

**GENERAL NOTES:**

DO NOT SCALE DRAWINGS. USE DIMENSIONS ONLY. IF A DISCREPANCY IS FOUND TO EXIST NOTIFY DESIGNER.

DETAILS ARE INTENDED TO SHOW METHOD AND MANNER OF ACCOMPLISHING WORK. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT THE JOB DIMENSIONS OR CONDITIONS AND IS TO BE INCLUDED AS PART OF THE WORK.

DIMENSIONS ARE TAKEN FROM THE FACE OF THE ACTUAL STUD. VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE PRIOR TO STARTING ANY WORK.

VERIFY FINDINGS, DIFFERENCES AND SUGGESTED MODIFICATIONS WITH DESIGNER PRIOR TO BEGINNING PROJECT.

ALL WEATHER EXPOSED SURFACES SHALL HAVE A WEATHER-RESISTIVE BARRIER TO PROTECT THE INTERIOR WALL COVERING AND THAT EXTERIOR OPENINGS ARE TO BE FLASHED IN SUCH A MANNER AS TO MAKE THEM WEATHER PROOF.

TEMPERED GLAZING IS REQUIRED, 2022 CBC, FOR:

A. WINDOW ADJACENT TO HOT TUBS, SWIMMING POOLS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS, SHOWERS, STAIR ENCLOSURES AND WITHIN 60" OF A STANDING SURFACE AND DRAIN INLET.

B. WINDOWS WITHIN A 24" ARC OF EITHER VERTICAL EDGE OF DOORS IN THE CLOSED POSITION AND WITHIN 60" OF FLOOR.

C. WINDOWS WITHIN 18" OF A WALKING SURFACE.

GFCI OUTLETS ARE REQUIRED OUTDOORS, BATHROOMS, IN KITCHENS, WET BARS, IN GARAGES, IN CRAWL SPACES AND IN UNFINISHED BASEMENTS. NEC 210.8.

INSULATION PER PLANS AND TITLE 24.

DOORS AND WINDOWS ARE TO BE FULLY WEATHER-STRIPPED AT ALL JOINTS AND ALL PENETRATIONS ARE TO BE CAULKED AND SEALED. ALL NEW GLAZING SHALL BE INSTALLED WITH CERTIFYING LABEL ATTACHED SHOWING THE U-VALUE AND FENESTRATION.

PROVIDE ALL NECESSARY BACKING AND FRAMING FOR ALL MOUNTED ITEMS, LIGHTS, FANS, AND OTHER ITEMS THAT REQUIRE SAME.

ALL NAILING SHALL BE IN COMPLIANCE WITH 2022 CBC, COMMON NAILS ONLY.

ALL RECEPTACLE OUTLET LOCATIONS SHALL COMPLY WITH 2022 CEC.

CONTRACTOR AND/OR SUBCONTRACTOR SHALL CAREFULLY STUDY AND COMPARE ALL DRAWINGS, DATA, DIMENSIONS, SPEC. & EXISTING SITE CONDITIONS BEFORE PROCEEDING WITH ANY WORK, AND REPORT TO THE DESIGNER AT ONCE ANY ERROR, INCONSISTANCY AND/OR OMISSION HE/SHE MAY DISCOVER.

REROUTE ALL EXISTING AC & WATER PIPING AS REQUIRED.

END JOINTS IN DOUBLE TOP PLATES SHALL BE LAPPED 48" MINIMUM.

ALL MEMBERS SHALL BE FRAMED, ANCHORED, TIED & BRACED SO AS TO DEVELOP THE STRENGTH & RIGIDITY NECESSARY FOR THE PURPOSES FOR WHICH THEY ARE TO BE USED.

ALL SPACING & EDGE AND END DISTANCES SHALL BE SUCH AS TO AVOID SPLITTING OF THE WOOD. HOLES FOR NAILS, WHEN NECESSARY TO PREVENT SPLITTING, SHALL BE BORED TO A DIA. OF 70% OF THE NAIL DIA.

ALL OUTDOOR LIGHTING SHALL CONFORM TO THE GOVERNING CITY, COUNTY, OR STATE AUTHORITY.

PER 2022 CBC, THE APPROVAL AND/OR PERMITTING OF THE PLANS & SPECIFICATIONS CONTAINED HEREIN DOES NOT PERMIT THE VIOLATION OF ANY STATE, COUNTY OR CITY LAW.

PIPING WHETHER BURIED OR UNBURIED FOR RECIRCULATING SECTIONS OF DOMESTIC HOT WATER HEATING SYSTEMS SHALL BE INSULATED PER TITLE 24.

ALL WINDOWS SHALL BE RATED AND CERTIFIED FOR 20 LBS/SF OF WIND LOAD.

**DESIGNER STATMENT**

To the best of my knowledge these plans are drawn to comply with owner's and/ or builder's specifications. Any changes made on them after prints are made will be done at the owner's and / or builder's expense and responsibility. The contractor shall verify all dimensions, plans, and details on the enclosed drawing. Powell And Assoc, Inc. is not liable for errors once construction has begun. While every effort has been made in the preparation of this plan to avoid mistakes, the maker can not guarantee against human error. The contractor of the job must check all dimensions and other details prior to construction and be solely responsible thereafter.

**PROJECT DATA:**

OWNER: DAVID HAN  
PHONE: 310.995.2418  
ADDRESS: 4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

SQUARE FOOTAGE:  
EXISTING RESIDENCE: 650 SQ. FT.  
EXISTING GARAGE: 336 SQ. FT.  
PROPOSED ADDITION: 537 SQ. FT.

**BUILDING DATA:**

OCCUPANCY: R-3  
TYPE OF CONSTRUCTION: V-B  
STORIES: 1  
APN: 1028-041-20  
TRK: 1932  
LOT: 20  
BLK: 23  
LEGAL: TRACT 1932 LOT 20 BLOCK 23  
TR NO 1932 LO  
YEAR BUILT: 1935  
EXISTING FIRE SPRINKLERS: NO

**INDEX OF SHEETS:**

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**APPLICABLE CODES:**

THE CITY OF CHINO HILLS NOW ENFORCES THE FOLLOWING EDITIONS OF THE MODEL CODES:

- 2022 CALIFORNIA BUILDING CODE
- 2022 CALIFORNIA RESIDENTIAL CODE
- 2022 CALIFORNIA ELECTRICAL CODE
- 2022 CALIFORNIA PLUMBING CODE
- 2022 CALIFORNIA MECHANICAL CODE
- 2022 CALIFORNIA EXISTING BUILDING CODE
- 2022 CALIFORNIA HISTORICAL CODE
- 2022 CALIFORNIA FIRE CODE
- 2022 CALIFORNIA GREEN BUILDING CODE
- 2022 CALIFORNIA ENERGY CODE
- 2022 CALIFORNIA REFERENCE STANDARDS CODE

ALL NEW WORK SHALL COMPLY WITH THE ABOVE LISTED EDITIONS OF THESE MODEL CODES

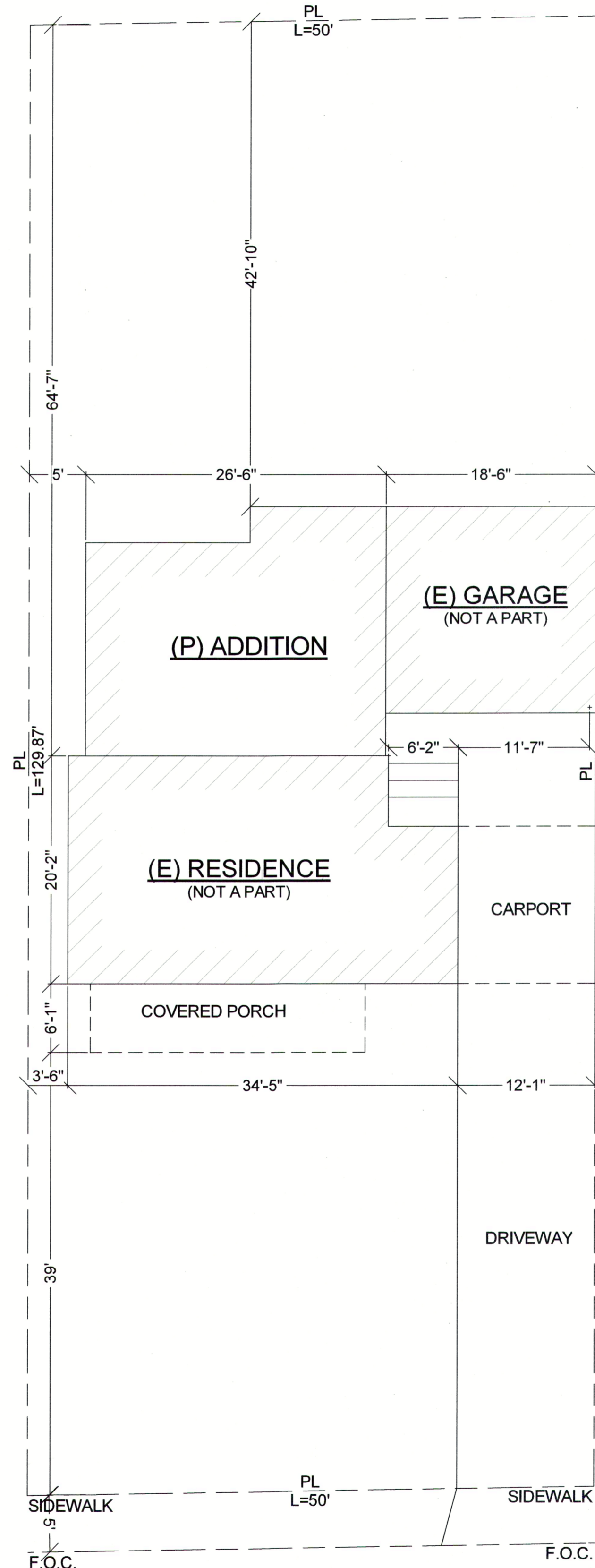
**SCOPE OF WORK:**

PROPOSED 537 SQ. FT. ADDITION



**VICINITY MAP:**  
SCALE: N.T.S.

**PROPOSED ADDITION**



**DESCANSO**

**SITE PLAN:**  
SCALE: 1/8"=1'-0"



**JOB SET**

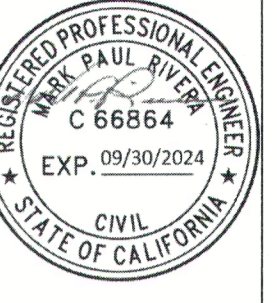
7/11/2023  
By: Tim Fan (PC BY WILLDAN)

REVIEWED FOR CODE COMPLIANCE

Reviewed by: *JL Myler*  
Date: 7/16/23

Approval of these plans & specifications shall not be construed to be a permit for, or an approval of any violation of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.

WILLDAN ENGINEERING



NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**PROJECT DATA & SITE PLAN**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA  
5908 JASMINE ST. STE B  
RIVERSIDE, CA 92504  
(951)352-3588

DATE:

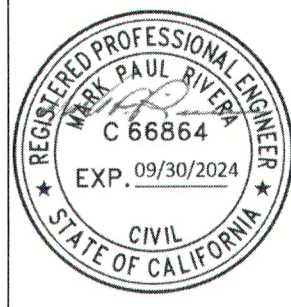
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NO.	DESCRIPTION	BY	DATE

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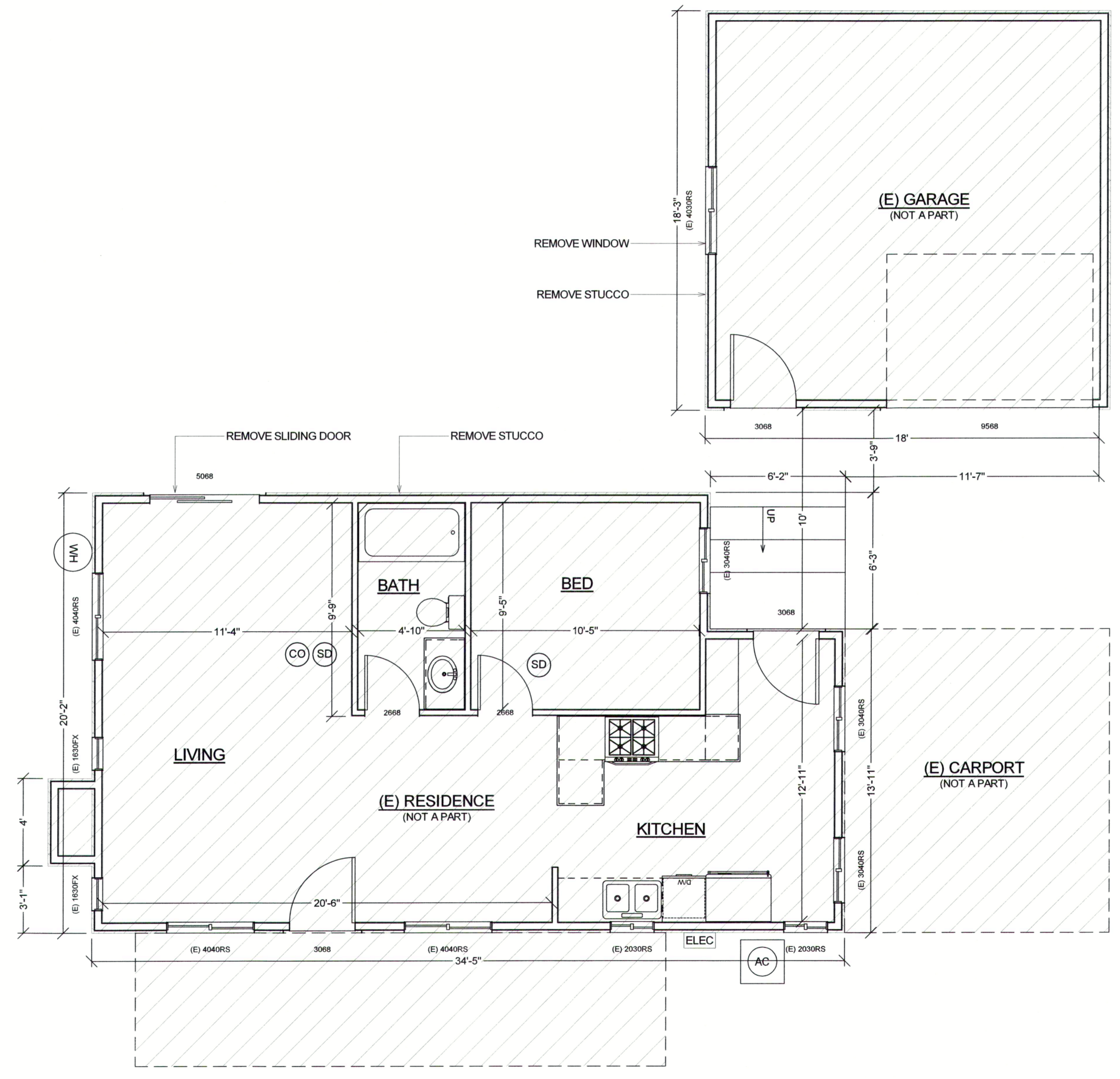
PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 352-3588

DATE:  
6/27/2023

SCALE:

SHEET:  
**2**



**APPROVED**  
CHINO HILLS  
PLANNING  
BY: *[Signature]*  
DATE: 7/14/23

7/11/23  
*[Signature]*

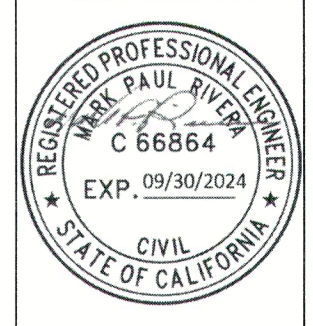
REVIEWED FOR CODE COMPLIANCE  
WILLDAN ENGINEERING

**WALL LEGEND**

- EXISTING 2x STUD WALL TO REMAIN
- NEW 2x4 STUDS @ 16" O.C.

**EXISTING FLOOR PLAN/DEMO PLAN**  
SCALE: 1/4"=1'-0"





NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**EXISTING ELEVATIONS**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA 4435 FIRST ST STE 500  
RIVERSIDE, CA 92504  
LIVERMORE, CA 94551  
(925) 745-4030

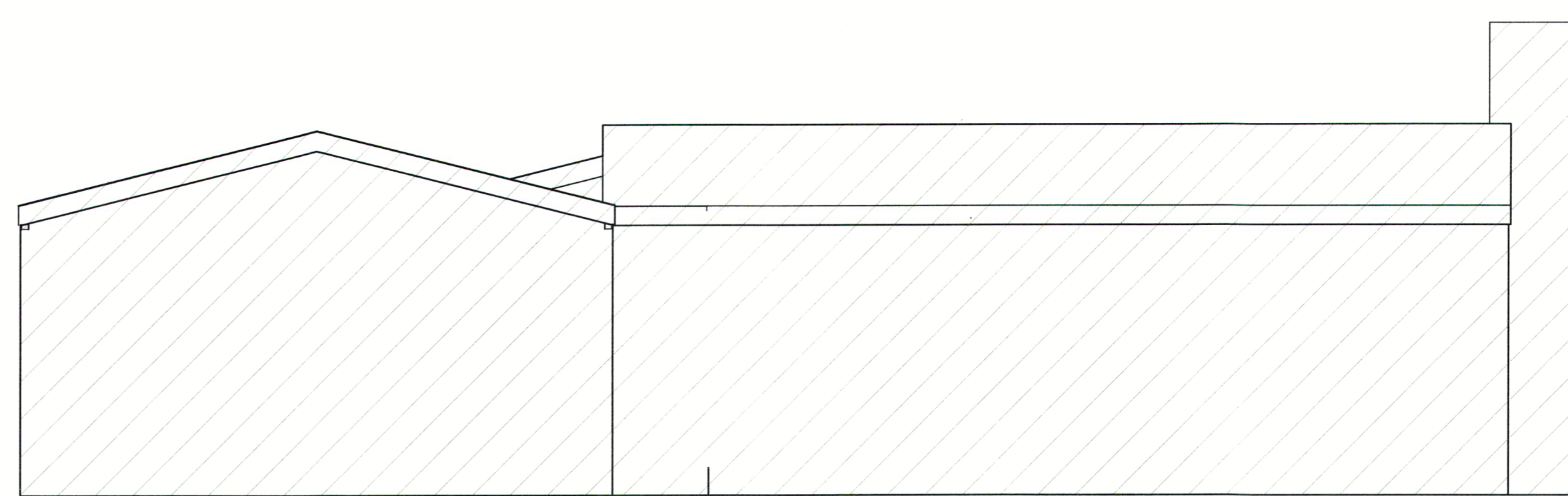
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6/27/2023

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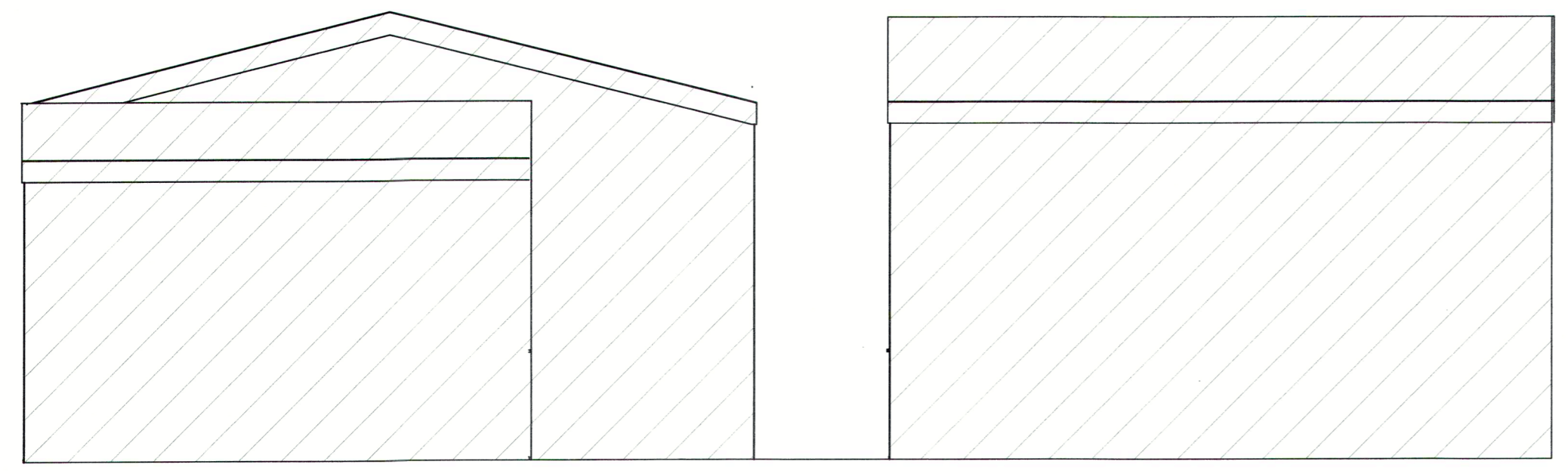
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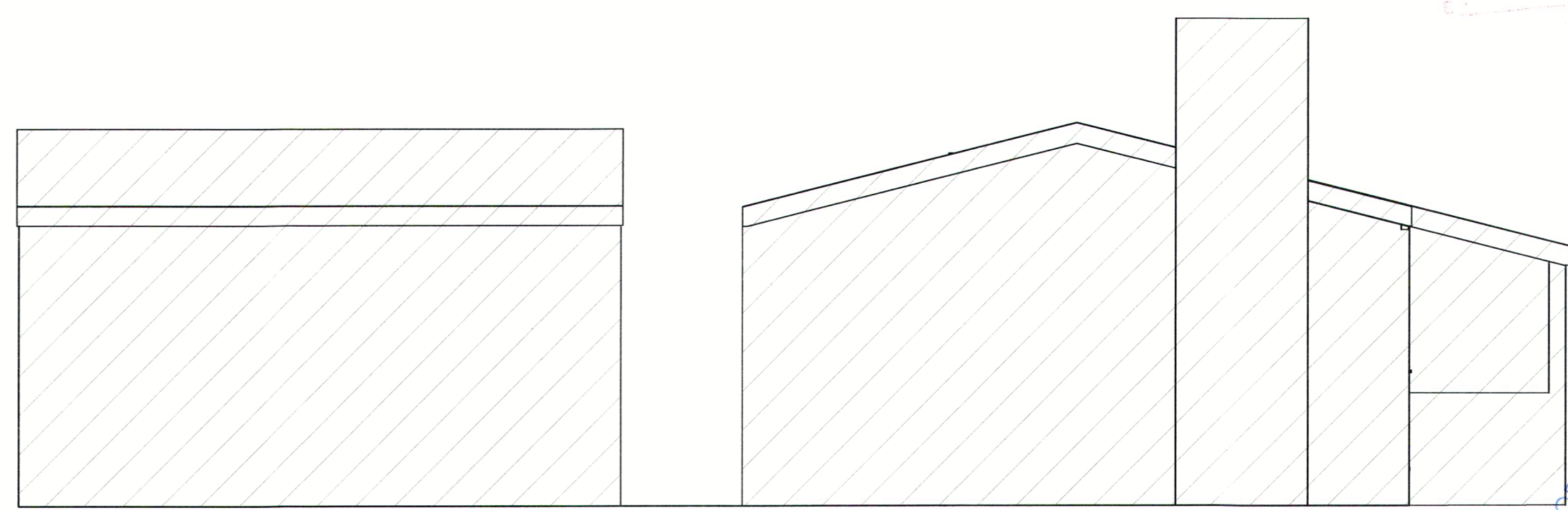


**APPROVED**  
CHINO HILLS  
PLANNING  
BY *mt*  
DATE 7/12/23

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



**EXISTING RIGHT ELEVATION**  
SCALE: 1/4"=1'-0"



*7/11/23*  
*of*

**WILLDAN ENGINEERING**  
WILLDAN ENGINEERING, INC. is a professional engineering firm providing engineering services to the public and private sectors. We are a member of the California Professional Engineers Board. Our services include: structural, mechanical, electrical, plumbing, and civil engineering. We are located at 11111 Wilddan Way, Suite 100, Chino Hills, CA 91709. Phone: (916) 745-4030. Fax: (916) 745-4031. Email: info@willdan.com. Website: www.willdan.com.

**EXISTING LEFT ELEVATION**  
SCALE: 1/4"=1'-0"



### LIGHTING NOTES:

THE TITLE 24 RESIDENTIAL LIGHTING REQUIREMENTS AS SET FORTH IN 2022 BUILDING ENERGY STANDARDS (BEES) MAY BE SUMMARIZED AS FOLLOWS:

- AT LEAST ONE WALL SWITCH-CONTROLLED LIGHTING OUTLET SHALL BE INSTALLED IN EVERY HABITABLE ROOM AND BATHROOM. [CEC 210.70(A)(1)]
- AT LEAST ONE WALL SWITCH-CONTROLLED LIGHTING OUTLET SHALL BE INSTALLED TO PROVIDE ILLUMINATION ON THE EXTERIOR SIDE OF OUTDOOR ENTRANCES OF EXITS WITH GRADE LEVEL ACCESS. [CEC 210.70(A)(2)(b)]
- ALL LUMINAIRES SHALL BE HIGH-EFFICACY IN ACCORDANCE WITH CEC TABLE 150.0-A [CEC 150.0(k)1A]
- THE NUMBER OF BLANK ELECTRICAL BOXES WHICH ARE MORE THAN 5 FEET FROM ABOVE THE FINISHED FLOOR SHALL BE NO GREATER THAN THE NUMBER OF BEDROOMS. THE ELECTRICAL BOXES MUST BE SERVED BY A DIMMER, VACANCY SENSOR, OR FAN SPEED CONTROL. [CEC 150.0(k)1B]
- RECESSED DOWNLIGHTS SHALL BE INSULATION CONTACT RATED, SHALL NOT CONTAIN SCREW BASED SOCKETS, AND ONLY CONTAIN JA8-2022-E (E FOR ELEVATED TEMPERATURE) RATED BULBS. [CEC 150.0(k)1C]
- ENCLOSED LUMINAIRES MUST CONTAIN JA8-2022-E (E FOR ELEVATED TEMPERATURE) RATED BULBS. [CEC 150.0(k)1H]
- EXHAUST FANS SHALL BE SWITCHED SEPARATELY FROM LIGHTING [CEC 150.0(k)2B]
- IN BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS, AT LEAST ONE LUMINAIRE MUST BE CONTROLLED BY A VACANCY SENSOR. [CEC 150.0(k)2J]
- ALL JA8 LUMINAIRES MUST BE CONTROLLED BY DIMMER OF VACANCY SENSOR. [CEC 150.0(k)2K]
- UNDER CABINET LIGHTING MUST BE SWITCHED SEPARATELY FROM OTHER LIGHTING. [CEC 150.0(k)2L]
- ALL OUTDOOR LIGHTING MUST BE CONTROLLED BY A MANUAL ON/OFF SWITCH AN ALSO ONE OF THE FOLLOWING:
  - PHOTOCELL WITH MOTION SENSOR.
  - PHOTOCONTROL AND AUTOMATIC TIME SWITCH CONTROL.
  - ASTRONOMICAL TIME CLOCK.
  - ENERGY MANAGEMENT CONTROL SYSTEM

NOTE: THESE REQUIREMENTS ARE A GENERAL OVERVIEW. FOR DETAILED REQUIREMENTS CONSULT A FULL TEXT OF BEES.

### GENERAL RESIDENTIAL ELECTRICAL CIRCUIT REQUIREMENTS

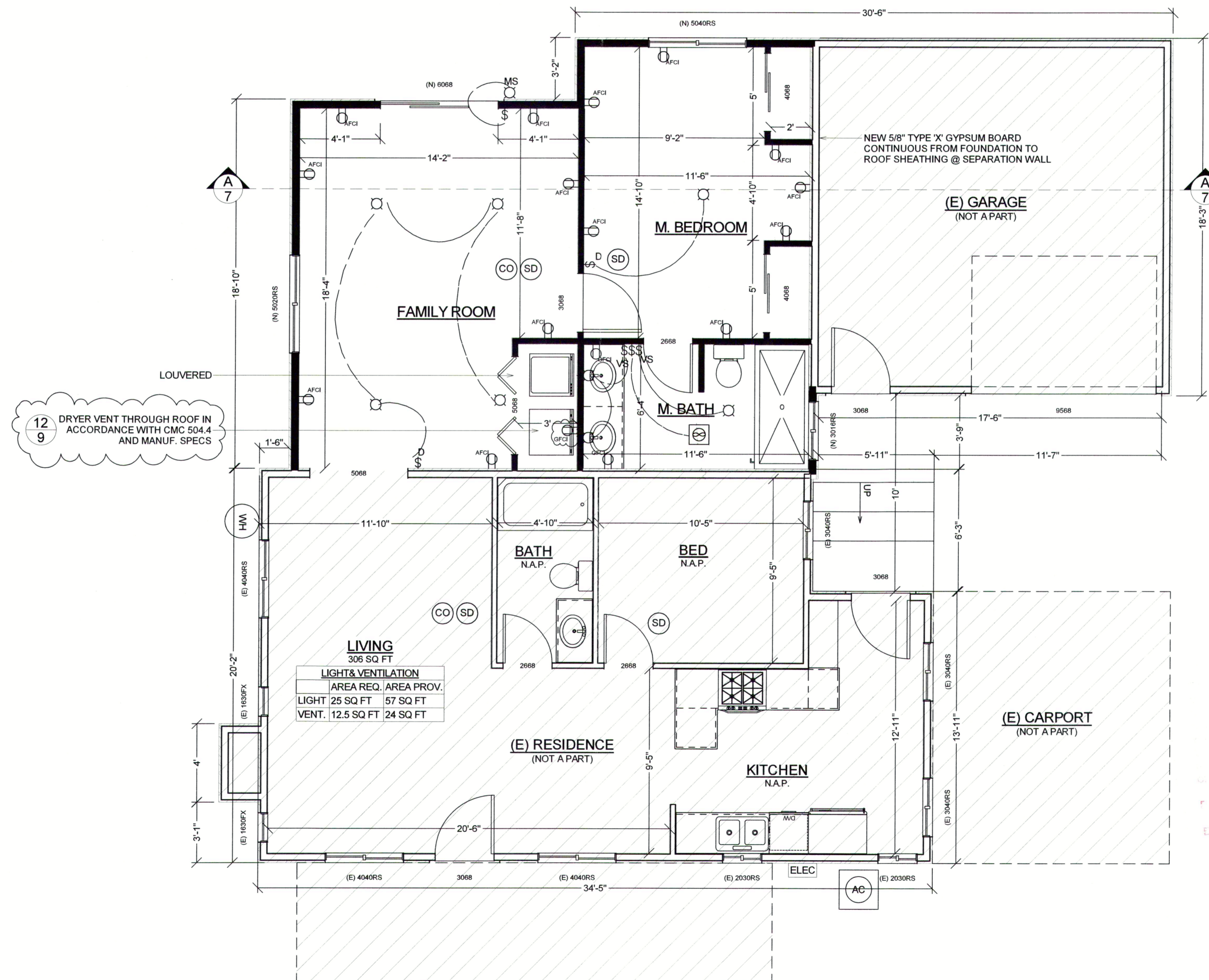
- PROVIDE AT LEAST TWO 20A SMALL APPLIANCE CIRCUITS TO FEED KITCHEN OUTLETS PER SECTION 210-52(B)
- PROVIDE AT LEAST ONE 20A DEDICATED CIRCUIT TO FEED ALL OUTLETS IN THE LAUNDRY AREA. MINIMUM ONE OUTLET. THIS CIRCUIT SHALL HAVE NO OTHER OUTLETS.
- PROVIDE AT LEAST ONE 20A DEDICATED CIRCUIT TO FEED OUTLETS IN BATHROOMS. THIS CIRCUIT SHALL HAVE NO OTHER OUTLETS.
- PROVIDE OUTLETS SO THAT NO PLACE ALONG ANY WALL SPACE 24" OR WIDER IS MORE THAN 6" FROM AN OUTLET.
- PROVIDE KITCHEN COUNTERTOP OUTLETS AT ALL COUNTER SPACES 12" OR WIDER SO THAT NO PLACE ALONG ANY COUNTER SPACE IS MORE THAN 24" FROM AN OUTLET. PROVIDE ONE OUTLET WITHIN 24" OF EITHER SIDE OF THE KITCHEN SINK.
- PROVIDE AT LEAST ONE OUTLET AT ANY PENINSULA OR ISLAND KITCHEN COUNTER SPACE.
- PROVIDE ONE OUTLET AT EACH BATHROOM SINK WITHIN 36" OF THE SINK.
- PROVIDE ONE OUTLET IN ANY HALLWAY 10" OR LONGER
- PROVIDE AT LEAST ONE GENERAL USE OUTLET IN ANY BASEMENT. THIS OUTLET IS IN ADDITION TO ANY OTHER REQUIRED OUTLET.
- PROVIDE ONE WEATHERPROOF GFI OUTLET AT THE FRONT AND REAR OF THE HOUSE AND AT ALL BALCONIES, DECKS, AND PORCHES.
- ALL EXTERIOR OUTLETS SHALL BE WEATHERPROOF AND GFI PROTECTED.
- ALL OUTLETS WITHIN THE GARAGE LESS THAN 8' ABOVE THE FLOOR SHALL BE GFI PROTECTED.
- ALL COUNTERTOP OUTLETS SHALL BE GFI PROTECTED.
- ALL BATHROOM OUTLETS SHALL BE GFI PROTECTED.
- ALL OUTLETS WITHIN 6' OF A SINK SHALL BE GFI PROTECTED.
- ALL 15A AND 20A 120V CIRCUITS SERVING OUTLETS (LIGHTING AND POWER) IN BEDROOMS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN, SUNROOMS, REC ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A COMBINATION-TYPE ARC-FAULT INTERRUPTER.
- PROVIDE A SERVICE OUTLET AND A SWITCHED LIGHT AT ANY ATTIC MOUNTED EQUIPMENT
- PROVIDE A SWITCHED LIGHT OR HALF-HOT OUTLET IN EVERY ROOM OR AREA.
- PROVIDE A SWITCHED EXTERIOR LIGHT AT EVERY EXTERIOR DOOR.
- ALL LIGHTING SHALL COMPLY WITH THE 2022 RESIDENTIAL COMPLIANCE MANUAL.

