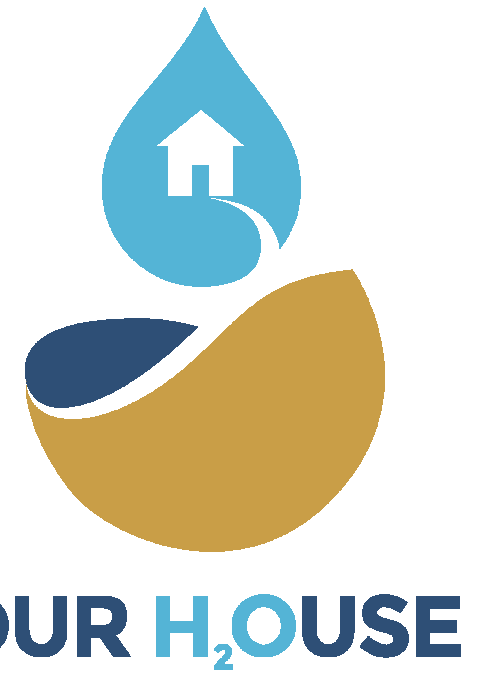




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**SOLAR DECATHLON**

**UC DAVIS**  
UNIVERSITY OF CALIFORNIA



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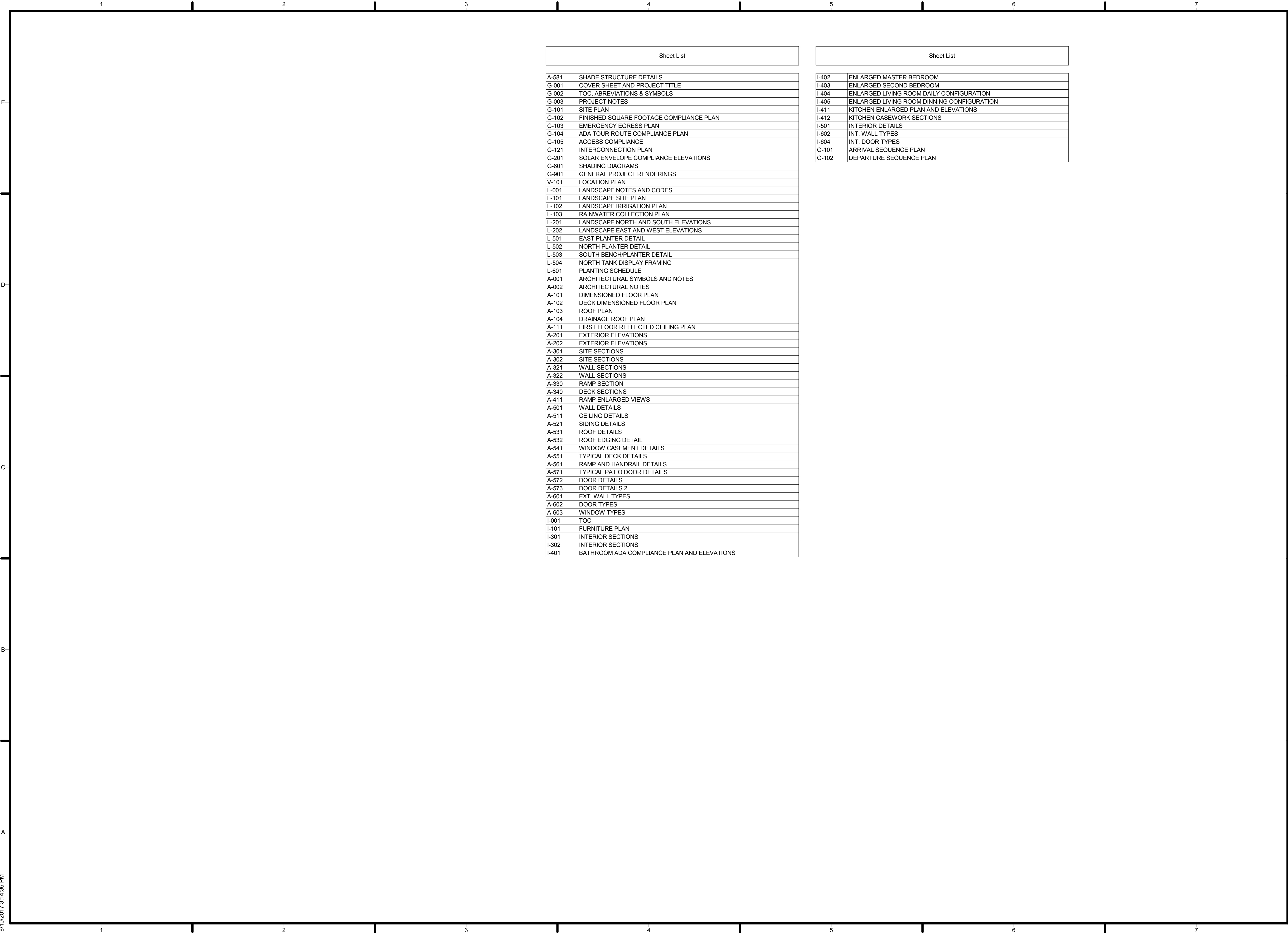
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**COVER SHEET AND PROJECT TITLE**

**G-001**





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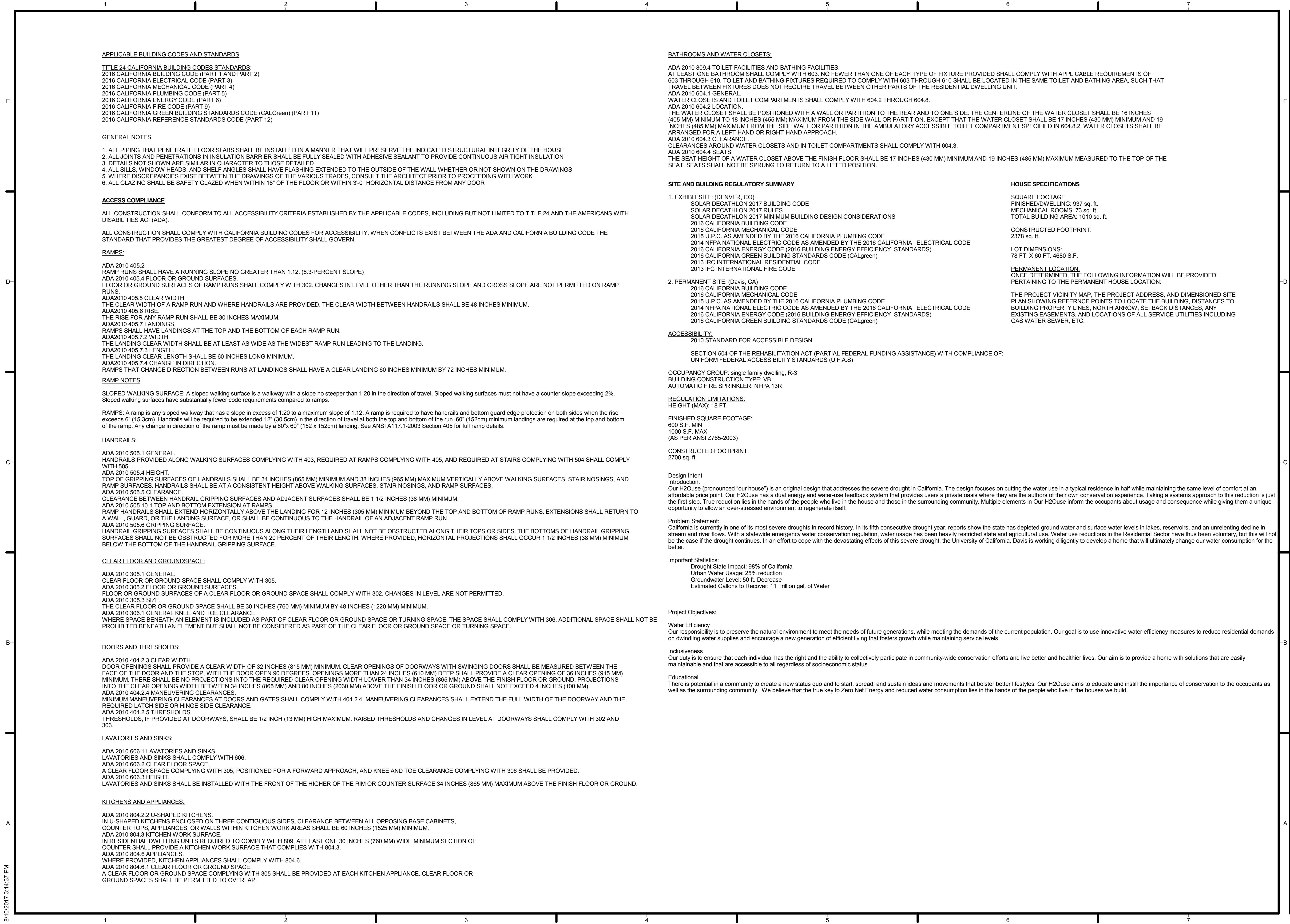
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**G-002**





**APPLICABLE BUILDING CODES AND STANDARDS**

**TITLE 24 CALIFORNIA BUILDING CODES STANDARDS:**  
 2016 CALIFORNIA BUILDING CODE (PART 1 AND PART 2)  
 2016 CALIFORNIA ELECTRICAL CODE (PART 3)  
 2016 CALIFORNIA MECHANICAL CODE (PART 4)  
 2016 CALIFORNIA PLUMBING CODE (PART 5)  
 2016 CALIFORNIA ENERGY CODE (PART 6)  
 2016 CALIFORNIA FIRE CODE (PART 9)  
 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) (PART 11)  
 2016 CALIFORNIA REFERENCE STANDARDS CODE (PART 12)

**GENERAL NOTES**

1. ALL PIPING THAT PENETRATE FLOOR SLABS SHALL BE INSTALLED IN A MANNER THAT WILL PRESERVE THE INDICATED STRUCTURAL INTEGRITY OF THE HOUSE
2. ALL JOINTS AND PENETRATIONS IN INSULATION BARRIER SHALL BE FULLY SEALED WITH ADHESIVE SEALANT TO PROVIDE CONTINUOUS AIR TIGHT INSULATION
3. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE DETAILED
4. ALL SILLS, WINDOW HEADS, AND SHELF ANGLES SHALL HAVE FLASHING EXTENDED TO THE OUTSIDE OF THE WALL WHETHER OR NOT SHOWN ON THE DRAWINGS
5. WHERE DISCREPANCIES EXIST BETWEEN THE DRAWINGS OF THE VARIOUS TRADES, CONSULT THE ARCHITECT PRIOR TO PROCEEDING WITH WORK
6. ALL GLAZING SHALL BE SAFETY GLAZED WHEN WITHIN 18" OF THE FLOOR OR WITHIN 3'-0" HORIZONTAL DISTANCE FROM ANY DOOR

**ACCESS COMPLIANCE**

ALL CONSTRUCTION SHALL CONFORM TO ALL ACCESSIBILITY CRITERIA ESTABLISHED BY THE APPLICABLE CODES, INCLUDING BUT NOT LIMITED TO TITLE 24 AND THE AMERICANS WITH DISABILITIES ACT(ADA).

ALL CONSTRUCTION SHALL COMPLY WITH CALIFORNIA BUILDING CODES FOR ACCESSIBILITY. WHEN CONFLICTS EXIST BETWEEN THE ADA AND CALIFORNIA BUILDING CODE THE STANDARD THAT PROVIDES THE GREATEST DEGREE OF ACCESSIBILITY SHALL GOVERN.

**RAMP:**

ADA 2010 405.2  
 RAMP RUNS SHALL HAVE A RUNNING SLOPE NO GREATER THAN 1:12. (8.3-PERCENT SLOPE)  
 ADA 2010 405.4 FLOOR OR GROUND SURFACES.  
 FLOOR OR GROUND SURFACES OF RAMP RUNS SHALL COMPLY WITH 302. CHANGES IN LEVEL OTHER THAN THE RUNNING SLOPE AND CROSS SLOPE ARE NOT PERMITTED ON RAMP RUNS.  
 ADA2010 405.5 CLEAR WIDTH.  
 THE CLEAR WIDTH OF A RAMP RUN AND WHERE HANDRAILS ARE PROVIDED, THE CLEAR WIDTH BETWEEN HANDRAILS SHALL BE 48 INCHES MINIMUM.  
 ADA2010 405.6 RISE.  
 THE RISE FOR ANY RAMP RUN SHALL BE 30 INCHES MAXIMUM.  
 ADA2010 405.7 LANDINGS.  
 RAMPS SHALL HAVE LANDINGS AT THE TOP AND THE BOTTOM OF EACH RAMP RUN.  
 ADA2010 405.7.2 WIDTH.  
 THE LANDING CLEAR WIDTH SHALL BE AT LEAST AS WIDE AS THE WIDEST RAMP RUN LEADING TO THE LANDING.  
 ADA2010 405.7.3 LENGTH.  
 THE LANDING CLEAR LENGTH SHALL BE 60 INCHES LONG MINIMUM.  
 ADA2010 405.7.4 CHANGE IN DIRECTION.  
 RAMPS THAT CHANGE DIRECTION BETWEEN RUNS AT LANDINGS SHALL HAVE A CLEAR LANDING 60 INCHES MINIMUM BY 72 INCHES MINIMUM.

**RAMP NOTES**

SLOPED WALKING SURFACE: A sloped walking surface is a walkway with a slope no steeper than 1:20 in the direction of travel. Sloped walking surfaces must not have a counter slope exceeding 2%. Sloped walking surfaces have substantially fewer code requirements compared to ramps.

RAMPS: A ramp is any sloped walkway that has a slope in excess of 1:20 to a maximum slope of 1:12. A ramp is required to have handrails and bottom guard edge protection on both sides when the rise exceeds 6" (15.3cm). Handrails will be required to be extended 12" (30.5cm) in the direction of travel at both the top and bottom of the run. 60" (152cm) minimum landings are required at the top and bottom of the ramp. Any change in direction of the ramp must be made by a 60' x 60" (152 x 152cm) landing. See ANSI A117.1-2003 Section 405 for full ramp details.

**HANDRAILS:**

ADA 2010 505.1 GENERAL.  
 HANDRAILS PROVIDED ALONG WALKING SURFACES COMPLYING WITH 403, REQUIRED AT RAMPS COMPLYING WITH 405, AND REQUIRED AT STAIRS COMPLYING WITH 504 SHALL COMPLY WITH 505.  
 ADA 2010 505.4 HEIGHT.  
 TOP OF GRIPPING SURFACES OF HANDRAILS SHALL BE 34 INCHES (865 MM) MINIMUM AND 38 INCHES (965 MM) MAXIMUM VERTICALLY ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES. HANDRAILS SHALL BE AT A CONSISTENT HEIGHT ABOVE WALKING SURFACES, STAIR NOSINGS, AND RAMP SURFACES.  
 ADA 2010 505.5 CLEARANCE.  
 CLEARANCE BETWEEN HANDRAIL GRIPPING SURFACES AND ADJACENT SURFACES SHALL BE 1 1/2 INCHES (38 MM) MINIMUM.  
 ADA 2010 505.10.1 TOP AND BOTTOM EXTENSION AT RAMPS.  
 RAMP HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES (305 MM) MINIMUM BEYOND THE TOP AND BOTTOM OF RAMP RUNS. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT RAMP RUN.  
 ADA 2010 505.6 GRIPPING SURFACE.  
 HANDRAIL GRIPPING SURFACES SHALL BE CONTINUOUS ALONG THEIR LENGTH AND SHALL NOT BE OBSTRUCTED ALONG THEIR TOPS OR SIDES. THE BOTTOMS OF HANDRAIL GRIPPING SURFACES SHALL NOT BE OBSTRUCTED FOR MORE THAN 20 PERCENT OF THEIR LENGTH. WHERE PROVIDED, HORIZONTAL PROJECTIONS SHALL OCCUR 1 1/2 INCHES (38 MM) MINIMUM BELOW THE BOTTOM OF THE HANDRAIL GRIPPING SURFACE.

**CLEAR FLOOR AND GROUNDSPACE:**

ADA 2010 305.1 GENERAL.  
 CLEAR FLOOR OR GROUND SPACE SHALL COMPLY WITH 305.  
 ADA 2010 305.2 FLOOR OR GROUND SURFACES.  
 FLOOR OR GROUND SURFACES OF A CLEAR FLOOR OR GROUND SPACE SHALL COMPLY WITH 302. CHANGES IN LEVEL ARE NOT PERMITTED.  
 ADA 2010 305.3 SIZE.  
 THE CLEAR FLOOR OR GROUND SPACE SHALL BE 30 INCHES (760 MM) MINIMUM BY 48 INCHES (1220 MM) MINIMUM.  
 ADA 2010 306.1 GENERAL. KNEE AND TOE CLEARANCE  
 WHERE SPACE BENEATH AN ELEMENT IS INCLUDED AS PART OF CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE, THE SPACE SHALL COMPLY WITH 306. ADDITIONAL SPACE SHALL NOT BE PROHIBITED BENEATH AN ELEMENT BUT SHALL NOT BE CONSIDERED AS PART OF THE CLEAR FLOOR OR GROUND SPACE OR TURNING SPACE.

**DOORS AND THRESHOLDS:**

ADA 2010 404.2.3 CLEAR WIDTH.  
 DOOR OPENINGS SHALL PROVIDE A CLEAR WIDTH OF 32 INCHES (815 MM) MINIMUM. CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP. WITH THE DOOR OPEN 90 DEGREES, OPENINGS MORE THAN 24 INCHES (610 MM) DEEP SHALL PROVIDE A CLEAR OPENING OF 36 INCHES (915 MM) MINIMUM. THERE SHALL BE NO PROJECTIONS INTO THE REQUIRED CLEAR OPENING WIDTH LOWER THAN 34 INCHES (865 MM) ABOVE THE FINISH FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES (865 MM) AND 80 INCHES (2030 MM) ABOVE THE FINISH FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES (100 MM).  
 ADA 2010 404.2.4 MANEUVERING CLEARANCES.  
 MINIMUM MANEUVERING CLEARANCES AT DOORS AND GATES SHALL COMPLY WITH 404.2.4. MANEUVERING CLEARANCES SHALL EXTEND THE FULL WIDTH OF THE DOORWAY AND THE REQUIRED LATCH SIDE OR HINGE SIDE CLEARANCE.  
 ADA 2010 404.2.5 THRESHOLDS.  
 THRESHOLDS, IF PROVIDED AT DOORWAYS, SHALL BE 1/2 INCH (13 MM) HIGH MAXIMUM. RAISED THRESHOLDS AND CHANGES IN LEVEL AT DOORWAYS SHALL COMPLY WITH 302 AND 303.

**LAVATORIES AND SINKS:**

ADA 2010 606.1 LAVATORIES AND SINKS.  
 LAVATORIES AND SINKS SHALL COMPLY WITH 606.  
 ADA 2010 606.2 CLEAR FLOOR SPACE.  
 A CLEAR FLOOR SPACE COMPLYING WITH 305, POSITIONED FOR A FORWARD APPROACH, AND KNEE AND TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED.  
 ADA 2010 606.3 HEIGHT.  
 LAVATORIES AND SINKS SHALL BE INSTALLED WITH THE FRONT OF THE HIGHER OF THE RIM OR COUNTER SURFACE 34 INCHES (865 MM) MAXIMUM ABOVE THE FINISH FLOOR OR GROUND.

**KITCHENS AND APPLIANCES:**

ADA 2010 804.2.2 U-SHAPED KITCHENS.  
 IN U-SHAPED KITCHENS ENCLOSED ON THREE CONTIGUOUS SIDES, CLEARANCE BETWEEN ALL OPPOSING BASE CABINETS, COUNTER TOPS, APPLIANCES, OR WALLS WITHIN KITCHEN WORK AREAS SHALL BE 60 INCHES (1525 MM) MINIMUM.  
 ADA 2010 804.3 KITCHEN WORK SURFACE.  
 IN RESIDENTIAL DWELLINGS UNITS REQUIRED TO COMPLY WITH 809, AT LEAST ONE 30 INCHES (760 MM) WIDE MINIMUM SECTION OF COUNTER SHALL PROVIDE A KITCHEN WORK SURFACE THAT COMPLIES WITH 804.3.  
 ADA 2010 804.6 APPLIANCES.  
 WHERE PROVIDED, KITCHEN APPLIANCES SHALL COMPLY WITH 804.6.  
 ADA 2010 804.6.1 CLEAR FLOOR OR GROUND SPACE.  
 A CLEAR FLOOR OR GROUND SPACE COMPLYING WITH 305 SHALL BE PROVIDED AT EACH KITCHEN APPLIANCE. CLEAR FLOOR OR GROUND SPACES SHALL BE PERMITTED TO OVERLAP.

**BATHROOMS AND WATER CLOSETS:**

ADA 2010 809.4 TOILET FACILITIES AND BATHING FACILITIES.  
 AT LEAST ONE BATHROOM SHALL COMPLY WITH 603. NO FEWER THAN ONE OF EACH TYPE OF FIXTURE PROVIDED SHALL COMPLY WITH APPLICABLE REQUIREMENTS OF 603 THROUGH 610. TOILET AND BATHING FIXTURES REQUIRED TO COMPLY WITH 603 THROUGH 610 SHALL BE LOCATED IN THE SAME TOILET AND BATHING AREA, SUCH THAT TRAVEL BETWEEN FIXTURES DOES NOT REQUIRE TRAVEL BETWEEN OTHER PARTS OF THE RESIDENTIAL DWELLING UNIT.  
 ADA 2010 604.1 GENERAL.  
 WATER CLOSETS AND TOILET COMPARTMENTS SHALL COMPLY WITH 604.2 THROUGH 604.8.  
 ADA 2010 604.2 LOCATION.  
 THE WATER CLOSET SHALL BE POSITIONED WITH A WALL OR PARTITION TO THE REAR AND TO ONE SIDE. THE CENTERLINE OF THE WATER CLOSET SHALL BE 16 INCHES (405 MM) MINIMUM TO 18 INCHES (455 MM) MAXIMUM FROM THE SIDE WALL OR PARTITION, EXCEPT THAT THE WATER CLOSET SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM FROM THE SIDE WALL OR PARTITION IN THE AMBULATORY ACCESSIBLE TOILET COMPARTMENT SPECIFIED IN 604.8.2. WATER CLOSETS SHALL BE ARRANGED FOR A LEFT-HAND OR RIGHT-HAND APPROACH.  
 ADA 2010 604.3 CLEARANCE.  
 CLEARANCES AROUND WATER CLOSETS AND IN TOILET COMPARTMENTS SHALL COMPLY WITH 604.3.  
 ADA 2010 604.4 SEATS.  
 THE SEAT HEIGHT OF A WATER CLOSET ABOVE THE FINISH FLOOR SHALL BE 17 INCHES (430 MM) MINIMUM AND 19 INCHES (485 MM) MAXIMUM MEASURED TO THE TOP OF THE SEAT. SEATS SHALL NOT BE SPRUNG TO RETURN TO A LIFTED POSITION.

**SITE AND BUILDING REGULATORY SUMMARY**

1. EXHIBIT SITE: (DENVER, CO)  
 SOLAR DECATHLON 2017 BUILDING CODE  
 SOLAR DECATHLON 2017 RULES  
 SOLAR DECATHLON 2017 MINIMUM BUILDING DESIGN CONSIDERATIONS  
 2016 CALIFORNIA BUILDING CODE  
 2016 CALIFORNIA MECHANICAL CODE  
 2015 U.P.C. AS AMENDED BY THE 2016 CALIFORNIA PLUMBING CODE  
 2014 NFPA NATIONAL ELECTRIC CODE AS AMENDED BY THE 2016 CALIFORNIA ELECTRICAL CODE  
 2016 CALIFORNIA ENERGY CODE (2016 BUILDING ENERGY EFFICIENCY STANDARDS)  
 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALgreen)  
 2013 IRC INTERNATIONAL RESIDENTIAL CODE  
 2013 IFC INTERNATIONAL FIRE CODE
2. PERMANENT SITE: (Davis, CA)  
 2016 CALIFORNIA BUILDING CODE  
 2016 CALIFORNIA MECHANICAL CODE  
 2015 U.P.C. AS AMENDED BY THE 2016 CALIFORNIA PLUMBING CODE  
 2014 NFPA NATIONAL ELECTRIC CODE AS AMENDED BY THE 2016 CALIFORNIA ELECTRICAL CODE  
 2016 CALIFORNIA ENERGY CODE (2016 BUILDING ENERGY EFFICIENCY STANDARDS)  
 2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALgreen)

**ACCESSIBILITY:**

2010 STANDARD FOR ACCESSIBLE DESIGN  
 SECTION 504 OF THE REHABILITATION ACT (PARTIAL FEDERAL FUNDING ASSISTANCE) WITH COMPLIANCE OF: UNIFORM FEDERAL ACCESSIBILITY STANDARDS (U.F.A.S)

OCCUPANCY GROUP: single family dwelling, R-3  
 BUILDING CONSTRUCTION TYPE: VB  
 AUTOMATIC FIRE SPRINKLER: NFPA 13R

**REGULATION LIMITATIONS:**

HEIGHT (MAX): 18 FT.

**FINISHED SQUARE FOOTAGE:**

600 S.F. MIN  
 1000 S.F. MAX  
 (AS PER ANSI Z765-2003)

**CONSTRUCTED FOOTPRINT:**

2700 sq. ft.

**Design Intent**

Introduction:  
 Our H2Ouse (pronounced "our house") is an original design that addresses the severe drought in California. The design focuses on cutting the water use in a typical residence in half while maintaining the same level of comfort at an affordable price point. Our H2Ouse has a dual energy and water-use feedback system that provides users a private oasis where they are the authors of their own conservation experience. Taking a systems approach to this reduction is just the first step. True reduction lies in the hands of the people who live in the house and those in the surrounding community. Multiple elements in Our H2Ouse inform the occupants about usage and consequence while giving them a unique opportunity to allow an over-stressed environment to regenerate itself.

**Problem Statement:**

California is currently in one of its most severe droughts in record history. In its fifth consecutive drought year, reports show the state has depleted ground water and surface water levels in lakes, reservoirs, and an unrelenting decline in stream and river flows. With a statewide emergency water conservation regulation, water usage has been heavily restricted state and agricultural use. Water use reductions in the Residential Sector have thus been voluntary, but this will not be the case if the drought continues. In an effort to cope with the devastating effects of this severe drought, the University of California, Davis is working diligently to develop a home that will ultimately change our water consumption for the better.

**Important Statistics:**

Drought State Impact: 98% of California  
 Urban Water Usage: 25% reduction  
 Groundwater Level: 50 ft. Decrease  
 Estimated Gallons to Recover: 11 Trillion gal. of Water

**Project Objectives:**

**Water Efficiency**

Our responsibility is to preserve the natural environment to meet the needs of future generations, while meeting the demands of the current population. Our goal is to use innovative water efficiency measures to reduce residential demands on dwindling water supplies and encourage a new generation of efficient living that fosters growth while maintaining service levels.

**Inclusiveness**

Our duty is to ensure that each individual has the right and the ability to collectively participate in community-wide conservation efforts and live better and healthier lives. Our aim is to provide a home with solutions that are easily maintainable and that are accessible to all regardless of socioeconomic status.

**Educational**

There is potential in a community to create a new status quo and to start, spread, and sustain ideas and movements that bolster better lifestyles. Our H2Ouse aims to educate and instill the importance of conservation to the occupants as well as the surrounding community. We believe that the true key to Zero Net Energy and reduced water consumption lies in the hands of the people who live in the houses we build.

**HOUSE SPECIFICATIONS**

**SQUARE FOOTAGE**

FINISHED/DWELLING: 937 sq. ft.  
 MECHANICAL ROOMS: 73 sq. ft.  
 TOTAL BUILDING AREA: 1010 sq. ft.

**CONSTRUCTED FOOTPRINT:**

2378 sq. ft.

**LOT DIMENSIONS:**

78 FT. X 60 FT. 4680 S.F.

**PERMANENT LOCATION:**

ONCE DETERMINED, THE FOLLOWING INFORMATION WILL BE PROVIDED PERTAINING TO THE PERMANENT HOUSE LOCATION:

THE PROJECT VICINITY MAP, THE PROJECT ADDRESS, AND DIMENSIONED SITE PLAN SHOWING REFERENCE POINTS TO LOCATE THE BUILDING, DISTANCES TO BUILDING PROPERTY LINES, NORTH ARROW, SETBACK DISTANCES, ANY EXISTING EASEMENTS, AND LOCATIONS OF ALL SERVICE UTILITIES INCLUDING GAS WATER SEWER, ETC.



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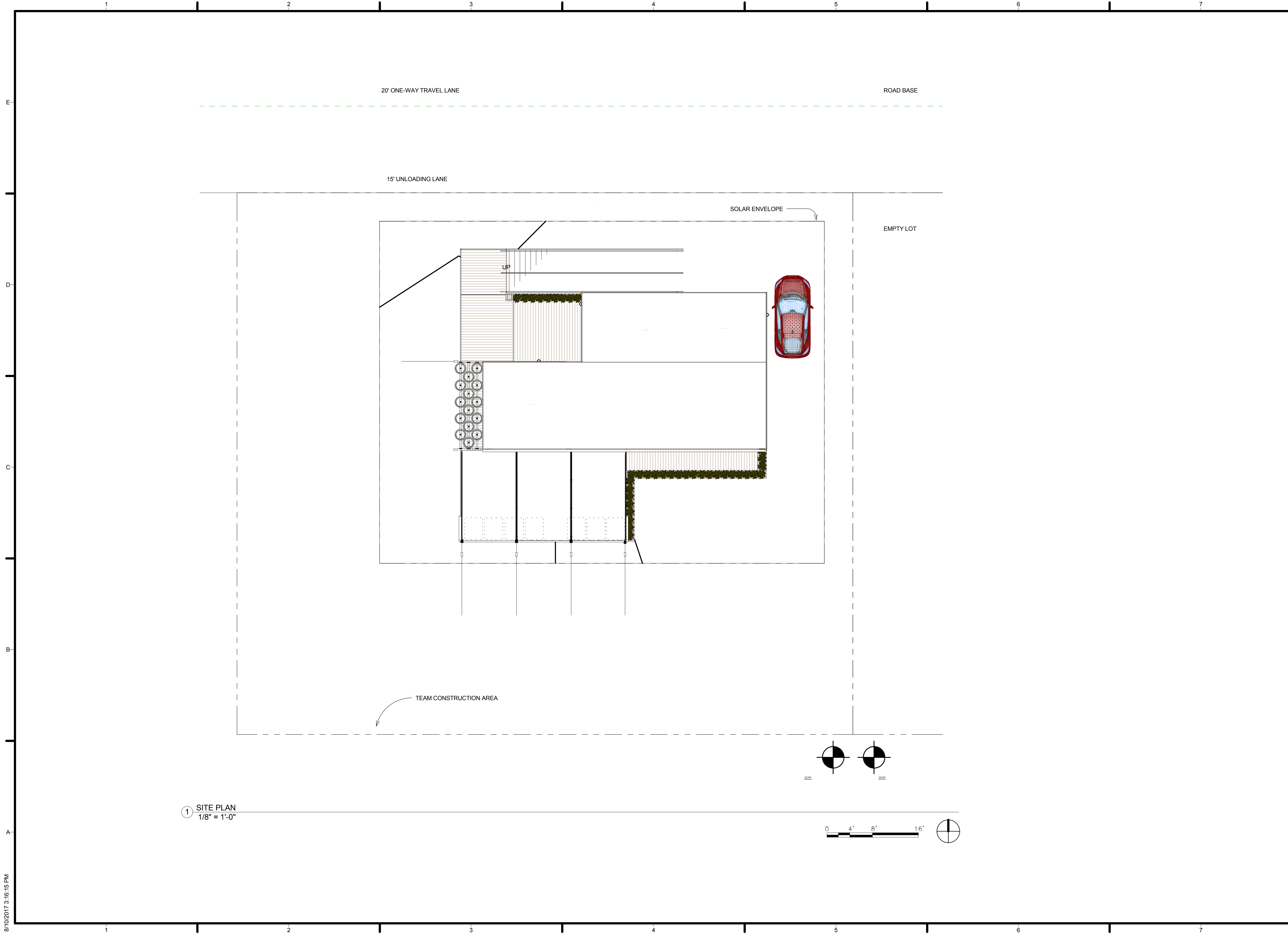
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**PROJECT NOTES**

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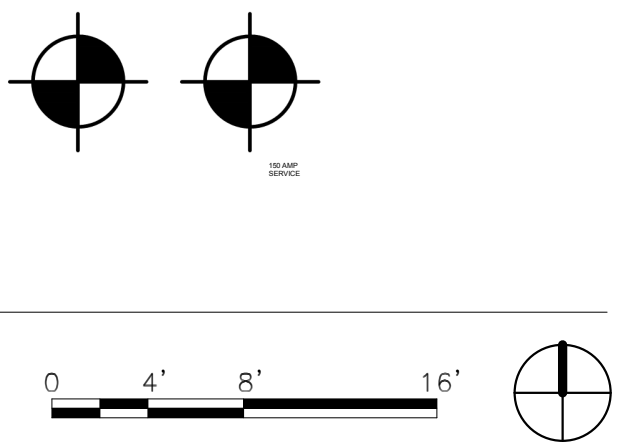
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**SITE PLAN**

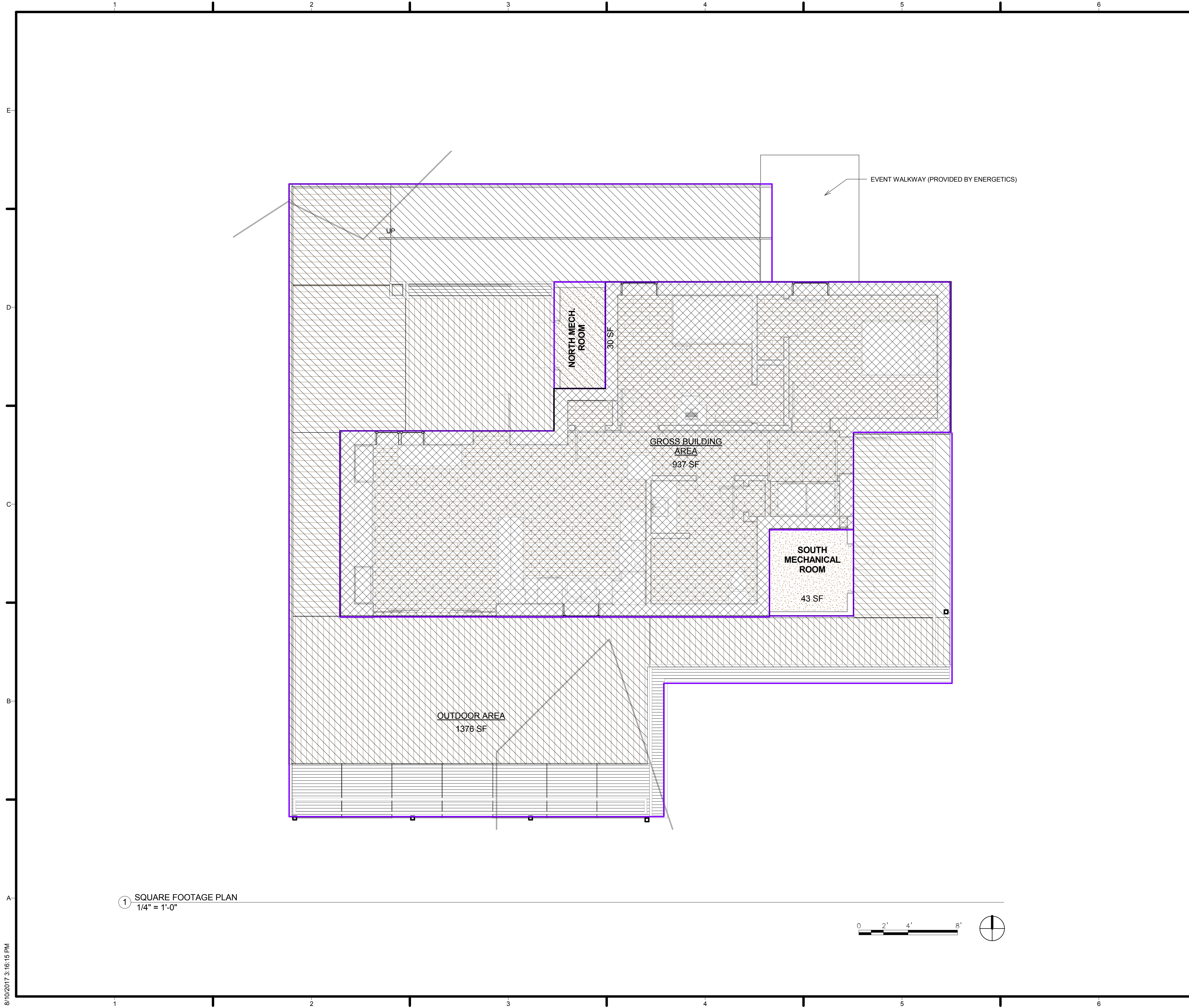
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① SITE PLAN  
 1/8" = 1'-0"



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① SQUARE FOOTAGE PLAN  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

GROSS BUILDING AREA: 937 SF.  
 GROSS OUTDOOR AREA: 1276 SF.  
 UNFINISHED NORTH MECH. ROOM AREA: 30 SF  
 UNFINISHED SOUTH MECH. RM AREA: 43 SF  
 TOTAL PROJECT AREA: 2286 SF  
 AREA PERTAINING TO MECHANICAL ROOM IS UNFINISHED AND UNCONDITIONED. IT IS NOT INCLUDED IN GROSS BUILDING AREA.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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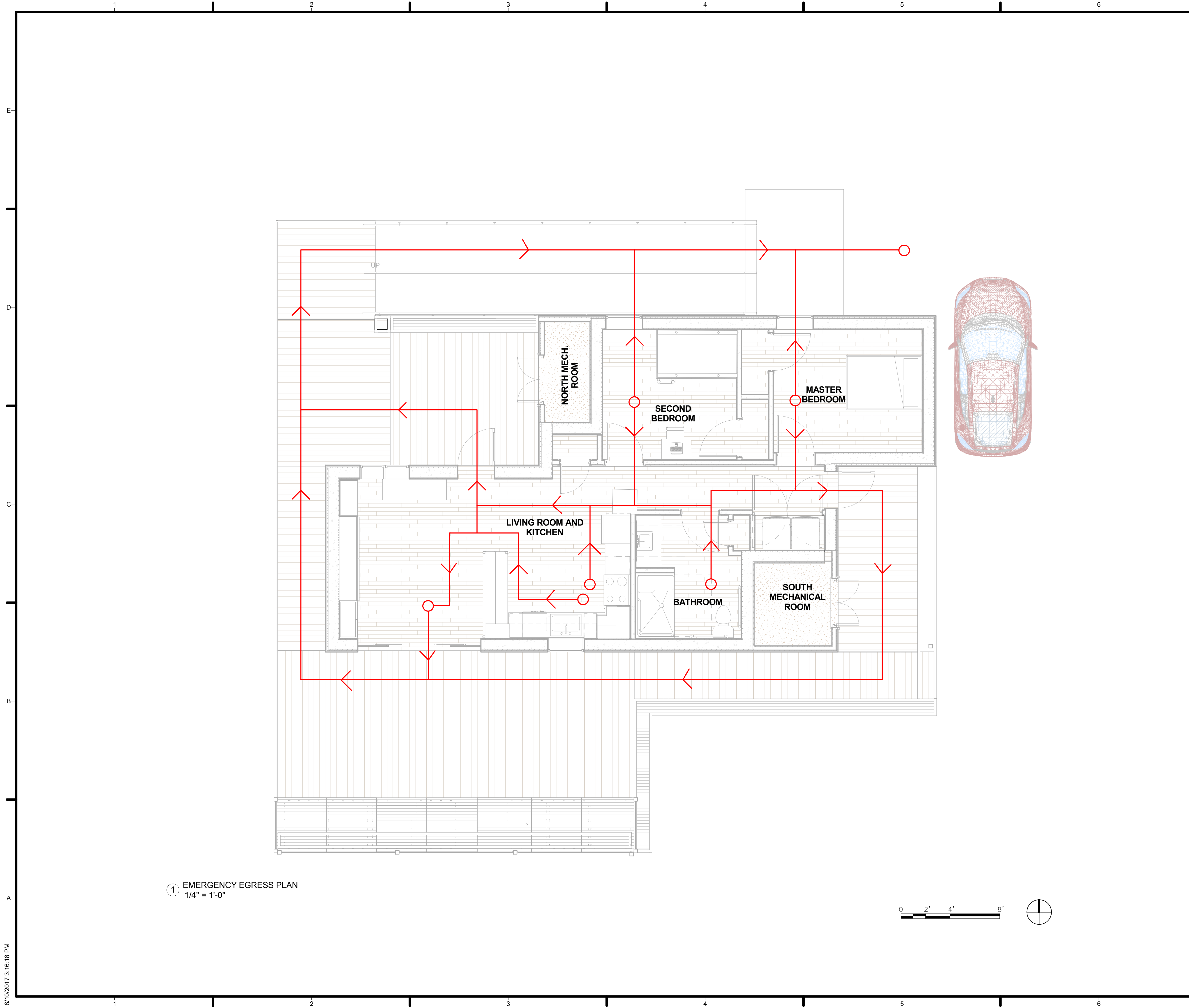
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SHEET TITLE  
**FINISHED SQUARE FOOTAGE COMPLIANCE PLAN**

**G-102**

8/10/2017 3:16:15 PM





① EMERGENCY EGRESS PLAN  
1/4" = 1'-0"



8/10/2017 3:16:18 PM

**GENERAL SHEET NOTES**

IN CASE OF AN EMERGENCY THAT REQUIRES EVACUATION OF THE PUBLIC, THE ROUTES SHOWN IN THE FLOOR PLAN TO THE LEFT WILL BE FOLLOWED.

STUDENT TOUR GUIDES WILL ESCORT THEIR GROUP OUT OF THE HOUSE VIA THE PROPOSED ROUTES IN DIRECT RELATION TO THE URGENCY OF THE EMERGENCY. IT WILL BE UP TO THE DISCRETION OF THE TOUR GUIDE TO DETERMINE WHICH ROUTE OR ROUTES ARE MOST EXPEDIENT FOR THE LIMITATIONS OF THE GROUP.

ONCE ALL OF THE TOUR GROUPS HAVE BEEN ESCORTED SAFELY OUT OF THE HOUSE AND GATHERED AT A SAFE DISTANCE, THE TEAM LEAD WILL CONFIRM WITH TOUR GUIDES THAT EVERYONE IS SAFELY OUT OF THE HOUSE AND INFORM EVENT ORGANIZERS ABOUT THE SITUATION.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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 DAVIS, CA 95616  
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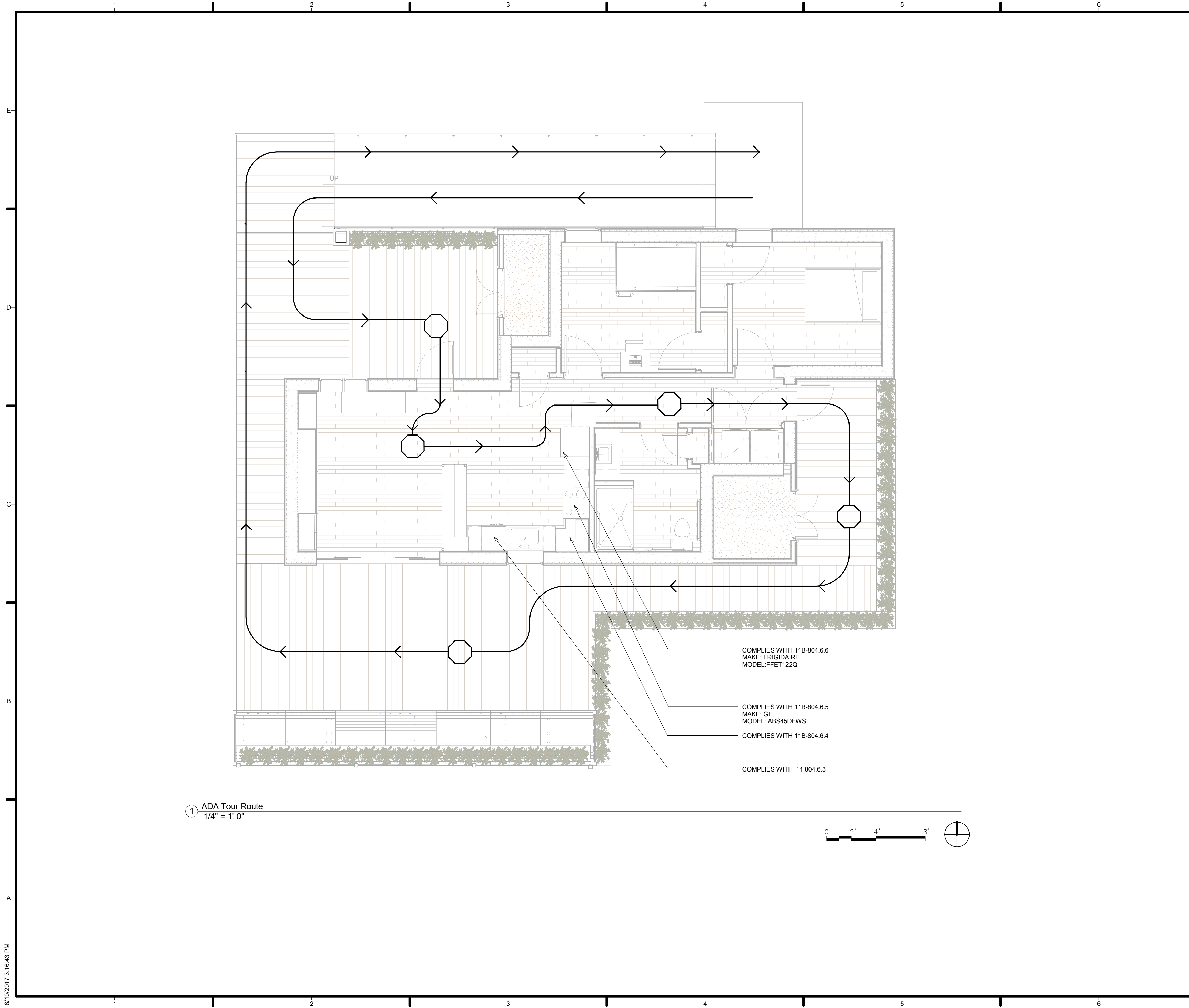
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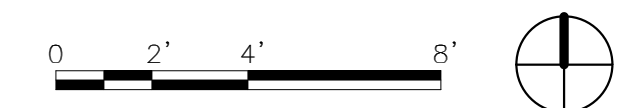
SHEET TITLE  
**EMERGENCY EGRESS PLAN**

**G-103**





① ADA Tour Route  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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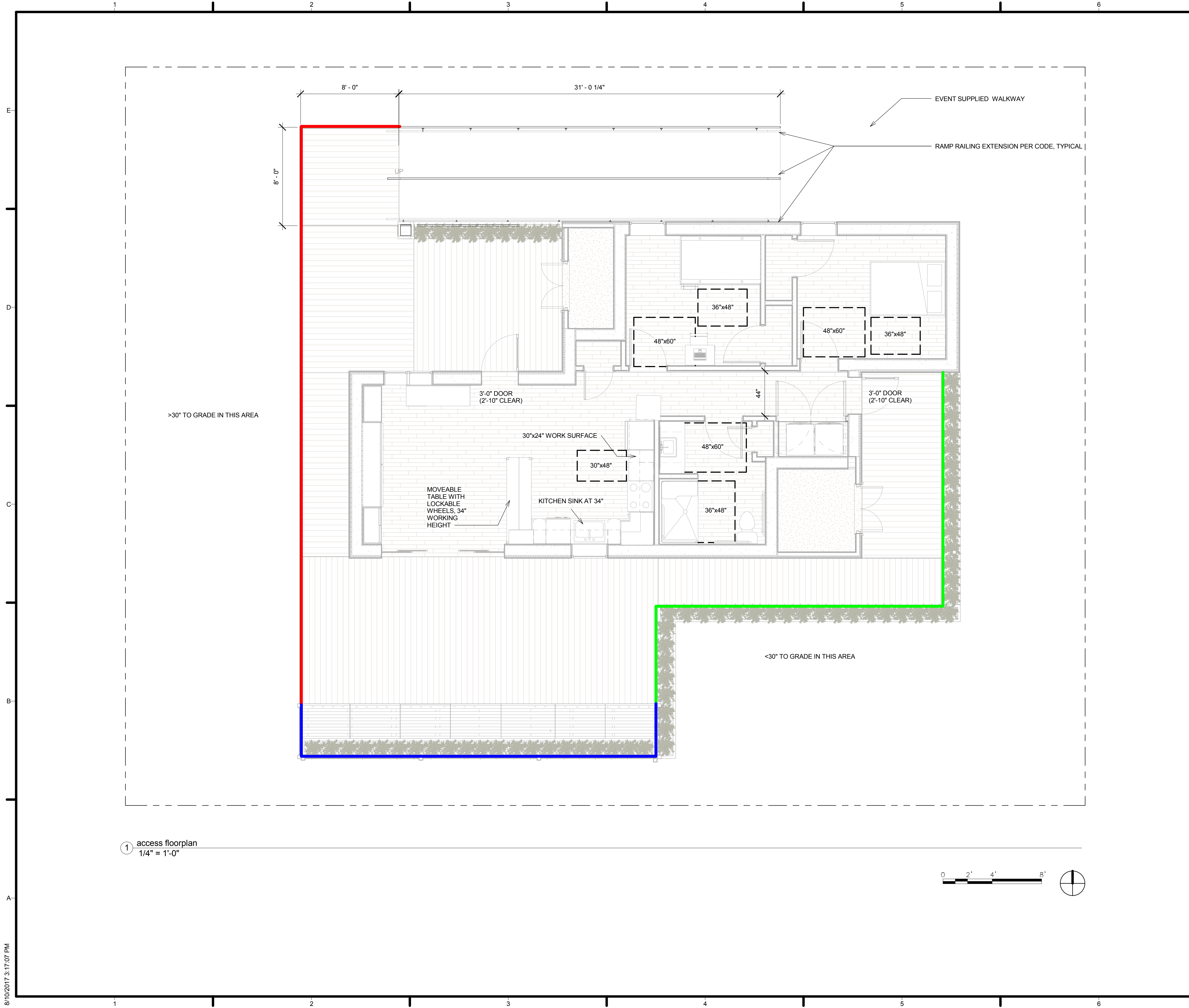
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SHEET TITLE  
**ADA TOUR ROUTE COMPLIANCE PLAN**

**G-104**

8/10/2017 3:16:43 PM





**GENERAL SHEET NOTES**

FALL PROTECTION  
 IN AREAS WHERE GRADE IS 30" OR MORE FROM THE DECK SURFACE, A RAILING WILL BE INSTALLED TO THE SPECIFICATIONS OUTLINED IN CBC

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- 36" RAILING PER CODE
- 42" RAILING AT BENCH LEVEL
- 6" RAISED PLANTER BOX



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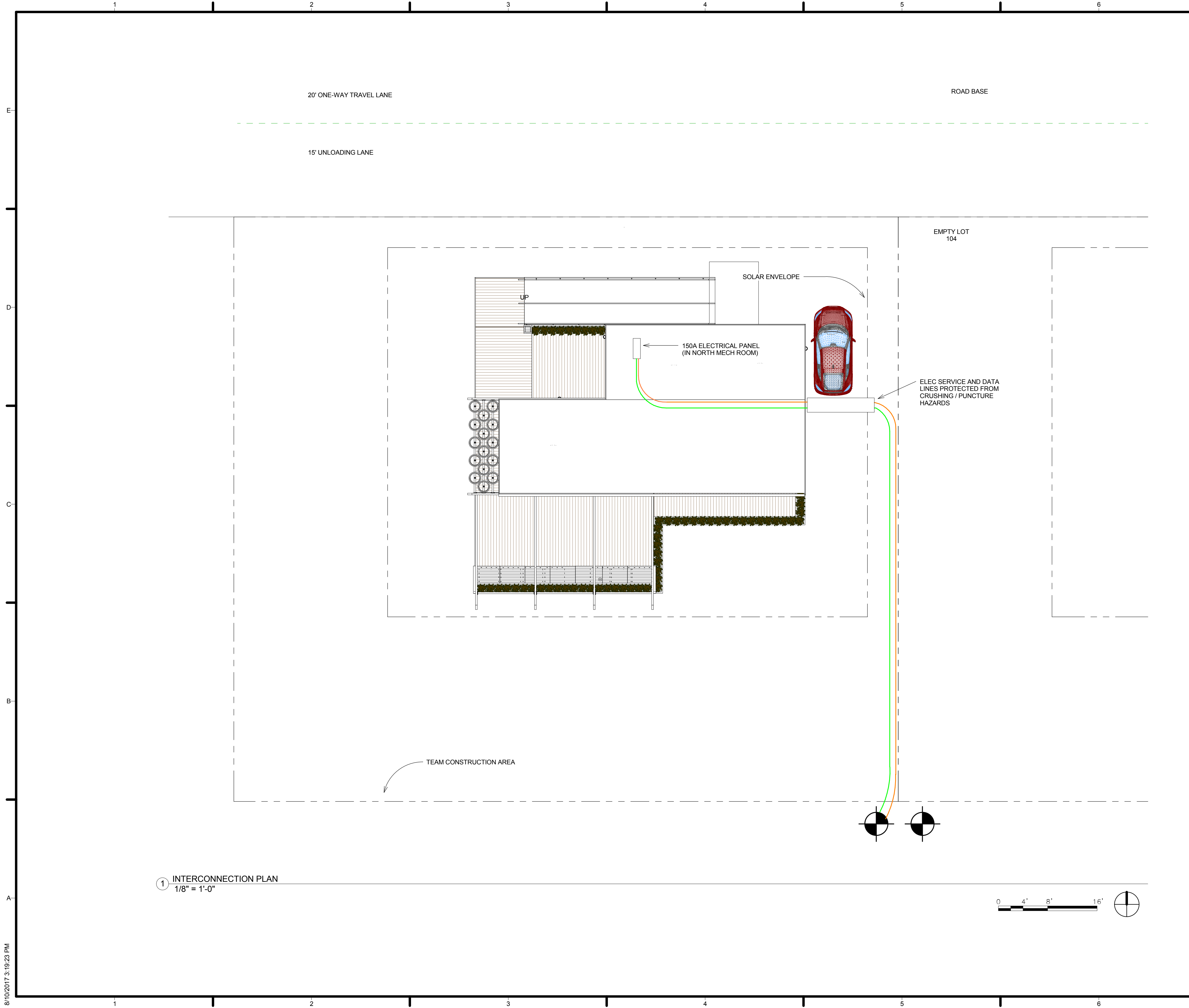
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SHEET TITLE  
**ACCESS COMPLIANCE**

**G-105**

8/10/2017 3:17:07 PM





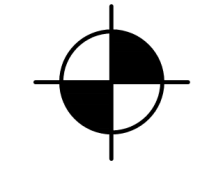


① INTERCONNECTION PLAN  
1/8" = 1'-0"

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND


-  150A SERVICE
-  3 CONDUCTOR CABLE, W/ GROUND (SIZED PER CODE)
-  EVENT MONITORING LINES



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SHEET TITLE  
**INTERCONNECTION PLAN**

**G-121**





**OUR H<sub>2</sub>OUSE**

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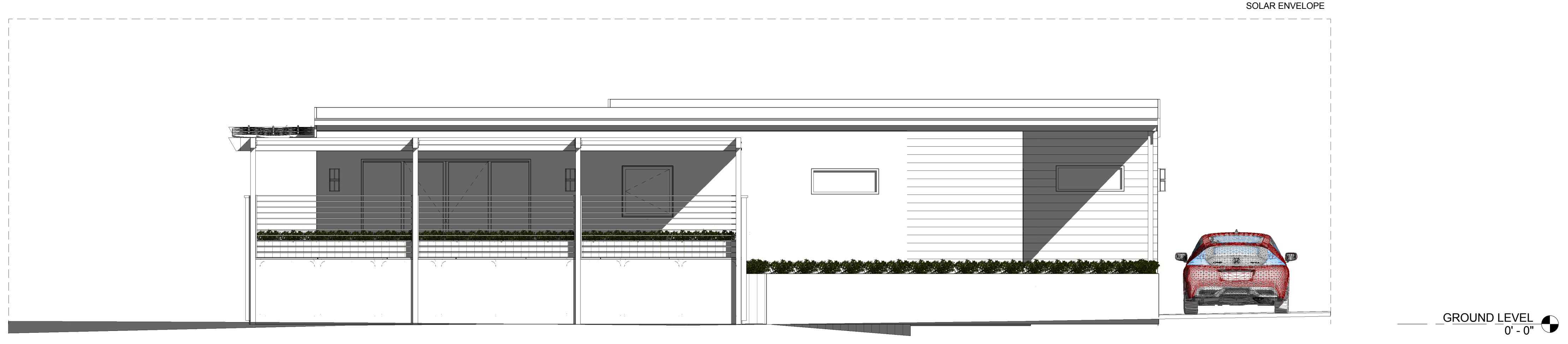


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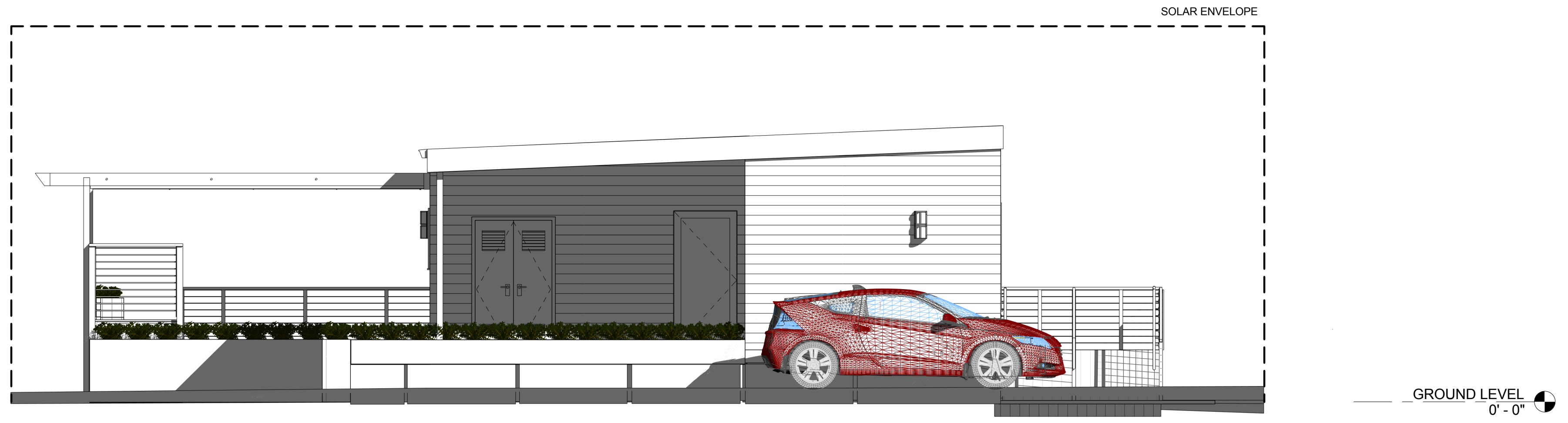
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SHEET TITLE  
**SOLAR ENVELOPE COMPLIANCE ELEVATIONS**

**G-201**



① SOLAR ENVELOPE COMPLIANCE  
 1/4" = 1'-0"

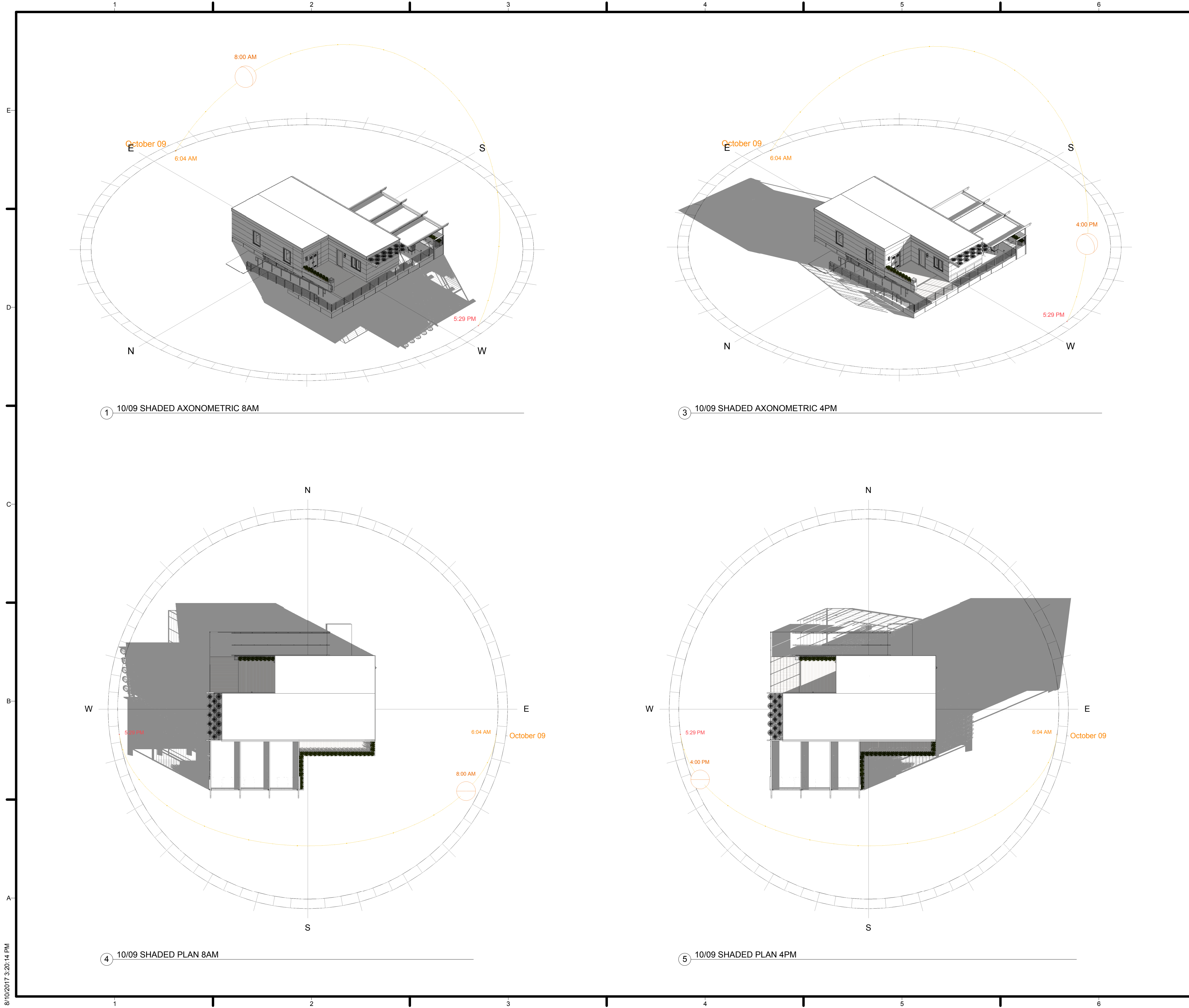


② East Elevation1  
 1/4" = 1'-0"



8/10/2017 3:19:56 PM





① 10/09 SHADED AXONOMETRIC 8AM

③ 10/09 SHADED AXONOMETRIC 4PM

④ 10/09 SHADED PLAN 8AM

⑤ 10/09 SHADED PLAN 4PM

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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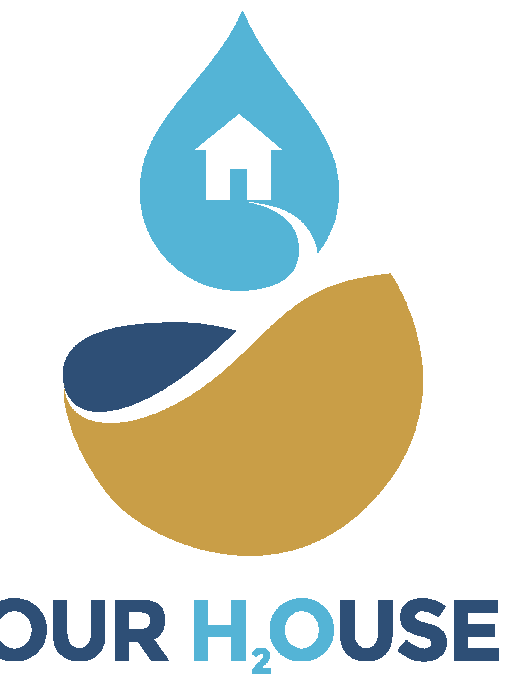
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SHEET TITLE  
 SHADING DIAGRAMS

G-601

8/10/2017 3:20:14 PM





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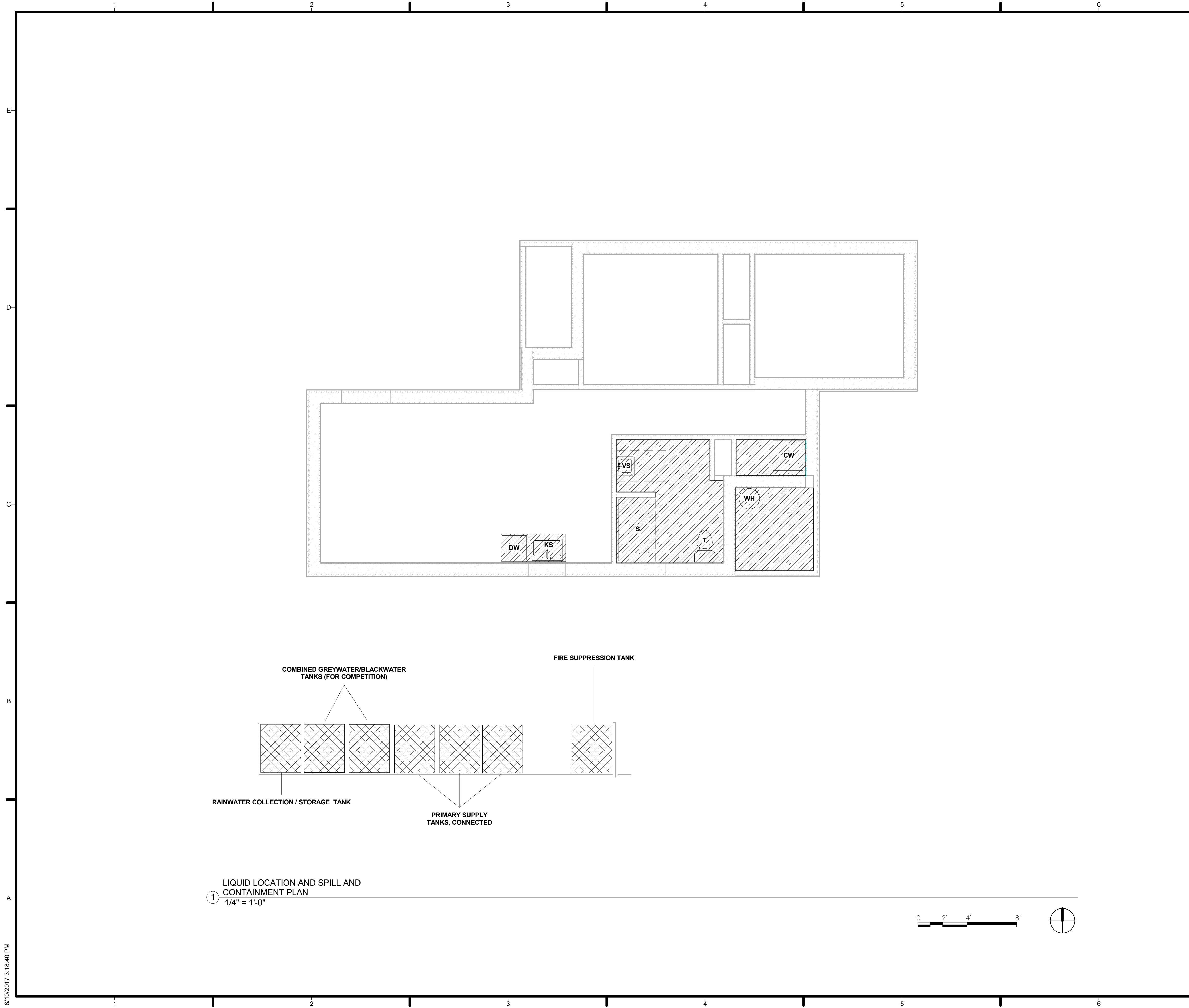
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SHEET TITLE  
 GENERAL PROJECT RENDERINGS

G-901





**GENERAL SHEET NOTES**

ALL IBC CONTAINERS WILL BE PLACED SOUTH OF THE SOUTH DECK AND WILL SERVE SUPPLY, DRAINAGE, AND POSSIBLE RAINWATER COLLECTION PURPOSES AS SHOWN.  
 ACTUAL PIPING CONNECTIONS ARE SHOWN ON RESPECTIVE SHEETS.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- WETTED AREAS
- TANKS
- DW DISH WASHER
- KS KITCHEN SINK
- S SHOWER
- T TOILET
- WH WATER HEATER
- CW CLOTHES WASHER
- VS VANITY SINK



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SHEET TITLE  
**LIQUID LOCATION AND SPILL CONTAINMENT**

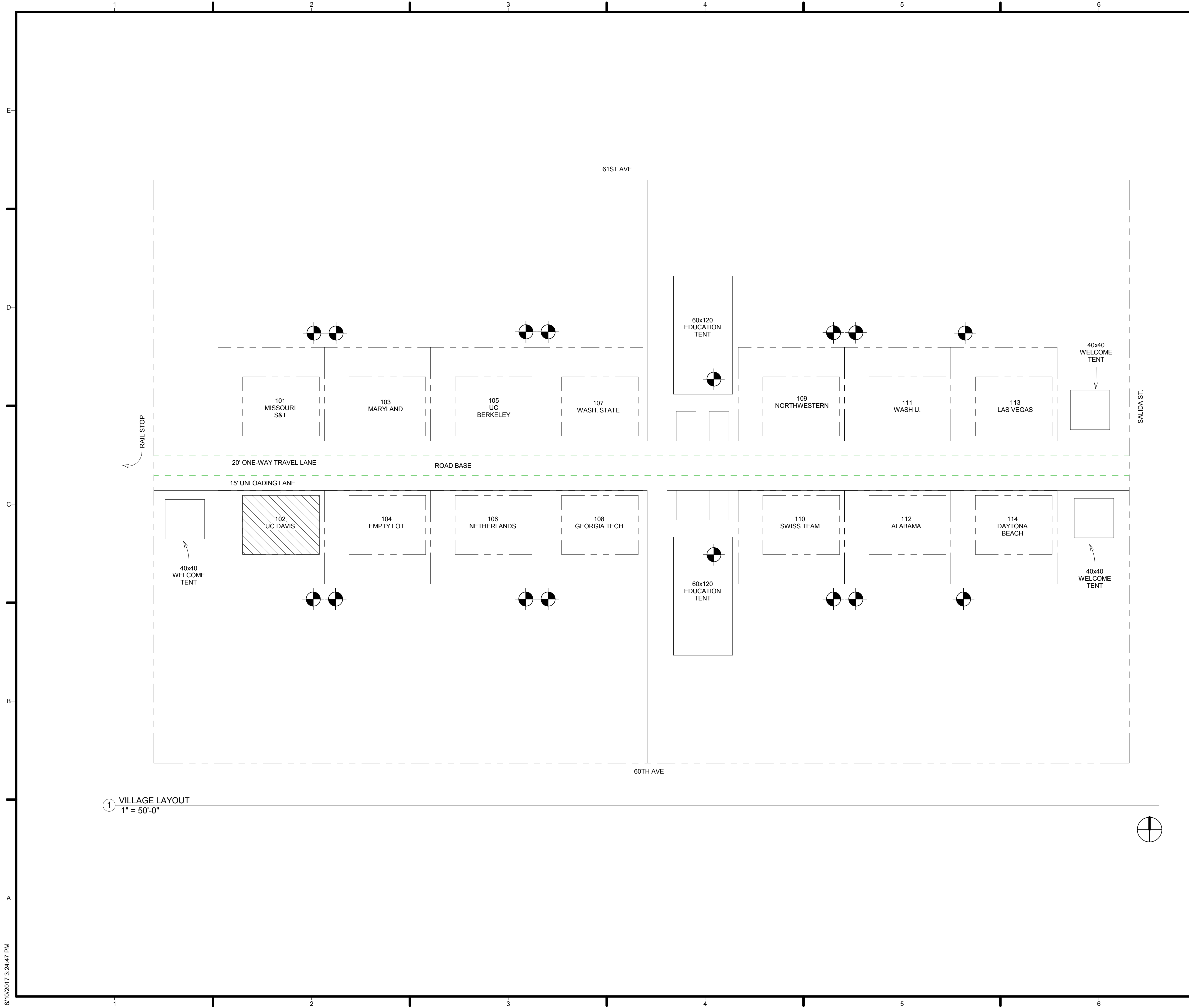
**H-101**

① LIQUID LOCATION AND SPILL AND CONTAINMENT PLAN  
 1/4" = 1'-0"



8/10/2017 3:18:40 PM





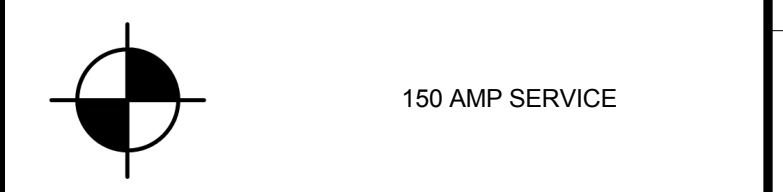
1 VILLAGE LAYOUT  
1" = 50'-0"

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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SHEET TITLE  
 LOCATION PLAN

V-101



**ICC : 2013 CALIFORNIA BUILDING CODE**

**SECTION 1114A EXTERIOR RAMPS AND LANDINGS ON ACCESSIBLE ROUTES**  
**1114A.1** WIDTH. THE CLEAR WIDTH OF RAMPS SHALL BE CONSISTENT WITH THE REQUIREMENTS IN CHAPTER 10 OF THIS CODE, BUT IN NO CASE SHALL BE LESS THAN 48 INCHES (1219 MM). HANDRAILS MAY PROJECT INTO THE REQUIRED CLEAR WIDTH OF THE RAMP AT EACH SIDE 3 1/2 INCHES (89 MM) MAXIMUM AT THE HAND-RAIL HEIGHT. CURBS, WHEEL GUIDES AND/OR APPURTENANCES SHALL NOT PROJECT INTO THE REQUIRED CLEAR WIDTH OF RAMPS.

**1114A.2** SLOPE. THE MAXIMUM SLOPE OF RAMPS ON AN ACCESSIBLE ROUTE SHALL BE NO GREATER THAN 1 UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.33-PERCENT SLOPE). TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.

**1114A.4** LANDINGS. RAMP LANDINGS SHALL BE LEVEL AND COMPLY WITH THIS SECTION.

**1114A.4.1** LOCATION OF LANDINGS. LANDINGS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF EACH RAMP. INTERMEDIATE LANDINGS SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 30 INCHES (762 MM) OF VERTICAL RISE AND AT EACH CHANGE OF DIRECTION. LANDINGS ARE NOT CONSIDERED IN DETERMINING THE MAXIMUM HORIZONTAL DISTANCE OF EACH RAMP.

**1114A.4.2** SIZE OF TOP LANDINGS. TOP LANDINGS SHALL NOT BE LESS THAN 60 INCHES (1524 MM) WIDE. TOP LANDINGS SHALL HAVE A MINIMUM LENGTH OF NOT LESS THAN 60 INCHES (1524 MM) IN THE DIRECTION OF THE RAMP RUN. SEE SECTION 1126A.3 FOR MANEUVERING CLEARANCES AT DOORS.

**1114A.4.3** SIZE OF BOTTOM AND INTERMEDIATE LANDINGS. THE MINIMUM WIDTH OF BOTTOM AND INTERMEDIATE LANDINGS SHALL NOT BE LESS THAN THE WIDTH OF THE RAMP.

INTERMEDIATE LANDINGS SHALL HAVE A LENGTH IN THE DIRECTION OF RAMP RUN OF NOT LESS THAN 60 INCHES (1524 MM). BOTTOM LANDINGS SHALL HAVE A LENGTH IN THE DIRECTION OF RAMP RUN OF NOT LESS THAN 72 INCHES (1829 MM)

**114A.6 RAMP HANDRAILS**

**1114A.6.1** WHERE REQUIRED, HANDRAILS SHALL BE PROVIDED AT EACH SIDE OF RAMPS WHEN THE SLOPE EXCEEDS 1 UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE) EXCEPTIONS:

1. CURB RAMPS
2. RAMPS THAT SERVE AN INDIVIDUAL DWELLING UNIT MAY HAVE ONE HANDRAIL EXCEPT THAT RAMPS OPEN ON ONE OR BOTH SIDES SHALL HAVE HANDRAILS PROVIDED ON THE OPEN SIDE OR SIDES.
3. RAMPS AT EXTERIOR DOOR LANDINGS WITH LESS THAN 6 INCHES (152 MM) RISE OR LESS THAN 72 INCHES (1829 MM) IN LENGTH.

**1114A.6.2 HANDRAIL CONFIGURATION.**

**1114A.6.2.1** HANDRAIL HEIGHTS. THE TOP OF HANDRAILS SHALL BE 34 TO 38 INCHES (864 TO 965 MM) ABOVE THE RAMP SURFACE.

**1114A.6.2.2** HANDRAIL CONTINUITY. HANDRAILS ON ALL RAMPS SHALL BE CONTINUOUS WITHIN THE FULL LENGTH OF EACH RAMP RUN. INSIDE HANDRAILS ON SWITCHBACK OR DOGLEG RAMPS SHALL BE CONTINUOUS BETWEEN RAMP RUNS.

**SECTION 1131 A CHANGES IN LEVEL ON ACCESSIBLE ROUTES**

**1131A.1** CHANGES IN LEVEL NOT EXCEEDING 1/2 INCH. ABRUPT CHANGES IN LEVEL ALONG ANY ACCESSIBLE ROUTE SHALL NOT EXCEED 1/2 INCH (12.7 MM). WHEN CHANGES IN LEVEL DO OCCUR, THEY SHALL BE BEVELED WITH A SLOPE NO GREATER THAN 1 UNIT VERTICAL IN 2 UNITS HORIZONTAL (50-PERCENT SLOPE). CHANGES IN LEVEL NOT EXCEEDING 1/4 INCH (6.35 MM) MAY BE VERTICAL.

**1131A.2** CHANGES GREATER THAN 1/2 INCH (12.7 MM) SHALL BE MADE BY MEANS OF A SLOPED SURFACE NOT GREATER THAN 1 UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE), OR A RAMP, ELEVATOR OR PLATFORM (WHEEL CHAIR) LEFT.

**1132A.4** EXTERIOR LANDINGS OF PERVIOUS CONSTRUCTION (E.G., WOOD DECKING WITH SPACES) SHALL BE THE SAME LEVEL AS THE INTERIOR LANDING, EXCEPT THAT SECONDARY EXTERIOR DOORS MAY HAVE NO MORE THAN 1/2 INCH (12.7 MM) OF CHANGE IN HEIGHT BETWEEN FLOOR SURFACES. CHANGES IN LEVEL SHALL COMPLY WITH SECTION 1131A.

**IAPMO : 2013 CALIFORNIA PLUMBING CODE**

**CHAPTER 15 : ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATIONS**

**1502.1 (C)** GRAY WATER SHALL NOT BE USED IN SPRAY IRRIGATION, ALLOWED TO POND OR RUNOFF AND SHALL NOT BE DISCHARGED DIRECTLY INTO OR REACH ANY STORM SEWER SYSTEM OR ANY SURFACE BODY OF WATER.

**1502.1 (D)** HUMAN CONTACT WITH GRAY WATER OR THE SOIL IRRIGATED BY GRAY WATER SHALL BE MINIMIZED AND AVOIDED, EXCEPT AS REQUIRED TO MAINTAIN THE GRAY WATER SYSTEM. THE DISCHARGE POINT OF ANY GRAY WATER SUBSOIL IRRIGATION OR SUBSURFACE IRRIGATION FIELD SHALL BE COVERED BY AT LEAST 2 INCHES (51 MM) OF MULCH, ROCK, OR SOIL, OR A SOLID SHIELD TO MINIMIZE THE POSSIBILITY OF HUMAN CONTACT.

**1502.1 (E)** GRAY WATER MAY BE RELEASED ABOVE THE GROUND SURFACE PROVIDED AT LEAST TWO (2) INCHES OF (51 MM) OF MULCH, ROCK, OR SOIL, OR A SHIELD COVERS THE RELEASE POINT. OTHER METHODS WHICH PROVIDE EQUIVALENT SEPARATION ARE ALSO ACCEPTABLE.

**1502.2.1** GRAY WATER SHALL BE PERMITTED TO BE DIVERTED AWAY FROM A SEWER OR PRIVATE SEWAGE DISPOSAL SYSTEM AND DISCHARGE TO A MULCH BASIN FOR RESIDENTIAL OCCUPANCIES. GRAY WATER SHALL NOT BE USED TO IRRIGATE ROOT CROPS OR FOOD CROPS INTENDED FOR HUMAN CONSUMPTION THAT COME IN CONTACT WITH SOIL.

**CHAPTER 16 : NONPOTABLE RAINWATER CATCHMENT SYSTEMS**

**1602.9.3** COLLECTION SURFACES. RAINWATER SHALL BE COLLECTED FROM ROOF SURFACES, OR OTHER MANMADE, ABOVE-GROUND IMPERVIOUS COLLECTION SURFACES. RAINWATER COLLECTED FROM SURFACE WATER RUNOFF, VEHICULAR PARKING SURFACES OR MANMADE SURFACES AT OR BELOW GRADE SHALL COMPLY WITH THE WATER QUALITY REQUIREMENTS FOR ON-SITE TREATED NONPOTABLE GRAY WATER SECTION 1604.0 EXCEPTION: COLLECTED RAINWATER OR STORM WATER USED EXCLUSIVELY FOR SUBSURFACE LANDSCAPE IRRIGATION.

**1602.7** RAINWATER CATCHMENT SYSTEM MATERIALS. RAINWATER CATCHMENT SYSTEM MATERIALS SHALL COMPLY WITH SECTION 1702.7.1 THROUGH SECTION 1702.7.3

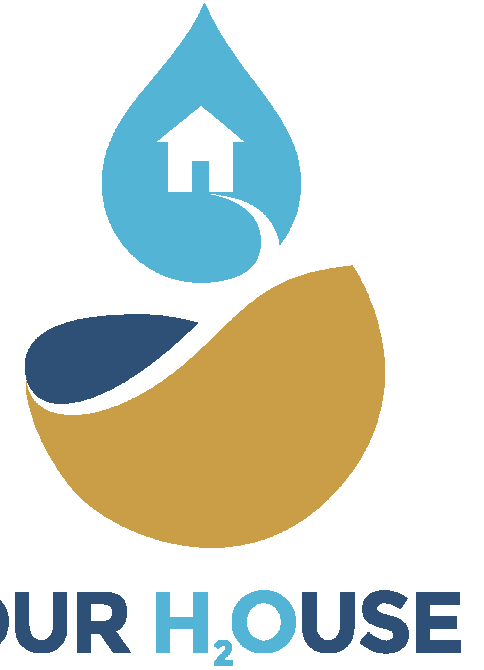
**1602.7.1** WATER SUPPLY AND DISTRIBUTION MATERIALS. RAINWATER CATCHMENT SUPPLY AND DISTRIBUTION MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THIS CODE FOR POTABLE WATER SUPPLY AND DISTRIBUTION SYSTEMS, UNLESS OTHERWISE PROVIDED FOR IN THIS SECTION.

**1602.7.2** RAINWATER CATCHMENT SYSTEM DRAINAGE MATERIALS. MATERIALS USED IN RAINWATER CATCHMENT DRAINAGE SYSTEMS, INCLUDING GUTTERS, DOWNSPOUTS, CONDUCTORS, AND LEADERS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CODE FOR STORM DRAINAGE.

