

General Notes

General Notes:

- Do not scale drawings. written dimensions take precedence. contractor to verify and be responsible for all dimensions and conditions on the job and notify Richard Grothues Designs of any variations from the dimensions or conditions shown on drawings.
- All written notes on the architectural drawings shall take precedence over the minimum standard notes detailed on this sheet.
- Every sleeping room shall have at least one operable emergency escape and rescue opening. The opening shall have a sill height of not more than 44" a.f.f. All emergency escape and rescue openings shall have a minimum net clear opening of 5.7 sq. ft. except grade floor openings shall have a minimum net clear opening of 5 sq. ft. The minimum net clear opening height shall be 24 inches and the net clear opening width shall be 20 inches (IRC 2012, Sect. R310).
- All window head heights taken from immediate interior floor level. Head heights in stairwells taken from first floor level.
- Ceiling heights taken from where the note is located on plan.
- Bathroom 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 above the floor (2012 IRC Section R307.2).
- All insulation shall have a flame spread rating not to exceed 25 and a smoke density rating not to exceed 450 (2012 IRC Section R316).
- Enclosed attics and enclosed rafter spaces formed where ceilings are applied direction 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. Ventilating openings shall be provided with corrosion-resistant wire mesh with 1/8" minimum to 1/4" maximum spacing (2012 IRC Section R806.1).
- When garage door openers are installed, provide low voltage for shutout and reverse sensors at both sides of overhead door.
- All walls with horizontal DWV shall be 2x6.

Attic Access Notes:

- Attics containing appliances requiring access shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30" high and 22" wide and not more than 20 feet long when measured along the centerline of the passageway from the opening to the appliance (2012 IRC Section M1305.1.3).
- Attics containing appliances shall be provided with a pull down stairway with a clear opening of not less than 22 inches in width and a load capacity of not less than 350 pounds.

Electrical Notes:

- Smoke alarms shall be installed in 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 but not including crawl spaces and uninhabitable attics. (2012 IRC Section R314.3)
- 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. Smoke alarms shall be interconnected (2012 IRC Section R314.4).
- GFCI receptacles to be located and installed per Sections E3801 and E3802 of the 2012 IRC.
- Provide 110v receptacle and switched light in attic near HVAC equipment (2012 IRC Section M1305.1.3.1). Locate switch near (if not outside) attic access.
- Fire rated wall penetrations by electrical outlets - surface area of individual metallic outlet or switch boxes shall not exceed 16 sq. in. The aggregate surface area of boxes shall not exceed 100 sq. in. per 100 sq. ft. Boxes located on opposite sides on walls or partitions shall be separated by a horizontal distance of 24". Metallic outlet or switch boxes shall be securely fastened to the studs, and the opening in the wallboard facing shall be cut so that the clearance between the box and the wallboard does not exceed 1/8 in. (taken from UL directory, page 13) (IRC 2012, Sect. R321.3).
- Provide a Cat 5e cable to every bedroom and study.
- Provide outside main of minimum 200 amp service with minimum #12 AWG copper wire and two ground rods.

Ventilation Notes:

- Provide ventilation at all baths and utility rooms through natural or mechanical means. Minimum operable window opening is 1 1/2 sq. ft., and ventilation rate for a (intermittent) mechanical vent shall be 50 cfm. (IRC 2012, Section R303.3).

Roof Notes:

- Plate heights as noted on sheet.
- Slopes as noted on sheet.
- 1'-6" overhangs from face of studs U.N.O.
- 8" overhangs from face of studs on gable end U.N.O.
- 12" overhangs from face of studs on dormers U.N.O.
- Soffit and ridge venting per builder specifications.
- Roofing material to be Owens Corning Duration or equivalent. Color to be determined.
- Roofing material shall withstand 110 mph winds and shall have a fire resistance rating of A or B per UL790.
- Minimum 6 nails per shingle. Nail pattern per manufacturer's specifications.
- Minimize plumbing penetrations through roof decking. Plumbing vents and all other penetrations through roof decking shall be directed to back roof slope where possible.
- Color coordinate piping to roof material.

Glazing Notes:

- Glazing in wall assemblies required to be one hour rated walls shall be in accordance with 2012 IRC Section R317. Builder to determine final material and provide appropriate test criteria to local authorities.
- Glazing identification and protection in hazardous locations shall comply with Section R308 of the 2012 IRC.
- Glazing in doors and end enclosures for hot tubs, whirlpools, saunas, steam rooms, bathtubs and showers shall comply with section R308 of the 2012 IRC.
- Provide safety glazing in these hazardous locations (IRC 2012 Section R308.4):
 - Glazing in tubs and showers where the bottom edge of a pane is less than 60" from any walking surface.
 - Glazing in side hinged doors except jalousies.
 - Glazing within 24" from a door and bottom of pane is less than 60" from the floor.
 - Exposed area of an individual pane greater than 9 sq. ft.
 - Bottom edge of a pane is less than 18" from floor.
 - Top edge of a pane is greater than 36" from floor (when bottom of this same pane is lower than 36" from the floor).
 - One or more walking surfaces within 36" horizontally of the glazing.
 - Glazing in stairwells where the bottom edge of a pane is less than 60" vertically from any nosing, and 60" horizontally from any stair nosing, where the edge of pane is less than 60" above the floor.

Masonry Notes:

- All concrete masonry units shall conform to IRC 2012
- Mortar for concrete masonry shall conform to IRC 2012, Section R607.
- Grout for concrete masonry shall be in accordance with IRC 2012, Section R609.
- Provide bond breaker at masonry bearing of all cast-in-place concrete slabs with building paper or as otherwise detailed.
- Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by 7/8 inch corrugated. Each tie shall be spaced not more than 24 inches on center horizontally and vertically and shall support not more than 2.67 square feet of wall area (2012 IRC Section R703.4.1).
- Weepholes shall be provided in the outside wythe of masonry walls at a maximum spacing of 33 inches on center. Weepholes shall not be less than 3/16" in diameter. Weepholes shall be located immediately above the flashing (2012 IRC Section R703.7.6).
- A minimum 0.019-inch, corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of 3 1/2 inches shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 928. The weep screed shall be placed a minimum of 4 inches above the earth or 2 inches above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange, the exterior lath shall cover and terminate on the attachment flange of the weep screed (2012 IRC Section R703.7.6.2.1).
- Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper (2012 IRC Section R703.6.3).
- The veneer shall be separated from the sheathing by an air space of a minimum of a nominal 1 inch but not more than 4 1/2 inches (2012 IRC Section R703.7.4.2).
- In areas subject to damage from termites as indicated by Table R301.2(1), methods of protection shall be in accordance with this section (2012 IRC Section R320.1).
- R404.1.6 Height above finished grade. Concrete and masonry foundation walls shall extend above the finished grade adjacent to the foundation at all points a minimum of 4 inches (102 mm) where masonry veneer is used and a minimum of 6 inches elsewhere.

Plumbing Notes:

- Floor drains shall have waste outlets not less than 2" in diameter and shall be provided with a removable strainer. The floor drain shall be constructed so that the drain is capable of being cleaned. Access shall be provided to the drain inlet (IRC 2012, Section P2718).
- Toilet, bath and showers shall be spaced as per Figure R307.1 in the 2012 IRC.
- Provide plumbing access panel at all bathtubs (IRC 2012, P2704).
- Locate water heater(s) in attic, above load bearing partition, in a pan with relief line to outside (IRC 2012, Sections M2005, M1305.1.3, and G2406).
- All gas appliances to comply with Chapter 24 of the 2012 IRC.
- Before foundation inspection can be made, one plumbing ground must extend a minimum of 10' above finished slab height and contain a 10' column of water.

Water Heater Notes:

- Installation of water heater to comply with Sections P2801.2 and M2005 of the 2012 IRC.
- Provide adequate attic ventilation for gas water heater (2012 IRC Section G407).
- Size of metal pan is determined by Section P2801.5.1 of the 2012 IRC.
- Provide decking below metal pan in accordance to Section R1307.1 of the 2012 IRC.
- Provide drain lines from pan and water heater to exterior (not to the sanitary sewer line) (2012 IRC Section P2801.5.2).
- Locate water heater on at least one (2012 IRC Sections P2801.3 & M2005):
 - partition
 - 2x6 joists at 16" o.c. (8' max. span)
 - 2x8 joists at 16" o.c. (10' max. span)
- Gas water heaters in garages shall be raised on a 18" high platform, and conform to 2012 IRC Sections P2801.6 and M1307.3.1.

Fireplace Notes:

- All brick or pre-fabricated fireplaces to be built and installed per Chapter 10 of the IRC 2012. A copy of the manufacturer's installation manual shall be available on site for inspector's review.
- Chimneys to be 2'-0" (min.) above roof line within a 10'-0" radius, or 3'-0" from any roofline (ridge) (2012 IRC Table R1003.1, Letter "F").
- Venting of both fireplace types shall comply to Chapter 18 of the 2012 IRC.
- Optional spark arresters can be installed at chimney: mesh to have max. 1/2" gap.

Stair & Guard Notes:

- Stairways, handrails and guardrails shall comply with Sections R311 and R312 of the 2012 IRC.
- Handrails to be 34" to 38" above nose of tread (2012 IRC Section R315.1).
- Guardrails at 36" to 42" above finished floor (2012 IRC Section R316.1); space between balusters at 4" max (2012 IRC Section R316.2).
- Hand gripping portion of handrails shall be not less than 1 1/4", nor more than 2 5/8" in cross section or the shape shall provide an equivalent grasping surface (2012 IRC Section R315.2).
- (One) handrail shall be continuous the full length of the stairs and shall extend not less than 6" beyond top and bottom risers, and shall terminate into a newel post or safety terminal (2012 IRC Section R315.1). Handrails adjacent to a wall shall have a space of not less than 1 1/2" between wall and rail. Handrails shall not project more than 4 1/2" on either side of the stairway (2012 IRC Section R314.1).
- If the underside of stairwell is closed off, provide 5/8" type "x" fire rated gypsum board to the underside of stairs.
- Newel post (that railing terminates into) shall be located no higher than the first tread.
- Minimum clear width between (and below) handrails shall be 27" (double), and 31 1/2" (single rail) (2012 IRC Section R314.1).
- Maximum riser height shall be 7 3/4", minimum tread depth shall be 10" (2012 IRC Section R314.2).
- Minimum headroom in all parts of the stair shall not be less than 6'-8" (finished height), measured vertically from sloped plane adjoining the tread nosing or from the floor surface of the landing or platform (2012 IRC Section R314.3).
- Individual stair treads shall be designed for a uniformly distributed live load of 40 psf or a 300 pound concentrated load acting over an area of 4 square inches, whichever produces the greater stress.
- Guardrails and handrails shall be designed for a single concentrated load of 200 pounds applied in any direction at any point along the top.

Engineer of Record Notes:

- When the local authority requires a registered engineer to provide a sealed and signed document for purposes of permitting, the engineer of record's details and schedules shall take precedence over the information shown on this sheet.

Bubble Notes on Details:

