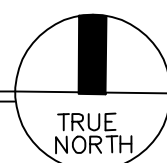


SEWER SITE PLAN (SPOT ELEVATIONS PER CPC 710)

REFER TO SITE PLAN THIS SHEET FOR ADDITIONAL INFO NOT SHOWN

SCALE: 1" = 40'-0"



SITE PLAN KEY LEGEND

(E) OR (N) = "EXISTING" OR "NEW" ITEM AS INDICATED ON PLANS
UG = UNDER GROUND CO = CLEANOUT

(E) ASSUMED PROPERTY LINES



(E) 2% MINIMUM SLOPE GRADE
(SEE NOTE #4 OF THIS PAGE)



(N) 2% MINIMUM SLOPE GRADE
(SEE NOTE #4 OF THIS PAGE)

FP EL. 00.00

FINISH AC PAVING STREET SPOT ELEVATION
(REFERENCE FOR SECTION CPC 710)

FG EL. 00.00

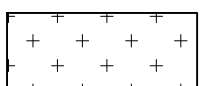
FINISH GRADE SPOT ELEVATION
(REFERENCE FOR SECTION CPC 710)

MHC EL. 00.00

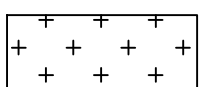
TOP OF MAN HOLE COVER SPOT ELEVATION
(REFERENCE FOR SECTION CPC 710)

FF EL. 00.00

FINISH FLOOR SPOT ELEVATION
(REFERENCE FOR SECTION CPC 710)



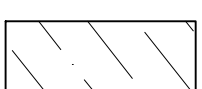
(E) DWELLING SINGLE STORY



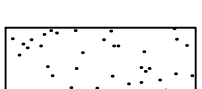
(E) GARAGE SINGLE STORY



(N) CONCRETE PAVING



(E) OFF SITE STRUCTURES



(E) CONCRETE PAVING TO REMAIN

(N) UG 4" PVC SEWER LATERAL SLOPE 1% MIN

(N) SEWER CLEAN OUT

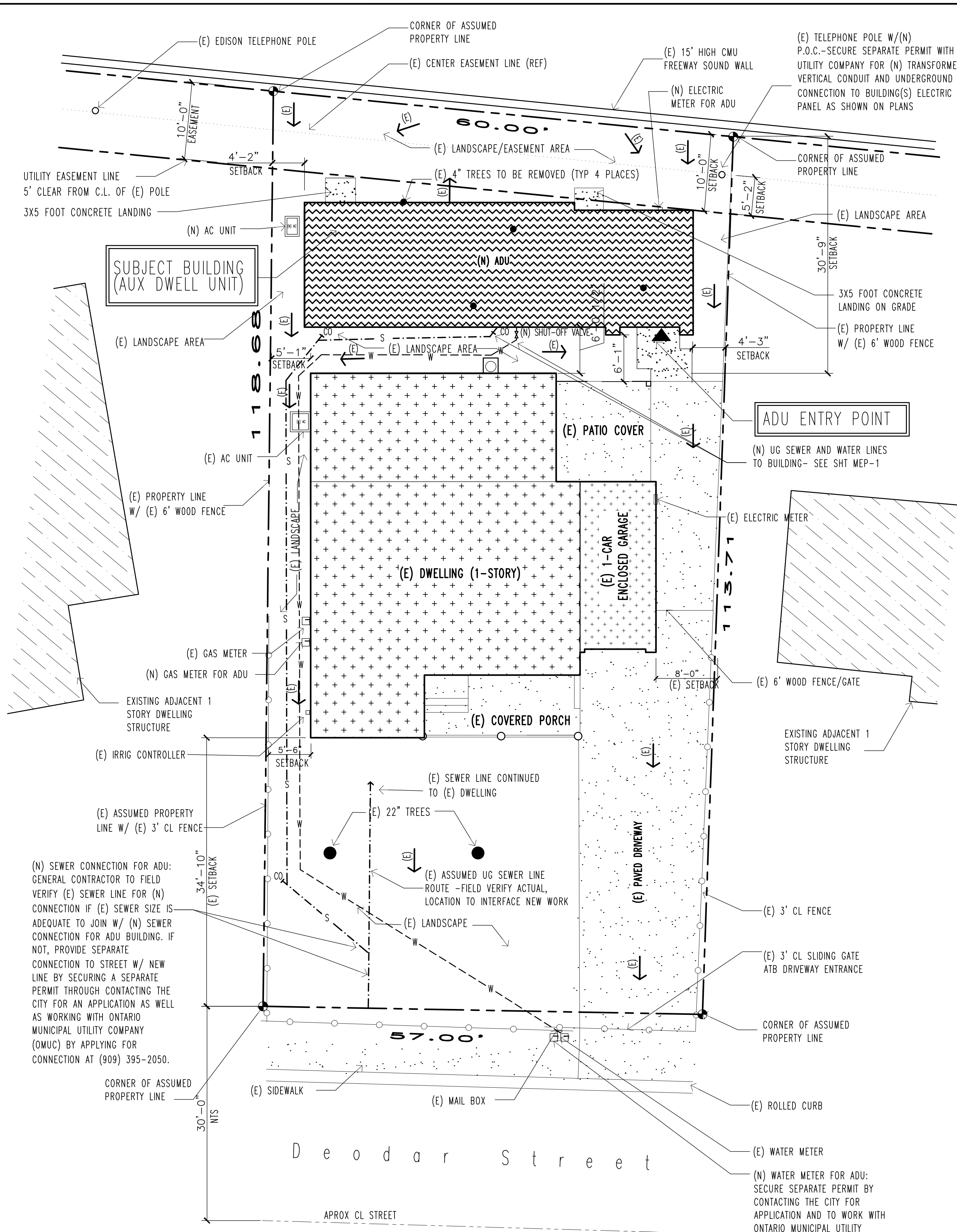
(N) 1" UG PE WATER LINE FROM METER TO HOUSE

DEMO SITE PLAN NOTES

1. PROTECT AND SAFEGUARD FROM DAMAGES ALL EXISTING CONSTRUCTION AND LANDSCAPE TO REMAIN. SET UP A KICK-OFF MEETING W/ OWNER TO CLARIFY PRIOR TO WORK. REFER TO DEMO PLAN, LANDSCAPE PLAN AND PROPOSED BUILDING PLAN FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS PLAN.
2. PROTECT IRRIGATION LINES AND CAP ABANDONED LINES FOR CONTINUAL IRRIGATION OPERATION - HAND WATER IF NECESSARY DRY SPOTS TO PROTECT ALL EXISTING LANDSCAPING TO REMAIN.
3. EXISTING WALKWAYS AND PATIO DECKS ON THESE PLANS ARE DIAGRAMMATIC. CONTRACTOR TO F.V. IF EXISTING PAVING AND SLOPES W/ NEW PROPOSED SLOPES. REWORK NEW SLOPE AREAS IF NECESSARY FOR UNIFORM SLOPES TO STREET

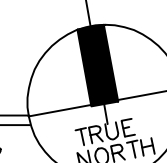
PROPOSED SITE PLAN NOTES

1. PROTECT AND SAFEGUARD FROM DAMAGES ALL EXISTING CONSTRUCTION, UTILITIES IRRIGATION AND LANDSCAPE TO REMAIN. REFER PROPOSED BUILDING PLANS FOR ADDITIONAL INFORMATION NOT SHOWN ON THIS PLAN.
2. UNDERGROUND WORK: STRATEGICALLY LOCATE AND INSTALL ALL LOW VOLTAGE LIGHTING, IRRIGATION OR OTHER BURIED UTILITIES TO ENSURE PROPER SEQUENCE PRIOR TO INSTALLING OR COVERING TOP SOILS/PAVING ON SITE.
3. BACK FILLING FOR TRENCHES SHALL BE COMPACTED TO NINETY (90) PERCENT DENSITY. BACK FILL FOR UTILITY TRENCHES SHALL BE COMPACTED ON BOTH SIDES OF PIPE IN SIX (6) INCH LAYERS PER MACHINERY TAMPER PER ASTM D-1557-94. SEE SOILS REPORT FOR MORE STRINGENT REQUIREMENTS
4. NO GRADING OR DRAINAGE MODIFICATIONS REQUIRED: REFER TO SITE PLAN FOR ARROW WHICH SLOPES AVERAGE 2% MINIMUM AS INDICATED BY --->. IF EXISTING LOT WILL REQUIRE MINIMAL REGRADING, LIGHTLY FEATHER OUT FOR A UNIFORM SLOPE (HOLDING A 6" WITHIN THE FIRST 10' MINIMUM) FALL AWAY FROM DWELLING TO SURFACE DRAIN TOWARDS FRONT AS REQUIRED. MANIPULATE GRADES FOR UNIFORM SLOPE TO DRAINAGE TO CARRY ALL WATER AWAY FROM THE BUILDING AND OTHER PARTS OF LOT ONTO PUBLIC STREETS PER LOCAL CODES. WHERE CUT AND FILL BALANCE OF SOILS CANNOT BE ACHIEVED FOR SLOPES MENTIONED ABOVE TO PROVIDE UNDERGROUND DRAINS, & INLETS TO ASSURE POSITIVE DRAINAGE FLOW. REFER TO CITY STANDARDS FOR NOTES AND DETAILS THAT SUPERSEDE THIS PARAGRAPH.
5. R311.3 FLOORS & LANDINGS AT EXTERIOR DOORS. EXTERIOR LANDINGS SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 2-PERCENT. R311.3.1 FLOOR ELEVATIONS AT REQUIRED EGRESS DOORS. LANDINGS OR FLOORS AT THE REQUIRED EGRESS DOORS SHALL NOT BE MORE THAN 1 1/2 INCHES LOWER THAN THE TOP OF THE THRESHOLD. EXCEPTION: THE EXTERIOR LANDING OR FLOOR SHALL NOT BE MORE THAN 7" INCHES BELOW THE TOP OF THE THRESHOLD PROVIDED THE DOOR DOES NOT SWING OVER THE LANDING OR FLOOR.
6. SHOULD EXISTING LANDSCAPE CHANGE AT FIELD, NEW PROPOSED LANDSCAPE PLAN TO BE DEFERRED ITEM- PROVIDED BY OTHERS TO SECURE AS SEPARATE PERMIT



PROPOSED SITE PLAN

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



Contractor shall exercise the responsibility with architect in securing latest approved dwgs. prior to actually executing work

NO./REVISION/DATE

2 CITY 3rd SET 5-20-21

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AUXILIARY DWELLING UNIT
SITE PLAN

CONTACT: Alfonso Castro
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Ontario, CA 91764
626-676-1937 email: Alfonso1616@cloud.com



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DATE

SEE REVISION BOX ABOVE FOR MORE

SCALE

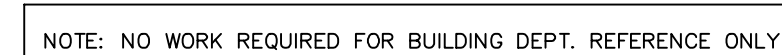
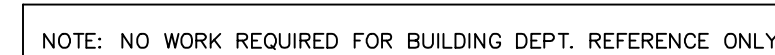
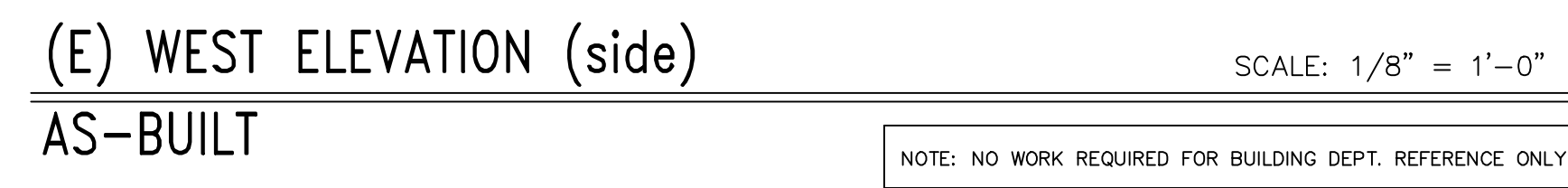
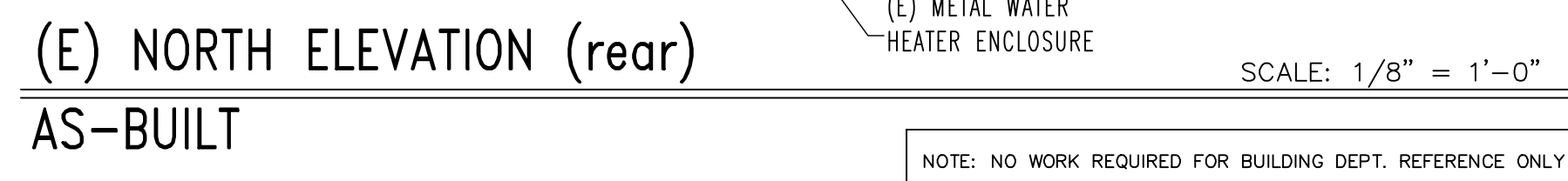
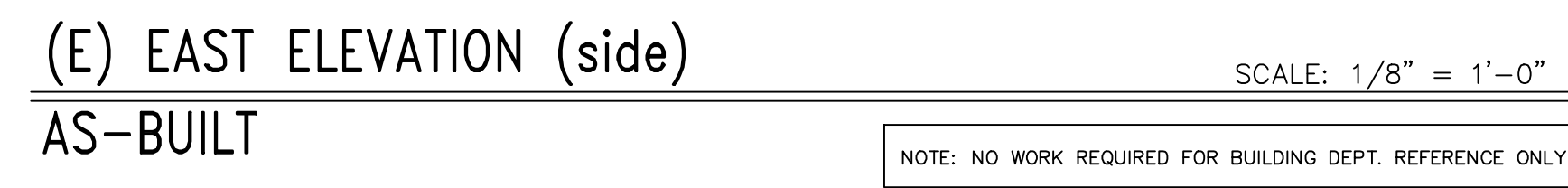
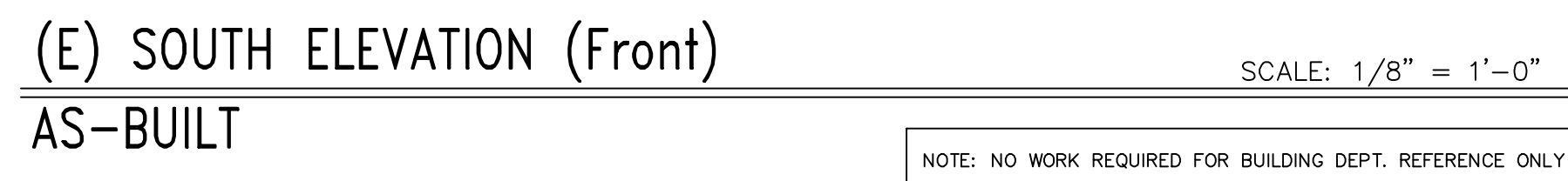
AS SHOWN ON PLANS

JOB NO.

SHEET

A-2

1 OF 10 INDEX SHEETS



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



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

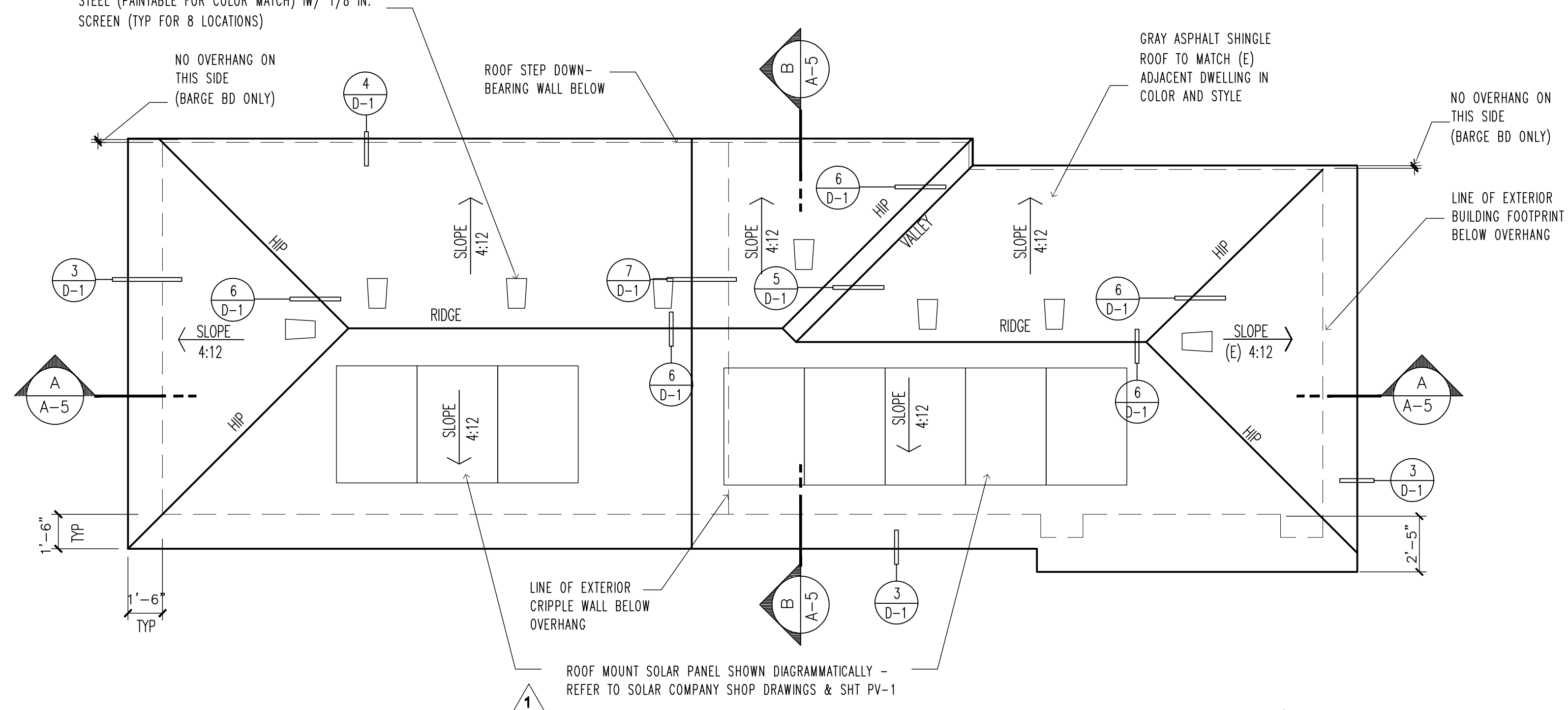


1 OF (REF TO INDEX) SHEETS

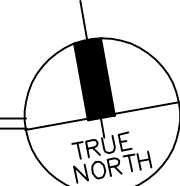
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1. ALL SLOPES AND OVERHANGS ARE AS NOTED ON PLANS (FIELD VERIFY TO MATCH EXISTING)
2. FOR TYPICAL SYMBOLS, ABBREVIATIONS AND NOTES, SEE COVER PAGE.
3. CONTRACTOR SHALL PROVIDE ADEQUATE ATTIC VENTILATION PER BUILDING CODES THROUGH CONTINUOUS SOFFIT VENTS AND EAVE AND DORMER VENTS.
4. ROOF WEIGHT FOR ASPHALT ASSEMBLY WEIGHT 290 (PER SQ.) FOR ASPHALT AND W/ 30 LBS FOR UNDERLAYMENT DIMENSIONAL SHINGLES (GREYISH COLOR TO MATCH EXISTING DWELLING) BY CERTAINTED "PRESIDENTIAL SHAKE SOLARIS SERIES" COUNTRY GRAY" W/ PERFORMANCE OF .21 ROOF REFLECTANCE AND .092 ROOF EMITTANCE; ICC ESR-3537 (ASPHALT SHINGLES SHALL MEET THE CLASSIFICATION REQUIREMENTS OF CRC TABLE R905.2.4.1(1) OR TABLE R905.2.4.1(2) FOR THE APPROPRIATE MAXIMUM BASIC WIND SPEED)
5. EXPOSED ROOF PIPES, VENTS, AND FLASHING TO (W) ROOF COLOR.
6. ROOF VENTILATION SHALL BE AREA RATIO OF 1/150 FOR ATTIC AREA OR 1/300 OF ATTIC AREA IF HALF THE VENT AREA LOCATED MORE THAN 3 FEET ABOVE EAVE VENTS W/ A BALANCE OF THE REQUIRED VENTILATION PROVIDED BY THE EAVE VENTS OPENINGS SHALL HAVE 1/4" INCHES CORROSION RESISTANT METAL MECH COVERING, PER SECTION 1505.3 DORMER VENTS SHALL BE SIZED ABOVE FREE AREA REQUIREMENT PER MANUFACTURE SPECIFICATIONS PER SECTION 1505.3 AND EACH VENT SHALL NOT EXCEED 144" SQ INCHES - SEE CHART BELOW OF THIS PAGE

GIBRALTAR BUILDING PRODUCTS 24 IN X 12 IN
GALVANIZED STEEL HALF-ROUND DORMER VENT MODEL
#BH24-1/8 NET FREE AREA: 100 SQ. IN. GALVANIZED
STEEL (PAINTABLE FOR COLOR MATCH) IW/ 1/8 IN.
SCREEN (TYP FOR 8 LOCATIONS)



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



1. REFER TO COVER SHEET FOR ADDITIONAL INFORMATION NOT SHOWN
2. REFER TO BLDG SECTION SHT A-7 FOR ADDITIONAL GENERAL NOTES NOT SHOWN
3. SMOKE DETECTORS PER 2019 C.B.C., SEE MEP SHEETS
4. CONTRACTOR SHALL FIELD VERIFY BOTH HORIZONTAL AND VERTICAL DIMENSIONS TO ENDURE PROPER FIT FOR ALL DETAILS-REPORT TO THE ARCHITECT IMMEDIATELY TO SECURE INSTRUCTIONS SHOULD INFORMATION BE INCORRECTLY NOTED
5. ALL PAINT FINISHES AND TEXTURES PER OWNERS DIRECTIONS
(PROVIDE 3/4" RADIUS CORNERS AT GYP BOARD WALLS BOTH (E) AND (N))
6. REFER TO MEP SHEET FOR ELECTRICAL, MECHANICAL AND PLUMBING HVAC AND FRAEMING CONTRACTOR TO HAVE PRE-CONSTRUCTION MEETING FOR DUCT ROUTES AND POSSIBLE DROPPED FRAMED SLOOPS WHERE DUCT CHASE WAYS MAY NOT BE ACCESSIBLE TO REACH GRILLS FROM UNIT

THE WALL OPENINGS ARE NOT BE ALLOWED WITHIN 3 FEET FROM THE PROPERTY LINE. WHEN THEY ARE MORE THAN 3' BUT LESS THAN 5' FROM THE LINE, CODE LIMITS THE OPENINGS TO 25% OF THE WALL AREA AS SHOWN - ACTUAL CONDITION IS 7% OPENINGS (7%<25%) AND IS MORE THAN 3'-0" FROM PROPERTY LINE

1

EXTERIOR WALL ASSEMBLY: 2X4 STUD WALLS @ 16" OC W/
R-15 BATT INSULATION AND 5/8" GYP. BOARD INTERIOR
SIDE AND AT EXTERIOR PROVIDE 7/8" 3 COAT EXT STUCCO
SYSTEM O/ ADDITIONAL EXTERIOR INSULATION SHEATHING AT
PLASTER USING MFGR SPECS INSTALLATION GUIDELINES OF
R-5 RIGID BD OF 1" THICK (4X8) SQUARE EDGE STYROFOAM
INSULATION BY DuPont® WITH DuPont® Tyvek® StuccoWrap®
call 1-866-583-2583 1-800-258-2434 (SEE SHT D-1)

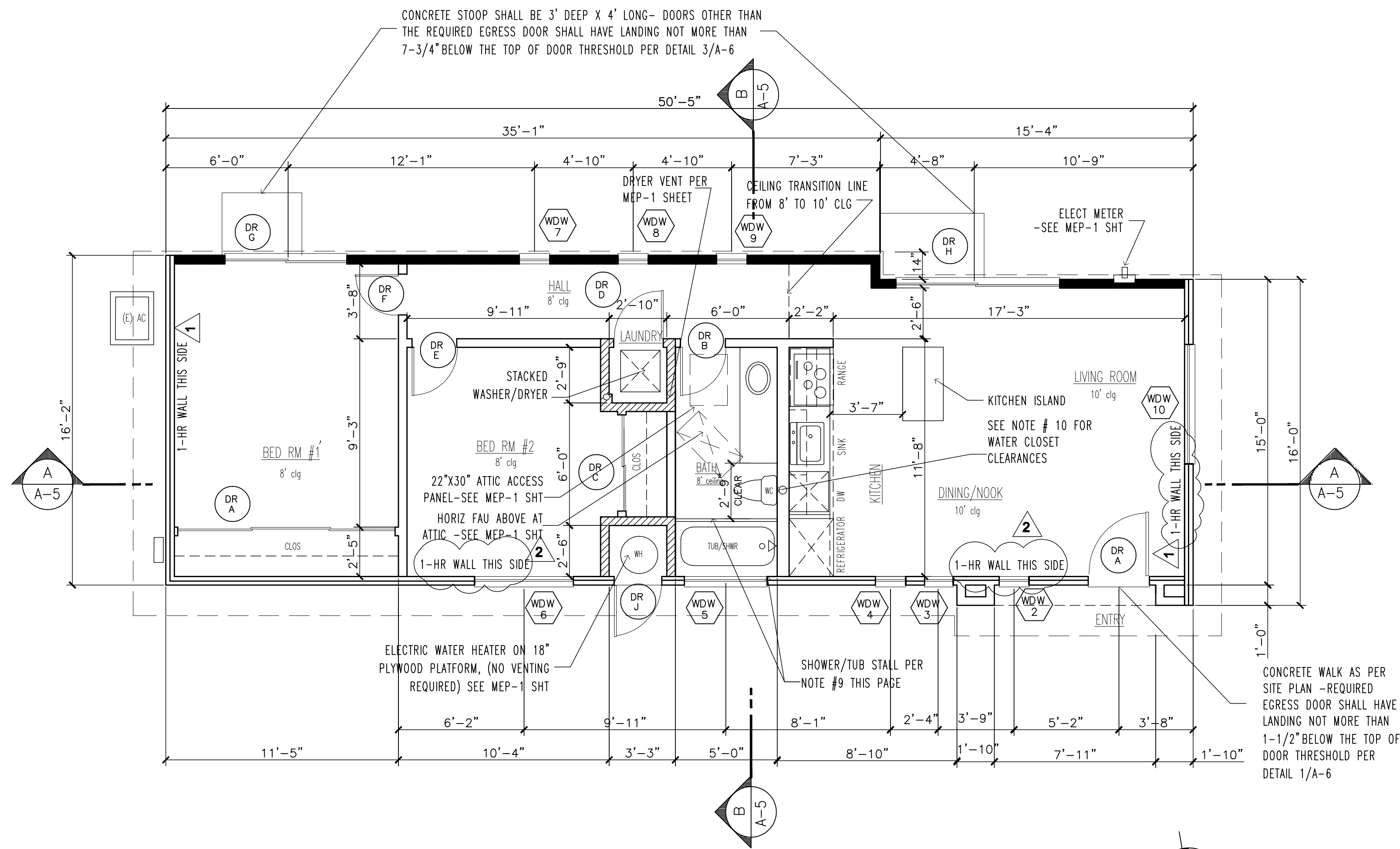
2X4 STUD INTERIOR WALLS @ 16" O.C W/ 5/8" GYP BOARD EACH SIDE

2X6 STUD INTERIOR PLUMBING/VENT WALLS @ 16" O.C W/ 5/8" GYP BOARD

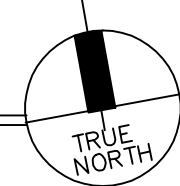
2X4 STUD WALLS @ 16" O.C W/ 5/8" GYP BOARD EACH
SIDE W/ R-15 BATT INSULATION INSIDE WALL CAVITY FOR
EQUIPMENT SOUND CONTROL

1-1/4" HR EXTERIOR WALL ASSEMBLY PER CRC Table R302.1(1)
 AS FOLLOWS: 2X4 STUD WALLS @ 16" O.C. W/ R-15 BATT
 INSULATION AND 5/8" TYPE "X" GP. BOARD INTERIOR SIDE
 AND AT EXTERIOR PROVIDE 7/8" 3 COAT EXT STUCCO
 SYSTEM OF ADDITIONAL EXTERIOR INSULATION SHEATHING AT
 PLASTER USING MFGR SPEC INSTALLATION GUIDELINES OF
 R-5 RIGID BD OF 1" THICK (4X8) SQUARE EDGE STYROFOAM
 INSULATION BY DuPont WITH DuPont Tyvek StuccoWrap, call
 1-866-583-2583 OR 1-800-258-2434 (SEE FULL ICC-ES
 SPEC @ PAGE D-1)

PROVIDE 30 INCH CLEAR WIDTH FOR WATER CLOSET
COMPARTMENT AND 24 INCH CLEARANCE IN FRONT OF THE
WATER CLOSET FOR BATHROOM. [CRC R307.1 AND CPC
402.5] SHT. A4.



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



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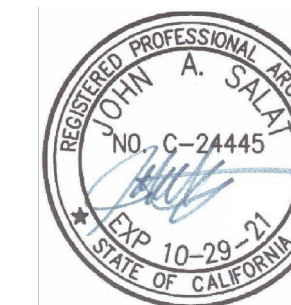
2 CITY 3rd SET 5-20-21

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architect

Castro Residence
AUXILIARY DWELLING UNIT
FLOOR AND ROOF PLAN

OWNER/SITE ADDRESS:
CONTACT: Alfonso Castro
 741 E Deodar St
 Ontario, CA 91764
 626-676-1937 email Alfonso1616@icloud.com



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DATE _____
APPROVED BY _____

AS NOTED ON PL

A-4

1 OF (REF TO INDEX) SHEETS

Contractor shall exercise the responsibility with architect in securing latest approved dwgs. prior to actually executing work.

NO./REVISION/DATE

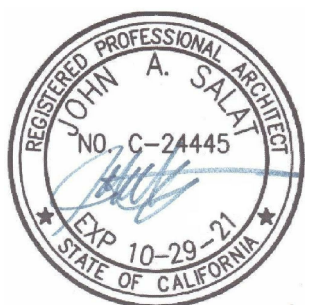
2 CITY 3rd SET 5-20-21

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zenarchitect.com

architect

Castro Residence
AUXILIARY DWELLING UNIT
proposed elevations
and sections

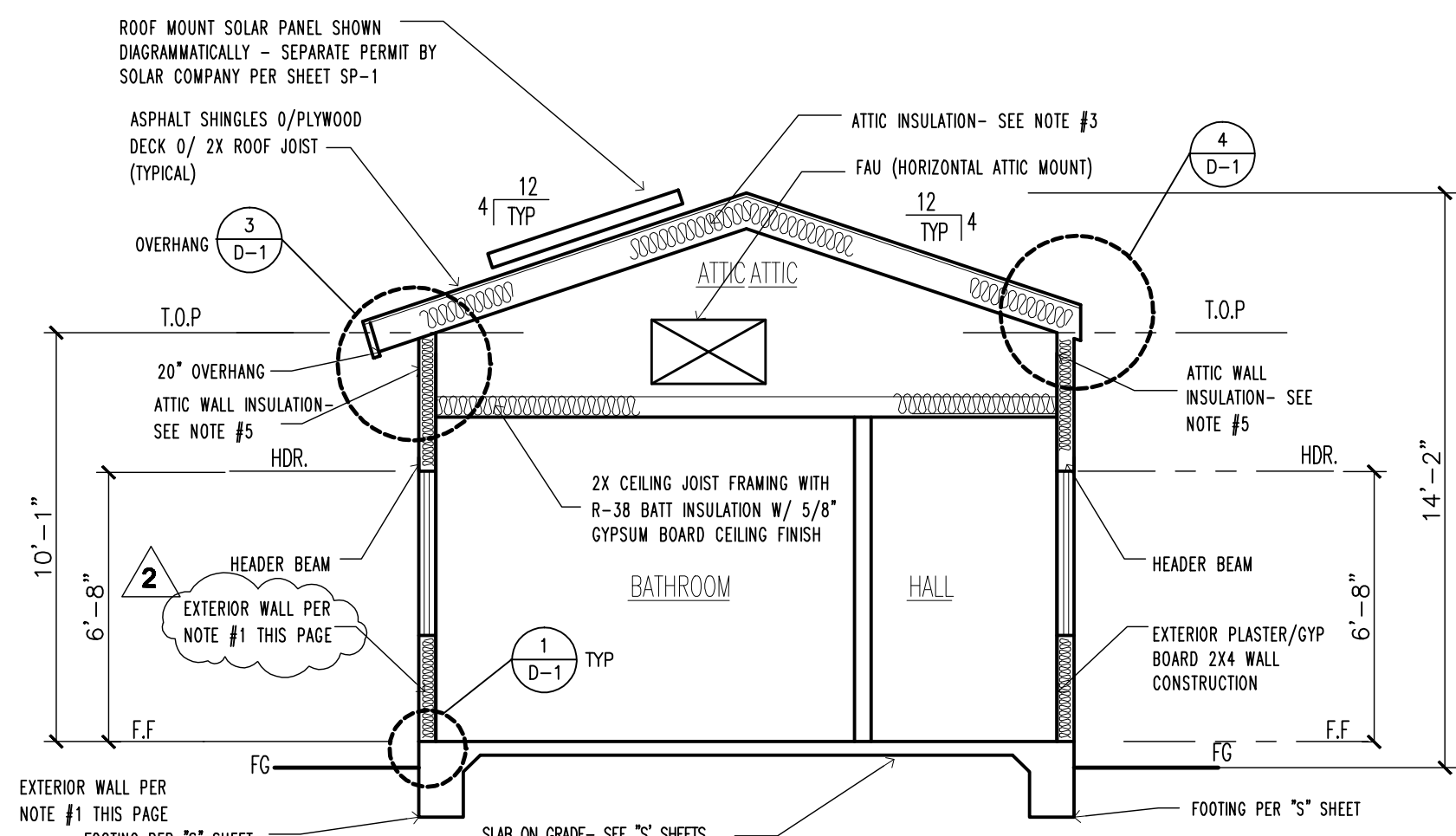
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CONTACT: Alfonso Castro
741 E Deodar St
Ontario, CA 91764
626-676-1937 email Alfonso1616@icloud.com



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5
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SEE REVISION BOX ABOVE FOR DATE
SCALE
AS NOTED ON PLANS
JOB NO.
SHEET

A-5

1 OF 10 (REF TO INDEX SHEETS)

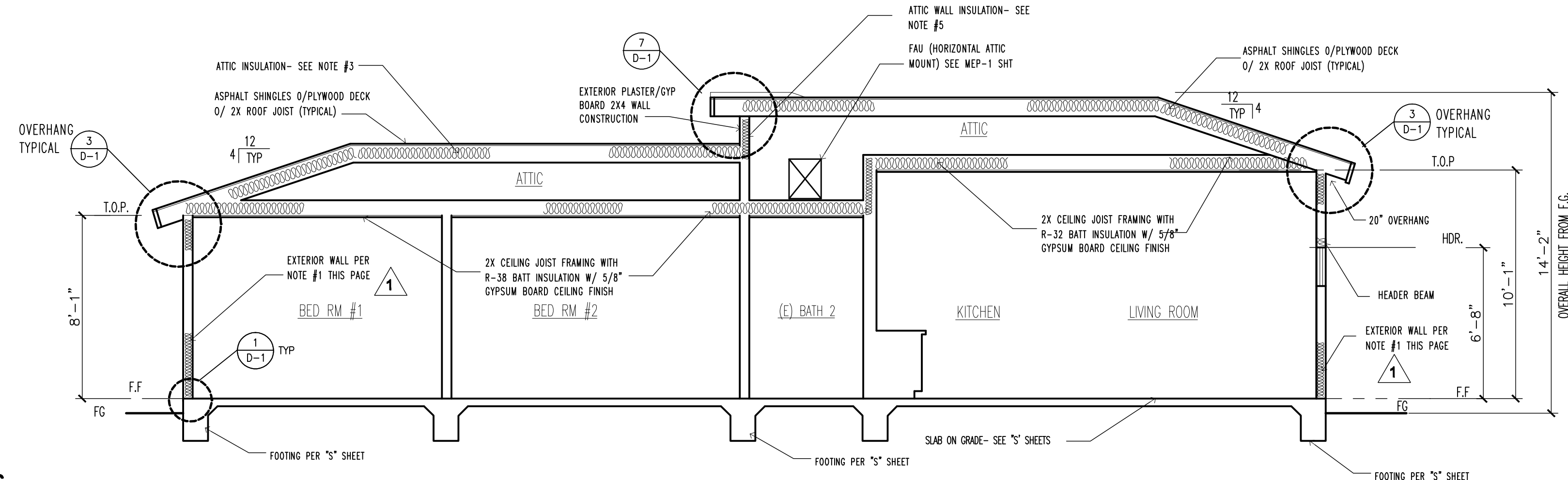


SECTION "B"

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

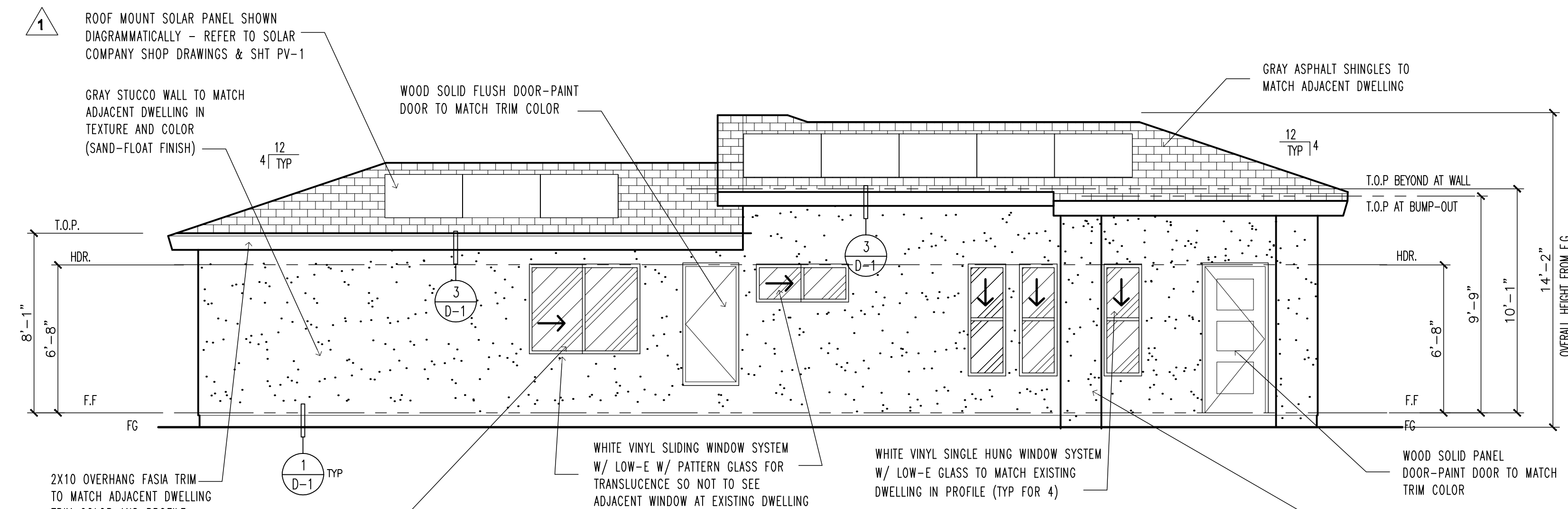
SECTION GENERAL NOTES

1. TYPICAL EXTERIOR WALL ASSEMBLY: 2X4 STUD WALLS; SEE SHEET A-4 LEGEND PORTION FOR THE THR WALL CONDITIONS FACING SOUTH/EAST/WEST WALLS TO UNRATED FOR THE NORTH FACING WALL.
2. WALLS AT ATTIC SHALL HAVE R-15 BATT INSULATION
3. 2X ROOF RAFTERS SHALL HAVE R-15 BATT INSULATION TO SANDWICH AT ATTIC - SEE ITEM 4 FOR LOWER CEILING JOIST CONDITION - SEE STRUCTURAL DRAWINGS FOR FRAMING INFORMATION NOT SHOWN
4. ALL CEILING JOIST TO BE 2 X WOOD FRAMING WITH R-38 BATT INSULATION W/ 5/8" GYPSUM BOARD CEILING INTERIOR FINISH- SEE STRUCTURAL DRAWINGS FOR FRAMING INFORMATION NOT SHOWN
5. TYPICAL ATTIC WALL ASSEMBLY: 2X4 STUD CRIPPLE WALLS @ 16" OC W/ R-15 BATT INSULATION AND EXTERIOR PROVIDE 7/8" 3 COAT EXT STUCCO SYSTEM O/ ADDITIONAL EXTERIOR INSULATION SHEATHING AT PLASTER USING MFOR SPECS INSTALLATION GUIDELINES OF "JOHNS MANVILLE AP FOIL-FACED POLYISOCYANURATE FOAM SHEATHING (R-5)"
6. BOTH H.E.R.S. AND QUALITY INSULATION INSPECTION IS REQUIRED AS PER MEP-1 SPECIFICATIONS
7. PROVIDE ATTIC VENT PER ROOF PLAN LAYOUT
8. REFER TO STRUCTURAL FOR DETAILED INFORMATION FOR SLAB AND GRADE PREP, SOILS AND DETAILS THAT MAY SUPERSEDE DRAWINGS



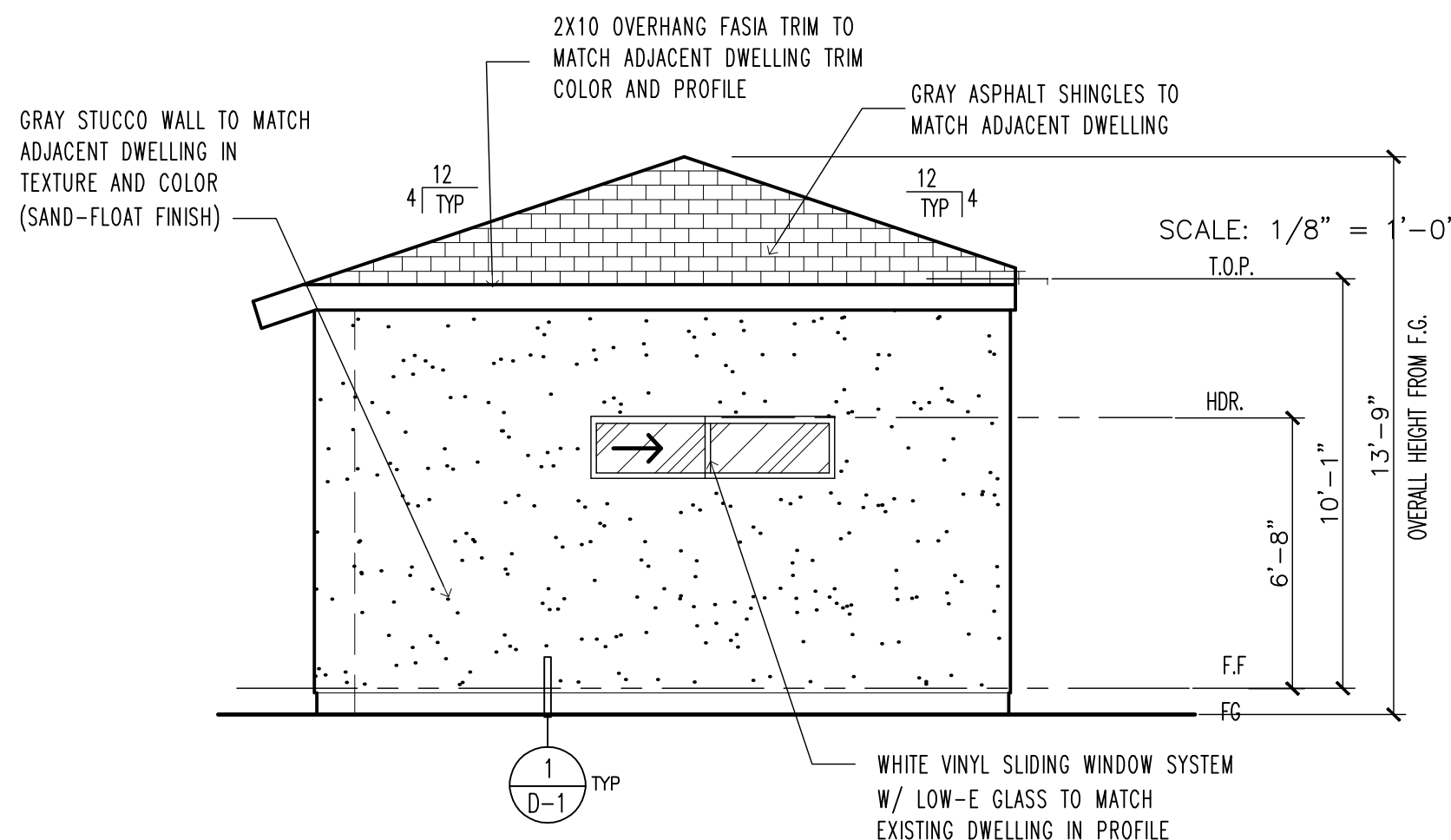
SECTION "A"

