

TOWNHOUSE DEVELOPMENT

BUILDING #1

4-8 WIGGIN STREET
LOWELL, MASSACHUSETTS



BUILDING CODE INFORMATION

MASS STATE BUILDING CODE - 9TH EDITION

CODE ANALYSIS: 780CMR (9th Edition) -2015 IBC with Massachusetts Amendments

PROJECT TYPE: Townhouses (5 Units)
BUILDING FLOOR AREA: 2,500sq.ft.
BUILDING VOLUME: 70,000+cf
BUILDING HEIGHT: 2 Story; 30' feet (w/ Basement)
USE GROUP: R-2 (TOWNHOUSES)
CONSTRUCTION TYPE: 5B (Sprinklered - NFPA 13R)

This Analysis assumes the following:
1. There are no outstanding building violations regarding this building.
2. The structure is not in a Flood Zone.
3. The building shall be alarmed in accordance with NFPA 72.
4. The building is not sprinklered in accordance with NFPA 13R.
5. The building is not under the perview of the Historic Board.

101.2 This analysis refers to the building code in accordance with M.G.L.c.143, § 93 - 100. The provisions of this code and all other referenced specialized codes shall apply to the construction, equipment, use and occupancy, and location of this building.

101.3 Intent. The purpose is to establish the minimum requirements to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and safety to life and property from fire and other hazards attributed to the built environment and to provide safety to fire fighters and emergency responders during emergency operations.

101.4 Referenced Codes. Referenced codes include the specialized codes of M.G.L. c. 143, § 96 and other codes and regulations listed in 101.4.1 through 101.4.12 and shall be considered part of this code to the prescribed extent of each such reference. Work regulated by the specialized codes of M.G.L. c. 143, § 96 shall be designed, installed and inspected by individuals authorized to do so in accordance with the specialized codes. However, the impact of work regulated by the specialized codes of M.G.L. c. 143, § 96 and other codes and regulations on work governed by this code shall be subject to inspection by the building official.

101.4.3 Plumbing. Reference the Board of State Examiners of Plumbers and Gas Fitters regulations at 248 CMR. For sewerage disposal or water connections also see 310 CMR.

101.4.5 Fire Prevention shall reference to the Board of Fire Prevention Regulations at 527 CMR, IFC or IMC (the more stringent standard shall apply).

101.4.6 Energy. See 780 CMR 13.00 for Energy Conservation.

101.4.7 Architectural Access. See the Architectural Access Board regulations at 521 CMR.

101.4.8 Environmental Protection. See the Department of Environmental Protection regulations at 310 CMR and the Division Water Pollution Control regulations at 314 CMR.

101.4.10 Electrical. Reference to 527 CMR 12.00; Massachusetts Electrical Code.

101.4.11 Sheet Metal. See the Board of Examiners of Sheet Metal Workers.

102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

102.2 Other Laws. The provisions of this code shall not nullify any provision of state or federal law. Massachusetts General Laws (M.G.L.s) and the Code of Massachusetts Regulations (CMRs) are often referenced in this code. It is the code user's responsibility to determine all applicable laws and regulations relevant to sections in this code. For example, care facilities licensed or operated by Massachusetts agencies often have CMRs with building requirements beyond this code for buildings licensed or operated by the respective agency.

102.2.2 Municipal Bylaws or Ordinances. When provisions of this code conflict with municipal bylaws and ordinances, this code shall govern unless the bylaws or ordinances were promulgated in accordance with M.G.L. c. 143, § 96.

310.4 Residential Group R-2. Residential Group R-2 occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature.

TABLE 504.3: ALLOWABLE BUILDING HEIGHT
Use Group R-2: Construction Type 5B (Sprinklered 13R): 60 feet

TABLE 504.4: ALLOWABLE BUILDING HEIGHT
Use Group B: Construction Type 5B (Sprinklered 13R): 3 Stories

TABLE 506.2: ALLOWABLE AREA
Use Group B: Construction Type 5B (Sprinklered 13R): 21,000sq.ft.

TABLE 601: FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS: Type 5B Construction: All Building Elements: 0hrs

1208.1 Minimum room widths. Habitable spaces, other than a kitchen, shall not be less than 7ft in any plan dimension. Kitchens shall have a clear passageway of not less than 3ft between counter fronts and appliances or counter fronts & walls.

803.6 Textile ceiling coverings. Where used as interior ceiling finish materials, textile ceiling coverings, including materials having woven or non-woven, napped, tufted, looped or similar surface and carpet and similar textile materials, shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of 780CMR Section 803.1.2 or 803.1.4.

803.7 Expanded vinyl wall coverings. Where used as interior wall finish materials, expanded vinyl wall coverings shall be tested in the manner intended for use, using the product mounting system, including adhesive, and shall comply with the requirements of 780CMR Section 803.1.2, 803.1.3 or 803.1.4.

804.4.1 Minimum critical radiant flux. Interior floor finish and floor covering materials in exit enclosures, exit passageways and corridors shall not be less than Class II in Groups B. In all areas, floor covering materials shall comply with the DOCF-1 "pill test" (CPSC 16 CFR, Part 1630).

808.1 Acoustical ceiling systems. The quality, design, fabrication and erection of metal suspension systems for acoustical tile and lay-in panel ceilings in buildings or structures shall conform with generally accepted engineering practice, the provisions of this chapter and other applicable requirements of this code.

808.1.1 Materials & installation. Acoustical materials complying with the interior finish requirements of Section 803 shall be installed in accordance with the manufacturer's recommendations and applicable provisions for applying interior finish.

808.1.1.1 Suspended acoustical ceilings. Suspended acoustical ceiling systems shall be installed in accordance with the provisions of ASTM C 635 and ASTM C 636.

TABLE 903.2 OCCUPANCY AUTOMATIC SPRINKLER REQUIREMENTS
Building having occupancy R-2 (TOWNHOUSES: SPRINKLER 13R

ENERGY EFFICIENCY NOTES (Residential) IECC 2023 w/ Massachusetts Amendments:

1. All pertinent construction components shall comply with the latest energy efficiency requirements.

2. All Dwelling Units shall conform to the following Home Energy Rating System (HERS) Performance rating:
All Electric Dwelling Units: HERS 45
Mixed Fuel Dwelling Units: HERS 42 (>4,000SF = HERS 0)

3. All Doors shall conform to U-value minimums: 0.32

4. All Windows shall conform to a minimum U-Values: 0.25 (Triple Glazing)

5. All Insulation shall conform to the following minimum R-Value:

- A. Basement Walls: (R 25)
- B. All Floor/Ceiling Systems: (R 30)
- C. All Exterior Walls: (R 30)
- D. All Unfinished Attic Floors: (R 60)

6. All Sprinkler systems in Residential buildings shall be completely insulated, with no sprinkler components outside the building fenestration.

