

**BUILDING INFORMATION**

<b>OCCUPANCY CODE</b>	R-3U 2019 CALIFORNIA RESIDENTIAL, BUILDING, PLUMBING, ELECTRICAL, MECHANICAL, FIRE/COVERS, CRC, GREEN CODE, LOW-RISE MANDATORY MEASURES SUMMARY, AND THE 2019 TITLE 24 ENERGY CODES	<b>BUILDING TYPE</b>	V-B
<b>BUILDING AREA - HOUSE</b>	CONDITIONED SPACE 2,900 SQ. FT. GARAGE 1,143 SQ. FT. COVERED PORCHES 633 SQ. FT.	<b>DESIGN LOADS</b>	ROOF 20 psf FLOOR 40 psf LIVE STAIR 40 psf DECK 60 psf
<b>LOT SIZE</b>	52.6 ACRES	<b>SOIL PARAMETERS</b>	BASED ON SOILS INDIGENOUS TO THE AREA: - BEARING PRESSURE - 1500 psf - LATERAL ACTIVE PRESSURE 100 psf - FLUID EQUIVALENT - SOIL-CONCRETE FRICTION COEFFICIENT 0.35 - SOIL PROFILE Sd
		<b>LATERAL DESIGN</b>	WIND ASIC WIND SPEED - 93 MPH WIND IMPORTANCE FACTOR - I = 1.0 WIND EXPOSURE - C
		<b>INTERNAL PRESSURE COEFF. - NA</b>	WOOD D.F. #2 MIN. CONCRETE 2500 PSI @ 28 DAYS
		<b>MATERIAL STRESS GRADES</b>	CONCRETE BLOCKS, GRADE N GROUT FLOWABLE MIN 2,000 PSI STEEL REINFORCING gr 60
		<b>SEISMIC:</b>	SDC=D I=1 R=6.5 Cs= 0.77

**SITE INFORMATION**

JURISDICTION SOLANO COUNTY  
 ZONE RR2.5  
 FIRE DISTRICT VACAVILLE FIRE DISTRICT  
 WATER RURAL NORTH VACAVILLE WATER DISTRICT  
 SEWAGE DISPOSAL NEW SEPTIC SYSTEM

65% OF NONHAZARDOUS WASTE SHALL BE RECYCLED AND/OR SALVAGED PER SECTION 4.408 OF THE 2019 CALIFORNIA GREEN BUILDING CODE DOCUMENTATION DEMONSTRATING COMPLIANCE WITH SECTION 4.408.2, 4.408.3, OR 4.408.4 SHALL BE EMAILED TO NUNTAL@SOLANOCOUNTY.COM AND APPROVED PRIOR TO FINAL INSPECTION.

TWO (2) COPIES OF EACH DEFERRED SUBMITTAL WILL FIRST BE SUBMITTED TO THE ARCHITECT/ENGINEER-OF-RECORD, WHO WILL REVIEW THEM AND FORWARD THEM TO THE BUILDING DEPARTMENT WITH NOTATIONS INDICATING THAT THE SUBMITTALS CONFORM TO THE DESIGN OF THE BUILDING. THE ENGINEER(S) RESPONSIBLE FOR THE DESIGN OF THE DEFERRED SUBMITTAL ITEMS SHALL STAMP AND WET-SIGN THOSE DRAWINGS AND CALCULATIONS FOR WHICH HE/SHE IS RESPONSIBLE.

CUT = 1768 CY  
 FILL = 1801 CY

**SRA**

Site Plan  
 Scale 1" = 75'

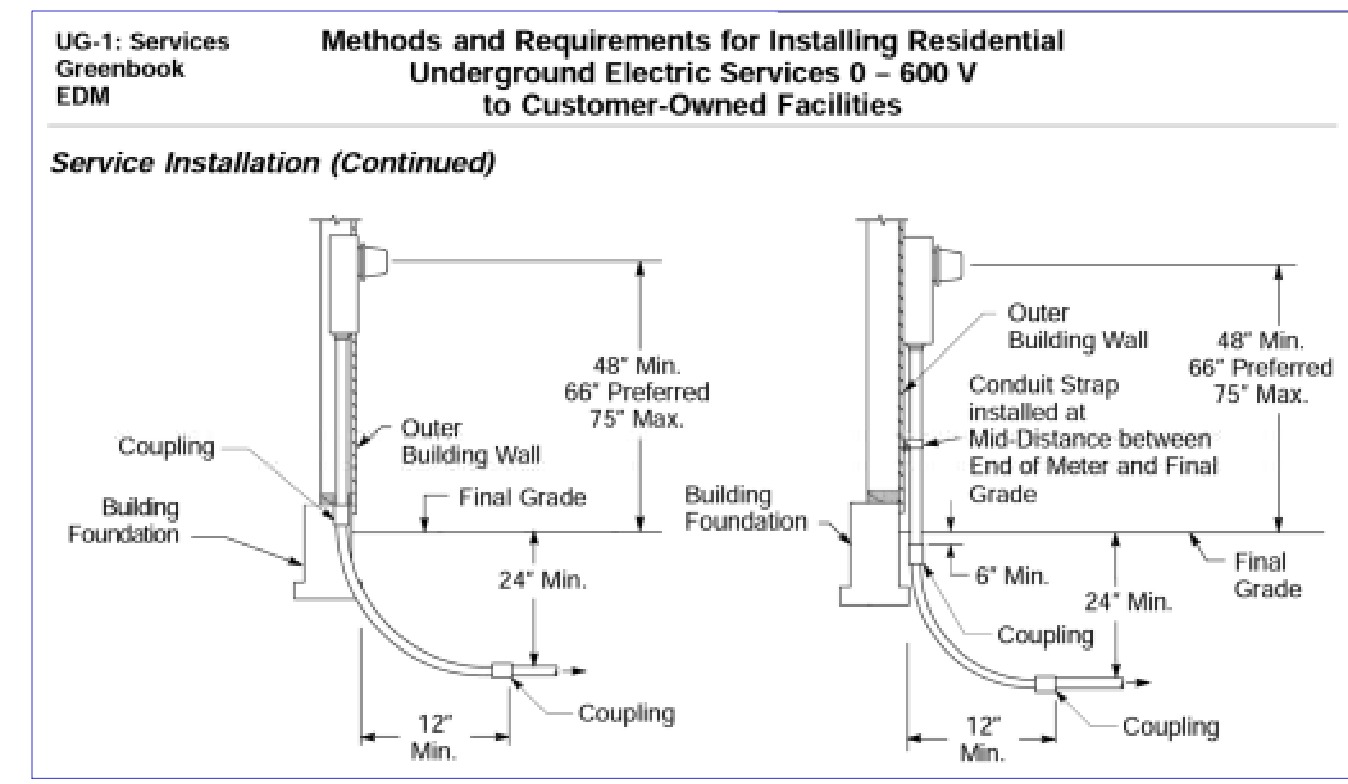
B2022-1152 Table of Contents

A1.0 - Site Plan and Contents  
 A1.1 - Elevations  
 A1.2 - Floor Plan  
 A1.3 - Cross Sections  
 G1.0 - Grading and Driveway Plans  
 EC1.0 - Erosion Control  
 U1.1 - Electrical and Gas Plans  
 S1.1 - Shear Plan  
 S1.2 - Foundation Plan  
 S1.3 - Roof Plan  
 T24.1 - Title 24  
 T24.2 - Cal Green  
 FP1 - Fire Sprinkler Plans

- WILDLAND-URBAN INTERFACE BUILDING REQUIREMENTS:
- \* ALL ROOFING MATERIALS ARE REQUIRED TO HAVE AND SHALL BE INSTALLED TO MEET A CLASS "A" ASSEMBLY. WHEN PROVIDED, VALLEY FLASHINGS SHALL BE INSTALLED OVER ONE LAYER 72# MINERAL-SURFACED NONPERFORATED CAP SHEET RUNNING THE ENTIRE LENGTH OF THE VALLEY.
  - \* ROOF GUTTERS SHALL BE PROVIDED WITH THE MEANS TO PREVENT THE ACCUMULATION OF LEAVES AND DEBRIS IN THE GUTTER.
  - \* EXTERIOR WALLS SHALL BE APPROVED NONCOMBUSTIBLE OR IGNITION-RESISTANT MATERIALS, HEAVY TIMBER, OR LOG WALL CONSTRUCTION OR SHALL PROVIDE PROTECTION FROM INTRUSION OF FLAMES AND EMBERS. COVERINGS SHALL EXTEND FROM TOP OF FOUNDATION TO THE ROOF AND TERMINATE AT 2-INCH NOMINAL SOLID WOOD BLOCKING BETWEEN RAFTERS AT ALL ROOF OVERHANGS, OR IN THE CASE OF ENCLOSED EAVES, TERMINATE AT THE ENCLOSURE.
  - \* EAVES OR SOFFITS SHALL BE PROTECTED BY IGNITION-RESISTANT MATERIALS OR NONCOMBUSTIBLE CONSTRUCTION ON THE EXPOSED UNDERSIDE.
  - \* VENTING OF BUILDING IS NOT ALLOWED IN EAVES OR CORNICES UNLESS USING STATE APPROVED VENTING DEVICES SPECIFICALLY APPROVED FOR INSTALLATION IN THESE AREAS.
  - \* VENTILATION OPENINGS IN WALLS SHALL RESIST THE INTRUSION OF FLAME AND EMBERS INTO THE STRUCTURE OR VENTS SHALL BE SCREENED WITH A CORROSION-RESISTANT NONCOMBUSTIBLE WIRE MESH WITH 1/8" OPENINGS OR ITS EQUIVALENT.
  - \* EXTERIOR GLAZING SHALL BE INSULATING-GLASS UNITS WITH A MINIMUM OF ONE TEMPERED PANE OR HAVE A FIRE-RESISTIVE RATING OF NOT LESS THAN 20 MINUTES.
  - \* EXTERIOR DOOR ASSEMBLIES SHALL MEET THE STANDARDS OF SFM 127A-1. BE APPROVED NONCOMBUSTIBLE CONSTRUCTION, SOLID CORE WOOD NOT LESS THAN 1-3/8" THICK, OR SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 20-MINUTES. GARAGE DOORS SHALL MEET THE REQUIREMENT IF THEY ARE NONCOMBUSTIBLE OR EXTERIOR FIRE-RETARDANT TREATED WOOD VEHICLE ACCESS DOORS.

**Permit is for primary dwelling only**

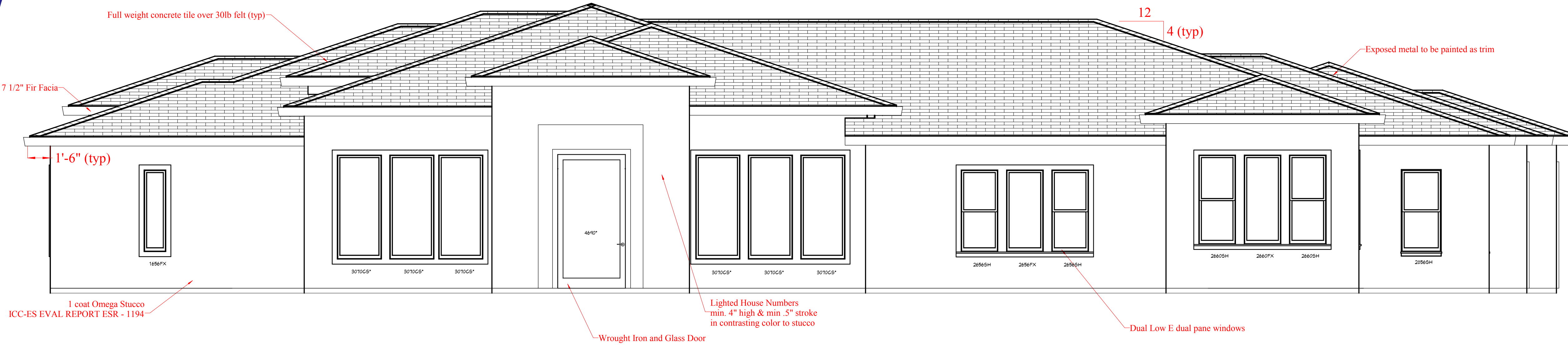
- SPECIAL INSPECTION REQUIRED**  
**CBC Chapt. 17**
- High Strength Bolts
  - Welding
  - Concrete
  - Geotechnical **compaction**
  - Other
- PRIOR TO FINAL INSPECTION SIGN-OFF REQUIRED BY:**
- PLANNING  PUBLIC WORKS
  - FIRE  GRADING
  - ENV. HEALTH  OTHER
- FIRE SPRINKLER SYSTEM REQUIRED**
- HOLDOWN ANCHOR BOLTS AND STANDARD ANCHOR BOLTS SHALL BE IN PLACE PRIOR TO FOUNDATION INSPECTION.
- ALL WORK SHALL COMPLY WITH THE LATEST CALIFORNIA EDITION OF THE BUILDING, ELECTRICAL MECHANICAL & PLUMBING CODES
- HERS VERIFICATION REQUIRED



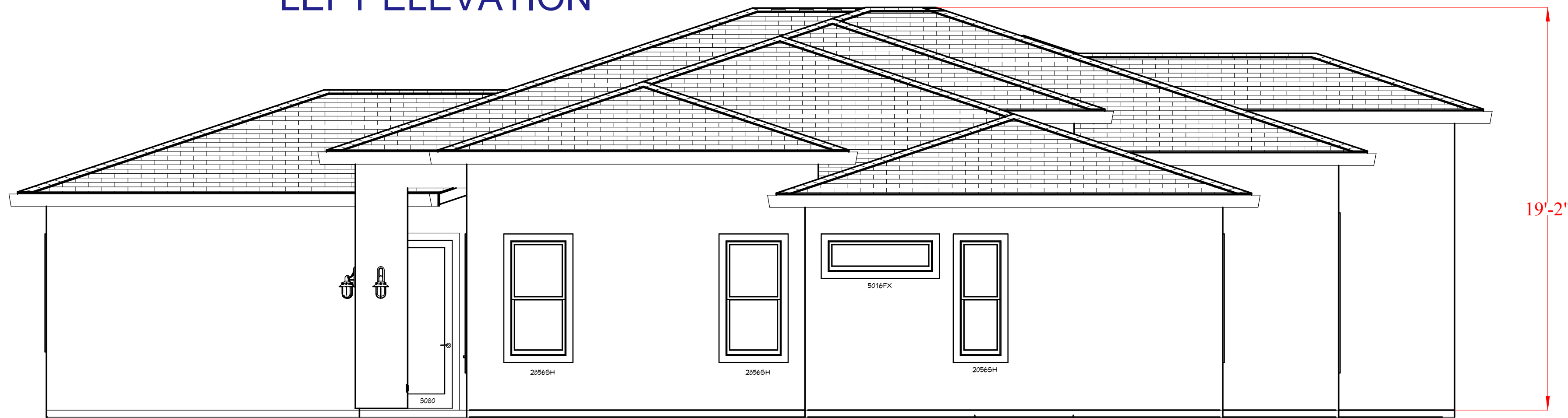
# FRONT ELEVATION

SCALE 1/4"=1'

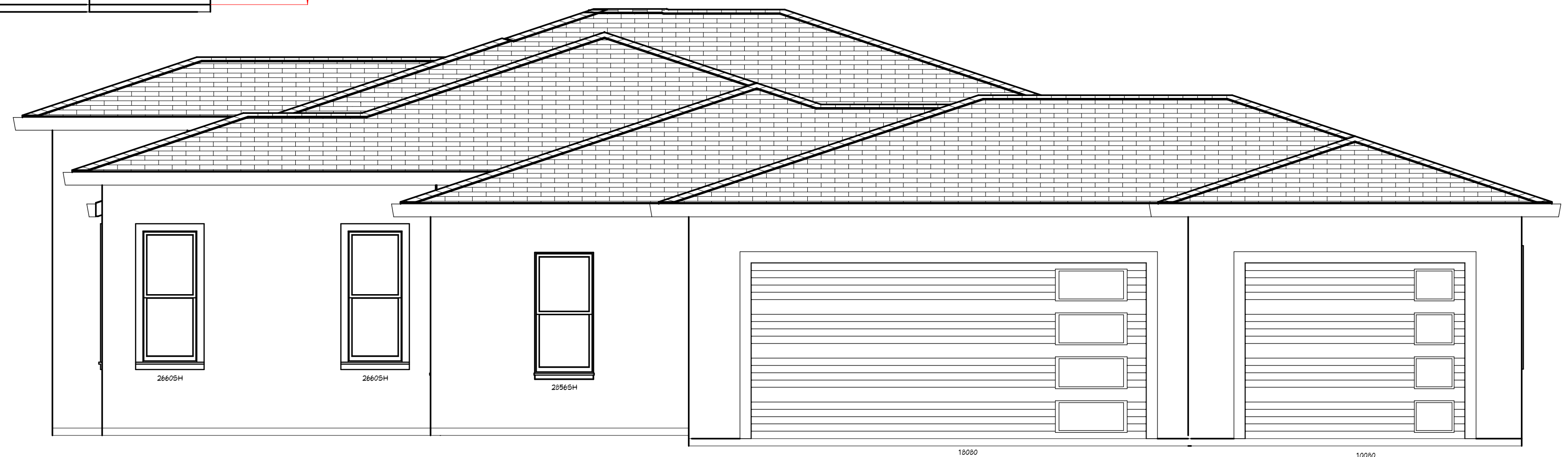
Finished floor elevation = 375.5'  
Exterior finished grade = 373.5'



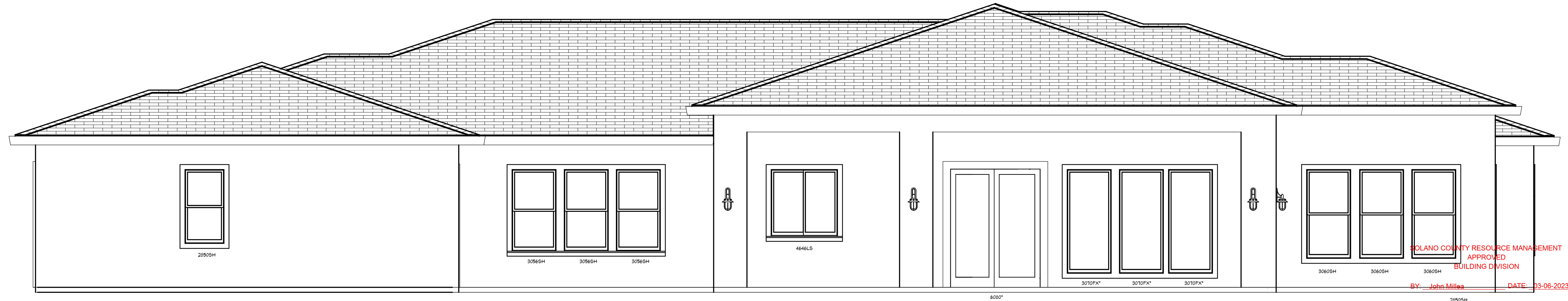
# LEFT ELEVATION



# RIGHT ELEVATION



# REAR ELEVATION



Stucco notes: A corrosion resistant weep screed which will allow water trapped behind the stucco to drain to the exterior of the building is required below the stucco at the foundation plate line. The weep screed must have 4" clearance above the ground and 2" above a concrete/asphalt surface.

Stucco contractor to float foundation wall to within 6" and parallel to finish grade

Stucco contractor to provide and install weep screed and corner bead

All flashing, sheet metal, vent stacks and pipes shall be painted to match adjacent building surfaces

1 Plastering with cement plaster shall be in accordance with ASTM C926. Plaster shall not be less than three coats where applied over metal lath or wire lath. [R703.7.2]  
2 Water-resistive barriers shall be installed as required in Section R703.2 and where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper. [R703.7.3]

Stucco Stone Veneer notes:  
1 Adhered masonry veneer shall comply with the requirements of R703.7.3 and the requirements of TMS 402.12.1 and 12.3. Adhered masonry veneer shall be installed in accordance with R703.7.1, TMS 602 Article 3.3C, or manufacturer's instructions. [R703.12]  
2 Anchored stone and masonry veneer shall be installed in accordance with R703.6, Table R703.3(1) and Figure R703.8. These veneers installed over a backing of wood shall not exceed 5 inches in thickness.

SCALE 1/4"=1'

**GENERAL REQUIREMENTS**

Work shall conform to all applicable zoning ordinances and codes as last adopted by Solano County including amendments thereto and to the adopted by the County including amendments thereto and to the 2019 CRC, CFC, CMC, CPC, CEC, CGBSC and 2019 Title 24 Energy Standard

\* Note: Nailing of framing structure shall comply with CRC unless noted otherwise. Dbl top plates carried over all headers

All Nails common unless otherwise noted.  
 8d common = 0.131"x2-1/2" 10d common = 0.148"x3"  
 16d common = 0.162"x3-1/2" 20d common = 0.203"x4"

2x blocking at all shear wall splices. All field nailing shall be 12" o.c. Provide 2x blocking between wall sheathing for type 1s, 4s, 11s, and 12s

Per 2019 CPC/CMC, gas line pressure testing is now 10 PSI for 15 min. and welded pipe is 60 PSI for 30 min.

Gas appliances shall have an accessible manual shutoff valve w/ non-displaceable valve or a listed convenience outlet valve installed within 6 ft. of the appliance served.

All fixtures must meet the reduced flow rate of Table 4.303.1

The combined flow rate for multiple showerheads shall not exceed maximum flow rate or design system so that only one shower head can be used at a time per Section 4.303.2.

A removable backflow prevention device shall be installed on all exterior hose bibs.

Any water system containing a backflow preventer, pressure regulator or other any other device that prevents dissipation of building pressure back into the water main shall be provided with an approved, listed, and adequately sized expansion tank or other approved device to control thermal expansion. CPC 608.3

All hot water supply piping 3/4" and greater shall be insulated. All hot water pipes from heating source to kitchen fixtures shall be insulated.

Water heaters shall have isolation valves on both the cold water supply and the hot water pipe leaving the water heater, and hose bibs or other fittings on each valve for flushing the water heater when the valves are closed. CBEEES 110.3(c)7

- The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. [CPC 411.2]
- Showerheads shall have a maximum flow rate of 1.8 gallons per minute at 80psi. [CPC 408.2.1]
- The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons (6.8 L) per minute at 60 psi. [CPC 420.2.1]
- The maximum flow rate of residential lavatory faucets shall not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 gallons per minute at 20 psi. [CPC 407.2.1.2]

SHOWERS: The base for adhesive application of wall tile or other nonabsorbent finish material in tub and shower areas over a moisture resistant underlayment (e.g. water-proof gypsum board) to a height of 6 feet above the floor.

Shower and tub combinations shall be provided w/ individual valves or the pressure balance, thermostatic, or combination valve type that provides scald and thermal shock protection. Valves shall be adjusted per manu. instructions to deliver a max mixed water setting of 120 degrees Fahrenheit.

Shower doors and panels, and bathtub enclosures adjacent to wall openings less than 60 inches above any standing surface shall be fully tempered, laminated safety glass or approved plastic.

Water Closets shall be a min of 30" clear width, 15" clear distance from water closet centerline to side wall, and 24" clearance in front of the water closet for all bathrooms.

An \* next to window size indicates the window or door is to have tempered glass. All Ext Glass Double Glaze. All ext glass to have a min. of one pane tempered.

Bedroom windows shall meet escape opening requirements with a minimum clear opening of 5.7 square feet, min. clear opening height of 24", minimum clear width of 20" and sill heights not more than 44" above the floor.

Fire Protection: All elements (walls, posts and beams) supporting a floor above the garage or a ceiling common to the dwelling shall have fire resistive protection on the garage side. A max spacing of 16" c.c. is required for floor/ceiling joists or trusses supporting 5/8" type 'X' GWB fire assemblies

Per R302.6 Dwelling/garage fire separation. The garage shall be separated as required by Table R302.6. Openings in garage walls shall comply with Section R302.5. Door and door assembly shall comply with Section R302.5.1

WALL NOTE: All walls are to be framed utilizing 2x d.f. #2 framing members 16" c.c. (typ.) Framing members are 2x4 or 2x6 as shown unless otherwise specified.

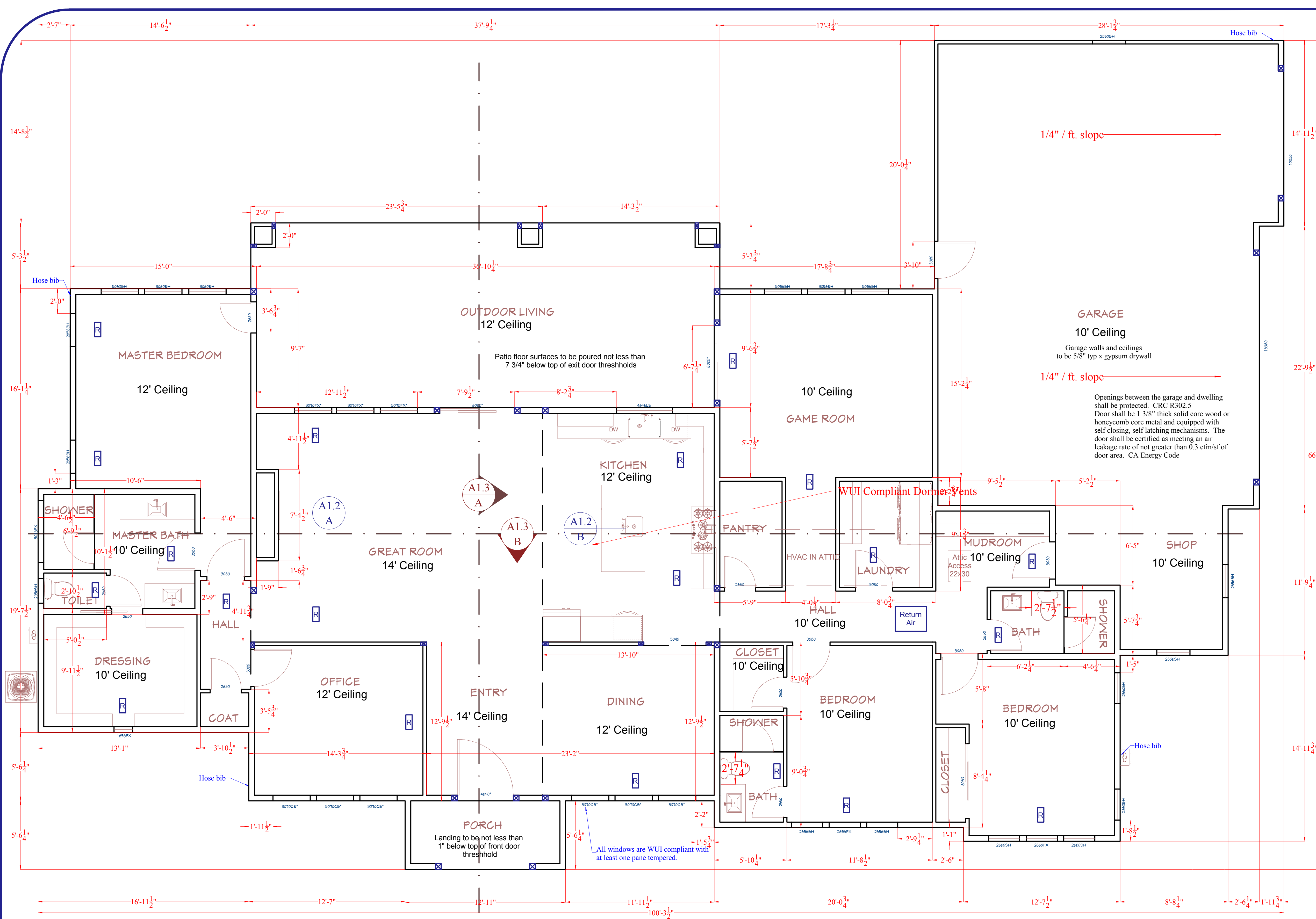
Windows and doors shall be constructed with single 2x trimmer and king stud equivalent with wall as specified unless noted.

Ext Walls - 2x6 DF #2 studs at 16" o.c. unless otherwise noted

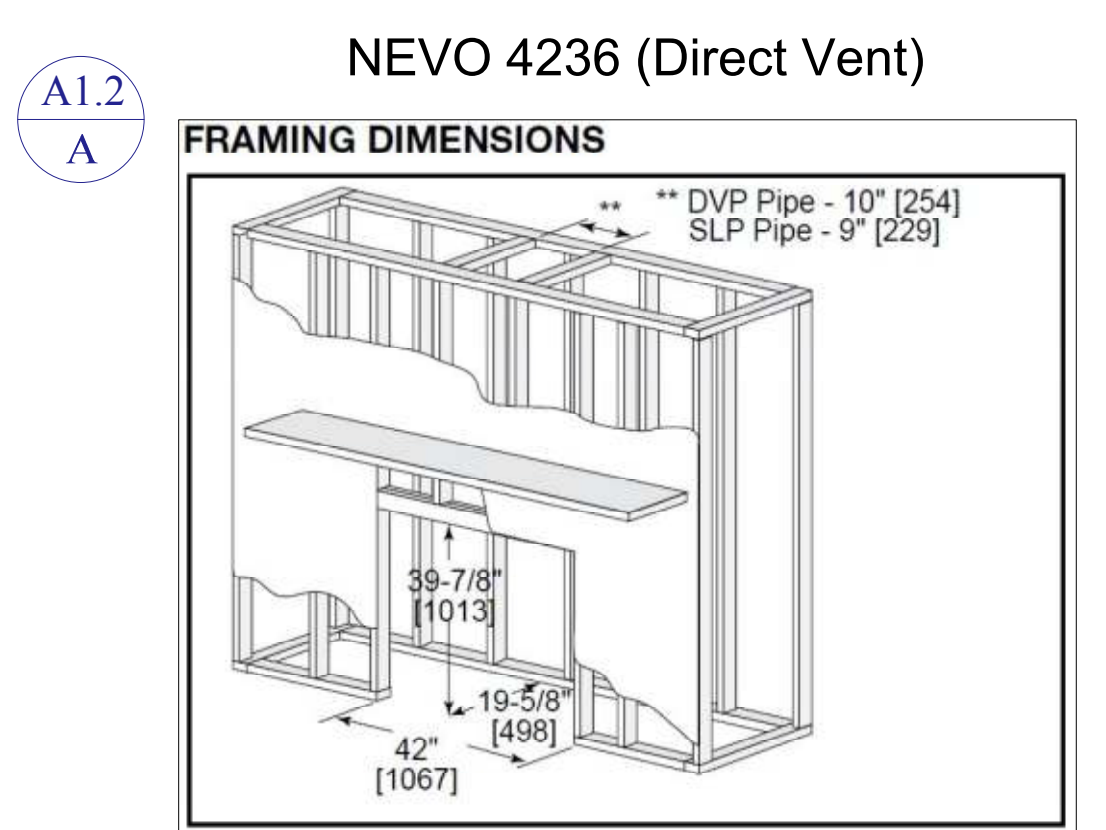
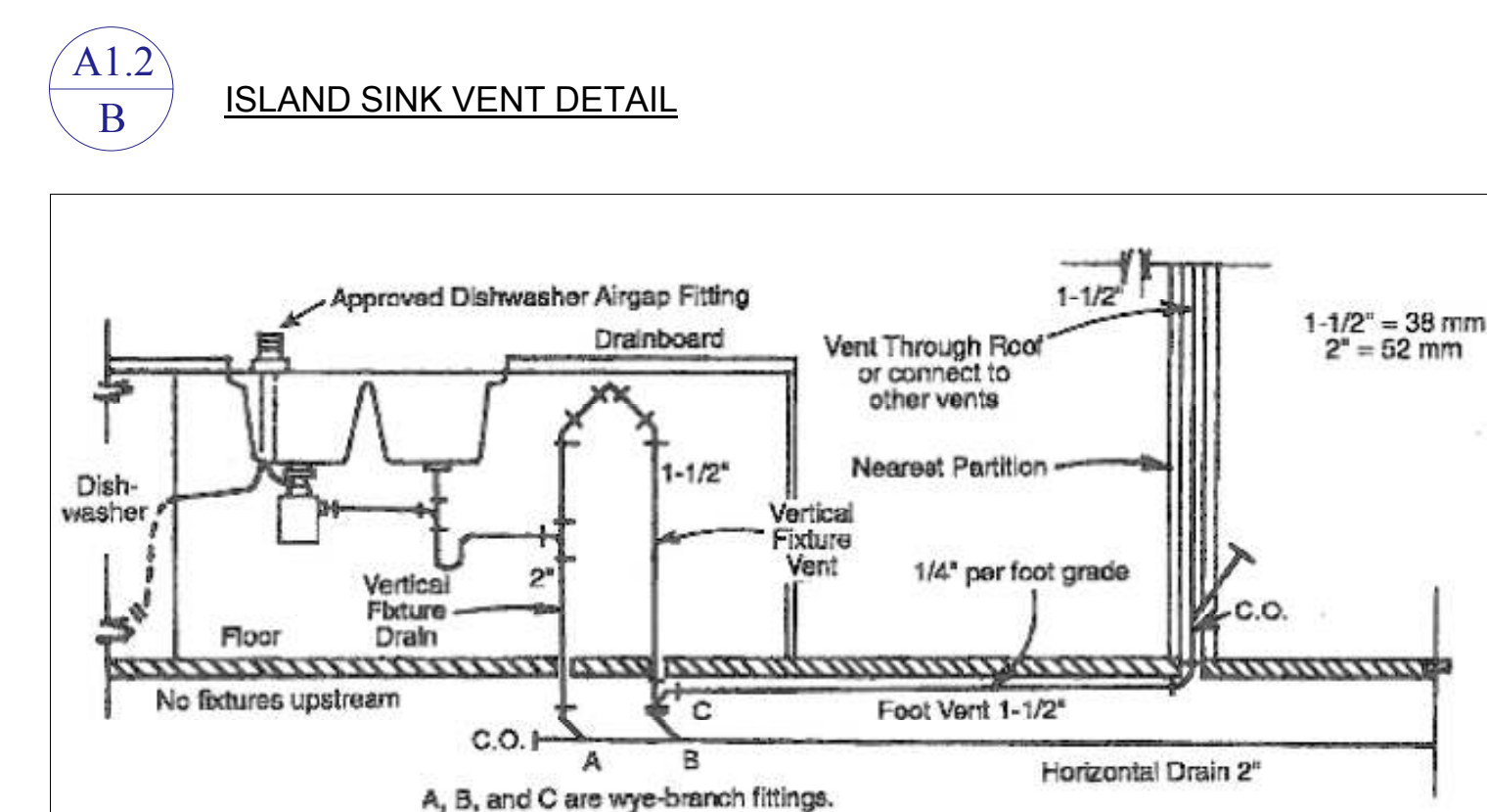
Cover all exterior walls w 3/8" OSB structural plywood w 8d's @ 6" o.c. edge / 12" o.c. field, unless otherwise noted. Plywood shall run continuous from top plate to sole plate w all edges blocked.