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



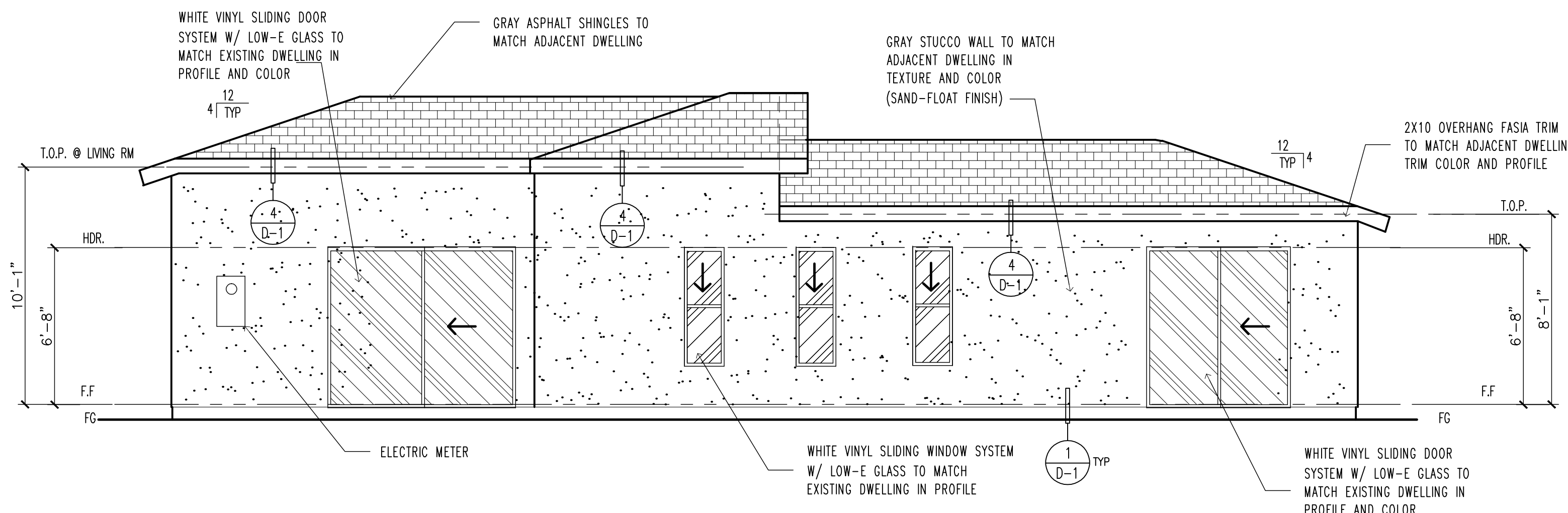
FRONT (SOUTH ELEVATION)

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



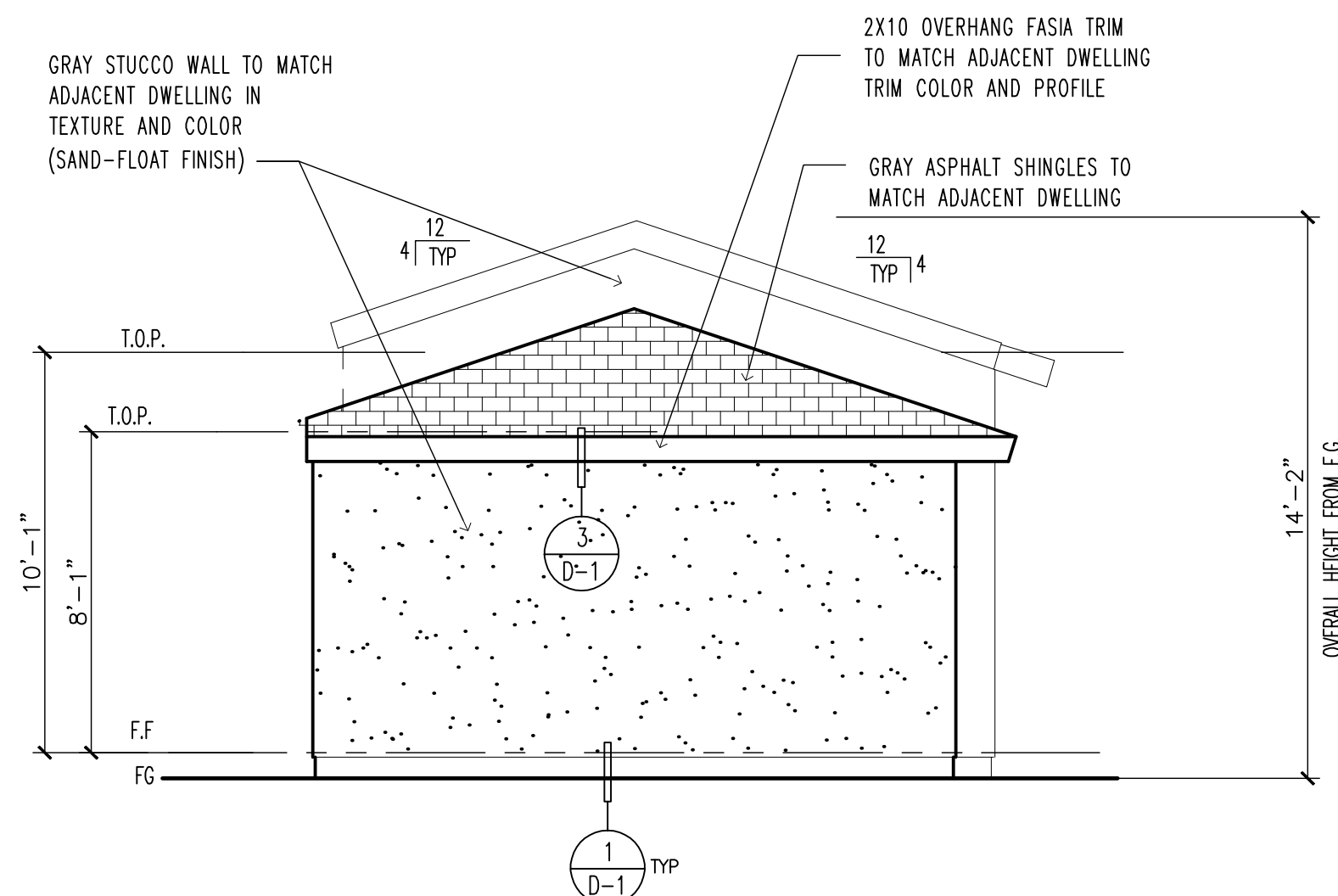
RIGHT SIDE (WEST ELEVATION)

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



REAR (NORTH ELEVATION)

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



LEFT SIDE (EAST ELEVATION)

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

WINDOW SCHEDULE														MIN T-24 RATING		REMARKS	WINDOW LEGEND		
WDW NO.	SIZE		ELEV	TYPE	FRAME		GLAZING												
	W	H			MAT'L	FINISH	TYPE	THICK	INSUL	TEMP	U-FACT	SHGC							
I S T	L E V E L																		
WDW 1	OMIT																		
WDW 2	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 3	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 4	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 5	4'-0"	1'-6"	3	SLIDE	VINYL	FFW	POG	3/4"	DBL	----	0.28	0.23							
WDW 6	5'-0"	6'-0"	2	SLIDE	VINYL	FFW	POG	3/4"	DBL	----	0.28	0.23							
WDW 7	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 8	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 9	1'-6"	5'-0"	4	S-HUNG	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							
WDW 10	6'-0"	1'-6"	1	SLIDE	VINYL	FFW	LOW-E	3/4"	DBL	----	0.28	0.23							

ABBREVIATIONS:
VNL = VINYL
T = TEMPERED GLAZING PER CBC (SEC 2406.4)
SL = SLIDING
FG = FIXED GLASS
TINT = TINT GLASS (FACTORY LOW-E PER T-24)
DBL = DOUBLE GLASS PANE
CLR = CLEAR
SP = SINGLE PANE CLEAR TEMPERED GLASS)
3/4" = OVERALL THICKNESS FOR DUAL PANE INSULATED GLASS
POG = PATTERN OBSCURE GLASS (MISLITE OR EQ)
FFW = FACTORY FINISH WHITE
S-HUNG = SINGLE HUNG WINDOW OPERATION

FIRE RESCUE/ESCAPE PER NOTE 7 THIS PAGE

WINDOW NOTES

- 1) MANUFACTURE: <https://www.simonton.com> FOR SINGLE HUNG AND SLIDERS AS NOTED IN SCHEDULE WITH ALL MATCHING STYLE FOR DESIGN FOR PROFILES AND COLORS. ALL WINDOWS TO BE VINYL WITH INSIDE "WHITE" AND EXTERIOR "WHITE" DAYLIGHTMAX SERIES. THE ENTIRE ASSEMBLY SHALL MEET THE MINIMUM REQUIREMENTS PER SHEETS T-24 SHEETS OF RATINGS W/ ATTACHED LABELS INDICATING ENERGY STAR LAB PERFORMANCE LOW "E" DUAL SYSTEM GLAZING.
- 2) CONTRACTOR TO F.V. ALL DOOR AND WINDOW SIZES PRIOR TO ORDERS/INSTALLATION FOR ALL ACTUAL FIELD R.O. OPENINGS
- 3) SUBMIT LOCK AND HARDWARE SPECIFICATIONS, TYPE AND FUNCTION TO OWNER FOR REVIEW W/ VENDORS GUIDANCE PRIOR TO ORDERING ALL WINDOWS AND DOORS. INTERIOR HARDWARE SHALL MATCH INTERIOR FRAME COLOR OF WHITE. (COORDINATE INTERIOR HARDWARE FINISH WITH OWNER INTERIORS DESIGNER IF DIFFERENT).

4) PROVIDE SCREENS FOR ALL WINDOWS ON OPERABLE SIDE

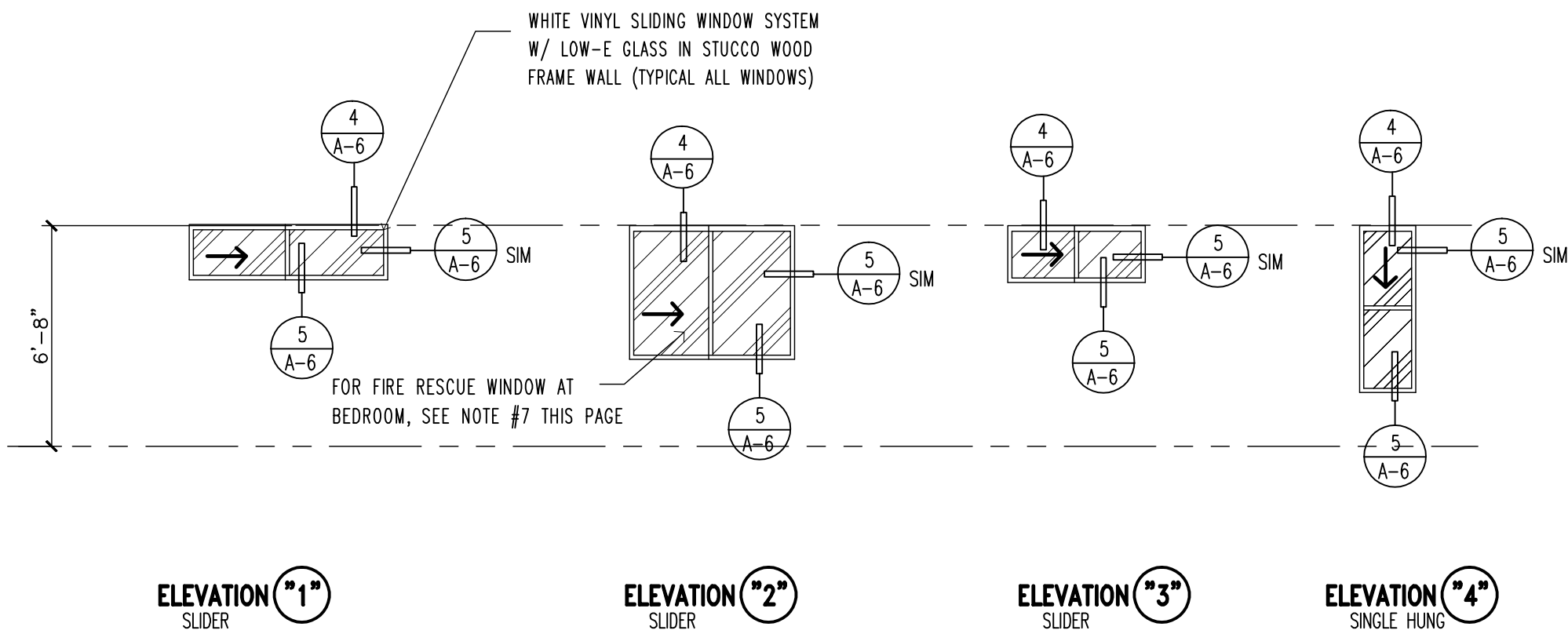
5) ALL GLAZING AND TINT PER T-24 ENERGY REQUIREMENTS AS DOUBLE GLAZE. "T" DESIGNATION ON ELEVATIONS INDICATES TEMPERED GLASS PER CBC (SEC 2406.4).

7) BEDROOM WINDOWS MUST MEET CODE SECTION 310.4 FOR FIRE ESCAPE OR RESCUE NET DIMENSIONS: MIN 20" WIDE X 24" HIGH SIZE FOR OPERATIVE CLEARANCE SIZE OF 5.7. S.F. W/ SILL AT 44" MAX FROM FINISH FLOOR SLIDERS AS SCHEDULED ON PLANS.

WINDOW ELEVATION/TYPES

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

NOTE: SCHEDULE BELOW IS DIAGRAMMATIC WHERE SWING DIRECTIONS AND SCALE SHALL BE SUPERSEDED BY PLANS



DOOR SCHEDULE

DR NO.	DOOR								FRAME			MIN T-24 RATING		REMARKS	DOOR LEGEND
	W	H	T	ELEV.	TYPE	MAT'L	FINISH	GLASS	MAT'L	FINISH	THRESHOLD	U-FACT	SHGC		
I	S	L E V E L													
DR A	3'-0"	6'-8"	1 3/4"	AA	SWING	VINYL	FFW	---	VINYL	FFW	DRIP KIT	.20	---	ENTRY DOOR EXTERIOR GRADE (WEATHER STRIP)	
DR B	2'-4"	6'-8"	1 3/8"	BB	SWING	WD	FFW	---	WD	FFW	TR	---	---	UNDERCUT DOOR BOTTOM FOR EXHAUST FLOW	
DR C	5'-0"	8'-0"	1 3/8"	CC	SLIDE	WD	FFW	---	WD	FFW	---	---	---		
DR D	2'-6"	6'-8"	1 3/8"	BB	SWING	WD	FFW	---	WD	FFW	---	---	---	SOUND CONTROL: WEATHER STRIP 3 SIDES (1", UNDERCUT)	
DR E	2'-6"	6'-8"	1 3/8"	BB	SWING	WD	FFW	---	WD	FFW	---	---	---		
DR F	2'-8"	6'-8"	1 3/8"	BB	SWING	WD	FFW	---	WD	FFW	---	---	---		
DR G	6'-0"	6'-8"	1 3/8"	EE	SLIDE	VINYL	FFW	T	VINYL	FFW	---	.29	.22	FIRE RESCUE/ESCAPE PER NOTE 7 THIS PAGE	
DR H	8'-0"	6'-8"	1 3/8"	EE	SLIDE	VINYL	FFW	T	VINYL	FFW	---	.29	.22		
DR J	2'-4"	6'-8"	1 3/4"	FF	SWING	WD	FFW	---	WD	FFW	---	.20	---	FLUSH EXTERIOR GRADE (WEATHER STRIP)	

ABBREVIATIONS:

FP = FIELD PAINT

SL = SLIDING

CLR = CLEAR

FG = FIXED GLASS

DBL = DOUBLE GLASS PANE

UC = UNDERCUT DOOR FOR EXHAUST FAN

TINT = FACTORY TINT (LOW-E PER T-24 SPECS)

T = TEMPERED GLAZING PER CBC (SEC 2406.4)

POG = PATTERN OBSCURE GLASS AT INTERIOR SIDE (MISLITE OR EQ)

3/4" = OVERALL THICKNESS FOR DUAL PANE INSULATED GLASS SYSTEMS

SC = SOLID CORE

HC = HOLLOW CORE

FFR = FACTORY FINISH WHITE

VNL = VINYL

PD = POCKET DOOR

DOOR NOTES

- 1) MANUFACTURE: <https://www.simonet.com> FOR SLIDERS AS NOTED IN SCHEDULE WITH ALL MATCHING STYLE FOR DESIGN FOR PROFILES AND COLORS FOR ADJACENT WINDOWS. ALL DOORS TO BE VINYL WITH INSIDE "WHITE" AND EXTERIOR "WHITE" MODERA CONTEMPORARY SERIES. THE ENTIRE ASSEMBLY SHALL MEET THE MINIMUM REQUIREMENTS PER SHEETS 1-24 SHEETS OF RATINGS W/ ATTACHED LABELS INDICATING ENERGY STAR LAB PERFORMANCE LOW "E" DUAL SYSTEM GLAZING.
- 3) CONTRACTOR TO F.V. ALL DOOR AND WINDOW SIZES PRIOR TO ORDERS/INSTALLATION FOR ALL ACTUAL FIELD R.O. OPENINGS
- 4) SUBMIT LOGIC AND HARDWARE SPECIFICATIONS, TYPE AND FUNCTION TO OWNER FOR REVIEW W/ VENDORS GUIDANCE PRIOR TO ORDERING ALL WINDOWS AND DOORS. INTERIOR HARDWARE SHALL MATCH INTERIOR FRAME COLOR OF WHITE. (COORDINATE INTERIOR HARDWARE FINISH WITH OWNER INTERIORS DESIGNER IF DIFFERENT).

5) ALL GLAZING AND TINT PER T-24 ENERGY REQUIREMENTS AS DOUBLE GLAZE. "T" DESIGNATION ON ELEVATIONS INDICATES TEMPERED GLASS PER CBC (SEC 2406.4).

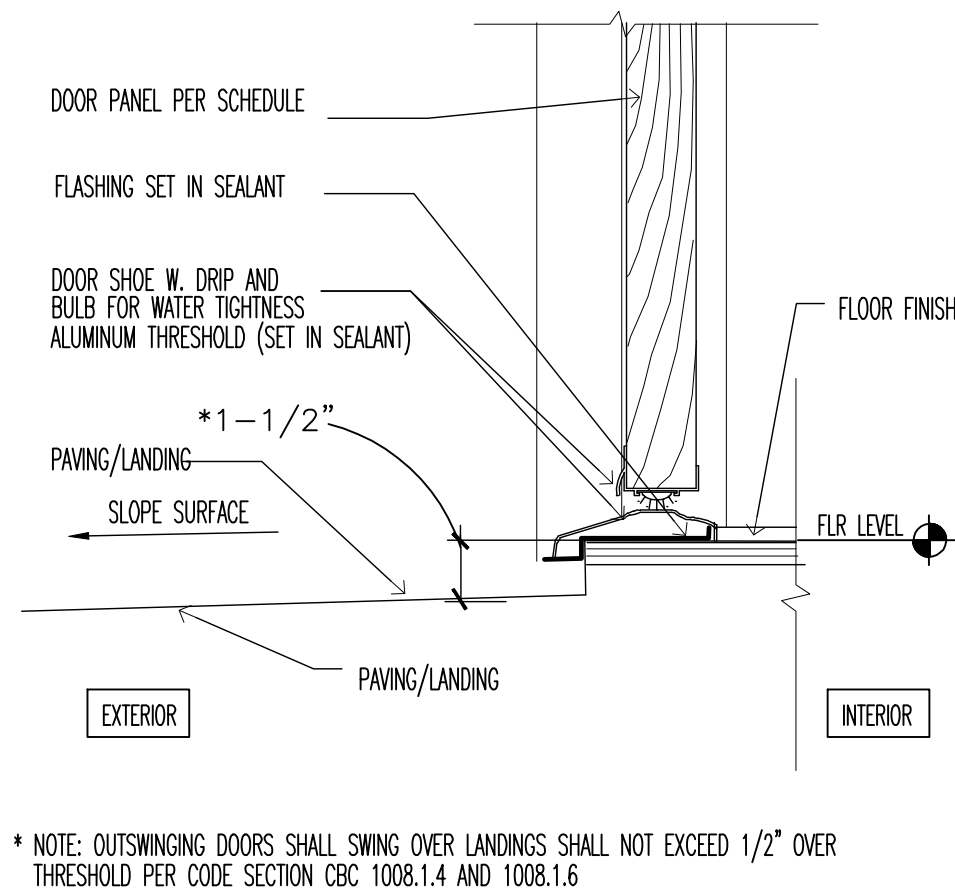
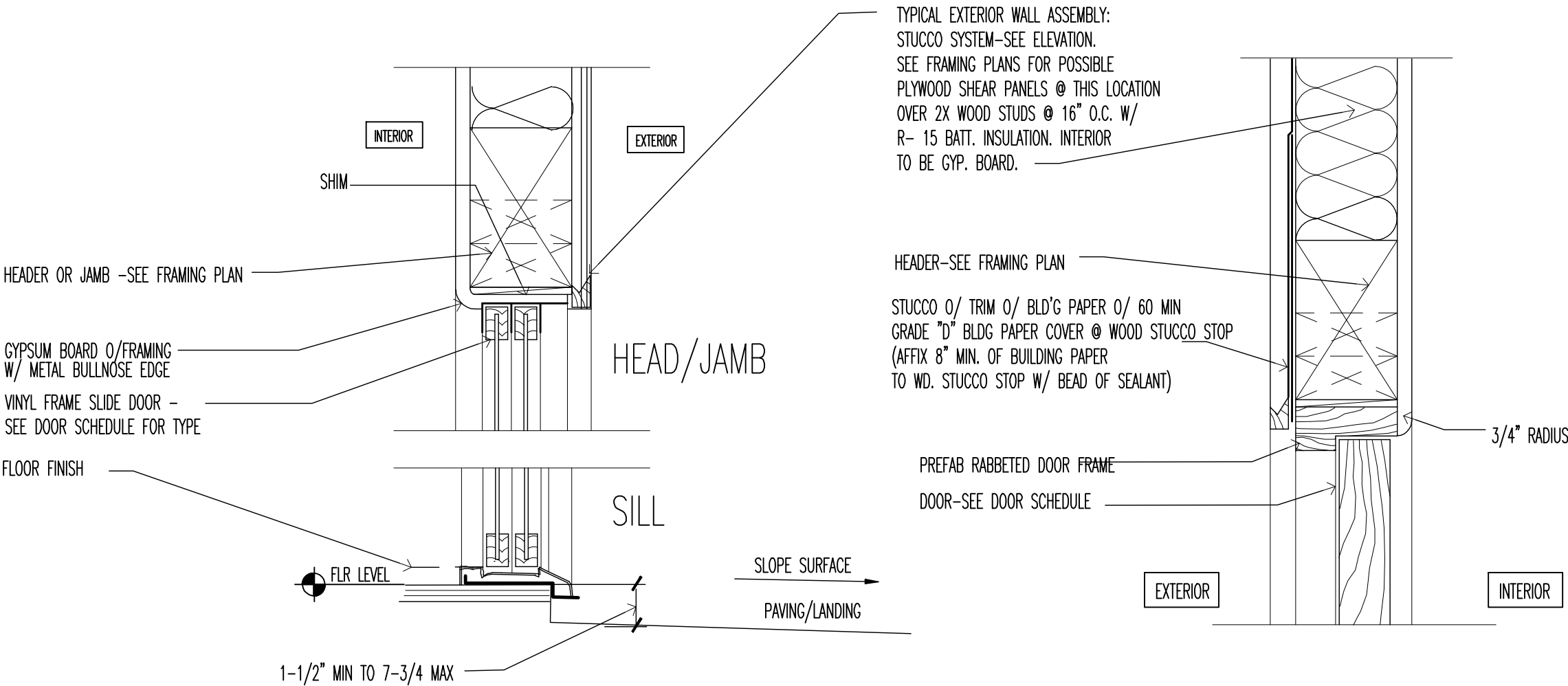
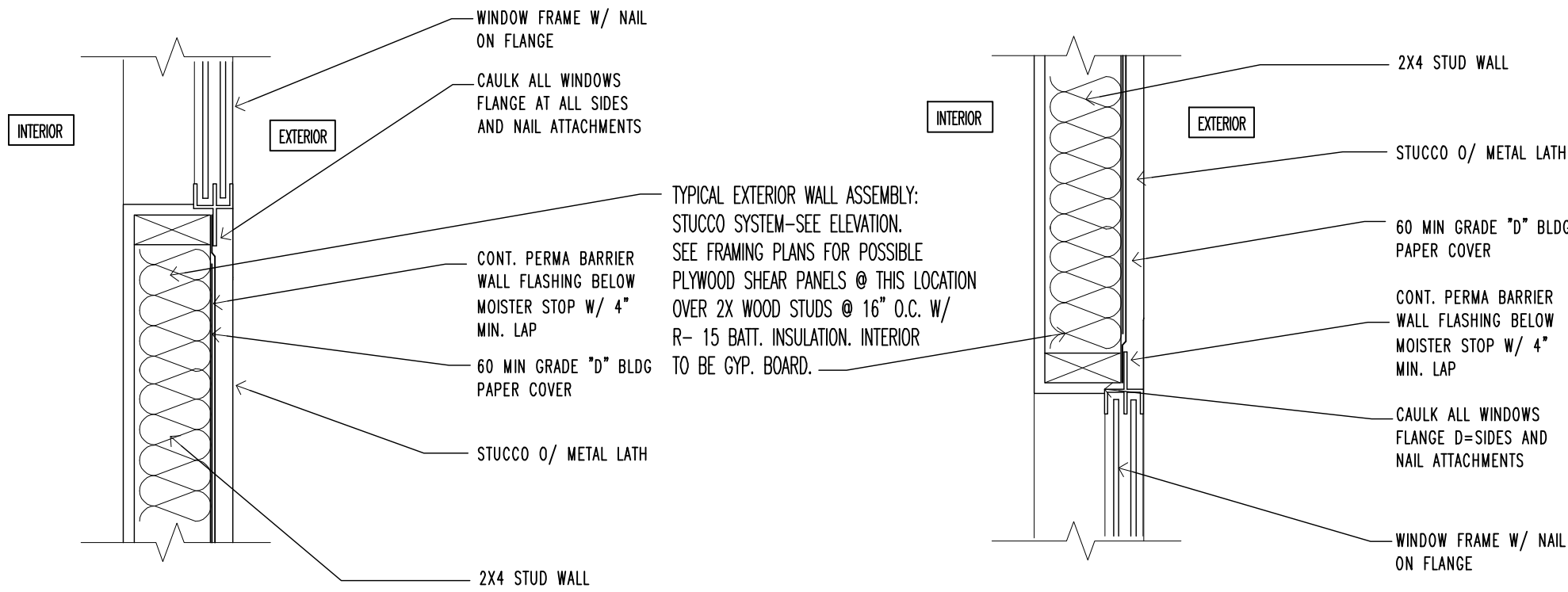
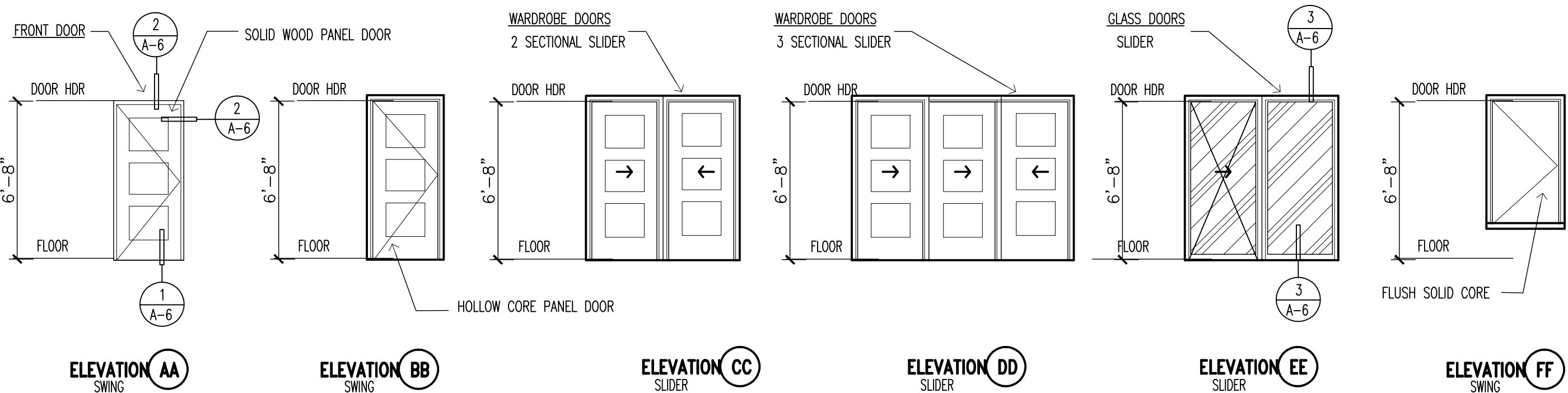
6) PROVIDE SCREENS FOR ALL EXTERIOR GLASS DOORS

7) EXTERIOR BEDROOM DOOR MUST MEET CODE SECTION 310.4 FOR FIRE ESCAPE OR RESCUE NET DIMENSIONS: MIN 20" WIDE X 24" HIGH SIZE FOR OPERATIVE CLEARANCE SIZE OF 5.7, S.F. W/ SILL AT 44" MAX FROM FINISH FLOOR SLIDERS AS SCHEDULED ON PLANS.

DOOR ELEVATION/TYPES

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

NOTE: SCHEDULE BELOW IS DIAGRAMMATIC WHERE SWING DIRECTIONS AND SCALE SHALL BE SUPERSEDED BY PLANS



* NOTE: OUTSWINGING DOORS SHALL SWING OVER LANDINGS SHALL NOT EXCEED 1/2" OVER THRESHOLD PER CODE SECTION CBC 1008.1.4 AND 1008.1.6

Contractor shall exercise the responsibility with architect in securing latest approved dwggs. prior to actually executing work

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architect

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AUXILIARY DWELLING UNIT
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OWNER/SITE ADDRESS:
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626-676-1937 email: Alfonso1616@icloud.com



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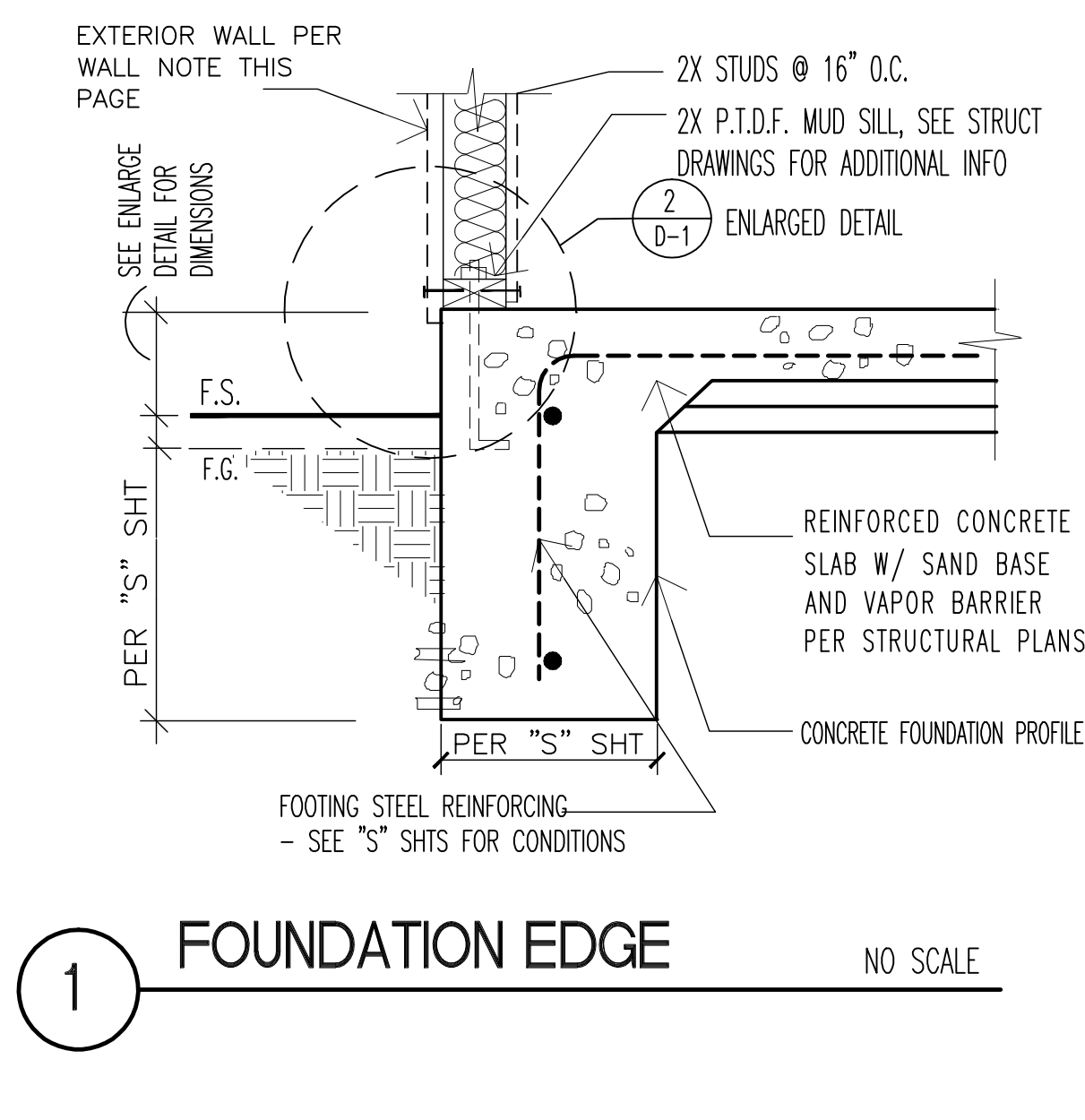
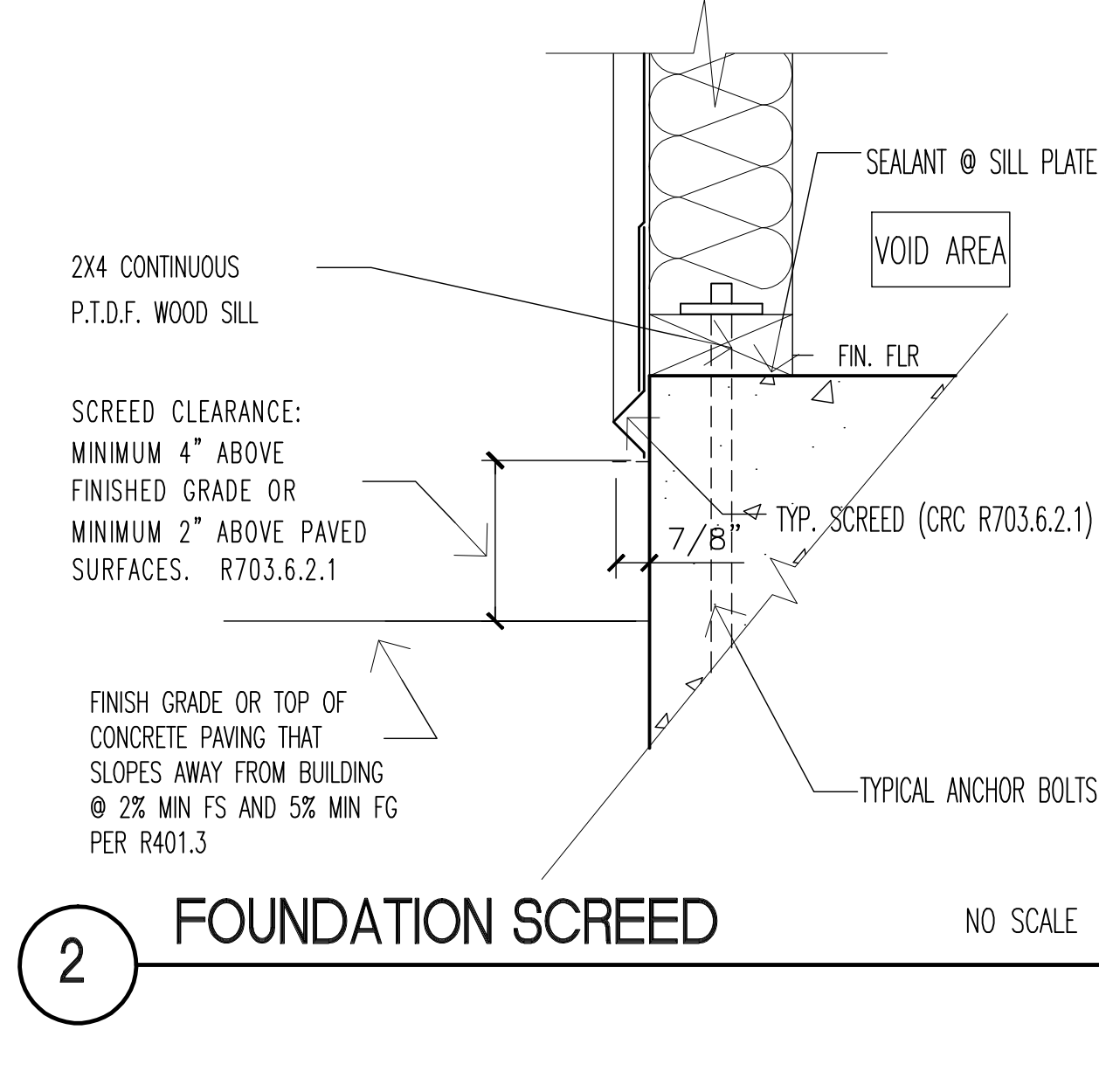
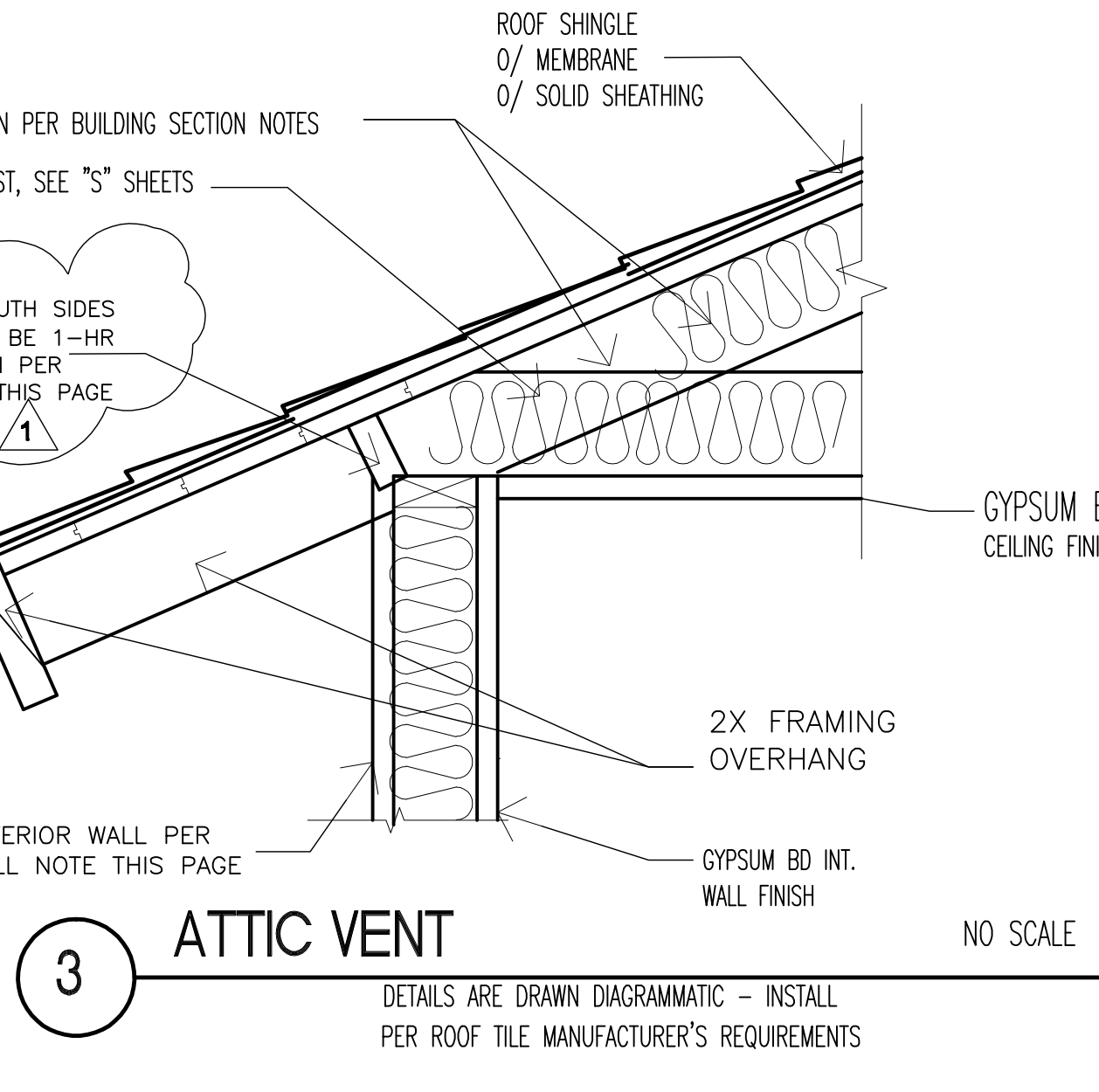
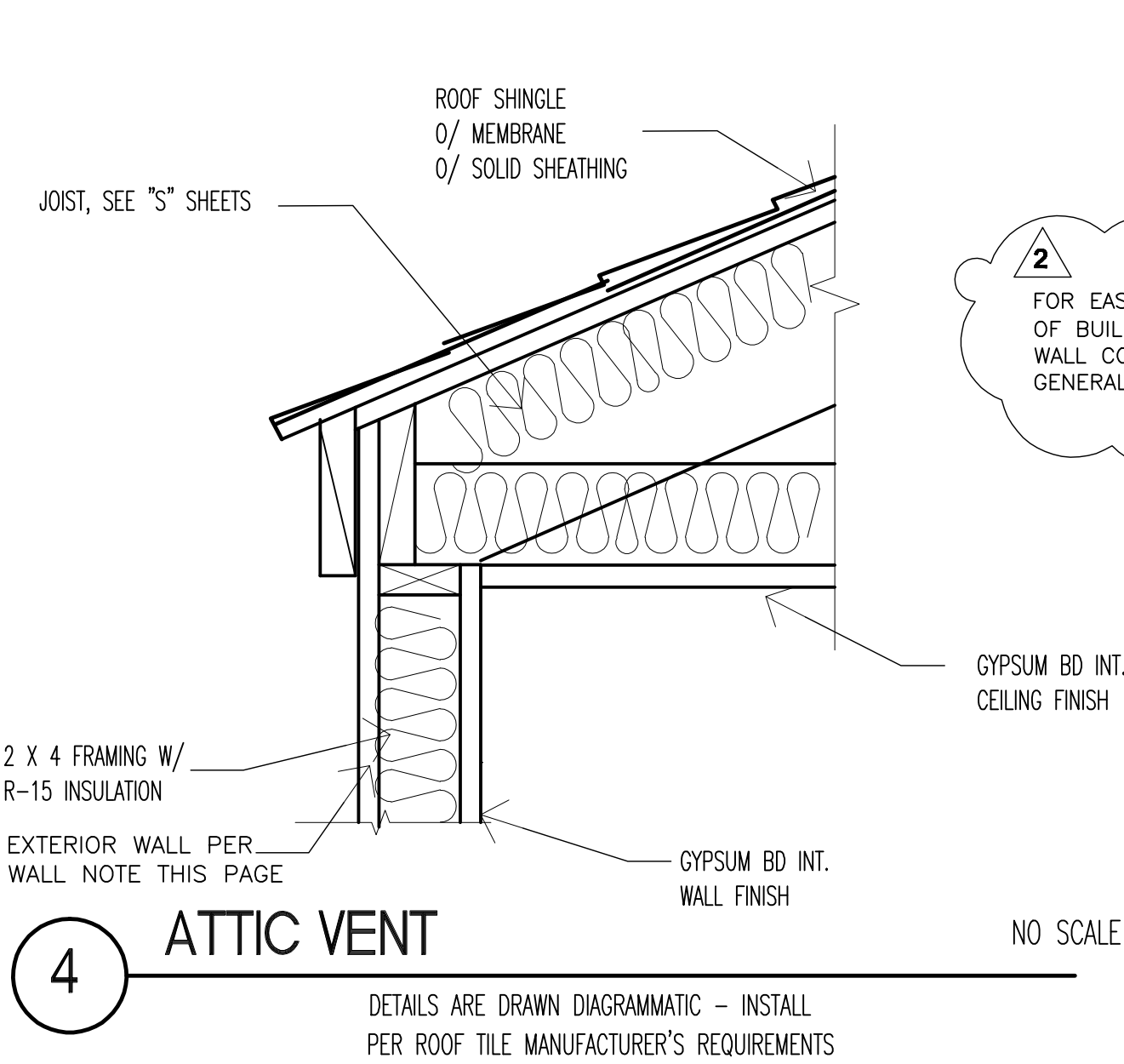
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A-6

1 OF SHEETS



TYPICAL WALL NOTES

ICC EVALUATION SERVICE
ICC-ES Evaluation Report
ESR-2142 Reissued October 2019 Revised October 2020 This report is subject to renewal October 2021.
www.icc-es.org | (800) 423-6587 | (562) 699-0543
REPORT HOLDER: DUPONT DE NEMOURS, INC.
EVALUATION SUBJECT:
STYROFOAM- BRAND INSULATION BOARDS AND
DUPONT FAN-FOLD PRODUCTS
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1 Hour Wall Assembly ESR-2142

4.4.3.1 Interior Face: One layer of 5/8-inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C36 or ASTM C1396, must be applied horizontally or vertically to the interior face of 2-by-4 or 2-by-6 wood studs spaced a maximum of 24 inches (610 mm) on center. The wallboard must be fastened to the studs and perimeter framing using 0.100-inch-diameter (2.54 mm) steel cup head nails or No. 6 bugle head screws, 1 5/8-inch-long (41.3 mm), having minimum head diameters of 0.300 inch (7.62 mm), and spaced a maximum of 8 inches (203 mm) on center. All wallboard joints must be taped and treated with joint compound in accordance with ASTM C840 or GA216. All vertical wallboard joints must be backed with minimum 2-by-4 or 2-by-6 wood framing, and taped and treated with joint compound in accordance with ASTM C840 or GA216. Insulation batts, R-11, measuring 3 1/2 inches thick (89 mm) for 2-by-4 studs, or R-19, measuring 6 1/4 inches (159 mm) for 2-by-6 studs, must be placed in the cavities between the framing and fastened to the framing. The insulation may be either fiberglass insulation batts with a minimum density of 0.62 pcf (9.93 kg/m³), or kraft-paper-faced fiberglass insulation batts with a minimum density of 0.65 pcf (10.41 kg/m³).