**1602.7.3** STORAGE TANKS. RAINWATER STORAGE TANKS SHALL COMPLY WITH SECTION 1702.9.5.

LANDSCAPE SHEET INDEX

Sheet Number	Sheet Name
L-001	LANDSCAPE NOTES AND CODES
L-101	LANDSCAPE SITE PLAN
L-102	LANDSCAPE IRRIGATION PLAN
L-103	RAINWATER COLLECTION PLAN
L-201	LANDSCAPE NORTH AND SOUTH ELEVATIONS
L-202	LANDSCAPE EAST AND WEST ELEVATIONS
L-501	EAST PLANTER DETAIL
L-502	NORTH PLANTER DETAIL
L-503	SOUTH BENCH/PLANTER DETAIL
L-504	NORTH TANK DISPLAY FRAMING
L-601	PLANTING SCHEDULE



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 COPYRIGHT: NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**LANDSCAPE NOTES AND CODES**

**L-001**





① LANDSCAPE FLOOR PLAN  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

All ornamental plants are 5 gallon in-pot transplants. All vegetable crops are 1 month old seedling transplants.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**


- CP *Ceratostigma plumbaginoides*
- EI *Echeveria imbricata*
- FC *Festuca cinerea*
- NT *Nassella tenuissima*
- SL *Symphytotrichum lateriflorum*
- SS *Schizachyrium scoparium*
- VC Vegetable crop, variable



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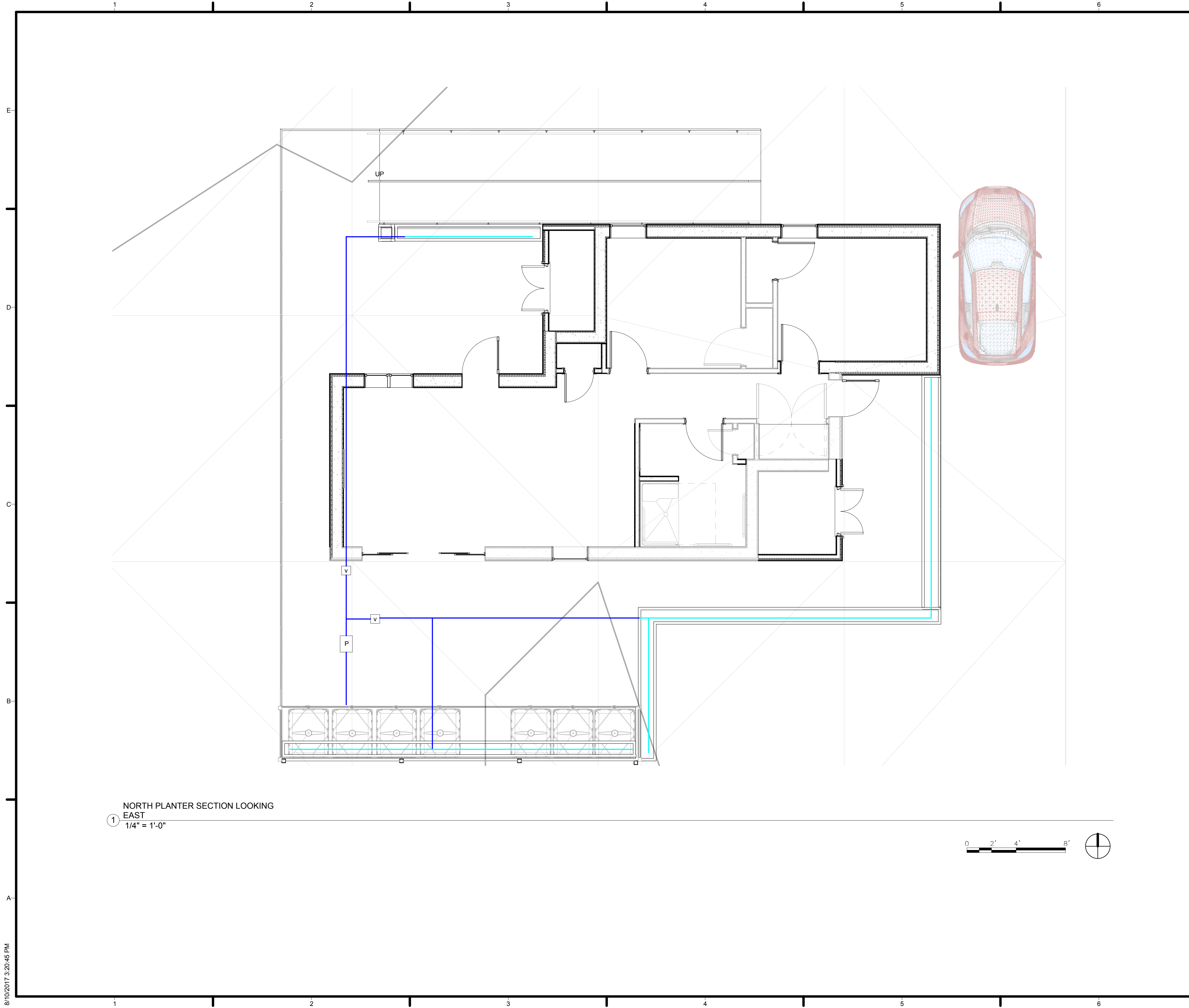
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03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
 COPYRIGHT: NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**LANDSCAPE SITE PLAN**

**L-101**





**GENERAL SHEET NOTES**

ALTHOUGH CODE COMPLIANT WITH CA 2016 PLUMBING CODE, GREYWATER IRRIGATION SYSTEM WILL NOT BE IN USE DURING THE COMPETITION.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- 1" SCH 40 PVC
- 1/4" POLY DRIP TUBING W/ PINCH DRIP EMITTERS
- V HUNTER PGV-101G VALVE
- P 1 HP WAYNE PLS100 SPRINKLER PUMP



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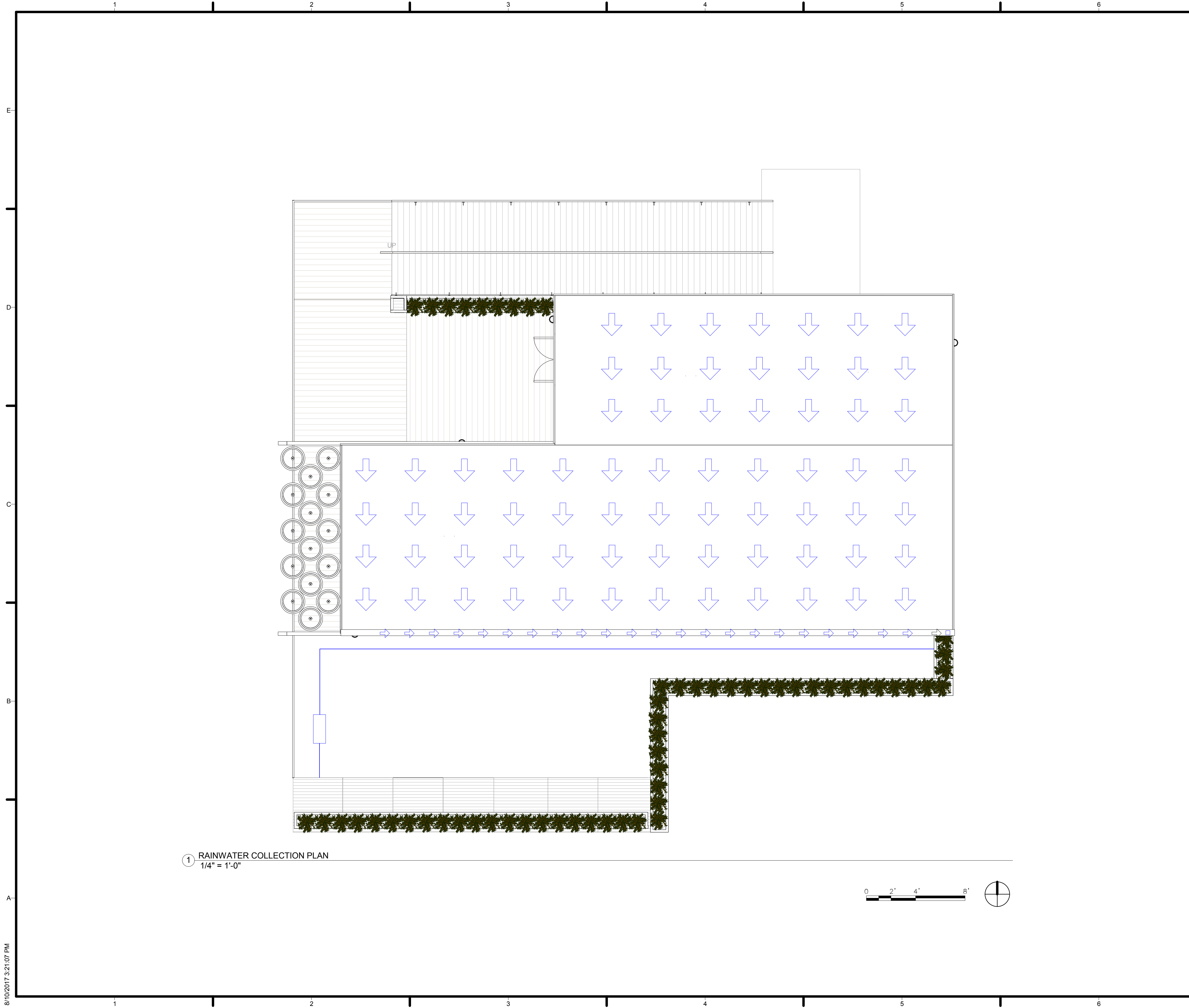
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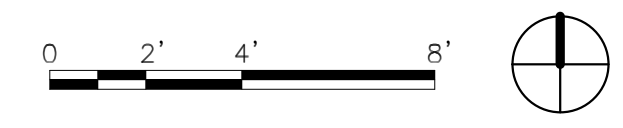
SHEET TITLE  
**LANDSCAPE IRRIGATION PLAN**

**L-102**





① RAINWATER COLLECTION PLAN  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

RAINWATER COLLECTION

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- SURFACE WATER DRAINAGE
- 3"x4" STEEL DOWNSPOUT
- 1" SCH 40 PVC
- First Flush Diverter



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SHEET TITLE  
**RAINWATER COLLECTION PLAN**

**L-103**





**OUR H<sub>2</sub>OUSE**

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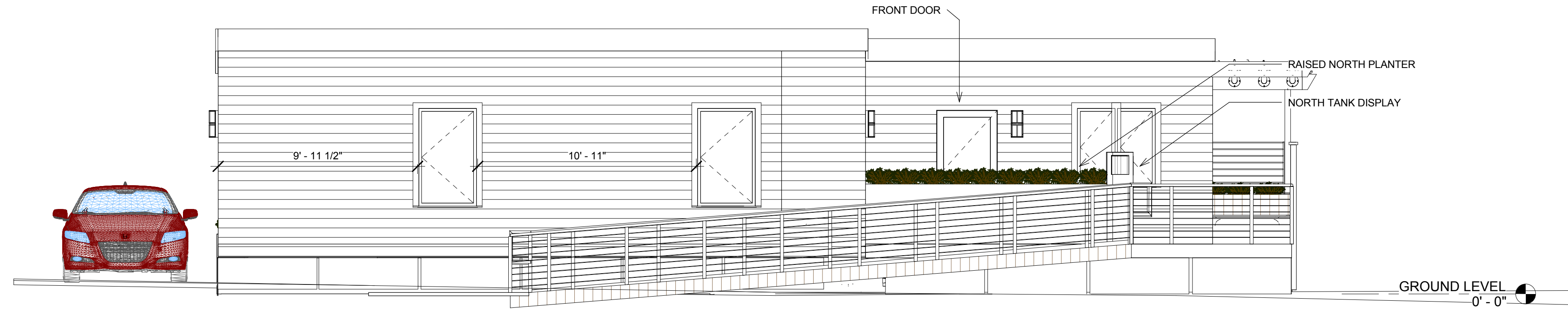


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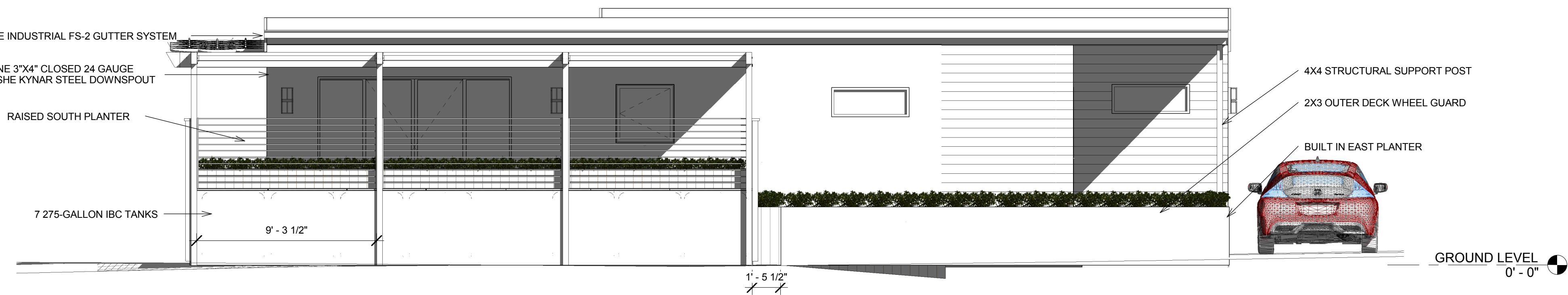
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SHEET TITLE  
**LANDSCAPE NORTH  
 AND SOUTH  
 ELEVATIONS**

**L-201**



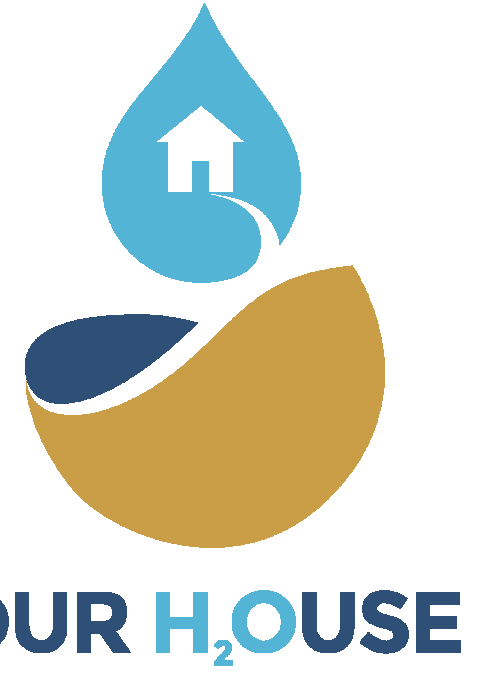
① LANDSCAPE NORTH ELEVATION  
 1/4" = 1'-0"



② LANDSCAPE SOUTH ELEVATION  
 1/4" = 1'-0"







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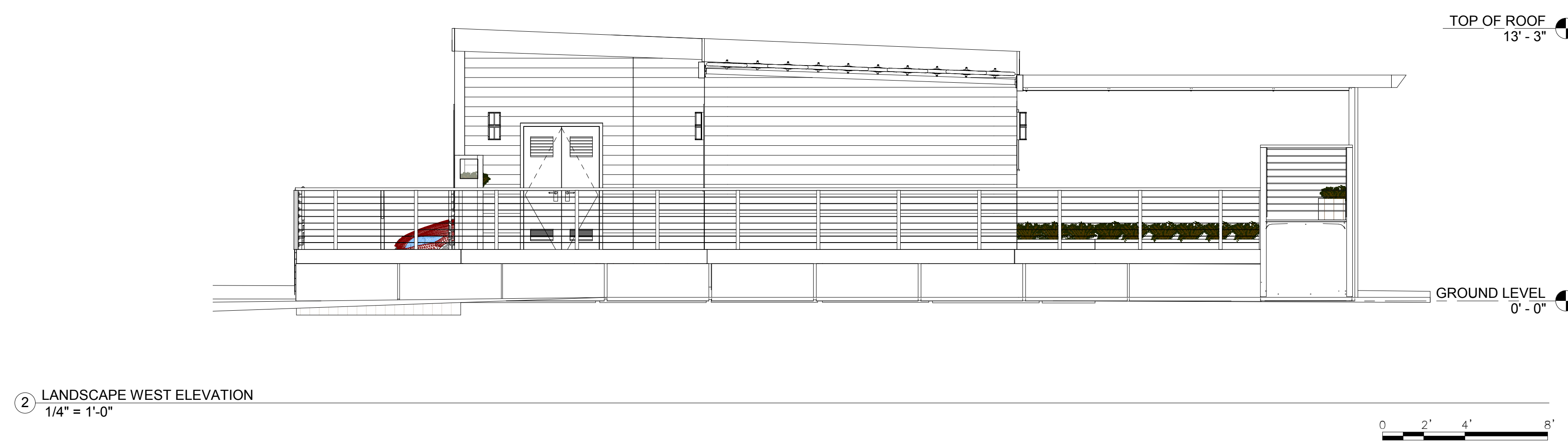
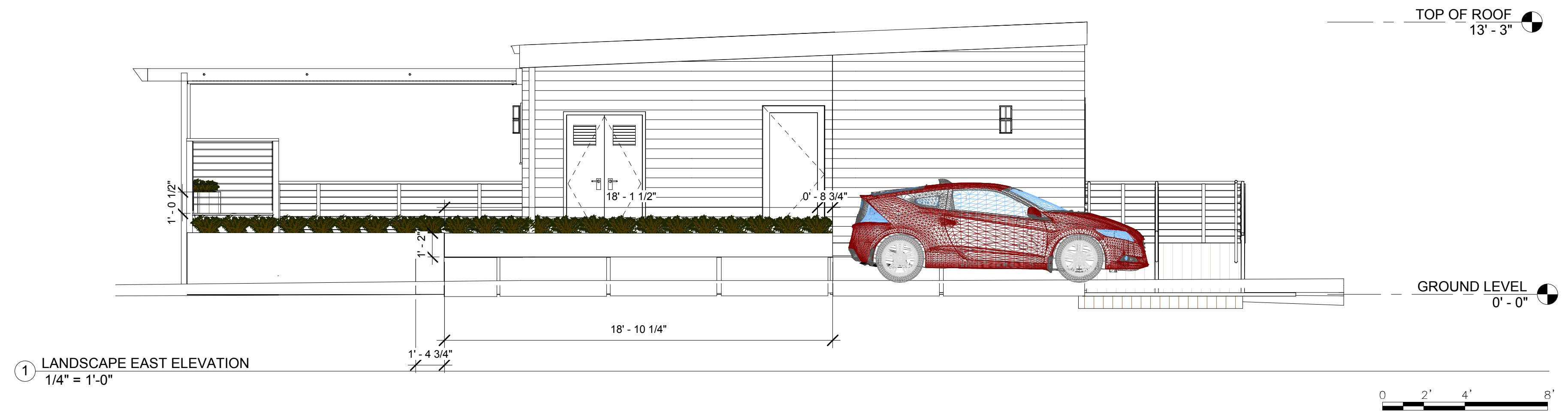


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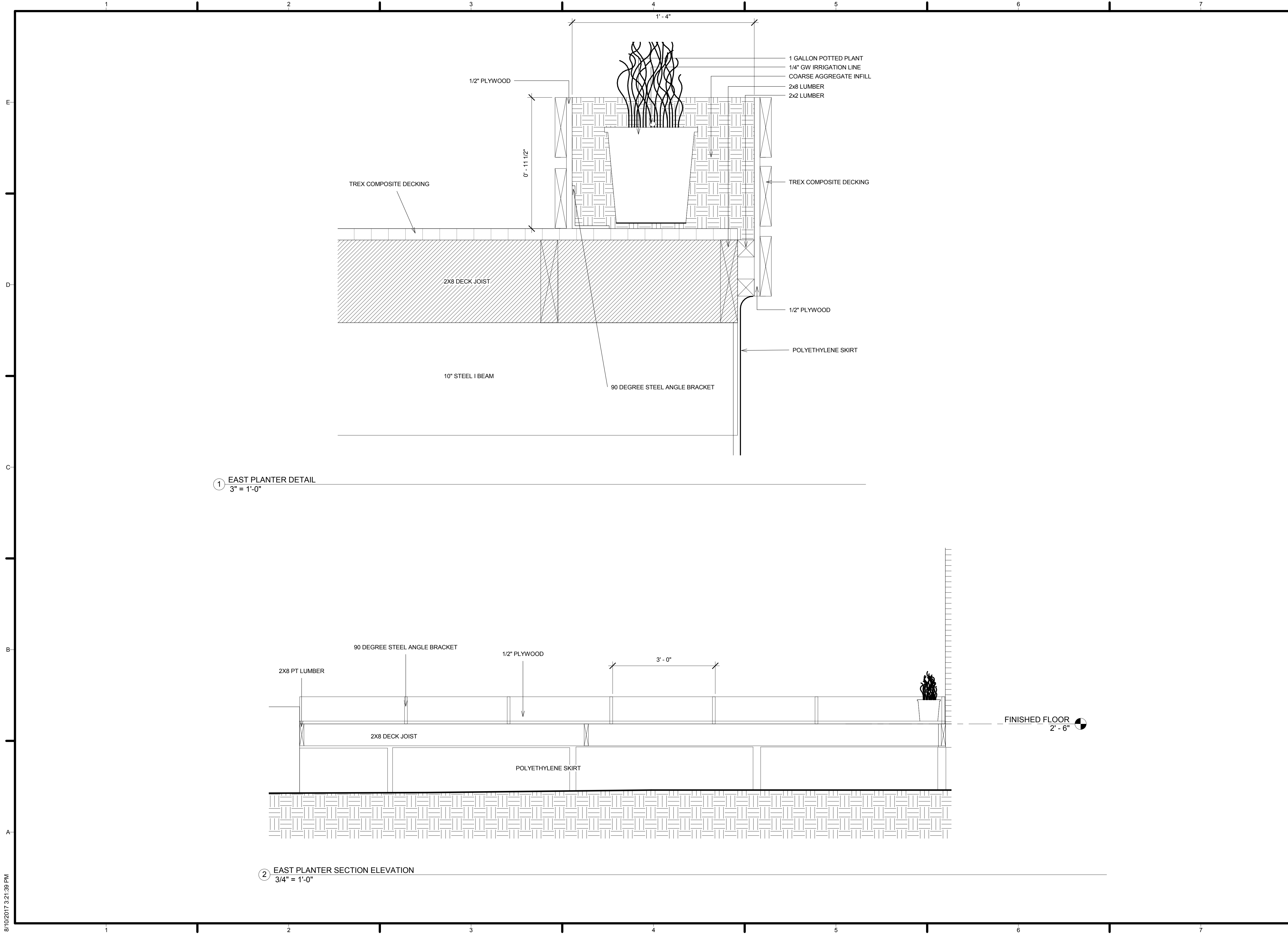
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 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
**LANDSCAPE EAST AND WEST ELEVATIONS**

**L-202**







① EAST PLANTER DETAIL  
3" = 1'-0"

② EAST PLANTER SECTION ELEVATION  
3/4" = 1'-0"



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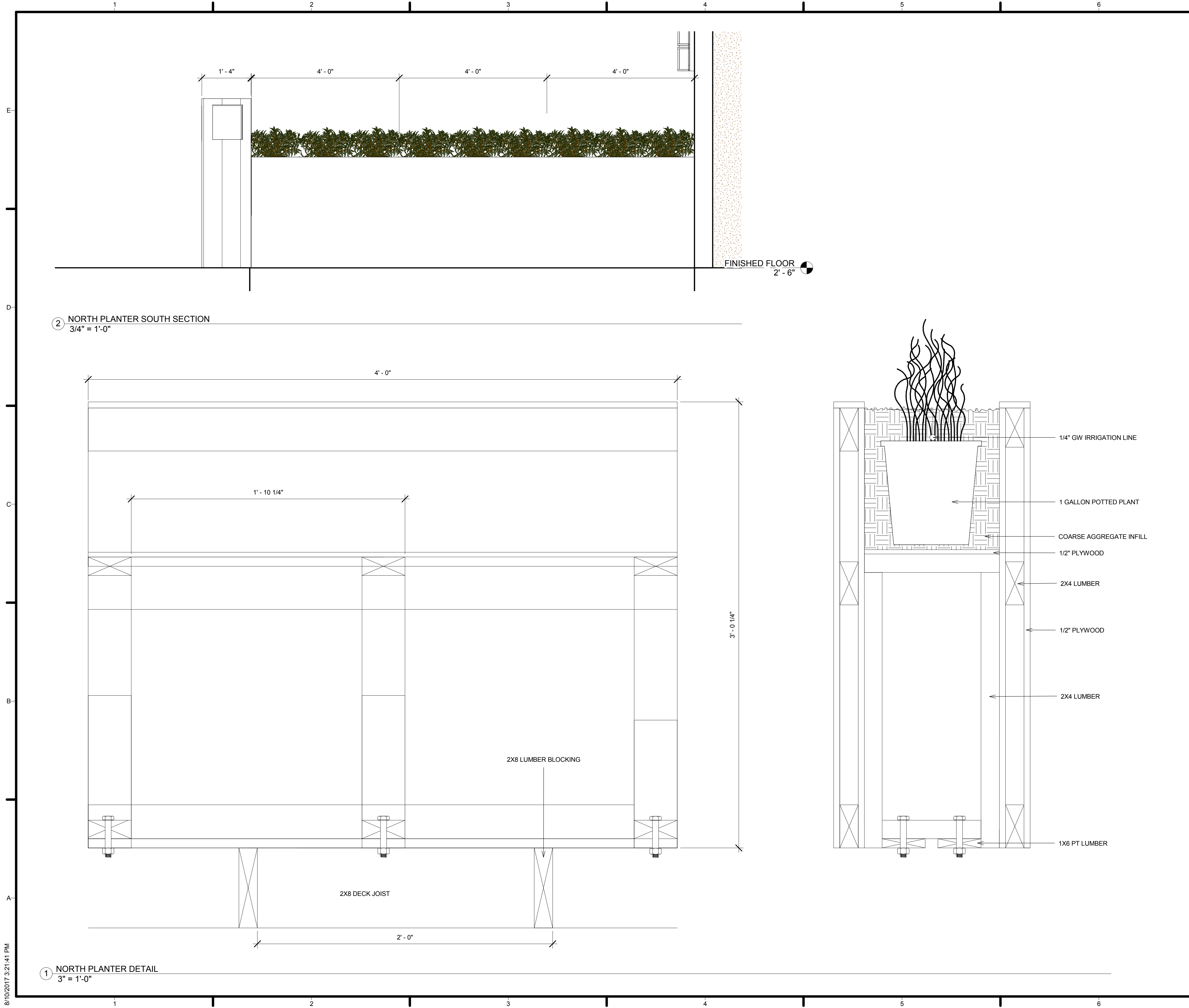
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SHEET TITLE  
**EAST PLANTER DETAIL**

**L-501**

8/10/2017 3:21:39 PM





GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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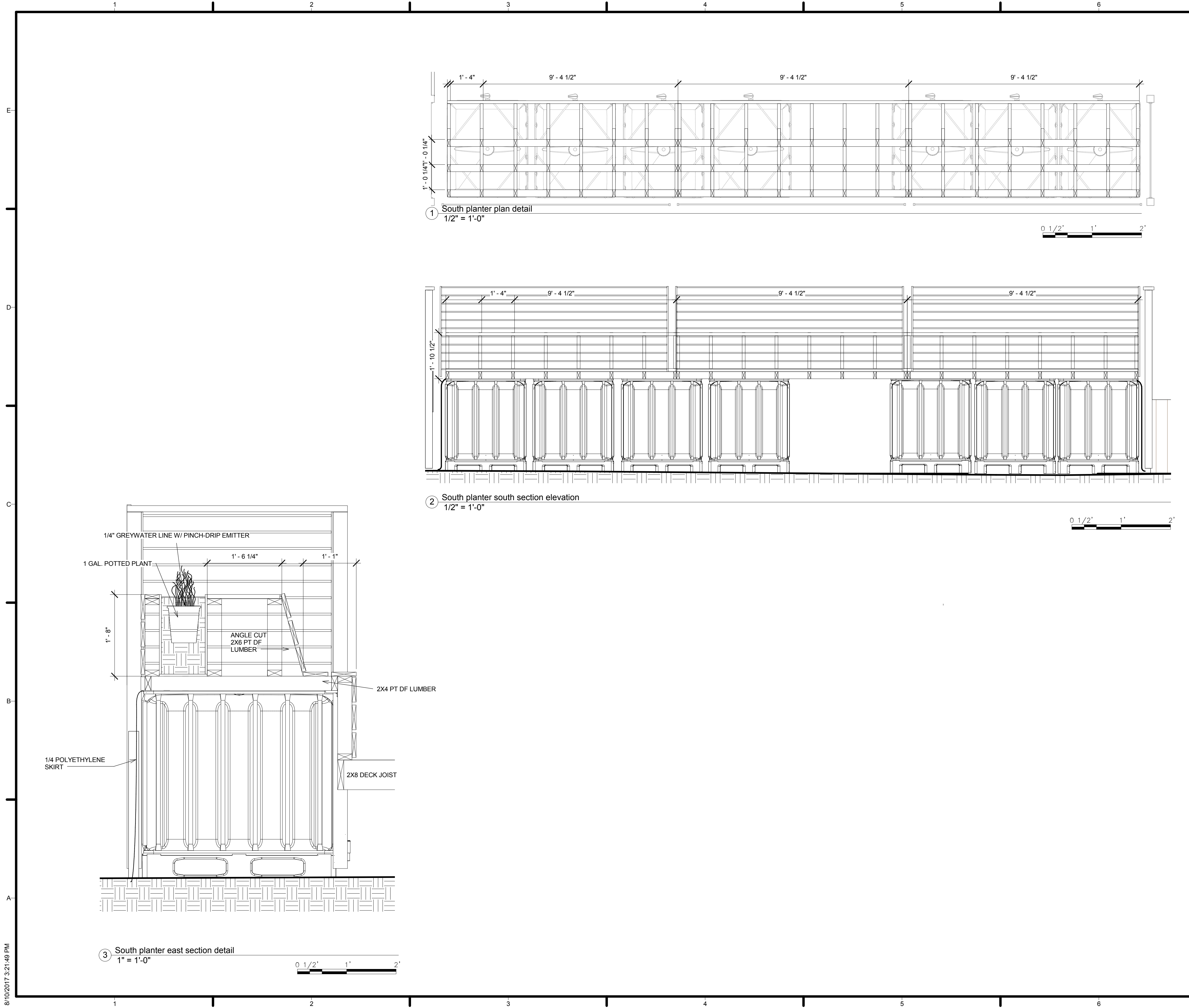
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SHEET TITLE  
 NORTH PLANTER  
 DETAIL

L-502

8/10/2017 3:21:41 PM





**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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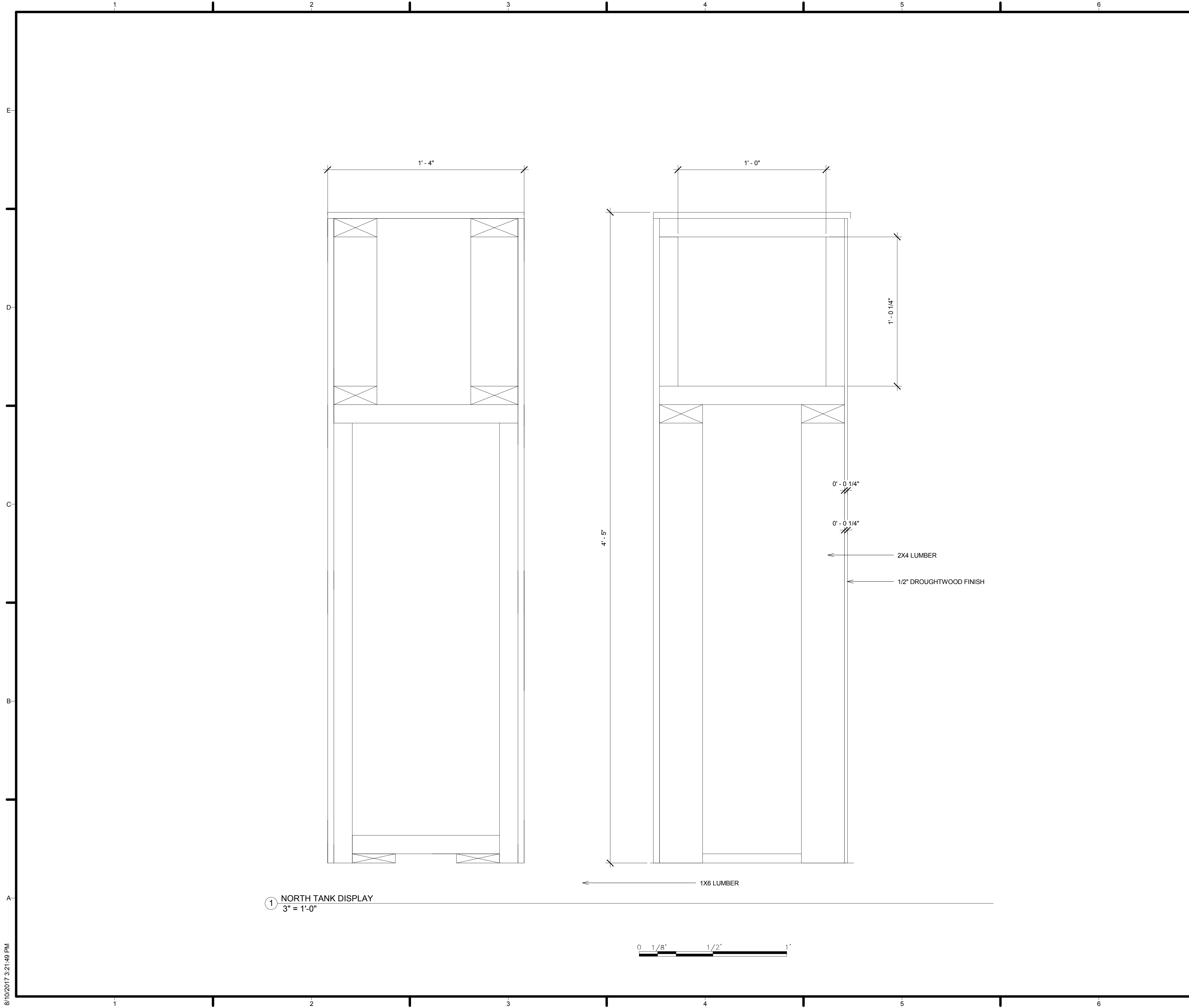
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 COPYRIGHT: NONE/PROJECT PUBLIC DOMAIN

SHEET TITLE  
**SOUTH BENCH/PLANTER DETAIL**

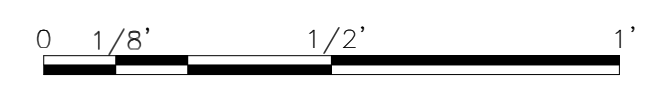
**L-503**

8/10/2017 3:21:49 PM





① NORTH TANK DISPLAY  
3" = 1'-0"



**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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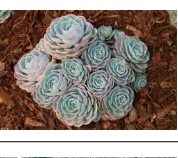



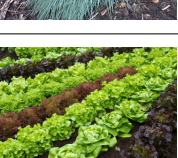





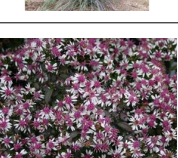

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SHEET TITLE  
**NORTH TANK DISPLAY  
 FRAMING**

**L-504**



Plant Schedule					
Scientific Name	Common Name	Count	Size	Image	Symbol
CERATOSTIGMA PLUMBAGINOIDES	DWARF PLUMBAGO	17	1 G		
ECHEVERIA 'IMBRICATA'	HENS AND CHICKS	17	1 G		
FESTUCA CINEREA	BOULDER BLUE FESCUE	17	1 G		
N/A	VEGETABLES-VARIABLE	84	Seedling Transplant		
NASSELLA TENUISSIMA	SILKY THREADGRASS	92	1 G		
SCHIZACHYRIUM SCOPARIUM	BLAZE LITTLE BLUESTEM	92	1 G		
SYMPHYOTRICHUM LATERIFLORUM	'LADY IN BLACK' ASTER	17	1 G		



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SHEET TITLE  
 PLANTING SCHEDULE

L-601



**LATERAL FORCE RESISTANCE SYSTEM NOTES**

- LATERAL LOAD IS EXPECTED TO BE TRANSFERRED TO LOAD BEARING WALLS BY BamCore SPECIFIED BRACKETS
- SHEAR LOADS WILL GET TRANSFERRED TO SIP FLOOR SYSTEM BY WALL'S BOTTOM METAL RACKS TO FLOOR AND SYMPSON LTP5 FASTENERS.
- 1/2 INCH THREADED BOLTS ARE SPECIFIED TO TRANSFER SHEAR LOADS FROM FLOOR SYSTEM TO TRAILERS.
- CP-SEISMIC PIERS ARE SPECIFIED TO COUNTINUE THE SHEAR LOADS TO THE GROUND.

**FOUNDATIONS**

- THE FOUNDATION DESIGN IS BASED ON SOLAR DECATHLON WIND, SEISMIC, AND SNOW LOAD ASSUMPTIONS.
- FOUNDATION TYPE:  
HOUSE:  
SEISMIC PIER SPA 30-5F BY CENTRAL PIERS, INC.  
STANDARD PIER BY CENTRAL PIER, INC  
DECK:  
STANDARD PIER BY CENTRAL PIER, INC
- ALLOWABLE LOADS PER PIER PRE-APPROVAL:

VERTICAL RESISTANCE:  
SEISMIC PIER SPA 30-5F 8251 lbs  
STANDARD PIER 6000 lbs

LATERAL RESISTANCE:  
SEISMIC PIER SPA 30-5F 1893 lbs  
STANDARD PIER 0 lbs (NOT APPROVED FOR LATERAL RESISTANCE)

UPLIFT RESISTANCE:  
SEISMIC PIER SPA 30-5F 2133 lbs  
STANDARD PIER 0 lbs (NOT APPROVED FOR UPLIFT RESISTANCE)

**BamCore WALL GENERAL NOTES:**

**LOAD BEARING/EXTERIOR WALLS - OUTSIDE PANEL RUN:**  
WITH THE BOTTOM TRACK IN POSITION, PANEL ASSEMBLY BEGINS AT THE ADJOINING CORNERS OF THE TWO ENDS OF A SINGLE WALL SECTION. THE OUTSIDE PANELS OF THE EXTERIOR WALL ARE ASSEMBLED FIRST USING THE OUTSIDE FOLD OF THE BOTTOM TRACK. AFTER THE OUTSIDE PANELS ARE COMPLETED ON THE EXTERIOR WALL, THE INSIDE RUN OF PANELS CAN BE INSTALLED IN SIMILAR MANNER.

AT EACH CORNER, PLACEMENT BEGINS WITH THE TWO PRE-MITERED ADJOINING PANELS ON BOTH SIDES OF THE CORNER. STARTING IN THE CORNERS ALLOWS THE TWO RIGHT-ANGLED PANELS TO PROVIDE THE INITIAL BRACING SUPPORT TO HOLD THE PANELS VERTICAL WHILE RUN OF ADJOINING PANELS BETWEEN THE TWO CORNERS ARE INSTALLED. THE PRE-MITERED CORNER PANELS ARE PLACED OVER THE BOTTOM TRACK OUTSIDE FOLD, WHICH IS 1/2" HIGH, THEN A SHEET METAL CORNER SPLINE IS SLIDE BETWEEN THE ADJOINING MITERED CORNER PANELS. EACH SIDE OF THE CORNER SPLINE IS 1/2" WIDE. FINALLY, ADJOINING PANELS ARE THEN BE ADDED ALONG THE OUTSIDE FOLD OF THE BOTTOM TRACK. TWO METHODS ARE USED TO JOIN ADJACENT PANELS. DEPENDING ON APPLICATION: (1) A METAL SPLINE PLACED IN GROOVES OF THE ADJACENT PANELS OR (2) A SIMPLE SHIPLAP JOINT WITHOUT A SPLINE. IN THE SPLINE METHOD, A 3" WIDE FLAT SPLINE IS INSERTED INTO THE SLOTS IN ALONG THE VERTICAL SIDES OF EACH PANEL SO THAT 1/4" OF THE METAL SPLINE PROTRUDES INTO THE SLOTS OF THE ADJOINING PANELS. NO IMAGE IS SHOWN OF THE BASIC MORE BASIC SHIPLAP JOINT.

AS THE FULL-WIDTH PANELS ARE ADDED IN THE RUN COMING FROM EACH CORNER, A LAST OPEN SECTION OF A WIDTH LESS THAN 4" THAT IS SPECIFIC TO THE WALL LENGTH WILL REMAIN TO BE PLACED. TYPICALLY, THE LAST PANEL IS JOINED TO THE OTHERS BY THE SHIPLAP JOINT. DEPENDING ON THE STRAIGHT-RUN LENGTH OF THE EXTERIOR WALL, TEMPORARY BRACING CAN BE ADDED FOR STABILITY UNTIL THE ENTIRE WALL SYSTEM IS LOCKED INTO POSITION.

AS THE PANELS ARE PLACED INTO POSITION OVER THE FOLDS OF THE BOTTOM TRACKS OR THE SPLINES ARE INSERTED IN CORNERS AND BETWEEN ADJOINING PANELS, ONLY A RUBBER MALLET IS NEEDED TO POSITION THE PANELS TIGHTLY INTO PLACE. ONCE ALL MEMBERS OF THE OUTSIDE RUN OF THE EXTERIOR WALL PANELS ARE IN PLACE, THE FULL RUN OF WALL CAN BE SCREWED OFF WITH 1/2" SELF-THREADING #10 SCREWS. SCREW LENGTH AND PLACEMENTS.

**LOAD BEARING/EXTERIOR WALLS - INSIDE PANEL RUN:**  
WITH THE OUTSIDE PANELS OF THE EXTERIOR WALL IN PLACE, THE INSIDE PANELS OF THE EXTERIOR WALL CAN QUICKLY BE ASSEMBLED. THE SAME PROCEDURE OF STARTING WITH THE TWO ADJOINING CORNER PANELS AND THEN PLACING THE STRAIGHT RUN OF PANELS IS FOLLOWED. WHEN NEEDED (ESPECIALLY IN LONGER WALL RUN SECTIONS), SHORT PIECES OF THE TOP TRACK CAN BE ADDED AS TEMPORARY BRACING WHILE THE INSIDE RUN OF EXTERIOR PANELS IS BEING PLACED INTO POSITION. AS THE INSIDE RUN OF PANELS IS BEING INSTALLED, BLOCKING (AS DESCRIBED NEXT) IS ALSO INSTALLED.

**NOTE:**  
SEE TECHNICAL EVALUATION REPORT FOR BamCore PRIME PANEL WALL SYSTEM [TER No. 1507-03 ] IN THE STAMPED STRUCTURAL SUBMISSION

**Structural Design Narrative**

The H2Ouse home is a unique single family residence that aims to be an affordable net zero house. The intent of this structural design is not only to comply with the codes and requirements of the competition but also to be compliant with local codes for residential use in Davis, CA and meet the transportation requirements to transport a 2 unit mobile home via DOT standards. The home will be constructed on (2) certified trailers that are hauled from Davis, CA to the competition location in Denver, Colorado by Class A trucks and connected to complete the house. At the end of the competition the mobile housing units will be separated and hauled back to Davis, CA. The single story residential home will be comprised of BamCore framing. Load-bearing BamCore walls will support gravity and shear loads and transfer them to the SIP floor system and central pier foundation system. The foundation system is typical of mobile housing; the twenty-five(25) standard piers carry the majority of the weight to the ground and the eight (8) anchor piers are embedded to prevent lateral and seismic movement. All site features such as shade structures, sloped walkways and shrouds for water storage will stand structurally independent from the housing unit.

**GENERAL NOTES**

- DETAILS OF CONSTRUCTION NOT FULLY SHOWN SHALL BE OF THE SAME NATURE AS SHOWN FOR SIMILAR CONSTRUCTION
- CONSTRUCTION SHALL CONFORM TO THE 2016 IBC, CBC AND ALL APPLICABLE CODES AND REGULATIONS.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
- CONTRACTOR SHALL NOTIFY THE ENGINEER AND ARCHITECT WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DRAWINGS OR DOCUMENTS. CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE BUILDING THAT IS IN CONFLICT, UNTIL THE CONFLICT IS RESOLVED WITH THE AFFECTED PARTIES.
- ALL PRE-MANUFACTURED ROOF TRUSSES, PRE-MANUFACTURED "I" JOISTS, PRE-MANUFACTURED LAMINATED VENEER & PARALLEL STRESS LUMBER BEAMS, AND BLUE LAMINATED BEAMS TO BE SUBMITTED TO THE PROJECT ARCHITECT AND/OR THE ENGINEER FOR REVIEW AND COORDINATION. A SUBMITTAL MAY THEN BE MADE TO THE BUILDING DEPARTMENT FOR REVIEW AND APPROVAL. INCLUDE A LETTER STATING THIS REVIEW AND COORDINATION HAS BEEN PERFORMED AND COMPLETED AND PLANS AND CALCULATIONS ARE FOUND TO BE ACCEPTABLE. TRUSS DRAWINGS AND LAYOUTS TO BE SUBMITTED PRIOR TO CONSTRUCTION AS PART OF DEFERRED SUBMITTAL PER 2016 CBC 2303.4.1
- THE DESIGN, ADEQUACY, AND SAFETY OF ERECTED BRACING, SHORING, TEMPORARY SUPPORTS, ETC. IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HAS NOT BEEN CONSIDERED BY THE STRUCTURAL ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR STABILITY OF THE STRUCTURE PRIOR TO THE APPLICATION OF ALL SHEAR WALLS AND AFFORMENTIONED MATERIALS. OBSERVATION VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- IN NO CASE SHOULD DRAWINGS, DETAILS, OR ANY PART OF THESE PLANS BE SCALED FOR ANY PURPOSE. IF ANY DIMENSION NOT SHOWN ARE REQUIRED IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE ENGINEER OR ARCHITECT FOR ADDITIONAL INFORMATION.
- ALL SIMPSON STRONG-TIE PRODUCTS SHALL BE INSTALLED WITH THE STRONG-DRIVE SD CONNECTOR SCREW.
- E.O.R IS TO PERFORM PERIODIC STRUCTURAL OBSERVATIONS PER IBC 1704.6 DURING CONSTRUCTION PROCESS

**STRUCTURAL LOADS AND ASSUMPTIONS**

**1. ASSUMPTIONS:**

BASIC WIND SPEED 115 mph  
EXPOSURE CATEGORY C  
RISK CATEGORY II  
SITE CLASSIFICATION D  
RISK CATEGORY II  
SEISMIC DESIGN CCATEGORY D  
Ie 1  
R 3.4

**2. STRUCTURAL LOADS**

SNOW LOAD 30 PSF (WHERE APPLICABLE)

VERTICAL LOADS:  
NORTH MODULE 24369 lbs  
SOUTH MODULE 35666 lbs

TOTAL 60035 lbs

**SHEAR AND BRACED WALL PANEL NOTES**

- BamCore USED IN THE CONSTRUCTION OF SHEAR WALLS TO BE 4x8" MINIMUM EXCEPT AT BOUNDARIES OR AT CHANGES IN FRAMING.
- FRAMING MEMBERS OR BLOCKING REQUIRED AT ALL PANEL EDGES IN SHEAR WALLS.
- DO NOT BREAK FACE PLY WHEN NAILING ANY OF THE WALLS.
- NAILS SPECIFIED FOR SHEAR WALLS.  
8d - 2 1/2" LONG, 0.131 SHANK DIAMETER, 9/32" HEAD DIAMETER. SPACING: 4 INCH EDGE AND 8 INCH FIELD NAILING
- MOISTURE CONTENT OF LUMBER NOT TO EXCEED 19% AT TIME OF FABRICATION OR CONSTRUCTION.
- ALL FRAMING MEMBERS USED IN THE CONSTRUCTION OF THE SHEAR WALLS MUST BE PER PLANS.
- NOTE THAT HORIZONTAL JOINTS DO NOT REQUIRE BLOCKING FOR BRACED WALL PANEL TYPES A & B PER 2016 CBC TABLE 2308.6.1.
- BRACED WALL PANEL SOLE PLATES TO BE NAILED TO THE FLOOR FRAMING AND TOP PLATES. SHALL BE CONNECTED TO THE FRAMING ABOVE PER TABLE 2308.6.1. SILLS SHALL BE CONNECTED TO THE FRAMING ABOVE PER 2016 CBC 2308.5.3, 2308.6. WHERE JOIST ARE PERPENDICULAR TO BRACED WALL LINES ABOVE, BLOCKING SHALL BE PROVIDED UNDER AND IN LINE WITH THE BRACED WALL PANELS. PROVIDE (3)-16d NAILS @ 16" O.C. (TYP.)

STRUCTURAL SHEET INDEX OF DRAWINGS	
SHEET NUMBER	SHEET NAME
S-001	STRUCTURAL NOTES AND SYMBOLS
S-002	FRAMING SCHEDULES
S-003	SIP TYPICAL NOTES AND DETAILS
S-004	ENGINEERED ANCHOR FOUNDATION NOTES
S-005	ENGINEERED STANDARD FOUNDATION DETAILS AND NOTES
S-101	FOUNDATION AND FOOTING PLAN
S-102A	FLOOR FRAMING PLAN
S-102B	ONE-LINE FLOOR FRAMING PLAN
S-103A	WALL FRAMING PLAN
S-103B	TIE DOWNS AND SHEAR TRANSFER
S-104	ROOF FRAMING PLAN
S-105	SHEAR WALL PLAN
S-106A	DECK FRAMING
S-106B	ONE-LINE DECK FRAMING PLAN
S-111	DECK MODULE LAYOUT
S-201	FRAMING ELEVATIONS
S-202	FRAMING ELEVATIONS
S-301	TYPICAL SECTIONS
S-302	TYPICAL SECTIONS
S-401	ENLARGED DECK ELEVATION
S-501A	BAMCORE FRAMING DETAILS
S-501B	BAMCORE FRAMING DETAILS
S-502	SIP FRAMING DETAILS
S-503	TYPICAL DECK DETAILS
S-506	RAMP DETAILS
S-507	TIE DOWNS AND SHEAR TRANSFER DETAIL
S-901	FRAMING ISOMETRIC

**WOOD**

1. ALL STRUCTURAL WOOD SHALL CONFORM WITH THE FOLLOWING SPECIFICATIONS.

DOUGLAS FIR LARCH WEST COAST LUMBER INSPECTION BUREAU GRADING RULES # 17

REDWOOD CALIFORNIA REDWOOD ASSOCIATION GRADING RULES

GLUE LAMINATED BEAMS GLUE LAMINATED FABRICATION SHALL BE PERFORMED IN AN APPROVED FABRICATOR'S SHOP IN ACCORDANCE WITH 2013 CBC 2303.1.3 STANDARD SPECIFICATIONS FOR STRUCTURAL GLUED LAMINATED TIMBER, ANSI/AITC A190.1. GLUE-LAMINATED BEAMS SHALL BE INSPECTED AND A CERTIFICATE PROVIDED TO FIELD INSPECTOR AT THE TIME OF FRAMING INSPECTION.

OSB PLYWOOD U.S. PRODUCT STANDARDS P.S. 2-92 FOR WOOD BASED STRUCTURAL USE PANELS.

MICROLAM LVL BEAMS NATIONAL EVALUATION REPORT NO. ICC ESR-1387 BEAM SHALL BE 1 3/4" STANDARD WIDTH.

PARALLAM PSL BEAMS NATIONAL EVALUATION REPORT NO. ICC ESR-1387

PARALLAM PSL BEAMS NATIONAL EVALUATION REPORT NO. ICC ESR-1153

**2. MINIMUM GRADES SHALL BE:**

HORIZONTAL FRAMING  
2X FRAMING: #2 D.F.L  
4X FRAMING: #2 D.F.L  
2X10 FRAMING: #1 D.F.L.

WALL FRAMING  
BamCore INTERIOR WALL SYSTEM  
BamCore EXTERIOR WALL SYSTEM

GLUED LAMINATED COMBINATION 24F-V4 3000' RADIUS

STRUCTURAL PLYWOOD  
APA RATED SHEATHING

MICROLAM LVL BEAMS  
2.0E

PARALLAM PSL BEAMS  
2.0E

3. BEARING AND SHEAR WALLS PER BamCore SPECIFICATIONS, LAPPED AT WALL AND PARTITION INTERSECTIONS W/3-16d NAILS. SPLICE UPPER AND LOWER PLATES BY LAPPING 48" MINIMUM WITH (24) 16d NAILS IN LAP.

4. HOLES FOR BOLTS IN WOOD SHALL BE BORED OF THE SAME NOMINAL DIAMETER AS THE BOLT + 1/16".

5. LAG SCREWS AND WOOD SCREWS SHALL BE SCREWED AND NOT DRIVEN INTO PLACE.

6. ALL BOLTS SHALL BE PROVIDED WITH METAL WASHERS UNDER HEADS AND NUTS WHICH BEAR ON WOOD. APPLIES ALSO TO INSERTED EXPANDING FASTENERS, RED HEADS, ETC.

WASHERS FOR WOOD TO WOOD CONNECTIONS TO BE AS FOLLOWS:

BOLT DIAMETER	M.I. WASHER	STEEL WASHER
1/2" O.D.	2 1/2" O.D. X 1/4"	2" X 2" X 1/4"
5/8" O.D.	2 3/4" O.D. X 5/16"	2 1/2" X 2 1/2" X 1/4"
3/4" O.D.	3" O.D. X 7/8"	3" X 3" X 5/16"
7/8" O.D.	3 1/2" O.D. X 7/16"	3 1/2" X 3 1/2" X 3/8"
1" O.D.	4" O.D. X 1/2"	3 3/4" X 3 3/4" X 3/8"

7. ALL BOLTS AND LAG SCREWS SHALL BE TIGHTENED AT THE TIME OF INSTALLATION AND RE-TIGHTENED BEFORE CLOSING IN OR AT COMPLETION OF JOB.

9. ALL WOOD STRUCTURAL MEMBERS, WHEN DESIGNED TO BE EXPOSED IN OUTDOOR APPLICATIONS, SHALL BE WOOD OF NATURAL RESISTANCE TO DECAY OR TREATED WOOD. 2016 CBC 2304.12



TEAM NAME: UC DAVIS BLUE MUSTANGS  
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CONTACT: (530) 752-5465  
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CONSULTANTS:

CLIENT: U.S. DEPARTMENT OF ENERGY  
SOLAR DECATHLON 2017  
WWW.SOLARDECATHLON.GOV



MARK	DATE	DESCRIPTION
06	6/29/2017	INSPECTOR SET
05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
DRAWN BY: BLUE MUSTANGS  
CHECKED BY: BLUE MUSTANGS  
COPYRIGHT: NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**STRUCTURAL NOTES AND SYMBOLS**

**S-001**





TEAM NAME: UC DAVIS BLUE MUSTANGS  
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CONSULTANTS:

CLIENT: U.S. DEPARTMENT OF ENERGY  
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MARK	DATE	DESCRIPTION
06	6/29/2017	INSPECTOR SET
05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
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SHEET TITLE  
**FRAMING SCHEDULES**

**S-002**

**TABLE 2304.10.1—continued FASTENING SCHEDULE**

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION	
		Edges (inches)	Intermediate supports (inches)
<b>Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing*</b>			
<b>Interior paneling</b>			
41. 1/4"	4d casing (1 1/2" x 0.080"); or 4d finish (1 1/2" x 0.072")	6	12
42. 3/8"	6d casing (2" x 0.099"); or 6d finish (Panel supports at 24 inches)	6	12

For SI: 1 inch = 25.4 mm.  
 a. Nails spaced at 6 inches at intermediate supports where spans are 48 inches or more. For nailing of wood structural panel and particleboard diaphragms and shear walls, refer to Section 2305. Nails for wall sheathing are permitted to be common, box or casing.  
 b. Spacing shall be 6 inches on center on the edges and 12 inches on center at intermediate supports for nonstructural applications. Panel supports at 16 inches (20 inches if strength axis in the long direction of the panel, unless otherwise marked).  
 c. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule and the ceiling joist is fastened to the top plate in accordance with this schedule, the number of toenails in the rafter shall be permitted to be reduced by one nail.

**NAILING SCHEDULE**

1. FOR ENGINEERED WOOD PRODUCTS, FOLLOW THE MANUFACTURE'S GUIDELINES.

**ICS-SIP FASTENER SCHEDULE**

**FASTENER SCHEDULE**

Application	Type	Spacing
Anchor foundation plates to cement/block	J-Bolts	4'-0" OC Maximum
	Simpson MA Type	Mfg'r Recommendation
	Simpson MAG Type	Mfg'r Recommendation
Sill plate to foundation plate	Drill, Epoxy	Mfg'r Recommendation
	16d nails or 3" Screws	6" OC in two offset rows
Sill plate floor system	16d nails or 3" Screws	6" OC in two offset rows
Securing ICS panels over 2 x 4 sill plate	8d nails or #10 x 1 1/2" Screw	8" OC from both sides
Securing beams to beam pockets	See specific detail	On plan
Securing joist hangers to top plate	16d nails	Pre-drilled holes in hanger
Securing beams to joist hanger	1 1/2" joist hanger nails	Pre-drilled holes in hanger
Securing joist to joist hanger	6d nails each side	Pre-drilled holes in hanger
4 1/2" roof panels to ridge beam	6" panel screw	6" from edge @ 8" OC
4 1/2" roof panels to rafter beams	6" panel screw	6" from edge @ 8" OC
4 1/2" roof panels to top wall plate	6" panel screw	6" from edge @ 8" OC
6 1/2" roof panels to ridge beam	8" panel screw	6" from edge @ 8" OC
6 1/2" roof panels to ridge beam	8" panel screw	6" from edge @ 8" OC
6 1/2" roof panels to ridge beam	8" panel screw	6" from edge @ 8" OC

(Other fasteners may be used when specific applications are required and should be applied with direction of manufacturer or engineer.)

**BamCore SCREW SCHEDULE:**

METAL TRACK SCREW SCHEDULE  
 FOR WOOD SUBFLOORS, TWO 1-1/2" #10 PAN HEAD SHEET METAL SCREWS ARE DRILLED THROUGH THE TRACK AND SUBFLOOR AND INTO EACH FLOOR JOIST

WALL PANEL SCREW SCHEDULE  
 THE SETS OF COLOR-CODED SCREWS REPRESENT THE THREE SCREW LENGTHS USED IN ASSEMBLING THE WALL SYSTEM. FOR LOAD BEARING WALLS 1-1/4" #10 SCREWS ARE USED. FOR NON-LOAD BEARING WALLS 3/4" #10 SCREWS ARE USED. FOR BLOCKING AROUND THE ROUGH OPENINGS OR IN CLEAR-WALL SECTIONS 2-1/2" #10 SCREWS ARE USED.

**TABLE 2304.10.1—continued FASTENING SCHEDULE**

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
<b>Wall</b>		
19. 1" brace to each stud and plate	2-8d common (2 1/2" x 0.131"); or 2-10d box (3" x 0.128"); or 2-3" x 0.131" nails; or 2-3" 14 gage staples, 7/16" crown	Face nail
20. 1" x 6" sheathing to each bearing	2-8d common (2 1/2" x 0.131"); or 2-10d box (3" x 0.128")	Face nail
21. 1" x 8" and wider sheathing to each bearing	3-8d common (2 1/2" x 0.131"); or 3-10d box (3" x 0.128")	Face nail
<b>Floor</b>		
22. Joist to sill, top plate, or girder	3-8d common (2 1/2" x 0.131"); or floor 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Toenail
23. Rim joist, band joist, or blocking to top plate, sill or other framing below	8d common (2 1/2" x 0.131"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	6" o.c., toenail
24. 1" x 6" subfloor or less to each joist	2-8d common (2 1/2" x 0.131"); or 2-10d box (3" x 0.128")	Face nail
25. 2" subfloor to joist or girder	2-16d common (3 1/2" x 0.162")	Face nail
26. 2" planks (plank & beam - floor & roof)	2-16d common (3 1/2" x 0.162")	Each bearing, face nail
27. Built-up girders and beams, 2" lumber layers	20d common (4" x 0.192"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	32" o.c. face nail at top and bottom staggered on opposite sides
	2-20d common (4" x 0.192"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	24" o.c. face nail at top and bottom staggered on opposite sides
28. Ledger strip supporting joists or rafters	3-16d common (3 1/2" x 0.162"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Each joist or rafter, face nail
	3-16d common (3 1/2" x 0.162"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Ends and at each splice, face nail
29. Joist to band joist or rim joist	3-16d common (3 1/2" x 0.162"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	End nail
30. Bridging or blocking to joist, rafter or truss	2-8d common (2 1/2" x 0.131"); or 2-10d box (3" x 0.128"); or 2-3" x 0.131" nails; or 2-3" 14 gage staples, 7/16" crown	Each end, toenail

**TABLE 2304.10.1—continued FASTENING SCHEDULE**

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
<b>Wood structural panels (WSP), subfloor, roof and interior wall sheathing to framing*</b>		
31. 7/8" - 1 1/2"	6d common or deformed (2" x 0.113") (subfloor and wall)	6 12
	8d box or deformed (2 1/2" x 0.113") (roof)	6 12
32. 3/4" - 1 1/4"	2 1/2" x 0.113" nail (subfloor and wall)	6 12
	1 1/2" 16 gage staple, 7/16" crown (subfloor and wall)	4 8
33. 1/2" - 1 1/8"	2 1/2" x 0.113" nail (roof)	4 8
	1 1/2" 16 gage staple, 7/16" crown (roof)	3 6
34. 1/2" fiberboard sheathing*	8d common (2 1/2" x 0.131"); or 6d deformed (2" x 0.113")	6 12
	2 1/2" x 0.113" nail; or 2" 16 gage staple, 7/16" crown	4 8
35. 3/4" fiberboard sheathing*	10d common (3" x 0.148"); or 8d deformed (2 1/2" x 0.131")	6 12
	Other exterior wall sheathing	
36. 1/2" and less	1 1/2" galvanized roofing nail (7/16" head diameter); or 1 1/2" 16 gage staple with 7/16" or 1" crown	3 6
	1 1/2" galvanized roofing nail (7/16" diameter head); or 1 1/2" 16 gage staple with 7/16" or 1" crown	3 6
37. 3/4" - 1"	8d common (2 1/2" x 0.131"); or 8d deformed (2" x 0.113")	6 12
	10d common (3" x 0.148"); or 8d deformed (2 1/2" x 0.131")	6 12
38. 1 1/4" - 1 1/2"	6d corrosion-resistant siding (1 1/4" x 0.106"); or 6d corrosion-resistant casing (2" x 0.099")	6 12
	8d corrosion-resistant siding (2 1/4" x 0.128"); or 8d corrosion-resistant casing (2 1/2" x 0.113")	6 12

**TABLE 2304.10.1 FASTENING SCHEDULE**

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
<b>Roof</b>		
1. Blocking between ceiling joists, rafters or trusses to top plate or other framing below	3-8d common (2 1/2" x 0.131"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Each end, toenail
	2-8d common (2 1/2" x 0.131"); or 2-3" x 0.131" nails	Each end, toenail
Blocking between rafters or truss not at the wall top plate, to rafter or truss	2-16 d common (3 1/2" x 0.162")	End nail
	3-3" x 0.131" nails	
Flat blocking to truss and web filler	16d common (3 1/2" x 0.162") @ 6" o.c.	Face nail
	3" x 0.131" nails @ 6" o.c.	
2. Ceiling joists to top plate	3-8d common (2 1/2" x 0.131"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Each joist, toenail
	3-16d common (3 1/2" x 0.162"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Face nail
3. Ceiling joist not attached to parallel rafter, laps over partitions (no thrust) (see Section 2308.7.3.1, Table 2308.7.3.1)	Per Table 2308.7.3.1	Face nail
	Per Table 2308.7.3.1	
4. Ceiling joist attached to parallel rafter (heel joint) (see Section 2308.7.3.1, Table 2308.7.3.1)	3-10d common (3" x 0.148"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Face nail
	3-10 common (3" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
5. Collar tie to rafter	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	End nail
	3-10d common (3 1/2" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
6. Rafter or roof truss to top plate (See Section 2308.7.5, Table 2308.7.5)	3-10d common (3 1/2" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
	3-10d common (3 1/2" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
7. Roof rafters to ridge valley or hip rafters; or roof rafter to 2-inch ridge beam	3-10d common (3 1/2" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
	3-10d common (3 1/2" x 0.148"); or 3-16d box (3 1/2" x 0.135"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail

**TABLE 2304.10.1—continued FASTENING SCHEDULE**

DESCRIPTION OF BUILDING ELEMENTS	NUMBER AND TYPE OF FASTENER	SPACING AND LOCATION
<b>Wall</b>		
8. Stud to stud (not at braced wall panels)	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	24" o.c. face nail
	16d common (3 1/2" x 0.162"); or 16d box (3 1/2" x 0.135"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	16" o.c. face nail
9. Stud to stud and abutting studs at intersecting wall corners (at braced wall panels)	16d common (3 1/2" x 0.162"); or 16d box (3 1/2" x 0.135"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	16" o.c. face nail
	16d common (3 1/2" x 0.162"); or 16d box (3 1/2" x 0.135"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	12" o.c. face nail
10. Built-up header (2" to 2" header)	16d common (3 1/2" x 0.162"); or 16d box (3 1/2" x 0.135"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	16" o.c. each edge, face nail
	16d common (3 1/2" x 0.162"); or 16d box (3 1/2" x 0.135"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	12" o.c. each edge, face nail
11. Continuous header to stud	4-8d common (2 1/2" x 0.131"); or 4-10d box (3" x 0.128")	Toenail
	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	16" o.c. face nail
12. Top plate to top plate	8-16d common (3 1/2" x 0.162"); or 12-10d box (3" x 0.128"); or 12-3" x 0.131" nails; or 12-3" 14 gage staples, 7/16" crown	Each side of end joint, face nail (minimum 24" lap splice length each side of end joint)
	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	16" o.c. face nail
13. Top plate to top plate, at end joints	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	16" o.c. face nail
	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	12" o.c. face nail
14. Bottom plate to joist, rim joist, band joist or blocking (not at braced wall panels)	16d common (3 1/2" x 0.162"); or 10d box (3" x 0.128"); or 3" x 0.131" nails; or 3" 14 gage staples, 7/16" crown	16" o.c. face nail
	2-16d common (3 1/2" x 0.162"); or 3-16d box (3 1/2" x 0.135"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	16" o.c. face nail
15. Bottom plate to joist, rim joist, band joist or blocking at braced wall panels	4-8d common (2 1/2" x 0.131"); or 4-10d box (3" x 0.128"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	Toenail
	2-16d common (3 1/2" x 0.162"); or 3-16d box (3 1/2" x 0.135"); or 4-3" x 0.131" nails; or 4-3" 14 gage staples, 7/16" crown	End nail
16. Stud to top or bottom plate	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	End nail
	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	End nail
17. Top or bottom plate to stud	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	End nail
	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Face nail
18. Top plates, laps at corners and intersections	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Face nail
	2-16d common (3 1/2" x 0.162"); or 3-10d box (3" x 0.128"); or 3-3" x 0.131" nails; or 3-3" 14 gage staples, 7/16" crown	Face nail





October 19, 2015

Insulated Superstructures, Inc. dba "ICS SIPS" and "Insulated Component Structures" 1901 East Prospect Road Fort Collins, CO 80525-1305

Re: Structural Insulated Panels (SIPs) 2012 IBC Chapter 17: Structural Tests and Special Inspections 2012 IBC Section 104.11 "Alternative Materials, Design, and Methods of Construction and Equipment."

To Whom it May Concern:

Front Range Structural Engineering has reviewed the SIPs manufactured by ICS SIPS and reviewed the testing information provided by an outside testing firm and found that the strength characteristics of these panels meet and exceed standard stud wall framing. The panels are constructed from two (2) 7/16" OSB APA rated skins with a polyurethane foam that is injected between the two skins to form the core of the panel. The foam is injected as a liquid and bonds to the OSB skins when it cures. The panel splines at the ends of each panel, typically 4" on-center, consist of a metal tongue-and-groove connection and the panels are foam-sealed and locked together with steel cam-locks.

The following are responses to the relevant sections of Chapter 17 of the 2012 IBC:

**SECTION 1703: APPROVALS**

**1703.1 Approved agency.**

The Structural Materials Laboratory of The William States Lee College of Engineering at The University of North Carolina at Charlotte, in conjunction with Young Engineering, Inc. and Professor David T. Young, Ph.D., P.E., confirms that the Laboratory meets the applicable requirements. The Laboratory strictly adheres to the applicable ASTM test methods and procedures prescribed for testing structural insulated panels (SIPs): ASTM E72 "Standard Methods of Conducting Strength Tests of Panels for Building Construction." The Laboratory has extensive experience conducting such tests.

**1703.1.1 Independence.**

The Laboratory and its employees are objective, competent, and independent from the manufacturer of the products, the contractor responsible for performing the work, and all other parties involved. The Laboratory and its employees have no conflicts of interest.

**1703.1.2 Equipment.**

The Laboratory has appropriate and adequate equipment to perform the required ASTM tests. The equipment is

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foam also contains flame-inhibitors and is self-extinguishing; therefore, it will not hold or carry a flame. This product is rated Class 1 under ASTM E84. Refer to the attached testing data for additional information. In addition, an ICS SIPS assembly has been tested by Intertek Evaluation Center in Elmendorf, Texas in accordance with ASTM E119 Fire Tests of Building Construction and Materials (equivalent to UL 263) and achieved a one-hour load-tested rating. See the attached test report for more information.

**Durability:**

The durability of the panels is similar to that of conventional framing because the same materials are used: wood and insulation. The advantage SIPs have over conventional framing is that the rigid insulation will always remain in place and the R value will remain constant as where fiberglass or cellulose insulation could possibly shift and create voids and cause cold spots.

**Safety:**

The SIPs are equally safe as conventional 2x framing based on fire safety since the foam burns similarly to that of wood.

The SIPs manufactured by ICS SIPS are considered a green building material by the U.S. Green Building Council.

I am available for further consultation as necessary.

Respectfully,



David Mitchell, PE  
Front Range Structural Engineering

PO Box 17542, Boulder, CO 80308-0542 w: (720) 314-8022 c: (720) 315-1971 www.frontrangestructural.com

calibrated prior to each test performed.

**1703.1.3 Personnel.**

The Laboratory employs professionally educated and experienced personnel for conducting, supervising, and evaluating tests and inspections. As a teaching institution, the Laboratory uses Professional Engineers and professors to provide strict supervision, administration, and certification of the tests.

The ASTM E72 tests performed are the same tests required for SIPs by the International Code Council (ICC).

The following are responses to Section 104.11 of the 2012 IBC:

**Quality:**

The panel skins are constructed from a "SIPs-grade" N612 standard APA-performance rated OSB manufactured by Tolo or Norbord; 2.5 pounds per cubic foot density polyurethane foam core, steel panel splines, and steel cam-lock's to securely connect panels to one another. The 4-1/2" panels have an insulation value of R-28 versus a standard 2x4 wall value of R-11 and the 6-1/2" panels have a R-42 versus a standard 2x6 wall which has a R-19. The 8-1/4" roof panels have an R-value of R-54.

**Strength:**

The strength of the SIPs meets and exceeds standard 2x wood framing. The "Design of Plywood Sandwich Panels" publication provided by APA was used to determine panel strengths along with the ASTM E72 testing data. The shear strength of the SIPs meets or exceeds that of shear plyed 2x6 stud walls. Based on testing results, the ultimate shear "racking" load is 612 PLF if the top plate and bottom plate are connected to the panel skins with 8d nails @ 6" on-center. With closer fastener spacing and hold-downs, a higher shear capacity could be achieved if necessary. For construction design purposes, an applicable safety-factor must be applied. For roof panels (limited to an L/180 deflection), an 8' long panel can support an allowable transverse live load or snow load of 61 PSF, per the testing results. This loading is assuming a 1.0 Load Duration Factor (LDF). The SIPs response to wind and seismic activity meets or exceeds that of 2x wood framing sheathed with OSB. The response modification coefficient "R" equals 6 for the SIPs, which is also equal to a 2x stud wall sheathed with OSB. Based on the transverse loading for the roof panels, the allowable wind loading on the panels is 61 PSF for an 8' panel, assuming no axial loading. The ultimate axial loading for an 8' tall panel is 12,656 PLF, based on testing results. For construction design purposes, an applicable safety factor must be applied. An interactive equation combining axial force and bending force is used to determine SIP adequacy. Additional vertical members may also be added in extreme cases. The axial load, transverse load, and racking load capacities of the SIP meet or exceed all IBC criteria.

**Effectiveness:**

The SIPs are extremely effective in energy saving simply based on R values differences and elimination of most thermal bridges compared with conventional framing. Also, they require far less "in the field" labor to install; the panels are all manufactured in a controlled environment and cut to fit in the factory with three levels of 100% quality-assurance inspection. Very little, if any "field alterations" are required.

**Fire Resistance:**

Based on the attached information sheet, the foam core does not melt, but it gets consumed just like the OSB skins. The toxicity of the foam core is equivalent to that of burning wood and has low smoke generation characteristics. Therefore, the fire resistance of these panels is very similar to conventional wood framing. The

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**ICS-SIP GENERAL NOTES:**

ICC- EC REPORTS WILL BE AVAILABLE SOON.

SITE STORAGE AND PROTECTION OF PANELS:

PANELS NEED TO BE KEPT OFF THE GROUND AND DRY. WHEN STORING FOR A SHORT TIME, THE PANELS SHOULD BE KEPT AT LEAST 6" OFF THE GROUND WITH STICKERS, AND PROTECTED FROM THE WEATHER BY A WATERPROOF, BREATHABLE COVER. WITH SOME SURFACES, EXPOSURE TO THE SUN OR WEATHER COULD CAUSE DISCOLORATION AND SWELLING. SPACE THE STICKERS NO MORE THAN 4' ON-CENTER. FIND A FLAT PLACE TO STORE THE PANELS TO INSURE THE PANELS WILL NOT TWIST OR TAKE A SET THAT WILL CAUSE PROBLEMS LATER. EXTENDED EXPOSURE MAY CAUSE DAMAGE AND SHOULD NOT BE STORED AT THE SITE FOR MORE THAN 10 DAYS. PANELS SHOULD BE LOCATED CLOSE TO THE LOCATION WHERE THEY WILL BE USED YET KEPT AWAY FROM POSSIBLE DAMAGE FROM TOOLS, VEHICLES, AND SITE EQUIPMENT.

FOLLOW PANEL PLACEMENT DETAILS:

EACH PROJECT WILL HAVE A DRAWING SHOWING THE LOCATION OF EACH INDIVIDUAL PANEL. PANELS CAN BE RELOCATED, BUT IT IS MUCH EASIER TO DO IT RIGHT THE FIRST TIME.

FOLLOW SPAN AND STRUCTURAL LIMITS:

LOAD LIMITS AND SPAN LIMITS FOR STRUCTURAL INSULATED PANELS AND OTHER BUILDING COMPONENTS, SUCH AS ENGINEERED JOISTS AND LAMINATED BEAMS, ARE PROVIDED BY MANUFACTURERS FOR USE IN SPECIFIC APPLICATIONS. FOLLOW THE LIMITS CAREFULLY. ALL ICS PANELS ARE DRAWN AND ENGINEERED TO BE INSTALLED AS PROVIDED AND MUST FOLLOW THE DESIGN DETAILS PROVIDED. DO NOT CUSTOMIZE OR CHANGE ANY PART OF A THERMAL ENVELOPE DESIGN WITHOUT CONSULTING A STRUCTURAL ENGINEER OR THE ICS DESIGN DEPARTMENT. ICS SIPS ARE DESIGNED AND ASSEMBLED FOR "SITE-SPECIFIC AND UNIQUE" APPLICATIONS.

FOAM SEALANT IS REQUIRED ON ALL PANEL:

JOINTS ICS PANELS HAVE BOTH A TONGUE & GROOVE PANEL INTERFACE SYSTEM MOLDED INTO THE PANEL EDGES. (TRADITIONAL 2X SPLINES ARE NOT USED EXCEPT WHERE THE STRUCTURAL ENGINEER CALLS FOR EMBEDDED STRUCTURAL MEMBERS.) THIS GIVES A VERY TIGHT JOINT THAT PREVENTS EDGE SHIFTS, THERMAL BRIDGES, AND THERMAL BREECHES (VOIDS). AS INSURANCE, PRIOR TO JOINING THE PANELS AT THE JOINT AND BASE, A BEAD OF EXPANDING FOAM ADHESIVE MUST BE PLACED TO INSURE A POSITIVE JOINT. AFTER THE FOAM BEADS ARE IN PLACE, THE PANELS ARE SLID TOGETHER AND FASTENED WITH THE CAM-LOCK FASTENERS. IN SOME CASES, 2X SPLINES ARE USED AT POINT LOAD DISTRIBUTION, AND 4X SPLINES MAY BE USED IN SOME INSTANCES, AS DESCRIBED LATER IN THIS MANUAL. FAILURE TO INSTALL THE PANELS TOGETHER PROPERLY MAY LESSEN THE THERMAL AND STRUCTURAL PERFORMANCE OF THE WALL OR ROOF. INSPECT ALL PANELS AS THEY ARE INSTALLED AND MAKE SURE THEY ARE PROPERLY FASTENED AND PLACED BEFORE GOING ON TO THE NEXT PANEL.

FOLLOW NAIL/SCREW SPECIFICATIONS CAREFULLY:

USING THE PROPER FASTENERS AND SPACING IS VERY IMPORTANT WITH STRUCTURAL INSULATED PANELS (SIPS). TABLE 1 PROVIDES A QUICK REFERENCE FOR NAIL AND SCREW SPECIFICATIONS WITH THE MOST COMMON APPLICATIONS. MORE COMPLETE INFORMATION MAY BE PROVIDED THROUGHOUT THE CONSTRUCTION MANUAL.



TEAM NAME: UC DAVIS BLUE MUSTANGS

ADDRESS: 2151 HUTCHISON DR DAVIS, CA 95616

CONTACT: (530) 752-5465 HTTP://SOLARDECATHLON.UCDAVIS.EDU

CONSULTANTS:

CLIENT: U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON 2017 WWW.SOLARDECATHLON.GOV



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01	7/19/2016	50% DD SET

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SHEET TITLE

SIP TYPICAL NOTES AND DETAILS

S-003



HOME SIZE	WIND LOAD (PSF)	30				40				100			
		110B	110C	110D	110E	110B	110C	110D	110E	110B	110C	110D	110E
UP TO 30'	43.5	4	2	4	2	4	2	4	2	4	2	4	2
30'-39'	43.5	4	2	4	2	4	2	4	2	4	2	4	2
40'-49'	43.5	4	2	4	2	4	2	4	2	4	2	4	2
50'-59'	43.5	4	2	4	2	4	2	4	2	4	2	4	2

HOME SIZE	WIND LOAD (PSF)	30				40				100			
		110B	110C	110D	110E	110B	110C	110D	110E	110B	110C	110D	110E
UP TO 30' PT	43.5	4	2	4	2	4	2	4	2	4	2	4	2
30'-39' PT	43.5	4	2	4	2	4	2	4	2	4	2	4	2
40'-49' PT	43.5	4	2	4	2	4	2	4	2	4	2	4	2
50'-59' PT	43.5	4	2	4	2	4	2	4	2	4	2	4	2

TO USE TABLE, FIND MAX ROOF PITCH, THEN HOME SIZE AND FOLLOW ROW ACROSS TO ROOF LOAD AND THEN DOWN TO COLUMN. TRANSVERSE BRACES ARE REQUIRED FOR ALL ROOF PITCHES. BRACE REQUIRED: SEE PLAN VIEWS SHEETS F3 AND F4 ABOVE FOR PLACEMENT OF C.P. ANCHOR BRACE. IF THE EXACT HOME SIZE IS NOT LISTED, CHECK THE NEXT SMALLER AND NEXT LARGER AND USE THE ONE THAT REQUIRES MORE C.P. ANCHOR BRACES.

ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F5 OF 6

ENGINEERED FOUNDATION PLAN  
C.P. ANCHOR BRACE  
SPA 30-19F

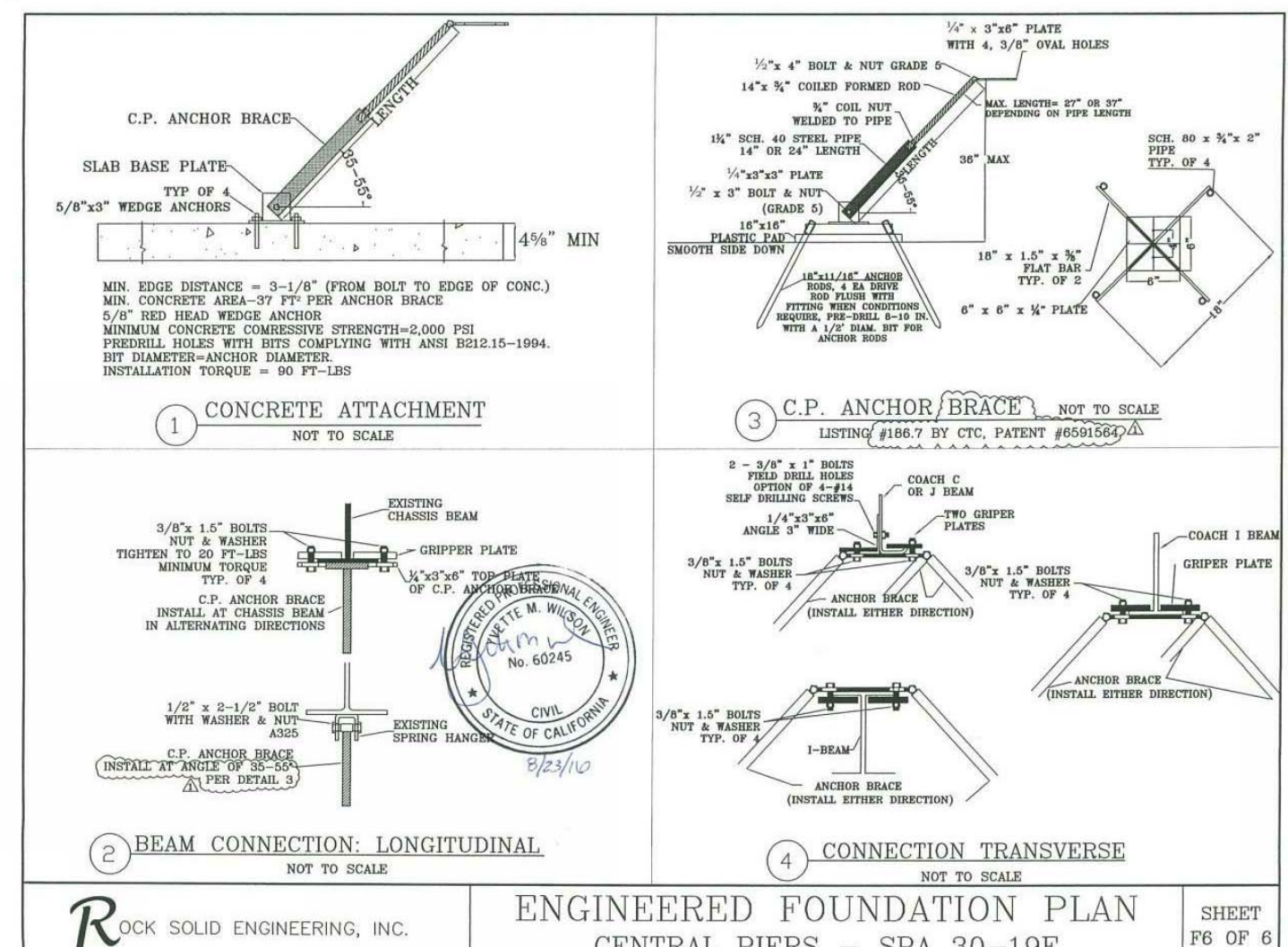
FOR: CENTRAL PIERS, INC.  
284 N. THORNE AVE.  
FRESNO, CA 93706  
559-269-0828

BY: ROCK SOLID ENGINEERING, INC.  
1100 MAIN STREET, SUITE A  
WATSONVILLE, CA 95076  
831-724-5868

STATE APPROVAL  
MANUFACTURED HOME/MOBILE HOME FOUNDATION SYSTEM HEALTH AND SAFETY CODE/SECTION 1851 APPROVED  
APPROVAL DOES NOT AUTHORIZE OR APPROVE ANY MODIFICATIONS OR DEVIATION FROM REQUIREMENTS OF APPLICABLE STATE LAWS AND REGULATIONS  
Division of Housing and Community Development  
By: [Signature] DATE: 8/16/2016  
This Plan Approval Expires: 7/11/2018

REV. DATE BY COMMENTS  
08/04/16 YW MINOR EDITS  
03/20/14 YW UPDATE TO 2013 CBC/IRC

ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F1 OF 6



ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F6 OF 6

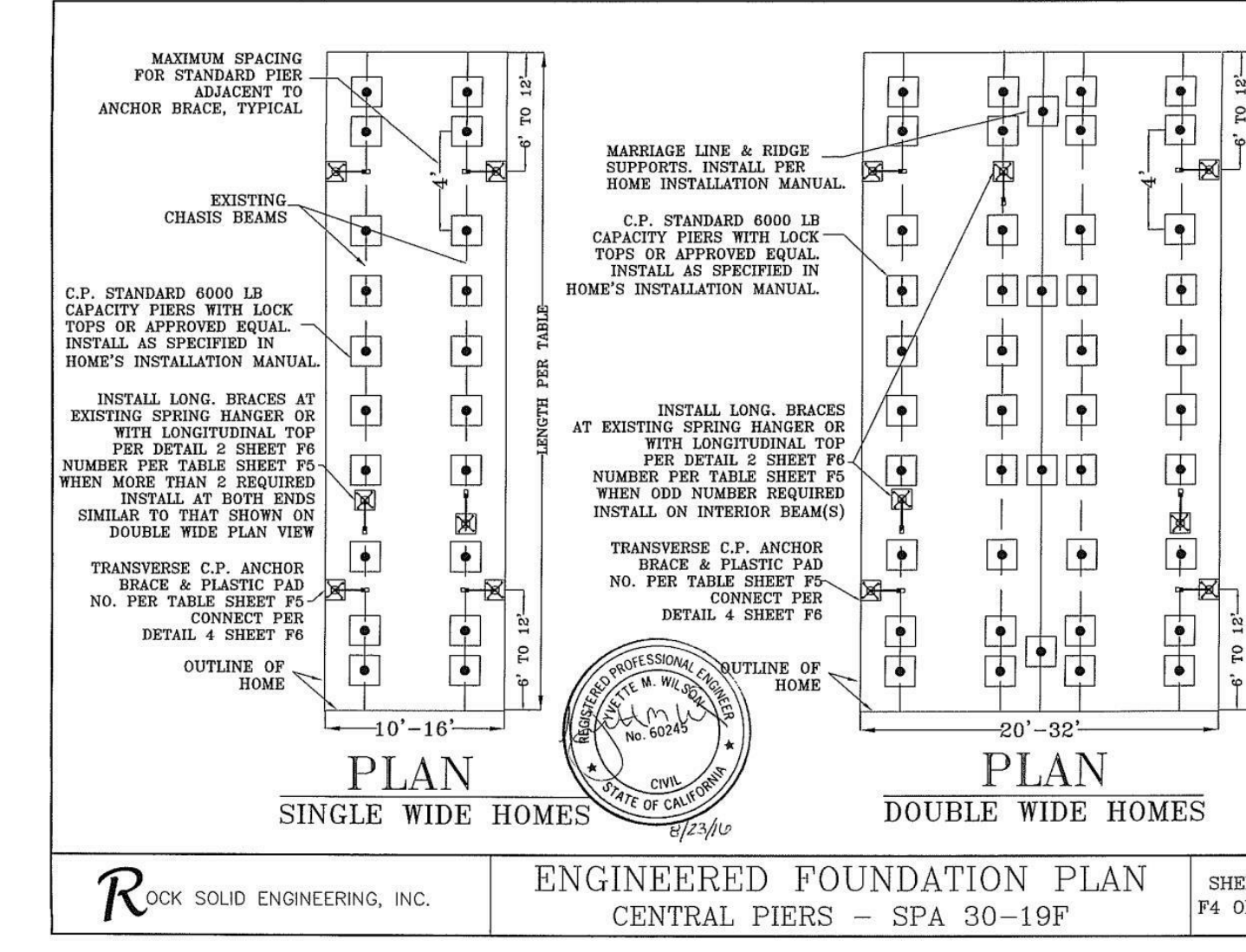
GENERAL NOTES:  
REFERENCE: CALIFORNIA CODE OF REGULATIONS, TITLE 25 AND 2013 C.R.C./C.B.C. CHAPTER 16. THESE PLANS MEET THE INTENT OF 2013 C.R.C. SECTION 1851.1.

- DESIGN LOADS SHALL BE CONSISTENT WITH LOCAL REQUIREMENTS WHERE INSTALLED. THE FOLLOWING DESIGN LOADS ARE INCORPORATED HEREIN:  
FLOOR LIVE LOAD: 40 PSF  
ROOF LIVE LOAD: 20 PSF AS LISTED IN TABLE  
SEISMIC DESIGN CATEGORY: E  
BASIC WIND SPEED & EXPOSURE: 110-150 MPH AS LISTED IN TABLE  
SITE CLASS D:  $S_{ds}=1.5$ ,  $S_{d1}=1.4$ ,  $S_{d2}=1.4$ ,  $S_{d3}=1.4$ ,  $S_{d4}=1.4$ ,  $S_{d5}=1.4$
- FOOTINGS ARE TO BE SUPPORTED BY EITHER FIRM, UNSATURATED SOIL, COMPACTED FILL, ASPHALT OR CONCRETE. FOOTINGS ARE DESIGNED FOR 1000 PSF BEARING CAPACITY & SHALL BE COMPATIBLE WITH LOCAL SOIL CONDITIONS. ALL FOOTINGS SHALL BE FOUND IN ACCORDANCE WITH R.C.D. GUIDELINES AND TITLES 25 OR PREPARE SUBGRADE PER SOIL REPORT, WHEN AVAILABLE.
- STRUCTURAL STEEL:  
a. SHALL CONFORM TO ASTM A36 Fy = 36 KSI MINIMUM.  
b. SHALL BE FABRICATED ACCORDING TO AISC SPECIFICATIONS.  
c. SHALL BE WELDED ACCORDING TO AWS SPECIFICATIONS.  
d. ELECTRODES: E70  
e. PLATES: ASTM A36  
f. BOLTS: SAE G65-ASTM A449-ASTM A325  
g. THREADED ROD: SAE GRADE 5 LOW CARBON STEEL  
h. ALL METAL COMPONENTS INCLUDING NAILS & SCREWS ETC. ARE TO BE PROTECTIVE COATED.  
i. THE ANCHOR BRACE (LISTING #186.7) SHALL BE LISTED AND LABELED BY CERTIFIED TESTING AND CONSULTING SERVICES (CTS) FOR THE FOLLOWING LOADS:  
ANCHOR BRACE LATERAL: 2700 LBS (Working Load), 4151 LBS (Ultimate Load)  
ANCHOR BRACE UPLIFT: 2100 LBS (Working Load), 3200 LBS (Ultimate Load)
- ALL CHASSIS BEAM PIER REQUIRED BY THE HOME MANUFACTURER SHALL BE POSITIVELY ATTACHED TO THE CHASSIS BEAM AND FOUNDATION PAD IN ACCORDANCE WITH TITLE 25, SECTION 1834.1. STEEL PIER SUPPORTS SHALL BE MANUFACTURED BY CENTRAL PIERS, INC. OR BE APPROVED EQUAL. ALL CHASSIS, PROMOTER AND MARRIAGE LINE SUPPORTS SHALL BE INSTALLED PER THE HOME INSTALLATION MANUAL. WITHOUT HOME INSTALLATION MANUAL, ALL PIERS SHALL BE INSTALLED PER TITLE 25, SECTION 1835.5.
- THIS SYSTEM MAY BE USED WITH MASONRY BLOCK STANDARD SUPPORTS. THE BLOCKS SHOULD BE INSTALLED PER TITLE 25 AND THE HOME INSTALLATION MANUAL.
- THIS SUPPORT SYSTEM PLAN IS DESIGNED TO BE CONSTRUCTED ON A LEVEL SITE WITH NO EXISTING SOIL PROBLEMS (SECTION 1834, TITLE 25).
- THE ANCHOR BRACE SHALL NOT BE INSTALLED IN NON-COHERENT SOIL (CLASS 4 SE, SW).
- WHEN OBSTRUCTIONS ARE ENCOUNTERED, THE DIRECTION OF THE ANCHOR BRACE MAY BE REVERSED PROVIDED THAT THE OPPOSITE ANCHOR BRACE IS ALSO REVERSED. THIS CONFIGURATION MAY BE USED WITH PERIMETER CHASSIS BEAMS.

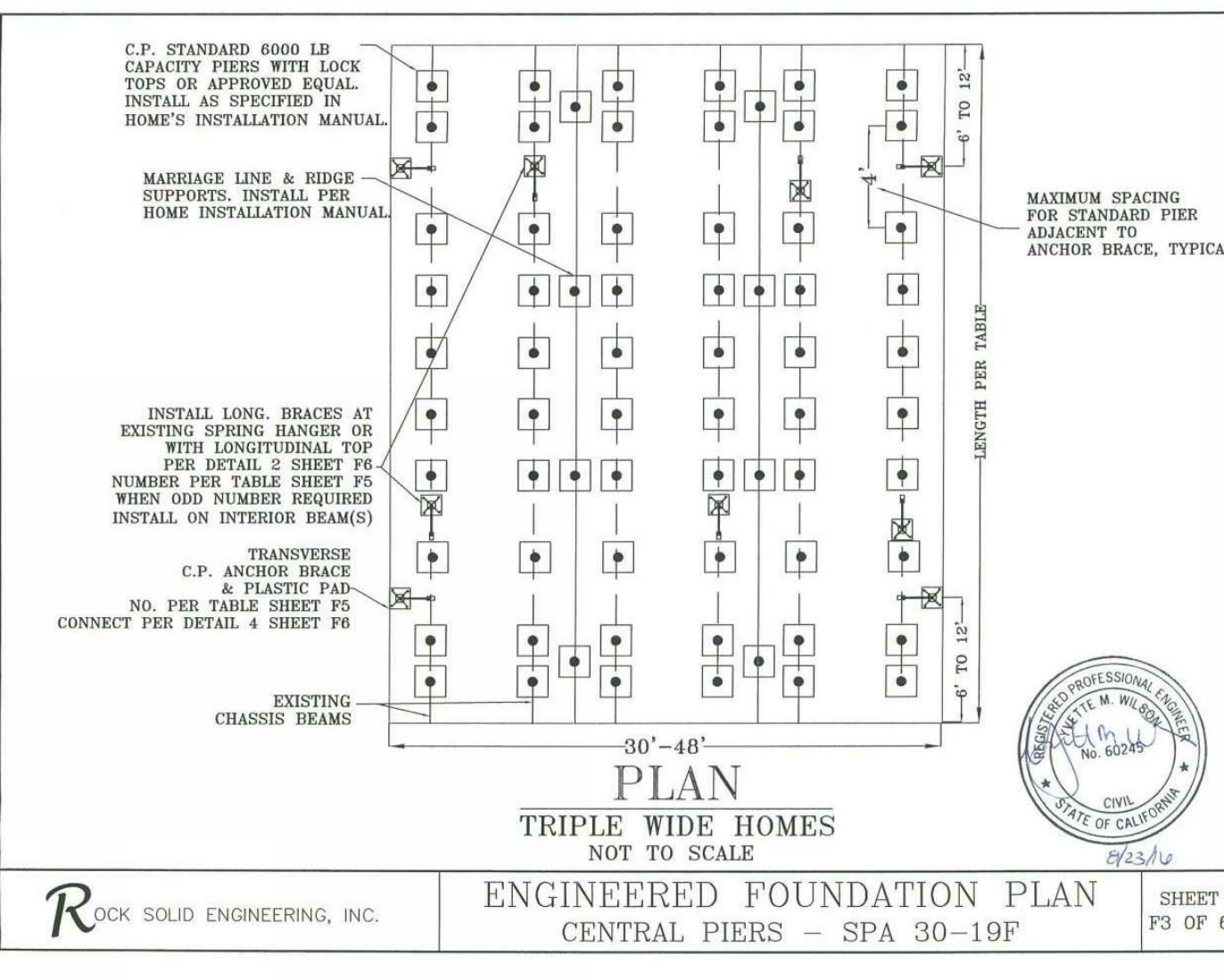
COACH SIZE NOTES:  
1. NUMBER OF ANCHOR BRACES TO BE DETERMINED BY TABLE SHEET F5.  
2. UNLESS APPROVED BY ROCK SOLID ENGINEERING, INC., THE ROOF PITCH SHOULD NOT EXCEED THOSE LISTED IN THE TABLE, SHEET F5.  
3. FOR ANY HOME SIZE OTHER THAN LISTED IN THE TABLE, THE ANCHOR LAYOUT SHALL BE REVIEWED AND APPROVED BY ROCK SOLID ENGINEERING, INC.

INSPECTION REQUIREMENTS:  
1. THE DESIGN OF THIS SYSTEM IS BASED ON STANDARD MANUFACTURED HOMES AS BUILT BY THE MANUFACTURER. SITE BUILT ADDITIONS SUCH AS GARAGES AND SECONDARY ROOFS HAVE NOT BEEN INCLUDED IN THIS DESIGN.  
2. ALL DIMENSIONS LISTED ON THIS PLAN, INCLUDING HOME SIZE, ROOF HEIGHT AND PIER HEIGHT, SHOULD BE FIELD VERIFIED BY THE LOCAL BUILDING OFFICIAL. ANY DISCREPANCIES SHOULD BE IMMEDIATELY BROUGHT TO THE ENGINEER'S ATTENTION.  
3. THE BUILDING PAD SHOULD BE INSPECTED TO ENSURE THAT PROPER PAD PREPARATION & DRAINAGE PATTERNS HAVE BEEN ESTABLISHED IN ACCORDANCE WITH TITLE 25 & THE HOME INSTALLATION MANUAL.

ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F2 OF 6



ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F4 OF 6



ROCK SOLID ENGINEERING, INC. ENGINEERED FOUNDATION PLAN CENTRAL PIERS - SPA 30-19F SHEET F3 OF 6



TEAM NAME: UC DAVIS BLUE MUSTANGS  
ADDRESS: 2151 HUTCHISON DR DAVIS, CA 95616  
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CONSULTANTS:

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LOT NUMBER: UNKNOWN  
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SHEET TITLE  
ENGINEERED ANCHOR FOUNDATION NOTES

S-004



Technicon Engineering Services, Inc.  
 Project: Compression Load Testing of Steel Piers  
 Central Piers, Inc. T&E No. 150301.001  
 Invoice No. 5368

Standard Pier Load Testing

Test #1	Test #2	Test #3	Average Load (lbs)	Load Rating
Pier Size (inches)	Pier Size (inches)	Pier Size (inches)	(lbs)	
6	6	6	22,550	3000
8	8	8	23,500	3000
10	10	10	24,400	3000
12	12	12	22,400	3000
14	14	14	23,500	3000
16	16	16	21,500	3000
18	18	18	19,500	3000
20	20	20	18,000	3000
22	22	22	17,500	3000
24	24	24	18,500	3000
26	26	26	18,100	3000
28	28	28	18,900	3000
30	30	30	17,500	3000
32	32	32	23,800	3000
34	34	34	23,800	3000
36	36	36	18,000	3000

Remarks:  
 1. Test taken to maximum load capacity of pier  
 2. Maximum Load Rating = 6000 pounds per pier

CP STANDARD PIER DOCUMENTATION - PAGE 10

Test Report  
 Standard and Standard Perimeter Piers  
 May 4, 2015  
 Page 2

5. Test Results and Conclusions  
 a. In accordance with Title 25, Section 1334, the average load for each pier height was divided by 30 to determine the safe operating load.  
 b. For the Standard Pier, the safe operating load exceeded the rating of 6000 pounds. Therefore all of the Standard Piers have been assigned a pass.  
 c. For the Perimeter Pier, the safe operating load exceeded the rating of 3000 pounds. Therefore all of the Perimeter Piers have been assigned a pass.  
 d. Complete load test results are presented Appendix A.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,  
 Technicon Engineering Services, Inc.  
 Darren G. Williams, PE, RCE  
 Principal

Attachments: Appendix A - Test Data Sheets

CP STANDARD PIER DOCUMENTATION - PAGE 7

Technicon Engineering Services, Inc.  
 Project: Compression Load Testing of Steel Piers  
 Central Piers, Inc. T&E No. 150301.001  
 Invoice No. 5368

Perimeter Pier Load Testing

Test #1	Test #2	Test #3	Average Load (lbs)	Load Rating
Pier Size (inches)	Pier Size (inches)	Pier Size (inches)	(lbs)	
6	6	6	19,133	3000
8	8	8	18,500	3000
10	10	10	18,400	3000
12	12	12	14,400	3000
14	14	14	12,300	3000
16	16	16	13,350	3000
18	18	18	11,200	3000
20	20	20	10,500	3000
22	22	22	11,200	3000
24	24	24	11,100	3000
26	26	26	11,400	3000
28	28	28	9,500	3000
30	30	30	10,100	3000
32	32	32	11,400	3000
34	34	34	10,800	3000
36	36	36	11,400	3000

Remarks:  
 1. Test taken to maximum load capacity of pier  
 2. Maximum Load Rating = 3000 pounds per pier

CP STANDARD PIER DOCUMENTATION - PAGE 11

Test Report  
 Standard and Standard Perimeter Piers  
 May 4, 2015  
 Page 3

Appendix A  
 TEST DATA SHEETS

CP STANDARD PIER DOCUMENTATION - PAGE 8

Technicon Engineering Services, Inc.  
 Project: Compression Load Testing of Steel Piers  
 Central Piers, Inc. T&E No. 150301.001  
 Invoice No. 5368

April 20, 2015

For: Mr. Andrew Naze  
 Central Piers, Inc.  
 284 N. Thorne Ave.  
 Fresno, CA 93706

Project: Compression Load Testing of Steel Piers  
 Subject: Compression Load Testing of Steel Piers

Dear Mr. Naze:  
 In accordance with your request and authorization, our firm performed laboratory tests on April 20, 2015.

Technicon Engineering Services received samples on April 13, 2015 for Compression Load Testing of Steel Piers.

The purpose of our service is to assist in quality control to achieve conformance with the approved project plans and specifications and generally accepted practices in the industry. Our services do not guarantee the performance of the design, materials, or workmanship.

Thank you for your valued business. If you have any questions concerning this report, please call the undersigned.

