

CONTRACTOR SHALL VERIFY AND CLARIFY ALL DIMENSIONS AND MATERIALS BEFORE CONSTRUCTION BEGINS. ALL MATERIALS SPECIFIED ARE MINIMUM REQUIREMENTS.

IF CONFLICTS OCCUR BETWEEN WRITTEN AND SCALED DIMENSIONS, THE WRITTEN DIMENSION GOVERNS. IF CONFLICTS OCCUR BETWEEN PLAN AND DETAIL, THE MORE CONSERVATIVE VALUE GOVERNS. IF CONFLICTS OCCUR BETWEEN PLAN AND EXISTING CONDITIONS, ENGINEER SHALL BE NOTIFIED PRIOR TO CONSTRUCTION MOBILIZATION.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DIMENSIONS AND MATERIALS.

Notes

R105.3.2 – Time Limitation of application
An application for a permit for any proposed work shall be deemed to have been abandoned 180 days after the date of filing unless such application has been pursued in good faith or a permit has been issued.

R105.5 – Expiration
Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance or after commencement of work if more than 180 days pass between inspections”.

Structural design and details fully conform to all appropriate requirements of the California Residential Code. Should a portion or all of the structural design conform to the requirements of the California Building Code, as allowed in the CRC, the statement shall clearly identify which portions of the structural design conform to the CBC or that the full structural design is in conformance with the structural requirements of the California Building Code. (R301.1.3 CRC)

Existing Site



Project Information		
Address	12355 Michigan St Grand Terrace, CA 92313	
APN	11672510900000	
Lot Area	0.73 Acres	
Zoning	R1-7.2	
Occupancy	SFR	
Structure	Existing SFR	Proposed Addition
Stories	1	1
Parking Spaces	3	3
Living	1782 Sq Ft	+614 Sq Ft
Storage	-	-
Garage	-	-
Total Structure	1782 Sq Ft	2396 Sq Ft
Adjustments		
Structure Increase	34.3%	
Lot Coverage	7.5%	

Building Data

Construction Type: V (Wood-Stucco)

Building is Equipped with Fire Sprinklers

City of Grand Terrace
Building & Safety
REVIEWED FOR CODE COMPLIANCE

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

Permit: PD0005-415
Date: 11/18/24 By: [Signature]

Contact

Ron Pearce (714) 579-3800

Owner

Pearce, R Family Trust
12355 Michigan St
Grand Terrace CA 92313
(714) 579-3800

Scope of Work - Addition

Demo Back Patio Slab
Addition to Back of Structure
Approximately 620 Sq Ft
Add Patio Slab & Side Door Landing

Applicable codes

2022 CRC, 2022 CBC, 2022 CPC, 2022 CMC,
2022 CEC, 2022 CA Energy, 2022 CGBC
City of Grand Terrace Municipal Code

Special Inspection

None Required by EOR

City Requirements:
ICC certified deputy inspector shall verify installation of Simpson XP epoxy for connection of existing foundation to new foundation. Inspector must register with the Building Division prior to observation.

Deferred Submittals

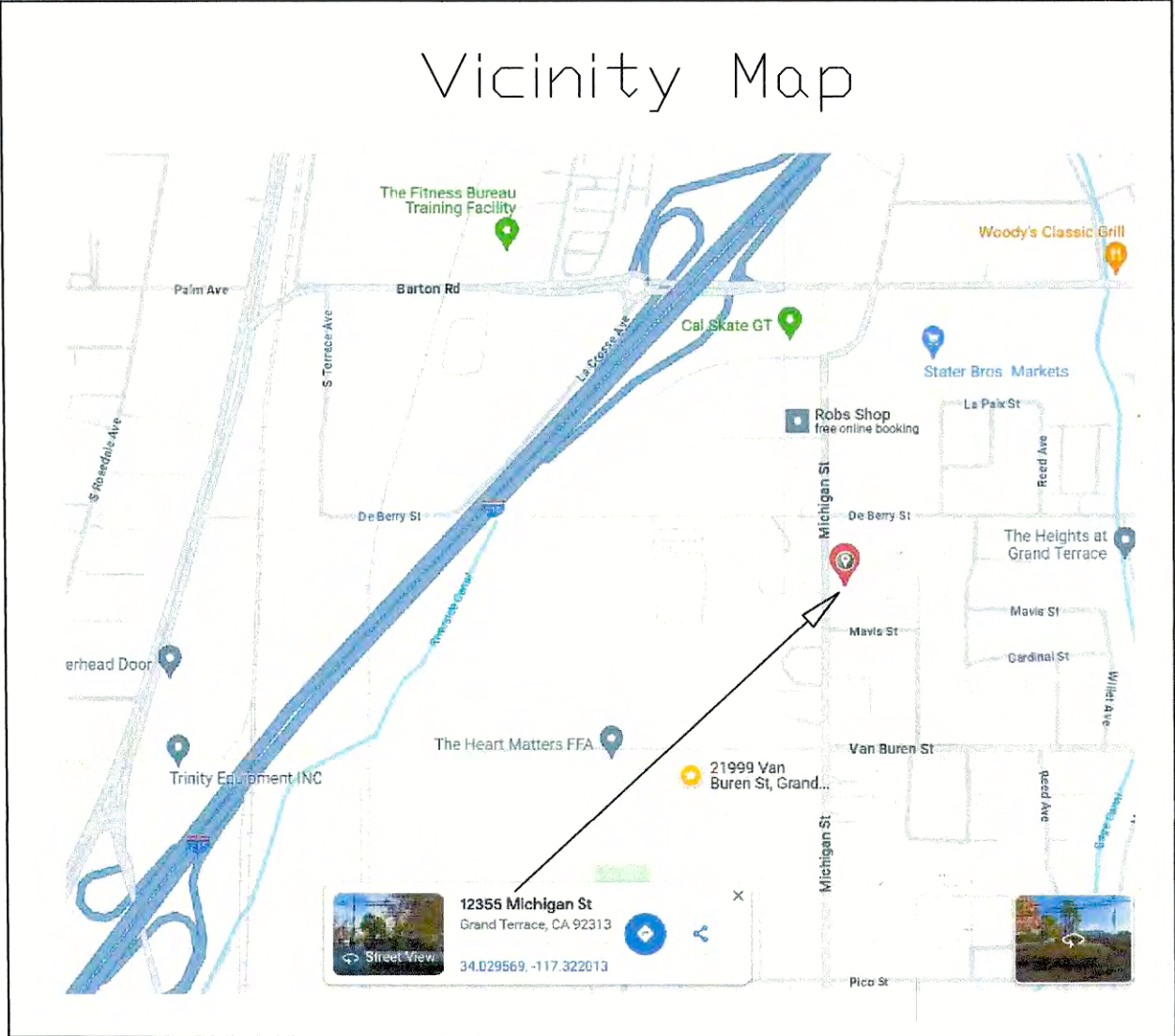
PV System

Note: All deferred submittals shall be reviewed by Engineer of Record (EOR) prior to submittal to the Building Official and Prior to Installation.

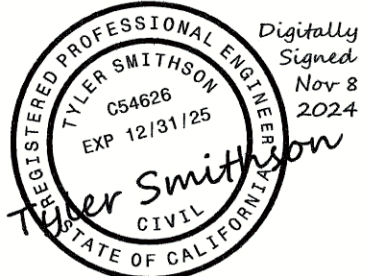
By Others

Truss Layout and Calculations
Roofing Material
Mechanical (FAU) Products

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Attachment: Structural Calculations	



REVISIONS		DATE
DESCRIPTION		
1 SUBMITTAL		6/26/2024
2 SUBMITTAL-2		9/4/2024
3 REVIEW		9/27/2024
4 SUBMITTAL-3		10/24/2024
5 SUBMITTAL-4		11/8/2024



Smithson Engineering
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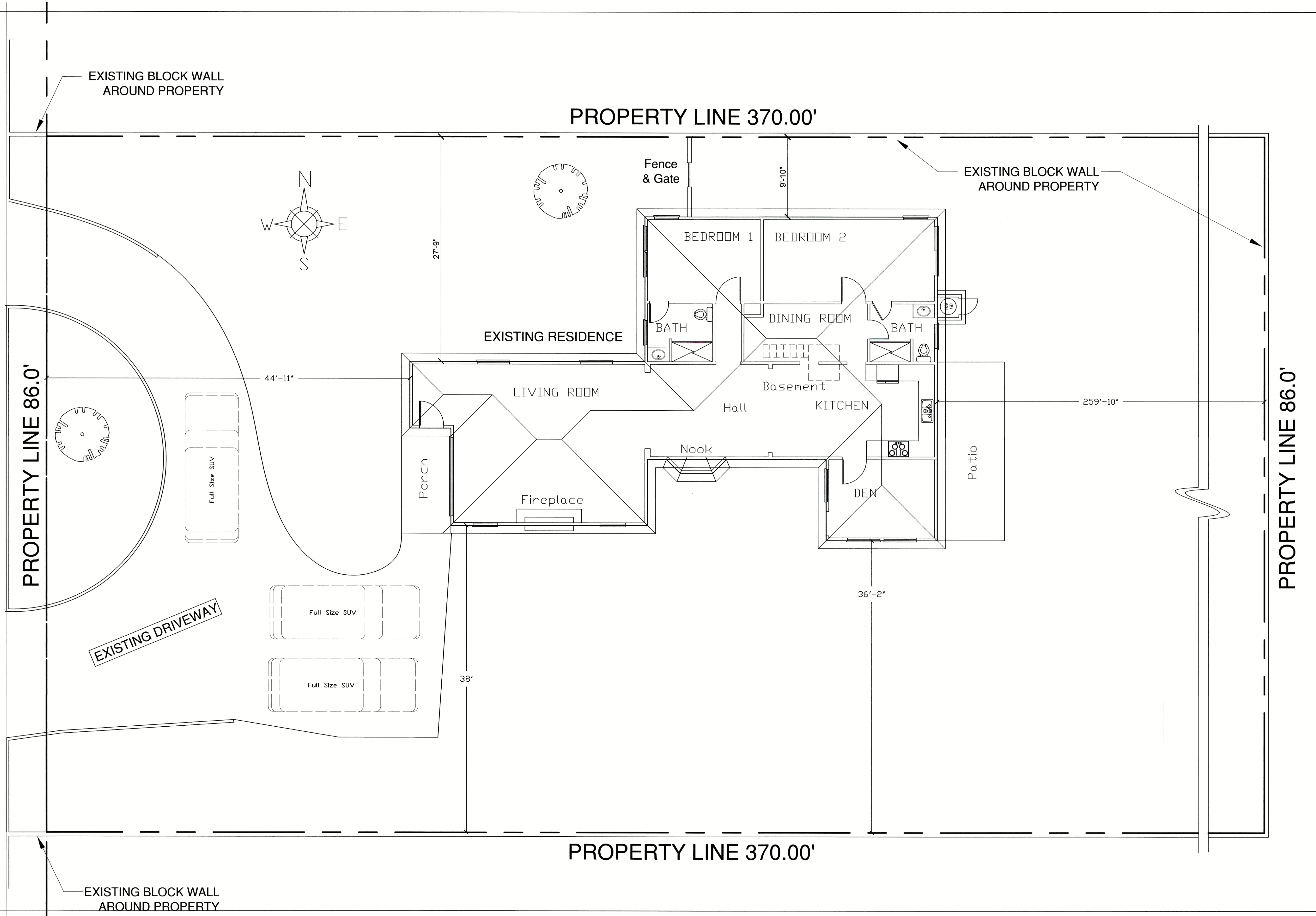
MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Title Sheet
Addition

DRAWN CS/TS
CHECKED
SCALE (on 24x36 Sheet)
1/16" = 1'
PROJECT MBE-PEARCE
SHEET
T1
Addition



MICHIGAN ST



JOB COPY

REVISIONS		DATE
DESCRIPTION		
① SUBMITTAL		6/26/2024
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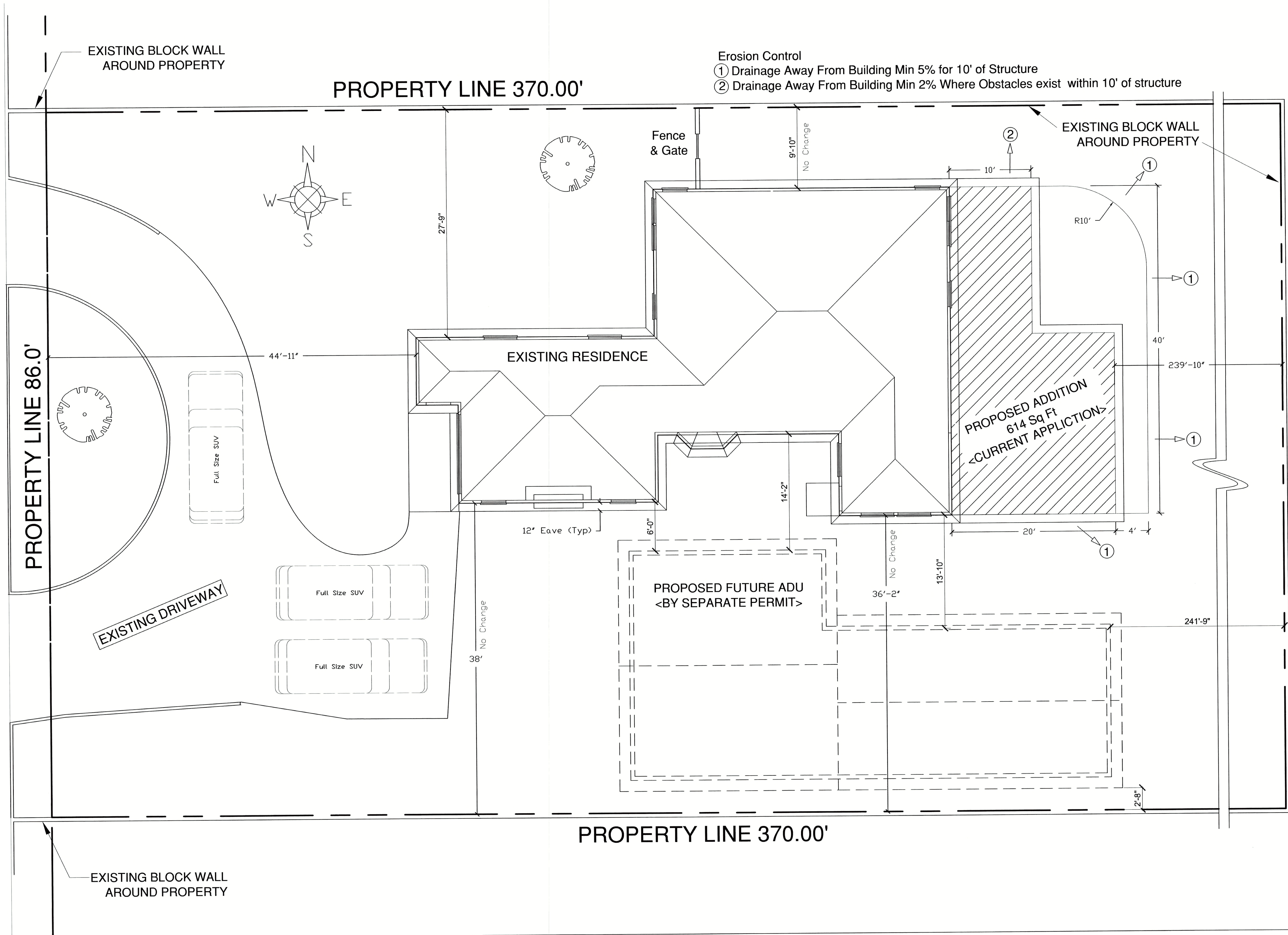
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Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Site Plan
◀Existing>

