

1 Site Plan  
SCALE: 1/8"=1'-0"

**GENERAL NOTES**

ALL WORK SHALL CONFORM TO: (A) THE MINIMUM STANDARDS OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE AND ALL RELATED DOCUMENTS PUBLISHED BY THE I.C.C. WHICH HAVE BEEN ADOPTED BY THE LOCAL GOVERNING AGENCY; (B) ALL REGULATIONS AND ORDINANCES OF ALL LOCAL GOVERNING AGENCIES; (C) ANY SPECIAL CONDITIONS REQUIRED BY THE LOCAL GOVERNING AGENCIES; AND (D) ALL CALIFORNIA STATE CODE AMENDMENTS (BUILDING STANDARDS CODE) TITLE 24.

THE APPLICABLE CODES WILL INCLUDE, BUT SHALL NOT BE LIMITED TO:

- 2019 CALIFORNIA RESIDENTIAL CODE (CRC)
  - 2019 CALIFORNIA BUILDING CODE (CBC)
  - 2019 CALIFORNIA ELECTRICAL CODE (CEC)
  - 2019 CALIFORNIA MECHANICAL CODE (CMC)
  - 2019 CALIFORNIA PLUMBING CODE (CPC)
  - 2019 CALIFORNIA ENERGY EFFICIENCY STANDARDS CODE (CEES)
  - 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN)
  - LONG BEACH MUNICIPAL CODE (LBMC)
  - LONG BEACH INFORMATION BULLETINS (IB)
- B. ALL WORK DESCRIBED IN THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR FOR DIMENSION, GRADE, EXTENT AND COMPATIBILITY TO THE EXISTING SITE. ANY DISCREPANCIES AND UNEXPECTED CONDITIONS THAT AFFECT OR CHANGE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE DESIGNER'S ATTENTION IMMEDIATELY. DO NOT PROCEED WITH THE WORK IN THE AREA OF DISCREPANCIES UNTIL ALL SUCH DISCREPANCIES ARE RESOLVED. IF THE CONTRACTOR CHOOSES TO DO SO, HE SHALL BE PROCEEDING AT HIS OWN RISK.
- C. OMISSIONS FROM THE DRAWINGS AND SPECIFICATION OR THE MISDESCRIPTION OF THE WORK WHICH IS MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH IS CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED DETAILS OF THE WORK AS IF FULLY AND COMPLETELY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.
- D. DIMENSIONS SHOWN SHALL TAKE PRECEDENCE OVER DRAWINGS SCALE OR PROPORTION. LARGER SCALE DRAWINGS SHALL TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS.
- E. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE SELECTION OF ALL PLUMBING FIXTURES INCLUDING TOILETS, TUB/SHOWER, LAVATORIES, SINKS AND ALL APPROPRIATE FAUCETS, TRIM AND DRAINS. THE OWNER SHALL SELECT ALL COLORS, FINISH AND OPTIONS.
- F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE MECHANICAL HEATING AND DISTRIBUTION SYSTEM IN COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS.
- G. THE CONTRACTOR SHALL COORDINATE WITH OWNER FOR THE SELECTION OF ALL ELECTRICAL LIGHT FIXTURES (THEIR COLOR, TYPE AND FINISH), AND SWITCHPLATED AND OUTLETS (COLOR AND TYPE). THE CONTRACTOR SHALL VERIFY ALL LOCATIONS AND HEIGHTS OF ALL OUTLETS, LIGHTING FIXTURES, ETC. WITH THE ARCHITECT.
- H. THE CONTRACTOR SHALL COORDINATE WITH OWNER FOR THE SELECTION OF ALL KITCHEN APPLIANCES (COLOR, TYPE AND OPTIONS).
- I. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE SELECTION AND PROPER LOCATIONS OF ALL BATHROOM SPECIALTIES INCLUDING, BUT NOT LIMITED TO, MEDICINE CABINETS, MIRRORS, TOWEL BARS AND HOOKS, TOILET PAPER DISPENSER, SOAP DISH AND SHOWER ENCLOSURE.
- J. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE DESIGN OF BUILT-IN CABINETS INCLUDING DOOR AND DRAWER LOCATIONS, TYPES OF HINGES, PULLS AND SLIDING HARDWARE. THE OWNER SHALL SELECT THE TYPE OF MATERIALS, COLOR AND FINISH FOR CABINETS.
- K. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE SELECTION OF ALL INTERIOR FINISHES INCLUDING FLOOR COVERINGS AND UNDERLAYMENTS, PAINT (INCLUDING NUMBER OF COATS), OTHER WALLCOVERINGS, BASE AND CASE, LAMINATES, TILE, ETC.
- L. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR THE SELECTION OF ALL DOOR HARDWARE, INCLUDING, BUT NOT LIMITED TO, DOOR LATCHES, HINGES, CABINET HARDWARE, ETC. (TYPES AND FINISHES).
- M. ALL WORK, CONSTRUCTION AND MATERIALS SHALL COMPLY WITH ALL PROVISION OF THE APPLICABLE BUILDING CODES AS WELL AS ANY OTHER RULES, REGULATIONS, AND ORDINANCES GOVERNING THE PLACE OF CONSTRUCTION. IT IS THE SOLE RESPONSIBILITY OF ANYONE SUPPLYING LABOR, MATERIALS, OR BOTH TO BRING TO THE ATTENTION OF THE DESIGNER, ENGINEER, GENERAL CONTRACTOR AND THE OWNER ANY DISCREPANCIES OR CONFLICT BETWEEN THE REQUIREMENTS OF THE CODE AND THE DRAWINGS.

**DRAWING INDEX:**

- ARCHITECTURAL
- A. 001 SITE PLAN/COVER SHEET
  - A. 002 2019 RESIDENTIAL MANDATORY MEASURES
  - A. 100 PROPOSED AND EXISTING/DEMO. PLAN
  - A. 200 EXISTING & PROPOSED ELEVATIONS
  - A. 201 PROPOSED ELEVATIONS AND SECTION
  - A. 300 ROOF PLAN AND DETAILS
  - A. 400 BUILDING PAPER/HOUSE WRAP DETAILS AROUND WINDOWS
  - A. 401 BUILDING PAPER/HOUSE WRAP DETAILS AROUND WINDOWS
  - A. 500 3D RENDERINGS

**PROJECT DATA**

**LEGAL DESCRIPTION:** A.P.N.: 7080-019-021  
TRACT: 17700  
LOT: 21

**OCCUPANCY GROUP:** R-3/ U

**LOT AREA:** 6,051 sq.ft

**TYPE OF CONSTRUCTION:** V-B

**FIRE SPRINKLER :** NO

**LOT COVERAGE (FOR REFERENCE ONLY)**

EXISTING S.F.R FOOT PRINT.....1,774 s.f.  
EXISTING 2-CAR GARAGE .....344 s.f.  
EXISTING FRONT PORCH.....54 s.f.  
EXISTING COVER PATIO.....81 s.f.  
TOTAL FLOOR AREA:.....2,253 s.f.

LOT AREA:.....6,051 s.f.  
TOTAL FLOOR AREA:.....2,253 s.f.  
2,253 / 6,051 x 100 =.....37.23 %  
NO ADDITION TO EXISTING FOOTAGE AREA

**DESCRIPTION OF WORK:**

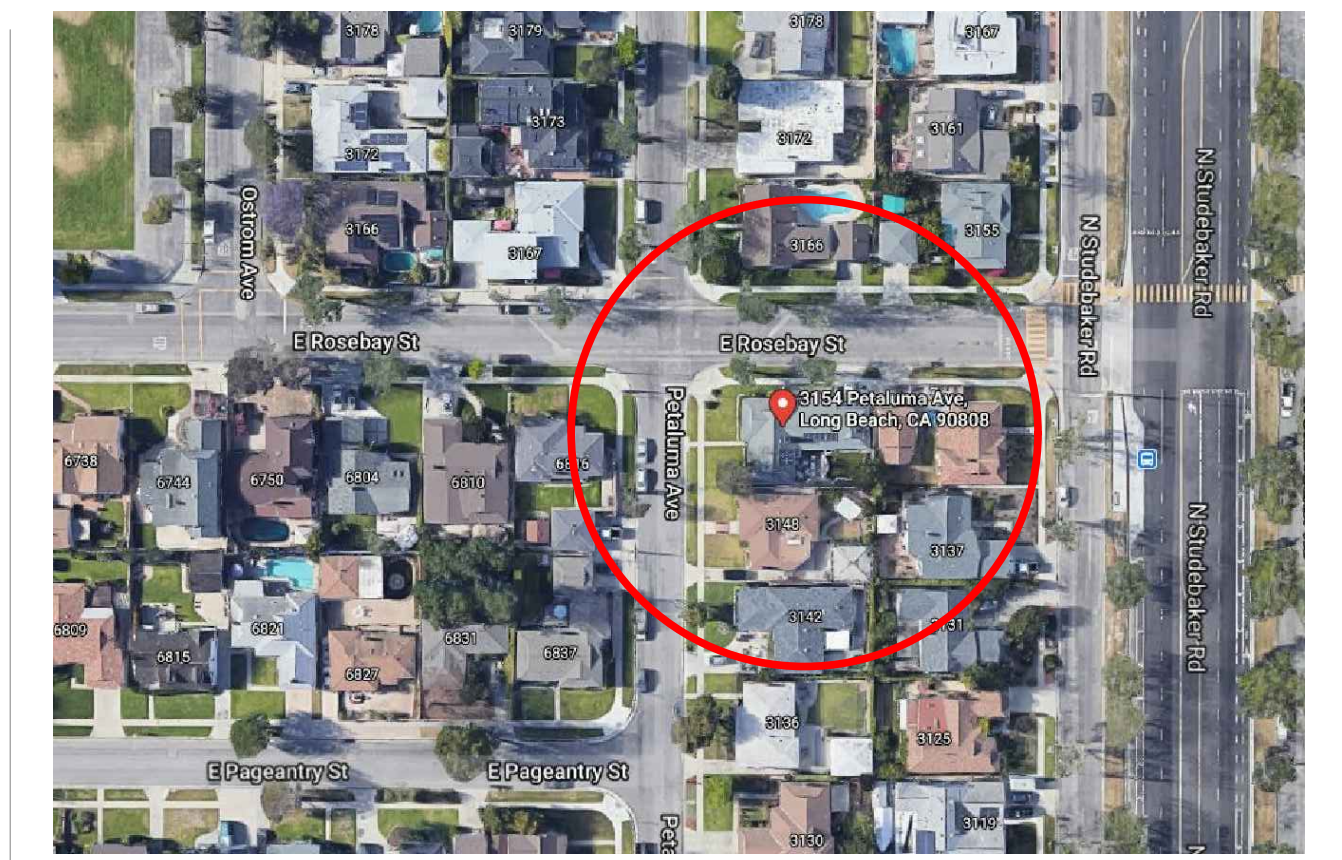
- 1.- INTERIOR REMODEL OF EXISTING S.F.R. 631 Sq. Ft.
- a.- REMODEL BEDROOM 3 TO CREATE A MASTER BEDROOM
  - b.- NEW WALK-IN CLOSET TO BE PART OF REMODELED BEDROOM
  - c.- NEW MASTER BATHROOM TO BE PART OF REMODELED BEDROOM
  - d.- RELOCATE EXISTING KITCHEN WITH NEW RECTANGULAR ISLAND
  - e.- NEW PANTRY CLOSET WITH A NEW SOLAR TUBE
  - f.- NEW SOLAR TUBE OVER PROPOSED KITCHEN ISLAND
  - g.- NEW WET BAR AT EXISTING FAMILY ROOM
  - h.- NEW ELECTRICAL FIRE PLACE AT EXISTING FAMILY ROOM
  - i.- NEW WINDOW AT EXISTING FAMILY ROOM
  - k.- EXISTING LAUNDRY WILL CONVERT TO STORAGE
  - j.- NEW WINDOWS AT REMODELED BEDROOM 3
  - l.- EXISTING FIREPLACE TO BE REMOVED
  - m.- NEW STACKED LAUNDRY NEXT TO MASTER BATH

**STRUCTURAL**

- S.000 OVER SHEET
- S.100 FOUNDATION & SHEAR-WALLS PLAN
- S.200 DETAILS

**MEP**

- M1.0 MECHANICAL SPECS
- M2.0 MECHANICAL PLAN
- M3.0 MECHANICAL SCHEDULES
- M4.0 MECHANICAL DETAILS
- M5.0 MECHANICAL DETAILS
- M6.0 MECHANICAL CATALOGUE
- E1.0 ELECTRICAL LEGEND
- E2.0 ELECTRICAL SPECS
- E3.0 ELECTRICAL PLAN
- E4.0 PANEL BOARD & SLD
- P1.0 PLUMBING SPECS
- P2.0 WATER SUPPLY PLAN
- P3.0 DRAINAGE PLAN
- P4.0 RISER DIAGRAM
- P5.0 GAS RISER DIAGRAM
- P6.0 GAS WATER HEATER
- P7.0 PLUMBING DETAILS



**AERIAL PHOTO**



**VICINITY MAP**

**KEY NOTES**

- 1 (E) CURB
- 2 (E) DRIVEWAY APPROACHED
- 3 (E) DRIVEWAY
- 4 (E) SIDEWALK
- 5 (E) CONCRETE WALKWAY
- 6 (E) CONCRETE SLAB
- 7 (E) FRONT YARD
- 8 (E) REAR YARD
- 9 (E) PLANTER
- 10 (E) 6 FT. HT. BLOCK WALL
- 11 (E) 5 FT. HT. BLOCK WALL
- 12 (E) 5 FT. HT. WOOD GATE
- 13 (E) ELECTRICAL METER
- 14 (E) WATER METER
- 15 (E) GAS METER
- 16 (E) HANDICAP RAMP



PixelArch Ltd.  
US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
+1 805 861 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:  
MAY 18, 2021

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

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DRAWING TITLE:

SITE PLAN

Sheet :

A.001

No.	Revision/Issue	Date
1	ISSUED FOR PLANNING APPROVAL	

Page No. :



### 2019 Low-Rise Residential Mandatory Measures Summary

NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. \*Exceptions may apply.

Table with 2 columns: Section ID and Measure Description. Includes sections for Building Envelope Measures, Air Leakage, Insulation Certification, Radiant Barrier, Ceiling and Rafter Roof Insulation, Wall Insulation, Raised-floor Insulation, Slab Edge Insulation, Vapor Retarder, Fireplaces, Decorative Gas Appliances, Space Conditioning, Water Heating, and Plumbing System Measures.



### 2019 Low-Rise Residential Mandatory Measures Summary

Table with 2 columns: Section ID and Measure Description. Includes sections for Liquid Line Drier, Storage Tank Insulation, Water Piping, Insulation Protection, Gas or Propane Water Heating Systems, Recirculating Loops, Solar Water-heating Systems, Ducts and Fans Measures, Factory-Fabricated Duct Systems, Field-Fabricated Duct Systems, Backdraft Damper, Gravity Ventilation Dampers, Protection of Insulation, Porous Inner Core Flex Duct, Duct System Sealing and Leakage Test, Air Filtration, and Space Conditioning System Airflow Rate and Fan Efficacy.



### 2019 Low-Rise Residential Mandatory Measures Summary

Table with 2 columns: Section ID and Measure Description. Includes sections for Requirements for Ventilation and Indoor Air Quality, Pool and Spa Systems and Equipment Measures, Lighting Measures, and Interior Switches and Controls.



### 2019 Low-Rise Residential Mandatory Measures Summary

Table with 2 columns: Section ID and Measure Description. Includes sections for Interior Switches and Controls, Residential Outdoor Lighting, Internally Illuminated Address Signs, Low-rise Multifamily Buildings, Minimum Solar Zone Area, Azimuth, Shading, Structural Design Loads on Construction Documents, Documentation, Main Electrical Service Panel, and Main Electrical Service Panel.



PixelArch Ltd.
US Office:
5425 Carpenteria Ave # 636, Carpinteria CA 93014
+1 805 861 7390 info@pixelarchltd.com
www.pixelarchltd.com

Project Name and Address:
INTERIOR REMODEL FOR
PETALUMA RESIDENCE
3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:
MAY 18, 2021
Scale:
NTS

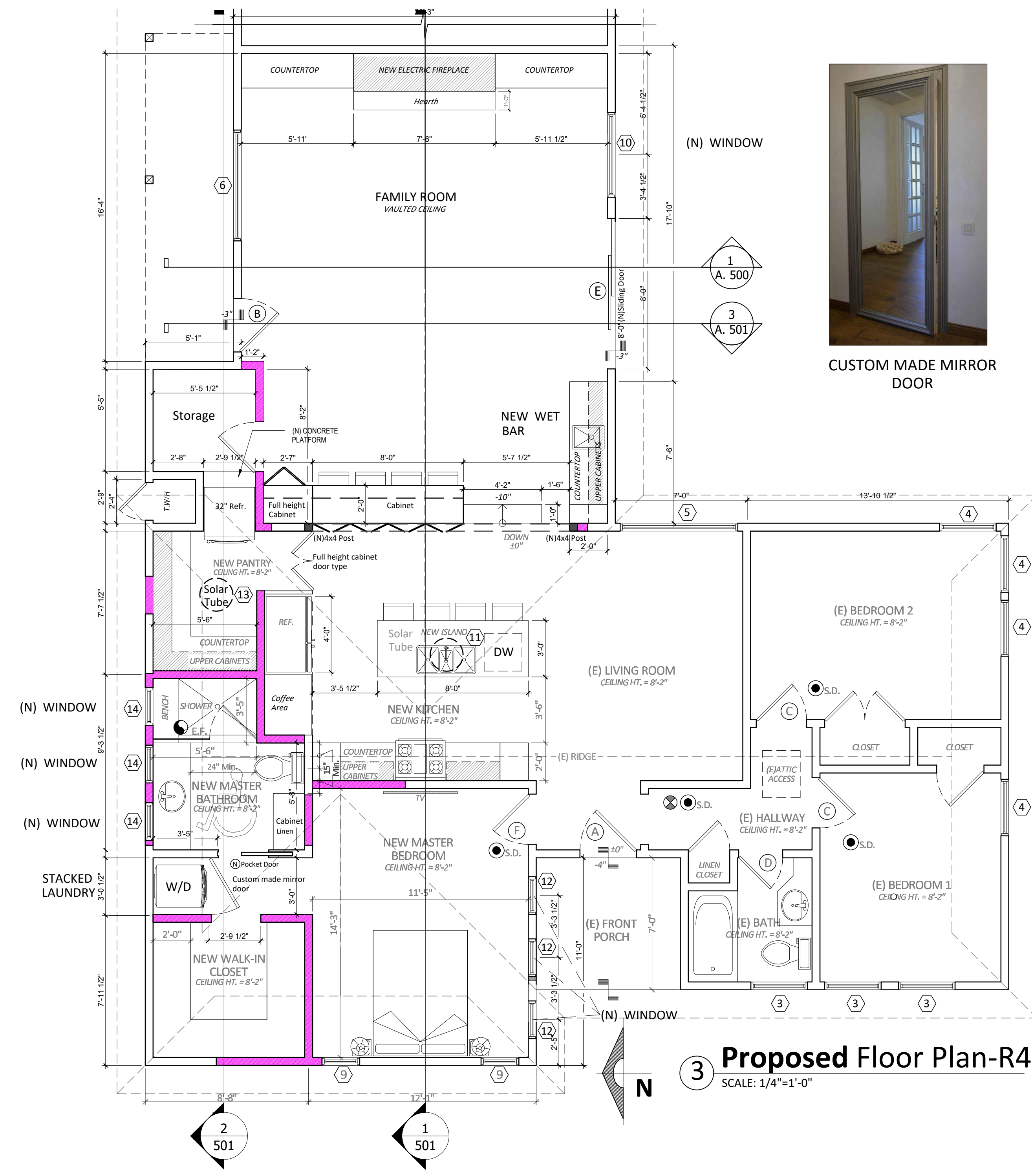
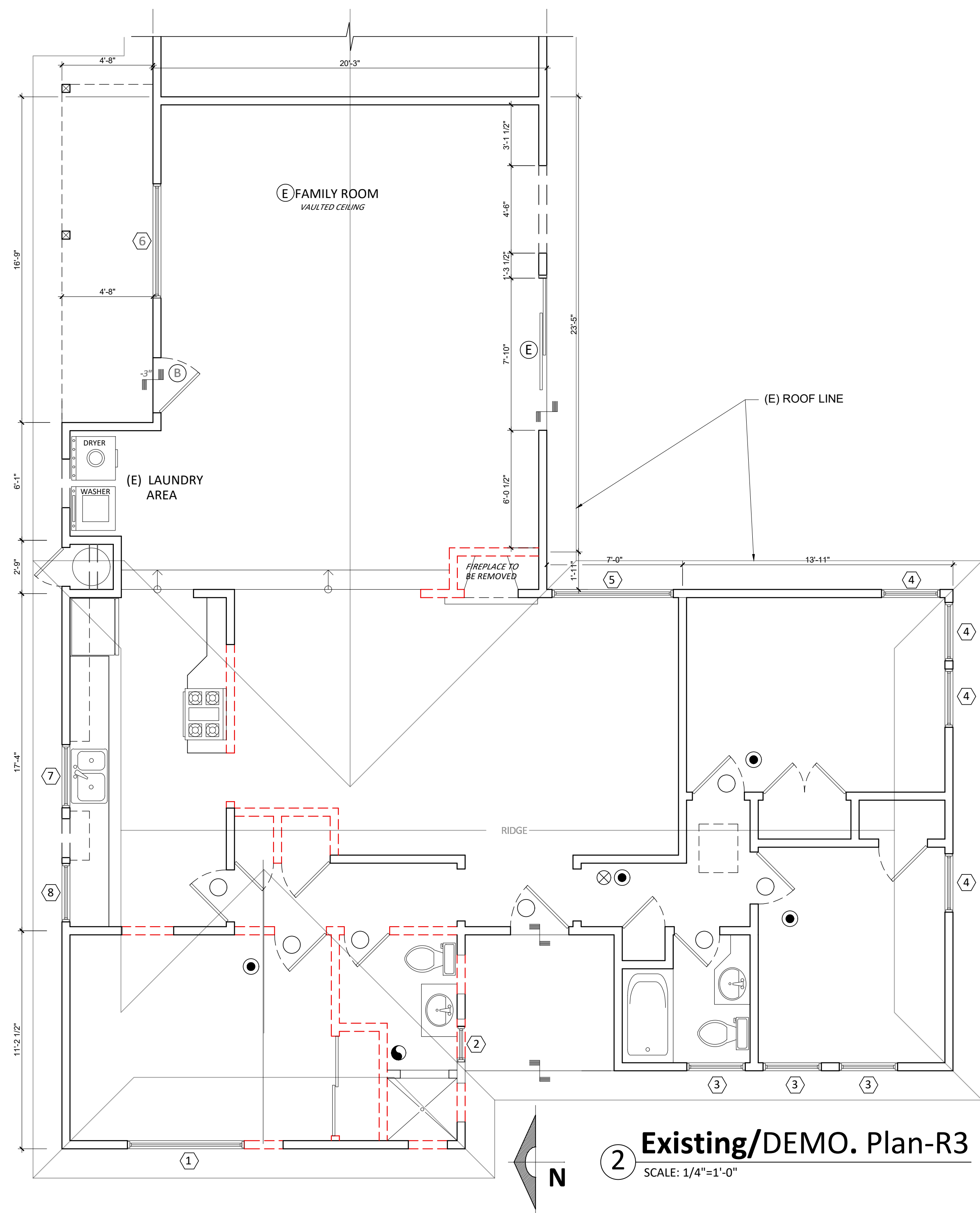
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2019\_RESIDENTIAL\_MANDATORY\_MEASURES

Sheet :
Page No. :

Table with 3 columns: No., Revision/Issue, Date. Row 1: 1, ISSUED FOR PLANNING APPROVAL, [blank].

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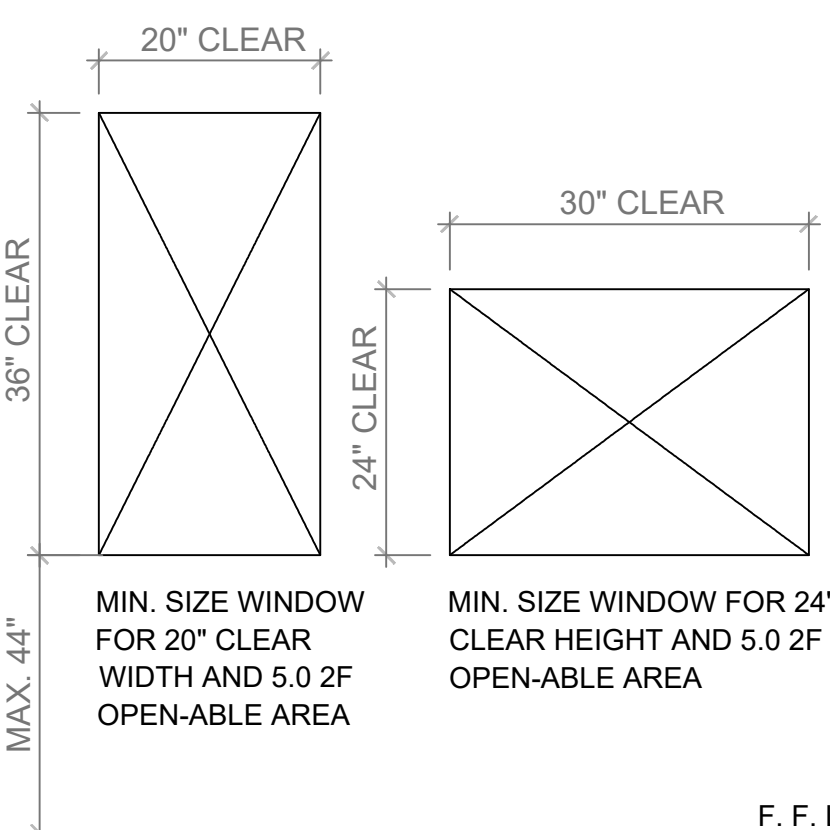
- GENERAL NOTES**
- WRITTEN DIMENSIONS ON THESE DRAWINGS SHALL HAVE PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTOR SHALL VERIFY, AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS ON THE JOB. THE DESIGNER MUST BE NOTIFIED OF ANY VARIATIONS FROM THE DIMENSIONS OR CONDITIONS SHOWN ON THESE DRAWINGS. SHOP DRAWINGS MUST BE SUBMITTED TO THE DESIGNER FOR COMPLIANCE REVIEW BEFORE PROCEEDING WITH FABRICATION.
  - BATHROOMS AREA SHALL BE MECHANICALLY VENTILATED IN ACCORDANCE WITH CRC SECTION R 303.3.1 (THE FAN SHALL BE EQUIPPED WITH HUMIDITY CONTROL)
  - WALL COVERING SHALL BE CEMENT PLASTER, TILE OR APPROVED EQUAL TO 72 INCHES ABOVE DRAIN AT SHOWERS OR TUB WITH SHOWERS. MATERIALS OTHER THAN STRUCTURAL ELEMENTS SHALL BE MOISTURE RESISTANT. NET AREA OF SHOWER RECEPTORS SHALL BE NOT LESS THAN 1,024 sq.in. OF FLOOR AREA, AND ENCOMPASS 30-INCH DIAMETER CIRCLE.
  - NOTCHING OF EXTERIOR AND BEARING / NONBEARING WALLS SHALL NOT EXCEED 25%/40% RESPECTIVELY. BORED HOLES IN BEARING / NONBEARING WALLS SHALL NOT EXCEED 40%/50% RESPECTIVELY. IN NO CASE SHALL THE EDGE OF THE BORED HOLE BE NEARER THAN 5/8 INCH TO THE EDGE OF THE STUD.

DOOR SCHEDULE				
STATUS	SYM	SIZE	TYPE	QTY
(E)	(A)	3'-0" x 6'-8"	SOLID PANEL	1
(E)	(B)	2'-10" x 6'-8"	SOLID PANEL	1
(E)	(C)	2'-8" x 6'-8"	HOLLOW CORE	4
(E)	(D)	2'-4" x 6'-8"	HOLLOW CORE	2
(E)	(E)	7'-10" x 6'-8"	SLIDING DOOR	1
NEW	(F)	2'-8" x 6'-8"	HOLLOW CORE	3

(E) = EXISTING

WINDOW SCHEDULE				
STATUS	SYM	SIZE	TYPE	QTY
(E)	(1)	6'-0" x 4'-0"	SLIDING, TO BE REMOVED	1
(E)	(2)	2'-0" x 3'-0"	SINGLE HUNG, TO BE REMOVED	1
(E)	(3)	3'-0" x 3'-6"	SINGLE HUNG	3
(E)	(4)	3'-0" x 4'-0"	SINGLE HUNG	4
(E)	(5)	6'-0" x 6'-0"	SLIDING	1
(E)	(6)	6'-0" x 4'-0"	SLIDING	1
(E)	(7)	3'-6" x 3'-0"	SINGLE HUNG, TO BE REMOVED	1
(E)	(8)	3'-0" x 3'-0"	SINGLE HUNG, TO BE REMOVED	1
NEW	(9)	2'-0" x 4'-0"	AWING	2
NEW	(10)	4'-0" x 6'-8"	FIXED GLASS	1
NEW	(11)	1'-9" Dim.	(N) SOLAR TUBE	1
NEW	(12)	2'-0" x 1'-8"	FIXED GLASS	3
NEW	(13)	1'-9" Dim.	(N) SOLAR TUBE	1
NEW	(14)	2'-0" x 1'-8"	AWING	3

- SYMBOL LEGEND**
- NEW WALL CONSTRUCTION WITH 2x STUDS D.F. No.2 @ 16"O.C.
  - USE 2x6 STUDS D.F. No.2 @ 16"O.C. FOR PLUMBING WALLS
  - USE 2x4 STUDS D.F. No.2 @ 16"O.C. FOR NON BEARING WALLS
  - EXISTING WALL TO BE REMOVED
  - EXISTING WALL TO REMAIN
  - CARBON MONOXIDE ALARM WITH A BATTERY BACKUP
  - S.M.D. SMOKE ALARM. W/ BATTERY BACKUP
  - E.F. EXHAUST FAN
    - A- EXHAUST FAN SHALL BE MINIMUM 50 CFM CAPABILITY
    - B- EXHAUST FANS SHALL BE ENERGY STAR COMPLIANT AND BE DUCTED TO TERMINATE TO THE OUTSIDE OF THE BUILDING.
    - C. THE FAN SHALL BE EQUIPPED WITH HUMIDITY SENSOR.
  - INDICATES FLOOR DROP
  - WINDOW SYMBOL
  - DOOR SYMBOL



NOTE: SIZES ARE TAKEN FROM DATA SUPPLIED BY WINDOW MANUFACTURERS. HOWEVER, THESE ARE GENERAL DIMENSIONS AND MUST BE VERIFIED WITH ACTUAL WINDOWS INSTALLED TO MEET MIN. EGRESS REQUIREMENTS.

MIN. SIZE WINDOW FOR 20" CLEAR WIDTH AND 5.0 2F OPEN-ABLE AREA

MIN. SIZE WINDOW FOR 24" CLEAR HEIGHT AND 5.0 2F OPEN-ABLE AREA

MAX. 44"

F. F. LEVEL

SINGLE CASEMENT: 2-4X4-0, 2-6X3-6 DOUBLE CASEMENT: 4-8X4-0 CASEMENT/FIXED COMBO: 7-0X4-0 OTHER WINDOW TYPES: AWING & BAY W/ FIXED CENTER, NONE W/O MANUF. DATA	SINGLE / DOUBLE HUNG: 3-0X5-0, 3-0X5-6, 3-4X5-0, 3-8X5-0, 4-0X5-0 SINGLE / FIXED COMBO: NONE W/O MANUF. DATA	SLIDER: 4-0X4-0 5-0X3-6 6-0X3-0	SLIDER / FIXED COMBO: 8-0X4-0 10-0X4-0 12-0X3-0
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**SECTION 1026 OF THE 2019 INTERNATIONAL BUILDING CODE /SECTION 310 OF THE 2016 INTERNATIONAL RESIDENTIAL CODE**

BASEMENTS IN A DWELLING UNIT AND EVERY SLEEPING ROOM BELOW THE FOURTH STORY (INCLUDES ROOMS WHICH COULD BE USED FOR SLEEPING SUCH AS DENS, SEWING ROOMS, STUDY, ETC.) MUST HAVE A LEAST ONE OPERABLE WINDOW OR DOOR APPROVED FOR EMERGENCY ESCAPE OR RESCUE WHICH SHALL OPEN DIRECTLY INTO A PUBLIC STREET, PUBLIC ALLEY, YARD, OR EXIT COURT. THE UNITS MUST BE OPERABLE FROM THE INSIDE TO PROVIDE A FULL CLEAR OPENING WITHOUT THE USE OF SEPARATE TOOLS.

FOR FULL EGRESS, ESCAPE OR RESCUE WINDOWS ARE REQUIRED TO HAVE A MINIMUM NET CLEAR OPEN-ABLE AREA OF 5.7 SQ. FT. (820.8 SQ IN). EXCEPTION: MAY BE REDUCED TO 5.0 SF (720 SQ IN) IF 44" OR LESS FROM EXTERIOR GROUND LEVEL TO SILL. THE MINIMUM NET CLEAR OPEN-ABLE HEIGHT DIMENSION MUST BE 24 INCHES. THE MINIMUM NET CLEAR OPEN-ABLE WIDTH DIMENSION MUST BE 20 INCHES. THEY MUST ALSO HAVE A FINISHED SILL HEIGHT (CLEAR OPENING) OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR. IN ORDER TO MEET THE REQUIRED NET-CLEAR OPEN AREA SQUARE-FOOT OPENING, EITHER THE WIDTH OR HEIGHT OR BOTH MUST EXCEED THE MINIMUM DIMENSIONS THEREOF.

WHEN REPLACING EXISTING NONCONFORMING WINDOWS REQUIRED FOR EMERGENCY ESCAPE AND RESCUE THE REPLACEMENT WINDOWS MUST MEET THE FOLLOWING:

EMERGENCY ESCAPE AND RESCUE REPLACEMENT WINDOW OPENINGS SHALL HAVE A MINIMUM NET CLEAR OPENING OF 4 SQ. FT.; MINIMUM NET CLEAR OPENING HEIGHT OF 22 INCHES; MINIMUM NET CLEAR OPENING WIDTH OF 20 INCHES. MINIMUM SILL HEIGHT OF NOT MORE THAN 48 INCHES ABOVE THE FLOOR OR THE INSTALLATION OF ONE OR MORE PERMANENTLY AFFIXED STEPS EXTENDING THE FULL WIDTH OF THE WINDOW OPENING, CONSTRUCTED TO THE CURRENT ADOPTED IRC RISE AND RUN DIMENSIONAL REQUIREMENTS, SO THAT THE TOP STEP IS NO GREATER THAN 44 INCHES TO THE TOP OF THE SILL WHERE THE EXISTING ROUGH OPENING DOES NOT ALLOW FOR REPLACEMENT WINDOW DIMENSIONAL REQUIREMENTS THE ROUGH OPENING SHALL BE ENLARGED AND THE REPLACEMENT WINDOW SHALL MEET THE FULL EMERGENCY ESCAPE AND RESCUE OPENINGS PER IRC SECTION R310.1 THROUGH R310.5 OR IBC SECTION 1026 AS APPLICABLE FOR SCOPE OF PROJECT.

ADDITIONAL GLAZING REQUIREMENTS:

FOR MINIMUM LIGHT, ALL SLEEPING ROOMS AND OTHER HABITABLE ROOMS REQUIRE GLAZING EQUAL TO AT LEAST 8% OF THE FLOOR AREA OF THE ROOM; MINIMUM VENTILATION OF 4% OF THE FLOOR AREA. SEE THE INTERNATIONAL BUILDING OR RESIDENTIAL CODES AS APPLICABLE FOR EXCEPTIONS AND A COMPLETE LIST OF LIGHT AND VENTILATION REQUIREMENTS.

SAFETY GLAZING IS REQUIRED IN DOORS, STORM DOORS, RAILINGS, WITHIN 24 INCHES OF A DOOR, OR WHEN PANES ARE OVER 9 SQUARE FEET AND WITHIN 18 INCHES OF THE FLOOR. SEE THE INTERNATIONAL BUILDING OR RESIDENTIAL CODES FOR EXCEPTIONS AND A COMPLETE LIST OF SAFETY GLAZING REQUIREMENTS.



**PixelArch Ltd.**  
US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
+1 805 681 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:  
**INTERIOR REMODEL FOR  
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3154 PETALUMA AVE. LONG BEACH, CA. 90808

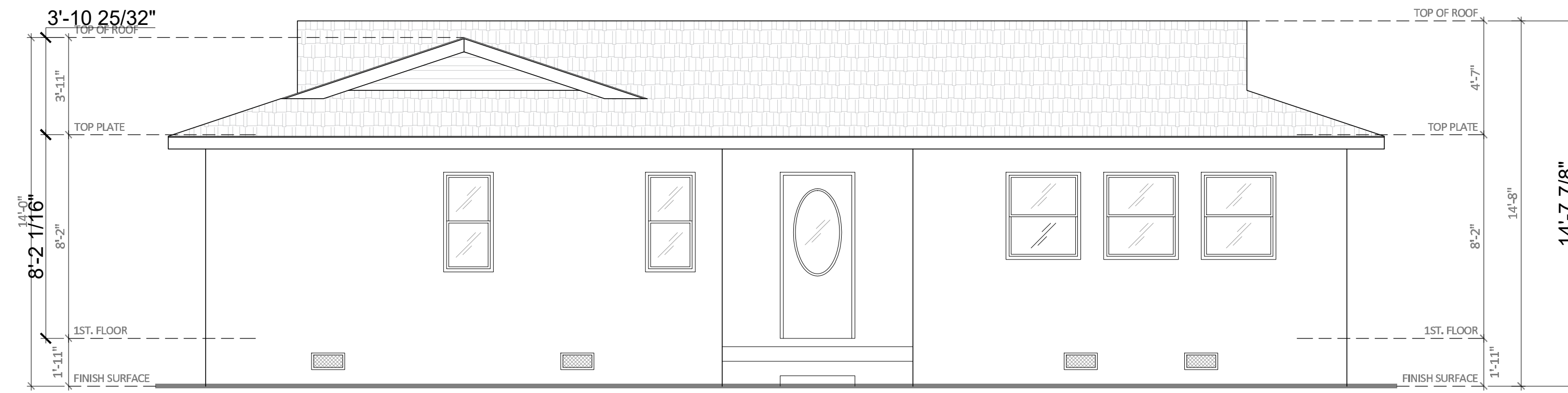
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**PROPOSED AND EXISTING /DEMO. PLAN**

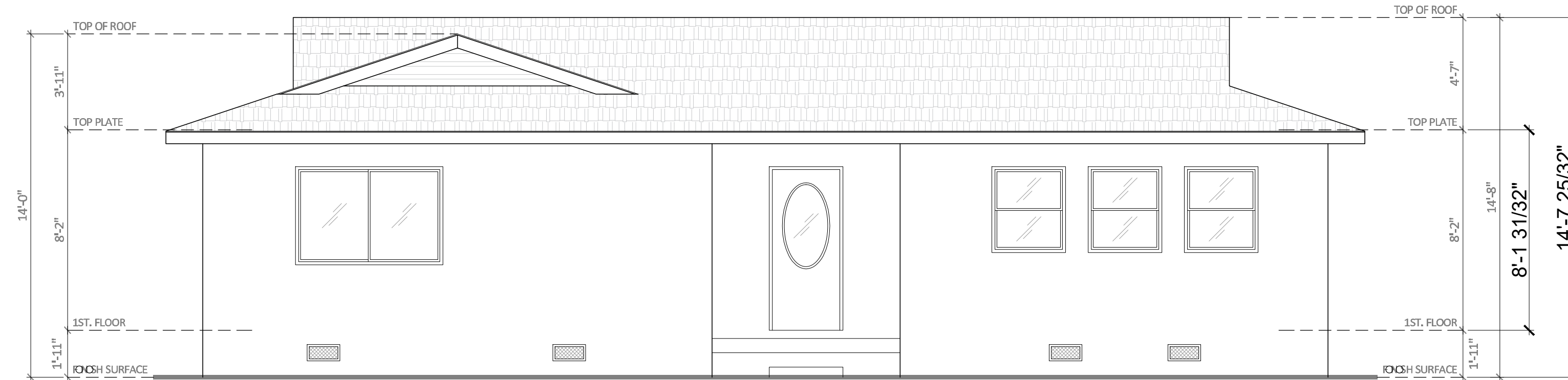
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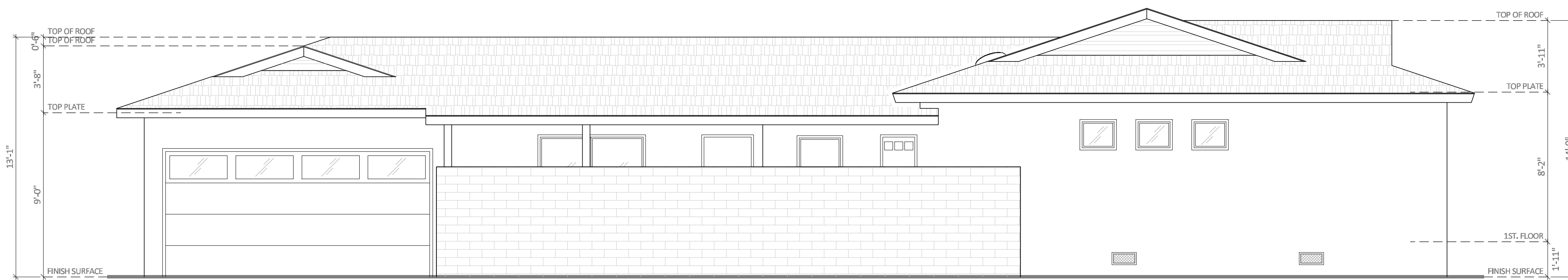
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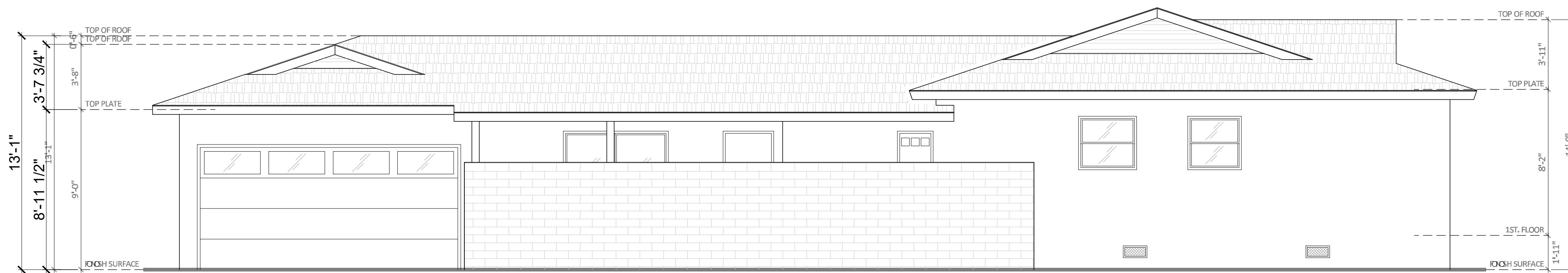
① **Proposed West Elevation**  
SCALE: 1/4" = 1'-0"



② **Existing West Elevation**  
SCALE: 1/4" = 1'-0"



③ **Proposed North Elevation**  
SCALE: 1/4" = 1'-0"



④ **Existing North Elevation**  
SCALE: 1/4" = 1'-0"

## DEMOLITION NOTES

1. DEMOLITION DRAWINGS ARE SCHEMATIC. REMOVE ALL WORK AS INDICATED AND AS REQUIRED TO COMPLETE NEW CONSTRUCTION AS INDICATED. REFER TO CIVIL ENGINEERING, LANDSCAPE, MECHANICAL AND ELECTRICAL DRAWINGS FOR FEATURES NOT OTHERWISE SHOWN.
2. NOTES AND SYMBOLS ARE TO APPLY AT ALL AREAS OF SIMILAR GRAPHIC REPRESENTATION. SUCH INDICATIONS MAY BE LIMITED TO PROMOTE CLARITY OR AVOID REDUNDANCY. NO LIMITATION OF APPLICATION SHALL BE CONSTRUED WITHOUT SPECIFIC NOTATION.
3. NOTIFY LOCAL AGENCY HAVING JURISDICTION PRIOR TO STARTING DEMOLITION WORK. COMPLY WITH ALL AGENCY REQUIREMENTS.
4. OWNER WILL REMOVE FURNITURE, STORED MATERIALS AND MOVABLE EQUIPMENT IN THE AREA OF WORK PRIOR TO START OF DEMOLITION.
5. VERIFY EXISTING CONDITIONS AND INVERT ELEVATIONS OF UNDERGROUND UTILITIES PRIOR TO DEMOLITION. NOTIFY DESIGNER OF DISCREPANCIES AND REQUEST DIRECTION.
6. DRAWINGS ARE PREPARED FROM INFORMATION MADE AVAILABLE BY THE OWNER AND ARE NOT A GUARANTEE OF EXISTING OR CONCEALED CONDITIONS.
7. PROVIDE ALL SHORING, BRACING AND SUPPORTS REQUIRED TO PREVENT SETTLEMENT OR DISPLACEMENT.
8. DISCONNECT ALL AFFECTED UTILITIES PRIOR TO STARTING DEMOLITION WORK.
9. NEATLY CUT AND REMOVE SURFACES AND FINISHES AS REQUIRED OR TO A NATURAL POINT OF DIVISION TO ENABLE INSTALLATION OF UTILITIES OR OTHER CONCEALED WORK, WHETHER SPECIFICALLY SHOWN OR INFERRED FOR SUPPORT OR RENOVATION.
10. PROTECT EXISTING WORK DESIGNATED TO REMAIN FROM DAMAGE DUE TO DEMOLITION AND RECONSTRUCTION WORK.
11. REPAIR AND REPLACE ALL EXISTING SURFACES AND FINISHES TO MATCH EXISTING UNDISTURBED WORK.
12. CAP ALL ABANDONED UTILITIES BEHIND FACE OF NEW FINISHES, INCLUDING FINISH GRADE OR PAVING, RECORD ALL LOCATIONS ON RECORD DOCUMENTS.
13. SEE SITE PLAN(S) FOR DEMOLITION OF SITE FEATURES NOT OTHERWISE INDICATED, INCLUDING PAVING, UNDERGROUND UTILITIES AND SERVICES.
14. SEE STRUCTURAL DRAWINGS FOR DEMOLITION OF SHEAR WALLS, INTERIOR PARTITIONS, AND TRENCHES FOR INSTALLATION OF UNDERGROUND UTILITIES.
15. SEE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR DEMOLITION OF ITEMS NOT OTHERWISE INDICATED, INCLUDING UNDERGROUND OR CONCEALED UTILITIES AND SERVICES.
16. ALL DEMOLISHED MATERIALS ARE THE PROPERTY OF THE CONTRACTOR, EXCEPT FOR SUCH ITEMS AS THE OWNER WISHES TO CLAIM. STOCKPILE THESE ITEMS ON THE SITE AS DIRECTED BY THE OWNER.
17. REMOVE DEMOLISHED MATERIALS FROM SITE AND DISPOSE OF IN A LEGAL MANNER AT A LOCAL RECYCLING FACILITY.
18. REMOVE ALL EXISTING NAILS, TACKS, STAPLES, HANGER WIRES, SIGNAL WIRES, CABLES AND SIMILAR ITEMS FROM SURFACES TO REMAIN. PREPARE ALL REMAINING SURFACES /SUBSTRATE TO RECEIVE INDICATED FINISHES.
19. REMOVE AND STORE DESIGNATED EQUIPMENT / MATERIALS FOR RE-INSTALLATION AS INDICATED.
20. SELECTIVE DEMOLITION INDICATED IN THESE CONTRACT DOCUMENTS EXCLUDES REMOVAL OF HAZARDOUS MATERIALS AND TOXIC SUBSTANCES.
21. PRIOR TO START OF WORK, REFER TO HAZARDOUS MATERIALS SURVEY OR ABATEMENT DOCUMENTATION PROVIDED BY OWNER. HAZARDOUS MATERIALS MAY BE PRESENT ON THE SITE OR IN EXISTING CONSTRUCTION. THESE CONTRACT DOCUMENTS DO NOT CONTAIN MEASURES OR PRECAUTIONS FOR HAZARDOUS MATERIALS ABATEMENT.
22. IF HAZARDOUS MATERIALS ARE DISCOVERED OR SUSPECTED DURING DEMOLITION OPERATIONS, STOP WORK AND NOTIFY OWNER'S REPRESENTATIVE FOR INSTRUCTIONS IMMEDIATELY. TAKE MEASURES TO PROTECT WORKERS AND PUBLIC. DIRECT ALL QUESTIONS ABOUT HAZARDOUS MATERIALS TO THE OWNER'S REPRESENTATIVE.
23. COORDINATE DEMOLITION WITH WORK OF HAZARDOUS MATERIAL ABATEMENT WORK AS DIRECTED BY OWNER.