Sincerely,  
 Technicon Engineering Services, Inc.  
 Darren G. Williams, RCE, REA  
 Principal Engineer

CP STANDARD PIER DOCUMENTATION - PAGE 9

Technicon Engineering Services, Inc.  
 Project: Compression Load Testing of Steel Piers  
 Central Piers, Inc. T&E No. 150301.001  
 Invoice No. 5368

TEST REPORT  
 VERTICAL LOAD TESTS OF  
 STANDARD PIER AND STANDARD PERIMETER PIER

RCE  
 CENTRAL PIERS, INC.  
 284 N. Thorne Avenue  
 Fresno, California 93706

Technicon Engineering Services, Inc.  
 May 4, 2015

CP STANDARD PIER DOCUMENTATION - PAGE 4

Test Report  
 Standard and Standard Perimeter Piers  
 May 4, 2015  
 Page 3

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 3. Test Arrangements ..... 1  
 4. Test Procedure ..... 1  
 5. Test Results and Conclusions ..... 1

Appendix A: Test Data Sheets

CP STANDARD PIER DOCUMENTATION - PAGE 5

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 Central Piers, Inc. T&E No. 150301.001  
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 Principal Engineer

CP STANDARD PIER DOCUMENTATION - PAGE 6

Technicon Engineering Services, Inc.  
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TEST REPORT  
 VERTICAL LOAD TESTS OF  
 STANDARD PIER AND STANDARD PERIMETER PIER

RCE  
 CENTRAL PIERS, INC.  
 284 N. Thorne Avenue  
 Fresno, California 93706

Technicon Engineering Services, Inc.  
 May 4, 2015

CP STANDARD PIER DOCUMENTATION - PAGE 1

Test Report  
 Standard and Standard Perimeter Piers  
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 Page 3

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 2. Purpose ..... 1  
 3. Test Arrangements ..... 1  
 4. Test Procedure ..... 1  
 5. Test Results and Conclusions ..... 1

Appendix A: Test Data Sheets

CP STANDARD PIER DOCUMENTATION - PAGE 2

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 Central Piers, Inc. T&E No. 150301.001  
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April 20, 2015

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Sincerely,  
 Technicon Engineering Services, Inc.  
 Darren G. Williams, RCE, REA  
 Principal Engineer

CP STANDARD PIER DOCUMENTATION - PAGE 3



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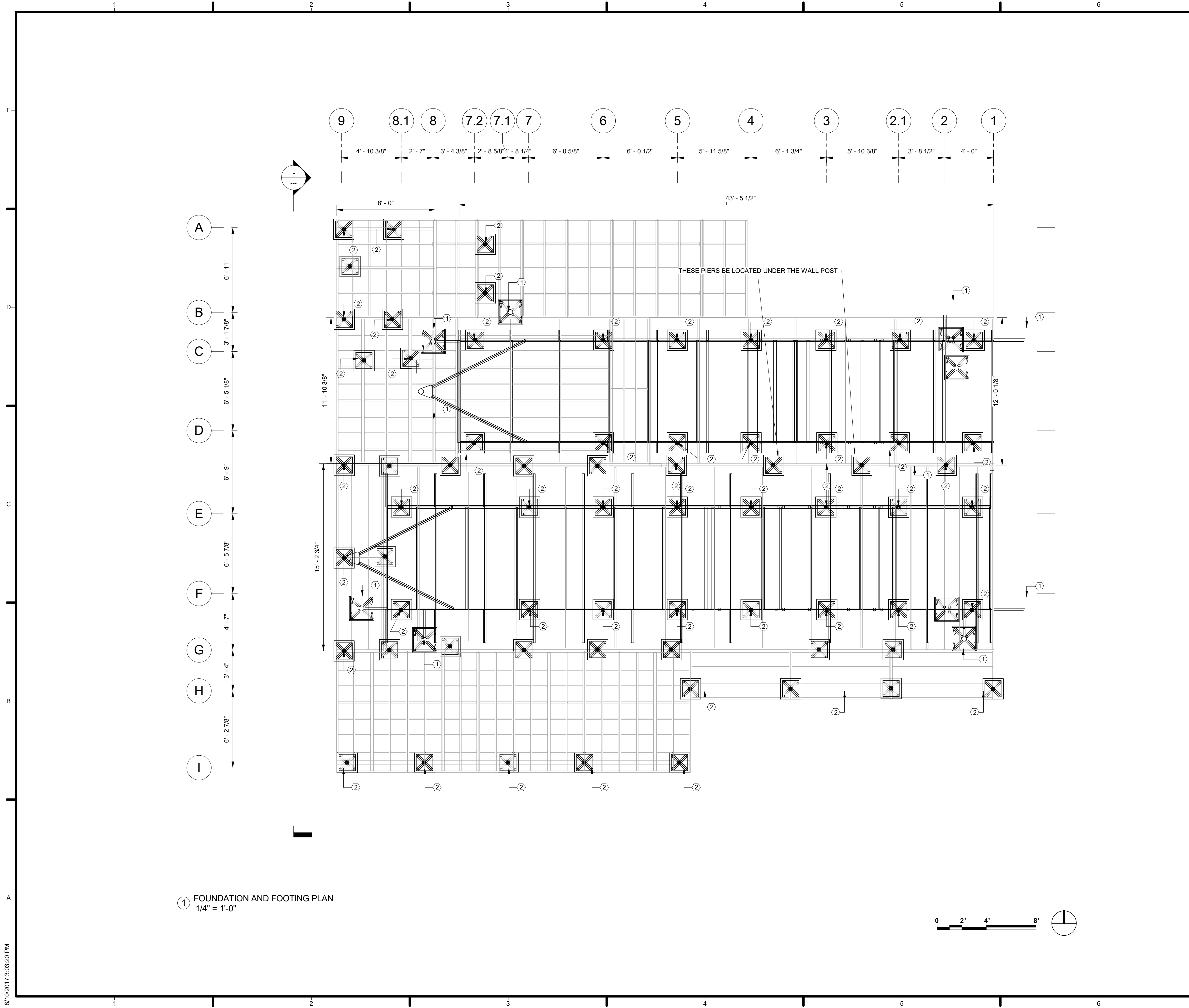


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LOT NUMBER: UNKNOWN  
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SHEET TITLE  
 ENGINEERED  
 STANDARD  
 FOUNDATION DETAILS  
 AND NOTES  
 S-005





1 FOUNDATION AND FOOTING PLAN  
1/4" = 1'-0"

### GENERAL SHEET NOTES

1. ALL PIERS UNDER THE HOUSE, UNLESS PLACED ON THE MODULAR LINE, MUST BE ATTACHED IN-LINE WITH THE CHASSIS I-BEAMS.
2. PLACEMENT AND ATTACHMENT OF PIERS SHALL NOT BE MODIFIED WITHOUT APPROVAL BY STRUCTURAL ENGINEER
3. ANCHOR PIERS SHOULD BE ANCHORED TO THE GROUND USING 4 ANCHOR RODS, ORTHOGONALLY 24" O.C. IN ALL 4 CORNERS OF PIER AS SPECIFIED IN MANUFACTURE PLANS. SEE SHEET S-101 FOR DETAILS.
4. ALL PIERS ARE ADJUSTABLE TO COMPENSATE UNEVEN GROUND ON SITE.
5. NUMBER OF PIERS:  
8 ANCHOR PIERS  
32 ANCHOR RODS (4 PER ANCHOR PIER)  
29 STANDARD PIERS UNDER THE HOUSE  
16 STANDARD PIERS UNDER THE DECK AREA

### REFERENCE KEYNOTES

### SHEET KEYNOTES

### LEGEND

- STANDARD PIER
- ANCHOR PIER



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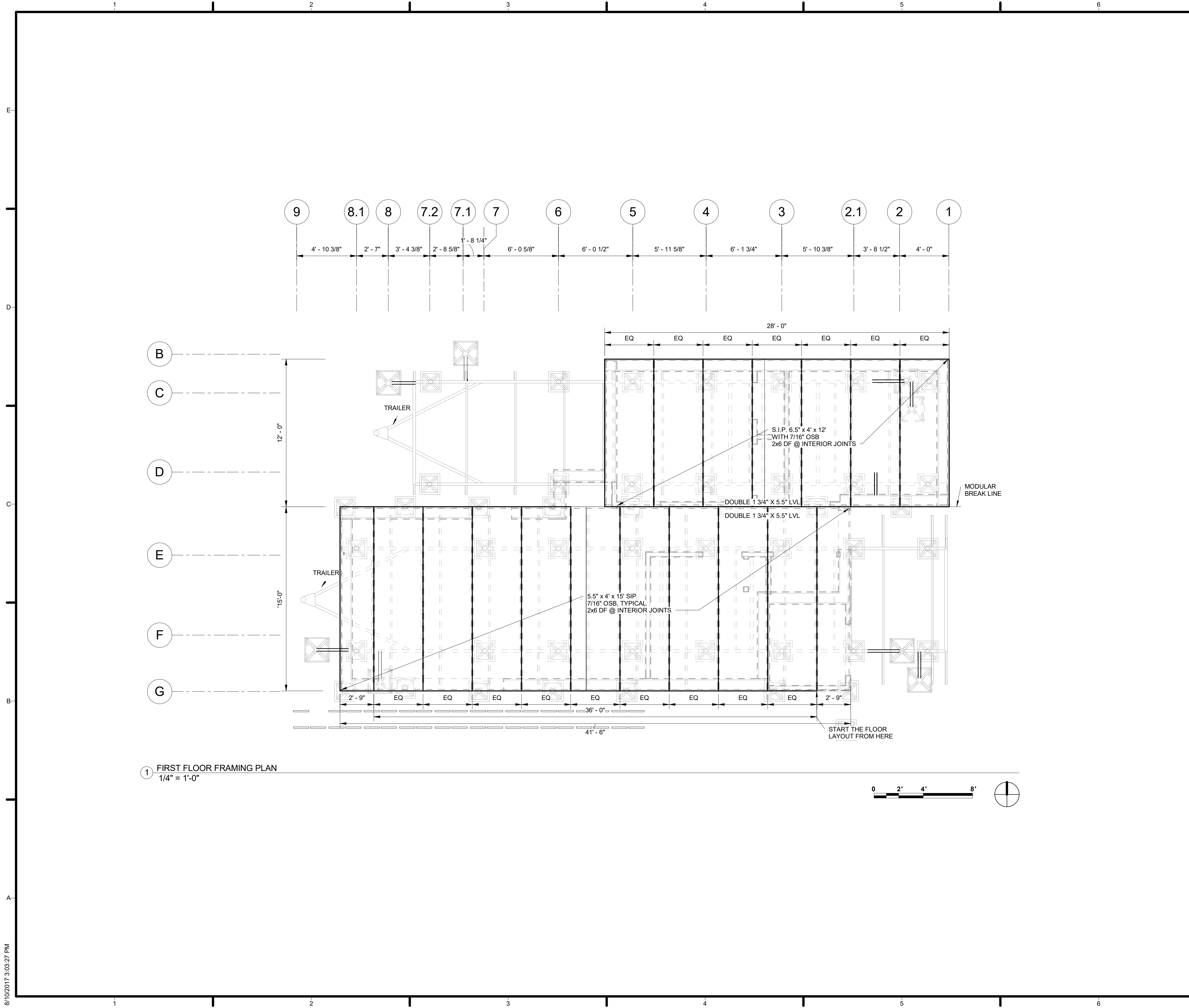
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SHEET TITLE  
**FOUNDATION AND FOOTING PLAN**

# S-101





① FIRST FLOOR FRAMING PLAN  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

1. TRAILER FRAMES SHALL NOT BE MODIFIED, CUT OR NOTCHED IN ANY WAY WITHOUT STRUCTURAL ENGINEER APPROVAL.
2. ALL MAINTENANCE AND CONSTRUCTION DIRECTLY RELATED TO THE TRAILER FRAMES OR THE LATERAL FLOOR LOAD TRANSFERAL SHALL BE PERFORMED UNDER SUPERVISION AND INSPECTED BY THE APPROPRIATE ENTITY.
3. ALL TRAILER FRAME ADDITIONS SHALL BE CONSTITUTED OF A36 MILD STEEL OR SUPERIOR.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**FLOOR FRAMING PLAN**

**S-102A**





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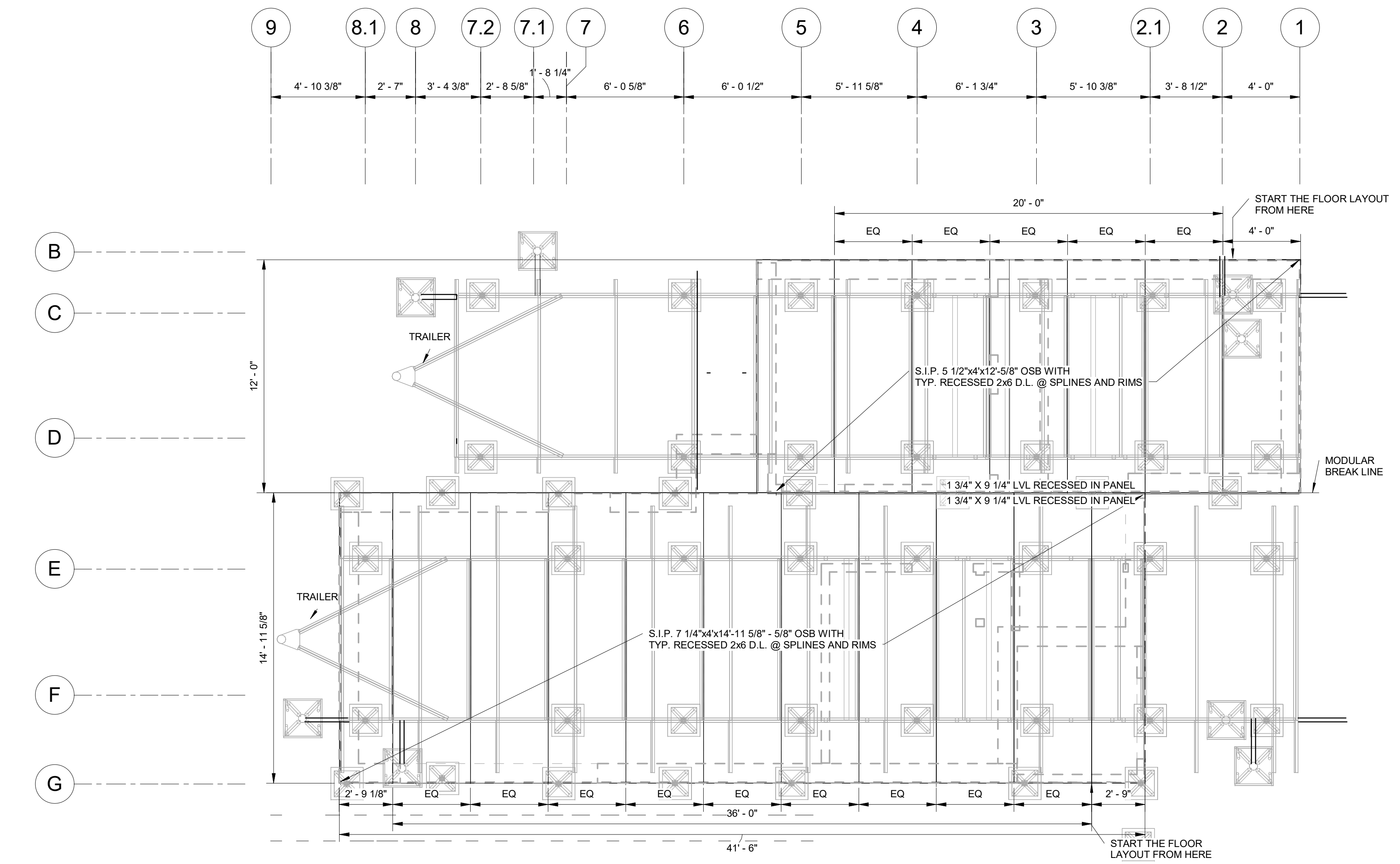


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SHEET TITLE  
 ONE-LINE FLOOR FRAMING PLAN

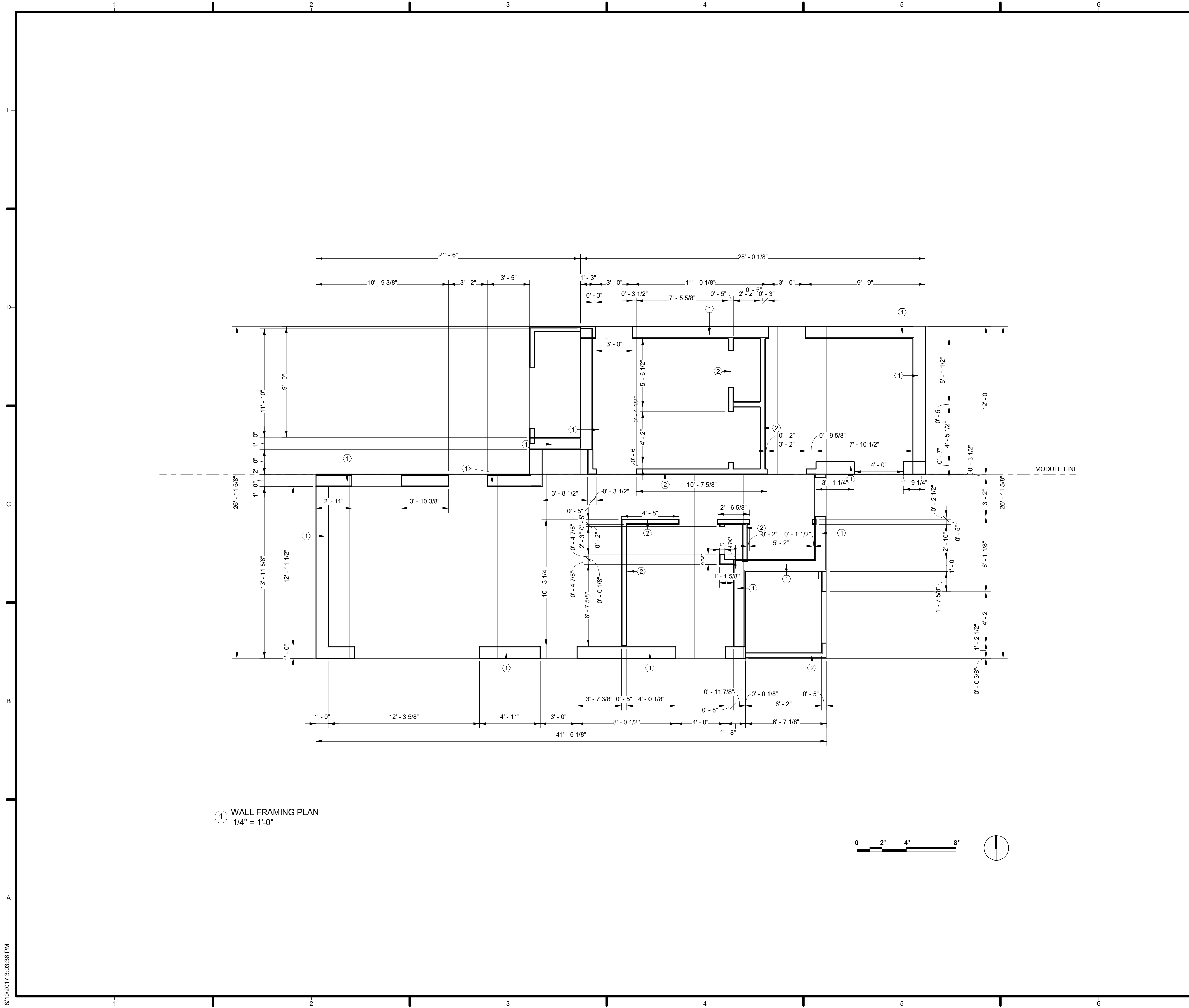
S-102B



1 FIRST FLOOR FRAMING PLAN Copy 2  
 1/4" = 1'-0"

8/10/2017 3:03:29 PM





① WALL FRAMING PLAN  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- ① 1. 12" BAMCORE EXTERIOR PANEL WALL SYSTEM
- ② 2. 5" BAMCORE INTERIOR PANEL WALL SYSTEM



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SHEET TITLE  
**WALL FRAMING PLAN**

**S-103A**





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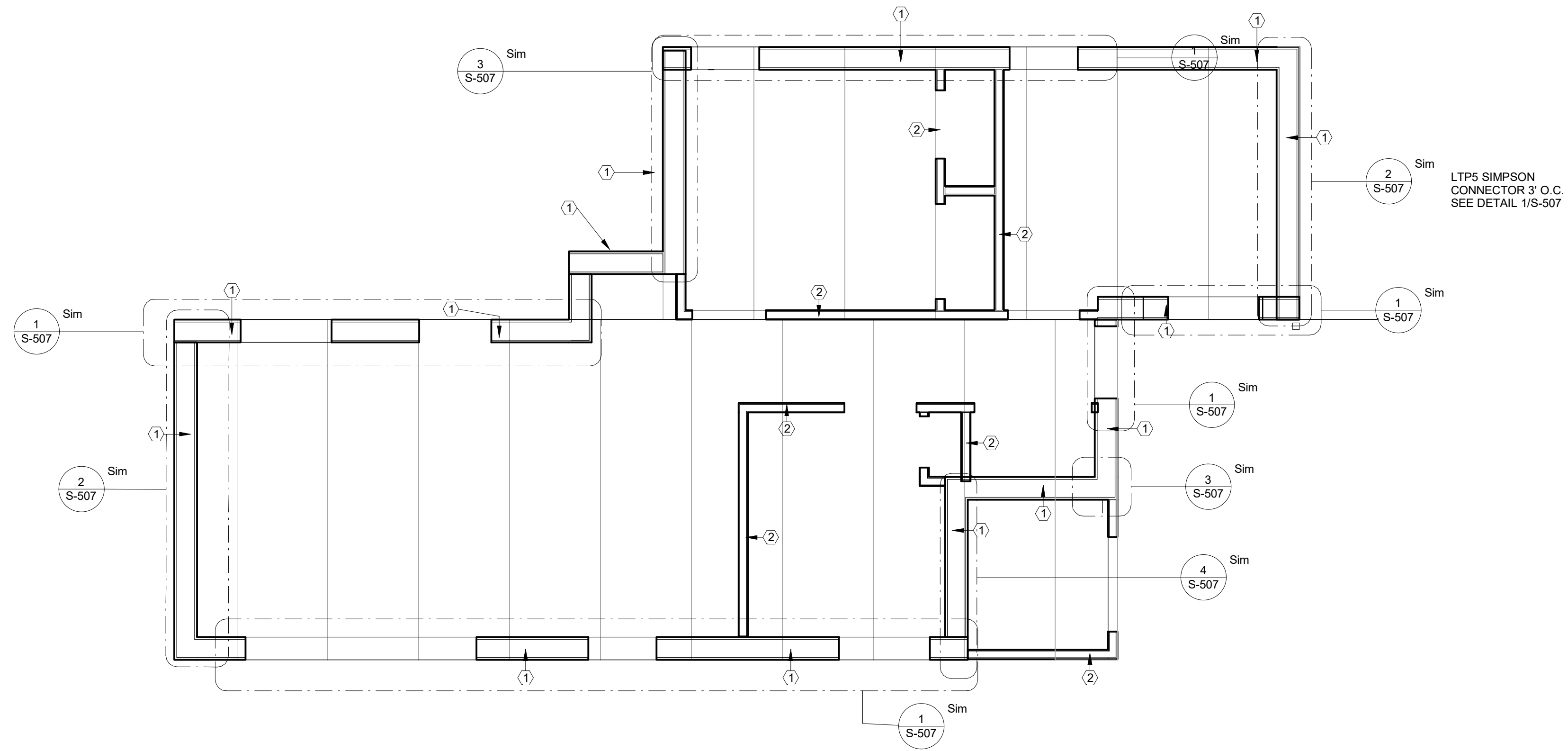


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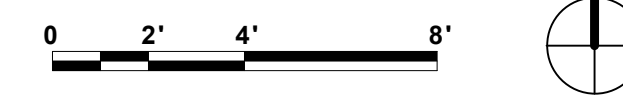
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SHEET TITLE  
 TIE DOWNS AND  
 SHEAR TRANSFER

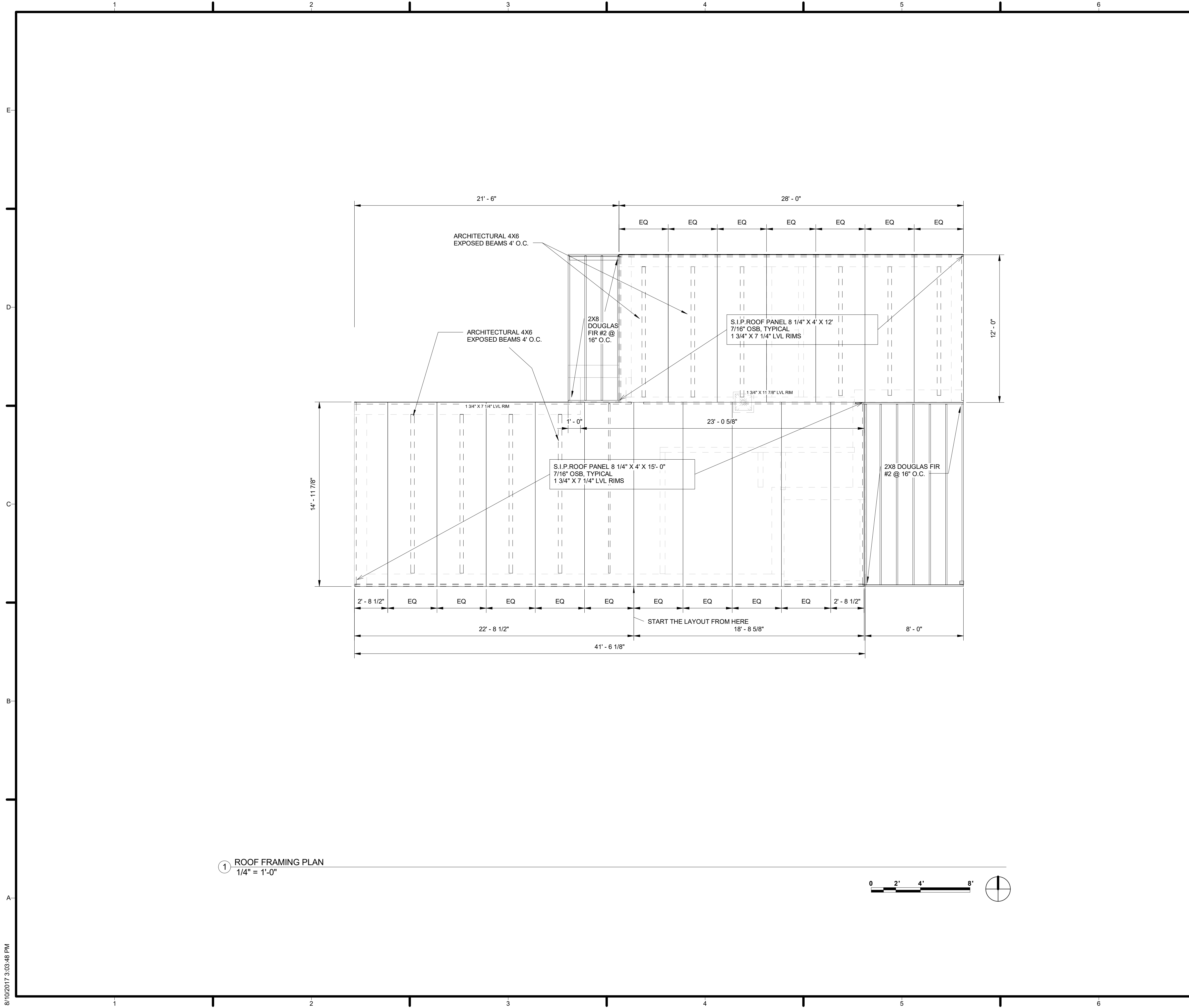
S-103B



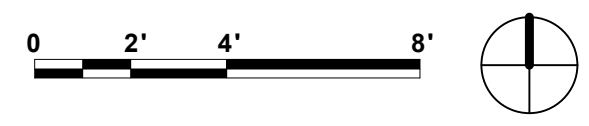
① WALL FRAMING PLAN SHEET  
 1/4" = 1'-0"







① ROOF FRAMING PLAN  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

NOTE THAT ROOF SIPS ARE SUPPORTED EVERY 24" O.C. BY EITHER 4X6 EXPOSED BEAMS OR 2X8 D.L. AT THE CONNECTIONS.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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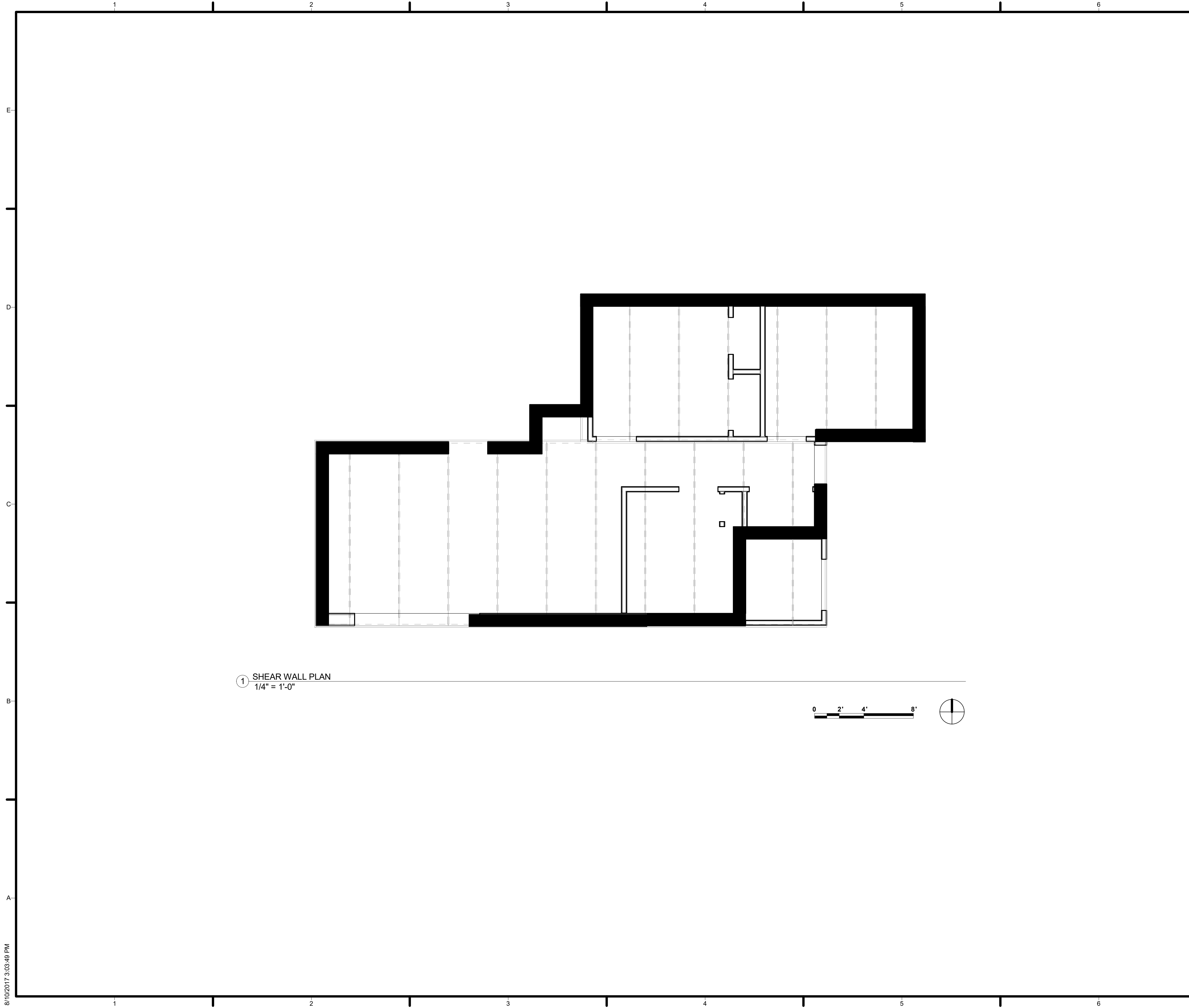
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SHEET TITLE  
**ROOF FRAMING PLAN**

**S-104**





① SHEAR WALL PLAN  
1/4" = 1'-0"



GENERAL SHEET NOTES

BamCore WALLS ARE SUFFICIENT ENOUGH TO RESIST THE SHEAR LOADS. SEE STRUCTURAL CALCULATION PACKAGE. SHEAR TRANSFER TO FLOOR AND TIE DOWNS ARE SHOWN IN S-103B.

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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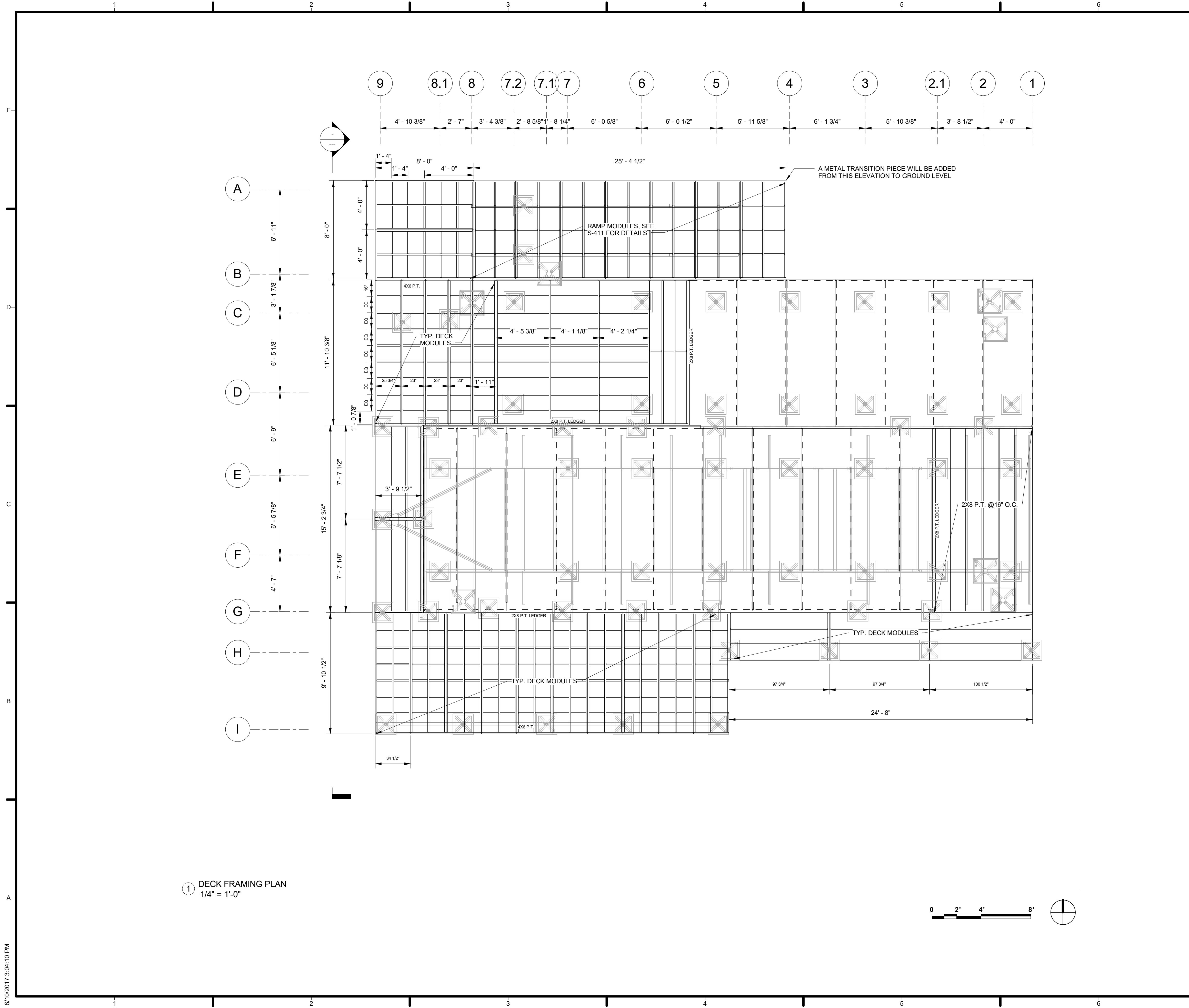
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SHEET TITLE  
 SHEAR WALL PLAN

S-105





**GENERAL SHEET NOTES**

1. DECK SECTIONS ABOVE TRAILER FRAMES ARE TO BE PERMANENTLY ATTACHED.
2. ALL OTHER DECK MODULES WILL BE PLACED BY HAND.
3. DECK MODULES' WEIGHTS HAVE BEEN CALCULATED TO BE COMPLIANT WITH OSHA.

**REFERENCE KEYNOTES**

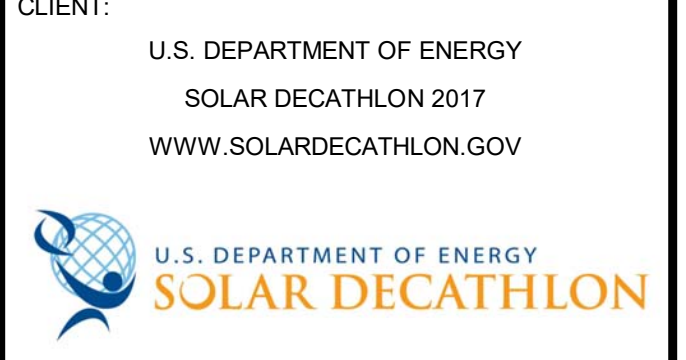
**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**DECK FRAMING**

**S-106A**

1 DECK FRAMING PLAN  
 1/4" = 1'-0"



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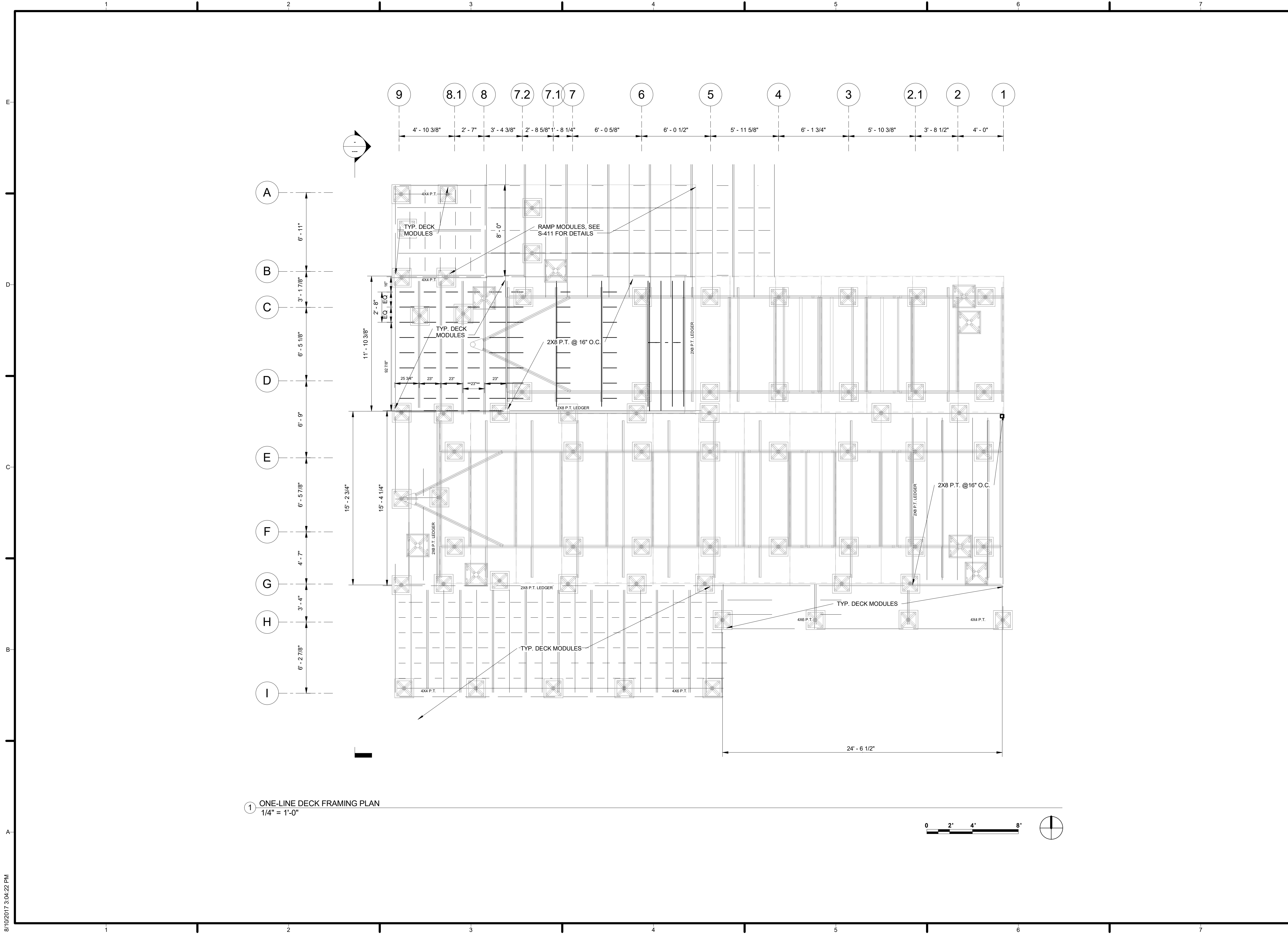


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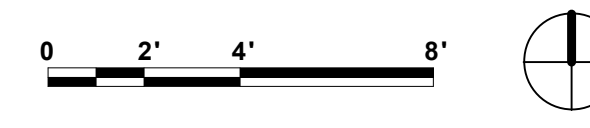
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SHEET TITLE  
 ONE-LINE DECK FRAMING PLAN

S-106B

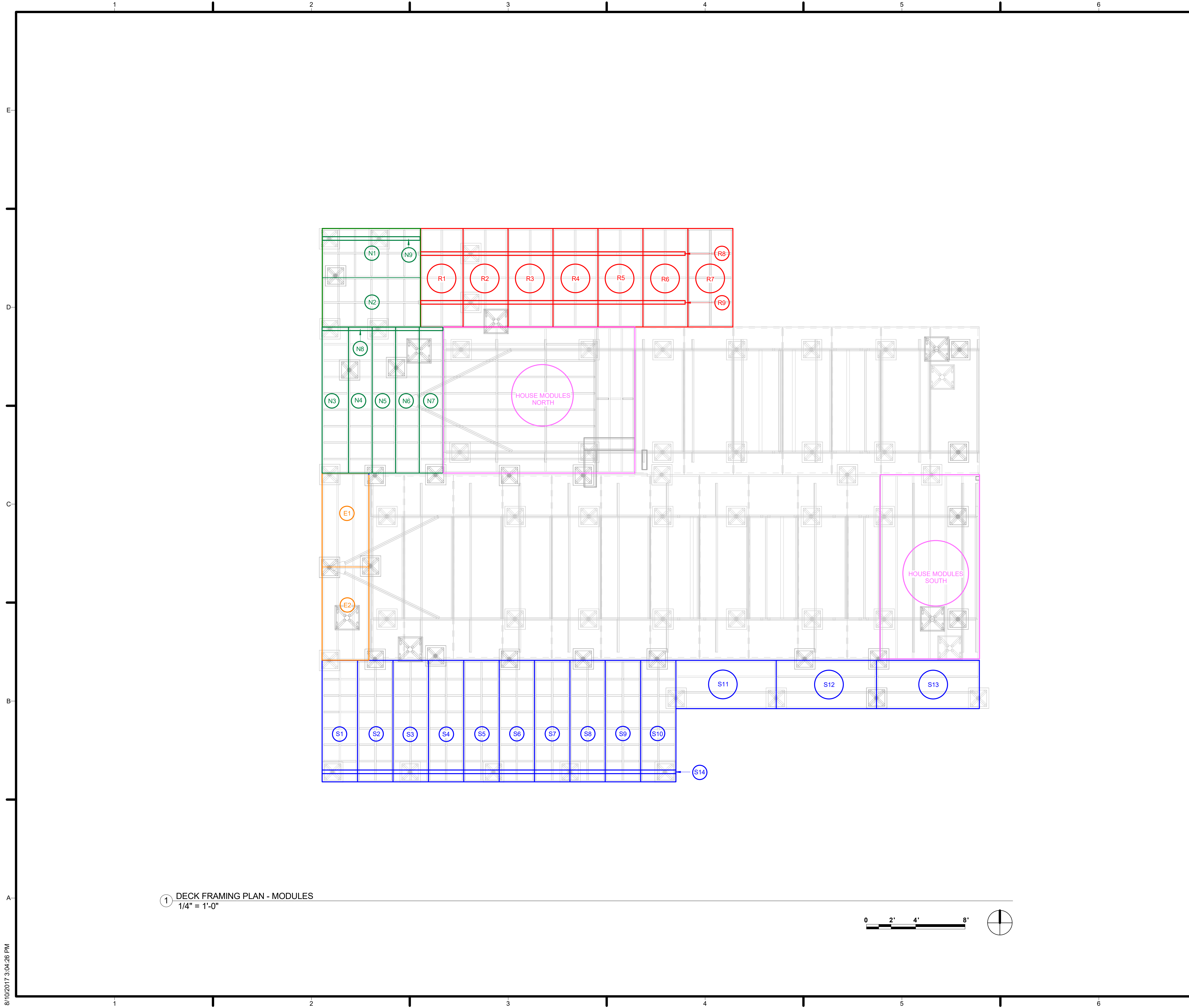


① ONE-LINE DECK FRAMING PLAN  
 1/4" = 1'-0"



8/10/2017 3:04:22 PM





GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

HOUSE MODULES (PERMANENT)



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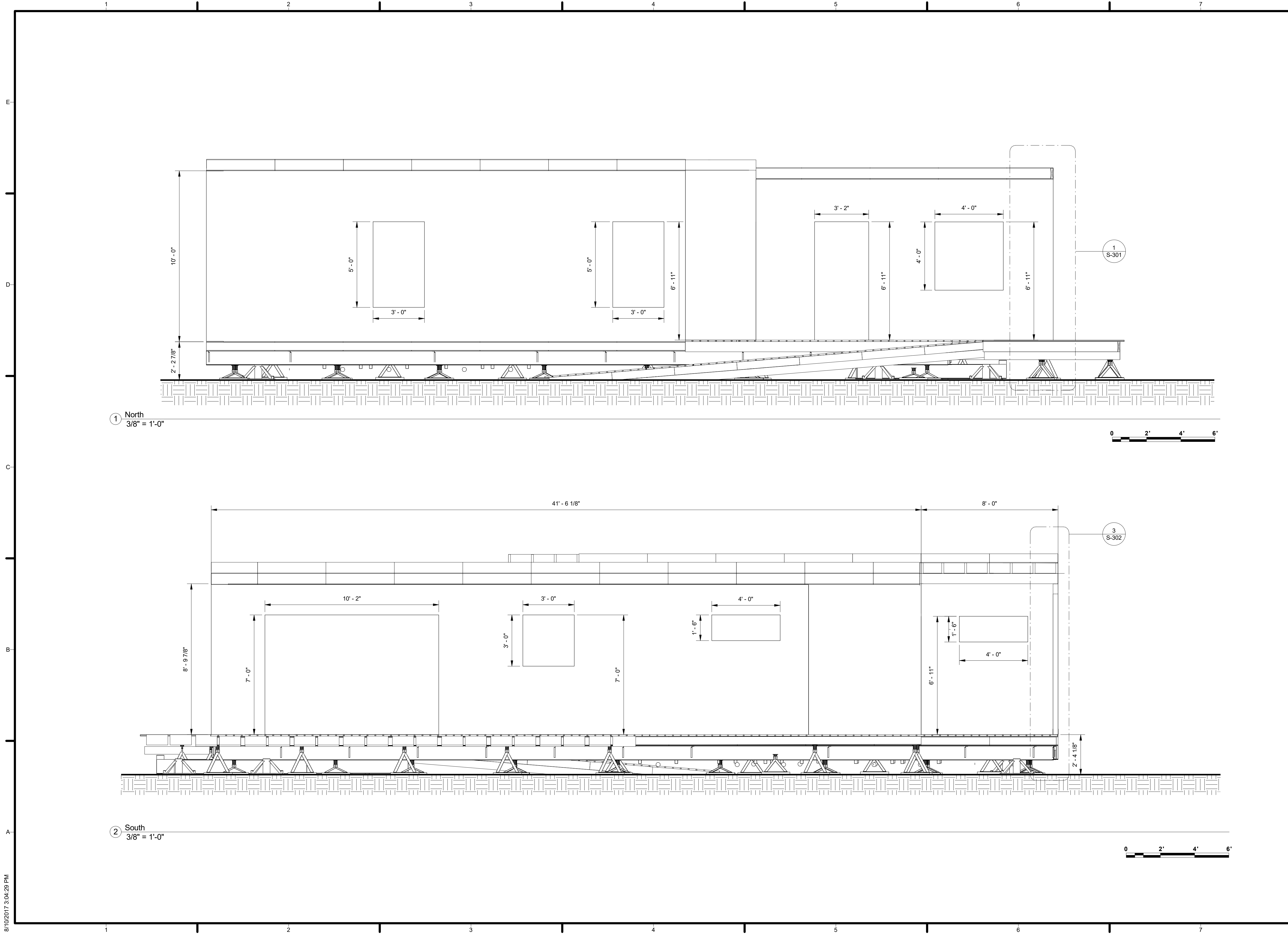
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SHEET TITLE  
 DECK MODULE LAYOUT

**S-111**

8/10/2017 3:04:26 PM





1 North  
3/8" = 1'-0"



2 South  
3/8" = 1'-0"



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SHEET TITLE  
 FRAMING ELEVATIONS

S-201





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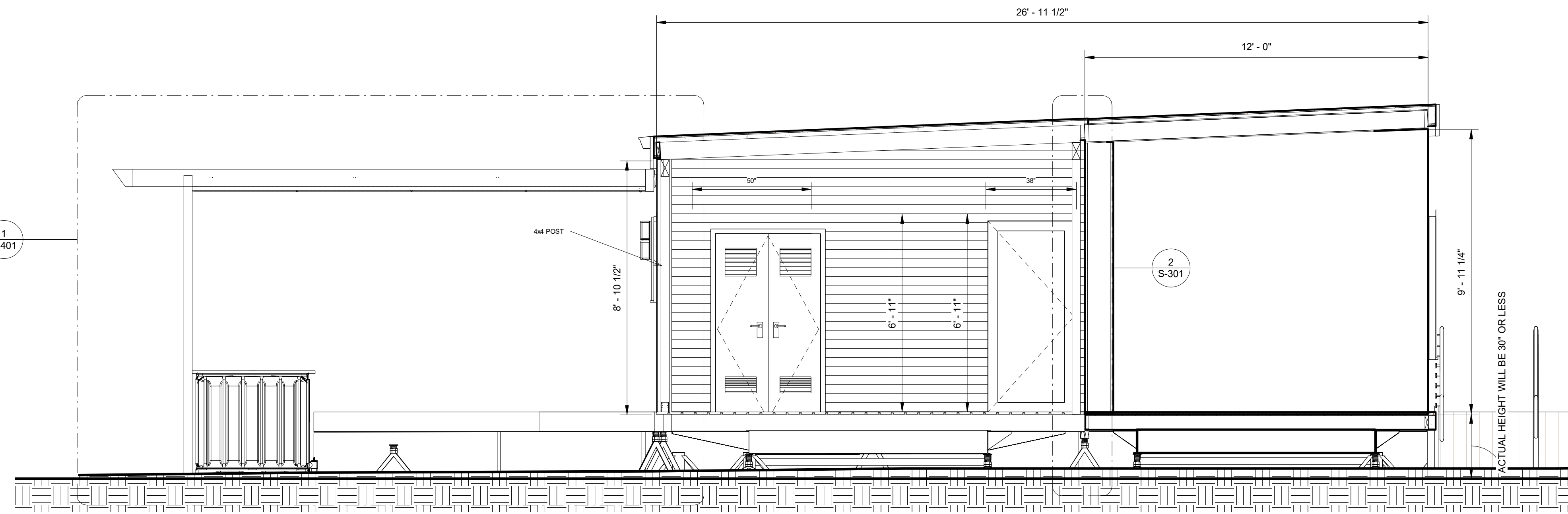


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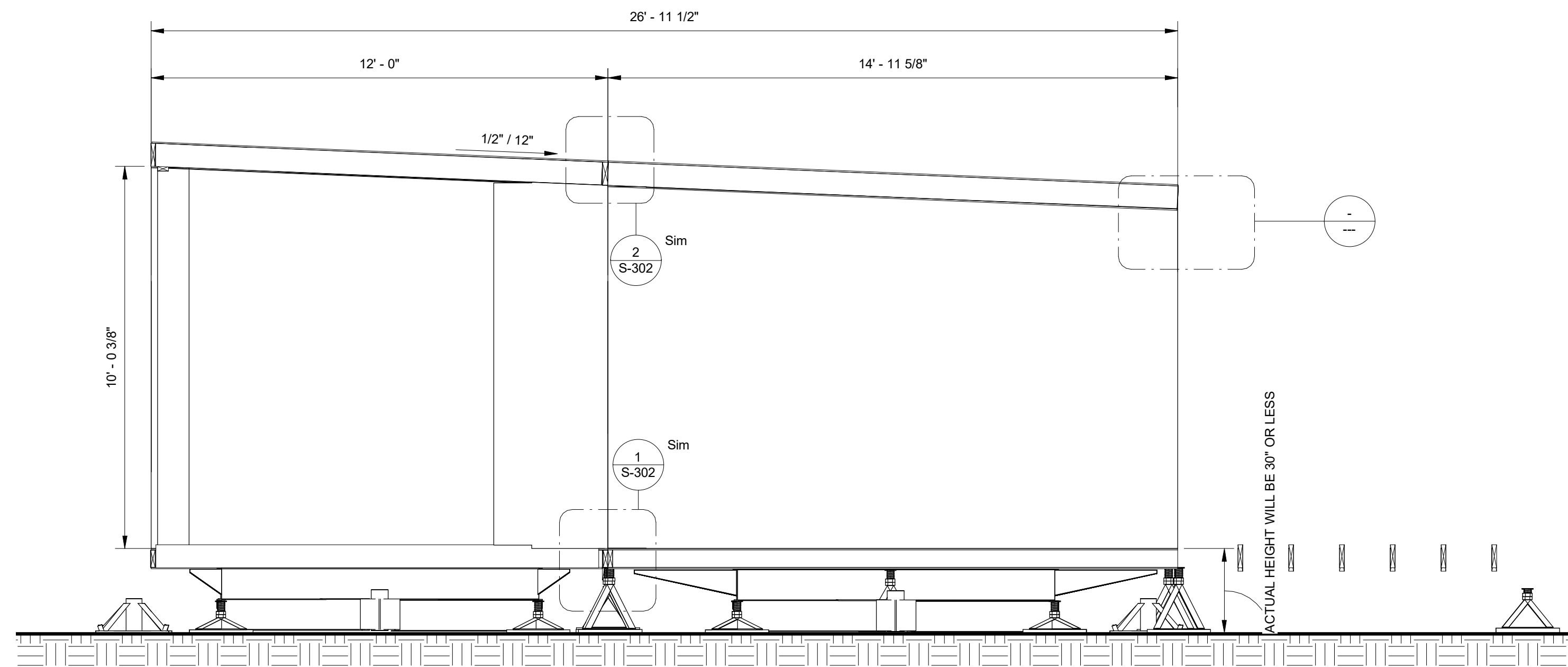
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SHEET TITLE  
 FRAMING ELEVATIONS

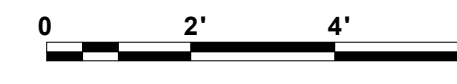
S-202



① EAST ELEVATION  
 3/8" = 1'-0"



② West  
 3/8" = 1'-0"







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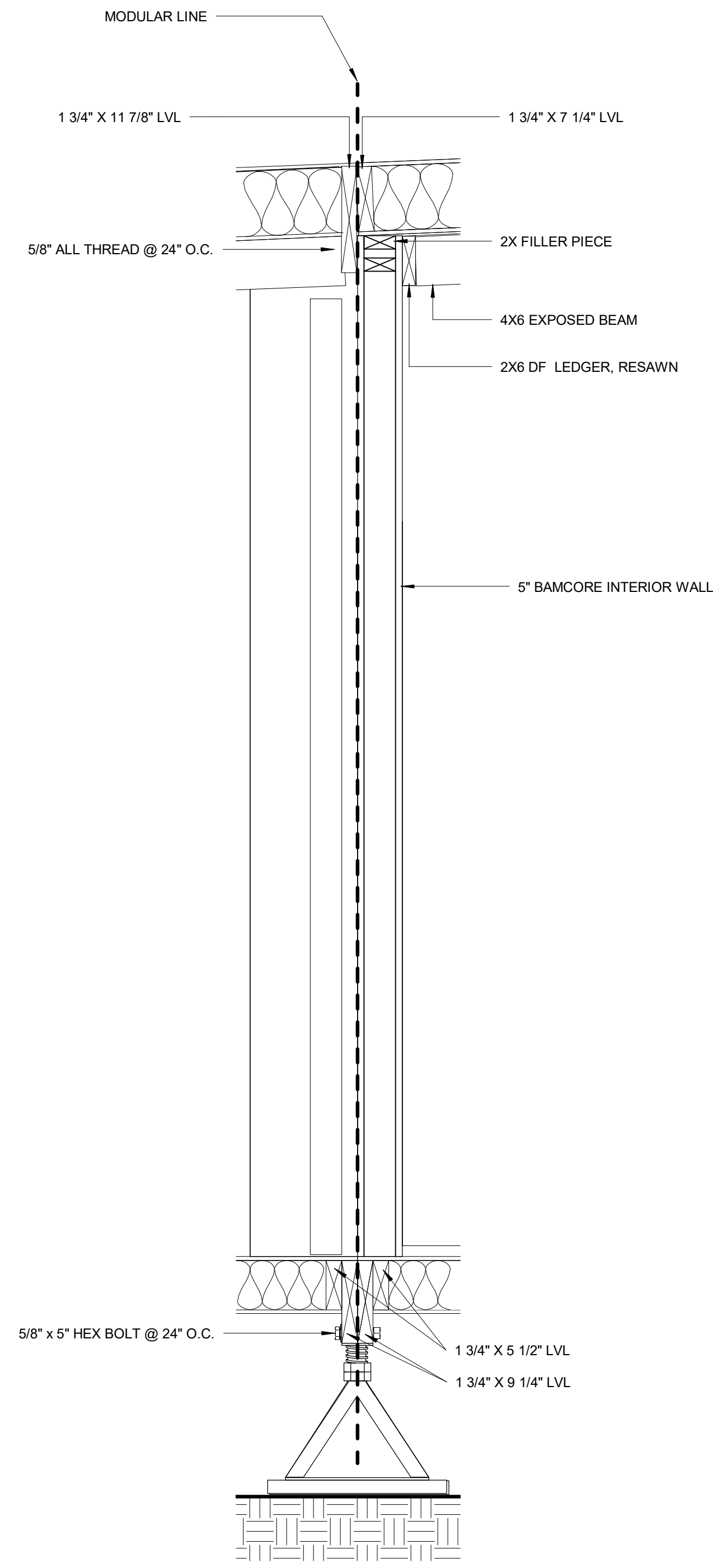


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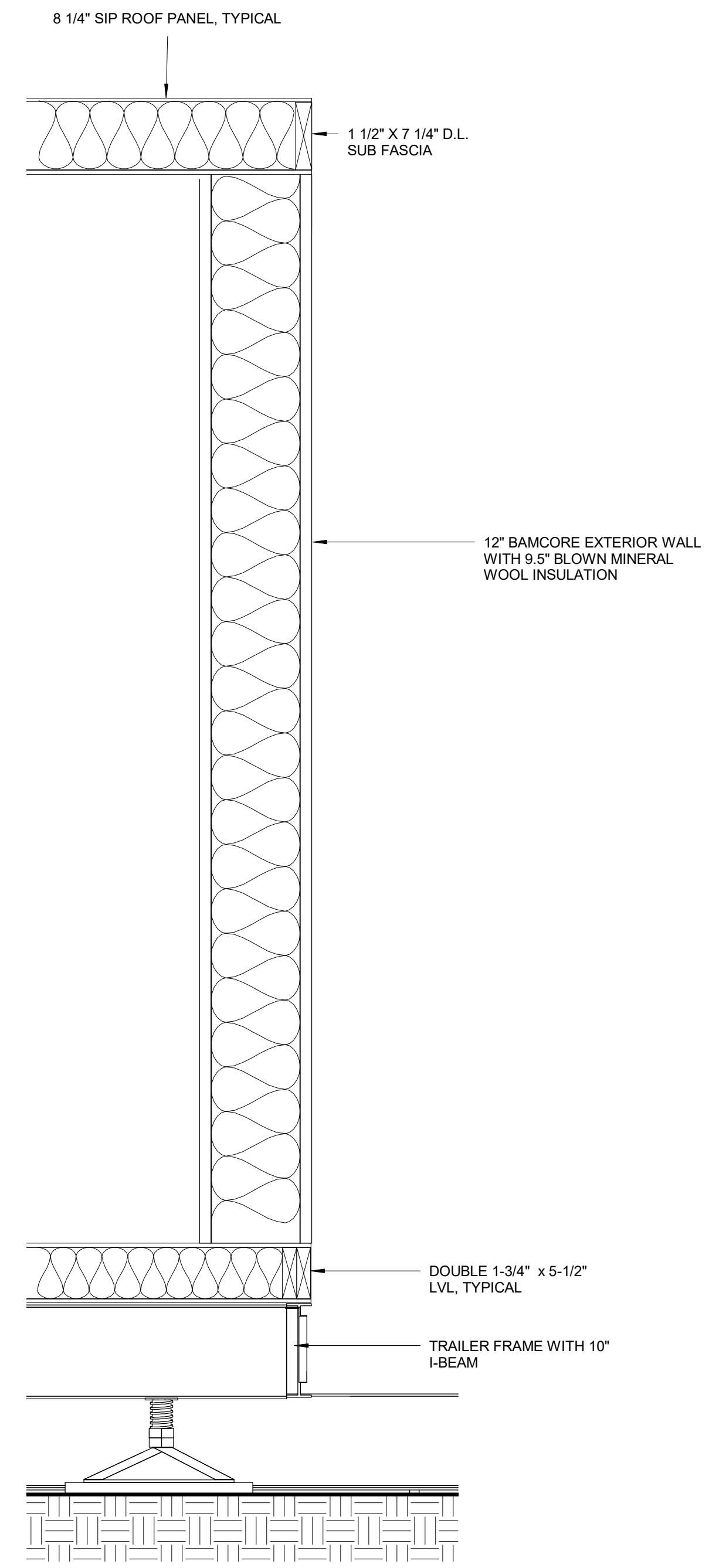
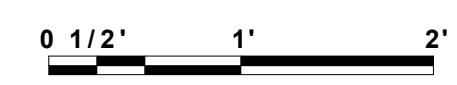
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SHEET TITLE  
 TYPICAL SECTIONS

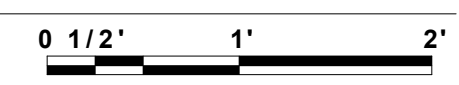
S-301



② TYP. MODULAR LINE SECTION  
 1" = 1'-0"



① TYP. WALL SECTION  
 1" = 1'-0"



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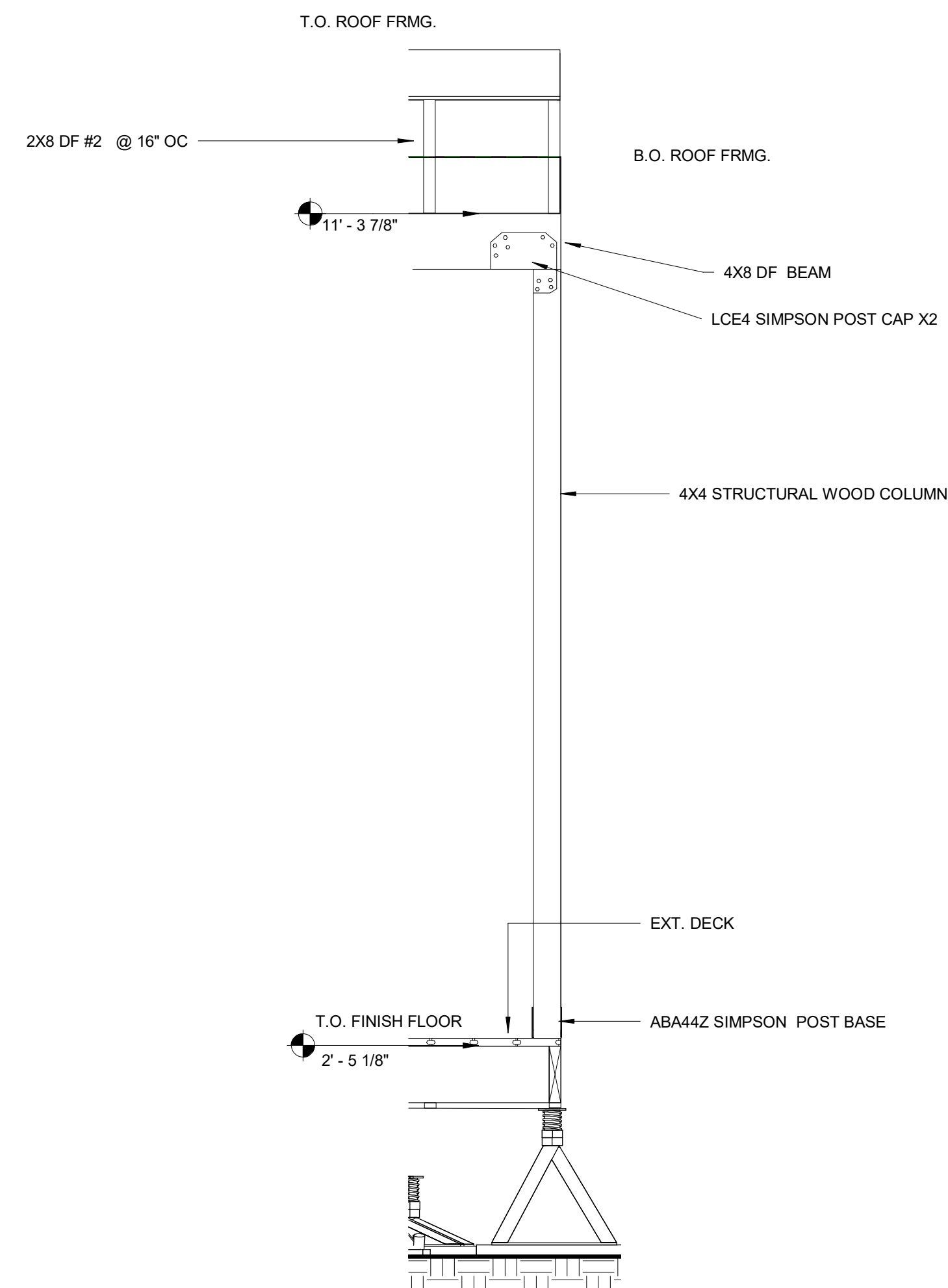


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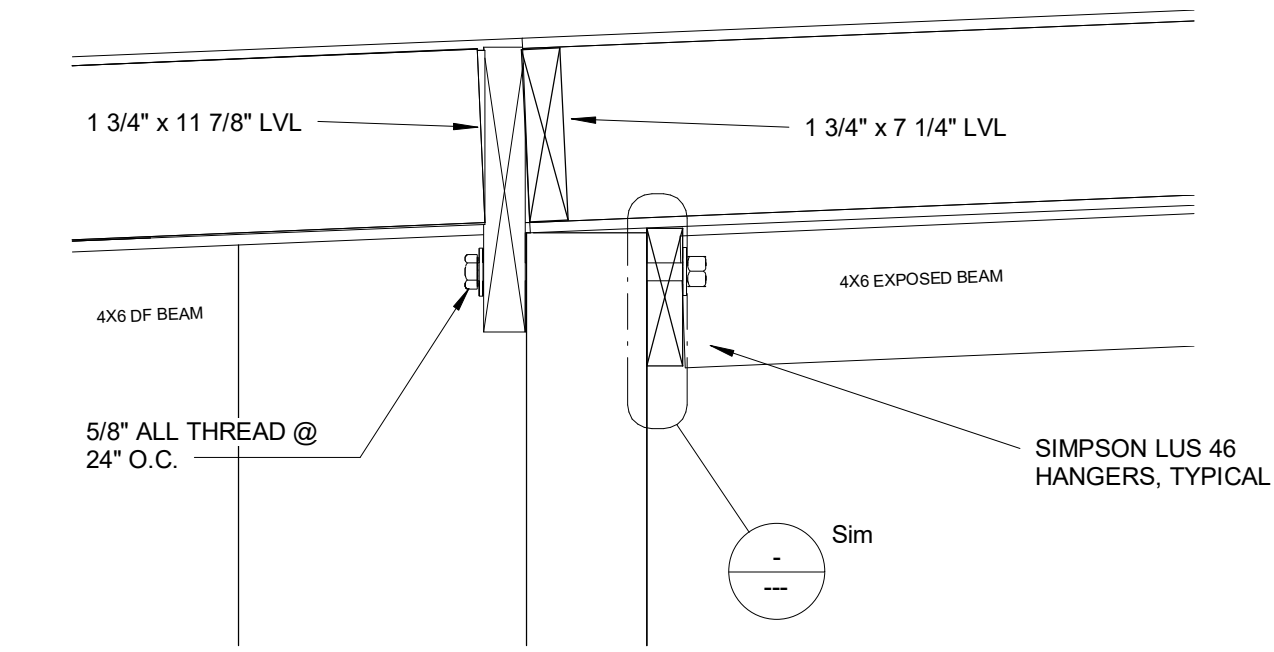
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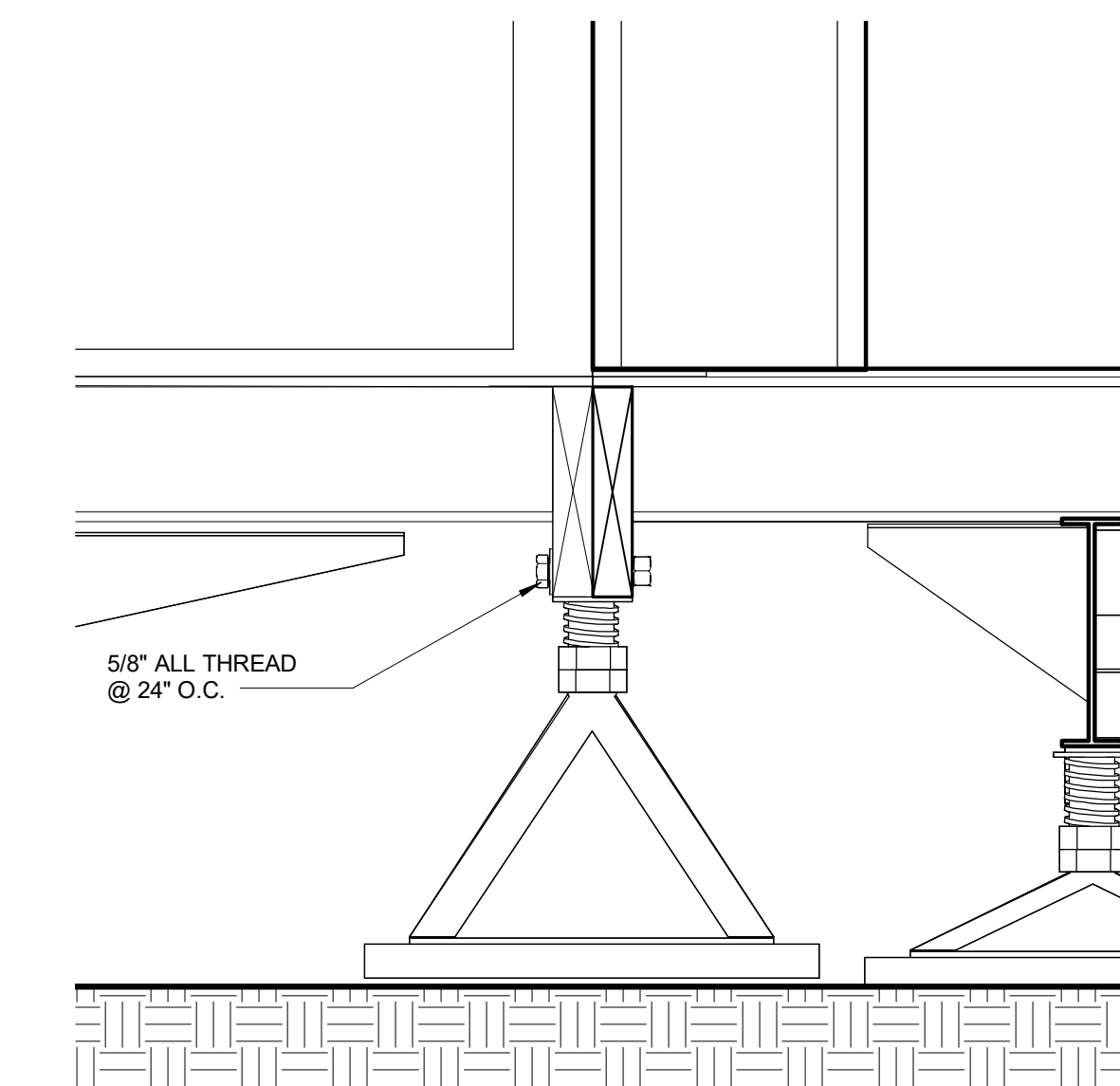
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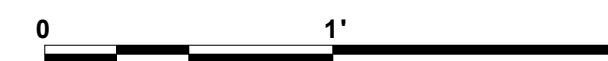
③ SOUTH EAST EXTERIOR COLUMN  
 3/4" = 1'-0"

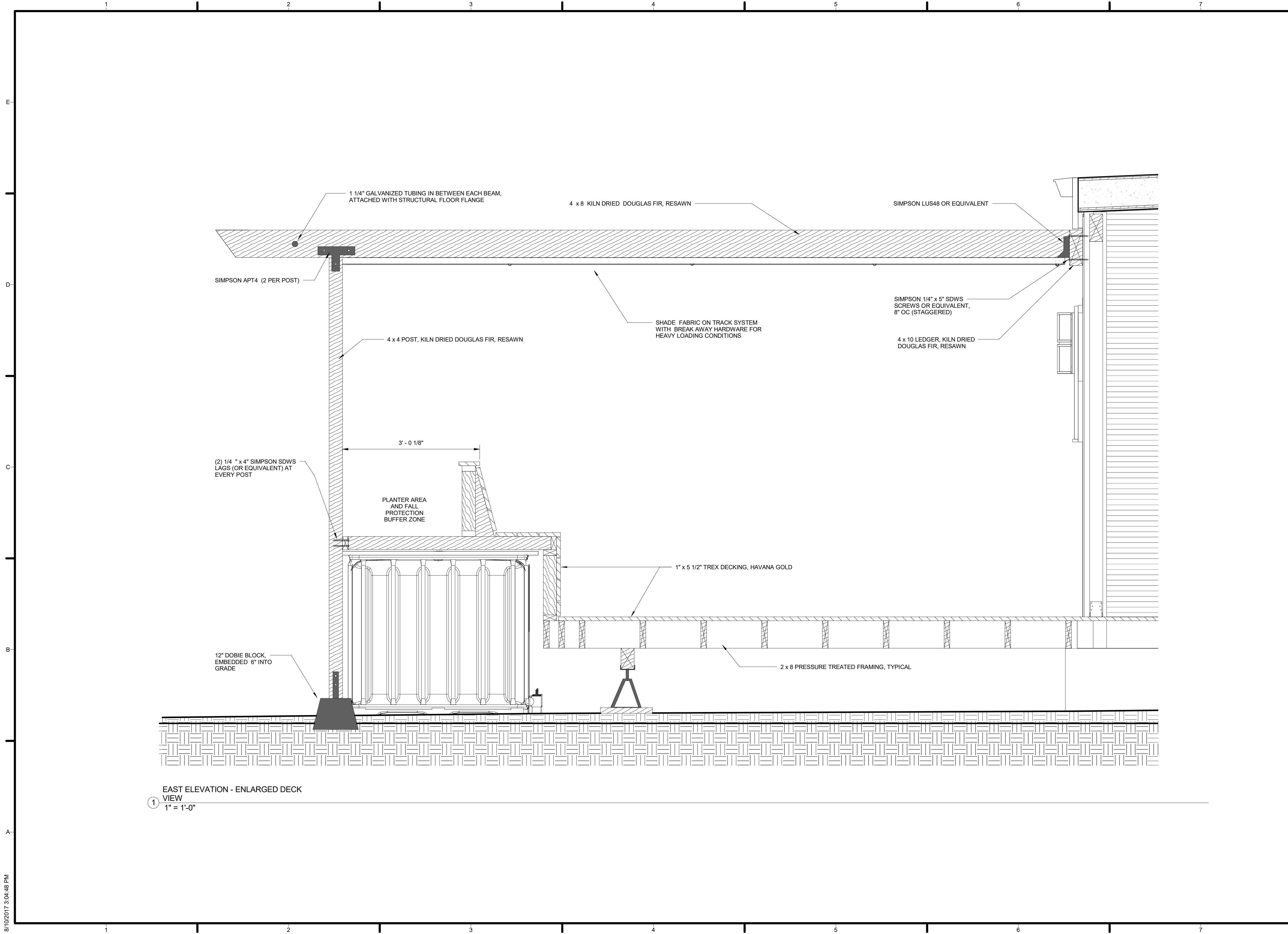


② MODULE ROOF CONNECTION  
 1 1/2" = 1'-0"



① FLOOR MODULE CONNECTION  
 1 1/2" = 1'-0"





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SHEET TITLE  
**ENLARGED DECK ELEVATION**

**S-401**

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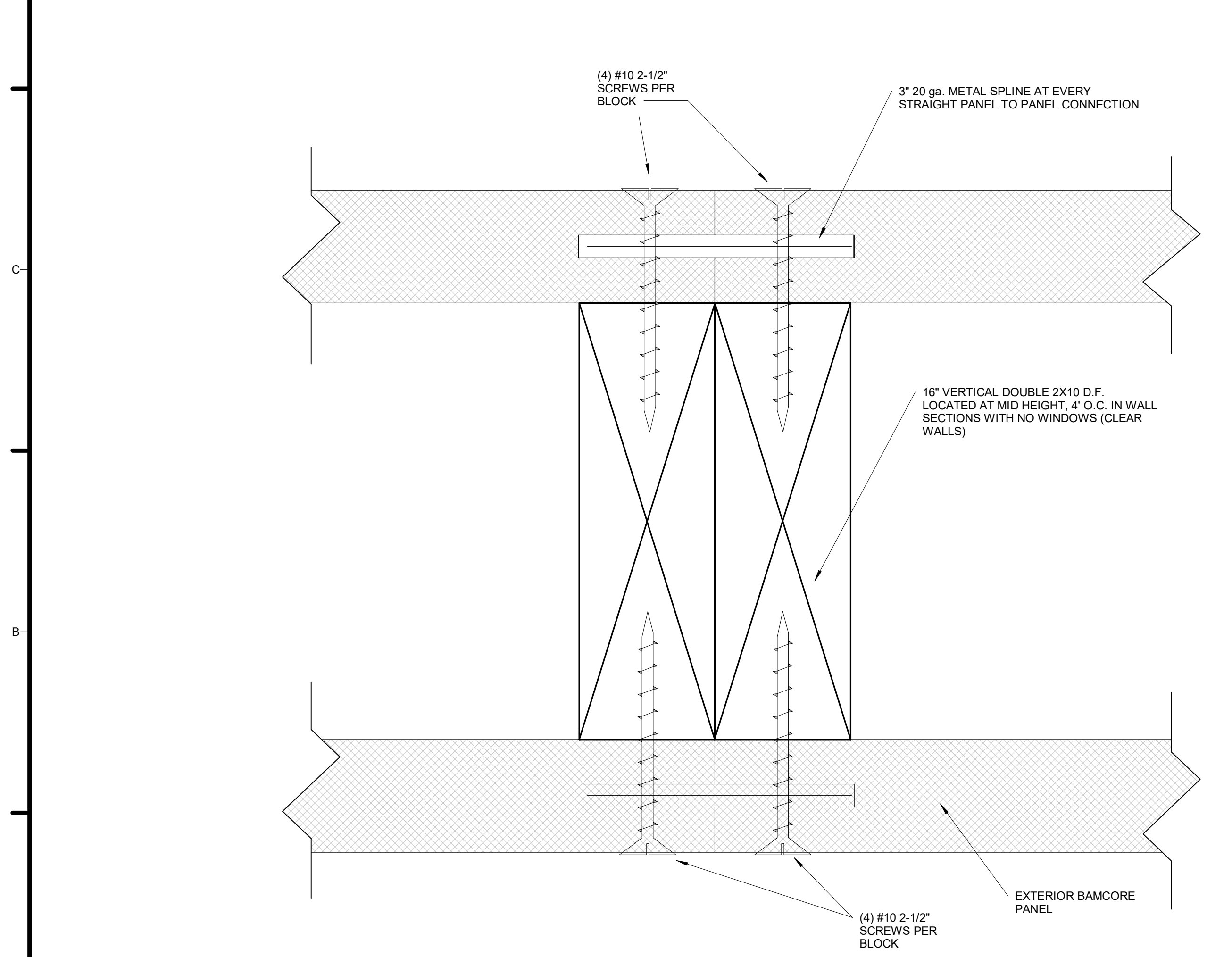
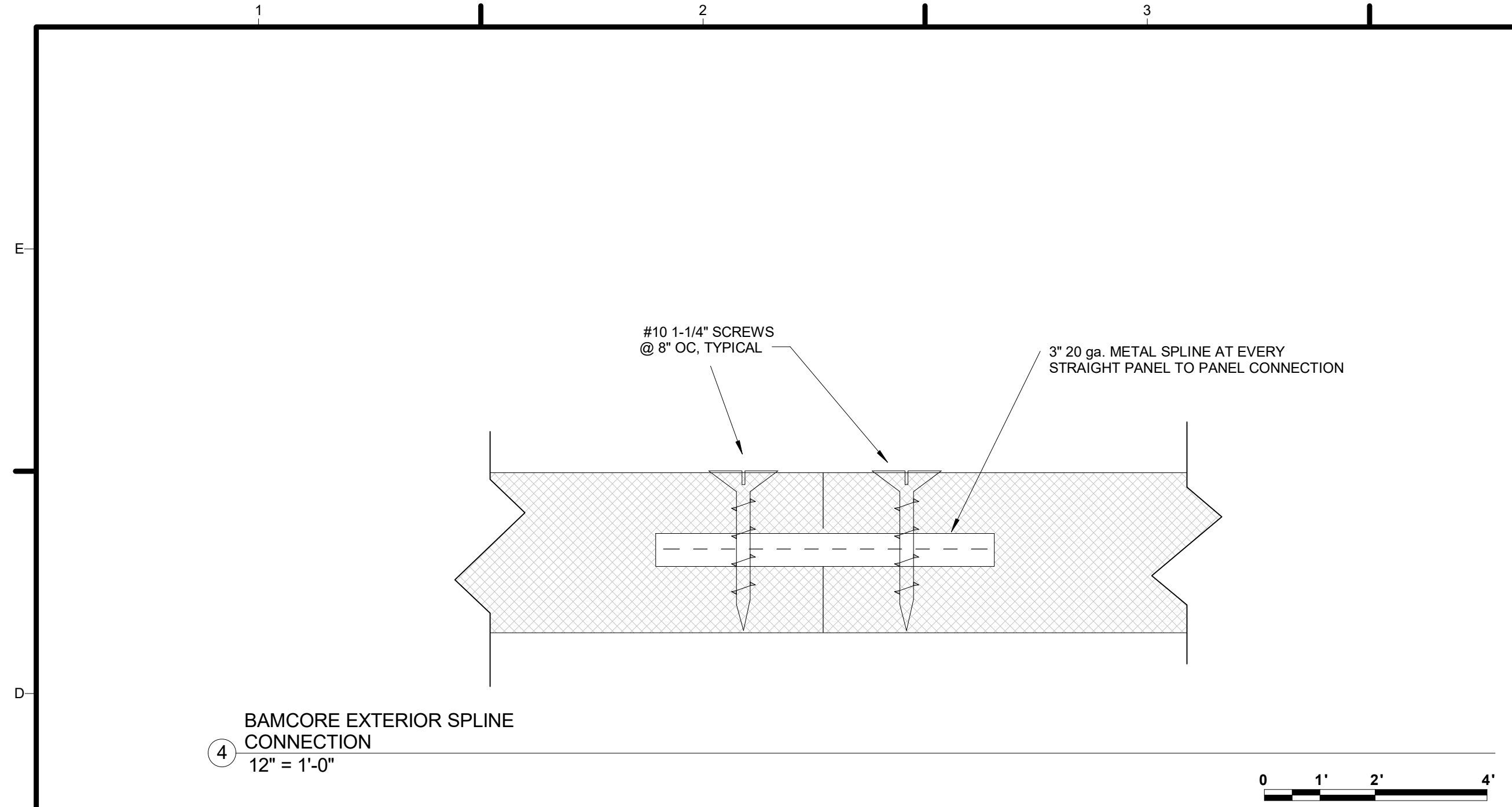
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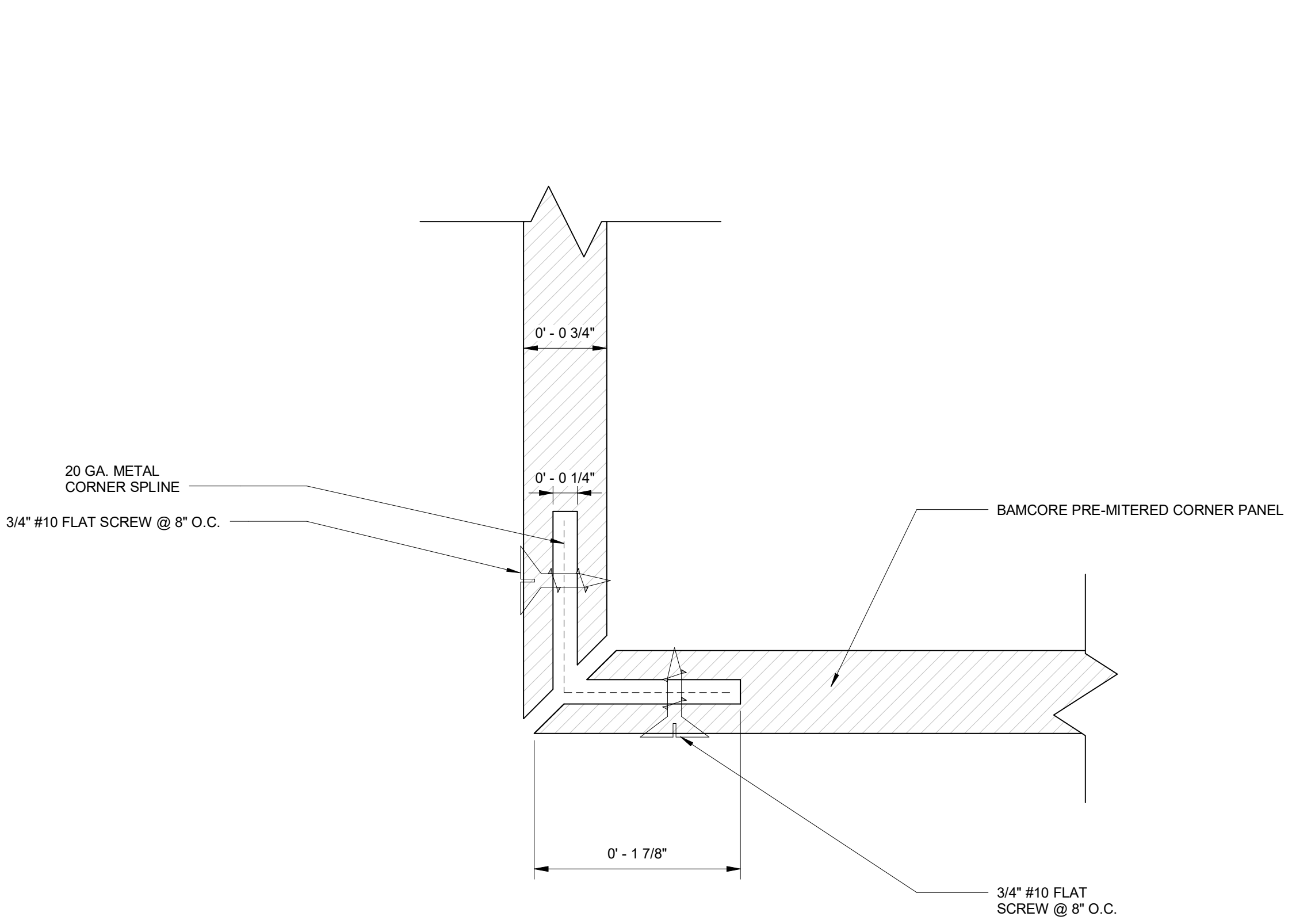
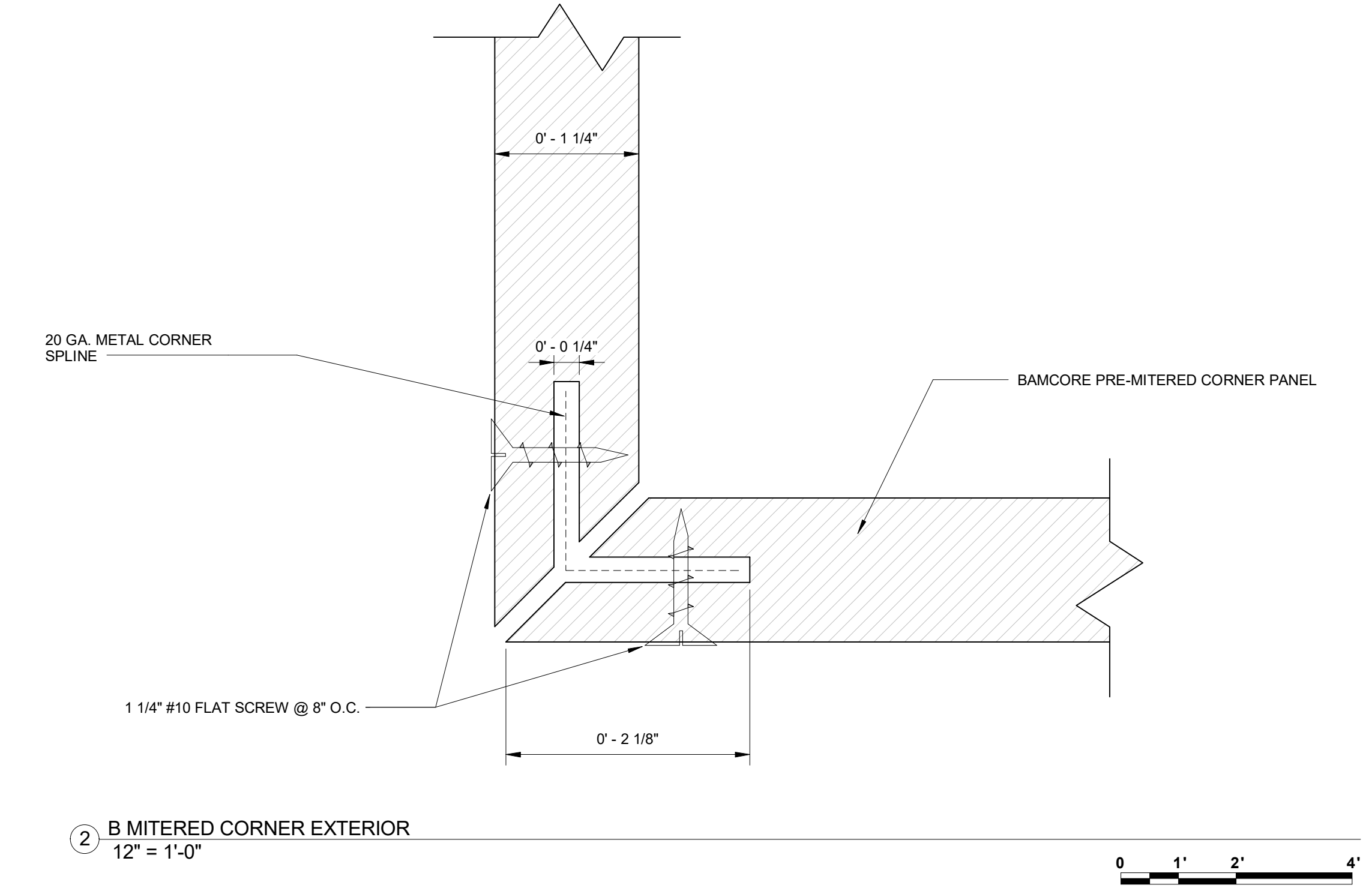
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SHEET TITLE  
**BAMCORE FRAMING DETAILS**

**S-501A**

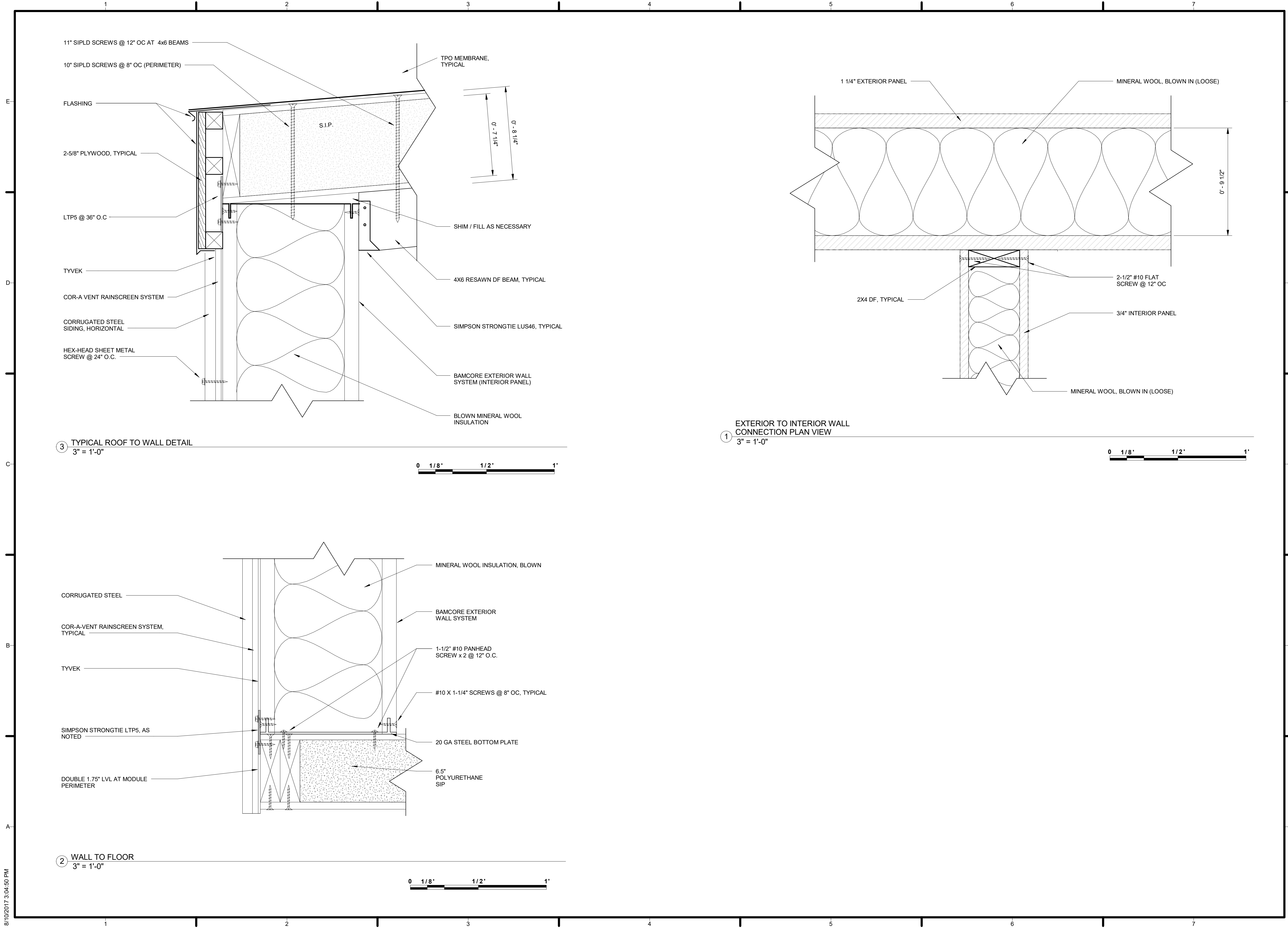


④ BAMCORE EXTERIOR SPLINE CONNECTION  
 12" = 1'-0"



② B MITERED CORNER EXTERIOR  
 12" = 1'-0"

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SHEET TITLE  
**BAMCORE FRAMING DETAILS**

**S-501B**





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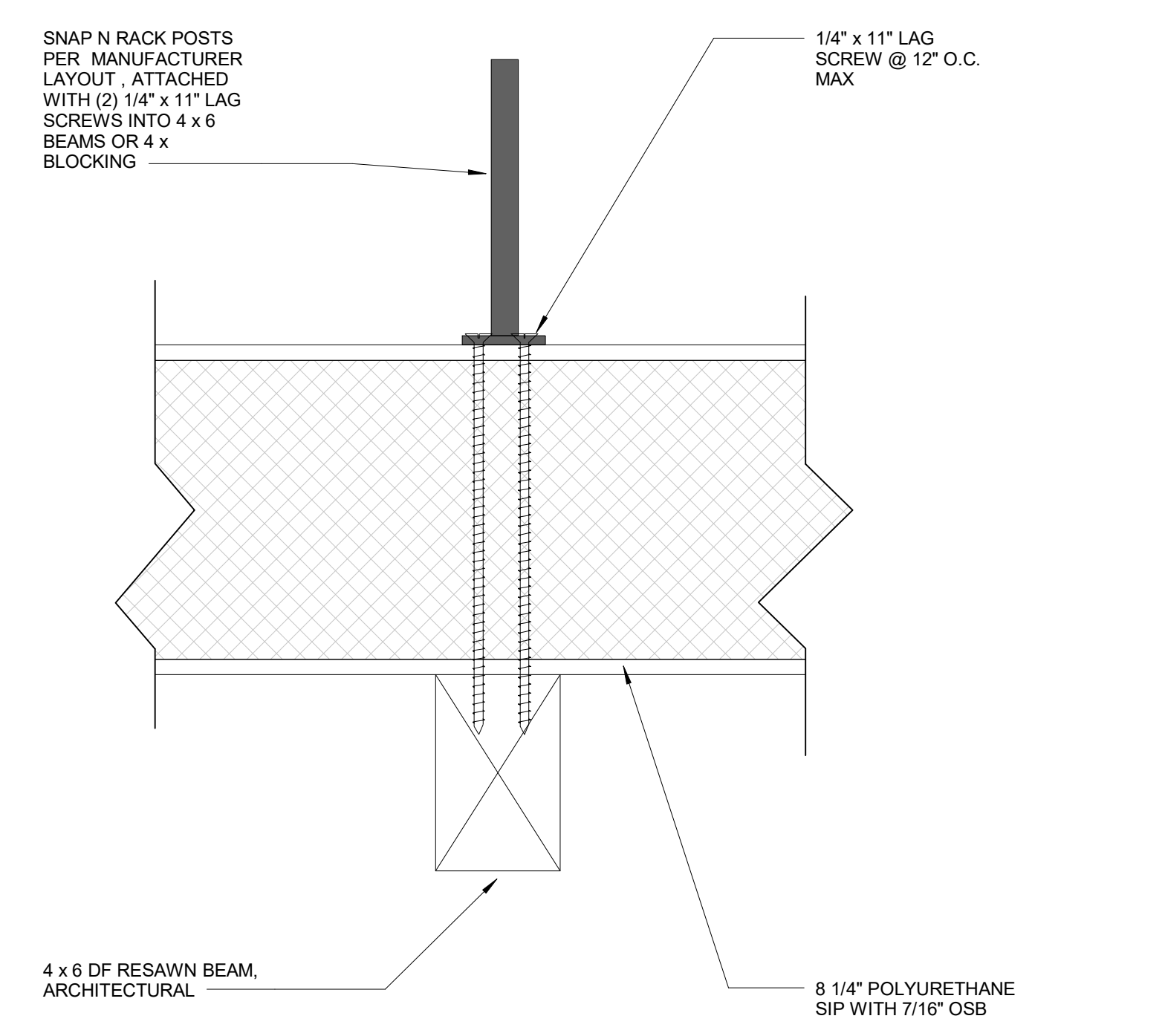


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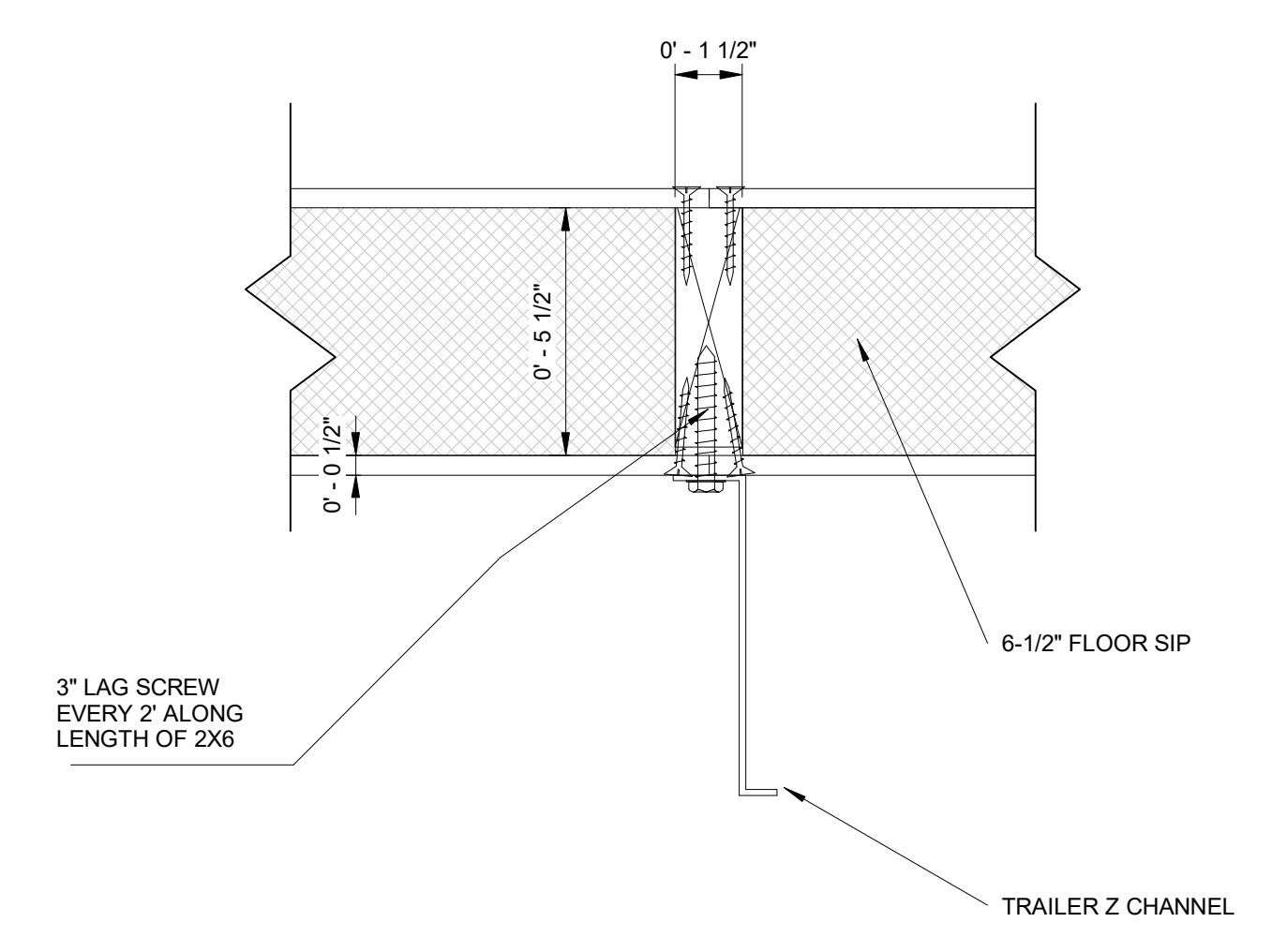
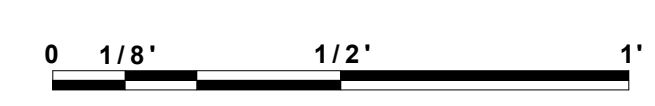
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SHEET TITLE  
 SIP FRAMING DETAILS