SOLANO COUNTY RESOURCE MANAGEMENT APPROVED BUILDING DIVISION

BY: John Milles DATE: 03-06-2023

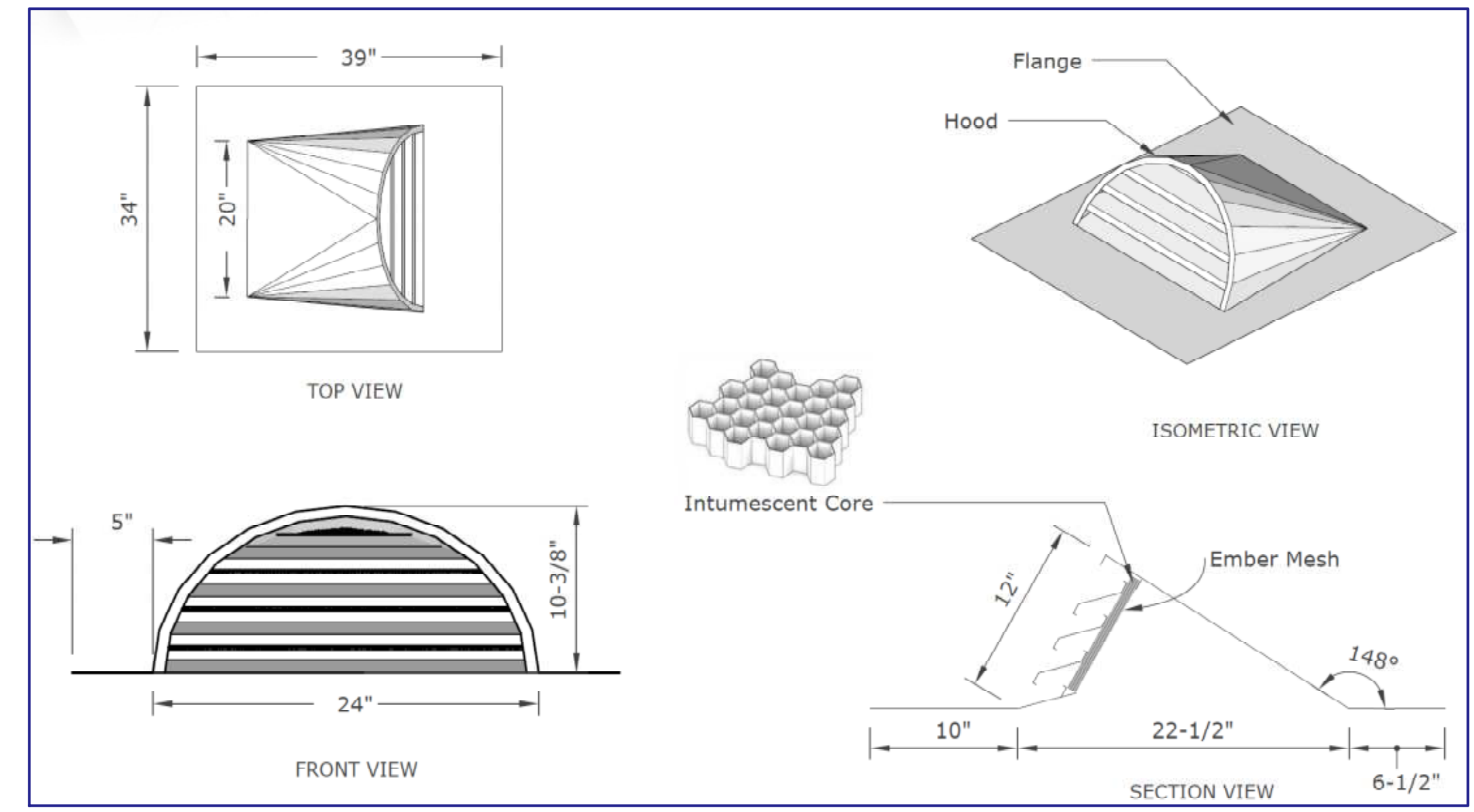
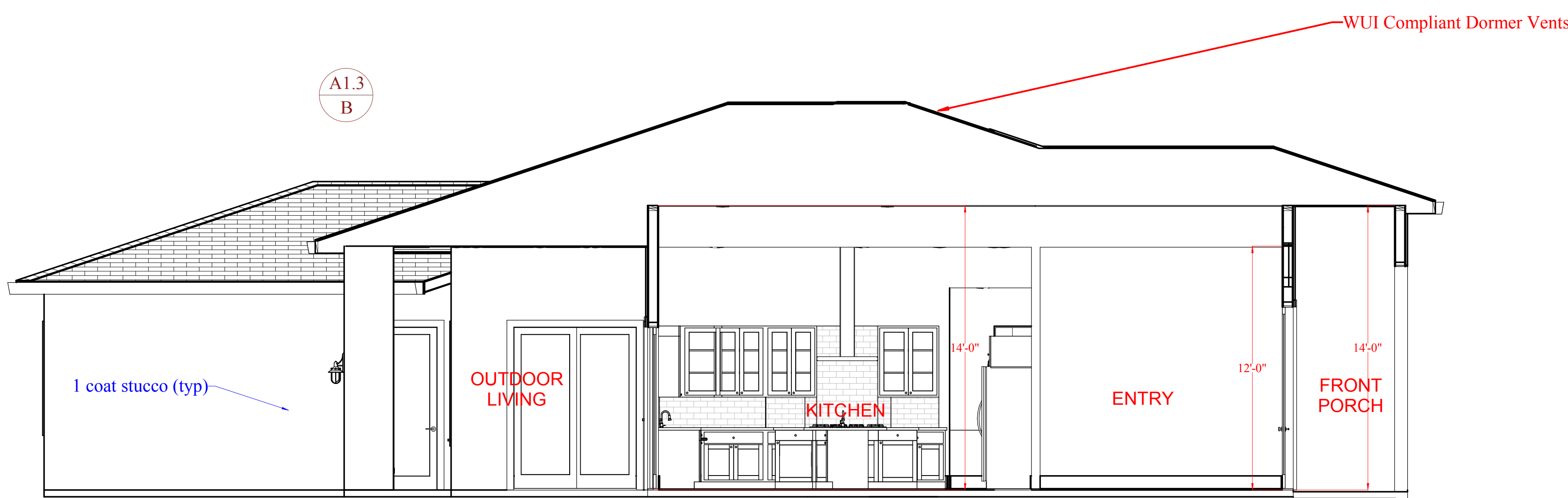
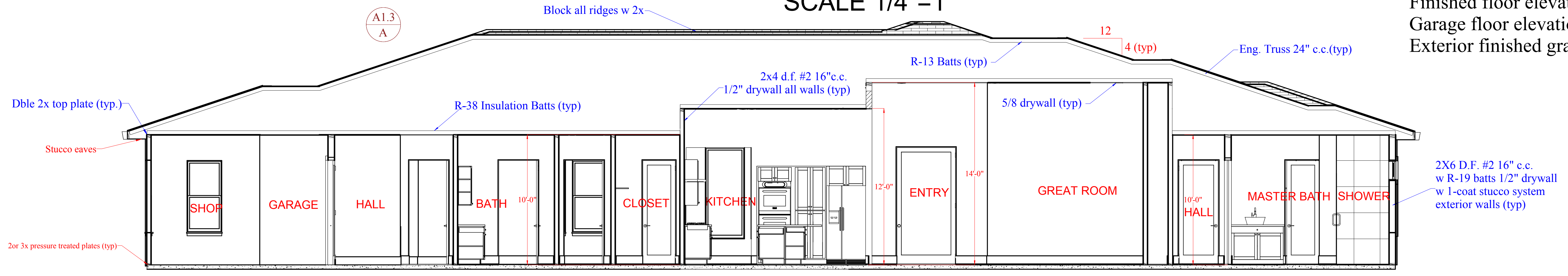


Finished floor elevation = 374.5'  
 Garage floor elevation = 374'  
 Exterior finished grade = 373.5'



SCALE 1/4"=1'

Finished floor elevation = 374.5'  
 Garage floor elevation = 374'  
 Exterior finished grade = 373.5'



WUI COMPLIANT SOFFIT VENTING DETAIL (typ)

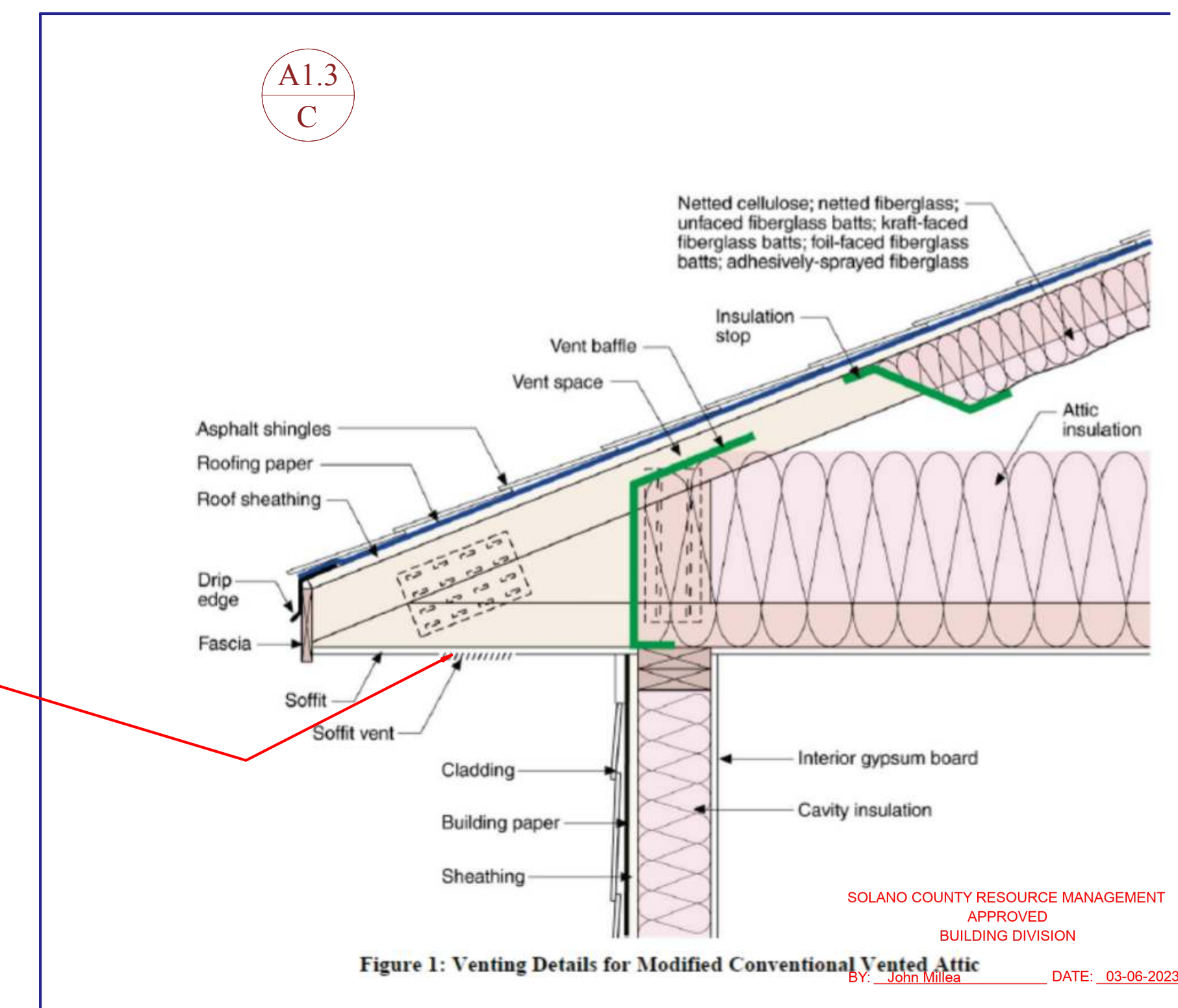
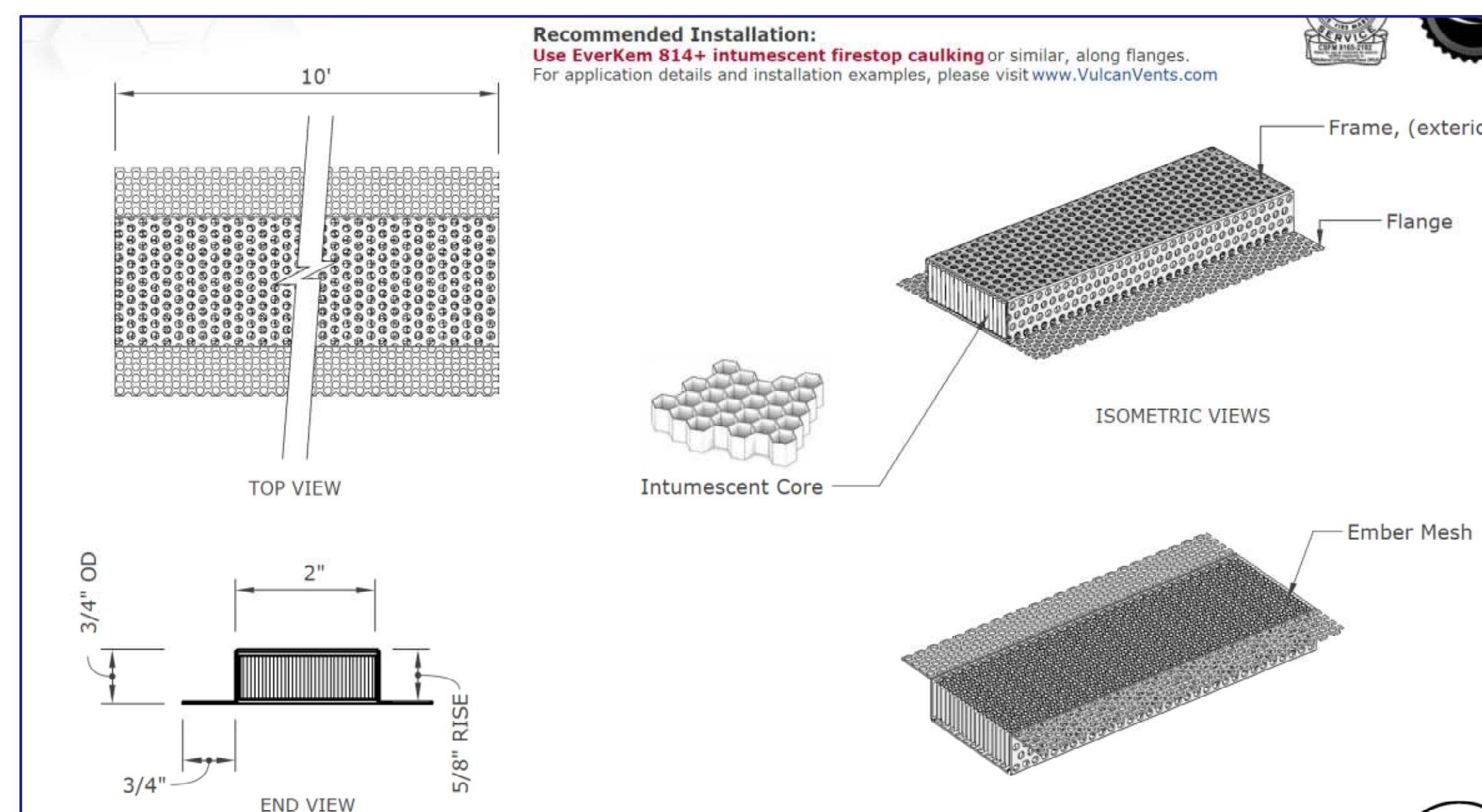
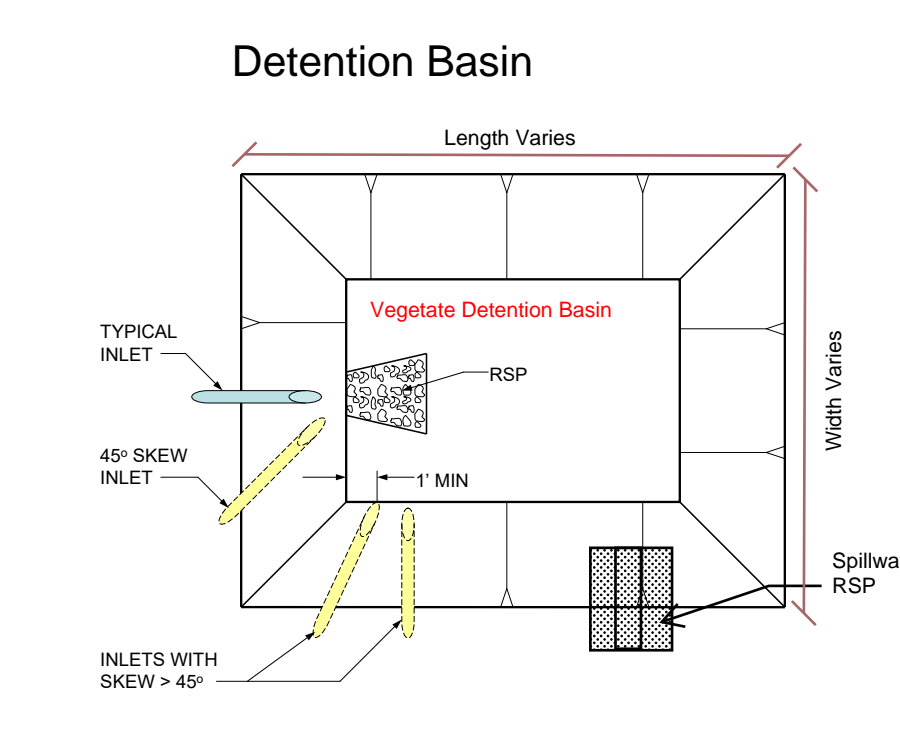
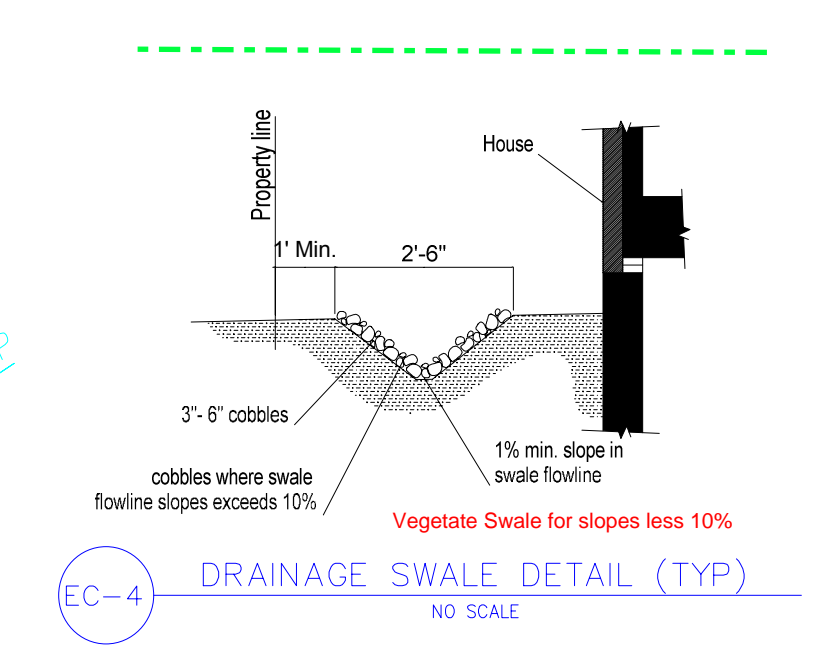


Figure 1: Venting Details for Modified Conventional Vented Attic  
 BY: John Millea DATE: 03-06-2023

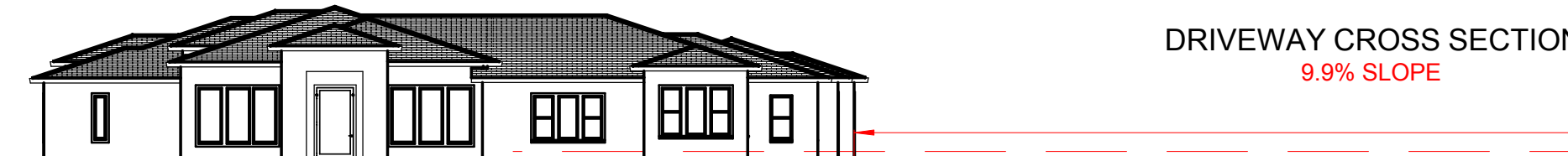
Site Plan  
Scale 1" = 20'

**Impervious Areas:**  
 Main Home = 4,681 SF  
 Concrete Driveway and Walks = 2,887 SF  
 Asphalt Driveway = 5,520 SF  
 ADU Home = 1,797 SF  
**Total Impervious Area = 14,885 SF**



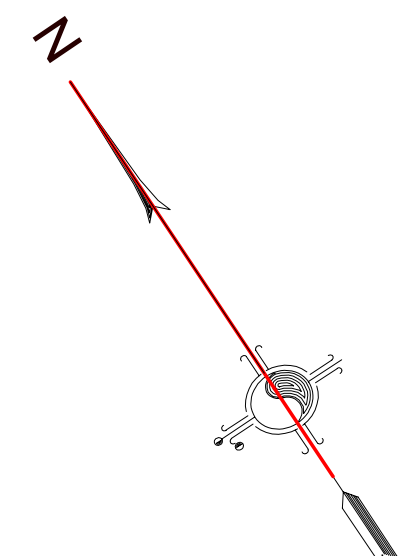
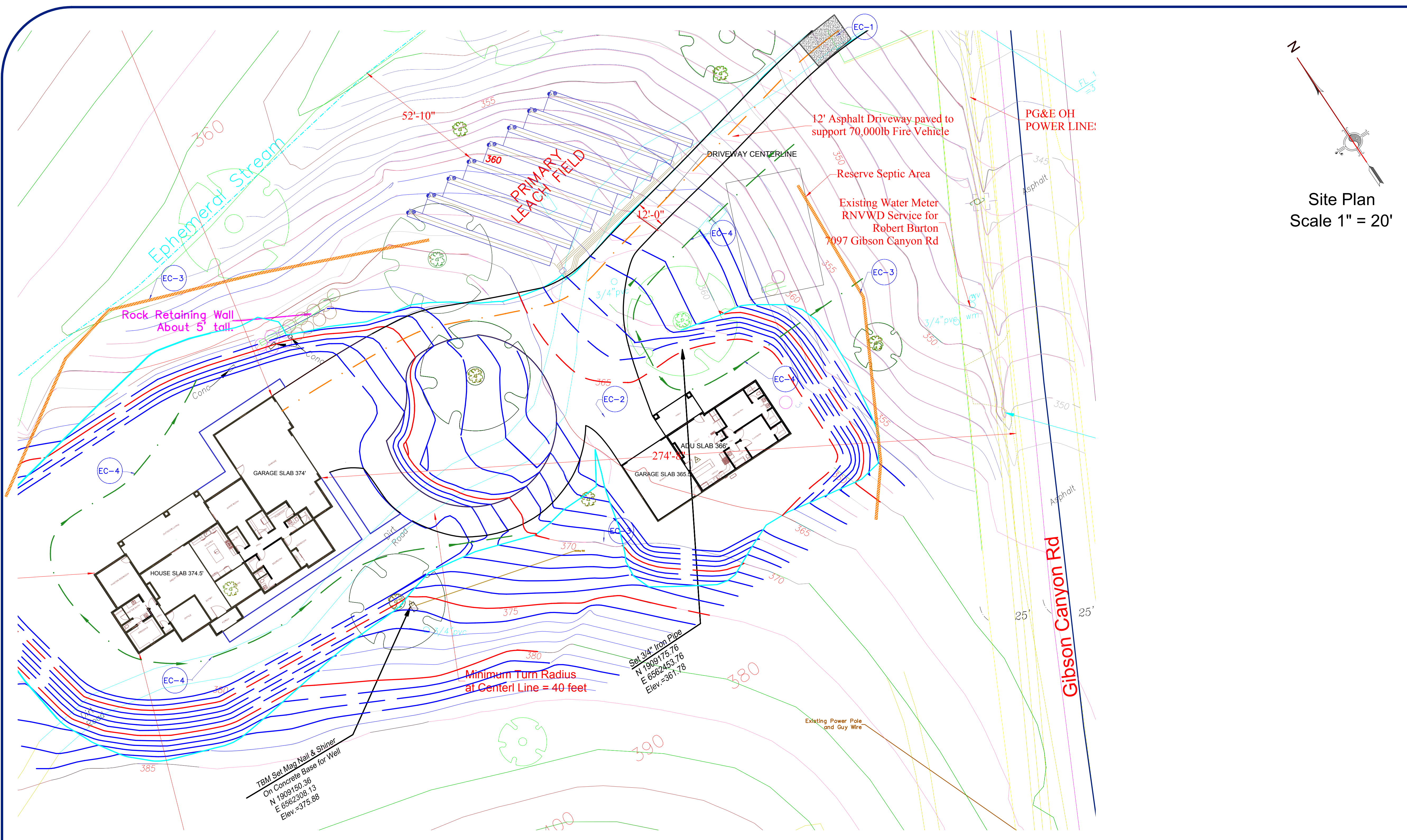
**Solano County Formula for Retention Created**  
 Minor Development 5000 SF - 15000 SF  
 150 CF of Storage for every 1000 SF of Impervious Surface created by development.  
 Memo Dated March 18, 2011

Impervious Area (SF)	Factor	Quotient	CF Factor	Total (CF)	Total (CY)
14,885	/ 1000 =	14.885 X	150 =	2232.8	82.7
Description	Length	Width	Depth	CY	
Pond 1	25	15	4	55.6	
Pond 2	20	10	4	29.6	
<b>Total</b>				<b>85.2</b>	



SOLANO COUNTY RESOURCE MANAGEMENT  
 APPROVED  
 BUILDING DIVISION  
 BY: John Miles DATE: 03-08-2023

SHEET  
Grading and Driveway  
Drainage



Site Plan  
Scale 1" = 20'

**GRADING NOTES**

1. AN ENCROACHMENT PERMIT IS REQUIRED FOR ALL WORK TO BE DONE WITHIN PUBLIC RIGHTS-OF-WAY OR EASEMENTS AND FOR CONNECTIONS TO PUBLICLY OWNED AND MAINTAINED FACILITIES.
2. CALL UNDERGROUND SERVICE ALERT (USA) AT 811 OR 800-942-2444 FORTY EIGHT (48) HOURS PRIOR TO ANY GRADING/EXCAVATION ACTIVITY.
3. THE OWNER/CONTRACTOR SHALL NOTIFY CITY OF FOLSOM CONSTRUCTION INSPECTION SERVICES AT 916-355-7210 TWENTY-FOUR (24) HOURS PRIOR TO COMMENCEMENT OF ANY GRADING.
4. CONTRACTOR SHALL OBTAIN APPROVED WATER METER FROM THE CITY AT THE OWNER'S EXPENSE.
5. ALL REFERENCES TO STANDARD SPECIFICATIONS SHALL MEAN THE LATEST EDITION OF THE CITY OF FOLSOM STANDARD CONSTRUCTION SPECIFICATIONS AND DESIGN PROCEDURES MANUAL.
6. DRAINAGE SHALES ARE TO BE CONSTRUCTED PER CITY STANDARD DETAIL.
7. CLEARING AND GRUBBING SHALL CONFORM TO THE PROVISIONS OF SECTION 19 OF THE STANDARD SPECIFICATIONS OF THE STANDARD SPECIFICATIONS.
8. ALL EXCAVATION BERMS/EMBANKMENTS SHALL CONFORM TO THE PROVISIONS IN SECTION 19 "EARTHWORK" OF THE STANDARD SPECIFICATIONS.
9. GUEST HOMES AND/OR SWIMMING POOLS SHALL BE CHUKED OUT ON THE GROUND AND ALL OAK TREES SHALL BE FENCED WITH HIGH VISIBILITY FENCING BEFORE THE PRE-SITE INSPECTION IS SCHEDULED.
10. NO WORK SHALL BE DONE UNDER OR WITHIN THE TREE PROTECTION ZONE (TPZ) OF ANY EXISTING TREE WITHOUT A VALID TREE PERMIT.
11. GRADING ACTIVITIES SHALL IMPLEMENT EROSION AND DUST CONTROL MEASURES AT ALL TIMES. EROSION CONTROL PLANS SHALL BE SUBMITTED TO THE CITY OF FOLSOM COMMUNITY DEVELOPMENT DEPARTMENT FOR REVIEW AND APPROVAL.
12. THERE SHALL BE NO TRESPASSING BY ANY KIND OF VEHICLE OR EQUIPMENT INTO OPEN SPACES AREAS.
13. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH THE SOILS REPORT REFERENCE NO. 920213.
14. ALL GRADING INCLUDING COMPACTION, EXCAVATION, PLACEMENT OF FILL MATERIALS, ETC. SHALL BE DONE UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL ENGINEER.
15. THE OWNER/CONTRACTOR SHALL PROVIDE A GRADING REPORT CONSISTING OF THE OBSERVATIONS MADE DURING EARTHWORK OPERATIONS, SIGNED AND STAMPED BY A LICENSED GEOTECHNICAL ENGINEER PRIOR TO ISSUANCE OF A BUILDING PERMIT FOR THE STRUCTURE. RECOMMENDATIONS PROVIDED IN THE GRADING REPORT SHALL BE COMPLETED PRIOR TO ANY STRUCTURAL IMPROVEMENTS.
16. AMENDED CONSTRUCTION DOCUMENTS WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND ANY CHANGES MADE DURING CONSTRUCTION THAT ARE NOT IN COMPLIANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS SHALL BE RESUBMITTED FOR APPROVAL AS AN AMENDED SET OF CONSTRUCTION DOCUMENTS.
17. INSPECTION REQUESTS: IT SHALL BE THE DUTY OF THE PERMIT HOLDER OR THEIR AGENT TO NOTIFY THE CITY OF FOLSOM BUILDING OFFICIAL THAT SUCH WORK IS READY FOR INSPECTION. IT SHALL BE THE DUTY OF THE PERSON REQUESTING ANY INSPECTIONS REQUIRED BY THIS CODE TO PROVIDE ACCESS TO AND MEANS FOR INSPECTION OF SUCH WORK PER 2015 C.R.C. 816.3.
18. INSPECTIONS: CONSTRUCTION OR WORK FOR WHICH A PERMIT IS REQUIRED SHALL BE SUBJECT TO INSPECTION BY THE CITY OF FOLSOM BUILDING OFFICIAL OR HIS/her REPRESENTATIVE, AND SUCH CONSTRUCTION OR WORK SHALL REMAIN ACCESSIBLE AND EXPOSED FOR INSPECTION PURPOSES UNTIL APPROVED. APPROVAL AS A RESULT OF AN INSPECTION SHALL NOT BE CONSTRUED TO BE AN APPROVAL OF A VIOLATION OF THE PROVISIONS OF THIS CODE OR OTHER REGULATIONS OF THE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT PER 2016 C.R.C. 816.3.
19. AT COMPLETION OF TRUSSES FABRICATION, THE TRUSS MANUFACTURER SHALL SUBMIT A CERTIFICATE OF COMPLIANCE STATING THAT WORK WAS PERFORMED IN ACCORDANCE WITH APPROVED CONSTRUCTION DOCUMENT. THIS CERTIFICATION SHALL BE PRESENTED TO THE CITY OF FOLSOM BUILDING INSPECTOR AT TIME OF PRODUCT DELIVERY.
20. CONTRACTOR SHALL PROVIDE CERTIFICATION LETTER FROM SOIL ENGINEER AT TIME OF FOUNDATION INSPECTION LETTER SHALL BE DATED AFTER ISSUANCE OF PERMIT AND CERTIFY THAT THE PAD AND FOOTING EXCAVATIONS ARE READY TO RECEIVE IMPROVEMENTS.
21. LOT SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 5 INCHES WITHIN FIRST 10 FEET. C.R.C. 816.3.
22. COMPLETE THE CITY FORM DETERMINATION OF APPLICABILITY TO THE MODEL WATER EFFICIENCY LANDSCAPE ORDINANCE (AB 681) AVAILABLE ON THE CITY'S WEB PAGE AND SUBMIT TO THE CITY ARBORIST FOR REVIEW.
23. IF IT IS DETERMINED THAT LANDSCAPE AND IRRIGATION PLANS ARE REQUIRED, PLANS, CALCULATIONS AND A CERTIFICATION STATEMENT SHALL BE SUBMITTED AS A DEFERRED SUBMITTAL. BEFORE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE LANDSCAPE AND IRRIGATION WORK SHALL BE COMPLETE. INSPECTIONS OF THE PLANTS AND IRRIGATION INSTALLATION BY THE CITY AND A THIRD PARTY WATER AUDIT MUST BE PERFORMED AND SUBMITTED FOR APPROVAL TO THE CITY ARBORIST.
24. NO GRADING IS TO TAKE PLACE OFF SITE. PORTION OF PROPERTY LABELED (DRAINAGE EASEMENT).

