

PROJECT STATISTICS

APN: 726 201 5007  
ZONE: RESIDENTIAL  
OCCUPANCY: R-2-N  
SITE AREA: 6,750 SQ. FT.

EXISTING RESIDENCE

BUILDING TYPE: V-B  
(E) RESIDENCE 996 SQ. FT. 14.7%

(E) IMPERMEABLE AREAS

FRONT CONCRETE PORCH 113 SQ. FT. 1.7 %  
CONCRETE WALK 142 SQ. FT. 2.1 %  
CONCRETE DRIVEWAY 830 SQ. FT. 12.3 %

(E) PERMEABLE AREAS

(E) PATIO PERMEABLE PAVERS 1,000 SQ. FT. 14.8 %

(N) ADDITION

BUILDING TYPE: V-B  
(N) ADDITION 371 SQ. FT. 5.5 %  
(N) CONCRETE PORCH UNDER ROOF 33 SQ. FT. .5 %

LOT COVERAGE

(E) RESIDENCE 30.8 %  
(E) RESIDENCE WITH NEW ADDITION 36.8 %

OWNER-PROPERTY:

HEWUS KAREN / MAYORGA FELICE  
922 Molino Ave  
Long Beach, CA 90804  
felice.mayorga@gmail.com

STRUCTURAL:

STEWART DESIGN AND ENGINEERING  
23535 PALOMINO DR. ST 303  
DIAMOND BAR, CA 91765  
909 301 1017

CARL@STEWARTDEC.COM

DESIGNER:

OHANA BUILDERS  
34941 CALLE DEL SOL, CAPISTRANO  
BEACH, CA 92624

CONTRACTOR:

AmGenCorp  
34941 CALLE DEL SOL,  
CAPISTRANO BEACH,  
CA 92624

www.AmGenCorp.com

GENERAL NOTES

- 1) CONCRETE STRENGTH TO BE 2500 PSI min AT 28 DAYS
- 2) SOILS ASSUMED TO BE NON-EXPANSIVE, SANDY SOILS
- 3) NATURAL GRADE IS UNDISTURBED OR 90% COMPACTED SOIL
- 4) FOOTING STEEL REINFORCING TO HAVE 3" min COVERAGE AND CLEARANCE FROM NATURAL GRADE
- 5) DESIGN BELOW MAY SUPPORT ONE FLOOR AND ROOF/CEILING ASSEMBLY. (THE SLAB IS NOT CONSIDERED A FLOOR)
- 6) EPOXY WILL NEED SPECIAL INSPECTION
- 7) SOIL LOAD BEARING CAPACITY(CRC R 401.4) 1500 psf

EDCO DISPOSAL

COMMERCIAL & RESIDENTIAL WASTE REMOVAL & RECYCLING PROFESSIONALS

2755 California Ave, Signal Hill, CA 90755

EDCODISPOSAL.COM

NOTES

(General Information)

10.1 ADVISORY: Application and plan submittal to other County departments for their review and approval may be required and is the responsibility of the applicant/agent.

10.2 Note: this site is not located in a high fire area.

922 MOLINO AVE. REMODEL

922 MOLINO AVE.  
LONG BEACH CA.  
90804

AIN# 726 201 5007

Attachment C

SCOPE OF WORK

NEW LIVING SPACE ADDITION ON EXISTING RESIDENCE TO INCLUDE:

NEW MASTER BEDROOM AND BATH.  
NEW LAUNDRY AREA.

SHEET INDEX

SHEET #	ARCHITECTURAL
A1.0	SITE PLAN / GENERAL NOTES / VICINITY MAP
A1.1	ENLARGED SITE PLAN WITH NEW ADDITION
A1.3	CONCRETE DRAINAGE PLAN
A2.0	PROPOSED FLOOR PLAN / EXISTING FLOOR PLAN W/ DEMO / SCHEDULES
A2.1	MOLINO VISUAL NOTES OF EXISTING CONDITIONS
A3.0	ELEVATIONS / SECTIONS
A5.0	ROOF PLAN
D1	ARCHITECTURAL DETAILS
D2	HORIZONTAL SIDING DETAILS
D2.1	HORIZONTAL SIDING DETAILS
D3	ELECTRIC WATER HEATER DETAILS
E1	ELECTRICAL PLAN NEW ADDITION
E2	ELECTRICAL NOTES AND GENERAL NOTES
Grand total: 13	

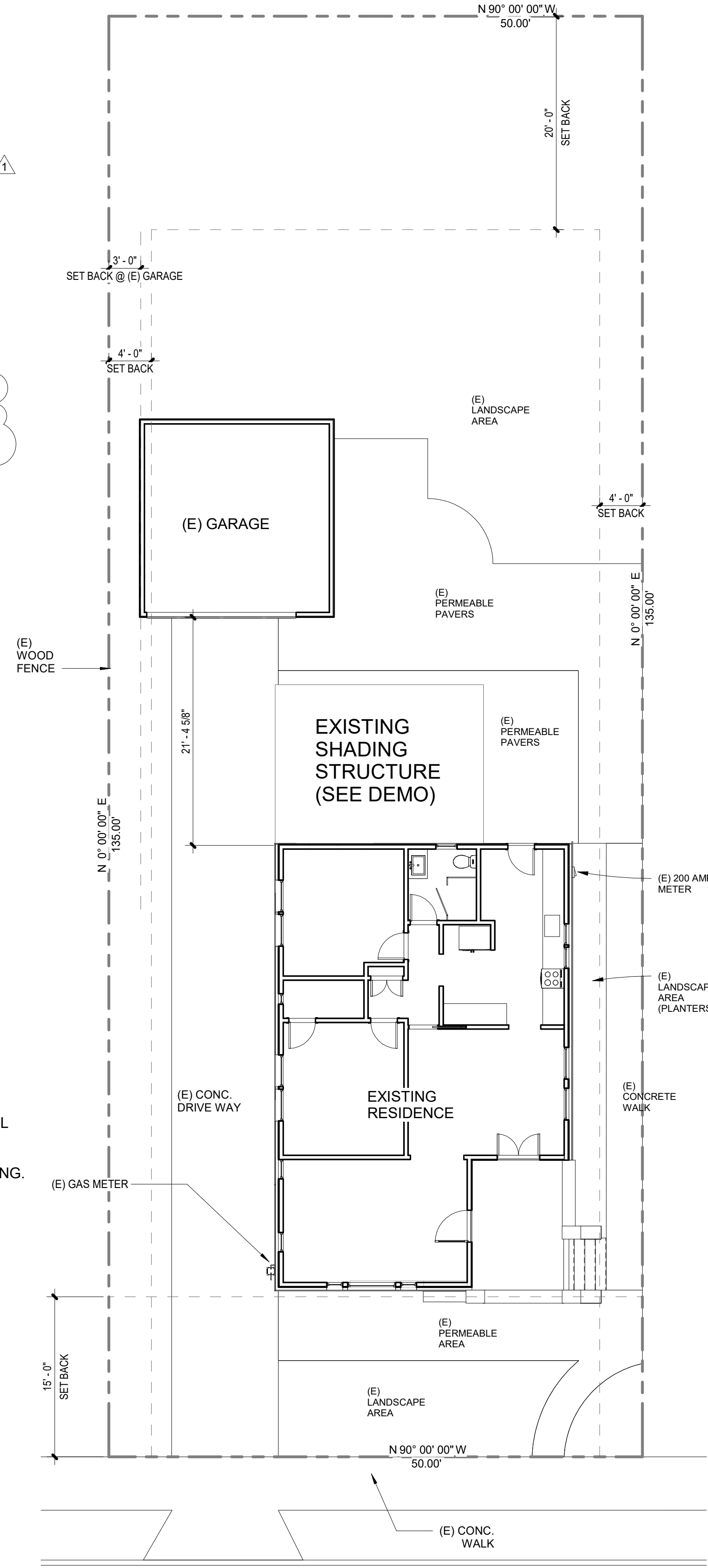
SHEET #	ENERGY
GB-1	GREEN CODE REQUIREMENTS
GB-2	GREEN CODE REQUIREMENTS
T24-1	TITLE 24
T24-2	TITLE 24
T24-3	TITLE 24
Grand total: 5	

SHEET #	STRUCTURAL
S-1	STRUCTURAL NOTES
S-2	FOUNDATION & FRAMING PLAN
S-3	DETAILS
S-4	DETAILS
S-5	DETAILS
Grand total: 5	

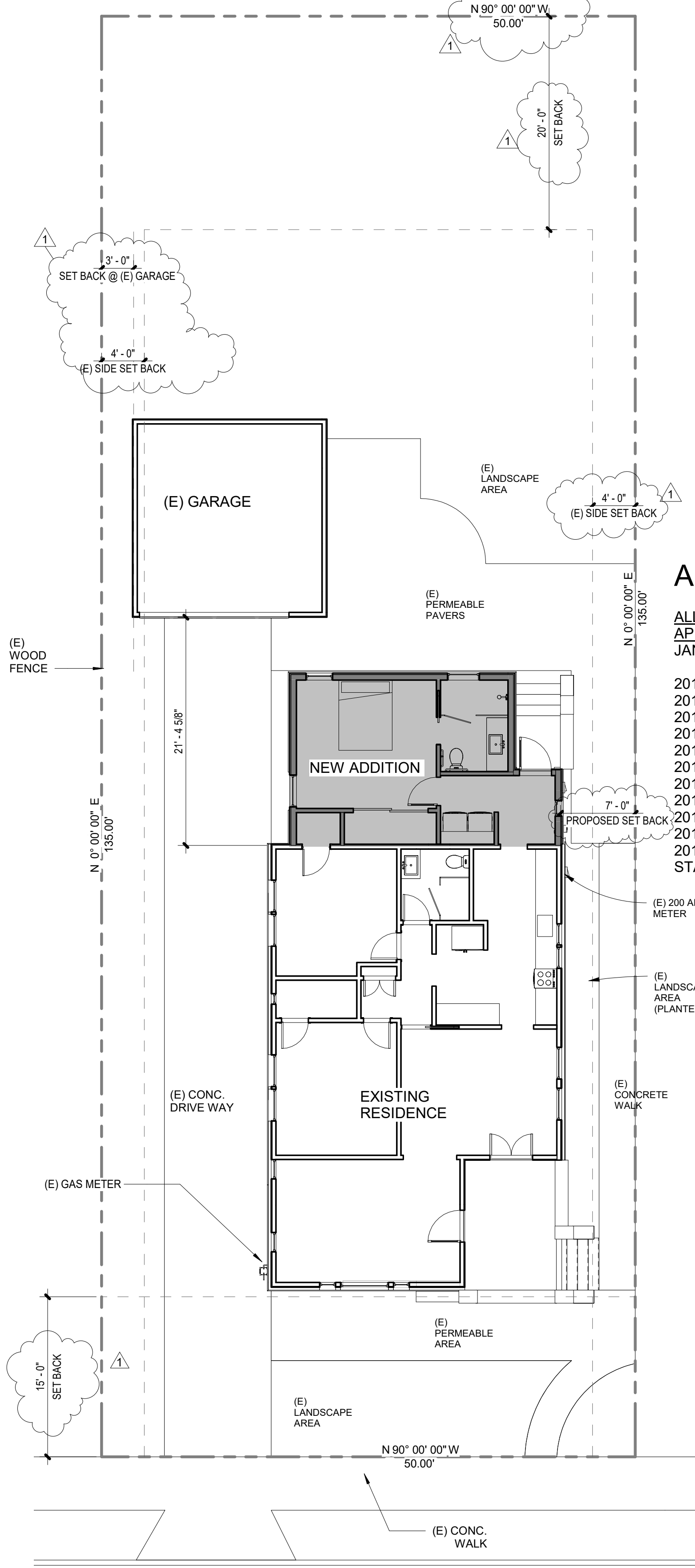
APPLICABLE CODES

ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATION APPLICABLE CODES AS OF JANUARY 1, 2020 THESE INCLUDE, BUT ARE NOT LIMITED TO;

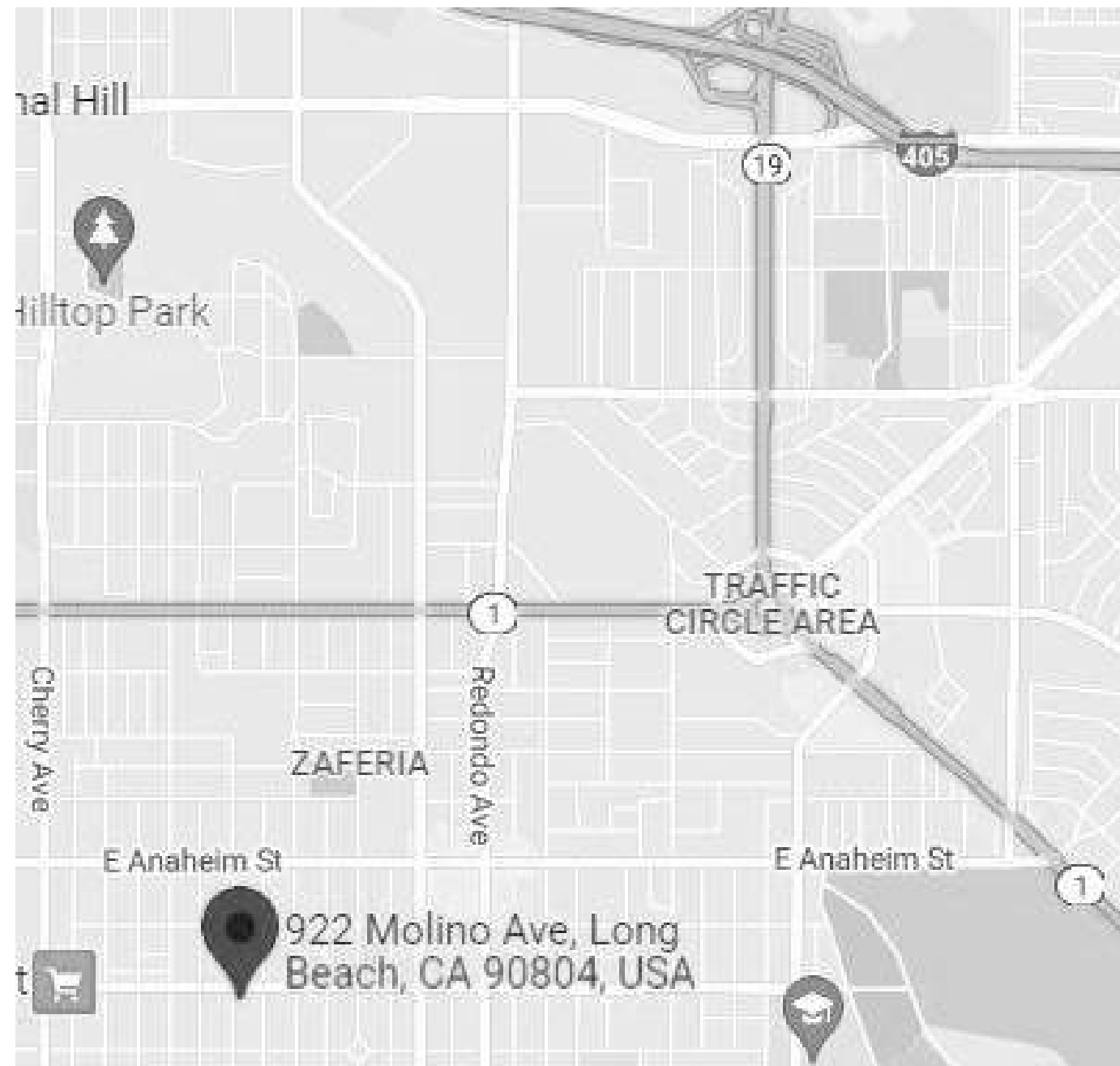
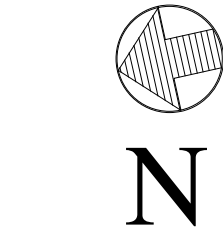
2019 CALIFORNIA BUILDING CODE  
2019 CALIFORNIA ADMINISTRATION CODE  
2019 CALIFORNIA BUILDING CODE BASED ON THE INTERNATIONAL BUILDING CODE, 2018 EDITION  
2019 CALIFORNIA RESIDENTIAL CODE BASED ON THE 2018 INTERNATIONAL RESIDENTIAL CODE  
2019 CALIFORNIA ELECTRICAL CODE BASED ON THE 2017 NFPA 72 NATIONAL ELECTRICAL CODE  
2019 CALIFORNIA MECHANICAL CODE BASED ON THE 2018 UNIFORM MECHANICAL CODE WITH  
2019 CALIFORNIA PLUMBING CODE BASED ON THE 2018 UNIFORM PLUMBING CODE WITH  
2019 CALIFORNIA ENERGY CODE  
2019 CALIFORNIA FIRE CODE BASED ON THE 2018 INTERNATIONAL FIRE CODE  
2019 CALIFORNIA GREEN BUILDING CODE  
2019 CALIFORNIA REFERENCED STANDARDS CODE CODES STATE CODES



2 EXISTING SITE PLAN  
1/8" = 1'-0"



1 EXISTING SITE PLAN W/ NEW ADDITION  
1/8" = 1'-0"



VICINITY MAP



THESE DRAWINGS HAVE BEEN PREPARED FOR DESIGN ONLY. CIVIL, STRUCTURAL, MECHANICAL, AND OTHER RELATED ENGINEERING DESIGN AND SPECIFICATIONS ARE THE RESPONSIBILITY OF THE RESPECTIVE ENGINEERS.

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REVISIONS

6 6 22 CITY CORRECTIONS

CLIENT INFO

922 MOLINO AVE.  
LONG BEACH CA  
90804

SHEET NAME

SITE PLAN / GENERAL NOTES / VICINITY MAP

Project number LB 1221

Date 6 13 22

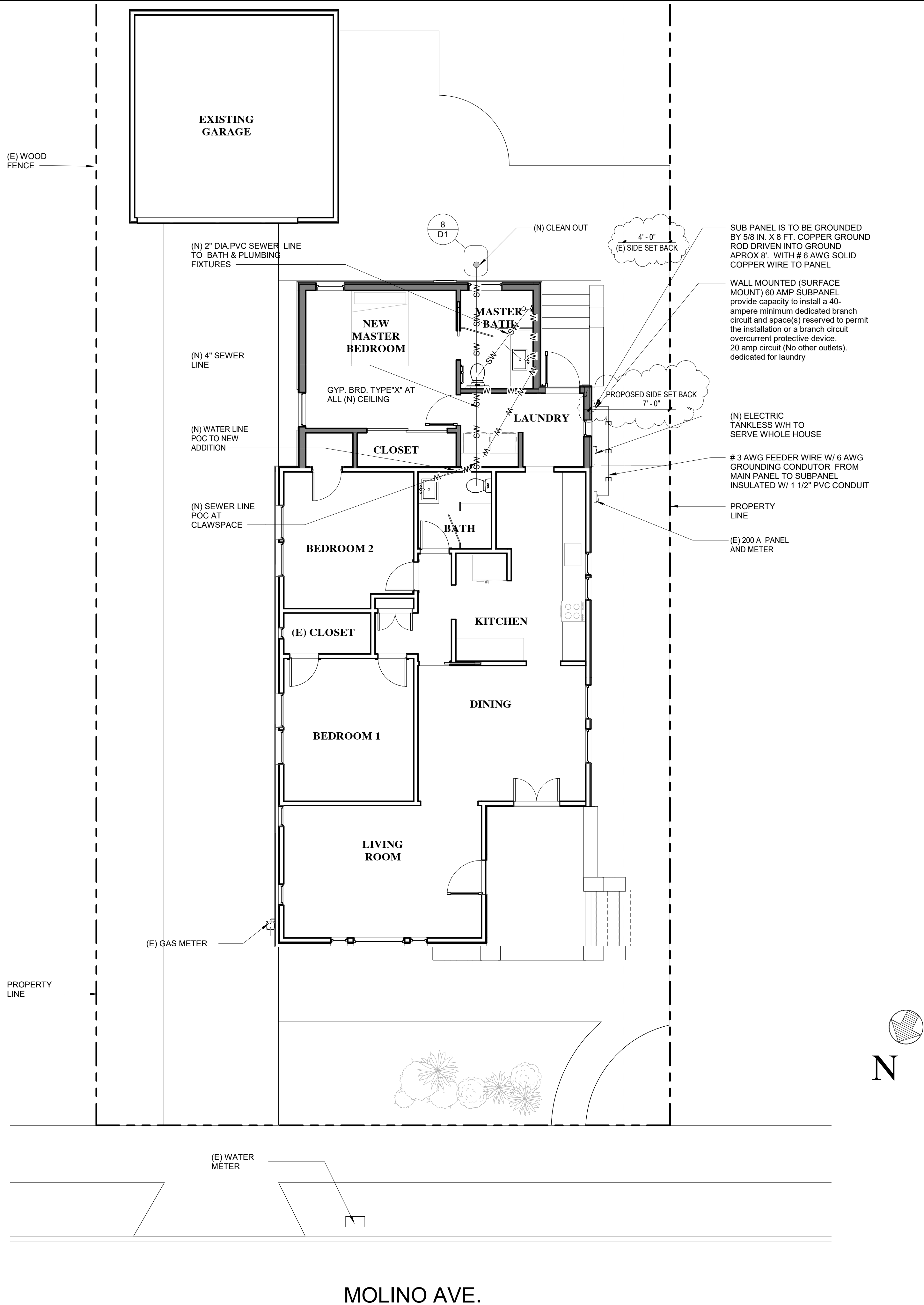
Drawn by Alpie T., Pedro O

Checked by P.O.

SHEET

A1.0

Scale 1/8" = 1'-0"



ENLARGED SITE PLAN WITH NEW ADDITION

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



AMERICAN GENERAL CORPORATION

www.AmGenCorp.com

34941 CALLE DEL SOL,  
CAPISTRANO BEACH,  
CA 92624

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SHEET NAME

ENLARGED SITE PLAN WITH  
NEW ADDITION

Project number LB 1221

Date 6 13 22

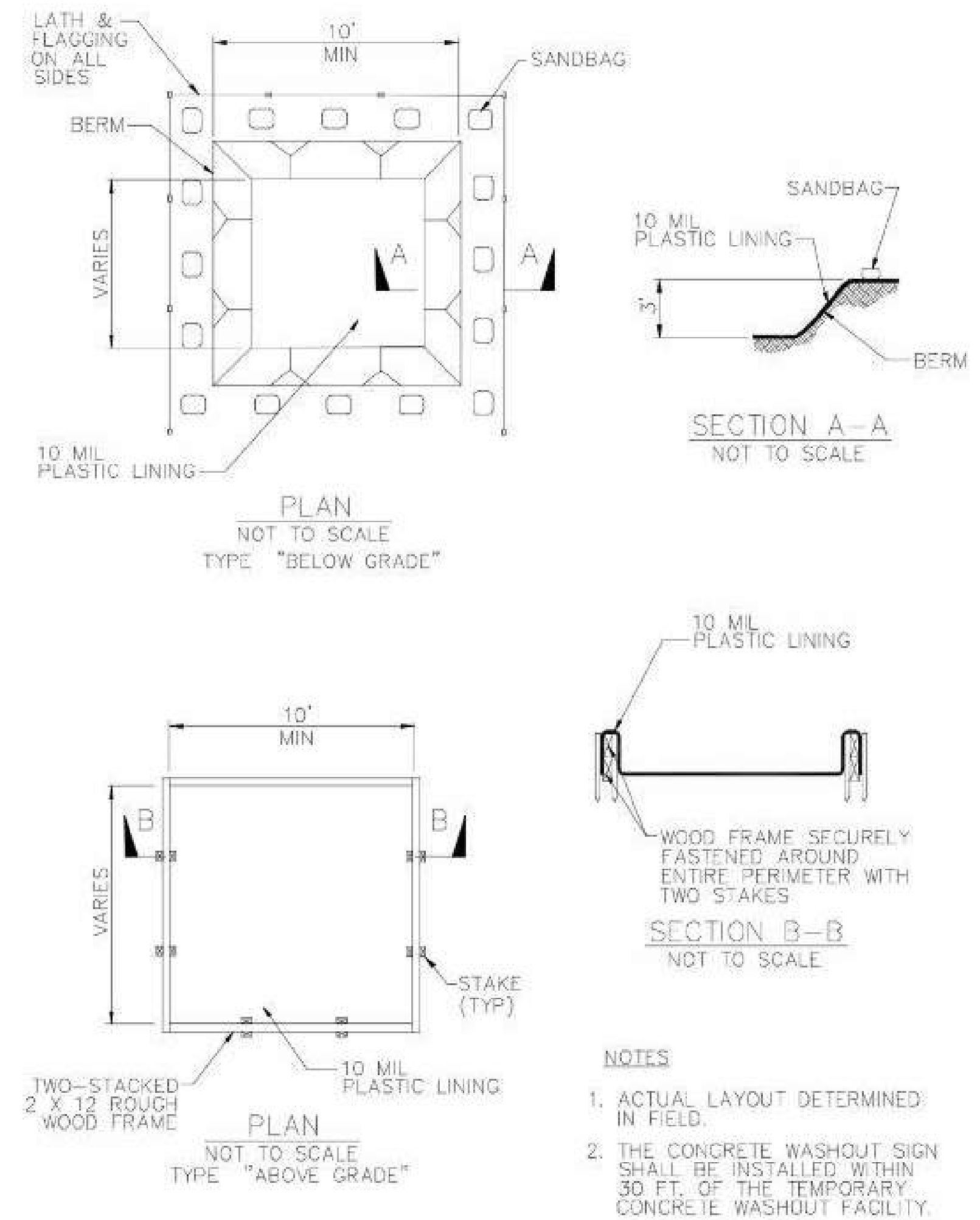
Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