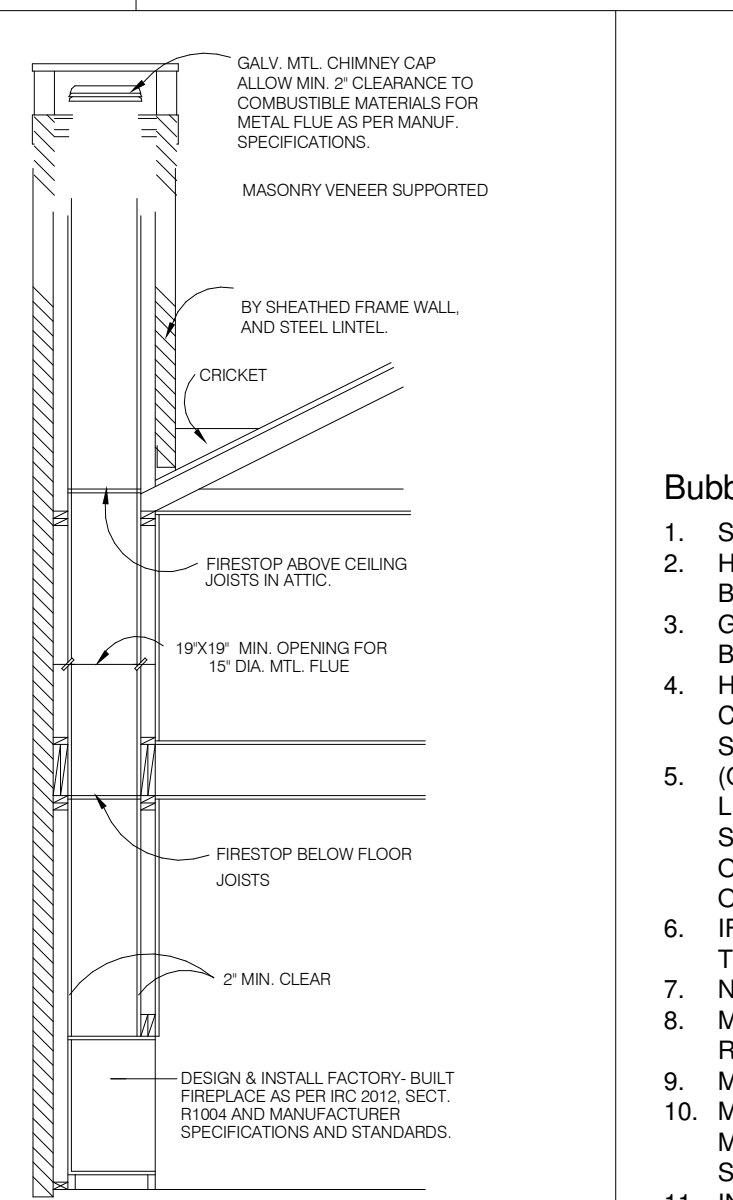
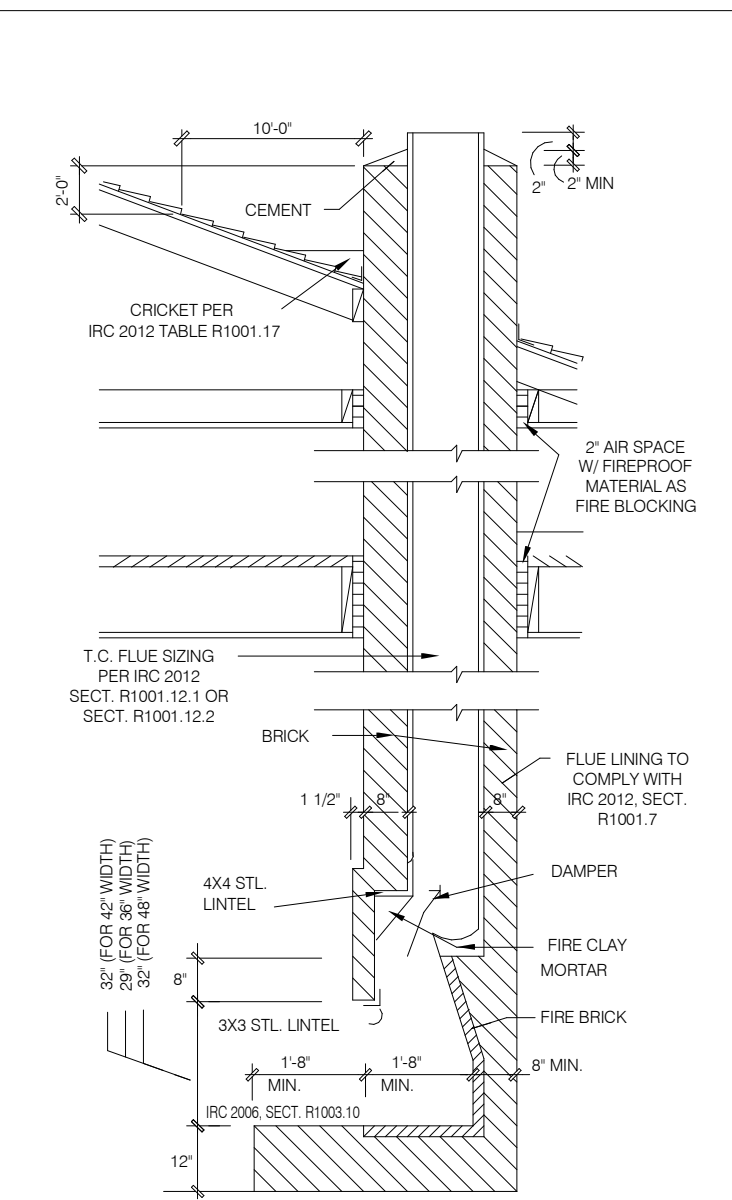
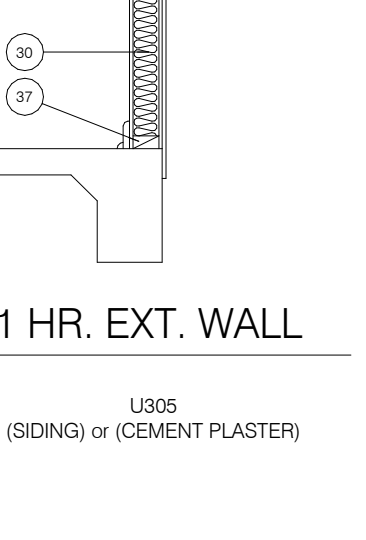
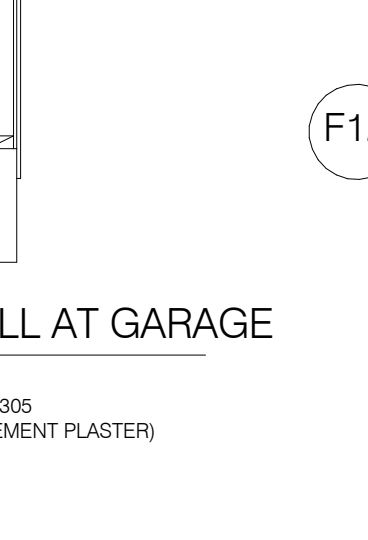
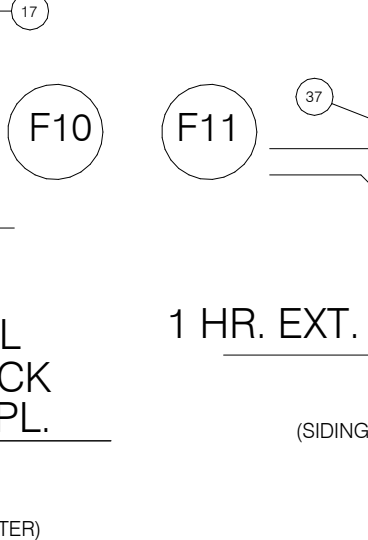
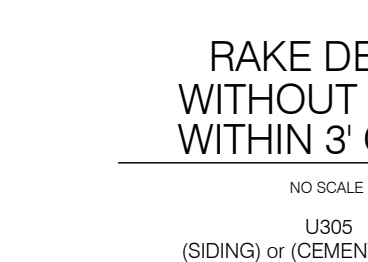
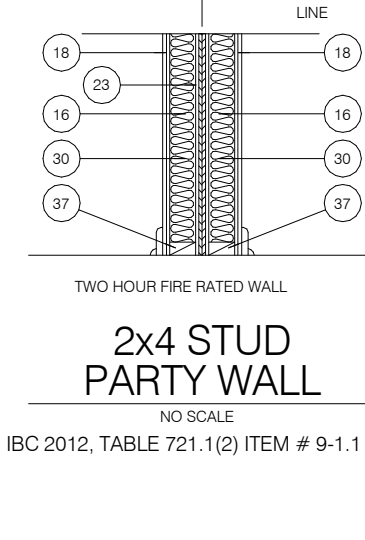
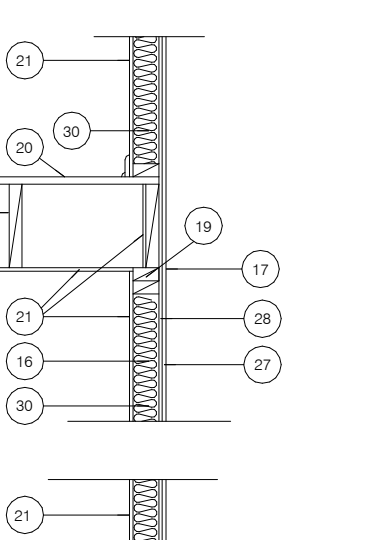
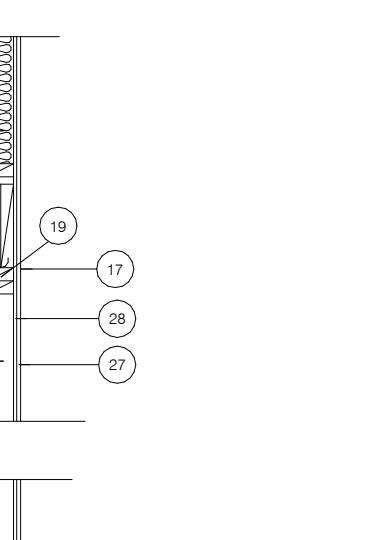
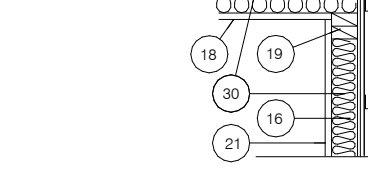
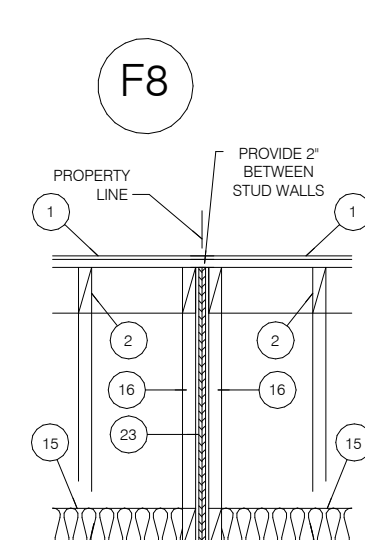
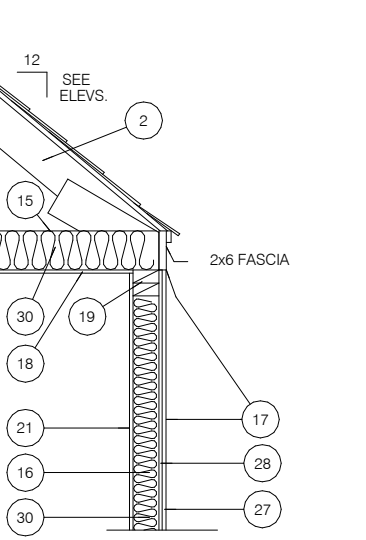
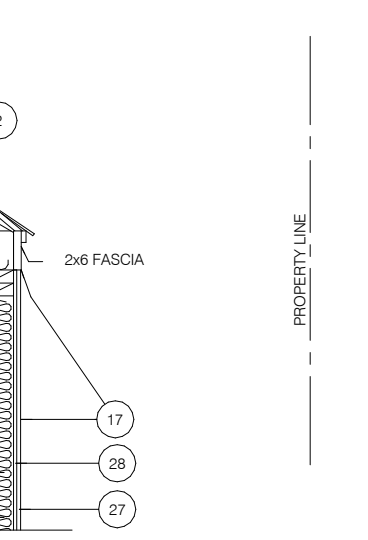
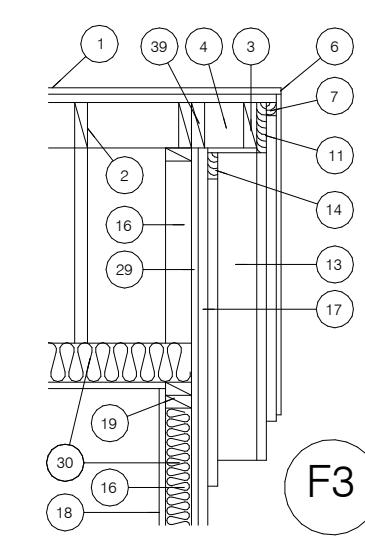
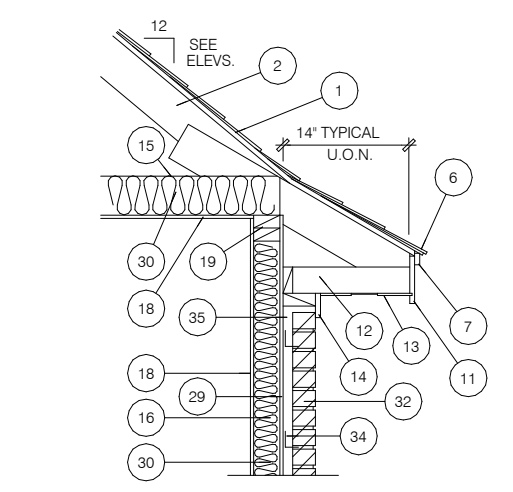
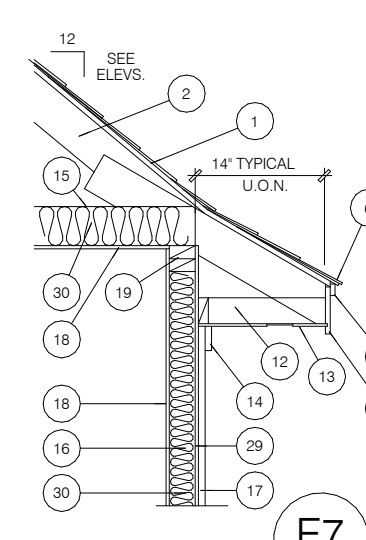
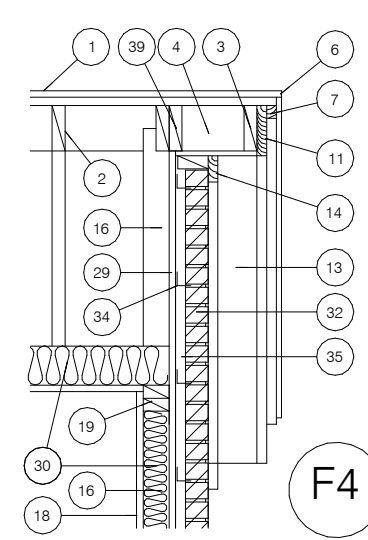
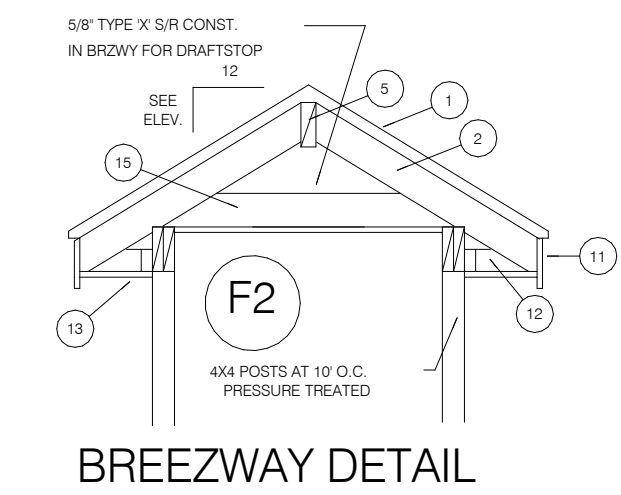
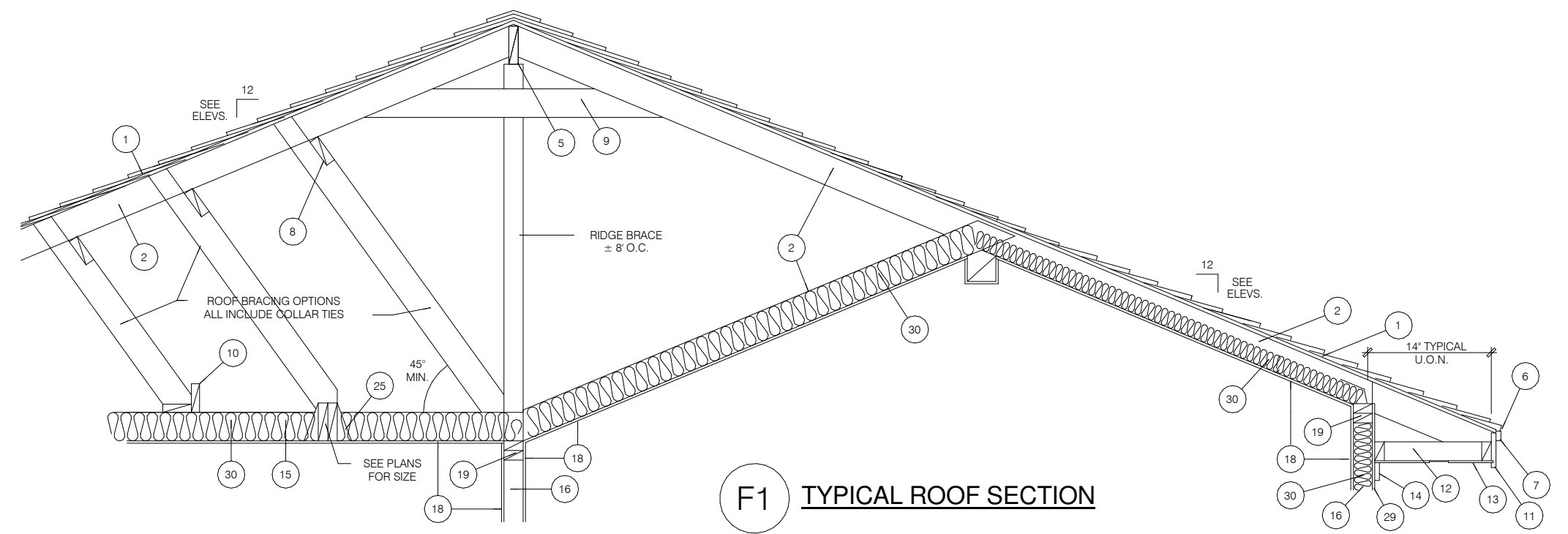
- STAIRWAYS SHALL COMPLY WITH 2012 IRC SECTIONS R312, R314, R315, AND R316
- HANDRAILS TO BE 34" TO 38" ABOVE NOSE OF TREAD (2012 IRC SECTION R316.1). SPACE BETWEEN BALUSTERS AT 4" MAX (2012 IRC SECTION R316.2).
- GUARDRAILS AT 36" TO 42" ABOVE FINISHED FLOOR (2012 IRC SECTION R316.1). SPACE BETWEEN BALUSTERS AT 4" MAX (2012 IRC SECTION R316.2).
- HAND GRIPPING PORTION OF HANDRAILS SHALL BE NOT LESS THAN 1 1/4" AND NOT MORE THAN 2 5/8" IN CROSS SECTION OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRASPING SURFACE (2012 IRC SECTION R315.2).
- (ONE) HANDRAIL SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS AND SHALL EXTEND NOT LESS THAN 6" BEYOND TOP AND BOTTOM RISERS, AND SHALL TERMINATE INTO A NEWEL POST OR SAFETY TERMINAL (2012 IRC SECTION R315.1). HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1 1/2" BETWEEN WALL AND RAIL. HANDRAILS SHALL NOT PROJECT MORE THAN 4 1/2" ON EITHER SIDE OF THE STAIRWAY (2012 IRC SECTION R314.1).
- IF THE UNDERSIDE OF STAIRWELL IS CLOSED OFF, PROVIDE 5/8" TYPE "X" FIRE RATED GYPSUM BOARD TO UNDERSIDE OF STAIRS.
- NEWEL POST (THAT RAILING TERMINATES INTO) SHALL BE LOCATED NO HIGHER THAN THE FIRST TREAD.
- MINIMUM CLEAR WIDTH BETWEEN (AND BELOW) HANDRAILS SHALL BE 27" (DOUBLE) AND 31 1/2" (SINGLE RAIL) (2012 IRC SECTION R314.1).
- MAXIMUM RISER HEIGHT SHALL BE 7 3/4". MINIMUM TREAD DEPTH SHALL BE 10" (2012 IRC SECT. R314.2).
- MINIMUM HEADROOM IN ALL PARTS OF THE STAIR SHALL NOT BE LESS THAN 6'-8" (FINISHED HEIGHT) AS MEASURED VERTICALLY FROM SLOPED PLANE ADJOINING THE TREAD NOSING OR FROM THE FLOOR SURFACE OF THE LANDING OR PLATFORM (2012 IRC SECTION R314.3).
- INDIVIDUAL STAIR TREADS SHALL BE DESIGNED FOR A UNIFORMLY DISTRIBUTED LIVE LOAD OF 40 PSF OR A 300 POUND CONCENTRATED LOAD ACTING OVER AN AREA OF 4 SQUARE INCHES, WHICHEVER PRODUCES THE GREATER STRESS.
- GUARDRAILS AND HANDRAILS SHALL BE DESIGNED FOR A SINGLE CONCENTRATED LOAD OF 200 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT ALONG THE TOP.