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 US Office:  
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Date:  
**MAY 18, 2021**  
 Scale:  
 1/4"=1'-0"

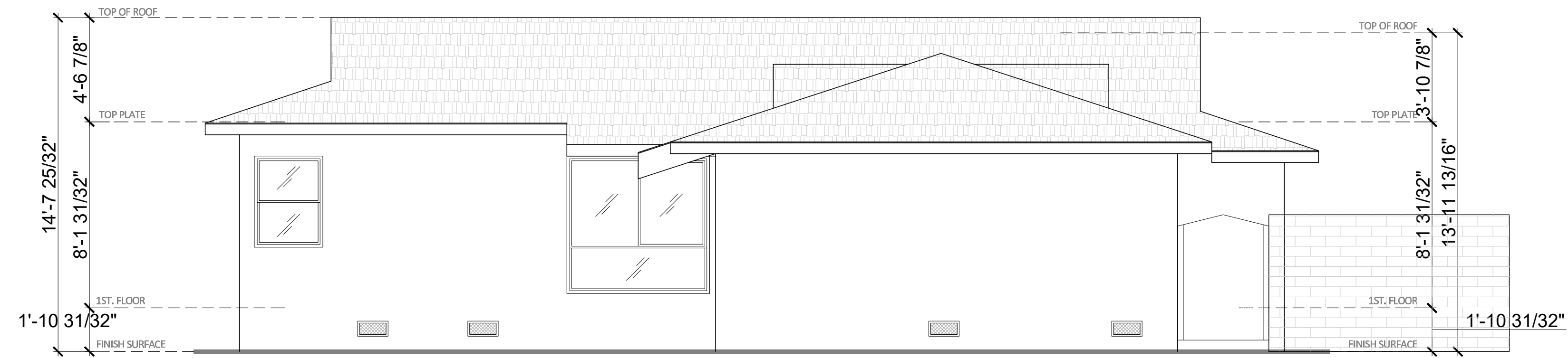
DRAWING TITLE:  
**EXISTING AND PROPOSED ELEVATIONS**

Sheet :  
 Page No. :

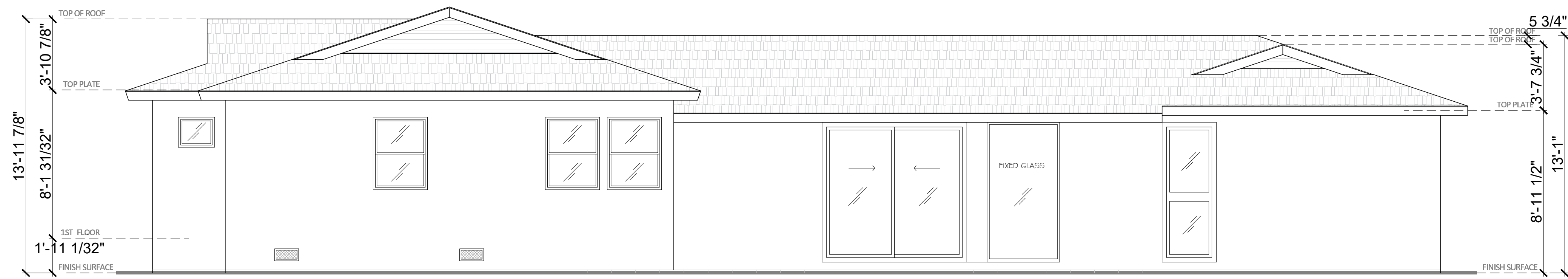
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**A. 200**

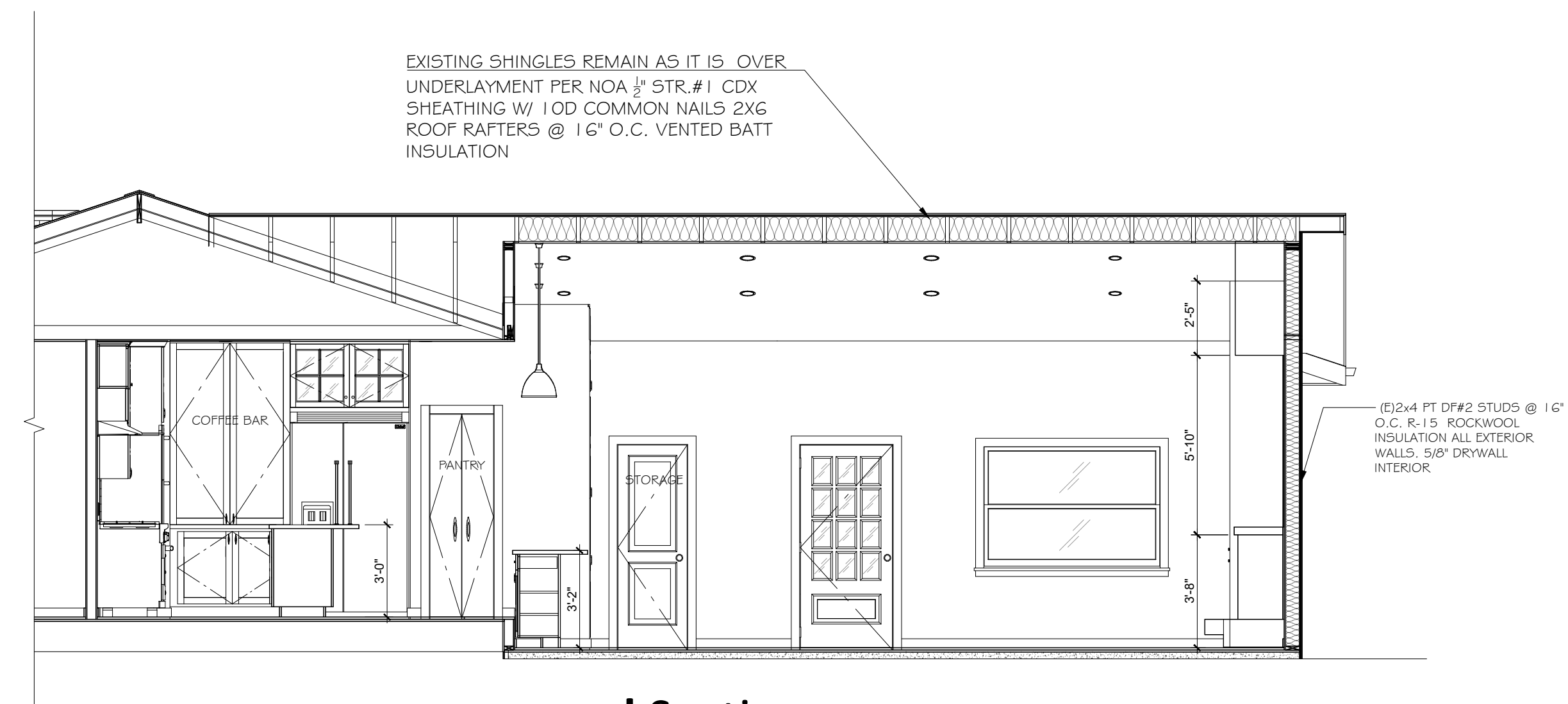
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5 **proposed East Elevation**  
SCALE: 1/4" = 1'-0"



6 **proposed South Elevation**  
SCALE: 1/4" = 1'-0"



5 **proposed Section**  
SCALE: 1/4" = 1'-0"



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DRAWING TITLE:  
**PROPOSED ELEVATIONS AND SECTION**

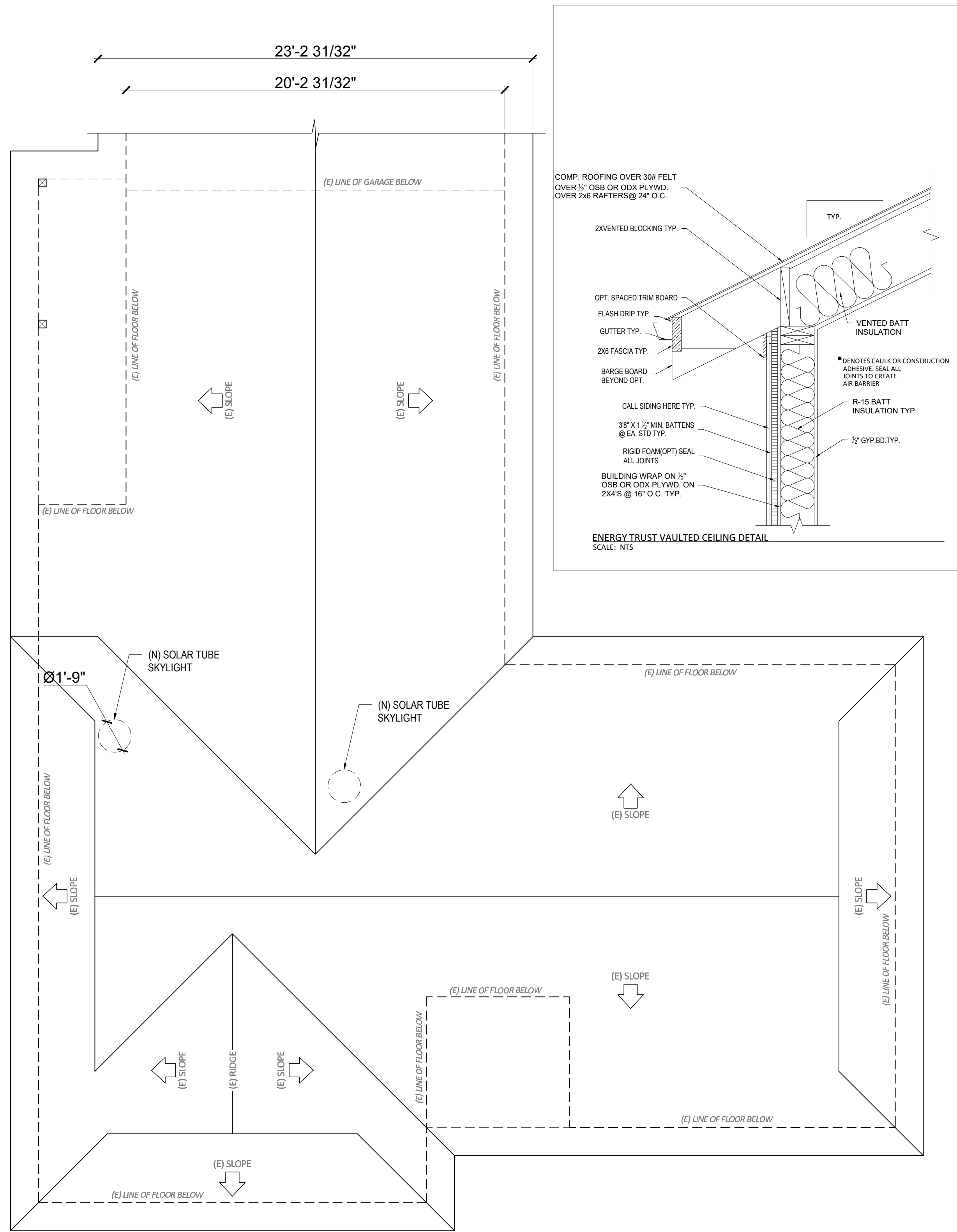
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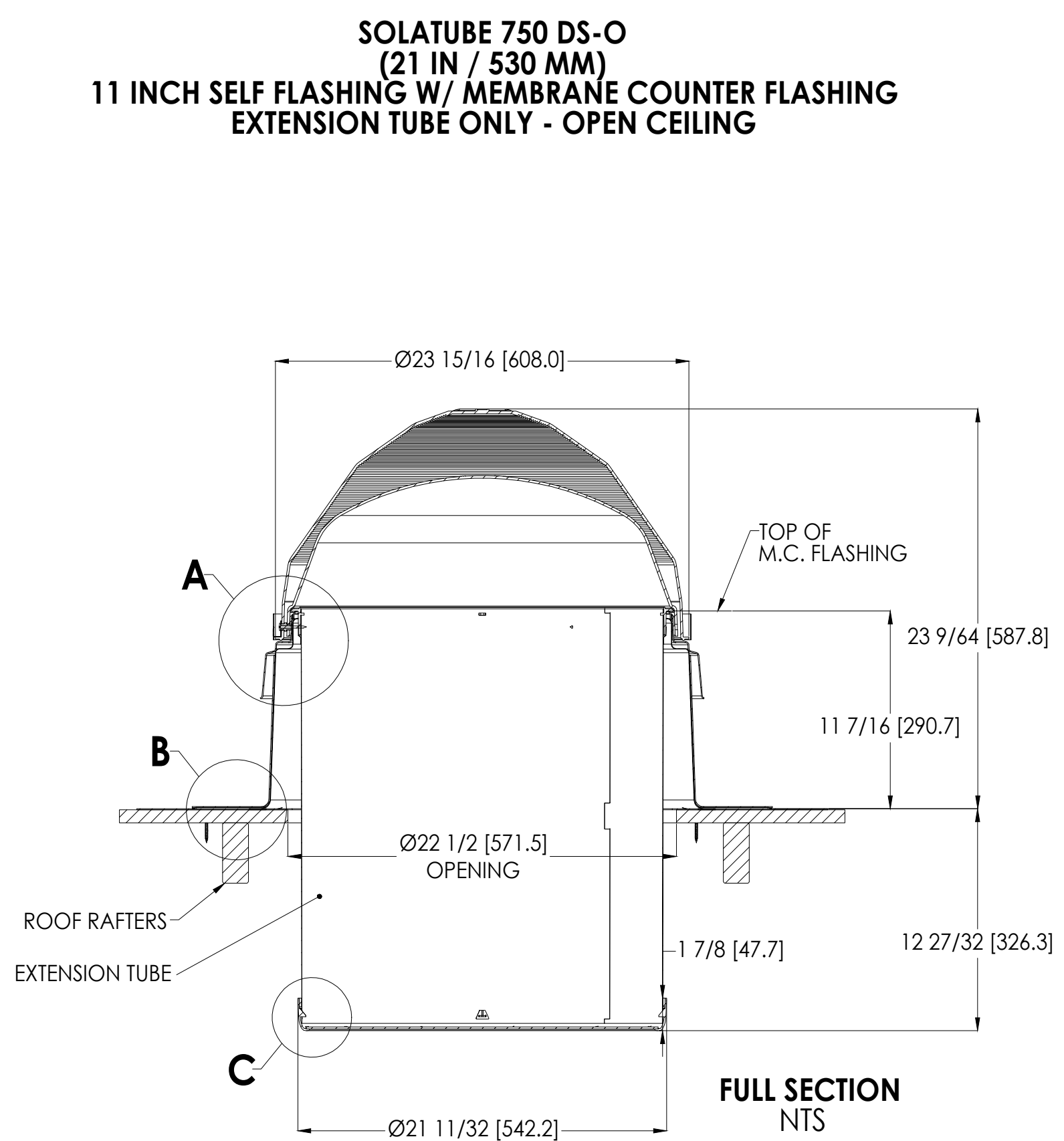
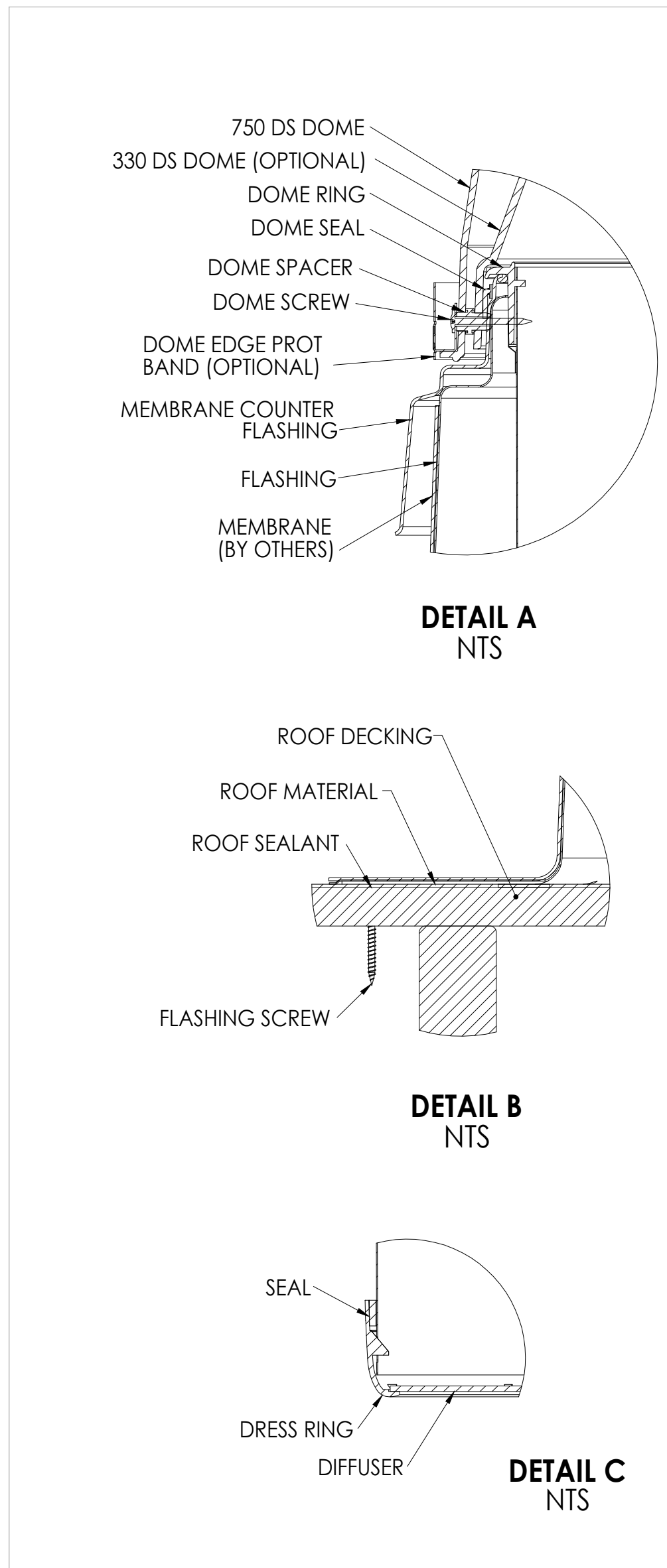
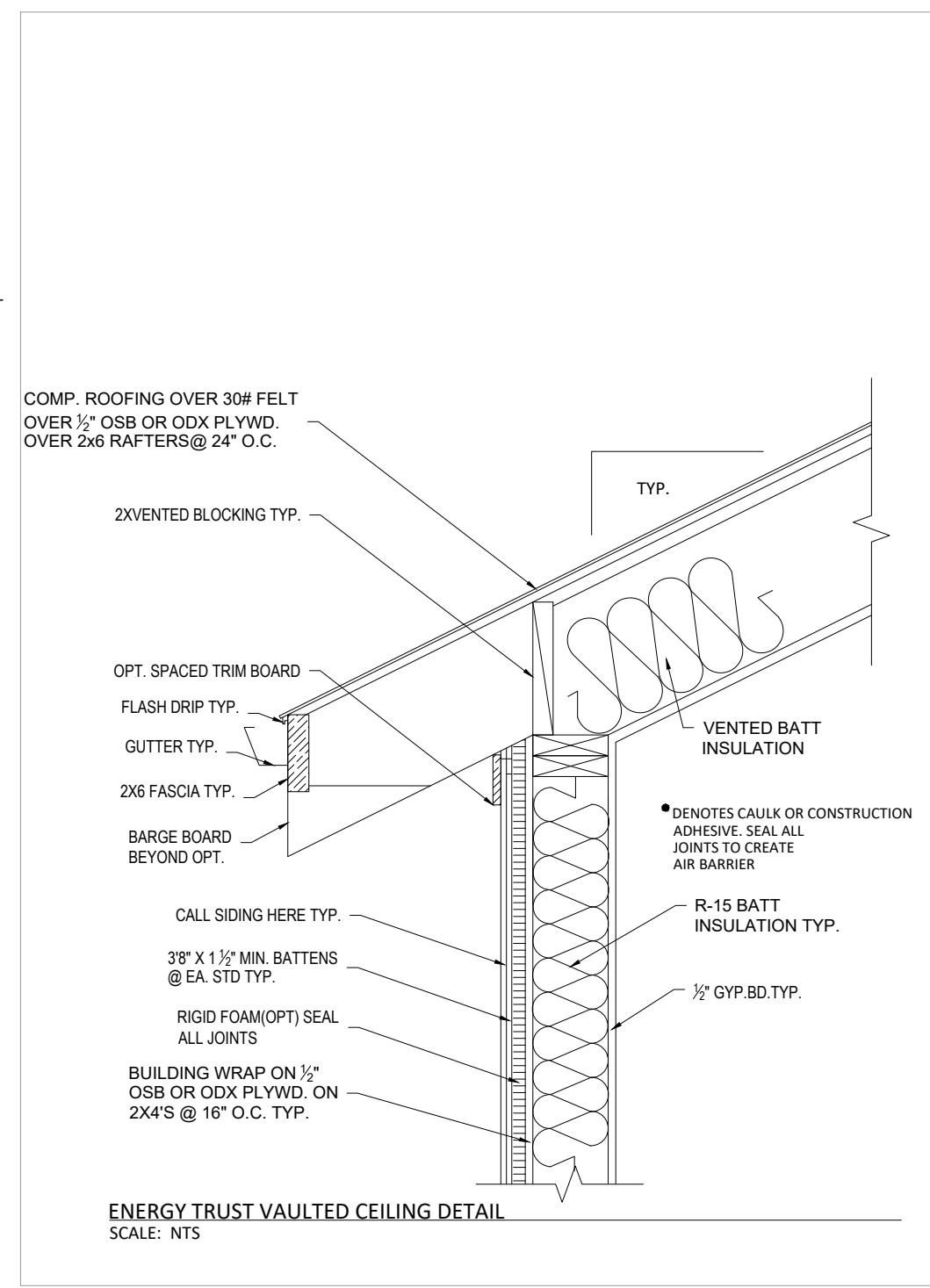
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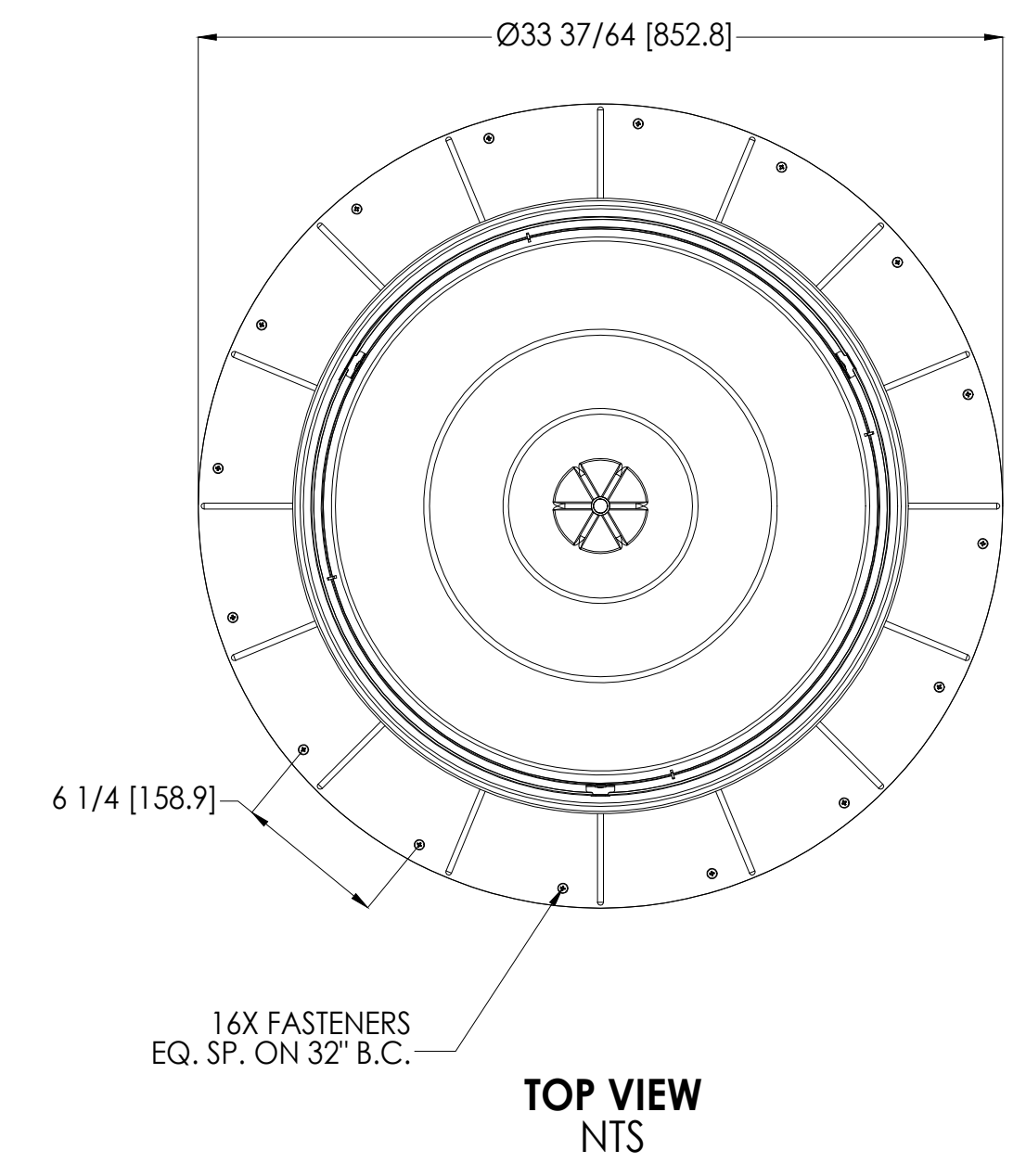
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**1 PROPOSED ROOF PLAN**  
SCALE: 1/4"=1'-0"



**750 DS (21") SELF FLASHING 11" MCF, OPEN CEILING**

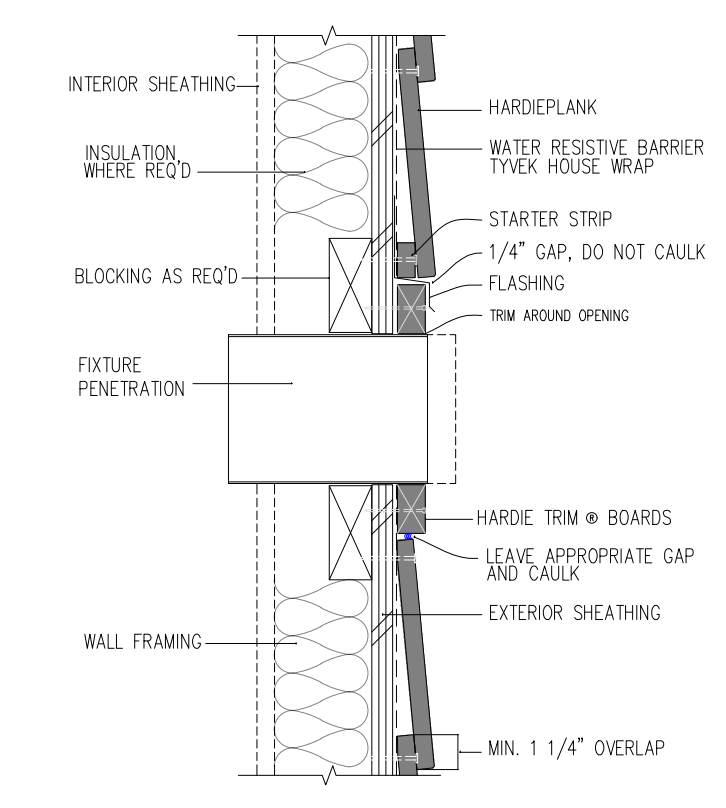


- NOTES:
- STRUCTURAL ELEMENTS (PLYWOOD, RAFTERS, DRYWALL ETC.) BY OTHERS & SHOWN FOR REFERENCE ONLY.
  - ALL TUBE JOINTS & SEAMS TAPED WITH 2" FOIL TAPE (NOT SHOWN).
  - DIMENSIONS IN BRACKETS ARE METRIC UNLESS OTHERWISE SPECIFIED.
  - 6" MIN CLEARANCE SHOULD BE MAINTAINED FROM ALL SOLATUBE COMPONENTS AND OTHER PLENUM COMPONENTS.

- ENERGY NOTES**
- ALL OPENABLE WINDOWS AND SLIDING DOORS SHALL LIMIT AIR LEAKAGE AND BE CERTIFIED AND LABELED TO COMPLY WITH ANSI STANDARD AIS 4.2-1972.
  - FIXED WINDOWS SHALL BE SEALED TO LIMIT AIR INFILTRATION.
  - ALL EXTERIOR DOORS AND WINDOWS ARE TO BE WEATHERSTRIPPED.
  - SITE BUILT DOORS MOUNTED ON THE INSIDE OR THE OUTSIDE OF EXTERIOR WALLS SHALL HAVE A MIN. 1" LAP AT JAMPS.
  - OPEN EXTERIOR JOINTS AROUND WINDOW AND DOOR FRAMES BETWEEN WALLS, FOUNDATIONS, ROOFS, PANELS, AND AT PENETRATION OF UTILITIES THRU THE ENVELOPE, SHALL BE SEALED, CAULKED, OR WEATHERSTRIPPED TO LIMIT AIR LEAKAGE.
  - PROVIDE A "CERTIFICATE OF COMPLIANCE" SIGNED BY THE OWNER, G.C., ARCHITECT, OR ENGINEER TO THE BLDG. DEPARTMENT STATING THAT THE WORK HAS BEEN PERFORMED AND MATERIALS INSTALLED ACCORDING TO THE PLANS AND SPECIFICATIONS AFFECTING NON-RESIDENTIAL ENERGY.
  - INSULATION SHALL BE INSTALLED TO MEET FLAME SPREAD AND SMOKE DENSITY REQUIREMENTS OF 5311 AND TITLE 24.

- GENERAL RENOVATION NOTES**
- CONTRACTORS TO VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING AND CONSTRUCTION.
  - ALL NEW INTERIOR WALLS TO BE 2x4 STUDS (3 1/2") @ 16" O.C. W/ 1/2" GYP. BRD. - USE MOISTURE RESISTANT GYP. BRD. & PLUMBING FIXTURES.
  - ALL AREAS DISTURBED BY CONSTRUCTION WHICH ARE TO REMAIN UNTOUCHED ARE TO BE RETURNED TO ORIGINAL CONDITION.
  - STRUCTURAL HEADERS & BEAMS (2) 2x10's (MIN) & POSTS 2-STUD (MIN) S.Y.P. #2 (UNLESS NOTED OTHERWISE)

- FINISH NOTES**
- NEW CEILING TO BE 1/2" GYP. BRD.
  - ALL GYP. BRD. TO BE PAINTED.
  - FLOORING TO BE INSTALLED IN FINISH AREAS (PER OWNER)
  - ALL FINISH SELECTIONS PER OWNER



**1 FIXTURE PENETRATION**  
NTS



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US Office:  
2425 Carpinteria Ave # 636, Carpinteria CA 93014  
+1 805 861 7390 info@pixelarchltd.com  
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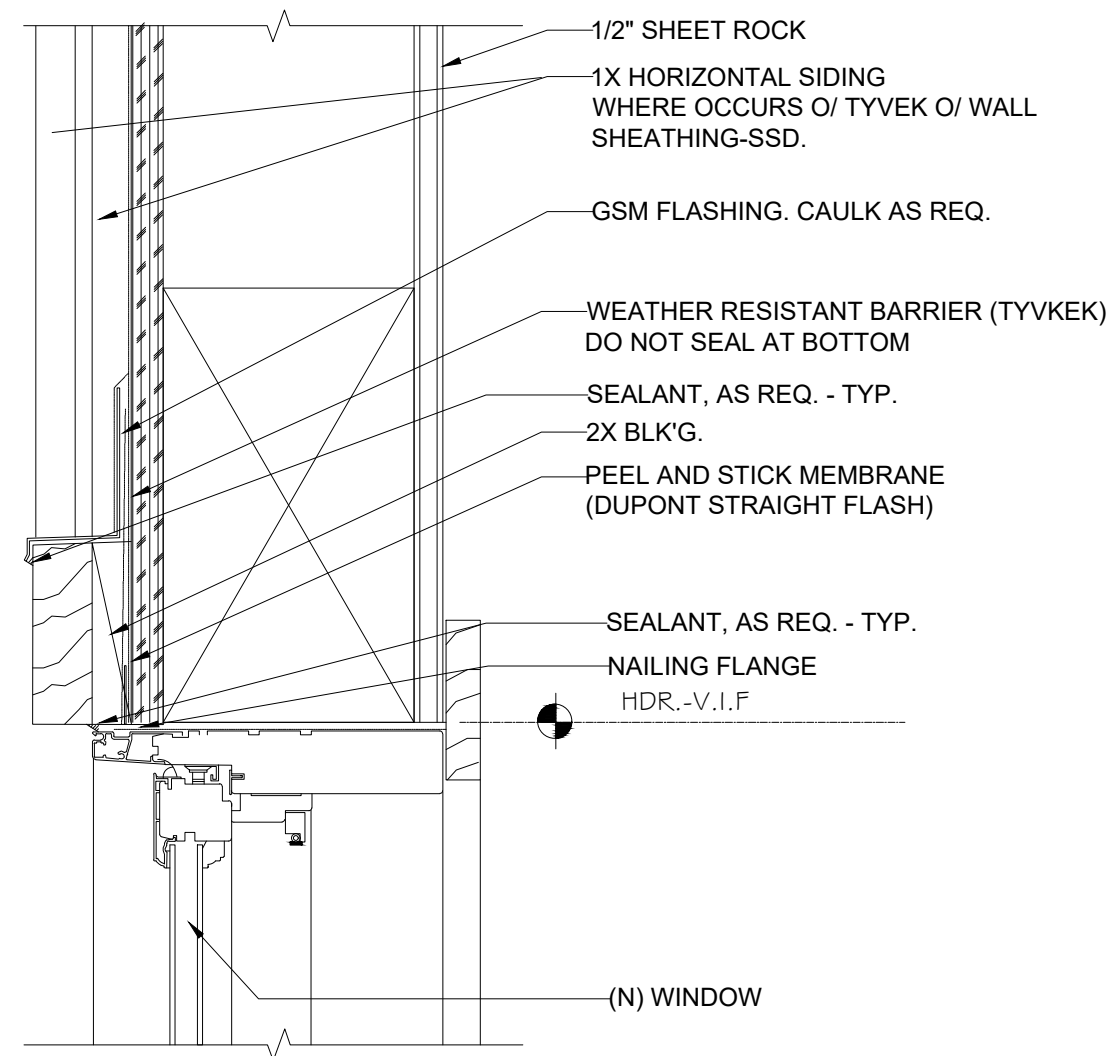
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**ROOF PLAN**

Sheet :  
Page No. :

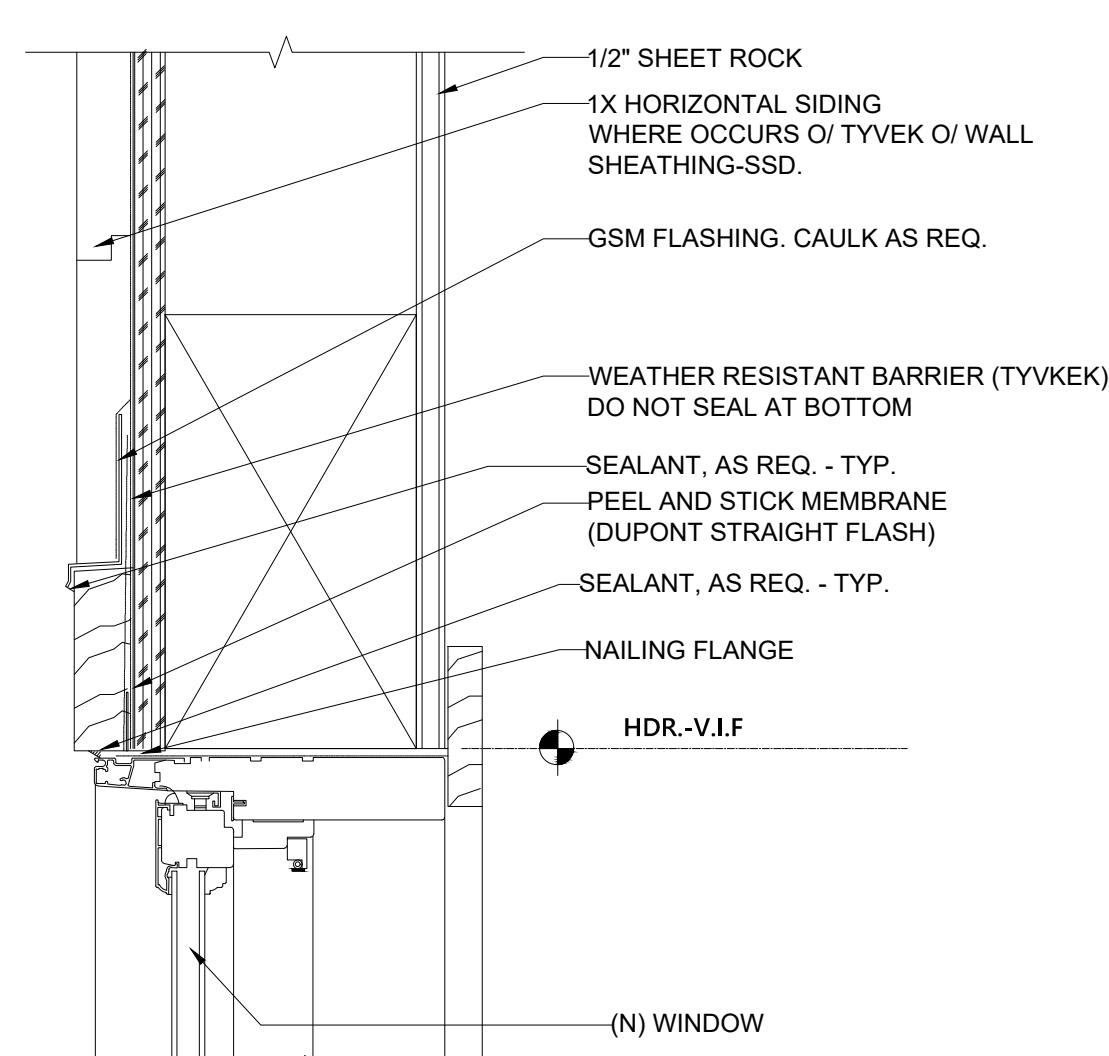
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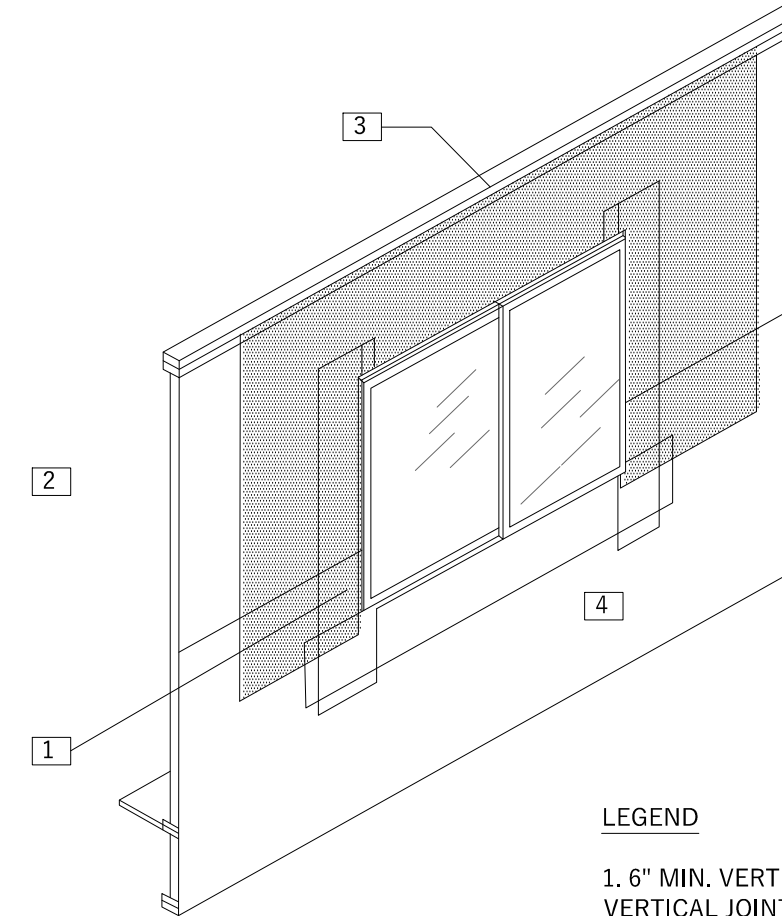
WINDOW HEAD @ WD. BOARD & BATTEN SIDING