**ASBESTOS NOTES**

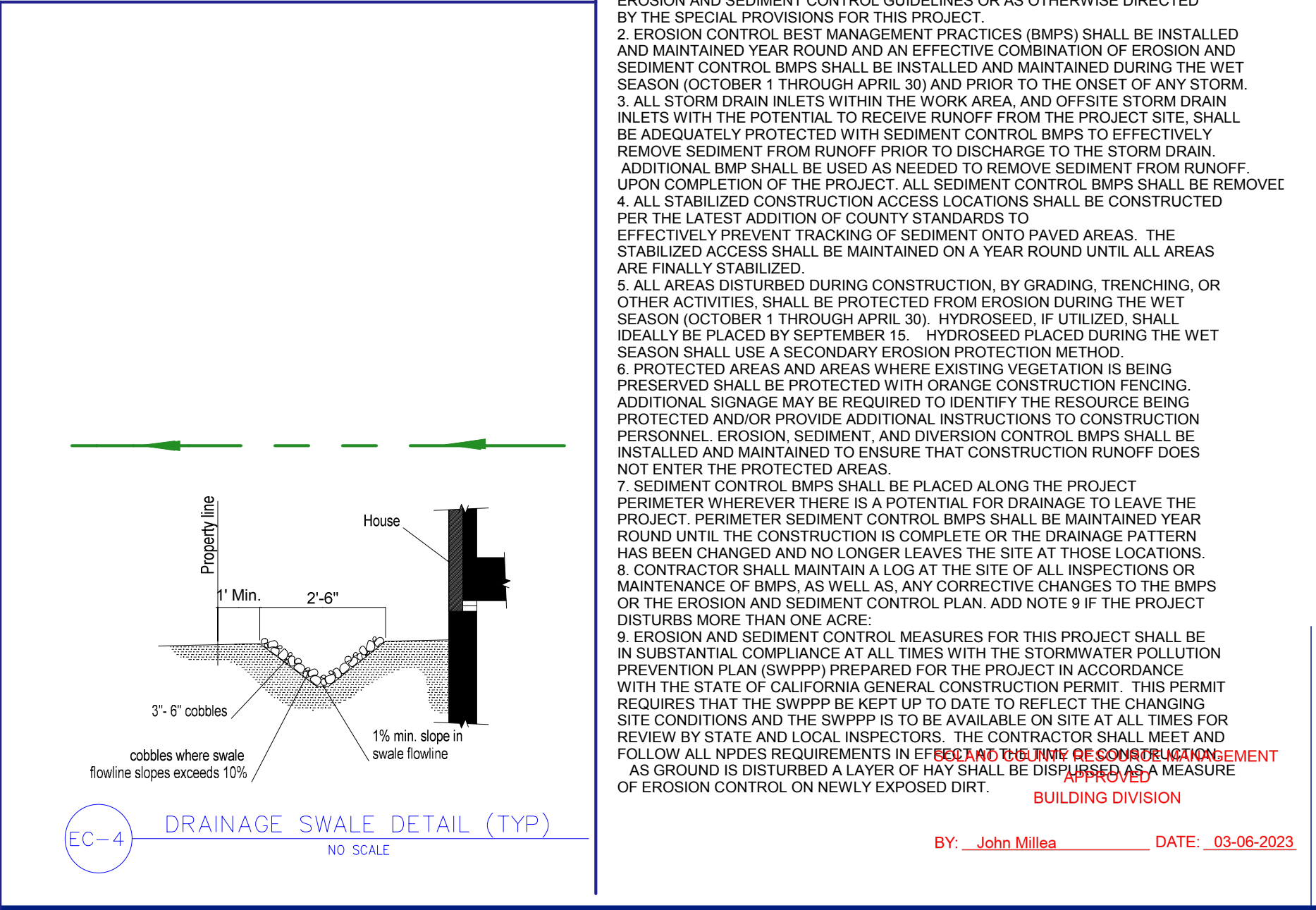
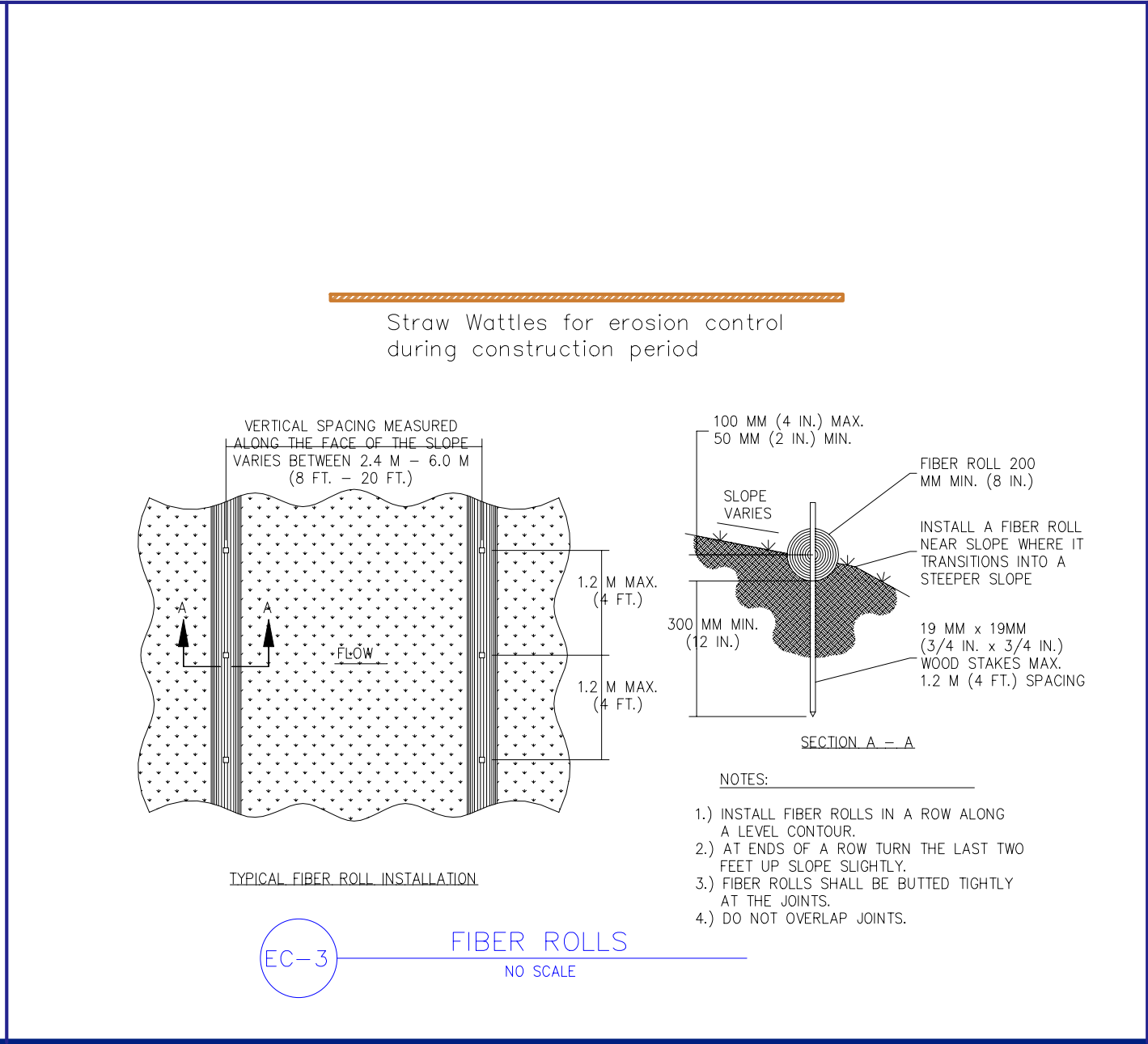
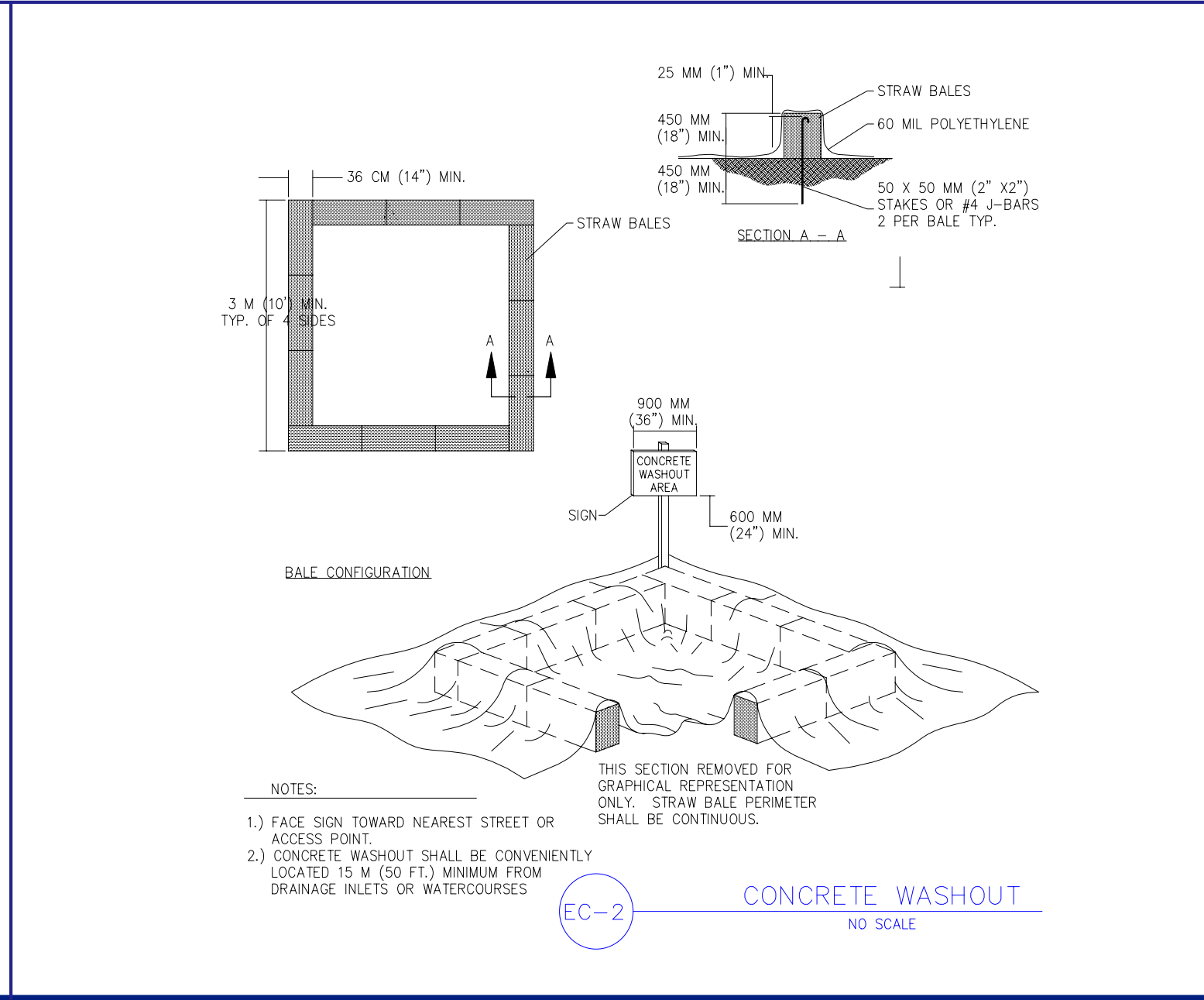
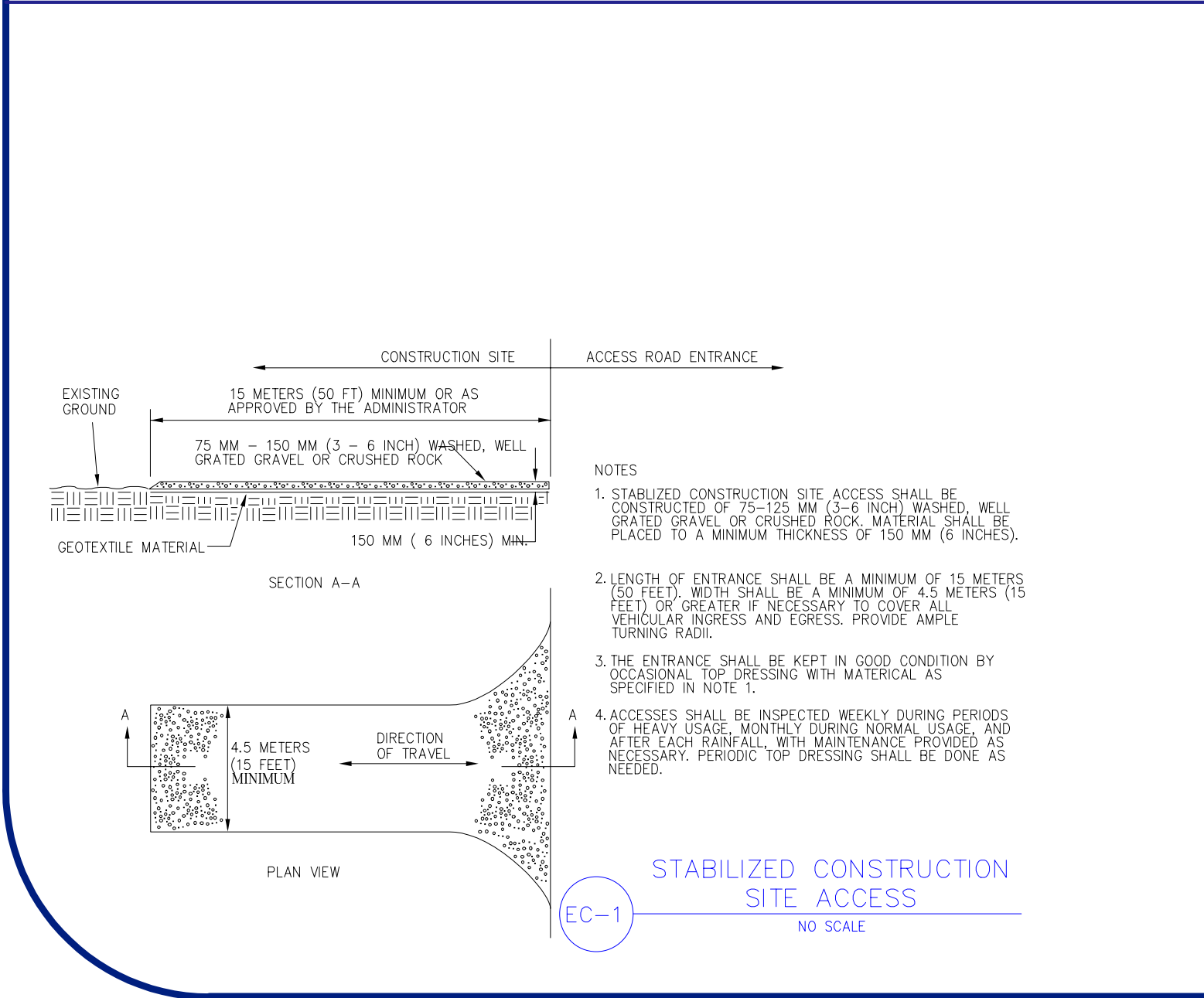
- AREAS OF ONE ACRE OR LESS MEETING THE CRITERIA IN SUBSECTIONS (b)(1) OR (b)(2):
1. CONSTRUCTION VEHICLE SPEED AT THE WORK SITE MUST BE LIMITED TO FIFTEEN (15) MILES PER HOUR OR LESS.
  2. PRIOR TO ANY GROUND DISTURBANCE SUFFICIENT WATER MUST BE APPLIED TO THE AREA TO BE DISTRIBUTED TO PREVENT VISIBLE EMISSIONS FROM CROSSING THE PROPERTY LINE.
  3. AREAS TO BE GRADED OR EXCAVATED MUST BE KEPT ADEQUATELY WETTED TO PREVENT VISIBLE EMISSIONS FROM CROSSING THE PROPERTY LINE.
  4. STORAGE PILES MUST BE KEPT ADEQUATELY WETTED, TREATED WITH A CHEMICAL DUST SUPPRESSANT, OR COVERED WHEN MATERIAL IS NOT BEING ADDED TO OR REMOVED FROM THE PILE.
  5. EQUIPMENT MUST BE WASHED DOWN BEFORE MOVING FROM THE PROPERTY ONTO A PAVED PUBLIC ROAD.
  6. VISIBLE TRACK-OUT ON THE PAVED PUBLIC ROAD MUST BE CLEANED USING WET SWEEPING OR A HEPA FILTER EQUIPPED VACUUM DEVICE WITHIN TWENTY FOUR (24) HOURS.

**EROSION & SEDIMENT CONTROL**

1. THE PROJECT SHALL CONFORM TO THE COUNTY CODE FOR PROTECTION OF SURFACE WATERS AND URBAN RUN-OFF. IN ADDITION, SITES OF ONE ACRE OR MORE SHALL COMPLY WITH THE STATE'S NPDES GENERAL CONSTRUCTION PERMIT.
2. THE PROJECT OWNER SHALL DESIGNATE AN EROSION AND SEDIMENT CONTROL (ESC) MANAGER WHO SHALL PROVIDE THEIR NAME, PHONE NUMBER, AND E-MAIL ADDRESS TO THE PUBLIC WORKS STORMWATER QUALITY MANAGER OR THE DESIGNATED CITY INSPECTOR. CHANGES TO THE ESC MANAGER'S CONTACT INFORMATION SHALL PROMPTLY BE REPORTED TO THE PUBLIC WORKS STORMWATER QUALITY MANAGER. THE ESC MANAGER SHALL BE RESPONSIBLE FOR ALL PROJECT PERSONNEL, INCLUDING SUBCONTRACTORS AND MATERIAL SUPPLIERS.
3. THE ESC MANAGER SHALL INSPECT AND MAKE NECESSARY CORRECTIONS AND ADJUSTMENTS TO THE STORMWATER CONTROLS ON THE FOLLOWING SCHEDULE:
  - 1) WEEKLY, 2) 48 HOURS PRIOR TO A STORM EVENT PREDICTED BY THE NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION TO EXCEED 0.10 INCH.
  - 3) DURING A STORM EVENT EXCEEDING 0.10 INCH AND 4) WITHIN 48 HOURS AFTER A STORM EVENT EXCEEDING 0.10 INCH.
4. BEST MANAGEMENT PRACTICES (BMPs) DESCRIBED HEREIN AND ON THE APPROVED EROSION CONTROL PLAN ARE THE MINIMUM REQUIRED. BMPs TO BE IMPLEMENTED AND MAINTAINED ON THE CONSTRUCTION SITE YEAR ROUND IN ORDER TO COMPLY WITH CHAPTER 8.70 OF THE F.M.C. ADDITIONAL MEASURES MAY BE REQUIRED AS SITE CONDITIONS DICTATE THROUGHOUT THE COURSE OF THE WORK, TO ENSURE THAT WATER QUALITY RUN-OFF INTO COUNTY DRAINAGE FACILITIES IS PROTECTED.
5. SEDIMENT CONTROL BMPs SHALL BE INSTALLED AND MAINTAINED YEAR ROUND AND AT A MINIMUM SHALL INCLUDE PERIMETER CONTROLS, DRAIN INLET PROTECTION, AND STABILIZED AREAS. PUBLIC STREETS AND SIDEWALKS SHALL BE SWEEP DAILY WHEN VEHICLES ARE ACCESSING THE SITE. WASHING THE STREET SHALL NOT BE PERMITTED UNLESS OTHERWISE APPROVED BY THE CITY.
6. THE CONTRACTOR SHALL ANTICIPATE AND ACCOMMODATE ANY RUN-OFF FROM NEIGHBORING PROPERTIES, INCLUDING EXISTING WATER COURSES. EXISTING WATER COURSES SHALL BE MAINTAINED IN THEIR ORIGINAL CONDITION, EXCEPT WHERE MODIFICATIONS ARE APPROVED BY THE COUNTY.
7. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE PROTECTED FROM EROSION DURING THE WET SEASON. HYDROSEED, IF USED, SHALL BE PLACED ON OR BEFORE SEPTEMBER 15TH. HYDROSEEDS PLACED AFTER SEPTEMBER 15TH SHALL BE USED WITH A SECONDARY PROTECTION METHOD SUCH AS A MAT OR BLANKET SPECIFICALLY DESIGNED TO FACILITATE GERMINATION AND GROWTH.
8. PROTECTED AREAS SHALL BE PROTECTED WITH ORANGE CONSTRUCTION FENCING. ADDITIONAL SIGNAGE MAY BE REQUIRED TO IDENTIFY THE RESOURCE BEING PROTECTED AND/OR PROVIDE ADDITIONAL INSTRUCTIONS TO CONSTRUCTION PERSONNEL.
9. CEMENTITIOUS, PAINT, WASTE, AND HAZARDOUS MATERIALS SHALL BE HANDLED, COVERED, AND/OR STORED PROPERLY TO AVOID SPILLS, LEAKAGE, AND CONTACT WITH RAIN OR STORMWATER RUNOFF.
10. UPON COMPLETION OF THE PROJECT, ALL BMPs SHALL BE REMOVED ONCE LANDSCAPING IS INSTALLED AND FUNCTIONING TO THE SATISFACTION OF THE COUNTY.

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE LATEST EDITION OF THE COUNTY IMPROVEMENT STANDARDS AND THE COUNTY OF SACRAMENTO EROSION AND SEDIMENT CONTROL GUIDELINES OR AS OTHERWISE DIRECTED BY THE SPECIAL PROVISIONS FOR THIS PROJECT.
2. EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE INSTALLED AND MAINTAINED YEAR ROUND AND AN EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROL BMPs SHALL BE INSTALLED AND MAINTAINED DURING THE WET SEASON (OCTOBER 1 THROUGH APRIL 30) AND PRIOR TO THE ONSET OF ANY STORM.
3. ALL STORM DRAIN INLETS WITHIN THE WORK AREA, AND OFFSITE STORM DRAIN INLETS WITH THE POTENTIAL TO RECEIVE RUNOFF FROM THE PROJECT SITE, SHALL BE ADEQUATELY PROTECTED WITH SEDIMENT CONTROL BMPs TO EFFECTIVELY REMOVE SEDIMENT FROM RUNOFF PRIOR TO DISCHARGE TO THE STORM DRAIN.
4. ADDITIONAL BMPs SHALL BE USED AS NEEDED TO REMOVE SEDIMENT FROM RUNOFF. UPON COMPLETION OF THE PROJECT, ALL SEDIMENT CONTROL BMPs SHALL BE REMOVED.
5. ALL STABILIZED CONSTRUCTION ACCESS LOCATIONS SHALL BE CONSTRUCTED PER THE LATEST EDITION OF COUNTY STANDARDS TO EFFECTIVELY PREVENT TRACKING OF SEDIMENT ONTO PAVED AREAS. THE STABILIZED ACCESS SHALL BE MAINTAINED ON A YEAR ROUND UNTIL ALL AREAS ARE FINALLY STABILIZED.
6. ALL AREAS DISTURBED DURING CONSTRUCTION, BY GRADING, TRENCHING, OR OTHER ACTIVITIES, SHALL BE PROTECTED FROM EROSION DURING THE WET SEASON (OCTOBER 1 THROUGH APRIL 30). HYDROSEED, IF UTILIZED, SHALL IDEALLY BE PLACED BY SEPTEMBER 15. HYDROSEEDS PLACED DURING THE WET SEASON SHALL USE A SECONDARY PROTECTION METHOD.
7. PROTECTED AREAS AND AREAS WHERE EXISTING VEGETATION IS BEING PRESERVED SHALL BE PROTECTED WITH ORANGE CONSTRUCTION FENCING. ADDITIONAL SIGNAGE MAY BE REQUIRED TO IDENTIFY THE RESOURCE BEING PROTECTED AND/OR PROVIDE ADDITIONAL INSTRUCTIONS TO CONSTRUCTION PERSONNEL. EROSION, SEDIMENT, AND DIVERSION CONTROL BMPs SHALL BE INSTALLED AND MAINTAINED TO ENSURE THAT CONSTRUCTION RUNOFF DOES NOT ENTER THE PROTECTED AREAS.
8. SEDIMENT CONTROL BMPs SHALL BE PLACED ALONG THE PROJECT PERIMETER WHEREVER THERE IS A POTENTIAL FOR DRAINAGE TO LEAVE THE PROJECT. PERIMETER SEDIMENT CONTROL BMPs SHALL BE MAINTAINED YEAR ROUND UNTIL THE CONSTRUCTION IS COMPLETE OR THE DRAINAGE PATTERN HAS BEEN CHANGED AND NO LONGER LEAVES THE SITE AT THOSE LOCATIONS.
9. CONTRACTOR SHALL MAINTAIN A LOG AT THE SITE OF ALL INSPECTIONS OR MAINTENANCE OF BMPs, AS WELL AS ANY CORRECTIVE CHANGES TO THE BMPs OR THE EROSION AND SEDIMENT CONTROL PLAN. ADD NOTE 9 IF THE PROJECT DISTURBS MORE THAN ONE ACRE.
10. EROSION AND SEDIMENT CONTROL MEASURES FOR THIS PROJECT SHALL BE IN SUBSTANTIAL COMPLIANCE AT ALL TIMES WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARED FOR THE PROJECT IN ACCORDANCE WITH THE STATE OF CALIFORNIA GENERAL CONSTRUCTION PERMIT. THIS PERMIT REQUIRES THAT THE SWPPP BE KEPT UP TO DATE TO REFLECT THE CHANGING SITE CONDITIONS AND THE SWPPP IS TO BE AVAILABLE ON SITE AT ALL TIMES FOR REVIEW BY STATE AND LOCAL INSPECTORS. THE CONTRACTOR SHALL MEET AND FOLLOW ALL NPDES REQUIREMENTS IN EFFECT AND THE NAME OF CONTRIBUTOR/OWNER AS GROUND IS DISTURBED A LAYER OF HAY SHALL BE DISPERSED AS A MEASURE OF EROSION CONTROL ON NEWLY EXPOSED DIRT.

BY: John Milica DATE: 03-06-2023



SHEET  
**EROSION CONTROL**

Electric Load Calculations			
General Lighting Loads	220-4(c)	2,900 sq. ft. x 3 VA =	8,700 VA
Minimum number of circuits		72.5 Amperes	
8,700 VA / 120 Volts =		72.5 Amperes	
72.5 Amperes /	15 amperes =	5 circuits	
Small Appliance Branch Circuits	220-4(b) (min. of two small appliance circuits required)	3 x 1,500 VA =	4,500 VA
Laundry Equipment Load	220-4(c)	1 x 1,500 VA =	1,500 VA
Total General Lighting	Small appliance & Laundry Circuit Load		14,700 VA
Application of Demand Factors	Table 220-11		
First 3,000 Volt-Amperes at 100%		3,000 VA	
Total minus 3,000 VA =	11,700 at 35%	4,095 VA	
Net general lighting and small appliance load		7,095 VA	
Appliance load - dwelling units	220-17		
Appliance	Nameplate Load		
1 Dishwashers	17.2 A 4,128 VA		
1 Disposals	9 A 1,920 VA		
Microwave	14 A 3,360 VA		
1-5 ton split A/C systems	50 A 36,000 VA	0 VA	
EV Charging Circuit	50 A 12,000 VA		
Total	139 A 57,408 VA		
Four +	57,408 x 75%	43,056 VA	
Add Range and Dryer Loads			
Range Load	Table 220-19 30.2 A 7,248 VA		
Dryer Load	Table 220-18 24 A 5,760 VA		
Total Calculated load		63,159 VA	
Minimum size of ungrounded service entrance conductors	63,159 VA / 240 volts =	263.16 Amperes	
Minimum Size of Grounded (neutral Service Entrance Conductors)			
Lighting and small appliance load		14,700 VA	
Range load of 8,000 Volt-amperes at 70%		5,600 VA	
Dryer load of 5,000 Volt-amperes at 70%		3,500 VA	
HVAC Load Volt-amperes at 70%		0 VA	
EV Charging Circuit at 70%		8,400 VA	
Total for grounded service-entrance conductor		33,934 VA	
33,934 Volt-amperes / 240 volts =		141.38 Amperes	

TOTAL HOME GAS REQUIREMENTS			
Appliance (typical)*	Btu/hr	Cubic Ft/hr	Qty.
Barbecue (residential)	75,000	75	1
Domestic Clothes Dryer	35,000	35	1
Gas Range			
36" Dual-Fuel Professional Range	86,000	86	
48" Dual-Fuel Professional Range	100,000	100	
Oven	25,000	25	
Gas Cooktop			
30" Gas Cooktop	45,000	45	
36" Gas Cooktop	86,000	86	1
48" Gas Cooktop	120,000	120	
Furnaces			
3 ton	56,000	56	
4 ton	80,000	80	
5 ton	100,000	100	1
Water Heaters			
50 gallon	50,000	50	
75 gallon	75,000	75	
Tankless			
200,000	200	2	400,000
140,000	140		
Fireplaces			
30"	20,000	20	
42"	35,000	35	1
84"	55,000	55	
Pool			
400,000	400		731,000

Size of Gas Piping (Inlet Pressure less than 2psi)												
Pipe Size	10	20	30	40	50	60	70	80	90	100	125	150
1/2	332	228	183	157	139	126	116	108	101	95	84	76
3/4	896	478	384	328	291	264	243	226	212	200	177	161
1	1,310	900	722	618	548	497	457	425	399	377	334	302
1 1/2	2,690	1,850	1,480	1,270	1,130	1,020	938	873	819	773	685	621
1 3/4	4,030	2,770	2,220	1,900	1,690	1,530	1,410	1,310	1,230	1,160	1,030	930
2	7,760	5,330	4,280	3,660	3,250	2,940	2,710	2,520	2,360	2,230	1,980	1,790
2 1/2	12,400	8,500	6,820	5,840	5,170	4,690	4,310	4,010	3,770	3,560	3,150	2,860
3	21,900	15,000	12,100	10,300	9,150	8,290	7,630	7,090	6,660	6,290	5,570	5,050

Derived from Table 1216.2(2)(4) Schedule 40 Metallic Pipe (NFPA 54 Table 6.2(b)) Size of Gas Piping (Inlet Pressure less than 2psi)

Receptacle outlets shall be spaced not more than 12' w/min. 6' from ends of walls or openings. Outlets req'd in walls 2' or greater.