Roof & Wall Details

Not To Scale

Bubble Notes on Details:

- Composition shingles (min 240#, max 360#) on 15# felt over:
 - 5/8" CDX plywood decking (typical), or
 - 5/8" 1 hour fire rated CDX plywood within 5' of prop. line.
- Rafters (2x6 typ.) with lap splice as required by span. See elevations for slope. Maximum unsupported span for 2x6 rafters shall be 10'-7".
- 2x4 barge rafter w/1x6 fascia or 2x6 barge w/1x6 fascia.
- 2x6 blocking at 24" o.c.
- Ridge, hip, or valley beams to be 1 size larger than rafters
- Galvanized flashing (drip edge)
- 1x2 trim
- 2x6 continuous purlins with 2x6 braces @ 48" o.c. (tee 2x4 braces @ 48" o.c. when length exceeds 8'-0"). 2x4 runner w/2x6 strongback installed at midspan between partitions when partitions exceed 8'-0".
- 2x6 collar ties at 48" o.c.
- Metal flashing at top, down sides, & under shingles.
- 1x8 or 1x6 fascia (see plans)
- 2x4 outlooker and nailer
- 3/8" plywood soffit w/vents @ 6'-0" o.c. max
- 1x4 trim
- Ceiling joists - all joists shall have a minimum bearing of 1 1/2" and have lateral support at ends and at each support.
- 2x4 stud wall at 16" o.c. (typ.). walls higher than 10' and walls supporting 2 floors shall have 2x6, 2 - 2x4, or 4x4 studs at 16" o.c.
- Exterior finish material as shown in 2012 IRC Table 1405.2
 - hard-plank or equal siding, or
 - stucco or plaster
- 1/2" gypsum wallboard
- 2x4 top plate
- Subflooring - see builder or owner for selection:
 - 2x6 tongue & groove installed diagonally
 - 1-1/8" APA sturdi-floor plywood or equal
 - 3/4" APA sturdi-floor plywood
 - 5/8" type "x" gypsum wallboard
- Floor joists - all joists shall have a minimum bearing of 1 1/2" and have lateral support at ends and at each support or use Simpson UJ joist metal hangers.
- One full-length layer of 1/2" type "x" gypsum wallboard laminated to each side of 1" full-length v-edge gypsum coreboard with approved laminating compound. Vertical joints of face layer and coreboard staggered at least 3" (2012 IRC Table 719.1(2), item 9-1.1).
- Two layers of 5/8" type "x" one hour fire rated gypsum wallboard.
- Joist hanger
- Concrete masonry units; two hour rating.
- #15 asphalt felt or equal waterproofing
- 5/8" type "x" gypsum wallboard applied over item #29 and under items #17/#22
- Exterior sheathing - see builder or owner for selection:
 - 1/2" exterior CDX plywood covered with Tyvek.
 - 2x8" wp gypsum.
- Rigid insulation can be placed over any exterior sheathing.
- Insulation:
 - Batt @ 3.6 R per inch of insulation. Allow 2" air space above insulation over sloped ceilings and provide cardboard baffles over plates.
- n/a
- Face brick veneer - weep holes at 36" o.c. at first course
- n/a
- Brick ties at 16" o.c. both ways
- 1" Air space
- Weepholes with weep screeds
- 2x4 treated sole plate with 30# felt below and 12" up wall
- Anchor bolts per structural engineer's specifications
- Continuous band - size equal to barge rafter.
- All framing lumber shall be Southern Yellow Pine #2 or better, unless otherwise noted on plan. Studs and plates may be construction grade material. 2x6 material shall be Southern Yellow Pine #1 or better.
- Plywood sheathing shall be manufactured with exterior glue in accordance with requirements of the 2012 IRC, and American Plywood Association Standard PS1-83. The grade, thickness, and panel identification index shall be as shown on the plans.
- All glue laminated beams shall be stress graded per structural engineer's specifications
- All framing clips and devices shall be Simpson "Strong Tie" or equivalent.
- Minimum nailing for connections not indicated on the plans shall be in accordance with 2012 IRC Table 602.3
- Truss joists shall be manufactured and installed in accordance with the requirements of the manufacturer.
- All nails shall be common, unless otherwise noted.
- Posts used for beam or girder supports shall have full bearing to the foundation, unless otherwise noted.
- Timber sizes prescribed are minimum. Larger sizes may be substituted. Detailed connections may require modification if substitutions are made.
- Provide 2-2x6 strongback on all spans over 8'-0" located at midpoint of span.
- Provide double joists under all parallel partitions
- Provide diagonal corner bracing per 2012 IRC Table 602.10.3 or 1/2" CDX plywood per 2012 IRC Table 602.10.3. Recommend expanding foam sealer (Polyseal or equal) to seal all possible infiltration.
- 1x3 or solid 2x12 cross bridging on spans over 10'-0"
- Provide fire breaks in walls greater than 10'-0" in height, and on both side of all floor penetrations. Install fire breaks at each end of breezeways when the breezeway is connected to 2 separate structures.



M1 MASONRY SEE IRC 2012 TABLE R1003.1 AND FIGURE R1003.1 FOR ADDITIONAL INFORMATION.

M2 FACTORY-BUILT

Fireplace Details

Not To Scale

Stair & Guard Details

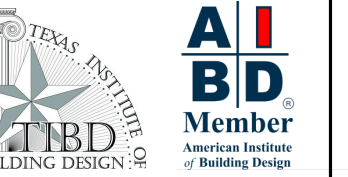
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Water Heater Details

Not To Scale



Residential
Commercial
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9225 Katy Freeway, Suite 103
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rick@rgrothuesdesigns.com