4.4.3.2 Exterior Face: A water-resistive barrier must be applied over the exterior face of wood framing in accordance with Section 3.2.9.1. One-inch-thick (25 mm), 1.5 pcf density (24 kg/m³), tongue-and-groove EPS insulation boards, or DOW Styrofoam Stuccomate brand XPS insulation boards recognized in ESR-2142 and described in Section 3.2.3.2 must be attached to the studs and perimeter framing in accordance with Section 4.2. All vertical joints in the insulation board must occur over studs. The insulation board must be followed by lath, as described in Section 3.2.4, fastened through the insulation boards to the studs and perimeter framing using 2-inch-long (51 mm), No. 16 gage galvanized staples, having 1 5/8-inch (23.8 mm) crowns, or minimum 2 1/4-inch-long (31.7 mm), 0.125-inch-diameter (3.18 mm) nails having minimum head diameters of 0.355 inch (9.02 mm). Fasteners must be spaced 6 inches (152 mm) on center. The Diamond Wall coating must then be applied to the lath in accordance with Section 4.1, at a minimum thickness of 3/8 inch (9.5 mm).

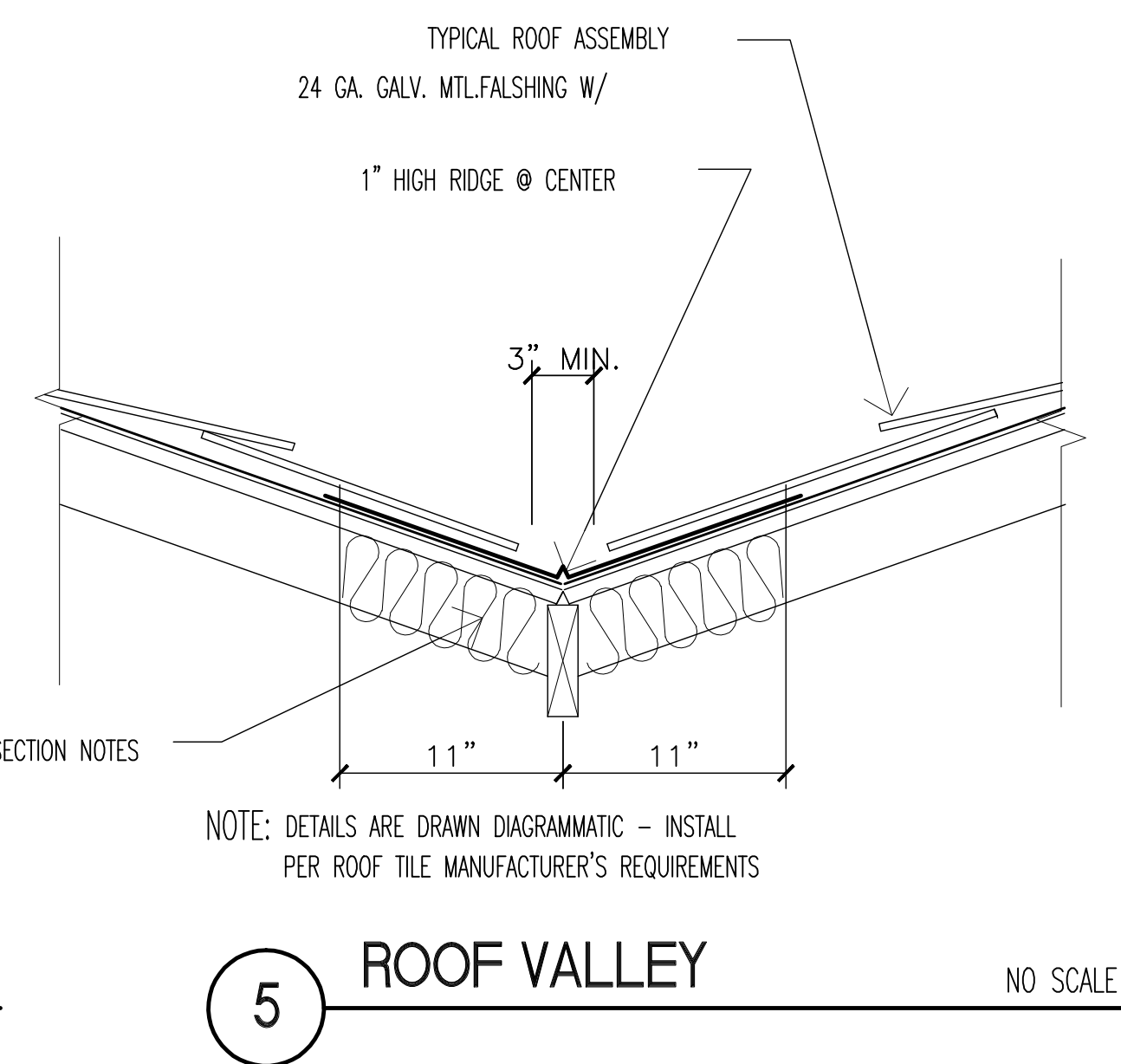
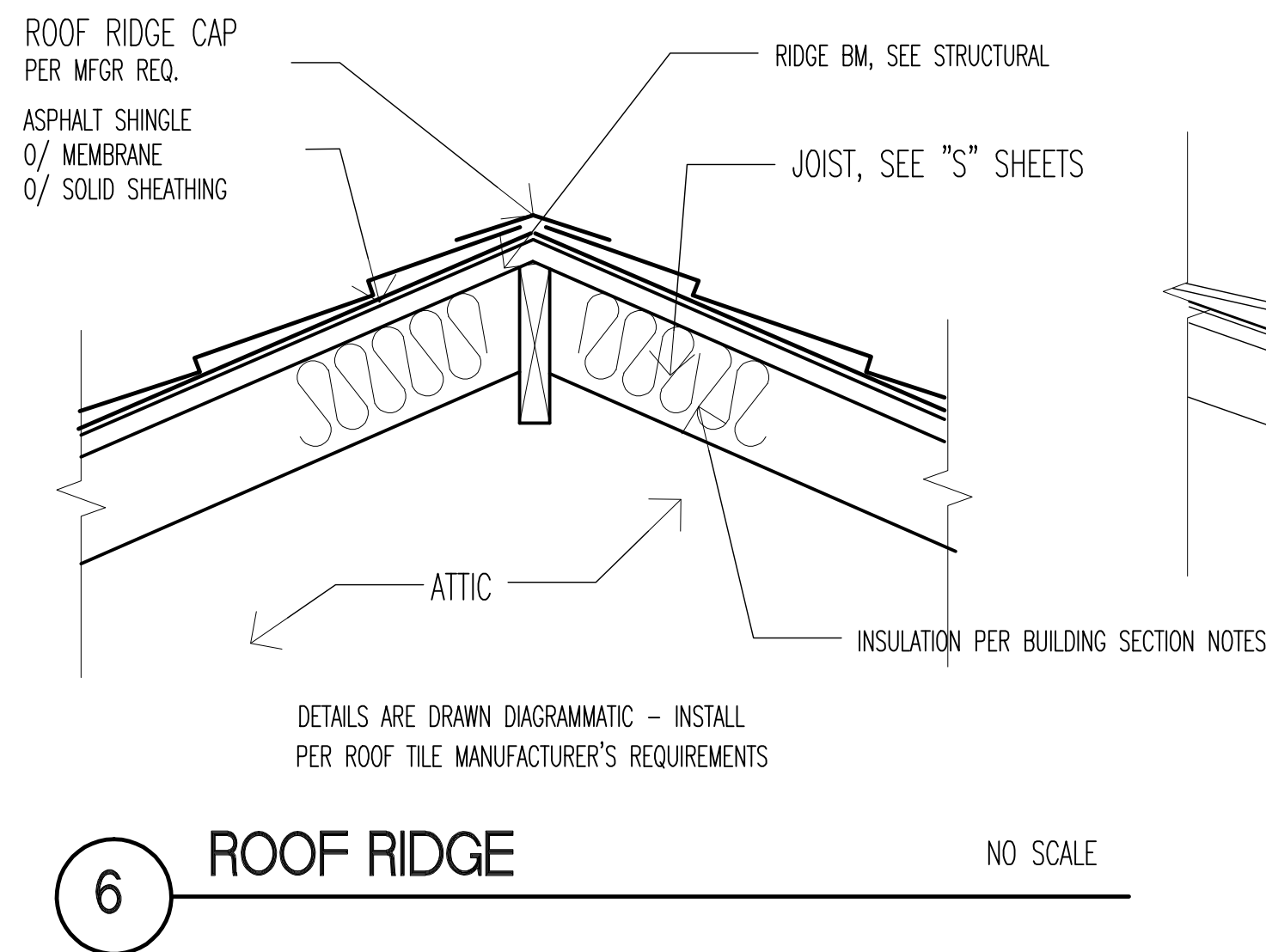
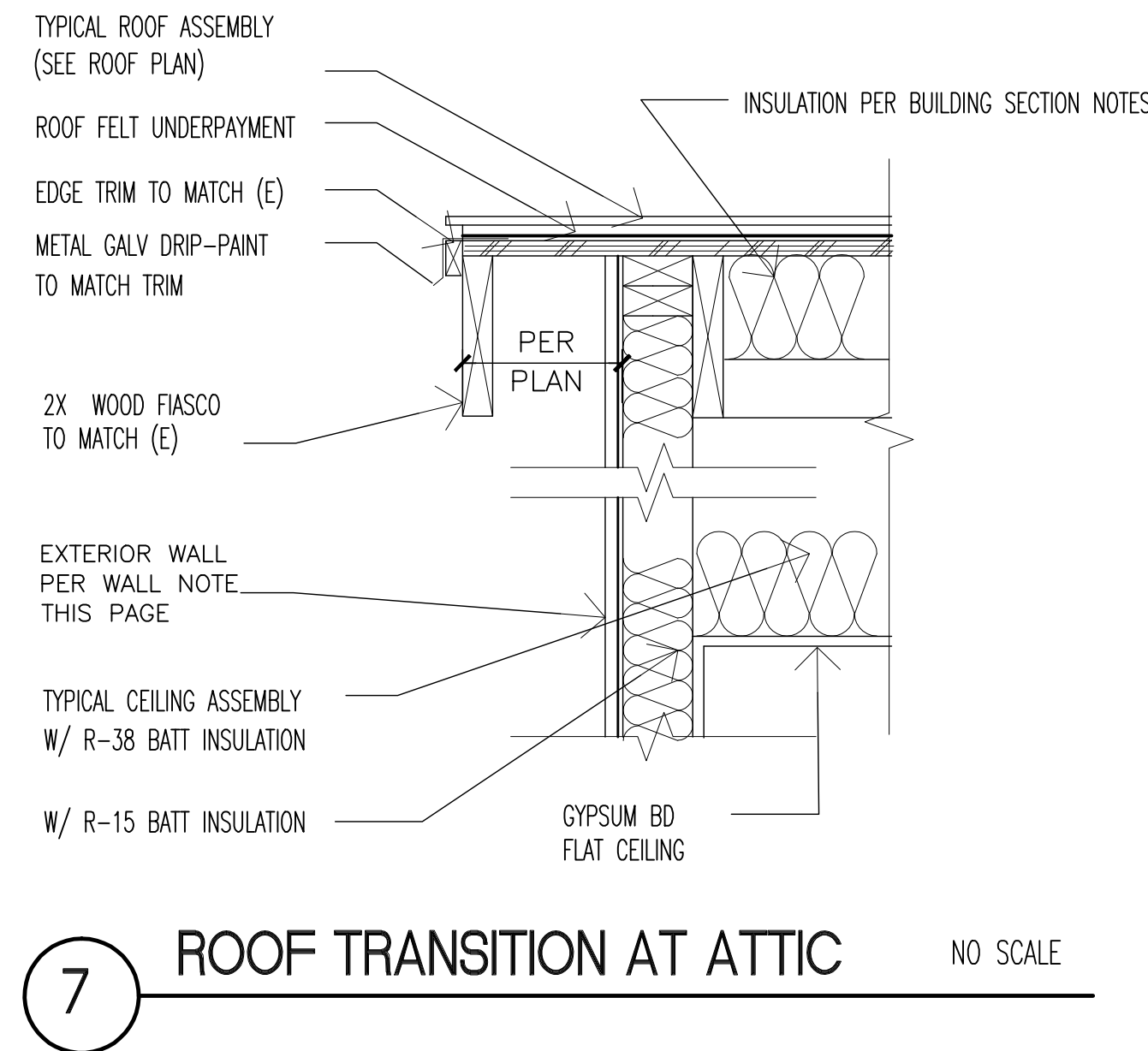
TYPICAL WALL NOTES (CONTINUE)

(NORTH OR SOUTH FACING WALLS)

TYPICAL EXTERIOR WALL ASSEMBLY AT NORTH AND SOUTH WALLS: SAME AS SPEC TO LEFT EXCEPT WALL DOES NOT REQUIRE TO BE 1-HR WALL SYSTEM THUS CAN USE NON-FIRE RATED GYPSUM BOARD MATERIAL AT INSIDE WALL FACE. (SEE STRUCTURAL DRAWINGS WHERE IN CONFLICT FOR FRAMING INFORMATION NOT SHOWN INCLUDING PLYWOOD SKIN SHEAR WALLS, ... ETC.)

GENERAL NOTES

- THIS NOTE SUPERSEDES "TYPICAL WALL NOTES" THIS PAGE AS FOLLOWS: FOOT T-24 INSULATION REQUIREMENTS SUBSTITUTE THE "R" WALL RATING OF REPLACES WALL CAVITY INSULATION USING MINIMUM R-15 BATT INSULATION INSIDE WALLS AND R-5 FOAM INSULATION BOARD FOR OUTSIDE SURFACE APPLICATION.
- FOR RESIDENTIAL SUBDIVISIONS A FIRE 1-HR FROM SEPARATION DISTANCE FOR EXTERIOR WALLS OF RATED PROJECTIONS SHALL BE PERMITTED TO BE REDUCED FROM YARD SETBACK YARD OF THE PROPERTY LINE IF THE EAVE FIRE BLOCKING IS PROVIDED FROM THE WALL TOP PLATE TO THE UNDERSIDE OF THE ROOF SHEATHING. NO VENTING ALLOWED AT SOLID BLOCKING PER CODE



Contractor shall exercise the responsibility with architect in securing latest approved dwgs. prior to actually executing work

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GENERAL MECHANICAL, ELECTRICAL AND PLUMBING NOTES

1. REFER TO DEMO PLANS FOR (E) CONDITIONS OF ITEMS TO BE REMOVED
2. REFER TO SHEET MEP-2 FOR ALL MEP DIVISIONS, SPECS AND NOTES NOT SHOWN ON THIS PAGE
3. SMOKE DETECTORS PER 2019 C.B.C., SEE SHEET MEP-2 SECTION 16 ELECTRICAL
4. FRAMING CONTRACTOR TO HAVE PRE-CONSTRUCTION MEETING FOR DUCT ROUTES AND POSSIBLE ADJUST FRAMED SOFFITS WHERE DUCT CHASE WAYS MAY NOT BE ACCESSIBLE TO REACH GRILLS FROM UNIT
5. VERIFY ALL NEW FUTURE SELECTION/TYPES W/ OWNER PRIOR TO INSTALL AND FIELD VERIFY ANY DISTURB CONDITIONS THAT WILL REQUIRE REPAIR OR REPLACEMENT
6. REFER TO SHEET A-2 FOR SEWER SITE PLAN SPOT ELEVATIONS NOT SHOWN ON THIS PAGE
7. REFER TO SHEET A-2 FOR SEWER AND WATER SITE CONNECTIONS NOT SHOWN ON THIS PAGE
8. FOR SIMPLICITY OF THESE PLAN, THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC TO THE EXTENT THAT THE CONTRACTOR IS RESPONSIBLE FOR ALL INSTALLATIONS TO INCLUDE PLUMBING AND MECHANICAL CODES AND VERIFYING OF ALL PIPE/DUCT SIZES, LOCATIONS ARE NOT TRULY LOCATED/SCALED AS THE CONTRACTOR SHALL ADJUST ACCORDINGLY TO BALANCE THE AIR/WATER DISTRIBUTION FOR ENTIRE BUILDING. CONTRACTOR SHALL ASSURE THAT ALL MAIN RUNS, FITTINGS, ELBOWS AND TRANSITION PIECES MEET INDUSTRY STANDARDS FOR SIZES, MEANS, METHODS, AND TECHNIQUES AS ARCHITECT'S DRAWINGS ARE DIAGRAMMATIC AND NOT NECESSARILY ENGINEERED TO FIT ON FIELD. THE CONTRACTOR SHALL CAREFULLY VERIFY AND INVENTORY MATERIALS AND METHOD PRIOR TO ORDER AND INSTALLATION. CHANGES TO ACCOMMODATE INSTALLATION OF THIS WORK WITH OTHER WORK OR IN ORDER TO MEET ARCHITECTURAL OR STRUCTURAL CONDITIONS, SHALL BE MADE WITHOUT ADDITIONAL COST TO CLIENT OR HOLD TO ARCHITECT AS A LIABILITY.
9. RULES AND REGULATIONS: ALL WORK AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE LATEST AMERICAN SOCIETY OF HEATING, REFRIGERATION STANDARDS, AND THE LATEST FEDERAL, STATE, AND AIR-CONDITIONING ENGINEER, COUNTY, CITY OR GOVERNING AGENCIES' UPC/UMC CODES, RULES, REGULATIONS OR AMENDMENTS. NOTHING IN THESE DRAWINGS OR NOTES SHALL BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.



DIVISION 15 – MECHANICAL/PLUMBING

ALL GOVERNING CODES FOR THIS PROJECT ARE AS FOLLOWS:
2019 CALIFORNIA RESIDENTIAL (CRC), ELECTRICAL (EEC), MECHANICAL (CMC),
CODE (EES) & PLUMBING (CPC), 2019 CALIF. ENERGY EFFICIENCY STANDARDS
CODES WITH LOCAL AMENDMENTS INCLUDING CALIFORNIA GREEN CODE 2019
AND 2019 ENERGY CODE (T-24)

FIXTURE/EQUIPMENT/APPLIANCE LIST

REFER TO T-24 AND OWNERS SEPARATE LIST FOR FIXTURES

DIVISION 15 – PLUMBING

ALL EXISTING PLUMBING FIXTURES MUST BE UPGRADED PURSUANT TO
CALIFORNIA CIVIL CODE, SECTIONS 1101.1 – 1101.8 TO COMPLY WITH THE
FOLLOWING CONSUMPTION LIMITS:
A. ANY TOILET MANUFACTURED TO USE MORE THAN 1.6 GALLONS OF WATER PER FLUSH.
B. ANY URINAL MANUFACTURED TO USE MORE THAN ONE GALLON OF WATER PER FLUSH.
C. ANY SHOWER HEAD MANUFACTURED TO HAVE A FLOW CAPACITY OF MORE THAN 2.5 GALLONS
OF WATER PER MINUTE.
D. ANY INTERIOR FAUCET THAT EMITS MORE THAN 2.2 GALLONS OF WATER PER MINUTE
NOTE TO CONTRACTOR: A COMPLETED AFFIDAVIT MAY BE PROVIDED TO THE BUILDING
INSPECTOR AT OR BEFORE FINAL IN LIEU OF INSPECTIONS OF THESE FIXTURES AS
NEW AND EXISTING BOTH MUST COMPLY TO CHART BELOW

MINIMUM FLOW RATE STANDARDS INDOOR WATER USE – GPM@ 4.303 RATE TO TABLE 4.303.2:

TABLE – MAXIMUM FIXTURE WATER USE		
FIXTURE TYPE	FLOW RATE	FOOTE
SHOWER HEADS (SINGLE)	1.8 GMP @ 80 PSI	FOOTE.1
MULTI-SHOWER HEAD TO OPERATE ONE HEAD AT A TIME SO THAT THE COMBINED FLOW RATE IS STILL THE SAME AS SINGLE HEAD IN SHOWER STALL AREA	1.8 GMP @ 80 PSI	R408.2.2
LAVATORY FAUCETS (RESIDENTIAL)	MAX. 1.2 GPM @ 60 PSI MIN. 0.8 GPM @ 20 PSI	R407.2.1.1
LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS	0.5 GPM @ 60 PSI	R407.1.2
KITCHEN FAUCETS	1.8 GPM @ 60 PSI	R420
METERING FAUCETS	0.2 GAL/CYCLE	R407.2.2
WATER CLOSET	1.28 GAL/FLUSH	R411

- ALL WATER INLET SUPPLY HOSE WITH TOP GRADE STAINLESS STEEL
BRADED FLEXIBLE METAL HOSES AND ALL SHUT-OFF VALVES TO BE
1/4 TURN – NO EXCEPTIONS (TYPICAL THROUGHOUT HOUSE)
- NO GAS PIPING SHALL BE INSTALLED IN OR ON THE GROUND UNDER
ANY BUILDING OR STRUCTURE. ALL EXPOSED GAS PIPING SHALL BE
KEPT AT LEAST 6" ABOVE GRADE OR STRUCTURE (CPC 1211).
- PROVIDE BONDING FROM COLD TO HOT WATER PIPING TO COMPLY
WITH NEC SECTION 250-80.
- PROVIDE SOLID WASTE CONNECTORS IN LIEU OF ACCESS PANELS.
(CPC 405)
- PROVIDE DEVICES TO ABSORB HIGH PRESSURES RESULTING FROM THE
QUICK CLOSING OF THE QUICK-ACTING VALVES FROM THE WASHER
AND DISHWASHER, ETC. (CPC)
- AT BATHTUBS AND TUB/SHOWER COMBINATIONS, CONTROL VALVES
SHALL BE PRESSURE BALANCED OR MIXING. VALVES SHALL BE
THERMOSTATICALLY CONTROLLED PER THE CPC SEC 410.7. 18.
- WATER CLOSET TO HAVE A SIDE CLEARANCE OF 15" ON EACH SIDE
THE CENTER LINE OF THE WATER CLOSET TO THE WALLS OR OTHER
OBSTRUCTION THERMOSTATICALLY CONTROLLED PER THE CPC SEC
410.7. 18.

DIVISION 15 – MECHANICAL

- BATHROOMS, WATER CLOSET COMPARTMENTS AND SIMILAR ROOMS SHALL
BE PROVIDED WITH MECHANICAL VENTILATION PER SECTION R303.3
UNLESS WINDOWS MEET OPEN VENTILATION REQUIREMENTS.
- FUEL BURNING APPLIANCES: FUEL BURNING APPLIANCES SUCH AS WATER
HEATERS AND FURNACES REQUIRE COMBUSTION AIR DUCTS AND EXHAUST
VENTS THAT MUST EXTEND TO THE OUTSIDE. THOUGHT MUST BE GIVEN TO
ROUTING. IT IS ADVISABLE TO LOCATE FUEL BURNING APPLIANCES ADJACENT
TO AN OUTSIDE WALL FOR EASE IN PROVIDING COMBUSTION AIR. CONSULT THE
2019 CALIFORNIA MECHANICAL CODE AND 2019 CALIFORNIA ENERGY CODE.
R402.4.4/N1102.4.4.
- ROOMS CONTAINING BATHTUBS, SHOWERS, SPAS AND SIMILAR BATHING
FIXTURES SHALL BE MECHANICALLY VENTILATED BY EXHAUST FAN WHICH
EXHAUSTS DIRECTLY –DUCTED TO TERMINATE OUTSIDE THE BUILDING CBC
1203.4.2.1. BATHROOM FANS MUST BE ENERGY STAR COMPLIANT AND SHALL
HAVE AN EXHAUST FAN THAT IS MIN. 50 CFM, A MAX SOUND RATING OR 3
SOME FOR INTERMITTENT OPERATION FOR CONTROLLED BY HUMIDITY CONTROL
UNLESS EXEMPTED ELSEWHERE.
- KITCHEN EXHAUST HOOD SHALL BE A MINIMUM OF 100 CFM WITH A MAX
SOUND RATING OF 3 SONE OF INTERMITTENT OPERATION. KITCHEN HOOD
SHALL BE DUCTED TO OUTSIDE AIR REGARDLESS OF FUEL TYPE OR HOOD
TYPE SUCH AS MICROWAVE (SUGGEST 400 CFM OR HIGHER)
- PROVIDE 100 SQ. IN. OF MAKEUP AIR TO LAUNDRY ROOM PER CMC 205,
504.4.1 AND 701.3. – SEE ALSO NOTE 6 AND 7 BELOW AT THIS PAGE FOR
COMBINED USES
- EXHAUST DUCTS SHALL TERMINATE 3" FROM OPENINGS INTO THE BUILDING
AND 10 EXHAUST DUCTS SHALL TERMINATE 3" FROM OPENINGS INTO THE
BUILDING AND 10 FROM FORCED AIR INLET PER CMC 502.2.1
- EXHAUST FAN SHALL BE SIZED TO PROVIDE VENTILATION FOR THE WHOLE
HOUSE. THE MINIMUM VENTILATION RATE FOR THE WHOLE-BUILDING EXHAUST
FAN SHALL BE CALCULATED ACCORDING TO ASHRAE STANDARD 62.2 EQUATION
4.1(A). THE CONDITIONED FLOOR AREA AND THE NUMBER OF BEDROOMS IN
THE HOME (THE EXISTING HOUSE AND THE ADDITION) WILL DETERMINE THE
MINIMUM VENTILATION RATE. ONE OF THE LOCAL EXHAUST FANS IN THE
BATHROOMS OR KITCHENS MAY BE USED TO MEET THE WHOLE-BUILDING
VENTILATION, PROVIDED THE EXHAUST FAN MEETS THE MINIMUM VENTILATION
RATED FOR BOTH THE LOCAL EXHAUST AND WHOLE-BUILDING VENTILATION
REQUIREMENTS. THE DUCTING FOR THE WHOLE BUILDING EXHAUST FAN SHALL
BE SIZED ACCORDING TO ASHRAE STANDARD 62.2 TABLE 7.1 AND THIS
EXHAUST FAN SHALL OPERATE CONTINUOUSLY. IDENTIFY FAN MANUFACTURER,
MODEL AND SOUNDS RATING (1 SONE FOR CONTINUOUS MAY BE SONE FOR
INTERMITTENT) ON PLANS. IDENTIFY LOCATION OF WHOLE BUILDING EXHAUST
FAN SHT. MEP-1.
- THE WHOLE-BUILDING VENTILATION EXHAUST FAN WILL OPERATE CONTINUOUSLY
AND IS REQUIRED TO BE RATED FOR SOUND AT A MAXIMUM OF 1 SONE. THIS
EXHAUST FAN CAN BE CONTROLLED BY A STANDARD ON/OFF SWITCH BUT THE
SWITCH MUST BE LABELED TO INFORM THE OCCUPANT THAT THE EXHAUST FAN
IS THE WHOLE-BUILDING VENTILATION EXHAUST FAN AND IS INTENDED TO
OPERATE CONTINUOUSLY. NO SPECIFIC WORDING IS MANDATED, BUT THE
WORDING NEEDS TO MAKE CLEAR WHAT THE CONTROL IS FOR AND THE
IMPORTANCE OF OPERATING THE SYSTEM. THIS MAY BE AS SIMPLE AS
"VENTILATION CONTROL" OR MIGHT INCLUDE WORDING SUCH AS: "OPERATE
WHEN THE HOUSE IS IN USE" OR "KEEP ON EXCEPT WHEN GONE OVER 7
DAYS" OR "FAN IS TO BE LEFT ON TO ENSURE INDOOR AIR QUALITY."
- HERS TESTING REQUIRED PER T-24
THIS BUILDING REQUIRES H.E.R.S VERIFICATION:
ALL ENERGY DOCUMENTATIONS FORMS MUST BE REGISTERED H.E.R.S. PROVIDER.

DIVISION 16 – ELECTRICAL

- INTERIOR LIGHTING SWITCHING DEVICES AND CONTROLS: ALL ELECTRICAL WORK
SHALL COMPLY WITH STATE CALIFORNIA ENERGY REGULATIONS (2019 ENERGY
EFFICIENCY STANDARDS)
A. ALL FORWARD PHASE CUT DIMMERS USED WITH LED LIGHT SOURCES
SHALL COMPLY WITH NEMA SSL 7A.
B. EXHAUST FANS SHALL BE CONTROLLED SEPARATELY FROM LIGHTING
SYSTEMS. SECTION 150.0 – MANDATORY FEATURES AND DEVICES
EXCEPTION TO SECTION 150.0(K)2B: LIGHTING INTEGRAL TO AN EXHAUST
FAN MAY BE ON THE SAME CONTROL AS THE FAN PROVIDED THE LIGHTING
CAN BE TURNED OFF IN ACCORDANCE WITH THE APPLICABLE PROVISIONS IN
SECTION 150.0(K)2 WHILE ALLOWING THE FAN TO CONTINUE TO OPERATE.
C. LIGHTING SHALL HAVE READILY ACCESSIBLE WALL-MOUNTED CONTROLS
THAT ALLOW THE LIGHTING TO BE MANUALLY TURNED ON AND OFF.
EXCEPTION TO SECTION 150.0(K)2C: CEILING FANS MAY PROVIDE CONTROL
OF INTEGRATED LIGHTING VIA A REMOTE CONTROL.
D. LIGHTING CONTROLS AND EQUIPMENT SHALL BE INSTALLED IN
ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
E. NO CONTROLS SHALL BYPASS A DIMMER, OCCUPANT SENSOR OR
VACANCY SENSOR FUNCTION WHERE THAT DIMMER OR SENSOR HAS BEEN
INSTALLED TO COMPLY WITH SECTION 150.0(K).
F. LIGHTING CONTROLS SHALL COMPLY WITH THE APPLICABLE REQUIREMENTS
OF SECTION 110.9. AND SECTION 150.0(K)
1). LIGHTING IN BATHROOMS, GARAGES, LAUNDRY ROOMS AND UTILITY
ROOMS. ALL LUMINAIRES SHALL BE HIGH EFFICACY AND SHALL BE
CONTROLLED BY A VACANCY SENSOR.
2). OTHER ROOMS. ALL LUMINAIRES SHALL BE HIGH EFFICACY AND SHALL
BE CONTROLLED BY A VACANCY SENSOR OR DIMMER. CLOSETS THAT
ARE LESS THAN 70 SQUARE FOOT ARE EXEMPT FROM THIS
REQUIREMENT.
3). HIGH EFFICACY LUMINAIRES MUST BE PIN BASED
4). IN BATHROOMS, GARAGES, LAUNDRY ROOMS, AND UTILITY ROOMS, AT
LEAST ONE LUMINAIRE IN EACH OF THESE SPACES SHALL BE
CONTROLLED BY AN OCCUPANT SENSOR PROVIDING AUTOMATIC-OFF
FUNCTIONALITY. IF AN OCCUPANT SENSOR IS INSTALLED, IT SHALL BE
INITIALLY CONFIGURED TO MANUAL-ON OPERATION USING THE
MANUAL CONTROL REQUIRED UNDER SECTION 150.0(K)2C.

- G. AN ENERGY MANAGEMENT CONTROL SYSTEM (EMCS) MAY BE USED TO
COMPLY WITH CONTROL REQUIREMENTS IN SECTION 150.0(K) IF AT A
MINIMUM IT PROVIDES THE FUNCTIONALITY OF THE SPECIFIED CONTROLS IN
ACCORDANCE WITH SECTION 110.9. MEETS THE INSTALLATION CERTIFICATE
REQUIREMENTS IN SECTION 130.4. MEETS THE EMCS REQUIREMENTS IN
SECTION 130.0(E), AND COMPLIES WITH ALL OTHER APPLICABLE
REQUIREMENTS IN SECTION 150.0(K)2.
H. A MULTISCENE PROGRAMMABLE CONTROLLER MAY BE USED TO COMPLY
WITH DIMMER REQUIREMENTS IN SECTION 150.0(K) IF AT A MINIMUM IT
PROVIDES THE FUNCTIONALITY OF A DIMMER IN ACCORDANCE WITH SECTION
110.9. AND COMPLIES WITH ALL OTHER APPLICABLE REQUIREMENTS IN
SECTION 150.0(K)2.

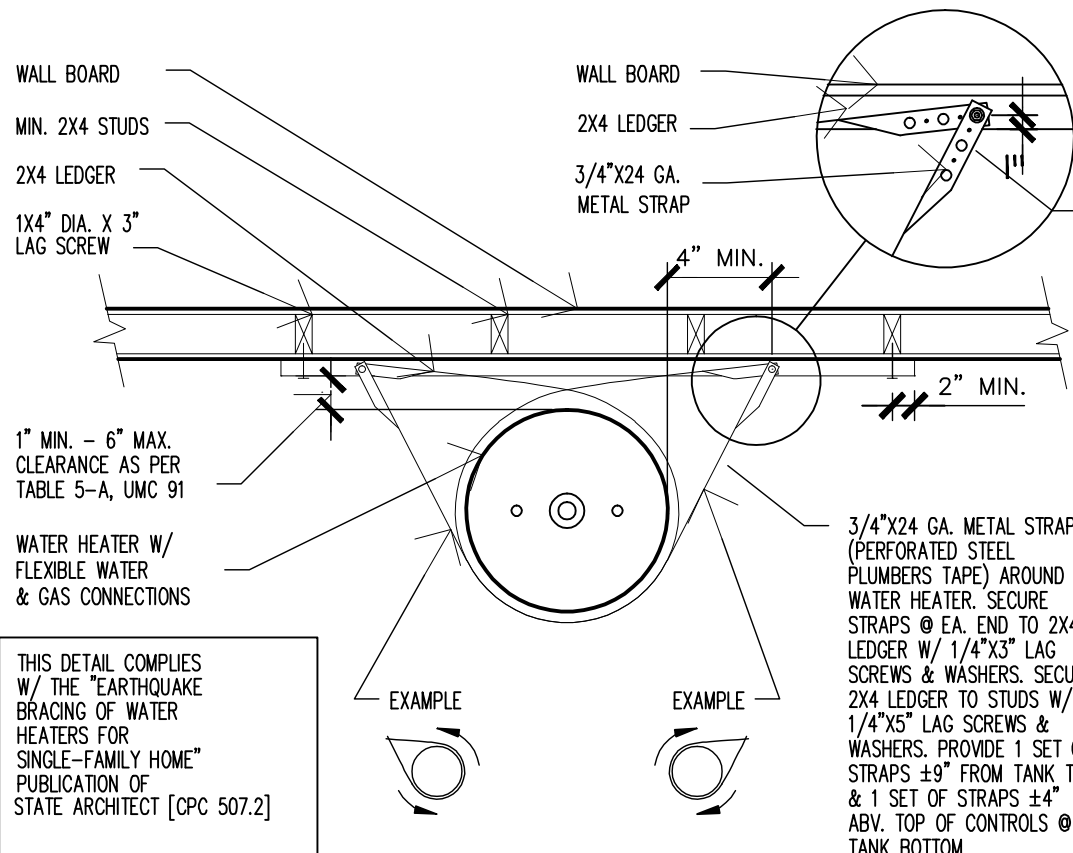
- J. LUMINAIRES THAT ARE OR CONTAIN LIGHT SOURCES THAT MEET
REFERENCE JOINT APPENDIX JAB REQUIREMENTS FOR DIMMING, AND THAT
ARE NOT CONTROLLED BY OCCUPANCY OR VACANCY SENSORS, SHALL HAVE
DIMMING CONTROLS. EXCEPTION 1 TO SECTION 150.0(K)2J: LUMINAIRES IN
CLOSETS LESS THAN 70 SQUARE FF
2. EXTERIOR LIGHTING: LUMINAIRES PROVIDING RESIDENTIAL OUTDOOR
LIGHTING SHALL HAVE SWITCH CONTROL LIGHTS LIGHTS AT ALL
EXTERIOR DOORS PER CEC 210.70(A) THE FOLLOWING REQUIREMENTS
AS APPLICABLE:
OUTDOOR LIGHTING PERMANENTLY MOUNTED TO A RESIDENTIAL BUILDING
OR, TO OTHER BUILDINGS ON THE SAME LOT SHALL MEET THE
REQUIREMENT IN ITEM #a) AND THE REQUIREMENTS IGNITE #a) SHALL
MEET THAT EITHER ITEM TO #b) OR #c) AS FOLLOWS:
a). CONTROLLED BY MANUAL ON AND OFF SWITCH THAT DOES NOT GO
OVERRIDE TO ON THE AUTOMATIC ACTIONS OF THE ITEM #2 OR #3;
AND
b). CONTROLLED BY PHOTOCELL AND MOTION SENSOR CONTROLS THAT
OVERRIDE TO ON SHALL NOT BE ALLOWED UNLESS THE OVERRIDE
AUTOMATICALLY REACTIVATES THE MOTION SENSOR WITHIN 6 HOURS OR,
c). CONTROL BY ONE OF THE FOLLOWING METHODS:
aa) PHOTO CONTROL AND AUTOMATIC TIME SWITCH CONTROL.
CONTROLS THAT OVERRIDE TO ON SHALL NOT BE ALLOWED
UNLESS THE OVERRIDE SHALL AUTOMATICALLY RETURN THE
PHOTO CONTROL AND AUTOMATICALLY TIME SWITCH CONTROL TO
ITS NORMAL OPERATION WITHIN 6 HOURS. OR
bb) ASTRONOMICAL TIME CLOCK, CONTROLS THAT OVERRIDES TO
ON SHALL NOT BE ALLOWED UNLESS YOU OVERRIDE SHALL
AUTOMATICALLY RETURN THE ASTRONOMICAL CLOCK TO ITS
NORMAL OPERATION WITHIN 6 HOURS AND WHICH IS PROGRAM
TO AUTOMATICALLY TURN THE OUTDOOR SWITCH OFF DURING
DAYLIGHT HOURS.

- ALL 125-VOLT, 15-AND 20 AMPERS RECEPTACLE OUTLETS SHALL BE
LISTED AS "TAMPER RESISTANT RECEPTACLE" PER CEC 406.12
- ANY FIXED APPLIANCE SUCH AS DISPOSAL, DISHWASHER, CLOTHES
WASHER, DRYER, BUILT-IN HEATERS, OR ANY OTHER FIXED APPLIANCE
WITH 1/4 H.P. MOTOR OR LARGER, SHALL BE ON A SEPARATE #12
AWG WIRE BRANCH CIRCUIT. EACH DWELLING UNIT SHALL HAVE
INSTALLED THEREIN AN INDIVIDUAL DISPOSAL CIRCUIT SUPPLIED WITH
MINIMUM #12 AWG WIRE AND A 15 AMP INDICATING-TYPE SWITCH. [CEC
210.23 & 220]
- PROVIDE GFI PROTECTION TO ALL 120 VOLT, 15 AND 20 AMP RECEPTABLES
INSTALLED OUTDOORS, IN BATHROOMS, IN BASEMENT, AT COUNTER TOP
SURFACES AND GARAGES. [CEC 210.8(A)] NEAR KITCHEN SINK.
- COUNTERTOPS IN THE KITCHEN, DINING AREA AND SIMILAR AREAS REQUIRE
A RECEPTACLE BE PROVIDED FOR EACH COUNTER SPACE WIDER THAN 12
INCHES SO THAT NO POINT IS MORE THAN 24" FROM AN OUTLET. [CEC
210.52(C)]. ALL POWER AND LIGHTING OUTLETS IN FAMILY ROOMS,
PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS,
HALLWAYS & SIMILAR AREAS ARE TO BE PROTECTED BY A COMBINATION
AFCI BREAKER. CEC 210.12(B). PROVIDE AT LEAST ONE RECEPTACLE OUTLET
IN BATHROOM WITHIN 36 PROVIDE A MINIMUM OF (1) 20-AMP CIRCUIT FOR
BATHROOM(S) OUTLET. SUCH CIRCUIT SHALL HAVE NO OTHER OUTLETS. THIS
CIRCUIT MAY SERVE MORE THAN ONE BATHROOM" (CEC 210-52(D)).

- EXCEPTION SMOKE AND CARBON MONOXIDE ALARMS:
INTERCONNECTION IS NOT REQUIRED IN EXISTING DWELLING UNITS WHERE
REPAIRS DO NOT RESULT IN THE REMOVAL OF WALL AND CEILING FINISHES,
THERE IS NO ACCESS BY MEANS OF ATTIC, BASEMENT OR CRAWL SPACE,
AND NO PREVIOUS METHOD FOR INTERCONNECTION EXISTED.
- RECESSED LUMINAIRES INSTALLED IN INSULATED CEILING SHALL BE IC RATED
(ZERO CLEARANCE) AND AT RATED (AIR TIGHT) AND SHALL BE SEALED
AND/OR GASKETED BETWEEN CEILING AND HOUSING, IN COMPLIANCE WITH
SECTION 150 (K)4.
- HIGH EFFICACY LUMINAIRES MUST BE PIN BASED. PLEASE ADD NOTES TO
PLANS.