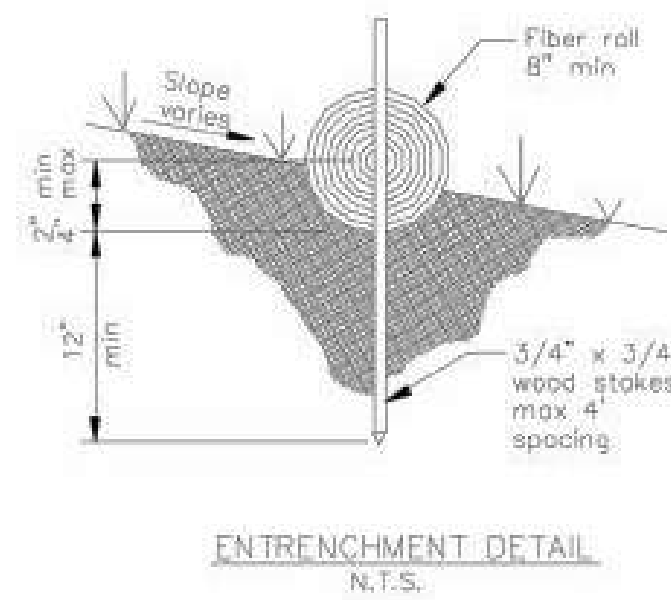
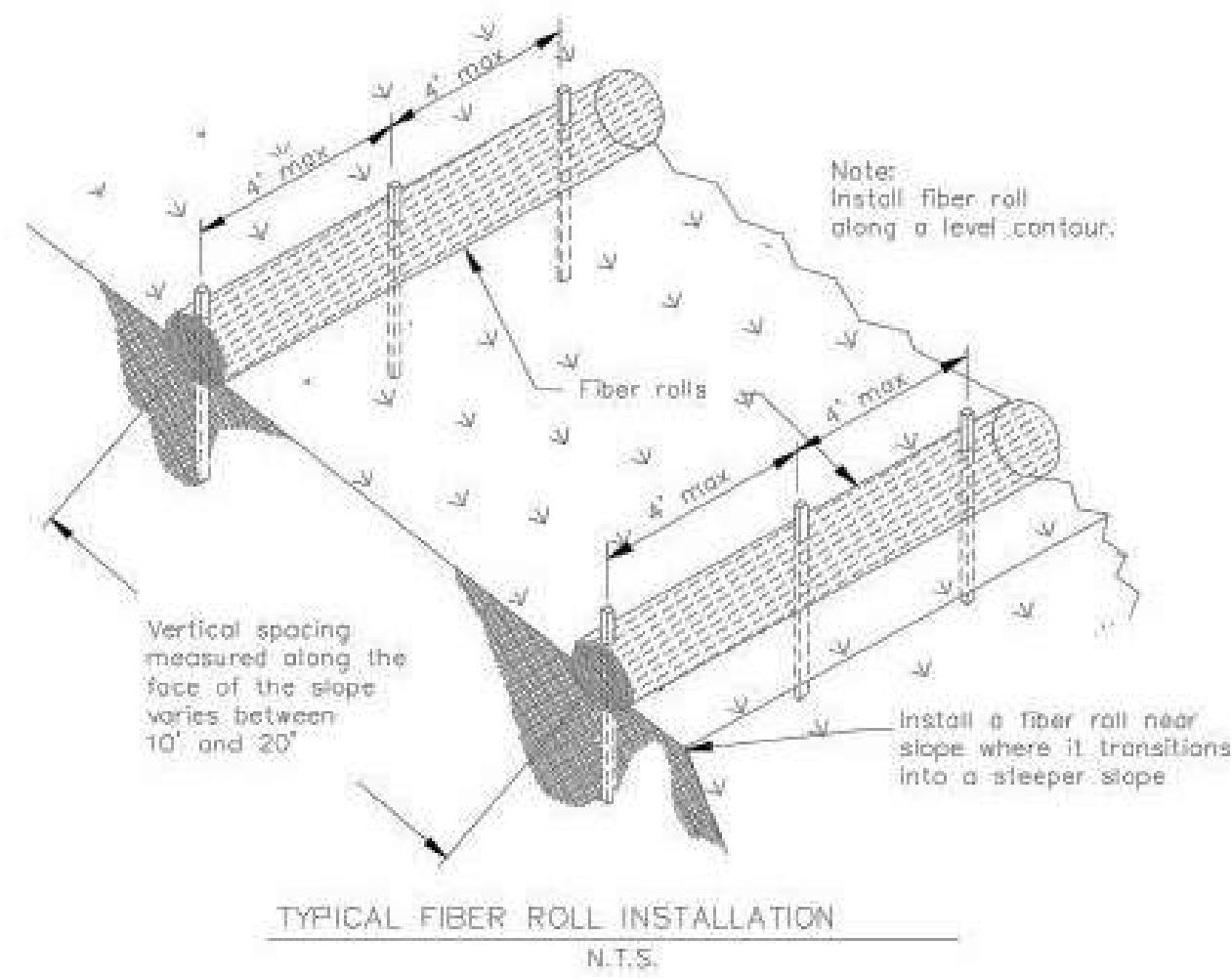
A1.1

Scale 3/16" = 1'-0"



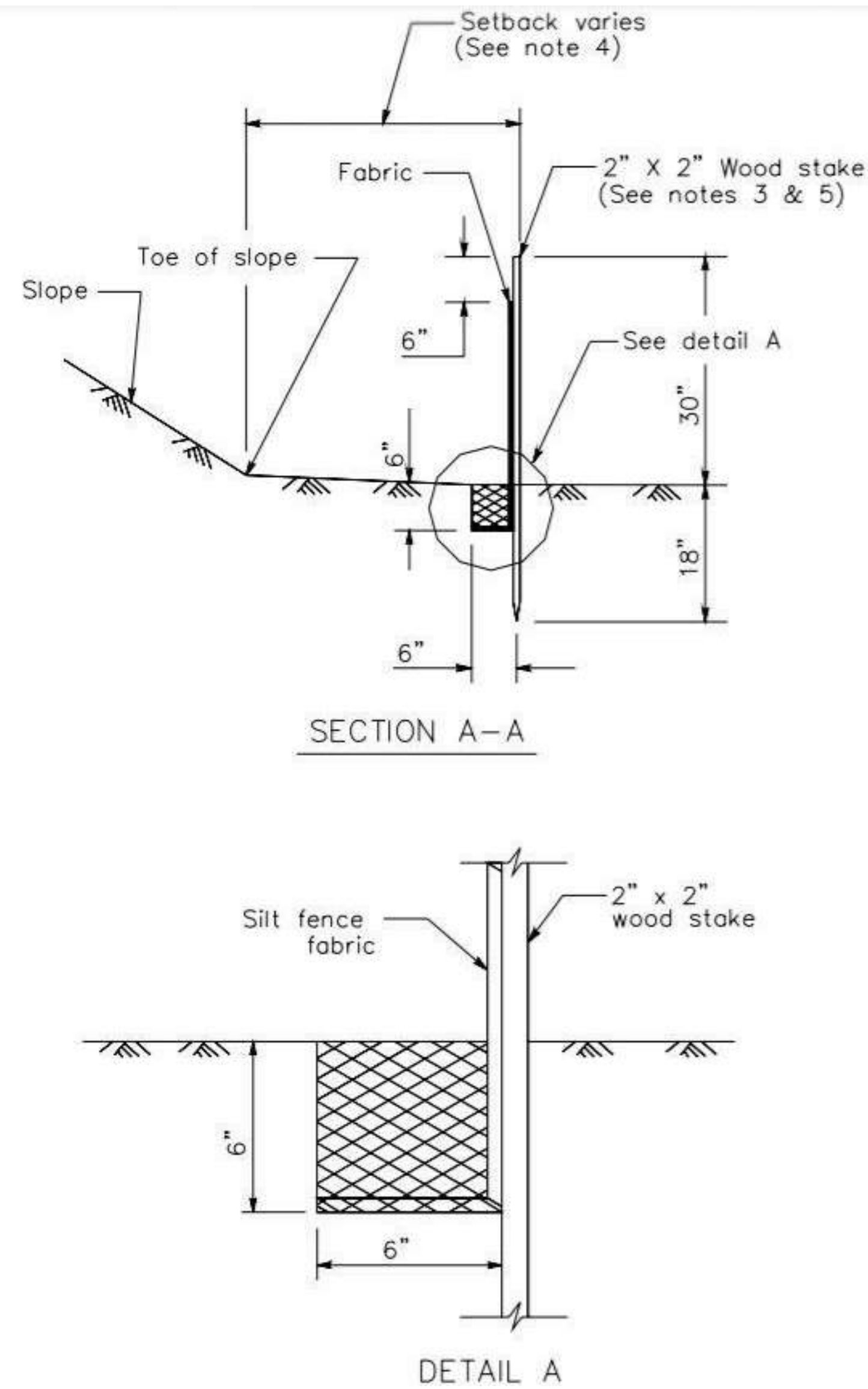
July 2012 California Stormwater BMP Handbook Construction www.casqa.org 6 of 7

**Fiber Rolls SE-5**



## 2 CONCRETE WASTE MANAGEMENT DETAILS

12" = 1'-0"



**LEGEND**

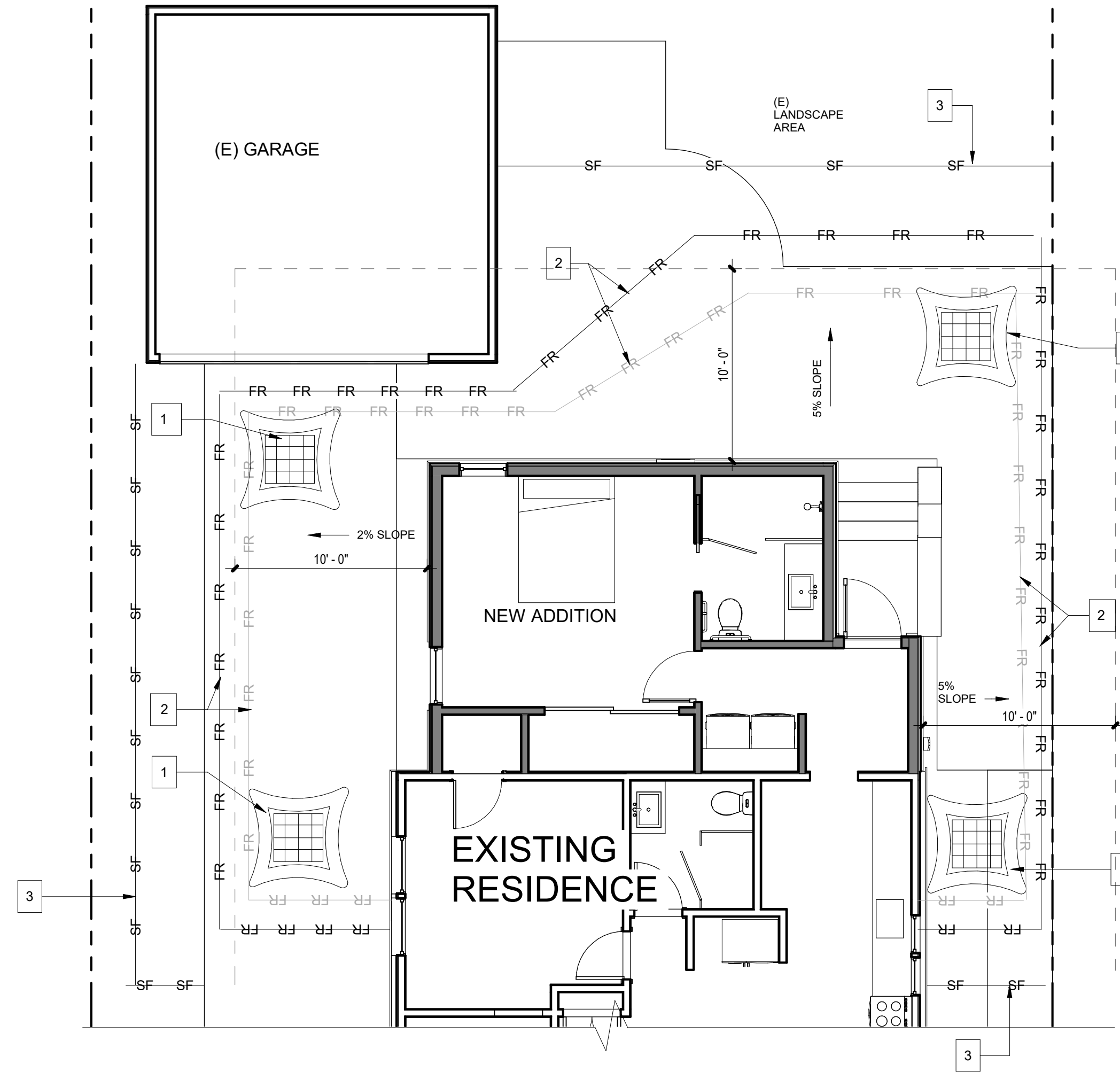
Tamped backfill

Slope direction

Direction of flow

## 1 CONCRETE DRAINAGE PLAN W/ NEW ADDITION

3/16" = 1'-0"



### NOTES:

20.2 FINISH FLOOR SHALL BE NO LESS THAN 8 INCHES PLUS 2% PER FOOT ABOVE TOP OF CURB AT STREET FOR DRAINAGE OFF THE LOT. PLEASE NOTE THIS ON SITE PLAN. [CRC 317.1]

20.3 MINIMUM 5% SLOPE FOR A MINIMUM OF 10' AWAY FROM STRUCTURE (2% IF SURFACE IS IMPERVIOUS) OR TO AN APPROVED DRAINAGE SYSTEM. SWALES USED FOR THIS PURPOSE ARE TO HAVE A MINIMUM SLOPE OF 2%. SHOW HOW DRAINAGE IS TO BE CONVEYED OFF SITE. [SBCO GRADING ORDINANCE #4766]

### STORM WATER DRAINAGE AND RETENTION NOTES

LOCATE CWA AT LEAST 50' AWAY FROM STORM INLETS, DRAINAGE DITCHES, AND WATERCOURSES.

- 1 CONCRETE WASHOUT AREA SEE CONCRETE WASTE MANAGEMENT DETAIL 2/A1.3
- 2 INSTALL FIBER ROLLS PER CASQA DETAIL SE-5
- 3 SILT FENCE SEE DETAIL BELOW

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### REVISIONS

6 6 22 CITY CORRECTIONS

### CLIENT INFO

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LONG BEACH CA  
90804

### SHEET NAME

CONCRETE DRAINAGE PLAN

Project number LB 1221  
Date 6 13 22  
Drawn by Alpie T., Pedro O  
Checked by Checker  
SHEET

**A1.3**

Scale As indicated

NOTE:  
ALL WINDOWS MINIMUM 1 TEMPERED PANE PER  
BUILDING CODE R337

WINDOWS WITH IN 24" OF DOOR, TUB, SHOWER TO HAVE  
BOTH PANELS TEMPERED

### WINDOW / DOOR LEGEND

(E) EGRESS WINDOW. MINIMUM NET CLEAR  
OPENING OF NOT LESS THAN 5.7 SQ. FEET  
(5.0 SQ. FT. MINIMUM IF AT GRADE FLOOR  
LEVEL). THEY SHALL ALSO HAVE A MINIMUM  
CLEAR OPENING WIDTH OF 20" AND A  
MINIMUM CLEAR OPENING HEIGHT OF 24"  
44" MAX. TO BOTTOM OF OPENING

(T) TEMPERED SAFETY GLASS

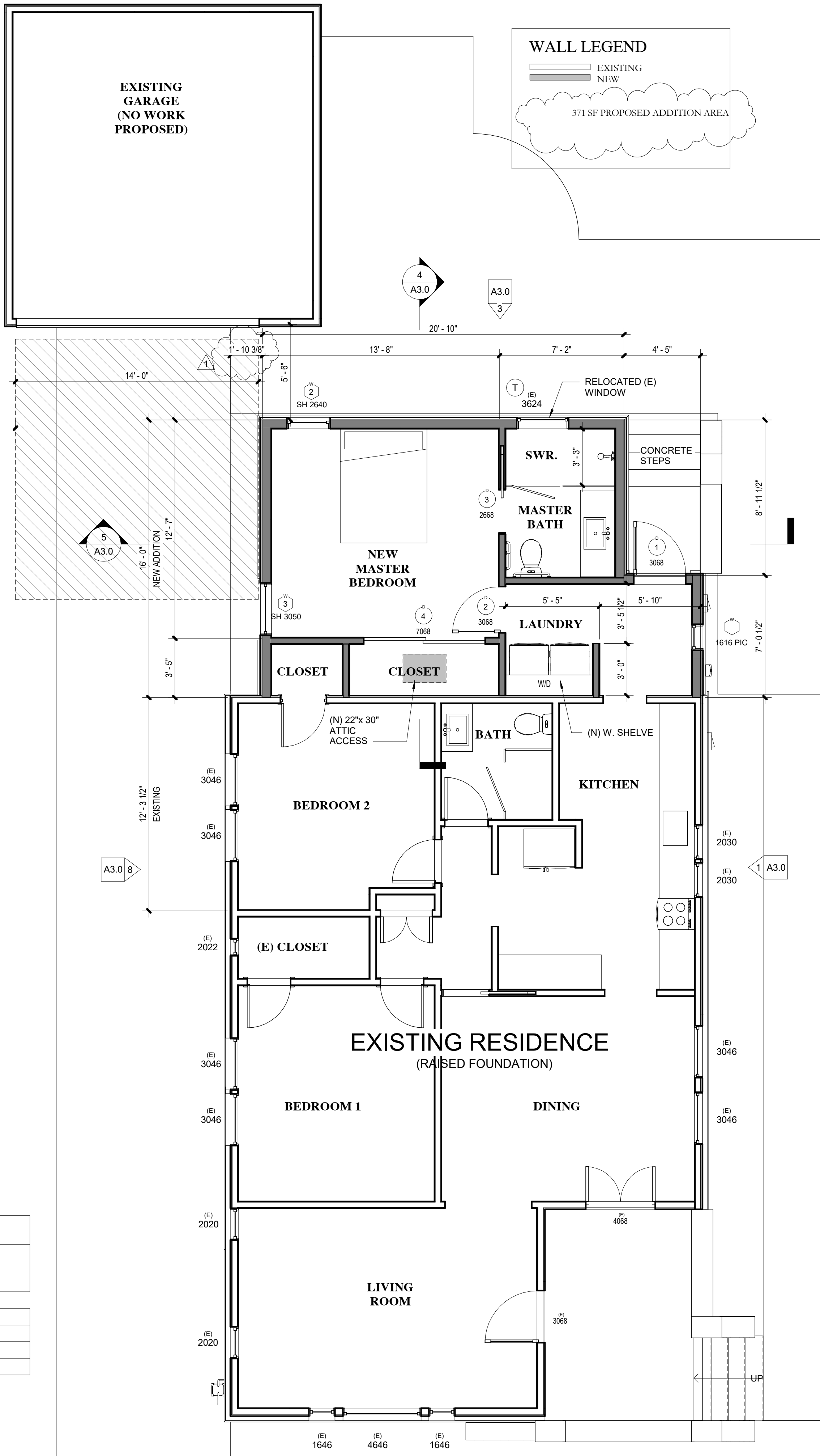
DOOR SCHEDULE1				
Door Number	Door Size	Width	Height	U-FACTOR
1	3068	3' - 0"	6' - 8"	
2	2868	2' - 8"	6' - 8"	
3	2668	2' - 6"	6' - 8"	
4	7068	7' - 0"	6' - 8"	

WINDOW SCHEDULE.				
Mark	Width	Height	U FACTOR (T-24)	SHGC (T-24)
			STC	
2	2' - 6"	4' - 0"		
3	3' - 0"	5' - 0"		
4	1' - 6"	1' - 6"		
5	3' - 0"	2' - 0"		

### WALL LEGEND

EXISTING  
NEW

371 SF PROPOSED ADDITION AREA



### 1 PROPOSED FLOOR PLAN WITH (N) ADDITION

1/4" = 1'-0"

EXISTING  
GARAGE  
(NO WORK  
PROPOSED)

(E) CONCRETE  
PATIO

DEMO EXISTING  
SHADING  
STRUCTURE

DEMO PORTION (E)  
CONC. PORCH  
OUTLINE

BEDROOM 2

BATH

KITCHEN

(E) CLOSET

EXISTING RESIDENCE  
(RAISED FOUNDATION)

BEDROOM 1

DINING

(E) LANDSCAPE  
AREA  
(PLANTERS)

(E) PERMEABLE  
AREA

LIVING  
ROOM



N

### 2 EXISTING FLOOR PLAN W/ DEMO

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### REVISIONS

6 6 22 CITY CORRECTIONS

### CLIENT INFO

922 MOLINO AVE.  
LONG BEACH CA  
90804

### SHEET NAME

PROPOSED FLOOR PLAN /  
EXISTING FLOOR PLAN W/  
DEMO / SCHEDULES

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

A2.0

Scale 1/4" = 1'-0"



open-end overhang.



existing windows and trim.



shingle siding and horizontal siding / wainscoat.



over-hang with wood detailing.



over-hang with wood detailing.



color and texture of siding.



Remove existing structure.



Entrance: No construction / no renovation.



Front of building: No construction / no renovation.



Remove existing structure.  
Remove, relocate existing door.  
existing wooden ends of overhang on the extension.

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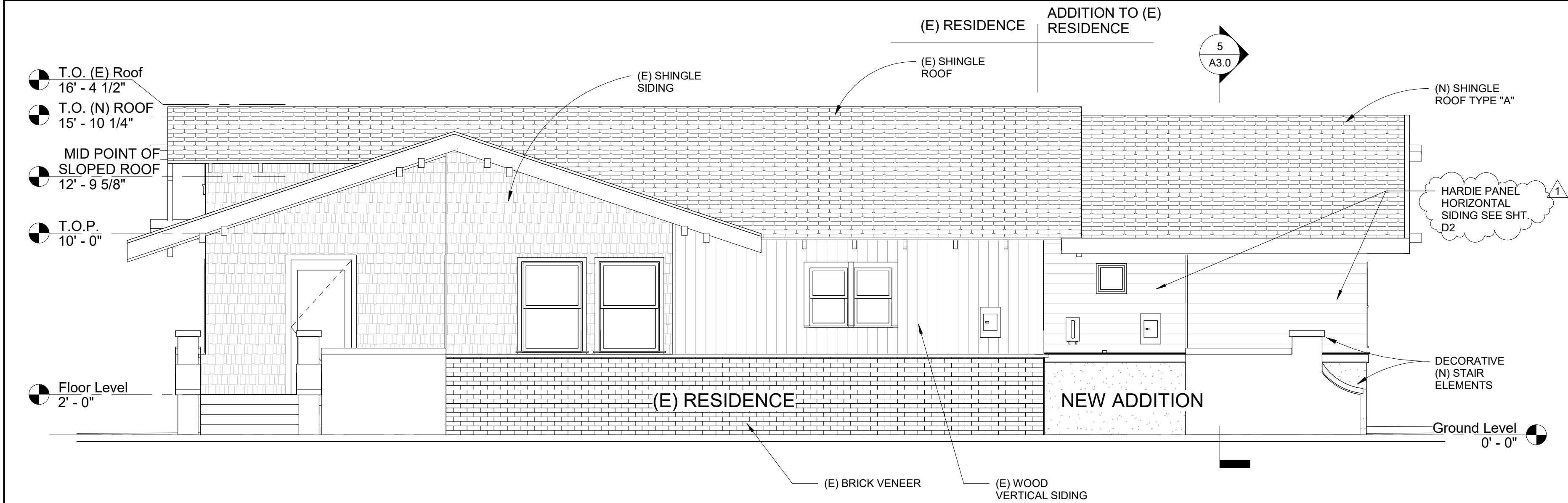
SHEET NAME

MOLINO VISUAL NOTES OF EXISTING CONDITIONS

Project number	LB 1221
Date	6 13 22
Drawn by	Alpie T., Pedro O
Checked by	Checker
SHEET	

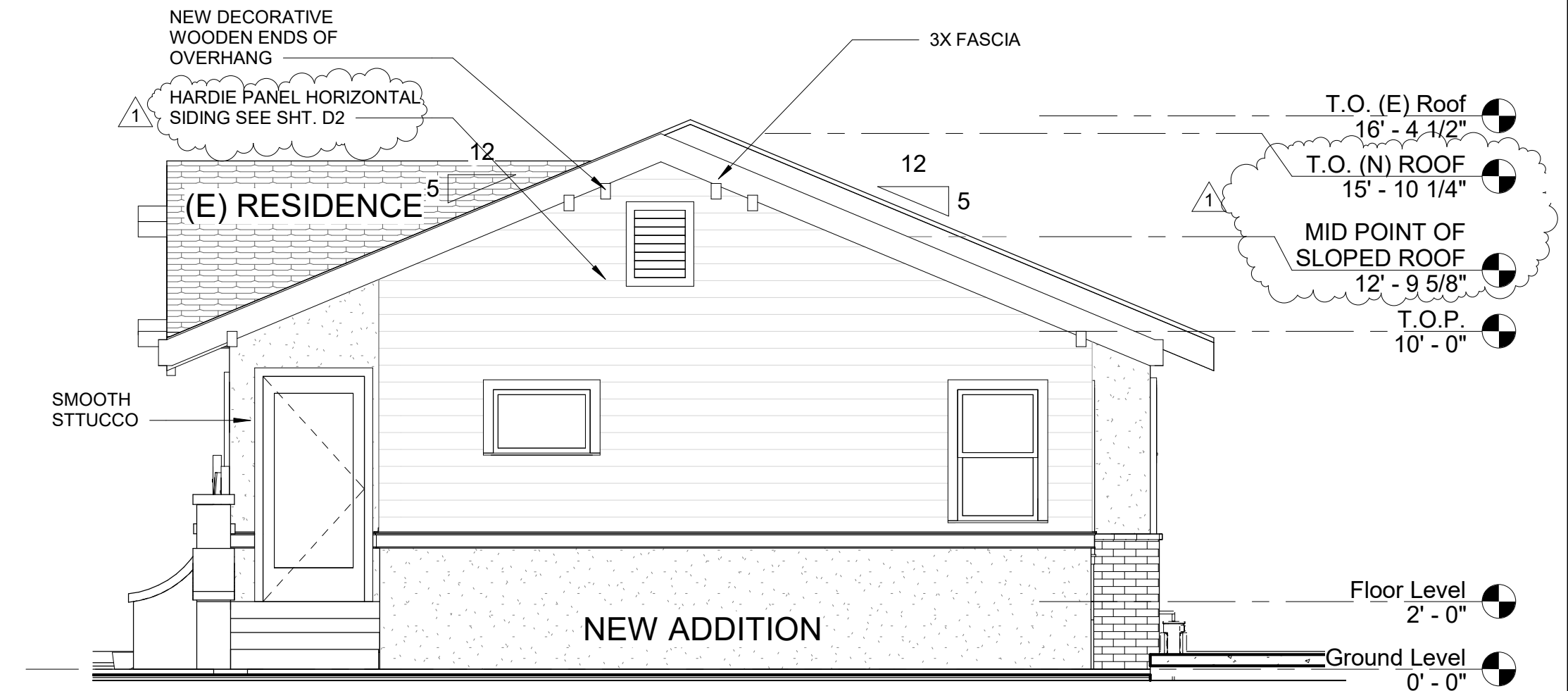
A2.1

Scale 1 1/2" = 1'-0"