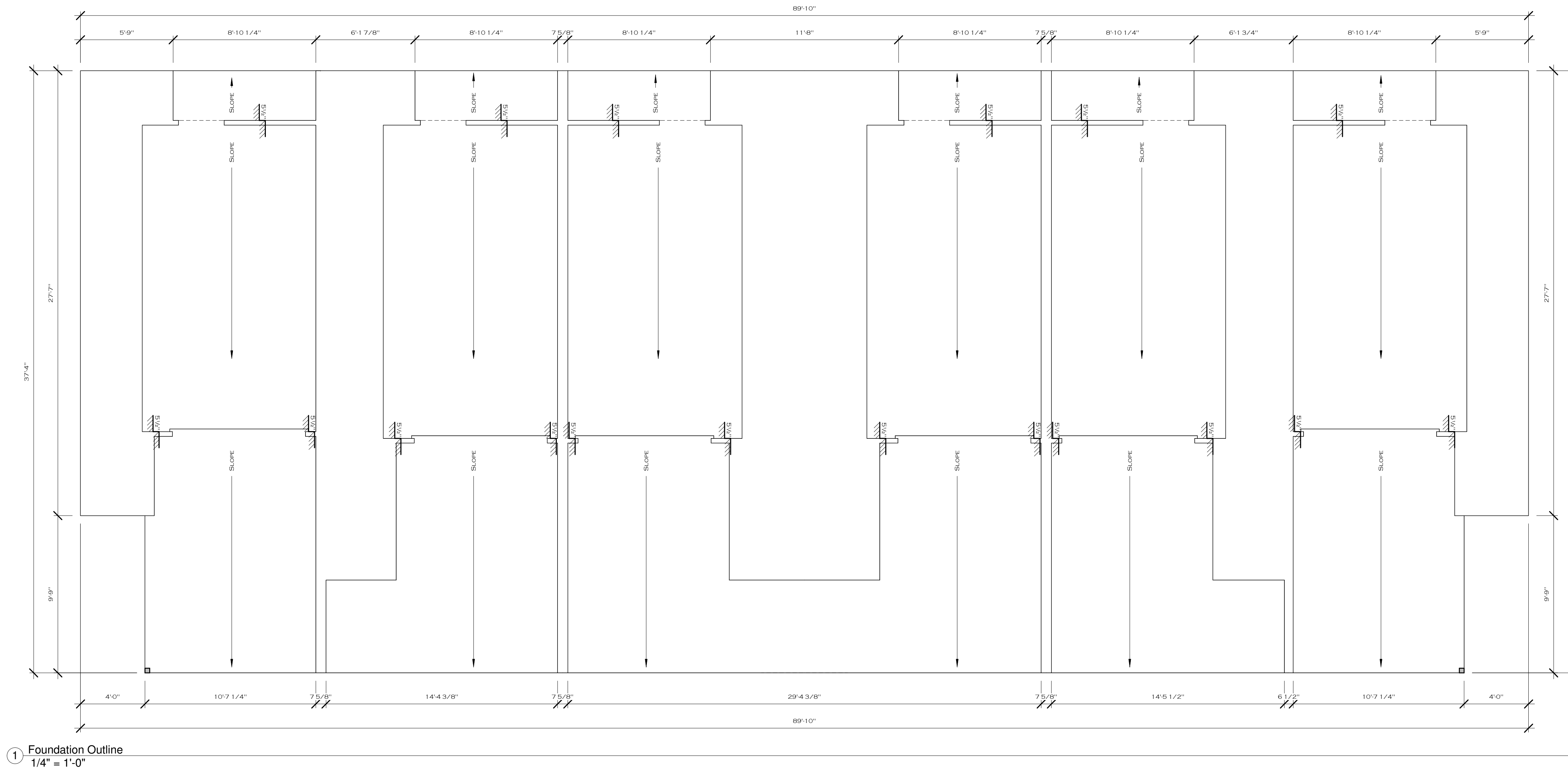


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Houston, Texas

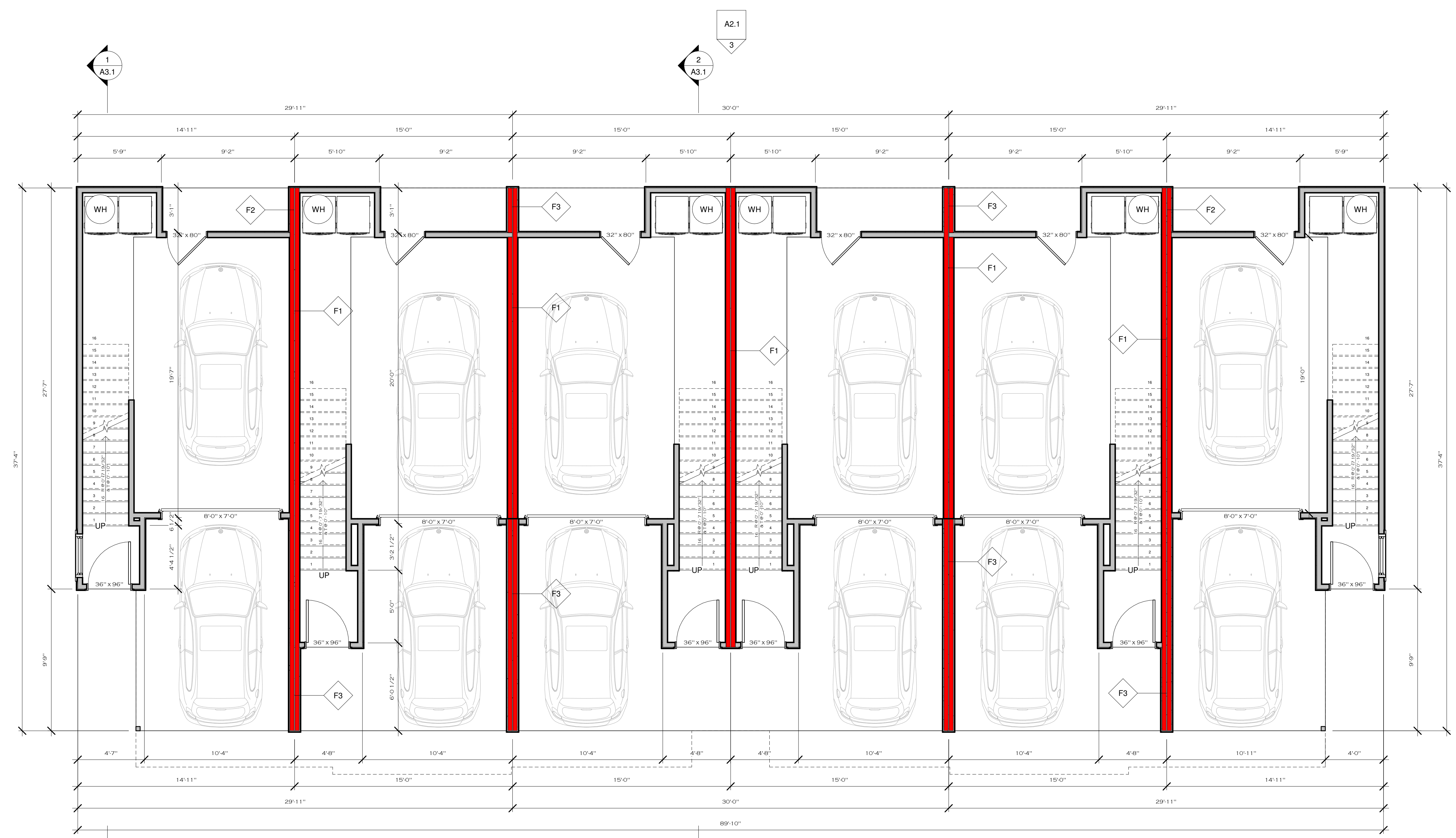
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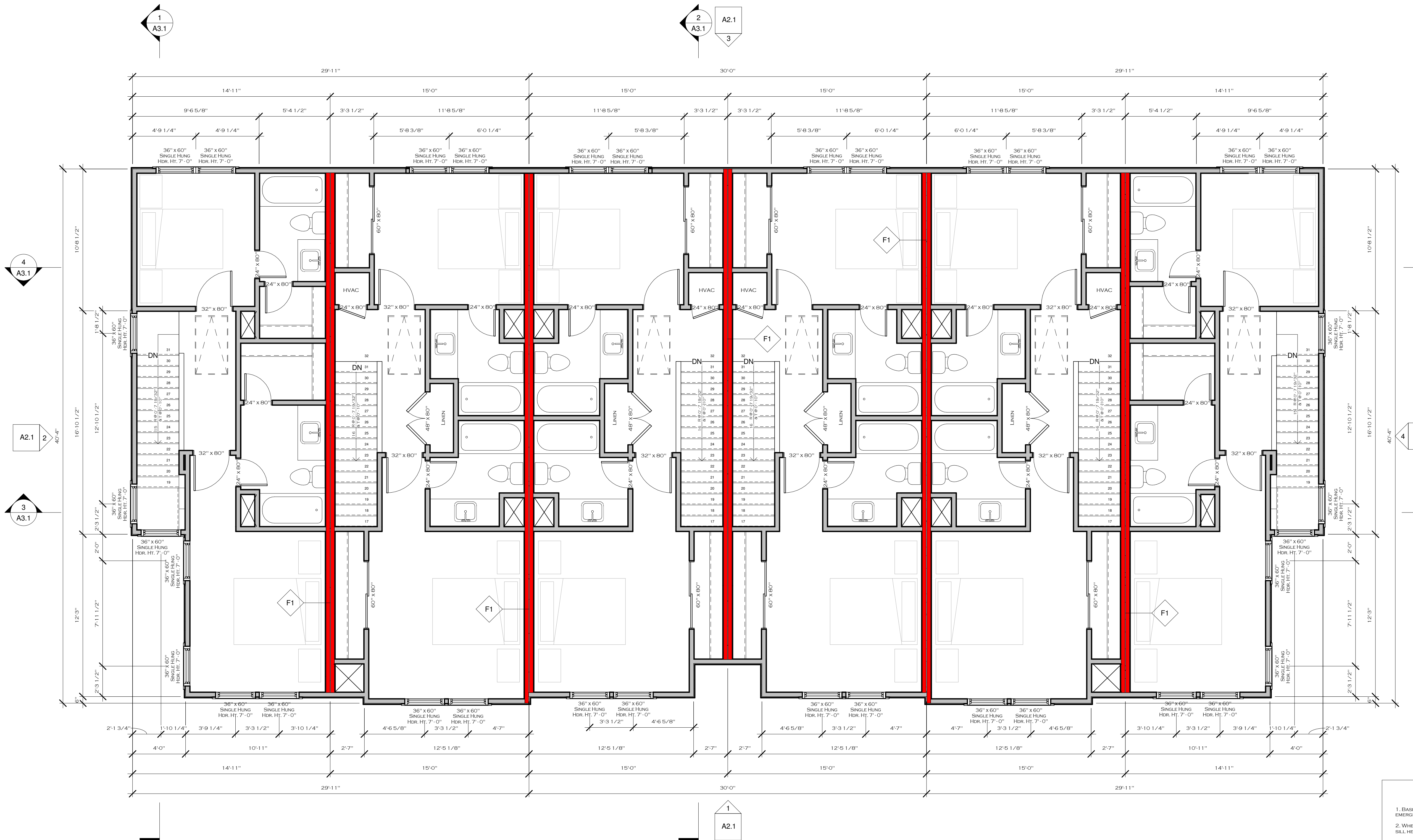
1 First Floor Plan
1/4" = 1'-0"

- EMERGENCY ESCAPE AND RESCUE OPENINGS**
1. BASEMENTS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING.
 2. WHERE EMERGENCY ESCAPE AND RESCUE OPENINGS ARE PROVIDED THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR.
 3. ALL EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5.7 SQUARE FEET. EXCEPTION: GRADE FLOOR OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 5 SQUARE FEET.
 4. THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES.
 5. THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES.
 6. EMERGENCY ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS OR SPECIAL KNOWLEDGE.

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Project Number:	
Sheet Name:	Floor Plan
Sheet Number:	A1.2

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Lighthill Partners, LLC
3-Duplex Building
Houston, Texas



1 Anno-3rd Floor
1/4" = 1'-0"

EMERGENCY ESCAPE AND RESCUE OPENINGS

1. BASEMENTS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING.
2. WHERE EMERGENCY ESCAPE AND RESCUE OPENINGS ARE PROVIDED THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR.
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Sheet Number:	

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EMERGENCY ESCAPE AND RESCUE OPENINGS

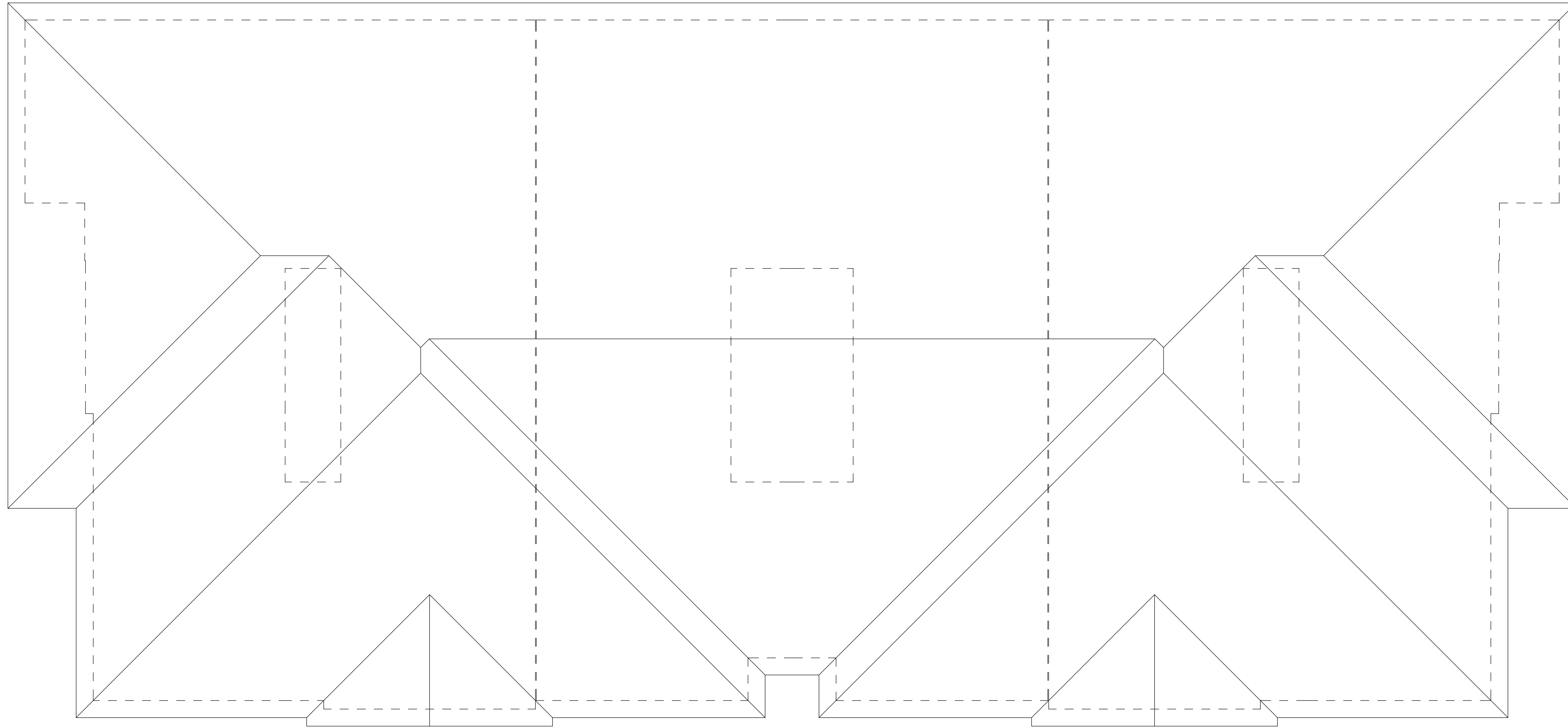
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1 Second Floor Plan
1/4" = 1'-0"

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Job Number:	
Project Number:	
Sheet Name:	Floor Plan
Sheet Number:	

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1 Anno-Roof
1/4" = 1'-0"

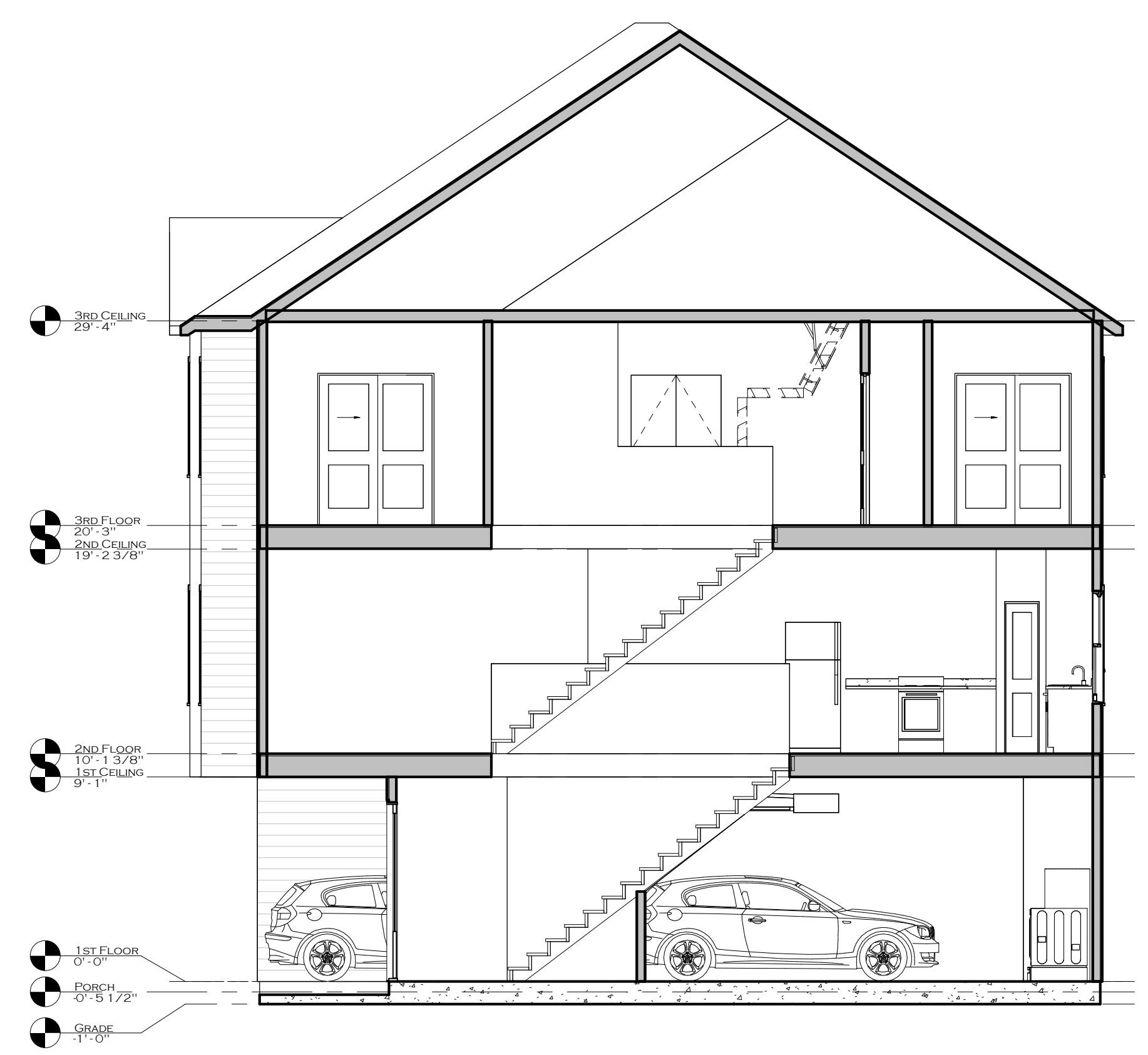


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Lighthill Partners, LLC
3- Duplex Building
Houston, Texas