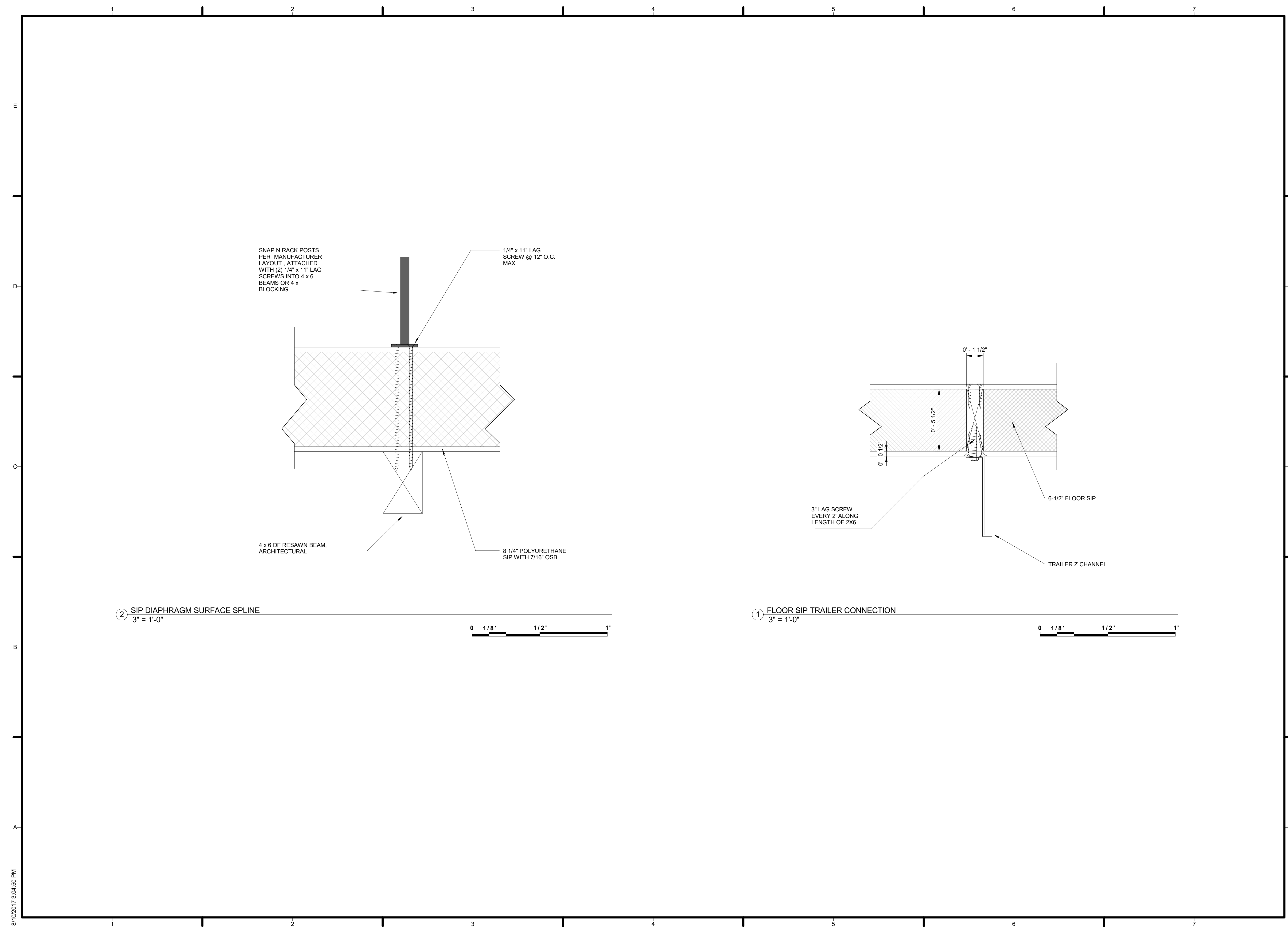
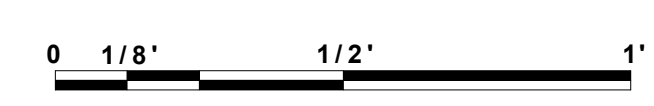
S-502



② SIP DIAPHRAGM SURFACE SPLINE  
 3" = 1'-0"



① FLOOR SIP TRAILER CONNECTION  
 3" = 1'-0"



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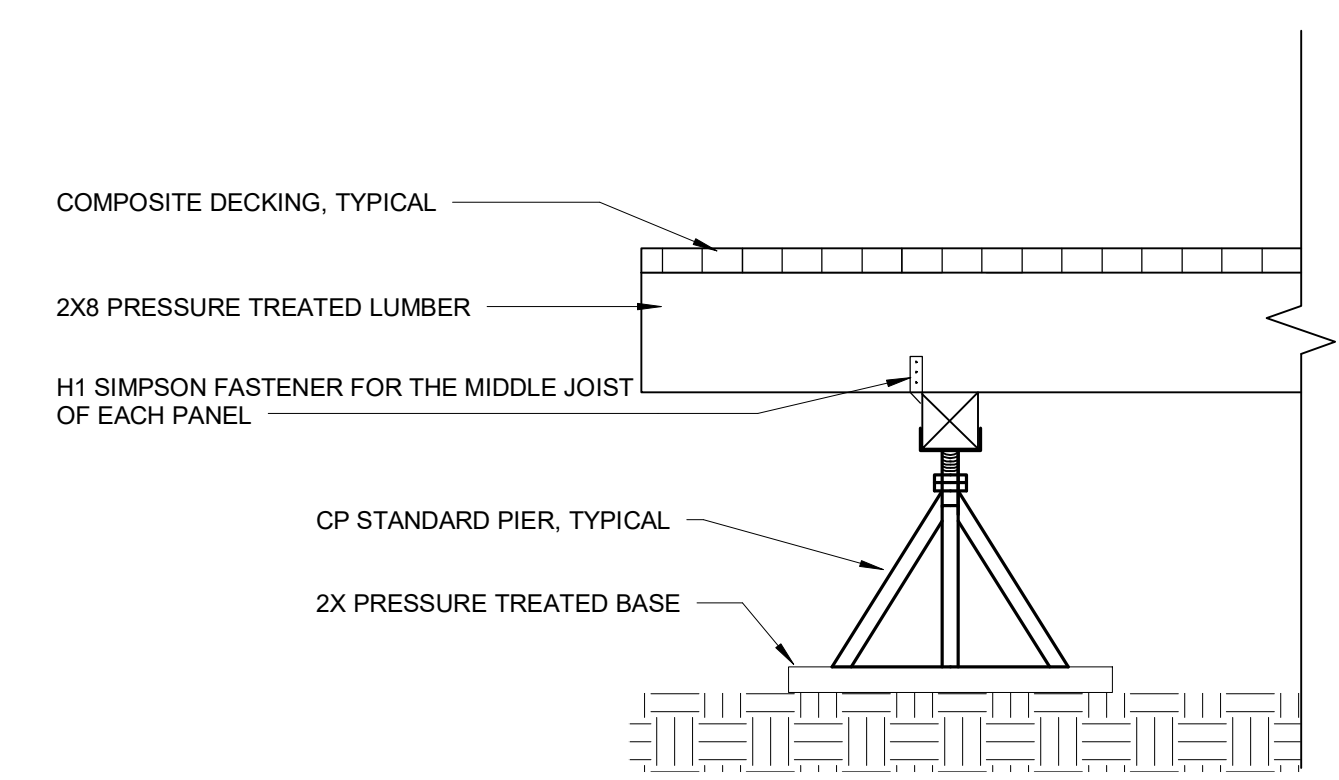


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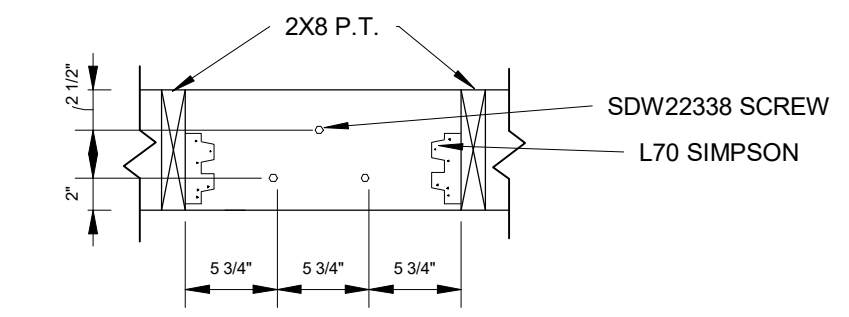
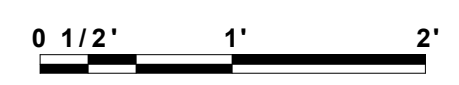
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SHEET TITLE  
**TYPICAL DECK DETAILS**

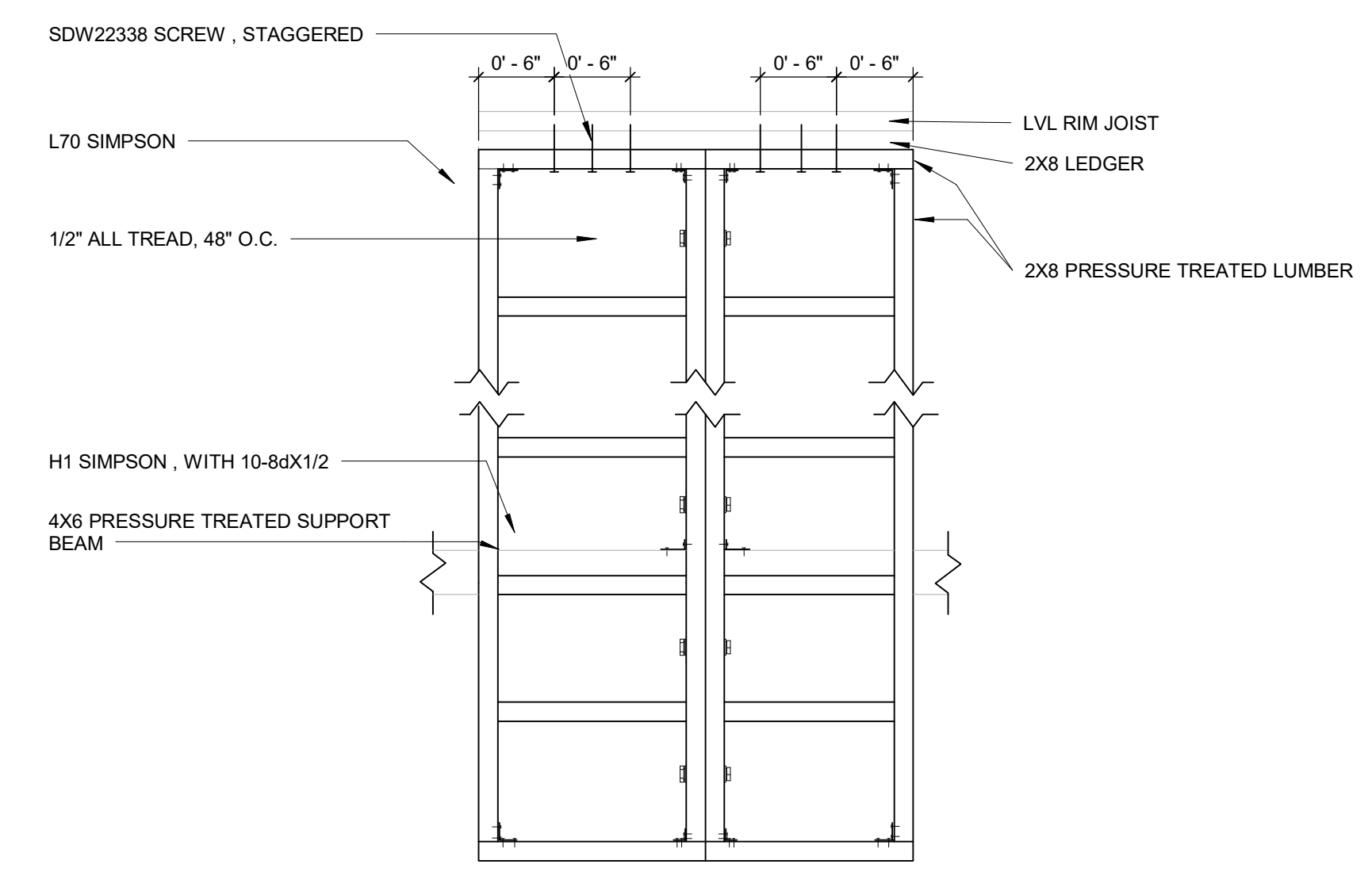
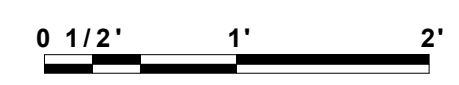
**S-503**



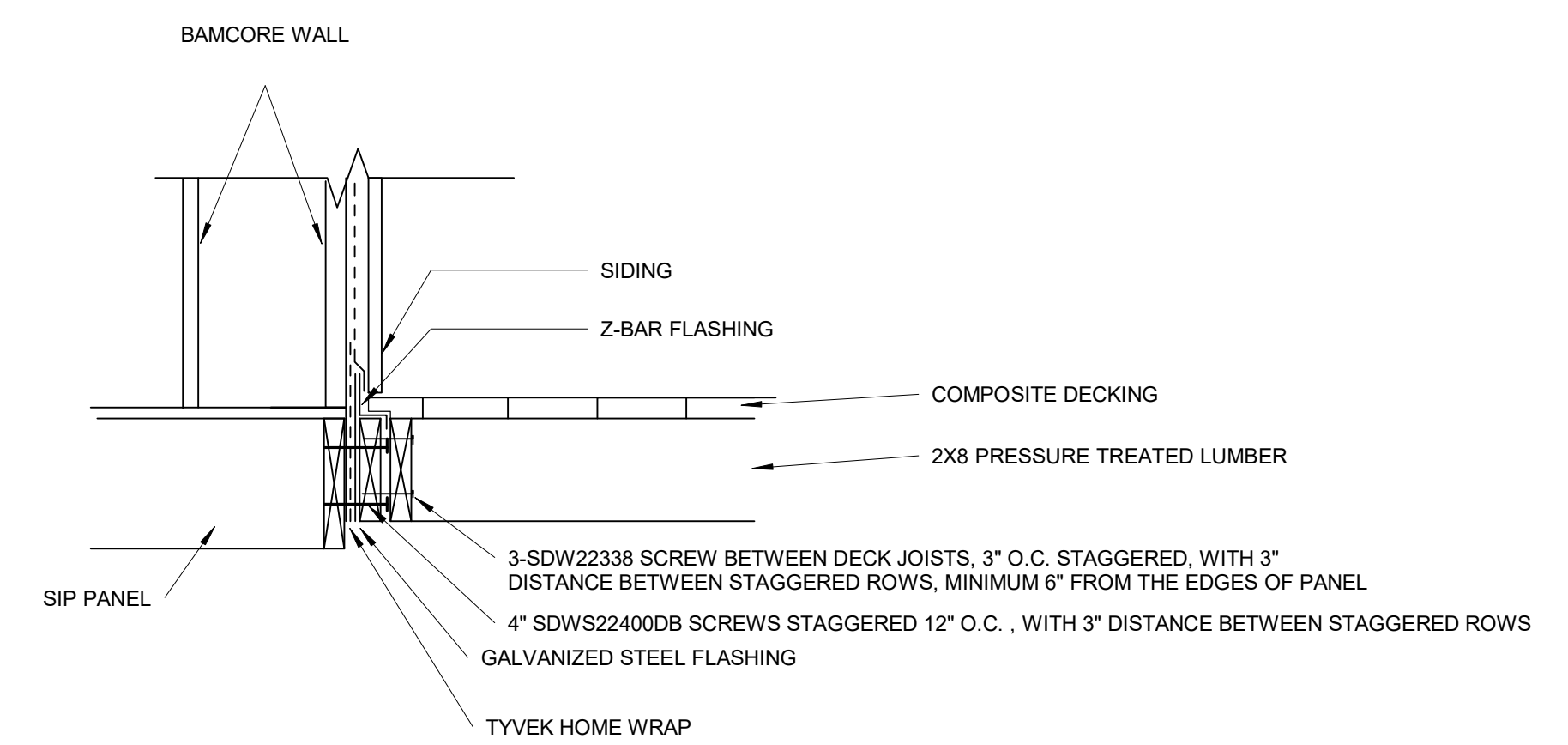
④ TYPICAL DECK FOUNDATION DETAILS  
 1" = 1'-0"



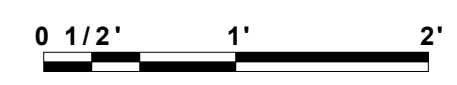
② DECK PANEL CONNECTION TO HOUSE MODULE  
 1" = 1'-0"



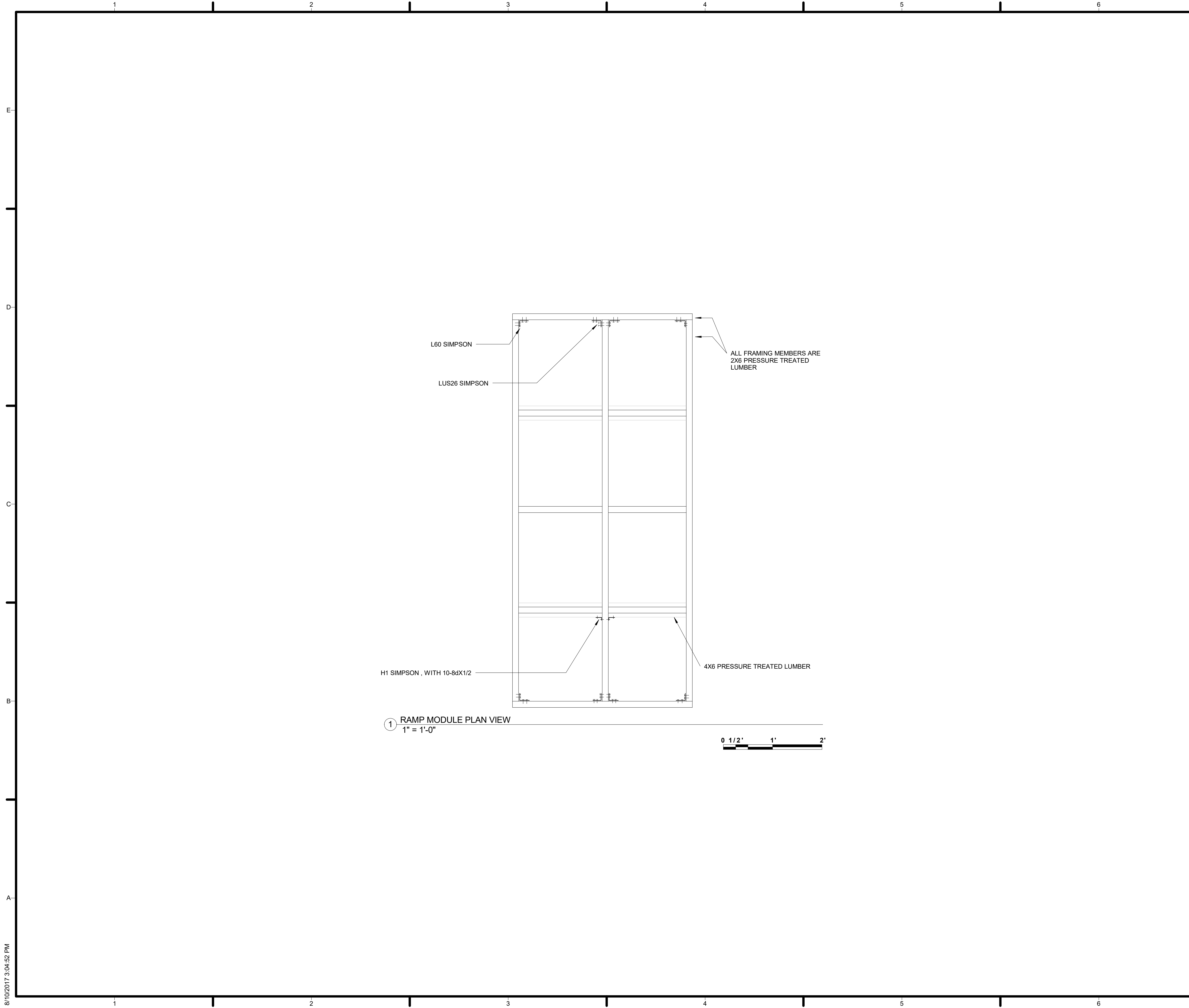
③ TYPICAL DECK PANEL  
 1" = 1'-0"



① LEDGER DETAIL  
 1" = 1'-0"







**GENERAL SHEET NOTES**

RAMP TERMINATION PIECE (TO GROUND LEVEL) WILL BE FABRICATED FROM STEEL. SHOP DRAWINGS ARE CURRENTLY BEING PRODUCED.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**RAMP DETAILS**

**S-506**



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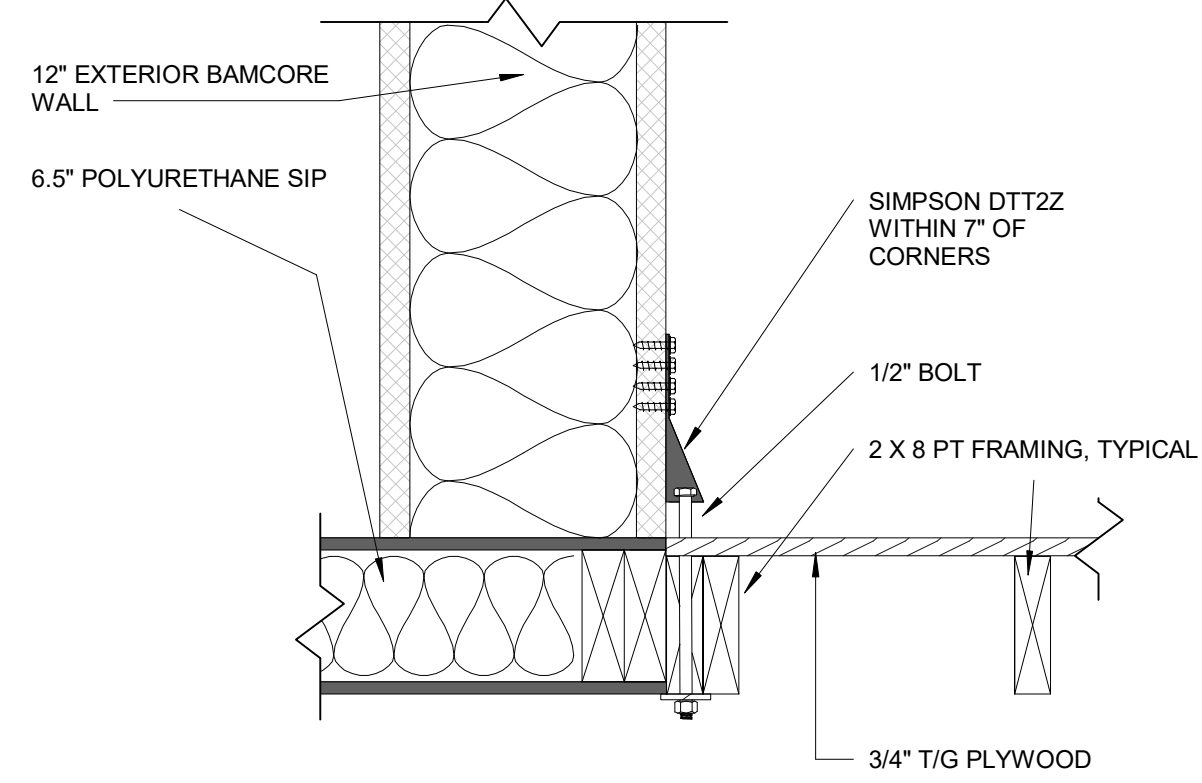


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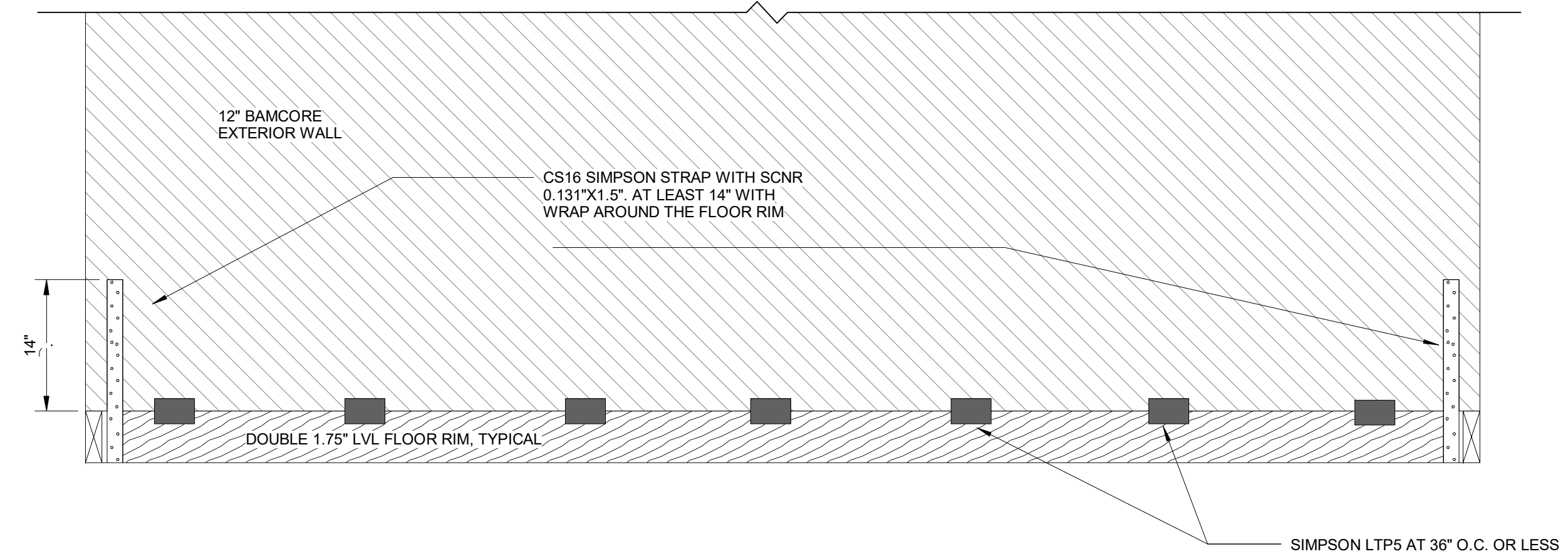
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SHEET TITLE  
 TIE DOWNS AND  
 SHEAR TRANSFER  
 DETAIL

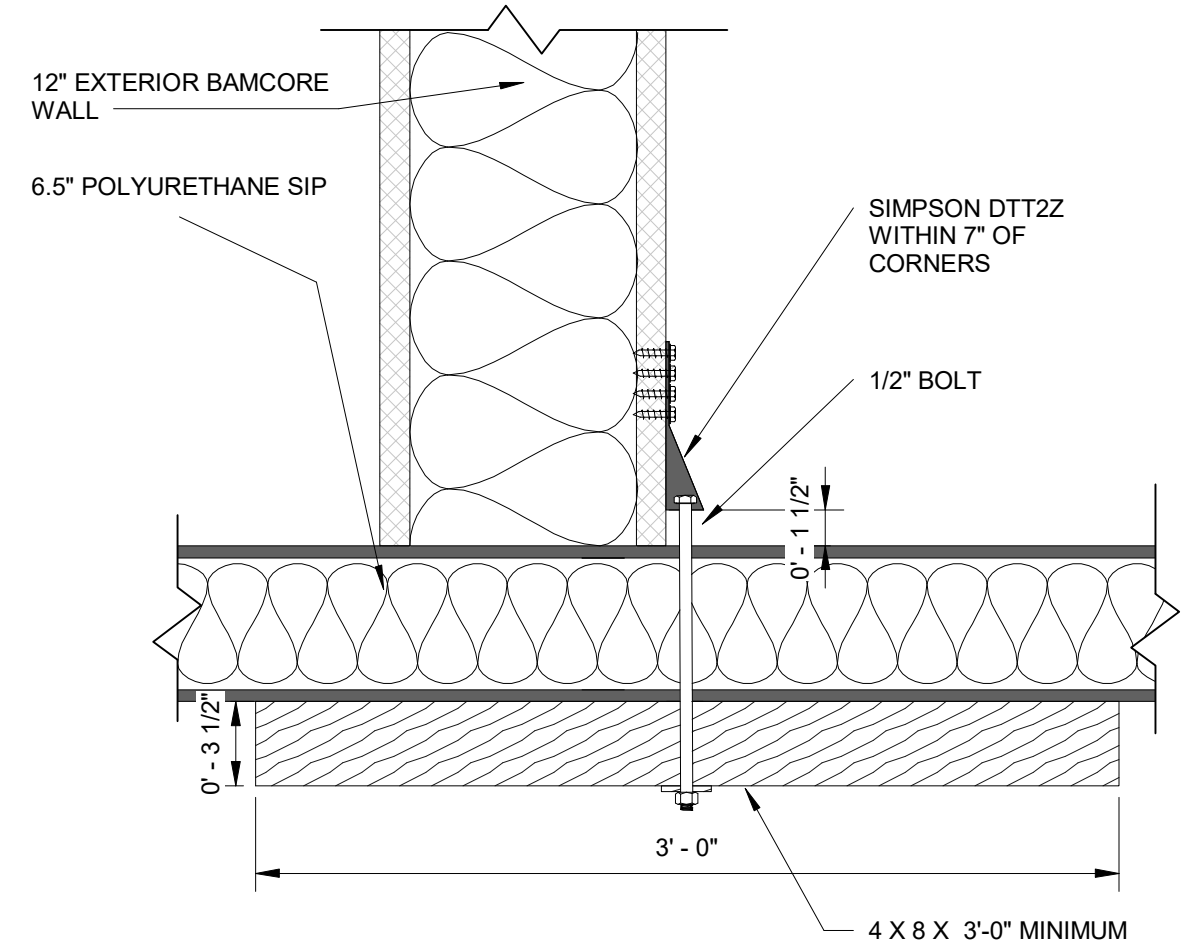
S-507



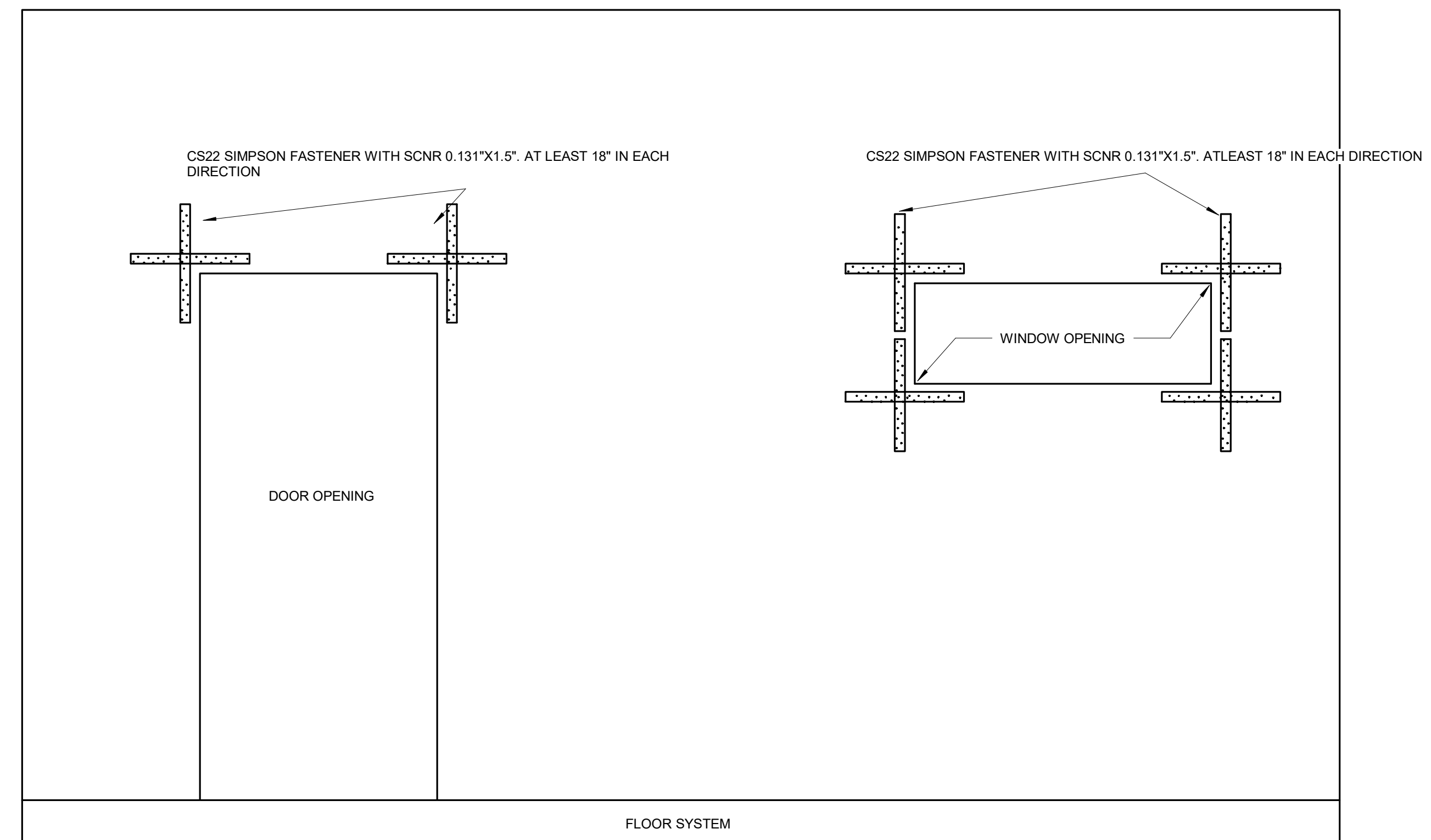
③ TIE DOWN DETAIL AT SIP EDGE  
 1 1/2" = 1'-0"



② SHEAR WALL END TIE DOWNS  
 1/4" = 1'-0"

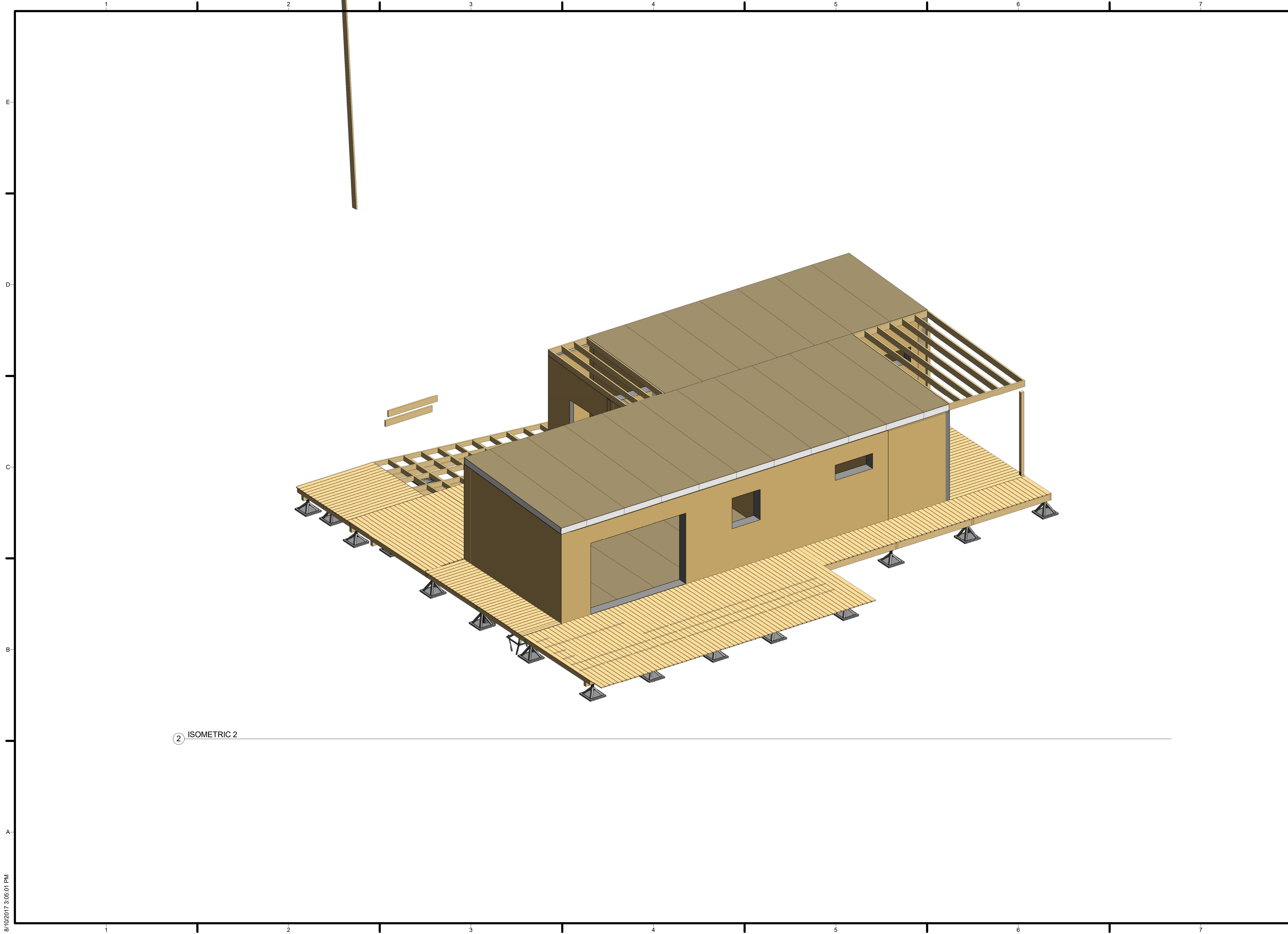


④ TIE DOWN DETAIL IN SIP FIELD  
 1 1/2" = 1'-0"



① TYPICAL SUB-DIAPHRAGM  
 3/4" = 1'-0"





② ISOMETRIC 2

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**OUR H<sub>2</sub>OUSE**

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SHEET TITLE  
**FRAMING ISOMETRIC**

**S-901**

ARCHITECTURAL SHEET INDEX	
Sheet Number	Sheet Name
A-001	ARCHITECTURAL SYMBOLS AND NOTES
A-002	ARCHITECTURAL NOTES
A-101	DIMENSIONED FLOOR PLAN
A-102	DECK DIMENSIONED FLOOR PLAN
A-103	ROOF PLAN
A-104	DRAINAGE ROOF PLAN
A-111	FIRST FLOOR REFLECTED CEILING PLAN
A-201	EXTERIOR ELEVATIONS
A-202	EXTERIOR ELEVATIONS
A-301	SITE SECTIONS
A-302	SITE SECTIONS
A-321	WALL SECTIONS
A-322	WALL SECTIONS
A-330	RAMP SECTION
A-340	DECK SECTIONS
A-411	RAMP ENLARGED VIEWS
A-501	WALL DETAILS
A-511	CEILING DETAILS
A-521	SIDING DETAILS
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A-541	WINDOW CASEMENT DETAILS
A-551	TYPICAL DECK DETAILS
A-561	RAMP AND HANDRAIL DETAILS
A-571	TYPICAL PATIO DOOR DETAILS
A-572	DOOR DETAILS
A-573	DOOR DETAILS 2
A-581	SHADE STRUCTURE DETAILS
A-601	EXT. WALL TYPES
A-602	DOOR TYPES
A-603	WINDOW TYPES

**ARCHITECTURAL ABBREVIATIONS**

ABBREVIATIONS	TERM
@	AT
ADJ	ADJUSTABLE/ADJACENT
AFF	ABOVE FINISHED FLOOR
ARCH	ARCHITECTURAL
BLDG	BUILDING
CAB	CABINET
CLR	CLEAR
COL	COLUMN
DTL	DETAIL
EA	EACH
ELEV	ELEVATION (HEIGHT)
EXIST	EXISTING
FIN	FINISH
FLR	FLOOR
GYM.BD.	GYPSUM BOARD
HT	HEIGHT
LTG	LIGHTING
NTS	NOT TO SCALE
OC	ON CENTER
PL	PLATE
PT	PAINT
REF	REFRIGERATOR
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
TYP	TYPICAL
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
WO	WITHOUT
WC	WATER CLOSET

**LINE LEGEND**

	ADA CLEARANCE
	EGRESS PLAN
	HIDDEN LINE
	OBJECT LINE
	SITE ELEVATIONS
	WEATHER RESISTANT BARRIER

**MATERIAL LEGEND**

	EARTH
	HIGH DENSITY FOAM
	INSULATION
	GYPSUM BOARD
	CORTEN STEEL
	SOLID WOOD
	SKIRT

**SYMBOLS LEGEND**

Room name	AREA TAG
150 SF	DOOR TAG
(ABC)	ELEVATION TAG
Name Elevation	EXTERIOR ELEVATION TAG
	GRAPHIC SCALE
	NORTH SYMBOL
Room name	ROOM TAG
	SHEET KEYNOTE TAG
	SECTION TAG
(0)	STRUCTURAL GRID TAG
1 / A101	VIEW REFERENCE
	WINDOW TAG

**GENERAL NOTES**

- ALL PIPING THAT PENETRATE FLOOR SLABS SHALL BE INSTALLED IN A MANNER THAT WILL PRESERVE THE INDICATED STRUCTURAL INTEGRITY OF THE HOUSE.
- ALL JOINTS AND PENETRATIONS IN INSULATION BARRIER SHALL BE FULLY SEALED WITH ADHESIVE SEALANT TO PROVIDE CONTINUOUS AIR TIGHT INSULATION.
- DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE DETAILED.
- ALL SILLS, WINDOW HEADS, AND SHELF ANGLES SHALL HAVE FLASHING EXTENDED TO THE OUTSIDE OF THE WALL WHETHER OR NOT SHOWN ON THE DRAWINGS.
- WHERE DISCREPANCIES EXIST BETWEEN THE DRAWINGS OF THE VARIOUS TRADES, CONSULT THE ARCHITECT PRIOR TO PROCEEDING WITH WORK.
- ALL GLAZING SHALL BE SAFETY GLAZED WHEN WITHIN 18" OF THE FLOOR OR WITHIN 3'-0" HORIZONTAL DISTANCE FROM ANY DOOR.



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**ARCHITECTURAL SYMBOLS AND NOTES**

**A-001**



2016 CBC PART 1  
SECTION 310.5 RESIDENTIAL GROUP R-3

CHAPTER 10 EGRESS  
SECTION 1003: GENERAL MEANS OF EGRESS  
1004.1 DESIGN OCCUPANT LOAD  
1004.2 INCREASED OCCUPANT LOAD  
1004.5 OUTDOOR AREAS  
SECTION 1005 MEANS OF EGRESS SIZING  
SECTION 1006: NUMBER OF EXITS AND EXIT ACCESS DOORWAYS  
1006.1 GENERAL  
1006.2.2.6 GROUP R-3 AND R-4  
1009.1 ACCESSIBLE MEANS OF EGRESS REQUIRED

1010.1 DOORS. MEANS OF EGRESS DOORS SHALL MEET THE REQUIREMENTS OF THIS SECTION. DOORS SERVING A MEANS OF EGRESS SYSTEM SHALL MEET THE REQUIREMENTS OF THIS SECTION AND SECTION 1022.2. DOORS PROVIDED FOR EGRESS PURPOSES IN NUMBERS GREATER THAN REQUIRED BY THIS CODE SHALL MEET THE REQUIREMENTS OF THIS SECTION. MEANS OF EGRESS DOORS SHALL BE READILY DISTINGUISHABLE FROM THE ADJACENT CONSTRUCTION AND FINISHES SUCH THAT THE DOORS ARE EASILY RECOGNIZABLE AS DOORS. MIRRORS OR SIMILAR REFLECTING MATERIALS SHALL NOT BE USED ON MEANS OF EGRESS  
1010.1.1 SIZE OF DOORS. THE REQUIRED CAPACITY OF EACH DOOR OPENING SHALL BE SUFFICIENT FOR THE OCCUPANT LOAD THEREOF AND SHALL PROVIDE A MINIMUM CLEAR WIDTH OF 32 INCHES (813 MM). CLEAR OPENINGS OF DOORWAYS WITH SWINGING DOORS SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP. WITH THE DOOR OPEN 90 DEGREES (1.57 RAD), WHERE THIS SECTION REQUIRES A MINIMUM CLEAR WIDTH OF 32 INCHES (813 MM) AND A DOOR OPENING INCLUDES TWO DOOR LEAVES WITHOUT A MULLION, ONE LEAF SHALL PROVIDE A CLEAR OPENING WIDTH OF 32 INCHES (813 MM). THE MAXIMUM WIDTH OF A SWINGING DOOR LEAF SHALL BE 48 INCHES (1219 MM) NOMINAL.  
1010.1.1.1 PROJECTIONS INTO CLEAR WIDTH. THERE SHALL NOT BE PROJECTIONS INTO THE REQUIRED CLEAR WIDTH LOWER THAN 34 INCHES (864 MM) ABOVE THE FLOOR OR GROUND. PROJECTIONS INTO THE CLEAR OPENING WIDTH BETWEEN 34 INCHES (864 MM) AND 80 INCHES (2032 MM) ABOVE THE FLOOR OR GROUND SHALL NOT EXCEED 4 INCHES (102 MM).  
1010.1.3 DOOR OPENING FORCE. THE FORCE FOR PUSHING OR PULLING OPEN INTERIOR SWINGING EGRESS DOORS, OTHER THAN FIRE DOORS, SHALL NOT EXCEED 5 POUNDS (22 N). THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR IN A CLOSED POSITION. FOR OTHER SWINGING DOORS, AS WELL AS SLIDING AND FOLDING DOORS, THE DOOR LATCH SHALL RELEASE WHEN SUBJECTED TO A 15-POUND (67 N) FORCE. THE DOOR SHALL BE SET IN MOTION WHEN SUBJECTED TO A 30-POUND (133 N) FORCE. THE DOOR SHALL SWING TO A FULL-OPEN POSITION WHEN SUBJECTED TO A 15-POUND (67 N) FORCE.  
1010.1.6 LANDINGS AT DOORS. LANDING LENGTH IN THE DIRECTION OF TRAVEL IN GROUPS R-3 AND U AND WITHIN INDIVIDUAL UNITS OF GROUP R-2 NEED NOT EXCEED 36 INCHES (914 MM).  
1010.1.7 THRESHOLDS. THRESHOLDS AT DOORWAYS SHALL NOT EXCEED 3/4 INCH (19.1 MM) IN HEIGHT ABOVE THE FINISHED FLOOR OR LANDING FOR SLIDING DOORS SERVING DWELLING UNITS OR 1/2 INCH (12.7 MM) ABOVE THE FINISHED FLOOR OR LANDING FOR OTHER DOORS. RAISED THRESHOLDS AND FLOOR LEVEL CHANGES GREATER THAN 1/4 INCH (6.4 MM) AT DOORWAYS SHALL BE BEVELED WITH A SLOPE NOT GREATER THAN ONE UNIT VERTICAL IN TWO UNITS HORIZONTAL (50-PERCENT SLOPE).  
1010.1.8 DOOR ARRANGEMENT. SPACE BETWEEN TWO DOORS IN A SERIES SHALL BE 48 INCHES (1219 MM) MINIMUM PLUS THE WIDTH OF A DOOR SWINGING INTO THE SPACE. DOORS IN A SERIES SHALL SWING EITHER IN THE SAME DIRECTION OR AWAY FROM THE SPACE BETWEEN THE DOORS.  
1010.1.9 DOOR OPERATIONS. EXCEPT AS SPECIFICALLY PERMITTED BY THIS SECTION EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT.  
SECTION 1012: RAMPS  
SECTION 1013: HANDRAILS  
SECTION 1017: EXIT ACCESS TRAVEL DISTANCE

CHAPTER 11A: HOUSING ACCESSIBILITY

1114A.6 RAMP HANDRAILS  
1114A.6.1 WHERE REQUIRED. HANDRAILS SHALL BE PROVIDED AT EACH SIDE OF RAMPS WHEN THE SLOPE EXCEEDS 1 UNIT VERTICAL IN 20 UNITS HORIZONTAL (5-PERCENT SLOPE)  
EXCEPTIONS:  
1114A.6.2 HANDRAIL CONFIGURATION.  
1114A.6.2.1 HANDRAIL HEIGHTS. THE TOP OF HANDRAILS SHALL BE 34 TO 38 INCHES (864 TO 965 MM) ABOVE THE RAMP SURFACE.  
1114.6.2.2 HANDRAIL CONTINUITY. HANDRAILS ON ALL RAMPS SHALL BE CONTINUOUS WITHIN THE FULL LENGTH OF EACH RAMP RUN. INSIDE HANDRAILS ON SWITCHBACK OR DOGLEG RAMPS SHALL BE CONTINUOUS BETWEEN RAMP RUNS.  
1114A.6.2.3 HANDRAIL EXTENSIONS  
1114A.6.2.4 HANDRAIL PROJECTIONS  
1114A.6.7 EDGE PROTECTION  
SECTION 1130A: ACCESSIBLE ROUTE WITHIN COVERED MULTIFAMILY DWELLING UNITS  
SECTION 1131A: CHANGES IN LEVEL ON ACCESSIBLE ROUTES  
1132A.4 LEVEL FLOOR OR LANDING. 2. EXTERIOR LANDINGS OF PERVIOUS CONSTRUCTION (E.G., WOOD DECKING WITH SPACES) SHALL BE THE SAME LEVEL AS THE INTERIOR LANDING, EXCEPT THAT SECONDARY EXTERIOR DOORS MAY HAVE NO MORE THAN 1/2 INCH (12.7 MM) OF CHANGE IN HEIGHT BETWEEN FLOOR SURFACES. CHANGES IN LEVEL SHALL COMPLY WITH SECTION 1131A.  
1132.A.4.1 THRESHOLDS  
1132A.5 MANEUVERING CLEARANCES AT DOORS  
SECTION 1133A KITCHENS  
(DETAILS IN INTERIOR SHEETS)  
SECTION 1134A BATHING AND TOILET FACILITIES  
(DETAILS IN INTERIOR SHEETS)  
SECTION 1138A ELECTRICAL RECEPTACLE, SWITCH, AND CONTROL HEIGHTS  
(DETAILS IN ELECTRICAL SHEETS)  
SECTION 1150A

CHAPTER 11B: ACCESSIBILITY TO PUBLIC BUILDINGS, PUBLIC ACCOMMODATIONS, COMMERCIAL BUILDINGS AND PUBLIC HOUSING

SECTION 1114A EXTERIOR RAMPS AND LANDINGS ON ACCESSIBLE ROUTES

1114A.1 WIDTH. THE CLEAR WIDTH OF RAMPS SHALL BE CONSISTENT WITH THE REQUIREMENTS IN CHAPTER 10 OF THIS CODE, BUT IN NO CASE SHALL BE LESS THAN 48 INCHES (1219 MM)  
HANDRAILS MAY PROJECT INTO THE REQUIRED CLEAR WIDTH OF THE RAMP AT EACH SIDE 3 1/2 INCHES (89 MM) MAXIMUM AT THE HAND-RAIL HEIGHT. CURBS, WHEEL GUIDES AND/OR APPURTENANCES SHALL NOT PROJECT INTO THE REQUIRED CLEAR WIDTH OF RAMPS.  
1114A.4  
1114A.4.1 LOCATION OF LANDINGS. LANDINGS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF EACH RAMP. INTERMEDIATE LANDINGS SHALL BE PROVIDED AT INTERVALS NOT EXCEEDING 30 INCHES (762 MM) OF VERTICAL RISE AND AT EACH CHANGE OF DIRECTION. LANDINGS ARE NOT CONSIDERED IN DETERMINING THE MAXIMUM HORIZONTAL DISTANCE OF EACH RAMP.  
1114A.4.2 SIZE OF TOP LANDINGS. TOP LANDINGS SHALL NOT BE LESS THAN 60 INCHES (1524 MM) WIDE. TOP LANDINGS SHALL HAVE A MINIMUM LENGTH OF NOT LESS THAN 60 INCHES (1524 MM) IN THE DIRECTION OF THE RAMP RUN. SEE SECTION 1126A.3 FOR MANEUVERING CLEARANCES AT DOORS.  
1114A.4.3 SIZE OF BOTTOM AND INTERMEDIATE LANDINGS. THE MINIMUM WIDTH OF BOTTOM AND INTERMEDIATE LANDINGS SHALL NOT BE LESS THAN THE WIDTH OF THE RAMP.  
INTERMEDIATE LANDINGS SHALL HAVE A LENGTH IN THE DIRECTION OF RAMP RUN OF NOT LESS THAN 60 INCHES (1524 MM). BOTTOM LANDINGS SHALL HAVE A LENGTH IN THE DIRECTION OF RAMP RUN OF NOT LESS THAN 72 INCHES (1829 MM)

2016 CBC PLUMBING CODE:

CHAPTER 15 ALTERNATE WATER SOURCES FOR NONPOTABLE APPLICATION  
1502.0 GRAY WATER SYSTEMS. GRAY WATER SYSTEMS SHALL BE VERIFIED IN ACCORDANCE WITH THE CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), CHAPTER 5, DIVISION 5.3.  
1502.1 GENERAL  
(C) GRAY WATER SHALL NOT BE USED IN SPRAY IRRIGATION, ALLOWED TO POND OR RUNOFF AND SHALL NOT BE DISCHARGED DIRECTLY INTO OR REACH ANY STORM SEWER SYSTEM OR ANY SURFACE BODY OF WATER.  
(D) HUMAN CONTACT WITH GRAY WATER OR THE SOIL IRRIGATED BY GRAY WATER SHALL BE MINIMIZED AND AVOIDED, EXCEPT AS REQUIRED TO MAINTAIN THE GRAY WATER SYSTEM. THE DISCHARGE POINT OF ANY GRAY WATER SUBSOIL IRRIGATION OR SUBSURFACE IRRIGATION FIELD SHALL BE COVERED BY AT LEAST 2 INCHES (51 MM) OF MULCH, ROCK, OR SOIL, OR A SOLID SHIELD TO MINIMIZE THE POSSIBILITY OF HUMAN CONTACT.  
1501.3 PERMIT. IT SHALL BE UNLAWFUL FOR A PERSON TO CONSTRUCT, INSTALL, ALTER, OR CAUSE TO BE CONSTRUCTED, INSTALLED, OR ALTERED AN ALTERNATE WATER SOURCE SYSTEM IN A BUILDING OR ON A PREMISE WITHOUT FIRST OBTAINING A PERMIT TO DO SUCH WORK.

CHAPTER 16 NONPOTABLE RAINWATER CATCHMENT SYSTEMS

1602.9.3 COLLECTION SURFACES. RAINWATER SHALL BE COLLECTED FROM ROOF SURFACES, OR OTHER MANMADE, ABOVE-GROUND IMPERVIOUS COLLECTION SURFACES. RAINWATER COLLECTED FROM SURFACE WATER RUNOFF, VEHICULAR PARKING SURFACES OR MANMADE SURFACES AT OR BELOW GRADE SHALL COMPLY WITH THE WATER QUALITY REQUIREMENTS FOR ON-SITE TREATED NONPOTABLE GRAY WATER SECTION 1604.0. EXCEPTION: COLLECTED RAINWATER OR STORM WATER USED EXCLUSIVELY FOR SUBSURFACE LANDSCAPE IRRIGATION.  
1602.7 RAINWATER CATCHMENT SYSTEM MATERIALS. RAINWATER CATCHMENT SYSTEM MATERIALS SHALL COMPLY WITH SECTION 1702.7.1 THROUGH SECTION 1602.7.3  
1602.7.1 WATER SUPPLY AND DISTRIBUTION MATERIALS. RAINWATER CATCHMENT SUPPLY AND DISTRIBUTION MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THIS CODE FOR POTABLE WATER SUPPLY AND DISTRIBUTION SYSTEMS, UNLESS OTHERWISE PROVIDED FOR IN THIS SECTION.  
1602.7.2 RAINWATER CATCHMENT SYSTEM DRAINAGE MATERIALS. MATERIALS USED IN RAINWATER CATCHMENT DRAINAGE SYSTEMS, INCLUDING GUTTERS, DOWNSPOUTS, CONDUCTORS, AND LEADERS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CODE FOR STORM DRAINAGE.  
1702.7.3 STORAGE TANKS. RAINWATER STORAGE TANKS SHALL COMPLY WITH SECTION 1702.9.5.

1602.9.5 RAINWATER STORAGE TANKS. RAINWATER STORAGE TANKS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH SECTION 1702.9.5.1 THROUGH SECTION 1702.9.5.8.  
1602.9.5.1 CONSTRUCTION. RAINWATER STORAGE SHALL BE CONSTRUCTED OF SOLID, DURABLE MATERIALS NOT SUBJECT TO EXCESSIVE CORROSION OR DECAY AND SHALL BE WATERTIGHT. STORAGE TANKS SHALL BE APPROVED SUCH TANKS ARE IN ACCORDANCE WITH APPROVED APPLICABLE STANDARDS.

1602.9.5.2 LOCATION. RAINWATER STORAGE TANKS SHALL BE PERMITTED TO BE INSTALLED ABOVE OR BELOW GRADE.

1602.9.5.3 ABOVE GRADE. ABOVE GRADE STORAGE TANKS SHALL BE AN OPAQUE MATERIAL, APPROVED FOR ABOVEGROUND USE IN DIRECT SUNLIGHT OR SHALL BE SHIELDED FROM DIRECT SUNLIGHT. TANKS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION TO ALLOW FOR INSPECTION AND CLEANING. THE TANK SHALL BE INSTALLED ON A FOUNDATION OR PLATFORM THAT IS CONSTRUCTED TO ACCOMMODATE LOADS IN ACCORDANCE WITH THE BUILDING CODE.

1602.9.5.4 BELOW GRADE. RAINWATER STORAGE TANKS INSTALLED BELOW GRADE SHALL BE STRUCTURALLY DESIGNED TO WITHSTAND ANTICIPATED EARTH OR OTHER LOADS. HOLDING TANK COVERS SHALL BE CAPABLE OF SUPPORTING AN EARTH LOAD OF NOT LESS THAN 300 POUNDS PER SQUARE FOOT (LB/FT<sup>2</sup>) (1465 KG/M<sup>2</sup>) WHERE THE TANK IS DESIGNED FOR UNDERGROUND INSTALLATION. BELOW GRADE RAINWATER TANKS INSTALLED UNDERGROUND SHALL BE PROVIDED WITH MANHOLES. BELOW GRADE STORAGE TANKS, LOCATED OUTSIDE OF THE BUILDING, SHALL BE PROVIDED WITH EITHER A MANHOLE NOT LESS THAN 24 INCHES (610 MM) SQUARE OR A MANHOLE WITH AN INSIDER DIAMETER OF NOT LESS THAN 24 INCHES (610 MM). SERVICE PORTS IN MANHOLE COVERS SHALL BE NOT LESS THAN 8 INCHES (203 MM) IN DIAMETER. THE MANHOLE OPENING SHALL BE LOCATED NOT LESS THAN 4 INCHES (102 MM) ABOVE THE SURROUNDING GRADE. THE SURROUNDING GRADE SHALL BE SLOPED AWAY FROM THE MANHOLE. UNDERGROUND TANKS SHALL BE BALLASTED, ANCHORED, OR OTHERWISE SECURED, TO PREVENT THE TANK FROM FLOATING OUT OF THE GROUND WHERE EMPTY. THE COMBINED WEIGHT OF THE TANK AND HOLD DOWN SYSTEM SHALL MEET OR EXCEED THE BUOYANCY FORCE OF THE TANK.

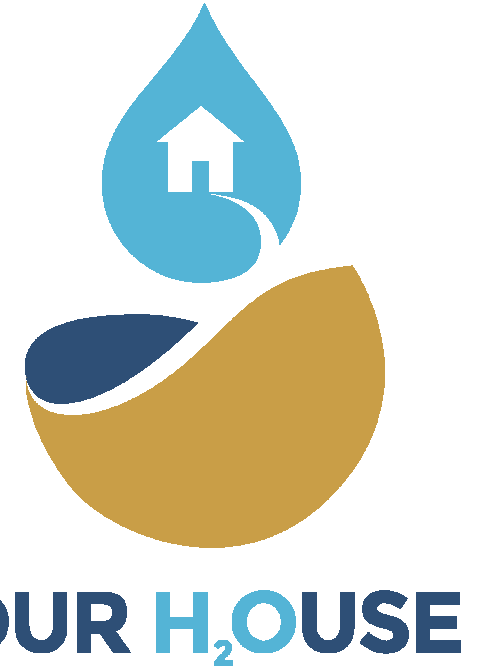
1602.9.5.5 DRAINAGE AND OVERFLOW. RAINWATER STORAGE TANKS SHALL BE PROVIDED WITH A MEANS OF DRAINING AND CLEANING. THE OVERFLOW DRAIN SHALL BE EQUIPPED WITH A SHUTOFF VALVE. THE OVERFLOW OUTLET SHALL DISCHARGE IN ACCORDANCE WITH THIS CODE FOR STORM DRAINAGE SYSTEMS. WHERE DISCHARGING TO THE STORM DRAINAGE SYSTEM, THE OVERFLOW DRAIN AND TANK DRAIN SHALL BE PROTECTED FROM BACKFLOW OF THE STORM DRAINAGE SYSTEM BY A BACKWATER VALVE OR OTHER APPROVED METHOD. BACKWATER VALVES SHALL BE INSTALLED SO THAT ACCESS IS PROVIDED TO THE WORKING PARTS FOR SERVICE AND REPAIR.

1602.9.5.8 MARKING. RAINWATER TANKS SHALL BE PERMANENTLY MARKED WITH THE CAPACITY AND THE LANGUAGE: "NONPOTABLE RAINWATER." WHERE OPENINGS ARE PROVIDED TO ALLOW A PERSON TO ENTER THE TANK, THE OPENING SHALL BE MARKED WITH THE FOLLOWING LANGUAGE: "DANGER-CONFINED SPACE."

RAMPS

THE RAMP OF THE NORTHSIDE OF HOUSE, 11.3%, IS COMPLIANT WITH CODE 1114A.2, WHICH STATES: THE MAXIMUM SLOPE OF RAMPS ON AN ACCESSIBLE ROUTE SHALL BE NO GREATER THAN 1 UNIT VERTICAL IN 12 UNITS HORIZONTAL (8.33-PERCENT SLOPE); TRANSITIONS FROM RAMPS TO WALKS, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.

TITLE 24 CALIFORNIA BUILDING CODES STANDARDS:  
2016 CALIFORNIA BUILDING CODE (PART 1 AND PART 2)  
2016 CALIFORNIA ELECTRICAL CODE (PART 3)  
2016 CALIFORNIA MECHANICAL CODE (PART 4)  
2016 CALIFORNIA PLUMBING CODE (PART 5)  
2016 CALIFORNIA ENERGY CODE (PART 6)  
2016 CALIFORNIA FIRE CODE (PART 9)  
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen) (PART 11)  
2016 CALIFORNIA REFERENCE STANDARDS CODE (PART 12)



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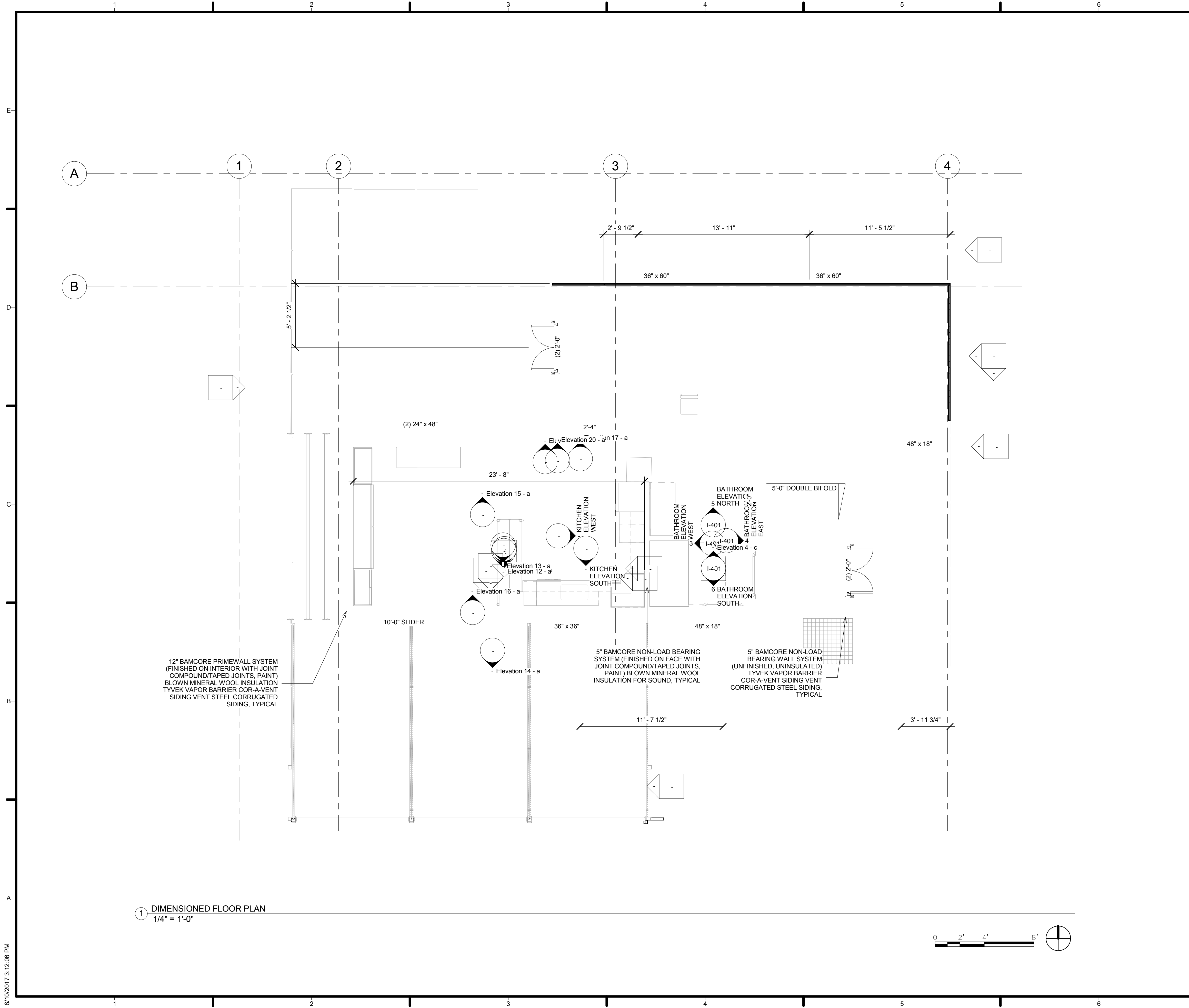
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SHEET TITLE

ARCHITECTURAL  
NOTES

A-002



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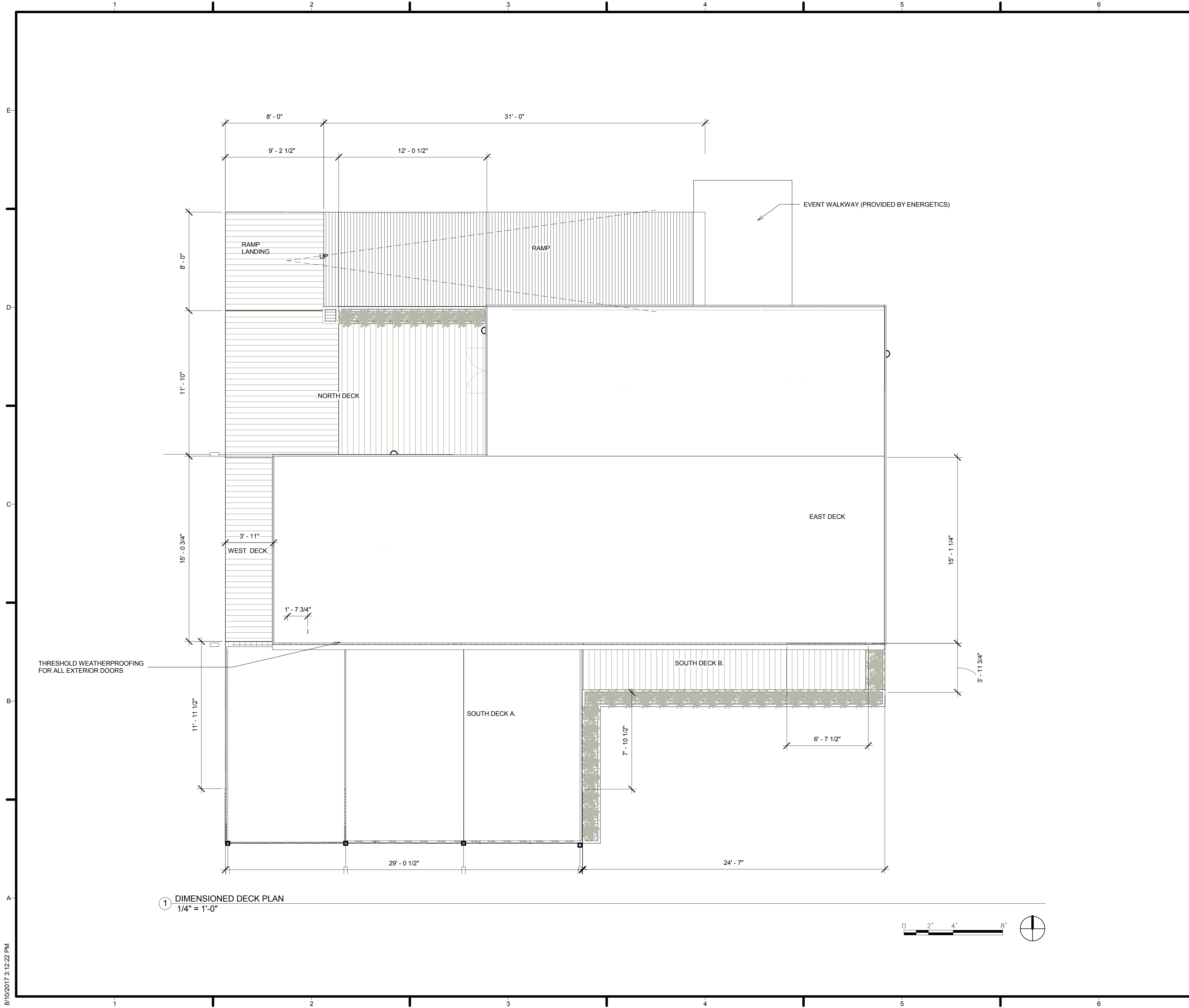
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SHEET TITLE  
**DIMENSIONED FLOOR PLAN**

**A-101**

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**GENERAL SHEET NOTES**

RAMP: DECKING IS ORIENTED N-S  
 RAMP LANDING: DECKING IS ORIENTED E-W  
 NORTH DECK: DECKING IS ORIENTED N-S  
 WEST DECK: DECKING IS ORIENTED E-W  
 SOUTH DECK A.: DECKING IS ORIENTED N-S  
 SOUTH DECK B.: DECKING IS ORIENTED N-S  
 EAST DECK: DECKING IS ORIENTED E-W

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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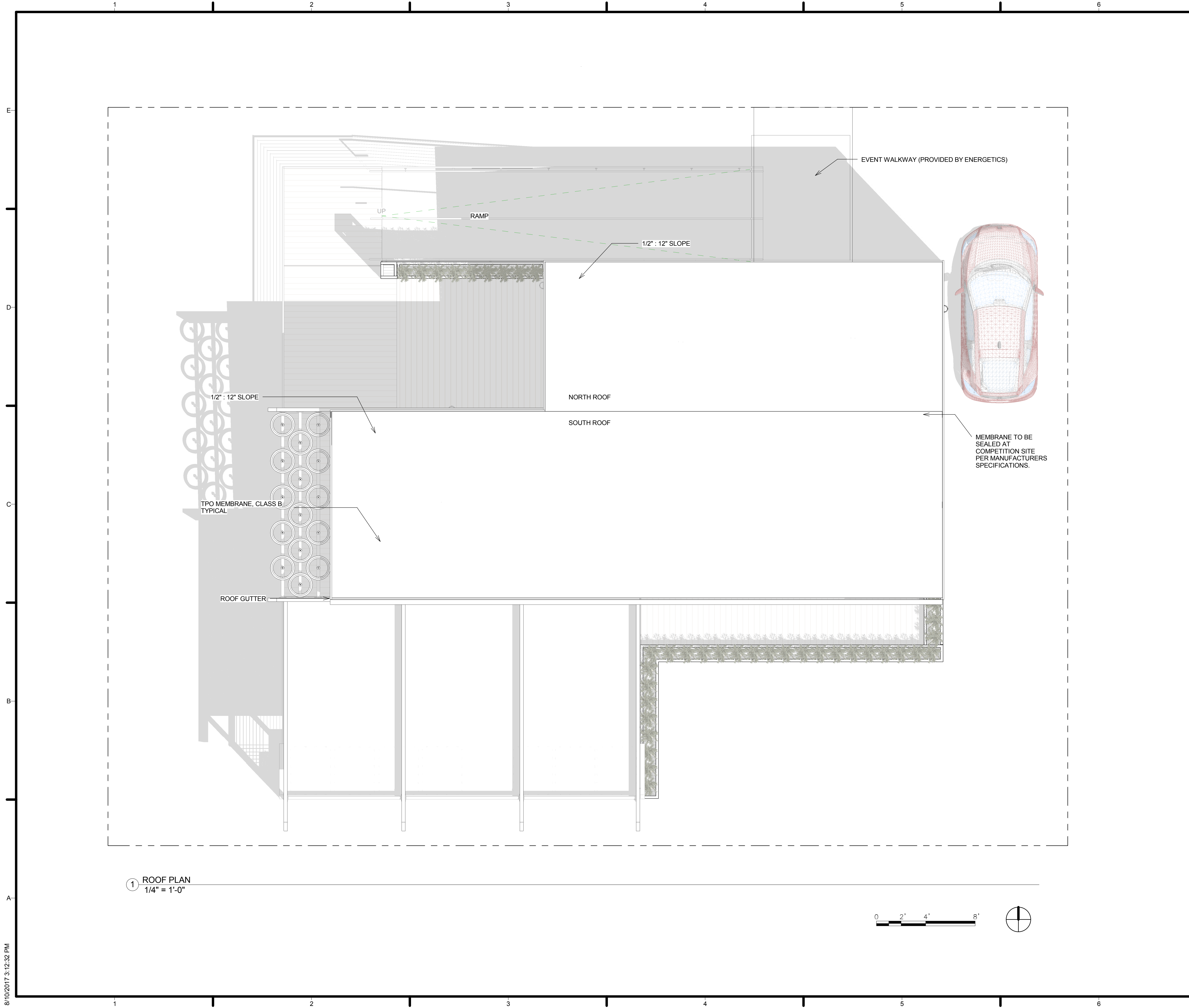


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SHEET TITLE  
**DECK DIMENSIONED FLOOR PLAN**

**A-102**



**GENERAL SHEET NOTES**

FIRESTONE ULTRAPLY TPO XR 115 ROOFING MEMBRANE IN WHITE FINISH (ASTM D 6818 TAS 131) AT 60-MIL THICK THERMOPLASTIC POLYOLEFIN, HEAT-WELDABLE, SINGLE-PLY WITH POLYESTER WEFT-INSERTED REINFORCEMENT & 8 OZ. NON-WOVEN POLYESTER FABRIC BACKING.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**ROOF PLAN**

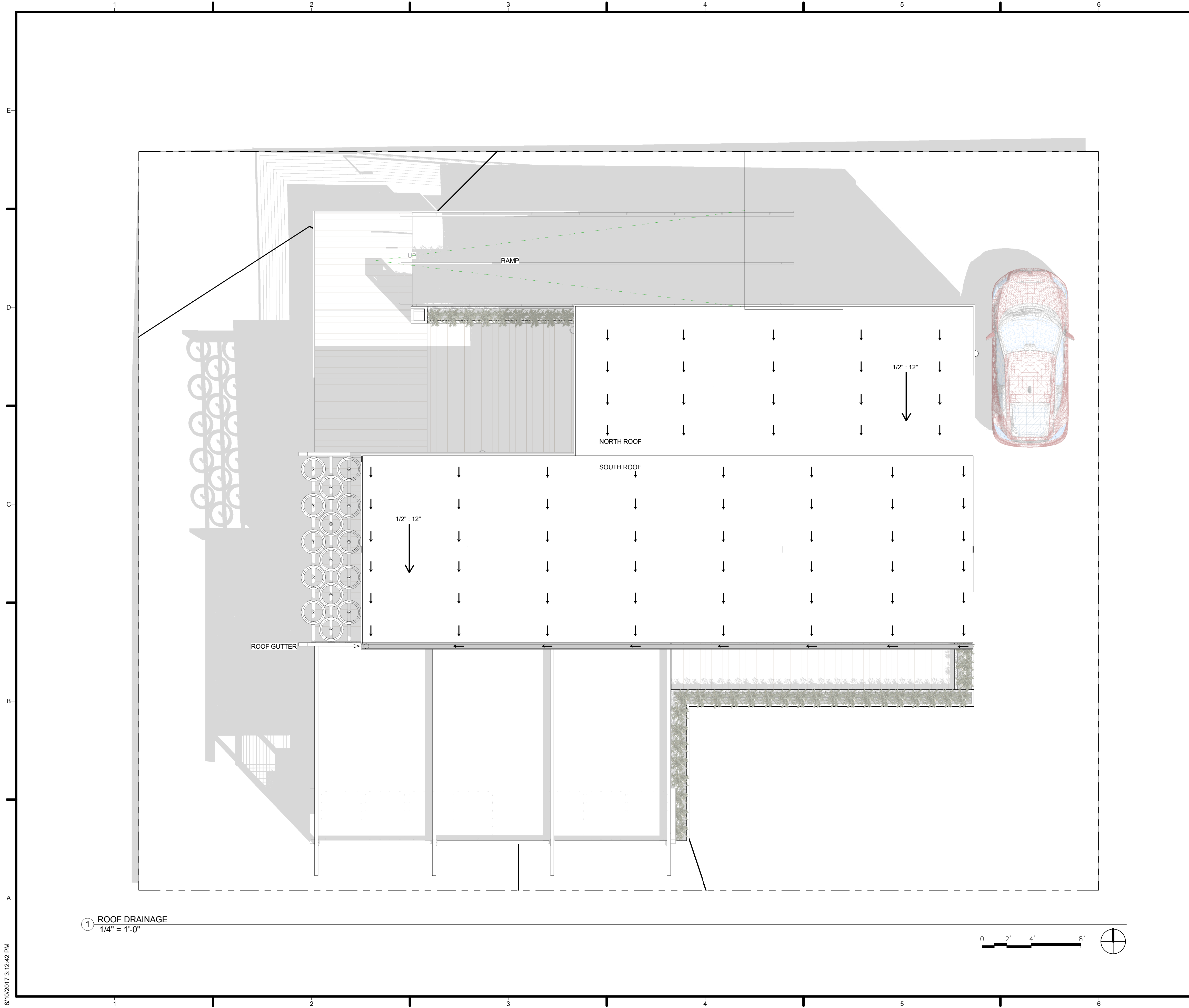
**A-103**

1 ROOF PLAN  
 1/4" = 1'-0"



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**GENERAL SHEET NOTES**

WHEN ATTACHED OVER DECKS THE FIELD ATTACHMENT MUST RUN PERPENDICULAR TO THE DECK PANELS.  
 THE FIRESTONE TPO SYSTEM SHALL BE INSTALLED SO THAT THE SEAMS SHED OR RUN PARALLELED TO THE WATER DRAINAGE.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- ↓ DRAINAGE DIRECTION
- ↓ SLOPE RATIO



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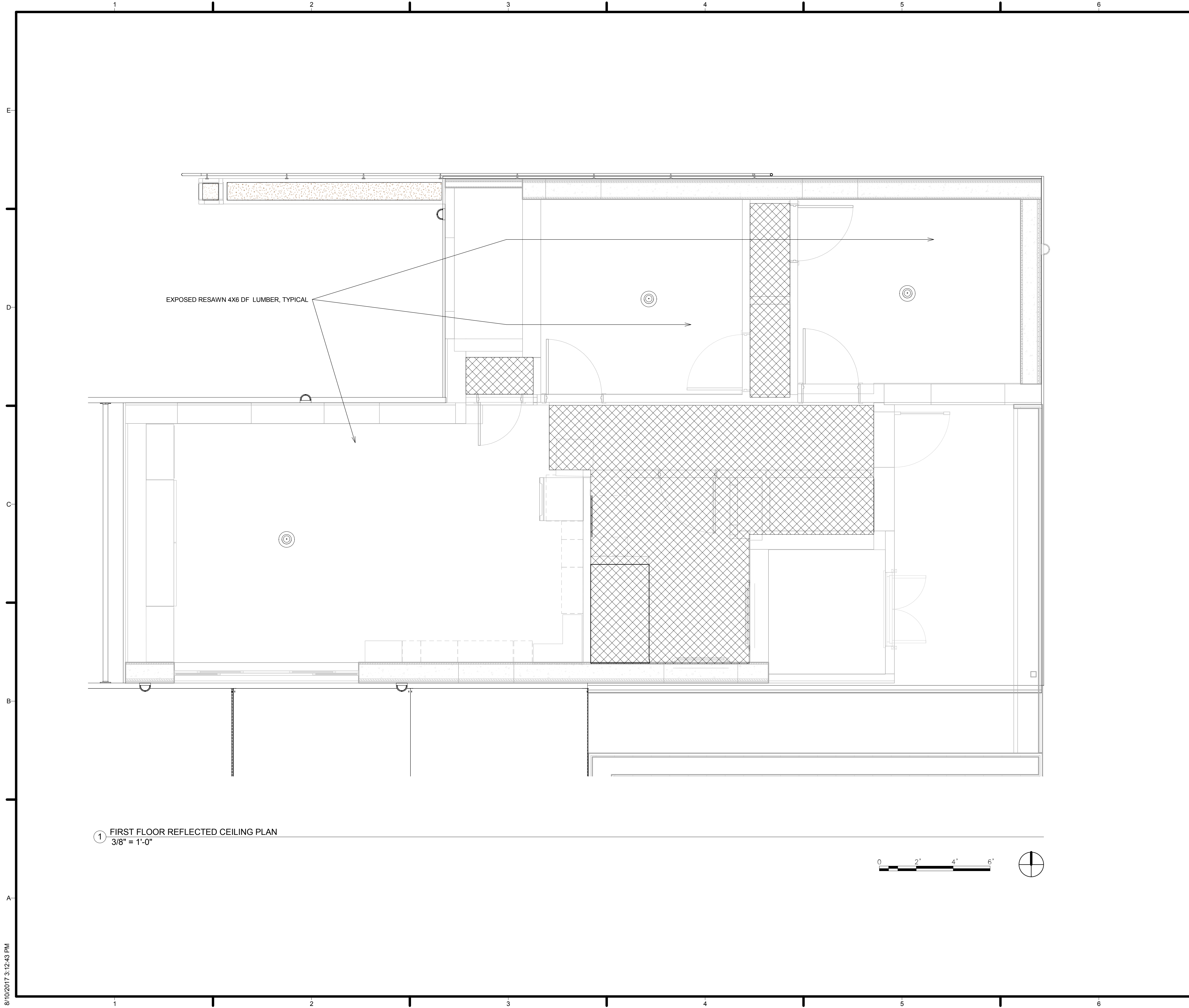
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**DRAINAGE ROOF PLAN**

**A-104**

① ROOF DRAINAGE  
 1/4" = 1'-0"



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① FIRST FLOOR REFLECTED CEILING PLAN  
3/8" = 1'-0"



**GENERAL SHEET NOTES**

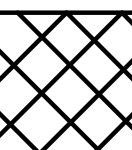
DROP CEILING IS WITHIN CONDITIONED SPACE. VENTILATION REGISTERS WITH A TOTAL AREA OF NO LESS THAN 1 SQ FT TO BE PLACED IN DROP CEILING TO ALLOW FOR PASSIVE ATTIC VENTILATION (CBC Sec 1023.3).

DROP CEILING FRAMING AND FINISH DETAIL SHOWN ON A-511

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

 8'-0" FLAT CEILING W/ 24" 2X4 FRAMING @ 16 O.C. AND 1/2" GYPSUM BOARD FINISH



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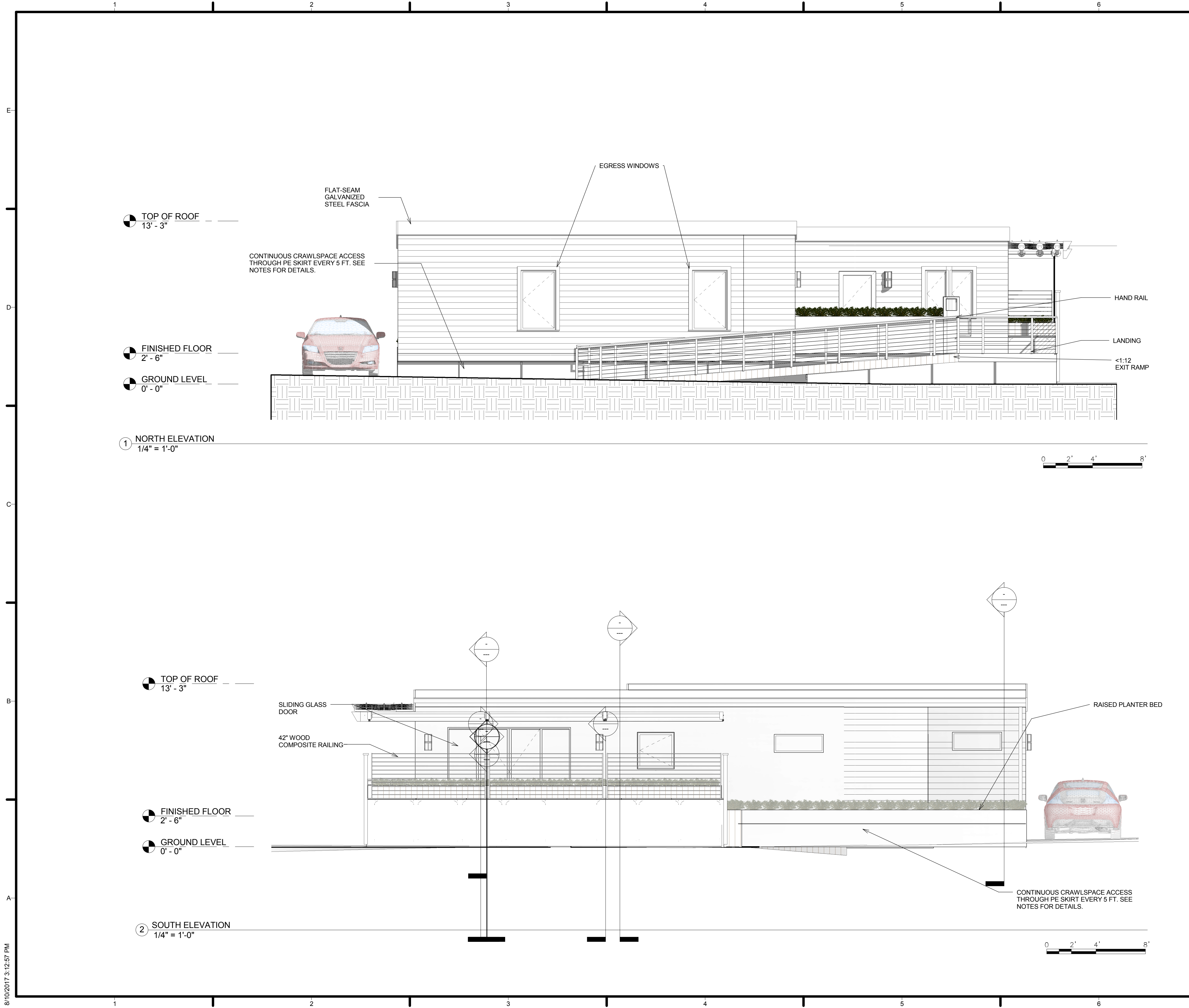
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SHEET TITLE  
**FIRST FLOOR REFLECTED CEILING PLAN**

**A-111**





**GENERAL SHEET NOTES**

1. CRAWL SPACE ACCESS + VENTILATION EVERY 5' UNDERBETWEEN AND/OR THROUGH 5' X 14" X 1.5' FLEXIBLE POLYETHYLENE SKIRT PIECES. PERMANENT SKIRTING TO BE DESIGNED AND INSTALLED AT FINAL UC DAVIS LOCATION ONCE SITE IS DETERMINED.
2. INTERIOR FINISHED FLOOR IS LINED UP WITH EXTERIOR DECKING AND SKIRT @ 2'-6"
3. RAMP IN NORTH ELEVATION IS DRAWN AS 30' TO SHOW "WORST CASE SCENARIO". ACTUAL GRADE CONDITIONS AT EXHIBITION SITE WILL DETERMINE ACTUAL LENGTH OF RAMP (WITH A MAXIMUM LENGTH OF 30').