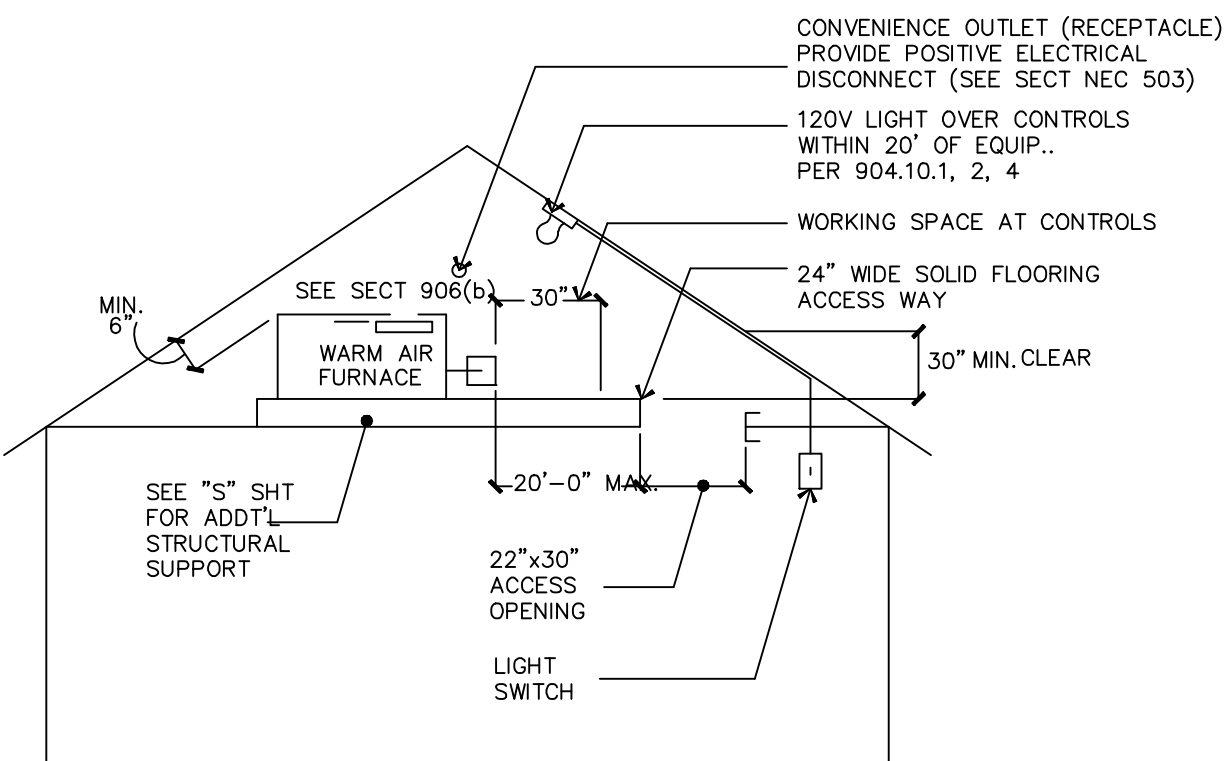
CONTINUE: DIVISION 16 – ELECTRICAL

- NEW DWELLING, SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING
LOCATIONS PER SECTION FOR R314 UL 217 SMOKE ALARMS AT
A. IN EACH SLEEPING ROOM
B. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE VICINITY OF THE BEDROOMS.
C. IN EACH STORY, INCLUDING BASEMENTS AND HABITABLE ATTICS.
D. AND IN DWELLING UNITS THAT HAVE AN ATTACHED GARAGE. [CRC R315
E. WHEN ONE OR MORE SMOKE ALARM IS REQUIRED THE ALARM DEVICE SHALL
BE INTERCONNECTED IN SUCH MANNER THAT THE ACTUATION OF ONE ALARM
WILL ACTIVATE ALL OF THE ALARMS AS HARD WIRED SMOKE DETECTORS [CRC R314]
F. SMOKE ALARMS SHALL BE LOCATED AT A MINIMUM OF 20 FEET FROM
PERMANENT COOKING EQUIPMENT AND AS MINIMUM 3 FEET AWAY FROM
BATHROOMS. IF SMOKE DETECTORS ARE LOCATED LESS THAN 20 FEET FROM
COOKTOP, IT SHALL HAVE AN ADDITIONAL FEATURE OF AN PHOTOELECTRIC
SMOKE DETECTOR SYSTEM AS IT SHALL NOT BE LOCATED LESS THAN 6
FEET FROM COOKING AREA
9. AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED IN DWELLING
UNITS AND IN SLEEPING UNITS WITHIN WHICH FUEL-BURNING APPLIANCES
ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES IN
ACCORDANCE WITH R31 UL 2034/2075. CARBON MONOXIDE ALARMS SHALL
ONLY BE REQUIRED IN SPECIFIC DWELLING UNITS OR SLEEPING UNITS FOR
WHICH THE PERMIT WAS OBTAINED. THE ALARMS SHALL BE INSTALLED IN THE
FOLLOWING LOCATIONS: a. OUTSIDE EACH SEPARATE DWELLING UNIT SLEEPING
AREA IN THE IMMEDIATE VICINITY OF THE BEDROOM(S). b. ON EVERY LEVEL
OF A DWELLING UNIT INCLUDING BASEMENTS. c. WHERE MORE THAN ONE
ALARM IS REQUIRED TO BE INSTALLED WITHIN THE DWELLING UNIT OR WITHIN
A SLEEPING UNIT.
10. ALARM SHALL BE INTERCONNECTED IN A MANNER THAT ACTIVATION OF ONE
ALARM SHALL ACTIVATE ALL THE ALARMS IN THE INDIVIDUAL UNIT.
11. EXCEPTION SMOKE AND CARBON MONOXIDE ALARMS:
INTERCONNECTION IS NOT REQUIRED IN EXISTING DWELLING UNITS WHERE
REPAIRS DO NOT RESULT IN THE REMOVAL OF WALL AND CEILING FINISHES,
THERE IS NO ACCESS BY MEANS OF ATTIC, BASEMENT OR CRAWL SPACE,
AND NO PREVIOUS METHOD FOR INTERCONNECTION EXISTED.



WATER HEATER SUPPORT DETAIL

NO SCALE 2



RELATED CODES SECTIONS: 309.1, 319 CMC 904.2
CENTRAL WARM-AIR FURNACES INSTALLED IN ATTICS MUST BE ACCESSIBLE FOR ROUTINE INSPECTION AND MAINTENANCE BY THE OWNER/OCCUPANT AND FOR SERVICE AND REPAIR AS NEEDED. CHANGING FILTERS, LUBRICATING MOTOR AND FAN BEARINGS, CHECKING BELT TENSIONS AND RELIGHTING THE PILOT FOLLOWING A SERVICE INTERRUPTION ARE NORMAL OWNER FUNCTIONS. ADEQUATE LIGHT, AN ELECTRICAL OUTLET, SAFE ACCESS WAY AND SUFFICIENT WORKING SPACE ON THE CONTROL SIDE ALL ENCOURAGE AND FACILITATE MAINTENANCE AND ALSO ENABLE RAPID EGRESS IN AN EMERGENCY.

ATTIC SECTION AT FAU

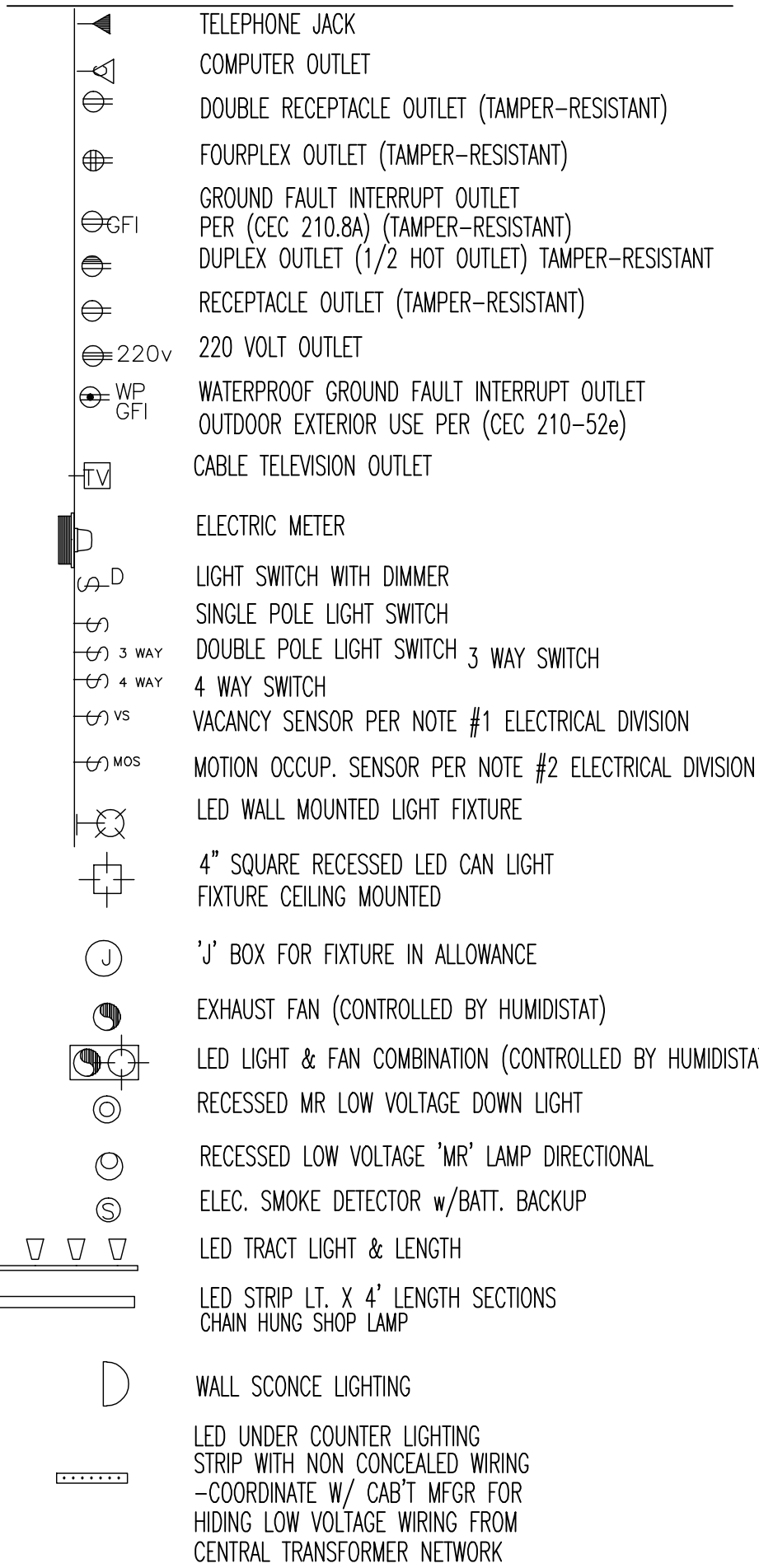
NO SCALE 1

ABBREVIATIONS

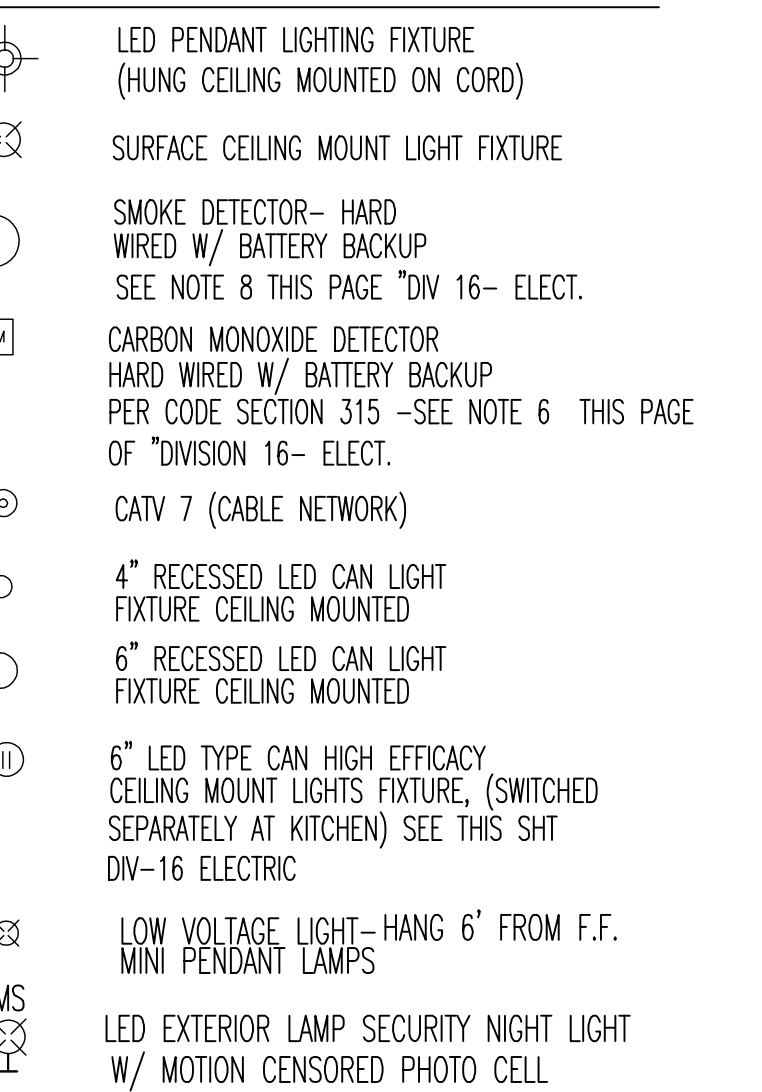
AFCI = ARC FAULT CIRCUIT INTERRUPTER
SEE THIS SHEET DIV-16 ELECTRIC
MSPC= MOTION SENSOR W/ INTEGRATED PHOTO CELL UNIT-SEE NOTE #2 THIS SHEET DIV-16 ELECTRIC
WL = WET LOCATION RECESSED LIGHT FIXTURE PER NEC 410
MOS= MOTION OCCUPANCE SENSOR – SEE NOTE #2 THIS SHEET DIV-16 ELECTRIC
(E) = EXISTING
(N) = NEW

SYMBOL STANDARDS

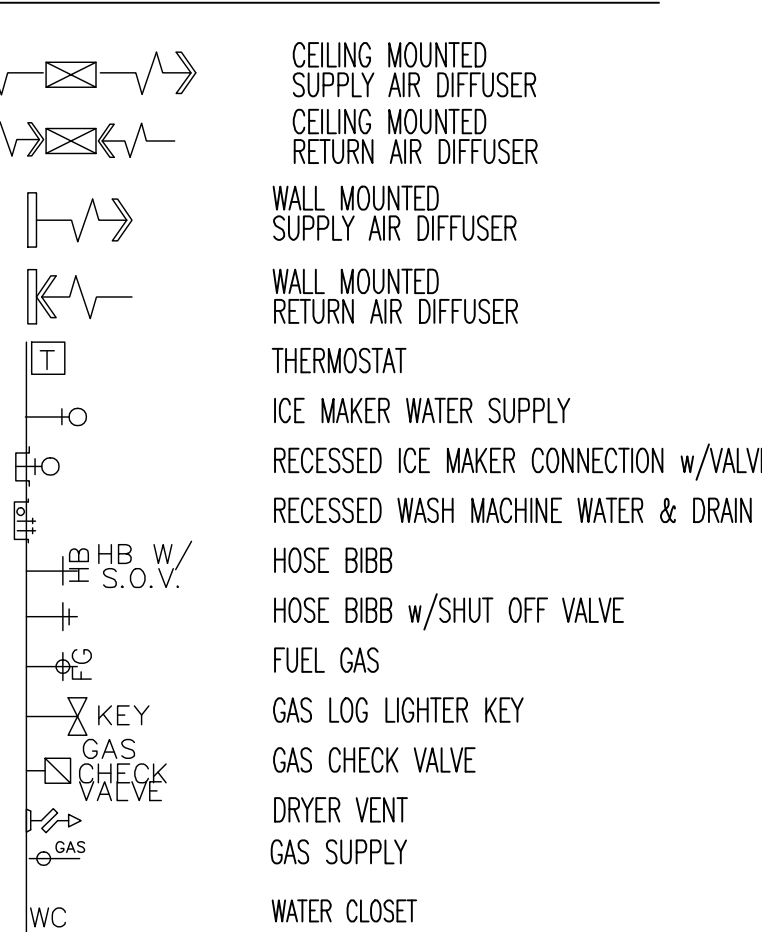
electrical



electrical (cont)



mechanical



Contractor shall exercise the responsibility with architect in securing latest approved dwgs. prior to actually executing work

NO. / REVISION / DATE

2 CITY 3rd SET 5-20-21

JOHN A. SALAT ARCHITECTS
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architect

Castro Residence
AUXILIARY DWELLING UNIT
MECHANICAL, ELECTRICAL
AND PLUMBING

OWNER/SITE ADDRESS:
CONTACT: Alfonso Castro
741 E Deodar St
Ontario, CA 91764
626-6766-1937 email: Alfonso1616@cloud.com



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5

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DATE

SEE REVISION BOX ABOVE FOR MORE

SCALE

AS NOTED ON PLANS

JOB NO.

1 SHEET

MEP-2

1 OF 10 (REF TO INDEX SHEETS)

2019 CALIFORNIA GREEN CODE

CALGREEN - RESIDENTIAL
MINIMUM REQUIREMENTS

Scope

1. 2019 California Green Building Standards Code (CG) is applicable to all new residential buildings, including but not limited to, dwellings, apartment houses, condominiums, hotels, and other types of dwellings containing sleeping accommodations with or without common toilets or cooking facilities regulated by the Department of Housing and Community Development (HCD-1). (NBMC 15.11.010, CG Section 101.3.1).
2. 2019 California Green Building Standards Code (CG) is applicable to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration. (301.1.1)

Energy Efficiency

3. New one and two family dwellings and townhouses with attached private garages shall install a listed nominal 1 inch inside diameter raceway to accommodate a dedicated 208/240 volt branch circuit. (4.106.4.1)
- a. The raceway shall originate at the main service or subpanel and terminate into a listed cabinet, box, or enclosure in close proximity to the proposed location of an EV charger.
- b. The service panel or subpanel shall provide capacity to install a minimum 40 ampere dedicated branch circuit and space reserved for installation of a branch circuit overcurrent protective device.
- c. The service panel or subpanel circuit directory shall identify the overcurrent protective devices space reserved for future EV charging as "EV CAPABLE."
- d. The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

Material Conservation and Resources Efficiency

4. Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or other similar method. (4.406.1)
5. Utilize one of the city's approved franchise hauler to recycle and/or salvage a minimum of 65% of the nonhazardous construction and demolition waste. (4.408.1, 4.408.3)

Water Efficiency and Conservation

6. New residential developments with an aggregate landscape area equal to or greater than 500 square feet shall comply with City's water efficient landscape ordinance. (4.304.1, NBMC 14.17)
7. Plumbing fixtures and fittings shall comply with the following (4.303.1):

FIXTURE TYPE	MAXIMUM FLOW RATE
Single Showerheads	1.8 gpm @ 80 psi
Multiple Showerheads	Combine flow rate of 2.0 gpm @80 psi
Residential Lavatory Faucets	1.2 gpm @ 60 psi ¹ maximum
Common and Public use Lavatory Faucets	0.5 gpm @60 psi
Kitchen Faucets	1.8 gpm @ 60 psi
Metering Faucets	0.25 gallons per cycle maximum
Water Closets	1.28 gallons/flush ¹
Wall Mounted Urinal	0.125 gallons/flush
All Other Types of Urinal	0.5 gallons/flush

1. Includes single and dual flush water closets with an effective flush rate of 1.28 gallons or less when tested per ASME A122.19.233.2 for single flush and ASME A112.19.14 for dual flush toilets.
2. Lavatory faucets shall not have a flow rate less than 0.8 gpm at 20 psi.

Environmental Quality

8. Moisture content of building materials used in wall and floor framing is checked before enclosure according to one of the following (4.505.3):
- a. Moisture content shall be determined with either a probe-type or contact-type moisture meter. Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
- b. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece to be verified.
- c. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing.
9. Aerosol paints and coatings shall meet the Product-weighted MIR Limits for ROC in Section 94522(a)(2) and other toxic requirements in Sections 94522(e)(1) and (f)(1) of the California Code of Regulations, Title 17, commencing with Section 94520. (4.504.2.3)
10. Carpet and carpet systems shall be compliant with of the following (4.504.3):
- a. Carpet and Rug Institute's Green Label Plus Program.
- b. California Department of Public Health Specification 01350.
- c. NSF/ANSI 140 at the Gold level.
- d. Scientific Certifications Systems Indoor Advantage™ Gold
11. Minimum 80% of floor area receiving resilient flooring shall comply with one of the following (4.504.4):
- a. VOC emission limits defined in the Collaborative for High Performance Schools (CHPS) High Performance Product Database.
- b. Products certified under UL GREENGUARD Gold.
- c. Certified under the Resilient Floor Covering Institute (RFCI) FloorScore program.
- d. California Department of Public Health Specification 01350.

12. Adhesives, sealants and caulks shall be compliant with volatile organic compound (VOC) limits set forth in Table 4.504.1 or Table 4.504.2. (4.504.2.1)

ADHESIVE VOC LIMIT ^{1,2} (Less Water and Less Exempt Compounds in Grams per Liter)	
ARCHITECTURAL APPLICATIONS	VOC LIMIT
Indoor carpet adhesives	50
Carpet pad adhesives	50
Outdoor carpet adhesives	150
Wood flooring adhesive	100
Rubber floor adhesives	60
Subfloor adhesives	50
Ceramic tile adhesives	65
VCT and asphalt tile adhesives	50
Drywall and panel adhesives	50
Cove base adhesives	50
Multipurpose construction adhesives	70
Structural glazing adhesives	100
Single-ply roof membrane adhesives	250
Other adhesives not specifically listed	50
SPECIALTY APPLICATIONS	
PVC welding	510
CPVC welding	490
ABS welding	325
Plastic cement welding	250
Adhesive primer for plastic	550
Contact adhesive	80
Special purpose contact adhesive	250
Structural wood member adhesive	140
Top and trim adhesive	250
SUBSTRATE SPECIFIC APPLICATIONS	
Metal to metal	30
Plastic foams	50
Porous material (except wood)	50
Wood	30
Fiberglass	80

1. If an adhesive is used to bond dissimilar substrates together, the adhesive with the highest VOC content shall be allowed.
2. For additional information regarding methods to measure VOC content specified in table, see South Coast Air Quality Management District Rule 1168.

SEALANT VOC LIMIT (Less Water and Less Exempt Compounds in Grams per Liter)	
SEALANTS	VOC LIMIT
Architectural	250
Marine deck	760
Nonmembrane roof	300
Roadway	250
Single-ply roof membrane	450
Other	420
SEALANT PRIMERS	
Architectural	
Nonporous	250
Porous	775
Modified bituminous	500
Marine deck	760
Other	750

13. Paints, stains, and other coatings shall be compliant with VOC and other toxic compound limits set forth in Table 4.504.3. (4.504.2.2)

VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS ^{2,3} (Grams of VOC per Liter of Coating, Less Water and Less Exempt Compounds)	
COATING CATEGORY	VOC LIMIT
Flat coatings	50
Nonflat coatings	100
Nonflat-high gloss coatings	150
Specialty Coatings	
Aluminum roof coatings	400
Basement specialty coatings	400
Bituminous roof coatings	50
Bituminous roof primers	350
Bond breakers	350
Concrete curing compounds	350
Concrete/masonry sealers	100
Driveway sealers	50
Dry fog coatings	150
Faux finishing coatings	350
Fire resistive coatings	350
Floor coatings	100
Form-release compounds	250
Graphic arts coatings (sign paints)	500
High temperature coatings	420
Industrial maintenance coatings	250
Low solids coatings ¹	120
Magnesite cement coatings	450
Mastic texture coatings	100
Metallic pigmented coatings	500
Multicolor coatings	250
Pretreatment wash primers	420
Primers, sealers, and undercoaters	100
Reactive penetrating sealers	350
Recycled coatings	250
Roof coatings	50
Rust preventative coatings	250
Shellacs	
Clear	730
Opaque	550
Specialty primers, sealers and undercoaters	100
Stains	250
Stone consolidants	450
Swimming pool coatings	340
Traffic marking coatings	100
Tub and tile refinish coatings	420
Waterproofing membranes	250
Wood coatings	275
Wood preservatives	350
Zinc-rich primers	340

1. Grams of VOC per liter of coating, including water and including exempt compounds.
2. The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.
3. Values in this table are derived from those specified by the California Air Resources Board, Architectural Coatings Suggested Control Measure, February 1, 2006. More information is available from the Air Resources Board.

14. Particleboard, medium density fiberboard (MDF) and hardwood plywood used in interior or exterior of the building shall comply with low formaldehyde emission standards as set forth in Table 4.504.5 below (4.504.5):

FORMALDEHYDE LIMITS ¹ (Maximum formaldehyde Emissions in Parts per Million)	
PRODUCT	LIMIT
Hardwood plywood veneer core	0.05
Hardwood plywood composite core	0.05
Particleboard	0.09
Medium density fiberboard	0.11
Thin medium density fiberboard ²	0.13

1. Values in this table are derived from those specified by the California Air Resources Board, Air Toxics Control Measure for Composite Wood as tested in accordance with ASTM E 1333-86(2002). For additional information, see California Code of Regulations, Title 17, Sections 93120 through 93120.12.
2. Thin medium density fiberboard has a maximum thickness of 5/16 inch (8 mm).

15. All duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the building inspector to reduce the amount of water, dust and debris, which may enter the system until final startup of the HVAC equipment. (4.504.1)

16. Bathroom exhaust fans shall be ENERGY STAR compliant and be ducted to terminate outside the building. Unless functioning as a component of whole house ventilation system, fans must be controlled by a humidity control capable of adjustment between a relative humidity rage of less than or equal to 50% to maximum 80%. (4.506.1)

17. Duct systems are sized, designed and equipment is selected using the following methods (4.507.2):
- a. Establish heat loss and heat gain values according to ANSI/ACCA 2 Manual J-2011 (Residential Load Calculation), ASHRAE handbooks or equivalent design methods.
- b. Size duct systems according to ANSI/ACCA 1 Manual D-2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
- c. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S-2014 (Residential Equipment Selection) or other equivalent design software or methods

Installer and Special Inspector Qualifications

18. HVAC system installers shall be trained and certified or work under direct supervision of trained and certified installers in the proper installation of HVAC systems. (702.1)
19. HVAC special inspectors must be qualified and able to demonstrate competence in the discipline they are inspecting. (702.2)

Documentations

20. An operation and maintenance manual, CD, web-based reference or other approved media shall be provided by the builder to the building occupant or owner at the final inspection. It shall include operation and maintenance instruction of the equipment and appliances. (4.410.1)
21. Documentation shall be provided to verify that finish materials used comply with VOC limits as set forth in Tables 4.504.1, 4.504.2, & 4.504.3. (4.504.2.4)
22. Documentation shall be provided to verify that composite wood products used comply with formaldehyde limits as set forth in Tables 4.504.5. (4.504.5.1)
23. Documentation which shows compliance with CAL Green code including construction documents, plans, specifications, builder or installer certification, and inspection reports and verification shall be available at the final inspection. (703.1)
24. CAL Green Documentation Compliance Certification form (City form) is required to be submitted to the Building Inspector prior to final building inspection. (Section 703.1)

NOTE: FOR BUILDING DEPT & GC USE AS MANY
ITEMS MAY NOT APPLY TO THIS PROJECT

Contractor shall exercise the responsibility with architect in securing latest approved dwgs, prior to actually executing work

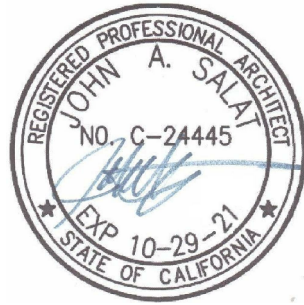
REVISIONS NO.
2 CITY 3rd SET 5-20-21

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PH 949-235-4847 email: freeingwinists@earthlink.net
zenarchitect.com

architect

Castro Residence
AUXILIARY DWELLING UNIT
CALIFORNIA GREEN CODE

OWNER/SITE ADDRESS:
CONTACT: Alfonso Castro
741 E Deodar St
Ontario, CA 91764
626-676-1937 email Alfonso1616@icloud.com



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DATE

SEE REVISION BOX ABOVE FOR DATE

SCALE

AS NOTED ON PLANS

JOB NO.

SHEET

CGC-1

T-24 ENERGY SPEC (sht 1 of 3)

CERTIFICATE OF COMPLIANCE

Project Name: Castro Residence

Calculation Description: Title 24 Analysis

CF1R-PRF-01E

(Page 1 of 9)

Calculation Date/Time: 2021-02-24T07:10:44-08:00

Input File Name: 741EDeodarCastro.rbd19x

GENERAL INFORMATION											
01	Project Name		Castro Residence								
02	Run Title		Title 24 Analysis								
03	Project Location		741 E Deodar St								
04	City		Ontario		05	Standards Version		2019			
06	Zip code		91764		07	Software Version		CBECC-Res 2019.1.3			
08	Climate Zone		10		09	Front Orientation (deg/ Cardinal)		190			
10	Building Type		Single family		11	Number of Dwelling Units		1			
12	Project Scope		NewConstruction		13	Number of Bedrooms		2			
14	Addition Cond. Floor Area (ft²)		0		15	Number of Stories		1			
16	Existing Cond. Floor Area (ft²)		n/a		17	Fenestration Average U-factor		0.29			
18	Total Cond. Floor Area (ft²)		797		19	Glazing Percentage (%)		21.62%			
20	ADU Bedroom Count		n/a		21	ADU Conditioned Floor Area		n/a			
22	Is Natural Gas Available?		Yes								

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	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: 421-P010026807A-000-000-0000000-0000

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time: 02/24/2021 13:10

Report Version: 2019.1.300

Schema Version: rev 20200901

HERS Provider: CHEERS

Report Generated: 2021-02-24 07:12:17

CERTIFICATE OF COMPLIANCE

Project Name: Castro Residence

Calculation Description: Title 24 Analysis

CF1R-PRF-01E

(Page 2 of 9)

Calculation Date/Time: 2021-02-24T07:10:44-08:00

Input File Name: 741EDeodarCastro.rbd19x

ENERGY DESIGN RATING				
Energy Design Ratings			Compliance Margins	
	Efficiency ^a (EDR)	Total ^a (EDR)	Efficiency ^a (EDR)	Total ^a (EDR)
Standard Design	52.5	26.6		
Proposed Design	52.3	26.4	0.2	0.2

RESULT: ^a COMPLIES1: Efficiency EDR includes improvements to the building envelope and more efficient equipment
2: Total EDR includes efficiency and demand response measures such as photovoltaic (PV) systems and batteries
3: Building complies when efficiency and total compliance margins are greater than or equal to zero

- Standard Design PV Capacity: 2.02 kWdc
- PV System: resized to 2.02 kWdc (a factor of 2.016) to achieve "Standard Design PV" PV scaling

ENERGY USE SUMMARY					
Energy Use (kTOD/ft ² -yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement	
Space Heating	14.58	20.45	5.87	-40.3	
Space Cooling	41.17	37.34	3.83	9.3	
IAQ Ventilation	3.35	3.35	0	0	
Water Heating	23.2	20.57	2.63	11.3	
Sell Utilization/Flexibility Credit	n/a	0	0	n/a	
Compliance Energy Total	82.3	81.71	0.59	0.7	

REQUIRED PV SYSTEMS - SIMPLIFIED											
01	02	03	04	05	06	07	08	09	10	11	12
DC System Size (kWdc)	Exception	Module Type	Array Type	Power Electronics	CFI	Azimuth (deg)	Tilt Input	Array Angle (deg)	Tilt: (x in 12)	Inverter Eff. (%)	Annual Solar Access (%)
2.02	NA	Standard	Fixed	none	true	150-270	n/a	n/a	<7:12	96	100

Registration Number: 421-P010026807A-000-000-0000000-0000

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time: 02/24/2021 13:10

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CERTIFICATE OF COMPLIANCE

Project Name: Castro Residence

Calculation Description: Title 24 Analysis

CF1R-PRF-01E

(Page 3 of 9)

Calculation Date/Time: 2021-02-24T07:10:44-08:00

Input File Name: 741EDeodarCastro.rbd19x

REQUIRED SPECIAL FEATURES	
The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.	
<ul style="list-style-type: none">PV System: 2.02 kWdcCool roofInsulation below roof deckNorthwest Energy Efficiency Alliance (NEEA) rated heat pump water heater; specific brand/model, or equivalent, must be installed	

HERS FEATURE SUMMARY	
The following is a summary of the features that must be field-verified by a certified HERS rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building tables below. Registered CF2Rs and CF3Rs are required to be completed in the HERS Registry	
Building-level Verifications: <ul style="list-style-type: none">Indoor air quality ventilationKitchen range hood Cooling System Verifications: <ul style="list-style-type: none">Minimum AirflowVerified SEERVerified Refrigerant Charge Heating System Verifications: <ul style="list-style-type: none">Verified HSPFVerified heat pump rated heating capacity HVAC Distribution System Verifications: <ul style="list-style-type: none">Duct leakage testing Domestic Hot Water System Verifications: <ul style="list-style-type: none">None	

BUILDING - FEATURES INFORMATION						
01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft ²)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Castro Residence	797	1	2	1	0	1

ZONE INFORMATION						
01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft ²)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
ADU	Conditioned	HVAC System1	797	9	DHW Sys 1	N/A

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CERTIFICATE OF COMPLIANCE

Project Name: Castro Residence

Calculation Description: Title 24 Analysis

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Input File Name: 741EDeodarCastro.rbd19x

OPAQUE SURFACES							
01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft ²)	Window and Door Area (ft ²)	Tilt (deg)
Front Wall	ADU	R-15 + R-5 Wall	190	Front	450	84	90
Left Wall	ADU	R-15 + R-5 Wall	280	Left	130	0	90
Back Wall	ADU	R-15 + R-5 Wall	10	Back	840	115.83	90
Right Wall	ADU	R-15 + R-5 Wall	100	Right	160	8	90
Wall to Attic	ADU>>Attic	R-15 Wall Int	n/a	n/a	30	0	n/a
Ceiling R-38	ADU	R-38 Roof Attic	n/a	n/a	797	n/a	n/a

ATTIC							
01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise (x in 12)	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic	R-15 Asphalt Shingle Roof	Ventilated	4	0.25	0.85	No	Yes

FENESTRATION / GLAZING													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC Source	SHGC Source	Exterior Shading
2	Window	Front Wall	Front	190				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen
3	Window	Front Wall	Front	190				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen
4	Window	Front Wall	Front	190				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen
5	Window	Front Wall	Front	190				1	6	0.28	NFRC	0.23	NFRC Bug Screen
6	Window	Front Wall	Front	190				1	20	0.28	NFRC	0.23	NFRC Bug Screen
SGD G	Window	Back Wall	Back	10				1	40	0.29	NFRC	0.22	NFRC Bug Screen
SGD H	Window	Back Wall	Back	10				1	53.33	0.29	NFRC	0.22	NFRC Bug Screen
7	Window	Back Wall	Back	10				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen

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FENESTRATION / GLAZING													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Name	Type	Surface	Orientation	Azimuth	Width (ft)	Height (ft)	Mult.	Area (ft ²)	U-factor	U-factor Source	SHGC Source	SHGC Source	Exterior Shading
8	Window	Back Wall	Back	10				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen
9	Window	Back Wall	Back	10				1	7.5	0.28	NFRC	0.23	NFRC Bug Screen
10	Window	Right Wall	Right	100				1	8	0.28	NFRC	0.23	NFRC Bug Screen

OPAQUE DOORS			
01	02	03	04
Name	Side of Building	Area (ft ²)	U-factor
Front Door A		20	0.2
Door J	Front Wall	15.5	0.2

SLAB FLOORS							
01	02	03	04	05	06	07	08
Name	Zone	Area (ft ²)	Perimeter (ft)	Edge Insul. R-value and Depth	Edge Insul. R-value and Depth	Carpeted Fraction	Heated
Slab On Grade	ADU	797	132	none	0	80%	No

OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-15 + R-5 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / R-5	0.06	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Sheathing / Insulation: R-5 Sheathing Exterior Finish: 3 Coat Stucco

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OPAQUE SURFACE CONSTRUCTIONS							
01	02	03	04	05	06	07	08
Construction Name	Surface Type	Construction Type	Framing	Total Cavity R-value	Interior / Exterior Continuous R-value	U-factor	Assembly Layers
R-15 Wall Int	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O. C.	R-15	None / None	0.086	Inside Finish: Gypsum Board Cavity / Frame: R-15 / 2x4 Other Side Finish: Gypsum Board
R-15 Asphalt Shingle Roof	Attic Roofs	Wood Framed Ceiling	2x4 Top Chord of Roof Truss @ 24 in. O. C.	R-15	None / None	0.07	Roofing: Light Roof (Asphalt Shingle) Roof Deck: Wood Siding/Sheathing/Decking Cavity / Frame: R-13.0 / 2x4 Top Chrd Around Roof Joists: R-2.0 Insul.
R-38 Roof Attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-38	None / None	0.025	Over Ceiling Joists: R-38.0 Insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

T-24 ENERGY SPEC (sht 2 of 3)

Contractor shall exercise the responsibility with architect in securing latest approved dwgs. prior to actually executing work.

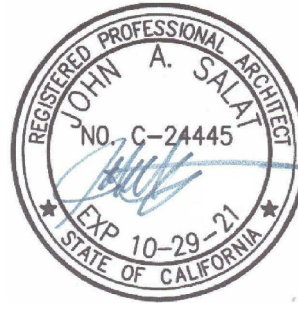
REVISIONS NO.
2 CITY 3rd SET 5-20-21

JOHN A. SALAT ARCHITECTS
22386 Woodgrove Road, Lake Forest, CA 92630
PH 949-235-4847 email: freewings@earthlink.net
zenarchitect.com

architect

Castro Residence
AUXILIARY DWELLING UNIT
T-24 ENERGY SPEC

OWNER/SITE ADDRESS:
CONTACT: Alfonso Castro
741 E Deodar St
Ontario, CA 91764
626-676-1937 email: Alfonso1616@cloud.com



DRAWN
JS

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DATE
SEE REVISION BOX ABOVE FOR DME

SCALE
AS NOTED ON PLANS

JOB NO.

SHEET

T-24.2

1 OF 5 SHEETS

CERTIFICATE OF COMPLIANCE

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WATER HEATERS											
01	02	03	04	05	06	07	08	09	10	11	12
Name	Heating Element Type	Tank Type	# of Units	Tank Vol. (gal)	Energy Factor or Efficiency	Input Rating or Pilot	Tank Insulation R-value (Int/Ext)	Standby Loss or Recovery Eff.	1st Hx. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition
DHW Heater 1	Heat Pump	n/a	1	50	NEEA	n/a	n/a	n/a	n/a	AOSmith/AOSmithFPTU50	Conditioned

WATER HEATING - HERS VERIFICATION

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

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06	07	08	09	10	11
Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name	Required Thermostat Type	Status	Verified Existing Condition	Heating Equipment Count	Cooling Equipment Count
HVAC System1	Heat pump heating cooling	Heat Pump	Heat Pump	n/a	Distribution System 1	Setback	New	NA	1	1

01	02	03	04	05	06	07	08	09	10	11
HVAC - HEAT PUMPS										
Name	System Type	Number of Units	Heating			Cooling		Zonally Controlled	Compressor Type	HERS Verification
			HSPF/COP	Cap 47	Cap 17	SEER	EER/CEER			
Heat Pump	Central split HP	1	9.2	48000	42000	15.5	12.73	Not Zonal	Single Speed	Heat Pump-hers-htpump

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I, I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Denise Kowal	Documentation Author Signature: <i>Denise Kowal</i>
Company: Hummingbird Energy Services	Signature Date: 02/24/2021
Address: 14811 Slalom Way	CEA/HERS Certification Identification (if applicable):
City/State/Zip: Truckee, CA 96161	Phone: 530-448-1053

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

- 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.
- 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.
- The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: John Salat	Responsible Designer Signature: <i>John Salat</i>
Company: John A Salat Architects	Date Signed: 02/24/2021
Address: 22386 Woodgrove Rd Woodgrove Rd	License:
City/State/Zip: Lake Forest, CA 92630	Phone: 9492354847

Digitally signed by Certified Home Energy Efficiency Rating System Services, Inc. (CHERS). This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

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HVAC HEAT PUMPS - HERS VERIFICATION								
01	02	03	04	05	06	07	08	09
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge	Verified HSPF	Verified Heating Cap 47	Verified Heating Cap 17
Heat Pump-hers-htpump	Required	350	Not Required	Required	Yes	Yes	Yes	Yes

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07	08	09	10	11	12
Name	Type	Design Type	Duct Ins. R-value		Duct Location		Surface Area		Bypass Duct	Duct Leakage	HERS Verification
			Supply	Return	Supply	Return	Supply	Return			
Distribution System 1	Unconditioned attic	Non-Verified	R-8	R-8	Attic	Attic	n/a	n/a	No Bypass Duct	Sealed and Tested	Distribution System 1-hers-dist

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
Distribution System 1-hers-dist	Yes	5.0	Not Required	Not Required	Not Required	Credit not taken	Not Required	No

IAQ (INDOOR AIR QUALITY) FANS

01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness (%)	IAQ Recovery Effectiveness - SREIAQ Recovery Effectiveness - SRE
Sfam IAQVentRpt	46	0.25	Default	0	n/a

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T-24 ENERGY SPEC (sht 3 of 3)

T-24 ENERGY SPEC (sht 3 of 3)

