



Planning and Appeals Board Meeting Agenda
Tuesday, May 12, 2026, 5:30 PM
Public Safety Complex, Municipal Court Room
701 Queen City Parkway, Gainesville, GA 30501

CALL TO ORDER

MINUTES

A. Minutes of March 10, 2026

OLD BUSINESS

A. Rezoning

- 1) Request from **Candler Development Services** to rezone a 0.62± acre tract located on the north side of Park Street between Park Street Place and Saint Charles Place (a/k/a **1141 Park Street, NE**) from Residential-I (R-I) to Residential-II (R-II).

Ward Number: Two
Tax Parcel Number(s): 01-037-001-022
Request: Three duplex homes

MISCELLANEOUS

ADJOURNMENT



CITY OF GAINESVILLE

Planning and Appeals Board Agenda Request

Item Created: April 15, 2026

Date Submitted:

Final Approval Date:

Presenter: Matt Tate, Community & Economic Development Dept Deputy Director

Item of Business: Minutes of March 10, 2026

Meeting Date: May 12, 2026

Purpose of Request:

The purpose of this request is to allow the Planning and Appeals Board to approve the minutes from the referenced meeting.

Facts & Issues / History & Background:

The minutes were reviewed by the Office and Records Coordinator and the Community & Economic Development Deputy Director.

Department Recommendation:

Approval of the minutes as presented.

Department Director:

Rusty Ligon

If funding is involved, are funds approved within the current budget? No

Amount Requested:

Sources of Funds:

Finance Comments:

Administrative Comments:

Attachments:

None



CITY OF GAINESVILLE

Planning and Appeals Board Agenda Request

Item Created: April 15, 2026
Date Submitted: April 28, 2026
Final Approval Date: May 1, 2026
Presenter: Matt Tate, Community & Economic Development Dept Deputy Director
Item of Business: Request from **Candler Development Services** to rezone a 0.62± acre tract located on the north side of Park Street between Park Street Place and Saint Charles Place (a/k/a **1141 Park Street, NE**) from Residential-I (R-I) to Residential-II (R-II).
Meeting Date: May 12, 2026

Purpose of Request:

This item was tabled at the March 10th Planning and Appeals Board meeting. The revised request proposes reducing the number of residential units from seven to six. The applicant is proposing to rezone the subject property for the purpose of redeveloping the subject property for three duplex homes. The homes will be for rent and will be marketed toward medical professionals and residents of NGHS. Each duplex unit is 800± sf in size. Access is proposed from Park Street which will require realignment of the existing driveway. The property contains an older single-family home that will be demolished. The adjacent properties include single-family homes and Sherwood Park Medical office park located east of the property.

Facts & Issues / History & Background:

Department Recommendation:

Planning staff recommended approval with eight conditions. See the Staff Recommendation report for details.

Department Director:

Rusty Ligon

If funding is involved, are funds approved within the current budget? No

Amount Requested:

Sources of Funds:

Finance Comments:

Administrative Comments:

Attachments:

1. Staff Recommendation Report
2. Location maps
3. Narrative - Revised
4. Survey
5. Site plan
6. Architectural Renderings

7. Architectural Elevations and Floor Plans

**GAINESVILLE PLANNING and APPEALS BOARD
STAFF RECOMMENDATION**

Applicant Candler Development Services
Property Owner Ethan Rogers
Location 1141 Park Street, NE
Request Rezone from R-I to R-II
Size 0.62± acre
Ward Two
Proposed Use Three duplex homes
Planning Division Staff Recommendation **Approval, with conditions**
Date May 12, 2026

▪ **Applicant's Proposal and Background Information**

The applicant is proposing to rezone the subject property for the purpose of redeveloping the property for three duplex homes for a total of 6 dwelling units. The original request included three duplex homes and one single-family home for a total of 7 dwelling units. The property contains a single-family home originally constructed in 1955 that will be demolished. The proposed homes will be for rent and will be marketed to medical professionals and residents of NGHS. The applicant anticipates the duplex units will be 769± sf. of heated floor space (first floor) and 576± sf. of heated floor space (second floor), each unit with 1 bed/1bath. Exterior stairs will provide access to the second floor unit. Access will require realignment of the existing driveway on Park Street. Sanitary sewer currently serves the property but will require upgrades for the additional residential uses. Further engineering will be required to address stormwater runoff and water quality requiring some level of on-site detention located at the rear of the property.

▪ **Adjacent Land Use and Zoning**

Location	Use	Zoning
North	Single-family homes	Planned Unit Development (P-U-D)
South	Sherwood Medical Office Park	Office and Institutional (O-I)
East	Single-family homes	Planned Unit Development (P-U-D)
West	Single-family homes	Residential-I (R-I)

▪ **Other Departmental Comments**

There were no other departmental comments regarding this request.

▪ **Zoning History**

The following zoning actions have taken place in the immediate area during the last ten years:

2022 – A request by Ethan Rogers to rezone a 0.31± acre tract located at 523 Park Street from Residential-I (R-I) to Residential-II (R-II) was approved for an accessory apartment.

2021 – A request by Northeast Georgia Medical Center to rezone a 48.997± acres tract located at 743 Spring Street, NE; 1227 Sherwood Park Drive, NE; 200 Wisteria Drive, NE and 1075 Jesse Jewell Parkway, SW from Planned Unit Development (P-U-D) and Office and Institutional (O-I) to Planned Unit Development (P-U-D) was approved for a hospital campus expansion.

2021 – A request by Jennifer Walter to rezone a 0.48± acre tract located at 522 South Enota Drive from Office and Institutional (O-I) to Neighborhood Business (N-B) was approved for a retail store.

2017 – A request by Will & McCay Crumley to rezone a 0.31± acre tract located at 523 Park Street from Residential-II (R-II) to Residential-I (R-I) was approved for the existing single-family home.

2017 – A request by Brightstone Transitions to amend a Planned Unit Development (P-U-D) zoning on a 0.50± acre tract located at 446 Green Street was approved with conditions for a group home and office.

2017 – A request by W.L. Norton Agency Inc., to rezone a 0.42± acre tract located at 418 Boulevard, NE from Residential-II (R-II) to Residential and Office (R-O) was approved with conditions for an office.

▪ **Staff Analysis**

(1) Is the proposed use suitable in view of the zoning and development of adjacent and nearby property?

The adjacent properties consist of mostly owner-occupied single-family homes zoned R-I and P-U-D except for Sherwood Medical Office Park, which is zoned O-I and has access from Sherwood Park Drive. Further west along Park Street extending to Prior Street there are a limited number non-single-family residential uses including a duplex, quadplex, multi-family apartments and condominiums. Within walking distance to the east is the Sherwood Plaza shopping center which includes numerous medical, office and commercial uses.

While the subject property is adjacent to single-family residential homes, the proposed structures appear to be appropriately scaled. The proposed duplex structures each have a total heated floor space of 1,345± sf. According to the Hall County tax records, the adjacent single-family homes range from 1,388 sf. to 3,118 sf. of heated floor space, with a couple of nearby homes as small as 1,080 sf. of heated floor space.

(2) Will the proposed use adversely affect the existing use or usability of adjacent or nearby property?

The subject property would function as multi-family property which is different than its current single-family use. Access will remain from Park Street, and the existing driveway will be improved to provide shared access. The proposed three detached structures each have the architectural appearance of a single-family structure. The proposal should have limited impact on the use or usability of the adjacent or nearby properties due to its small scale with each unit only having 1bed/1bath. The proposal appears to be designed with thoughtful site planning to reflect single-family homes to minimize impacts on the surrounding properties without diminishing neighborhood quality.

(3) Is the proposed use compatible with the purpose and intent of the Comprehensive Plan?

The Future Development Map for the City of Gainesville places the subject property within the *Single-family Residential* land use category which includes areas containing or planned for single-family detached or semi-detached housing at densities ranging from two to four dwelling units per acre. The subject property is 0.62± acre in size. The applicant's proposal is for 6 dwelling units at a density of 9.68 du/ac. The proposed zoning of Residential-II (R-II) allows for up to 12 du/ac.

According to the Character Area map for the City of Gainesville, the subject property is located within the *Traditional Neighborhoods* Character Area. The vision for this area anticipates minimal change, and primary issues within this subarea include incompatible infill development and the threat of encroaching urban sprawl. A range of housing is encouraged to meet the needs of different household types, sizes and incomes. Commercial encroachment should be minimized and should respect and mirror the small scale of the surrounding neighborhoods, while the purity of the landscape and quality of housing should be preserved. Appropriate land uses allowed include low to medium density single-family and multi-family residential, limited general mixed-use, mixed-use / commercial, parks and recreation, and Public and institutional.

It is staff's opinion that the proposal is consistent with the *Traditional Neighborhood Character Area* of the Comprehensive Plan but is at a higher residential density.

(4) Are there substantial reasons why the property cannot or should not be used as currently zoned?

The property is zoned Residential-I (R-I) and is limited to one single-family residence. The property has been in a state of disrepair for approximately four years. The owner acquired the property two years ago and desires to maximize the density to allow for additional housing opportunities while blending in architecturally with the surrounding residential landscape.

(5) Will the proposed use cause an excessive or burdensome use of public facilities or services, including but not limited to streets, schools, water or sewer utilities, and police or fire protection?

The subject property currently utilizes various City services, including police and fire protection and utilities. Gainesville Fire Station #2, located off Cleveland Highway, is approximately 2.1± miles from the subject property. The proposal will have minimal load on water and sanitary sewer services which currently serve the site. Given the small scale of the proposal, minimal impacts are expected to the Gainesville City School system which already provides bus service to the nearby properties.

According to the Institute of Transportation Engineers (ITE) Trip Generation Handbook (9th Edition), the proposed 6-unit development could generate 57± new trips per weekday and 5± A.M. and 6± P.M. peak hour trips during the weekday.

(6) Is the proposed use supported by new or changing conditions not anticipated by the Comprehensive Plan or reflected in the existing zoning on the property or surrounding properties?

The subject property is located near the Sherwood Medical Office Park and Sherwood Plaza shopping center. The nearby Brenau University campus and NEGA Medical Center campus have grown significantly over the past 20 years, all of which have created need for more quality in-town housing that is walkable to neighborhood services and employment opportunities.

Properties located along Park Street are expected to remain residential but there may be redevelopment opportunities for non-traditional single-family housing and two-family housing where appropriate. The proposal aims to help address the missing middle housing needs catering to young professionals and the local workforce.

(7) Does the proposed use reflect a reasonable balance between the promotion of the public health, safety, morality, or general welfare and the right to unrestricted use of property?

The proposed rezoning for three duplex homes is different than the adjacent single-family homes but is not unlike the mixture of housing types and zoning along Park Street. Therefore, the proposed rezoning request, with the recommended conditions, appears to promote a

reasonable balance between the interests of the City, the property owner, and neighboring residents and property owners.

▪ **Staff Recommendation**

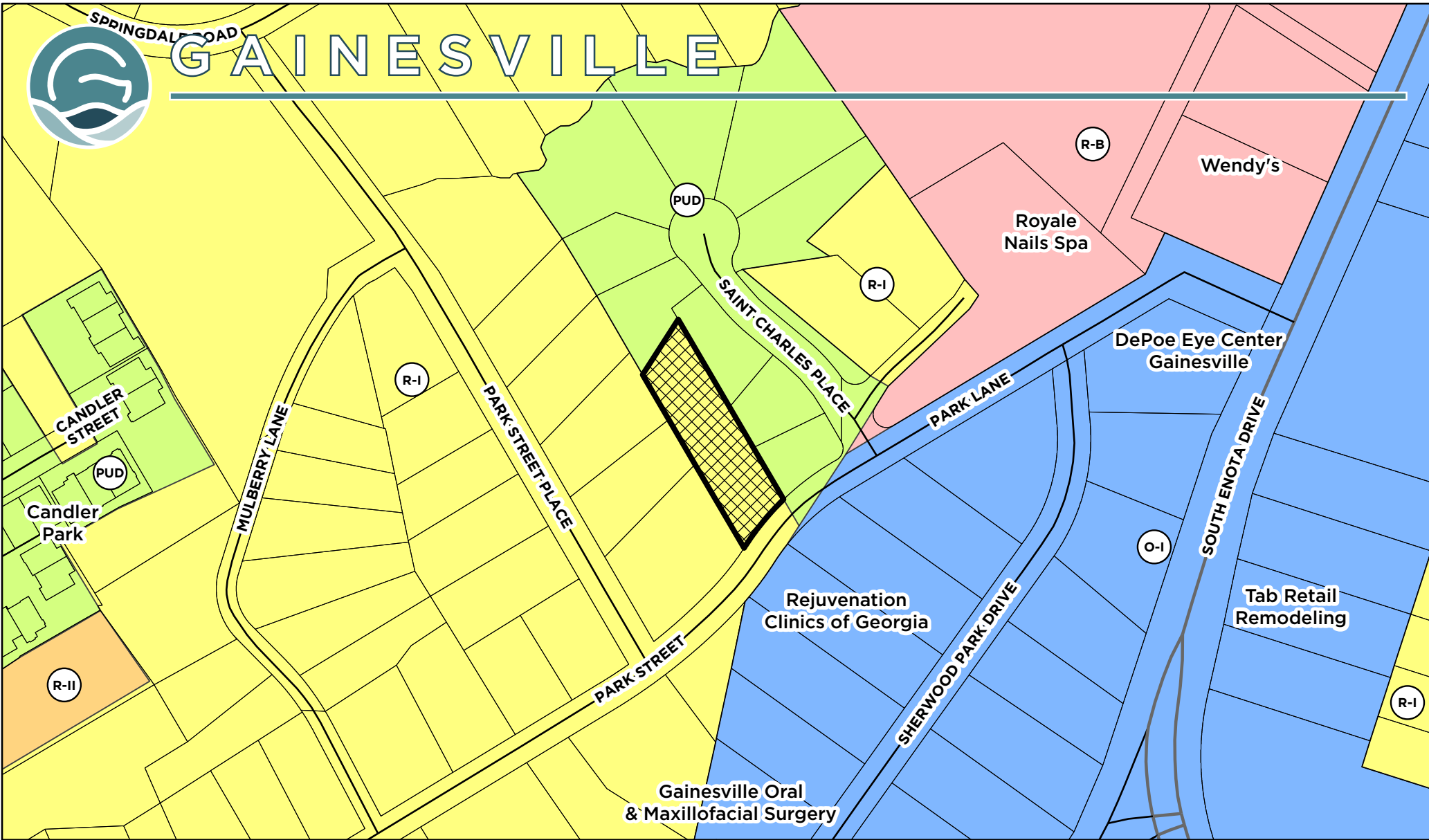
The Planning Division staff is recommending **conditional approval** of this rezoning request with **R-II zoning**, based on the Comprehensive Plan and the adjacent and nearby residential and non-residential land uses.

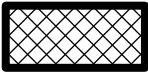
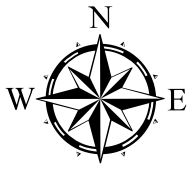
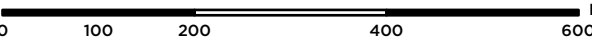
Conditions

1. The development standards within the applicant's revised narrative, site plan, and architectural renderings shall be made part of the zoning ordinance and shall be subject to the Community and Economic Development Director approval. Any zoning conditions adopted as part of this zoning ordinance that conflict with the applicant's narrative, concept plan and architectural renderings shall take precedence over the applicant's development standards.
2. The use of the property shall be limited to a maximum of six residential units not to exceed two residential units per structure.
3. The perimeter of the subject property adjacent to single-family properties shall be screened with a staggered row of buffer trees consisting of a mixture of Cryptomeria, Arborvitae and Eastern Red Cedar trees or other approved trees at a minimum installation height of 8 feet. The location, number, spacing, size and type of trees planted shall be subject to the approval of the Community and Economic Development Department Director.
4. The front yard of each residential structure shall be sodded and planted with at least one 3" caliper in size hardwood tree.
5. The individual garbage containers shall be stored behind each residential unit and screened by a privacy fence in a manner so as not to be visible from the proposed residential units, adjoining properties, roads and parking areas subject to the approval of the Community and Economic Development Director. A trash dumpster shall not be allowed on the property.
6. The property owner or a property manager shall be responsible for the regular maintenance of the entire property.
7. All access point design for the subject property shall be submitted for review and approval by the Gainesville Public Works Director.
8. An updated as-built boundary survey/plat of the subject property shall be recorded prior to obtaining a Certificate of Occupancy.



GAINESVILLE



Applicant: CANDLER DEVELOPMENT SERVICES		Request: Rezoning +/- 0.62 AC from Residential-I (R-I) to Residential-II (R-II) for three duplex homes.	
REZONING REQUEST			
Subject Property Address: 1141 Park Street, NE	Tax Parcel: 01-037-001-022	 Subject Property	 Page 9 of 28
Meeting Date: 05/12/2026 Map Prepared: 04/15/2026		 Scale: 1" = 200'	



GAINESVILLE

Royale
Nails Spa

SAINT CHARLES PLACE

PARK STREET PLACE

PARK LANE

PARK STREET

SHERWOOD PARK DRIVE

Rejuvenation
Clinics of Georgia

Applicant:

CANDLER DEVELOPMENT SERVICES

Request:

Rezone +/- 0.62 AC from Residential-I (R-I) to Residential-II (R-II) for three duplex homes.

REZONING REQUEST

Subject Property Address:
1141 Park Street, NE

Tax Parcel:
01-037-001-022

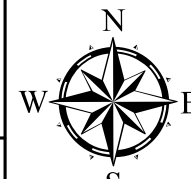


Subject Property

Aerial from 2025

Meeting Date: 05/12/2026
Map Prepared: 04/15/2026

0 50 100 200 300 Feet
Scale: 1" = 100'



Narrative Report

Application Type: Rezoning

Request: R-1 to R-2

Subject Property

- **Address:** 1141 Park Street, Gainesville, Georgia
 - **Parcel Number:** 01037 001022
 - **Total Acreage:** 0.62 acres
 - **Existing Zoning:** R-1 – Single-Family Residential
 - **Proposed Zoning:** R-2 – Two-Family Residential
-

Proposed Development

The applicant proposes a small-scale residential infill development consisting of:

- **Three (3) duplex residential buildings** (six dwelling units), and

for a total of **six (6) dwelling units** on the subject property.

- Units will be smaller, studio style units (~ 800 SqFt.)
 - Rentals will be geared towards medical professionals and residents of NGHS
-

Residential Density

- **Total Units:** 6
- **Site Area:** 0.62 acres
- **Proposed Density:** 9.68 dwelling units per acre

The proposed density is consistent with the intent of the R-2 zoning district and represents a modest increase over single-family zoning while maintaining neighborhood compatibility.

Surrounding Area & Compatibility

The property is located within an established residential area characterized by existing R1, PUD and R2 zoning for residential uses. The proposed R-2 zoning allows for residential uses that are compatible in scale and character with surrounding development. The property is adjacent to a PUD development and is across Park St. from properties zoned O-I. No commercial or high-intensity uses are proposed. Traffic impacts are expected to be minimal and consistent with residential use of the property.

Comprehensive Plan Consistency

The requested rezoning is consistent with the City of Gainesville Comprehensive Plan goals that encourage:

- Residential infill development within existing neighborhoods
 - Efficient use of existing public infrastructure
 - A range of housing types to meet community needs
-

Public Benefit

Approval of the rezoning will:

- Increase housing availability within the city limits
 - Promote responsible and well-designed residential infill
 - Utilize existing utilities, streets, and public services efficiently
 - Support neighborhood stability and long-term community growth
-

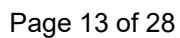
Conclusion

In our opinion, rezoning from **R-1 to R-2** for the **0.62-acre property at 1141 Park Street** is appropriate, compatible with surrounding uses, consistent with the Comprehensive Plan, and in the best interest of the City of Gainesville.



TACS DATE 2/16/24
 PATRICK D. CANADAY, GA RLS #3039
 CLARKCANADAY LLC
 C.O.A NO. LSF 00175
 EMAIL: CLARKCANADAY2@GMAIL.COM

- 1.) FIELD DATA: 0.03" AVERAGE HRMS
- 2.) MEASUREMENTS WERE TAKEN WITH A DUAL FREQUENCY CARLSON BRx7 GNSS GPS RTK & BASE RECEIVER ON 2/15/24. DISTANCES ARE GROUND.
- 3.) PLAT PRECISION: 1"/60,668".
- 4.) THIS PLAT HAS BEEN DONE FOR THE USE AND PURPOSE OF THE CLIENT ASCRIBED AND CONTRACTED WITH BELOW. ALL OTHER PARTIES ARE SUBSEQUENTLY PUT ON NOTICE AS TO THE LIMITED DEGREE OF RELIANCE UPON THIS PLAT BY THIRD PARTIES.
- 5.) THE PUBLIC RECORDS REFERENCED HEREON REFLECT THOSE RECORDS NECESSARY TO THE BOUNDARY OF THE SUBJECT PROPERTY. THEY DO NOT CONSTITUTE A TITLE SEARCH. PROPERTY IS SUBJECT TO ALL RIGHT OF WAYS, EASEMENTS, AND RESTRICTIONS OF RECORD.
- 6.) THE NORTH MERIDIAN SHOWN HEREON IS BASED ON GRID NORTH GA WEST OBTAINED BY GPS RTK/BASE METHODS USING THE LIECA SMARTNET NETWORK.







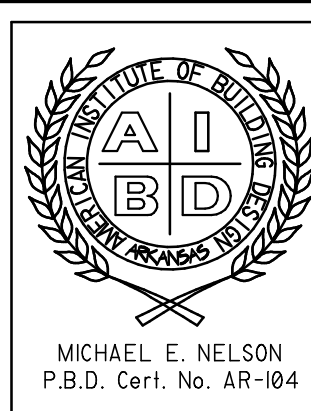
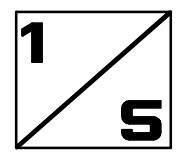
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986.596.4233

DATE	8/3/22
SCALE	1/4" = 1'-0"
BUILDER	
JOB	
DRAWN BY	



R310.6 DWELLING ADDITIONS.
WHERE DWELLING ADDITIONS CONTAIN SLEEPING ROOMS, AN EMERGENCY ESCAPE AND RESCUE OPENING SHALL BE PROVIDED IN EACH NEW SLEEPING ROOM. WHERE DWELLING ADDITIONS HAVE BASEMENTS, AN EMERGENCY ESCAPE AND RESCUE OPENING SHALL BE PROVIDED IN THE NEW BASEMENT.

NOTE: SEE SECTION 310.6 FOR EXCEPTIONS

R310.7 ALTERATIONS OR REPAIRS OF EXISTING BASEMENTS.
NEW SLEEPING ROOMS CREATED IN AN EXISTING BASEMENT SHALL BE PROVIDED WITH EMERGENCY ESCAPE AND RESCUE OPENINGS IN ACCORDANCE WITH SECTION R310.1. OTHER THAN NEW SLEEPING ROOMS, WHERE EXISTING BASEMENTS UNDERGO ALTERATIONS OR REPAIRS, AN EMERGENCY ESCAPE AND RESCUE OPENING IS NOT REQUIRED.

NOTE: SEE SECTION 310.7 FOR EXCEPTION

SECTION R311 MEANS OF EGRESS

R311.1 MEANS OF EGRESS.
DWELLINGS SHALL BE PROVIDED WITH A MEANS OF EGRESS IN ACCORDANCE WITH THIS SECTION. THE MEANS OF EGRESS SHALL PROVIDE A CONTINUOUS AND UNOBSTRUCTED PATH OF VERTICAL AND HORIZONTAL EGRESS TRAVEL FROM ALL PORTIONS OF THE DWELLING TO THE REQUIRED EGRESS DOOR WITHOUT REQUIRING TRAVEL THROUGH A GARAGE. THE REQUIRED EGRESS DOOR SHALL OPEN DIRECTLY INTO A PUBLIC WAY OR TO A YARD OR COURT THAT OPENS TO A PUBLIC WAY.

R311.2 EGRESS DOOR.
NOT LESS THAN ONE EGRESS DOOR SHALL BE PROVIDED FOR EACH DWELLING UNIT. THE EGRESS DOOR SHALL BE SIDE-HINGED, AND SHALL PROVIDE A CLEAR WIDTH OF NOT LESS THAN 32 INCHES (813 MM) WHERE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES (1.57 RAD). THE CLEAR HEIGHT OF THE DOOR OPENING SHALL BE NOT LESS THAN 78 INCHES (1981 MM) IN HEIGHT MEASURED FROM THE TOP OF THE THRESHOLD TO THE BOTTOM OF THE STOP. OTHER DOORS SHALL NOT BE REQUIRED TO COMPLY WITH THESE MINIMUM DIMENSIONS. EGRESS DOORS SHALL BE READILY OPERABLE FROM INSIDE THE DWELLING WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.

R311.3 FLOORS AND LANDINGS AT EXTERIOR DOORS.
THERE SHALL BE A LANDING OR FLOOR ON EACH SIDE OF EACH EXTERIOR DOOR. THE WIDTH OF EACH LANDING SHALL BE NOT LESS THAN THE DOOR SERVED.
LANDINGS SHALL HAVE A DIMENSION OF NOT LESS THAN 36 INCHES (914 MM) MEASURED IN THE DIRECTION OF TRAVEL. THE SLOPE AT EXTERIOR LANDINGS SHALL NOT EXCEED 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2 PERCENT).

NOTE: SEE SECTION 311.3 FOR EXCEPTION

R311.3.1 FLOOR ELEVATIONS AT THE REQUIRED EGRESS DOORS.
LANDINGS OR FINISHED FLOORS AT THE REQUIRED EGRESS DOOR SHALL BE NOT MORE THAN 1 1/2 INCHES (38 MM) LOWER THAN THE TOP OF THE THRESHOLD.

NOTE: SEE SECTION 311.3.1 FOR EXCEPTION

R311.3.2 FLOOR ELEVATIONS AT OTHER EXTERIOR DOORS.
DOORS OTHER THAN THE REQUIRED EGRESS DOOR SHALL BE PROVIDED WITH LANDINGS OR FLOORS NOT MORE THAN 7 3/4 INCHES (196 MM) BELOW THE TOP OF THE THRESHOLD.

NOTE: SEE SECTION 311.3.2 FOR EXCEPTION

R311.3.3 STORM AND SCREEN DOORS.
STORM AND SCREEN DOORS SHALL BE PERMITTED TO SWING OVER EXTERIOR STAIRS AND LANDINGS.

R311.4 VERTICAL EGRESS.
EGRESS FROM HABITABLE LEVELS INCLUDING HABITABLE ATTIC AND BASEMENTS THAT ARE NOT PROVIDED WITH AN EGRESS DOOR IN ACCORDANCE WITH SECTION R311.2 SHALL BE BY A RAMP IN ACCORDANCE WITH SECTION R311.8 OR A STAIRWAY IN ACCORDANCE WITH SECTION R311.7.

R311.5 LANDING, DECK, BALCONY AND STAIR CONSTRUCTION, AND ATTACHMENT
EXTERIOR LANDINGS, DECKS, BALCONIES, STAIRS AND SIMILAR FACILITIES SHALL BE POSITIVELY ANCHORED TO THE PRIMARY STRUCTURE TO RESIST BOTH VERTICAL AND LATERAL FORCES OR SHALL BE DESIGNED TO BE SELF-SUPPORTING. ATTACHMENT SHALL NOT BE ACCOMPLISHED BY USE OF TOENAILS OR NAILS SUBJECT TO WITHDRAWAL.

R311.6 HALLWAYS.
THE WIDTH OF A HALLWAY SHALL BE NOT LESS THAN 3 FEET (914 MM).

R310.2.2 MINIMUM DIMENSIONS.
THE MINIMUM NET CLEAR OPENING HEIGHT DIMENSION SHALL BE 24 INCHES (610 MM). THE MINIMUM NET CLEAR OPENING WIDTH DIMENSION SHALL BE 20 INCHES (508 MM). THE NET CLEAR OPENING DIMENSIONS SHALL BE THE RESULT OF NORMAL OPERATION OF THE MOMENT.

R310.2.3 MAXIMUM HEIGHT FROM FLOOR.
EMERGENCY ESCAPE AND RESCUE OPENING. IT SHALL HAVE THE BOTTOM OF THE CLEAR OPENING NOT GREATER THAN 44 INCHES (1118 MM) ABOVE THE FLOOR.

R310.2.4 EMERGENCY ESCAPE AND RESCUE OPENINGS UNDER DECKS AND CANTILEVERS.
EMERGENCY ESCAPE AND RESCUE OPENINGS INSTALLED UNDER DECKS, PORCHES AND CANTILEVERS SHALL BE FULLY OPENABLE AND PROVIDE A PATH NOT LESS THAN 36 INCHES (914 MM) IN HEIGHT AND 36 INCHES (914 MM) IN WIDTH TO A YARD OR COURT.

NOTE: SEE SECTION 310.2.4 FOR EXCEPTION

R310.2.4 EMERGENCY ESCAPE AND RESCUE OPENINGS UNDER DECKS AND PORCHES.
EMERGENCY ESCAPE AND RESCUE OPENINGS INSTALLED UNDER DECKS AND PORCHES SHALL BE FULLY OPENABLE AND PROVIDE A PATH NOT LESS THAN 36 INCHES (914 MM) IN HEIGHT TO A YARD OR COURT.

R310.3 EMERGENCY ESCAPE AND RESCUE DOORS
WHERE A DOOR IS PROVIDED AS THE REQUIRED EMERGENCY ESCAPE AND RESCUE OPENING, IT SHALL BE A SIDE-HINGED DOOR OR A SLIDING DOOR

R310.4 AREA WELLS.
AN EMERGENCY ESCAPE AND RESCUE OPENING WHERE THE BOTTOM OF THE CLEAR OPENING IS BELOW THE ADJACENT GRADE SHALL BE PROVIDED WITH AN AREA WELL IN ACCORDANCE WITH SECTIONS R310.4.1 THROUGH R310.4.4.

R310.4.1 MINIMUM SIZE.
THE HORIZONTAL AREA OF THE AREA WELL SHALL BE NOT LESS THAN 9 SQUARE FEET (0.9 M2), WITH A HORIZONTAL PROJECTION AND WIDTH OF NOT LESS THAN 36 INCHES (914 MM). THE SIZE OF THE AREA WELL SHALL ALLOW THE EMERGENCY ESCAPE AND RESCUE OPENING TO BE FULLY OPENED.

NOTE: SEE SECTION 310.4.1 FOR EXCEPTION

R310.4.2 LADDER AND STEPS.
AREA WELLS WITH A VERTICAL DEPTH GREATER THAN 44 INCHES (1118 MM) SHALL BE EQUIPPED WITH AN APPROVED PERMANENTLY AFFIXED LADDER OR STEPS. THE LADDER OR STEPS SHALL NOT BE OBSTRUCTED BY THE EMERGENCY ESCAPE AND RESCUE OPENING WHERE THE WINDOW OR DOOR IS IN THE OPEN POSITION. LADDERS OR STEPS REQUIRED BY THIS SECTION SHALL NOT BE REQUIRED TO COMPLY WITH SECTION R311.7.

