



ANDRESEN
ARCHITECTURE
INC.

17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

[illegible][illegible]

	compression heating is higher than the cut-off temperature for supplementary heating.
§ 110.2(c):	Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.
§ 110.3(a)(4):	Water Heating Recirculation Loop Serving Multiple Dwelling Units. Water heating recirculation loops serving multiple dwelling units must meet the air-mixing valve, backflow prevention, pump priming, pump isolation valve, and recirculation loop connection requirements of 110.3(b).
§ 110.3(c)(6):	Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 MBtu 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.
§ 110.5:	Pilot Lights. Continuous burning pilot lights are prohibited for natural gas, low-type vented furnace, nonvented cooling appliances (except appliances without an electrical supply voltage connected with pilot lights that consume less than 150 Btu per hour) and gas hot and gas water heaters.
§ 150.0(b)(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(b)(2).

[illegible]

	Interior Common Area of Low-rise Multifamily Buildings. The use of low-rise multifamily residential buildings where the total interior area of single-family buildings is less than 10,000 sq. ft. and the total area of multifamily buildings is less than the square area of the lot. The use of multifamily buildings is not applicable to the interior common area of the building.
03/06/06	<ul style="list-style-type: none"> a. Compliance with applicable requirements in Sections 110.6, 110.6.1, 110.7, 110.8, 110.9, 110.11, 110.6.8 and 110.12. b. Lighting installed for common and corridors must be located by occupancy areas and reduce the lighting power in each space by at least 50 percent. The occupancy must be capable of turning the light occupancy areas off and on at discrete points of ingress and egress.
03/06/06	Single Family Residential. Single family residential buildings in subdivisions with 10 or more single family residential units where the application for a variance submitted by the residents has been deemed complete and approved by the local jurisdiction.
03/06/06	Single-Family Residential. Single family residential buildings in subdivisions with 10 or more single family residential units where the application for a variance submitted by the residents must comply with the requirements of 110.6, 110.6.1, 110.6.8, 110.6.9, 110.7, 110.8, 110.9, 110.11, 110.12, 110.13, 110.14, 110.15, 110.16, 110.17, 110.18, 110.19, 110.20, 110.21, 110.22, 110.23, 110.24, 110.25, 110.26, 110.27, 110.28, 110.29, 110.30, 110.31, 110.32, 110.33, 110.34, 110.35, 110.36, 110.37, 110.38, 110.39, 110.40, 110.41, 110.42, 110.43, 110.44, 110.45, 110.46, 110.47, 110.48, 110.49, 110.50, 110.51, 110.52, 110.53, 110.54, 110.55, 110.56, 110.57, 110.58, 110.59, 110.60, 110.61, 110.62, 110.63, 110.64, 110.65, 110.66, 110.67, 110.68, 110.69, 110.70, 110.71, 110.72, 110.73, 110.74, 110.75, 110.76, 110.77, 110.78, 110.79, 110.80, 110.81, 110.82, 110.83, 110.84, 110.85, 110.86, 110.87, 110.88, 110.89, 110.90, 110.91, 110.92, 110.93, 110.94, 110.95, 110.96, 110.97, 110.98, 110.99, 110.100, 110.101, 110.102, 110.103, 110.104, 110.105, 110.106, 110.107, 110.108, 110.109, 110.110, 110.111, 110.112, 110.113, 110.114, 110.115, 110.116, 110.117, 110.118, 110.119, 110.120, 110.121, 110.122, 110.123, 110.124, 110.125, 110.126, 110.127, 110.128, 110.129, 110.130, 110.131, 110.132, 110.133, 110.134, 110.135, 110.136, 110.137, 110.138, 110.139, 110.140, 110.141, 110.142, 110.143, 110.144, 110.145, 110.146, 110.147, 110.148, 110.149, 110.150, 110.151, 110.152, 110.153, 110.154, 110.155, 110.156, 110.157, 110.158, 110.159, 110.160, 110.161, 110.162, 110.163, 110.164, 110.165, 110.166, 110.167, 110.168, 110.169, 110.170, 110.171, 110.172, 110.173, 110.174, 110.175, 110.176, 110.177, 110.178, 110.179, 110.180, 110.181, 110.182, 110.183, 110.184, 110.185, 110.186, 110.187, 110.188, 110.189, 110.190, 110.191, 110.192, 110.193, 110.194, 110.195, 110.196, 110.197, 110.198, 110.199, 110.200, 110.201, 110.202, 110.203, 110.204, 110.205, 110.206, 110.207, 110.208, 110.209, 110.210, 110.211, 110.212, 110.213, 110.214, 110.215, 110.216, 110.217, 110.218, 110.219, 110.220, 110.221, 110.222, 110.223, 110.224, 110.225, 110.226, 110.227, 110.228, 110.229, 110.230, 110.231, 110.232, 110.233, 110.234, 110.235, 110.236, 110.237, 110.238, 110.239, 110.240, 110.241, 110.242, 110.243, 110.244, 110.245, 110.246, 110.247, 110.248, 110.249, 110.250, 110.251, 110.252, 110.253, 110.254, 110.255, 110.256, 110.257, 110.258, 110.259, 110.260, 110.261, 110.262, 110.263, 110.264, 110.265, 110.266, 110.267, 110.268, 110.269, 110.270, 110.271, 110.272, 110.273, 110.274, 110.275, 110.276, 110.277, 110.278, 110.279, 110.280, 110.281, 110.282, 110.283, 110.284, 110.285, 110.286, 110.287, 110.288, 110.289, 110.290, 110.291, 110.292, 110.293, 110.294, 110.295, 110.296, 110.297, 110.298, 110.299, 110.300, 110.301, 110.302, 110.303, 110.304, 110.305, 110.306, 110.307, 110.308, 110.309, 110.310, 110.311, 110.312, 110.313, 110.314, 110.315, 110.316, 110.317, 110.318, 110.319, 110.320, 110.321, 110.322, 110.323, 110.324, 110.325, 110.326, 110.327, 110.328, 110.329, 110.330, 110.331, 110.332, 110.333, 110.334, 110.335, 110.336, 110.337, 110.338, 110.339, 110.340, 110.341, 110.342, 110.343, 110.344, 110.345, 110.346, 110.347, 110.348, 110.349, 110.350, 110.351, 110.352, 110.353, 110.354, 110.355, 110.356, 110.357, 110.358, 110.359, 110.360, 110.361, 110.362, 110.363, 110.364, 110.365, 110.366, 110.367, 110.368, 110.369, 110.370, 110.371, 110.372, 110.373, 110.374, 110.375, 110.376, 110.377, 110.378, 110.379, 110.380, 110.381, 110.382, 110.383, 110.384, 110.385, 110.386, 110.387, 110.388, 110.389, 110.390, 110.391, 110.392, 110.393, 110.394, 110.395, 110.396, 110.397, 110.398, 110.399, 110.400, 110.401, 110.402, 110.403, 110.404, 110.405, 110.406, 110.407, 110.408, 110.409, 110.410, 110.411, 110.412, 110.413, 110.414, 110.415, 110.416, 110.417, 110.418, 110.419, 110.420, 110.421, 110.422, 110.4

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name: J.A. Ruisse Ent.
 System Name: Res HVAC
 Date: 10/8/2021
 Floor Area: 1,713

ENGINEERING CHECKS		SYSTEM LOAD		COIL COOLING PEAK			COIL HTG. PEAK		
	Number of Systems			CFM	Sensible	Latent	CFM	Sensible	
Heating System									
Output per System	48,000		Total Room Loads	406	16,638	1,161	474	13,793	
Total Output (Btu/hr)	48,000		Return Ventd Lighting		0				
Output (Btu/hr/sqft)	28.0		Return Air Ducts		747			\$10	
Cooling System									
Output per System	47,500		Return Fan		0			9	
Total Output (Btu/hr)	47,500		Ventilation	0	0	0	0	0	
Total Output (Cfm/sqft)	4.0		Supply Fan		0			9	
Total Output (Btu/hr/sqft)	27.7		Supply Air Ducts		747			\$10	
Total Output (cgh/Ton)	42.6		TOTAL SYSTEM LOAD		16,381	1,161		14,812	
Air System									
CFM per System	895		HVAC EQUIPMENT SELECTION						
Airflow (cph)	895		Bosch BOVA-604-HD1-M00G		38,000	0		38,003	
Airflow (cwh/sqft)	0.52								
Airflow (cfm/ton)	20.1								
Outside Air (%)	0.0%		Total Adjusted System Output		38,000	0		38,003	
Outside Air (cwh/sqft)	0.00		(Adjusted for Peak Design conditions)						

Note: values above given at ARI conditions

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)

Aug 2 PM Jan 1 AM

COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

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County of Riverside
4080 Lerion St. 9th Floor
Riverside, CA 92503
APPROVED
01/10/2023 14:20
REVIEWED BY: MANASHED
Approval of these plans shall not be construed to be a permit for, or an approval of any violations of any of the provisions of the state or county laws. This seal and stamp must be kept on the job until completion.

Window Types

NOTES:

1. WINDOW GRID AND TRIM OPTIONS VARY - SEE ELEVATIONS

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Plan Notes

- 3-06 4" THICK CONCRETE SLAB ON 2" SAND OVER 10 MIL "VISOQUEEN" VAPOR BARRIER ON 2" SAND WITH #4 BARS AT 18" ON CENTER EACH WAY IN CENTER OF SLAB.
- 3-14 4" THICK CONCRETE GARAGE SLAB ON GRADE (2,500 PSI MIX) WITH #4 BARS AT 18" ON CENTER EACH WAY IN CENTER OF SLAB WITH SMOOTH TROWEL FINISH. SLOPE 2" TO DRAIN. SAWCUT WITHIN 24 HOURS WHERE INDICATED.
- 3-25 1" MINIMUM THICK DEEP SAWCUT CONTROL JOINTS (TYPICAL) (@ 15'-0" O/C). SAWCUT MAXIMUM OF 24 HOURS AFTER SLAB POUR.
- 3-65 4" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/4" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2' BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 3'-0" OUT FROM FACE OF DOOR.
- 3-80 30" LONG #3 BARS AT 24" O/C
- 3-180 12" WIDE x 12" DEEP (BELOW GRADE) CONTINUOUS CONCRETE FOOTING WITH (2) #4 REINFORCING BARS TOP AND BOTTOM. PROVIDE 5/8" DIAMETER x 12" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)
- 3-200 12" WIDE x 12" DEEP (BELOW GRADE) CONTINUOUS CONCRETE FOOTING WITH STEM AND (2) #4 REINFORCING BARS TOP AND BOTTOM. PROVIDE 5/8" DIAMETER x 12" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)
- 3-205 CONTINUOUS 12" WIDE x 12" DEEP CONCRETE FOOTING AT GARAGE DOOR OPENING WITH (2) #4 TOP & BOT
- 3-385 OMIT ANCHOR BOLTS AT OPENINGS (TYPICAL)
- 3-658 PIER FOOTING (2,500 PSI MIX) LEVEL WITH HOUSE SLAB WITH TWO 5/8" DIAMETER x 12" LONG ANCHOR BOLTS (ASTM A-307) TWO SIDES AND ONE BOLT OTHER TWO SIDES (6 TOTAL) WITH 3" x 3" x 0.229" SQUARE STEEL PLATE WASHERS TYPICAL. BOTTOM 6" OF FOOTING TO EXTEND OUT AN ADDITIONAL 3" BEYOND THE PIER EDGES
- 6-142 ALL INTERIOR NON-BEARING HEADERS BENEATH TRUSSES MAY BE 2 x 4 PLAT WITH (1) 2 x 4 TRIMMER EACH END. PROVIDE 1x TOP PLATE AND 2x PLATE AT INTERIOR NON-BEARING WALLS WITH "SIMPSON DTC" TRUSS CLIPS AT 48" O/C
- 6-146 4 x 6 DOUG FIR #2 OR BETTER HEADER WITH (1) 2 x 4 TRIMMER EACH END
- 6-256 6 x 6 DOUG FIR #1 OR BETTER HEADER WITH (1) 2 x 4 TRIMMER EACH END
- 6-619 LAP DOUBLE TOP PLATES ALONG THIS WALL 4'-0" MINIMUM WITH TWENTY (20) - 16d NAILS OR WITH "SIMPSON MSTB" STRAP
- 6-657 15/32" APA RATED OSB FOIL-FACED ("LUMINOX" OR EQUAL. FOIL SIDE DOWN) ROOF SHEATHING 32/16 SPAN RATING EXTERIOR GLUE LAY PERPENDICULAR WITH RAFTERS AND NAIL WITH 8d NAILS AT 6" O/C EDGES AND BOUNDARY AND 12" O/C IN FIELD. INCLUDE FOIL-FACED SHEATHING AT ALL VERTICAL WALLS AT GABLED ENDS
- 6-695 FLAT BOTTOM ENGINEERED ROOF TRUSSES AT 24" O/C
- 6-697 GIRDER TRUSS (PROVIDE DOUBLE 2 x 4 STUDS EACH END - TYPICAL ION) (DOUBLE TRUSS IF REQUIRED - SEE TRUSS MANUFACTURERS CALCULATIONS FOR EXACT REQUIREMENTS)
- 6-701 PROVIDE HANGERS OR PRESSURE BLOCKING AT TRUSS TO GIRDER CONNECTION (SEE TRUSS DRAWINGS FOR REQUIREMENTS)
- 6-709 DRAG TRUSS (SEE PLAN FOR LOADING). PROVIDE BOUNDARY NAILING (8d NAILS AT 6" ON CENTER) ALONG ENTIRE LENGTH OF DRAG TRUSS
- 6-713 2 x 4 SOLID RIDGE BLOCKING BETWEEN TRUSSES
- 6-717 DOUBLE TRUSSES FOR HORIZONTAL FURNACE IN ATTIC (IF REQUIRED - SEE TRUSS MANUFACTURERS CALCULATIONS FOR EXACT REQUIREMENTS)
- 6-940 SOLID 2x EAVE BLOCKING WITH "SIMPSON H1" CLIPS AT 24" ON CENTER FROM EACH ROOF TRUSS (OR RAFTER) TO DOUBLE TOP PLATES (OR BEAM). PROVIDE "SIMPSON A35" CLIPS TO EAVE BLOCKING AT SHEAR WALLS. SEE SHEAR PANEL SCHEDULE FOR ADDITIONAL "SIMPSON A35" CLIPS TO EAVE BLOCKING. ("H1" SPACING AT 24" ON CENTER STILL OCCURS AT SHEAR WALLS IN ADDITION TO A35'S)
- 15-530 30" x 30" ATTIC ACCESS FOR ATTIC FAU. PROVIDE WEATHERSTRIP OR SEAL AT THE ATTIC ACCESS PANEL TO PREVENT DRAFTS. (ACCESS SHALL BE SIZED TO ACCOMMODATE REMOVAL OF LARGEST PIECE OF EQUIPMENT)
- 15-640 4 TON FAU WITH COOLING COIL. SET ON PLYWOOD PLATFORM WITH RETURN AIR BELOW. PROVIDE 4" DIAMETER 1" VENT TO OUTSIDE AIR. PROVIDE WATERTIGHT GALVANIZED PAN WITH 3/4" PVC CONDENSATE OVERFLOW TO DRAIN ABOVE WINDOW.

Framing Plan Legend

- EFF. L=8'-0"
L=10'-0"
LENGTH
SHEAR WALL REF. (SEE SHEAR WALL SCHEDULES)
- (10) BEAM TAG (SEE BEAM SCHEDULE)
3-12 x 3-12 = BEAM SIZE: LETTER = BEAM HEIGHT
? = PLAN NOTE TAG
- DETAIL REF. #
DETAIL SHEET #
WALL ELEVATION REF. #
SHEET #
FOOTING TAG

Roof Framing Plan

1/4" = 1'-0"

TO TRUSS COMPANY
TYPICAL TRUSS HEEL AT 7'-14"

Foundation Plan

1/4" = 1'-0"

Shear Wall Schedule Notes

- ABUTTING PANEL EDGES AT PANELS <1>, <2> & <3> TO HAVE 3x POSTS (OR BLOCKING). ABUTTING SHEAR EDGES AT <3A>, <4> & <4A> TO HAVE 4x POSTS (OR BLOCKING)
- NO SHEAR PANEL WIDTHS LESS THAN 2'-0" ALLOWED (@ 4'-6" WIDTH - USE 2'-0" AND 2'-6" PANELS). ALL EDGES SHALL BE BLOCKED.
- ANCHOR BOLT SPACING AT SLAB AND A35 (OR LTP4) SPACING ON TOP OF SHEAR WALL ONLY OCCURS WHERE SHEAR PANELS OCCUR
- (NON-SHEARED WALL AREAS TO RECEIVE A35 OR LTP4 CLIPS AT 24" ON CENTER)
- NAILS SHALL BE COMMON OR GALVANIZED BOX. (GALVANIZED NAILS SHALL BE HOT-DIPPED OR TUMBLE). NAILING APPLIES TO ALL STUDS, PLATES AND BLOCKING. ALL EDGE NAILING AT TOP PLATES SHALL BE TO UPPER TOP PLATE. STAGGERING OF NAILS TO FRAMER'S PLATE IS NOT ACCEPTABLE.
- NAILS SHALL BE SPACED NO LESS THAN 12" FROM PANEL EDGES AND NOT LESS THAN 3/8" FROM EDGE OF STUDS
- WOOD STRUCTURAL PANELS SHALL CONFORM TO CBC SEC. 2303.1.4
- THE PLATE WASHER SHALL EXTEND TO WITHIN 1/2" OF THE BOTTOM PLATE ON THE SIDE (S) WITH SHEATHING (SDPWs 4.3.6.4.3)
- SHEAR WALLS SHALL RUN CONTINUOUSLY FROM FOUNDATION TO ROOF/FLOOR FRAMING.

Beam Schedule		
Beam Calc #		Type
1	3-1/2x11-1/4 PARALLAM	
2	4x14 DF #1	
3	4x6 DF #2	

Shear Wall Schedule (2019 CBC)					
Shear Wall Number	Extend Shear Panel From Floor to Floor or Floor to Roof Sheathing Above (Typical) Stud Spacing To Be 16" O/C (Typical)	Shear Value Per C.B.C. Table 2306.4.1	"Simpson A35 or LTP4" From Wall to Rim Joist or From Roof to Plates	5/8" Dia. Anchor Bolt Spacing	Sill Plate Nailing at Second Floor
1	3/8" WOOD STRUCTURAL PANEL (STRUCT I SHEATHING) WITH 8d NAILS AT 6" O/C EDGES AND 12" O/C IN FIELD (3x STUDS @ 48" O/C)	280 PLF (EARTHQUAKE) & 349 PLF (WIND)	12" O/C	16" O/C	16d STAGGERED 14"
2	3/8" WOOD STRUCTURAL PANEL (STRUCT I SHEATHING) WITH 8d NAILS AT 4" O/C EDGES AND 12" O/C IN FIELD (3x STUDS @ 48" O/C)	430 PLF (EARTHQUAKE) & 502 PLF (WIND)	10" O/C	16" O/C	16d STAGGERED 14"
3	3/8" WOOD STRUCTURAL PANEL (STRUCT I SHEATHING) WITH 8d NAILS AT 3" O/C EDGES AND 12" O/C IN FIELD (3x STUDS @ 48" O/C)	550 PLF (EARTHQUAKE) & 770 PLF (WIND)	8" O/C	12" O/C	16d STAGGERED 14"

Foundation Notes

- CEMENT TYPE II (MIN. FC = 2,500 psi. 28 DAYS FOR FLATWORK, MIN.) MAXIMUM WATER-CEMENT RATIO IS 0.44 WITH MAXIMUM SLUMP OF 4".
- SOIL ALLOWABLE BEARING PRESSURE OF 1,500 POUNDS PER SQUARE FOOT.
- ANCHOR BOLTS AND FASTENERS IN CONTACT WITH PRESERVATIVE-TREATED WOOD SHALL BE HOT DIPPED ZINC-COATED GALVANIZED STEEL
- SHEAR WALL ANCHOR BOLTS AND HOLDOWN HARDWARE MUST BE SECURED IN PLACE PRIOR TO FOUNDATION INSPECTION.
- LINE, GRADE AND COMPACTION TEST RESULTS SHALL BE PRESENTED TO THE BUILDING INSPECTOR AT INITIAL FOUNDATION INSPECTION.
- FINAL COMPACTION REPORT SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT TO VERIFY FOUNDATION PLANS PRIOR TO FOUNDATION INSPECTION.
- PRIOR TO REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE SOILS ENGINEER SHALL INSPECT AND APPROVE THE FOUNDATION EXCAVATIONS

Simpson Hardware Schedule				
Hardware Number	Comments	Min. Stud/Post Sized	Capacity	Note
H01	STH014	4 X 4	3,815#	HOLDOWN STRAP WITH (30) 18d SINKERS AS SHOWN
H02	HDS-SDS2.5	4 X 4	5,645#	HOLDOWN WITH "SIMPSON SSTB24" HOLDOWN BOLT AT EACH END AS SHOWN.

Pad Footing Schedule			
Type Mark	Type	Rebar Condition	Count
P-1	2'-3" SQ. x 12" DEEP.	(3) #4 EACH WAY	1

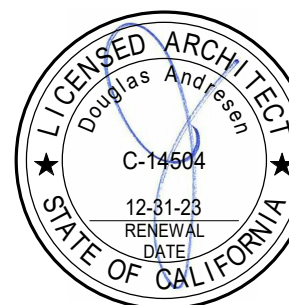
Proposed Single Family Residence For:

Abel & Elizabeth Ciurar

13063 Via Alia, Riverside, CA 92503

2 Nov. 2021

21-4294



Foundation & Framing

A-4

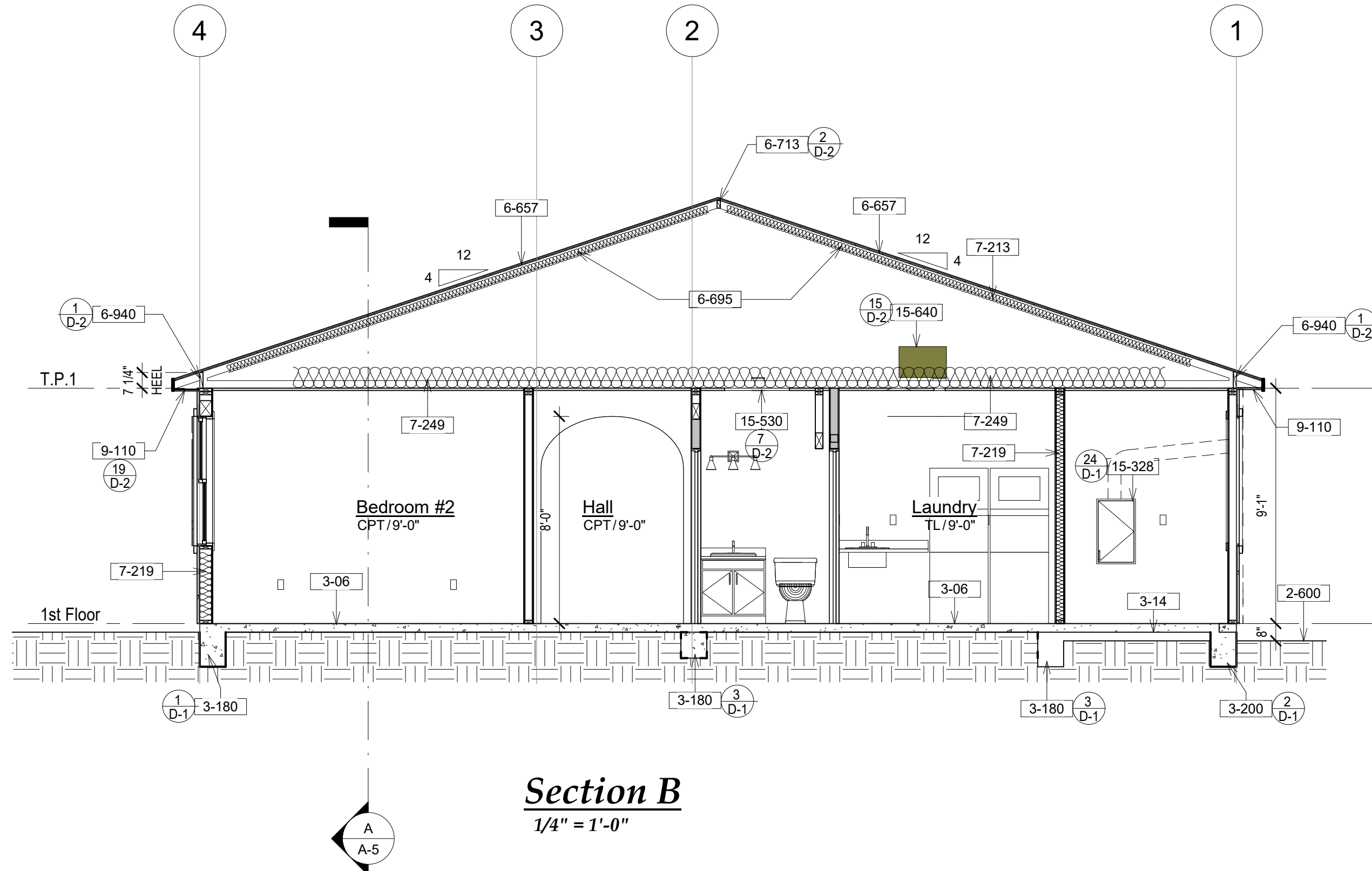
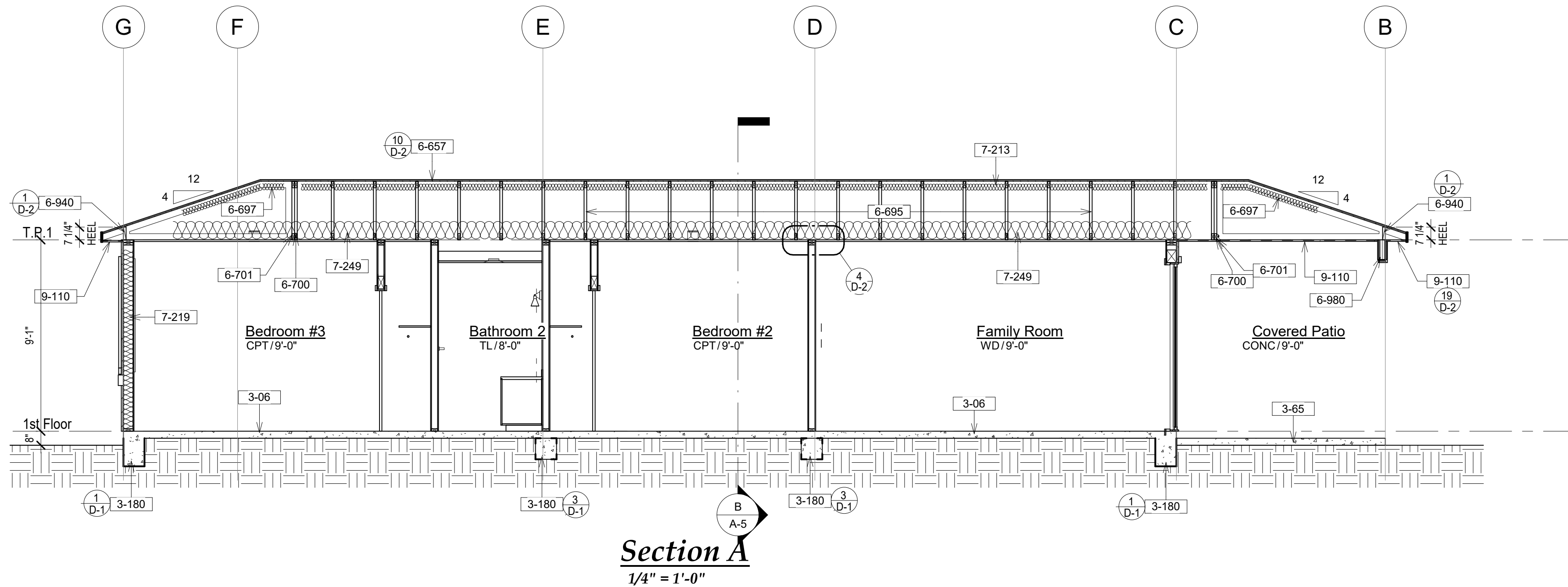
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County of Riverside
4080 Lerion St. 9th
Riverside, CA 92502

County of Riverside Building & Safety
4080 Lerion St. 9th Floor
Riverside, CA 92502
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Approval of these plans shall not be construed to be a permit for, or an approval of, any violations of any of the provisions of the state or county laws. This set of plans must be kept on the job until completion.



ANDRESEN
ARCHITECTURE
INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

- Plan Notes
- 3-06

4" THICK CONCRETE SLAB ON 2" SAND OVER 10 MIL "VLSQUEEN" VAPOR BARRIER ON 2" SAND WITH #4 BARS AT 18" ON CENTER EACH WAY IN CENTER OF SLAB.
- 3-65

4" THICK CONCRETE SLAB ON GRADE WITH MEDIUM BROOM FINISH. SLOPE 1/4" PER FOOT MINIMUM AWAY FROM BUILDING. PROVIDE A LANDING AT ALL DOORS A MINIMUM OF 2' BEYOND EACH SIDE OF DOOR AND A MINIMUM OF 3'-0" OUT FROM FACE OF DOOR.
- 3-180

12" WIDE x 12" DEEP (BELOW GRADE) CONTINUOUS CONCRETE FOOTING WITH (2) #4 REINFORCING BARS TOP AND BOTTOM. PROVIDE 5/8" DIAMETER x 12" LONG ANCHOR BOLTS (ASTM A-307) AT 48" O/C AND 12" FROM CORNERS AND BREAKS IN SILL PLATE (7" MINIMUM EMBEDMENT INTO CONCRETE) WITH 3" x 3" x 0.220" SQUARE STEEL PLATE WASHERS TYPICAL. (CLOSER SPACING AND DEEPER FOOTING MAY BE REQUIRED AT SHEAR WALLS - SEE SCHEDULE)
- 6-657

15/32" APA RATED OSB FOIL-FACED ("LUMINOX", OR EQUAL, FOIL SIDE DOWN) ROOF SHEATHING 32/16 SPAN RATING EXTERIOR GLUE LAY PERPENDICULAR WITH RAFTERS AND NAIL WITH 6d NAILS AT 8" O/C EDGES AND BOUNDARY AND 12" O/C IN FIELD. INCLUDE FOIL-FACED SHEATHING AT ALL VERTICAL WALLS AT GABLED ENDS
- 6-695

FLAT BOTTOM ENGINEERED ROOF TRUSSES AT 24" O/C
- 6-697

FLAT BOTTOM ENGINEERED JACK TRUSSES AT 24" O/C
- 6-700

GIRDER TRUSS (PROVIDE DOUBLE 2 x 4 STUDS EACH END - TYPICAL UOM) (DOUBLE TRUSS IF REQUIRED - SEE TRUSS MANUFACTURER'S CALCULATIONS FOR EXACT REQUIREMENTS)
- 6-701

PROVIDE HANGERS OR PRESSURE BLOCKING AT TRUSS TO GIRDER CONNECTION (SEE TRUSS DRAWINGS FOR REQUIREMENTS)
- 6-713

2 x 4 SOLID RIDGE BLOCKING BETWEEN TRUSSES
- 6-940

SOLID 2x EAVE BLOCKING WITH "SIMPSON H1" CLIPS AT 24" ON CENTER FROM EACH ROOF TRUSS (OR RAFTER) TO DOUBLE TOP PLATES (OR BEAM). PROVIDE "SIMPSON A35" CLIPS TO EAVE BLOCKING AT SHEAR WALLS. SEE SHEAR PANEL SCHEDULE FOR ADDITIONAL "SIMPSON A35" CLIPS TO EAVE BLOCKING. ("H1" SPACING AT 24" ON CENTER STILL OCCURS AT SHEAR WALLS IN ADDITION TO A35'S)
- 6-980

BEAM (SEE FRAMING PLAN)
- 7-213

R-13 FIBERGLASS BATT INSULATION (PROVIDE WIRE SUPPORTS AT TOP CHORD OF TRUSS INSTALLATION)
- 7-219

R-19 FIBERGLASS BATT INSULATION
- 7-249

R-49 FIBERGLASS BATT INSULATION
- 9-110

STUCCO SOFFIT (USE HIGH-RIB METAL LATH AT ALL HORIZONTAL APPLICATIONS)
- 15-328

RESIDENTIAL TANKLESS GAS-FIRED HOT WATER FIXTURE ON WALL WITH 3/4" GAS AND WATER CONNECTION AND 4" DIAMETER "B" VENT (SEE MECHANICAL SYSTEM NOTES FOR MANUFACTURER AND MODEL NUMBER). VERIFY REQUIRED INPUT BTU RATE WITH OWNER.
- 15-530

30" x 30" ATTIC ACCESS FOR ATTIC FAU. PROVIDE WEATHERSTRIP OR SEAL AT THE ATTIC ACCESS PANEL TO PREVENT DRAFTS. (ACCESS SHALL BE SIZED TO ACCOMMODATE REMOVAL OF LARGEST PIECE OF EQUIPMENT)
- 15-640

4 TON FAU WITH COOLING COIL. SET ON PLYWOOD PLATFORM WITH RETURN AIR BELOW. PROVIDE 4" DIAMETER "B" VENT TO OUTSIDE AIR. PROVIDE WATERTIGHT GALVANIZED PAN WITH 3/4" PVC CONDENSATE OVERFLOW TO DRAIN ABOVE WINDOW.