THESE ARE GENERAL REQUIREMENTS FOR RESIDENTIAL INSTALLATIONS. OTHER REQUIREMENTS MAY APPLY. PLEASE REFER TO THE CURRENT EDITION OF THE CALIFORNIA ELECTRICAL CODE FOR SPECIFIC REQUIREMENTS AND POSSIBLE EXCEPTIONS TO THE GENERAL REQUIREMENTS.

### PLUMBING FIXTURE NOTE:

EFFECTIVE JAN 1, 2017 RESIDENTIAL BUILDING UNDERGOING ADDITIONS, ALTERATIONS OR IMPROVEMENTS SHALL REPLACE NONCOMPLIANCE PLUMBING FIXTURES WITH WATER-CONSERVING PLUMBING FIXTURES PRIOR TO FINAL INSPECTION. THE REQUIREMENTS SHALL APPLY TO NEW FIXTURES IN ADDITIONS OR AREAS OF ALTERNATION TO THE BUILDING (PER 2022 CAL GREEN SECTIONS 301.1.1, 4.303.1.1 - 4.303.1.4.4 & CPC SECTIONS 403.0-403.8)

PLUMBING FIXTURE TYPE	MAX. FLOW RATE
WATER CLOSETS	1.28 GPF
SHOWERHEADS	1.8 GPM @ 80 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
RESIDENTIAL LAVATORY FAUCETS	1.2 GPM @ 60 PSI MAX, 0.8 GPM @ 20 PSI MIN.
PUBLIC LAVATORY FAUCETS	0.5 GPM @ 60 PSI
METERING FAUCETS	0.2 GALLONS / CYCLE
URINALS	0.125 GPF (WALL-MOUNT) & 0.5 GPF (OTHER)



**APPROVED**  
CHINO HILLS PLANNING  
BY: [Signature]  
DATE: 7/12/23

**RECEIVED**  
CHINO HILLS PLANNING  
DATE: 7/12/23

WILLDAN ENGINEERING  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 352-3588

### ELECTRICAL LEGEND

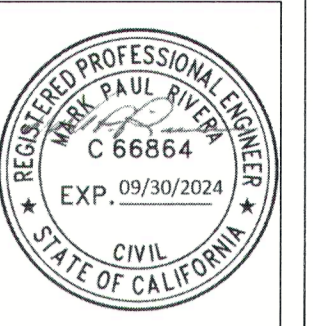
(F)	HIGH EFFICACY FLUSH MOUNTED LIGHT
(C)	HIGH EFFICACY CEILING MOUNTED LIGHT
(E)	50 CFM EXHAUST FAN W/ HUMIDITY CONTROL
(MS)	HIGH EFFICACY FLOURECENT EXTERIOR LIGHT W/ PHOTOCONTROL SENSOR
(SD)	CEILING MOUNTED INTER CONNECTED SMOKE DETECTOR
(CO)	CEILING MOUNTED INTER CONNECTED CARBON MONOXIDE DETECTOR
(S)	SWITCH
(D)	DIMMER SWITCH
(VS)	VACANCY SENSOR
(AFCI)	ARC-FAULT CIRCUIT INTERRUPTER
(GFCI)	GROUND-FAULT CIRCUIT INTERRUPTER
(WP GFI)	WATER PROOF GROUND-FAULT CIRCUIT INTERRUPTER

**SD / CO ALARMS:**  
- CARBON MONOXIDE ALARMS SHALL BE INTERCONNECTED SO THAT THE ACTIVATION OF ONE ALARM ACTIVATES ALL OF THE ALARMS (CRC R315.7)  
- SMOKE ALARMS SHALL BE INTERCONNECTED SO THAT THE ACTIVATION OF ONE ALARM ACTIVATES ALL OF THE ALARMS. (CRC R314.4)

**RECEPTACLES:**  
- ALL 120V, SINGLE PHASE, 15 & 20 AMPS BRANCH CIRCUITS SUPPLYING OUTLETS OR DEVICES INSTALLED IN DWELLING UNITS KITCHENS, FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DEN, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, LAUNDRY AREAS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER (AFCI), COMBINATION TYPE. (CEC 210.12A)  
- ALL NONLOCKING TYPE 125V, 15 AND 20 AMP RECEPTACLES IN A DWELLING UNIT SHALL BE LISTED TAMPER-RESISTANT EXCEPT FOR RECEPTACLES (CEC 406.12A):  
~ LOCATED MORE THAN 5 1/2' ABOVE THE FLOOR.  
~ THAT ARE A PART OF A LUMINAIRE OR APPLIANCE  
~ LOCATED WITHIN A DEDICATED SPACE FOR APPLIANCE  
~ REPLACEMENT NON GROUNDING TYPE

### WALL LEGEND

(Hatched)	EXISTING 2x STUD WALL TO REMAIN
(Solid)	NEW 2x4 STUDS @ 16" O.C.



NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**PROPOSED FLOOR PLAN**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 352-3588

DATE:  
6/27/2023

SCALE:

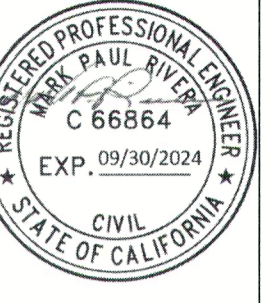
SHEET:

**4**

### PROPOSED FLOOR PLAN

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





NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**PROPOSED ELEVATIONS**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE  
CHINO HILLS, CA 91709

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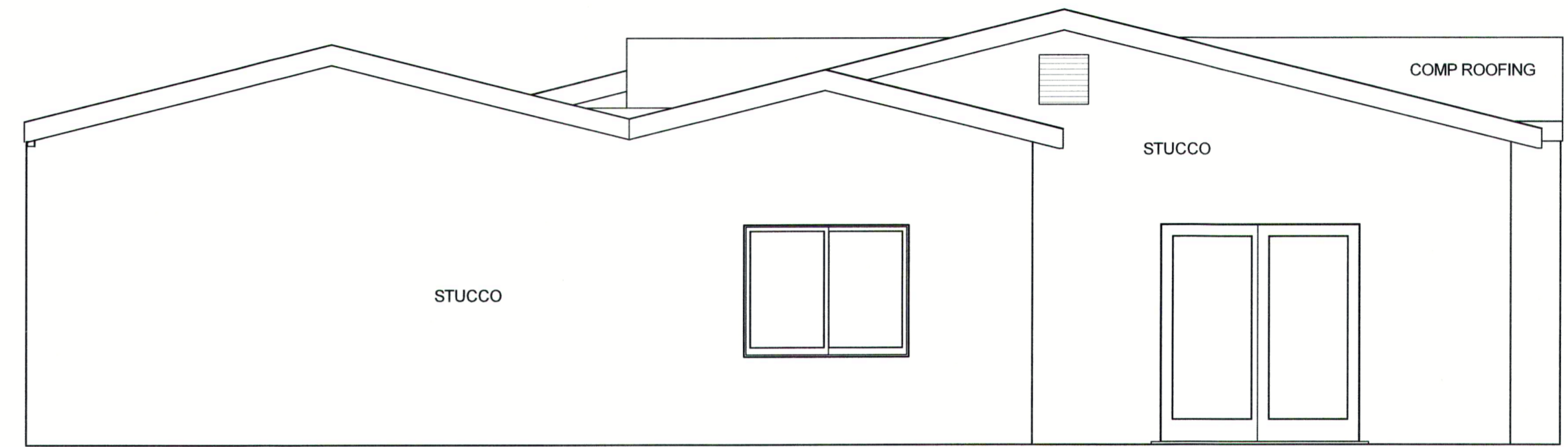
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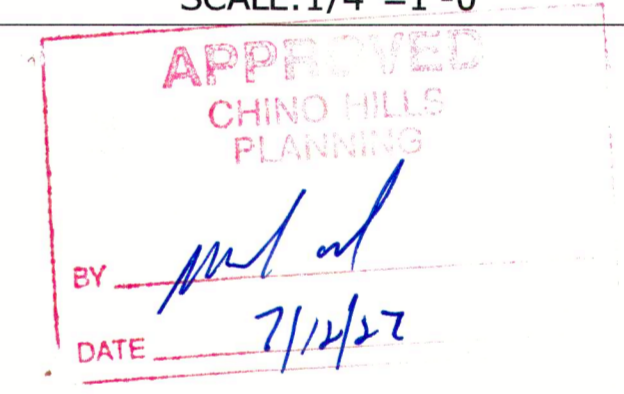
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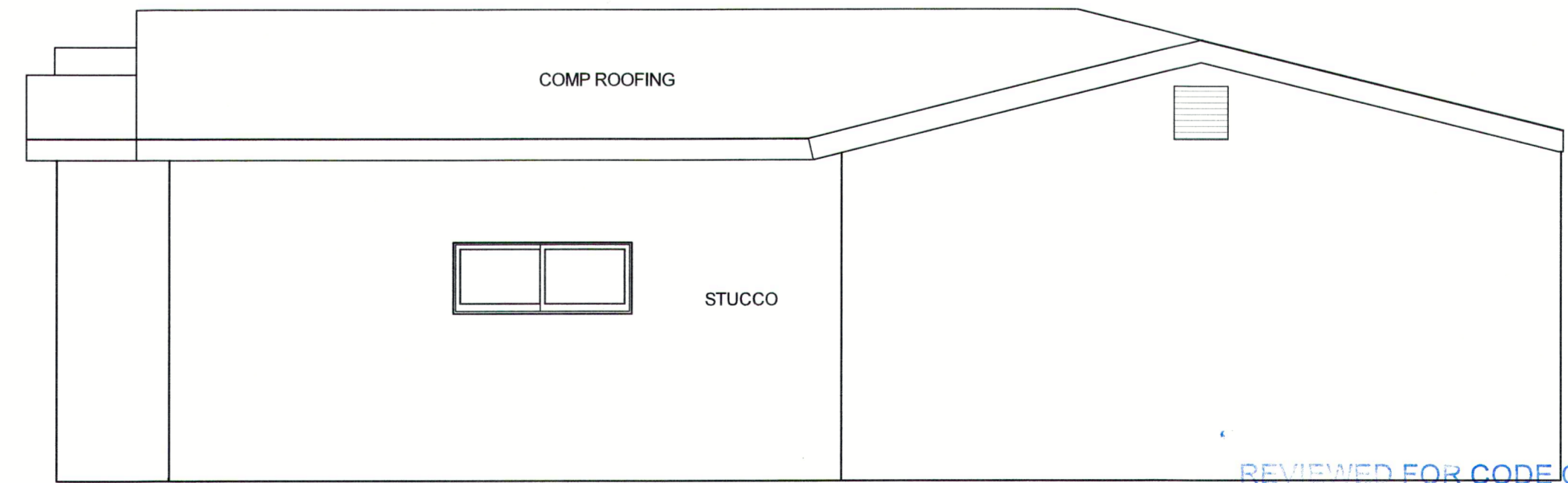


NOTE:  
1. NEW FINISH MATERIALS TO MATCH COLOR & STYLE OF EXISTING RESIDENCE.

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

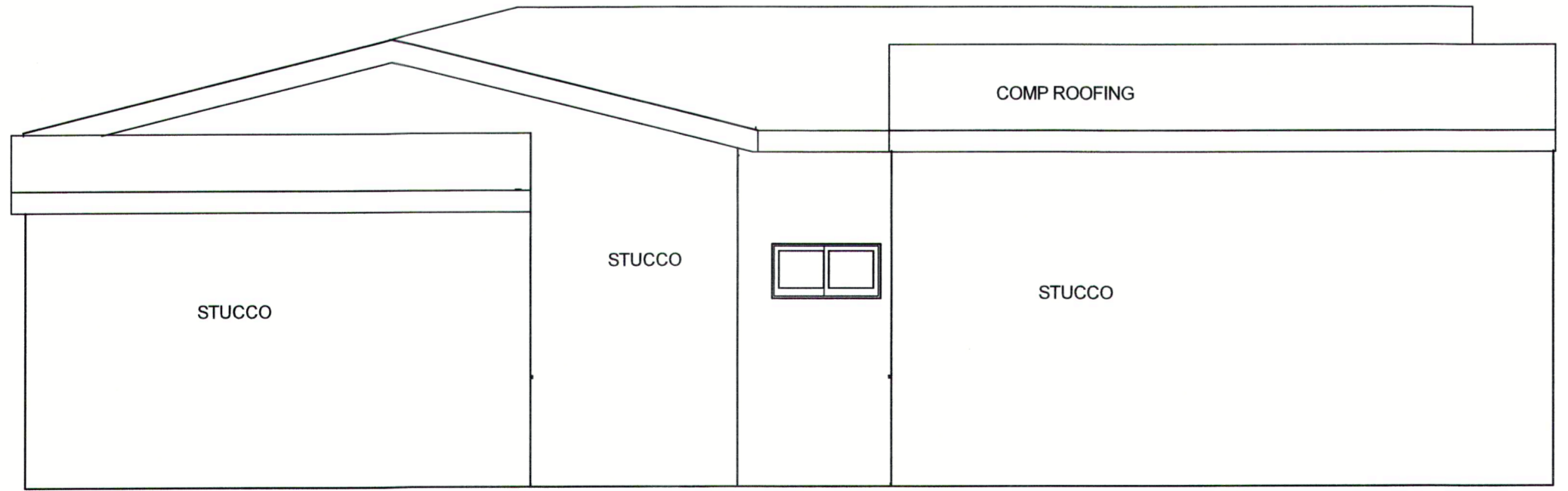


REVIEWED FOR CODE COMPLIANCE  
7/11/23  
[Signature]



REVIEWED FOR CODE COMPLIANCE  
Approved plans & specifications shall not be used to obtain a permit for, or an approval of any violation of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.  
WILLDAN ENGINEERING

**PROPOSED LEFT ELEVATION**  
SCALE: 1/4"=1'-0"



**PROPOSED RIGHT ELEVATION**  
SCALE: 1/4"=1'-0"



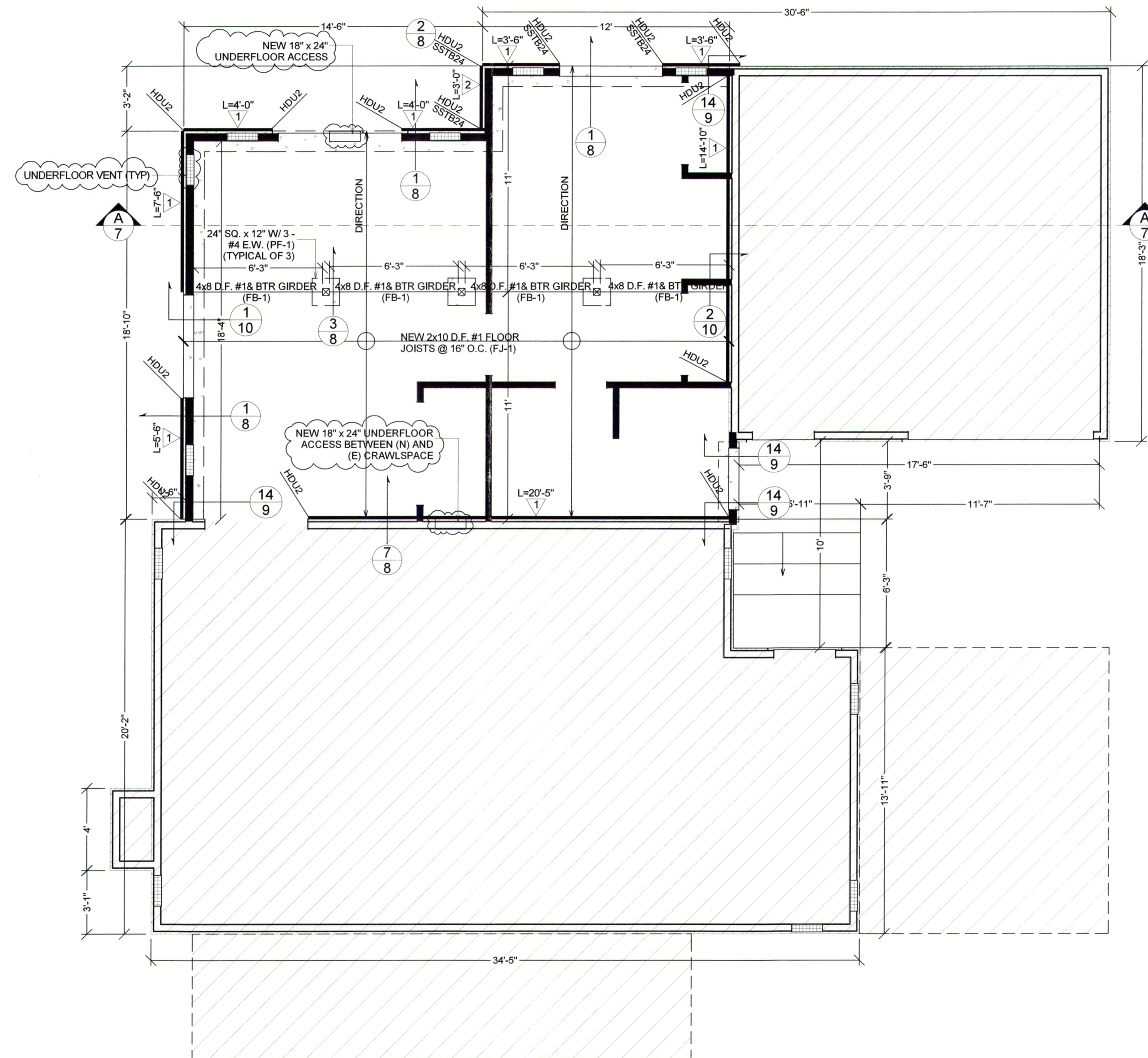
## FOUNDATIONS:

- SAFE SOIL BEARING CAPACITY IS BASED UPON THE 2022 CALIFORNIA BUILDING CODE TABLE 1806.A.2 "PRESUMPTIVE LOAD-BEARING VALUES" AND IS ASSUMED TO BE 1500 P.S.F. FOR "CLASS 5 MATERIAL". THE SAFE BEARING CAPACITY MUST BE VERIFIED PRIOR TO PLACING ANY CONCRETE. IF THE SOILS ARE FOUND TO CONTAIN CLAY OR CLAYEY SILT, THE FOUNDATION WILL NEED TO BE REDESIGNED AND A SOILS ENGINEER SHALL BE RETAINED TO PROVIDE RECOMMENDATIONS. IF OTHER CONDITIONS ARE ENCOUNTERED WHICH MAY HAVE AN ADVERSE EFFECT ON THE STRUCTURE, THE ENGINEER MUST BE NOTIFIED.
- BEFORE COMMENCING ANY EARTHWORK, THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL UNDERGROUND UTILITIES OR STRUCTURES AND SHALL NOT PERFORM ANY WORK THAT WILL DAMAGE OR INTERFERE WITH THE SERVICE OF SAME.
- SITE PREPARATION, BACKFILL, SELECT FILL, ETC. SHALL BE AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER IF ONE IS RETAINED OR AS IS COMMON FOR OTHER STRUCTURES WITH SIMILAR CONDITIONS WHERE A GEOTECHNICAL ENGINEER IS NOT RETAINED.
- FOOTING EXCAVATIONS SHALL BE NEAT AND TRUE, WITH ALL LOOSE MATERIAL AND STANDING WATER REMOVED BEFORE FOOTING CONCRETE IS PLACED. EXCAVATIONS SHALL BE PROTECTED FROM FREEZING IF ALLOWED TO FREEZE. THE EXCAVATION WILL NEED TO BE SCARIFIED AND RE-COMPACTED.
- EARTH FORMS MAY BE USED FOR FOOTINGS ONLY WHERE THE SOIL IS FIRM AND STABLE AND THE CONCRETE WILL NOT BE EXPOSED.
- AT STEPPED FOOTINGS, PLACE CONCRETE IN THE LOWEST FOOTINGS FIRST PROCEEDING UP TO THE HIGHEST.
- ALL FOUNDATIONS SHALL BE PLACED ON FIRM UNDISTURBED EARTH. HOLES DUE TO REMOVAL OF LARGE ROCKS OR OVER-EXCAVATION SHALL BE FILLED WITH CONCRETE.
- UNLESS SHOWN OTHERWISE, FOOTINGS SHALL BE PLACED A MINIMUM OF 12 INCHES BELOW THE FINISHED EXTERIOR GRADE.
- ALL LOOSE SOIL AND FILL, INCLUDING BACKFILL BEHIND WALLS SHALL BE PLACED IN 6" LIFTS AND COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY.

## REINFORCED CONCRETE:

- ALL CONCRETE WORK AND MATERIALS SHALL CONFORM TO ACI 318, AS AMENDED BY THE 2022 C.B.C.
- CAST IN PLACE CONCRETE SHALL HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH IN 28 DAYS OF 2500 PSI.
- UNLESS NOTED OTHERWISE, DESIGN IS BASED ON F'c LESS THAN OR EQUAL TO 2500 PSI, THEREFORE, SPECIAL INSPECTION IS NOT REQUIRED.
- MAXIMUM WATER -CEMENT RATIO SHALL BE 0.45
- THE MAXIMUM SLUMP SHALL BE:
 

SLABS	4"
WALLS	4"
OTHER CONCRETE	4"
- REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI-318 AND SHALL BE ASTM A 615 GRADE 40 FOR #3 BARS & GRADE 60 FOR #4 BARS AND LARGER. WELDED WIRE FABRIC SHALL CONFORM TO IBC STANDARD NO. 26-6 (ASTM A 185).
- ALL HORIZONTAL BARS SHALL BE BENT AT CORNERS WITH A 24" EXTENSION, OR HAVE MATCHING CORNER BARS WITH 24" LEGS.
- AT INTERSECTING WALLS AND FOOTINGS, REINFORCEMENT SHALL BE EXTENDED THROUGH AND LAPPED ON THE OPPOSITE FACE OF THE CONTINUING WALL OR FOOTING, OR SHALL BE CONTINUOUS.
- AT "T" INTERSECTIONS, THE BARS IN THE DISCONTINUOUS WALL OR FOOTING SHALL EXTEND TO THE OPPOSITE FACE AND SHALL TERMINATE IN A STANDARD HOOK.



## FOUNDATION PLAN

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

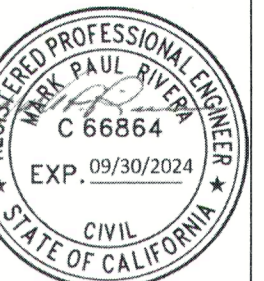
CRAWL SPACE VENTILATION  
CRAWL SPACE AREA: 1187 SQ FT

1187 SQ. FT/150=7.91 X 144 SQ IN = 1140 SQ. IN. TOTAL REQUIRED

VENTILATION PROVIDED:  
UNDERFLOOR ACCESS 24" x 18" VENT=428" NET  
FREE VENTILATION X (1) = 428 SQ. IN.  
UNDERFLOOR VENT 16" x 8" VENT=64" NET FREE  
VENTILATION X (12) = 768 SQ. IN.

TOTAL REQUIRED 1140 SQ. IN.  
TOTAL PROVIDED 1196 SQ. IN.

VENTILATION NOTES:  
1. VENT OPENINGS SHALL HAVE 1/4" MAX.  
CORROSION RESISTANT METAL MESH COVERING.



DATE

BY

NO. DESCRIPTION

SHEET TITLE:  
**FOUNDATION PLAN**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCAMISO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 352-3588

DATE:

6/27/2023

SCALE:

SHEET:

**6**

REVIEWED FOR CODE COMPLIANCE

Approved drawings, plans & specifications shall not be used for any other project, or an approval of any jurisdiction of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.

WILLDAN ENGINEERING

## FOUNDATION LEGEND

EXISTING FOUNDATION  
(TO REMAIN)



NEW FOUNDATION  
(PER PLANS)





**WOOD NOTES:**

- SAWN LUMBER SHALL BE DOUGLAS FIR COMPLYING WITH DOC PS20 AND SHALL HAVE THE FOLLOWING MINIMUM GRADES (PER 2022 CBC) UNLESS OTHERWISE NOTED ON THE PLANS.
 