R310.4.2.1 LADDER.
LADDERS AND RUNGS SHALL HAVE AN INSIDE WIDTH OF NOT LESS THAN 12 INCHES (305 MM), SHALL PROJECT NOT LESS THAN 3 INCHES (76 MM) FROM THE WALL AND SHALL BE SPACED NOT MORE THAN 18 INCHES (457 MM) ON CENTER VERTICALLY FOR THE FULL HEIGHT OF THE AREA WELL.

R310.4.2.2 STEPS.
STEPS SHALL HAVE AN INSIDE WIDTH OF NOT LESS THAN 12 INCHES (305 MM), A MINIMUM TREAD DEPTH OF 5 INCHES (127 MM) AND A MAXIMUM RISER HEIGHT OF 18 INCHES (457 MM) FOR THE FULL HEIGHT OF THE AREA WELL.

R310.4.3 DRAINAGE.
AREA WELLS SHALL BE DESIGNED FOR PROPER DRAINAGE BY CONNECTING TO THE BUILDING'S FOUNDATION DRAINAGE SYSTEM REQUIRED BY SECTION R405.1

NOTE: SEE SECTION 310.4.3 FOR EXCEPTION

R310.4.4 BARS, GRILLES, COVERS AND SCREENS.
WHERE BARS, GRILLES, COVERS, SCREENS OR SIMILAR DEVICES ARE PLACED OVER EMERGENCY ESCAPE AND RESCUE OPENINGS, AREA WELLS, BUILDING ENCLOSURES OR AREA WELLS THAT SERVE SUCH OPENINGS, THE MINIMUM NET CLEAR OPENING SIZE SHALL COMPLY WITH SECTIONS R310.2 THROUGH R310.2.2 AND R310.4.1. SUCH DEVICES SHALL BE RELEASABLE OR REMOVABLE FROM THE INSIDE WITHOUT THE USE OF A KEY, OR TOOL, OR FORCE GREATER THAN THAT REQUIRED FOR THE NORMAL OPERATION OF THE ESCAPE AND RESCUE OPENING.

R310.5 REPLACEMENT WINDOWS FOR EMERGENCY ESCAPE AND RESCUE OPENINGS.
REPLACEMENT WINDOWS INSTALLED IN BUILDINGS MEETING THE SCOPE OF THIS CODE SHALL BE EXEMPT FROM SECTIONS R310.2 AND R310.4.4, PROVIDED THAT THE REPLACEMENT WINDOW MEETS THE FOLLOWING CONDITIONS:

- THE REPLACEMENT WINDOW IS THE MANUFACTURER'S LARGEST STANDARD SIZE WINDOW THAT WILL FIT WITHIN THE EXISTING FRAME OR EXISTING ROUGH OPENING. THE REPLACEMENT WINDOW IS OF THE SAME OPERATING STYLE AS THE EXISTING WINDOW OR A STYLE THAT PROVIDES FOR AN EQUAL OR GREATER WINDOW OPENING AREA THAN THE EXISTING WINDOW.
- THE REPLACEMENT WINDOW IS NOT PART OF A CHANGE OF OCCUPANCY.

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2021 International Residential Code® Construction Specifications and Methodologies

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GENERAL SITE NOTES

- CONTRACTOR TO VERIFY LOCATIONS OF SITE UTILITIES, REQUIREMENTS, AND CONNECTIONS FEES. OWNER, CONTRACTOR AND SUB-CONTRACTORS TO PAY ALL OF THEIR RELATED CONSTRUCTION PERMIT FEES AS AGREED UPON BETWEEN THE OWNER AND CONTRACTOR.
- BEFORE EXCAVATION, THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS, MAPS, AND BUILDING SITE OF EXITING FACILITY TO DETERMINE THE ROUTES OF ALL UNDERGROUND UTILITIES.

BEFORE DIGGING COMMENCES IT IS ADVISED THAT THE OWNER AND OR CONTRACTOR CALL THEIR STATES UTILITY LOCATOR FACILITATOR.
3. IT IS RECOMMENDED THAT THE SITES SOIL BE TESTED FOR COMPRESSION RATING TO DETERMINE FOUNDATION AND FOOTING DESIGN. CONCRETE FOUNDATIONS AND FOOTING DESIGN SHALL BE IN ACCORDANCE TO CHAPTER 4 OF THE I.R.C. CODE. SEE FOUNDATION SECTION ON THIS PAGE FOR MORE DETAIL.
4. CONSULT A LOCAL CIVIL ENGINEER FOR SITE PLANS AND SURVEYS OF EXISTING PROPERTY. A LANDSCAPE ARCHITECT SHOULD BE CONSULTED FOR MORE EXTENSIVE LANDSCAPE DESIGNS.

CHAPTER 3 :: BUILDING PLANNING

SECTION R304 MINIMUM ROOM AREAS

R304.1 MINIMUM AREA.
HABITABLE ROOMS SHALL HAVE A FLOOR AREA OF NOT LESS THAN 70 SQUARE FEET (6.5 M2).
EXCEPTION: KITCHENS.

R304.2 MINIMUM DIMENSIONS.
HABITABLE ROOMS SHALL BE NOT LESS THAN 7 FEET (2134 MM) IN ANY HORIZONTAL DIMENSION.

EXCEPTION: KITCHENS.

R304.3 HEIGHT EFFECT ON ROOM AREA.
PORTIONS OF A ROOM WITH A SLOPING CEILING MEASURING LESS THAN 5 FEET (1524 MM) OR A FURRED CEILING MEASURING LESS THAN 7 FEET (2134 MM) FROM THE FINISHED FLOOR TO THE FINISHED CEILING SHALL NOT BE CONSIDERED AS CONTRIBUTING TO THE MINIMUM REQUIRED HABITABLE AREA FOR THAT ROOM.

SECTION R305 CEILING HEIGHT

R305.1 MINIMUM HEIGHT.
HABITABLE SPACE, HALLWAYS AND PORTIONS OF BASEMENTS CONTAINING THESE SPACES SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 7 FEET (2134 MM). BATHROOMS, TOILET ROOMS AND LAUNDRY ROOMS SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 6 FEET 8 INCHES (2032 MM).

NOTE: SEE SECTION R305.1 FOR EXCEPTIONS

R305.1.1 BASEMENTS.
PORTIONS OF BASEMENTS THAT DO NOT CONTAIN HABITABLE SPACE OR HALLWAYS SHALL HAVE A CEILING HEIGHT OF NOT LESS THAN 6 FEET 8 INCHES (2032 MM).

EXCEPTION: AT BEAMS, GIRDERS, DUCTS OR OTHER OBSTRUCTIONS, THE CEILING HEIGHT SHALL BE NOT LESS THAN 6 FEET 4 INCHES (1931 MM) FROM THE FINISHED FLOOR.

SECTION R306 SANITATION

R306.1 TOILET FACILITIES.
EVERY DWELLING UNIT SHALL BE PROVIDED WITH A WATER CLOSET, LAVATORY, AND A BATHTUB OR SHOWER.

R306.2 KITCHEN.
EACH DWELLING UNIT SHALL BE PROVIDED WITH A KITCHEN AREA AND EVERY KITCHEN AREA SHALL BE PROVIDED WITH A SINK.

R306.3 SEWAGE DISPOSAL.
PLUMBING FIXTURES SHALL BE CONNECTED TO A SANITARY SEWER OR TO AN APPROVED PRIVATE SEWAGE DISPOSAL SYSTEM.

R306.4 WATER SUPPLY TO FIXTURES.
PLUMBING FIXTURES SHALL BE CONNECTED TO AN APPROVED WATER SUPPLY. KITCHEN SINKS, LAVATORIES, BATHTUBS, SHOWERS, BIDETS, LAUNDRY TUBS AND WASHING MACHINE OUTLETS SHALL BE PROVIDED WITH HOT AND COLD WATER.

SECTION R307 TOILET, BATH, AND SHOWER SPACES

R307.1 SPACE REQUIRED.
FIXTURES SHALL BE SPACED IN ACCORDANCE WITH FIGURE R307.1, AND IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION P2705.1.

R307.2 BATHTUB AND SHOWER SPACES.
BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET (1829 MM) ABOVE THE FLOOR.

SECTION R308 GLAZING

R308.4 HAZARDOUS LOCATIONS.
THE LOCATIONS SPECIFIED IN SECTIONS R308.4.1 THROUGH R308.4.7 SHALL BE CONSIDERED TO BE SPECIFIC HAZARDOUS LOCATIONS FOR THE PURPOSES OF GLAZING.

R308.4.1 GLAZING IN DOORS
GLAZING IN FIXED AND OPERABLE PANELS OF SWINGING, SLIDING AND BI-FOLD DOORS SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

NOTE: SEE SECTION 308.4.1 FOR EXCEPTIONS

R308.4.2 GLAZING ADJACENT TO DOORS.
GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES (1524 MM) ABOVE THE FLOOR OR WALKING SURFACE AND IT MEETS EITHER OF THE FOLLOWING CONDITIONS:

- WHERE THE GLAZING IS WITHIN 24 INCHES (610 MM) OF EITHER SIDE OF THE DOOR IN THE PLANE OF THE DOOR IN A CLOSED POSITION.
 - WHERE THE GLAZING IS ON A WALL LESS THAN 180 DEGREES (3.14 RAD) FROM THE PLANE OF THE DOOR IN A CLOSED POSITION AND WITHIN 24 INCHES (610 MM) OF THE HINGE SIDE OF AN IN-SWINGING DOOR.
- EXCEPTIONS:
- DECORATIVE GLAZING.
 - WHERE THERE IS AN INTERVENING WALL OR OTHER PERMANENT BARRIER BETWEEN THE DOOR AND THE GLAZING.
 - WHERE ACCESS THROUGH THE DOOR IS TO A CLOSET OR STORAGE AREA 3 FEET (914 MM) OR LESS IN DEPTH. GLAZING IN THIS APPLICATION SHALL COMPLY WITH SECTION R308.4.3.
 - GLAZING THAT IS ADJACENT TO THE FIXED PANEL OF PATIO DOORS.

R308.4.3 GLAZING IN WINDOWS.
GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION:

- THE EXPOSED AREA OF AN INDIVIDUAL PANE IS LARGER THAN 9 SQUARE FEET (0.836 M2).
- THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 18 INCHES (457 MM) ABOVE THE FLOOR.
- THE TOP EDGE OF THE GLAZING IS MORE THAN 36 INCHES (914 MM) ABOVE THE FLOOR.
- ONE OR MORE WALKING SURFACES ARE WITHIN 36 INCHES (914 MM), MEASURED HORIZONTALLY AND IN A STRAIGHT LINE, OF THE GLAZING.

NOTE: SEE SECTION R308.4.3. FOR EXCEPTIONS

R308.4.4 GLAZING IN GUARDS AND RAILINGS.
GLAZING IN GUARDS AND RAILINGS, INCLUDING STRUCTURAL BALUSTER PANELS AND NONSTRUCTURAL IN-FILL PANELS, REGARDLESS OF AREA OR HEIGHT ABOVE A WALKING SURFACE SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

R308.4.4.1 STRUCTURAL GLASS BALUSTER PANELS.
GUARDS WITH STRUCTURAL GLASS BALUSTER PANELS SHALL BE INSTALLED WITH AN ATTACHED TOP RAIL OR HANDRAIL. THE TOP RAIL OR HANDRAIL SHALL BE SUPPORTED BY NOT LESS THAN THREE GLASS BALUSTER PANELS, OR SHALL BE OTHERWISE SUPPORTED TO REMAIN IN PLACE SHOULD ONE GLASS BALUSTER PANEL FAIL.

NOTE: SEE SECTION 308.4.4.1 FOR EXCEPTIONS.

R308.4.5 GLAZING AND WET SURFACES.
GLAZING IN WALLS, ENCLOSURES OR FENCES CONTAINING OR ADJACENT TO HOT TUBS, SPAS, WHIRLPOLS, SAUNAS, STEAM ROOMS, BATHTUBS, SHOWERS AND INDOOR OR OUTDOOR SWIMMING POOLS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES (1524 MM) MEASURED VERTICALLY ABOVE ANY STANDING OR WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION. THIS SHALL APPLY TO SINGLE GLAZING AND ALL PANES IN MULTIPLE GLAZING.

NOTE: SEE SECTION 308.4.5 FOR EXCEPTIONS.

R308.4.6 GLAZING ADJACENT TO STAIRS AND RAMPS.
GLAZING WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 36 INCHES (914 MM) ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE OF STAIRWAYS, LANDINGS BETWEEN FLIGHTS OF STAIRS AND RAMPS SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

NOTE: SEE SECTION 308.4.6 FOR EXCEPTIONS.

R308.4.7 GLAZING ADJACENT TO THE BOTTOM STAIR LANDING.
GLAZING ADJACENT TO THE LANDING AT THE BOTTOM OF A STAIRWAY WHERE THE GLAZING IS LESS THAN 36 INCHES (914 MM) ABOVE THE LANDING AND WITHIN A 60-INCH (1524 MM) HORIZONTAL ARC LESS THAN 180 DEGREES FROM THE BOTTOM TREAD NOSING SHALL BE CONSIDERED TO BE A HAZARDOUS LOCATION.

SEE SECTION 308.4.7 FOR EXCEPTION

R308.5 SITE-BUILT WINDOWS.
SITE-BUILT WINDOWS SHALL COMPLY WITH SECTION 2404 OF THE INTERNATIONAL BUILDING CODE.

R308.6 SKYLIGHTS AND SLOPED GLAZING.
SKYLIGHTS AND SLOPED GLAZING SHALL COMPLY WITH THE FOLLOWING SECTIONS.

R308.6.1 DEFINITIONS.
THE FOLLOWING TERMS ARE DEFINED IN CHAPTER 2:
-SKYLIGHT, UNIT.
-SKYLIGHTS AND SLOPED GLAZING.
-TUBULAR DAYLIGHTING DEVICE (TDD).

SECTION R309 GARAGES AND CARPORTS

R309.1 FLOOR SURFACE.
GARAGE FLOOR SURFACES SHALL BE OF APPROVED NONCOMBUSTIBLE MATERIAL. THE AREA OF FLOOR USED FOR PARKING OF AUTOMOBILES OR OTHER VEHICLES SHALL BE SLOPED TO FACILITATE THE MOVEMENT OF LIQUIDS TO A DRAIN OR TOWARD THE MAIN VEHICLE ENTRY DOORWAY.

R309.2 CARPORTS.
CARPORTS SHALL BE OPEN ON NOT LESS THAN TWO SIDES. CARPORT FLOOR SURFACES SHALL BE OF APPROVED NONCOMBUSTIBLE MATERIAL. CARPORTS NOT OPEN ON TWO OR MORE SIDES SHALL BE CONSIDERED TO BE A GARAGE AND SHALL COMPLY WITH THE PROVISIONS OF THIS SECTION FOR GARAGES. THE AREA OF FLOOR USED FOR PARKING OF AUTOMOBILES OR OTHER VEHICLES SHALL BE SLOPED TO FACILITATE THE MOVEMENT OF LIQUIDS TO A DRAIN OR TOWARD THE MAIN VEHICLE ENTRY DOORWAY.

EXCEPTION: ASPHALT SURFACES SHALL BE PERMITTED AT GROUND LEVEL IN CARPORTS.

R309.4 AUTOMATIC GARAGE DOOR OPENERS.
AUTOMATIC GARAGE DOOR OPENERS, IF PROVIDED, SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 325.

R309.5 FIRE SPRINKLERS.
PRIVATE GARAGES SHALL BE PROTECTED BY FIRE SPRINKLERS WHERE THE GARAGE WALL HAS BEEN DESIGNED BASED ON TABLE R302.1(2). NOTE A. SPRINKLERS IN GARAGES SHALL BE CONNECTED TO AN AUTOMATIC SPRINKLER SYSTEM THAT COMPLIES WITH SECTION P2804. GARAGE SPRINKLERS SHALL BE RESIDENTIAL SPRINKLERS OR QUICK-RESPONSE SPRINKLERS, DESIGNED TO PROVIDE A DENSITY OF 0.05 GPM/F2. GARAGE DOORS SHALL NOT BE CONSIDERED OBSTRUCTIONS WITH RESPECT TO SPRINKLER PLACEMENT.

SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 EMERGENCY ESCAPE AND RESCUE OPENING REQUIRED.
BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE NOT LESS THAN ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING. WHERE BASEMENTS CONTAIN ONE OR MORE SLEEPING ROOMS, AN EMERGENCY ESCAPE AND RESCUE OPENING SHALL BE REQUIRED IN EACH SLEEPING ROOM. EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL OPEN DIRECTLY INTO A PUBLIC WAY, OR TO A YARD OR COURT HAVING A MINIMUM WIDTH OF 36 INCHES (914 MM) THAT OPENS TO A PUBLIC WAY.

NOTE: SEE SECTION R310.1 FOR EXCEPTION

R310.1.1 OPERATIONAL CONSTRAINTS AND OPENING CONTROL DEVICES.
EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE. WINDOW OPENING CONTROL DEVICES AND FALL PREVENTION DEVICES COMPLY WITH ASMF F2090 SHALL BE PERMITTED FOR USE ON WINDOWS SERVING AS A REQUIRED EMERGENCY ESCAPE AND RESCUE OPENING AND SHALL BE NOT MORE THAN 70 INCHES (178 CM) ABOVE THE FINISHED FLOOR.

R310.2 EMERGENCY ESCAPE AND RESCUE OPENINGS.
EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE MINIMUM DIMENSIONS IN ACCORDANCE WITH SECTIONS R310.2.1 THROUGH R310.2.4.

R310.2.1 MINIMUM SIZE.
EMERGENCY AND ESCAPE RESCUE OPENINGS SHALL HAVE A NET CLEAR OPENING OF NOT LESS THAN 5.7 SQUARE FEET (0.530 M2).

EXCEPTION: THE MINIMUM NET CLEAR OPENING FOR GRADE FLOOR EMERGENCY ESCAPE AND RESCUE OPENING SHALL BE 5 SQUARE FEET (0.465 M2).
HAVE A NET CLEAR OPENING AREA OF NOT LESS THAN 5 SQUARE FEET (0.465 M2).

R311.7 STAIRWAYS. WHERE REQUIRED BY THIS CODE OR PROVIDED, STAIRWAYS SHALL COMPLY WITH THIS SECTION.

EXCEPTIONS:
1. STAIRWAYS NOT WITHIN OR SERVING A BUILDING, PORCH OR DECK.
2. STAIRWAYS LEADING TO NONHABITABLE ATTICS.
3. STAIRWAYS LEADING TO CRAWL SPACES.

R311.7.1 WIDTH.
STAIRWAYS SHALL BE NOT LESS THAN 36 INCHES (914 MM) IN CLEAR WIDTH AT ALL POINTS ABOVE THE PERMITTED HANDRAIL HEIGHT AND BELOW THE REQUIRED HEADROOM HEIGHT. THE CLEAR WIDTH OF STAIRWAYS AT AND BELOW THE HANDRAIL HEIGHT, INCLUDING TREADS AND LANDINGS, SHALL BE NOT LESS THAN 31 1/2 INCHES (787 MM) WHERE A HANDRAIL IS INSTALLED ON ONE SIDE AND 27 INCHES (688 MM) WHERE HANDRAILS ARE INSTALLED ON BOTH SIDES.

NOTE: SEE SECTION 311.7.1 FOR EXCEPTION

R311.7.2 HEADROOM.
THE HEADROOM IN STAIRWAYS SHALL BE NOT LESS THAN 6 FEET 8 INCHES (2032 MM) MEASURED VERTICALLY FROM THE SLOPED LINE ADJOINING THE TREAD NOSING OR FROM THE FLOOR SURFACE OF THE LANDING OR PLATFORM ON THAT PORTION OF THE STAIRWAY.

NOTE: SEE SECTION 311.7.2 FOR EXCEPTION

R311.7.3 VERTICAL RISE.
A FLIGHT OF STAIRS SHALL NOT HAVE A VERTICAL RISE GREATER THAN 12 FEET 7 INCHES (3835 MM) BETWEEN FLOOR LEVELS OR LANDINGS

R311.7.4 WALK-LINE.
THE WALK-LINE ACROSS WINDER TREADS AND LANDINGS SHALL BE CONCENTRIC TO THE TURN AND PARALLEL TO THE DIRECTION OF TRAVEL ENTERING AND EXITING THE TURN. THE WALKLINE SHALL BE LOCATED 12 INCHES (305 MM) FROM THE INSIDE OF THE TURN. THE 12-INCH (305mm) DIMENSION SHALL BE MEASURED FROM THE WIDEST POINT OF THE CLEAR STAIR WIDTH AT THE WALKING SURFACE. WHERE WINDERS ARE ADJACENT WITHIN A FLIGHT, THE POINT OF THE WIDEST CLEAR STAIR WIDTH OF THE ADJACENT WINDERS SHALL BE USED.

R311.7.5 STAIR TREADS AND RISERS.
STAIR TREADS AND RISERS SHALL MEET THE REQUIREMENTS OF THIS SECTION. FOR THE PURPOSES OF THIS SECTION, DIMENSIONS AND DIMENSIONED SURFACES SHALL BE EXCLUSIVE OF CARPETS, RUGS OR RUNNERS.

R311.7.5.1 RISERS.
THE RISER HEIGHT SHALL BE NOT MORE THAN 7 3/4 INCHES (196 MM). THE RISER HEIGHT SHALL BE MEASURED VERTICALLY BETWEEN LEADING EDGES OF THE ADJACENT TREADS. THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH (9.5 MM). RISERS SHALL BE VERTICAL OR SLOPED FROM THE UNDERSIDE OF THE NOSING OF THE TREAD ABOVE AT AN ANGLE NOT MORE THAN 30 DEGREES (0.51 RAD) FROM THE VERTICAL. AT OPEN RISERS, OPENINGS LOCATED MORE THAN 30 INCHES (762 MM), AS MEASURED VERTICALLY, TO THE FLOOR OR GRADE BELOW SHALL NOT PERMIT THE PASSAGE OF 4-INCH-DIA (102 MM) SPHERE.

NOTE: SEE SECTION 311.5.1 FOR EXCEPTION

R311.7.5.2 TREADS.
THE TREAD DEPTH SHALL BE NOT LESS THAN 10 INCHES (254 MM). THE TREAD DEPTH SHALL BE MEASURED HORIZONTALLY BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AND AT A RIGHT ANGLE TO THE TREAD'S LEADING EDGE. THE GREATEST TREAD DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH (9.5 MM).

R311.7.5.2.1 WINDER TREADS.
WINDER TREADS SHALL HAVE A TREAD DEPTH OF NOT LESS THAN 10 INCHES (254MM) MEASURED BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AT THE INTERSECTIONS WITH THE WALK-LINE. WINDER TREADS SHALL HAVE A TREAD DEPTH OF NOT LESS THAN 6 INCHES (152 MM) AT ANY POINT WITHIN THE CLEAR WIDTH OF THE STAIR. WITHIN ANY FLIGHT OF STAIRS, THE LARGEST WINDER TREAD DEPTH AT THE WALK-LINE SHALL NOT EXCEED THE SMALLEST WINDER TREAD BY MORE THAN 3/8 INCH (9.5 MM). CONSISTENTLY SHAPED WINDERS AT THE WALK-LINE SHALL BE ALLOWED WITHIN THE SAME FLIGHT OF STAIRS AS RECTANGULAR TREADS AND SHALL NOT BE REQUIRED TO BE WITHIN 3/8 INCH (9.5 MM) OF THE RECTANGULAR TREAD DEPTH.

NOTE: SEE SECTION 311.7.5.2.1 FOR EXCEPTION

R311.7.5.3 NOSINGS.
NOSINGS AT TREADS, LANDINGS AND FLOORS OF STAIRWAYS SHALL HAVE A RADIUS OF CURVATURE AT THE NOSING NOT GREATER THAN 9/16 INCH (14 MM) OR A BEVEL NOT GREATER THAN 1/4 INCH (12.7 MM). A NOSING PROJECTION NOT LESS THAN 3/4 INCH (19 MM) AND NOT MORE THAN 1 1/4 INCHES (32 MM) SHALL BE PROVIDED ON STAIRWAYS. THE GREATEST NOSING PROJECTION SHALL NOT EXCEED THE SMALLEST NOSING PROJECTION BY MORE THAN 3/8 INCH (9.5 MM) WITHIN A STAIRWAY.

NOTE: SEE SECTION 311.7.5.3 FOR EXCEPTION

R311.7.5.4 EXTERIOR PLASTIC COMPOSITE STAIR TREADS.
PLASTIC COMPOSITE EXTERIOR STAIR TREADS SHALL COMPLY WITH THE PROVISIONS OF THIS SECTION AND SECTION R507.2.2.

R311.7.6 LANDINGS FOR STAIRWAYS.
THERE SHALL BE A FLOOR OR LANDING AT THE TOP AND BOTTOM OF EACH STAIRWAY. THE WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL SHALL BE NOT LESS THAN THE WIDTH OF THE FLIGHT SERVED. FOR LANDINGS OF SHAPES OTHER THAN SQUARE OR RECTANGULAR, THE DEPTH AT THE WALK LINE AND THE TOTAL AREA SHALL BE NOT LESS THAN THAT OF A QUARTER CIRCLE WITH A RADIUS EQUAL TO THE REQUIRED LANDING WIDTH. WHERE THE STAIRWAY HAS A STRAIGHT RUN, THE DEPTH IN THE DIRECTION OF TRAVEL SHALL BE NOT LESS THAN 36 INCHES (914 MM).

NOTE: SEE SECTION 311.7.6 FOR EXCEPTION

R311.7.7 STAIRWAY WALKING SURFACE.
THE WALKING SURFACE OF TREADS AND LANDINGS OF STAIRWAYS SHALL BE SLOPED NOT STEEPER THAN ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2-PERCENT SLOPE).

NOTE: SEE SECTION 311.7.7 FOR EXCEPTION

R311.7.8 HANDRAILS.
HANDRAILS SHALL BE PROVIDED ON NOT LESS THAN ONE SIDE OF EACH FLIGHT OF STAIRS WITH FOUR OR MORE RISERS.

R311.7.8.1 HEIGHT.
HANDRAIL HEIGHT, MEASURED VERTICALLY FROM THE SLOPED PLANE ADJOINING THE TREAD NOSING, OR FINISH SURFACE OF RAMP SLOPE, SHALL BE NOT LESS THAN 34 INCHES (864 MM) AND NOT MORE THAN 38 INCHES (965 MM).

NOTE: SEE SECTION 311.7.8.1 FOR EXCEPTIONS

R311.7.8.2 HANDRAIL PROJECTION.
HANDRAILS SHALL NOT PROJECT MORE THAN 4 1/2 INCHES (114 MM) ON EITHER SIDE OF THE STAIRWAY.

NOTE: SEE SECTION 311.7.8.2 FOR EXCEPTIONS

R311.7.8.3 HANDRAIL CLEARANCE.
HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1 1/2 INCHES (38 MM) BETWEEN THE WALL AND THE HANDRAILS.

R311.7.8.4 CONTINUITY.
HANDRAILS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE FLIGHT, FROM A POINT DIRECTLY ABOVE THE TOP RISER OF THE FLIGHT TO A POINT DIRECTLY ABOVE THE LOWEST RISER OF THE FLIGHT. HANDRAIL ENDS SHALL BE RETURNED TOWARD A WALL, GUARD WALKING SURFACE CONTINUOUS TO ITSELF, OR TERMINATE TO A POST

NOTE: SEE SECTION 311.7.8.4 FOR EXCEPTIONS

R311.7.8.5 GRIP-SIZE.
REQUIRED HANDRAILS SHALL BE OF ONE OF THE FOLLOWING TYPES OR PROVIDE EQUIVALENT GRASPABILITY.

NOTE: SEE R3117.8.3 FOR TYPE I AND TYPE II HANDRAILS.

R311.7.8.6 EXTERIOR PLASTIC COMPOSITE HANDRAILS.
PLASTIC COMPOSITE EXTERIOR HANDRAILS SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R507.2.2.

R311.7.9 ILLUMINATION.
STAIRWAYS SHALL BE PROVIDED WITH ILLUMINATION IN ACCORDANCE WITH SECTION R303.7 AND R303.8.

R311.7.10 SPECIAL STAIRWAYS.
SPIRAL STAIRWAYS AND BULKHEAD ENCLOSURE STAIRWAYS SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R311.7 EXCEPT AS SPECIFIED IN SECTIONS R311.7.10.1 AND R311.7.10.2.

R311.7.10.1 SPIRAL STAIRWAYS.
THE CLEAR WIDTH AT AND BELOW THE HANDRAILS AT SPIRAL STAIRWAYS SHALL BE NOT LESS THAN 26 INCHES (660 MM) AND THE WALK-LINE RADIUS SHALL BE NOT GREATER THAN 24 1/2 INCHES (622 MM). EACH TREAD SHALL HAVE A DEPTH OF NOT LESS THAN 6 3/4 INCHES (171 MM) AT THE WALK-LINE. TREADS SHALL BE IDENTICAL, AND THE RISE SHALL BE NOT MORE THAN 9 1/2 INCHES (241 MM). HEADROOM SHALL BE NOT LESS THAN 6 FEET 6 INCHES (1982 MM).

R311.7.10.2 BULKHEAD ENCLOSURE STAIRWAYS.
STAIRWAYS SERVING BULKHEAD ENCLOSURES, NOT PART OF THE REQUIRED BUILDING EGRESS, PROVIDING ACCESS FROM THE OUTSIDE GRADE LEVEL, TO THE BASEMENT FLOOR SHALL BE EXEMPT FROM THE REQUIREMENTS OF SECTIONS R311.3 AND R311.7 WHERE THE HEIGHT FROM THE BASEMENT FINISHED FLOOR LEVEL TO GRADE ADJACENT TO THE STAIRWAY IS NOT MORE THAN 8 FEET (2438 MM) AND THE GRADE LEVEL OPENING TO THE STAIRWAY IS COVERED BY A BULKHEAD ENCLOSURE WITH HINGED DOORS OR OTHER APPROVED MEANS.

NOTE: SEE SECTION R311.7.11 THROUGH R311.7.12.2 FOR ALTERNATING TREAD DEVICES AND SHIPS LADDERS.

R311.8 RAMPS. WHERE REQUIRED BY THIS CODE OR PROVIDED, RAMPS SHALL COMPLY WITH THIS SECTION.

EXCEPTION: RAMPS NOT WITHIN OR SERVING A BUILDING, PORCH OR DECK.

R311.8.1 MAXIMUM SLOPE
RAMPS SERVING THE EGRESS DOOR REQUIRED BY SECTION R311.2 SHALL HAVE A SLOPE OF NOT MORE THAN 1 UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.3-PERCENT SLOPE). OTHER RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1 UNIT VERTICAL IN 8 UNITS HORIZONTAL (12.5 PERCENT).

