



Building Permit Application

Howard County Maryland
Department of Inspections, Licenses and Permits
3430 Court House Drive
Permits: 410-313-2455
www.howardcountymd.gov

Date Received: _____

Permit No.: _____

Building Address: 5709 ADAMS WAY
 City: CLARKSVILLE State: MD Zip Code: 21029
 Suite/Apt. # _____ SDP/WP/BA #: _____
 Census Tract: _____ Subdivision: _____
 Section: _____ Area: _____ Lot: _____
 Tax Map: _____ Parcel: _____ Grid: _____
 Zoning: _____ Map Coordinates: _____ Lot Size: _____

Property Owner's Name: ROD & SUE DIETRICH
 Address: 5709 ADAMS WAY
 City: CLARKSVILLE State: MD Zip Code: 21029
 Phone: 443 472 5446 Fax: SAME
 Email: ROD.DIETRICH@HOTMAIL.COM

Existing Use: SINGLE FAMILY HOME
 Proposed Use: SAME WITH DETACHED GARAGE
 Estimated Construction Cost: \$ 10,000
 Description of Work: DETACHED GARAGE
51' X 21' 10' 7 1/2 SF
SEE PLANS
 Occupant or Tenant: ROD & SUE DIETRICH
 Was tenant space previously occupied? Yes No
 Contact Name: ROD & SUE DIETRICH
 Address: 5709 ADAMS WAY
 City: CLARKSVILLE State: MD Zip Code: 21029
 Phone: 443 472 5446 Fax: SAME
 Email: RODDIETRICH@HOTMAIL.COM

*Applicant's Name & Mailing Address, (If other than stated herein)
 Applicant's Name: WAYNE COSSENTINO
 Address: 8775 CENTRE PARK DR #659
 City: COLUMBIA State: MD Zip Code: 21045
 Phone: 410 977 5781 Fax: 410 442 5765
 Email: WAYNECOSSENTINO@YAHOO.COM

Contractor Company: COSSENTINO REMODELING
 Contact Person: WAYNE COSSENTINO
 Address: 8775 CENTRE PARK DRIVE #659
 City: COLUMBIA State: MD Zip Code: 21045
 License No.: 08010016414
 Phone: 410 977 5781 Fax: 410 442 5765
 Email: WAYNECOSSENTINO@YAHOO.COM

Engineer/Architect Company: ATLANTA PLAN SOURCE
 Responsible Design Prof.: _____
 Address: P.O. Box 1169 ALPHARETTA
 City: ALPHARETTA State: GA Zip Code: 30009
 Phone: 770 664 4114 Fax: SAME
 Email: N/A

| Commercial Building Characteristics | Residential Building Characteristics | |
|--|---|-------|
| Height: | <input checked="" type="checkbox"/> SF Dwelling <input type="checkbox"/> SF Townhouse | |
| No. of stories: | Depth | Width |
| Gross area, sq. ft./floor: | 1 st floor: | |
| | 2 nd floor: | |
| Area of construction (sq. ft.): | Basement: | |
| | <input type="checkbox"/> Finished Basement | |
| Use group: | <input type="checkbox"/> Unfinished Basement | |
| | <input type="checkbox"/> Crawl Space | |
| Construction type: | <input checked="" type="checkbox"/> Slab on Grade | |
| <input type="checkbox"/> Reinforced Concrete | No. of Bedrooms: | |
| <input type="checkbox"/> Structural Steel | Multi-family Dwelling | |
| <input type="checkbox"/> Masonry | No. of efficiency units: | |
| <input type="checkbox"/> Wood Frame | No. of 1 BR units: | |
| <input type="checkbox"/> State Certified Modular | No. of 2 BR units: | |
| | No. of 3 BR units: | |
| | Other Structure: <u>DETACHED GARAGE</u> | |
| | Dimensions: <u>51 X 21</u> | |
| <input checked="" type="checkbox"/> Roadside Tree Project Permit | Footings: <u>MONOLITHIC SLABS</u> | |
| <input type="checkbox"/> Yes <input type="checkbox"/> No | Roof: | |
| Roadside Tree Project Permit # | <input type="checkbox"/> State Certified Modular | |
| | <input type="checkbox"/> Manufactured Home | |

| Utilities | |
|---|--|
| Water Supply | |
| <input type="checkbox"/> Public | |
| <input checked="" type="checkbox"/> Private | |
| Sewage Disposal | |
| <input type="checkbox"/> Public | |
| <input checked="" type="checkbox"/> Private | |
| Electric: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Gas: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Heating System | |
| <input type="checkbox"/> Electric | <input type="checkbox"/> Oil |
| <input type="checkbox"/> Natural Gas | <input type="checkbox"/> Propane Gas |
| <input type="checkbox"/> Other: | |
| Sprinkler System: | |
| <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Grading Permit Number: | |
| Building Shell Permit Number: | |

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES AS FOLLOWS: (1) THAT HE/SHE IS AUTHORIZED TO MAKE THIS APPLICATION; (2) THAT THE INFORMATION IS CORRECT; (3) THAT HE/SHE WILL COMPLY WITH ALL REGULATIONS OF HOWARD COUNTY WHICH ARE APPLICABLE THERETO; (4) THAT HE/SHE WILL PERFORM NO WORK ON THE ABOVE REFERENCED PROPERTY NOT SPECIFICALLY DESCRIBED IN THIS APPLICATION; (5) THAT HE/SHE GRANTS COUNTY OFFICIALS THE RIGHT TO ENTER ONTO THIS PROPERTY FOR THE PURPOSE OF INSPECTING THE WORK PERMITTED AND POSTING NOTICES.

Wayne CosSENTINO
 Applicant's Signature
WayneCosSENTINO@YAHOO.COM
 Email Address
Wayne CosSENTINO REMODELING
 Title/Company

Wayne CosSENTINO
 Print Name
OCTOBER 20TH 2016
 Date

Checks Payable to: DIRECTOR OF FINANCE OF HOWARD COUNTY
 PLEASE WRITE NEATLY & LEGIBLY
 -FOR OFFICE USE ONLY-

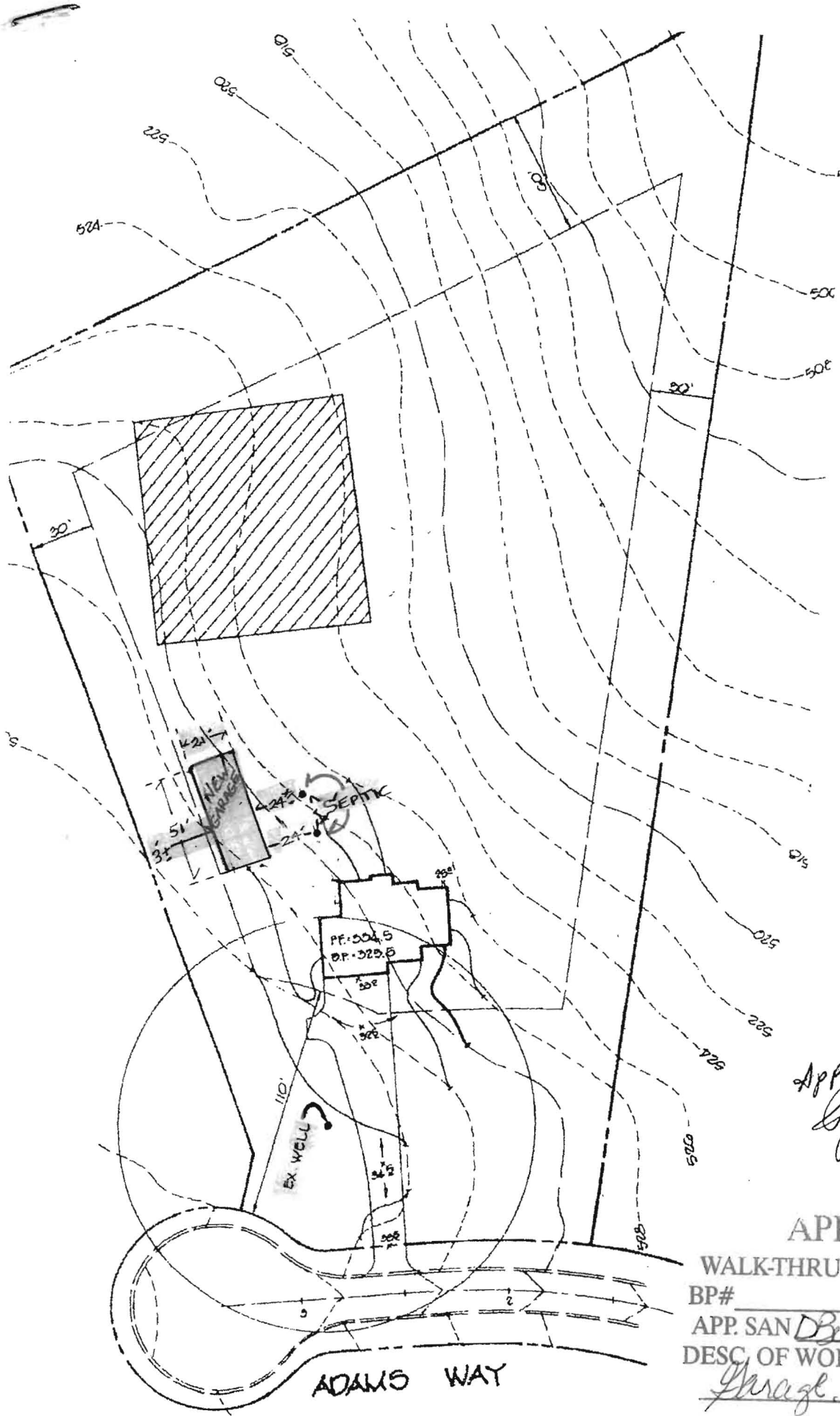
| AGENCY | DATE | SIGNATURE OF APPROVAL |
|----------------------|-----------------|-----------------------|
| State Highways | | |
| Building Officials | | |
| PSZA (Zoning) | | |
| PSZA (Engineering) | | |
| Health | <u>10-25-16</u> | <u>Bernard</u> |

Is Sediment Control approval required for issuance? Yes No
 CONTINGENCY CONSTRUCTION START

| DPZ SETBACK INFORMATION |
|---|
| Front: |
| Rear: |
| Side: |
| Side St.: |
| All minimum setbacks met? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Is Entrance Permit Required? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Historic District? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Lot Coverage for New Town Zone: |
| SDP/Red-line approval date: |

| | |
|----------------|----|
| Filing Fee | \$ |
| Permit Fee | \$ |
| Tech Fee | \$ |
| Excise Tax | \$ |
| PSFS | \$ |
| Guaranty Fund | \$ |
| Add'l per Fee | \$ |
| Total Fees | \$ |
| Sub-Total Paid | \$ |
| Balance Due | \$ |
| Check | # |

Distribution of Copies: White: Building Officials Green: PSZA,Zoning Yellow: PSZA,Engineering Pink: Health Gold: SHA