12



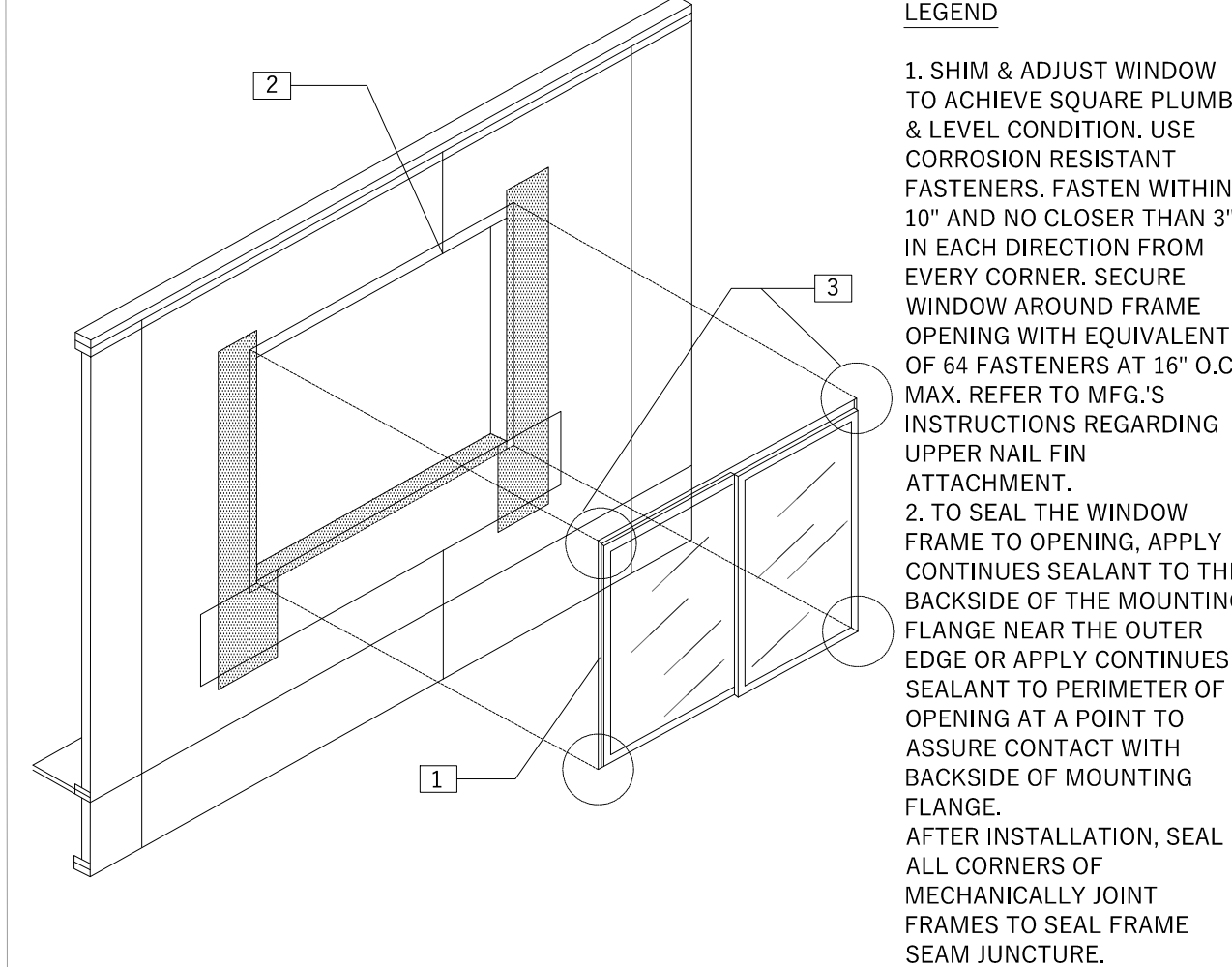
WINDOW HEAD @ HORIZONTAL SIDING

9



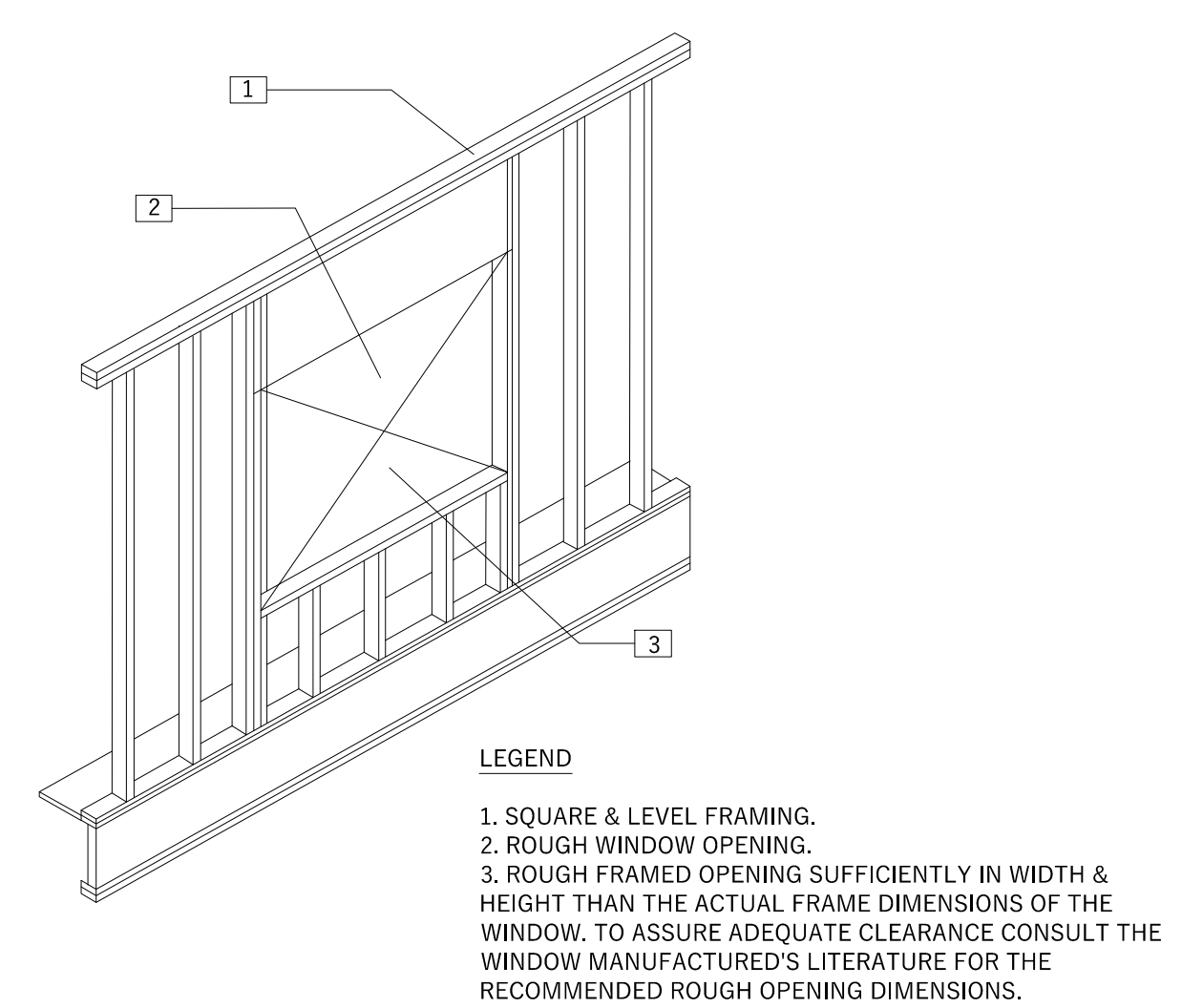
BUILDING PAPER-SECOND COURSE

7



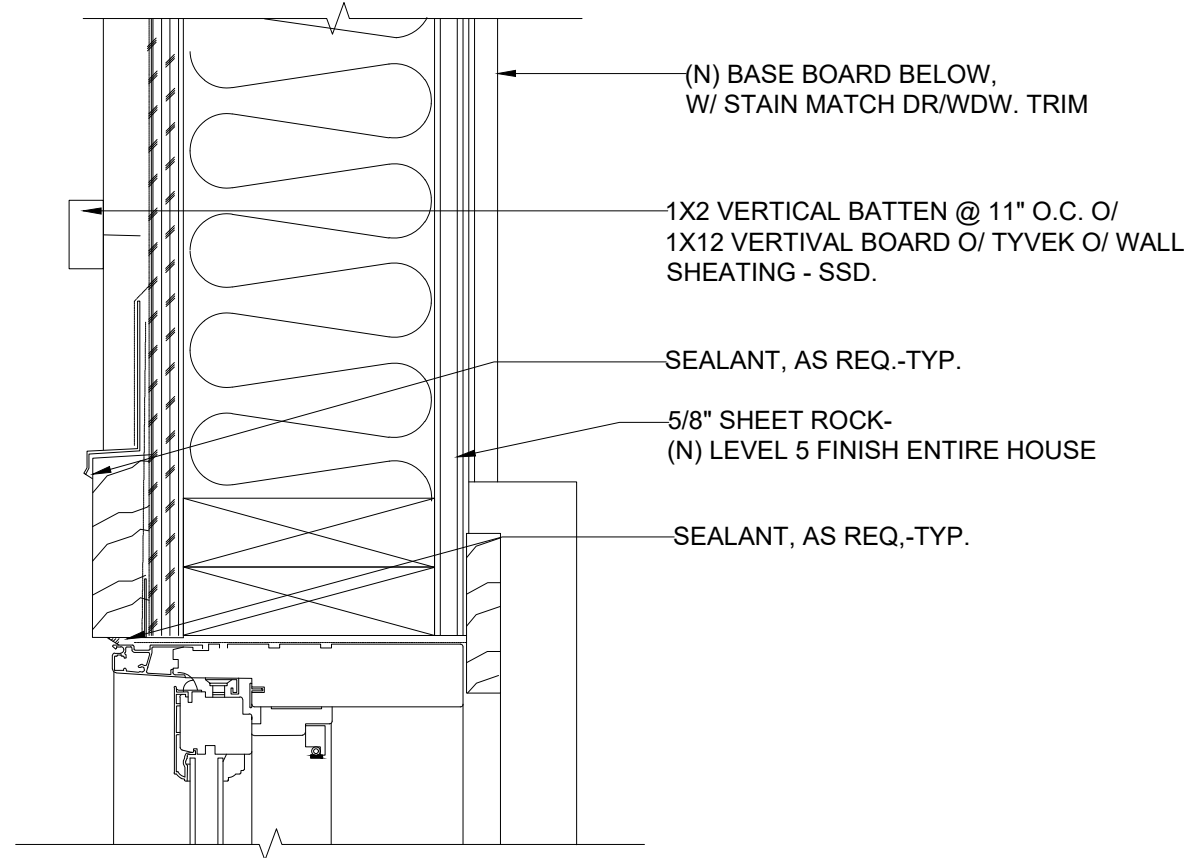
WINDOW INSTALLATION

4



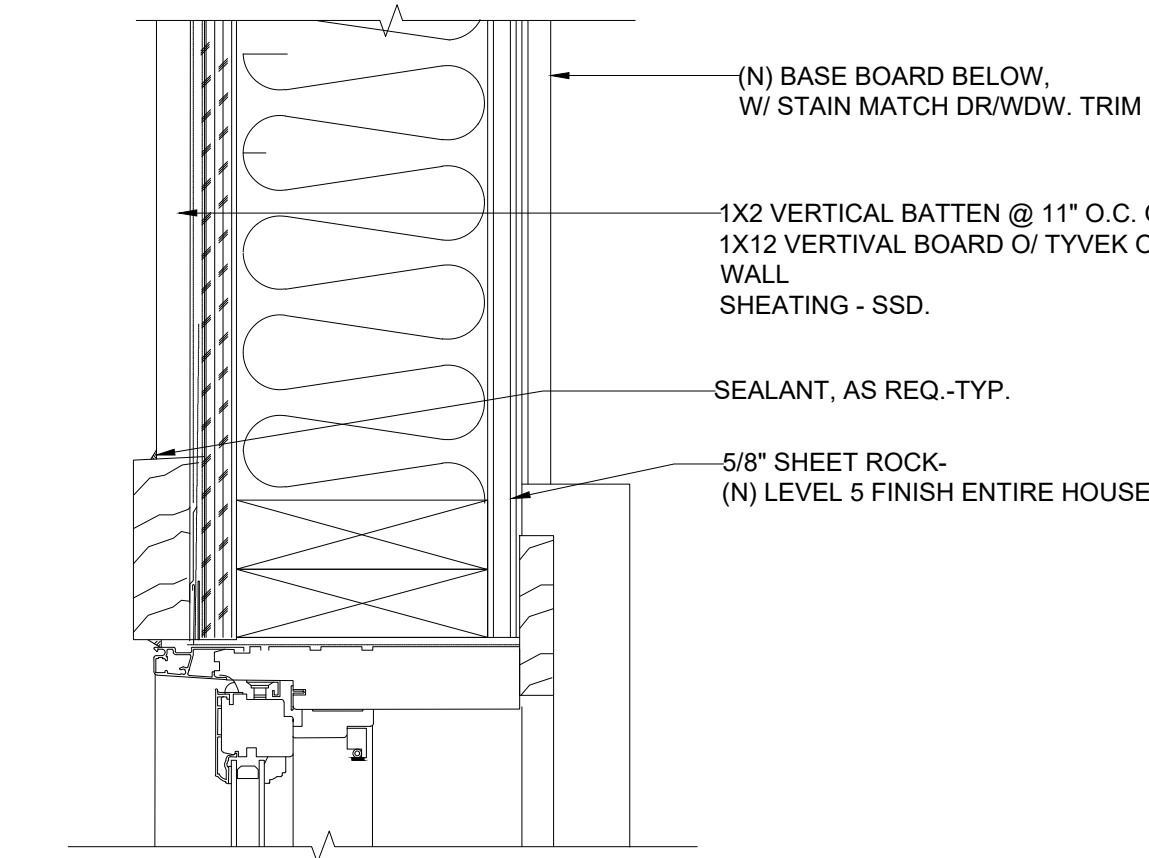
ROUGH WINDOW OPENING

1



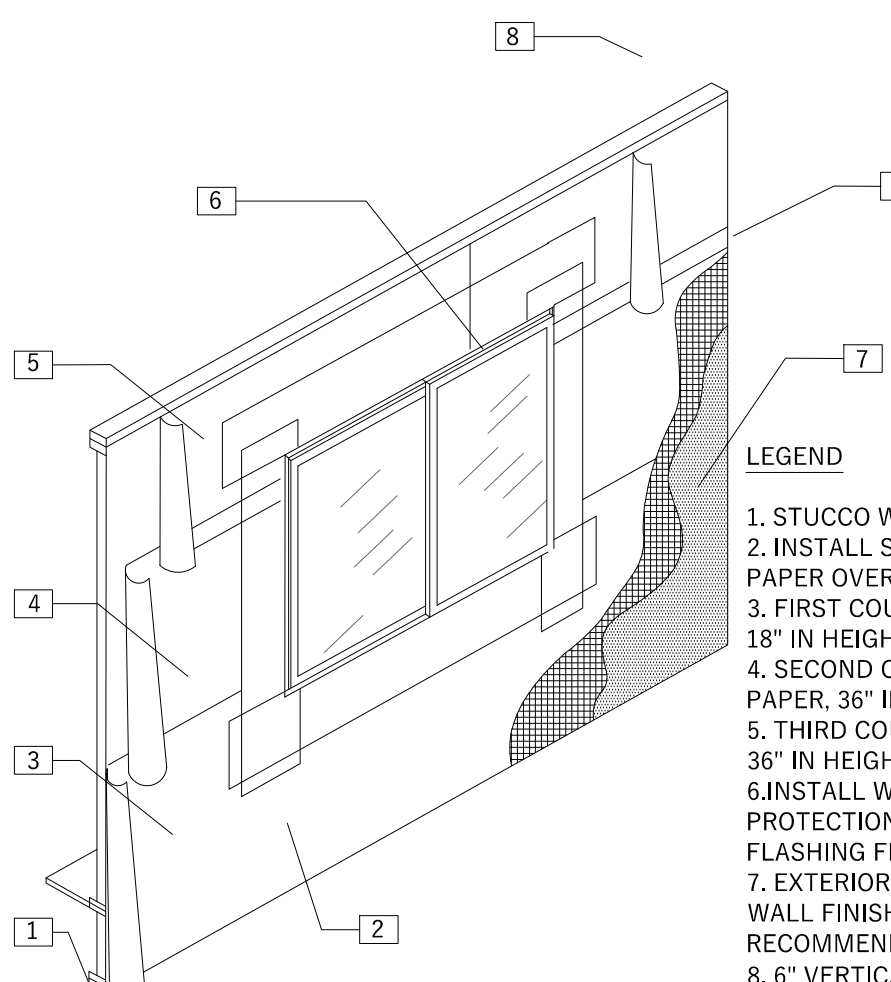
WINDOW JAMB @ WD. BOARD & BATTEN SIDING

13



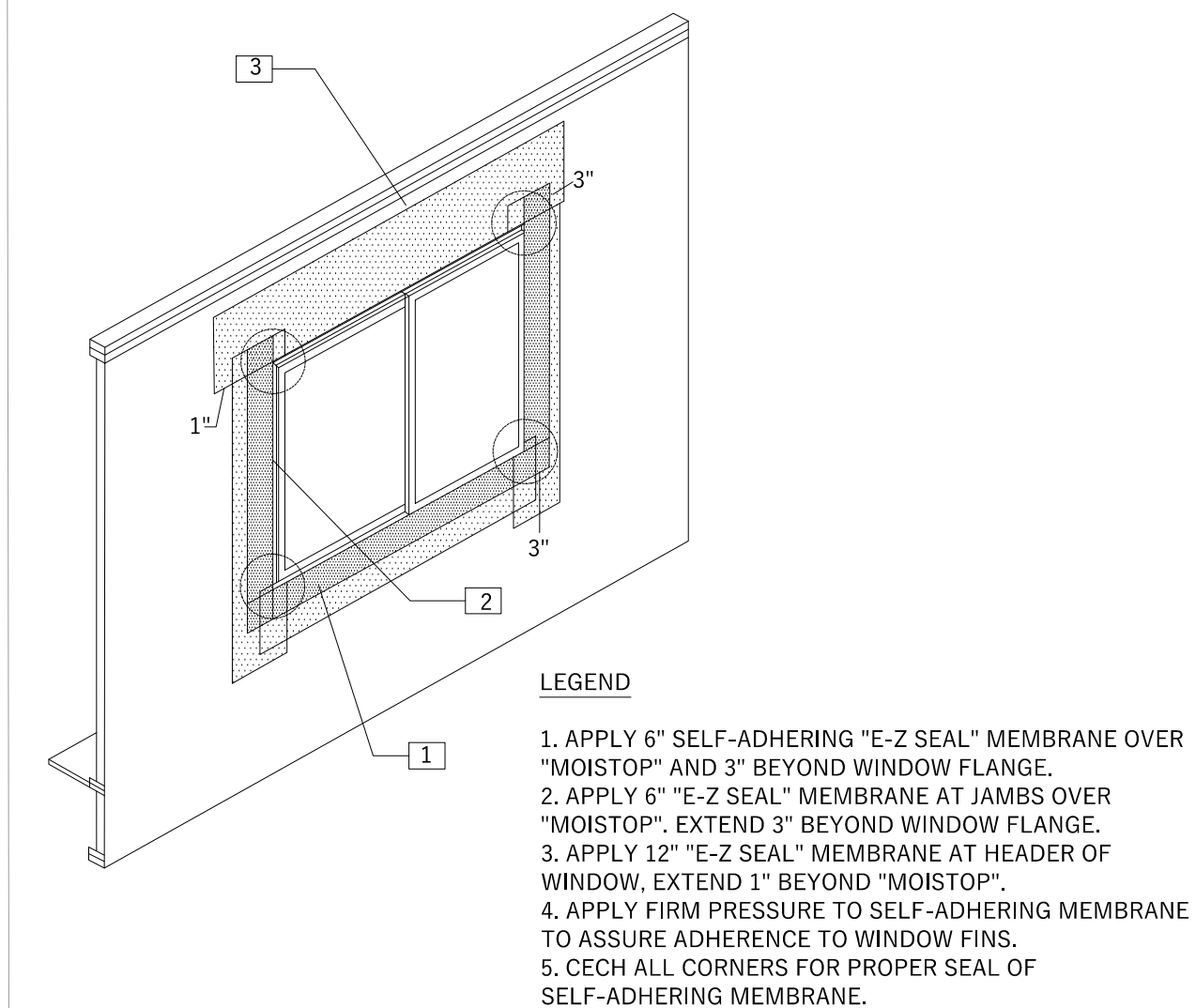
WINDOW JAMB @ HORIZONTAL SIDING

10



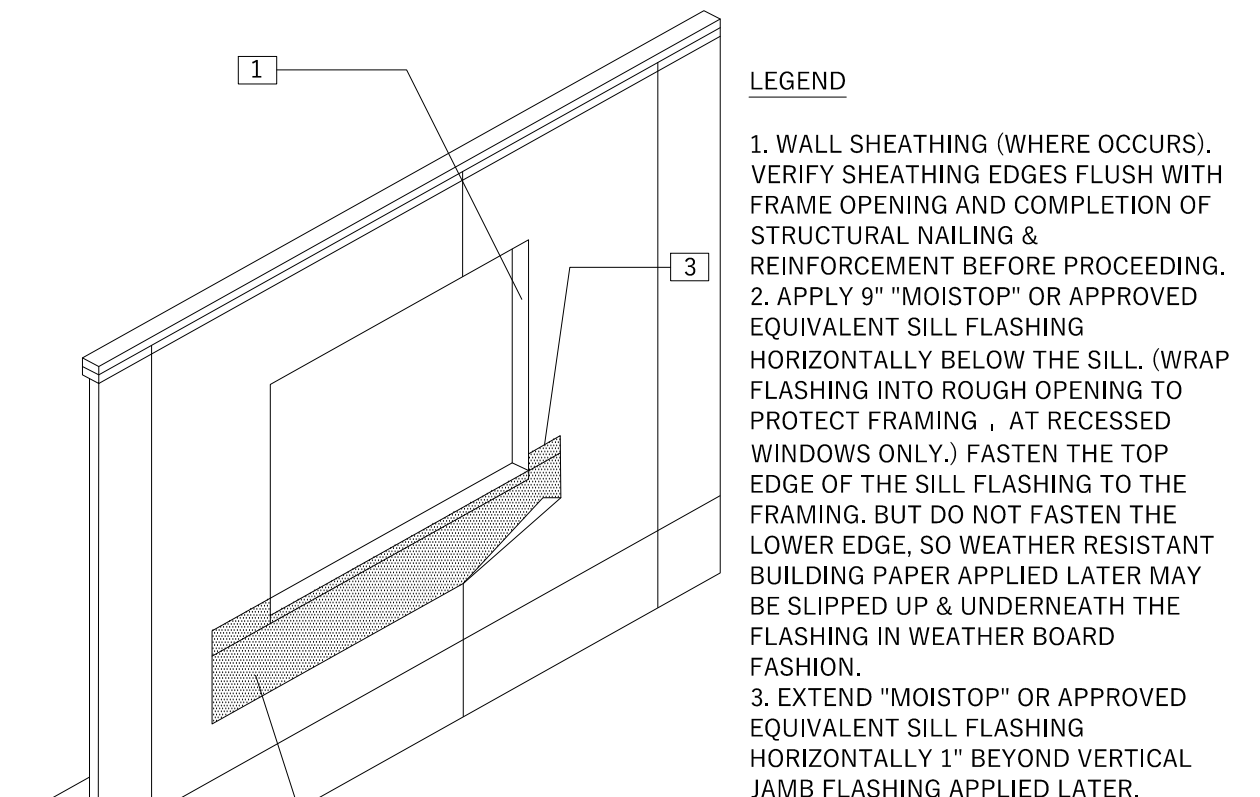
TRIM-FLASHING-PROTECTION COURSE

8



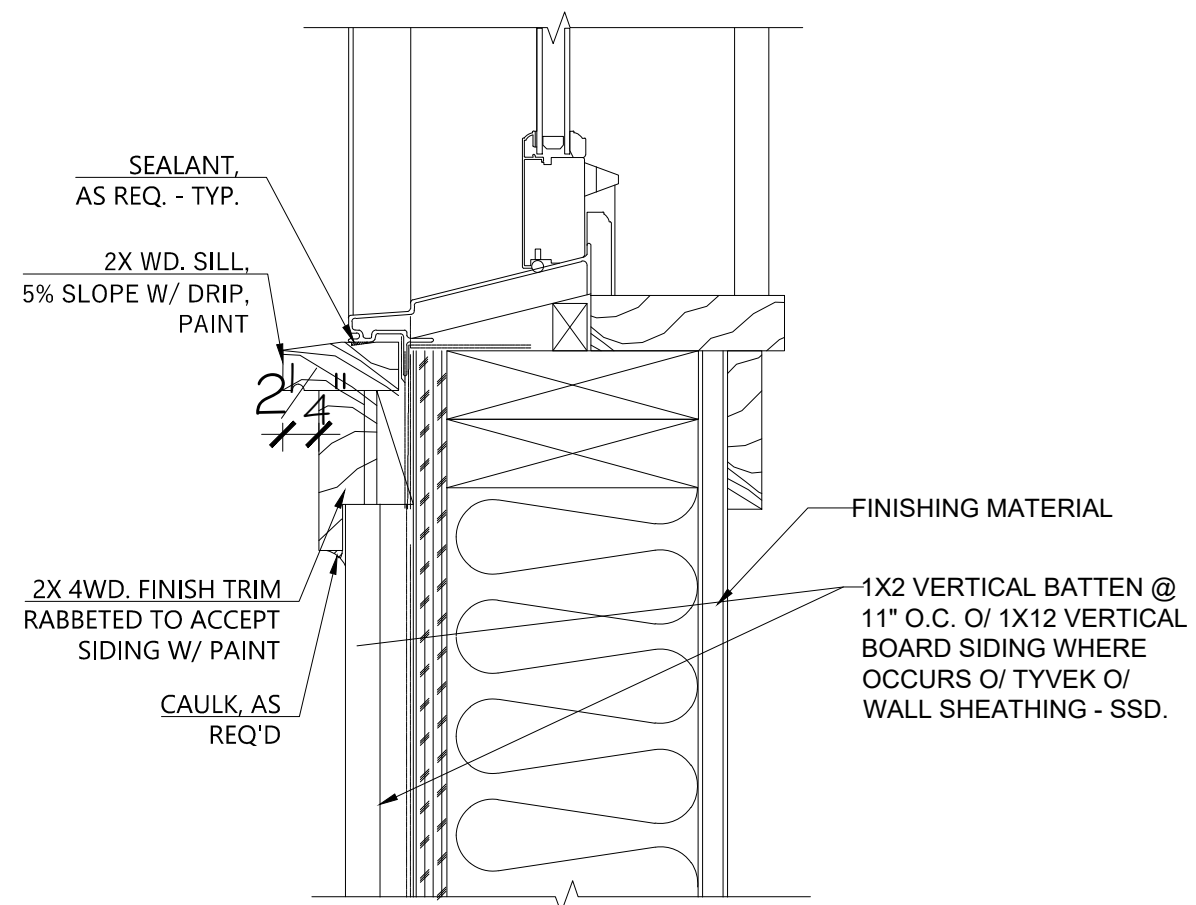
SELF-ADHESIVE MEMBRANE

5



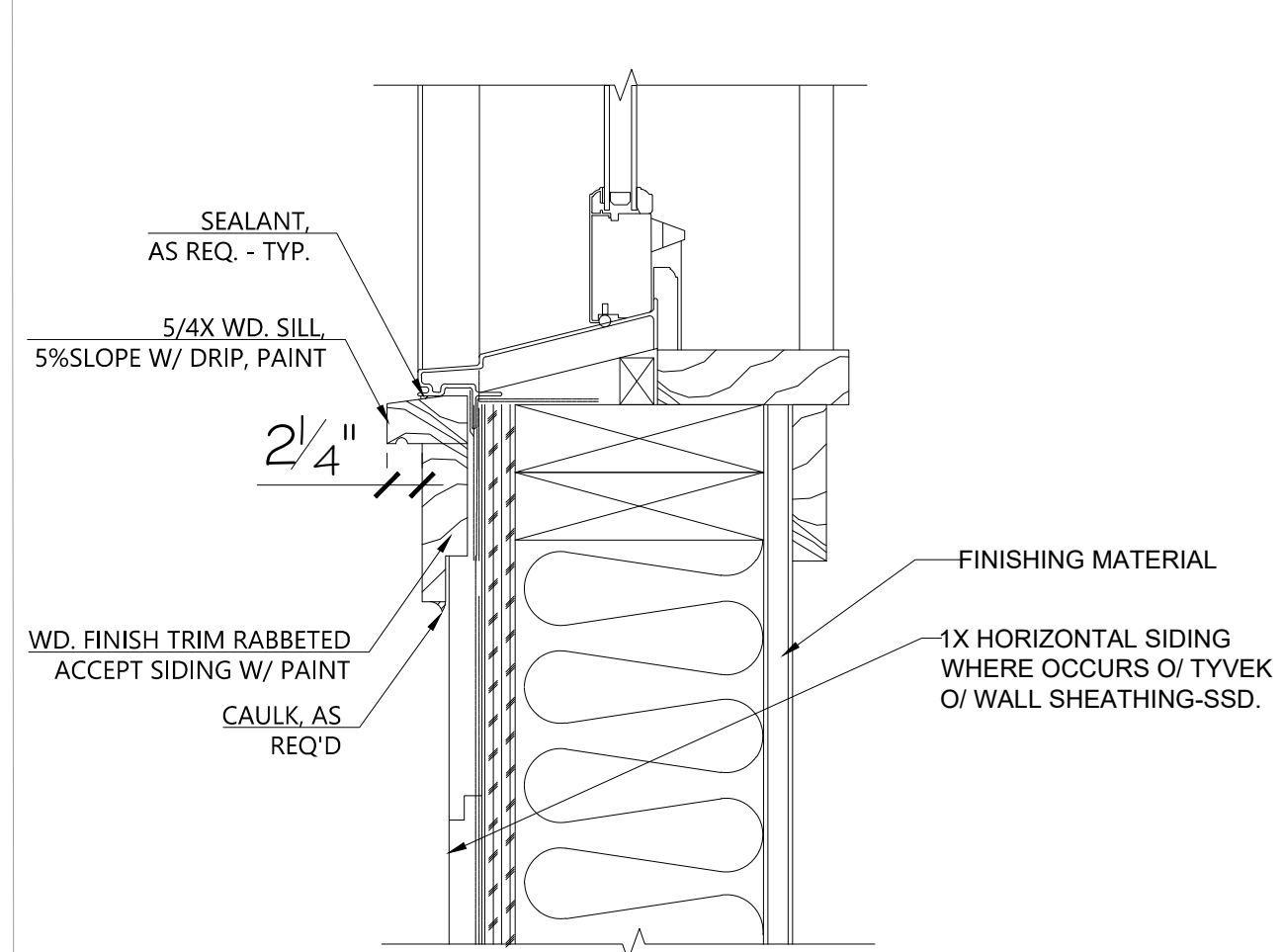
SILL FLASHING

2



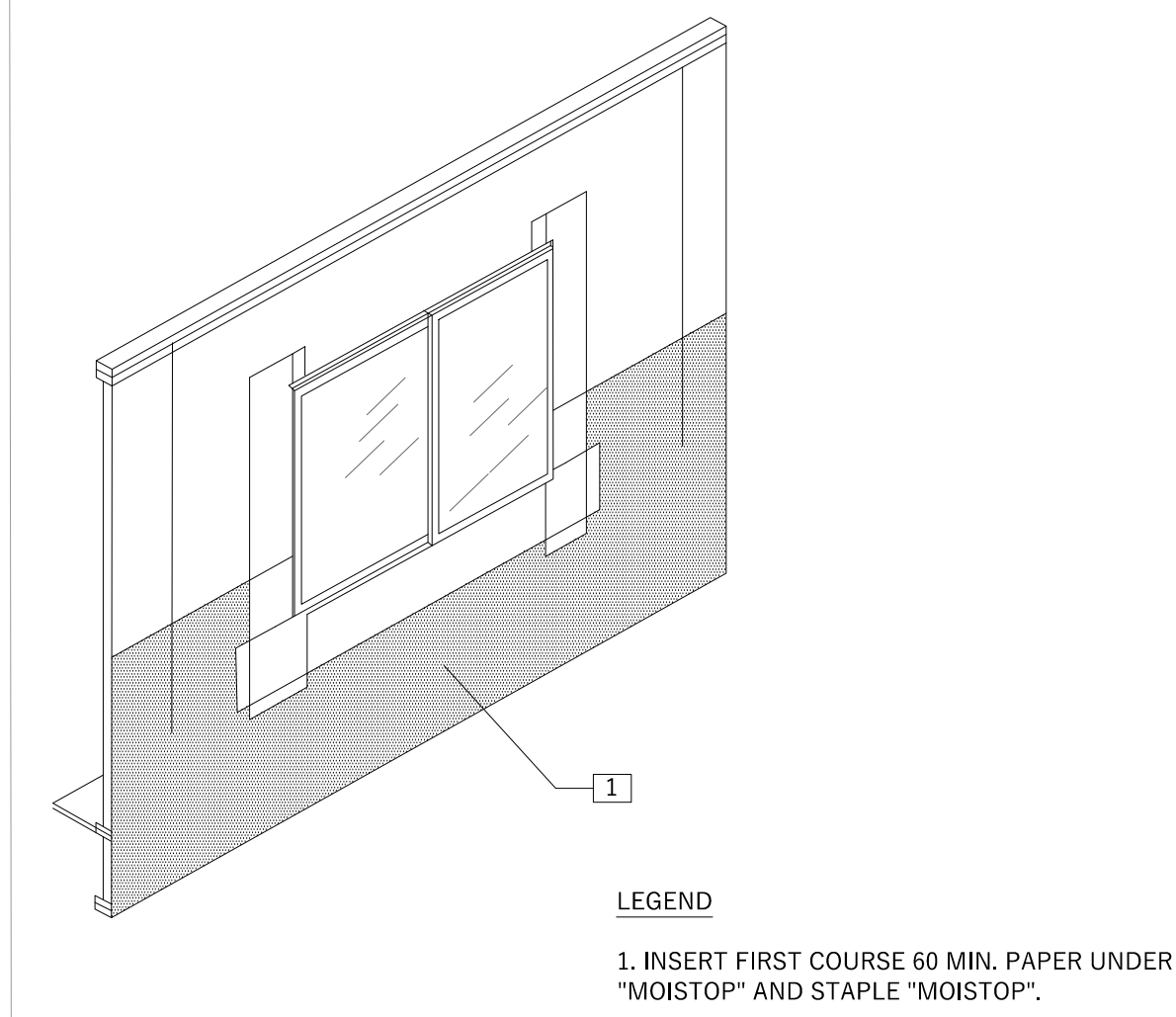
WINDOW SILL @ WD. BOARD & BATTEN SIDING

14



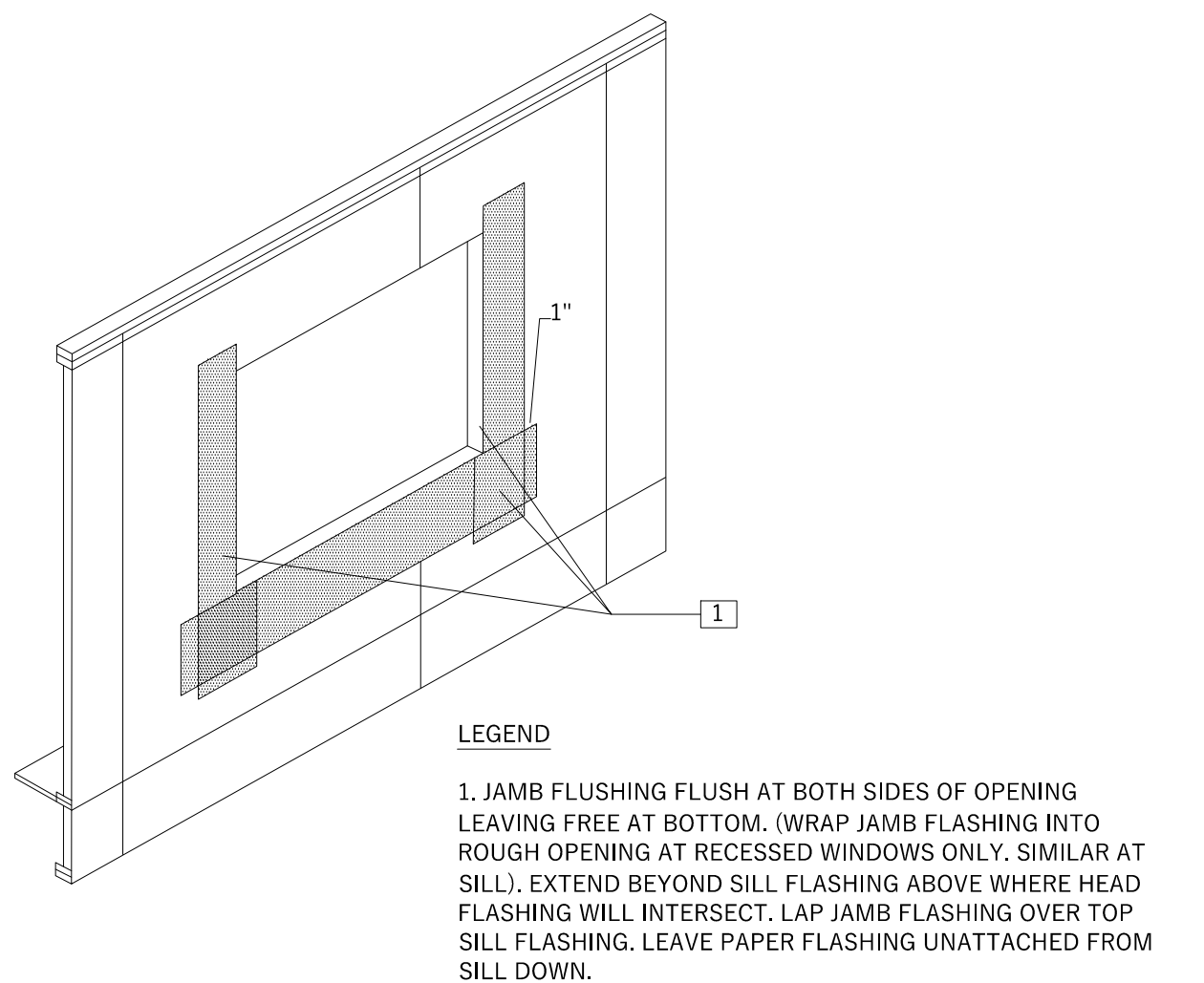
WINDOW SILL @ HORIZONTAL SIDING

11



BUILDING PAPER- FIRST COURSE

6



JAMB FLASHING

3



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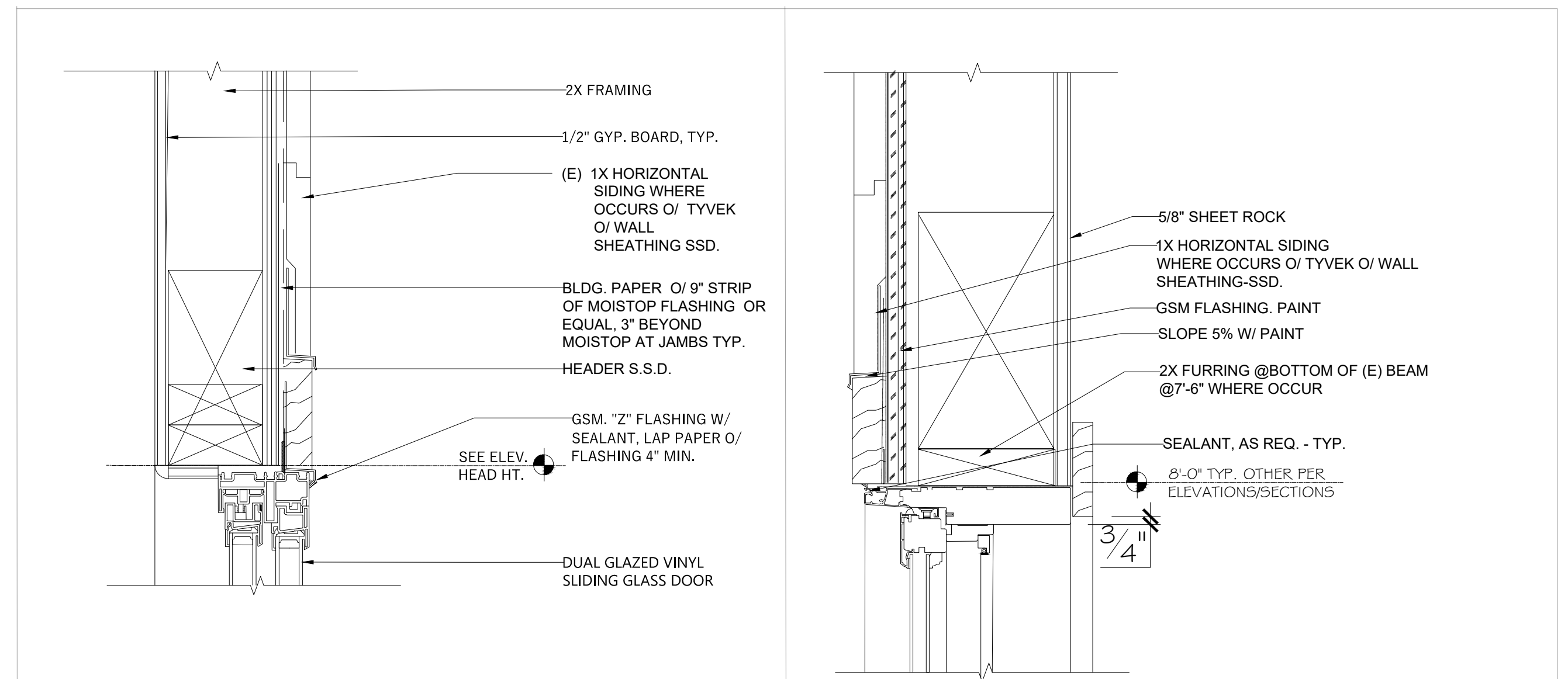
DRAWING TITLE:  
**BUILDING PAPER / HOUSE WRAP DETAIL  
 AROUND WINDOWS**

Sheet :  
 Page No. :

No.	Revision/Issue	Date
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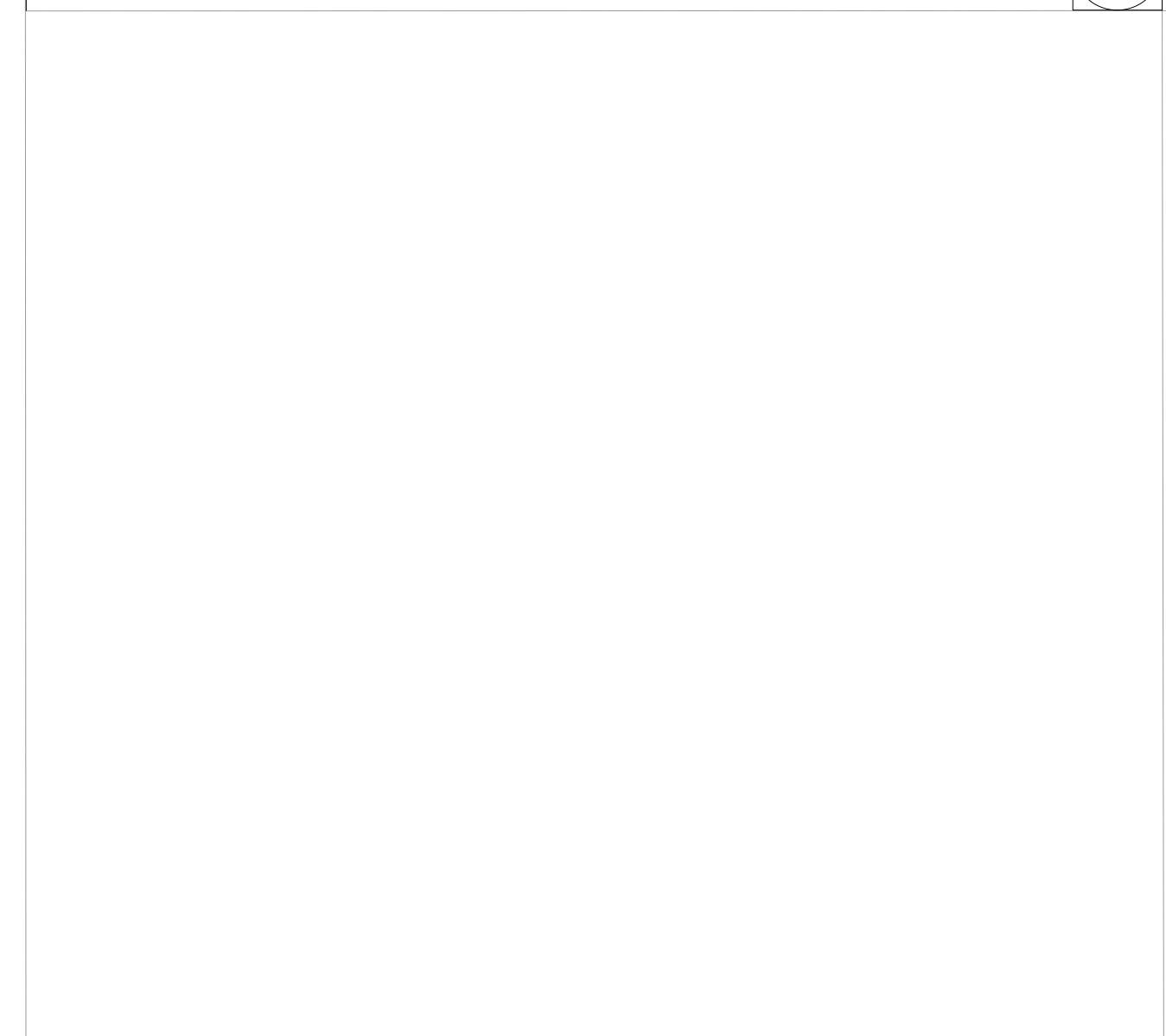
A. 400

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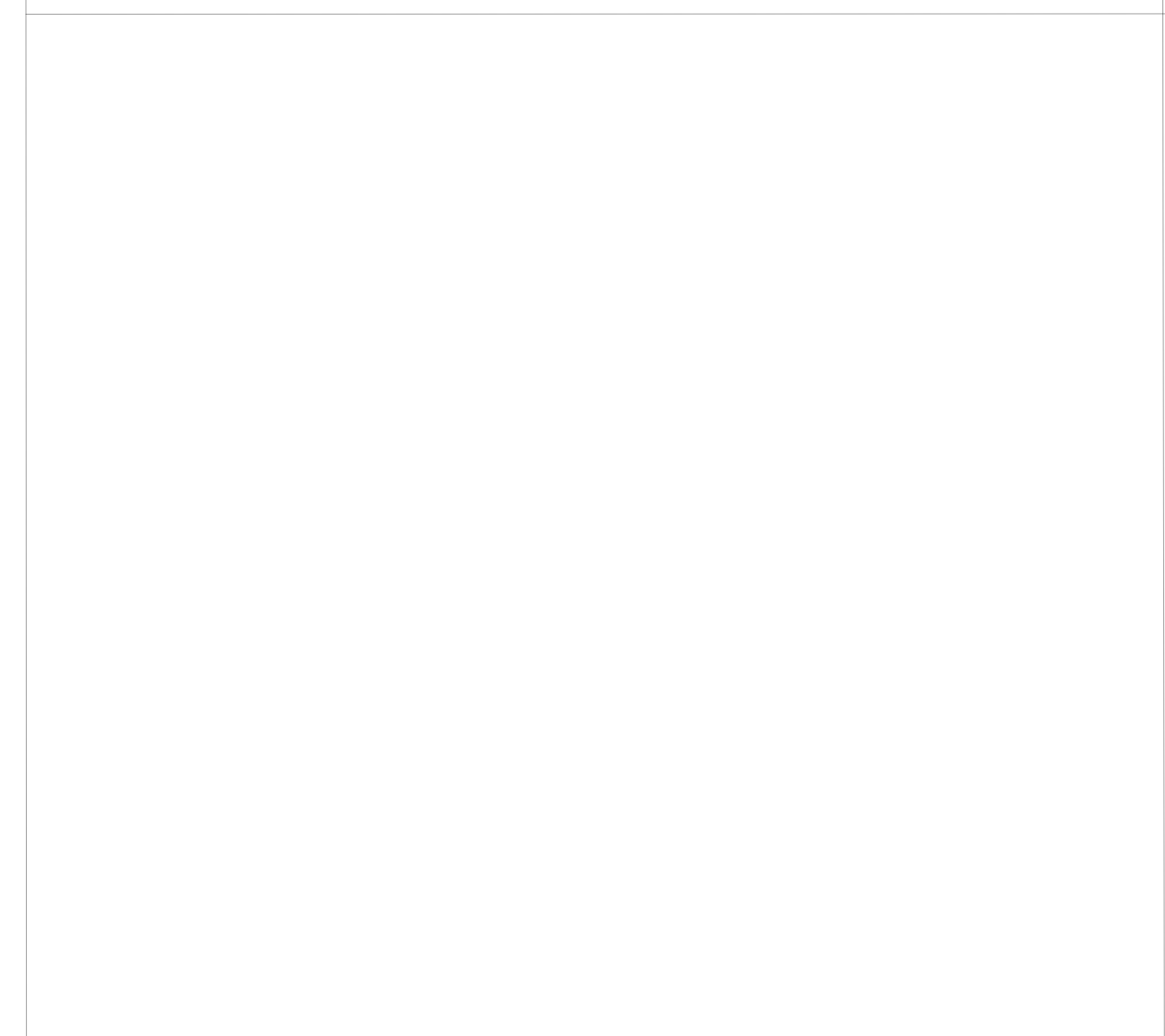


SLIDING GLASS DOOR HEAD/JAMB

18 TYP. DOOR HEAD @ HORIZONTAL WD. SIDING 15



TYP. DOOR JAMB @ HORIZONTAL WD. SIDING 16



DOOR HEAD/JAMB 17



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DRAWING TITLE:  
**BUILDING PAPER / HOUSE WRAP DETAIL  
 AROUND WALL TO ROOF TRANSITION**

Sheet :

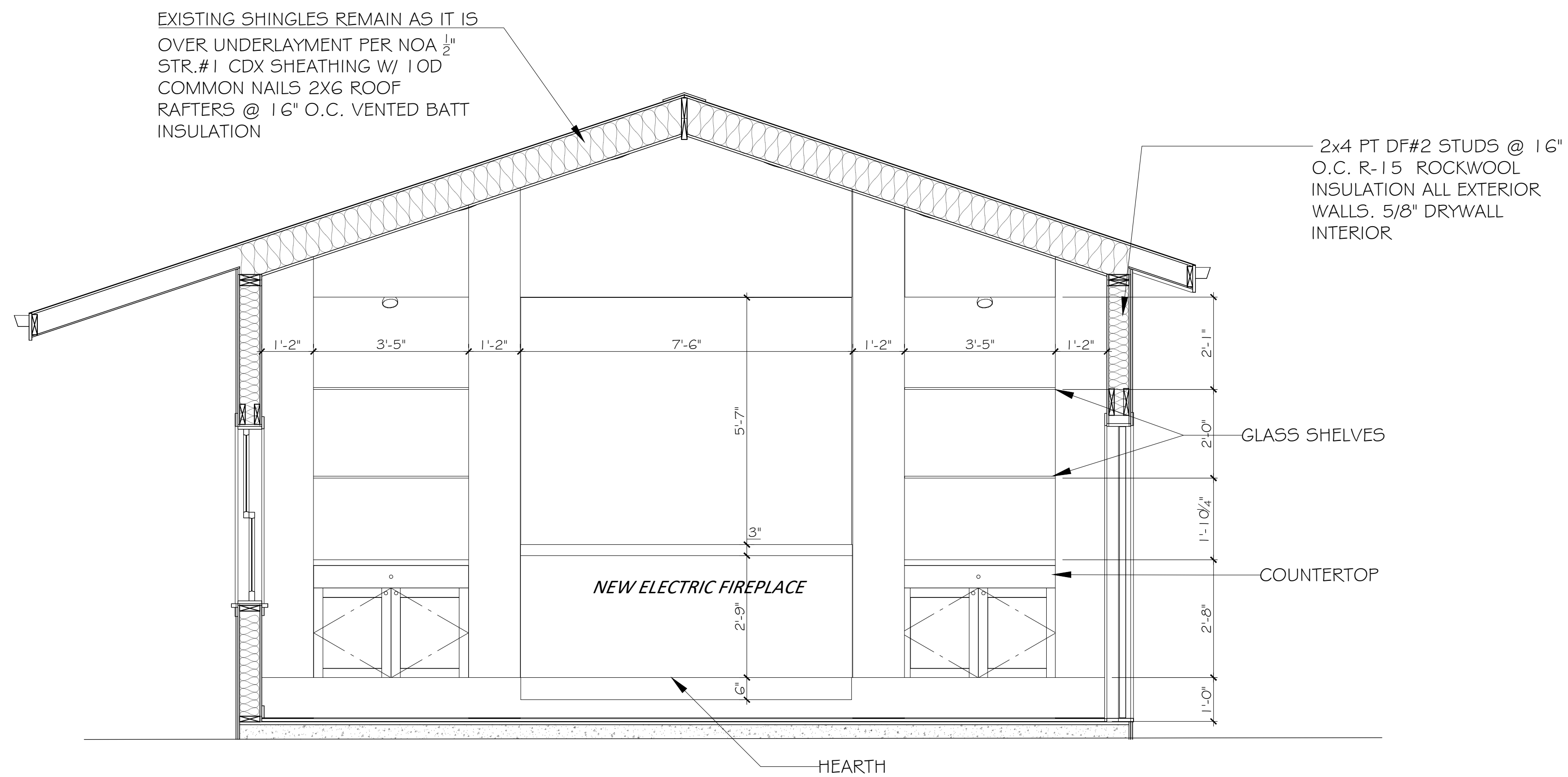
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**3D RENDERINGS**

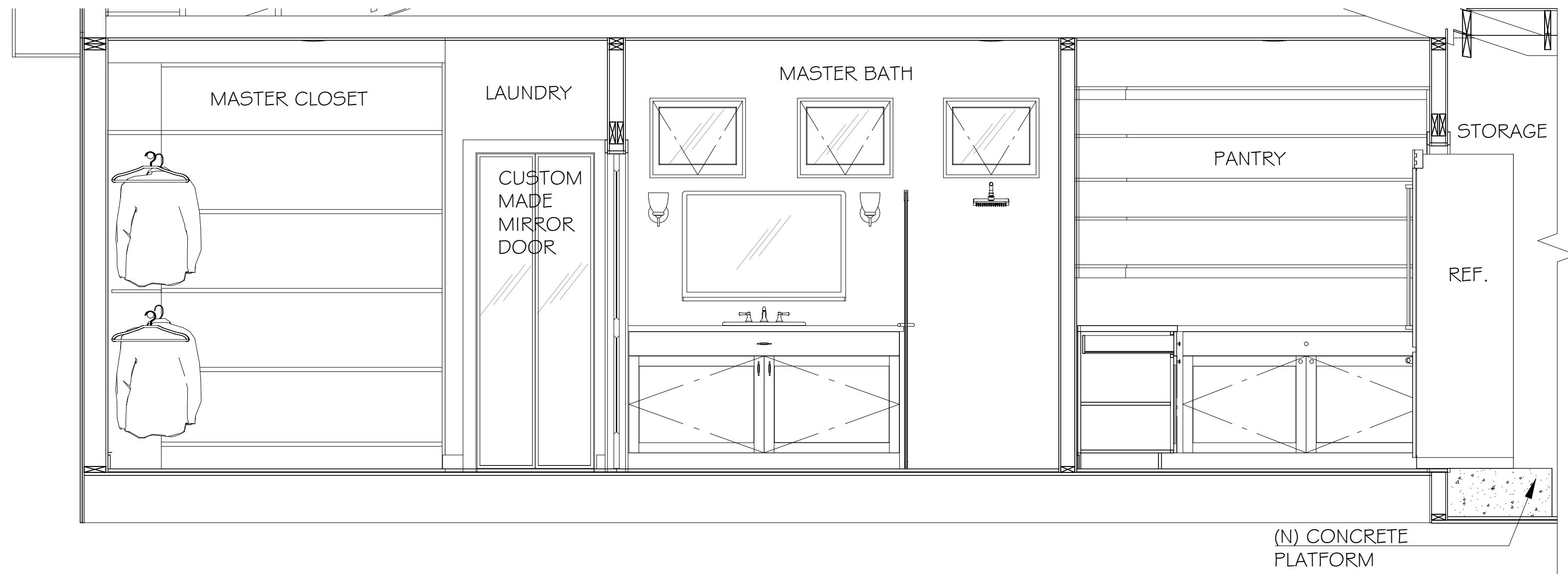
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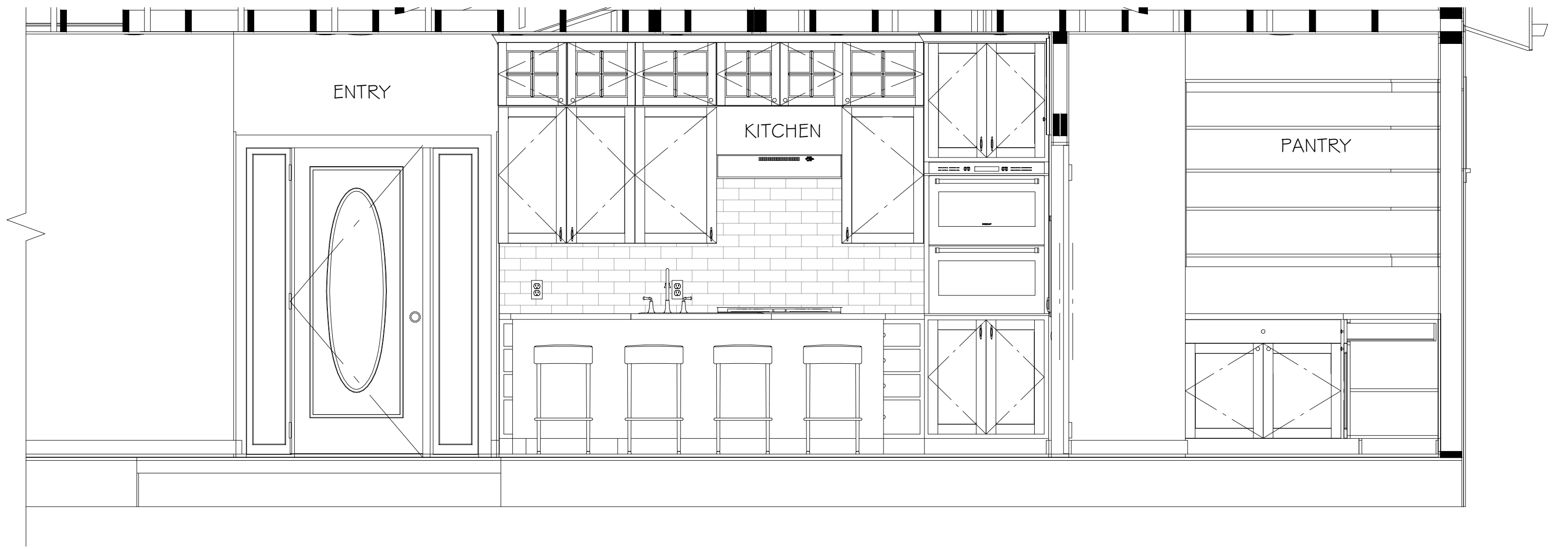
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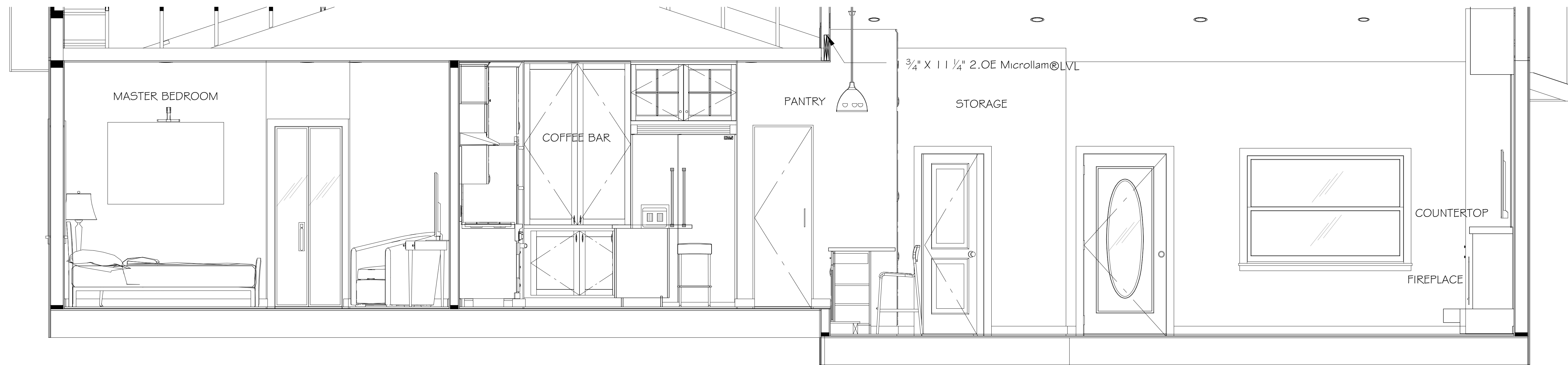
2 PROPOSED SECTION

Scale: 1/2" = 1'-00"



3 PROPOSED SECTION

Scale: 1/2" = 1'-00"



1 PROPOSED LONGITUDINAL SECTION

Scale: 1/2" = 1'-00"



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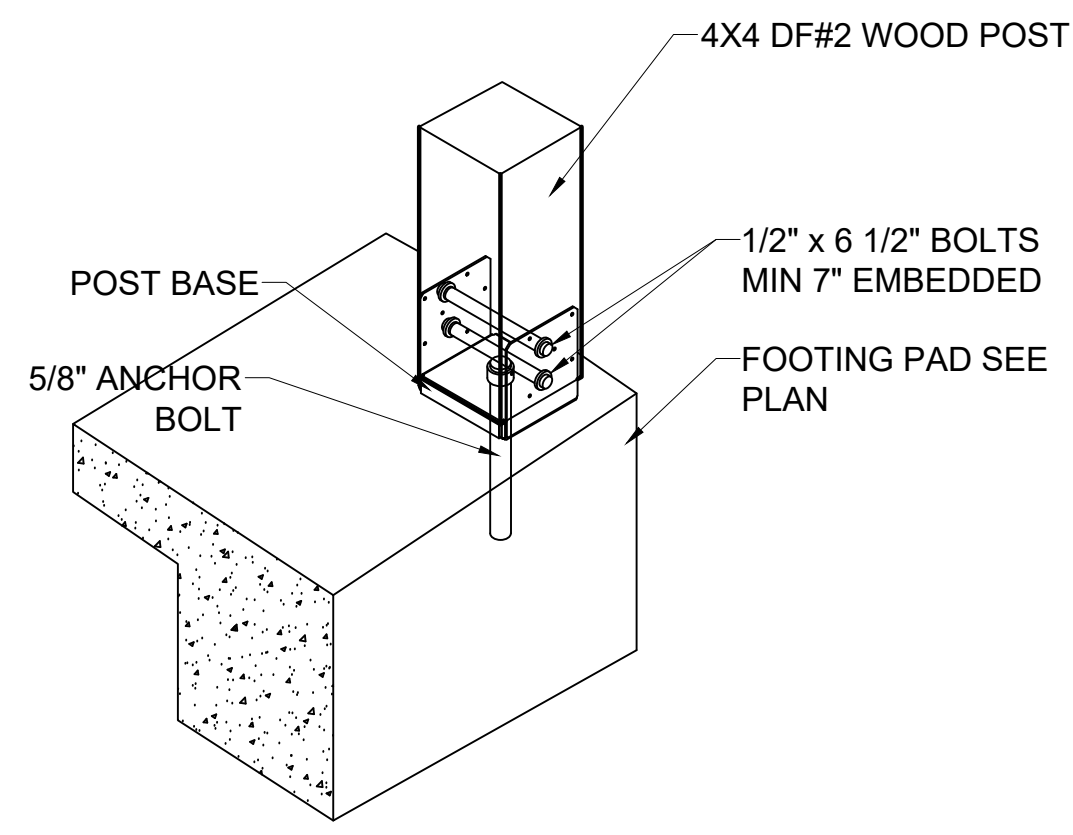
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**A. 501**

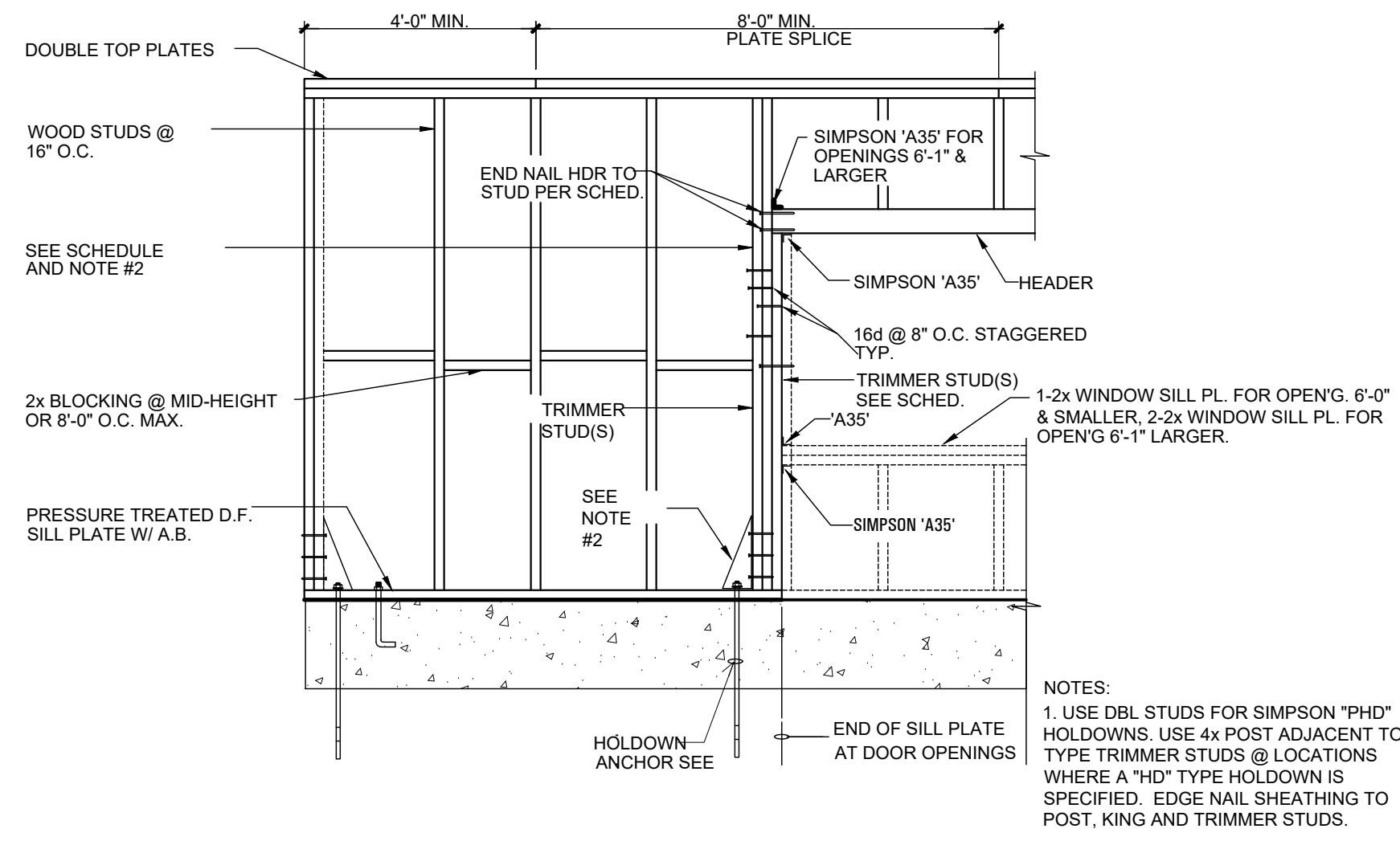
No.	Revision/Issue	Date
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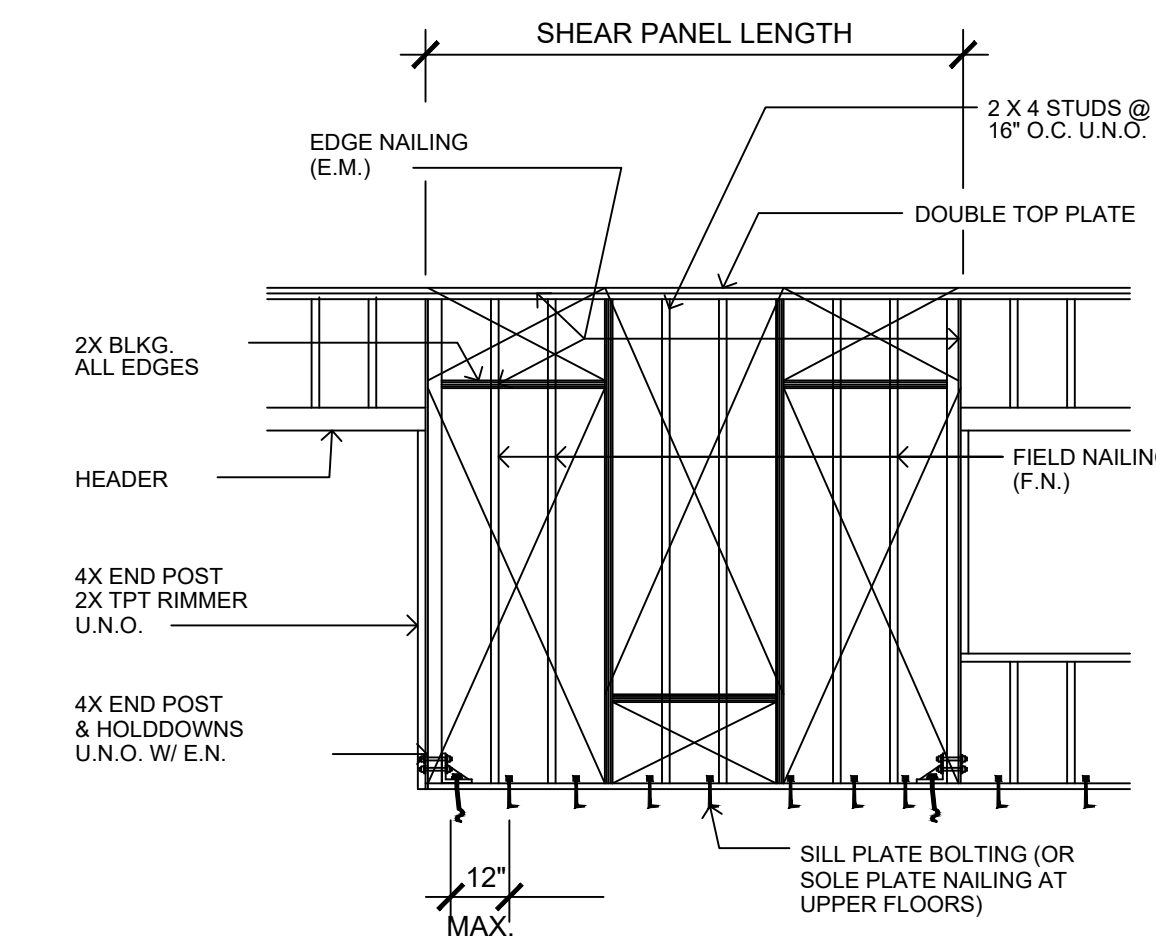




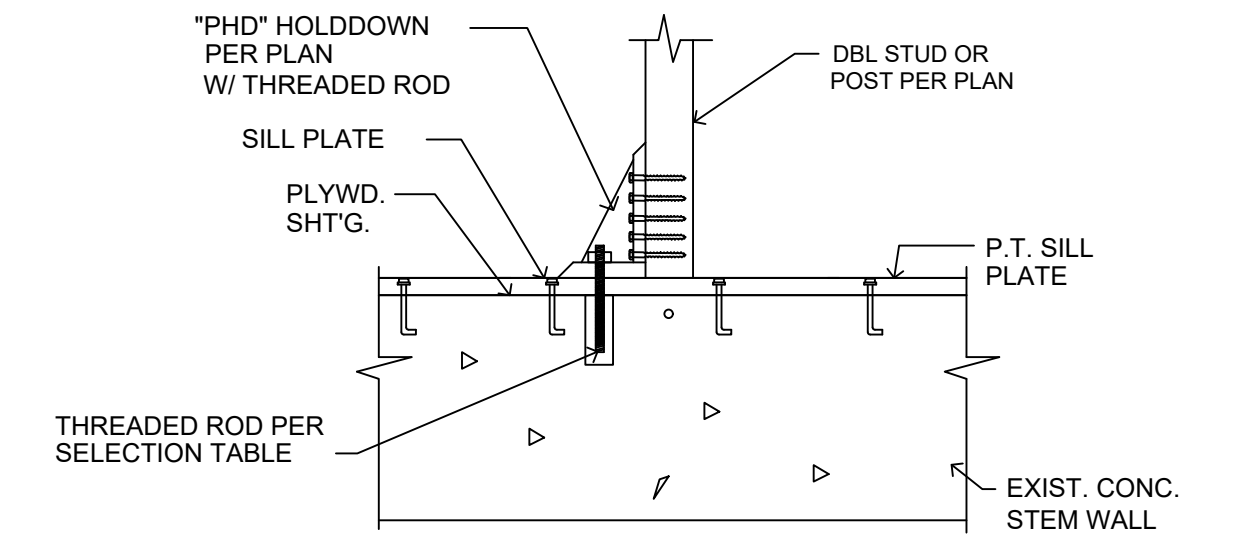
**POST TO FOOTING DETAIL**  
SCALE 1"=1'-0"



**WALL FRAMING DETAIL**  
SCALE: NTS



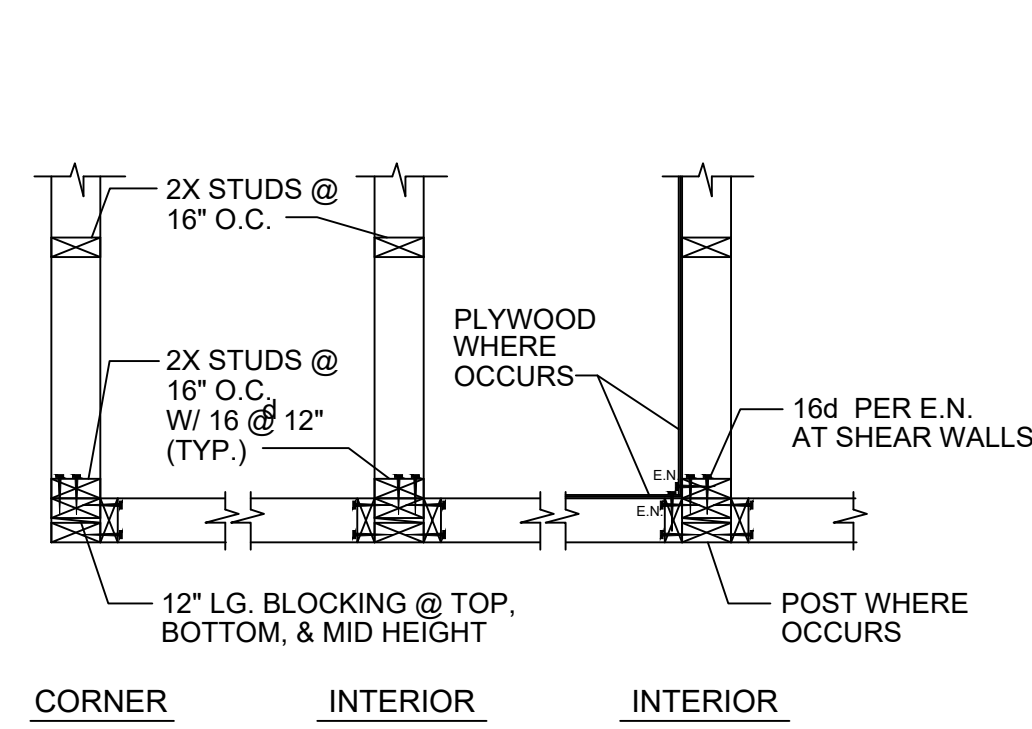
**TYP. SHEAR WALL LAYOUT**  
SCALE 1"=1'-0"



- NOTES:
1. CONT. INSPECTION REQ'D.
  2. DRILL HOLES PER MANUF. SPECS.
  3. A307 THREADED RODS W/ SIMPSON SET XP ICC ESR-2508
  4. ALL BOLTS SHALL BE HOT-DIPPED ZINC COATED, GALVANIZED, STAINLESS STEEL

ROD DIA.	EMBED DEPTH	EDGE DIST.	LOAD CAP.
5/8" Ø	10	1-3/4"	-
7/8" Ø	15	1-3/4"	1600

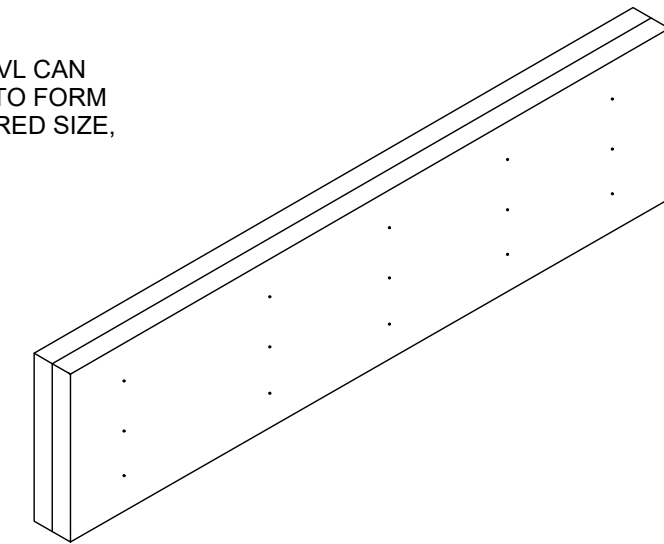
**TYP. HOLD DOWN INSTALLATION DETAILS**  
SCALE 1"=1'-0"



**TYPICAL STUD WALL INTERSECTION**  
SCALE 1"=1'-0"

- MICROLLAM LVL**
- 1) MIN. OF 2 ROWS 16d (3D) NAILS @ 12" O.C. FOR 16" & 18" BEAMS
  - 2) MIN. OF 3 ROWS 16d (3D) NAILS @ 12" O.C. FOR 16" & 18" BEAMS
  - 3) MULTIPLE PIECES OF MICROLLAM LVL CAN BE NAILED OR BOLTED TOGETHER TO FORM A HEADER OR BEAM OF THE REQUIRED SIZE, UP TO A MAX. WIDTH OF 7"

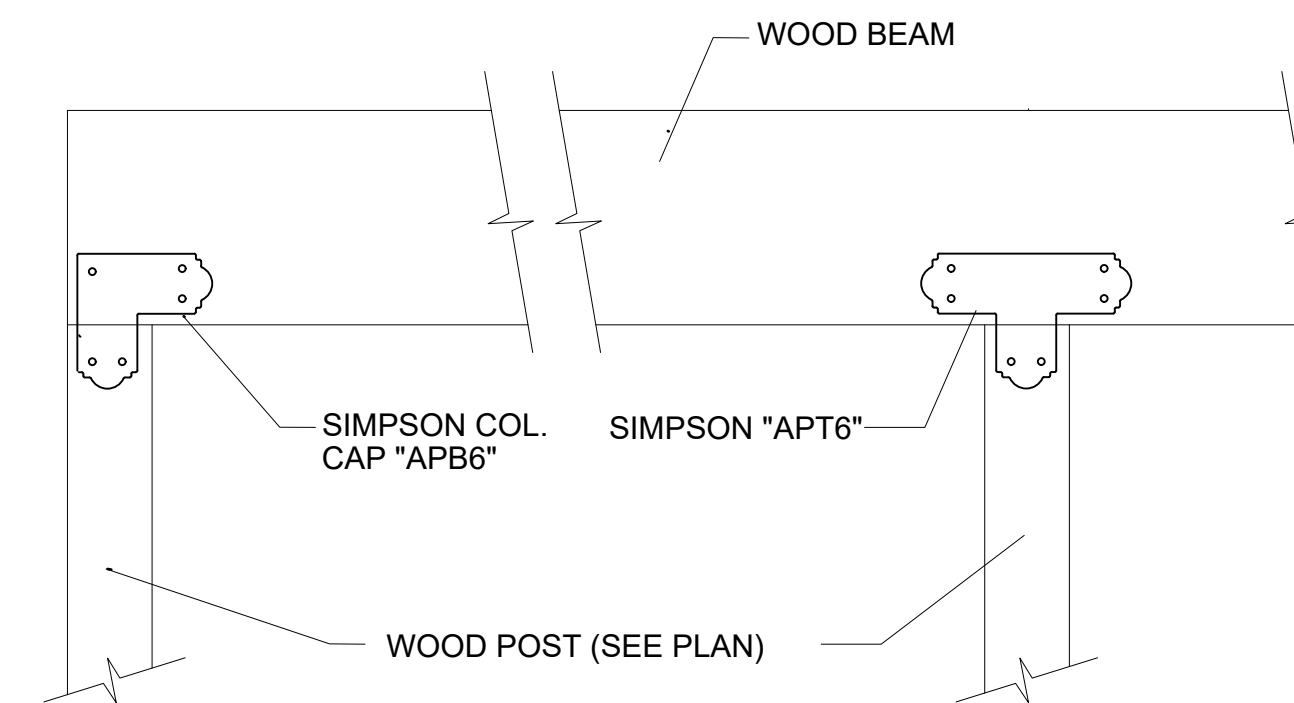
**CONNECTION OF MULTIPLE PIECES OF TOP-LOADED BEAMS**



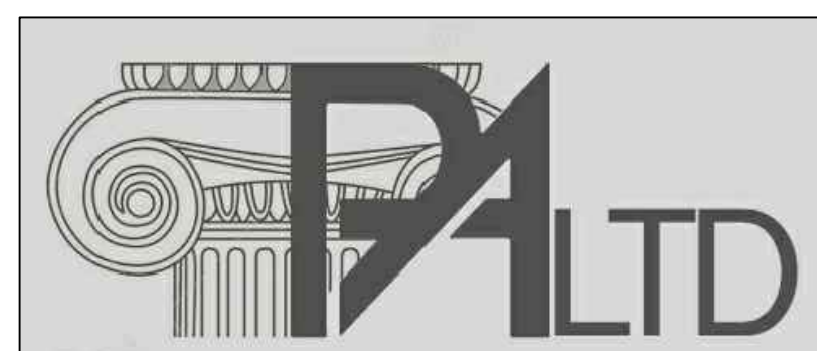
- PARALLAM PSL**
- 1 7/8" WIDTH PIECES:
  - MINIMUM OF 2 ROWS 16d NAILS AT 12" O.C.
  - MINIMUM OF 3 ROWS 16d AND 18" BEAMS
  - 3 7/8" WIDTH PIECES:
  - MINIMUM OF 2 ROWS 7/8" BOLTS @ 24" O.C. STAGGERED

FOR SIDE-LOADED MULTIPLE MEMBER BEAMS, ADDITIONAL NAILING OR BOLTING MAY BE REQUIRED. SEE CURRENT TRUSS JOIST Mac MILLAN LITERATURE.