EXCEPTION: WHERE IT IS TECHNICALLY INFEASIBLE TO COMPLY BECAUSE OF SITE CONSTRAINTS, RAMPS SHALL HAVE A SLOPE OF NOT MORE THAN 1 UNIT VERTICAL IN 8 UNITS HORIZONTAL (12.5 PERCENT).

R311.8.2 LANDINGS REQUIRED.
THERE SHALL BE A FLOOR OR LANDING AT THE TOP AND BOTTOM OF EACH RAMP, WHERE DOORS OPEN ONTO RAMPS, AND WHERE RAMPS CHANGE DIRECTIONS. THE WIDTH OF THE LANDING PERPENDICULAR TO THE RAMP SLOPE SHALL BE NOT LESS THAN 36 INCHES (914 MM).

R311.8.3 HANDRAILS REQUIRED.
HANDRAILS SHALL BE PROVIDED ON NOT LESS THAN ONE SIDE OF RAMPS EXCEEDING A SLOPE OF ONE UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.33-PERCENT SLOPE).

R311.8.3.1 HEIGHT.
HANDRAIL HEIGHT, MEASURED ABOVE THE FINISHED SURFACE OF THE RAMP SLOPE, SHALL BE NOT LESS THAN 34 INCHES (864 MM) AND NOT MORE THAN 38 INCHES (965 MM).

R311.8.3.2 GRIP SIZE.
SMOKE ALARMS ON RAMPS SHALL COMPLY WITH SECTION R311.7.8.5.

R311.8.3.3 CONTINUITY.
HANDRAILS WHERE REQUIRED ON RAMPS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE RAMP. HANDRAIL ENDS SHALL BE RETURNED OR SHALL TERMINATE IN NEWEL POSTS OR SAFETY TERMINALS. HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1 1/2 INCHES (38 MM) BETWEEN THE WALL AND THE HANDRAILS.

SECTION R312 GUARDS AND WINDOW FALL PROTECTION

R312.1 GUARDS.
GUARDS SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R312.1.1 THROUGH R312.1.4.

R312.1.1 WHERE REQUIRED.
GUARDS SHALL BE PROVIDED FOR THOSE PORTIONS OF OPEN-SIDED WALKING SURFACES, INCLUDING FLOORS, STAIRS, RAMPS AND LANDINGS, THAT ARE LOCATED MORE THAN 30 INCHES (762 MM) MEASURED VERTICALLY TO THE FLOOR OR GRADE BELOW AT ANY POINT WITHIN 36 INCHES (914 MM) HORIZONTALLY TO THE EDGE OF THE OPEN SIDE. INSECT SCREENING SHALL NOT BE CONSIDERED AS A GUARD.

R312.1.2 HEIGHT.
REQUIRED GUARDS AT OPEN-SIDED WALKING SURFACES, INCLUDING STAIRS, PORCHES, BALCONIES OR LANDINGS, SHALL BE NOT LESS THAN 36 INCHES (914 MM) IN HEIGHT AS MEASURED VERTICALLY ABOVE THE ADJACENT WALKING SURFACE OR THE LINE CONNECTING THE NOSINGS.

NOTE: SEE SECTION 312.1.2 FOR EXCEPTION

R312.1.3 OPENING LIMITATIONS.
REQUIRED GUARDS SHALL NOT HAVE OPENINGS FROM THE WALKING SURFACE TO THE REQUIRED GUARD HEIGHT THAT ALLOW PASSAGE OF A SPHERE 4 INCHES (102 mm) IN DIAMETER.

NOTE: SEE SECTION 312.1.3 FOR EXCEPTION

R312.1.4 EXTERIOR PLASTIC COMPOSITE GUARDS.
PLASTIC COMPOSITE EXTERIOR GUARDS SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R317.4.

R312.2 WINDOW FALL PROTECTION.
WINDOW FALL PROTECTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R312.2.1 AND R312.2.2.

R312.2.1 WINDOW OPENING HEIGHT.
IN DWELLING UNITS, WHERE THE BOTTOM OF THE CLEAR OPENING OF AN OPERABLE WINDOW OPENING IS LOCATED LESS THAN 24 INCHES (610 MM) ABOVE THE FINISHED FLOOR AND GREATER THAN 72 INCHES (1829 MM) ABOVE THE FINISHED GRADE OR OTHER SURFACE BELOW ON THE EXTERIOR OF THE BUILDING, THE OPERABLE WINDOW SHALL COMPLY WITH ONE OF THE FOLLOWING:

- OPERABLE WINDOW OPENINGS WILL NOT ALLOW A 4-INCH-DIAMETER (102 MM) SPHERE TO PASS THROUGH WHERE THE OPENINGS ARE IN THEIR LARGEST OPENED POSITION.
- OPERABLE WINDOWS ARE PROVIDED WITH WINDOW OPENING CONTROL DEVICES OR FALL PREVENTION DEVICES THAT COMPLY WITH ASTM F2090.

R312.2.2 WINDOW OPENING CONTROL DEVICES.
WINDOW OPENING CONTROL DEVICES SHALL COMPLY WITH ASTM F2090. THE WINDOW OPENING CONTROL DEVICE, AFTER OPERATION TO RELEASE THE CONTROL DEVICE ALLOWING THE WINDOW TO FULLY OPEN, SHALL NOT REDUCE THE NET CLEAR OPENING AREA OF THE WINDOW UNIT TO LESS THAN THE AREA REQUIRED BY SECTION R310.2.1.

SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS

313.1 TOWNHOUSE AUTOMATIC FIRE SPRINKLER SYSTEMS.
AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN TOWNHOUSES.

NOTE: SEE SECTION 313.1 FOR EXCEPTION

R313.1.1 DESIGN AND INSTALLATION.
AUTOMATIC SPRINKLER SYSTEMS FOR TOWNHOUSES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION P2904 OR NFPA 13D.

R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SPRINKLER SYSTEMS.
AN AUTOMATIC SPRINKLER SYSTEM SHALL BE INSTALLED IN ONE- AND TWO-FAMILY DWELLINGS.

NOTE: SEE SECTION 313.2 FOR EXCEPTION

R313.2.1 DESIGN AND INSTALLATION.
AUTOMATIC SPRINKLER SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION P2904 OR NFPA 13D.

SECTION R314 SMOKE ALARMS

R314.1 GENERAL.
SMOKE ALARMS SHALL COMPLY WITH NFPA 72 AND SECTION R314.

R314.1.1 LISTINGS.
SMOKE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 217. COMBINATION SMOKE AND CARBON MONOXIDE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 217 AND UL 2034.

R314.2 WHERE REQUIRED.
SMOKE ALARMS SHALL BE PROVIDED IN ACCORDANCE WITH THIS SECTION.

R314.2.1 NEW CONSTRUCTION.
SMOKE ALARMS SHALL BE PROVIDED IN DWELLING UNITS.

R314.2.2 ALTERATIONS, REPAIRS AND ADDITIONS.
WHERE ALTERATIONS, REPAIRS OR ADDITIONS REQUIRING A PERMIT OCCUR, THE INDIVIDUAL DWELLING UNIT SHALL BE EQUIPPED WITH SMOKE ALARMS LOCATED AS REQUIRED FOR NEW DWELLINGS.

NOTE: SEE SECTION 314.2.2 FOR EXCEPTION

R314.3 LOCATION.
SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS:

- IN EACH SLEEPING ROOM.
- OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
- ON EACH ADDITIONAL STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS AND NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS. IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SURFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
- SMOKE ALARMS SHALL BE INSTALLED NOT LESS THAN 3 FEET (914 MM) HORIZONTALLY FROM THE DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER UNLESS THIS WOULD PREVENT PLACEMENT OF A SMOKE ALARM REQUIRED BY THIS SECTION.
- IN THE HALLWAY AND IN THE ROOM OPEN TO THE HALLWAY IN DWELLING UNITS WHERE THE CEILING HEIGHT OF A ROOM OPEN TO A HALLWAY SERVING BEDROOMS EXCEEDS THAT OF THE HALLWAY BY 24 INCHES (610 MM) OR MORE.

R314.3.1 INSTALLATION NEAR COOKING APPLIANCES.
SMOKE ALARMS SHALL NOT BE INSTALLED IN THE FOLLOWING LOCATIONS UNLESS THIS WOULD PREVENT PLACEMENT OF A SMOKE ALARM IN A LOCATION REQUIRED BY SECTION R314.3.

- IONIZATION SMOKE ALARMS SHALL NOT BE INSTALLED LESS THAN 20 FEET (6096 MM) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.
- IONIZATION SMOKE ALARMS WITH AN ALARM-SILENCING SWITCH SHALL NOT BE INSTALLED LESS THAN 10 FEET (3048 mm) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.
- PHOTOELECTRIC SMOKE ALARMS SHALL NOT BE INSTALLED LESS THAN 6 FEET (1828 MM) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.
- SMOKE ALARMS LISTED AND MARKED HELPS REDUCE COOKING NUISANCE ALARMS SHALL NOT BE INSTALLED LESS THAN 6 FEET (1828 MM) HORIZONTALLY FROM A PERMANENTLY INSTALLED COOKING APPLIANCE.

R314.4 INTERCONNECTION.
WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R314.3, THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL DWELLING UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

R314.5 COMBINATION ALARMS.
COMBINATION SMOKE AND CARBON MONOXIDE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF SMOKE ALARMS.

R314.6 POWER SOURCE.
SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION.

NOTE: SEE SECTION 314.6 FOR EXCEPTIONS

R314.7 FIRE ALARM SYSTEMS
FIRE ALARM SYSTEMS SHALL BE PERMITTED TO BE USED IN LIEU OF SMOKE ALARMS AND SHALL COMPLY WITH SECTIONS R314.7.1 THROUGH R314.7.4.

R314.7.1 GENERAL.
FIRE ALARM SYSTEMS SHALL COMPLY WITH THE PROVISIONS OF THIS CODE AND THE HOUSEHOLD FIRE WARNING EQUIPMENT PROVISIONS OF NFPA 72. SMOKE DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 268.

R314.7.2 LOCATION.
SMOKE DETECTORS SHALL BE INSTALLED IN THE LOCATIONS SPECIFIED IN SECTION R314.3.

R314.7.3 PERMANENT FIXTURE
WHERE A HOUSEHOLD FIRE ALARM SYSTEM IS INSTALLED, IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY, OWNED BY THE HOMEOWNER.

R314.7.4 COMBINATION DETECTORS.
COMBINATION SMOKE AND CARBON MONOXIDE DETECTORS SHALL BE PERMITTED TO BE INSTALLED IN FIRE ALARM SYSTEMS IN LIEU OF SMOKE DETECTORS, PROVIDED THAT THEY ARE LISTED IN ACCORDANCE WITH UL 268 AND UL 2075.

SECTION R315 CARBON MONOXIDE ALARMS

R315.1 GENERAL.
CARBON MONOXIDE ALARMS SHALL COMPLY WITH SECTION R315.

R315.1.1 LISTINGS.
CARBON MONOXIDE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 2034. COMBINATION CARBON MONOXIDE AND SMOKE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 2034 AND UL 217.

R315.2 WHERE REQUIRED.
CARBON MONOXIDE ALARMS SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS R315.2.1 AND R315.2.2.

R315.2.1 NEW CONSTRUCTION.
FOR NEW CONSTRUCTION, CARBON MONOXIDE ALARMS SHALL BE PROVIDED IN DWELLING UNITS WHERE EITHER OR BOTH OF THE FOLLOWING CONDITIONS EXIST.

- THE DWELLING UNIT CONTAINS A FUEL-FIRED APPLIANCE.
- THE DWELLING UNIT HAS AN ATTACHED GARAGE WITH AN OPENING THAT COMMUNICATES WITH THE DWELLING UNIT.

R315.2.2 ALTERATIONS, REPAIRS AND ADDITIONS.
WHERE ALTERATIONS, REPAIRS OR ADDITIONS REQUIRING A PERMIT OCCUR, THE INDIVIDUAL DWELLING UNIT SHALL BE EQUIPPED WITH CARBON MONOXIDE ALARMS LOCATED AS REQUIRED FOR NEW DWELLINGS.
EXCEPTIONS:

NOTE: SEE SECTION 315.2.2 FOR EXCEPTION

R315.3 LOCATION.
CARBON MONOXIDE ALARMS IN DWELLING UNITS SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS. WHERE A FUEL-BURNING APPLIANCE IS LOCATED WITHIN A BEDROOM OR ITS ATTACHED BATHROOM, A CARBON MONOXIDE ALARM SHALL BE INSTALLED WITHIN THE BEDROOM.

R315.4 COMBINATION ALARMS.
COMBINATION CARBON MONOXIDE AND SMOKE ALARMS SHALL BE PERMITTED TO BE USED IN LIEU OF CARBON MONOXIDE ALARMS.

R315.5 INTERCONNECTIVITY.
WHERE MORE THAN ONE CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R315.3, THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL DWELLING UNIT. PHYSICAL INTERCONNECTION OF CARBON MONOXIDE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

NOTE: SEE SECTION 315.5 FOR EXCEPTIONS

R315.6 POWER SOURCE.
CARBON MONOXIDE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHERE SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE AND, WHERE PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVER-CURRENT PROTECTION.

NOTE: SEE SECTION 315.5 FOR EXCEPTION

R315.7 CARBON MONOXIDE DETECTION SYSTEMS.
CARBON MONOXIDE DETECTION SYSTEMS SHALL BE PERMITTED TO BE USED IN LIEU OF CARBON MONOXIDE ALARMS AND SHALL COMPLY WITH SECTIONS R315.7.1 THROUGH R315.7.4.

R315.7.1 GENERAL.
HOUSEHOLD CARBON MONOXIDE DETECTION SYSTEMS SHALL COMPLY WITH NFPA 720. CARBON MONOXIDE DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 2075.

R315.7.2 LOCATION.
CARBON MONOXIDE DETECTORS SHALL BE INSTALLED IN THE LOCATIONS SPECIFIED IN SECTION R315.3. THESE LOCATIONS SUPERSEDE THE LOCATIONS SPECIFIED IN NFPA 720.

R315.7.3 PERMANENT FIXTURE
WHERE A HOUSEHOLD CARBON MONOXIDE DETECTION SYSTEM IS INSTALLED, IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY AND OWNED BY THE HOMEOWNER.

R315.7.4 COMBINATION DETECTORS
COMBINATION CARBON MONOXIDE AND SMOKE DETECTORS INSTALLED IN CARBON MONOXIDE DETECTION SYSTEMS IN LIEU OF CARBON MONOXIDE DETECTORS SHALL BE LISTED IN ACCORDANCE WITH UL 268 AND UL 2075.

SECTION R321 ELEVATORS AND PLATFORM LIFTS

R321.1 ELEVATORS.
WHERE PROVIDED, PASSENGER ELEVATORS, LIMITED- USE AND LIMITED-APPLICATION ELEVATORS OR PRIVATE RESIDENCE ELEVATORS SHALL COMPLY WITH ASME A17.1/CSA B44.

SECTION R322 FLOOD-RESISTANT CONSTRUCTION

R322.1 GENERAL.
BUILDINGS AND STRUCTURES CONSTRUCTED IN WHOLE OR IN PART IN FLOOD HAZARD AREAS, INCLUDING A OR V ZONES AND COASTAL A ZONES, AS ESTABLISHED IN TABLE R301.2(1), AND SUBSTANTIAL IMPROVEMENT AND REPAIR OF SUBSTANTIAL DAMAGE OF BUILDINGS AND STRUCTURES IN FLOOD HAZARD AREAS, SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS CONTAINED IN THIS SECTION. BUILDINGS AND STRUCTURES THAT ARE LOCATED IN MORE THAN ONE FLOOD HAZARD AREA SHALL COMPLY WITH THE PROVISIONS ASSOCIATED WITH THE MOST RESTRICTIVE FLOOD HAZARD AREA. BUILDINGS AND STRUCTURES LOCATED IN WHOLE OR IN PART IN IDENTIFIED FLOODWAYS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH ASCE 24.

R322.1.2 STRUCTURAL SYSTEMS.
STRUCTURAL SYSTEMS OF BUILDINGS AND STRUCTURES SHALL BE DESIGNED, CONNECTED AND ANCHORED TO RESIST FLOTATION, COLLAPSE OR PERMANENT LATERAL MOVEMENT DUE TO STRUCTURAL LOADS AND STRESSES FROM FLOODING EQUAL TO THE DESIGN FLOOD ELEVATION.

R322.1.3 FLOOD-RESISTANT CONSTRUCTION.
BUILDINGS AND STRUCTURES ERECTED IN AREAS PRONE TO FLOODING SHALL BE CONSTRUCTED BY METHODS AND PRACTICES THAT MINIMIZE FLOOD DAMAGE.

R322.1.4 ESTABLISHING THE DESIGN FLOOD ELEVATION.
THE DESIGN FLOOD ELEVATION SHALL BE USED TO DEFINE FLOOD HAZARD AREAS. AT A MINIMUM, THE DESIGN FLOOD ELEVATION SHALL BE THE HIGHER OF THE FOLLOWING:

- THE BASE FLOOD ELEVATION AT THE DEPTH OF PEAK ELEVATION OF FLOODING, INCLUDING WAVE HEIGHT, THAT HAS A 1 PERCENT (100-YEAR FLOOD) OR GREATER CHANCE OF BEING EQUALED OR EXCEEDED IN ANY GIVEN YEAR.
- THE ELEVATION OF THE DESIGN FLOOD ASSOCIATED WITH THE AREA DESIGNATED ON A FLOOD HAZARD MAP ADOPTED BY THE COMMUNITY, OR OTHERWISE LEGALLY DESIGNATED.

FOR DETERMINING DESIGN FLOOD ELEVATIONS AND IMPACTS REFER TO SECTIONS R322.1.4.1 AND R322.1.4.2

R322.1.5 LOWEST FLOOR.
THE LOWEST FLOOR SHALL BE THE LOWEST FLOOR OF THE LOWEST ENCLOSED AREA, INCLUDING BASEMENT, AND EXCLUDING ANY UNFINISHED FLOOD-RESISTANT ENCLOSURE THAT IS USEABLE SOLELY FOR VEHICLE PARKING, BUILDING ACCESS OR LIMITED STORAGE PROVIDED THAT SUCH ENCLOSURE IS NOT BUILT SO AS TO RENDER THE BUILDING OR STRUCTURE IN VIOLATION OF THIS SECTION.

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DESIGNS

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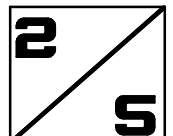
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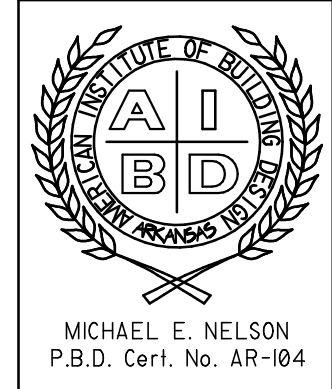


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R322.1.6 PROTECTION OF MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS.
ELECTRICAL SYSTEMS, EQUIPMENT AND COMPONENTS; HEATING, VENTILATING, AIR CONDITIONING; PLUMBING APPLIANCES AND PLUMBING FIXTURES; DUCT SYSTEMS; AND OTHER SERVICE EQUIPMENT SHALL BE LOCATED AT OR ABOVE THE ELEVATION REQUIRED IN SECTION R322.2 OR R322.3. IF REPLACED AS PART OF A SUBSTANTIAL IMPROVEMENT, ELECTRICAL SYSTEMS, EQUIPMENT AND COMPONENTS; HEATING, VENTILATING, AIR CONDITIONING AND PLUMBING APPLIANCES AND PLUMBING FIXTURES; DUCT SYSTEMS; AND OTHER SERVICE EQUIPMENT SHALL MEET THE REQUIREMENTS OF THIS SECTION. SYSTEMS, FIXTURES, AND EQUIPMENT AND COMPONENTS SHALL NOT BE MOUNTED ON OR PENETRATE THROUGH WALLS INTENDED TO BREAK AWAY UNDER FLOOD LOADS.

NOTE: SEE SECTION 322.1.6 FOR EXCEPTION

R322.1.7 PROTECTION OF WATER SUPPLY AND SANITARY SEWAGE SYSTEMS.
NEW AND REPLACEMENT WATER SUPPLY SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOOD WATERS INTO THE SYSTEMS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE. NEW AND REPLACEMENT SANITARY SEWAGE SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOODWATERS INTO SYSTEMS AND DISCHARGES FROM SYSTEMS INTO FLOODWATERS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE AND CHAPTER 3 OF THE INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE.

R322.1.8 FLOOD-RESISTANT MATERIALS.
BUILDING MATERIALS AND INSTALLATION METHODS USED FOR FLOORING AND INTERIOR AND EXTERIOR WALLS AND WALL COVERINGS BELOW THE ELEVATION REQUIRED IN SECTION R322.2 OR R322.3 SHALL BE FLOOD DAMAGE- RESISTANT MATERIALS THAT CONFORM TO THE PROVISIONS OF FEMA TB-2.

SEE SECTION R322.2 FOR FLOOD HAZARD AREAS (INCLUDING A ZONES).

R322.2.2 ENCLOSED AREA BELOW REQUIRED ELEVATION.
ENCLOSED AREAS, INCLUDING CRAWL SPACES, THAT ARE BELOW THE ELEVATION REQUIRED IN SECTION R322.1 SHALL:
1. BE USED SOLELY FOR PARKING OF VEHICLES, BUILDING ACCESS OR STORAGE.
2. BE PROVIDED WITH FLOOD OPENINGS THAT MEET THE FOLLOWING CRITERIA AND ARE INSTALLED IN ACCORDANCE WITH SECTION R322.2.2.1 SECTIONS 2.1 THROUGH 2.3, AS WELL AS, SECTIONS:

-R322.2.2.1 FOR INSTALLATION OF OPENINGS.
-R322.2.3 FOUNDATION DESIGN AND CONSTRUCTION.
-R322.2.4 TANKS.

REFER TO SECTION R322.3 FOR COASTAL HIGH-HAZARD AREAS (INCLUDING V ZONES AND COASTAL A ZONES, WHERE DESIGNATED), INCLUDING:

R322.3.1 LOCATION AND SITE PREPARATION
R322.3.2 ELEVATION REQUIREMENTS
R322.3.3 FOUNDATIONS
R322.3.4 CONCRETE SLABS
R322.3.5 WALLS BELOW REQUIRED ELEVATION
R322.3.6 ENCLOSED AREAS BELOW REQUIRED ELEVATION.
R322.3.7 STAIRWAYS AND RAMPS
R322.3.8 DECKS AND PORCHES
R322.3.9 CONSTRUCTION DOCUMENTS
R322.3.10 TANKS

SECTION R323 STORM SHELTERS

R323.1 GENERAL.
THIS SECTION APPLIES TO STORM SHELTERS WHERE CONSTRUCTED AS SEPARATE DETACHED BUILDINGS OR WHERE CONSTRUCTED AS SAFE ROOMS WITHIN BUILDINGS FOR THE PURPOSE OF PROVIDING REFUGE FROM STORMS THAT PRODUCE HIGH WINDS, SUCH AS TORNADOS AND HURRICANES. IN ADDITION TO OTHER APPLICABLE REQUIREMENTS IN THIS CODE, STORM SHELTERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ICC/NSSA-ICC 500.

R323.1.1 SEALED DOCUMENTATION.
THE CONSTRUCTION DOCUMENTS FOR ALL STRUCTURAL COMPONENTS AND IMPACT PROTECTIVE SYSTEMS OF THE STORM SHELTER SHALL BE PREPARED AND SEALED BY A REGISTERED DESIGN PROFESSIONAL INDICATING THAT THE DESIGN MEETS THE CRITERIA OF ICC 500.

EXCEPTION: STORM SHELTERS, STRUCTURAL COMPONENTS AND IMPACT-PROTECTIVE SYSTEMS

SECTION R327 SWIMMING POOLS, SPAS AND HOT TUBS

R327.1 GENERAL.
THE DESIGN AND CONSTRUCTION OF POOLS AND SPAS SHALL COMPLY WITH THE INTERNATIONAL SWIMMING POOL AND SPA CODE.

SECTION R326 HABITABLE ATTICS

R326.1 GENERAL.
HABITABLE ATTICS SHALL COMPLY WITH SECTIONS R326.2 AND R326.3.

R326.2 MINIMUM DIMENSIONS.
A HABITABLE ATTIC SHALL HAVE A FLOOR AREA IN ACCORDANCE WITH SECTION R304 AND A CEILING HEIGHT IN ACCORDANCE WITH SECTION R305.

R326.3 STORY ABOVE GRADE PLANE.
A HABITABLE ATTIC SHALL BE CONSIDERED A STORY ABOVE GRADE PLANE.

NOTE: SEE SECTION 326.3 FOR EXCEPTION

R326.4 MEANS OF EGRESS.
THE MEANS OF EGRESS FOR HABITABLE ATTICS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF SECTION R311.

CHAPTER 4 :: FOUNDATIONS

SECTION R401 GENERAL

R401.1 APPLICATION. THE PROVISIONS OF THIS CHAPTER SHALL CONTROL THE DESIGN AND CONSTRUCTION OF THE FOUNDATION AND FOUNDATION SPACES FOR BUILDINGS. IN ADDITION TO THE PROVISIONS OF THIS CHAPTER, THE DESIGN AND CONSTRUCTION OF FOUNDATIONS IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2 SHALL MEET THE PROVISIONS OF SECTION R322. WOOD FOUNDATIONS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH AWC PWF.

NOTE: SEE SECTION R401.1 FOR EXCEPTION

R401.2 REQUIREMENTS.
FOUNDATION CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS IN ACCORDANCE WITH SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING SOIL. FILL SOILS THAT SUPPORT FOOTINGS AND FOUNDATIONS SHALL BE DESIGNED, INSTALLED AND TESTED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

R401.3 DRAINAGE.
SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER APPROVED POINT OF COLLECTION THAT DOES NOT CREATE A HAZARD. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL NOT FEWER THAN 6 INCHES (152 MM) WITHIN THE FIRST 10 FEET (3048 MM).

NOTE: SEE SECTION R401.3 FOR EXCEPTION

R401.4 SOIL TESTS.
WHERE QUANTIFIABLE DATA CREATED BY ACCEPTED SOIL SCIENCE METHODOLOGIES INDICATE EXPANSIVE SOILS, COMPRESSIBLE SOILS, SHIFTING SOILS, OR OTHER QUESTIONABLE SOIL CHARACTERISTICS ARE LIKELY TO BE PRESENT, THE BUILDING OFFICIAL SHALL DETERMINE WHETHER TO REQUIRE A SOIL TEST TO DETERMINE THE SOIL'S CHARACTERISTICS AT A PARTICULAR LOCATION. THIS TEST SHALL BE DONE BY AN APPROVED AGENCY USING AN APPROVED METHOD.

SECTION R402 MATERIALS

R402.1 WOOD FOUNDATIONS.
WOOD FOUNDATION SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE.

R402.1.1 FASTENERS.
FASTENERS USED BELOW GRADE TO ATTACH PLYWOOD TO THE EXTERIOR SIDE OF EXTERIOR BASEMENT OR CRAWLSPACE WALL STUDS, OR FASTENERS USED IN KNEE WALL CONSTRUCTION, SHALL BE OF TYPE 304 OR 316 STAINLESS STEEL. FASTENERS USED ABOVE GRADE TO ATTACH PLYWOOD AND ALL LUMBER-TOLUMBER FASTENERS EXCEPT THOSE USED IN KNEE WALL CONSTRUCTION SHALL BE OF TYPE 304 OR 316 STAINLESS STEEL, SILICON BRONZE, COPPER, HOT-DIPPED GALVANIZED (ZINC COATED) STEEL NAILS, OR HOT-TUMBLED GALVANIZED (ZINC COATED) STEEL NAILS. ELECTRO-GALVANIZED STEEL NAILS AND GALVANIZED (ZINC COATED) STEEL STAPLES SHALL NOT BE PERMITTED.

R402.1.2 WOOD TREATMENT.
LUMBER AND PLYWOOD SHALL BE PRESSURE-PRESERVATIVE TREATED AND DRIED AFTER TREATMENT IN ACCORDANCE WITH AWPA U11 (COMMODITY SPECIFICATION A, SPECIAL REQUIREMENT 4.2), AND SHALL BEAR THE LABEL OF AN ACCREDITED AGENCY. WHERE LUMBER OR PLYWOOD IS CUT OR DRILLED AFTER TREATMENT, THE TREATED SURFACE SHALL BE FIELD TREATED WITH COPPER NAPHTHENATE, THE CONCENTRATION OF WHICH SHALL CONTAIN NOT LESS THAN 2-PERCENT COPPER METAL, BY REPEATED BRUSHING, DIPPING OR SOAKING UNTIL THE WOOD CANNOT ABSORB MORE PRESERVATIVE.

R402.2 CONCRETE.
CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH, AS SHOWN IN TABLE R402.2. CONCRETE SUBJECT TO MODERATE OR SEVERE WEATHERING AS INDICATED IN TABLE R301.2(1) SHALL BE AIR ENTRAINED AS SPECIFIED IN TABLE R402.2. THE MAXIMUM WEIGHT OF FLY ASH, OTHER POZZOLANS, SILICA FUME, SLAG OR BLENDING AGENTS THAT IS INCLUDED IN CONCRETE MIXTURES FOR GARAGE FLOOR SLABS AND FOR EXTERIOR PORCHES, CARPORT SLABS AND STEPS THAT WILL BE EXPOSED TO DEICING CHEMICALS SHALL NOT EXCEED THE PERCENTAGES OF THE TOTAL WEIGHT OF CEMENTITIOUS MATERIALS SPECIFIED IN SECTION 19.3.4 OF ACI MATERIALS USED TO PRODUCE CONCRETE AND TESTING THEREOF SHALL COMPLY WITH THE APPLICABLE STANDARDS LISTED IN CHAPTERS 19 AND 20 OF ACI 318 OR ACI 332. R402.2.1

R402.3 PRECAST CONCRETE.
PRECAST CONCRETE FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH SECTION R404.5 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE AND THE MANUFACTURER'S INSTRUCTIONS.

R402.4 MASONRY.
MASONRY SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THIS CHAPTER AND SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 1,500 PSI (10.3 MPA).

SECTION 403 FOOTINGS

R403.1 GENERAL.
ALL EXTERIOR WALLS SHALL BE SUPPORTED ON CONTINUOUS SOLID OR FULLY GROUTED MASONRY OR CONCRETE FOOTINGS, CRUSHED STONE FOOTINGS, WOOD FOUNDATIONS, OR OTHER APPROVED STRUCTURAL SYSTEMS THAT SHALL BE OF SUFFICIENT DESIGN TO ACCOMMODATE ALL LOADS ACCORDING TO SECTION R301 AND TO TRANSMIT THE RESULTING LOADS TO THE SOIL WITHIN THE LIMITATIONS AS DETERMINED FROM THE CHARACTER OF THE SOIL. FOOTINGS SHALL BE SUPPORTED ON UNDISTURBED NATURAL SOILS OR ENGINEERED FILL. CONCRETE FOOTINGS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R403 OR IN ACCORDANCE WITH ACI 332.