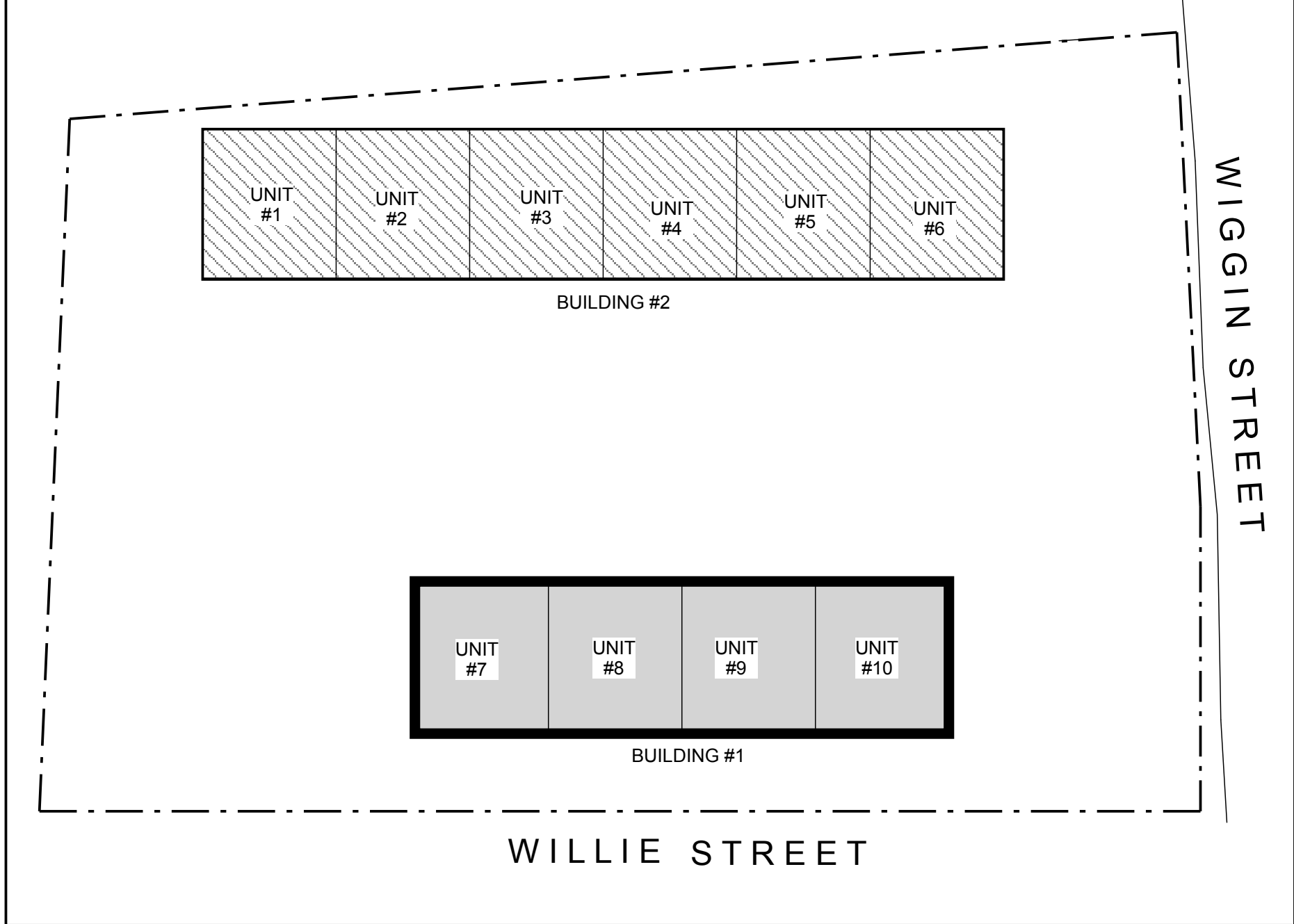
7. The Contractor is solely responsible for coordinating all required insulation inspections and testing.

8. All Residential Units shall have a minimum Air Leakage Rate (ALR) of 50 Pascals (Pa). Tests shall be performed only after all Mechanical, Electrical, Plumbing, and Fire Protection roughs are signed off, and the following is in place during testing:
A. All exterior Doors are closed.
B. All exterior Windows are closed.
C. All flues and dampers are closed.
D. All interior doors shall be open.

* If the Residential Units are Insulated during the time of testing, then all Heating and Cooling systems shall be turned off, and all supply and return registers shall be fully open.

STRUCTURE ELEMENTS	FIRE RESISTANCE RATINGS	OPENING PROTECTIVE FIRE PROTECTION RATING
EXTERIOR WALLS:	0 HOURS (705.2)	0 HOURS
DWELLING UNIT SEPARATIONS	.5 HOUR	N/A HOURS
SMOKE BARRIERS	1 HOUR	NA
OTHER NONLOADBEARING PARTITIONS	0 HOURS	0 HOURS
INT'R BEAR'G WALLS,COLUMNS, GIRDERS & TRUSSES	0 HOURS	0 HOURS
STRUCTURAL MEMBERS SUPPORTING WALLS	0 HOURS	0 HOURS
FLOOR CONSTRUCTION INCLUDING BEAMS	0 HOURS	NA
ROOF CONSTRUCTION	0 HOURS	NA