Proposed Single Family Residence For:
Abel & Elizabeth Ciurur
13063 Via Alia, Riverside, CA 92503

2 Nov. 2021

27 May 2022

21-4294

Sections

A-5

13063 Via Alia, Riverside, CA 92503

12-31-23
RENEWAL
DATE
STATE OF CALIFORNIA

C:\Users\JonathanBallesteros\Andresen Architecture Inc\AAI - Access\Projects 2020-2029\2021\21-4294 Ciurur SFR\Revit\21-4294 Ciurur SFR (2021).rvt 1/10/2023 8:02:42 AM

County of Riverside
4080 Lamon St. 9th Floor
Riverside, CA 92502

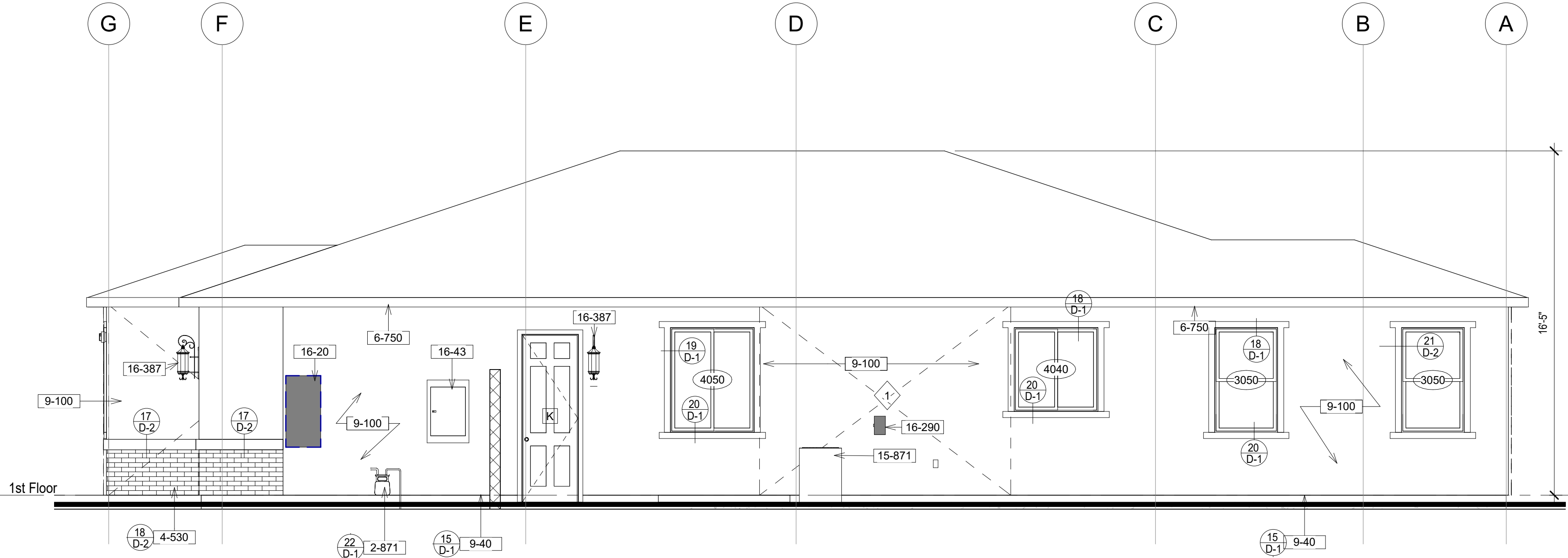
County of Riverside Building & Safety
4080 Lamon St. 9th Floor
Riverside, CA 92502
01/13/2023 1:42:43 PM
APPROVED
REVIEWED BY: MANASHED
Approval of these plans shall not be construed to be a permit for, or an approval of, any violations of any of the provisions of the state or county laws. This set of plans must be kept on the job until completion.



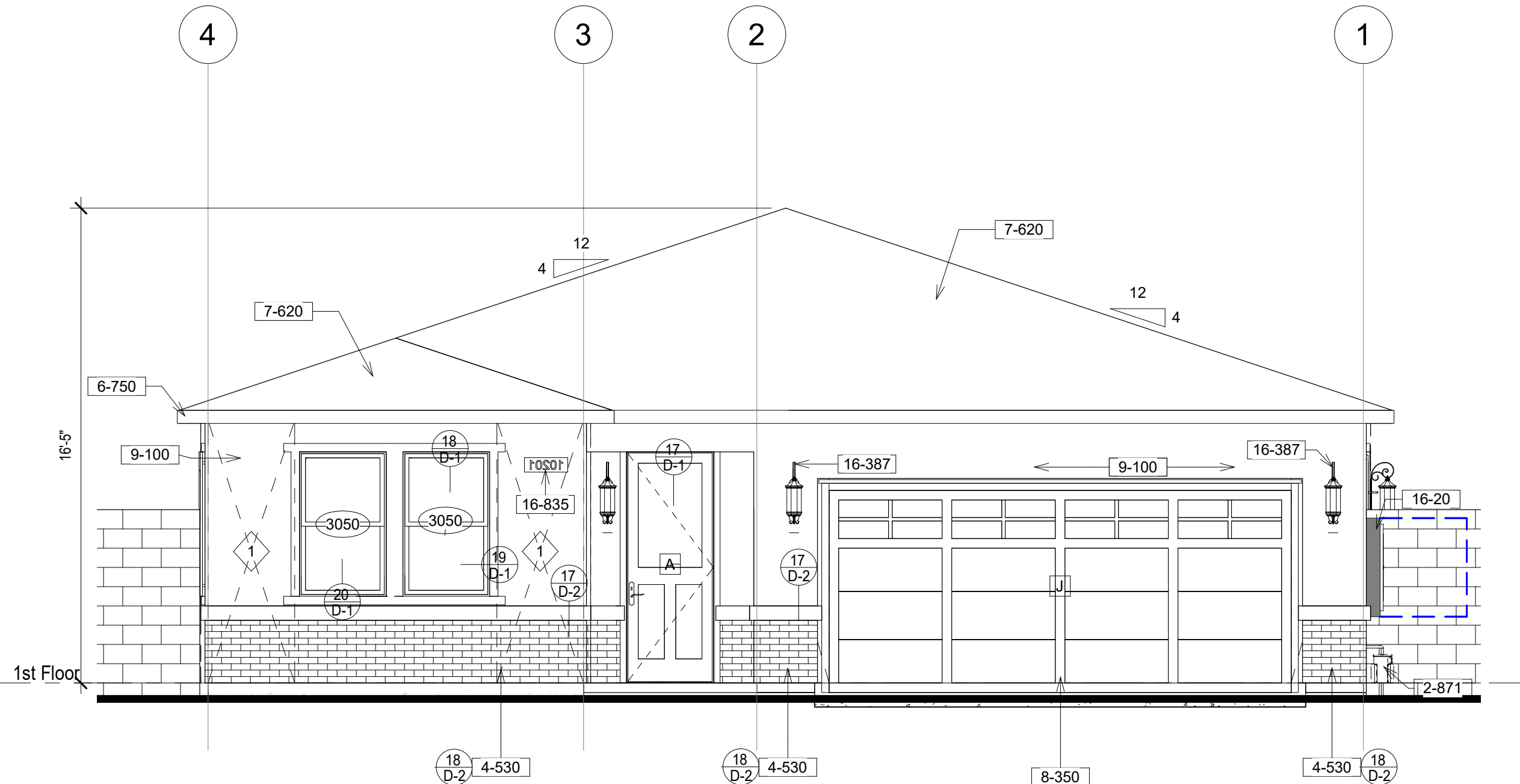
ANDRESEN
ARCHITECTURE
INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Plan Notes

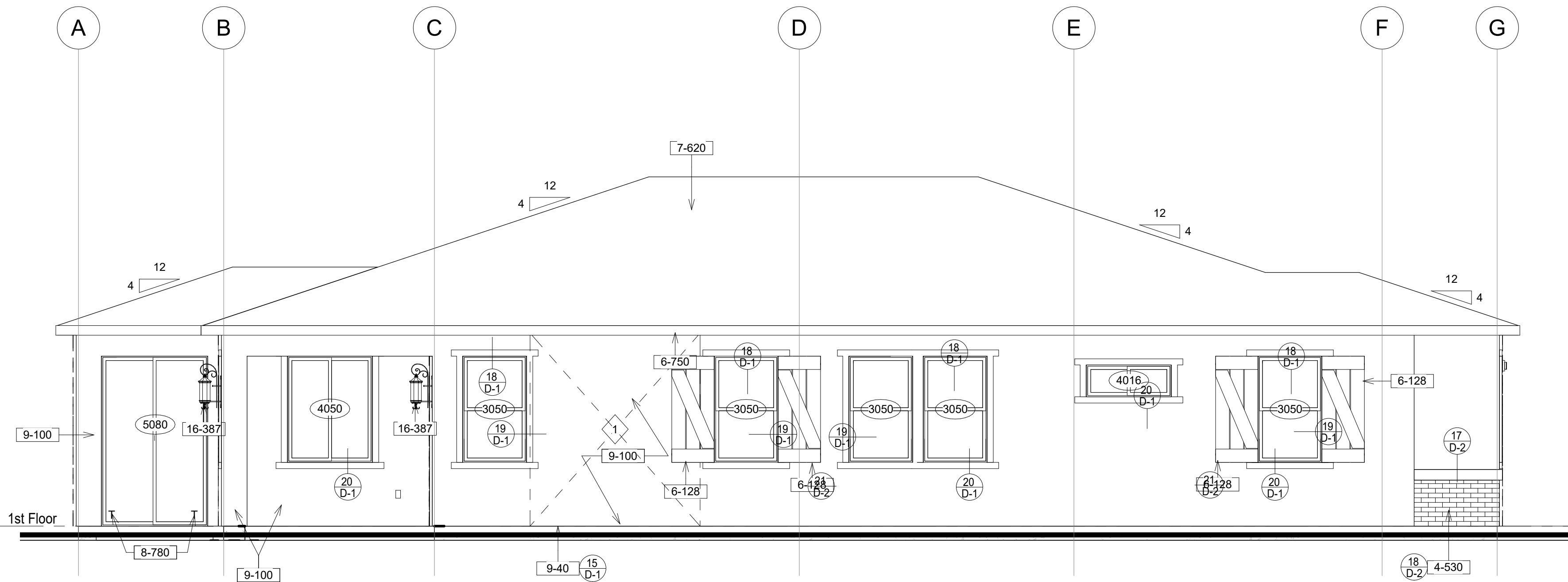
- 2-871NEW GAS METER LOCATION (BY UTILITY). (VERIFY EXACT LOCATION WITH UTILITY COMPANY)
4-530CULTURED STONE VENEER OVER SOLID SHEATHING ("CULTURED STONE" CSV-84 "EARTH BLEND RIVER ROCK") ICC ESR-1364
6-68LINE OF WALL BELOW
6-95OHAGIN CLOAKED VENT TILE (MODEL "S" FOR "S" TILE, MODEL "M" FOR LOW PROFILE, AND MODEL "FLAT" FOR FLAT CONCRETE TILE.) WITH 1/8" GALVANIZED MESH SCREEN AT OPENING (OHAGINS 1 (800) 394-3864)
6-128DECORATIVE REDWOOD SHUTTER PLANT-ON. SAND AND FINISH WITH TWO COATS
6-750100% ACRYLIC LATEX ENAMEL PAINT
7-4852" x 8" RESAWN FASCIA BOARD
7-62024" WIDE GALVANIZED VALLEY METAL (26 GAUGE) WITH 1" HIGH SPLASH DIVERTER RIB AT CENTER FLOW LINE
7-620NEW GLASS 1/4" 25 YEAR COMPOSITION ROOF SHINGLES (ICC ESR-1475) OVER ONE LAYER 15 LB. FELT TO MATCH EXISTING. (ROOF SHALL BE INSTALLED WITH WIND TABS TO RESIST 130 MPH WINDS) (GAF, UL Class A, Listed to ANSI/UL 790)
8-350OVERHEAD SECTIONAL GARAGE DOOR (RATED FOR 80 MPH WIND, EXP. "C")
8-780T INDICATES TEMPERED GLASS
9-40CONTINUOUS GALVANIZED SHEET METAL WEEP SCREED
9-1007/8" EXTERIOR CEMENT PLASTER WITH PAPER-BACKED WOVEN WIRE FABRIC LATH (3 COATS MINIMUM). PROVIDE TWO LAYERS OF GRADE "D" PAPER OVER ALL PLYWOOD SHEAR PANEL (USE HIGH RIB LATH AT HORIZONTAL APPLICATIONS)
15-871CONDENSING UNIT. PROVIDE 3-1/2" THICK POLYETHYLENE PAD EXTENDED 3" MINIMUM ABOVE GROUND
16-20200 AMP RECESSED MAIN PANEL (UNDERGROUND FEED WITH TWO #30 AWG & ONE #2 GROUND) (VERIFY EXACT LOCATION WITH UTILITY COMPANY) (PROVIDE GAS AND WATER BONDING TO SERVICE) PROVIDE 3'-0" DEEP BY 2'-6" WIDE MINIMUM CLEARANCE IN FRONT OF PANEL PER ARTICLE 110-26a
16-43PROPOSED LOCATION FOR INVERTER AND METERING EQUIPMENT FOR SOLAR PANELS PER ENERGY CODE, SECTION 110.10
16-49PV SYSTEM WITH STANDARD DESIGN PV CAPACITY PER TITLE 24 (AREA SHALL BE COMPRISED OF AREAS THAT HAVE NO DIMENSION LESS THAN FIVE FEET AND ARE NO LESS THAN 80 SQ. FT. EACH) PER ENERGY CODE, SECTION 110.100. SOLAR PANELS CONTRACTOR TO VERIFY BEST DIRECTION TO FACE THE PANELS AT TIME OF INSTALLATION.
16-290220 V. DISCONNECT SWITCH (VERIFY CONDUCTOR SIZE AND FUSING WITH LOCAL CODES)
16-387SURFACE MOUNTED ADJUSTABLE FLOOD LIGHTS (+84" UON) WITH MOTION DETECTOR ILLUMINATED ADDRESS LIGHT AT +84" ABOVE FLOOR LINE (UON) PER CITY STANDARD WITH 4" HIGH MINIMUM HEIGHT NUMBERS ON CONTRASTING BACKGROUND AND ILLUMINATED AT ALL HOURS OF DARKNESS
16-835



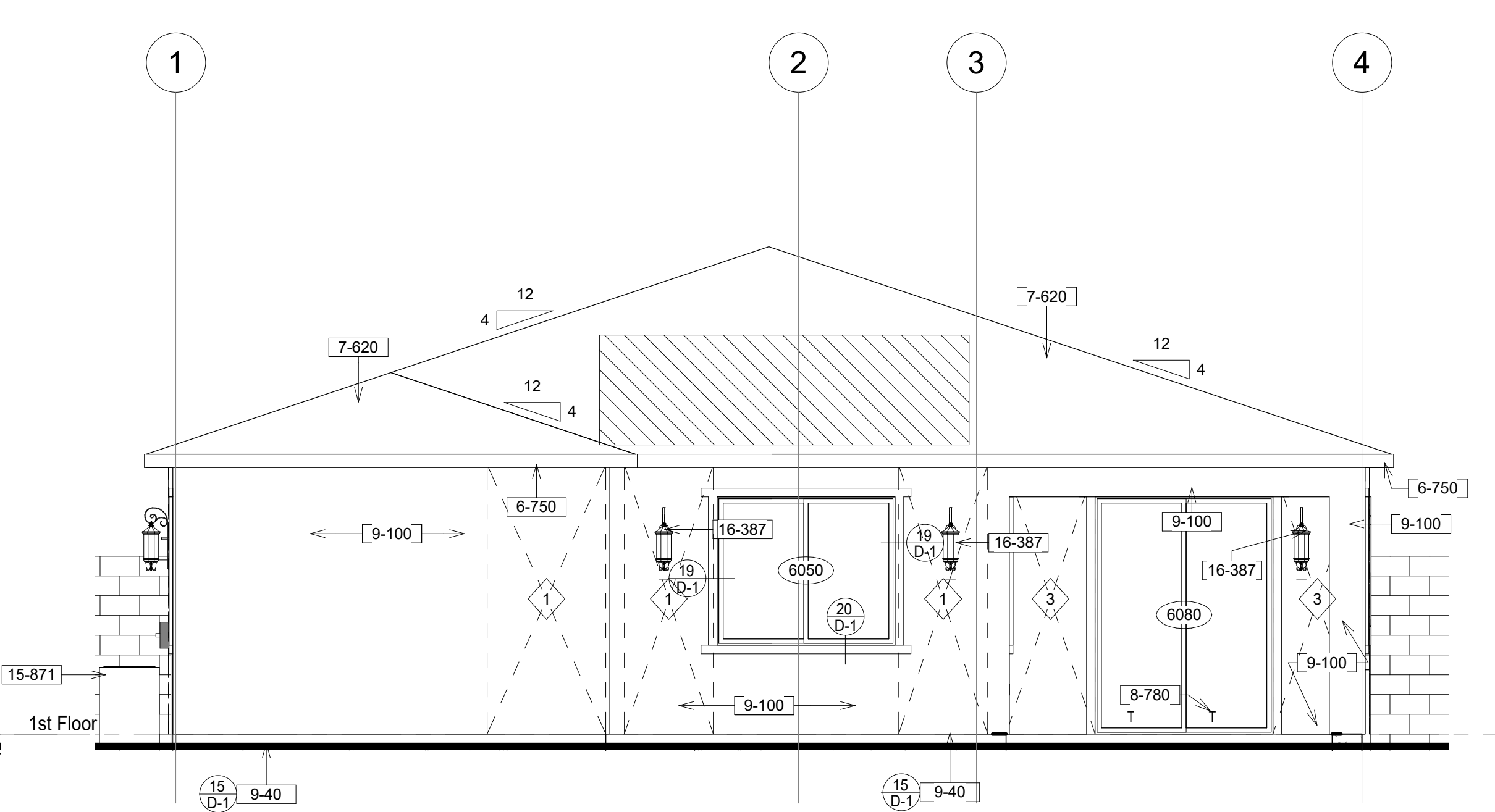
Left Elevation (West)
1/4" = 1'-0"



Front Elevation (South)
1/4" = 1'-0"



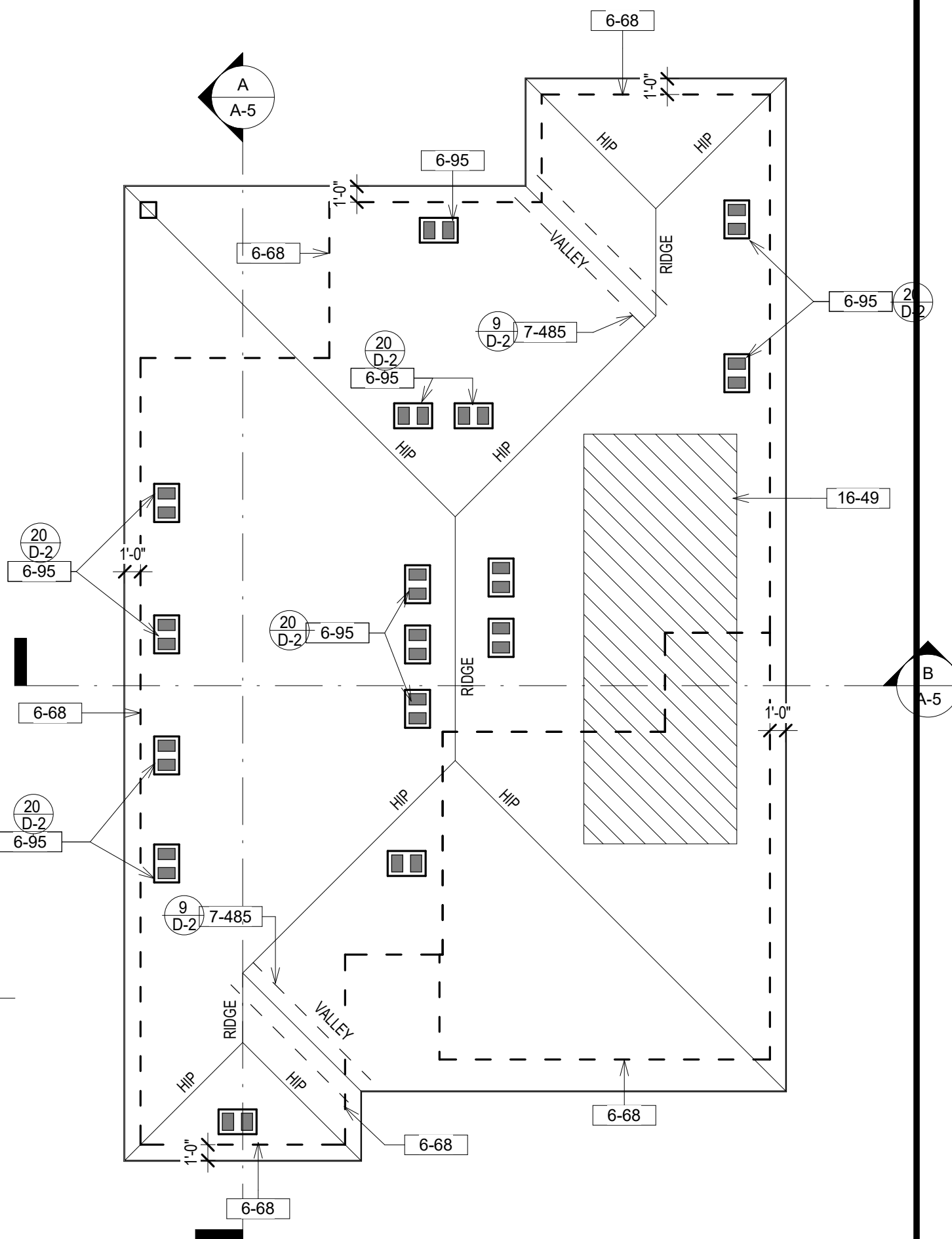
Right Elevation (East)
1/4" = 1'-0"



Rear Elevation (North)
1/4" = 1'-0"

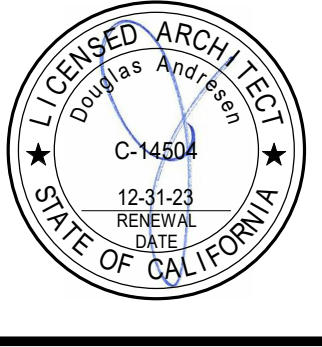
Attic Ventilation Summary

ATTIC AREA : 1,713 SQ. FT.
TOTAL VENTILATED ATTIC AREA = 1,713 SQ. FT. / 300 = 5.71 SQ. FT.
SUB-TOTAL VENTILATION REQUIRED = 822.24 SQ. IN.
100,000 BTUH INPUT ATTIC FAU (1 SQ. IN PER 2,000 BTUH x 2 (HIGH & LOW) x 2 (50% AREA LOST DUE TO MESH)) = 200.00 SQ. IN
TOTAL VENTILATION REQUIRED = 1,022.24 SQ. IN
(8) OHAGIN CLOAKED VENTS (SHINGLES) AT 72 SQ. IN. EACH = 576.00 SQ. IN.
(8) OHAGIN CLOAKED VENTS (SHINGLES) AT 72 SQ. IN. EACH = 576.00 SQ. IN.
TOTAL VENTILATION PROVIDED = 1,152.00 SQ. IN.



Roof Plan
1/8" = 1'-0"

Proposed Single Family Residence For:
Abel & Elizabeth Ciurur
13063 Via Alia, Riverside, CA 92503
2 Nov. 2021
21-4294



Elevations & Roof Plan
A-6

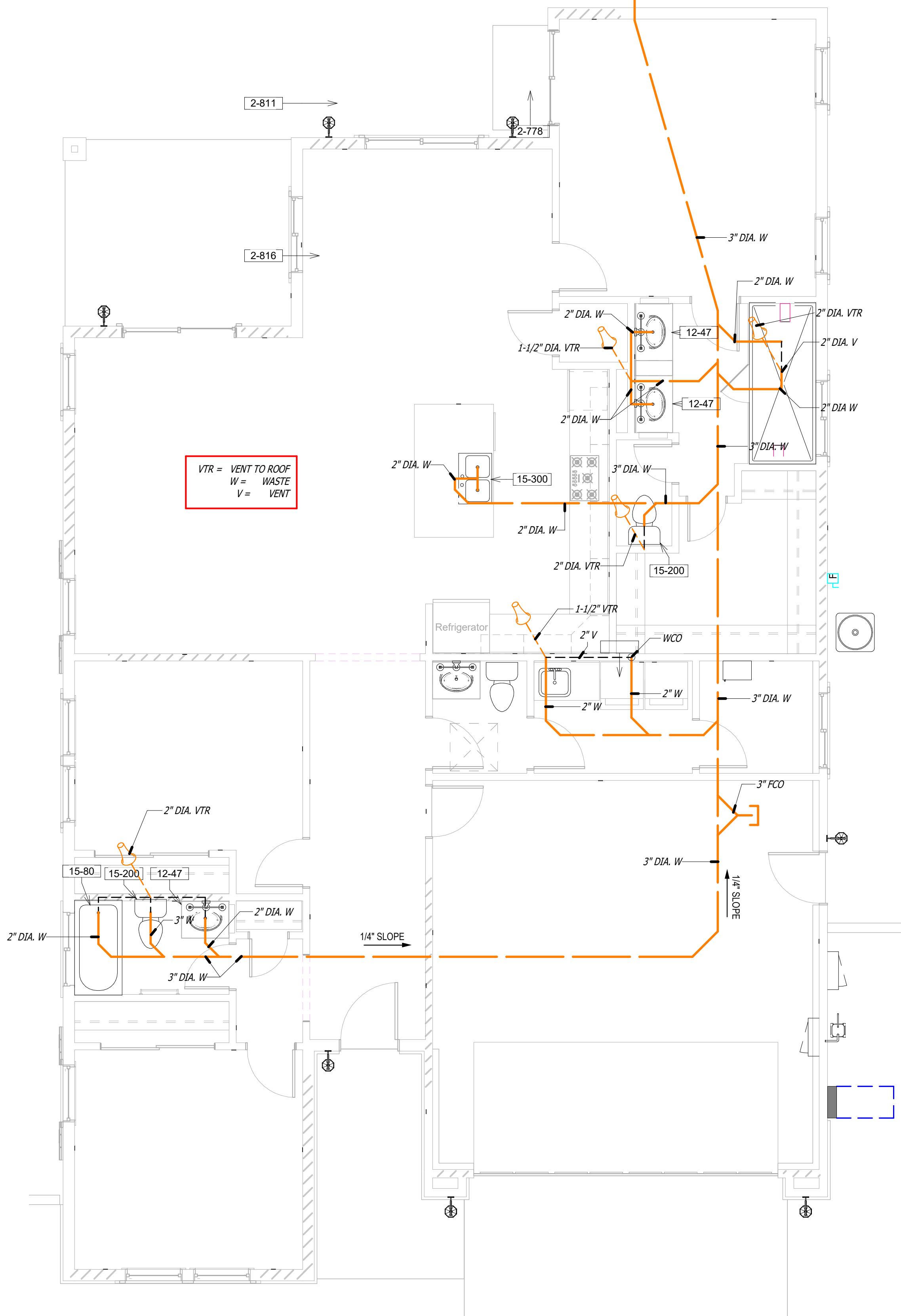
PIPE MATERIAL SCHEDULE					
SERVICE	PIPE MATERIAL & WEIGHT	TYPE OF JOINTS	PRESSURE FITTING MATERIAL	SHUT-OFF RATINGS PSI - SWP	VALVE
COLD WATER ABV. GROUND	COPPER L TUBE	SOLDERED	CAST BRONZE/ WROUGHT COPPER	125	BALL GATE CHECK
COLD WATER BELOW GROUND TO 5' OUTSIDE BUILDING	COPPER K TUBE	BRAZED	CAST BRONZE/ WROUGHT COPPER	125	BALL GATE
COLD WATER BELOW GROUND BEYOND 5'-0"	SCHEDULE 80 PVC	SOLVENT-WELD	PVC	125	GATE
HOT WATER ABV. GROUND	COPPER L TUBE	SOLDERED	CAST BRONZE/ WROUGHT COPPER	125	BALL CHECK
FUEL GAS	STEEL 40, BLACK	SCREWED WELDED	MALL. IRON STEEL WELD	150	SQR HEAD COCK
FUEL GAS	POLYETHYLENE PIPING, STAINLESS STEEL TUBING	PER MANF.	STAINLESS STEEL TUBING	PER MANF.	PER MANF.
VENT	NO-HUB CAST IRON	NO-HUB	N/A	N/A	N/A
WASTE & SOIL DRAINS BELOW GRADE	SCHEDULE 40 ABS	SALVIENT-WELD	ABS	N/A	N/A
WASTE & SOIL DRAINS ABOVE GRADE	Copper L Tube	Soldered	Bronze	125	N/A
	NO-HUB CAST IRON	NO-HUB	N/A	N/A	N/A
CONDENSATE	Schedule 40 ABS	Solvent-Weld	ABS	N/A	N/A
	Copper M Tube	SOLDERED	BRONZE	125	N/A
MEDICAL GAS AND AIR SYSTEMS	COPPER K TUBE	BRAZED	CAST BRONZE/ WROUGHT COPPER	125	BALL

PLUMBING PIPE INSULATION SCHEDULE					
SERVICE	TEMPERATURE RANGE (F)	PIPE SIZE (IN. DIA.)			REQUIRED INSULATION THICKNESS (IN.)
		RUNOUTS UP TO 2	1 AND LESS THRU 2	1.25 THRU 4	
DOMESTIC HOT WATER RECIRCULATING LOOPS	ABOVE 105°	0.5	1.0	1.0	1.5
FIRST 8 FEET OF PIPING FROM STRAGE & ELECTRIC TRACE TAPE SYSTEMS (NON-RECIRCULATING)	ABOVE 105°	0.5	1.0	1.0	1.5

DRAINAGE FIXTURE UNIT VALUES (DFU)

APPLIANCE / FIXTURE	UNIT	TOTAL
BATH SHOWER	2.0 (3) = 6.0	
CLOTHES WASHER	3.0 (1) = 3.0	
LAVATORY	1.0 (5) = 5.0	
KITC. SINK	2.0 (1) = 2.0	
WATER CLOSET	3.0 (2) = 6.0	
TOTAL DFU		22.0

3" DIA. WASTE OK! PER TABLE 703.2



Plumbing - Sewer Plan

1/4" = 1'-0"



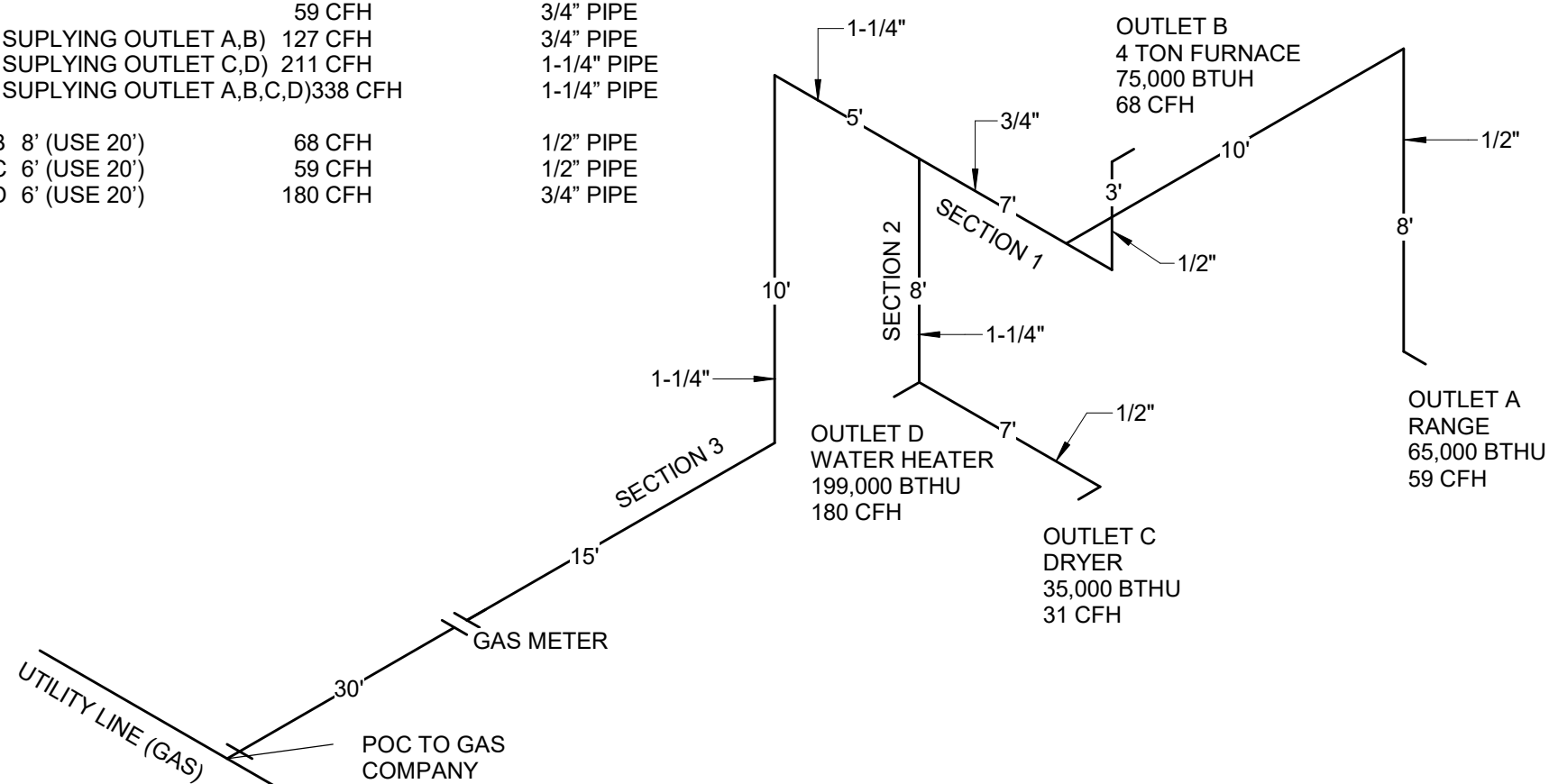
CHECK GAS SUPPLY LINES FROM GAS METER:

GAS OVEN	65,000 BTUH / 1,100 =	59 CFH	OUTLET A
FURNACE	75,000 BTUH / 1,100 =	68 CFH	OUTLET B
DRYER	35,000 BTUH / 1,100 =	31 CFH	OUTLET C
WATER HTR.	199,000 BTUH / 1,100 =	180 CFH	OUTLET D

TOTAL LENGTH OF PIPE TO THE MOST REMOTE OUTLET=95' (USE 100'-TABLE 1215.2(1))