Approved:
Philip A. Stevens
 Pres
 5/15/98

APPROVED

WALK-THRU BUILDING PERMIT

BP# _____ A# _____

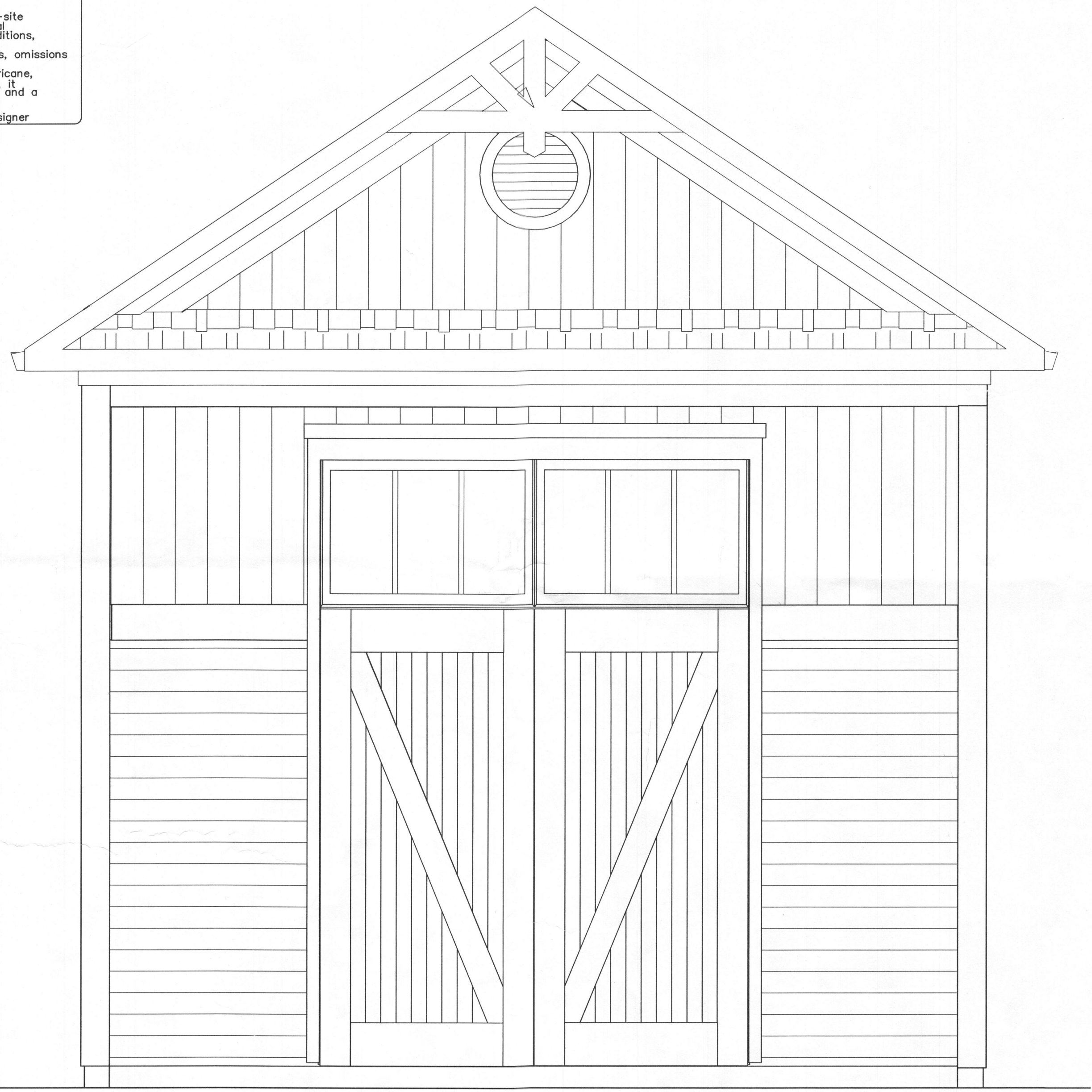
APP. SAN *Bernard* DATE: *10-25-16*

DESC. OF WORK: *Detached Garage. Approved as shown*

ADAMS WAY

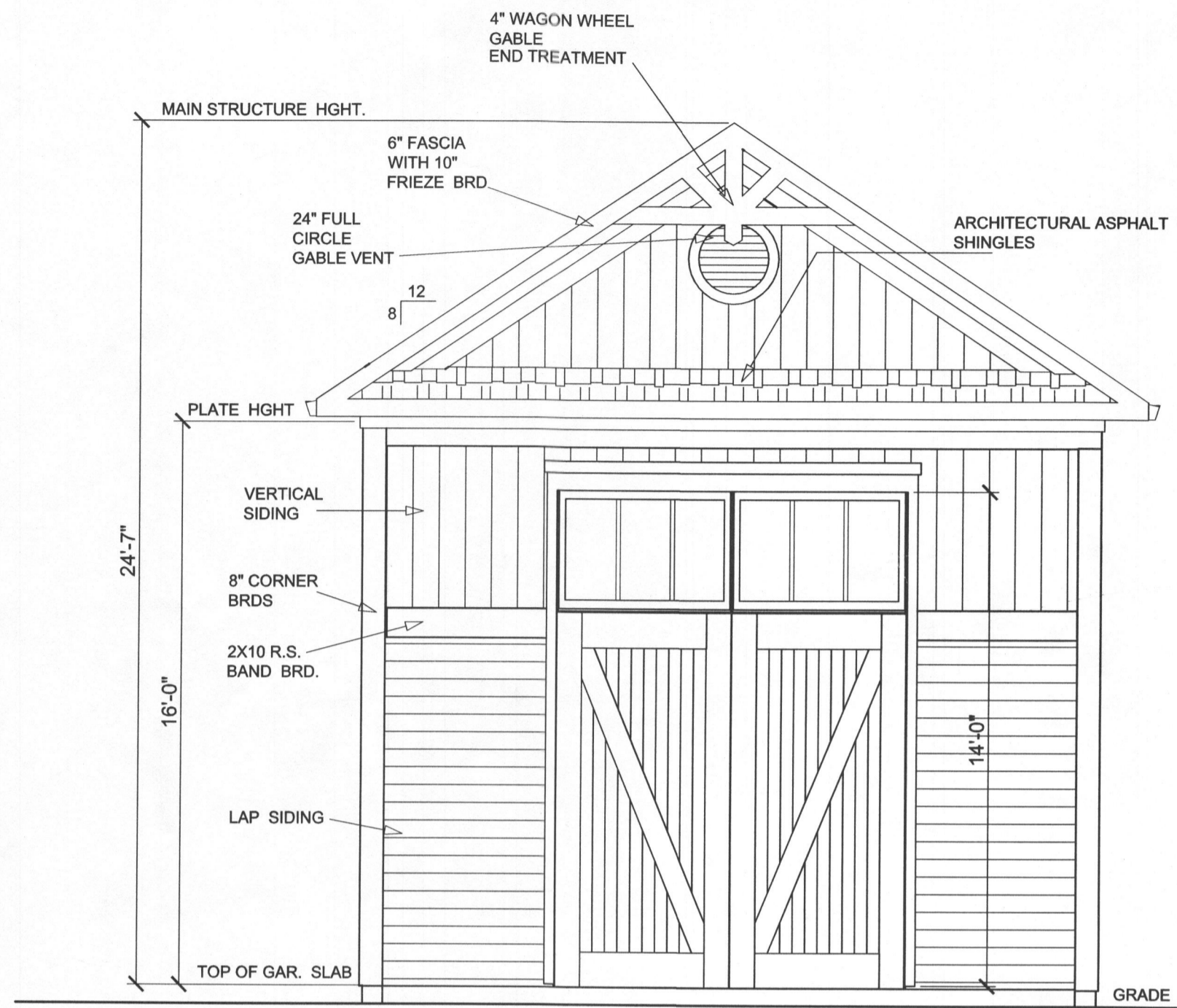
Great effort has gone into the ReDesign of these plans. However, due to the impossibility of providing any on-site supervision over the actual construction, the variance in local code requirements and other local building and weather conditions, ReDesign HP LLC, assumes no responsibility for any damages, including structural failures, due to any deficiencies, omissions or errors in these plans. Furthermore, due to soil and/or weather conditions (i.e. hurricane, earthquake, snow, etc...) or for any other unusual conditions, it is recommended that you consult with local building officials and a local architect or engineer prior to beginning construction.

*Note: all derivative designs are copyright of the original designer

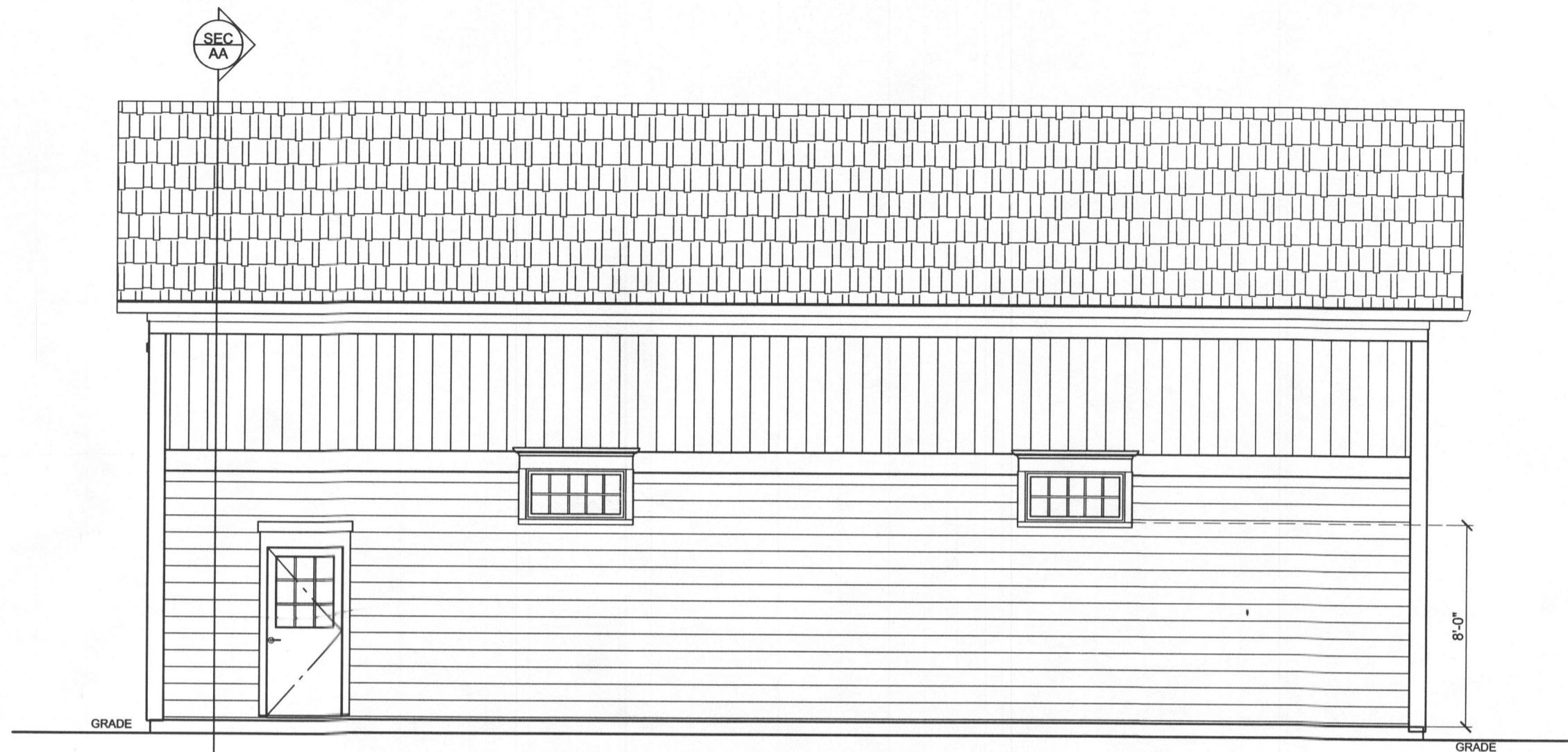


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 P.O. Box 1169 Alpharetta, GA 30009
 INDEPENDENT CONTRACTOR Ph: 770-664-4114
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Note: Great care and effort have gone into the creation of the design and engineering of these plans. However, because of the impossibility of providing any personal and/or "on-site" consultation, supervision, and control over the actual construction and because of the great variance in local building code requirements and other local conditions, Atlanta Plan Source, Inc. shall be a refund of the purchase price of the home plans. These home plans are provided as a guide only. It is the responsibility of the purchaser to consult with local building officials and a local architect or engineer prior to the start of actual construction. Additional engineering may be required to comply with seismic, wind, or other special conditions as required by local building codes.

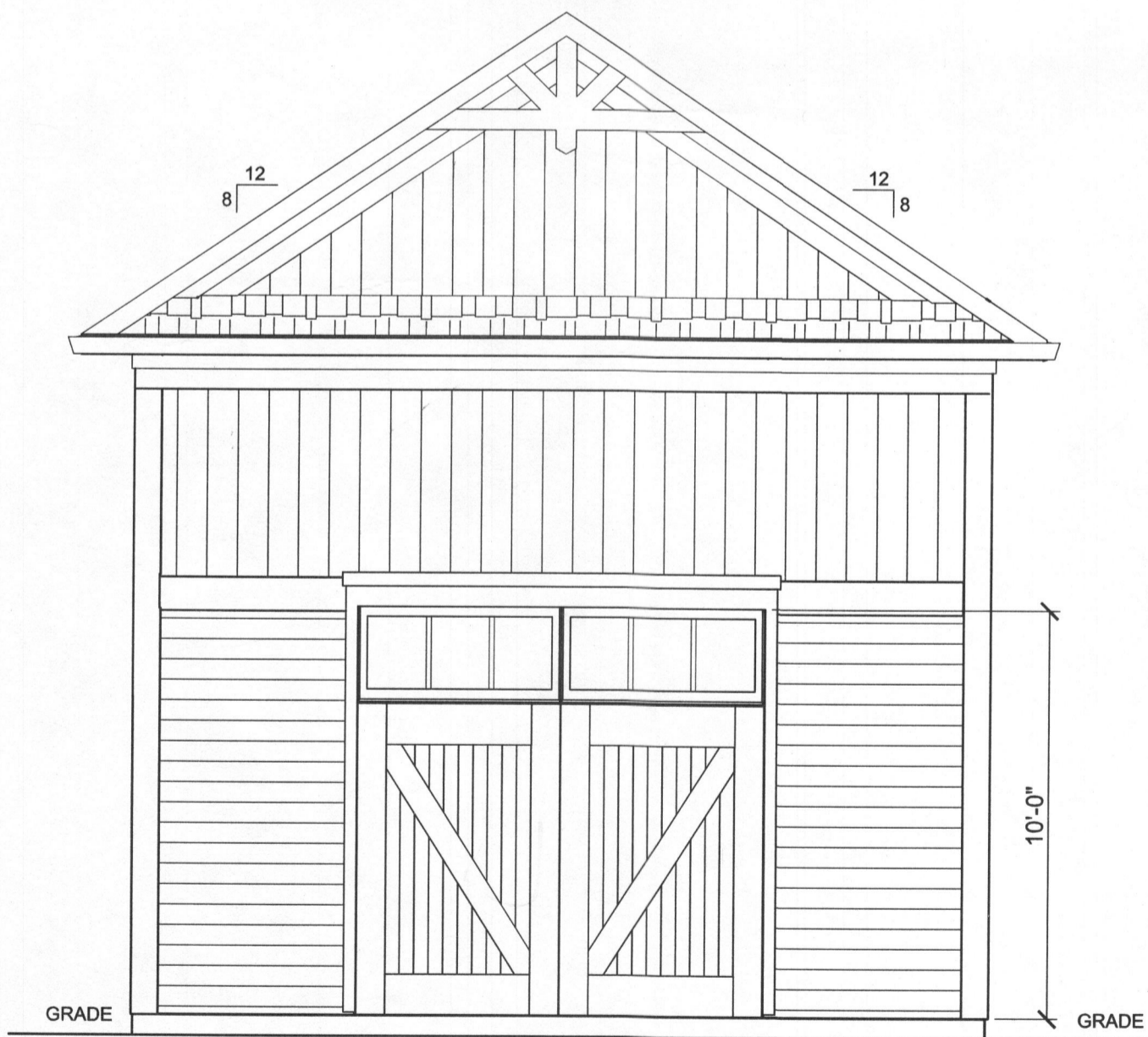


FRONT ELEVATION
SCALE: 1/4" = 1'-0"