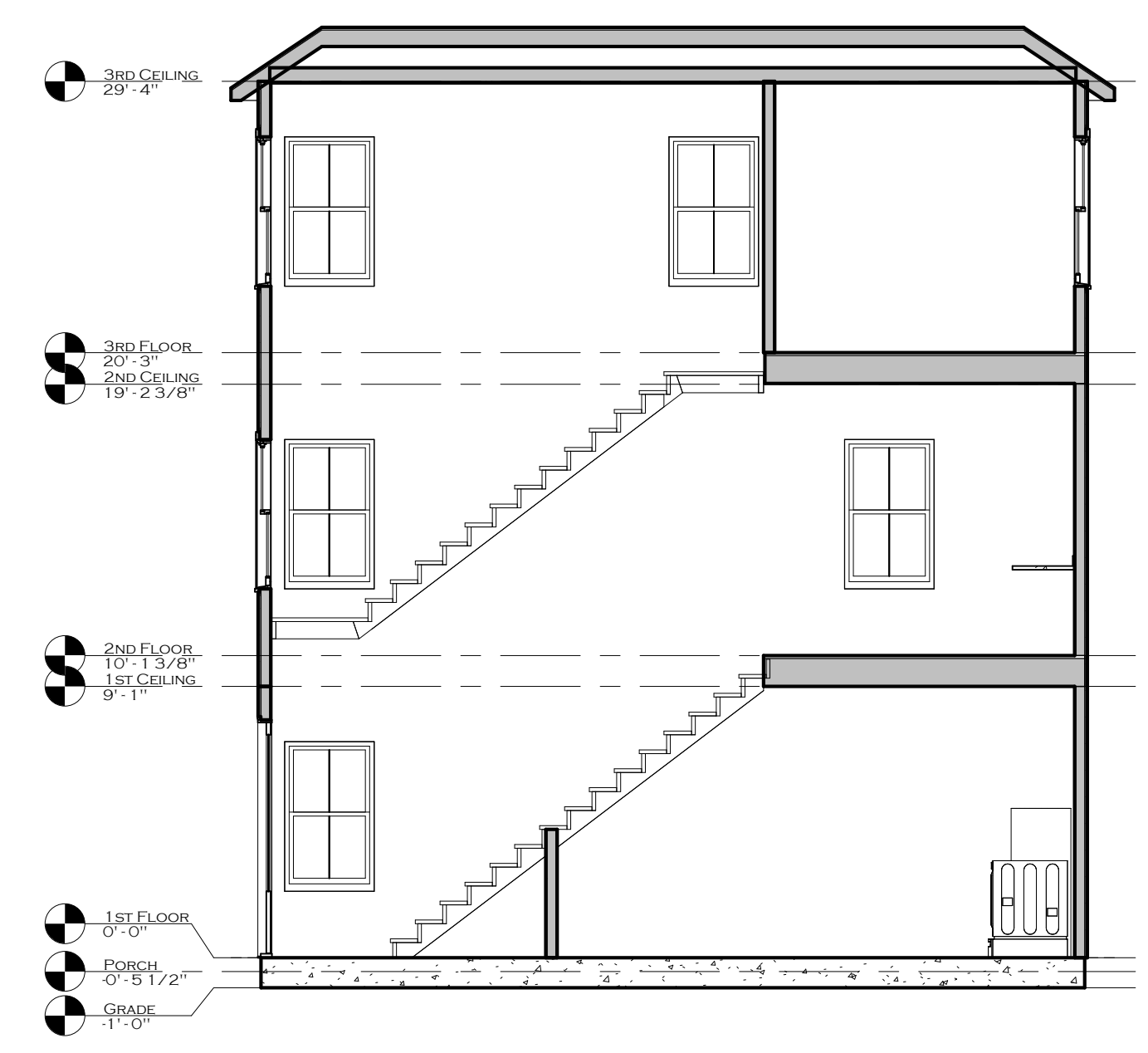
④ Section 4
3/16" = 1'-0"



② Section 2
3/16" = 1'-0"



③ Section 3
3/16" = 1'-0"



① Section 1
3/16" = 1'-0"

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Job Number:	
Project Number:	
Sheet Name:	Building Sections
Sheet Number:	

UL Product iQ®
 BXUV.U360 - Fire-resistance Ratings - ANSI/UL 263

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States

Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

Design Criteria and Allowable Variances

Design No. U360

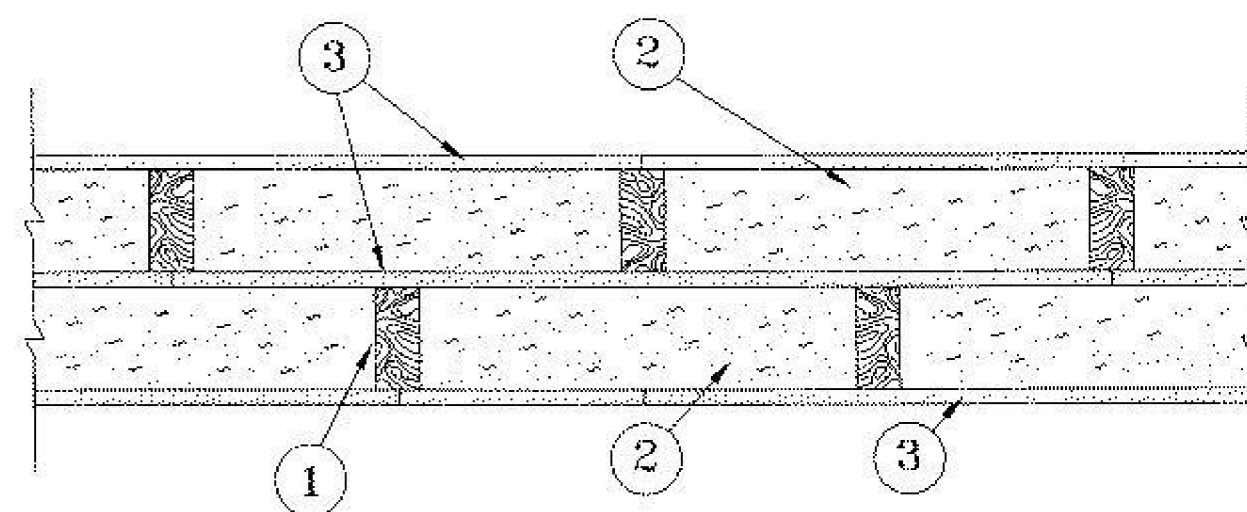
March 11, 2020

Bearing Wall Rating — 2 Hr.

Finish Rating — 20 Min.

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



- 1. Wood Studs** — Nominal 2 by 4 in. spaced 16 in. on center, effectively firestopped at top and bottom of wall.
- 2. Fiber, Sprayed*** — Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the cavities between wood studs of both sides of wall to a nominal depth of 3-1/2 in. Minimum dry density of 4.3 pounds per cubic ft. **NU-WOOL CO INC** — Cellulose Insulation
- 3. Gypsum Board*** — Any 5/8 in. thick UL Classified Gypsum Board that is eligible for use in Design Nos. L501, G512 or U305. Nom 5/8 in. thick wallboard, 4 ft wide, paper surfaced, with beveled, square, or tapered edges, applied vertically. Gypsum board fastened 6 in. OC at joints and edges and 12 in. OC in the field with No. 6 by 1-5/8 in. long bugle head drywall screws. **AMERICAN GYPSUM CO** (View Classification) — CKNX.R14196

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO (View Classification) — CKNX.R19374

CABOT MANUFACTURING ULC (View Classification) — CKNX.R25370

CERTAINTED GYPSUM INC (View Classification) — CKNX.R3660

CGC INC (View Classification) — CKNX.R19751

CERTAINTED GYPSUM INC (View Classification) — CKNX.R18482

GEORGIA-PACIFIC GYPSUM L L C (View Classification) — CKNX.R2717

LOADMASTER SYSTEMS INC (View Classification) — CKNX.R11809

NATIONAL GYPSUM CO (View Classification) — CKNX.R3501

PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM (View Classification) — CKNX.R7094

PANEL REY S A (View Classification) — CKNX.R21796

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD (View Classification) — CKNX.R19262

THAI GYPSUM PRODUCTS PCL (View Classification) — CKNX.R27517

UNITED STATES GYPSUM CO (View Classification) — CKNX.R1319

USG BORAL DRYWALL SFZ LLC (View Classification) — CKNX.R38438

USG MEXICO S A DE C V (View Classification) — CKNX.R16089

3A. Gypsum Board* — (As an alternate to Item 3) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 3. **PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM** — Types QuietRock ES.

3B. Gypsum Board* — (As an alternate to 5/8 in. Type FSW in Item 3) — 2 layers nom. 5/16 in. thick gypsum panels applied vertically. Horizontal joints on the same side need not be staggered. Inner layer attached with fasteners, as described in item 3, spaced 24 in. OC. Outer layer attached per Item 3. **NATIONAL GYPSUM CO** — Type FSW.

3C. Wall and Partition Facings and Accessories* — (As an alternate to Item 3) — Nominal 5/8 in. thick, 4 ft wide panels, applied vertically and secured as described in Item 3. **PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM** — Type QuietRock 527.

3D. Gypsum Board* — (As an alternate to Item 3) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a max 8 in. OC, with last screw 1 in. from edge of board. **AMERICAN GYPSUM CO** — Types AGK-1, M-Glass, AG-C, LightRoc.

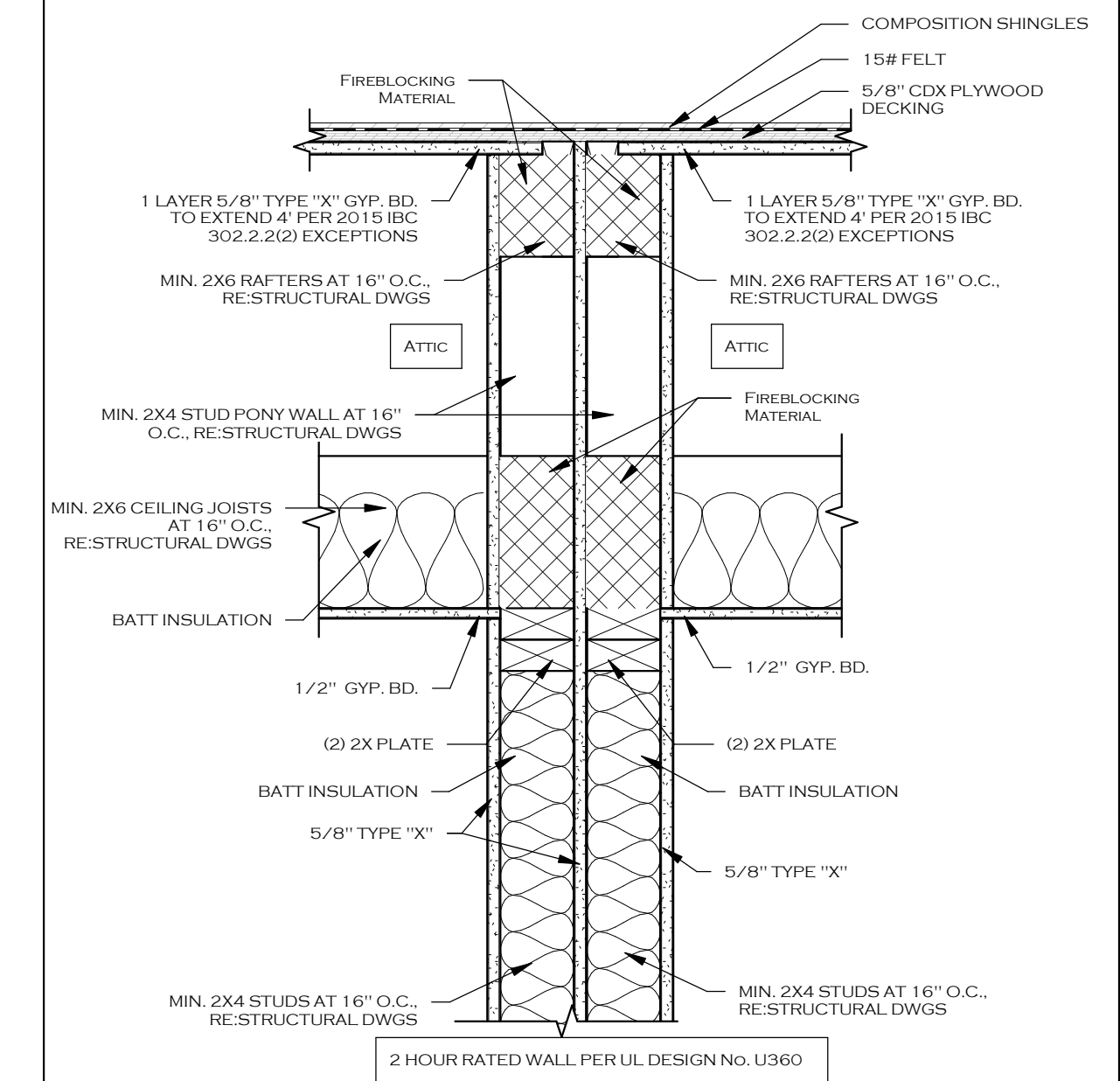
3E. Gypsum Board* — (As an alternate to Item 3) — 5/8 in. thick gypsum panels, with beveled, square, or tapered edges, applied either horizontally or vertically. Gypsum panels fastened to framing with 1-1/4 in. long Type W coarse thread gypsum panel steel screws spaced a maximum 8 in. OC with the last screw 1 in. from the edge of the board. When used in widths other than 48 in., gypsum panels are to be installed horizontally. **NATIONAL GYPSUM CO** — Type FSK, Type FSK-G, Type FSW, Type FSW-3, Type FSW-5, Type FSW-G, Type FSK-C, Type FSW-C, Type FSKR-C, Type FSW-6, Type FSL.

4. Joints and Screw Heads (not shown) — On outer layers of wallboards, wallboard joints covered with tape and joint compound and screwheads covered with joint compound.