**CONNECTION OF MULTIPLE PIECES**  
SCALE: NTS



**TYPICAL BEAM TO COLUMN DETAIL**  
SCALE 1"=1'-0"



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US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
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## MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM.

DEFINITIONS: FURNISH MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION. INSTALL MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE. PROVIDE MEANS TO FURNISH AND INSTALL COMPLETE AND READY FOR INTENDED USE.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS FOR ALL MECHANICAL EQUIPMENT INSTALLED.

COORDINATION: COORDINATE WITH THE WORK OF OTHER SECTIONS. EQUIPMENT FURNISHED BY OTHERS. REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRC" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

SHEET METAL DUCTWORK: PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS. FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A". SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND GASKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS.

EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.

DUCT INSULATION: MATERIAL FOR SUPPLY AND RETURN AIR. DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION.

FLEXIBLE DUCT - UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT. SUPPORT FLEXIBLE DUCTS FROM THE BUILDING'S STRUCTURE WITH MINIMUM 1" WIDE, 18 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP. SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION.

ROUND VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL FRAME AND BLADES. MINIMUM 3/8" SQUARE STEEL AXLE. MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING, WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE. PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS. PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL AS DUCT IN WHICH IT IS INSTALLED. PROVIDE FLUSH FRAMES FOR UN-INSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

HVAC CONTROL SYSTEM: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE M2.0.

PROGRAMMABLE THERMOSTAT FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT. SUPPLY FAN RUNS CONTINUOUSLY DURING THE OCCUPIED MODE.

EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF.

EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

COMMISSIONING/VERIFICATION: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS.

TEST AND BALANCE: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING, TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111, ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

COMPLETION REQUIREMENTS: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER.

THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.

THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING: (A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE; (B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT, REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED; (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY; (D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SEQUENCE DESCRIPTIONS. DESIRED OR FIELD-DETERMINED SET-POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS; (E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

## HVAC GENERAL NOTES

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE HEATING, VENTILATION, AND AIR CONDITIONING SYSTEM AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION, IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. DRAWINGS FOR HVAC WORK ARE DIAGRAMATIC SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. PROVIDE ALL DUCTWORK, MATERIALS, CONNECTIONS, ACCESSORIES, FITTINGS, OFFSETS, TRANSITIONS, DAMPERS AS REQUIRED FOR A COMPLETE WORKABLE SYSTEM.

4. ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND APPROVED LISTING. ALL EQUIPMENT, PIPING AND SUPPORTS SHALL BE RESTRAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL EQUIPMENT SHALL BE ANCHORED TO RESIST THE LATERAL FORCE REQUIREMENTS OF CHAPTER 16 OF THE 2012 INTERNATIONAL BUILDING CODE.

5. COORDINATE THE INSTALLATION OF THE HVAC SYSTEM WITH ALL OTHER TRADES PRIOR TO FABRICATION OR INSTALLATION. COORDINATE THE LOCATIONS OF PENETRATIONS AND FINAL LOCATION OF ALL EQUIPMENT WITH THE GENERAL CONTRACTOR. PROVIDE EQUIPMENT WEIGHTS, EQUIPMENT DIMENSIONS, PLATFORM SIZES & LOCATIONS, CURB SIZES & LOCATIONS, CONCRETE PAD SIZES AND LOCATIONS AS REQUIRED. COORDINATE LOCATIONS OF GAS & CONDENSATE LINES WITH PLUMBING CONTRACTOR. COORDINATE LOCATIONS OF POWER, DISCONNECTS, AND CONTROL CONDUIT WITH THE ELECTRICAL CONTRACTOR. COORDINATE LOCATIONS OF ALL DIFFUSERS, REGISTERS, AND GRILLES WITH ARCHITECTURAL PLANS, ELECTRICAL LIGHTING PLANS AND ARCHITECTURAL ELEVATIONS.

6. DETAILS FOR EQUIPMENT PADS, PLATFORMS, AND FLASHINGS SHALL BE AS INDICATED BY THE ARCHITECTURAL/STRUCTURAL/CIVIL DRAWINGS, UNLESS NOTED OTHERWISE.

7. ALL EQUIPMENT, DUCTS, PIPING, SUPPORTS, AND OTHER DEVICES OUTSIDE OF THE BUILDING OR EXPOSED TO WEATHER, SHALL BE COMPLETELY WEATHER-PROOFED.

8. OUTSIDE AIR INTAKES SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. BELOW ANY VENT OR EXHAUST DISCHARGE.

9. ALL DUCT SIZES ARE CLEAR INSIDE DIMENSIONS. DUCTWORK SHALL BE CONSTRUCTED, ERECTED, INSULATED AND TESTED IN ACCORDANCE CHAPTER 6 OF THE 2012 INTERNATIONAL MECHANICAL CODE.

10. ALL EXHAUST FANS SHALL BE EQUIPPED WITH A BACK DRAFT DAMPER.

11. DUCT AND AIR TRANSFER PENETRATIONS THRU BUILDING ASSEMBLIES REQUIRING PROTECTION SHALL BE PROTECTED WITH FIRE DAMPERS, SMOKE DAMPERS, COMBINATION SMOKE/FIRE DAMPERS AND CEILING RADIATION DAMPERS IN ACCORDANCE WITH SECTION 607 OF THE INTERNATIONAL MECHANICAL CODE. DUCTS NOT REQUIRING DAMPERS SHALL COMPLY WITH SECTION 714 & 717 OF THE 2019 CALIFORNIA BUILDING CODE.

12. INSTALL SMOKE DETECTORS AND PROVIDE FOR SMOKE DETECTION AND AUTOMATIC SHUT-OFF OF ALL AIR HANDLING EQUIPMENT IN ACCORDANCE WITH SECTION 606 OF THE 2019 CALIFORNIA MECHANICAL CODE.

13. UNLESS NOTED OTHERWISE, ALL LINE VOLTAGE WIRING, CONDUIT, FINAL CONNECTIONS, DISCONNECTS, STARTERS, AND OVER CURRENT PROTECTION DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR AS INDICATED ON THESE MECHANICAL DRAWINGS AND/OR ELECTRICAL DRAWINGS AND/OR ELECTRICAL SECTION OF THE SPECIFICATIONS.

14. INSTALL ALL LOW VOLTAGE HVAC CONTROL WIRE AND DEVICES PER PLAN. ALL WIRE SHALL BE IN CONDUIT PROVIDED AND INSTALLED BY THE ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE.

15. PROVIDE OWNER WITH THREE COPIES OF A CERTIFIED AIR BALANCE REPORT PREPARED IN BY A THIRD PARTY CERTIFIED BY THE AABC OR NEBB. TEST, ADJUST AND BALANCE THE HVAC SYSTEM IN ACCORDANCE WITH AABC OR NEBB PROCEDURES. PROVIDE START-UP/TEST REPORTS FOR ALL AIR HANDLING EQUIPMENT, FANS, AND REFRIGERATION EQUIPMENT. TEST AND VERIFY PROPER OPERATION OF ALL MAKE-UP AIR/EXHAUST AIR INTERLOCK SYSTEMS AND THEIR SEQUENCES OF OPERATION. BALANCE ALL AIR FLOWS WITHIN 5% OF DESIGN VALUES. PERMANENTLY MARK BALANCE POSITION OF ALL REGULATING DEVICES.

16. PROVIDE OWNER WITH THREE SETS OF AS-BUILT PLANS AND OPERATIONS AND MAINTENANCE MANUALS. CLEARLY IDENTIFY ALL EQUIPMENT WITH PERMANENT PLASTIC OR METAL LABELS/TAGS (PEN MARKING NOT ACCEPTABLE).

17. PROVIDE ONE YEAR WARRANTY ON ALL LABOR, PARTS AND MATERIALS.

18. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE WRITTEN APPROVAL OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

19.0

a) DUCTS FOR DEMAND CONTROLLED VENTILATION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE FAN MANUFACTURER'S INSTALLATION INSTRUCTIONS, THE PROVISIONS ASHRAE 62.2, TABLE 5.3, OR THE AIRFLOW SHALL BE MEASURED AS REQUIRED BY AND IN COMPLIANCE WITH ASHRAE 62.2, 5.4.

b) DUCTS FOR KITCHEN COOKTOPS OR RANGES SHALL BE SHOWN OF METAL WITH A SMOOTH INTERIOR. [CMC 504.3].

1) IDENTIFY THE DETAILED REQUIREMENTS OF CMC DRYER DUCTS. SPECIFY--

a) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE INSTALLED IN ACCORDANCE WITH CMC 504.0.

b) DUCTS FOR DOMESTIC CLOTHES DRYERS SHALL BE RIGID METALLIC DUCTS WITH A MINIMUM MILL THICKNESS OF 16 (0.016-INCH), SHALL HAVE A MINIMUM 4-INCH DIAMETER AND A SMOOTH INTERIOR. THE COMBINED HORIZONTAL AND VERTICAL LENGTH OF THE DUCTS OF THE DUCTS SHALL BE 14-FEET, WHICH SHALL BE REDUCED BY 2-FEET FOR EVERY 90-DEGREE ELBOW IN EXCESS OF TWO ELBOWS.

c) LISTED CLOTHES DRYER TRANSITION DUCTS NOT MORE THAN 6-FEET IN LENGTH SHALL BE PERMITTED TO CONNECT THE DRYER TO THE EXHAUST DUCTS AS LONG AS THEY ARE NOT CONCEALED WITHIN CONSTRUCTION, AND THEY ARE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

## LEGEND

		DUCT WORK (WIDTHxDEPTH)
		LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
		SUPPLY DUCT, SECTION
		RETURN DUCT, SECTION
		EXHAUST DUCT, SECTION
		RISE OR DROP IN DIRECTION OF AIR FLOW
	FLEX. CONN.	FLEXIBLE CONNECTION
		DUCT TRANSITION, ROUND AND RECTANGULAR
		SPLITTER DAMPER
		EXTRACTOR AT BRANCH DUCT
		TURNING VANES
		FLEXIBLE DUCT
		SINGLE LINE DUCT WORK
	AVD	AUTOMATIC VOLUME DAMPER
	MVD	MANUAL VOLUME DAMPER
	BDD	BACKDRAFT DAMPER
	MD	MODULATING DAMPER
	AFD	AUTOMATIC FIRE DAMPER
	AD	ACCESS DOOR
	SD	SUPPLY DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
	SWR	SIDE WALL SUPPLY REGISTER
	SWE	SIDE WALL RETURN OR EXHAUST
	LD	LINEAR DIFFUSER
	D.L.	DOOR LOUVER
	U.C.	UNDER CUT DOOR
	VAV	VARIABLE AIR VOLUME
	T	THERMOSTAT
	S	DUCT SMOKE DETECTOR

## SPECIAL NOTICE TO CONTRACTORS

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.

2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.

3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

4. NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.

## CITY CODES

2019 California Building Code  
2019 California Residential Code  
2019 California Fire Code  
2019 California Electrical Code  
2019 California Mechanical Code  
2019 California Plumbing Code  
2019 California Green Building Standards Code  
2019 California Historical Building Code  
2019 California Referencend Standards Code  
2019 California Administrative Code  
2019 California Energy Code  
ACI 318-14 (Structural Concrete)  
TMS 402/602-16 (Structural Masonry)  
ASCE 7-16 (Design Loads for Structures)



PixelArch Ltd.  
US Office:  
5425 Carpentera Ave # 636, Carpentera CA 93014  
+1 805 861 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

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

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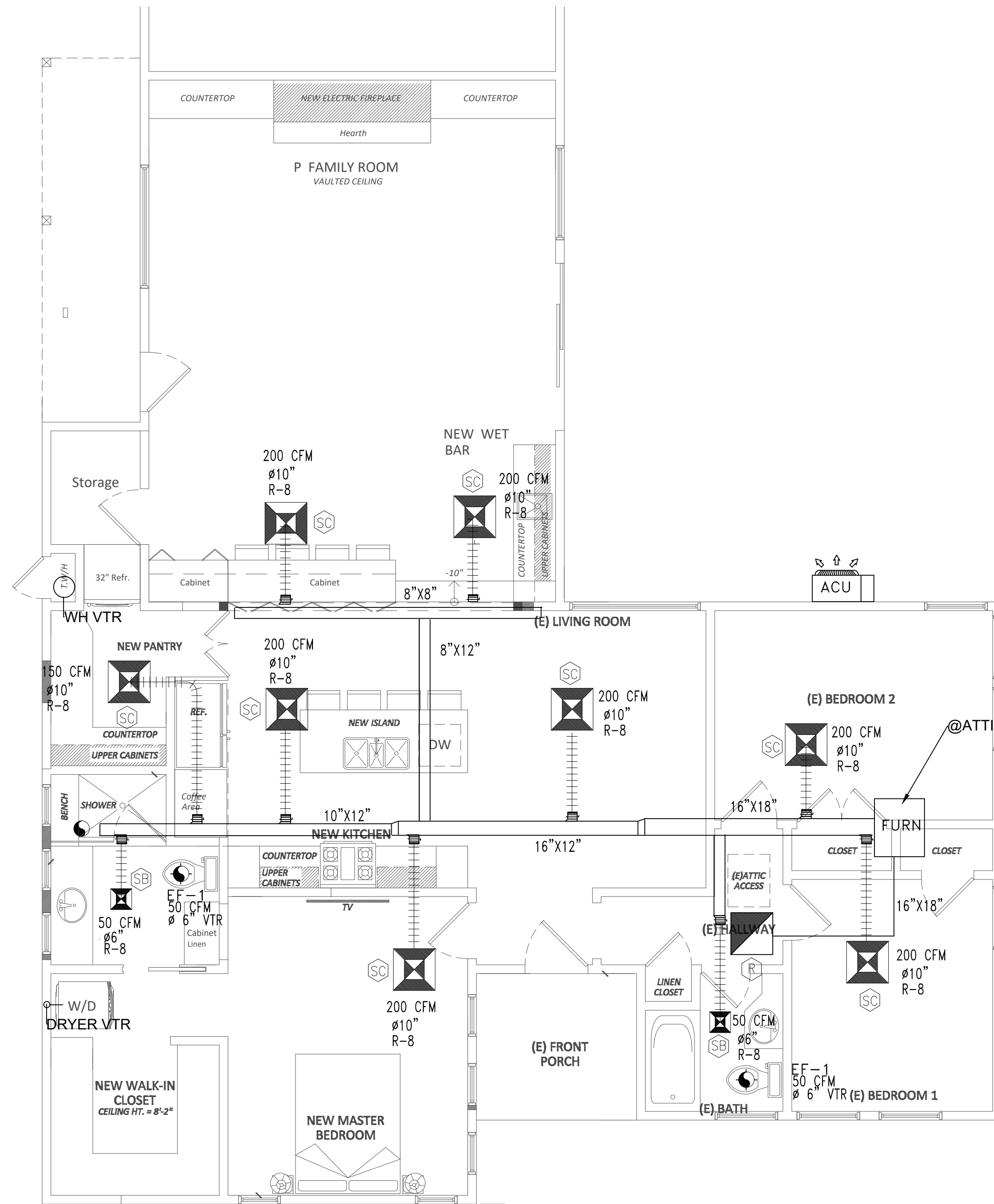
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**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 861 7390 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

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**MECHANICAL PLAN**

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FORCE AIR INDOOR UNIT										
INDOOR UNIT MARK	OUTDOOR UNIT MARK	MANUF. MODEL NUMBER /AHU	OPERATING WT (LBS)	EVAPORATOR FAN			HEATING DATA		ELECTRICAL DATA	
				SUPPLY AIRFLOW (CFM)	ESP (IN. WC)	HP POWER	HEATING INPUT (NAT. GAS MBTUH)	V/PH/HZ	MCA (AMPS)	MOP (AMPS)
FURN	ACU	GOODMAN/GMVC960804CN	181.0	1600	0.50	0.50	80.0	115/1/60	10.6	15

NOTES:  
 1) PROVIDE MOTORIZED DAMPER FOR OA INTAKE  
 2) PROVIDE WALL MOUNTED 7-DAY PROGRAMMABLE THERMOSTAT , 1-STAGE COOLING AND 2-STAGE HEATING  
 3) COORDINATE CONDENSATE DRAIN WITH PLUMBING CONTRACTOR. PIPE TO NEAREST APPROVED PLUMBING FIXTURE  
 4) PROVIDE FLOAT SWITCH IN SECONDARY DRAIN PAN FOR EMERGENCY SHUT-DOWN  
 5) PROVIDE CONCENTRIC VENT KIT. ALLOWS FOR BOTH EXHAUST AND COMBUSTION AIR.

CONDENSING UNIT SCHEDULE														
OUTDOOR UNIT MARK	SERVES	MANUFACTURER /CONDENSER MODEL NUMBER	NOMINAL TONNAGE	NOMINAL COOLING MBH	OPERATING WT (LBS)	REFRIGERATION			COMPRESSOR(S)	CONDENSER FAN(S)		ELECTRICAL DATA		
						AMBIENT TEMP (F)	TYPE	# OF CIRCUITS	QTY	QTY	FLA	V/PH/HZ	MCA (AMPS)	MOP (AMPS)
ACU	FURN	GOODMAN/GSX16048	4.0	48	162.00	95.0	R-410A	1	1.00	1.0	1.5	208-230/1/60	23.7	40.00

NOTES:  
 1. UNITS ARE 1-STAGE SCROLL COMPRESSORS  
 2. PROVIDE MOUNTING PADS FOR CONDENSING UNITS PER MANUFACTURER RECOMMENDATIONS. COORDINATE LOCATION WITH ARCHITECT/OWNER.  
 3. PROVIDE TIMED LOCK-OUT, SERVICE VALVES AND DRYERS.  
 4. ELECTRICAL CONTRACTOR SHALL PROVIDE WEATHERPROOF DISCONNECT SWITCH.  
 5. PROVIDE DX LIQUID AND SUCTION REFRIGERANT PIPING SIZED FOR ACTUAL FIELD CONDITIONS AND MANUFACTURER'S RECOMMENDATIONS.  
 6. PROVIDE REFRIGERANT SAFETY RELIEF VALVE IN ACCORDANCE WITH LOCAL CODES.  
 7. PROVIDE LOW AMBIENT CONTROL.  
 8. EQUIVALENT MODEL OR EQUAL. CONTRACTOR TO VERIFY ALL PART NUMBERS WITH MANUFACTURER AND PROVIDE SUBMITTALS TO THE DESIGN TEAM.

Exhaust Ultra-Silent Humidity-Sensing Ventilation Fan schedule								
TAG NUMBER	AREA SERVED	MODEL	TYPE	CFM	RPM	AMPS	WATTS	V/PH
EF-1	SEE PLAN	Broan-Nutone QTXE110S	CEILING	110	760.00	1.90	87.00	120.00

REMARKS:  
 1. DISCONNECT SWITCH/STARTER  
 2. PROVIDE MANUFACTURER VIBRATION ISOLATION KIT  
 3. BACKDRAFT DAMPER  
 4. INTERLOCK W/ LIGHTS  
 5. EQUIVALENT MODEL OR EQUAL

DIFFUSER SCHEDULE						
SYMBOL	ADAPTOR/NECK SIZE	FACE SIZE	MAX CFM	MAX TP	MAX NC	THROW
SB	6" Ø	12"X12"	118	0.041	-	4-WAY
SC	14" Ø	24"X24"	535	0.028	13	4-WAY
R	14" Ø	24"X24"	1283	0.159	38	4-WAY
R2	6" Ø	12"X12"	118	0.041	-	4-WAY
SYMBOL	Effective AREA	NOMINAL DUCT WIDTH	MAX CFM	MAX TP	MAX NC	THROW (FT)
LL	0.389	11-3/4	235	0.04	22	32
R1	0.389	11-3/4	550	0.219	43	32

1. SA THRU SB ARE TITUS MODEL OMNI STEEL DIFFUSERS.  
 2. R IS TITUS MODEL OMNI STEEL DIFFUSERS.  
 3. ALL SUPPLY DIFFUSERS SHALL BE PROVIDED W/2" INSULATION BLANKET ON BACK OF DIFFUSER. ALL DIFFUSERS SHALL HAVE OPPOSED BLADE DAMPERS (OBD).  
 \* RUNOUTS ARE DUCTS SERVING ONLY ONE SUPPLY DIFFUSER.

FLEX DUCT SCHEDULE	
NECK SIZE	AIRFLOW (CFM)
6	0 TO 125
8	126 TO 200
10	201 TO 275
12	276 TO 375
14	376 TO 475
16	476 TO 600



PixelArch Ltd.  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 861 7390 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

DRAWING TITLE:

MECHANICAL SCHEDULES

Sheet :

Scale:  
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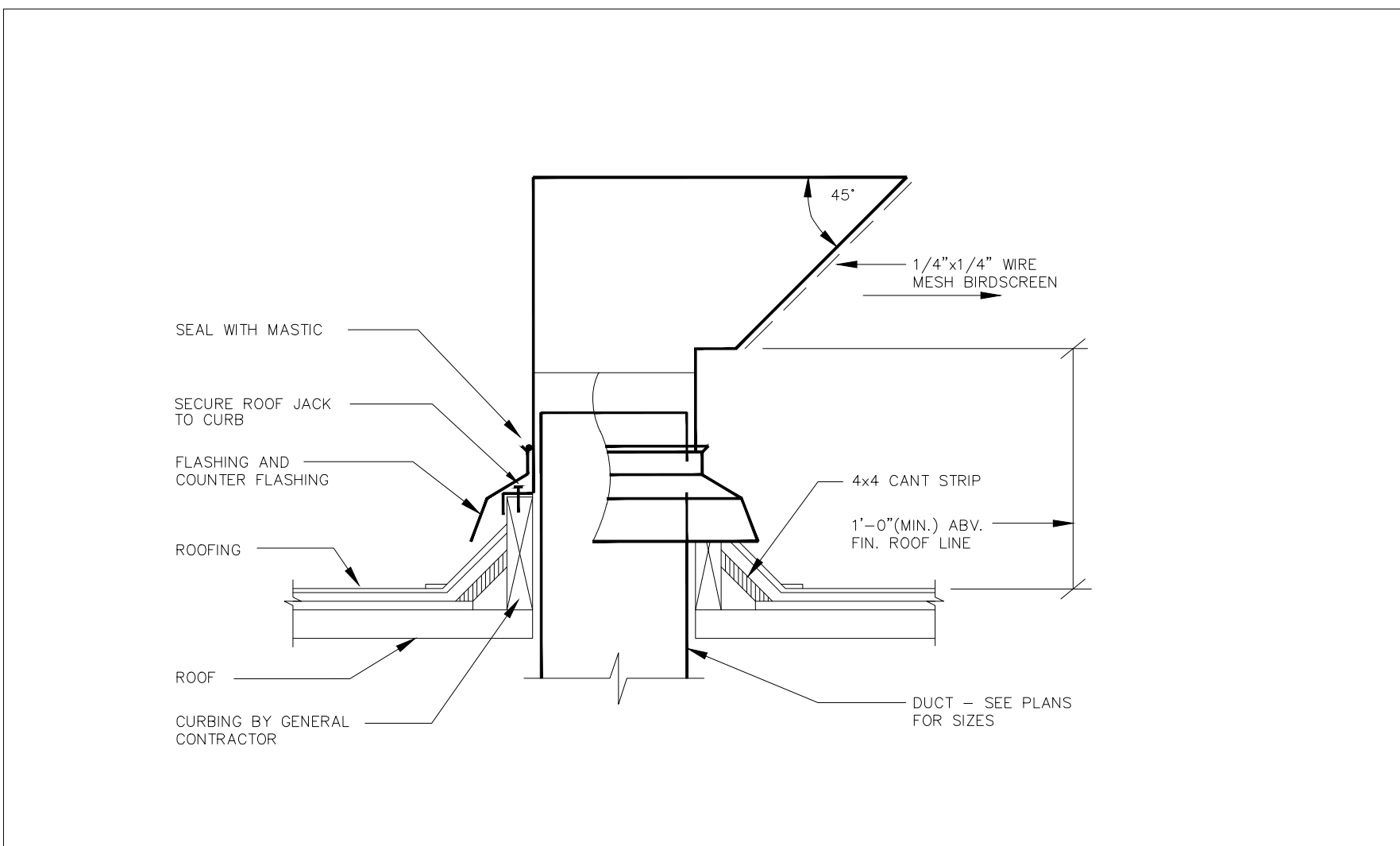
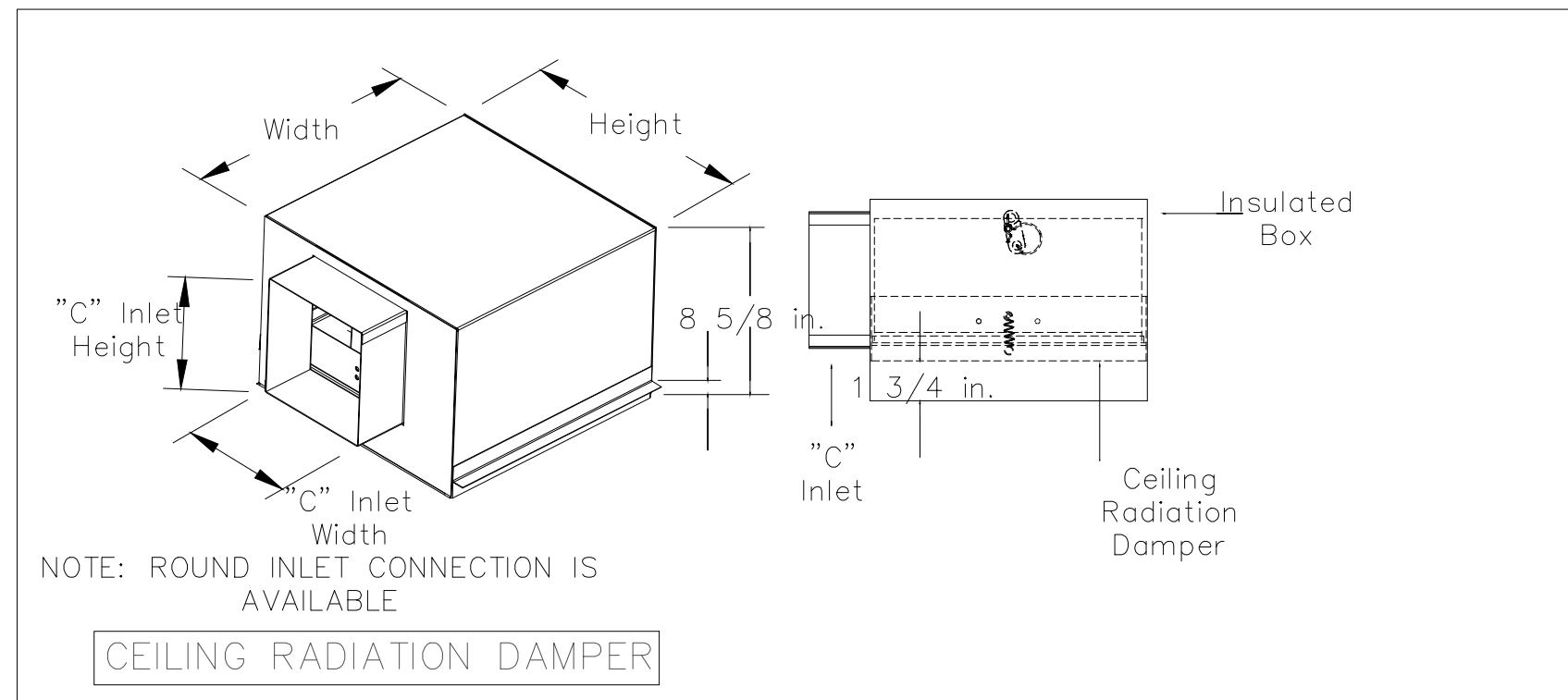
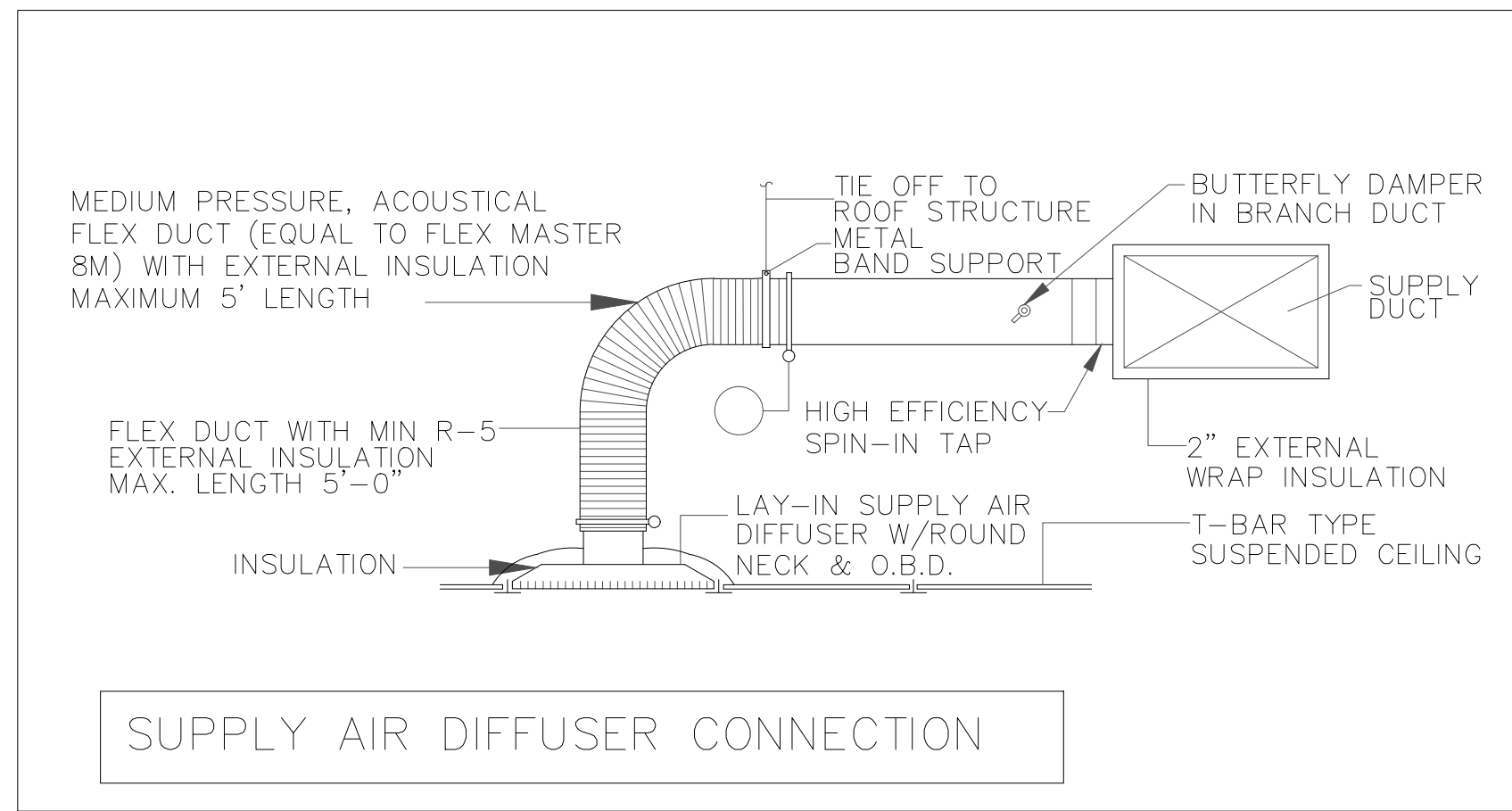
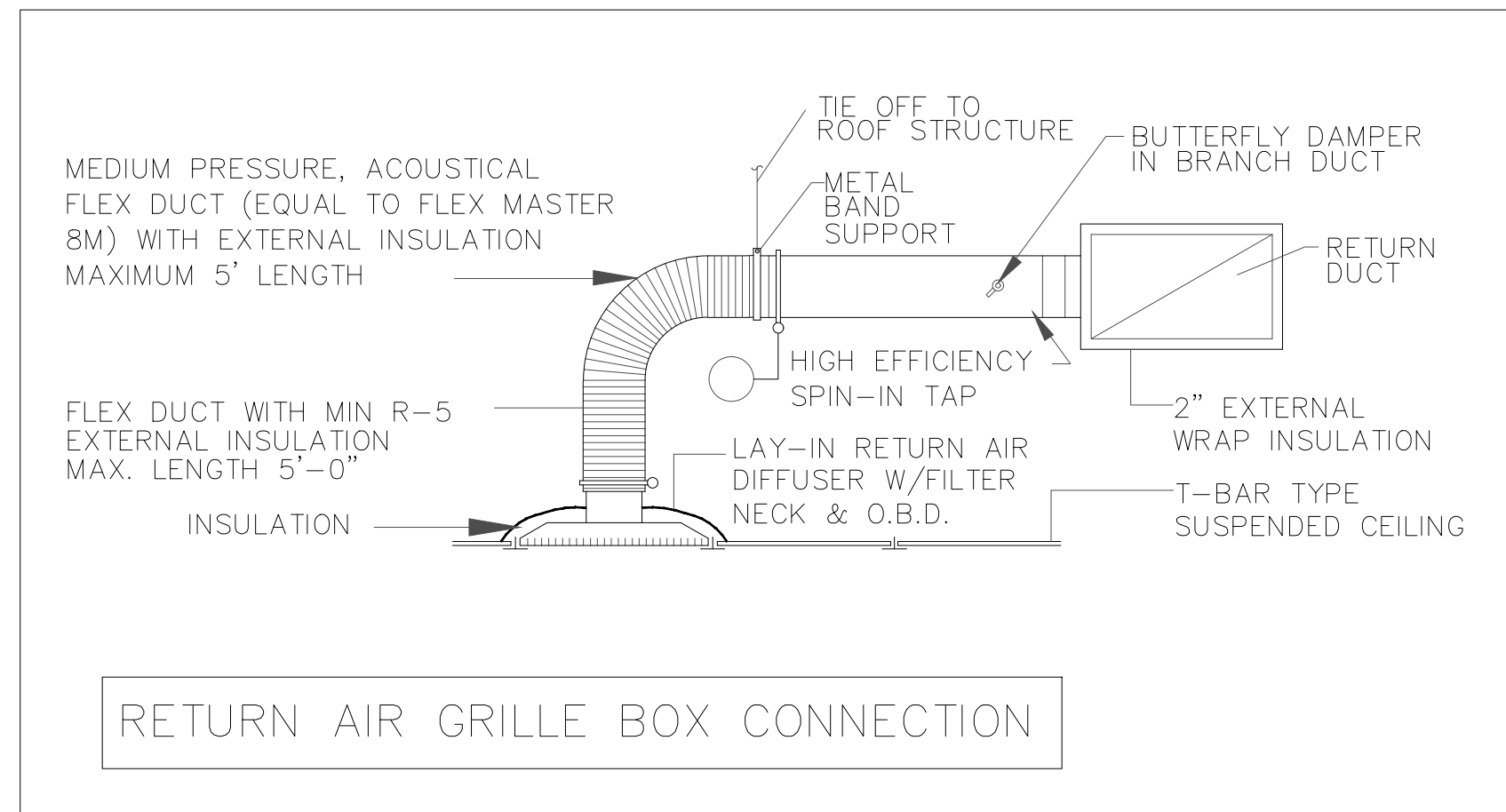
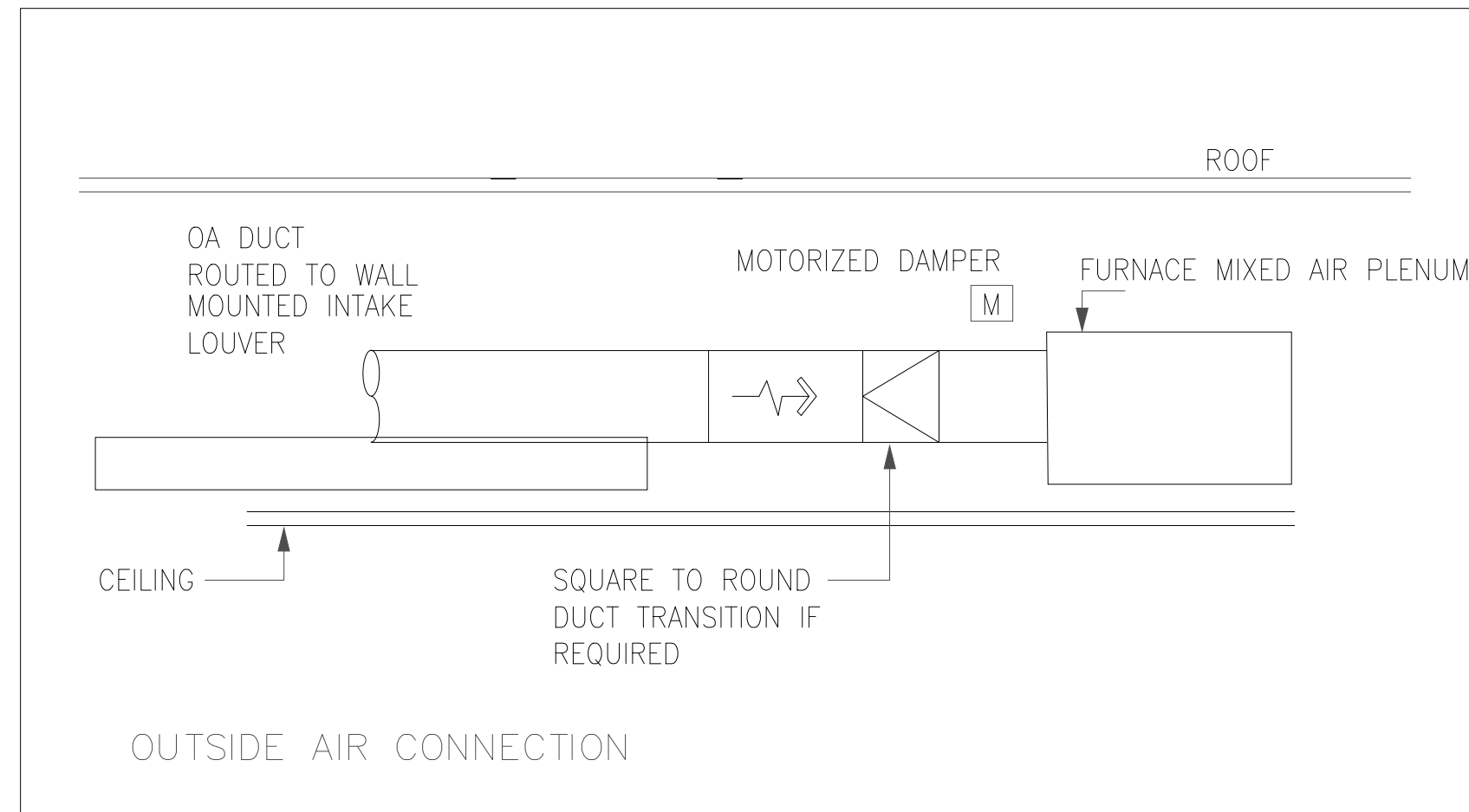
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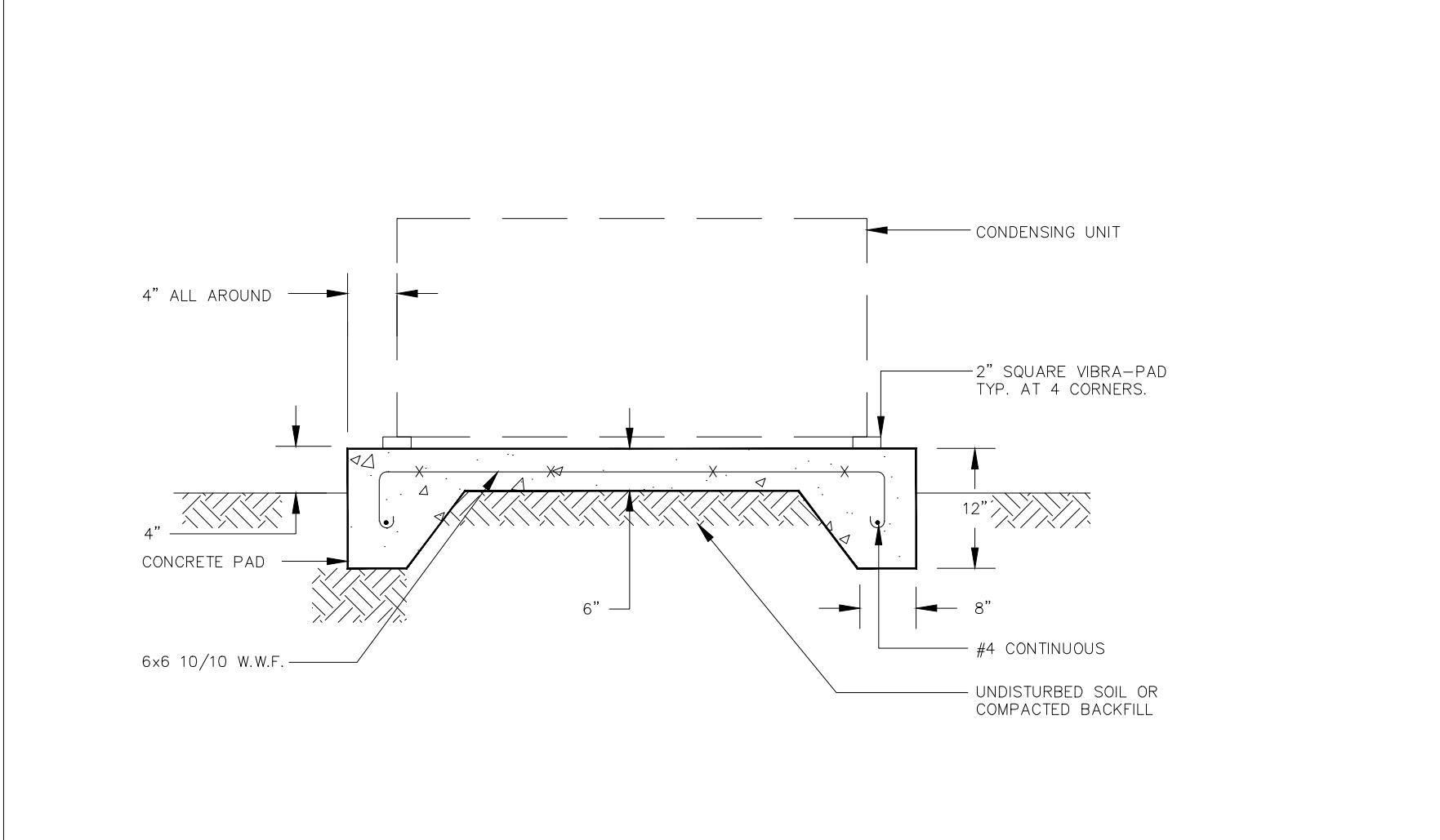
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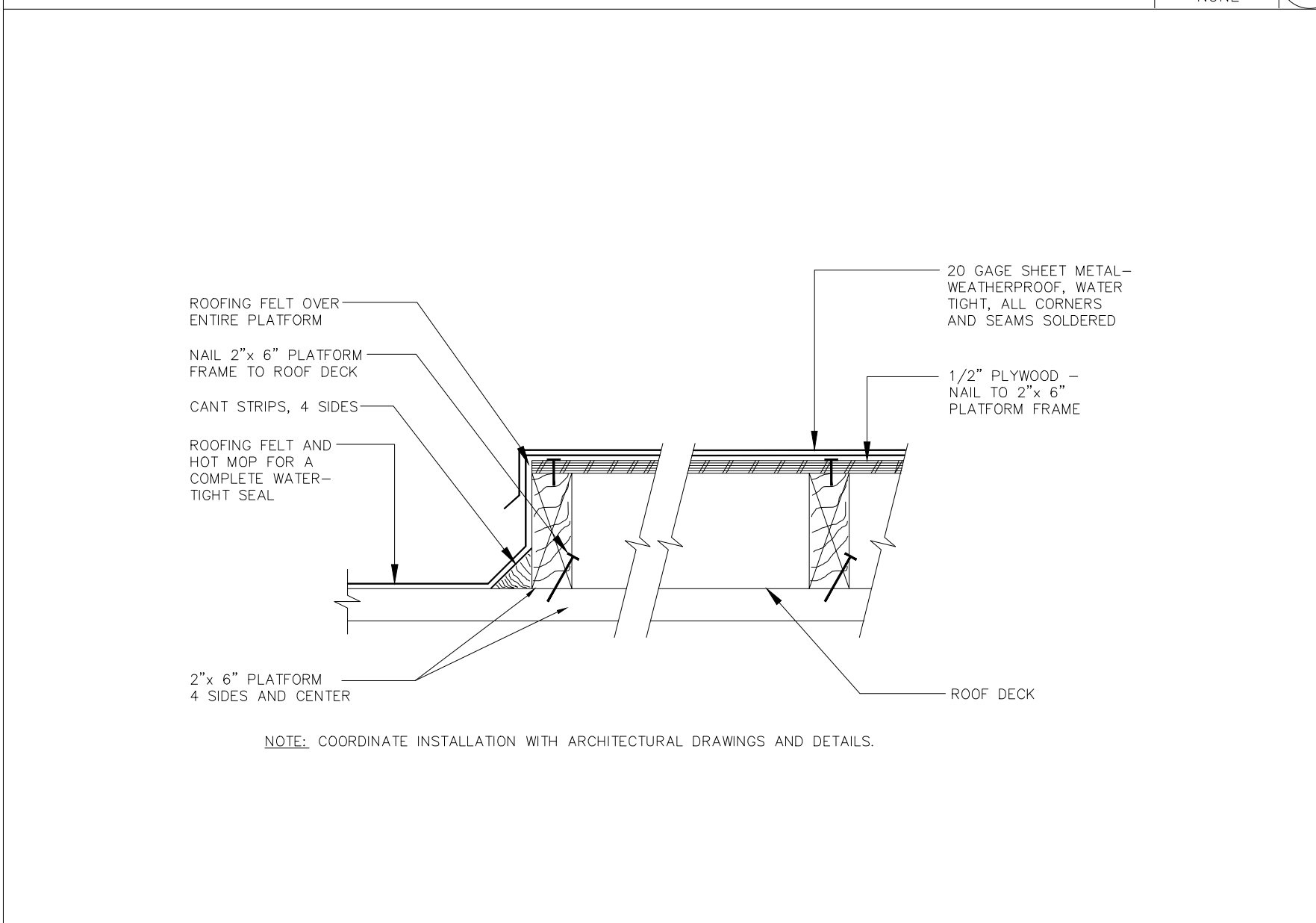