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	1"=6'
PROJECT	MBE-PEARCE
SHEET	C1 Addition

CL
MICHIGAN ST



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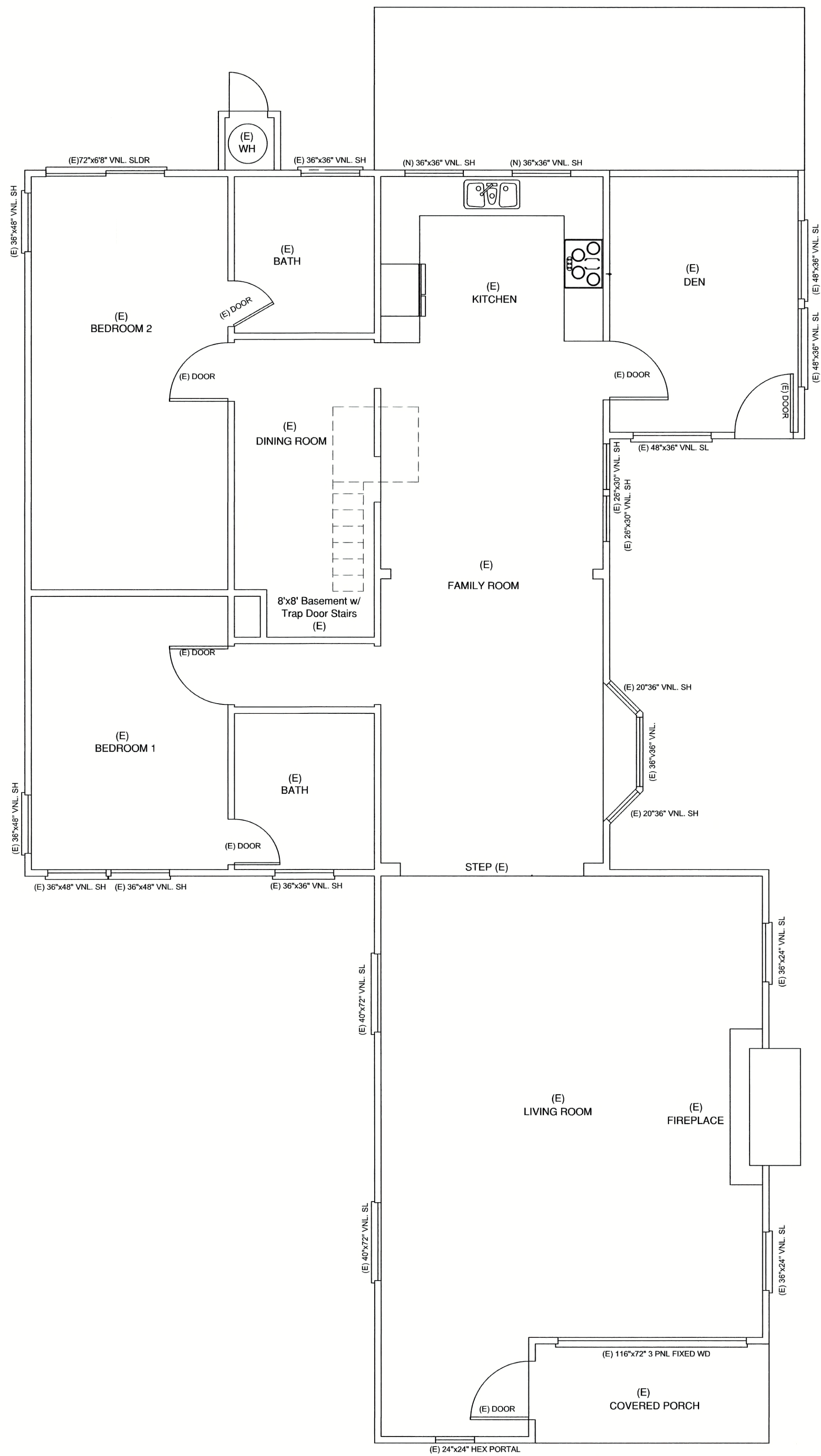
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Pearce Addition
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Site Plan
<Proposed>

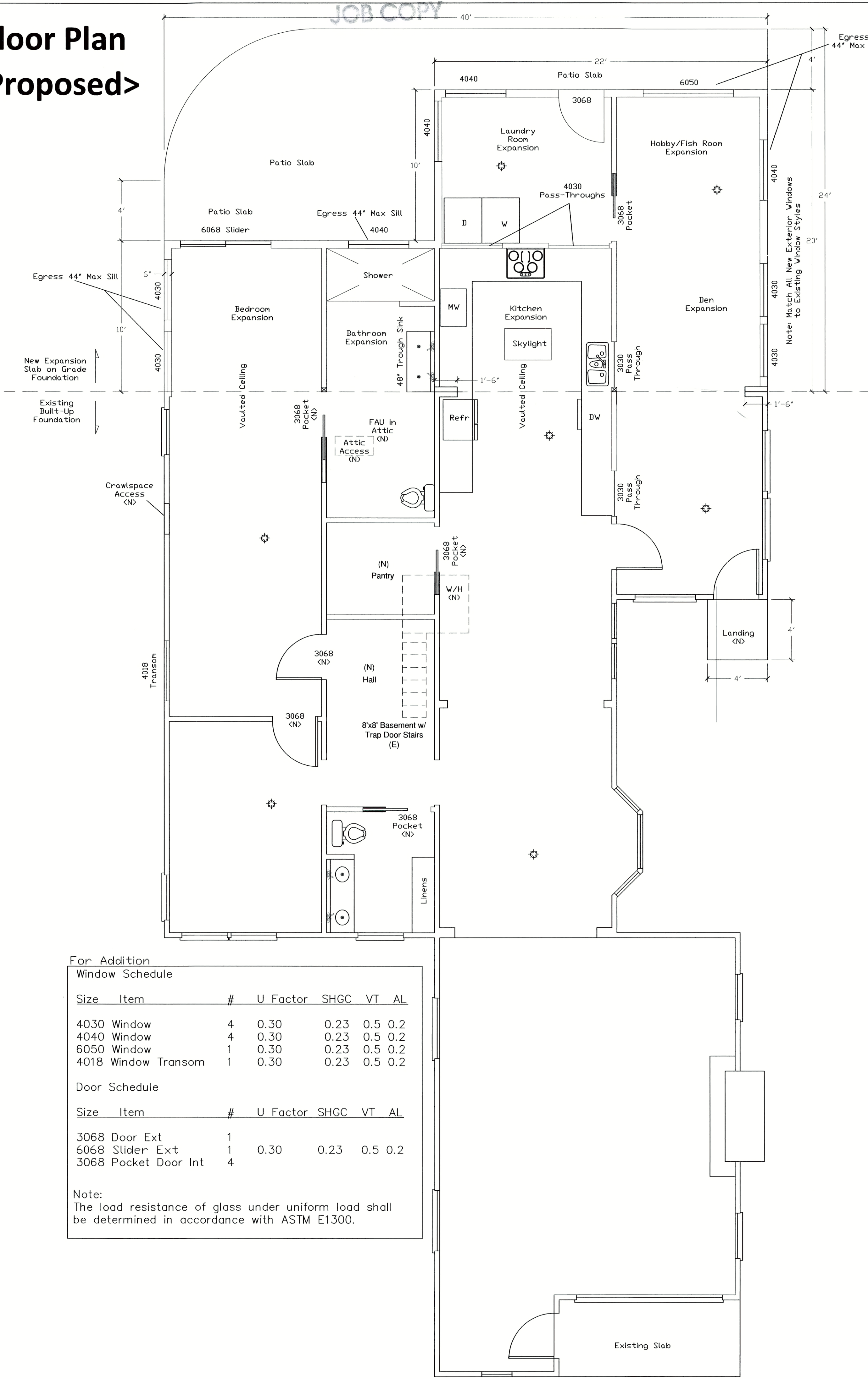
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CHECKED	
SCALE (on 24x36 Sheet)	1" = 6'
PROJECT	MBE-PEARCE
SHEET	C2

Addition

Floor Plan
<Existing>



Floor Plan
<Proposed>



For Addition

Window Schedule						
Size	Item	#	U Factor	SHGC	VT	AL
4030	Window	4	0.30	0.23	0.5	0.2
4040	Window	4	0.30	0.23	0.5	0.2
6050	Window	1	0.30	0.23	0.5	0.2
4018	Window Transom	1	0.30	0.23	0.5	0.2

Door Schedule						
Size	Item	#	U Factor	SHGC	VT	AL
3068	Door Ext	1				
6068	Slider Ext	1	0.30	0.23	0.5	0.2
3068	Pocket Door Int	4				

Note:
The load resistance of glass under uniform load shall be determined in accordance with ASTM E1300.

REVISIONS

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⑤	SUBMITTAL-4	11/8/2024

REGISTERED PROFESSIONAL ENGINEER
TYLER SMITHSON
EXP 12/31/25
056606
CIVIL
STATE OF CALIFORNIA

Digitally Signed
Nov 8 2024

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Floor Plan

DRAWN CS/TS

CHECKED

SCALE (on 24x36 Sheet)
1/4" = 1'

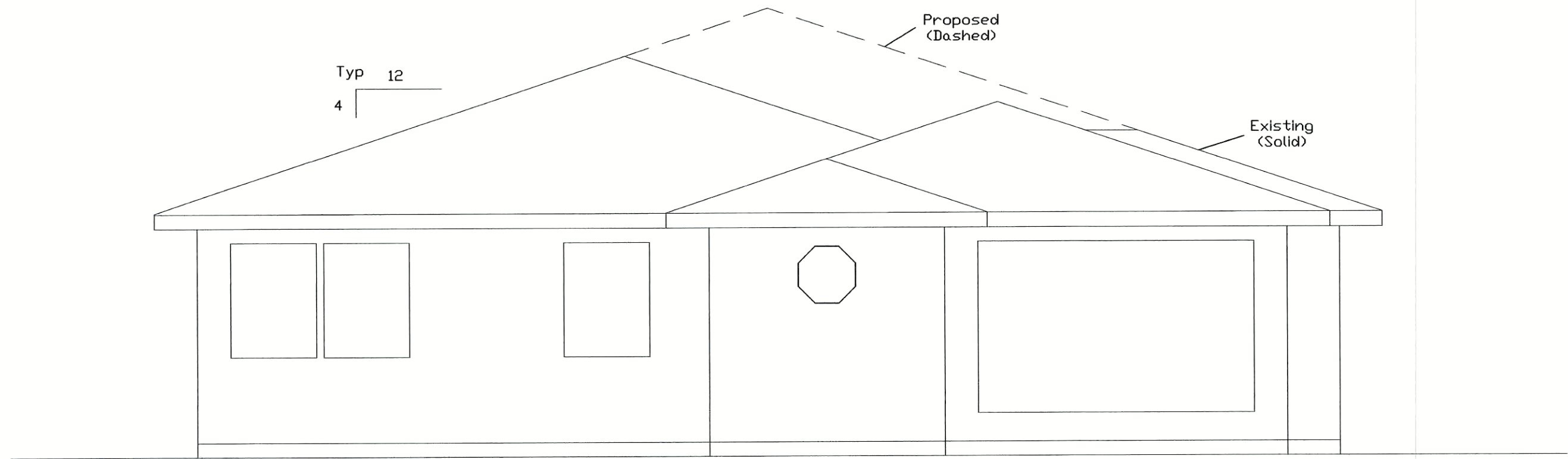
PROJECT MBE-PEARCE

SHEET

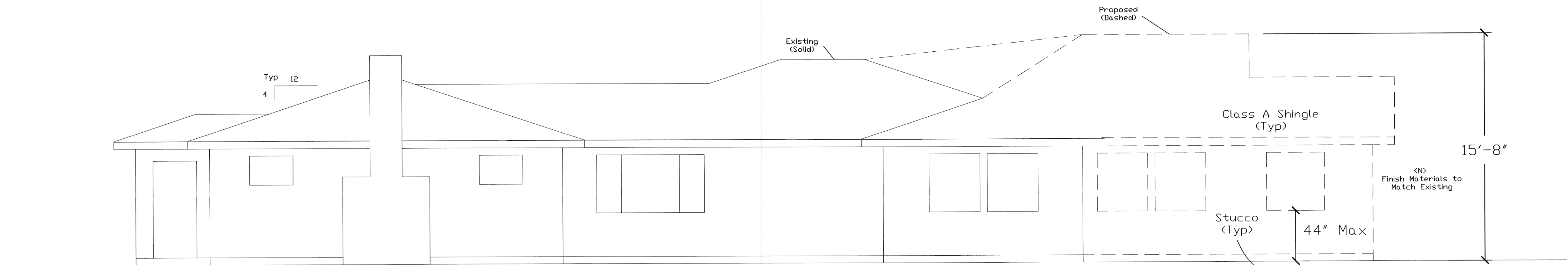
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Addition