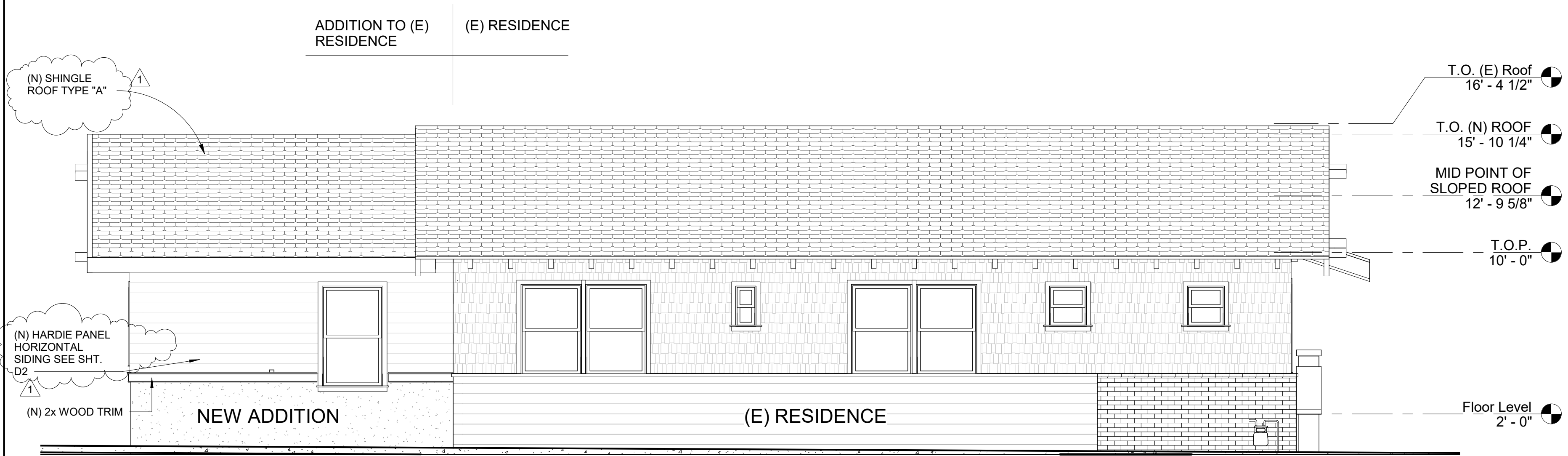
## SOUTH ELEVATION

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



## EAST ELEVATION

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



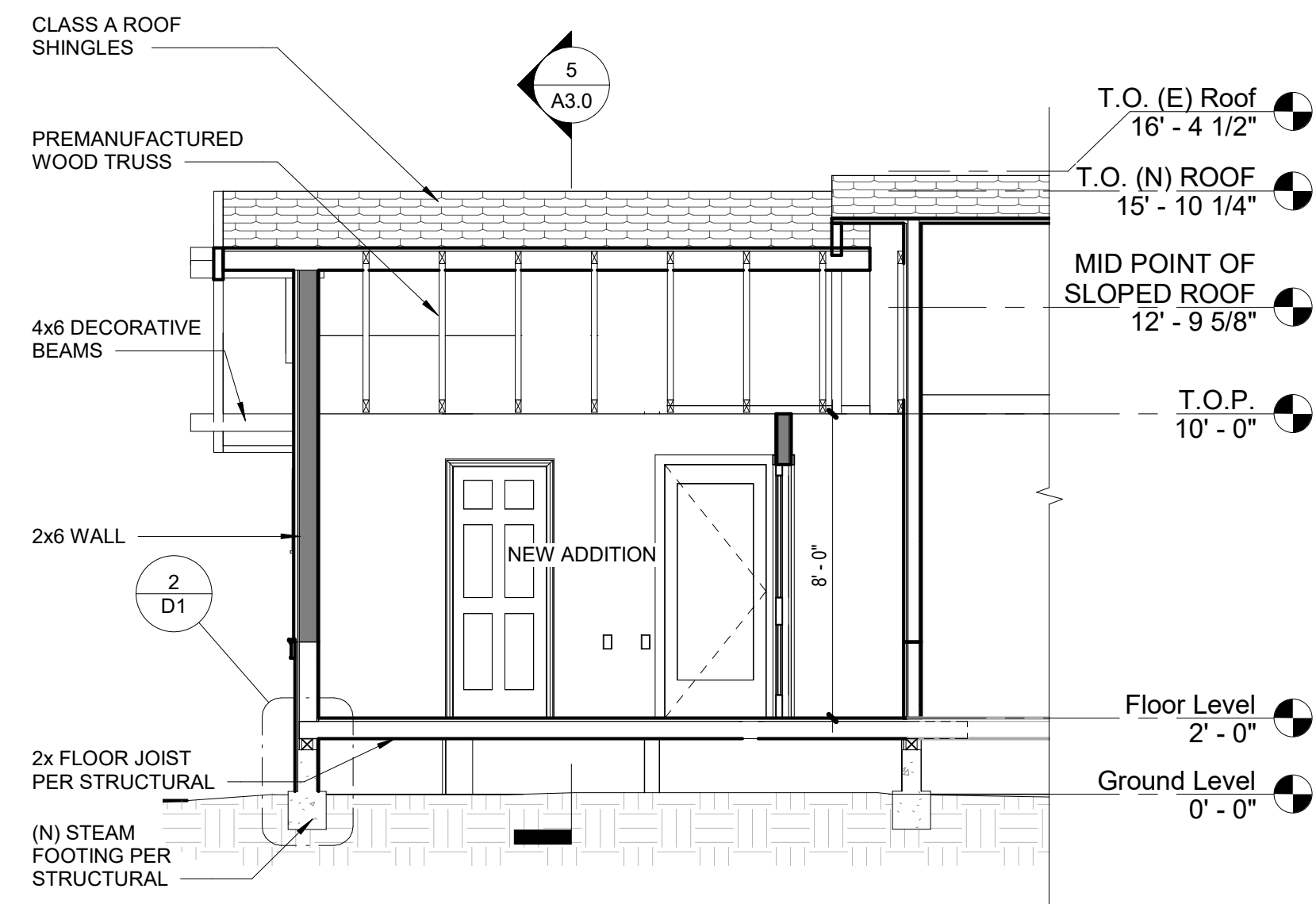
## NORTH ELEVATION

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



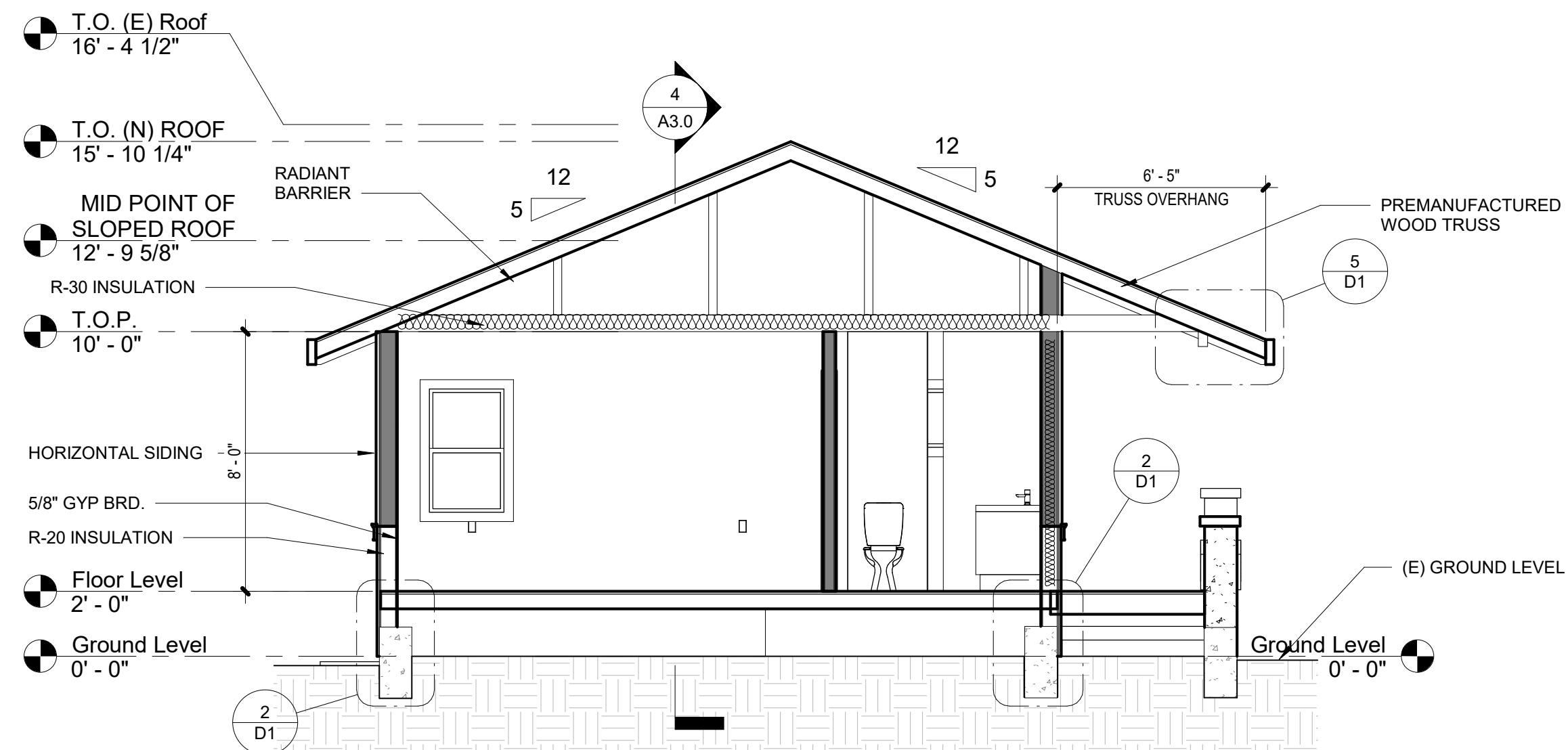
## WEST ELEVATION

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



## Section 1

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



## Section 2

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

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REVISIONS  
6 6 22 CITY CORRECTIONS

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SHEET NAME

ELEVATIONS / SECTIONS

Project number LB 1221

Date 6 13 22

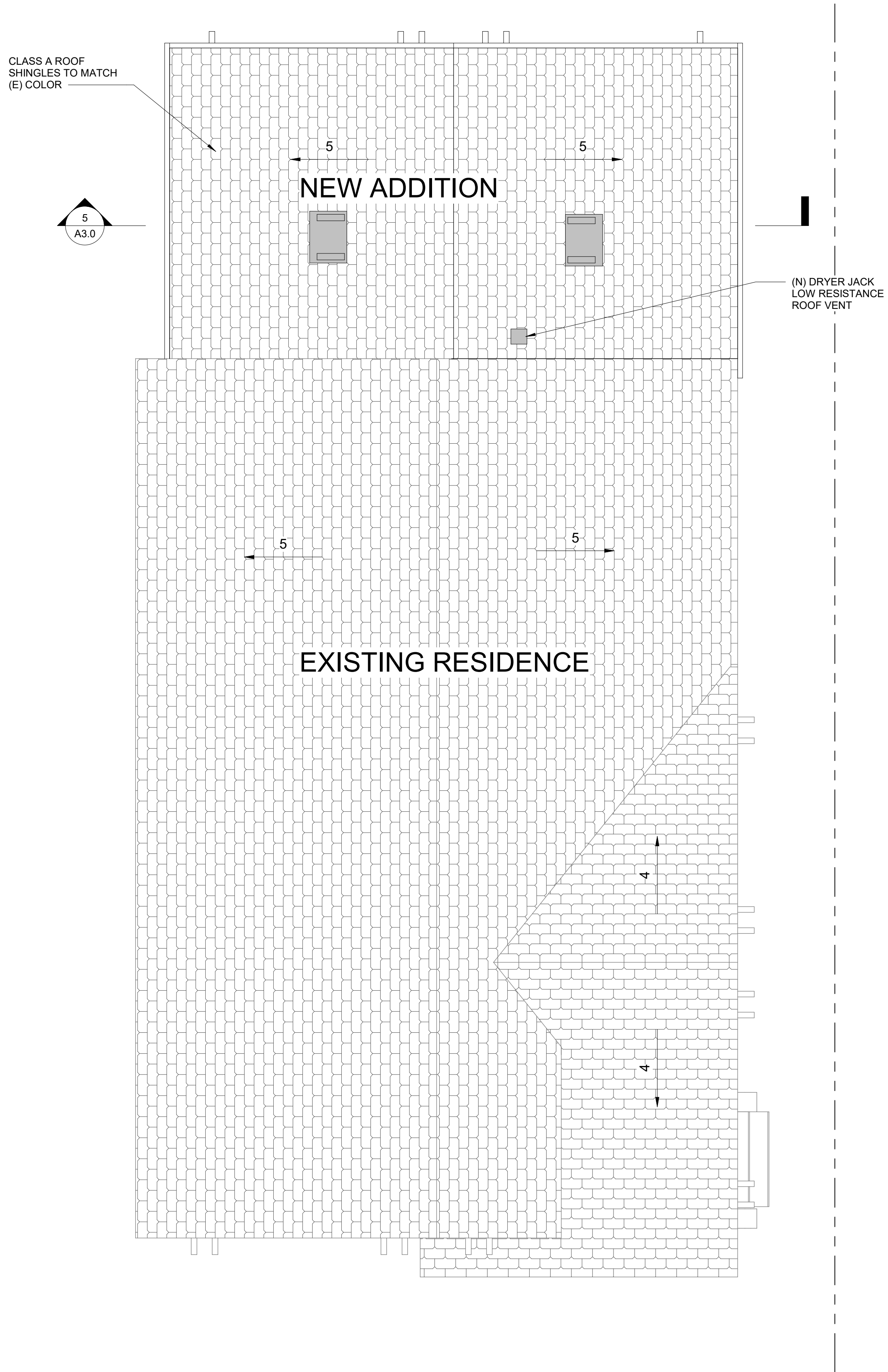
Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

**A3.0**

Scale 1/4" = 1'-0"



## ATTIC VENT CALCS. NEW ADDITION

371 SQ. FT. / 150 = 2.5 SQ. FT

2 - O'HAGIN TAPERED LOW-PROFILE (0.72 SQ. FT . EACH)  
2 x 0.72 SQ. FT. = 1.44 SQ. FT.

6 - (6) 2" DIA. DRILLED HOLES - FREIZE BLOCKS EAVE VENT  
(0.26 SQ. FT. EACH)  
6 x 0.26 SQ. FT. = 1.56 SQ. FT.

TOTAL = 3.0 SQ. FT

### NOTE:

30.6 VENT OPENINGS ARE TO BE PROVIDED WITH CORROSION-RESISTANT SCREENING WITH OPENINGS NO LARGER THAN 1/4 INCH AND NO SMALLER THAN 1/16 INCH. [CRC R806]

10.2 Note: this site is not located in a high fire area.

## 1 ROOF PLAN

1/4" = 1'-0"

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90804

### SHEET NAME

ROOF PLAN

Project number LB 1221

Date 6 13 22

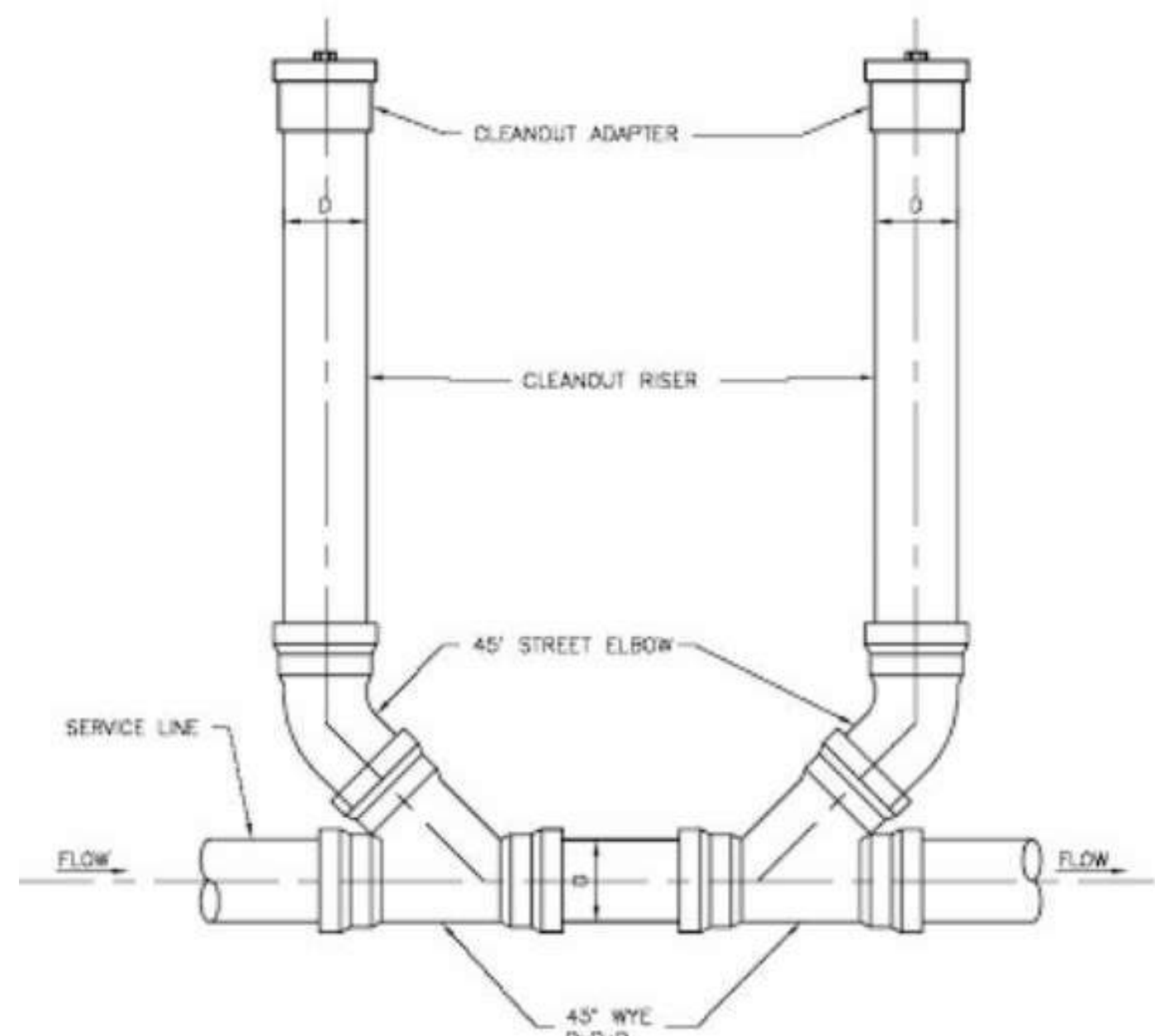
Drawn by Alpie T., Pedro O

Checked by P.O.

SHEET

A5.0

Scale 1/4" = 1'-0"



**ELEVATION**

**NOTES:**

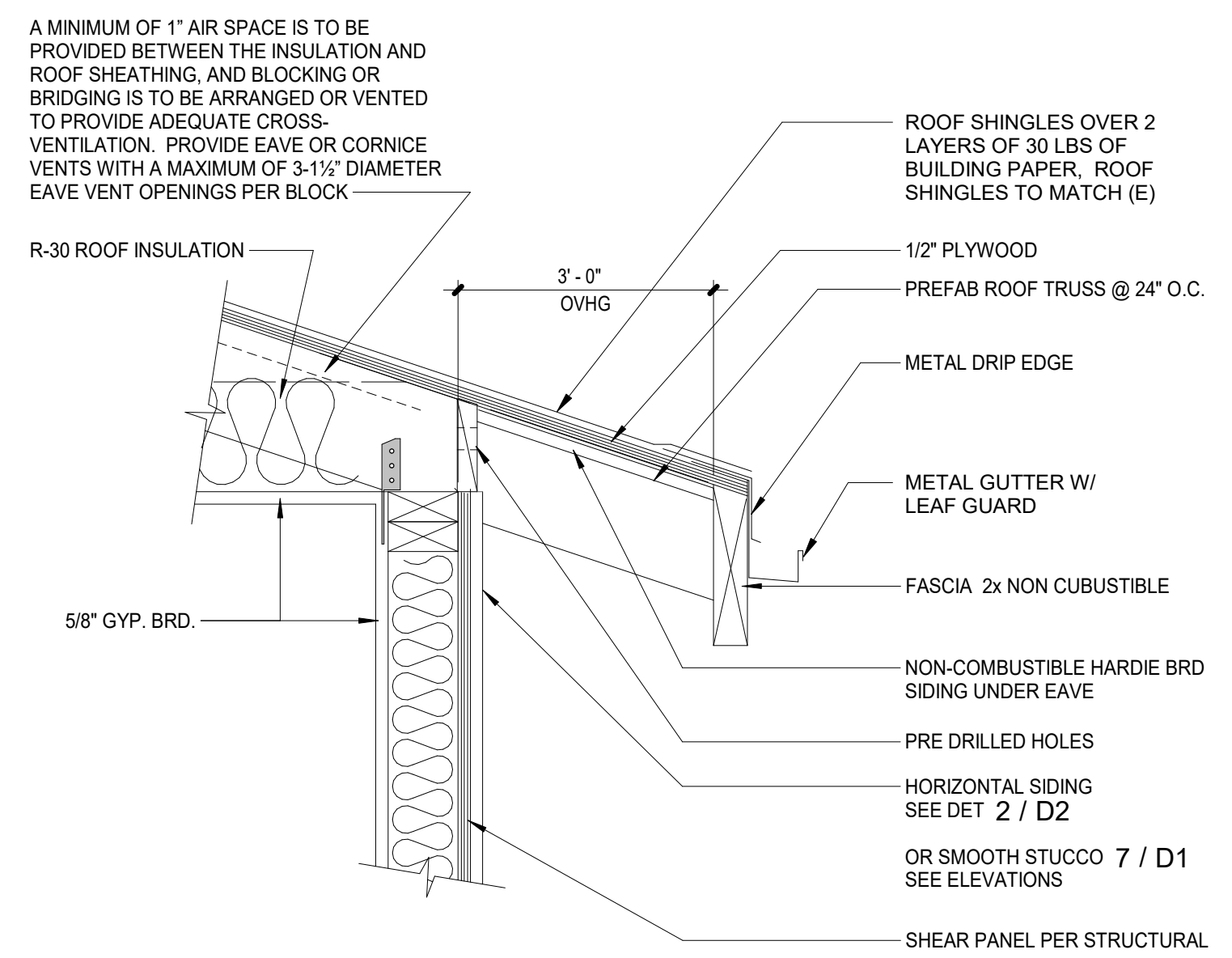
1. ALL FITTINGS SHALL BE GASKETED

2. CLEANOUTS TO BE SAME DIAMETER (12) AS SERVICE LINE



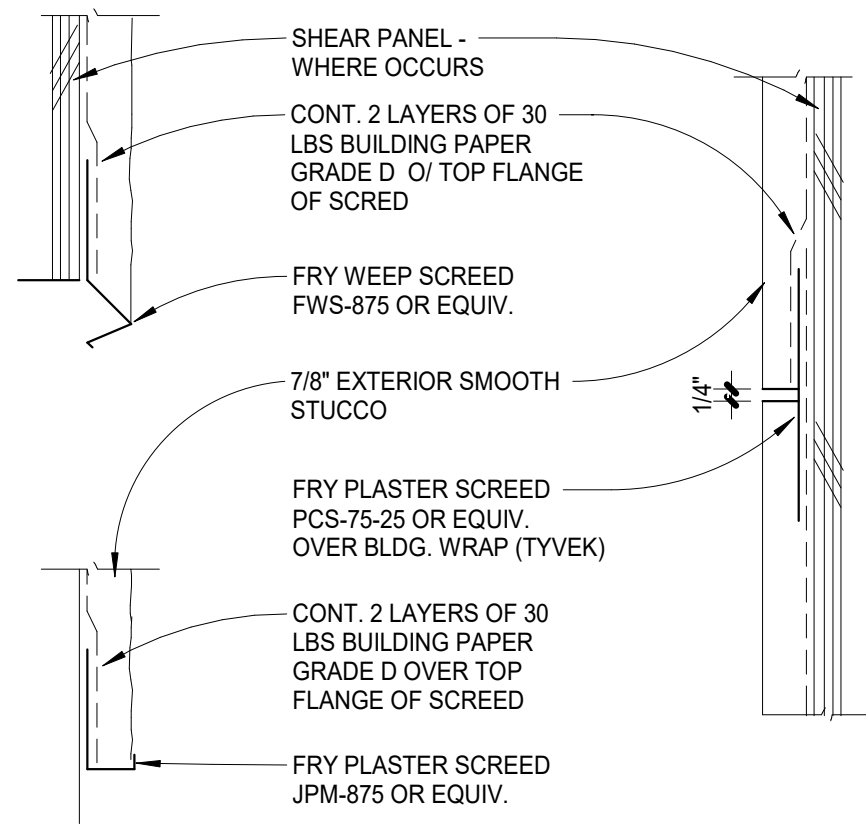
**8 CLEANOUT DET.**

1 1/2" = 1'-0"



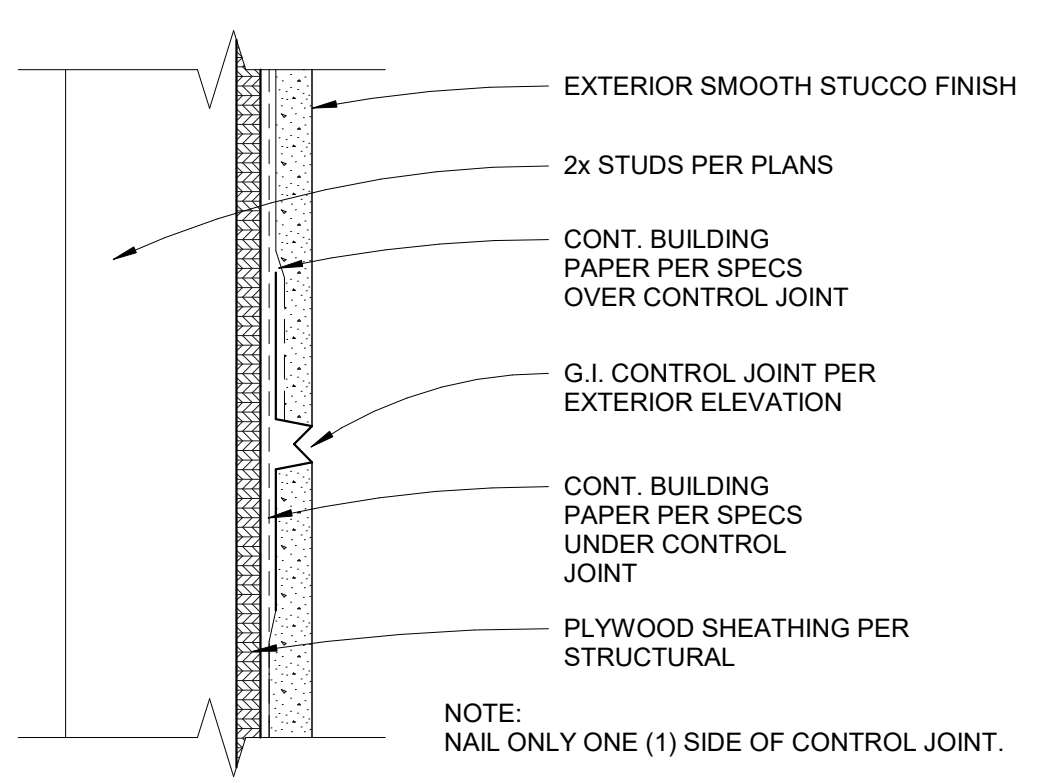
**5 EAVE DETAIL**

1 1/2" = 1'-0"