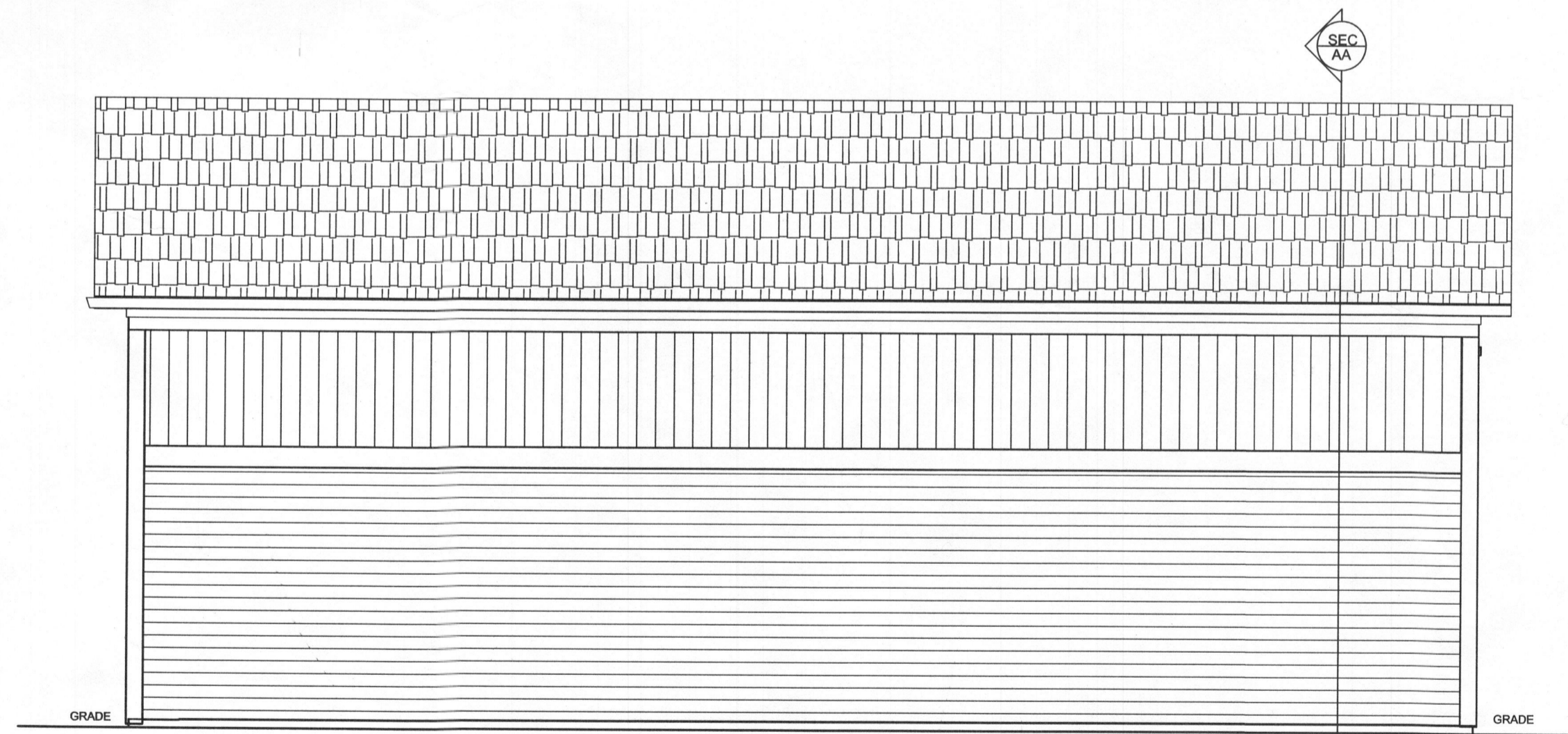


RIGHT ELEVATION
SCALE: 3/16" = 1'-0"

Great effort has gone into the ReDesign of these plans. However, due to the impossibility of providing any on-site supervision over the actual construction, the variance in local code requirements and other local building and weather conditions, ReDesign HP LLC, assumes no responsibility for any damages, including structural failures, due to any deficiencies, omissions or errors in these plans. Furthermore, due to soil and/or weather conditions (i.e. hurricane, earthquake, snow, etc...) or for any other unusual conditions, it is recommended that you consult with local building officials and a local architect or engineer prior to beginning construction.
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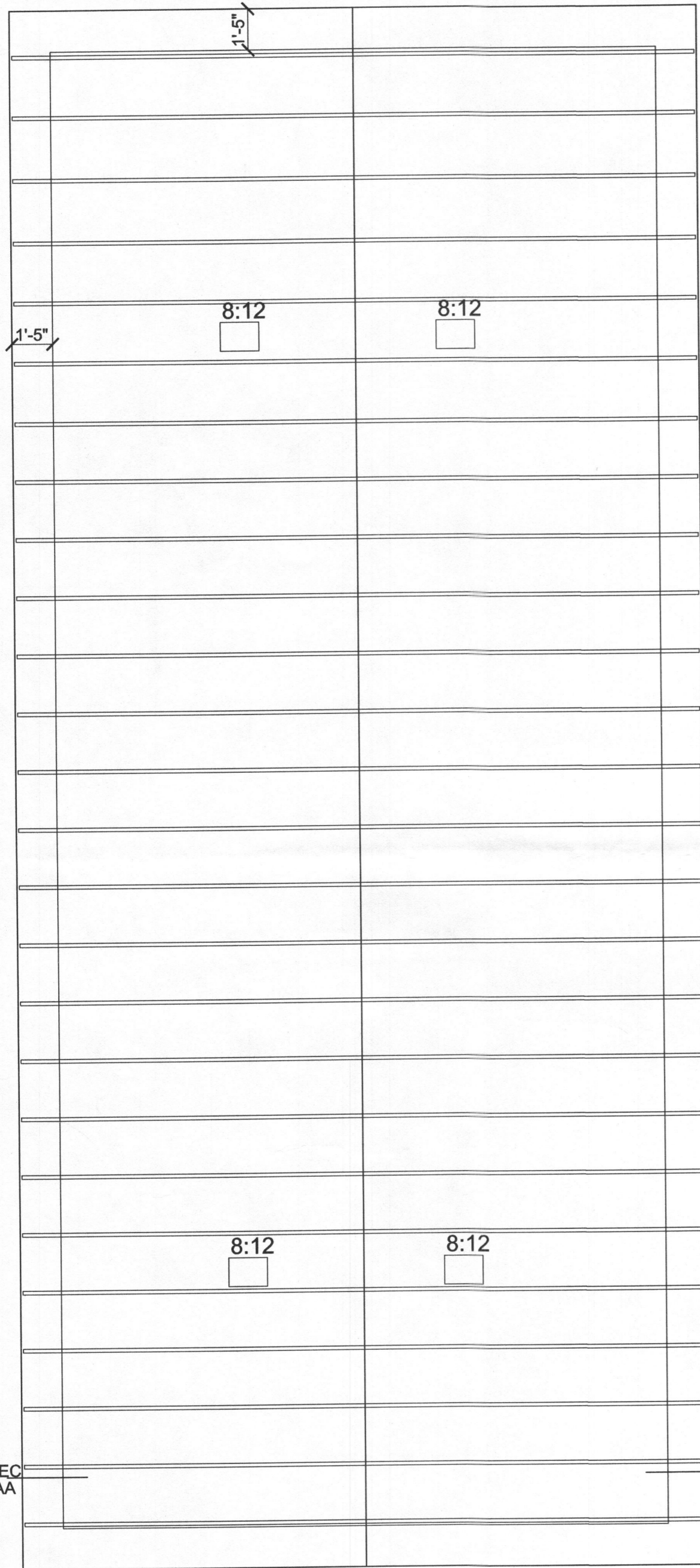


REAR ELEVATION
SCALE: 1/4" = 1'-0"



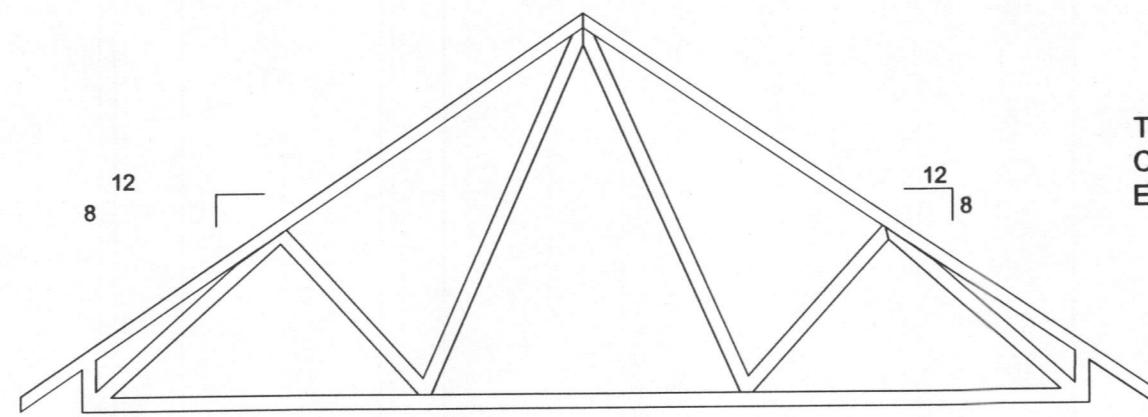
LEFT ELEVATION
SCALE: 3/16" = 1'-0"

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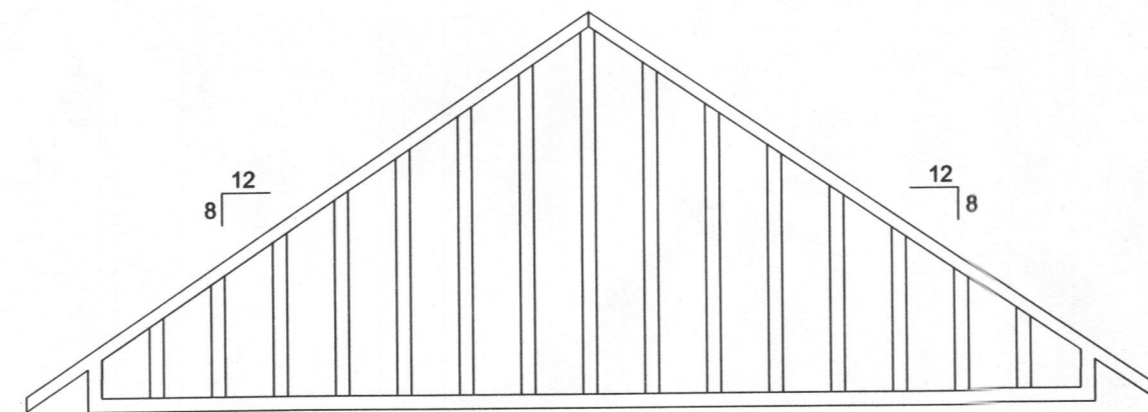


TRUSS PLAN

SCALE: 1/4" = 1'-0"