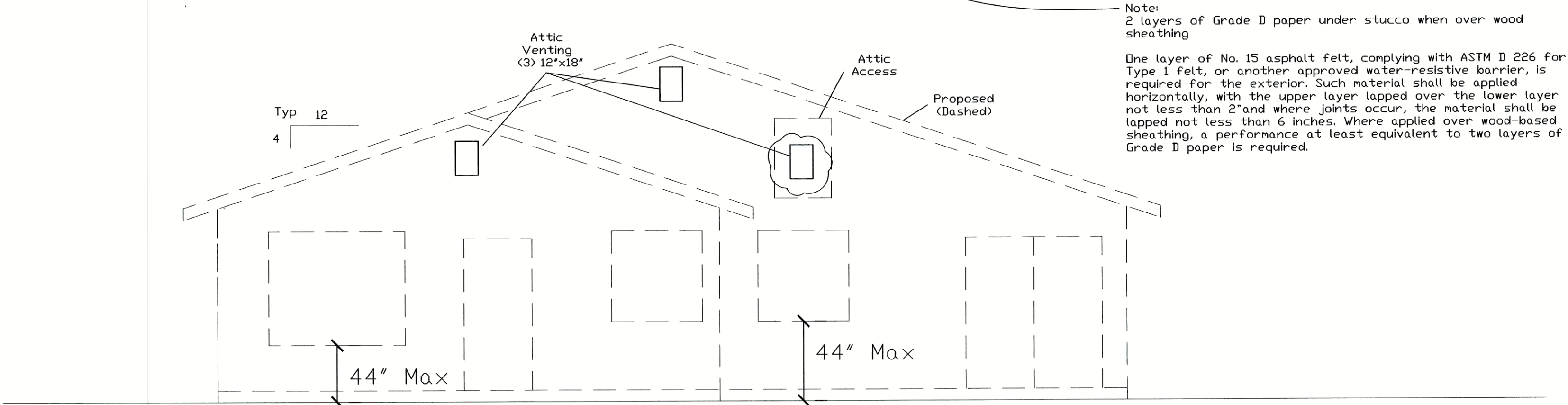
Note: Exterior color and material will match existing building



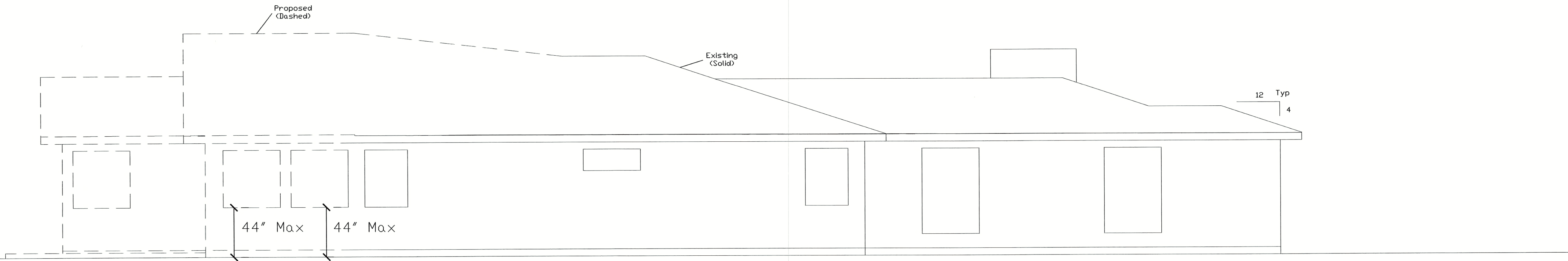
Front Elevation (West)



Right Elevation (South)

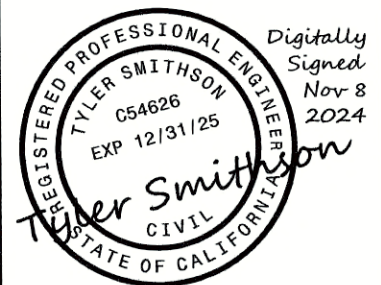


Rear Elevation (East)

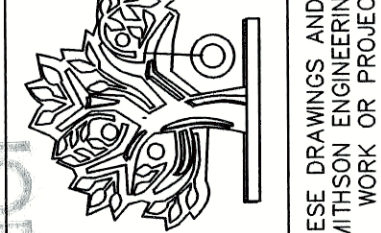


Left Elevation (North)

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5	SUBMITTAL-4	11/8/2024



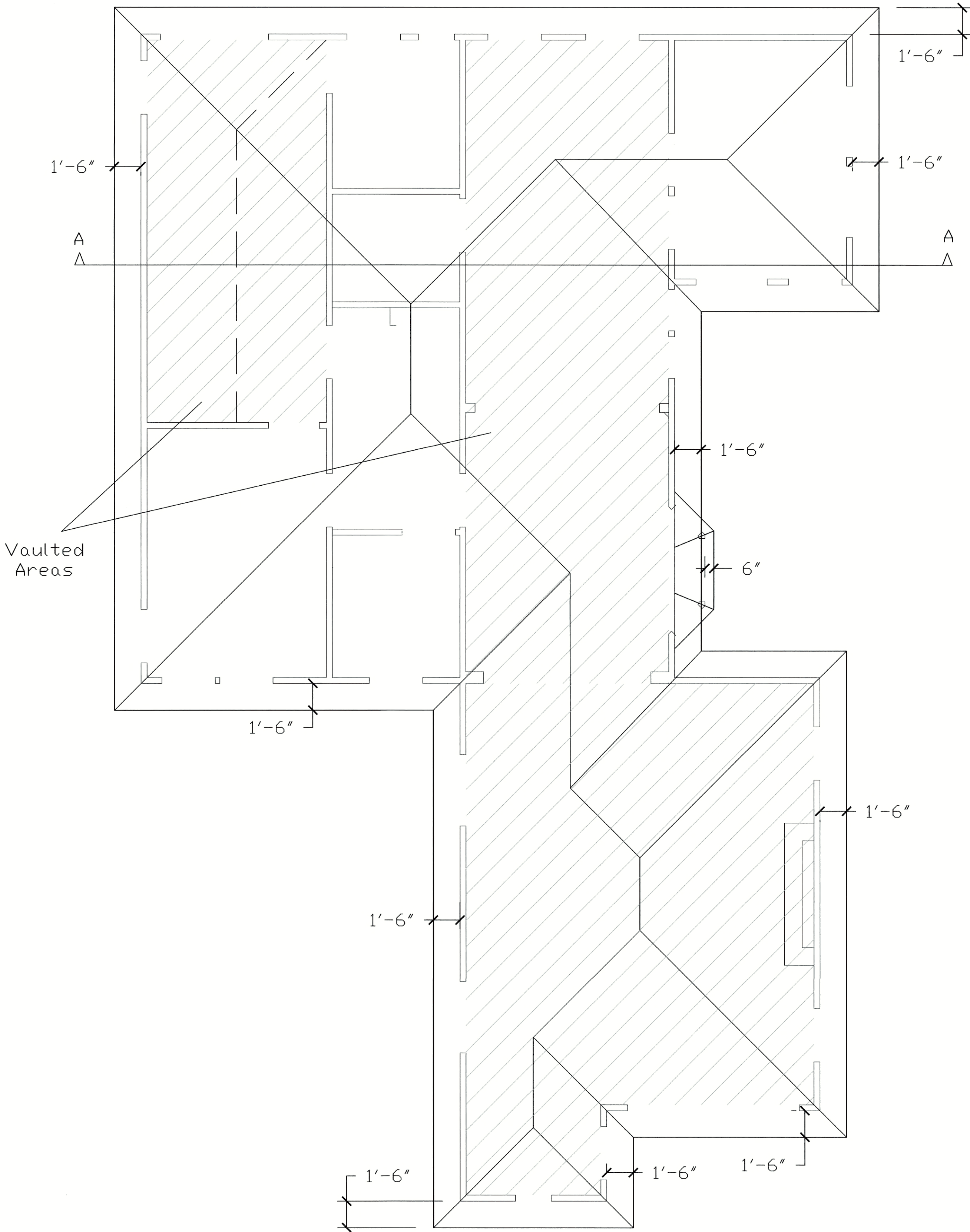
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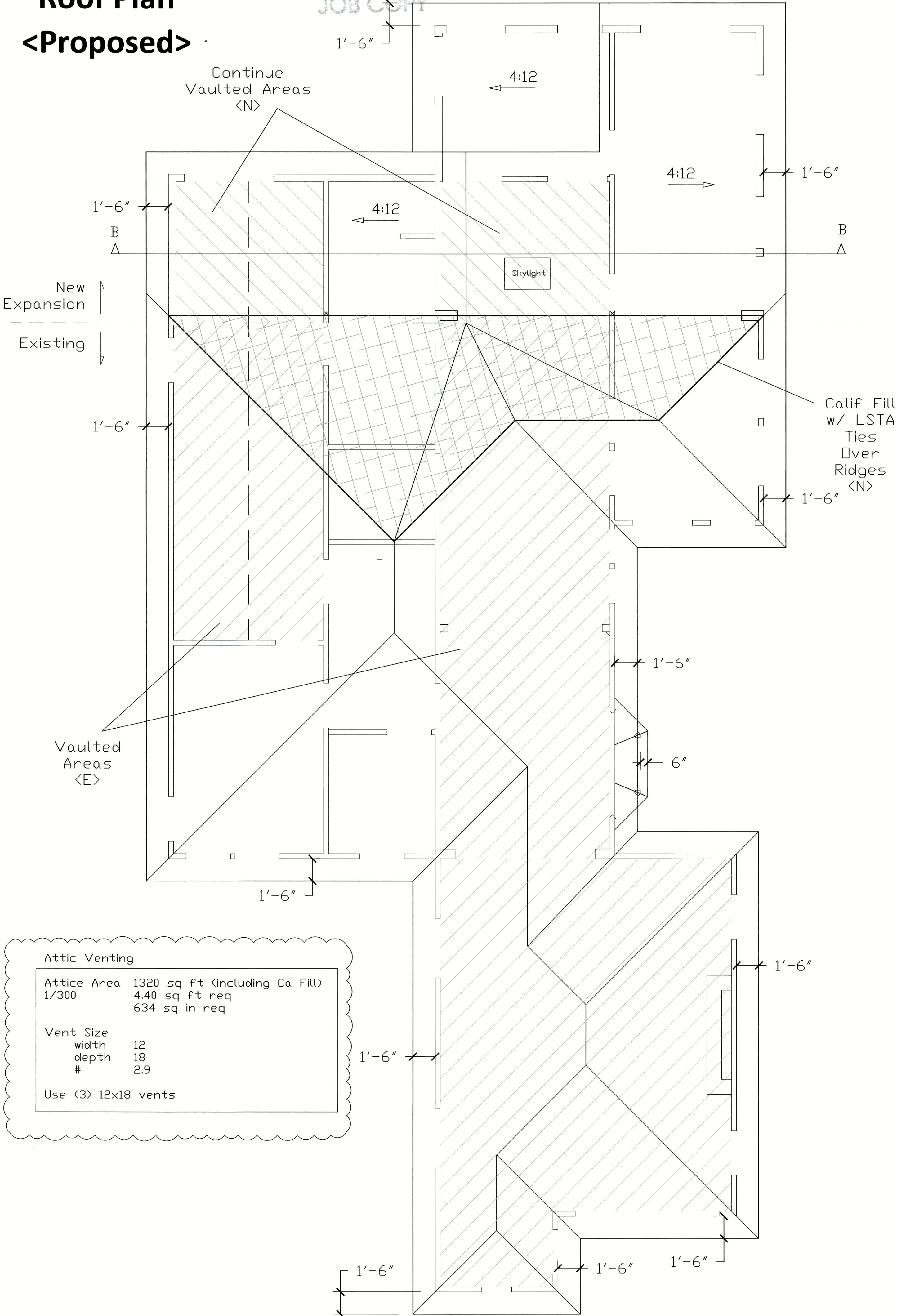
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Grand Terrace CA 92313

Elevations	
DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	1/4" = 1'
PROJECT	MBE-PEARCE
SHEET	A2 Addition

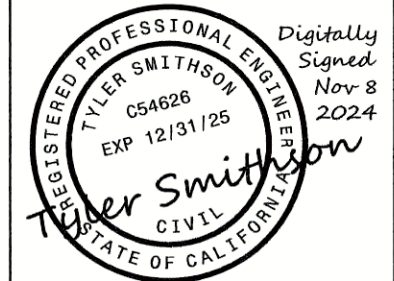
Roof Plan
<Existing>



Roof Plan
<Proposed>



REVISIONS		DATE
1	SUBMITTAL	6/26/2024
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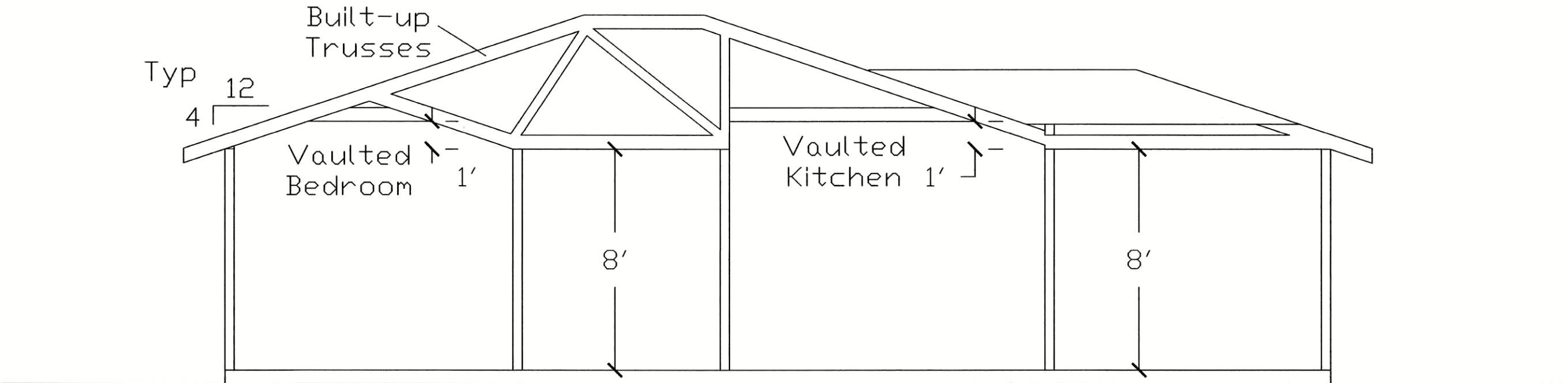
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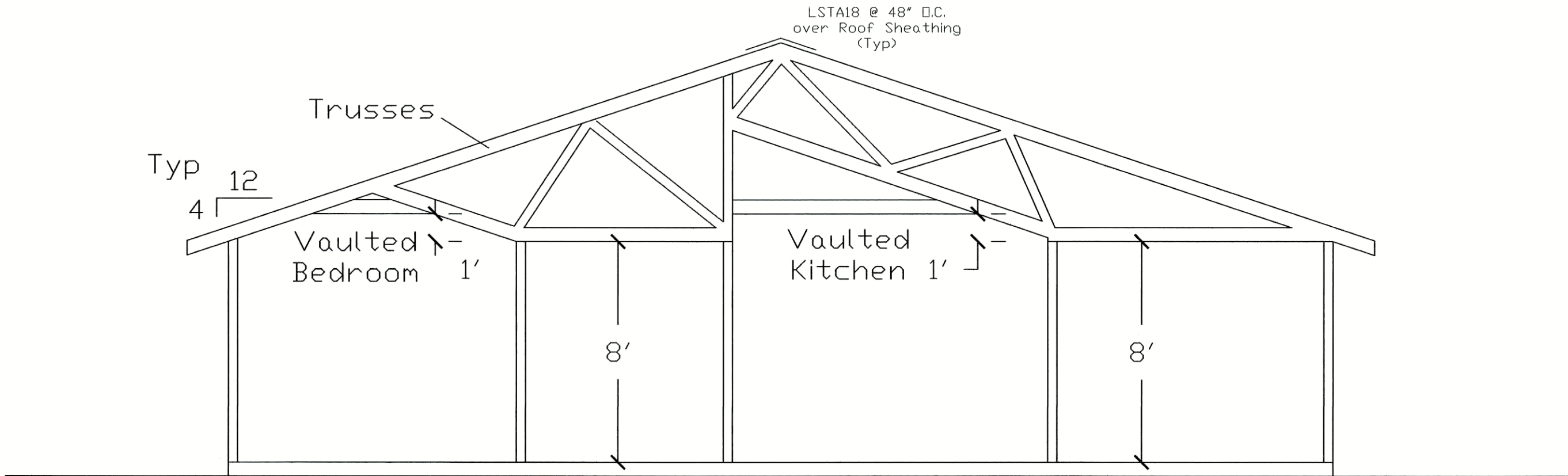
Roof Plan

DRAWN CS/TS
CHECKED
SCALE (on 24x36 Sheet)
1/4" = 1'
PROJECT MBE-PEARCE
SHEET
A3
Addition

Section A:A



Section B:B



Note:
Vent New Attic
Space per 7/S4
@ Eaves.