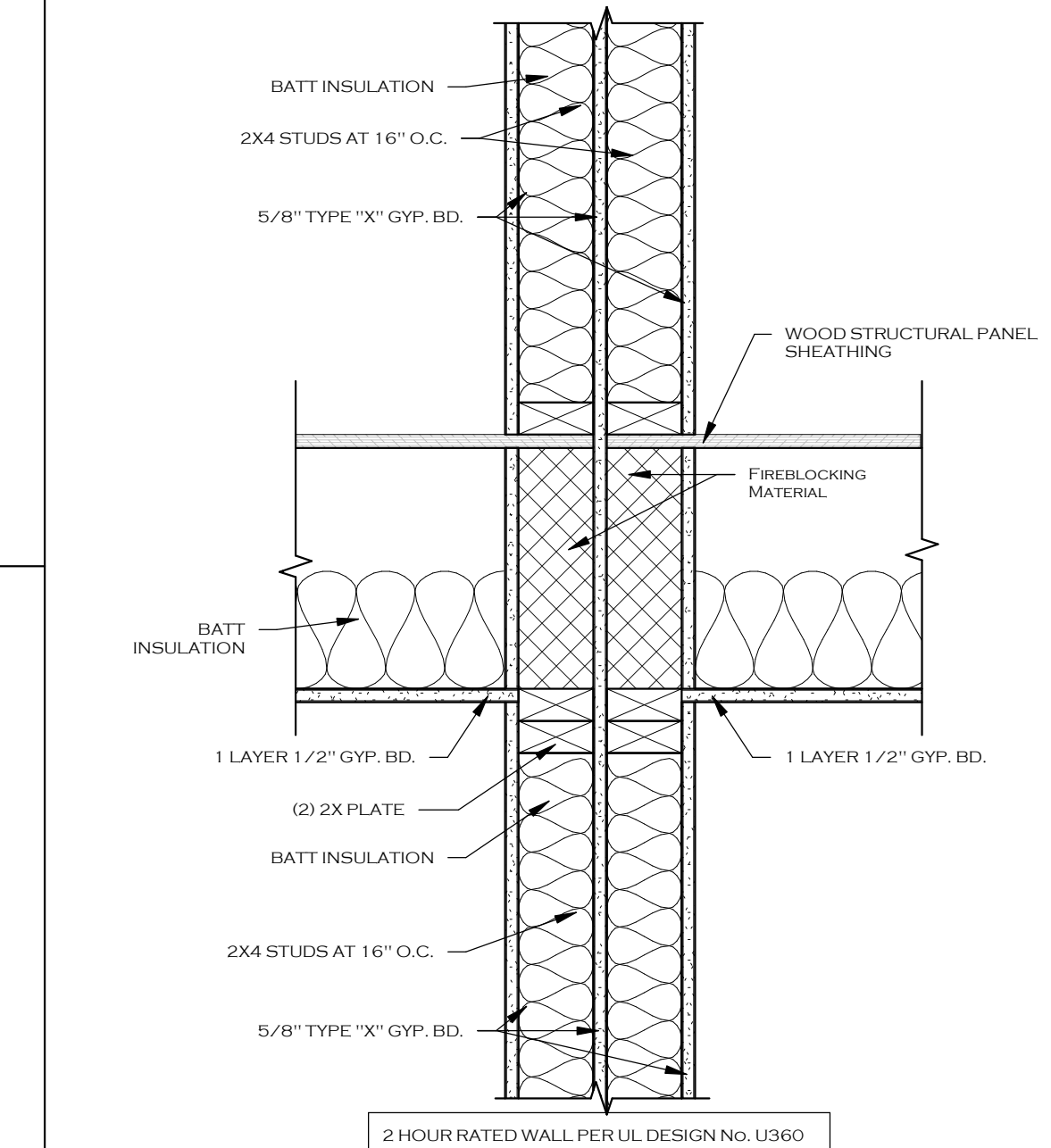
5. Structural Adhesive (not shown) — A 1/2 in. wide bead applied to all stud faces before application of wallboard.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Last Updated on 2020-03-11

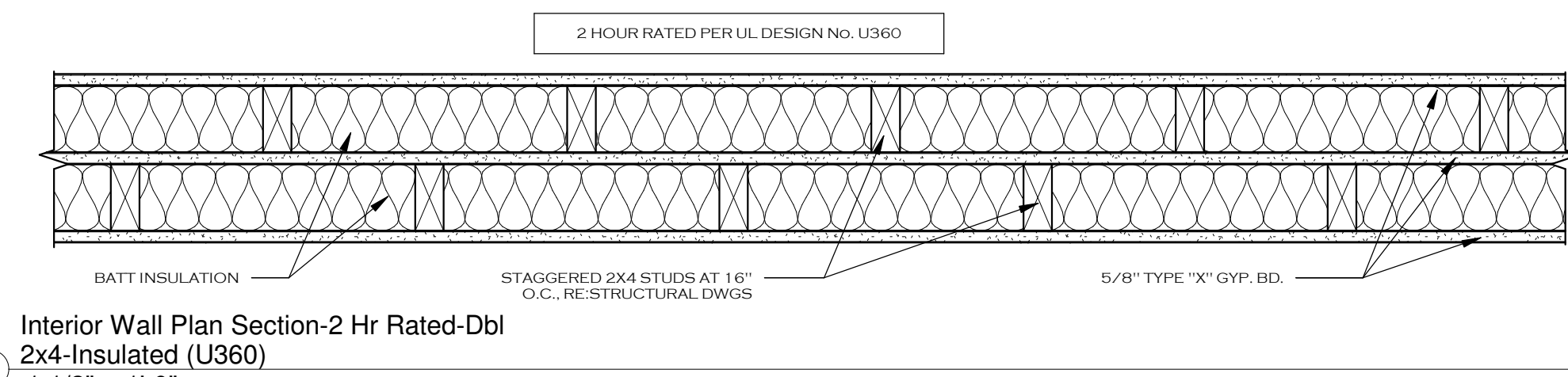


Ceiling/Roof Assembly-2 Hr Rated-DbI 2x4 Wall (U360)
 1 1/2" = 1'-0"

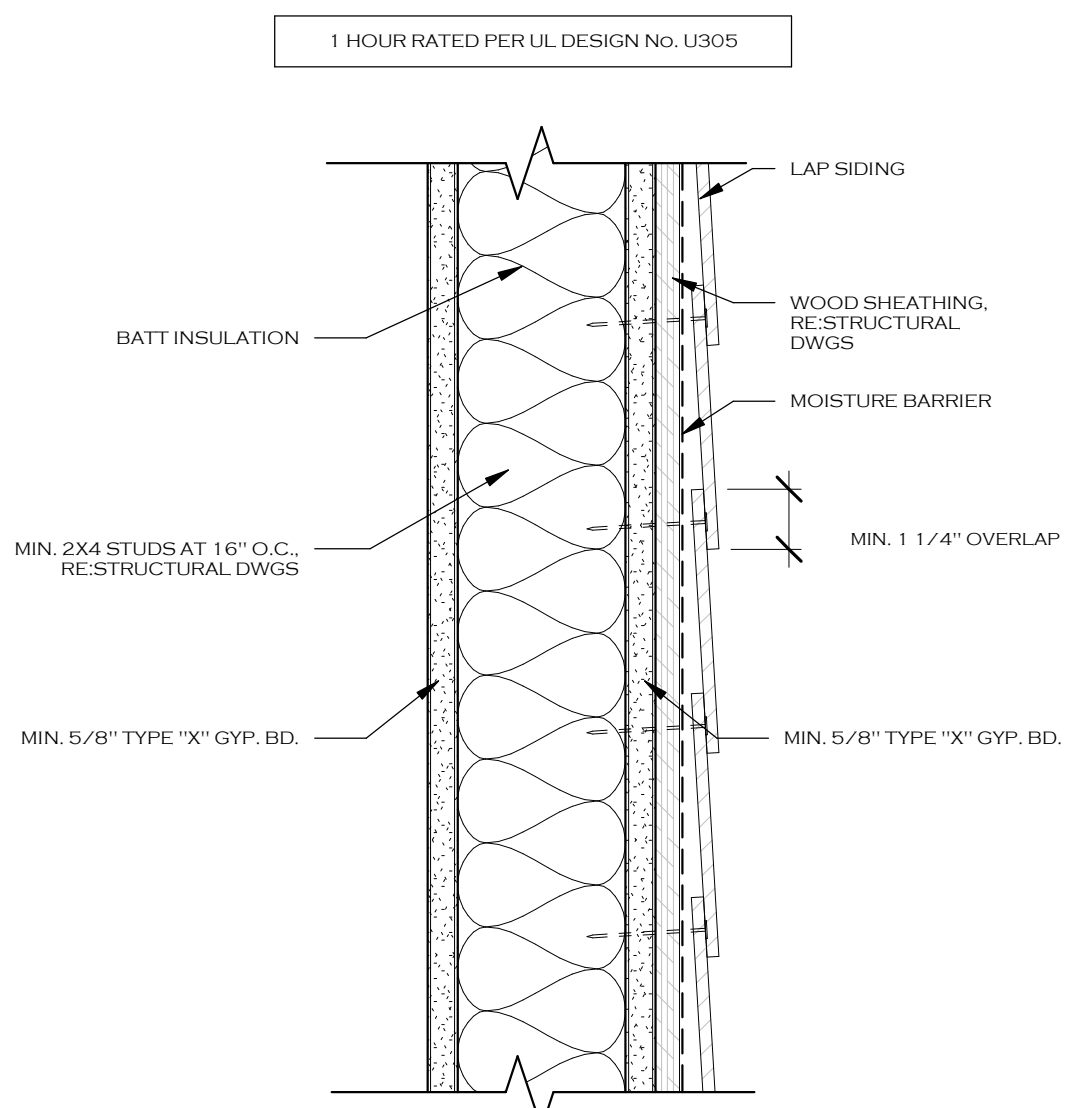


Floor/Ceiling Assembly-Non-Rated-Truss-2 Hr Rated-DbI 2x4 Wall (U360)
 1 1/2" = 1'-0"

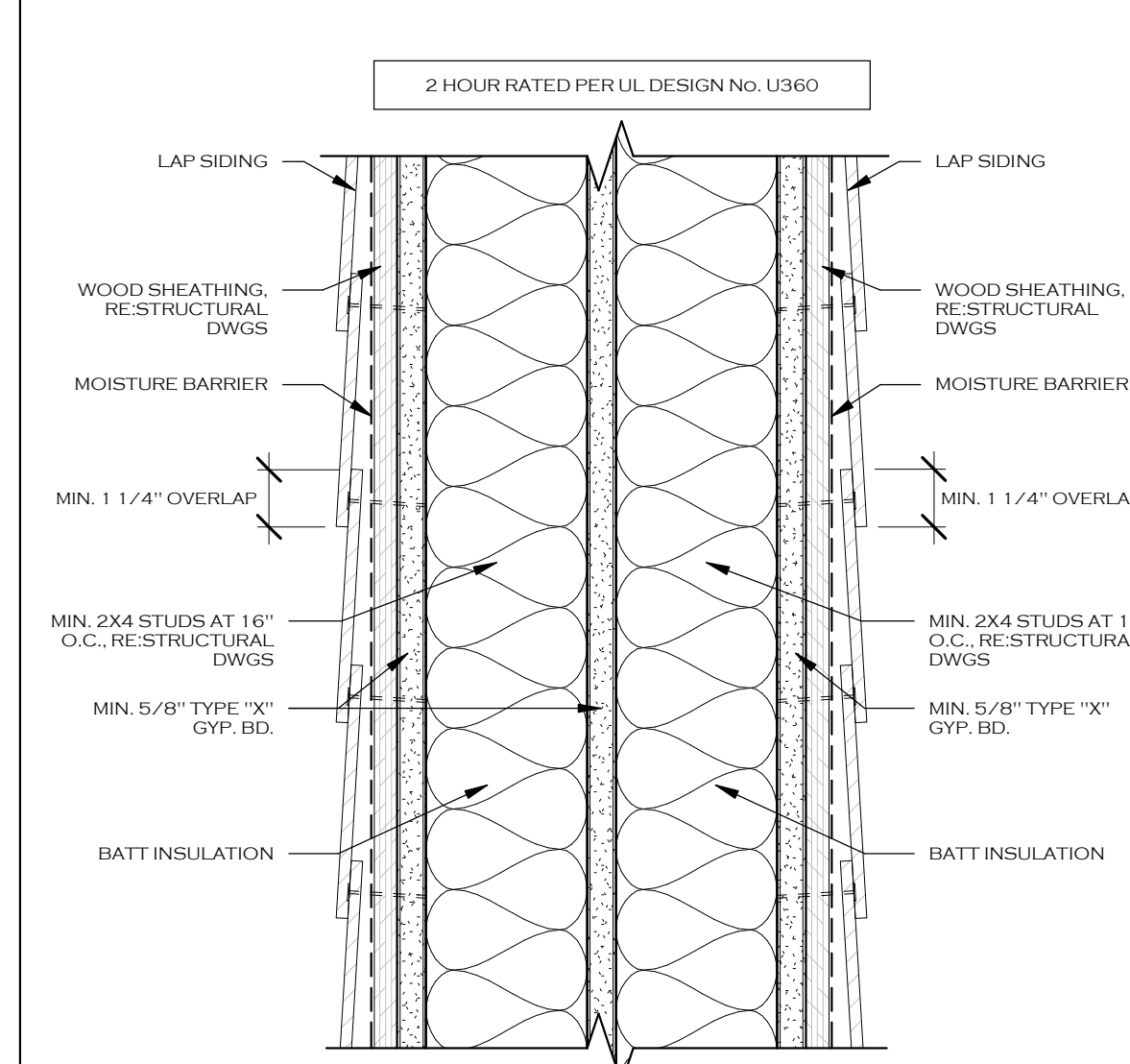
FIREBLOCKING NOTE:
 R302.11 IRC FOR FIREBLOCKING
 IN COMBUSTIBLE CONSTRUCTION, FIRE-BLOCKING SHALL BE PROVIDED TO CUT OFF BOTH VERTICAL AND HORIZONTAL CONCEALED DRAFT OPENINGS AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE.
 R302.11.1 FIREBLOCKING MATERIALS
 1. TWO INCH (51 MM) NOMINAL LUMBER
 2. TWO THICKNESSES OF 1 INCH (25.4 MM) NOMINAL LUMBER WITH BROKEN LAP JOINTS.
 3. ONE THICKNESS OF 2 3/32 INCH (18.3 MM) WOOD STRUCTURAL PANELS WITH JOINTS BACKED BY 2 3/32 INCH (18.5 MM) WOOD STRUCTURAL PANELS.
 4. ONE THICKNESS OF 3/4 INCH (19.1 MM) PARTICLE BOARD WITH JOINTS BACKED BY 3/4 INCH (19.1 MM) PARTICLE BOARD.
 5. ONE HALF INCH (12.7 MM) GYPSUM BOARD.
 6. ONE QUARTER INCH (6.4 MM) CEMENT-BASED MILLBOARD.
 7. BATTS OF BLANKETS OF MINERAL WOOL OR GLASS FIBER OR OTHER APPROVED MATERIALS INSTALLED IN SUCH A MANNER AS TO BE SECURELY RETAINED IN PLACE.
 8. CELLULOSE INSULATION INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E 119 OR UL 263, FOR THE SPECIFIC APPLICATION.