OUTLET A	59 CFH
SECTION 1 (FROM GAS MTR. SUPPLYING OUTLET A,B)	127 CFH
SECTION 2 (FROM GAS MTR. SUPPLYING OUTLET C,D)	211 CFH
SECTION 3 (FROM GAS MTR. SUPPLYING OUTLET A,B,C,D)	338 CFH

TOTAL LENGTH TO OUTLET B	8' (USE 20')
TOTAL LENGTH TO OUTLET C	8' (USE 20')
TOTAL LENGTH TO OUTLET D	8' (USE 20')



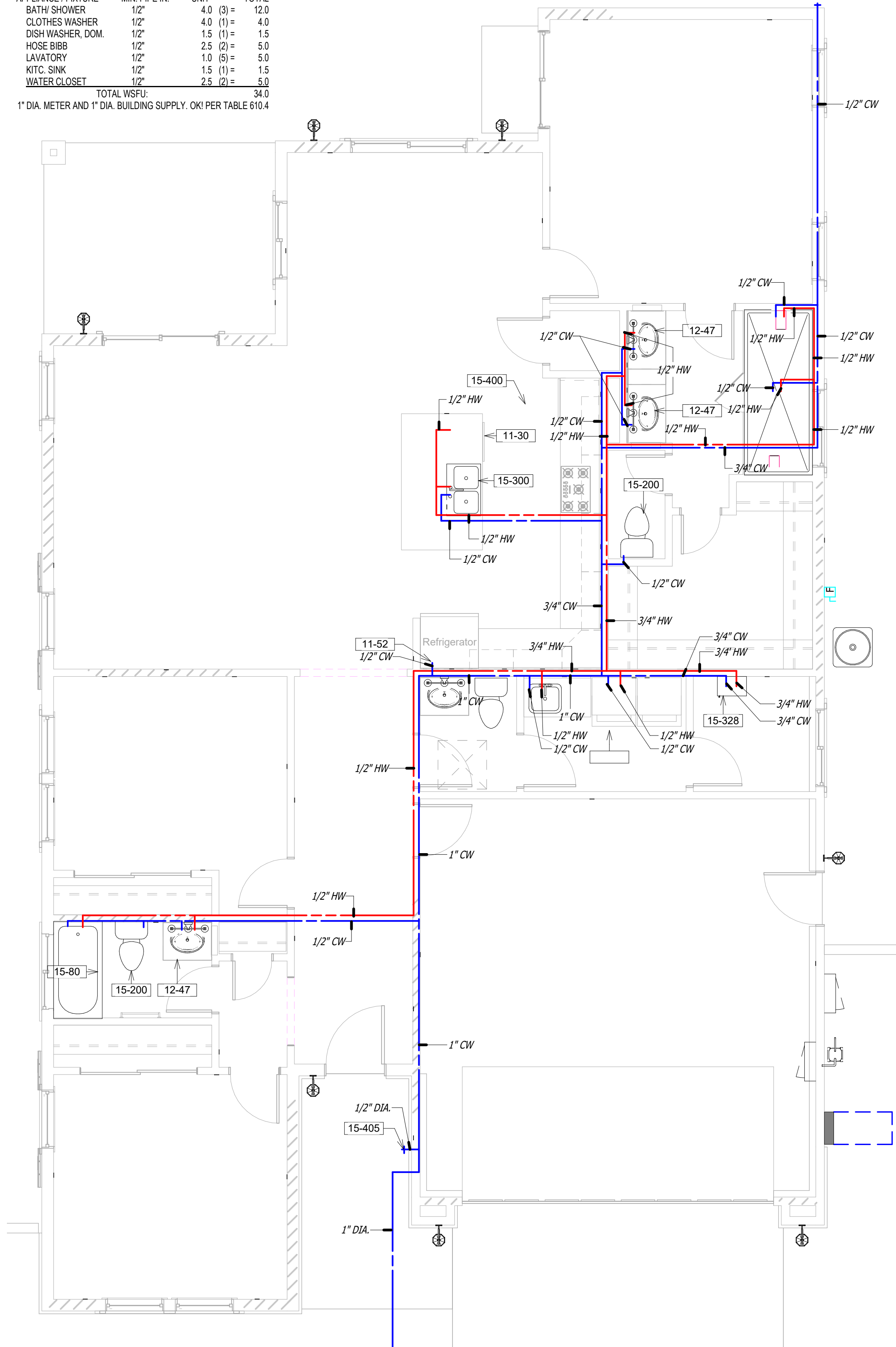
Gas Isometric

1/4" = 1'-0"

WATER SUPPLY FIXTURE UNITS (WSFU)

APPLIANCE / FIXTURE	MIN. PIPE IN.	UNIT	TOTAL
BATH SHOWER	1/2"	4.0 (3) =	12.0
CLOTHES WASHER	1/2"	4.0 (1) =	4.0
DISH WASHER, DOM.	1/2"	1.5 (1) =	1.5
HOSE BIBB	1/2"	2.5 (2) =	5.0
LAVATORY	1/2"	1.0 (5) =	5.0
KITC. SINK	1/2"	1.5 (1) =	1.5
WATER CLOSET	1/2"	2.5 (2) =	5.0
TOTAL WSFU			34.0

1" DIA. METER AND 1" DIA. BUILDING SUPPLY. OK! PER TABLE 610.4



Plumbing - Hot & Cold Plan

1/4" = 1'-0"



17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Plan Notes

- 2-778 6'-0" DIAMETER x 25'-0" DEEP SEEPAGE PIT PER COUNTY STANDARDS
- 2-811 DISTRIBUTION BOX
- 2-816 NEW 1,200 GALLON SEPTIC TANK AND 5' DIA. X 20'-0" DEEP SEEPAGE PIT
- 11-30 DISHWASHER SPACE
- 11-52 REFRIGERATOR SPACE (PROVIDE RECESSED SHUT-OFF IN PLASTIC BOX FOR ICEMAKER)
- 12-47 BASE CABINET WITH GRANITE TOP AND 6" SPLASH WITH UNDERMOUNT LAVATORY
- 15-80 60" x 32" x 72" HIGH FIBERGLASS COMBINATION TUB/SHOWER UNIT. NO SLIP JOINT CONNECTIONS ARE PERMITTED IN WASTE LINE. SET SHOWER HEAD IN WALL AT +76" ABOVE FLOOR WITH METAL ESCUTCHEON. PROVIDE SHOWER CURTAIN ROD. SHOWERS & TUB/SHOWERS SHALL BE PROVIDED WITH INDIVIDUAL CONTROL VALVES OF THE PRESSURE BALANCE OR THERMOSTATIC MIXING VALVE TYPE PER SEC. 420.0.2000 UPC.
- 15-200 TANK-TYPE WATER CLOSET (1.28 GALLONS PER FLUSH MAXIMUM)
- 15-300 33" x 22" DOUBLE BOWL SELF-RIMMING ENAMELED STEEL KITCHEN SINK WITH 1/2 HP GARBAGE DISPOSER
- 15-328 RESIDENTIAL TANKLESS GAS-FIRED HOT WATER FIXTURE ON WALL WITH 3/4" GAS AND WATER CONNECTION AND 4" DIAMETER "B" VENT (SEE MECHANICAL SYSTEM NOTES FOR MANUFACTURER AND MODEL NUMBER). VERIFY REQUIRED INPUT BTU RATE WITH OWNER.
- 15-400 HOSE BIB WITH BACKFLOW PREVENTER
- 15-405 HOSE BIB AND MAIN SHUT-OFF VALVE WITH PRESSURE REGULATOR AND ANTI-SIPHON VALVE

Water Notes

- "WATER PIPE AND FITTINGS WITH A LEAD CONTENT WHICH EXCEEDS 8% SHALL BE PROHIBITED IN SYSTEMS CONVEYING POTABLE WATER
- ALL FIXTURES, EQUIPMENT, PIPING, AND MATERIALS SHALL BE LISTED
- ALL PLUMBING FIXTURES SHALL MEET THE FLOW REQUIREMENTS SPECIFIED IN THE CALIFORNIA GREEN BUILDING CODE
- THE FLOW RATES FOR ALL PLUMBING FIXTURES SHALL COMPLY WITH THE MAXIMUM FLOW RATES SPECIFIED IN SECTION 4.303.1

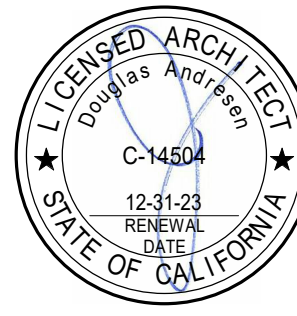
Proposed Single Family Residence For:

Abel & Elizabeth Ciurur

13063 Via Alia, Riverside, CA 92503

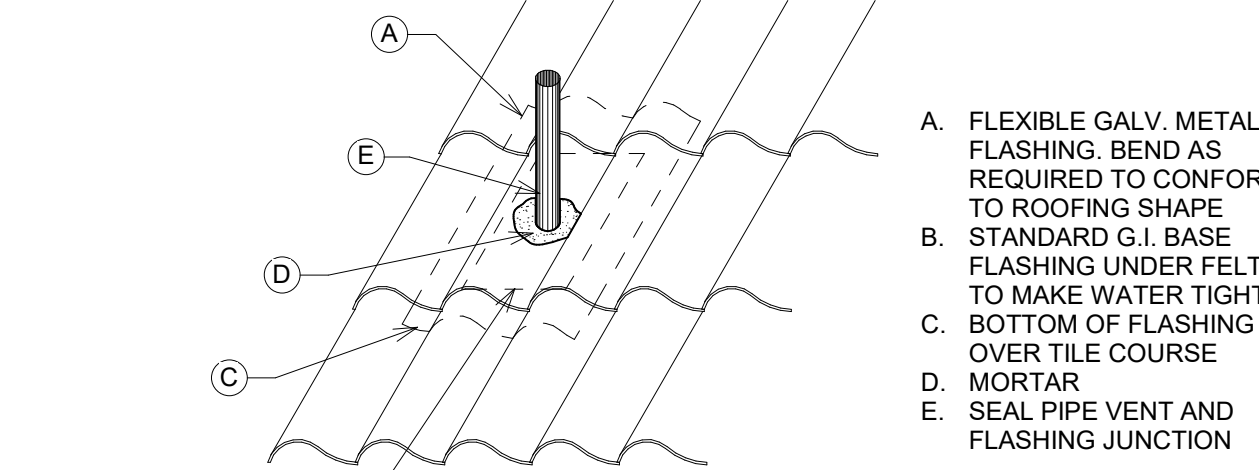
2 Nov. 2021

21-4294

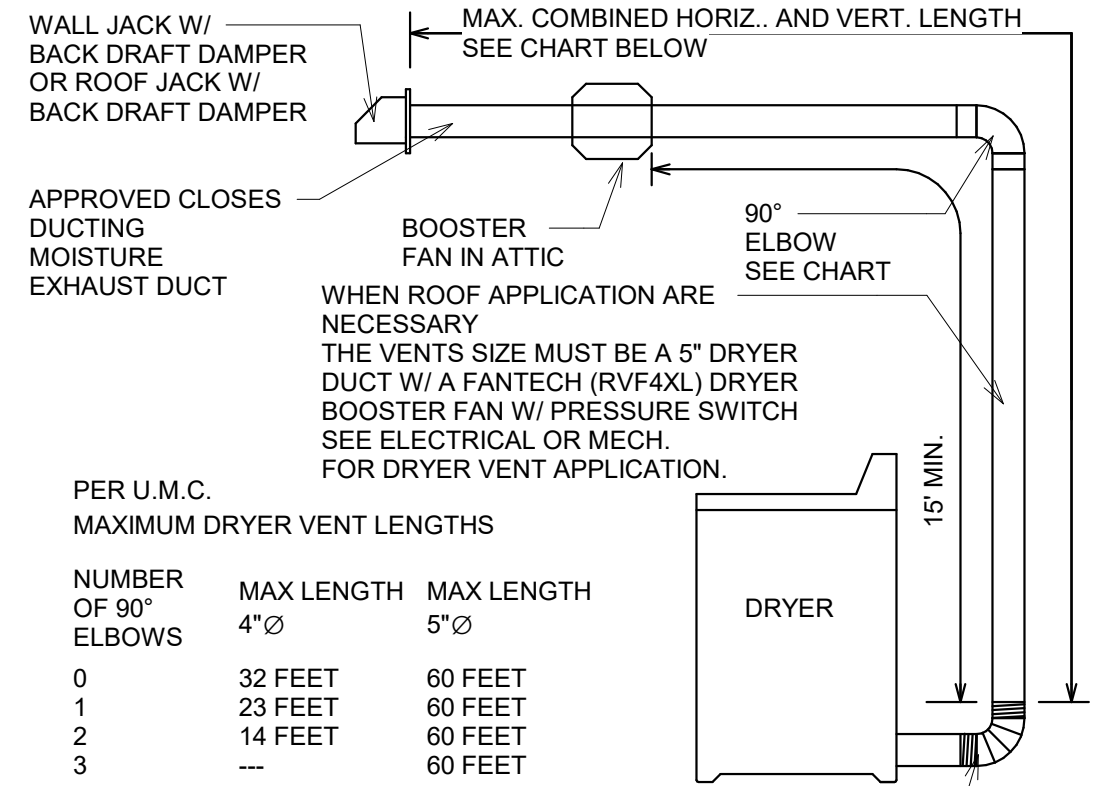


Plumbing Plans

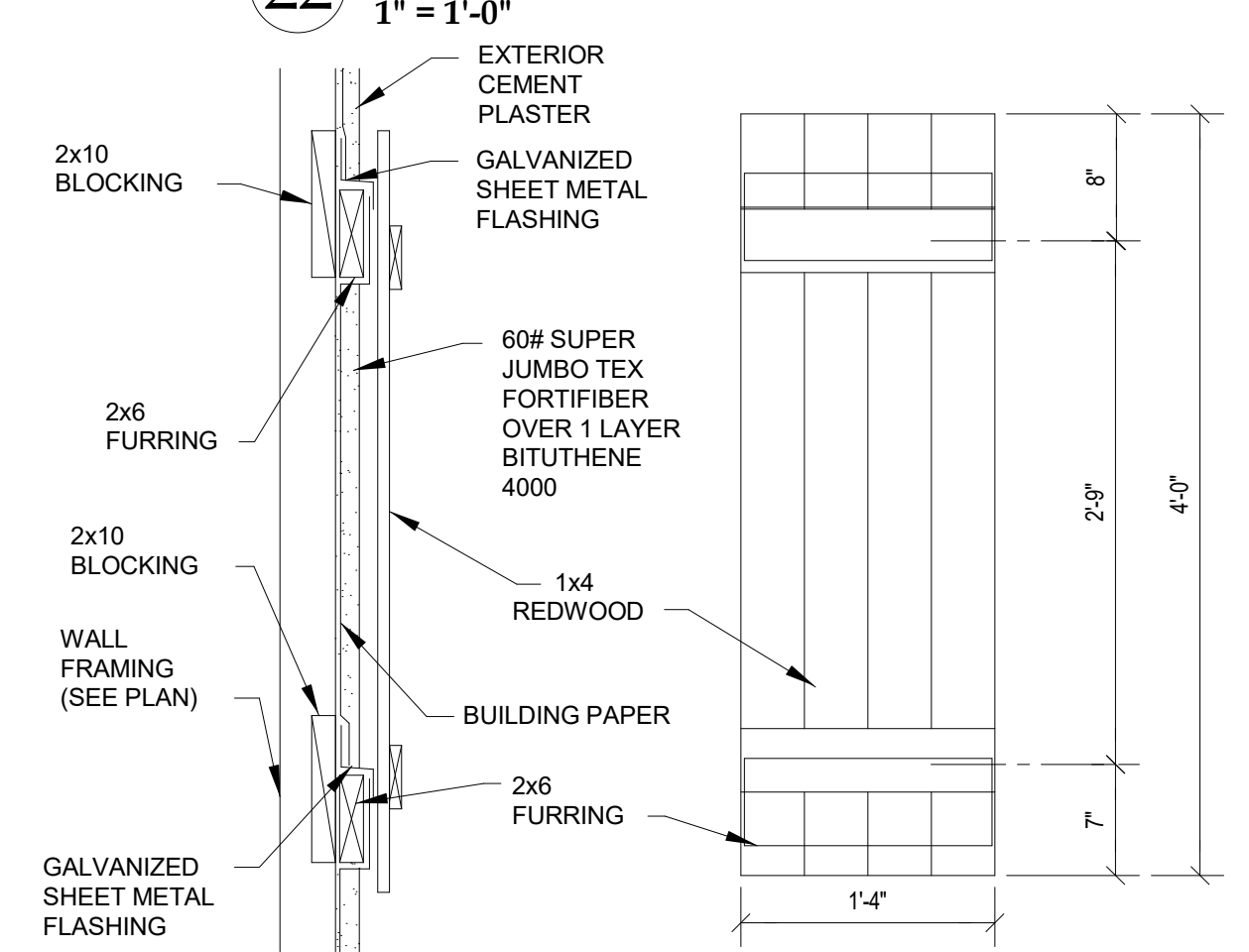
A-8



23 Plumbing Vent
1/4" = 1'-0"



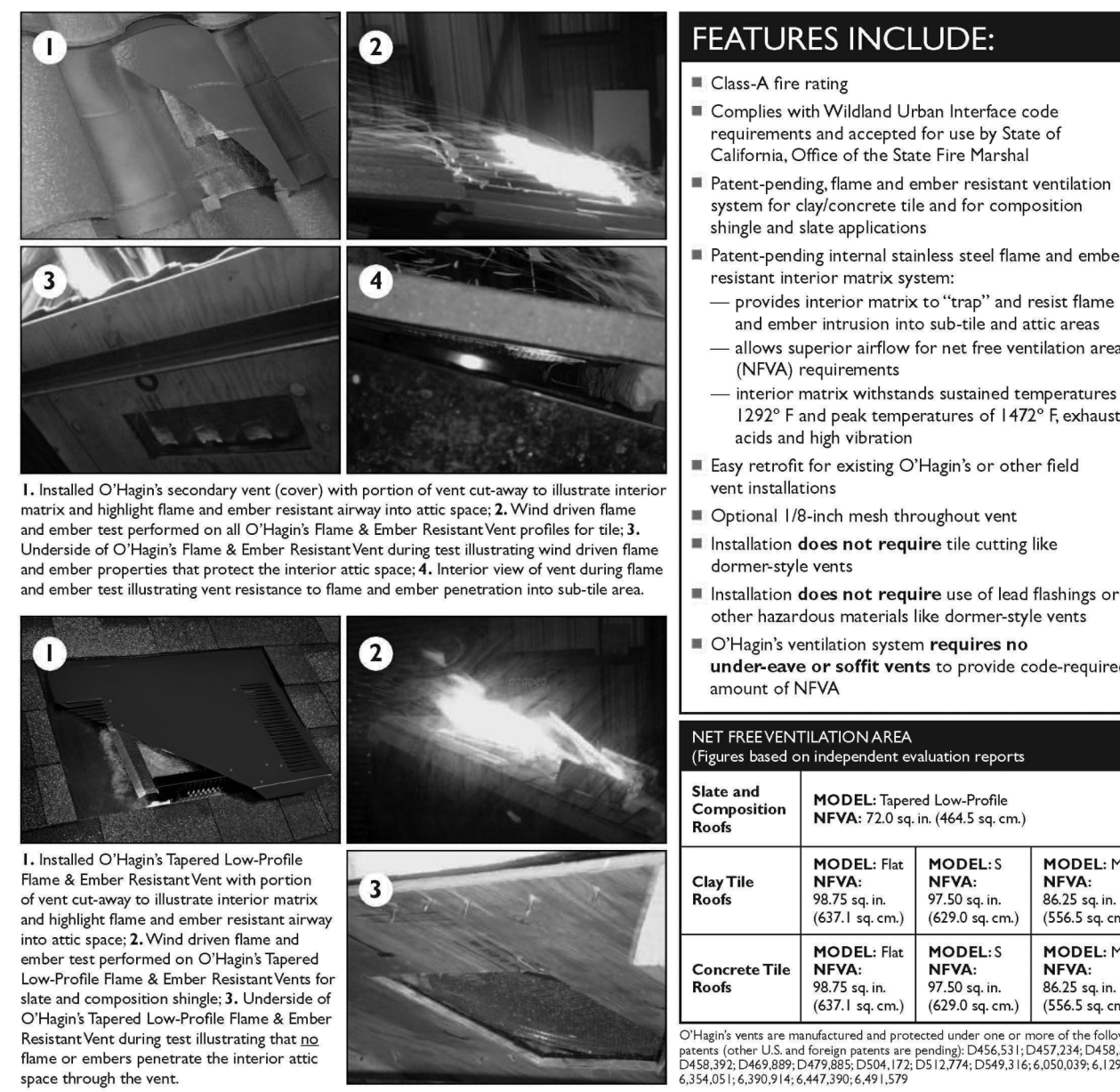
22 Dryer Detail
1" = 1'-0"



21 Wood Shutter
1" = 1'-0"

FIRE & ICE® - Flame & Ember Resistant Attic Vents

O'Hagin's Inc. industry-leading technical design team has developed a Class-A rated Flame & Ember Resistant Vent to meet the requirements of 2007 California Building Code Chapters 15 and 24 for resistance of flame and ember incursion. This Flame & Ember Resistant Vent retains all the unique features, materials and quality construction of our standard line of vents for clay and concrete roof tiles, as well as for composition shingle and slate - but with the added optional feature of a patent pending stainless steel flame and ember resistant interior matrix design. In addition to following all Installation Instructions and Installation Bulletins for O'Hagin's patent pending Flame & Ember Resistant Vents, O'Hagin's recommends using additional best practices in building design and construction as set forth by local ordinance, code and/or wildfire prevention plans. There are many causes of structural damage due to wildfire. O'Hagin's, Inc. does not guarantee, nor warrant that its products will prevent damage from wildfire.



Item and Component	Model: Tapered Low-Profile NPVA: 72 sq. in. (645 sq. cm.)	Model: L NPVA: 60 sq. in. (526 sq. cm.)	Model: M NPVA: 48 sq. in. (418 sq. cm.)
Clay Tile Roof	Model: Flat NPVA: 80 sq. in. (697 sq. cm.)	Model: L NPVA: 68 sq. in. (590 sq. cm.)	Model: M NPVA: 56 sq. in. (483 sq. cm.)
Concrete Tile Roof	Model: Flat NPVA: 80 sq. in. (697 sq. cm.)	Model: L NPVA: 68 sq. in. (590 sq. cm.)	Model: M NPVA: 56 sq. in. (483 sq. cm.)

O'Hagin's vents are manufactured and processed under one or more of the following patents: US 6,108,124; US 6,108,125; US 6,108,126; US 6,108,127; US 6,108,128; US 6,108,129; US 6,108,130; US 6,108,131; US 6,108,132; US 6,108,133; US 6,108,134; US 6,108,135; US 6,108,136; US 6,108,137; US 6,108,138; US 6,108,139; US 6,108,140; US 6,108,141; US 6,108,142; US 6,108,143; US 6,108,144; US 6,108,145; US 6,108,146; US 6,108,147; US 6,108,148; US 6,108,149; US 6,108,150; US 6,108,151; US 6,108,152; US 6,108,153; US 6,108,154; US 6,108,155; US 6,108,156; US 6,108,157; US 6,108,158; US 6,108,159; US 6,108,160; US 6,108,161; US 6,108,162; US 6,108,163; US 6,108,164; US 6,108,165; US 6,108,166; US 6,108,167; US 6,108,168; US 6,108,169; US 6,108,170; US 6,108,171; US 6,108,172; US 6,108,173; US 6,108,174; US 6,108,175; US 6,108,176; US 6,108,177; US 6,108,178; US 6,108,179; US 6,108,180; US 6,108,181; US 6,108,182; US 6,108,183; US 6,108,184; US 6,108,185; US 6,108,186; US 6,108,187; US 6,108,188; 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Division 1
General Requirements

- Mark performed shall comply with the following:**
1. Compliance. These General Notes apply unless otherwise stated on plans or specifications.
 2. Codes. California modified version (2014 Edition) of the International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, International Fire Code, National Electrical Code, 2017 Edition of the California Energy Standards and all other applicable laws and regulations governing the site of the work.
 3. ASTM. Standard Specifications (in case of conflict, the more expensive reference shall govern).
 4. Quality of Work. All work needs to be performed by qualified and experienced contractors familiar with the type of work, quality of materials. All materials furnished shall be new and of first quality. No used materials or seconds will be permitted. "Or equal". The Contractor shall submit for the Architect or Builder's acceptance all materials or equipment which is considered "or equal" to that specified.
 5. On-Site Verification of all dimensions and conditions shall be the responsibility of the Contractor and the Sub-Contractors. Noted dimensions take precedent over scale. Each Contractor or Sub-Contractor shall report to Project Superintendent all conditions which prevent the proper execution of their work.
 6. Project Superintendent. The on-site construction superintendent shall provide on site supervision to the extent necessary to assure that the improvements are being constructed in conformance with the construction documents and the performance standards of the industry trades. He/she shall inspect all structural framing members, concrete anchors, tie-downs, flashing framing members, roof materials and underlayment for each building. The inspection is to ensure that all materials and applications meet the manufacturer's specifications and installation guidelines or A.S.T.M. requirements, whichever is more stringent, and to notify the Architect and Owner in sufficient time to prevent any defective material from being incorporated into the work.
 7. Client's Architect and Project Superintendent to be notified immediately by the contractor should any question arise or any discrepancies be found pertaining to the working drawings and/or specifications. The Contractor shall be held responsible for any errors, discrepancies or omissions which the Contractor failed to notify the Architect of before construction or fabrication of the work.
 8. The Builder has requested, contracted with, and is compensating Andresen Architecture, Inc. for the limited services of providing the minimum structural engineering drawing required, when combined with the other Builders consultants drawings, to obtain a building permit for this project. These drawings are not intended to, nor do they detail all conditions, identify all materials, or define or limit the scope of work required to complete the project. The Builder has requested, accepted, and represents that he/she will select all materials and manufactures, quality and select all sub-contractors and installers, direct all ways and means of construction and provide all additional information, above and beyond these drawings, required to complete the project in conformance with all governing agencies and the work will meet or exceed accepted industry standards.
 9. Sub-Contractor shall insure that all work is done in a professional and workmanlike manner by skilled mechanics and shall replace any materials or items damaged by the Contractor's performance and no additional cost to Builder. Sub-Contractors and Suppliers are hereby notified that they are to confer and to cooperate fully with each other during the course of construction to determine the exact extent and overlap of each other's work and to successfully complete the execution of the work. All Sub-Contractors shall use the quality to pass inspections by local authorities, lending institutions, Architect, or Builder. Any one or all of the above mentioned inspectors may inspect workmanship at any time and any corrections needed to enhance the quality of the building will be done immediately. Each Sub-Contractor, unless specifically exempted by his Sub-Contract Agreement, shall be responsible for cleaning up and removing from the job site all trash and debris not left by other Sub-Contractors. Builder will determine how soon after each Sub-Contractor completes each phase of work that trash and debris will be removed from the site. Drawings and Specifications represent the finished structure. All bracing, temporary supports, shoring, etc. is the sole responsibility of the Contractor. Observation visits to the job site by the Architect do not include inspection of construction procedures. The Contractor is solely responsible for all construction methods and for safety conditions of the worksite. These visits shall not be construed as continuous and detailed inspections.
 10. Intent. It is the intent of the construction documents that all work be performed in a sound manner, using the specified project with all materials, assemblies, and systems correctly installed and performing in a manner consistent with the standards of the industry for this type of project. Construction documents include, but are not limited to, working drawings, specifications, structural calculations, state mandated energy calculations and notes, soil report, geology report, acoustical engineer's report, addendum and change orders, and these general notes unless otherwise noted on plans or specifications.
 11. Details. Contractors and Sub-Contractors recognize that the Architect cannot prepare plans and drawings that cover all conceivable construction details or site conditions. Interpretation. Contractor and Sub-Contractor shall inform the Architect of any missing details or corrections which are believed by them to be necessary or appropriate for the proper construction of the project and which would not normally be their responsibility under standard industry practices and techniques.
 12. Terminology, abbreviations, and symbols used on the construction documents are those recognized in the construction industry for the purposes indicated by the context in which used. In the event that industry publications do not adequately define any given term, the definitions found in Webster's Unabridged dictionary or the American language will govern. Refer uncertainties to Architect before proceeding.
 13. Testing & Inspections. Arrange for all testing and inspections required by the construction documents, local building department, health department, and other agencies having jurisdiction over the project.
 14. Manufacturer's name. Products specified on the construction documents by manufacturer's name or other designation are a project requirement, unless specifically noted otherwise. Substitutions are permitted only with prior written approval of the Architect and Owner. Selection of products which comply with requirements including applicable standards is Contractor's option where no product names are indicated by owner or documents. Contractor/Sub-Contractor shall bear all responsibility for products which he/she selects and install. Substitution. No substitutions shall be made without Owner's written authorization. Any substitution shall be made known to Builder and Architect in advance to avoid any delay in the project schedule. The General Contractor and any Sub-Contractors shall not make structural substitutions or changes without prior written authorization from the Structural Engineer and written notification to the Architect.
 15. Conflicts. Where construction documents conflict with codes, the more stringent shall apply.
 16. Changes. No changes are to be made on these plans without the prior knowledge and consent of the Architect whose signature appears herein. Approval by city or county inspector does not constitute authority to deviate from plans or specifications.
 17. Builder's Set. The set of drawings is a "builder set". It is sufficient to obtain a building permit, however, all materials and methods of construction necessary to complete the project are not necessarily described in this "builder set". The implementation of the plans requires a Client/Contractor (General Contractor and Sub-Contractors) thoroughly knowledgeable with the applicable building codes and methods of construction. The plans and general notes delineate and describe only locations, dimensions, types of materials and general methods of assembling or fastening.
 18. Structural Analysis for this project is done per applicable Building Code at the time of design considering standard of care.
 19. Upon Completion of the above by the Architect and prior to the start of construction the Contractor is responsible to check all dimensions, coordinate with the work of architectural, mechanical and other trades to ensure compliance with his/her requirements.
 20. No deviations from structural details shall be made without the written approval of Andresen Architecture, Inc. Approval by the City Inspector does not constitute authority to deviate from plans or specifications. Contractor is to comply with manufacturer's instruction and recommendation to the extent that printed information is more detailed or stringent than requirements contained directly in construction documents.

Division 2
Site/Work

1. All footings shall rest on firm natural soil or approved compacted fill. All filling, backfilling, recompaction, etc. is to be accomplished only under the supervision of the Soils Engineer.
2. No Slope Report (Assumed soil bearing value 1,000 PSF).
3. All finish grade to drain away from the building footings.
4. Terminate Control. Soil shall be treated as per HUD/MPS.
5. Utilities. Contractor is responsible for locating all existing utilities whether shown hereon or not and to protect them from damage. The Contractor shall bear all expenses for repair or replacement necessary in the prosecution of this work.
6. Protection. Protect structures, utilities, sidewalks, pavements, and other facilities in greater care. Barricade, open excavations and provide warning lights. Comply with regulations of authorities having jurisdiction.
7. Retaining Walls. Furnish foundation drainage pipe complete with bends, reducers, adapters, couplings, collars, and joint materials per plans.
8. Backfill. Use evenly graded mixture of gravel or crushed stone, and natural sand with 100% passing 4-1/2" sieve and 0-3/8" passing a No. 50 sieve for filtering material.
9. Grading. Grade ground surface to conform to required contours and to provide surface drainage minimum 1/8" away from building for a minimum of 10 feet.
10. Pipe Backfill. Place supporting layer of filtering material over compacted subgrade with drainage pipe is to be laid to a compacted depth of not less than 4" after testing drain lines, place additional filtering material to a 4" depth around sides and top of drain. Lay drain pipe sloping away from building material. Provide full bearing for pipe section throughout its length to true grades and alignment.
11. Test or check, lines before backfilling to assure free flow. Remove obstructions, replace damaged components and retest system until satisfactory.
12. Backfill shall not be placed until supporting foundations, walls, and/or slabs have attained sufficient strength to support lateral soil pressures.

Division 3
Concrete

- General:**
1. All reinforced concrete materials and construction shall conform to Building Code, Chapter 14.
 2. Comply with the following:
 - A. ACI 308 "Specification of Structural Concrete Buildings".
 - B. ACI 318 "Building Code Requirements for Reinforced Concrete".
 3. Mix designs may be adjusted when material characteristics, job conditions, weather, test results and other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Architect.
 4. Minimum design parameters. Use design mix that will provide a durable concrete surface free of pocks, spalls and other defects resulting from chemical incompatibility of constituent materials or adjacent conditions. Maximum 1-1/2 gallons of water per sack of cement. Maximum slump 4".
- Materials:**
1. Cement shall conform to Section 1403.2 of Building Code and shall be Portland Cement conforming to ASTM C-150, Type I or II, low alkali. Use Type V cement for soil containing a sulfate concentration of 0.28 or more (min. 2000 psi, 38 days).
 2. Aggregates shall conform to Building Code 1403A.2 and shall be natural sand and rock conforming to ASTM C39, except that aggregates of proven suitability may be used when acceptable to Architect.
 3. Water shall be drinkable.
 4. Air-entraining admixture, when required, shall be ASTM C-260.
 5. Underlayment, vapor barrier, plastic shall be placed over subgrade under all house slabs with sand fill above and below (see plans). Install vapor barrier with 12" minimum laps. Do not puncture with staples or screwdrivers. Use blocking to support and level screeds and remove all such blocking after screeding.
 6. Formwork shall be of materials with sufficient stability to withstand pressure of placed concrete without deflection or creep. Special Exposure: Refer to Table 1404A.2.2 of Building Code for special exposure condition as required by soils engineer.