DESCRIPTION	GRADE	ALLOWABLE STRESS
TYPICAL FRAMING	STANDARD OR BETTER	Fb=525 PSI
2x RAFTERS AND JOISTS	NO. 2	Fb=1250 PSI (SINGLE MEMBER USES)
2x RAFTERS AND JOISTS	NO. 2	Fb=1250 PSI (REPETATIVE MEM. USES)
4x BEAMS	NO. 1	Fb=1250 PSI
6x BEAMS	NO. 1	Fb=1000 PSI
POST AND TIMBERS	NO. 1	Fc=1000 PSI

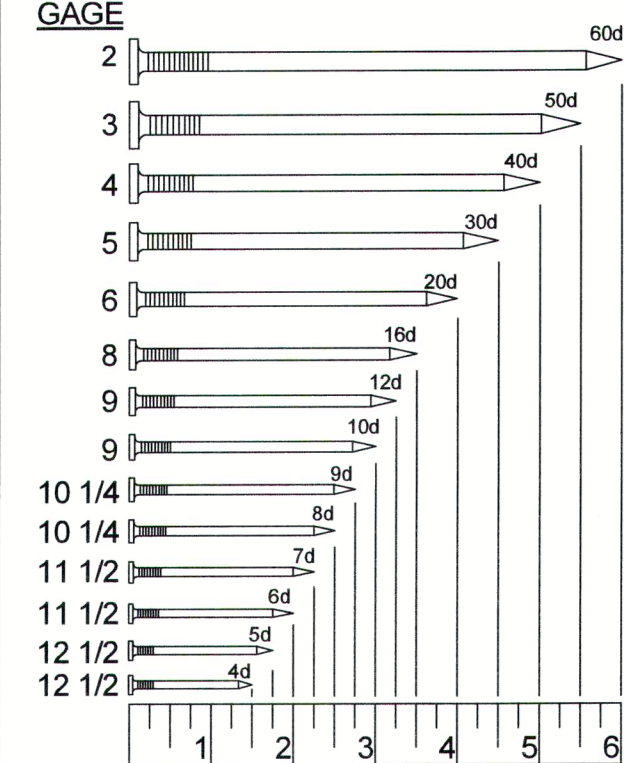
GLUE-LAMINATED BEAMS WESTERN SPECIES, 24F-1.7E WS  
 PARALAM BEAMS (PSL) SHALL BE 2.0 E.  
 MICROLAM (LVL) BEAMS SHALL BE 1.9 E.  
 TIMBER STRAND (LSL) SHALL BE 1.3 E.
- FOUNDATION SILL PLATES SHALL BE PRESERVATIVE-TREATED WOOD OR FOUNDATION GRADE REDWOOD.
- LUMBER SHALL HAVE A MOISTURE CONTENT LESS THAN OR EQUAL TO 19%.
- ALL NAILS SHALL BE COMMON NAILS, EXCEPT AS NOTED ON THE PLANS.
- NAILS WHICH WILL BE EXPOSED TO WEATHER SHALL BE EITHER ZINC COATED, ALUMINUM ALLOY WIRE, OR STAINLESS STEEL.
- FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED OR FIRE-RETARDANT TREATED WOOD SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER (R317.3)
- ALL ROUGH FRAMING SHALL CONFORM TO THE 2022 CBC.
- FRAMING HARDWARE SHALL BE AS MANUFACTURED BY THE SIMPSON STRONG-TIE CO. OR APPROVED EQUAL AND OF TYPE AND SIZE INDICATED ON THE PLANS. INSTALLATION SHALL BE AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE NAILED FOR FULL CAPACITY, UNLESS NOTED OTHERWISE.
- SPECIAL CARE SHALL BE GIVEN TO THE FABRICATION OF BEARING SURFACES OF COLUMNS TO ENSURE THAT MEMBERS FIT TIGHTLY AND THE INTERFACING SURFACES ARE TRUE.
- BOLTS SHALL BE CUT AND THREAD MACHINE BOLTS (ASTM A 307). USE WASHERS WHERE BOLT HEAD OR NUT BEARS ON WOOD. HOLES SHALL BE 1/32" LARGER IN DIAMETER.
- PLYWOOD AND ORIENTED STRAND BOARD (OSB) SHALL CONFORM DOC PS1 OR DOC PS2 AND WITH VOLUNTARY PRODUCT STANDARD PS 2-10 FOR WOOD BASED STRUCTURAL PANELS, AS ADOPTED BY THE 2022 C.B.C.
- ROOF SHEATHING SHALL BE 15/32" CCX SHEATHING, WITH A PANEL INDEX OF 24/0, NAILED WITH 8d NAILS, SPACED AT 6" O.C., AT PANEL EDGES AND BOUNDARIES AND 12" O.C WITHIN THE FIELD. (U.N.O)

**NAILING SCHEDULE:**

BUILDING ELEMENTS:	FASTENER	SPACING
JOIST TO SILL OR GIRDER, TOE NAIL	3-8d	
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL	16d	16-O.C.
TOP OR SOLE PLATE TO STUD, END NAIL	2-16d	
STUD TO SOLE PLATE, TOE NAIL	3-8d OR 2-16d	
DOUBLE STUDS, FACE NAIL	10d	24-O.C.
DOUBLE PLATES, FACE NAIL	10d	24-O.C.
SOLE PLATE TO JOIST OR BLOCKING AT BRACED WALL PANEL	3-16d	16-O.C.
DOUBLE TOP PLATES, MIN. 48" OFFSET OF END JOINTS, FACE NAIL IN LAPPED AREA	8-16d	
BLOCKING BETWEEN JOIST OR RAFTERS TO TOP PLATE, TOE NAIL	3-8d	
RIM JOIST TO TOP PLATE, TOE NAIL	8d	6-O.C.
TOP PLATES, LAPS AT CORNERS AND INTERSECTIONS, FACE NAIL	2-10d	
BUILT-UP HEADER, TWO PIECES W/ 1/2" SPACER EDGE	16d	16-O.C.
CEILING JOIST TO PLATE, TOE NAIL	3-8d	
CONTINUOUS HEADER TO STUD, TOE NAIL	4-8d	
CEILING JOIST, LAPS OVER PARTITIONS, FACE NAIL	3-10d	
CEILING JOIST TO PARALLEL RAFTERS, FACE NAIL	3-10d	
RAFTER TO PLATE, TOE NAIL	2-16d	
1x BRACE TO EACH STUD AND PLATE, FACE NAIL	2-8d	
BUILT-UP CORNER STUDS	10d	24-O.C.
ROOF RAFTERS TO RIDGE, VALLEY OR HIP RAFTERS:		
TOE NAIL	4-16d	
FACE NAIL	3-16d	
RAFTERS TIES TO RAFTERS, FACE NAIL	3-8d	
WOOD STRUCTURAL PANELS, SUBFLOOR, ROOF AND WALL SHEATHING TO FRAMING		

FASTENER	EDGES	INTERMEDIATE
5/16-1/2 6d COMMON NAIL (SUBFLOOR, WALL)	6	12
8d COMMON NAIL (ROOF)	6	12
19/32-1 8d COMMON NAIL	6	12
1 1/8-1 1/4 10d COMMON NAIL OR 8d DEFORMED NAIL	6	12

CELLULOSIC FIBERBOARD SHEATHING 1 1/2 GALV. ROOFING NAIL



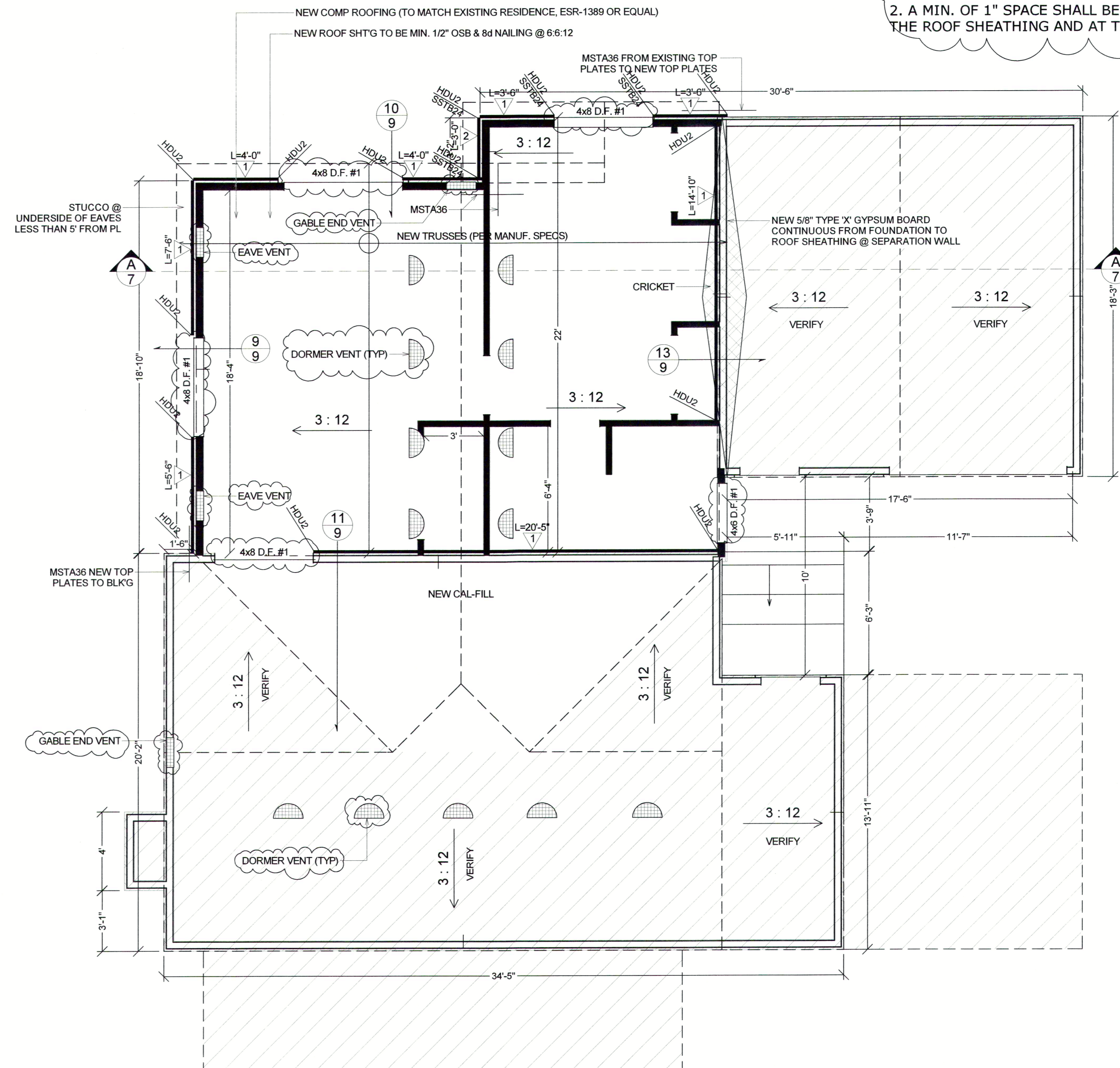
- ALL NAILS ARE SMOOTH-COMMON, BOX OR DEFORMED SHANKS EXCEPT WHERE OTHERWISE STATED.
- NAILS SHALL BE SPACED AT NOT MORE THAN 6 INCHES ON CENTER AT ALL SUPPORTS WHERE SPANS ARE 48 INCHES OR GREATER.
- FOUR-FOOT-BY-8-FOOT OR 4-FOOT-BY-9-FOOT PANELS SHALL BE APPLIED VERTICALLY.

SIZES OF COMMON WIRE NAILS

**ATTIC VENTILATION CALCULATION:**

ATTIC AREA: 1187 SQ FT  
 1187 SQ. FT/150=7.91 X 144 SQ IN = 1140 SQ. IN. TOTAL REQUIRED  
**VENTILATION PROVIDED**  
 (1) GABLE END VENT 18"x18"=170 NET FREE VENTILATION X (2) = 340 SQ. IN.  
 (1) DORMER VENT 9" X 18"=56" NET FREE VENTILATION X (13) = 728 SQ. IN.  
 (1)EAVE VENT 5.5" X 14" EAVE VENT=41" NET FREE VENTILATION X (2) =82 SQ. IN.  
**TOTAL REQUIRED 1140 SQ. IN.**  
**TOTAL PROVIDED 1150 SQ. IN.**

- VENTILATION NOTES:**
- VENT OPENINGS SHALL BE 1/16" MIN. AND 1/4" MAX. AND OPEN DIRECTLY TO THE OUTSIDE AIR.
  - A MIN. OF 1" SPACE SHALL BE PROVIDED BETWEEN THE INSULATION AND THE ROOF SHEATHING AND AT THE LOCATION OF VENTS.



**CHINO HILLS APPROVED**  
 This set of plans & specifications shall be used for the project of construction of the above described project. The City of Chino Hills is not responsible for any errors or omissions on these plans and specifications. The City of Chino Hills is not responsible for any violations of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.  
 Date: 7/11/23  
 By: [Signature]

REVIEWED FOR CODE COMPLIANCE

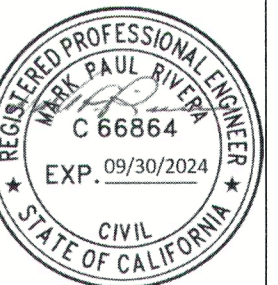
Approved plans & specifications shall not be used for any other project without the approval of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.

WILLDAN ENGINEERING

**CONTRACTOR TO FIELD VERIFY ALL TRUSS LENGTHS & PITCH PRIOR TO TRUSS FABRICATION**

**ROOF FRAMING PLAN**

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



NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**ROOF FRAMING PLAN**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
 4124 DESCANSO AVE.  
 CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
 NORTHERN CALIFORNIA  
 5908 JASMINE ST. STE B  
 RIVERSIDE CA 92504  
 (951)352-3588

DATE:

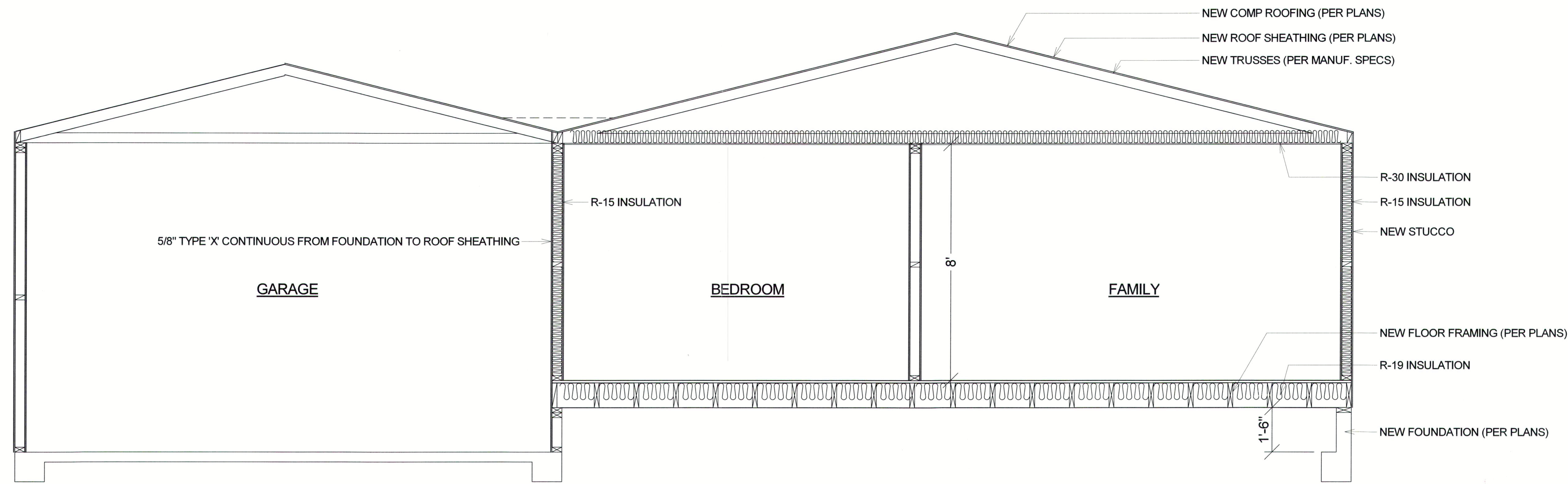
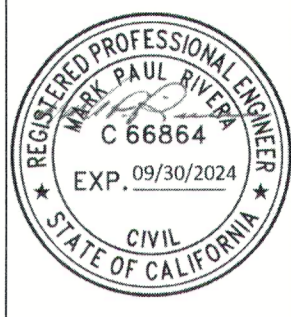
6/27/2023

SCALE:

SHEET:

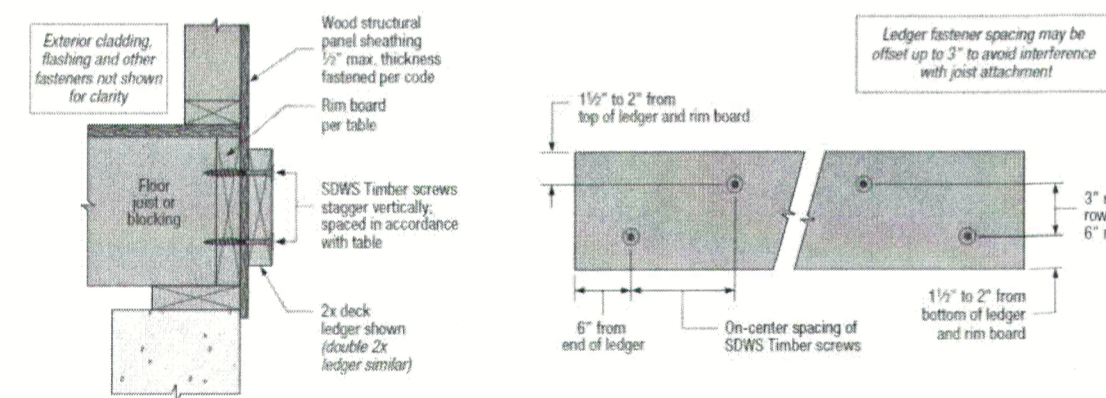
**7**





**SECTION 'A-A'**  
SCALE 1/2"=1'-0"

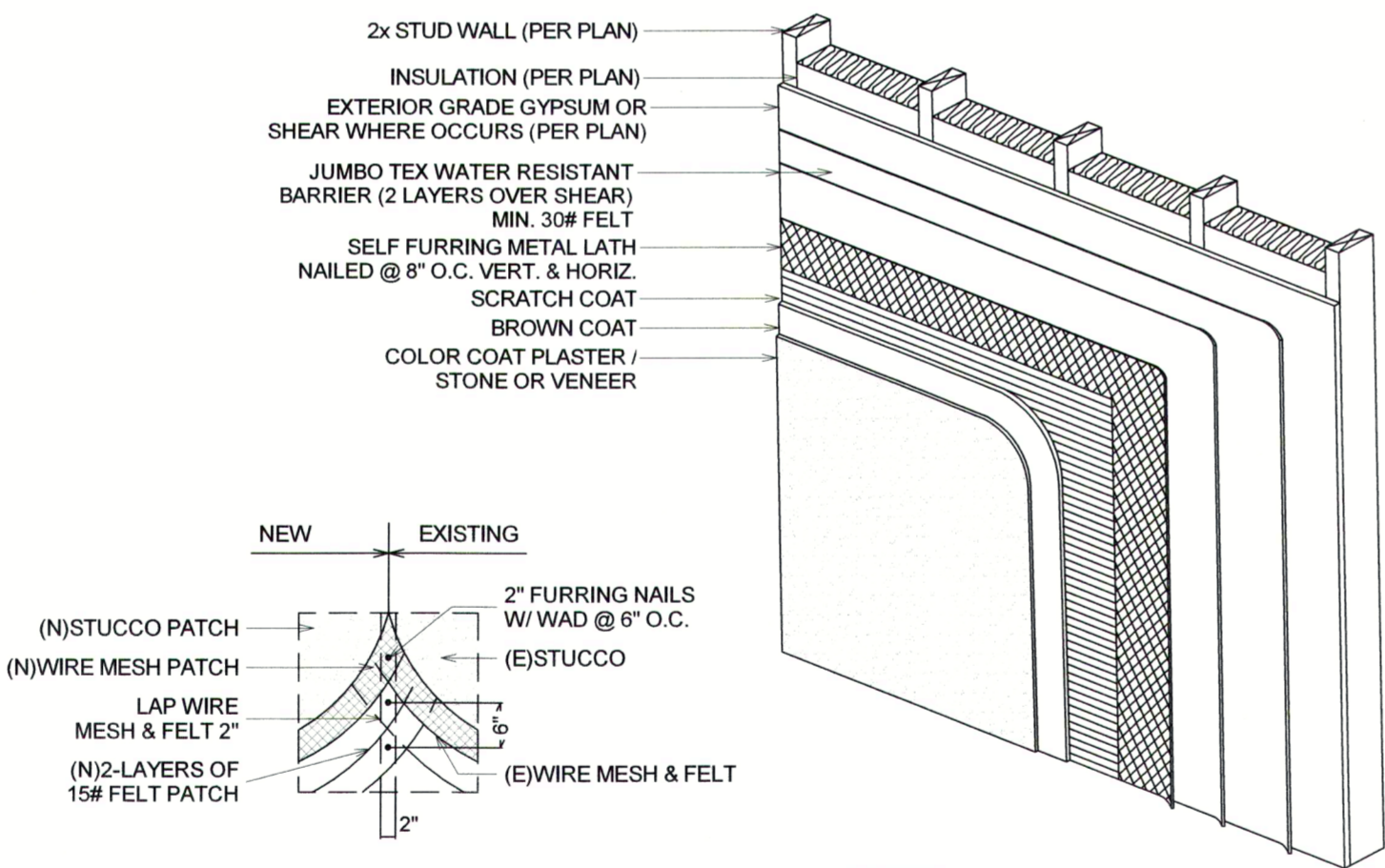
- SDWS screw spacing values are equivalent to 2018 IRC Table R607.5.1.3(1) and 2015 IRC Table R607.2. The table above also provides SDWS screw spacing for a wide range of materials commonly used for rim board, and an alternate loading condition as required by some jurisdictions.
- Sawn lumber rim board shall be spruce-pine-fir, hem-fir, Douglas-fir-larch, or southern pine species. Ledger shall be hem-fir, Douglas-fir-larch, or southern pine species.
- Fastener spacings are based on the lesser of single fastener ICC-ES AC208.3 testing of the Strong-Drive SDWS Timber screw with a safety factor of 5.0 or ICC-ES AC133 assembly testing with a factor of safety of 5.0. Spacing includes NDS wet service factor adjustment.
- Multiple ledger plies shall be fastened together per code independent of the SDWS screws.
- Rows of screws shall be vertically offset and evenly staggered. Screws shall be placed 1 1/2" to 2" from the top and bottom of the ledger or rim board with 3" minimum and 6" maximum between rows and spaced per the table. End screws shall be located 6" from the end and at 1 1/2" to 2" from the bottom of the ledger. For screws located at least 2" but less than 6" from the end, use 50% of the load per screw and 50% of the table spacing between the end screw and the adjacent screw, and for screws located between 2" and 4" from the end, spread using a 1/2" dial.
- Structural sheathing between the ledger and rim board shall be a maximum of 1/2" thick and fastened per code.
- See pp. 100-110 for ledger-to-rim attachment with 1/2" gap.



**NOTE:**  
1. LEDGER TO BE MIN. 2x8 FASTENED USING SDS 1/4" DIA. x 3-1/2" LONG SCREWS @ 8" O.C. STAGGERED.

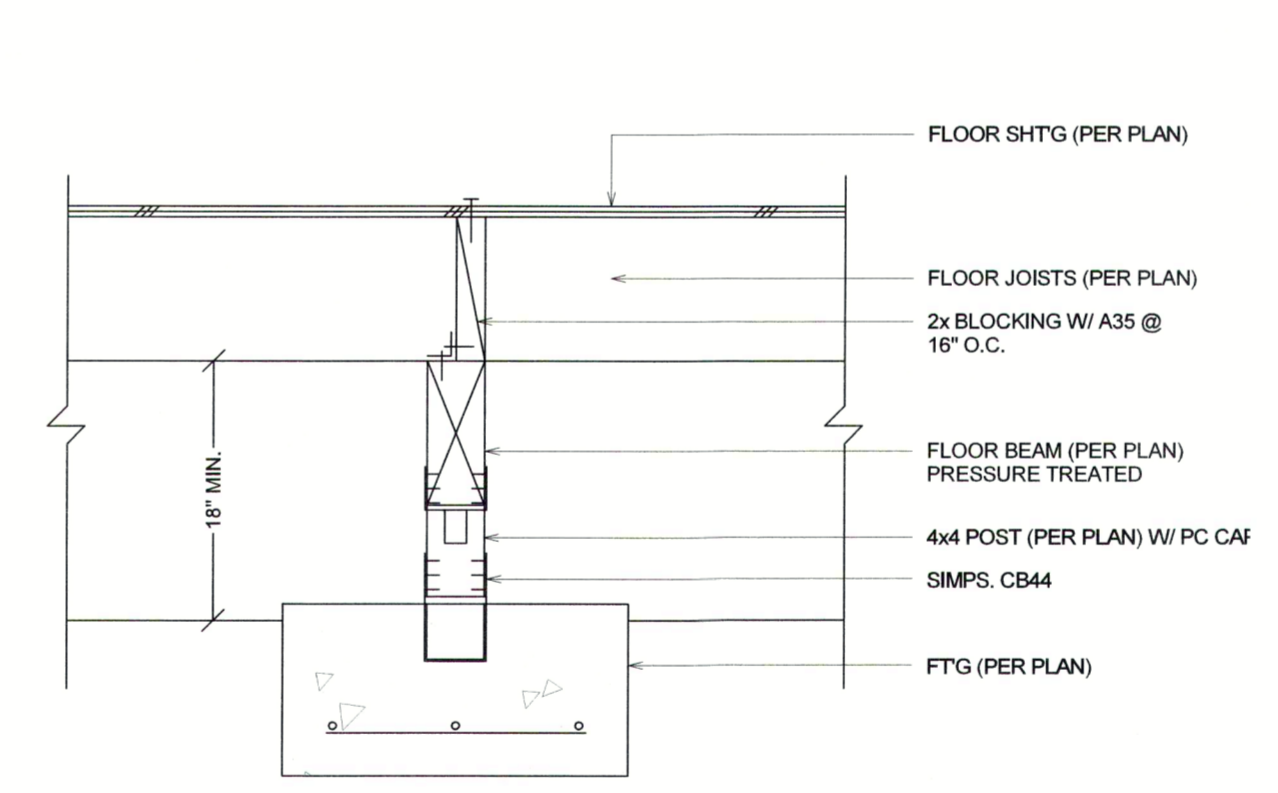
**LEDGER CONNECTION**

7/8



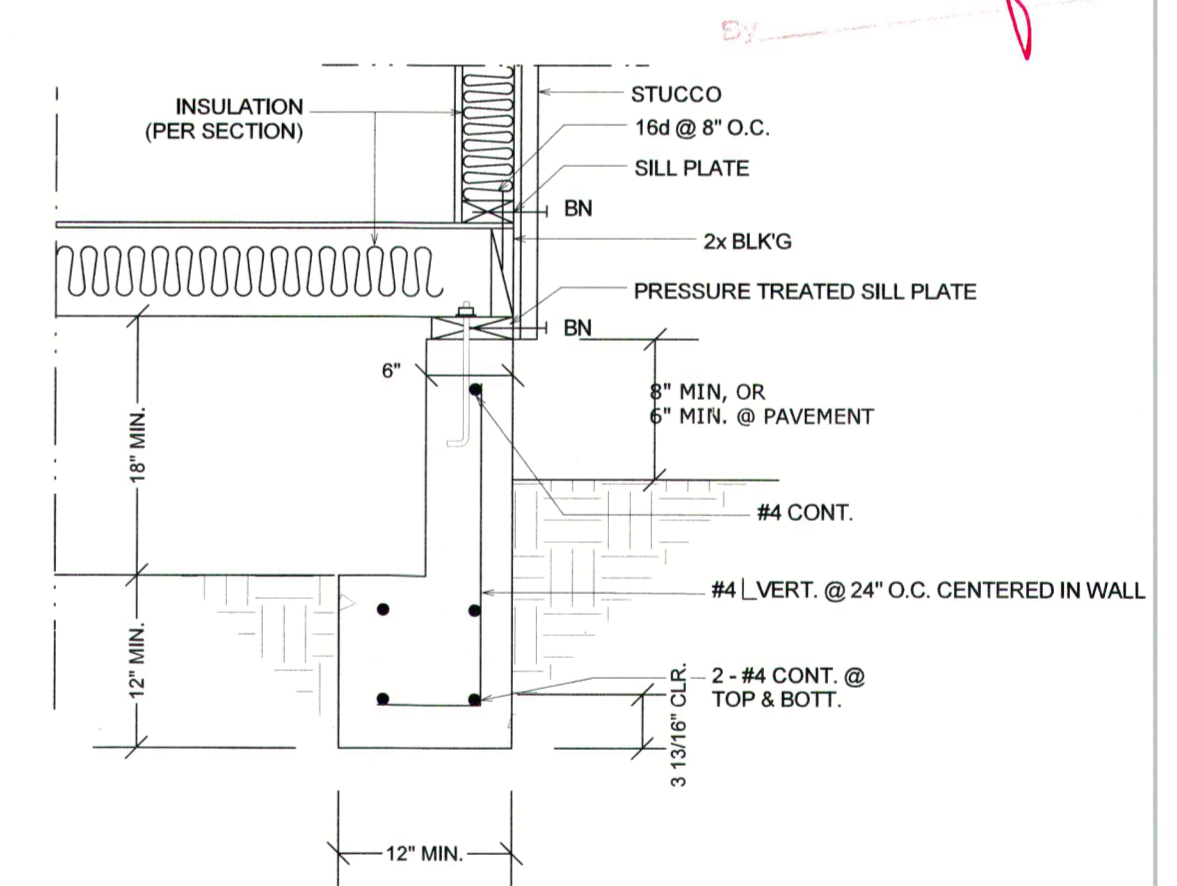
**EXTERIOR WALL CONSTRUCTION**

5/8



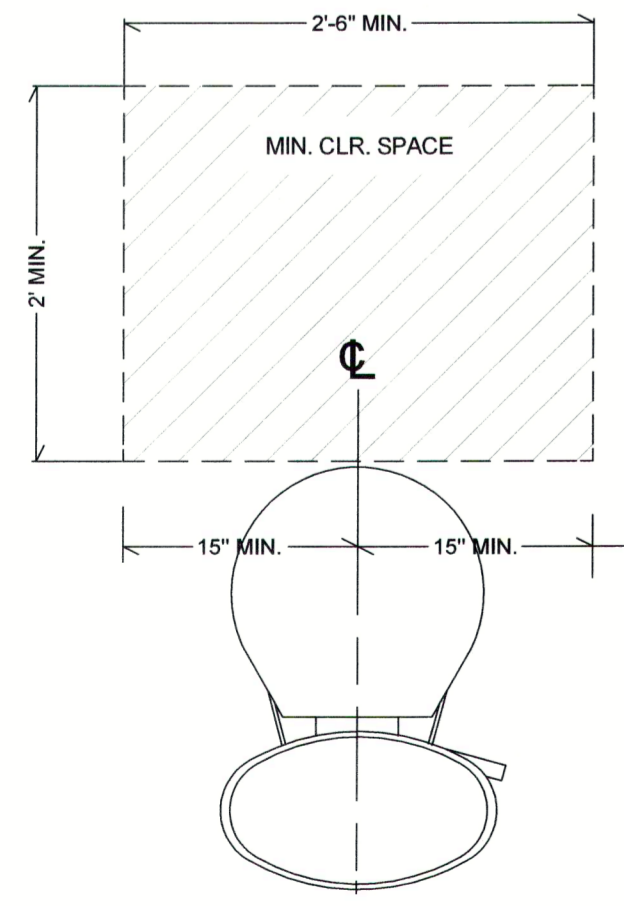
**GIRDER CONNECTION**

3/8



**EXTERIOR FOOTING**

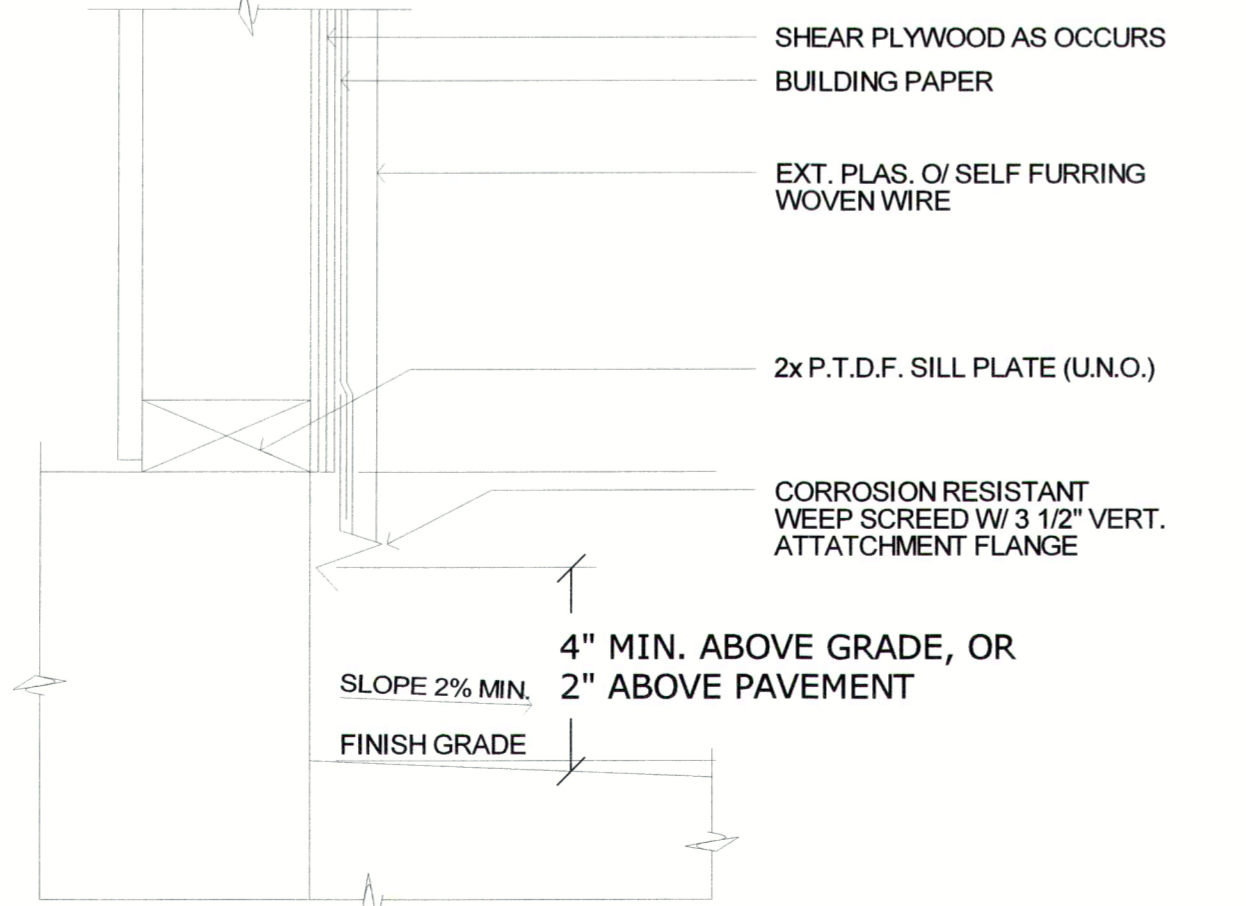
1/8



**2019 CPC 402.5 SETTING**  
FIXTURES SHALL BE SET LEVEL AND IN PROPER ALIGNMENT WITH REFERENCE TO ADJACENT WALLS. NO WATER CLOSET OR BIDET SHALL BE SET CLOSER THAN 15 INCHES (381 MM) FROM ITS CENTER TO A SIDE WALL OR OBSTRUCTION NOR CLOSER THAN 30 INCHES (762 MM) CENTER TO CENTER TO A SIMILAR FIXTURE. THE CLEAR SPACE IN FRONT OF A WATER CLOSET, LAVATORY, OR BIDET SHALL BE NOT LESS THAN 24 INCHES (610 MM). NO URINAL SHALL BE SET CLOSER THAN 12 INCHES (305 MM) FROM ITS CENTER TO A SIDE WALL OR PARTITION NOR CLOSER THAN 24 INCHES (610 MM) CENTER TO CENTER.  
**EXCEPTION:** THE INSTALLATION OF PAPER DISPENSERS OR ACCESSIBILITY GRAB BARS SHALL NOT BE CONSIDERED OBSTRUCTIONS.