R403.1.1 MINIMUM SIZE.
THE MINIMUM WIDTH, W, AND THICKNESS, T, FOR CONCRETE FOOTINGS SHALL BE IN ACCORDANCE WITH TABLES R403.1(1) THROUGH R403.1(3) AND FIGURE R403.1(1) OR R403.1.3, AS APPLICABLE, BUT NOT LESS THAN 12 INCHES (305MM) IN WIDTH AND 6 INCHES (152) IN DEPTH. THE FOOTING WIDTH SHALL BE BASED ON THE LOAD-BEARING VALUE OF THE SOIL IN ACCORDANCE WITH TABLE R401.4.1. FOOTING PROJECTIONS, P, SHALL BE NOT LESS THAN 2 INCHES (51 MM) AND SHALL NOT EXCEED THE THICKNESS OF THE FOOTING. FOOTING THICKNESS AND PROJECTION FOR PRECAST PILES SHALL BE IN ACCORDANCE WITH SECTION R1001.2. THE SIZE OF FOOTINGS SUPPORTING PIERS AND COLUMNS SHALL BE BASED ON THE TRIBUTARY LOAD AND ALLOWABLE SOIL PRESSURE IN ACCORDANCE WITH TABLE R401.4.1. FOOTINGS FOR WOOD FOUNDATIONS SHALL BE IN ACCORDANCE WITH THE DETAILS SET FORTH IN SECTION R403.2, AND FIGURES R403.1(2) AND R403.1(3). FOOTINGS FOR PRECAST FOUNDATIONS SHALL BE IN ACCORDANCE WITH THE DETAILS SET FORTH IN SECTION R403.4, TABLE R403.4, AND FIGURES R403.4(1) AND R403.4(2).

REFER TO THESE SECTIONS FOR THE FOLLOWING TOPICS:
-R403.1.2 CONTINUOUS FOOTING IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2.
-R403.1.3 FOOTING AND STEM WALL REINFORCING IN SEISMIC DESIGN CATEGORIES D0, D1, AND D2.
-R403.1.3.4 INTERIOR BEARING AND BRACED WALL PANEL FOOTINGS IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2.
-R403.1.3.5 REINFORCEMENT.
-R403.1.3.6 ISOLATED CONCRETE FOOTINGS.

R403.1.4 MINIMUM DEPTH.
EXTERIOR FOOTINGS SHALL BE PLACED NOT LESS THAN 12 INCHES (305 MM) BELOW THE UNDISTURBED GROUND SURFACE. WHERE APPLICABLE, THE DEPTH OF FOOTINGS SHALL ALSO CONFORM TO SECTIONS R403.1.4.1. DECK FOOTINGS SHALL BE IN ACCORDANCE WITH SECTION R507.3.

R403.1.4.1 FROST PROTECTION.
EXCEPT WHERE OTHERWISE PROTECTED FROM FROST, FOUNDATION WALLS, PIERS AND OTHER PERMANENT SUPPORTS OF BUILDINGS AND STRUCTURES SHALL BE PROTECTED FROM FROST BY ONE OR MORE OF THE FOLLOWING METHODS:
1. EXTENDED BELOW THE FROST LINE SPECIFIED IN TABLE R301.2(1).
2. CONSTRUCTED IN ACCORDANCE WITH SECTION R403.3.
3. CONSTRUCTED IN ACCORDANCE WITH ASCE 32.
4. ERECTED NO SOLID ROCK.

FOOTINGS SHALL NOT BEAR ON FROZEN SOIL UNLESS THE FROZEN CONDITION IS PERMANENT.

NOTE: SEE SECTION R403.1.4.1 FOR EXCEPTIONS

R403.1.5 SLOPE.
THE TOP SURFACE OF FOOTINGS SHALL BE LEVEL. THE BOTTOM SURFACE OF FOOTINGS SHALL NOT HAVE A SLOPE EXCEEDING ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE). FOOTINGS SHALL BE STEPPED WHERE IT IS NECESSARY TO CHANGE THE ELEVATION OF THE TOP SURFACE OF THE FOOTINGS OR WHERE THE SLOPE OF THE BOTTOM SURFACE OF THE FOOTINGS WILL EXCEED ONE UNIT VERTICAL IN 10 UNITS HORIZONTAL (10-PERCENT SLOPE).

R403.1.6 FOUNDATION ANCHORAGE.
WOOD SILL PLATES AND WOOD WALLS SUPPORTED DIRECTLY ON CONTINUOUS FOUNDATIONS SHALL BE ANCHORED TO THE FOUNDATION IN ACCORDANCE WITH THIS SECTION.

COLD-FORMED STEEL FRAMING SHALL BE ANCHORED DIRECTLY TO THE FOUNDATION AND FASTENED TO WOOD SILL PLATES IN ACCORDANCE WITH SECTION R506.3.1 OR R603.3.1, AS APPLICABLE. WOOD SILL PLATES SUPPORTING COLD-FORMED STEEL FRAMING SHALL BE ANCHORED TO THE FOUNDATION IN ACCORDANCE WITH THIS SECTION.

WOOD SOLE PLATES AT ALL EXTERIOR WALLS ON MONOLITHIC SLABS, WOOD SOLE PLATES OF BRACED WALL PANELS AT BUILDING INTERIORS ON MONOLITHIC SLABS AND ALL WOOD SILL PLATES SHALL BE ANCHORED TO THE FOUNDATION WITH MINIMUM 1/2-INCH DIAMETER (12.7 MM) ANCHOR BOLTS SPACED NOT GREATER THAN 6 FEET (1829 MM) ON CENTER OR APPROVED ANCHORS OR ANCHOR STRAPS SPACED AS REQUIRED TO PROVIDE EQUIVALENT ANCHORAGE TO 1/2-INCH-DIAMETER (12.7 MM) ANCHOR BOLTS. BOLTS SHALL EXTEND NOT LESS THAN 7 INCHES (178 MM) INTO CONCRETE OR GROUTED CELLS OF CONCRETE MASONRY UNITS. THE BOLTS SHALL BE LOCATED IN THE MIDDLE THIRD OF THE WIDTH OF THE PLATE. A NUT AND WASHER SHALL BE TIGHTENED ON EACH ANCHOR BOLT. THERE SHALL BE NOT FEWER THAN TWO BOLTS PER PLATE SECTION WITH ONE BOLT LOCATED NOT MORE THAN 12 INCHES (305 MM) OR LESS THAN SEVEN BOLT DIAMETERS FROM EACH END OF THE PLATE. SECTION. INTERIOR BEARING WALL SOLE PLATES ON MONOLITHIC SLAB FOUNDATION THAT ARE NOT PART OF A BRACED WALL PANEL SHALL BE POSITIVELY ANCHORED WITH APPROVED FASTENERS. SILL PLATES AND SOLE PLATES SHALL BE PROTECTED AGAINST DECAY AND TERMITES WHERE REQUIRED BY SECTIONS R317 AND R318. ANCHOR BOLTS SHALL BE PERMITTED TO BE LOCATED WHILE CONCRETE IS STILL PLASTIC AND BEFORE IT HAS SET. WHERE ANCHOR BOLTS RESIST PLACEMENT OR THE CONSOLIDATION OF CONCRETE AROUND ANCHOR BOLTS IS IMPEDED, THE CONCRETE SHALL BE VIBRATED TO ENSURE FULL CONTACT BETWEEN THE ANCHOR BOLTS AND CONCRETE.

NOTE: SEE SECTION 403.1.6 FOR EXCEPTION

R403.1.6.1 FOUNDATION ANCHORING IN SEISMIC DESIGN CATEGORIES C, D0, D1 AND D2.
IN ADDITION TO THE REQUIREMENTS OF SECTION R403.1.6, THE FOLLOWING REQUIREMENTS SHALL APPLY TO WOOD LIGHT-FRAME STRUCTURES IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2 AND WOOD LIGHT-FRAME TOWNHOUSES IN SEISMIC DESIGN CAT. C.

NOTE: SEE SECTION 403.1.6.1 FOR REQUIREMENTS

R403.1.7 FOOTINGS ON OR ADJACENT TO SLOPES.
THE PLACEMENT OF BUILDINGS AND STRUCTURES ON OR ADJACENT TO SLOPES STEEPER THAN ONE UNIT VERTICAL IN THREE UNITS HORIZONTAL (33.3-PERCENT SLOPE) SHALL CONFORM TO SECTIONS R403.1.7.1 THROUGH R403.1.7.4

R403.1.8 FOUNDATIONS ON EXPANSIVE SOILS.
FOUNDATION AND FLOOR SLABS FOR BUILDINGS LOCATED ON EXPANSIVE SOILS SHALL BE DESIGNED IN ACCORDANCE WITH SECTION 1808.6 OF THE INTERNATIONAL BUILDING CODE.

NOTE: SEE SECTION 403.1.8 FOR EXCEPTION AND EXPANSIVE SOILS CLASSIFICATIONS.

R403.2 FOOTINGS FOR WOOD FOUNDATIONS.
FOOTINGS FOR WOOD FOUNDATIONS SHALL BE IN ACCORDANCE WITH FIGURES R403.1(2) AND R403.1(3). GRAVEL SHALL BE WASHED AND WELL GRADED. THE MAXIMUM SIZE STONE SHALL NOT EXCEED 3/4 INCH (19.1 MM). GRAVEL SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. SAND SHALL BE COARSE, NOT SMALLER THAN 1/16-INCH (1.6 MM) GRAINS AND SHALL BE FREE FROM ORGANIC, CLAYEY OR SILTY SOILS. CRUSHED STONE SHALL HAVE A MAXIMUM SIZE OF 1/2 INCH (12.7 MM).

R403.3 FROST-PROTECTED SHALLOW FOUNDATIONS.
FOR BUILDINGS WHERE THE MONTHLY MEAN TEMPERATURE OF THE BUILDING IS MAINTAINED AT NOT LESS THAN 64°F (18°C), FOOTINGS ARE NOT REQUIRED TO EXTEND BELOW THE FROST LINE WHERE PROTECTED FROM FROST BY INSULATION IN ACCORDANCE WITH FIGURE R403.3(1) AND TABLE R403.3(1). FOUNDATIONS PROTECTED FROM FROST IN ACCORDANCE WITH FIGURE R403.3(1) AND TABLE R403.3(1) SHALL NOT BE USED FOR UNHEATED SPACES SUCH AS PORCHES, UTILITY ROOMS, GARAGES AND CARPORTS, AND SHALL NOT BE ATTACHED TO BASEMENTS OR CRAWL SPACES THAT ARE NOT MAINTAINED AT A MINIMUM MONTHLY MEAN TEMPERATURE OF 64°F (18°C).

REFER TO SECTION 403 FOR THE FOLLOWING AREAS:

-R403.3.1 FOUNDATIONS ADJOINING FROST-PROTECTED SHALLOW FOUNDATIONS
-R403.3.2 PROTECTION OF HORIZONTAL INSULATION BELOW GROUND.
-R403.3.3 DRAINAGE.
-R403.3.4 TERMITE PROTECTION.

R403.4 FOOTINGS FOR PRECAST CONCRETE FOUNDATIONS.
FOOTINGS FOR PRECAST CONCRETE FOUNDATIONS SHALL COMPLY WITH SECTION R403.4.

SECTION 404 FOUNDATION AND RETAINING WALLS

R404.1 CONCRETE AND MASONRY FOUNDATION WALLS.
REFER TO SECTION 404.1 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR CONCRETE AND MASONRY FOUNDATION WALLS.

R404.2 WOOD FOUNDATION WALLS.
REFER TO SECTION 404.2 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR WOOD FOUNDATION WALLS.

R404.3 WOOD SILL PLATES.
WOOD SILL PLATES SHALL BE NOT LESS THAN 2-INCH BY 4-INCH (51 MM BY 102 MM) NOMINAL LUMBER. SILL PLATE ANCHORAGE SHALL BE IN ACCORDANCE WITH SECTIONS R403.1.6 AND R602.11.

R404.4 RETAINING WALLS.
RETAINING WALLS THAT ARE NOT LATERALLY SUPPORTED AT THE TOP AND THAT RETAIN IN EXCESS OF 48 INCHES (1219 MM) OF UNBALANCED FILL, OR RETAINING WALLS EXCEEDING 24 INCHES (610 MM) IN HEIGHT THAT RESIST LATERAL LOADS IN ADDITION TO SOIL, SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE TO ENSURE STABILITY AGAINST OVERTURNING, SLIDING, EXCESSIVE FOUNDATION PRESSURE AND WATER UPLIFT. RETAINING WALLS SHALL BE DESIGNED FOR A SAFETY FACTOR OF 1.5 AGAINST LATERAL SLIDING AND OVERTURNING. THIS SECTION SHALL NOT APPLY TO FOUNDATION WALLS SUPPORTING BUILDINGS.

R404.5 PRECAST CONCRETE FOUNDATION WALLS.
REFER TO SECTION 404.5 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR PRECAST CONCRETE FOUNDATION WALLS.

SECTION R405 FOUNDATION DRAINAGE

R405.1 CONCRETE OR MASONRY FOUNDATIONS.
DRAINS SHALL BE PROVIDED AROUND CONCRETE OR MASONRY FOUNDATIONS THAT RETAIN EARTH AND ENCLOSE HABITABLE OR USABLE SPACES LOCATED BELOW GRADE. DRAINAGE TILES, GRAVEL OR CRUSHED STONE DRAINS, PERFORATED PIPE OR OTHER APPROVED SYSTEMS OR MATERIALS SHALL BE INSTALLED AT OR BELOW THE TOP OF THE FOOTING OR BELOW THE BOTTOM OF THE SLAB AND SHALL DISCHARGE BY GRAVITY OR MECHANICAL MEANS INTO AN APPROVED DRAINAGE SYSTEM. GRAVEL OR CRUSHED STONE DRAINS SHALL EXTEND NOT LESS THAN 1 FOOT (305 MM) BEYOND THE OUTSIDE EDGE OF THE FOOTING AND 6 INCHES (152 MM) ABOVE THE TOP OF THE FOOTING AND BE COVERED WITH AN APPROVED FILTER MEMBRANE MATERIAL. THE TOP OF OPEN JOINTS OF DRAIN TILES SHALL BE PROTECTED WITH STRIPS OF BUILDING PAPER. EXCEPT WHERE OTHERWISE RECOMMENDED BY THE DRAIN MANUFACTURER, PERFORATED DRAINS SHALL BE SURROUNDED WITH AN APPROVED FILTER MEMBRANE OR THE FILTER MEMBRANE SHALL COVER THE WASHED GRAVEL OR CRUSHED ROCK COVERING THE DRAIN. DRAINAGE TILES OR PERFORATED PIPE SHALL BE PLACED ON NOT LESS THAN 2 INCHES (51 MM) OF WASHED GRAVEL OR CRUSHED ROCK NOT LESS THAN ONE SIEVE SIZE LARGER THAN THE TILE JOINT OPENING OR PERFORATION AND COVERED WITH NOT LESS THAN 6 INCHES (152 MM) OF THE SAME MATERIAL.

REFER TO SECTION 405 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR PRECAST CONCRETE FOUNDATION WALLS.

SECTION R406 FOUNDATION WATER-PROOFING AND DAMP-PROOFING

REFER TO SECTION 406 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR WATER-PROOFING AND DAMP-PROOFING FOUNDATIONS INCLUDING THE FOLLOWING AREAS:

-R406.1 CONCRETE AND MASONRY FOUNDATION DAMPPROOFING.
-R406.2 CONCRETE AND MASONRY FOUNDATION WATERPROOFING.
-R406.3 DAMPPROOFING FOR WOOD FOUNDATIONS.
-R406.4 PRECAST CONCRETE FOUNDATION SYSTEM DAMPPROOFING.

SECTION R407 COLUMNS

REFER TO SECTION 407 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR COLUMNS INCLUDING THE FOLLOWING AREAS:

-R407.1 WOOD COLUMN PROTECTION.
-R407.2 STEEL COLUMN PROTECTION.
-R407.3 STRUCTURAL REQUIREMENTS.

SECTION R408 UNDER-FLOOR SPACE

REFER TO SECTION 408 FOR FURTHER SPECIFICATIONS, NOTES AND DESIGN CRITERIA FOR UNDER-FLOOR SPACE INCLUDING THE FOLLOWING AREA:

-R408.1 MOISTURE CONTROL.
-R408.2 OPENINGS FOR UNDER-FLOOR VENTILATION.
-R408.3 UN-VENTED CRAWL SPACE.
-R408.4 ACCESS.
-R408.5 REMOVAL OF DEBRIS.
-R408.6 FINISHED GRADE.
-R408.7 FLOOD RESISTANCE.
-R408.8 UNDER-FLOOR VAPOR RETARDER

CHAPTER 5 :: FLOORS

SECTION R501 GENERAL

R501.1 APPLICATION.
THE PROVISIONS OF THIS CHAPTER SHALL CONTROL THE DESIGN AND CONSTRUCTION OF THE FLOORS FOR BUILDINGS, INCLUDING THE FLOORS OF ATTIC SPACES USED TO HOUSE MECHANICAL OR PLUMBING FIXTURES AND EQUIPMENT.

R501.2 REQUIREMENTS.
FLOOR CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS IN ACCORDANCE WITH SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING STRUCTURAL ELEMENTS.

SECTION R502 WOOD FLOOR FRAMING

R502.1 GENERAL.
WOOD AND WOOD-BASED PRODUCTS USED FOR LOAD-SUPPORTING PURPOSES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION. SEE SECTIONS 502.1.1 THROUGH 502.1.7 FOR FURTHER SPECIFICATIONS.

R502.2 DESIGN AND CONSTRUCTION.
FLOORS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CHAPTER, FIGURE R502.2 AND SECTIONS R317 AND R318 OR IN ACCORDANCE WITH ANSI AWC NDS. SEE SECTIONS 502.2.1 THROUGH 502.2.2 FOR FURTHER SPECIFICATIONS.

R502.3 ALLOWABLE JOIST SPANS.
SPANS FOR FLOOR JOISTS SHALL BE IN ACCORDANCE WITH TABLES R502.3.1(1) AND R502.3.1(2), FOR OTHER GRADES AND SPECIES AND FOR OTHER LOADING CONDITIONS, REFER TO THE AWC STJR. SEE SECTIONS 502.3.1 THROUGH 502.3.3 FOR FURTHER SPECIFICATIONS.

R502.4 JOISTS UNDER BEARING PARTITIONS.
JOISTS UNDER PARALLEL BEARING PARTITIONS SHALL BE OF ADEQUATE SIZE TO SUPPORT THE LOAD.DOUBLE JOISTS, SIZED TO ADEQUATELY SUPPORT THE LOAD, THAT ARE SEPARATED TO PERMIT THE INSTALLATION OF PIPING OR VENTS SHALL BE FULL DEPTH SOLID BLOCKED WITH LUMBER NOT LESS THAN 2 INCHES (51 MM) IN NOMINAL THICKNESS SPACED NOT MORE THAN 4 FEET (1219 MM) ON CENTER. BEARING PARTITIONS PERPENDICULAR TO JOISTS SHALL NOT BE OFFSET FROM SUPPORTING GIRDERS. WALLS OR PARTITIONS MORE THAN THE JOIST DEPTH UNLESS SUCH JOISTS ARE OF SUFFICIENT SIZE TO CARRY THE ADDITIONAL LOAD.

R502.5 ALLOWABLE GIRDER AND HEADER SPANS.
THE ALLOWABLE SPANS OF GIRDERS AND HEADERS FABRICATED OF DIMENSION LUMBER SHALL NOT EXCEED THE VALUES SET FORTH IN TABLES R602.7(1), R602.7(2) AND R602.7(3).

R502.6 BEARING.
THE ENDS OF EACH JOIST, BEAM OR GIRDER SHALL HAVE NOT LESS THAN 1 1/2 INCHES (38 MM) OF BEARING ON WOOD OR METAL, NOT LESS THAN 3 INCHES (76 MM) OF BEARING ON MASONRY OR CONCRETEOR BE SUPPORTED BY APPROVED JOIST HANGERS. ALTERNATIVELY, THE ENDS OF JOISTS SHALL BE SUPPORTED ON A 1-INCH BY 4-INCH (25 MM BY 102 MM) RIBBON STRIP AND SHALL BE NAILED TO THE ADJACENT STUD. THE BEARING ON MASONRY OR CONCRETE SHALL BE DIRECT, OR A SILL PLATE OF 2-INCH-MINIMUM (51 mm) NOMINAL THICKNESS SHALL BE PROVIDED UNDER THE JOIST, BEAM OR GIRDER. THE SILL PLATE SHALL PROVIDE A MINIMUM NOMINAL BEARING AREA OF 48 SQUARE INCHES (30 865 MM2). SEE SECTIONS 502.6.1 THROUGH 502.6.2 FOR FURTHER SPECIFICATIONS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

-R502.7 LATERAL RESTRAINT AT SUPPORTS.
-R502.8 CUTTING, DRILLING AND NOTCHING.
-R502.9 FASTENING.
-R502.10 FRAMING OF OPENINGS.
-R502.11 WOOD TRUSSES.
-R502.12 DRAFTSTOPPING REQUIRED.
-R502.13 FIREBLOCKING REQUIRED.

REFER TO THE IRC FOR THE FOLLOWING SECTIONS:

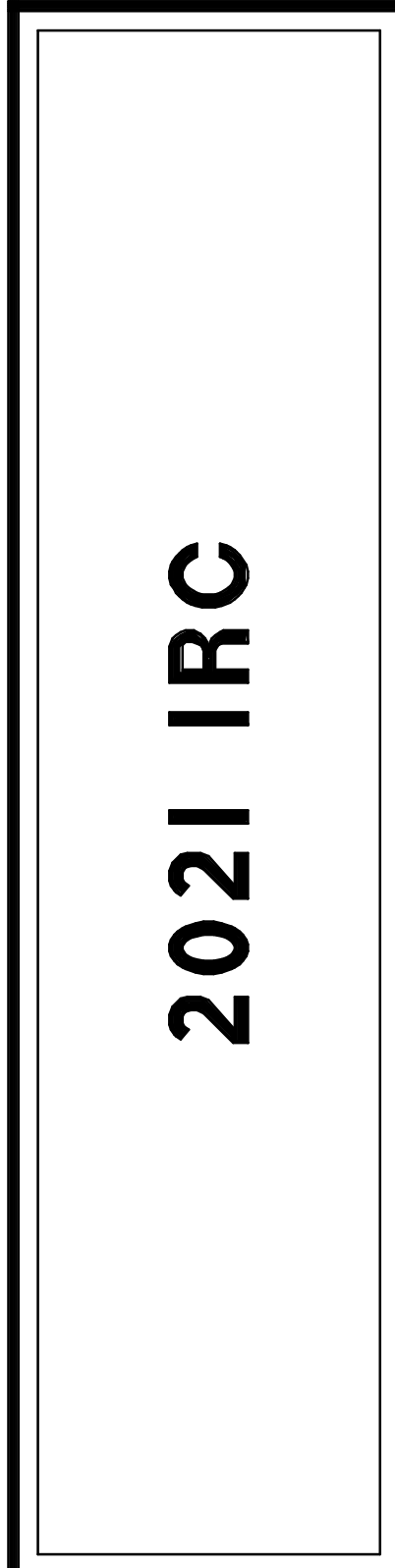
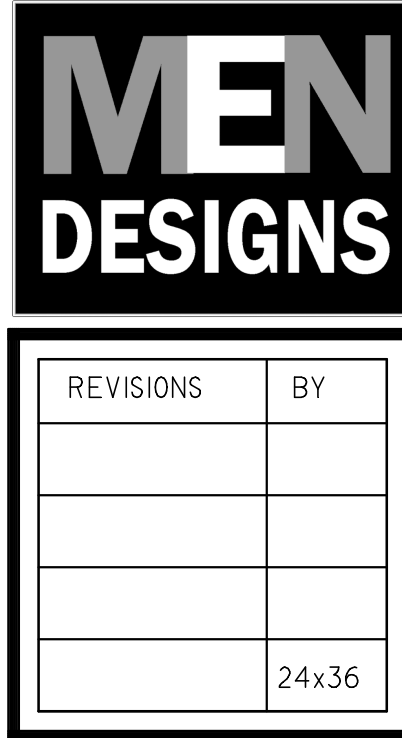
SECTION 503 FLOOR SHEATHING
SECTION 504 PRESSURE PRESERVATIVE TREATED WOOD FLOORS
SECTION 505 COLD-FORMED STEEL FLOOR FRAMING

SECTION R506 CONCRETE FLOORS (ON GROUND)

R506.1 GENERAL.
CONCRETE SLAB-ON-GROUND FLOORS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION OR ACI 332. FLOORS SHALL BE A MINIMUM 3 1/2 INCHES (89 MM) THICK (FOR EXPANSIVE SOILS, SEE SECTION R403.1.8). THE SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE SHALL BE AS SET FORTH IN SECTION R402.2.

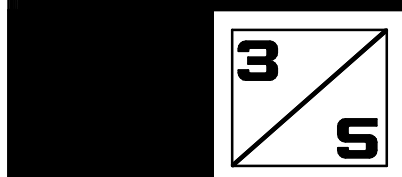
R506.2 SITE PREPARATION.
THE AREA WITHIN THE FOUNDATION WALLS SHALL HAVE ALL VEGETATION, TOP SOIL AND FOREIGN MATERIAL REMOVED.

R506.2.1 FILL.
FILL MATERIAL SHALL BE FREE OF VEGETATION AND FOREIGN MATERIAL. THE FILL SHALL BE COMPACTED TO ENSURE UNIFORM SUPPORT OF THE SLAB, AND EXCEPT WHERE APPROVED, THE FILL DEPTHS SHALL NOT EXCEED 24 INCHES (610 MM) FOR CLEAN SAND OR GRAVEL AND 8 INCHES (203 MM) FOR EARTH.



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DATE	8/3/22
SCALE	1/4" = 1'-0"
BUILDER	
JOB	
DRAWN BY	



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R506.2.2 BASE.
A 4-INCH-THICK (102 MM) BASE COURSE CONSISTING OF CLEAN GRADED SAND, GRAVEL, CRUSHED STONE, CRUSHED CONCRETE OR CRUSHED BLAST-FURNACE SLAG PASSING A 2- INCH (51 MM) SIEVE SHALL BE PLACED ON THE PREPARED SUBGRADE WHERE THE SLAB IS BELOW GRADE.

NOTE: SEE SECTION 506.2.2 FOR EXCEPTION

R506.2.3 VAPOR RETARDER.
A 10-MIL (0.010 INCH; 0.254 α M) VAPOR RETARDER CONFORMING TO ASTM E1745 CLASS A REQUIREMENTS WITH JOINTS LAPPED NOT LESS THAN 6 INCHES (152 MM) SHALL BE PLACED BETWEEN THE CONCRETE FLOOR SLAB AND THE BASE COURSE OR THE PREPARED SUBGRADE WHERE A BASE COURSE DOES NOT EXIST.

NOTE: SEE SECTION R506.2.3 FOR EXCEPTIONS

R506.2.4 REINFORCEMENT SUPPORT.
WHERE PROVIDED IN SLABS-ON-GROUND, REINFORCEMENT SHALL BE SUPPORTED TO REMAIN IN PLACE FROM THE CENTER TO UPPER ONE-THIRD OF THE SLAB FOR THE DURATION OF THE CONCRETE PLACEMENT.

SECTION R507 DECKS

R507.1 DECKS.
WOOD-FRAMED DECKS SHALL BE IN ACCORDANCE WITH THIS SECTION. DECKS SHALL BE DESIGNED FOR THE LIVE LOAD REQUIRED IN SECTION R301.5 OR THE GROUND SNOW LOAD INDICATED IN TABLE R301.2, WHICHEVER IS GREATER. FOR DECKS USING MATERIALS AND CONDITIONS NOT PRESCRIBED IN THIS SECTIONS, REFER TO SECTION R301.

R507.2 MATERIALS.
MATERIALS USED FOR THE CONSTRUCTION OF DECKS SHALL COMPLY WITH THIS SECTION.

R507.2.1 WOOD MATERIALS.
WOOD MATERIALS SHALL BE NO. 2 GRADE OR BETTER LUMBER PRESERVATIVE-TREATED IN ACCORDANCE WITH SECTION R317, OR APPROVED, NATURALLY DURABLE LUMBER, AND TERMITE PROTECTED WHERE REQUIRED IN ACCORDANCE WITH SECTION R318. WHERE DESIGN IN ACCORDANCE WITH SECTION R301 IS PROVIDED, WOOD STRUCTURAL MEMBERS SHALL BE DESIGNED USING THE WET SERVICE FACTOR DEFINED IN AWC NDS. CUTS, NOTCHES, AND DRILLED HOLES OF PRESERVATIVE TREATED WOOD MEMBERS SHALL BE TREATED IN ACCORDANCE WITH SECTION R317.1.1. ALL PRESERVATIVE-TREATED WOOD PRODUCTS IN CONTACT WITH THE GROUND SHALL BE LABELED FOR SUCH USAGE.

R507.2.1.1 ENGINEERED WOOD PRODUCTS.
ENGINEERED WOOD PRODUCTS SHALL BE IN ACCORDANCE WITH SECTION R502.

R507.2.2 PLASTIC COMPOSITE DECK BOARDS, STAIR TREADS, GUARDS, OR HANDRAILS.
PLASTIC COMPOSITE EXTERIOR DECK BOARDS, STAIR TREADS, GUARDS AND HANDRAILS SHALL COMPLY WITH THE REQUIREMENTS OF ASTM D7032 AND SECTION R507.3. SEE SECTIONS R507.2.2.1 THROUGH R507.2.2.5 AND SECTIONS R507.2.2.3 THOUGHT R507.2.5 FOR FURTHER SPECIFICATIONS.

R507.2.3 FASTENERS AND CONNECTORS.
METAL FASTENERS AND CONNECTORS USED FOR ALL DECKS SHALL BE IN ACCORDANCE WITH SECTION R317.3 AND TABLE R507.2.3.

R507.3 FOOTINGS
DECKS SHALL BE SUPPORTED ON CONCRETE FOOTINGS OR OTHER APPROVED STRUCTURAL SYSTEMS DESIGNED TO ACCOMMODATE ALL LOADS IN ACCORDANCE WITH SECTION R301. DECK FOOTINGS SHALL BE SIZED TO CARRY THE IMPOSED LOADS FROM THE DECK STRUCTURE TO THE GROUND AS SHOWN IN FIGURE R507.3.

NOTE: SEE SECTION R507.3 FOR EXCEPTION

R507.4 DECK POSTS.
FOR SINGLE-LEVEL DECKS, WOOD POST SIZE SHALL BE IN ACCORDANCE WITH TABLE R507.4.

R507.4.1 DECK POST TO FOOTING CONNECTION.
WHERE POSTS BEAR ON CONCRETE FOOTINGS IN ACCORDANCE WITH SECTION R403 AND FIGURE R507.4.1, LATERAL RESTRAINT SHALL BE PROVIDED BY MANUFACTURED CONNECTORS OR A MINIMUM POST EMBEDMENT OF 12 INCHES (305 MM) IN SURROUNDING SOILS OR CONCRETE PIERS. OTHER FOOTING SYSTEMS SHALL BE PERMITTED.