KEY PLAN



WILLIE STREET

BUILDING #2

BUILDING #1

UNIT #1

UNIT #2

UNIT #3

UNIT #4

UNIT #5

UNIT #6

UNIT #7

UNIT #8

UNIT #9

UNIT #10

UNIT #1

UNIT #2

UNIT #3

UNIT #4

UNIT #5

UNIT #6

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UNIT #10

UNIT #1

UNIT #2

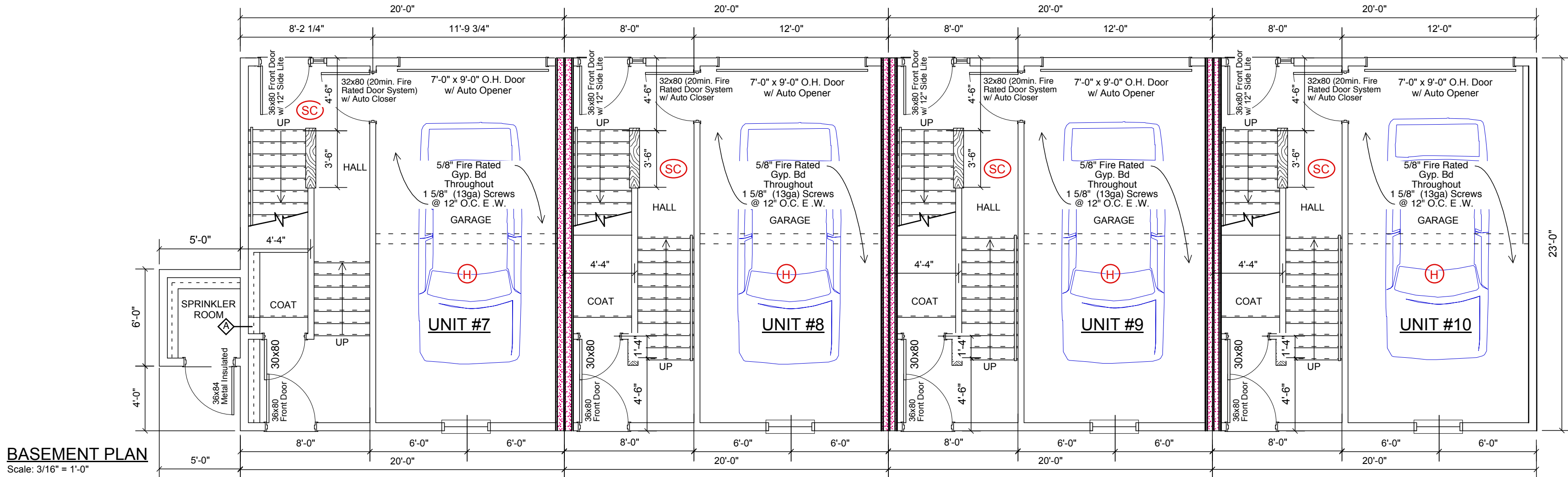
UNIT #3

UNIT #4

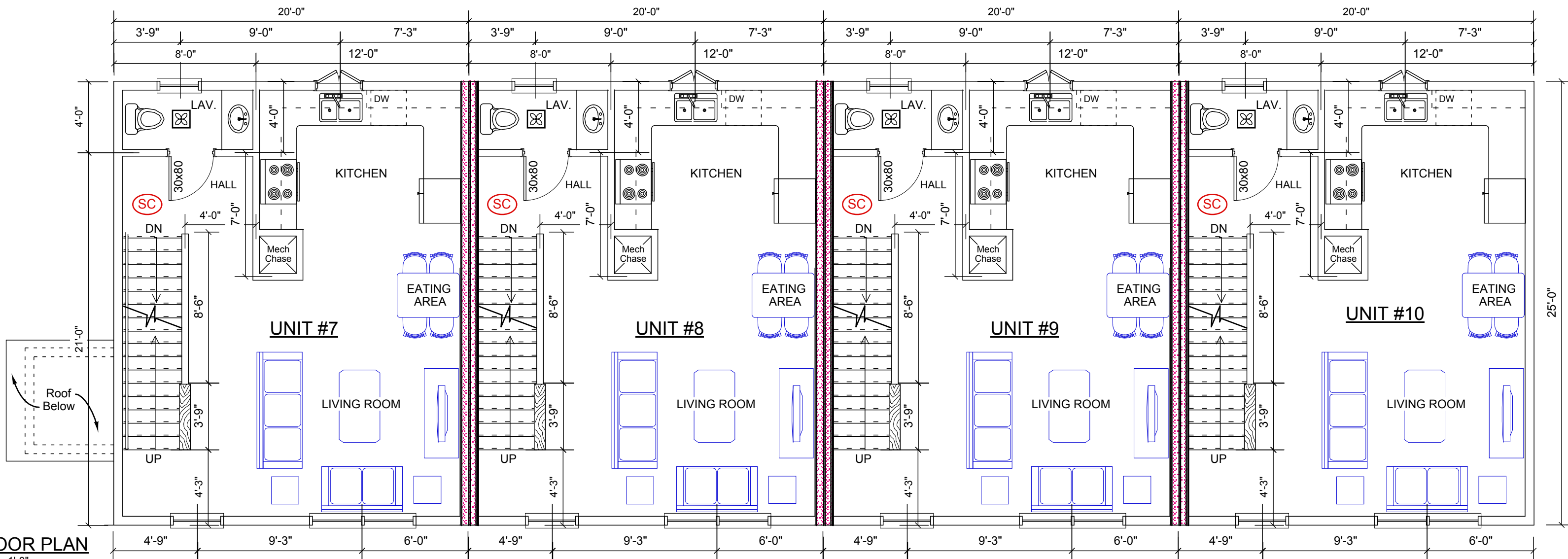
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UNIT #6

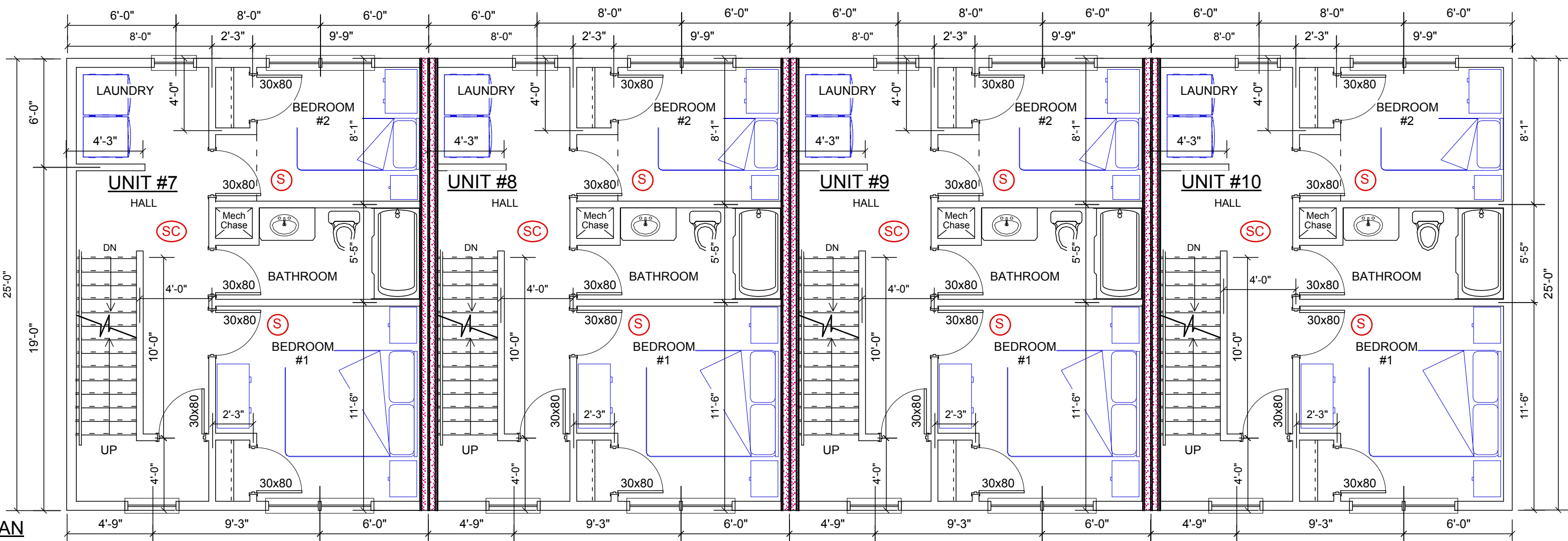
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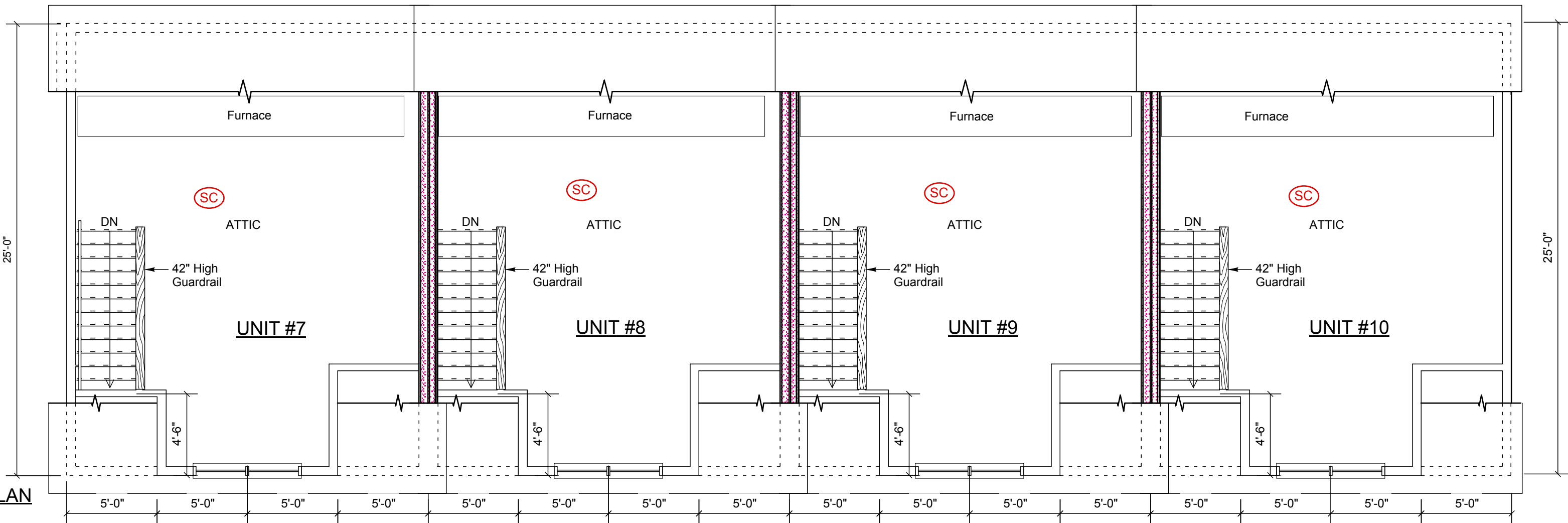
BASEMENT PLAN
Scale: 3/16" = 1'-0"