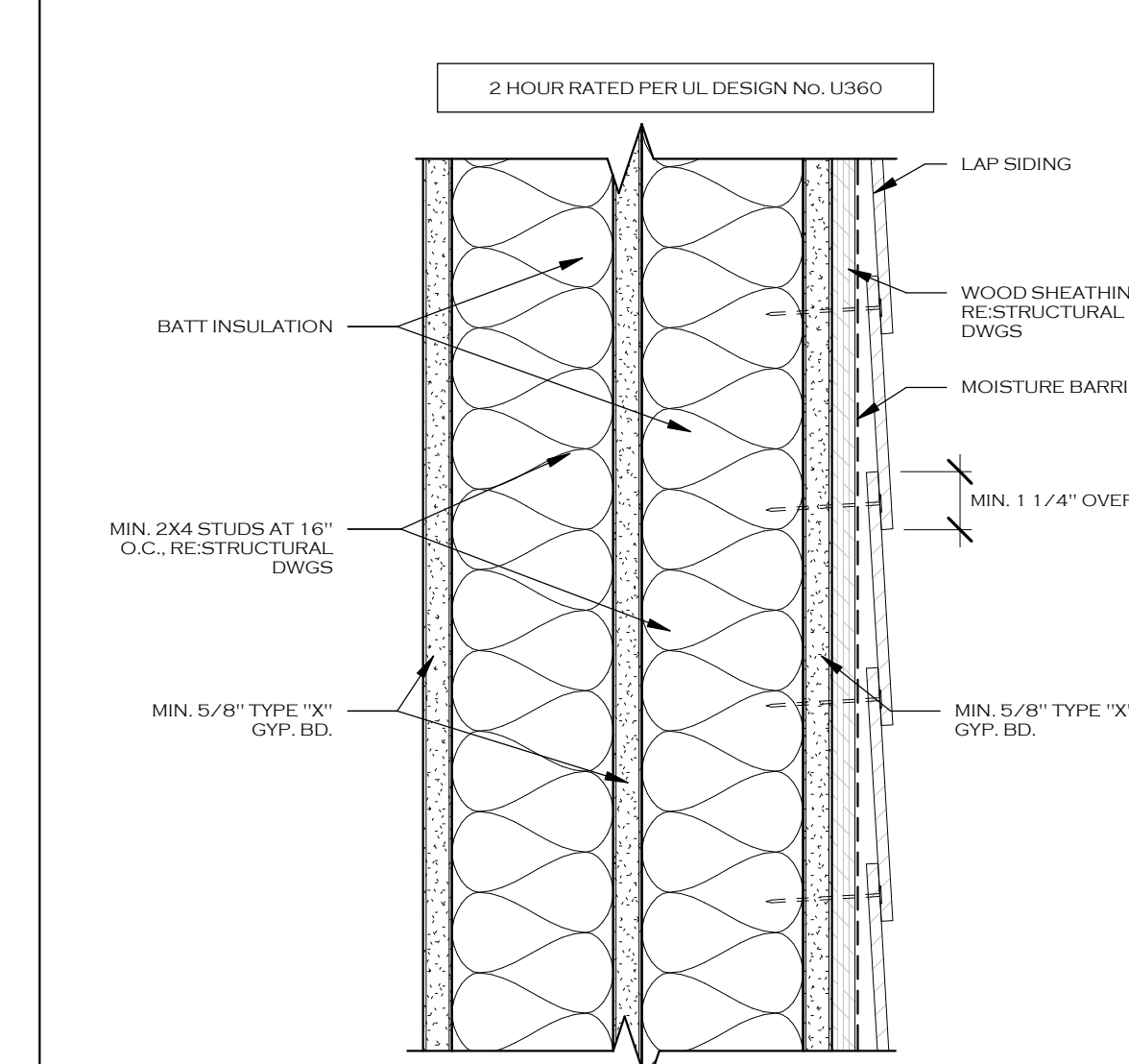
Interior Wall Plan Section-2 Hr Rated-DbI 2x4-Insulated (U360)
 1 1/2" = 1'-0"



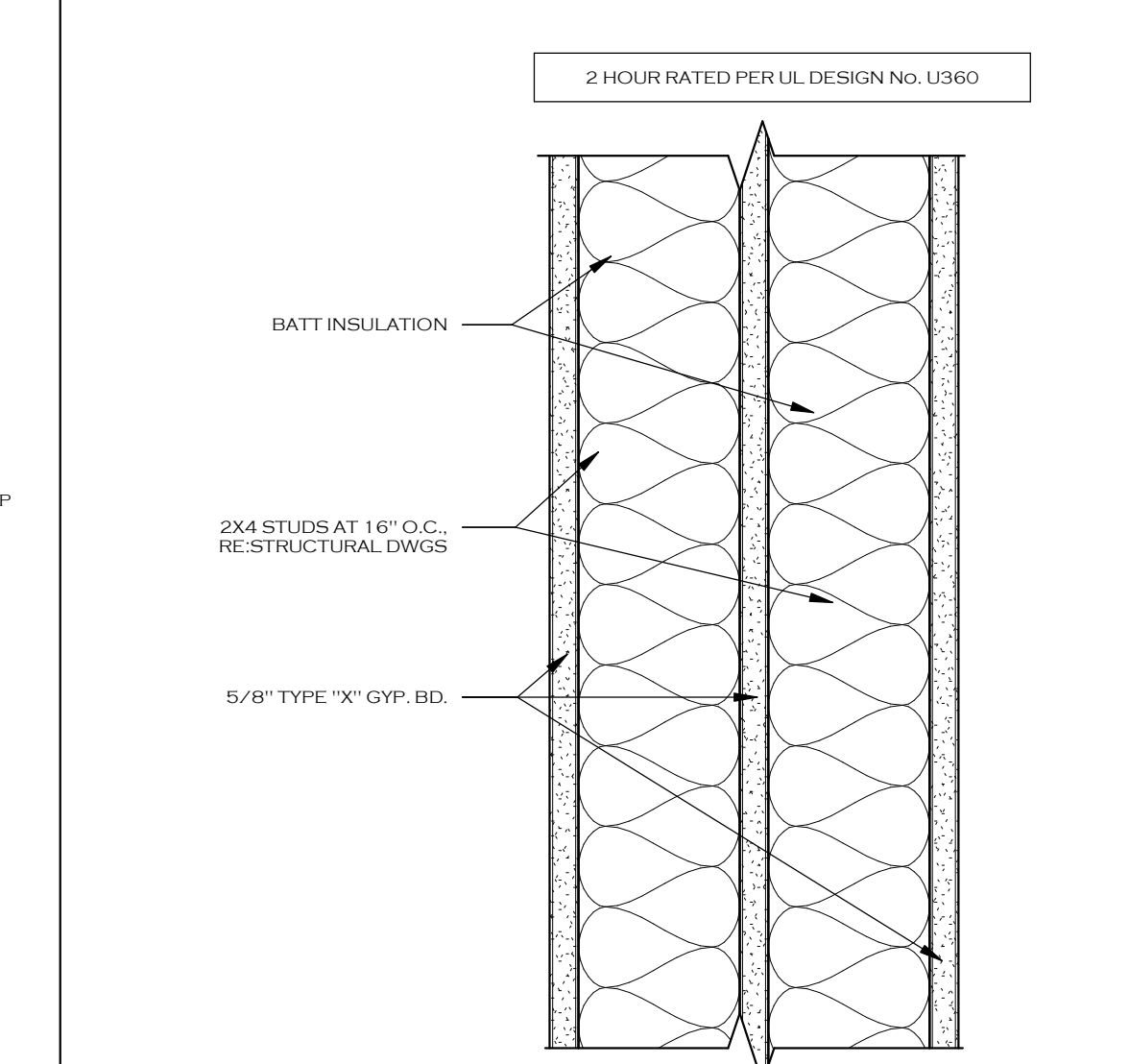
Exterior Wall Section-1 Hr Rated-2x4-Lap Siding (U305)
 3" = 1'-0"



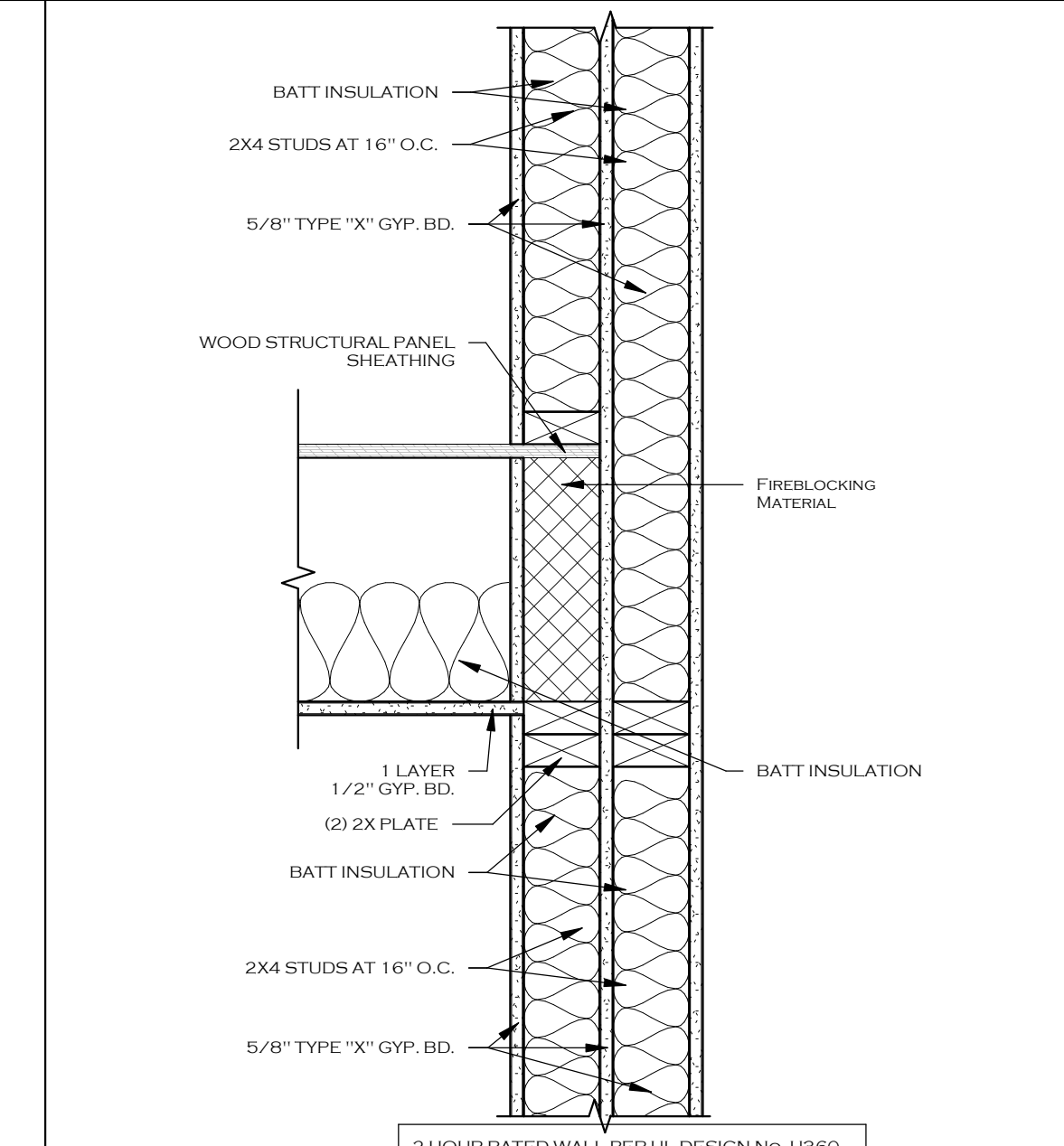
Exterior Wall Section-2 Hr Rated-DbI 2x4-Lap Siding Both Sides (U360)
 3" = 1'-0"



Exterior Wall Section-2 Hr Rated-DbI 2x4-Lap Siding (U360)
 3" = 1'-0"



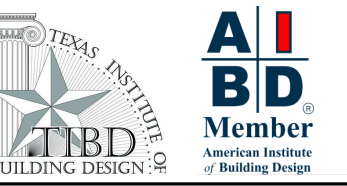
Interior Wall Section-2 Hr Rated-DbI 2x4-Insulated (U360)
 3" = 1'-0"



Floor/Ceiling Assembly-Non-Rated-Truss-1 Hr Rated-DbI 2x4 Wall @Stairs
 1 1/2" = 1'-0"



Residential
 Commercial
 Land Planning
 9225 Katy Freeway, Suite 103
 Houston, TX 77024
 Phone: 713.449.9191
 Fax: 713.893.6901
 rick@rgrothuesdesigns.com



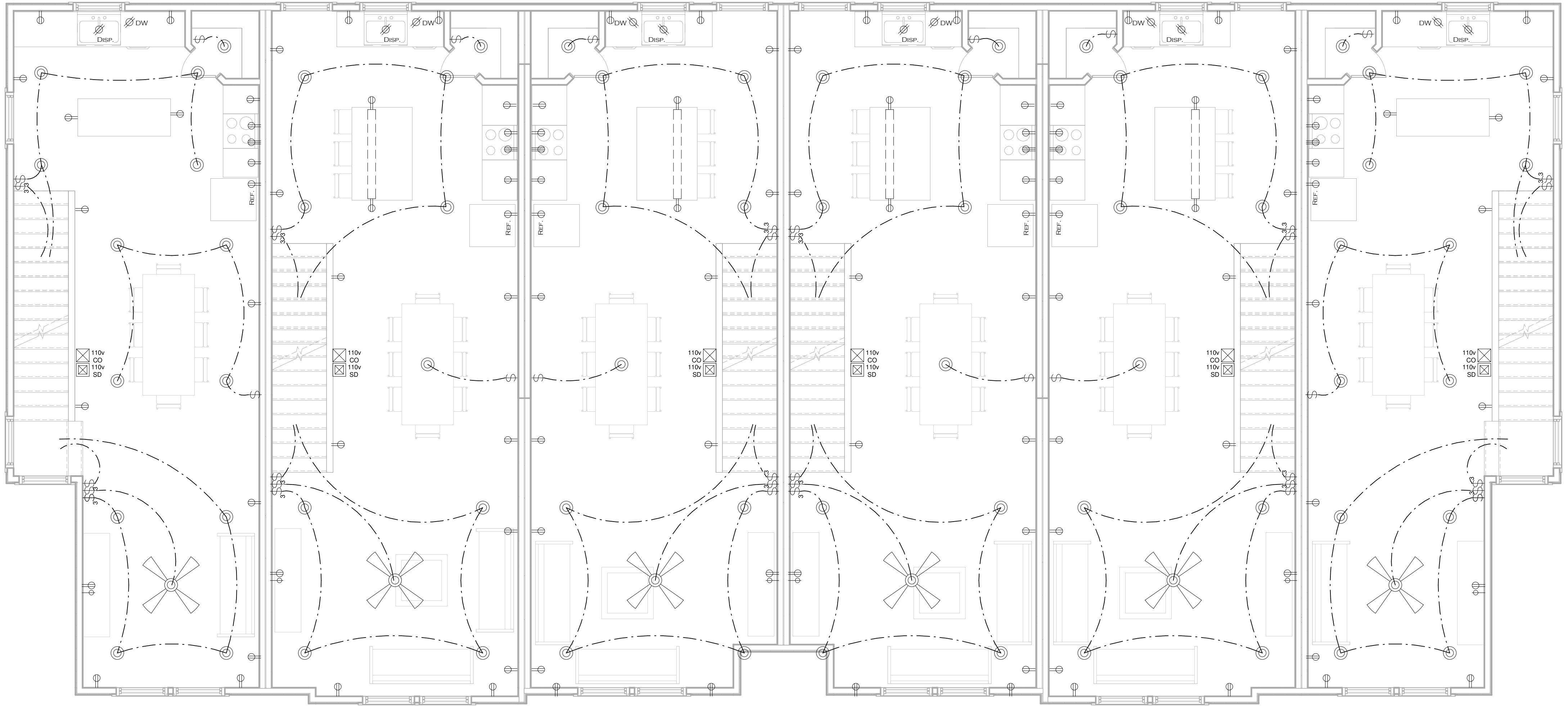
Lighthill Partners, LLC
 3-Duplex Building
 Houston, Texas