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Sections

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	1/4" = 1'
PROJECT	MBE-PEARCE
SHEET	A3.1 Addition

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Note:
Shower and tub-shower combinations shall be provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that provide scald and thermal shock protection. These valves shall conform to ASSE 1016 or ASME A112.18.1/CSA B125.1. Handle position stops shall be provided on such valves and shall be adjusted per the manufacturer's instructions to deliver a maximum mixed water setting of 120°F. Water heating thermostats shall not be considered a suitable control for meeting this provision. (CPC 408.3)

Type of Fixture	Non-Compliant Plumbing	Fixture Required Water-Conserving Plumbing Fixture (max. rate) (California 4.303)
Faucet- Kitchen	More than 2.2 gallons/minute	1.8 gallons/minute at 60 psi

Kitchen Hood Ventilation
- Local exhaust system shall be installed in the kitchen and vented to the outdoors (recirculation prohibited) with a minimum exhaust rate as indicated in the table below. (ICCIRC 150.6 (b), ASHRAE std. 62.2)

Note: In Michens specify the local exhaust system vented to outdoors, the minimum exhaust rate shall follow table ISO-G. Hood over Eloc. ranges with 110 cfm and Hood over Natural Gas 250 cfm for 1900 to 1500 of Dwelling unit.

Dwelling Unit Floor above [ft.]	Flood Over Electric Range	Flood Over Natural Gas Range
1st floor	1000 CFM @ 100 FPM	1000 CFM @ 100 FPM
2nd floor - 1200	1000 CFM @ 100 FPM	1000 CFM @ 100 FPM
3rd floor - 1800	1000 CFM @ 100 FPM	1000 CFM @ 100 FPM
4th floor	1000 CFM @ 100 FPM	1000 CFM @ 100 FPM

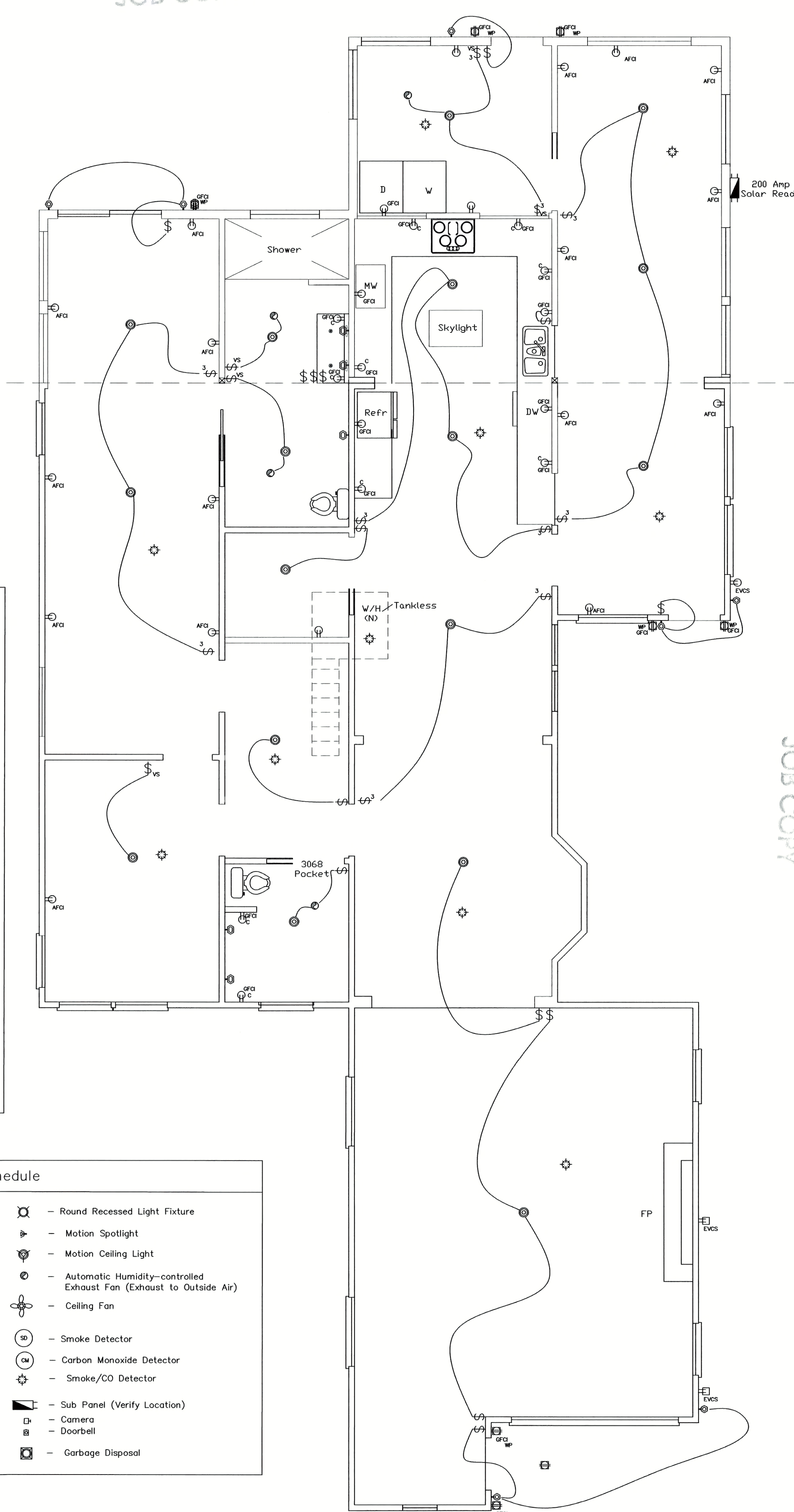
- All Exterior walls exposed during construction shall be insulated with min R-13 [CNC 150.29a, 150.30-31]
- All Roofing/Ceiling exposed during construction shall be insulated with min R-19 [CNC 150.29a, 150.30a-f]
- All accessible joints, penetrations and other openings in the building envelope about the area of work shall be caulked, gasketed, weatherstripped or otherwise sealed. [CNC 150.29, 150.31]

- Carbon monoxide alarms are not required if there is no fuel-burning appliances or fireplace in the unit and where the garage is detached from the unit. (GBC 315.2.1)
- Carbon monoxide alarms shall be installed on the ceiling or wall (above the door header) outside each separate sleeping area in the dwelling unit.

Green Building Standards

- Adhesives, sealants, caulks, paints & coatings shall comply with the VOC limits. [CalGreen 4.504.2.1 & 4.504.2.2]
- Aeronautics & coatings shall meet the Product-Weighted MRV limits for VOC. [CalGreen 4.504.2.3]
- Maximum 0.05% of the installed ceiling fraction shall contain any one or more certified products per CalGreen Section 4.504.4

- – Conventional Outlet
- – Outside Outlet
- – Water-Proof Duplex Convenience Outlet
- – W/Ground Fault Circuit Interrupter
- – GFCI Outlet – Counter
- – GFCI Outlet – Wall
- – Electrical Vehicle Charging Station
- – Single Pole Switch
- – Three Way Switch
- – Vacancy Sensor Switch
- – Can Light
- – Outside Light
- – Ceiling Light
- – Light Over Mirror
- – Florescent
- – Wall Mounted Light




 Digitally Signed
 Nov 8 2024
 Tyler Smithson
 CIVIL ENGINEER

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MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Electrical

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	
1/4" = 1'	
PROJECT	MBE-PEARCE
SHEET	

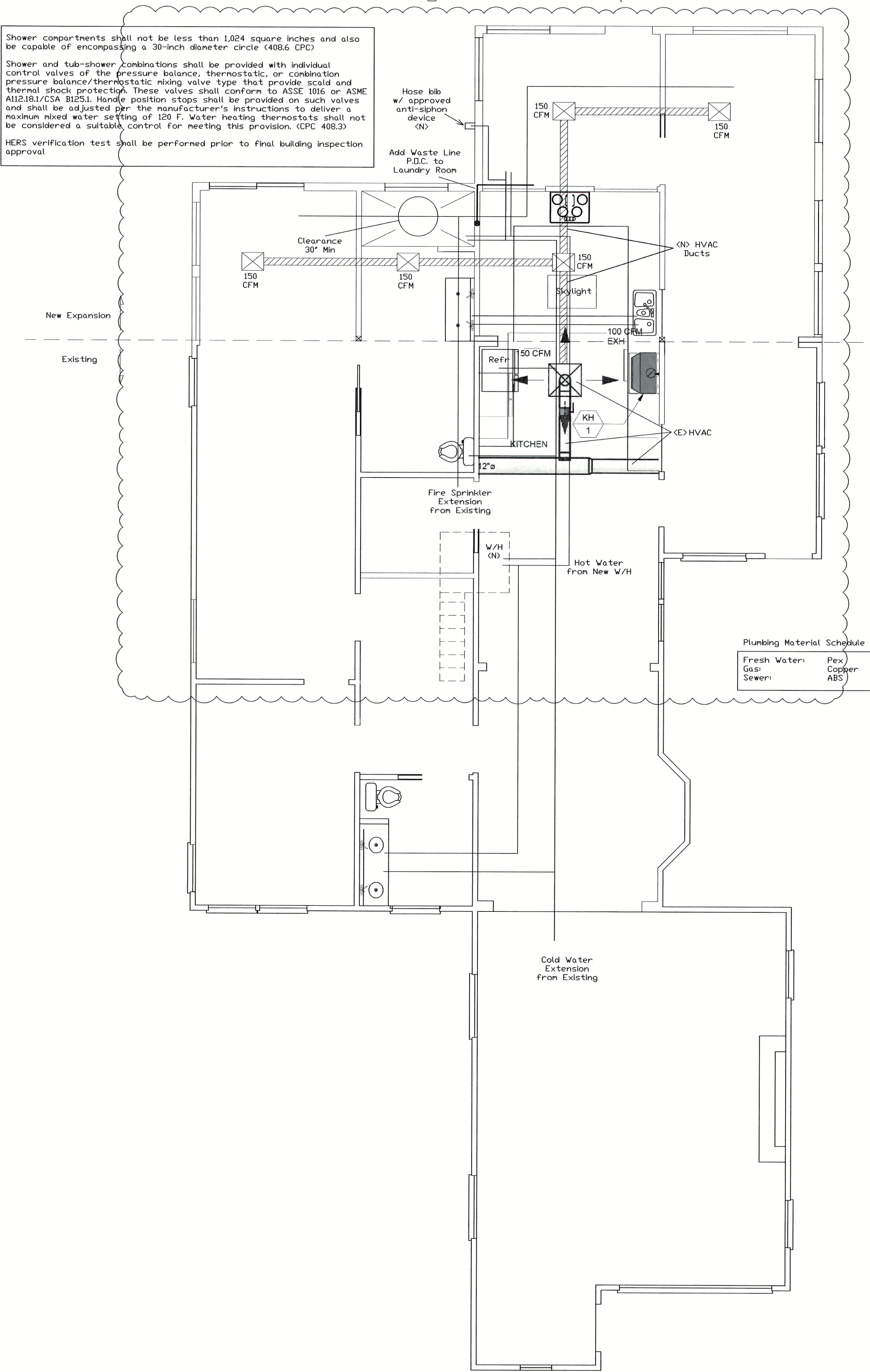
A4

Mechanical / Plumbing / Fire Sprinkler

Shower compartments shall not be less than 1,024 square inches and also be capable of encompassing a 30-inch diameter circle (408.6 CPC)

Shower and tub-shower combinations shall be provided with individual control valves of the pressure balance, thermostatic, or combination pressure balance/thermostatic mixing valve type that provide scald and thermal shock protection. These valves shall conform to ASSE 1016 or ASME A112.18.1/CSA B125.1. Handle position stops shall be provided on such valves and shall be adjusted per the manufacturer's instructions to deliver a maximum mixed water setting of 120 F. Water heating thermostats shall not be considered a suitable control for meeting this provision. (CPC 408.3)

HERS verification test shall be performed prior to final building inspection approval



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MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Mechanical

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	1/4" = 1'
PROJECT	MBE-PEARCE
SHEET	A4.1 Addition

General Notes

- All construction workmanship and materials shall conform to the latest edition of California Building Code (CBC) except where more stringent requirements are noted or shown on plans.
- The plans shall be reviewed for dimensional and existing site conformance by the contractor before starting the work. The engineer shall be notified of any discrepancies.
- Working dimensions shall not be scaled from drawings.
- Notes and details on drawings shall precede these general notes.
- The design, adequacy and safety of erection, bracing, shoring, temporary supports, etc. is the sole responsibility of the contractor, and has not been considered by the Engineer of Record (EOR). The contractor is responsible for the stability of the structure during the entire course of construction. The engineer shall not be held responsible for field inspection/observation of the above item.
- Vibrational effects of any mechanical equipment have not been considered by the EOR.
- Concrete slabs on grade have not been designed by the EOR.
- Allowable soil bearing pressure to be a minimum of 1,000 psi unless a soil report is provided. Soils in the building area and 5 feet beyond shall be compacted to a minimum of 90% relative compaction per CBC.
- For sill bolting at existing footings use "red head" ICBO #1372 or ICC-ES ESR-2251, the same size and spacing as called for on plans (min 2-3/4" embed, min 48" O.C.).
- Dowel new into existing slabs/stem walls w/#4 rebar @ 24" O.C. w/ 8" embed and footings w/dowels to match new reinforcement size/location.
- At the beginning of each job the contractor shall meet with the local building official to confirm inspection requirement of the local jurisdiction.