NOTE: SEE SECTION R507.4.1 FOR EXCEPTIONS

R507.5 DECK BEAMS.
MAXIMUM ALLOWABLE SPANS FOR WOOD DECK BEAMS, AS SHOWN IN FIGURE R507.5, SHALL BE IN ACCORDANCE WITH TABLES R507.5(1) THROUGH R507.5(4). BEAM PLIES SHALL BE FASTENED TOGETHER WITH TWO ROWS OF 10D (3-INCH X 0.128-INCH) NAILS MINIMUM AT 16 INCHES (406 MM) ON CENTER ALONG EACH EDGE. BEAMS SHALL BE PERMITTED TO CANTILEVER AT EACH END UP TO ONE-FOURTH OF THE ACTUAL BEAM SPAN. DECK BEAMS OF OTHER MATERIALS SHALL BE PERMITTED WHERE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES.

R507.7 DECKING.
MAXIMUM ALLOWABLE SPACING FOR JOISTS SUPPORTING WOOD DECKING, EXCLUDING STAIRWAYS, SHALL BE IN ACCORDANCE WITH TABLE R507.7. WOOD DECKING SHALL BE ATTACHED TO EACH SUPPORTING MEMBER WITH NOT LESS THAN TWO 8D THREADED NAILS OR TWO NO. 8 WOOD SCREWS. MAXIMUM ALLOWABLE SPACING FOR JOISTS SUPPORTING PLASTIC COMPOSITE DECKING SHALL BE IN ACCORDANCE WITH SECTION R507.2. OTHER APPROVED DECKING OR FASTENER SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.

R507.8 VERTICAL AND LATERAL SUPPORTS.
WHERE SUPPORTED BY ATTACHMENT TO AN EXTERIOR WALL, DECKS SHALL BE POSITIVELY ANCHORED TO THE PRIMARY STRUCTURE AND DESIGNED FOR BOTH VERTICAL AND LATERAL LOADS. SUCH ATTACHMENT SHALL NOT BE ACCOMPLISHED BY THE USE OF TONAILS OR NAILS SUBJECT TO WITHDRAWAL. FOR DECKS WITH CANTILEVERED FRAMING MEMBERS, CONNECTION TO EXTERIOR WALLS OR OTHER FRAMING MEMBERS SHALL BE DESIGNED AND CONSTRUCTED TO RESIST UPLIFT RESULTING FROM THE FULL LIVE LOAD SPECIFIED IN TABLE R301.5 ACTING ON THE CANTILEVERED PORTION OF THE DECK. WHERE POSITIVE CONNECTION TO THE PRIMARY BUILDING STRUCTURE CANNOT BE VERIFIED DURING INSPECTION, DECKS SHALL BE SELF-SUPPORTING.

CHAPTER 6 :: WALL CONSTRUCTION

SECTION R601 GENERAL

R601.1 APPLICATION.
THE PROVISIONS OF THIS CHAPTER SHALL CONTROL THE DESIGN AND CONSTRUCTION OF WALLS AND PARTITIONS FOR BUILDINGS.

R601.2 REQUIREMENTS.
WALL CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS IMPOSED IN ACCORDANCE WITH SECTION R301 AND OF TRANSMITTING THE RESULTING LOADS TO THE SUPPORTING STRUCTURAL ELEMENTS.

SECTION R602 WOOD WALL FRAMING

R602.1 GENERAL.
WOOD AND WOOD-BASED PRODUCTS USED FOR LOAD SUPPORTING PURPOSES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION. SEE SECTIONS 602.6.1 THROUGH 602.6.11 FOR FURTHER SPECIFICATIONS.

R602.2 GRADE.
STUDS SHALL BE A MINIMUM NO. 3, STANDARD OR STUD GRADE LUMBER.

NOTE: SEE SECTION 506.2.2 FOR EXCEPTION

R602.3 DESIGN AND CONSTRUCTION.
EXTERIOR WALLS OF WOODFRAME CONSTRUCTION SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CHAPTER AND FIGURES R602.3(1) AND R602.3(2), OR IN ACCORDANCE WITH AWC NDS. COMPONENTS OF EXTERIOR WALLS SHALL BE FASTENED IN ACCORDANCE WITH TABLES R602.3(1) THROUGH R602.3(4). WALL SHEATHING SHALL BE FASTENED DIRECTLY TO FRAMING MEMBERS AND, WHERE PLACED ON THE EXTERIOR SIDE OF AN EXTERIOR WALL, SHALL BE CAPABLE OF RESISTING THE WIND PRESSURES LISTED IN TABLE R301.2(2) ADJUSTED FOR HEIGHT AND EXPOSURE USING TABLE R301.2(3) AND SHALL CONFORM TO THE REQUIREMENTS OF TABLE R602.3(3). WALL SHEATHING USED ONLY FOR EXTERIOR WALL COVERING PURPOSES SHALL COMPLY WITH SECTION R703. STUDS SHALL BE CONTINUOUS FROM SUPPORT AT THE SOLE PLATE TO A SUPPORT AT THE TOP PLATE TO RESIST LOADS PERPENDICULAR TO THE WALL. THE SUPPORT SHALL BE FOUNDATION OR FLOOR, CEILING OR ROOF DIAPHRAGM OR SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

NOTE: SEE SECTION 506.2.3 FOR EXCEPTION

SEE SECTIONS 602.3.1 THROUGH 603.3.5 FOR FURTHER SPECIFICATIONS.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

R602.4 INTERIOR LOAD-BEARING WALLS.
R602.5 INTERIOR NONBEARING WALLS.
R602.6 DRILLING AND NOTCHING OF STUDS.
R602.7 HEADERS.
R602.8 FIREBLOCKING REQUIRED.
R602.9 CRIPPLE WALLS.

R602.10 WALL BRACING.
BUILDINGS SHALL BE BRACED IN ACCORDANCE WITH THIS SECTION OR, WHEN APPLICABLE, SECTION R602.12. WHERE A BUILDING, OR PORTION THEREOF, DOES NOT COMPLY WITH ONE OR MORE OF THE BRACING REQUIREMENTS IN THIS SECTION, THOSE PORTIONS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION R301.1.

REFER TO SECTIONS 602.10.1 THROUGH 602.10.10 FOR BRACED WALL PANELS, DESIGN AND CRITERIA.

REFER TO THE IRC FOR THE FOLLOWING SECTIONS:

SECTION 603 COLD-FORMED STEEL WALL FRAMING
SECTION 604 WOOD STRUCTURAL PANELS
SECTION 605 PARTICLEBOARD
SECTION 606 GENERAL MASONRY CONSTRUCTION
SECTION 607 GLASS UNIT MASONRY
SECTION 608 EXTERIOR CONC. WALL CONSTRUCTION
SECTION 609 (SEE BELOW)
SECTION R610 STRUCTURAL INSULATED PANEL WALL CONSTRUCTION

SECTION R609 EXTERIOR WINDOWS AND DOORS.

R609.1 GENERAL.
THIS SECTION PRESCRIBES PERFORMANCE AND CONSTRUCTION REQUIREMENTS FOR EXTERIOR WINDOWS AND DOORS INSTALLED IN WALLS. WINDOWS AND DOORS SHALL BE INSTALLED IN ACCORDANCE WITH THE FENESTRATION MANUFACTURER'S WRITTEN INSTRUCTIONS. WINDOW AND DOOR OPENINGS SHALL BE FLASHED IN ACCORDANCE WITH SECTION R703.4. WRITTEN INSTALLATION INSTRUCTIONS SHALL BE PROVIDED BY THE FENESTRATION MANUFACTURER FOR EACH WINDOW OR DOOR.

R609.2 PERFORMANCE. EXTERIOR WINDOWS AND DOORS SHALL BE CAPABLE OF RESISTING THE DESIGN WIND LOADS SPECIFIED IN TABLE R301.2(2) ADJUSTED FOR HEIGHT AND EXPOSURE IN ACCORDANCE WITH TABLE R301.2(3) OR DETERMINED IN ACCORDANCE WITH ASCE 7 USING THE ALLOWABLE STRESS DESIGN LOAD COMBINATIONS OF ASCE 7. FOR EXTERIOR WINDOWS AND DOORS TESTED IN ACCORDANCE WITH SECTIONS R609.3 AND R609.5, REQUIRED DESIGN WIND PRESSURES DETERMINED FROM ASCE 7 USING THE ULTIMATE STRENGTH DESIGN (USD) ARE PERMITTED TO BE MULTIPLIED BY 0.6. DESIGN WIND LOADS FOR EXTERIOR GLAZING NOT PART OF A LABELED ASSEMBLY SHALL BE PERMITTED TO BE DETERMINED IN ACCORDANCE WITH CHAPTER 24 OF THE IRC. DESIGN WIND LOADS FOR EXTERIOR GLAZING NOT PART OF A LABELED ASSEMBLY SHALL BE PERMITTED TO BE DETERMINED IN ACCORDANCE WITH CHAPTER 24 OF THE INTERNATIONAL BUILDING CODE.

R609.4 GARAGE DOORS.
GARAGE DOORS SHALL BE TESTED IN ACCORDANCE WITH EITHER ASTM E330 OR ANSI/ASMA 108, AND SHALL MEET THE ACCEPTANCE CRITERIA OF ANSI/ASMA 108.

CHAPTER 7 :: WALL COVERING

R702.1 GENERAL.
INTERIOR COVERINGS OR WALL FINISHES SHALL BE INSTALLED IN ACCORDANCE WITH THIS CHAPTER AND TABLE R702.1(1), TABLE R702.1(2), TABLE R702.1(3) AND TABLE R702.3.5. INTERIOR MASONRY VENEER SHALL COMPLY WITH THE REQUIREMENTS OF SECTION R703.7.1 FOR SUPPORT AND SECTION R703.7.4 FOR ANCHORAGE, EXCEPT AN AIRSPACE IS NOT REQUIRED. INTERIOR FINISHES AND MATERIALS SHALL CONFORM TO THE FLAME SPREAD AND SMOKE DEVELOPMENT REQUIREMENTS OF SECTION R302.9. SEE SECTIONS 702.2 THROUGH 702.7 FOR FURTHER SPECIFICATIONS.

SECTION R703 EXTERIOR COVERING

R703.1 GENERAL.
EXTERIOR WALLS SHALL PROVIDE THE BUILDING WITH A WEATHER-RESISTANT EXTERIOR WALL ENVELOPE. THE EXTERIOR WALL ENVELOPE SHALL INCLUDE FLASHING AS DESCRIBED IN SECTION R703.4.

R703.2 WATER-RESISTIVE BARRIER.
NOT FEWER THAN ONE LAYER OF WATER-RESISTIVE BARRIER SHALL BE APPLIED OVER STUDS OR SHEATHING OF ALL EXTERIOR WALLS WITH FLASHING AS INDICATED IN SECTION R703.4. IN SUCH A MANNER AS TO PROVIDE A CONTINUOUS WATER-RESISTIVE BARRIER BEHIND THE EXTERIOR WALL VENEER. THE WATER-RESISTIVE BARRIER MATERIAL SHALL BE CONTINUOUS TO THE TOP OF WALLS AND TERMINATED AT PENETRATIONS AND BUILDING APPENDAGES IN A MANNER TO MEET THE REQUIREMENTS OF THE EXTERIOR WALL ENVELOPE AS DESCRIBED IN SECTION R703.1. WATER-RESISTIVE BARRIER MATERIALS SHALL COMPLY WITH ONE OF THE FOLLOWING:
1. NO. 15 FELT COMPLYING WITH ASTM D226, TYPE 1.
2. ASTM E2568, TYPE 1 OR 2.
3. ASTM E331 IN ACCORDANCE WITH SECTION R703.1.1.
4. OTHER APPROVED MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
NO.15 ASPHALT FELT AND WATER-RESISTIVE BARRIERS COMPLYING WITH ASTM E2556 SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES (51 MM), AND WHERE JOINTS OCCUR, SHALL BE LAPPED NOT LESS THAN 6 INCHES (152 MM).

R703.3.3 FASTENERS.
EXTERIOR WALL COVERINGS AND ROOF OVERHANG SOFFITS SHALL BE SECURELY FASTENED WITH ALUMINUM, GALVANIZED, STAINLESS STEEL OR RUST-PREVENTATIVE COATED NAILS OR STAPLES IN ACCORDANCE WITH TABLE R703.3(1) OR WITH OTHER APPROVED CORROSION- RESISTANT FASTENERS IN ACCORDANCE WITH THE WALL COVERING MANUFACTURER'S INSTALLATION INSTRUCTIONS. NAILS AND STAPLES SHALL COMPLY WITH ASTM F1667. NAILS SHALL BE T-HEAD, MODIFIED ROUND HEAD, OR ROUND HEAD WITH SMOOTH OR DEFORMED SHANKS. STAPLES SHALL HAVE A MINIMUM CROWN WIDTH OF 7/16 INCH (11.1 MM) OUTSIDE DIAMETER AND BE MANUFACTURED OF MINIMUM 16-GAGE WIRE. WHERE FIBERBOARD, GYPSUM, OR FOAM PLASTIC SHEATHING BACKING IS USED, NAILS OR STAPLES SHALL BE DRIVEN INTO THE STUDS. WHERE WOOD OR WOOD STRUCTURAL PANEL SHEATHING IS USED, FASTENERS SHALL BE DRIVEN INTO STUDS UNLESS OTHERWISE PERMITTED TO BE DRIVEN INTO SHEATHING IN ACCORDANCE WITH EITHER THE SIDING MANUFACTURER'S INSTALLATION INSTRUCTIONS OR TABLE R703.3.2.

R703.4 FLASHING.
APPROVED CORROSION-RESISTANT FLASHING SHALL BE APPLIED SHINGLE-FASHION IN A MANNER TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING STRUCTURAL FRAMING COMPONENTS. SELF-ADHERED MEMBRANES USED AS FLASHING SHALL COMPLY WITH AAMA 711. FLUID-APPLIED MEMBRANES USED AS FLASHING IN EXTERIOR WALLS SHALL COMPLY WITH AAMA 714. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH. APPROVED CORROSION-RESISTANT FLASHINGS SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:

1. EXTERIOR WINDOW AND DOOR OPENINGS. FLASHING AT EXTERIOR WINDOW AND DOOR OPENINGS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION R703.4.1.
2. AT THE INTERSECTION OF CHIMNEYS OR OTHER MASONRY CONSTRUCTION WITH FRAME OR STUCCO COPINGS, WITH PROJECTING LIPS ON BOTH SIDES UNDER STUCCO COPINGS.
3. UNDER AND AT THE ENDS OF MASONRY, WOOD OR METAL COPINGS AND SILLS.
4. CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM.
5. WHERE EXTERIOR PORCHES, DECKS OR STAIRS ATTACH TO A WALL OR FLOOR ASSEMBLY OF WOODFRAME CONSTRUCTION.
6. AT WALL AND ROOF INTERSECTIONS.
7. AT BUILT-IN GUTTERS.

-R703.5 WOOD, HARDBOARD AND WOOD STRUCTURAL PANEL SIDING.

-R703.6 WOOD SHAKES AND SHINGLES.
-R703.7 EXTERIOR PLASTER (STUCCO).
-R703.8 ANCHORED STONE AND MASONRY VENEER, GENERAL.
-R703.9 EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)/EIFS WITH DRAINAGE
-R703.10 FIBER CEMENT SIDING.
-R703.11 VINYL SIDING.
-R703.12 ADHERED MASONRY VENEER INSTALLATION.
-R703.13 INSULATED VINYL SIDING.
-R703.14 POLYPROPYLENE SIDING.
-R703.15 CLADDING ATTACHMENT OVER FOAM SHEATHING TO WOOD FRAMING.
-R703.16 CLADDING ATTACHMENT OVER FOAM SHEATHING TO COLD-FORMED STEEL FRAMING.
-R703.17 CLADDING ATTACHMENT OVER FOAM SHEATHING TO MASONRY OR CONCRETE WALL CONSTRUCTION.

CHAPTER 8 :: ROOF-CEILING CONSTRUCTION

SECTION 802 WOOD ROOF FRAMING

R802.1 GENERAL.
WOOD AND WOOD-BASED PRODUCTS USED FOR LOAD SUPPORTING PURPOSES SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THIS SECTION.

SEE SECTIONS 802.1.1 THROUGH 802.1.8 FOR FURTHER SPECIFICATIONS.

R802.2 DESIGN AND CONSTRUCTION.
THE FRAMING DETAILS REQUIRED IN SECTION R802 APPLY TO ROOFS HAVING A MINIMUM SLOPE OF THREE UNITS VERTICAL IN 12 UNITS HORIZONTAL (25-PERCENT SLOPE) OR GREATER. ROOF-CEILINGS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS CHAPTER AND FIGURES R606.1(1), R606.1(1)(2) AND R606.1(1)(3) OR IN ACCORDANCE WITH AWC NDS. COMPONENTS OF ROOF-CEILINGS SHALL BE FASTENED IN ACCORDANCE WITH TABLE R602.3(1).

R802.3 RIDGE.
A RIDGE BOARD USED TO CONNECT OPPOSING RAFTERS SHALL BE NOT LESS THAN 1 INCH (25 MM) NOMINAL THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. WHERE CEILING JOIST OR RAFTER TIES DO NOT PROVIDE CONTINUOUS TIES ACROSS THE STRUCTURE AS REQUIRED BY SECTION R802.5.2, THE RIDGE SHALL BE SUPPORTED BY A WALL OR RIDGE BEAM DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE AND SUPPORTED ON EACH END BY A WALL OR COLUMN.

R802.4 RAFTERS.
RAFTERS SHALL BE IN ACCORDANCE WITH THIS SECTION.

R802.4.1 RAFTER SIZE.
RAFTERS SHALL BE SIZED BASED ON THE RAFTER SPANS IN TABLES R802.4.1(1) THROUGH R802.4.1(8). RAFTER SPANS SHALL BE MEASURED ALONG THE HORIZONTAL PROJECTION OF THE RAFTER. FOR OTHER GRADES AND SPECIES AND FOR OTHER LOADING CONDITIONS, REFER TO THE AWC STJR.

R802.4.2 FRAMING DETAILS.
RAFTERS SHALL BE FRAMED OPPOSITE FROM EACH OTHER TO A RIDGE BOARD. SHALL NOT BE OFFSET MORE THAN 1 1/2 INCHES (38 MM) FROM EACH OTHER AND SHALL BE CONNECTED WITH A COLLAR TIE OR RIDGE STRAP IN ACCORDANCE WITH SECTION R802.4.6 OR DIRECTLY OPPOSITE FROM EACH OTHER TO A GUSSET PLATE IN ACCORDANCE WITH TABLE R602.3(1). RAFTERS SHALL BE NAILED TO THE TOP WALL PLATES IN ACCORDANCE WITH TABLE R602.3(1) UNLESS THE ROOF ASSEMBLY IS REQUIRED TO COMPLY WITH THE UPLIFT REQUIREMENTS OF SECTION R802.11.

R802.4.3 HIPs AND VALLEYS.
HIP AND VALLEY RAFTERS SHALL BE NOT LESS THAN 2 INCHES (51 MM) NOMINAL IN THICKNESS AND NOT LESS IN DEPTH THAN THE CUT END OF THE RAFTER. HIP AND VALLEY RAFTERS SHALL BE SUPPORTED AT THE RIDGE BY A BRACE TO A BEARING PARTITION OR BE DESIGNED TO CARRY AND DISTRIBUTE THE SPECIFIC LOAD AT THAT POINT.

R802.4.4 RAFTER SUPPORTS.
WHERE THE ROOF PITCH IS LESS THAN 3:12 (25-PERCENT SLOPE), STRUCTURAL MEMBERS THAT SUPPORT RAFTERS, SUCH AS RIDGES, HIPs AND VALLEYS, SHALL BE DESIGNED AS BEAMS, AND BEARING SHALL BE PROVIDED FOR RAFTERS IN ACCORDANCE WITH SECTION R802.6.

REFER TO THE IRC FOR FURTHER INFORMATION ON THE FOLLOWING AREAS:

R802.5 ALLOWABLE RAFTER SPANS.
R802.6 BEARING.
R802.7 CUTTING, DRILLING AND NOTCHING.
R802.8 LATERAL SUPPORT.
R802.9 FRAMING OF OPENINGS.
R802.10 WOOD TRUSSES.

R802.10.1 TRUSS DESIGN DRAWINGS. TRUSS DESIGN DRAWINGS, PREPARED IN CONFORMANCE TO SECTION R802.10.1, SHALL BE PROVIDED TO THE BUILDING OFFICIAL AND APPROVED PRIOR TO INSTALLATION. TRUSS DESIGN DRAWINGS SHALL BE PROVIDED WITH THE SHIPMENT OF TRUSSES DELIVERED TO THE JOB SITE. TRUSS DESIGN DRAWINGS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING INFORMATION:

REFER TO SECTION 802.10.1 (1-12 FOR MINIMUM INFORMATION)

R802.10.2 DESIGN.
WOOD TRUSSES SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE. THE DESIGN AND MANUFACTURE OF METAL-PLATE-CONNECTED WOOD TRUSSES SHALL COMPLY WITH ANSI/TPI 1. THE TRUSS DESIGN DRAWINGS SHALL BE PREPARED BY A REGISTERED DESIGN PROFESSIONAL WHERE REQUIRED BY THE STATUTES OF THE JURISDICTION IN WHICH THE PROJECT IS TO BE CONSTRUCTED IN ACCORDANCE WITH SECTION R106.1.

R802.10.3 BRACING.
TRUSSES SHALL BE BRACED TO PREVENT ROTATION AND PROVIDE LATERAL STABILITY IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED IN THE CONSTRUCTION DOCUMENTS FOR THE BUILDING AND ON THE INDIVIDUAL TRUSS DESIGN DRAWINGS. IN THE ABSENCE OF SPECIFIC BRACING REQUIREMENTS, TRUSSES SHALL BE BRACED IN ACCORDANCE WITH ACCEPTED INDUSTRY PRACTICE SUCH AS THE SBCA BUILDING COMPONENT SAFETY INFORMATION (BDSI) GUIDE TO GOOD PRACTICE FOR HANDLING, INSTALLING & BRACING OF METAL PLATE CONNECTED WOOD TRUSSES.

R802.10.4 ALTERATIONS TO TRUSSES.
TRUSS MEMBERS SHALL NOT BE CUT, NOTCHED, DRILLED, SPLICED OR OTHERWISE ALTERED IN ANY WAY WITHOUT THE APPROVAL OF A REGISTERED DESIGN PROFESSIONAL. ALTERATIONS RESULTING IN THE ADDITION OF LOAD SUCH AS HVAC EQUIPMENT WATER HEATER THAT EXCEEDS THE DESIGN LOAD FOR THE TRUSS SHALL NOT BE PERMITTED WITHOUT VERIFICATION THAT THE TRUSS IS CAPABLE OF SUPPORTING SUCH ADDITIONAL LOADING.

R802.11 ROOF TIE UPLIFT RESISTANCE.
ROOF ASSEMBLIES SHALL HAVE UPLIFT RESISTANCE IN ACCORDANCE WITH SECTIONS R802.11.1.1 AND R802.11.1.2.

NOTE: SEE SECTION 802.11 FOR EXCEPTION

R802.11.1 TRUSS UPLIFT RESISTANCE.
TRUSSES SHALL BE ATTACHED TO SUPPORTING WALL ASSEMBLIES BY CONNECTIONS CAPABLE OF RESISTING UPLIFT FORCES AS SPECIFIED ON THE TRUSS DESIGN DRAWINGS FOR THE ULTIMATE DESIGN WIND SPEED AS DETERMINED BY FIGURE R301.2(5)A AND LISTED IN TABLE R301.2(1) OR AS SHOWN ON THE CONSTRUCTION DOCUMENTS. UPLIFT FORCES SHALL BE PERMITTED TO BE DETERMINED AS SPECIFIED BY TABLE R802.11, IF APPLICABLE, OR AS DETERMINED BY ACCEPTED ENGINEERING PRACTICE.
R802.11.2 RAFTER UPLIFT RESISTANCE.
INDIVIDUAL RAFTERS SHALL BE ATTACHED TO SUPPORTING WALL ASSEMBLIES BY CONNECTIONS CAPABLE OF RESISTING UPLIFT FORCES AS DETERMINED BY TABLE R802.11 OR AS DETERMINED BY ACCEPTED ENGINEERING PRACTICE. CONNECTIONS FOR BEAMS USED IN A ROOF SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICE.

REFER TO THE IRC FOR THE FOLLOWING SECTIONS:

SECTION 803 ROOF SHEATHING
SECTION 804 COLD-FORMED STEEL ROOF FRAMING

SECTION 805 CEILING FINISHES

R805.1 CEILING INSTALLATION.
CEILINGS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS FOR INTERIOR WALL FINISHES AS PROVIDED IN SECTIONS R702.1 THROUGH R702.6.

SECTION R806 ROOF VENTILATION

R806.1 VENTILATION REQUIRED.
ENCLOSED ATTICS AND ENCLOSED RAFTER SPACES FORMED WHERE CEILINGS ARE APPLIED DIRECTLY TO THE UNDERSIDE OF ROOF RAFTERS SHALL HAVE CROSS VENTILATION FOR EACH SEPARATE SPACE BY VENTILATING OPENINGS PROTECTED AGAINST THE ENTRANCE OF RAIN OR SNOW. VENTILATION OPENINGS SHALL HAVE A LEAST DIMENSION OF 1/16 INCH (1.6 MM) MINIMUM AND 1/4 INCH (6.4 MM) MAXIMUM. VENTILATION OPENINGS HAVING A LEAST DIMENSION LARGER THAN 1/4 INCH (6.4 MM) SHALL BE PROVIDED WITH CORROSION-RESISTANT WIRE CLOTH SCREENING, HARDWARE CLOTH PERFORATED VINYL OR SIMILAR MATERIAL WITH OPENINGS HAVING A LEAST DIMENSION OF 1/16 INCH (1.6 MM) MINIMUM AND 1/4 INCH (6.4 MM) MAXIMUM. OPENINGS IN ROOF FRAMING MEMBERS SHALL CONFORM TO THE REQUIREMENTS OF SECTION R802.7. REQUIRED VENTILATION OPENINGS SHALL OPEN DIRECTLY TO THE OUTSIDE AIR AND SHALL BE PROTECTED TO PREVENT THE ENTRY OF BIRDS, RODENTS, SNAKES, AND OTHER SIMILAR CREATURES.

R806.2 MINIMUM VENT AREA.
THE MINIMUM NET FREE VENTILATING AREA SHALL BE 1/150 OF THE AREA OF THE VENTED SPACE.

NOTE: SEE SECTION 806.2 FOR EXCEPTION

R806.3 VENT AND INSULATION CLEARANCE.
WHERE EAVE OR CORNICE VENTS ARE INSTALLED, BLOCKING, BRIDGING, AND INSULATION SHALL NOT BLOCK THE FREE FLOW OF AIR. NOT LESS THAN A 1-INCH (25 MM) SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND THE ROOF SHEATHING AND AT THE LOCATION OF THE VENT.

R806.4 INSTALLATION AND WEATHER PROTECTION.
VENTILATORS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALLATION OF VENTILATORS IN ROOF SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION R903. INSTALLATION OF VENTILATORS IN WALL SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION R703.1.

R806.5 UNVENTED ATTIC AND UNVENTED ENCLOSED RAFTER ASSEMBLIES.
UNVENTED ATTICS AND UNVENTED ENCLOSED ROOF FRAMING ASSEMBLIES CREATED BY CEILINGS THAT ARE APPLIED DIRECTLY TO THE UNDERSIDE OF THE ROOF FRAMING MEMBERS AND STRUCTURAL ROOF SHEATHING APPLIED DIRECTLY TO THE TOP OF THE ROOF FRAMING MEMBERS/RAFTERS, SHALL BE PERMITTED WHERE ALL THE FOLLOWING CONDITIONS ARE MET:

SEE CONDITIONS 806.5 (1 THROUGH 5)

SECTION R807 ATTIC ACCESS

R807.1 ATTIC ACCESS.
BUILDINGS WITH COMBUSTIBLE CEILING OR ROOF CONSTRUCTION SHALL HAVE AN ATTIC ACCESS OPENING TO ATTIC AREAS THAT HAVE A VERTICAL HEIGHT OF 30 INCHES (762 MM) OR GREATER OVER AN AREA OF NOT LESS THAN 30 SQUARE FEET (2.8 M2). THE VERTICAL HEIGHT SHALL BE MEASURED FROM THE TOP OF THE CEILING FRAMING MEMBERS TO THE UNDERSIDE OF THE ROOF FRAMING MEMBERS.

THE ROUGH-FRAMED OPENING SHALL BE NOT LESS THAN 22 INCHES BY 30 INCHES (559 MM BY 762 MM) AND SHALL BE LOCATED IN A HALLWAY OR OTHER LOCATION WITH READY ACCESS. WHERE LOCATED IN A WALL, THE OPENING SHALL BE NOT LESS THAN 22 INCHES WIDE BY 30 INCHES HIGH (559 MM WIDE BY 762 MM HIGH). WHERE THE ACCESS IS LOCATED IN A CEILING, MINIMUM UNOBSTRUCTED HEADROOM IN THE ATTIC SPACE SHALL BE 30 INCHES (762 MM) AT SOME POINT ABOVE THE ACCESS MEASURED VERTICALLY FROM THE BOTTOM OF CEILING FRAMING MEMBERS. SEE SECTION M1305.1.3 FOR ACCESS REQUIREMENTS WHERE MECHANICAL EQUIPMENT IS LOCATED IN ATTICS.

CHAPTER 9 :: ROOF ASSEMBLIES

SECTION R901 GENERAL

R901.1 SCOPE. THE PROVISIONS OF THIS CHAPTER SHALL GOVERN THE DESIGN, MATERIALS, CONSTRUCTION AND QUALITY OF ROOF ASSEMBLIES.

CHAPTER 10 :: CHIMNEYS & FIREPLACES

R1001.1 GENERAL.
MASONRY FIREPLACES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THIS SECTION AND THE APPLICABLE PROVISIONS OF CHAPTERS 3 AND 4.