Ceiling fans, fixtures, lamp holders, and receptacles shall be securely supported. A fixture that weighs more than 6 lbs. or exceeds 16" in any dimension shall not be supported by the screw shell of a lamp holder. Outlet boxes shall not be used as sole support for ceiling (paddle) fans.

Bathroom exhaust fans which exhaust directly from bathrooms shall comply with the following:

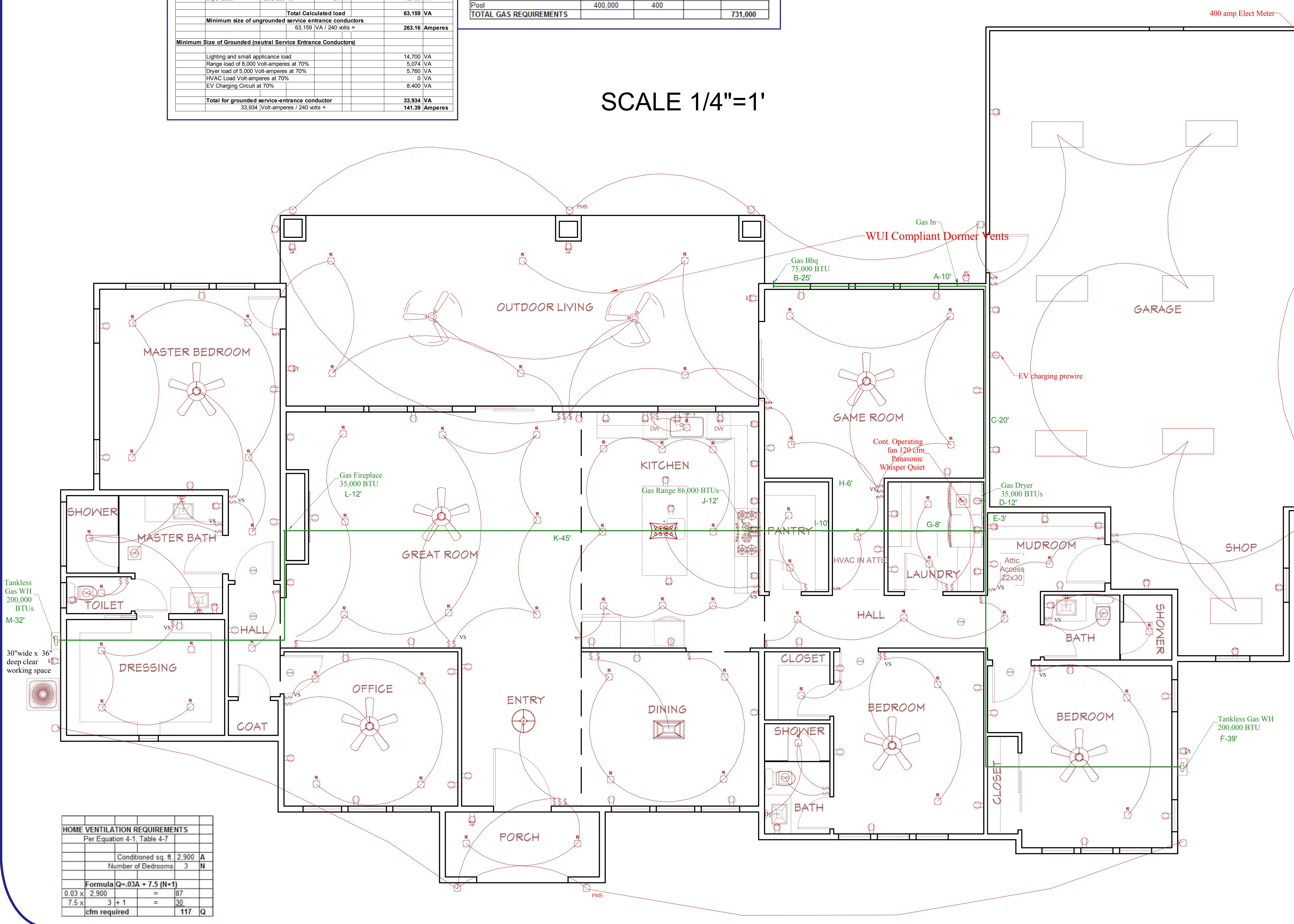
- Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
- Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidistat which shall be readily accessible. Humidistat controls shall be capable of adjustment between a relative humidity range of 50 to 80%.

Bathrooms, water closet compartments and other similar rooms shall be provided with aggregate glazing area in windows of not less than 3 square feet, one-half of which must be operable. Exception: The glazed areas shall not be required where artificial light and a mechanical ventilation system are provided. The minimum ventilation rates shall be 50 cubic feet per minute (24 L/s) for intermittent ventilation or 25 cubic feet per minute (12 L/s) for continuous ventilation. Ventilation air from the space shall be exhausted directly to the outside.

Lighting Notes:

- All installed luminaires shall be high-efficiency in accordance with Table 150.0-A
- In bathrooms, garages, laundry rooms, and utility rooms, at least one luminaire in each of these spaces shall be controlled by a vacanc sensor.
- Branch circuit serving garage receptacles shall not serve outlets outside garage.
- A/C condenser units supported from ground shall rest on concrete or other approved base extending not less than 3" above ground level. A dedicated circuit is required for the furnace.
- A minimum of one 120-Volt 20-amp dedicated circuit required for each garage.
- 110V smoke detector req'd w/battery backup audible in all sleeping areas. In dwelling units a smoke detector shall be installed in each sleeping room and outside each separate sleeping area within the immediate vicinity of bedrooms.
- Smoke detectors shall receive their primary power from the building wiring and shall be equipped with a battery backup and emit a signal when the battery is low. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection. Where more than one smoke alarm is required to be installed they shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit.
- An approved carbon monoxide alarm shall be installed in dwelling units and sleeping units within which fuelburning appliances are installed and in dwelling units that have attached garages. Carbon monoxide alarms shall receive their primary power from the building wiring and shall be equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection. Where more than one Carbon monoxide alarm is required to be installed they shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit.
- An Intersystem Bonding Electrode which includes provisions for connecting at least three grounding or bonding conductors required for communications systems shall be installed externally at the service entrance panel.
- All 125-volt, 15 and 20 amp receptacles in the dwelling shall be listed tamper-resistant.
- Vents for fuel burning appliances other than direct-vent appliances shall terminate at least 4' below, 4' horizontally from, or 1' above any door, operable window, or gravity air inlet into the building. The bottom of the vent shall be located at least 12" above the grade.
- Environmental air duct exhaust, such as for kitchen range exhausts, bathroom exhausts, and clothes dryer exhausts, shall terminate 3' from property lines and 3' from any openings into the building.
- When a room is designed for the installation of a clothes dryer, a minimum opening of 100 square inches for make-up air shall be provided in the door or by other approved means.
- Kitchen hoods, bathroom fans and other exhaust fan ducts shall terminate outside the building and have a back draft damper. When the exhaust fan operates continuously a back draft damper is not required.
- All 15 & 20 amp, 125 volt receptacles, including the garbage disposal receptacle, within 6' of the kitchen sink shall be GFCI protected.
- A listed raceway shall be installed to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or other enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as (IEV CAPABLE). The raceway termination location shall be permanently and visibly marked as "EV CAPABLE".
- Provide min. 1-20 Amp branch circuit for bathrooms. No additional outlets on said circuits. Bathroom receptacles shall be supplied by a separate 20A circuit and shall not have lighting, exhaust fans, or other outlets on it.
- All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling shall be protected by a listed arc-fault circuit interrupter, combination-type, installed to provide protection of the branch circuit.
- Provide a U/Fer Ground, a 20' section of #4 rebar incased in at least 2" of concrete with a grounding wire #4 copper clamped to water & gas line accessible from the exterior of the structure. Working space width between A/C equip shall be 30". Receptacle location for service of A/C equip shall be on same level & within 25 ft. of equip.
- Provide smooth metal duct for dryer exhaust extending to outside w back damper not to exceed total combined horiz and vert length of 14' including two 90 deg. elbows. Two feet shall be deducted for ea. 90 deg. elbow in excess of two.
- Provide steel electrical box in fire-resistive ceiling and walls. Box area shall not exceed 16 sq. in.
- Kitchen and Bath fans rated 3 sons or less are required and must be vented to the outside. Kitchen range hoods required 100cfm. Bathrooms required 50cfm.
- A continuously running bath fan that meets ANSI/AH/ESA Standard 62.2. The sound level cannot exceed 1.0 sone, and the CFM required req'd to meet Table 4-7 of the Residential Compliance Manual.
- An automatic garage door opener that is installed in a residence shall have a battery backup function that is designed to operate when activated because of an electrical outage.
- All receptacles and devices in the habitable portion of a dwelling unit, except for bathrooms, shall be protected by a listed and readily accessible AFCI. 2019 California Electrical Code (CEC) 21 0.12(A)
- Two or more small appliance branch circuits for the kitchen are limited to supplying wall and the counter space outlets including the refrigerator (note they cannot serve the dining room, outside plugs, range hood, disposal, dishwasher or microwaves). CEC 21 0.52(B)
- Laundry Branch Circuits: In addition to the other branch circuit requirements, at least one 20-amp branch circuit shall be provided to supply receptacle outlets required by CEC 21 0.52(F), CEC 210.11(C)(2)
- Provide a dedicated 20-amp branch circuit to serve the required bathroom outlets. This circuit cannot supply any other receptacles, lights, fans, etc.
- Provide a dedicated branch circuit at the garage. This circuit shall not supply receptacles outside of the garage. Provide at least one receptacle for each car space note more than 5'-6" above the floor. GFCI protection shall be provided at all receptacles in bathrooms, garages, crawl spaces, unfinished basements, laundry areas, within 6 feet of sinks, within 6 feet of bathtub and shower stalls, receptacles serving kitchen countertop surfaces and dishwashers, and outdoor receptacles.

SCALE 1/4"=1'



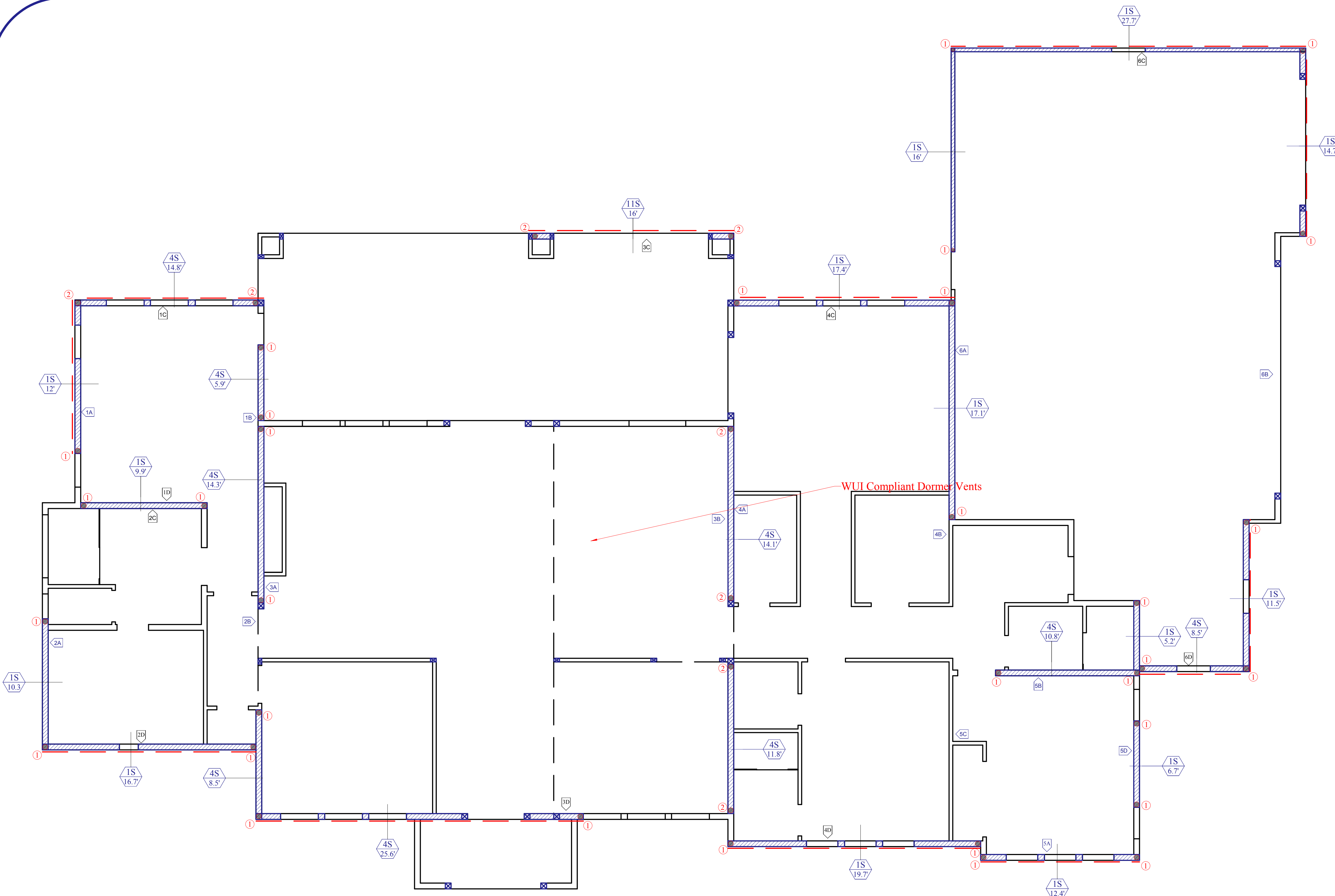
- Single Pole Switch
- Three or Four Way Switch
- Dimmer Switch
- Vacancy Sensor Switch
- Door Bell
- Hard Wired Interconnected w battery pack Smoke Alarm
- Hard Wired Interconnected w battery pack CO/Smoke Alarm
- 4 ft. Flourecent or LED
- Recessed LED Light
- Photocell Motion Sensor
- Ceiling Fan w light
- Duplex Receptacle Outlet
- Weatherproof Outdoor GFCI
- 220 Receptacle
- Indoor GFI Receptacle
- Exhaust Fan

BY: John Milles DATE: 03-06-2023

APPROVED: SOLANO COUNTY RESOURCE MANAGEMENT

BUILDING DIVISION

Elect & Gas Plans



Ext Walls - 2x6 DF #2 studs at 16"o.c. unless otherwise noted.

Cover all exterior walls w 3/8" OSB structural plywood w 8d's @ 6" o.c. edge / 12" o.c. field, unless otherwise noted. Plywood shall run continuous from top plate to sole plate w all edges blocked.

**HOLDOWNS ON 1ST AND 2ND FLOORS:**

1. If holddown is in alignment with shearwall below - apply connector to chord below
2. If holddown is offset, but within the limits of a shearwall below, provide duplicate chord within shearwall. Apply edge nailing at embedded chord and attach holddown to chord below.
3. If holddown is offset and there is no shearwall below, provide duplicate chord below within stud wall, come off holddown at both ends and continue to foundation. Provide holddown at foundation.
4. If holddown is located at a door or window below, connect holddown (strap) to window header. Connect additional strap at each end of header to support studs below. Provide holddown at the bottom of support studs to the foundation at each end of window or door.

**FIREBLOCKING:**

is required to provide a separation between concealed vert. and horiz. spaces, in walls, at stair stringers (top@bottom), at soffits, drop ceilings, cove ceilings, and openings around ducts, vents, pipes, and flue chases. To be provided vertically at ceiling and floor levels and horiz. at intervals not exceeding 10'

All nails shall be common. All field nailing shall be 12" o.c. Provide 2x blocking between wall sheathing for type 1s, 4s, 11s, and 12s

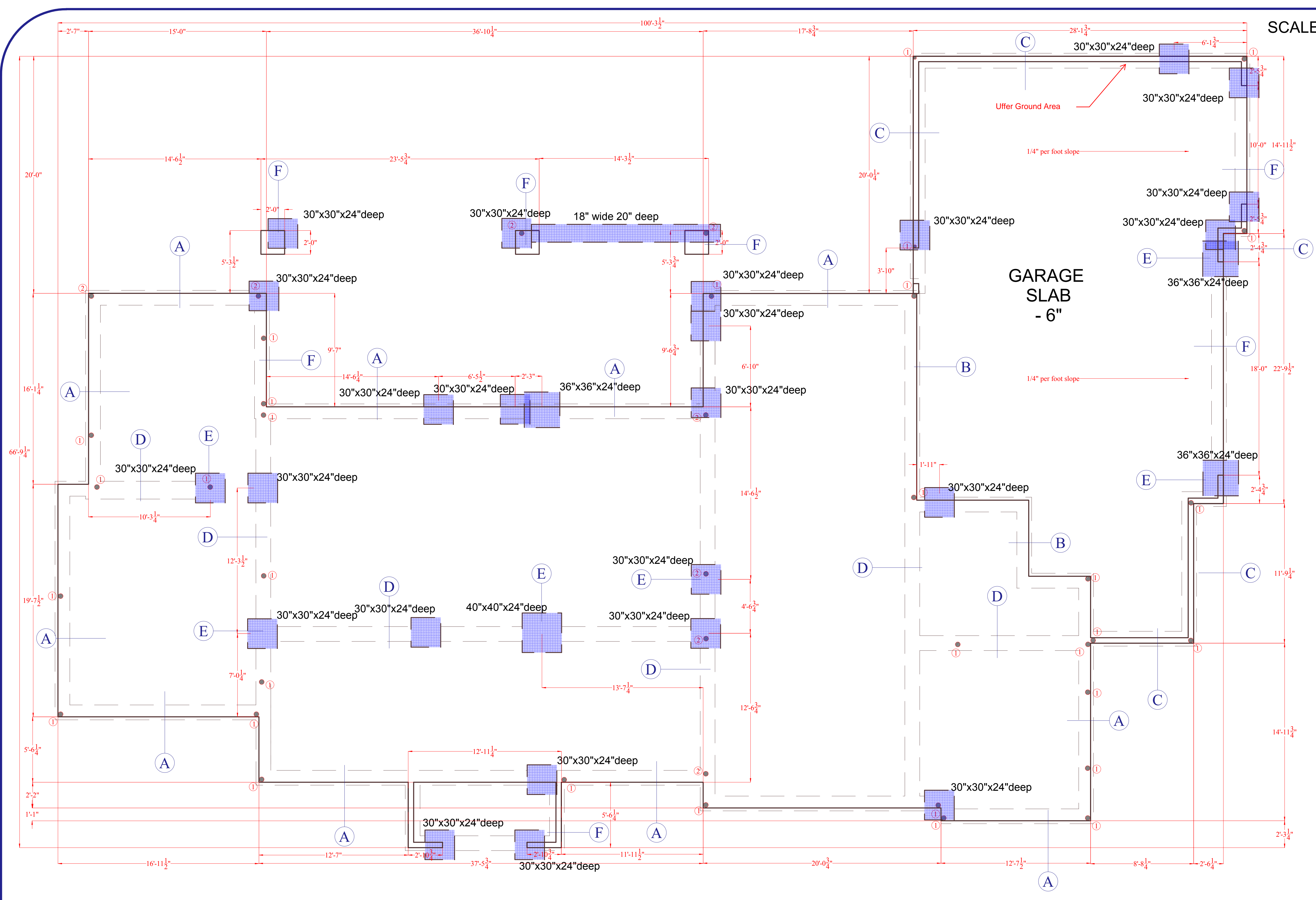
**OPENINGS IN PERFORATED SHEAR WALLS**

Block and strap the top and bottom of all openings, or groups of openings, with Simpson CS14 continuously, and beyond the opening the full width of the opening(s) on both sides, or the entire length of the perforated shear wall. For door openings on concrete slabs, strap only the top of the opening.

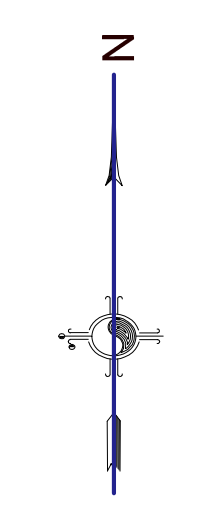
		XS SHEAR WALL SCHEDULE						KC ZONE	
Wall Type	Chord	Fndn Bolt Space in Feet	Fndn Bolt	2nd Floor Sill Nailing	Sheathing	Nails	Edge Nail Spac	Requires 3x Sole and Joint	
1S	2 @ 2x4	4	5/8"	16d @ 6"	3/8"	8d	6"	N	
4S	2 @ 2x6	4	5/8"	16d @ 6"	3/8"	8d	4"	N	

HD Type	Name	Anchor Diameter inches	Simpson Anchor Bolt (or equal)		Stud Bolts/SDS Screws	Vert Memb
			Stem Wall	Slab		
1	HTT4	5/8	SSTB16	SSTB16	18-10dx1-1/2	2 @ 2x4
2	HDU5	5/8	SB5/8x24	SSTB20	14 @ 1/4x2-1/2	2 @ 2x4





SCALE 1/4"=1'



\* Note: All Bearing plates surfaces shall include 5/8 anchor bolts. Anchor bolts shall be embedded at least 7 inches into the concrete or masonry and shall be spaced not more than 6 feet apart. There shall be a min. of two bolts per piece with one bolt located not more than 12 inches or less than less than seven bolt diameters from each end of piece.

Plate washers shall be a min. of 3 x 3 x .229" and shall be used on bolt per CRC.

Hot dipped zinc coated galvanized, stainless steel or aluminum alloy corrosion resistant anchor bolts or pressure treated wood plate req'd per CRC

Stab bolts are to have a min. of 3" ground to steel clearance in footing.

Provide a Uffer ground, a 20" section of #4 rebar incased in at least 2" of concrete with #4 grounding wire clamped to water & gas line accessible from ext of structure per C.E.C.

\*Pre-saturate ground prior to pouring slab

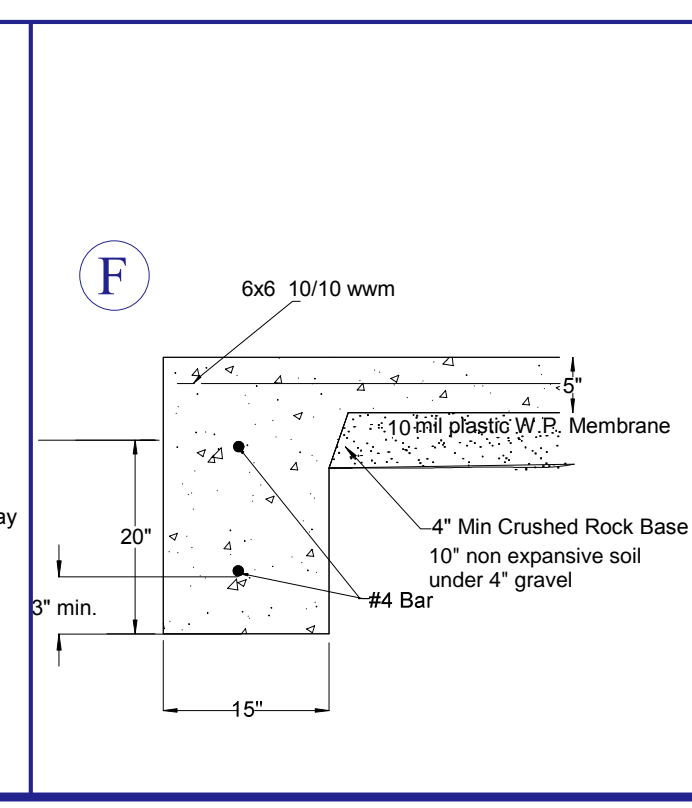
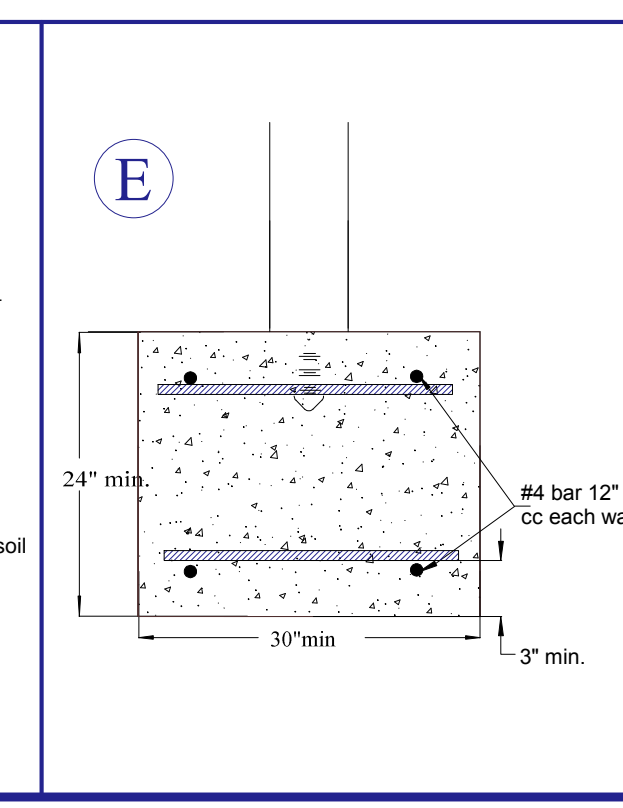
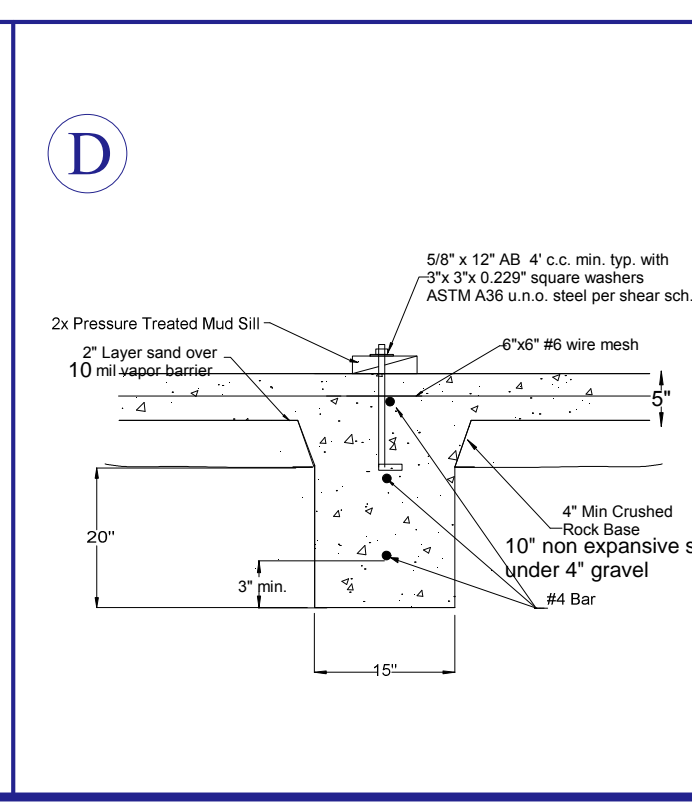
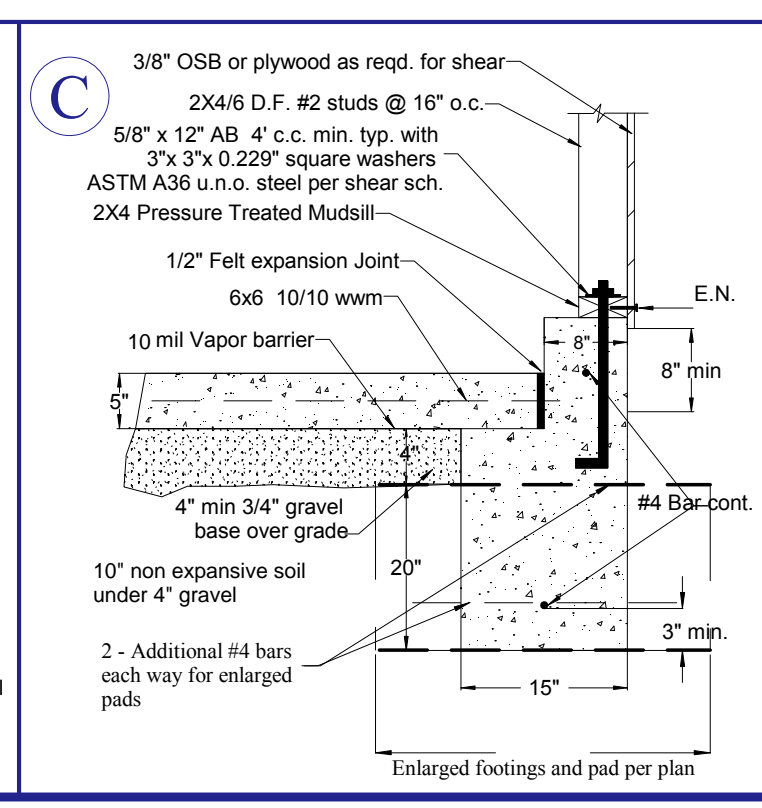
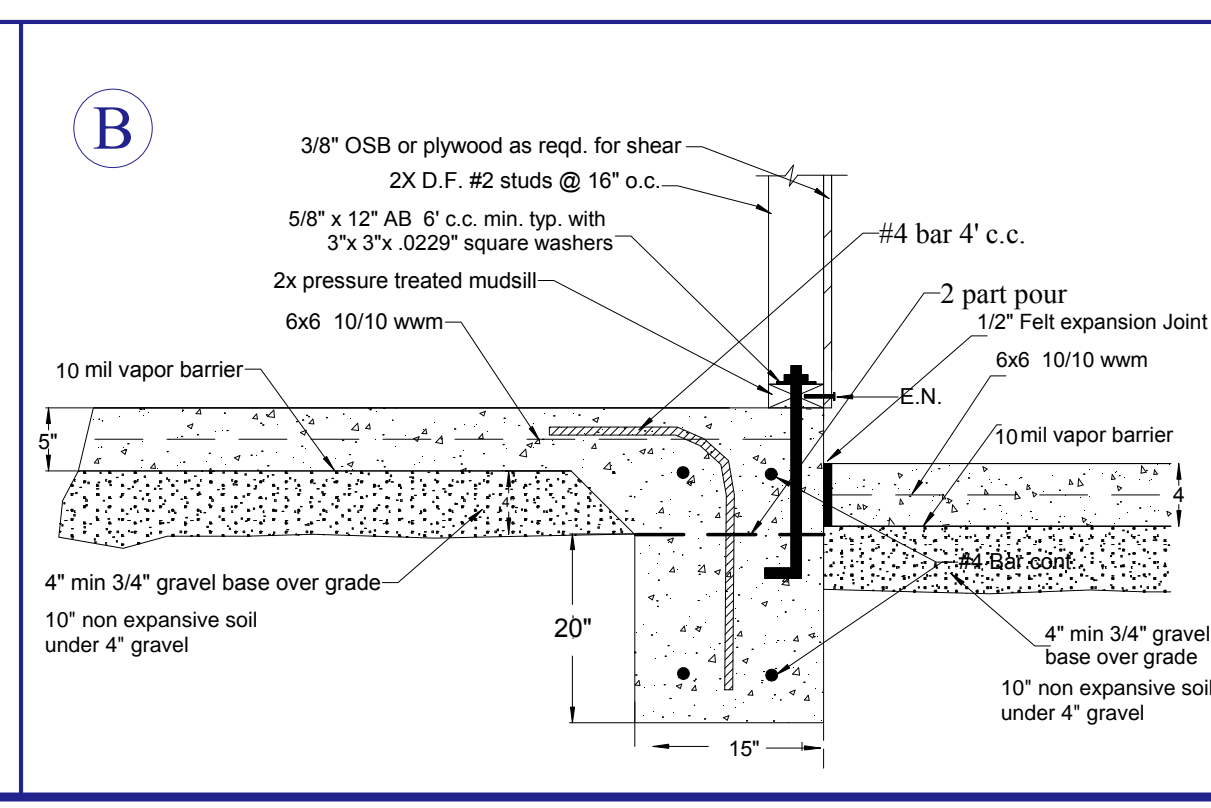
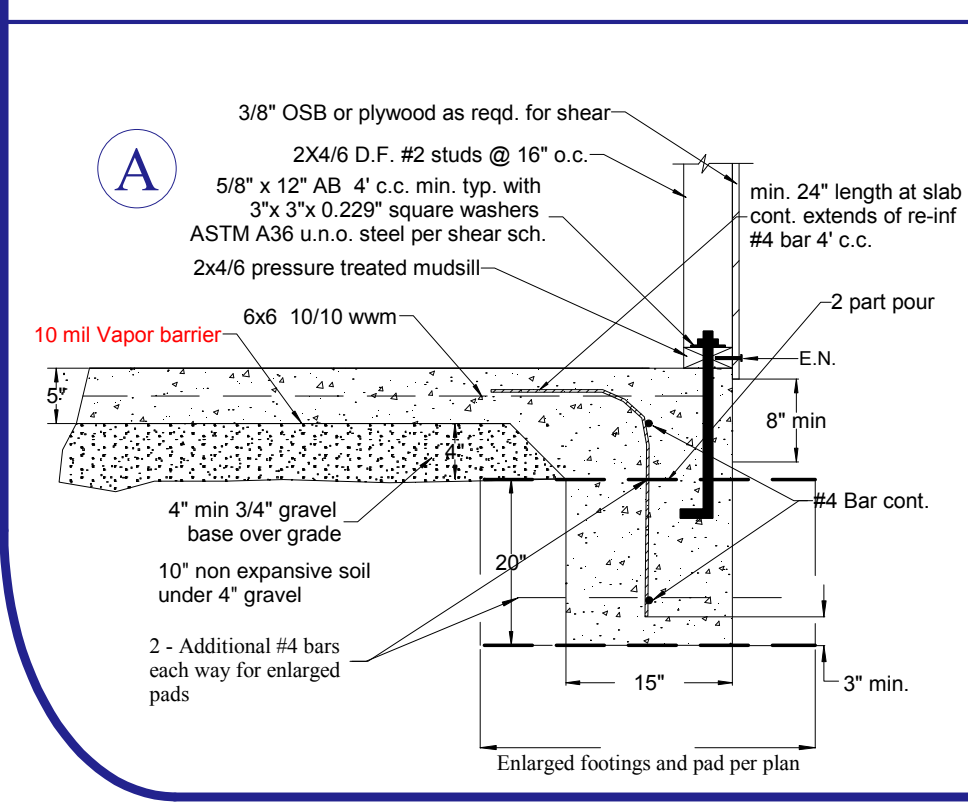
Two part pour:  
Anchor bolts on two pour systems must be 14" long. With 3X sill the anchor bolts must be 16" long. Simpson SSTB must be one size larger and many Simpson Strap type hold downs must be 2-P.