Reinforcing Steel

1. All reinforcing shall be ASTM A-615-40 for #4 bars and smaller. All reinforcing shall be ASTM A-615-60 for #5 bars and larger. Welded wire fabric is to be ASTM-165, lap 1-1/2 spaces, 9" min. for structural slabs, all reinforcing #5 and larger to be ASTM A-615-60. Unless otherwise noted or shown on plans, the minimum clear distance or reinforcement to face of concrete slab shall be:
Slab on grade 2" (center of slab)
Concrete against wall 2"
Formed 2"
Without Form 3"
Concrete Exposed to weather 3"/2"
2. All bars shall be deformed as per ASTM A-305.
3. All bars shall be clean of loose flaky rust, grease, or other materials likely to impair bond.
4. All bars shall be made cold for #6 and smaller.
5. Splicing of bars shall have lapping of 30 dia. or 2'-0" min. in all continuous reinforcement of footings and concrete walls, except as noted on plans. Maximum reinforcement shall have lappings of 40 dia. or 2'-0" whichever is greater.
6. All reinforcing bars shall be accurately and securely placed not before pouring concrete.
7. Welding and reinforcing steel shall conform to AWS D1.4 using low hydrogen electrodes & A706 rebar.
8. Splices of horizontal rebar in walls and footings shall be staggered 4'-0" min.
9. Details for walls and columns shall be the same size and spacing as the wall/column reinforcing unless noted otherwise.

Concrete

1. Drypack shall be composed of one part Portland cement to not more than three parts sand & shall be non-sink.

Construction

1. Continuous exterior footing shall have 5/8" dia. x min. 12" anchor bolts with 3"x3"x22" plate washer, min. 1" embedment into concrete, at 48" O.C. unless noted otherwise on plans. One anchor bolt should be located max. 12" away from the end of the wall plates, min. (2) A/B's per all plate per shear panel.
2. Sill fastening.
All Continuous Footings: Embed 5/8" diameter x 12" anchor bolts 1" into concrete per shear panel.
Monolithic Pour System: Embed anchor bolts 1" into concrete.
Two-Four System: Embed anchor bolts 4" past cold joint into footing. Use 5/8" diameter x 14" long anchor bolts at all 3x all plate locations.
3. All interior non-shear walls shall have HLTI X-DNI (with a minimum penetration of 1-1/4" into slab) at 24" O.C. unless noted otherwise to be installed in accordance with I.C.C. ESR-1669 March 2014. Actual slab thickness to be minimum 4".

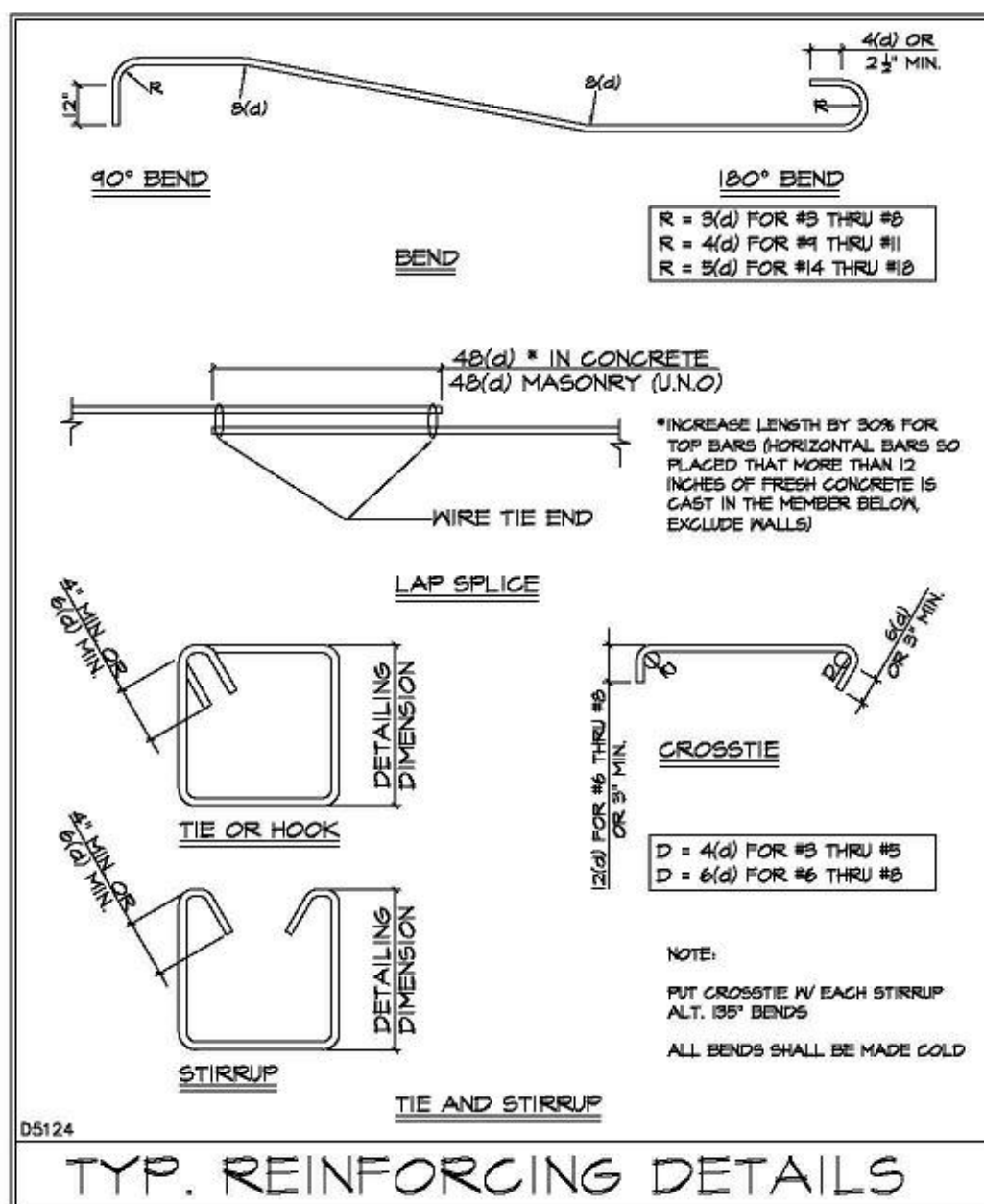
Strength

1. Concrete shall be proportioned to provide a minimum compressive strength, f_c , equal to 3000 psi (after 28 days), unless noted otherwise per Building Code Sections 1805. All reinforcement dowels, holdowns and other inserts shall be secured in position and approved by the local building official prior to the pouring of any concrete.

Execution

1. Position, support, and secure reinforcement against displacement with metal chairs, runways, bolsters, spacers and hangers, as required. Direct wire ties into concrete, not toward exposed concrete surfaces. Maintain minimum clear distance between soil and reinforcing of 3" at base of exterior pile one to be used.
2. Lap reinforcing bars a minimum of 40 bar diameters.
3. Provide construction, isolation, and control joints as required. Locate joints so as to not impair strength and appearance of structure. Place isolation and control joints in slab-on-grade to minimize random cracking.
4. Use I.C.C.-ES approved shop pins with cadmium washers, 3'-0" O.C. max, 6" from corners and splices in interior bearing walls unless otherwise noted. Use same at 4'-0" max. for interior non-bearing walls. Slab to be thickened to 3 times pin penetration for 8" min. width where steel pins are to be used. Verify required thickness prior to placing concrete.
5. Consolidate placed concrete using mechanical vibrating equipment with hand, rodding, and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.
6. Protect concrete from physical damage or reduced strength due to weather extremes, drying moisture, placement and curing:
 - A. In cold weather comply with ACI 306.
 - B. In hot weather comply with ACI 305.

Division 3 (continued)
Concrete



TYP. REINFORCING DETAILS

1. Prior to placing concrete, remove all water, mud, loose earth, and debris from excavations.
2. Foundation (widths and depths), and reinforcing as shown on plans or superseded by any local codes or ordinances which require increases in same.
3. All load-bearing footings shall be on-level, undisturbed soil to be grout under the footing. Grout shall be placed in the footing. Do not place concrete until all reinforcement, conduit, outlet, boxes, anchors, hangers, sleeves, bolts and other embedded materials and items are securely and properly fastened in their proper places and positions. Sub-Contractor shall verify installation of hold-down and anchor bolts, "PA" straps and other anchorage material and items prior to placement of concrete. Hold-downs to be installed in accordance with I.C.C.-ES Report ESR-2604.
4. Pipes may pass through structural steel in sleeves, but shall not be embedded in the concrete. If pipes are embedded in the slab or wall thickness shall not be placed in the structural concrete unless specifically detailed. For residential construction: The Concrete Sub-Contractor shall install a minimum 1/2" diameter plastic pipe under the driveway, located at the street side of the entry walk, for future sprinkler system (verify with Landscape Sub-Contractor). Concrete Sub-Contractor shall also install plastic conduits in for power, telephone, CATV, and irrigation controller. Plastic pipe shall be provided by the Plumbing Contractor and the conduit by the Electrical Contractor. Refer to architectural drawings and details for reveals, areas of textured concrete or special finishes, items required to be cast into the concrete, curbs, and slab depressions.
5. Finish of slabs shall be brotressed smooth and level around all existing pipes, conduits, and miscellaneous run straps providing therefrom.
6. Repairs shall be made promptly by the Concrete Sub-Contractor to remove any anchor bolts or other items protruding from the slab or in or openings and shall patch any surface damaged by the removal thereof.
7. Grout. Mix one part Portland cement, 1/2 hydrated lime, not more than 3 parts sand and not more than 2 parts 3/8" maximum size washed gravel by volume. Grout shall be placed in the footing, strength of 2000 PSI at 28 days of age, aggregates per ASTM C416, Mortar-Mix, Type 5 ASTM C270 and consisting of one part Portland cement, 1/2 hydrated lime, not more than 3 parts sand, all by volume. Type 5 mortar shall have a minimum compressive strength of 1800 PSI at 28 days of age. No fire clay permitted in mortar used for structural units. All materials for mortars shall be measured by volume and cement mixed dry, air added, and then water added to bring to the proper consistency for use. No mortars that have stood for more than one hour shall be used.

Foundation

1. All holdowns and post anchors to be installed according to most current Simpson Strong-Tie specifications and requirements of I.C.C.-ES Report ESR-2604 shall be tied in place prior to foundation inspection.
2. Min. concrete depth to be 8" for receiving STHDs. Verify locations of holdowns and anchor bolts with rough framing to assure prior and accurate installation.
3. Provide 48 x 24" steel at 24 O.C. and 12" from the corner at all concrete stoops and porches.
4. Provide min. 1/4" reinforcing for electrical ground, location to be verified with the electrical contractor.
5. Verify min. foundation depth, width, reinforcing steel, and additional expansive soil requirements with valid soils report and if any more stringent they shall supersede the above minimum specifications.

- See Division 3, Section "Strength" for concrete strength
1. Admixtures in concrete mixture containing calcium chlorides shall not be used.
 2. Footing shall be examined and certified in writing by the project Soil/Geology Engineer prior to inspection and placement of concrete. Concrete shall be to the strength and slump as specified per structural design and consist of Portland cement ASTM C150 Type V per Soils Engineer's recommendations and Building Code Table 1804.4 when concrete is exposed to sulfate reduction solution and aggregates per ASTM C39, water to be clean and potable.
 3. Placement shall be in one continuous operation unless otherwise specified and slab surface shall be cured with Hints compound or equal or other methods in accordance with good construction practices at Contractor's option.
 4. Contractor shall dampen slab underlayment of sand/membrane just prior to concrete placement.
 5. The bottoms of footing excavations shall be level, clean, and free of loose material or water when concrete is placed. Over excavation shall be filled with concrete or properly compacted fill that has been tested and approved by the Soils Engineer. Backfill shall not be placed until supporting foundations, walls, and slabs have attained sufficient strength to support lateral soil pressures.
 6. Floor slab shall be poured level to 1/8" in 10'-0".
 7. Requirements for pre-saturation of sub grade soil and daylight setback of footing from any descending slope shall comply with current soils report.
 8. Finish grade around the perimeter of slab shall be constructed such that rain and irrigation water drained away from the slab.
 9. All site and pad preparation, such as but not limited to shading compacting of the fill, pre-saturation, and concrete slab base preparation, shall be performed in accordance with the Soils Engineer's recommendation and soil report.
 10. Foundations drawings prepared by Andresen Architecture, Inc. reflect the structural requirements, refer to architectural plans for dimensions depressures, slope shelves, pocks, stoops, and porches not shown. Accuracy of the dimensions and final fit of the building shall be reviewed by the Architect and the Contractor prior to construction.
 11. Waiting period for concrete slabs-on-grade prior to start of construction as follows:
 - a) Walk on slab 24 hours after concrete has been poured.
 - b) Begin nail framing 4-5 days after concrete poured.
 - c) Begin roof/floor framing 7-10 days after concrete poured.
 - d) Do not load roof prior to 14 days after concrete poured.
 12. Reinforcing bars shall be arranged for observation of the work by the Soils Engineer. The following are req's of the Soils Engineer:
 - a) All footing excavations shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to structure. Place isolation and control joints in slab-on-grade to minimize random cracking.
 - b) Soil conditions, including compactions and moisture content, shall be inspected and certified in compliance with the soils report by the Soils Engineer prior to placing of concrete or steel.
 - c) A certificate of compliance shall be submitted to the Building Official prior to its foundation inspection, and to the Architect and Structural Engineer.

1. Prior to the Contractor requesting a Building Department foundation inspection, the Soil Engineer shall advise the Building Official in writing of the following:
 - a. The building pad was prepared in accordance with the soil report.
 - b. The utility trenches have been properly backfilled and compacted.
 - c. The soil conditions and soil test results, including moisture and bearing capacity conform to the soils report.
2. The Concrete Contractor is to verify location of holdowns and anchor bolts with rough framing to assure proper and accurate installation, with framing contractor.

Division 4
Masonry

General

1. All concrete masonry materials and construction shall be in accordance with Building Code Chapter 21.
2. Mortar used in mix shall be potable.
3. Sand shall meet the requirements for "Aggregate For Masonry Mortar" ASTM C144.
4. Portland Cement shall meet the requirements for "Portland Cement" ASTM C150.
5. Plastic Cement shall comply with the latest adopted edition of Mason Code.
6. Lime putty shall be made of high calcium lime and aged to ensure complete slaking.
7. Installed lites to meet the requirements for "Hydrated Lime For Masonry Purposes" ASTM C207, Type 1S.
8. Steel reinforcing to be deformed bars to meet ASTM A615, Grade 40 for sizes #3 and Grade 60 for sizes #5 and larger.
9. Lightweight concrete precision block to conform to standards for hollow load concrete masonry units and to conform to ASTM C40, Grade "N-1" (top color).
10. Mortar to conform to code and to the following:
 - a) 1 part Portland cement
 - b) 1/2 part dry loose sand
 - c) 1/2 lime putty or hydrated lime or, may be composed of the following:
 - i) 1 part plastic cement
 - ii) 2500 psi concrete. Solid grout all cells.
11. Ultimate compressive strength of foundation concrete shall be 2500 psi at 28 days.
12. Brick shall be medium weight (M) grade in accordance with ASTM C216, Grade SW, with at least a compressive strength of 2,000 psi.
13. Aggregate shall conform to ASTM C144 (Mortar) and ASTM C404 (Grout).
14. Samples: Masonry Sub-Contractor shall submit samples of veneer to Builder for written approval prior to proceeding with installation.

Materials

1. All materials making up finished concrete masonry construction shall conform to standards required by Building Code Chapter 21.
2. Lumber: Dimensional lumber shall be of Douglas Fir-Larch of the following product classification in grade indicated.
3. Alignment of vertical cells. Masonry shall be built to preserve the unobstructed vertical continuity of the cells. The vertical alignment shall be sufficient to maintain a clear, unobstructed vertical opening not less than 2" x 8". Lag bolts clean and dry.
4. Cleanouts. Cleanout opening shall be provided at the bottoms of all cells to be filled at each lift or pour of grout, when such lift or pour of grout is in excess of 4'-0" in height. Cleanouts shall be sealed after inspection and before grouting.
5. Grout. Solid all cells which contain rebar, bolts, etc. Grout solid all cells below grade. All reinforcements shall have a minimum grout coverage of 3/4". All brick shall have a minimum of 2" grout space.
6. Nonexpansive fill shall be used in backfilling behind walls. All walls shall be adequately shored during the backfill operation.
7. When absolutely necessary for construction purposes to stop off longitudinal runs of masonry, stop off only by racking back one half unit length in each course. Shading shall not be permitted.
8. Masonry shall comply with I.C.C.-ES Report ESR-2604.
9. Reinforcing shall be accurately placed, and held in position top and bottom.
10. Masonry veneer. Provide 1" mortar between masonry veneer and "Aqua Lath" or manufactured by Tree Island Steel I.C.C.-ES Report ESR-2267 or equal.

Strength

1. The specified compressive strength of masonry, f_m , shall be 1500 psi, unless noted otherwise. If higher f_m is noted, it shall be verified by prism tests as required in Building Code, Section 2105.2.

Concrete Unit Masonry

1. Concrete masonry units for load bearing systems may be brick as specified by ASTM C55, specifications for Concrete Building Brick. Grade N concrete bricks are for use as architectural veneer and facing finish. Grade S concrete bricks are for general use where moderate strength and resistance to frost action and moisture penetration are required.
2. Grout. Mix one part Portland cement, 1/2 hydrated lime, not more than 3 parts sand and not more than 2 parts 3/8" maximum size washed gravel by volume. Grout shall be placed in the footing, strength of 2000 PSI at 28 days of age, aggregates per ASTM C416, Mortar-Mix, Type 5 ASTM C270 and consisting of one part Portland cement, 1/2 hydrated lime, not more than 3 parts sand, all by volume. Type 5 mortar shall have a minimum compressive strength of 1800 PSI at 28 days of age. No fire clay permitted in mortar used for structural units. All materials for mortars shall be measured by volume and cement mixed dry, air added, and then water added to bring to the proper consistency for use. No mortars that have stood for more than one hour shall be used.

Construction (General)

1. Walls shall be straight, plumb, and true, with all courses true to the level and level, built to dimensions shown. Cells shall be filled solid with grout as indicated. Blocks shall be laid up with mortarper type 3 mortar. Clean units before placing. Use masonry saw for cutting.

Special Inspection

- For concrete masonry construction which is noted as requiring special inspection per drawings, such inspection shall be carried out in accordance with Building Code, Section 1704. Concrete masonry construction which requires special inspection also is required to have masonry prism testing prior to and during construction as described in Building Code, Section 2105.5

Division 5
Metals

General

1. Comply with the following:
 - A. AISC "Code of Standard Practice for Steel Buildings and Bridges".
 - B. AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel" in accordance with good construction practices at Contractor's option.
 - C. AWS "Structural Welding Code", comply with applicable provisions except as otherwise indicated.
2. All elements of metal materials and construction shall conform to the req's specified in Building Code, Ch. 22.

Materials

1. Structural Steel and miscellaneous iron shall be primed with a rust resistance primer & shall conform to ASTM A36 as a minimum, unless otherwise noted. All N shapes to be ASTM A992.
2. Galvanized steel, luting shall conform to ASTM A902, grade B (Fy=46 ksi).
3. Steel pipes shall conform to ASTM A53, Type E or S, Grade B (Fy=36 ksi).
4. Fasteners such as bolts, nuts, and screws shall conform to ASTM A325, unless otherwise noted. Provide bolts, nuts, lag bolts, machine screws, wood screws, toggle bolts, masonry anchorage devices, lock washers as required for application indicated. Hot-dip galvanized fasteners for exterior applications to comply with ASTM A593.
5. Holes for bolts shall be drilled or punched & shall be 1/16" larger than bolt diameter.
6. Shop paints. SSPC-PAINT 1B, shop prime structural steel except points to be embedded in concrete or masonry.
7. Galvanized steel shall conform to ASTM A902, grade B (Fy=46 ksi).
8. Welding code shall conform to AWS for intended use.
9. All structural welding procedures and materials shall conform to Building Code, Section 1704. Welding shall be performed by the submerged arc process using E10XX-low hydrogen electrodes, u.n.o.
10. Welding code shall conform to AWS for intended use.
11. All structural welding procedures and materials shall conform to Building Code, Section 1704. Welding shall be performed by the submerged arc process using E10XX-low hydrogen electrodes, u.n.o.
12. Welding code shall conform to AWS for intended use.
13. All structural welding procedures and materials shall conform to Building Code, Section 1704. Welding shall be performed by the submerged arc process using E10XX-low hydrogen electrodes, u.n.o.
14. Welding code shall conform to AWS for intended use.

Execution

1. Comply with AWS D1.1 code for procedure, appearance, and quality of welds.
2. Set base plates on cleaned bearing surfaces, using wedges or other approved devices as required. Slop pack open spaces.
3. Fabricate steel pipe callings to dimensions shown, with smooth bends and welded joints using 1/2 steel pipe, u.n.o.
4. Tag shop shop drawings for field welds, bolted connections and graded areas, and apply same type point as used in shop. Use galvanizing repair paint on damaged galvanized surfaces.

Welds

1. All shop welding and fabrication must be done in a shop certified by AISC Quality Certification Program and approved by the Building Official. All field welding must be performed by a certified welder and a special inspector shall continuously inspect all structural field welding. Both shall be approved by the Building Official.
2. Clean corners and field welds, and exposed ends smooth and flush. Weld cap on exposed ends of pipes and tubes.

Division 6
Wood

ROUGH CARPENTRY

General

1. All reference specifications are the latest edition adopted or approved by the engineering authority.
 - A. CBC Chapter 23.
 - B. NDS "National Design Specifications for Wood Construction"
 - C. PS 20 "Softwood Lumber Standards"
 - D. NDS "National Design Specifications for Eastern Lumber"
 - E. R15 "Standard Specification for Grades of California Redwood Lumber"
2. Manufacture of S4S and grade stamped, to comply with PS20 and applicable framing rules of inspection agencies certified by AISC's board of review.
3. Moisture content. Freshly seasoned lumber with 19% or less moisture content at time of dressing and shipment (for sizes 6" or greater in thickness).
4. Refer to structural calculations for any questions regarding lumber grades, beams, and header sizes.
5. Construction materials shall be spread out if placed on framed floors or roof. Load shall not exceed the design live load per square foot. Provide adequate shoring and/or bracing where structure has not attained design strength.

Materials

1. Framing:
 - A. Light-framing and Studs: (2"-4" thick, 2"-6" wide). Stud or standard grade.
 - B. Joists and Rafters: (2"-4" thick, 5" and wider). No. 1 grade or better.
 - C. Posts, Beams, Headers, and Timbers: (4" and thicker). No. 1 grade, treated.
 - D. Redwood, Foundation Grade: all heart u.n.o. (if lumber species other than Douglas Fir-Larch is to be used, Contractor shall request in writing, approval from Architect and Structural Engineer prior to construction).
 - E. Top Plates: All top plates to be Hem-Fir or Doug-Fir, standard grade or better.
 - F. Basements: Sill plates or fascias, trims, posts and beams shall be re-sawn lumber.
2. Wood Panels:
 - A. Particleboard underlayment: ANSI A208.1, Grade 1-M-1 in thickness indicated.
 - B. Wall Sheathing: American Plywood Association approved Oriented Strand Board (OSB) Waterboard (Grade 2-M-V) may be used instead of Structural II Plywood as indicated on shear panel schedule.
 - C. Typical Floor Sheathing:
 - i) A. 2x4 or 2x6 Stud-Floor T&G EXP I with min. a panel index of 52/16".
 - ii) Refer to NER 108 for installation and conditions of use.
 - iii) EN: 104 common nails at 6" O.C.
 - iv) EN: 104 common nails at 6" O.C.
 - v) F.N: 104 common nails at 12" O.C.
 - D. Use ring or screw shank nails and glue sheathing to framing using adhesives meeting APA specification AFG-20 or ASTM D3448.
 - E. Apply glue in accordance with manufacturer's recommendations.
 - F. Use 60d galvanized screw min. 2" long at 6" O.C. B.N., 6" O.C. E.N., and 12" O.C. Field nailing (ICC-ES Report ESR-1271, dated January 1, 2002, ANSI, ASME 18.6.1).
3. Typical Roof Sheathing:
 - i) 1/2" APA rated sheathing Exp I with a min. panel index of 24/16, refer to NER 108 for installation and condition of use.
 - ii) B.N. 6d common nails at 6" O.C.
 - iii) E.N. 6d common nails at 6" O.C.
 - iv) F.N. 6d common nails at 12" O.C.
4. All materials must be stamped by one of the following agencies: APA, FFS/TECO, or Pilsbury.
5. Metal hangers and framing anchors of size and type recommended and approved by manufacturer. Hot-dip galvanize fasteners and anchors for metal exposed to weather. In ground contact and high relative humidity.
6. Preservative pressure-treated products:
 - A. Lumber: Manufactured with water-borne preservatives to comply with ANFA C2 and C4 respectively, and 2014 CEC SEC. 25051.8.
 - B. Above ground: Use cold-chamber grade use: ANFA LP-2.
 - C. Sealing: Treat cuts, nailers, blocking, stripping, and similar items in conjunction with roofing, flashing, vapor barriers, and waterproofing.
 - D. Concrete Contact: Treat sills, sleepers, blocking, furring, stripping and similar items in direct contact with masonry or masonry, or use wood/stone.
 - E. Sill Caulking: Apply a bead of mastic caulking under all plates of all exterior walls at interior bottom of sill plate.

Shop Drawings

1. Sufficient copies of shop drawings for any member or product designed by an entity other than Andresen Architecture, Inc. shall be submitted to Andresen Architecture, Inc. prior to fabrication for review, to be reviewed and returned in 5 to 5 working days.
2. Review of shop drawings by Andresen Architecture, Inc. does not relieve the Contractor of responsibility for the design or the Contractor from compliance with Building Code.
3. Andresen Architecture, Inc. review of the shop drawing consists of checking general conformance with structural drawings. Design accuracy of such product, dimensions and quantity of the project is not reviewed by Andresen Architecture, Inc.
4. Trusses shall be designed in accordance with the latest local Building Code for all loads imposed, including lateral loads and mechanical equipment loads.
5. Wood truss manufacturer shall supply to the Architect and the Building Department the following information for approval of design loads, configuration (2 or 3 point bearing), and shear transfer, prior to fabrication. It shall be the responsibility of the manufacturer to obtain building department approval of calculations and shop drawings prior to fabrication.
6. Trusses shall be designed in accordance with the latest local Building Code for all loads imposed, including lateral loads and mechanical equipment loads.
7. All connections involving trusses shall be ICC-ES approved and of adequate strength to resist stresses due to the loadings imposed and shall be designed and specified by the truss manufacturer.
8. Dead load and live load deflections shall be limited to min. L/240, live load deflection min. L/360.
9. Truss bracing and/or bracing shall be provided and detailed by truss manufacturer as required to adequately brace all trusses.
10. Truss manufacturer to provide details which allow for normal deck loads without imposing lateral loads on their supports (i.e., scissors trusses).
11. Truss manufacturer is responsible for providing additional shear and drag trusses shown on the framing plan.
12. Truss manufacturer is responsible for providing framing plans and structural details prior to fabrication of trusses and specifying hangers.
13. All trusses designed by truss manufacturer shall be design to sustain all vertical, lateral, and other pertinent loads, including bracing of top and bottom chords, in addition to any connections related to trusses. Contractor is to coordinate with truss manufacturer.
14. The truss manufacturer is responsible to meet the profile as indicated in the drawings and to meet the sheathing. Bracing shall sustain all vertical, lateral, and other pertinent loads, including bracing of top and bottom chords, in addition to any connections related to trusses. Contractor is to coordinate with truss manufacturer.
15. The truss manufacturer is responsible to meet the profile as indicated in the drawings and to meet the sheathing. Bracing shall sustain all vertical, lateral, and other pertinent loads, including bracing of top and bottom chords, in addition to any connections related to trusses. Contractor is to coordinate with truss manufacturer.
16. Each truss shall be legibly branded, marked, or otherwise have permanently affixed thereto the following information located within 2'-0" of the center of span on the face of the bottom chord:
 - a. Identity of the company manufacturing the truss
 - b. The design loads
 - c. The spacing of the trusses.

Execution

1. Bracing. All members shall be framed, anchored, tied and braced so as to develop the strength and rigidity necessary for the purposes for which they are used. Framing Sub-Contractor shall adequately brace floor joists to prevent sagging where materials are stockpiled prior to erection.
2. Lath-bracing. Provide 1 x 6 diagonal (at approx. 45 degrees) every 25'-0" maximum.
3. Top plates. Top plates in wood shall be 1/2" to 1/6" larger than the nominal bolt diameter. All bolts shall have standard cut washer under head and nut unless otherwise noted. All bolts shall be tightened prior to application of sheathing, gypsum board, plaster, etc.
4. Structural members shall not be cut for pipes, etc. unless specifically detailed.
5. Firefill for nailing when nail spacing results in the wood splitting.



Division 6 (continued)
Nood

- B. Beams and girders.
- A. Bearing on masonry. The ends of beams or girders supported on masonry or concrete shall have not less than 8" of bearing.
- B. Bearing on wood. All beams or girders supported on wood shall have full bearing and bearing shall be comprised of one (1) solid post (or multiple posts) embedded in an approved manner unless otherwise specified on plans.
- C. Bracing. Provide 2 x 4 temporary bracing to all beams projecting 3'-0" beyond building line to prevent warpage.
4. Roof and Ceiling Framing.
- A. Framing. Rafter shall be framed directly opposite each other at the ridge. There shall be a ridge board at least 2" nominal thickness at all ridges and not less in depth than the cut end of the rafter. At all valleys or hips there shall be a single valley or hip rafter not less than 2" nominal thickness and not less than the depth of the rafter.
- B. Rafter. Rafter shall be nailed to an adjacent ceiling joist to form a continuous tie between exterior walls when such joists are parallel to the rafters. Where not parallel, rafters shall be tied to 2" by 4" (nominal) minimum size cross ties. Rafter ties shall be spaced not more than 4' on center.
- C. Purlin. To support roof loads may be installed to reduce the span of rafters within allowable limits and shall be supported by struts to bearing walls. The maximum span of a 2" by 8" purlin shall be 8'. In no case shall a purlin be smaller than the supported rafter. The unbraced length of the 2 x 4 struts shall not exceed 8' (0'-0" for 2 x 6 struts) and the minimum slope of the struts shall not be less than 45 degrees above the horizontal.
- D. Blocking. Rafter more than 8" in depth shall be supported laterally at the ends and at each support by solid blocking not less than 2" in thickness and the full depth of the rafter unless nailed to a header, band or rim joist or to an adjoining stud and as required by Code. Provide 2x solid blocking at 10'-0" intervals for all rafters more than 8" deep.
- E. Deck and Barge Boards shall be resin materials, free of splinters and shall have a texture not so rough so as to be injurious or irritating to the skin if located where it can be touched under normal living conditions. If there are any questions regarding the acceptability of any material, contact the Project Superintendent.
- F. Galliform Framing to be 2 x 6 Douglas Fir #2 or better rafters at 24" o.c. with a maximum span of 10'-0" typical.
10. Standards. For sheathing, underlayment and other products not covered in above standards, comply with recommendations of product involved for use in the application.
11. Bearing. Cut, shape, count, plumb, level and turn all framing members to provide full bearing.
12. Protection from deterioration.
- A. Separation. Where wood is nearer than 8" to earth, use treated or natural decay resistant wood unless separated by a 3" concrete slab with an impervious membrane between earth and concrete.
- B. Embedded. Wood shall not be embedded in the ground or in direct contact with the earth and used for the support of permanent structures.
- C. Sills. All foundation plates, sills and sleepers on a concrete or masonry slab, which is in direct contact with earth shall be treated with the same species and shall be treated or branded by an approved agency. As an alternate, use a layer of 22 gauge sheet metal between the sill and concrete/masonry.
- D. Exposed. Columns and posts located on concrete floors or decks exposed to weather or to water splash and which support permanent structures shall be supported by metal pedestals projecting at least 6" above exposed earth and at least 1" above such floor.
13. Provide fire-stopping to cut off all concealed draft openings (both vertical and horizontal) and to form an effective barrier in specific locations as follows:
- A. Walls At Floor/Ceilings. In exterior or interior stud walls, at ceilings and floor levels.
- B. Stud spaces. In all stud walls and partitions, including turned spaces, to be placed that the maximum dimensions of any concealed space is not over 10'-0".
- C. Stringers. Between stair stringers at top & bottom, between studs in line with run of stair if wall below stair is unfinished.
- D. Pocket Doors. Around top, bottom, sides and ends of sliding door pockets.
- E. Vents. In openings around vents, ducts, chimneys, fireplaces and similar openings with non-combustible fire stop material only. A metal collar tightly fitted to the chimney and nailed to the wood framing may be used.
- F. Other. Any other locations not specifically mentioned above, such as holes for pipes, shutoff behind turning strips and similar places which could afford a passage for flames.
- G. Thickness. Firestop of wood shall be 2" nominal thickness. If the width of the opening is such that more than one piece of lumber is necessary, there shall be 2 thickness of 1" nominal material with joints broken or one thickness of 3/4" Plywood.
- H. Gypsum Board. Firestop may also be of gypsum wall board.
14. Openings in floor or roof structures. Where header span exceeds 4'-0", double header and trimmer members and support with metal hangers.
15. Notching and drilling of joists, rafters, and studs are permitted as detailed in standard details.
16. Vertical Assemblies.
- A. Provide 2 x 4 studs at 16" O.C. for bearing and exterior walls on the top two stories and exterior 2 x 6 or 3 x 4 x 4 studs at 16" O.C. for bearing and exterior walls on floor below the top two stories.
- B. Cutting, notching, and boring of studs is permitted in accordance with #15 above. Minimum distance between hole and edge of stud 3/8".
- C. Place studs with wide dimension perpendicular to wall. Frame corners with 8 studs on where walls intersect back up cleats may be used where adequate backing is provided for finish material. Minimum stud length for foundation wall is 14'. Provide solid blocking where this length does not occur. Where foundation cripple nail exceeds 4" high frame as required for additional story.
- D. At all walls provide double top plates lap corners and stagger splices minimum 4'-0". At all walls, provide single bottom plate except where lightweight concrete floor fill is used. Provide double bottom plate where plates are cut or bored to pass other work. Provide 1/8" x 1 1/2" metal strap each side with 4-inlet nails. All plates size 2x stud walls size 2x min.
- E. Brace all exterior walls and main cross walls at or near ends and at max. 25'-0" intervals by an approved method. Brace cripple walls as required for full height walls. Framers is responsible for installing temporary bracing to adequately support framing during construction. This bracing is to remain in place until structural integrity has been achieved.
- F. Cripple walls shall be framed of studs not less in size than the studing above with min. length of 24" or shall be framed of solid blocking. When exceeding 4'-0" in height, such walls shall be framed of studs having the size req'd for an additional story.
- G. Stud partitions containing plumbing, heating, or other pipes shall be so framed and the joists underneath it so spaced as to give proper clearance for the piping.
- H. Blocking (2 x 6 min) to be provided at all handrails and at all both accessories.
- I. Timber. Douglas Fir-Larch #18 moisture content.
- J. Lumber shall be free of heart center.
- K. Bridging. All stud partitions or walls with studs having a height-to-least-thickness ratio exceeding 50 shall have blocking not less than 2" in thickness and of the same width as the studs fitted snugly and nailed to provide adequate lateral support.
- L. Window sills. 8'-0" in length or longer shall be doubled. All windows shall have a gypsum board stool v.i.v.
17. Connections.
- A. Post/Beam. Provide positive connection between posts and beams to prevent up lift or lateral displacement and at beam splices to prevent separation.
- B. Nails may be common, box or vinyl coated sinkers unless specifically noted otherwise or required otherwise by the governing codes. Where necessary to prevent splitting, predrill pilot holes smaller than nail provide maximum nailing per CBC 2304.4.1.
18. Attic Ventilation.
- Enclosed attics, and enclosed rafter spaces shall have cross-ventilation for each separate space by ventilating openings protected against entrance of rain. The net free ventilating area shall not be less than 1/50 of the area of the space ventilated. The openings shall be covered with corrosion resistant metal mesh openings of 1/4" in dimension. Do not block vents with insulation.
19. Framing.
- A. Stud walls perpendicular to a concrete or masonry wall shall be bolted to the concrete or masonry wall with 5/8" diameter x 8' A307 bolts at top, mid-height and bottom.
- B. Structural information shown on framing plans is for the main structural elements. Non-structural elements shall be constructed per approved code requirements.
- C. Height of the roof line is considered as 12 psf max. (total roof dead load of 20 psf). If roofing material exceeds this load, the Framing Contractor should notify Andresen Architecture, Inc. in writing prior to construction.
- D. All shear panels shall have continuous sheathing material from one end to the other and from plate to plate as specified on the drawings. Contractor shall coordinate framing such that continuity of shear panels is assured.
- E. All ledgers shall be spliced with ST22 strap, v.i.v.