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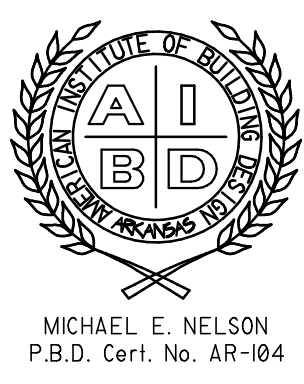


TABLE N1102.4.1.1 (R402.4.1.1)
AIR BARRIER AND INSULATION INSTALLATIONa

COMPONENT	AIR BARRIER CRITERIA	INSULATION INSTALLATION CRITERIA
General requirements	A continuous air barrier shall be installed in the building envelope. The exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed.	Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.	The insulation in any dropped ceiling/soffit shall be aligned with the air barrier.
Walls	The junction of the foundation and sill plate shall be sealed. The junction of the top plate and the top of exterior walls shall be sealed. Knee walls shall be sealed.	Cavities within corners and headers of frame walls shall be insulated by completely filling the cavity with a material having a thermal resistance of not less than R-3 per inch. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and in continuous alignment with the air barrier.
Windows, skylights and doors	The space between framing and skylights, and framing the jambs of windows and doors, shall be sealed.	
Rim joists	Rim joists shall include the air barrier.	Rim joists shall be insulated.
Floors (including above garage and cantilevered floors) and floors above garages.	The air barrier shall be installed at any exposed edge of insulation.	Floor framing cavity insulation shall be installed to maintain permanent contact with the underside of subfloor decking. Alternatively floor framing cavity insulation shall be in contact with the top side of sheathing, or continuous insulation installed on the underside of floor framing; and extending from the bottom to the top of all perimeter floor framing members.
Crawl space walls	Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.	Crawl space insulation where provided instead of floor insulation, shall be permanently attached to the walls.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.	
Narrow cavities		Batts to be installed in narrow cavities shall be cut to fit. On narrow cavities shall be filled with insulation that on installation readily conforms to the

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	Air sealing shall be provided between the garage and conditioned spaces.	available cavity space.
Garage separation		
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.	Recessed light fixtures installed in the building thermal envelope shall be air tight and IC rated.
Plumbing and wiring		In exterior walls, batt insulation shall be cut neatly to fit around wiring and plumbing or insulation that on installation, readily conforms to available space, shall extend behind piping and wiring.
Shower/tub on exterior wall	The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.	Exterior walls adjacent to showers and tubs shall be insulated.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.	
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.	
Concealed sprinklers	Where required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.	

a. Inspection of log walls shall be in accordance with the provisions of ICC 400.

TABLE N1102.1.2 (R402.1.2)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENTa

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	GLAZED FENESTRATION SHGC, g	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT WALL R-VALUE	SLAB R-VALUE & DEPTH	CRAWL SPACE WALL R-VALUE
1	NR	0.75	0.25	30	13	3/4	13	0	0	0
2	0.40	0.65	0.25	38	13	4/6	13	0	0	0
3	0.32	0.55	0.25	38	20 or 13 + 5h	8/13	19	5/13f	0	5/13
4 except Marine	0.32	0.55	0.40	49	20 or 13 + 5h	8/13	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.30	0.55	NR	49	20 or 13 + 5h	13/17	30g	15/19	10, 2 ft	15/19
6	0.30	0.55	NR	49	20 + 5 or 13 + 10h	15/20	30g	15/19	10, 4 ft	15/19
7 and 8	0.30	0.55	NR	49	20 + 5 or 13 + 10h	19/21	38g	15/19	10, 4 ft	15/19

For SI: 1 foot = 304.8 mm.

a. R-values are minimums. U-factors and SHGC are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-value specified in the table.

b. The fenestration U-factor column excludes skylights. The SHGC column applies to all glazed fenestration.

Exception: Skylights may be excluded from glazed fenestration SHGC requirements in Climate Zones 1 through 3 where the SHGC for such skylights does not exceed 0.30.

c. 15/19 means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. 15/19 shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. 10/13 means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.

d. R-5 shall be added to the required slab edge R-values for heated slabs. Insulation depth shall be the depth of the footing or 2 feet, whichever is less in Zones 1 through 3 for heated slabs.

e. There are no SHGC requirements in the Marine Zone.

f. Basement wall insulation is not required in warm-humid locations as defined by Figure N1101.10 and Table N1101.10.

g. Or insulation sufficient to fill the framing cavity, R-19 minimum.

h. The first value is cavity insulation, the second value is continuous insulation, so 13+5 means R-13 cavity insulation plus R-5 continuous insulation.

i. The second R-value applies when more than half the insulation is on the interior of the mass wall.

TABLE N1102.1.4 (R402.1.4)
EQUIVALENT U-FACTORSa

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING WALL U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTORb	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	0.50	0.75	0.035	0.084	0.197	0.064	0.360	0.477
2	0.40	0.65	0.030	0.084	0.165	0.064	0.360	0.477
3	0.35	0.55	0.030	0.060	0.098	0.047	0.091c	0.136
4 except Marine	0.25	0.55	0.026	0.060	0.098	0.047	0.059	0.085
5 and Marine 4	0.32	0.55	0.026	0.060	0.082	0.033	0.050	0.055
6	0.32	0.55	0.026	0.045	0.060	0.033	0.050	0.055
7 and 8	0.32	0.55	0.026	0.045	0.057	0.028	0.050	0.055

a. Nonfenestration U-factors shall be obtained from measurement, calculation or an approved source.

b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.17 in Zone 1, 0.14 in Zone 2, 0.12 in Zone 3, 0.087 in Zone 4 except Marine, 0.065 in Zone 5 and Marine 4, and 0.057 in Zones 6 through 8.

c. Basement wall U-factor of 0.360 in warm-humid locations as defined by Figure N1101.10 (R301.1) and Table N1101.10 (R301.1).

SPECIAL CONTRACTOR NOTES:

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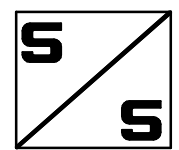
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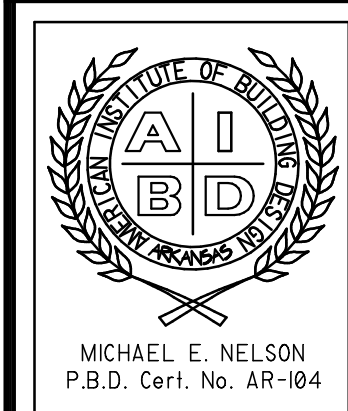
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* THE REQUIRED EXTREME FIBER STRESS IN BENDING " F_b ", IN POUNDS/IN². MODULUS OF ELASTICITY IN 1,000,000 psi. WHERE LB IS EQUAL TO 1,000,000 psi

LIMITED ATTIC STORAGE WHERE DEVELOPMENT OF FUTURE ROADS IS NOT POSSIBLE														
Southern Yellow pine - 20lbs./Ft ³ - Live Load														
	F _b	E**	2x4			2x6			2x8			2x10		
			12"	16"	24"	12"	16"	24"	12"	16"	24"	12"	16"	24"
SELECT STRUCTURAL	2150	18	10-3	9-4	8-1	16-1	14-7	12-9	21-2	19-3	16-10	27-1	24-7	21-6
#1 DENSE	1800	19	10-5	9-6	8-3	16-1	14-11	13-0	21-2	19-7	17-2	27-0	25-0	21-6
#2	1500	18	10-3	9-4	8-1	16-1	14-7	12-9	21-2	19-3	16-10	27-1	24-7	21-6
#3	1200	18	10-3	9-4	8-1	16-1	14-7	12-9	21-2	19-3	16-10	27-1	24-7	21-6
#4	900	16	9-8	8-9	7-2	15-6	13-9	11-3	20-5	18-2	14-9	26-0	23-2	18-10
#5	875	15	7-9	6-8	5-6	12-0	10-8	8-6	15-9	13-9	11-5	20-3	17-6	14-3
MAXIMUM DEFLECTION IS			1/240 OF SPAN											

FLAT OR SLOPED RAFTERS (FLAT ROOF OR CATHEDRAL CEILING WITH NO ATTIC SPACE) SUPPORTING DRYWALL CEILING

FLAT OR SLOPED RAFTERS (FLAT ROOF OR CATHEDRAL CEILING WITH NO ATTIC SPACE) SUPPORTING DRYWALL CEILING															
Southern Yellow pine - 20lbs/Ft ²															
		2x6				2x8				2x10				2x12	
		F _b	E"	I ²	I ⁶	I ²⁴	I ²	I ⁶	I ²⁴	I ²	I ⁶	I ²⁴	I ²	I ⁶	I ²⁴
SELECT STRUCTURAL	2150	18	16-1	14-6	12-5	21-3	19-2	16-5	27-0	24-5	20-11	32-10	29-9	25-5	25-5
#1 DENSE	2150	19	16-1	14-10	12-5	21-3	19-7	16-5	27-0	25-0	20-11	33-4	30-5	25-5	25-5
#2 DENSE	1750	17	15-5	13-9	11-3	20-1	18-8	14-9	26-8	23-1	18-31	27-1	28-1	22-5	22-5
#3	1875	15	14-9	12-6	10-4	19-2	17-1	13-8	25-8	21-4	17-6	26-0	26-3	20-3	20-3
	1750	15	11-3	9-8	7-11	14-9	12-0	0-5	18-10	16-3	13-3	23-0	19-11	16-1	16-1

FLAT OR LOW SLOPED RAFTERS ON ATTIC SPACE SLOPE 3 IN 12 OR LESS														
Southern Yellow pine - 20lbs/FT ²														
		2x6			2x8			2x10			2x12			
	"F _b "	"E"	12"	16"	24"	12"	16"	24"	12"	16"	24"	12"	16"	24"
SELECT STRUCTURAL	2150	18	16-2	14-7	12-10	21-3	19-3	16-7	27-1	24-7	20-6	33-0	29-11	26-1
#1 DENSE	2150	19	16-5	14-10	12-11	21-3	19-7	17-3	27-0	24-10	21-2	33-0	30-4	26-10
#2	1750	17	15-10	14-6	12-1	20-10	19-0	16-0	26-7	24-2	20-4	32-9	29-6	24-9
#3	1500	16	15-2	13-6	11-5	19-10	18-3	15-11	26-3	23-11	19-5	31-5	28-4	23-10
#3	870	12	12-0	10-5	8-7	15-10	13-7	11-3	20-2	17-6	14-3	24-3	21-2	17-4

MEDIUM OR HIGH SLOPED RAFTERS (IN ATTIC SPACES) SLOPE 3 IN 12 OR LESS														
Southern Yellow pine - 20lbs/FT ³														
	F _b ^a	E ^a *	2x4			2x6			2x8			2x10		
			12"	16"	24"	12"	16"	24"	12"	16"	24"	12"	16"	24"
SELECT STRUCTURAL	2150	18	11-2	10-3	9-0	17-9	16-0	14-2	23-5	21-2	18-6	30-5	27-9	23-8
#1 DENSE	2150	19	11-6	10-7	9-0	18-0	16-6	14-2	23-5	21-9	18-6	29-5	27-0	23-5
#2	1750	17	9-11	8-11	7-8	14-10	13-0	11-2	20-8	20-7	18-7	28-2	25-2	21-5
#3	1750	15	7-8	6-8	5-8	12-8	11-0	9-2	18-6	18-4	16-10	28-2	24-5	19-5
			8-1	7-1	5-9	12-4	10-0	9-0	16-8	14-8	11-10	28-2	24-5	19-5

SIZE OF STEEL ANGLE ¹ _{INCHED}	NO STORY ABOVE	ONE STORY ABOVE	TWO STORY ABOVE	NO. OF I/2 OR EQUIVALENT REINFORCING BARS ²
3 X 3 X 1/4	6'-0"	3'-6"	3'-0"	1
4 X 3 X 1/4	8'-0"	5'-0"	3'-0"	1
6 X 3-1/2 X 1/4	14'-0"	8'-0"	3'-6"	2
2-6 X 3-1/2 X 1/4	12'-0"	11'-0"	5'-0"	4

R703.7.3 Lintels Masonry veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of non-combustible materials and the allowable span shall not exceed the values set fourth in Table R703.7.3. The lintels shall have a length of bearing of not less than 4 inches (102mm).

* MODULUS OF ELASTICITY "E" IN 1,000,000 psi. OR 1.0 IS EQUAL TO 1,000,000 psi

Douglas Fir - Larch - 40lbs./Ft ² - Live Load														
	F _b	E**	2x6			2x8			2x10			2x12		
			12"	16"	24"	12"	16"	24"	12"	16"	24"	12"	16"	24"
SELECT STRUCTURAL	2050	1.8	11-2	10-2	8-10	14-8	13-4	11-8	16-9	17-4	14-2	22-3	20-9	18-1
DENSE #1	2050	1.9	11-2	10-4	8-10	14-8	13-7	11-8	16-9	17-4	14-2	22-3	20-9	18-1
DENSE #2	1850	1.7	10-0	9-0	7-10	13-8	12-7	10-7	15-7	16-4	13-1	21-0	19-6	17-6
#2	1850	1.7	10-11	9-11	8-6	14-5	13-1	11-4	16-9	16-6	14-5	22-5	20-4	17-6
#3	1450	1.5	9-2	7-11	6-7	12-3	10-7	8-8	15-7	13-9	11-0	18-1	16-4	13-5

Southern Yellow Pine - 40lbs./Ft ² - Live Load																		
	F _b	E**	2x6				2x8				2x10				2x12			
			12"	16"	24"		12"	16"	24"		12"	16"	24"		12"	16"	24"	
SELECT STRUCTURAL	2150	18	11-2	10-2	8-10	14-8	13-4	11-8	16-9	17-4	22-10	22-10	20-9	18-5				
#1 DENSE	2150	19	11-2	10-4	9-10	15-8	13-7	11-8	16-9	17-4	22-10	22-10	20-9	18-5				
#2 DENSE	1700	18	10-2	9-2	8-10	14-8	13-4	11-8	16-9	17-4	22-10	22-10	20-9	18-5				
#3	1500	16	9-2	8-9	8-9	14-8	12-10	11-3	16-9	16-9	22-10	22-10	20-9	18-5				
	875	1.5	9-4	7-11	6-8	12-4	10-9	6-9	16-9	13-5	14-4	19-13	17-7	17-5				

California Redwood - 40lbs./Ft ² - Live Load														
	F _b	E**	2x6			2x8			2x10			2x12		
			12"	16"	24"	12"	16"	24"	12"	16"	24"	12"	16"	24"
CL,HEART STRUCT.	2650	1.4	10-3	9-4	8-2	13-6	12-3	10-9	17-3	15-8	13-8	21-0	19-1	16-8
SELECT STRUCTURAL	2600	1.4	10-3	9-4	8-2	13-6	12-3	10-9	17-3	15-8	13-8	21-0	19-1	16-8
#1	2400	1.0	9-0	8-0	7-0	12-3	11-0	10-0	16-7	15-1	13-2	20-2	18-4	16-0
#2	1400	1.25	9-0	8-11	7-10	11-0	10-4	9-4	16-7	15-1	13-2	20-2	18-4	16-0
#3	800	1.1	9-0	7-10	6-5	11-9	10-3	8-5	16-7	15-1	13-2	18-2	15-10	13-2

SPAN DATA FOR GLUED LAMINATED ROOF BEAMS *

EXAMPLE: CLEAR SPAN = 20'-0"
 BEAM SPACING = 10'-0"
 DEAD LOAD 8 LBS./SQ.FT. (ROOFING AND DECKING)
 LIVE LOAD 20 LBS./SQ.FT. (SNOW)
 TOTAL LOAD LIVE LOAD + DEAD LOAD X BEAM SPACING
 = (20 + 8) X 10 = 280 LBS./LIN.FT.
 THE BEAM SIZE REQUIRED IS 3/4 X 13 1/2 WHICH SUPPORT 347 LBS./LIN.FT. OVER A SPAN OF 20'-0".

* BEAMS MAY BE DOUGLAS FIR, LARCH OR SOUTHERN YELLOW PINE.

SPAN DATA FOR GLUED LAMINATED FLOOR BEAMS

EXAMPLE: CLEAR SPAN = 20'-0"
BEAM SPACING = 10'-0"
DEAD LOAD 7 LBS./SQ.FT. (DECKING AND CARPET)
LIVE LOAD 40 LBS./SQ.FT. (FURNITURE AND OCCUPANTS)
TOTAL LOAD LIVE LOAD + DEAD LOAD X BEAM SPACING
= (40 + 7) X 10 = 470 LBS./LIN.FT.
THE BEAM SIZE REQUIRED IS 5 1/4 X 15 WHICH SUPPORT 508 LBS./LIN/ FT. OVER A SPAN OF 20'-0".

* BEAMS MAY BE DOUGLAS FIR, LARCH OR SOUTHERN YELLOW PINE.

In case of conflict between the General Notes below and the specifications the more rigid requirement shall govern unless amended in writing by the Engineer.

Design Codes - (All latest editions unless noted)

- American Concrete Institute (ACI)
- American Institute of Steel Construction (AISC)
- American Welding Society (AWS)
- Southern Standard Building Code (SSBC)
- American National Standards Institute, Inc. (ANSI A581.1-1982)

Minimum Design Loads for Buildings and Other Structures

2. Material Specifications and Design Stresses

- Anchor Bolts and Embedded Steel.....F_y = 36,000 psi (ASTM A36)
- Structural Steel UN0.....F_y = 36,000 psi (ASTM A36)
- Cast-in-place Concrete
- Footings.....F_c = 3,000 psi at 28-days.
- Inferior slabs-on-grade.....f_c = 3,000 psi at 28-days.
- Ext. exposed concrete lair entrained.....F_c = 4,000 psi at 28-days.
- Reinforcing Steel
- #2 and #3 bar 3 only.....F_y = 40,000 psi (ASTM A615, Grade 40)
- #4 and larger bars.....F_y = 60,000 psi (ASTM A615, Grade 60)

3. Design Soil Bearing Pressures

- Reference Soil and Foundation Investigation by Grubbs, Garner, & Hoskyn, Inc. Consulting Engineers, Little Rock, AR.
- Footings on natural soils are designed for a maximum soil bearing pressure of 2,000 psf.
- All concrete foundations are designed for a maximum soil bearing pressure of 2,000 psf.
- If the soil at the footing bearing elevations shown is of questionable bearing value, the Engineer or Architect shall be notified immediately.
- After footing excavations are completed and before placing concrete, the excavated area shall be inspected and approved by the Owner selected independent testing laboratory as specified.

1. All columns shall be centered on grid lines unless noted otherwise.
2. All column footings shall be centered on columns unless noted otherwise.
3. All wall footings shall be centered on walls unless noted otherwise.
4. For concrete reinforcing at corners, see typical corner bar detail.
5. For slab-on-grade construction joint detail, see typical slab-on-grade detail.
6. For exterior concrete slabs, the surface shall be finished to exhibit a liquid trowel finish. The surface shall be placed in loose lifts not to exceed 8" and compacted to a density of not less than 95% of Modified Proctor Maximum Dry Density (ASTM D-1557) at or slightly wet of optimum moisture content. In place moisture and density of each lift shall be determined by in-place testing before placing additional lift.
7. Where noted C/J, on plan, provide Keyed Joint in floor slab.
8. A 6-mil polyethylene film vapor barrier shall be placed below all interior slabs-on-grade.
9. Prepare 4"-6" deep medium to coarse sand or gravel compacted drainage fill below all interior slabs-on-grade.

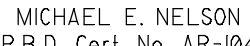
1. Arrangement and bending of reinforcing steel shall be in accordance with ACI detailing manual, latest edition.
2. Reinforcing steel shall be new and all bars over #2 shall be deformed.
3. Where reinforcing bars are shown continuous, lap bars 36-bar diameters or 24-bar diameters at tension or compression splices respectively (12", minimum).
4. Concrete shall be placed in proper position, free of dirt, mud, etc., for supporting reinforcing steel in the proper position while placing concrete.
5. Concrete protective covering for reinforcement at surfaces not exposed directly to the ground shall be 1" for bars #5 and smaller, and 2" for beam stirrups and column ties or spirals.
6. Concrete protective covering for reinforcement at surfaces which will be exposed to the ground and in contact with the ground shall be 2" for bars larger than #5 and 1-1/2" for #5 bars or smaller. Provide 3" cover below and at ends of footing bars.
7. Accurate sizes of openings, sleeve, etc., required for other trades must be verified by these trades before concrete is placed.

1. Place vertical reinforcing bars at corners, joints of openings, below beam bearing, and in walls as indicated on the drawings.
2. Develop vertical reinforcing bars out of the structure below with bars of the same size and spacing above.
3. Lap splice bars in masonry 40 bar diameters.
4. Place horizontal bars in 8" deep concrete above top of wall.
5. Continue band beam units and reinforcing uninterrupted around corners and across wall intersections.
6. Metal masonry course reinforcing shall be truss type conforming to ASTM A82, not less than 1/4" thick, welded at exterior wall. Furnish masonry with prefabricated corners and tees. Reinforcing shall be used in all partitions, spaced 16" o.c., vertically, joints lapped 6".
7. Place reinforcing in first bed joint above and below all concrete slabs and wall openings. Reinforcing in concrete shall conform to ASTM A618, Grade 60, with a minimum average compressive strength on net area of 1,000 psi and minimum net area compressive strength of individual units shall be 1,500 psi.
8. Mortar shall be Type N conforming to ASTM C129, Type I.
9. Mortar shall be Type N conforming to property or protection requirements of ASTM C476.
10. All masonry fill concrete shall have a minimum strength at 28-days $f'c = 3,000$ psi.
11. All masonry aggregate shall be 3/8" and shall be placed in maximum lifts of 4'-0" deep.
12. All steel reinforcement shall conform to ASTM A618, Type I, Grade 60.

ABBREV.	DESCRIPTION	ABBREV.	DESCRIPTION
•	ARCH. - architectural	•	PAN. - pantry
•	B.F. - bi-fold doors	•	P.D. - pocket door
•	BRD. - board	•	PR. - pair
•	C.D.X. - C B D grade exterior plywood	•	P.T. - pressure treated
•	COL. - column	•	P.W. - plywood
•	CLG. or CLQS. - closet	•	R6. - range
•	CLNG. - ceiling	•	RD. - rod or round
•	C.O. - cased opening	•	REF. - refrigerator
•	C.M.U. - concrete masonry unit (concrete block)	•	RFG. - roofing
•	COMP. - composition	•	RND. - round
•	C.T. - cook-top	•	SH. - shelf
•	D. - dryer	•	SHLV. - shelves
•	DIA. - diameter	•	SHT. - sheet
•	DWG. - drawing	•	SQ. - square
•	DW. - dishwasher	•	S4S - surfaced four sides (rectangular wood trim)
•	DN. - down	•	S.F. or SQ.F.T. - square foot
•	EXT. - exterior	•	SEC. or SECT. - section
•	FTG. - footing	•	SHWR. - shower
•	FT. - foot	•	SKL. - skylight
•	FZR. - freezer	•	SL. - sliding
•	GAL.V. - galvanized	•	T.C. - trash compactor
•	GYP. BD. - gypsum wallboard	•	TRM. - trim
•	HVAC - heating, ventilation and air conditioning	•	TRFD. - treated
•	H.B. - hose bibb	•	THK - thick
•	H.D. - heavy duty	•	T66 - tongue and groove
•	H.W. - hot water	•	W. - washer
•	I.B. - ironing board	•	W.H. - water heater
•	I.C. - ice maker	•	WHP. - whirlpool
•	INSUL. - insulation	•	WP. - waterproof
•	M.C. - medicine cabinet	•	W/ - with
•	M.U. - make-up		
•	M.W. - microwave		
•	N.I.C. - not in contract		
•	N.T.S. - not to scale		
•	O.C. - on center		

1. MICHAEL E. NELSON DESIGNERS, LLC or Michael E. Nelson shall have no liability for any HOME constructed from this plan. Release of these plans contemplates further cooperation among the owner, his contractor and the designer. Design and construction are complex. Although the designer and his consultants performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect and every contingency cannot be anticipated. Any ambiguity or discrepancy in the drawings shall be resolved in favor of the designer. The designer shall not be responsible for the designer's misreading or misunderstanding and increases construction costs. A failure to cooperate by a simple notice to the designer shall relieve the designer from responsibility for all consequences. Changes made from the plans without the consent of the designer are unauthorized and shall relieve the designer of responsibility for all consequences arising out of such changes. Only qualified persons shall be permitted to alter or modify the drawings. The owner is authorized to modify the drawings for design. Written dimensions on these drawings shall have precedence over scaled dimensions. Contractors shall verify, and be responsible for all dimensions and conditions on the job. This office must be notified of any variations from the dimensions and conditions shown by these drawings. Shop details must be submitted to this office for approval before proceeding with fabrication or construction.

or any HOME constructed from the date of the design and the designer. Design and construction shall be carried out with due care and diligence, they cannot be held responsible for any ambiguity or discrepancy in the design. The designer is free to notify the designer compounds of any changes. The designer shall relieve the designer of any liability for the consent of the designer are unauthorised. The designer shall be of such changes. Only qualified



REVISIONS	BY
	24x36

LEGENDS / GENERAL NOTES

MEN
DESIGNS

By *Michael E. Nelson*

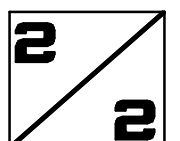
A Signature Series of Home Plans

DATE
SCALE 1/4" = 1'-
BUILDER
JOB
DRAWN BY

1
2

REVISIONS	BY
	24x36

DATE	
SCALE	1/4" = 1'-0"
BUILDER	
JOB	
DRAWN BY	



WOOD

I. Materials:

- Sawn lumber.
- Sawn lumber calculations are based on Douglas Fir Larch, except as shown otherwise on Drawings, graded in accordance with Standard Grading Rules of WHPA or Rule No. 16 of WCLB, as follows:
 - Light Framing No. 2 and better
 - Studs No. 2 and better (Light Framing)
 - Joists and Planks No. 1 and better
 - Beams and Stringers Dense No. 1 and better
 - Posts and Timbers Dense No. 1 and better

- All 2" lumber shall be seasoned to 19% maximum moisture content.
- All wood in contact with concrete, masonry, or soil shall be pressure treated per UBC Standard 25.12.
- Glued laminated members shall be Douglas Fir Larch or equal, conforming with the AITC 117-82 and PS 56-73 fabricated with wet use adhesive.

- Grade combination "22F" unless otherwise specified on Drawings.
- All plywood shall be identified by grade mark of an approved inspection agency and shall be Standard C, D, Flat Interior with ext. glue unless otherwise specified on Drawings.
- Light timber decking shall be constructed with 2" tongue and groove plank commercial decking grade marked by an approved inspection agency. Decking shall be laid in accordance with Section 2517 (b.3) UBC [Joists in such planking may be randomly spaced, provided the system is applied to not less than three continuous spans, planks are center matched, each plank bears join at least one support and joints are separated by at least 2-4 inches in adjacent pieces.]
- Connections:
 - Nailing: Minimum nailing requirements for standard connections unless specifically shown of noted otherwise. Automatic nailing of stapling devices shall not be used without prior approval of method and fasteners by Owner.

Item	No. or o/c of Nails	Size of Nail or Common
Toe nail to plates, sill or girder	3	8d
To parallel alternate joists	3	16d
At laps overbearing, face nail	3	16d
Studs		
End nail to plates	2	16d
Or toe nail to ea. side	4	8d
Top Plates		
Spike together	16	a/c
Laps & intersections, face nail	2	16d
Blocking		
To plate	2	16d
or toe nail	4	8d
To joist each side	2	16d
or toe nail	4	8d
Bridging		
Toe nail to joists, each end	2	8d
Studs		
Corner, angle, or multiply	24	a/c
2"x laminated beams or lintels	16	a/c
Spike together	16	a/c
Double joists or headers	16	a/c
Spike together, along ea. edge	16	a/c
Plywood sheathing and sub floor nailing		
At edges of each sheet	3/8" thk. 1/2" x 5/8" thk. 1/2" x 5/8" thk.	8d 6'o/c max. 6'o/c max.

At interior of each sheet space nails 10'o/c for 3/8" and 1/2" thick plywood 10'o/c for 5/8" B. Sheathing shall be nailed as follows, except where shown otherwise:

- Roof plywood: 8d common at 6' o/c at all supported edges and at 12' o/c at interior supports.
- Floor plywood: 8d common at 6' o/c at all supported edges and at 10' o/c at interior supports.
- Wall plywood sheathing direct to framing: 10d common at 6' o/c all panel edges and at 10' o/c at all interior studs.
- Anchor all studs at door openings, ends, and corners of walls which are sheathed with plywood and/or gypsum board to bottom plate with 2 Simpson x 35 framing anchors.
- All manufactured connection hardware shall be as designated on Drawings and installed and full nailed in conformance to manufacturer's instructions and applicable ICBO approval.
- All steel connection assemblies detailed on Drawings shall be fabricated from ASTM A36 steel in conformance with applicable requirements of AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings." Welding shall conform to AWS D11.
- Install lag screws in drilled lead holes with a diameter equal to 3/4 of the shank diameter (lag screws shall not be hammered in). Max of soap lag screws. Provide washers under heads bearing on wood. Holes shall be properly aligned.
- Bolt holes shall be drilled 1/16" larger than bolt diameter. Provide washers under all bolt heads and nuts bearing on wood. Holes shall be properly aligned.

In no case shall misalignment be allowed which prevents proper bearing or alignment of members. Oversize holes shall not be allowed. Bolts shall be A307 bolts. Nuts shall be tightened snug.

- Installation:
 - All stud walls shown on Structural Drawings shall have 2 x4 studs placed at 16'o/c, except where shown otherwise.
 - Top plates shall be doubled on all stud walls.
 - Cripples under headers shall be continuous to sole plate.
 - Block all stud walls as required for sheathing.
 - Blocking 2" wide of equal depth of the members shall be provided between all joists and rafters at their supports, unless members are nailed to a rim joist.
 - Beams, girders, and joists supporting bearing walls or other concentrated loads shall not be notched. Joists, except as above may be notched no deeper than 1/4 the depth, at top edge only, provided such notches located within 1/8 to 1/4 of span from face of support. Sockets for notches shall not be located within center half of the span. All holes shall be centered within depth of member.
 - Holes and notches in studs shall not exceed 1" in diameter or depth. Studs on exterior walls shall not be notched.
 - Joists, rafters, and decking shall not be cut and headed or displaced to provide for openings in roofs or floors, except as detailed on Drawings.
 - Install all horizontal members with crown up.
 - All members in bearing shall be accurately cut and aligned so that full bearing is provided without the use of shims. Bearing posts shall have full blocking of support under.
 - All rafters shall be notched for full bearing at all supports.
 - All joists shall have a minimum of 2" bearing at supports.
 - Lapping joists shall have 6" laps centered over interior supports.
 - Ledgers and stud wall foundation sill plates shall be bolted to concrete with anchor bolts of size and minimum spacing as shown on Drawings. At least two bolts shall be provided for each piece with one bolt within 12" of each end.

M. All plywood wall sheathing shall be applied as follows: Center vertical joints over studs and center horizontal joints over 2" blocking or plate. Nail top of panels to double top plate, and nail bottom of panels to anchored sill plate. Apply gypsum board so that end joints of adjacent courses do not occur over the same stud.

Plywood sub floor and roof sheathing: Install with face grain at right angles to supports, continuous over two (2) or more spans. Allow minimum space 1/16 inch between and joists and 1/8 inch at edge joists for expansion and contraction of panels.