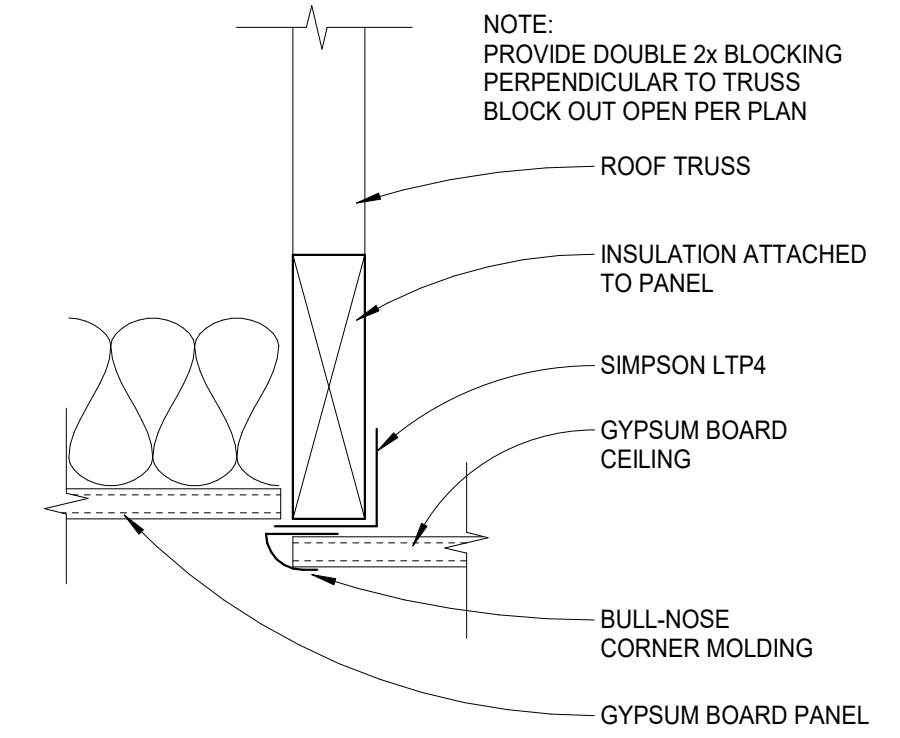
**6 STUCCO SCREED.**

3" = 1'-0"



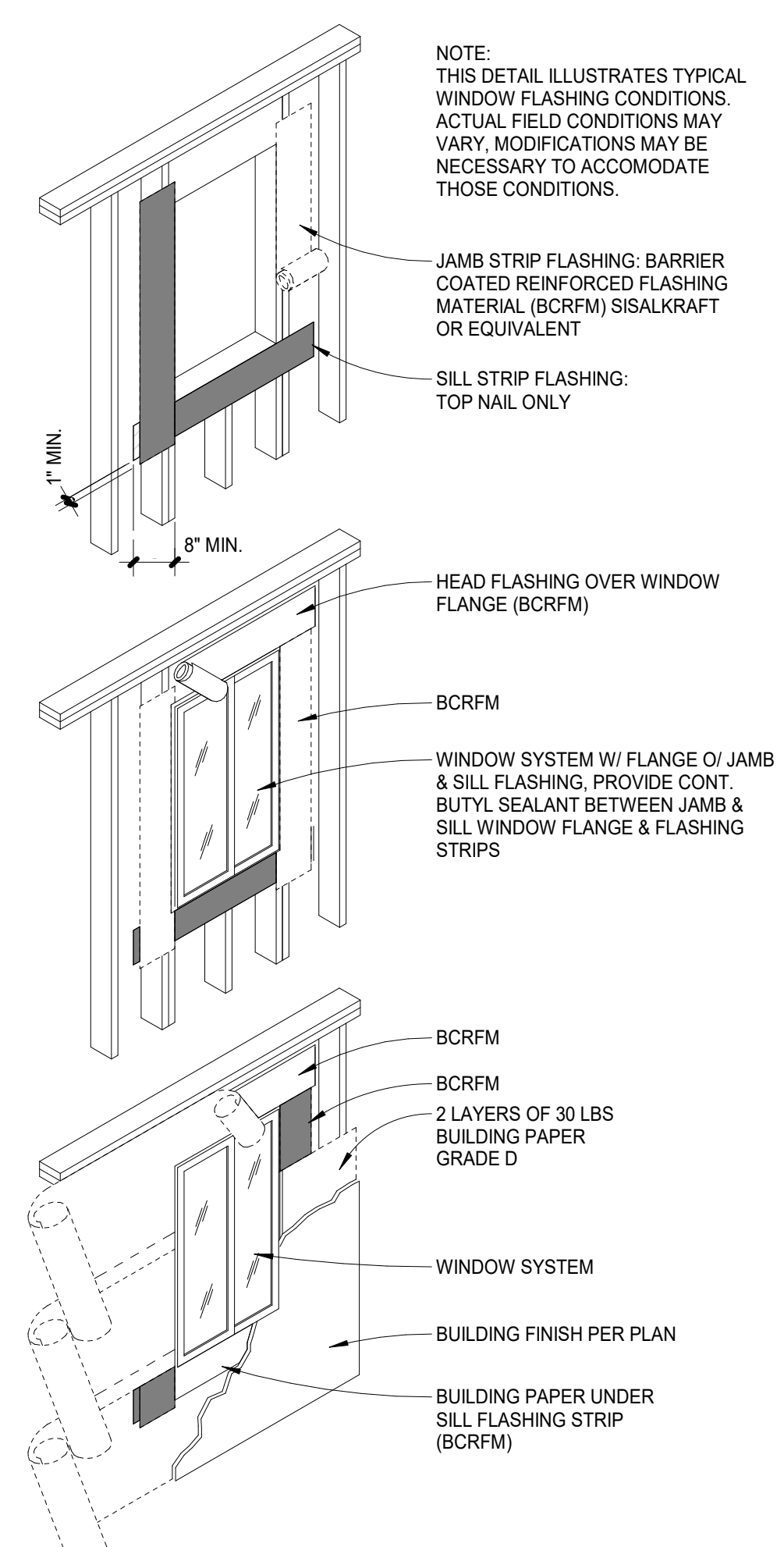
**7 STUCCO CONTROL JOINT.**

3" = 1'-0"



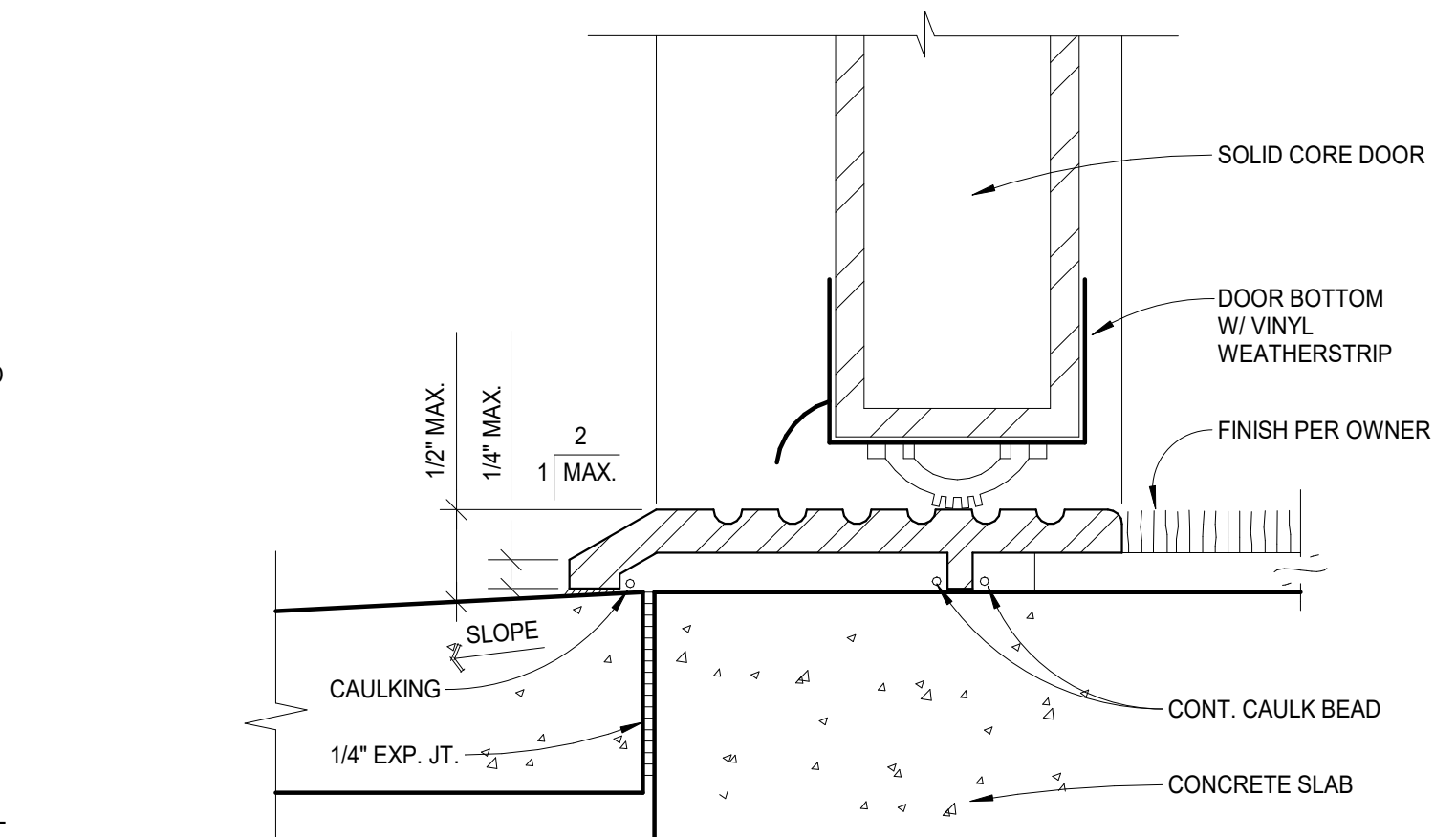
**3 ATTIC ACCESS PANEL1**

3" = 1'-0"



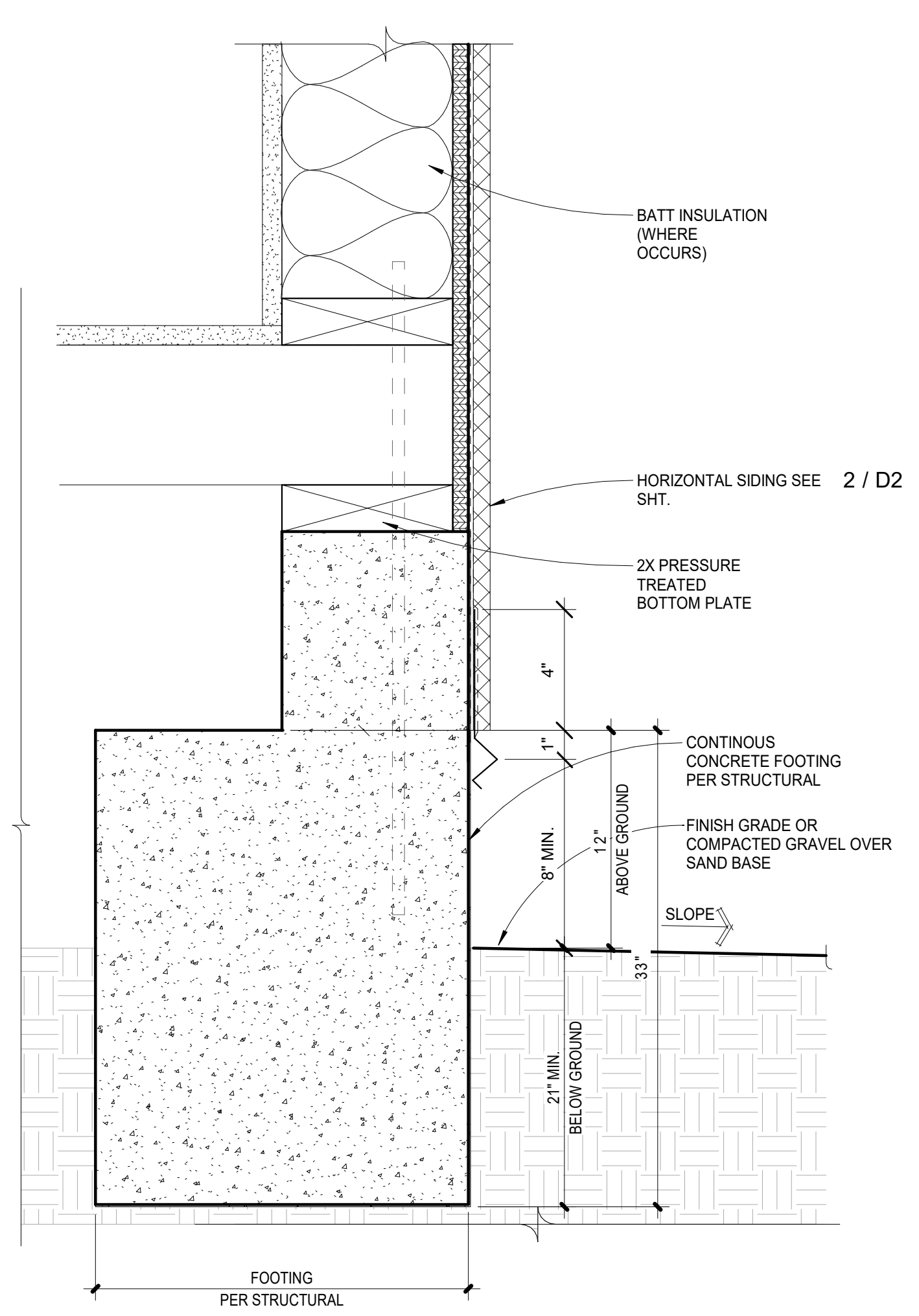
**4 WINDOW FLASHING**

1 : 1



**1 ENTRY THRESHOLD1**

6" = 1'-0"



**2 CONTINUOUS FOOTING DETAIL (N) RAISED FOUNDATION**

3" = 1'-0"

**NOTE:**

PENETRATIONS OR OPENINGS IN CONSTRUCTION ASSEMBLIES FOR PIPING; ELECTRICAL DEVICES; RECESSED CABINETS; BATHTUBS; SOFFITS; OR HEATING, VENTILATING OR EXHAUST DUCTS SHALL BE SEALED, LINED, INSULATED OR OTHERWISE TREATED TO MAINTAIN THE REQUIRED RATINGS.

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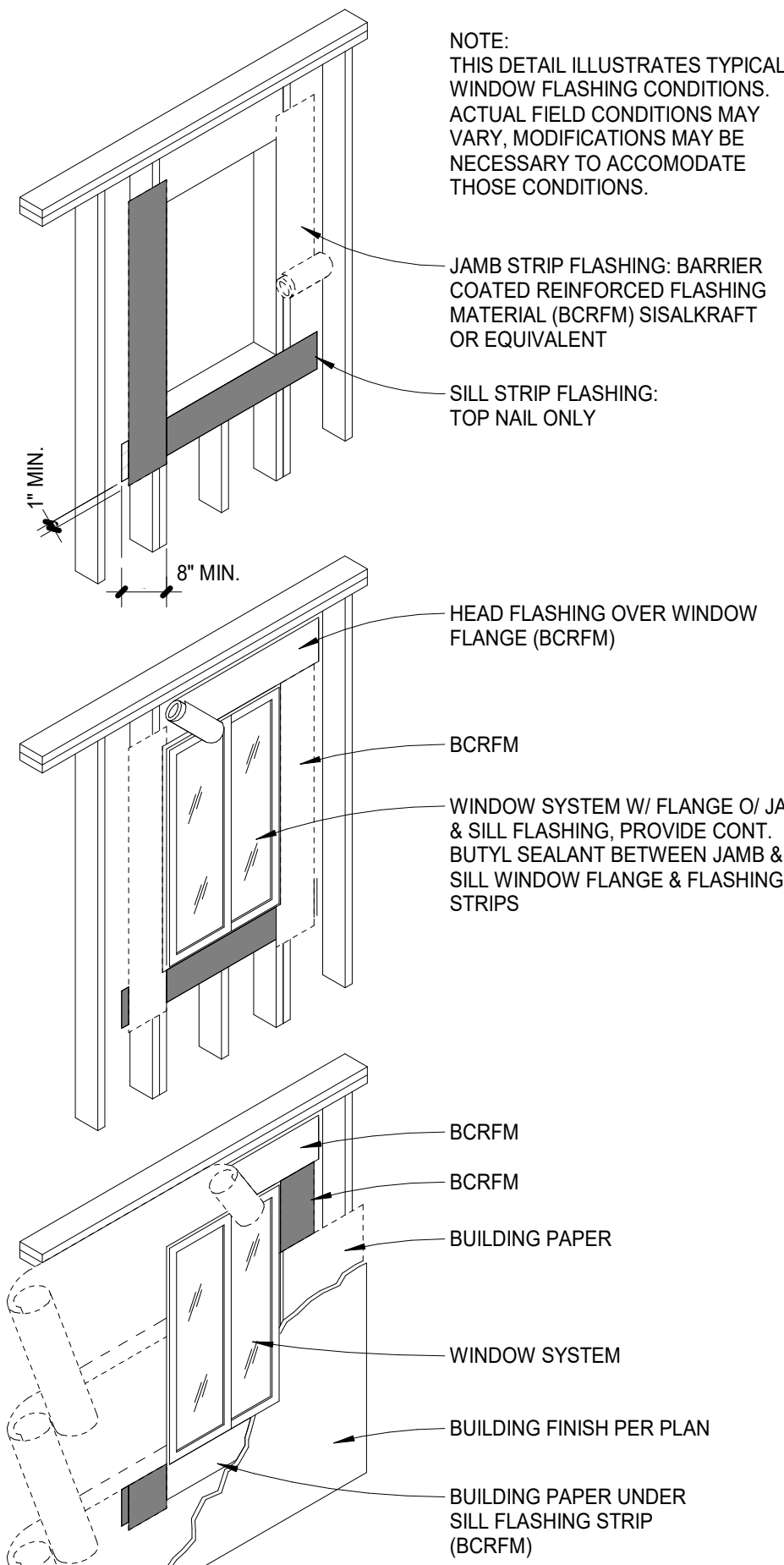
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REVISIONS	
6	22 CITY CORRECTIONS

CLIENT INFO

922 MOLINO AVE.  
LONG BEACH CA  
90804

SHEET NAME	
ARCHITECTURAL DETAILS	
Project number LB 1221	
Date 6 13 22	
Drawn by Alpie T., Pedro O	
Checked by Checker	
SHEET	
D1	
Scale As indicated	



NOTE:  
THIS DETAIL ILLUSTRATES TYPICAL  
WINDOW FLASHING CONDITIONS.  
ACTUAL FIELD CONDITIONS MAY  
VARY. MODIFICATIONS MAY BE  
NECESSARY TO ACCOMMODATE  
THOSE CONDITIONS.

JAMB STRIP FLASHING: BARRIER  
COATED REINFORCED FLASHING  
MATERIAL (BCRFM) SISALKRAFT  
OR EQUIVALENT

SILL STRIP FLASHING:  
TOP NAIL ONLY

HEAD FLASHING OVER WINDOW  
FLANGE (BCRFM)

BCRFM

WINDOW SYSTEM W/ FLANGE O/ JAMB  
& SILL FLASHING. PROVIDE CONT.  
BUTYL SEALANT BETWEEN JAMB &  
SILL WINDOW FLANGE & FLASHING  
STRIPS

BCRFM

BCRFM

BUILDING PAPER

WINDOW SYSTEM

BUILDING FINISH PER PLAN

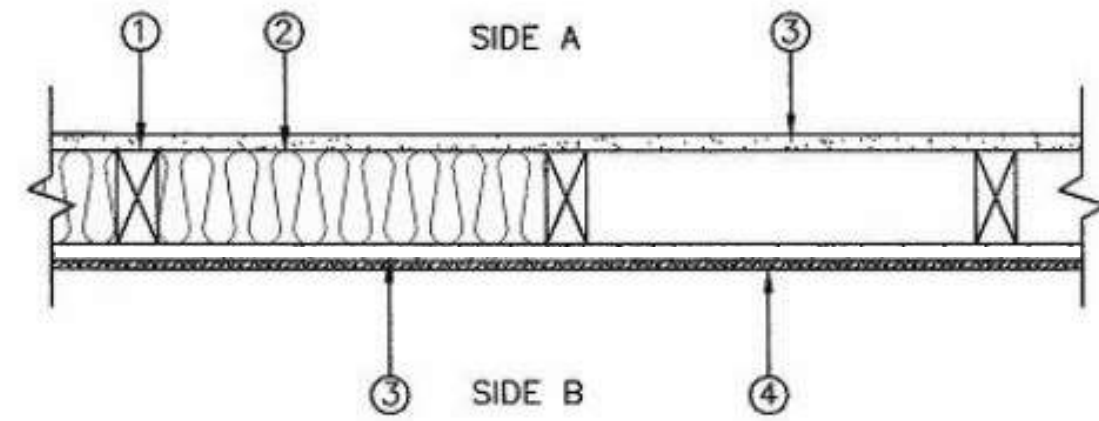
BUILDING PAPER UNDER  
SILL FLASHING STRIP  
(BCRFM)

## WINDOW FLASHING

9  
D2

SCALE 1:1

## 1 HR ASSEMBLY HORIZONTAL SIDING DESIGN NO. JH/WA 60-04 NON-SYMMETRICAL LOAD-BEARING WALL ASSEMBLY FULL DESIGN LOAD



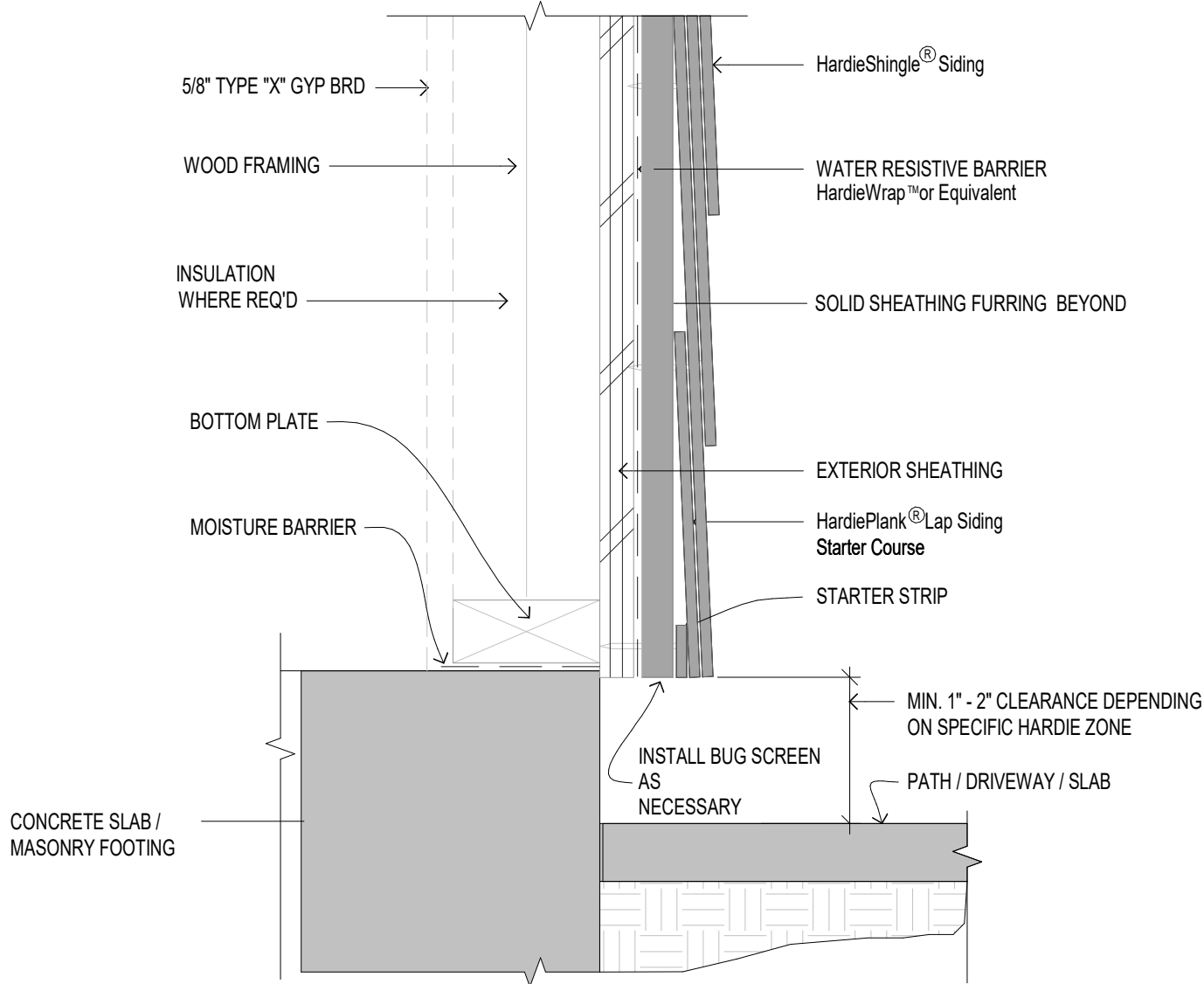
1.	Wood Studs: Nominal 2" by 4" solid sawn wood studs located 24" oc, with two top plates and a single bottom plate.
2.	Insulation R-19 INSULATION ACCORDING TO TITLLE 24
3.	30 lb Building paper
4.	Fibre-cement Exterior Siding: 5/16" thick Hardiplank® lap siding, applied horizontally with a 1-1/4" headlap and fastened with a single 6d corrosion resistant common nail driven through the lapped planks at each stud location.