2500 psi concrete @ 28 days (typ.)  
gr 60 rebar per AGTM A615 & A615m-04 Stds. (typ.)

For shear wall layout, hold down devices location, and anchor bolt locations, SSW24x13, SW24x9, and SW24x8 see Sheet 4 & 5

Plate washers at shear walls sill plates to extend within 1/2" of the sheathed-edge of the wall per SDPWS 4.3.6.3.2

Finished floor elevation = 374.5'  
Garage floor elevation = 374'  
Exterior finished grade = 373.5'



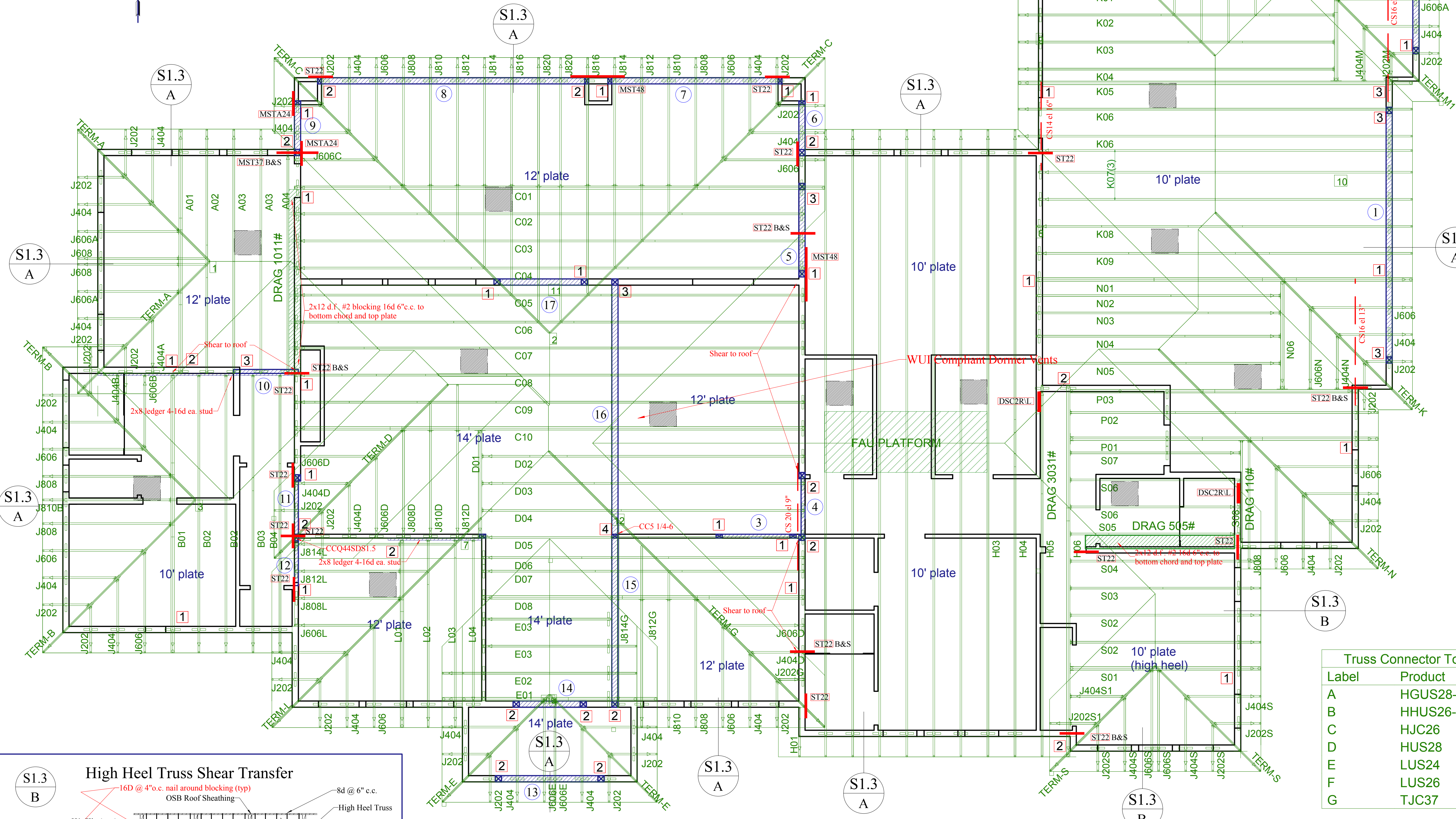
HD Type	Name	Anchor Diameter inches	Simpson Anchor Bolt (or equal) Stem Wall	Stud Bolts/SDS Screws Slab	Vert Memb
1	HTT4	5/8	SSTB16	SSTB16	18-10dx1-1/2 2 @ 2x4
2	HDU5	5/8	SB5/8x24	SSTB20	14 @ 1/4x2-1/2 2 @ 2x4

SOLANO COUNTY RESOURCE MANAGEMENT APPROVED BUILDING DIVISION  
BY: John Milles DATE: 03-06-2023

SCALE 1/4"=1'

Venting will be screened eave vents utilizing 3 - 2" dia. vents every other rafter bay and 2" continuous stucco eave vents, 1/8" max holes  100 sq. in. O'Hagin vent

Roof sq ft	sq inches	/300	Top 1/2 req'd	# 100 sq. in. dormers	Vented sq. inches	Lin ft of eave	Eave Bays Vented	Vented sq. inches	Total vented sq. inches
4,668	672,192	2,241	1,120	12	1200	351	78	1,102	2,302



**ROOF FRAMING NOTES:**

- All framing material to be #2 Douglas Fir minimum, unless noted otherwise.
- Roof sheathing to be minimum 15/32" CDX/OSB APA rated for 24" O.C. framing. Nail with 8d at 6" O.C. edge, 12" O.C. field. Install with face grain perpendicular to framing.
- All top plates to be lapped 48" min. with 24-16d per lap, typ.
- Nail roof sheathing at drag trusses with 8d at 6" O.C. min. and as noted on plans.
- Rafters and overframing to be:  
 2x4 #2 DF up to 7' - 0" Max. Span  
 2x6 #2 DF up to 10' - 0" Max. Span  
 2x8 #2 DF up to 14' - 0" Max. Span  
 Provide purlins of same size material as supported rafters. Brace to bearing locations with struts at 6' - 0" O.C. max. Struts to be same size as supported rafters and shall be braced where lengths exceed 6' - 0".
- Provide min. double 2X Post at each end of all girder trusses, and as noted on plans.
- Connection hardware to be Simpson only. No Substitutions.
- All nails in diaphragms and shear walls to be common wire nails, U.N.O.
- 2x blocking all ridges
- B&S or h&s indicates the framer is to provide blocking in each location so specified along entire length of strap which will enable strap to be nailed in location shown in accordance with manuf. spec. Each block to be min. 2x6 d.f. nailed to supporting/cross members w min. 3-16d end nails @ ea. end so strap is set to wide side of block. Any additional cross members req'd shall be 2x6 d.f.

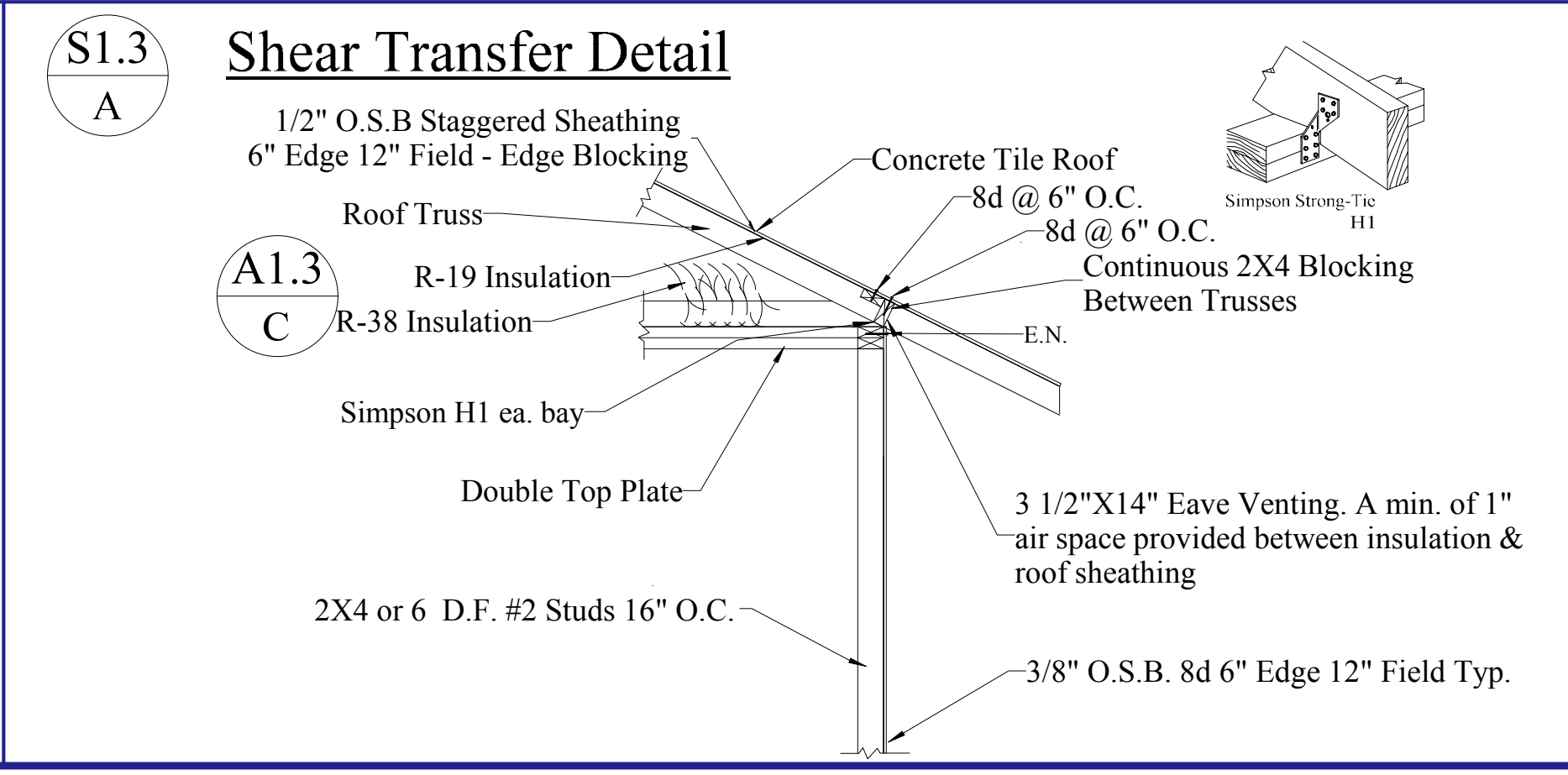
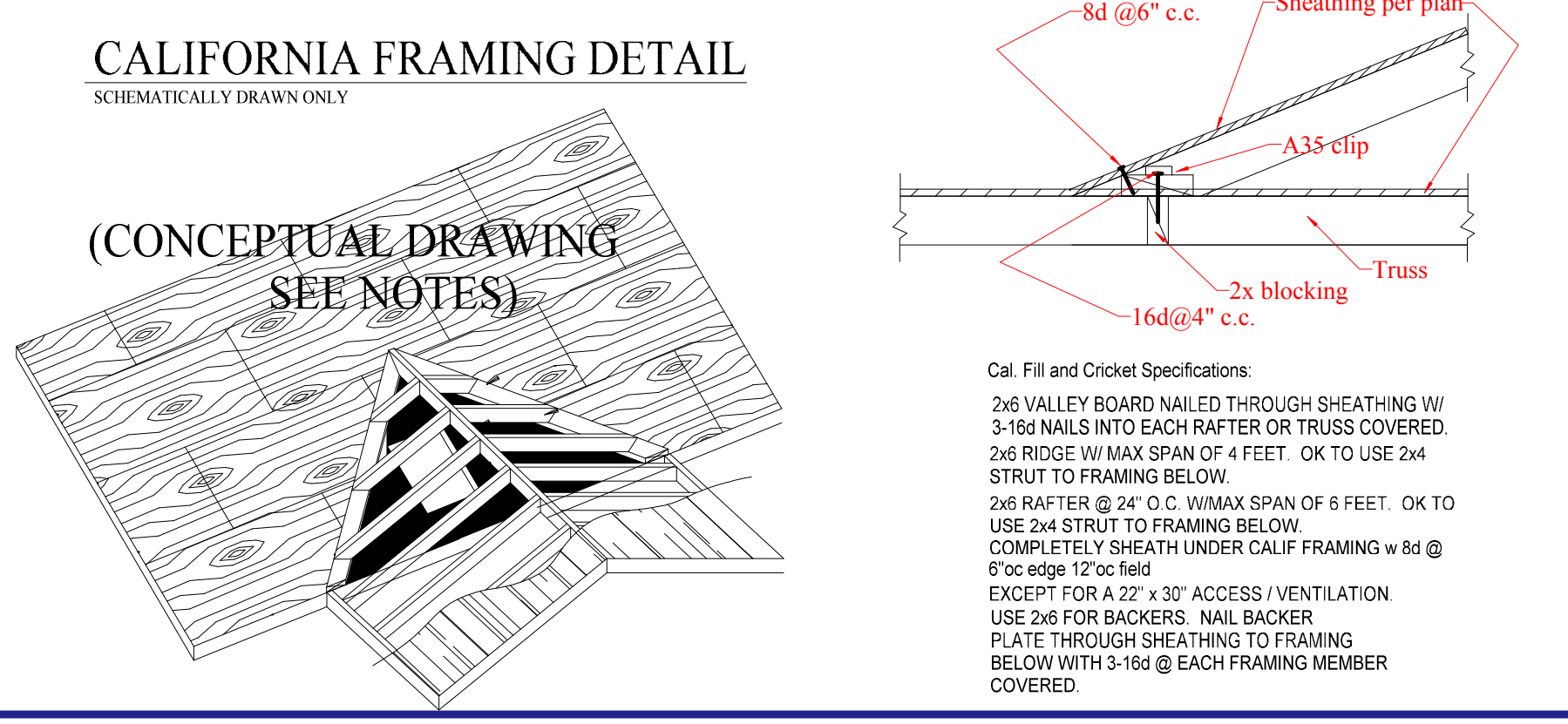
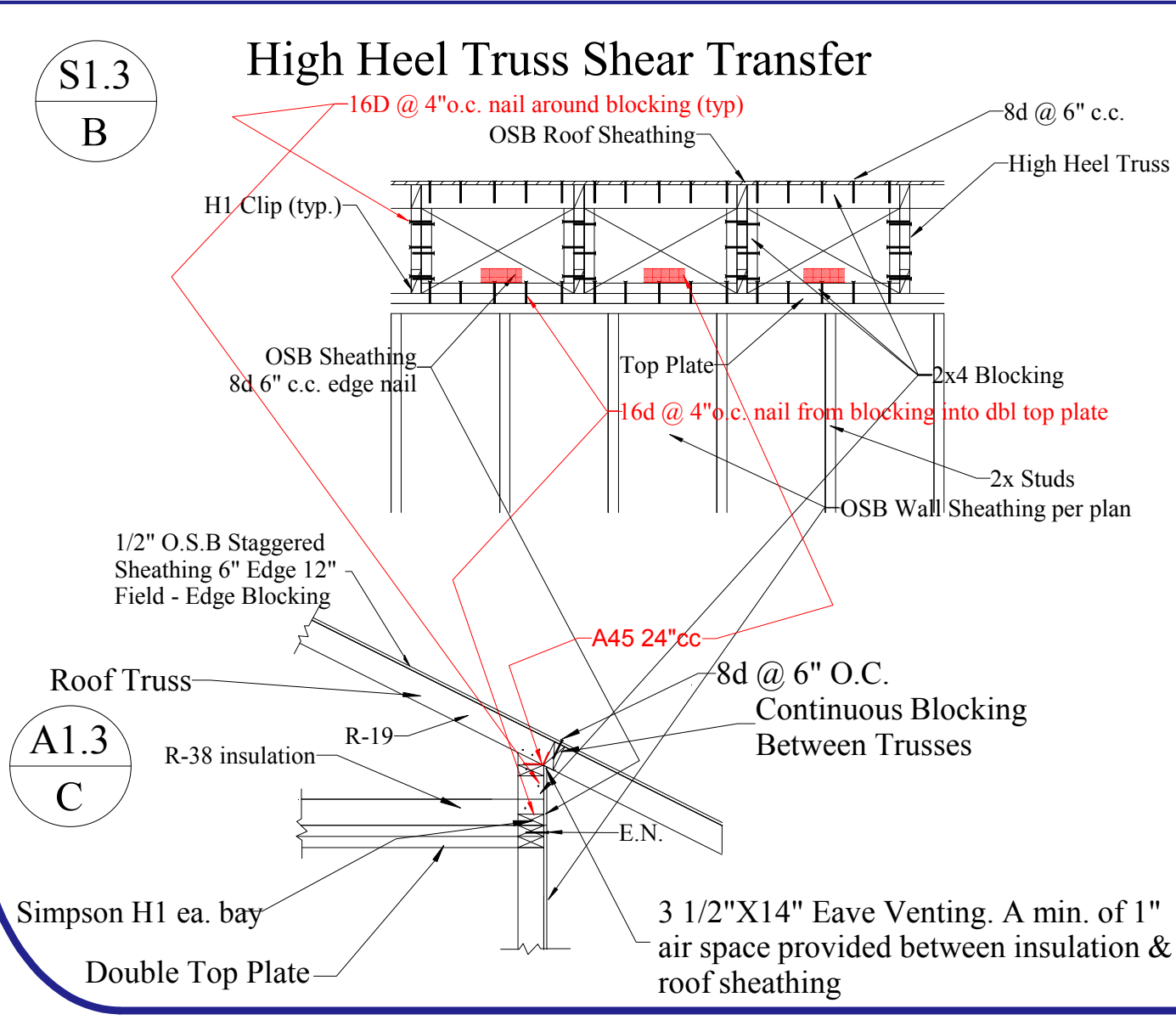
**ATTIC ACCESS**

An unobstructed passageway which is no more than 20' in length when measured along the center line of the passageway from the access opening to the equipment, and has continuous solid flooring not less than 24" wide throughout its length; and a level service space (inspector repair and replacement) not less than 30" in depth, width and height of the working space and 30" wide located at the front or service side of the equipment.

**Truss Connector Total List**

Label	Product	Qty
A	HGUS28-2	1
B	HHUS26-2	5
C	HJC26	5
D	HUS28	9
E	LUS24	62
F	LUS26	1
G	TJC37	92

BEAM	DESCRIPTION	SIZE - DF	DF GRADE	SIZE - VERT LAM PARALL
1	Roof - Garage HDR Plan Front			5.25x1
2	Roof - Garage HDR Plan Rear	6x12	No. 1 & Btr	
3	Roof - Dining to Kitchen	4x12	No. 2	
4	Roof - Kitchen to Powder HDR	4x12	No. 2	
5	Roof - Kitchen to OL HDR	4x12	No. 2	
6	Roof - Outdoor Lvg Plan Rt	4x12	No. 2	
7	Roof - Outdoor Lvg RearRt	6x12	No. 1 & Btr	
8	Roof - Outdoor Lvg Rear Left			5.25x1
9	Roof - Outdoor Lvg Plan Left	4x12	No. 2	
10	Roof - MBR to M Bath	4x12	No. 2	
11	Roof - MBR to Great Room	4x12	No. 2	
12	Roof - MBR to Office	4x12	No. 2	
13	Roof - Entry HDR	6x12	No. 1 & Btr	
14	Roof - Front Door HDR	6x12	No. 1 & Btr	
15	Roof - Entry to Dining			5.25x1
16	Roof - Great Room to Kitchen			5.25x1
17	Roof - GR Rm to Outdoor Living HDR	6x12	No. 1 & Btr	



COLUMN	DESCRIPTION	SIZE - DF	DF GRADE	SIZE - VERSA LAM 2800
1	At B2-7, 9, 11-14, 17	2@2x4	No. 2	3.5x3.5
2	At B4/L, 6/L, 8, 11/12/L., 21R	2@2x6	No. 1 & Btr	5.25x3.5
3	At B1, 5/G, 8/L, 10, 15L, 16L	3@2x6	No. 1 & Btr	3.5x5.5
4	At B15/16, 16R	6x6	No. 1 & Btr	3.5x5.5

CERTIFICATE OF COMPLIANCE
Project Name: Burton Ranch House
Calculation Description: Title 24 Analysis
Calculation Date/Time: 2022-10-29T11:52:02-07:00
Input File Name: Burton Ranch House.rbd19x

CERTIFICATE OF COMPLIANCE
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Joints and Openings - Openings in the building envelope separating conditioned space from unconditioned space needed to accommodate gas, plumbing, electrical lines and other necessary penetrations must be sealed in compliance with the CEC with the following exception in annular spaces around pipes, electric cables, conduits or other openings in plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or a similar method acceptable per 2019 CalGreen Section 4.406

GENERAL INFORMATION
01 Project Name
02 Run Title
03 Project Location
04 City
05 Zip code
06 Climate Zone
07 Building Type
08 Project Scope

OPAQUE SURFACES
01 Name
02 Zone
03 Construction
04 Azimuth
05 Orientation
06 Gross Area (ft²)
07 Window and Door Area (ft²)
08 Tilt (deg)

BUILDING ENVELOPE - HERS VERIFICATION
01 Quality Insulation Installation (QII)
02 High R-value Spray Foam Insulation
03 Building Envelope Air Leakage
04 CFM50

Moisture Content of Building Materials: Building materials with visible signs of water damage shall not be used. Wall and floor framing not to be enclosed until moisture content is equal to or less than 19% verified by the following per 2019 CalGreen Section 4.505.

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

ATTIC
01 Name
02 Construction
03 Type
04 Roof Rise (x in 12)
05 Roof Reflectance
06 Roof Emittance
07 Radiant Barrier
08 Cool Roof

WATER HEATING SYSTEMS
01 Name
02 System Type
03 Distribution Type
04 Water Heater Name (#)
05 Solar Heating System
06 Compact Distribution
07 HERS Verification

Composite Wood Products: Provide one of the following showing that hardwood plywood, particle board and medium density fiberboard composite wood products used on the interior or exterior of the building meet the requirements by or before the dates shown on 2019 CalGreen Table 4.504.5 or by the ARB's Air Toxics Control Measure for Composite Wood (17 CCR93120 et seq.) per 2019 CalGreen 5.504.5:

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Operation and Maintenance Manual - At the time of final inspection, provide an owner's manual in print or digital format containing the following:

ENERGY DESIGN RATINGS
Energy Design Ratings
Compliance Margins

FENESTRATION / GLAZING
01 Name
02 Type
03 Surface
04 Orientation
05 Azimuth
06 Width (ft)
07 Height (ft)
08 Mult.
09 Area (ft²)
10 U-factor
11 U-factor Source
12 SHGC
13 SHGC Source #
14 Exterior Shading

SPACE CONDITIONING SYSTEMS
01 Name
02 System Type
03 Heating Unit Name
04 Cooling Unit Name
05 Fan Name
06 Distribution Name
07 Required Thermostat Type
08 Status
09 Verified Existing Equipment Count
10 Heating Equipment Count
11 Cooling Equipment Count

a. Directions to the owner or occupant that the manual stays with structure for life of structure.

REQUIRED PV SYSTEMS - SIMPLIFIED
01 Name
02 Zone
03 Construction
04 Azimuth
05 Orientation
06 Gross Area (ft²)
07 Window and Door Area (ft²)
08 Tilt (deg)

OPAQUE DOORS
01 Name
02 Side of Building
03 Area (ft²)
04 U-factor

HVAC - HEATING UNIT TYPES
01 Name
02 System Type
03 Number of Units
04 Heating Efficiency

b. Operation and maintenance for the following: i. Equipment and appliance, including water saving devices and systems. HVAC, water heater and other major appliances and equipment.

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 (%)

OVERHANDS AND FINIS
01 Window
02 Depth
03 Dist Up
04 Left Extant
05 Right Extant
06 Flap Ht.
07 Depth
08 Top Up
09 Dist L
10 Bot Up
11 Depth
12 Top Up
13 Dist R
14 Bot Up

HVAC - COOLING UNIT TYPES
01 Name
02 System Type
03 Number of Units
04 Efficiency EER/CEER
05 Efficiency SEER
06 Zonally Controlled
07 Multi-speed Compressor
08 HERS Verification

c. Information from local utility, water and waste recovery providers or methods to further reduce resource consumption including recycle programs and locations.

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Project Name: Burton Ranch House
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f. Information about water conserving landscape and irrigation design and controller which conserve water.

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

SLAB FLOORS
01 Name
02 Zone
03 Area (ft²)
04 Perimeter (ft)
05 Edge Insul. R-value and Depth
06 Edge Insul. R-value and Depth
07 Carpeted Fraction
08 Heated

HVAC - DISTRIBUTION SYSTEMS
01 Name
02 Type
03 Design Type
04 Duct Ins. R-value
05 Supply Return
06 Duct Location
07 Supply Return
08 Surface Area
09 Bypass Duct
10 Duct Leakage
11 HERS Verification

g. Instructions or maintaining gutters and downspouts and the importance of diverting water at least 5 feet from foundation.

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.

OPAQUE SURFACE CONSTRUCTIONS
01 Construction Name
02 Surface Type
03 Construction Type
04 Framing
05 Total Cavity R-value
06 Interior / Exterior Continuous R-value
07 U-factor
08 Assembly Layers

HVAC DISTRIBUTION - HERS VERIFICATION
01 Name
02 Duct Leakage Verification
03 Duct Leakage Target (%)
04 Verified Duct Location
05 Verified Duct Design
06 Buried Ducts
07 Deeply Buried Ducts
08 Low-leakage Air Handler
09 Low Leakage Ducts Entirely in Conditioned Space

h. Information on required routine maintenance measures including but not limited to caulking, painting, and grading around the building, etc.

BUILDING - FEATURES INFORMATION
01 Project Name
02 Conditioned Floor Area (ft²)
03 Number of Dwelling Units
04 Number of Bedrooms
05 Number of Zones
06 Number of Ventilation Cooling Systems
07 Number of Water Heating Systems

ZONE INFORMATION
01 Zone Name
02 Zone Type
03 HVAC System Name
04 Zone Floor Area (ft²)
05 Avg. Ceiling Height
06 Water Heating System 1
07 Water Heating System 2

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

i. Carpet and Rug Institute's Green Label Plus Program. ii. California Department of Public Health Standard Practice for the testing of vases (specification 01350).

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iii. NSF/ANSI 140 at Gold level. iv. Scientific Certifications Systems Indoor Advantage Gold per 2019 CalGreen Section 4.504.3.

OPAQUE SURFACE CONSTRUCTIONS
01 Construction Name
02 Surface Type
03 Construction Type
04 Framing
05 Total Cavity R-value
06 Interior / Exterior Continuous R-value
07 U-factor
08 Assembly Layers

IAQ (INDOOR AIR QUALITY) FANS
01 Dwelling Unit
02 IAQ CFM
03 IAQ Watts/CFM
04 IAQ Fan Type
05 IAQ Recovery Effectiveness (%)
06 IAQ Recovery Effectiveness - SRE/IAQ Recovery Effectiveness - SRE

CERTIFICATE OF COMPLIANCE
Project Name: Burton Ranch House
Calculation Description: Title 24 Analysis
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f. Carpet Cushion: Provide specifications for carpet padding to be used. Product must meet the requirements of the Carpet and Rug Institute Green Label Program per 2019 CalGreen Section 4.504.3.1.

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

RESRESPONSIBLE PERSON'S DECLARATION STATEMENT

g. Carpet Adhesive: Provide specifications for carpet adhesive to be used. Product must meet the vac requirements of 2019 CalGreen Table 4.504.1 per 2019 CalGreen 4.504.3.2.