GENERAL

- CODES: The Uniform building Code, latest edition, of the International Conference of Building Officials, with possible modifications by local code administration, shall govern where not otherwise qualified in the Specification.
- Site Work: Includes all demolition, site clearing, excavation, filling, grading drainage, and related items necessary to complete the work indicated on Drawings.
- In the event of conflict between pertinent codes and regulations and referenced standards of these Specifications, the more stringent provisions shall govern.
- Structural Specifications and Drawings for this work have been prepared in accordance with generally accepted engineering practice to meet minimum requirements of the latest edition of the Southern Building Code.
- Specifications and Drawings indicate finished structure. Builder shall be responsible for construction methods, procedures, and conditions (including safety), except as specifically indicated otherwise in the contract documents.
- Construction loads shall not overload structure nor shall they be in excess of design loadings indicated on drawings.
- Builders shall verify all materials, dimensions, and conditions shown on Structural or noted in Structural Specifications. Any variances within Structural Drawings and Specification, or with conditions encountered at the job site, shall be reported to Owner in writing before commencement of any work effected by such variances.
- Builder shall rigidly adhere to all laws, codes, and ordinances which apply to this work. We shall notify and receive clarification from owner in writing of any variations between contract documents and governing regulations.
- All manufactured materials, components, fasteners, assemblies, etc. shall be handled and installed in accordance with manufacturer's instructions and provisions of applicable ICBO Research Recommendations. Where specific manufactured products are called for, generic equals which meet applicable standards and specifications may be used.
- No variance by a Building Official shall be binding on Designers.
- Builder shall investigate site during clearing and earthwork operations for filling excavations or buried structures such as cess pools, cisterns, foundations, etc. If any such items are found, Owner shall be notified immediately.
- Backfill shall not be placed against basement retaining walls until:
 - Concrete or masonry grout has reached its specified 28 day strength.
 - And, structural floor framing (including plywood subfloor) required to stabilize walls is complete and fully nailed and anchored.
- Foundation walls of habitable rooms located below grade shall be waterproofed with membranes extending from the edge of the footing to the finished grade line. The membrane shall consist of either 2-ply hotmopped felts, 6-mil polyvinyl chloride, 55-pound roll roofing or equivalent material. The laps in the waterproof membrane shall be sealed and firmly affixed to the wall.

FOUNDATIONS

- General:
 - Footing thicknesses shown on Drawings are minimum.
 - Footings may be poured neat against sides of excavations only if approved by owner.
 - Builder shall be responsible for support of all temporary embankments and excavations.
- Backfill:
 - Backfill shall be placed in 6 inch maximum lifts and compacted to minimum density of 90% (under slabs on grade) and 90% (elsewhere) of maximum density of optimum moisture content as determined by AASHTO Standard T99.
 - Backfill shall consist of non expansive, free draining, predominantly granular material, free of debris and organic material.
 - Footings:
 - Footings are sized for a minimum total load bearing pressure of 3000 psf. (1-STORY) 3500 psf (2-STORY) except as noted.
 - Footings shall be placed at a depth to conform to local shown otherwise on Drawings or codes.
 - Final 3" of excavation shall be removed by hand tool operations in order to assure undisturbed bearing surface.
 - Footings shall be founded on firm, undisturbed, native, free draining soils. Conditions found to be otherwise shall be reported to Owner.
 - Bottom surface of footings shall not slope more than 1:8 vertical to 10:0 horizontal, except as shown on Drawings.
 - No excavation shall be made lower and closer to any footings than 1:8 vertical to 3:0 horizontal, except as shown on Drawings.
 - All ground over which footings and slab on grade are to be placed shall be free of expansive or compressible debris and organic materials.
 - Footings and slab on grade concrete shall not be placed on muddy or frozen ground. Sub grade for slab where vapor barrier is not required shall be damp at time of concrete placement.

CONCRETE

- Concrete construction shall conform to "Specifications for Structural Concrete for Buildings" (ACI 301), Recommended Practice for Concrete Formwork (ACI 347), Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete (ACI 304).
- Concrete shall have minimum 28 day field cured compressive strength of 3000 psi (f'c = 3000 psi), (1-STORY) unless otherwise specified. 3500 psi (f'c = 3500 psi), (2-STORY) unless otherwise specified.
- Use air entraining admixture in all concrete, provided not less than 4% nor more than 8% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete.
- Admixture containing chloride salts shall not be used.
- Materials for Concrete: 1. Portland Cement ASTM C150, Type as required. 2. Aggregates ASTM C 33. 3. Water portable, clean, free of oils, acids, alkali, and organic matter. 4. Air Entraining Admixture ASTM C 260. 5. Water Reducing Admixture ASTM C 494. Type as required.
- Membrane Forming Curing Compounds: ASTM C 309.
- Form Materials:
 - Exposed concrete Surfaces: Panel type to provide continuous straight, smooth finish. Use largest practical sizes to minimize form joints.
 - Unexposed Concrete Surfaces: Suitable materials, dressed on at least 2 edges and one side for tight fit.
- Concrete shall be of "Ready Mixed Concrete" and shall conform to ASTM C 94. Mix alternate No. 2.
- At time of placement, concrete shall have a slump of 4" maximum (per ASTM C431).
- All concrete shall be thoroughly consolidated during placement using a mechanical vibrator.
- Concrete when placed shall have a temperature between 50 degrees and 70 degrees F. Temperature of concrete during mixing of transportation shall never be lower than 40 degrees F. nor higher than 90 degrees F.
- During cold weather (ambient temperatures below 40 degrees F.) Builder shall maintain concrete at a minimum temperature of 50 degrees F. for 3 days and above 32 degrees F. for 14 days following its placement. Follow ACI 306R recommendations for cold weather concreting.
- During hot weather (ambient temperature above 80 degrees F.) Builders shall follow recommendations for hot weather concreting as described in ACI 305 R as required to minimize temperature and shrinkage cracking of concrete.

- Concrete shall be conveyed and deposited in accordance with recommendations of ACI 403.
- Membranes curing compound shall be provided on all horizontal slab surfaces. Curing compound shall conform to ASTM C309, and shall be applied in accordance with manufacturer's printed instructions.

- Except where detailed on Structural Drawings, reinforcement shall not be displaced or cut to provide clearance for penetrations, conduits, or embedments.
- Design, fabrication, installation, and removal of concrete formwork is solely the responsibility of Builder.
- Anchor bolts cast in concrete shall conform to ASTM A307.
- Concrete Placement: Comply with ACI 304, Placing Concrete, and ACI 304.2R Placing Concrete by Pumping Method.

MASONRY

- Masonry Units:
 - All hollow concrete units shall be at least 7 5/8" x 7 5/8" x15 5/8" and shall provide minimum unobstructed vertical cores with a least dimension of 3 1/2" when laid up in running bond, unless otherwise specified on Drawings.
 - Moisture content of hollow concrete units per ASTM C90 at time of laying shall not exceed 30% of total absorption.
- Mortar:
 - Mortar shall conform to UBC Type "S" ASTM C476 8 ASTM C91.
 - Mortar shall be retentempered as required to keep it plastic, shall be used within 1 hour of initial mixing, and shall not be allowed to stand for longer than 1/2 hour without remixing. Minimum 1600 psi.
- Grout:
 - Grout shall be proportioned in conformance with ASTM C476, except as otherwise specified. Maximum size aggregate shall be 3/8".
 - Grout shall have an average 28 day ultimate compressive strength of 3000 psi.
 - Grout shall be mixed with sufficient water to be properly placed in cells without segregation.
 - Mortar shall not be used for, of, in the grout.
 - No line shall be allowed in grout.
 - Grout shall be mixed in a mechanical mixer for at least 5 minutes after all water to be used has been added. Ready mixed grout shall conform to all applicable specifications of ASTM C 94. No water shall be added to ready mix grout after its discharge from mixer.

- Specified 28 day compressive strength as determined by prism tests shall be 1350 psi (f'm=1350 psi).
- Proper units shall be used to provide for all windows, doors, bond beams, lintels, pilasters, etc. With a minimum of cutting.
- All masonry units shall be clean and sound when laid up. Hollow concrete units shall be dry when laid up. Stone and brick units shall be saturated surface dry when laid up.
- Lay masonry in running bond except as designed otherwise on Drawings. Provide masonry bonds at all corners and intersections.
- Grout all cells containing reinforcement, bolts, or indicated as grouted on Drawings. Wood, paper, or cardboard shall not be used as grout dams.
- Cells not filled with grout shall be filled with vermiculite poured insulation material. All cells shall receive fill.
- Masonry shall be layered up and grouted in lifts not exceeding 4' 0". Vertical grout pours shall be stopped 1/12" below the top of the top most unit. Each bond beam shall be grouted with lift below.
- All beams and lintels shall be grouted such that horizontal grout travel is limited to two feet.
- All grout shall be thoroughly consolidated, and reconsolidated, using a mechanical masonry vibrator.
- Masonry shall not be laid up or grouted when ambient temperature is below 40 degrees F. or above 90 degrees F. Masonry shall be protected from freezing temperatures for at least 14 days after laying. When ambient temperatures exceed 90 degrees F., units that have previously been laid up shall be given a very fine, light fog spray of water every four hours until 48 hours have elapsed since laid up.

MILD STEEL REINFORCEMENTS FOR CONCRETE AND MASONRY

- Mild steel reinforcement for concrete and masonry construction shall be manufactured, detailed, fabricated, and placed in accordance with:
 - "Building Code Requirements for Reinforced Concrete" (ACI 308R) and "Manual of Standard Practices for Detailing Reinforced Concrete Structures" (ACI 308R, ACI SP 66) and shall be deformed steel bars conforming to ASTM A615, Grade 4C.
- Ties, stirrups, and hoops shall conform to ASTM A615, Grade 4C.

- Reinforcement shall not be bent in the field unless all of the following provisions are met:
 - The bars are of size #6 and smaller.
 - ASTM A615, Grade 40 bars are provided.
 - Welded wire fabric shall conform to ASTM A 185, in as long lengths as practicable.
- Splices:
 - Reinforcement in concrete and masonry shall have A. Reinforcement in concrete and masonry shall have lap lengths as follows, unless otherwise specified on Drawings.

Bar Size	Length in Concrete	Length in Masonry
#3	1' 6"	2' 0"
#4	2' 0"	2' 6"
#5	2' 6"	3' 3"
#6	3' 4"	3' 9"

- Welded wire fabrics shall be lapped one grid width plus 2" reinforcement shall be bent cold.
- Reinforcement shall not be welded.

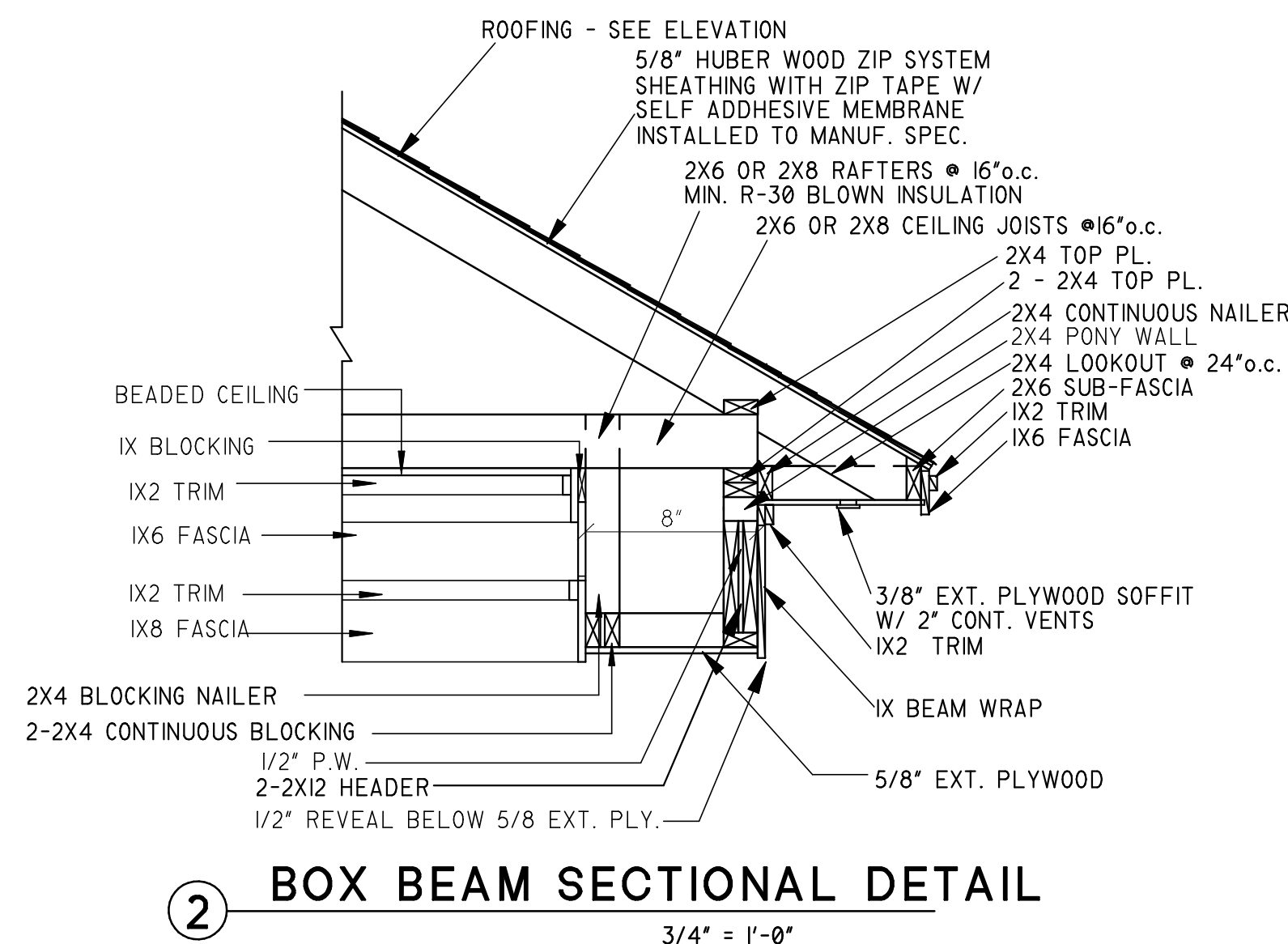
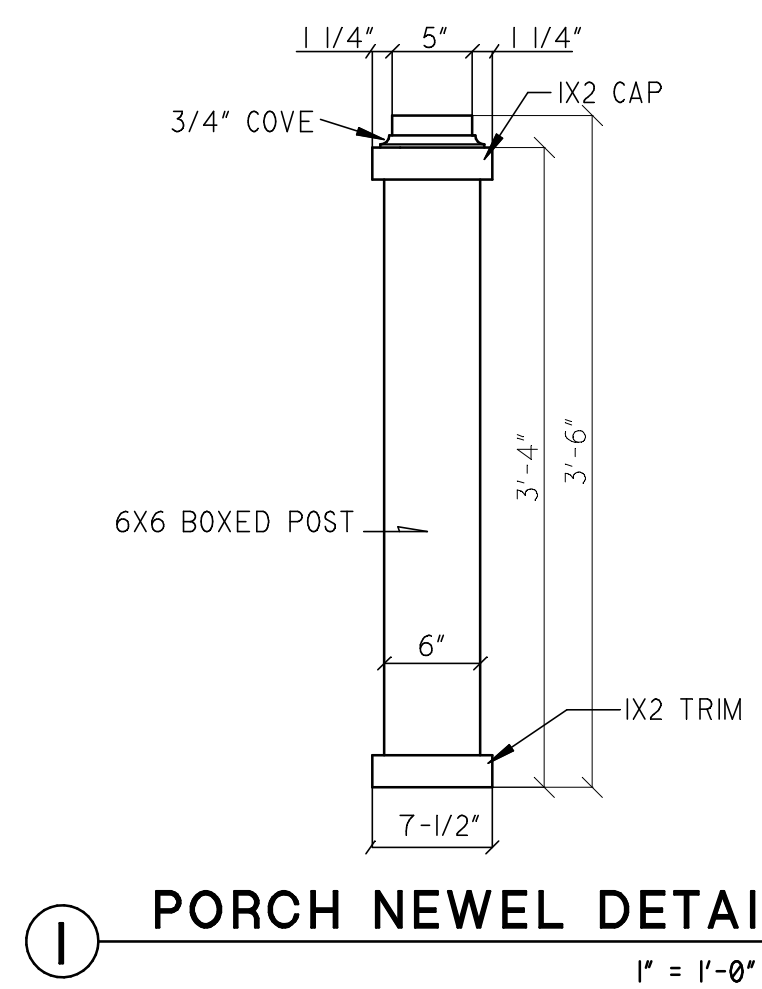
- Placement:
 - Reinforcement shall be accurately placed and adequately supported by concrete, metal, or other approved chairs, spacers, or ties, and secured against displacement during concrete or grout placement. Tack welding not allowed.
 - Except where shown otherwise on Structural Drawings, reinforcement in concrete cover as follows:
 - Concrete deposited against earth.....3"
 - Formed concrete against earth.....2"
 - Exterior faces of walls.....3/4"
 - Interior faces of walls.....3/4"
 - To top of slabs on grade.....3/4"

NOTICE DUTY OF COOPERATION

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Preparation of these plans is my own, and the entire credit of the Designer is assumed.



NOTE:
FASCIA MATERIAL W/ OPT. METAL WRAP TO MATCH
SECTIONAL DETAILS. VERIFY W/ BUILDER

1- HVAC TO BE IN ATTIC. VERIFY W/ BUILDER.
2- UPPER FLOOR CEILING HEIGHTS TO BE 8'-0" UNLESS NOTED.
3- UPPER FLOOR JOIST TO BE 16-1/2" OPEN WEB FLOOR TRUSSES @ 16' O.C. W/ 3/4" T&G ADVANTECH FLOOR GLUED & SCREWED.
SEE TRUSS MANUF. FOR FLOOR TRUSS LAYOUTS.
ALL OPEN WEB FLOOR TRUSSES TO BE DESIGNED & ENGINEERED BY TRUSS MANUF. TRUSS MANUF. WILL PROVIDE TRUSS LAYOUT BASED ON ENGINEERING.
4- TRUSS MANUF. TO PROVIDE TRUSS W/ CHAMFERED END ON SELECTED UNITS TO ALLOW FOR EXT. WALL SUPPORT & RAFTER CLEARANCE.
4- HVAC 8' W.H. TO BE IN ATTIC UNLESS OTHERWISE NOTED.

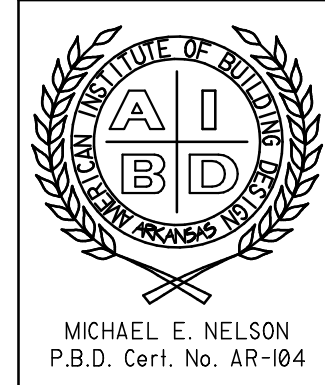
18. ALL BATH AND TOILET AREA WALLS AND CEILINGS SHALL HAVE WATER RESISTANT GYPSUM BOARD.

HEAT/COOLED MAIN FLOOR:	769 SQ. FT.
HEAT/COOLED UPPER:	576 SQ. FT.
HEAT/COOLED TOTAL:	1,345 SQ. FT.
PORCH:	128 SQ. FT.
TOTAL:	1,378 SQ. FT.

- 1- MAIN FLOOR CEILINGS TO BE 8" UNLESS NOTED.
- 2- UPPER FLOOR CEILINGS TO BE 8" UNLESS NOTED.
- 3- BUILDER TO APPROVE & VERIFY ALL PLANS BEFORE CONSTRUCTION.
- 4- VERIFY ALL PLANS W/ LOCAL BUILDING CODES.
- 5- HVAC C.W.H. TO BE IN ATTIC UNLESS OTHERWISE NOTED.
- 6- PROVIDE SHUT-OFF VALVE FOR ALL GAS APPLIANCES. REFERENCE IRC SECTION 62419
- 7- ALL GLASS LOCATED WITHIN 18" OF FLOOR, 24" OF A DOOR OR LOCATED WITHIN 60" OF FLOOR AT BATH TUBS, WHIRL POOLS, SHOWERS, SAUNAS, STEAM ROOMS OR HOT TUBS SHALL BE TEMPERED TO COMPLY WITH IRC SECTION R308.4.8
- 8- ALL EXTERIOR WALLS TO BE OF 2X6 CONSTRUCTION WITH STUDS @ 16" O.C.

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Written dimensions on these drawings shall have precedence over dimensioned dimensions; conflicts shall be resolved as follows: written dimensions over dimensioned dimensions. Dimensions shown on drawings shall be used unless otherwise noted. All dimensions are given in feet and inches. Dimensions and conditions shown by these drawings. Shop details must be submitted to this office for approval before proceeding with fabrication or construction.



MAIN AND UPPER FLOOR PLAN / NOTES / 2X6 EXT. WALLS

MEN5424

OTTER CREEK COTTAGE

MEN *By Michael E. Nelson*
DESIGNS A Signature Series of Home Plans

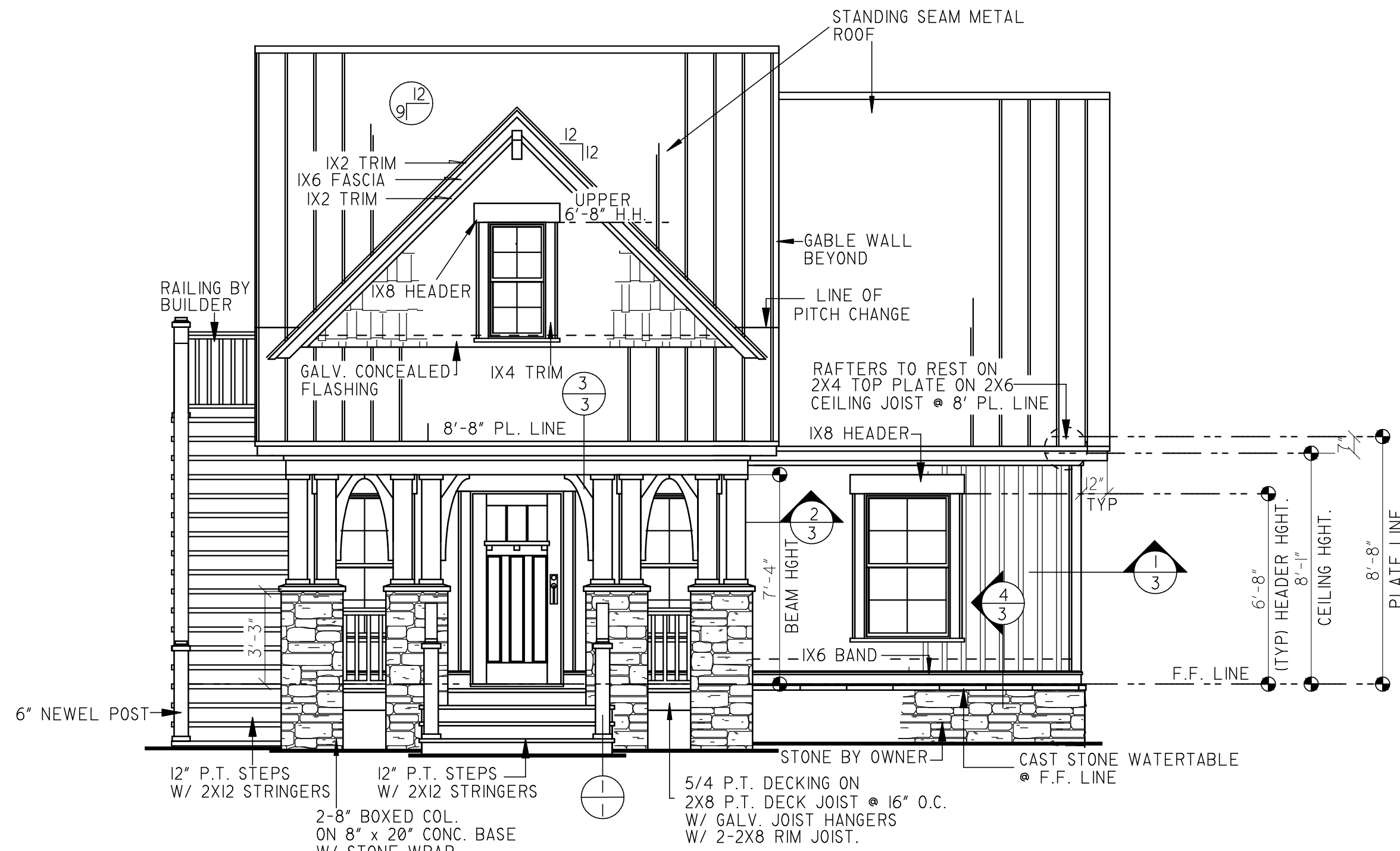
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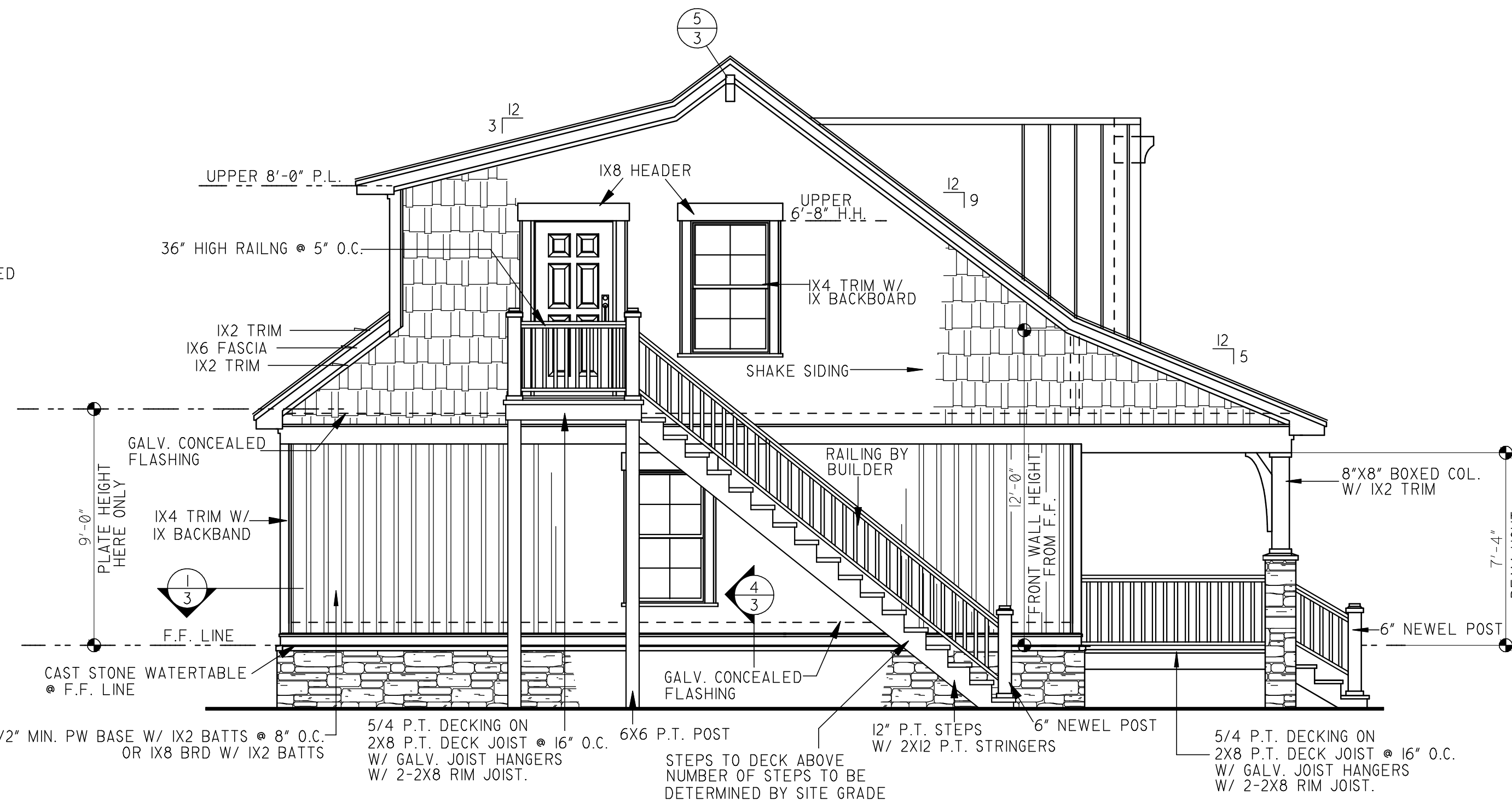
DATE	5/18/2023
SCALE	1/4" = 1'-0"
BUILDER	
JOB	MEN5424
DRAWN BY	CH

ELEVATION NOTES:

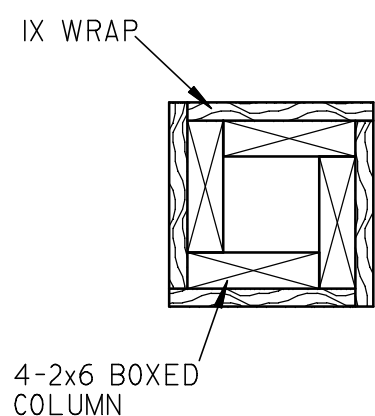
1. GUTTERS AND DOWNSPOUTS ARE NOT SHOWN FOR CLARITY. DOWNSPOUTS SHALL BE LOCATED TOWARDS THE FRONT AND REAR OF THE HOUSE. LOCATE DOWNSPOUTS IN NON-VISUALLY OFFENSIVE LOCATIONS, FOR EXAMPLE, FRONT WALL OF HOUSE, BESIDE PORCH COLUMNS, ETC. GENERAL CONTRACTOR SHALL VERIFY EXISTING GRADES AND COORDINATE ANY NECESSARY ADJUSTMENTS TO HOUSE WITH OWNER.
2. PLUMBING AND HVAC VENTS SHALL BE GROUPED IN ATTIC TO LIMIT ROOF PENETRATIONS AND TO BE LOCATED AWAY FROM PUBLIC VIEW, I.E. AT THE REAR OF THE HOUSE AND SHALL BE PRIMED AND PAINTED TO MATCH ROOF COLOR.
3. PROVIDE ATTIC VENTILATION PER LOCAL CODE REQUIREMENTS.
4. EXTERIOR FLASHING SHALL BE CORRECTLY INSTALLED AT ALL CONNECTIONS BETWEEN ROOFS, WALLS, CHIMNEYS, PROJECTIONS AND PENETRATIONS AS REQUIRED BY APPROVED CONSTRUCTION PRACTICES.
5. CONTRACTOR SHALL PROVIDE ADEQUATE ATTIC VENTILATIONS / ROOF VENTS PER LOCAL GOVERNING CODE. INSTALL CONTINUOUS RIDGE VENTILATION AND PAINT TO MATCH ROOF. PROVIDE APPROPRIATE SOFFIT VENTILATION AT OVERHANGS.