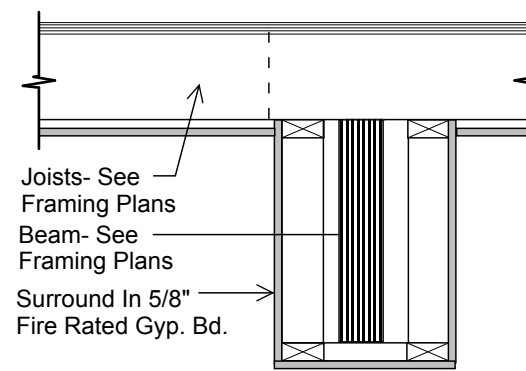
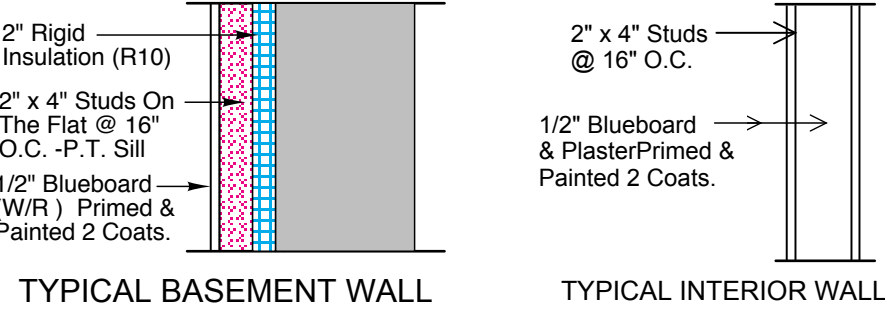
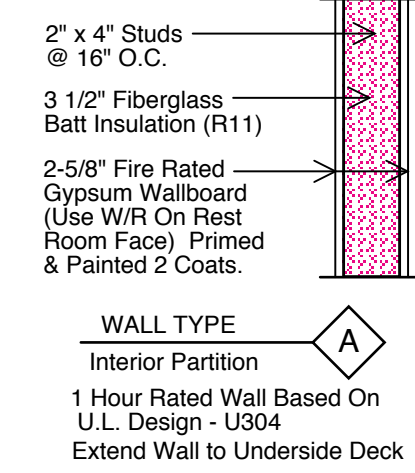
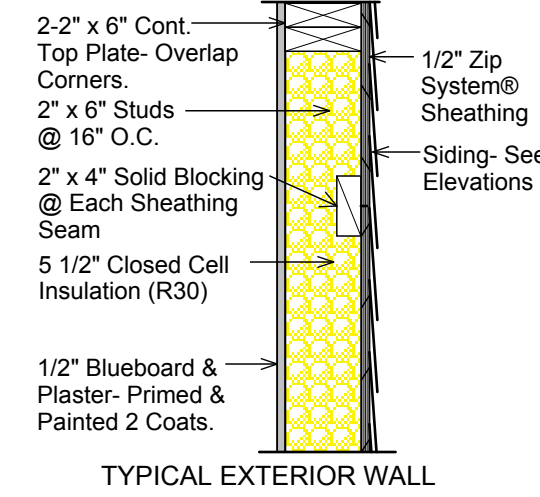
1ST FLOOR PLAN
Scale: 3/16" = 1'-0"



2ND FLOOR PLAN
Scale: 3/16" = 1'-0"



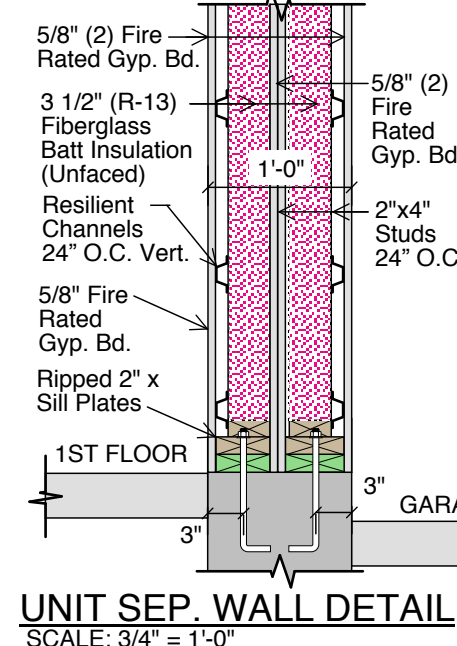
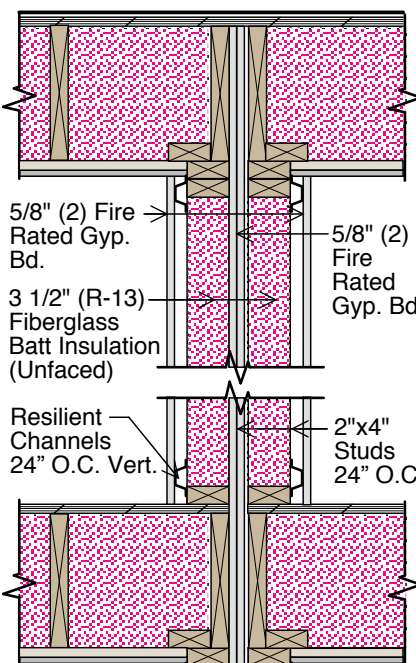
3RD FLOOR PLAN
Scale: 3/16" = 1'-0"



GARAGE BEAM DETAIL
Scale: 3/4" = 1'-0"

- FINISH CARPENTRY:**
- All materials and operations shall meet the requirements of the latest revision of the standard specifications of the following: The Architectural Woodwork Institute (AWI), American Plywood Association (APA), National Forest Products Association (NFPA), Southern Pine Inspection Bureau (SPIB), American Wood Preserves Bureau (AWPB) and the Hardwood Plywood Manufacturers Association (HPMA).
 - Grading of lumber of the various species shall conform to the requirements of ASTM D 2555 and ASTM D 245.
- INTERIOR FINISHES:**
- Interior finishes to be determined by the owner unless otherwise noted.
 - All finishes, appliances, electrical & plumbing fixtures, etc. to be installed by the contractor after owner selection or as otherwise may have been agreed.
- JOINT SEALERS:**
- Provide all labor, materials and equipment necessary to complete all of the following including, but not limited to Sealant around the perimeter of windows, doors, louvers and all openings in exterior walls, under exterior thresholds and sills, exterior and interior trim.
 - Exterior sealant shall be one part acrylic, "Mono" by Tremco® or equal. Interior sealant shall be acrylic-latex type sealant.

WALL PENETRATIONS:
Where Pipes Penetrate UNIT SEPARATION WALLS: Seal Around Metal Pipe Penetrations w/ 3" Min. Safing Insulation & 1" Min. "FIRECODE" Compound By USG Or Equal.



UNIT SEP. WALL DETAIL
SCALE: 3/4" = 1'-0"

Hourly Rating : 1-hour
STC Rating : 50-54 STC
Fire Test Reference: U.L. U309
Sound Test Reference RAL TL77-138

UNIT SEPARATION WALL:
Resilient channels 24" O.C. Attached Horiz. on one side of 2"x4" Studs 24" O.C. w/ 1.25" Type S drywall screws.