TR1 TRUSS

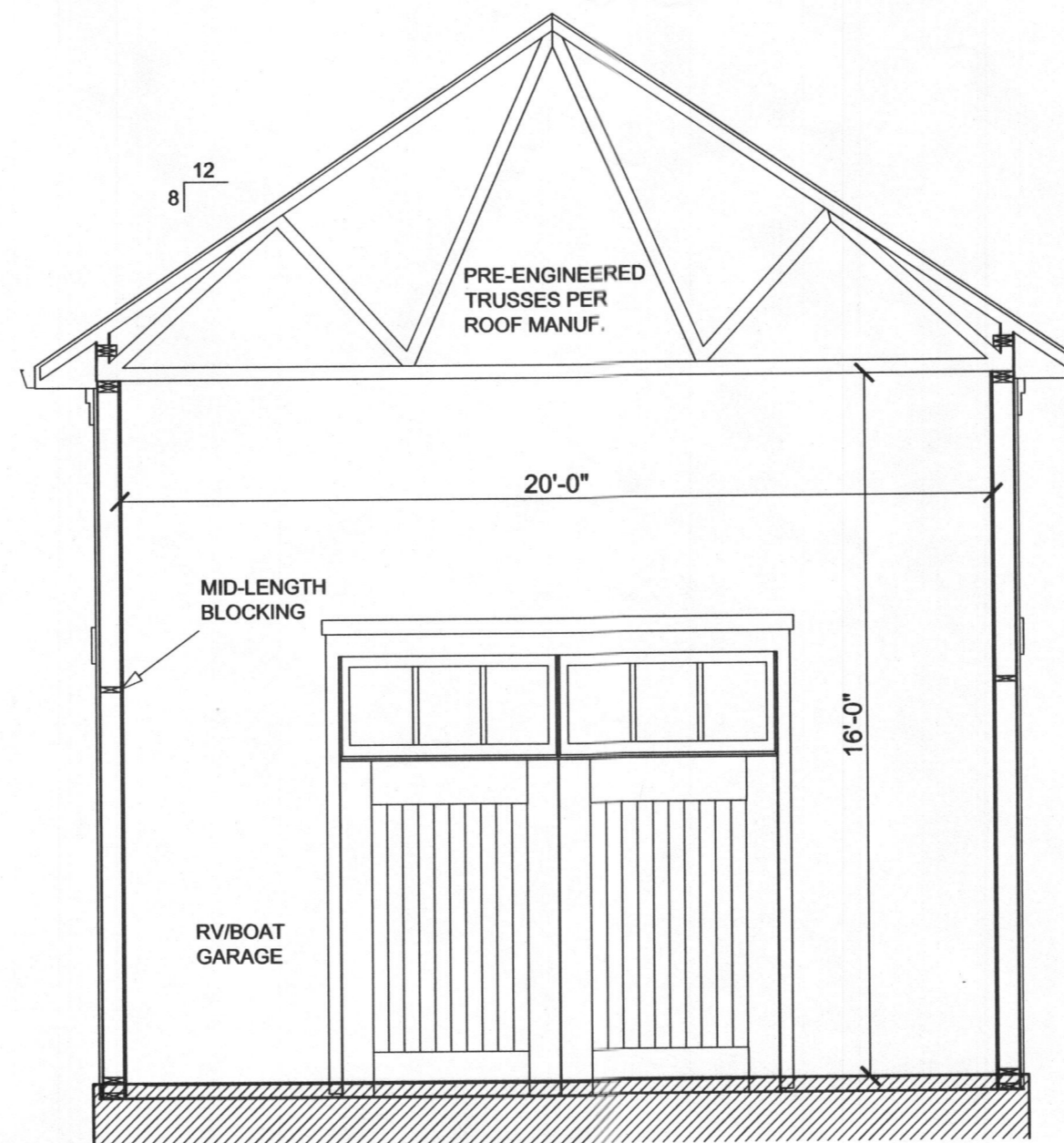


TR0 TRUSS

TRUSS PROFILES

SCALE: 1/4" = 1'-0"

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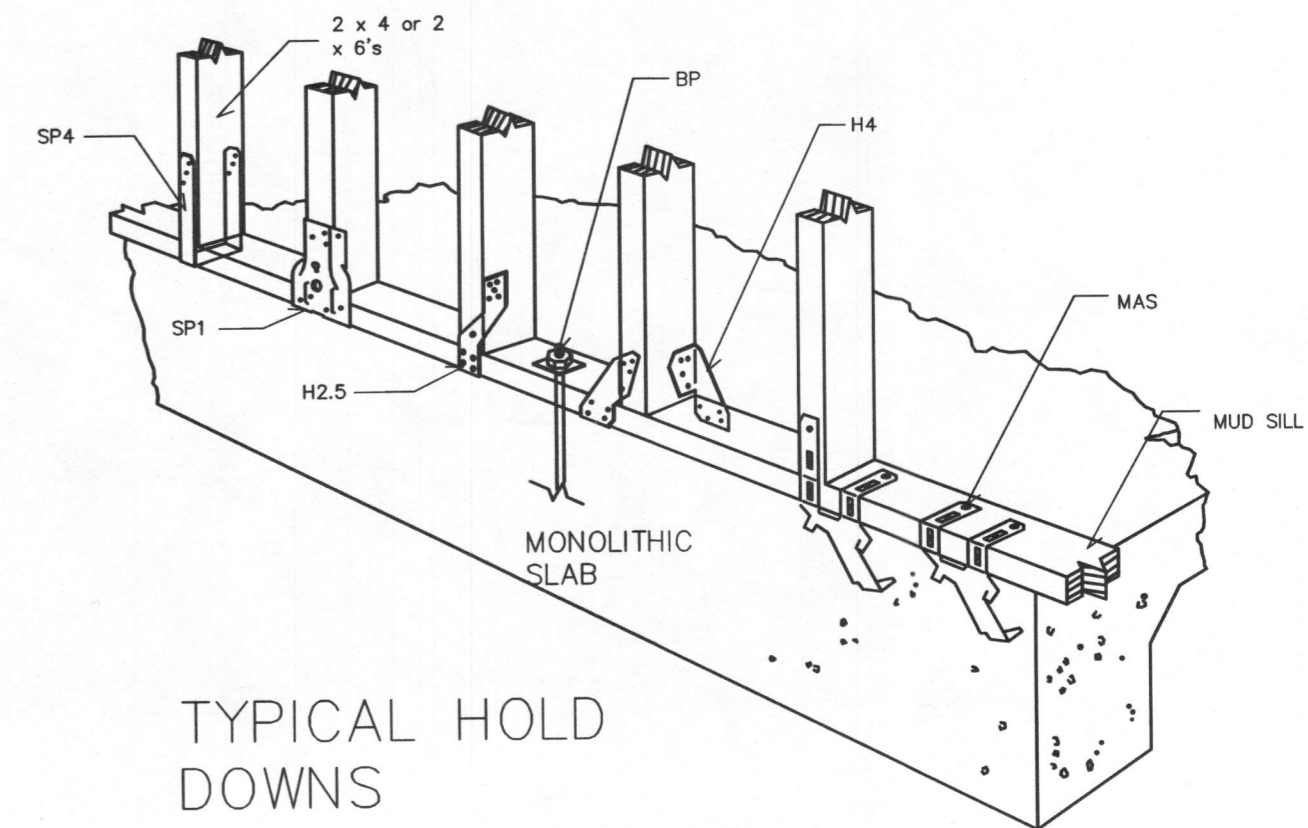


SECTION - AA

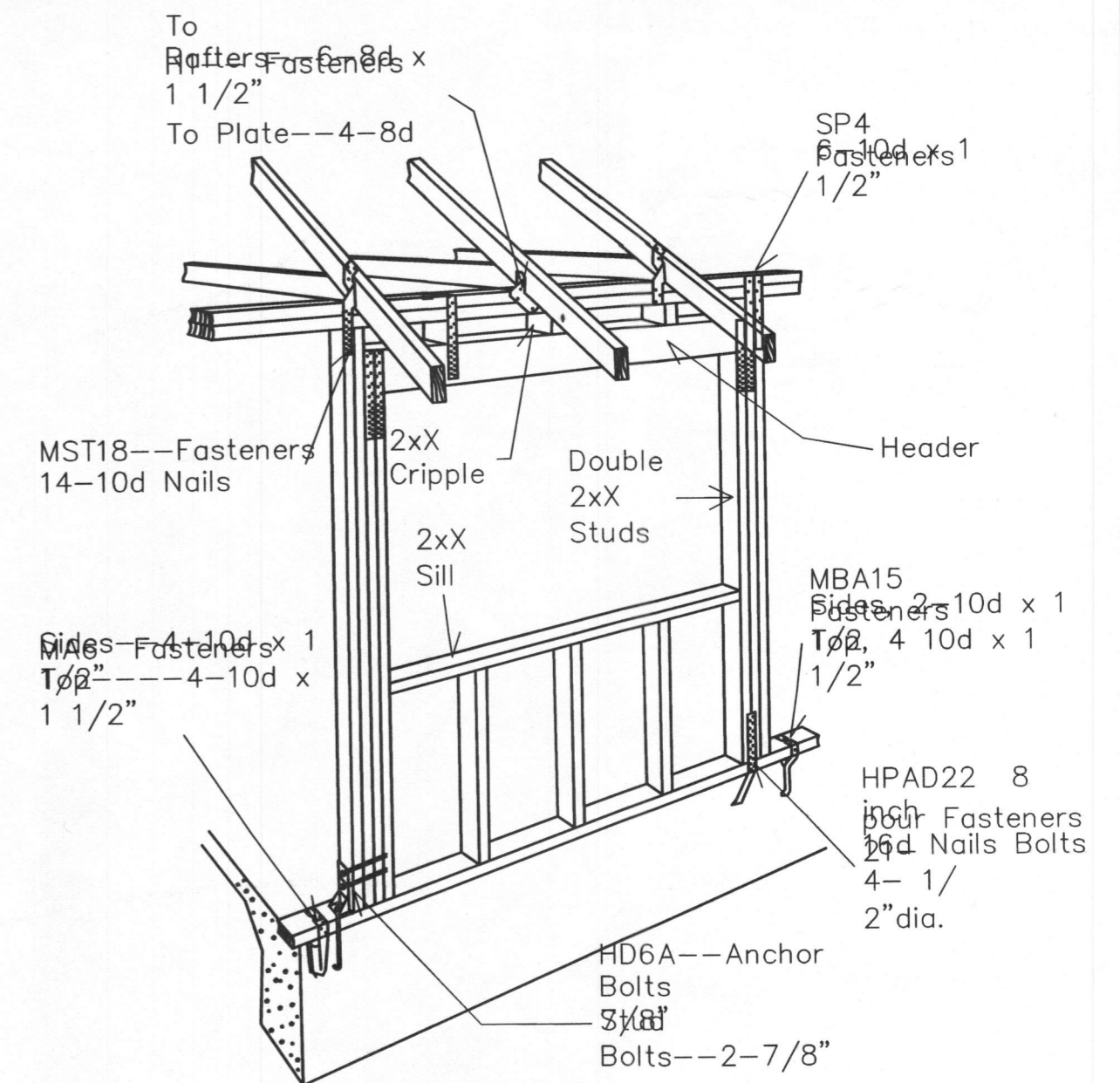
SCALE: 1/4" = 1'-0"

FRAMING NOTES

- ALL EXTERIOR WALL OPENINGS & BEARING SPACINGS TO HAVE 4x12 HEADERS UNLESS OTHERWISE INDICATED. TRUSSES THAT ARE ATTACHED TO FLUSH BEAMS ARE TO BE HANGING DOUBLE JOISTS UNLESS INDICATED OTHERWISE. UNINTERRUPTED FIRESTOPPING, DRAFTSTOPS & FIRESTOPS AS PER NFPA 221B.
 - POST, BEAMS, HEADERS, JOISTS & RAFTERS. NO.2 DOUGLAS FIR.
 - SILLS, PLATES, BLOCKING, BRIDGING ETC. NO. 3 DOUGLAS FIR.
 - POST & BEAM BRIDGEWOOD BRIDGEWOOD. F. 3/4" SMOO, DRY ADH.
5. NAIL SCHEDULE:
- | | | |
|---------------------------|----------------------|--------------|
| JOIST TO SILL OR GIRDER | 3-6d | TOE NAIL |
| BRIDGING TO JOIST | 2-6d | TOE NAIL |
| 2" SUBFLOOR TO GIRDER | 25d OR | BLIND NAIL |
| SOLE PLATE TO JOIST | 16" | FACE NAIL |
| TOP PLATE TO STUDS | 3-16d | END NAIL |
| STUD TO SOLE PLATE | 4-8d | TOE NAIL OR |
| | | END NAIL |
| DOUBLE STUDS | 2-16d | FACE NAIL |
| DOUBLE TOP PLATE | 16d @ 16" | FACE NAIL |
| CONTINUOUS HEADER (2 PC.) | 16d @ 16" | FACE NAIL |
| CLG. JST TO PL. | 3-6d | TOE NAIL |
| CLG. JST LAP OVER PL. | 3-16d | FACE NAIL |
| CLG. JST TO RAFTER | 3-16d | FACE NAIL |
| RAFTER TO TOP PL. | 3-16d | TOE NAIL |
| BUILD-UP CORNER STUDS | 3-6d | FACE NAIL |
| PLYWOOD SUBFLOOR | 16d @ 24" | FACE NAIL |
| | 8d @ 6" | EDGE NAIL |
| | 8d @ 10" | EDGE NAIL |
| | 8d @ 6" | EDGE NAIL |
| | 8d @ 12" | EDGE NAIL |
| | 2-16d | TOE NAIL |
| | 16d @ 15" | FACE NAIL |
| | 1/2" BOLTS W/WASHERS | FACE NAIL |
| | EA. SIDE @ 24" O.C. | STAGGER NAIL |
| | 2-6d | FACE NAIL |
| | | NAIL |



TYPICAL HOLD DOWNS



TYPICAL HOLD DOWNS

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PLAN SOURCE
 INC. A CORPORATION

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2012 International Residential Code® Construction Specifications and Methodologies