## 1 HR HORIZONTAL SIDING WALL DETAIL 1

2

D2

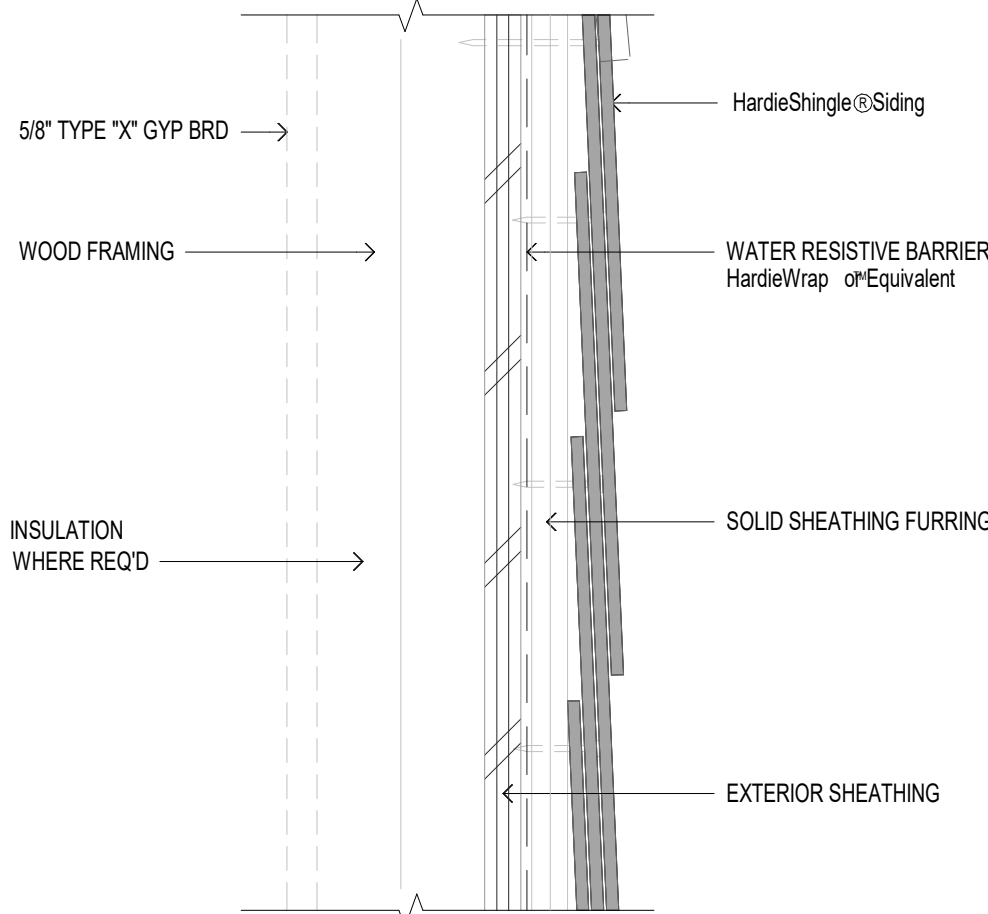
SCALE 1" = 1'-0"



## HARDSCAPE CLEARANCES, RAINSCREEN, DECKS, PORCHES, PATIOS, WALKWAYS, ROOFS, ETC.

7

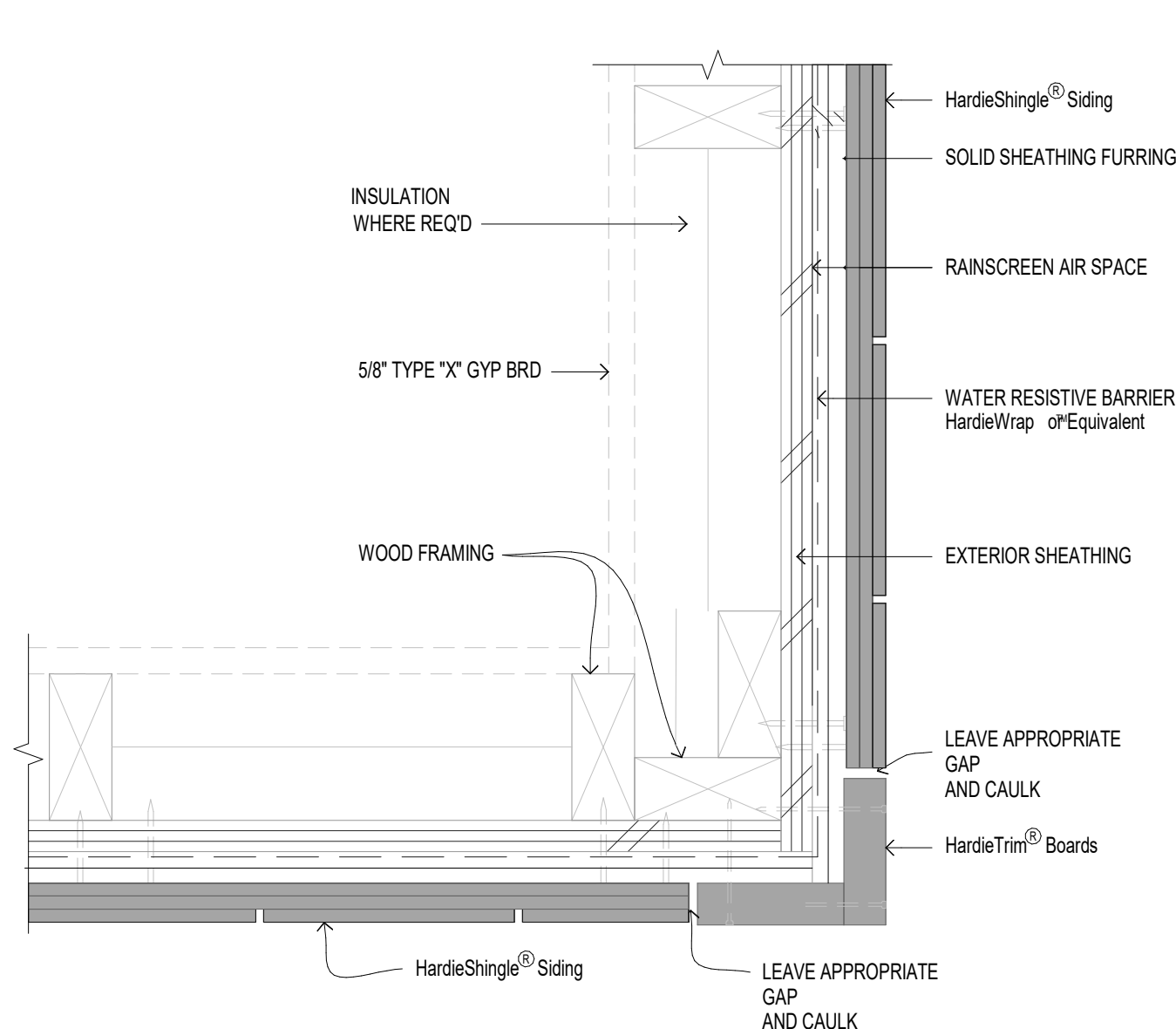
SCALE: 1/2"=1'-0"



## HORIZONTAL LAP VIEW - RAINSCREEN

5

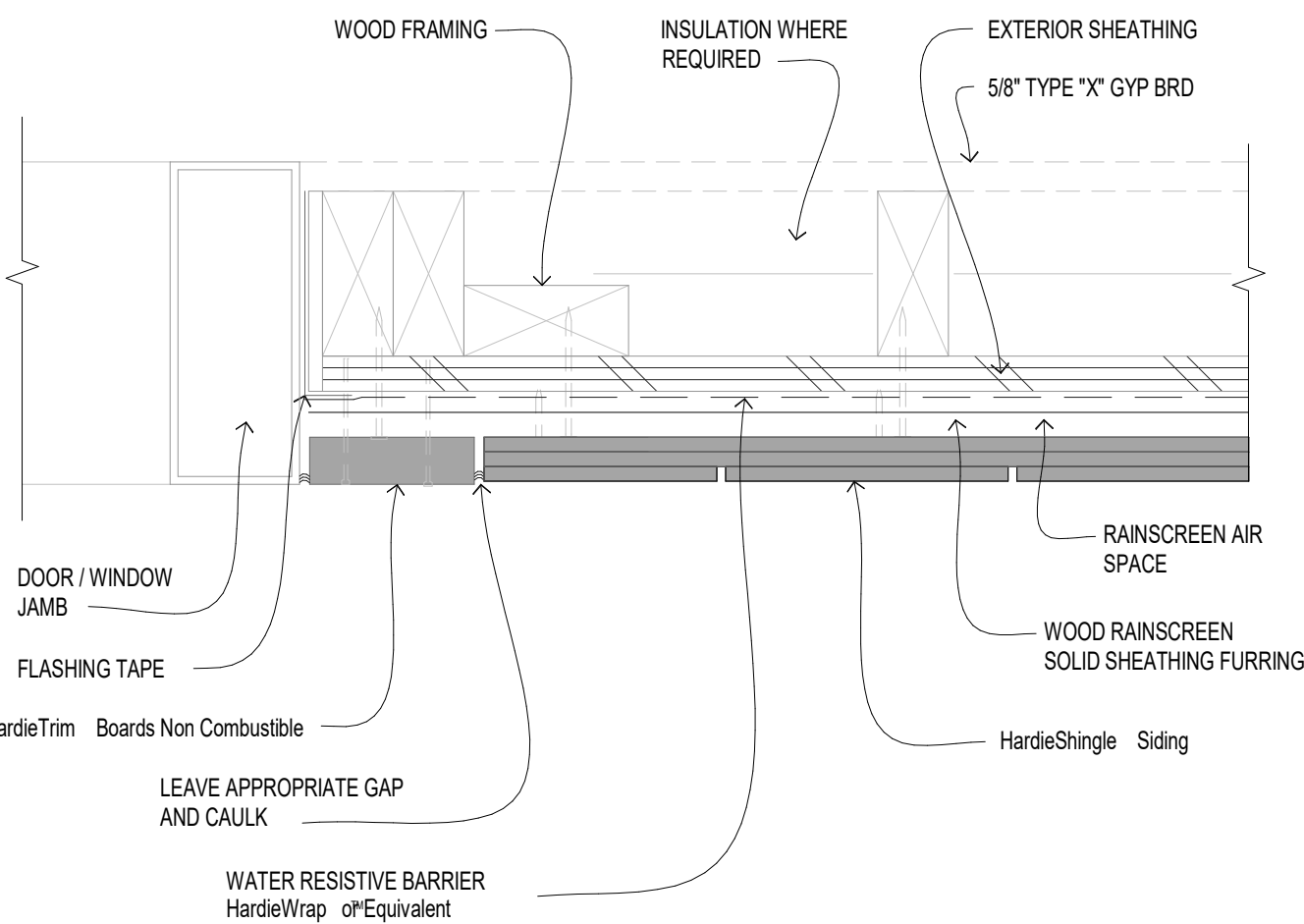
SCALE: 3"=1'-0"



## OUTSIDE CORNER - RAINSCREEN

2

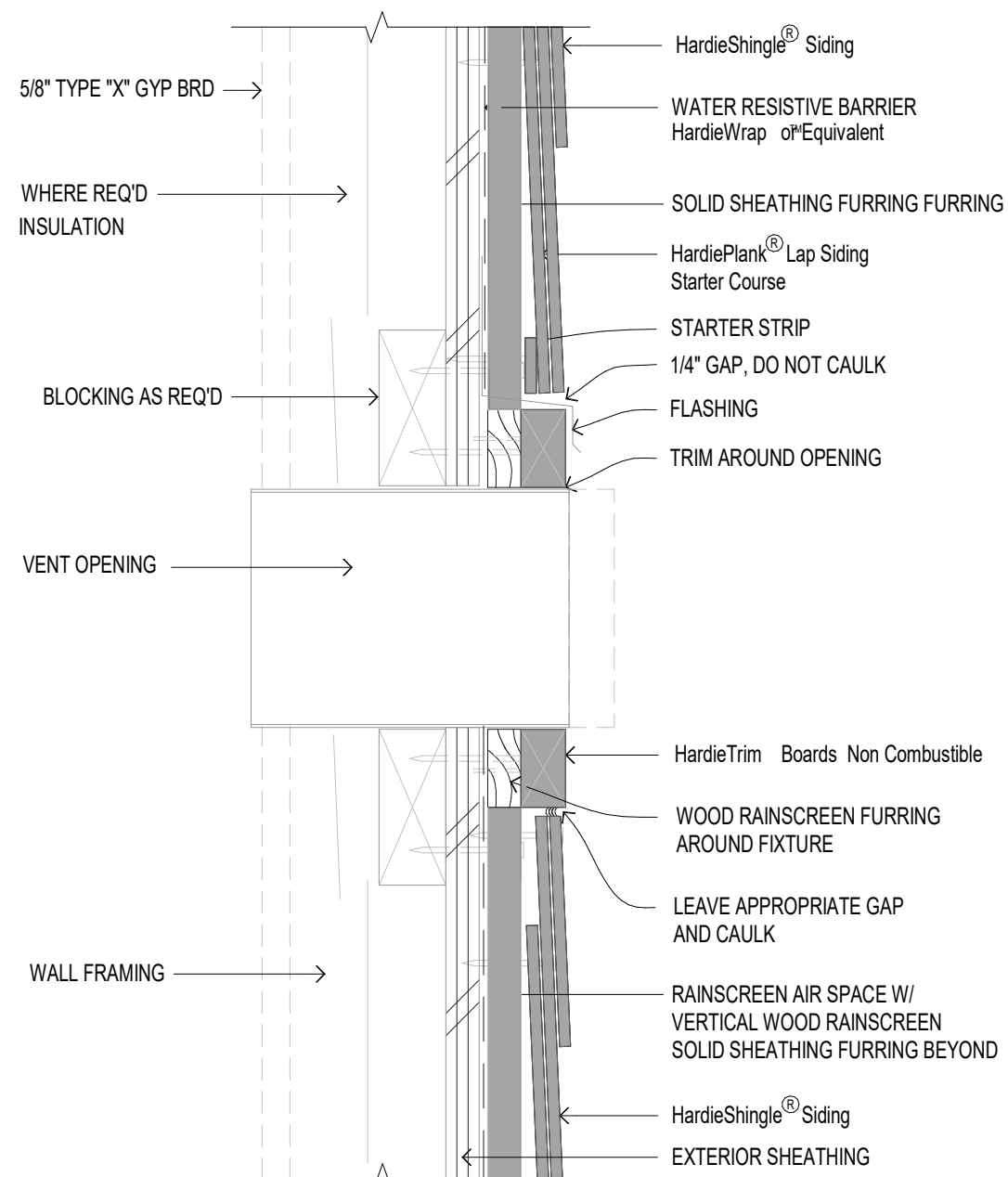
SCALE: 3"=1'-0"



## DOOR / WINDOW JAMB - RAINSCREEN

8

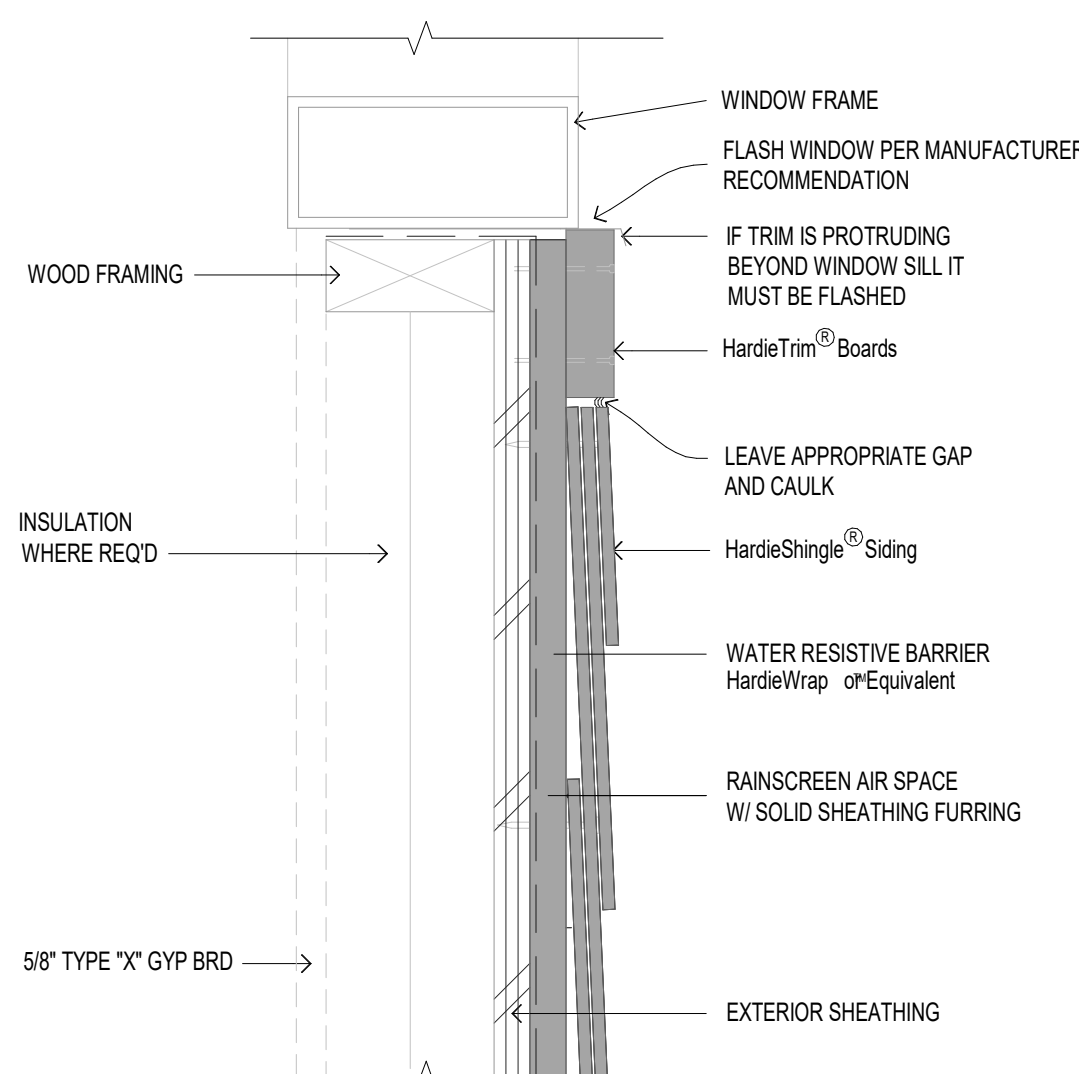
SCALE: 3"=1'-0"



## FIXTURE PENETRATION - RAINSCREEN

6

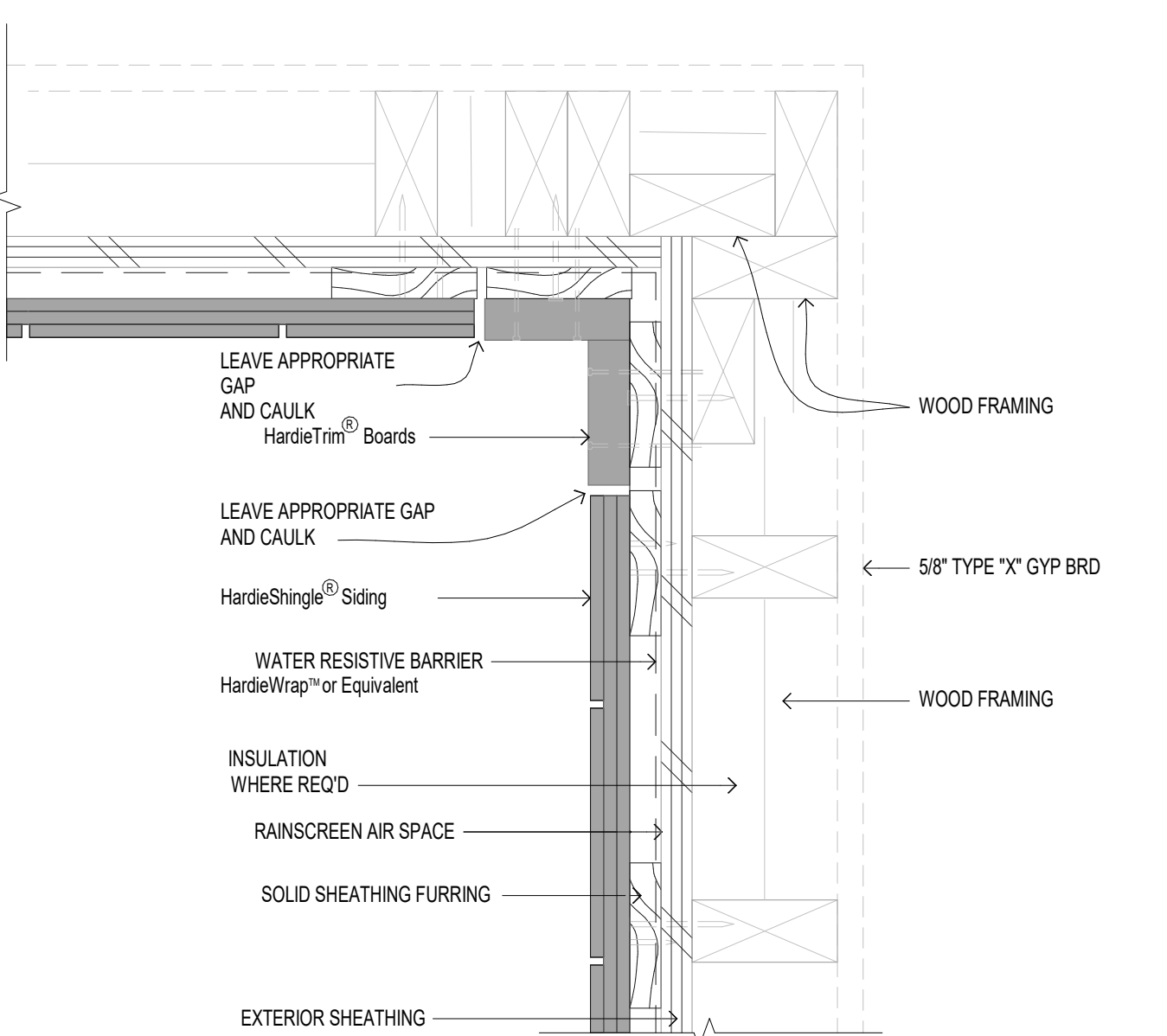
SCALE: 3"=1'-0"



## WINDOW SILL - RAINSCREEN

4

SCALE: 3"=1'-0"



## INSIDE CORNER - RAINSCREEN

1

SCALE: 3"=1'-0"



AMERICAN GENERAL CORPORATION

www.AmGenCorp.com

34941 CALLE DEL SOL,  
CAPISTRANO BEACH,  
CA 92624

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### SHEET NAME

### HORIZONTAL SIDING DETAILS

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

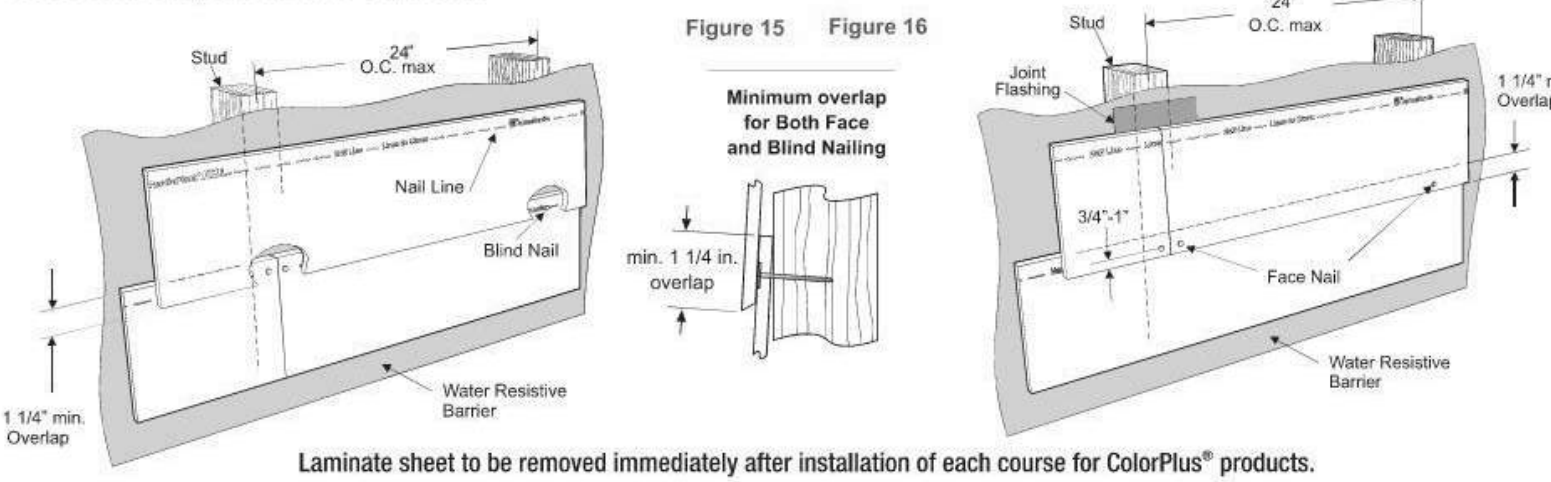
Checked by Checker

SHEET

D2

Scale As indicated

FASTENER REQUIREMENTS continued



Laminate sheet to be removed immediately after installation of each course for ColorPlus® products.

Pin-backed corners may be done for aesthetic purposes only. Finish nails are recommended for pin-backs. Headed siding nails are allowed. Place pin-backs no closer than 1 in. from plank ends and 3/4 in. from plank edge into min. 3/8 in. wood structural panel. Pin-backs are not a substitute for blind or face nailing.

GENERAL FASTENING REQUIREMENTS

Fasteners must be corrosion resistant, galvanized, or stainless steel. Electro-galvanized are acceptable but may exhibit premature corrosion. James Hardie recommends the use of quality, hot-dipped galvanized nails. James Hardie is not responsible for the corrosion resistance of fasteners. Stainless steel fasteners are recommended when installing James Hardie® products near the ocean, large bodies of water, or in very humid climates.

Manufacturers of ACQ and CA preservative-treated wood recommend spacer materials or other physical barriers to prevent direct contact of ACQ or CA preservative-treated wood and aluminum products. Fasteners used to attach HardieTrim Tabs to preservative-treated wood shall be of hot dipped zinc-coated galvanized steel or stainless steel and in accordance to 2009 IRC R317.3 or 2009 IBC 2304.9.5

- Consult applicable product evaluation or listing for correct fasteners type and placement to achieve specified design wind loads.
- NOTE: Published wind loads may not be applicable to all areas where Local Building Codes have specific jurisdiction. Consult James Hardie Technical Services if you are unsure of applicable compliance documentation.
- Drive fasteners perpendicular to siding and framing.
- Fastener heads should fit snug against siding (no air space).
- NOTE: Whenever a structural member is present, HardiePlank should be fastened with even spacing to the structural member. The tables allowing direct to OSB or plywood should only be used when traditional framing is not available.

CUT EDGE TREATMENT

Caulk, paint or prime all field cut edges. James Hardie touch-up kits are required to touch-up ColorPlus products.