One layer 5/8" ToughRock® Fireguard X™ or 5/8" DensaArmor Plus® FireGuard® interior panels applied horizontally to channels w/ 1" Type S drywall screws 8" o.c. w/ vertical joints located mid way between studs.

3 1/2" glass fiber insulation in stud spaces.

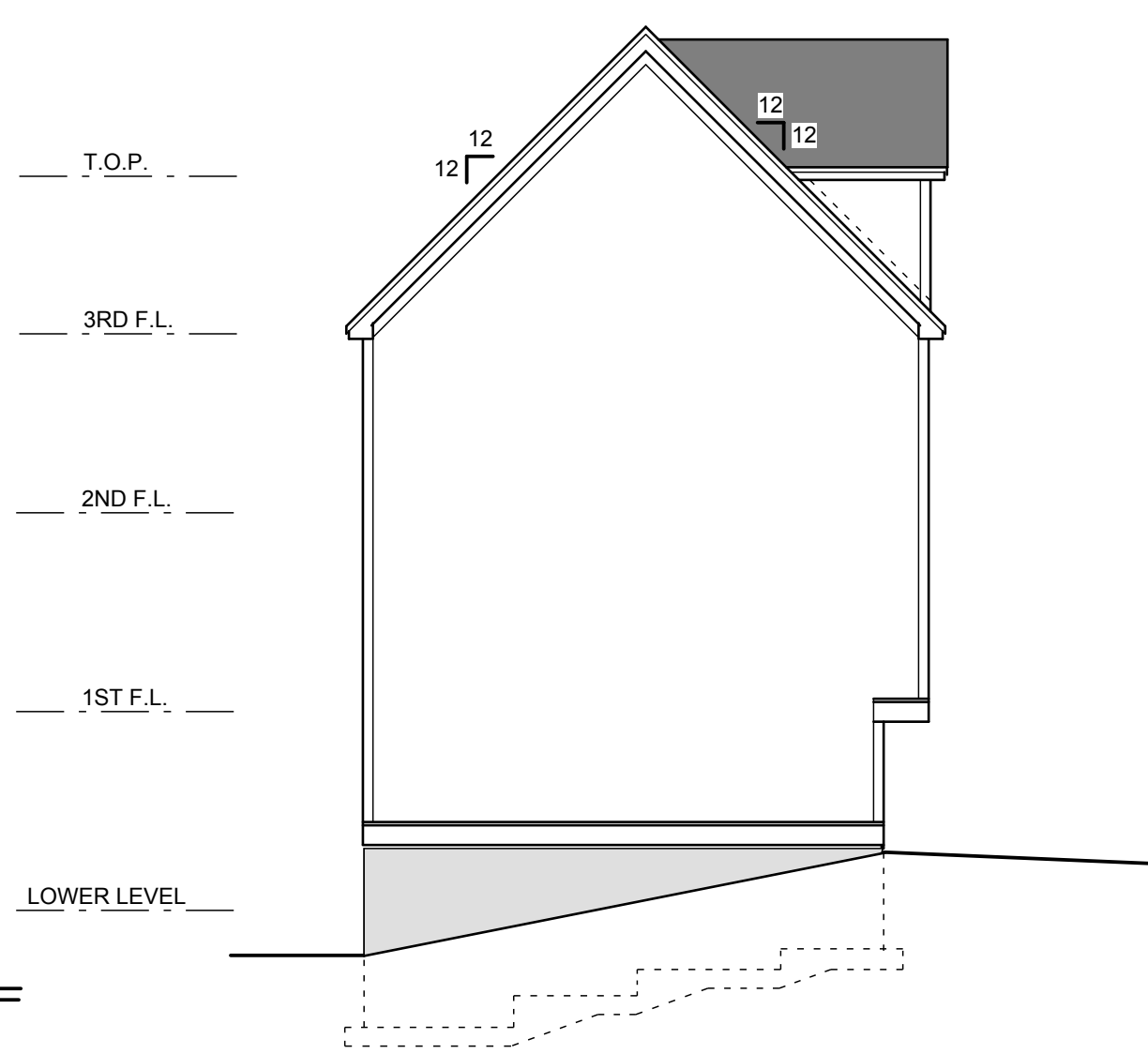
Opposite side: one layer 5/8" ToughRock® Fireguard X™ Products or 5/8" DensaArmor Plus FireGuard interior panels applied horizontally or vertically to studs w/ 8d cement coated nails, 1 7/8" long, 0.0915" shank, 15/64" heads, 7" O.C. Vertical joints staggered 24" on opposite sides. Sound Tested with 3-1/2" fiberglass insulation



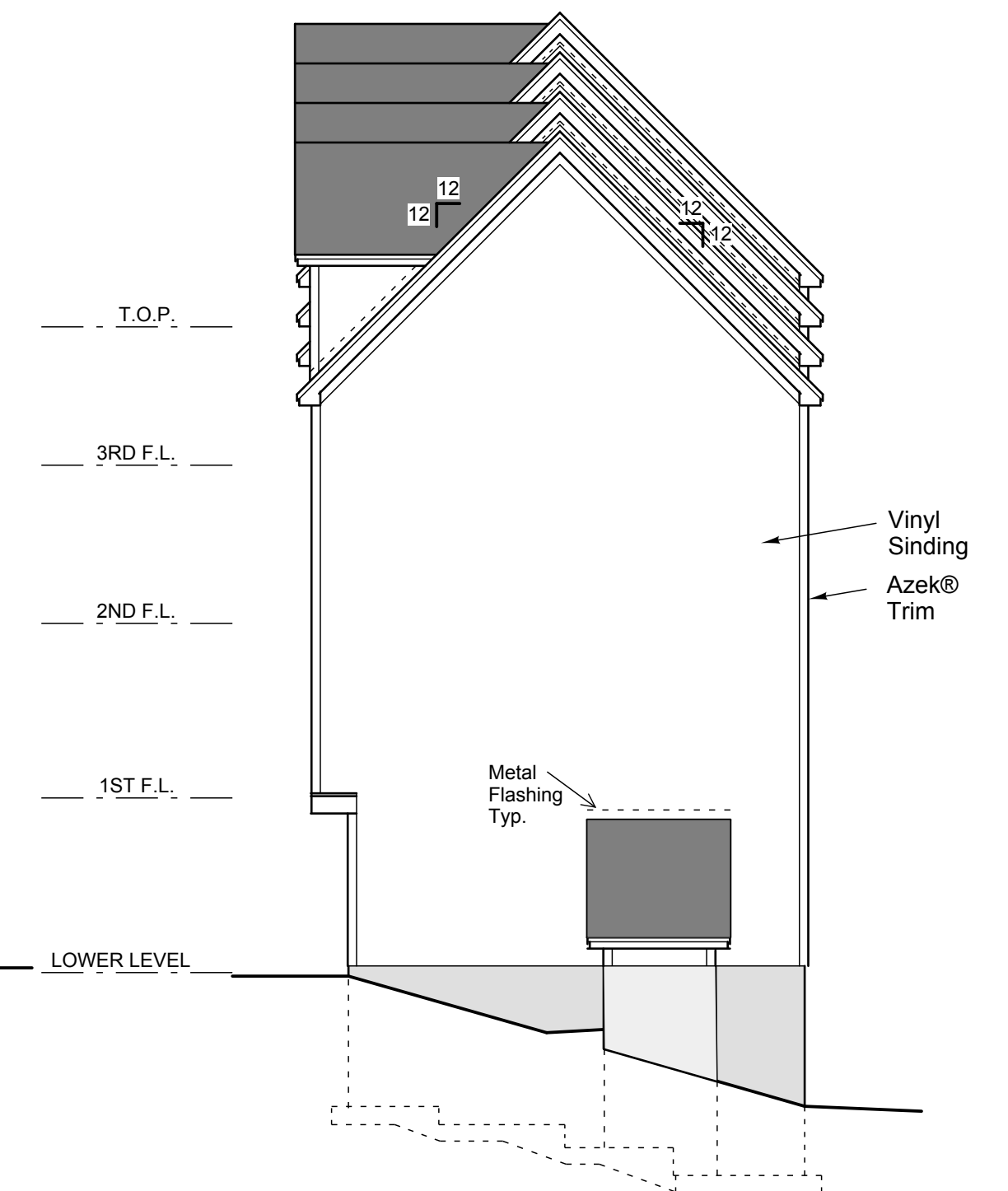
FRONT ELEVATION
Scale: 1/8" = 1'-0"