IMPORTANT NOTE: THESE NOTES AND SPECIFICATIONS ARE PROVIDED BY ATLANTA PLAN SOURCE, INC. AS A SERVICE TO THEIR CUSTOMERS TO PROVIDE THE MOST POPULAR CODE TOPICS. THE INFORMATION AND METHODOLOGIES PREPARED HEREIN ARE IN ACCORDANCE TO AND REFERENCED TO THE 2012 INTERNATIONAL RESIDENTIAL CODE®. THE INFORMATION IS ALSO A GENERAL SUMMARY OF THE CODE AND IT IS RECOMMENDED THAT YOU BECOME FAMILIAR WITH THE FULL EXTENT OF THE ACTUAL CODE. THE NOTES AND SPECIFICATIONS MAY HAVE TO BE AMENDED DUE TO VARIATIONS IN LOCAL CODES AND GEOLOGICAL CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND/OR HOMEOWNER TO MAKE THE NECESSARY MODIFICATIONS TO ENSURE CODE COMPLIANCE AND STRUCTURAL INTEGRITY. IT IS RECOMMENDED THAT YOU CONSULT A LOCAL ARCHITECT OR ENGINEER OF YOUR CHOICE AND CHECK WITH LOCAL BUILDING OFFICIALS PRIOR TO THE START OF ACTUAL CONSTRUCTION. SPECIAL ENGINEERING MAY REQUIRE THAT THESE SPECIFICATIONS BE CHANGED OR AMENDED TO COMPLY WITH SEISMIC, WIND, OR OTHER SPECIAL CONDITIONS AS REQUIRED BY LOCAL CONSTRUCTION METHODOLOGIES AND LOCAL CODES.

| LINE LOADING (psf) | DESIGN LOADS | | | | SOIL |
|--------------------|--------------|------|-------|--------|------|
| | FLOOR | ROOF | DECKS | STAIRS | |
| 40g | 30g | 60g | 100g | 3000g | |

UNL BEAMS: $P=2000$ $F=200$ $E=1.9$ $F_{ow}=750$
 WIND: 30 30 30
 SEISMIC ZONE: C - FOR DD , $D1$, $D2$, SEE ADDED NOTES BELOW
 SITE SPECIFIC DESIGN CRITERIA AND ENERGY CALCULATIONS MAY BE REQUIRED FOR ALL BUILDINGS. PLEASE CONTACT 770-664-4114 FOR YOUR HOME PLEASE CONTACT 770-664-4114

| ASSUMED INSULATION R-VALUES | |
|-----------------------------|------|
| 1. ROOF: UNVENTED | R-30 |
| 2. ROOF: VENTED | R-38 |
| 3. EXTERIOR WALL | R-13 |
| 4. FLOOR | R-25 |
| 5. OVERHEATED | R-11 |
| 6. BASEMENT WALLS | R-10 |
| 7. PERIMETER | R-10 |
| 8. DUCTS | R-8 |
| 9. UNHEATED AREAS | R-8 |

IMPORTANT DISCLAIMER
 THE ENCLOSED INFORMATION IS INTENDED TO ASSIST AND INFORM YOU THROUGH THE CONSTRUCTION OF YOUR HOME. YOUR CONSTRUCTION PLANS HAVE BEEN DRAWN TO PRESCRIBE TO INDUSTRY STANDARDS. THESE PROFESSIONAL STANDARDS DETERMINE HOW CONSTRUCTION PLANS ARE DRAWN AND WHAT INFORMATION THEY INCLUDE. CONSTRUCTION PLANS ARE INTENDED AS A TECHNICAL GUIDE TO PROFESSIONAL CONTRACTORS AND ARE NOT INTENDED TO BE A SET OF STEP-BY-STEP INSTRUCTIONS. THEREFORE, IF YOU ARE PLANNING TO BUILD YOUR HOME WITHOUT THE SERVICES OF A PROFESSIONAL BUILDER, WE SUGGEST THAT YOU BECOME THOROUGHLY FAMILIAR WITH READING CONSTRUCTION PLANS OR CONSIDER CONSULTING A CONSTRUCTION SPECIALIST. IF YOU SHOULD HAVE ANY QUESTIONS REGARDING THE CONSTRUCTION PLANS AND/OR THE SUPPORTIVE DOCUMENTATION, PLEASE FEEL FREE TO CONTACT US AT 1.866.441.2143

GREAT CARE AND EFFORT GOES INTO THE CREATION OF THE DESIGN AND ENGINEERING OF YOUR CONSTRUCTION PLANS. HOWEVER, BECAUSE OF THE IMPOSSIBILITY OF PROVIDING ANY PERSONAL AND/OR "ON-SITE" CONSULTATION, SUPERVISION AND CONTROL OVER THE ACTUAL CONSTRUCTION, AND BECAUSE OF THE GREAT VARIANCES IN LOCAL BUILDING CODE REQUIREMENTS AND OTHER LOCATION BUILDING AND WEATHER CONDITIONS, UNLIMITED OPTIONS INC. NOR THE AGENTS OR EMPLOYEES ASSUMES NO RESPONSIBILITY FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO, ANY DEFICIENCIES, OMISSIONS, OR ERRORS IN THE DESIGN, IN ANY CASE, ANY DISCREPANCIES, ERRORS, AND/OR OMISSIONS IN THE CONSTRUCTION PLANS SHALL BE BROUGHT TO THE ATTENTION OF ATLANTA PLAN SOURCE, INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION. PROCEEDING WITH CONSTRUCTION CONSTITUTES THE ACCEPTANCE OF THE CONSTRUCTION DOCUMENTS 'AS IS' AND ANY DISCREPANCIES, ERRORS, AND/OR OMISSIONS BECOME THE SOLE RESPONSIBILITY OF THE PURCHASER. IF ANY ERRORS ARE DISCOVERED PRIOR TO CONSTRUCTION ATLANTA PLAN SOURCE, INC. WILL BE GIVEN FULL OPPORTUNITY TO CORRECT ANY ERRORS AND/OR OMISSIONS TO THE CONSTRUCTION PLANS. IN ANY OR ALL CIRCUMSTANCES, THE MAXIMUM FINANCIAL LIABILITY TO ATLANTA PLAN SOURCE, INC. CAN NOT EXCEED THE TOTAL PLAN PURCHASE.

PROFESSIONAL SEAL
 THOUGH EVERY EFFORT WAS MADE TO MAKE THE CONSTRUCTION DOCUMENTS FOLLOW THE I.R.C. NATIONAL CODE METHODOLOGIES, A FEW STATES AND CITIES HAVE PASSED BI-LAWS REGARDING CONSTRUCTION PLANS THAT WOULD BE SUBMITTED TO YOUR LOCAL MUNICIPALITY AND USED FOR THE CONSTRUCTION OF YOUR HOME. THESE BI-LAWS REQUIRE THE CONSTRUCTION PLANS TO BE REVIEWED AND/OR PREPARED, INSPECTED, AND SEALED (OR STAMPED) BY A LICENSED ARCHITECT IN YOUR STATE. IT IS ADVISED THAT YOU CONTACT YOUR MUNICIPALITY'S BUILDING DEPARTMENT FOR INSTRUCTIONS TO COMPLY WITH THEIR CONSTRUCTION PLANS REVIEW PROCESS.

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 REPRODUCTION OF THESE CONSTRUCTION PLANS, EITHER IN WHOLE OR IN PART, INCLUDING ANY FORM COPYING AND/OR PREPARATION OF A DERIVATIVE WORKS THEREOF, FOR ANY REASON IS STRICTLY PROHIBITED. THE PURCHASE OF A SET OF CONSTRUCTION PLANS IN NO WAY TRANSFERS ANY COPYRIGHT OR OTHER OWNERSHIP INTEREST IN IT TO THE PURCHASER. THE PURCHASE OF AN EXCEPT FOR A LIMITED LICENSING RELEASE TO USE THE SAID PLAN SET FOR CONSTRUCTING ONE AND ONLY ONE DWELLING UNIT. THE PURCHASE OF ADDITIONAL SETS OF THE SAID PLANS AT A REDUCED PRICE FROM THE ORIGINAL SET OR AS PART OF A MULTIPLE SET PACKAGE DOES NOT CONVEY TO THE PURCHASER A LICENSE TO CONSTRUCT MORE THAN ONE DWELLING. SIMILARLY, THE PURCHASE OF REPRODUCIBLE CONSTRUCTION PLANS (A.K.A. SEPIAS, MYLARS, OR VELLUMS) CARRIES THE SAME COPYRIGHT PROTECTION AS MENTIONED ABOVE. IT IS GENERALLY ALLOWED TO MAKE A MAXIMUM OF 10 COPIES FOR THE CONSTRUCTION OF A SINGLE DWELLING ONLY. TO USE ANY PLAN MORE THAN ONCE, AND TO AVOID AND COPYRIGHT/LICENSING INFRINGEMENT IT IS NECESSARY TO CONTACT THE ORIGINAL DESIGNER TO RECEIVE AND LICENSE FOR ANY EXTENDED USAGE. WHEREAS A PURCHASER OF REPRODUCIBLE'S IS GRANTED A LICENSE TO MAKE COPIES, IT SHOULD BE NOTED THAT AS COPYRIGHTED MATERIALS, MAKING PHOTOCOPIES FROM CONSTRUCTION PLANS IS ILLEGAL. COPYRIGHT AND LICENSEE OF CONSTRUCTION PLANS EXISTS TO PROTECT ALL PARTIES. IT RESPECTS AND SUPPORTS THE INTELLECTUAL PROPERTY OF THE ORIGINAL ARCHITECT AND/OR DESIGNER, THEREBY KEEPING IT POSSIBLE TO OFFER PRE-DRAWN PLANS AT AFFORDABLE PRICES. COPYRIGHT LAW FOR PRE-DRAWN CONSTRUCTION PLANS IS NOW BEING VIGOROUSLY ENFORCED. COPYRIGHT INFRINGEMENT COULD LEAD TO FINES OF UP TO \$100,000 PER VIOLATION.

GENERAL SITE NOTES
 1. 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.
 2. BEFORE EXCAVATION, THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS, MAPS, AND BUILDING SITE OF EXISTING 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 R308 GLAZING

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

R308.4.1 GLAZING IN DOORS.
 GLAZING IN ALL FIXED AND OPERABLE PANELS OF SWINGING, SLIDING AND BIFOLD DOORS SHALL BE CONSIDERED A HAZARDOUS LOCATION.

NOTE: SEE SECTION 308.4.1 FOR EXCEPTIONS

R308.4.2 GLAZING ADJACENT DOORS.
 GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE OF THE GLAZING IS WITHIN A 24-INCH (610 MM) ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION AND WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES (1524 MM) ABOVE THE FLOOR OR WALKING SURFACE SHALL BE CONSIDERED A HAZARDOUS LOCATION.

NOTE: SEE SECTION R308.4.2 FOR EXCEPTIONS

R308.4.3 GLAZING IN WINDOWS.
 GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE CONSIDERED A HAZARDOUS LOCATION:
 1. THE EXPOSED AREA OF AN INDIVIDUAL PANE IS LARGER THAN 9 SQUARE FEET (0.829 M²);
 2. THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 18 INCHES (457 MM) ABOVE THE FLOOR;
 3. THE TOP EDGE OF THE GLAZING IS MORE THAN 36 INCHES (914 MM) ABOVE THE FLOOR; AND
 4. 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

5. OUTBOARD PANES IN INSULATING GLASS UNITS AND OTHER MULTIPLE GLAZED PANELS WHEN THE BOTTOM EDGE OF THE GLASS IS 25 FEET (7620 MM) OR MORE ABOVE GRADE, A ROOF, WALKING SURFACES OR OTHER HORIZONTAL [WITHIN 45 DEGREES (0.79 RAD) OF HORIZONTAL] SURFACE ADJACENT TO THE GLASS EXTERIOR.

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 A HAZARDOUS LOCATION.

R308.4.5 GLAZING AND WET SURFACES.
 GLAZING IN WALLS, ENCLOSURES OR FENCES CONTAINING OR FACING HOT TUBS, SPAS, WHIRLPOOLS, 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 EXCEPTION

R308.4.6 GLAZING ADJACENT 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 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 60 INCHES (1524 MM) HORIZONTALLY OF THE BOTTOM TREAD SHALL BE CONSIDERED A HAZARDOUS LOCATION.

NOTE: 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.

SECTION R310 EMERGENCY ESCAPE AND RESCUE OPENINGS

R310.1 EMERGENCY ESCAPE AND RESCUE REQUIRED.
 BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING. WHERE BASEMENTS CONTAIN ONE OR MORE SLEEPING ROOMS, EMERGENCY EGRESS AND RESCUE OPENINGS SHALL BE REQUIRED IN EACH SLEEPING ROOM. WHERE EMERGENCY ESCAPE AND RESCUE OPENINGS ARE PROVIDED THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES (1118 MM) MEASURED FROM THE FINISHED FLOOR TO THE BOTTOM OF THE CLEAR OPENING. WHERE A DOOR OPENING HAVING A THRESHOLD BELOW THE ADJACENT GROUND ELEVATION SERVES AS AN EMERGENCY ESCAPE AND RESCUE OPENING AND IS PROVIDED WITH A BULKHEAD ENCLOSURE, THE BULKHEAD ENCLOSURE SHALL COMPLY WITH SECTION R310.3. THE NET CLEAR OPENING DIMENSIONS REQUIRED BY THIS SECTION SHALL BE OBTAINED BY THE NORMAL OPERATION OF THE EMERGENCY ESCAPE AND RESCUE OPENING FROM THE INSIDE.