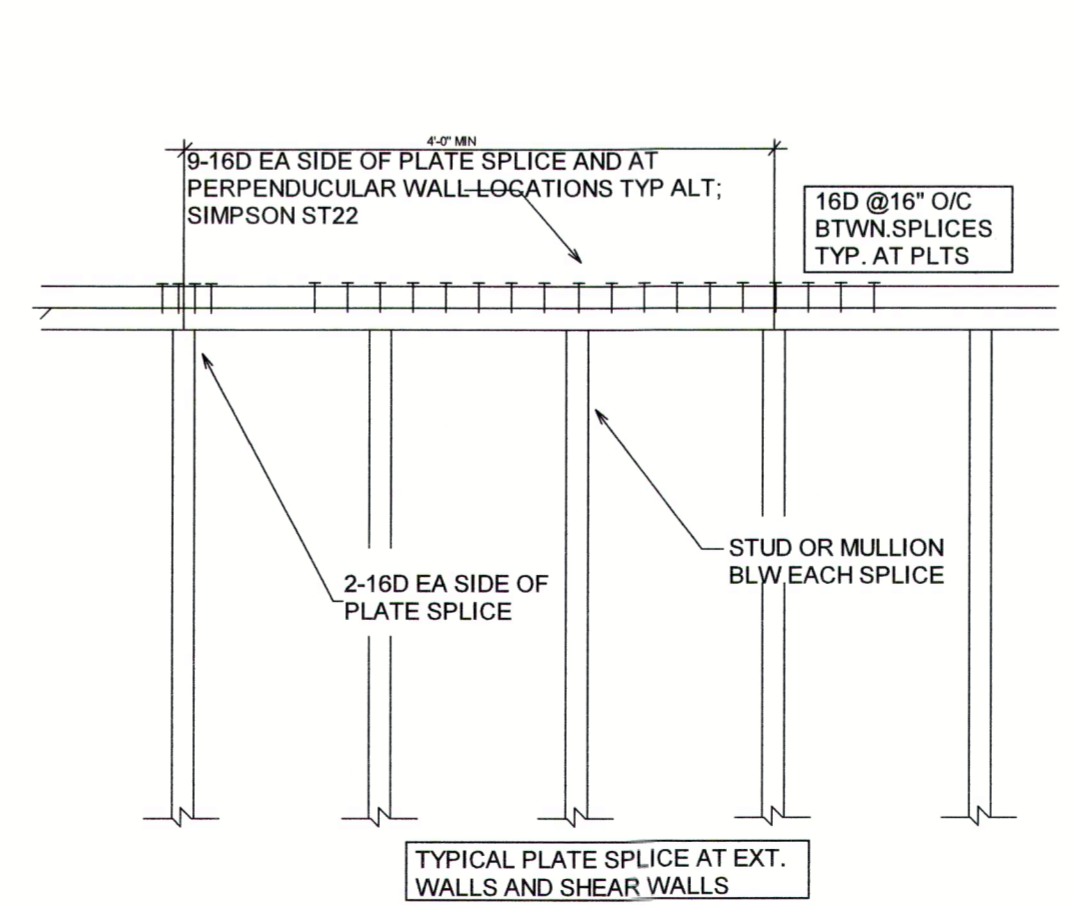
**WATER CLOSET**

8/8



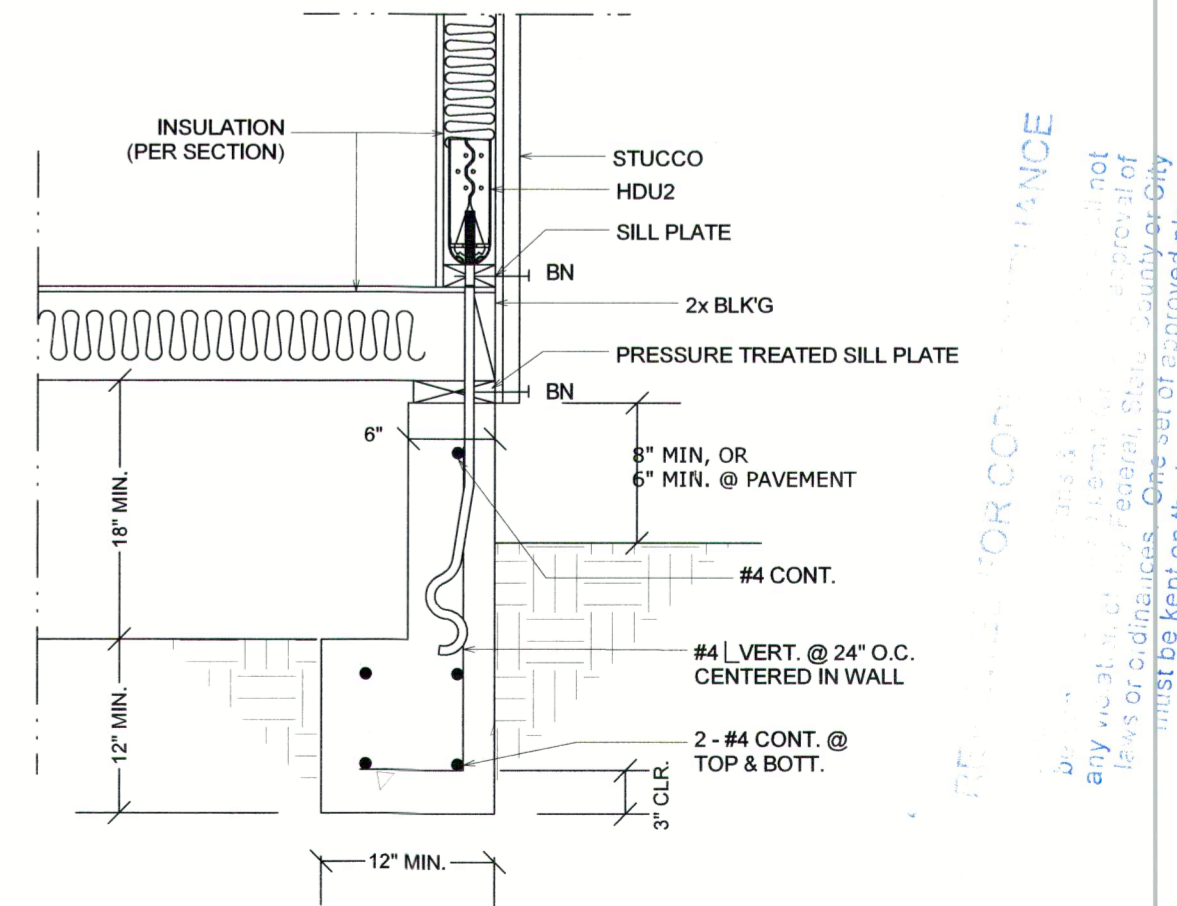
**STUCCO SCREED**

6/8



**TYPICAL PLATE SPLICE AT EXT. WALLS AND SHEAR WALLS**

4/8



**EXTERIOR FOOTING**

2/8

NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**SECTION & DETAILS**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
SOUTHERN CALIFORNIA  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 952-3588

DATE:  
6/27/2023

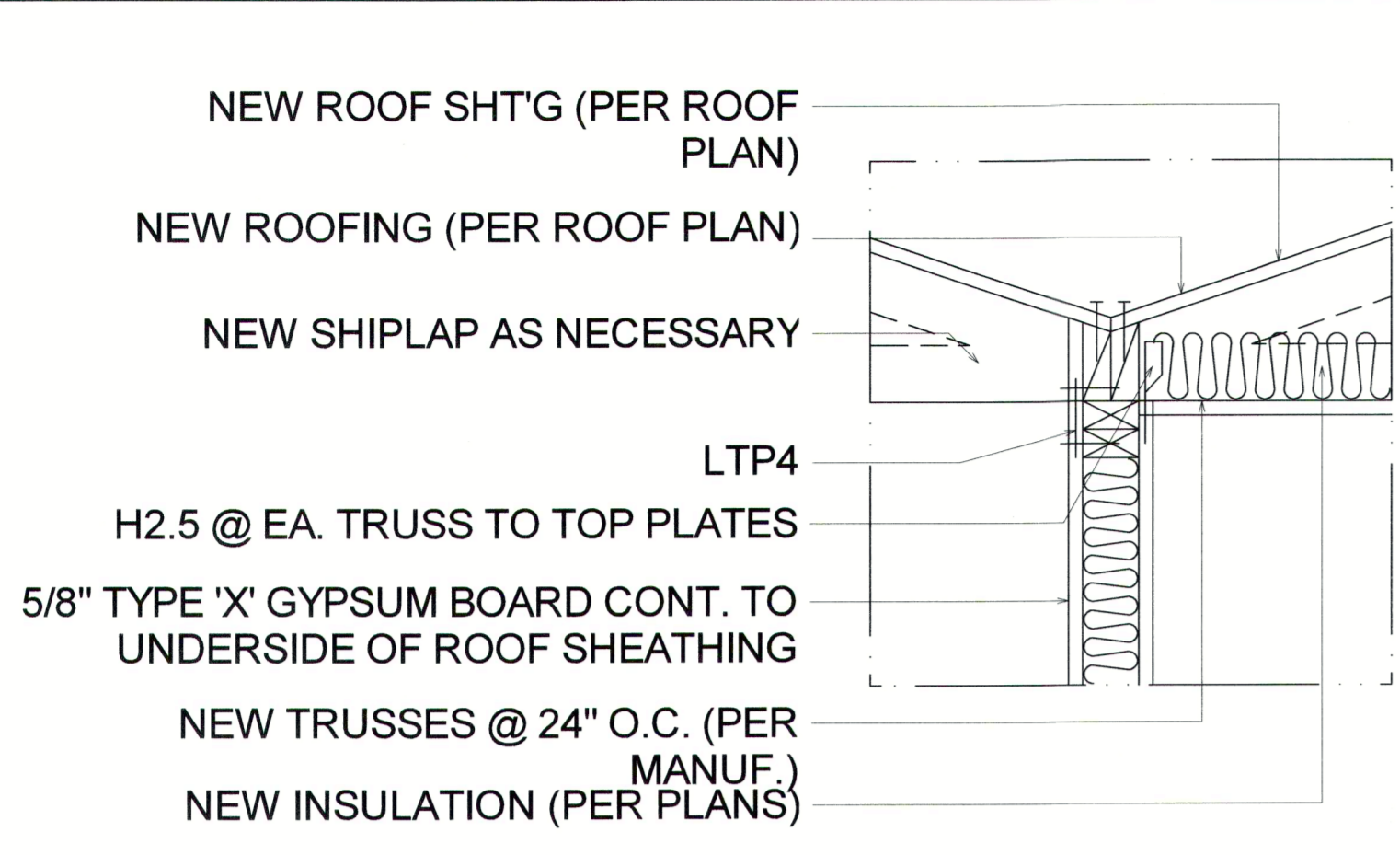
SCALE:

SHEET:  
**8**

7/11/23

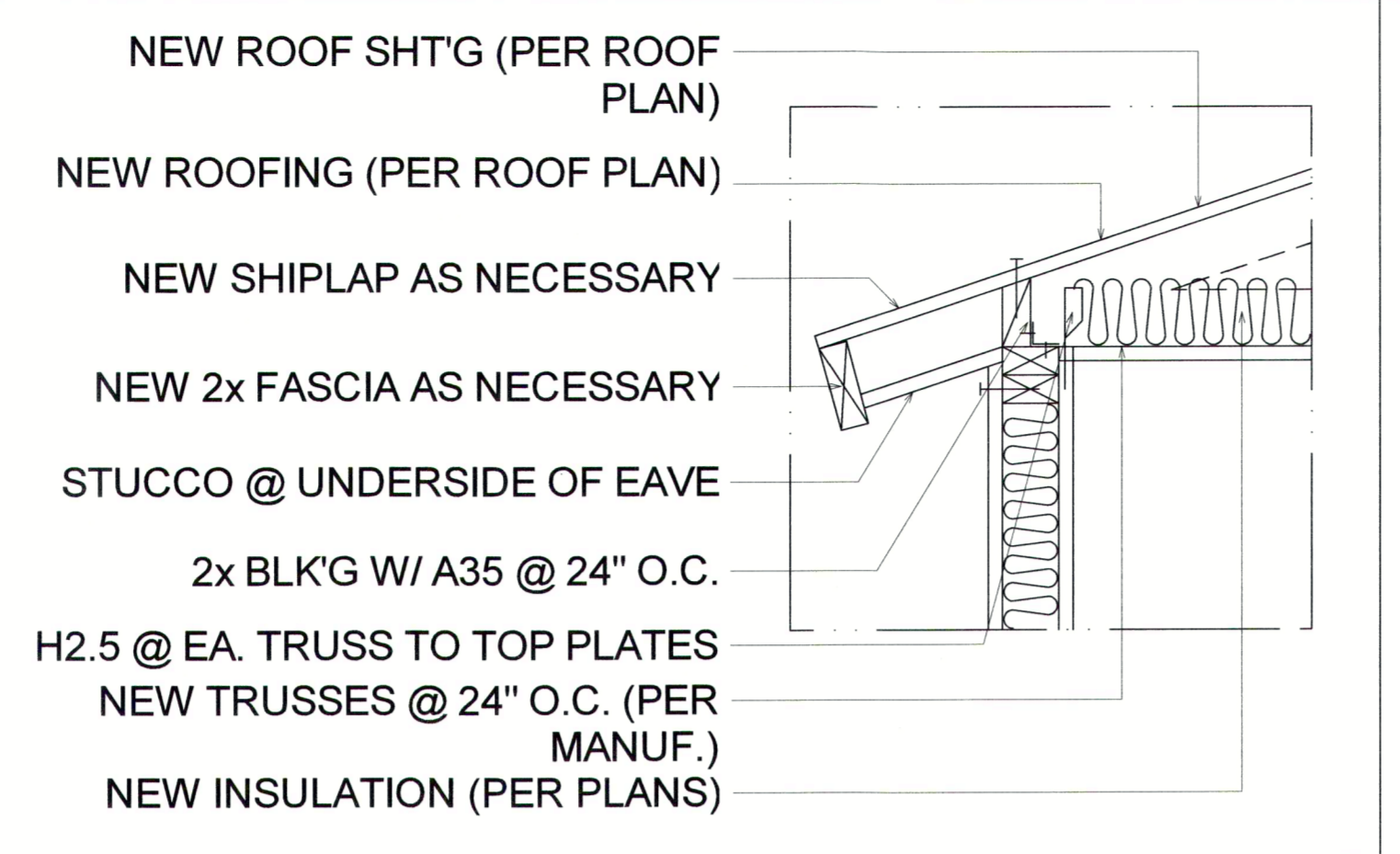
WILLDAN ENGINEERING  
11111 WILLOW CREEK DRIVE  
SUITE 300  
DANA POINT, CA 92629  
(949) 441-1111  
www.willdan.com