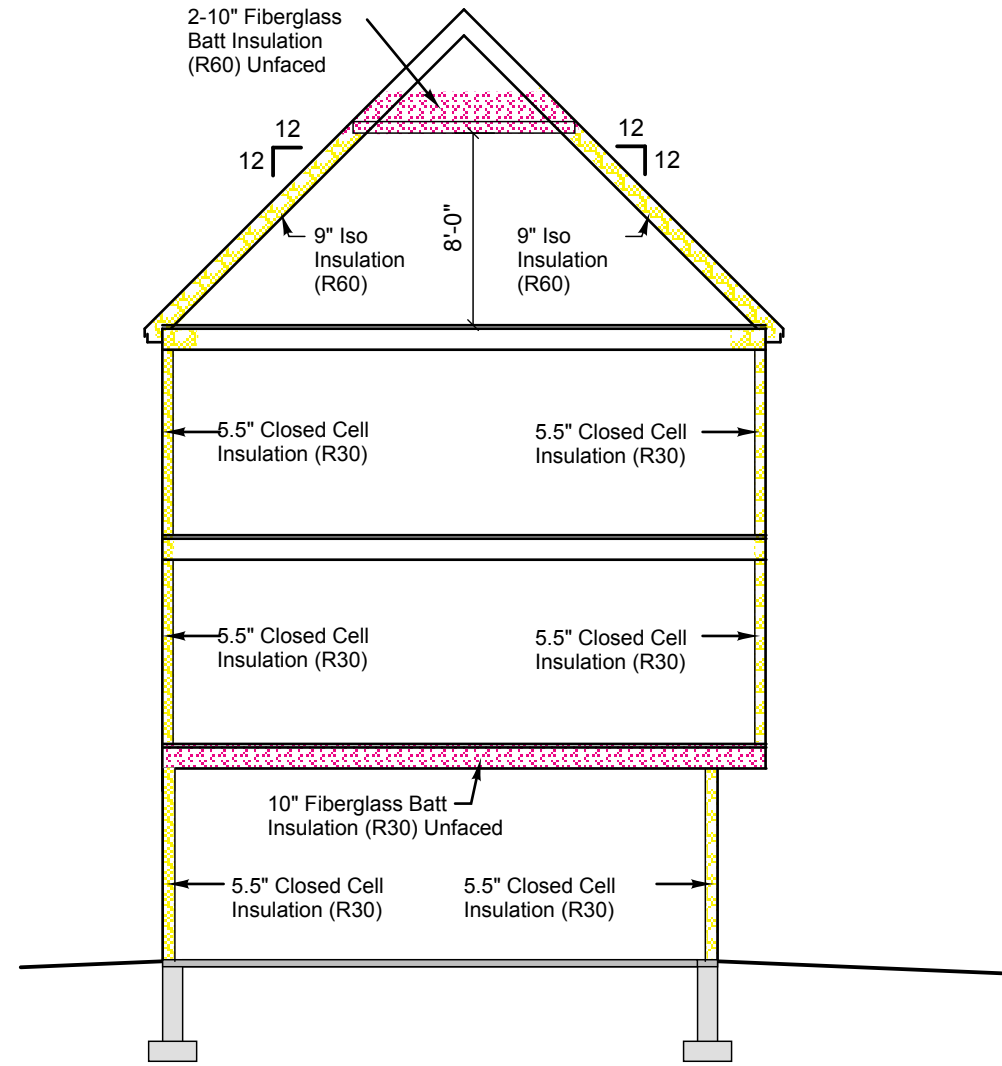
REAR ELEVATION
Scale: 1/8" = 1'-0"



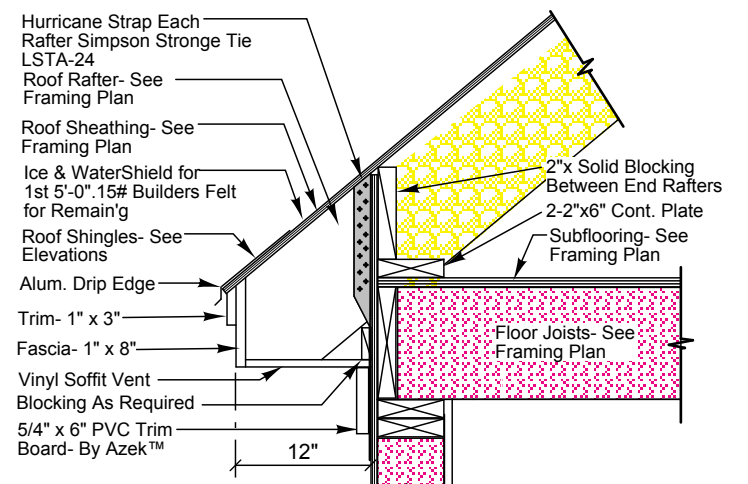
RIGHT SIDE ELEVATION
Scale: 1/8" = 1'-0"



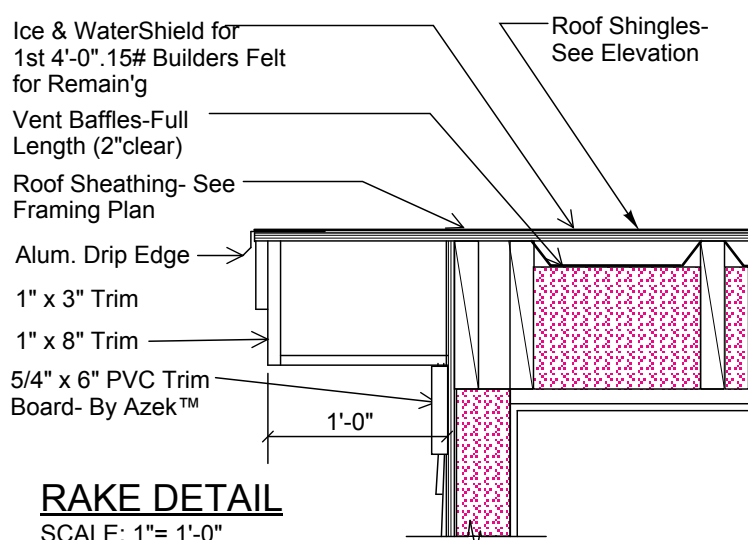
LEFT SIDE ELEVATION
Scale: 1/8" = 1'-0"