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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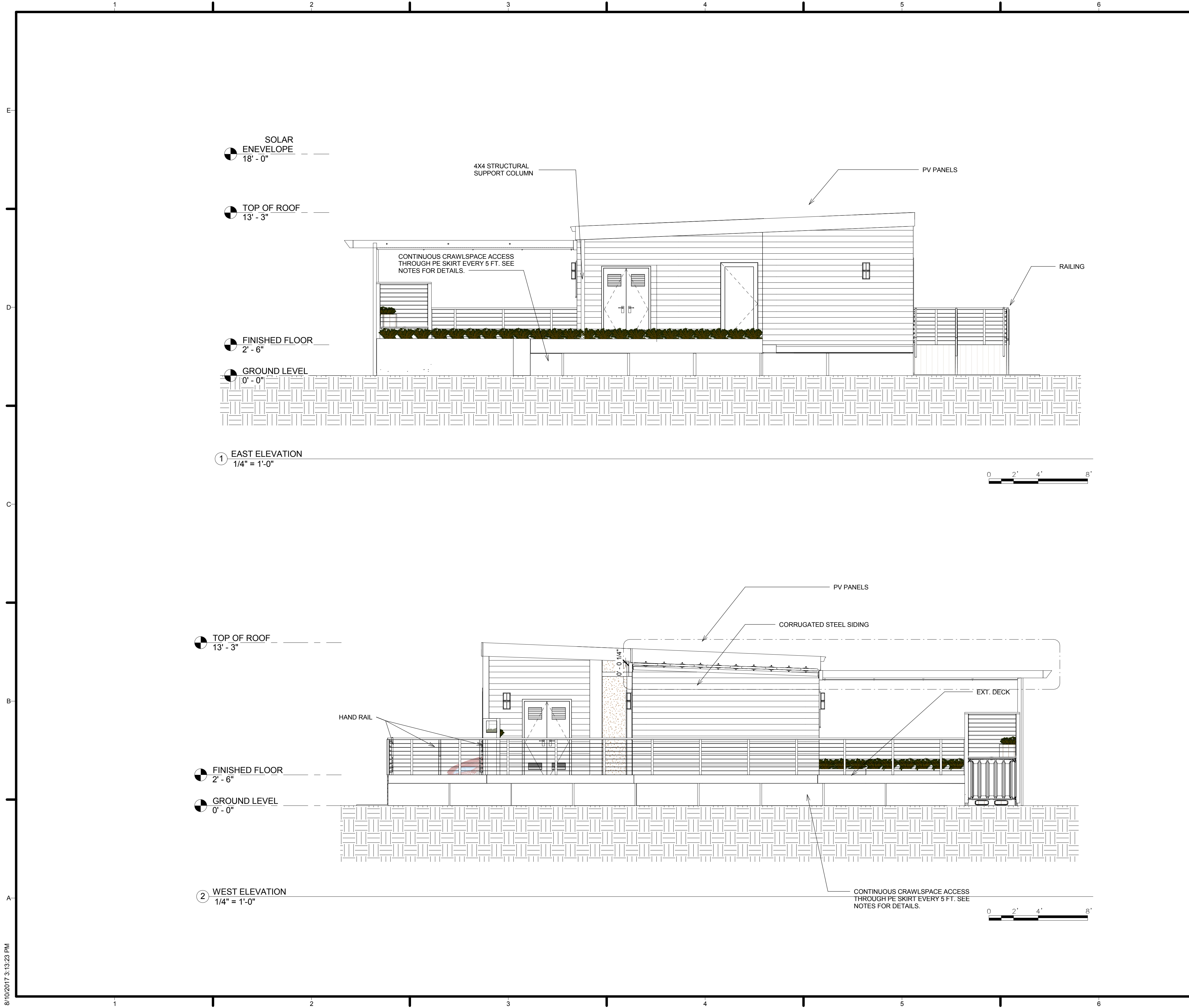
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SHEET TITLE  
**EXTERIOR ELEVATIONS**

**A-201**



**GENERAL SHEET NOTES**

1. CRAWL SPACE ACCESS + VENTILATION EVERY 5' UNDER/BETWEEN AND/OR THROUGH 5' x 1.5' FLEXIBLE POLYETHYLENE SKIRT PIECES

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**EXTERIOR ELEVATIONS**

**A-202**





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SHEET TITLE  
**SITE SECTIONS**

**A-301**

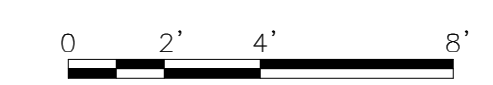
SOLAR ENEVELOPE 18'-0"

TOP OF ROOF 13'-3"

FINISHED FLOOR 2'-6"

GROUND LEVEL 0'-0"

① SITE SECTION LOOKING NORTH  
 1/4" = 1'-0"



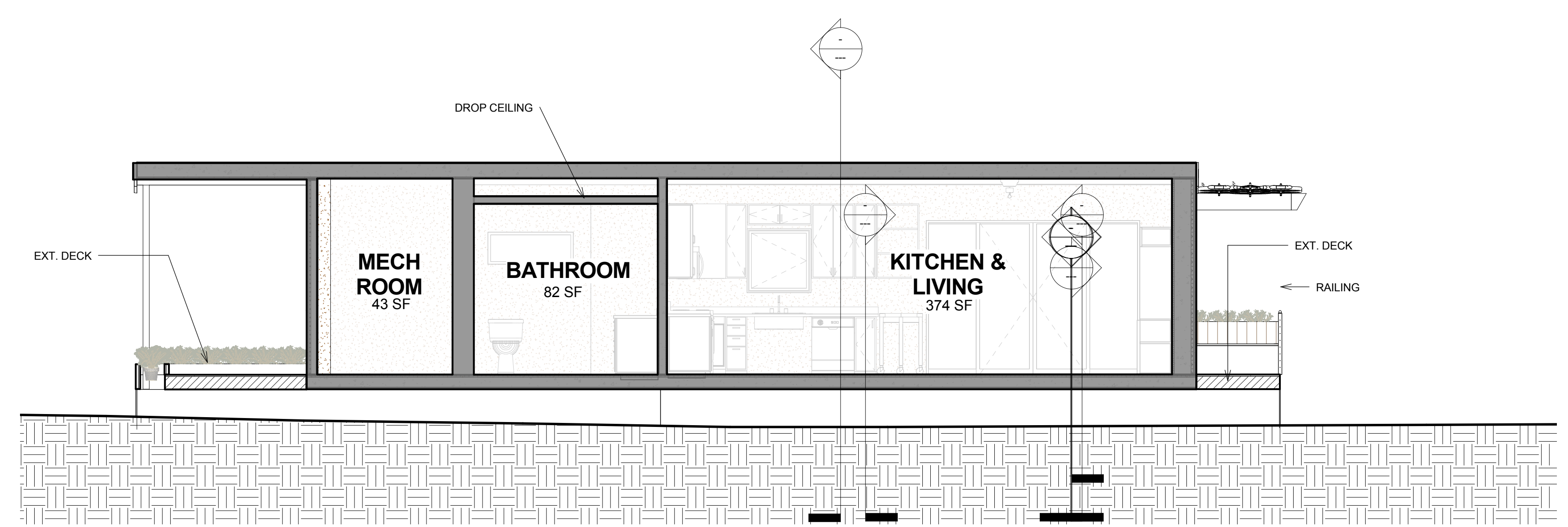
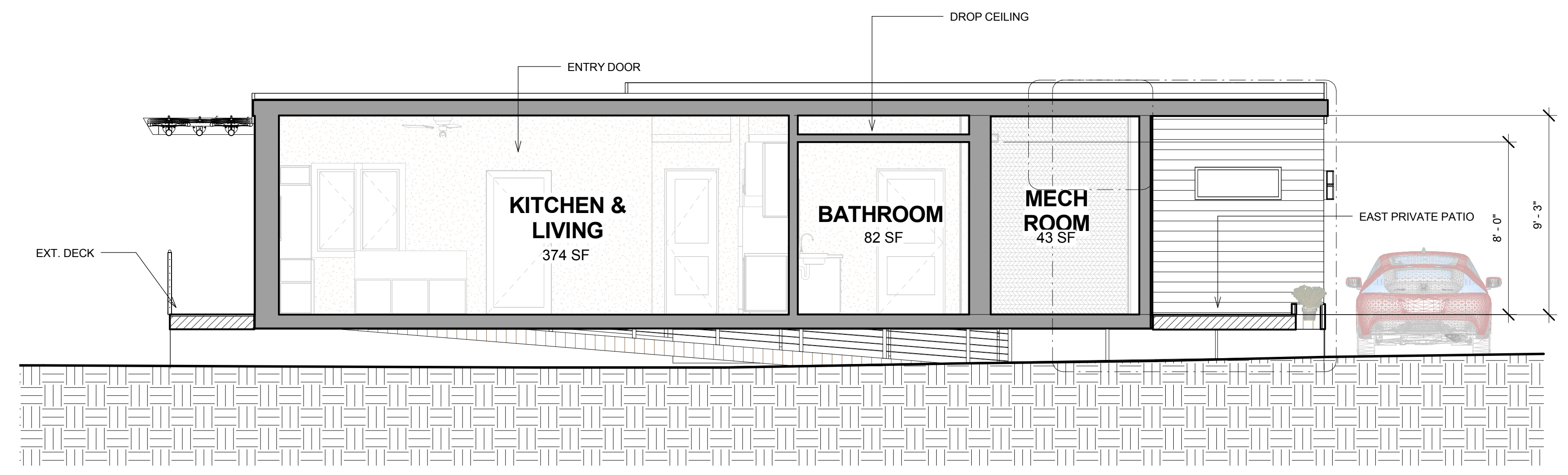
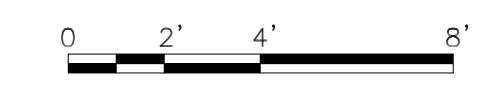
SOLAR ENEVELOPE 18'-0"

TOP OF ROOF 13'-3"

FINISHED FLOOR 2'-6"

GROUND LEVEL 0'-0"

② SITE SECTION LOOKING SOUTH  
 1/4" = 1'-0"





**OUR H<sub>2</sub>OUSE**

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**SITE SECTIONS**

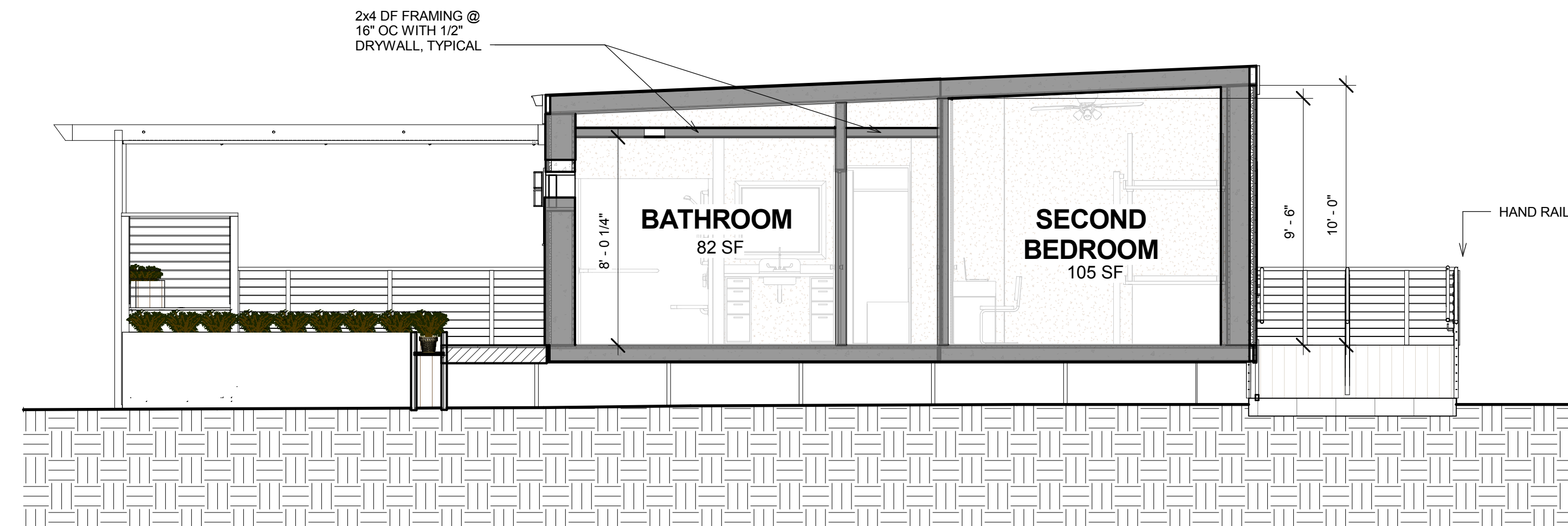
**A-302**

SOLAR ENEVELOPE  
 18' - 0"

TOP OF ROOF  
 13' - 3"

FINISHED FLOOR  
 2' - 6"

GROUND LEVEL  
 0' - 0"



1 SITE SECTION LOOKING WEST  
 1/4" = 1'-0"



SOLAR ENEVELOPE  
 18' - 0"

TOP OF ROOF  
 13' - 3"

FINISHED FLOOR  
 2' - 6"

GROUND LEVEL  
 0' - 0"



2 SITE SECTION LOOKING EAST  
 1/4" = 1'-0"







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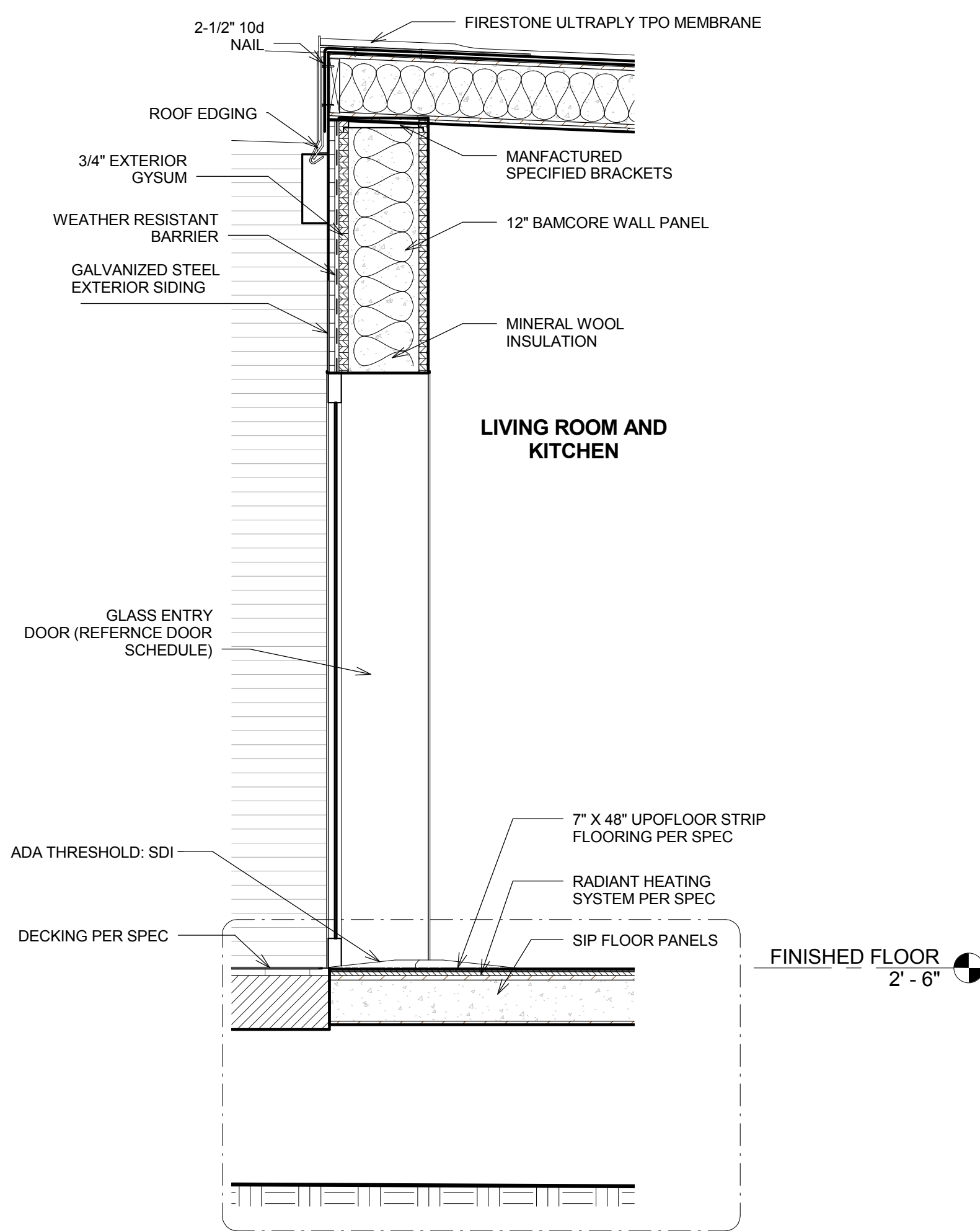


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05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

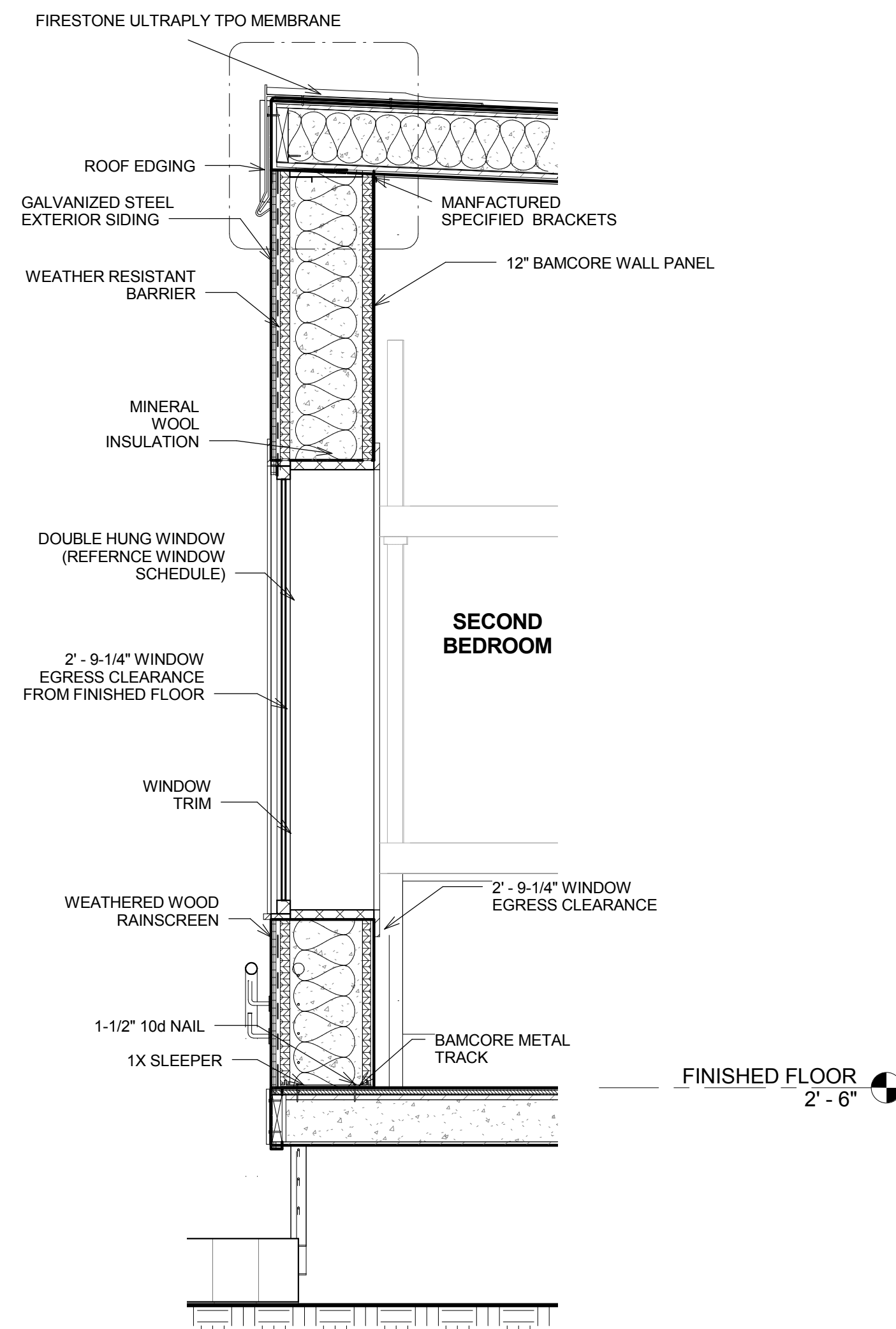
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LOT NUMBER: UNKNOWN		
DRAWN BY: BLUE MUSTANGS		
CHECKED BY: BLUE MUSTANGS		
COPYRIGHT: NONE/PROJECT PUBLIC DOMAIN		

SHEET TITLE  
**WALL SECTIONS**

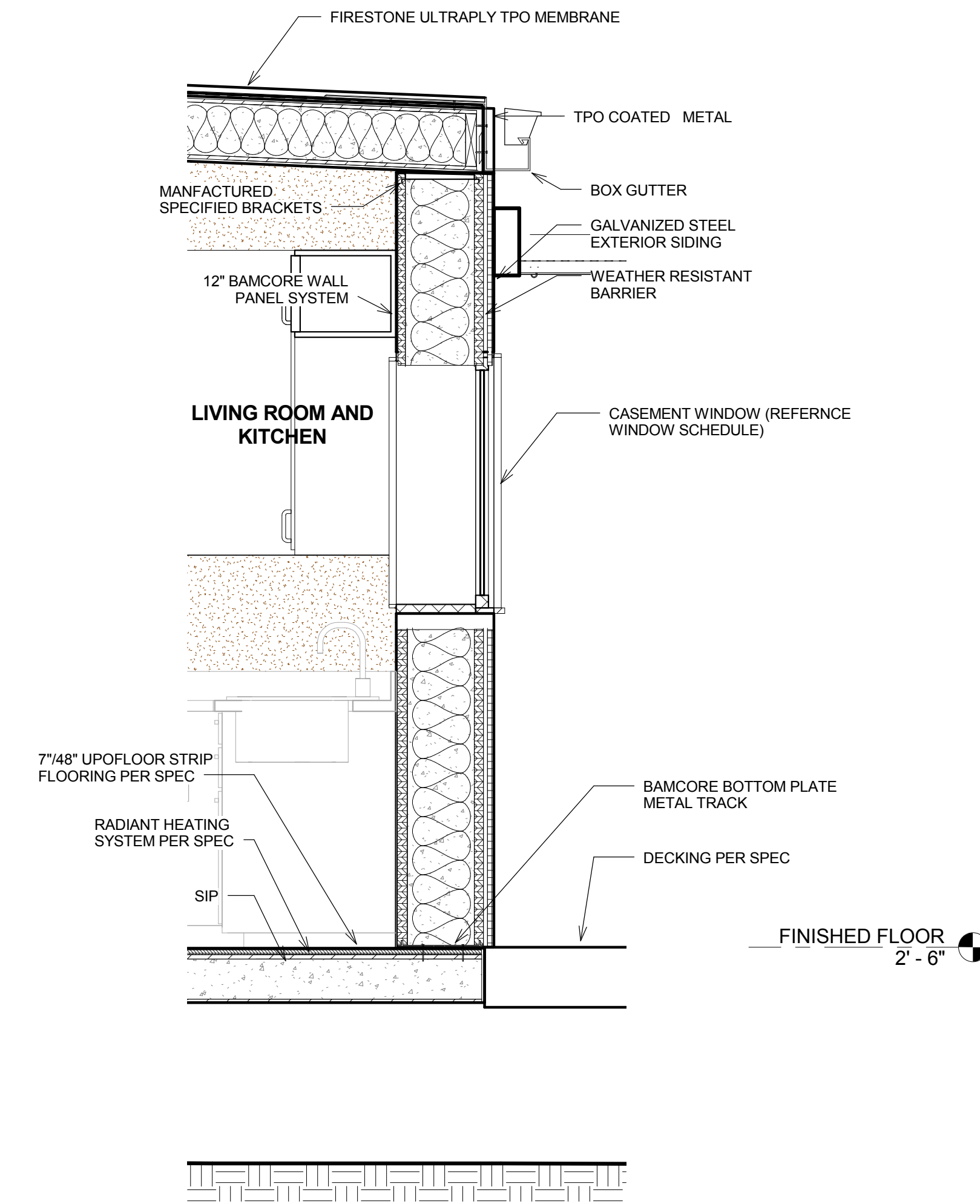
**A-321**



③ WALL SECTION @ ENTRY DOOR  
 3/4" = 1'-0"



② WALL SECTION @ BEDROOM WINDOW  
 3/4" = 1'-0"



① WALL SECTION @ KITCHEN WINDOW  
 3/4" = 1'-0"







**OUR H<sub>2</sub>OUSE**

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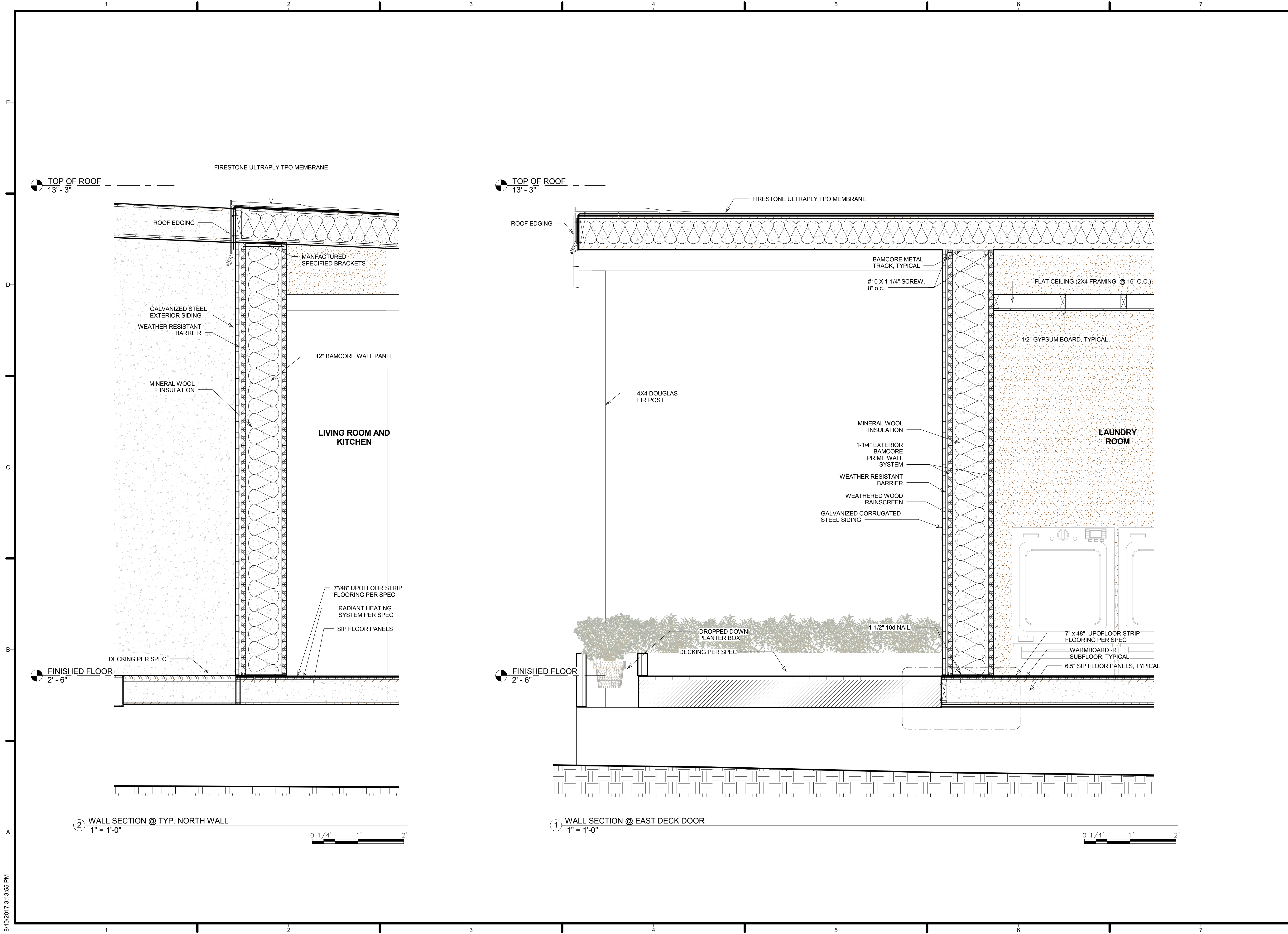


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05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
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SHEET TITLE  
**WALL SECTIONS**

**A-322**

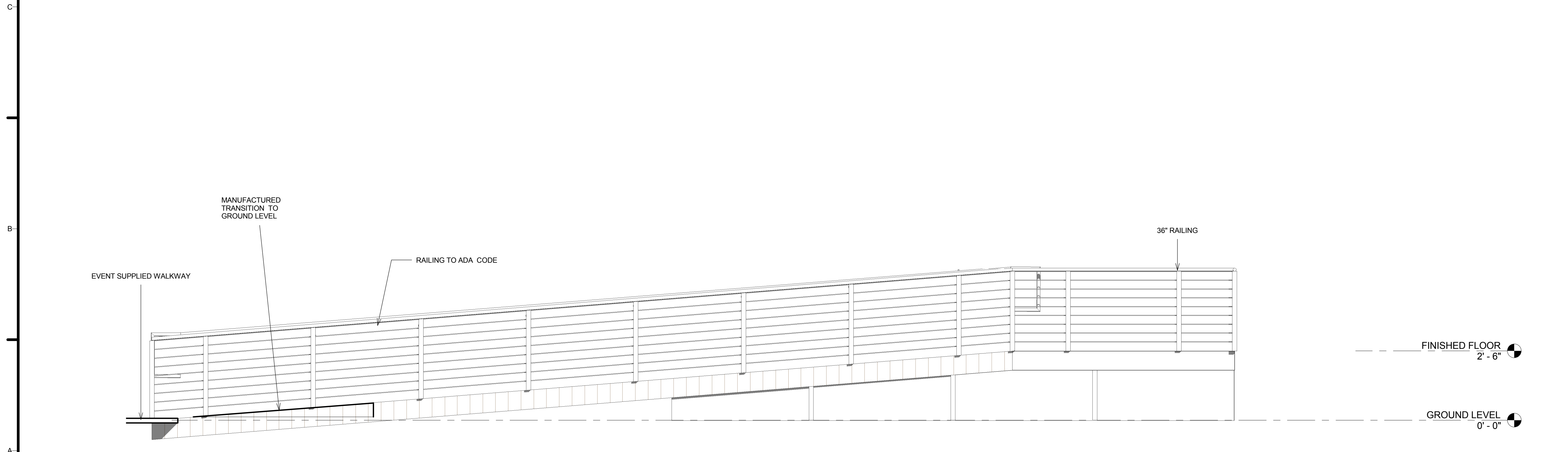
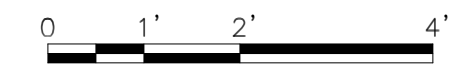


8/10/2017 3:13:55 PM

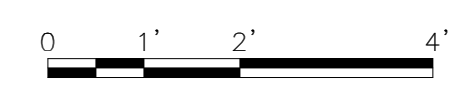




① RAMP SECTION - SOUTH VIEW  
1/2" = 1'-0"



② RAMP LANDING SECTION  
1/2" = 1'-0"



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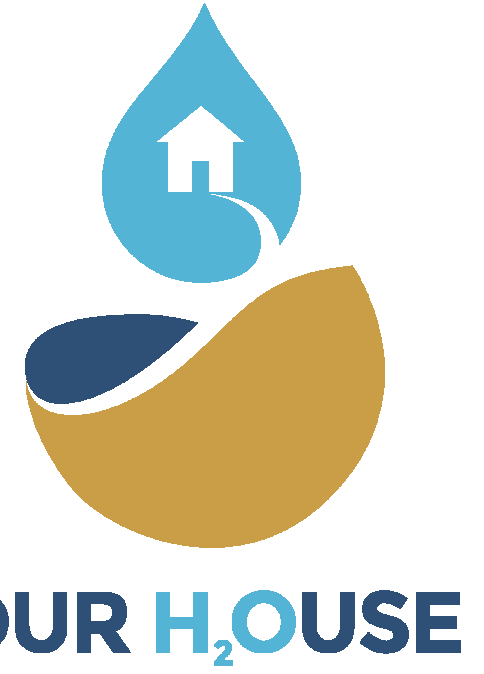
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03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
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SHEET TITLE  
**RAMP SECTION**

**A-330**



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MARK	DATE	DESCRIPTION
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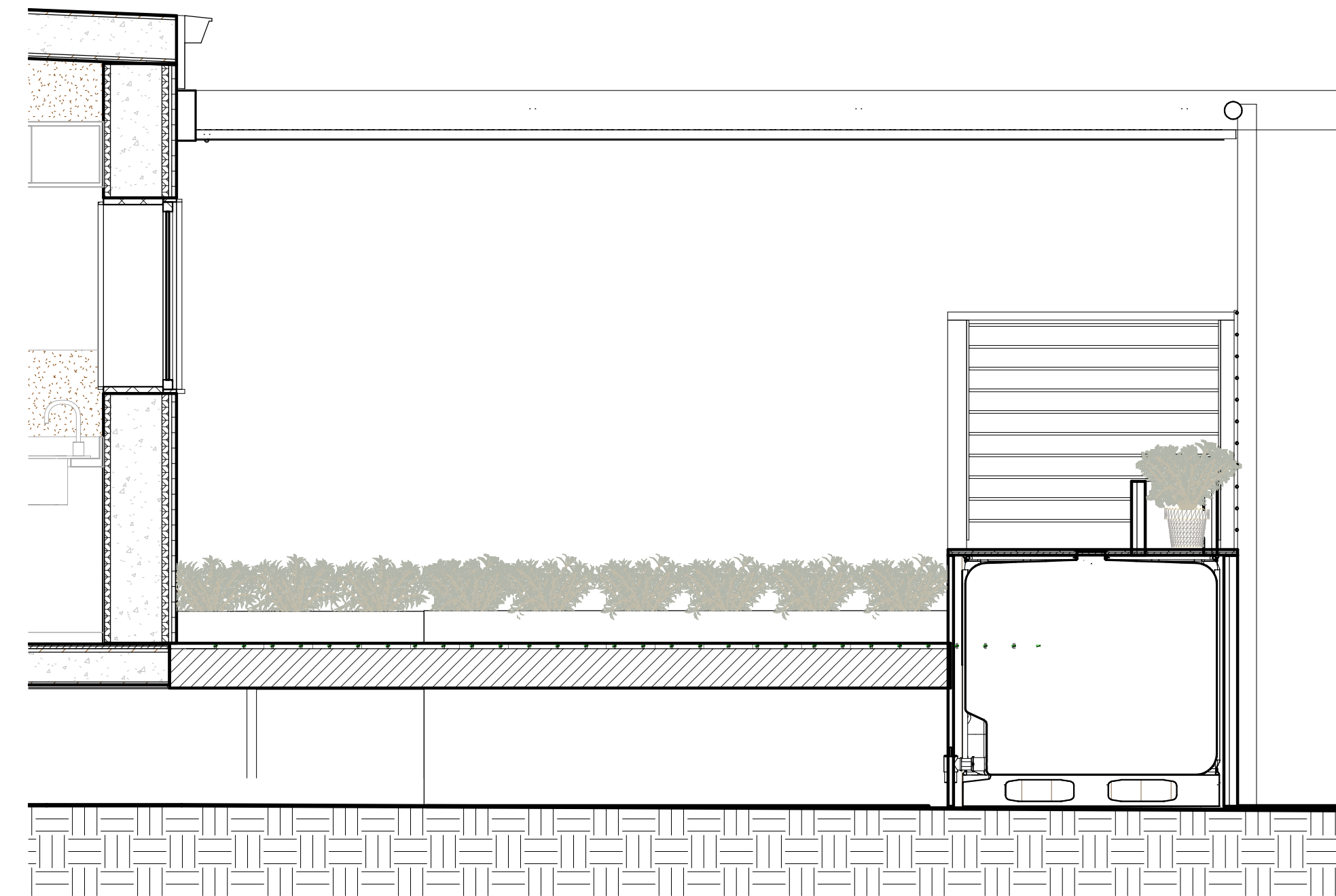
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
 COPYRIGHT: NONE/PROJECT PUBLIC DOMAIN

SHEET TITLE  
 DECK SECTIONS

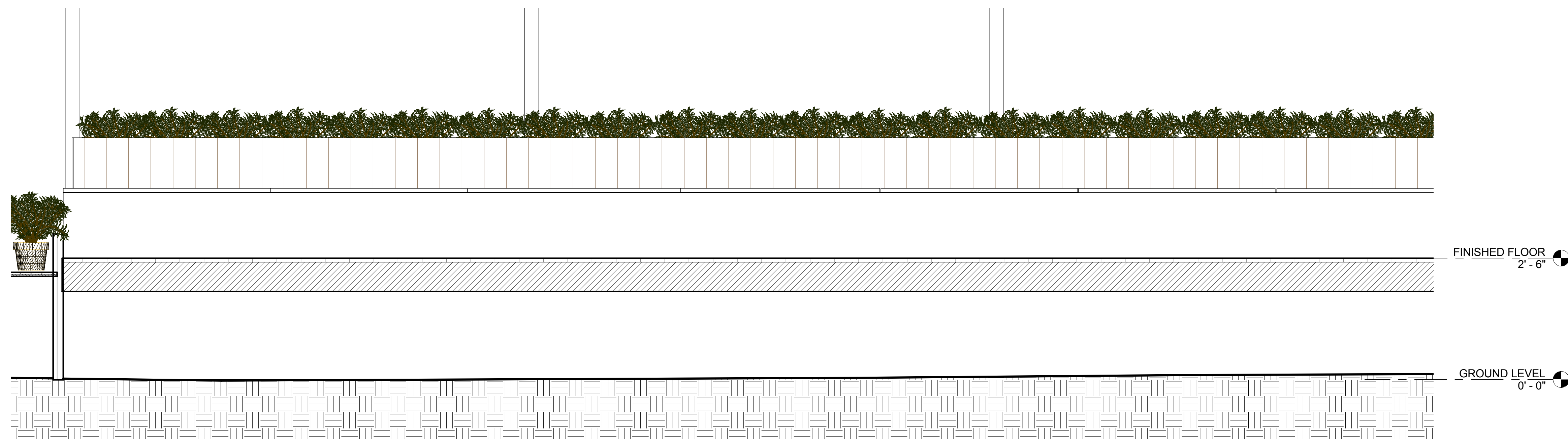
A-340



③ DECK SECTION 1  
 1/2" = 1'-0"

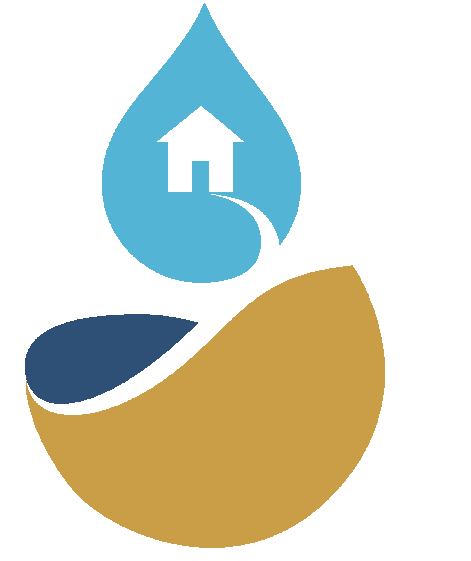


② DECK SECTION EAST  
 1/2" = 1'-0"



① DECK SECTION - SOUTH VIEW  
 3/4" = 1'-0"





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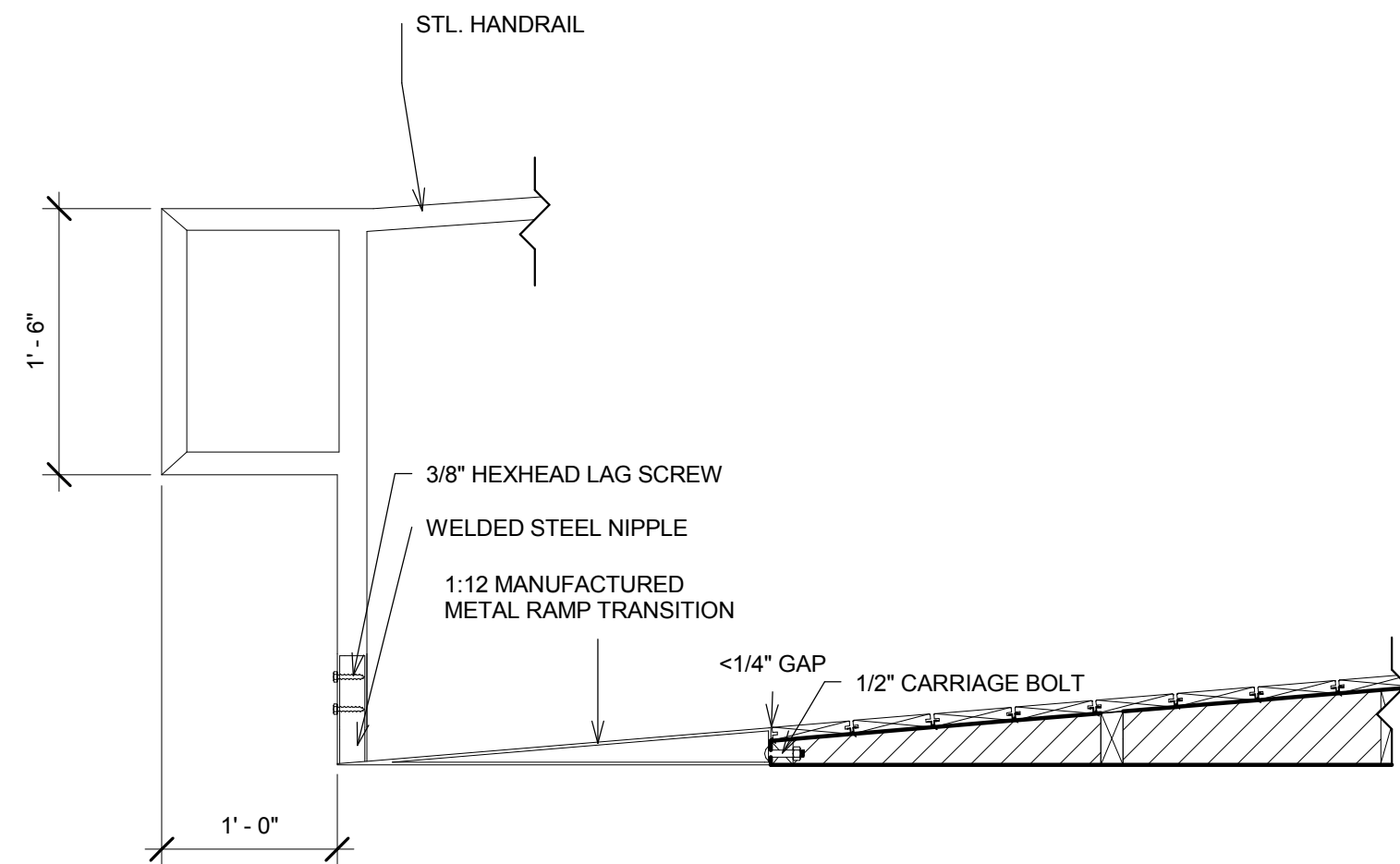


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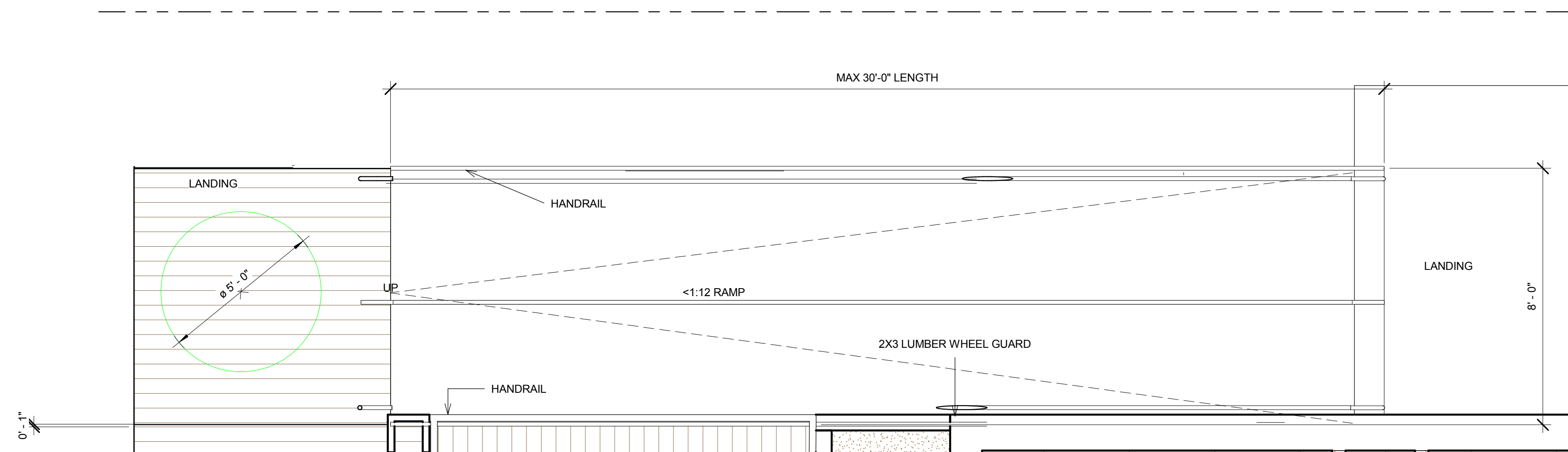
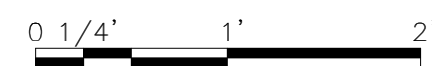
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 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
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SHEET TITLE  
**RAMP ENLARGED VIEWS**

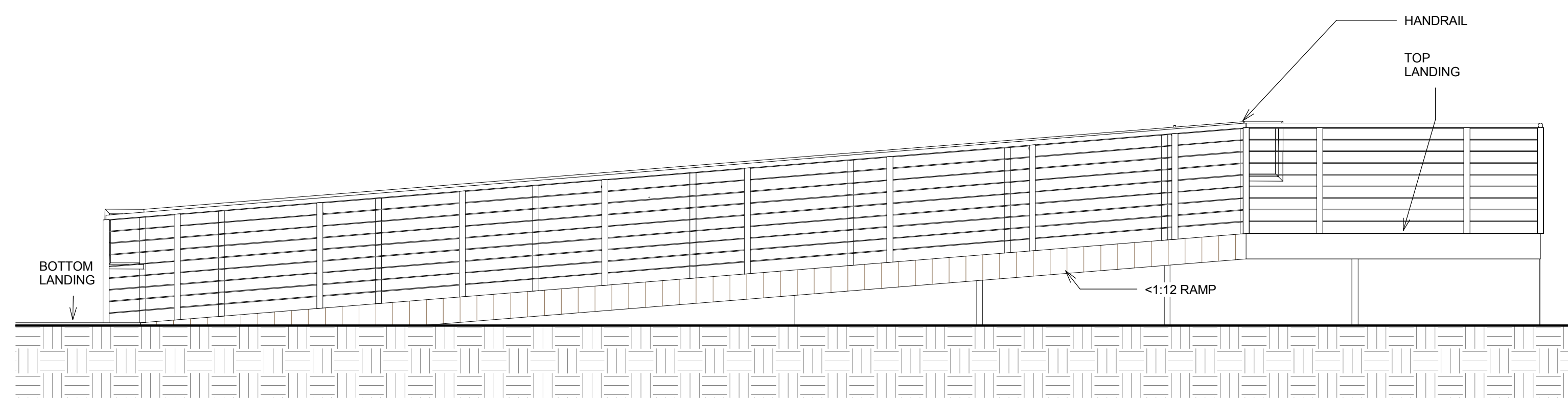
**A-411**



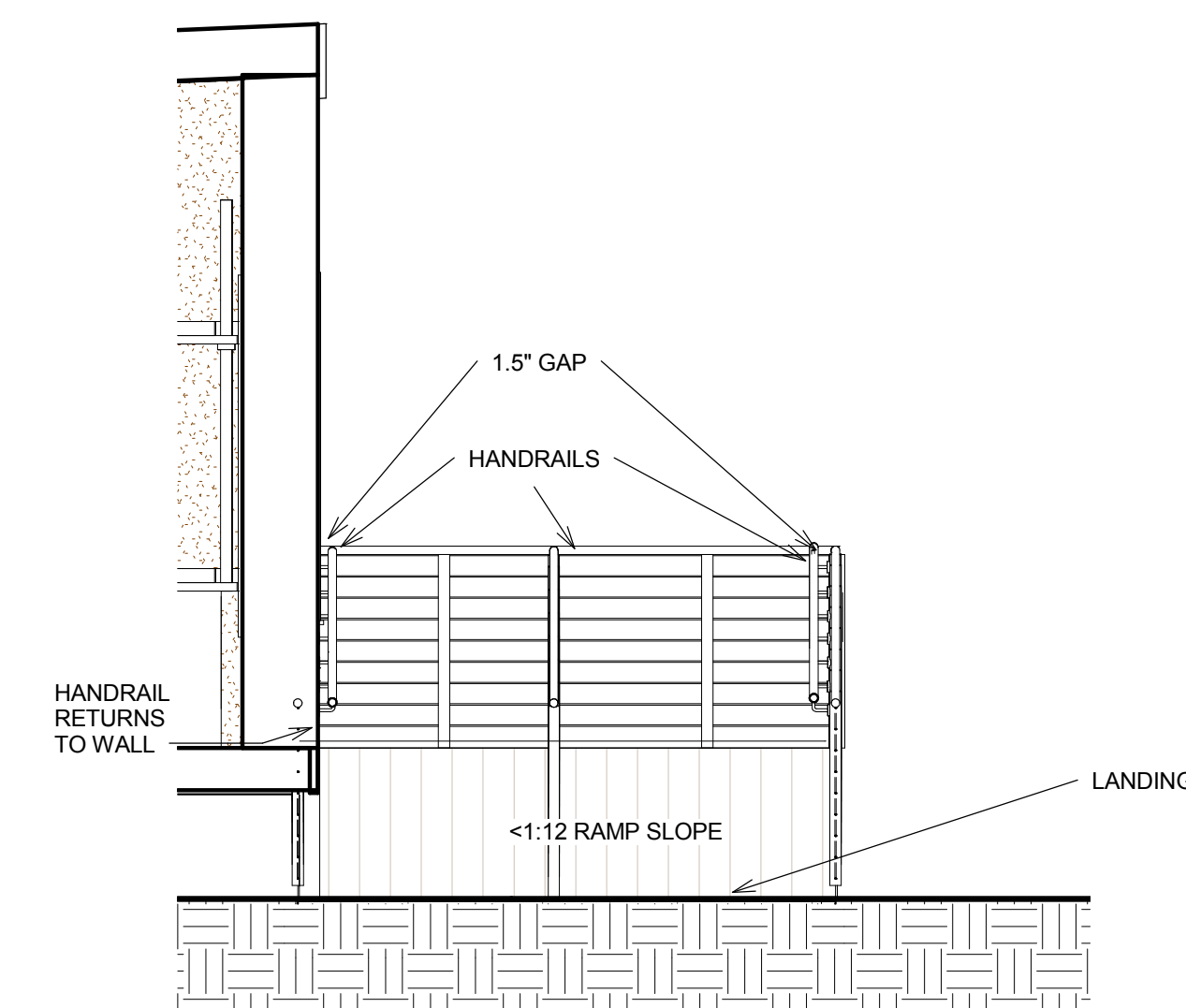
④ RAILING EXTENSION DETAIL  
 1" = 1'-0"



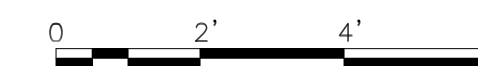
② RAMP PLAN  
 3/8" = 1'-0"

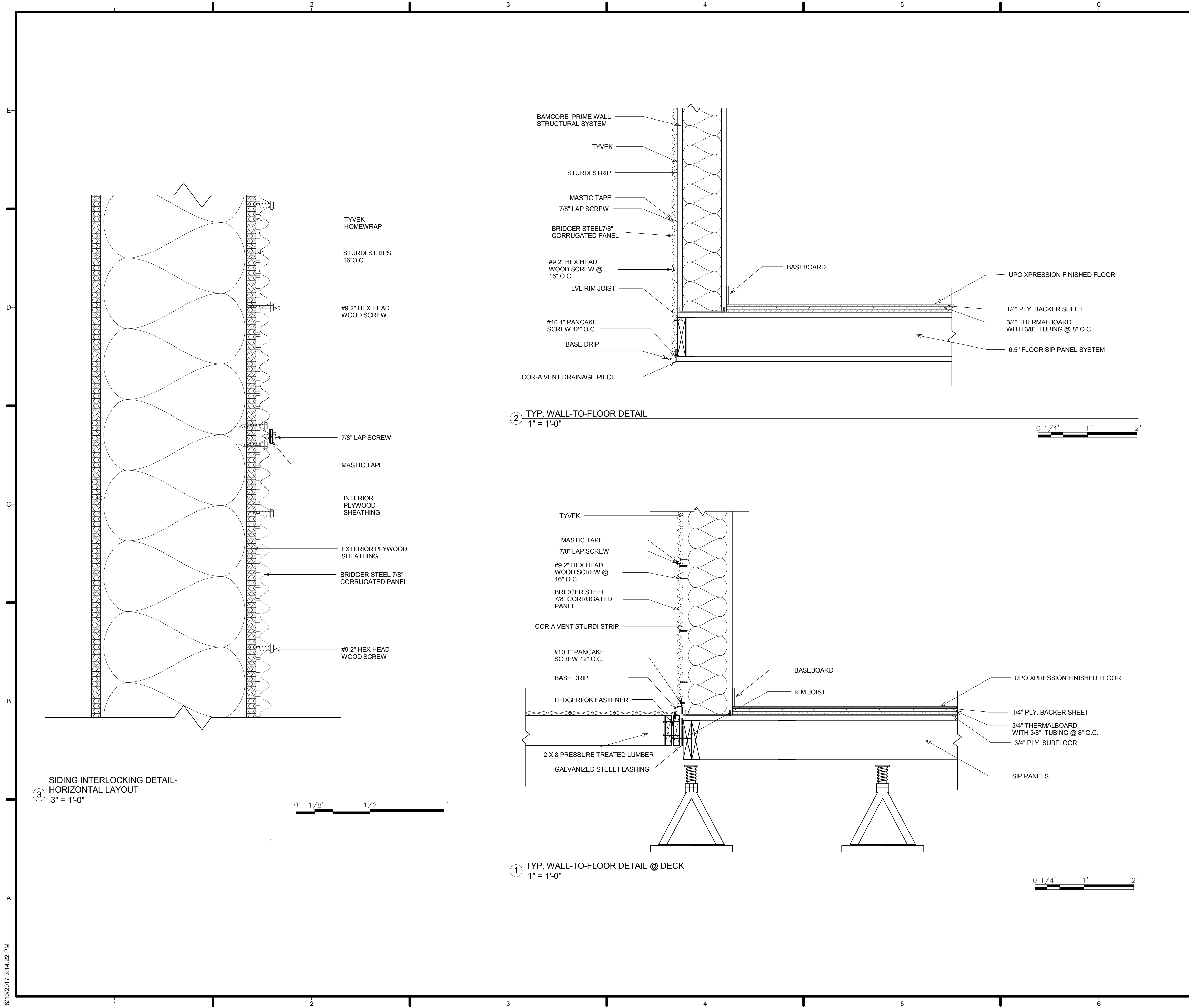


③ NORTH RAIL SECTION  
 3/8" = 1'-0"



① RAMP - WEST  
 3/8" = 1'-0"





**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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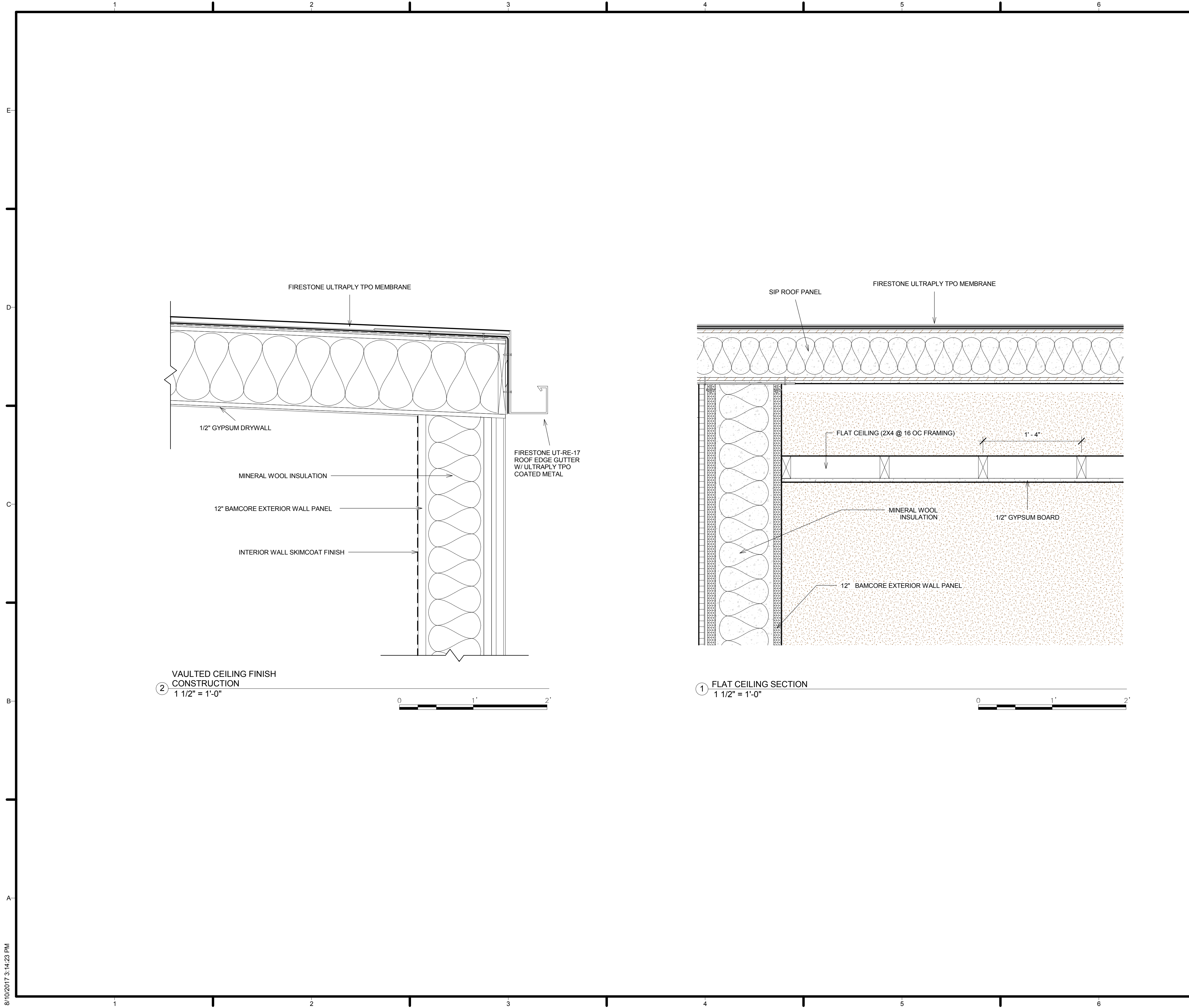
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
**WALL DETAILS**

**A-501**

8/10/2017 3:14:22 PM





**GENERAL SHEET NOTES**

FLAT CEILING CRAWL SPACE IS WITHIN CONDITIONED SPACE AND VENTILATED BY HOUSE HVAC OPERATION.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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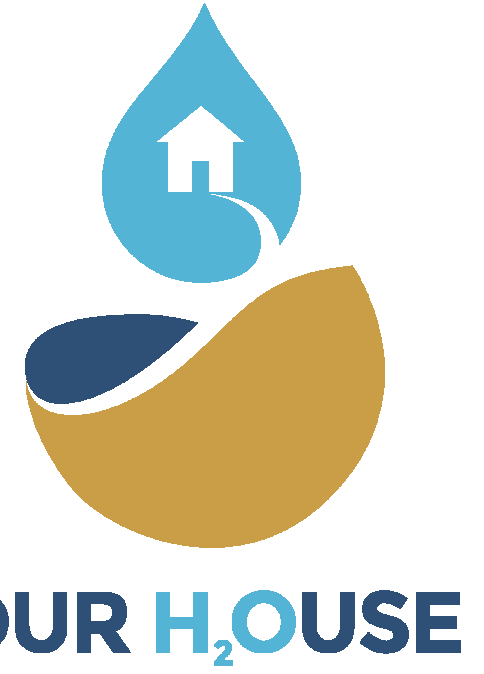
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01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
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SHEET TITLE  
**CEILING DETAILS**

**A-511**



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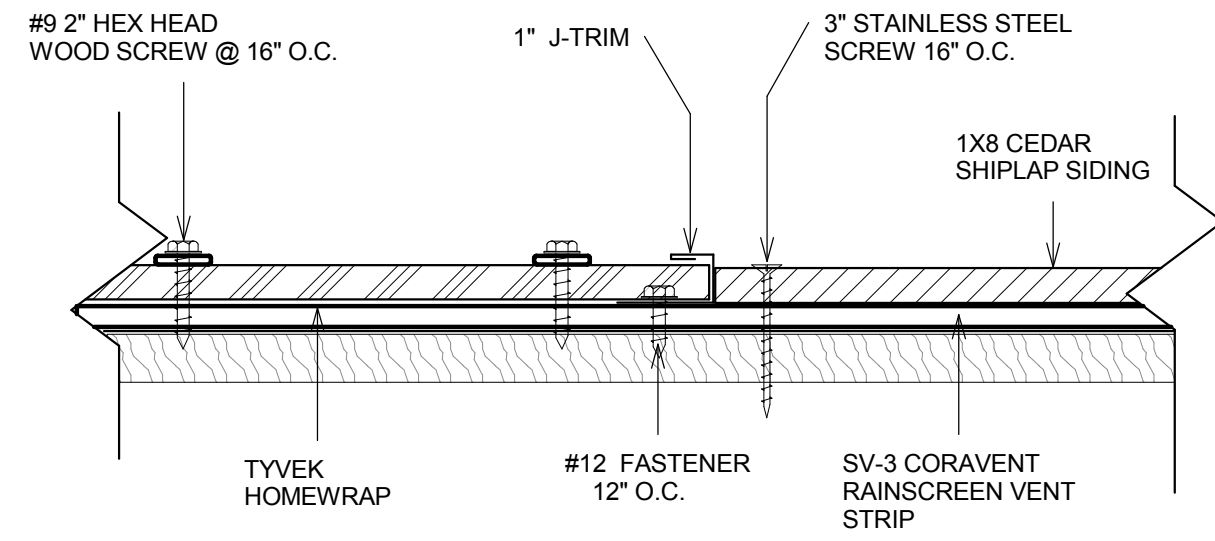


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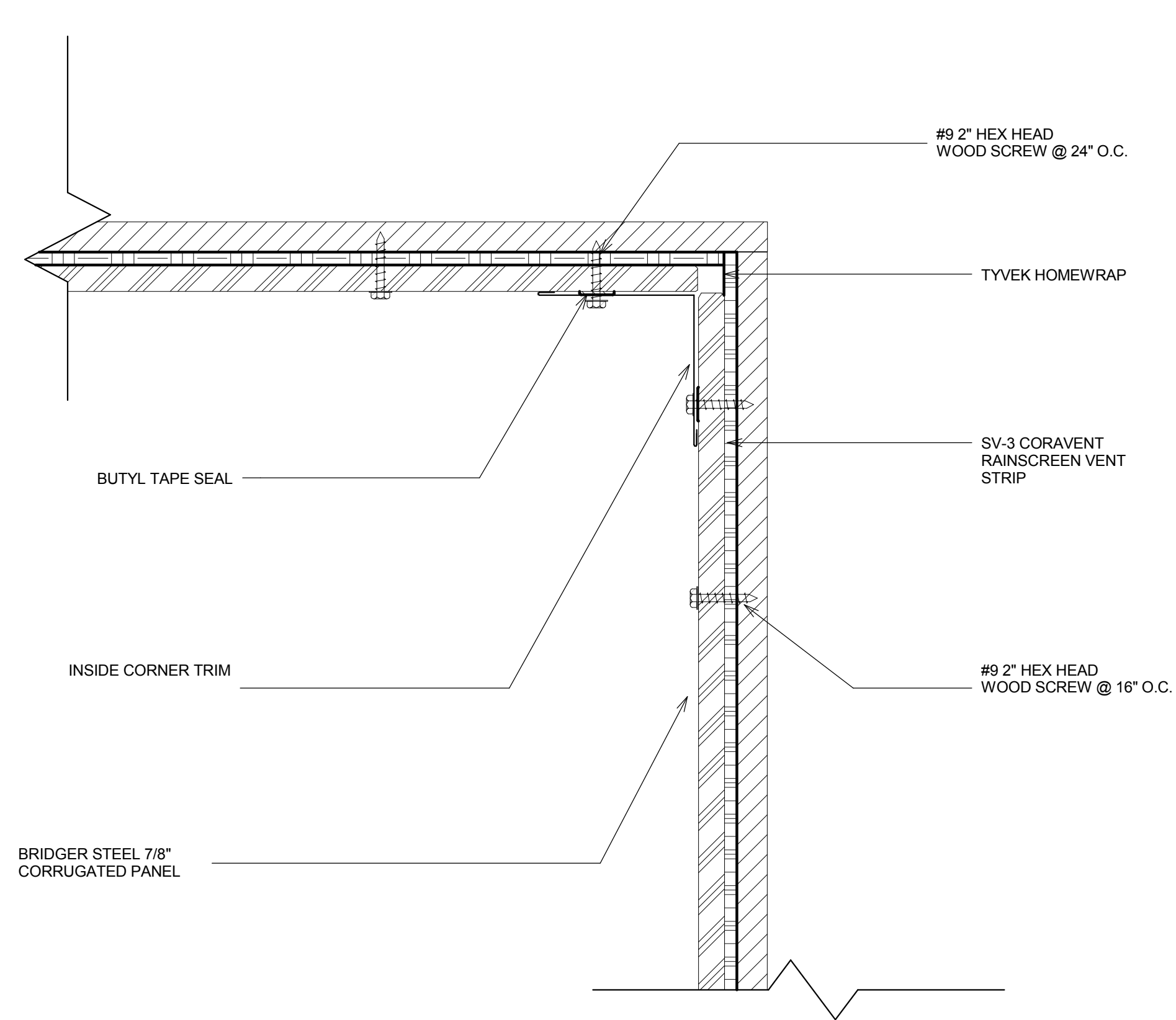
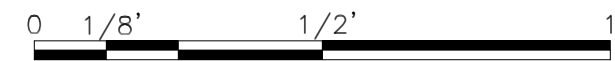
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 CHECKED BY: BLUE MUSTANGS  
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SHEET TITLE  
**SIDING DETAILS**

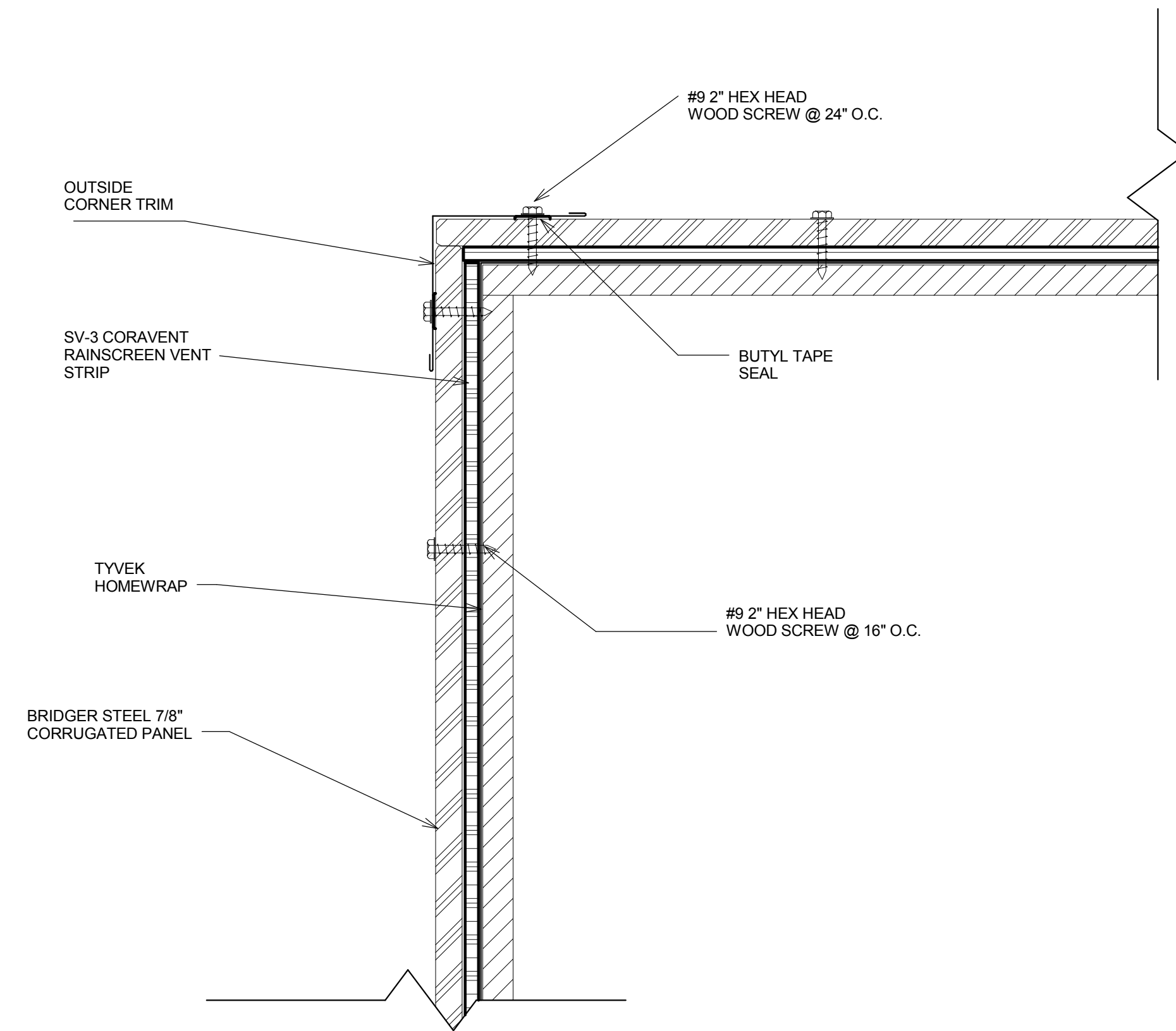
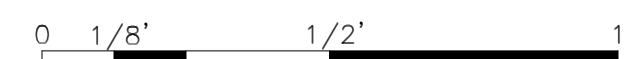
**A-521**



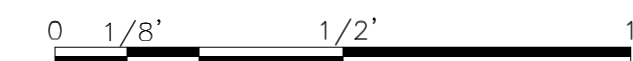
TYP. SIDING DETAIL CORRUGATED  
 PANEL INTERACTION WITH SHIPLAP  
 SIDING  
 ②  
 3" = 1'-0"



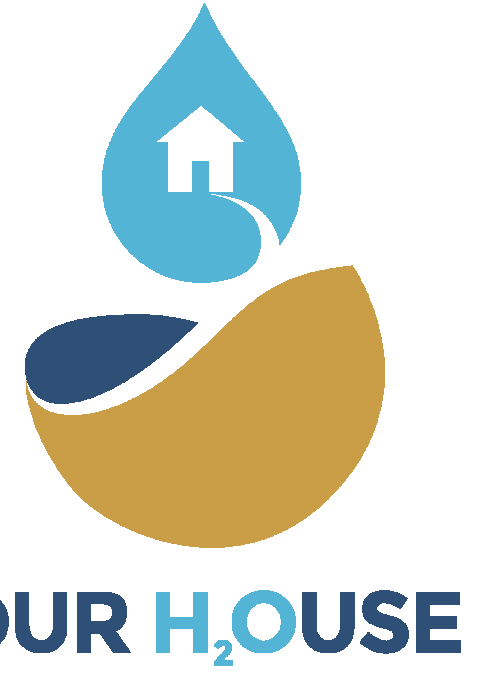
SIDING DETAIL INSIDE CORNER PLAN  
 VIEW  
 ③  
 3" = 1'-0"



SIDING DETAIL OUTSIDE CORNER PLAN  
 VIEW  
 ①  
 3" = 1'-0"







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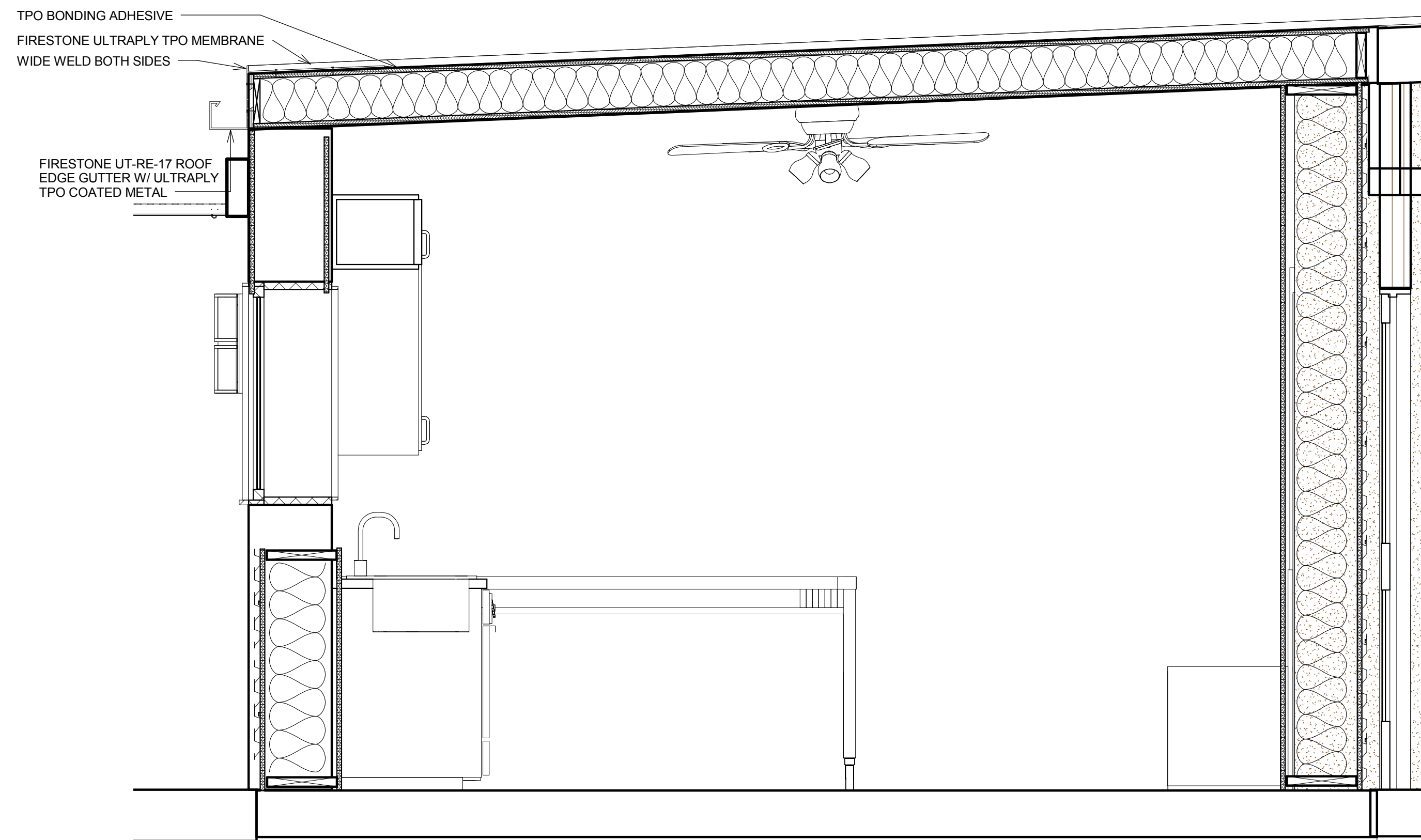


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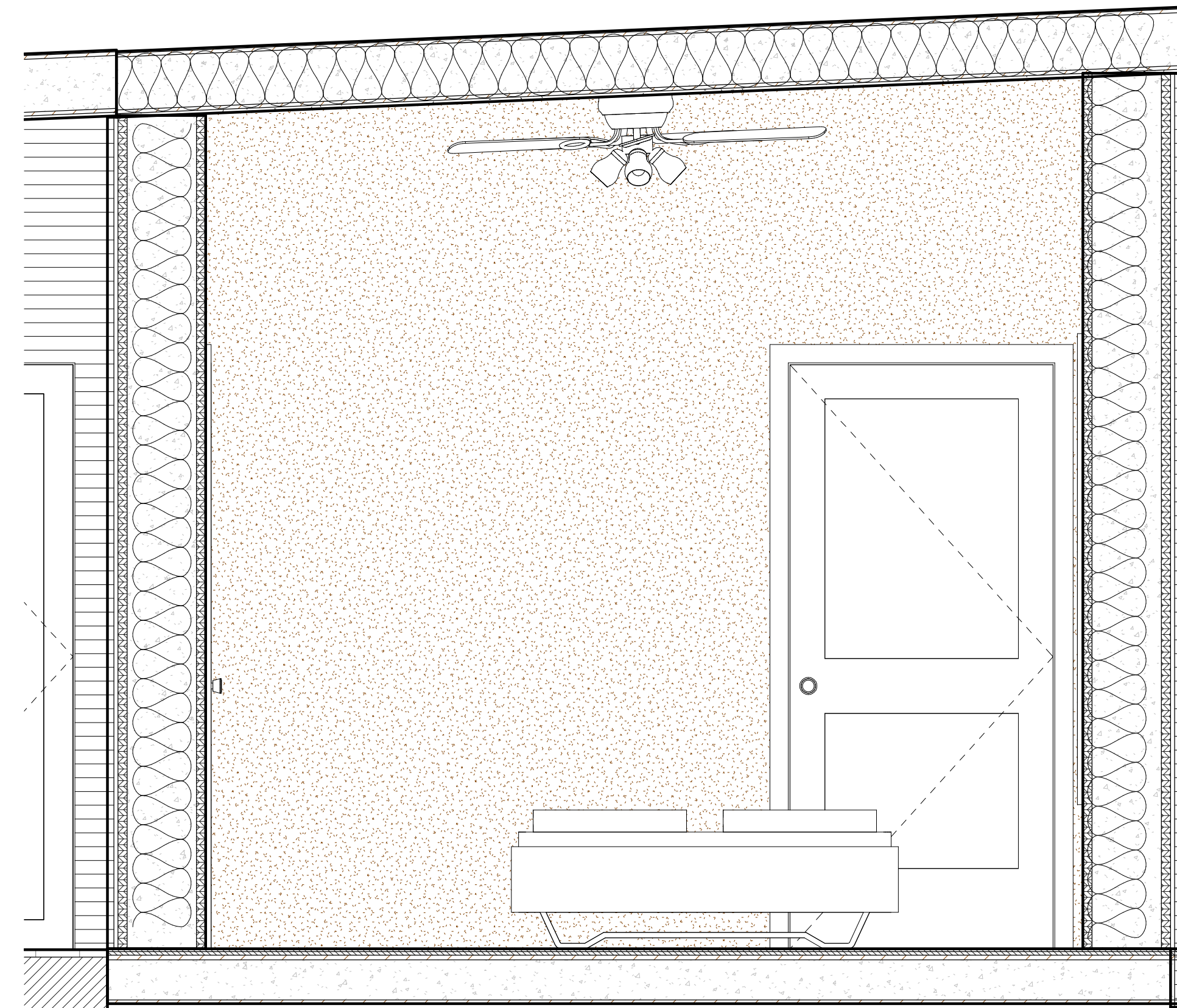
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
 COPYRIGHT: NONE/PROJECT PUBLIC DOMAIN

SHEET TITLE  
**ROOF DETAILS**

**A-531**



② ROOF DETAIL SOUTH MODULE  
 3/4" = 1'-0"



① ROOF DETAIL NORTH MODULE  
 3/4" = 1'-0"





**OUR H<sub>2</sub>OUSE**

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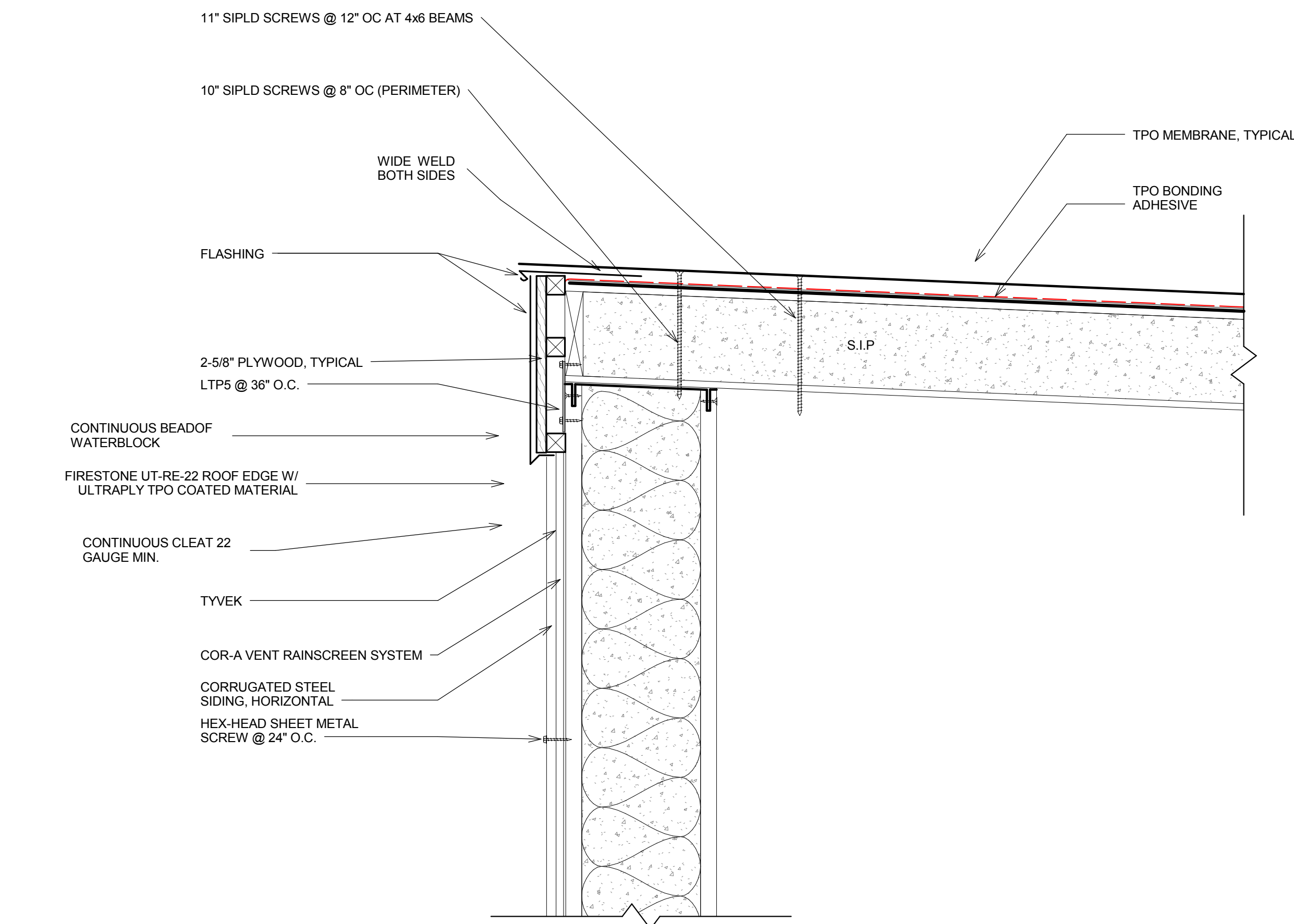


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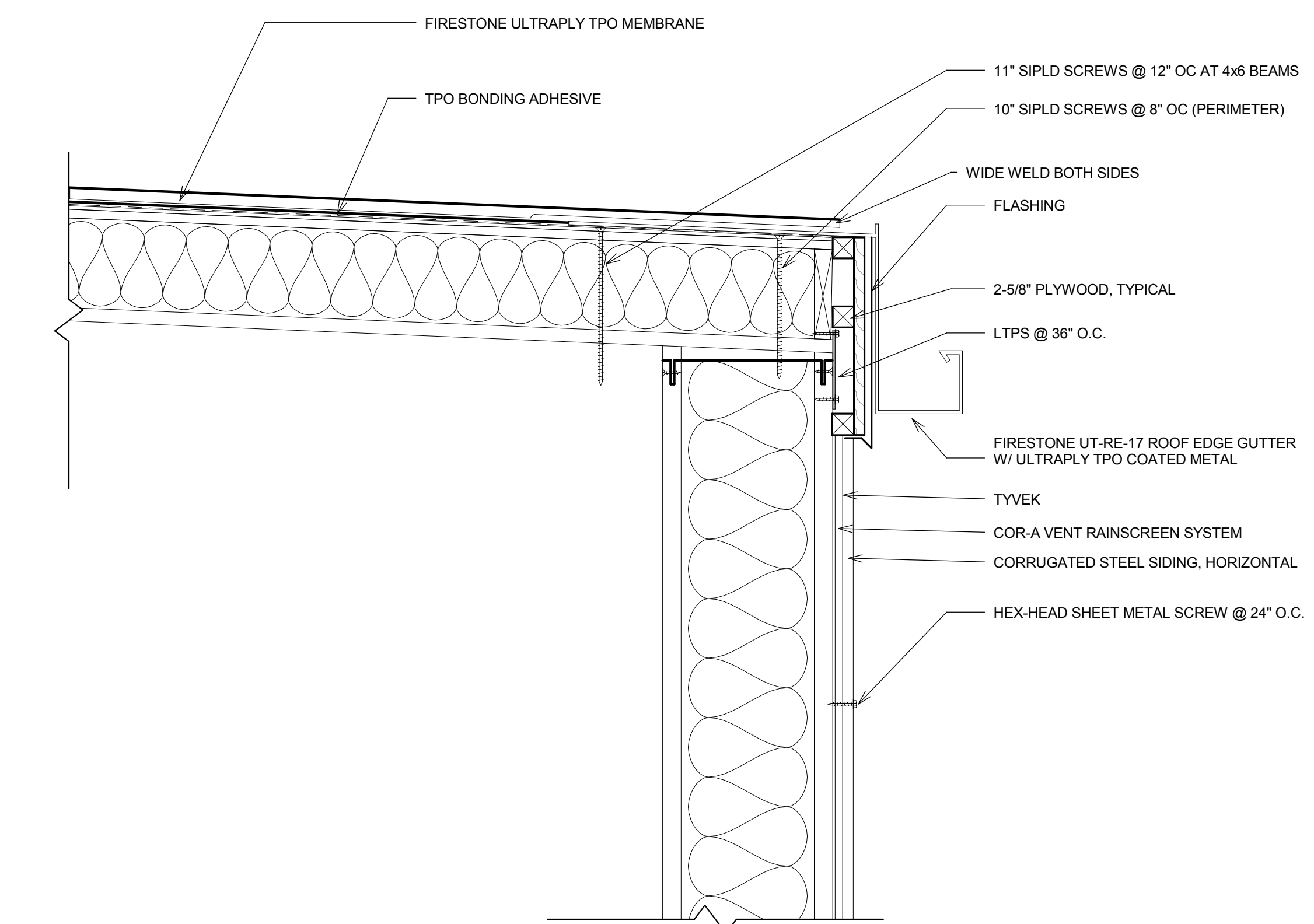
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 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
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SHEET TITLE  
**ROOF EDGING DETAIL**

**A-532**



② ROOF EDGING - NORTH  
 1 1/2" = 1'-0"



① ROOF EDGING - SOUTH  
 1 1/2" = 1'-0"



8/10/2017 3:14:26 PM





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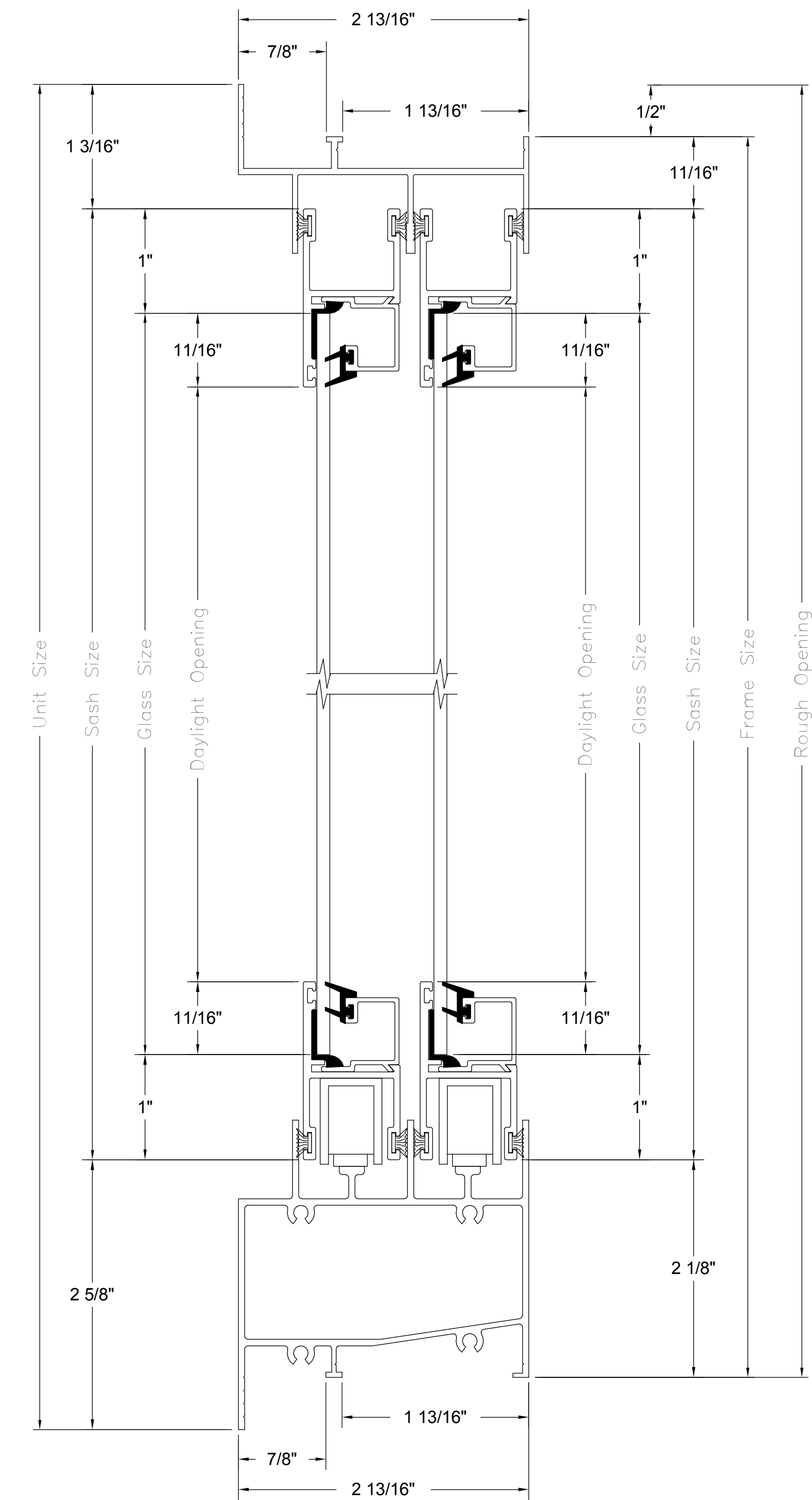


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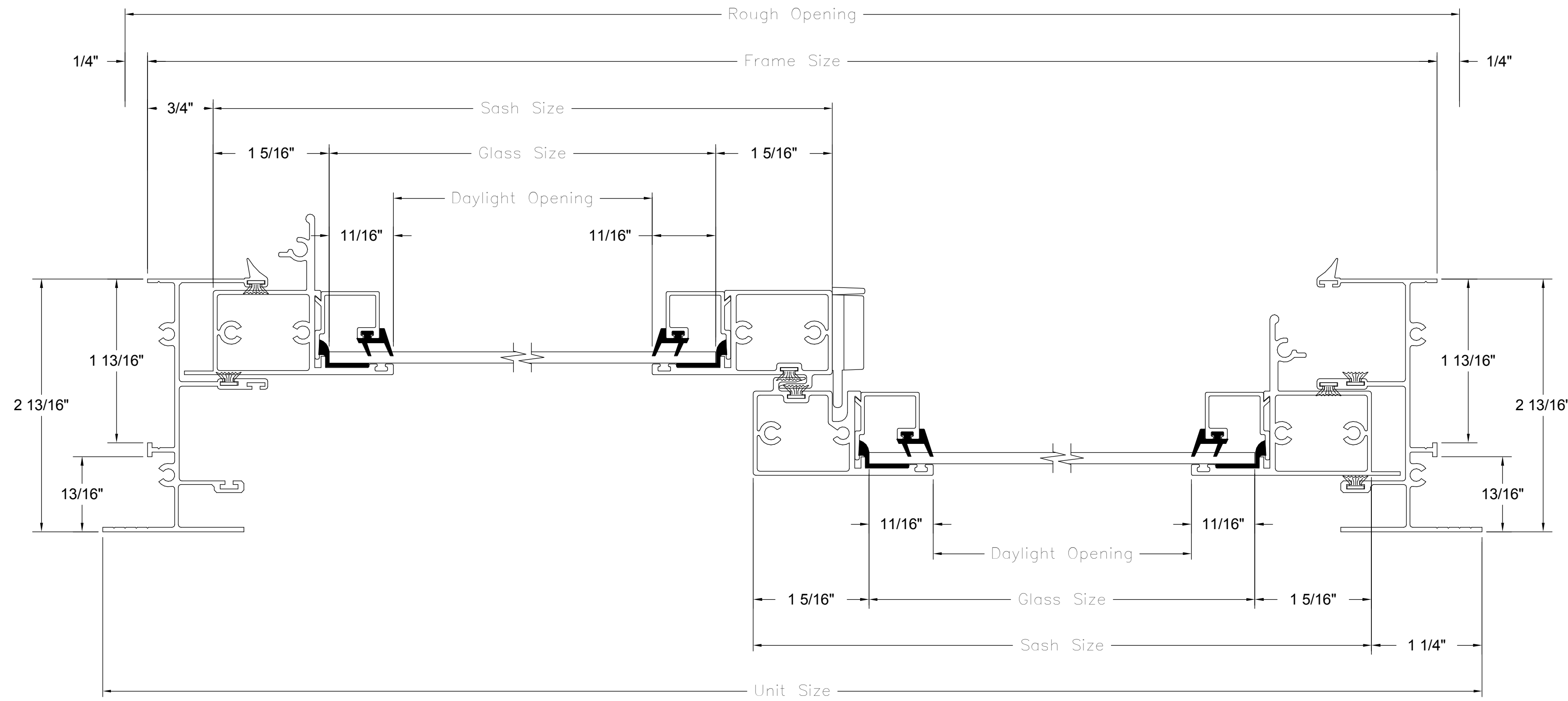
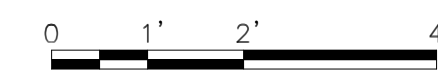
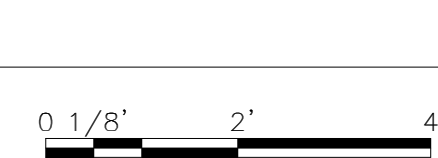
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
**WINDOW CASEMENT  
 DETAILS**

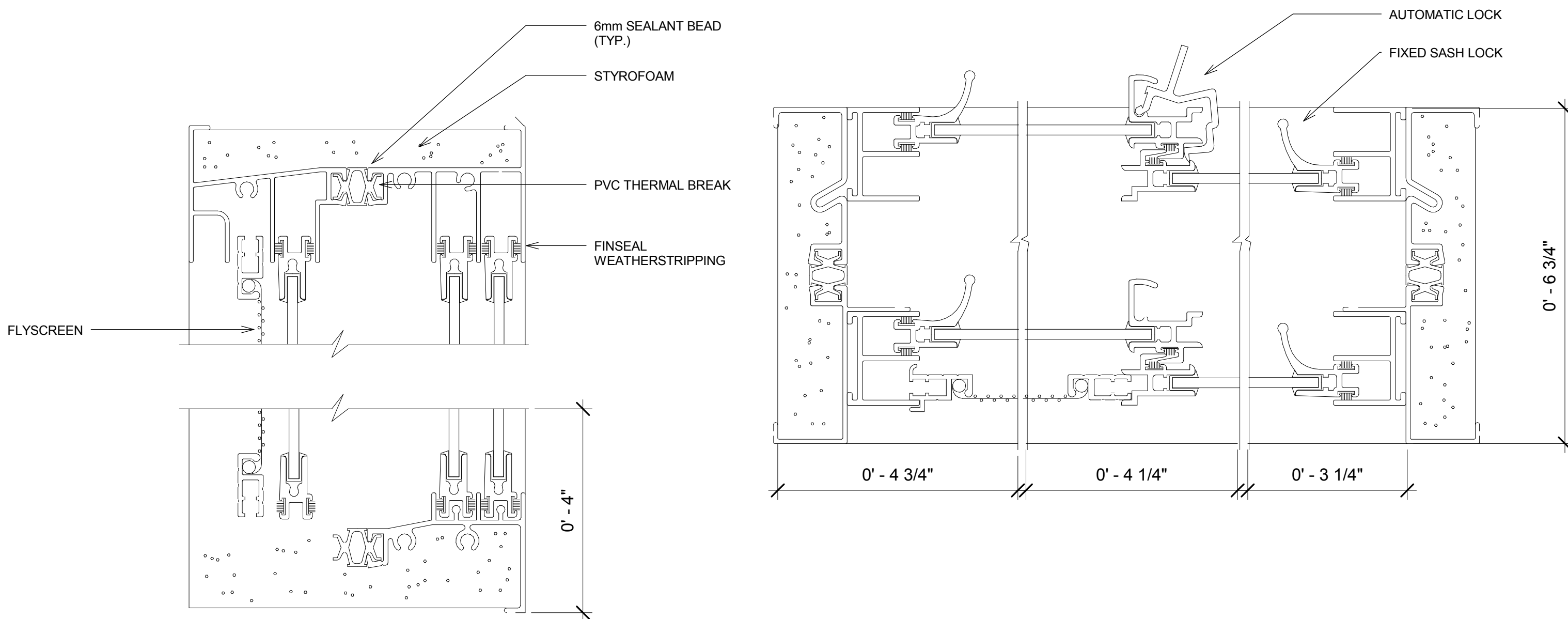
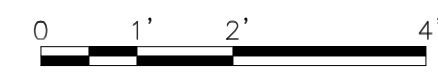
**A-541**



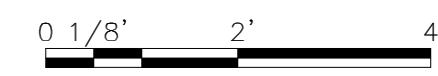
① CASEMENT VERTICAL  
 12" = 1'-0"

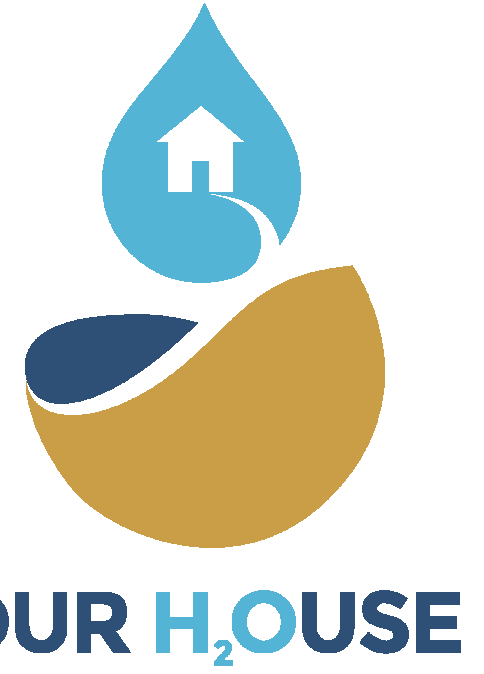


③ CASEMENT HORIZONTAL  
 12" = 1'-0"



② CASEMENT KITCHEN WINDOW DETAIL  
 6" = 1'-0"





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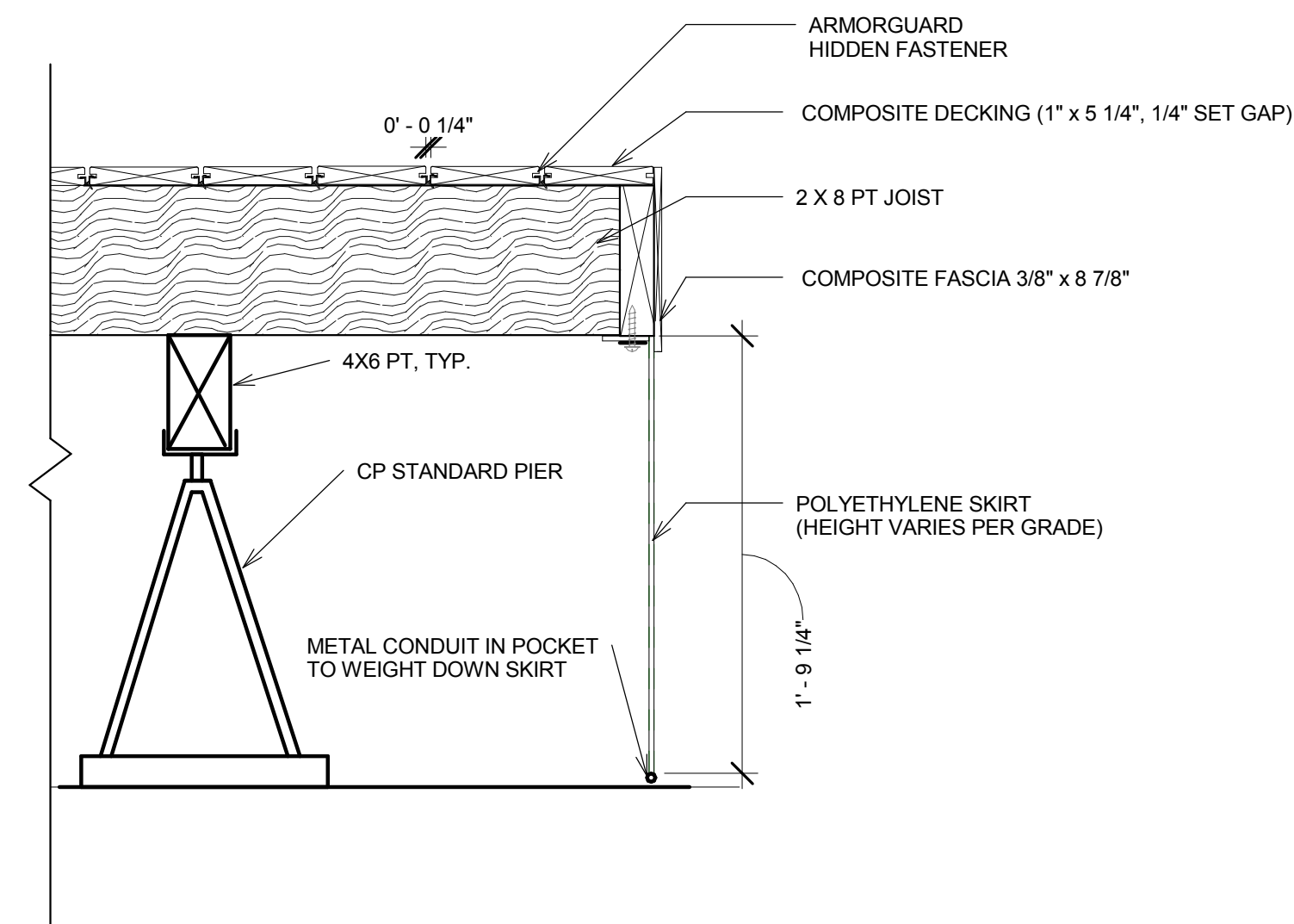