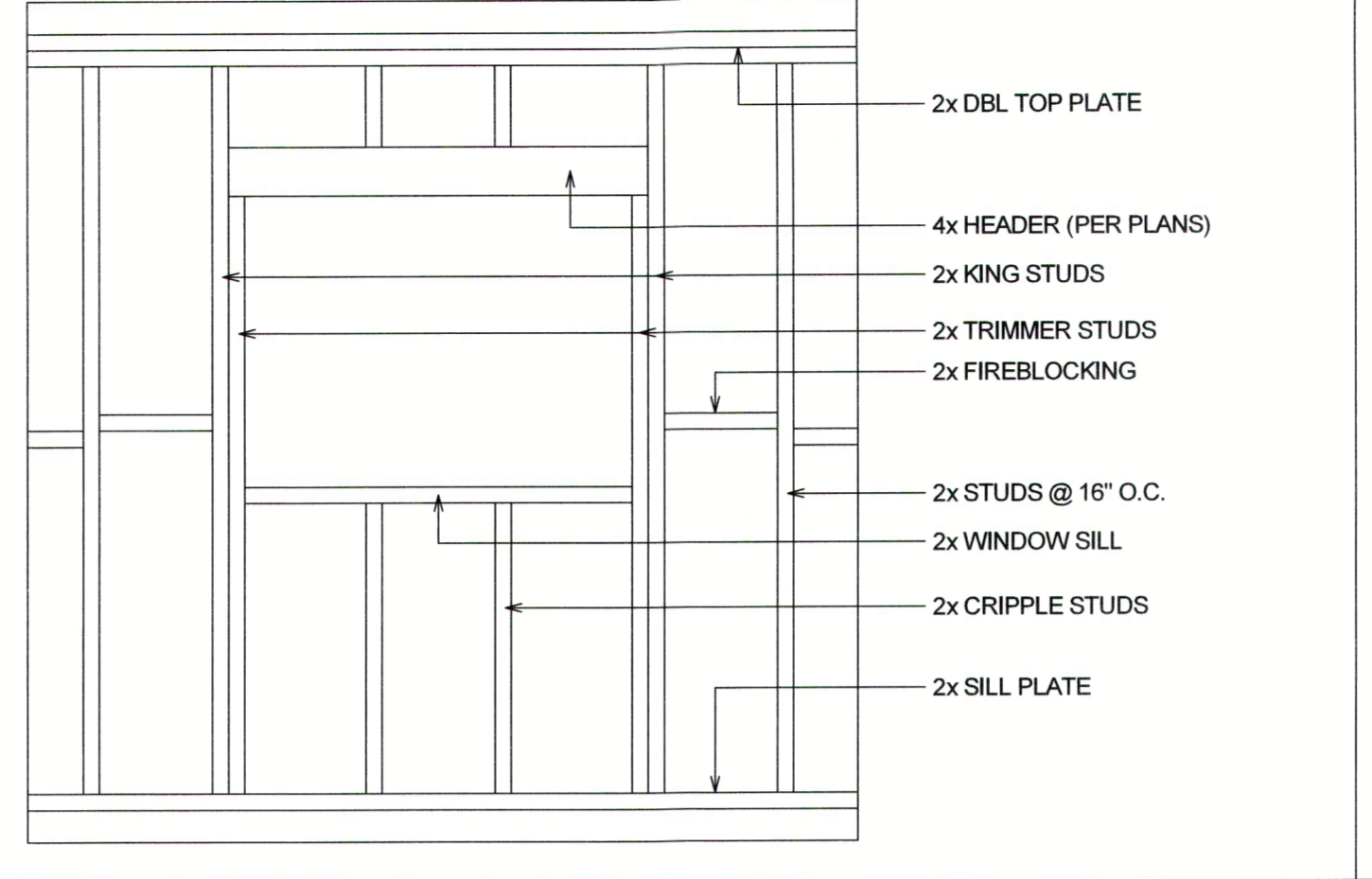
TRUSS TO WALL

13  
9



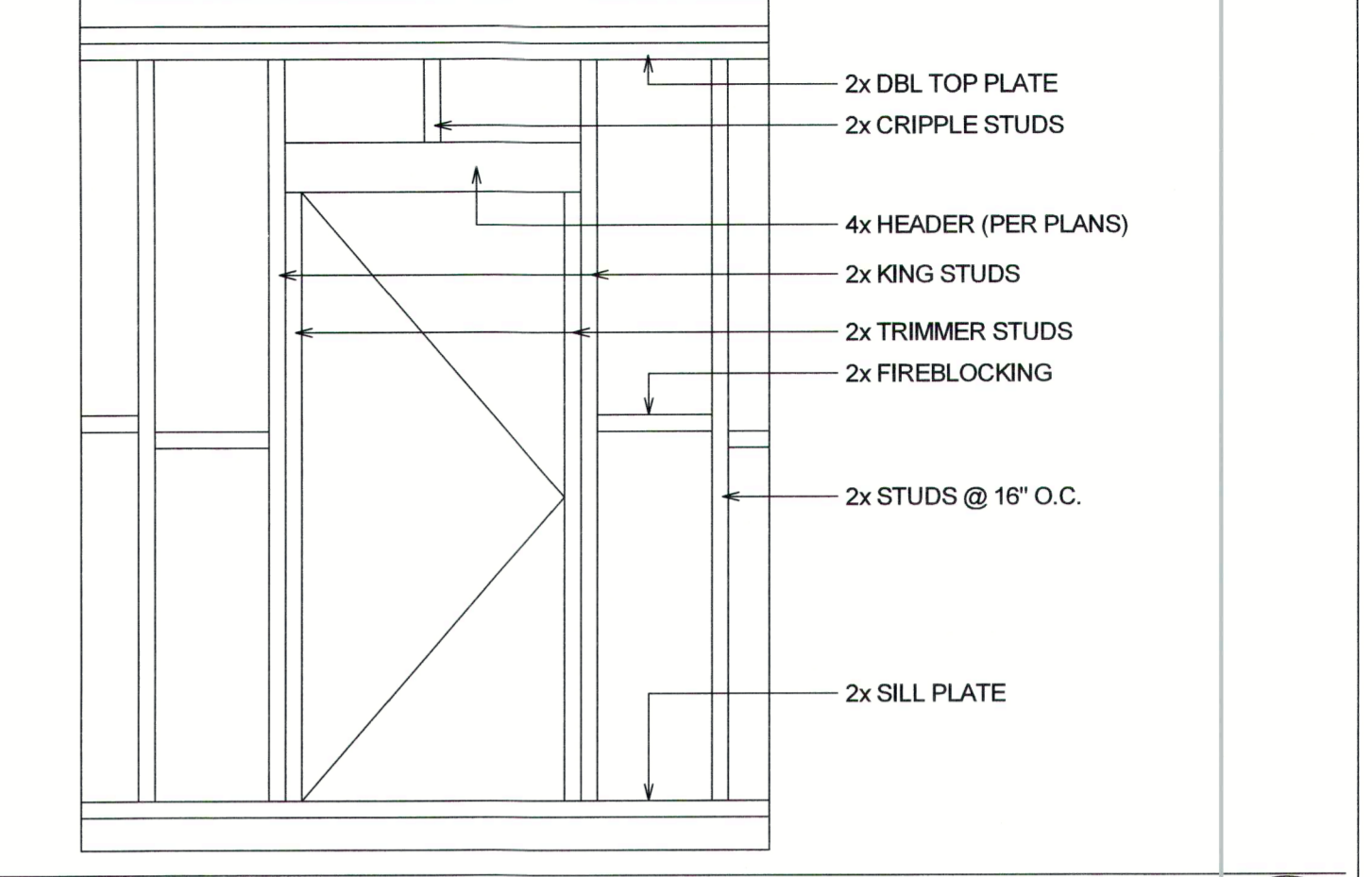
TRUSS TO EXTERIOR WALL

9  
9



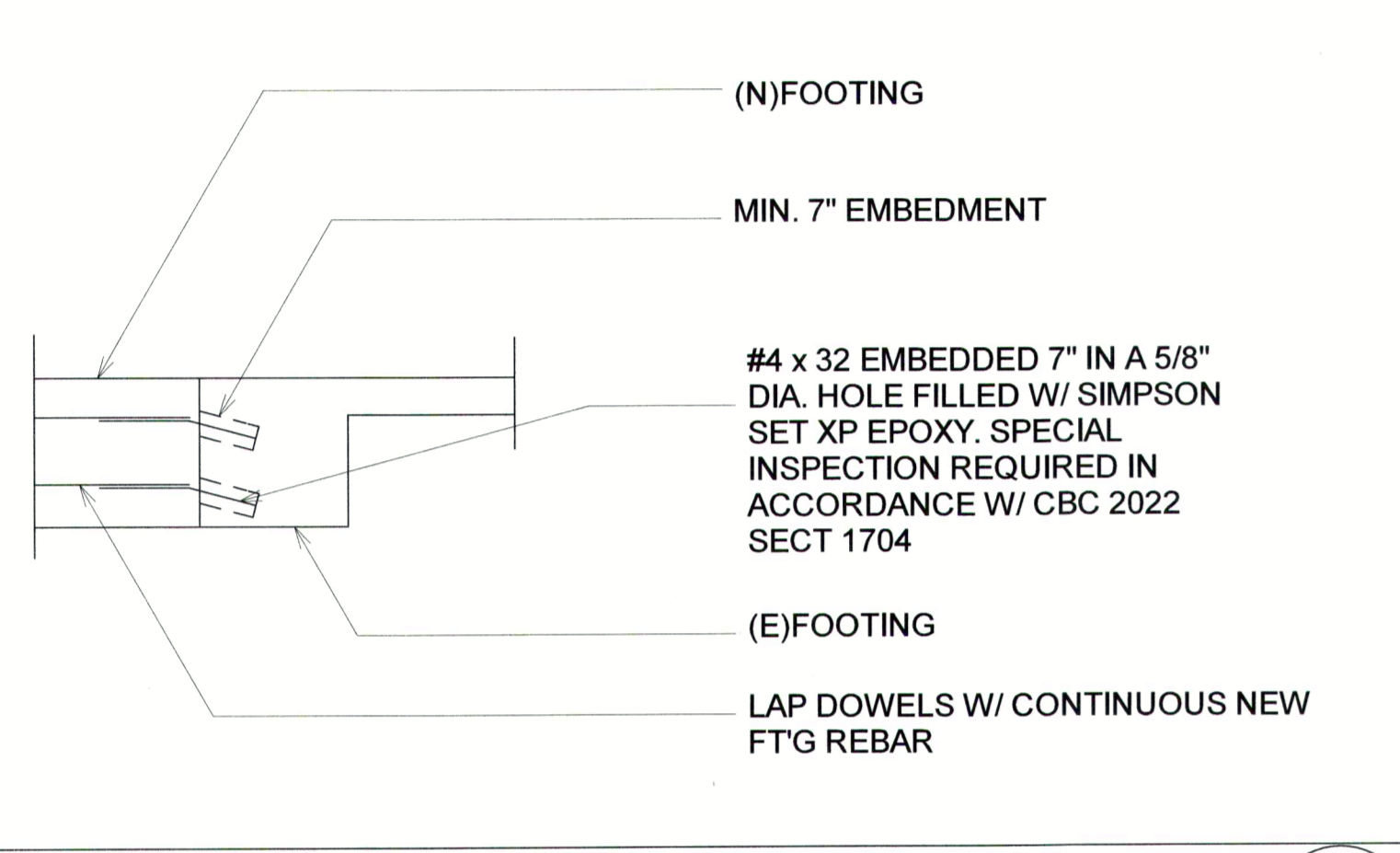
WINDOW FRAMING

5  
9



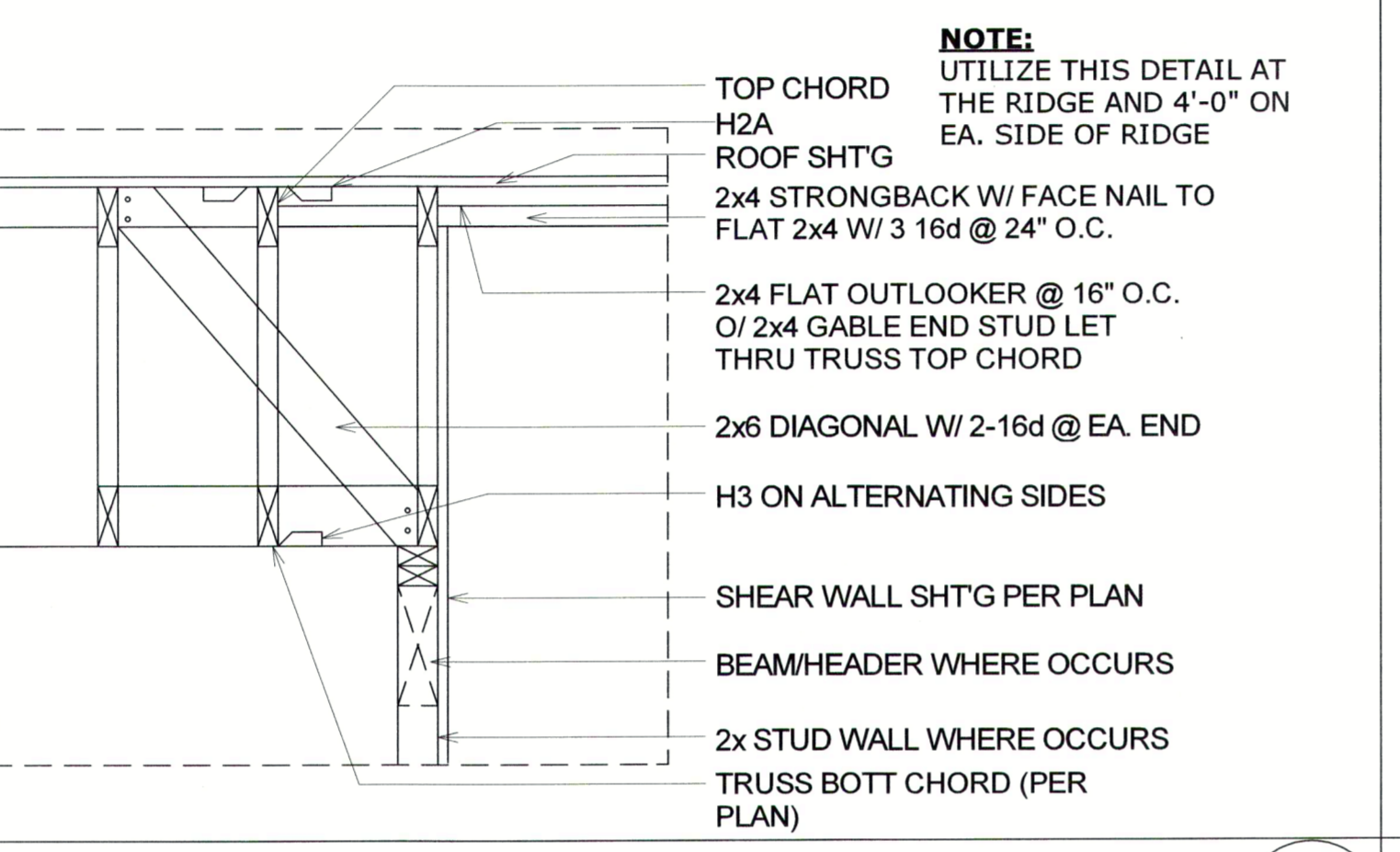
DOOR FRAMING SECTION

1  
9



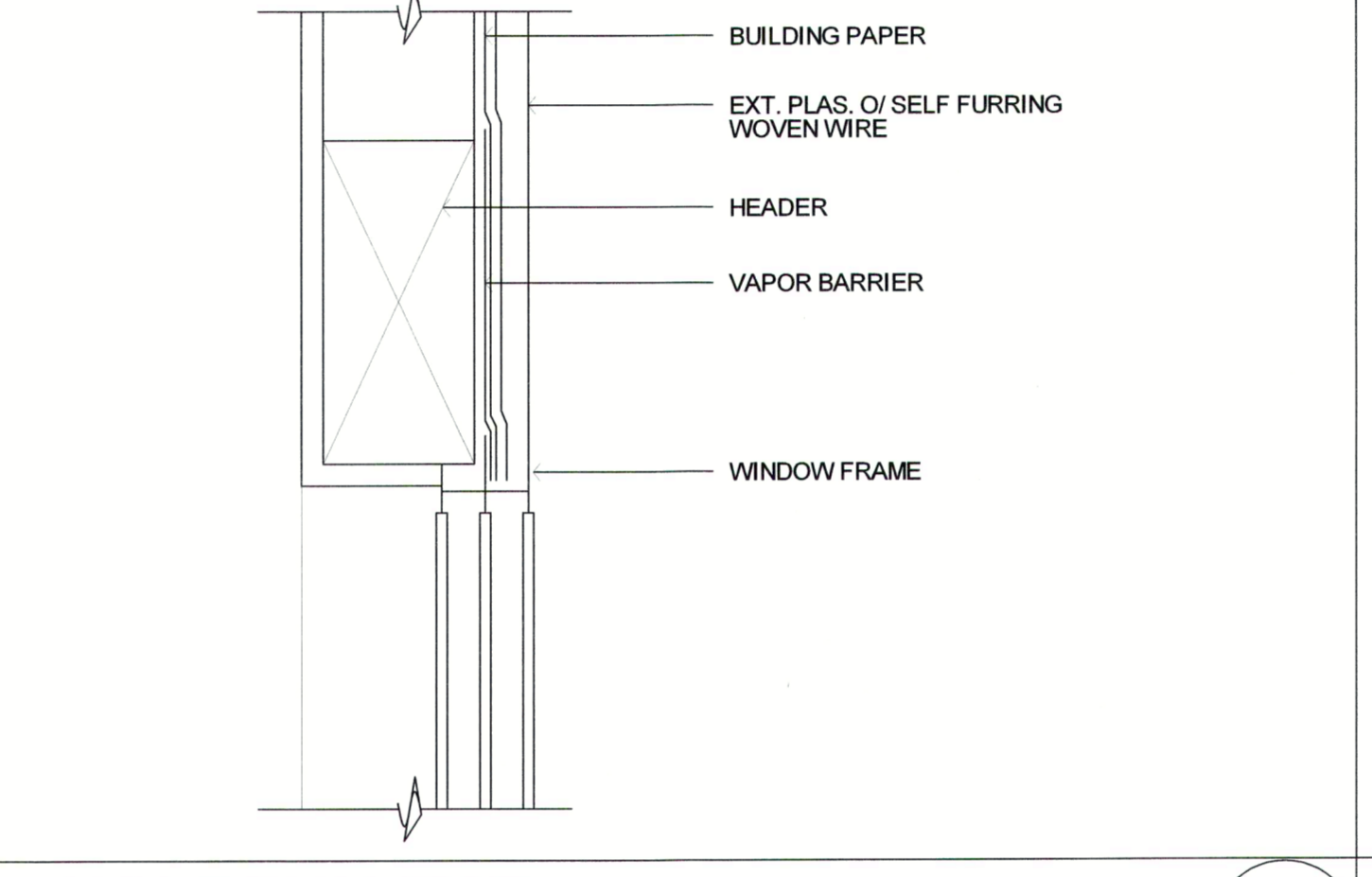
FOOTING CONNECTION

14  
9



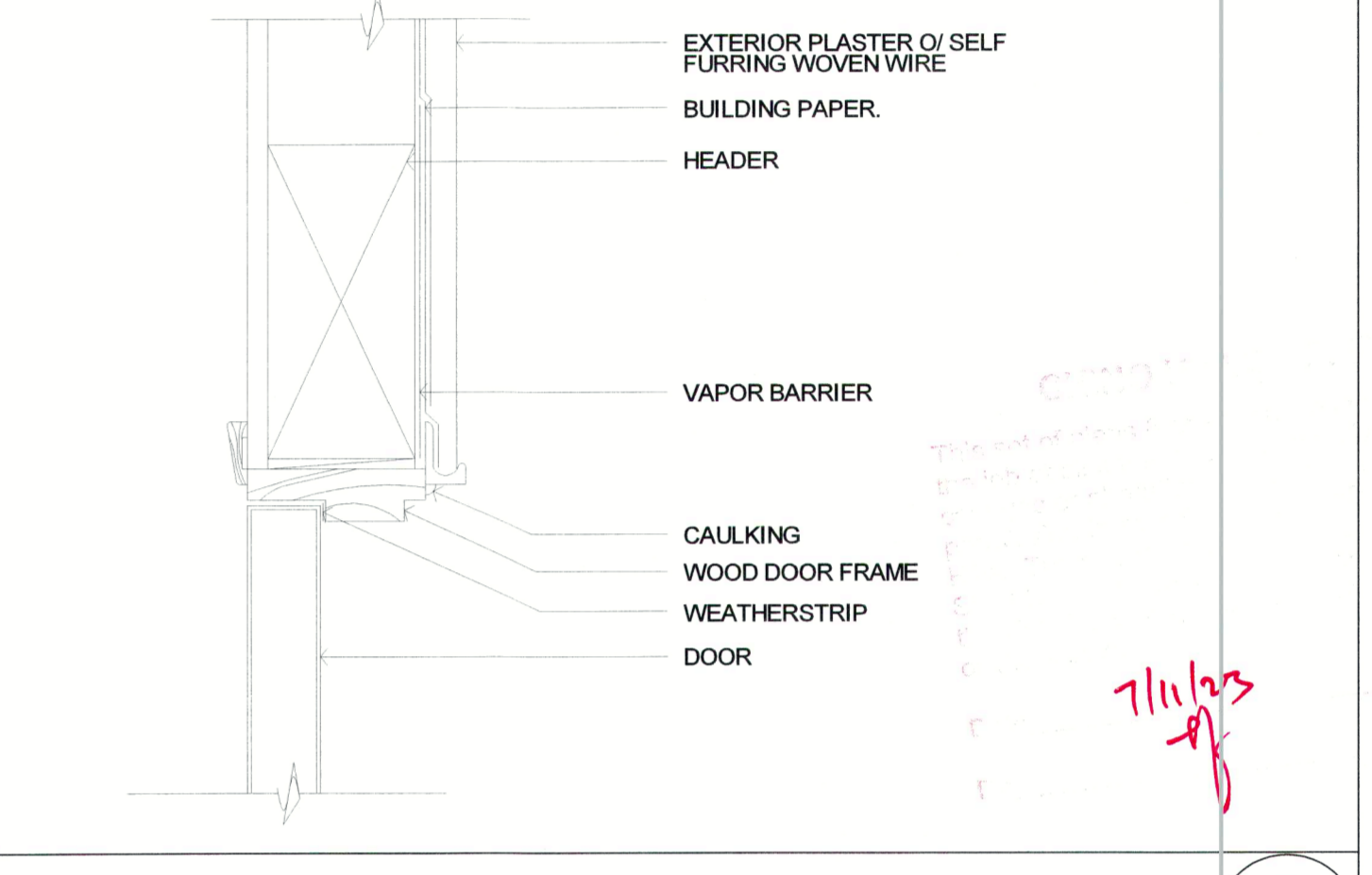
GABLE END

10  
9



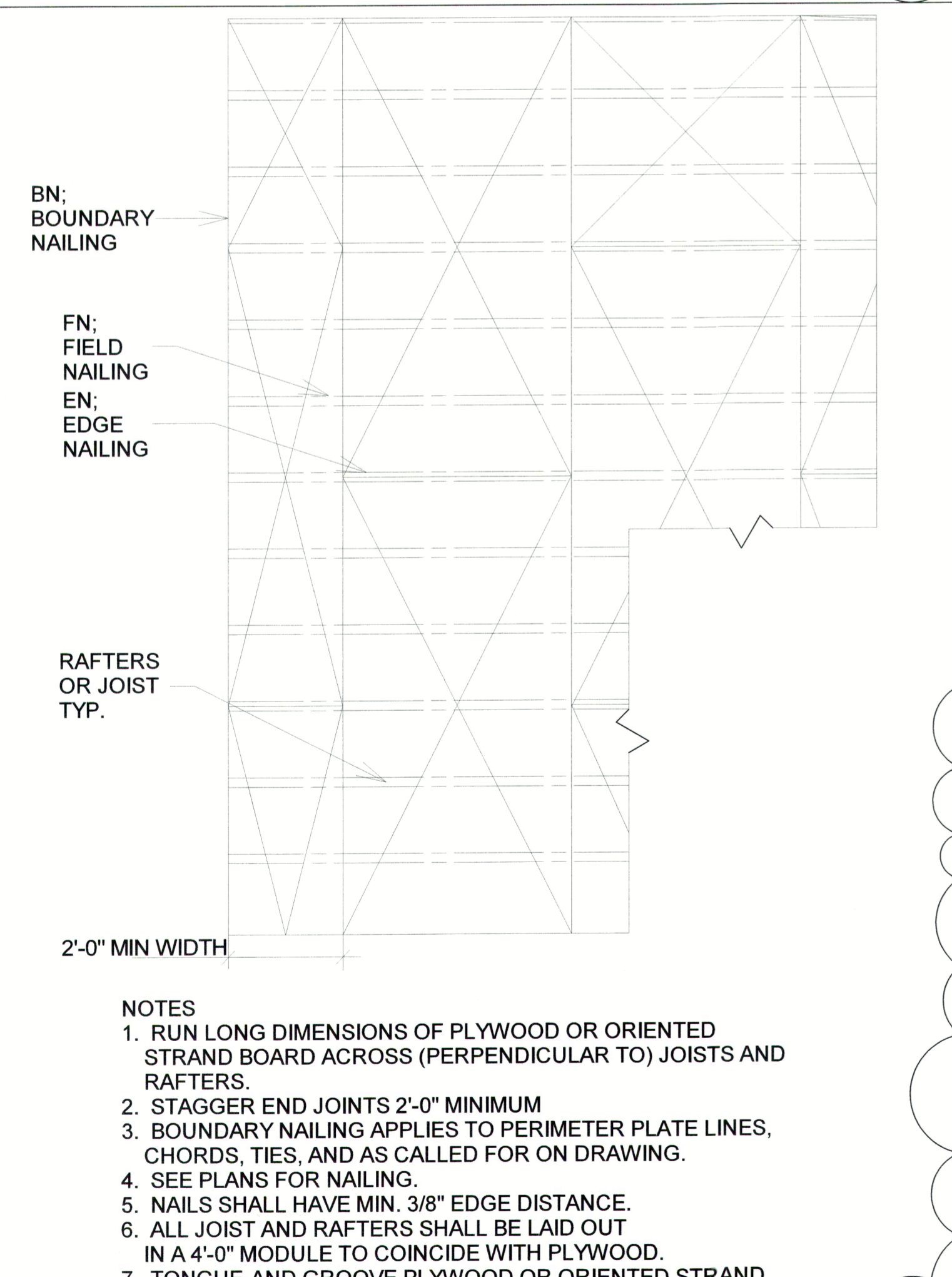
WINDOW HEAD

6  
9



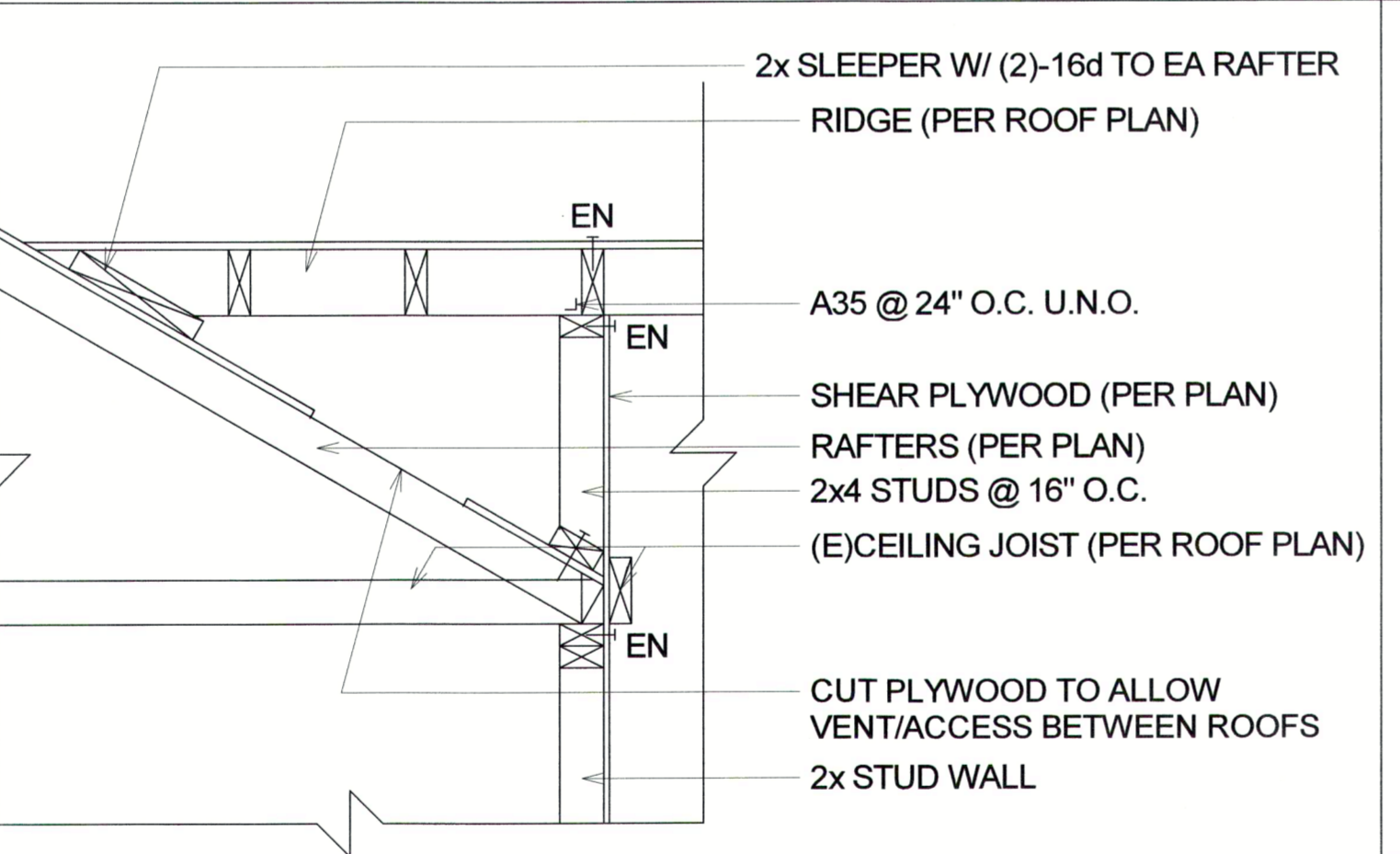
DOOR HEAD

2  
9



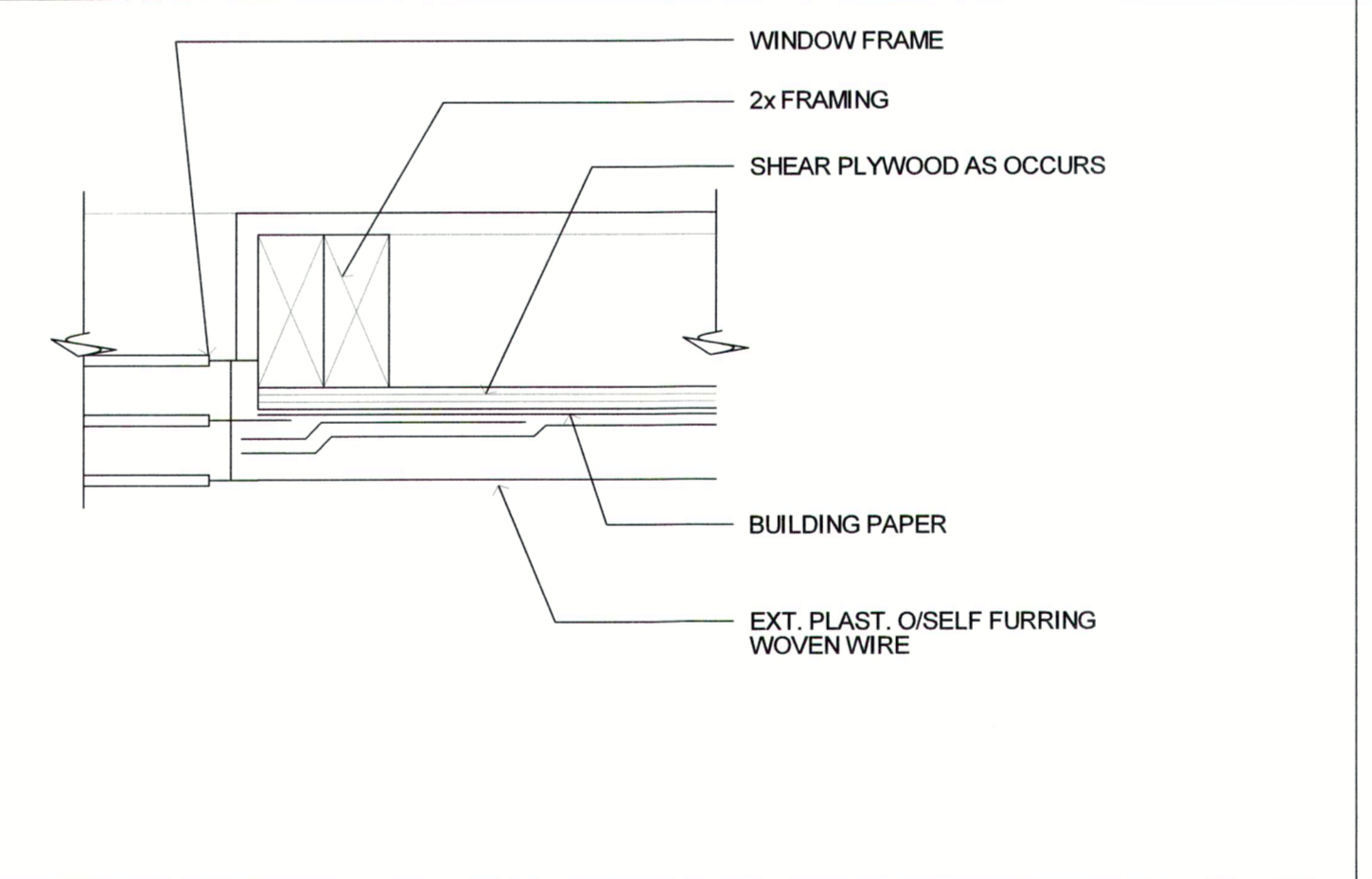
PLYWOOD LAYOUT

16  
9



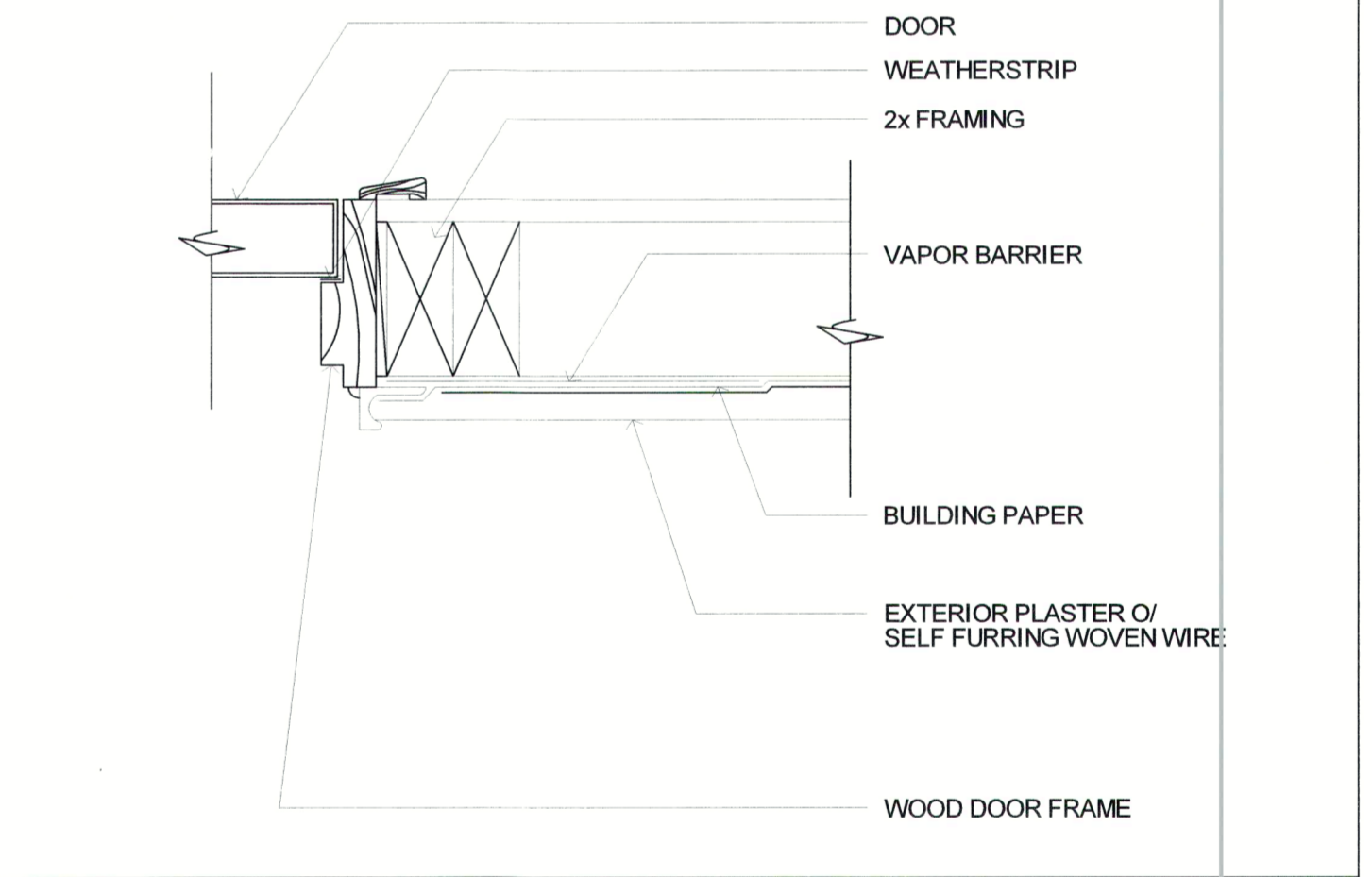
CAL-FILL

11  
9



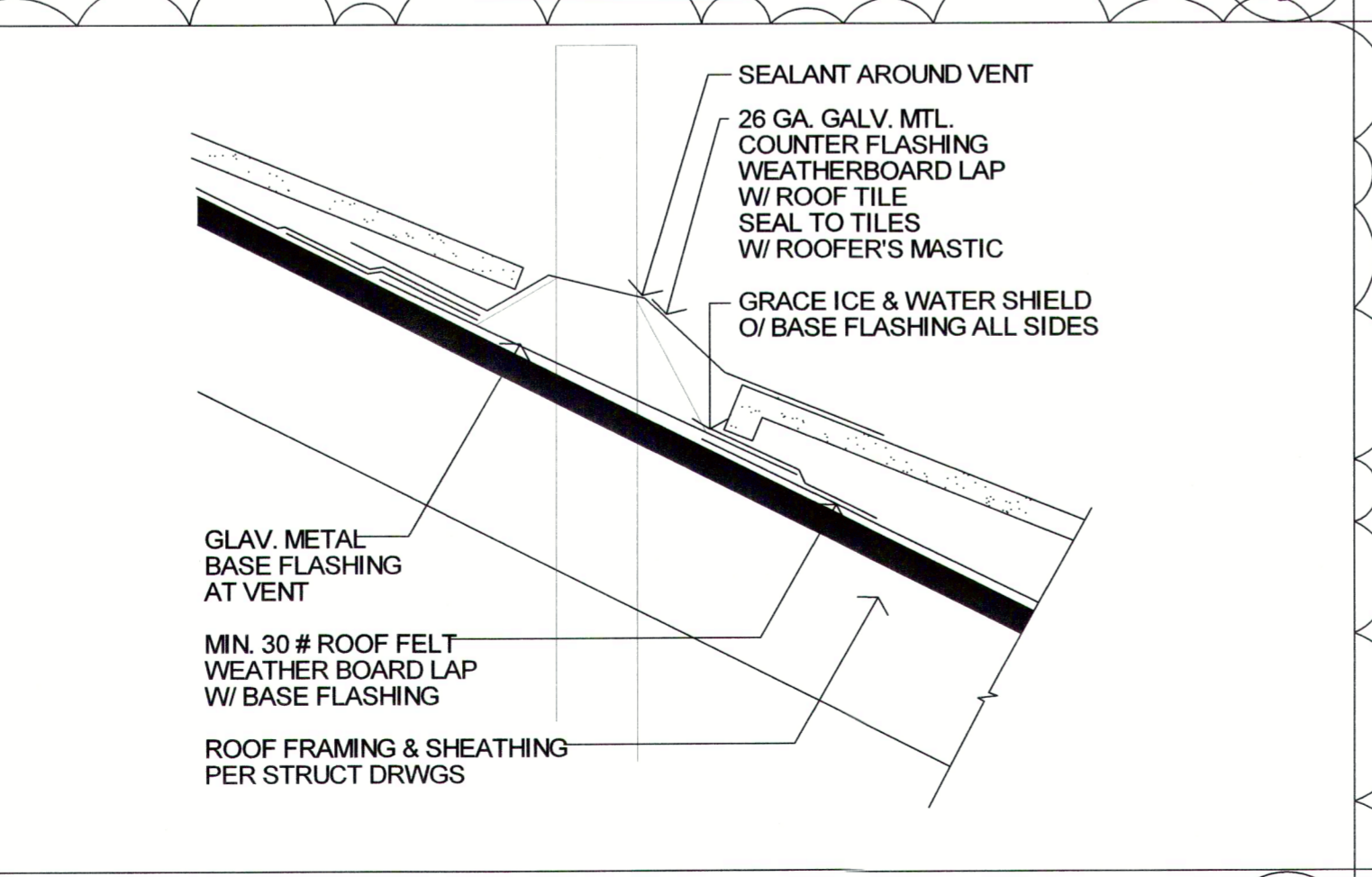
WINDOW JAMB

7  
9



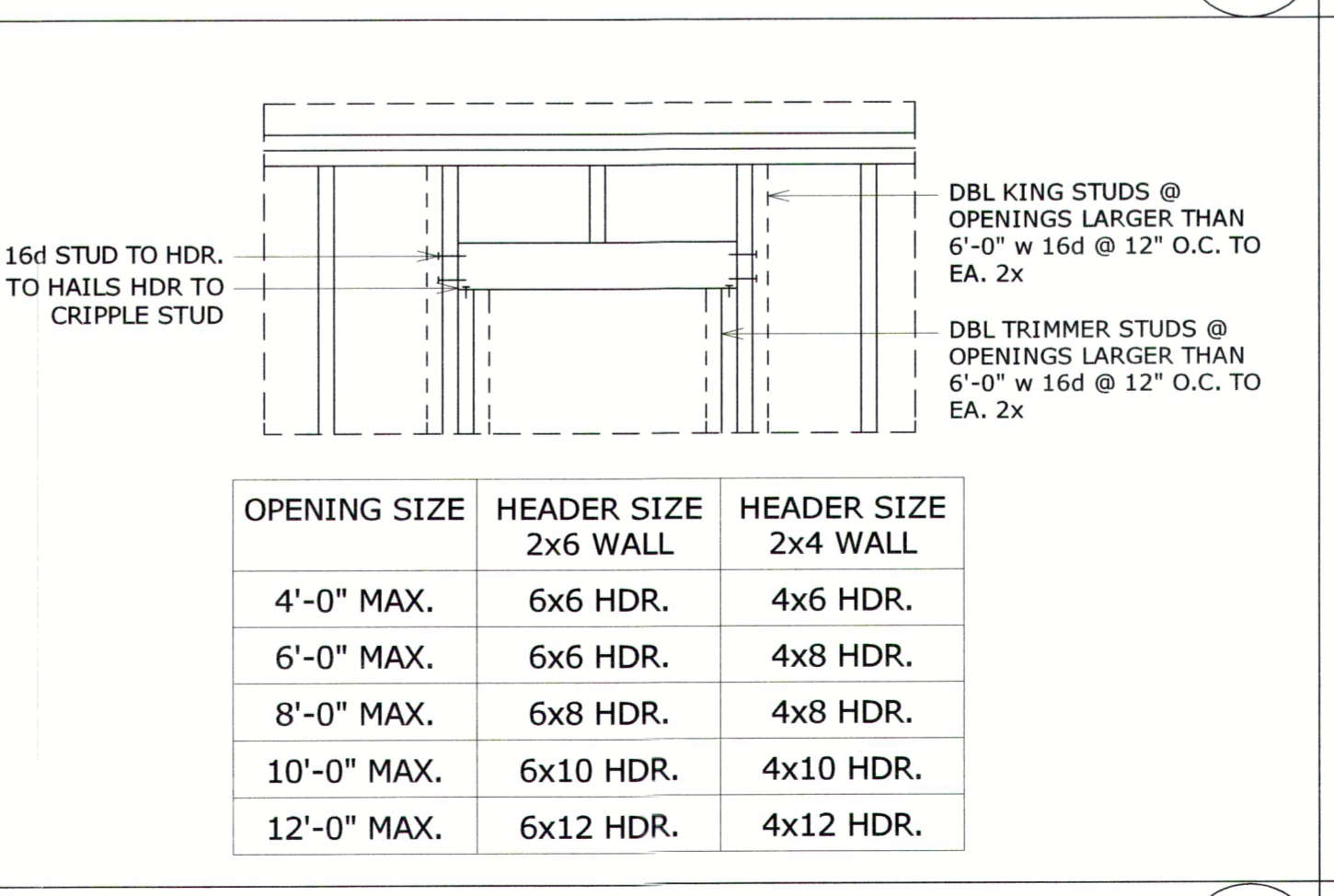
DOOR JAMB

3  
9



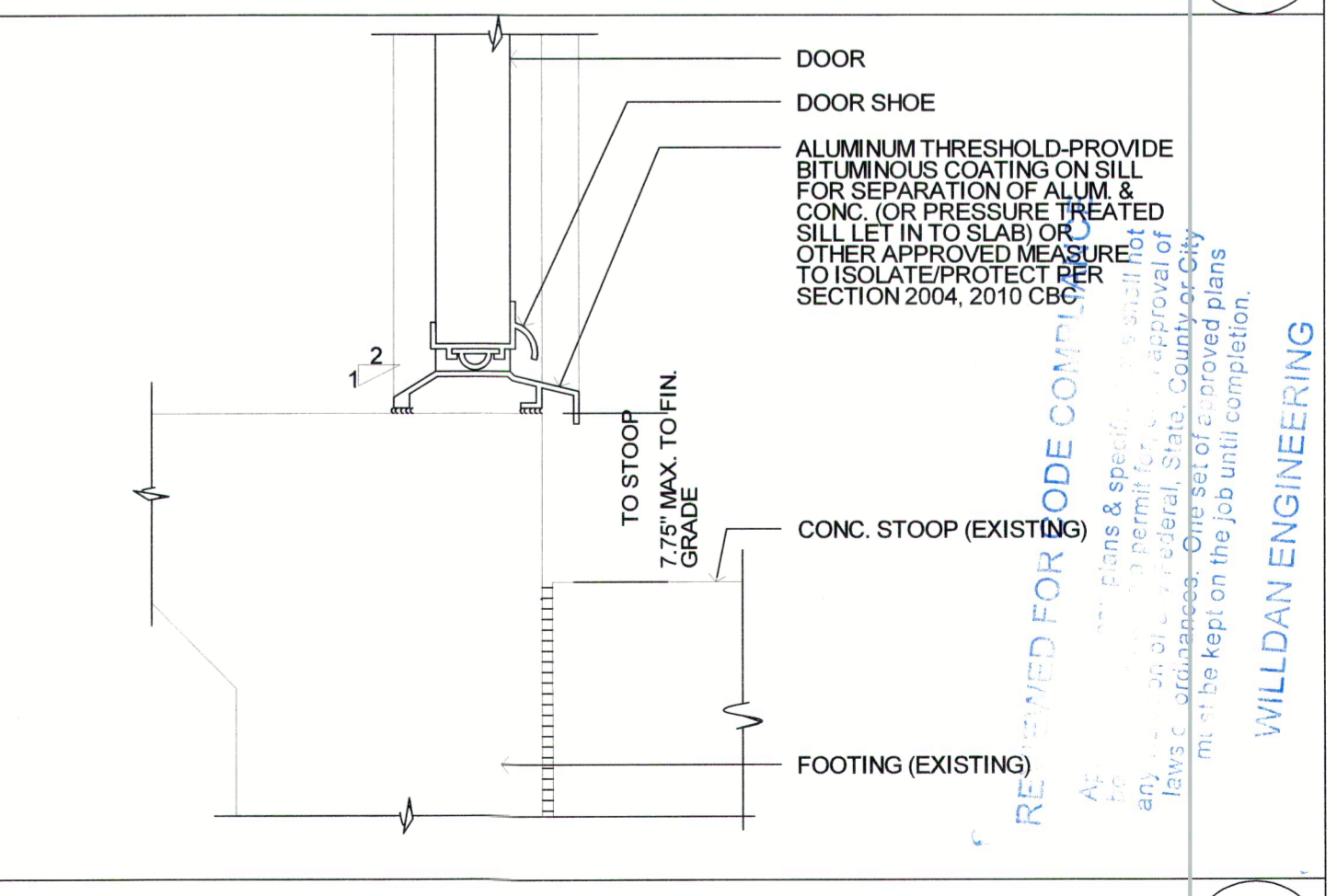
VENT THROUGH ROOF

12  
9



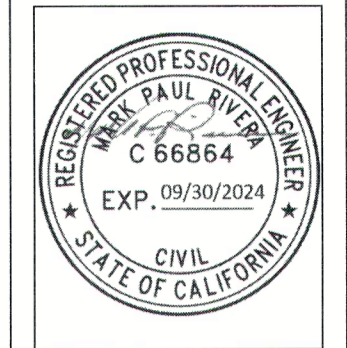
TYPICAL HEADER SCHEDULE (U.N.O.)

8  
9



DOOR THRESHOLD

4  
9



NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**DETAILS**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
NORTHERN CALIFORNIA  
4435 FIRST ST STE 360  
LIVERMORE, CA 94551  
(951) 352-3588

DATE:  
6/27/2023

SCALE:

SHEET:  
**9**

WILLDAN ENGINEERING



**Chapter 3 - GREEN BUILDING**

**301.1.1 Additions and alterations** • Applies to additions or alterations of residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. Requirements only apply within the specific area of the addition or alteration. • Note directs code users to Civil Code Section 1101.1 et seq., regarding replacement of non-compliant plumbing fixtures.

**301.2 Low-rise and high-rise buildings** - Banners identify provisions applying to low-rise only [LR] or high-rise only [HR].

**Division 4.1 - PLANNING AND DESIGN (SITE DEVELOPMENT)**

**4.106.2 Storm water drainage and retention during construction** Projects which disturb less than 1 acre of soil and are not part of a larger common plan of development shall manage storm water drainage during construction.

**4.106.3 Grading and paving** - Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Exception for additions and alterations which do not alter the existing drainage path.

**4.106.4 Electric vehicle (EV) charging for new construction** • Comply with Section 4.106.4.1 and 4.106.4.2 for future installation and use of EV chargers. • Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625. • Exceptions on a case-by-case basis as determined by the Local Enforcing Agency: 1. Where there is no commercial power supply. 2. Verification that meeting requirements will alter the local utility infrastructure design requirements on the utility side of the meter increasing costs to the homeowner/developer by more than \$400.00 per dwelling unit.

**4.106.4.1 & 4.106.4.1.1 EV charging: 1- & 2-family dwellings/tenhouses with attached private garages** • Install a listed raceway to accommodate a dedicated 208/240-volt branch circuit for each dwelling unit. • Raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). • Raceway shall originate at the main service or subpanel and terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. • Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. • Service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. Service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".

**4.106.4.2 EV charging for multifamily dwellings** • Applies to building sites with 17 or more multifamily dwelling units constructed on the site. • 3% of the total number of parking spaces provided for all types of parking facilities, but in no case less than one, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the number of EV spaces shall be rounded up to the nearest whole number. Note: Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.

**4.106.4.2.1 EV charging space (EV space) locations** • Construction documents shall indicate the location of proposed EV spaces. At least 1 EV space shall be located in common use areas and available for use by all residents. • When EV chargers are installed, EV spaces required by Section 4.106.4.2.2. Item 3, shall comply with at least 1 of the following options: 1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from the accessible parking space. 2. The EV space shall be located on an accessible route to the building, as defined in the California Building Code, Chapter 2.

**4.106.4.2.2 EV charging space (EV space) dimensions** EV spaces shall be designed to comply with the following: 1. The minimum length of each EV space shall be 18 feet. 2. The minimum width of each EV space shall be 9 feet. 3. One in every 25 EV spaces, but not less than 1, shall also have an 8-foot wide minimum aisle. A 5-foot wide minimum aisle shall be permitted providing the minimum width of the EV space is 12 feet. a) Surface slope for this EV space and aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083% slope) in any direction.

**4.106.4.2.3 Single EV space required** • Install listed raceway capable of accommodating a 208/240-volt dedicated branch circuit. § The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). § The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. • Construction documents shall identify the raceway termination point. • The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.

**4.106.4.2.4 Multiple EV spaces required** • Construction documents shall indicate raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at full rated amperage of the EVSE. • Plan design shall be based upon a 40-ampere minimum branch circuit. • Raceways and related components planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

**4.106.4.2.5 Identification** The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code

**Division 4.2- ENERGY EFFICIENCY**

**4.201.1 & 5.201.1 Scope** • Energy efficiency requirements for low-rise residential (Section 4.201.1) and highrise residential/hotels/motels (Section 5.201.1) are now in both residential and nonresidential chapters of CAL.Green. • Standards for residential buildings do not require compliance with levels of minimum energy efficiency beyond those required by the 2022 California Energy Code.

**Division 4.3 - WATER EFFICIENCY AND CONSERVATION (INDOOR WATER USE)**

**4.303.1 Water conserving plumbing fixtures and fittings** Plumbing fixtures and fittings shall comply with the following:

**4.303.1.1** Water Closets:  $\leq 1.28$  gal/flush

**4.303.1.2** Wall Mounted Urinals:  $\leq 0.125$  gal/flush; all other urinals  $\leq 0.5$  gal/flush

**4.303.1.3.1** Single Showerheads:  $\leq 1.8$  gpm @ 80 psi

**4.303.1.3.2** Multiple Showerheads: combined flow rate of all showerheads controlled by a single valve shall not exceed 1.8 gpm @ 80 psi, or only one shower outlet is to be in operation at a time

**4.303.1.4.1** Residential Lavatory Faucets: Maximum Flow Rate  $\leq 1.2$  gpm @ 60 psi; Minimum Flow Rate  $\geq 0.8$  gpm @ 20 psi

**4.303.1.4.2** Lavatory Faucets in Common and Public Use Areas of Residential Buildings:  $\leq 0.5$  gpm @ 60 psi

**4.303.1.4.3** Metering Faucets:  $\leq 0.2$  gallons per cycle

**4.303.1.4.4** Kitchen Faucets:  $\leq 1.8$  gpm @ 60 psi; temporary increase to 2.2 gpm allowed but shall default to 1.8 gpm

**4.303.2 Standards for plumbing fixtures and fittings** Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code, and shall meet applicable standards referenced in Table 1701.1 of the California Plumbing Code.

**Division 4.3 - WATER EFFICIENCY AND CONSERVATION (OUTDOOR WATER USE)**

**4.304.1 Outdoor potable water use in landscape areas** After December 1, 2015, new residential developments with an aggregate landscape area equal to or greater than 500 square feet shall comply with one of the following: 1. A local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent, or 2. Projects with aggregate landscape areas less than 2500 square feet may comply with the MWELO's Appendix D Prescriptive Compliance Option

**Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (ENHANCED DURABILITY & REDUCED MAINTENANCE)**

**4.406.1 Rodent proofing** Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be closed with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency to prevent passage of rodents.

**Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (CONSTRUCTION WASTE REDUCTION, DISPOSAL & RECYCLING)**

**4.408.1 Construction waste reduction of at least 65%** • Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4; OR meet a more stringent local construction and demolition waste management ordinance. • Documentation is required per Section 4.408.5. Exceptions: 1. Excavated soil and land-clearing debris. 2. Alternative waste reduction methods developed by working with local enforcing agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite. 3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

**4.408.2 Construction waste management plan** Submit a construction waste management plan meeting Items 1 through 5 in Section 4.408.2. Plans shall be updated as necessary and shall be available for examination during construction.

**4.408.3 Waste management company** Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that diverted construction and demolition waste materials meet the requirements in Section 4.408.1.

**4.408.4 4.408.4.1 Waste stream reduction alternative** • (LR) Projects that generate a total combined weight of construction and demolition waste disposed in landfills, which do not exceed 3.4 pounds per square foot of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1. • Projects that generate a total combined weight of construction and demolition waste disposed in landfills, which do not exceed 2 pounds per square foot of the building area, shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1.

**Division 4.4 - MATERIAL CONSERVATION & RESOURCE EFFICIENCY (BUILDING MAINTENANCE & OPERATION)**

**4.410.1 Operation and maintenance manual** At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which covers 10 specific subject areas shall be placed in the building.

**4.410.2 Recycling by occupants** Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and is identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive. Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code Section 42649.82 (a)(2)(A) et. seq. are not required to comply with the organic waste portion of this section.

**Division 4.5 - ENVIRONMENTAL QUALITY (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 all applicable local ordinances.

**Division 4.5 - ENVIRONMENTAL QUALITY (POLLUTANT CONTROL)**

**4.504.1 Protection 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 intake and distribution component openings shall be covered. Tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of water, dust and debris entering the system may be used.

**4.504.2.1 Adhesives, sealants and caulks** Adhesives, sealants 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 1168 VOC limits, as shown in Tables 4.504.1 or 4.504.2, as applicable. Such products shall also comply with Rule 1168 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 the California Code of Regulations (CCR), 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 Air Resources Board Architectural Suggested 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 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, Suggested Control Measure, and the corresponding Flat, Nonflat, or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply. Aerosol paints and coatings Aerosol paints and coatings shall meet the Product-Weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Section 94522(e)(1) and (f)(1) of the CCR, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District shall additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

**4.504.3 Carpet systems** Carpet installed in the building interior shall meet the testing and product requirements of 1 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** Carpet cushion installed in the building interior shall meet the requirements of the Carpet and Rug Institute's Green Label Plus Program.

**4.504.3.2 Carpet adhesive** Carpet adhesives 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 building shall meet the requirements for formaldehyde as specified in the Air Resources Board's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et. seq.), as shown in Table 4.504.5. Documentation is required per Section 4.504.5.1. • Definition of Composite Wood Products: Composite wood products include hardwood plywood, particleboard, and medium density fiberboard. "Composite wood products" do not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists, or finger-joined lumber, all as specified in CCR, Title 17, Section 93120.1(a)

**Division 4.5 - ENVIRONMENTAL QUALITY (INTERIOR MOISTURE CONTROL)**

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