**Chapter 7A** compliant: Tested and listed to ASTM2886.  
OSFM BML listing: 8165-2192, ICC-ESL listing: 1300

**1 Hour Fire Rated**, ICC-ESL listing: 1299. **Canadian Compliance** : ICC-ESL: 1455 [CAN/ULC-S101-14]



1299,1300,1455

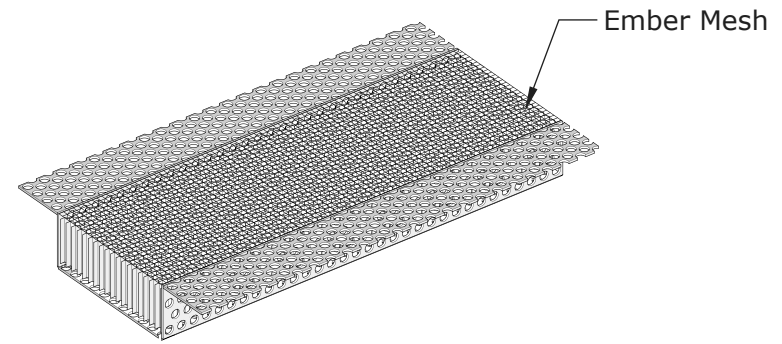
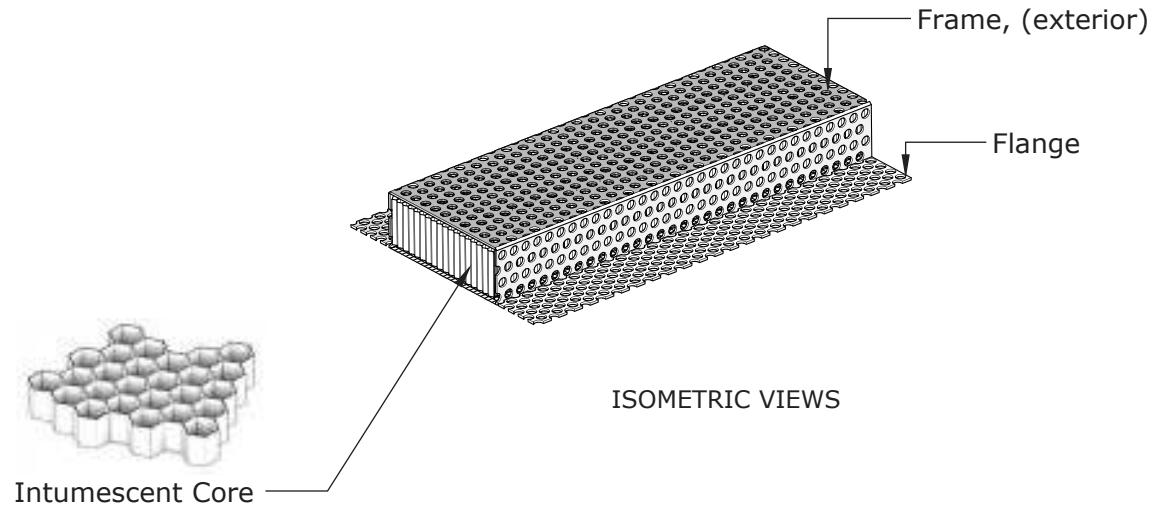
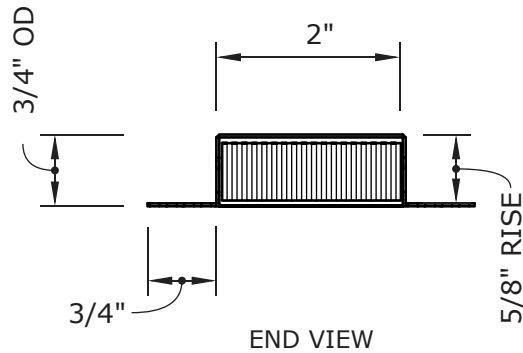
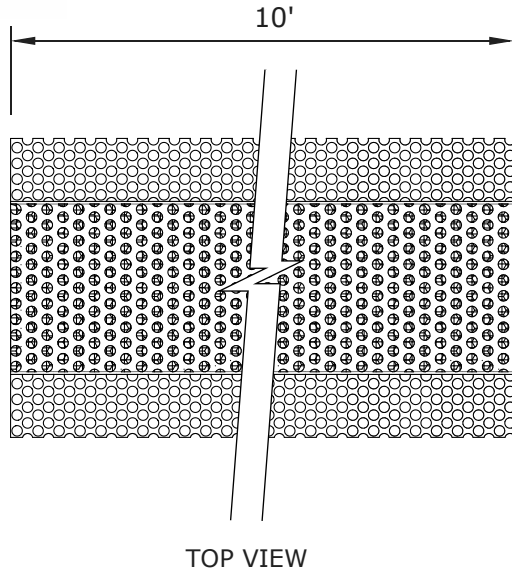


WWW.VULCANVENTS.COM (916) 652-7424 info@vulcanvents.com P.O. Box 1126 Loomis, CA. 95650

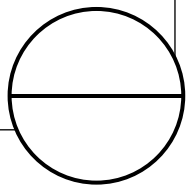


**Recommended Installation:**

**Use EverKem 814+ intumescent firestop caulking** or similar, along flanges.  
For application details and installation examples, please visit [www.VulcanVents.com](http://www.VulcanVents.com)



SOLANO COUNTY RESOURCE MANAGEMENT  
Proudly Manufactured By:  
BUILDING DIVISION



**VSC2120 PRODUCT SPECIFICATION & DATA SHEET**

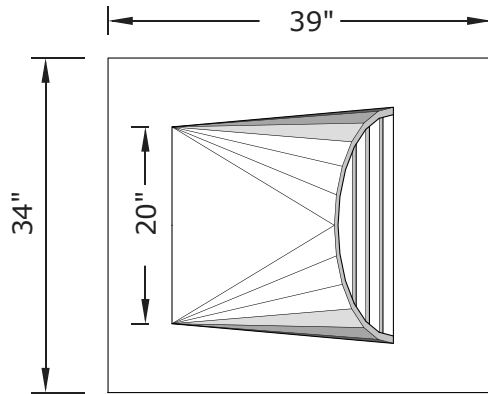
Model Description	<b>Continuous Vent</b>	Flange Type	<b>Standard</b>	Frame & Flange	<b>G90 Galvanized Perforated Steel (1/8" holes) - 24GA</b>
Model Number	<b>VSC2120</b>	NFVA	<b>96 sq. in.</b>	Intumescent Core	<b>5mm Hexagonal Matrix - Aluminum with intumescent coating</b>
Model Size	<b>2" x 120"</b>			Ember Mesh	<b>14 Mesh - 304 Stainless Steel</b>

BY: John Millea DATE: 03-06-2023

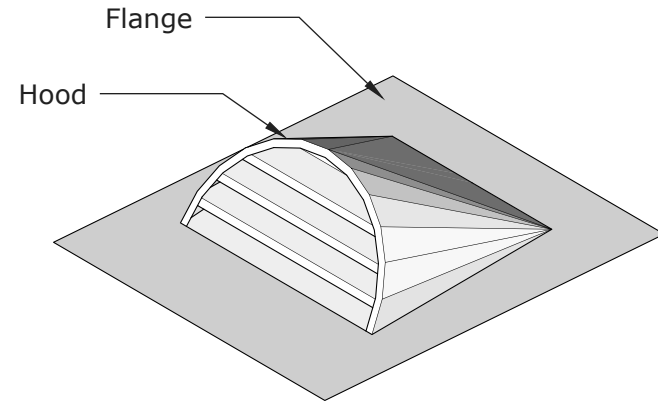
Approved for use in the Wildland Urban Interface (W.U.I.)

**Chapter 7A** compliant: Tested and listed to ASTM E2886. **ICC-ESL** listing: 1300

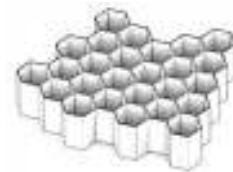
WWW.VULCANVENTS.COM (916) 652-7424 info@newcalmetals.com P.O. Box 1126 Loomis, CA. 95650



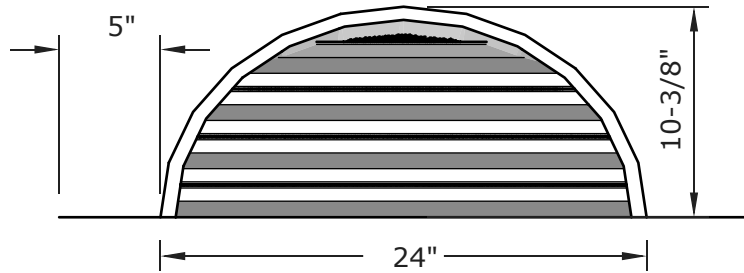
TOP VIEW



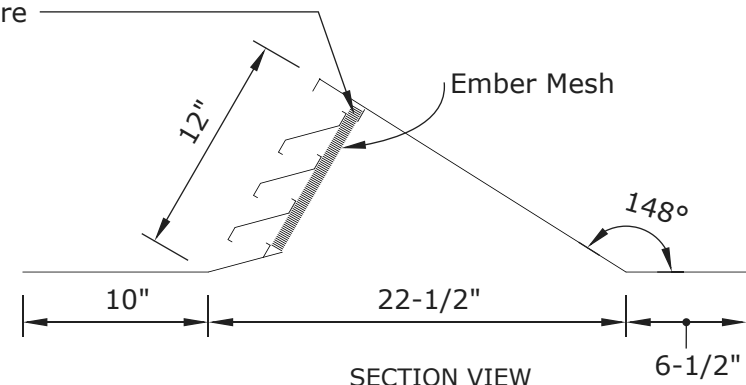
ISOMETRIC VIEW



Intumescent Core



FRONT VIEW



SECTION VIEW

SOLANO COUNTY RESOURCE MANAGEMENT

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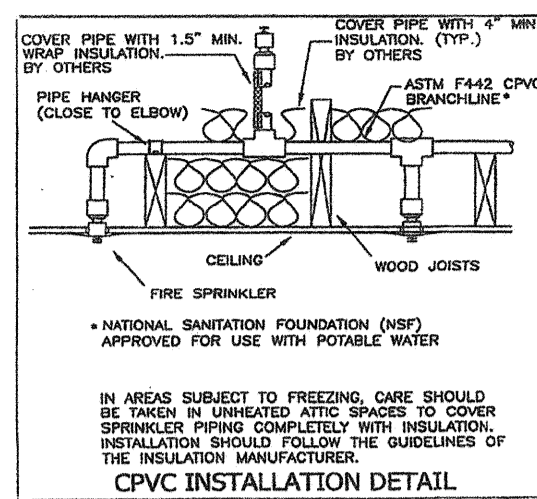
BUILDING DIVISION

www.newcalmetals.com

**VDHR1224 PRODUCT SPECIFICATION & DATA SHEET**

Model Description	<b>Half Round Dormer Vent</b>	Flange Type	<b>Standard</b>	Frame & Flange	<b>G90 Galvanized Steel - 26GA</b>
Model Number	<b>VDHR1224</b>	NFVA	<b>90 sq. in.</b>	Intumescent Core	<b>5mm Hexagonal Matrix - Aluminum with intumescent coating</b>
Model Size	<b>12" x 24"</b>			Ember Mesh	<b>14 Mesh - 304 Stainless Steel</b>

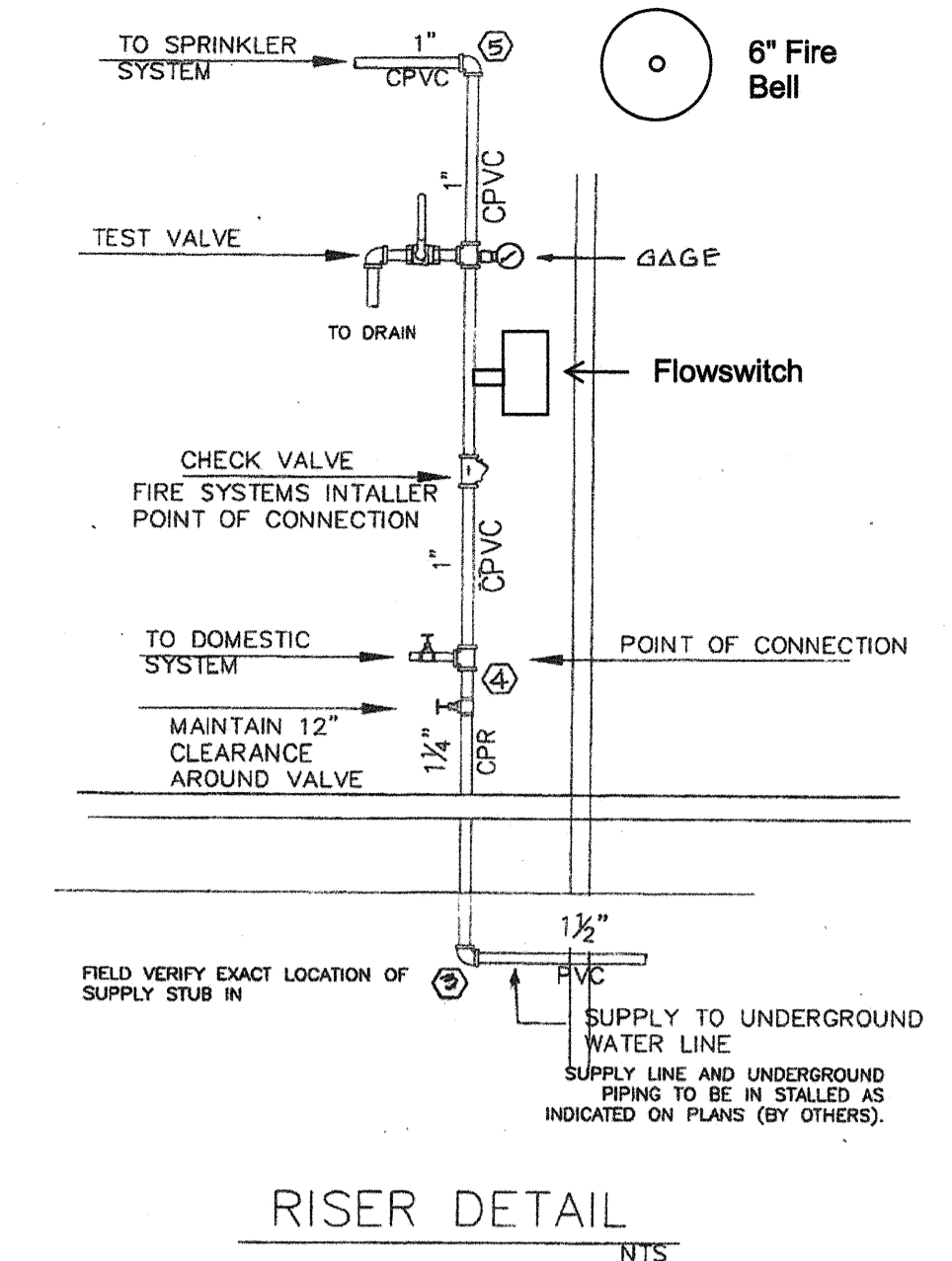
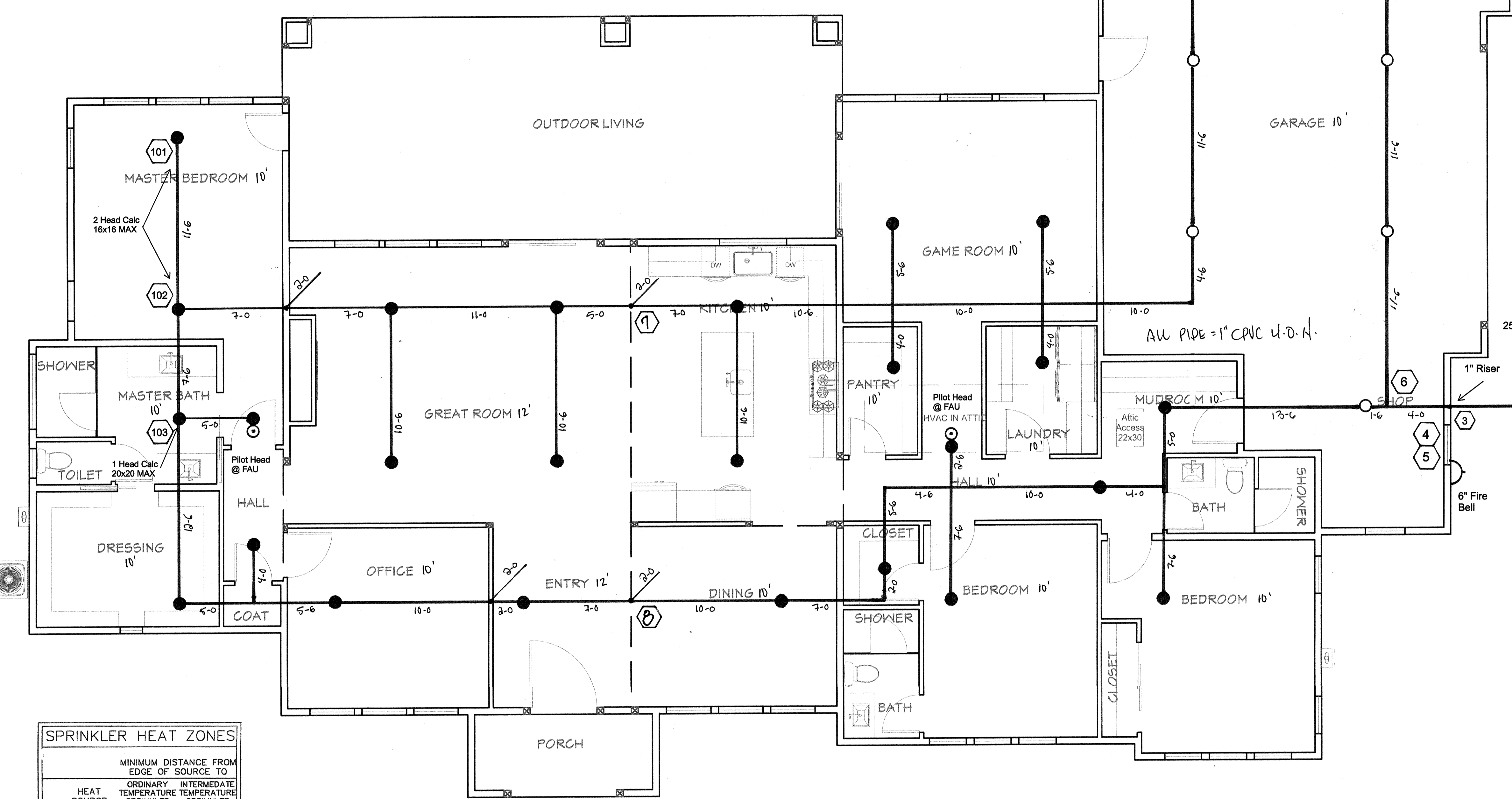
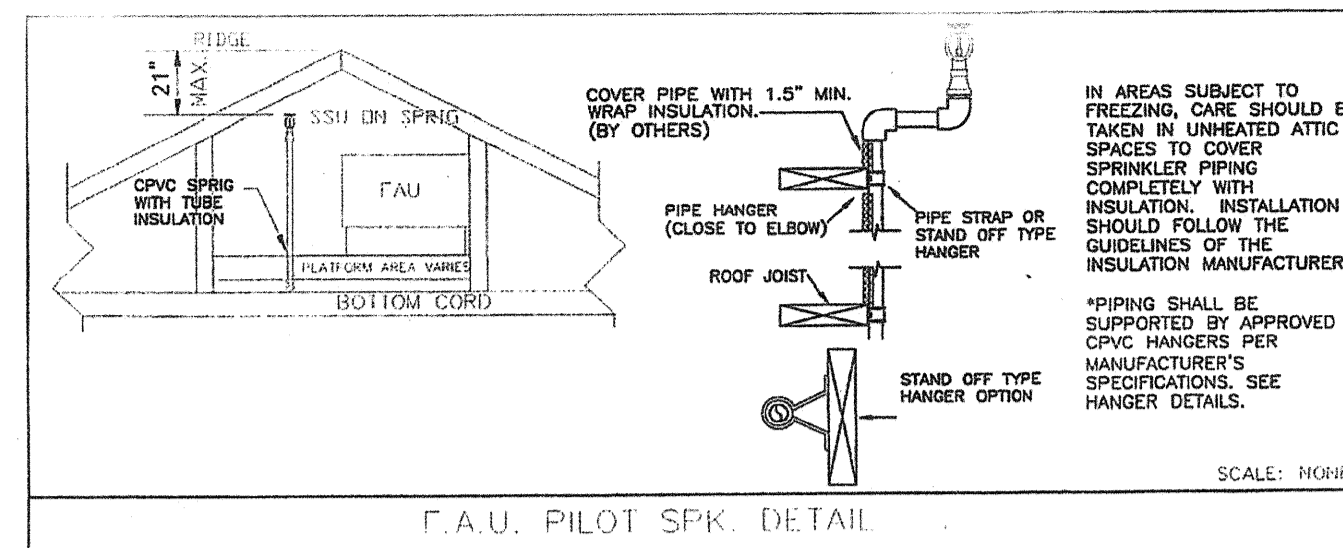
BY: John Millea DATE: 03-06-2023



PIPE MATERIAL	PIPE SIZE					
	3/4"	1"	1 1/2"	2"	2 1/2"	3"
COPPER	8	8	10	10	12	12
CPVC	5.5	6	6.5	7	8	9
SCHEDULE 40 & 10 STEEL	12	12	15	15	15	15
THREADABLE THIRDMALL	12	12	12	12	12	12

**HANGER NOTES**

- ALL LENGTHS SHOWN ARE THE MAXIMUM RECOMMENDED DISTANCE BETWEEN HANGERS EXPRESSED IN FT.
- PROVIDE A HANGER WITHIN 6 INCHES OF ALL DROPS TO SPRINKLER HEADS WHEN USING CPVC PIPE.
- STEEL PIPE IS NOT ALLOWED IN SIZES LESS THAN 1 INCH.



HEAT SOURCE	MINIMUM DISTANCE FROM EDGE OF SOURCE TO SPRINKLER	
	ORDINARY TEMPERATURE SPRINKLER	INTERMEDIATE TEMPERATURE SPRINKLER
SIDE OF OPEN OR RECESSED FIREPLACE	3'-0"	1'-0"
FRONT OF RECESSED FIREPLACE	5'-0"	3'-0"
COAL- OR WOOD-BURNING STOVE	3'-6"	1'-0"
KITCHEN RANGE	1'-6"	0'-9"
WALL OVEN	1'-6"	0'-9"
HOT AIR FLUES	1'-6"	0'-9"
UNINSULATED HEAT DUCTS	1'-6"	0'-9"
UNINSULATED HOT WATER PIPES	1'-0"	0'-6"
SIDE OF CEILING-OR WALL-MOUNTED HOT AIR DIFFUSERS	2'-0"	1'-0"
FRONT OF WALL-MOUNTED HOT AIR DIFFUSERS	3'-0"	1'-6"
HOT WATER HEATER OR FURNACE	3'-0"	0'-3"
LIGHT FIXTURE OW - 250W	0'-6"	0'-3"

- NOTES:**
- HANGERS ARE PER NFPA 13D 2016 ED. AND SHALL BE UL LISTED FOR CPVC. ALL MATERIALS SHALL BE UL LISTED.
  - HYDROSTATIC TEST 150 PSI @ 30 MIN.
  - ALL PIPE SHALL BE CPVC U.O.N.
  - SPRINKLERS SHALL BE OMITTED FROM CLOSETS LESS THAN 24 SQ. FT. NFPA 13D BATHS LESS THAN 55 SQ. FT. NFPA 13D
  - SPRINKLERS SHALL MAINTAIN A DISTANCE OF 3' FROM CENTER OF CEILING FANS AND OTHER SIMILAR OBSTRUCTIONS.
  - SYSTEM DESIGN PER 2019 CRC AND NFPA 13D 2016 ED.
  - AS NOTED IN DETAIL, OWNER SHALL BE RESPONSIBLE FOR INSULATION OF SPRINKLER PIPING.
  - FIRE SPRINKLER SYSTEM OWNER'S MANUAL SHALL BE PROVIDED TO THE HOME OWNER AND THE FINAL SPRINKLER INSTALLATION SHALL INCLUDE THE SIGN OR VALVE TAG.

Provide a weatherproof warning sign, with minimum 1/4" letter, affixed adjacent to the main shutoff valve stating the following:  
**"WARNING: The water system for this home supplies fire sprinklers that require certain flows and pressures to fight a fire. Devices that restrict the flow or decrease the pressure of automatically shut off the water softeners, filtration systems, and automatic shut off valves, shall not be added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."**

**Table F1 Allowance for Friction Loss in Fittings<sup>3</sup>**

Fitting Size ANSI Inches	3/4	1	1 1/4	1 1/2
Tee Branch- ft	3	5	6	8
Elbow 90°- ft	4	5	6	7
Elbow 45°- ft	1	1	2	2
Coupling- ft	1	1	1	1
Tee Run <sup>2</sup> - ft	1	1	1	1

**1-SPRINKLER HEAD CALCULATION**

SYSTEM DESIGN DATA	
SYSTEM TYPE	CALCULATED <input checked="" type="checkbox"/> SCHEDULE _____
	WET <input checked="" type="checkbox"/> DRY _____ DELUGE _____ PREACTION _____
HAZARD CLASSIFICATION	13D (1 SPK CALC) 1 NO. OF SPRINKLERS
HYDRAULIC DESIGN DATA	.05 GPM/SQ FT 20 x 20 MAX
AREA OF APPLICATION	1 SPK SQ FT DOMESTIC ALLOWANCE 5 GPM
TOTAL SYSTEM REQUIREMENTS	26 GPM @ 39.15 PSI
ADJ. FLOW TEST DATA	STATIC PRESSURE 55 RESIDUAL PRESSURE 20 @ 1000 GPM

**2-SPRINKLER HEAD CALCULATION**

SYSTEM DESIGN DATA	
SYSTEM TYPE	CALCULATED <input checked="" type="checkbox"/> SCHEDULE _____
	WET <input checked="" type="checkbox"/> DRY _____ DELUGE _____ PREACTION _____
HAZARD CLASSIFICATION	13D (2 SPK CALC) 2 NO. OF SPRINKLERS
HYDRAULIC DESIGN DATA	.05 GPM/SQ FT 16 x 16 MAX
AREA OF APPLICATION	2 SPK SQ FT DOMESTIC ALLOWANCE 5 GPM
TOTAL SYSTEM REQUIREMENTS	31.5 GPM @ 36.18 PSI
ADJ. FLOW TEST DATA	STATIC PRESSURE 55 RESIDUAL PRESSURE 20 @ 1000 GPM

**SPRINKLER LEGEND**

SYM	CNT	NAME	TEMP	K	NPT	ORIF	MFG	MODEL	TRIM
●	25	LF2	162°	4.9	1/2"	7/16"	SENJU	SS8464	CNCLD
○	2	FRQR	205°	5.6	1/2"	1/2"	SENJU	SS2552	N/A
○	1	LF2	162°	3.0	1/2"	3/8"	SENJU	SS8361	CNCLD
○	7		175°	4.9	1/2"	7/16"	SENJU	SS4451	401
▶	1	HSW	162°	4.2	1/2"	7/16"	SENJU	SS4423	FLUSH
34		TOTAL THIS PROJECT							

**Fire Sprinkler Plan 1/4" @ 10'**

# PROJECT DATA

## SCOPE OF WORK

TO INSTALL A ROOF MOUNTED SOLAR PHOTOVOLTAIC SYSTEM AT THE OWNER RESIDENCE LOCATED AT 7097 GIBSON CANYON RD VACAVILLE, CA 95688  
 THE POWER GENERATED BY THE PV SYSTEM WILL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ELECTRICAL SERVICE EQUIPMENT.  
 THE PV SYSTEM DOES NOT INCLUDE STORAGE BATTERIES

**APN NUMBER** 0105-200-200

## SHEET INDEX

PV-0	COVER PAGE
PV-1	SITE PLAN
PV-2	ROOF PLAN & MODULES
PV-2A	STRING LAYOUT & BOM
PV-3	ATTACHMENT DETAILS
PV-4	ELECTRICAL LINE DIAGRAM & CALCS.
PV-4A	SPECIFICATIONS & CALCULATION
PV-5	SIGNAGE
PV-6+	EQUIPMENT SPECIFICATIONS

## GOVERNING CODES

2019 CALIFORNIA ELECTRICAL CODE. TITLE 24, PART 3  
 2019 CALIFORNIA RESIDENTIAL CODE. TITLE 24, PART 2.5  
 2019 CALIFORNIA FIRE CODE. TITLE 24, PART 9  
 2019 CALIFORNIA BUILDING CODE. TITLE 24, PART 2  
 2019 CALIFORNIA GREEN BUILDING STANDARDS CODE. TITLE 24, PART 11  
 2019 CALIFORNIA ENERGY CODE. TITLE 24, PART 6  
 2019 CALIFORNIA PLUMBING CODE. TITLE 24, PART 5  
 2019 CALIFORNIA MECHANICAL CODE. TITLE 24, PART 4

## AUTHORITY HAVING JURISDICTION(AHJ)

CITY OF VACAVILLE

## SYSTEM RATING

DC SYSTEM SIZE 3.69 KWDC

AC SYSTEM SIZE 2.70 KWAC

## EQUIPMENT SUMMARY

MODULE	9 JINKO JKM410M-72HL-V-(410W)
INVERTER	9 ENPHASE IQ8PLUS-72-2-US(240V) MICROINVERTERS

# NOTES

### GENERAL NOTES:

- THESE CONSTRUCTION DOCUMENTS HAVE BEEN BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
- CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, OBTAINS ALL PERMITS, LICENSES AND PAY ALL REQUIRED FEES AND COMPLETE INSTALLATION.
- CONTRACTOR HAS THE FULL RESPONSIBILITY TO CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK. ANY WORK STARTED BEFORE CONSULTATION AND ACCEPTANCE BY THE ENGINEER SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBJECT TO CORRECTION BY THEM WITHOUT ADDITIONAL COMPENSATION.
- DAMAGE CAUSED TO THE EXISTING STRUCTURE, PIPES, DUCTS, WINDOWS, WALL, FLOORS, ETC. SHALL BE REPAIRED TO THE ORIGINAL CONDITION OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION AND COMPLETION OF THE WORK WITH APPROVED MATERIALS.
- CONTRACTOR SHALL OBTAIN BUILDING PERMIT. NO WORK TO START UNLESS BUILDING PERMIT IS PROPERLY DISPLAYED.
- ALL WORKMANSHIP AND MATERIALS SHALL BE OF FIRST QUALITY AND IN COMPLIANCE WITH THE REQUIREMENTS OF THE CA BUILDING CODE, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION AND ALL PERTINENT AGENCIES.
- ALL EXPOSED PLUMBING, HVAC, ELECTRICAL DUCTWORK, PIPING AND CONDUITS ARE TO BE PAINTED BY GENERAL CONTRACTOR.
- THE CONTRACTOR SHALL PERFORM THE WORK IN STRICT CONFORMANCE WITH THE LOCAL LAWS, REGULATIONS AND THE CALIFORNIA ELECTRIC CODE.

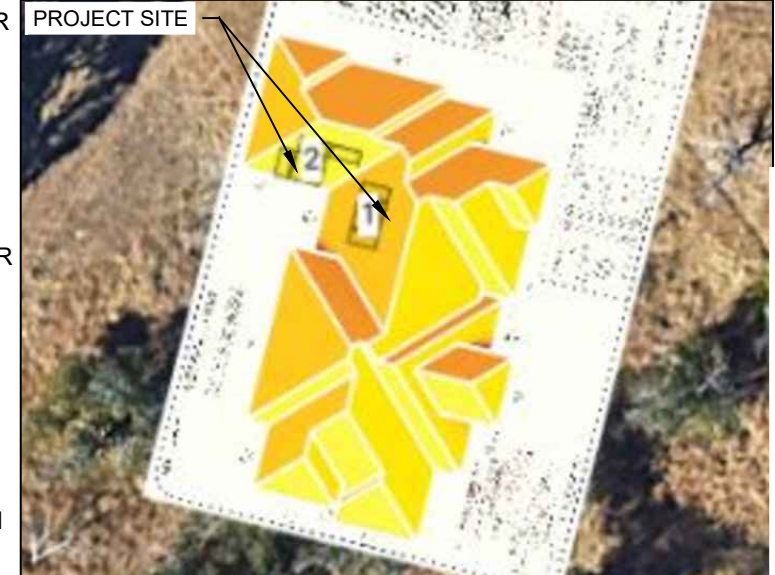
### ELECTRICAL NOTES:

- THE EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE INSTALLED ONLY BY QUALIFIED PEOPLE. A QUALIFIED PERSON IS ONE WHO HAS RECEIVED SAFETY TRAINING TO RECOGNIZE AND AVOID THE HAZARDS INVOLVED.
- LOCAL UTILITY PROVIDER SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PHOTOVOLTAIC INSTALLATION. FOR A LINE SIDE TAP CONNECTION, UTILITY NEEDS TO BE NOTIFIED WELL IN ADVANCE TO COORDINATE BUILDING ELECTRICAL SHUT OFF.
- NEW CONDUIT ROUTING SHOWN IS ESSENTIALLY SCHEMATIC. SUBCONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
- ALL EXTERIOR CONDUIT, FITTINGS, AND BOXES SHALL BE WATERTIGHT AND APPROVED FOR USE IN WET LOCATIONS.
- WIRING METHODS FOR PV SYSTEM CONDUCTORS AREN'T PERMITTED WITHIN 10 IN. OF THE ROOF DECKING OR SHEATHING EXCEPT WHERE LOCATED DIRECTLY BELOW THE ROOF SURFACE THAT'S COVERED BY PV MODULES AND ASSOCIATED EQUIPMENT WIRING.
- CONTRACTOR SHALL FOLLOW ALL ELECTRICAL EQUIPMENT LABELING REQUIREMENTS IN CFC 2019
- PV SOURCE, OUTPUT AND INVERTER CIRCUITS SHALL BE IDENTIFIED AT ALL POINTS OF TERMINATION, CONNECTION, AND SPLICES. THE MEANS OF ID CAN BE SEPARATE COLOR CODING, MARKING TAPE, TAGGING ETC.
- MEASURE THE LINE-TO-LINE AND LINE-TO-NEUTRAL VOLTAGE OF ALL SERVICE ENTRANCE CONDUCTORS PRIOR TO INSTALLING ANY SOLAR EQUIPMENT. THE VOLTAGES FOR THE 240VAC RATED.