Foundation Notes

- If soil report exists, all excavations shall be inspected by soils engineer
- The minimum bolting for sill plates to foundation shall be 5/8" diameter anchor bolts with 7" min embedment in concrete with spacing no greater than 48" O.C. or further than 12" from corners (min. 2 bolts per plate). See foundation plan and shear schedule for further bolting requirements.
- Slab on grade: minimum 4 inch concrete slab with 6x6-10/10 WWM @ center of slab thickness or with fiber mesh over 2 inch of sand over 10 mil visqueen over compacted soil (unless noted otherwise on plan).
- Pipe or ducts that exceed one third the slab or concrete wall thickness shall not be placed in structural concrete unless specifically detailed.

Concrete Notes

- Unless otherwise noted on plans concrete shall have a minimum compressive strength of 2500 psi in 28 days.
- Cement shall conform to ASTM C-150.
- Aggregate shall conform to ASTM C-33.
- Corners of slab, beams, walls and columns shall be formed with a 3/4" chamber unless noted otherwise on plans.
- For floor slab, provide 1" deep saw cuts or construction joints at a maximum of 18 feet O.C. each way, in a square pattern (unless shown otherwise).

Reinforcing Steel Notes

- Reinforcing steel shall conform to ASTM A615, graded as noted:
 - all #3 bars - grade 40
 - #4 bars in slabs or site work - grade 40
 - #4 bars in walls and foundation - grade 60
 - #5 and larger - grade 60
- All reinforcing steel, anchor bolts, and other inserts shall be secured in placing concrete or grouting of masonry.
- Reinforcing steel may be lap spliced with 50 bar diameters in masonry or 40 bar diameters in concrete with min. 18" lap.
- Provide the following minimum concrete cover:
 - surface cast against earth - 3"
 - exposed to earth or weather - 2"
 - not exposed to weather or earth - 1"
 - beam and column - 1.5"
 - slab on grade - mid depth
- Number 5 or larger reinforcing bars shall not be re-bent.
- Provide dowels in footings and/or grade beams with same size and number as vertical wall or column reinforcing, having a minimum projection equal to standard lap splice unless noted otherwise.

Lumber Notes

- All lumber shall be DOC PS20 or Equivalent - Douglas Fir-Larch visually graded per WCLIB/WWPA grading rules unless noted otherwise on plans:
 - 4x 2x joists and rafter - no. 2
 - 6x and larger beams - no. 2
 - plates, blocking and studs - no. 2
- Glued-laminated timber shall be Douglas Fir combination 24F-V4* DF/DF, industrial appearance with exterior glue (Fb = 2400 psi, Fv = 165 psi, E = 1800000 psi). A certificate of inspection for each GLB from an approved inspection agency shall be submitted.
- (*) use V8 for cantilever/continuous beams and V4 for simple span beams.
- Plywood sheathing shall conform to the requirement of latest edition of U.S. Product standard PS-1 and shall be graded marked in accordance with APA.
- All sills and plates resting on concrete or masonry and within 48" of earth shall be pressure treated Douglas Fir.
- All nails shall be common nails. Box nails are not acceptable uno on plans.
- Top plates to be doubled 2x unless noted otherwise. Lap 48" min with minimum of 8-16d through each side of splice unless noted otherwise on plans.

Wood Framing Notes

- Framing shall comply with the latest CBC.
- All connecting hardware, joist hangers, tie straps, etc., shall be Simpson Strong-Tie unless noted otherwise (UNO) on plans.
- Fasteners in contact with pressure treated wood shall be hot dipped zinc coated galvanized steel, stainless steel, silicon bronze or copper.

Roof Framing Notes

- Roof sheathing: min 1/2" CDX Struct. II plywood panel index no 24/0 with exterior glue. Use 8d nails at 6" O.C. at all edges, boundaries and shear walls and 12" O.C. in field. No blocking required UNO on plans (alt. 7/16" OSB).
- Framing around openings, trimmer and header joists shall be doubled and supported by hangers per code.
- Ceiling joists per plan.

Floor Framing Notes

- Floor sheathing: min 5/8" CDX Struct. II T&G plywood, index no. 32/16, 40/20, or 48/24 with exterior glue. Use 10d nails @ 6" O.C. at all edges, boundaries, shear walls, and 12" O.C. in field. All edges blocked at decks (alt. 19/32" OSB in lieu of 5/8" plywood).
- Provide continuous blocking between floor joists under bearing walls which are perpendicular to joists.
- Slab on grade: minimum 4 inch concrete slab with 6x6-10/10 w.w.m. @ center of slab thickness or with fiber mesh (unless noted otherwise).
- Framing around openings: trimmer and header joists shall be doubled and supported by hangers per code.

Wall Framing Notes

- Unless otherwise noted on plans, wood studs shall be as follows:
 - 2x4 @ 16" O.C. (bearing wall) supporting a max of one floor and on roof shall have a max height of 10 feet
 - 2x4 @ 24" O.C. (non-bearing wall) shall have a max height of 14 feet
 - 2x6 @ 16" O.C. (bearing wall) supporting a max of two floors and one roof shall have a max height of 10 feet
 - 2x6 @ 24" O.C. (non-bearing wall) shall have a max height of 20 feet
 - Rake walls adjacent to sloped ceilings shall be balloon framed. Double top plates shall always be supported by a roof or ceiling diaphragm.
 - Shear wall panel must be continuous to the top plate. Sheathing shall have all edges blocked and appropriate shear transfer through ceiling or sofit framing.
 - Wall bracing shall be provided per CBC (2326.5.1). Provide 1x6 let-in bracing @ approximate 45 degrees every 25' in all stud wall not sheathed. Braces to run continuous from top plate to sill plate.
 - Double top plate shall be lapped min. 48" at all splices and shall overlap at corners.
 - Boring and notching of wall studs shall be as follows:
 - Notching maximum: 25% of width on bearing walls
 - 40% of width on non-bearing walls
 - Boring maximum:
 - 40% of width on bearing walls
 - 60% of width on non-bearing walls
- Note: a min of 5/8" clearance from edge of stud to hole shall be provided

Joist / Rafter Framing Notes

- Boring and notching of joists shall conform to CBC: Boring-max diameter of hole shall not exceed 1/3 of depressed depth of joist with min edge clearance of 2 inches. Notching-max depth at ends shall not exceed 1/4 of depressed depth. No notching is allowed in the center third of the joist span. Notching in other locations shall be in the compression side with a max depth of 1/6 of the joist depth.
- Where three or more joists are used the joists shall be bolted together with 1/2" diameter machine bolts w/washers at 24" O.C. staggered. Bolts shall be retightened prior to applying finish materials.
- Joists/rafters shall lap at splices a min of 4 inches with 3-16d nails.
- Cross bridging or 2x blocking shall be provided @ 8'-0" O.C. for all joists and rafters more than 8" in depth.
- 2x solid blocking shall be placed between joists or rafters at all supports.

Roof / Floor Truss Notes

- A complete set of truss calculations, shop drawings, prepared and signed by a California Registered Engineer shall be submitted to EOR prior to fabrication.
- Truss manufacturer shall provide and design hangers and web blocking as required.
- The contractor shall notify truss manufacturer of any modification. The EOR is not responsible for the truss design and modification during construction.

Shear Wall Schedule						
SW	Plywood/OSB	Framing	Nails	Spacing	Shear	5/8"ab
1	3/8" Min CDX	2x	8d	6"	220	48
2	3/8" Min CDX	2x	8d	4"	320	32
3	3/8" Min CDX	3x	8d	2" stag	530	24
TS SW	Sheathing	Panel	Screws	Spacing	Shear	5/8" ab
1B	3/8" Min CDX	20 Ga, EPS 1.5, 24" Studs			356	48"
3B	3/8" Min CDX	18 Ga, EPS 1.5, 16" Studs			513	32"
Roof	1/2" CDX 24/0	2x	8d	6"	215	
Floor	3/4" CDX 24/0	2x	8d	6"	215	

NAILING SCHEDULE	
CONNECTION	NAILING
1. JOIST TO SILL OR GIRDER, TOENAIL	3-8d
2. BRIDGING TO JOIST, TOENAIL EACH END	2-8d
3. 1" x 6" SUBFLOOR OR LESS TO EACH JOIST, FACE NAIL	2-8d
4. WIDER THAN 1" x 6" SUBFLOOR TO EACH JOIST, FACE NAIL	3-8d
5. 2" SUBFLOOR TO JOIST OR GIRDER, BLIND AND FACE NAIL	2-16d
6. SILL PLATE TO JOIST OR BLOCKING, TYPICAL FACE NAIL SILL PLATE TO JOIST OR BLOCKING, AT BRACED WALL PANEL	16d @ 16" O.C. 3-16d PER 16"
7. TOP PLATE TO STUD, END NAIL	2-16d
8. STUD TO SILL PLATE	4-8d FOR TOENAIL OR 2016d FOR END NAIL
9. DOUBLE STUDS, FACE NAIL	16d @ 24" O.C.
10. DOUBLED TOP PLATES, TYPICAL FACE NAIL DOUBLED TOP PLATES, 4' MIN LAP SPLICE	16d @ 16" O.C. 8-16d
11. BLOCKING BETWEEN JOISTS OR RAFTERS TO TOP PLATE	3-8d
12. RIM JOIST TO TOP PLATE, TOENAIL	8d @6" O.C
13. TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL	2-16d
14. CONTINUOUS HEADER, TWO PIECES	16d @ 16" O.C ALONG EACH SIDE
15. CEILING JOIST TO TOP PLATE, TOENAIL	3-8d
16. CONTINUOUS HEADER TO STUD, TOENAIL	4-8d
17. CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	3-16d
18. CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	3-16d
19. RAFTER TO PLATE, TOENAIL	3-8d
20. 1" BRACE TO EACH STUD AND PLATE, FACE NAIL	2-8d
21. 1" x 8" SHEATHING OR LESS TO EACH BEARING, FACE	3-8d
22. WIDER THAN 1"X8" SHEATHING TO EACH BEARING,FACE WALL	3-8d
23. BUILT- UP CORNER STUDS	16d @ 24" O.C
24. BUILT- UP GIRDER AND BEAMS	20d @ 32" O.C STAGGERED W/ 2-20d AT ENDS AND AT EACH SPLICE
25. 2" PLANKS	2-16d AT EACH BEARING

JOB COPY

CBC 2022
Wind 110mph (85mph Valt)
Seismic D
Soil 1500 psf
Concrete 2500 psf

Design Loads for this Project:
Floor Live Load: 40 psf, Floor Dead Load: 15 psf
Roof Live Load: 20 psf, Roof Dead Load: 15 psf

Applicable Codes

City of Grand Terrace Municipal Code

2022 CA Building Codes

2022 CRC, 2022 CBC, 2022 CPC, 2022 CMC,
2022 CEC, 2022 CA Energy, 2022 CGBC

REVISIONS	DESCRIPTION	DATE
	① SUBMITTAL	6/26/2024
	② SUBMITTAL-2	9/14/2024
	③ REVIEW	9/27/2024
	④ SUBMITTAL-3	10/24/2024
	⑤ SUBMITTAL-4	11/8/2024



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20352 Portview Circle Suite 201
Huntington Beach CA 92646

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MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Structural Notes

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	
PROJECT	NTS
SHEET	MBE--PEARCE

S1

Addition

Notes:

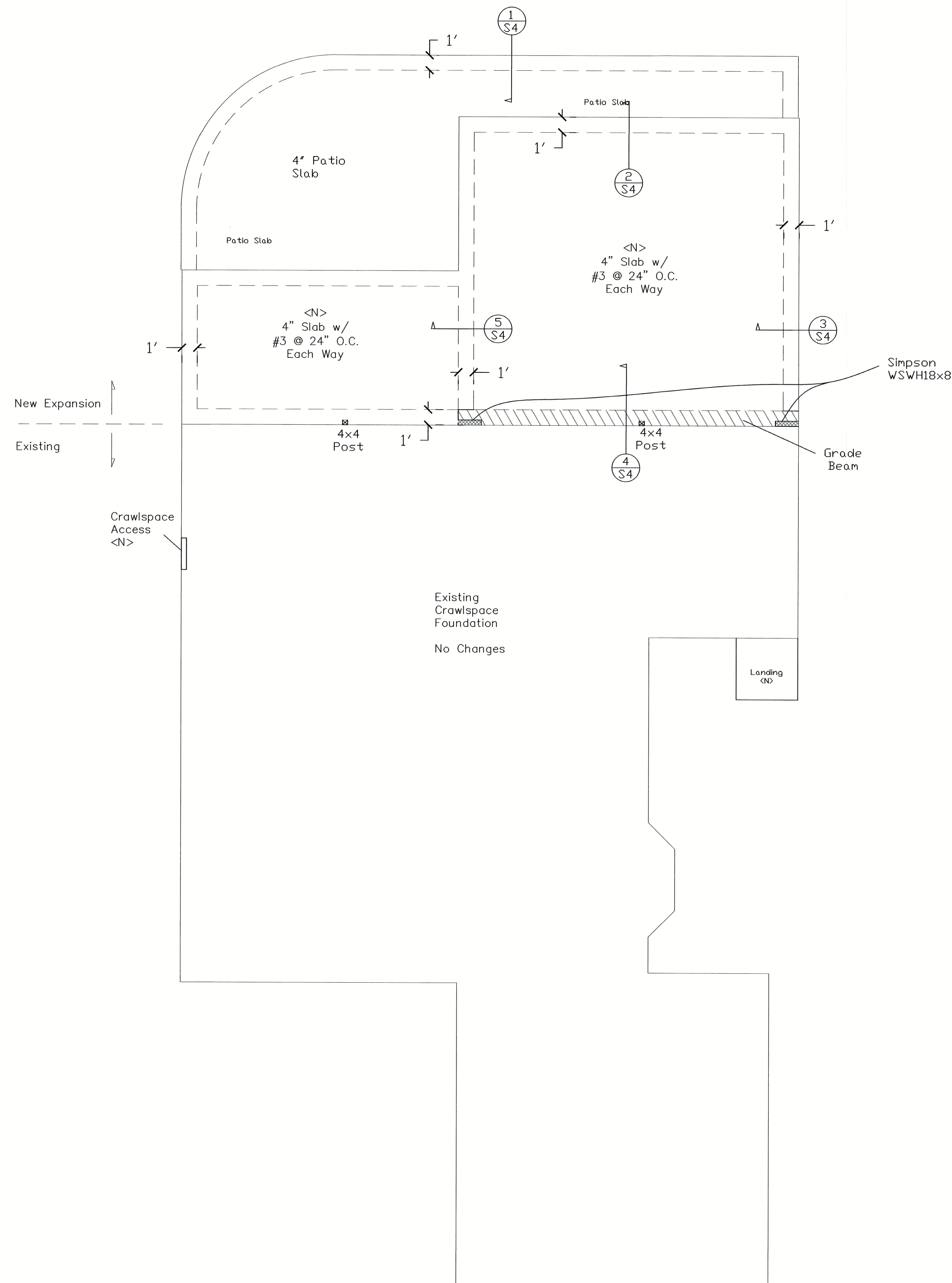
The contractor shall provide a written letter to the building inspector stating that all inaccessible structural connections have been installed in conformance with the requirements of the approved plans.