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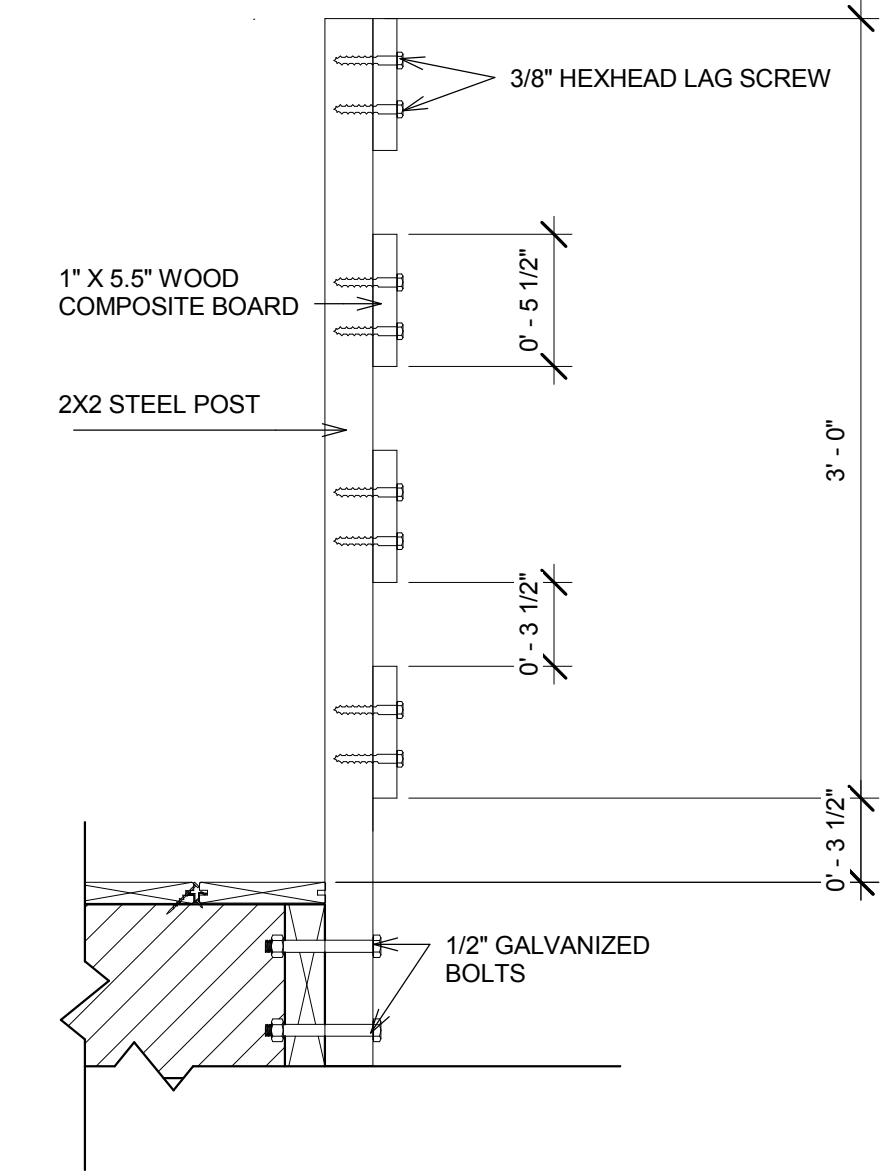
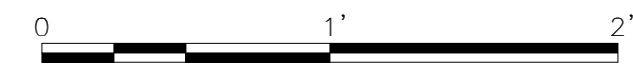
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
 COPYRIGHT: NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**TYPICAL DECK DETAILS**

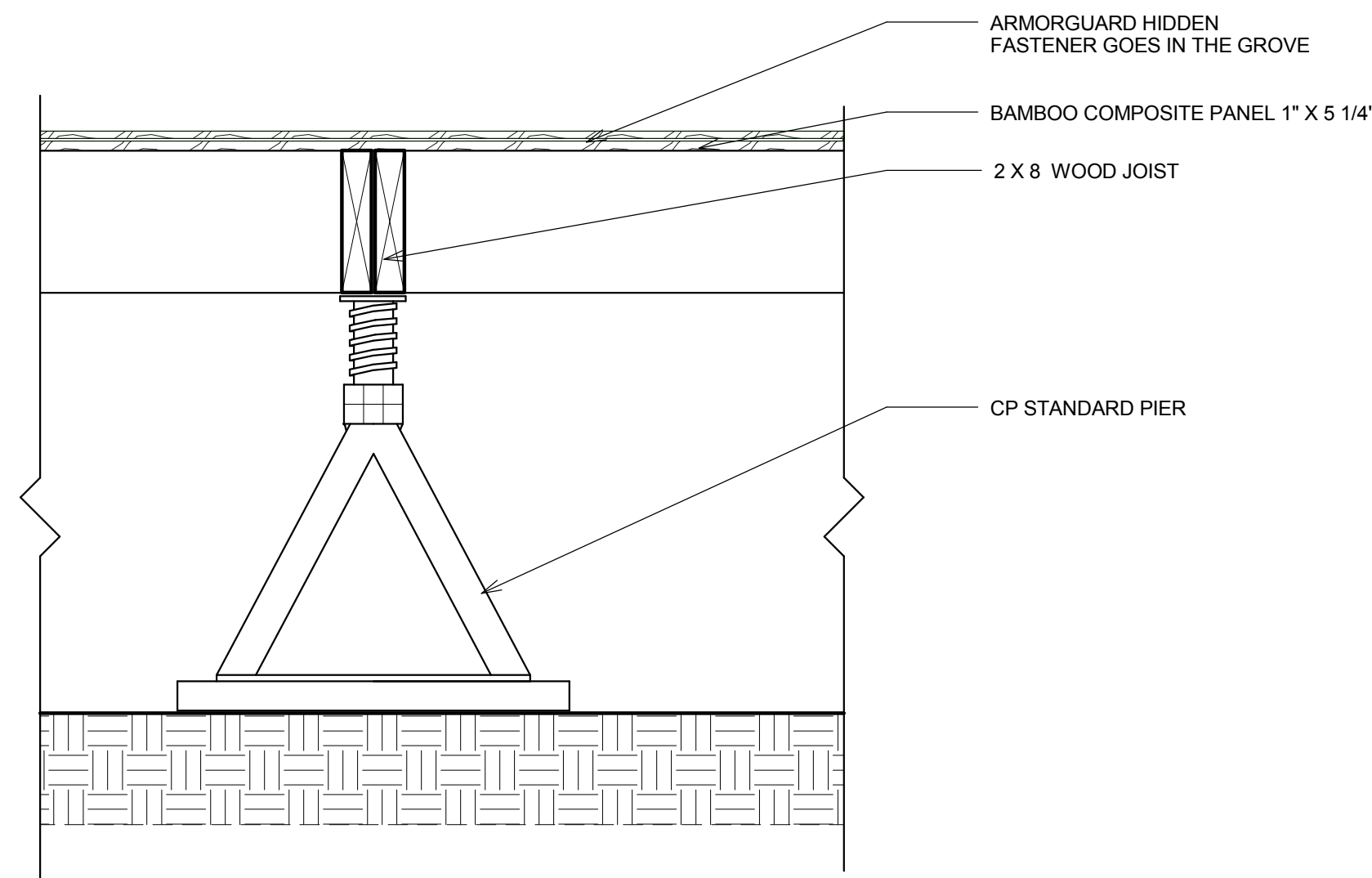
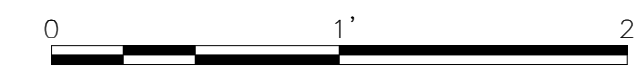
**A-551**



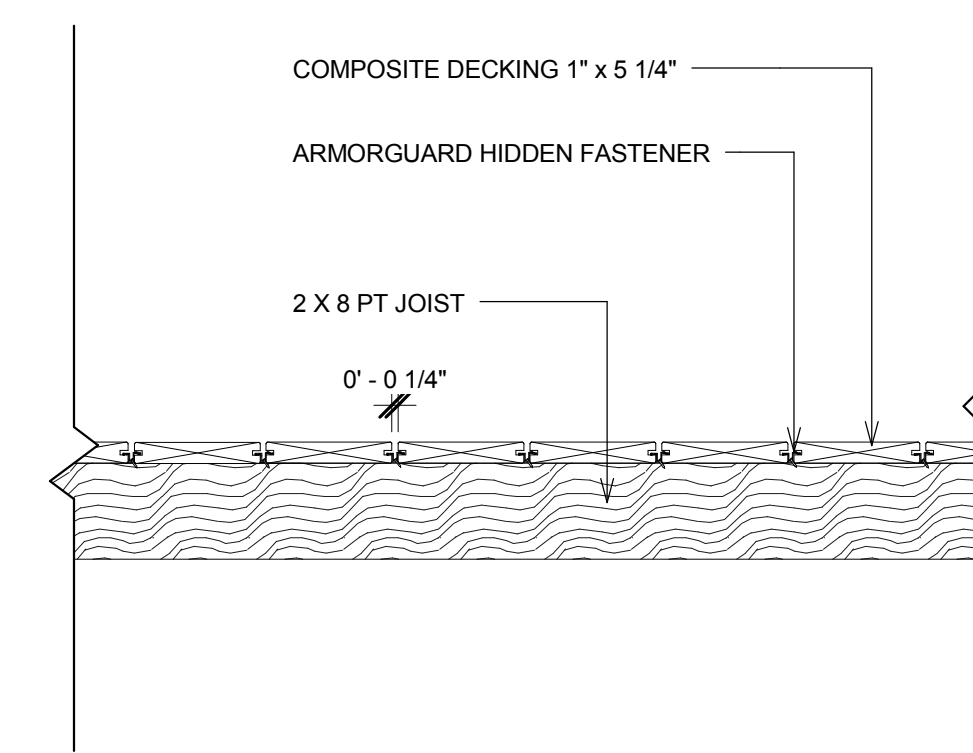
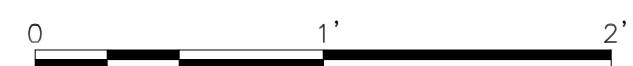
④ DECK EDGE DETAIL  
 1 1/2" = 1'-0"



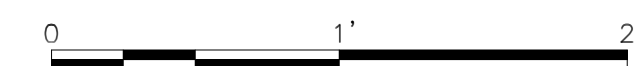
② DECK AND RAIL ELEVATION  
 1 1/2" = 1'-0"



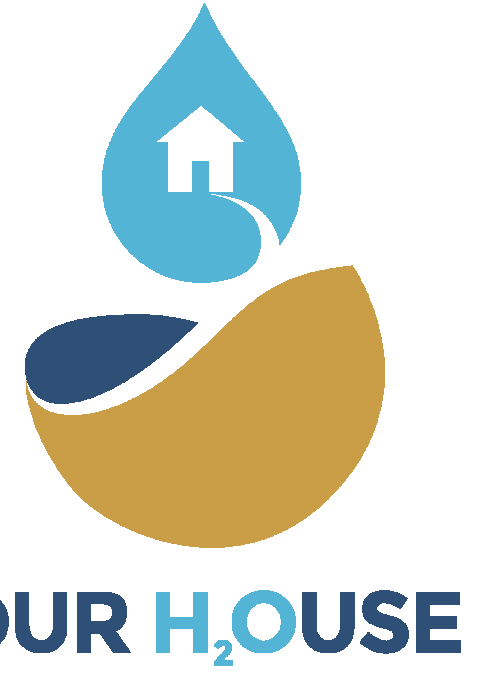
③ TYP. DECK DETAIL  
 1 1/2" = 1'-0"



① DECK DETAIL  
 1 1/2" = 1'-0"







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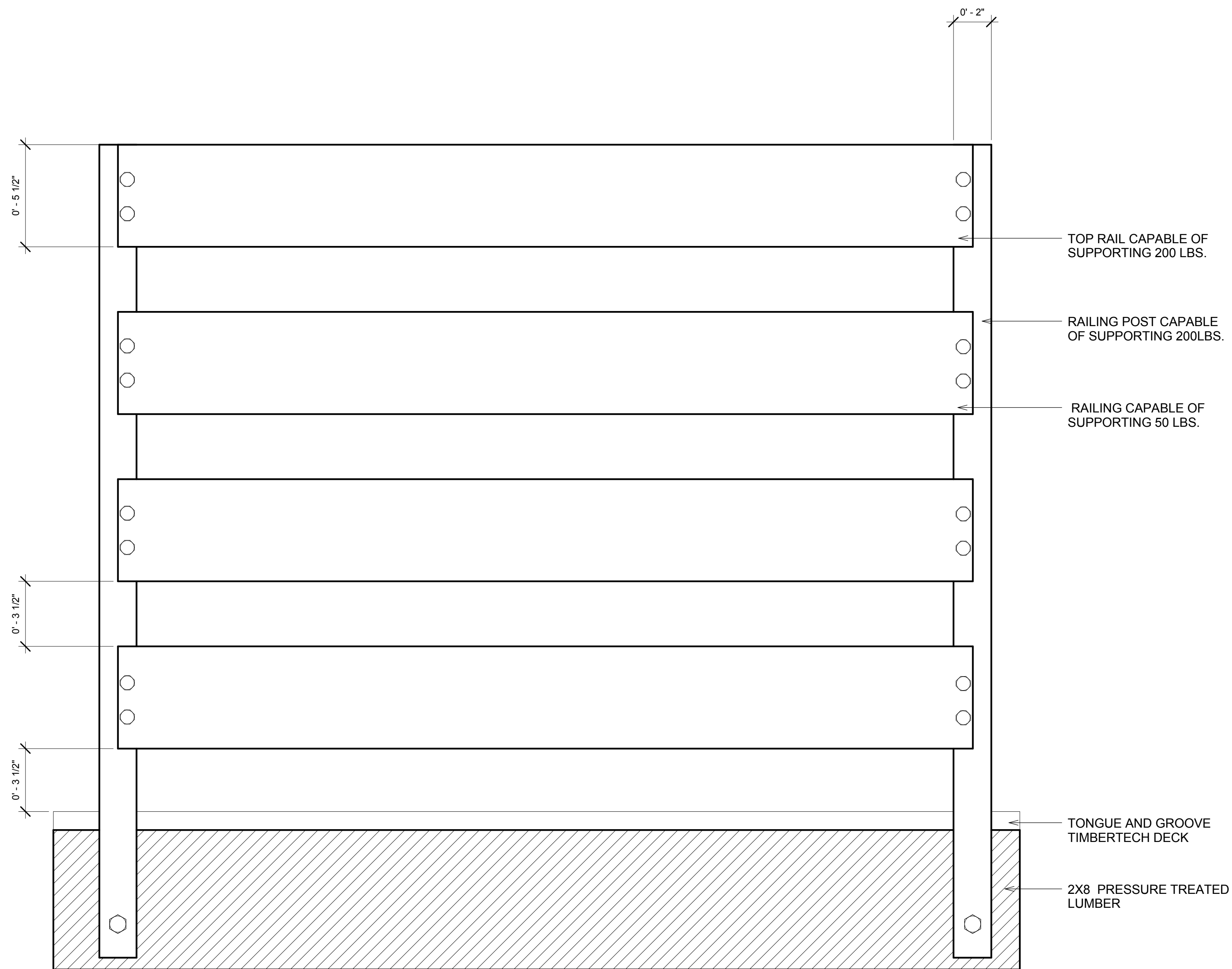


MARK	DATE	DESCRIPTION
06	6/29/2017	INSPECTOR SET
05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

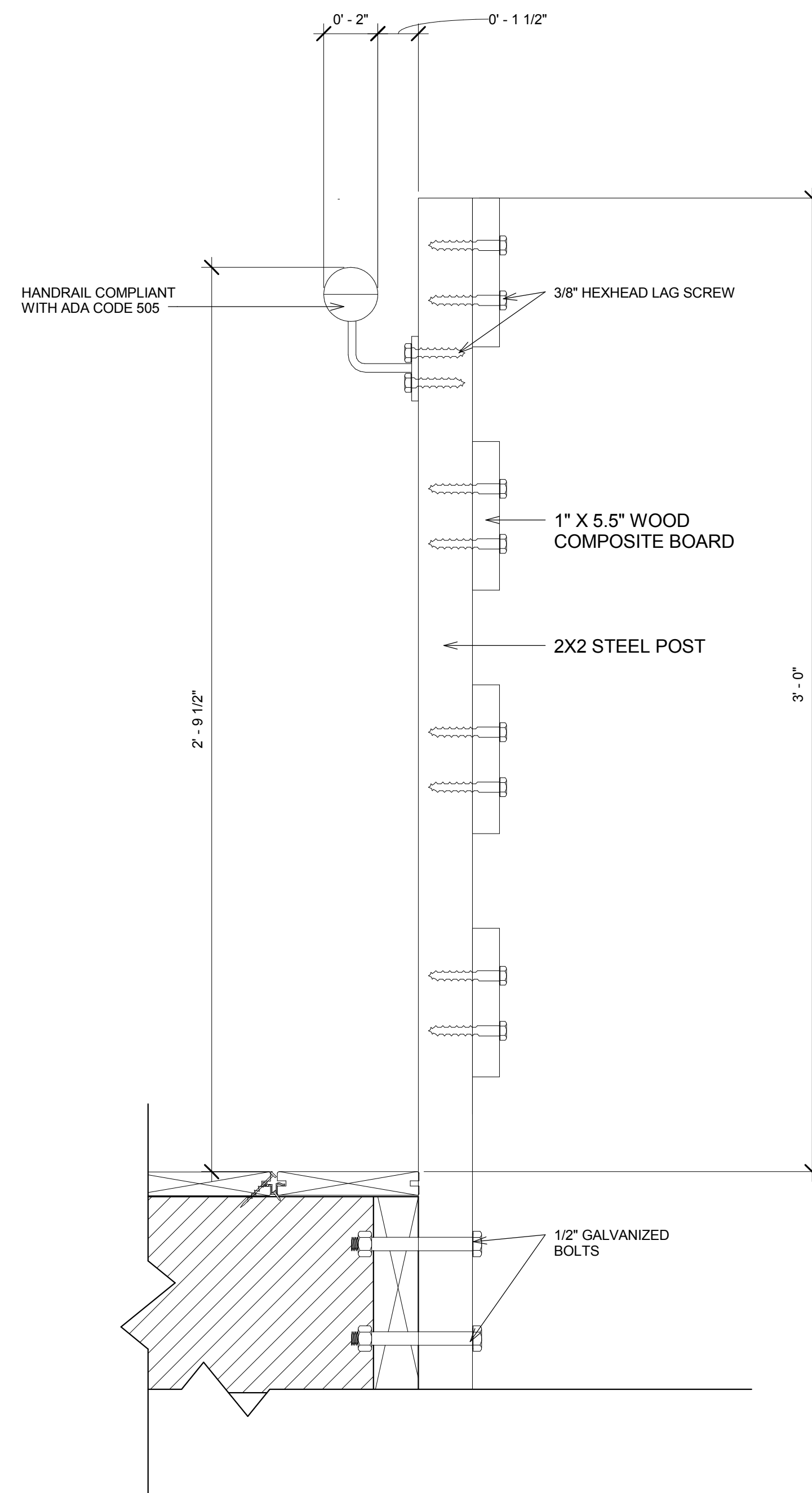
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
 COPYRIGHT: NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**RAMP AND HANDRAIL  
 DETAILS**

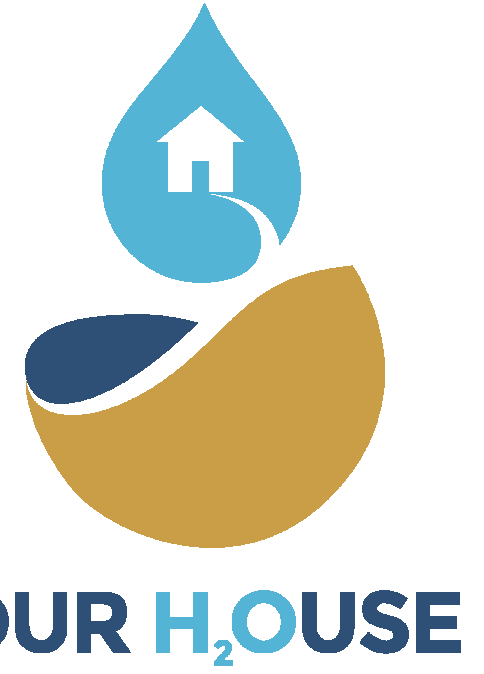
**A-561**



② RAMP AND HANDRAIL ELEVATION  
 3" = 1'-0"



① RAMP & HANDRAIL  
 3" = 1'-0"



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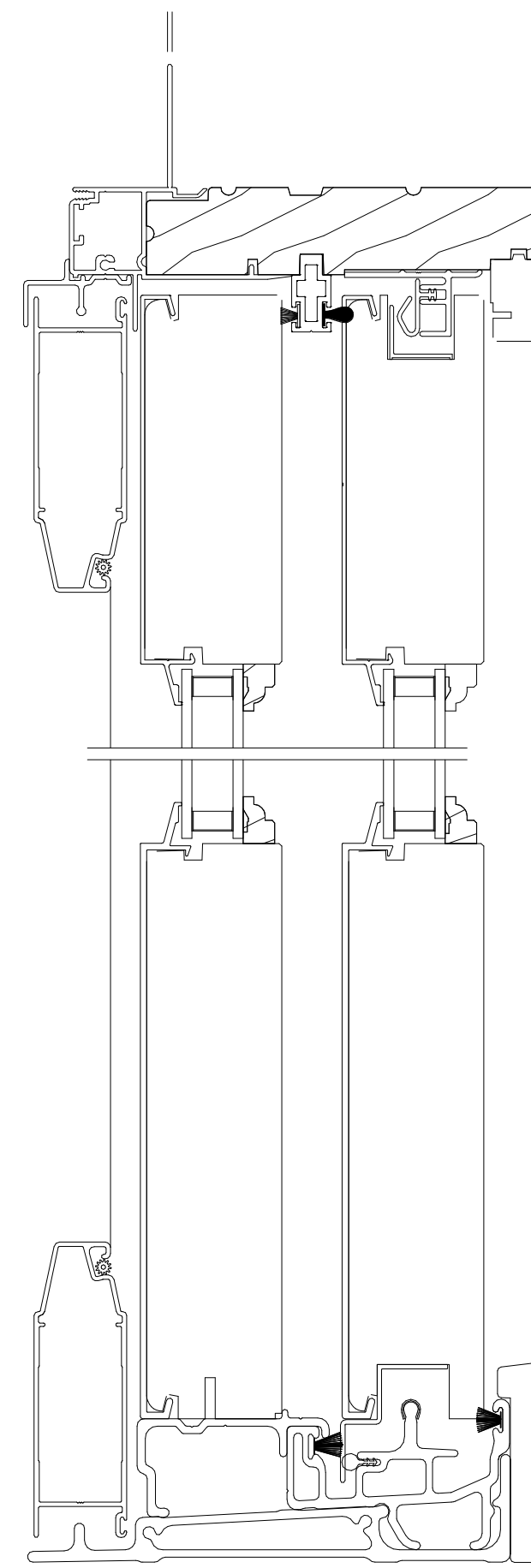


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05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

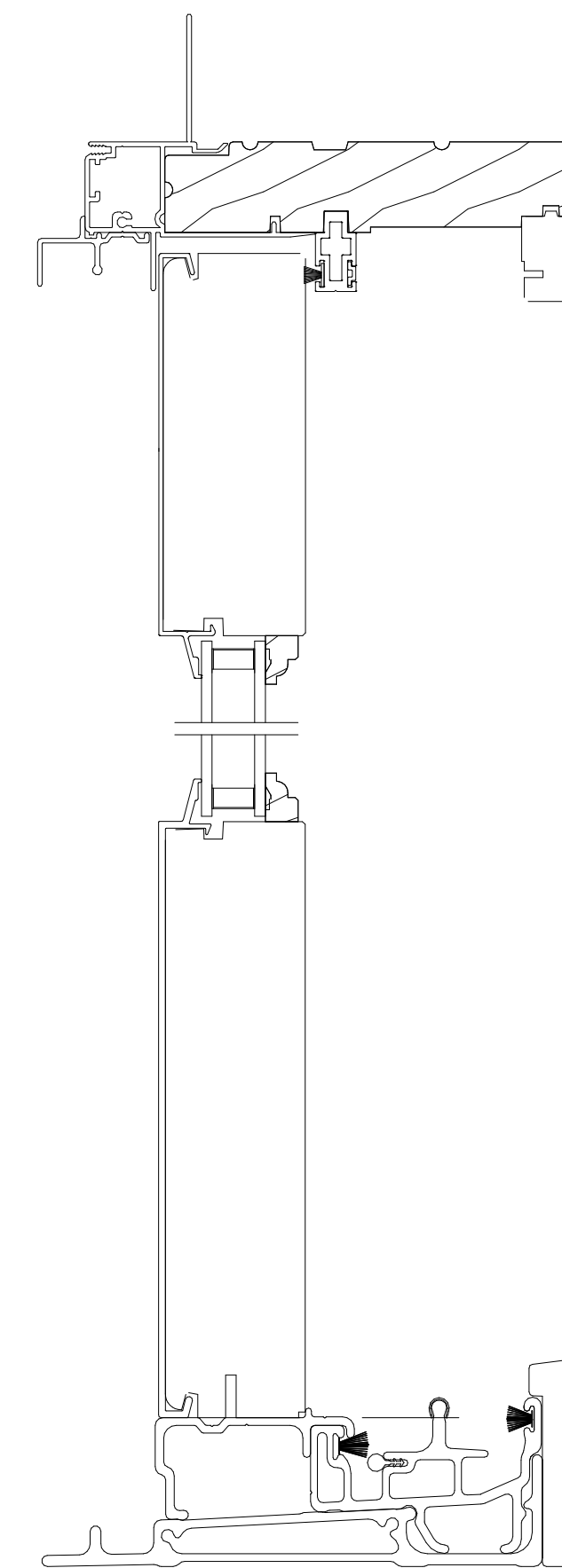
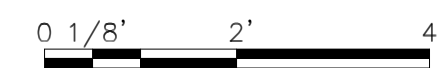
MARK	DATE	DESCRIPTION
LOT NUMBER: UNKNOWN		
DRAWN BY: BLUE MUSTANGS		
CHECKED BY: BLUE MUSTANGS		
COPYRIGHT: NONE/PROJECT PUBLIC DOMAIN		

SHEET TITLE  
**TYPICAL PATIO DOOR DETAILS**

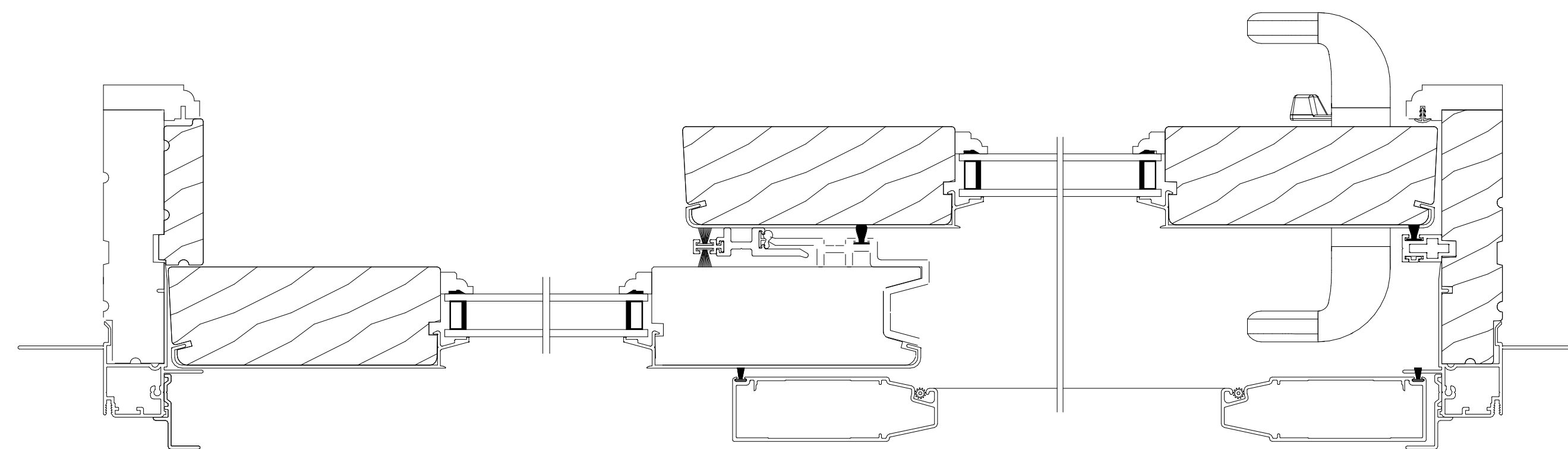
**A-571**



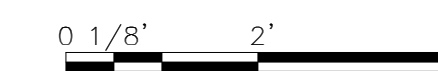
③ PREMIUM PATIO DOOR VERTICAL FIXED  
 6" = 1'-0"



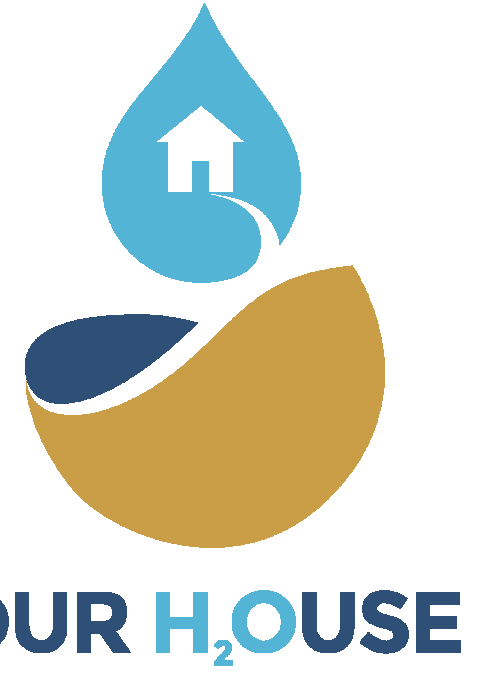
② PREMIUM PATIO DOOR VERTICAL  
 6" = 1'-0"



① PREMIUM PATIO DOOR HORIZONTAL  
 6" = 1'-0"







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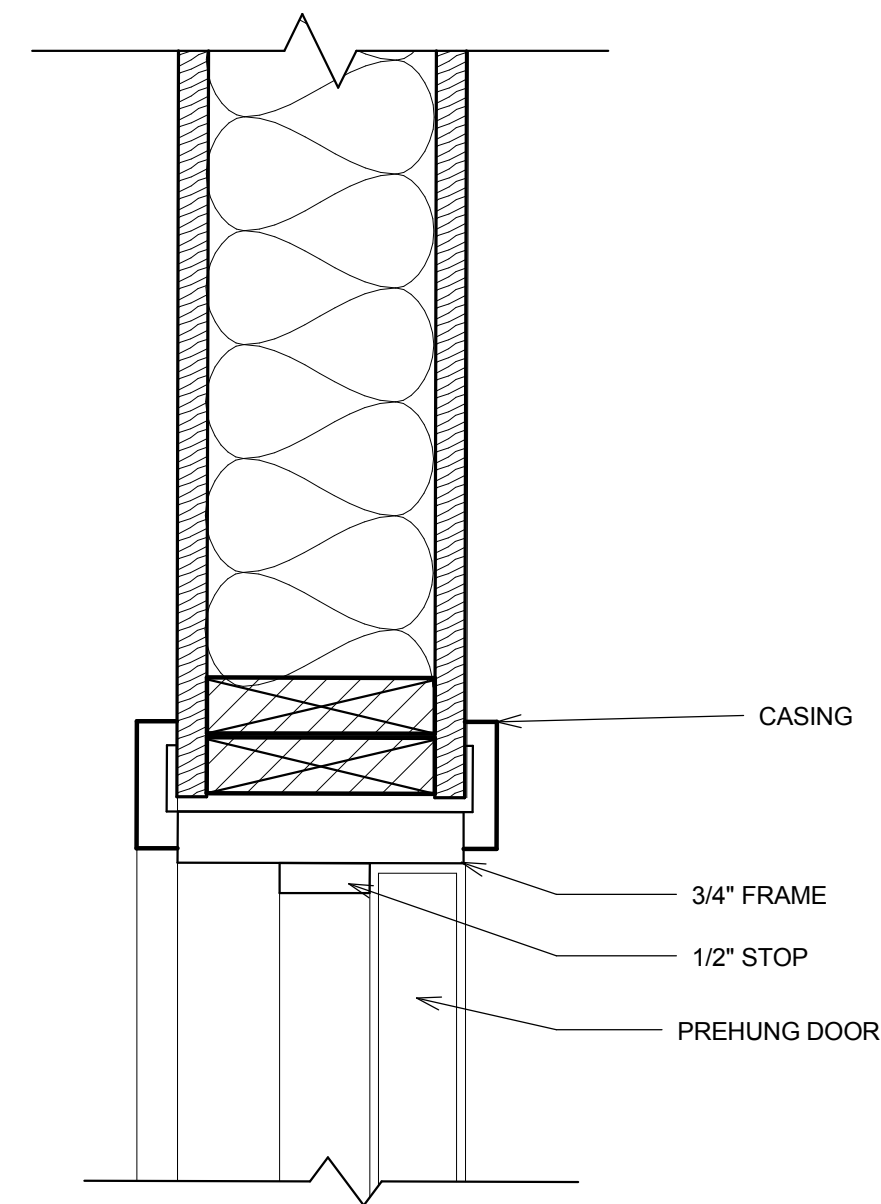


06	6/29/2017	INSPECTOR SET
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03	2/23/2017	100% CD SET
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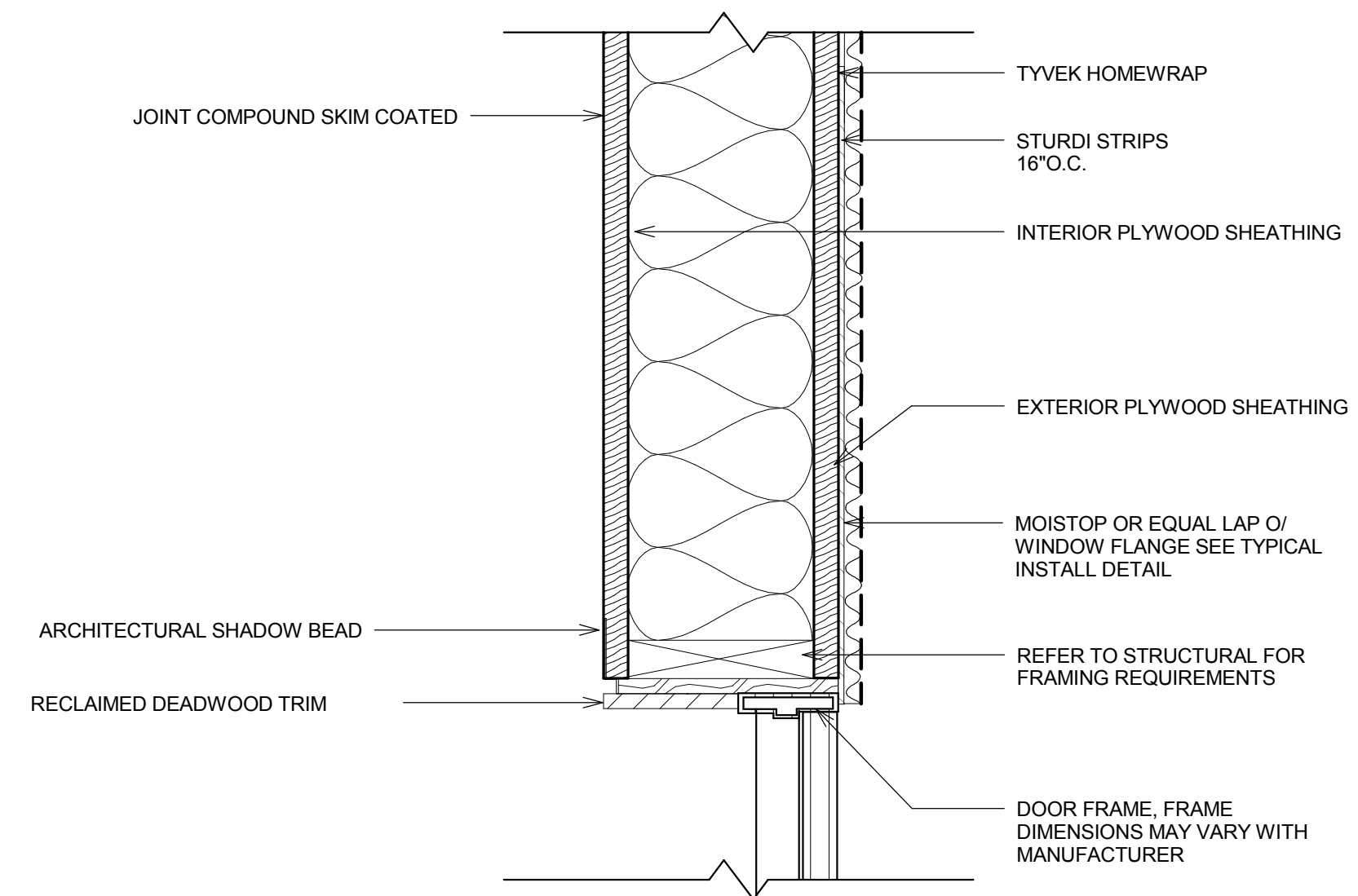
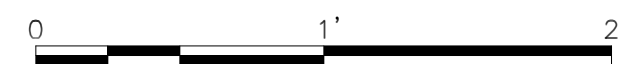
MARK	DATE	DESCRIPTION
LOT NUMBER:		UNKNOWN
DRAWN BY:		BLUE MUSTANGS
CHECKED BY:		BLUE MUSTANGS
COPYRIGHT:		NONE:PROJECT PUBLIC DOMAIN

SHEET TITLE  
**DOOR DETAILS**

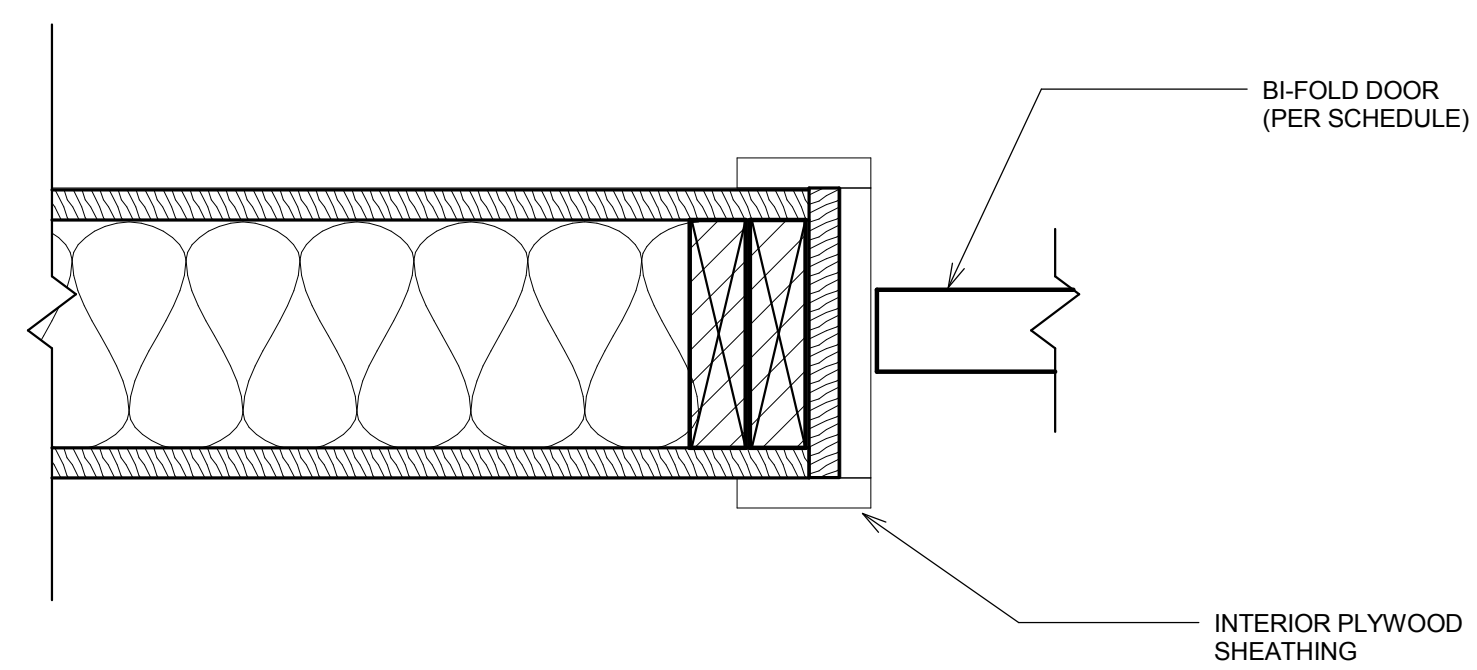
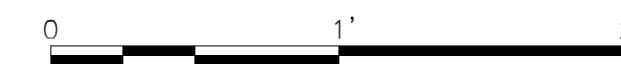
**A-572**



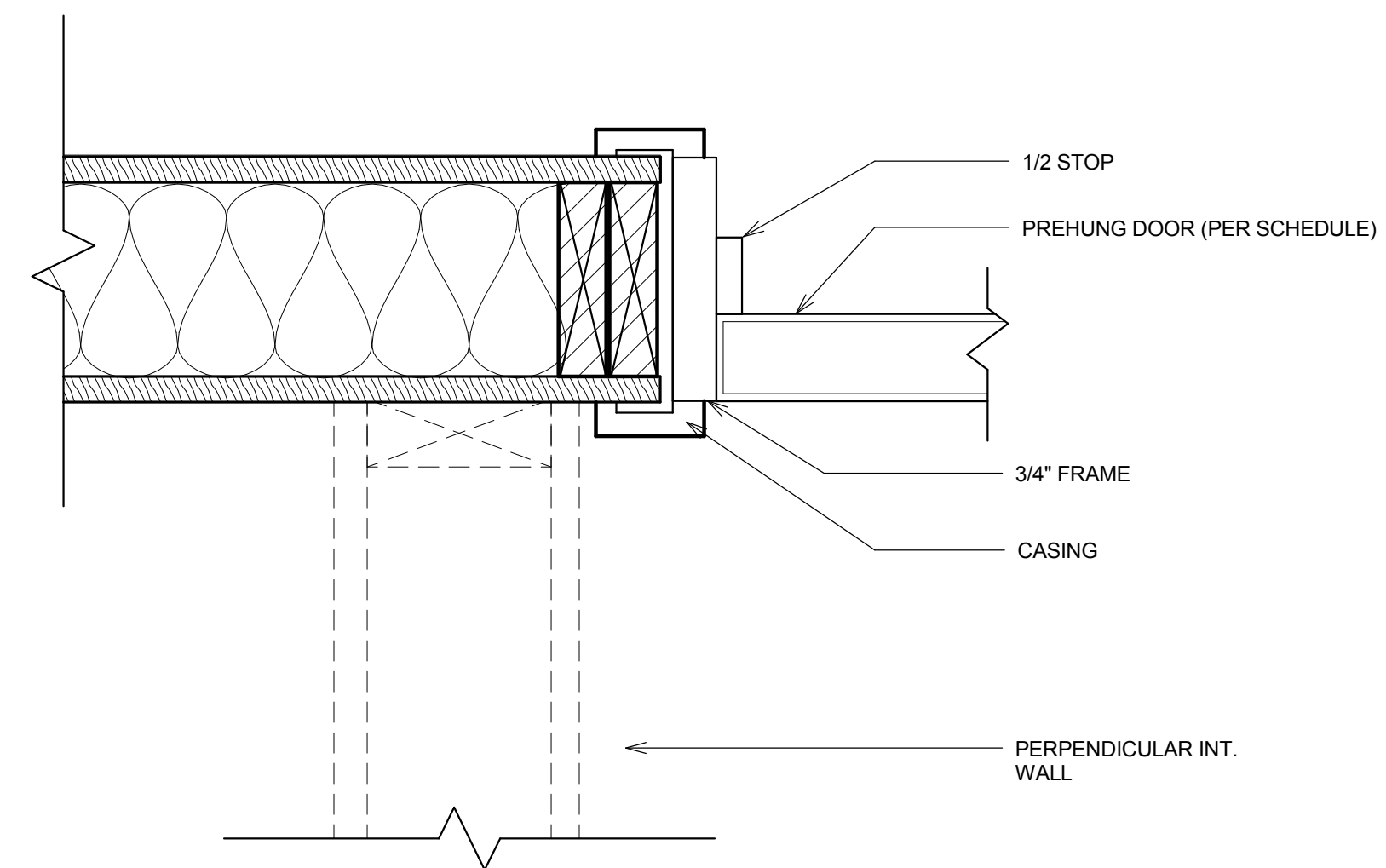
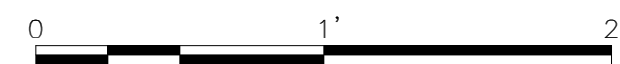
④ DOOR HEAD AT EXTERIOR  
 1 1/2" = 1'-0"



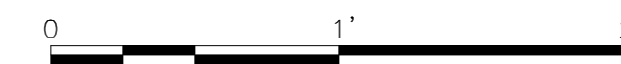
② DOOR HEAD AT EXTERIOR 2X6 STUD WALL  
 1 1/2" = 1'-0"



③ JAMB BIFOLD DOOR  
 1 1/2" = 1'-0"



① JAMB DOOR AT INTERIOR WALL  
 1 1/2" = 1'-0"





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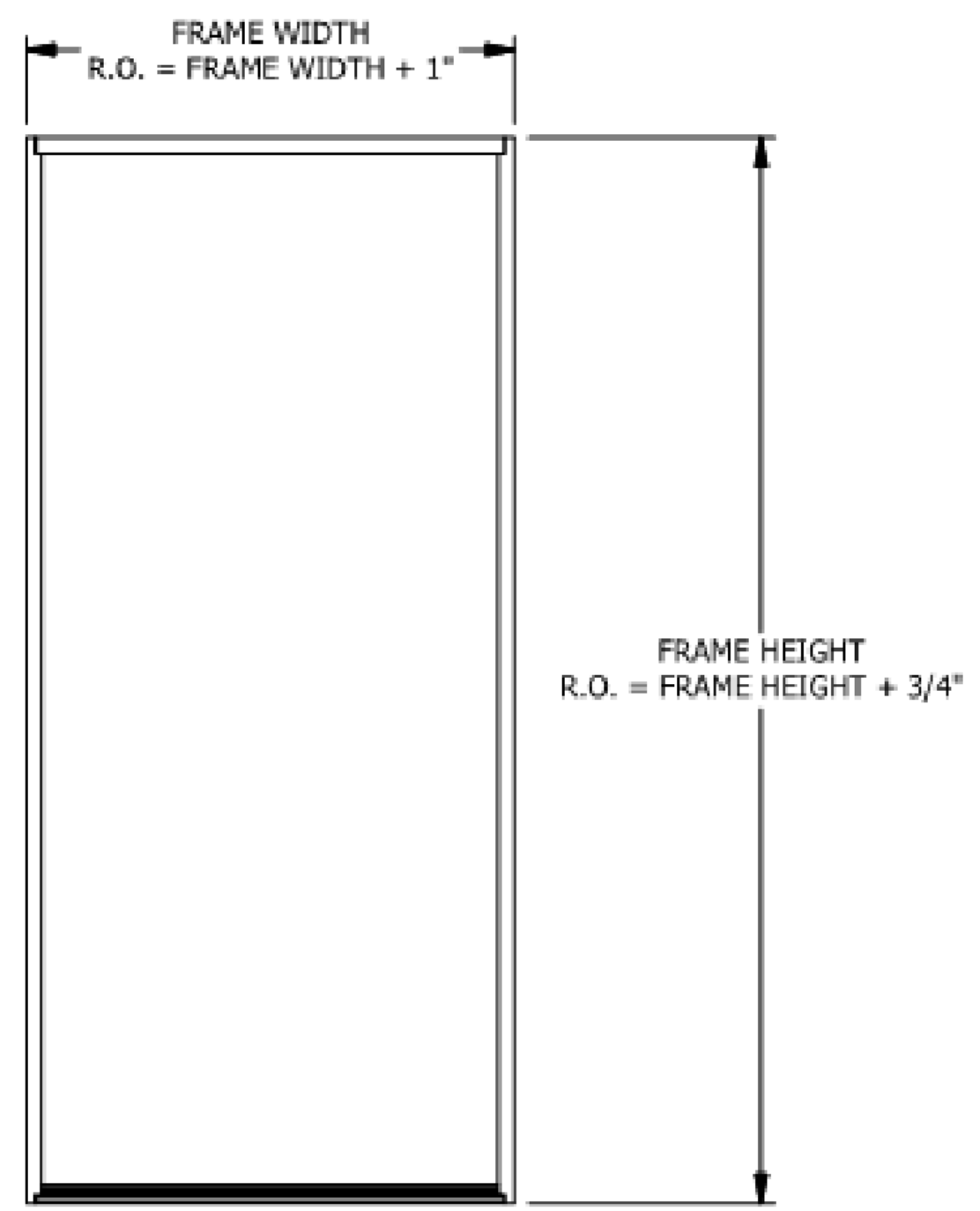


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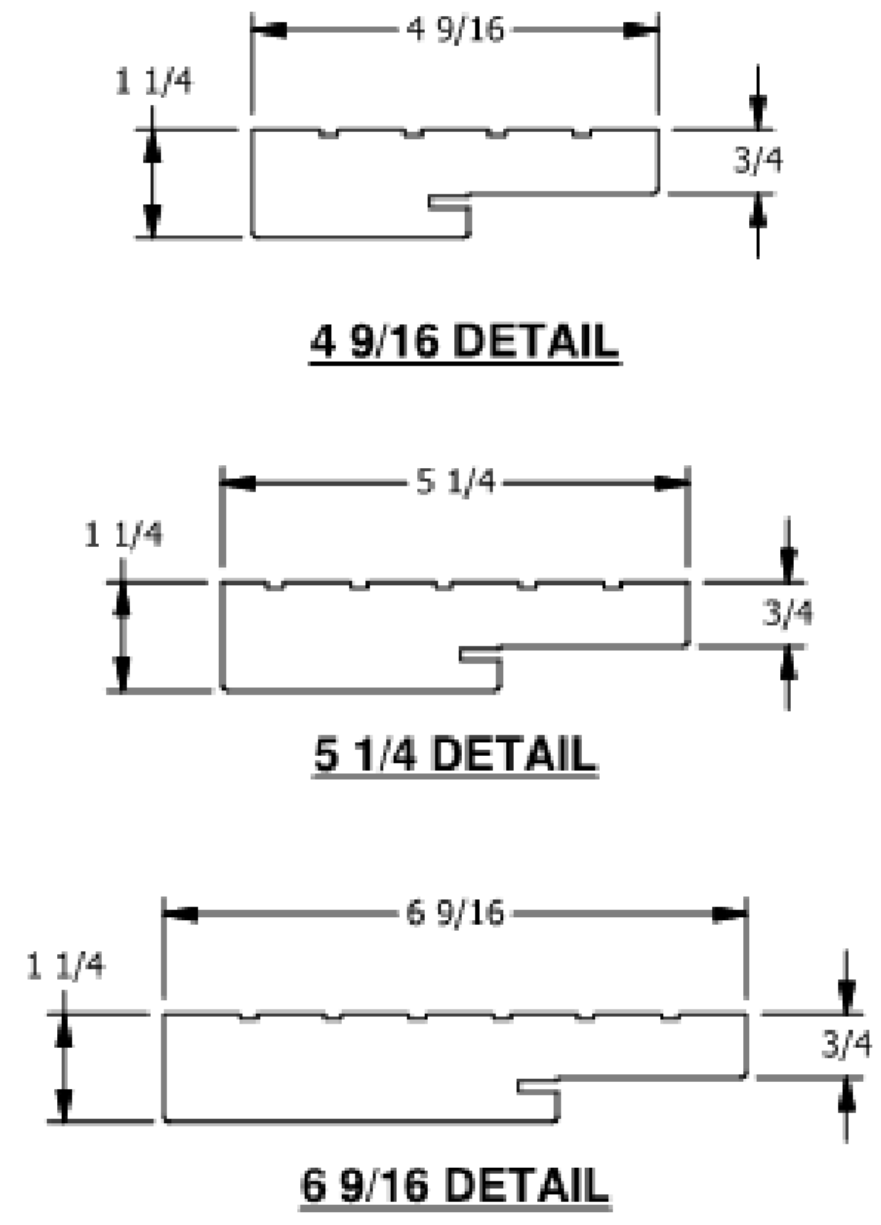
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
**DOOR DETAILS 2**

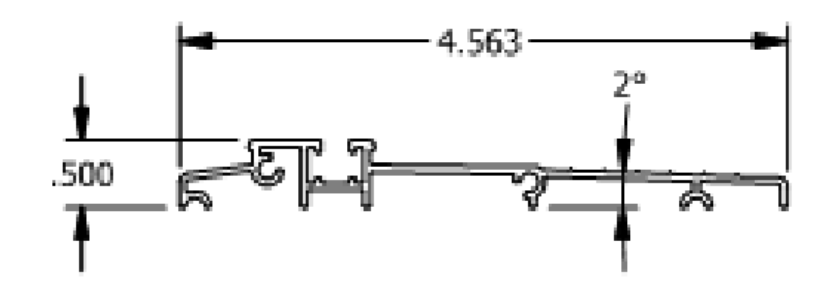
**A-573**



**TYPICAL DOOR FRAME**

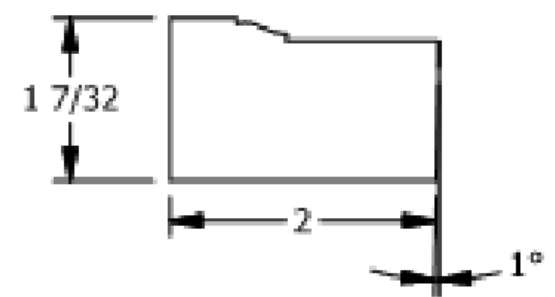


**HEAD AND JAMB OPTIONS**



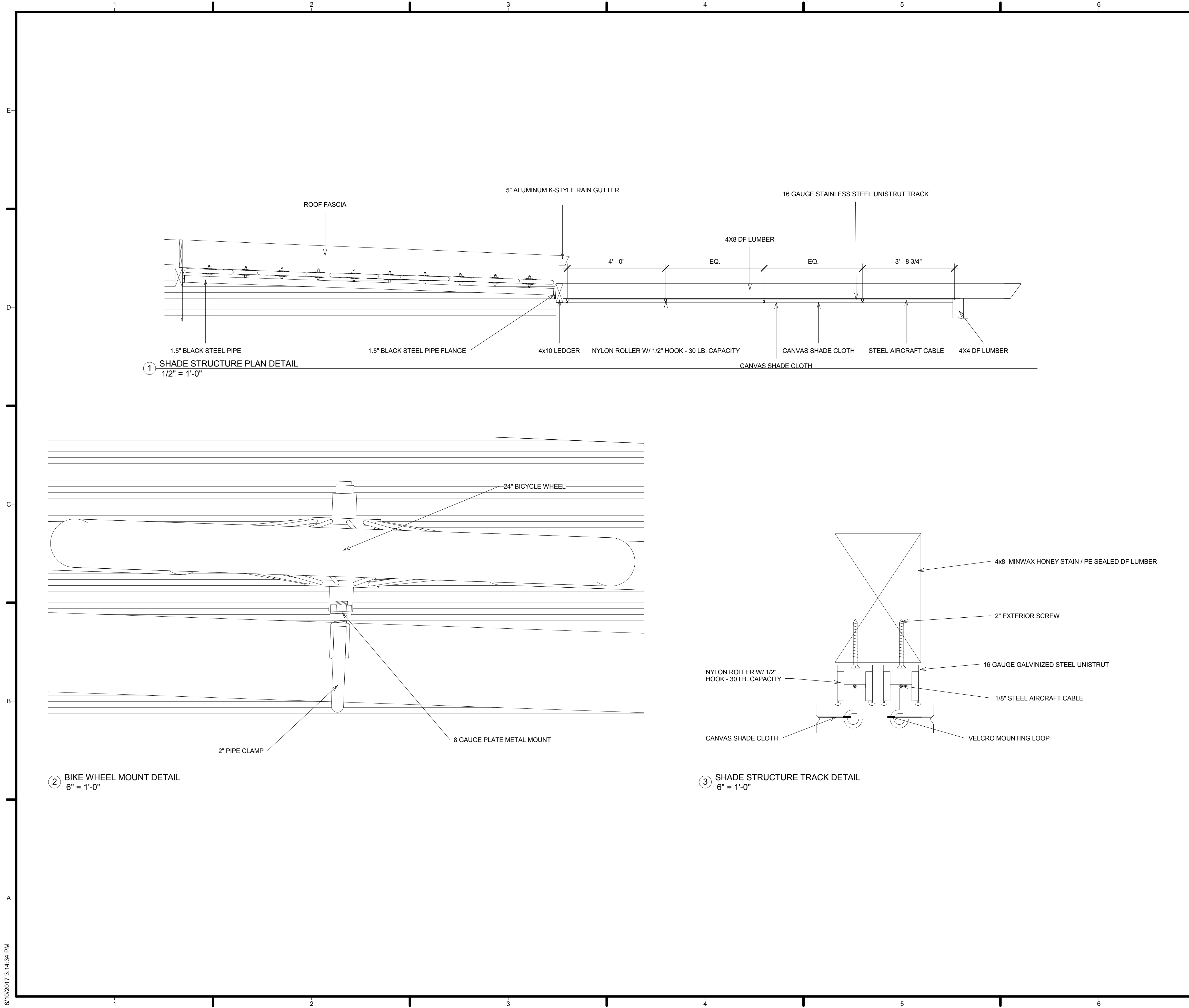
**TYPICAL ADA THRESHOLD**

**SILL OPTIONS**  
 SILL TYPES MAY VARY BASED ON  
 REGION AND SUPPLIER



**BRICKMOULD  
 STANDARD**





GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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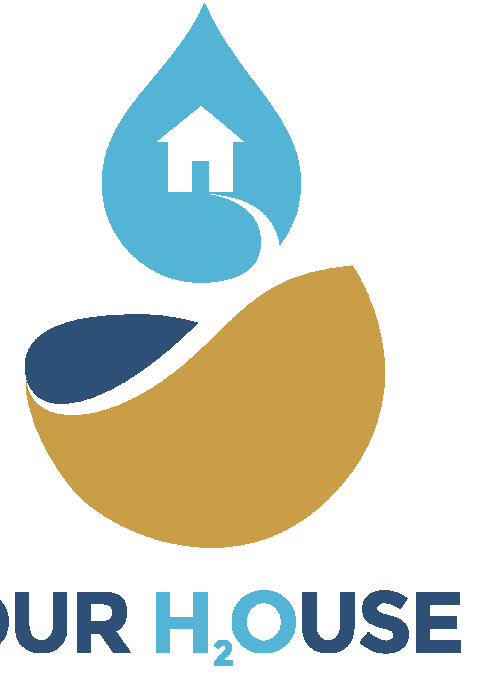
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01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
 SHADE STRUCTURE  
 DETAILS

A-581

EXTERIOR WALLS SCHEDULE								
Type	Function	Thermal Resistance (R)	Volume	Width	Count	Structural Material	Length	Area
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	49.96 CF	1' - 1 1/2"	1	Plywood, Sheathing	7' - 10 3/4"	45 SF
EXTERIOR BAMCORE - NO SIDING	Exterior	42.5492 (h-ft <sup>2</sup> ·°F)/BTU	63.73 CF	1' - 0"	1	Plywood, Sheathing	6' - 9 1/4"	64 SF
EXTERIOR BAMCORE - NO SIDING	Exterior	42.5492 (h-ft <sup>2</sup> ·°F)/BTU	55.42 CF	1' - 0"	1	Plywood, Sheathing	7' - 2 1/4"	55 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	249.36 CF	1' - 1 1/2"	1	Plywood, Sheathing	34' - 3 1/4"	223 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	156.23 CF	1' - 1 1/2"	1	Plywood, Sheathing	22' - 10 3/4"	140 SF
EXTERIOR BAMCORE - NO SIDING	Exterior	42.5492 (h-ft <sup>2</sup> ·°F)/BTU	83.30 CF	1' - 0"	1	Plywood, Sheathing	10' - 8 1/2"	83 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	283.30 CF	1' - 1 1/2"	1	Plywood, Sheathing	27' - 7"	270 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	83.99 CF	1' - 1 1/2"	1	Plywood, Sheathing	7' - 11 1/2"	75 SF
exterior - corrugated Horizontal THIN	Exterior	22.5934 (h-ft <sup>2</sup> ·°F)/BTU	30.00 CF	0' - 6"	1	Plywood, Sheathing	6' - 7"	61 SF
exterior - corrugated Horizontal THIN	Exterior	22.5934 (h-ft <sup>2</sup> ·°F)/BTU	21.91 CF	0' - 6"	1	Plywood, Sheathing	7' - 6"	44 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	133.21 CF	1' - 1 1/2"	1	Plywood, Sheathing	14' - 0 3/4"	119 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	110.05 CF	1' - 1 1/2"	1	Plywood, Sheathing	11' - 1 1/2"	105 SF
exterior - corrugated Horizontal	Exterior	45.7943 (h-ft <sup>2</sup> ·°F)/BTU	37.08 CF	1' - 1 1/2"	1	Plywood, Sheathing	4' - 0 1/4"	33 SF
EXTERIOR BAMCORE - NO SIDING	Exterior	42.5492 (h-ft <sup>2</sup> ·°F)/BTU	29.49 CF	1' - 0"	1	Plywood, Sheathing	4' - 1 1/2"	29 SF
exterior - corrugated Horizontal THIN	Exterior	22.5934 (h-ft <sup>2</sup> ·°F)/BTU	27.67 CF	0' - 6"	1	Plywood, Sheathing	8' - 7"	56 SF
exterior - corrugated Horizontal THIN	Exterior	22.5934 (h-ft <sup>2</sup> ·°F)/BTU	21.05 CF	0' - 6"	1	Plywood, Sheathing	3' - 7 1/2"	45 SF



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03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
 EXT. WALL TYPES

A-601





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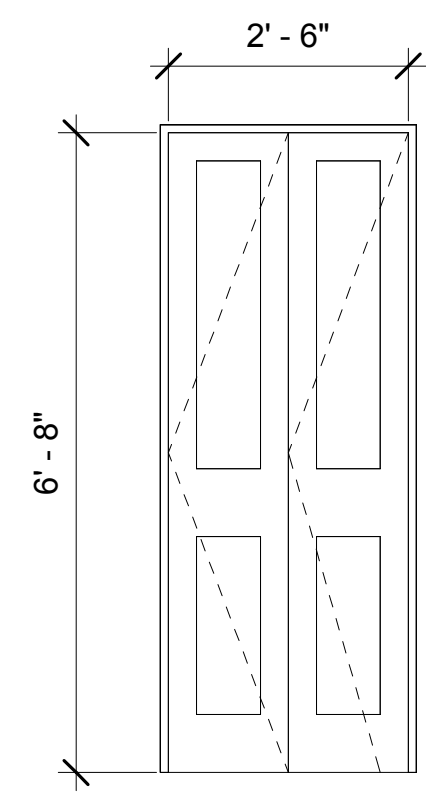


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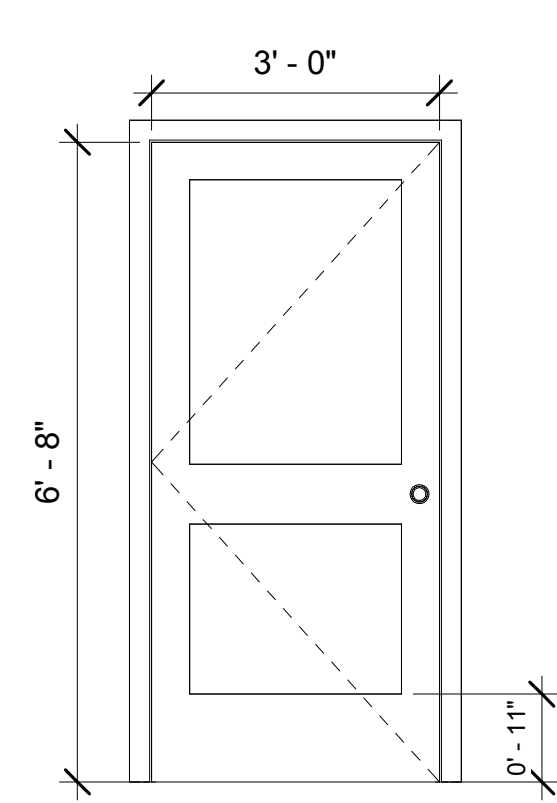
LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
 CHECKED BY: BLUE MUSTANGS  
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SHEET TITLE  
**DOOR TYPES**

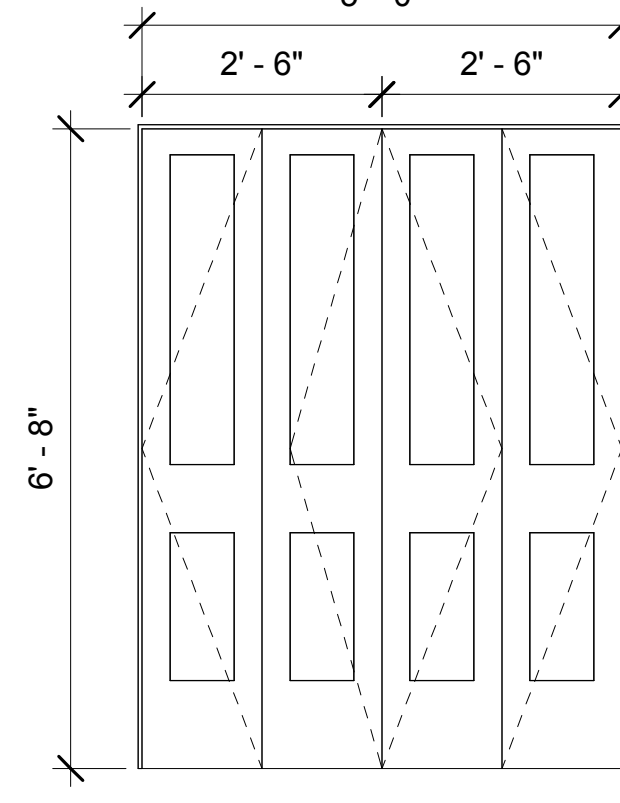
**A-602**



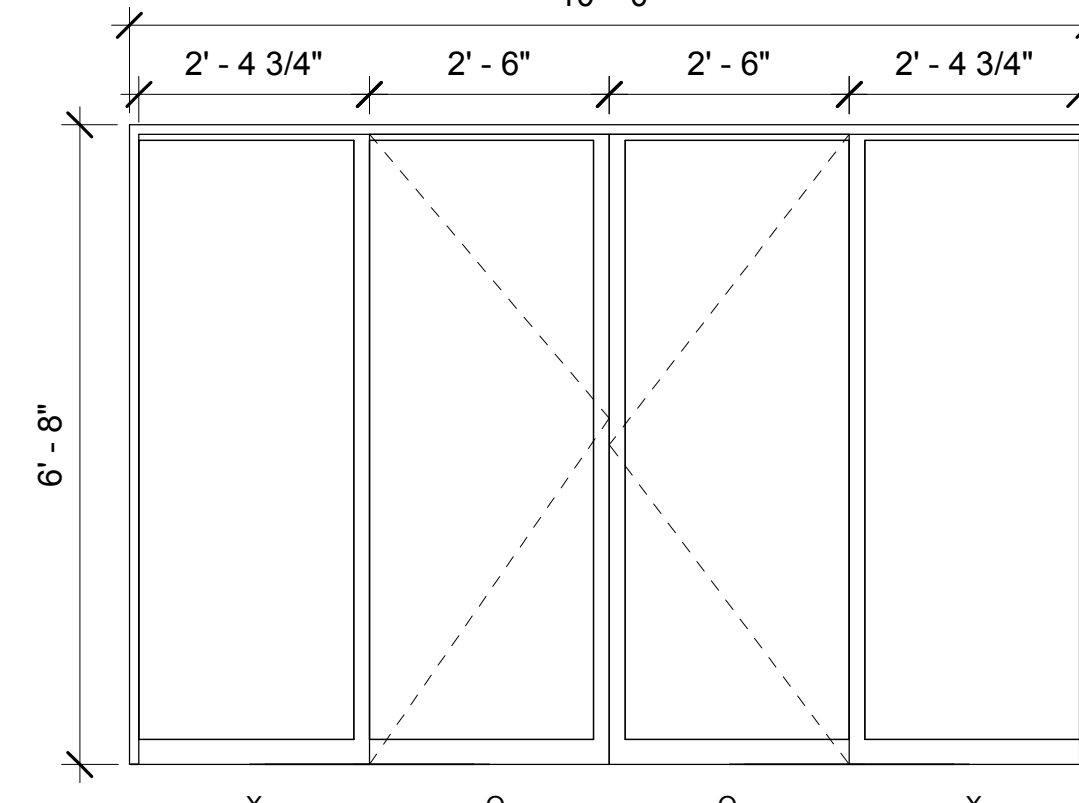
DOOR TYPE A



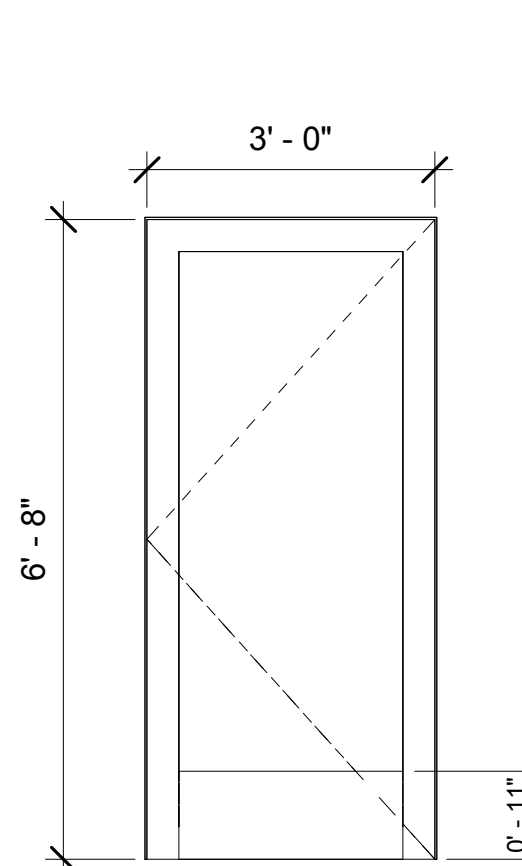
DOOR TYPE B



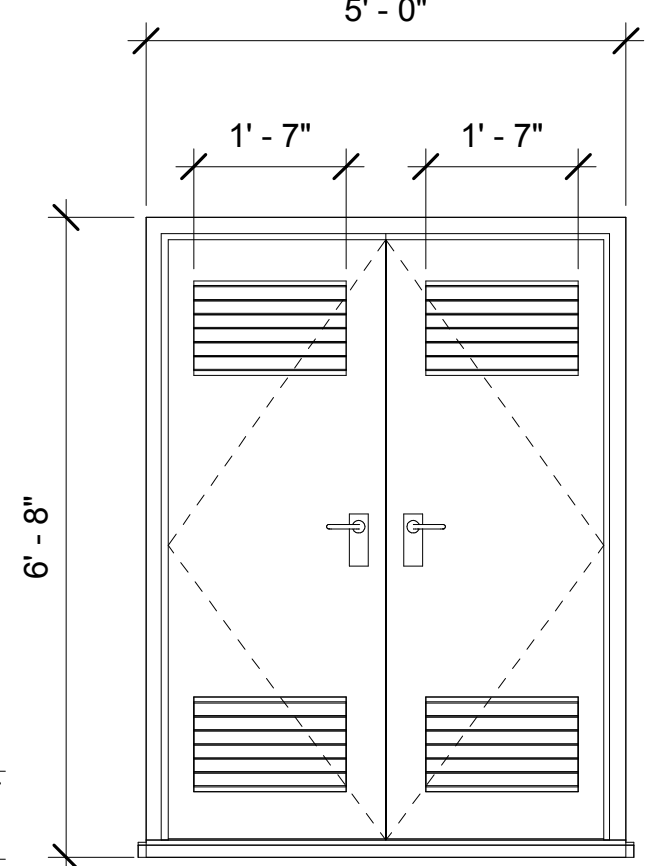
DOOR TYPE C



DOOR TYPE D



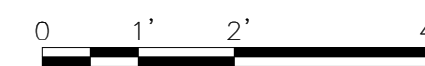
DOOR TYPE E



DOOR TYPE F

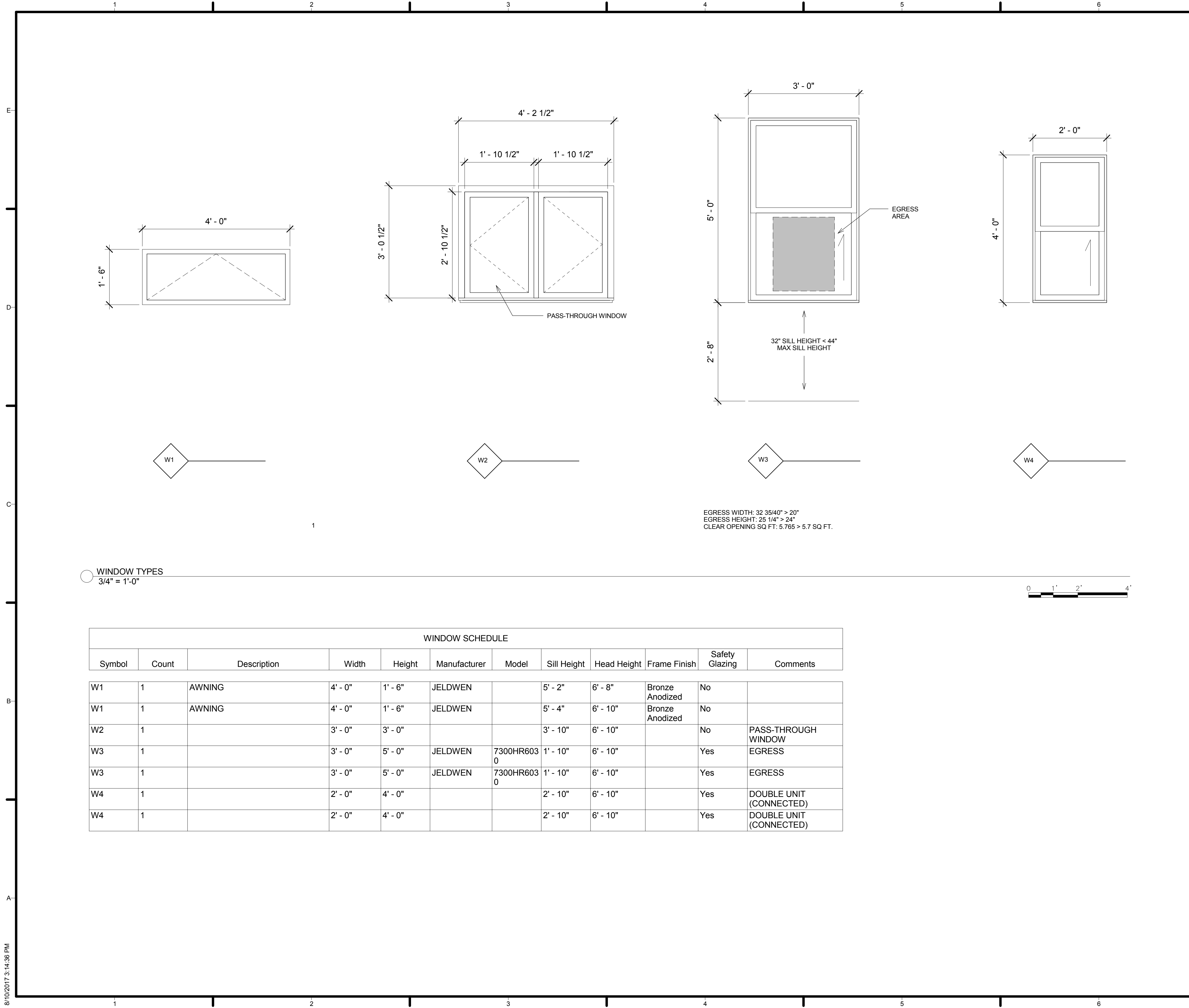
1 DOOR TYPES  
 1/2" = 1'-0"

\*NOTE: ALL DOORS ARE STANDARD HEIGHT 3068



DOOR SCHEDULE

Mark	Count	Family and Type	Type	Height	Width	Rough Height	Rough Width	Head Height	Thickness	Model	Manufacturer	Glazing	Finish	Frame Material
68	1	Door-Interior-Single-2_Panel-Wood-ADA: 36" x 80"	36" x 80"	6' - 8"	3' - 0"	6' - 9"	3' - 2"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
69	1	Door-Interior-Single-2_Panel-Wood: 36" x 80"	36" x 80"	6' - 8"	3' - 0"	6' - 9"	3' - 2"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
70	1	Door-Interior-Single-2_Panel-Wood-ADA: 36" x 80"	36" x 80"	6' - 8"	3' - 0"	6' - 9"	3' - 2"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
71	1	Door-Interior-Single-2_Panel-Wood-ADA: 28" x 80"	28" x 80"	6' - 8"	2' - 4"	6' - 9"	2' - 6"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
A	1	Door-Interior-Single-2_Panel-Wood-ADA: 24" x 80"	24" x 80"	6' - 8"	2' - 0"	6' - 9"	2' - 2"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
B	2	Door-Interior-Single-2_Panel-Wood-ADA: 36" x 80"	36" x 80"	6' - 8"	3' - 0"	6' - 9"	3' - 2"	6' - 8"	0' - 1 1/2"				WHITE	WOOD
C	1	Double_Door_Panel_266: 68" x 80"	68" x 80"	6' - 8"	5' - 8"			6' - 8"					WHITE	WOOD
D	1	Four Panel Sliding Door: 4 panel sliding door 10'	4 panel sliding door 10'	7' - 2 1/2"	10' - 0"			7' - 2 1/2"				Tempered Glass	WOODGRAIN CLAD	ALUMINUM CLAD
E	2	Single-Glass -ADA: 36" x 80" with shadow	36" x 80" with shadow	6' - 8"	3' - 0"	6' - 10"	3' - 2"	6' - 8"	0' - 1 3/4"		JELDWEN	Tempered Glass		FIBERGLASS
F	2	External Louvre Metal Door: 48" x 84" Utility Doors w/ Louvres	48" x 84" Utility Doors w/ Louvres	6' - 10"	4' - 0"	6' - 10"	4' - 0"		0' - 1 3/4"				STEEL	STEEL
P	1	DoorThreshold_SDI 16: As Specified in 08 11 13	As Specified in 08 11 13						0' - 1"	As Specified in 08 71 00	Steel Door Institute			
S	1	DoorThreshold_SDI 16: As Specified in 08 11 13	As Specified in 08 11 13						0' - 1"	As Specified in 08 71 00	Steel Door Institute			
T	1	DoorThreshold_SDI 16: As Specified in 08 11 13	As Specified in 08 11 13						0' - 1"	As Specified in 08 71 00	Steel Door Institute			



GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND



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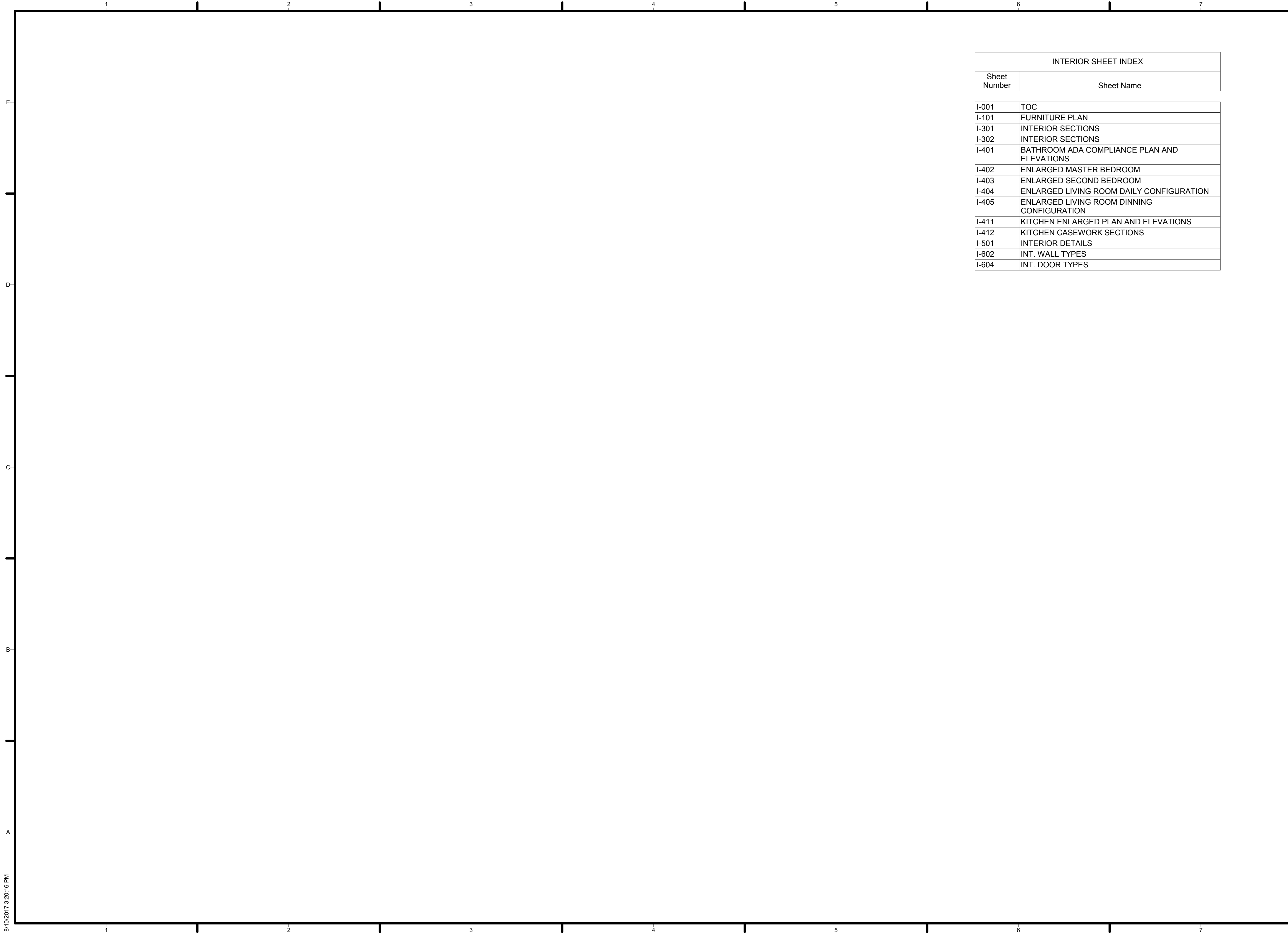
SHEET TITLE  
**WINDOW TYPES**

**A-603**

WINDOW TYPES  
 3/4" = 1'-0"

WINDOW SCHEDULE											
Symbol	Count	Description	Width	Height	Manufacturer	Model	Sill Height	Head Height	Frame Finish	Safety Glazing	Comments
W1	1	AWNING	4' - 0"	1' - 6"	JELDWEN		5' - 2"	6' - 8"	Bronze Anodized	No	
W1	1	AWNING	4' - 0"	1' - 6"	JELDWEN		5' - 4"	6' - 10"	Bronze Anodized	No	
W2	1		3' - 0"	3' - 0"			3' - 10"	6' - 10"		No	PASS-THROUGH WINDOW
W3	1		3' - 0"	5' - 0"	JELDWEN	7300HR6030	1' - 10"	6' - 10"		Yes	EGRESS
W3	1		3' - 0"	5' - 0"	JELDWEN	7300HR6030	1' - 10"	6' - 10"		Yes	EGRESS
W4	1		2' - 0"	4' - 0"			2' - 10"	6' - 10"		Yes	DOUBLE UNIT (CONNECTED)
W4	1		2' - 0"	4' - 0"			2' - 10"	6' - 10"		Yes	DOUBLE UNIT (CONNECTED)





INTERIOR SHEET INDEX	
Sheet Number	Sheet Name
I-001	TOC
I-101	FURNITURE PLAN
I-301	INTERIOR SECTIONS
I-302	INTERIOR SECTIONS
I-401	BATHROOM ADA COMPLIANCE PLAN AND ELEVATIONS
I-402	ENLARGED MASTER BEDROOM
I-403	ENLARGED SECOND BEDROOM
I-404	ENLARGED LIVING ROOM DAILY CONFIGURATION
I-405	ENLARGED LIVING ROOM DINNING CONFIGURATION
I-411	KITCHEN ENLARGED PLAN AND ELEVATIONS
I-412	KITCHEN CASEWORK SECTIONS
I-501	INTERIOR DETAILS
I-602	INT. WALL TYPES
I-604	INT. DOOR TYPES



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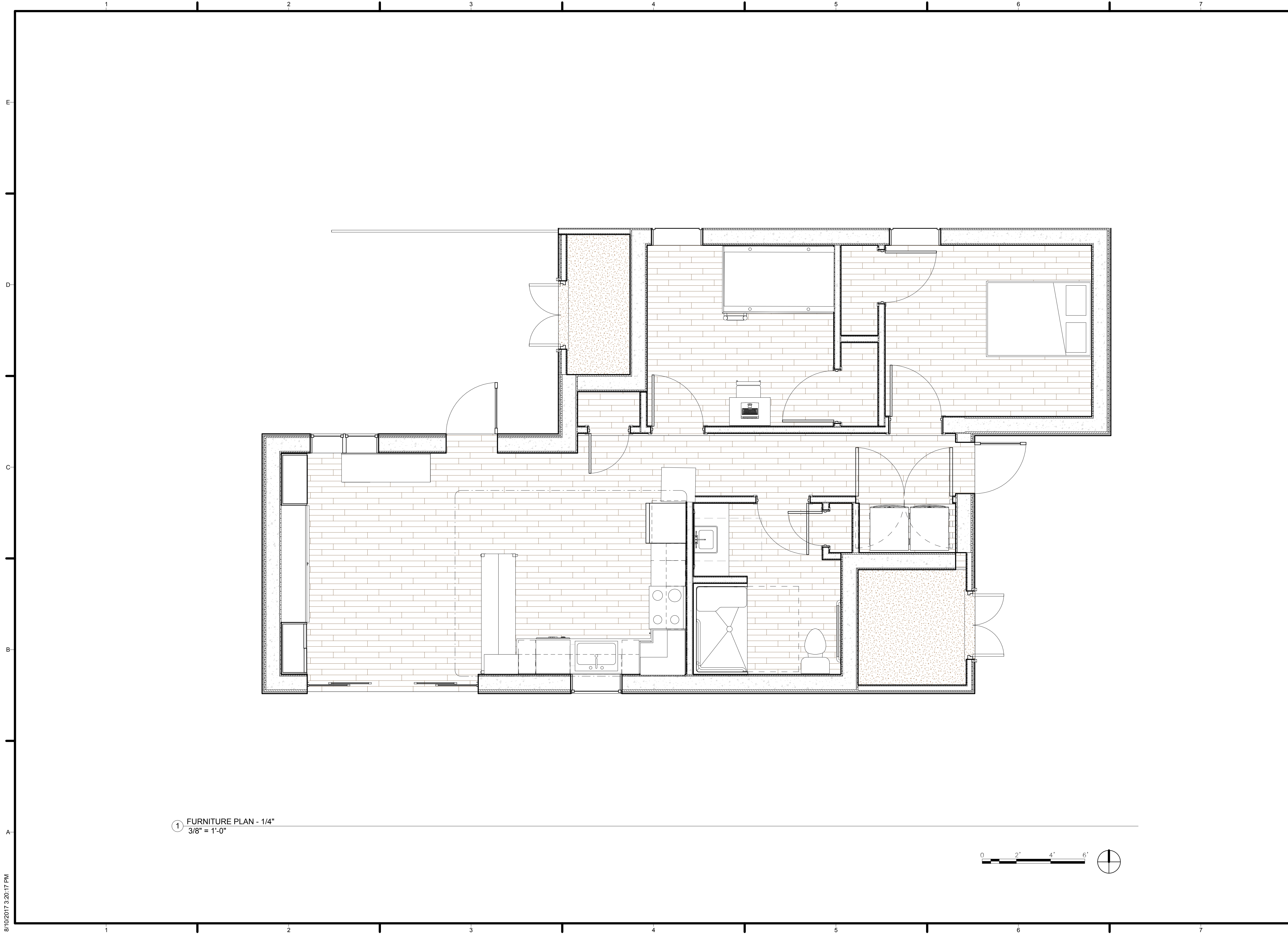


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05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
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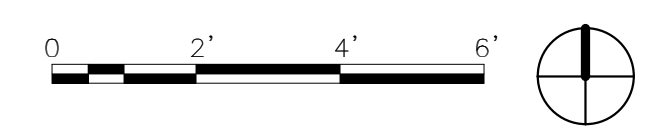
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SHEET TITLE  
 TOC

I-001



① FURNITURE PLAN - 1/4"  
3/8" = 1'-0"



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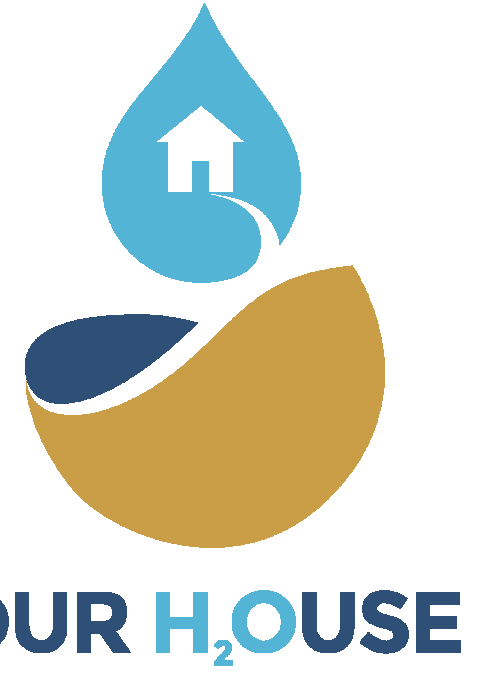
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SHEET TITLE  
**FURNITURE PLAN**

**I-101**

8/10/2017 3:20:17 PM





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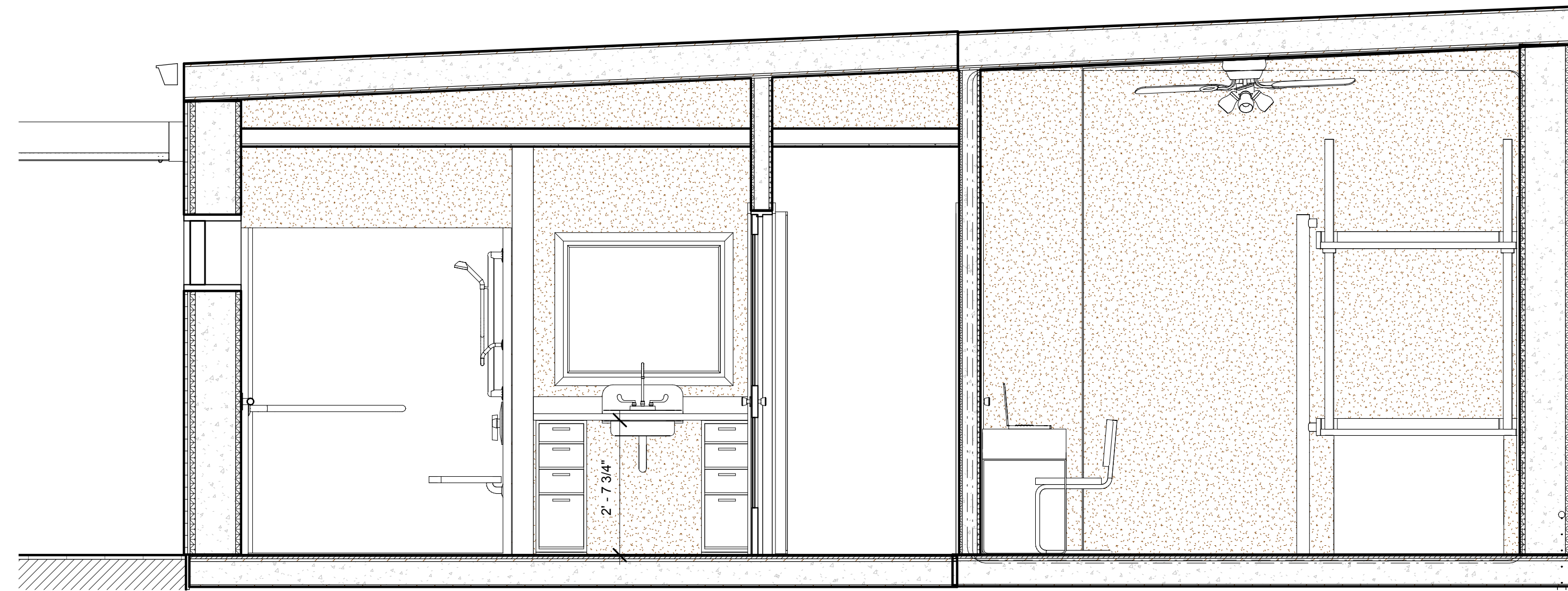
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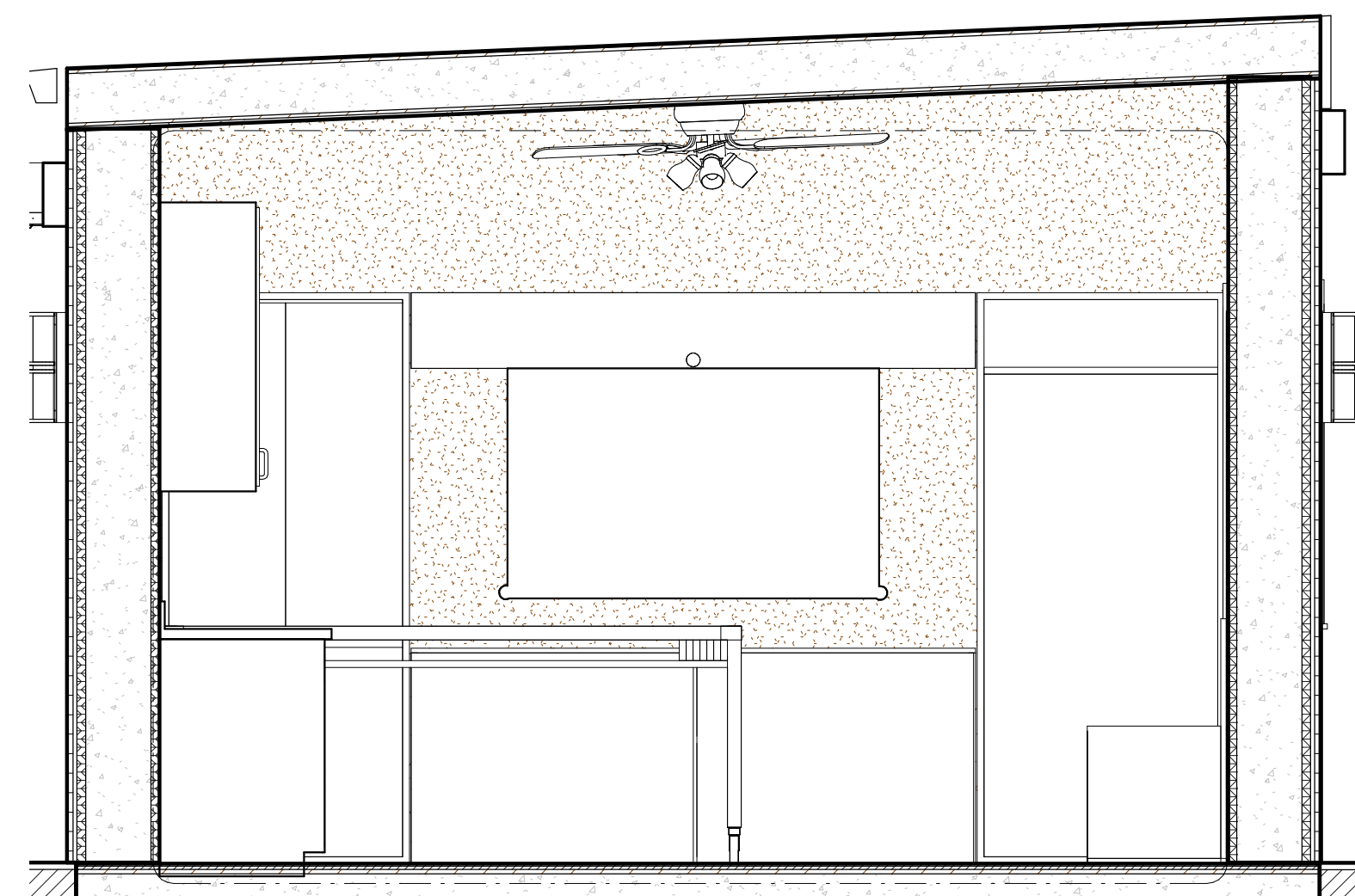
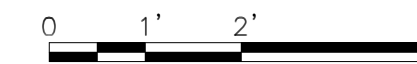
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SHEET TITLE  
 INTERIOR SECTIONS