CAULKING

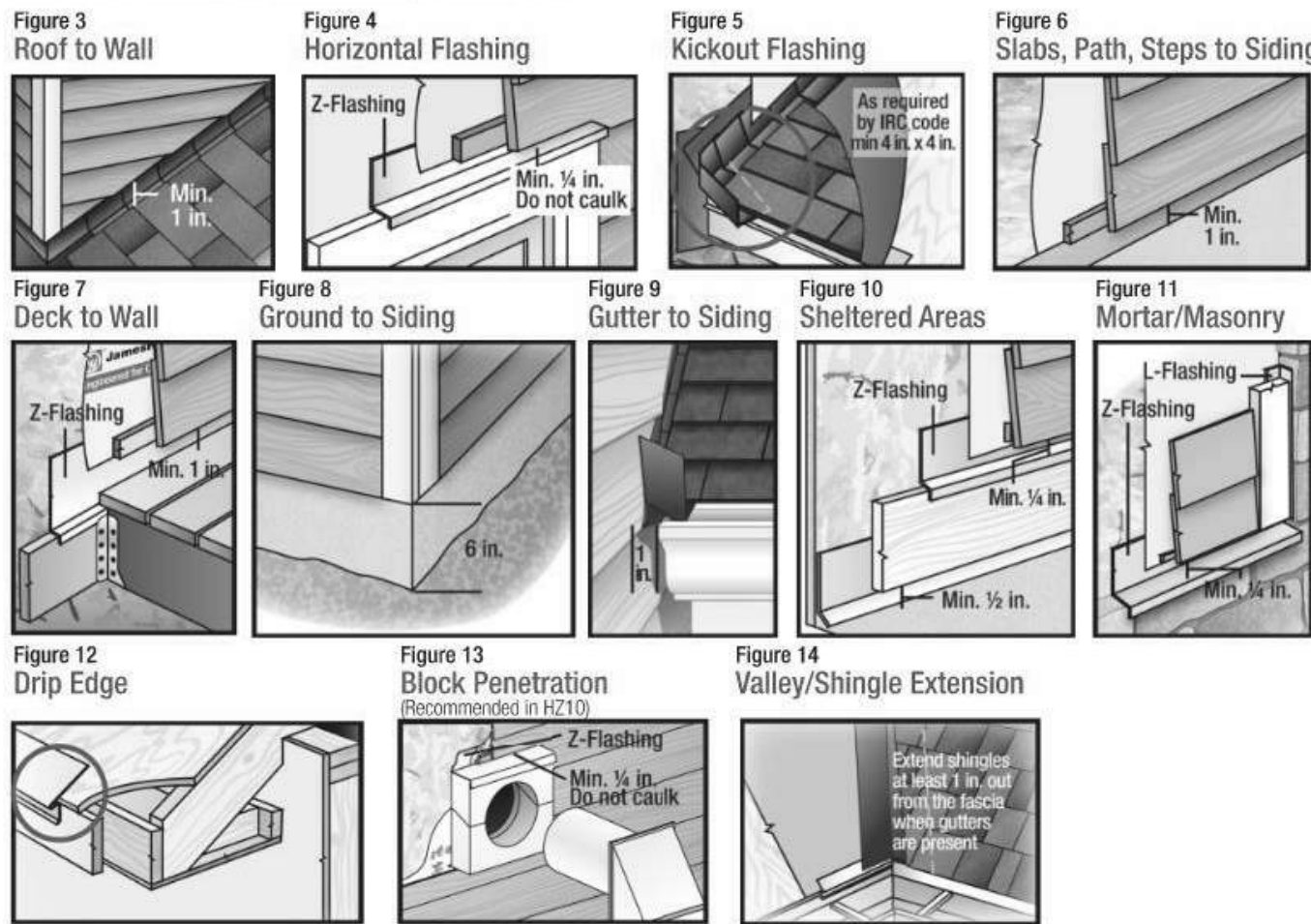
For best results use an Elastomeric Joint Sealant complying with ASTM C920 Grade NS, Class 25 or higher or a Latex Joint Sealant complying with ASTM C834. Caulking/Sealant must be applied in accordance with the caulking/sealant manufacturer's written instructions. **Note: some caulking manufacturers do not allow "tooling".**

PAINTING

DO NOT use stain, oil/alkyd base paint, or powder coating on James Hardie® Products. Factory-primed James Hardie products must be painted within 180 days of installation. 100% acrylic topcoats are recommended. Do not paint when wet. For application rates refer to paint manufacturers specifications. Back-rolling is recommended if the siding is sprayed.

HS11119 P34 1219

CLEARANCE AND FLASHING REQUIREMENTS



FASTENER REQUIREMENTS\*

Refer to the applicable ESR report online to determine which fastener meets your wind load design criteria.

Blind Nailing is the preferred method of installation for HardiePlank® lap siding products. Face nailing should only be used where required by code for high wind areas and must not be used in conjunction with Blind nailing (Please see JH Tech bulletin 17 for exemption when doing a repair).

BLIND NAILING

Nails - Wood Framing

- Siding nail (0.09 in. shank x 0.221 in. HD x 2 in. long)
- 11ga. roofing nail (0.121 in. shank x 0.371 in. HD x 1.25 in. long)

Screws - Steel Framing

- Ribbed Wafer-head or equivalent (No. 8 x 1 1/4 in. long x 0.375 in. HD) Screws must penetrate 3 threads into metal framing.

Nails - Steel Framing

- ET & F PanelFast® nails or equivalent (0.10 in. shank x 0.313 in. HD x 1-1/2 in. long) Nails must penetrate minimum 1/4 in. into metal framing.

OSB minimum 7/16 in.

- Siding nail (0.09 in. shank x 0.215 in. HD x 1-1/2 in. long)
- Ribbed Wafer-head or equivalent (No. 8 x 1 5/8 in. long x 0.375 in. HD).

FACE NAILING

Nails - Wood Framing

- 6d (0.113 in. shank x 0.267 in. HD x 2 in. long)
- Siding nail (0.09" shank x 0.221" HD x 2" long)

Screws - Steel Framing

- Ribbed Bugle-head or equivalent (No. 8-18 x 1-5/8 in. long x 0.323 in. HD) Screws must penetrate 3 threads into metal framing.

Nails - Steel Framing

- ET & F pin or equivalent (0.10 in. shank x 0.25 in. HD x 1-1/2 in. long) for ColorPlus for aesthetic reasons as the Caulking and ColorPlus will weather differently. For the same reason, do not caulk nail heads on ColorPlus products.

OSB minimum 7/16 in.

- Siding nail (0.09 in. shank x 0.221 in. HD x 1-1/2 in. long)

\*Also see General Fastening Requirements, and when considering alternative fastening options refer to James Hardie's Technical Bulletin USTB 5 - Fastening Tips for HardiePlank Lap Siding.

HS11119 P24 1219

HardiePlank® Lap Siding

EFFECTIVE DECEMBER 2019

IMPORTANT: FAILURE TO FOLLOW JAMES HARDIE WRITTEN INSTALLATION INSTRUCTIONS AND COMPLY WITH APPLICABLE BUILDING CODES MAY VIOLATE LOCAL LAWS, AFFECT BUILDING ENVELOPE PERFORMANCE AND MAY AFFECT WARRANTY COVERAGE. FAILURE TO COMPLY WITH ALL HEALTH AND SAFETY REGULATIONS WHEN CUTTING AND INSTALLING THIS PRODUCT MAY RESULT IN PERSONAL INJURY. BEFORE INSTALLATION, CONFIRM YOU ARE USING THE CORRECT HARDIEZONE® PRODUCT INSTRUCTIONS BY VISITING [HARDIEZONE.COM](http://HARDIEZONE.COM) OR CALL 1-866-942-7343 (866-9-HARDIE)

CUTTING INSTRUCTIONS

STORAGE & HANDLING:

- Store flat and keep dry and covered prior to installation. Installing siding wet or saturated may result in shrinkage at butt joints. Carry planks on edge. Protect edges and corners from breakage. James Hardie is not responsible for damage caused by improper storage and handling of the product.



OUTDOORS

- Position cutting station so that airflow blows dust away from the user and others near the cutting area.
- 2. Cut using one of the following methods:
  - a. Best: Circular saw equipped with a HardieBlade® saw blade and attached vacuum dust collection system. Shears (manual, pneumatic or electric) may also be used, not recommended for products thicker than 7/16 in.
  - b. Better: Circular saw equipped with a dust collection feature (e.g. Reck® saw and a HardieBlade saw blade).
  - c. Good: Circular saw equipped with a HardieBlade saw blade.

- DO NOT dry sweep dust; use wet dust suppression or vacuum to collect dust.
- For maximum dust reduction, James Hardie recommends using the "Best" cutting practices. Always follow the equipment manufacturer's instructions for proper operation.
- For best performance when cutting with a circular saw, James Hardie recommends using HardieBlade® saw blades.
- Go to [jameshardiepros.com](http://jameshardiepros.com) for additional cutting and dust control recommendations.

**IMPORTANT:** The Occupational Safety and Health Administration (OSHA) regulates workplace exposure to silica dust. For construction sites, OSHA has deemed that cutting fiber cement with a circular saw having a blade diameter less than 8 inches and connected to a commercially available dust collection system per manufacturer's instructions results in exposures below the OSHA Permissible Exposure Limit (PEL) for respirable crystalline silica, without the need for additional respiratory protection. If you are unsure about how to comply with OSHA silica dust regulations, consult a qualified industrial hygienist or safety professional, or contact your James Hardie technical sales representative for assistance. James Hardie makes no representation or warranty that adopting a particular cutting practice will assure your compliance with OSHA rules or other applicable laws and safety requirements.

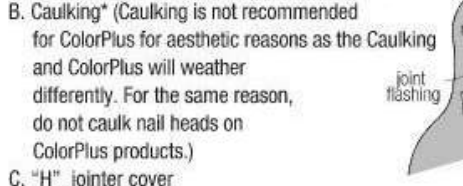
GENERAL REQUIREMENTS:

- HardiePlank® lap siding can be installed over braced wood or steel studs, 20 gauge (33 mils) minimum to 16 gauge (54 mils) maximum, spaced a maximum of 24 in o.c. or directly to minimum 7/16 in thick OSB sheathing. See General Fastening Requirements. Irregularities in framing and sheathing can mirror through the finished application. Correct irregularities before installing siding.
- Information on installing James Hardie products over non-railable substrates (ex: gypsum, foam etc.) can be located in JH Tech Bulletin 19 at [www.jameshardie.com](http://www.jameshardie.com)
- A water-resistive barrier is required in accordance with local building code requirements. The water-resistive barrier must be appropriately installed with penetration and junction flashing in accordance with local building code requirements. James Hardie will assume no responsibility for water infiltration. James Hardie does manufacture HardieWrap® Weather Barrier, a non-vent non-perforated housewrap®, which complies with building code requirements.
- When installing James Hardie products all clearance details in figs. 3-14 must be followed.
- Adjacent finished grade must slope away from the building in accordance with local building codes - typically a minimum of 6 in. in the first 10 ft..
- Do not use HardiePlank lap siding in Fascia or Trim applications.
- Do not install James Hardie products such that they may remain in contact with standing water.
- HardiePlank lap siding may be installed on full vertical wall applications only.
- For larger projects, including commercial and multi-family projects, where the span of the wall is significant in length, the designer and/or architect should take into consideration the coefficient of thermal expansion and moisture movement of the products in their design. These values can be found in the Technical Bulletin "Expansion Characteristics of James Hardie® Siding Products" at [www.jameshardie.com](http://www.jameshardie.com)
- James Hardie Building Products provides installation/wind load information for buildings with a maximum mean roof height of 85 feet. For information on installations above 60 feet, please contact JH technical support.

INSTALLATION: JOINT TREATMENT

One or more of the following joint treatment options are required by code (as referenced 2009 IRC R703.10.2)

- A. Joint Flashing (James Hardie recommended)
- B. Caulking (Caulking is not recommended for ColorPlus for aesthetic reasons as the Caulking and ColorPlus will weather differently. For the same reason, do not caulk nail heads on ColorPlus products.)
- C. "H" joint cover



Note: Field painting over caulking may produce a sheen difference when compared to the field painted PrimePlus®. Refer to Caulking section in these instructions. For additional information on HardieWrap® Weather Barrier, consult James Hardie at 1-866-4Hardie or [www.hardiewrap.com](http://www.hardiewrap.com)

SELECT CEDARMILL®   SMOOTH   BEADED CEDARMILL®   BEADED SMOOTH   CUSTOM COLONIAL SMOOTH®   CUSTOM COLONIAL™ ROUGHSAWN	HS11119 P14 1219
Visit <a href="http://jameshardiepros.com">jameshardiepros.com</a> for the most recent version.	

COLORPLUS® TECHNOLOGY CAULKING, TOUCH-UP & LAMINATE

- Care should be taken when handling and cutting James Hardie® ColorPlus® products. During installation use a wet soft cloth or soft brush to gently wipe off any residue or construction dust left on the product, then rinse with a garden hose.
- Touch up nicks, scrapes and nail heads using the ColorPlus® Technology touch-up applicator. Touch-up should be used sparingly. If large areas require touch-up, replace the damaged area with new HardiePlank® lap siding with ColorPlus® Technology.
- Laminate sheet must be removed immediately after installation of each course.
- Terminate non-factory cut edges into trim where possible, and caulk. Color matched caulks are available from your ColorPlus® product dealer.
- Treat all other non-factory cut edges using the ColorPlus Technology edge coat, available from your ColorPlus product dealer.

**Note:** James Hardie does not warrant the usage of third party touch-up or paints used as touch-up on James Hardie ColorPlus products.

Problems with appearance or performance arising from use of third party touch-up paints or paints used as touch-up that are not James Hardie touch-up will not be covered under the James Hardie ColorPlus Limited Finish Warranty.

PAINTING JAMES HARDIE® SIDING AND TRIM PRODUCTS WITH COLORPLUS® TECHNOLOGY

When repainting ColorPlus products, James Hardie recommends the following regarding surface preparation and topcoat application:

- Ensure the surface is clean, dry, and free of any dust, dirt, or mildew
- Repriming is normally not necessary
- 100% acrylic topcoats are recommended
- DO NOT use stain, oil/alkyd base paint, or powder coating on James Hardie® Products.
- Apply finish coat in accordance with paint manufacturers written instructions regarding coverage, application methods, and application temperature
- DO NOT caulk nail heads when using ColorPlus products, refer to the ColorPlus touch-up section

COVERAGE CHART/ESTIMATING GUIDE

Number of 12 ft. planks, does not include waste

COVERAGE AREA LESS OPENINGS (1 SQ = 100 sq.ft.)	HARDIEPLANK® LAP SIDING WIDTH															
	5 1/4	6	6 1/4	6 3/4	8 1/4	9 1/4	9 1/2	12								
(exposure)	4	5	6	6 1/4	6 3/4	7	8	8 1/4	10 3/4							
1	25	20	17	16	15	14	13	13	9							
2	50	40	33	32	30	29	25	25	19							
3	75	60	50	48	44	43	38	38	28							
4	100	80	67	64	59	57	50	50	37							
5	125	100	83	80	74	71	63	63	47							
6	150	120	100	96	89	86	75	75	56							
7	175	140	117	112	104	100	88	88	65							
8	200	160	133	128	119	114	100	100	74							
9	225	180	150	144	133	129	113	113	84							
10	250	200	167	160	148	143	125	125	93							
11	275	220	183	176	163	157	138	138	102							
12	300	240	200	192	178	171	150	150	112							
13	325	260	217	208	193	186	163	163	121							
14	350	280	233	224	207	200	175	175	130							
15	375	300	250	240	222	214	188	188	140							
16	400	320	267	256	237	229	200	200	149							
17	425	340	283	272	252	243	213	213	158							
18	450	360	300	288	267	257	225	225	167							
19	475	380	317	304	281	271	238	238	177							
20	500	400	333	320	296	286	250	250	186							

This coverage chart is meant as a guide. Actual usage is subject to variables such as building design, James Hardie does not assume responsibility for over or under ordering of product.

HS11119 P44 1219

**SAFETY WARNING:** DANGER: May cause cancer if dust from product is inhaled. Causes damage to lungs and respiratory system through prolonged or repeated inhalation of dust from product. Refer to the current product Safety Data Sheet before use. The hazard associated with fiber cement arises from crystalline silica present in the dust generated by activities such as cutting, machining, drilling, routing, sawing, crushing, or otherwise abrading fiber cement, and when cleaning, or disposing of or moving the dust. When doing any of these activities in a manner that generates dust you must (1) comply with the OSHA standard for silica dust under other applicable law, (2) follow James Hardie cutting instructions to reduce or limit the release of dust, (3) wear others in the area to avoid breathing the dust, (4) when using mechanical saw or high speed cutting tools, work outdoors and use dust collection equipment, and (5) if no other dust controls are available, wear a dust mask or respirator that meets NIOSH requirements (e.g. N-95 dust mask). During clean up, use a well maintained vacuum and filter appropriate for capturing fine (respirable) dust or use wet clean-up methods - never dry sweep.

**WARNING:** This product can expose you to chemicals including respirable crystalline silica, which is known to the State of California to cause cancer. For more information go to [P69Warnings.ca.gov](http://P69Warnings.ca.gov).

**RECOGNITION:** 1 In accordance with ICC-ES Evaluation Report ESR-2290, HardiePlank® lap siding is recognized as a suitable alternate to that specified in the 2006, 2009, 2012 & 2015 International Residential Code for One and Two-Family Dwellings, and the 2006, 2009, 2012 & 2015 International Building Code. HardiePlank lap siding is also recognized for application in the following: City of Los Angeles Research Report No. 24862, State of Florida Product Approval PL13192, Miami-Dade County Florida MIA No. 17-0408-08, U.S. Dept. of HUD Materials Release 1363, Texas Department of Insurance Product Evaluation: ES-23, City of New York MEA 223-93-M, and California OSA PA-019. These documents should also be consulted for additional information concerning the suitability of this product for specific applications.

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Product warranties, safety information and additional installation information are available at [jameshardiepros.com](http://jameshardiepros.com)



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SHEET NAME

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Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

D2.1

Scale 12" = 1'-0"



PERFORMANCE™ tankless electric water heaters

Product Specifications (all models)	Rated Pressure	25 PSI min., 150 PSI max.
	Certifications	ETL Listed to UL 499 and CSA
	Std. Temp. Settings	120°F (Adjustable 80°F-140°F)
	Temp. Accuracy	±1°F at steady state flow
	Turn-On	0.3 GPM

Suggested Specifications

Unit shall have copper clad immersion heating element(s) with brass terminations for increased durability. External temperature control and display adjustable in 1° increments with a range of 80°-140°F. Display shall be capable of displaying setpoint temperature in Celsius or Fahrenheit temperature scales. Unit shall utilize a flow meter with a 0.3 gpm activation point and manage power based on actual flow rate and inlet temperature. Values should be processed 60 times per second. Unit shall be WQA certified lead free, certified to UL499 and CSA C22.2 No.64.

Optional Inline Flow Regulator

- Enhanced outlet temperature control
- Install on the outlet side of the heater
- Limit maximum volume to the specified flow rate to ensure exiting temperature is within an acceptable range
- Flow Regulators for ½" and ¾" NPT plumbing connections
- Flow range: 1 to 5 gallons per minute

RHEEM PART NUMBER	GPM RATINGS OF INSERTS PROVIDED	CONNECTION SIZE
RTE10001A	1.0, 1.5, 2.0	1/2" NPT
RTE10001B	2.0, 3.0, 4.0, 5.0	3/4" NPT

Suggested Sizing Guide

MODEL NUMBER	FLOW REGULATOR PART NO.	GPM INSERT TO USE BASED ON INLET WATER TEMPERATURE			
		40°F	50°F	60°F	70°F
RETEX-04	N/A	N/A	N/A	N/A	N/A
RETEX-06	N/A	N/A	N/A	N/A	N/A
RETEX-08	RTE10001A	1.0	1.0	1.0	1.5
RETEX-11	RTE10001A	1.0	1.0	1.5	2.0
RETEX-13	RTE10001A	1.0	1.0	1.5	2.0
RETEX-18	RTE10001B	2.0	2.0	2.0	3.0
RETEX-24	RTE10001B	2.0	2.0	3.0	4.0
RETEX-27	RTE10001B	2.0	3.0	4.0	5.0
RETEX-36	RTE10001B	3.0	4.0	5.0	5.0

In keeping with its policy of continuous progress and product improvement, Rheem reserves the right to make changes without notice.

Rheem Water Heating • 101 Bell Road  
Montgomery, Alabama 36117-4305 • www.rheem.com

3

12/20 FORM NO. THD-PTE Rev. 2



PERFORMANCE® tankless electric water heaters



RETEX-04, RETEX-06

- Unique Features:**
- External Digital Display – shows outlet temperature
  - Durable Copper Immersion single heating element, field serviceable
  - Simple Installation – Bottom 1/2" NPT water connections



RETEX-08, RETEX-11, RETEX-13

- Unique Features:**
- External Adjustable Digital Thermostatic Control with LED display (±1 degree accuracy)
  - Durable Copper Immersion two heating elements, field serviceable
  - Simple Installation – Side 1/2" compression water connections with 1/2" NPT adapters included



RETEX-18

- Unique Features:**
- External Digital Thermostatic Control with LED display (±1 degree accuracy)
  - Most advanced self-modulation, adjust power to meet hot water demand
  - Durable Copper Immersion two heating elements, field serviceable
  - Simple Installation – Bottom 3/4" NPT water connections



RETEX-24, RETEX-27

- Unique Features:**
- External Digital Thermostatic Control with LED display (±1 degree accuracy)
  - Most advanced self-modulation, adjust power to meet hot water demand
  - Durable Copper Immersion three heating elements, field serviceable
  - Simple Installation – Bottom 3/4" NPT water connections



RETEX-36

- Unique Features:**
- External Digital Thermostatic Control with LED display (±1 degree accuracy)
  - Most advanced self-modulation, adjust power to meet hot water demand
  - Durable Copper Immersion four heating elements, field serviceable
  - Simple Installation – Bottom 3/4" NPT water connections

PERFORMANCE® Tankless Electric Specifications

DESCRIPTION	FEATURES						ROUGHING IN DIMENSIONS (SHOWN IN INCHES)						
	MODEL NUMBER	KW	AMPS	RECOMMENDED BREAKER SIZE	VOLTAGE	RECOMMENDED WIRE SIZE (CS)	MIN. FLOW (GPM)	MAX. FLOW (GPM)	HEIGHT	WIDTH	DEPTH	WATER CONN.	SHIP WEIGHT (LBS.)
120V 1 HEATING CHAMBER													
RETEX-04		3.5	29A	(1x30A)	120	10 AWG	0.3	4.8	5-7/8	10-7/8	2-3/4	1/2 NPT	4.5
360V 1 HEATING CHAMBER													
RETEX-06		6.0	29A	(1x30A)	220	10 AWG	0.3	4.8	5-7/8	10-7/8	2-3/4	1/2 NPT	4.5
RETEX-08		7.3	33A	(1x40A)	240	8 AWG	0.3	4.8	12-5/8	8-1/4	3-5/8	1/2 CF	7
RETEX-11		11.8	46A	(1x50A)	240	6 AWG	0.3	4.8	12-5/8	8-1/4	3-5/8	1/2 CF	8.5
RETEX-13		13.0	54A	(1x60A)	240	6 AWG	0.3	4.8	12-5/8	8-1/4	3-5/8	1/2 CF	8.5
360V 2 HEATING CHAMBERS													
RETEX-18		18.0	75A	(2x40A)	240	8 AWG	0.3	7.0	18-1/4	14-1/2	3-1/2	3/4 NPT	14.78
360V 3 HEATING CHAMBERS													
RETEX-24		24.0	100A	(3x40A)	240	8 AWG	0.3	7.0	18-1/4	17-5/8	3-1/2	3/4 NPT	17.8
RETEX-27		27.0	113A	(3x40A)	240	8 AWG	0.3	7.0	18-1/4	17-5/8	3-1/2	3/4 NPT	17.8
360V 4 HEATING CHAMBERS													
RETEX-36		36.0	150A	(4x40A)	240	8 AWG	0.3	8.0	18-1/4	21-5/8	3-1/2	3/4 NPT	22.7

\* 24W units can be used in 200V single phase with 25% reduced temperature output. Please refer per IEL standards the rating plate and installation instructions will all be according to a 24WV applied voltage. Check with local officials prior to devising the electrical infrastructure.

2

12/20 FORM NO. THD-PTE Rev. 2

PERFORMANCE®



The new degree of comfort.

PERFORMANCE® tankless electric water heaters offer continuous hot water

Performance Features

- On demand, consistent and continuous hot water
- Compact and stylish with digital temperature control in increments of 1° ranging from 80°F to 140°F\*
- Robust copper immersion heating elements with brass top increases durability and are threaded for easy replacement
- Simple Installation
- Digital temperature display
- External controls to adjust temperature in increments of 1°\*

Average GPM Usage by Application

Standard Hand Sink	0.5 GPM
Washing Machine	1 to 1.5 GPM
Water-Saver Shower Head	1.5 GPM
Dishwasher	1 to 2 GPM
Kitchen Sink	2.0 GPM
Standard Shower Head	2.0 GPM
Bath Tub	≥ 4 GPM
Whole-Home	Up to 6 GPM

Average Gallons Per Minute (GPM) based on 2010 Plumbing Standards

Warranty

- 5-Year heating chamber and 1-year parts limited warranty
- See written warranty for complete details

\*RETEX-04 and RETEX-06 only show output temperature and are non-thermostatically controlled

MODEL NUMBER	TEMPERATURE RISE °F							
	0.5 GPM	1.0 GPM	1.5 GPM	2.0 GPM	2.5 GPM	3.0 GPM	4.0 GPM	5.0 GPM
SINGLE POINT-OF-USE								
RETEX-04	48"	24"	16"	12"	—	—	—	—
RETEX-06	75"	37"	25"	19"	—	—	—	—
MULTIPLE APPLICATIONS								
RETEX-08	+	55"	36"	27"	22"	18"	14"	—
RETEX-11	+	75"	50"	38"	30"	25"	19"	—
RETEX-13	+	89"	59"	44"	36"	30"	22"	—
RETEX-18	+	+	82"	62"	49"	41"	31"	25"
RETEX-24	+	+	109"	82"	66"	55"	41"	33"
RETEX-27	+	+	+	92"	74"	62"	46"	37"
RETEX-36	+	+	+	98"	82"	62"	49"	41"

+ Temperature electronically limited setting on adjustable thermostat on front cover

POINT-OF-USE

For 0.5 GPM to 2.0 GPM Applications



RETEX-04, RETEX-06

MULTIPLE APPLICATIONS

For 0.5 GPM to 6.0 GPM Applications



RETEX-08, RETEX-11, RETEX-13



RETEX-18



RETEX-24, RETEX-27



RETEX-36



Tested and certified by the Water Quality Association against NSF-ANSI 372 for lead free compliance

See specifications chart on next page.