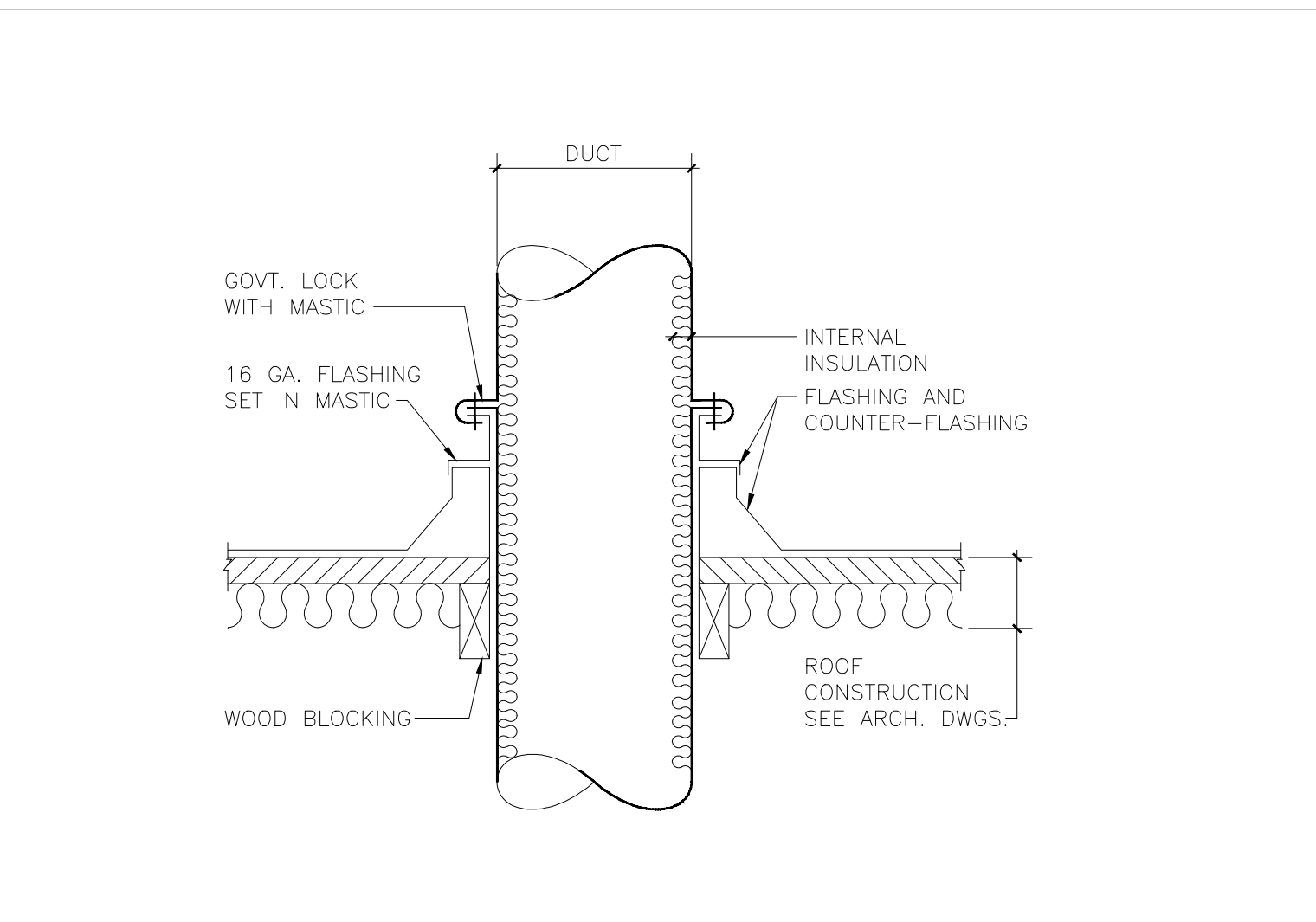
ROOF JACK DETAIL SCALE NONE 4



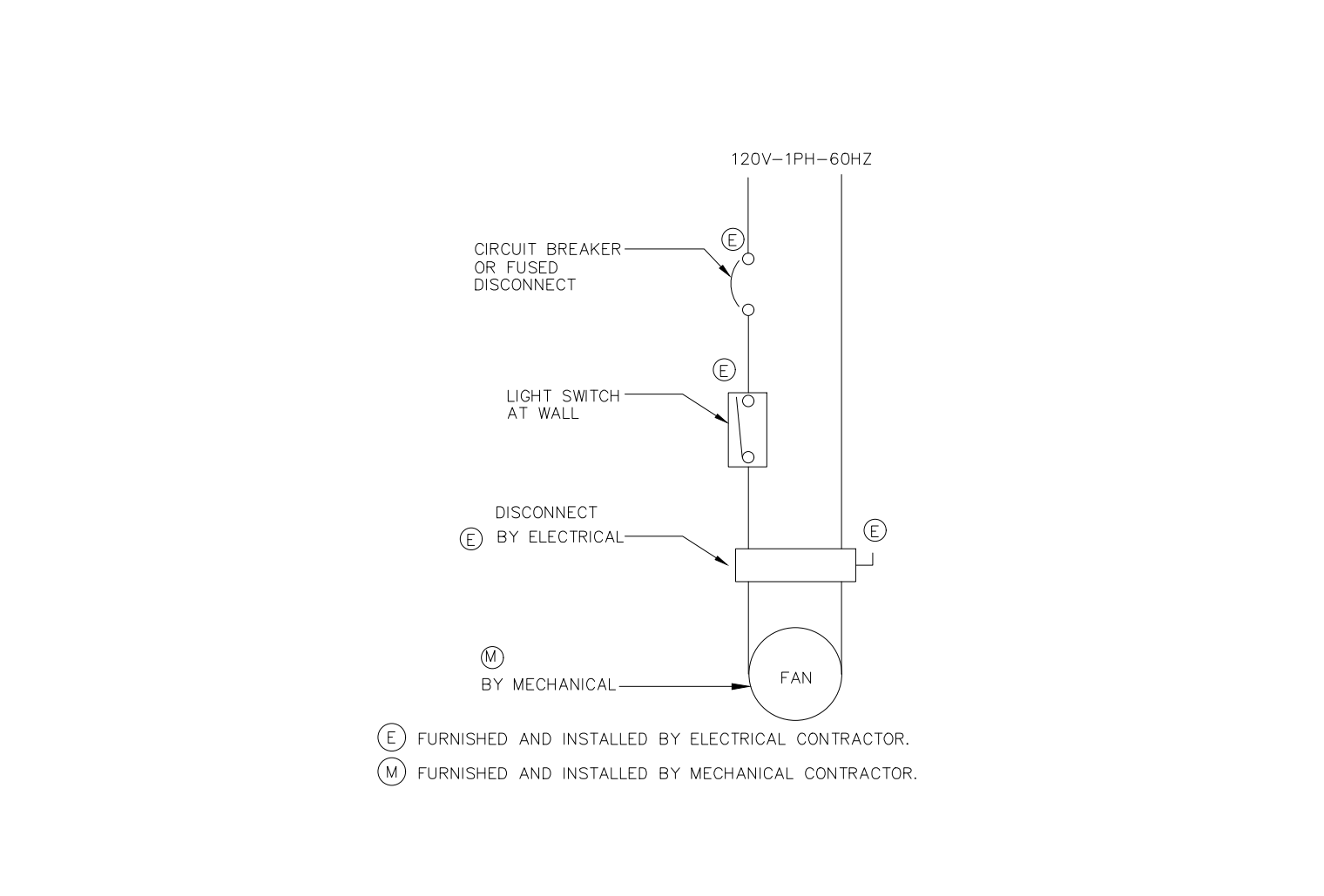
HEAT PUMP/CONDENSING UNIT MOUNTING DETAIL SCALE NONE 5



SECTION PLATFORM DETAIL SCALE NONE 6



DUCT ROOF PENETRATION SCALE NONE 1



TOILET EXHAUST FAN DIAGRAM SCALE NONE 2



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 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 861 7390 info@pixelarchltd.com  
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**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

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**MECHANICAL DETAILS**

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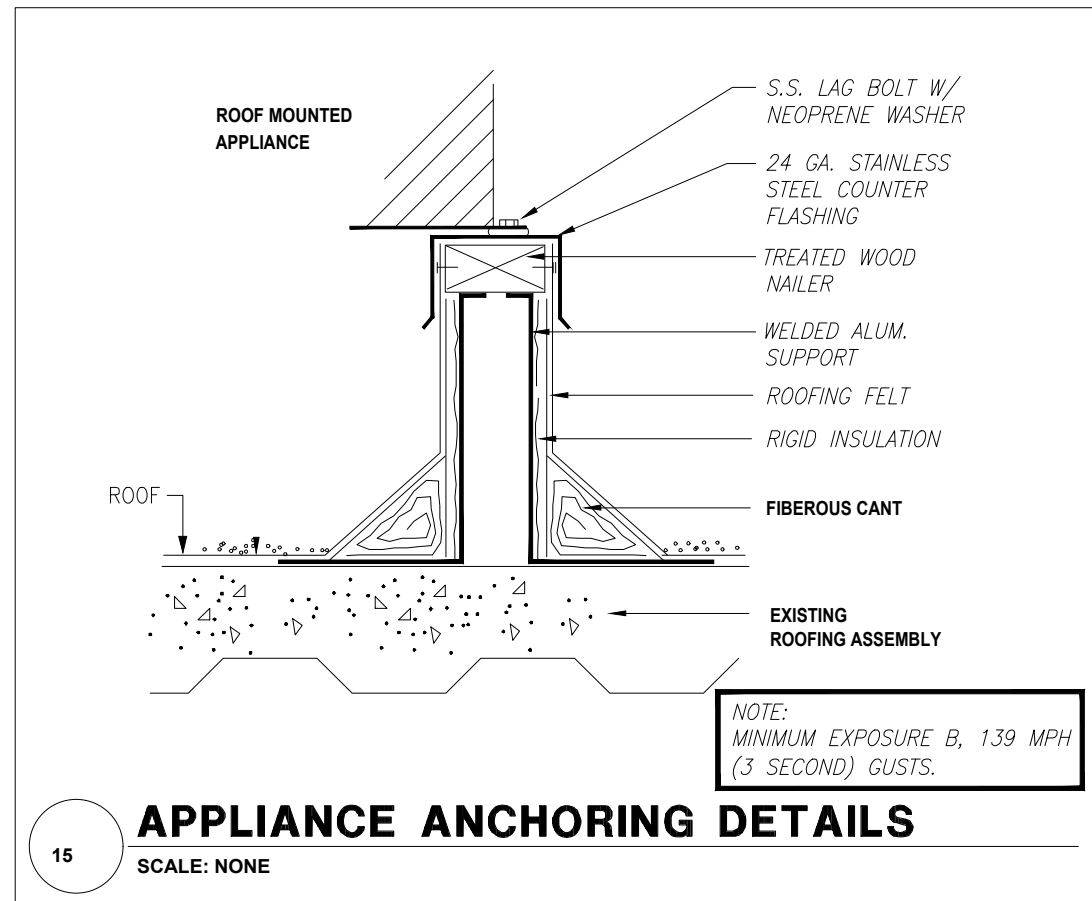
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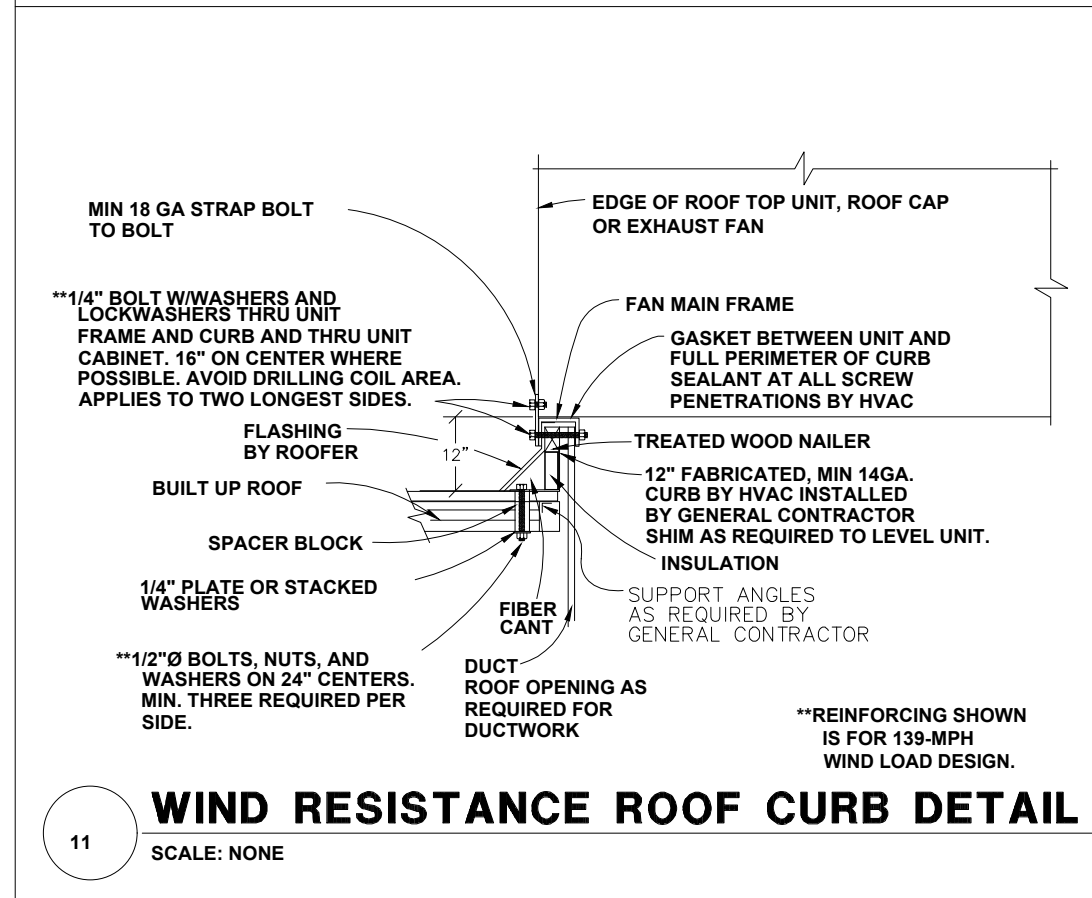
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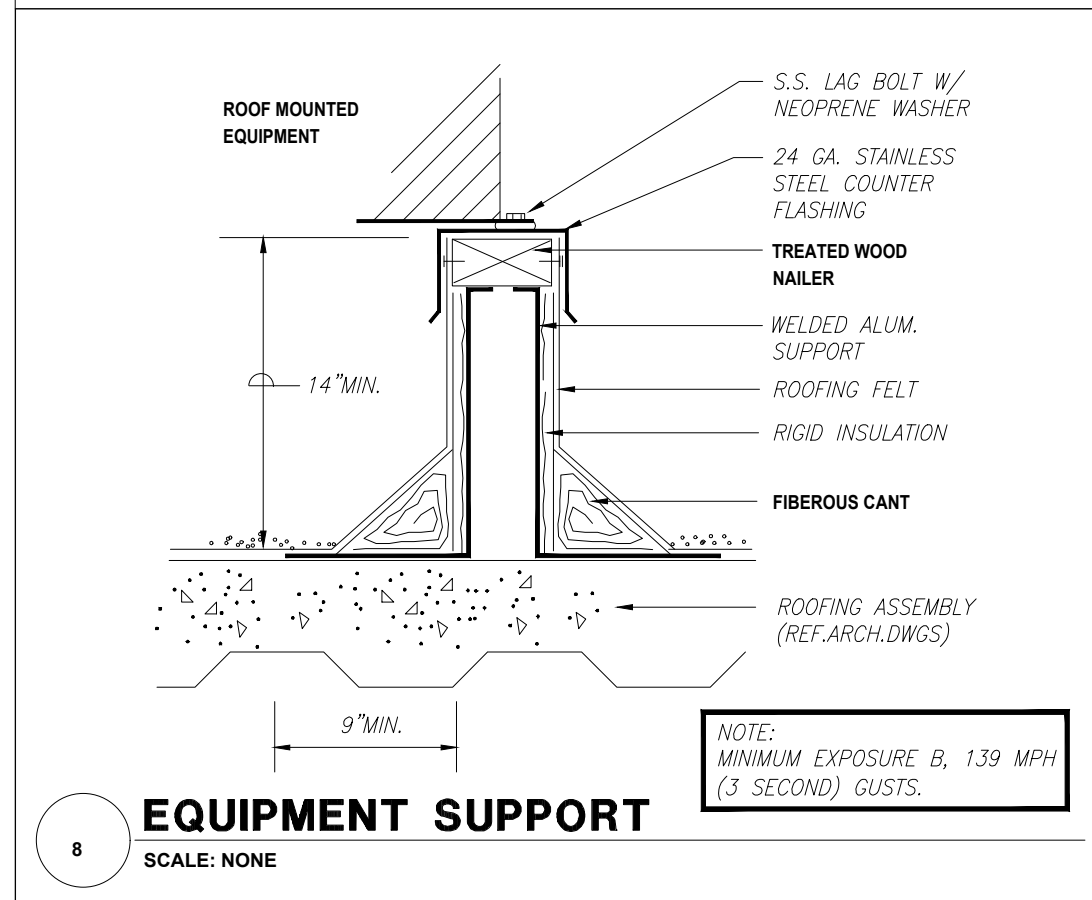
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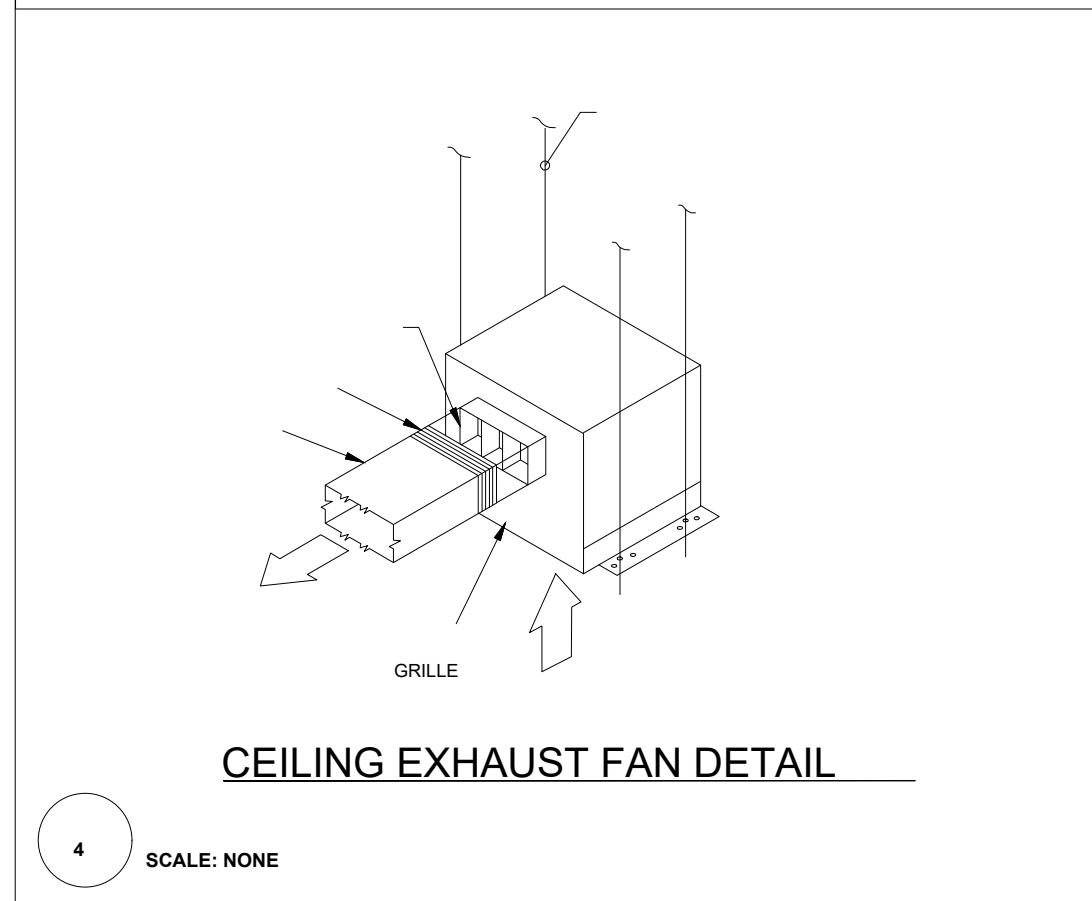
**15 APPLIANCE ANCHORING DETAILS**  
SCALE: NONE



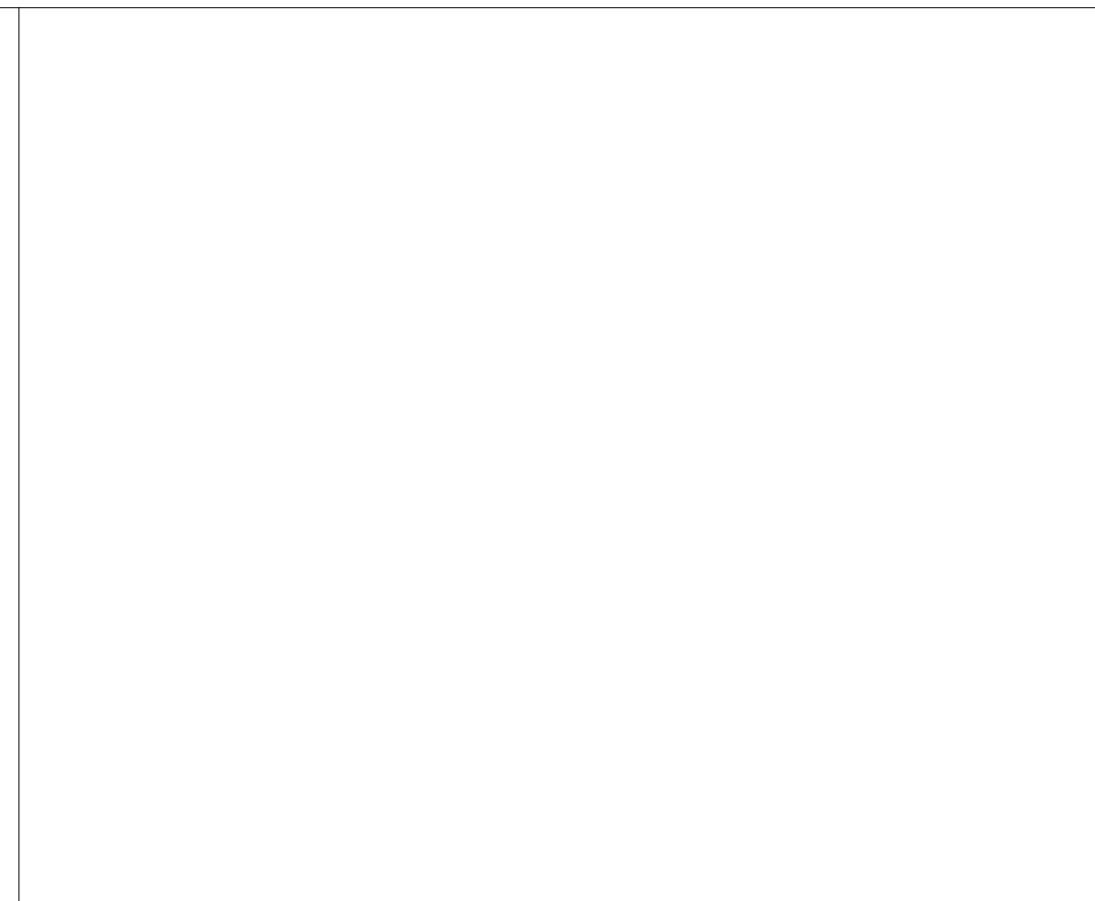
**11 WIND RESISTANCE ROOF CURB DETAIL**  
SCALE: NONE



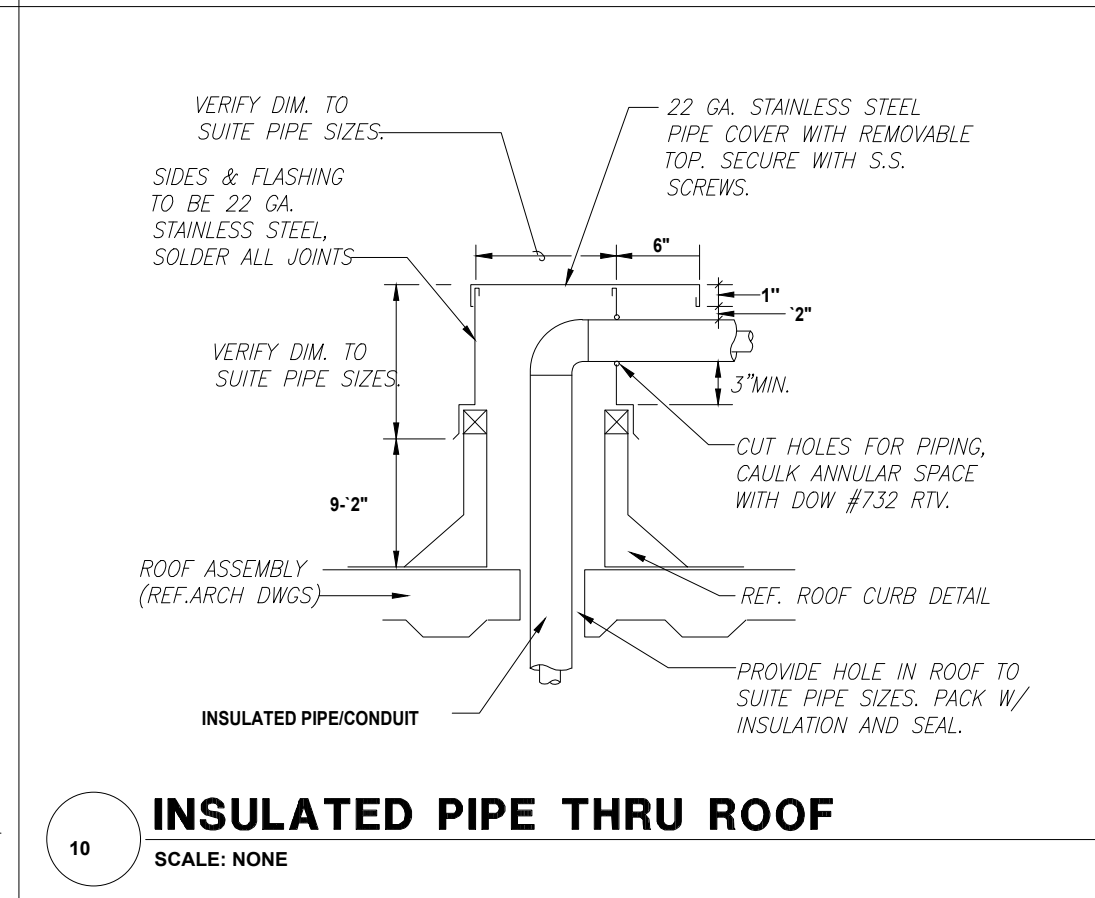
**8 EQUIPMENT SUPPORT**  
SCALE: NONE



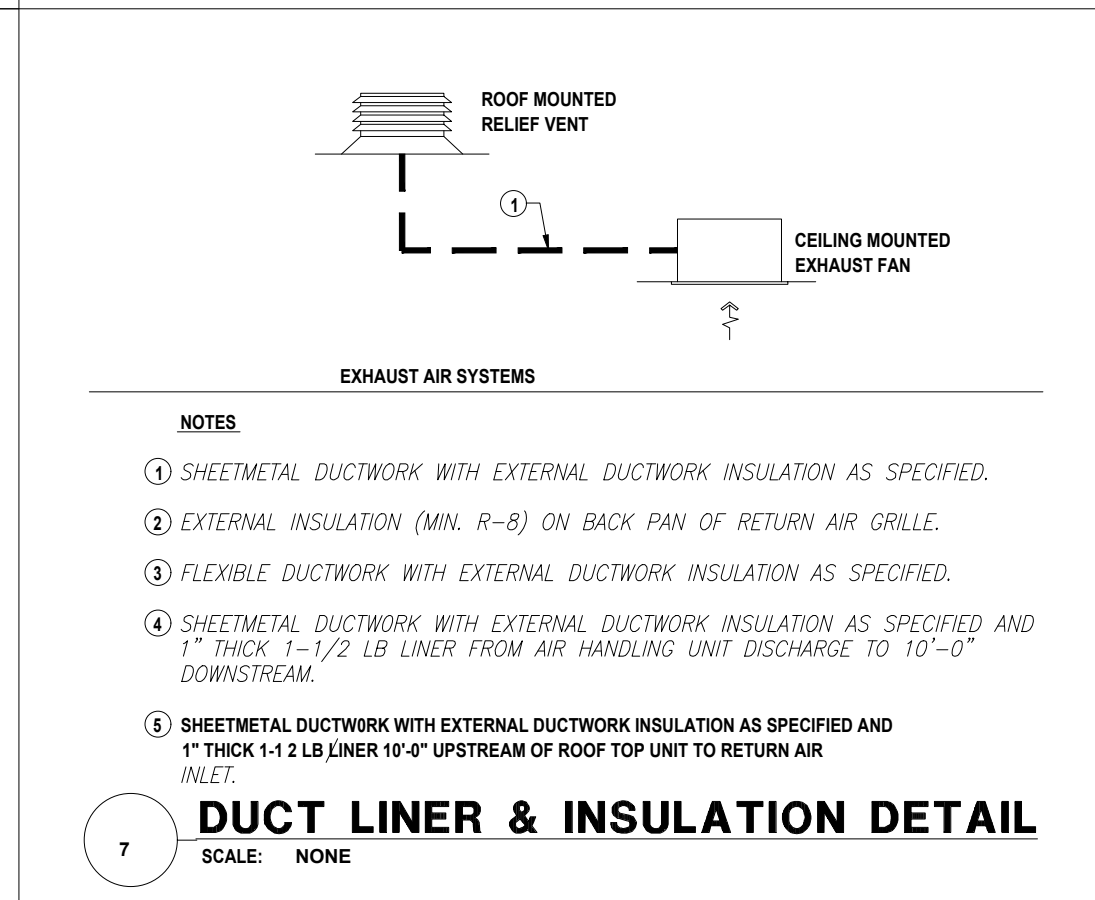
**4 CEILING EXHAUST FAN DETAIL**  
SCALE: NONE



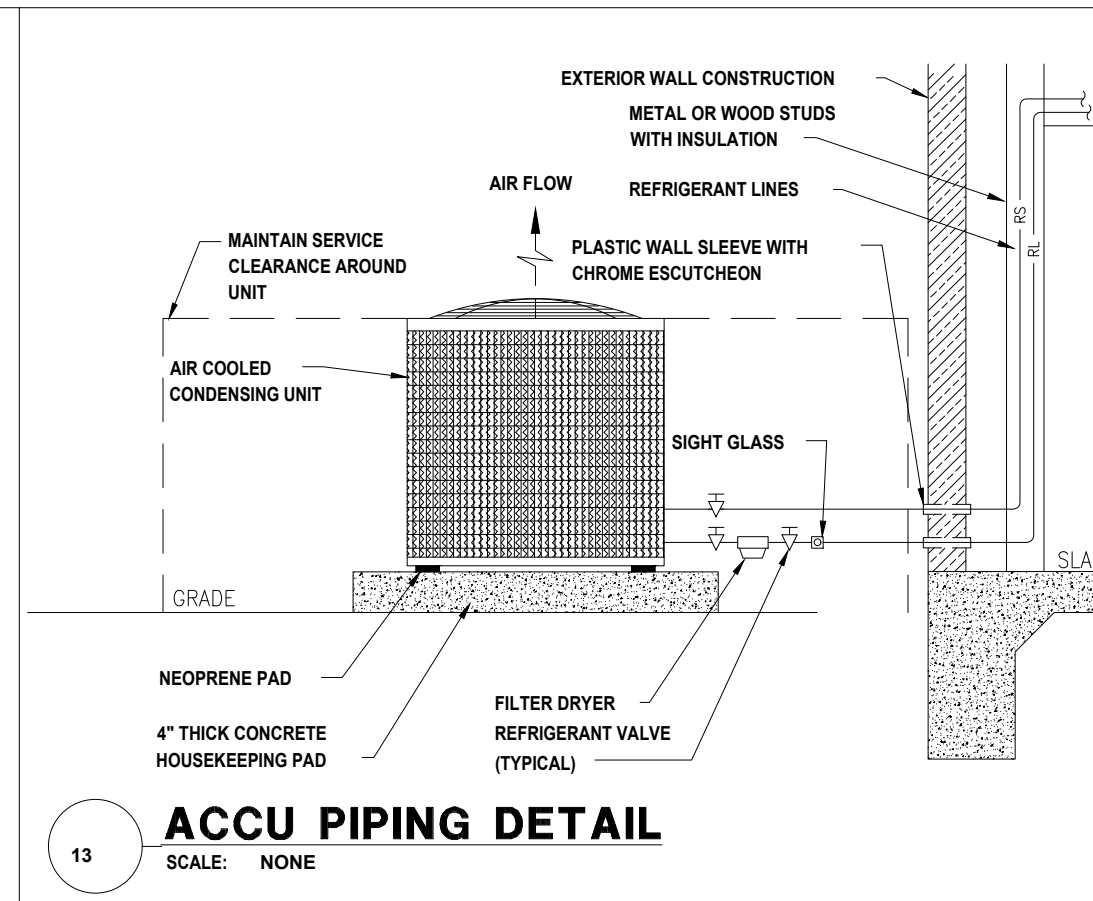
**13 ACCU PIPING DETAIL**  
SCALE: NONE



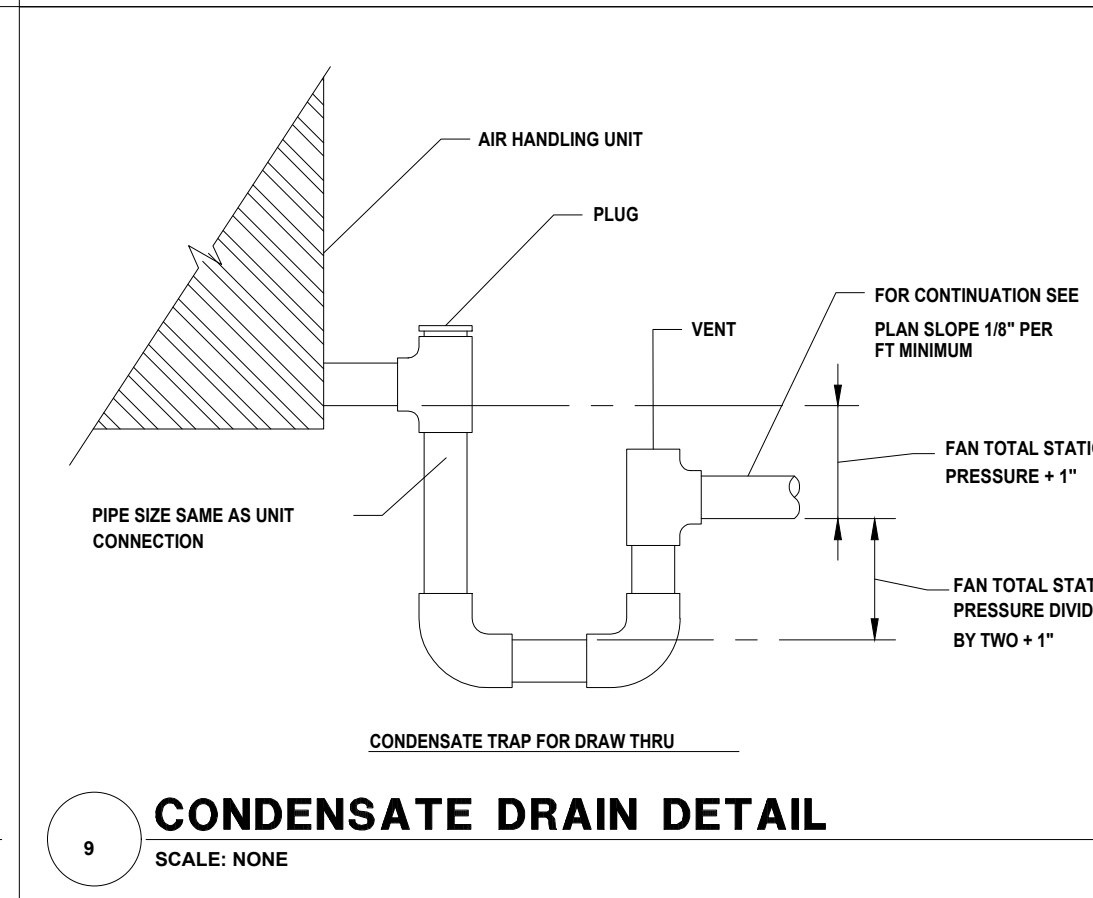
**10 INSULATED PIPE THRU ROOF**  
SCALE: NONE



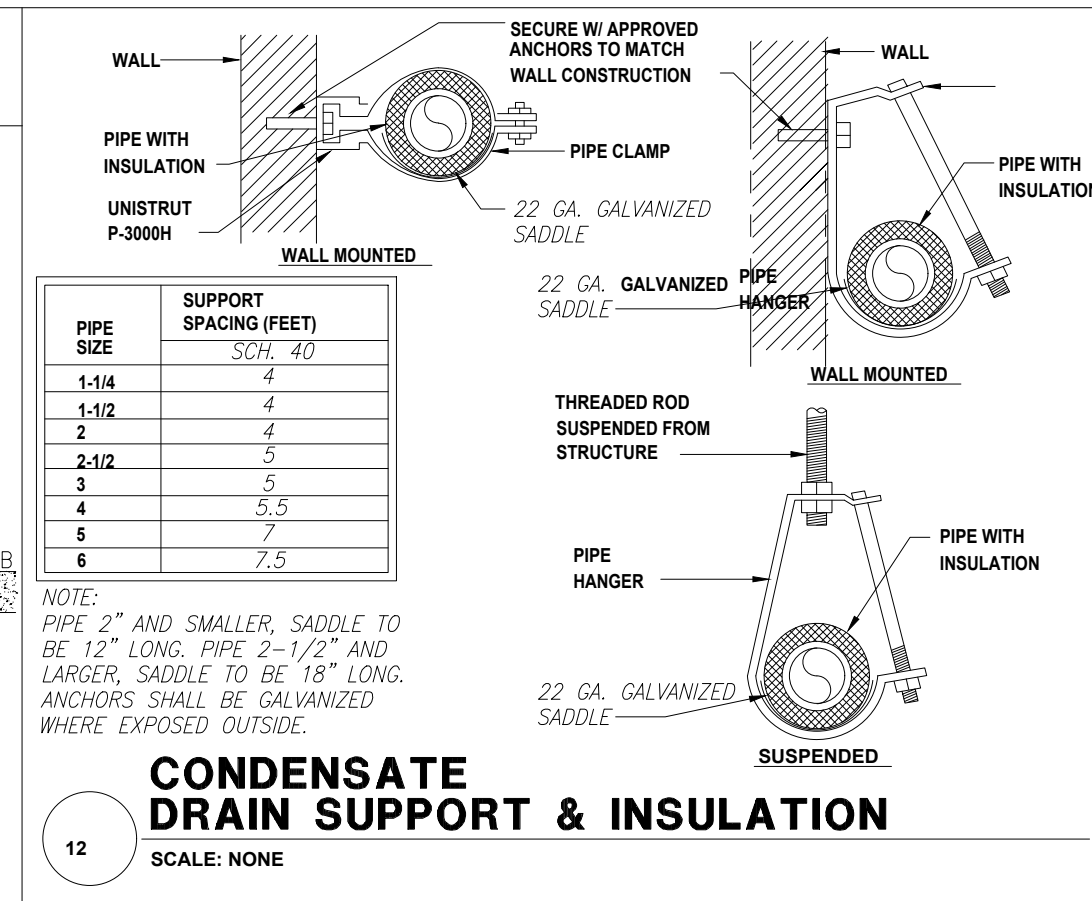
**7 DUCT LINER & INSULATION DETAIL**  
SCALE: NONE



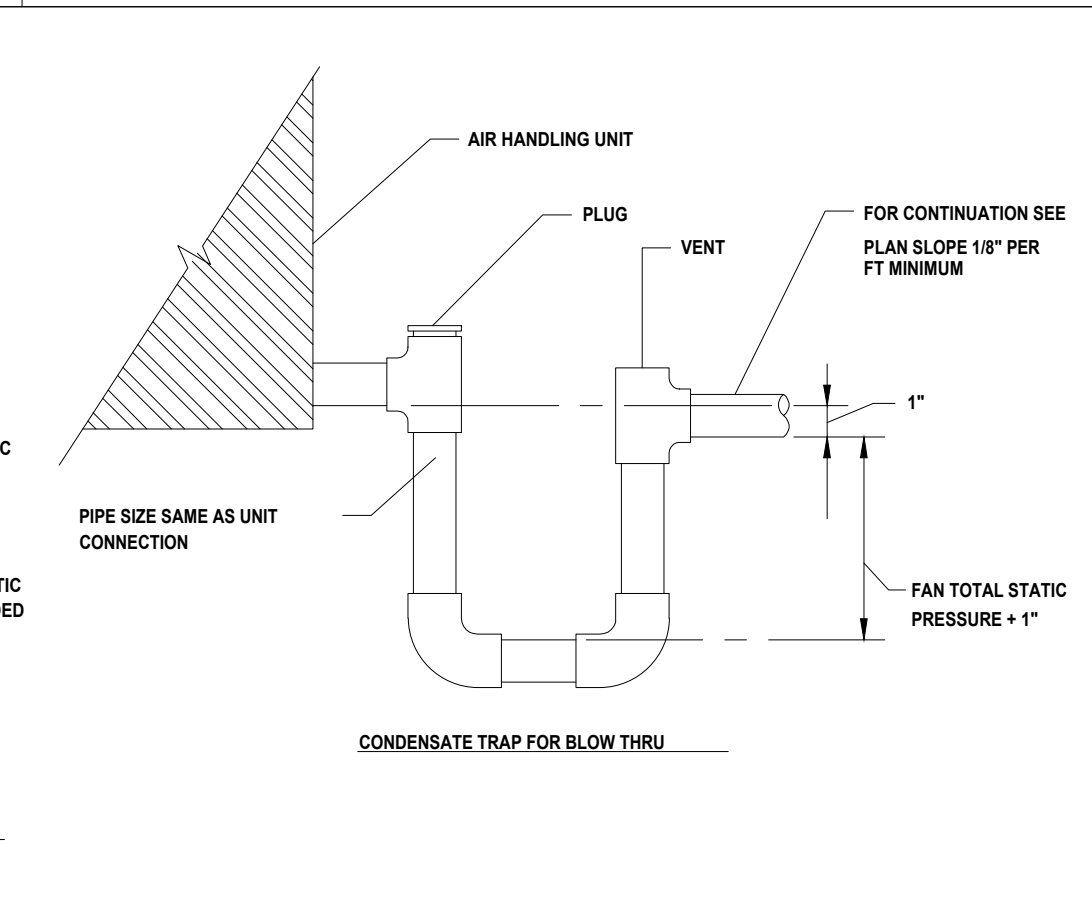
**9 CONDENSATE DRAIN DETAIL**  
SCALE: NONE



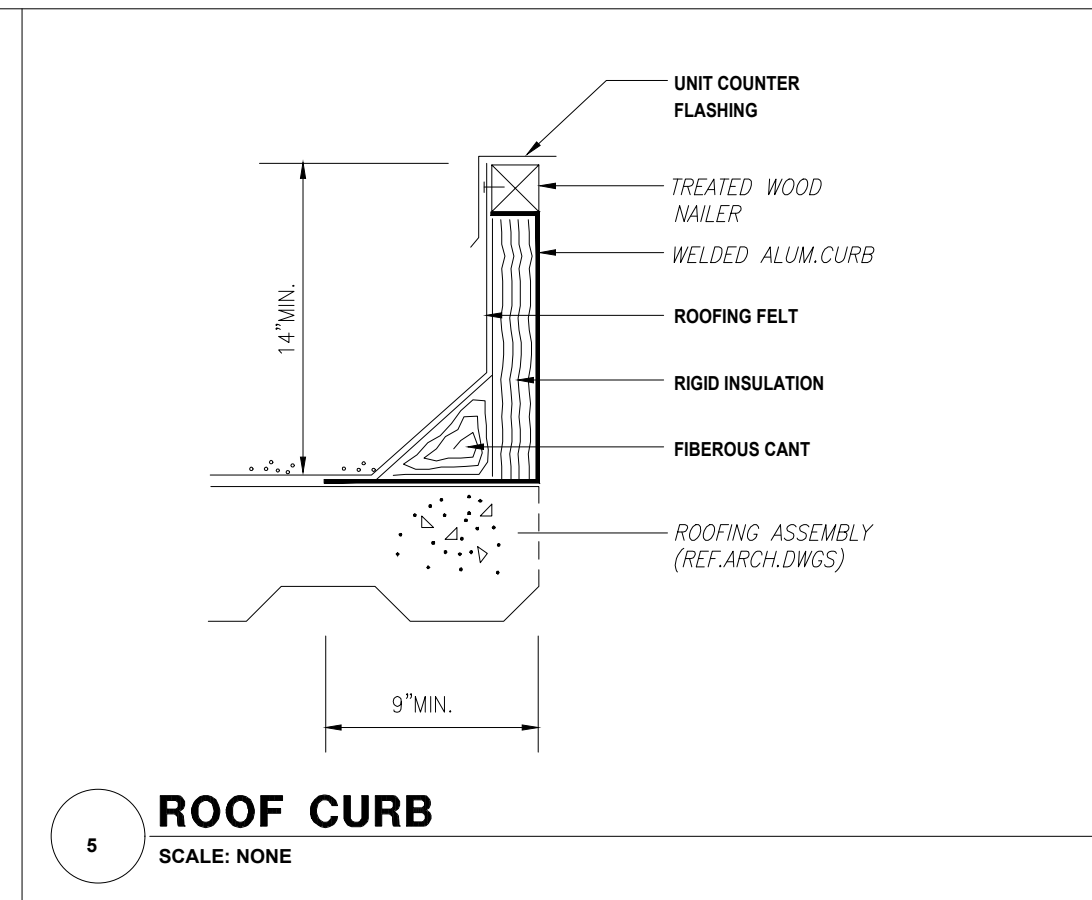
**6 FLEX DUCT CONNECTION AT SUPPLY AIR DIFFUSER**  
SCALE: NONE



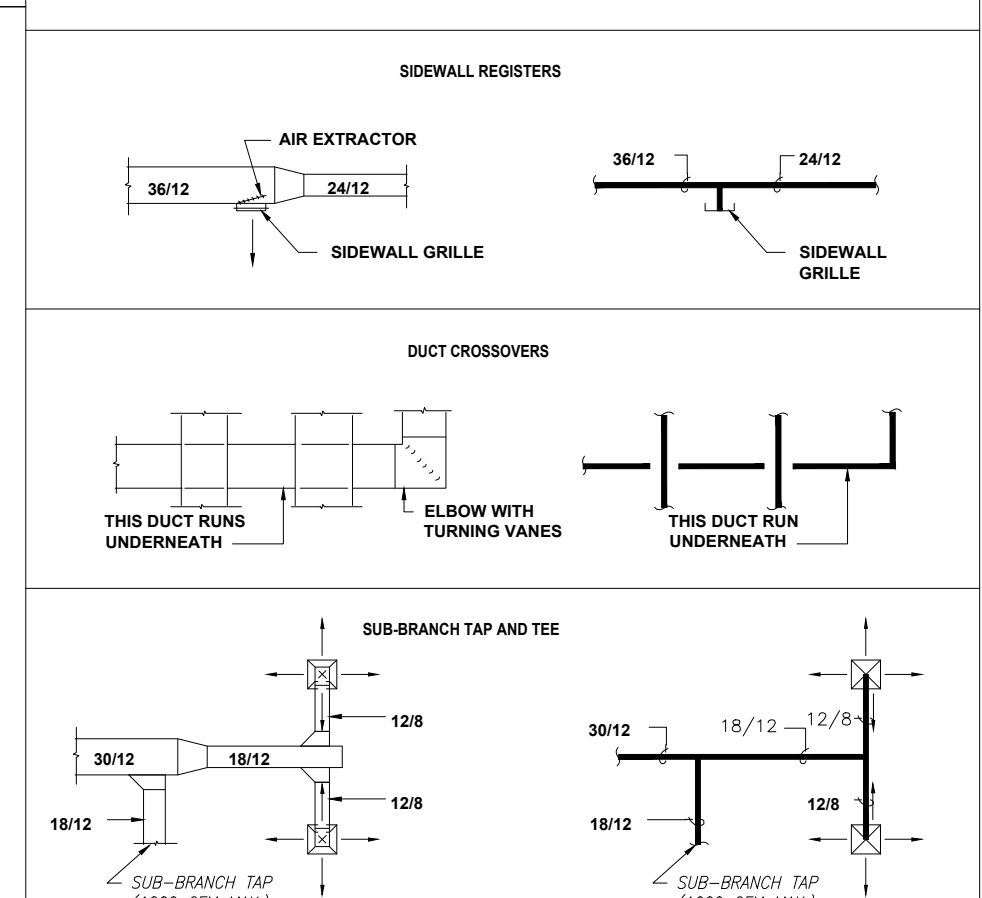
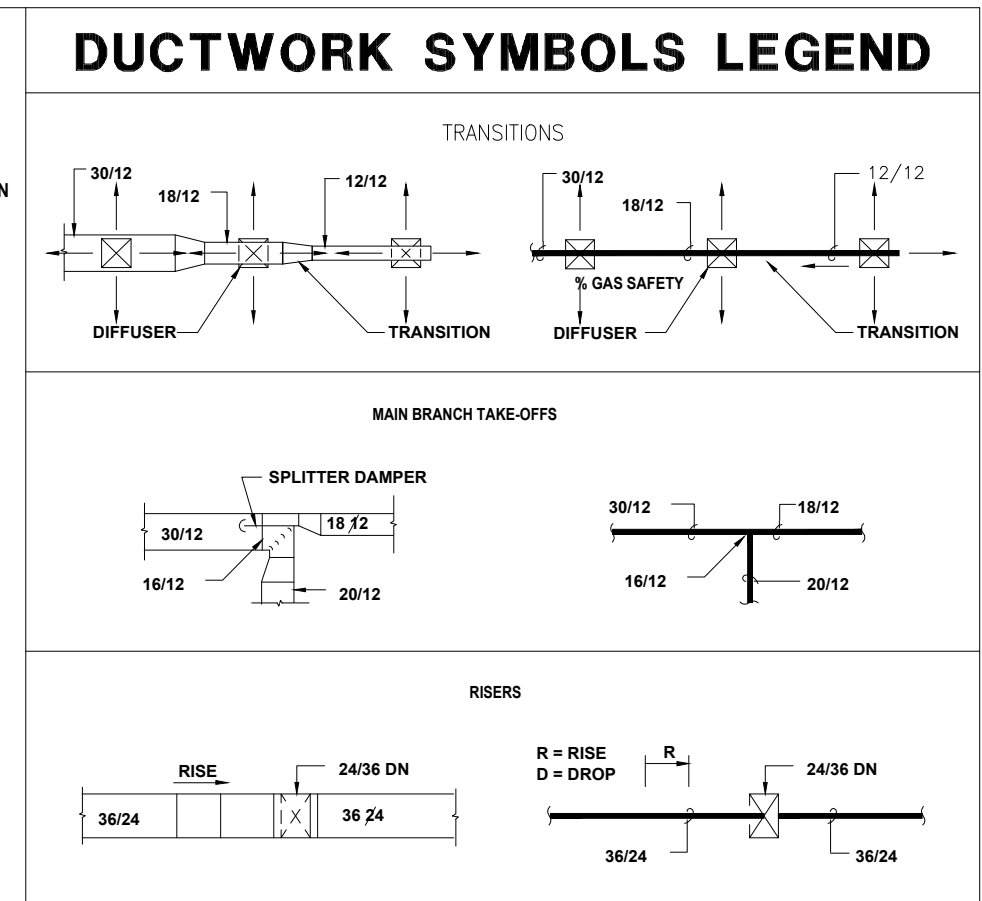
**12 CONDENSATE DRAIN SUPPORT & INSULATION**  
SCALE: NONE



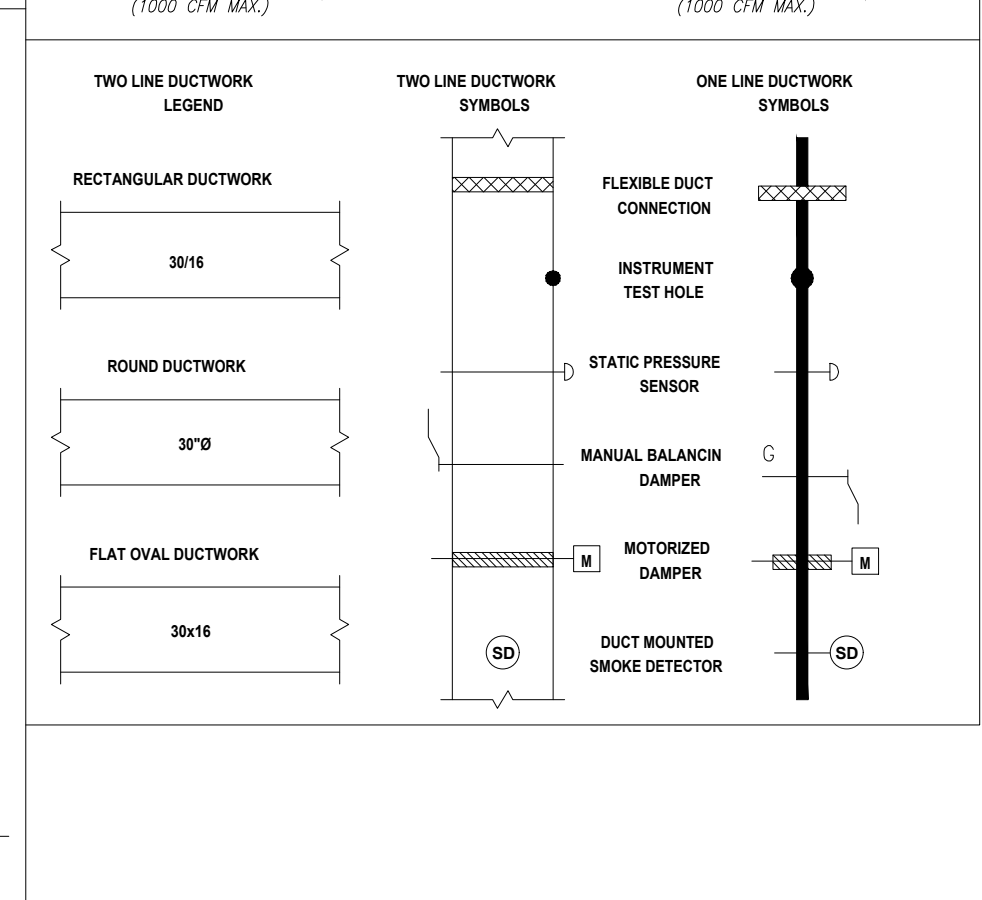
**5 ROOF CURB**  
SCALE: NONE



**3 PIPE THRU EXTERIOR WALL DETAIL**  
SCALE: NONE



**2 FLEXIBLE DUCT TAP**  
SCALE: NONE



**1 RIGID DUCT TAP TO SINGLE SUPPLY AIR DIFFUSER**  
SCALE: NONE



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US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
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MECHANICAL DETAILS

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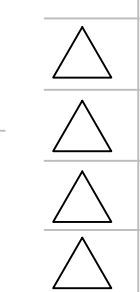
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M5.0




**Franklin**  
Air Conditioning & Heating

# GSX16

COOLING CAPACITY: 18,000 - 57,000

ENERGY-EFFICIENT  
SPLIT SYSTEM AIR CONDITIONER  
1 1/2 TO 5 TONS  
UP TO 16 SEER



**Standard Features**

- Energy-efficient compressor
- Factory-installed filter drier
- Fully charged for 15' of tubing length
- Copper tube/aluminum fin coil
- Service valves with sweat connections and easy-to-access gauge ports
- Contactor with lug connection
- Ground lug connection
- AHRI Certified
- ETL Listed

**Cabinet Features**

- Heavy-gauge galvanized-steel cabinet with a lowered sound control top
- Attractive Architectural Gray powder paint finish with 500-hour salt-spray approval
- Wire fan discharge grille
- Steel louver coil guard
- Single-panel access to controls with space provided for field-installed accessories
- When properly anchored, meets the 2010 Florida Building Code unit integrity requirements for hurricane-type winds (Anchor bracket kits available.)