I-301

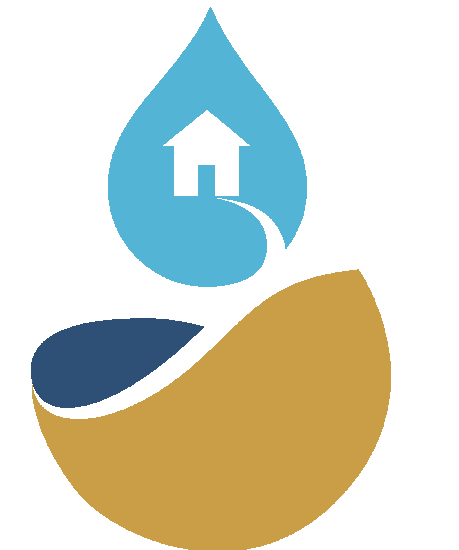


② SOUTH MOD INTERIOR SECTION  
 1/2" = 1'-0"



① INTERIOR SECTION WEST WALL  
 1/2" = 1'-0"





**OUR H<sub>2</sub>OUSE**

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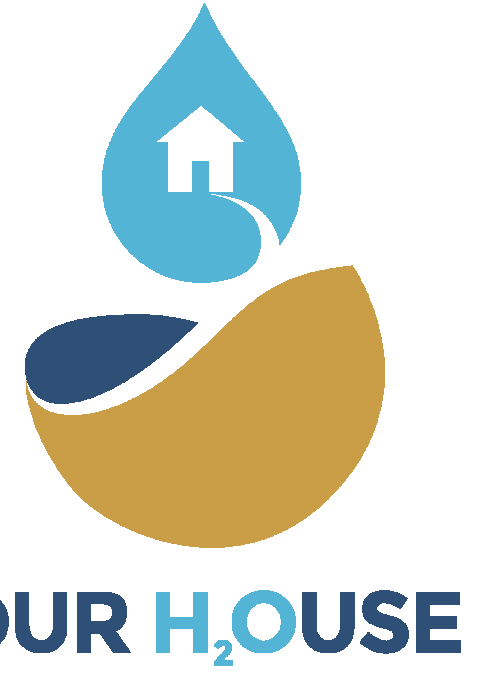
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SHEET TITLE  
**INTERIOR SECTIONS**

**I-302**





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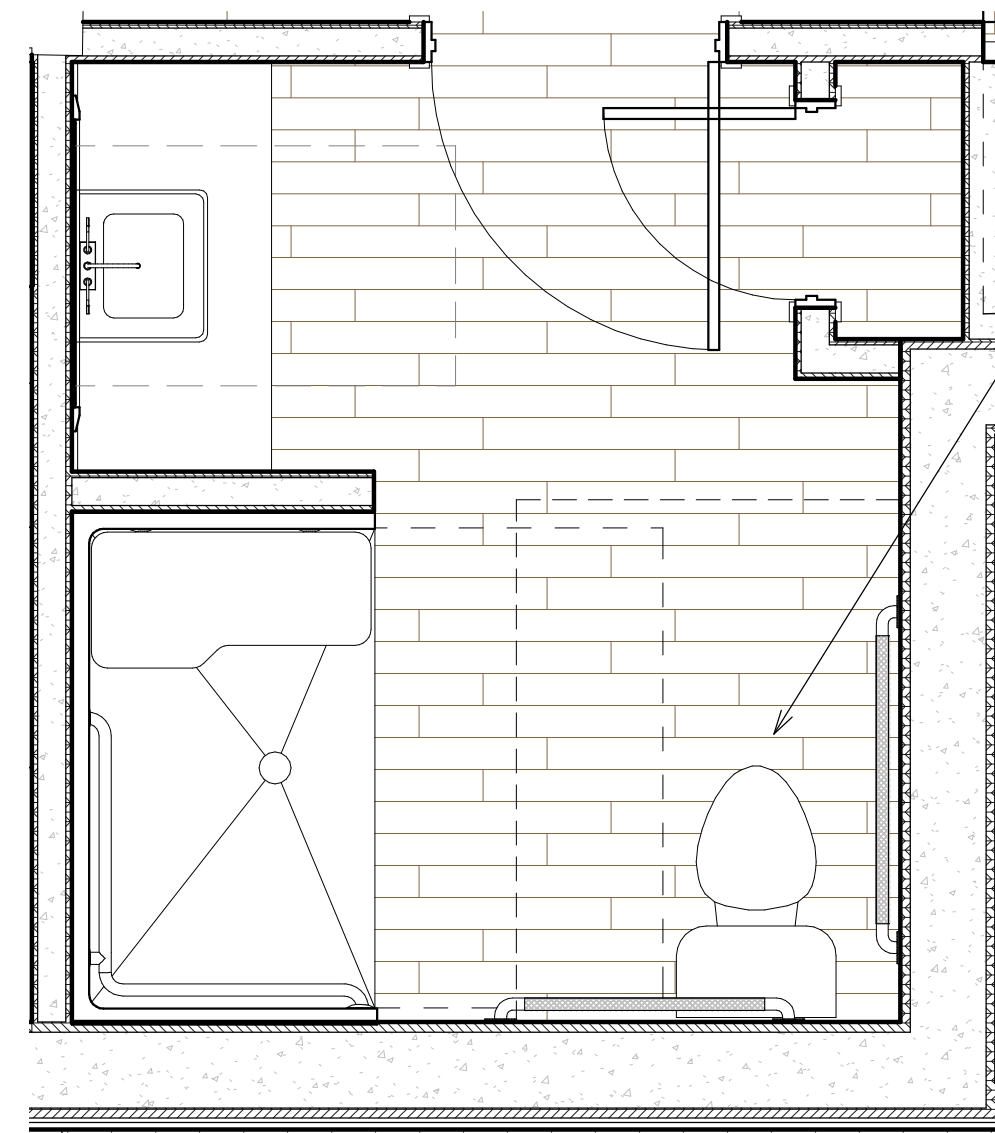


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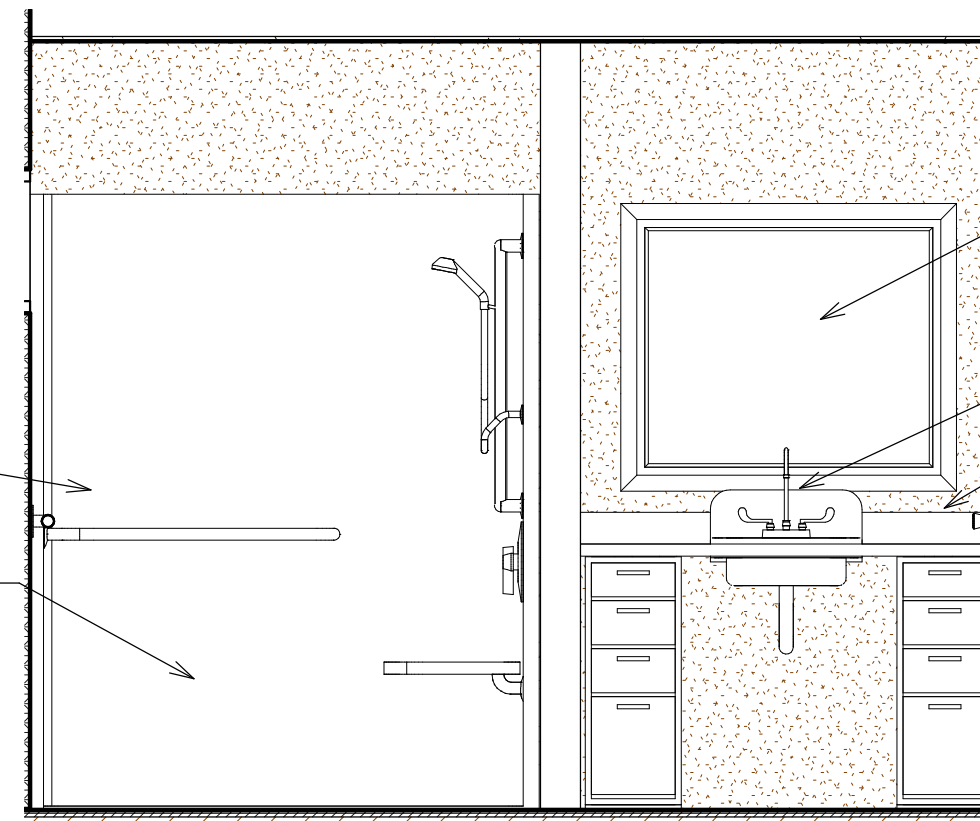
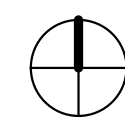
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SHEET TITLE  
**BATHROOM ADA COMPLIANCE PLAN AND ELEVATIONS**

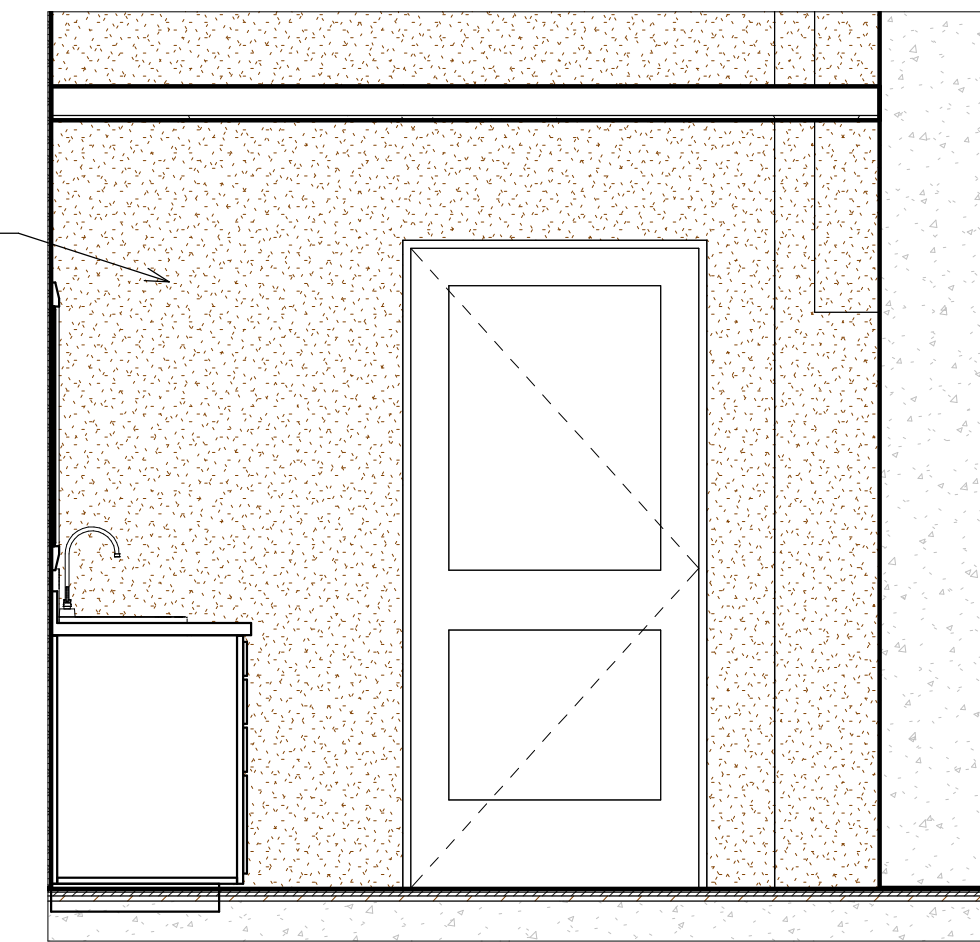
**I-401**



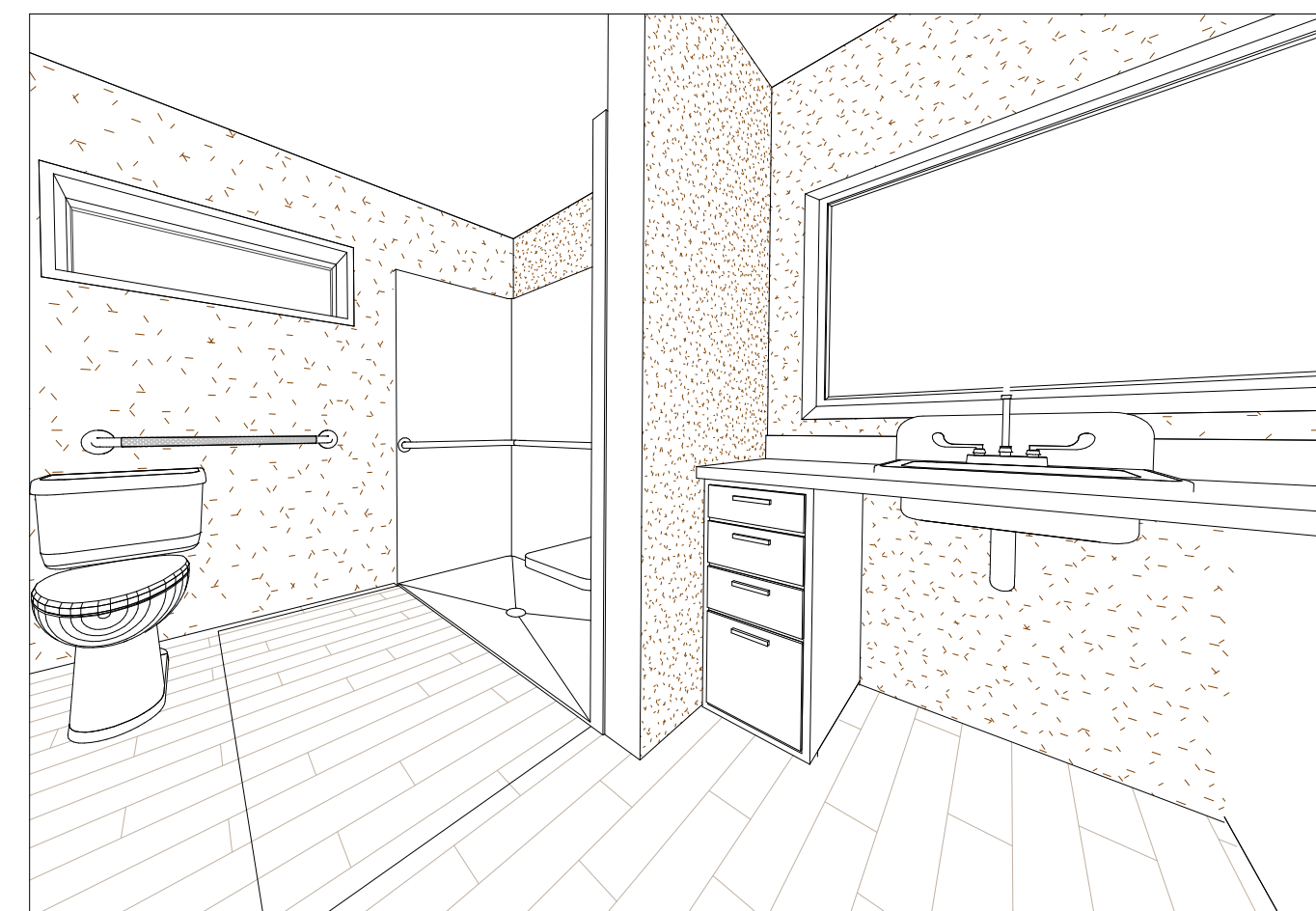
1 ENLARGED BATHROOM PLAN  
 1/2" = 1'-0"



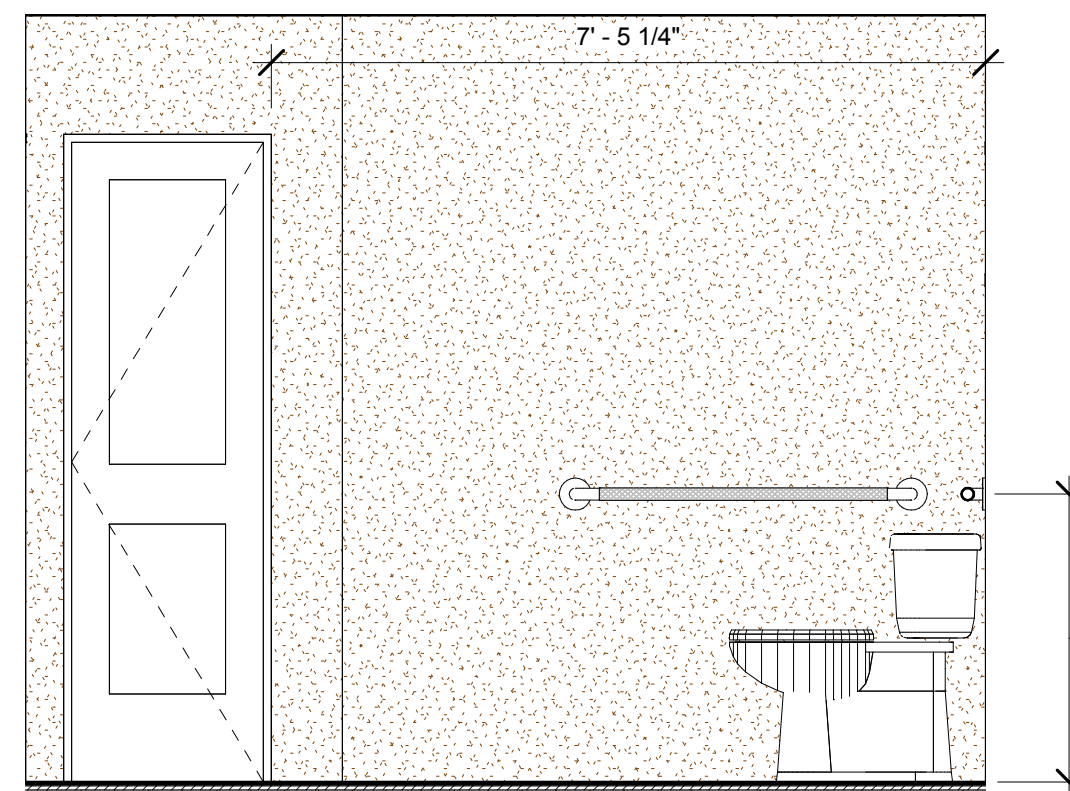
3 BATHROOM ELEVATION WEST  
 1/2" = 1'-0"



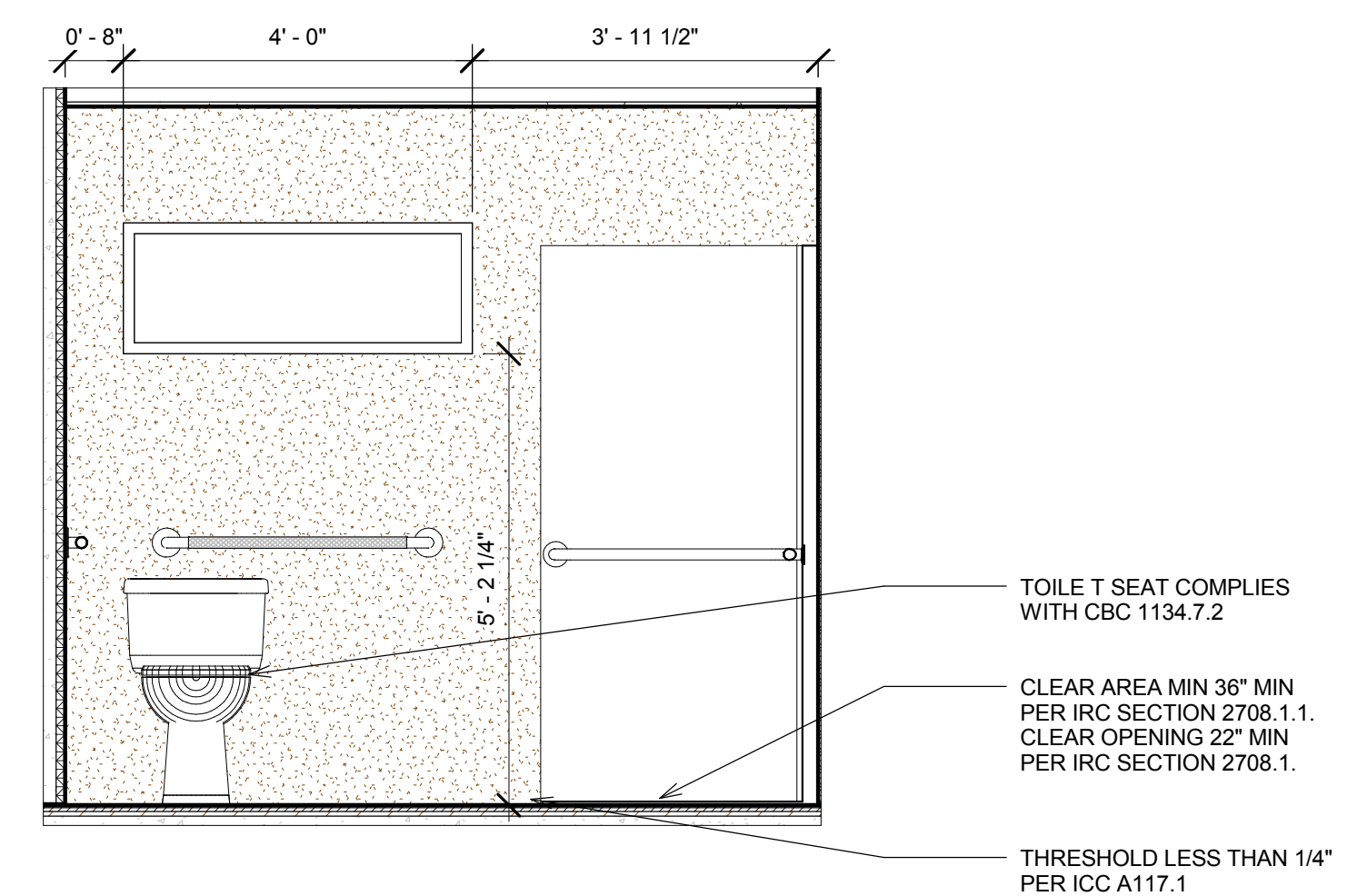
5 BATHROOM ELEVATION NORTH  
 1/2" = 1'-0"



2 BATHROOM PERSPECTIVE



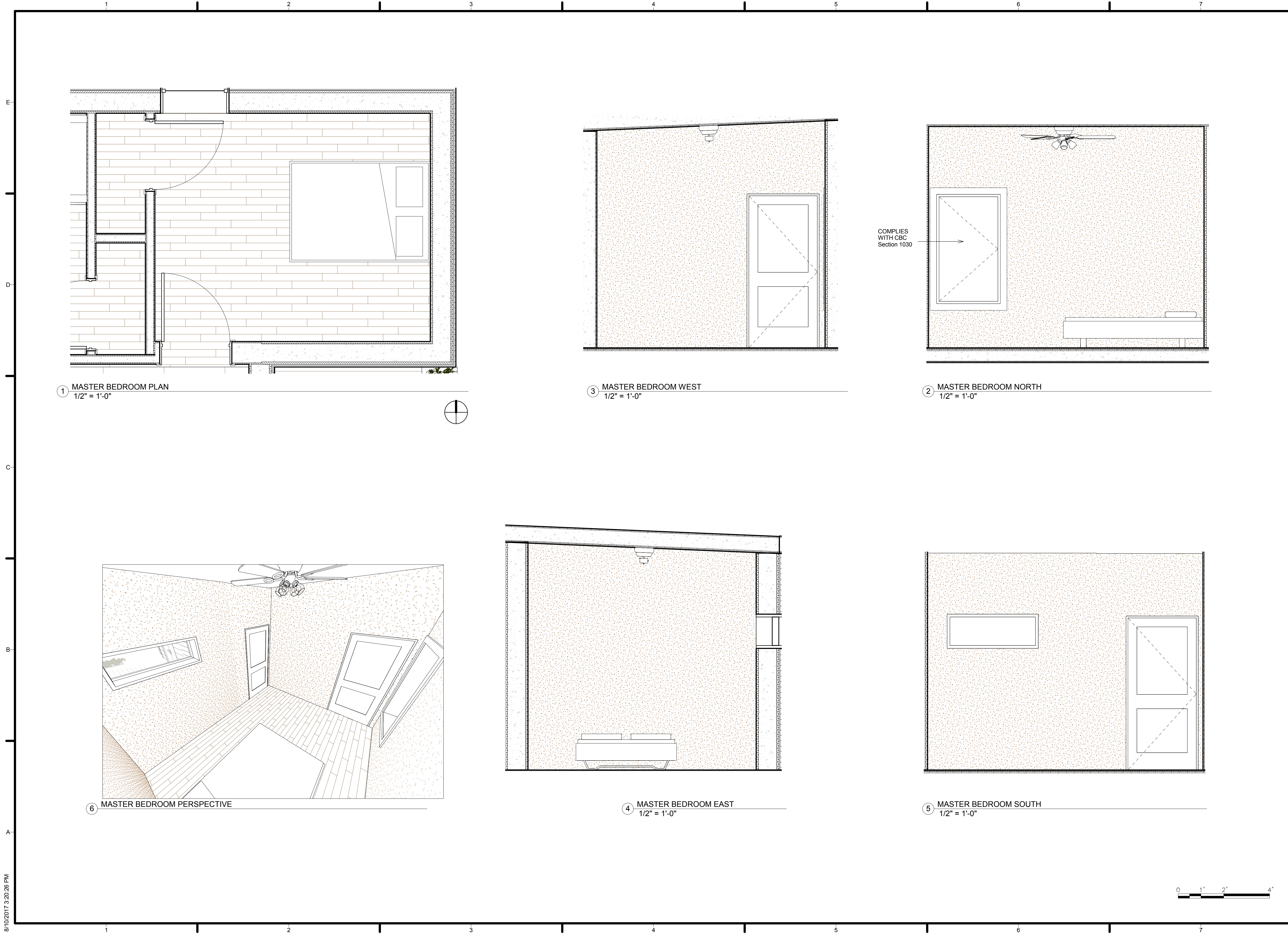
4 BATHROOM ELEVATION EAST  
 1/2" = 1'-0"



6 BATHROOM ELEVATION SOUTH  
 1/2" = 1'-0"







1 MASTER BEDROOM PLAN  
1/2" = 1'-0"

3 MASTER BEDROOM WEST  
1/2" = 1'-0"

2 MASTER BEDROOM NORTH  
1/2" = 1'-0"

6 MASTER BEDROOM PERSPECTIVE

4 MASTER BEDROOM EAST  
1/2" = 1'-0"

5 MASTER BEDROOM SOUTH  
1/2" = 1'-0"



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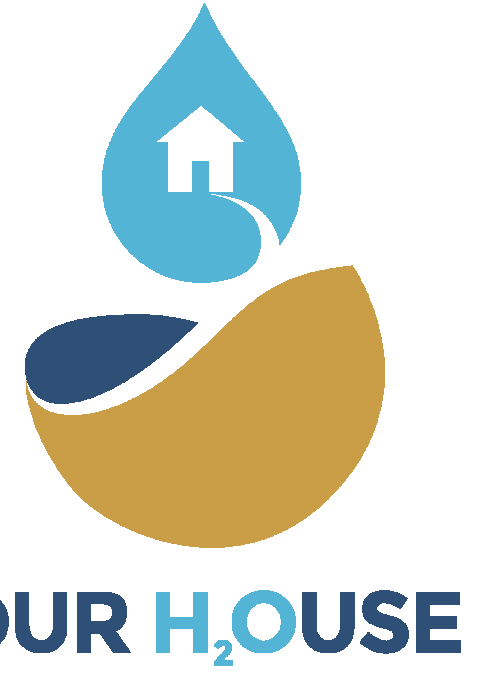
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SHEET TITLE  
 ENLARGED MASTER BEDROOM

I-402

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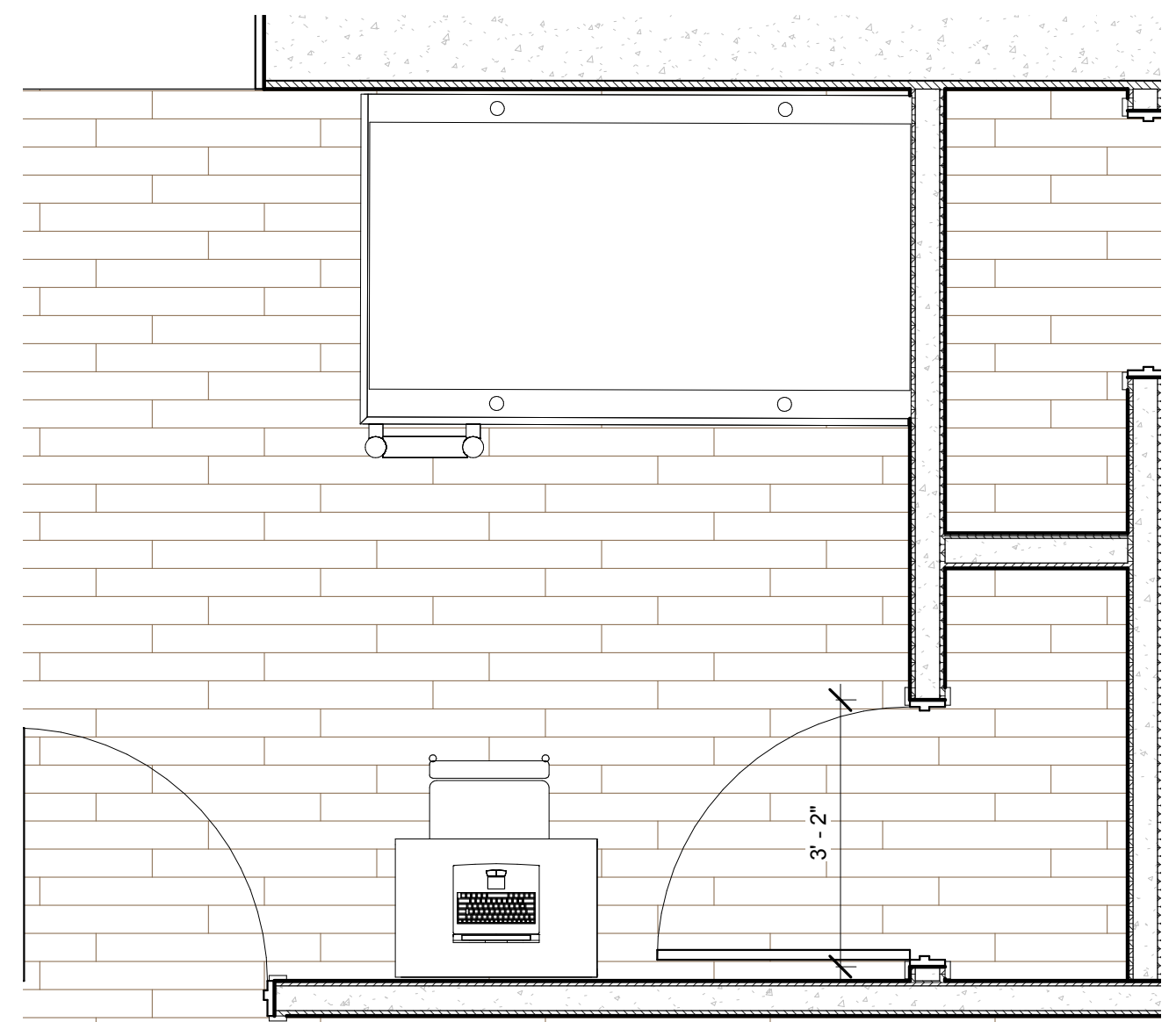


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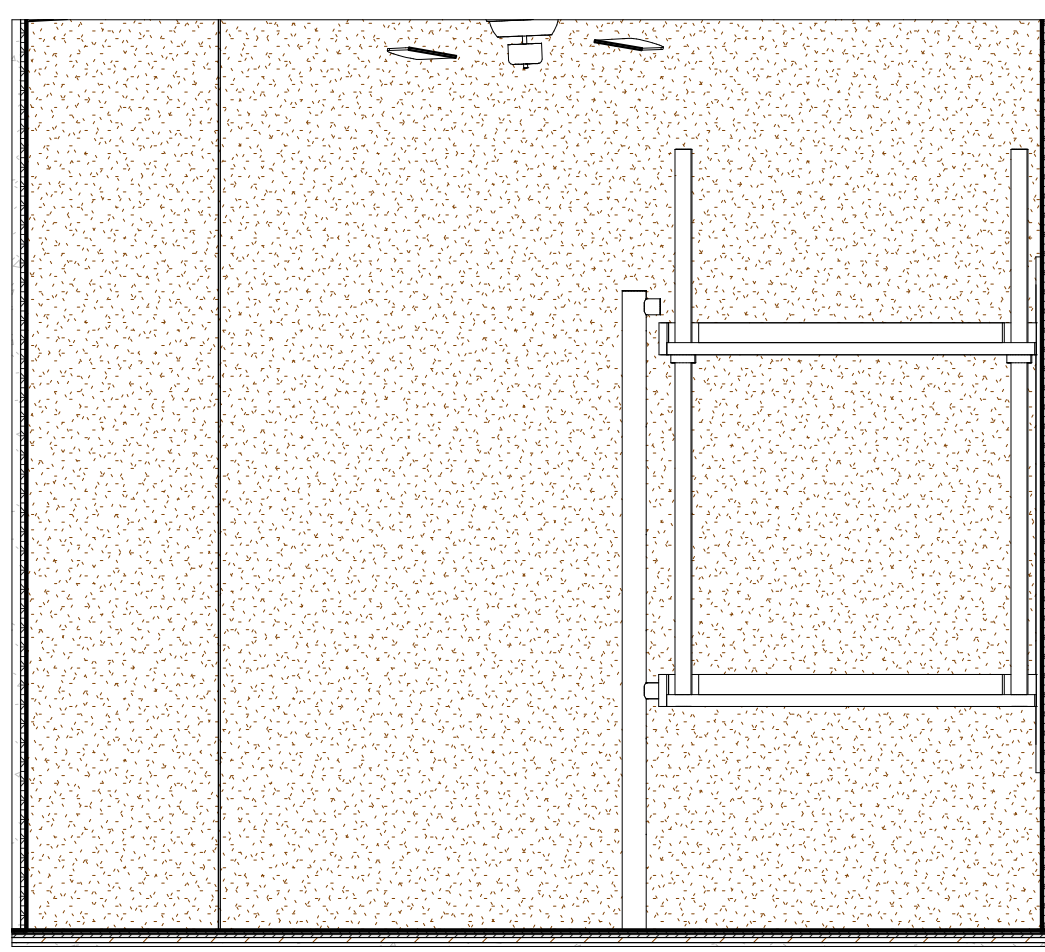
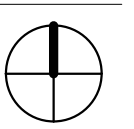
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SHEET TITLE  
 ENLARGED SECOND BEDROOM

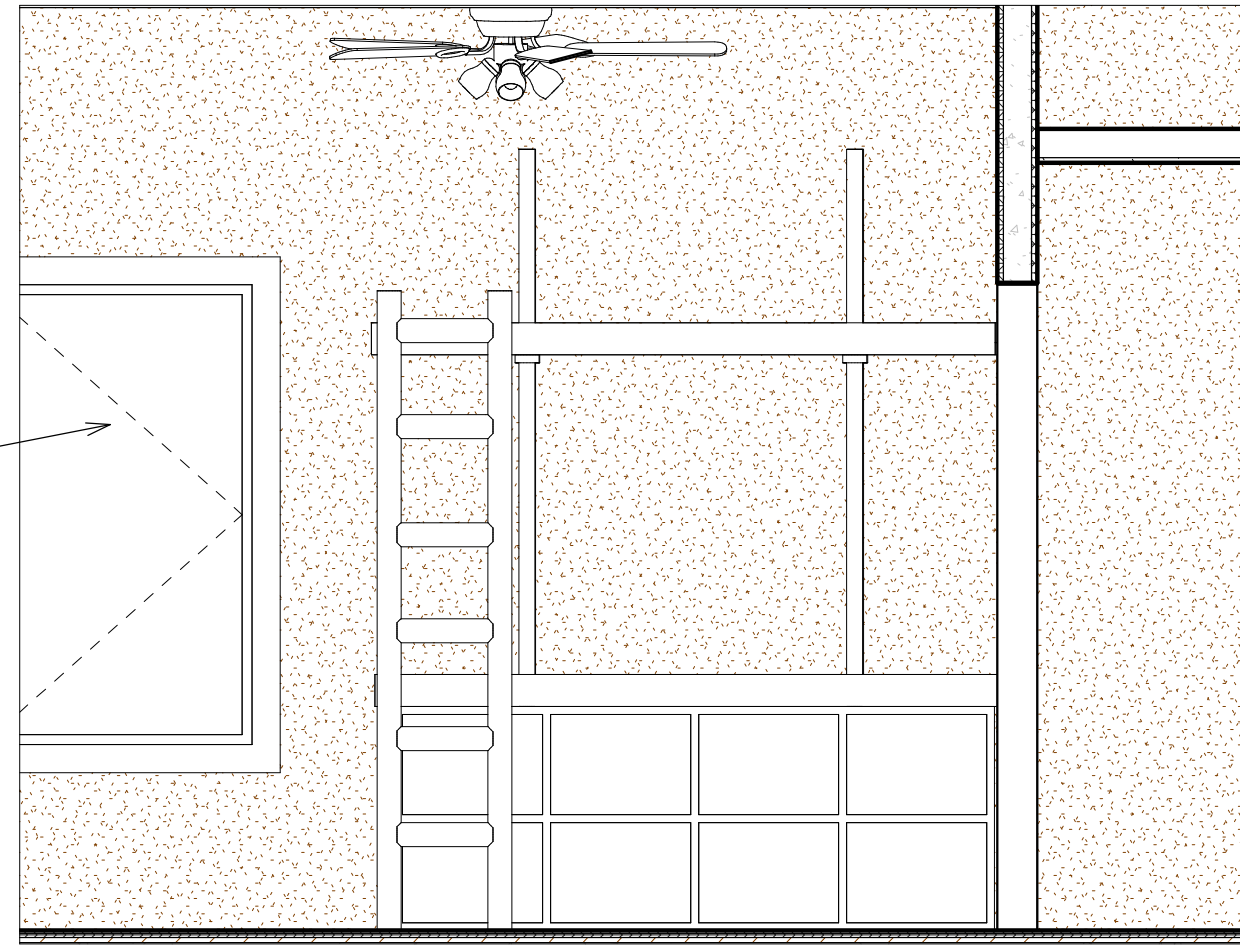
I-403



1 SECOND BEDROOM FLOORPLAN  
 1/2" = 1'-0"

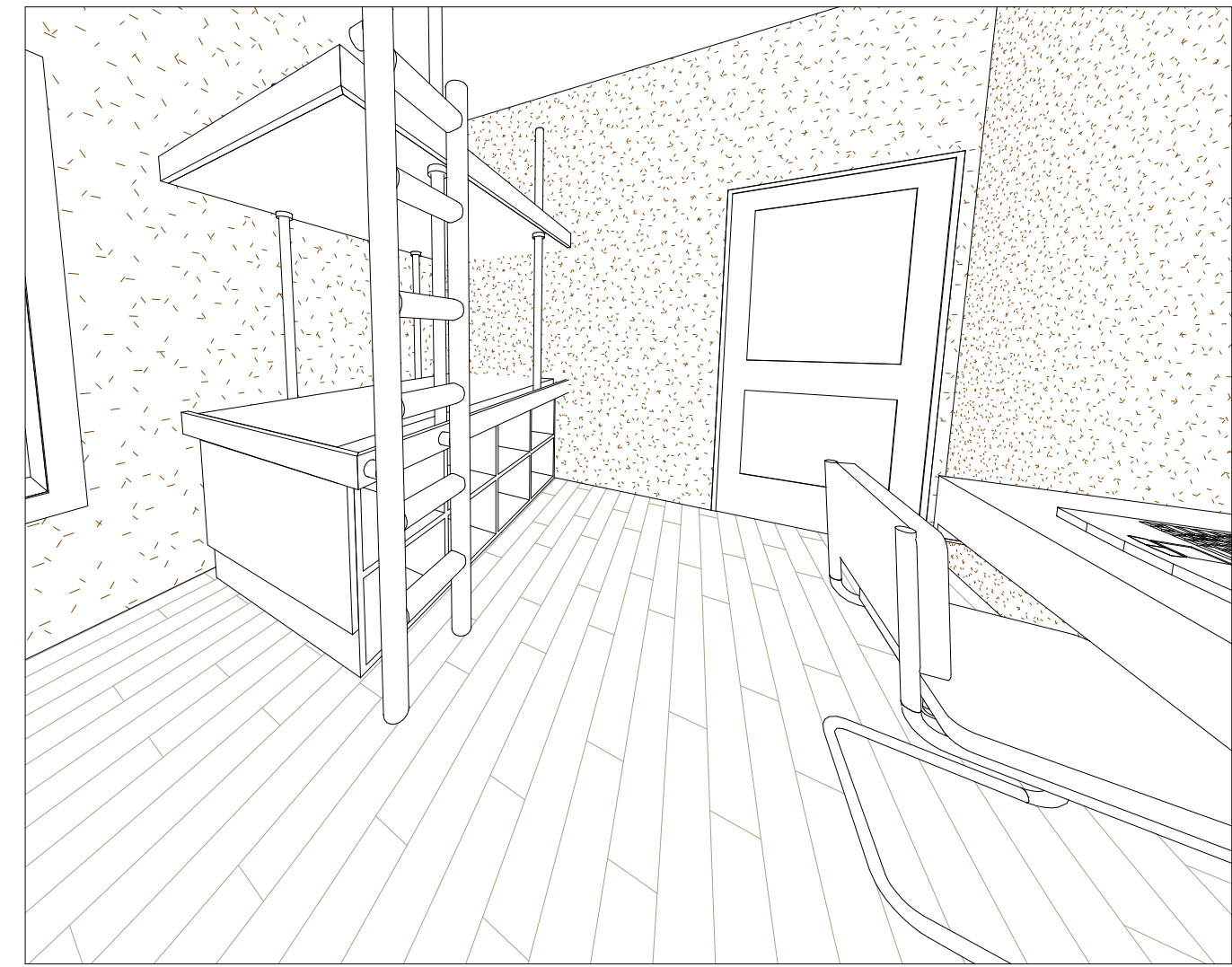


5 SECOND BEDROOM WEST  
 1/2" = 1'-0"

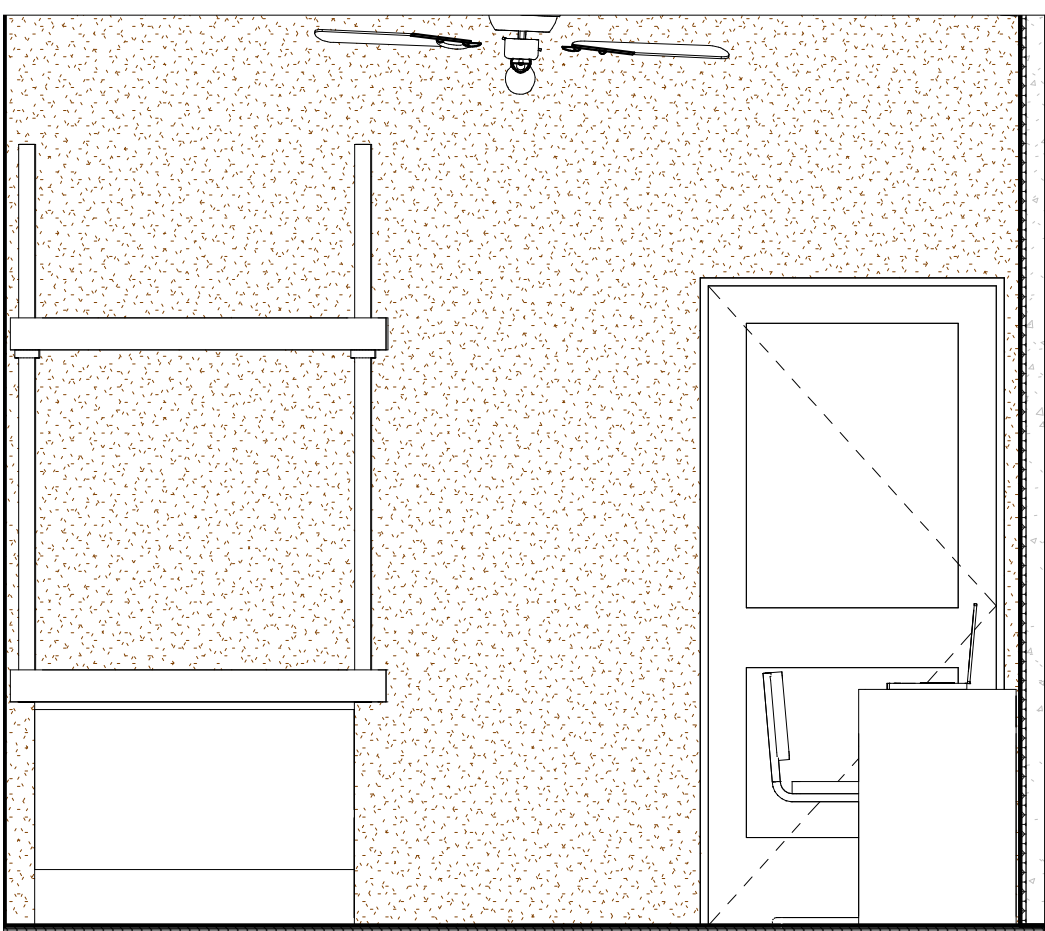


COMPLIES WITH  
 CBC Section 1030

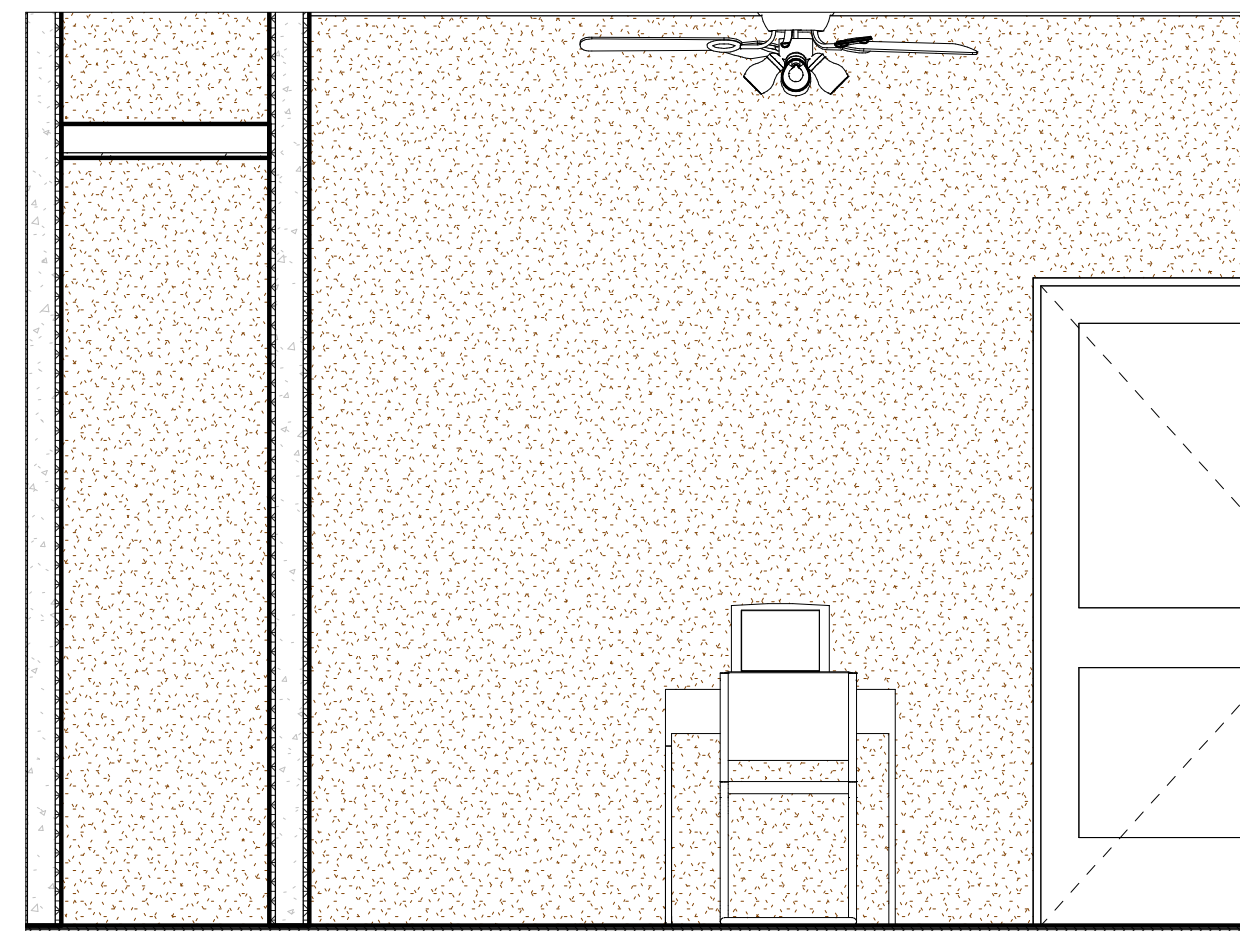
2 SECOND BEDROOM NORTH  
 1/2" = 1'-0"



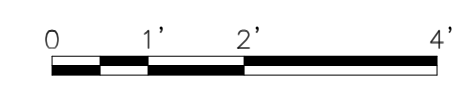
6 SECOND BEDROOM PERSPECTIVE



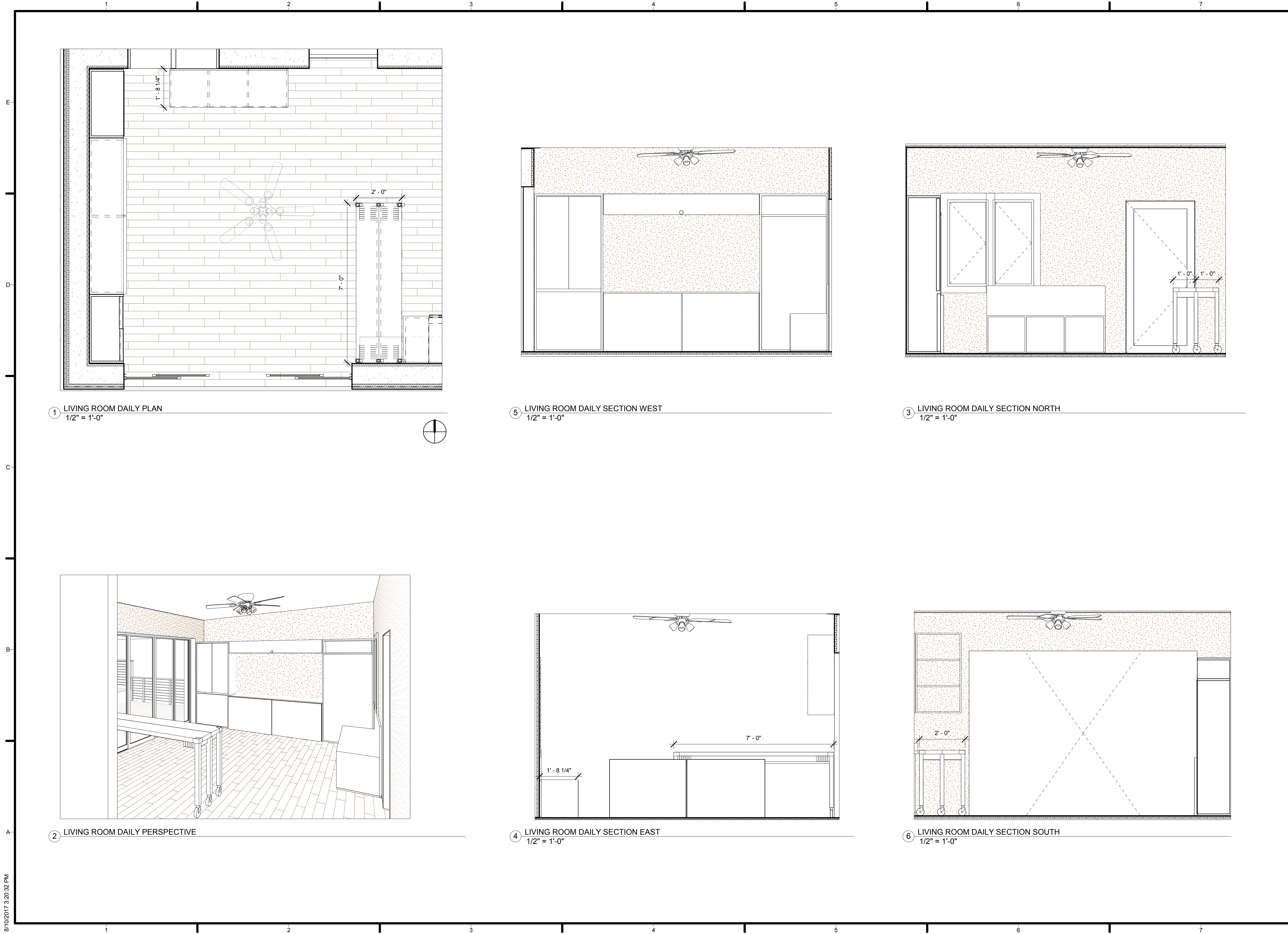
3 SECOND BEDROOM EAST  
 1/2" = 1'-0"



4 SECOND BEDROOM SOUTH  
 1/2" = 1'-0"



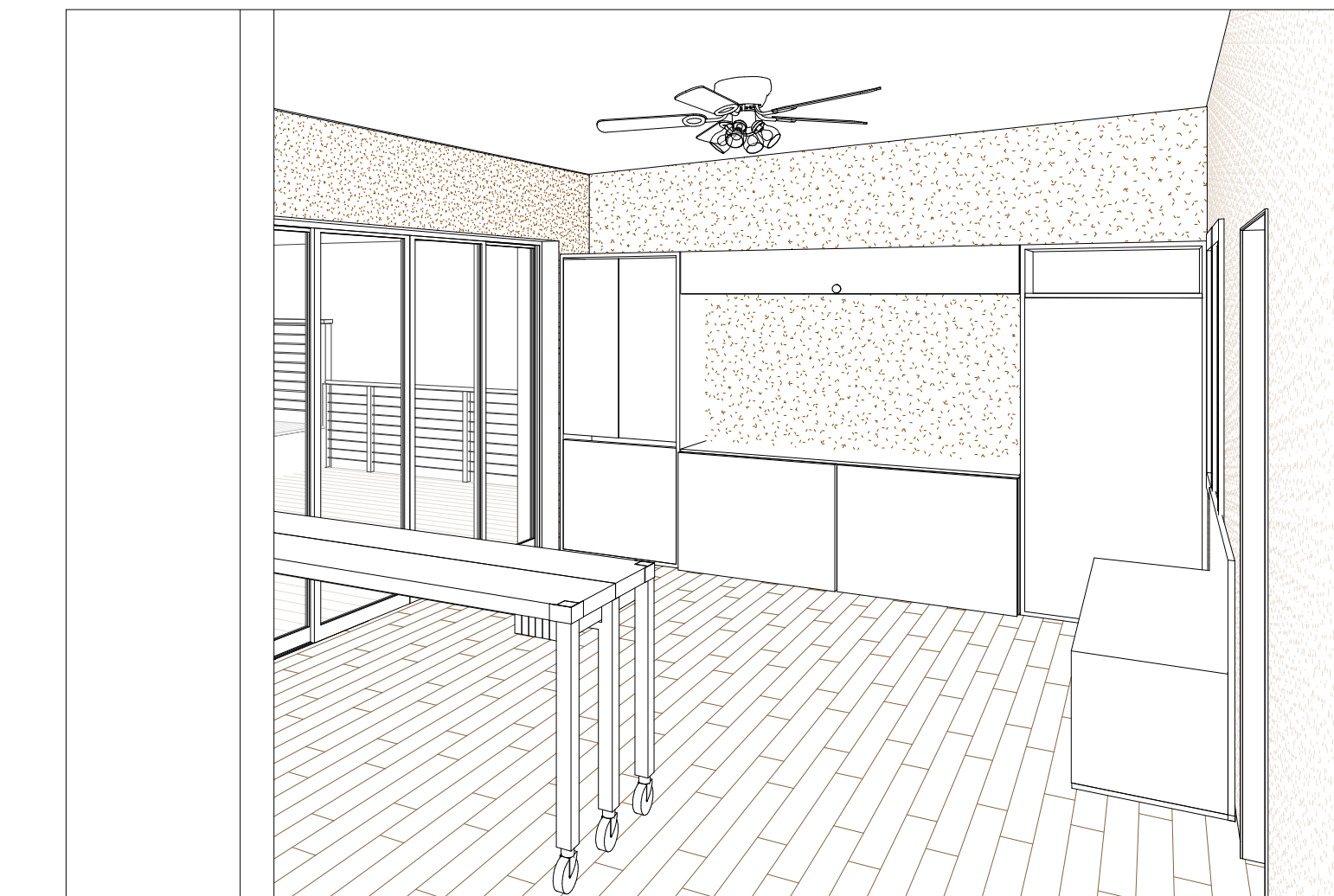




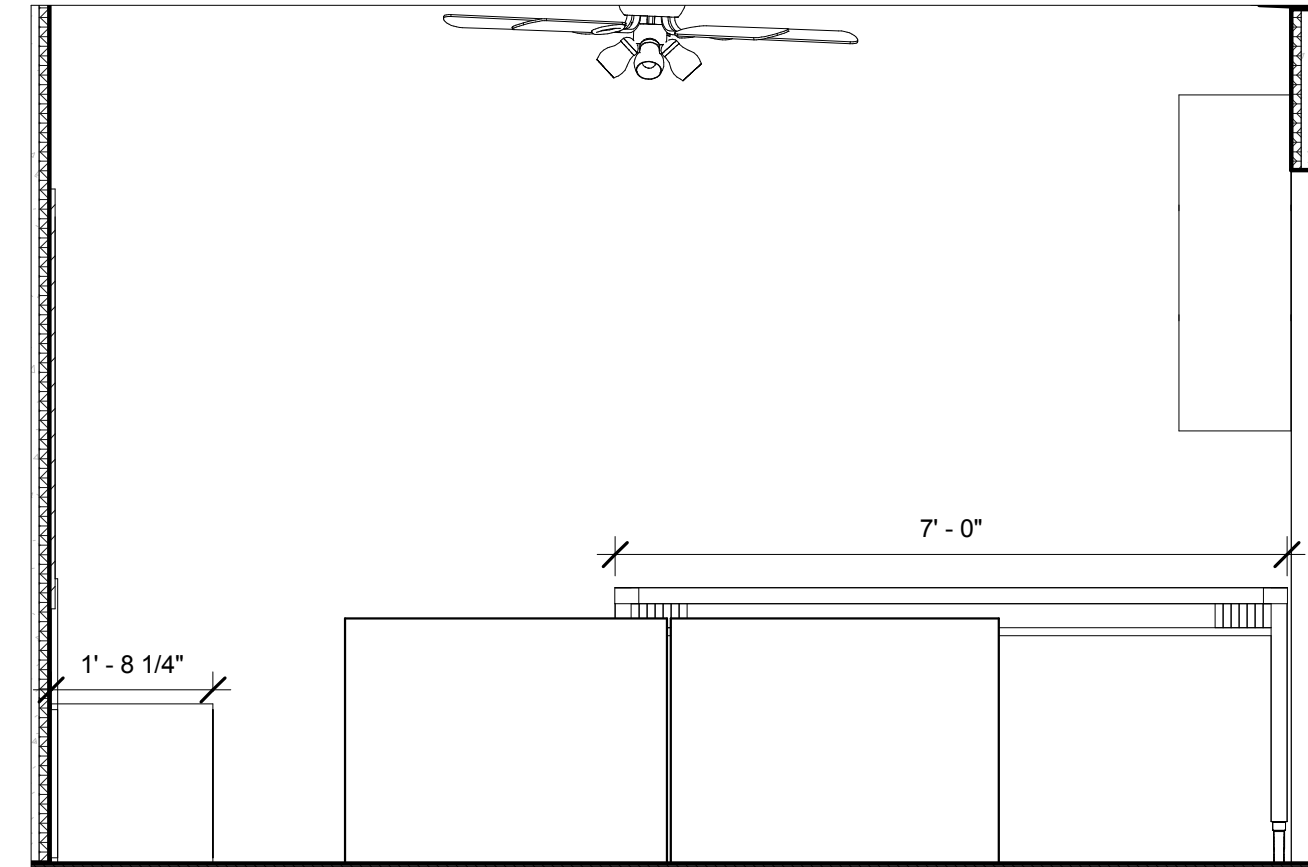
① LIVING ROOM DAILY PLAN  
1/2" = 1'-0"

⑤ LIVING ROOM DAILY SECTION WEST  
1/2" = 1'-0"

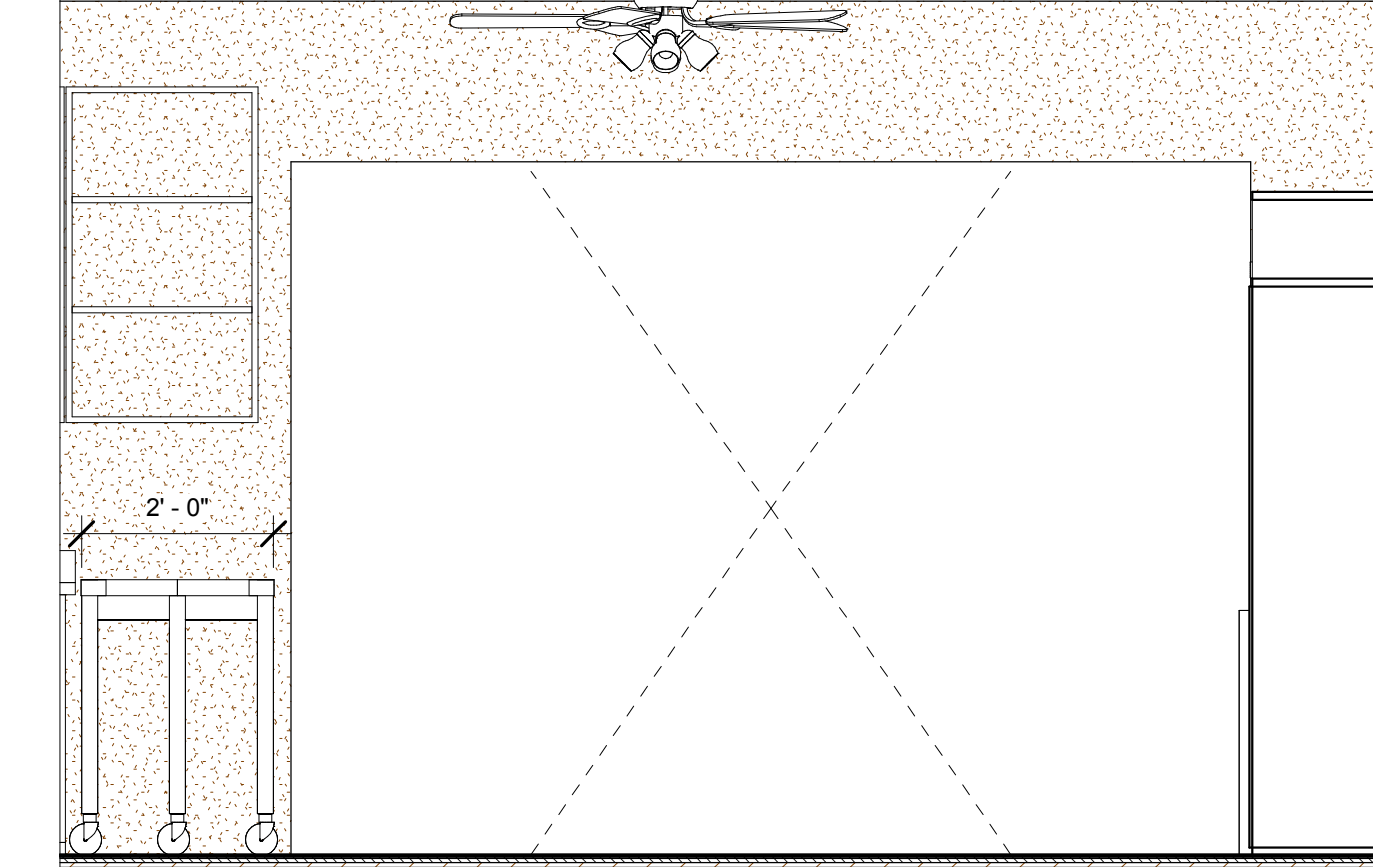
③ LIVING ROOM DAILY SECTION NORTH  
1/2" = 1'-0"



② LIVING ROOM DAILY PERSPECTIVE



④ LIVING ROOM DAILY SECTION EAST  
1/2" = 1'-0"



⑥ LIVING ROOM DAILY SECTION SOUTH  
1/2" = 1'-0"



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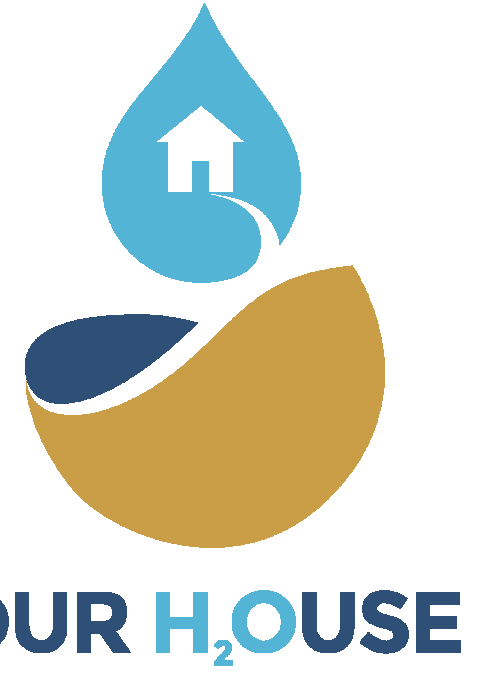
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03	2/23/2017	100% CD SET
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LOT NUMBER: UNKNOWN  
 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
 ENLARGED LIVING ROOM DAILY CONFIGURATION

I-404





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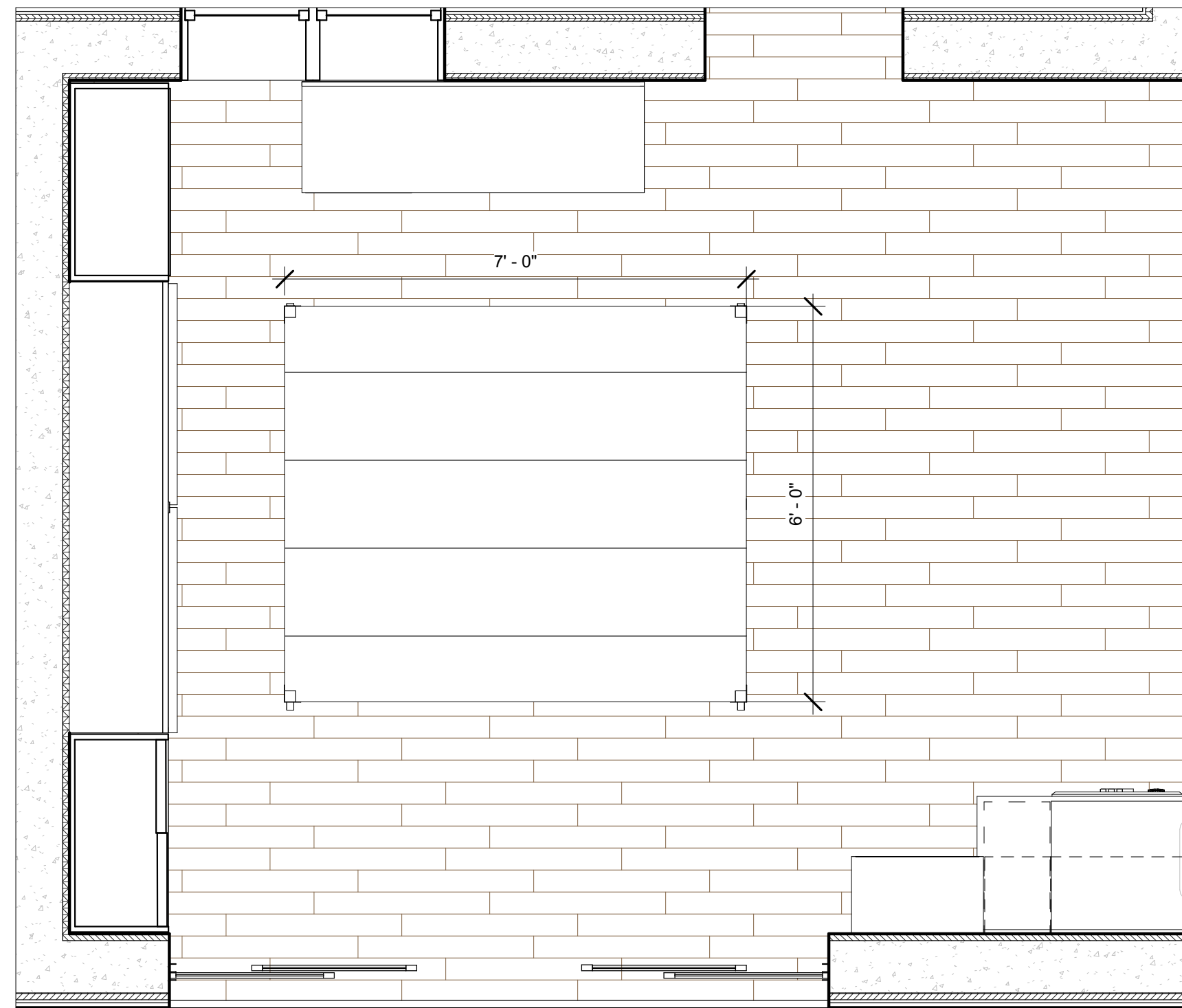


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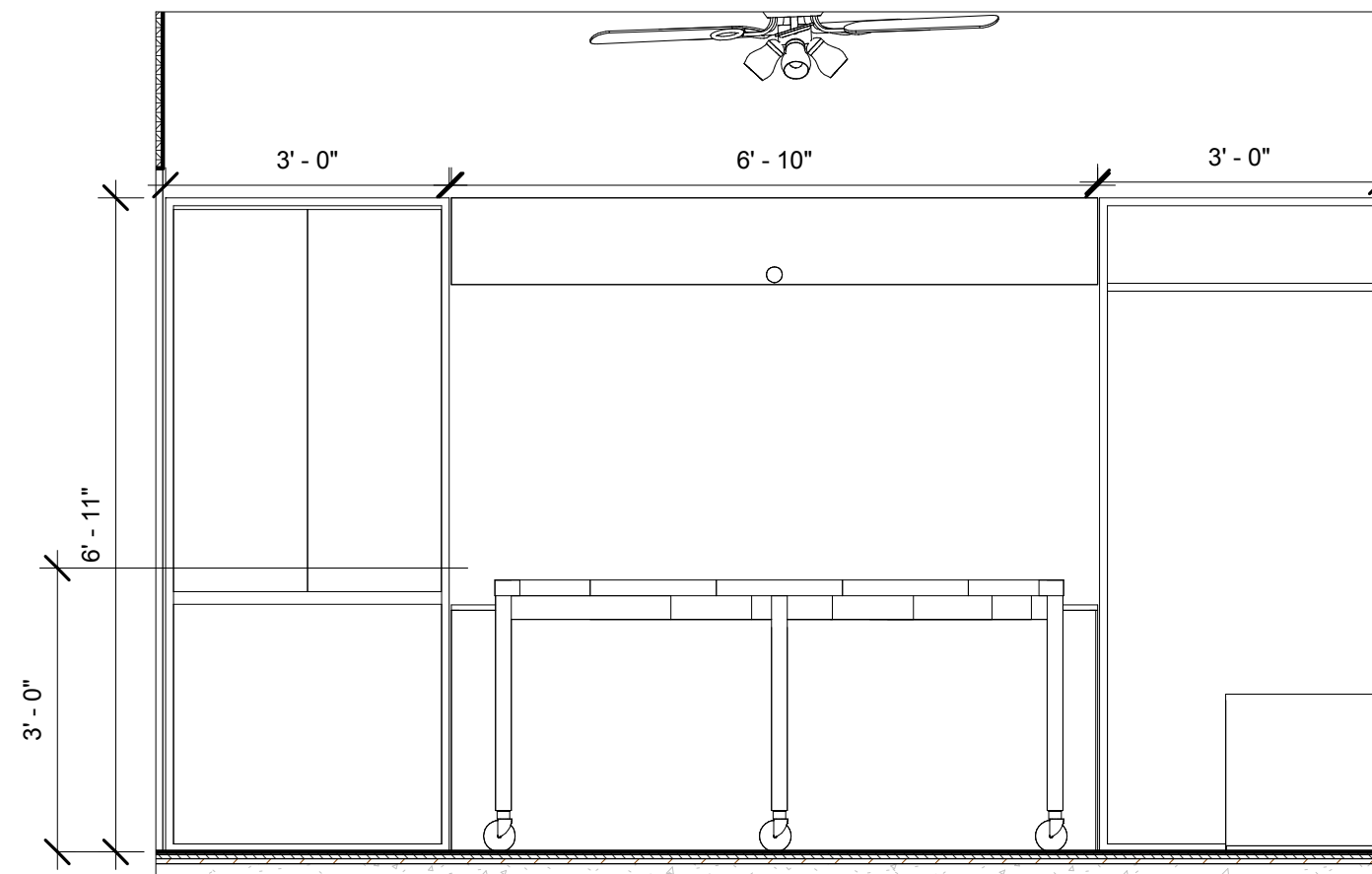
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SHEET TITLE  
**ENLARGED LIVING ROOM DINNING CONFIGURATION**

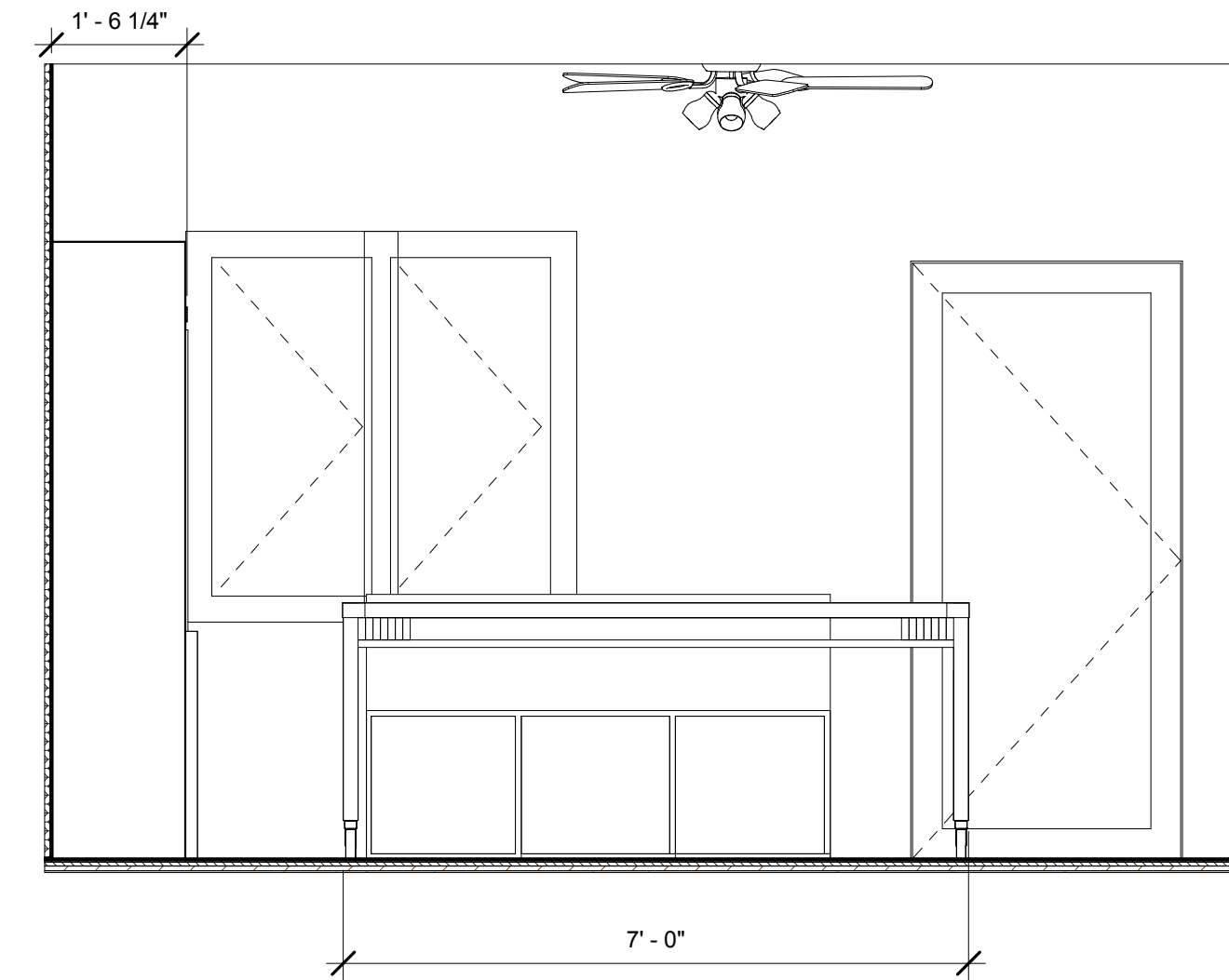
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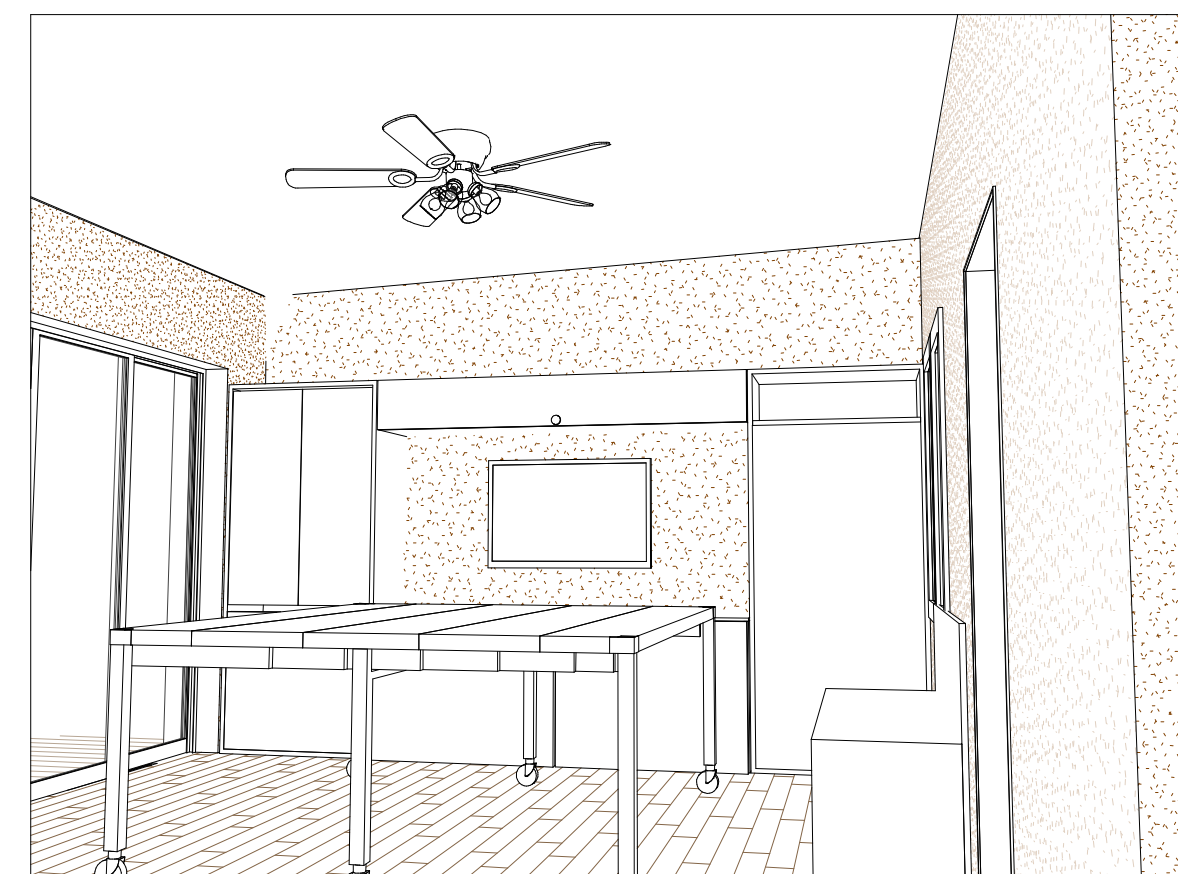
② LIVING ROOM DINNING PLAN  
 1/2" = 1'-0"



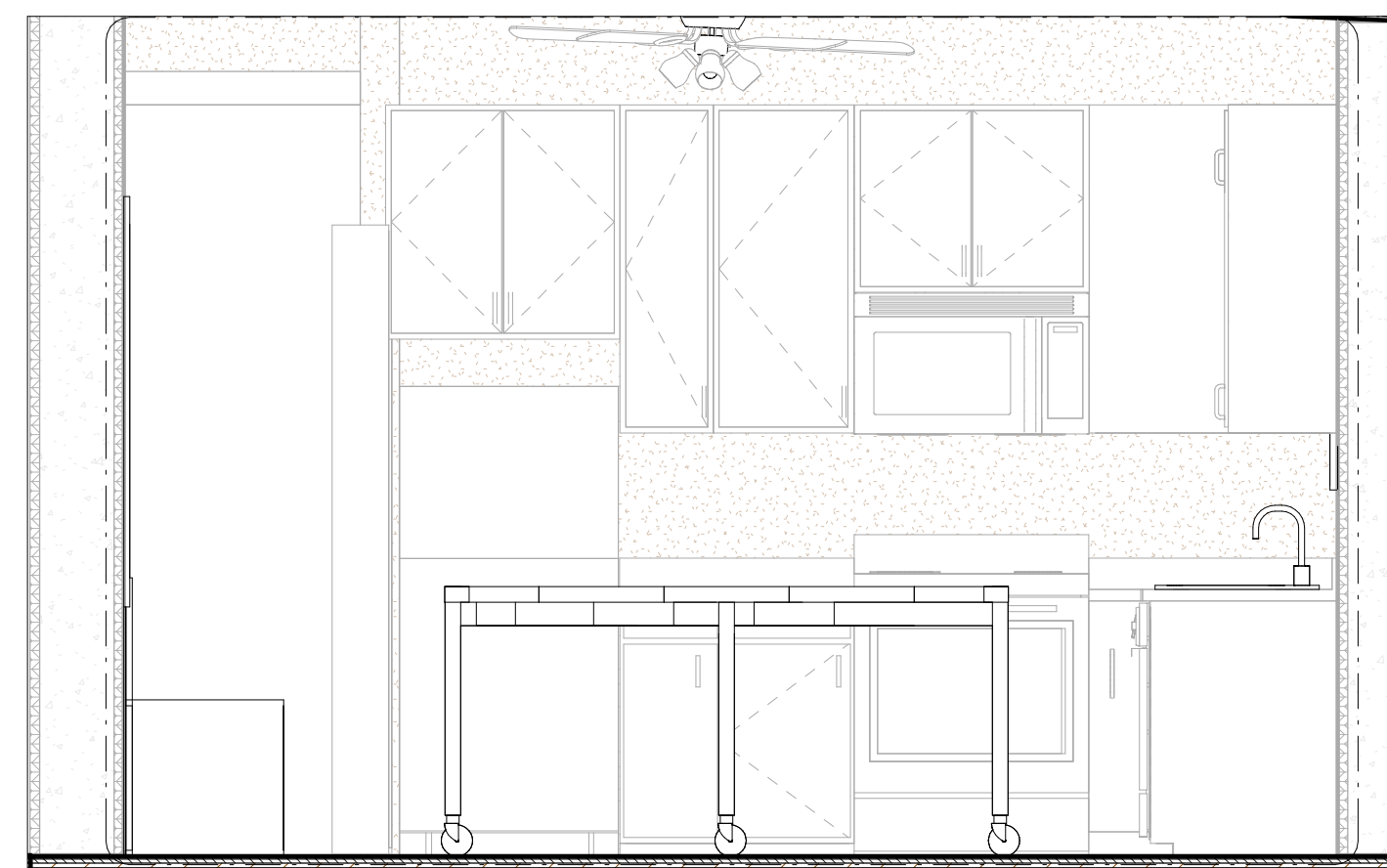
③ LIVING ROOM DINNING SECTION WEST  
 1/2" = 1'-0"



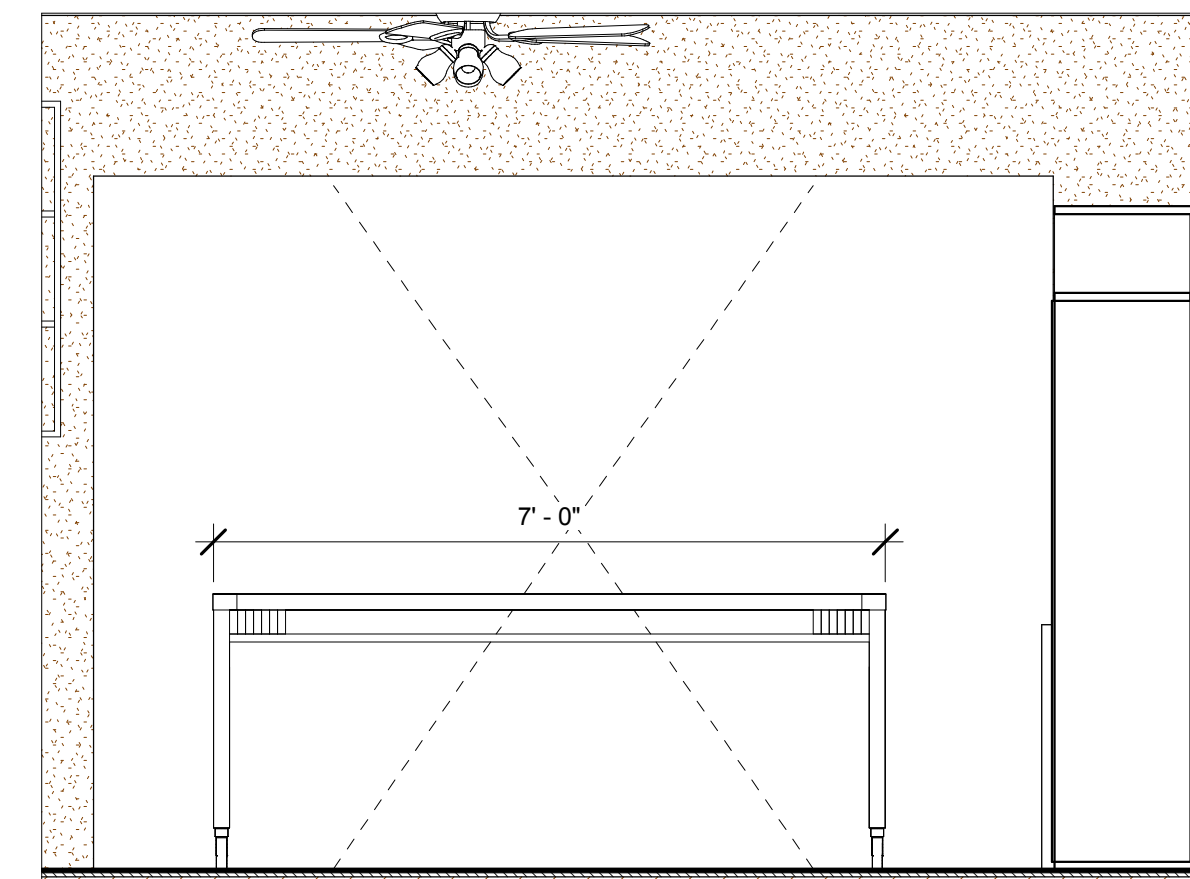
④ LIVING ROOM DINNING SECTION NORTH  
 1/2" = 1'-0"



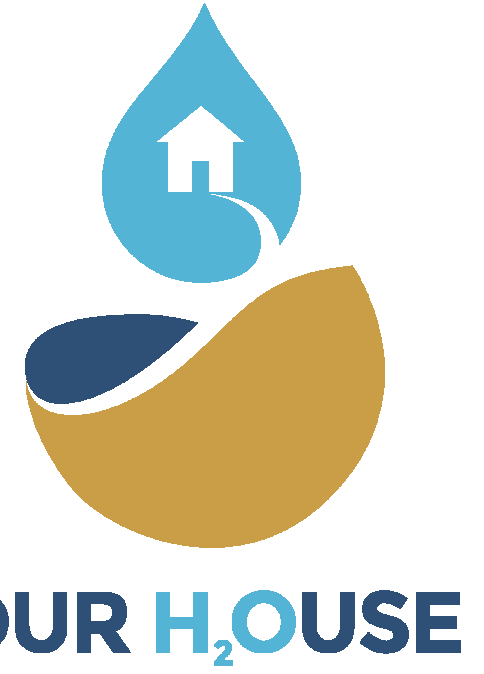
① LIVING ROOM DINNING PERSPECTIVE



⑤ LIVING ROOM DINNING SECTION EAST  
 1/2" = 1'-0"



⑥ LIVING ROOM DINNING SECTION SOUTH  
 1/2" = 1'-0"



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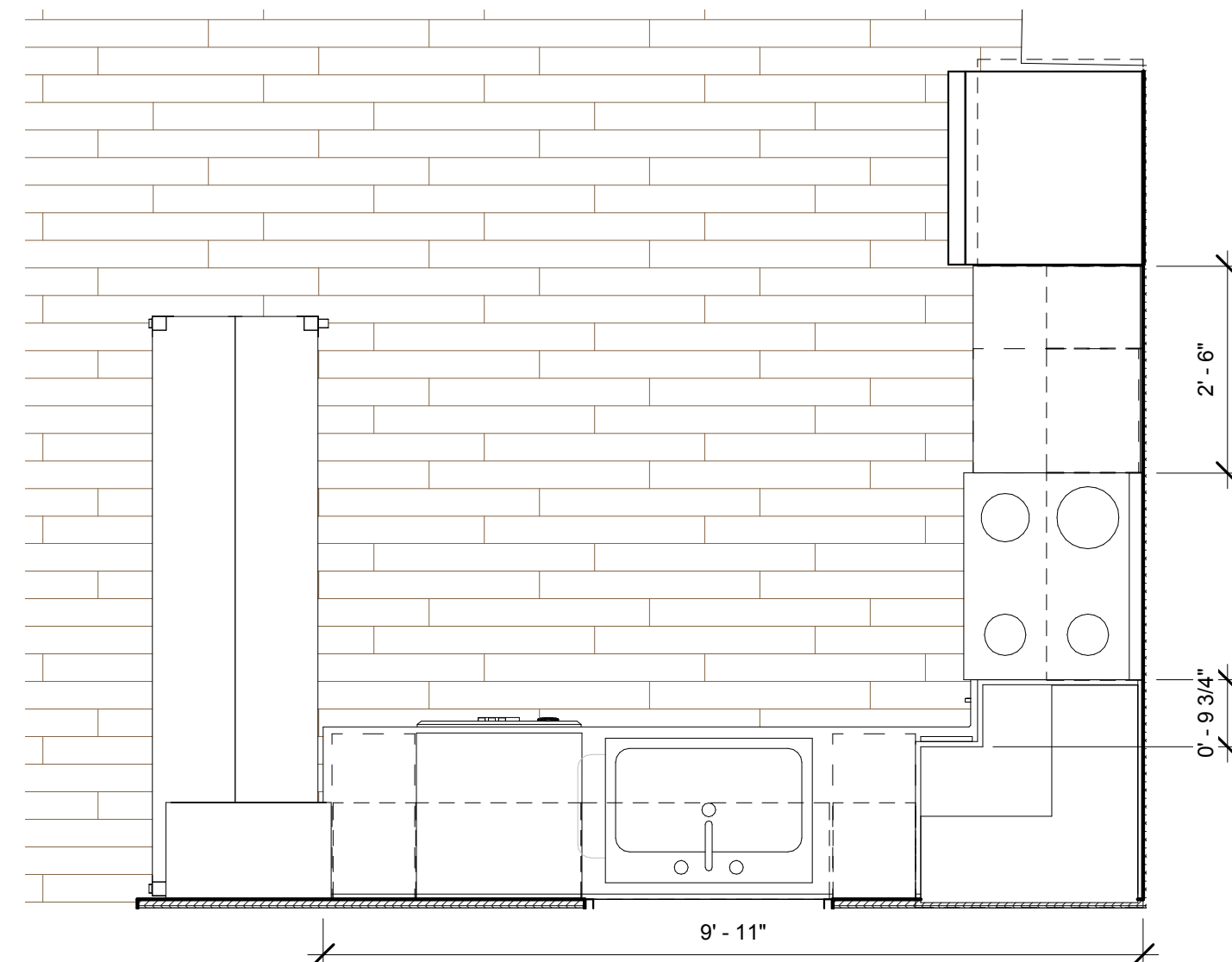


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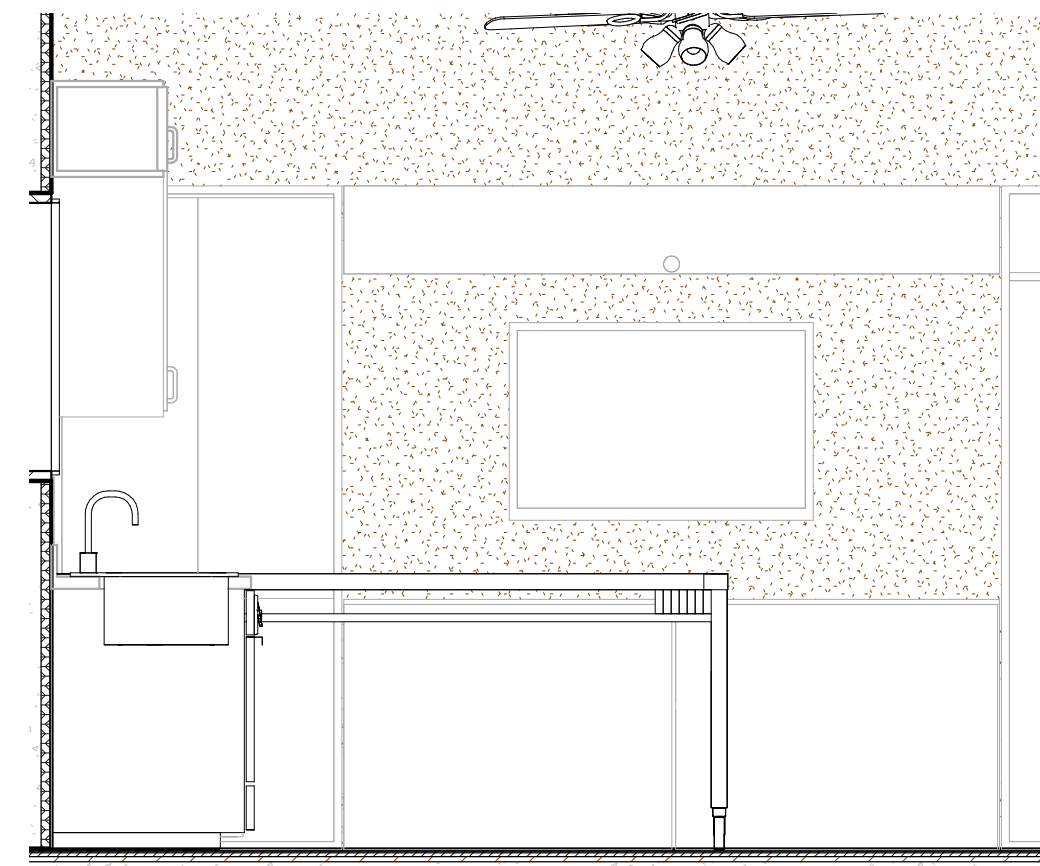
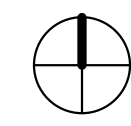
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 DRAWN BY: BLUE MUSTANGS  
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SHEET TITLE  
**KITCHEN ENLARGED  
 PLAN AND ELEVATIONS**