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REVISIONS

6 6 22 CITY CORRECTIONS

CUSTOMER INFO

SHEET NAME

ELECTRIC WATER HEATER  
DETAILS

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

D3

Scale

922 MOLINO AVE.  
LONG BEACH CA  
90804

7/18/2022 1:33:03 PM

     	<p>RECESSED CAN LIGHT (HIGH EFFICACY) WITH DIMMER</p> <p>RECESSED CAN LIGHT (HIGH EFFICACY) WITH DIMMER AND HUMIDITY RESISTANT</p> <p>WALL MTD LED LIGHT FIXTURE (HIGH EFFICACY)</p> <p>WALL MTD LED LIGHT FIXTURE w/ MOTION SENSOR (HIGH EFFICACY)</p> <p>WALL MOUNTED BATH FIXTURE (HIGH EFFICACY)</p>	<p>-Light fixtures permitted in closets are as follows: (CEC 410, 16)</p> <p>A surface mounted or recessed incandescent fixture with a completely enclosed lamp.</p> <p>A surface mounted or recessed fluorescent fixture.</p> <p>Luminaire Types Not Permitted. Incandescent luminaires with open or partially enclosed lamps and pendant luminaires or lampholders shall not be permitted.</p>	<p>60.4 Outdoor lighting permitted in closets as follows. (CEC 410, 16)</p> <p>same lot shall be high efficacy as listed below. Also, the lighting shall be controlled by:</p> <ol style="list-style-type: none"> <li>Controlled by photocell</li> <li>Controlled by any of the following:             <ol style="list-style-type: none"> <li>Photocell and automatic override unless the override automatically returns to its normal operation within 6 hours</li> <li>Astronomical time clock override automatically return programmed to automatically turn the lights off at sunrise</li> <li>Energy management system minimum provides the function of the standards; meets the installation meets the requirements for an override switch that allows the lights to be bypassed during the day</li> </ol> </li> </ol>
  	<p>PENDANT LIGHT (HIGH EFFICACY)</p> <p>WALL MTD WALL WASHER LIGHT FIXTURE</p> <p>CEILING MTD WALL WASHER LIGHT FIXTURE</p>	<p>ALL INSTALLED LUMINAIRES TO BE HIGH EFFICACY IN ACCORDANCE WITH TABLE 150.0-A</p>	<p>Each bathroom that contains a bathtub, shower or similar source of moisture shall have an exhaust fan ducted to the outside with a minimum ventilation rate of 50 cfm. The ducting shall be sized according to ASHRAE Standard 62.2 Table 7.1. (§150(0) CENc)</p>
  	<p>FLUSH MTD CEILING LIGHT FIXTURE (HIGH EFFICACY)</p> <p>EXHAUST FAN W/5 AIR CHANGES PER/HR (minimum ventilation rate of 50 cfm shall be provided and exhausted directly to the outside)</p> <p>Deluxe Quiet 65 CFM Ceiling Power Bath Fan. Tested in accordance with Figure #12 of ANSI/AMCA standard 210-07, ANSI/ASHRAE standard 51-07, AMCA 300-08 and HVI standard 915/916</p> <p>WHOLE HOUSE EXHAUST FAN DESIGNATION TO BE POSTED. Kitchen exhaust fan with an exhaust rate of 100 cfm minimum for intermittent exhaust or 5 air changes per hour if continuous. Kitchen hood systems that vent air to the outside may be used for this purpose. [California Energy Code Section 150.0(e)]</p>		
	<p>POWER OF COM WIRING</p>		
     	<p>110V DUPLEX ELECTRICAL RECEPTACLE</p> <p>110V QUAD ELECTRICAL RECEPTACLE</p> <p>110V SINGLE ELECTRICAL RECEPTACLE</p> <p>220V ELECTRICAL RECEPTACLE</p> <p>110V WATER PROOF DUPLEX ELECTRICAL RECEPTACLE</p> <p>110V FLOOR MTD DUPLEX ELECTRICAL RECEPTACLE</p>	<p>All 125 Volt, 15 Amp, and 20 Amp shall be Tamper-resistant receptacles</p> <p>Provide arc-fault circuit interrupter protection for fill outlets, not just receptacles, for the entire dwelling unit (§210.12 CEC)</p>	
       	<p>WATER PROOF SINGLE POLE LIGHT SWITCH</p> <p>SINGLE POLE LIGHT SWITCH</p> <p>3-WAY LIGHT SWITCH</p> <p>4-WAY LIGHT SWITCH</p> <p>DIMMER LIGHT SWITCH</p> <p>SINGLE POLE LIGHT SWITCH w/GROUND FAULT INTERRUPT</p> <p>SINGLE POLE LIGHT SWITCH w/GROUND FAULT INTERRUPT</p> <p>SINGLE POLE LIGHT SWITCH w/ VACANCY SENSOR</p>	<p>FLUSH MTD CEILING FAN WITH LIGHT FIXTURE (HIGH EFFICACY)</p>	
  	<p>JUNCTION BOX</p> <p>HVAC THERMOSTAT</p> <p>SMOKE/CARBON MONOXIDE DETECTOR</p> <p>120 VOLT HARD-WIRED INTERCONNECTED W/BATTERY BACKUP</p>		
	<p>Clothes dryer to be vented outside and equipped with a back draft damper. Vent is to have maximum vertical and horizontal length including (2) 90 degree elbows of 14 feet. A length of 2 feet shall be deducted for each elbow in excess of two. If a dryer booster fan is proposed, please specify compatible fan on plans. [CMC 504.4]</p>		

110V ELEC & COMM RECEPTABLES ARE TO BE INSTALLED  
@ +18" AFF EXCEPT WHEN OVER COUNTER TOPS - UNO

110V ELEC & COMM RECEPTABLES OVER +36" COUNTER  
TOPS ARE TO BE INSTALLED @ +44" AFF - UNO

110V ELEC & COMM RECEPTABLES OVER +32" AFF COUNTER  
TOPS ARE TO BE INSTALLED @ +40" AFF - UNO

ALL 110V ELEC RECEPTABLES INSTALLED IN THE KITCHEN,  
ULIN, BATH, GARAGE, LO, OR ANY AREA THAT IS TO BE SERVED  
BY A WATER SOURCE ARE TO BE GROUND FAULT INTERRUPT  
DEVICES OR INSTALLED ON A GROUND FAULT INTERRUPT  
CIRCUIT

ALL EXTERIOR ELEC RECEPTABLES ARE TO BE WATER PROOF

ALL SWITCHES TO BE INSTALLED @ +44" AFF - UNO

SWITCHES BY OWNER'S BED IN OWNER'S SUITE INSTALLED  
@ 12" AFF - UNO

VERIFY ALL HVAC EQUIP POWER & GAS REQ'D & LOCATIONS  
w/ HVAC SUB-COUNT & BLDR PRIOR TO INSTALLATION

VERIFY ALL POOL EQUIP POWER & GAS REQ'D & LOCATIONS  
w/ POOL SUB-COUNT & BLDR PRIOR TO INSTALLATION

FIELD VERIFY LOCATION OF ALL WALL WASHERS

HOLD ALL SWITCHES AS CLOSE TO CORNER OR DOOR JAMB  
AS POSSIBLE

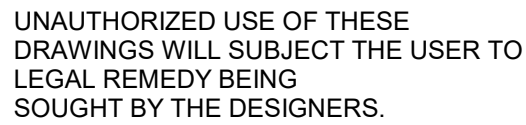
60.4 Outdoor lighting permanently mounted to a single family dwelling or other buildings in the same lot shall be high efficacy and must be controlled by an on/off switch that does not override to ON as listed below. Also, the lighting must be one of the following methods:

- Controlled by photocell and motion sensor. Controls that override to ON shall not be allowed unless the override automatically reactivates the motion sensor within 6 hours, or
- Controlled by any of the following:
  - Photocell and automatic time switch control. Controls that override to ON shall not be allowed unless the override automatically return the photocell and automatic time switch control to ON within 6 hours.
  - Astronomical time clock. Controls that override to ON shall not be allowed unless the override automatically return the astronomical clock its normal operation within 6 hours and which is programmed to automatically turn the outdoor lighting OFF during daylight hours, or
  - Energy management system. Controls that override to ON shall not be allowed unless the system meets the functionality of an astronomical time clock in accordance with Section 110.9 of the standards, meets the Installation Certification requirements in Section 130.4 of the standards; and

60.4.1.1 The override must be a manual switch that is not a bypass switch that allows the luminaire to be always ON, and is programmed to automatically turn the outdoor lighting OFF during daylight hours.

1. Unless in accordance with CEC 210.12 (A) Exception 1, 2, or 3, all 120-volt, single phase, 15 and 20 ampere branch circuits supplying outlets or devices installed in dwelling unit kitchen, family room, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, laundry areas, or similar rooms or areas shall be protected by a listed arc-fault/branch circuit interrupter, combination type, a branch-feeder type, a listed supplemental arc protection circuit breaker installed to provide protection of the branch circuit.
2. All exterior lighting is to be shielded and is not permitted to shine off site.
3. Luminaries providing outdoor lighting, including lighting for private patios, entrances, balconies, porches, etc...which are permanently mounted to a residential building shall be high efficacy or may be low efficacy if controlled by ON and Off switch, which does not override to ON motion sensor and photocontrol, motion sensor may not override, photocontrol without override. (CENEC 150(k)(9))

1. The number of blank electrical boxes located more than 5 feet above finished floor and do not contain a luminaire shall not exceed the number of bedrooms; these boxes must be served by a dimmer, vacancy sensor or fan speed control. [California Energy Code Section 150 (k) 1 (B)]
2. Recessed downlight in ceilings shall not contain screw base sockets; and shall contain lamps that comply with Joint Appendix JA8; and lamps shall be marked with "JA8-2016" or JA8-2016-E". [California Energy Code Section 150 (k) 1 (G)]
3. Except for luminaires in closets less than 70 SF and luminaires in hallways, all permanently installed luminaires with light sources compliant with Joint Appendix JA8 shall be controlled by dimmers or Vacancy sensors. [California Energy Code Section 150 (k) 2 (K)]



Project number	LB 1221
Date	6 13 22
Drawn by	Alpie T., Pedro O
Checked by	Checker
SHEET	
E1	
Scale	1/4" = 1'-0"

GENERAL NOTES

1. Permanent vacuum breakers shall be included with all new hose bibs. Hose bibbs shall be fitted with a non-removable backflow device.
2. Provide Water Closets with a maximum flow of 1.28 gallons per flush (gpf).
3. Provide lavatory faucets with a maximum flow of 1.2 gallons per minute (GPM)
4. Shower head shall be approved for a maximum 1.8 gpm per 2019 California Green Building Standards code. ALSO A REQUIREMENT FOR PRIMARY DWELLING.
5. State Health and Safety Code Sec 17821.9 bans the use of chlorinated polyvinyl chloride (CPVC) and crosslinked polyethelyn (PEX) for interior water supply piping
6. Exhaust fan min. 5-Air changes per hour minimum 50 cfm.
7. Smoke Alarms  
Provide smoke alarms at all of the following locations 2019 CBC Sec. R314
- a. On the ceiling or wall outside of each separate sleeping area in the immediate vicinity of bedrooms.
- b. In each room used for sleeping purposes.
- c. In each story within a dwelling unit, including basements. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.
- Smoke Alarm Notes:
- a. In new construction, required smoke alarms shall receive their primary power from the building wiring where such wiring is served from a commercial source and shall be equipped with a battery back-up. Smoke alarms shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.
- b. Where more than one smoke alarm is required to be installed, the smoke alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual dwelling unit. The alarm shall be clearly audible in all bedrooms over background noise levels with all intervening doors closed.
8. Shower and tub-shower combination control valve must be pressure balanced.
9. "PEX" piping is an approved material for water supply and distribution systems in California for residential occupancies.
10. All 120-volt, single phase, 15- and 20- ampere branch circuits supplying outlets installed in the family room, kitchen, laundry area, closets, and bedrooms are required to be protected by a listed arc fault circuit interrupter, combination-type, installed to provide protection of the branch circuit. Outlets include receptacle outlets, lighting outlets, carbon monoxide and smoke alarm outlets. CEC 210.12(A)
11. Provide fluorescent lighting in the bathroom and kitchen (40 lumens per watt minimum).
12. All branch circuits that supply 125 volts, single-phase, 15 and 20-ampere receptacle outlets installed in dwelling unit bedrooms shall be protected by an arc-fault circuit interrupter(s).
13. Two dedicated 20-ampere branch circuits are required in kitchen/dining area.
14. Bathroom circuiting shall be either:
- a) 20-ampere circuit dedicated to each bathroom, or
- b) at least one 20-ampere circuit supplying only bathroom receptacle outlets.
15. Manufactured windows shall have a label attached certified by the National Fenestration Rating Council (NFRC) and showing compliance with energy calculations.
16. Receptacle outlet locations will comply with NEC Article 210-52(a)
17. There shall be a floor or landing on each side of a door. Such floor or landing shall be at the same elevation on each side of the door. Landings shall be level except for exterior landings, which are permitted to have a slope not to exceed 0.25 unit vertical in 12 units horizontal (2 - percent slope). 2019 CBC Sec. R311.3
- Exceptions:
1. A door is permitted to open at the top step of an interior flight of stairs, provided the door does not swing over the top step.
2. The landing at an exterior doorway shall not be more than 7.75 inches below the top of the threshold, provided the door, other than an exterior storm or screen door, does not swing over the landing.
18. A 12" minimum access panel to bathtub trap connection is required unless plumbing is without slip joints.
19. Max. temperature of 120° to be provided by the use of pressure balance or thermostatic mixing valves.
20. Emergency escape and rescue. Basements and sleeping rooms below the fourth story above grade plane shall have at least one exterior emergency escape and rescue opening. Such openings shall open directly into a public way or to a yard or court that opens to a public way. 2019 CBC Sec. R310.2
1. Emergency escape and rescue openings shall have a minimum net clear opening of 5.7 square feet. 2019 CBC R310.2.1
2. The minimum net clear opening height dimension shall be 24 inches. The minimum net clear opening width dimension shall be 20 inches. 2019 CBC Sec. R310.2.1
3. Emergency escape and rescue openings shall have the bottom of the clear opening not greater than 44 inches measured from the floor. 2019 CBC Sec. R310.2.2
21. All lights in closets shall comply with NEC 410-8 for clearance to combustibles.
22. In Kitchens and Dining areas of dwelling units a receptacle outlet shall be installed at each counter space wider than 12 inches. Receptacles shall be installed so that no point along the wall line is more than 24 inches measured horizontally from a receptacle outlet in that space. Island and peninsular countertops 12 inches by 24" long (or greater) shall have at least one receptacle. Counter top spaces separated by range tops, refrigerators, or sinks shall be considered as separate counter top spaces.
23. Elements of appliances which create a glow or spark must be located a minimum of 18" above the floor. Ducts through garage into dwelling shall be minimum 26-gauge galvanized steel.
24. Where an addition, alteration or repair to an individual dwelling unit or guestroom in Group R requires a permit, battery-operated smoke alarms shall be installed in the existing construction in accordance with the preceding item. Section R314.2.2

HIGH EFFICACY NOTES

1. High efficacy EXTERIOR lighting can be fluorescent of high-intensity discharge lamp (HID) such as metal halide or pressure sodium, etc.  
Outdoor Lighting Requirement, all luminaries mounted to a building or to other buildings on the same lot shall be high efficacy luminaries or must be controlled by a motion sensor and controlled by one of these: photocontrol or Astronomical time clock or Energy management control system (EMCS).
2. High efficacy luminaires of 13 watts or higher must have electronic ballasts. (CEC150(k).1)
3. NO SCREW BASE FIXTURES MEET THE HIGH EFFICACY DEFINITION. Base to be 4 pin.
4. Permanently installed luminaries in bathrooms, garages, laundry rooms, and utility rooms shall be high efficacy luminaries.
- a. EXCEPTION to CEC Section 150 (k) 3 : Permanently installed luminaries that are not high efficacy shall be allowed provided that they are CONTROLLED BY AN OCCUPANT SENSOR(S) certified to comply with Section 119(d). Such MOTION SENSORS shall not have a control that allows the luminaries to be turned on automatically or that has an override allowing the luminaries to be always on.
- Lighting in bathroom shall have one high efficacy luminaires and all low efficacy lighting must be controlled by vacancy sensors.
5. Permanently installed luminaries located other than in kitchens, bathrooms, garages, laundry rooms and utility rooms shall be high efficacy luminaries. (i.e. Interior rooms such as living room, dining room, bedrooms, hallways, etc.). Other room requirement, all luminaries shall either be high efficacy or shall be controlled by a vacancy sensor or dimmer. Closets that are less than 70 square foot are exempt from this requirement.
- a. EXCEPTION 1 to CEC Section 150 (k) 4: Permanently installed luminaries that are not high efficacy luminaries shall be allowed provided that they are CONTROLLED BY A DIMMER SWITCH.
- b. EXCEPTION 2 to CEC Section 150 (k) 4: Permanently installed luminaries that are not high efficacy luminaries shall be allowed provided that they are CONTROLLED BY AN OCCUPANT SENSOR(S) certified to comply with Section 119(d). Such motion sensors shall not have a control that allows the luminaries to be turned on automatically or that has an override allowing the luminaries to be always on.
- c. EXCEPTION 3 to CEC Section 150 (k) 4: Permanently installed luminaries that are not high efficacy luminaries SHALL BE ALLOWED IN CLOSETS LESS THAN 70 SQUARE FEET.
6. Lighting in areas adjacent to the kitchen, including but not limited to dining and nook areas, are considered kitchen lighting if they are not separately switched from kitchen lighting.
7. Recessed Luminaries in Insulated Ceilings:
- a. Luminaries (Lights) recessed into insulated ceilings shall be APPROVED FOR ZERO CLEARANCE insulation cover (IC) by Underwriters Laboratories or other testing/rating laboratories recognized by the international Conference of Building Officials.
- b. Shall include a label CERTIFYING AIR TIGHT (AT) or similar designation to show air leakage less than 2.0 CFM at 75 PASCAL's (or 1.57 lbs/ft2) WHEN TESTED IN ACCORDANCE WITH ASTM E283.
- c. SHALL BE SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND CEILING to ensure all air leaks are sealed between the ceiling and fixture, and the conditioned and unconditioned space.
- d. Recessed lights cans if installed in a ceiling with insulation, the light can must be rated to be airtight (AT-rated) and insulation contact rated (IC-rated).
8. Permanently installed luminaires in kitchens shall be high efficacy luminaires (energy-efficacy fixtures such as Compact Fluorescent lamps (CFLs) with electronic ballasts, Fluorescent Lamps with electronic ballasts, High intensity discharge (HID) lams, etc).
9. Luminaries providing outdoor lighting and permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy luminaries or controlled by a combination photo-control / motion sensor.
10. In bathrooms, at least one fixture shall be high efficacy and all remaining fixtures shall be high efficacy or be controlled by a vacancy sensor.
11. In kitchen, at least one-half of the wattage rating of the fixtures must be high efficacy.

HIGH EFFICACY LAMPS	
Lamp Power	Required lamp efficacy
Less than 15 watts	40 lumens/watt
15-40 watts	50 lumens/watt
More than 40 watts	60 lumens/watt
Note: Ballast wattage is not included when determining lamp efficacy	

AGC

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REVISIONS

6 6 22 CITY CORRECTIONS

CLIENT INFO

922 MOLINO AVE.  
LONG BEACH CA  
90804

SHEET NAME

ELECTRICAL NOTES AND  
GENERAL NOTES

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by Checker

SHEET

E2

Scale 1/4" = 1'-0"



# 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

## RESIDENTIAL MANDATORY MEASURES, SHEET 1 (January 2020, Includes August 2019 Supplement)

**DISCLAIMER:** THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODED



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LEGAL REMEDY BEING  
SOUGHT BY THE DESIGNERS.

## REVISIONS

6 6 22 CITY CORRECTIONS

## CLIENT INFC

922 MOLINO AVE.  
LONG BEACH CA  
90804

## SHEET NAME

## GREEN CODE REQUIREMENTS

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by	Checker
------------	---------

**SHEET**

# GB-1

Scale



Y	=	YES
N/A	=	NOT APPLICABLE
RESPON. PARTY	=	RESPONSIBLE PARTY (ie: ARCHITECT, ENGINEER, OWNER, CONTRACTOR, INSPECTOR ETC.)

34941 CALLE DEL SOL  
CAPISTRANO BEACH,  
CA 92624

COMPLIANCE TO THESE DRAWINGS WILL  
BE THE RESPONSIBILITY OF THE  
GENERAL CONTRACTOR.

THESE DRAWINGS, AS INSTRUMENTS OF SERVICE ARE THE EXCLUSIVE PROPERTY OF THE DESIGNERS, AND ARE NOT TO BE USED IN WHOLE OR PART WITHOUT HIS EXPRESS WRITTEN PERMISSION.

UNAUTHORIZED USE OF THESE  
DRAWINGS WILL SUBJECT THE USER TO  
LEGAL REMEDY BEING  
SOUGHT BY THE DESIGNERS.

6 6 22 CITY CORRECTIONS

922 MOLINO AVE.  
LONG BEACH CA  
90804

## GB-2

Scale

**MAXIMUM INCREMENTAL REACTIVITY (MIR).** The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O<sub>3</sub>/g ROG)

**Note:** MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

**MOISTURE CONTENT.** The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

**PRODUCT-WEIGHTED MIR (PWMIR).** The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).

**Note:** PWMIR is calculated according to equations found in CCR, Title 17, Section 94521 (a).

**REACTIVE ORGANIC COMPOUND (ROC).** Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

**VOC.** A volatile organic compound (VOC) broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

**4.503 FIREPLACES**

**4.503.1 GENERAL.** Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves, pellet stoves and fireplaces shall also comply with applicable local ordinances.

**4.504 POLLUTANT CONTROL**

**4.504.1 COVERING OF DUCT OPENINGS & PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION.** At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of water, dust or debris which may enter the system.

**4.504.2 FINISH MATERIAL POLLUTANT CONTROL.** Finish materials shall comply with this section.

**4.504.2.1 Adhesives, Sealants and Caulks.** Adhesives, sealant and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:

1. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers and caulks shall comply with local or regional air pollution control or air quality management district rules where applicable or SCAQMD Rule 116B VOC limits, as shown in Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 116B prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products, as specified in Subsection 2 below.
2. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than 1 pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of *California Code of Regulations*, Title 17, commencing with section 94507.

**4.504.2.2 Paints and Coatings.** Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB *Architectural Coatings Control Measure*, as shown in Table 4.504.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, *Standardized Color Measure*, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply.

**4.504.2.3 Aerosol Paints and Coatings.** Aerosol paints and coatings shall meet the Product-weighted MIR Limits for VOC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(e)(1) and (f)(1) of *California Code of Regulations*, Title 17, commencing with Section 94520, and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

**4.504.2.4 Verification.** Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.
2. Field verification of on-site product containers.

TABLE 4.504.1 - ADHESIVE VOC LIMIT <sub>1,2</sub>	
(Less Water and Less Exempt Compounds in Grams per Liter)	
ARCHITECTURAL APPLICATIONS	VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVE	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS	
COATING CATEGORY	VOC LIMIT
FLAT COATINGS	50
NON-FLAT COATINGS	100
NONFLAT-HIGH GLOSS COATINGS	150
<b>SPECIALTY COATINGS</b>	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS:	120
MAGNESITE CEMENT COATINGS	400
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

TABLE 4.504.5 - FORMALDEHYDE LIMITS:	
MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION	
PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD <sub>2</sub>	0.13
1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIF. AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIF. CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.	
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16" (8 MM).	

## DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

**4.504.3 CARPET SYSTEMS.** All carpet installed in the building interior shall meet the testing and product requirements of at least one of the following:

- 1. Carpet and Rug Institute's Green Label Plus Program.
- 2. 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).
- 3. NSF/ANSI 140 at the Gold level.
- 4. Scientific Certifications Systems Indoor Advantage Gold.

**4.504.3.1 Carpet cushion.** All carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label program.

**4.504.3.2 Carpet adhesive.** All carpet adhesive shall meet the requirements of Table 4.504.1.

**4.504.4 RESILIENT FLOORING SYSTEMS.** Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall comply with one or more of the following:

- 1. Products compliant with 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), certified as a CHPS Low-Emitting Material in the Collaborative for High Performance Schools (CHPS) High Performance Products Database.
- 2. Products certified under UL GREENGUARD GOLD (formerly the Greenguard Children & Schools program).
- 3. Certification under the Resilient Floor Covering Institute (RFCI) FloorScore program.
- 4. 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).

**4.504.5 COMPOSITE WOOD PRODUCTS.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 4.504.5

**4.504.5.1 Documentation.** Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

- 1. Product certifications and specifications.
- 2. Chain of custody certifications.
- 3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
- 4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European G330 S3 standards, and Canadian CSA 0121, CSA 0151, CSA 0153 and CSA 0325 standards.
- 5. Other methods acceptable to the enforcing agency.

## 4.505 INTERIOR MOISTURE CONTROL

**4.505.1 General.** Buildings shall meet or exceed the provisions of the *California Building Standards Code*.

**4.505.2 CONCRETE SLAB FOUNDATIONS.** Concrete slab foundations required to have a vapor retarder by the California Building Code, Chapter 19, or concrete slab-on-ground floors required to have a vapor retarder by the California Residential Code, Chapter 5, shall also comply with this section.

**4.505.2.1 Capillary break.** A capillary break shall be installed in compliance with at least one of the following:

- 1. A 4-inch (101.6 mm) thick base of 1/2 inch (12.7mm) or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design, which will address bleeding, shrinkage, and curing, shall be used. For additional information, see American Concrete Institute, ACI 302 R-06.
- 2. Other equivalent methods approved by the enforcing agency.
- 3. A slab design specified by a licensed design professional.

**4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS.** Building materials with visible signs of moisture problem shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

- 1. Moisture content shall be determined with either a probe-type or contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
- 2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
- 3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure.

## 4.506 INDOOR AIR QUALITY AND EXHAUST

**4.506.1 Bathroom exhaust fans.** Each bathroom shall be mechanically ventilated and shall comply with the following:

- 1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
- 2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.
  - a. Humidity controls shall be capable of adjustment between a relative humidity range less than or equal to 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment.
  - b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in).

**Notes:**

- 1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.
- 2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code*.

## 4.507 ENVIRONMENTAL COMFORT

**4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN.** Heating and air conditioning systems shall be sized, designed and have their equipment selected using the following methods:

- 1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
- 2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
- 3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

**Exception:** Use of alternate design temperatures necessary to ensure the system functions are acceptable.

Y	N/A	RESPON. PARTY
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	

## CHAPTER 7

### INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS

#### 702 QUALIFICATIONS

##### 702.1 INSTALLER TRAINING.

HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

1. State certified apprenticeship programs.
2. Public utility training programs.
3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations.
4. Programs sponsored by manufacturing organizations.
5. Other programs acceptable to the enforcing agency.

##### 702.2 SPECIAL INSPECTION [HCD].

When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector.

1. Certification by a national or regional green building program or standard publisher.
2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors.
3. Successful completion of a third party apprentice training program in the appropriate trade.
4. Other programs acceptable to the enforcing agency.

**Notes:**

1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.
2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS).

[BSC] When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency.

**Note:** Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.

#### 703 VERIFICATIONS

##### 703.1 DOCUMENTATION.

Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.

**702.1 INSTALLER TRAINING.** HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following:

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5. Other programs acceptable to the enforcing agency.

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3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European 636 3S standards, and Canadian CSA 0121, CSA 0151, CSA 0153 and CSA 0325 standards.
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2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.

**4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS.** Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.

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2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.

- Humidity controls shall be capable of adjustment between a relative humidity range less than or equal to 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment.
- A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in)

**Notes:**

1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.
2. Lighting integral to bathroom exhaust fans shall comply with the *California Energy Code*.

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1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

**Exception:** Use of alternate design temperatures necessary to ensure the system functions are acceptable.

**DISCLAIMER:** THIS DOCUMENT IS PROVIDED AND INTENDED TO BE USED AS A MEANS TO INDICATE AREAS OF COMPLIANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS (CALGREEN) CODE. DUE TO THE VARIABLES BETWEEN BUILDING DEPARTMENT JURISDICTIONS, THIS CHECKLIST IS TO BE USED ON AN INDIVIDUAL PROJECT BASIS AND MAY BE MODIFIED BY THE END USER TO MEET THOSE INDIVIDUAL NEEDS. THE END USER ASSUMES ALL RESPONSIBILITY ASSOCIATED WITH THE USE OF THIS DOCUMENT, INCLUDING VERIFICATION WITH THE FULL CODE.