<div><div></div><div><div>2019 Low-Rise Residential Mandatory Measures Summary</div><div><div>NOTE: Low-rise residential buildings subject to the Energy Standards must comply with all applicable mandatory measures, regardless of the compliance approach used. Review the respective section for more information. *Exceptions may apply. (01/2020)</div></div></div></div> <div><div>Building Envelope Measures:</div><div><div>§ 110.6(a)1: 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 AAMA/WDMA/CSA 1011.5 Z/A440-2011.*</div><div>§ 110.6(a)5: Labeling. Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).</div><div>§ 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 J44.5 for exterior doors. They must be caulked and/or weather-stripped.*</div><div>§ 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.</div><div>§ 110.8(a): Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).</div><div>§ 110.8(g): Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).</div><div>§ 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 CF1R.</div><div>§ 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.</div><div>§ 150.0(a): Ceiling and Rafter Roof Insulation. Minimum R-22 insulation in wood-frame ceiling, or the weighted average U-factor must not exceed 0.043. Minimum R-19 or weighted average U-factor of 0.054 or less in a rafter roof alteration. 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 continuous 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.*</div><div>§ 150.0(b): Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.</div><div>§ 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.*</div><div>§ 150.0(d): Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*</div><div>§ 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).</div><div>§ 150.0(g)1: 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).</div><div>§ 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.</div><div>§ 150.0(q): Fenestration Products. Fenestration, including skylights, separating conditioned space from unconditioned space or outdoors must have a maximum U-factor of 0.58; or the weighted average U-factor of all fenestration must not exceed 0.58.*</div><div>Fireplaces, Decorative Gas Appliances, and Gas Log Measures:</div><div>§ 110.5(e): Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.</div><div>§ 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.</div><div>§ 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.*</div><div>§ 150.0(e)3: Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*</div><div>Space Conditioning, Water Heating, and Plumbing System Measures:</div><div>§ 110.0-§ 110.3: 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.*</div><div>§ 110.2(a): HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2.A through Table 110.2.K.*</div><div>§ 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, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.*</div><div>§ 110.2(c): Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*</div><div>§ 110.3(c)4: Water Heating Recirculation Loops Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must meet the air release valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of § 110.3(c)4.</div><div>§ 110.3(c)8: 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.</div><div>§ 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.*</div><div>§ 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.</div><div>§ 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</div><div>§ 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.</div><div>§ 150.0(i)1: Storage Tank Insulation. Unfired hot water tanks, such as storage tanks and backup storage tanks for solar water-heating systems, must have a minimum of R-12 external insulation or R-16 internal insulation where the internal insulation R-value is indicated on the exterior of the tank.</div><div>§ 150.0(j)2A: Water Piping, Solar Water-heating System Piping, and Space Conditioning System Line Insulation. All domestic hot water piping must be insulated as specified in Section 609.11 of the California Plumbing Code. In addition, the following piping conditions must have a minimum insulation wall thickness of one inch or a minimum insulation R-value of 7.7: the first five feet of cold water pipes from the storage tank; all hot water piping with a nominal diameter equal to or greater than 3/4 inch and less than one inch; all hot water piping with a nominal diameter less than 3/4 inch that is: associated with a domestic hot water recirculation system, from the heating source to storage tank or between tanks, buried below grade, and from the heating source to kitchen fixtures.*</div><div>§ 150.0(j)3: Insulation Protection. Piping insulation must be protected from damage, including that due to sunlight, moisture, equipment maintenance, and wind as required by Section 120.3(b). Insulation exposed to weather must be water retardant and protected from UV light (no adhesive tapes). Insulation covering 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.</div><div>§ 150.0(n)1: Gas or Propane Water Heating Systems. Systems using gas or propane water heaters to serve individual dwelling units must include all of the following: A dedicated 125 volt, 20 amp electrical receptacle connected to the electric panel with a 120/240 volt 3 conductor, 10 AWG copper branch circuit, within three feet of the water heater without obstruction. Both ends of the unused conductor must be labeled with the word "spare" and be electrically isolated. Have a reserved single pole circuit breaker space in the electrical panel adjacent to the circuit breaker for the branch circuit and labeled with the words "Future 240V Use"; a Category III or IV vent, or a Type B vent with straight pipe between the outside termination and the space where the water heater is installed; a condensate drain that is no more than two inches higher than the base of the water heater, and allows natural draining without pump assistance; and a gas supply line with a capacity of at least 200,000 Btu per hour.</div><div>§ 150.0(n)2: Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.</div><div>§ 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.</div></div></div>	<div><div>Ducts and Fans Measures:</div><div>§ 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.</div><div>CMC Compliance. All air distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-008-2008 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to a minimum installed level of R-6.0 or a minimum installed level of R-4.2 when ducts are entirely in conditioned space as confirmed through field verification and diagnostic testing (RA3.1.4.3.8). Portions of the duct system completely exposed and surrounded by directly conditioned space are not required to be insulated. 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 requirements of UL 181, UL 181A, or UL 181B or aerosol sealant that meets the requirements of UL 723. If mastic or tape is used to seal openings greater than ¼ inch, the combination of mastic and either mesh or tape must be used. Building cavities, support platforms for air handlers, 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 cavities and support platforms must not be compressed to cause reductions in the cross-sectional area.*</div><div>§ 150.0(m)1: 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.</div><div>§ 150.0(m)2: 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.</div><div>§ 150.0(m)7: Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.</div><div>§ 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.</div><div>§ 150.0(m)9: Protection of Insulation. Insulation must be protected from damage, sunlight, moisture, equipment maintenance, and wind. Insulation exposed to weather must be suitable for outdoor service. For example, protected by aluminum, sheet metal, painted canvas, or plastic cover. Cellular foam insulation must be protected as above or painted with a coating that is a water retardant and provides shielding from solar radiation.</div><div>§ 150.0(m)10: Porous Inner Core Flex Duct. Porous inner core flex ducts must have a non-porous layer between the inner core and outer vapor barrier.</div><div>§ 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 § 150.0(m)11 and Reference Residential Appendix RA3.</div><div>§ 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. Pressure drops and labeling must meet the requirements in §150.0(m)12. Filters must be accessible for regular service.*</div><div>§ 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 ≥ 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 all others. Small duct high velocity systems must provide an airflow ≥ 250 CFM per ton of nominal cooling capacity, and an air-handling unit fan efficiency ≤ 0.82 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*</div><div>Requirements for Ventilation and Indoor Air Quality:</div><div>§ 150.0(o)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.</div><div>§ 150.0(o)1C: Single Family Detached Dwelling Units. Single family detached dwelling units, and attached dwelling units not sharing ceilings or floors with other dwelling units, occupiable spaces, public garages, or commercial spaces must have mechanical ventilation airflow provided at rates determined by ASHRAE 62.2 Sections 4.1.1 and 4.1.2 and as specified in § 150.0(o)1C.</div><div>§ 150.0(o)1E: Multifamily Attached Dwelling Units. Multifamily attached dwelling units must have mechanical ventilation airflow provided at rates in accordance with Equation 150.0-B and must be either a balanced system or continuous supply or continuous exhaust system. If a balanced system is not used, all units in the building must use the same system type and the dwelling unit envelope leakage must be ≤ 0.3 CFM at 50 Pa (0.2 inch water) per square foot of dwelling unit envelope surface area and verified in accordance with Reference Residential Appendix RA3.8.</div><div>§ 150.0(o)1F: Multifamily Building Central Ventilation Systems. Central ventilation systems that serve multiple dwelling units must be balanced to provide ventilation airflow for each dwelling unit served at a rate equal to or greater than the rate specified by Equation 150.0-B. All unit airflows must be within 20 percent of the unit with the lowest airflow rate as it relates to the individual unit's minimum required airflow rate needed for compliance.</div><div>§ 150.0(o)1G: Kitchen Range Hoods. Kitchen range hoods must be rated for sound in accordance with Section 7.2 of ASHRAE 62.2.</div><div>§ 150.0(o)2: Field Verification and Diagnostic Testing. Dwelling unit ventilation airflow must be verified in accordance with Reference Residential Appendix RA3.7. A kitchen range hood must be verified in accordance with Reference Residential Appendix RA3.7.4.3 to confirm it is rated by HVI to comply with the airflow rates and sound requirements as specified in Section 5 and 7.2 of ASHRAE 62.2.</div><div>Pool and Spa Systems and Equipment Measures:</div><div>§ 110.4(a): Certification by Manufacturers. Any pool or spa heating system or equipment must be certified to have all of the following: a thermal efficiency that complies with the Appliance Efficiency Regulations; an on-off switch mounted outside of the heater that allows shutting off the heater without adjusting the thermostat setting; a permanent weatherproof plate or card with operating instructions; and must not use electric resistance heating.*</div><div>§ 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.</div><div>§ 110.4(b)2: Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.</div><div>§ 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.</div><div>§ 110.5: Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light.</div><div>§ 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.*</div><div>Lighting Measures:</div><div>§ 110.9: Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*</div><div>§ 150.0(k)1A: Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A.</div><div>§ 150.0(k)1B: 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 must be no greater than the number of bedrooms. These electrical boxes must be served by a dimmer, vacancy sensor control, or fan speed control.</div><div>§ 150.0(k)1C: Recessed Downlight Luminaires in Ceilings. Luminaires recessed into ceilings must meet all of the requirements for: insulation contact (IC) labeling, air leakage, sealing, maintenance, and socket and light source as described in § 150.0(k)1C.</div><div>§ 150.0(k)1D: Electronic Ballasts for Fluorescent Lamps. Ballasts for fluorescent lamps rated 13 watts or greater must be electronic and must have an output frequency no less than 20 kHz.</div><div>§ 150.0(k)1E: Night Lights, Step Lights, and Path Lights. Night lights, step lights and path lights are not required to comply with Table 150.0-A or be controlled by vacancy sensors provided they are rated to consume no more than 5 watts of power and emit no more than 150 lumens.</div><div>§ 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)*.</div><div>§ 150.0(k)1G: Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix J48.*</div><div>§ 150.0(k)1H: Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the J48 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.</div><div>§ 150.0(k)1I: Light Sources in Drawers, Cabinets, and Linen Closets. Light sources internal to drawers, cabinetry 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.</div><div>§ 150.0(k)2A: Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.</div><div>§ 150.0(k)2B: Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.*</div><div>§ 150.0(k)2C: Interior Switches and Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*</div><div>§ 150.0(k)2D: Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions.</div><div>§ 150.0(k)2E: Interior Switches and Controls. Controls must not bypass a dimmer, occupant sensor, or vacancy sensor function if the control is installed to comply with § 150.0(k).</div><div>§ 150.0(k)2F: Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9.</div></div>	<div><div>§ 150.0(k)2G: Interior Switches and Controls. An energy management control system (EMCS) may be used to comply with control requirements if it: provides functionality of the specified control according to § 110.9; meets the Installation Certificate requirements of § 130.4; meets the EMCS requirements of § 130.0(e); and meets all other requirements in § 150.0(k)2.</div><div>§ 150.0(k)2H: Interior Switches and Controls. A multiscene programmable controller may be used to comply with dimmer requirements in § 150.0(k) if it provides the functionality of a dimmer according to § 110.9, and complies with all other applicable requirements in § 150.0(k)2.</div><div>§ 150.0(k)2I: Interior Switches and Controls. In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces must be controlled by an occupant sensor or a vacancy sensor providing automatic-off functionality. If an occupant sensor is installed, it must be initially configured to manual-on operation using the manual control required under Section 150.0(k)2C.</div><div>§ 150.0(k)2J: Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix J48 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*</div><div>§ 150.0(k)2K: Interior Switches and Controls. Under cabinet lighting must be controlled separately from ceiling-installed lighting systems.</div><div>§ 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 meet the requirement in item § 150.0(k)3A(i) (ON and OFF switch) and the requirements in either § 150.0(k)3A(ii) (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3A(iii) (astronomical time clock), or an EMCS.</div><div>§ 150.0(k)3B: Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, outdoor lighting for private patios, entrances, balconies, and porches; and residential parking lots and carports with less than eight vehicles per site must comply with either § 150.0(k)3A or with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.</div><div>§ 150.0(k)3C: Residential Outdoor Lighting. For low-rise residential buildings with four or more dwelling units, any outdoor lighting for residential parking lots or carports with a total of eight or more vehicles per site and any outdoor lighting not regulated by § 150.0(k)3B or § 150.0(k)3D must comply with the applicable requirements in Sections 110.9, 130.0, 130.2, 130.4, 140.7 and 141.0.</div><div>§ 150.0(k)4: Internally Illuminated Address Signs. Internally illuminated address signs must comply with § 140.8; or must consume no more than 5 watts of power as determined according to § 130.0(c).</div><div>§ 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 Sections 110.9, 130.0, 130.1, 130.4, 140.6, and 141.0.</div><div>§ 150.0(k)6A: Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals 20 percent or less of the floor area, permanently installed lighting for the interior common areas in that building must be compliant with Table 150.0-A and be controlled by an occupant sensor.</div><div>§ 150.0(k)6B: Interior Common Areas of Low-rise Multifamily Residential Buildings. In a low-rise multifamily residential building where the total interior common area in a single building equals more than 20 percent of the floor area, permanently installed lighting for the interior common areas in that building must: i. Comply with the applicable requirements in Sections 110.9, 130.0, 130.1, 140.6 and 141.0; and ii. Lighting installed in corridors and stairwells must be controlled by occupant sensors that reduce the lighting power in each space by at least 50 percent. The occupant sensors must be capable of turning the light fully on and off from all designed paths of ingress and egress.</div><div>Solar Ready Buildings:</div><div>§ 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) through § 110.10(e).</div><div>§ 110.10(a)2: Low-rise Multifamily Buildings. Low-rise multi-family buildings that do not have a photovoltaic system installed must comply with the requirements of § 110.10(b) through § 110.10(d).</div><div>§ 110.10(b)1: 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 190 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. For low-rise multi-family buildings the solar zone must be located on the roof or overhang of the building, or on the roof or overhang of another structure located within 250 feet of the building, or on covered parking installed with the building project, and have a total area no less than 15 percent of the total roof area of the building excluding any skylight area. The solar zone requirement is applicable to the entire building, including mixed occupancy.*</div><div>§ 110.10(b)2: Azimuth. All sections of the solar zone located on steep-sloped roofs must be oriented between 90 degrees and 300 degrees of true north.</div><div>§ 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.*</div><div>§ 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 distance, measured in the horizontal plane, of the height difference between the highest point of the obstruction and the horizontal projection of the nearest point of the solar zone, measured in the vertical plane.*</div><div>§ 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.</div><div>§ 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.</div><div>§ 110.10(d): Documentation. A copy of the construction documents or a comparable document indicating the information from § 110.10(b) through § 110.10(c) must be provided to the occupant.</div><div>§ 110.10(e)1: Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.</div><div>§ 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".</div></div>

Contractor shall exercise the responsibility with architect in securing latest approved drawings, prior to actually executing work.

REVISIONS NO.

2 CITY 3rd SET 5-20-21

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CASTRO RESIDENCE

AUXILIARY DWELLING UNIT

T-24 ENERGY SPEC

DRAWN

5

CHECKED

5

DATE

SEE REVISION BOX ABOVE FOR DATE

SCALE

AS NOTED ON PLANS

JOB NO.

SHEET

T-24.3

1 OF 1 SHEETS

SOLAR PANEL SPECS (note: refer to vendor shop drawings for additional information not shown on this page)

NOTE:

SOLAR PHOTOVOLTAIC: SOLAR PV SYSTEM INSTALLATION MUST COMPLY WITH CALIFORNIA ELECTRICAL CODE, CALIFORNIA FIRE CODE, AND CRC R331. 215 ROOFTOP INSTALLED BUILDING INTEGRATED PHOTOVOLTAIC SYSTEMS THAT SERVE AS THE ROOF COVERING SHALL BE LISTED AND LABELED FOR FIRE CLASSIFICATION. [CRC R902.3, R908.1.6]

216 ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED AND IDENTIFIED WITH A FIRE CLASSIFICATION IN ACCORDANCE WITH UL 1703 AND CBC TABLE 1505.1 BASED ON BUILDING TYPE OF CONSTRUCTION. [CRC 902.4, R908.1.3] 217 PHOTOVOLTAIC

MODULES/SHINGLES INSTALLATION SHALL COMPLY WITH THE FOLLOWING [CRC R905.16]: A) PHOTOVOLTAIC MODULES/SHINGLES SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 1703. B) PHOTOVOLTAIC MODULES/SHINGLES SHALL BE ATTACHED IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS.

C) PHOTOVOLTAIC MODULES/SHINGLES SHALL BE TESTED AND LABELED FOR WIND RESISTANCE IN ACCORDANCE WITH ASTM D 3161AND SHALL MEET THE CLASSIFICATION REQUIREMENTS OF TABLE R905.2.4.1(2) FOR THE APPROPRIATE MAXIMUM BASIC WIND SPEED.



City of Ontario

BUILDING DEPARTMENT

303 EAST "B" STREET, CIVIC CENTER, ONTARIO, CA 91764

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Submittal Requirements Standard –

Solar Photovoltaic Installations 10 kW or Less for One- and Two-Family Dwellings

The plan must include the following minimum requirements:

- Must submit a minimum of two sets of plans in minimum size sheet of 11" x 17".
- General information about the project, such as property address, licensed design professional and property owner's information; systems power size; maximum distributed weight of the solar PV system in psf, (including modules, rails, attachments, and all components); & calculations of percentages of covered roof areas to be included.
- Systems that cover more than 50% of the roof area are beyond the scope of this standard; must be submitted for fire department plan review.
- Supply side connections, de-rating of main circuit breakers, power storage batteries, stand-alone systems, & panelboards connected in series, (panelboards with load circuits), are beyond the scope of this standard; these systems must be submitted for plan review.
- Plans with structural engineering are required to be submitted for plan review.
- This standard is limited to flush mounted type, (installed parallel to the roof), with a gap between 2" to 10" to the roof surface, and to roof pitches from ¼:12 to 6:12, (0° to 26° Slope), only; others are beyond the scope of this standard and must be submitted for plan review.
- Tilted type systems are beyond the scope of this standard; these require plan submittal with structural engineering design.
- The roof mounted PV arrays systems are limited to a maximum of 4psf, higher loads are beyond the scope of this standard and must be submitted for plan review.
- This standard is limited to roofing materials of tile without other roofing materials below; two layers maximum of asphalt shingles, & one layer of built-up roofs.
- Master PV plans for tracts are beyond the scope of this standard.
- Patio covers used to support the PV systems are beyond the scope of this standard..
- Roofs with metal standing seam, and wooden shingle or shake materials are beyond the scope this standard; these require plan submittal with structural engineering design.
- The horizontal connections and attachments spacing shall not exceed 4" and must be staggered in adjacent horizontal rows, and the maximum length of the rails' cantilever is limited to 18"; spans that exceed these spacing and lengths are beyond the scope of this standard and must be submitted for plan review.
- Submittals must include copies of the specifications of the manufactured racking system; modules, combiner boxes, DC/DC converters, (optimizers), and inverters.
- A site plan showing all of the existing improvements in the property, location of the electrical service equipment and all of the solar PV wall mounted equipment, required working clearances in front of the electrical equipment, property lines, and north orientation.
- An electrical roof/roof framing plan showing the layout of the arrays and their supporting structure, fire department roof access and clearances, roof pitch and slope, micro-inverters, DC/DC converters, (optimizers), combiner boxes, junction boxes, electrical raceways' layout/routing, DWW vent terminations, gas flue/B-Vents, attic air vents, skylights, exhaust vents terminations, chimneys, antennas, satellite dishes, rooftop HVAC equipment, and other existing items on the roof.

Revised 1-17-17

- A structural mounting detail for the connections and attachments of the proposed supports, rails systems, flashing, and roof structure. It must indicate the amount of lag screws per connection. The lag screws must be 5/16" diameter, corrosion resistant type, and be embedded not less than 2½" into the roof rafter/truss top chord.
- The electrical single line diagram shall include:
 - A diagram showing the number of photovoltaic modules with Voltage and Ampacity output.
 - Show all disconnects, combiners, inverters with input and output ratings, the ampere rating of the main electrical panel bus, the size of the main service disconnect, PV circuit breaker in amperes, in addition to the size and the type of all raceways and conductors, and the Amp rating of existing electrical service that are proposed to be removed must be stated.
 - Show and identify in the inverter reference the required DC ground-fault, GFI, protection; DC arc-fault circuit interrupter, AFCI, protection; and DC disconnect; CEC 690.5, 690.11, & 690.13.
 - Must follow the PV electrical design worksheet that is included within this standard as minimum requirements.
 - Per Fire Department—show Rapid Shutdown equipment near the electrical service panelboard, CFC 104.1.
 - Rooftop-mounted PV panels/modules shall have a minimum class C fire rating, CEC 1510.7.2 & CRC R907.3.
 - For design build plans, the contractor's license classification, license number, and signature must be included on each sheet.
- Plans shall be signed and stamped by the licensed design professional as required by the California Business and Professions Code

Fire safety requirements:

- Conduit, wiring systems and raceways for photovoltaic circuits shall be located as close as possible to the ridge, hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities, CFC 605.11.1.2.6 & CRC R324.7.2.7.
- Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box, CFC 605.11.1.2.6 & CRC R324.7.2.7.
- DC Combiner Boxes shall be located so that conduit runs are minimized in the pathways between arrays, CFC 605.11.1.2.6 & CRC R324.7.2.7.
- DC wiring in enclosed spaces in buildings shall be installed in metallic conduit or raceways. Conduit runs along the bottom of load bearing members, CEC 690.31(G), CFC 605.11.1.2.6 & CRC R324.7.2.7.
- All roofs shall have an access point that does not place ground ladders over openings such as windows or doors, shall be located at strong points of building construction, and in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs, CFC 605.11.1.1 & CRC R324.7.1.
- Roofs with slopes greater than 2:12 shall have solar PV layouts with access pathways that comply with the following criteria: (some exceptions apply, see the referenced code sections)
 - Hip Roofs: Panels/modules shall be located so that there is a 3-foot wide clear access pathway from the eave to the ridge on each roof slope where panels/modules are located, CFC 605.11.1.2.2 & CRC R324.7.2.2.
 - Hips and Valleys: If panels/modules are placed on both sides of a hip or valley they shall be located no closer than 18 inches to a hip or valley. If the panels are located on only one side of a hip or valley that is of equal length, then the panels can be placed directly adjacent to the hip or valley, CFC 605.11.1.2.4 & CRC R324.7.2.4.
 - Single Ridges: Panels/modules shall be located so that there are two 3-foot wide access pathways from the eave to the ridge on each roof slope where there are panels/modules installed, CFC 605.11.1.2.3 & CRC R324.7.2.3.
 - Ridges: Panels/modules shall be located no higher than 3 feet from the top of the ridge in order to allow for fire department smoke ventilation operations, CFC605.11.1.2.5 & CRC R324.7.2.5.
- Access pathways shall be located at a structurally sound location capable of supporting the load of fire fighters accessing the roof, CFC 605.11.1.2.2 & CRC R324.7.2.2.
- Must follow the markings and warning labels diagrams that are included within this standard as minimum requirements.
- This plan standard may be used as a general guideline to prepare the minimum requirements of solar PV installations 10 kW or less in one- and two-family dwellings' plans. The sample electrical single line diagram provided in this standard is for reference purposes only. Plans shall be prepared/modified to reflect the actual project-specific details.

The following notes must be included in the plans:

- All materials, equipment, installation and work shall comply with the following applicable codes:
 - 2016 CRC / 2015 IBC
 - 2016 CEC / 2014 NEC
 - 2016 CMC / 2015 UMC
 - 2016 CFC / 2015 UPC
 - 2016 CFC / 2015 IFC
 - 2016 Building Energy Efficiency Standards
 - All equipment shall be listed and labeled by a recognized testing laboratory and installed per the listing requirements and the manufacturer's instructions, CFC 110.2, 110.3, 690.4(B) and 690.13(F).
 - All outdoor equipment shall be NEMA 3R rated, including all roof mounted transition boxes and switches.
 - All equipment shall be properly grounded and bonded in accordance with CEC article 250.
 - All PV circuits connected to more than one source shall have overcurrent devices located so as to provide overcurrent protection from all sources, CEC 690.9(A).
 - All equipment of the PV system (including **rapid shutdown**) shall be located near the main electrical service equipment, CEC 690.13, 690.15.
 - Rapid shutdown equipment to provide controlled conductors that shall be limited to not more than 30 volts and 240 volt-amperes within 30 seconds of rapid shutdown initiation, CEC 690.12.
 - The utility-interactive inverters shall automatically de-energize its output to the connected electrical production and distribution network upon loss of voltage in the system and shall remain in that state until the electrical production and distribution network voltage has been restored, CEC 690.61 & 705.40.
 - Due to the fact that PV modules are energized whenever exposed to light, PV contractor shall disable the array during installation and service by short circuiting, open circuiting, or covering the array with opaque covering, CEC 690.18.
 - All conductor exposed to weather shall be listed and identified for use in direct sunlight, CEC310.10(D) and 690.31(C) through (G).
 - All conductors to be of copper material and their insulations to be rated to not less than 90°C/60-Volts minimum.
 - Insulation of exposed conductors under the modules shall be USE-2 or PV-Wire type for grounded DC systems, CEC 690.31(B); and PV-Wire type for ungrounded DC systems, (as in transformerless inverters or microinverters with isolated grounds), CEC 690.35(D).
 - Fire-stranded cable connections must be made in lugs and terminals listed and marked for the use, CEC 110.14 & 690.74(A).
 - All PV circuit conductors shall be marked on each end for unique identification, CEC 690.31(B).
 - All grounded, (neutral), conductors' insulation shall be solid white, gray, or with 3-white stripes, CEC 200.6, 200.7, & 400.22; and all grounding conductors shall be of bare wire without covering, or with insulation of green or green with yellow stripes, CEC 250.119 & 400.23. The color of **ungrounded** conductors shall be other than for grounded, (neutral), and grounding conductors, CEC 310.11(C).
 - Maximum conductor length between supply side connection and overcurrent protection is 10 feet, CEC 705.31.
 - Connections on the load side of the service disconnecting means of the other source(s) at any distribution equipment on the premises shall meet the following, CEC 705.12(D).
 - The interconnection point shall be on the line side of all ground-fault protection equipment, CEC 705.32.
 - DC wiring inside a building must be in metallic type raceways, conduits, enclosures, or cable sheathings, CEC 690.31(G).
 - Raceways in enclosed portions of the building must run along bottom of loadbearing members, CEC R324.7.2.7.
 - Metallic type raceways, conduits, enclosures, and cable sheaths containing circuits over 250-Volts to ground must be bonded in accordance with CEC 250.97 & 250.97(8).
 - Flexible, fine-stranded cables shall be terminated only with terminals, lugs, devices or connector that are identified and listed for such use, CEC 690.31(H) & 110.14.
 - Connectors shall be of latching or locking type. Connectors that are readily accessible and operating at: over 30 volts shall require tool to open and marked "Do Not Disconnect Under Load" or "Not For Current Interrupting", CEC 690.33(C) & (F)(2).
- Revised 1-17-17
- Equipment grounding conductor for PV modules smaller than 6 AWG shall be protected from physical damage by a raceway or cable armor, CEC 690.46 & 250.120(C).
 - DC PV source or DC PV output circuits shall be contained in metal raceways, type MC cable or metallic enclosures when inside the building, CEC 690.31(G).
 - Cables/wires that are subject to physical damage, such as those not located under the modules, must be protected, CEC 300.4.
 - Proposed locations of electrical service replacements must also be approved by the electrical utility company.
 - For electrical service replacements, bonding to the metal pipes of natural gas, hot water, and cold water must be provided, CEC 250.104.
 - Grounding rod electrodes shall be installed 8" minimum in contact with soil, CEC 250.53(G).
 - All exterior conduits shall be painted to match the color of the surrounding area (roof, siding, and stucco).
 - Existing plumbing vents, skylights, exhaust outlets, & ventilations intake air openings shall not be covered or blocked by the solar photovoltaic system.
 - Existing DWW plumbing vent terminations that are horizontally located closer than 12" from the proposed modules, must be rerouted, or must be extended a minimum of 6" above the surface of the modules to comply with CPC 906.1.
 - Existing B-vent terminations, for fuel burning appliances, where adjacent to the proposed modules, must be extended 12" above the modules' top surface to comply with CMC 802.6.2(1) & CPC 509.6.2(1).
 - The markings, "WARNING: PHOTOVOLTAIC POWER SOURCE", for DC raceways and cable assemblies must be at 10' o.c.; and bends, above or below penetrations of roofs, ceilings, walls, or barriers, CEC 690.31(G)(4).
 - PV combiner panelboards must have permanent markings indicating that they are DEDICATED FOR PV CIRCUITS ONLY NO LOADS ARE TO BE CONNECTED.
 - Working clearances to be provided at new and existing electrical equipment, CEC 110.26.
 - Residential type PV circuits over 150-Volts to ground must not be accessible to other than qualified persons while energized, CEC 690.7(D).
 - A ladder must be provided for inspections in accordance with Cal-OSHA regulations.
 - All of the required markings, signs, and labels must be installed on all equipment prior to any inspections.
 - Labels shall be reflective, and all letters shall be capitalized and shall be a minimum height of 3/8" in white on a red background.

PV electrical design worksheet:

PROJECT ADDRESS: 741 E Deodar St PLAN REVIEW #

Module's Model number LG355Q1C-A5 Voc 42.7VDC, & Isc 10.78ADC or AC modules Amps. Optimizer (DC/DC converter) maximum output current/Amps rating 15ADC. Inverter(s)/microinverter Model Number(s) SE3000H & maximum output Amp rating 12.5AAC

The lowest expected temperature is 30°F for Ontario; must use Voltage correction factor of 1.12 or greater per Table 690.7. The average ambient temperature of conductors in raceways or cable assemblies located outdoors and NOT on roof-tops is 98°F for Ontario; must use correction factor of 0.91 or less per table 310.15(B)(2)(a). The average ambient temperature of exposed conductors or conductors in raceways on roofs is 138°F for Ontario; must use correction factor of 0.71 or less, Tables 310.15(B)(2)(a) & 310.15(B)(3)(c). Must be located more than ¾" above roofs.

An adjustment factor of 0.8 must be used for 4-6 current carrying conductors in a conduit or cable assembly per table 310.15(B)(3)(a); must use an adjustment factor of 1.0 for 3 or less conductors.

Overcurrent protection & Ampacity for copper conductors; 110.14(C), 240.4(B) & (D), 240.6, & Table 310.15(B)(16):

Size of copper conductor in American Wire Gauge, (AWG):	14	12	10	8	6	4	2
Circuit breaker maximum Ampere rating:	15	20	30	50	70	90	125
Ampacity only for adjustments/corrections:	25	30	40	55	75	95	130
Adjusted/corrected Ampacity not to exceed that of 75°C terminals' temperature rating.	20	25	35	50	65	85	115

Equipment Grounding Conductors, (EGC), AWG, Table 250.122: 14 12 10 10 8 8 6
must use #6 AWG minimum where exposed/NOT in a raceway, 690.45 & 250.120(C).
Inverters Grounding Electrode Conductor, (GEC), Table 250.66; 8-AWG minimum where in a raceway; 6-AWG minimum where exposed/NOT in a raceway, 690.45 & 250.64(B); or 6-AWG minimum where single conductor is used for combined GEC & GEC for 100, 110, & 125-Amp circuit breaker, 690.47(C)(3).

1. MAXIMUM PV VOLTAGE AND CURRENT CALCULATIONS:

a. Maximum PV system Voltage (total to be 600 volts or less per 690.7(C):

1.12 x Voc x # of modules connected in series = total Volts. (FIXED STRING VOLTAGE MAXIMUM)

1.12 x N/A x = 380VDC total Volts.

b. Maximum PV current/Amps, (1.25 x 1.25 = 1.56 per 690.8(A) & 690.8(B)):

i. For modules connections made in series, NO DC/DC converters:

1.56 x Isc = Amps.

1.56 x Isc = Amps.

ii. For modules connections made in parallel, NO DC/DC converters:

1.56 x Isc x # of connections made in parallel = Amps.

1.56 x Isc x # of connections made in parallel = Amps.

iii. For DC/DC converters connections made in series:

1.25 x DC/DC converter output current rating = Amps.

1.25 x = Amps.

iv. For DC/DC converters connections made in parallel:

1.25 x DC/DC converter output current rating x # of connections made in parallel = Amps.

1.25 x 15A x 1 = 16.8 Amps.

2. CONDUCTOR AMPACITY CALCULATIONS: (modules/ DC/DC converters to junction/combiner box)

a. Conductor size: #10 AWG & its allowed Ampacity for adjustments/corrections: 40 Amps.

Conductors' adjusted Ampacity:

Temperature correction factor of 0.71 x more than 3 current carrying conductors adjustment factor x conductor allowed Ampacity for adjustments/corrections = Amps.
0.71 x 0.80 or 1.0 x 40 = 28.4 Amps; Ampacity not to exceed that of 75°C terminals' temperature rating.

(2) CURRENT CARRYING CONDUCTORS

3. DC CONDUCTOR AMPACITY CALCULATIONS (from junction/combiner box to inverter)

a. Conductor size: #10 AWG & its allowed Ampacity for adjustments/corrections: 40 Amps.

Conductors' adjusted Ampacity:

Temperature correction factor of 0.71 x more than 3 current carrying conductors adjustment factor x conductor allowed Ampacity for adjustments/corrections = Amps.
0.71 x 0.80 or 1.0 x 40 = 28.4 Amps; Ampacity not to exceed that of 75°C terminals' temp. rating.

4. CENTRAL INVERTERS AC CONDUCTOR AMPACITY CALCULATION: (inverter(s) to panelboard)

a. Inverter #1 output AC calculations:

1.25 x Inverter output maximum current per = Amps.

1.25 x 12.5 = 15.6 Amps

b. Conductor size: #8 AWG & its allowed Ampacity for adjustments/corrections: 55 Amps.

Conductors' corrected Ampacity:

Temperature correction factor of 0.91 x conductor allowed Ampacity for adjustments/corrections = Amps.

0.91 x 55 = 50.05 Amps; Ampacity not to exceed that of 75°C terminals' temperature rating.

c. Inverter #2 output AC calculations, (applicable if another inverter of different output ratings is proposed:

1.25 x Inverter output maximum current = Amps.

1.25 x N/A = Amps.

d. Conductor size: #8 AWG & its allowed Ampacity for adjustments/corrections: Amps.

Conductors' corrected Ampacity:

Temperature correction factor of 0.91 x conductor allowed Ampacity for adjustments/corrections = Amps.

0.91 x = Amps; Ampacity not to exceed that of 75°C terminals' temperature rating.

5. MICROINVERTERS AC CONDUCTOR AMPACITY CALCULATION: (inverter(s) to panelboard)

a. Microinverter output AC calculations, for single circuit:

1.25 x largest number of microinverters in parallel in single circuit x microinverter output maximum current = Amps.

1.25 x N/A x = Amps.

b. Conductor size: #8 AWG & its allowed Ampacity for adjustments/corrections: Amps.

Conductors' corrected Ampacity:

Temperature correction factor of 0.71 x conductor allowed Ampacity for adjustments/corrections = Amps.

0.71 x N/A = Amps; Ampacity not to exceed that of 75°C terminals' temperature rating.

6. PV COMBINER PANELBOARD AC CONDUCTOR AMPACITY CALCULATION: (inverters to combiner panelboard)

a. Combiner panelboard busbar rating: N/A Amps.

b. 1.25 x (inverter #1 + inverter #2 + inverter #3 output maximum currents = Amps

1.25 x (+) = Amps

c. Conductor size: #8 AWG & its allowed Ampacity for adjustments/corrections: Amps.

Conductors' corrected Ampacity:

Temperature correction factor of 0.91 x conductor allowed Ampacity for adjustments/corrections = Amps

0.91 x = Amps; Ampacity not to exceed that of 75°C terminals' temperature rating

7. CALCULATION OF 120% OR 100% RULE FOR BUSBAR: (Note: The Ampere ratings of the six circuit breakers that act as a main circuit breaker per 230.71(A), must be added together)

a. 120% rule:

1.2 x busbar Ampere rating ≥ main circuit breaker Ampere rating + 125% of Maximum Output of Inverter.

1.2 x 150=180 ≥ 150A + 1.25 x 12.5 Amps = 165.625A TOTAL SUPPLY

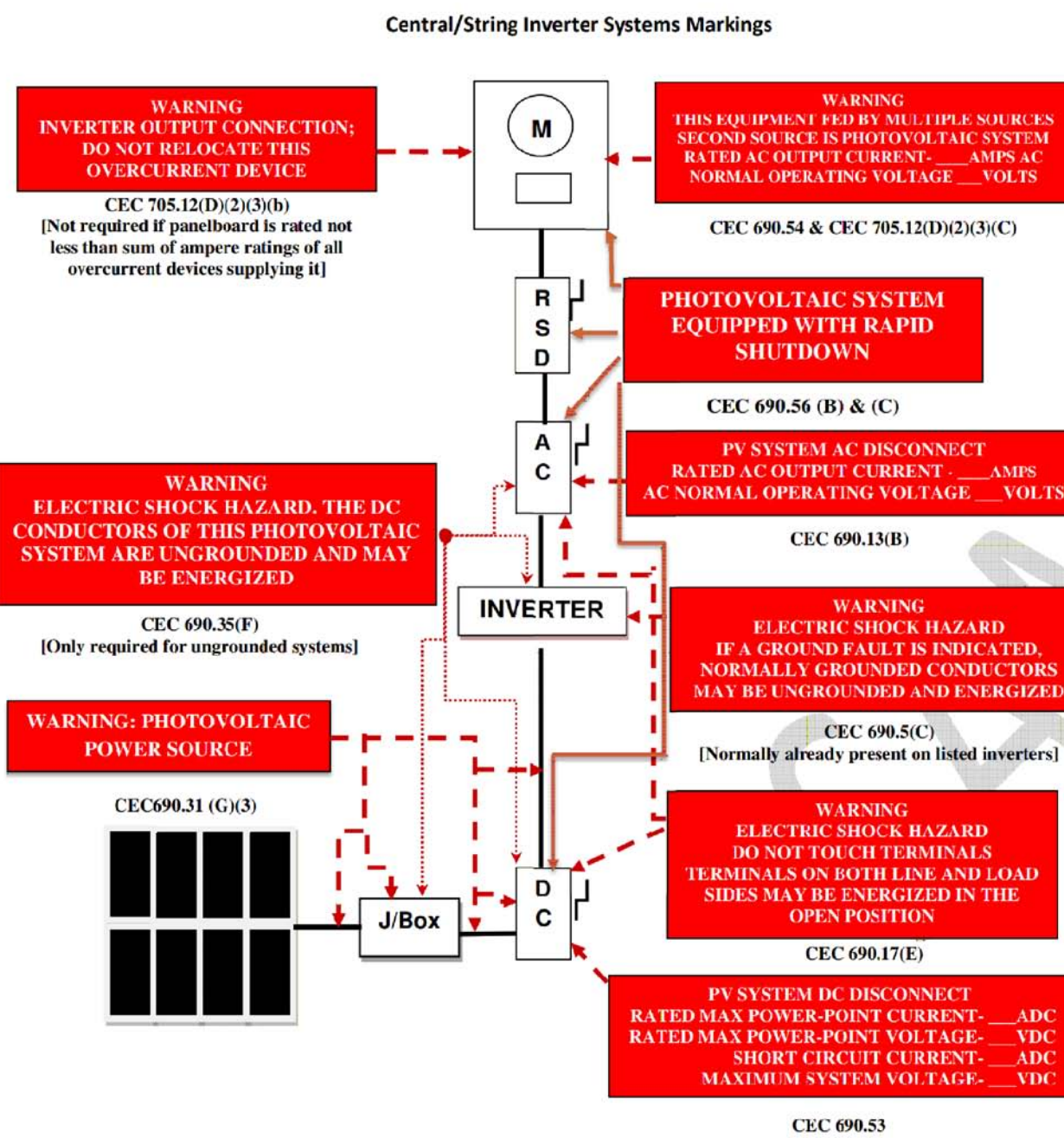
b. 100% rule:

1.0 x busbar Ampere rating ≥ main circuit breaker Ampere rating + 125% of Maximum Output of Inverter.

1.0 x ≥ + 1.25 x Amps.

Markings and warning labels

ANSI Z535.4 provides guidelines for the design of safety signs and labels for application to products. A phenolic plaque with contrasting colors between the text and background would meet the intent of the code for permanency. Type size is minimum 20 point (3/8") white on red background. Label to be suitable for the environment.

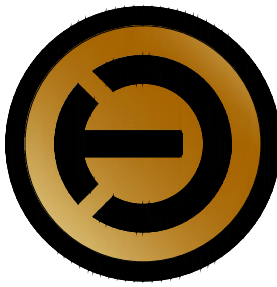


Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
C10 #501235

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge Technologies SE3000H-US (240V).
(N) 2.63kW CEC System (STC).

Alfonso Castro
741 E Deodar St
Ontario, CA 91764
(949) 235-4847
APN #1047-202-09-0000

REVISION BLOCK	
DESCRIPTION	DATE
Initial Draft of Plans	4/1/21
Revisions Per Customer	4/15/21
Revisions	5/24/21



SOUTHERN CALIFORNIA EDISON UTILITY

CONTRACTOR



TITAN
SOLAR POWER
CA LIC# C-10 1062072
EXP DATE 01/31/2022
TITAN SOLAR POWER CA INC
525 W BASELINE ROAD
MESA, AZ 85210
(800) 729-7652
WWW.TITANSOLARPOWER.COM

THOS PORTER, LICENSE HOLDER

2 (05/24/21)

1 (04/15/21)

1. All materials, equipment, installation and work shall comply with the following applicable codes:
2. - 2019 CBC / 2018 IBC
3. - 2019 CRC / 2018 IRC
4. - 2019 CEC / 2017 NEC
5. - 2019 CMC / 2018 UMC
6. - 2019 CPC / 2018 UPC
7. - 2019 CFC / 2018 IFC
8. - 2019 CECB / 2018 IEBC
9. - 2019 Building Energy Efficiency Standards
10. • All equipment shall be listed and labeled by a recognized testing laboratory and installed per the listing requirements and the
11. manufacturer's instructions, CEC 110.2, 110.3, 690.4(B) and 690.12(D).
12. • All outdoor equipment shall be NEMA 3R rated, including all roof mounted transition boxes and switches.
13. • All equipment shall be properly grounded and bonded in accordance with CEC article 250.
14. • All PV circuits connected to more than one source shall have protection against overcurrent per CEC 690.9.
15. • Disconnecting means of the PV system (including rapid shutdown initiation) shall be located in readily accessible location near the
16. equipment, CEC 690.13, 690.15.
17. • Energy storage systems terminals located more than 5 feet away or on opposite side of wall from connected equipment must
18. have disconnecting means in accordance with CEC 706.7(E) and labeled per 706.7(D). A second disconnecting means located at
19. the connected equipment shall be installed where the disconnecting means at the ESS end of the circuit is not within sight.
20. • Rapid shutdown equipment to comply with CEC 690.12.
21. • The utility-interactive inverters shall automatically de-energize its output to the connected electrical production and distribution
22. network upon loss of voltage in the system and shall remain in that state until the electrical production and distribution network
23. voltage has been restored, CEC 705.40.
24. • All conductors in exposed outdoor locations shall be listed and identified for use in direct sunlight and for the application.
25. CEC310.10(D) and 690.31(C) through (F).
26. • Insulation of exposed conductors under the modules shall be USE-2 or PV-Wire type for PV systems, CEC 690.31(C).
27. • Fine-stranded cable connections must be made in lugs and terminals listed and marked for the use, CEC 110.14.
28. • All PV circuit conductors shall be marked on each end and grouped for unique identification, CEC 690.31(B).
29. • All grounded, (neutral), conductors' insulation shall be solid white, gray, or with 3-white stripes, CEC 200.6, 200.7, & 400.22; and
30. all grounding conductors shall be of bare wire without covering, or with insulation of green or green with yellow stripes, CEC
31. 250.119 & 400.23. The color of ungrounded conductors shall be other than for grounded, (neutral), and grounding conductors,
32. CEC 310.110(C).
33. • Maximum conductor length between supply side connection and overcurrent protection is 10 feet, CEC 705.31.
34. • Connections on the load side of the service disconnecting means of the other source(s) at any distribution equipment on the
35. premises shall meet the following, CEC 705.12(B).
36. • DC wiring inside a building must be in metallic type raceways, conduits, enclosures, or cable sheathings, CEC 690.31(G)

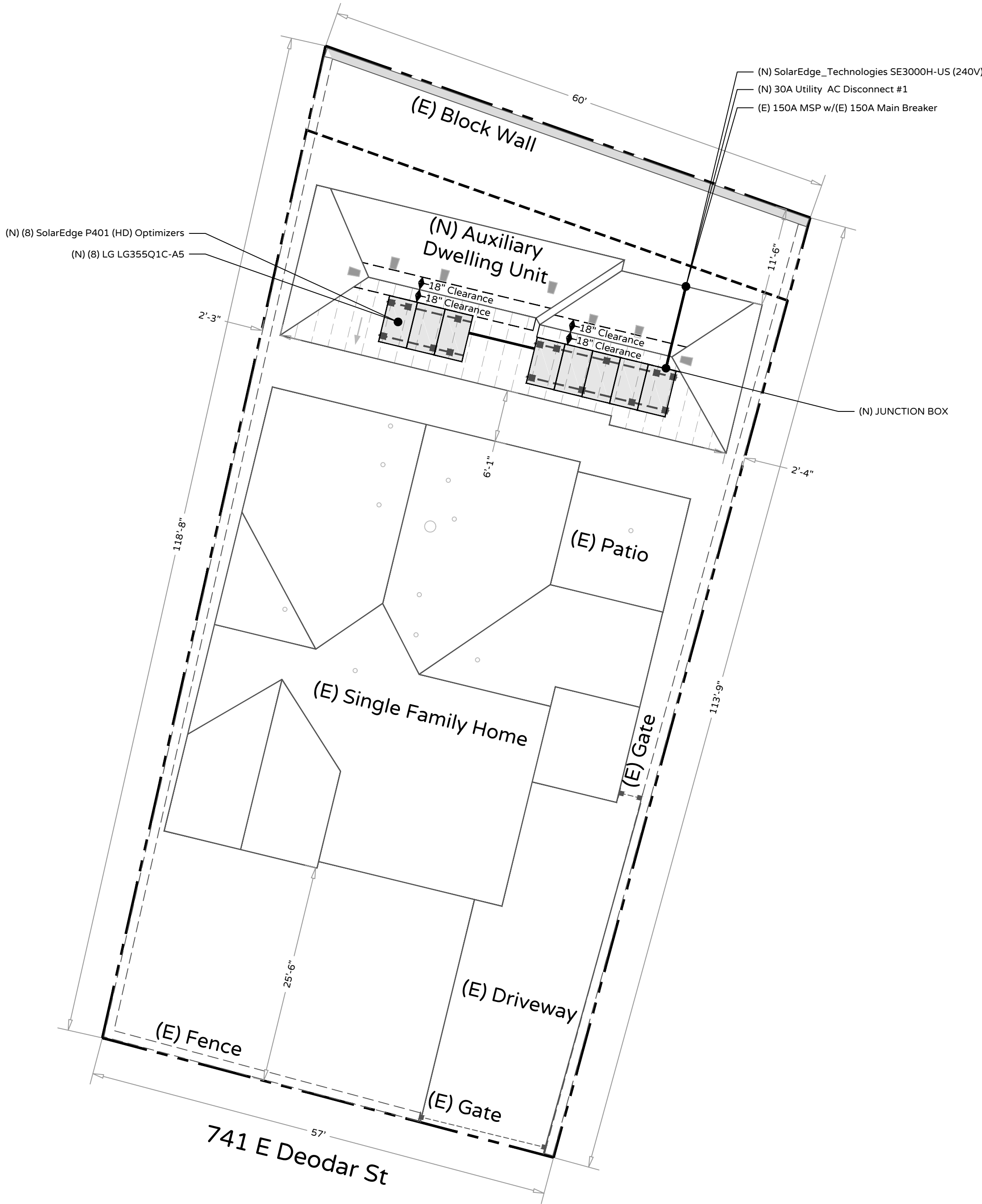
Metallic type raceways, conduits, enclosures, and cable sheaths containing circuits over 250-Volts to ground must be bonded in accordance with CEC 250.97.

- All exterior conduit, fittings and boxes shall be rain tight and approved for use in wet locations, CEC 314.15
- Flexible, fine-stranded cables shall be terminated only with terminals, lugs, devices or connector that are identified and listed for such use, CEC 690.31(H) & 110.14.
- Connectors shall be of latching or locking type. Connectors that are readily accessible and operating at over 30 volts shall require tool to open and marked "Do Not Disconnect Under Load" or "Not For Current Interrupting", CEC 690.33(C) & (E)(2).
- Equipment grounding conductor for PV modules smaller than 6 AWG shall be protected from physical damage by a raceway or cable armor, CEC 690.46 & 250.120(C).
- The interconnection point shall be on the supply side of all ground-fault protection equipment, CEC 705.32.
- Cables/wires that are subject to physical damage, such as those not located under the modules, must be protected, CEC 300.4.
- Proposed locations of electrical service replacements must also be approved by the electrical utility company.
- For electrical service replacements, bonding to the metal pipes of natural gas, hot water, and cold water must be provide, CEC 250.104.
- Grounding rod electrodes shall be minimum 5/8" in diameter and installed 8' minimum in contact with soil, CEC 250.52(A)(5), 250.53(G).
- All exterior conduits shall be painted to match the color of the surrounding area (roof, siding, and stucco).
- Minimum 7/8" clearance from roof to bottom of conduit or use a temperature adder of 33 degrees C. CEC 310.15(B)(3)(c)
- Existing plumbing vents, skylights, exhaust outlets, & ventilations intake air openings shall not be covered or blocked by the solar photovoltaic system.
- Existing DWV plumbing vent terminations that are horizontally located closer than 12" from the proposed modules, must be rerouted, or must be extended a minimum of 6" above the surface of the modules, CPC 906.1.
- Existing B-vent terminations, for fuel burning appliances, where adjacent to the proposed modules, must be extended 12" above the modules' top surface, CMC 802.6.1(1) & CPC 509.6.1(1).
- The markings, "WARNING: PHOTOVOLTAIC POWER SOURCE", for DC raceways and cable assemblies must be at 10' o.c.; and bends, above or below penetrations of roofs, ceilings, walls, or barriers, CEC 690.31(G)(4).
- PV combiner panelboards must have permanent markings indicating that they are DEDICATED FOR PV CIRCUITS ONLY NO LOADS ARE TO BE CONNECTED.
- Working clearances to be provided at new and existing electrical equipment, CEC 110.26.
- A ladder must be provided for inspections in accordance with Cal-OSHA regulations, secured and extending 3' above the roof.
- All of the required markings, signs, and labels must be installed on all equipment prior to any inspections.
- Labels shall be reflective, and all letters shall be capitalized and shall be a minimum height of 3/8" in white on a red background. CEC 690.31(G)(4)
- Identification of power source rapid shutdown and labeling shall be in accordance with CEC 690.56(C).
- When the main circuit breaker is derated, a permanent marking must be provided on the panelboard to indicate that THE MAIN CIRCUIT BREAKER HAS BEEN DOWNSIZED TO _____ AMPS, DO NOT UPSIZE IT.
- Panels and modules not to be installed on roof below an emergency escape and rescue opening. CRC R324.6.2.2
- Ground-mounted PV systems must have a clear, brush-free area of 10-feet and a fire separation distance of 5-feet minimum to other structures and property lines, CRC R324.7 & R302.1.
- Plan check and permit for PV system and associated equipment only. • All projects subject to field verification for code compliance.