R310.1.1 MINIMUM OPENING AREA.
 ALL EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET (0.530 M²).

R310.1.2 MINIMUM OPENING HEIGHT.
 THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES (610 MM).

R310.1.3 MINIMUM OPENING WIDTH.
 THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES (508 MM).

R310.1.4 OPERATIONAL CONSTRAINTS.
 EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE.

R310.2 WINDOW WELLS.
 THE MINIMUM HORIZONTAL AREA OF THE WINDOW WELL SHALL BE 9 SQUARE FEET (0.9 M²), WITH A MINIMUM HORIZONTAL PROJECTION AND WIDTH OF 36 INCHES (914 MM). THE AREA OF THE WINDOW WELL SHALL ALLOW THE EMERGENCY ESCAPE AND RESCUE OPENING TO BE FULLY OPENED.

NOTE: SEE SECTION 310.2 FOR EXCEPTION

R310.2.1 LADDER AND STEPS.
 WINDOW WELLS WITH A VERTICAL DEPTH GREATER THAN 44 INCHES (1118 MM) SHALL BE EQUIPPED WITH A PERMANENTLY AFFIXED LADDER OR STEPS USABLE WITH THE WINDOW IN THE FULLY OPEN POSITION. LADDERS OR STEPS REQUIRED BY THIS SECTION SHALL NOT BE REQUIRED TO COMPLY WITH SECTIONS R311.7 AND R311.8. LADDERS OR RUNGS SHALL HAVE AN INSIDE WIDTH OF AT LEAST 12 INCHES (305 MM), SHALL PROJECT AT LEAST 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 WINDOW WELL.

SECTION R311 MEANS OF EGRESS

R311.1 MEANS OF EGRESS.
 ALL DWELLINGS SHALL BE PROVIDED WITH A MEANS OF EGRESS AS PROVIDED IN 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 EXTERIOR OF THE DWELLING AT THE REQUIRED EGRESS DOOR WITHOUT REQUIRING TRAVEL THROUGH A GARAGE.

R311.2 EGRESS DOOR.
 AT LEAST ONE EGRESS DOOR SHALL BE PROVIDED FOR EACH DWELLING UNIT. THE EGRESS DOOR SHALL BE SIDE-HINGED, AND SHALL PROVIDE A MINIMUM CLEAR WIDTH OF 32 INCHES (813 MM) WHEN MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES (1.57 RAD). THE

MINIMUM CLEAR HEIGHT OF THE DOOR OPENING SHALL NOT BE 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 OPENABLE 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 NOT BE LESS THAN THE DOOR SERVED. EVERY LANDING SHALL HAVE A MINIMUM DIMENSION OF 36 INCHES (914 MM) MEASURED IN THE DIRECTION OF TRAVEL. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT).

NOTE: SEE SECTION R311.3 FOR EXCEPTION

R311.3.1 FLOOR ELEVATIONS AT THE REQUIRED EGRESS DOORS.
 LANDINGS OR FINISHED FLOORS AT THE REQUIRED EGRESS DOOR SHALL NOT BE MORE THAN 11/2 INCHES (38 MM) LOWER THAN THE TOP OF THE THRESHOLD.

NOTE: SEE SECTION R311.3.1 FOR EXCEPTION

WHERE EXTERIOR LANDINGS OR FLOORS SERVING THE REQUIRED EGRESS DOOR ARE NOT AT GRADE, THEY SHALL BE PROVIDED WITH ACCESS TO GRADE BY MEANS OF A RAMP IN ACCORDANCE WITH SECTION R311.8 OR A STAIRWAY IN ACCORDANCE WITH SECTION R311.7.

R311.3.2 FLOOR ELEVATIONS FOR OTHER EXTERIOR DOORS.
 DOORS OTHER THAN THE REQUIRED EGRESS DOOR SHALL BE PROVIDED WITH LANDINGS OR FLOORS NOT MORE THAN 73/4 INCHES (196 MM) BELOW THE TOP OF THE THRESHOLD.

NOTE: SEE SECTION R311.3.2 FOR EXCEPTIONS

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

R311.4 VERTICAL EGRESS.
 EGRESS FROM HABITABLE LEVELS INCLUDING HABITABLE ATTICS AND BASEMENTS 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.

NOTE: SEE SECTION 311.2 FOR EXCEPTION

R311.5 CONSTRUCTION.
R311.5.1 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 MINIMUM WIDTH OF A HALLWAY SHALL BE NOT LESS THAN 3 FEET (914 MM).

NOTE: SEE SECTION 311.7.2 FOR EXCEPTION

R311.7 STAIRWAYS.
R311.7.1 WIDTH.
 STAIRWAYS SHALL NOT BE LESS THAN 36 INCHES (914 MM) IN CLEAR WIDTH AT ALL POINTS ABOVE THE PERMITTED HANDRAIL HEIGHT AND BELOW THE REQUIRED HEADROOM HEIGHT. HANDRAILS SHALL NOT PROJECT MORE THAN 4.5 INCHES (114 MM) ON EITHER SIDE OF THE STAIRWAY AND THE MINIMUM CLEAR WIDTH OF THE STAIRWAY AT AND BELOW THE HANDRAIL HEIGHT, INCLUDING TREADS AND LANDINGS, SHALL NOT BE LESS THAN 31/2 INCHES (787 MM) WHERE A HANDRAIL IS INSTALLED ON ONE SIDE AND 27 INCHES (689 MM) WHERE HANDRAILS ARE PROVIDED ON BOTH SIDES.

EXCEPTION: THE WIDTH OF SPIRAL STAIRWAYS SHALL BE IN ACCORDANCE WITH SECTION R311.7.10.1.

R311.7.2 HEADROOM.
 THE MINIMUM HEADROOM IN ALL PARTS OF THE STAIRWAY SHALL NOT BE 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 LARGER THAN 12 FEET (3658 MM) BETWEEN FLOOR LEVELS OR LANDINGS.

R311.7.4 WALKLINE.
 THE WALKLINE ACROSS WINDER TREADS SHALL BE CONCENTRIC TO THE CURVED DIRECTION OF TRAVEL THROUGH THE TURN AND LOCATED 12 INCHES (305 MM) FROM THE TURN WHERE THE WINDERS ARE NARROWER. THE 12-INCH (305 MM) DIMENSION SHALL BE MEASURED FROM THE WIDEST POINT OF THE CLEAR

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

R311.7.5.1 RISERS.
 THE MAXIMUM RISER HEIGHT SHALL BE 73/4 INCHES (196 MM). THE RISER 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. OPEN RISERS ARE PERMITTED PROVIDED THAT THE OPENING BETWEEN TREADS DOES NOT PERMIT THE PASSAGE OF A 4-INCH-DIAMETER (102 MM) SPHERE.

EXCEPTION: THE OPENING BETWEEN ADJACENT TREADS IS NOT LIMITED ON STAIRS WITH A TOTAL RISE OF 30 INCHES (762 MM) OR LESS.

R311.7.5.2 TREADS.
 THE MINIMUM TREAD DEPTH SHALL BE 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 MINIMUM TREAD DEPTH OF 10 INCHES (254 MM) MEASURED BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AT THE INTERSECTIONS WITH THE WALKLINE. WINDER TREADS SHALL HAVE A MINIMUM TREAD DEPTH OF 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 WALKLINE SHALL NOT EXCEED THE SMALLEST WINDER TREAD BY MORE THAN 3/8 INCH (9.5 MM). CONSISTENTLY SHAPED WINDERS AT THE WALKLINE SHALL BE ALLOWED WITHIN THE SAME FLIGHT OF STAIRS AS RECTANGULAR TREADS AND DO NOT HAVE TO BE WITHIN 3/8 INCH (9.5 MM) OF THE RECTANGULAR TREAD DEPTH.

R311.7.5.2.2 NOSINGS.
 THE RADIUS OF CURVATURE AT THE NOSING SHALL BE NO GREATER THAN 9/16 INCH (14 MM). A NOSING NOT LESS THAN 3/4 INCH (19 MM) BUT NOT MORE THAN 11/4 INCHES (32 MM) SHALL BE PROVIDED ON STAIRWAYS WITH SOLID RISERS. THE GREATEST NOSING PROJECTION SHALL NOT EXCEED THE SMALLEST NOSING PROJECTION BY MORE THAN 3/8 INCH (9.5 MM) BETWEEN TWO STORES, INCLUDING THE NOSING AT THE LEVEL OF FLOORS AND LANDINGS. BEVELING OF NOSINGS SHALL NOT EXCEED 1/2 INCH (12.7 MM).

EXCEPTION: A NOSING IS NOT REQUIRED WHERE THE TREAD DEPTH IS A MINIMUM OF 11 INCHES (279 MM).

R311.7.5.4 EXTERIOR WOOD/PLASTIC COMPOSITE STAIR TREADS.
 WOOD/PLASTIC COMPOSITE STAIR TREADS SHALL COMPLY WITH THE PROVISIONS OF SECTION R507.3.

R311.7.6 LANDINGS FOR STAIRWAYS.
 THERE SHALL BE A FLOOR OR LANDING AT THE TOP AND BOTTOM OF EACH STAIRWAY. THE MINIMUM WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL SHALL BE NO LESS THAN THE WIDTH OF THE FLIGHT SERVED. LANDINGS OF SHAPES OTHER THAN SQUARE OR RECTANGULAR SHALL BE PERMITTED PROVIDED THE DEPTH AT THE WALK LINE AND THE TOTAL AREA IS 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 MINIMUM DEPTH IN THE DIRECTION OF TRAVEL SHALL BE NOT LESS THAN 36 INCHES (914 MM).

NOTE: SEE SECTION R311.7.6. FOR EXCEPTION

R311.7.7 STAIRWAY WALKING SURFACE.
 THE WALKING SURFACE OF TREADS AND LANDINGS OF STAIRWAYS SHALL BE SLOPED NO STEEPER THAN ONE UNIT VERTICAL IN 48 INCHES HORIZONTAL (2-PERCENT SLOPE).

R311.7.8 HANDRAILS.
 HANDRAILS SHALL BE PROVIDED ON AT LEAST ONE SIDE OF EACH CONTINUOUS RUN OF TREADS OR FLIGHT 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).

R311.7.8.2 CONTINUITY.
 HANDRAILS FOR STAIRWAYS 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 OR SHALL TERMINATE IN NEWEL POSTS OR SAFETY TERMINALS. HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 11/2 INCH (38 MM) BETWEEN THE WALL AND THE HANDRAILS.

R311.7.8.3 GRIP-SIZE.
 ALL REQUIRED HANDRAILS SHALL BE OF ONE OF THE FOLLOWING TYPES OR PROVIDE EQUIVALENT GRASPABILITY.

R311.7.8.4 EXTERIOR WOOD/PLASTIC COMPOSITE HANDRAILS.
 WOOD/PLASTIC COMPOSITE HANDRAILS SHALL COMPLY WITH THE PROVISIONS OF SECTION R507.3.

R311.7.9 ILLUMINATION.
 ALL STAIRS SHALL BE PROVIDED WITH ILLUMINATION IN ACCORDANCE WITH SECTION R303.

R311.7.10 SPECIAL STAIRWAYS.
 SPIRAL STAIRWAYS AND BULKHEAD ENCLOSURE STAIRWAYS SHALL COMPLY WITH ALL REQUIREMENTS OF SECTION R311.7 EXCEPT AS SPECIFIED BELOW.

R311.7.10.1 SPIRAL STAIRWAYS.
 SPIRAL STAIRWAYS ARE PERMITTED, PROVIDED THE MINIMUM CLEAR WIDTH AT AND BELOW THE HANDRAIL SHALL BE 26 INCHES (660 MM) WITH EACH TREAD HAVING A 7/2-INCH (190 MM) MINIMUM TREAD DEPTH AT 12 INCHES (914 MM) FROM THE NARROWER EDGE. ALL TREADS SHALL BE IDENTICAL AND THE RISE SHALL BE NO MORE THAN 9/2 INCHES (241 MM). A MINIMUM HEADROOM OF 6 FEET 6 INCHES (1982 MM) SHALL BE PROVIDED.

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 SHALL BE EXEMPT FROM THE REQUIREMENTS OF SECTIONS R311.3 AND R311.7 WHERE THE MAXIMUM HEIGHT FROM THE BASEMENT FINISHED FLOOR LEVEL TO GRADE ADJACENT TO THE STAIRWAY DOES NOT EXCEED 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 R311.8 FOR EXCEPTION

R311.8 RAMPS.
R311.8.1 MAXIMUM SLOPE.
 RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1 UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.33-PERCENT SLOPE).

NOTE: SEE SECTION R311.8 FOR EXCEPTION

R311.8.2 LANDINGS REQUIRED.
 A MINIMUM 3-FOOT-BY-3-FOOT (914 MM BY 914 MM) LANDING SHALL BE PROVIDED:

1. AT THE TOP AND BOTTOM OF RAMPS.
2. WHERE DOORS OPEN ONTO RAMPS.
3. WHERE RAMPS CHANGE DIRECTION.

R311.8.3 HANDRAILS REQUIRED.
 HANDRAILS SHALL BE PROVIDED ON AT LEAST ONE SIDE OF ALL 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.
 HANDRAILS ON RAMPS SHALL COMPLY WITH SECTION R311.7.8.3.