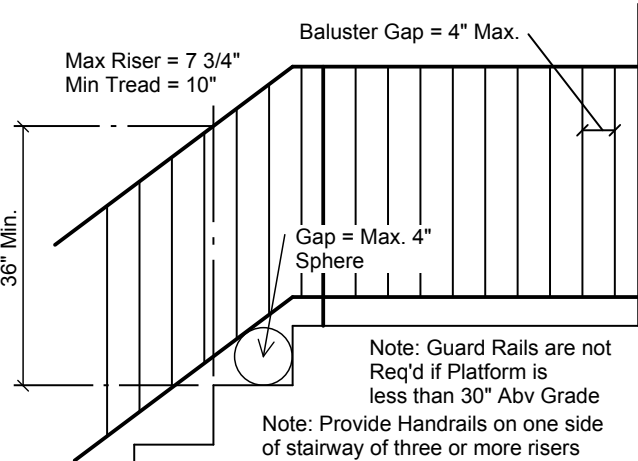
SECTION A-A
Scale: 3/16" = 1'-0"



EAVE FRAMING DETAIL
Scale: 3/4" = 1'-0"



RAKE DETAIL
SCALE: 1" = 1'-0"



EXTERIOR STAIR NOTES & DETAIL

STAIR NOTES:

- The stair system shall be constructed so that all individual stair treads shall conform to a min. of 40psf live load & 300lbs/4sq.in. with a max. deflection of 1/360.
- Stairways shall not be less than 36" 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" on either side of the stairway and the min. clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5" where a handrail is installed on one side and 27" where handrails are provided on both sides.
- The min. headroom in all parts of the stairway shall not be less than 6'-8" 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. Where the nosing of treads at the side of a flight extend under the edge of a floor opening through which the stair passes, the floor opening shall be allowed to project horizontally into the required headroom a max. of 4.75".
- The max. riser height shall be 8.25". 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".
- The min. tread depth shall be 9". 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".
- The radius of curvature at the nosing shall be no greater than 9/16". A nosing not less than 3/4", but not more than 1 1/4" shall be provided on stairways with solid treads. The greatest nosing projection shall not exceed the smallest nosing projection by more than 3/8" between two stories, including the nosing at the level of floors and landings. Beveling of nosings shall not exceed 1/2". Rises shall be vertical or sloped under the tread above from the underside of the nosing above at an angle not more than 30 degrees from the vertical. A nosing is not required where the tread depth is a min. of 11".
- Open risers are permitted, provided that the opening between treads does not permit the passage of a 4" dia. sphere. The opening between adjacent treads is not limited on stairs with a total rise of 30' or less.
- There shall be a floor or landing at the top and bottom of each stairway. A flight of stairs shall not have a vertical rise larger than 12'-0" between floor levels or landings.
- The width of each landing shall not be less than the width of the stairway served. Every landing shall have a min. dimension of 36" measured in the direction of travel. A floor or landing is not required at the top of the interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.
- Landings or floors at the required egress door shall not be more than 1.5" lower than the top of the threshold. The exterior landing or floor shall not be more than 7.75" below the top of the threshold provided the door does not swing over the landing or floor.
- The walking surface of treads and landings of stairways shall be sloped no steeper than 1:48.
- Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers. Handrail height shall be measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be between 34" - 38". The use of a volute, turnout or starting easing shall be allowed over the lowest tread. When handrail fittings or bendings are used to provide continuous transition between flights, the transition from handrail to guardrail, or used at the start of a flight, the handrail height at the fittings or bendings shall be permitted to exceed the maximum height.
- 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 1.5" between the wall and the handrails. Handrails shall be permitted to be interrupted by a newel post at the turn. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.
- All required handrails shall be of one of the following types or provide equivalent graspability:
Type I: Handrails with a circular cross section shall have an outside diameter of 1.25" - 2". If the handrail is not circular, it shall have a perimeter dimension of 4" - 6.25" with a max. cross section of dimension of 2.25". Edges shall have a min. radius of 0.01".
Type II: Handrails with a perimeter greater than 6.25" shall have a graspable finger recess area on both sides of the profile. The finger recess shall begin within a distance of 3/4" measured vertically from the tallest portion of the profile and achieve a depth of at least 3/16" within 7/8" below the widest portion of the profile. This required depth shall continue for at least 3/8" to a level that is not less than 1.75" below the tallest portion of the profile. The min. width of the handrail above the recess shall be 1.25" - 2.75". Edges shall have a min. radius of 0.01".

RESIDENTIAL UNIT STAIR NOTES & DETAILS

WINDOWS:

- All windows shall be Thermo pane Tilt-in windows or Approved Eq.
- All habitable rooms shall have an aggregate glazing area of not less than 8% of the floor area of such rooms. The glazed areas need not be installed in rooms where artificial light is provided capable of producing an average illumination of 6 footcandles over the area of the room at a height of 30" above the floor level.
- The min. operable area to the outdoors shall be 4% of the floor area being ventilated. The glazed areas need not be operable where the opening is not req'd & an approved mechanical ventilation system capable of producing 0.35 air change/hv in the room is installed or a whole-house mech. ventilation system is installed capable of supplying outdoor ventilation air of 15cfm per occupant computed on the basis of two occupants for the first bedroom & 1 occupant for each additional bedroom.
- To determine light & ventilation requirements, any room shall be considered as a portion of an adjoining room when at least one-half of the area of the common wall is open & unobstructed & provides an opening of not less than one-tenth of the floor area of the interior room but not less than 25sq.ft.
- Bathrooms, water closet compartments & other similar rooms shall be provided w/ aggregate glazing area in windows of not less than 3sq.ft. 1/2 of which must be operable. Mechanical ventilation is req'd for bathrooms w/ a shower or bathtub. The glazed areas shall not be req'd where artificial light and a mechanical ventilation system are provided. The min. ventilation rates shall be 30cfm for intermittent ventilation or 20cfm for continuous ventilation. Ventilation air from the space shall be exhausted directly to the outside.
- Req'd glazed openings shall op en directly onto a yard. Req'd glazed openings may face into a roofed porch where the porch abuts a yard & the longer side of the porch is at least 85% unobstructed & the ceiling height is not less than 7'. Eave projections shall not be considered as obstructing the clear open space of a yard or court. Required glazed openings may face into the area under a deck, balcony, bay or front cantilever provided a clear vertical space at least 36" in height is provided.
- All emergency escape windows from sleeping rooms shall have a net clear opening of 3.3sq.ft. The min. net clear opening shall be 20" x 24" in either direction except that windows in sleeping rooms of existing dwellings which do not conform to these requirements may be replaced without conforming to these dimensional requirements, provided that the windows do not significantly reduce the existing opening size.
- Req'd glazed openings shall be permitted to open into patio covers that abutts, yard if in excess of 40% of the exterior sunroom walls are open, or are enclosed only by insect screening, & the ceiling height of the sunroom is not less than 7'.
- Windows & doors shall be installed & flashed in accordance w/ manufacturer's written installation instructions. Fenestration shall bear a label identifying manufacturer, performance characteristics, & approved inspection agency to indicate compliance w/ the requirements of ASTM E 1886 & ASTM E 1996, or AIAA 506.
- Where the opening of an operable window is located more than 72" above the finished grade or surface below, the lowest part of the clear opening of the window shall be a min. of 24" 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" diameter sphere where such openings are located within 24" of the finished floor.
- Window opening limiting devices shall be self acting & shall be positioned to prohibit the free passage of a 4" dia. sphere through the window opening when the window opening limiting device is installed w/ release mechanisms to allow for emergency escape through the window opening without the need for keys, tools or special knowledge. Window opening limiting devices shall comply w/ all of the following: Release of the window opening-limiting device shall require no more than 15lbs of force. The window opening limiting device release mechanism shall operate properly in all types of weather. Window opening limiting devices shall have their release mechanisms clearly identified for proper use in an emergency. The window opening limiting device shall not reduce the min. net clear opening area of the window unit below what is required.
- Windows & Doors shall be designed to resist the design wind loads. Protection of exterior windows & glass doors in buildings located in wind-borne debris regions. Exterior windows and sliding doors shall bear a label identifying manufacturer, performance characteristics and approved inspection agency to indicate compliance w/ AIAA/VDMA/CSA 1011.5 (S.D.640).
- The following are Hazardous Locations for Glazing applications: Glazing in all doors, and in adjacent panels within 24" glazed openings of a size through which a 3" dia. sphere is unable to pass. Glazing in railings regardless of area or height above a walking surface. Includes are structural balustrade panels and nonstructural infill panels. Glazing within 60" of doorways, stairways, landings and ramps. Glazing within 60" of swimming pools, hot tubs, whirlpools, saunas, spas, steam rooms, bathtubs and showers. Glazing less than 16" above the floor. Glazing in walls on the latch side of and perpendicular to the plane of the door in a closed position. Glazing adjacent to a door where access through the door to a closet or storage area 36" or less in depth. Glazing greater than 36q.ft. in area.