Roof Access Point	Property Lines	Fence Line	Block Wall	Conduit On Roof	Conduit In Attic	Conduit In Trench

PROJECT SHALL COMPLY WITH
2019 CALIFORNIA BUILDING CODE / 2018 IBC
2019 CALIFORNIA RESIDENTIAL CODE / 2018 IRC
2019 CALIFORNIA ELECTRICAL CODE / 2017 NEC
2019 CALIFORNIA MECHANICAL CODE / 2018 UMC
2019 CALIFORNIA PLUMBING CODE / 2018 UPC
2019 CALIFORNIA ENERGY CODE
2019 CALIFORNIA HISTORICAL CODE
2019 CALIFORNIA EXISTING BUILDING CODE / 2018 IEBC 2019
CALIFORNIA GREEN BUILDING STANDARDS CODE

THIS PLAN CHECK IS FOR SOLAR PHOTOVOLTAIC ONLY. OTHER
STRUCTURES ON SITE ARE NOT A PART OF REVIEW.



Plot Plan & Photovoltaic Layout	PV-1.0
Project Notes	PV-1.1
Racking Details	PV-2.0 & PV-2.1
Fire Labels & Equipment Elevation	PV-3.0
Fire Placard	PV-3.1
Conduit Run & Grounding Details	PV-4.0
3 Line Diagram & 1 Line Diagram	PV-4.1 & PV-4.2
Safety Placard	PV-5.0
Manufacture Spec. Sheets	Attached

OCCUPANCY GROUP: R-3
TYPE OF CONSTRUCTION: TYPE V-B
AUTHORITY HAVING JURISDICTION: CITY OF ONTARIO
ASSESSORS PARCEL NUMBER: #1047-202-09-0000
NUMBER OF STORIES: 1-Story
ROOF PITCH: 18"

1 Sheet Index & Site Information

Scale: NTS

- EXISTING PLUMBING VENTS, SKYLIGHTS, EXHAUST OUTLETS, VENTILATIONS INTAKE AIR OPENINGS SHALL NOT BE COVERED BY THE SOLAR PHOTOVOLTAIC SYSTEM.
- ALL EQUIPMENT SHALL BE LISTED AND LABELED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY AND INSTALLED PER THE LISTING REQUIREMENTS AND THE MANUFACTURE'S INSTRUCTIONS. [NEC 690.4(D)]
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED, INCLUDING ALL ROOF MOUNTED TRANSITION BOXES & SWITCHES. - ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250
- ALL CIRCUITS CONNECTED TO MORE THAN ONE SOURCE SHALL HAVE OVERCURRENT DEVICES LOCATED SO AS TO PROVIDE OVERCURRENT PROTECTION FROM ALL SOURCES. [NEC 690.9(A)]
- ADDITIONAL EQUIPMENT OF THE PV SYSTEM SHALL BE LOCATED OUTSIDE THE BUILDING NEAR THE MAIN ELECTRICAL SERVICES. [NEC 690.14(C)]
- THE UTILITY-INTERACTIVE INVERTERS SHALL AUTOMATICALLY DE-ENERGIZE ITS OUTPUT TO THE CONNECTED ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK UPON LOSS OF VOLTAGE IN THE SYSTEM REMAIN IN THE ENERGIZED STATE UNTIL THE ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK VOLTAGE HAS BEEN RESTORED. [NEC 690.61 & 705.40]
- DUE TO THE FACT THAT PV MODULES ARE ENERGIZED WHENEVER EXPOSED TO LIGHT, PV CONTRACTOR SHALL DISABLE THE ARRAY DURING INSTALLATION AND SERVICE BY SHORT CIRCUITING, OPEN CIRCUITING, OR COVERING THE ARRAY WITH OPAQUE COVERING. [NEC 690.18]
- ALL CONDUCTOR EXPOSED TO WEATHER SHALL BE LISTED AND IDENTIFIED FOR USE IN DIRECT SUNLIGHT. [NEC 690.31(B), 310.8(D)]
- THE MODULE CONDUCTORS MUST BE TYPE USE-2 OR LISTED FOR PHOTOVOLTAIC (PV) WIRE. [NEC 690.31(B)]
- ALL CONDUCTORS SHALL BE MARKED ON EACH END FOR UNIQUE IDENTIFICATION. [NEC 690.4 (B)]
- ALL GROUNDED CONDUCTOR SHALL BE PROPERLY COLOR IDENTIFIED AS WHITE. [NEC 200.6]
- PV SISTEM CONNECTED ON THE LOAD SIDE OF THE SERVICE DISCONNECTING MEANS OF THE OTHER SOURCE(S) AT ANY DISTRIBUTION EQUIPMENT ON THE PREMISES SHALL MEET THE FOLLOWING [NEC 705.12(D)]:
- EACH SOURCE CONNECTION SHALL BE MADE AT A DEDICATED SOURCE CIRCUIT BREAKER OR FUSIBLE DISCONNECTING MEANS. [NEC 705.12(D)(1)]
- THE SUM OF THE AMPERE RATING OF THE OVERCURRENT DEVICES IN THE CIRCUITS SUPPLYING POWER TO THE BUSBAR OR CONDUCTOR SHALL NOT EXCEED 120% OF THE BUSBAR OR CONDUCTOR. [NEC 705.12(D)(2)]
- THE INTERCONNECTION POINT SHALL BE ON THE LINE SIDE OF ALL GROUND-FAULT PROTECTION EQUIPMENT. [NEC 705.12(D)(3)]
- EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUS BAR OR CONDUCTOR SHALL BE MARKED TO INDICATE THE PRESENCE OF ALL SOURCES. [NEC 705.12(D)(4)]
- CIRCUIT BREAKER, IF BACKFED, SHALL BE SUITABLE FOR SUCH OPERATION. [NEC 705.12(D)(5)]
- TO MINIMIZE OVERHEATING OF THE BUSBAR IN THE PANELBOARD, THE PANELBOARD MAIN CIRCUIT BREAKER AND THE PV POWER SOURCE CIRCUIT BREAKER SHALL BE PHYSICALLY LOACTED AT THE OPPOSITE END OF THE BUSBAR. [NEC 705.12(D)(7)]
- ALL THE NEC REQUIRED WARNING SIGNS, MARKINGS AND LABELS SHALL BE POSTED ON EQUIPMENT AND DISCONNECTS PRIOR TO ANY INSPECTIONS TO BE PERFORMED BY THE BUILDING DEPARTMENT INSPECTOR.
- METALLIC RACEWAYS OR METALLIC ENCLOSURES ARE REQUIRED WIRING METHOD FOR INSIDE A BUILDING FOR PV SYSTEM. [NEC 690.31(E)]
- FLEXIBLE, FINE-STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS, LUGS, DEVICES OR CONNECTOR THAT ARE IDENTIFIED AND LISTED FOR SUCH USE. [NEC 690.31(F) & 110.14(A)]
- CONNECTORS SHALL BE OF LOCKING OR LATCHING TYPE. CONNECTORS THAT ARE READILY ACCESSIBLE AND OPERATING AT OVER 30 VOLTS SHALL REQUIRE TOOL TO OPEN AND MARKED "DO NOT DISCONNECT UNDER LOAD" OR "NOT FOR CURRENT INTERRUPTING". [NEC 690.33(C) & (E)(2)]
- EQUIPMENT GROUNDING CONDUCTOR FOR PV MODULES SMALLER THAN 6 AWG SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY A RACEWAY OR CABLE ARMOR. [NEC 690.46 & 250.120(C)]
- EQUIPMENT GROUNDING FOR PV SYSTEMS WITHOUT GROUND FAULT PROTECTION (GFP) AND INSTALLED ON NON-DWELLING UNITS MUST HAVE AMPACITY OF AT LEAST 2 TIMES THE TEMPERATURE AND CONDUIT FILL CORRECTED CIRCUIT CONDUCTOR AMPACITY. [NEC 690.45(B)]
- FINE-STRANED CABLES USED FOR BATTERY TERMINALS, DEVICES, AND CONNECTIONS REQUIRE LUGS AND TERMINALS LISTED AND MARKED FOR THE USE. [NEC 690.74(A)]



2 AHJ Notes

Scale: NTS

3 Plot Plan

Scale: 1" = 10'

3 Photovoltaic System Notes

Scale:

2019 CA BUILDING CODE / 2018 IBC
2019 CA RESIDENTIAL CODE / 2018 IRC
2019 CA ELECTRICAL CODE / 2017 NEC
2019 CA MECHANICAL CODE / 2018 UMC
2019 CA PLUMBING CODE / 2018 UPC
2019 CA ENERGY CODE
2019 CA HISTORICAL CODE
2019 CA EXISTING BUILDING CODE / 2018 IEBC

1 Applicable Codes
Scale: NTS

CODE BOOK:	2019 CEC
BREAKER SIZES:	CEC 240.6
WIRE AMPACITY TABLE:	CEC 310.16
MAX SYSTEM VOLTAGE CORRECTION:	CEC 690.7
NUMBER OF CONDUCTORS CORRECTION:	CEC 310.15(B)(3)(A)
AMBIENT TEMPERATURE CORRECTION:	CEC 310.15(B)(2)(A)
AMBIENT TEMPERATURE ADJUSTMENT:	CEC 310.15(B)(2)(C)
DC GROUNDING ELECTRODE CONDUCTOR:	UNGROUND DC SYSTEM
AC GROUNDING ELECTRODE CONDUCTOR:	CEC 250.66
RACK GROUNDING ELECTRODE CONDUCTOR:	CEC 690.47(D)
MAXIMUM OCPD (120% RULE):	CEC 690.64

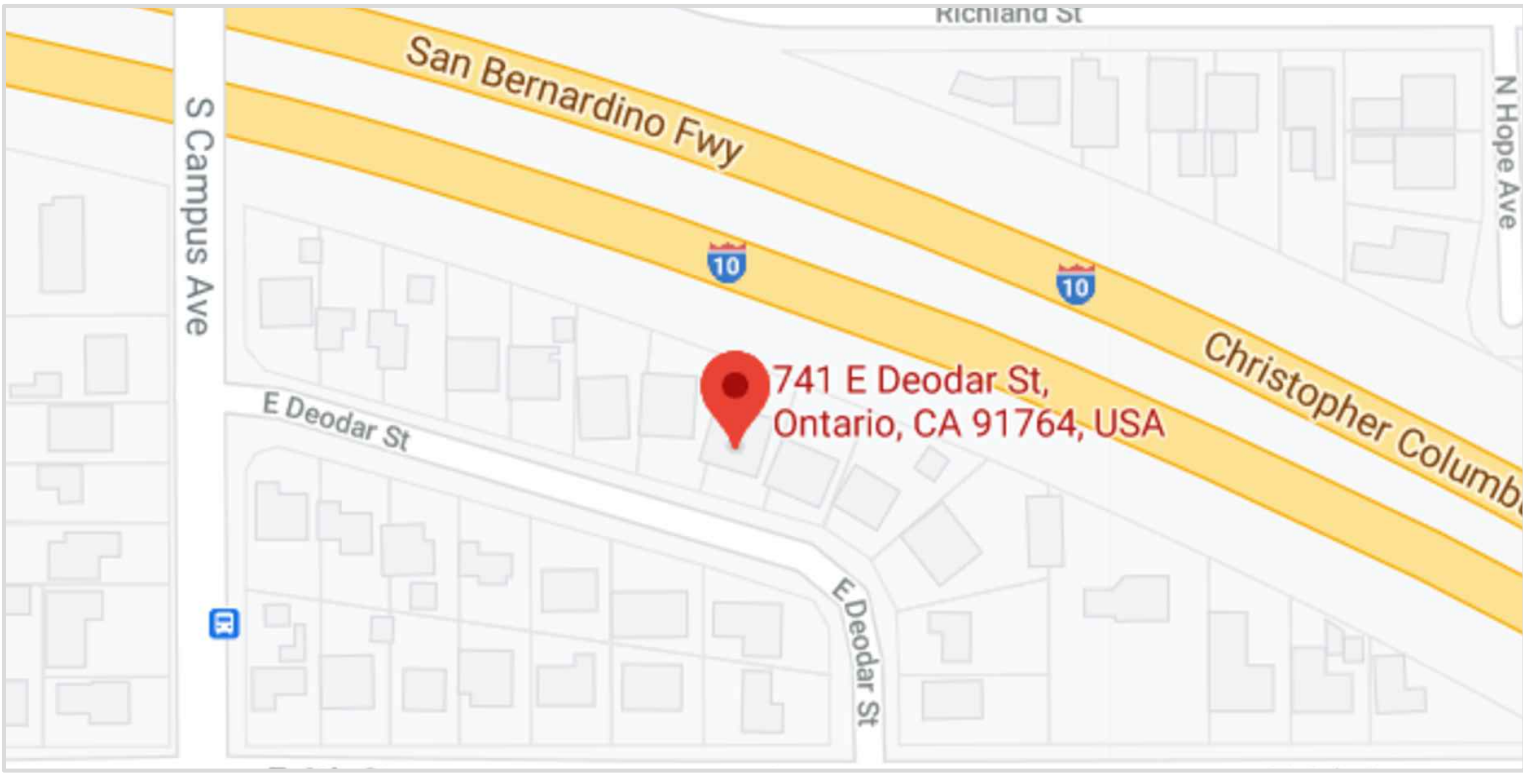
2 Electrical Code References
Scale: NTS

- ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY CEC 110.26.
- WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY CEC 690.31(A),(C) AND CEC TABLES 310.15(B)(2)(A) AND 310.15 (B)(3)(C).
- JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO CEC 690.34.
- ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
- ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
- ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE

3 Equipment Location
Scale: NTS

- LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH CEC 690.64(B).
- THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS INPUT MAY NOT EXCEED 120% OF BUSBAR RATING CEC 705.12(D)(2)(3).
- WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV DEDICATED BACKFFED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD CEC 705.12(D)(2)(3).
- AT MULTIPLE PV OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVER CURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVER CURRENT DEVICE MAY BE EXCLUDED ACCORDING TO CEC 705.12(D)(2)(3)(C) .
- FEEDER TAP INTER CONNECTION (LOAD SIDE) ACCORDING TO CEC 705.12(D)(2)(1) .
- SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO CEC 705.12(A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH CEC 230.42 BACK FEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING CEC 705.12(D)(5).

4 Interconnection Notes
Scale: NTS



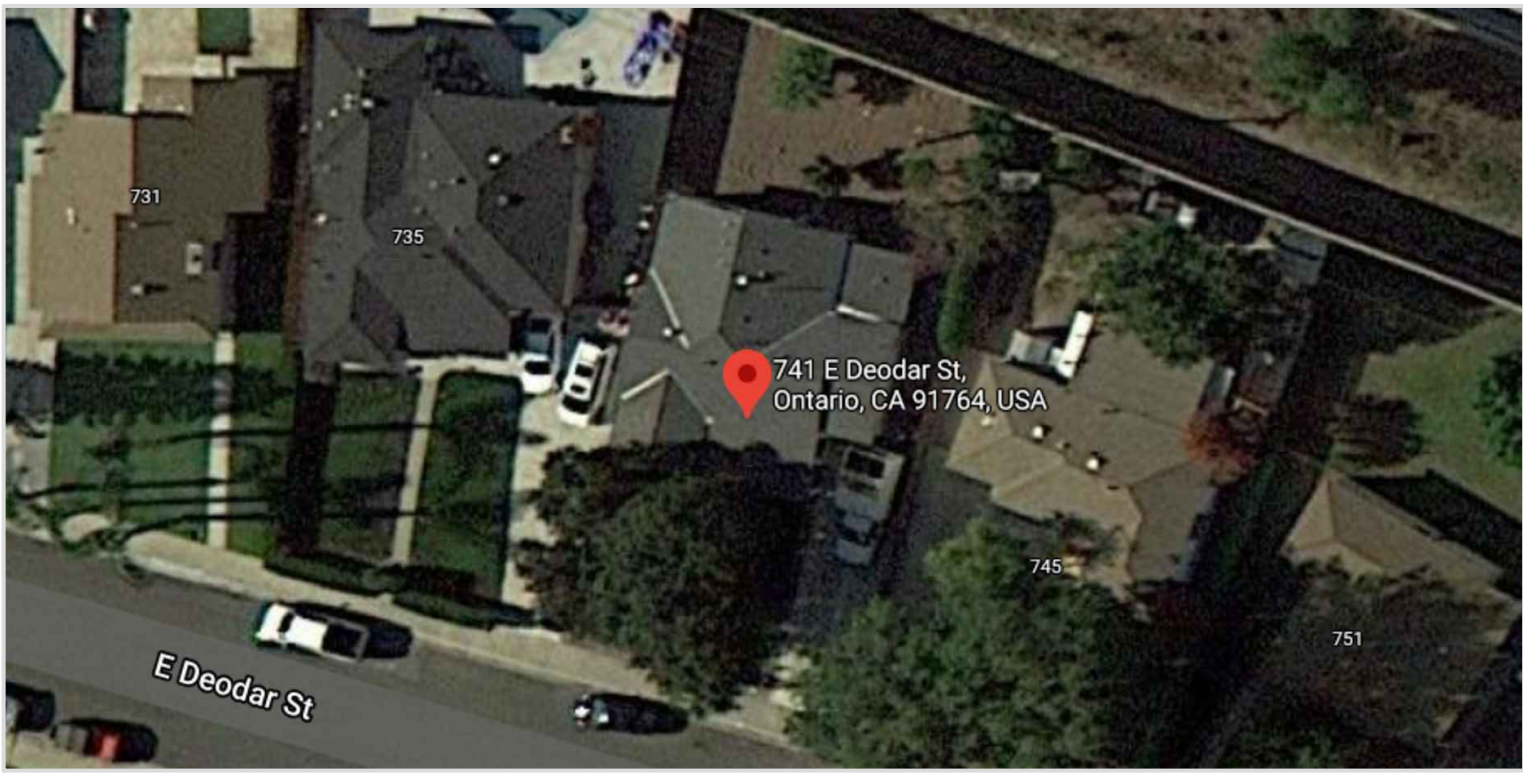
5 Vicinity Map
Scale: NTS

- MODULES ARE LISTED UNDER UL 1703 AND CONFORM TO THE STANDARDS.
- INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
- DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
- WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH CEC 110.26.
- ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
- ALL CONDUCTORS SHALL BE 600V, 75°C STANDARD COPPER UNLESS OTHERWISE NOTED.
- WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
- ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
- PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

6 General Notes
Scale: NTS

- GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
- PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO CEC 690.43 AND MINIMUM CEC TABLE 250.122 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH CEC 250.134 AND 250.136(A).
- EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED ACCORDING TO CEC 690.45 AND MICRO INVERTER MANUFACTURER'S INSTRUCTIONS.
- EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.
- THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
- GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER CEC 250.119
- THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH CEC 690.47 AND 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO CEC 250, CEC 690.47 AND AHJ.
- GROUND-FAULT DETECTION SHALL COMPLY WITH CEC 650.5 IN GENERAL AND CEC 690.5(A)(1) SPECIFICALLY.

7 Grounding Notes
Scale: NTS



8 Aerial Map
Scale: NTS

- RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.
- JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
- ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED WITH APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
- ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.
- WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

9 Structural Notes
Scale: NTS

- ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
- CONDUCTORS SIZED ACCORDING TO CEC 690.8, CEC 690.7.
- DC WIRING LIMITED TO MODULE FOOTPRINT. MICRO INVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY WITH SUITABLE WIRING CLIPS.
- AC CONDUCTORS COLORED OR MARKED AS FOLLOWS: PHASE A OR L1- BLACK PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE PHASE C OR L3- BLUE, YELLOW, ORANGE*, OR OTHER CONVENTION NEUTRAL- WHITE OR GREY IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE CEC 110.15.

10 Wiring & Conduit Notes
Scale: NTS

- DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
- DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
- RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [CEC 690.12]. LOCATION OF LABEL ACCORDING TO AHJ.
- ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO CEC 690.8, CEC 690.9 AND 240.
- MICRO INVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH CEC 110.3(B).
- IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO CEC 690.11 AND UL1699B.

11 Disconnection & OCPD Notes
Scale: NTS

2 (05/24/21)



CONTRACTOR INFORMATION

Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
C10 #501235

SYSTEM INFORMATION

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge Technologies SE3000H-US (240V).
(N) 2.63kW CEC System (STC).

PROJECT INFO.

Alfonso Castro
741 E Deodar St
Ontario, CA 91764
(949) 235-4847
APN #1047-202-09-0000

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REVISION BLOCK		
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Project: Alfonso Castro_4/15/21		
SHEET		
PV-1.1		

Array	Quantity	Mounting Type	Array Tilt	Azimuth	Att. Spacing	Roof Type
AR-01	5	Flush Mounted	18°	194	72"	Comp. Shingle**
AR-02	3	Flush Mounted	18°	194	72"	Comp. Shingle**

**See PV-2.1 for Additional Information & Details

PV Modules	Fire Clearance	Obstructions	Penetration Points	Rafters	Rails

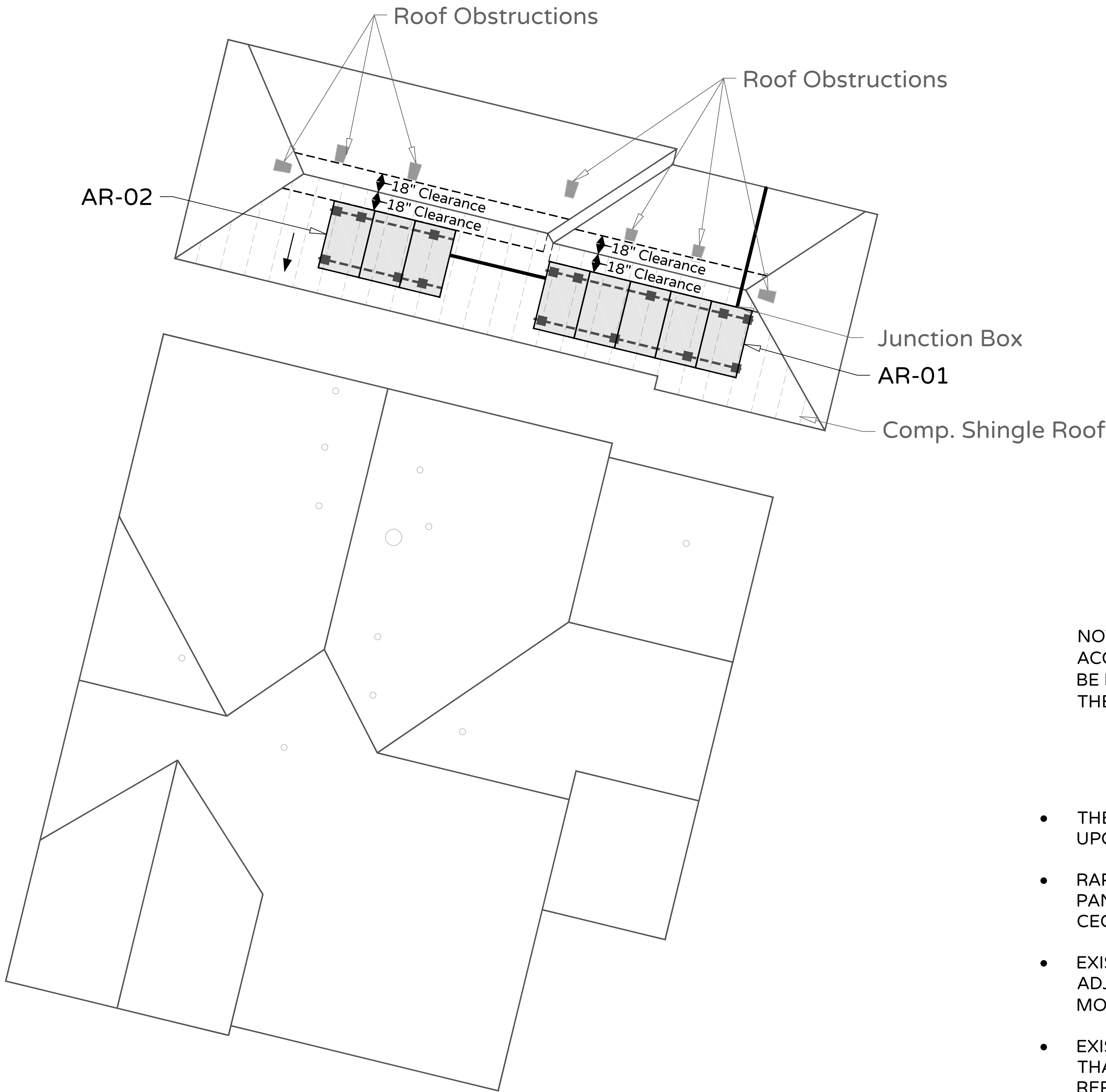
Project # TSP70932

CONTRACTOR


TITAN
SOLAR POWER
CA LIC# C-10 1062072
EXP. DATE: 01/01/2022
TITAN SOLAR POWER CA, INC.
525 W BASELINE ROAD
MESA, AZ 85210
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THOS PORTER, LICENSE HOLDER

2 (05/24/21)



NOTE: RAPID SHUT DOWN INITIATION TO BE LOCATED AT A READILY ACCESSIBLE LOCATION OUTSIDE AT THE BUILDING. CEC 690.12(C) ARRAY SHALL BE LOCATED AT LEAST 2H2 (2 TIMES THE MAXIMUM HEIGHT OF MODULE ABOVE THE ROOF DECK) FROM THE ROOF EDGE A GABLE RIDGE OR A HIP RIDGE.

- THE PROPOSED LOCATION OF THE ELECTRICAL SERVICE REPLACEMENT/ UPGRADE TO BE APPROVED BY S.C.E
- RAPID SHUTDOWN INITIATION TO BE LOCATED IN OR NEAR THE SERVICE PANEL. MEANS OF WIRING CONTROL TO BE LOCATED WITHIN 10' OF PV ARRAY. CEC 690.12.
- EXISTING B-VENTS TERMINATIONS FOR FUEL BURNING APPLIANCES, WHERE ADJACENT TO THE PROPOSED MODULES, MUST BE EXTENDED 12" ABOVE THE MODULES' TOP SURFACE TO COMPLY WITH CMC 802.6.2(1) & CPC 509.6.2(1)
- EXISTING DMV PLUMBING VENT TERMINATIONS THAT ARE LOCATED CLOSER THAN 12" HORIZONTALLY FROM THE PROPOSED MODULES, MUST BE REROUTED OR BE EXTENDED 6" MIN. ABOVE THE TOP SURFACE OF THE MODULES TO COMPLY WITH CPC 906.1
- MODULES NOT TO BE INSTALLED OVER OR BLOCK ATTIC AIR VENTS.

1 (04/15/21)

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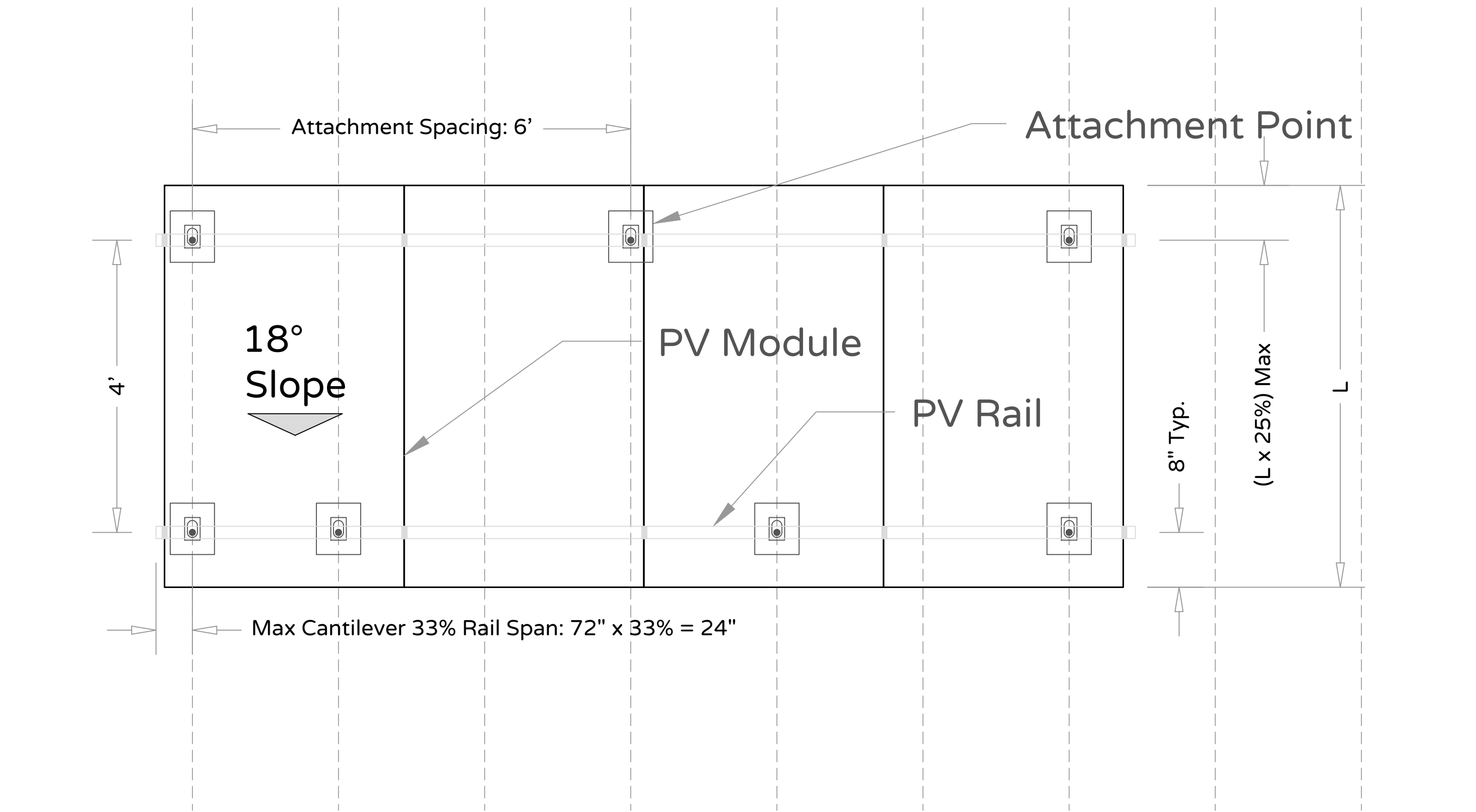
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Project: Alfonso Castro_4/15/21

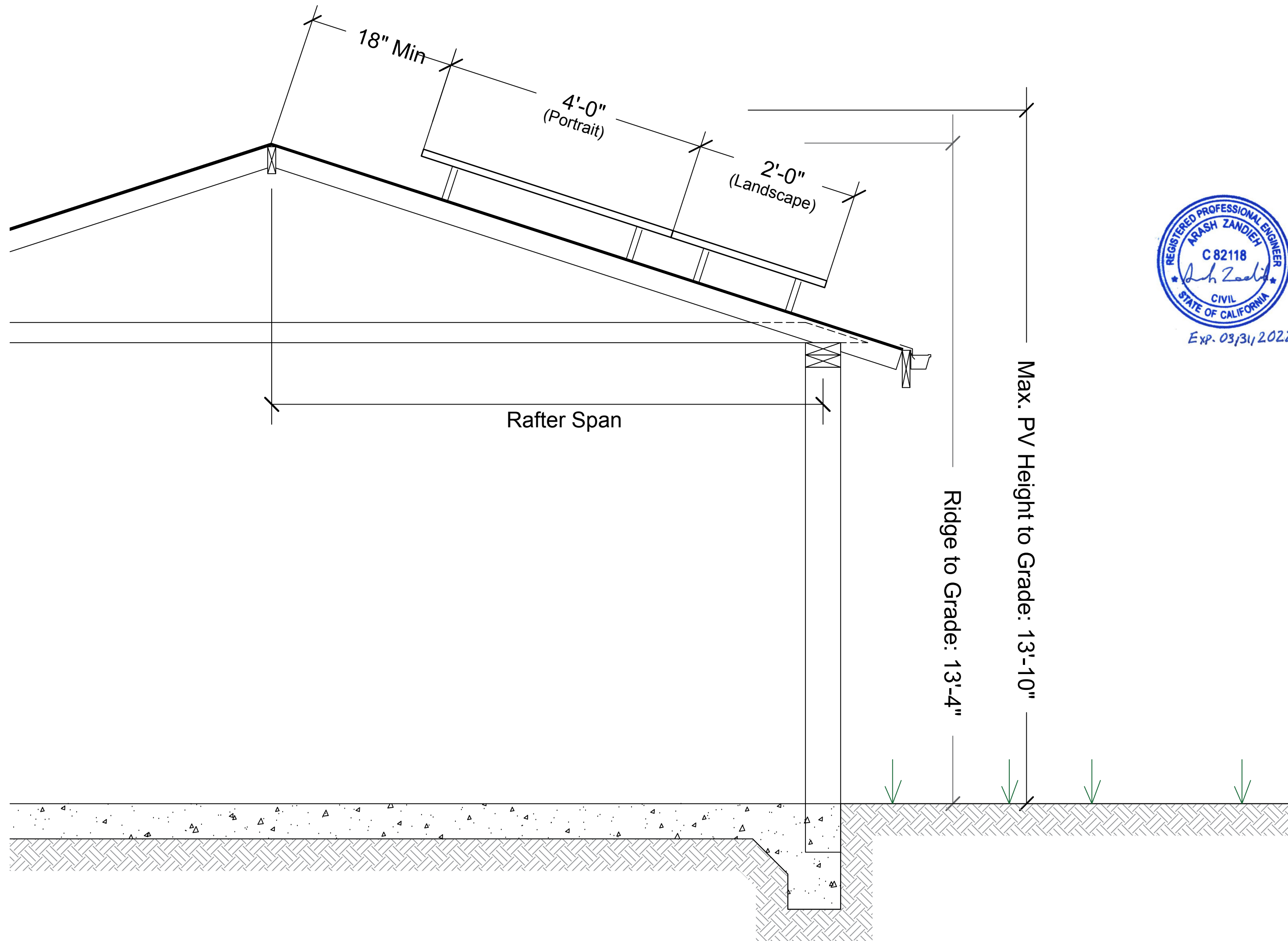


PV-2.0





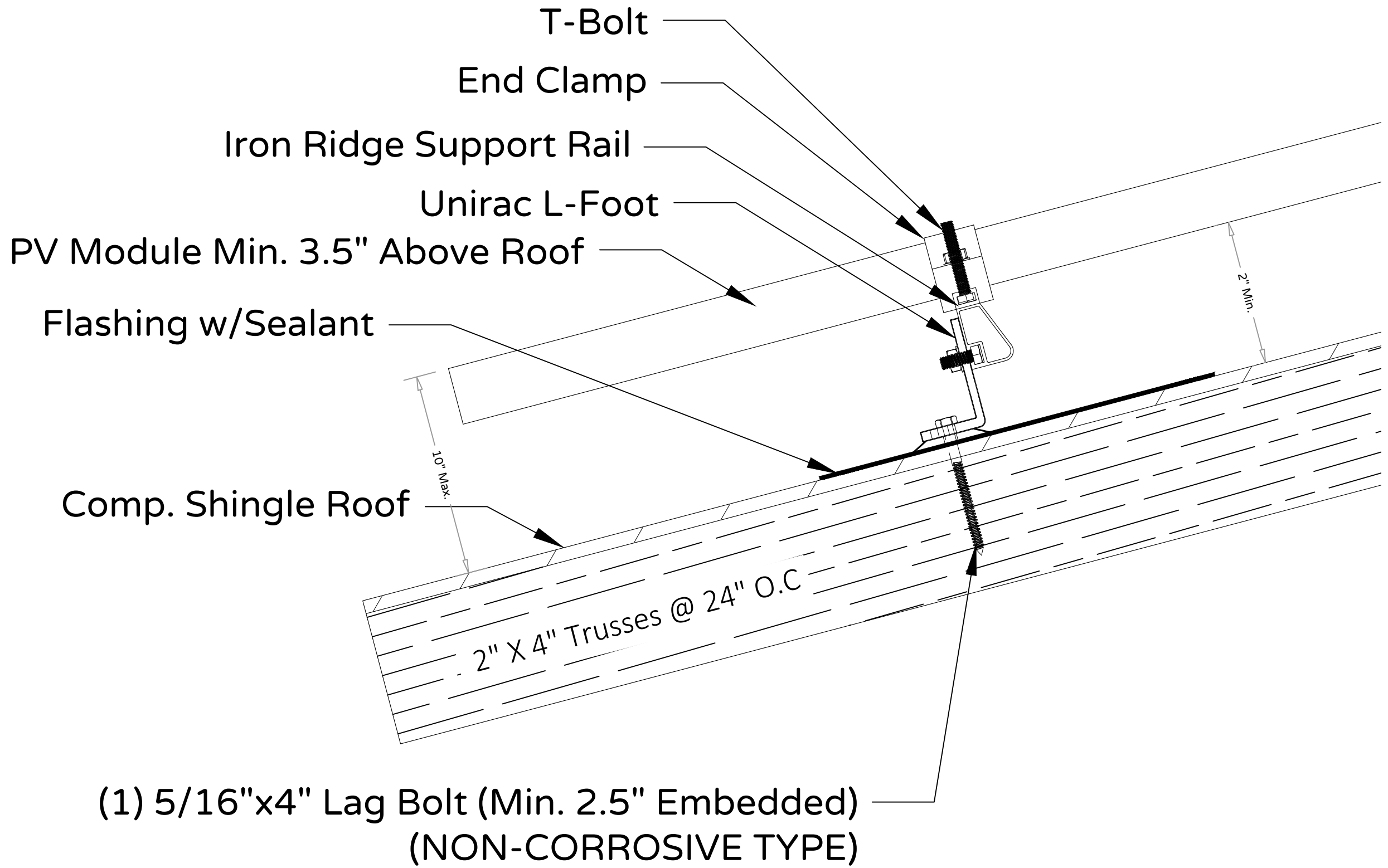
2 Roof 1 Attachment Spacing Detail
Scale: NTS



1 Partial Framing Detail
Scale: NTS

Roof Information
Roof Material: Comp. Shingle.
Roof Framing: Engineered Trusses.
Framing Size & Spacing: 2" x 4", 24" O.C.
Framing Span & Roof Pitch: 6'-0", 18° Pitch
Framing Species & Grade: Douglas Fir Larch #2.
Racking Information
Racking / Rail Manufacture: Everest Crossrail 48-X 14 Ft. Rails
Attachment Manufacture: Everest EverFlash.
Number of Attachments: 15 Attachments
Racking Weight: 3.56 Lbs. / Module
Module Information
Modules: (8) LG LG355Q1C-A5
Module Dimensions: 66.93" x 40" x 1.57"
Module Weight & Sq.Ft. : 41.79 Lbs. , 18.59 Sq.Ft.
Array Sq.Ft. : 148.72 Sq.Ft.
Weight Calculations
Weight w/Racking & Add Ons: 378.8 Lbs.
Weight (Lbs.) / Attachment: 25.25 Lbs. / Attachment.
Distributed Weight on Roof: 2.55 Lbs. / Square Foot.

3 Roof 1 Calculations
Scale: NTS



4 Roof 1 Attachment Detail
Scale: NTS

2 (05/24/21)



Project # TSP70932

CONTRACTOR INFORMATION

TITAN SOLAR POWER

Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
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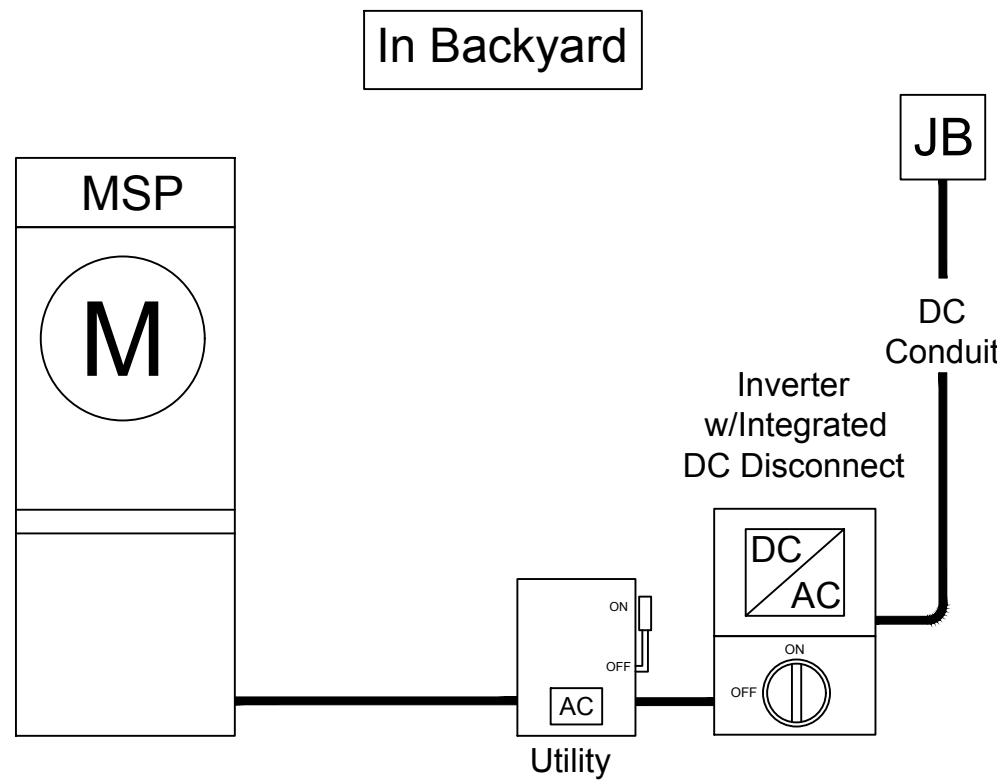
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PV-2.1

LABEL PLACEMENT	LABELS
JUNCTION BOX	2
DC CONDUIT	2
INVERTER	4, 6, 7, 8, 9, 10
AC DISCONNECT	5, 7
MAIN SERVICE PANEL	1, 3



2 (05/24/21)



1 PV Equipment Location & Fire Label Placement Table

Scale: NTS

1. **WARNING**
POWER SOURCE OUTPUT CONNECTION.
DO NOT
RELOCATE THIS
OVERCURRENT DEVICE.

CEC 705.12(B)(2)(3)(b)

[or (e) if panelboard in rated not less than sum of ampere rating of all overcurrent devices supplying it]

2. **WARNING**
PHOTOVOLTAIC POWER SOURCE

CEC 690.31(G)(3)

3. **WARNING**
THIS EQUIPMENT FED BY MULTIPLE SOURCES
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
RATED AC OUTPUT CURRENT "---AMPS AC
NORMAL OPERATING FACE---VOLTS.

CEC 490.54 7 CEC 705.11(B) (2)(3)(C)

4. **RAPID SHUTDOWN SWITCH**
FOR SOLAR PV SYSTEM

CEC 690.56(C)(3)

5. **PV SYSTEM AC DISCONNECT**
RATED AC OUTPUT CURRENT "---AMPS
AC NORMAL OPERATING VOLTAGE ---VOLTS

CEC 690.13(B)

6. **WARNING**
ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED.
NORMALLY GROUNDED CONDUCTORS
MAY BE UNGROUNDED AND ENERGIZED.

CEC 712.58

[Normally already present on listed inverters]

7. **WARNING**
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND LOAD
SIDES MAY BE ENERGIZED IN THE
OPEN POSITION.

CEC 690.13(B)

8. **PV SYSTEM DC DISCONNECT**
RATED MAX POWER POINT CURRENT ----ADC
RATED MAX POWER POINT VOLTAGE ----VDC
SHORT CIRCUIT CURRENT ---ADC
MAXIMUM SYSTEM VOLTAGE ---VDC

CEC 690.53

9. **SOLAR PV SYSTEM EQUIPPED**
WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY

figure 690.56(C)(1)(a) Label for PV System that Shut Down the Array and the Conductors Leaving the Array.