**Contents**

- Nomenclature..... 2
- Product Specifications..... 3
- Expanded Cooling Data..... 4
- AHRI Ratings..... 24
- Dimensions..... 106
- Wiring Diagrams..... 107
- Accessories..... 110

**10 YEAR PARTS LIMITED WARRANTY**

SS-FGSX16 www.franklinhvacsystems.com 2/18 Supplement 1/18

**NOMENCLATURE**

G S X 16 0 36 1 AA

1 2 3 4.5 6 7.8 9 10,11

Brand  
G Goodman® Brand

Product Category  
S Split System

Unit Type  
X Condenser R-410A  
Z Heat Pump R-410A

Efficiency  
13 13 SEER 16 16 SEER  
14 14 SEER 18 18 SEER

Legacy National Model  
0 Legacy National Model  
S Sold In Southeast and North Regions  
A Sold In All Regions

Engineering  
Major & Minor Revisions (not used for inventory or ordering)

Electrical  
1 208/230 V, 1 Phase, 60 Hz  
2 230/240 V, 1 Phase, 50 Hz  
3 208/230 V, 3 Phase, 60 Hz

Nominal Capacity  
18 1 1/2 Tons 30 2 1/2 Tons 42 3 1/2 Tons  
19 1 3/4 Tons 31 2 3/4 Tons 43 3 3/4 Tons  
24 2 Tons 36 3 Tons 48 4 Tons  
25 2 Tons 37 3 Tons 60 5 Tons

SS-FGSX16 www.franklinhvacsystems.com 3

**PRODUCT SPECIFICATIONS**

	GSX16 0111F	GSX16 0241F	GSX16 0361F	GSX16 0411A	GSX16 0511F	GSX16 0711A	GSX16 0811F	GSX16 0911F
<b>CAPACITIES</b>								
Nominal Cooling (BTU/h)	18,000	23,000	29,000	30,200	34,800	36,000	42,000	45,500
SEER	16	16	16	16	16	16	16	16
Decibels	71.5	71.5	71.5	73.5	71.5	73	73	73
<b>COMPRESSOR</b>								
R/A	9.0	13.5	12.8	12.8	14.1	15.4	17.9	21.4
LRA	46	58.3	64	64	77	83.9	112	135
<b>CONDENSER FAN MOTOR</b>								
Horsepower	1/6	1/6	1/6	1/6	1/6	1/6	1/4	1/3
FLA	0.95	0.95	0.95	0.95	0.95	0.95	1.30	2.80
<b>REFRIGERATION SYSTEM</b>								
Refrigerant Line Size <sup>1</sup>								
Liquid Line Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Line Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Refrigerant Connection Size								
Liquid Valve Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Suction Valve Size ("O.D.)	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
Valve Type	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat	Sweat
Refrigerant Charge	78	70	78	94	94	93	110	121
<b>ELECTRICAL DATA</b>								
Voltage-Phase (60 Hz)	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1	208/230-1
Minimum Circuit Ampacity <sup>2</sup>	12.2	17.8	17.0	17.0	18.6	20.2	23.3	23.7
Max. Overcurrent Protection <sup>3</sup>	20	30	25	25	30	35	40	50
Min / Max Volts	197/253	197/253	197/253	197/253	197/253	197/253	197/253	197/253
Electrical Conduit Size	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"	3/4" or 1/2"
<b>EQUIPMENT WEIGHT (LBS)</b>	145	142	149	155	162	182	206	219
<b>SHIP WEIGHT (LBS)</b>	163	160	167	179	180	204	228	241
<b>ENERGY STAR® CERTIFIED</b>								

**ENERGY STAR NOTES**

- Proper sizing and installation of equipment is critical to achieving optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your contractor for details or visit www.energystar.gov.
- The www.energystar.gov website provides up-to-date system combinations certified to meet ENERGY STAR requirements. See Page 24-25 for all ENERGY STAR certified combinations as of this document's release date.

<sup>1</sup> Tested and rated in accordance with AHRI Standard 210/240  
<sup>2</sup> Wire size should be determined in accordance with National Electrical Codes; extensive wire runs will require larger wire sizes  
<sup>3</sup> Must use time-delay fuses or HACR-type circuit breakers of the same size as noted.

**NOTES**

- Always check the SER plate for electrical data on the unit being installed.
- Installer will need to supply 3/4" to 1 1/4" adapters for suction line connections.
- Units are charged with refrigerant for 15' of liquid line. System charge must be adjusted per installation instructions Final Charge Procedure.
- Installation of these units requires the specified TXV kit to be installed on the indoor coil. THE SPECIFIED TXV IS DETERMINED BY THE OUTDOOR UNIT NOT THE INDOOR COIL.

SS-FGSX16 www.franklinhvacsystems.com 4

**Goodman**  
Air Conditioning & Heating

# GMVC96

TWO-STAGE, VARIABLE-SPEED  
ECM GAS FURNACE  
UP TO 96% AFUE



**Contents**

- Nomenclature..... 2
- Product Specifications..... 3
- Dimensions..... 4
- Airflow Data..... 5
- Wiring Diagrams..... 9
- Accessories..... 10

**Standard Features**

- ComfortNet™ Communicating System compatible
- Heavy-duty aluminum-steel tubular heat exchanger
- Stainless-steel secondary heat exchanger
- Two-stage gas valve provides quiet, economical heating
- Durable Silicon Nitride igniter
- Quiet two-speed induced draft blower
- Utilizes ComfortNet™ communicating, two-stage or single-stage thermostats
- Self-diagnostic control board with constant memory fault code history output to a dual 7-segment display
- Color-coded low-voltage terminals with provisions for electronic air cleaner and humidifier
- Efficient and quiet variable-speed airflow system gently ramps up or down according to heating or cooling demand
- Multiple continuous fan speed options offer quiet air circulation
- Auto-Comfort and enhanced dehumidification modes available
- All models comply with California 40 ng/lj Low NOx emissions standard

**Cabinet Features**

- Designed for multi-position installation — upflow, horizontal left or right
- Certified for direct vent (2-pipe) or non-direct vent (1-pipe)
- Easy to install top venting with optional side venting
- Convenient left or right connection for gas and electrical service
- Cabinet air leakage (Q<sub>air</sub>) ≤ 2%
- Heavy-gauge steel cabinet with durable baked-enamel finish
- Fully insulated heat exchanger and blower section
- Airtight solid bottom or side-return with easy-cut tabs for effortless removal in bottom air-inlet applications

**10 YEAR PARTS LIMITED WARRANTY**

SS-GMVC96 www.goodmanmfg.com 12/15 Supplement 8/15

**NOMENCLATURE**

G M V C 96 000 3 B N A A

1 2 3 4 5.6 7.8 10 11 12 13 14

Brand  
G Goodman® Brand

Configuration  
M Upflow/Horizontal  
C Downflow/Horizontal

Motor  
V Variable Speed ECM / ComfortNet  
E Multi-Speed ECM  
S Single Speed

Gas Valve  
B - 17.5"  
M - Modulating  
C - 21"  
S - Two Stage  
S - Single Stage

Cabinet Width  
B - 17.5"  
C - 21"  
D - 24.5"

Maximum CFM  
AFUE  
2 - 800 CFM  
92 92% AFUE  
96 96% AFUE  
97 97.96% AFUE

MBTU/h  
040 - 40,000 BTU/h 080 - 80,000 BTU/h 120 - 120,000 BTU/h  
060 - 60,000 BTU/h 100 - 100,000 BTU/h

Minor Revision  
A - Initial Release  
B - 1st Revision

Major Revision  
A - Initial Release  
B - 1st Revision

NDx  
N - Low NOx

Cabinet Width  
B - 17.5"  
C - 21"  
D - 24.5"

Maximum CFM  
2 - 800 CFM  
3 - 1200 CFM  
4 - 1600 CFM  
5 - 2000 CFM

**ACCESSORIES**

MODEL	DESCRIPTION	GMVC96 0403BNA	GMVC96 0603BNA	GMVC96 0803BNA	GMVC96 0803CNA	GMVC96 1005CNA	GMVC96 1205DNA
CTY04	ComfortNet-compatible Control	✓	✓	✓	✓	✓	✓
EVENT-2	Concentric Vent Kit (2")	✓	✓	✓	✓	✓	✓
EVENT-3	Concentric Vent Kit (3")	✓	✓	✓	✓	✓	✓
CFSP17	Downflow Sub-Base 17.5"	—	—	—	—	—	—
CFSP21	Downflow Sub-Base 21"	—	—	—	—	—	—
CFSP24	Downflow Sub-Base 24"	—	—	—	—	—	—
RF000142	Drain Kit - Horizontal Left Vertical Flue	✓	✓	✓	✓	✓	✓
EFRO2	External Filter Rack with 16"x25" Permanent Filter	✓	✓	✓	✓	—	—
FL00000005	Flush Mount Vent Kit - 3" or 2"	✓	✓	✓	✓	✓	✓
0170K000015	Flush Mount Vent Kit - 2"	✓	✓	✓	✓	✓	✓
AFE18-60A	Fossil Fuel (Dual Fuel) Kit	✓	✓	✓	✓	✓	✓
HASFK	High-Altitude Natural Gas Kit	HASFK-1	HASFK-1	HASFK-2	HASFK-2	HASFK-3	HASFK-2
HASFK	High-Altitude LP Gas Kit	HASFK-1	HASFK-1	HASFK-2	HASFK-2	HASFK-3	HASFK-2
LPLP03	Low LP Gas Pressure Switch	✓	✓	✓	✓	✓	✓
LPM-08	LP Conversion Kits	✓	✓	✓	✓	✓	✓

SS-GMVC96 www.goodmanmfg.com 3

**PRODUCT SPECIFICATIONS**

	GMVC96 0403BNA	GMVC96 0603BNA	GMVC96 0803BNA	GMVC96 0804CNA	GMVC96 1005CNA	GMVC96 1205DNA
<b>HEATING DATA</b>						
High Fire Input <sup>1</sup>	40,000	60,000	80,000	80,000	100,000	120,000
High Fire Output <sup>1</sup>	38,400	57,600	76,800	76,800	96,000	115,200
Low Fire Steady State Input <sup>1</sup>	28,000	42,000	56,000	56,000	70,000	84,000
Low Fire Steady State Output <sup>1</sup>	26,880	40,320	53,760	53,760	67,200	80,640
AFUE <sup>2</sup>	96	96	96	96	96	96
Temperature Rise Range (°F)	20 - 50	20 - 50	35 - 65	25 - 55	35 - 65	35 - 65
Vent Diameter <sup>3</sup>	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"	2" - 3"
No. of Burners	2	3	4	4	5	6
<b>CIRCULATOR BLOWER</b>						
Available A/C @ 0.5" ESP	1.5 - 3	1.5 - 3	1.5 - 3	1.5 - 4	2 - 5	2 - 5
Size (D x W)	10" x 8"	11" x 8"	11" x 8"	11" x 10"	11" x 10"	11" x 11"
Horsepower @ 1075 RPM	1/2	3/4	1	1	1	1
Speed	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM	VS ECM
<b>ELECTRICAL DATA</b>						
Min. Circuit Ampacity <sup>4</sup>	7.8	7.8	7.8	10.6	14.4	14.4
Max. Overcurrent Device (amps) <sup>5</sup>	15	15	15	15	20	20
<b>SHIPPING WEIGHT (LBS)</b>	114	117	120	141	143	156

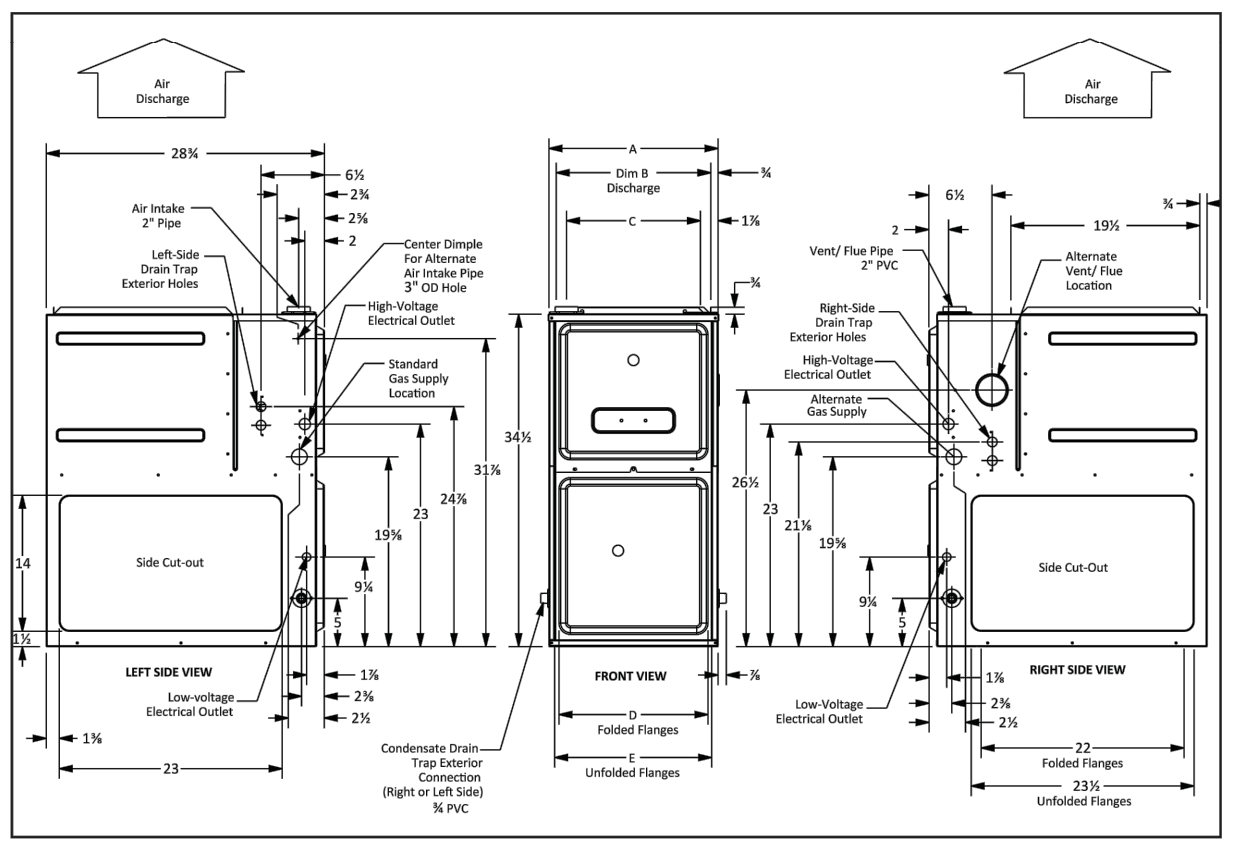
<sup>1</sup> Natural Gas BTU/h  
<sup>2</sup> DOE AFUE based upon isolated Combustion System (ICS)  
<sup>3</sup> Installer must supply one or two PVC pipes: one for combustion air (optional) and one for the flue outlet (required). Vent pipe must be either 2" or 3" in diameter, depending upon furnace size, number of elbows, length of run and installation (1 or 2 pipes). The optional Combustion Air Pipe is dependent on installation/code requirements and must be 2" or 3" diameter PVC.  
<sup>4</sup> Minimum Circuit Ampacity = (1.25 x Circulator Blower Amps) + ID Blower amps. Wire size should be determined in accordance with National Electrical Codes. Extensive wire runs will require larger wire sizes.  
<sup>5</sup> Maximum Overcurrent Protection Device refers to maximum recommended fuse or circuit breaker size. May use fuses or HACR-type circuit breakers of the same size as noted.

**NOTES**

- All furnaces are manufactured for use on 115 VAC, 60 Hz, single-phase electrical supply.
- Gas Service Connection 3/4" FPT
- Important: Size fuses and wires properly and make electrical connections in accordance with the National Electrical Code and/or all existing local codes.
- For bottom return: Failure to unfold flanges may reduce airflow by up to 18%. This could result in performance and noise issues.
- For servicing or cleaning, a 24" front clearance is required. Unit connections (electrical, flue and drain) may necessitate greater clearances than the minimum clearances listed above. In all cases, accessibility clearance must take precedence over clearances from the enclosure where accessibility clearances are greater.

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**DIMENSIONS**



MODEL	W	D	H	A	B	C	D	E
GMVC960403BNA	17 1/2"	28 1/2"	34 1/2"	17 1/2"	16"	13 1/2"	12 1/2"	13 1/2"
GMVC960603BNA	17 1/2"	28 1/2"	34 1/2"	17 1/2"	16"	13 1/2"	12 1/2"	13 1/2"
GMVC960803BNA	17 1/2"	28 1/2"	34 1/2"	17 1/2"	16"	13 1/2"	12 1/2"	13 1/2"
GMVC960804CNA	21"	28 1/2"	34 1/2"	21"	19 1/2"	17 1/2"	16"	17 1/2"
GMVC961005CNA	21"	28 1/2"	34 1/2"	21"	19 1/2"	17 1/2"	16"	17 1/2"
GMVC961205DNA	24 1/2"	28 1/2"	34 1/2"	24 1/2"	23"	20 1/2"	19 1/2"	20 1/2"

**MINIMUM CLEARANCES TO COMBUSTIBLE MATERIALS**

POSITION	SIDES	REAR	FRONT	BOTTOM	FLUE	TOP
Upflow	0"	0"	3"	C	0"	1"
Horizontal	6"	0"	3"	C	0"	6"

C = If placed on combustible floor, the floor MUST be wood ONLY.

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**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # G3G, Carpinteria CA 93014  
 +1 805 861 7390 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:  
 INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

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GENERAL ELECTRICAL NOTES	
#	DESCRIPTION
1	GENERAL CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE SUBMITTING BID.
2	ALL WORK SHALL BE DONE IN ACCORDANCE WITH 2019 NEC, AS AMENDED BY 2019 ELECTRICAL CODE, 2019 ENERGY CODE AND ANY ADDITIONAL STATE OR LOCAL CODES WHICH MAY APPLY.
3	GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, CERTIFICATES, ETC. REQUIRED.
4	GENERAL CONTRACTOR SHALL OBTAIN AND PAY FOR BOTH ROUGH AND FINAL UNDER-WRITERS OR OTHER APPROVED INSPECTION AGENCY CERTIFICATES "ELECTRICAL INSPECTION". THESE CERTIFICATES SHALL BE PRESENTED WITH REQUEST FOR FINAL PAYMENT.
5	IT IS THE INTENT OF THESE PLANS TO PROVIDE A COMPLETE OPERATING ELECTRICAL SYSTEM. THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL WIRING, EQUIPMENT, MATERIAL, ETC. REQUIRED, EXCEPT WHERE SPECIFICALLY NOTED AS BEING FURNISHED BY OTHERS. SHOULD THERE BE ANY QUESTIONS CONCERNING RESPONSIBILITY, THEY SHALL BE ADDRESSED TO ARCHITECT PRIOR TO BID. NO EXTRA CHARGES WILL BE ALLOWED.
6	ELECTRICAL SERVICE SHALL BE COORDINATED WITH THE EXISTING FIELD CONDITIONS.
7	CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO ALL CONTROLS, OWNER-SUPPLIED EQUIPMENT, MECHANICAL AND PLUMBING EQUIPMENT AS REQUIRED.
8	REFER TO ARCHITECTURAL DRAWINGS FOR ELEVATION DETAILS. ALL FIXTURE AND DEVICE LOCATIONS SHOWN ON ARCHITECTURAL DRAWINGS SUPERSEDE THOSE SHOWN ON ELECTRICAL PLANS.
9	CIRCUIT NUMBER ON THE DRAWINGS ARE FOR IDENTIFICATION ONLY AND DO NOT INDICATE THE POSITION ON PANEL BOARD. CONNECT THE CIRCUITS WITH THE LIGHTEST LOADS AND THE RECEPTACLE CIRCUITS NEAR THE TOP OF THE PANEL, AND THE MORE HEAVILY LOADED CIRCUITS NEAR THE BOTTOM. BALANCE ALL CIRCUITS EVENLY BETWEEN PHASE SO THAT FEEDER WIRES CARRY APPROXIMATELY EQUAL CURRENT. ALL PHASES MUST BE BALANCED WITHIN 10% OR LESS. G.C. SHALL REBALANCE IF NECESSARY.
10	BRANCH CIRCUIT CONDUCTOR INSULATION SHALL BE COLOR CODED AND SHALL BE 600 VOLT, TYPE THHN/THWN.
11	CABLES IN HIGH TEMPERATURE AREAS SHALL HAVE INSULATION TYPE SUITABLE FOR THE TEMPERATURE. CABLES USED IN SPACES FOR ENVIRONMENTAL AIR SHALL CONFORM WITH APPLICABLE N.E.C. REQUIREMENTS.
12	ALL WIRING USED IN RETURN OR DISCHARGE AIR PLENUMS SHALL BE PLENUM RATED OR INSTALLED PER METHODS APPROVED BY THE LATEST EDITION OF THE N.E.C. FOR SUCH APPLICATION.
13	ALL WIRE AND CABLE CONDUCTORS SHALL BE COPPER WITH INSULATION RATED 600V. CONDUCTORS SIZED #10 AWG AND SMALLER SHALL BE SOLID OR STRANDED, AND CONDUCTORS SIZED LARGER THAN #10 AWG SHALL BE STRANDED WIRE.
14	BRANCH CIRCUITS FOR POWER AND LIGHTING SHALL NOT BE LESS THAN #12 AWG. OR AS NOTED. WIRES ARE TO BE SIZED FOR THE APPROPRIATE VOLTAGE DROPS. SEE WIRE SIZE SCHEDULE ON THIS SHEET.
15	ALL DATA CABLES SHALL BE CAT6, PLENUM RATED. TO BE PROVIDED BY OWNER SELECTED VENDOR. ELECTRICAL WORK SHALL BE TO PROVIDE OUTLET BOXES AND "RING AND STRING" FOR PULLING OF CABLES IN UNSEALABLE SPACES.
16	CONTROL WIRING SHALL NOT BE LESS THAN #14 AWG UNLESS OTHERWISE NOTED.
17	HOMERUNS SHOWN ARE SCHEMATIC. CONTRACTOR MAY ORIGINATE HOMERUNS FROM DIFFERENT LOCATIONS. ALL WIRE INCLUDING HOMERUNS SHALL BE DELINEATED ON AS-BUILT DRAWINGS.
18	ALL WIRING INSTALLED UNDER THIS CONTRACT SHALL BE TESTED FOR PROPER CONNECTIONS AND SHORT CIRCUITS PRIOR TO THE TURNING OVER OF WORK AS A COMPLETE UNIT.
19	PROVIDE ALL ELECTRICAL SYSTEM GROUNDING IN ACCORDANCE WITH N.E.C. REQUIREMENTS EVEN IF IT IS NOT SHOWN ON THE DRAWINGS. INCLUDE ADDITIONAL GROUNDING CONDUCTORS IN ALL RACEWAYS EVEN THOUGH THE DRAWINGS SHOW ONLY CIRCUIT AND/OR NEUTRALS CONDUCTORS. THE PLUMBING AND PIPING SYSTEM SHALL NOT BE USED AS A GROUND. ALL TRANSFORMER NEUTRALS SHALL BE GROUNDED TO BUILDING STEEL IN ACCORDANCE WITH NEC 250-70.
20	ALL CONDUITS PASSING THROUGH PARTITIONS ARE TO BE APPROPRIATELY SLEEVED AND SEALED.
21	FURNISH AND INSTALL ALL CONDUIT WITH PULL WIRES AS REQUIRED. ALL OUTLET BOXES SHALL BE STEEL, EXTRA DEEP WITH GROUNDING PIGTAILS. GROUNDING PIGTAILS ARE NOT ACCEPTABLE.
22	ALL PENETRATIONS SHALL BE INSTALLED AND SEALED PER NATIONAL STATE AND LOCAL CODES.
23	DO NOT MAKE ANY CHANGES OR SUBSTITUTIONS WITHOUT SPECIFIC WRITTEN APPROVAL FROM THE ARCHITECT OR ENGINEER.
24	GUARANTEE ALL WORK, MATERIAL AND EQUIPMENT FOR A PERIOD OF ONE YEAR FROM THE DATE OF APPROVAL AND FINAL ACCEPTANCE.
25	THIS DESIGN IS BASED ON INITIAL DESIGN DATA. GENERAL CONTRACTOR TO SUPPLY AND INSTALL FEEDERS, FUSES AND CIRCUIT BREAKERS TO MATCH THE NAMEPLATE RATING OF ALL EQUIPMENT. THIS SHALL BE INCLUDED IN THE INITIAL BID PROPOSAL AND NO EXTRAS SHALL BE ENTERTAINED.
26	LABEL ALL JUNCTION BOXES, OUTLETS, LIGHT SWITCH, ETC. WITH CIRCUIT NUMBER ON INTERIOR OR COVER PLATE. USE SELF-ADHESIVE "DYMO" LABEL 1/8" HIGH LETTERS.
27	GENERAL CONTRACTOR SHALL PROVIDE SEISMIC RESTRAINTS AND SUPPORTS FOR ALL FLOOR, WALL, AND CEILING MOUNTED ELECTRICAL EQUIPMENT TO RESIST EARTHQUAKE EFFECTS DETERMINED IN ACCORDANCE WITH THE BUILDING CODE.
28	THE G.C. SHALL PROVIDE ALL EQUIPMENT, MATERIALS AND LABOR TO COMPLETE ALL ELECTRICAL WORK IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH GOOD COMMERCIAL PRACTICE INCLUDING THE INSTALLATION OF ALL THE EQUIPMENT MATERIALS AND SYSTEMS AND THE FINAL CONNECTIONS TO THE OWNER'S EQUIPMENT AND FIXTURES AS REQUIRED BY THE OWNER. THE G.C. SHALL ALSO FURNISH TEMPORARY WIRING AND LIGHTING TO PROVIDE A MINIMUM OF 25 FC IN WORK AREAS FOR USE OF ALL THE TRADES DURING CONSTRUCTION AND THE INSTALLATION OF THE OWNERS FIXTURES. THE G.C. IS RESPONSIBLE TO REMOVE ALL TEMPORARY WIRING UPON COMPLETION OF CONSTRUCTION OF ALL TRADES.
29	THIS CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AND INSTALL ALL SUPPLEMENTARY SUPPORT, INCLUDING SUPPORT STEEL AS REQUIRED TO HANG ALL EQUIPMENT AND LIGHTING FROM THE EXISTING STRUCTURE IN ACCORDANCE WITH THE ARCHITECTURAL/STRUCTURAL SUPPORT AND LOADING CRITERIA.
30	IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE FULLY DIMENSIONED COORDINATION DRAWINGS FOR ALL OF HIS RESPECTIVE WORK. THESE DRAWINGS MUST BE FULLY COORDINATED WITH ALL EXISTING CONDITIONS. ALL HVAC, PLUMBING, FIRE PROTECTION, ELECTRICAL, LIGHTING, STRUCTURAL AND ARCHITECTURAL SYSTEMS PRIOR TO PREPARING COMPOSITE MULTI-DISCIPLINE COORDINATION DRAWINGS.
31	ALL DISCONNECTING MEANS AND EQUIPMENT INDICATED ON THE DRAWING SHALL BE IDENTIFIED BY NAMEPLATE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE 110-22.
32	ALL WIRING FOR THE EMERGENCY LIGHTING AND EMERGENCY SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 710.
33	THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 300.

GENERAL ELECTRICAL NOTES	
#	DESCRIPTION
33	THE WIRING METHODS AND MATERIALS INDICATED IN THE SPECIFICATIONS AND ON THE DRAWINGS SHALL BE INSTALLED AND CONNECTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 300.
34	THE ELECTRICAL SERVICE AND DISTRIBUTION SYSTEM AS INDICATED ON THE RISER DIAGRAM AND MATERIALS INDICATED IN THE SPECIFICATIONS SHALL BE IN COMPLIANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE ARTICLE 230, SERVICES.
35	ALL OVER CURRENT PROTECTION SHALL BE IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE SECTION 240, OVERCURRENT PROTECTION.
36	ALL GROUNDING REQUIREMENTS OF THE COMPLETE ELECTRICAL DISTRIBUTION SYSTEM AND AS INDICATED IN THE SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 250, GROUNDING AND BONDING.
37	PRIOR TO ANY REQUIRED CUTTING AND PATCHING OF CONCRETE FLOOR AND/OR CUTTING OF ROOF, CONTRACTOR SHALL COORDINATE WITH BUILDING ENGINEER.
38	FOR ALL LIGHTING FIXTURES MOUNTED IN HUNG CEILING THE GENERAL CONTRACTOR SHALL PROVIDE AND INSTALL INDIVIDUAL SUPPORT AT EACH CORNER OF RECESSED LIGHTING TRAFFER CONNECTED TO BUILDING STEEL ABOVE ALL CONDUIT AND MC CABLE MOUNTED ABOVE HUNG CEILING SHALL BE INDIVIDUALLY SUPPORTED IN THE SAME FASHION AS PER NEC REQUIREMENTS.
39	DO NOT SCALE FROM THESE DRAWINGS.
40	PLANS ARE PREPARED WITH REQUIRED BRANCH CIRCUITS INDICATED BY CIRCUIT NUMBERS. PROVIDE AND INSTALL ALL CONDUITS, CONDUCTORS, BOXES, MISCELLANEOUS FITTINGS, ETC. FOR A COMPLETE AND OPERABLE SYSTEM (HOME RUN SHOWN). BRANCH CIRCUIT INSTALLATION SHALL COMPLY WITH SPECIFICATIONS AND N.E.C.
41	ELECTRICAL RECEPTACLE, SWITCH AND CONTROL HEIGHTS (CBC-1136A.1): ELECTRICAL RECEPTACLE OUTLETS ON BRANCH CIRCUITS OF 30 AMPERES OR LESS AND COMMUNICATION SYSTEM RECEPTACLES SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE RECEPTACLE OUTLET BOX OR RECEPTACLE HOUSING TO THE LEVEL OF FINISHED FLOOR OR WORKING PLATFORM IF THE REACH IS OVER AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT MEASURED AT THE BOX IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. OBSTRUCTION SHALL NOT EXCEED MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH THE RECEPTACLE.
42	SWITCH AND CONTROL HEIGHTS: (CBC 1136A.2) CONTROL OR SWITCHES INTENDED TO BE USED BY THE OCCUPANT OF THE ROOM OR AREA TO CONTROL LIGHTING AND RECEPTACLE OUTLETS, APPLIANCES, ALARMS OR COOLING, HEATING AND VENTILATING EQUIPMENT SHALL BE LOCATED NO MORE THAN 48 INCHES (1219MM) MEASURED FROM THE TOP OF THE OUTLET BOX NOR LESS THAN 15 INCHES (381MM) MEASURED FROM THE BOTTOM OF THE OUTLET BOX TO THE LEVEL OF THE FINISHED FLOOR OR WORKING PLATFORM IF THE REACH IS OVER A PHYSICAL BARRIER OR AN OBSTRUCTION (FOR EXAMPLE, A KITCHEN BASE CABINET) BETWEEN 20 AND 25 INCHES (508 AND 635MM) IN DEPTH, THE MAXIMUM HEIGHT IS REDUCED TO 44 INCHES (1118MM) FOR FORWARD APPROACH, OR 46 INCHES (1168MM) FOR SIDE APPROACH, PROVIDED THE OBSTRUCTION IS NO MORE THAN 24 INCHES (610MM) IN DEPTH. PHYSICAL BARRIERS OR OBSTRUCTIONS SHALL NOT EXCEED MORE THAN 25 INCHES (635MM) FROM THE WALL BENEATH A CONTROL.

LIGHTING FIXTURE SCHEDULE							
Type	Symbol	Type Location Description	Mfg Catalog #	Lamps	Watts	Voltage	Notes
L1		Ceiling Recessed led (6" round)	*Lithonia Ltg' LDNG 40/05 LD6AR LD	LED	20W	120/277V	New dimmable lighting fixture
L1E		Ceiling Recessed led	*Lithonia Ltg' LDNG 40/05 LD6AR LD	LED	20W	120/277V	New dimmable EM lighting fixture
L2		Surface mnt. explosion proof lighting fixture	*Larson Electronics' EPL-48-2L-LED	LED	20W	120/277V	New dimmable lighting fixture
EX		Wall mounted Emergency EXIT SIGN (Single head)	Similar to *Lithonia Lighting' LE S 1 SD	LED	2W	120/277V	New EM SIGN lighting fixture
L3		Wall mounted HIGH EFFICIENCY	*Lithonia Ltg' FMABFL 14 20840 F20	LED	20W	120/277V	New dimmable lighting fixture
L4		Wall Mounted Bath Bar High Efficiency	*Lithonia Ltg' FM_FLIT_24 840 BN	LED	25W	120/277V	New dimmable lighting fixture
L5		Ceiling Mounted Strip Light High Efficiency	*Lithonia Ltg' CSS T48 MVDLT 40K 80CRI CCS	LED	35.3W	120/277V	New dimmable lighting fixture
L6		Under Cabinet Strip Light High Efficiency	*Lithonia Ltg' UCB 17 120 SWR	LED	17W	120/277V	New dimmable lighting fixture
L7		Outdoor Lighting	*Lithonia Ltg' TWRI LED ALD 40K DBBTXD	LED	16W	120/277V	New dimmable lighting fixture
N		Exhaust Fan w/Light	QTXE110C		31.4W		

ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
\$	SINGLE POLE SWITCH AND BOX, WALL MOUNTED +44" AFF. LOWER CASE LETTER INDICATES CIRCUIT CONTROLLED BY SWITCH.
	WALL MOUNTED DIMMER SWITCH, 0-10V DIMMING WITH ON-OFF SWITCH.
\$LV	WALL MOUNTED 3 WAY ON, CENTER OFF LOW VOLTAGE SWITCH FOR LCP CONTROLLER LIGHTS.
	RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +18" AFF U.O.N. (WP=WEATHERPROOF, GF=GROUND FAULT CIRCUIT INTERRUPTER)
	DEDICATE RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +18" AFF U.O.N. (WP=WEATHERPROOF, GF=GROUND FAULT CIRCUIT INTERRUPTER)
	USB RECEPTACLE, DUPLEX 20A, 120V GRD, NEMA 5-20R +42" AFF U.O.N.
	RECEPTACLE, SINGLE, 20A, 120V GRD, NEMA 5-20R +18" AFF UON.
	RECEPTACLE, DOUBLE DUPLEX (2) 20A, 120V, GRD - NEMA (2) 5-20R +18" AFF U.O.N.
	RECEPTACLE DOUBLE DUPLEX 20A, 120V GRD NEMA 5-20R FLOOR MOUNTED.
	RECEPTACLE DOUBLE DUPLEX (2) 20A, 120V GRD, NEMA 5-20R MOUNTED.
	2 PORT VOICE/ DATA OUTLET, WALL MOUNT +18" AFF PROVIDE RING & STRING TO PULL CABLES THRU HOLLOW WALL VOICE/ DATA WIRING BY TELECOM SYSTEM INSTALLER.
	TV OUTLET, WALL MOUNT +60" AFF PROVIDE RING & STRING TO PULL CABLES THRU HOLLOW WALL.
	COMBINATION 4-PLEX RECEPTACLE, NEMA 5-20R DOUBLE DUPLEX (1) DUPLEX AUTO CONTROLLED BY OCCUPANCY SENSOR PER T24, (1) DUPLEX UNCONTROLLED), & TYPE 6 VOICE/DATA OUTLET, FLOOR MOUNTED. PROVIDE MIN. 3/4" TEL/DATA CONDUIT WITH PULL WIRES.
	4-PLEX RECEPTACLE, NEMA 5-20R DOUBLE DUPLEX (1) DUPLEX AUTO CONTROLLED BY OCCUPANCY SENSOR PER T24, (1) DUPLEX UNCONTROLLED), +18" AFF, U.O.N. SEE NOTE 2.
	DUPLEX RECEPTACLE, NEMA 5-20R OCCUPANCY SENSOR CONTROLLED, +18" AFF. SEE NOTE 2.
	GFCI DUPLEX RECEPTACLE ABOVE COUNTER LEVEL, NEMA 5-20R.
	GFCI DUPLEX RECEPTACLE ABOVE COUNTER LEVEL, VACANCY SENSOR CONTROLLED, NEMA 5-20R.
	SPECIAL PURPOSE CONNECTION FOR ELECTRICAL EQUIPMENT. VERIFY CONNECTION TYPE AND WIRING REQUIREMENTS PRIOR TO ROUGH-IN.
	CLASS 1, DIVISION 1 RATED EXPLOSION-PROOF OUTLET. SEE ADDITIONAL NOTES ON SHEET E3.1.
	RECEPTACLE, 120V/240V, 3PH, 4W, GRD, RATING AS INDICATED IN PLANS.
	RECEPTACLE 20A, 480V, 3PH, 4W, GRD, NEMA L22-20R, +18" AFF UON.
	DUPLEX RECEPTACLE 20A, 120V, GND (5-20R U.O.N.), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END.
	DOUBLE DUPLEX RECEPTACLE 20A, 120V, GND (5-20R U.O.N.), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END.
	TWIST-LOCK RECEPTACLE 20, 250V, SINGLE PHASE (L6-20R U.O.N.), SUSPENDED BY TYPE S.O. CORD WITH GRIPS AT EACH END.
	OCCUPANCY SENSOR LOW VOLTAGE CEILING MOUNTED FOR ROOM CONTROLLER.
	OCCUPANCY SENSOR LOW VOLTAGE WALL MOUNTED FOR ROOM CONTROLLER.
	CEILING MOUNTED DAYLIGHT SENSOR.
	JUNCTION BOX CEILING MOUNTED, SIZE TO CODE, TAPE AND TAG WIRES.
	JUNCTION BOX WALL MOUNTED, SIZE TO CODE, TAPE AND TAG WIRES.
	ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED (277/480V).
	ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED (120/208V).
	SPECIAL PURPOSE ELECTRICAL PANELBOARD, SURFACE OR FLUSH MOUNTED.
	TRANSFORMER - DRY TYPE.
	FUSED DISCONNECT SWITCH WITH DUAL ELEMENT FUSES. SWITCH AND FUSES RATING PER NAMEPLATE OF SERVED UNIT.
	NON-FUSED DISCONNECT SWITCH, RATING PER NAMEPLATE OF SERVED UNIT.
	MAGNETIC MOTOR STARTER, NEMA RATING AS REQUIRED PER SERVED UNIT.
	WALL MOUNTED JUNCTION BOX FOR PRE-WIRED FURNITURE POWER SYSTEM CONNECTION. PROVIDE POWER WHP WITH TERMINATION PLUS TO MATCH FURNITURE SYSTEM CONNECTOR. LOCATE BOX AS LOW AS POSSIBLE. FIELD COORDINATE FINAL LOCATION.
	COMBINATION TELEPHONE AND DATA OUTLET, WALL MOUNTED AS LOW AS POSSIBLE FOR FLEXIBLE CONNECTION TO FURNITURE SYSTEM.
	FLOOR MOUNTED FURNITURE FEEDS W/POWER & TELE/DATA PORT CAPACITY FOR ELECTRIFIED DESKS PER CLIENT'S REQUIREMENTS.
	POWER POLES W/POWER & TELE/DATA PORT CAPACITY FOR ELECTRIFIED DESKS PER CLIENT'S REQUIREMENTS.
	Smoke Detector
	Carbon Monoxide Detector
<b>LEGEND NOTES:</b> 1. MOUNTING HEIGHT INDICATED ARE AFF TO CENTER OF PLATE. IN CASE OF CONFLICT, GENERAL NOTES 41 & 42 SHALL PREVAIL. 2. NOT ALL SYMBOLS AND ABBREVIATIONS ARE NECESSARILY USED IN THIS PROJECT.	

WIRE SCHEDULE AND NOTES					
LOAD PER PH (KVA)	WIRE SIZE (AWG)	MAXIMUM LENGTH OF BRANCH CIRCUIT PER UTILIZATION VOLTAGE	NOTES AND REMARKS		
< 1.92	#12	56 FT	85 FT	98 FT	5
	#10	94 FT	141 FT	163 FT	5
	#8	144 FT	217 FT	250 FT	5
< 1.44	#6	230 FT	345 FT	398 FT	5
	#12	75 FT	113 FT	130 FT	5
	#10	125 FT	188 FT	217 FT	5
< 1.26	#8	192 FT	289 FT	334 FT	5
	#6	306 FT	460 FT	531 FT	5
	#12	86 FT	129 FT	149 FT	5
< 1.08	#10	143 FT	215 FT	248 FT	5
	#8	220 FT	330 FT	381 FT	5
	#12	100 FT	150 FT	173 FT	5
< 0.9	#10	167 FT	250 FT	289 FT	5
	#8	256 FT	385 FT	445 FT	5
	#12	120 FT	180 FT	240 FT	5
< 0.72	#10	200 FT	300 FT	347 FT	5
	#12	150 FT	225 FT	260 FT	5
	#10	250 FT	375 FT	434 FT	5

ABBREVIATIONS AND TAGS			
ABB.	DESCRIPTION	ABB.	DESCRIPTION
EMH	ELECTRIC WATER HEATER	SD	SMOKE DETECTOR
(E)	EXISTING TO REMAIN	TEL	TELEPHONE
EC	ELECTRICAL CONTRACTOR	TX	TRANSFORMER
FA	FIRE ALARM	TV	TELEVISION
FMT	FLEXIBLE METALLIC TUBING	UAC	UNDER ANOTHER CONTRACT
GC	GENERAL CONTRACTOR	UAS	UNDER ANOTHER SECTION
GF1	GROUND FAULT INTERRUPTER	UON	UNLESS OTHERWISE NOTED
IG	ISOLATED GROUND	V.D.	VOLTAGE DROP
LL	LANDLORD	W	WIRE
LV	LOW VOLTAGE	WP	WEATHERPROOF
	MECHANICAL DRAWING TAG. SEE MECHANICAL DRAWINGS FOR ADDITIONAL DESCRIPTION.		DETAIL TAG. REFER TO DETAIL 4 ON SHEET NUMBER E-4.

ELECTRICAL DRAWING SCHEDULE	
#	TITLE
E1.0	ELECTRICAL LEGEND, NOTES, SCHEDULES & ABBREVIATIONS
E2.0	ELECTRICAL SPECIFICATIONS
E3.0	ELECTRICAL PLANS
E4.0	SINGLE LINE DIAGRAM AND PANEL SCHEDULES

**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 481 7380 info@pixelarch.com  
 www.pixelarch.com

Project Name and Address:  
**INTERIOR REMODEL FOR  
 PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

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ELECTRICAL SPECIFICATIONS

PART 1	GENERAL	PART 2	PRODUCTS	PART 2	PRODUCTS	PART 3	EXECUTION										
1.01	<p><b>SCOPE OF WORK:</b> Furnish and install all materials and equipment and provide all labor, tools, transportation, superintendence and services required and necessary to complete the work shown on the drawings and/or specified herein. Also include all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation.</p> <p><b>REGULATORY REQUIREMENTS:</b> Code compliance is mandatory. Nothing in these Drawings and Specifications work not conforming to these codes, where work is shown to exceed minimum code requirements, comply with drawings and specifications. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to the following: 1. Occupational Safety and Health Act Standards (OSHA). 2. NFPA #70: National Electric Code (NEC), California Electrical Code (CEC). 3. NFPA #101: Life Safety Code. 4. State Fire Marshal. 5. Local Utilities Companies.</p> <p><b>LICENSE, FEES AND PERMITS:</b> Electrical contractor shall pay for all licenses, permits and inspection fees required by the authority having jurisdiction and shall arrange for all required inspections.</p> <p><b>SAFETY AND INDEMNITY:</b> The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of work. This requirement will apply continuously and not be limited to normal working hours. No act, service, drawing review or construction review by the Owner, the Engineers or their Consultants, is intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.</p> <p><b>DRAWINGS AND SPECIFICATIONS:</b> All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Specific direct routing of conduits and wiring is not assured. Exact requirements shall be governed by conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitate by such conditions shall be included in the bid.</p> <p><b>CONDITIONS AT SITE:</b> The electrical contractor shall have examined the site and familiarized themselves with all discernible existing conditions. No extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.</p> <p><b>WORKMANSHIP AND CONTRACTOR'S QUALIFICATIONS:</b> Only quality workmanship will be accepted. Haphazard or poor installation will be cause for rejection of work.</p> <p><b>SHOP DRAWINGS AND MATERIALS LISTS:</b> Submit to Owner in a single package six (6) copies of complete shop drawings and materials list, as noted below, for review within fifteen (15) days after award of contract. Submittals required as follows: 1. Wiring devices: switches, receptacles, device plates. 2. Enclosures for utility company metering. 3. Main fused disconnect switch. 4. Panelboards. 5. Disconnect switches. 6. Lighting fixtures, lamps and lighting control equipment.</p> <p><b>SUBSTITUTIONS:</b> One or more makes of materials or methods may have been specified to establish the standard of quality, workmanship, finish and design required, but other materials or methods equal in quality, workmanship, finish, design, and guaranteed performance, will be accepted. However, all changes and substitutions shall be requested in letter form and shall be accompanied with a statement of the amount of money to be returned to the contractor if the substitution is permitted. No work involving materials submitted for substitution shall proceed until written acceptance is received from the Owner. The Owner is the sole judge of acceptability of preferred substitutions. If a substitution item is permitted, and any re-design effort is thereby necessitated, the required redesign shall be at the Contractor's expense.</p> <p><b>COORDINATION:</b> Coordinate work with other trades to avoid conflict and to provide correct rough-in and connection for equipment furnished under other trades that require electrical connections. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain service ability and code compliance. Verify equipment dimensions and requirements with provisions specified under this Section. Check actual job conditions before fabricating work. Report necessary changes in time to prevent needless work. Changes or additions, subject to additional compensation, which are made without written authorization and an agreed price, shall be at the Contractor's risk and expense.</p> <p><b>CUTTING AND PATCHING:</b> All cutting and patching required for work of this Division is included herein. Coordination with General Contractor and other trades is imperative. Contractor shall bear the responsibility for and the added expense of adjusting for improper holes, supports, etc.</p> <p><b>ACCEPTANCE DEMONSTRATION:</b> Upon completion of the work, at a time to be designated by the Owner, the Contractor shall demonstrate for the Owner the operation of the electrical installation, including any and all special items installed by him or installed under his supervision. Properly set automatic time switches to perform switching operations in accordance with schedules provided by the Owner's representative, and demonstrate (using the manufacturer's operating instructions) how to override and/or test time switches programming.</p> <p><b>RECORD DRAWINGS, EQUIPMENT DATA:</b> Maintain one set of clean working drawings at the job site and enter daily such "as-built" information as feeder and service routes, pull box locations and changes in layout or arrangement which occur during construction. Deliver completed drawings to the Owner. Deliver to the Owner's representative three copies of data sheets or other current manufacturers' publications for each item of electrical equipment furnished for the project including at least these data: 1. Technical description and replaceable parts list. 2. Physical description and installation instructions. 3. Main fused disconnect switch. 4. Manufacturer's Warranty.</p> <p><b>CLEAN-UP:</b> Rid the premises of scrap materials, trash and debris both during construction and at completion of the project. Leave the building and surrounding area in a clean and orderly condition.</p> <p><b>GUARANTEE:</b> Guarantee the installation free from defects of workmanship and materials for a period of one year after Date of Certification of final payment and promptly remedy any defects developing during this period, without charge.</p> <p><b>TEMPORARY SERVICES:</b> Provide adequate and safe temporary electrical power and lighting throughout the construction and finishing of the premises. In addition to special or unusual requirements, provide at least these items: 1. Three 20-amp circuits for construction power tools. Provide GFI temporary circuits with coverplates to meet OSHA requirements. 2. Three or more light strings suspended approximately one foot below the height of finish ceiling with lamps spaced not more than twelve feet on centers. Strings shall be run the length of the store space parallel to the demising walls, with one string within eight feet of each wall and one (or more) intermediate string(s) arranged to limit the spacing between rows to sixteen feet or less. 3. Flood lighting and task lighting for painting and other finish work. When permanent electrical service is operable, disconnect and remove from the premises the materials and equipment used for temporary power and lighting, and restore modifications and repair damage caused by the installation, use or removal of temporary service provisions.</p>	2.01	<p><b>MATERIAL APPROVAL:</b> All materials must be new and bear Underwriter's Laboratories label. Materials that are not covered by UL testing standards shall be tested and approved by an independent testing laboratory or a governmental agency. Material not in accordance with these specifications may be rejected either before or after installation.</p> <p><b>CONDUITS AND OTHER RACEWAYS:</b> A. Rigid Steel: Hot-dipped galvanized. B. Intermediate Metal Conduit (IMC): Hot-dipped galvanized. C. Electrical Metallic Tubing (EMT): Electro-galvanized. D. Wireway: Code gauge steel, with knockouts and hinged cover, corrosion resistant gray baked enamel finish. E. Provide fittings and accessories approved for the purpose equal in all respects to the conduit or raceway. EMT connectors and couplings shall be steel setscrew type indoors and steel compression type in wet locations and outdoors.</p> <p><b>WIRES AND CABLES:</b> A. For power and lighting system 600V or less: 1. Conductor: minimum size #12 AWG. a. #12 and #10 AWG solid copper. b. #8 AWG and larger shall be stranded copper. 2. Insulation type: a. #12 to #1 AWG: THHN for wet or underground and THHN for dry locations. b. #1/0 through #4/0 AWG: XHHW (55 mils). c. #250 MCM and larger: XHHW (65 mils). d. Grounding wire: TW. B. For signs and communications circuit: 1. Special cables shall be as specified on drawings. 2. Conductors for general use shall be stranded copper conductor, #16 AWG minimum, with THHN insulation for underground or wet locations and THHN insulation for dry locations. C. Acceptable Products: General Electric, Anacoona, Okonite, Paronite or Triangle products conforming or exceeding applicable IPCEA standards.</p> <p><b>OUTLET BOXES, JUNCTION AND PULL BOXES:</b> A. Outlet boxes: 4" square x 1-1/2" deep (or larger) galvanized sheet steel NO-type with plaster ring and cover for general interior use and cast metal type FS or FD with matching screw covers for exterior and exposed interior locations (gasketed in damp or wet locations). B. Junction boxes shall be some as outlet boxes up to 42 cu. in. and code gauge sizes with surface or flush type screw or fixture. Slatelock or Ideol. For wire size #6 AWG and larger: T &amp; B or equivalent compression type with 3M #33+ or Plymouth "Slipknot Grey" tape insulation. C. Pull boxes shall be some as junction boxes unless indicated otherwise on the drawings, with covers. D. Telephone outlet boxes shall be the type and size required by the serving telephone company but not smaller than 4-11/16" square x 2-1/8" deep with single-gang ring and Sierra #5-754N split plate bushing.</p> <p><b>WRING DEVICES AND PLATES:</b> Wiring devices and plates shall be by Pass and Seymour or approved equal. 1. Standard design: a. Switch and receptacles devices shall be plastic bodies, color per architect. b. Wall plates shall be metal type 430, stainless steel, color per architect. c. Isolated ground receptacles shall be white with orange triangle as required per NEC, manufactured by "Leviton" # 5362-IGW or approved equal.</p> <p><b>CONDUIT HANGERS:</b> For individual conduit runs not directly fastened to the structure, use rod hangers manufactured by Caddy, Unistrut or Powerstrut. For multiple conduit runs, use Unistrut or Powerstrut trapeze type conduit support designed for maximum deflection not greater than 1/8".</p> <p><b>WIRE CONNECTORS:</b> For wire sizes #8 AWG and smaller: Insulated pressure type (with live spring) rated 105 degrees C, 600V, for building wiring and 1000V, for signs or fixtures. Slatelock or Ideol. For wire size #6 AWG and larger: T &amp; B or equivalent compression type with 3M #33+ or Plymouth "Slipknot Grey" tape insulation.</p> <p><b>PANELBOARDS:</b> A. Construction: Cabinets shall be of code gauge, galvanized steel, surface or flush mounted as indicated. Doors shall be of cold-rolled steel with concealed hinges and flush catch and lock. All panels shall be keyed alike. Panels located adjacent to each other shall have identically sized enclosure and trim. Minimum panel width shall be 20". Finish exposed part with one coat of primer and one coat of light grey enamel suitable for overpainting in field if desired. B. Bus Bars: Provide ground block with full complement of terminals in addition to insulated neutral bus. Future breaker spaces shall have complete provision including busses and connecting hardware. C. Manufacturers: Panelboards shall be General Electric Type "AQ" or type "AE" or equivalent products of Eaton, Cutler-Hammer, Square D or Siemens-ITE. D. Circuit Breakers: Shall be quick-make, quick-break, molded case type: 1. 120/240 Volt Panels: Shall be General Electric Type "Q" line, bolt-on type, with minimum symmetrical interrupting capacity as shown. 2. Provide multi-pole units with common trip element. 3. Circuit breakers used on "ON-OFF" control of fluorescent lighting (panelboard switching) shall be Underwriters' Laboratories listed and marked "SMD" to indicate their suitability. E. Identification: Provide screw-on (no adhesives) bakelite or photo-etched metallic nameplate identification on outside of each panel showing panel designation, voltage and phase in minimum 1/4" high letters. Each panel shall contain a metal-framed circuit directory inside cover, with plastic protector. Complete shop drawings are required. See Article 1.08.</p> <p><b>INDIVIDUALLY MOUNTED MOTOR CONTROLLERS:</b> A. For Polyphase Motors: Combination motor circuit protector and magnetic starter, with 3-leg overload protection. Provide two interlock contacts of the interchangeable open-close type. Provide hand-off-automatic selector switch, motor running pilot light and reset button in cover. Circuits 300V and over shall be provided with 120V control transformers. B. Starters for fractional horsepower 120V motors shall be manual type unless shown otherwise, equipped with built-in overload protection. C. Acceptable manufacturers: General Electric, Siemens, Square D, Eaton, and Allen Bradley.</p> <p><b>LIGHTING:</b> A. Furnish and install all fixtures complete, including lamps and ballast ready for service. B. Supports: Proper supports and mounting accessories, such as hangers, stems, yokes, plaster frames, etc. shall be provided as required by the type of ceiling installed. Where swivel canopies or ball aligners are specified, they shall cause fixture to hang plumb regardless of ceiling slope. C. Fixture Designation: Fixture types are designated on drawings. Where only one fixture designation is shown, it applies to all fixtures in that room or area. For exact fixture count and location refer to reflected ceiling plan.</p> <p><b>MISCELLANEOUS MATERIALS:</b> A: Safety Switches: Heavy duty type, 600V, horsepower rated for motors, fused or non-fused as required. Mount in enclosure with NEMA rating as required for the specific application General Electric, Square D or Eaton.</p>	2.02	<p><b>DRY TYPE TRANSFORMERS:</b> General: Equipment shall conform to or exceed requirements of NEMA, ANSI Standard C89.2 for Dry Type Transformers for General Applications. Acceptable products are those of General Electric Company's "QL" Line or equivalent Square D, Siemens-ITE, or Eaton. Electrical Ratings: 1. Secondary windings voltage: 480Y/277V Volts, 3-Phase, WYE Grounded. Primary windings voltage: 208Y/120V Volts, 3-Phase. Frequency: 60 Hz. KVA rating: As shown on drawings. Taps: Six (6) 2.5% full capacity taps: 2 above and 4 below, rated voltage. Impedance: For transformers larger than 75 KVA, 4.5% minimum, 5.75% maximum. 2. Winding temperature rise shall be 150 degrees Centigrade in accordance with UL Specification Article 506. 3. Transformer shall be capable of operating at 100% of nameplate rating continuously while in an ambient temperature not exceeding 40 degrees Centigrade. 4. Transformer shall meet the daily overload requirements of ANSI Standard C57.96. Vibration Isolation, Factory-Installed: Provide neoprene rubber pads to isolate core and coil assembly from transformer enclosure. Installation: 1. Anchor transformer securely with minimum 1/2" diameter bolts. Strength of bolts used to secure the transformer shall be sufficient to resist shear and uplift produced by force equal to 1/2 of the equipment mass applied horizontally at center of gravity. 2. Provide 1" thick high resiliency pads to isolate transformer from floor or platform. Korfund "Elasto Rib" or equivalent. 3. Use flexible conduits at least 24" long for electrical connections. 4. Provide grounding of each transformer secondary including all conduits, wires, and conductors in accordance with NEC 250-26 and any local additional regulations.</p>	2.12	<p><b>EXECUTION</b></p> <p><b>GENERAL:</b> A: Electric system layouts indicated on the drawings are generally diagrammatic and shall be followed as closely as actual construction and work of other trades will permit. Govern exact routing of cable and wiring and the locations of outlets by the structure and equipment served. Take all dimensions from architectural drawings. B. Consult all other drawings, verify scales and report any dimensional discrepancies or other conflicts with Owner before submitting bid. C. All home runs to panelboards are indicated as starting from the outlet nearest the panel and continuing in the general direction of that panel. Continue such circuits to the panel as though the routes were completely indicated. Terminate homeruns of signal, alarm, and communication systems in a similar manner. D. Avoid cutting and boring holes through structure or structural members wherever possible. Obtain prior approval of Owner and conform to all structural requirements when cutting or boring the structure is necessary and permitted. Furnish and install all necessary hardware, hangers, blocking, brackets, bracing, runners, etc. required for equipment specified under this Section. E. Provide necessary backing required to insure rigid mounting of outlet boxes.</p> <p><b>WRING METHODS:</b> A. Install all wiring in raceway or use MC cable. Where approved by all Applicable codes, conduit shall be rigid steel, IMC or EMT as follows: 1. Above ground: Use rigid steel, IMC or EMT. a. Wet locations: Rigid steel or IMC only. b. Locations subject to mechanical injury: Rigid steel or IMC only. c. Dry locations and not subject to mechanical injury: EMT, IMC or rigid steel conduit. 2. Underground: Use rigid steel. B. Use flexible conduits in the following applications: 1. Recessed lighting fixtures. 2. Motor connections. 3. At building joints. 4. At wet locations, flexible conduit shall be liquid tight type.</p> <p><b>INSTALLATION OF CONDUITS:</b> A. General: 1. Run all conduit concealed unless otherwise noted or shown. 2. Run all conduit parallel to or at right angles to center lines of columns and beams. 3. Conduits above ceilings shall not obstruct removal of ceiling tiles, lighting fixtures, air diffusers, etc. 4. Conduits shall not cross any duct shaft or area designated as future duct shaft horizontally. Conduit risers when allowed in duct shaft must be coordinated with Mechanical work to avoid any conflict. B. Conduit Supports: 1. Support conduits with Underwriter's Laboratories listed steel conduit supports at intervals required by the National Electric Code. Wires or sheet metal strips are not acceptable for conduit support. Use conduit hangers for all conduits not directly fastened to structure and for all multiple conduit runs. Do not attach any conduit to mechanical ducts or pipes. 2. Individual conduits 1/2" and 3/4" size for lighting may be supported from ceiling support wires with Caddy clips only if acceptable to local code. Only one conduit is permitted to be attached to any ceiling support wire. Hang such conduit so as not to effect level of ceiling. 3. Avoid attaching conduit to fan plenums. When it is necessary to support conduit from fan plenum, provide a length of flexible conduit between portion attached fan plenum and portion attached to the building to minimize transmission of vibration to the building structure.</p> <p><b>CONNECTIONS TO EQUIPMENT:</b> A. General: 1. Furnish and install required power supply conduit and wiring to all equipment. See below for other wiring required. 2. Furnish and install a disconnect switch immediately ahead of and adjacent to each magnetic motor starter or appliance unless the motor appliance is located adjacent and within sight of the serving panelboard, circuit breaker or switch. Verify all equipment nameplate current ratings prior to installation. 3. Install all rough-in work for equipment from approved shop drawings to suit the specific requirements of the equipment. 4. Furnish and install manual thermal protection for all motors not integrally equipped with thermal protection. 5. Furnish 120 Volt power to each control panel and time switch requiring a source of power to operate.</p> <p><b>WIRE COLOR CODE:</b> Color coding shall be continuous for wire #12 through #10 AWG. Phase conductors #8 and larger and nonconductors of any size in cable assemblies may have colored phasing tape at terminations. Color code wires as follows: Voltage Phase A Phase B Phase C Neutral Ground 120/208V Black Blue Red White Green 277/480V Brown Orange Yellow Gray Green</p>	3.01	<p><b>EXECUTION</b></p> <p><b>GENERAL:</b> A. Existing electrical wiring which will not be made obsolete and which will be disturbed due to construction changes required by this contract shall be restored to operating condition. Where construction changes require, outlets and conduit runs shall be relocated. B. Existing conduits and pull in new wiring or install junction boxes and splice in new wiring. C. Outlets from which fixtures, switches, receptacles, and/or other electrical devices are moved and which are not replaced or reused shall be removed, where outlets boxes, etc., are completely removed, the contractor shall cut off conduits and remove wiring. D. Where conduits extending through floors are to be abandoned, the contractor shall cut and cap or plug conduit, and the conduit shall not protrude above the floor. E. Where existing conduit is to be abandoned, the conduit shall be removed if it is exposed, in a crawl space or in accessible ceiling. F. Where it is impossible to remove the conduit, it shall be cut off and capped or plugged. G. Remove all existing wiring not reused or required to maintain continuity circuits to remain. H. The contractor shall be held fully responsible for the proper restoration of all existing surfaces requiring patching, plastering, painting and/or other repairs due to the installation of electrical work under the terms of this specification. Close all openings, repair all surfaces, etc., as required. I. Maintain circuit continuity to areas outside of this work. Provide new conduit and conductors as required to maintain continuity and maintain area as existing.</p> <p><b>GROUNDING:</b> A. Electrical service and separately derived alternating current system shall be grounded in accordance with NEC Article 250-3 to 250-26, inclusive. B. Ground non-current carrying metal parts of electrical equipment enclosures, frames, conductor raceways or cable trays to provide a low impedance path for line-to-ground fault current and to bond all non-current carrying metal parts together. Provide ground conductor in each raceway system in addition to conductors shown. C. Equipment ground conductor shall be electrically and mechanically continuous from the electrical circuit source to the equipment to be grounded. Size ground conductors per NEC Article 250-95 unless larger conductors are shown on drawings. D. Grounding conductors shall be identified with green insulation. Where green insulation is not available on larger sizes, black insulation shall be used and suitable identified with green tape at each junction box or device enclosure.</p> <p><b>END OF SECTION</b></p>	3.02	<p><b>EXECUTION</b></p> <p><b>GENERAL:</b> A. 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**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 481 7390 info@pixelarch.com  
 www.pixelarch.com

