhaeuser products. Other suppliers are acceptable with prior approval of Engineer of Record.
- Double top plate splices to have 48" minimum lap with (16) 16d nails staggered. Stagger top plate top ply and bottom ply splices.
- Top plate to be continuous over openings.

STRUCTURAL NOTES - WOOD NAILING SCHEDULE

1. This nailing schedule is typical unless otherwise noted or detailed. All nails shall be common wire nails (no clipped head nails).	
Connection Type	Nailing
Joist to sill or girder, toe nail ea. side	(3) 8d
Bridging to joist, toe nail each end	(2) 8d
Sole plate to joist or blocking, face nail	16d @ 16" O.C.
Top plate to stud, end nail	(2) 16d
Double studs, face nail	16d @ 24" O.C.
Doubled top plates, face nail	(2) 16d @ 16" O.C.
Continuous header, two pieces	16d @ 16" O.C.
Ceiling joists to plate, toe nail	(3) 8d
Continuous joists to plate, toe nail	(3) 8d
Ceiling joists, laps over partitions, face nail	(3) 16d
Rafter to plate, toe nail	(3) 8d
Built-up corner studs	16d @ 24" O.C.
Ceiling joists to parallel rafters, face nail	(3) 16d
Plywood sheathing	See Plans

TYPICAL NAIL SHANK DIAMETER AND LENGTHS						
Type	Description	6d	8d	10d	16d	40d
Common	Length	2"	2 1/2"	3"	3 1/2"	5"
Nails	Diameter	0.113"	0.131"	0.148"	0.162"	0.238"
	Head Diameter	0.266"	0.281"	0.312"	0.344"	0.469"
					0.531"	

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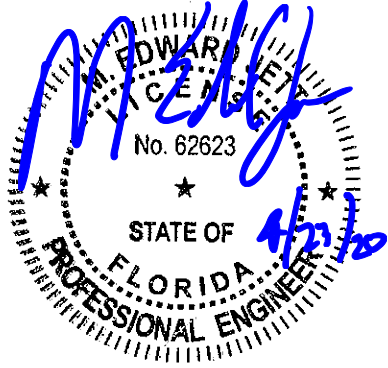
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PROJECT INFORMATION

PROJECT:

WESTWOOD AT  
WINTER HAVEN  
APARTMENTS

PROJECT ADDRESS:

Avenue G  
Winter Haven, FL 36801  
HUD# 067-35554

PROJECT NO.: 180888

ACTIVE DESIGN PHASE

- ☐ FOR REVIEW ONLY
- ☐ FOR PERMITTING ONLY
- ☐ SCHEMATIC DESIGN
- ☐ DESIGN DEVELOPMENT
- ☐ CONSTRUCTION BIDDING
- ☒ CONSTRUCTION DOCUMENTS
- ☐ AS-BUILT RECORD SET

REVISION INFORMATION

NO.	DATE	DESCRIPTION
1	4/24/2020	REVISION #1

KEY PLAN

SHEET INFORMATION

SHEET ISSUED: 03-25-19  
DESIGNED BY: KRQ  
DRAWN BY: JCP  
REVIEWED BY: RMG  
SHEET TITLE:

STRUCTURAL NOTES

SHEET NO.:

S001