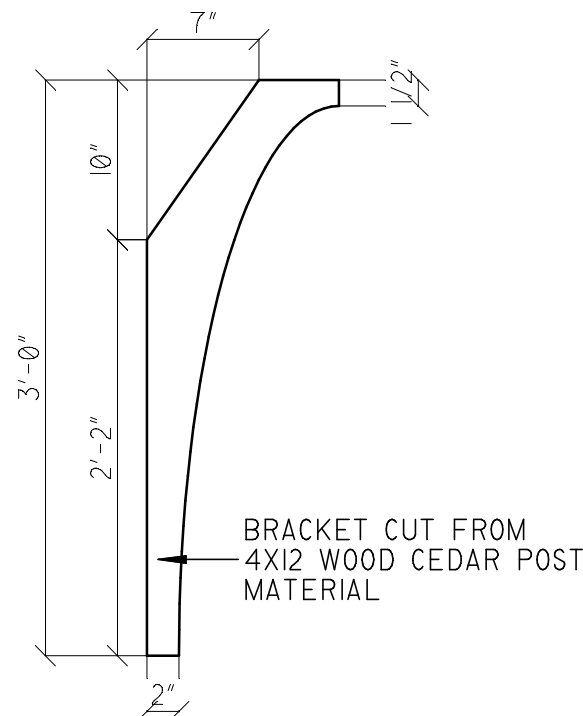
FRONT ELEVATION



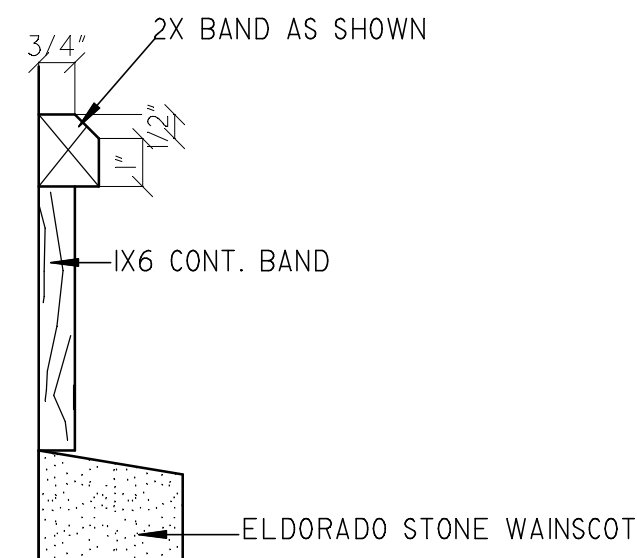
LEFT ELEVATION



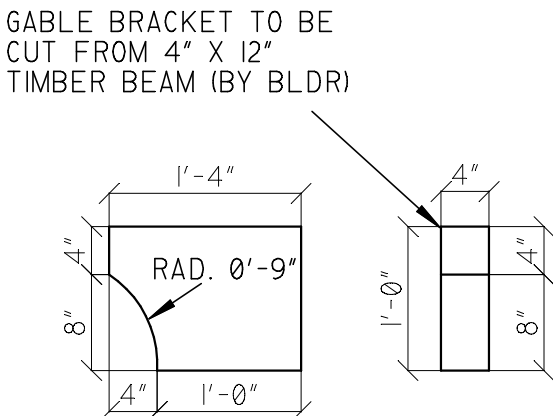
8X8 BOXED COLUMN DETAIL
1 1/2" = 1'-0"



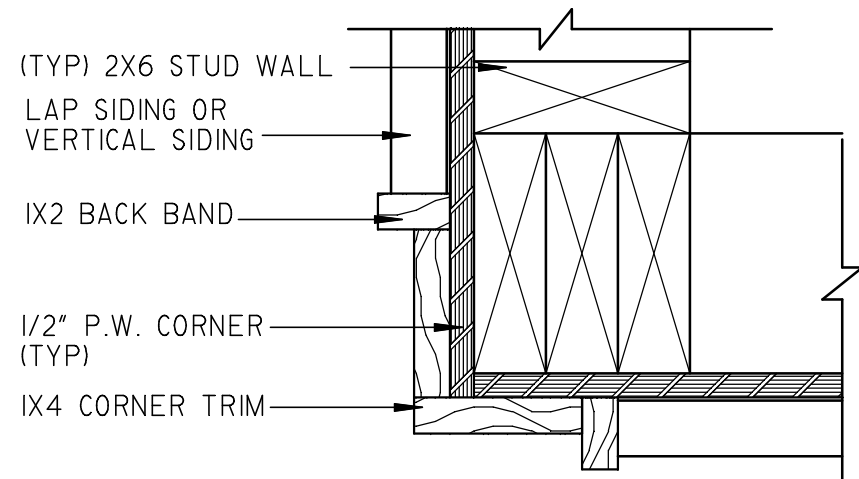
36\"/>



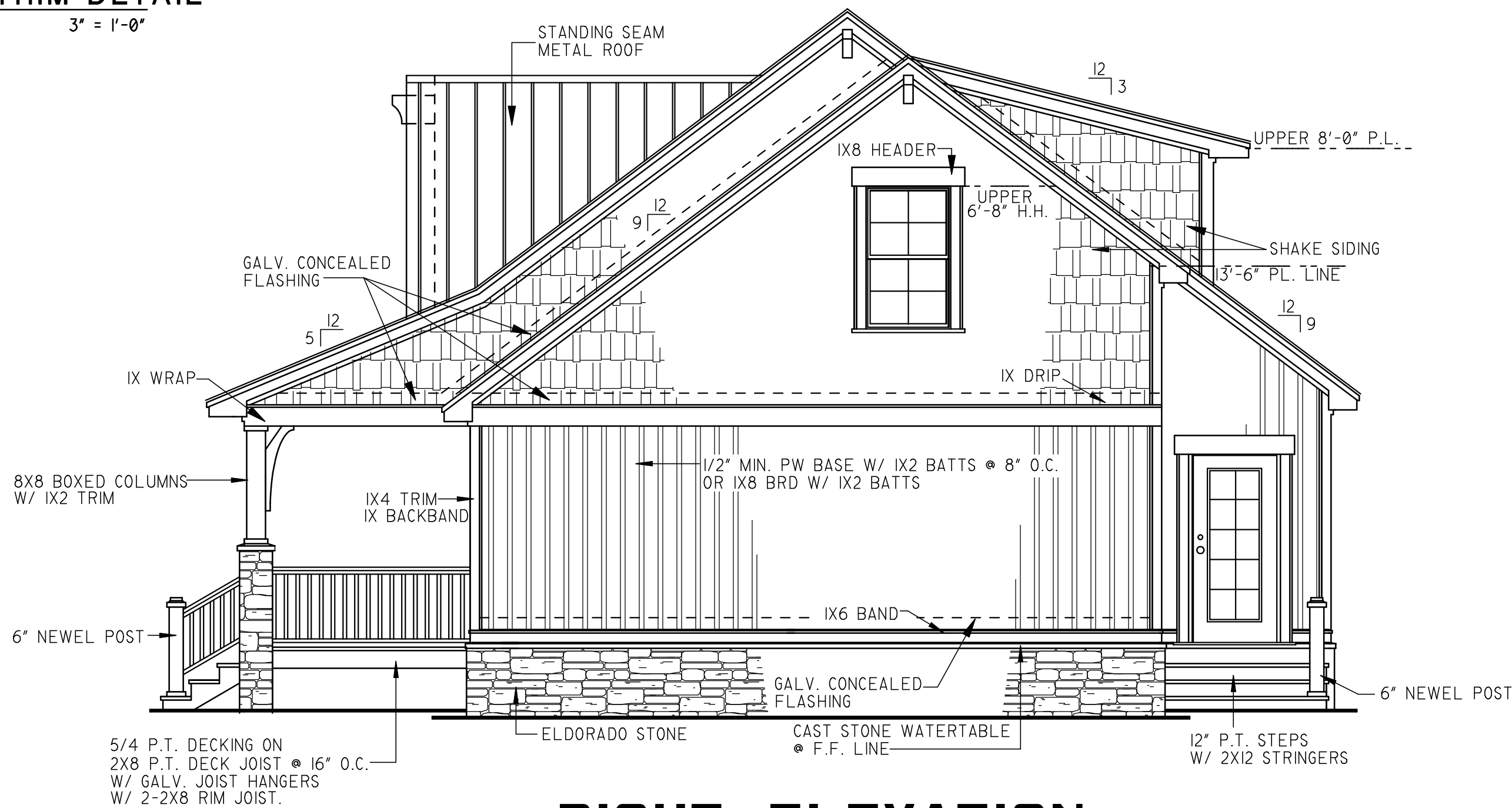
TRIM BOARD DETAIL
3\"/>



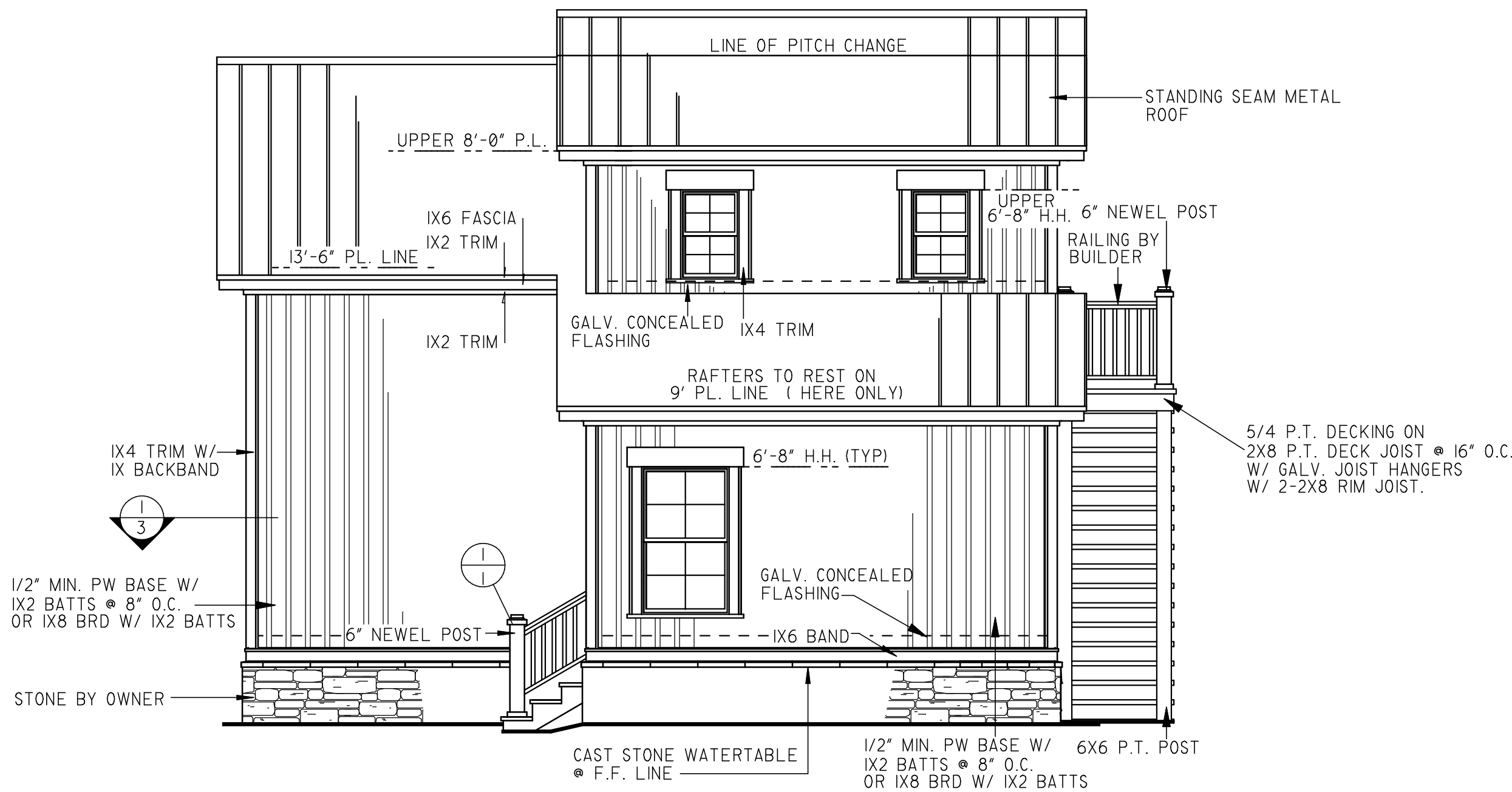
TIMBER GABLE BRACKET DETAIL
3/4\"/>



OPT. CORNER IX4 TRIM DETAIL
3\"/>



RIGHT ELEVATION

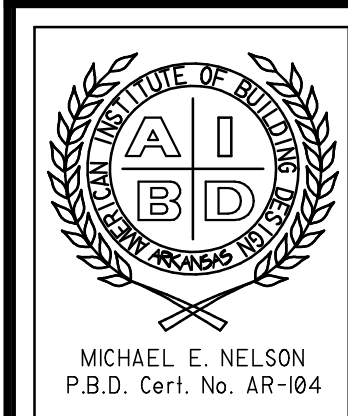


REAR ELEVATION

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MEN
DESIGNS

REVISIONS	BY
	24x36

MAIN AND UPPER FLOOR ELECTRICAL PLAN / NOTES / 2X6 EXT. WALLS

MEN5424

OTTER CREEK COTTAGE

By Michael E. Nelson

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NATIONALLY PUBLISHED

A CUSTOM DESIGN & PLAN MODIFICATION COMPANY

DATE

5/18/2023

SCALE

1/4" = 1'-0"

BUILDER

JOB

MEN5424

DRAWN BY

CH

4

5

MAIN FLOOR

UPPER FLOOR

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
	EXHAUST FAN
	CEILING FAN
	CEILING FAN W/ LIGHT
	EXHAUST FAN W/ LIGHT
	HEAT, LIGHT AND VENT
	LIGHT
	4' FLORESCENT LIGHT
	2' X 4' FLORESCENT LIGHT
	6" RECESSED CAN LIGHT
	3" RECESSED CAN LIGHT
	FLOOD LIGHT
	WALL MOUNTED LIGHT
	ELECTRICAL OUTLET
	220V ELECTRICAL OUTLET
	CEILING MOUNTED OUTLET
	FLOOR MOUNTED OUTLET
	HIDDEN OUTLET
	SWITCHED OUTLET
	BREAKER BOX
	PHONE
	SMOKE DETECTOR
	SWITCH
	STACKED SWITCHES
	THREE WAY
	FOUR WAY
	GROUND FAULT INTERRUPTER
	WATERPROOF
	ELECTRICAL WIRE
	CABLE TV
	TRACK LIGHTING

NOTE:
1.- OWNER TO VERIFY & APPROVE ALL ELECTRICAL & POSSIBLE FLOOR OUTLET LOCATIONS NOT NOTED.
2.- PROVIDE ARC-FAULT INTERRUPTER PROTECTION FOR ALL BEDROOMS. REFERENCE IRC SECTION E3802
3.- OWNER TO LOCATE AND VERIFY PHONE & CABLE JACKS.
4.- SEE OWNER FOR ALL OUTDOOR ELECTRICAL NEEDS AND LIGHTING.

1 STAIR DETAIL

SCALE 3/4" = 1'-0"

1-A STAIR SECTIONAL

SCALE 3/4" = 1'-0"

2 TYP PORCH COLUMN DETAIL

1/2" = 1'-0"

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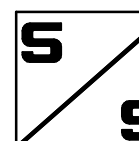
Page 26 of 28

REVISIONS	BY
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ROOF PLAN / NOTES / 2X6 EXT. WALLS
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OTTER CREEK COTTAGE

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DATE	5/18/2023
SCALE	1/4" = 1'-0"
BUILDER	
JOB	MEN5424
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CONSTRUCTION AND FRAMING NOTES:

I. DESIGN LOADS ARE AS FOLLOWS PER SQ FT:

LOCATION	LIVE	DEAD	DEFLECT LIMIT
1ST FLOOR	40 LB	10 LB	L/360
2ND FLOOR (SLEEPING AREAS)	30 LB	10 LB	L/360
ATTIC (NON STORAGE)	10 LB	5 LB	L/240
ATTIC (STORAGE)	20 LB	10 LB	L/240
ROOF (WITH FINISHED CEILING)	30 LB	15 LB	L/240
ROOF (NO FINISHED CEILING)	30 LB	7 LB	L/180
DECKS	60 LB	10 LB	L/360

SNOW LOADS HAVE BEEN ADJUSTED TO REFLECT THE SLIDEOFF FACTOR, AS A FUNCTION OF ROOF PITCH. RAFTER SIZES MAY HAVE TO BE INCREASED TO ACCOMADATE HIGHER SNOW LOADS. VERIFY WITH LOCAL CODES.

WIND LOAD DESIGN BASED ON U.S. WIND ZONE 4 WIND LOAD REQUIREMENTS ALSO REFERENCE I.R.C. SECTION R301.2 AND VERIFY WIND LOAD REQUIREMENTS WITH LOCAL CODES

2. LUMBER SHALL BE DOUGLAS-FIR-LARCH, HEM-FIR OR SOUTHERN-YELLOW-PINE WITH FB=1450 AND E=1.6 MINIMUM.

3. ALL HEADERS SHALL BE FREE FROM ALL SPLITS, CHECKS OR SHAKES.

4. UNLESS NOTED OTHERWISE, PROVIDE DOUBLE HEADER JOISTS AND TRIMMERS AT ALL FLOOR OPENINGS, DOUBLE JOISTS UNDER ALL PARALLEL PARTITIONS, DOUBLE 2X12 HEADERS WITH 1/2" PLYWOOD, GLUED BETWEEN AND NAILED, FOR ALL OPENINGS IN 2X6 WALLS, DOUBLE 2X12 HEADERS NAILED TOGETHER FOR ALL OPENINGS IN 2X4 WALLS.

5. FLOOR CONSTRUCTION: 3/4" TONGUE AND GROOVE SUBFLOOR WITH FINISH MATERIAL OVER.

6. STAIR CONSTRUCTION SHALL CONSIST OF (3)2X12 STRINGERS, 5/4" OR 2X THICK TREADS AND 3/4" THICK RISERS OR MATERIALS FABRICATED BY A COMPONENT MANUFACTURER.

7. ALL WOOD PLATES IN CONTACT WITH CONCRETE SHALL BE "PRESSURE TREATED" 8 SILICONE SEALED.

8. "MICRO-LAM" BEAMS SHALL HAVE BENDING STRESS: FB=2,800 PSI. VERIFY WITH LOCAL CODES.

9. SPECIAL UPLIFT CONNECTORS AS INDICATED AT CANTILEVERED JOISTS SHALL BE "SIMPSON STRONG TIE" ANCHORS OR EQUAL.

10. MINIMUM HEADER SIZE SHALL BE (2)2"x6" UNLESS NOTED OTHERWISE EXTERIOR WALLS SHALL BE (2) 2X12 WITH 1/2" PLYWOOD.

11. ALL STRUCTURAL STEEL SHALL CONFORM WITH ASTM SPECIFICATION A-36.

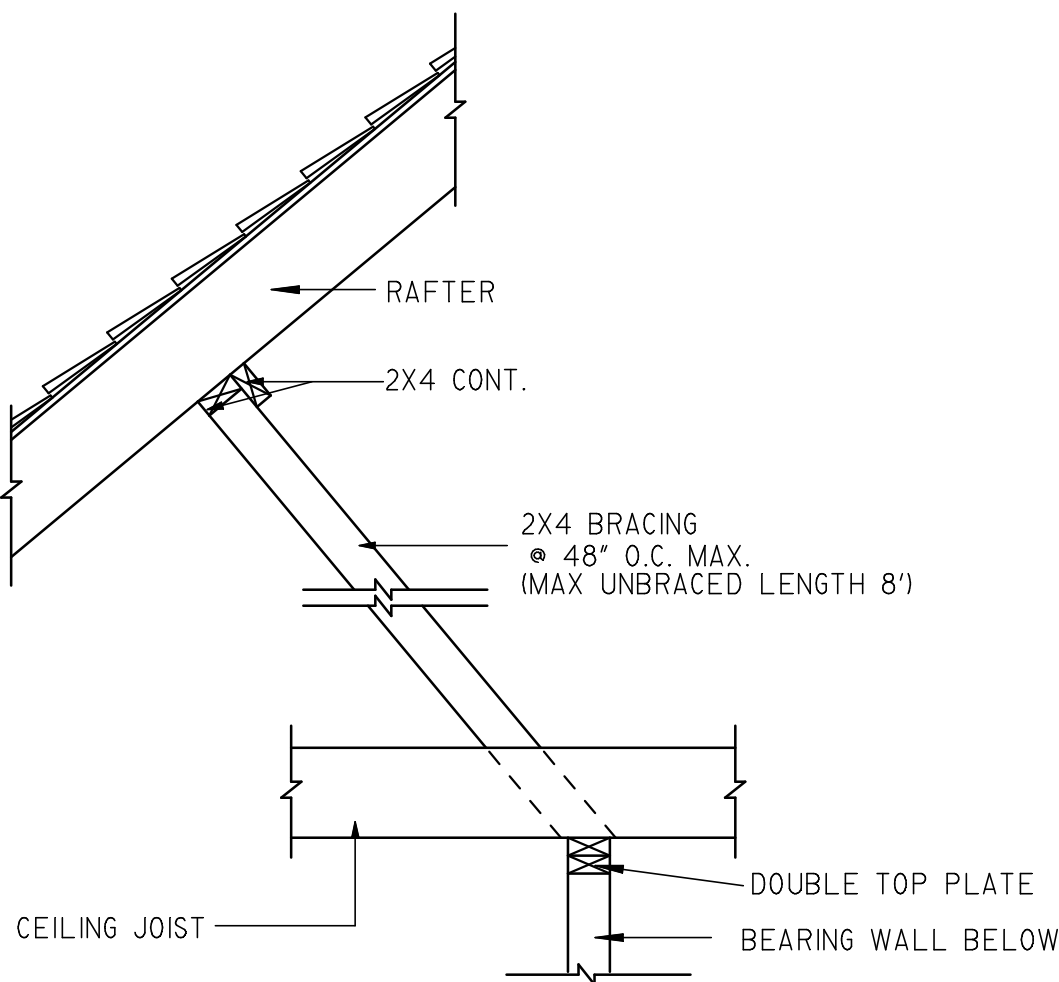
12. UNLESS OTHERWISE NOTED, PROVIDE A 2X PLATE BOLTED TO THE TOP FLANGE OF ALL STEEL BEAMS WITH 3/8" DIAMETER BOLTS STAGGERED AT 24" ON CENTER, RIGIDLY FASTEN ALL CONNECTING RAFTERS AND JOISTS AS APPROVED BY GOVERNING CODES, UNLESS OTHERWISE NOTED.

13. FLOOR FRAMING LAYOUT SHALL BE COORDINATED WITH THE GENERAL AND HVAC CONTRACTORS TO PROVIDE ACCESS CHASES AND UNOBSTRUCTED RUNS FOR HVAC DUCT WORK. FLOOR TRUSS LAYOUT TO BE ENGINEERED BY TRUSS MANUFACTURE.

14. PROVIDE BRIDGING OR BLOCKING AT MIDSPAN OF JOISTS/RAFTERS/TRUSSES, MAXIMUM SPACING BETWEEN BEARING WALL AND BLOCKING IS 8'-0".

15. THESE FRAMING PLANS WERE DESIGNED USING STANDARD CONSTRUCTION PRACTICES. THEY CONFORM TO STANDARD BUILDING CODES. DUE TO VARIATIONS IN LOCAL CODES AND GEOLOGICAL CONDITIONS REVISIONS MAY BE REQUIRED TO THESE PLANS.

16. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LOCAL CODES, REGULATIONS, AND FHA/VA MPS. THE BUILDER SHALL VERIFY ALL CONDITIONS BEFORE BEGINNING CONSTRUCTION. CONSULT WITH LOCAL STRUCTURAL ENGINEERS AND CODE OFFICIALS PRIOR TO USING THE FRAMING MATERIALS PROVIDED TO INSURE COMPLIANCE WITH CODES AND STRUCTURAL INTEGRITY.

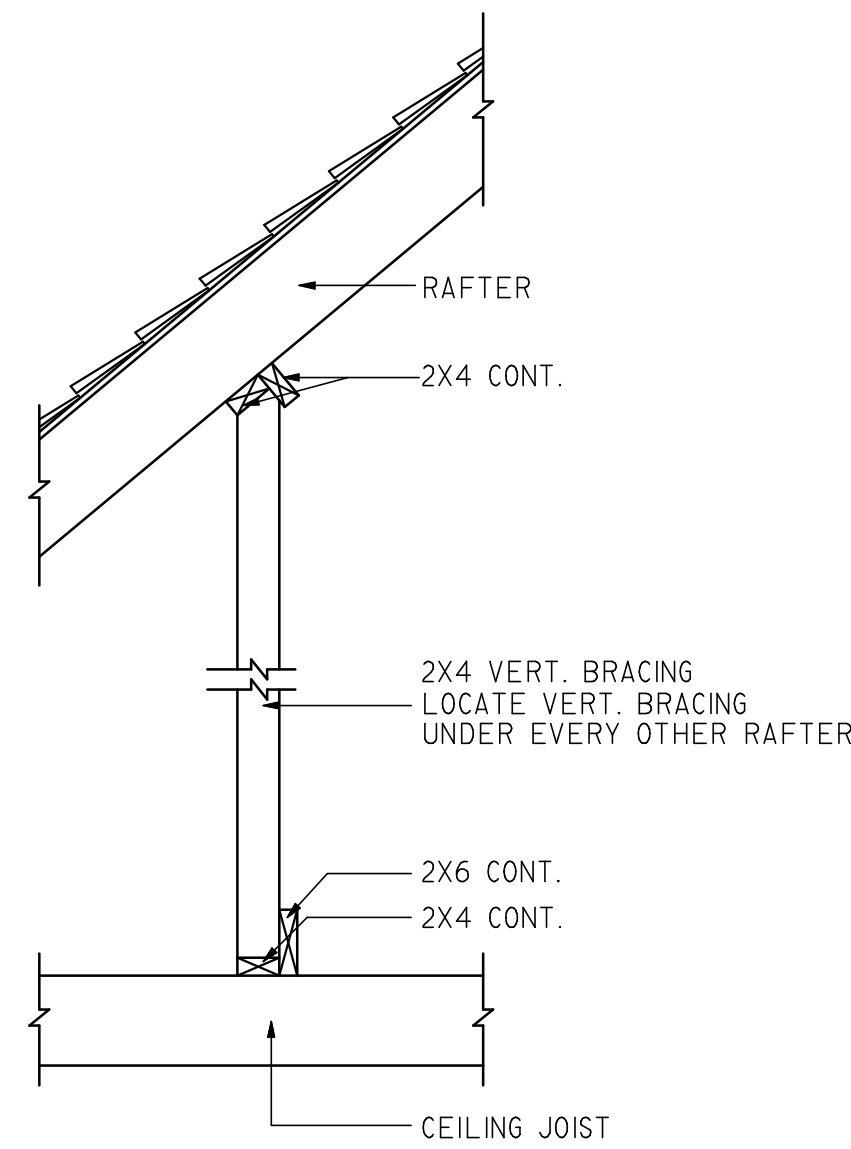


OPT. RAFTER BRACING DETAIL (PURLIN)

3/4" = 1'-0"

NOTE:

PURLINS ARE PERMITTED TO BE INSTALLED TO REDUCE THE SPAN OF RAFTERS. PURLINS SHALL BE SUPPORTED BY 2-INCH BY 4-INCH BRACES INSTALLED TO BEARING WALLS AT A SLOPE OF NOT LESS THAN 45 DEGREES. THE BRACES SHALL NOT BE SPACED MORE THAN 48" APART ON CENTER AND THE UNBRACED LENGTH OF BRACES SHALL NOT EXCEED 8 FT. PULINS SHALL BE CONTINUOUS. (REFER IRC R802.5.1)



RAFTER BRACING DETAIL

3/4" = 1'-0"

FRAMING NOTES:

- RAFTERS TO BE SUPPORTED BY CONT. BRACING FOR HORIZONTAL SPANS OF 15'-0" OR GREATER.
- SUPPORT ALL HIP, VALLEY, AND RIDGES @ 8'-0" O.C. MAX.
- ALL RAFTERS TO BEAR ON SECOND FLOOR WALLS WHERE APPLICABLE.
- RAFTERS MAY BE SPLICED ONLY @ CONT. BRACING OR SECOND FLOOR WALLS.
- RAFTERS TO BE PLACED IN COMPLIANCE WITH ALL LOCAL CODES.
- EXAMPLES:
 - 2X6 RAFTERS @ 16" O.C. MAX. WITH 1/2" P.W. DECKING.
 - 2X6 RAFTERS @ 24" O.C. MAX. WITH 5/8" P.W. DECKING.
 - 2X8 RAFTERS @ 24" O.C. MAX. WITH 5/8" P.W. DECKING.
 - 2X8 RAFTERS @ 16" O.C. MAX. WITH 1/2" P.W. DECKING.
- FASCIA OVERHANG TO BE 12" (TYP.) UNLESS NOTED ON ELEVATIONS.
- ALL HIP / VALLEY RAFTERS TO BE 2X10 UNLESS NOTED.

INSULATION NOTES:

- PROVIDE R-19 BATT INSULATION IN 2X6 WALLS, R-13 IN 2X4 WALLS, MINIMUM R-30 INSULATION IN FLAT CEILINGS AND R-30 MINIMUM BLANKET INSULATION IN VAULTED CEILINGS, ALLOW 1/2" MINIMUM AIRSPACE BETWEEN SHEATHING AND INSULATION, FACE FOIL DOWN TO WARM SIDE.
- INSTALL SIDE WALL AND CEILING INSULATION IN CONTINUOUS BLANKETS WITHOUT HOLES FOR ELECTRICAL BOXES, LIGHT FIXTURES OR HEATING DUCTWORK. CAULK ALL OPENINGS IN EXTERIOR WALL CONSTRUCTION.
- INSTALL 6 MIL POLYETHYLENE VAPOR BARRIER AGAINST INSIDE OF ALL INSULATION. LAP JOINTS 18" MINIMUM.
- FLOORS OVER UNHEATED SPACE SHALL HAVE R-25 FOIL BACK INSULATION BETWEEN JOISTS.
- SLAB EDGE INSULATION R-5.
- HVAC DUCTS LOCATED IN UNHEATED SPACES SHALL BE INSULATED WITH R-8.

SECTION NOTES:

- PROVIDE INSULATION BAFFLES AT EAVE VENTS BETWEEN RAFTERS / TRUSSES.
- RIDGES, VALLEY AND HIP MEMBERS SHALL BE FULL VERTICAL DEPTH OF FRAMING MEMBERS
- PROVIDE 2X6 COLLAR TIES AT 48" O.C.
- PROVIDE CONTINUOUS 2X6 PURLINS AT MID-SPAN OF RAFTERS, SPACE AT 8'-6" MAX.
- PROVIDE 2X4 STRUTS AT 48" O.C. FROM PURLINS TO BEARING WALLS AT 45 MINIMUM ANGLE.
- HANDRAILS SHALL BE MOUNTED 34" ABOVE NOSING OF STAIRS. GUARDRAILS SHALL BE MOUNTED AT 36".

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