Wood blocking shall be installed to accommodate future installation of safety hardware/grab bars

ALL MATERIALS SPECIFIED ARE MINIMUM REQUIREMENTS.

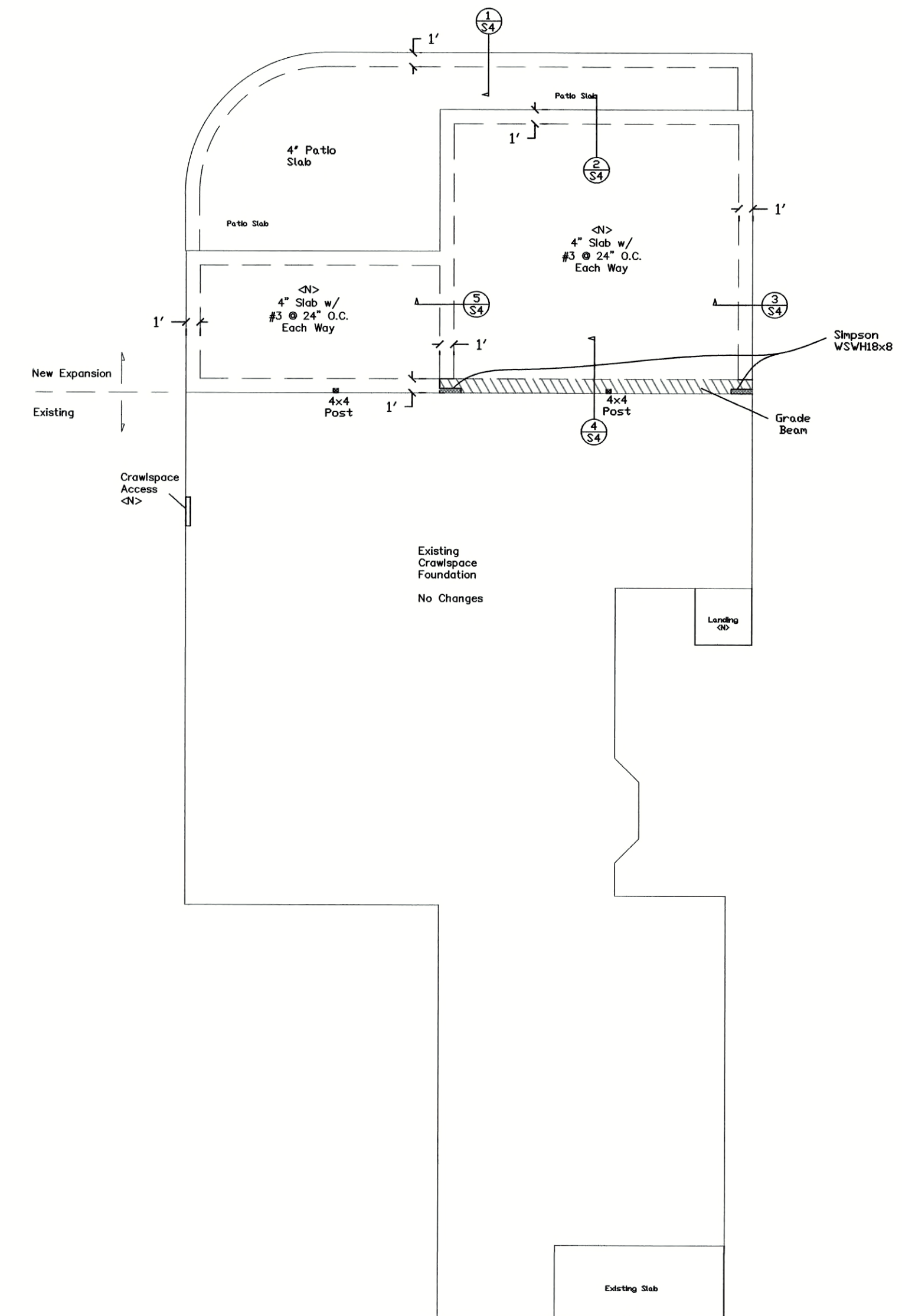
IF CONFLICTS OCCUR BETWEEN PLAN AND DETAIL, THE MORE CONSERVATIVE VALUE GOVERNS.

CONTRACTOR SHALL VERIFY AND CLARIFY ALL DIMENSIONS AND MATERIALS BEFORE CONSTRUCTION BEGINS.



1/4" = 1'

1/8" = 1'



Note: Lot shall be graded to drain surface water away from foundation. The grade shall fall not fewer than 6 inches within the first 10 feet. Impervious surface may be min 2% slope. Drains or swales shall be provided where 10' distance can't be provided. (CRC R401.3).

REVISIONS		DATE
DESCRIPTION		
1	SUBMITTAL	6/26/2024
2	SUBMITTAL-2	9/4/2024
3	REVIEW	9/27/2024
4	SUBMITTAL-3	10/24/2024
5	SUBMITTAL-4	11/8/2024



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MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Foundation Plan

DRAWN	CS/TS
CHECKED	
SCALE (on 24x36 Sheet)	Varies
PROJECT	MBE-PEARCE
SHEET	

S2

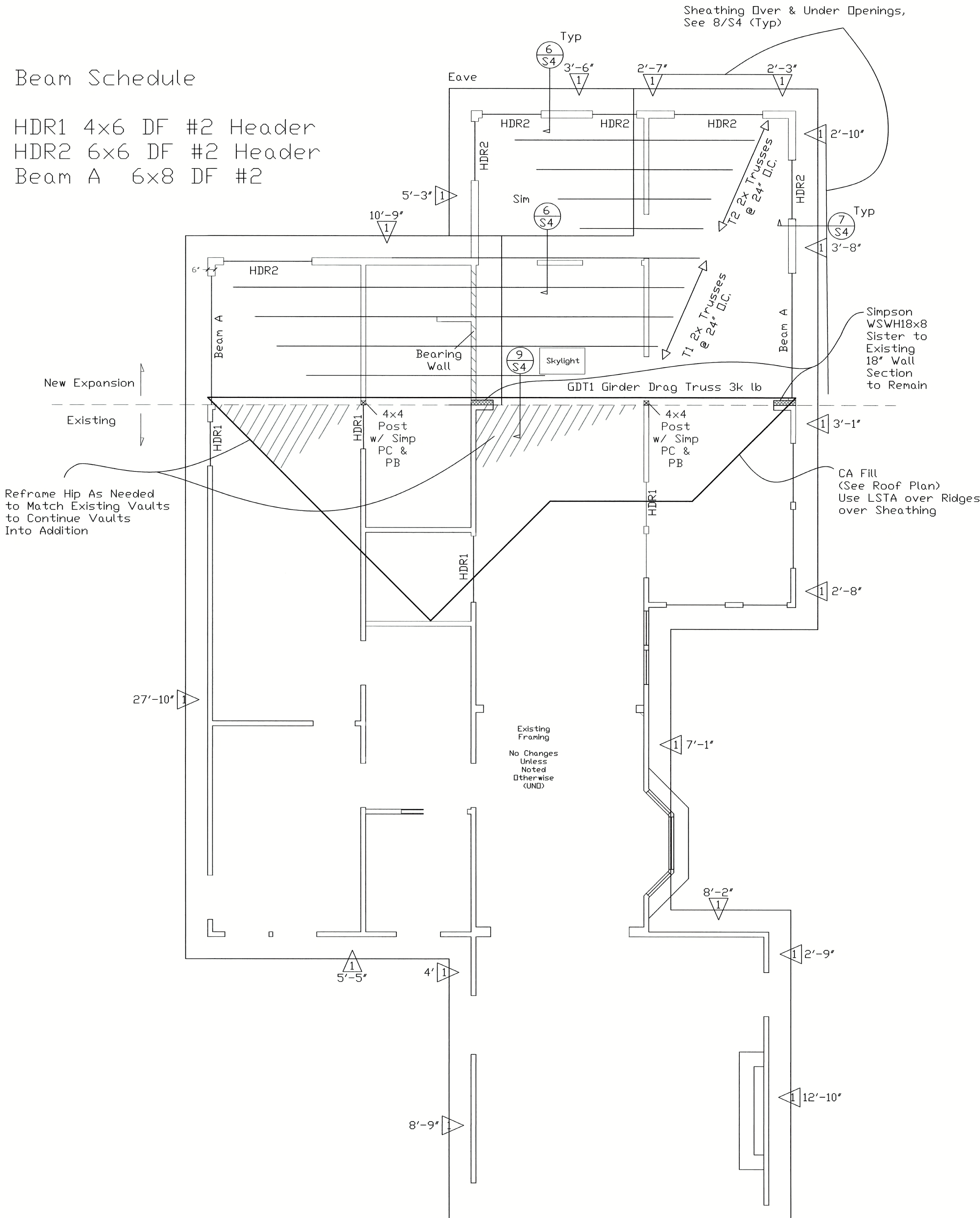
Addition

1/4" = 1'

1/8" = 1'

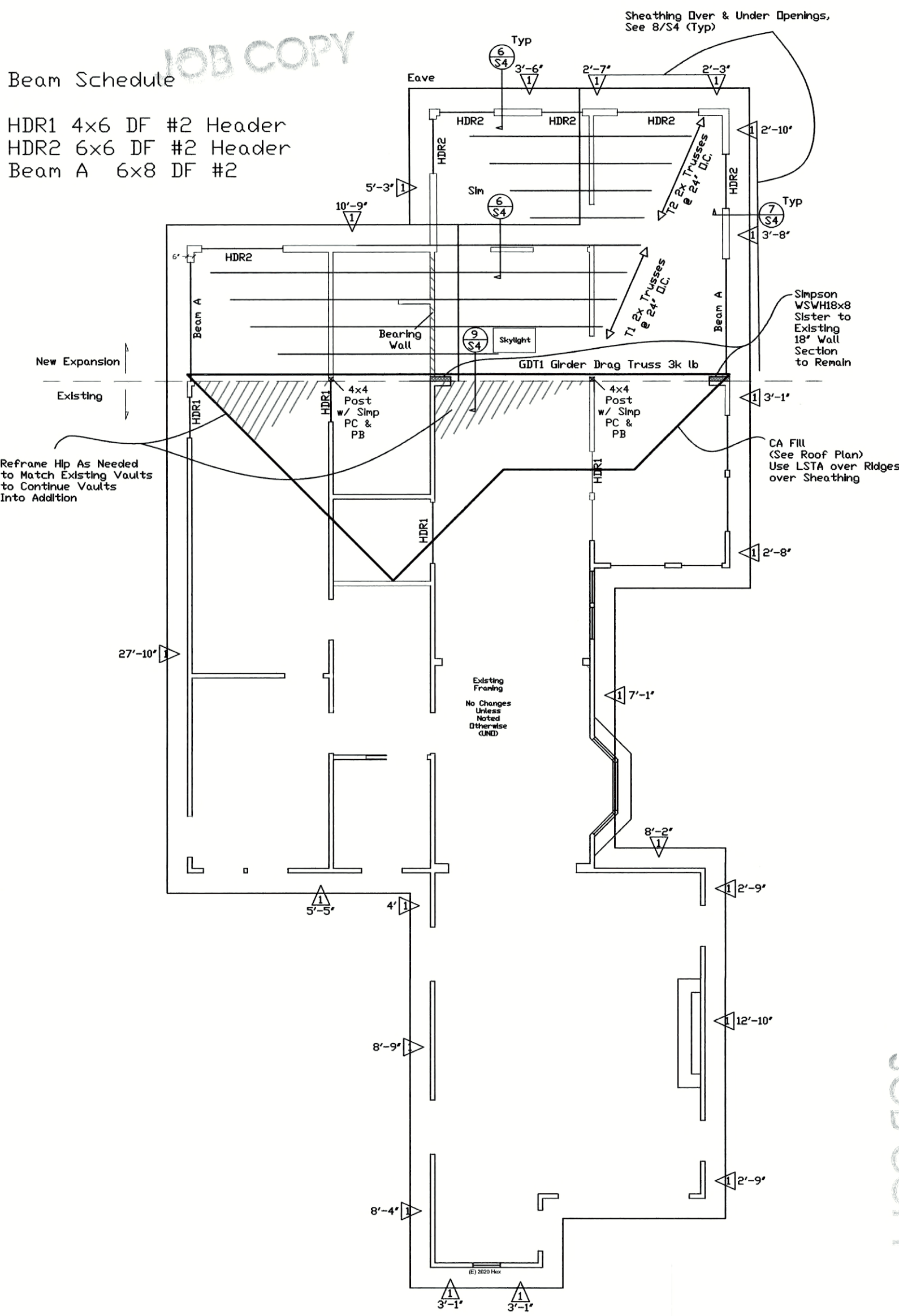
Beam Schedule

HDR1 4x6 DF #2 Header
HDR2 6x6 DF #2 Header
Beam A 6x8 DF #2



Beam Schedule

HDR1 4x6 DF #2 Header
HDR2 6x6 DF #2 Header
Beam A 6x8 DF #2



REVISIONS	DATE
1	6/26/2024
2	9/4/2024
3	9/27/2024
4	10/24/2024
5	11/8/2024

DESCRIPTION	DATE
SUBMITTAL	6/26/2024
SUBMITTAL-2	9/4/2024
REVIEW	9/27/2024
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REGISTERED PROFESSIONAL ENGINEER
TYLER SMITHSON
054626
EXP 12/31/26
CIVIL
STATE OF CALIFORNIA