Division 6 (continued)
Nood

- F. All shear transfer nailing shall be per drawings. Contractor shall provide proper notification for inspections to review the same.
- G. Provide posts at lower floor under posts or multiple studs above. Provide full width and depth compression block between floors at such locations.
- H. All joist, laggers, shall be Simpson U hanger, all beam hangers shall be Simpson HU hangers v.i.v. on plan or detail. Follow manufacturer's recommendations for installation.
- I. A double sill plate is used at light-weight concrete flooring, then the framing contractor shall apply sill plate nailing to both sill plates, at 16" O.C. max. or as specified per schedule.
- J. Building Code, 2302.9.1, balloon framed walls (non-bearing) stud heights: 2x4's @ 16" O.C. maximum 14'-0" height 2x6's @ 16" O.C. maximum 20'-0" height No multiples of 2x4's and 2x6's to span more than 14'-0" bearing walls, exceeding 10'-0" must be designed case by case.
- K. Use 4x4 header for openings less than 16' at bearing walls without point loads, and at openings less than 4'-0" at non-bearing walls. Use 2x framing & medicine cabinet and garage vent (v.i.v.).
20. Ceiling Joists.
- Use this span table for ceiling joists given the following conditions, unless noted otherwise on plan.
- a. dead load = 6.0 psf
- b. live load = 1.0 psf
- c. total deflection = L/240
- d. with ceiling drywall
- e. use #2 Douglas Fir-Larch
21. SIZE SPACING MAX SPAN
- | SIZE | SPACING | MAX SPAN |
|------|---------|----------|
| 2x4 | 12" | 10'-6" |
| 16" | 12" | 8'-1" |
| 16" | 16" | 9'-1" |
| 2x6 | 12" | 15'-1" |
| 16" | 16" | 15'-1" |
| 2x8 | 24" | 19'-2" |
| 16" | 24" | 21'-0" |
| 2x8 | 16" | 17'-4" |
| 24" | 24" | 17'-4" |
21. Minimum Quality.
- A. All machine bolts shall conform to ASTM A307. Holes for bolts should be drilled 1/16" larger than bolt dia.
- F. Square washers shall be mild steel. Use min. 2" sq. x 3/16" thick washers for bolts with 5/8" use 3-1/2" sq. x 3/8" thick washers for bolts with 1" dia.
- G. Adhesive used to attach floor floor sheathing to framing elements shall conform with APA specification AF-C4.
- H. Manufactured hardware specified on the drawings are to be Simpson Strong Tie (unless specifically authorized in writing by Andresen Architecture, Inc.). Follow all manufacturer's requirements & recommendations for installation & handling of the product.
- I. Do not bend the Simpson FPA straps.
- J. Sheet rock framing.
- K. Stacked sheet rock loading shall be limited to the following quantities in any one room.
- 5/8" 16 individual 4x10 sheets (8 pairs of sheets) 1/2". 20 individual 4x10 sheets (10 pairs of sheets) The shoring of the 2nd floor is required if the number of sheet rock exceeds the quantities listed above.
- K. Fasteners specified on the drawings may be colored using manufacturer's brands that utilize the Trackers color coded system. Follow all manufacturer's requirements and recommendations for installation and handling of the products.

COLOR CHART FOR STRUCTURAL NAILS	
TYPE OF MEMBER	COLOR
2x4 COMMON	0=0.131 - L=2 1/2"
2x6 COMMON	0=0.143 - L=3"
2x8 COMMON	0=0.162 - L=3 1/2"
2x10 COMMON	0=0.182 - L=4"
2x12 COMMON	0=0.191 - L=4 1/4"
2x14 COMMON	0=0.201 - L=4 1/2"
2x16 COMMON	0=0.211 - L=4 3/4"
2x18 COMMON	0=0.221 - L=5"
2x20 COMMON	0=0.231 - L=5 1/4"

- STRUCTURAL GLUE-LAMINATED UNITS
- General.
1. All fabrication and workmanship shall conform to the current edition of the Standard Specifications for Structural Glued Laminated Douglas Fir (Coast Region) Lumber by the West Coast Lumbermen's Association and the current edition of Timber Construction.
2. All glued-laminated members shall be Douglas Fir-Larch, with 1/2" outer and core laminations, combination 24F with waterproof resorcinol or phenol resorcinol glue conforming to Federal Specification MIL-A-5478-B, Use Combination 24F-VB or 24F-VB for simply supported beams, and combination 24F-VB or 24F-VB for cantilevered beams.
3. Comply with ANSI/AITC A190 "Structural grade laminated timber."
4. Provide factory-glued structural units, produced by AITC-licensed firm, qualified to apply the AITC "Quality Inspected" mark.
5. Fastenings mark each piece of glued-laminated structural units with AITC quality inspected mark.
6. Design. Where portions of final design for glued-laminated timber members are indicated as manufacturer's responsibility (any element of design consideration), comply with applicable provisions of AITC 117 "Designing standard specifications for structural glued-laminated timber of softwood species."
7. A certificate of inspection for each 60-lb beam from an approved Testing Agency shall be submitted to, and approved by the local Building Department and the Architect.

- Materials.
1. Provide glued-laminated timber members sized as shown on drawings that meet or exceed the following stress values for normal loading duration and condition of use.
- Bending (Fb), 2400 psi.
- Horizontal shear (Fv), 165 psi.
- Compression perpendicular to grain (Ft-Tension Face), 560 psi.
- Compression perpendicular to grain (Ft-Compression Face), 560 psi.
- Modulus of elasticity (E), 1,800,000 psi.
2. ASTM D 2554 "Net-use" adhesive, unless otherwise indicated.
3. Use manufacturer's standard transparent, colorless wood sealer, effective in retarding transmission of moisture at cross grain cuts.
4. Use manufacturer's standard transparent penetrating wood sealer, which will not interfere with application of wood stain and transparent finish, or paint finish as indicated.
5. Moisture content of the lumber at the time of gluing shall not be more than 16% with a maximum variation of 5% in any beam.

- Execution.
1. Required camber for fabrication of each member is shown on drawings, and may be either convex or parabolic, at manufacturer's option. If not shown, use camber as indicated on drawings.
2. Immediately after end-cutting each member to final length, and after wood treatment, if any, apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces "flood coated" for not less than 12 minutes. Beams shall be load wrapped for protection during shipping.
3. After fabrication and seasoning of each unit, and end coat sealing, apply a heavy saturation coat of penetration sealer on surfaces of each unit, except for treated wood where treatment has included a water repellent.
4. Finished members shall be industrial appearance grade (unless otherwise noted) in conformance with Standard Appearance Grades of the A.I.T.C.

Division 7
Thermal & Moisture Protection

- ATTIC ACCESS.
- Provide attic access with insulation where indicated on plans.
- EXTERIOR WALL COVERINGS.
- Weather-Resistant Barrier provide one (1) layer of 60 pound asphalt saturated felt minimum under all exterior finishes.
- Shear Walls and Horizontal Applications require a minimum of two (2) layers of grade "D" building paper.
- Materials.
1. All exterior materials shall conform to the requirements of the Uniform Building Code, applicable edition, and all State and Local codes.
- ROOFING AND MEMBRANES.
1. Supply. Furnish and install roofing and waterproofing work complete, including cant strips and incorporating other trades flashing, sleeves and jacks.
2. Installation. Install roofing and wall corrosion resistant metal flashing per manufacturer's recommendations including the use of fasteners and anchoring devices for high wind areas, and per C.B.C. Chapter 1509, detailing incorporating flashing, eucpers, jacks, sleeves, roof drains, skylights, etc., supplied by others.
3. Inspection. Owner shall provide a waterproofing specialist to review built-up roofing, waterproof decking, foundation wall waterproofing, and flashing details and provide continuous inspection during field installation of all waterproof and flashing surfaces and materials to insure adherence to manufacturer's specifications and the highest standards of construction practice.

- Special Conditions.
1. Provide cant strips at all vertical surfaces.
2. Provide crickets, as indicated, and as necessary, for proper water drainage and to redirect channeled or runoff water away from vertical surfaces.

Materials. Refer to plans for type and manufacturer of roofing.

- BUILT-UP ROOFING.
- General.
1. Plywood Deck. This specification is applicable to built-up roofing systems applied directly to plywood substrates. Should any other substrate be encountered submit a written list of required materials and finish products under the drawings may be colored using manufacturer's brands that utilize the Trackers color coded system. Follow all manufacturer's requirements and recommendations for installation and handling of the products.
2. Standard reference specifications.
- A. Roofs shall conform with APA specification AF-C4.
- B. Published specifications, recommendations and instructions by manufacturer of products used.
- C. Coordinate with other trades to insure proper sequencing of each installation.
- D. Manufacturer's guarantee/warranty. MFR's Standard 10-year guarantee.
3. Roofing warranty. Provide "Roofing Contractors" standard 2-year roofing guarantee, NRCA Form IT20A or equivalent form.
4. Flashing. 3 plies #15 perforated asphalt-saturated organic felt complying with ASTM D-226.
5. Base piers. 3 plies #15 asphalt impregnated glass fiber mat or composite with ASTM D-2116, Type IV.
6. Interply bitumen roofing asphalt complying with ASTM D-312, Type II.

- Materials.
1. Provide materials complying with governing regulations and NRCA roofing and waterproofing material specifications #3, NADA diagram A, as follows:
- A. Sheathing paper: single ply 15 lb. rosin based sheathing paper.
- B. Base piers. 2 plies #15 perforated asphalt-saturated organic felt complying with ASTM D-226.
- C. Flashing. 3 plies #15 perforated asphalt-saturated organic felt complying with ASTM D-226.
- D. Base piers. 3 plies #15 asphalt impregnated glass fiber mat or composite with ASTM D-2116, Type IV.
- E. Interply bitumen roofing asphalt complying with ASTM D-312, Type II.

- Execution.
1. Weather. Proceed with roofing work only when existing and forecasted weather conditions will permit work to be performed in accordance with recommendations.
2. Substrate Corrections. Examine substrate surfaces to receive built-up roofing systems and associated work, and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected in a manner acceptable to installer.
3. Substrate Surface. Verify that substrate is securely fastened with no projecting fasteners and no adjacent units in excess of 1/8" out of plane.
4. Protection. Protect other work from spillage of built-up roofing materials.
5. Heat and apply bitumen in accordance with equicases temperature (EVT) method as recommended by NRCA.
6. Base sheets shall be nailed using not less than one nailer each 1/3 square feet with nails of the type required by the manufacturer for the type of deck. Successive layers shall be cemented to the base sheets using 20 pounds of hot asphalt for solid mopping (10 pounds for spot or strip-mopping), or not less than two gallons of cold bituminous compound in accordance with manufacturer's published specifications, or 30 pounds of hot coal tar pitch per roofing square.
7. Minimum Height. Mineral aggregate surfaced roofs shall be surfaced with not less than 60 pounds of hot asphalt or other cementing material in which is embedded not less than 400 pounds of gravel or other approved surfacing materials or other 550 pounds of crushed slag per roofing square.
8. Cap sheets shall be cemented to the base sheets using no less cementing material than that specified for solidly cemented base sheets.
9. Cape joints of substrate to prevent penetration by roofing materials.
10. Single multiple plies of roofing unless otherwise required by manufacturer's instructions.
11. On sloping substrates (sloping more than 3/8" for coaltar bitumen, 3/4" for asphalt with asbestos felts, or 1" for asphalt with other felts) comply with NRCA "roofing manual" for nailing felts of BUR to substrate or nailers in the substrate and comply with composition roofing manufacturer's instructions for nailing composition roofing.
12. All edges of roofing where possible (without causing leaks), and nail composition flashing to vertical surfaces at edges and penetrations of roofing.

- INSULATION.
- General.
1. Certificate. After installing insulation the installer shall post in a conspicuous location in the building a certificate signed by the installer that the installation conforms with the requirements of Title 24, Part 6, and that the materials installed conform with the requirements of Title 20, Chapter 2. The certificate shall state the Manufacturer's name and material identification, the installed R-value, and weight per square foot.

- Materials.
1. Mineral fiber blanket/batt insulation of inorganic non-asbestos fibers formed into resilient batts. Semi-rigid type where required for self support.

- Execution.
1. Insulate. Insulation at all exterior walls, walls between living space and unheated garage or storage room, between jambs and framing, ceilings with cold areas above, attic access panel, and ceiling joists (leave open space above for ventilation) to receive (batt) insulation.
2. Nails to be minimum of R-5 unless otherwise noted.
3. Ceilings to be minimum of R-30 unless otherwise noted.
4. Floors Over Unconditioned: to be minimum of R-19 unless otherwise noted.
5. See Energy Compliance Sheet for California Energy Title 24 Requirements.
6. Infiltration. The following openings in the building envelope must be caulked and sealed as indicated (door sills, member sizes, blank profiles, and operating units), modify only as necessary to meet performance requirements.
7. Install units with accurately aligned and tight joints manufacturer instructions. Apply hardware and adjust weather tight closure. Set sill members in a full bed of sealants and fillers.
8. Provide pulls and keyless locking device, lockable from inside only on each sliding panel.
9. Provide deadbolt and latchset at all exterior swinging doors, including hoes to garage doors, or as required by local codes.
10. Viewers. All main or front entry doors shall be equipped with a wide angle viewer (180 degrees) except where the occupant has a clear vision of the area outside the door without opening the door.
11. Weather stripping. All sliding swinging doors and windows opening to the exterior or to unconditioned areas shall be fully weather stripped, gasketed or otherwise treated to limit air infiltration.
12. Alternative approved techniques may be used to meet the standard caulking req'ts for exterior walls, including but not limited to, continuous sealing, building wraps, or rigid nail insulation.

- Balcony and Deck Coatings.
1. Elastomeric or membrane deck coatings shall be installed per manufacturer's specifications. Color and Finish and detailing to be approved by Architect and/or Owner.

Division 7 (continued)
Thermal & Moisture Protection

- Exterior Decks.
1. Decks, balconies, landings, exterior stairways and similar surfaces exposed to the weather and sealed underneath shall be waterproofed.
2. All exterior decks and balconies exposed to weather shall be constructed with sufficient slope (minimum 1/4 inch per foot) to ensure adequate drainage.
3. Unless designed to drain over deck edges, drains and overflows of adequate size shall be installed at the low points of the deck.
4. Provide minimum 2 inch drop from finished interior floor to the highest floor level on any adjoining deck or balcony.
- JOINT SEALERS.
- General.
1. Compatibility. Provide materials selected for compatibility with each other and with substrates in each joint system; confirm with manufacturer's special type designed to reduce sound transmission type RC-1.
2. General characteristics. Provide type, grade, class, hardness and similar characteristics or material to comply with manufacturer's recommendations relative to exposures, traffic, weather conditions and other factors of the joint system for best possible overall performance. Joint sealers are required to permanently maintain integrity and waterproof seals, without failures in joint movement accommodation, cohesion, adhesion (where applicable), migrations, staining and other performances as specified.

- Execution.
1. Weather conditions. Install exterior elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer for installation.
2. Clean joint surfaces and prime or seal as recommended by sealant manufacturer.
3. Support sealants from back with construction as shown or with joint filler or back rod.
4. Install liquid sealants by proven methods which will ensure "wetting" of joint bond surfaces, without gaps or air pockets in sealant. Sealant shall be applied to surface and slightly below adjoining surfaces, except form slight cove with sealant at inverted corner joints.

- FLASHING AND SHEET METAL.
- General.
1. General reference specifications.
- A. Comply with "Architectural Sheet Metal Manual" by SMACNA for each general category for work required.
- B. NRCA "Roofing and Waterproofing Manual".
- C. Coordinate with other trades to insure proper sequencing of each installation.
- D. Published installation instructions by manufacturer of roofing material used.
- E. Coordinate with other trades to ensure proper sequencing of each installation.

- Materials.
1. Zinc-coated steel: commercial quality, 20% copper, ASTM A-659, 6.90 hot-dip galvanized, min. 26 gauge.
2. Aluminum, ASTM B-209, Alloy 5052, temper H 14, anodized or baked enamel to meet adjacent metal products min. 0.002 inch.
3. Solder. For steel 50/50 tin/lead solder (ASTM B 32), with rosin flux.
4. Epoxy sealer, sealer, 2-part, non-corrosive metal seam cementing compound for use with non-compatible materials.
5. Fasteners compatible with metals being fastened.
6. Bituminous coatings: (for use as a dielectric separation), FSF TP0444 or 559C-point 12, solvent type. Nominally free of sulfur, compound for 15 mil dry thickness per coat.
7. Roofing cement, ASTM D-2822 asphalt.

- Execution.
1. Seams. Fabricate sheet metal with flat-lock seams: solder with type solder and flux recommended by manufacturer, except seal aluminum seams with aluminum seam cement and where required for strength rivet seams and joints.
2. Shop fabricate to greatest extent possible in accordance with applicable reference standards to provide a permanently waterproof weather resistant installation provide for separation of non-compatible materials when all exposed edges.
3. Anchor units securely in place using concealed fasteners where possible in a manner that will be true to the plumb and level where indicated with a minimum of joints.
4. Seal laps. Set flanges in full bed of roofing cement.
5. Expansion. Provide for thermal expansion of running sheet metal work.
6. Roof/Wall. Flash and counter flash at all roof to wall conditions.
7. Flash and counter flash around doors, windows and outlookers projecting through exterior walls or roof surfaces.
8. Roof valley flashing shall be provided of not less than No. 26 galvanized sheet gauge corrosion-resistant metal and shall extend at least 12" from the center line each way and shall have a splash diverter rivet not less than 1" high at the flow line formed as part of the flashing. Sections of flashing shall have an overlap of not less than 2" and be fastened with 1/4" diameter bolts.
9. Seal moving joints in metal work with elastomeric sealants.
10. Exterior openings exposed to the weather shall be flashed in such a manner as to maintain a weather tight seal.
11. Counter-flashing shall be provided at the junction of roof and vertical surfaces (walls, etc.).
12. Roof beams and outlookers projecting through exterior walls and roof surfaces shall be flashed with galvanized iron flashing and caulked.
13. Wood Trim Exposed to Weather shall be flashed where butting to exterior finish.

- Workmanship.
1. Work shall be accurately fabricated to match detail and fitted to job conditions.
2. Molded and brake-formed members shall be finished true and straight with sharp lines and angles.
3. Lock seams flat and true to line. 1/2 inch wide, sweated full with solder where overlapping does not provide water tight connections.
4. Sheet metal work shall be designed to provide complete weather tight and waterproof connections.
5. All galvanized metal shall be shop primed with one coat of zinc dust-zinc oxide primer over all surfaces and as recommended by metal specialists.
6. Sheet metal used as flashing adjacent to wood surfaces shall be sealed with high quality sealant to ensure waterproofing between such materials.

- SKYLIGHTS.
1. Skylights are to be constructed and installed as per manufacturer's specifications and Section 2610 of CBC.

Division 8
Doors and Windows

- DOORS.
- General.
1. Standards. Comply with requirements of ANSI/NFMA I.S. 1 and Section 1300 of ANI "Architectural Woodwork Quality Standards."
2. Wood door standards, the requirements of NFMA I.S. 3-70 apply to the work.
3. Aluminum door standards, requirements of ANSI/AAMA 402.4 and SAA 2005 apply to work.

- Materials.
1. Fire-rated doors to be labeled and listed with rating required by a testing inspection agency acceptable to authority.
2. Door classification, provide aluminum sliding glass doors of type 550-BL (residential).

- Execution.
1. Install doors to comply with manufacturer's instructions.
2. Maintain design spacing as indicated (door sills, member sizes, blank profiles, and operating units), modify only as necessary to meet performance requirements.
3. Install units with accurately aligned and tight joints manufacturer instructions. Apply hardware and adjust weather tight closure. Set sill members in a full bed of sealants and fillers.
4. Provide pulls and keyless locking device, lockable from inside only on each sliding panel.
5. Provide deadbolt and latchset at all exterior swinging doors, including hoes to garage doors, or as required by local codes.
6. Viewers. All main or front entry doors shall be equipped with a wide angle viewer (180 degrees) except where the occupant has a clear vision of the area outside the door without opening the door.
7. Weather stripping. All sliding swinging doors and windows opening to the exterior or to unconditioned areas shall be fully weather stripped, gasketed or otherwise treated to limit air infiltration.

- OVERHEAD DOOR SPRINGS.
1. Springs shall be installed with a restraint device to anchor the spring or any part thereof in the event it fractures.
2. Both the spring and the restraint devices must be identified as conforming to the requirements to use the California Department of Housing and Community Development.

Division 9
Finishes

- GYPSUM DRYWALL.
- General.
1. Gypsum board standard, ASTM C-840.
2. Comply with the following:
- A. GBC Chapter 2.
- B. Fire resistant design manual, eleventh edition, gypsum association.
3. All gypsum wallboard at time to be installed in such a manner that there are not surfaces out of alignment with adjacent surfaces and the true plane of the wall is maintained.
- Materials.
1. Exposed gypsum board, ASTM C-840.
2. Water-resistant gypsum board, ASTM C-840.
3. Routed corner brags. Provide routed corner brags except at windows and wardrobes.
4. Sound reduction. Where shown as "resilient", provide sound reduction material type designed to reduce sound transmission type RC-1.
5. Acoustical sealants. Non-drying, non-hardening, non-staining, non-leaking, gumable sealant for concealed sealant for exposed applications.
6. Sound attention blankets. Semi-rigid mineral fiber without moisture.
7. Joint tape & compound. GBC standard 47-6.
8. Fasteners. 5d cooler nails, except 6d cooler nails where necessary for structural or fire-resistive requirements. Other fasteners with ICC-ES approvals may be used.

- Execution.
1. Taping, except as otherwise indicated, apply joint tape and joint compound at joints (both directions) between gypsum boards. Apply compound at accessory flanges, penetrations, fasteners heads and surface defects.
2. Joints. Treated joints, fastener heads, cut edges and penetrations in water-resistant backing board to comply with second material section.
3. Protection. Gypsum wallboard shall not be installed until weather protection for the installation is provided.
4. Edge. Bearing. All edges and ends of gypsum wallboard shall occur on the framing members, except those edges and ends which are perpendicular to the framing members.
5. Gypsum board nailing shall be as follows: (Unless otherwise noted on plans) Fasteners shall be spaced not less than 8" inch from edges and ends of gypsum wall board. Apply fasteners in a manner that does not fracture paper face. The size and spacing of fasteners shall comply with UBC application edition, state and local codes.
6. 1/2" and 5/8" type "X" gypsum board to receive 6d cooler nails at 12" O.C. to all studs, plates and blocking.
7. Gypsum board attached to trusses at 24" O.C. shall have long dimension perpendicular to framing members.
8. Installation. Install board continuous behind tubs, showers, and non-leaking gumable sealant for concealed sealant for exposed applications.
9. Fire Resistance. Provide type "X" where indicated and where required in fire-resistance rated assemblies.

- TILEWORK.
- Scope.
1. Finish and install tile, grout, mastic, mortar, sealer, etc., complete. Work shall be clean, plumb, level, except as areas intended to drain, true to line with consistent joints.

- General.
1. Standards. Apply to the work except as otherwise indicated.
2. American National Standards Institute (ANSI), mortar and grout materials and installation standards.
3. Standard specification for ceramic tile ANSI A117.
4. Single-component sealants, ASTM C-420, Type S, Grade NS, use NT for use in joints in non-traffic areas.

- Installation.
1. Tile on floor, slab or wood framed shall be installed per the Ceramic Tile Institute standards and the Tile Council of America.
2. Install mud set tile at counters, tubs and showers per the Ceramic Tile Institute and the Tile Council of America standards.
3. Provide waterproof membrane beneath tile over water resistant backing board as recommended by manufacturer and Ceramic Tile Institute and the Tile Council of America standards at all areas subject to moisture and water (i.e., tubs and showers).

- Materials.
1. Tile and grout as selected by Owner.
2. Installation of grouted tile flooring is not recommended over wood framed floor systems.

- PAINTING.
- Scope.
1. Provide painting work as indicated and specified, complete including preparation of surfaces other than those that are factory primed.

- General.
1. Color Selection. Seven (7) days prior to beginning work, furnish Architect with color chips for surfaces other than those that are factory primed. Submit samples for Architect's review of color and texture only.

- Workmanship.
1. Each coat shall be uniformly applied, well brushed out and free of brush marks, runs, sags, or skips.
2. Paint. Finishes shall be cut sharply to line. Protect adjacent surfaces.
3. Mix and apply paint and stains in accordance with the manufacturer's instructions.
4. Surfaces shall be masked or removed prior to painting or staining.
5. Subcontractor will be responsible for any damage resulting from overspray, and necessary clean-up.
6. Semi-gloss paint to be roller or brush applied.

- Preparation of Surfaces.
1. Surfaces shall be clean and dry and in suitable condition for finish specified. Remove all oil, grease, bond breaking agents, dust, mill scale and efflorescence.
2. Grouts, seals, and joints shall be filled, sanded smooth, and sealed. Wood surfaces, except resawn wood, shall be sanded perfectly smooth. Sanding dust shall be completely removed.
3. All surfaces shall be primed with a black-painted prior to installation, to minimize inconsistent shrinkage.

- Materials.
1. Mix, prepare, and store painting and finishing materials in accordance with manufacturer's directions.
2. Submit list of materials and manufacturers for Owner's and Architect's approval.
3. All materials shall be delivered to the site in sealed original manufacturer's containers.

- Execution.
1. Preparation. Prepare cementitious surfaces of concrete, concrete block, masonry materials to be painted by removing efflorescence, chalk, dust, dirt, grease and oils, and by roughing to remove glaze. Do not paint over surfaces where alkalinity or moisture content exceeds manufacturer's recommendations.
2. Seal wood required to be job-painted, prime edges, ends, face, undersides and backside of counters, cases, cabinets, etc., use spore varnish for back priming where transparent finish is required.
3. Paneling. Back prime interior paneling only where masonry, plaster or other wet wall construction occurs on backside.
4. Terrazzo, marble and stone surfaces which are not galvanized or shop-coated, remove oil, grease, loose dirt, mill scale and other foreign substances by solvent or mechanical cleaning. Touchup shop-coated prime coats wherever damaged.
5. Non-ferrous metal. Clean galvanized surfaces free of oil and surface contaminants with non-petroleum based solvent.
6. Rough sand and resawn surfaces to receive stain. DO NOT prime unless otherwise noted on plan.
7. Roof Flashings. Painting Sub-Contractor shall provide paint to match roofing color for painting roof flashings and vents. Painting of such flashings and vents shall be by Roofing Sub-Contractor.

- EXTERIOR PLASTER.
- General.
1. Comply with the following:
- A. "Plaster/Metal Framing Systems/Lath Manual."
- B. California Lathing and Plastering Contractors Association recommendations.

- Materials.
1. Plaster, Portland Cement Plaster, ASTM C150, Type I, II, III, IIII.
2. Lime, ASTM C-206.
3. Aggregates. Clean and graded from coarse to fine, ASTM C144-74.7.
4. Water. Potable.
5. Lath. Wire fabric over 15 lbs. paper or paper backed woven wire fabric.



17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:
Abel & Elizabeth Cinnar
13063 Via Alia, Riverside, CA 92503

2 Nov, 2021

2

County of Riverside
4080 Lemon St. 9th Floor
Riverside, CA 92503
APN: 951-836-0530

APPROVED
01/13/2023 1:42:40 PM
REVIEWED BY: MANASHED

Approval of these plans shall not be construed to be a permit for, or an approval of, any violations of any of the provisions of the state or county laws. This set of plans must be kept on the job until completion.

HOMEOWNER: J.A RUSSO ENTERPRISES, INC
PH: 951.836.0530

ADDRESS: VIA ALIA
RIVERSIDE, CA 92503
APN: 269-470-030

PHOTOVOLTAIC SOLAR PROJECT INFORMATION:
SYSTEM SIZE: 2,730 kW (DC), 2,320 kW (AC)

MODULES: (8) Q CELLS Q.PEAK DUO-G6+ 340
PEAK POWER = 340 W
MAX OPERATING CURRENT = 10.16 A
MAX OPERATING VOLTAGE = 33.451 V
OPEN CIRCUIT VOLTAGE = 40.24 V
SHORT CIRCUIT CURRENT = 10.68 A
MAX SERIES FUSE RATING = 20 A
TEMP. COEFF. OF Voc = -0.27%/C
DIMENSIONS = 68.5" X 40.6" X 1.3"
WEIGHT = 43.9 LBS


ARRAY: INSTALLED WEIGHT = 2.9 PSF
ROOF COVERAGE = 155 SF,
LESS THAN 50% OF TOTAL ROOF AREA

MOUNTING HARDWARE: IRONRIDGE XR10 LIGHT RAIL
IRONRIDGE FLASHED FOOT ATTACHMENTS
3/8" STAINLESS STEEL LAG BOLTS @
48" OC OR LESS WITH A MINIMUM OF
3/4" PENETRATION INTO ROOF RAFTERS

EXISTING ROOF INFO: 1 STORY, ASPHALT SHINGLE
2 X 4 TRUSSES @ 24" OC

INVERTER/DC DISCONNECT: (8) ENPHASE IQ7PLUS-72-2-US
MICROINVERTERS
MAX DC INPUT VOLTAGE = 60 V
START-UP VOLTAGE = 22 V
OPERATING VOLTAGE RANGE = 16 V - 60 V
MAX INPUT SHORT CIRCUIT CURRENT = 15.0 A
RATED AC POWER = 290 W
AC VOLTAGE = 240 V
MAX AC OUTPUT CURRENT = 1.21 A
MAX AC OVERCURRENT PROTECTION = 30.0 A
MAX NUMBER OF INVERTERS PER CIRCUIT = 13
NEMA TYPE 6 ENCLOSURE
DIMENSIONS = 8.4" X 6.9" X 1.2"
WEIGHT = 2.4 LBS

NOTICE:
ANY CHANGES TO OR USES OF THESE DOCUMENTS DRAWINGS WITHOUT THE
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VICINITY MAP
NTS

SHEET INDEX:
SHEET 1 PROJECT INFO, VICINITY MAP, NOTES, SCOPE OF WORK
SHEET 2 SITE/ROOF PLAN, ELEVATION DETAIL
SHEET 3 ELECTRIC LINE DRAWING, GROUNDING DETAIL
SHEET 4 CALCULATIONS, SIGNS
ATTACHED MODULE, INVERTER, MOUNTING HARDWARE SPEC SHEETS

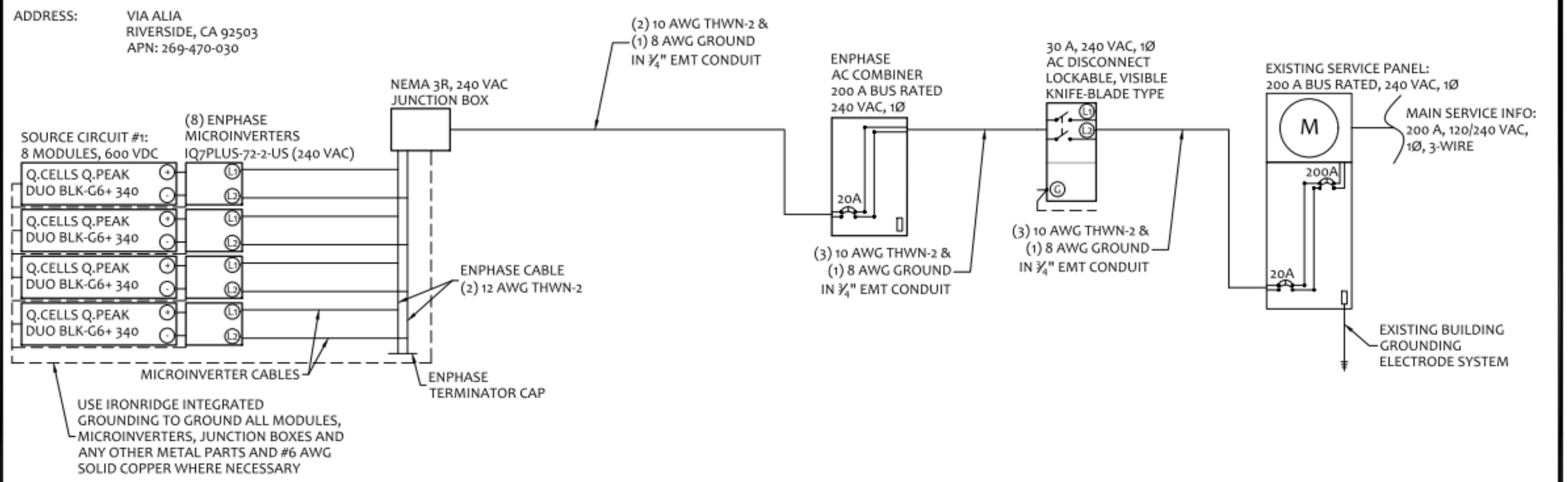
GENERAL NOTES:
1. THIS SYSTEM COMPLIES WITH THE 2019 CRC, 2019 CBC, 2019 CFC, AND THE 2019 CEC.
2. THE SYSTEM WILL NOT BE TURNED-ON UNTIL THE SERVING UTILITY COMPANY HAS BEEN NOTIFIED.
3. THE INSTALLED SOLAR SYSTEM HAS A DISTRIBUTED WEIGHT LESS THAN 4 PSF. THE CONCENTRATED LOAD FOR EACH VERTICAL SUPPORT IS LESS THAN 40 LBS.
4. ALL PV EQUIPMENT IS LISTED BY A RECOGNIZED TESTING LAB. INVERTERS ARE UL 1741 COMPLIANT.
5. THE BACKFED BREAKER WILL BE LOCATED AT THE OPPOSITE END OF THE BUS FROM THE MAIN BREAKER.
6. CONDUCTORS ARE 90° C RATED COPPER WIRE.
7. ANY CONDUCTORS EXPOSED TO SUNLIGHT ARE LISTED AS SUNLIGHT RESISTANT.
8. IF DC CONDUCTORS ARE RUN INSIDE THE BUILDING, THEY WILL BE CONTAINED IN A METAL RACEWAY.
9. ANY CONDUCTORS BETWEEN SEPARATE ARRAYS ON THE ROOF WILL BE PROTECTED IN CONDUIT.
10. THE EQUIPMENT GROUNDING CONDUCTOR ON THE ROOF WILL BE PROTECTED FROM PHYSICAL DAMAGE. IT WILL BE TUCKED NEATLY UNDER THE MODULES AND RAILS AND SECURED IN PLACE.
11. THE MODULES WILL BE ATTACHED TO THE EQUIPMENT GROUNDING CONDUCTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
12. ALL EXTERIOR CONDUIT, FITTINGS AND BOXES ARE RAIN-TIGHT AND APPROVED FOR USE IN WET LOCATIONS.
13. CLEARANCES AROUND ALL ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH CEC 110.26.
14. SOLAR MODULES WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
15. IF THE EXISTING MAIN SERVICE PANEL DOES NOT HAVE A VERIFIABLE GROUNDING ELECTRODE SYSTEM, A GROUNDING ELECTRODE SYSTEM WILL BE INSTALLED PER CEC 250.50. THE ELECTRICAL SERVICE WILL BE BONDED TO THE WATER AND GAS PIPING PER SECTION 250.104 OF THE CEC.
16. A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH CAL-OSHA REGULATIONS.