**4.505.2.1 Capillary break** A capillary break shall be installed in compliance with at least 1 of the following: 1. A 4-inch thick base of 1/2-inch or larger clean aggregate shall be provided with a vapor retarder in direct contact with concrete and a concrete mix design which will address bleeding, shrinkage and curling shall be used. For additional information, see American Concrete Institute, ACI 302.2R-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 water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19% moisture content. Moisture content shall be verified in compliance with the following: 1. Moisture content shall be determined with either a probe-type or a contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements in Section 101.8. 2. Moisture readings shall be taken at a point 2 feet to 4 feet from the grade-stamped end of each piece to be verified. 3. At least 3 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. Manufacturers' drying recommendations shall be followed for wet-applied insulation products prior to enclosure.

**Division 4.5 - ENVIRONMENTAL QUALITY (INDOOR AIR QUALITY & 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 manual or automatic adjustment between a relative humidity range of less than 50% to a maximum of 80%. b) A humidity control may be a separate component to the exhaust fan and is not required to be integral or built-in. Note: For CALGreen a "bathroom" is a room which contains a bathtub, shower, or tub/shower combination. Fans or mechanical ventilation is required in each bathroom.

**Division 4.5 - ENVIRONMENTAL QUALITY (ENVIRONMENTAL COMFORT)**

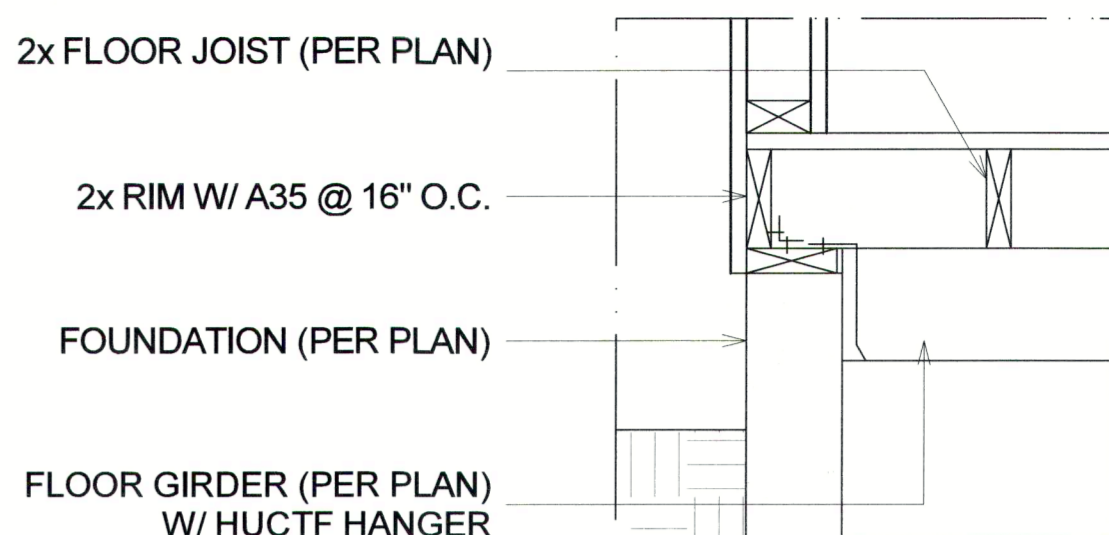
**4.507.2 Heating and air conditioning system design** Heating and air conditioning systems shall be sized, designed, and equipment selected using the following methods: 1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J – 2011 (Residential Load Calculation), ASHRAE handbooks 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 systems functions are acceptable.

**CHAPTER 7 - INSTALLER & SPECIAL INSPECTOR QUALIFICATION (QUALIFICATIONS, VERIFICATIONS)**

**702.1 Installer training** HVAC system installers shall be trained and certified in the proper installation of HVAC systems and equipment by a recognized training or certification program. 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.

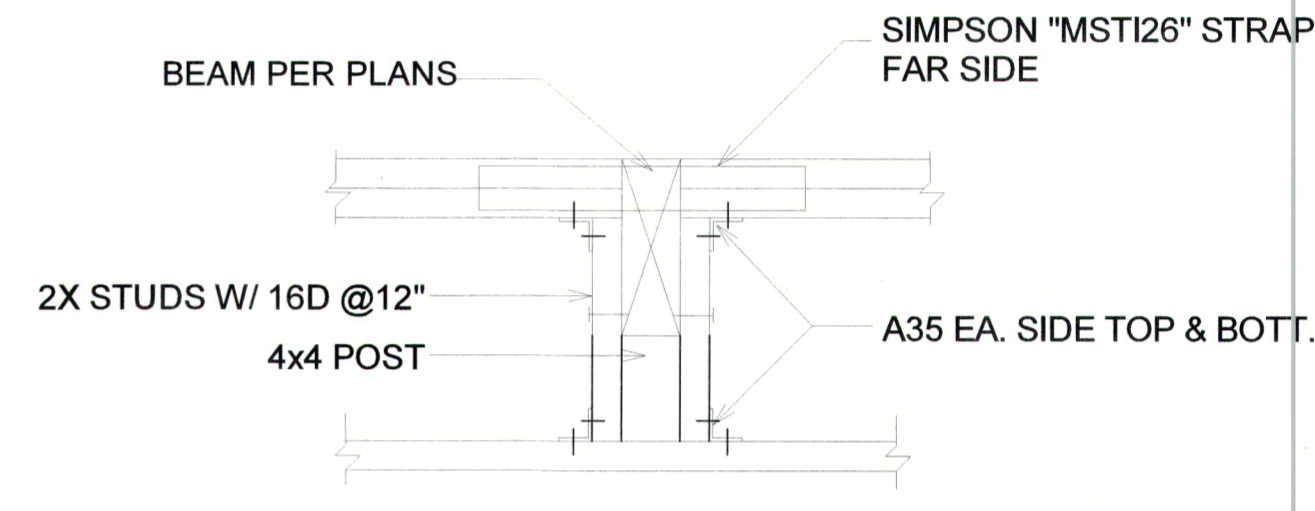
**702.2 Special inspection** Special inspectors must be qualified and able to demonstrate competence to the enforcing agency in the discipline in which they are inspecting.

**703.1 Documentation** Documentation of compliance shall include, but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the local enforcing agency. Other specific documentation or special inspections necessary to verify compliance are specified in appropriate sections of CALGreen.



**FLOOR GIRDER TO FND**

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**FLOOR GIRDER TO WALL**

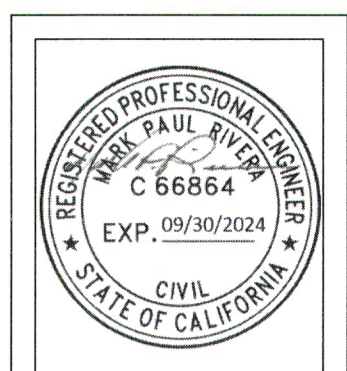
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7/11/23  
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REVIEWED FOR CODE COMPLIANCE  
Approved for use as plans and specifications for the project. This permit is void if any conditions are not met as specified in the code. Use is limited to the project and any other use is prohibited. This review must be kept on file until completion.

WILLDAN ENGINEERING



NO.	DESCRIPTION	BY	DATE

SHEET TITLE:  
**CALIFORNIA GREEN BUILDING STANDARDS**

PROJECT DESCRIPTION:  
**PROPOSED ADDITION**  
4124 DESCANSO AVE.  
CHINO HILLS, CA 91709

DRAWINGS PROVIDED BY:  
**POWELL AND ASSOCIATES INC.**  
NORTHERN CALIFORNIA  
5908 JASMINE ST STE B  
RIVERSIDE, CA 92504  
(951) 352-3588

DATE:  
6/27/2023

SCALE:

SHEET:  
**10**

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GENERAL INFORMATION	
01	Project Name: 4124 Descanso Ave
02	Run Title: Title 24 Analysis
03	Project Location: 4124 Descanso Ave
04	City: Chino Hills
05	Standards Version: 2022
06	Zip code: 91709
07	Software Version: EnergyPro 9.1
08	Climate Zone: 10
09	Front Orientation (deg/ Cardinal): 180
10	Building Type: Single family
11	Number of Dwelling Units: 1
12	Project Scope: Addition and/or Alteration
13	Number of Bedrooms: 2
14	Addition Cond. Floor Area (ft <sup>2</sup> ): 537
15	Number of Stories: 1
16	Existing Cond. Floor Area (ft <sup>2</sup> ): 650
17	Fenestration Average U-factor: 0.3
18	Total Cond. Floor Area (ft <sup>2</sup> ): 1187
19	Glazing Percentage (%): 14.70%
20	ADU Bedroom Count: n/a

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	Standard Design Source Energy (EDR1) (kBtu/ft <sup>2</sup> -yr)	Standard Design TDV Energy (EDR2) (KTU/ft <sup>2</sup> -yr)	Proposed Design Source Energy (EDR1) (kBtu/ft <sup>2</sup> -yr)	Proposed Design TDV Energy (EDR2) (KTU/ft <sup>2</sup> -yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0	32.6	0	35.69	0	-3.09
Space Cooling	0	75.86	0	71.91	0	3.95
IAQ Ventilation	0	0	0	0	0	0
Water Heating	0	38.31	0	38.31	0	0
Self Utilization/Flexibility Credit						
Efficiency Compliance Total	0	146.77	0	145.91	0	0.86
Photovoltaics		0		0		
Battery				0		
Flexibility						
Indoor Lighting	0	7.83	0	7.83		
Appl. & Cooking	0	28.3	0	28.28		
Plug Loads	0	39.13	0	39.13		
Outdoor Lighting	0	1.76	0	1.76		
TOTAL COMPLIANCE	0	223.79	0	222.91		

ENERGY USE INTENSITY				
	Standard Design (kBtu/ft <sup>2</sup> - yr)	Proposed Design (kBtu/ft <sup>2</sup> - yr)	Compliance Margin (kBtu/ft <sup>2</sup> - yr)	Margin Percentage
Gross EUI <sup>1</sup>	37.09	37.49	-0.4	-1.08
Net EUI <sup>2</sup>	37.09	37.49	-0.4	-1.08

Notes  
 1. Gross EUI is Energy Use Total (not including PV) / Total Building Area.  
 2. Net EUI is Energy Use Total (including PV) / Total Building Area.

REQUIRED SPECIAL FEATURES
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis. • Insulation below roof deck • New ductwork added is less than 25 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 - FEATURES INFORMATION						
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
4124 Descanso Ave	1187	1	2	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	Status
Exist. Res.	Conditioned	HVAC System1	650	8	DHW Sys 1	Existing Unchanged
Addition	Conditioned	HVAC System1	537	8	DHW Sys 1	New

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	Exist. Res.	Default Wall Prior-1978	180	Front	272	59	90	none	Existing	No
Left Wall	Exist. Res.	Default Wall Prior-1978	270	Left	160	25	90	none	Existing	No
Rear Wall	Exist. Res.	Default Wall Prior-1978	0	Back	272	0	90	none	Existing	No
Right Wall	Exist. Res.	Default Wall Prior-1978	90	Right	160	36	90	none	Existing	No
(N) Left Wall	Addition	(N) R-15 Wall	270	Left	176	10	90	none	New	n/a
(N) Rear Wall	Addition	(N) R-15 Wall	0	Back	208	60	90	Extension	New	n/a
(N) Right Wall	Addition	(N) R-15 Wall	90	Right	176	5	90	Ex. w/ Siding	New	n/a
Interior Surface	Addition->Exist. Res.	Default Wall Prior-1978	n/a	n/a	208	0	n/a		New	No
Roof	Exist. Res.	Default Roof Prior-1978	n/a	n/a	650	n/a	n/a		Existing	No
(N) Roof	Addition	(N) R-30 Roof Attic	n/a	n/a	537	n/a	n/a		New	n/a
(N) Raised Floor	Addition	(N) R-19 Floor Crawlspace	n/a	n/a	537	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 Exist. Res.	Attic Roof/Exist. Res.	Ventilated	3	0.1	0.85	No	No	Existing	No
Attic Addition	Attic Roof/Addition	Ventilated	3	0.1	0.85	No	No	New	n/a

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
Windows	Window	Front Wall	Front	180			1	38	1.04	Table 110.6-A	0.76	Table 110.6-B	Bug Screen	Existing	No
Windows 2	Window	Left Wall	Left	270			1	25	1.04	Table 110.6-A	0.76	Table 110.6-B	Bug Screen	Existing	No
Windows 3	Window	Right Wall	Right	90			1	36	1.04	Table 110.6-A	0.76	Table 110.6-B	Bug Screen	Existing	No
(N) Windows	Window	(N) Left Wall	Left	270			1	10	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
(N) Glass Doors	Window	(N) Rear Wall	Back	0			1	40	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
(N) Windows 2	Window	(N) Rear Wall	Back	0			1	20	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
(N) Windows 3	Window	(N) Right Wall	Right	90			1	5	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA

OPAQUE DOORS					
01	02	03	04	05	06
Name	Side of Building	Area (ft <sup>2</sup> )	U-factor	Status	Verified Existing Condition
Door	Front Wall	21	0.5	Existing	No

SLAB FLOORS									
01	02	03	04	05	06	07	08	09	10
Name	Zone	Area (ft <sup>2</sup> )	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated	Status	Verified Existing Condition
Slab	Exist. Res.	650	108	none	0	80%	No	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
Default Wall Prior-1978	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
(N) R-15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.095	Inside Finish: Gypsum Board Cavity / Frame: no insul. / 2x4 Exterior Finish: 3 Coat Stucco
Default Wall Prior-1978	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 Roof/Exist. Res.	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-0	None / 0	0.644	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: no insul. / 2x4
Attic Roof/Addition	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-19	None / 0	0.059	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-6.0 insul.

REVIEWED FOR CODE COMPLIANCE

Approved by the undersigned for the permit process. No approval of any violation of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.

7/11/23

WILLDAN ENGINEERING

4124 Descanso Ave  
 Addition  
 Chino Hills, Ca 91709

Project	Sheet
Date	T-24-1
Scale	



CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 4124 Descanso Ave Calculation Date/Time: 2023-05-18T16:24:39-07:00

CF1R-PRF-01E

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OPAQUE SURFACE CONSTRUCTIONS table with columns 01-08 and rows for Construction Name, Surface Type, Construction Type, Framing, Total Cavity R-value, Interior/Exterior Continuous R-value, U-factor, and Assembly Layers.

BUILDING ENVELOPE - HERS VERIFICATION table with columns 01-05 and rows for Quality Insulation Installation (QII), High R-value Spray Foam Insulation, Building Envelope Air Leakage, CFM50, and CFM50.

WATER HEATING SYSTEMS table with columns 01-12 and rows for Name, System Type, Distribution Type, Water Heater Name, Number of Units, Solar Heating System, Compact Distribution, HERS Verification, Water Heater Name (#), Status, Verified Existing Heating System, and Existing Water Heating System.

Registration Number: CA Building Energy Efficiency Standards - 2022 Residential Compliance Registration Date/Time: 2022.0.000 Report Version: rev 20220901

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 4124 Descanso Ave Calculation Date/Time: 2023-05-18T16:24:39-07:00

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WATER HEATERS table with columns 01-15 and rows for Name, Heating Element Type, Tank Type, # of Units, Tank Vol. (gal), Heating Efficiency Type, Efficiency, Rated Input Type, Input Rating or Pilot, Tank Insulation R-value (Int/Ext), Standby Loss or Recovery Eff, 1st Hr. Rating or Flow Rate, Tank Location, Status, and Verified Existing Condition.

WATER HEATING - HERS VERIFICATION table with columns 01-07 and rows for Name, Pipe Insulation, Parallel Piping, Compact Distribution, Compact Distribution Type, Recirculation Control, and Shower Drain Water Heat Recovery.

SPACE CONDITIONING SYSTEMS table with columns 01-12 and rows for Name, System Type, Heating Unit Name, Heating Equipment Count, Cooling Unit Name, Cooling Equipment Count, Fan Name, Distribution Name, Required Thermostat Type, Status, Verified Existing Condition, and Existing HVAC System.

HVAC - HEATING UNIT TYPES table with columns 01-04 and rows for Name, System Type, Number of Units, and Heating Efficiency.

Registration Number: CA Building Energy Efficiency Standards - 2022 Residential Compliance Registration Date/Time: 2022.0.000 Report Version: rev 20220901

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

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HVAC - COOLING UNIT TYPES table with columns 01-09 and rows for Name, System Type, Number of Units, Efficiency Metric, Efficiency EER/EER2/CEER, Efficiency SEER/SEER2, Zonally Controlled, Multi-speed Compressor, and HERS Verification.