Project Name and Address:  
 INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:  
**APRIL 28, 2021**  
 Scale:

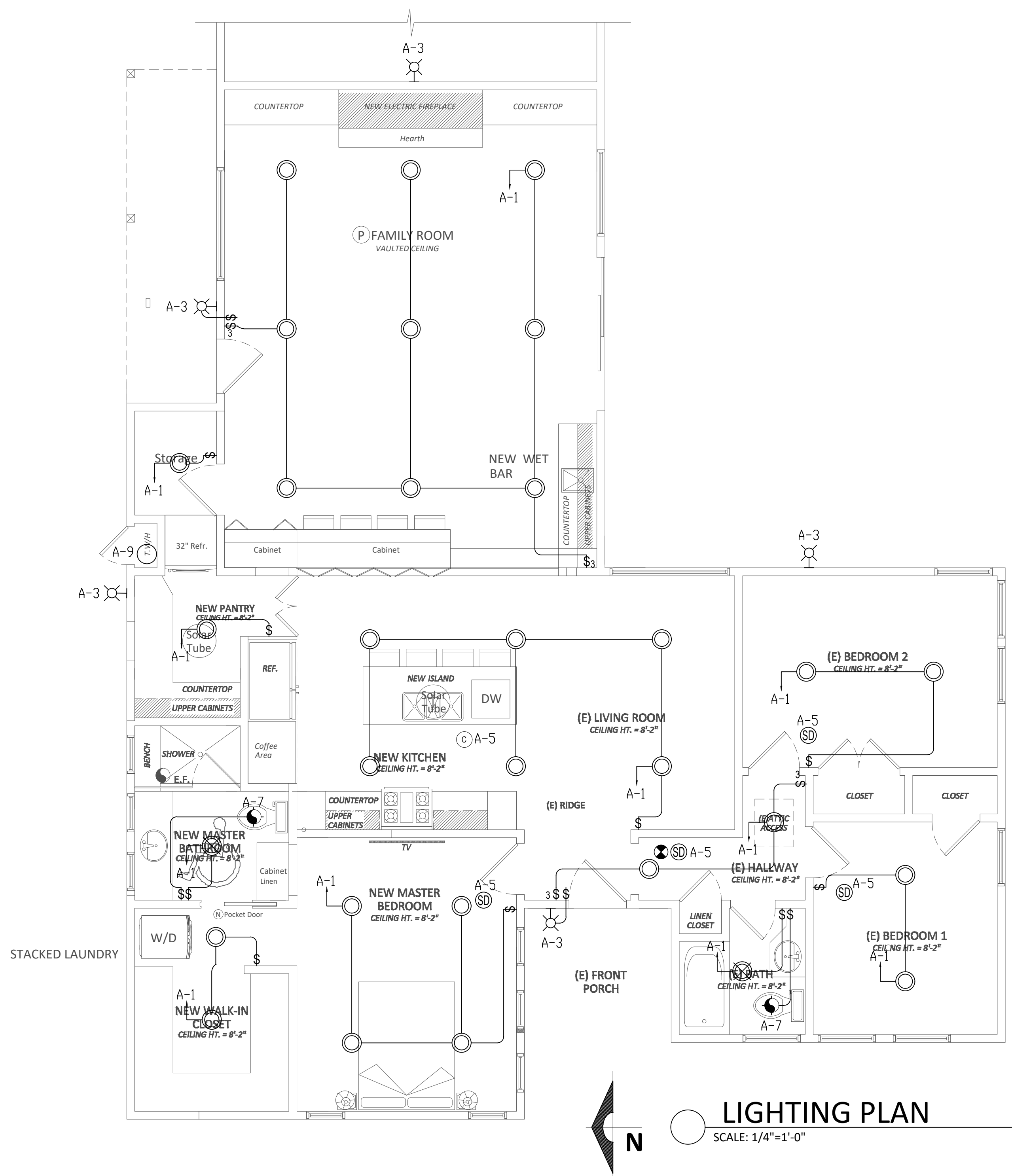
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**ELECTRICAL SPECS**

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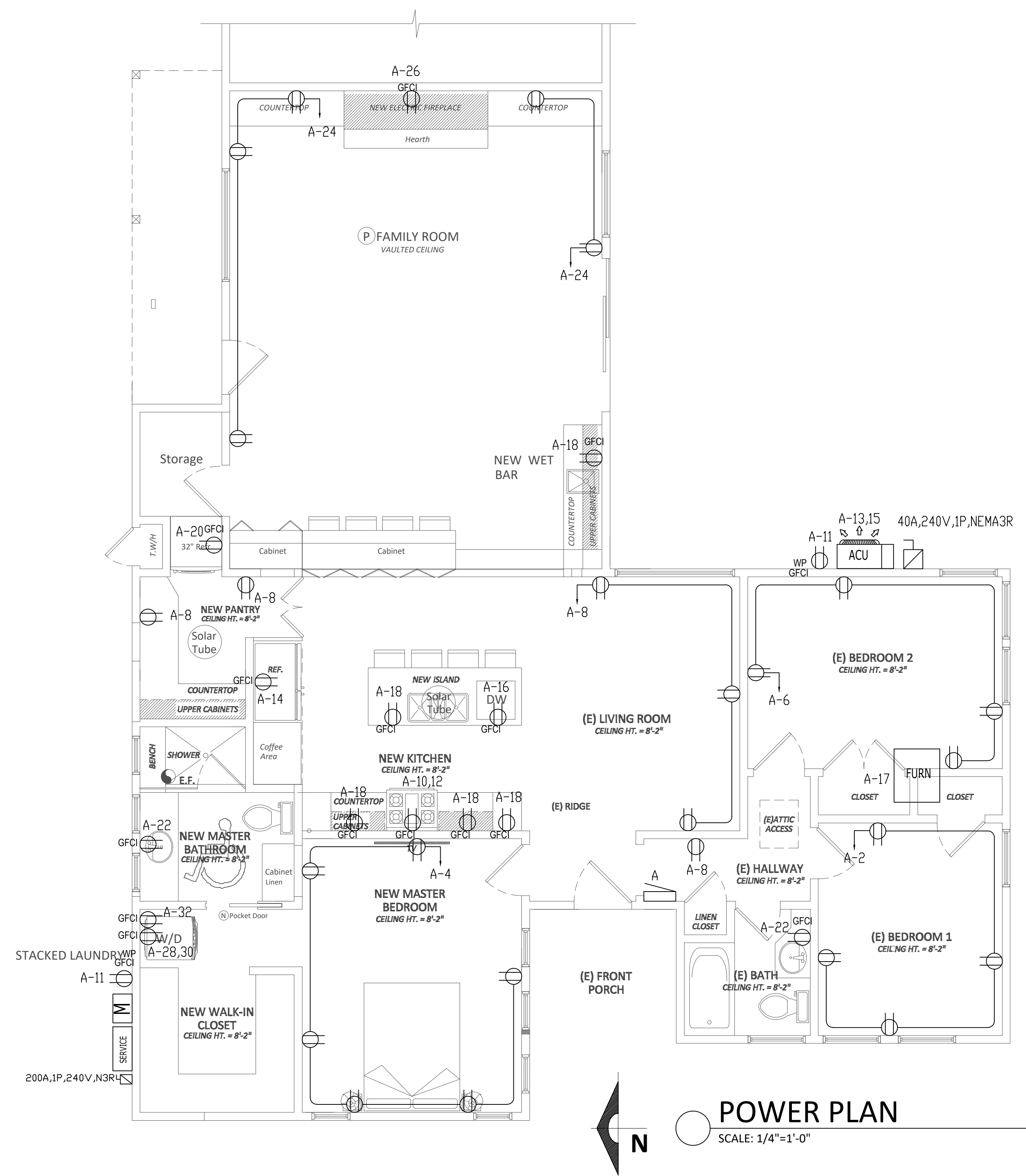
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**E2.0**



**LIGHTING PLAN**  
SCALE: 1/4"=1'-0"



**POWER PLAN**  
SCALE: 1/4"=1'-0"



**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 851 7380 info@pixelarchltd.com  
 www.pixelarchltd.com

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No.	Revision/Issue	Date

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**E3.0**

CONNECTED LOAD						DEMAND TOTAL	
LOAD SUMMARY	CL	DF	A	B			
L Lighting	0.72	1.25	0.64	0.08	0.90		
R Convenience Recept	13.62		5.85	7.77	11.81		
H Heating (Space)	0.50	1.25	0.50		0.63		
C Cooling	7.50	1.00	4.10	3.40	7.50		
A HVAC		1.00					
P Process		1.00					
O Other Continuous		1.25					
K Kitchen	6.10	0.65	2.90	3.20	3.97		
N Noncontinuous	0.60	1.00	0.60		0.60		
		1.00					
<b>Total</b>	<b>29.04</b>		<b>14.59</b>	<b>14.45</b>	<b>25.40</b>		
Total Demand Load (KVA)						25.40	
Total Demand Current (A)						105.83	
Min. Feeder Ampacity (A)						132.29	

PANEL A									
SYSTEM VOLTAGE		240/120V, 1Ø, 3W							
BUS SIZE		200A-1P/C/B BUS FLUG							
SYSTEM TYPE		NORMAL							
FEEDER PROT		200							
CONDUCTOR SIZE		4/0 AWG - #6G CU							
CONDUCTOR PHASE		1							
MAINS		200A MCB							
SCCR		SERIES RATED							
MCB RATING		80%							
GROUND FAULT		NO							
FEEDER LENGTH (FT)		50							
FEEDER V. DROP (%)		0.508							
FAULT CURRENT		22							
KAIC RATING		22							
ENCLOSURE		TYPE 3R							
DESCRIPTION	* CB	KVA	A	B	KVA	CB	DESCRIPTION	*	
1 LIGHTING	L	20A-1P	0.64	1.36	0.72	20A-1P	OUTLET AT BEDROOM#1	R	2
3 OUTDOOR LIGHTING	L	20A-1P	0.08	1.16	1.08	20A-1P	OUTLET AT MASTER BEDROOM#2	R	4
5 SMOKE DETECTOR	N	20A-1P	0.60	1.32	0.72	20A-1P	OUTLET AT BEDROOM#2	R	6
7 EXHAUST FAN	C	20A-1P	0.60	1.68	1.08	20A-1P	OUTLET AT LIVINGROOM	R	8
9 WATER HEATER	H	20A-1P	0.50	2.50	2.00	30A-2P	RANGE/ OVEN	K	10
11 GFCI OUTLET AT OUTDOOR	R	20A-1P	0.36	2.36	2.00			K	12
13 ACU	C	40A-2P	2.80	3.70	0.90	20A-1P	REFRIGERATOR	K	14
15	C		2.80	4.00	1.20	20A-1P	DSH WASHER	K	16
17 FURN	C	20A-1P	1.30	2.20	0.90	20A-1P	GFCI OUTLET AT KITCHEN	R	18
19 SPARE		20A-1P		0.90	0.90	20A-1P	REFRIGERATOR	R	20
21 SPARE		20A-1P	0.36	0.36	0.36	20A-1P	GFCI OUTLET AT BATHROOM	R	22
23 SPARE		20A-1P		0.90	0.90	20A-1P	OUTLET AT FAMILY ROOM	R	24
25 SPARE		20A-1P	0.90	0.90	0.90	20A-1P	ELECTRIC FIREPLACE	R	26
27 SPARE		20A-1P		2.25	2.25	30A-2P	DRYER	R	28
29 SPARE		20A-1P		2.25	2.25			R	30
31 SPARE		20A-1P		1.20	1.20	20A-1P	WASHING MACHINE	R	32
33 SPARE		20A-1P				20A-1P	SPARE	R	34
35 SPARE		20A-1P				20A-1P	SPARE	R	36
37 SPARE		20A-1P				20A-1P	SPARE	R	38
39 SPARE		20A-1P				20A-1P	SPARE	R	40
41 SPARE		20A-1P				20A-1P	SPARE	R	42
Total Connected Load						14.59	14.45		

### Available Fault Current Calculation

Utility Fault Current  amperes kVA =   
 E =   
 I =  $\frac{kVA \times 1000}{E} = \text{trans. FLA}$  trans. FLA =

$I_{SCA} = \frac{\text{trans. FLA} \times 100 \times \text{PF}}{\text{transformer Z}}$  PF =   
 Z =   
 $I_{SCA} = \text{ampere short-circuit current RMS symmetrical}$   $I_{SCA} = 2,785$  amperes

Point to Point Method Length (distance) FEET L =   
 (ASC)  $I_{SCA} = 42,000$  Copper in Metal Raceway  
 # conductors per phase N =   
 Phase conductor constant C =  Phase Conductor 4/0  
 Volt Line to Line E L-L =  Volt  
 f =   
 Neutral conductor constant C =  Neutral Conductor 4/0  
 Volt Line to Neutral E L-N =  Volt  
 f =

Multiplier  $M = \frac{1}{1+f}$  Line to Line M =   
 Line to Neutral M =

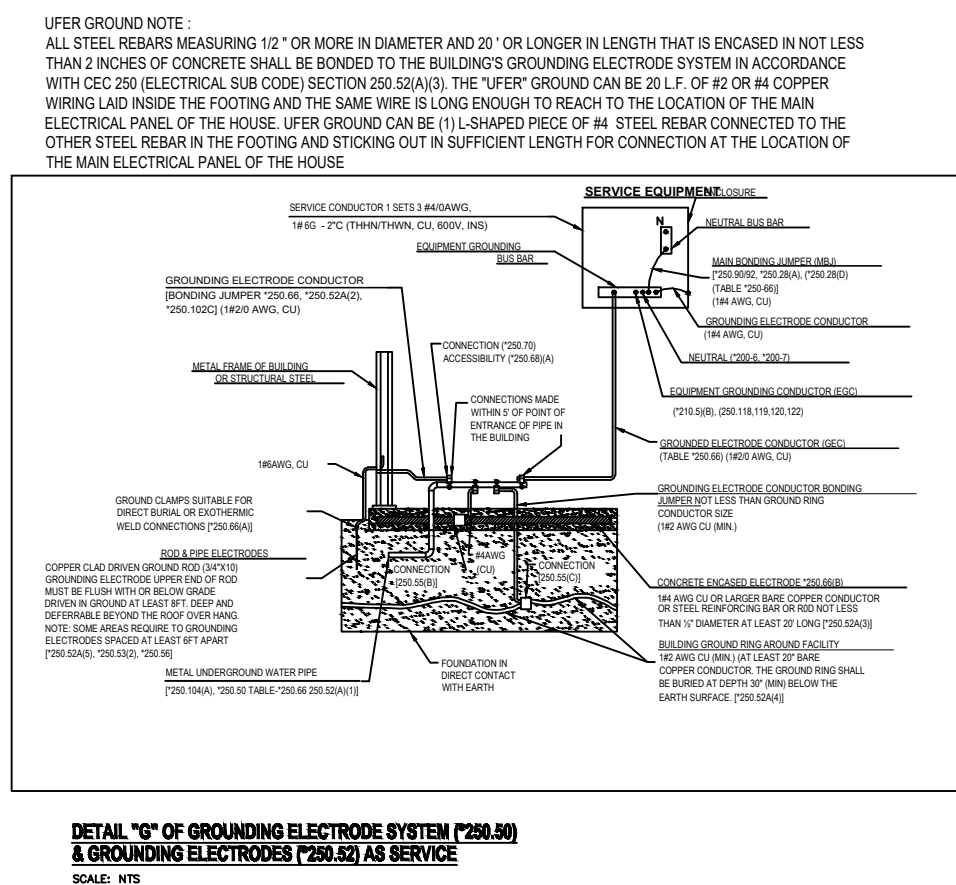
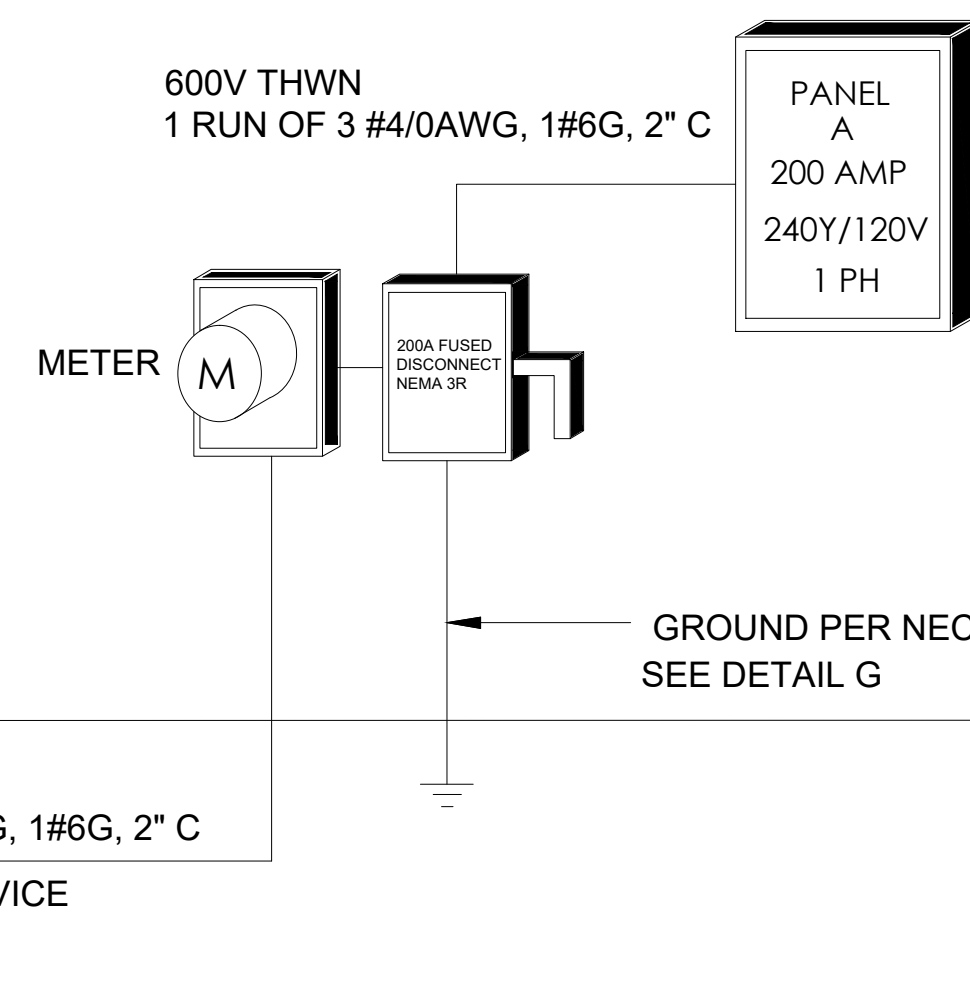
$I_{SCA} \times M = \text{fault current at terminals of main disconnect L-L} = 19,442$  amperes  
 $I_{SCA} \times M = \text{fault current at terminals of main disconnect L-N} = 14,060$  amperes

Fault Current from  Copper in Metal Raceway  
 Length (distance) FEET L =   
 (ASC)  $I_{SCA} = 19,442$  Phase 14,060 Neutral  
 # conductors per phase N =   
 Phase conductor constant C =  Phase Conductor 4/0  
 Volt Line to Line E L-L =  Volt  
 f =   
 Neutral conductor constant C =  Neutral Conductor 4/0  
 Volt Line to Neutral E L-N =  Volt  
 f =

Multiplier  $M = \frac{1}{1+f}$  Line to Line M =   
 Line to Neutral M =

$I_{SCA} \times M = \text{fault current at terminal of the panel L-L} = 12,648$  amperes  
 $I_{SCA} \times M = \text{fault current at terminal of the panel L-N} = 7,913$  amperes

Calculation does not include motor contribution



**PixelArch Ltd.**  
 US Office:  
 5425 Carpinteria Ave # 636, Carpinteria CA 93014  
 +1 805 481 7380 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:  
 APRIL 28, 2021  
 Scale:

DRAWING TITLE:  
 PANEL BOARD & SLD

Sheet :

No. Revision/Issue Date

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**PLUMBING SPECIFICATIONS**

THE WORK INCLUDES MODIFICATION TO THE EXISTING PLUMBING SYSTEM AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING PLUMBING SYSTEM. THE WORK ALSO INCLUDES ROUGH-IN AND FINAL CONNECTIONS TO FOOD SERVICE EQUIPMENT AND BEVERAGE DISPENSING EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND/OR ORDINANCES AND IS SUBJECT TO INSPECTION.

HOOK-UP CHARGES, PERMITS AND ALL OTHER EXPENSES RELATED TO A COMPLETE AND FUNCTIONING PLUMBING SYSTEM ARE INCLUDED AS A PART OF THIS SECTION.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD ROUGH-IN DRAWINGS FOR PLUMBING FIXTURE INSTALLATION REQUIREMENTS. COMPLY WITH ALL APPLICABLE ADA INSTALLATION REQUIREMENTS.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

PIPING SYSTEMS - GENERAL: ALL PIPING SHALL BE RUN PARALLEL TO BUILDING LINES AND SUPPORTED AND ANCHORED AS REQUIRED TO FACILITATE EXPANSION AND CONTRACTION. ALL PIPING SHALL BE CONCEALED EXCEPT IN UNFINISHED SPACES. INSTALL AS REQUIRED TO MEET ALL CONSTRUCTION CONDITIONS AND TO ALLOW FOR INSTALLATION OF OTHER WORK SUCH AS DUCTS AND ELECTRICAL CONDUIT. AT ALL CONNECTIONS BETWEEN FERROUS PIPING AND NONFERROUS PIPING, PROVIDE AN ISOLATING DIALECTIC UNION. ALL HANGERS SHALL BE COMPATIBLE WITH PIPING MATERIAL TO PREVENT CORROSION.

PROVIDE ALL FITTINGS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE PLUMBING SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

FIXTURES/EQUIPMENT FURNISHED BY OTHERS: PLUMBING CONTRACTOR SHALL PROVIDE UTILITY CONNECTIONS REQUIRED SUCH AS WATER, GAS, AIR, SUPPLIES, WASTE OUTLET, TRAPS, ETC. AT ALL PLUMBING TYPE FIXTURES OR EQUIPMENT FURNISHED BY OWNER, GENERAL CONTRACTOR, FOOD SERVICE CONTRACTOR, EQUIPMENT SUPPLIER, ETC. INCLUDED ARE STOP VALVES, ESCUTCHEONS, AND CHROME PLATED BRASS TUBING WITH COMPRESSION FITTINGS.

SEWER AND WASTE PIPING: PROVIDE ALL DRAINS AND SEWERS WITHIN THE SPACE WITH CONNECTION TO THE EXISTING DRAINAGE SYSTEMS ON-SITE. SANITARY DRAINAGE PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (ASTM D1785) PIPE, FITTINGS AND CONNECTIONS. SANITARY DRAINAGE PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV (ASTM D1785) PIPE WITH SOLVENT WELD FITTINGS MAY BE USED (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES). ALL DRAINAGE PIPING SHALL BE UNIFORMLY PITCHED, 1/4" PER FOOT UNLESS OTHERWISE REQUIRED BY EXISTING CONDITIONS, OR INDICATED ON THE DRAWINGS.

VENTS: PROVIDE A COMPLETE SYSTEM OF STANDARD WEIGHT CAST IRON NO-HUB VENT RISERS WHERE THE CEILING SPACE IS USED AS A RETURN AIR FLENUM OR USE CO-EXTRUDED PVC DWV (ASTM D1785) PIPE (WHERE PERMITTED BY CODE/LOCAL AUTHORITIES) WHERE THERE IS A DUCTED RETURN AIR SYSTEM. DO NOT USE PVC PIPE IN RETURN AIR FLENUM SPACES. THE VENT SYSTEM SHALL BE CARRIED THROUGH THE ROOF WITH APPROPRIATE FLASHING.

CONDENSATE AND INDIRECT DRAIN PIPING: PIPING ABOVE FLOOR SHALL BE CO-EXTRUDED PVC DWV (ASTM D1785) PIPE, FITTINGS AND CONNECTIONS. PIPING BELOW GRADE SHALL BE CO-EXTRUDED PVC DWV(ASTM D1785) PIPE WITH SOLVENT WELD FITTINGS.

CLEANOUTS: PROVIDE CLEANOUTS AT THE END OF EACH HORIZONTAL RUN, AND AT THE BASE OF ALL VERTICAL WASTE AND DRAIN PIPES. CLEANOUTS SHALL BE OF THE SAME SIZE AS THE PIPES THEY SERVE, CONFORMING TO CODE REQUIREMENTS. PROVIDE SUITABLE WALL OR FLOOR CLEANOUTS WITH ACCESSORIES TO OBSCURE FROM VIEW.

WATER DISTRIBUTION PIPING: LAYOUT WATER PIPING SO THAT THE ENTIRE SYSTEM CAN BE DRAINED. HOT AND COLD WATER PIPING SHALL BE 1/2" MIN. CPVC PIPE WITH SOLVENT FITTING. PROVIDE WATER HAMMER ARRESTERS AT EACH FIXTURE OR GROUP OF FIXTURES AS REQUIRED. INSTALL CHROME PLATED BRASS ESCUTCHEON PLATES AT ALL PENETRATIONS THROUGH FINISHED SURFACES (INCLUDING CABINET INTERIORS).

PIPE INSULATION: INSULATE (AS ALLOWED BY CODE) ALL LISTED SERVICE PIPING AS FOLLOWS. DOMESTIC COLD/HOT WATER, HOT WATER RETURN, STORM WATER PIPING, PROVIDE 1" PREFORMED FIBERGLASS, ASJ/SS-11, FLAME SPREAD 25, SMOKE DEVELOPED 50, ASTM C-547. FOR CONDENSATE PIPING PROVIDE 1/2" THICK INSULATION OF SAME CHARACTERISTICS AS LISTED FOR 1" ABOVE. WHERE PERMITTED BY LOCAL CODES, PROVIDE 1/2" SELF-ADHESIVE UNICELLULAR FOAM PIPE INSULATION WITH PRE-FORMED PVC FITTING COVERS - EQUAL TO SELF-ADHESIVE ARMSTRONG 2000 WITH K FACTOR OF 0.27 AT 75 DEGREES MEAN TEMPERATURE. INSULATE ANY EXPOSED CONDENSATE PIPING WITH WASTE TEMPERATURE BELOW 60 DEGREES F.

SHUTOFF VALVES, WITH UNIONS SHALL BE PROVIDED FOR SERVICE TO EACH PLUMBING FIXTURE, FOOD SERVICE EQUIPMENT ITEM OR OTHER EQUIPMENT ITEM, TO FACILITATE ISOLATION FOR REPAIR OR REPLACEMENT. VALVES SHALL BE EQUAL TO JENKINS #902-1 BALL VALVE, CHROME-FINISHED BRONZE, TEFLON SEATS AND PACKING, 400 LB. W.O.G., SOLDER END.

ACCESS PANELS SHALL BE PROVIDED WHERE CONCEALED CONTROL DEVICES, VALVES, ETC. ARE CONCEALED WITHIN WALLS. WHERE ACCESS FOR ADJUSTMENT AND MAINTENANCE IS POSSIBLE THROUGH LAY-IN SUSPENDED CEILINGS, ACCESS PANELS ARE NOT REQUIRED.

PIPING SYSTEM- PVC ASTM D1785, SCHEDULE 80 AND CPVC PIPE WITH SOLVENT FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES.

INSTALLATION: THOROUGHLY CLEAN ITEMS BEFORE INSTALLATION. CAP PIPE OPENINGS TO EXCLUDE DIRT UNTIL FIXTURES ARE INSTALLED AND FINAL CONNECTIONS HAVE BEEN MADE. PROCEED AS RAPIDLY AS CONSTRUCTION WILL PERMIT. SET FIXTURES LEVEL AND IN PROPER ALIGNMENT. INSTALL SUPPLIES IN PROPER ALIGNMENT WITH FIXTURES. INSTALL SILICONE SEALANT BETWEEN FIXTURES AND ADJACENT MATERIAL, FOR SANITARY JOINT, AND OMIT ESCUTCHEONS.

REPAIR EXISTING PLUMBING SYSTEM COMPONENTS DAMAGED BY CONSTRUCTION OPERATIONS AND RESTORE TO ORIGINAL CONDITIONS.

TEST WATER SYSTEM UNDER 150 PSIG HYDROSTATIC PRESSURE, FOR FOUR (4) HOURS MINIMUM. WHEN TESTING INDICATES MATERIALS OR WORKMANSHIP IS DEFICIENT, REPLACE OR REPAIR AS REQUIRED, AND REPEAT TEST UNTIL STANDARDS ARE ACHIEVED.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

**GENERAL NOTES**

1. THE INTENT OF THESE PLANS AND SPECIFICATIONS IS TO INCLUDE ALL LABOR, EQUIPMENT, MATERIALS, AND SERVICES NECESSARY TO FURNISH, INSTALL, TEST, AND ADJUST A COMPLETE WORKABLE PLUMBING INSTALLATION AS SHOWN, PRESCRIBED, OR REASONABLY IMPLIED BUT NOT LIMITED TO THAT EXPLICITLY INDICATED IN THE CONTRACT DOCUMENTS, BUT NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE INTENT THEREOF.

2. THE ENTIRE INSTALLATION SHALL CONFORM TO THE REQUIREMENTS OF THE 2006 UNIFORM PLUMBING CODE, 2006 INTERNATIONAL BUILDING CODE, 2006 INTERNATIONAL ENERGY CONSERVATION CODE AND ALL OTHER APPLICABLE CODES AND REGULATIONS REQUIRED BY AUTHORITIES HAVING JURISDICTION, IN THE EVENT OF CONFLICT BETWEEN SPECIFICATIONS, CODES, AND REGULATIONS, THE MORE RESTRICTIVE SHALL APPLY.

3. COORDINATE ENTIRE INSTALLATION OF THE PLUMBING SYSTEM WITH THE WORK OF OTHER TRADES PRIOR TO ANY FABRICATION OR INSTALLATION. FIELD VERIFY ALL DIMENSIONS AND CONDITIONS. REPORT ANY DISCREPANCIES, IN WRITING, TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE SPECIFICATIONS.

5. PROVIDE ONE YEAR WARRANTY ON ALL PARTS AND LABOR.

6. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE THE BEST ARRANGEMENT OF ALL DUCT, PIPE, CONDUIT, ETC.

7. ALL CUTTING AND PATCHING OF THE EXISTING STRUCTURE SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.

8. ALL HOT WATER PIPING AND RECIRCULATION PIPING (EXCEPT RUNOUTS 12 FT. OR SHORTER TO INDIVIDUAL FIXTURES) SHALL BE INSULATED TO MEET THE REQUIREMENTS OF THE 2006 INTERNATIONAL ENERGY CONSERVATION CODE

9. CONDENSATE DRAINS SHALL BE PROVIDED FOR EACH AIR CONDITIONING UNIT. HORIZONTAL CONDENSATE DRAINS ABOVE ANY CEILING SHALL BE INSULATED WITH MIN. 3/8" THICK CLOSED CELL INSULATION.

10. PIPING:  
A. WASTE, VENT, AND STORM DRAIN PIPING SHALL BE CO-EXTRUDED PVC ASTM D1785) PIPE  
B. WATER PIPE SHALL BE CPVC PIPE

C. CONDENSATE PIPING SHALL BE CO-EXTRUDED PVC (ASTM D1785) PIPE

D. INSIDE GAS PIPING SHALL BE BLACK IRON ASTM D1785 WITH MALLEABLE IRON FITTINGS. OUTSIDE SHALL BE GALVANIZED IRON ASTM D1785 WITH GALVANIZED FITTINGS. GAS LINE TO BE PAINTED GRAY IN COLOR. A 24 HOUR METERED GAS TEST SHALL BE REQUIRED.

E. ALL PIPING NOT ENCLOSED IN CONDITION SPACE OR AT EXTERIOR WALLS SHALL BE INSULATED.

F. PIPING: PVC ASTM D1785, SCHEDULE 80 AND CPVC PIPING WITH SOLVENT WELD FITTINGS SHALL BE USED WHERE PERMITTED BY CODE/LOCAL AUTHORITIES

11. ALL VENTS OR EXHAUSTS SHALL BE AT LEAST 10 FT. AWAY OR 3 FT. ABOVE ANY WINDOW, DOOR, OPENING, OR AIR INTAKE.

12. CLEANOUTS SHALL BE INSTALLED PER THE UNIFORM PLUMBING CODE.

13. PROVIDE WATER TIGHT FLASHINGS WHEREVER PIPES PASS THROUGH EXTERIOR WALLS, ROOFS, OR FLOORS.

14. PROVIDE ISOLATION FOR ALL PIPES THAT COME IN CONTACT WITH THE STRUCTURE.

15. LOCATION OF EXISTING UTILITIES AND POINTS OF CONNECTION ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTHS OF EXISTING UTILITIES AND SERVICES PRIOR TO STARTING WORK OF THIS SECTION. IF INDICATED POINTS OF CONNECTION CANNOT BE MADE TO EXISTING UTILITIES AS FOUND, THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.

16. VALVES SHALL BE NIBCO, JENKINS, HAMMOND, RED & WHITE OR APPROVED EQUAL. SERVICE PRESSURE SHALL BE SUITABLE FOR SERVICE INTENDED. THE MAIN WATER SHUT OFF VALVE SHALL BE A FULL PORT BALL TYPE AND APPROVED FOR SERVICE INTENDED.

17. CONTRACTOR SHALL PROVIDE ALL SHUT OFF VALVES AS NECESSARY TO ISOLATE ANY EQUIPMENT, PLUMBING ITEMS, OR FIXTURES, THAT MAY NEED SERVICING OR ARE SUBJECT TO FAILURE WHETHER OR NOT SUCH VALVES ARE SHOWN ON THE DRAWINGS.

18. PROVIDE HANGERS AND SUPPORTS AS REQUIRED. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.

19. CONTRACTOR IS RESPONSIBLE FOR HIS OWN TRENCHING, BACKFILL, AND COMPACTION OF TRENCHES NECESSARY TO COMPLETE HIS SCOPE OF WORK. BACKFILLED TRENCHES SHALL BE RETURNED TO THEIR ORIGINAL GRADE UNLESS NOTED OTHERWISE.

20. CONTRACTOR SHALL AFFIX A MAINTENANCE LABEL TO ALL EQUIPMENT REQUIRING ROUTINE MAINTENANCE AND SHALL PROVIDE MAINTENANCE AND OPERATIONAL MANUALS IN ACCORDANCE WITH THE SPECIFICATIONS.

21. ALL EQUIPMENT THAT REQUIRES KEYS OR SPECIAL TOOLS TO OPERATE SHALL SUPPLY THE OWNER WITH TWO OF ANY SUCH KEYS OR TOOLS FOR EACH PIECE OF EQUIPMENT THAT REQUIRE THE SAME.

25. ANY CHANGE OR DEVIATION FROM THESE PLANS OR SPECIFICATIONS SHALL REQUIRE THE APPROVAL, IN WRITING, OF THE ENGINEER PRIOR TO COMMENCEMENT OF SUCH WORK.

26. ALL PLUMBING, ELECTRICAL, AND GAS LINES SHALL BE CONCEALED WITHIN THE BUILDING STRUCTURE TO AS GREAT EXTENT AS POSSIBLE. ALL LINES NOT CONCEALED SHALL BE SECURED 6" OFF THE FLOOR AND 3/4" FROM THE WALLS USING STANDOFF BRACKETS

27. AN APPROVED BACKFLOW PREVENTOR SHALL BE PROPERLY INSTALLED UPSTREAM OF ANY POTENTIAL HAZARD BETWEEN THE POTABLE WATER SUPPLY AND SOURCE OF CONTAMINATION.

28. WATER SUPPLY CARBONATORS SHALL BE PROTECTED BY AN APPROVED REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTOR. THE RELIEF VALVE SHALL DRAIN IN-DIRECTLY TO A FLOOR SINK WITH A 1" MIN. AIR GAP.

**SPECIAL NOTICE TO CONTRACTORS**

1. ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-CONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.

2. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.

3. ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT AND/OR ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

**WATER SAVING STANDARDS.**

THE WATER SAVING PERFORMANCE STANDARDS FOR A PLUMBING FIXTURE ARE THOSE ESTABLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI), CURRENT REVISION, OR THE FOLLOWING STANDARDS, WHICHEVER ARE THE MORE RESTRICTIVE.

1 THE MAXIMUM FLOW FROM A SINK OR LAVATORY FAUCET OR A FAUCET AERATOR SHALL NOT EXCEED 0.5 GALLONS OF WATER PER MINUTE AT A PRESSURE OF 60 POUNDS PER SQUARE INCH WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

2.THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED AN AVERAGE OF 1.28 GALLONS WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

3 THE MAXIMUM VOLUME OF WATER PER FLUSH FROM A URINAL AND THE ASSOCIATED FLUSH VALVE, IF ANY, SHALL NOT EXCEED AN AVERAGE OF ONE GALLON WHEN TESTED IN ACCORDANCE WITH ANSI TESTING PROCEDURES

**PIPE MATERIAL SCHEDULE**

SERVICE		COPPER TYPE "M"	COPPER TYPE "L"	COPPER TYPE "K"	GAST IRON	BLACK STEEL	GALV. STEEL	VTRI CLAY	ABS	SCH 40 PVC	SCH 40 CPVC	REMARKS
WATER PIPING	INSIDE										X	
	OUTSIDE									X		
SANITARY DRAIN	INSIDE									X		
	OUTSIDE									X		
SANITARY VENT	INSIDE									X		
	OUTSIDE									X		
GAS PIPING	INSIDE					X						
	OUTSIDE						X					
STORM DRAIN	INSIDE							X				
	OUTSIDE									X		
CONDENSATE DRAINAGE	INSIDE									X		
	OUTSIDE									X		
CONDENSATE	INSIDE									X		
	OUTSIDE									X		
COMPRESSED AIR	INSIDE					X						
	OUTSIDE						X					

NOTES:

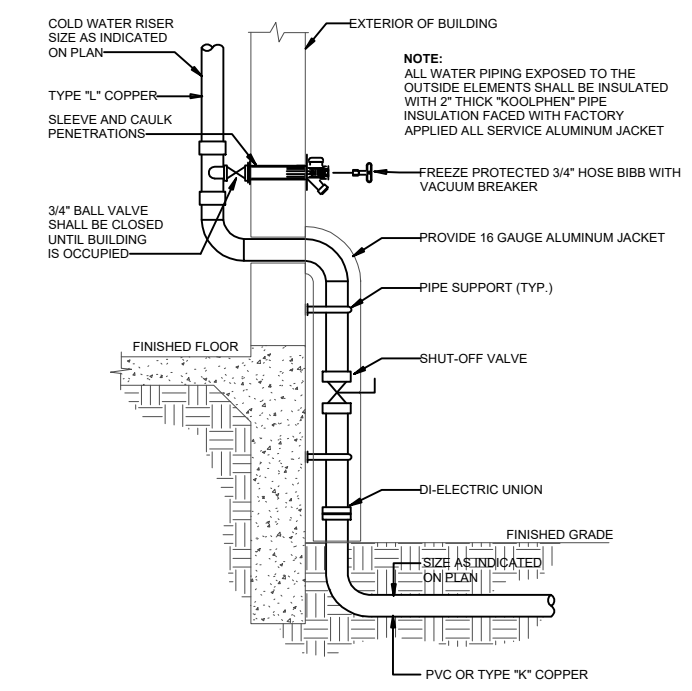
**BUILDING CODES:**

CITY OF HOUSTON CITY CURRENT BUILDING CODES:

- 2015 INTERNATIONAL BUILDING CODE\*
- 2015 INTERNATIONAL FIRE CODE\*
- 2015 INTERNATIONAL MECHANICAL CODE\*
- 2015 INTERNATIONAL PLUMBING CODE\*
- 2015 INTERNATIONAL FUEL GAS CODE\*
- 2015 INTERNATIONAL ENERGY CODE\*
- 2014 NATIONAL ELECTRICAL CODE\*
- \*AMENDMENTS

**MAXIMUM FIXTURE FLOW RATE**

FIXTURE TYPE	MAXIMUM FLOW RATE
NONRESIDENTIAL LAVATORY FAUCETS	0.5 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	0.2 GALLONS/CYCLE
WATER CLOSET	1.28 GALLONS/FLUSH
URINALS	0.5 GALLONS/FLUSH



NOTE: VERIFY REQUIREMENTS FOR METERING AND PIPING WITH WATER COMPANY. INSTALL OTHER UTILITIES A MINIMUM OF 10'-0" FROM WATER LINE. PLUMBING CONTRACTOR SHALL PAY ALL WATER COMPANY FEES FOR INSTALLATION. USE WELDED OR SCREWED PIPE AND FITTINGS PER PLUMBING SPECS. WATER COMPANY SHALL EXCAVATE, BACKFILL AND REPAIR ANY PAVING OR SOIL FOR WATER SERVICE LINE INSTALLATION FROM MAIN TO BUILDING.

**EXTERIOR COLD WATER BUILDING ENTRY**  
NOT TO SCALE



**PixelArch Ltd.**  
US Office:  
5425 Carpenter Ave # 636, Carpinteria CA 93014  
+1 805 861 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

DRAWING TITLE:

**PLUMBING SPECS**

Sheet :

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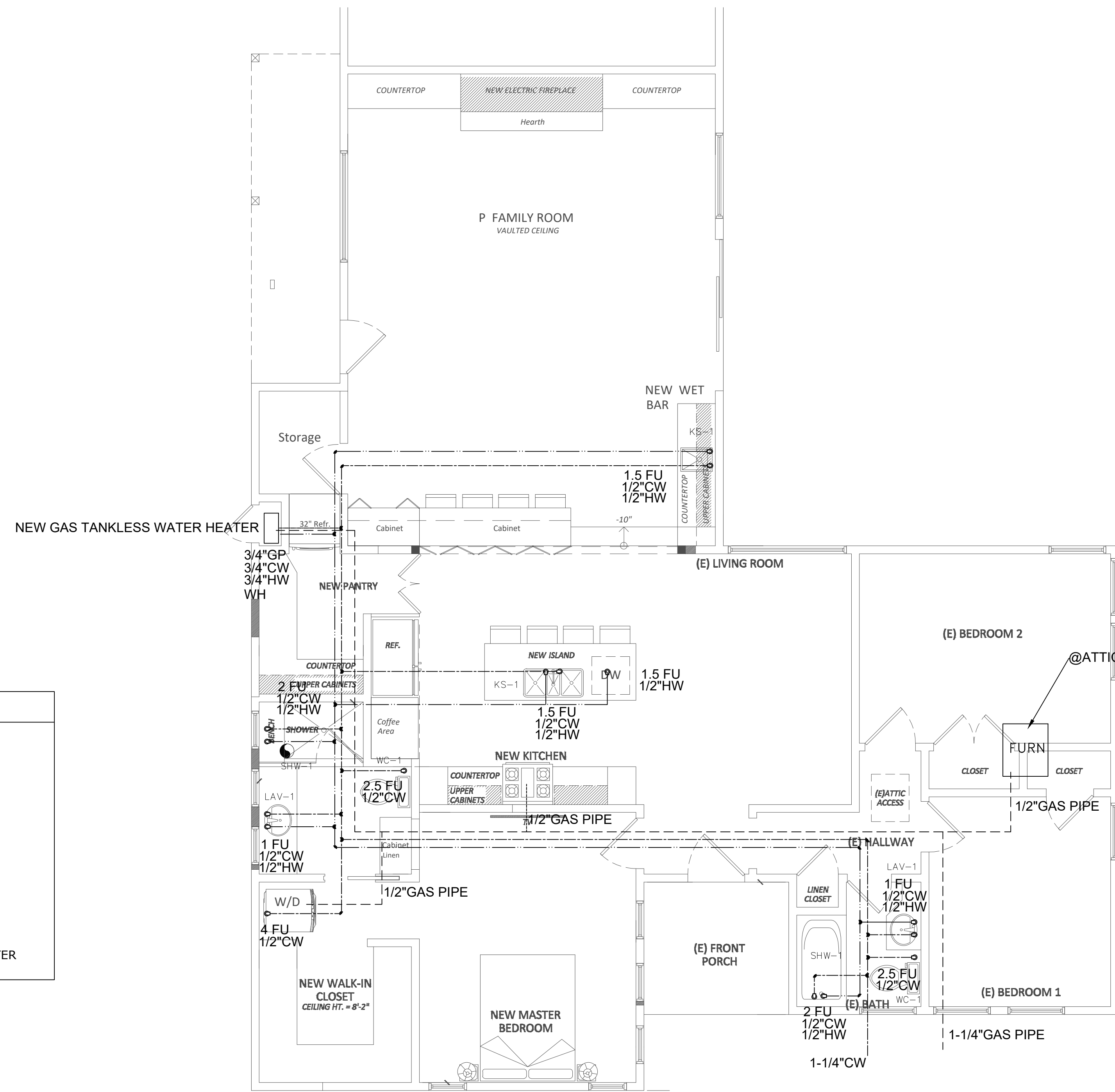
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**P1.0**

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**ABBREVIATIONS :**

ABBREV.	DESCRIPTION
CO.	CLEAN OUT
DN.	DOWN
FD	FLOOR DRAIN
FCO	FLOOR CLEAN OUT
F.F.L	FINISH FLOOR LEVEL
UG	UNDER GROUND
GP	GAS PIPE
DP	WASTE PIPE
VP	VENT PIPE
VS	VENT STACK
VTR	VENT TO ROOF
FU	FIXTURE UNIT
CW	COLD WATER
HW	HOT WATER
TWH	TANKLESS WATER HEATER
HB	HOSE PIPE



**PixelArch Ltd.**  
 US Office:  
 5425 Carpintera Ave # G36, Carpintera CA 93014  
 +1 805 881 7390 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

DRAWING TITLE:

**WATER SUPPLY PLAN**

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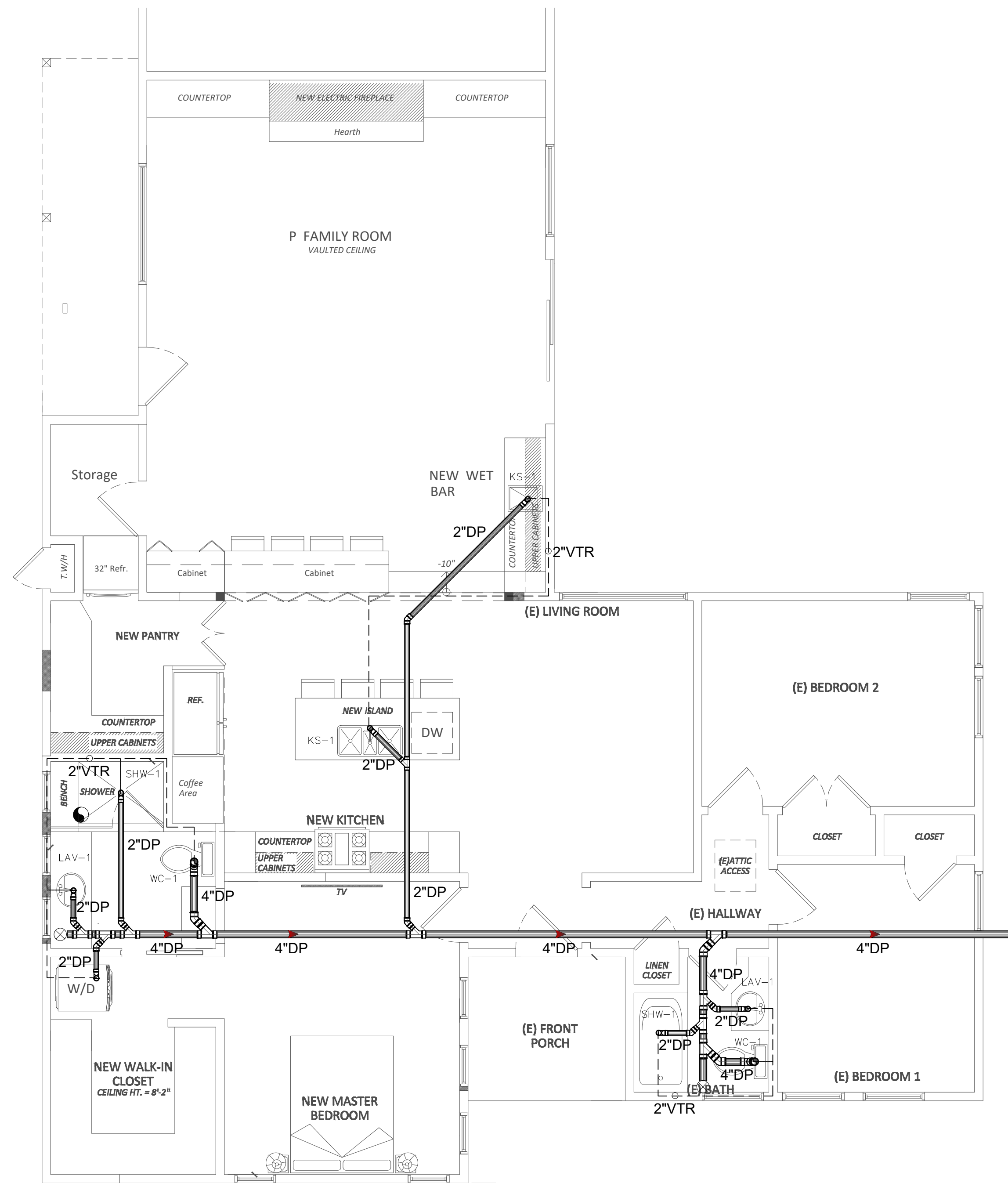
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**P2.0**

No.	Revision/Issue	Date
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ABBREVIATIONS :

ABBREV.	DESCRIPTION
CO.	CLEAN OUT
DN.	DOWN
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**PixelArch Ltd.**  
 US Office:  
 5425 Carpenter Ave # 636, Carpinteria CA 93014  
 +1 805 861 7390 info@pixelarchltd.com  
 www.pixelarchltd.com

Project Name and Address:

INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

DRAWING TITLE:

**DRAINAGE PLAN**

Sheet :