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.1300
SHEET 1 OF 4

HOMEOWNER: J.A RUSSO ENTERPRISES, INC
PH: 951.836.0530

ADDRESS: VIA ALIA
RIVERSIDE, CA 92503
APN: 269-470-030

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USE IRONRIDGE INTEGRATED GROUNDING TO GROUND ALL MODULES, MICROINVERTERS, JUNCTION BOXES AND ANY OTHER METAL PARTS AND #6 AWG SOLID COPPER WHERE NECESSARY

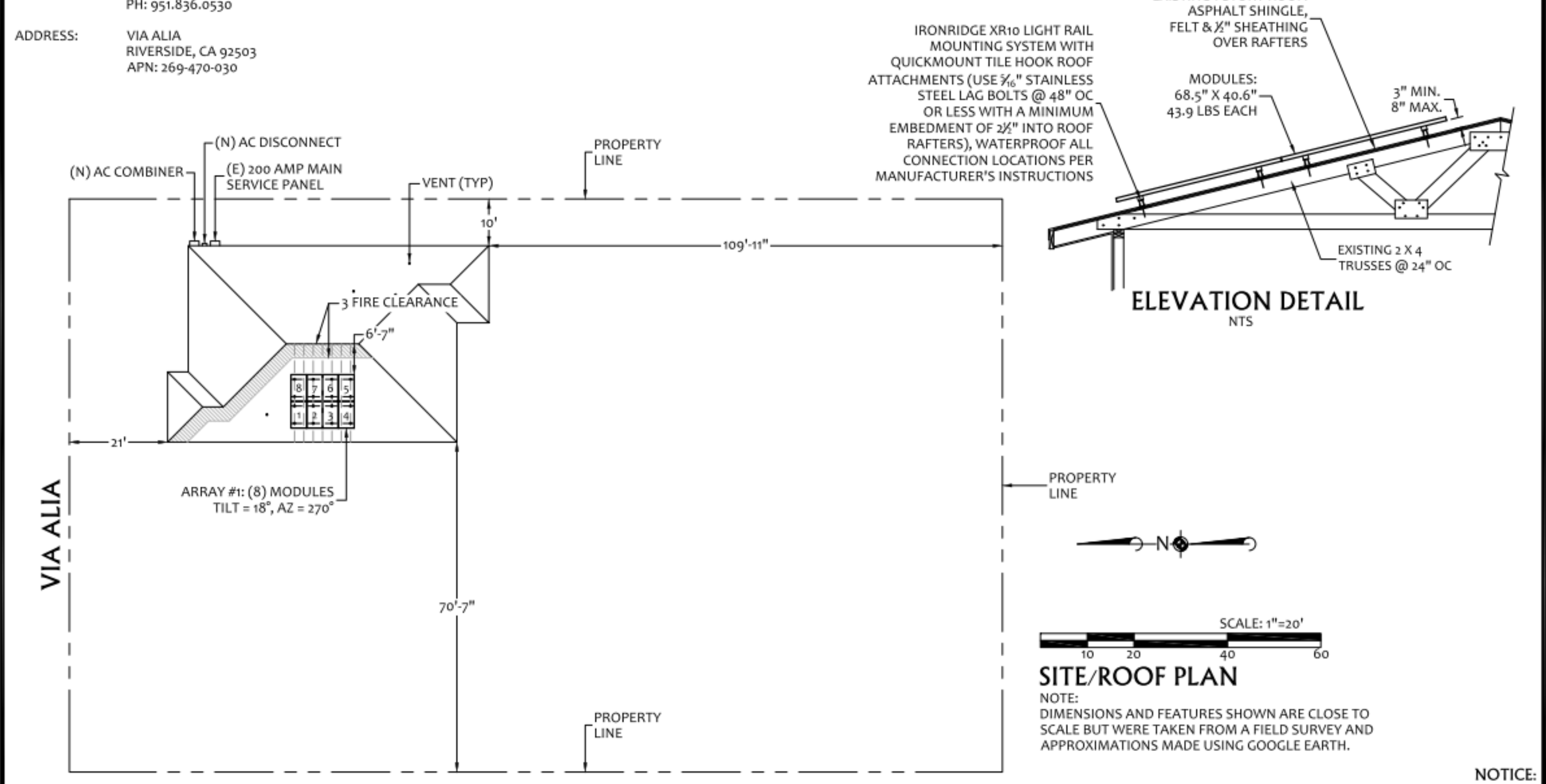
SCOPE OF WORK:
INSTALL (8) Q CELLS Q.PEAK DUO BLK-G6+ 340 SOLAR ELECTRIC MODULES AND (8) ENPHASE IQ7PLUS-72-2-US MICROINVERTERS ON THE EXISTING 1ST STORY TORCH DOWN ROOF. INSTALL ASSOCIATED MOUNTING HARDWARE, JUNCTION BOXES, CONDUIT, CONDUCTORS AND GROUNDING. INSTALL (1) AC COMBINER, (1) AC DISCONNECT, AND INSTALL OCPD IN MAIN SERVICE PANEL.

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.1300
SHEET 3 OF 4

HOMEOWNER: J.A RUSSO ENTERPRISES, INC
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SITE/ROOF PLAN
NOTE:
DIMENSIONS AND FEATURES SHOWN ARE CLOSE TO SCALE BUT WERE TAKEN FROM A FIELD SURVEY AND APPROXIMATIONS MADE USING GOOGLE EARTH.

SCOPE OF WORK:
INSTALL (8) Q CELLS Q.PEAK DUO BLK-G6+ 340 SOLAR ELECTRIC MODULES AND (8) ENPHASE IQ7PLUS-72-2-US MICROINVERTERS ON THE EXISTING 1ST STORY TORCH DOWN ROOF. INSTALL ASSOCIATED MOUNTING HARDWARE, JUNCTION BOXES, CONDUIT, CONDUCTORS AND GROUNDING. INSTALL (1) AC COMBINER, (1) AC DISCONNECT, AND INSTALL OCPD IN MAIN SERVICE PANEL.

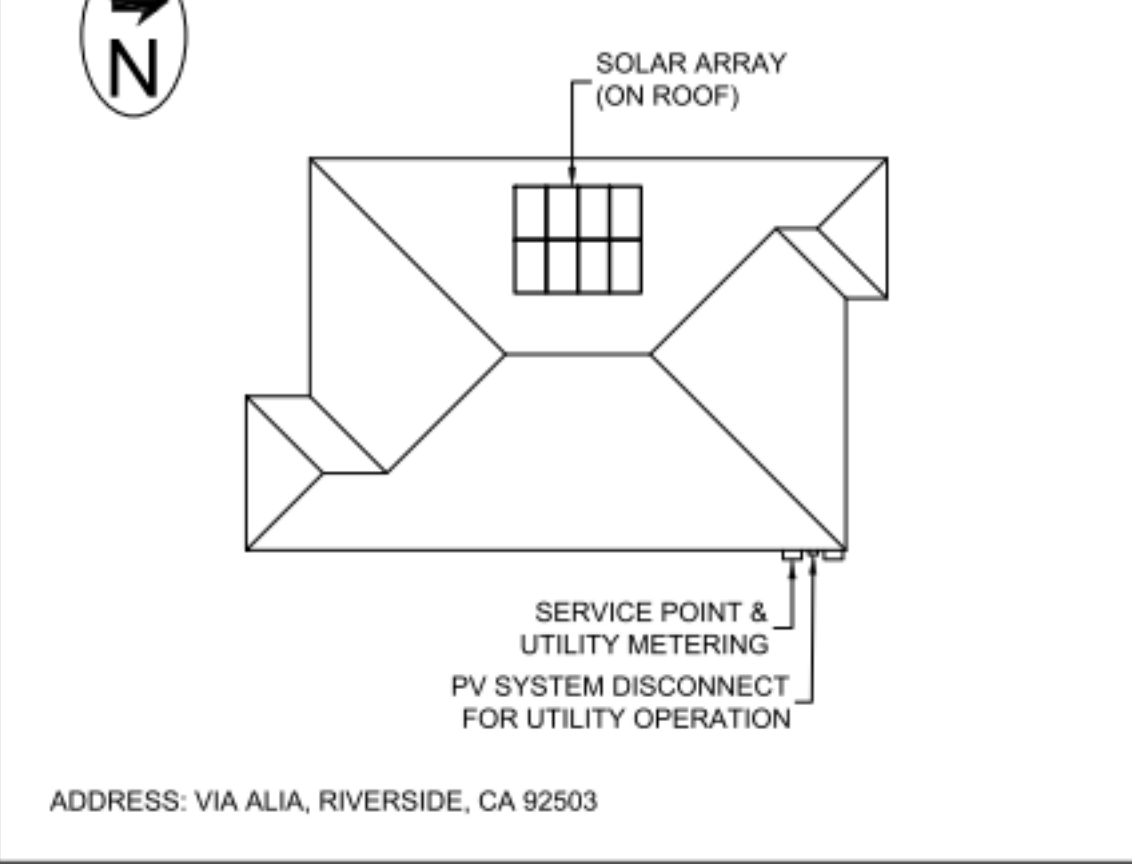
PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.1300
SHEET 2 OF 4

HOMEOWNER: J.A RUSSO ENTERPRISES, INC
PH: 951.836.0530

ADDRESS: VIA ALIA
RIVERSIDE, CA 92503
APN: 269-470-030

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CAUTION:
POWER TO THIS BUILDING IS ALSO
SUPPLIED FROM THE FOLLOWING SOURCES
WITH DISCONNECTS AS SHOWN.




TO BE INSTALLED ON THE OUTSIDE COVER OF THE MAIN SERVICE DISCONNECT:

SYSTEM SIGNAGE
ALL SIGNAGE SHALL BE REFLECTIVE, UV RESISTANT PLASTIC, RED IN COLOR WITH WHITE LETTERING, AND ATTACHED WITH WEATHERPROOF ADHESIVE OR OTHER APPROVED METHOD. ALL LETTERS SHALL BE A MINIMUM OF 3/4" HEIGHT AND ALL CAPITALIZED.
ALL CONDUIT, JUNCTION BOXES AND OTHER ENCLOSURES SHALL BE MARKED AT 10' MAX INTERVALS AND AT ALL BENDS, TERMINATIONS, SPLICES OR CONNECTIONS WITH "WARNING: PHOTOVOLTAIC POWER SOURCE".
TO BE INSTALLED AT ALL SERVICEABLE PANELS OR BOXES AND AT ALL DISCONNECTS:
WARNING
ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
TO BE INSTALLED ON THE FRONT OF THE AC DISCONNECT:
RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM
RATED AC OUTPUT CURRENT = 12.10 A
NOMINAL OPERATING AC VOLTAGE = 240 V
TO BE INSTALLED AT THE BACKFED BREAKER SERVING THE PV SOLAR SYSTEM:
WARNING
POWER SOURCE OUTPUT CONNECTION - DO NOT RELOCATE THIS OVERCURRENT DEVICE
TO BE INSTALLED ON THE FRONT OF THE MAIN SERVICE DISCONNECT:
"SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN" SHALL BE BLACK LETTERING ON YELLOW BACKGROUND. THE REMAINDER OF THE SIGN SHALL BE BLACK LETTERING ON WHITE BACKGROUND.
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

SYSTEM CALCULATIONS:
MODULE OPERATING CURRENT = 10.02 A
INVERTER MAX INPUT CURRENT = 15.00 A
10.02 A < 15.00 A, OK
MODULE OPERATING VOLTAGE = 33.94 V
INVERTER INPUT OPERATING VOLTAGE RANGE = 16 V - 60 V
16 V < 33.94 V < 60 V, OK
MODULE Voc = 40.66 V
VOLTAGE CORRECTION FACTOR = 1.14
40.66 V (1.14) = 46.35 V
INVERTER MAX INPUT VOLTAGE = 60 V
46.35 V < 60 V, OK
MODULE Isc = 10.52 A
10.52 A (1.25)(1.25) = 16.44 A [Isc]
TOTAL NUMBER OF MICROINVERTERS = 8
INVERTER MAX OUTPUT CURRENT = 1.21 A
(8) (1.21 A) (1.25) = 12.10 A [Ic], USE 30 A BREAKER
MAIN SERVICE PANEL BUS RATING = 200 A
MAIN SERVICE PANEL MAIN OCPD = 200 A
200 A + 20 A SOLAR OCPD = 220 A
200 A BUS (1.2) = 240 A
220 A < 240 A, OK
WIRE CALCULATIONS:
FROM THE MICROINVERTERS TO THE AC COMBINER:
AMBIENT TEMPERATURE = 39°C
TEMPERATURE ADJUSTMENT FACTOR FOR CONDUIT NOT OFFSET FROM ROOF = 33°C
ADJUSTMENT FACTOR PER TABLE 310.15(B)(2)(a) FOR 90°C INSULATED CONDUCTOR AT 39°C = 0.91
Ic = 12.10 A
12.10 A (0.91) = 11.01 A
SELECT WIRE SIZE WITH AMPACITY GREATER THAN 11.01 A, USE 10 AWG THWN-2 COPPER WIRE WITH AN AMPACITY OF 40 A
SELECT CONDUIT FOR (2) 10 AWG THWN-2 & (1) 8 AWG GROUND = 3/4" EMT CONDUIT
FROM THE AC COMBINER TO THE MAIN SERVICE PANEL:
ADJUSTMENT FACTOR PER TABLE 310.15(B)(2)(a) FOR 90°C INSULATED CONDUCTOR AT 39°C = 0.91
Ic = 12.10 A
12.10 A (0.91) = 11.01 A
SELECT WIRE SIZE WITH AMPACITY GREATER THAN 11.01 A, USE 10 AWG THWN-2 COPPER WIRE WITH AN AMPACITY OF 40 A
SELECT CONDUIT FOR (3) 10 AWG THWN-2 & (1) 8 AWG GROUND = 3/4" EMT CONDUIT

SCOPE OF WORK:
INSTALL (8) Q CELLS Q.PEAK DUO BLK-G6+ 340 SOLAR ELECTRIC MODULES AND (8) ENPHASE IQ7PLUS-72-2-US MICROINVERTERS ON THE EXISTING 1ST STORY TORCH DOWN ROOF. INSTALL ASSOCIATED MOUNTING HARDWARE, JUNCTION BOXES, CONDUIT, CONDUCTORS AND GROUNDING. INSTALL (1) AC COMBINER, (1) AC DISCONNECT, AND INSTALL OCPD IN MAIN SERVICE PANEL.

PLANS PREPARED BY:
JENNIFER KEMME
PH: 909.748.1300
SHEET 4 OF 4



ANDRESEN
ARCHITECTURE
INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:
Abel & Elizabeth Ciurac
13063 Via Alia, Riverside, CA 92503

2 Nov. 2021

21-4294

12-31-23
RENEWAL
DATE

PV1

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County of Riverside
4080 Lerdo St. 9th Floor
Riverside, CA 92503
APN: 01/13/2023 142:43 PM
REVIEWED BY: MANASHED
Approval of these plans shall not be construed to be a permit for, or an approval of, any violations of any of the provisions of the state or county laws. This set of plans must be kept on the job until completion.

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Q. PEAK DUO-G6+
340-360
ENDURING HIGH PERFORMANCE

Q. ANTUM TECHNOLOGY

Q. CELLS

Q. ANTUM TECHNOLOGY

Q. CELLS

- Q. ANTUM TECHNOLOGY: LOW LEVELLED COST OF ELECTRICITY**
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate up to 23.4%.
- INNOVATIVE ALL-WEATHER TECHNOLOGY**
Optimal yields, whatever the weather with excellent low-light and temperature behaviour.
- ENDURING HIGH PERFORMANCE**
Long-term yield security with Anti-LID Technology, Hot-Spot Protection and Traceable Quality The Q™.
- EXTREME WEATHER RATING**
High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (6000Pa).
- A RELIABLE INVESTMENT**
Inclusive 25-year product warranty and 25-year linear performance warranty*.
- STATE OF THE ART MODULE TECHNOLOGY**
Q. ANTUM DUO combines cutting edge cell separation and innovative wiring with Q. ANTUM Technology.

THE IDEAL SOLUTION FOR:
Residential and commercial buildings
Rooftop and ground-mounted solar power plants

Engineered in Germany

Q CELLS

Data Sheet
Enphase IQ7 and IQ7+ Microinverters
Region: AMERICAS

Enphase IQ7 and IQ7+ Microinverters

The high-powered smart grid-ready **Enphase IQ7 Micro™** and **Enphase IQ7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ7 and IQ7+ Microinverters integrate with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ7+ Micro is required to support 72-cell modules.

To learn more about Enphase offerings, visit enphase.com

ENPHASE

Engineered in Germany

Q CELLS

Enphase IQ7 and IQ7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US / IQ7-60-B-US	IQ7PLUS-72-2-US / IQ7PLUS-72-B-US
Commonly used module pairings¹	235 W / 350 W +	235 W / 440 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V / 37 V	27 V / 45 V
Operating range	16 V / 48 V	16 V / 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Over-voltage class DC port	II	II
DC port backfeed current	0 A	0 A
PV array configuration	1 x 1 ungrounded array. No additional DC side protection required.	DC side protection requires max 20 A per branch circuit
OUTPUT DATA (AC)	IQ7 Microinverter	IQ7+ Microinverter
Peak output power	250 VA	295 VA
Maximum continuous output power	240 VA	290 VA
Nominal (UL) voltage/range²	240 V / 208 V / 211-264 V	240 V / 208 V / 211-264 V
Maximum continuous output current	1.0 A (240 V) 1.15 A (208 V)	1.21 A (240 V) 1.39 A (208 V)
Nominal frequency	60 Hz	60 Hz
Extended frequency range	47 - 68 Hz	47 - 68 Hz
AC short circuit fault current over 3 cycles	5.8 Arms	5.8 Arms
Maximum units per 20 A (0-1) branch circuit³	13 (240 VAC) 13 (208 VAC)	11 (240 VAC) 11 (208 VAC)
Overvoltage class AC port	III	III
AC port backfeed current	0 A	0 A
Power factor setting	1.0	1.0
Power factor (adjustable)	0.7 leading - 0.7 lagging	0.7 leading - 0.7 lagging
EFFICIENCY	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.5 %
CEC weighted efficiency	97.0 %	97.0 %
MECHANICAL DATA		
Ambient temperature range	-40°C to +65°C	
Relative humidity range	4% to 100% (condensing)	
Connector type (IQ7-60-2-US & IQ7PLUS-72-2-US)	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)	
Connector type (IQ7-60-B-US & IQ7PLUS-72-B-US)	Friends PV2 (MC4 interchangeable)	
Adapters for modules with MC4 or UTX connectors:	PV2 to MC4, order ECA-S2D-S22	
PV2 to UTX, order ECA-S2D-S25		
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)	
Weight	1.08 kg (2.38 lbs)	
Cooling	Natural convection - No fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure	
Environmental category / UV exposure rating	NEMA Type 6 / outdoor	
FEATURES		
Communication	Power Line Communication (PLC)	
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy. The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.	
Disconnecting means	CA Rule 21 (UL 1741-SA)	
Compliance	UL 61819-1, UL 1741/IEEE1547, FCC Part 15 Class B, IEC 60335-1, IEC 60335-2-1, IEC 60335-2-2, IEC 60335-2-3, IEC 60335-2-4, IEC 60335-2-5, IEC 60335-2-6, IEC 60335-2-7, IEC 60335-2-8, IEC 60335-2-9, IEC 60335-2-10, IEC 60335-2-11, IEC 60335-2-12, IEC 60335-2-13, IEC 60335-2-14, IEC 60335-2-15, IEC 60335-2-16, IEC 60335-2-17, IEC 60335-2-18, IEC 60335-2-19, IEC 60335-2-20, IEC 60335-2-21, IEC 60335-2-22, IEC 60335-2-23, IEC 60335-2-24, IEC 60335-2-25, IEC 60335-2-26, IEC 60335-2-27, IEC 60335-2-28, IEC 60335-2-29, IEC 60335-2-30, IEC 60335-2-31, IEC 60335-2-32, IEC 60335-2-33, IEC 60335-2-34, IEC 60335-2-35, IEC 60335-2-36, IEC 60335-2-37, IEC 60335-2-38, IEC 60335-2-39, IEC 60335-2-40, IEC 60335-2-41, IEC 60335-2-42, IEC 60335-2-43, IEC 60335-2-44, IEC 60335-2-45, IEC 60335-2-46, IEC 60335-2-47, IEC 60335-2-48, IEC 60335-2-49, IEC 60335-2-50, IEC 60335-2-51, IEC 60335-2-52, IEC 60335-2-53, IEC 60335-2-54, IEC 60335-2-55, IEC 60335-2-56, IEC 60335-2-57, IEC 60335-2-58, IEC 60335-2-59, IEC 60335-2-60, IEC 60335-2-61, IEC 60335-2-62, IEC 60335-2-63, IEC 60335-2-64, IEC 60335-2-65, IEC 60335-2-66, IEC 60335-2-67, IEC 60335-2-68, IEC 60335-2-69, IEC 60335-2-70, IEC 60335-2-71, IEC 60335-2-72, IEC 60335-2-73, IEC 60335-2-74, IEC 60335-2-75, IEC 60335-2-76, IEC 60335-2-77, IEC 60335-2-78, IEC 60335-2-79, IEC 60335-2-80, IEC 60335-2-81, IEC 60335-2-82, IEC 60335-2-83, IEC 60335-2-84, IEC 60335-2-85, IEC 60335-2-86, IEC 60335-2-87, IEC 60335-2-88, IEC 60335-2-89, IEC 60335-2-90, IEC 60335-2-91, IEC 60335-2-92, IEC 60335-2-93, IEC 60335-2-94, IEC 60335-2-95, IEC 60335-2-96, IEC 60335-2-97, IEC 60335-2-98, IEC 60335-2-99, IEC 60335-2-100	

1. No enforced DC:AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>
2. Nominal voltage range can be extended beyond nominal if required by the utility.
3. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit enphase.com

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Datasheet

IRONRIDGE

Flush Mount System

Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Our components have been tested to the limit and proven in extreme environments, including Florida's high-velocity hurricane zones.

Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.

Strength Tested
All components evaluated for superior structural performance.

PE Certified
Pre-stamped engineering letters available in most states.

Class A Fire Rating
Certified to maintain the fire resistance rating of the existing roof.

Design Assistant
Online software makes it simple to create, share, and price projects.

UL 2703 Listed System
Entire system and components meet newest effective UL 2703 standard.

25-Year Warranty
Products guaranteed to be free of impairing defects.

XR Rails ®

XR10 Rail

A low-profile mounting rail for regions with light snow.
• 6' spanning capability
• Moderate load capability
• Clear and black finish

XR100 Rail

The ultimate residential solar mounting rail.
• 8' spanning capability
• Heavy load capability
• Clear and black finish

XR1000 Rail

A heavyweight mounting rail for commercial projects.
• 12' spanning capability
• Extreme load capability
• Clear anodized finish

BOSS™ Bonded Splices

Bonded Structural Splices connect XR Rails together.
• Integrated bonding
• No tools or hardware
• Self-centering stop tab

Clamps & Grounding ®

UFO™

Universal Fastening Objects bond modules to rails.
• Fully assembled & lubed
• Single, universal size
• Clear and black finish

Stopper Sleeves

Snap onto the UFO to turn into a bonded end clamp.
• Bonds modules to rails
• Sized to match modules
• Clear and black finish

CAMO™

Bond modules to rails while staying completely hidden.
• Universal end-clamp
• Tool-less installation
• Fully assembled

Bonding Hardware

Bond and attach XR Rails to roof attachments.
• T & Square Bolt options
• Nut uses 7/16" socket
• Assembled and lubricated

Attachments ®

FlashFoot2™

Flash and mount XR Rails with superior waterproofing.
• Twist-on Cap eases install
• Wind-driven rain tested
• Mill and black finish

FlashVue™

Flash and mount conduit, strut, or junction boxes.
• Twist-on Cap eases install
• Wind-driven rain tested
• Secures 3/4" or 1" conduit

Knockout Tile

Replace tiles and ensure superior waterproofing.
• Flat, S, & W tile profiles
• Form-fit compression seal
• Single-lag universal base

All Tile Hook

Mount on tile roofs with a simple, adjustable hook.
• Works on flat, S, & W tiles
• Single-socket installation
• Optional deck flashing

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
[Go to IronRidge.com/design](https://ironridge.com/design)

Endorsed by FL Building Commission
Flush Mount is the first mounting system to receive Florida Product approval for 2017 Florida Building Code compliance.
[Learn More at bit.ly/floridacert](https://bit.ly/floridacert)

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ENPHASE

Enphase AC Combiner Box

MODEL NUMBER	AC Combiner Box XAM1-120 (880-00211)	AC combiner with Enphase Envoy-S Metered™ for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional consumption monitoring (+/- 2.5%).
ACCESSORIES (order separately)	Enphase Module Connect™ CELLMODEM-01	Plug and play industrial grade cellular modem with five-year data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.)
Consumption Monitoring CT CT-200-SPLIT		Split core current transformers enable whole home consumption metering (+/- 2.5%).
ELECTRICAL SPECIFICATIONS		
Maximum system size	11.5 kW at 240 VAC	
Rating	Continuous duty	
Maximum system voltage	240 VAC	
Rated output current	48 A	
Rated input current, each input	16 A	
Maximum fuses/circuit breaker rating (output)	60 A	
Solar branch circuit breakers	Three 2-pole 20A/240 VAC DIN rail-mounted breakers	
Production Metering CT	200A solid core pre-installed on solar busbar and wired to Envoy-S	
MECHANICAL DATA		
Dimensions (WxHxD)	38.0 x 38.7 x 20.3 cm (15.0" x 15.3" x 8.0")	
Weight	5.1 kg (11.2 lbs)	
Ambient temperature range	-40°C to +48°C (-40°F to 118°F)	
Cooling	Vented, natural convection	
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction	
Wire size	12 to 6 AWG copper conductors for branch inputs. 12 to 4 AWG copper conductors for combined output. Follow local code requirements for conductor sizing.	
Altitude	To 2000 meters (6,560 feet)	
INTERNET CONNECTION OPTIONS		
Integrated Wi-Fi	802.11b/g/n	
Ethernet	802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)	
Cellular	Optional, CELLMODEM-01 (not included)	
COMPLIANCE		
Compliance, Combiner Box	UL 1741	
Compliance, Envoy-S	UL 916 CAN/CSA C22.2 No. 61010-1 47 CFR, Part 15, Class B, ICES 003 IEC/EN 61010-1:2016 EN50065-1, EN61000-4-5, EN61000-4-1, EN61000-4-2 Metering, ANSI C12.20 accuracy class 0.5	

To learn more about Enphase offerings, visit enphase.com

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ENPHASE

AAI

ANDRESEN
ARCHITECTURE
INC.

17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

Proposed Single Family Residence For:

Abel & Elizabeth Ciurac
13063 Via Alia, Riverside, CA 92503

2 Nov. 2021

21-4294

PV Plans

PV2

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AAI ARCHITECTURAL ENGINEERING
17087 ORANGE WAY, FONTANA, CA. 92335
(909) 355-6688 (TEL.)

doug.andresen@aaifirm.com



J.A. RUSSO ENT.
13063 VIA ALIA PARCEL 30
RIVERSIDE, CA. 92503

21-4294
5 OCT. 2021

SHEET INDEX: **PAGES:**

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FOOTING CALCULATIONS	22 - 24



ROOF LOAD

DEAD LOAD:

CONCRETE TILE	9.5	PSF
SHTG	2.0	PSF
FRAMING	3.0	PSF
INSULATION	1.0	PSF
MISCELLANEOUS	2.0	PSF
GYP BOARD	2.5	PSF
TOTAL	20.0	PSF
LIVE LOAD:	20.0	PSF
W_T =	40.0	PSF

INTERIOR WALLS

DEAD LOAD:

GYP BOARD	4.0	PSF
FRAMING	2.0	PSF
TOTAL	6.0	PSF

EXTERIOR WALLS

DEAD LOAD:

STUCCO	10.0	PSF (25 PSF AT
GYP BOARD	2.0	PSF VENEER)
MISC.	2.0	PSF
FRAMING	2.0	PSF
TOTAL	16.0	PSF (31.0 PSF AT
		VENEER)

STONE VENEER IS ONLY 3'-0" HIGH
 (BOTTOM HALF OF WALL IS
 NOT INCLUDED IN LATERAL ANALYSIS)

CHECK UPLIFT AT OVERHANG (ASCE 7-16 FIG. 6-2)

$$E_{OH} = (24.0 \text{ PSF})(1' \text{ OVERHANG})(2' \text{ O/C TRUSSES}) = 48 \# \text{ UPLIFT} < 455 \# \text{ OK!}$$

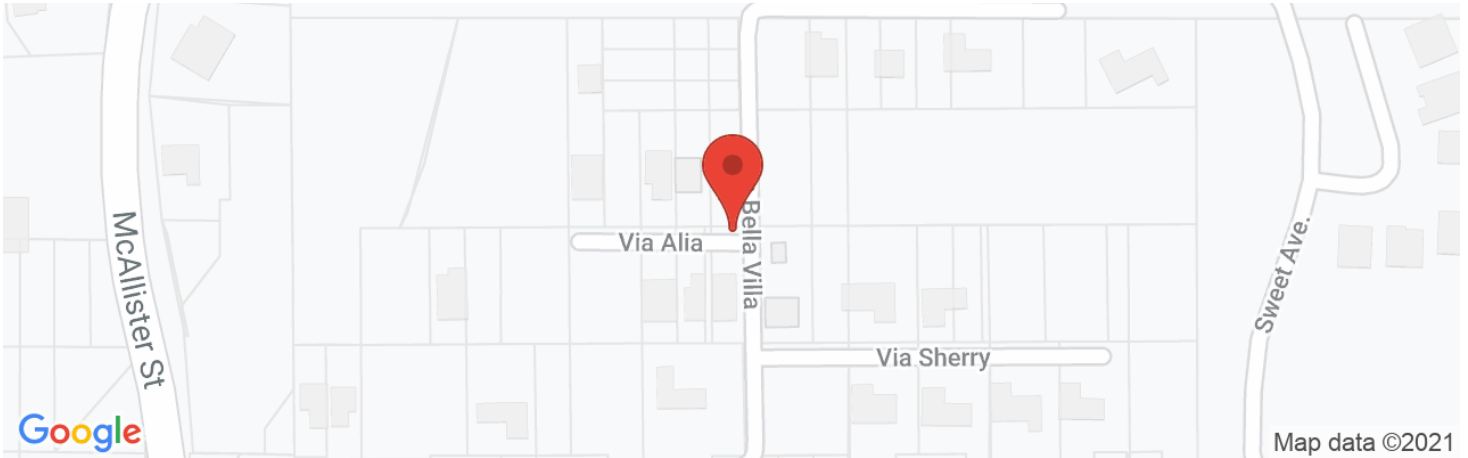
USE "SIMPSON" H1 CLIP AT EACH RAFTER

CONSTRUCTION OF THIS PROJECT SHALL BE IN CONFORMANCE WITH THE 2019 CALIFORNIA BUILDING CODE



Via Alia - Russo 030

Latitude, Longitude: 33.87522359, -117.43338323



Date	10/5/2021, 12:55:11 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	1.5	MCE_R ground motion. (for 0.2 second period)
S_1	0.589	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.8	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.2	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.544	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.653	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
S_{sRT}	1.643	Probabilistic risk-targeted ground motion. (0.2 second)
S_{sUH}	1.747	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
S_{sD}	1.5	Factored deterministic acceleration value. (0.2 second)
S_{1RT}	0.589	Probabilistic risk-targeted ground motion. (1.0 second)
S_{1UH}	0.64	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S_{1D}	0.6	Factored deterministic acceleration value. (1.0 second)
PGA_d	0.544	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.94	Mapped value of the risk coefficient at short periods
C_{R1}	0.92	Mapped value of the risk coefficient at a period of 1 s

Lateral Analysis (Seismic) ASCE 7-16 Section 12.8 Equivalent Lateral Force Procedure

2,725	Roof Area - Including Overhangs (sf)	
20	Roof Weight (psf)	
9	Wall Height (ft.)	
16	Average Wall Weight (psf)	
66	Length of Building (ft) (North / South Direction)	
40	Length of Building (ft) (East / West Direction)	
12	Mean Roof Height, h (ft)	
70	Length of All Walls (Interior & Exterior, one Direction - lf)	
59,540 #	Seismic Load (lbs)	Base Shear (psf) 3.75 psf

Lateral Load in N / S Direction

59,540 lbs.