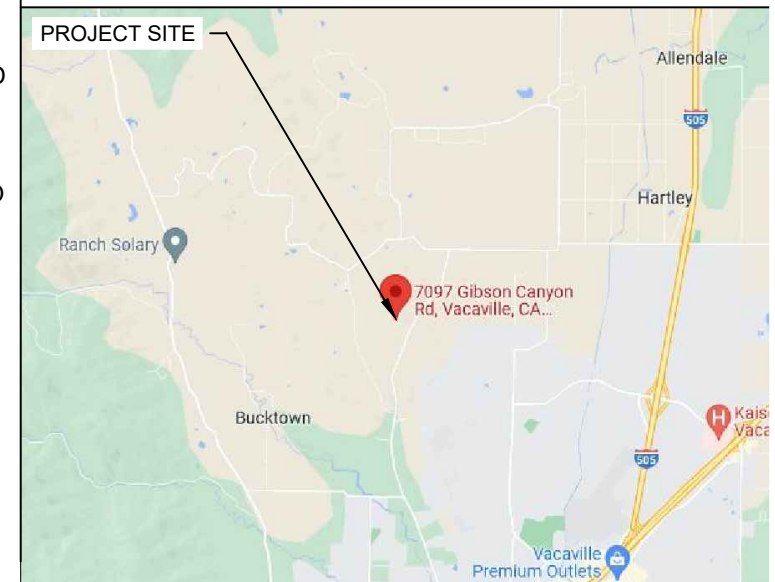
### WIRING AND CONDUIT NOTES:

- ALL CONDUIT SIZES AND TYPES, SHALL BE LISTED FOR ITS PURPOSE AND APPROVED FOR THE SITE APPLICATIONS
- ALL PV CABLES AND HOMERUN WIRES BE #10AWG \*USE-2, PV WIRE, OR PROPRIETARY SOLAR CABLING SPECIFIED BY MFR, OR EQUIVALENT; ROUTED TO SOURCE CIRCUIT COMBINER BOXES AS REQUIRED
- ALL CONDUCTORS AND OCPD SIZES AND TYPES SPECIFIED ACCORDING TO CEC 2019 FOR MULTIPLE CONDUCTORS
- ALL PV DC CONDUCTORS IN CONDUIT EXPOSED TO SUNLIGHT SHALL BE DERATED ACCORDING TO CEC 2019 BLACK ONLY\*\*
- EXPOSED ROOF PV DC CONDUCTORS SHALL BE USE-2, 90°C RATED, WET AND UV RESISTANT, AND UL LISTED RATED FOR 600V, UV RATED SPIRAL WRAP SHALL BE USED TO PROTECT WIRE FROM SHARP EDGES
- PHASE AND NEUTRAL CONDUCTORS SHALL BE DUAL RATED THHN/THWN-2 INSULATED, 90°C RATED, WET AND UV RESISTANT, RATED FOR 1000V PER CEC 2019
- 4-WIRE DELTA CONNECTED SYSTEMS HAVE THE PHASE WITH THE HIGHER VOLTAGE TO GROUND MARKED ORANGE OR IDENTIFIED BY OTHER EFFECTIVE MEANS
- VOLTAGE DROP LIMITED TO 2%
- NEGATIVE GROUNDED SYSTEMS DC CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS: DC POSITIVE - RED (OR MARKED RED), DC NEGATIVE - GREY (OR MARKED GREY)
- POSITIVE GROUNDED SYSTEMS DC CONDUCTORS COLOR CODED: DC POSITIVE - GREY (OR MARKED GREY), DC NEGATIVE - BLACK (OR MARKED BLACK)
- AC CONDUCTORS >4AWG COLOR CODED OR MARKED: PHASE A OR L1- BLACK, PHASE B OR L2- RED, PHASE C OR L3- BLUE, NEUTRAL- WHITE/GRAY

# HOUSE PHOTO



# VICINITY MAP



SOLANO COUNTY RESOURCE MANAGEMENT

APPROVED  
BUILDING DIVISION

BY: John Miller DATE: 03-06-2023

SHEET NAME  
**COVER PAGE**

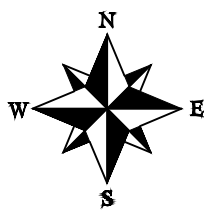
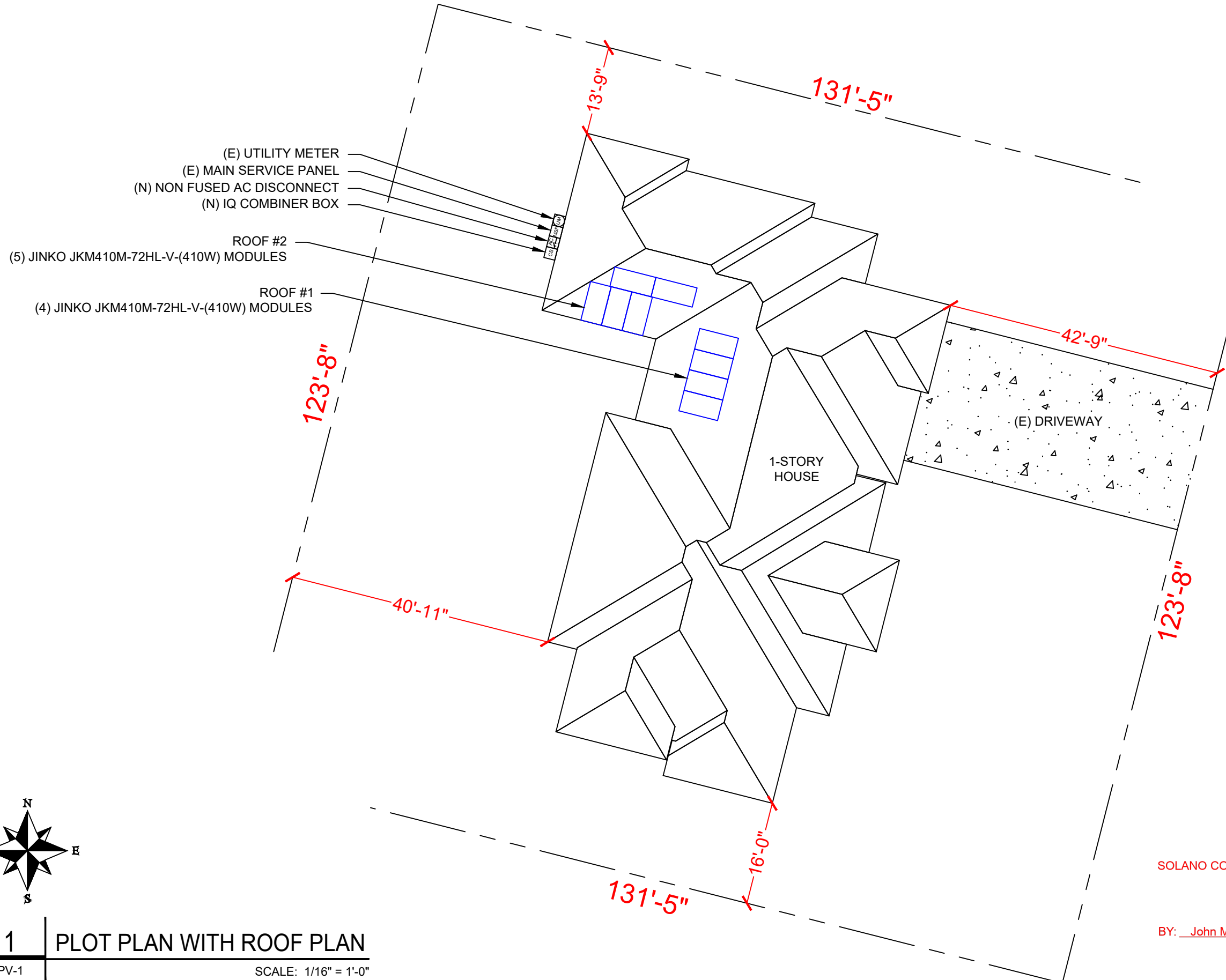
SHEET SIZE  
**ANSI B  
11" X 17"**

SHEET NUMBER  
**PV-0**



**SITE NOTES**

- A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS AN UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
- THE SOLAR PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
- PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED.



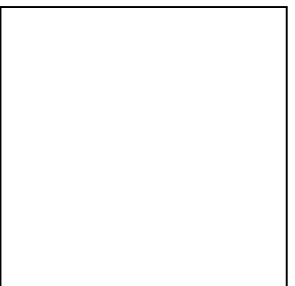
**1 PLOT PLAN WITH ROOF PLAN**

PV-1

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

SOLANO COUNTY RESOURCE MANAGEMENT  
APPROVED  
BUILDING DIVISION

BY: John Millea DATE: 03-06-2023



SHEET NAME	SITE PLAN
SHEET SIZE	ANSI B 11" X 17"
SHEET NUMBER	PV-1

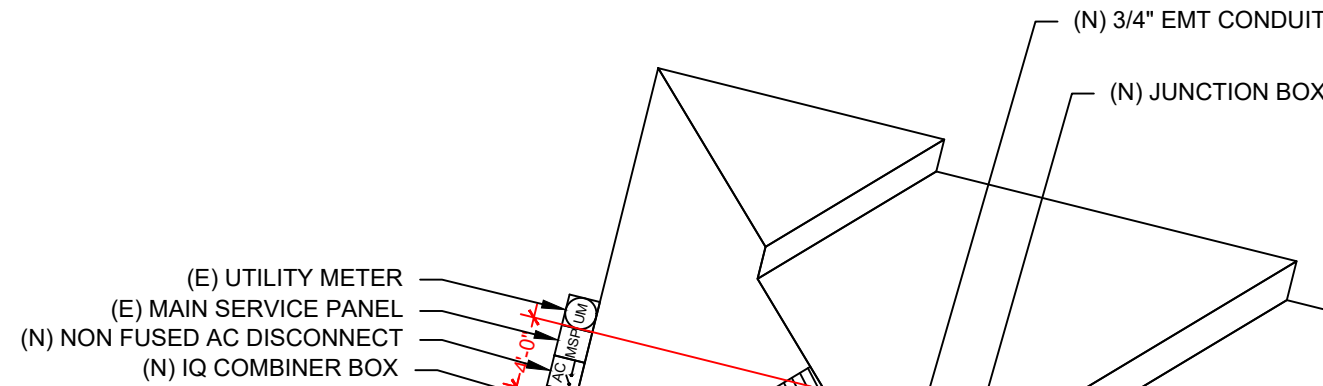
**DESIGN SPECIFICATION**

RISK CATEGORY: - II  
 CONSTRUCTION: - SFD  
 ZONING: - RESIDENTIAL  
 SNOW LOAD (ASCE 7-10): - 0 PSF  
 EXPOSURE CATEGORY: - B  
 WIND SPEED (ASCE 7-10): - 110 MPH

**MODULE TYPE, DIMENSIONS & WEIGHT**

NUMBER OF MODULES: - 9 MODULES  
 MODULE TYPE: - JINKO JKM410M-72HL-V-(410W)  
 MODULE WEIGHT: - 49.6 LBS  
 MODULE DIMENSIONS: - 79.06" x 39.45" = 21.66SF  
 UNIT WEIGHT OF AREA: - 2.29 PSF

PANEL HEIGHT OFF ROOF	4"
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- (N) IRONRIDGE XR 10 RAIL
- ROOFS #1 & #2
- (9) JINKO JKM410M-72HL-V-(410W) MODULES
- (26) IRONRIDGE ALL TILE ROOF HOOK ATTACHMENT @ 48" o.c.
- (9) ENPHASE IQ8PLUS-72-2-US(240V) MICROINVERTER

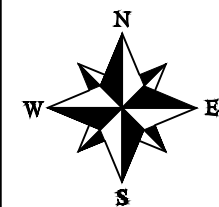
(E) BACK OF RESIDENCE

(E) FRONT OF RESIDENCE  
 GIBSON CANYON RD

ROOF DESCRIPTION					
ROOF	ROOF TILT	AZIMUTH	TRUSS SIZE	TRUSS SPACING	ROOF MATERIAL
#1	20°	284°	2"X6"	24" o.c.	CONCRETE TILE
#2	20°	194°	2"X6"	24" o.c.	CONCRETE TILE

ARRAY AREA & ROOF AREA CALC'S				
ROOF	# OF MODULES	ARRAY AREA (Sq. Ft.)	ROOF AREA (Sq. Ft.)	ROOF AREA COVERED BY ARRAY (%)
#1	4	81.79	431.96	19
#2	5	102.22	234.82	44
TOTAL	9	183.01	6411.94	3

LEGEND	
JB	(N) JUNCTION BOX
UM	(E) UTILITY METER
MSP	(E) MAIN SERVICE PANEL (MSP)
ACD	(N) NON-FUSED AC DISCONNECT
CB	(N) IQ COMBINER BOX
○	- VENT, ATTIC FAN (ROOF OBSTRUCTION)
●	- ROOF ATTACHMENT
---	- CONDUIT



**1 ROOF PLAN & MODULES**

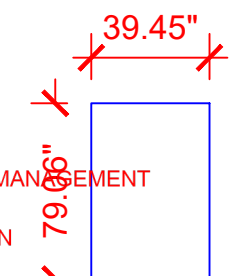
PV-2

SCALE: 3/32" = 1'-0"

SOLANO COUNTY RESOURCE MANAGEMENT  
 APPROVED  
 BUILDING DIVISION

BY: John Millea DATE: 03-06-2023

JINKO  
 JKM410M-72HL-V-(410W)  
 MODULES



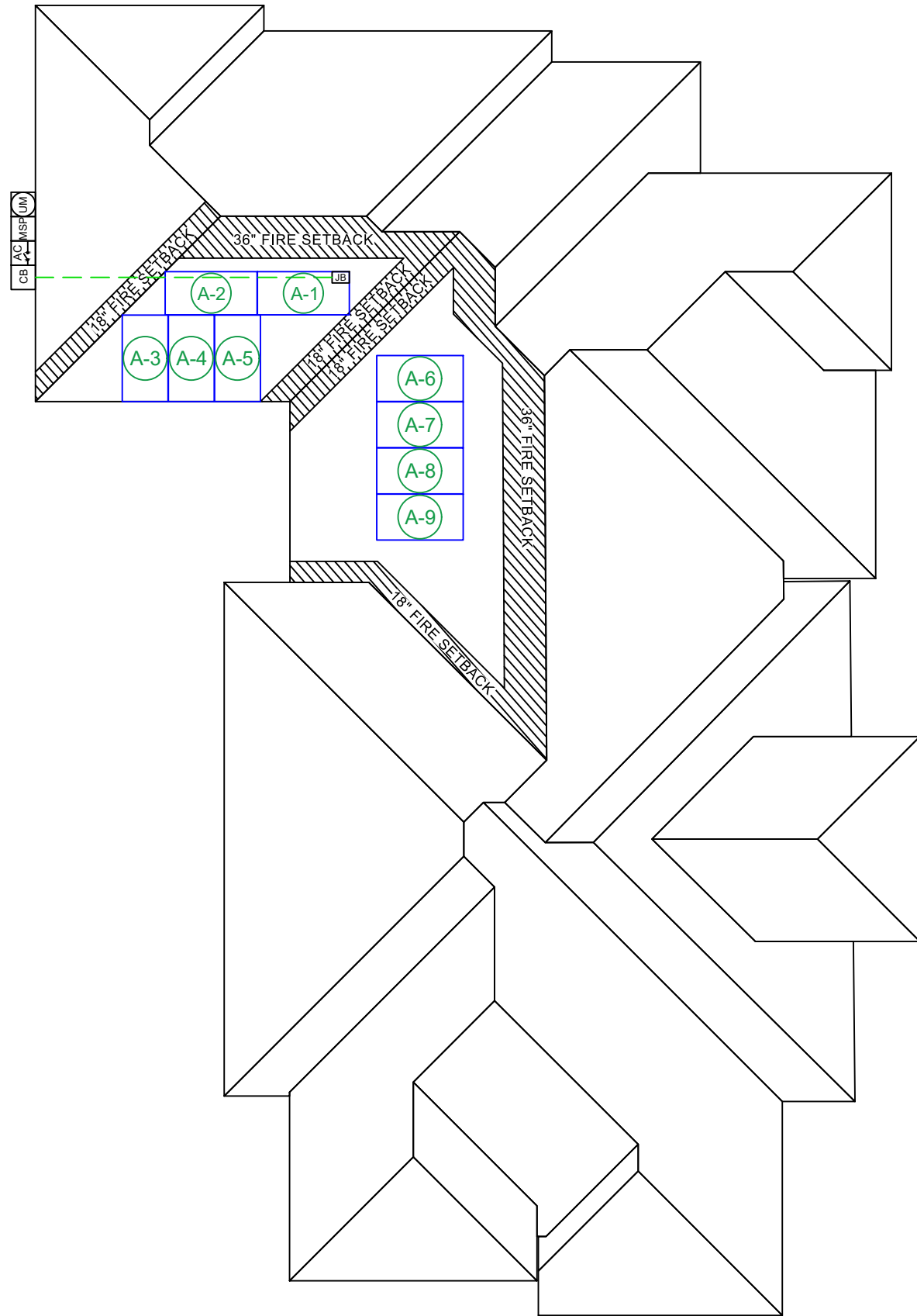
SHEET NAME  
**ROOF PLAN & MODULES**

SHEET SIZE

**ANSI B  
 11" X 17"**

SHEET NUMBER

**PV-2**



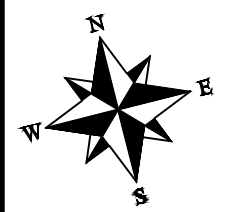
(E) BACK OF RESIDENCE

(E) FRONT OF RESIDENCE

GIBSON CANYON RD

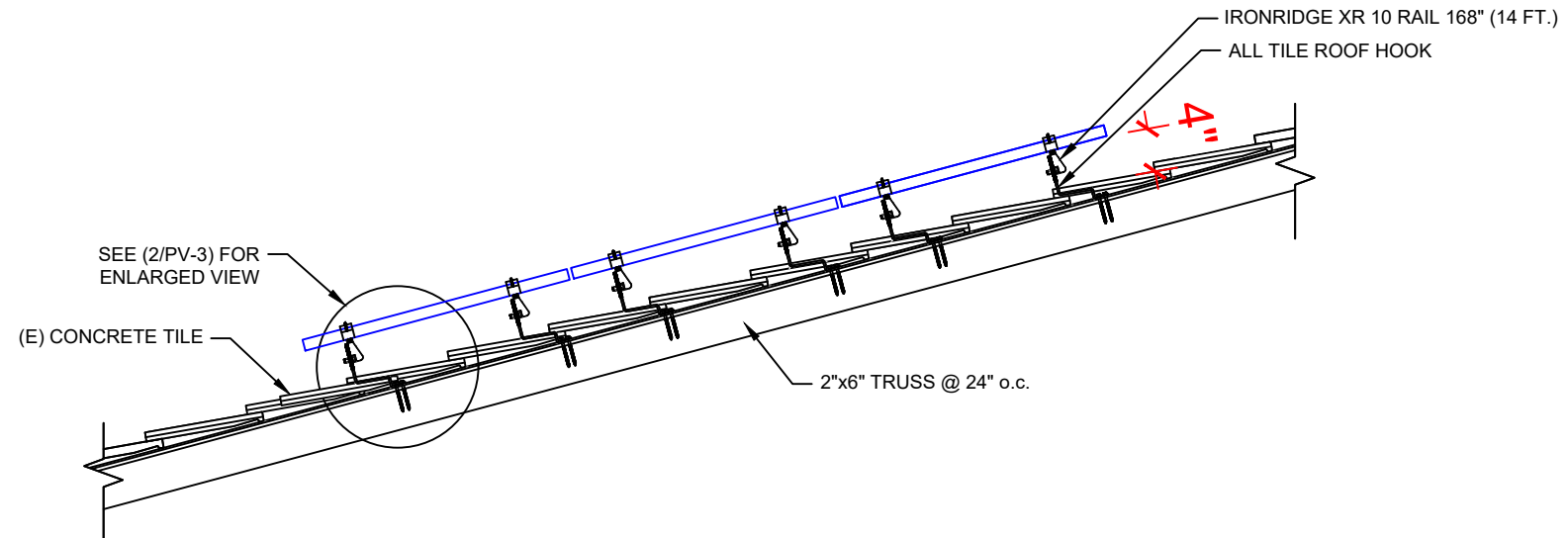
BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	9	JINKO JKM410M-72HL-V-(410W)
INVERTER	9	ENPHASE IQ8PLUS-72-2-US(240V)
JUNCTION BOX	1	JUNCTION BOX, NEMA 3R, UL LISTED
COMBINER BOX	1	ENPHASE IQ COMBINER W/ IQ ENVOY (X-IQ-AM1-240-4)
AC DISCONNECT	1	SQUARE D DU222RB PV SYSTEM AC DISCONNECT SWITCH NON FUSED VISIBLE OPEN 30A, 120/240V 2P NEMA 3R
ATTACHMENT	52	BOLT, LAG 5/16 x 4"
ATTACHMENT	26	ASSY, BASE, CLEAR
ATTACHMENT	26	ASSY, ARM, CLEAR
ATTACHMENT	26	BOLT, CARRIAGE 5/16 x 1"
ENPHASE Q CABLE	15	ENPHASE Q CABLE 240V (PER CONNECTOR)
BRANCH TERMINATOR	1	BRANCH TERMINATOR
IQ WATER TIGHT CAP	6	IQ WATER TIGHT CAPS
RAILS	6	IRONRIDGE XR-10 RAIL- 14 FEET (168")
BONDED SPLICE	0	SPLICE KIT
MID CLAMP	12	UNIVERSAL FASTENING OBJECT (UFO)
END CLAMP	12	STOPPER SLEEVE
CLAMP	12	IRONRIDGE CAMO-01-M1 HIDDEN UNIVERSAL END CLAMP
GROUNDING LUG	3	IRONRIDGE GROUNDING LUG

**(A)** - MODULE STRINGING



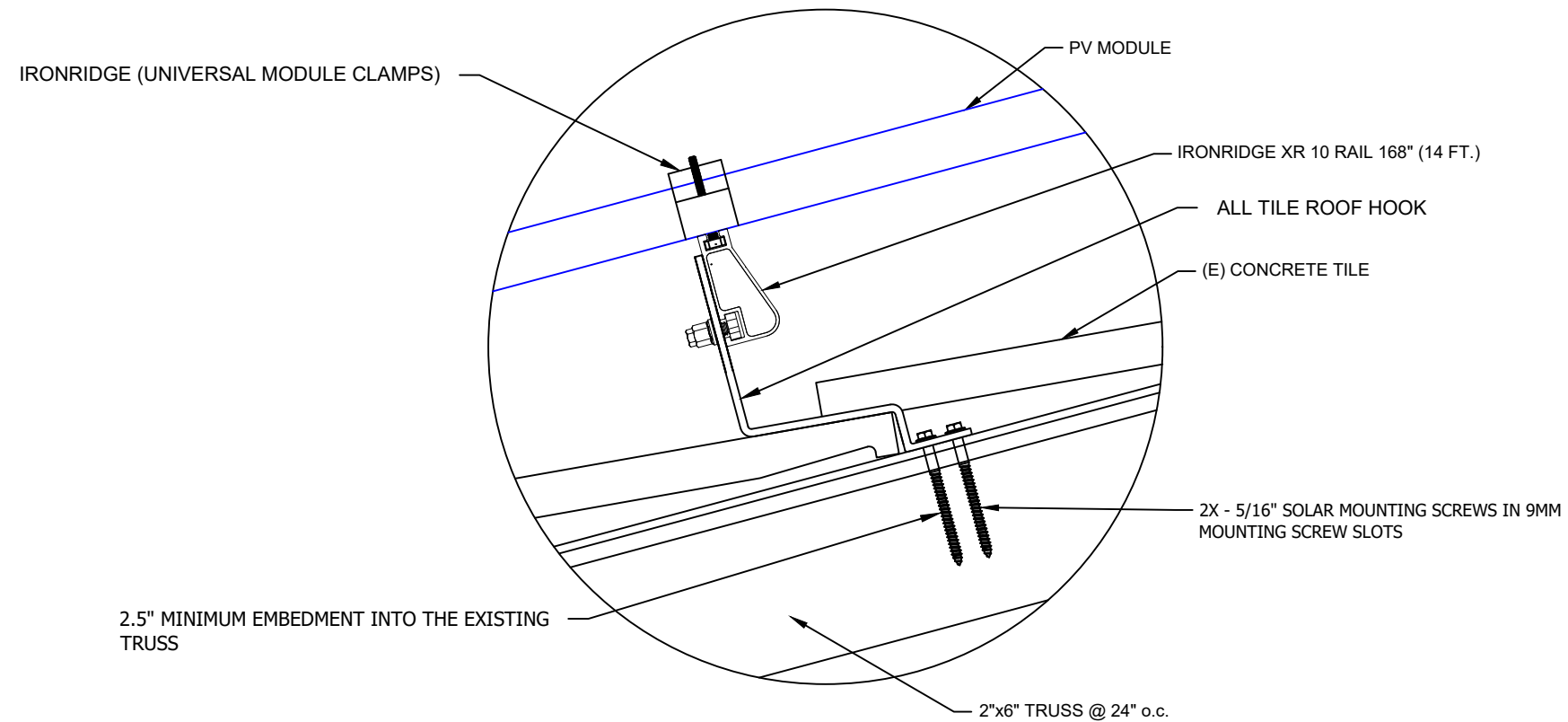
SOLANO COUNTY RESOURCE MANAGEMENT  
 APPROVED  
 BUILDING DIVISION  
 BY: John Millea DATE: 03-06-2023

SHEET NAME <b>STRING LAYOUT &amp; BOM</b>
SHEET SIZE <b>ANSI B 11" X 17"</b>
SHEET NUMBER <b>PV-2A</b>



1 ATTACHMENT DETAILS

PV-3



2 ENLARGED VIEW OF ATTACHMENT

PV-3

SCALE: NTS

SOLANO COUNTY RESOURCE MANAGEMENT  
 APPROVED  
 BUILDING DIVISION

BY: John Millea DATE: 03-06-2023

SHEET NAME  
 ATTACHMENT  
 DETAIL

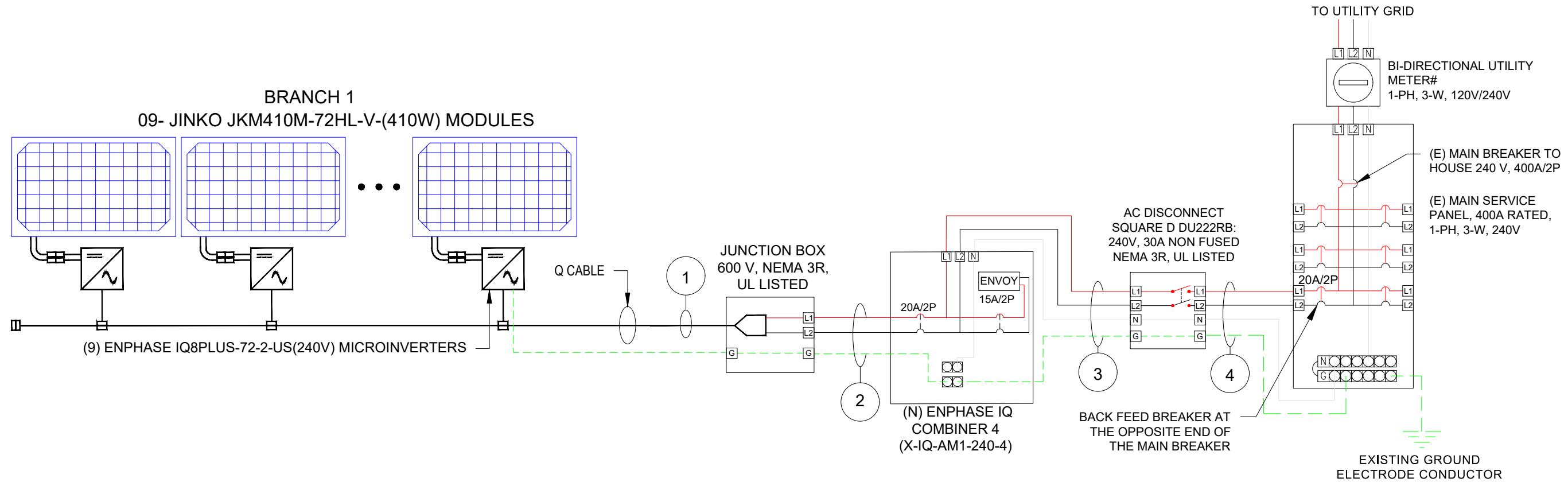
SHEET SIZE

ANSI B  
 11" X 17"

SHEET NUMBER

PV-3

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOLTAGE DROP
				12 AWG	Q CABLE	-						-	6 AWG	BARE COPPER	0.71								
1	2	ARRAY	JUNCTION BOX	12 AWG	Q CABLE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(58°C)	N/A	10.89A	13.6A	N/A	N/A	90°C	46FT	0.38%
2	1	JUNCTION BOX	IQ COMBINER BOX	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	2	11.45%	20A	8 AWG	THWN-2, COPPER	0.91	(36°C)	1	10.89A	13.6A	40A	36.4A	90°C	32FT	0.37%
3	1	IQ COMBINER BOX	AC DISCONNECT	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	15.27%	N/A	8 AWG	THWN-2, COPPER	0.91	(36°C)	1	10.89A	13.6A	40A	36.4A	90°C	5FT	0.06%
4	1	AC DISCONNECT	MSP	10 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	15.27%	20A	8 AWG	THWN-2, COPPER	0.91	(36°C)	1	10.89A	13.6A	40A	36.4A	90°C	5FT	0.06%



1 | ELECTRICAL LINE DIAGRAM  
PV-4 | SCALE: NTS

INTERCONNECTION 120% RULE
UTILITY FEED + SOLAR BACKFEED 400A + 20A = 420A
BUSS RATING x 120% 400A x 120% = 480A

SERVICE INFO.
ALL NAME: CITY OF YACAWILF
SOLANO COUNTY RESOURCE MANAGEMENT
UTILITY PROVIDER: PG&E
MAIN SERVICE PANEL VOLTAGE: 240V
MAIN BREAKER RATING: 400A
BY: J. BURNS DATE: 03-06-2023
MAIN SERVICE LOCATION: NORTH
SERVICE FEED SOURCE: UNDERGROUND

SHEET NAME ELECTRICAL LINE & CALCS.
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-4

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	JINKO JKM410M-72HL-V-(410W)
VMP	40.68 V
IMP	10.08 A
VOC	49.6 V
ISC	10.76 A
TEMP. COEFF. VOC	-0.29%/°C
PTC RATING	367.7 W
MODULE DIMENSION	79.06"(L) x 39.45"(W)
PANEL WATTAGE	410W

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	ENPHASE IQ8PLUS-72-2-US(240V)
MAX DC SHORT CIRCUIT CURRENT	15 A
CONTINUOUS OUTPUT CURRENT	1.21A (240V)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-3°C
AMBIENT TEMP (HIGH TEMP 2%)	36°C
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	90°C
CONDUCTOR TEMPERATURE RATE	58°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.29%/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

### Voltage rise in Q Cable from the Microinverters to the Junction Box

For branch circuit #1 of 9 IQ 8+ Micros, the voltage rise on the 240 VAC Q Cable is 0.38%

### Voltage rise from the Junction Box to the IQ Combiner box

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft) × (2-way wire length in ft)  
= (1.21 amp × 9 ) × (0.00129 Ω/ft) × (32 ft × 2)  
= 10.89 amps × 0.00129 Ω/ft × 64 ft  
= 0.90 volts  
%VRise = 0.90 volts ÷ 240 volts = 0.37%  
The voltage rise from the Junction Box to the IQ Combiner Box is 0.37%

### Voltage rise from the IQ Combiner box to AC Disconnect

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft.) × (2-way wire length in ft.)  
= (1.21 amp × 9) × (0.001290 Ω/ft) × (5 ft. × 2)  
= 10.89 amps × 0.001290 Ω/ft × 10 ft.  
= 0.14 volts  
%VRise = 0.14 volts ÷ 240 volts = 0.06%  
The voltage rise from the IQ Combiner Box to the AC Disconnect is 0.06%

### Voltage rise from the AC Disconnect to the Main Service Panel

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft) × (2-way wire length in ft)  
= (1.21 amp × 9) × (0.001290 Ω/ft) × (5 ft × 2)  
= 10.89 amps × 0.001290 Ω/ft × 10 ft  
= 0.14 volts  
%VRise = 0.14 volts ÷ 240 volts = 0.06%  
The voltage rise from the AC Disconnect to the Main Service Panel is 0.06%

### Total system voltage rise for all three wire sections

0.38 % + 0.37% + 0.06% + 0.06% = 0.87%

SOLANO COUNTY RESOURCE MANAGEMENT  
APPROVED  
BUILDING DIVISION

BY: John Millea DATE: 03-06-2023

SHEET NAME  
SPECIFICATIONS  
& CALC.