10. **SOLAR PV SYSTEM EQUIPPED**
WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION, TO SHUTDOWN CONDUCTORS OUTSIDE THE ARRAY. CONDUCTORS WITHIN ARRAY REMAIN ENERGIZED IN SUNLIGHT

figure 690.56(C)(1)(b) Label for PV System that Shut Down the the Conductors Leaving the Array only.

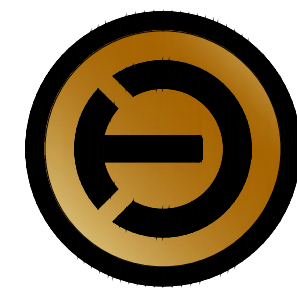
2 Fire Labels

Scale: NTS

1 (04/15/21)

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CONTRACTOR INFORMATION



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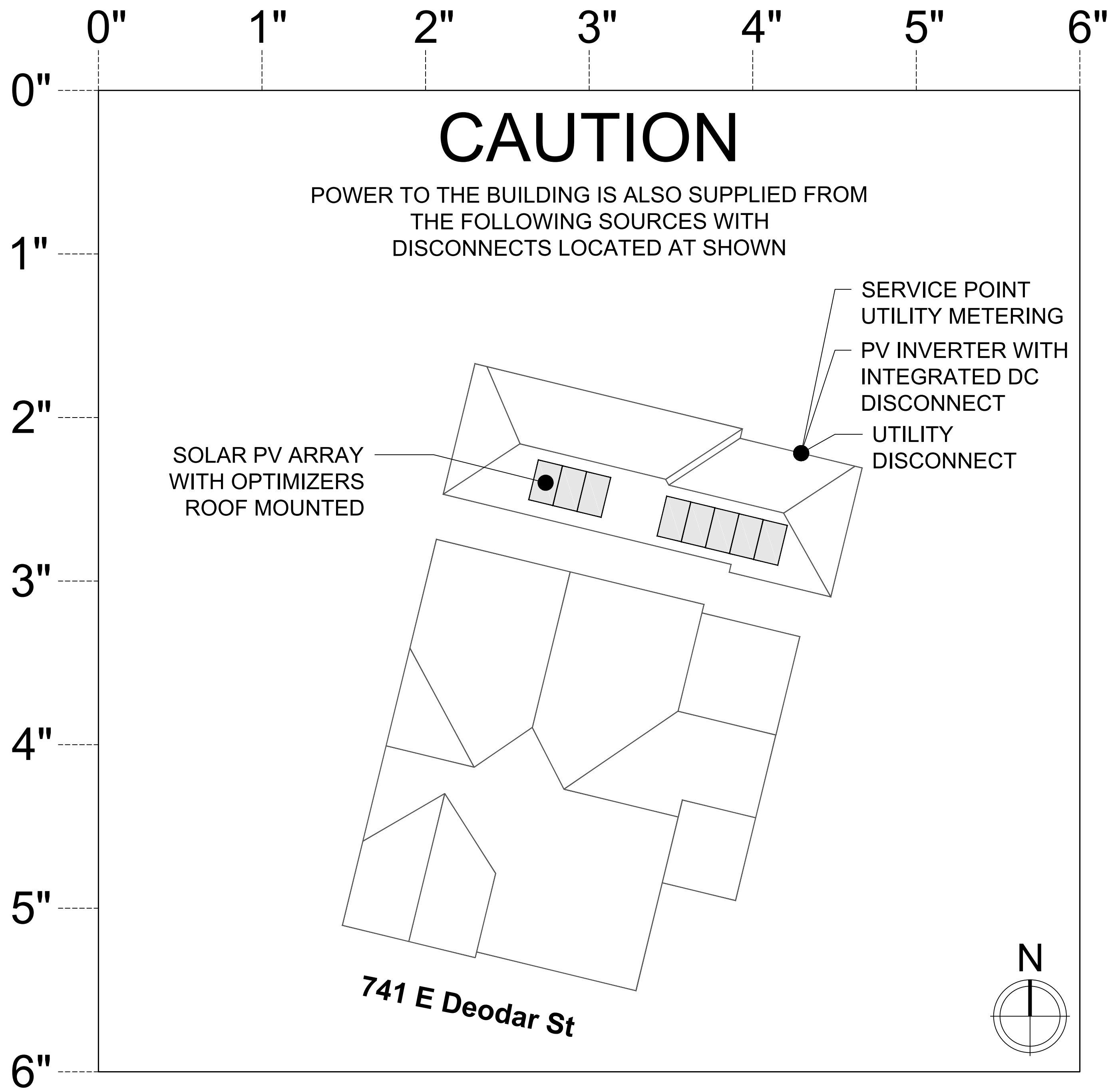
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SHEET
PV-3.0



2 (05/24/21)



PLACARD ONLY REQUIRED WHEN PV UTILITY DISCONNECT
& METER ARE NOT CO-LOCATED WITH SES

NOTE: THE PLAQUE SHALL BE METAL OR PLASTIC, WITH ENGRAVED OR
MACHINE PRINTED LETTERS IN A CONTRASTING COLOR TO THE
PLAQUE, INCLUDE THE LOCATION OF METER, DISCONNECTS,
INVERTER, THE ARRAY AND A FOOTPRINT OF THE ENTIRE BUILDING
AND SITE. THE PLAQUE WILL BE ATTACHED BY POP-RIVETS, SCREWS
OR OTHER APPROVED FASTENERS.

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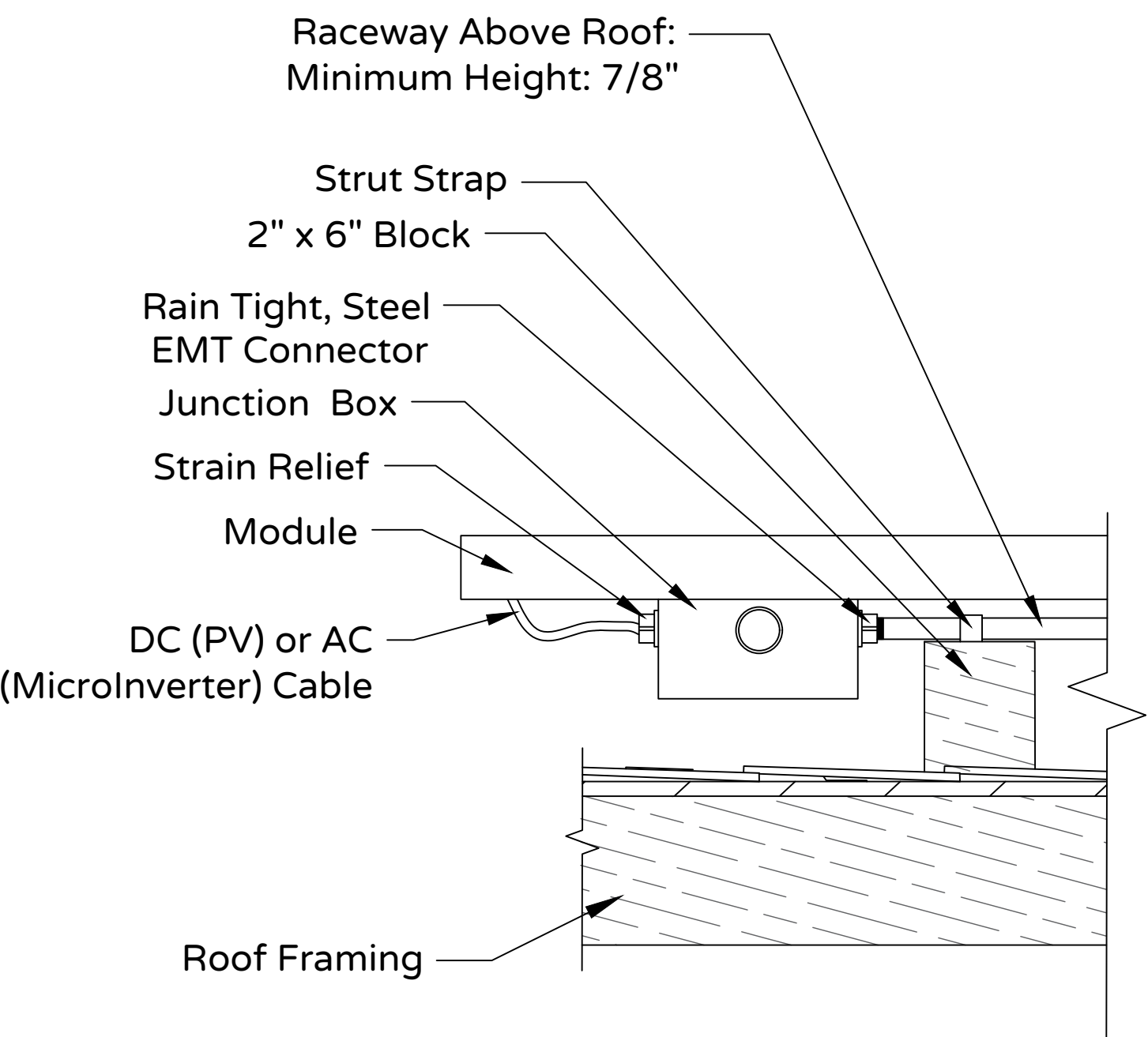
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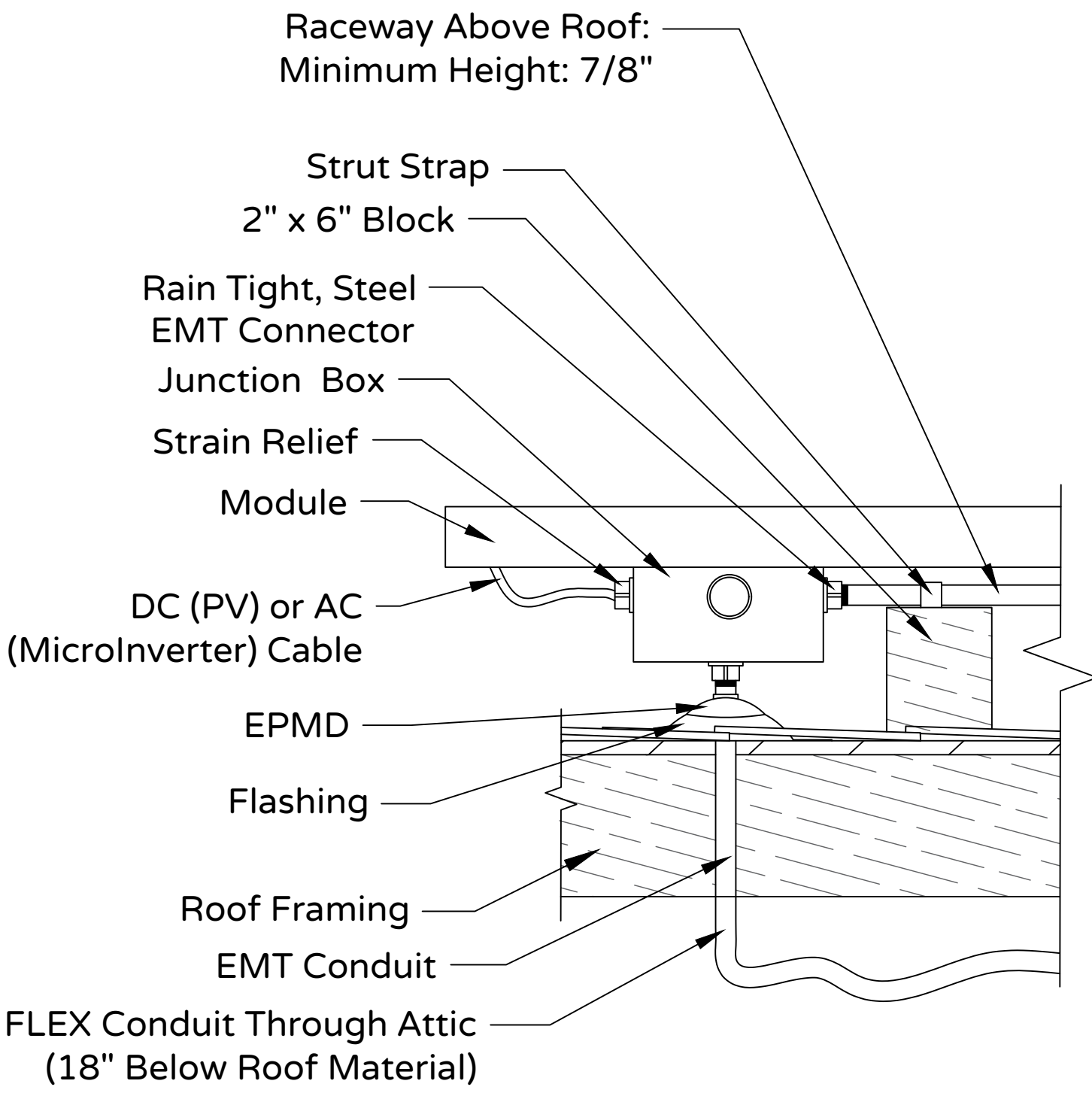


1 (04/15/21)

CONDUIT RUN ABOVE ROOF



CONDUIT RUN THROUGH ATTIC



2 (05/24/21)

CONTRACTOR



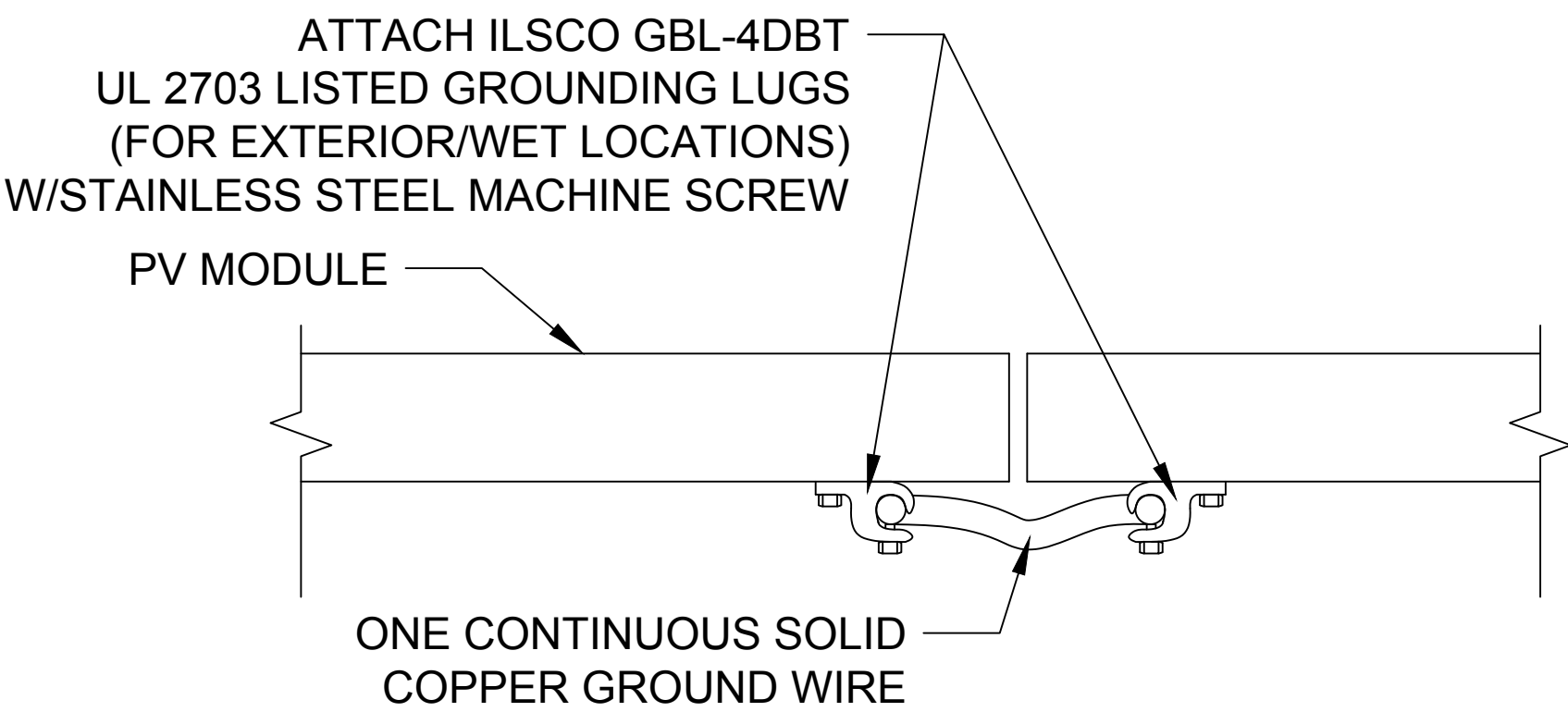
TITAN
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THOS PORTER, LICENSE HOLDER

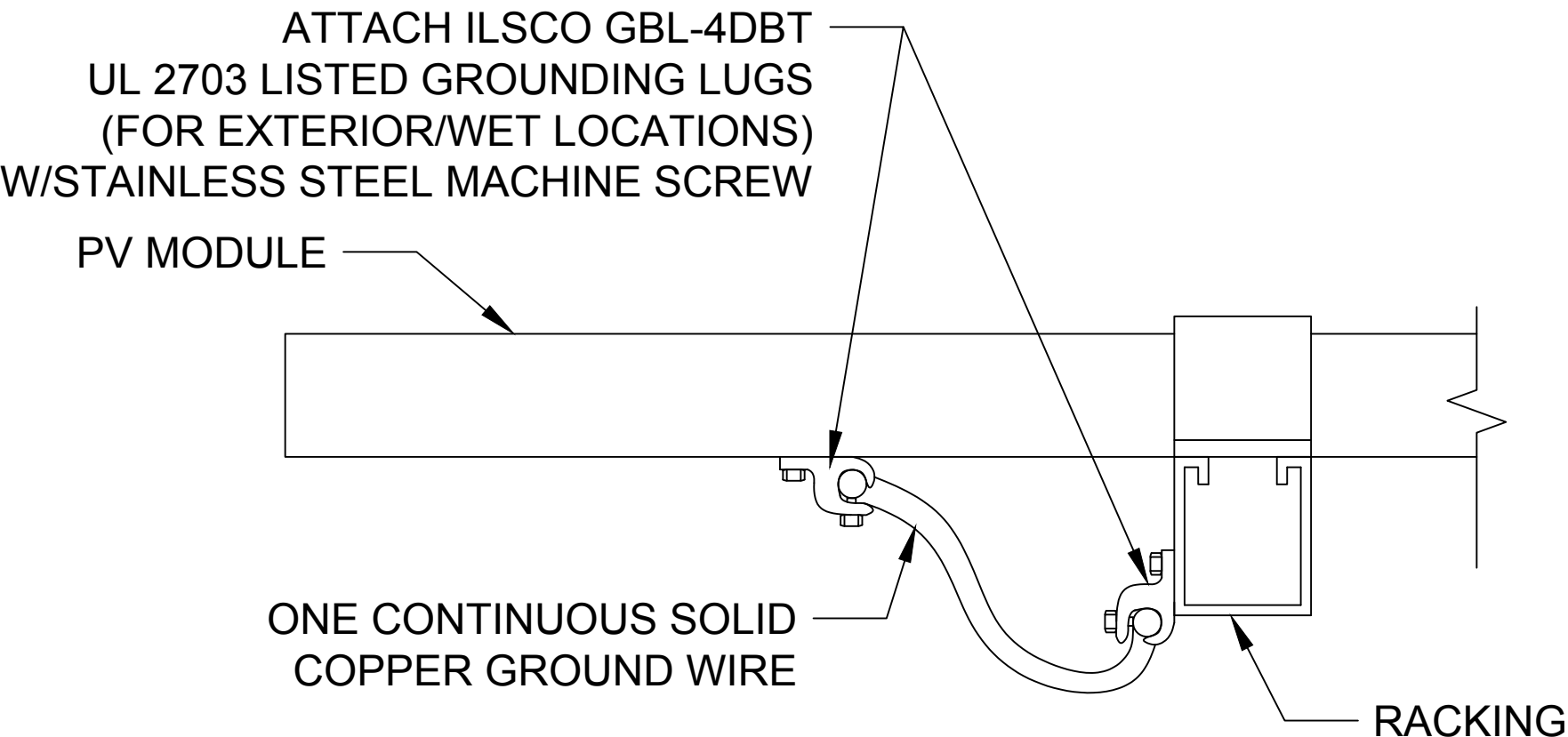
1 Conduit Run Details
Scale: NTS

Module to Module



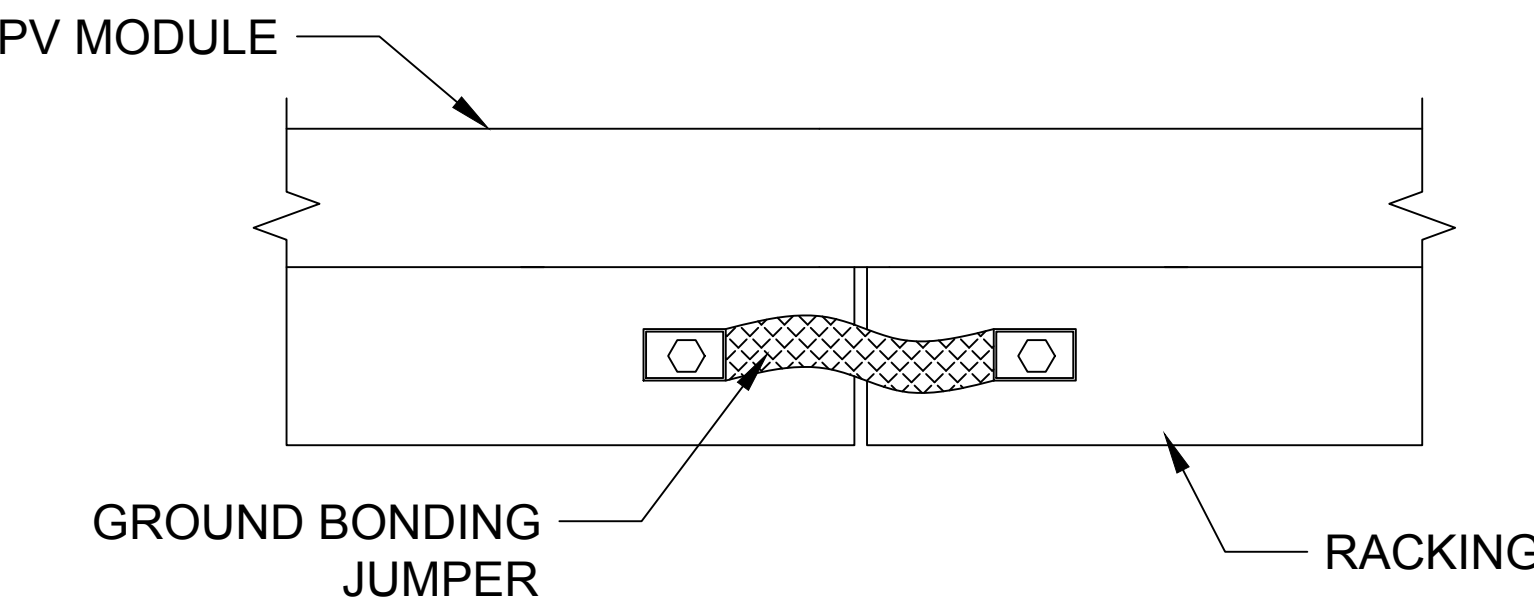
NTS REMOVAL OF ONE PIECE OF EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN ANY OTHER PIECES.

Module to Rail



NTS REMOVAL OF ONE PIECE OF EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN ANY OTHER PIECES.

Rail to Rail




NTS REMOVAL OF ONE PIECE OF EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN ANY OTHER PIECES.

2 Grounding Details
Scale: NTS

1 (04/15/21)

Project # TSP70932



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SHEET

 PV INSTALLATION PROFESSIONAL

PV-4.0

Wire Tag	Conductor Qty. Size & Type	Neutral Qty. Size & Type	Ground Qty., Size & Type	Raceway Size & Type	Raceway Location	Raceway Height Above Roof	Output Current	125% of Output Current	Min. OCPD	Wire De-Rate Calculation				Dist. (Ft)	Voltage	Voltage Drop %	Conduit Fill %
										Wire Rating	Ambient Temp	# of Cond.	Final Ampacity				
DC.1	(2) #10 AWG PV Wire		(1) #10 AWG Bare Copper	Not Applicable	Under Array	1"	15A	18.8A	20A	40A	X 0.91	X 1	= 36.4A	10 Ft.	380V	0.1%	
DC.2	(2) #10 AWG THWN-2		(1) #10 AWG THWN-2	3/4" EMT Conduit	Above Roof	1"	15A	18.8A	20A	40A	X 0.91	X 1	= 36.4A	20 Ft.	380V	0.2%	11.9%
AC.1	(2) #8 AWG THWN-2	(1) #8 AWG THWN-2	(1) #8 AWG THWN-2	3/4" EMT Conduit	Exterior Wall	"N/A"	12.5A	15.6A	20A	55A	X 0.91	X 1	= 50.1A	5 Ft.	240V	0.04%	27.5%

PV Module 1
(8) LG
LG355Q1C-A5
Power at STC: 355W
Power at PTC: 332.8W
V-oc: 42.7V V-mp: 36.3V
I-sc: 10.78A I-mp: 9.79A
V-oc Temp Coefficient: -0.24%/°C
Output (I-sc x 1.25 x 1.25): 16.8A

PV Optimizer 1
(8)SolarEdge P401 (HD)
Max I-sc Input: 11.75A
Max V-oc Input: 60V
Max Power Per String: 6000W
Inverter 1 (2840W/380V) = 7.5A

Inverter 1
SolarEdge_Technologies SE3000H-US (240V)
Max Output Current: 12.5A
Safety Rating: (12.5A x 1.25) = 15.6A
Minimum OCPD: 20A
Max Number of Strings: 2
Number of MPPT's: 1
Maximum Input Voltage: 480V
Transformerless (Y/N): Yes

Operating Current: 7.5A
Operating Voltage: 380V
Maximum System Voltage: 480V
Short Circuit Current: 15A

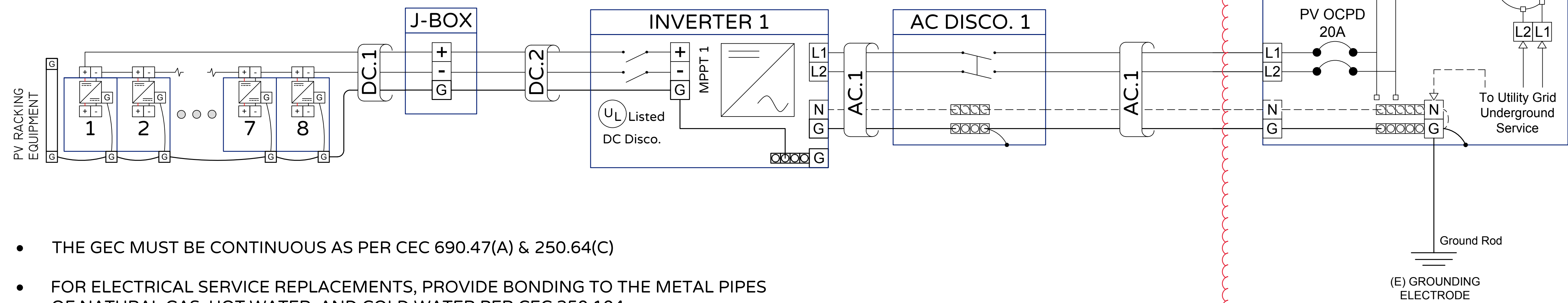
AC Disconnect #1
30A Utility AC Disconnect #1,
2 Pole, Knife-Blade Type,
NON-FUSED VISIBLE OPEN
30A/240V 2P 10KAIC EATON
CAT# DG221URB.

Main Service Panel 1
Existing 150A MSP, Top-Fed
1Ø, 3W, 120/240V
Utility: Southern California Edison
Interconnection: PV Breaker
Main Breaker De-Rated:No



2 (05/24/21)

SOUTHERN CALIFORNIA EDISON UTILITY



2 (05/24/21)

- THE GEC MUST BE CONTINUOUS AS PER CEC 690.47(A) & 250.64(C)
- FOR ELECTRICAL SERVICE REPLACEMENTS, PROVIDE BONDING TO THE METAL PIPES OF NATURAL GAS, HOT WATER, AND COLD WATER PER CEC 250.104
- A SINGLE ROD ELECTRODE SHALL BE SUPPLEMENTED BY ADDITIONAL ELECTRODE. 2016 CEC 250.53(A)(2)
- THE COLOR OF UNGROUNDED CONDUCTORS SHALL BE OTHER THAN FOR GROUNDED (NEUTRAL), CONDUCTORS(SOLID WHITE, GREY OR WITH 3-WHITE STRIPES 200.6, 200.7, & 400.22), AND GROUNDING CONDUCTORS, (BARE WIRE WITHOUT COVERING, GREEN OR GREEN WITH YELLOW STRIPES, 250.119 & 400.23), AS PER 310.110(C)

PER CEC 690.64	
Main Panel Interconnection Information	
Bus Bar 1 Rating:	100A
Main Breaker 1 Rating:	100A
PV Back Feed (Actual Load):	15.6A
PV OCPD:	20A
Interconnection Calculation: 120% Rule	
(20A + 150A) = 170A (<=) 180A	

Ambient Temperature Information	
Extreme Min Temp:	-1°C
Ambient Temp:	37°C
Ambient Temp. Adjustments	
0" to 7/8" Above Roof:	70°C
Voltage Drop Information	
DC Voltage Drop:	0.3%
AC Voltage Drop:	0.04%
Total System Voltage Drop:	0.34%

1 (04/15/21)

Project # TSP70932

CONTRACTOR INFORMATION

TITAN SOLAR POWER

SYSTEM INFORMATION

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge_Technologies SE3000H-US (240V).
(N) 2.63kW CEC System (STC).

PROJECT INFO.

Alfonso Castro
741 E Deodar St
Ontario, CA 91764
(949) 235-4847
APN #1047-202-09-0000

EE STAMP

PE STAMP

REVISION BLOCK

DESCRIPTION	DATE
Initial Draft of Plans	4/1/21
Revisions Per Customer	4/15/21
Revisions	5/24/21

Project: Alfonso Castro_4/15/21

SHEET

PV-4.1

Wire Tag	Conductor Qty. Size & Type	Neutral Qty. Size & Type	Ground Qty., Size & Type	Raceway Size & Type	Raceway Location	Raceway Height Above Roof	Output Current	125% of Output Current	Min. OCPD	Wire De-Rate Calculation				Dist. (Ft)	Voltage	Voltage Drop %	Conduit Fill %
										Wire Rating	Ambient Temp	# of Cond.	Final Ampacity				
DC.1	(2) #10 AWG PV Wire		(1) #10 AWG Bare Copper	Not Applicable	Under Array	1"	15A	18.8A	20A	40A	X 0.91	X 1	= 36.4A	10 Ft.	380V	0.1%	
DC.2	(2) #10 AWG THWN-2		(1) #10 AWG THWN-2	3/4" EMT Conduit	Above Roof	1"	15A	18.8A	20A	40A	X 0.91	X 1	= 36.4A	20 Ft.	380V	0.2%	11.9%
AC.1	(2) #8 AWG THWN-2	(1) #8 AWG THWN-2	(1) #8 AWG THWN-2	3/4" EMT Conduit	Exterior Wall	"N/A"	12.5A	15.6A	20A	55A	X 0.91	X 1	= 50.1A	5 Ft.	240V	0.04%	27.5%

PV Module 1
(8) LG
LG355Q1C-A5
Power at STC: 355W
Power at PTC: 332.8W
V-oc: 42.7V V-mp: 36.3V
I-sc: 10.78A I-mp: 9.79A
V-oc Temp Coefficient: -0.24%/°C
Output (I-sc x 1.25 x 1.25): 16.8A

PV Optimizer 1
(8)SolarEdge P401 (HD)
Max I-sc Input: 11.75A
Max V-oc Input: 60V
Max Power Per String: 6000W
Inverter 1 (2840W/380V) = 7.5A

Inverter 1
SolarEdge_Technologies SE3000H-US (240V)
Max Output Current: 12.5A
Safety Rating: (12.5A x 1.25) = 15.6A
Minimum OCPD: 20A
Max Number of Strings: 2
Number of MPPT's: 1
Maximum Input Voltage: 480V
Transformerless (Y/N): Yes

Operating Current: 7.5A
Operating Voltage: 380V
Maximum System Voltage: 480V
Short Circuit Current: 15A

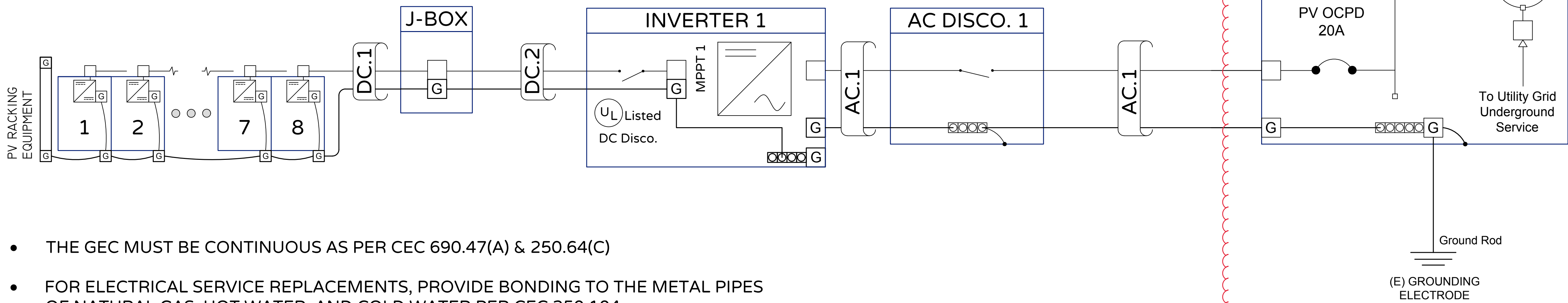
AC Disconnect #1
30A Utility AC Disconnect #1,
2 Pole, Knife-Blade Type,
NON-FUSED VISIBLE OPEN
30A/240V 2P 10KAIC EATON
CAT# DG221URB.

Main Service Panel 1
Existing 150A MSP, Top-Fed
1Ø, 3W, 120/240V
Utility: Southern California Edison
Interconnection: PV Breaker
Main Breaker De-Rated:No



2 (05/24/21)

SOUTHERN CALIFORNIA EDISON UTILITY



- THE GEC MUST BE CONTINUOUS AS PER CEC 690.47(A) & 250.64(C)
- FOR ELECTRICAL SERVICE REPLACEMENTS, PROVIDE BONDING TO THE METAL PIPES OF NATURAL GAS, HOT WATER, AND COLD WATER PER CEC 250.104
- A SINGLE ROD ELECTRODE SHALL BE SUPPLEMENTED BY ADDITIONAL ELECTRODE. 2016 CEC 250.53(A)(2)
- THE COLOR OF UNGROUNDED CONDUCTORS SHALL BE OTHER THAN FOR GROUNDED (NEUTRAL), CONDUCTORS(SOLID WHITE, GREY OR WITH 3-WHITE STRIPES 200.6, 200.7, & 400.22), AND GROUNDING CONDUCTORS, (BARE WIRE WITHOUT COVERING, GREEN OR GREEN WITH YELLOW STRIPES, 250.119 & 400.23), AS PER 310.110(C)

PER CEC 690.64	
Main Panel Interconnection Information	
Bus Bar 1 Rating:	150A
Main Breaker 1 Rating:	150A
PV Back Feed (Actual Load):	15.6A
PV OCPD:	20A
Interconnection Calculation: 120% Rule	
(20A + 150A) = 170A (<=) 180A	

Ambient Temperature Information	
Extreme Min Temp:	-1°C
Ambient Temp:	37°C
Ambient Temp. Adjustments	
0" to 7/8" Above Roof:	70°C
Voltage Drop Information	
DC Voltage Drop:	0.3%
AC Voltage Drop:	0.04%
Total System Voltage Drop:	0.34%

Project # TSP70932

CONTRACTOR INFORMATION

Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
C10 #501235

SYSTEM INFORMATION

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge_Technologies SE3000H-US (240V).
(N) 2.63kW CEC System (STC).

PROJECT INFO.

Alfonso Castro
741 E Deodar St
Ontario, CA 91764
(949) 235-4847
APN #1047-202-09-0000

EE STAMP

PE STAMP

REVISION BLOCK

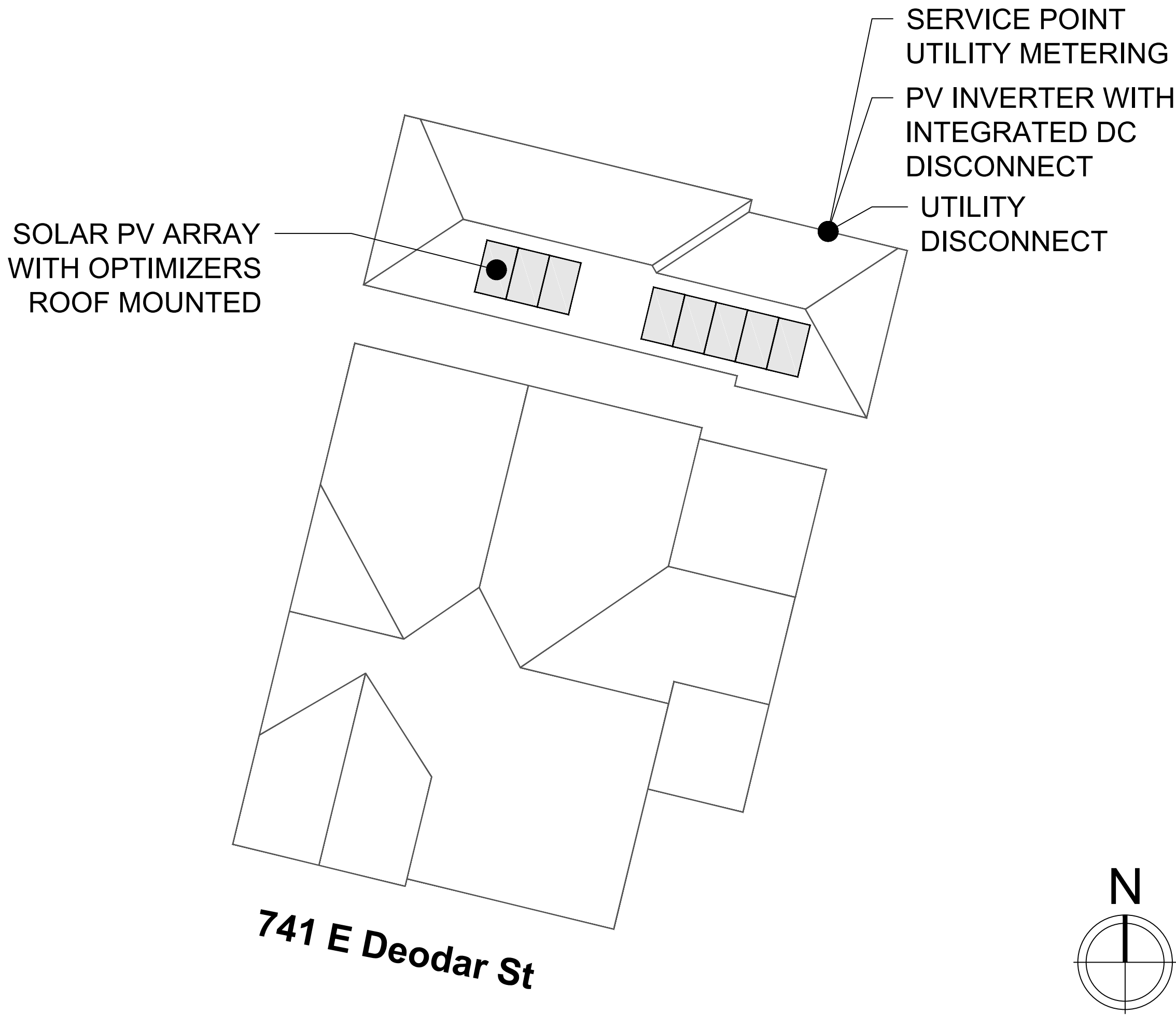
DESCRIPTION	DATE
Initial Draft of Plans	4/1/21
Revisions Per Customer	4/15/21
Revisions	5/24/21

Project: Alfonso Castro_4/15/21

NASCEP
CERTIFIED
PV INSTALLATION
PROFESSIONAL

SHEET
PV-4.2

NOTES: INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME. INSTALLERS SHALL UPDATE NAME, ADDRESS, AND PHONE NUMBER OF NEAREST URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.



LOCATION OF NEAREST URGENT CARE FACILITY

NAME:
ADDRESS:
PHONE NUMBER:

2 (05/24/21)

CONTRACTOR


TITAN
SOLAR POWER
CA LIC# C-10 1062072
EXP DATE 01/31/2022
TITAN SOLAR POWER CA INC
525 W BASELINE ROAD
MESA, AZ 85210
(800) 729-7052
WWW.TITANSOLARPOWER.COM


THOS PORTER, LICENSE HOLDER

CONTRACTOR INFORMATION

Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
C10 #501235

SYSTEM INFORMATION

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge Technologies SE3000H-US (240V)
(N) 2.63kW CEC System (STC).

PROJECT INFO.

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741 E Deodar St
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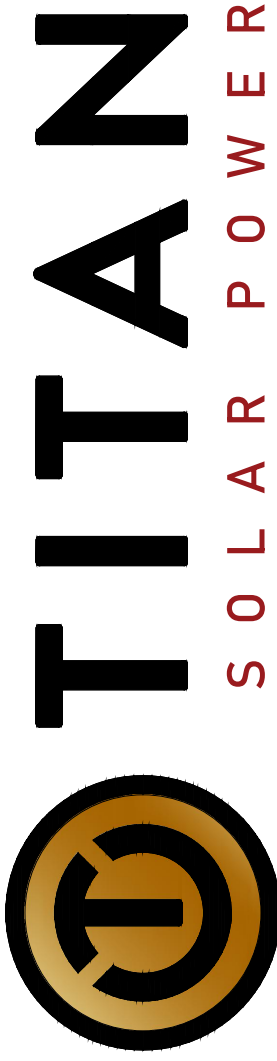
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REVISION BLOCK	
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Initial Draft of Plans	4/1/21
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Revisions	5/24/21

Project: Alfonso Castro_4/15/21



1 (04/15/21)



LG NeON[®] R

LG36501C-A5 | LG36001C-A5 | LG35501C-A5 | LG35001C-A5

365W | 360W | 355W | 350W

LG NeON[®] R is new powerful product with global top level performance. Applied new cell structure without electrodes on the front, LG NeON[®] R maximized the utilization of light and enhanced its reliability. LG NeON[®] R demonstrates LG's efforts to increase customer's values beyond efficiency. It features enhanced warranty, durability, performance under real environment, and aesthetic design suitable for roofs.



Feature

- Enhanced Performance Warranty**
LG NeON[®] R has an enhanced performance warranty. After 25 years, LG NeON[®] R is guaranteed at least 87.6% of initial performance.
- Extended Product Warranty**
LG has extended the product warranty of the LG NeON[®] R to 25 years which is top level of the industry.
- Aesthetic Roof**
The LG NeON[®] R has been designed with aesthetics in mind: no electrode on the front that makes new product more aesthetic. LG NeON[®] R can increase the value of a property with its modern design.
- High Power Output**
The LG NeON[®] R has been designed to significantly enhance its output making it efficient even in limited space.
- Better Performance on a Sunny Day**
LG NeON[®] R now performs better on a sunny days thanks to its improved temperature coefficient.
- Outstanding Durability**
With its newly reinforced frame design, LG NeON[®] R can endure a front load up to 6000 Pa, and a rear load up to 5400 Pa.

About LG Electronics
LG Electronics is a global top player committed to responding to operators with the solar market. The company first embarked on a solar energy storage research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first Mono[®] series to the market, which is now available in 32 countries. The Mono[®] series Mono[®] (MCH), Mono[®] (MCH2), Mono[®] (MCH3) and Mono[®] (MCH4) series have been released in 2013, 2015 and 2016, which demonstrates LG Solar's lead, innovation and commitment to the industry.