ρ **EQ Shear (plf)**

1.30 154.65 plf

Lateral Load in E / W Direction

59,540 lbs.

ρ **EQ Shear (plf)**

1.30 255.17 plf

Seismic Base Shear

1.50 = S_S	$F_a = 1.20$	1.80 = $S_{MS} = F_a * S_S$	1.20 = $S_{DS} = 2/3 S_{MS}$
0.59 = S_1	$F_v = N/A$	N/A = $S_{M1} = F_v * S_1$	N/A = $S_{D1} = 2/3 S_{M1}$
6.50 = R		$D = \text{Site Class}$	$D = \text{SDC}$
0.20 = $T_a = C_t * h_n^x$ (Eq. 12.8-7)		$II = \text{Occup.}$	1.00 = $I_E \text{ Factor}$

12.00 = T_L = Long Period Transition (Fig. 22-12)

ASCE 7-16 (Eq. 12.8-2) $C_s = S_{DS} * I_E / R$ **0.13** GOVERNS

ASCE 7-16 (Eq. 12.8-2) $C_{s \text{ MAX}} = S_{DS} * I_E / R * T$ 7.04

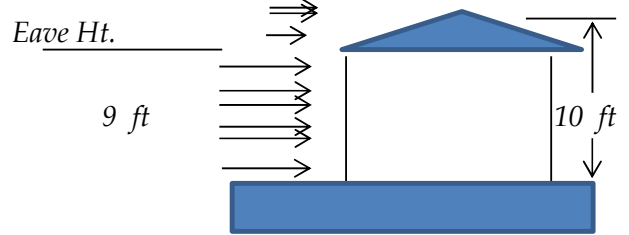
ASCE 7-16 (Eq. 12.8-2) $C_s = S_{DS} * T_L * I_E / R * T^2$ 55.38 Only occurs when $T_a > T_L$ (N/A on this project)

ASCE 7-16 (Eq. 12.8-2) $C_s = 0.44 * S_{DS} * I_E$ 0.007

ASCE 7-16 (Eq. 12.8-2) $C_s = 0.5 * S_{D1} * I_E / R$ N/A

One Story Lateral Analysis (Wind) ASCE 7-16 Section 28: Envelope Procedure

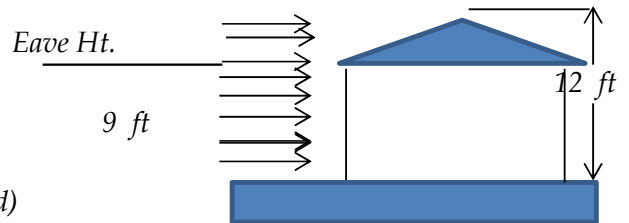
130	Basic Wind Speed (mph) (Fig. 26.5-1)	A	B	C	D
0.85	Directionality Factor, K_d (Table 26-6.1)	26.6	-7	17.7	-3.9
1.00	Risk Factor, I (Table 1.5-2)				
C	Exposure Category (Sec. 26.7)				
1.00	Topographic Factor, K_{zt} (Sec. 26.8)				
9.5	Terrain Exp. Constant, α (Table 26.9-1)				
1.15	Adjustment Factor, λ (Sec. 26.8)				
900	Terrain Exposure Constant, Z_g (feet)				
0.85	Gust Factor, G or G_f (Sec. 26.9)				
Enclosed	Enclosure Classification (Sec. 26.10)				
0.18	Internal Pressure Coefficient, G_{Cpi} (Table 26.11-1)				
A,B,C, & D Above	External Pressure Coefficient, C_p (Fig. 28-6.1)				
See Below	Design Wind Load, $p = qGC_p - qGC_{pi}$ (Eq. 28-4.1)				



Hip or Gable End

Building Data

4 :12	Roof Slope (inches per foot)
18.43	Theta Θ (degrees)
66	North / South Dimension (ft)
40	East / West Dimension (ft)
10	Mean Roof Height, h (ft) (Hip or Gable End)
12	Ridge Height, h (ft) (Gable Facing Ridge)
9	Plate Height (ft)



Gable Facing Ridge

North-South Direction

Hip or Gable End

Location	Trib.	Pressure	Load	Load * ω
Wall Above	1.00	0.00	0.00	0.00
Wall Below	4.50	0.00	0.00	0.00
Total (plf)				0.00

Gable Facing Ridge

Location	Trib.	Pressure	Load	Load * ω
Wall Above	3.00	0.00	0.00	0.00
Wall Below	4.50	0.00	0.00	0.00
Total (plf)				0.00

East-West Direction

Hip or Gable End

Location	Trib.	Pressure	Load	Load * ω
Wall Above	1.00	0.00	0.00	0.00
Wall Below	4.50	0.00	0	0.00
Total (plf)				0.00

Gable Facing Ridge

Location	Trib.	Pressure	Load	Load * ω
Wall Above	3.00	0.00	0.00	0.00
Wall Below	4.50	0.00	0	0.00
Total (plf)				0.00

When Alternative Basic Load Combination, Sec. 1605.3.2 is used, the wind load is magnified by $0.6\omega = 0.78$. Since all internal wind pressures for enclosed buildings act equally on all the internal surfaces (equally and in opposite directions) these pressures cancel each other out in the lateral directions only. Net uplift pressures acting on components to be analyzed and designed separately.

Line A

	←————→
9	Wall Height (ft.)
4	Total Shear Wall Length (ft.)
4	Shortest Shear Wall Segment (ft.)
4	Effective Shear Wall Length (ft.)
2.25	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
0.89	Modifier Where H / W Exceeds 2:1 ($r = 2*L/H$) for $2:1 > H/W < 3.5:1$ (Seismic Loads Only)
14	Total Diaphragm Length (ft.)
10	Total Non-Shear Wall Length (ft.)
0	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
3.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
5	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
75	Seismic Tributary Area (sf)
281	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
3.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
0	Overturning Moment (ft-lbs)
896	Dead Load of Wall
1.20	S_{DS}
387	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
597	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
559	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-156	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

70 plf < 249 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
249	382	489	649
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

20 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Plates to Roof Framing

4,040 # > 0 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere

Line B

	←————→
9	Wall Height (ft.)
6	Total Shear Wall Length (ft.)
3	Shortest Shear Wall Segment (ft.)
6	Effective Shear Wall Length (ft.)
3.00	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
0.67	Modifier Where H / W Exceeds 2:1 ($r = 2*L/H$) for $2:1 > H/W < 3.5:1$ (Seismic Loads Only)
40	Total Diaphragm Length (ft.)
6	Total Non-Shear Wall Length (ft.)
12	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
2.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
5	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
350	Seismic Tributary Area (sf)
1,311	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
8.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
5,899	Overturning Moment (ft-lbs)
672	Dead Load of Wall
1.20	S_{DS}
290	Resisting Moment (Seismic) (ft-lbs) ($0.6 - 0.14 S_{DS}$) $D \pm \rho E / 1.4$
448	Resisting Moment (Wind) (ft-lbs) ($2/3$) $D \pm \omega W$
1,982	Uplift (lbs) (Seismic) $D \pm E < 3,815$ # OK! Use STHD14 Holdown Strap
-158	Uplift (lbs) (Wind) $D \pm W < 3,815$ # OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

218 plf < 287 plf OK! Use Shear Wall Type <2>

Determine Shear Wall Type (Wind)

0 plf < 602 plf OK! Use Shear Wall Type <2>

Diaphragm Nailing (Seismic)

33 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Drag Truss

459 #


Drag Strap to Porch Beam

393 # < 2,050 # OK! Use "Simpson MSTA30"

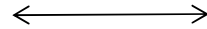
Plates to Roof Framing

4,584 # > 1,311 # OK! Use 4x8 @ 10" O/C at Shear Wall & 24" O/C Elsewhere (909) 355-6688
Andresen Architectural Engineering

<1>	<2>	<3>	<4>
187	287	367	487
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

<u>Line C</u>					
9	Wall Height (ft.)				
6	Total Shear Wall Length (ft.)				
3	Shortest Shear Wall Segment (ft.)				
6	Effective Shear Wall Length (ft.)				
3.00	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)				
0.67	Modifier Where H / W Exceeds 2:1 ($r = 2*L/H$) for 2:1 > H/W < 3.5:1 (Seismic Loads Only)				
40	Total Diaphragm Length (ft.)				
6	Total Non-Shear Wall Length (ft.)				
28	Diaphragm Length Requiring a Drag Strap (or Drag Truss)				
2.83	Wall Length to the Center of the Holdown (ft)				
16	Wall Weight (psf)				
5	1/2 of Tributary Floor or Roof Length (ft)				
16	Floor or Roof Weight (psf)				
3.75	Seismic Base Shear (psf)				
575	Seismic Tributary Area (sf)				
2,154	Seismic Shear Load This Line (lbs)				
0.00	Wind Load (plf)				
13.5	Wind Tributary Area (lf)				
0	Wind Load This Line (lbs)				
9,692	Overturning Moment (ft-lbs)				
672	Dead Load of Wall				
1.20	S_{DS}				
290	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$				
448	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$				
3,322	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap				
-158	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap				
<u>Determine Shear Wall Type (Seismic)</u>		<1>	<2>	<3>	<4>
359 plf	< 367 plf OK! Use Shear Wall Type <3>	187	287	367	487
<u>Determine Shear Wall Type (Wind)</u>		<1>	<2>	<3>	<4>
0 plf	< 770 plf OK! Use Shear Wall Type <3>	349 plf	602 plf	770 plf	1,022 plf
<u>Diaphragm Nailing (Seismic)</u>					
54 plf	< 240 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12") Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)				
<u>Diaphragm Nailing (Wind)</u>					
0 plf	< 335 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12") Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)				
<u>Drag Truss</u>					
2,154 #					
<u>Plates to Drag Truss</u>					
5,394 # >	2,154 # OK! Use A35 at 8" O/C at Shear Wall & 24" O/C Elsewhere				

Line D



9	Wall Height (ft.)
8	Total Shear Wall Length (ft.)
8	Shortest Shear Wall Segment (ft.)
8	Effective Shear Wall Length (ft.)
1.13	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
40	Total Diaphragm Length (ft.)
6	Total Non-Shear Wall Length (ft.)
28	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
7.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
5	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
725	Seismic Tributary Area (sf)
2,716	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
17.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
24,440	Overturning Moment (ft-lbs)
1,792	Dead Load of Wall
1.20	S_{DS}
774	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
1,195	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
3,022	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-153	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

339 plf < 430 plf OK! Use Shear Wall Type <2>

Determine Shear Wall Type (Wind)

0 plf < 602 plf OK! Use Shear Wall Type <2>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

68 plf < 240 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Diaphragm Nailing (Wind)

0 plf < 335 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Drag Truss

2,716 #

Plates to Drag Truss

5,664 # > 2,716 # OK! Use A35 at 10" O/C at Shear Wall & 24" O/C Elsewhere

Line E

	←————→
9	Wall Height (ft.)
8	Total Shear Wall Length (ft.)
8	Shortest Shear Wall Segment (ft.)
8	Effective Shear Wall Length (ft.)
1.13	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
40	Total Diaphragm Length (ft.)
6	Total Non-Shear Wall Length (ft.)
28	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
7.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
5	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
675	Seismic Tributary Area (sf)
2,528	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
13.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
22,755	Overturning Moment (ft-lbs)
1,792	Dead Load of Wall
1.20	S_{DS}
774	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
1,195	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
2,807	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-153	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

316 plf < 430 plf OK! Use Shear Wall Type <2>

Determine Shear Wall Type (Wind)

0 plf < 602 plf OK! Use Shear Wall Type <2>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

63 plf < 240 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Diaphragm Nailing (Wind)

0 plf < 335 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Drag Truss

2,528 #

Plates to Drag Truss

5,664 # > 2,528 # OK! Use A35 at 10" O/C at Shear Wall & 24" O/C Elsewhere

J.A. Russo Ent.

13063 Via Alia

Riverside, CA 92503

Line F

6.5	Wall Height (ft.)
5	Total Shear Wall Length (ft.)
2.5	Shortest Shear Wall Segment (ft.)
5	Effective Shear Wall Length (ft.)
2.60	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
0.77	Modifier Where H/W Exceeds 2:1 ($r = 2*L/H$) for $2:1 > H/W < 3.5:1$ (Seismic Loads Only)
40	Total Diaphragm Length (ft.)
16	Total Non-Shear Wall Length (ft.)
19	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
2.33	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
5	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
275	Seismic Tributary Area (sf)
1,030	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
7	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
3,348	Overturning Moment (ft-lbs)
460	Dead Load of Wall
1.20	S_{DS}
199	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm pE / 1.4$
307	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
1,351	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-132	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic) Below Cont. Hdr.

206 plf < 331 plf OK! Use Shear Wall Type <2>

Determine Shear Wall Type (Wind)

0 plf < 602 plf OK! Use Shear Wall Type <2>

Determine Shear Wall Type (Seismic) Above Cont. Hdr.

49 plf < 280 plf OK! Use Shear Wall Type <1>

Diaphragm Nailing (Seismic) Below Cont. Hdr.

26 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")

Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")

Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Drag Truss

361 #

Drag Strap to Porch Beam & Drag Truss

932 # < 2,050 # OK! Use "Simpson MSTA30"

Plates to Roof Framing

Andresen Architectural Engineering OK! Use 7085 or 1220 O/C at Shear Wall & 24" O/C Elsewhere (909) 355-6688

<1>	<2>	<3>	<4>
215	331	423	562
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf
<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf

Line G

		←————→
9	Wall Height (ft.)	
6	Total Shear Wall Length (ft.)	
3	Shortest Shear Wall Segment (ft.)	
6	Effective Shear Wall Length (ft.)	
3.00	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)	
0.67	Modifier Where H / W Exceeds 2:1 ($r = 2*L/H$) for 2:1 > H/W < 3.5:1 (Seismic Loads Only)	
13	Total Diaphragm Length (ft.)	
7	Total Non-Shear Wall Length (ft.)	
0	Diaphragm Length Requiring a Drag Strap (or Drag Truss)	
2.83	Wall Length to the Center of the Holdown (ft)	
16	Wall Weight (psf)	
5	1/2 of Tributary Floor or Roof Length (ft)	
16	Floor or Roof Weight (psf)	
3.75	Seismic Base Shear (psf)	
50	Seismic Tributary Area (sf)	
187	Seismic Shear Load This Line (lbs)	
0.00	Wind Load (plf)	
2	Wind Tributary Area (lf)	
0	Wind Load This Line (lbs)	
843	Overturning Moment (ft-lbs)	
672	Dead Load of Wall	
1.20	S_{DS}	
290	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$	
448	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$	
195	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap	
-158	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap	

Determine Shear Wall Type (Seismic)

31 plf < 187 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
187	287	367	487
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

14 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Plates to Roof Framing

4,268 # > 187 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere



Line 1

9	Wall Height (ft.)
12	Total Shear Wall Length (ft.)
12	Shortest Shear Wall Segment (ft.)
12	Effective Shear Wall Length (ft.)
0.75	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
62	Total Diaphragm Length (ft.)
50	Total Non-Shear Wall Length (ft.)
0	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
11.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
20	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
750	Seismic Tributary Area (sf)
2,809	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
10.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
25,283	Overturning Moment (ft-lbs)
5,568	Dead Load of Wall
1.20	S_{DS}
2,405	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
3,712	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
1,934	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-314	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

234 plf < 280 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

45 plf < 240 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Diaphragm Nailing (Wind)

0 plf < 335 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Plates to Eave Blocking

16,600 # > 2,809 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere



Line 2

9	Wall Height (ft.)
12	Total Shear Wall Length (ft.)
12	Shortest Shear Wall Segment (ft.)
12	Effective Shear Wall Length (ft.)
0.75	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
62	Total Diaphragm Length (ft.)
10	Total Non-Shear Wall Length (ft.)
32	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
11.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
20	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
875	Seismic Tributary Area (sf)
3,277	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
13.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
29,497	Overturning Moment (ft-lbs)
5,568	Dead Load of Wall
1.20	S_{DS}
2,405	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
3,712	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
2,290	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-314	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

273 plf < 280 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

53 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Drag Strap to Roof Diaphragm

1,692 # < 2,490 # OK! Use "Simpson CS14" (L = 30'-0") to 4 x 4 Solid Blk'g.

Plates to Truss Blocking

7,640 # > 3,277 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere



Line 3

9	Wall Height (ft.)
11	Total Shear Wall Length (ft.)
11	Shortest Shear Wall Segment (ft.)
11	Effective Shear Wall Length (ft.)
0.82	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
56	Total Diaphragm Length (ft.)
0	Total Non-Shear Wall Length (ft.)
48	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
10.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
20	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
600	Seismic Tributary Area (sf)
2,247	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
9.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
20,226	Overturning Moment (ft-lbs)
5,104	Dead Load of Wall
1.20	S_{DS}
2,205	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
3,403	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
1,664	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-314	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

204 plf < 280 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

40 plf < 180 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Diaphragm Nailing (Wind)

0 plf < 252 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 3 AF&PA Table 4.2C (Unblocked Load Perpendicular to Framing)

Drag Strap to Roof Diaphragm

1,926 # < 2,490 # OK! Use "Simpson CS14" (L = 50'-0") to 4 x 4 Solid Blk'g.

Plates to Truss Blocking

4,950 # > 2,247 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere



Line 4

9	Wall Height (ft.)
8	Total Shear Wall Length (ft.)
8	Shortest Shear Wall Segment (ft.)
8	Effective Shear Wall Length (ft.)
1.13	Shortest Shear Wall Height to Width Ratio (≤ 2.0 is OK - 2:1 Max Without Reduction)
59	Total Diaphragm Length (ft.)
50	Total Non-Shear Wall Length (ft.)
9	Diaphragm Length Requiring a Drag Strap (or Drag Truss)
7.83	Wall Length to the Center of the Holdown (ft)
16	Wall Weight (psf)
20	1/2 of Tributary Floor or Roof Length (ft)
16	Floor or Roof Weight (psf)
3.75	Seismic Base Shear (psf)
500	Seismic Tributary Area (sf)
1,873	Seismic Shear Load This Line (lbs)
0.00	Wind Load (plf)
6.5	Wind Tributary Area (lf)
0	Wind Load This Line (lbs)
16,855	Overturning Moment (ft-lbs)
3,712	Dead Load of Wall
1.20	S_{DS}
1,604	Resisting Moment (Seismic) (ft-lbs) $(0.6 - 0.14 S_{DS})D \pm \rho E / 1.4$
2,475	Resisting Moment (Wind) (ft-lbs) $(2/3)D \pm \omega W$
1,948	Uplift (lbs) (Seismic) $D \pm E < 3,815 \#$ OK! Use STHD14 Holdown Strap
-316	Uplift (lbs) (Wind) $D \pm W < 3,815 \#$ OK! Use STHD14 Holdown Strap

Determine Shear Wall Type (Seismic)

234 plf < 280 plf OK! Use Shear Wall Type <1>

Determine Shear Wall Type (Wind)

0 plf < 349 plf OK! Use Shear Wall Type <1>

<1>	<2>	<3>	<4>
280 plf	430 plf	550 plf	730 plf
<1>	<2>	<3>	<4>
349 plf	602 plf	770 plf	1,022 plf

Diaphragm Nailing (Seismic)

32 plf < 240 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Diaphragm Nailing (Wind)

0 plf < 335 plf OK! Use Standard Nailing at Roof Sheathing (8d @ 6", 6" & 12")
Case 1 AF&PA Table 4.2C (Unblocked Load Parallel to Framing)

Drag Strap to Porch Beam

286 # < 2,050 # OK! Use "Simpson MSTA30"

Plates to Eave Blocking

14,800 # > 1,873 # OK! Use A35 at 12" O/C at Shear Wall & 24" O/C Elsewhere

Wood Beam

Lic. #: KW-06012912

File: 20-3858.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.5.31
Andresen Architecture, Inc.

DESCRIPTION: Beam #1 - Rear Porch Bm. (3-1/2" x 11-1/4" Parallam)

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : IBC 2018

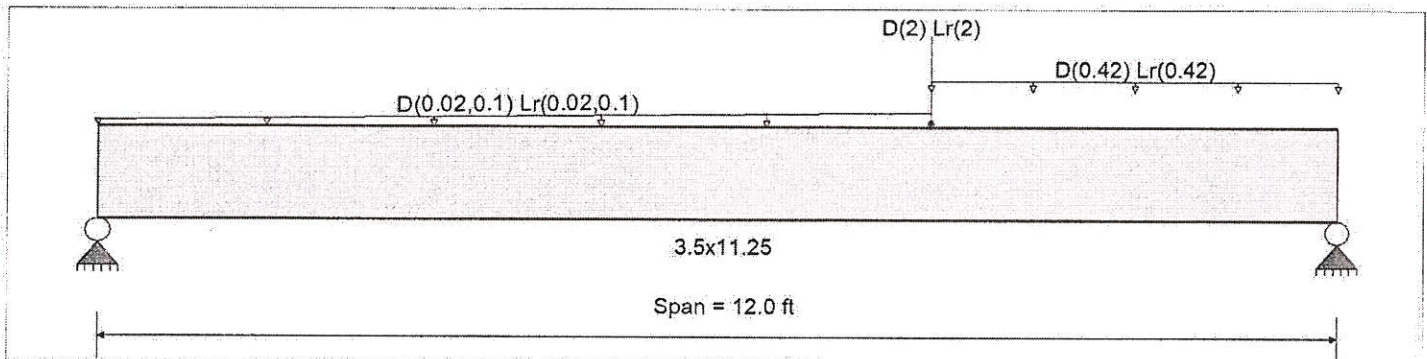
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : iLevel Truss Joist
Wood Grade : Parallam PSL 2.0E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	2900 psi	E : Modulus of Elasticity	
Fb -	2900 psi	Ebend- xx	2000ksi
Fc - Prll	2900 psi	Eminbend - xx	1016.535ksi
Fc - Perp	750 psi		
Fv	290 psi		
Ft	2025 psi	Density	45.07 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1

Varying Uniform Load : D = 0.020->0.10, Lr = 0.020->0.10 k/ft, Extent = 0.0 --> 8.0 ft, Trib Width = 1.0 ft, (Hip Roof)

Point Load : D = 2.0, Lr = 2.0 k @ 8.0 ft, (Girder Truss)

Uniform Load : D = 0.020, Lr = 0.020 ksf, Extent = 8.0 --> 12.0 ft, Tributary Width = 21.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.748	1	Maximum Shear Stress Ratio	=	0.534	: 1
Section used for this span	=	3.5x11.25		Section used for this span	=	3.5x11.25	
	=	2,710.28psi			=	193.72 psi	
	=	3,625.00psi			=	362.50 psi	
Load Combination	=	+D+Lr		Load Combination	=	+D+Lr	
Location of maximum on span	=	8.015ft		Location of maximum on span	=	11.080 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.218 in	Ratio =	660 >= 360			
Max Upward Transient Deflection		0.000 in	Ratio =	0 < 360			
Max Downward Total Deflection		0.436 in	Ratio =	330 >= 180			
Max Upward Total Deflection		0.000 in	Ratio =	0 < 180			

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Max Stress Ratios										Moment Values			Shear Values		
		Span #	M	V	C _d	C _{FV}	C _i	C _r	C _m	C _t	C _L	M	f _b	F _b	V	f _v	F _v
D Only																	
Length = 12.0 ft	1	0.519	0.371	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.00	8.34	1,355.14	2610.00	2.54	96.86	261.00
+D+Lr					1.000	1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.748	0.534	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	16.67	2,710.28	3625.00	5.09	193.72	362.50
+D+0.750Lr					1.000	1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.654	0.468	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	14.59	2,371.49	3625.00	4.45	169.51	362.50
+0.60D					1.000	1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.175	0.125	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	5.00	813.08	4640.00	1.53	58.12	464.00

Wood Beam

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 Andresen Architecture, Inc.

Lic. #: KW-06012912

DESCRIPTION: Beam #1 - Rear Porch Bm. (3-1/2" x 11-1/4" Parallam)

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.4358	6.526		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.462	5.858
Overall MINimum	1.231	2.929
D Only	1.231	2.929
+D+Lr	2.462	5.858
+D+0.750Lr	2.154	5.126
+0.60D	0.739	1.757
Lr Only	1.231	2.929

Wood Beam

Lic. #: KW-06012912

File: 20-3858.ec6
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Andresen Architecture, Inc.

DESCRIPTION: Beam #2 - Garage Hdr. (4 x 14 DF #1)

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : IBC 2018

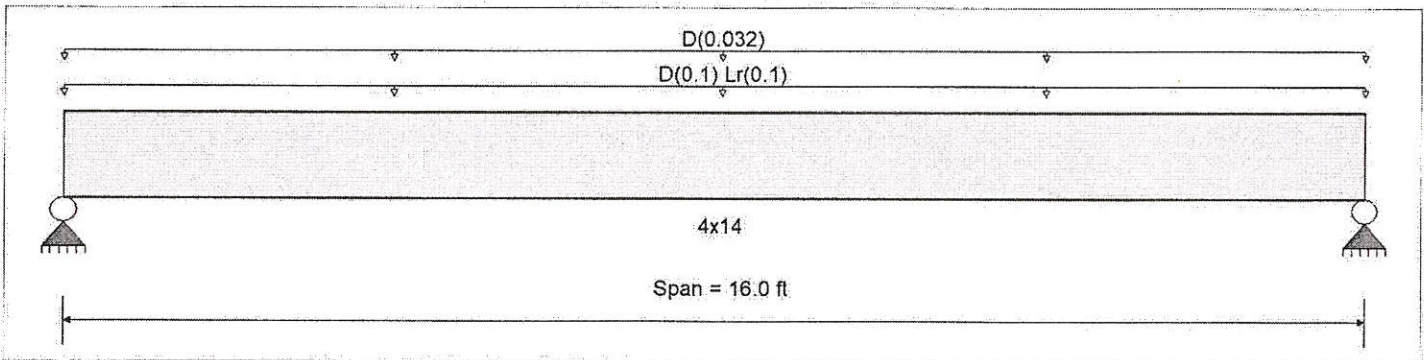
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.1

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	1350 psi	E : Modulus of Elasticity	
Fb -	1350 psi	Ebend- xx	1600ksi
Fc - Prll	925 psi	Eminbend - xx	580ksi
Fc - Perp	625 psi		
Fv	170 psi		
Ft	675 psi	Density	31.21pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, Lr = 0.020 ksf, Tributary Width = 5.0 ft, (Roof)
Uniform Load : D = 0.0320, Tributary Width = 1.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.515	1	Maximum Shear Stress Ratio	=	0.245	: 1
Section used for this span	=	4x14		Section used for this span	=	4x14	
	=	869.90psi			=	52.14 psi	
	=	1,687.50psi			=	212.50 psi	
Load Combination	=	+D+Lr		Load Combination	=	+D+Lr	
Location of maximum on span	=	8.000ft		Location of maximum on span	=	14.949 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.137 in	Ratio =	1405 >= 360			
Max Upward Transient Deflection		0.000 in	Ratio =	0 < 360			
Max Downward Total Deflection		0.317 in	Ratio =	605 >= 180			
Max Upward Total Deflection		0.000 in	Ratio =	0 < 180			

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		C _d	C _{FV}	C _i	C _r	C _m	C _t	C _L	Moment Values			Shear Values		
			M	V								M	fb	F'b	V	fv	F'v
D Only	Length = 16.0 ft	1	0.407	0.194	0.90	1.000	1.00	1.00	1.00	1.00	1.00	4.22	494.94	0.00	0.00	0.00	0.00
+D+Lr	Length = 16.0 ft	1	0.515	0.245	1.25	1.000	1.00	1.00	1.00	1.00	1.00	7.42	869.90	1687.50	1.61	52.14	212.50
+D+0.750Lr	Length = 16.0 ft	1	0.460	0.219	1.25	1.000	1.00	1.00	1.00	1.00	1.00	6.62	776.16	1687.50	1.44	46.53	212.50
+0.60D	Length = 16.0 ft	1	0.137	0.065	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.53	296.97	2160.00	0.55	17.80	272.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.3170	8.058		0.0000	0.000

Wood Beam

File: 20-3858.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.5.31
Andresen Architecture, Inc.

Lic. # : KW-06012912

DESCRIPTION: Beam #2 - Garage Hdr. (4 x 14 DF #1)

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.856	1.856
Overall MINimum	0.800	0.800
D Only	1.056	1.056
+D+Lr	1.856	1.856
+D+0.750Lr	1.656	1.656
+0.60D	0.634	0.634
Lr Only	0.800	0.800

Wood Beam

Lic. #: KW-06012912

File: 20-3858.ec6
Software copyright ENERCALC, INC. 1983-2020, Build:12.20.5.31
Andresen Architecture, Inc.

DESCRIPTION: Beam #3 - Porch Bm. (4 x 6 DF #2)

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16

Load Combination Set : IBC 2018

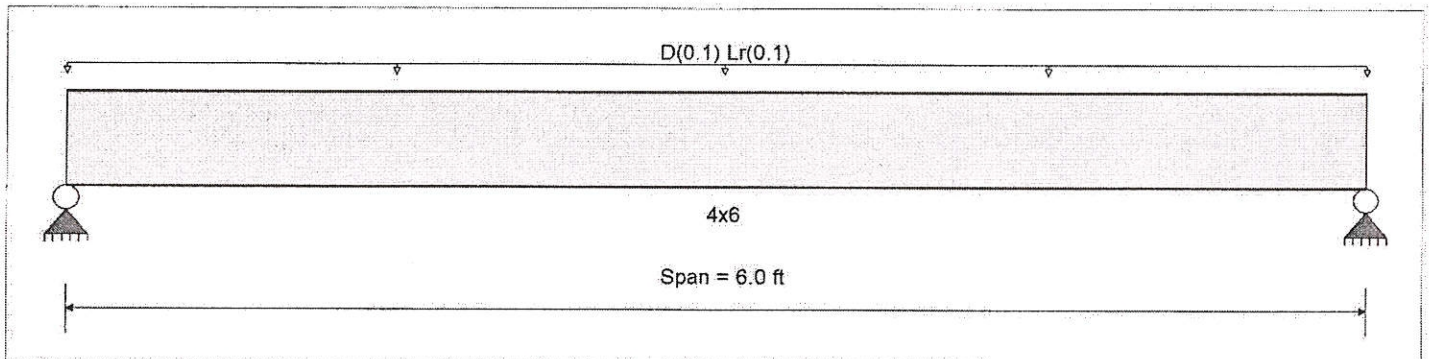
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2018

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

Fb +	875 psi	E : Modulus of Elasticity	
Fb -	875 psi	Ebend- xx	1300 ksi
Fc - Prll	600 psi	Eminbend - xx	470 ksi
Fc - Perp	625 psi		
Fv	170 psi		
Ft	425 psi	Density	31.21 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Uniform Load : D = 0.020, Lr = 0.020 ksf, Tributary Width = 5.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.430 : 1	Maximum Shear Stress Ratio	=	0.188 : 1
Section used for this span	=	4x6	Section used for this span	=	4x6
	=	612.04 psi		=	39.93 psi
	=	1,421.88 psi		=	212.50 psi
Load Combination	=	+D+Lr	Load Combination	=	+D+Lr
Location of maximum on span	=	3.000 ft	Location of maximum on span	=	0.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.046 in Ratio =	1548 >= 360		
Max Upward Transient Deflection		0.000 in Ratio =	0 < 360		
Max Downward Total Deflection		0.093 in Ratio =	774 >= 180		
Max Upward Total Deflection		0.000 in Ratio =	0 < 180		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values		
			M	V	C _d	C _{FV}	C _i	C _r	C _m	C _t	C _L	M	f _b	F ^b	V	f _v
D Only													0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.299	0.130	0.90	1.300	1.00	1.00	1.00	1.00	0.45	306.02	1023.75	0.26	19.96	153.00
+D+Lr						1.300	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.430	0.188	1.25	1.300	1.00	1.00	1.00	1.00	0.90	612.04	1421.88	0.51	39.93	212.50
+D+0.750Lr						1.300	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.377	0.164	1.25	1.300	1.00	1.00	1.00	1.00	0.79	535.54	1421.88	0.45	34.94	212.50
+0.60D						1.300	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
	Length = 6.0 ft	1	0.101	0.044	1.60	1.300	1.00	1.00	1.00	1.00	0.27	183.61	1820.00	0.15	11.98	272.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.0930	3.022		0.0000	0.000

Wood Beam

File: 20-3858.ec6
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Lic. #: KW-06012912

Andresen Architecture, Inc.