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 8-23-2023 12:03:38 PM
 Job Number:
 Project Number:
 Sheet Name:
 Wall Sections
 Sheet Number:

A5.1

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NOTE: THROUGH PENETRATIONS R302.4.1

THROUGH PENETRATIONS OF FIRE-RESISTANCE-RATED WALL OR FLOOR ASSEMBLIES SHALL COMPLY WITH SECTION R317.3.1.1 OR R317.3.1.2.

EXCEPTION: WHERE THE PENETRATING ITEMS ARE STEEL, FERROUS OR COPPER PIPES, TUBES OR CONDUITS, THE ANNULAR SPACE SHALL BE PROTECTED AS FOLLOWS:

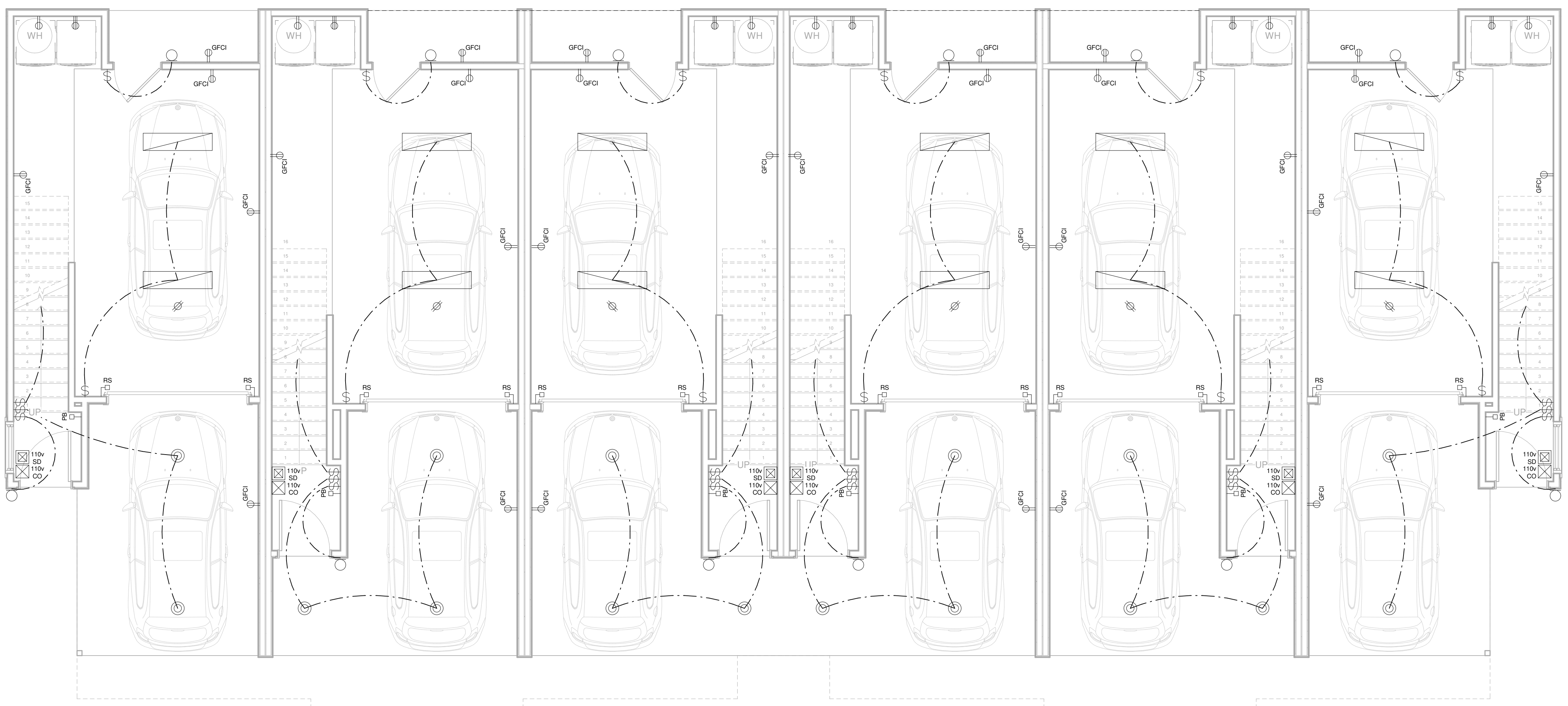
A. IN CONCRETE OR MASONRY WALL OR FLOOR ASSEMBLIES WHERE THE PENETRATING ITEM IS A MAXIMUM 6 INCHES NOMINAL DIAMETER AND THE AREA OF THE OPENING THROUGH THE WALL DOES NOT EXCEED 1.44 SQUARE INCHES, CONCRETE, GROUT OR MORTAR IS PERMITTED WHERE INSTALLED TO THE FULL THICKNESS OF THE WALL OR FLOOR ASSEMBLY OR THE THICKNESS REQUIRED TO MAINTAIN THE FIRE RESISTANCE RATING.

B. THE MATERIAL USED TO FILL THE ANNULAR SPACE SHALL PREVENT THE PASSAGE OF FLAME AND HOT GASES SUFFICIENT TO IGNITE COTTON WASTE WHERE SUBJECTED TO ASTM E 119 TIME TEMPERATURE FIRE CONDITIONS UNDER A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCH OF WATER (3 PA) AT THE LOCATION OF THE PENETRATION FOR THE TIME PERIOD EQUIVALENT TO THE FIRE RESISTANCE RATING OF THE CONSTRUCTION PENETRATED.

2 Second Floor Plan
1/4" = 1'-0"

Electrical Legend

- ⊕ 110v Duplex Outlet
- ⊕ 110v Quad Outlet
- ⊕ 110v GFCI Outlet
- ⊕ 220v Outlet
- ⊕ RG6 Cable Outlet
- ⊕ Switch
- ⊕ 3 Way Switch
- ⊕ Telephone
- ⊕ Push Button
- ⊕ Reverse Sensor
- ⊕ Wall Mounted Fixture
- ⊕ 6" Recess Fixture
- ⊕ Pendant / Hanging Fixture
- ⊕ Ceiling Mounted Fixture
- ⊕ Exhaust Fan
- ⊕ 110v Ceiling Outlet
- ⊕ 110v v Smoke Detector w/ Battery Back-up
- ⊕ Undercounter Lighting
- ⊕ 1x4 Fluorescent Fixture
- ⊕ Ceiling Fan
- ⊕ Ceiling Fan w/ Light



NOTE: SMOKE ALARMS

R313.2 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 BUT NOT INCLUDING GARAGE SPACES AND UNINHABITABLE ATTICS.
WHEN MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT 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.

R313.3 POWER SOURCE. IN NEW CONSTRUCTION, THE REQUIRED 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.

1 First Floor Plan
1/4" = 1'-0"

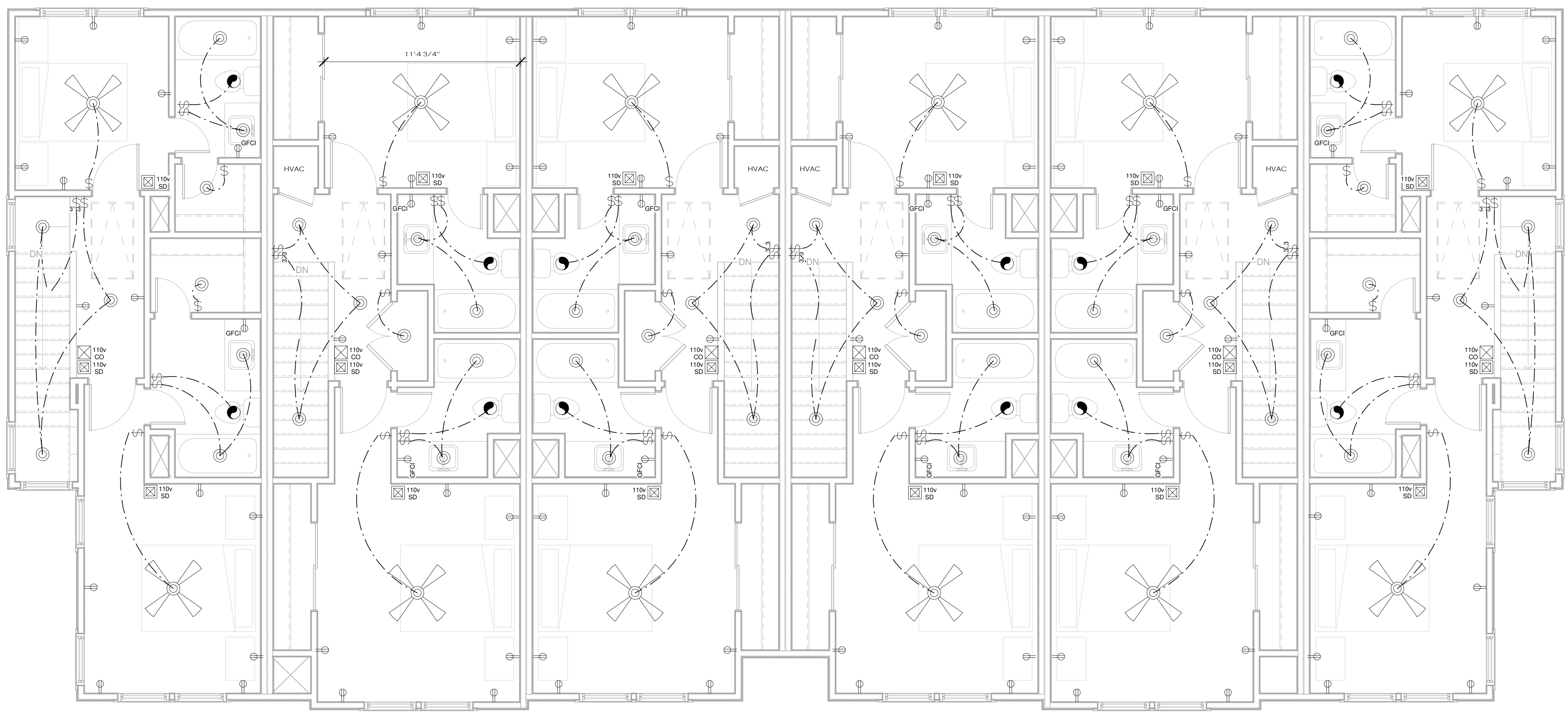
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NOTE: THROUGH PENETRATIONS R302.4.1
THROUGH PENETRATIONS OF FIRE RESISTANCE-RATED WALL OR FLOOR ASSEMBLIES SHALL COMPLY WITH SECTION R317.3.1.1 OR R317.3.1.2.
EXCEPTION: WHERE THE PENETRATING ITEMS ARE STEEL, FERROUS OR COPPER PIPES, TUBES OR CONDUITS, THE ANNULAR SPACE SHALL BE PROTECTED AS FOLLOWS:
A. IN CONCRETE OR MASONRY WALL OR FLOOR ASSEMBLIES WHERE THE PENETRATING ITEM IS A MAXIMUM 6 INCHES NOMINAL DIAMETER AND THE AREA OF THE OPENING THROUGH THE WALL DOES NOT EXCEED 144 SQUARE INCHES, CONCRETE, GROUT OR MORTAR IS PERMITTED WHERE INSTALLED TO THE FULL THICKNESS OF THE WALL OR FLOOR ASSEMBLY OR THE THICKNESS REQUIRED TO MAINTAIN THE FIRE RESISTANCE RATING.
B. THE MATERIAL USED TO FILL THE ANNULAR SPACE SHALL PREVENT THE PASSAGE OF FLAME AND HOT GASES SUFFICIENT TO IGNITE COTTON WASTE WHERE SUBJECTED TO ASTM E119 TIME TEMPERATURE FIRE CONDITIONS UNDER A MINIMUM POSITIVE PRESSURE DIFFERENTIAL OF 0.01 INCH OF WATER (3 PA) AT THE LOCATION OF THE PENETRATION FOR THE TIME PERIOD EQUIVALENT TO THE FIRE RESISTANCE RATING OF THE CONSTRUCTION PENETRATED.

Electrical Legend

- 110v Duplex Outlet
- 110v Quad Outlet
- 110v GFCI Outlet
- 220v Outlet
- RG6 Cable Outlet
- Switch
- 3 Way Switch
- Telephone
- Push Button
- Reverse Sensor
- Wall Mounted Fixture
- 6" Recess Fixture
- Pendant / Hanging Fixture
- Ceiling Mounted Fixture
- Exhaust Fan
- 110v Ceiling Outlet
- 110v v Smoke Detector w/ Battery Back-up
- Undercounter Lighting
- 1x4 Fourscent Fixture
- Ceiling Fan
- Ceiling Fan w/ Light

NOTE: SMOKE ALARMS
R313.2 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 BASMENTS BUT NOT INCLUDING CRAWL SPACES AND UNHABITABLE ATTICS.
WHEN MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT.
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1 Elec-3rd Floor
1/4" = 1'-0"