LG NeON[®] R

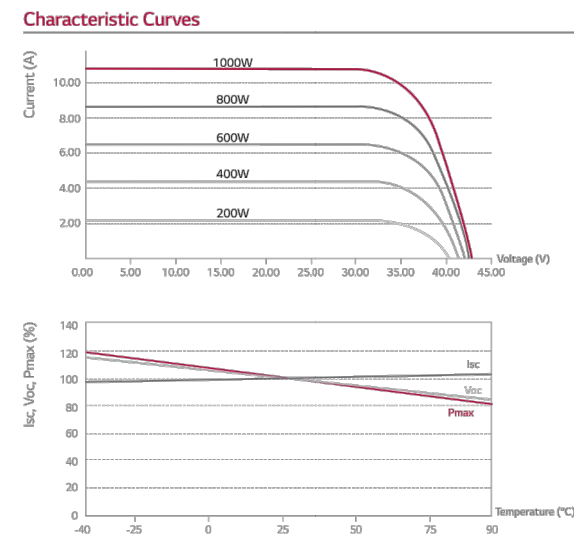
Preliminary

LG36501C-A5 | LG36001C-A5 | LG35501C-A5 | LG35001C-A5

Mechanical Properties	
Cells	6 x 10
Cell Vendor	LG
Cell Type	Monocrystalline / H-type
Cell Dimensions	161.7 x 161.7 mm / 6.36 inches
Dimensions (L x W x H)	1,700 x 1,010 x 40 mm
Front Load	6,000N / 1,350 lbf
Rear Load	5,400N / 1,210 lbf
Weight	18.5 kg / 40.79 lb
Connector Type	MC4 (MC)
Auxiliary Box	With 3 pins
Cables	1,000 mm x 2 mm / 39.37 in x 2 mm
Glass	High Transmittance Tempered Glass
Frame	Anodized Aluminum

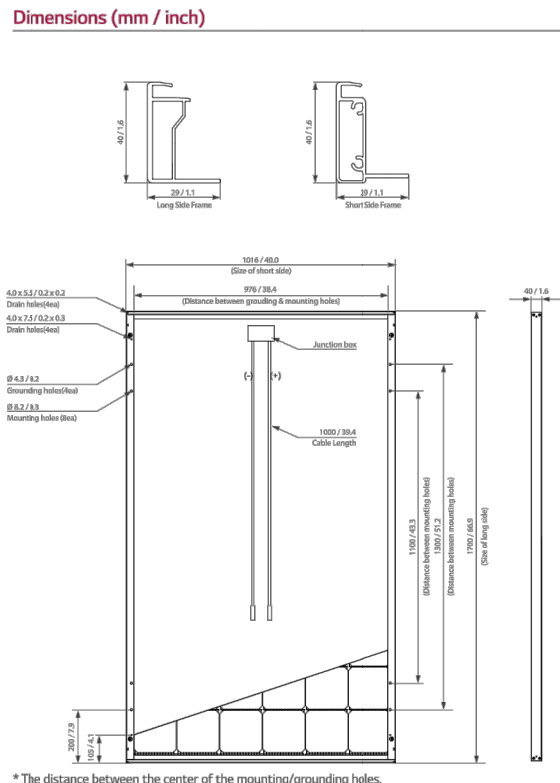
Certifications and Warranty	
Certifications	IEC 61215, IEC 61730-1/-2, UL 1703, IEC 61701 (Salt mist corrosion test), IEC 62716 (Ammonia corrosion test), ISO 9001
Module Fire Performance	Type I (UL)
Fire Rating	Class C
Product Warranty	25 years*
Output Warranty of Power	Linear Warranty†
* First 5 years: 95%, 2) After 5th year: 0.40% annual degradation, 3) 25 years: 87.6%	

Temperature Characteristics	
NOCT ¹⁾	44 ± 3
Pmax	-0.30
Voc	-0.24
Isc	0.04
* NOCT (Nominal Operating Cell Temperature): Irradiance 800 W/m ² , ambient temperature 20 °C, wind speed 1 m/s	



Electrical Properties (STC)*	
Model	LG36501C-A5 LG36001C-A5 LG35501C-A5 LG35001C-A5
Maximum Power (Pmax)	365 360 355 350
MPP Voltage (Vmpp)	36.7 36.5 36.3 36.1
MPP Current (Impp)	9.95 9.87 9.79 9.70
Open Circuit Voltage (Voc)	42.8 42.7 42.7 42.7
Short Circuit Current (Isc)	10.80 10.79 10.78 10.77
Module Efficiency	21.1 20.8 20.6 20.3
Operating Temperature	-40 ~ +90
Maximum System Voltage	1,000 (UL / NEC)
Maximum Series Fuse Rating	A 20
Power Tolerance	0 ~ +3
* STC (Standard Test Condition): Irradiance 1000 W/m ² , Module Temperature 25 °C, AM 1.5	
† The temperature power output is measured and determined by LG Electronics at its site and absolute direction.	

Electrical Properties (NOCT)	
Model	LG36501C-A5 LG36001C-A5 LG35501C-A5 LG35001C-A5
Maximum Power (Pmax)	275 271 267 263
MPP Voltage (Vmpp)	36.6 36.4 36.2 36.0
MPP Current (Impp)	7.51 7.45 7.39 7.32
Open Circuit Voltage (Voc)	40.2 40.2 40.2 40.1
Short Circuit Current (Isc)	8.70 8.69 8.68 8.67



LG Electronics Inc.
Solar Business Division
LG Twin Towers, 128 Yeouido-dong, Yeongdeungpo-gu, Seoul 07236, Korea
www.lg-solar.com

Product specifications are subject to change without notice.
DS-01-480-C-01-01-19-07
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Power Optimizer

For North America
P370 / P400 / P401 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerances to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com

solaredge

Power Optimizer

For North America
P370 / P400 / P401 / P485 / P505

Optimizer model (typical module compatibility)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT						
Rated Input DC Power ¹⁾	370	400	400	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	60	80	60	125 ²⁾	83 ³⁾	Vdc
MPP Operating Range	8 - 60	8 - 80	8 - 60	12.5 - 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11	13.1	11.75	11	14	Adc
Maximum Efficiency				99.5		%
Weighted Efficiency				98.8		%
Overvoltage Category				II		
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)						
Maximum Output Current		15				Adc
Maximum Output Voltage		60		85		Vdc
Safety Output Voltage per Power Optimizer		1 ± 0.1				Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)						
STANDARD COMPLIANCE						
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 & 2020		NEC 2014, 2017 & 2020		NEC 2014, 2017 & 2020	
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3	
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to TLL M-07		UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to TLL M-07		UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to TLL M-07	
Material	UL94 V-0, UV Resistant		UL94 V-0, UV Resistant		UL94 V-0, UV Resistant	
RoHS	Yes		Yes		Yes	
INSTALLATION SPECIFICATIONS						
Maximum Allowed System Voltage	1000		1000		1000	
Compatible inverters	All SolarEdge Single Phase and Three Phase Inverters		All SolarEdge Single Phase and Three Phase Inverters		All SolarEdge Single Phase and Three Phase Inverters	
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6.1	129 x 153 x 33.5 / 5.1 x 6.1	129 x 153 x 28.5 / 5.1 x 6.1	129 x 153 x 33.5 / 5.1 x 6.1	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	655 / 1.4	750 / 1.7	855 / 1.9	845 / 1.9	954 / 2.3	g / lb
Input Connector	MC4 ⁴⁾		MC4 ⁴⁾		MC4 ⁴⁾	
Input Wire Length	0.16 / 0.52, 0.9 / 2.29 ⁵⁾		0.16 / 0.52, 0.9 / 2.29 ⁵⁾		0.16 / 0.52	m / ft
Output Wire Type / Connector	Double Insulated / MC4		Double Insulated / MC4		Double Insulated / MC4	
Output Wire Length	1.2 / 3.9		1.2 / 3.9		1.2 / 3.9	m / ft
Operating Temperature Range ⁶⁾	-40 to +85 / -40 to +185		-40 to +85 / -40 to +185		-40 to +85 / -40 to +185	
Protection Rating	IP68 / NEMA4P		IP68 / NEMA4P		IP68 / NEMA4P	
Relative Humidity	0 ~ 100		0 ~ 100		0 ~ 100	

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
(2) NEC 2017 requires max input voltage be not more than 1000V.
(3) For other connector types please contact SolarEdge.
(4) For dual wires for parallel connection of two modules use MC4⁴⁾ (also MC4⁴⁾ in the case of an odd number of PV modules in one string. Installing one PV module with a single power optimizer connected to one PV module. When connecting a single module use the unground input connectors with the supplied pair of wires.
(5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details.
(6) For 277/480V grid: It is allowed to install up to 2,000W per string when the maximum power difference between each string is 1,000W.
(7) For 277/480V grid: It is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W.

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Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge

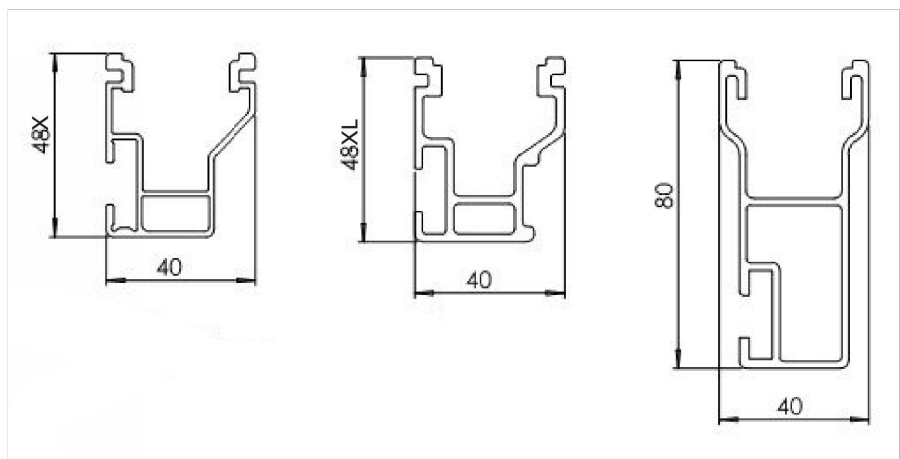
Single Phase Inverter with HD-Wave Technology for North America

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (V1) - (V2) - (V3)	✓	✓	✓	✓	✓	✓	✓	Volts
AC Output Voltage Min.-Nom.-Max. (V1) - (V2) - (V3)	-	✓	-	✓	-	-	✓	Volts
AC Frequency (Nominal)	59.3 - 60.3 / 60.5 ¹⁾							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power factor	1, Adjustable - 0.85 to 0.85							
GFCI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5300	-	7750	-	-	15500	W
Transformerless, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380							Vdc
Maximum Input Current @240V ²⁾	8.5	10.5	13.5	16.5	20	27	30.5	Amps
Maximum Input Current @208V ²⁾	-	9	-	13.5	-	-	27	Amps
Max. Input Short Circuit Current	45							Amps
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	0.05% Sensitivity							
Maximum Inverter Efficiency	99	99.2					99 @ 240V 98.5 @ 208V	%
CEC Weighted Efficiency	99							%
Nighttime Power Consumption	< 2.5							W

¹⁾ For other regional settings please contact SolarEdge support.
²⁾ A higher current source may be used; the inverter will limit its input current to the values stated.

Single Phase Inverter with HD-Wave Technology for North America

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US
ADDITIONAL FEATURES							
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)						
Revenue Grade Metering, ANSI C12.20	Optional ³⁾						
Consumption metering	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection						
Inverter Commissioning	Automatic Rapid Shutdown upon AC Grid Disconnect						
Rapid Shutdown - NEC 2014 and 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect						
STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to TLL M-07						
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (N)						
Emissions	FCC Part 15 Class B						
INSTALLATION SPECIFICATIONS							
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG			1" Maximum / 14-6 AWG			
DC Input Conduit Size / # of Strings / Range	1" Maximum / 1-2 strings / 14-6 AWG			1" Maximum / 1-3 strings / 14-6 AWG			
Dimensions with Safety Switch (N2)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			21.3 x 14.6 x 7.3 / 540 x 370 x 185			
Weight with Safety Switch	22 / 10	25.1 / 11.4		26.2 / 11.9		38.8 / 17.6	
Notes	< 25			Natural Connection		< 50	
Operating Temperature Range	-40 to +140 / -40 to +60°F			T / °C			
Connection Rating	NEMA 4X (inverter with Safety Switch)						

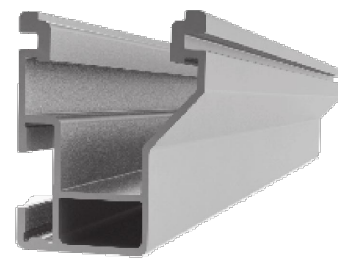


Technical data

	CrossRail System
Roof Type	Composition shingle, tile, standing seam
Material	High corrosion resistance stainless steel and high grade aluminum
Flexibility	Modular construction, suitable for any system size, height adjustable
PV Modules	For all common module types
Module Orientation	Portrait and landscape
Roof Attachment	Screw connection into rafter
Structural Validity	IBC compliant, stamped engineering letters available for all solar states
Warranty	25 years



CrossRail 48-X

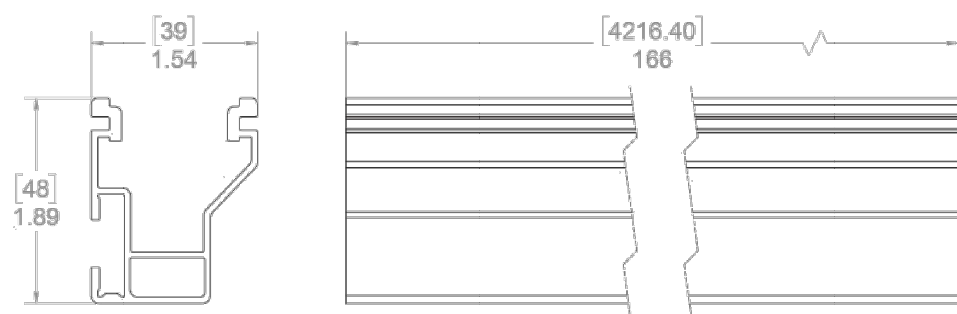


Mechanical Properties

	CrossRail 48-X
Material	6000 Series Aluminum
Ultimate Tensile Strength	37.7 ksi (260 MPa)
Yield Strength	34.8 ksi (240 MPa)
Weight	0.56 lbs/ft (0.833 kg/m)
Finish	Mill or Dark Anodized

Section Properties

	CrossRail 48-X
Sx	0.1980 in³ (3.245 cm³)
Sy	0.1510 in³ (2.474 cm³)
A (X-Section)	0.4650 in² (2.999 cm²)



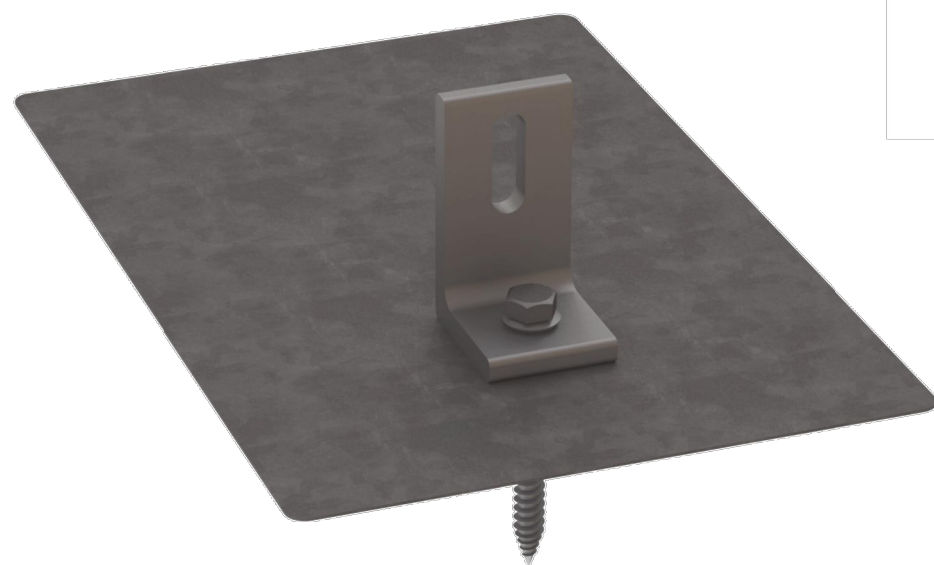
Dimensions in [mm] Inches

Notes:

- Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- UL2703 Listed System for Fire and Bonding



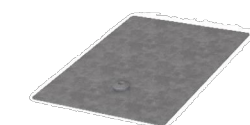
EverFlash eComp Kit



Part Number	Description
4800366	EverFlash eComp Kit, Black
4800367	EverFlash eComp Kit, Silver

- High quality, patented design to ensure watertight seal
- Included as part of a UL 2703 Listed System
- Easy installation, can be retrofitted without removing shingles
- Meets or exceeds all known building codes
- Aluminum base with stainless steel hardware for high corrosion resistance
- Compatible with all our CrossRails

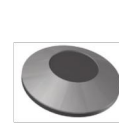
Components



EverFlash eComp, 8x12"
Material: aluminum
Finish: silver, black



L-Foot and Hardware
Material: aluminum and stainless steel
Finish: mill, dark



5/16" Sealing Washer
Material: stainless steel, EPDM insert



5/16" Lag Bolt
Material: stainless steel

EverFlash eComp Kit Product Sheet US04 | 1019 - Subject to change - Product illustrations are exemplary and may differ from the original.

Bonding and Grounding

Appropriate means of bonding and grounding are required by regulation. The information provided in this manual shall always be verified with local and national building codes.

Everest Solar Systems has obtained a UL 2703 system listing from Underwriter's Laboratories (UL).

A sample bonding path diagram is shown in Figure 1 below. Your specific installation may vary, based upon site conditions and your AHJ's requirements.

Each electrical connection has been evaluated to a maximum fuse rating of 30A. At least one ground lug per row of modules must be used to ground all strings within each sub-array, although additional may be used for redundancy. When installed per these installation instructions, all connections meet the requirements of NEC 690.43.

This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.

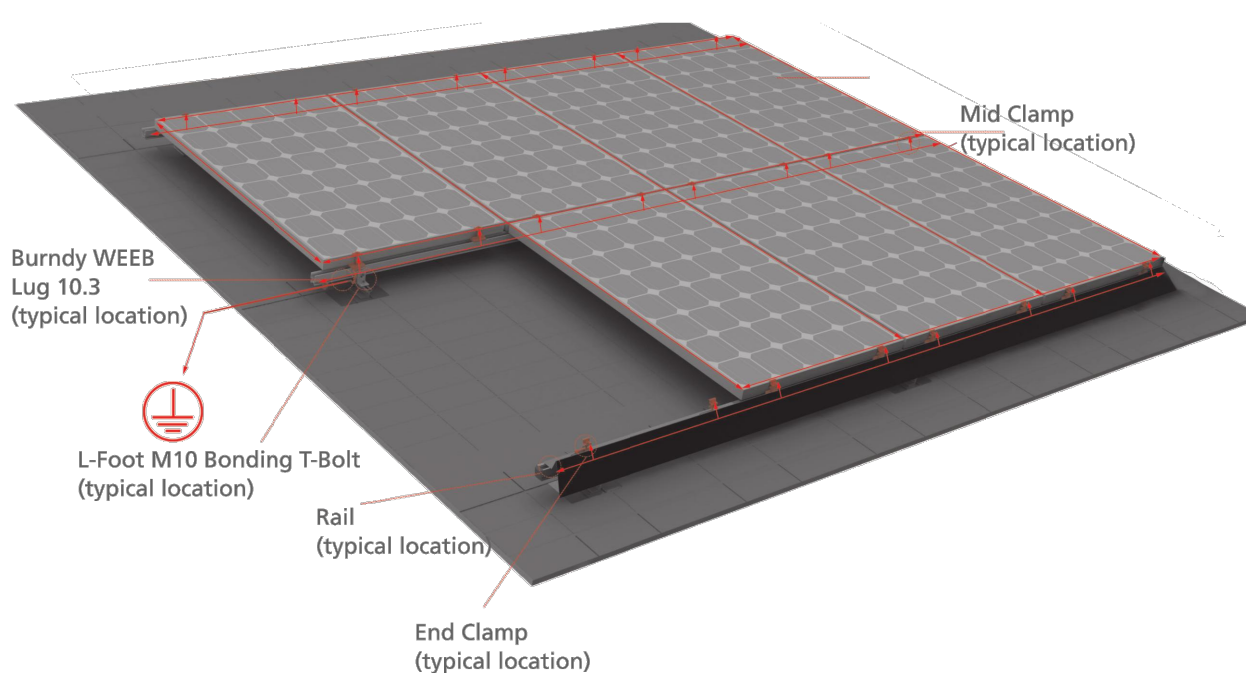


Figure 1: Bonding connections shown in red. For certain jurisdictions, bonding and grounding connections are identified at typical locations.

- Note the WEEB Lug 10.3 utilizes a WEEB 11.5 as a bonding washer and thus carries the markings of a WEEB 11.5

Fire Rating

The CrossRail Shared Rail System has undergone fire performance testing in accordance with UL 2703, Fire Performance. A System Class A fire rating is achieved when using the CrossRail Shared Rail under the following conditions:

- Roof slope of 2/12 inch rise per linear foot or greater
- Used in combination with a UL 1703 Listed module with a fire performance rating of Type 1, Type 2, or Type 3. Consult the module manufacturer for specific fire performance rating information
- CrossRail may be mounted using any stand-off height to maintain the Class A fire rating. Always consult the module manufacturer's installation instructions to ensure your installation is in compliance with their UL 1703 Listing.
- The results of the racking system do not improve a roof covering Class rating.

Compatible Modules

Everest's CrossRail Shared Rail System was tested with the following:

NRTL Listed LG Modules:

- LGxxxS1C-G4
- LGxxxN1C-G4
- LGxxxS2WG4
- LGxxxN1K-G4
- LGxxxN2W-G4
- LGxxxN1K-A5
- LGxxxS1C-A5
- LGxxxN1C-A5
- LGxxxE1C-A5
- LGxxxE1K-A5
- LGxxxN2W-A5
- LGxxxS2W-A5
- LGxxxQ1C-A5
- LGxxxN1W-V5
- LGxxxN2W-V5
- LGxxxN1C-V5

NRTL Listed Canadian Solar Modules:

- CS6U-xxx
- CS6K-xxx
- CS6X-xxx
- CS6P-xxx
- CS6K-P-PG DYMOND
- CS6K-270M
- CS6K-275M
- HIS-MxxxMG
- HIS-MxxxMI
- HIS-MxxxTI
- HIS-MxxxRI
- HIS-SxxxRI
- HIS-MxxxRG

NRTL Listed Solarworld Modules

- "Sunmodule":
 - Plus SW XXX Mono
 - Plus SW XXX Poly
 - (all may be followed by "black")
- NRTL Listed Lumos Modules:
 - LSXxxx-60M-B/C
- NRTL Listed Trina Solar Modules:
 - DUOMAX SPECS 1, PEG14
 - DUOMAX SPECS 2, PEG5
 - DUOMAX SPECS 3, PEG5.07
 - DUOMAX SPECS 4, PDG5
- NRTL Listed Prism Solar Modules:
 - B14B xxx Bifacial
 - B160 xxx Bifacial

CERTIFICATE OF COMPLIANCE

Certificate Number 20171017-E467724
Report Reference E467724-20150108
Issue Date 2017-OCTOBER-17

Issued to: Everest Solar Systems
Ste 111
3809 Ocean Ranch Blvd
Oceanside CA 92056

This is to certify that representative samples of

MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING DEVICES AND GROUND LUGS FOR USE WITH PHOTOVOLTAIC MODULES AND PANELS
USL –Everest Crossrail System, utilizing Crossrail 48, 48-S, 48-X rails, and Everest MiniRail XPRESS System for System Fire Classification and Bonding.
USL- Everest CrossRail System, utilizing CrossRail 80 for Bonding.

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety:

UL 2703, Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for use with Flat-Plate Photovoltaic Modules and Panels

Additional Information:

See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Samuel

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at UL@ul.com/customer-service



CONTRACTOR INFORMATION

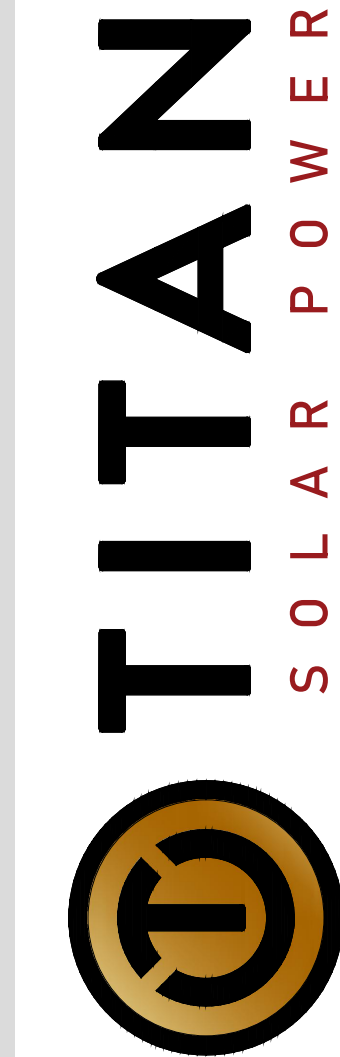
CONTRACTOR



CA LIC# C-10 1062072
EXP DATE: 01/31/2022
TITAN SOLAR POWER CA, INC.
525 W BASELINE ROAD
MESA, AZ 85210
(800) 729-7052
WWW.TITANSOLARPOWER.COM

THOS PORTER, LICENSE HOLDER

2 (05/24/21)



Titan Solar Power CA, Inc.
525 W. Baseline Rd
Mesa, AZ 85210
(480) 830-9290
C10 #501235

SYSTEM INFORMATION

2.84 kW DC System (STC)
3.0 kW AC System
(8) LG LG355Q1C-A5
(8) SolarEdge P401 (HD) Optimizers
SolarEdge Technologies SE3000H-US (240V).
(N) 2.63kW CEC System (STC).

PROJECT INFO.

Alfonso Castro
741 E Deodar St
Ontario, CA 91764
(949) 235-4847
APN #1047-202-09-0000

EE STAMP

PE STAMP

REVISION BLOCK

DESCRIPTION	DATE
Initial Draft of Plans	4/1/21
Revisions Per Customer	4/15/21
Revisions	5/24/21

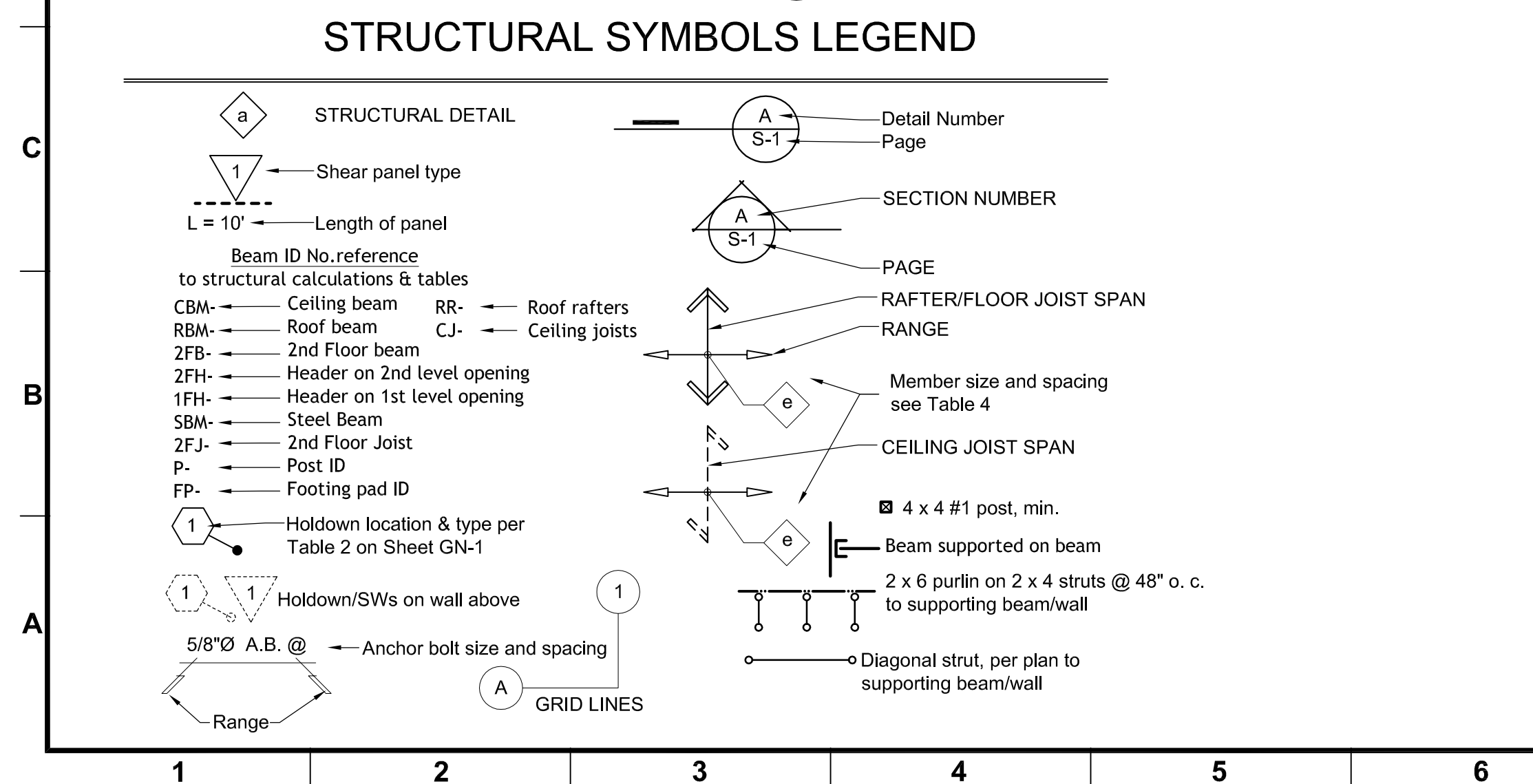
Project: Alfonso Castro_4/15/21



SHEET

Data

1 (04/15/21)



△	Panel Type ⁴	Nailing ⁶	Sole Pl Connectors	Block to Dbl Pl @ ⁹	A. B's to Fng ^{15,7}	allowable (plf)
1	^{15,8} STR 1 Plywd <small>For panel on 2x4s only</small>	8d @ 6", 6", 12"	20d @ 8" o.c.	LTp4 @ 24" o.c.	% 0 @ 4" o.c.	210
2	^{15,8} STR 1 Plywd <small>For panel on 2x4s only</small>	8d @ 6", 6", 12"	20d @ 6" SDS @ 6" o.c.	LTp4 @ 16" o.c.	% 0 @ 24" o.c.	420 ²
2	^{15,8} STR 1 Plywd <small>For panel on 2x4s only</small>	8d @ 4", 4", 12"	20d @ 6" o.c.	LTp4 @ 16" o.c.	% 0 @ 32" o.c.	320 ²
3	^{15,8} STR 1 Plywd <small>For panel on 2x4s only</small>	8d @ 4", 4", 12"	20d @ 6" SDS @ 4" o.c.	LTp4 @ 8" o.c.	% 0 @ 16" o.c.	640
3	^{15,8} STR 1 Plywd	8d @ 3", 3", 12"	20d @ 6" SDS @ 8" o.c.	LTp4 @ 16" o.c.	% 0 @ 24" o.c.	900
4	^{15,8} stucco	1-1/2", 11 GA"	20d @ 8" o.c.	LTp4 @ 24" o.c.	% 0 @ 6" o.c.	50

- 1) Element spacing shown on foundation plans govern over what is shown on table.
- 2) Where shear design values exceed 350 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3-inch nominal member, or two 2-inch nominal members fastened together in accordance with Section 2306.1 to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered at all panel edges.
 - a) 1/2" edge distance for plywood boundary nailing
 - b) stagger nails if nail spacing is less than 2" o. c.
 - c) square plate washers shall be used with all anchor bolts per CBC 2308.3.2
- 3) Nails shall have 7/16" head, with 1/4" thick furring, nailed to the wood studs. Staples are not allowed for structural applications.
- 4) Plywood shall be installed under 2 layers of 15# felt paper, when under stucco.
- 5) On existing footings use Simpson RFB's between existing bolts to provide the required spacing. Epoxy type: Use Simpson SET-XP
- 6) Nails shall be common, only.
- 7) Foundation anchor bolts shall include 0.229" x 3" x 3" steel plate washers per CBC sect. 2308.12.8.
- 8) LARR 25427
- 9) Install hardware on alternate sides of wall when less than 12" o. c. spacing

HD symbol	HD type	Capacity,		Anchor (on conc. flng)	Min. embed't
		4 x Post			
①	HDU2-SDS2.5 ⁴	2550		SSTB16 ^{5,7}	12-5/8"
②	HDU4-SDS2.5 ⁴	3325		SSTB24 ^{5,7}	20-5/8"
③	HDU5-SDS2.5 ⁴	3325		SSTB24 ^{5,7}	20-5/8"
④	HDU8-SDS2.5 ⁴	6970		SSTB28 ^{5,7}	24 7/8"
HD symbol	HD type	Capacity,	Nails ⁶		
		4 x Post	No. req'd ea. end		
⑤	CMST16 ⁸	4585	56 Sinker		
⑥	CMST14 ⁸	6490	78-10d		
⑦	CMST12 ⁸	9215	98-10d		

- 1) Holdown hardware shall be secured in place prior to foundation inspection.
- 2) Holdown connector bolts into wood framing require approved plate washers.
- 3) Holdown connector bolts shall be tightened prior to covering the wall framing.
- 4) LARR 25720, ESR-2330
- 5) ER-4935
- 6) Contractor to provide the number of nails specified at each end of holdown.
- 7) Min. compressive strength is 2500 psi.
- 8) LARR 25713

The following special inspections are required for this project. The special inspector shall keep records of inspections which shall be available to the building official and to the EOR. Reports shall indicate the work inspected was or was not completed in conformance with approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the building official and the EOR, prior to the completion of that phase of the work.

A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon prior to the start of work by the applicant and the building official.

Verification and inspection	Continuous	Periodic	Referenced Std.	IBC Reference
Material verification of structural steel	-	X	Applicable ASTM material stds.	
Single pass fillet welds < 3/8"		X	AWS D1.1	1704.3.1
Inspection of reinforcing steel		X	ACI 318: 3.5, 7.1-7.7	1913.4
Verification of required concrete design mix		X	ACI 318: Chapter 4, 5.2 - 5.4	1904.2.2, 1913.2, 1913.3
Inspection of size, location and dimensions of grade beams and caissons		X	ACI 318: 6.1.1	
Nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system, for wood shear walls where nail spacing is 4 inches or less.		X	-	1707.3
Inspection of threaded rods installed in concrete footings with approved epoxy.		X	-	1704
Hardy Frame Panel Installation		X	-	1705.10

JOIST TO SILL OR GIRDER, TOENAIL.....	3-8d
BRIDGING TO JOIST, TOENAIL EACH END.....	2-8d
JOIST TO BLOCKING, END NAIL.....	16d TOP & BOTTT.
RIM JOIST TO JOISTS, END NAIL.....	16d TOP & BOTTT.
FLOOR JOIST LAP @ BEARING, FACE NAIL.....	2-16d
SOLE PLATE TO JOIST OR BLOCKING, FACE NAIL.....	16d @ 16" O.C.
STUD TO TOP PLATE, END NAIL.....	2-16d
STUD TO SOLE PLATE.....	4-8d TOENAIL
DOUBLE STUDS, FACE NAIL.....	OR 2-16d .END
DOUBLE TOP PLATES, FACE NAIL.....	NAIL
TOP PLATES, LAPS AND INTERSECTIONS, FACE NAIL.....	16d @ 24" O.C.
CEILING JOISTS TO PLATE TOENAIL.....	16d @ 24" O.C.
CEILING JOISTS , LAP OVER PARTITIONS, FACE NAIL.....	2-16d
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL.....	3-8d
RAFTER TO PLATE, TOENAIL.....	3-16d
RAFTER TO RIDGE.....	3-16d
RAFTER TIES, 2x LUMBER, FACE NAIL.....	3-8d
RAFTER TIES, 1x LUMBER, FACE NAIL.....	2-16d
BUILT-UP CORNER STUDS.....	3-16d
POST TO PIER PAD, TOENAIL.....	5-8d
GIRDER TO POST, TOENAIL.....	16 @ 24" O.C.
2x PLANKS.....	3-16d
NOTES	
1. COMMON OR GALVANIZED BOX NAILS MAY BE USED.	2-16d
2. SCHEDULE BASED ON DOUGLAS FIR-LARCH FRAMING.	
3. TABLE BASED ON UBC TABLE 25-Q AND L.A. CITY TYPE V SHEET.	
4. THESE CONNECTIONS ARE MINIMUM CONDITIONS AND MAY BE SUPERSEDED BY MORE SPECIFIC	
5. DETAILS AS INDICATED ON	
6. THESE PLANS.	
7. DIAPHRAGM SHEATHING NAILS OR OTHER APPROVED SHEATHING CONNECTORS SHALL BE DRIVEN SO	
8. THAT THEIRHEAD OR CROWN IS FLUSH WITH THE SURFACE OF THE SHEATHING.	

NAILING SCHEDULE

A. These documents are intended to provide sufficient information for the contractor to properly calculate the material, equipment and labor necessary for proper execution and completion of the project.

B. Should any conditions arise where the intent of the drawings is in doubt, where there is a discrepancy, there appears to be in error on the drawings, or there is a discrepancy between the drawings and field conditions, the engineer of record shall be notified as soon as possible for the procedure to be followed.

C. The structure is designed as a completely finished structure. The contractor is responsible for all other stages of construction. The design, adequacy and safety of erection bracing, shoring, safety measures, temporary supports, etc., is the sole responsibility of the contractor, and has not been considered by the engineer. The contractor is responsible for the stability of the structure prior to erection of all shear walls, roof and floor diaphragms. Vega Cayetano, P. E., Inc. disclaims any liability or expense arising from any accident or structural failure during construction.

D. It shall be the responsibility of the contractor to locate all existing utilities whether shown heron or not and to protect them from damage. The contractor shall bear the expense of repair or replacement in conjunction with the execution of this project.

E. No changes are to be made on these plans without the knowledge and consent of the engineer whose signature appears heron. Do not scale plans.

F. All work shall comply with applicable state statutes and all regulations of other agencies having jurisdiction over this project. The contractor shall assume full responsibility for complying with the General Safety orders of the California Division of Industrial Safety, the regulations of the Federal and State Occupational Safety and Health administration. The contractor shall be responsible and hold harmless the engineer for any damages and/or penalties resulting from his failure to comply with said laws, statutes, ordinances and regulations.

All materials and workmanship shall conform to the California Building Code 2019 Edition

- Lumber shall be Douglas Fir per Standard Grading and Dressing rules No. 16 by the West Coast Lumber Inspection Bureau. 19% maximum moisture content. Must be grade marked.
- The following minimum grades shall apply:
 - Structural light framing #2
 - Structural Joist and Planks #2
 - Beams, Stringers, Posts and Timbers #1
 - Lumber in contact with concrete or masonry shall be minimum 2 x sill pressure treated lumber in compliance with FS TT-W-010 for ground contact and minimum grade reduced for other applications.
 - Structural laminated beams shall be Parallam® PSL, as manufactured by Weyerhaeuser. Materials shall comply with ICC ES ESR-1387.
 - Open web trusses shall be those manufactured by Truss-Joist Macmillan and shall be installed per manufacturer's specifications.
 - Prefabricated connectors shall be as manufactured by Simpson Company "Strong Tie" connectors.
 - Roof Sheathing: 1/2" Structural 1 Plywood w/ 8d common nails @ 6", 6", 12" max spacing. Specs of plan govern.
 - Floor Sheathing: 3/8" T & G plywood with 10d @ 6", 6", 12" max. Spacing shown on plan spans.

- All concrete shall be 150 pcf density and shall attain a minimum compressive strength at 28 days on 2500 psi.
- Concrete for grade beams and caissons shall be a minimum of 3000 psi compressive strength. Special inspection is required.
- Cement shall be type I or II Portland Cement per A.S.T.M. C-150. Maximum water content 7.5 gallons per sack of cement.
- Maximum aggregate size shall be 1-1/2".
- All work shall conform to the ACI 318 requirements for reinforced concrete and the ACI 301 specifications and any applicable modifications as noted in these drawings and specifications.
- Reinforcing, anchor bolts, and all other embedded hardware shall be securely fastened and shall be inspected by city inspector prior to pouring concrete.
- Concrete shall be maintained in a moist condition for a minimum of seven days after its placement.

- Reinforcing steel shall be deformed bars of intermediate grade conforming to ASTM Specification A615 grade 40 for bars #4 and smaller; A615 grade 60 for bars #5 and larger. Mesh reinforcing shall be 6 x 6 - W1.4 x W1.4 unless shown otherwise, conforming to ASTM specification A185.
- Provide minimum cover over reinforcing as follows:
 - a. Concrete against earth, unformed: 3"
 - b. Concrete against earth, formed: 2"
 - c. Concrete Block 2"
- Lap all reinforcing 30 diameters in concrete and 40 diameters in concrete block. Or, 24" minimum (concrete or block).

- All concrete block shall be grade "A" load bearing units conforming to A.S.T.M. C-190, latest revision. f'm = 1500 psi. Continuous inspection is not required.
- Mortar mix shall be one part cement, 3-1/2 parts sand and a maximum of 1/4 part lime putty, or dry hydrated lime.
- Mortar joints shall be a minimum of 3/8" and shall be full head and bed.
- Grout mix shall be 1 part cement, 3 parts sand, 2 parts pea gravel, and sufficient water to cause the grout to flow without segregation. Minimum compressive strength shall be 2500 psi. in 28 days.
- Grout pours shall not exceed four feet in height. Fill all cells solid with grout.

- Structural steel and miscellaneous iron shall conform to ASTM A 36.
- Steel tubes shall conform to ASTM A501. Steel pipe shall conform to A53 Grade "B".
- Machine bolts shall conform to ASTM A 307, Grade A and ANSI B18.2. When indicated high strength required use ASTM A 325.
- All Welding shall be performed by certified welders under the supervision of a Registered Deputy Inspector or in the shop of an approved fabricator.
- Continuous inspection is required for field welding.
- A certificate of Fabrication from the shop performing the welding or a report from the Registered Deputy Inspector must be furnished to the job inspector prior to framing approval.
- Pipe columns: Use ASTM A 53, Grade B. Steel tubes shall conform to ASTM A500 grade "B" steel, Fy=46 ksi.
- Welding shall be done by electric shielded arc process using E-70XX electrodes. All welds shall be uniform in size and appearance, and free of pinholes, porosity, undercutting or other defects. All butt welds shall be full penetration.
- Holes in steel shall be 1/16" oversize for ordinary steel to steel connections and 3/16" for anchor bolts, unless noted otherwise.
- Structural steel not encased in concrete or masonry shall be shop painted as specified. Any abrasion shall be touched up after erection.

- All laminated lumber shall be properly kiln dried for glue lamination and moisture content shall not exceed 12%.
- Glu-lams shall conform to combination 24F: Fb = 2400 psi minimum,
- Fv = 165 psi, Fc (perp) = 650 psi and E = 1.8 E6 psi, minimum.
- All laminated beams shall conform to industrial appearance grade unless shown or specified otherwise.
- Tension lamination required at top & bottom of all cantilever glu-lam beams.

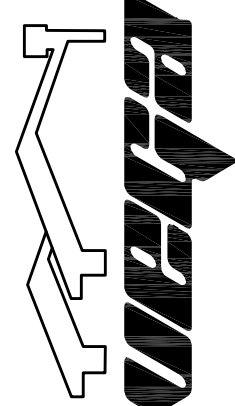
Roof deck surface shall be finished with "Desert-Crete magnezite walking deck system" by Hill Brothers Chemical Company (or approved equal). ESR-1161, LARR 25262.

1. Footings to be continuous, poured in place in compacted/natural grade. Depth of footing to be a minimum of 24 inches into natural undisturbed soil.
2. Slab to be 4 inches thick concrete reinforced with #4 @ 16" o. c., E/W over 6 mil vapor barrier.
3. Anchor bolts to be 5/8" ø with 7" minimum embedment into concrete. Minimum two anchor bolts per plate; one within 12" off plate end. Maximum bolt spacing to be 6'-0" o.c. Spacing specified on Foundation Plan governs.
4. When slabs and footings are poured over fill, fill must be compacted to at least 90% of maximum dry density.
5. Slabs to be connected to perimeter footings by #4 dowels at 24" o. c., bent 3 ft. into slab.
6. Saturate soil 18" deep before placing the concrete slab.
7. All footings to be reinforced with continuous 2-#4 bars. Two 3" from the bottom and two 1-1/2" from the top of footing.
8. Hold-down hardware must be secured in place prior to foundation inspection.
9. Lumber in contact with concrete or masonry shall be minimum 2 x sill pressure treated lumber in compliance with FS TT-W-591C or foundation grade redwood.
10. All planters in close proximity to the structure shall have adequate drainage of surface water to prevent saturation of soil under foundation.

▽ No.	DESCRIPTION	DATE:	BY:
▽	City review	02/26/21	CV
▽	Plan check corrections	03/19/21	CV

9234 Stamps Ave.
Downey, CA 90240
Tel (562) 861-5333
Fax (562) 861-5333
Lic. No. C43117

tano, P. E., Inc.
A professional practice of engineering



SHEET TITLE:	GENERAL NOTES, SCHEDULES
ADDRESS:	741 E. Deodar St. Ontario CA 91764
OWNER/CONTRACTOR:	

PROJECT NO. 21-112

GN-1
OF 2 SHEET