DESCRIPTION: Beam #3 - Porch Bm. (4 x 6 DF #2)

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.600	0.600
Overall MINimum	0.300	0.300
D Only	0.300	0.300
+D+Lr	0.600	0.600
+D+0.750Lr	0.525	0.525
+0.60D	0.180	0.180
Lr Only	0.300	0.300

General Footing

File: 20-3858.ec6
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Andresen Architecture, Inc.

Lic. #: KW-06012912

DESCRIPTION: Ftg. #1 - Porch Pier Ftg (2'-3" Sq x 12" Dp. W/(3) #4 Bars E.W.)

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : IBC 2018

General Information

Material Properties

f'c : Concrete 28 day strength	=	2.50	ksi
fy : Rebar Yield	=	60.0	ksi
Ec : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
Increase Bearing By Footing Weight	=	No	
Soil Passive Resistance (for Sliding)	=	250.0	pcf
Soil/Concrete Friction Coeff.	=	0.30	

Analysis Settings

Min Steel % Bending Reinf.	=		
Min Allow % Temp Reinf.	=	0.00180	
Min. Overturning Safety Factor	=	1.0 : 1	
Min. Sliding Safety Factor	=	1.0 : 1	
Add Ftg Wt for Soil Pressure	:	Yes	
Use ftg wt for stability, moments & shears	:	Yes	
Add Pedestal Wt for Soil Pressure	:	No	
Use Pedestal wt for stability, mom & shear	:	No	

Increases based on footing Depth

Footing base depth below soil surface	=	1.0	ft
Allow press. increase per foot of depth when footing base is below	=		ksf

Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=		ksf
---	---	--	-----

Dimensions

Width parallel to X-X Axis	=	2.250	ft
Length parallel to Z-Z Axis	=	2.250	ft
Footing Thickness	=	12.0	in

Pedestal dimensions...

px : parallel to X-X Axis	=		in
pz : parallel to Z-Z Axis	=		in
Height	=		in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0	in

Reinforcing

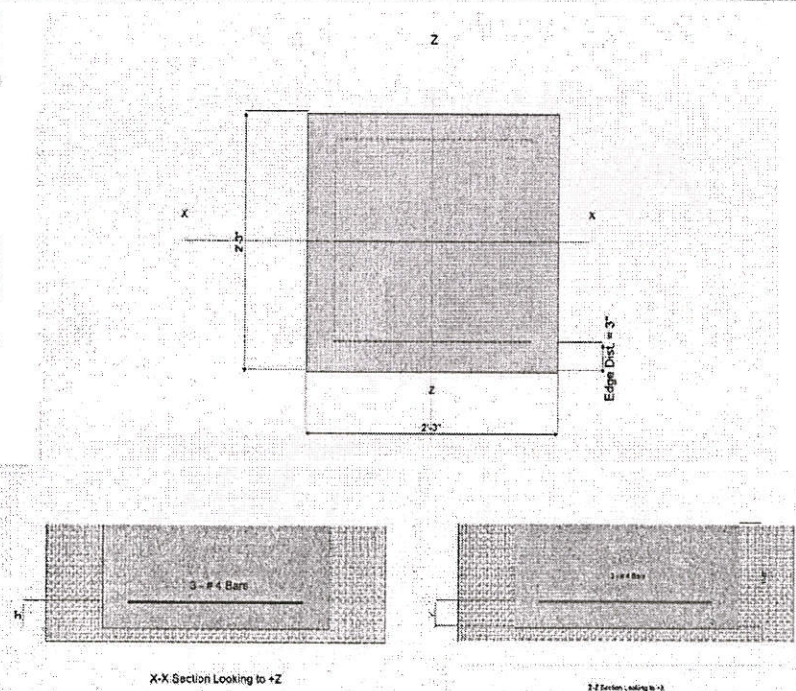
Bars parallel to X-X Axis	=		
Number of Bars	=	3	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=		
Number of Bars	=	3.0	
Reinforcing Bar Size	=	# 4	

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	=	n/a	
# Bars required within zone	=	n/a	
# Bars required on each side of zone	=	n/a	

Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	2.929	2.929				k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k



General Footing

Lic. #: KW-06012912

File: 20-3858.ec6
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Andresen Architecture, Inc.

DESCRIPTION: Ftg. #1 - Porch Pier Ftg (2'-3" Sq x 12" Dp. W/(3) #4 Bars E.W.)

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.8680	Soil Bearing	1.302 ksf	1.50 ksf	+D+Lr about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.09835	Z Flexure (+X)	1.025 k-ft/ft	10.424 k-ft/ft	+1.20D+1.60Lr
PASS	0.09835	Z Flexure (-X)	1.025 k-ft/ft	10.424 k-ft/ft	+1.20D+1.60Lr
PASS	0.09835	X Flexure (+Z)	1.025 k-ft/ft	10.424 k-ft/ft	+1.20D+1.60Lr
PASS	0.09835	X Flexure (-Z)	1.025 k-ft/ft	10.424 k-ft/ft	+1.20D+1.60Lr
PASS	0.07650	1-way Shear (+X)	5.737 psi	75.0 psi	+1.20D+1.60Lr
PASS	0.07650	1-way Shear (-X)	5.737 psi	75.0 psi	+1.20D+1.60Lr
PASS	0.07650	1-way Shear (+Z)	5.737 psi	75.0 psi	+1.20D+1.60Lr
PASS	0.07650	1-way Shear (-Z)	5.737 psi	75.0 psi	+1.20D+1.60Lr
PASS	0.1492	2-way Punching	22.386 psi	150.0 psi	+1.20D+1.60Lr

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	1.50	n/a	0.0	0.7236	0.7236	n/a	n/a	0.482
X-X, +D+Lr	1.50	n/a	0.0	1.302	1.302	n/a	n/a	0.868
X-X, +D+0.750Lr	1.50	n/a	0.0	1.157	1.157	n/a	n/a	0.771
X-X, +0.60D	1.50	n/a	0.0	0.4341	0.4341	n/a	n/a	0.289
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.7236	0.7236	0.482
Z-Z, +D+Lr	1.50	0.0	n/a	n/a	n/a	1.302	1.302	0.868
Z-Z, +D+0.750Lr	1.50	0.0	n/a	n/a	n/a	1.157	1.157	0.771
Z-Z, +0.60D	1.50	0.0	n/a	n/a	n/a	0.4341	0.4341	0.289

Overturing Stability

Rotation Axis & Load Combination...	Overturing Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturing				

Sliding Stability

All units k

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in ²	Gvrn. As in ²	Actual As in ²	Phi*Mn k-ft	Status
X-X, +1.40D	0.5126	+Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.40D	0.5126	-Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D+0.50Lr	0.6224	+Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D+0.50Lr	0.6224	-Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D	0.4394	+Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D	0.4394	-Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D+1.60Lr	1.025	+Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +1.20D+1.60Lr	1.025	-Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +0.90D	0.3295	+Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
X-X, +0.90D	0.3295	-Z	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.40D	0.5126	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.40D	0.5126	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr	0.6224	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D+0.50Lr	0.6224	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D	0.4394	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z, +1.20D	0.4394	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK

General Footing

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 Andresen Architecture, Inc.

Lic. #: KW-06012912

DESCRIPTION: Ftg. #1 - Porch Pier Ftg (2'-3" Sq x 12" Dp. W/(3) #4 Bars E.W.)

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in ²	Gvnr. As in ²	Actual As in ²	Phi*Mn k-ft	Status
Z-Z: +1.20D+1.60Lr	1.025	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z: +1.20D+1.60Lr	1.025	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z: +0.90D	0.3295	-X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK
Z-Z: +0.90D	0.3295	+X	Bottom	0.2592	Min Temp %	0.2667	10.424	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	2.87 psi	2.87 psi	2.87 psi	2.87 psi	2.87 psi	75.00 psi	0.04	OK
+1.20D+0.50Lr	3.48 psi	3.48 psi	3.48 psi	3.48 psi	3.48 psi	75.00 psi	0.05	OK
+1.20D	2.46 psi	2.46 psi	2.46 psi	2.46 psi	2.46 psi	75.00 psi	0.03	OK
+1.20D+1.60Lr	5.74 psi	5.74 psi	5.74 psi	5.74 psi	5.74 psi	75.00 psi	0.08	OK
+0.90D	1.84 psi	1.84 psi	1.84 psi	1.84 psi	1.84 psi	75.00 psi	0.02	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	11.19 psi	150.00 psi	0.07462	OK
+1.20D+0.50Lr	13.59 psi	150.00 psi	0.09061	OK
+1.20D	9.59 psi	150.00 psi	0.06396	OK
+1.20D+1.60Lr	22.39 psi	150.00 psi	0.1492	OK
+0.90D	7.20 psi	150.00 psi	0.04797	OK

BUILDING ENERGY ANALYSIS REPORT

PROJECT:

J.A. Russo Ent.
APN 269-470-030
Riverside, CA 92503



Project Designer:

17087 Orange Way
Fontana, CA 92335
909-355-6688

Report Prepared by:

Adriana Gomez
Andresen Architecture, Inc
17087 Orange Way
Fontana, CA 92335
9093556688

Job Number:

21-4294

Date:

10/6/2021

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

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

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CERTIFICATE OF COMPLIANCE**CF1R-PRF-01E****Project Name:** Via Alia Parcel 30**Calculation Date/Time:** 2021-10-06T14:36:47-07:00**(Page 1 of 10)****Calculation Description:** Title 24 Analysis**Input File Name:** Russo Via Alia Parcel 30 (21-4294).ribd19x

GENERAL INFORMATION					
01	Project Name	Via Alia Parcel 30			
02	Run Title	Title 24 Analysis			
03	Project Location	APN 269-470-030			
04	City	Riverside	05	Standards Version	2019
06	Zip code	92503	07	Software Version	EnergyPro 8.2
08	Climate Zone	10	09	Front Orientation (deg/ Cardinal)	0
10	Building Type	Single family	11	Number of Dwelling Units	1
12	Project Scope	NewConstruction	13	Number of Bedrooms	3
14	Addition Cond. Floor Area (ft ²)	0	15	Number of Stories	1
16	Existing Cond. Floor Area (ft ²)	n/a	17	Fenestration Average U-factor	0.3
18	Total Cond. Floor Area (ft ²)	1713	19	Glazing Percentage (%)	17.51%
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-P010146915A-000-000-00000000-0000

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time: 10/06/2021 14:34

HERS Provider: CHEERS

Report Version: 2019.1.300

Report Generated: 2021-10-06 14:37:31

Schema Version: rev 20200901

CERTIFICATE OF COMPLIANCE**CF1R-PRF-01E****Project Name:** Via Alia Parcel 30**Calculation Date/Time:** 2021-10-06T14:36:47-07:00**(Page 2 of 10)****Calculation Description:** Title 24 Analysis**Input File Name:** Russo Via Alia Parcel 30 (21-4294).ribd19x

ENERGY DESIGN RATING				
	Energy Design Ratings		Compliance Margins	
	Efficiency ¹ (EDR)	Total ² (EDR)	Efficiency ¹ (EDR)	Total ² (EDR)
Standard Design	47.9	24.9		
Proposed Design	47.8	24.7	0.1	0.2
RESULT: ³: COMPLIES				
1: 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				
<ul style="list-style-type: none"> Standard Design PV Capacity: 2.42 kWdc PV System resized to 2.42 kWdc (a factor of 2.424) to achieve 'Standard Design PV' PV scaling 				

ENERGY USE SUMMARY				
Energy Use (kTDV/ft ² -yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	6.71	8.4	-1.69	-25.2
Space Cooling	23.93	24.45	-0.52	-2.2
IAQ Ventilation	2.72	2.72	0	0
Water Heating	13.68	11.27	2.41	17.6
Self Utilization/Flexibility Credit	n/a	0	0	n/a
Compliance Energy Total	47.04	46.84	0.2	0.4

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 (%)
2.42	NA	Standard	Fixed	none	true	150-270	n/a	n/a	<=7:12	96	100

Registration Number: 421-P010146915A-000-000-0000000-0000

Registration Date/Time: 10/06/2021 14:34

HERS Provider: CHEERS

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

Report Version: 2019.1.300

Report Generated: 2021-10-06 14:37:31

Schema Version: rev 20200901

CERTIFICATE OF COMPLIANCE**CF1R-PRF-01E****Project Name:** Via Alia Parcel 30**Calculation Date/Time:** 2021-10-06T14:36:47-07:00**(Page 3 of 10)****Calculation Description:** Title 24 Analysis**Input File Name:** Russo Via Alia Parcel 30 (21-4294).ribd19x**REQUIRED SPECIAL FEATURES**

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

- Whole house fan
- Non-standard roof reflectance
- Ceiling has high level of insulation
- Insulation below roof deck
- Window overhangs and/or fins

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:

- Indoor air quality ventilation

Cooling System Verifications:

- Minimum Airflow
- Verified EER
- Verified SEER
- Verified Refrigerant Charge
- Fan Efficacy Watts/CFM

Heating System Verifications:

- Verified HSPF
- Verified heat pump rated heating capacity

HVAC Distribution System Verifications:

- Duct leakage testing

Domestic Hot Water System Verifications:

- -- 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
Via Alia Parcel 30	1713	1	3	1	1	1

Registration Number: 421-P010146915A-000-000-0000000-0000

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

Registration Date/Time: 10/06/2021 14:34

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CERTIFICATE OF COMPLIANCE**CF1R-PRF-01E****Project Name:** Via Alia Parcel 30**Calculation Date/Time:** 2021-10-06T14:36:47-07:00**(Page 4 of 10)****Calculation Description:** Title 24 Analysis**Input File Name:** Russo Via Alia Parcel 30 (21-4294).ribd19x

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
SFR	Conditioned	Res HVAC1	1713	9	DHW Sys 1	N/A

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)
Rear Wall (South)	SFR	R-19 Wall	180	Back	360	103.008	90
Right Wall (West)	SFR	R-19 Wall	270	Right	552	131	90
Left Wall (East)	SFR	R-19 Wall	90	Left	315	36	90
Front Wall (North)	SFR	R-19 Wall	0	Front	174	54	90
Roof	SFR	R-49 Clg + R-13 Roof	n/a	n/a	1713	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 SFR	Attic RoofSFR	Ventilated	4	0.19	0.92	Yes	No

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	SHGC Source	Exterior Shading
Rear Glass Door	Window	Rear Wall (South)	Back	180	6	8	1	48	0.3	NFRC	0.25	NFRC	Bug Screen
Rear Windows	Window	Rear Wall (South)	Back	180	6	8	1	55.01	0.3	NFRC	0.25	NFRC	Bug Screen
Right Windows	Window	Right Wall (West)	Right	270	4	5	6	131	0.3	NFRC	0.25	NFRC	Bug Screen
Left Windows	Window	Left Wall (East)	Left	90	4	5	1	36	0.3	NFRC	0.25	NFRC	Bug Screen
Front Windows	Window	Front Wall (North)	Front	0	6	5	1	30	0.3	NFRC	0.25	NFRC	Bug Screen

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CA Building Energy Efficiency Standards - 2019 Residential Compliance

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OPAQUE DOORS			
01	02	03	04
Name	Side of Building	Area (ft ²)	U-factor
Door	Front Wall (North)	24	1

OVERHANGS AND FINS													
01	02	03	04	05	06	07	08	09	10	11	12	13	14
Window	Overhang					Left Fin				Right Fin			
	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	Dist L	Bot Up	Depth	Top Up	Dist R	Bot Up
Rear Glass Door	10	0.1	10	10	0	0	0	0	0	0	0	0	0
Rear Windows	1	1	3	3	0.67	0	0	0	0	0	0	0	0
Right Windows	1	1	3	3	0.67	0	0	0	0	0	0	0	0
Left Windows	1	1	3	3	0.67	0	0	0	0	0	0	0	0
Front Windows	1	1	3	3	0.67	0	0	0	0	0	0	0	0

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	SFR	1713	0.1	none	0	80%	No

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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-19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O. C.	R-19	None / None	0.074	Inside Finish: Gypsum Board Cavity / Frame: R-19 in 5-1/2 in. (R-18) / 2x6 Exterior Finish: 3 Coat Stucco
Attic RoofSFR	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-13	None / None	0.072	Roofing: 10 PSF (RoofTileAirGap) Tile Gap: present Roof Deck: Wood Siding/sheathing/decking Cavity / Frame: R-13.0 / 2x4 Around Roof Joists: R-0.0 insul.
R-49 Clg + R-13 Roof	Ceilings (below attic)	Wood Framed Ceiling	2x4 @ 24 in. O. C.	R-49	None / None	0.02	Over Ceiling Joists: R-39.9 insul. Cavity / Frame: R-9.1 / 2x4 Inside Finish: Gypsum Board

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

WATER HEATING SYSTEMS						
01	02	03	04	05	06	07
Name	System Type	Distribution Type	Water Heater Name (#)	Solar Heating System	Compact Distribution	HERS Verification
DHW Sys 1	Domestic Hot Water (DHW)	Standard Distribution System	DHW Heater 1 (1)	n/a	None	n/a

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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 Hr. Rating or Flow Rate	NEEA Heat Pump Brand or Model	Tank Location or Ambient Condition
DHW Heater 1	Gas	Consumer Instantaneous	1	0	0.97-UEF	<= 200 kBtu/hr	0	n/a	n/a	n/a	n/a

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
Res HVAC1	Heat pump heating cooling	Heat Pump System 1	Heat Pump System 1	HVAC Fan 1	Air 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 System 1	Central split HP	1	10.5	48000	24000	20	13.5	Not Zonal	Single Speed	Heat Pump System 1-hers-htpump

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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 System 1-hers-htpump	Required	350	Required	Required	Yes	Yes	Yes	Yes

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

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

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

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

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 - SRE IAQ Recovery Effectiveness - SRE
SFam IAQVentRpt	80	0.25	Default	0	n/a

COOLING VENTILATION								
01	02	03	04	05	06	07	08	09
Name	Airflow Rate (CFM/ft2)	Cooling Vent CFM	Cooling Vent Watts/CFM	Total Watts	Number of Fans	CFVCS Type	Exhausts to	HERS Verification
Whole House Fan	1.5	2569.5	0.14	359.73	1	Not a CFVCS	Attic	No

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1. I certify that this Certificate of Compliance documentation is accurate and complete.	
Documentation Author Name: Adriana Gomez	Documentation Author Signature: <i>Adriana Gomez</i>
Company: Andresen Architecture, Inc.	Signature Date: 10/06/2021
Address: 17087 Orange Way	CEA/ HERS Certification Identification (If applicable):
City/State/Zip: Fontana, CA 92335	Phone: 909-355-6688
RESPONSIBLE PERSON'S DECLARATION STATEMENT	
I certify the following under penalty of perjury, under the laws of the State of California:	
<ol style="list-style-type: none"> 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance. 2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 	
Responsible Designer Name: Adriana Gomez	Responsible Designer Signature: <i>Adriana Gomez</i>
Company: Andresen Architecture, Inc.	Date Signed: 10/06/2021
Address: 17087 Orange Way	License: C 33098
City/State/Zip: Fontana, CA 92335	Phone: 909-355-6688

Digitally signed by ConSol Home Energy Efficiency Rating System Services, Inc. (CHEERS). 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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2019 Low-Rise Residential Mandatory Measures Summary

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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)

Building Envelope Measures:	
§ 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 101/I.S.2/A440-2011.*
§ 110.6(a)5:	Labeling. Fenestration products and exterior doors must have a label meeting the requirements of § 10-111(a).
§ 110.6(b):	Field fabricated exterior doors and fenestration products must use U-factors and solar heat gain coefficient (SHGC) values from Tables 110.6-A, 110.6-B, or JA4.5 for exterior doors. They must be caulked and/or weather-stripped.*
§ 110.7:	Air Leakage. All joints, penetrations, and other openings in the building envelope that are potential sources of air leakage must be caulked, gasketed, or weather stripped.
§ 110.8(a):	Insulation Certification by Manufacturers. Insulation must be certified by the Department of Consumer Affairs, Bureau of Household Goods and Services (BHGS).
§ 110.8(g):	Insulation Requirements for Heated Slab Floors. Heated slab floors must be insulated per the requirements of § 110.8(g).
§ 110.8(i):	Roofing Products Solar Reflectance and Thermal Emittance. The thermal emittance and aged solar reflectance values of the roofing material must meet the requirements of § 110.8(i) and be labeled per §10-113 when the installation of a cool roof is specified on the CF1R.
§ 110.8(j):	Radiant Barrier. When required, radiant barriers must have an emittance of 0.05 or less and be certified to the Department of Consumer Affairs.
§ 150.0(a):	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.*
§ 150.0(b):	Loose-fill Insulation. Loose fill insulation must meet the manufacturer's required density for the labeled R-value.
§ 150.0(c):	Wall Insulation. Minimum R-13 insulation in 2x4 inch wood framing wall or have a U-factor of 0.102 or less, or R-20 in 2x6 inch wood framing or have a U-factor of 0.071 or less. Opaque non-framed assemblies must have an overall assembly U-factor not exceeding 0.102. Masonry walls must meet Tables 150.1-A or B.*
§ 150.0(d):	Raised-floor Insulation. Minimum R-19 insulation in raised wood framed floor or 0.037 maximum U-factor.*
§ 150.0(f):	Slab Edge Insulation. Slab edge insulation must meet all of the following: have a water absorption rate, for the insulation material alone without facings, no greater than 0.3 percent; have a water vapor permeance no greater than 2.0 perm per inch; be protected from physical damage and UV light deterioration; and, when installed as part of a heated slab floor, meet the requirements of § 110.8(g).
§ 150.0(g)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).
§ 150.0(g)2:	Vapor Retarder. In climate zones 14 and 16, a Class I or Class II vapor retarder must be installed on the conditioned space side of all insulation in all exterior walls, vented attics, and unvented attics with air-permeable insulation.
§ 150.0(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.*
Fireplaces, Decorative Gas Appliances, and Gas Log Measures:	
§ 110.5(e)	Pilot Light. Continuously burning pilot lights are not allowed for indoor and outdoor fireplaces.
§ 150.0(e)1:	Closable Doors. Masonry or factory-built fireplaces must have a closable metal or glass door covering the entire opening of the firebox.
§ 150.0(e)2:	Combustion Intake. Masonry or factory-built fireplaces must have a combustion outside air intake, which is at least six square inches in area and is equipped with a readily accessible, operable, and tight-fitting damper or combustion-air control device.*
§ 150.0(e)3:	Flue Damper. Masonry or factory-built fireplaces must have a flue damper with a readily accessible control.*
Space Conditioning, Water Heating, and Plumbing System Measures:	
§ 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.*
§ 110.2(a):	HVAC Efficiency. Equipment must meet the applicable efficiency requirements in Table 110.2-A through Table 110.2-K.*
§ 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.*
§ 110.2(c):	Thermostats. All heating or cooling systems not controlled by a central energy management control system (EMCS) must have a setback thermostat.*
§ 110.3(c)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.
§ 110.3(c)6:	Isolation Valves. Instantaneous water heaters with an input rating greater than 6.8 kBtu per hour (2 kW) must have isolation valves with hose bibbs or other fittings on both cold and hot water lines to allow for flushing the water heater when the valves are closed.
§ 110.5:	Pilot Lights. Continuously burning pilot lights are prohibited for natural gas: fan-type central furnaces; household cooking appliances (except appliances without an electrical supply voltage connection with pilot lights that consume less than 150 Btu per hour); and pool and spa heaters.*
§ 150.0(h)1:	Building Cooling and Heating Loads. Heating and/or cooling loads are calculated in accordance with the ASHRAE Handbook, Equipment Volume, Applications Volume, and Fundamentals Volume; the SMACNA Residential Comfort System Installation Standards Manual; or the ACCA Manual J using design conditions specified in § 150.0(h)2.



2019 Low-Rise Residential Mandatory Measures Summary

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§ 150.0(h)3A:	Clearances. Air conditioner and heat pump outdoor condensing units must have a clearance of at least five feet from the outlet of any dryer
§ 150.0(h)3B:	Liquid Line Drier. Air conditioners and heat pump systems must be equipped with liquid line filter driers if required, as specified by the manufacturer's instructions.
§ 150.0(j)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.
§ 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.*
§ 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.
§ 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.
§ 150.0(n)2:	Recirculating Loops. Recirculating loops serving multiple dwelling units must meet the requirements of § 110.3(c)5.
§ 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.
Ducts and Fans Measures:	
§ 110.8(d)3:	Ducts. Insulation installed on an existing space-conditioning duct must comply with § 604.0 of the California Mechanical Code (CMC). If a contractor installs the insulation, the contractor must certify to the customer, in writing, that the insulation meets this requirement.
§ 150.0(m)1:	CMC Compliance. All air-distribution system ducts and plenums must meet the requirements of the CMC §§ 601.0, 602.0, 603.0, 604.0, 605.0 and ANSI/SMACNA-006-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition. Portions of supply-air and return-air ducts and plenums must be insulated to 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 1/4 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.*
§ 150.0(m)2:	Factory-Fabricated Duct Systems. Factory-fabricated duct systems must comply with applicable requirements for duct construction, connections, and closures; joints and seams of duct systems and their components must not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and draw bands.
§ 150.0(m)3:	Field-Fabricated Duct Systems. Field-fabricated duct systems must comply with applicable requirements for: pressure-sensitive tapes, mastics, sealants, and other requirements specified for duct construction.
§ 150.0(m)7:	Backdraft Damper. Fan systems that exchange air between the conditioned space and outdoors must have backdraft or automatic dampers.
§ 150.0(m)8:	Gravity Ventilation Dampers. Gravity ventilating systems serving conditioned space must have either automatic or readily accessible, manually operated dampers in all openings to the outside, except combustion inlet and outlet air openings and elevator shaft vents.
§ 150.0(m)9:	Protection of Insulation. Insulation must be protected from damage, 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 water retardant and provides shielding from solar radiation.
§ 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.
§ 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.
§ 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.*
§ 150.0(m)13:	Space Conditioning System Airflow Rate and Fan Efficacy. 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 efficacy ≤ 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 efficacy ≤ 0.62 watts per CFM. Field verification testing is required in accordance with Reference Residential Appendix RA3.3.*



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Requirements for Ventilation and Indoor Air Quality:	
§ 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.
§ 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.
§ 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.
§ 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.
§ 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.
§ 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.
Pool and Spa Systems and Equipment Measures:	
§ 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.*
§ 110.4(b)1:	Piping. Any pool or spa heating system or equipment must be installed with at least 36 inches of pipe between the filter and the heater, or dedicated suction and return lines, or built-in or built-up connections to allow for future solar heating.
§ 110.4(b)2:	Covers. Outdoor pools or spas that have a heat pump or gas heater must have a cover.
§ 110.4(b)3:	Directional Inlets and Time Switches for Pools. Pools must have directional inlets that adequately mix the pool water, and a time switch that will allow all pumps to be set or programmed to run only during off-peak electric demand periods.
§ 110.5:	Pilot Light. Natural gas pool and spa heaters must not have a continuously burning pilot light.
§ 150.0(p):	Pool Systems and Equipment Installation. Residential pool systems or equipment must meet the specified requirements for pump sizing, flow rate, piping, filters, and valves.*
Lighting Measures:	
§ 110.9:	Lighting Controls and Components. All lighting control devices and systems, ballasts, and luminaires must meet the applicable requirements of § 110.9.*
§ 150.0(k)1A:	Luminaire Efficacy. All installed luminaires must meet the requirements in Table 150.0-A.
§ 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.
§ 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.
§ 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.
§ 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.
§ 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).*
§ 150.0(k)1G:	Screw based luminaires. Screw based luminaires must contain lamps that comply with Reference Joint Appendix JA8.*
§ 150.0(k)1H:	Light Sources in Enclosed or Recessed Luminaires. Lamps and other separable light sources that are not compliant with the JA8 elevated temperature requirements, including marking requirements, must not be installed in enclosed or recessed luminaires.
§ 150.0(k)1I:	Light Sources in Drawers, Cabinets, and Linen Closets. Light sources internal to drawers, 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.
§ 150.0(k)2A:	Interior Switches and Controls. All forward phase cut dimmers used with LED light sources must comply with NEMA SSL 7A.
§ 150.0(k)2B:	Interior Switches and Controls. Exhaust fans must be controlled separately from lighting systems.*
§ 150.0(k)2C:	Interior Switches and Controls. Lighting must have readily accessible wall-mounted controls that allow the lighting to be manually turned ON and OFF.*
§ 150.0(k)2D:	Interior Switches and Controls. Controls and equipment must be installed in accordance with manufacturer's instructions.
§ 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).
§ 150.0(k)2F:	Interior Switches and Controls. Lighting controls must comply with the applicable requirements of § 110.9.



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§ 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.
§ 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.
§ 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.
§ 150.0(k)2J:	Interior Switches and Controls. Luminaires that are or contain light sources that meet Reference Joint Appendix JA8 requirements for dimming, and that are not controlled by occupancy or vacancy sensors, must have dimming controls.*
§ 150.0(k)2K:	Interior Switches and Controls. Under cabinet lighting must be controlled separately from ceiling-installed lighting systems.
§ 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)3Ai (ON and OFF switch) and the requirements in either § 150.0(k)3Aii (photocell and either a motion sensor or automatic time switch control) or § 150.0(k)3Aiii (astronomical time clock), or an EMCS.
§ 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.
§ 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.
§ 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).
§ 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.
§ 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 comply with Table 150.0-A and be controlled by an occupant sensor.
§ 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.
Solar Ready Buildings:	
§ 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).
§ 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).
§ 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 160 square feet each for buildings with roof areas greater than 10,000 square feet. For single family residences, the solar zone must be located on the roof or overhang of the building and have a total area no less than 250 square feet. 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.*
§ 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.
§ 110.10(b)3A:	Shading. The solar zone must not contain any obstructions, including but not limited to: vents, chimneys, architectural features, and roof mounted equipment.*
§ 110.10(b)3B:	Shading. Any obstruction located on the roof or any other part of the building that projects above a solar zone must be located at least twice the 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.*
§ 110.10(b)4:	Structural Design Loads on Construction Documents. For areas of the roof designated as a solar zone, the structural design loads for roof dead load and roof live load must be clearly indicated on the construction documents.
§ 110.10(c):	Interconnection Pathways. The construction documents must indicate: a location reserved for inverters and metering equipment and a pathway reserved for routing of conduit from the solar zone to the point of interconnection with the electrical service; and for single family residences and central water-heating systems, a pathway reserved for routing plumbing from the solar zone to the water-heating system.
§ 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.
§ 110.10(e)1:	Main Electrical Service Panel. The main electrical service panel must have a minimum busbar rating of 200 amps.
§ 110.10(e)2:	Main Electrical Service Panel. The main electrical service panel must have a reserved space to allow for the installation of a double pole circuit breaker for a future solar electric installation. The reserved space must be permanently marked as "For Future Solar Electric".

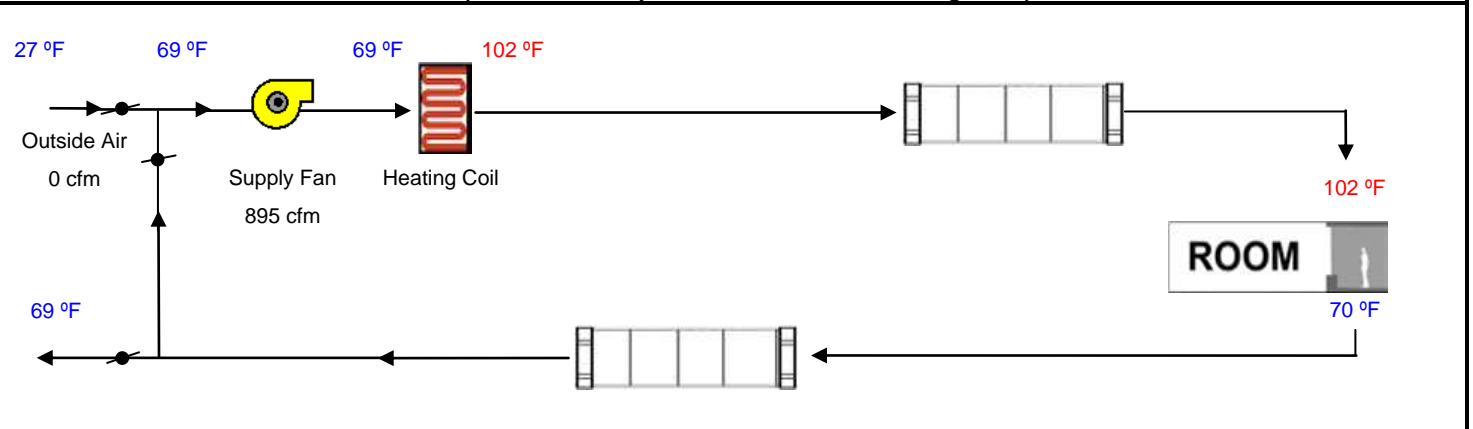
HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

Project Name J.A. Russo Ent.	Date 10/6/2021
System Name Res HVAC	Floor Area 1,713

ENGINEERING CHECKS		SYSTEM LOAD				
Number of Systems	1	Total Room Loads Return Vented Lighting Return Air Ducts Return Fan Ventilation Supply Fan Supply Air Ducts TOTAL SYSTEM LOAD	COIL COOLING PEAK			COIL HTG. PEAK
Heating System			CFM	Sensible	Latent	CFM
Output per System	48,000		408	16,638	1,161	414
Total Output (Btuh)	48,000			0		
Output (Btuh/sqft)	28.0			747		510
Cooling System				0		0
Output per System	47,500		0	0	0	0
Total Output (Btuh)	47,500			0		0
Total Output (Tons)	4.0			747		510
Total Output (Btuh/sqft)	27.7					
Total Output (sqft/Ton)	432.8			18,133	1,161	14,812

Air System		HVAC EQUIPMENT SELECTION				
CFM per System	895	Bosch BOVA-60HDN1-M20G				
Airflow (cfm)	895		38,020	0		30,803
Airflow (cfm/sqft)	0.52					
Airflow (cfm/Ton)	226.1					
Outside Air (%)	0.0%	Total Adjusted System Output (Adjusted for Peak Design conditions)		38,020	0	30,803
Outside Air (cfm/sqft)	0.00	TIME OF SYSTEM PEAK				
Note: values above given at ARI conditions					Aug 3 PM	Jan 1 AM

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)