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 11/2 INCHES (38 MM) BETWEEN THE WALL AND THE HANDRAILS.

STAIR WIDTH AT THE WALKING SURFACE OF THE WINDER, IF WINDERS ARE ADJACENT WITHIN THE 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 ALL DIMENSIONS AND DIMENSIONED SURFACES SHALL BE EXCLUSIVE OF CARPETS, RUGS OR RUNNERS.

R311.7.5.1 RISERS.
 THE MAXIMUM RISER HEIGHT SHALL BE 73/4 INCHES (196 MM). THE RISER 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. OPEN RISERS ARE PERMITTED PROVIDED THAT THE OPENING BETWEEN TREADS DOES NOT PERMIT THE PASSAGE OF A 4-INCH-DIAMETER (102 MM) SPHERE.

EXCEPTION: THE OPENING BETWEEN ADJACENT TREADS IS NOT LIMITED ON STAIRS WITH A TOTAL RISE OF 30 INCHES (762 MM) OR LESS.

R311.7.5.2 TREADS.
 THE MINIMUM TREAD DEPTH SHALL BE 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 MINIMUM TREAD DEPTH OF 10 INCHES (254 MM) MEASURED BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AT THE INTERSECTIONS WITH THE WALKLINE. WINDER TREADS SHALL HAVE A MINIMUM TREAD DEPTH OF 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 WALKLINE SHALL NOT EXCEED THE SMALLEST WINDER TREAD BY MORE THAN 3/8 INCH (9.5 MM). CONSISTENTLY SHAPED WINDERS AT THE WALKLINE SHALL BE ALLOWED WITHIN THE SAME FLIGHT OF STAIRS AS RECTANGULAR TREADS AND DO NOT HAVE TO BE WITHIN 3/8 INCH (9.5 MM) OF THE RECTANGULAR TREAD DEPTH.

R311.7.5.2.2 NOSINGS.
 THE RADIUS OF CURVATURE AT THE NOSING SHALL BE NO GREATER THAN 9/16 INCH (14 MM). A NOSING NOT LESS THAN 3/4 INCH (19 MM) BUT NOT MORE THAN

SECTION R312 GUARDS AND WINDOW FALL PROTECTION

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 SILLS.
IN DWELLING UNITS, WHERE THE OPENING OF AN OPERABLE WINDOW IS LOCATED MORE THAN 72 INCHES (1829 MM) ABOVE THE FINISHED GRADE OR SURFACE BELOW, THE LOWEST PART OF THE CLEAR OPENING OF THE WINDOW SHALL BE A MINIMUM OF 24 INCHES (610 MM) ABOVE THE FINISHED FLOOR OF THE ROOM IN WHICH THE WINDOW IS LOCATED. OPERABLE SECTIONS OF WINDOWS SHALL NOT PERMIT OPENINGS THAT ALLOW PASSAGE OF A 4-INCH-DIAMETER (102 MM) SPHERE WHERE SUCH OPENINGS ARE LOCATED WITHIN 24 INCHES (610 MM) OF THE FINISHED FLOOR.

NOTE: SEE SECTION R312.2.1 FOR EXCEPTIONS

SECTION R313 AUTOMATIC FIRE SPRINKLER SYSTEMS

R313.1 TOWNHOUSE AUTOMATIC FIRE SPRINKLER SYSTEMS.
AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN TOWNHOUSES.

EXCEPTION: AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL NOT BE REQUIRED WHEN ADDITIONS OR ALTERATIONS ARE MADE TO EXISTING TOWNHOUSES THAT DO NOT HAVE AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM INSTALLED.

R313.1.1 DESIGN AND INSTALLATION.
AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEMS FOR TOWNHOUSES SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH SECTION P2904.

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

NOTE: SEE SECTION R313.2 FOR EXCEPTION

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

SECTION R314 SMOKE ALARMS

R314.1 SMOKE DETECTION AND NOTIFICATION.
ALL SMOKE ALARMS SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 217 AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE AND THE HOUSEHOLD FIRE WARNING EQUIPMENT PROVISIONS OF NFPA 72.

R314.2 SMOKE DETECTION SYSTEMS.
HOUSEHOLD FIRE ALARM SYSTEMS INSTALLED IN ACCORDANCE WITH NFPA 72 THAT INCLUDE SMOKE ALARMS, OR A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE INSTALLED AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS, SHALL BE PERMITTED. THE HOUSEHOLD FIRE ALARM SYSTEM SHALL PROVIDE THE SAME LEVEL OF SMOKE DETECTION AND ALARM AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS. WHERE A HOUSEHOLD FIRE WARNING SYSTEM IS INSTALLED USING A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE(S), IT SHALL BECOME A PERMANENT FEATURE OF THE OCCUPANCY AND OWNED BY THE HOMEOWNER. THE SYSTEM SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION AND BE MAINTAINED IN ACCORDANCE WITH NFPA 72.

NOTE: SEE SECTION R314.2 FOR EXCEPTION

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

1. IN EACH SLEEPING ROOM.
2. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
3. ON EACH ADDITIONAL STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS BUT 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 SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.

R314.3.1 ALTERATIONS, REPAIRS AND ADDITIONS.
WHEN ALTERATIONS, REPAIRS OR ADDITIONS REQUIRING A PERMIT OCCUR, OR WHEN ONE OR MORE SLEEPING ROOMS ARE ADDED OR CREATED IN EXISTING DWELLINGS, THE INDIVIDUAL DWELLING UNIT SHALL BE EQUIPPED WITH SMOKE ALARMS LOCATED AS REQUIRED FOR NEW DWELLINGS.

NOTE: SEE SECTION 314.3.1 FOR EXCEPTIONS

R314.4 POWER SOURCE.
SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHEN SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE, AND WHEN PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION.

NOTE: SEE SECTION R314.4 FOR EXCEPTIONS

R314.5 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 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.

NOTE: SEE SECTION R314.5 FOR EXCEPTION

SECTION R315 CARBON MONOXIDE ALARMS

R315.1 CARBON MONOXIDE ALARMS.
FOR NEW CONSTRUCTION, AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.

R315.2 CARBON MONOXIDE DETECTION SYSTEMS.
CARBON MONOXIDE DETECTION SYSTEMS THAT INCLUDE CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THIS SECTION FOR CARBON MONOXIDE ALARMS AND NFPA 720, SHALL BE PERMITTED. THE CARBON MONOXIDE DETECTORS SHALL BE LISTED AS COMPLYING WITH UL 2075, WHERE A HOUSEHOLD CARBON MONOXIDE DETECTION SYSTEM IS INSTALLED, IT SHALL BECOME A PERMANENT FEATURE OF THE OCCUPANCY, OWNED BY THE HOMEOWNER AND SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION.

NOTE: SEE SECTION 315.2 FOR EXCEPTION

R315.3 WHERE REQUIRED IN EXISTING DWELLINGS.
WHERE WORK REQUIRING A PERMIT OCCURS IN EXISTING DWELLINGS THAT HAVE ATTACHED GARAGES OR IN EXISTING DWELLINGS WITHIN WHICH FUEL-FIRED APPLIANCES EXIST, CARBON MONOXIDE ALARMS SHALL BE PROVIDED IN ACCORDANCE WITH SECTION R315.1.

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) AS ESTABLISHED IN TABLE R301.2(1) SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS CONTAINED IN THIS SECTION. 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.
ALL STRUCTURAL SYSTEMS OF ALL BUILDINGS AND STRUCTURES SHALL BE DESIGNED, CONNECTED AND ANCHORED TO RESIST FLOTTATION COLLAPSE AND PERMANENT LATERAL MOVEMENT DUE TO STRUCTURAL LOADS AND STRESSES FROM FLOODING EQUAL TO THE DESIGN FLOOD ELEVATION R322.1.3 FLOOD-RESISTANT CONSTRUCTION.
ALL BUILDINGS AND STRUCTURES ERRECTED 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 IS THE HIGHER OF:

1. THE BASE FLOOD ELEVATION AT THE DEPTH OF PEAK ELEVATION OF FLOODING (INCLUDING WAVE HEIGHT) WHICH HAS A 1 PERCENT (100-YEAR FLOOD) OR GREATER CHANCE OF BEING EQUALLED OR EXCEEDED IN ANY GIVEN YEAR; OR
 2. 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 322.1.4.2

R322.1.6 PROTECTION OF MECHANICAL 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 (COASTAL HIGH-HAZARD AREAS INCLUDING V ZONES), 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.

R322.2 FLOOD HAZARD AREAS (INCLUDING A ZONES).
ALL AREAS THAT HAVE BEEN DETERMINED TO BE PRONE TO FLOODING BUT NOT SUBJECT TO HIGH-VELOCITY WAVE ACTION SHALL BE DESIGNATED AS FLOOD HAZARD AREAS. FLOOD HAZARD AREAS THAT HAVE BEEN DELINEATED AS SUBJECT TO WAVE HEIGHTS BETWEEN 11/2 FEET (457 MM) AND 3 FEET (914 MM) SHALL BE DESIGNATED AS COASTAL A ZONES. ALL BUILDING AND STRUCTURES CONSTRUCTED IN WHOLE OR IN PART IN FLOOD HAZARD AREAS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTIONS R322.2.1 THROUGH R322.2.3.

NOTE: SEE SECTION R322.1.6 FOR EXCEPTION

R322.2.2 ENCLOSED AREA BELOW DESIGN FLOOD ELEVATION.
ENCLOSED AREAS, INCLUDING CRAWL SPACES, THAT ARE BELOW THE DESIGN FLOOD ELEVATION SHALL:

1. BE USED SOLELY FOR PARKING OF VEHICLES, BUILDING ACCESS OR STORAGE.
2. BE PROVIDED WITH FLOOD OPENINGS THAT MEET THE FOLLOWING CRITERIA:

NOTE: SEE SECTION R322.2.2 FOR CRITERIA

R322.3.5 ENCLOSED AREAS BELOW DESIGN FLOOD ELEVATION.
ENCLOSED AREAS BELOW THE DESIGN FLOOD ELEVATION SHALL BE USED SOLELY FOR PARKING OF VEHICLES, BUILDING ACCESS OR STORAGE.

CHAPTER 4 - FOUNDATIONS

R401.2 REQUIREMENTS.
FOUNDATION CONSTRUCTION SHALL BE CAPABLE OF ACCOMMODATING ALL LOADS ACCORDING TO 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. GRAVEL FILL USED AS FOOTINGS FOR WOOD AND PRECAST CONCRETE FOUNDATIONS SHALL COMPLY WITH SECTION R403.

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 A MINIMUM OF 6 INCHES (152 MM) WITHIN THE FIRST 10 FEET (3048 MM).

SEE SECTION 401.3 FOR EXCEPTION

R401.4 SOIL TESTS.
WHERE QUANTIFIABLE DATA CREATED BY ACCEPTED SOIL SCIENCE METHODOLOGIES INDICATE EXPANSIVE, COMPRESSIBLE, SHIFTING 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.

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-TO-LUMBER 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-TUMBLER GALVANIZED (ZINC COATED) STEEL NAILS. ELECTRO-GALVANIZED STEEL NAILS AND GALVANIZED (ZINC COATED) STEEL STAPLES SHALL NOT BE PERMITTED.

R402.1.2 WOOD TREATMENT.
ALL LUMBER AND PLYWOOD SHALL BE PRESERVE-PRESERVATIVE TREATED AND DRIED AFTER TREATMENT IN ACCORDANCE WITH AFWA U1 (COMMODITY SPECIFICATION A, USE CATEGORY 4B AND SECTION 5.2), AND SHALL BEAR THE LABEL OF AN ACCREDITED AGENCY. WHERE LUMBER AND/OR PLYWOOD IS CUT OR DRILLED AFTER TREATMENT, THE TREATED SURFACE SHALL BE FIELD TREATED WITH COPPER NAPHTHENATE, THE CONCENTRATION OF WHICH SHALL CONTAIN A MINIMUM OF 2 PERCENT COPPER METAL, BY REPEATED BRUSHING, DIPPING OR SOAKING UNTIL THE WOOD ABSORBS NO MORE PRESERVATIVE.

R402.2 CONCRETE.
CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF FC, 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 BLENDED CEMENTS 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 4.2.3 OF ACI 318. MATERIALS USED TO PRODUCE CONCRETE AND TESTING THEREOF SHALL COMPLY WITH THE APPLICABLE STANDARDS LISTED IN CHAPTER 3 OF ACI 318 OR ACI 332.

SECTION R403 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 WHICH 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 FOOTING SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R403 OR IN ACCORDANCE WITH ACI 332.

R403.1.1 MINIMUM SIZE.
MINIMUM SIZES FOR CONCRETE AND MASONRY FOOTINGS SHALL BE AS SET FORTH IN TABLE R403.1 AND FIGURE R403.1(1). THE FOOTING WIDTH, W, SHALL BE BASED ON THE LOAD-BEARING VALUE OF THE SOIL IN ACCORDANCE WITH TABLE R401.4.1. SPREAD FOOTINGS SHALL BE AT LEAST 6 INCHES (152 MM) IN THICKNESS, T. FOOTING PROJECTIONS, P, SHALL BE AT LEAST 2 INCHES (51 MM) AND SHALL NOT EXCEED THE THICKNESS OF THE FOOTING. 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).