FOUNDATION PLAN
Scale: 1/8" = 1'-0"

1ST FLOOR FRAMING PLAN

2ND FLOOR FRAMING PLAN

3RD FLOOR FRAMING PLAN
Scale: 1/8" = 1'-0"

ROOF FRAMING PLAN

THERMAL & DAMPPROOFING:

1. The General Contractor (GC) shall supply all materials and labor for the construction of the Dampproofing and related work necessary for the proper completion of the work.
2. The Dampproofing shall be a finished asphalt waterproofing membrane reinforced with Glass Fiber Towel Cloth or equal as approved by the Architect.
3. The GC shall inspect all surfaces to guarantee that they are free of dirt, oil, grease, and other contaminants from dirt, grease and loose particles. Particular attention shall be given to the concrete mortar floor surfaces.
4. The exterior of all basement walls and floor surfaces other locations as indicated in the Contract Documents shall be damp proofed. Material shall be spread by brush or trowel. The material shall be applied in 12 inch wide strips and shall be thoroughly worked into the surface leaving no voids. The material shall be made in 2 coats with 24 to 48 mild days between coats. Each coat shall be applied at the general contractor's expense.
5. Pipes and other items that penetrate dampproofing shall be caulked with compatible plastic cement around their perimeter.
6. Prior to applying the dampproofing, the GC shall establish on the ground the exact proposed exterior finish grade.
7. The GC shall be responsible for the exterior finish grade. The lower limit shall be the outside corner of the top of the footings. Special attention shall be given to the basement floor and exterior walls. The GC shall be responsible for the exterior finish grade to surfaces which will be exposed to view in the final work.
8. All foundation walls shall be braced during operations on backfilling and compaction. Bracing shall be left in position until the backfill is compacted.
9. All footings shall be carried down to undisturbed material having a minimum bearing capacity of 1500 pounds per square foot.
10. No footing shall be placed in water or on frozen ground.
11. In general, exterior finished grade shall be carried down a minimum of 4 feet below construction grade.
12. All concrete work shall conform to the latest A.C.I. Codes 301 & 318.
13. All concrete shall attain a minimum compressive strength of 3000 psi at 28 days. Portland cement shall conform to ASTM C150. Aggregate shall conform to ASTM C 33. Ready mix concrete shall conform to ASTM C 94.
14. All reinforcing bar details shall conform to the latest A.C.I. Code and detailing manual.
15. All slabs on ground shall be placed on a minimum of 8" layer of 95% compacted gravel and placed in panels not exceeding 16' square or 12' rectangular in size on the plan's or otherwise directed by the Engineer.
16. Welded wire mesh shall conform to ASTM A 185.

CONCRETE NOTES:
1. Unless otherwise noted

1. All foundation walls shall be braced during operations of backfilling and compaction. Bracing shall be left in position until the concrete has attained a minimum of 70% of its design strength.
2. All footings shall be carried down to undisturbed material having a minimum bearing capacity of 1500 pounds per square foot.
3. No footing shall be placed in water or on frozen ground.
4. In general, exterior construction shall be carried down a minimum of 4 feet below finished grade.
5. All concrete work shall conform to the latest A.C.I. Codes 307 & 318.
7. All concrete shall attain a minimum compressive strength of 2800 psi at 28 days. Portland cement concrete shall conform to ASTM C150. Aggregate shall conform to ASTM C 33. Ready mix concrete shall conform to ASTM C 94.
8. All reinforcing bar details shall conform to the latest A.C.I. Code 308.
9. All slabs on ground shall be placed on a minimum of 8" layer of 90# compacted gravel and placed in panels not exceeding 12' x 12'. All reinforcement shall be placed on the plan's) or otherwise directed by the Engineer.
10. Welded wire mesh shall conform to ASTM A 185.

FOUNDATION DETAIL @ DEMISING WALL
Scale: 1/2" = 1'-0"

TYP. FOUNDATION SECTION
Scale: 1/2" = 1'-0"

SCALE: 1/2"= 1'-0"

FOUNDATION WALL @ DOOR
Scale: 1/2" = 1'-0"

ANCHOR BOLT DETAIL

Scale: 3/4" = 1'-0"

FOUNDATION DETAIL @ SIDEWALK/GARAGE
Scale: 1/2" = 1'-0"

CORNER/INTERSECTING WALL REINFORCING DETAIL
Scale: 1/2" = 1'-0"

CORNER FRAMING DETAIL

NOTCHING & BORED HOLE LIMITATIONS FOR EXTERIOR & LOAD BEARING WALLS

SILL DETAIL

MICROLLAM® BEAM DETAILS

HEADER DETAIL- A
SCALE: 3/4"= 1'-0"

HEADER DET
SCALE: 3/4"= 1'-0"

FRAMING DETAIL @ GARAGE DOORS
SCALE: 3/8" = 1'-0"

DUCT WALL PENETRATION

- DUCT WORK PENETRATION NOTES:**
1. Penetration of ductwork through roof or tapered eaves. The system shall be installed in accordance with the manufacturer's instructions. The number, size, thickness, number of layers and orientation shall be as specified in the individual UG0 or V400 Wall and Type of Penetration. The minimum thickness of the roof or eaves shall be 1/2" (12.7 mm). The fire rating of the firestop system is equal to the fire rating of the wall assembly in which it is installed.
2. Steel Duct – Maximum 34" x 34" x 22 gauge (or heavier) steel duct to be installed either concentrically or eccentrically within the opening. The annular space shall be min 3/4" to max 1-1/2". Duct to be rigidly supported on both sides of the opening.
3. Presto System – The Presto system shall consist of the following:
- SA1. Picking Material – Min 6 in. or 1/4" thickness of min 4 mil mineral wool batt insulation for 1 or 2 ft openings. Min 12 in. or 1/2" thickness of min 4 mil mineral wool batt insulation for 2 or 3 ft openings. The material shall be firmly packed into the opening as a permanent form and recessed from both surfaces of wall to accommodate the required thickness of fill material.
- SA2. Forming Material – As an alternate to the packing material in Item SA1, min 4 mil x wide strips of min 1/2" thick mineral wool batt insulation may be used. The strips shall be cut to the required annular space and compression fitted, edge fitted, to fill the annular space to a min 10 mm depth for 1 ft rated walls and min 1/4" (6.35 mm) depth for 2 ft rated walls. The strips shall be firmly pressed from both surfaces of wall as necessary to accommodate the required thickness of fill material.
- SA3. Fill Void or Cavity Material – Classification: Min 58" thickness of fill material applied within annular space, flush with the surface of the wall. PROTECTION PRODUCTS – FS-3000, FS-1, FS-1990 or CP-2016.
- SA4. Sealing the Wall – Caulking Material