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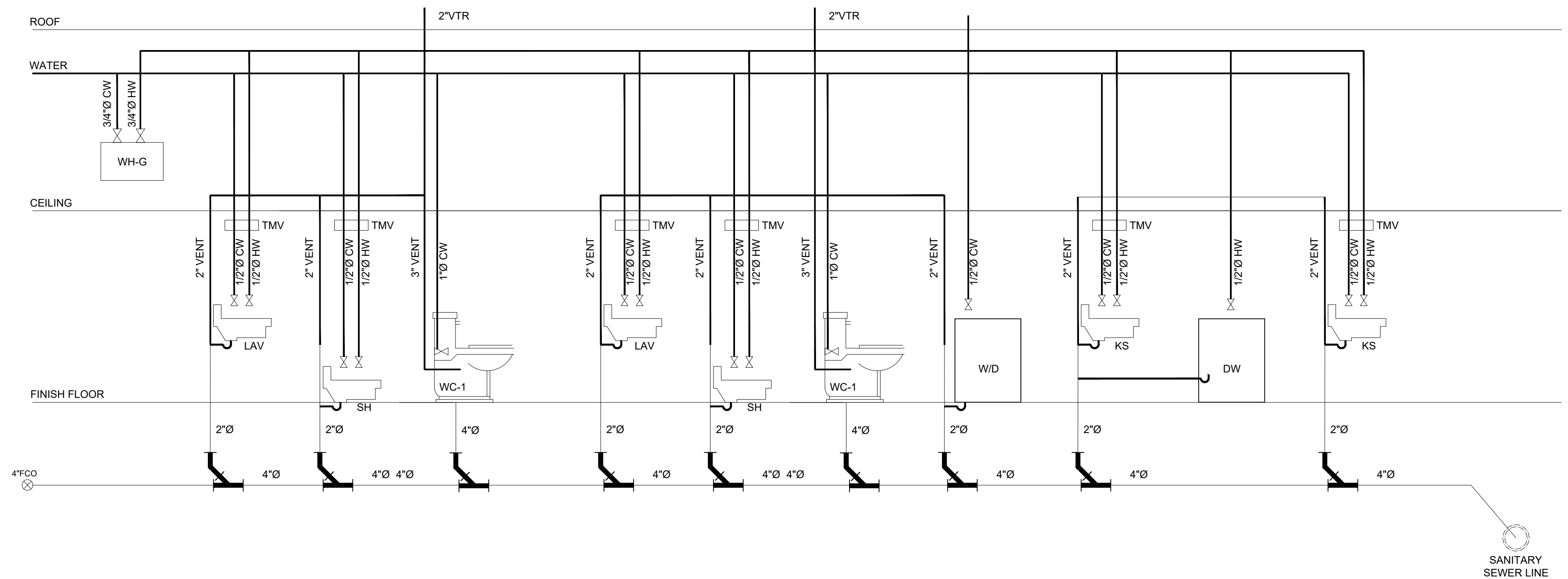
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**P3.0**

PLUMBING FIXTURE SCHEDULE							
ITEM	FIXTURE	COLD WATER	HOT WATER	WASTE	TRAP	VENT	DESCRIPTION
WC-1	WATER CLOSET (ADA APPROVED)	3/4"	-	4"	INT.	2"	DELTA MODEL # C41908-WH4.5547(411) TURNER 2-PIECE 1.28 GPF SINGLE FLUSH ROUND FRONT TOILET IN WHITE. TOILET SHALL BE ADA AND ASME A112.19.1 COMPLIANT (OR APPROVED EQUAL).
LAV-1	LAVATORY (ADA APPROVED)	1/2"	1/2"	2"	1-1/2"	2"	"KOHLER" HUDSON MODEL K-2849 WHITE VITREOUS CHINA WALL MOUNTED LAVATORY WITH 4" CENTERS OR APPROVED EQUAL. INCLUDE MODEL K-7401-5A FAUCET WITH STANDARD AERATOR AND WRISTBLADE HANDLES. LAVATORY AND FAUCETS SHALL BE ADA AND ASME A112.19.1M COMPLIANT (OR APPROVED EQUAL).
FD	FLOOR DRAIN	1/2"	-	-	-	-	WATTS DRAINAGE FD-320-Y EPOXY COATED CAST IRON AREA DRAIN WITH ANCHOR FLANGE, WEEPHOLES, 8" DIAMETER FIXED TOP WITH HEEL PROOF DUCTILE IRON GRATE, AND NO HUB (STANDARD) OUTLET
TP-1	TRAP PRIMER	-	-	2"	-	2"	WATTS DRAINAGE LFTP300-DR PRESSURE DROP ACTIVATED LEAD FREE BRASS TRAP PRIMER WITH EPDM SEALS, INTEGRAL AIR GAP, AND 1/2" SWEAT OR NPT THREADED CONNECTIONS. OPERATING PRESSURE 25 PSI - 125 PSI. TESTED AND APPROVED IN CONFORMANCE WITH ASSE STANDARD 1018. SPECIFY MODEL LFTP300-DU-DR FOR DISTRIBUTION UNIT.
KS-1	KITCHEN SINK	1/2"	1/2"	2"	1-1/2"	2"	KOHLER UNDERTONE UNDER-MOUNT KITCHEN SINK K-3182 14-1/4" L X 18" W X 7-5/8" D. 18 GAUGE STAINLESS STEEL, WITH SIMPLICE BAR SINK FAUCET SWING SPOUT, MODEL # K-22034 (OR APPROVED EQUAL).
SHW-1	SHOWER	1/2"	1/2"	2"	1-1/2"	2"	KOHLER ARCHER K-1946-RA ACRYLIC, RIGHT-HAND DRAIN WITH K-TS395-4SE FAUCET



## WATER CALCULATIONS

AS PER UPC TABLE 610.3  
"WATER SUPPLY FIXTURE UNITS (WSFU) AND MINIMUM FIXTURE BRANCH PIPE SIZES"

2 - LAV	1	FU = 2
2 - WC	2.5	FU = 5
1 - CLOTHES WASHER	4	FU = 4
2 - SHOWER (SHR)	2	FU = 4
- BATHTUB	4	FU =
2 - KITCHEN SINK	1.5	FU = 3
1 - DISHWASHER	1.5	FU = 1.5
- HOSE BIBB	2.5	FU = 2.5
<b>TOTAL WSFU:</b>	<b>22</b>	<b>FU</b>

NOTE:  
THE FIXTURES BEING SHOWN FOR THIS PERMIT WILL BE CONNECTED TO 1-1/4" METER PIPE SIZES ARE CONSERVATIVELY SIZED USING 8 PSI/100'

WATER PIPING CONSERVATIVELY SIZED AT 8 0 PSI/100'

PIPE SIZING CHART	TANK	VALVE	NOTE: PIPE SIZING CHART SIZED WITH 2015 UPC FIGURE A 103.1(1) @ 8 0 PSI/100' FOR FRICTION LOSS CHART A 105.1(1).
1/2"	= 3 GPM = 3 FU	- FU	
3/4"	= 8 GPM = 10 FU	- FU	
1"	= 17 GPM = 24 FU	- FU	
1-1/4"	= 29 GPM = 51 FU	12 FU	
1-1/2"	= 44 GPM = 103 FU	35 FU	
2"	= 76 GPM = 254 FU	132 FU	
2-1/2"	= 115 GPM = 455 FU	329 FU	
3"	= 165 GPM = 719 FU	666 FU	
3-1/2"	= 220 GPM = 1091 FU	1091 FU	
4"	= 290 GPM = 1668 FU	1668 FU	

WATER CONSERVING PLUMBING FIXTURES AND FITTINGS	
Plumbing fixtures and fittings shall comply with the following: (2019 CGBSC, California Plumbing Code (CPC) and Table 1401.1 of the CPC)	
4303.1.1	All Water closets: <1.28 gal/flush Tank type water closet shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.
4303.1.2	Urinals: <0.5 gal/flush
4303.1.3.1	Single showerheads: <1.8 gpm @ 80 psi
4303.1.3.2	Multiple showerheads: combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm @ 80 psi or only one shower outlet is to be in operation at a time.
4303.1.4.1	Residential Lavatory Faucets: 0.8 gpm @ 20 psi < Flow Rate <1.2 gpm @ 60 psi
4303.1.4.2	Lavatory Faucets in common and Public Use Areas (outside of dwellings or sleeping units) in residential buildings: <0.5 gpm @ 60 psi
4303.1.4.3	Metering Faucets: <0.25 gallons per cycle
4303.1.4.4	Kitchen Faucets: <1.8 gpm @ 60 psi; Maximum Flow Rate of 1.8 gpm

**PLUMBING FIXTURE CERTIFICATION REQUIRED:**  
A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.



**PixelArch Ltd.**  
US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
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INTERIOR REMODEL FOR  
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3154 PETALUMA AVE. LONG BEACH, CA. 90808

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**RISER DIAGRAM**

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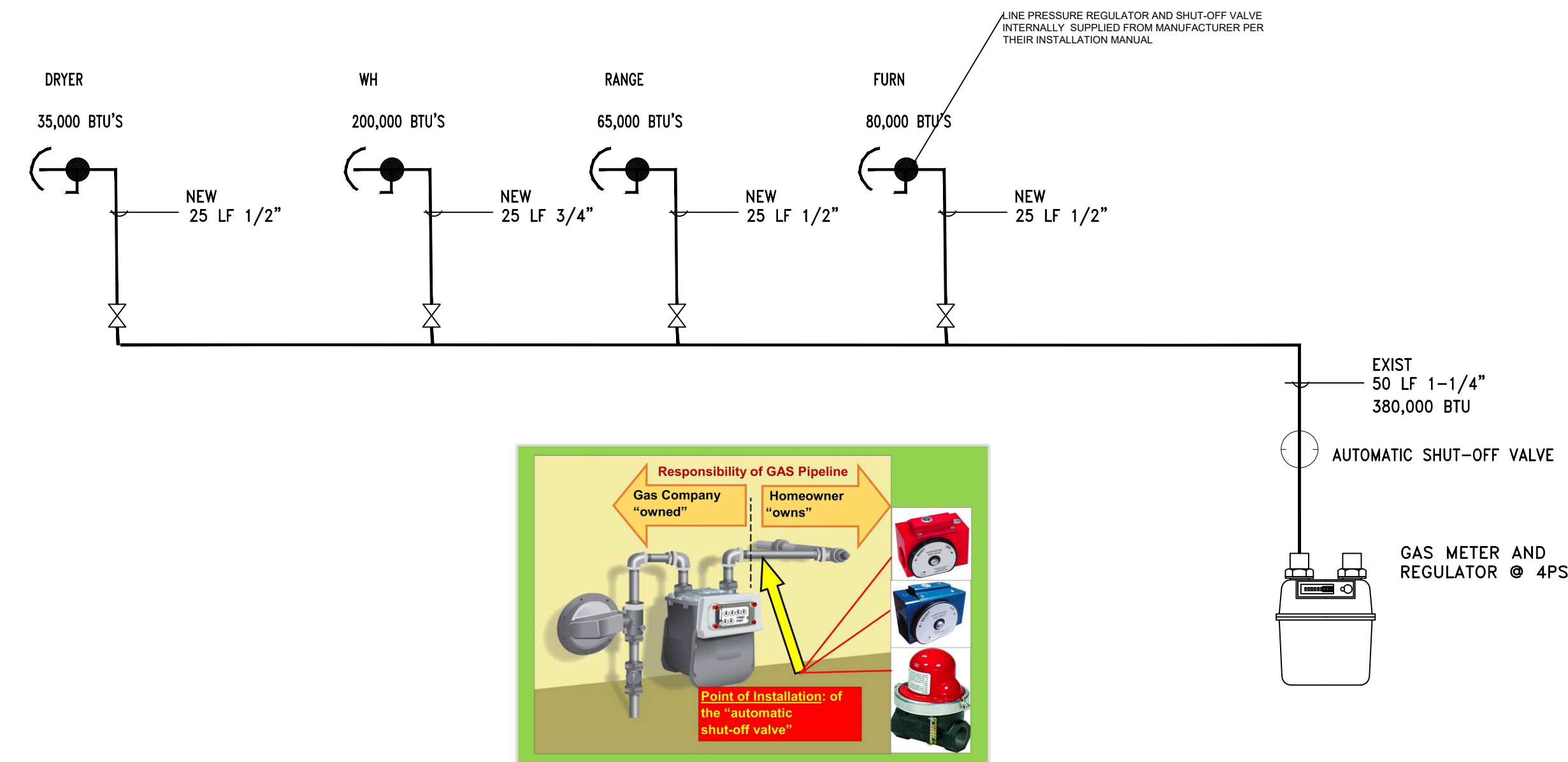
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TABLE 1216.2(1)  
SCHEDULE 40 METALLIC PIPE [NFPA 54: TABLE 6.2(b)]1, 2

		GAS: NATURAL												
		INLET PRESSURE: LESS THAN 2 psi												
		PRESSURE DROP: 0.5 in. w.c.												
		SPECIFIC GRAVITY: 0.60												
PIPE SIZE (Inch)														
NOMINAL:	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12
ACTUAL ID:	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	4.026	5.047	6.065	7.981	10.020	11.938
LENGTH (feet)	CAPACITY IN CUBIC FEET OF GAS PER HOUR													
10	172	360	678	1390	2090	4020	6400	11 300	23 100	41 800	67 600	139 000	252 000	399 000
20	118	247	466	957	1430	2760	4400	7780	15 900	28 700	46 500	95 500	173 000	275 000
30	95	199	374	768	1150	2220	3530	6250	12 700	23 000	37 300	76 700	139 000	220 000
40	81	170	320	657	985	1900	3020	5350	10 900	19 700	31 900	65 600	119 000	189 000
50	72	151	284	583	873	1680	2680	4740	9660	17 500	28 300	58 200	106 000	167 000
60	65	137	257	528	791	1520	2430	4290	8760	15 800	25 600	52 700	95 700	152 000
70	60	126	237	486	728	1400	2230	3950	8050	14 600	23 600	48 500	88 100	139 000
80	56	117	220	452	677	1300	2080	3670	7490	13 600	22 000	45 100	81 900	130 000
90	52	110	207	424	635	1220	1950	3450	7030	12 700	20 600	42 300	76 900	122 000
100	50	104	195	400	600	1160	1840	3260	6640	12 000	19 500	40 000	72 600	115 000
125	44	92	173	355	532	1020	1630	2890	5890	10 600	17 200	35 400	64 300	102 000
150	40	83	157	322	482	928	1480	2610	5330	9650	15 600	32 100	58 300	92 300
175	37	77	144	296	443	854	1360	2410	4910	8880	14 400	29 500	53 600	84 900
200	34	71	134	275	412	794	1270	2240	4560	8260	13 400	27 500	49 900	79 000
250	30	63	119	244	366	704	1120	1980	4050	7320	11 900	24 300	44 200	70 000
300	27	57	108	221	331	638	1020	1800	3670	6630	10 700	22 100	40 100	63 400



**CALGREEN CODE NOTES:**

- For the purpose of CalGreen Code, Residential buildings include all those newly constructed occupancies under HCD which includes all buildings three stories or less with any of the following occupancies: Single family dwellings, duplexes, hotels, motels, apartments, condominiums, row homes, etc.
- Storm water drainage management shall be implemented during construction. (CGBC 4.106)
- Plan and develop the site to keep surface water away from the buildings. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows. (CGBC 4.106.3)
- Vapor retarder and capillary break is installed at slab on grade foundations. Show one of the following methods on the plans.
  - 4 inch thick base of 1/2 inch or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design which addresses bleeding, shrinkage, and curing shall be used. For additional information, see ACI 302.2R-02.
  - A slab design specified by a licensed design professional. (CGBC 4.505.2.1)
- Automatic irrigation systems controllers installed at the time of final inspection shall be weather based. (CGBC 4.304.1)
- Joints and openings, Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or similar method acceptable to the enforcing agency. (CGBC 4.406.1)
- A minimum of 65 percent of the construction waste generated at the site is diverted to recycle or salvage per CGBC Section 4.406.1 and City ordinance.
- A plumbing fixture certification must be completed and signed by either a licensed general contractor, or a plumbing subcontractor, or the building owner certifying the flow rate of the fixtures installed. A copy of the certification can be obtained from the development services department.
- Before Final Inspection, a complete operation and maintenance manual shall be provided to the building occupant or Owner. Contractor or owner shall submit an affidavit that confirms the delivery of such. (Section 4.410.1). A sample of the manual is available on the Housing and Community Development (HCD) web site. The Manual should include in addition to other aspects the following:
  - Direction to the building owner or occupant that the manual shall remain with the building for throughout the life cycle of the structure.
  - Operation and maintenance instructions for the following:
    - Equipment and appliances, including water-saving devices and systems, HVAC systems, water-heating systems and other major appliances and equipment.
    - Roof and yard drainage, including gutters and downspouts.
    - Space conditioning systems, including condensers and air filters.
    - Landscape irrigation systems.
    - Water re-use systems.
  - Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
  - Public transportation and/or carpool options available in the area.
  - Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain such humidity levels.
  - Information about water conservation landscape and irrigation design and controllers which conserve water.
  - Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5' away from foundation.
  - Information on required routine maintenance measures, including, but not limited to caulking, painting, grading around the building, etc.
  - Information about state solar energy and incentive programs available.
- A copy of all special inspection verifications required by the enforcing agency or this code.
- A copy of a complete operation and maintenance manual as outlined in the notes above will be delivered to the building owner prior to final inspection.
- An owner manual certified and signed by either a licensed General Contractor or a home owner certifying that a copy of the manual has been delivered/received to the building owner. A copy of the certification form can be obtained from the development services department.
- Duct openings and other related air distribution component openings shall be covered during construction. (CGBC 4.504.1)
- Adhesives, sealants and caulks shall be compliant with VOC and other toxic compound limits. (CGBC 4.504.2.1)
- Paints, stains and other coatings shall be compliant with VOC limits set in Section 4.504.2.2 and Table 4.504.3 of Cal Green.
- Aerosol paints and coatings shall be compliant with product weighted MIR limits for VOC and other toxic compounds as specified in Section 4.504.2.3 of the California Green Building Code.
- A certification completed and signed by either the general contractor or subcontractor, or the building owner certifying that the paint, stain, and adhesives, complies with the requirements of the California Green Building Code. A copy of the form can be obtained from the development services department.
- Documentation shall be provided to verify that compliant VOC limit finish materials have been used. A letter from the contractor and/or the building owner certifying what material has been used and its compliance with the code must be submitted to the building inspector. (CGBC 4.504.2.4)
- Carpet and carpet systems shall be compliant with VOC limits. (Section 4.504.3) A letter from the contractor, subcontractor, and/or the building owner certifying what material used complies with the CGBC.
- Eighty percent of floor areas receiving resilient flooring shall comply with one or more of the following:
  - VOC-emission limits defined in the collaborative for High Performance Schools (CHPS) High Performance Products Database.
  - Products compliant with CHPS criteria certified under the Greenguard Children & School program.
  - Certification under the Resilient Floor Covering Institute (RFCI) Floor Score Program.
  - Meet the California Department of public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.1, February 2010 (also known as Specification 01350).
- Hardwood plywood, particleboard, medium density fiberboard (MDF), composite wood product used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in AIA's Air Toxics Control Measure for composite wood as specified in Section 4.504.5 and Table 4.504.5 of CALGREEN.
- A certification completed and signed by the general contractor, subcontractor or building owner certifying that the resilient flooring, composite wood product, plywood, particle board etc. comply with the VOC limits and formaldehyde limits specified in the notes above and the California Green Building Code.
- Building materials with visible signs of water damage shall not be installed. Walls and Floors framing shall not be enclosed when framing members exceed 19% moisture content.
- The moisture content of building materials used in wall and floor framing is checked before enclosure. Moisture content shall be verified by either a probe type or contact type moisture meter. A certificate of compliance indicating date of test location and results issued by the framer subcontractor or General contractor must be submitted to the building inspector. (CGBC 4.505.3)
- Exhaust fans which terminate outside the building are provided in every bathroom that contains a shower or tub. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidistat which can adjust between 50 to 80 percent.
- Whole house exhaust fans shall have insulated louvers or covers which close when the fan is off. Covers or louvers shall have a minimum insulation value of R-4.2. (CGBC 4.507)
- Duct systems are sized, designed, and equipment is selected using the following methods:
  - Establish heat loss and heat gain values according to Air Conditioning Contractors of America (ANSI, ACCA) Manual J, ASHRAE handbooks or equivalent.
  - Size duct systems according to ACCA 29-D (Manual D) or equivalent.
  - Select heating and cooling equipment according to ACCA 98-S (Manual S) or equivalent.
- INSTALLER AND SPECIAL INSPECTOR QUALIFICATIONS: HVAC system installers are trained and certified in the proper installation of HVAC systems. (CGBC 702) Verification of compliance with this code may include construction documents, plans specifications builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which show substantial conformance. (CGBC 703)
- Automatic irrigation system controllers for landscaping provided by the builder and installed at the time of final inspection shall comply with the following:
  - Controllers shall be weather or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants needs as weather conditions change.
  - Automatic irrigation systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controllers. Soil moisture controllers are required to have rain sensor input.



**PixelArch Ltd.**  
 US Office:  
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INTERIOR REMODEL FOR  
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 3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date:

DRAWING TITLE:

**GAS RISER DIAGRAM**

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**P5.0**



Residential/Commercial Gas Tankless Water Heaters

### TANKLESS HIGH EFFICIENCY CONDENSING WATER HEATERS

Ultra-Low NOx gas tankless water heaters with condensing technology featuring an unprecedented 0.95 Energy Factor which lowers operating costs and is environmentally friendly.

#### FEATURES:

##### CONTINUOUS MAXIMUM FLOW RATES UP TO 10.0 GPM

##### ENERGY STAR® QUALIFIED

##### AVAILABLE IN NATURAL GAS OR PROPANE (LP)

##### 540 MODELS

- Can be used in residential and commercial applications
- Easy-link up to 4 heaters
- Multi-link up to 20 heaters

##### INDOOR MODEL

- Includes integrated temperature controls and advanced diagnostics to simplify troubleshooting
- Factory-installed power cord

##### OUTDOOR MODEL

- Includes a wall mount temperature remote controller and advanced diagnostics to simplify troubleshooting

##### DURABLE HEAT EXCHANGER:

- Primary heat exchanger is constructed of a commercial-grade copper that is more resistant to erosion. Copper is 23x better at heat transfer than stainless steel thus stabilizing outgoing water temperatures quicker.
- Secondary Heat Exchanger is made of Type 316L Stainless Steel to protect against corrosion.

##### COMMON VENT UP TO 8 UNITS

##### COMPLIES WITH LEAD FREE STANDARDS

#### SAFETY FEATURES:

- Air-Fuel Ratio (AFR) Sensor
- Exhaust & Water Temperature Safety Control
- Overheat Cut-Off Fuse

##### INTERNAL FREEZE PROTECTION SYSTEM

##### POWER DIRECT VENT DESIGN

- Category III or IV venting can be used
- Exhaust, 3" PVC Venting up to 70 Feet or 4" PVC Venting up to 100 Feet
- Provides Reliable venting with PVC, CPVC, or ABS Pipe for Intake and Exhaust (solid core only). Canadian Installations Require ULCSGS Listed PVC or CPVC Pipe for Venting.

##### ACCESSORIES

- Pipe Cover
- Neutralizer Kit
- Isolation Valve Kits
- Concentric Termination
- Product Preservers® Anti-Scale System
- Multi-Unit Controller (540 Model Only)
- Commercial Remote Temperature Control (540 Model Only)

##### WARRANTY

- 15-year limited warranty on heat exchanger in residential applications
- 6-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts

#### INDOOR MODELS ATI-240, ATI-340, ATI-540



#### OUTDOOR MODELS ATO-240, ATO-340, ATO-540



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AOSRH4835



Residential/Commercial Gas Tankless Water Heaters

#### TANKLESS HIGH EFFICIENCY CONDENSING MODELS

Model Number	Type	Gas Consumption Input		Inlet Gas Pressure		Energy Factor (EF)	Maximum GPM*	Hot/Cold Connections	Gas Connection	Dimensions in Inches			Unit Weight (lbs)
		Minimum BTU/H	Maximum BTU/H	Minimum in. W.C.	Maximum in. W.C.					Height	Width	Depth	
<b>Indoor Models</b>													
ATI-240H-N	Natural	15,000	160,000	4.0	10.5	0.95	6.6	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATI-240H-P	Propane	13,000	160,000	8.0	14.0	0.95	6.6	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATI-340H-N	Natural	15,000	180,000	4.0	10.5	0.95	8	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATI-340H-P	Propane	13,000	180,000	8.0	14.0	0.95	8	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATI-540H-N	Natural	15,000	199,000	4.0	10.5	0.95	10	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	59
ATI-540H-P	Propane	13,000	199,000	8.0	14.0	0.95	10	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	59
<b>Outdoor Models</b>													
ATO-240H-N	Natural	15,000	160,000	4.0	10.5	0.95	6.6	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATO-240H-P	Propane	13,000	160,000	8.0	14.0	0.95	6.6	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATO-340H-N	Natural	15,000	180,000	4.0	10.5	0.95	8	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATO-340H-P	Propane	13,000	180,000	8.0	14.0	0.95	8	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	58
ATO-540H-N	Natural	15,000	199,000	4.0	10.5	0.95	10	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	59
ATO-540H-P	Propane	13,000	199,000	8.0	14.0	0.95	10	3/4" NPT	3/4" NPT	23-5/8"	17-3/4"	11-1/4"	59

\*Current numbers based on factory testing: 0.5 GPM for activation; 0.4 GPM required for continuous fire after initial ignition.  
Indoor models are certified from sea level to 10,100 ft. elevation. Outdoor models are certified from sea level to 6,000 ft. elevation.

15-150 PSI Water Pressure, 40 PSI or above recommended for maximum flow.

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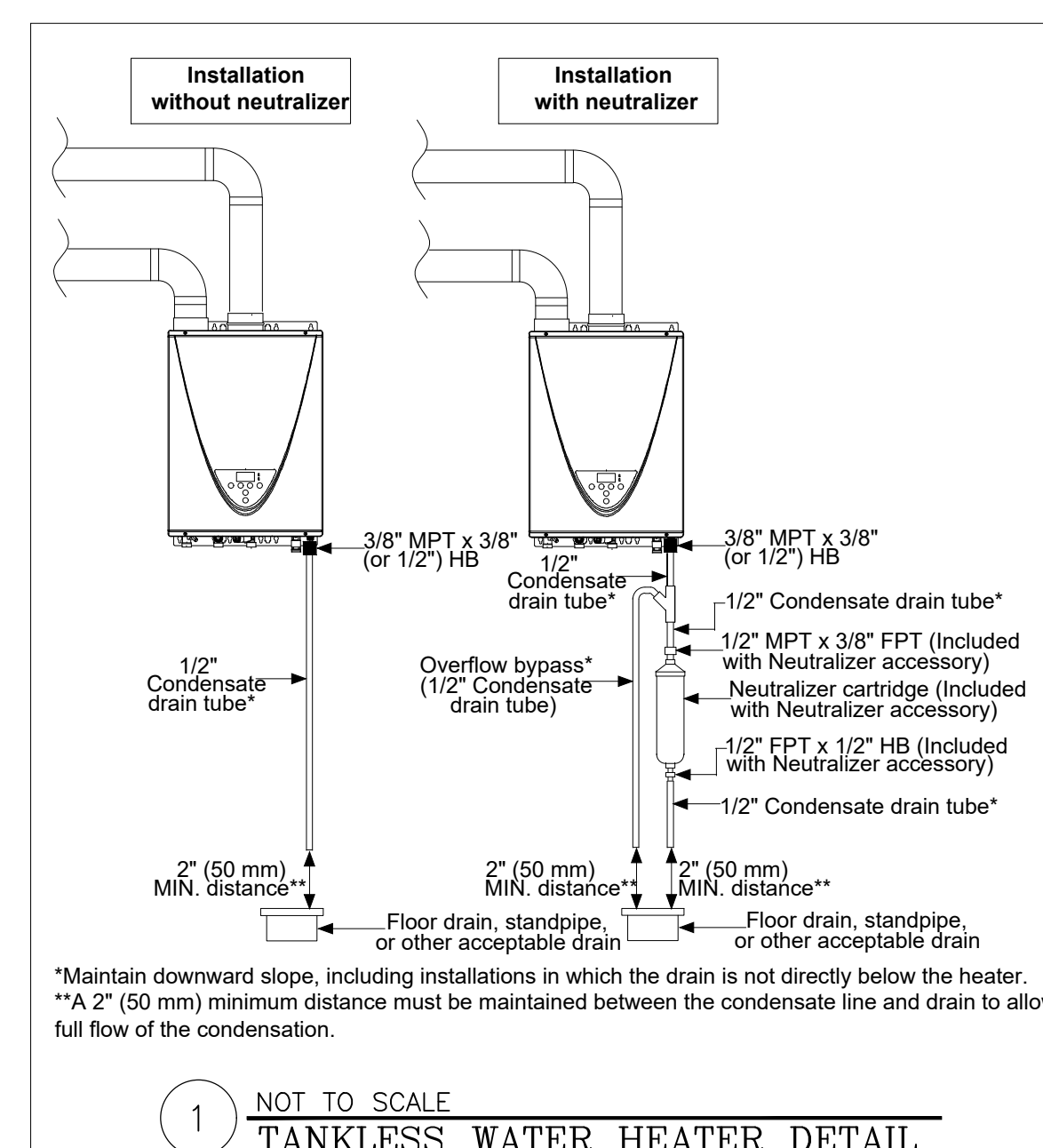
15-150 PSI Water Pressure, 40 PSI or above recommended for maximum flow.

15-150 PSI Water Pressure, 40 PSI or above recommended for maximum flow.

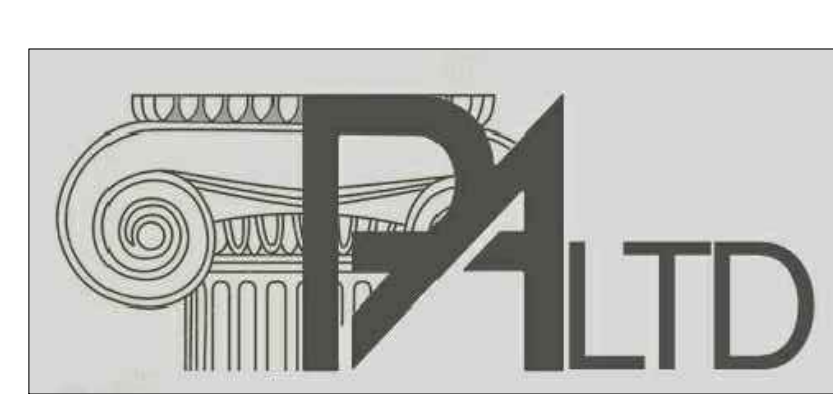
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15-150 PSI Water Pressure, 40 PSI or above recommended for maximum flow.



1 NOT TO SCALE  
TANKLESS WATER HEATER DETAIL



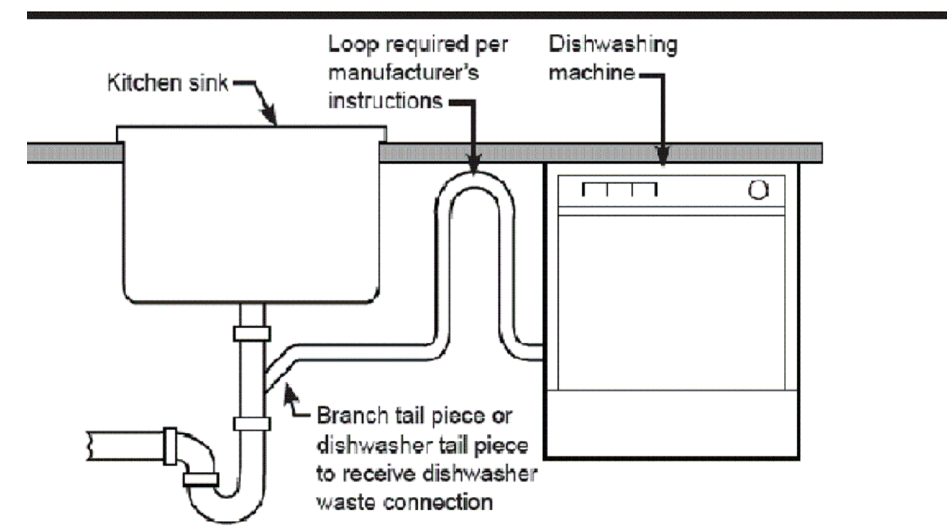
PixelArch Ltd.  
US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
+1 805 881 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:  
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PETALUMA RESIDENCE**  
3154 PETALUMA AVE. LONG BEACH, CA. 90808

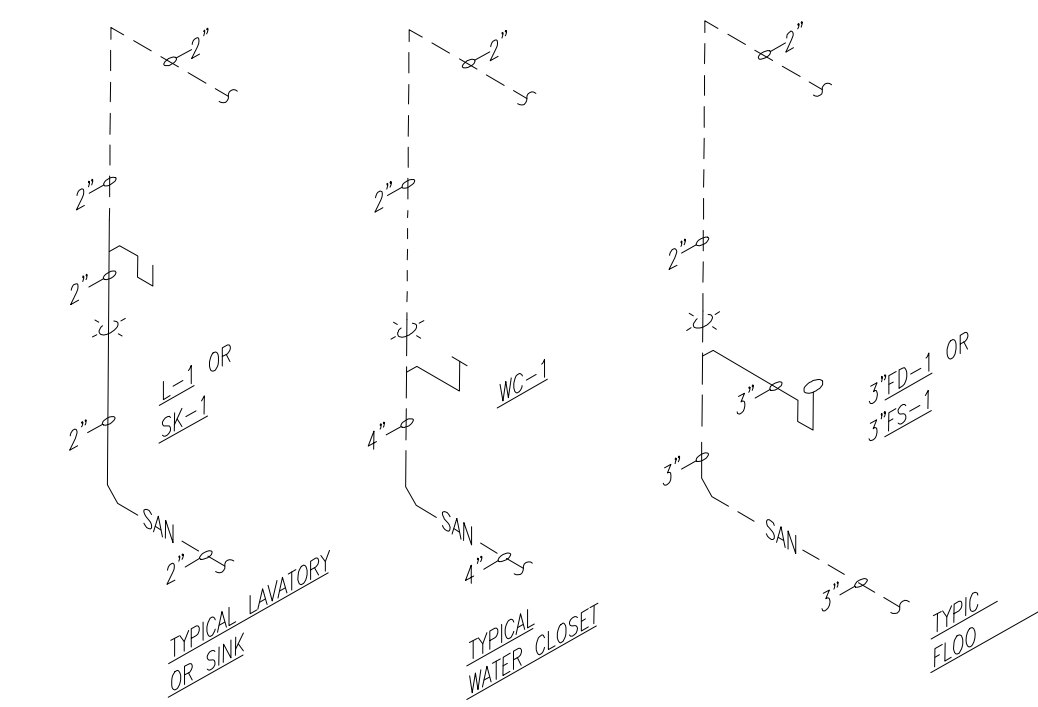
Date: \_\_\_\_\_ DRAWING TITLE: **GAS WATER HEATER** Sheet : \_\_\_\_\_  
Scale: 1/4"=1'-0" Page No. : \_\_\_\_\_  
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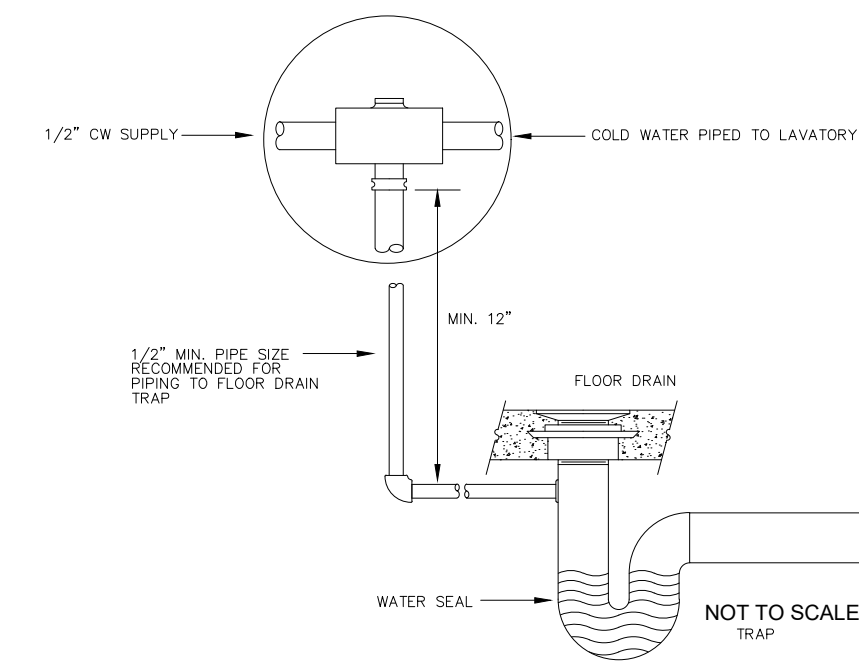
P6.0



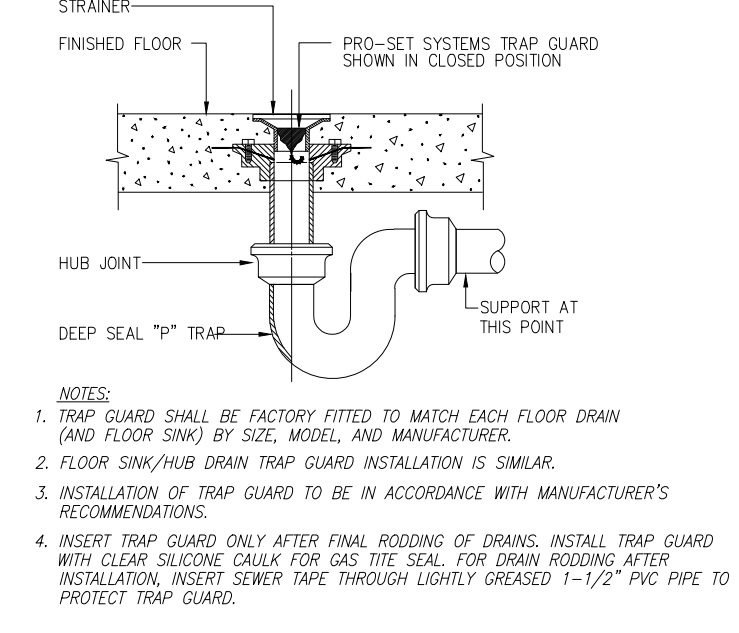
**13** DISHWASHER INSTALLATION DETAIL



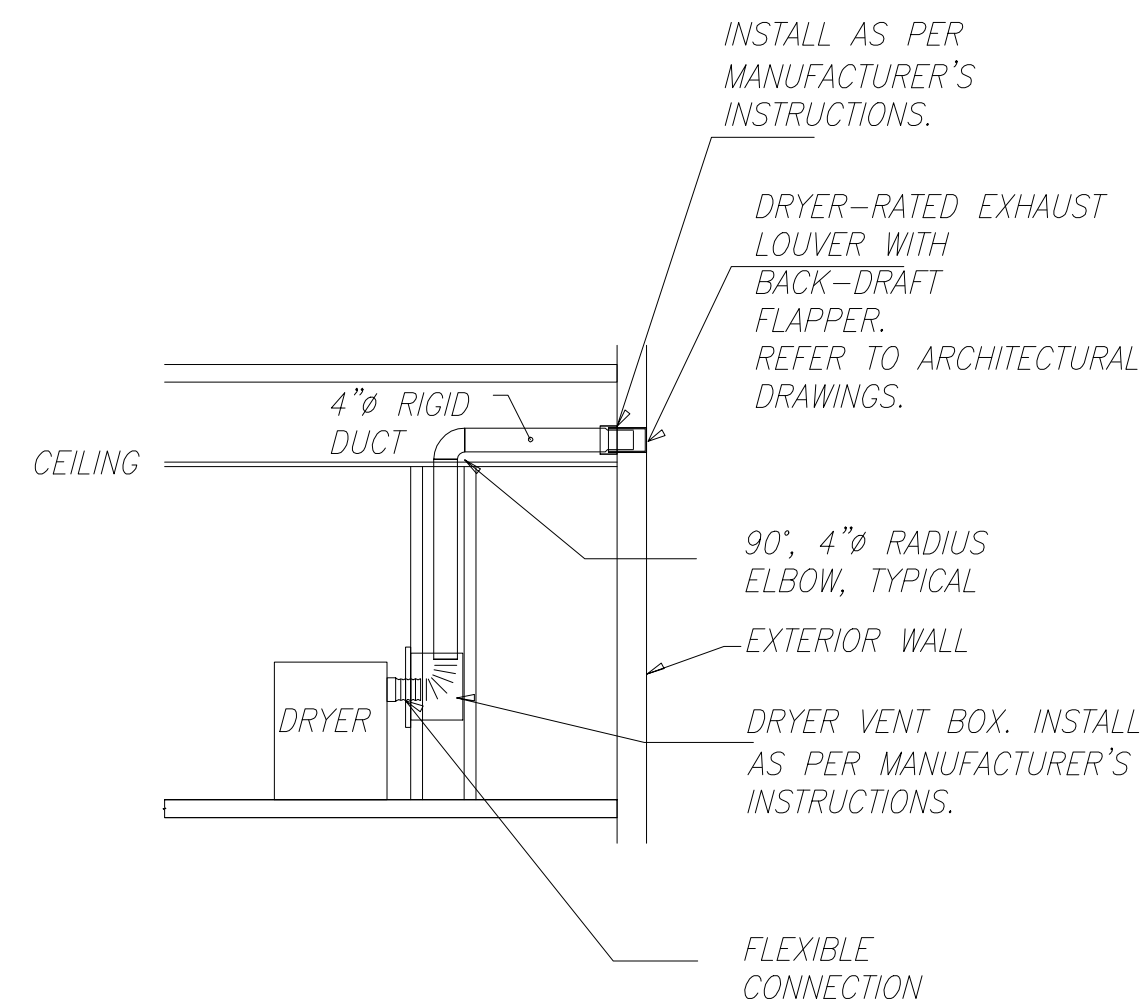
**11** TYPICAL WASTE AND VENT RISERS  
SCALE: NONE



**5** TRAP PRIMER



**4** FLOOR DRAIN WITH TRAP SEAL PROTECTION  
SCALE: NONE



**NOTES:**

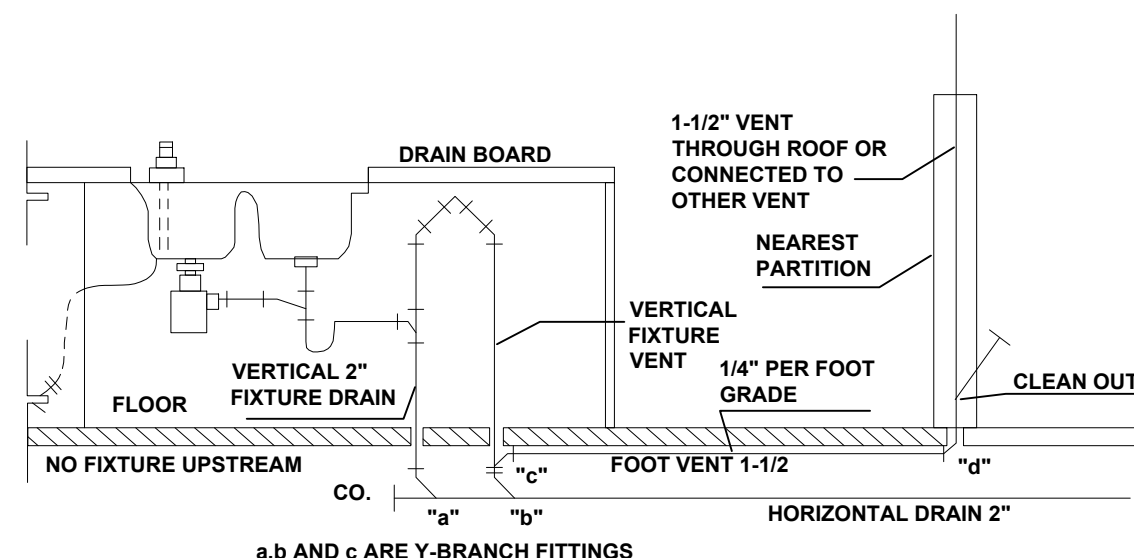
1. THE MALE END OF THE OVERLAPPED DUCT JOINTS SHALL EXTEND IN THE DIRECTION OF AIRFLOW.
2. NO SCREWS SHALL BE ALLOWED IN THE DRYER EXHAUST DUCT AND ALL JOINTS SHALL BE SEALED WITH FOIL FACED TAPE.
3. DRYER EXHAUST SYSTEM IS DESIGNED BASED ON A WASHER/DRYER AS MANUFACTURED BY GE MODEL GFDN120ED. CONTRACTOR SHALL USE SHEET METAL ROUND DUCTWORK AND MINIMIZE THE USE OF FLEXIBLE DUCTWORK.

MAXIMUM LENGTH OF 4 INCH DIAMETER RIGID METAL DUCT:  
No. OF ELBOW FEET

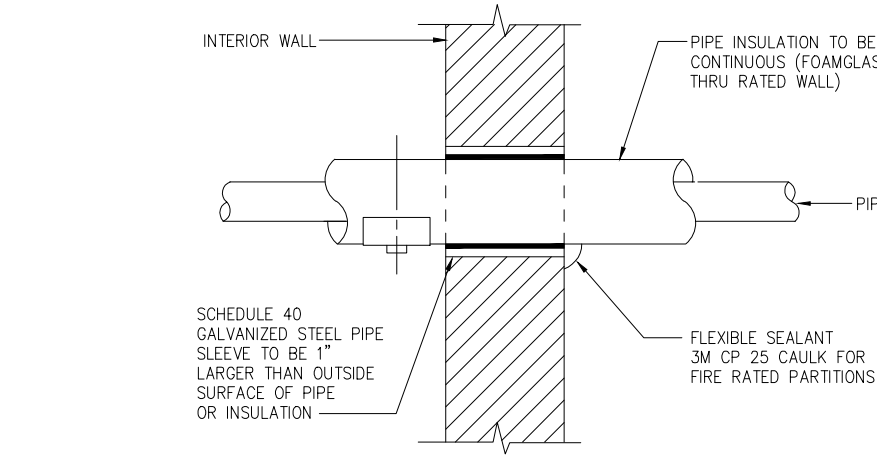
0	90
1	60
2	45
3	35
4	25

DRYER EXHAUST DETAIL "A"  
NOT TO SCALE

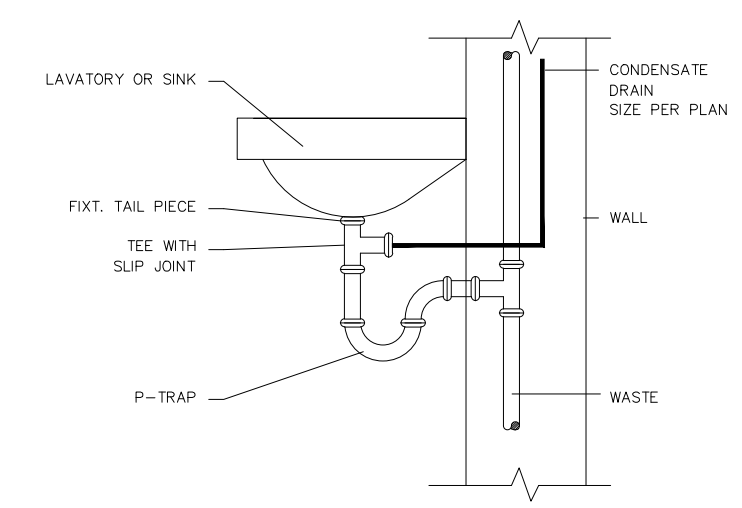
**12** DRYER VENT  
SCALE: NONE



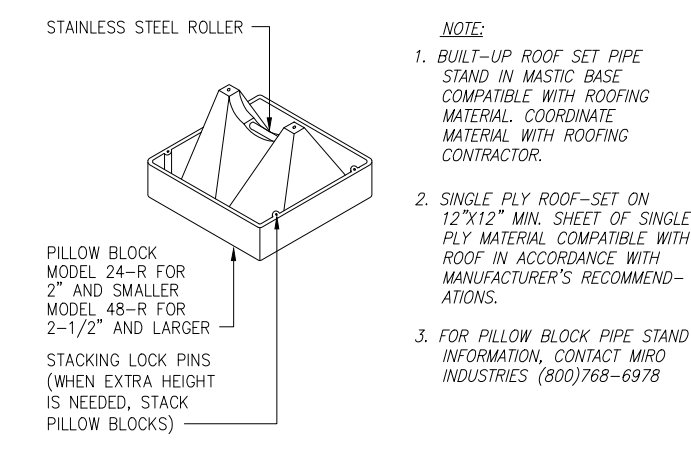
**10** ISLAND SINK VENT



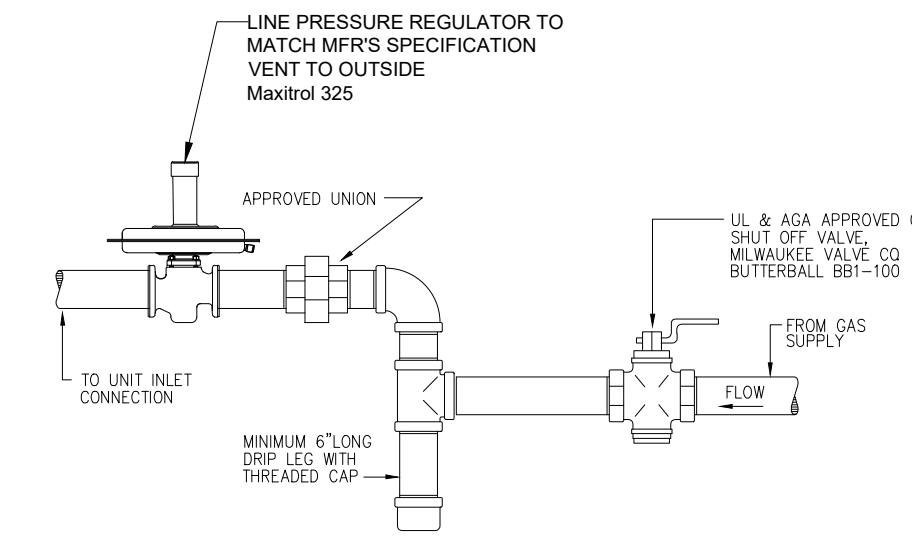
**6** INTERIOR WALL PENETRATION  
SCALE: NONE



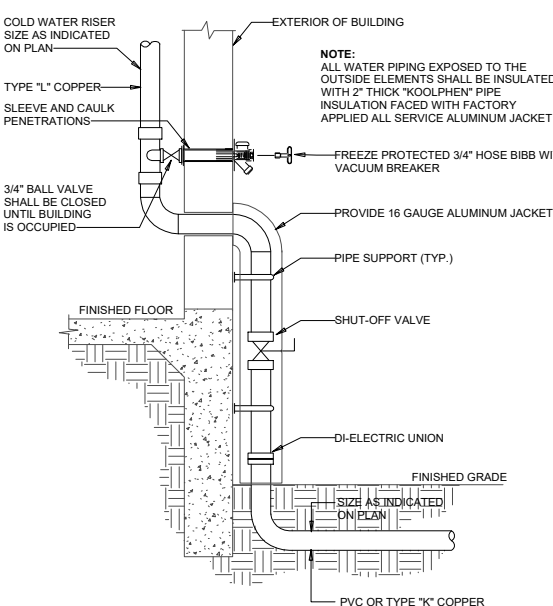
**3** CONDENSATE TERMINATION  
SCALE: NONE



**7** PIPE SUPPORT ON ROOF  
SCALE: NONE



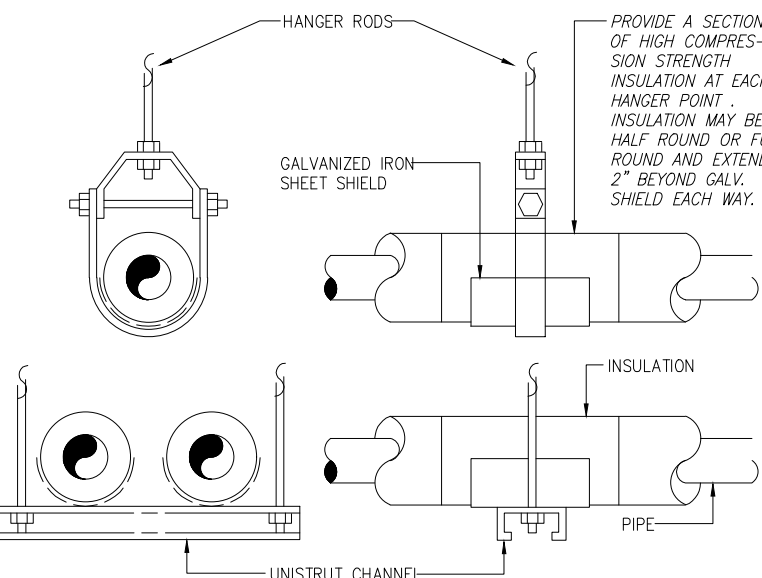
**2** GAS CONNECTION TO EQUIPMENT  
SCALE: NONE



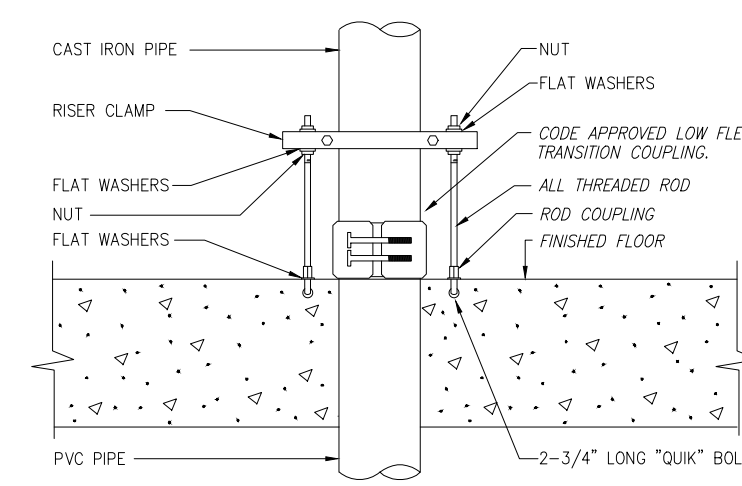
**9** WATER ENTRY DETAIL  
SCALE: NONE

MINIMUM DIMENSIONS OF GALVANIZED SHEET METAL PROTECTION SHIELDS AT PIPE HANGERS

NOMINAL SIZE PIPE	SHIELD LENGTH MIN. (IN.)	GUAGE THICKNESS
1/2" & 3/4"	12	18
1" - 2-1/2"	12	18
3" - 4"	12	18
6"	12	16



**8** HANGER FOR WATER PIPING  
SCALE: NONE



**1** CAST IRON TO PVC PIPE TRANSITION  
SCALE: NONE



**PixelArch Ltd.**  
US Office:  
5425 Carpinteria Ave # 636, Carpinteria CA 93014  
+1 805 861 7390 info@pixelarchltd.com  
www.pixelarchltd.com

Project Name and Address:  
INTERIOR REMODEL FOR  
**PETALUMA RESIDENCE**  
3154 PETALUMA AVE. LONG BEACH, CA. 90808

Date: \_\_\_\_\_ DRAWING TITLE: **PLUMBING DETAILS**  
Scale: 1/4"=1'-0"  
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