Digitally Signed
Nov-8
2024

MBE Construction
Pearce Addition
12355 Michigan St
Grand Terrace CA 92313

Framing Plan

DRAWN CS/TS
CHECKED
SCALE (on 24x36 Sheet) Varies
PROJECT MBE-PEARCE
SHEET

S3
Addition

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 12355 Michigan St Residence_
Calculation Description: Title 24 Analysis
Analysis_V9.2.2- Addition.rbd22x

Calculation Date/Time: 2024-06-19T14:42:58+05:30
Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy
Analysis_V9.2.2- Addition.rbd22x

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(Page 1 of 15)

GENERAL INFORMATION										
01	Project Name	12355 Michigan St Residence_								
02	Run Title	Title 24 Analysis								
03	Project Location	12355 Michigan St								
04	City	Grand Terrace		05	Standards Version		2022			
06	Zip code	92313		07	Software Version		EnergyPro 9.2			
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 (ft²)	620		15	Number of Stories		1			
16	Existing Cond. Floor Area (ft²)	1980		17	Fenestration Average U-factor		0.31			
18	Total Cond. Floor Area (ft²)	2600		19	Glazing Percentage (%)		17.80%			
20	ADU Bedroom Count	n/a		21	ADU Conditioned Floor Area		n/a			
22	Fuel Type	Natural gas		23	No Dwelling Unit:		No			

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

Registration Number: 424-P010111209A-000-000-0000000-0000
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01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft²)	Avg. Ceiling Height	Water Heating System 1	Status
(E) Residence Living Area	Conditioned	(N) HVAC System1	1980	8	DHW Sys 1	Existing Unchanged
(N) Addition	Conditioned	(N) HVAC System1	620	8	DHW Sys 1	New

01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft2)	Tilt (deg)	Wall Exceptions	Status	Verified Existing Condition
Front Wall S	(E) Residence Living Area	Default Wall 1992 to Pres	180	Front	524.06	66.81	90	none	Existing	No
Rear Wall N	(E) Residence Living Area	Default Wall 1992 to Pres	0	Back	554.06	70.64	90	none	Existing	No
Left Wall W	(E) Residence Living Area	Default Wall 1992 to Pres	270	Left	405.61	127.03	90	none	Existing	No
Diagonal Wall SW	(E) Residence Living Area	Default Wall 1992 to Pres	225	n/a	19.28	5.01	90	none	Existing	No
Diagonal Wall SE	(E) Residence Living Area	Default Wall 1992 to Pres	135	n/a	19.28	5.01	90	none	Existing	No
Front Wall S 2	(N) Addition	R-21 Wall_	180	Front	160	40	90	Extension	New	n/a
Rear Wall N 2	(N) Addition	R-21 Wall_	0	Back	80	24	90	Extension	New	n/a
Rear Wall N 3	(N) Addition	R-21 Wall_	0	Back	80	16	90	none	New	n/a
Right Wall E	(N) Addition	R-21 Wall_	90	Right	320	122.03	90	none	New	n/a
Interior Wall	(E) Residence Living Area>(E) Residence Living Area	R-13 Wall	n/a	n/a	73.44	0	n/a		Altered	No
Attic Roof	(E) Residence Living Area	Default Roof 2013-Present	n/a	n/a	518	n/a	n/a		Existing	No

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01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window 3460_2	Window	Rear Wall N	Back	0			1	19.98	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
(N) Window 4018_	Window	Rear Wall N	Back	0			1	6.68	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 3040_	Window	Rear Wall N	Back	0			1	12	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 3040_2	Window	Rear Wall N	Back	0			1	12	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 3040_3	Window	Left Wall W	Left	270			1	12	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 3040_4	Window	Left Wall W	Left	270			1	12	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 3090_	Window	Left Wall W	Left	270			1	9	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 2020_	Window	Left Wall W	Left	270			1	4	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 9860_	Window	Left Wall W	Left	270			1	58.02	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 4030_3	Window	Left Wall W	Left	270			1	12	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 1830_	Window	Diagonal Wall SW	225				1	5.01	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No
Window 1830_2	Window	Diagonal Wall SE	135				1	5.01	0.55	Table 110.6-A	0.67	Table 110.6-B	Bug Screen	Existing	No

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Analysis_V9.2.2- Addition.rbd22x

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ENERGY USE SUMMARY						
Energy Use	Standard Design Source Energy (EDR1) (kBtu/ft² · yr)	Standard Design TDV Energy (EDR2) (kTDV/ft² · yr)	Proposed Design Source Energy (EDR1) (kBtu/ft² · yr)	Proposed Design TDV Energy (EDR2) (kTDV/ft² · yr)	Compliance Margin (EDR1)	Compliance Margin (EDR2)
Space Heating	0	37.15	0	35.52	0	1.63
Space Cooling	0	80.38	0	79.84	0	0.54
IAQ Ventilation	0	0	0	0	0	0
Water Heating	0	13.84	0	13.84	0	0
Self Utilization/Flexibility Credit						
Efficiency Compliance Total	0	131.37	0	129.2	0	2.17
Photovoltaics		0		0		
Battery				0		
Flexibility						
Indoor Lighting	0	6.46	0	6.46		
Appl. & Cooking	0	12.94	0	12.94		
Plug Loads	0	17.86	0	17.86		
Outdoor Lighting	0	1.65	0	1.65		
TOTAL COMPLIANCE	0	170.28	0	168.11		

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01	02	03	04	05	06	07	08	09	10	11
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft²)	Window and Door Area (ft2)	TiR (deg)	Wall Exceptions	Status	Verified Existing Condition
(N) Attic Roof	(E) Residence Living Area	R-30 Roof Attic + R13 BRD	n/a	n/a	157	n/a	n/a		New	n/a
Attic Roof 2	(N) Addition	R-30 Roof Attic + R13 BRD	n/a	n/a	410	n/a	n/a		New	n/a
Raised Floor	(E) Residence Living Area	Default Floor Crawlspace	n/a	n/a	1980	n/a	n/a		Existing	No

01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Zone	Construction	Azimuth	Orientation	Area (ft²)	Skylight Area (ft²)	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Cool Roof	Status	Verified Existing Condition	Existing Construction
Non-Attic Roof S	(E) Residence Living Area	R-0 Roof No Attic	180	Front	495	0	4	0.1	0.85	No	Existing	No	
Non-Attic Roof N	(E) Residence Living Area	R-0 Roof No Attic	0	Back	415	0	4	0.1	0.85	No	Existing	No	
Non-Attic Roof W	(E) Residence Living Area	R-0 Roof No Attic	270	Left	158	0	4	0.1	0.85	No	Existing	No	
Non-Attic Roof E	(E) Residence Living Area	R-0 Roof No Attic	90	Right	60	0	4	0.1	0.85	No	Existing	No	
(N) Non-Attic Roof E	(E) Residence Living Area	R-21 Roof No Attic	90	Right	177	0	4	0.1	0.85	No	New	n/a	
Non-Attic Roof S 2	(N) Addition	R-21 Roof No Attic	180	Front	92	6.4	4	0.1	0.85	No	New	n/a	
Non-Attic Roof N 2	(N) Addition	R-21 Roof No Attic	0	Back	118	0	4	0.1	0.85	No	New	n/a	

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01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft²)	U-factor	U-factor Source	SHGC	SHGC Source	Exterior Shading	Status	Verified Existing Condition
Window 4030_4	Window	Front Wall S 2	Front	180			1	12	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4030_5	Window	Front Wall S 2	Front	180			1	12	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4040_	Window	Front Wall S 2	Front	180			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4030_6	Window	Rear Wall N 2	Back	0			1	12	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4030_7	Window	Rear Wall N 2	Back	0			1	12	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4040_2	Window	Rear Wall N 3	Back	0			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Door 6068_	Window	Right Wall E	Right	90			1	40.02	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4040_3	Window	Right Wall E	Right	90			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 4040_4	Window	Right Wall E	Right	90			1	16	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Door 3068_2	Window	Right Wall E	Right	90			1	20.01	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Window 6050_	Window	Right Wall E	Right	90			1	30	0.3	NFRC	0.23	NFRC	Bug Screen	New	NA
Skylight 3121_	Skylight	Non-Attic Roof S 2	Front	180			1	6.4	0.49	NFRC	0.27	NFRC		New	NA

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 12355 Michigan St Residence_
Calculation Description: Title 24 Analysis
Analysis_V9.2.2- Addition.rbd22x

Calculation Date/Time: 2024-06-19T14:42:58+05:30
Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy
Analysis_V9.2.2- Addition.rbd22x

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ENERGY USE INTENSITY				
	Standard Design (kBtu/ft² · yr)	Proposed Design (kBtu/ft² · yr)	Compliance Margin (kBtu/ft² · yr)	Margin Percentage
Gross EUI¹	26.86	26.66	0.2	0.74
Net EUI²	26.86	26.66	0.2	0.74

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 12355 Michigan St Residence_

Calculation Description: Title 24 Analysis

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Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.2.2-Addition rbd22x

01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-21 Roof No Attic	Cathedral Ceilings	Wood Framed Ceiling	2x12 @ 16 in. O. C.	R-21	None / None	0.047	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-21 / 2x12 Inside Finish: Gypsum Board
R-13 Wall	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-13	None / None	0.092	Inside Finish: Gypsum Board Cavity / Frame: R-13 / 2x4 Other Side Finish: Gypsum Board
Attic Roof(E) Residence Living/E Area	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-3	None / 0	0.222	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-3 / 2x4
Attic Roof(N) Addition	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-13	None / 0	0.078	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-0.0 Insul.
Default Floor Crawlspace	Floors Over Crawlspace	Wood Framed Floor	2x8 @ 16 in. O. C.	R-19	None / None	0.049	Floor Surface: Carpeted Floor Deck: Wood Siding/sheathing/decking Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x8
Default Roof 2013-Present	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 Insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board
R-30 Roof Attic + R13 BRD	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-30	None / None	0.032	Over Ceiling Joists: R-20.9 Insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 12355 Michigan St Residence_

CFIR-PRF-01-e

Calculation Date/Time: 2024-06-19T14:52:58+00:00

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Calculation Description: Title 24 Analysis

Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.2.2-Addition.rbd22x

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Name	Type	Design Type	Duct Ins. R-value	Duct Location	Surface Area	Suppl y	Retur n	Bypass Duct	Duct Leakage	HERS Verification	Status	Verified Existing Condition	Existing Distribution system	New Ducts >= 25 ft	
Air Distribution System 1	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Air Distribution System 1-HERS-dist	New	n/a	No	

HVAC - DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08	09
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler	Low Leakage Ducts Entirely in Conditioned Space
Air Distribution System 1-HERS-dist	Yes	5.0	Not Required	Not Required	Not Required	Credit not taken	Not Required	No

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	Name
HVAC Fan 1	HVAC Fan	0.45	HVAC Fan 1-HERS-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficacy (Watts/CFM)
HVAC Fan 1-HERS fan	Required	0.45

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD										CFR 192F-01-E				
Project Name: 12355 Michigan St Residence_										Calculation Date/Time: 2024-06-19T14:42:58+05:30				
Calculation Description: Title 24 Analysis										Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.2.2-Addition.rbd22x				
BUILDING ENVELOPE - HERS VERIFICATION														
01		02		03		04		05						
Quality Insulation Installation (QII)		High R-value Spray Foam Insulation		Building Envelope Air Leakage		CFM50		CFM50						
Not Required		Not Required		N/A		n/a		n/a						
WATER HEATING SYSTEMS														
01	02	03	04	05	06	07	08	09	10	11	12			
Name	System Type	Distribution Type	Water Heater Name	Number of Units	Solar Heating System	Compact Distribution	HERS Verification	Water Heater Name (#)	Status	Verified Existing Condition	Existing Water Heating System			
DHW Sys 1	Domestic Hot Water (DHW)	Standard	DHW Heater 1	1	n/a	None		DHW Heater 1 (1)	Altered	No				
WATER HEATERS														
01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
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	Verified Existing Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	UEF	0.81	Btu/Hr	200000	0	n/a	n/a		Altered	No
WATER HEATING - HERS VERIFICATION														
01		02		03		04		05		06		07		
Name		Pipe Insulation		Parallel Piping		Compact Distribution		Compact Distribution Type		Recirculation Control		Shower Drain Water Heat Recovery		
DHW Sys 1 - 1/1		Not Required		Not Required		Not Required		None		Not Required		Not Required		

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD		CF1R-PRF-01-E
Project Name: 12355 Michigan St Residence_	Calculation Date/Time: 2024-06-19T14:42:58+05:30	(Page 14 of 15)
Calculation Description: Title 24 Analysis	Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.2.2-Addition.rbd22x	
HERS RATER VERIFICATION OF EXISTING CONDITIONS		

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CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD

Project Name: 12355 Michigan St Residence_

Calculation Description: Title 24 Analysis

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Calculation Date/Time: 2024-06-19T14:42:58+05:30

Input File Name: 6189_12355 Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.2.2_Addition.rbd22x

SPACE CONDITIONING SYSTEMS											
01	02	03	04	05	06	07	08	09	10	11	12
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	Existing HVAC System
(N) HVAC System1	Heating and cooling system other	Heating Component 1	1	Cooling Component 1	1	HVAC Fan 1	Air Distribution System 1	Setback	New	No	

HVAC - HEATING UNIT TYPES				
01	02	03	04	05
Name	System Type	Number of Units	Heating Efficiency	Heating Unit Brand
Heating Component 1	Central gas furnace	1	AFUE - 80	n/a

HVAC - COOLING UNIT TYPES					
01	02	03	04	05	06
Name	System Type	Number of Units	Efficiency Metric	Efficiency EER/SEER/CEER	Efficiency SEER/SEER2
Cooling Component 1	Central split AC	1	EER/SEER	12.5	15

HVAC COOLING - HERS VERIFICATION					
01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER/SEER2	Verified SEERSEER2	Verified Refrigerant Charge
Cooling Component 1-hers-cool	Required	350	Required	Not Required	Required