HVAC - DISTRIBUTION SYSTEMS table with columns 01-16 and rows for Name, Type, Design Type, Duct Ins. R-value, Duct Location, Surface Area, Bypass Duct, Duct Leakage, HERS Verification, Status, Verified Existing Condition, Existing Distribution System, and New Ducts 25 ft.

HVAC - FAN SYSTEMS table with columns 01-04 and rows for Name, Type, Fan Power (Watts/CFM), and Name.

HVAC FAN SYSTEMS - HERS VERIFICATION table with columns 01-03 and rows for Name, Verified Fan Watt Draw, and Required Fan Efficiency (Watts/CFM).

Registration Number: CA Building Energy Efficiency Standards - 2022 Residential Compliance Registration Date/Time: 2022.0.000 Report Version: rev 20220901

RESIDENTIAL MEASURES SUMMARY RMS-1

Project Name: Addition Building Type: Single Family Addition Alone Date: 5/18/2023

INSULATION table with columns Construction Type, Cavity (ft²), Special Features, and Status. Rows include Wall, Door, Roof, Slab, and Wall.

FENESTRATION table with columns Orientation, Area (ft²), U-Fac, SHGC, Overhang, Sides/Ins, Exterior Shades, and Status. Rows include Front, Left, Right, Rear, and Right.

HVAC SYSTEMS table with columns Qty, Heating, Min. Eff, Cooling, Min. Eff, Thermostat, and Status. Row includes 1 Gas Central Furnace.

HVAC DISTRIBUTION table with columns Location, Heating, Cooling, Duct Location, Duct R-Value, and Status. Row includes HVAC System Ducted Ducted Attic 6.0 Existing.

WATER HEATING table with columns Qty, Type, Gallons, Min. Eff, Distribution, and Status.

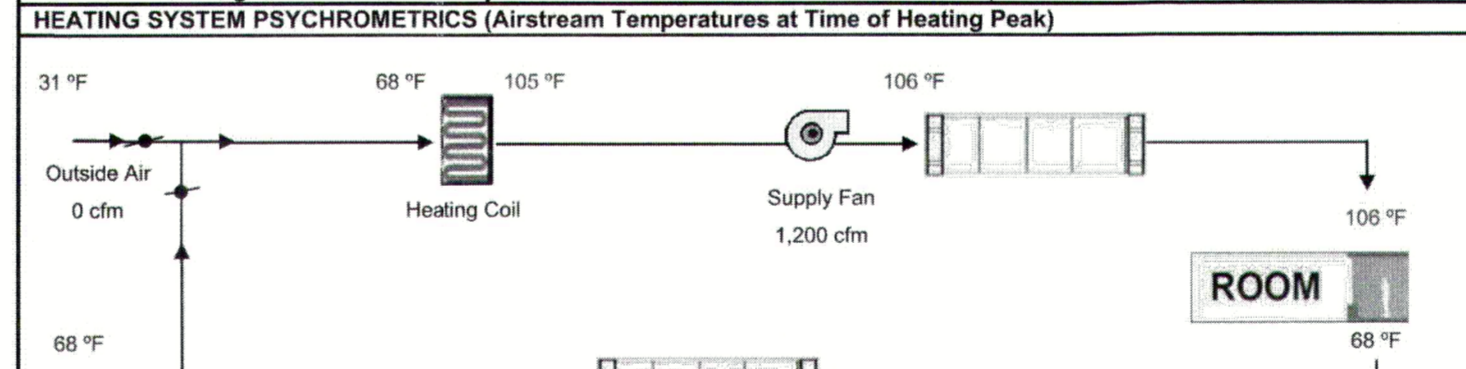
EnergyPro 9.1 by EnergySoft User Number: 20180 ID: 23-497 Page 12 of 14

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

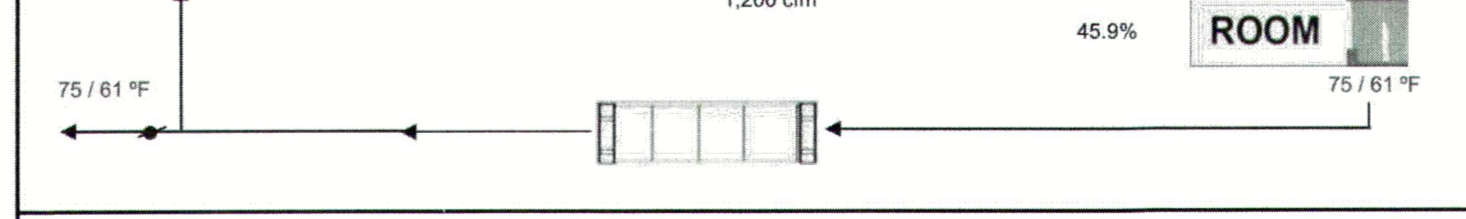
Project Name: New ADU Date: 4/2/2023

ENGINEERING CHECKS and SYSTEM LOAD tables. Includes Heating System, Cooling System, Air System, and HVAC EQUIPMENT SELECTION.

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak) table showing temperature and flow data for heating peak.



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak) table showing temperature and flow data for cooling peak.



CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 4124 Descanso Ave Calculation Date/Time: 2023-05-18T16:24:39-07:00

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

Documentation Author Name: Robert Gonzales Signature Date: 5/18/2023

RESPONSIBLE PERSON'S DECLARATION STATEMENT

Responsible Designer Name: THOMAS AUGUSTIN Signature Date: 05-18-2023

Registration Number: CA Building Energy Efficiency Standards - 2022 Residential Compliance Registration Date/Time: 2022.0.000 Report Version: rev 20220901

Project Address: 4124 Descanso Ave Addition Chino Hills, Ca 91709. Sheet: T-24-2

REVIEWED FOR CODE COMPLIANCE WILL DAN ENGINEERING



2022 Single-Family Residential Mandatory Requirements Summary	
NOTE: Single-family residential buildings subject to the Energy Codes must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. (04/2022)	
<b>Building Envelope:</b>	
§ 110.6(a):	Air Leakage. Manufactured fenestration, exterior doors, and exterior pet doors must limit air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283, or AIAA/WDMA/CSA-1011, § 29440-2011.
§ 110.6(a)s:	Labeling. Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA.4 for exterior doors. They must be caulked and/or weather-stripped.
§ 110.7:	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per § 10-113 when the installation of a cool roof is specified on the CFR.
§ 110.8(j):	Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	Roof Deck, Ceiling and Rafter Roof Insulation. Roof decks in newly constructed attics in climate zones 4 and 8-16 area-weighted average U-factor not exceeding U-0.184. Ceiling and rafter roofs minimum R-22 insulation in wood-frame ceiling; or area-weighted average U-factor must not exceed 0.043. Rafter roof alterations minimum R-19 or area-weighted average U-factor of 0.054 or less. Attic access doors must have permanently attached insulation using adhesive or mechanical fasteners. The attic access must be gasketed to prevent air leakage. Insulation must be installed in direct contact with a roof or ceiling which is sealed to limit infiltration and exfiltration as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck or on top of a drywall ceiling.
§ 150.0(b):	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.
§ 150.0(d):	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.
§ 150.0(f):	Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g):	Vapor Retarder. In climate zones 1 through 16, the earth floor of unvented crawl space must be covered with a Class I or Class II vapor retarder. This requirement also applies to controlled ventilation crawl space for buildings complying with the exception to § 150.0(d).
§ 150.0(g)2:	Vapor Retarder. In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(i):	Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.45; or area-weighted average U-factor of all fenestration must not exceed 0.45.
<b>Fireplaces, Decorative Gas Appliances, and Gas Log:</b>	
§ 110.5(e):	Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and light-fitting damper or combustion-air control device.
§ 150.0(e)3:	Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.
<b>Space Conditioning, Water Heating, and Plumbing System:</b>	
§ 110.0-§ 110.5:	Certification. 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.
§ 110.2(a):	HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-N.
§ 110.2(b):	Controls for Heat Pumps with Supplementary Electric Resistance Heaters. 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-on temperature for compression heating is higher than the cut-on temperature for supplementary heating.
§ 110.2(c):	Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.
§ 110.3(c)3:	Insulation. Unfired service water heater storage tanks and solar water-heating backup tanks must have adequate insulation, or tank surface heat loss rating.
§ 110.3(c)6:	Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.

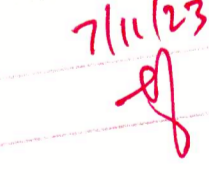
2022 Single-Family Residential Mandatory Requirements Summary	
§ 110.5:	Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters.
§ 150.0(h)1:	Building Cooling and Heating Loads. 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.
§ 150.0(h)3A:	Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer.
§ 150.0(h)3B:	Liquid Line Drier. Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(i)1:	Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in § 609.11 of the California Plumbing Code.
§ 150.0(j)2:	Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by § 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering chilled water piping and refrigerant suction piping located outside the conditioned space must include, or be protected by, a Class I or Class II vapor retarder. Pipe insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(k)1:	Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must designate a space at least 2.5 x 2.5 x 7 suitable for the future installation of a heat pump water heater, and meet electrical and plumbing requirements, based on the distance between this designated space and the water heater location; and a condensate drain no more than 2" higher than the base of the water heater.
§ 150.0(n)3:	Solar Water-heating Systems. 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 by a listing agency that is approved by the executive director.
<b>Ducts and Fans:</b>	
§ 110.8(d)3:	Ducts. Insulation installed on an existing 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.
§ 150.0(m)1:	CMC Compliance. All air-distribution system ducts and plenums must meet CMC §§ 601.0-605.0 and ANS/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to R-6.0 or higher; ducts located entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8) do not require insulation. Connections of metal ducts and inner core of flexible ducts must be mechanically fastened. Openings must be sealed with mastic, tape, or other duct-closure system that meets the applicable UL requirements, or aerosol sealant that meets UL 723. The combination of mastic and either mesh or tape must be used to seal openings greater than 1/4". If mastic or tape is used, building cavities, air handler support panels, and plenums 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 panels containing such ducts; ducts installed in these spaces must not be compressed.
§ 150.0(m)2:	Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	Gravity Ventilation Dampers. 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.
§ 150.0(m)9:	Protection of Insulation. Insulation must be protected from damage due to sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service (e.g., protected by aluminum, sheet metal, painted canvas, or plastic cover). Cellular foam insulation must be protected as above or painted with a water retardant and solar radiation-resistant coating.
§ 150.0(m)10:	Porous Inner Core Flex Duct. Porous inner cores of flex ducts must have a non-porous layer or air barrier between the inner core and outer vapor barrier.
§ 150.0(m)11:	Duct System Sealing and Leakage Test. 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 Reference Residential Appendix RA3.1.
§ 150.0(m)12:	Air Filtration. 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 150.0-A. Clean-filter pressure drop and labeling must meet the requirements in § 150.0(m)12. Filters must be accessible for regular service. Filter racks or grilles must use gaskets, sealing, or other means to close gaps around the inserted filters to and prevents air from bypassing the filter.

2022 Single-Family Residential Mandatory Requirements Summary	
§ 150.0(m)13:	Space Conditioning System Airflow Rate and Fan Efficiency. 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 $\geq 350$ CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency $\geq 0.45$ watts per CFM for gas furnace air handlers and $\leq 0.58$ watts per CFM for all others. Small duct high velocity systems must provide an airflow $\geq 250$ CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency $\geq 0.62$ watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.
<b>Ventilation and Indoor Air Quality:</b>	
§ 150.0(b)1:	Requirements for Ventilation and Indoor Air Quality. 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)1B:	Central Fan Integrated (CFI) Ventilation Systems. Continuous operation of CFI air handlers is not allowed to provide the whole-dwelling unit ventilation airflow required per § 150.0(o)1C. A motorized damper(s) must be installed on the ventilation duct(s) that prevents all airflow through the space conditioning duct system when the damper(s) is closed and controlled per § 150.0(o)1B&iv. CFI ventilation systems must have controls that track outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with § 150.0(o)1C.
§ 150.0(o)1C:	Whole-Dwelling Unit Mechanical Ventilation for Single-Family Detached and Townhouses. 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 specified in § 150.0(o)1C-iii.
§ 150.0(o)1G:	Local Mechanical Exhaust. Kitchens and bathrooms must have local mechanical exhaust; nonenclosed kitchens must have demand-controlled exhaust system meeting requirements of § 150.0(o)1Gii enclosed kitchens and bathrooms can use demand-controlled or continuous exhaust meeting § 150.0(o)1Giii-iv. Airflow must be measured by the installer per § 150.0(o)1Gv, and rated for sound per § 150.0(o)1Gvi.
§ 150.0(o)1H:	Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems. The airflow required per § 150.0(o)1C must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/grilles per Reference Residential Appendix RA3.7. Whole-dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 § 7.2 at no less than the minimum airflow rate required by § 150.0(o)1C.
§ 150.0(o)2:	Field Verification and Diagnostic Testing. Whole-Dwelling Unit ventilation airflow, vented range hood airflow and sound rating, and HRV and ERV fan efficiency must be verified in accordance with Reference Residential Appendix RA3.7. Vented range hoods must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HVI or AHAM to comply with the airflow rates and sound requirements per § 150.0(o)1G.
<b>Pool and Spa Systems and Equipment:</b>	
§ 110.4(a):	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: compliance with the Appliance Efficiency Regulations and listing in MAEDDS; an on-off switch mounted outside of the heater that allows shutting off 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(b)1:	Piping. 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 solar heating.
§ 110.4(b)2:	Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3:	Directional Inlets and Time Switches for Pools. Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5:	Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.
<b>Lighting:</b>	
§ 110.9:	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A, except lighting integral to exhaust fans, kitchen range hoods, bath vanity mirrors, and garage door openers; navigation lighting less than 5 watts; and lighting integral to drawers, cabinets, closets with an efficacy of at least 45 lumens per watt.
§ 150.0(k)1B:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.
§ 150.0(k)1C:	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must not contain screw based sockets, must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.0(k)1D:	Light Sources in Enclosed or Recessed Luminaires. 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(k)1E:	Blank Electrical Boxes. The number of electrical boxes that are more than five feet above the finished floor and do not contain a luminaire or other device shall be no more than the number of bedrooms. These boxes must be served by a dimmer, vacancy sensor control, low voltage wiring, or fan speed control.
§ 150.0(k)1F:	Lighting Integral to Exhaust Fans. Lighting integral to exhaust fans (except when installed by the manufacturer in kitchen exhaust hoods) must meet the applicable requirements of § 150.0(k).

2022 Single-Family Residential Mandatory Requirements Summary	
§ 150.0(k)1G:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.
§ 150.0(k)1H:	Light Sources in Enclosed or Recessed Luminaires. 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(k)1I:	Light Sources in Drawers, Cabinets, and Linen Closets. 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 that they are rated to consume no more than 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(k)2A:	Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.
§ 150.0(k)2A:	Accessible Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off.
§ 150.0(k)2B:	Multiple Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.0(k).
§ 150.0(k)2C:	Mandatory Requirements. Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.0(k)2D:	Energy Management Control Systems. An energy management control system (EMCS) may be used to comply with dimming, occupancy, and control requirements if it provides the functionality of the specified control per § 110.9 and the physical controls specified in § 150.0(k)2A.
§ 150.0(k)2E:	Automatic Shutoff Controls. In bathrooms, garages, laundry rooms, utility rooms and walk-in closets, at least one installed luminaire must be controlled by an occupancy or vacancy sensor providing automatic shutoff functionality. Lighting inside drawers and cabinets with opaque fronts or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.0(k)2F:	Dimmers. Lighting in habitable spaces (e.g., living rooms, dining rooms, kitchens, and bedrooms) must have readily accessible wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase cut dimmers controlling LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.0(k)2K:	Independent controls. Integrated lighting of exhaust fans shall be controlled independently from the fans. Lighting under cabinets or shelves, lighting in display cabinets, and switched outlets must be controlled separately from ceiling-installed lighting.
§ 150.0(k)3A:	Residential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or to other buildings on the same lot, must have a manual on/off switch and either a photo cell and motion sensor or automatic time switch control or an astronomical time clock. An energy management control system that provides the specified control functionality and meets all applicable requirements may be used to meet these requirements.
§ 150.0(k)4:	Internally illuminated address signs. Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 150.0(k)5:	Residential Garages for Eight or More Vehicles. Lighting for residential parking garages for eight or more vehicles must comply with the applicable requirements for nonresidential garages in §§ 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.
<b>Solar Readiness:</b>	
§ 110.10(a)1:	Single-Family Residences. Single-family residences located in subdivisions with 10 or more single-family residences and where the application for a tentative subdivision map for the residences has been deemed complete and approved by the enforcement agency, which do not have a photovoltaic system installed, must comply with the requirements of § 110.10(b)-(e).
§ 110.10(a)1A:	Minimum Solar Zone Area. 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 Title 24, Part 9 or other parts of Title 24 or in any requirements adopted by a local jurisdiction. The solar zone total area must be comprised of areas that have no dimension less than 5 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 overhang of the building and have a total area no less than 250 square feet.
§ 110.10(b)2:	Azimuth. All sections of the solar zone located on steep-sloped roofs must have an azimuth between 90-300° of true north.
§ 110.10(b)3A:	Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof-mounted equipment.
§ 110.10(b)3B:	Shading. 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 horizontal distance 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.
§ 110.10(b)4:	Structural Design Loads on Construction Documents. 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.
§ 110.10(c):	Interconnection Pathways. 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. Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b)-(c) must be provided to the occupant.
§ 110.10(d):	Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	Main Electrical Service Panel. 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."

2022 Single-Family Residential Mandatory Requirements Summary	
<b>Energy Storage System (ESS) Ready.</b> All single-family residences must meet all of the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four or more ESS supplied branch circuits, or a dedicated raceway from the main service to a subpanel that supplies the branch circuits in § 150.0(k); at least four branch circuits must be identified and have their source collocated at a single panelboard suitable to be supplied by the ESS, with one circuit supplying the refrigerator, one lighting circuit near the primary exit, and one circuit supplying a sleeping room receptacle outlet; main panelboard must have a minimum busbar rating of 225 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with raceways installed between the panelboard and the switch location to allow the connection of backup power source.	
<b>Heat Pump Space Heater Ready.</b> Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the furnace with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready"; and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."	
<b>Electric Cooktop Ready.</b> Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the cooktop with circuit conductors rated at least 50 amps with the blank cover identified as "240V ready"; and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."	
<b>Electric Clothes Dryer Ready.</b> Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated unobstructed 240V branch circuit wiring installed within 3' of the dryer location with circuit conductors rated at least 30 amps with the blank cover identified as "240V ready"; and a reserved main electrical service panel space to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."	

\*Exceptions may apply.

7/11/23  
  
 REVIEWED FOR CODE COMPLIANCE  
 Applications, plans & specifications shall not be used for construction until an approval of any violation of any federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.  
 WILLDAN ENGINEERING

4124 Descanso Ave Addition Chino Hills, Ca 91709	
Project	Sheet
Date	T-24-3
Scale	





MiTek USA, Inc.  
MiTek USA, Inc.  
400 Sunrise Avenue, Suite 270  
Roseville, CA 95661  
Telephone 916-755-3571

Re: 30094

The truss drawing(s) referenced below have been prepared by MiTek USA, Inc. under my direct supervision based on the parameters provided by Arrow Truss Co..

Pages or sheets covered by this seal: R74658643 thru R74658647

My license renewal date for the state of California is September 30, 2024.

REVIEWED FOR CODE COMPLIANCE

Reviewed by: [Signature]

Date: 7/6/23

Approval of these plans & specifications shall not be construed to be a permit for, or an approval of any violation of any Federal, State, County or City laws or ordinances. One set of approved plans must be kept on the job until completion.

RETURN WITH SUBMITTAL

WILLDAN ENGINEERING



[Red Signature]

February 8, 2023

Zhao, Xiaoming

**IMPORTANT NOTE:** The seal on these truss component designs is a certification that the engineer named is licensed in the jurisdiction(s) identified and that the designs comply with ANSI/TPI 1. These designs are based upon parameters shown (e.g., loads, supports, dimensions, shapes and design codes), which were given to MiTek or TRENCO. Any project specific information included is for MiTek's or TRENCO's customers file reference purpose only, and was not taken into account in the preparation of these designs. MiTek or TRENCO has not independently verified the applicability of the design parameters or the designs for any particular building. Before use, the building designer should verify applicability of design parameters and properly incorporate these designs into the overall building design per ANSI/TPI 1, Chapter 2.



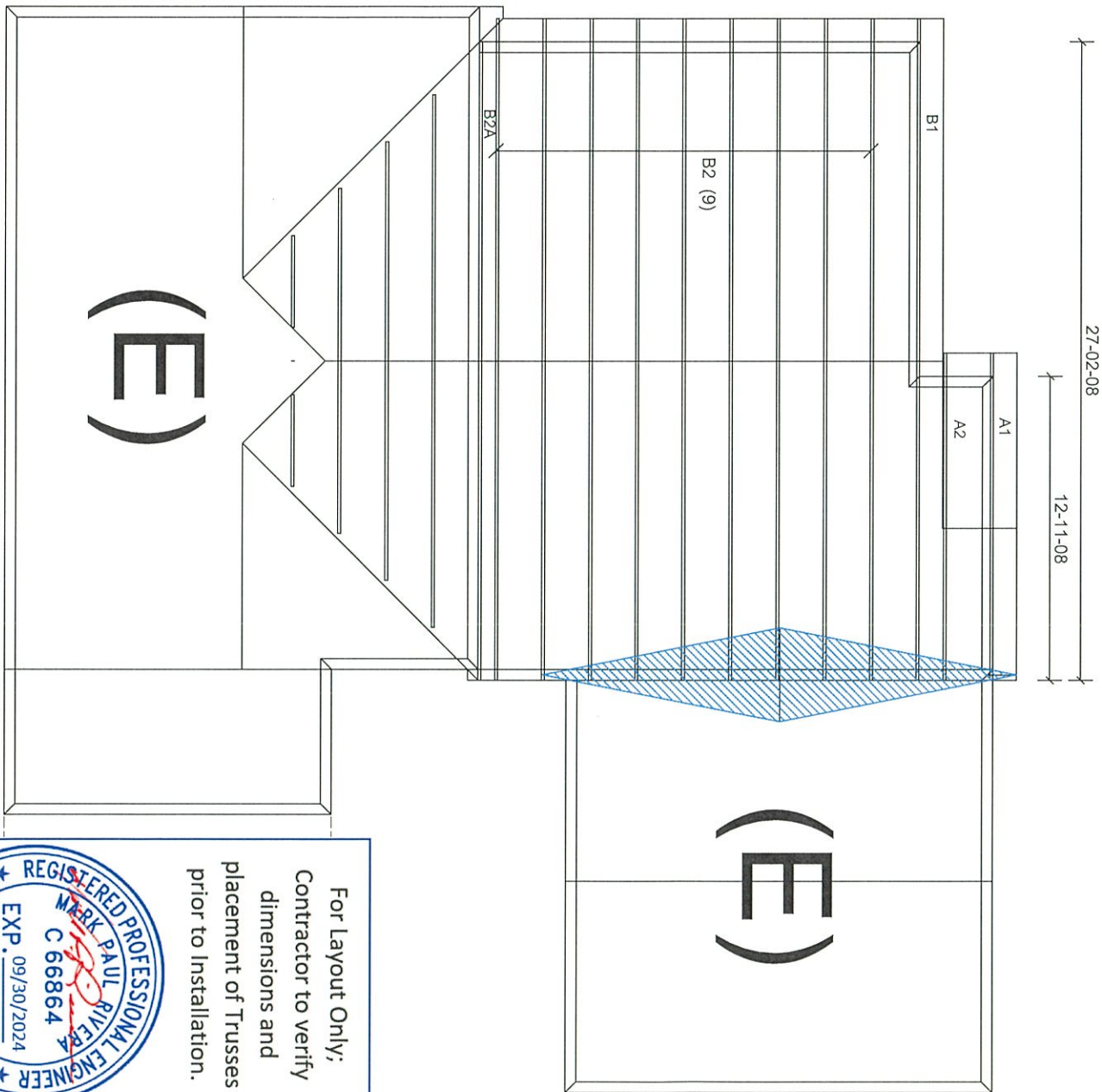
\*To Match (E) before fabrication

**ARROW TRUSS CO.**  
**CERTIFIED INSPECTION IN STRICT**  
**ACCORDANCE**  
**2018 IBC**

Customer Name: Powell & Associates  
Address: 4124 Descanso rd.  
Chino Hills CA 91709

Pitch: 3:12  
Overhang: 12"  
Truss Spacing: 24: O.C  
Top Chord: 2x4  
Tie Loading: 45  
Job#: 30094  
Date: 2/8/23  
Drawn By: CJ

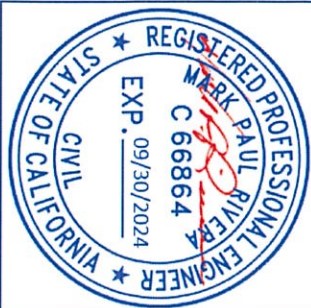
CONTRACTOR SHALL VERIFY ALL  
DIMENSIONS PRIOR TO TRUSS FABRICATION  
CONTRACTOR SHALL READ AND IMPLEMENT  
ALL SPECIFICATIONS INCLUDED WITHIN  
FOLLOWING DETAILS AND CALCULATIONS  
HATCHED AREA REPRESENTS VAULTED  
CEILING



(E)

(E)

For Layout Only;  
Contractor to verify  
dimensions and  
placement of Trusses  
prior to installation.



CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO TRUSS FABRICATION

CONTRACTOR SHALL READ AND IMPLEMENT ALL SPECIFICATIONS INCLUDED WITHIN FOLLOWING DETAILS AND CALCULATIONS

HATCHED AREA REPRESENTS VAULTED CEILING



ABOVE PLACEMENT PLAN PROVIDED FOR TRUSS PLACEMENT ONLY. REFER TO TRUSS CALCULATIONS AND ENGINEERED DRAWINGS FOR ALL FURTHER INFORMATION. BUILDING DESIGNER/ENGINEER OF RECORD RESPONSIBLE FOR ALL NON-TRUSS TO TRUSS CONNECTIONS. BUILDING DESIGNER/ENGINEER OF RECORD TO REVIEW AND APPROVE OF ALL DESIGNS PRIOR TO CONSTRUCTION.

All designs property of ARROW TRUSS and are null and void if not fabricated by ARROW TRUSS.

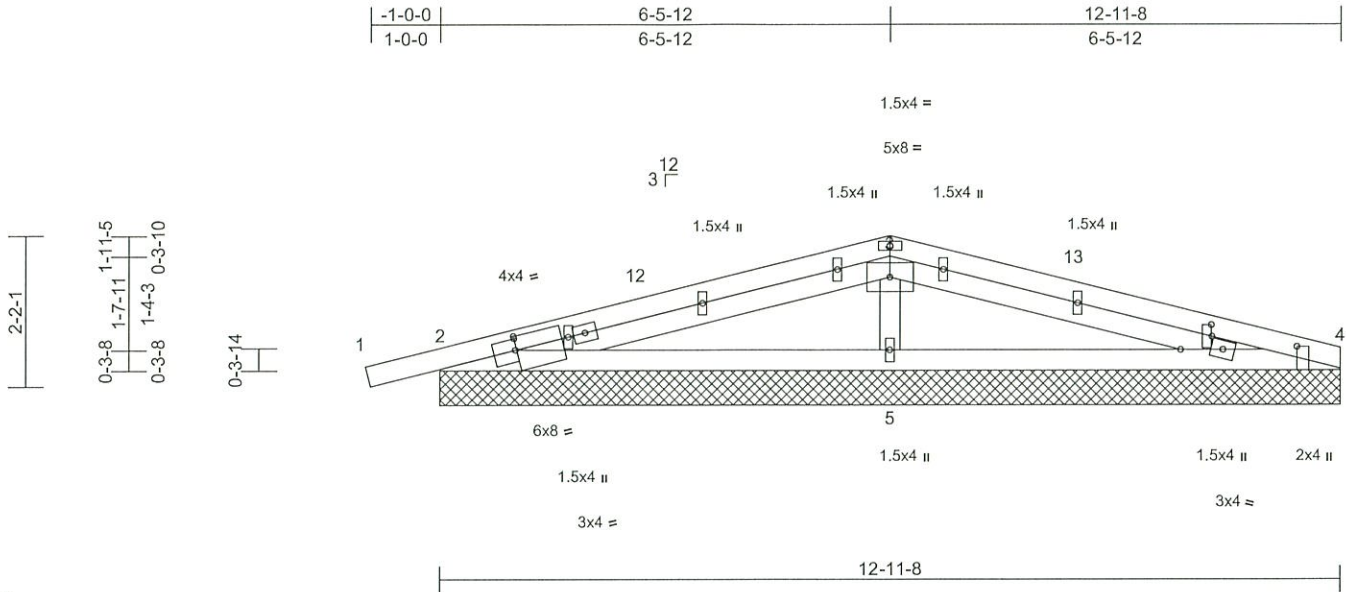


Job 30094	Truss A1	Truss Type Common	Qty 1	Ply 1	Job Reference (optional) R74658643
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Arrow Truss Co., Upland, CA - 91786,

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Page: 1



Scale = 1:33.2

Plate Offsets (X, Y): [2:0-0-4,0-2-6], [2:0-0-4,0-2-0], [4:0-5-0,0-3-4], [4:0-0-8,1-7-15], [10:0-2-0,0-0-2]

Loading	(psf)	Spacing	2-0-0	CSI	DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP	
TCLL (roof)	20.0	Plate Grip DOL	1.25	TC	0.43	Vert(LL)	n/a	-	n/a	999	MT20	220/195
TCDL	15.0	Lumber DOL	1.25	BC	0.35	Vert(CT)	n/a	-	n/a	999		
BCLL	0.0*	Rep Stress Incr	NO	WB	0.18	Horz(CT)	0.00	5	n/a	n/a		
BCDL	10.0	Code	IBC2018/TPI2014	Matrix-AS							Weight: 54 lb	FT = 20%

**LUMBER**

TOP CHORD 2X4 DF No.1&Btr G  
BOT CHORD 2X4 DF No.1&Btr G  
OTHERS 2X4 DF Std G

**BRACING**

TOP CHORD Structural wood sheathing directly applied.  
BOT CHORD Rigid ceiling directly applied.

**REACTIONS** All bearings 12-11-8.

(lb) - Max Horiz 2=505 (LC 23), 6=505 (LC 23)  
Max Uplift All uplift 100 (lb) or less at joint(s) except 2=-529 (LC 22), 4=-326 (LC 33), 5=-109 (LC 23), 6=-529 (LC 22), 9=-326 (LC 33)  
Max Grav All reactions 250 (lb) or less at joint (s) except 2=567 (LC 43), 4=393 (LC 42), 5=705 (LC 1), 6=567 (LC 43), 9=393 (LC 42)

**FORCES**

(lb) - Max. Comp./Max. Ten. - All forces 250 (lb) or less except when shown.