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-4A

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

LABEL LOCATION:  
 POINT OF INTERCONNECTION,  
 (PER CODE: CEC 690.13(B))

**2** **WARNING - Electric Shock Hazard**  
 No user serviceable parts inside  
 Contact authorized service provider for assistance

LABEL LOCATION:  
 INVERTER, JUNCTION BOXES (ROOF),  
 (PER CODE: CEC 690.13)

**3** **WARNING: DUAL POWER SOURCE**  
 SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION:  
 POINT OF INTERCONNECTION  
 (PER CODE: CEC 690.13)

**4** **WARNING: PHOTOVOLTAIC**  
**POWER SOURCE**

LABEL LOCATION:  
 CONDUIT, COMBINER BOX  
 (PER CODE: CEC690.31(G)(3))

**ADHESIVE FASTENED SIGNS:**

- THE LABEL SHALL BE SUITABLE FOR THE ENVIRONMENT WHERE IT IS INSTALLED.
- ADHESIVE FASTENED SIGNS MAY BE ACCEPTABLE IF PROPERLY ADHERED. VINYL SIGNS SHALL BE WEATHER RESISTANT [CFC 605.11.1.3]

**5** **PHOTOVOLTAIC SYSTEM AC DISCONNECT**  
 RATED AC OUTPUT CURRENT 10.89 AMPS  
 NOMINAL OPERATING AC VOLTAGE 240 VOLTS

LABEL LOCATION:  
 POINT OF INTERCONNECTION,  
 (PER CODE: CEC 690.54)

**6** **WARNING**  
 INVERTER OUTPUT CONNECTION DO NOT  
 RELOCATE THIS OVERCURRENT DEVICE

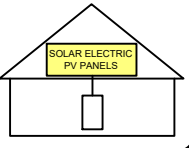
LABEL LOCATION:  
 POINT OF INTERCONNECTION  
 (PER CODE: CEC 705.12(2)(b))  
 [Not required if panelboard is rated not less than sum of ampere ratings  
 of all overcurrent devices supplying it]

**7** **CAUTION: SOLAR ELECTRIC**  
**SYSTEM CONNECTED**

LABEL LOCATION  
 WEATHER RESISTANT MATERIAL, DURABLE ADHESIVE,  
 UL969 AS STANDARD TO WEATHER RATING (UL LISTING  
 OF MARKINGS NOT REQUIRED), MIN 3  
 8" LETTER HEIGHT  
 ARIAL OR SIMILAR FONT NON-BOLD, PLACED WITHIN  
 THE MAIN SERVICE DISCONNECT, PLACED ON THE  
 OUTSIDE OF THE COVER WHEN DISCONNECT IS  
 OPERATED WITH THE SERVICE PANEL CLOSED.  
 (PER CODE: CEC690.15, 690.13(B))

**8** **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



PROVIDE AT AC DISCONNECT FOR  
 RAPID SHUTDOWN COMPLIANT  
 SYSTEM

**9** **SOLAR DISCONNECT**

LABEL LOCATION:  
 DISCONNECT, POINT OF INTERCONNECTION  
 (PER CODE: CEC690.13(B))

**10** **WARNING**  
 DUAL POWER SUPPLY  
 SOLAR ELECTRIC SYSTEM

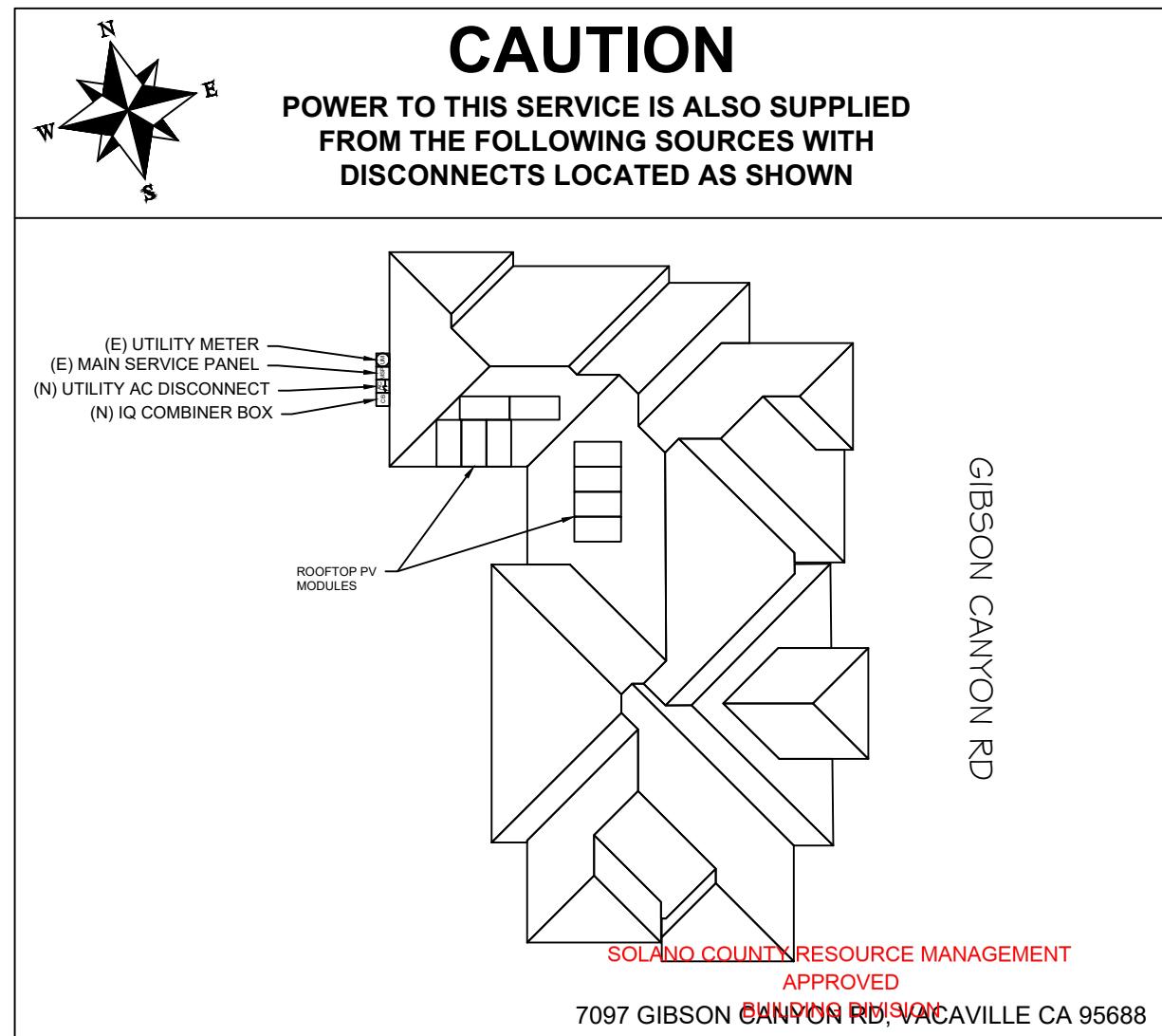
LABEL LOCATION:  
 METER PANEL

**11** **CAUTION: SOLAR CIRCUIT**

LABEL LOCATION:  
 MARKINGS PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS,  
 ENCLOSURES, AND CABLE ASSEMBLIES AT LEAST EVERY 10 FT, AT TURNS AND  
 ABOVE/BELOW PENETRATIONS AND ALL COMBINER/JUNCTION BOXES. (PER CODE:  
 CFC 605.11.1.4)

**12** **! WARNING !**  
 INVERTER OUTPUT CONNECTION. DO NOT  
 RELOCATE THIS OVERCURRENT DEVICE.

LABEL LOCATION:  
 POINT-OF-INTERCONNECTION OR AT MAIN  
 SERVICE DISCONNECT (MSP)



LABEL LOCATION:  
 BUILDING/STRUCTURE, UTILITY METER

BY: John Millea DATE: 03-06-2023

SHEET NAME SIGNAGE
SHEET SIZE ANSI B 11" X 17"
SHEET NUMBER PV-5



EAGLE  
MODULES

THE MOST  
DEPENDABLE  
SOLAR BRAND

## EAGLE 72HM G2

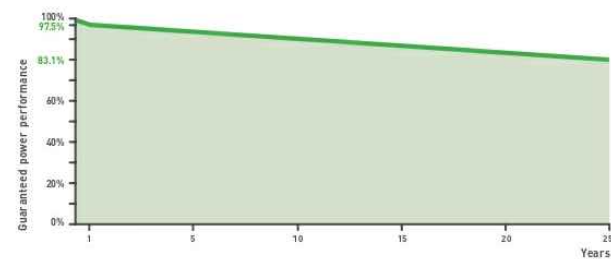
390-410 WATT • HALF CELL MONO PERC MODULE

Positive power tolerance of 0~+3%

- NYSE-listed since 2010, Bloomberg Tier 1 manufacturer
- Best-selling module globally for last 4 years
- Top performance in the strictest 3rd party labs
- 99.9% on-time delivery to the installer
- Automated manufacturing utilizing artificial intelligence
- Vertically integrated, tight controls on quality
- Premium solar panel factories in USA and Malaysia

### LINEAR PERFORMANCE WARRANTY

25-Year Performance Warranty



Nomenclature: JKM410M-72HL-V

Code	Cell	Code	Cell	Code	Certification
JKM	410M	-72	HL	-V	
JKM	410M	-72	HL	-V	1000V
JKM	410M	-72	HL	-V	1500V



- ISO9001:2008 Quality Standards
- ISO14001:2004 Environmental Standards
- IEC61215, IEC61730 certified products
- OHSAS18001 Occupational Health & Safety Standards
- UL1703 certified products

BUILDING YOUR TRUST IN SOLAR. [JINKOSOLAR.US](http://JINKOSOLAR.US)



### KEY FEATURES

**Diamond Half Cell Technology**  
World-record breaking efficient mono PERC half cut solar cells deliver high power in a small footprint.

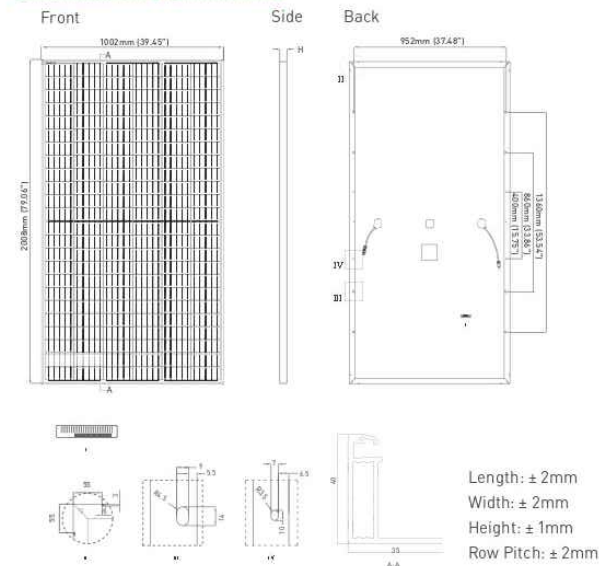
**Designed for Long Life**  
Uses the same DuPont protective film as the Space Station, Mars Lander, and jetliners. 25-year warranty.

**Shade Tolerant**  
Twin array design allows continued performance even with shading by trees or debris.

**Power Boost in Cloudy Conditions**  
A special film diffuses light, boosting performance even with shading by trees or debris.

**Protected Against All Environments**  
Certified to withstand humidity, heat, rain, marine environments, wind, hailstorms, and packed snow.

### ENGINEERING DRAWINGS



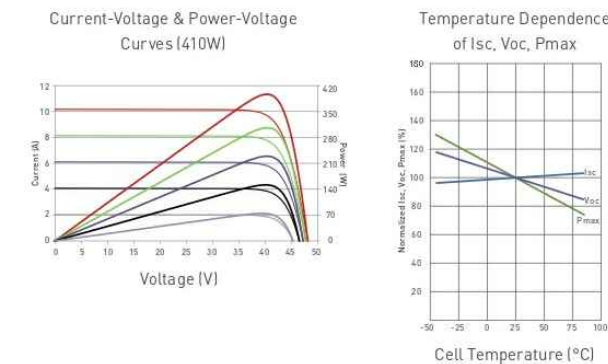
### MECHANICAL CHARACTERISTICS

Cells	Mono PERC Diamond Cell (158.75x158.75mm)
No. of Half Cells	144 (6x24)
Dimensions	2008x1002x40mm (79.06x39.45x1.57in)
Weight	22.5kg (49.6lbs)
Front Glass	3.2mm, Anti-Reflection Coating High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP67 Rated
Output Cables	12 AWG, 1400mm (55.12in) or Customized Length
Fire Type	Type 1
Pressure Rating	5400Pa (Snow) & 2400Pa (Wind)

### TEMPERATURE CHARACTERISTICS

Temperature Coefficients of Pmax	-0.35%/°C
Temperature Coefficients of Voc	-0.29%/°C
Temperature Coefficients of Isc	0.048%/°C
Nominal Operating Cell Temperature (NOCT)	45±2°C

### ELECTRICAL PERFORMANCE & TEMPERATURE DEPENDENCE



### MAXIMUM RATINGS

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage	1500VDC (UL and IEC)
Maximum Series Fuse Rating	20A

### PACKAGING CONFIGURATION

[Two pallets = One stack]  
27pcs/pallet, 54pcs/stack, 594pcs/40'HQ Container

### ELECTRICAL CHARACTERISTICS

Module Type	JKM390M-72HL-V		JKM395M-72HL-V		JKM400M-72HL-V		JKM405M-72HL-V		JKM410M-72HL-V	
	STC	NOCT	STC	NOCT	STC	NOCT	SCT	NOCT	SCT	NOCT
Maximum Power (Pmax)	390Wp	287Wp	395Wp	291Wp	400Wp	294Wp	405Wp	298Wp	410Wp	302Wp
Maximum Power Voltage (Vmp)	39.64V	37.0V	39.90V	37.4V	40.16V	37.6V	40.42V	37.8V	40.68V	38.0V
Maximum Power Current (Imp)	9.84A	7.75A	9.90A	7.77A	9.96A	7.82A	10.02A	7.88A	10.08A	7.94A
Open-circuit Voltage (Voc)	48.6V	45.8V	48.8V	46.0V	49.1V	46.2V	49.4V	46.5V	49.6V	46.7V
Short-circuit Current (Isc)	10.46A	8.45A	10.54A	8.51A	10.61A	8.57A	10.69A	8.63A	10.76A	8.69A
Module Efficiency STC (%)	19.38%		19.63%		19.88%		20.13%		20.38%	

\*STC: ☀ Irradiance 1000W/m<sup>2</sup> 🌡 Cell Temperature 25°C ☁ AM = 1.5  
 NOCT: ☀ Irradiance 800W/m<sup>2</sup> 🌡 Ambient Temperature 20°C ☁ AM = 1.5 🌬 Wind Speed 1m/s  
 \*Power measurement tolerance: ±3%

The company reserves the final right for explanation on any of the information presented hereby. JKM390-410M-72HL-V-A4-US  
**SOLANO COUNTY RESOURCE MANAGEMENT**  
 APPROVED  
 BUILDING DIVISION **Jinko Solar**

BUILDING YOUR TRUST IN SOLAR. [JINKOSOLAR.US](http://JINKOSOLAR.US)

BY: John Millea DATE: 03-06-2023

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-6





## IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.



IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.



IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

### Easy to install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

### High productivity and reliability

- Produce power even when the grid is down\*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

### Microgrid-forming

- Complies with the latest advanced grid support\*\*
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

\* Only when installed with IQ System Controller 2, meets UL 1741.

\*\* IQ8 and IQ8Plus supports split phase, 240V installations only.

## IQ8 and IQ8+ Microinverters

INPUT DATA (DC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings <sup>1</sup>	W	235 – 350	235 – 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPT voltage range	V	27 – 37	29 – 45
Operating range	V	25 – 48	25 – 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current <sup>2</sup> [module Isc]	A		15
Overvoltage class DC port			II
DC port backfeed current	mA		0
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)		IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range <sup>3</sup>	V	240 / 211 – 264	
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	50 – 68	
AC short circuit fault current over 3 cycles	Arms	2	
Max units per 20 A (L-L) branch circuit <sup>4</sup>		16	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading – 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	
MECHANICAL DATA			
Ambient temperature range		-40°C to +60°C (-40°F to +140°F)	
Relative humidity range		4% to 100% (condensing)	
DC Connector type		MC4	
Dimensions (HxWxD)		212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")	
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	
Environ. category / UV exposure rating		NEMA Type 6 / outdoor	
COMPLIANCE			
Certifications		CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01	

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://link.enphase.com/module-compatibility>.

(2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

SOLANO COUNTY RESOURCE MANAGEMENT  
APPROVED  
BUILDING DIVISION

BY: John Millea DATE: 03-06-2023

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-7

# Enphase IQ Combiner 4/4C

X-IQ-AM1-240-4  
X-IQ-AM1-240-4C



X-IQ-AM1-240-4C

X-IQ-AM1-240-4



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

The **Enphase IQ Combiner 4/4C** with Enphase IQ Gateway and integrated LTE-M1 cell modem (included only with IQ Combiner 4C) consolidates interconnection equipment into a single enclosure and streamlines IQ microinverters and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.

### Smart

- Includes IQ Gateway for communication and control
- Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), included only with IQ Combiner 4C
- Includes solar shield to match Enphase IQ Battery aesthetics and deflect heat
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and consumption monitoring

### Simple

- Centered mounting brackets support single stud mounting
- Supports bottom, back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- Two years labor reimbursement program coverage included for both the IQ Combiner SKU's
- UL listed



## Enphase IQ Combiner 4/4C

### MODEL NUMBER

IQ Combiner 4 (X-IQ-AM1-240-4)	IQ Combiner 4 with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes a silver solar shield to match the IQ Battery system and IQ System Controller 2 and to deflect heat.
IQ Combiner 4C (X-IQ-AM1-240-4C)	IQ Combiner 4C with Enphase IQ Gateway printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and consumption monitoring (+/- 2.5%). Includes Enphase Mobile Connect cellular modem (CELLMODEM-M1-06-SP-05), a plug-and-play industrial-grade cell modem 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.) Includes a silver solar shield to match the IQ Battery and IQ System Controller and to deflect heat.

### ACCESSORIES AND REPLACEMENT PARTS (not included, order separately)

Ensemble Communications Kit COMMS-CELLMODEM-M1-06 CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	- Includes COMMS-KIT-01 and CELLMODEM-M1-06-SP-05 with 5-year Sprint data plan for Ensemble sites - 4G based LTE-M1 cellular modem with 5-year Sprint data plan - 4G based LTE-M1 cellular modem with 5-year AT&T data plan
Circuit Breakers BRK-10A-2-240V BRK-15A-2-240V BRK-20A-2P-240V BRK-15A-2P-240V-B BRK-20A-2P-240V-B	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220 Circuit breaker, 2 pole, 15A, Eaton BR215B with hold down kit support Circuit breaker, 2 pole, 20A, Eaton BR220B with hold down kit support
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-SOLARSHIELD-ES	Replacement solar shield for IQ Combiner 4/4C
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 4/4C (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Gateway printed circuit board (PCB) for Combiner 4/4C
X-IQ-NA-HD-125A	Hold down kit for Eaton circuit breaker with screws.

### ELECTRICAL SPECIFICATIONS

Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating	65 A
Max. continuous current rating (input from PV/storage)	64 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. total branch circuit breaker rating (input)	80A of distributed generation / 95A with IQ Gateway breaker included
Production metering CT	200 A solid core pre-installed and wired to IQ Gateway
Consumption monitoring CT (CT-200-SPLIT)	A pair of 200 A split core current transformers

### MECHANICAL DATA

Dimensions (WxHxD)	37.5 x 49.5 x 16.8 cm (14.75" x 19.5" x 6.63"). Height is 21.06" (53.5 cm) with mounting brackets.
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors • 60 A breaker branch input: 4 to 1/0 AWG copper conductors • Main lug combined output: 10 to 2/0 AWG copper conductors • Neutral and ground: 14 to 1/0 copper conductors Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)

### INTERNET CONNECTION OPTIONS

Integrated Wi-Fi	802.11b/g/n
Cellular	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (4G based LTE-M1 cellular modem). Note that an Enphase Mobile Connect cellular modem is required for all Ensemble installations.
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)

### COMPLIANCE

Compliance, IQ Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production) Consumption metering: accuracy class 2.5
Compliance, IQ Gateway	UL 60601-1/CANCSA 22.2 No. 61010-1

SOLANO COUNTY RESOURCE MANAGEMENT  
APPROVED ENPHASE  
BUILDING DIVISION

To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

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BY: John Millea DATE: 03-06-2023

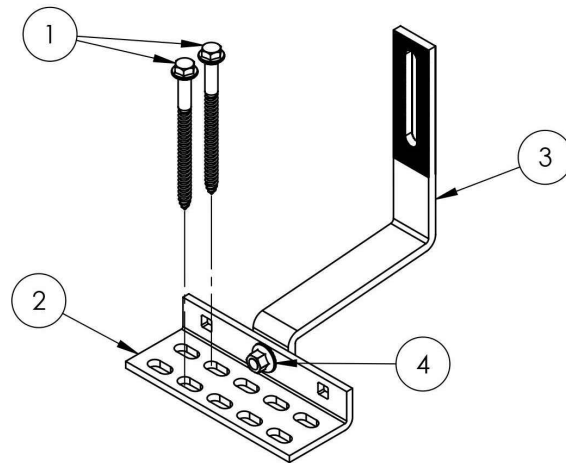
SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

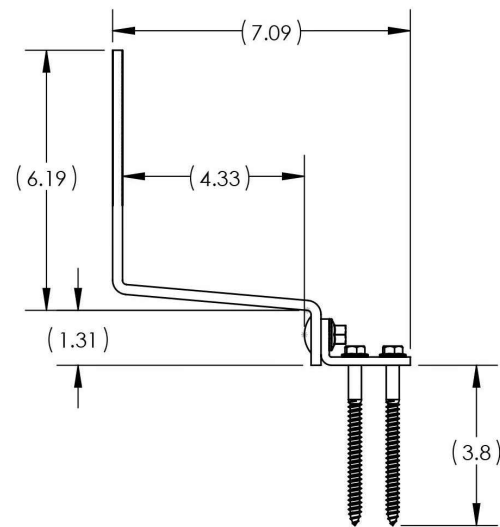
SHEET NUMBER

PV-8



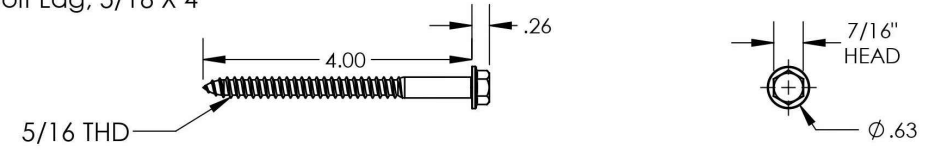
ITEM NO.	DESCRIPTION	QTY IN KIT
1	BOLT, LAG 5/16 X 4"	2
2	ASSY, BASE, CLEAR	1
3	ASSY, ARM, CLEAR	1
4	BOLT, CARRIAGE 5/16 X 1"	1

Part Number	Description
ATH-01-M1	All Tile Hook

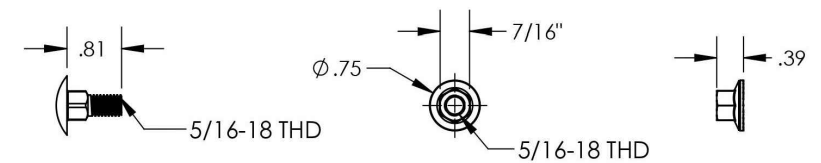


v1.0

1) Bolt Lag, 5/16 X 4"

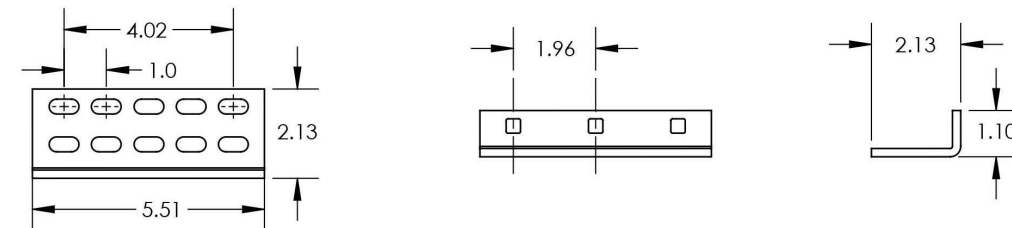


2) Bolt, Carriage 5/16 X 1"

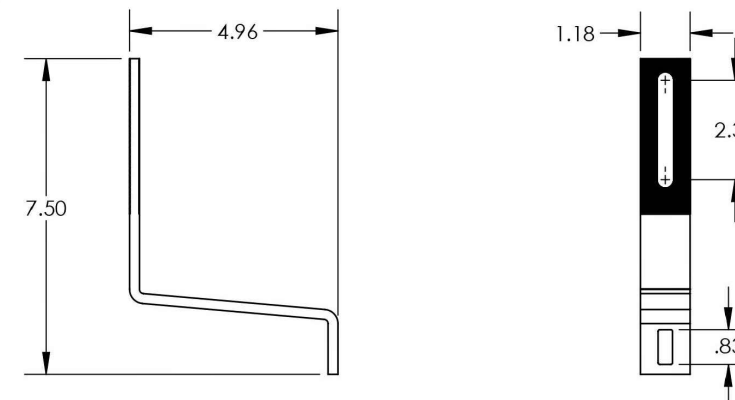


Items	Property	Value
1 & 2	Material	300 Series Stainless Steel
	Finish	Clear

3) Base, Clear



4) Arm, Clear



Items	Property	Value
3 & 4	Material	300 Series Stainless Steel
	Finish	Clear

SOLANO COUNTY RESOURCE MANAGEMENT.0

APPROVED  
BUILDING DIVISION

BY: John Millea DATE: 03-06-2023

SHEET NAME  
EQUIPMENT  
SPECIFICATION

SHEET SIZE

ANSI B  
11" X 17"

SHEET NUMBER

PV-9



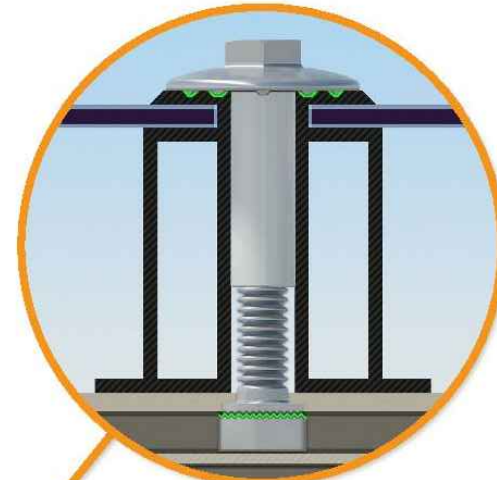
# UFO Family of Components

Tech Brief

## Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

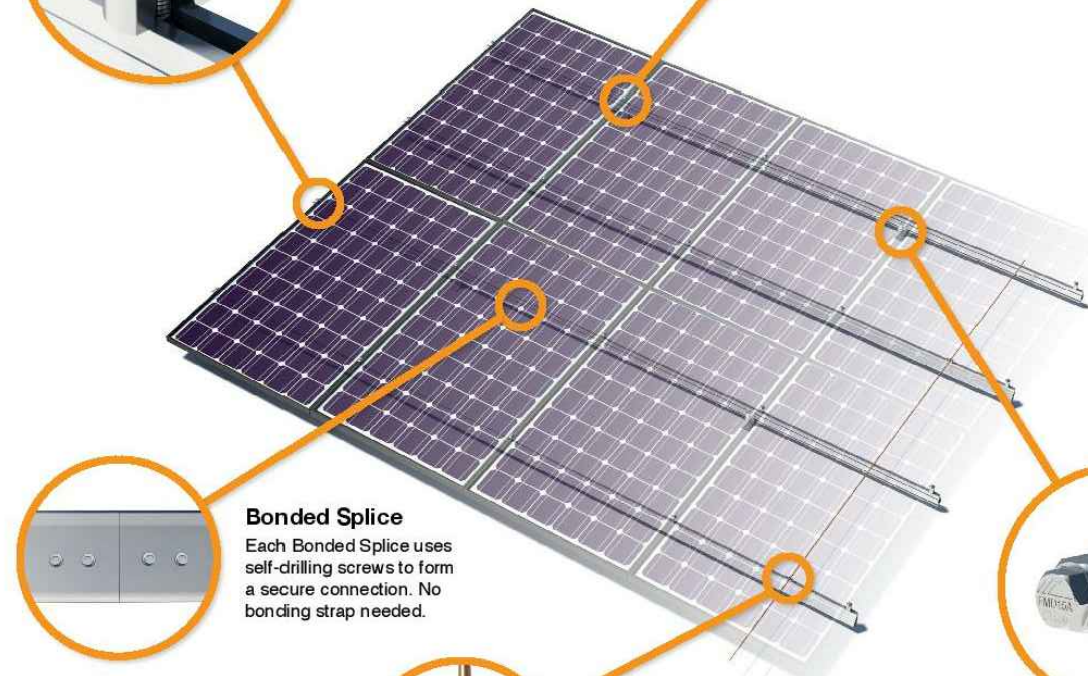
UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



**Universal Fastening Object (UFO)**  
The UFO securely bonds solar modules to XR Rails. It comes assembled and lubricated, and can fit a wide range of module heights.



**Stopper Sleeve**  
The Stopper Sleeve snaps onto the UFO, converting it into a bonded end clamp.



**Bonded Splice**  
Each Bonded Splice uses self-drilling screws to form a secure connection. No bonding strap needed.

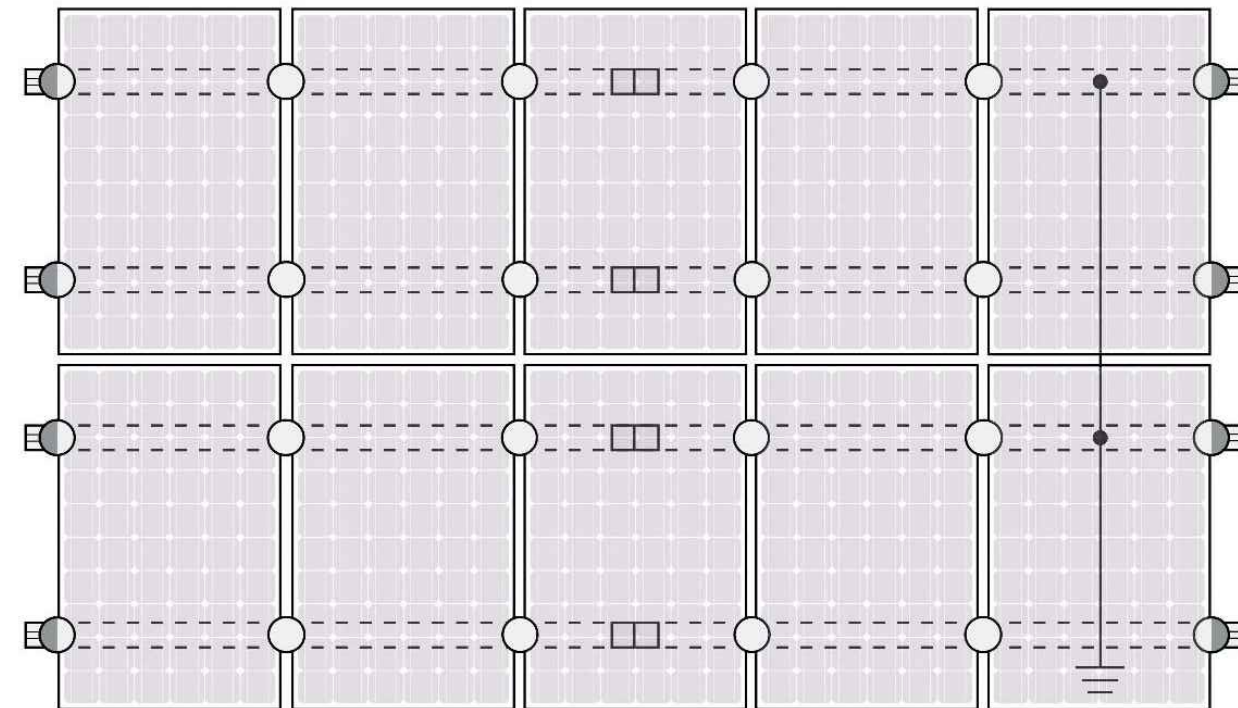


**Grounding Lug**  
A single Grounding Lug connects an entire row of PV modules to the grounding conductor.



**Bonded Attachments**  
The bonding bolt attaches and bonds the L-foot to the rail. It is installed with the same socket as the rest of the system.

## System Diagram



○ UFO   ◐ Stopper Sleeve   ● Grounding Lug   ◻ Bonded Splice   ≡ Ground Wire

Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

## UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](http://IronRidge.com/UFO)

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for detailed list		

APPROVED BUILDING DIVISION

SHEET NAME  
**EQUIPMENT SPECIFICATION**

SHEET SIZE  
**ANSI B 11" X 17"**

SHEET NUMBER  
**PV-10**