CERTIFICATE OF COMPLIANCE – RESIDENTIAL PERFORMANCE COMPLIANCE METHOD Project Name: 12355 Michigan St Residence_ Calculation Description: Title 24 Analysis	CFIR-PFR-01-E Input Date/Time: 2024-06-19T14:42:58+00:30 Input File Name: 6189_12355Michigan St, Grand Terrace, CA 92313_Energy Analysis_V9.3.2_Addition.rbd2x
DOCUMENTATION AUTHOR'S DECLARATION STATEMENT I, I certify that this Certificate of Compliance documentation is accurate and complete. Documentation Author Name: Viranchi Shah	
Company: www.gettitle24.com Address: 14730 Beach Blvd., #133 City/State/Zip: La Mirada, CA 90638	Documentation Author Signature: <i>Viranchi Shah</i> Signature Date: 06/19/2024 CEA/HERS Certification Identification (If applicable): R19-19-30147 Phone: 714-488-4736
	
RESPONSIBLE PERSON'S DECLARATION STATEMENT I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance. 2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.	
Responsible Design Name: Tyler Smithson Company: Smithson Engineering Address: 20352 Portview Circle, Suite 201, City/State/Zip: Huntington Beach, CA 92646	Responsible Designer Signature: <i>Tyler Smithson</i> Date Signed: 06/20/2024 License: Phone: (909) 496-0786

Registration Number: 424-P010111209A-000-000-00000000-0000 Registration Date/Time: 06/20/2024 13:14 HERS Provider: CHEERS
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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)

Building Envelope:

\$ 110(a)(1)	Air Leakage. Manufactured fenestration, exterior doors, and exterior pet door must all meet air leakage to 0.3 CFM per square foot or less when tested per NFRC-400, ASTM E283, or AAMA/WDMA/CSA-1011.5/5.5/44-04-11.
\$ 110(a)(2)	Labeling Requirements. Exterior doors and exterior pet doors must have a label that meets the requirements of § 101.11(f).
\$ 110(a)(3)	Field Fabricated exterior doors and fenestration products must have a label that meets the requirements of § 101.11(f). Field fabricated exterior doors and fenestration products must have a label that meets the requirements of § 101.11(f).
\$ 110(b)	Field Fabricated exterior doors and fenestration products must have a label that meets the requirements of § 101.11(f).
\$ 110(c)	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be sealed, gasketed, or weathered sealed.
\$ 110(d)	Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
\$ 110(e)	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
\$ 110(f)	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 § 110.13 when the installation of a cool roof is specified on the CDRB.
\$ 110(g)	Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
\$ 110(h)	Roof Deck, Ceiling and Rafter Insulation. Roof deck in newly constructed attics in climate zones 4 and 5 is 4-6 or 4-8 are-weighted U-Factor not exceeding U-Factor 0.154. 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 contact with a roof or ceiling surface. Insulation must be certified and labeled as specified in § 110.7, including but not limited to placing insulation either above or below the roof deck on top of a drywall ceiling.
\$ 110(i)(1)	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's requirements for the labeled R-Value.
\$ 110(i)(2)	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-Factor of 0.102 or less, and R-26 in 2x6 inch wood framing or have a U-Factor of 0.071 or less. Oppose non-framed assemblies must have an overall assembly U-Factor not exceeding 0.02. Masonry walls must meet Tables 15-A-1 or B-1.
\$ 110(j)(1)	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-Factor.
\$ 110(j)(2)	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 vapor permeance no greater than 20 perm in; 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).
\$ 110(k)(1)	Vapor Retarder. In climate zones 1 through 16, the earth floor of inverted 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).
\$ 110(k)(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.
\$ 110(k)(3)	Fenestration Products. Fenestration products, including sliding sash, operable casement, awning, and fixed products, must have a maximum U-Factor of 0.45; or area-weighted average U-Factor of all fenestration must not exceed 0.45.
\$ 110(k)(4)	Fenestration Products. Fenestration products, including sliding sash, operable casement, awning, and fixed products, must have a maximum U-Factor of 0.45; or area-weighted average U-Factor of all fenestration must not exceed 0.45.

Fireplaces, Decorative Gas Appliances, and Gas Log:

§ 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 tight-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.

Space Conditioning, Water Heating, and Plumbing System:

§ 110.0.0 § 110.3
§ 110.2(a) **Certification.** Heating, ventilation, and air conditioning (HVAC) equipment, water heaters, showers, faucets, and all other required appliances must be certified by the manufacturer to the California Energy Commission.

§ 110.2(b) **HVAC Equipment.** Existing equipment must meet the applicable efficiency standards through Table 110.2-N.

§ 110.2(c) **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/cooling for compression heating is higher than the cut-off temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.

§ 110.2(d) **Thermostats.** All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.

§ 110.2(e) **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(a)(3) **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.

5/6/22



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):	Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, and/or Heating, Ventilation and Air Conditioning, the SMACNA Residential Comfort System Installation Standards Manual, or the ACCA Manual J using design conditions specified in § 150.0(i)(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 drain.
§ 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):	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):	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 resistant 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. Piping insulation buried below grade must be installed in a waterproof and non-crushable casing or sleeve.
§ 150.0(l)(n):	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 less than 2" in diameter than the base of the water heater.
§ 150.0(m)(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.

Ducts and Fans:

§ 110.0(e)(3)	Ducts. Installation on an existing space-conditioning duct must comply with § 60.0.4 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. CMC Compliance. All air-distribution system ducts and plenums must meet CMC §§ 601.0-0.05 and ANSIS/ACCA-006-2006 HVAC Building Construction Standards, 2006, 2nd Edition. Portions of supply and return air plenums must be constructed of steel or R-6.0 or higher; ducts located entirely in conditioned space as confirmed through verification and diagnostic testing (13.4.3) 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 mastic or tape must be used to seal openings greater than 1/4". If mastic or tape is used, building cavities, air handler support platforms, 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 platforms may contain ducts, ducts installed in these spaces must not be compressed.
§ 150.0(m)(1)	Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures, panels and seams of duct systems and their components must not be sealed with duct black rubber adhesive duct tape unless the manufacturer specifically states that the material may be used with duct tape.
§ 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 damper.
§ 150.0(m)(8)	Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have air openings and/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 tool misuse, 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). Cellular foam insulation must be protected from damage by rodents or other animals. Other solar radiation-resistant cover material is permitted.
§ 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 occupied space, the duct system must be tested, as confirmed through field verification and diagnostic testing, in accordance with Reference Standard Appendix R3A.1.
§ 150.0(m)(12)	Air Filtration. Space conditioning systems with ducts exceeding 10 feet and the supply side of one inch ducts 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. Clear-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 prevent air from bypassing the filter.

5/6/22



2022 Single-Family Residential Mandatory Requirements Summary

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 ≥ 350 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency ≤ 0.45 watts per CFM for gas furnace air handlers and ≤ 0.58 watts per CFM for air handlers. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3. *

Ventilation and Indoor Air Quality:

§ 150.0(a):	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(i). *
§ 150.0(b):	Central Fan Integrated (CFI) Ventilation Systems. Continuous operation of CFI fan handlers is not allowed to provide the whole-dwelling-unit ventilation required by § 150.0(i)(1)(C). A motorized damper(s) must be installed in the ventilation duct that prevents all airflow through the space conditioning duct system when the damper(s) is closed and/or controlled per § 150.0(i)(1)(B). CFI ventilation systems must ensure that tracks for outdoor air ventilation run time, and either open or close the motorized damper(s) for compliance with § 150.0(i)(1)(C).
§ 150.0(c):	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(i)(1)(C)ii.
§ 150.0(g):	Local Mechanical Exhaust. Kitchens and bathrooms must not have local mechanical exhaust; nonexhausted kitchens must have demand-controlled exhaust system meeting requirements of § 150.0(i)(1)(G)ii and enclosed kitchens and bathrooms can use demand-controlled or controlled exhaust meeting § 150.0(i)(1)(G)iii. Airflow must be measured by the installer per § 150.0(i)(1)(G), and rated for sound per § 150.0(i)(1)(G)*.
§ 150.0(h)&:	Airflow Measurement and Sound Ratings of Whole-Dwelling Unit Ventilation Systems. The airflow required per § 150.0(i)(1)(C) must be measured by using a flow hood, flow grid, or other airflow measuring device at the fan's inlet or outlet terminals/registers (per Reference Residential Appendix R3.7). Whole-dwelling unit ventilation systems must be rated for sound per ASHRAE 62.2 § 7.2 at no less than the minimum airflow rates required per § 150.0(i)(1)(C).
§ 150.0(j):	Field Verification and Diagnostic Testing. Whole-Dwelling Unit ventilation airflow, whole-dwelling unit sound rating, and HRV and ERV fan efficiency must be verified in accordance with Reference Residential Appendix R3.7. Ventile ranges must be verified per Reference Residential Appendix RA3.7.4.3 to confirm if it is rated by HV or AHAM to comply with the airflow rates and sound requirements per § 150.0(i)(1)(G).

Pool and Spa Systems and Equipment:

§ 110.10(a) § 110.10(b) § 110.10(c) § 110.10(d) § 110.10(e) § 110.10(f) § 110.10(g)	Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: compliance to the ASHRAE 90.1-2010 energy code; a minimum 10-year warranty on the heat exchanger; a minimum 10-year warranty on the heat pump; and the ability to shut off the heater without adjusting the thermostat setting, a permanent waterproof plate or card with operating instructions; and must use electric resistance heating. 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. Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover. Controls and Thermostats. Switches for Pools, Pumps and Spas must be located in the pool water, and a line switch must be provided that will allow all pumps to be set or programmed to run during off-peak electrical demand periods. Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light. Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump
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Lighting:

	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.
§ 150.001(A):	Luminaire Efficiency. All installed luminaires must meet the requirements in Table 150.0-4A, except lighting integral to exhaust fans, kitchen range hoods, vanity mirrors, and garage door openers; navigation lighting less than 7 watts; and lighting integral to drawers, cabinets, and doors with an efficacy of at least 100 lumens per watt.
§ 150.001(B):	Screw-based Luminaires. Screw-based luminaires must contain lamps that comply with Reference Joint Appendix JA8.
§ 150.001(C):	Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must not contain screw-based ballasts; must be airtight, and must be sealed with a gasket or caulk. California Electrical Code § 410.116 must also be met.
§ 150.001(D):	Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JAB associated temperature requirements, including marking requirements, must be installed in enclosed or recessed luminaires.
§ 150.001(E):	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, a vacancy sensor circuit, low voltage wiring, or fan speed circuit.
§ 150.001(F):	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(X).

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§ 150.00(1)(G)	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.
§ 150.00(1)(H)	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.
§ 150.00(1)(I)	Light Sources in Drawers, Cabinets, and Linen Closets. Light sources internal to drawers, cabinets or linen closets are not required to comply with Table 150.0-0 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.
§ 150.00(2)(A)	Interior Switches and Controls. All forward phase out dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.00(2)(B)	Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.
§ 150.00(2)(C)	Accessible Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned on and off.
§ 150.00(2)(D)	Multiple Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the dimmer or sensor is installed to comply with § 150.00(2)(C).
§ 150.00(2)(E)	Dimmer Requirements. Lighting controls must comply with the applicable requirements of § 110.9.
§ 150.00(2)(F)	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 § 150.00(2)(C).
§ 150.00(2)(G)	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 off-functionality. Lighting inside drawers and cabinets with open front doors or doors must have controls that turn the light off when the drawer or door is closed.
§ 150.00(2)(H)	Dimmers. Lighting in hallways, corridors, and closets must have controls that allow the lighting to be manually accessed by wall-mounted dimming controls that allow the lighting to be manually adjusted up and down. Forward phase out dimmers with LED light sources in these spaces must comply with NEMA SSL 7A.
§ 150.00(2)(I)	Independent controls. Integrated lighting of exhaust fans shall be controlled independently from the lights. Lighting under cabinets or shelves, lighting in drawers, and closets, and switched ceiling lights must be controlled separately from ceiling-installed lighting.
§ 150.00(2)(J)	Residential Outdoor Lighting. For single-family residential buildings, outdoor lighting permanently mounted to a residential building, or other buildings on the same lot, must have a manual on/off switch and either a photonic 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.
§ 150.00(2)(K)	Internally illuminated address signs. Internally illuminated address signs must either comply with § 140.8 or consume no more than 5 watts of power.
§ 150.00(3)	Requirements for Light 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.

Solar Readiness:

§ 110.10(c)	Single-Family Residences. Single-family residences located in subdivisions with 10 or more single-family residences and where the owner or tentative owner has been notified by the local health department or the local environmental health agency that the building does not have a photovoltaic system installed, must comply with the requirements of § 110.10(b)(2).
§ 110.10(c)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 no less than 10 feet in width. The solar zone must be comprised of areas that are no less than 10 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 overhanging of the building and have a total area no less than 250 square feet.
§ 110.10(c)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(c)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(c)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(c)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)5	Interconnection. The solar zone must be connected to the building's electrical system by 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.
§ 110.10(c)6	Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b)(2) must be provided to the occupant.
§ 110.10(c)7	Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(c)8	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."

Electric and Energy Storage Ready:

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2022 Single-Family Residential Mandatory Requirements Summary

§ 506 (a)	Energy Storage System (ESS) Ready. At single-family residences must meet all the following: Either ESS-ready interconnection equipment with backed up capacity of 60 amps or more and four more ESS supplied branch circuits, or a dedicated receptance from the main service to a subpanel that supplies the branch circuit (or 150 VA); at least four branch circuits must be identified and have their main disconnect located at the main service panel; the branch circuit must be protected by a 20-amp circuit breaker, and the circuit must run the primary exit, and one circuit supplying a sleeping room inside the closet; main panelboard must have a minimum busbar width of 125 amps; sufficient space must be reserved to allow future installation of a system isolation equipment/transfer switch within 3' of the main panelboard, with sufficient clearance and setback distance from the exterior wall to allow for the installation of a double pole circuit breaker permanently marked as "For Future 240V use."
§ 507 (a)	Heat Pump Space Heater Ready. Systems using gas or propane furnaces to serve individual dwelling units must include: A dedicated ungrounded 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."
§ 508 (a)	Electric Cooktop Ready. Systems using gas or propane cooktop to serve individual dwelling units must include: A dedicated ungrounded 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."
§ 509 (a)	Electric Clothes Dryer Ready. Clothes dryer locations with gas or propane plumbing to serve individual dwelling units must include: A dedicated ungrounded 240V branch circuit wiring installed within 3' of the dryer panel 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.

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TITLE 24 MANDATORY MEASURES

SHEET 2 OF 2

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