R403.1.2 CONTINUOUS FOOTING IN SEISMIC DESIGN CATEGORIES DO, D1 AND D2.
THE BRACED WALL PANELS AT EXTERIOR WALLS OF BUILDINGS LOCATED IN SEISMIC DESIGN CATEGORIES DO, D1 AND D2 SHALL BE SUPPORTED BY CONTINUOUS FOOTINGS. ALL REQUIRED INTERIOR BRACED WALL PANELS IN BUILDINGS WITH PLAN DIMENSIONS GREATER THAN 50 FEET (15 240 MM) SHALL ALSO BE SUPPORTED BY CONTINUOUS FOOTINGS.

R403.1.3 SEISMIC REINFORCING.
CONCRETE FOOTINGS LOCATED IN SEISMIC DESIGN CATEGORIES DO, D1 AND D2, AS ESTABLISHED IN TABLE R301.2(1), SHALL HAVE MINIMUM REINFORCEMENT. BOTTOM REINFORCEMENT SHALL BE LOCATED A MINIMUM OF 3 INCHES (76 MM) CLEAR FROM THE BOTTOM OF THE FOOTING.

NOTE: SEE SECTION 403.1.3 FOR EXCEPTION

R403.1.4 MINIMUM DEPTH.
ALL EXTERIOR FOOTINGS SHALL BE PLACED AT LEAST 12 INCHES (305 MM) BELOW THE UNDISTURBED GROUND SURFACE. WHERE APPLICABLE, THE DEPTH OF FOOTINGS SHALL ALSO CONFORM TO SECTIONS R403.1.4.1 THROUGH R403.1.4.2.

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 OR EXCEPTIONS LISTED IN IRC CODE.

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 TEN UNITS HORIZONTAL (10-PERCENT SLOPE).

R403.1.6 FOUNDATION ANCHORAGE.
SILL PLATES AND WALLS SUPPORTED DIRECTLY ON CONTINUOUS FOUNDATIONS 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 ANCHOR BOLTS SPACED A MAXIMUM OF 6 FEET (1829 MM) ON CENTER. BOLTS SHALL BE AT LEAST 1/2 INCH (12.7 MM) IN DIAMETER AND SHALL EXTEND A MINIMUM OF 7 INCHES (178 MM) INTO CONCRETE OR GROUTED CELLS OF CONCRETE MASONRY UNITS. A NUT AND WASHER SHALL BE TIGHTENED ON EACH ANCHOR BOLT. THERE SHALL BE A MINIMUM OF 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. COLD-FORMED STEEL FRAMING SYSTEMS SHALL BE FASTENED TO WOOD SILL PLATES OR ANCHORED DIRECTLY TO THE FOUNDATION AS REQUIRED IN SECTION R505.3.1 OR R603.3.1.

NOTE: CONSULT SECTION R403.1.6. FOR EXCEPTIONS, SEE SECTION R403.1.6.1 FOUNDATION ANCHORAGE IN SEISMIC DESIGN CATEGORIES C (WOOD LIGHT-FRAME TOWNHOUSES), DO, D1 AND D2.

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.

EXCEPTION: SLAB-ON-GROUND AND OTHER FOUNDATION SYSTEMS WHICH HAVE PERFORMED ADEQUATELY IN SOIL CONDITIONS SIMILAR TO THOSE ENCOUNTERED AT THE BUILDING SITE ARE PERMITTED SUBJECT TO THE APPROVAL OF THE BUILDING OFFICIAL.

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 A MINIMUM OF 64°F (18°C), FOOTINGS ARE NOT REQUIRED TO EXTEND BELOW THE FROST LINE WHEN 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 MASONRY 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).

SECTION R404 FOUNDATION AND RETAINING WALLS

R404.1 CONCRETE AND MASONRY FOUNDATION WALLS.
CONCRETE FOUNDATION WALLS SHALL BE SELECTED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R404.1.2. MASONRY FOUNDATION WALLS SHALL BE SELECTED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R404.1.1.

R404.1.1 DESIGN OF MASONRY FOUNDATION WALLS.
MASONRY FOUNDATION WALLS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION OR IN ACCORDANCE WITH THE PROVISIONS OF TMS 402/ACI 530/ASCE 5 OR NCMA TR88-A. WHEN TMS 402/ACI 530/ASCE 5, NCMA TR88-A OR THE PROVISIONS OF THIS SECTION ARE USED TO DESIGN MASONRY FOUNDATION WALLS, PROJECT DRAWINGS, TYPICAL DETAILS AND SPECIFICATIONS ARE NOT REQUIRED TO BEAR THE SEAL OF THE ARCHITECT OR ENGINEER RESPONSIBLE FOR DESIGN, UNLESS OTHERWISE REQUIRED BY THE STATE LAW OF THE JURISDICTION HAVING AUTHORITY.

NOTE: SEE SECTIONS 404.1 THROUGH 404.4 FOR FURTHER SPECIFICATIONS ON FOUNDATION AND RETAINING WALLS.

SECTION R405 FOUNDATION DRAINAGE

R405.1 CONCRETE OR MASONRY FOUNDATIONS.
DRAINS SHALL BE PROVIDED AROUND ALL 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 AREA TO BE PROTECTED AND SHALL DISCHARGE BY GRAVITY OR MECHANICAL MEANS INTO AN APPROVED DRAINAGE SYSTEM. GRAVEL OR CRUSHED STONE DRAINS SHALL EXTEND AT LEAST 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. 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 A MINIMUM OF 2 INCHES (51 MM) OF WASHED GRAVEL OR CRUSHED ROCK AT LEAST 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.

EXCEPTION: A DRAINAGE SYSTEM IS NOT REQUIRED WHEN THE FOUNDATION IS INSTALLED ON WELL-DRAINED GROUND OR SAND-GRAVEL MIXTURE SOILS ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM, GROUP 1 SOILS, AS DETAILED IN TABLE R405.1.

R405.1.1 PRECAST CONCRETE FOUNDATION.
PRECAST CONCRETE WALLS THAT RETAIN EARTH AND ENCLOSE HABITABLE OR USABLE SPACE LOCATED BELOW-GRADE THAT REST ON CRUSHED STONE FOOTINGS SHALL HAVE A PERFORATED DRAINAGE PIPE INSTALLED BELOW THE BASE OF THE WALL ON EITHER THE INTERIOR OR EXTERIOR SIDE OF THE WALL, AT LEAST ONE FOOT (305 MM) BEYOND THE EDGE OF THE WALL. IF THE EXTERIOR DRAINAGE PIPE IS USED, AN APPROVED FILTER MEMBRANE MATERIAL SHALL COVER THE PIPE. THE DRAINAGE SYSTEM SHALL DISCHARGE INTO AN APPROVED SEWER SYSTEM OR TO DAYLIGHT.

R405.2 WOOD FOUNDATIONS.
WOOD FOUNDATIONS ENCLOSEING HABITABLE OR USABLE SPACES LOCATED BELOW GRADE SHALL BE ADEQUATELY DRAINED IN ACCORDANCE WITH SECTIONS R405.2.1 THROUGH R405.2.3.

R405.2.1 BASE.
A POROUS LAYER OF GRAVEL, CRUSHED STONE OR COARSE SAND

SHALL BE PLACED TO A MINIMUM THICKNESS OF 4 INCHES (102 MM) UNDER THE BASEMENT FLOOR. PROVISION SHALL BE MADE FOR AUTOMATIC DRAINING OF THIS LAYER AND THE GRAVEL OR CRUSHED STONE WALL FOOTINGS.

R405.2.2 VAPOR RETARDER.
A 6-MIL-THICK (0.15 MM) POLYETHYLENE VAPOR RETARDER SHALL BE APPLIED OVER THE POROUS LAYER WITH THE BASEMENT FLOOR CONSTRUCTED OVER THE POLYETHYLENE.

R405.2.3 DRAINAGE SYSTEM.
IN OTHER THAN GROUP 1 SOILS, A SUMP SHALL BE PROVIDED TO DRAIN THE POROUS LAYER AND FOOTINGS. THE SUMP SHALL BE AT LEAST 24 INCHES (610 MM) IN DIAMETER OR 20 INCHES SQUARE (0.0129 M²), SHALL EXTEND AT LEAST 24 INCHES (610 MM) BELOW THE BOTTOM OF THE BASEMENT FLOOR AND SHALL BE CAPABLE OF POSITIVE GRAVITY OR MECHANICAL DRAINAGE TO REMOVE ANY ACCUMULATED WATER. THE DRAINAGE SYSTEM SHALL DISCHARGE INTO AN APPROVED SEWER SYSTEM OR TO DAYLIGHT.

SECTION R406 FOUNDATION WATERPROOFING AND DAMPPROOFING

R406.2 CONCRETE AND MASONRY FOUNDATION WATERPROOFING.
IN AREAS WHERE A HIGH WATER TABLE OR OTHER SEVERE SOIL-WATER CONDITIONS ARE KNOWN TO EXIST, EXTERIOR FOUNDATION WALLS THAT RETAIN EARTH AND ENCLOSE INTERIOR SPACES AND FLOORS BELOW GRADE SHALL BE WATERPROOFED FROM THE TOP OF THE FOOTING TO THE FINISHED GRADE. WALLS SHALL BE WATERPROOFED IN ACCORDANCE WITH ONE OF THE FOLLOWING:

1. TWO-PLY HOT-MOPPED FELTS.
2. FIFTY-FIVE-POUND (25 KG) ROLL ROOFING.
3. SIX-MIL (0.15 MM) POLYVINYL CHLORIDE.
4. SIX-MIL (0.15 MM) POLYETHYLENE.
5. FORTY-MIL (1 MM) POLYMER-MODIFIED ASPHALT.
6. SIXTY-MIL (1.5 MM) FLEXIBLE POLYMER CEMENT.
7. ONE-EIGHTH-INCH (3 MM) CEMENT-BASED, FIBER-REINFORCED, WATERPROOF COATING.
8. SIXTY-MIL (0.22 MM) SILV-FLY LIQUID-APPLIED SYNTHETIC RUBBER.

EXCEPTION: ORGANIC-SOLVENT-BASED PRODUCTS SUCH AS HYDROCARBONS, CHLORINATED HYDROCARBONS, KETONES AND ESTERS SHALL NOT BE USED FOR ICF WALLS WITH EXPANDED POLYSTYRENE FORM MATERIAL. USE OF PLASTIC ROOFING CEMENTS, ACRYLIC COATINGS, LATEX COATINGS, MORTARS AND PARGINGS TO SEAL ICF WALLS IS PERMITTED. COLD-SETTING ASPHALT OR HOT ASPHALT SHALL CONFORM TO TYPE C OF ASTM D 449. HOT ASPHALT SHALL BE APPLIED AT A TEMPERATURE OF LESS THAN 200°F (93°C).

ALL JOINTS IN MEMBRANE WATERPROOFING SHALL BE LAPPED AND SEALED WITH AN ADHESIVE COMPATIBLE WITH THE MEMBRANE.

SECTION R408 UNDER-FLOOR SPACE

R408.1 VENTILATION.
THE UNDER-FLOOR SPACE BETWEEN THE BOTTOM OF THE FLOOR JOISTS AND THE EARTH UNDER ANY BUILDING (EXCEPT SPACE OCCUPIED BY A BASEMENT) SHALL HAVE VENTILATION OPENINGS THROUGH FOUNDATION WALLS OR EXTERIOR WALLS. THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 M²) FOR EACH 150 SQUARE FEET (14 M²) OF UNDER-FLOOR SPACE AREA, UNLESS THE GROUND SURFACE IS COVERED BY A CLASS 1 VAPOR RETARDER MATERIAL. WHEN A CLASS 1 VAPOR RETARDER MATERIAL IS USED, THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 M²) FOR EACH 1,500 SQUARE FEET (140 M²) OF UNDER-FLOOR SPACE AREA. ONE SUCH VENTILATING OPENING SHALL BE WITHIN 3 FEET (914 MM) OF EACH CORNER OF THE BUILDING.

R408.2 OPENINGS FOR UNDER-FLOOR VENTILATION.
THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 M²) FOR EACH 150 SQUARE FEET (14 M²) OF UNDER-FLOOR AREA. ONE VENTILATION OPENING SHALL BE WITHIN 3 FEET (915 MM) OF EACH CORNER OF THE BUILDING. VENTILATION OPENINGS SHALL BE COVERED FOR THEIR HEIGHT AND WIDTH WITH ANY OF THE FOLLOWING MATERIALS PROVIDED THAT THE LEAST DIMENSION OF THE COVERING SHALL NOT EXCEED 1/4 INCH (6.4 MM):

1. PERFORATED SHEET METAL PLATES NOT LESS THAN 0.070 INCH (1.8 MM) THICK.
2. EXPANDED SHEET METAL PLATES NOT LESS THAN 0.047 INCH (1.2 MM) THICK.
3. CAST-IRON GRILL OR GRATING.
4. EXTRUDED LOAD-BEARING BRICK VENTS.
5. HARDWARE CLOTH OF 0.035 INCH (0.89 MM) WIRE OR HEAVIER.
6. CORROSION-RESISTANT WIRE MESH, WITH THE LEAST DIMENSION BEING 1/8 INCH (3.2 MM) THICK.

NOTE: SEE SECTION 408.2 FOR EXCEPTION

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