TOP CHORD 2-12=-1329/1288, 3-12=-729/690, 3-13=-514/499, 4-13=-1194/1155  
BOT CHORD 2-5=-810/852, 4-5=-794/784  
WEBS 3-5=-492/552

**NOTES**

- Unbalanced roof live loads have been considered for this design.
- Wind: ASCE 7-16; Vult=130mph (3-second gust) Vasd=103mph; TC DL=9.0psf; BCDL=6.0psf; h=25ft; Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope) exterior zone and C-C Corner(3E) -1-0-7 to 2-11-9, Corner(3R) 2-11-9 to 8-11-8, Corner(3E) 8-11-8 to 12-11-8 zone; cantilever left and right exposed; end vertical left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60

- Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see Standard Industry Gable End Details as applicable, or consult qualified building designer as per ANSI/TPI 1.
- All plates are 1.5x4 MT20 unless otherwise indicated.
- Gable requires continuous bottom chord bearing.
- Gable studs spaced at 1-4-0 oc.
- \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members.
- A plate rating reduction of 20% has been applied for the green lumber members.
- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 528 lb uplift at joint 2, 326 lb uplift at joint 4, 109 lb uplift at joint 5, 528 lb uplift at joint 2 and 326 lb uplift at joint 4.
- This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- This truss has been designed for a total drag load of 2500 lb. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 0-0-0 to 12-11-8 for 192.9 plf.
- This truss design requires that a minimum of 7/16" structural wood sheathing be applied directly to the top chord and 1/2" gypsum sheetrock be applied directly to the bottom chord.
- No notches allowed in overhang and 10000 from left end and 0 from right end or 12" along rake from scarf, whichever is larger. Minimum 1.5x4 tie plates required at 2-0-0 o.c. maximum between the stacking chords. For edge-wise notching, provide at least one tie plate between each notch.

LOAD CASE(S) Standard



February 8, 2023

**WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 5/19/2020 BEFORE USE.**

Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see **ANSI/TPI1 Quality Criteria, DSB-89 and BCSI Building Component Safety Information** available from Truss Plate Institute, 2670 Crain Highway, Suite 203 Waldorf, MD 20601



MiTek USA, Inc.  
400 Sunrise Avenue, Suite 270  
Roseville, CA 95661

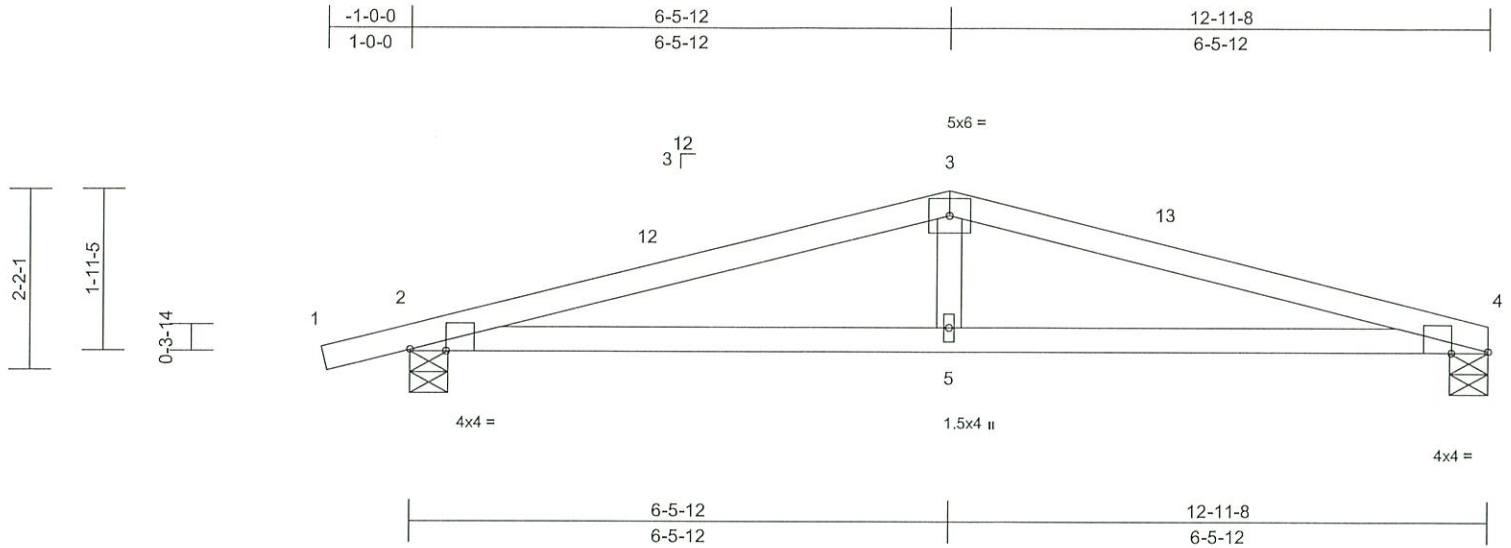


Job	Truss	Truss Type	Qty	Ply	Job Reference (optional)
30094	A2	Common	1	1	R74658644

Arrow Truss Co., Upland, CA - 91786,

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Page: 1



Scale = 1:27.7

Plate Offsets (X, Y): [2:0-5-4,Edge], [4:0-5-4,Edge]

Loading	(psf)	Spacing	2-0-0	CSI	DEFLL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL (roof)	20.0	Plate Grip DOL	1.25	TC	Vert(LL)	-0.06	5-8	>999	360	MT20	220/195
TCDL	15.0	Lumber DOL	1.25	BC	Vert(CT)	-0.19	5-8	>802	240		
BCLL	0.0*	Rep Stress Incr	YES	WB	Horz(CT)	0.03	4	n/a	n/a		
BCDL	10.0	Code	IBC2018/TPI2014	Matrix-AS	Wind(LL)	0.08	5-8	>999	240	Weight: 39 lb	FT = 20%

**LUMBER**  
 TOP CHORD 2X4 DF No.1&Btr G  
 BOT CHORD 2X4 DF No.1&Btr G  
 WEBS 2X4 DF Std G

**BRACING**  
 TOP CHORD Structural wood sheathing directly applied.  
 BOT CHORD Rigid ceiling directly applied.

**REACTIONS** (size) 2=0-5-8, 4=0-5-8  
 Max Horiz 2=48 (LC 13)  
 Max Uplift 2=-167 (LC 5), 4=-111 (LC 6)  
 Max Grav 2=658 (LC 1), 4=580 (LC 1)

**FORCES** (lb) - Maximum Compression/Maximum Tension  
 TOP CHORD 1-2=0/18, 2-3=-1403/897, 3-4=-1402/896  
 BOT CHORD 2-5=-781/1334, 4-5=-781/1334  
 WEBS 3-5=-9/214

**NOTES**

- Unbalanced roof live loads have been considered for this design.
- Wind: ASCE 7-16; Vult=130mph (3-second gust) Vasd=103mph; TCDL=9.0psf; BCDL=6.0psf; h=25ft; Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope) exterior zone and C-C Exterior(2E) -1-0-7 to 2-11-9, Exterior(2R) 2-11-9 to 8-11-8, Exterior(2E) 8-11-8 to 12-11-8 zone; cantilever left and right exposed; end vertical left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members.
- A plate rating reduction of 20% has been applied for the green lumber members.
- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 111 lb uplift at joint 4 and 167 lb uplift at joint 2.

- This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
  - This truss design requires that a minimum of 7/16" structural wood sheathing be applied directly to the top chord and 1/2" gypsum sheetrock be applied directly to the bottom chord.
- LOAD CASE(S)** Standard



February 8, 2023

**WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 5/19/2020 BEFORE USE.**  
 Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see **ANSI/TPI1 Quality Criteria, DSB-89 and BCSI Building Component Safety Information** available from Truss Plate Institute, 2670 Crain Highway, Suite 203 Waldorf, MD 20601



MiTek USA, Inc.  
 400 Sunrise Avenue, Suite 270  
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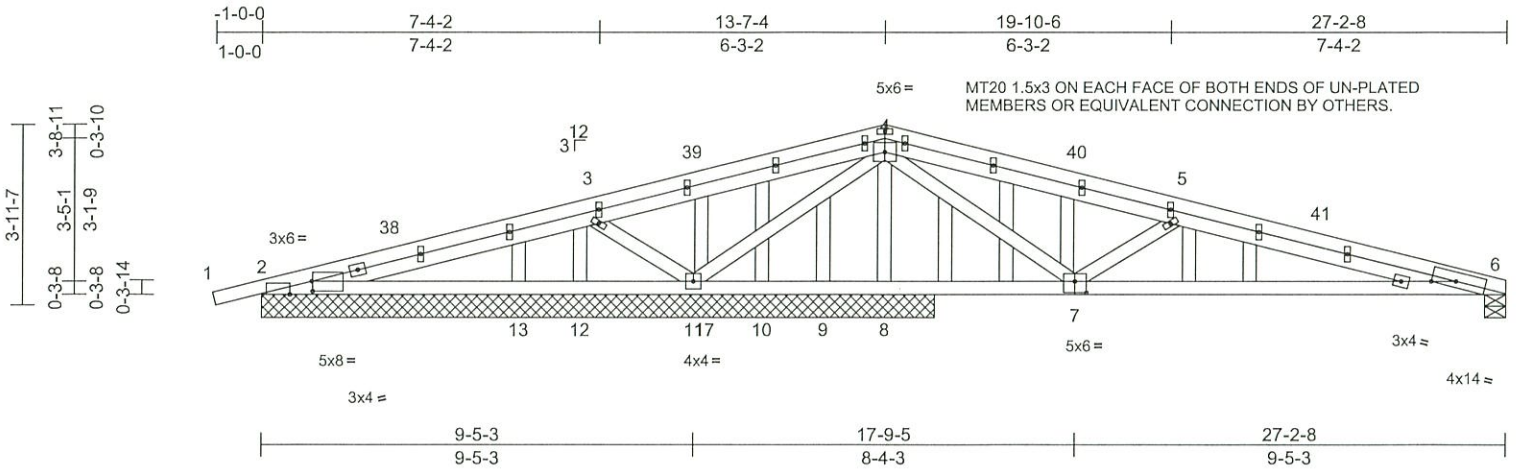


Job	Truss	Truss Type	Qty	Ply	Job Reference (optional)
30094	B1	Common	1	1	R74658645

Arrow Truss Co., Upland, CA - 91786,

Run: 8.63 S Nov 19 2022 Print: 8.630 S Nov 19 2022 MiTek Industries, Inc. Wed Feb 08 13:41:39  
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Page: 1



Scale = 1:50.4

Plate Offsets (X, Y): [2:0-0-4,0-2-10], [2:0-5-12,Edge], [6:0-6-4,0-1-10], [7:0-3-0,0-3-0]

Loading	(psf)	Spacing	2-0-0	CSI	DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP	
TCLL (roof)	20.0	Plate Grip DOL	1.25	TC	0.55	Vert(LL)	-0.06	7-34	>999	360	MT20	220/195
TCDL	15.0	Lumber DOL	1.25	BC	0.46	Vert(CT)	-0.43	7-34	>371	240		
BCLL	0.0*	Rep Stress Incr	NO	WB	0.79	Horz(CT)	0.02	6	n/a	n/a		
BCDL	10.0	Code	IBC2018/TPI2014	Matrix-AS		Wind(LL)	0.13	7-34	>999	240	Weight: 156 lb	FT = 20%

**LUMBER**

TOP CHORD 2X4 DF Std G \*Except\* 2-4,4-6:2X4 DF No.1&Btr G  
 BOT CHORD 2X4 DF No.1&Btr G  
 WEBS 2X4 DF Std G  
 OTHERS 2X4 DF Std G

**BRACING**

TOP CHORD Structural wood sheathing directly applied.  
 BOT CHORD Rigid ceiling directly applied.

**REACTIONS** (size)

2=14-8-8, 6=0-5-8, 8=14-8-8,  
 9=14-8-8, 10=14-8-8, 11=14-8-8,  
 12=14-8-8, 13=14-8-8, 17=14-8-8,  
 35=14-8-8  
 Max Horiz 2=315 (LC 31), 35=315 (LC 31)  
 Max Uplift 2=-426 (LC 22), 6=-444 (LC 25),  
 8=-159 (LC 25), 9=-99 (LC 1),  
 10=-24 (LC 33), 11=-865 (LC 22),  
 12=-116 (LC 46), 13=-25 (LC 30),  
 17=-966 (LC 1), 35=-426 (LC 22)  
 Max Grav 2=418 (LC 43), 6=668 (LC 47),  
 8=174 (LC 1), 9=163 (LC 25),  
 10=48 (LC 47), 11=2312 (LC 1),  
 12=54 (LC 30), 13=291 (LC 46),  
 17=438 (LC 24), 35=418 (LC 43)

**FORCES** (lb) - Maximum Compression/Maximum Tension

TOP CHORD 1-2=0/18, 2-3=-1175/1172, 3-4=-558/989,  
 4-5=-1371/862, 5-6=-2251/1713  
 BOT CHORD 2-13=-1001/1016, 12-13=-696/711,  
 11-12=-551/588, 10-11=-266/495,  
 9-10=-128/354, 8-9=-74/354, 6-8=-1530/2001  
 WEBS 5-7=-792/423, 11-17=-2248/897,  
 4-17=-1552/596, 3-11=-680/371,  
 4-7=-208/957

**NOTES**

1) Unbalanced roof live loads have been considered for this design.

- Wind: ASCE 7-16; Vult=130mph (3-second gust) Vasd=103mph; TCDL=9.0psf; BCDL=6.0psf; h=25ft; Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope) exterior zone and C-C Exterior(2E) -1-0-7 to 2-11-9, Interior (1) 2-11-9 to 9-7-4, Exterior(2R) 9-7-4 to 17-7-4, Interior (1) 17-7-4 to 22-11-12, Exterior(2E) 22-11-12 to 26-11-12 zone; cantilever left and right exposed; end vertical left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see Standard Industry Gable End Details as applicable, or consult qualified building designer as per ANSI/TPI 1.
- All plates are 1.5x4 MT20 unless otherwise indicated.
- Gable studs spaced at 1-4-0 oc.
- \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members.
- A plate rating reduction of 20% has been applied for the green lumber members.
- Bearing at joint(s) 17 considers parallel to grain value using ANSI/TPI 1 angle to grain formula. Building designer should verify capacity of bearing surface.
- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 444 lb uplift at joint 6, 426 lb uplift at joint 2, 865 lb uplift at joint 11, 159 lb uplift at joint 8, 99 lb uplift at joint 9, 24 lb uplift at joint 10, 966 lb uplift at joint 17, 116 lb uplift at joint 12, 25 lb uplift at joint 13 and 426 lb uplift at joint 2.
- This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- This truss has been designed for a total drag load of 2500 lb. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 0-0-0 to 27-2-8 for 91.9 plf.

- This truss design requires that a minimum of 7/16" structural wood sheathing be applied directly to the top chord and 1/2" gypsum sheetrock be applied directly to the bottom chord.
- No notches allowed in overhang and 10000 from left end and 0 from right end or 12" along rake from scarf, whichever is larger. Minimum 1.5x4 tie plates required at 2-0-0 o.c. maximum between the stacking chords. For edge-wise notching, provide at least one tie plate between each notch.

**LOAD CASE(S)** Standard



February 8, 2023

**WARNING - Verify design parameters and READ NOTES ON THIS AND INCLUDED MITEK REFERENCE PAGE MII-7473 rev. 5/19/2020 BEFORE USE.**

Design valid for use only with MiTek® connectors. This design is based only upon parameters shown, and is for an individual building component, not a truss system. Before use, the building designer must verify the applicability of design parameters and properly incorporate this design into the overall building design. Bracing indicated is to prevent buckling of individual truss web and/or chord members only. Additional temporary and permanent bracing is always required for stability and to prevent collapse with possible personal injury and property damage. For general guidance regarding the fabrication, storage, delivery, erection and bracing of trusses and truss systems, see **ANSI/TPI1 Quality Criteria, DSB-89 and BCSI Building Component Safety Information** available from Truss Plate Institute, 2670 Crain Highway, Suite 203 Waldorf, MD 20601



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 400 Sunrise Avenue, Suite 270  
 Roseville, CA 95661

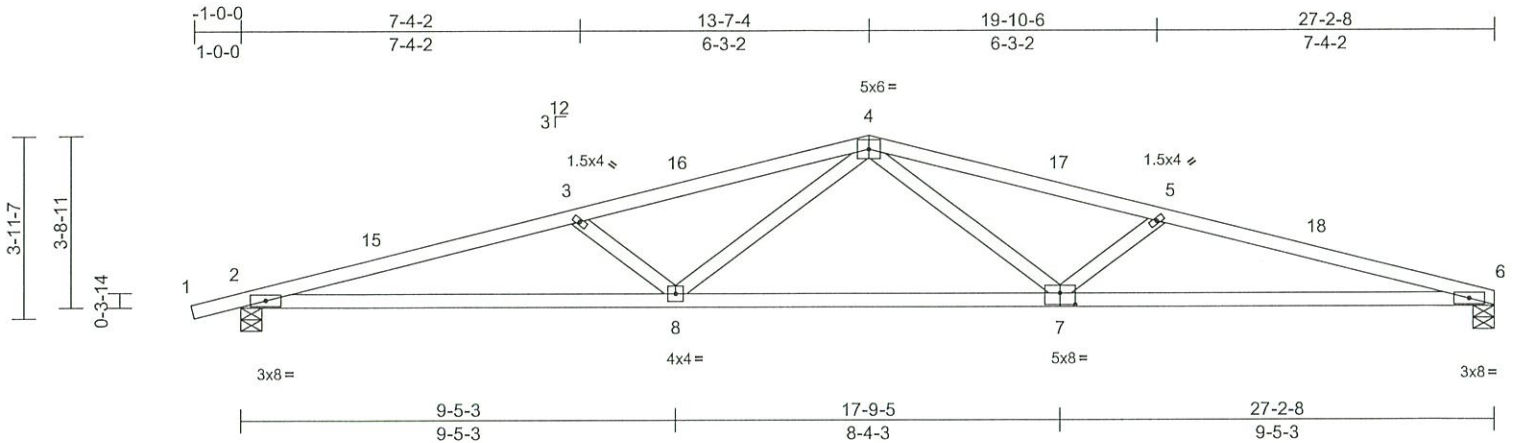


Job 30094	Truss B2	Truss Type Common	Qty 9	Ply 1	Job Reference (optional) R74658646
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Arrow Truss Co., Upland, CA - 91786,

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Page: 1



Scale = 1:50.1

Plate Offsets (X, Y): [7:0-4-0,0-3-0]

Loading	(psf)	Spacing		CSI		DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP
TCLL (roof)	20.0	Plate Grip DOL	1.25	TC	0.52	Vert(LL)	-0.20	7-11	>999	360	MT20	220/195
TCDL	15.0	Lumber DOL	1.25	BC	0.67	Vert(CT)	-0.81	7-11	>406	240		
BCLL	0.0*	Rep Stress Incr	YES	WB	0.39	Horz(CT)	0.16	6	n/a	n/a		
BCDL	10.0	Code	IBC2018/TPI2014	Matrix-AS		Wind(LL)	0.23	7-11	>999	240	Weight: 98 lb	FT = 20%

**LUMBER**

TOP CHORD 2X4 DF No.1&Btr G  
BOT CHORD 2X4 DF No.1&Btr G  
WEBS 2X4 DF Std G

**BRACING**

TOP CHORD Structural wood sheathing directly applied.  
BOT CHORD Rigid ceiling directly applied.

**REACTIONS**

(size) 2=0-5-8, 6=0-5-8  
Max Horiz 2=88 (LC 13)  
Max Uplift 2=-288 (LC 5), 6=-234 (LC 6)  
Max Grav 2=1298 (LC 1), 6=1223 (LC 1)

**FORCES**

(lb) - Maximum Compression/Maximum Tension  
TOP CHORD 1-2=0/18, 2-3=-3789/1112, 3-4=-3323/959,  
4-5=-3332/983, 5-6=-3801/1148  
BOT CHORD 2-8=-1002/3649, 6-8=-1040/3662  
WEBS 4-7=-176/954, 5-7=-647/323, 4-8=-163/944,  
3-8=-641/314

**NOTES**

- Unbalanced roof live loads have been considered for this design.
- Wind: ASCE 7-16; Vult=130mph (3-second gust)  
Vasd=103mph; TCDL=9.0psf; BCDL=6.0psf; h=25ft;  
Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope) exterior zone and C-C Exterior(2E) -1-0-7 to 2-11-9, Interior (1) 2-11-9 to 9-7-4, Exterior(2R) 9-7-4 to 17-7-4, Interior (1) 17-7-4 to 23-2-8, Exterior(2E) 23-2-8 to 27-2-8 zone; cantilever left and right exposed; end vertical left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members.
- A plate rating reduction of 20% has been applied for the green lumber members.

- Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 234 lb uplift at joint 6 and 288 lb uplift at joint 2.
- This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- This truss design requires that a minimum of 7/16" structural wood sheathing be applied directly to the top chord and 1/2" gypsum sheetrock be applied directly to the bottom chord.

LOAD CASE(S) Standard



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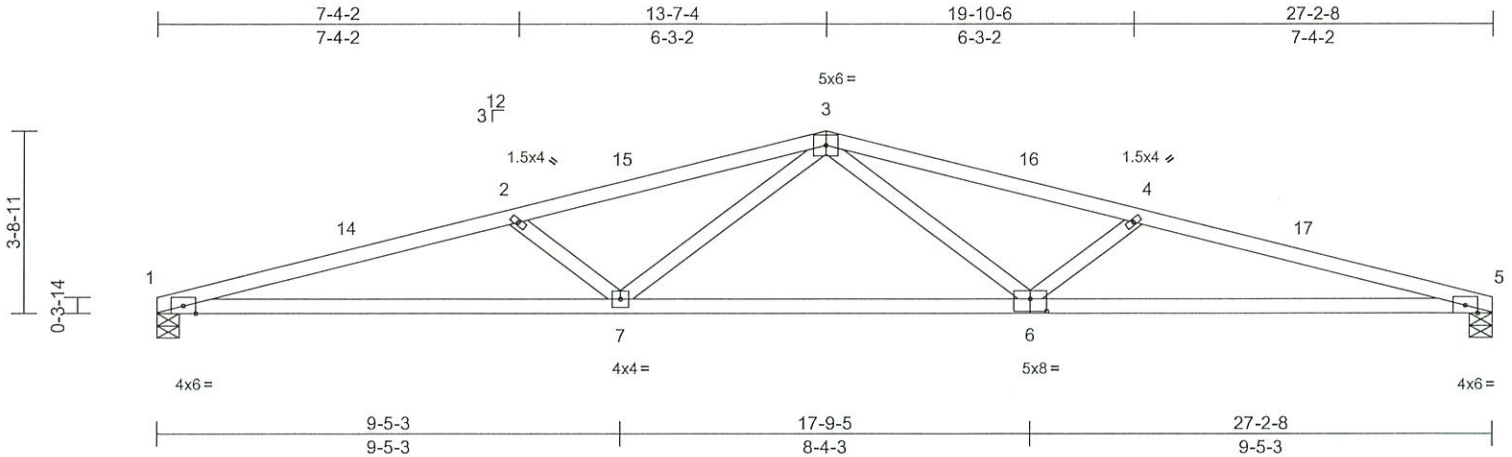


Job 30094	Truss B2A	Truss Type Common Supported Gable	Qty 1	Ply 1	Job Reference (optional) R74658647
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Arrow Truss Co., Upland, CA - 91786,

Run: 8.63 S Nov 19 2022 Print: 8.630 S Nov 19 2022 MiTek Industries, Inc. Wed Feb 08 13:41:40  
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Page: 1



Scale = 1:47

Plate Offsets (X, Y): [6:0-4-0,0-3-0]

Loading	(psf)	Spacing	2-0-0	CSI	DEFL	in	(loc)	l/defl	L/d	PLATES	GRIP	
TCLL (roof)	20.0	Plate Grip DOL	1.25	TC	0.62	Vert(LL)	-0.20	7-10	>999	360	MT20	220/195
TCDL	15.0	Lumber DOL	1.25	BC	0.74	Vert(CT)	-0.81	7-10	>405	240		
BCLL	0.0*	Rep Stress Incr	NO	WB	0.39	Horz(CT)	0.16	5	n/a	n/a		
BCDL	10.0	Code	IBC2018/TPI2014	Matrix-AS		Wind(LL)	0.25	7-10	>999	240	Weight: 97 lb	FT = 20%

#### LUMBER

TOP CHORD 2X4 DF No.1&Btr G  
BOT CHORD 2X4 DF No.1&Btr G  
WEBS 2X4 DF Std G

#### BRACING

TOP CHORD Structural wood sheathing directly applied.  
BOT CHORD Rigid ceiling directly applied.

#### REACTIONS

(size) 1=0-5-8, 5=0-5-8  
Max Horiz 1=77 (LC 31)  
Max Uplift 1=-549 (LC 22), 5=-549 (LC 25)  
Max Grav 1=1224 (LC 1), 5=1224 (LC 1)

#### FORCES

(lb) - Maximum Compression/Maximum Tension  
TOP CHORD 1-2=-3807/1867, 2-3=-3337/1133,  
3-4=-3337/1133, 4-5=-3807/1867  
BOT CHORD 1-7=-1835/3667, 5-7=-1773/3667  
WEBS 4-6=-647/328, 3-7=-185/954, 2-7=-647/327,  
3-6=-185/954

- 5) Provide mechanical connection (by others) of truss to bearing plate capable of withstanding 549 lb uplift at joint 1 and 549 lb uplift at joint 5.
- 6) This truss is designed in accordance with the 2018 International Building Code section 2306.1 and referenced standard ANSI/TPI 1.
- 7) This truss has been designed for a total drag load of 2500 lb. Lumber DOL=(1.33) Plate grip DOL=(1.33) Connect truss to resist drag loads along bottom chord from 0-0-0 to 27'-2-8 for 91.9 plf.
- 8) This truss design requires that a minimum of 7/16" structural wood sheathing be applied directly to the top chord and 1/2" gypsum sheetrock be applied directly to the bottom chord.

LOAD CASE(S) Standard

#### NOTES

- 1) Unbalanced roof live loads have been considered for this design.
- 2) Wind: ASCE 7-16; Vult=130mph (3-second gust)  
Vasd=103mph; TC DL=9.0psf; BC DL=6.0psf; h=25ft;  
Ke=1.00; Cat. II; Exp C; Enclosed; MWFRS (envelope) exterior zone and C-C Exterior(2E) 0-0-0 to 4-0-0, Interior (1) 4-0-0 to 9-7-4, Exterior(2R) 9-7-4 to 17-7-4, Interior (1) 17-7-4 to 23-2-8, Exterior(2E) 23-2-8 to 27-2-8 zone; cantilever left and right exposed; end vertical left and right exposed; C-C for members and forces & MWFRS for reactions shown; Lumber DOL=1.60 plate grip DOL=1.60
- 3) \* This truss has been designed for a live load of 20.0psf on the bottom chord in all areas where a rectangle 3-06-00 tall by 2-00-00 wide will fit between the bottom chord and any other members.
- 4) A plate rating reduction of 20% has been applied for the green lumber members.



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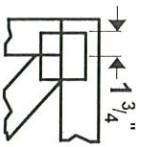


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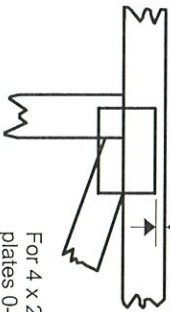


# Symbols

## PLATE LOCATION AND ORIENTATION



Center plate on joint unless x, y offsets are indicated. Dimensions are in 1/16-in-sixteenths. Apply plates to both sides of truss and fully embed teeth.



For 4 x 2 orientation, locate plates 0-<sup>1</sup>/<sub>16</sub>" from outside edge of truss.



This symbol indicates the required direction of slots in connector plates.

\* Plate location details available in MITek 20/20 software or upon request.

## PLATE SIZE

4 X 4

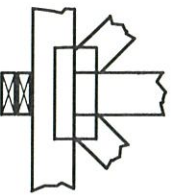
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

## LATERAL BRACING LOCATION



Indicated by symbol shown and/or by text in the bracing section of the output. Use T or I bracing if indicated.

## BEARING

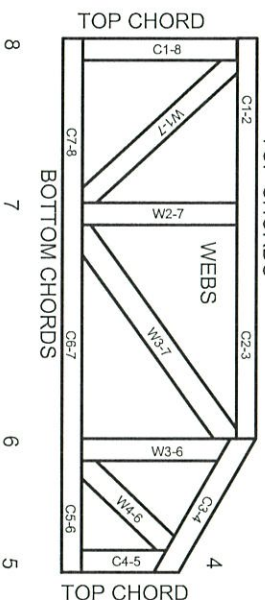


Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number where bearings occur. Min size shown is for crushing only.

## Industry Standards:

- ANSI/ITP1: National Design Specification for Metal Plate Connected Wood Truss Construction.
- DSB-89: Design Standard for Bracing.
- BCSI: Building Component Safety Information, Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

# Numbering System



JOINTS ARE GENERALLY NUMBERED/LETTERED CLOCKWISE AROUND THE TRUSS STARTING AT THE JOINT FARTHEST TO THE LEFT.

CHORDS AND WEBS ARE IDENTIFIED BY END JOINT NUMBERS/LETTERS.

## PRODUCT CODE APPROVALS

ICC-ES Reports:

- ESR-1311, ESR-1352, ESR1988
- ER-3907, ESR-2362, ESR-1397, ESR-3282

Trusses are designed for wind loads in the plane of the truss unless otherwise shown.

Lumber design values are in accordance with ANSI/TP1 section 6.3. These truss designs rely on lumber values established by others.

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MITek Engineering Reference Sheet: MII-7473 rev. 5/19/2020

# General Safety Notes

## Failure to Follow Could Cause Property Damage or Personal Injury

- Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI.
- Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative Tor I bracing should be considered.
- Never exceed the design loading shown and never stack materials on inadequately braced trusses.
- Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
- Cut members to bear tightly against each other.
- Place plates on each face of truss at each joint and embed fully. Knots and wane at joint locations are regulated by ANSI/TP1.
- Design assumes trusses will be suitably protected from the environment in accord with ANSI/TP1.
- Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
- Unless expressly noted, this design is not applicable for use with fire retardant, preservative treated, or green lumber.
- Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
- Plate type, size, orientation and location dimensions indicated are minimum plating requirements.
- Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
- Top chords must be sheathed or purlins provided at spacing indicated on design.
- Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
- Connections not shown are the responsibility of others.
- Do not cut or alter truss member or plate without prior approval of an engineer.
- Install and load vertically unless indicated otherwise.
- Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.
- Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.
- Design assumes manufacture in accordance with ANSI/TP1 Quality Criteria.
- The design does not take into account any dynamic or other loads other than those expressly stated.