7/18/2022 11:33:08 PM

CERTIFICATE OF COMPLIANCE

Project Name: Molino Ave Addition

Calculation Description: Title 24 Analysis

Calculation Date/Time: 2022-03-17T15:06:47-07:00

Input File Name: Molino Ave Addition (922).ribd19x

CF1R-PRF-01E

(Page 1 of 10)

GENERAL INFORMATION

01	Project Name		Molino Ave Addition									
02	Run Title		Title 24 Analysis									
03	Project Location		922 Molino Avenue									
04	City		Long Beach			05	Standards Version		2019			
06	Zip code		90804			07	Software Version		EnergyPro 8.3			
08	Climate Zone		6			09	Front Orientation (deg/ Cardinal)		270			
10	Building Type		Single family			11	Number of Dwelling Units		1			
12	Project Scope		AdditionAlteration			13	Number of Bedrooms		3			
14	Addition Cond. Floor Area (ft²)		371			15	Number of Stories		1			
16	Existing Cond. Floor Area (ft²)		996			17	Fenestration Average U-factor		0.3			
18	Total Cond. Floor Area (ft²)		1367			19	Glazing Percentage (%)		15.95%			
20	ADU Bedroom Count		n/a			21	ADU Conditioned Floor Area		n/a			
22	Is Natural Gas Available?		Yes									

COMPLIANCE RESULTS

01	Building Complies with Computer Performance
02	Building does not require field testing or HERS verification
03	This building incorporates one or more Special Features shown below

ENERGY USE SUMMARY

Energy Use (KTDU/ft <sup>2</sup> -yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	27.13	27.39	-0.26	-1
Space Cooling	27.72	26.4	1.32	4.8
IAQ Ventilation	0	0	0	
Water Heating	24.56	24.56	0	0
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	79.41	78.35	1.06	1.3

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time:

Report Version: 2019.2.000  
Schema Version: rev 20200901

HERS Provider:

Report Generated: 2022-03-17 15:07:19

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Form MF-1R Mandatory Measures Summary	15
Room Load Summary	19

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

Molino Ave Addition  
922 Molino Avenue  
Long Beach, CA 90804

Project Designer:

AGC  
34941 Calle Del Sol  
Capistrano Beach, CA 92624

Report Prepared by:

Timothy Carstairs, CEA, HERS, GPR  
Carstairs Energy Inc.  
2238 Bayview Heights Drive, Suite E  
Los Osos, CA 93402  
(805) 904-9048



Job Number:

22-031722

Date:

3/17/2022

The EnergyPro computer program has been used to perform the calculations summarized in this compliance report. This program has approval and is authorized by the California Energy Commission for use with both the Residential and Nonresidential 2019 Building Energy Efficiency Standards.

This program developed by EnergySoft Software – www.energysoft.com.

CERTIFICATE OF COMPLIANCE

Project Name: Molino Ave Addition

Calculation Description: Title 24 Analysis

Calculation Date/Time: 2022-03-17T15:06:47-07:00

Input File Name: Molino Ave Addition (922).ribd19x

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FENESTRATION / GLAZING

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft <sup>2</sup> )	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
French Door	Window	Front Wall	Front	270			1	27	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window	Window	Front Wall	Front	270			1	7	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 5	Window	Front Wall	Front	270			1	7	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 6	Window	Front Wall	Front	270			1	7	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 7	Window	Left Wall	Left	0			1	4	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 8	Window	Left Wall	Left	0			1	4	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 9	Window	Left Wall	Left	0			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 10	Window	Left Wall	Left	0			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 11	Window	Left Wall	Left	0			1	4	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 12	Window	Left Wall	Left	0			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 13	Window	Left Wall	Left	0			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 14	Window	Right Wall	Right	180			1	6	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 15	Window	Right Wall	Right	180			1	6	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 16	Window	Right Wall	Right	180			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No

Registration Number:

CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time:

Report Version: 2019.2.000  
Schema Version: rev 20200901

HERS Provider:

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OPAQUE SURFACES

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft <sup>2</sup> )	Window and Door Area (ft <sup>2</sup> )	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Front Wall	Existing Living Area	R-0 Wall	270	Front	224	48	90	none	Existing	No
Left Wall	Existing Living Area	R-0 Wall	0	Left	336	66	90	none	Existing	No
Right Wall	Existing Living Area	R-0 Wall	180	Right	336	59	90	none	Existing	No
Left Wall 2	New Living Area	R-13 Wall	0	Left	128	15	90	none	New	n/a
Rear Wall	New Living Area	R-13 Wall	90	Back	168	48	90	none	New	n/a
Right Wall 2	New Living Area	R-13 Wall	180	Right	128	2	90	none	New	n/a
Interior Surface	Existing Living Area>>New Living Area	R-0 Wall1	n/a	n/a	168	0	n/a		New	n/a
Roof	Existing Living Area	R-11 Roof Attic	n/a	n/a	996	n/a	n/a		Existing	No
Roof 2	New Living Area	R-30 Roof Attic	n/a	n/a	371	n/a	n/a		New	n/a
Raised Floor	Existing Living Area	R-0 Floor Crawlspace	n/a	n/a	996	n/a	n/a		Existing	No
Raised Floor 2	New Living Area	R-19 Floor Crawlspace	n/a	n/a	371	n/a	n/a		New	n/a

ATTIC

01	02	03	04	05	06	07	08	09	10
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof	Status	Verified Existing Condition
Attic Existing Living Area	Attic RoofExisting Living Area	Ventilated	4	0.1	0.85	No	No	Existing	No
Attic New Living Area	Attic RoofNew Living Area	Ventilated	4	0.1	0.85	No	No	New	n/a

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- New ductwork added is less than 40 ft. in length

HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry

Building-level Verifications:

- None --

Cooling System Verifications:

- None --

Heating System Verifications:

- None --

HVAC Distribution System Verifications:

- None --

Domestic Hot Water System Verifications:

- None --

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft <sup>2</sup> )	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Molino Ave Addition	1367	1	3	2	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft <sup>2</sup> )	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
Existing Living Area	Conditioned	HVAC System1	996	8	DHW Sys 1	N/A
New Living Area	Conditioned	HVAC System1	371	8	DHW Sys 1	N/A



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REVISIONS

6 6 22 CITY CORRECTIONS

CLIENT INFO

922 MOLINO AVE.  
LONG BEACH CA  
90804

SHEET NAME

TITTLE 24

Project number LB 1221

Date 6 13 22

Drawn by Alpie T., Pedro O

Checked by P.O.

SHEET

T24-1

Scale

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BUILDING ENVELOPE - HERS VERIFICATION															
01				02				03				04			
Quality Insulation Installation (QII)				High R-value Spray Foam Insulation				Building Envelope Air Leakage				CFM50			
Not Required				Not Required				Not Required				n/a			

WATER HEATING SYSTEMS									
01	02	03	04	05	06	07	08	09	10
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification	Status	Verified Existing Condition	Existing Water Heating System
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 1 (1)	n/a	None	n/a	Existing	No	

WATER HEATERS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Energy Factor or Efficiency	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff	1st Hr. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition	Status	Verified Existing Condition
DHW Heater 1	Gas	Small Storage	1	50	0.57-EF	<= 75 kBtu/hr	0	80	n/a	n/a	n/a	Existing	No

WATER HEATING - HERS VERIFICATION							
01	02	03	04	05	06	07	08
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Compact Distribution Type	Recirculation Control	Central DHW Distribution	Shower Drain Water Heat Recovery
DHW Sys 1 - 3/1	Not Required	Not Required	Not Required	None	Not Required	Not Required	Not Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT																							
1. I certify that this Certificate of Compliance documentation is accurate and complete.																							
Documentation Author Name:								Documentation Author Signature:															
Timothy Carstairs, CEA, HERS, GPR																							
Company: Carstairs Energy Inc.								Signature Date: 3/17/2022															
Address: 2238 Bayview Heights Drive, Suite E								CEA/ HERS Certification Identification (If applicable): R16-06-10042															
City/State/Zip: Los Osos, CA 93402								Phone: (805) 904-9048															
<b>RESPONSIBLE PERSON'S DECLARATION STATEMENT</b>																							
I certify the following under penalty of perjury, under the laws of the State of California:																							
1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.																							
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.																							
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.																							
Responsible Designer Name:								Responsible Designer Signature:															
PEDRO ORNELAS																							
Company: AGC								Date Signed: 3 19 22															
Address: 34941 Calle Del Sol								License:															
City/State/Zip: Capistrano Beach, CA 92624								Phone: 805 268 2502															

Registration Number: CA Building Energy Efficiency Standards - 2019 Residential Compliance

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01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-0 Wall1	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.277	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Other Side Finish: Gypsum Board
Attic RoofExisting Living Area	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic RoofNew Living Area	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / None	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
R-0 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x12 @ 16 in. O. C.	R-0	None / None	0.216	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x12
R-19 Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x10 @ 16 in. O. C.	R-19	None / None	0.046	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 / 2x10
R-11 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-11	None / None	0.081	Over Ceiling Joists: R-1.9 Insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board
R-30 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 Insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

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HVAC - DISTRIBUTION SYSTEMS																
01	02		03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area									
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts 40 ft	
											1-hers-dist					
HVAC - FAN SYSTEMS																
01				02				03				04				
Name				Type				Fan Power (Watts/CFM)				Name				
HVAC Fan 1				HVAC Fan				0.58				HVAC Fan 1-hers-fan				
HVAC FAN SYSTEMS - HERS VERIFICATION																
01				02				03								
Name				Verified Fan Watt Draw				Required Fan Efficacy (Watts/CFM)								
HVAC Fan 1-hers-fan				Not Required				0								

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FENESTRATION / GLAZING															
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window 17	Window	Right Wall	Right	180			1	13.5	1.19	Table 110.6-A	0.83	Table 110.6-B	Bug Screen	Existing	No
Window 3	Window	Left Wall 2	Left	0			1	15	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 2	Window	Rear Wall	Back	90			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 1	Window	Rear Wall	Back	90			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 18	Window	Rear Wall	Back	90			1	8	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Door 1	Window	Rear Wall	Back	90			1	20	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a
Window 4	Window	Right Wall 2	Right	180			1	2	0.3	NFRC	0.23	NFRC	Bug Screen	New	n/a

OPAQUE DOORS					
01	02	03	04	05	06
Name	Side of Building	Area (ft²)	U-factor	Status	Verified Existing Condition
Door	Right Wall	20	0.5	Existing	No

OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-0 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-0	None / None	0.361	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-13	None / None	0.101	Inside Finish: Gypsum Board Cavity / Frame: R-13 / 2x4 Exterior Finish: 3 Coat Stucco

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SPACE CONDITIONING SYSTEMS										
01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Heating Equipment Count	Cooling Equipment Count
HVAC System1	Heating and cooling system other	Heating Component 1	Cooling Component 1	HVAC Fan 1	Air Distribution System 1	n/a	Existing	No	1	1

HVAC - HEATING UNIT TYPES			
01	02	03	04
Name	System Type	Number of Units	Heating Efficiency
Heating Component 1	Central gas furnace	1	AFUE-80

HVAC - COOLING UNIT TYPES							
01	02	03	04	05	06	07	08
Name	System Type	Number of Units	Efficiency EER/CEER	Efficiency SEER	Zonally Controlled	Mult-speed Compressor	HERS Verification
Cooling Component 1	Central split AC	1	11.7	14	Not Zonal	Single Speed	Cooling Component 1-hers-cool

HVAC - DISTRIBUTION SYSTEMS															
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
			Duct Ins. R-value		Duct Location		Surface Area								
Name	Type	Design Type	Supply	Return	Supply	Return	Supply	Return	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts 40 ft
Air Distributi on System 1	Unconditioned attic	Non-Verified	R-6	R-6	Attic	Attic	n/a	n/a	No Bypass Duct	Existing (not specified)	Air Distributi on System	Existing + New	No	n/a	n/a

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Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 110.0(c) § 110.3:	<b>Certification.</b> Heating, ventilation and air conditioning (HVAC) equipment, water heaters, showerheads, faucets, and all other regulated appliances must be certified by the manufacturer to the California Energy Commission."
§ 110.0(2)(a):	<b>HVAC Efficiency.</b> Equipment must meet the applicable efficiency requirements in Table 110.2.A-4 through Table 110.2.K."
§ 110.0(2)(b):	<b>Controls for Heat Pumps with Supplementary Electric Resistance Heaters.</b> Heat pumps with supplementary electric resistance heaters must have controls that prevent supplementary heater operation when the heating load can be met by the heat pump alone; and in which the cut-out temperature for compression heating is higher than the cut-out temperature for supplementary heating; and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating."
§ 110.0(2)(c):	<b>Thermostats.</b> All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat."
§ 110.3(c)(4):	<b>Water Heating Recirculation Loops Serving Multiple Dwelling Units.</b> Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)(4).
§ 110.3(c)(6):	<b>Isolation Valves.</b> Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with those bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed."
§ 110.5:	<b>Pilot Lights.</b> Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters."
§ 150.0(h)(1):	<b>Building Cooling and Heating Loads.</b> Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment, Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)(2).

HVAC SYSTEMS						
Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
HVAC DISTRIBUTION					Duct	
Location	Heating	Cooling	Duct Location	R-Value	Status	
WATER HEATING						
Qty.	Type	Gallons	Min. Eff	Distribution		Status

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HVAC SYSTEMS						
Qty.	Heating	Min. Eff	Cooling	Min. Eff	Thermostat	Status
1	Central Furnace	80% AFUE	Split Air Conditioner	14.0 SEER	Setback	Existing
HVAC DISTRIBUTION					Duct	
Location	Heating	Cooling	Duct Location	R-Value	Status	
HVAC System	Ducted	Ducted	Attic	6.0	Altered	
WATER HEATING						
Qty.	Type	Gallons	Min. Eff	Distribution		Status

EnergyPro 8.3 by EnergySoft

User Number: 6249

ID: 22-031722

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LEGAL REMEDY BEING  
SOUGHT BY THE DESIGNERS.

[illegible]

\* Total includes ventilation load for zonal systems.



§ 150.01(k)(2)	<p><b>Interior Switches and Controls.</b> An energy management control system (EMCS) may be used to comply with control requirements if it provides functionality of the specified control according to § 110.9, meets the installation Certificate requirements of § 130.4, meets the EMC requirements of § 130.5, and meets all other requirements in § 150.01(k).</p>
§ 150.01(k)(2)	<p><b>Interior Switches and Controls.</b> A dimmer switch or a programmable controller may be used to comply with dimmer requirements in § 150.01(k). It provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.01(k).</p>
§ 150.01(k)(2)	<p><b>Interior Switches and Controls.</b> In bathrooms, garages, laundry rooms, and utility rooms, if at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to maintain the space occupied for a minimum of 15 minutes after the last detected occupancy.</p>
§ 150.01(k)(2)	<p><b>Interior Switches and Controls.</b> Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.</p>
§ 150.01(k)(2)	<p><b>Interior Switches and Controls.</b> Under cabinet lighting must be controlled separately from ceiling-installed lighting systems.</p>
§ 150.01(k)(3)	<p><b>Residential Outdoor Lighting.</b> For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must meet the requirement in item § 150.01(k)(3A) (On and Off switching) and the requirements in either § 150.01(k)(3B) (photovoltaic system installed) or § 150.01(k)(3C) (photovoltaic system not installed).</p>
§ 150.01(k)(3)	<p><b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches, and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.01(k)(3A) or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.</p>
§ 150.01(k)(3)	<p><b>Residential Outdoor Lighting.</b> For low-rise residential buildings with four or more dwelling units, § 150.01(k)(3B) or § 150.01(k)(3C) must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.</p>
§ 150.01(k)(4)	<p><b>Internally illuminated address signs.</b> Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 watts of power as determined according to § 130.0(c).</p>
§ 150.01(k)(5)	<p><b>Residential Garages for Motor Vehicles.</b> Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in Sections 110.9, 130.0, 130.1, 130.2, 130.4, 140.6, and 141.0.</p>
§ 150.01(k)(6A)	<p><b>Interior Common Areas of Low-rise Multifamily Residential Buildings.</b> In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must comply with Table 150-A-4A or be controlled by an occupant sensor.</p>
§ 150.01(k)(6B)	<p><b>Interior Common Areas of Single-Family Residential Buildings.</b> In a single-family residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must:</p>
§ 150.01(k)(6B)	<p>1. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 130.4, 140.6 and 141.0; and</p>
§ 150.01(k)(6B)	<p>2. Lighting installed in corridors and entryways must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off at assigned paths of ingress and egress.</p>
§ 150.01(k)(6C)	<p><b>Low-rise Multifamily Buildings.</b> Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.9 through § 110.10(b).</p>
§ 150.01(k)(7)	<p><b>Minimum Solar Zone Area.</b> The solar zone must have a minimum total area as described below. The solar zone must comply with access, pathway, smoke ventilation, and spacing requirements as specified in Table 24. Part 9 or other parts of Table 24 in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than five feet and are no less than 80 square feet each for buildings with roof areas less than or equal to 10,000 square feet or no less than 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single-family residences, the solar zone must be located on the roof or overhanging of the building and have a total area in a single building of at least 250 square feet. For multifamily buildings, the solar zone must be located on the roof or overhanging of the building, or on the roof or overhanging of another structure located within 250 feet of the building, or on covered parking installed with the building, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.</p>
§ 150.01(k)(8)	<p><b>Azimuth.</b> All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 330 degrees of true north.</p>
§ 150.01(k)(9A)	<p><b>Shading.</b> The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof-mounted equipment.</p>
§ 150.01(k)(9B)	<p><b>Shading.</b> Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.</p>
§ 150.01(k)(9C)	<p><b>Structural Design Loads on Construction Documents.</b> For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.</p>
§ 150.01(k)(10)	<p><b>Interconnection Pathways.</b> The construction documents must indicate a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service, and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system.</p>
§ 150.01(k)(11)	<p><b>Documentation.</b> A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(d) must be provided to the occupant.</p>
§ 150.01(k)(11)	<p><b>Main Electrical Service Panel.</b> The main electrical service panel must have a minimum backup rating of 200 amps.</p>
§ 150.01(k)(12)	<p><b>Main Electrical Service Panel.</b> The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".</p>



Requirements for Ventilation and Indoor Air Quality	
	<b>Requirements for Ventilation and Indoor Air Quality.</b> All dwelling units must meet the requirements of ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Residential Buildings subject to the amendments specified in § 150.0(o)(1).
§ 150.0(o)(1):	
§ 150.0(o)(1C):	<b>Single Family Detached Dwelling Units.</b> Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)(1C).
§ 150.0(o)(1E):	<b>Multifamily Attached Dwelling Units.</b> Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling-unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.7.4.
§ 150.0(o)(1F):	<b>Multifamily Building Central Ventilation Systems.</b> Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the value with the lowest airflows rate in the building to indicate that the minimum required airflow rate needed for compliance.
§ 150.0(o)(1G):	<b>Kitchen Range Hoods.</b> Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.
§ 150.0(o)(2):	<b>Field Verification and Diagnostic Testing.</b> Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7.4. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.
<b>Pool and Spa Systems and Equipment Measures:</b>	
	<b>Certification by Manufacturers.</b> Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting of the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.
§ 110.4(a):	
§ 110.4(b)(1):	<b>Piping.</b> Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future local shoring.
§ 110.4(b)(2):	<b>Covers.</b> Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)(3):	<b>Directional and Time Switches for Pools.</b> Pools that have directional lights that adequately mix the pool water, and a time switch that will allow pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5:	<b>Pilot Light.</b> Natural gas pool or spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	<b>Pool Systems and Equipment Installation.</b> Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves. <sup>1</sup>
<b>Lighting Measures:</b>	
	<b>Lighting Controls and Components.</b> All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9. <sup>1</sup>
§ 150.0(o)(1A):	<b>Luminaire Efficacy.</b> All installed luminaires must meet the requirements in Table 150.0-A.
§ 150.0(o)(1B):	<b>Blank Electrical Boxes.</b> The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device must be no greater than the number of bedrooms. These electrical boxes must be sealed by a dimmer, vacancy sensor control, or fan speed control.
§ 150.0(o)(1C):	<b>Recessed Downlight Luminaires in Ceilings.</b> Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling; air leakage; sealing; maintenance; and socket and light source as described in § 150.0(o)(1C).
§ 150.0(o)(1D):	<b>Electronic Ballasts for Fluorescent Lights.</b> Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.
§ 150.0(o)(1E):	<b>LED Lights, Step Lights, and Night Lights.</b> Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 0.5 watts of power and emit no more than 150 lumens.
§ 150.0(o)(1F):	<b>Lighting Integral to Exhaust Fans.</b> Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k). <sup>1</sup>
§ 150.0(o)(1G):	<b>Screw based luminaires.</b> Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8. <sup>1</sup>
§ 150.0(o)(1H):	<b>Light Sources in Enclosed or Recessed Luminaires.</b> Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(o)(1I):	<b>Light Sources in Drawers, Cabinets, and Linen Closets.</b> Light sources internal to drawers, cabinets or linen closets are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 0.5 watts of power, emit no more than 150 lumens, and are equipped with controls that automatically turn the lighting off when the drawer, cabinet or linen closet is closed.
§ 150.0(o)(2A):	<b>Interior Switches and Controls.</b> All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(o)(2B):	<b>Interior Switches and Controls.</b> Exhaust fans must be controlled separately from lighting systems. <sup>2</sup>
§ 150.0(o)(2C):	<b>Interior Switches and Controls.</b> Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF. <sup>2</sup>
§ 150.0(o)(2D):	<b>Interior Switches and Controls.</b> Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 150.0(o)(2E):	<b>Interior Switches and Controls.</b> Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k). <sup>2</sup>
§ 150.0(o)(2F):	<b>Interior Switches and Controls.</b> Lighting controls must comply with the applicable requirements of § 110.9.



\$ 150.00(a)(3)	<b>Cleanances.</b> Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer.
\$ 150.00(b)(38)	<b>Liquid Line Drier.</b> Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
\$ 150.00(b)(39)	<b>Storage Tank Insulation.</b> Unfired hot water tanks, such as storage tanks and backup storage tanks for water-heating systems, must have a minimum of R-12 external insulation where the internal insulation R-value is indicated on the exterior of the tank.
\$ 150.00(b)(2A)	<b>Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation.</b> All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is associated with refrigeration system, from the heating source to storage tank or between tanks; and piping between the tank and the heating source to kitchen fixtures.*
\$ 150.00(b)(3)	<b>Buried Protection.</b> Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chimneys, pipes and refrigerant piping must be protected from weather, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation buried below grade must be installed in a waterproof and non-cushioning (such as gravel, a Class I or Class II vapor retarder) material.
\$ 150.00(b)(1)	<b>Gas or Propane Water Heating Systems.</b> Systems using gas or propane water heaters to serve individual dwelling units must include all of the following. A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unswitched branch circuit must be labeled with the word "spare" and be electrically disconnected from the panel. A dual-label branch circuit must be installed adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V 1-ø", a Category III or IV vent, or a Type B vent with straight pipe to the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher above the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.
\$ 150.00(b)(2)	<b>Recirculating Loops.</b> Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)(5).
\$ 150.00(b)(3)	<b>Solar Water-heating Systems.</b> Solar water-heating systems and collectors must be certified and rated by the Solar Rating and Certification Corporation (SRCC), the International Association of Plumbing and Mechanical Officials, Research and Testing (IAPMO R&T), or a listing agency that is approved by the Executive Director.
\$ 150.00(b)(3)	<b>Ducts and Fans Measures:</b>
\$ 110.0(d)(3)	<b>Ducts.</b> Insulation installed on an air-tight, space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
\$ 150.00(b)(1)	<b>CMC Compliance.</b> All air-distribution system ducts and plenums must meet the requirements of the CMC §§601.01, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-2006 HVAC Duct Construction Standards Manual and Flexible 3rd Edition. Portions of rigid and return air ducts and plenums must be insulated to a minimum insulation level of R-6.0 or a minimum insulation level of R-4.2 where ducts are entirely in conditioned space as confirmed through testing and approved testing (R-4.2, 4.5, 4.8). Portions of ducts and plenums that are completely exposed to unconditioned space must be insulated by directly conditioned space installed to be insulated. Components of metal ductwork and inner core of flexible ducts must be mechanically fastened. Aero-seals must be sealed with mastic, tape, or other duct-climate system that meets the applicable requirements of UL 181, UL 181A, or UL 181B or approved sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic or tape and sealant must be tested and approved by the manufacturer. Components of flexible ducts that are designed or constructed with materials other than sealed sheet metal, duct board or flexible duct must not be used to convey conditioned air. Building cavities and support platforms may contain ducts. Ducts installed in cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*
\$ 150.00(b)(2)	<b>Factory-Fabricated Duct Systems.</b> Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures. Joints and seams of duct components must not be sealed with cloth back rubber adhesive duct tapes unless such tapes are installed in combination with mastic and duct bands.
\$ 150.00(b)(3)	<b>Field-Fabricated Duct Systems.</b> Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
\$ 150.00(b)(7)	<b>Backdraft Bypass.</b> Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
\$ 150.00(b)(8)	<b>Gravity Ventilation Systems.</b> Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
\$ 150.00(b)(9)	<b>Protection of Insulation.</b> Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, steel, metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is water retardant and provides shielding from solar radiation.
\$ 150.00(b)(10)	<b>Porous Inner Core Flex Duct.</b> Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.
\$ 150.00(b)(11)	<b>Duct System Sealing and Leakage Test.</b> When space conditioning systems use forced air duct systems to supply conditioned air to an occupiable space, the ducts must be sealed and duct leakage tested, as confirmed through field verification and diagnostic testing, in accordance with § 150.00(b)(12) and the International Appendix RA3.
\$ 150.00(b)(12)	<b>Air Filtration.</b> Space conditioning systems with ducts exceeding 10 feet and the supply side of ventilation systems must have MERV 13 or equivalent filters. Filters for space conditioning systems must have a two inch depth or can be one inch if sized per Equation 150.0A.4. Pressure drops and labeling must meet the requirements in § 150.00(b)(12). Filters must be accessible for regular service.*
\$ 150.00(b)(13)	<b>Space Conditioning System Airflow Rate and Fan Efficiency.</b> Space conditioning systems that use ducts to supply cooling must have a hole for the placement of a static pressure probe, or a permanently installed static pressure probe in the supply plenum. Airflow must be a 350 CFM per ton of nominal cooling capacity and fan efficiency must be 70% for CFM, gas furnaces and 68% for CFM, gas furnaces and 68% for CFM, for air handlers and 68% for CFM, for air handlers. Small wall high velocity systems must provide an airflow of 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency <0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*

## REVISIONS

6 6 22 CITY CORRECTIONS

CLIENT INFC

922 MOLINO AVE.  
LONG BEACH CA  
90804

SHEET NAME

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project number LB 1221

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Drawn by Alpie T., Pedro O

checked by P.O.

SHEET 1

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