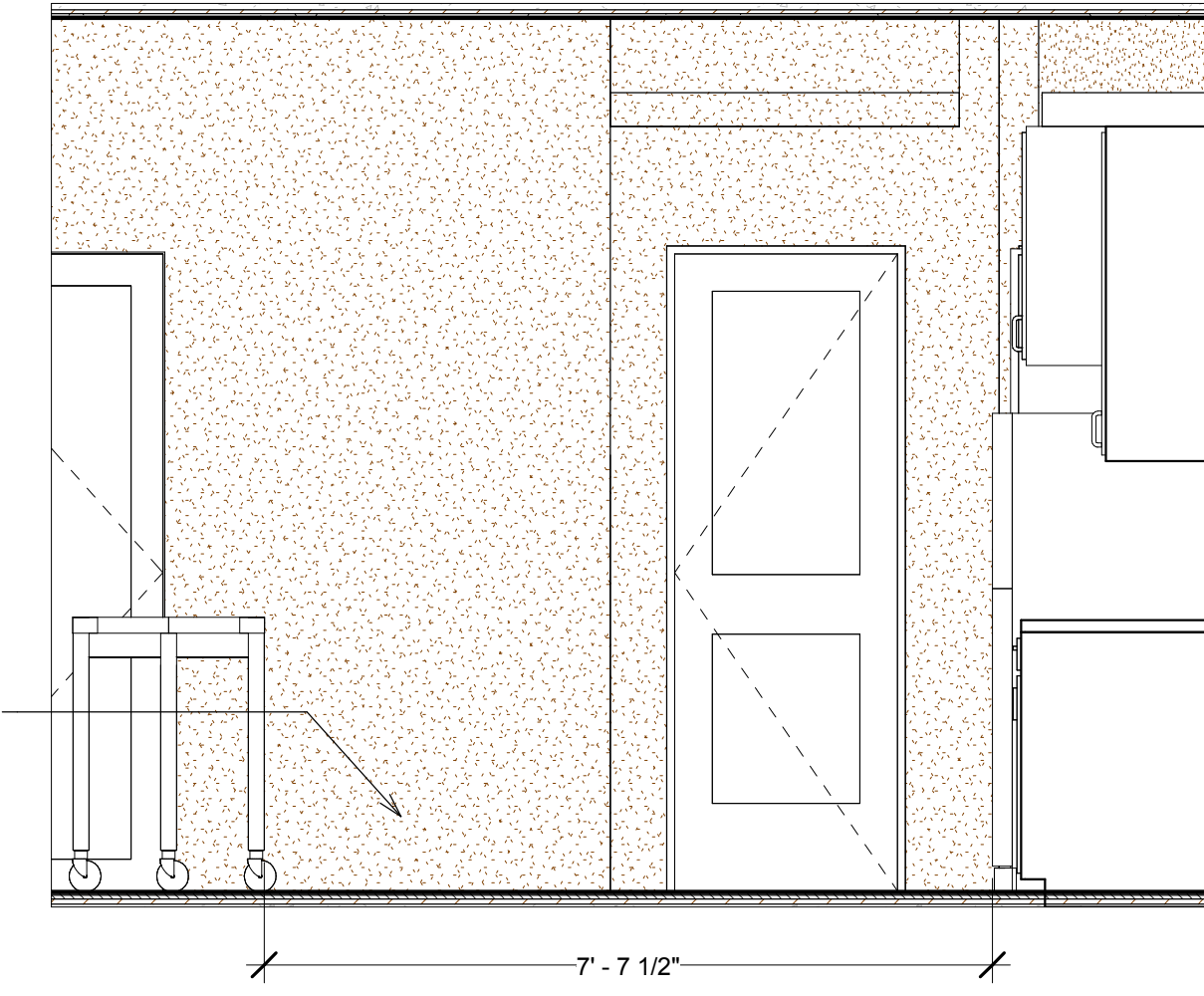
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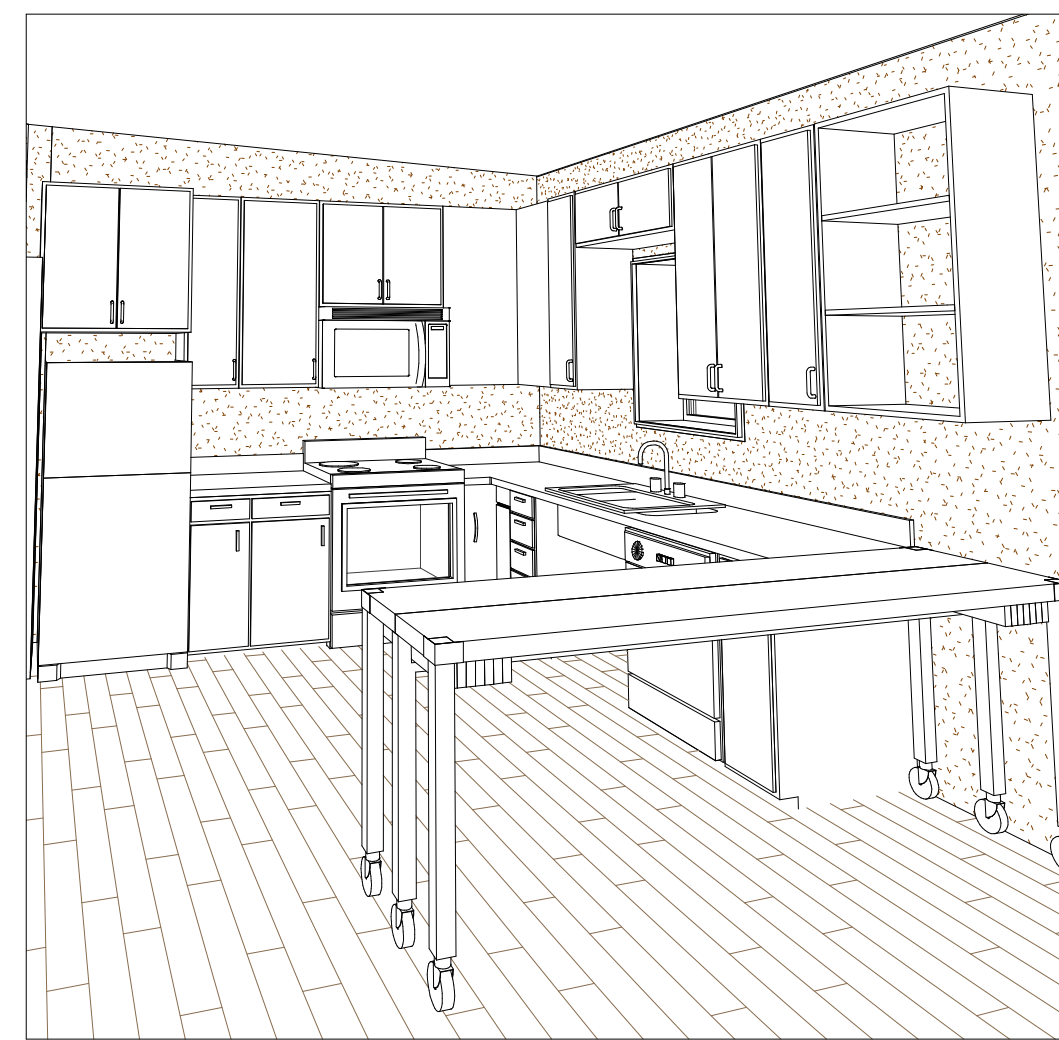
① KITCHEN ENLARGED PLAN  
 1/2" = 1'-0"



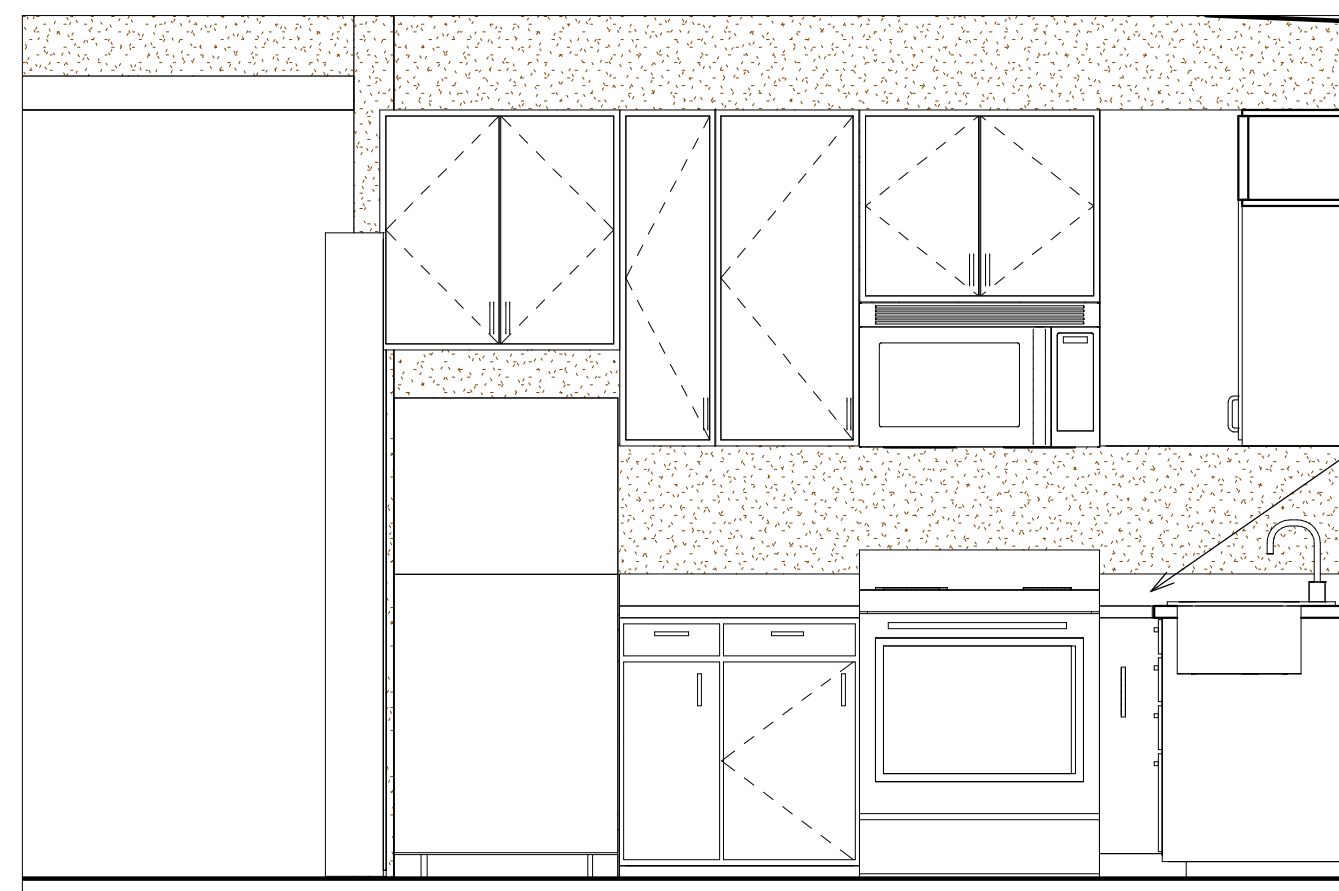
⑤ KITCHEN SECTION WEST  
 1/2" = 1'-0"



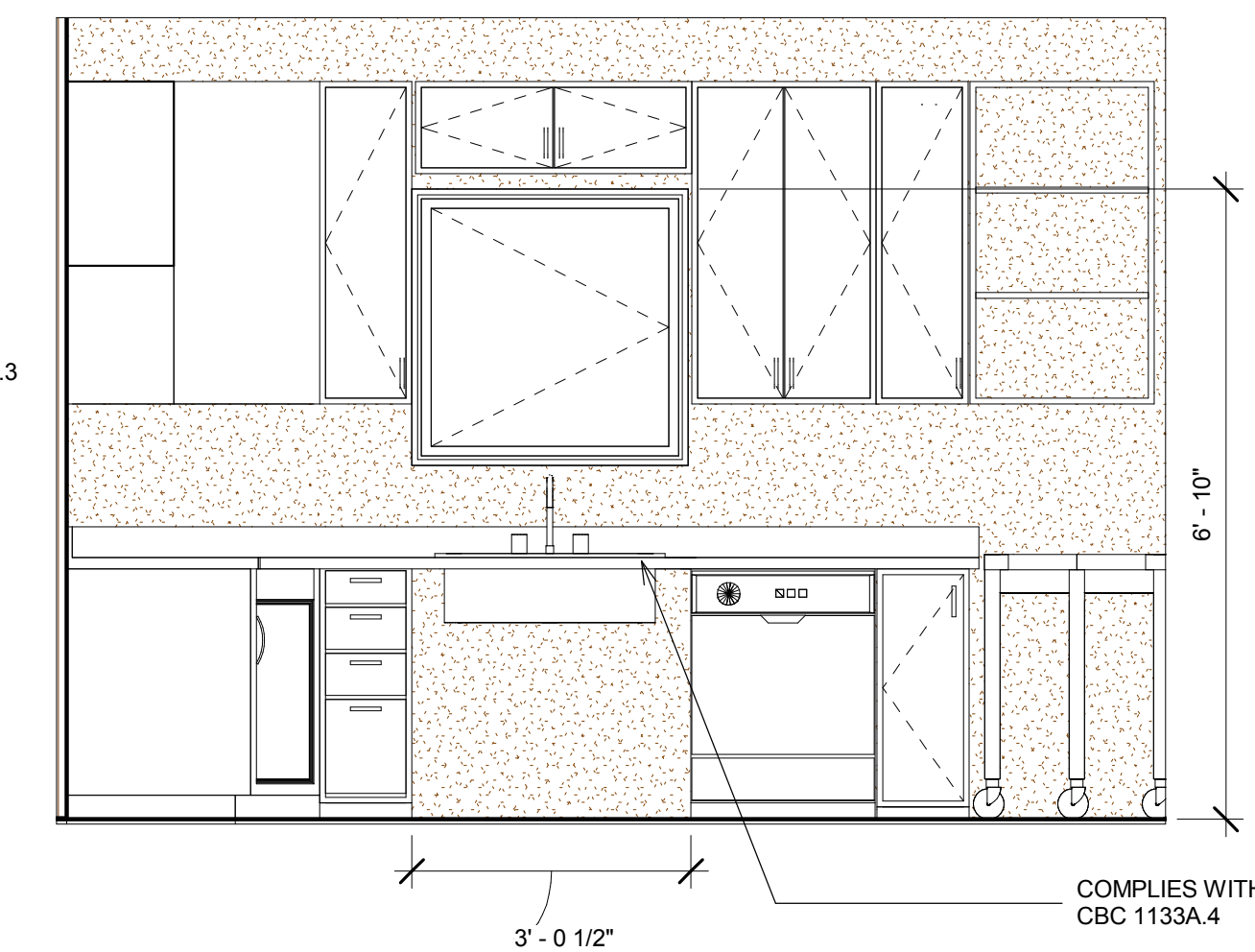
③ KITCHEN SECTION NORTH  
 1/2" = 1'-0"



⑥ KITCHEN BREAKFAST BAR VIEW



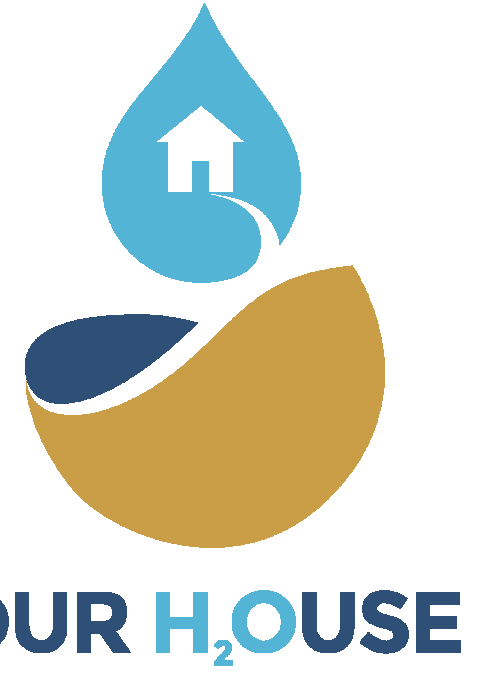
④ KITCHEN SECTION EAST  
 1/2" = 1'-0"



② KITCHEN SECTION SOUTH  
 1/2" = 1'-0"







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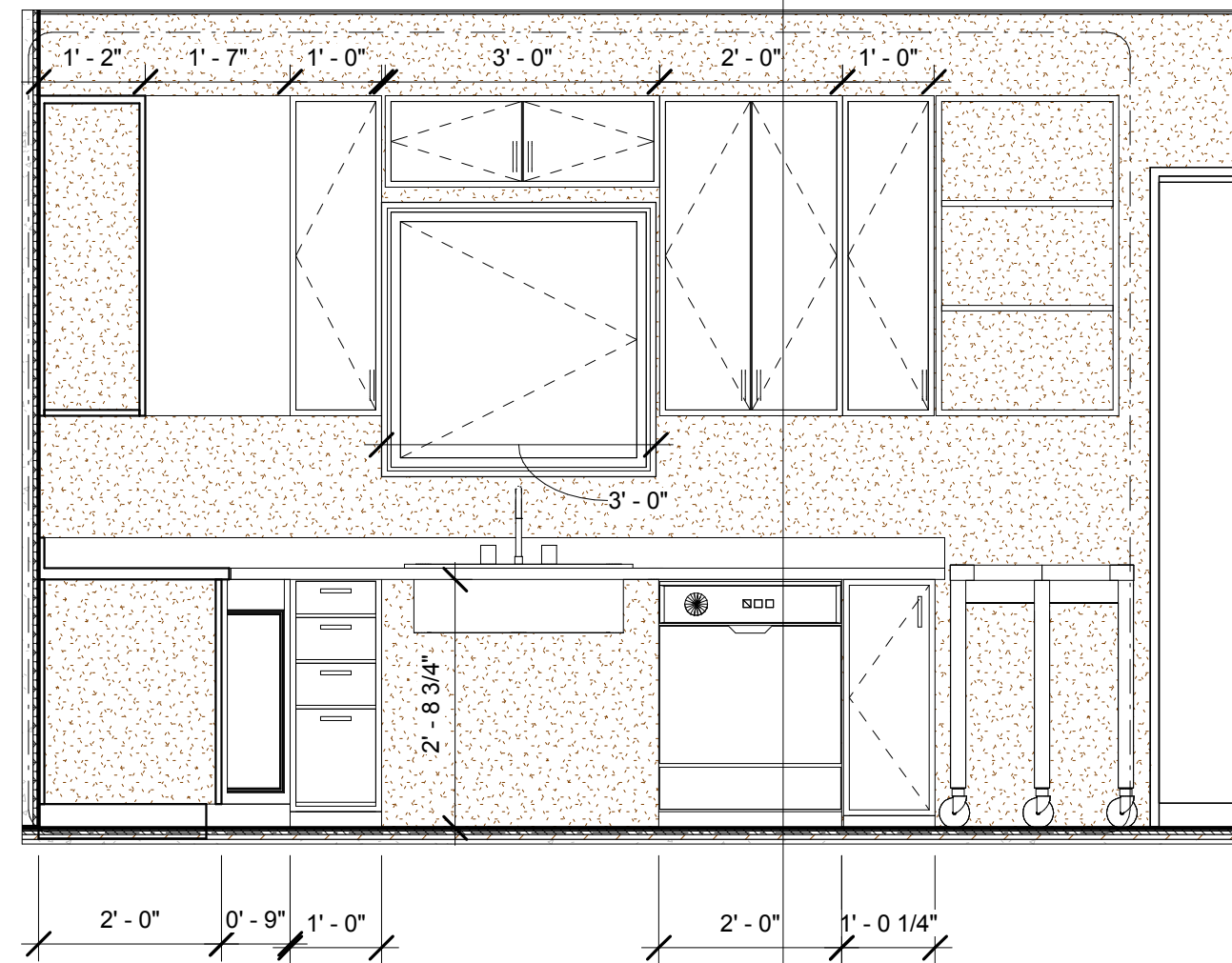


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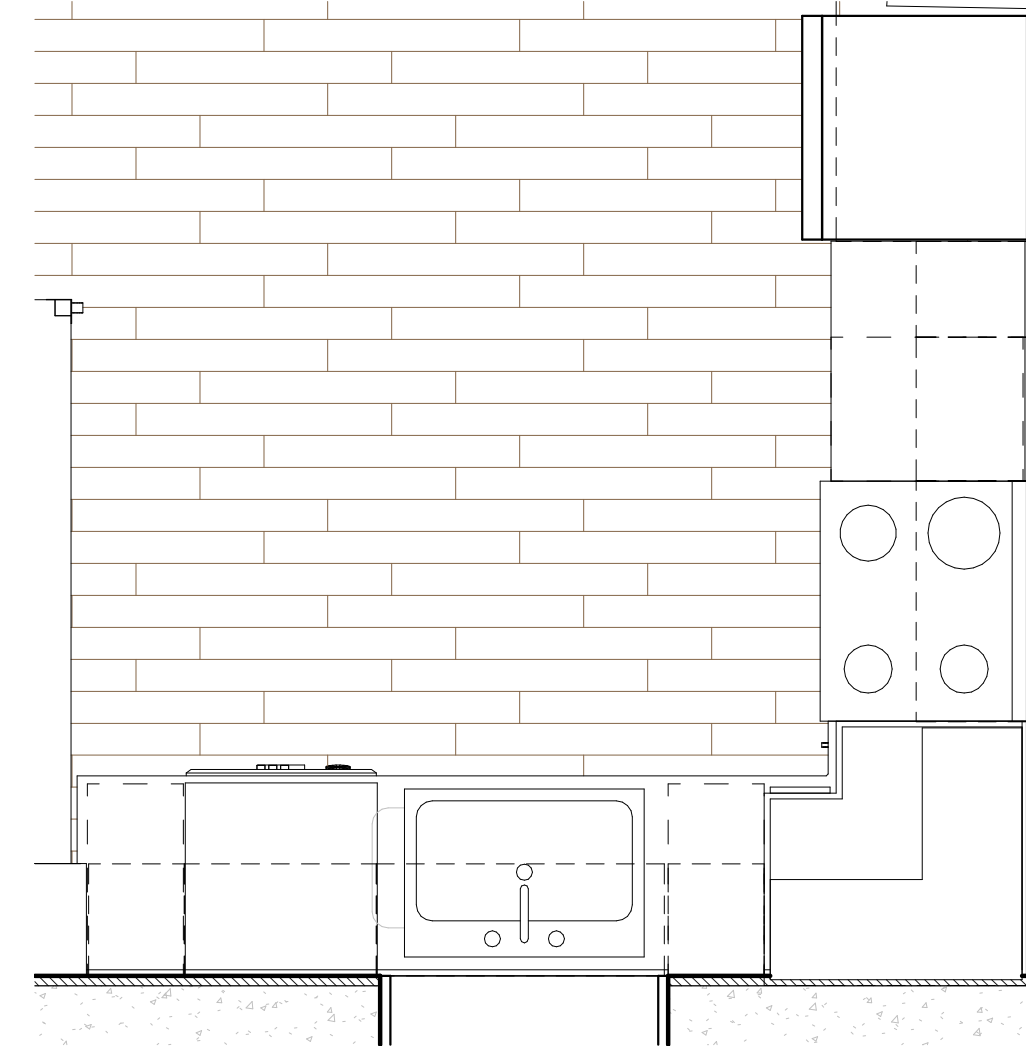
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SHEET TITLE  
**KITCHEN CASEWORK SECTIONS**

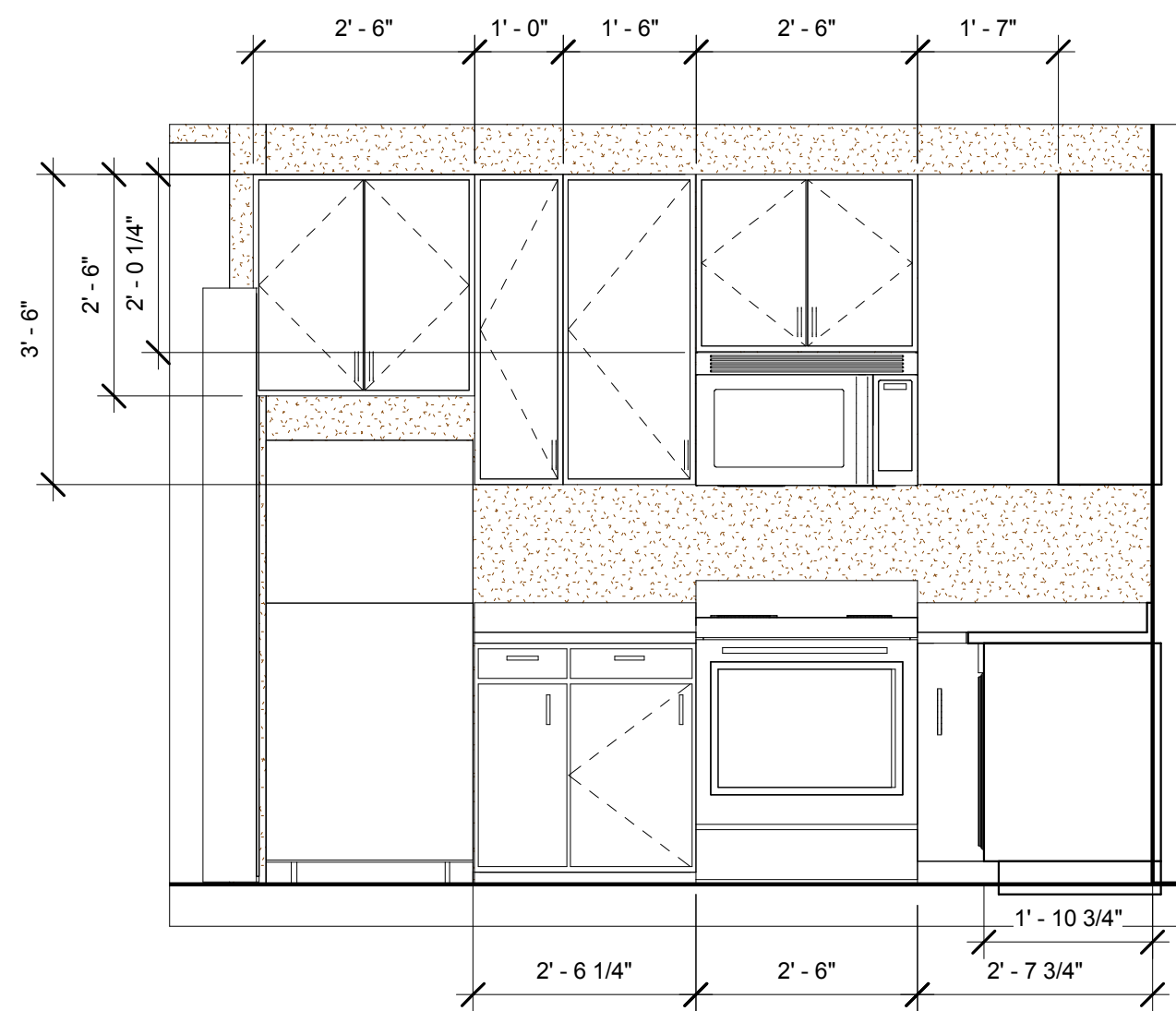
**I-412**



③ SOUTH WALL KITCHEN CASEWORK  
 1/2" = 1'-0"

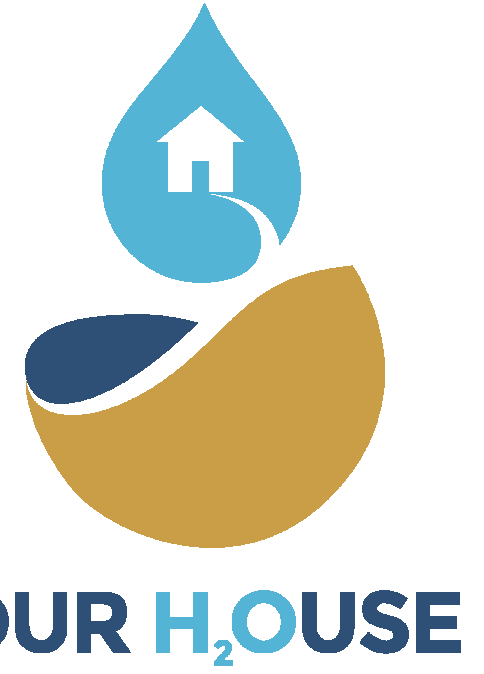


① KITCHEN CASEWORK PLAN  
 1/2" = 1'-0"



⑥ EAST WALL KITCHEN CASEWORK  
 1/2" = 1'-0"





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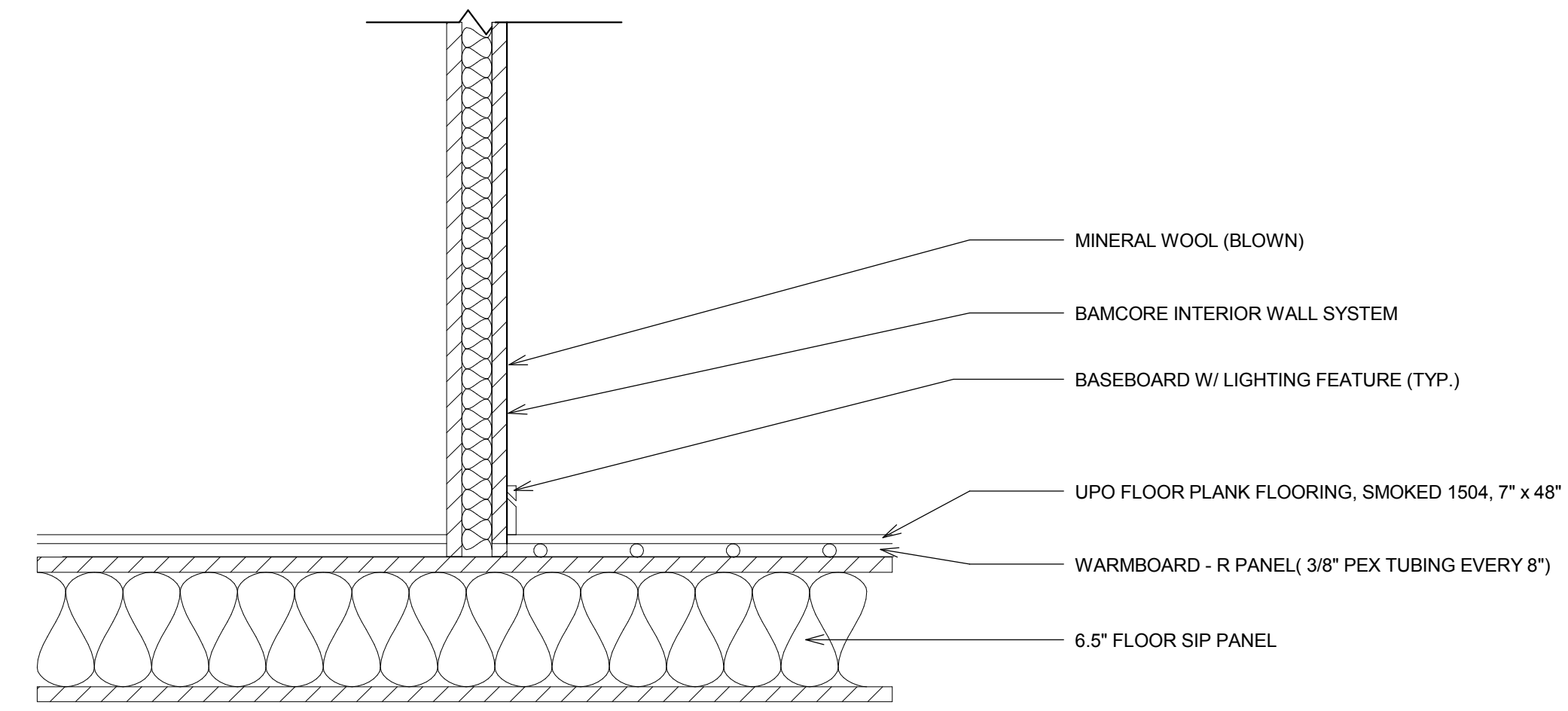


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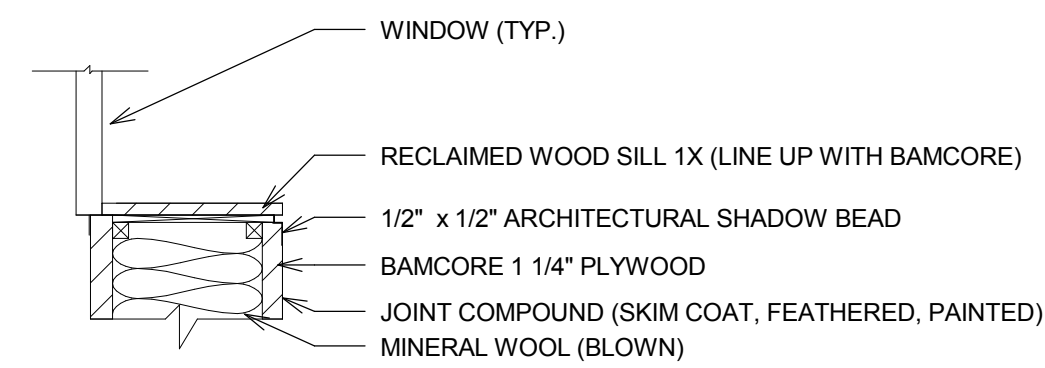
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**INTERIOR DETAILS**

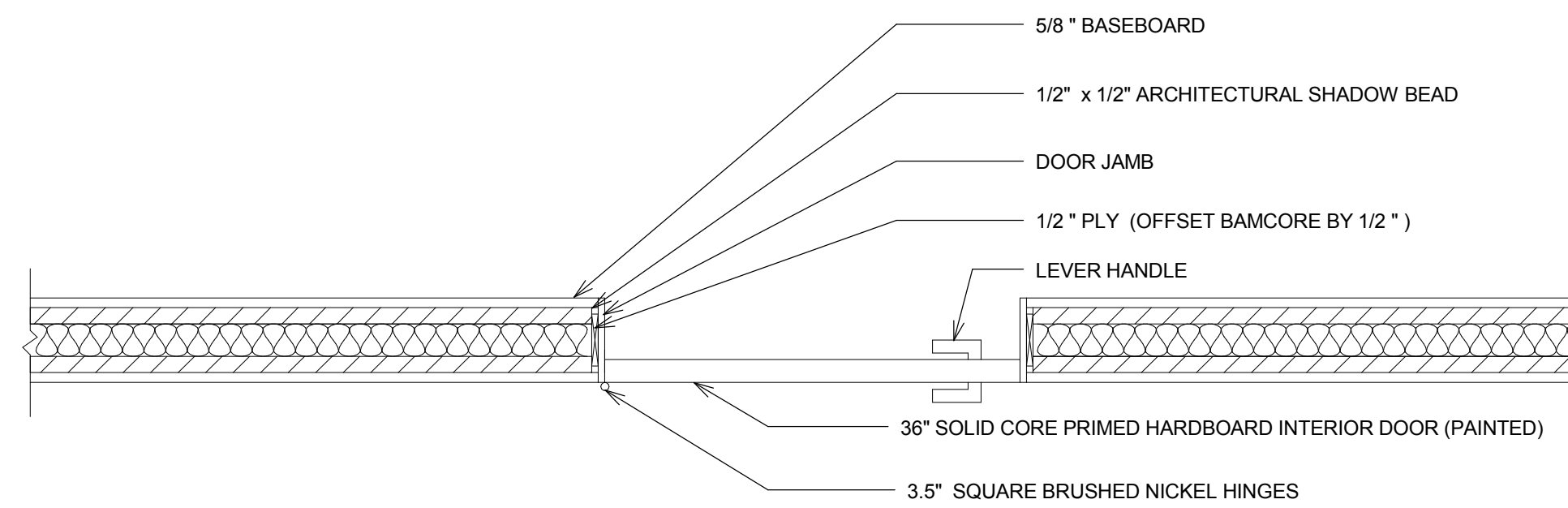
**I-501**



② INTERIOR WALL DETAIL  
 1" = 1'-0"



③ INTERIOR WINDOW SHADOW DETAIL  
 1" = 1'-0"



① PLAN VIEW INTERIOR DOOR SHADOW  
 DETAIL  
 1" = 1'-0"





INTERIOR WALLS SCHEDULE

Type	Function	Thermal Resistance (R)	Volume	Width	Count	Fire Rating	Structural Material	Length	Area
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	36.71 CF	0' - 5"	1		Plywood, Sheathing	16' - 1 1/4"	88 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	34.00 CF	0' - 5"	1		Plywood, Sheathing	11' - 4 1/4"	82 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	34.00 CF	0' - 5"	1		Plywood, Sheathing	11' - 4 1/4"	82 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	8.78 CF	0' - 5"	1		Plywood, Sheathing	2' - 7"	21 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	46.18 CF	0' - 5"	1		Plywood, Sheathing	14' - 1 1/2"	111 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	6.66 CF	0' - 5"	1		Plywood, Sheathing	3' - 3 3/4"	16 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	11.16 CF	0' - 5"	1		Plywood, Sheathing	3' - 7 1/4"	27 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	38.06 CF	0' - 5"	1		Plywood, Sheathing	10' - 9 1/4"	91 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	10.49 CF	0' - 5"	1		Plywood, Sheathing	3' - 4 1/4"	25 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	9.58 CF	0' - 5"	1		Plywood, Sheathing	2' - 2 1/2"	23 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	1.69 CF	0' - 5"	1		Plywood, Sheathing	0' - 10"	4 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	2.29 CF	0' - 5"	1		Plywood, Sheathing	4' - 5"	5 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	2.50 CF	0' - 5"	1		Plywood, Sheathing	4' - 7"	6 SF
South Planter box 1"	Interior	5.7691 (h-ft <sup>2</sup> -F)/BTU	1.40 CF	0' - 1"	1		Metal Stud Layer	4' - 3 1/2"	17 SF
South Planter box 1"	Interior	5.7691 (h-ft <sup>2</sup> -F)/BTU	9.25 CF	0' - 1"	1		Metal Stud Layer	28' - 10 3/4"	111 SF
Planter Wall	Interior		23.05 CF	0' - 2 1/2"	1		Wood Frame	28' - 10 3/4"	111 SF
interior bamcore thick	Interior	45.3093 (h-ft <sup>2</sup> -F)/BTU	23.06 CF	1' - 0"	1		Plywood, Sheathing	4' - 10 3/4"	23 SF
interior bamcore	Interior	16.4638 (h-ft <sup>2</sup> -F)/BTU	7.42 CF	0' - 5"	1		Plywood, Sheathing	4' - 5"	18 SF
Planter Wall	Interior		3.58 CF	0' - 2 1/2"	1		Wood Frame	4' - 3 1/2"	17 SF
Planter Wall	Interior		7.09 CF	0' - 2 1/2"	1		Wood Frame	11' - 1 1/4"	34 SF
Planter Wall	Interior		14.46 CF	0' - 2 1/2"	1		Wood Frame	23' - 1 3/4"	69 SF
Planter Wall	Interior		0.73 CF	0' - 2 1/2"	1		Wood Frame	1' - 2"	4 SF
Planter Wall	Interior		15.20 CF	0' - 2 1/2"	1		Wood Frame	24' - 4 3/4"	73 SF
Planter Wall	Interior		7.68 CF	0' - 2 1/2"	1		Wood Frame	12' - 3 1/4"	37 SF
Planter Wall	Interior		0.38 CF	0' - 2 1/2"	1		Wood Frame	1' - 4 1/4"	2 SF
Planter Wall	Interior		1.90 CF	0' - 2 1/2"	1		Wood Frame	18' - 10 1/2"	9 SF
Planter Wall	Interior		4.50 CF	0' - 2 1/2"	1		Wood Frame	18' - 9"	22 SF
Planter Wall	Interior		0.24 CF	0' - 2 1/2"	1		Wood Frame	1' - 1 1/4"	1 SF
Planter Wall	Interior		6.71 CF	0' - 2 1/2"	1		Wood Frame	28' - 6 1/2"	32 SF
Planter Wall	Interior		0.46 CF	0' - 2 1/2"	1		Wood Frame	1' - 1 1/4"	2 SF
Planter Wall	Interior		6.77 CF	0' - 2 1/2"	1		Wood Frame	28' - 8"	32 SF
Planter Wall	Interior		7.54 CF	0' - 2 1/2"	1		Wood Frame	11' - 11 1/2"	36 SF
Planter Wall	Interior		0.73 CF	0' - 2 1/2"	1		Wood Frame	1' - 2"	4 SF
Planter Wall	Interior		7.38 CF	0' - 2 1/2"	1		Wood Frame	11' - 9 3/4"	35 SF
Planter Wall	Interior		0.60 CF	0' - 2 1/2"	1		Wood Frame	1' - 2"	3 SF
Planter Wall	Interior		1.06 CF	0' - 2 1/2"	1		Wood Frame	1' - 3 1/2"	5 SF
Planter Wall	Interior		0.76 CF	0' - 2 1/2"	1		Wood Frame	1' - 2"	4 SF
Planter Wall	Interior		0.76 CF	0' - 2 1/2"	1		Wood Frame	1' - 2"	4 SF
Planter Wall	Interior		1.11 CF	0' - 2 1/2"	1		Wood Frame	1' - 1"	5 SF
Planter Wall	Interior		0.65 CF	0' - 2 1/2"	1		Wood Frame	1' - 3"	3 SF



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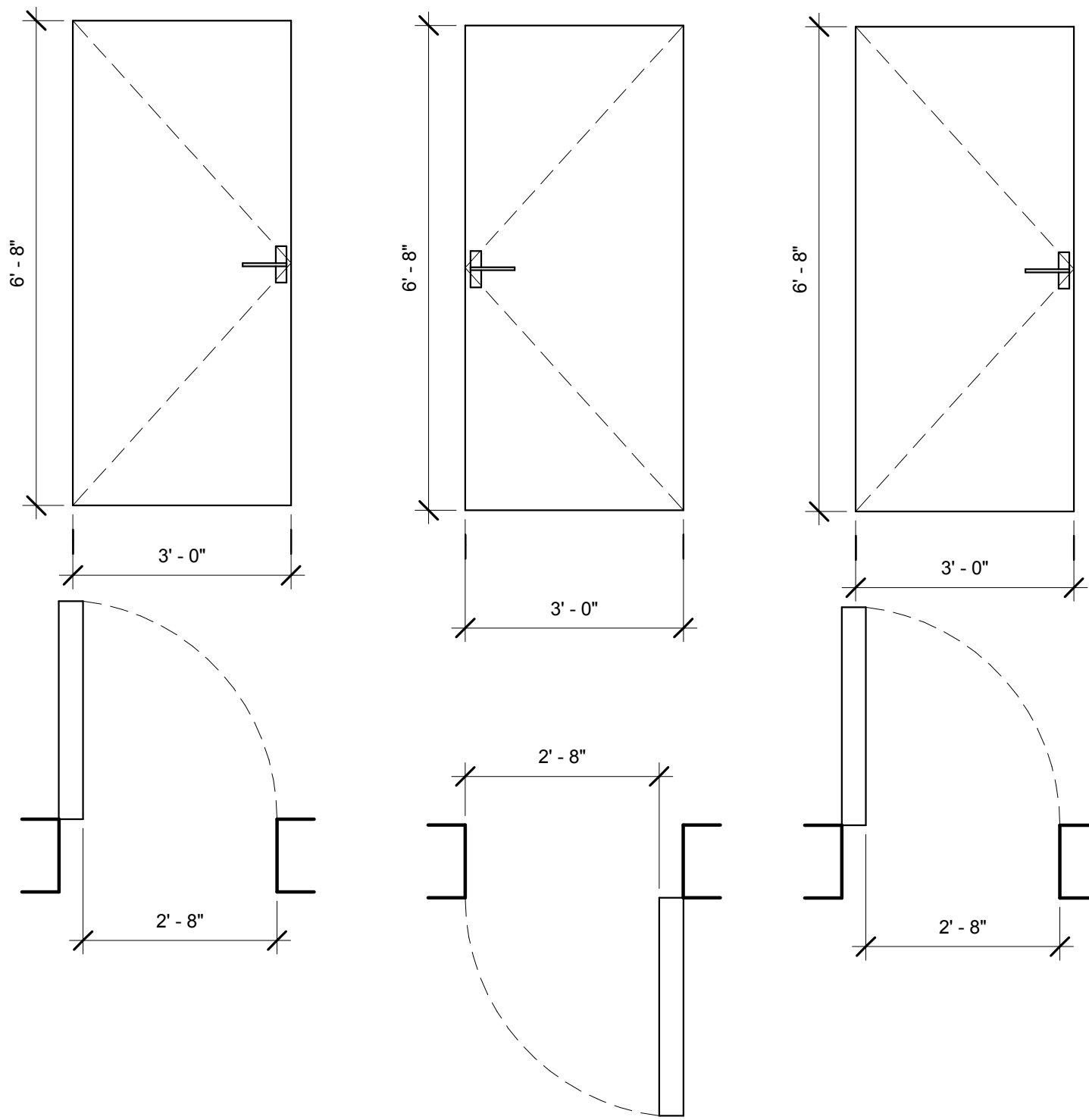


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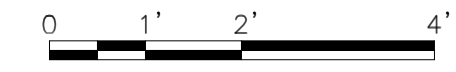
**I-602**



① MASTER BEDROOM DOOR  
1/2" = 1'-0"

② BATHROOM DOOR  
1/2" = 1'-0"

③ SECOND BEDROOM DOOR  
1/2" = 1'-0"



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**INT. DOOR TYPES**

**I-604**



FIRE PROTECTION SHEET INDEX	
Sheet Number	Sheet Name
F-001	FIRE PROTECTION NOTES AND SYMBOLS
F-101	FIRE DETECTION AND ALARM PLAN
F-501	FIRE CONNECTION AND SPRINKLER DETAILS
F-901	SPRINKLER ISOMETRIC
F-102	FIRE SUPPRESSION COVERAGE PLAN
F-601	FIRE PROTECTION SCHEDULES
F-002	FIRE SPECIFICATIONS

- (S) SMOKE DETECTOR
- 16' X 16' MAX COVERAGE AREA FIRE SPRINKLER HEAD
- 18' X 18' MAX COVERAGE AREA FIRE SPRINKLER HEAD
- (FST) FIRE SUPPRESSION TANK
- ▨ SPRINKLER COVERAGE
- 3/4" CPVC PIPE
- 1" CPVC PIPE

**GENERAL NOTES**

**SPRINKLER DESIGN PRESSURE AND FLOWRATE**

**NFPA 13D (2016) HAS THE FOLLOWING REQUIREMENTS**

8.1.4 OPERATING PRESSURE.  
THE MINIMUM OPERATING PRESSURE OF ANY SPRINKLER SHALL BE THE HIGHER OF THE MINIMUM OPERATING PRESSURE SPECIFIED BY THE LISTING OR 7 PSI (0.4 BAR).  
(1) TYCO 2234 SPRINKLER HEADS, WITH A K FACTOR OF 4.9 SHALL BE USED--THESE HEADS OPERATE OVER A 16' X 16' COVERAGE AREA AND A PRESSURE OF 7 PSI WITH ONE HEAD OPERATING AT A 18' X 18' COVERAGE AREA LOCATED IN THE KITCHEN WITH A PRESSURE OF 13 PSI.

**10.1.1\* SPRINKLERS THAT ARE LISTED WITH SPECIFIC DISCHARGE CRITERIA.**

THE SYSTEM SHALL PROVIDE AT LEAST THE FLOW REQUIRED TO PRODUCE A MINIMUM DISCHARGE DENSITY OF 0.05 GPM/SF (2.0 MM/MIN) OR THE SPRINKLER LISTING, WHICHEVER IS GREATER TO THE DESIGN SPRINKLERS.  
(1) THE LISTED SPRINKLER HEADS FLOWRATES ARE 13 GPM AND 17 GPM.

**10.2.1 NUMBER OF DESIGN SPRINKLERS.**

FOR EACH OF THE FOLLOWING SITUATIONS 10.2.1 (1) THROUGH (5), THE NUMBER OF SPRINKLERS IN THE DESIGN AREA SHALL BE ALL OF THE SPRINKLERS WITHIN A COMPARTMENT, UP TO A MAXIMUM OF TWO SPRINKLERS, THAT REQUIRE THE GREATEST HYDRAULIC DEMAND.

**SYSTEM FLOWRATE AND STORAGE VOLUME**

**NFPA 13D (2016) HAS THE FOLLOWING REQUIREMENT:**

6.1.3 WHERE STORED WATER IS USED AS THE SOLE SOURCE OF SUPPLY, THE MINIMUM QUANTITY OF SPRINKLERS SHALL BE PERMITTED TO EQUAL THE TWO SPRINKLER WATER DEMAND RATE TIMES 7 MINUTES WHERE DWELLING UNITS MEET THE FOLLOWING CRITERIA:

- (1) ONE STORY IN HEIGHT
  - (2) LESS THAN 2000 SF (186 M2) IN AREA
- NFPA 13D (2016) ALSO REQUIRES THAT THE FIRE SUPPRESSION SYSTEM BE ABLE TO SUPPLY ENOUGH FLOW FOR THE TWO MOST HYDRAULICALLY DEMANDING SPRINKLERS OR 30 GPM, WHICHEVER IS GREATER.

SINCE THE FIRE SUPPRESSION SYSTEM FOR THIS HOME UTILIZES 12 SPRINKLERS, AT A SYSTEM FLOW RATE OF 30 GPM, 210 GALLONS (1 SPRINKLER AT 13 GPM AND 1 SPRINKLER AT 17 GPM FOR 7 MINUTES) OF STORAGE WILL BE REQUIRED.

**REQUIRED EQUIPMENT**

- 1. WATER METER: NFPA 13D (2016) 6.2.1 (1) REQUIRES A TEST CONNECTION DOWNSTREAM OF THE PUMP THAT CREATES A FLOW OF WATER EQUAL TO THE SMALLEST SPRINKLER K-FACTOR IN THE FIRE SUPPRESSION SYSTEM. **THIS TEST CONNECTION SHALL CONSIST OF A 3-WAY BALL VALVE WITH AN ATTACHED WATER METER THAT INDICATES THE FLOW RATE. THE WATER METER AND 3-WAY BALL VALVE SHALL BE INCLUDED IN THE FIRE PUMP ASSEMBLY.**
- 2. FIRE PUMP ASSEMBLY: AN ECONO XPS19 A06 MODEL FROM GENERAL AIR PRODUCTS SHALL SERVE AS THE FIRE PUMP ASSEMBLY. THIS FIRE PUMP IS CAPABLE OF GENERATING 3 HORSEPOWER AND HAS A LOW LIMIT PRESURE OF 56.8 PSI.
  - A) THIS FIRE PUMP ASSEMBLY INCLUDES: A STAINLESS STEEL PUMP, HEAVY DUTY PRESSURE SWITCH, WATER DELIVERY PRESSURE GAUGE, LOCKING BALL VALVE, WATER HAMMER ARRESTOR, DRAIN VALVE, CHECK VALVE, LIQUID FILLED GAUGE, AND NON-FERROUS PIPING SYSTEM.
  - B) THE FIRE PUMP SHALL BE CAPABLE OF SUPPLYING ABOUT 131.2 FEET OF HEAD AT A FLOWRATE OF 30 GPM.
  - C) THE WATER DELIVERY PRESSURE GAUGE SHALL SERVE AS THE WATER METER.
  - D) THE HEAVY DUTY PRESSURE SWITCH WILL ACTIVATE THE PUMP WHEN THE PRESSURE IN THE PRESSURE GAUGE FALLS BELOW THE POINT.
- 3. PIPING:
  - A) 1" CPVC PIPING SHALL BE UTILIZED FOR THE SERVICE PIPE, NORTH TRUNK, AND SOUTH TRUNK.
  - B) 1" CPVC PIPING SHALL BE UTILIZED TO CROSS THE MARRIAGE LINE.
  - C) 3/4" CPVC PIPING SHALL BE UTILIZED FOR THE SPRINKLER BRANCHES FROM PIPING FIXTURE.
- 4. ACCORDING TO NFPA 13 STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS TABLE 9.2.2.1, 1" CPVC PIPING SHALL BE SUPPORTED WITH HANGERS EVERY 12 FEET.

**INSTALLATION GUIDE LINES PER NFPA 13D (2016)**

- 9.1.1\* WET PIPE SYSTEMS.
  - A WET PIPE SYSTEM SHALL BE PERMITTED TO BE USED WHERE ALL PIPING IS INSTALLED IN AREAS MAINTAINED ABOVE 40°F (4°C), INCLUDING AREAS PROPERLY INSULATED TO MAINTAIN 40°F (4°C).
  - A.8.3.1 IN AREAS SUBJECT TO FREEZING, CARE SHOULD BE TAKEN IN UNHEATED ATTIC SPACES TO COVER SPRINKLER PIPING COMPLETELY WITH INSULATION.
  - INSTALLATION SHOULD FOLLOW THE GUIDELINES OF THE INSULATION MANUFACTURER. FIGURE A.8.3.1(A) THROUGH FIGURE A.8.3.1(E) SHOW SEVERAL METHODS THAT CAN BE CONSIDERED. (SEE 2010 CRC R313.3.2.3 FOR CA REQUIREMENT(S))

**NFPA 13D (2016) CHAPTER 8 SPRINKLER POSITION AND LOCATION.**

8.2.5.7\* SHADOW AREAS.  
SHADOW AREAS SHALL BE PERMITTED IN THE PROTECTION AREA OF A SPRINKLER AS LONG AS THE CUMULATIVE DRY AREAS DO NOT EXCEED 15 SF (1.4 M2) PER SPRINKLER.

**LOCATION OF SPRINKLERS**

- 8.3.1 SPRINKLERS SHALL BE INSTALLED IN ALL AREAS EXCEPT WHERE OMISSION IS PERMITTED BY 8.3.2 THROUGH 8.3.8.
- 8.3.2 SPRINKLERS SHALL NOT BE REQUIRED IN BATHROOMS OF 55 SF (5.1 M2) AND LESS.
- 8.3.3 SPRINKLERS SHALL NOT BE REQUIRED IN CLOTHES CLOSETS, LINEN CLOSETS, AND PANTRIES THAT MEET ALL OF THE FOLLOWING CONDITIONS:
  - (1) THE AREA OF THE SPACE DOES NOT EXCEED 24 SF (2.1 M2).
  - (2) THE WALLS AND CEILINGS ARE SURFACED WITH NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIALS, AS DEFINED IN NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION.
- 8.3.4\* SPRINKLERS SHALL NOT BE REQUIRED IN GARAGES, OPEN ATTACHED PORCHES, CARPORTS, AND SIMILAR STRUCTURES.
- 8.3.5 SPRINKLERS SHALL NOT BE REQUIRED IN ATTICS WITH OR WITHOUT STORAGE, PENTHOUSE EQUIPMENT ROOMS, ELEVATOR MACHINE ROOMS, CONCEALED SPACES DEDICATED EXCLUSIVELY TO AND CONTAINING ONLY DWELLING UNIT VENTILATION EQUIPMENT, FLOOR/CEILING SPACES, ELEVATOR SHAFTS, CRAWL SPACES, AND OTHER CONCEALED SPACES THAT ARE NOT USED OR INTENDED FOR LIVING PURPOSES AND DO NOT CONTAIN FUEL-FIRED EQUIPMENT.
- 8.3.6 SPRINKLERS SHALL NOT BE REQUIRED IN COVERED, UNHEATED PROJECTIONS OF THE BUILDING AT ENTRANCES/EXITS AS LONG AS THE DWELLING UNIT HAS ANOTHER MEANS OF EGRESS.
- 8.3.7 SPRINKLERS SHALL NOT BE REQUIRED FOR CEILING POCKETS THAT MEET THE FOLLOWING CONDITIONS:
  - (1) THE TOTAL VOLUME OF ALL UNPROTECTED CEILING POCKETS IN A COMPARTMENT DOES NOT EXCEED 100 CF (2.8 M3)
  - (2) THE ENTIRE FLOOR UNDER THE UNPROTECTED CEILING POCKET IS PROTECTED BY THE SPRINKLERS AT THE LOWER CEILING ELEVATION.
  - (3) EACH UNPROTECTED CEILING POCKET IS SEPARATED FROM ANY ADJACENT UNPROTECTED CEILING POCKET BY A MINIMUM 10 FT HORIZONTAL DISTANCE.
  - (4) THE INTERIOR FINISH OF THE UNPROTECTED CEILING POCKET IS NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIAL.
  - (5) SKYLIGHTS NOT EXCEEDING 32 SF (3 M2) SHALL BE PERMITTED TO HAVE A PLASTIC COVER.

**FIRE SPRINKLERS CODE REQUIREMENTS**

R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SYSTEMS. AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN AND ON TWO-FAMILY DWELLINGS.

**P2904.1 GENERAL.**

THE DESIGN AND INSTALLATION OF RESIDENTIAL FIRE SPRINKLER SYSTEMS SHALL BE IN ACCORDANCE WITH NFPA 13D OR SECTION P2904. WHICH SHALL BE CONSIDERED EQUIVALENT TO NFPA 12D. PARTIAL RESIDENTIAL SPRINKLER SYSTEMS SHALL BE PERMITTED TO BE INSTALLED ONLY IN BUILDINGS NOT REQUIRED TO BE EQUIPPED WITH A RESIDENTIAL SPRINKLER SYSTEM. SECTION P2904 SHALL APPLY TO STAND-ALONE AND MULTIPURPOSE WET-PIPE SPRINKLER SYSTEMS THAT DO NOT INCLUDE THE USE OF ANTI-FREEZE. A MULTIPURPOSE FIRE SPRINKLER SYSTEM SHALL PROVIDE DOMESTIC WATER TO BOTH FIRE SPRINKLERS AND PLUMBING FIXTURES. A STAND-ALONE SPRINKLER SYSTEM SHALL BE SEPARATE AND INDEPENDENT FROM THE WATER DISTRIBUTION SYSTEM.

**P2904.1.1 REQUIRED SPRINKLER LOCATIONS.**

SPRINKLERS SHALL BE INSTALLED TO PROTECT ALL AREAS OF A DWELLING UNIT.

**EXCEPTIONS:**

- 1. ATTICS, CRAWL SPACES, AND NORMALLY UNOCCUPIED CONCEALED SPACES THAT DO NOT CONTAIN FUEL-FIRED APPLIANCES DO NOT REQUIRE SPRINKLERS. IN ATTICS, CRAWL SPACES, AND NORMALLY UNOCCUPIED CONCEALED SPACES THAT CONTAIN FUEL-FIRED EQUIPMENT, A SPRINKLER SHALL BE PROVIDED ABOVE THE EQUIPMENT; HOWEVER, SPRINKLERS SHALL NOT BE REQUIRED IN THE REMAINDER OF THE SPACE.
- 2. CLOTHES CLOSETS, LINEN CLOSETS AND PANTRIES NOT EXCEEDING 24 SF IN AREA, WITH THE SMALLEST DIMENSION NOT GREATER THAN 3 FEET AND HAVING WALL AND CEILING SURFACES OF GYPSUM BOARD.
- 3. BATHROOMS NOT GREATER THAN 55 SF IN AREA.
- 4. GARAGES; CARPORTS; EXTERIOR PORCHES; UNHEATED ENTRY AREAS, SUCH AS MUD ROOMS, THAT ARE ADJACENT TO AN EXTERIOR DOOR; AND SIMILAR AREAS.

**P2904.2 SPRINKLERS.**

SPRINKLERS SHALL BE LISTED RESIDENTIAL SPRINKLERS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

**P2904.2.1 TEMPERATURE RATING AND SEPARATIONS FROM HEAT SOURCES.**

EXCEPT AS PROVIDED FOR IN SECTION P2904.2.2, SPRINKLERS SHALL HAVE A TEMPERATURE RATING OF NOT LESS THAN 135°F AND NOT MORE THAN 170°F. SPRINKLERS SHALL BE SEPARATED FROM HEAT SOURCES AS REQUIRED BY THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

**P2904.2.4.1 COVERAGE AREA LIMIT.**

THE AREA OF COVERAGE OF A SINGLE SPRINKLER SHALL NOT EXCEED 400 SF AND SHALL BE BASED ON THE SPRINKLER LISTING AND THE SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

**P2904.2.4.2 OBSTRUCTIONS TO COVERAGE.**

SPRINKLER DISCHARGE SHALL NOT BE BLOCKED BY OBSTRUCTIONS UNLESS ADDITIONAL SPRINKLERS ARE INSTALLED TO PROTECT THE OBSTRUCTED AREA. ADDITIONAL SPRINKLERS SHALL NOT BE REQUIRED WHERE THE SPRINKLER SEPARATION FROM OBSTRUCTIONS COMPLIES WITH EITHER THE MINIMUM DISTANCE INDICATED IN FIGURE P2904.2.4.2 OR THE MINIMUM DISTANCES SPECIFIED IN THE SPRINKLER MANUFACTURER'S INSTRUCTIONS WHERE THE MANUFACTURER'S INSTRUCTIONS PERMIT A LESSER DISTANCE.

**P2904.2.4.2.1 ADDITIONAL REQUIREMENTS FOR PENDENT SPRINKLERS.**

PENDENT SPRINKLERS WITHIN 3 FEET OF THE CENTER OF A CEILING FAN, SURFACE-MOUNTED CEILING LUMINAIRE OR SIMILAR OBJECT SHALL BE CONSIDERED TO BE OBSTRUCTED, AND ADDITIONAL SPRINKLERS SHALL BE INSTALLED.

**P2904.2.4.2.2 ADDITIONAL REQUIREMENTS FOR SIDEWALL SPRINKLERS.**

SIDEWALL SPRINKLERS WITHIN 5 FEET OF THE CENTER OF A CEILING FAN, SURFACE-MOUNTED CEILING LUMINAIRE OR SIMILAR OBJECT SHALL BE CONSIDERED TO BE OBSTRUCTED, AND ADDITIONAL SPRINKLERS SHALL BE INSTALLED.

**P2904.3 SPRINKLER PIPING SYSTEM.**

SPRINKLER PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS FOR COLD WATER DISTRIBUTION PIPING. SPRINKLER PIPING SHALL COMPLY WITH ALL REQUIREMENTS FOR COLD WATER DISTRIBUTION PIPING. FOR MULTIPURPOSE PIPING SYSTEMS, THE SPRINKLER PIPING SHALL CONNECT TO AND BE A PART OF THE COLD WATER DISTRIBUTION PIPING SYSTEM.

**P2904.3.1 NONMETALLIC PIPE AND TUBING.**

NONMETALLIC PIPE AND TUBING, SUCH AS CPVC AND PEX, SHALL BE LISTED FOR USE IN RESIDENTIAL FIRE SPRINKLER SYSTEMS.

**P2904.3.1.1 NONMETALLIC PIPER PROTECTION.**

NONMETALLIC PIPE AND TUBING SYSTEMS SHALL BE PROTECTED FROM EXPOSURE TO THE LIVING SPACE BY A LAYER OF NOT LESS THAN 3/8-INCH-THICK GYPSUM WALLBOARD, 1/2- INCH-THICK PLYWOOD, OR OTHER MATERIAL HAVING A 15-MINUTE FIRE RATING.

**P2904.3.2 SHUTOFF VALVES PROHIBITED.**

WITH THE EXCEPTION OF SHUTOFF VALVES FOR THE ENTIRE WATER DISTRIBUTION SYSTEM, VALVES SHALL NOT BE INSTALLED IN ANY LOCATION WHERE THE VALVE WOULD ISOLATE PIPING SERVING ONE OR MORE SPRINKLERS.

**P2904.3.3 SINGLE DWELLING LIMIT.**

PIPING BEYOND THE SERVICE VALVE LOCATED AT THE BEGINNING OF THE WATER DISTRIBUTION SYSTEM SHALL NOT SERVE MORE THAN ONE DWELLING.

**P2904.3.4 DRAIN.**

A MEANS TO DRAIN THE SPRINKLER SYSTEM SHALL BE PROVIDED ON THE SYSTEM SIDE OF THE WATER DISTRIBUTION SHUTOFF VALVE.

**P2904.4 DETERMINING SYSTEM DESIGN FLOW.**

THE FLOW FOR SIZING THE SPRINKLER PIPING SYSTEM SHALL BE BASED ON THE FLOW RATING OF EACH SPRINKLER IN ACCORDANCE WITH SECTION P2904.4.1 AND THE CALCULATION IN ACCORDANCE WITH SECTION P2904.4.2.

**P2904.5 WATER SUPPLY.**

THE WATER SUPPLY SHALL PROVIDE NOT LESS THAN THE REQUIRED DESIGN FLOW RATE FOR SPRINKLERS IN ACCORDANCE WITH SECTION P2904.4.2 AT A PRESSURE NOT LESS THAN THAT USED TO COMPLY WITH SECTION P2904.6.

**P2904.6 PIPE SIZING.**

THE PIPING TO SPRINKLERS SHALL BE SIZED FOR THE FLOW REQUIRED BY SECTION P2904.4.2. THE FLOW REQUIRED TO SUPPLY THE PLUMBING FIXTURES SHALL NOT BE REQUIRED TO BE ADDED TO THE SPRINKLER DESIGN FLOW.

**P2904.7 INSTRUCTIONS AND SIGNS.**

AN OWNER'S MANUAL FOR THE FIRE SPRINKLER SYSTEM SHALL BE PROVIDED TO THE OWNER. A SIGN OR VALVE TAG SHALL BE INSTALLED AT THE MAIN SHUTOFF VALVE TO THE WATER DISTRIBUTION SYSTEM 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 OR AUTOMATICALLY SHUT OFF THE WATER TO THE FIRE SPRINKLER SYSTEM, SUCH AS WATER SOFTENERS, FILTRATION SYSTEMS AND AUTOMATIC SHUTOFF 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."

**P2904.8.1 PRE-CONCEALMENT INSPECTION.**

THE FOLLOWING ITEMS SHALL BE VERIFIED PRIOR TO THE CONCEALMENT OF ANY SPRINKLER SYSTEM PIPING:

- 1. SPRINKLERS ARE INSTALLED IN ALL AREAS AS REQUIRED BY SECTION P2904.1.1.
- 2. WHERE SPRINKLER WATER SPRAY PATTERNS ARE OBSTRUCTED BY CONSTRUCTION FEATURES, LUMINARIES, OR CEILING FANS, ADDITIONAL SPRINKLERS ARE INSTALLED AS REQUIRED BY SECTION P2904.2.4.2.
- 3. SPRINKLERS ARE THE CORRECT TEMPERATURE RATING AND ARE INSTALLED AT OR BEYOND THE REQUIRED SEPARATION DISTANCES FROM HEAT SOURCES AS REQUIRED BY SECTIONS P2904.2.1 AND P2904.2.2.
- 4. THE PIPE SIZE EQUALS OR EXCEEDS THE SIZE USED IN APPLYING TABLES P2904.6.2(4) THROUGH P2904.6.2(9) OR, IF THE PIPING SYSTEM WAS HYDRAULICALLY CALCULATED IN ACCORDANCE WITH SECTION P2904.6.1, THE SIZE USED IN THE HYDRAULIC CALCULATION.
- 5. THE PIPE LENGTH DOES NOT EXCEED THE LENGTH PERMITTED BY TABLES P2904.6.2(4) THROUGH P2904.6.2(9) OR, IF THE PIPING SYSTEM WAS HYDRAULICALLY CALCULATED IN ACCORDANCE WITH SECTION P2904.6.1, PIPE LENGTHS AND FITTINGS DO NOT EXCEED THOSE USED IN THE HYDRAULIC CALCULATION.
- 6. NONMETALLIC PIPING THAT CONVEYS WATER TO SPRINKLERS IS LISTED FOR USE WITH FIRE SPRINKLERS.
- 7. PIPING IS SUPPORTED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S AND SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 8. THE PIPING SYSTEM IS TESTED IN ACCORDANCE WITH SECTION P2503.7.

**P2904.8.2 FINAL INSPECTION.**

THE FOLLOWING ITEMS SHALL BE VERIFIED UPON COMPLETION OF THE SYSTEM:

- 1. SPRINKLERS ARE NOT PAINTED, DAMAGED OR OTHERWISE HINDERED FROM OPERATION.
- 2. WHERE A PUMP IS REQUIRED TO PROVIDE WATER TO THE SYSTEM, THE PUMP STARTS AUTOMATICALLY UPON SYSTEM WATER DEMAND.
- 3. PRESSURE-REDUCING VALVES, WATER SOFTENERS, WATER FILTERS OR OTHER IMPAIRMENTS TO WATER FLOW THAT WERE NOT PART OF THE ORIGINAL DESIGN HAVE NOT BEEN INSTALLED.
- 4. THE SIGN OR VALVE TAG REQUIRED BY SECTION P2904.7 IS INSTALLED AND THE OWNER'S MANUAL FOR THE SYSTEM IS PRESENT.

**CALIFORNIA 2016 RESIDENTIAL CODE (CRC) HAS THE FOLLOWING REQUIREMENTS**

**SMOKE ALARMS**

**R314.2 SMOKE DETECTION SYSTEMS.**

HOUSEHOLD FIRE ALARM SYSTEMS INSTALLED IN ACCORDANCE WITH NFPA 72 THAT INCLUDE SMOKE ALARMS, OR A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE INSTALLED AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS, SHALL BE PERMITTED. THE HOUSEHOLD FIRE ALARM SYSTEM SHALL PROVIDE THE SAME LEVEL OF SMOKE DETECTION AND ALARM AS REQUIRED BY THIS SECTION FOR SMOKE ALARMS. WHERE A HOUSEHOLD FIRE WARNING SYSTEM IS INSTALLED USING A COMBINATION OF SMOKE DETECTOR AND AUDIBLE NOTIFICATION DEVICE(S), IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY AND OWNED BY THE HOMEOWNER. THE SYSTEM SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION AND BE MAINTAINED IN ACCORDANCE WITH NFPA 72.

**R314.3 LOCATION.**

SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS:

- 1. IN EACH SLEEPING ROOM.
- 2. OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
- 3. SMOKE ALARMS SHALL BE INSTALLED NOT LESS THAN 3 FT (914 MM) HORIZONTALLY FROM THE DOOR OR OPENING OF A BATHROOM THAT CONTAINS A BATHTUB OR SHOWER UNLESS THIS WOULD PREVENT PLACEMENT OF A SMOKE ALARM REQUIRED BY SECTION R314.3.

**R314.4 INTERCONNECTION.**

WHERE MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT IN ACCORDANCE WITH SECTION R314.3, THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. PHYSICAL INTERCONNECTION OF SMOKE ALARMS SHALL NOT BE REQUIRED WHERE LISTED WIRELESS ALARMS ARE INSTALLED AND ALL ALARMS SOUND UPON ACTIVATION OF ONE ALARM.

**R314.6 POWER SOURCE.**

SMOKE ALARMS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING WHEN SUCH WIRING IS SERVED FROM A COMMERCIAL SOURCE, AND WHEN PRIMARY POWER IS INTERRUPTED, SHALL RECEIVE POWER FROM A BATTERY. WIRING SHALL BE PERMANENT AND WITHOUT A DISCONNECTING SWITCH OTHER THAN THOSE REQUIRED FOR OVERCURRENT PROTECTION.

**E3902.12 ARC-FAULT CIRCUIT-INTERRUPTER PROTECTION.**

ALL BRANCH CIRCUITS THAT SUPPLY 120-VOLT, SINGLE-PHASE, 15- AND 20-AMPERE OUTLETS INSTALLED IN FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS AND SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A COMBINATION TYPE ARC-FAULT CIRCUIT INTERRUPTER INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT.

NFPA 72: SMOKE DETECTORS INSTALLED IN A WALL SHALL BE NO CLOSER THAN 4" AND NO MORE THAN 12" FROM THE CEILING

NFPA 72: WHEN LOCATED ON THE CEILING, SMOKE DETECTORS MUST BE NO CLOSER THAN 4" FROM THE WALL.

**CO ALARM**

**R315.1 CARBON MONOXIDE ALARMS.**

AN APPROVED CARBON MONOXIDE ALARM SHALL BE INSTALLED OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.

**R315.3 LOCATION.**

CARBON MONOXIDE ALARMS IN DWELLING UNITS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS IN THE FOLLOWING LOCATIONS:

- 1. OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
- 2. ON EVERY OCCUPIABLE LEVEL OF A DWELLING UNIT, INCLUDING BASEMENTS.

**R315.4 ALARM REQUIREMENTS.**

SINGLE-STATION CARBON MONOXIDE ALARMS SHALL BE LISTED AS COMPLYING WITH UL 2034 AND SHALL BE INSTALLED IN ACCORDANCE WITH THIS CODE AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

**R315.6 CARBON MONOXIDE DETECTION SYSTEMS.**

CARBON MONOXIDE DETECTION SYSTEMS THAT INCLUDE CARBON MONOXIDE DETECTORS AND AUDIBLE NOTIFICATION APPLIANCES, INSTALLED AND MAINTAINED IN ACCORDANCE WITH THIS SECTION FOR CARBON MONOXIDE ALARMS AND NFPA 720, SHALL BE PERMITTED. THE CARBON MONOXIDE DETECTORS SHALL BE LISTED AS COMPLYING WITH UL 2075. WHERE A HOUSEHOLD CARBON MONOXIDE DETECTION SYSTEM IS INSTALLED, IT SHALL BECOME A PERMANENT FIXTURE OF THE OCCUPANCY, OWNED BY THE HOMEOWNER AND SHALL BE MONITORED BY AN APPROVED SUPERVISING STATION.



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**FIRE PROTECTION NOTES AND SYMBOLS**

**F-001**

FIRE PUMP SPECIFICATIONS		
NAME	VALUE	UNIT
ACTUAL CALCULATED FLOW	30	GPM
MAXIMUM OPERATING PRESSURE	70	PSI
RESULTING HEAD OF PUMP	162	FT

FIRE PUMP CALCULATIONS		
NAME	VALUE	UNIT
CALCULATED FLOW RATE	30	GPM
MAXIMUM OPERATING PRESSURE	58.8	PSI
RESULTING HEAD OF PUMP	135.9	FT

FIRE SPRINKLERS SPECIFICATIONS					
NAME	VALUE	UNIT	NAME	VALUE	UNIT
FLOW RATE	13	GPM	FLOW RATE	17	GPM
MAXIMUM COVERAGE AREA	16 X 16	FT^2	MAXIMUM COVERAGE AREA	18 X 18	FT^2
MAXIMUM SPACING	16	FT	MAXIMUM SPACING	16	FT
MINIMUM SPACING	8	FT	MINIMUM SPACING	8	FT
OPERATING PRESSURE	7	PSI	OPERATING PRESSURE	12	PSI



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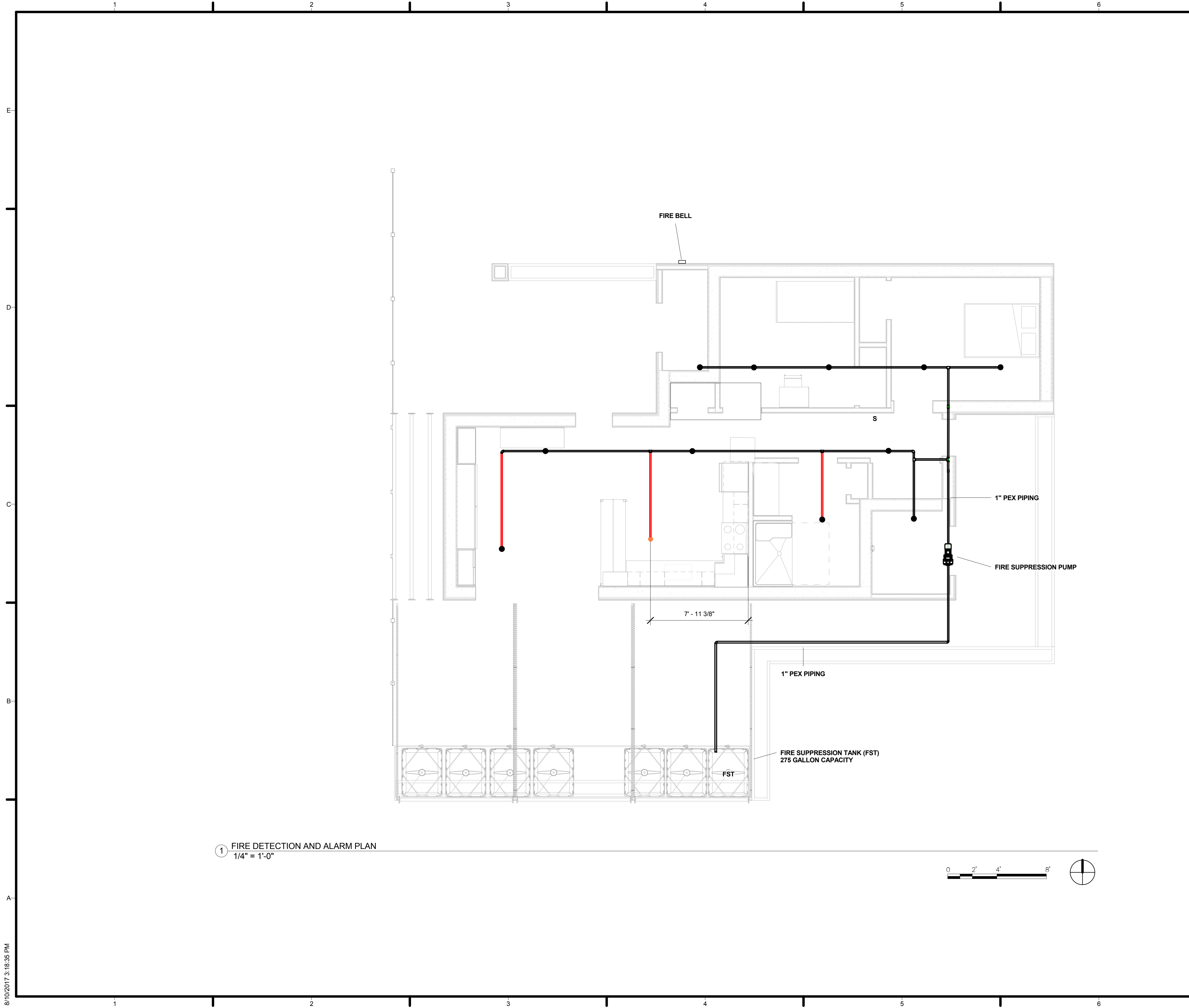
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**FIRE SPECIFICATIONS**

**F-002**





**GENERAL SHEET NOTES**

THE FIRE SUPPRESSION SUPPLY TANK IS PLACED BENEATH THE SOUTH DECK AND THE FIRE PUMP IS PLACED BENEATH THE EAST DECK

210 GALLONS OF WATER REQUIRED FOR FIRE SUPPRESSION (2 SPRINKLERS - ONE AT 13 GPM AND ONE AT 17 GPM FOR 7 MINUTES) IN ACCORDANCE WITH NFPA 13 (2016) CODE

PEX PIPE CONNECTS THE FIRE SUPPRESSION SUPPLY TANK TO THE FIRE PUMP IN WHICH CONNECTS TO THE CHECK VALVE THAT WORKS AS A CONVERTER FROM PEX TO CPVC PIPING

ALL SPRINKLER HEAD HAS A MAXIMUM COVERAGE AREA OF 16' X 16' EXCEPT ONE SPRINKLER IN THE KITCHEN THAT HAS A MAXIMUM COVERAGE AREA OF 18' X 18'

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- (S) SMOKE DETECTOR
- 16' X 16' MAX COVERAGE AREA FIRE SPRINKLER HEAD
- 18' X 18' MAX COVERAGE AREA FIRE SPRINKLER HEAD
- (FST) FIRE SUPPRESSION TANK
- ▨ SPRINKLER COVERAGE
- 3/4" CPVC PIPE
- 1" CPVC PIPE



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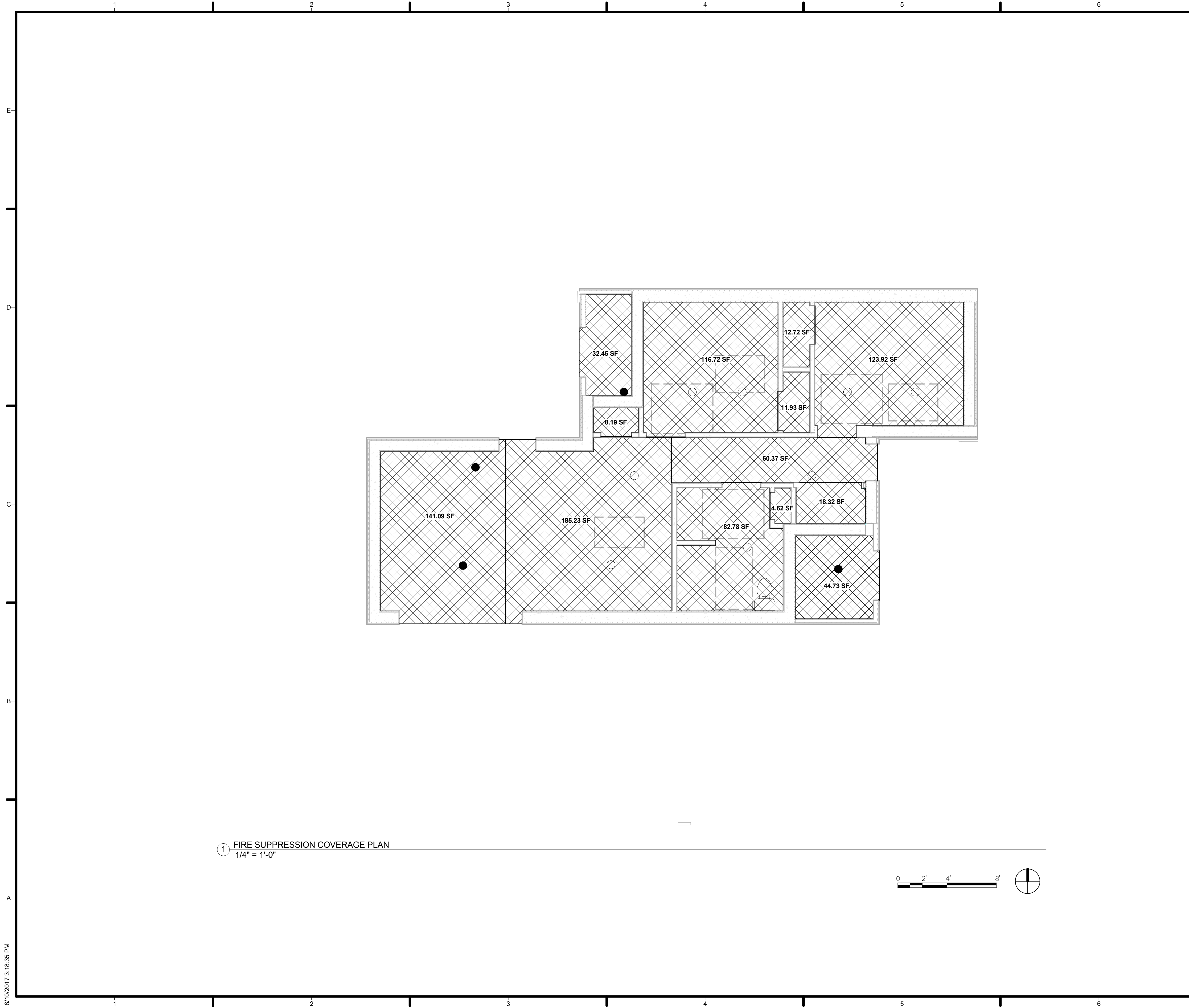
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**FIRE DETECTION AND ALARM PLAN**

**F-101**

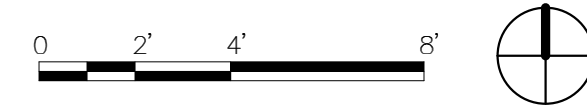
① FIRE DETECTION AND ALARM PLAN  
 1/4" = 1'-0"



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① FIRE SUPPRESSION COVERAGE PLAN  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

1. CROSSHATCHED AREA INDICATES SPRINKLER COVERAGE
2. CIRCLES INDICATE SPRINKLER PLACEMENTS
3. SQUARE FOOTAGE IS INDICATED IN EACH SECTION OF THE HOUSE
4. ACCORDANCE TO NFPA 13D 8.3.3 THE AREA OF THE CLOSETS DO NOT EXCEED 24SF THEREFORE, DO NOT REQUIRE SPRINKLERS IN NORTH CLOSET, CLOTHES CLOSET IN EACH BEDROOM, LAUNDRY ROOM, AND BATHROOM CLOSET

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- FIRE SPRINKLER HEAD
- ▨ SPRINKLER COVERAGE



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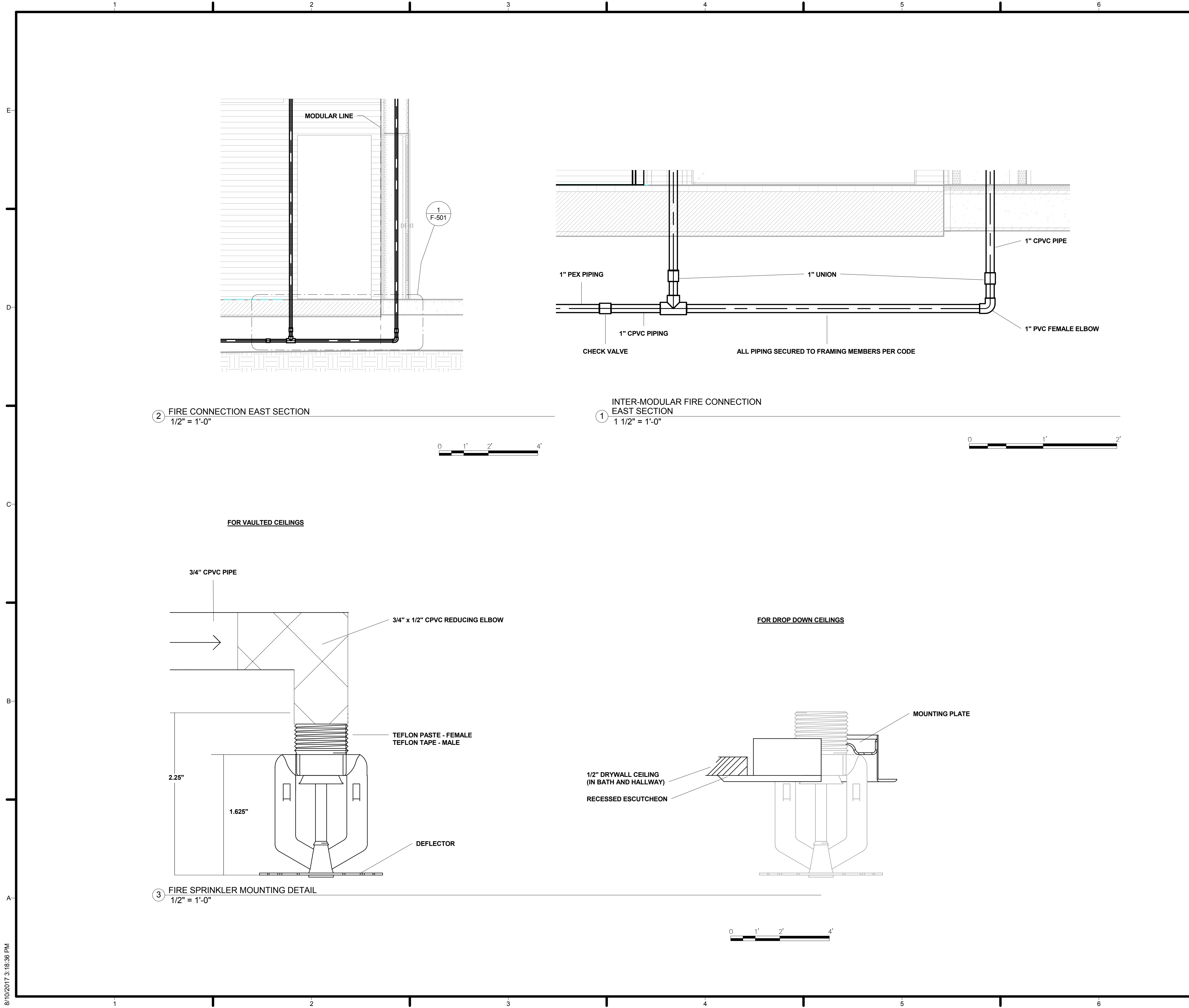
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SHEET TITLE  
**FIRE SUPPRESSION COVERAGE PLAN**

**F-102**





**GENERAL SHEET NOTES**

FROM THE VERTICAL PIPE DOWN, THE TWO MODULES ARE CONNECTED BY CPVC PIPE WHICH IS HOOKED UP TO THE FIRE PUMP AND THE FIRE SUPPRESSION SUPPLY TANK.

FIRE SPRINKLER MOUNTING DETAIL (DETAIL 3): LEFT DETAIL DEPICTS FIRE SPRINKLER CONNECTIONS IN VAULTED AREAS OF THE HOUSE, RIGHT DETAIL DEPICTS FIRE SPRINKLER CONNECTIONS IN DROP DOWN CEILING AREAS AS LABELED.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**FIRE CONNECTION AND SPRINKLER DETAILS**

**F-501**



FIRE EQUIPMENT SCHEDULE									
SYSTEM NAME	MANUFACTURER	MODEL NUMBER	QUANTITY	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LBS)	DIAMETER (IN)	HORSEPOWER
FIRE PUMP	GENERAL AIR PRODUCTS	XPS19AD6	1	22.5	11	17.75	73		3
FIRE EXTINGUISHER	AMEREX	B500	1	15.25	7.25	4.25	9.25		
FIRE SPRINKLER	TYCO	TY2234	12	2.2	2.9	-	-	0.5	
SMOKE DETECTOR	UTC CLIMATE, CONTROLS & SECURITY	SIGA2-PHCOS	3	4.4	4.4	2.43	0.44		
CPVC PIPE, 1" X 15 FT	B&K	UW-SPO813 586-1200HC	15	120				1	
CPVC PIPE, 0.75" X 15. FT	B&K	UW-SPO813 586- 2520HCC	4	252				1	
PEX PIPE, 1" X 15 FT	SHARKBITE		3						

FIRE SUPPRESSION FITTINGS SCHEDULE		
FITTING	DIAMETER (IN)	COUNT
TEE-BRANCH, CPVC	1" x 1" x 0.75"	2
TEE-BRANCH, CPVC	1" x 1" x 1"	3
TEE-BRANCH, CPVC	1" x 1" x 0.5"	6
ELBOW, CPVC	1" x 0.5"	3
ELBOW, CPVC	1" x 0.75"	1
ELBOW, CPVC	1" x 1"	4
ELBOW, CPVC	0.75" x 0.5"	3
UNION, CPVC	1" x 1"	2
SPRINKLER ROUGH-INS	NA	3
CHECK VALVE	1" x 1"	1



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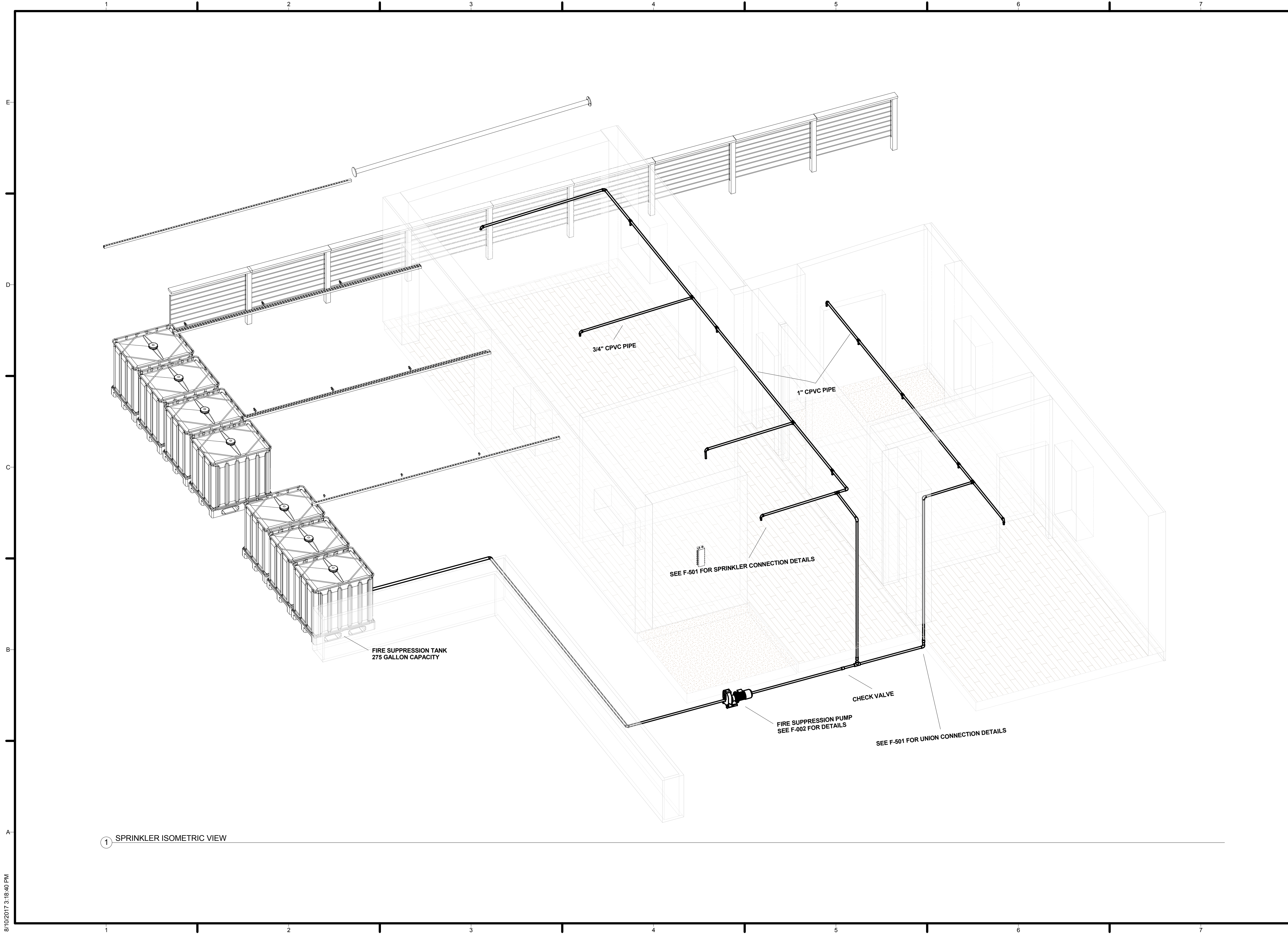
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SHEET TITLE  
**FIRE PROTECTION SCHEDULES**

**F-601**





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**SPRINKLER ISOMETRIC**

**F-901**

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PLUMBING SHEET INDEX		
Sheet Number	Sheet Name	
P-001	PLUMBING NOTES AND SYMBOLS	
P-002	PLUMBING SPECIFICATIONS	
P-101	DOMESTIC SUPPLY PLAN	
P-102	DOMESTIC RETURN PLAN	
P-301	SOUTH SECTION SUPPLY AND RETURN	
P-302	EAST SECTION SUPPLY AND RETURN	
P-501	TYPICAL PLUMBING DETAILS	
P-601	PLUMBING SCHEDULES	
P-602	PLUMBING SYSTEM DIAGRAMS	
P-901	SUPPLY PIPING ISOMETRIC	
P-902	RETURN PIPING ISOMETRIC	

PLUMBING ABBREVIATIONS		
ABBREVIATION	TERM	
BWT	Blackwater Tank	
CW	Clothes Washer	
DW	Dishwasher	
GW	Greywater Filter	
GWST	Greywater Storage Tank	
GW	Greywater Tank	
HPWH	Heat Pump Water Heater	
KS	Kitchen Sink	
PST	Primary Supply Tank	
RSP	Rooftop Sprinklers	
SH	Bathroom Shower	
T	Toilet	
VS	Vanity Sink in Bathroom	
WH	Water Heater	

**GENERAL NOTES**

**INSTALLATION OF EQUIPMENT**

1. ALL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES & AUTHORITIES AND THE RECOMMENDATIONS OF THE MANUFACTURER. THIS INCLUDES THE PERFORMANCE OF SUCH TESTS AS THE MANUFACTURER RECOMMENDS.

2. ATTACHMENTS: SUPPORT ALL WORK ADEQUATELY AND PER CODE. ALL EQUIPMENT SHALL BE SECURELY ATTACHED TO THE BUILDING STRUCTURE IN AN APPROVED MANNER.

3. INTERFERENCE: THE CONTRACTOR SHALL COORDINATE WORK SO THAT INTERFERENCES BETWEEN CONDUITS, PIPING, EQUIPMENT, ARCHITECTURAL AND STRUCTURAL WORK WILL BE AVOIDED. ALL NECESSARY OFFSETS IN DUCTS AND FITTINGS REQUIRED TO PROPERLY INSTALL THE WORK SHALL BE FURNISHED SO AS TO TAKE UP A MINIMUM SPACE. AND ALL SUCH OFFSETS AND FITTINGS REQUIRED TO ACCOMPLISH THIS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR WITHOUT ADDITIONAL EXPENSE TO THE OWNER.

4. SEAL ALL OPENINGS THROUGH WALLS AND CEILINGS, INSTALL ESCUTCHEON PLATES AT BUILDING INTERIOR, PROPERLY FLASH ALL EXTERIOR OPENINGS.

5. COORDINATE EQUIPMENT LOCATIONS, CONTROL AND POWER WIRING REQUIREMENTS AND CONNECTION POINTS WITH THE ELECTRICAL AND CONTROLS CONTRACTORS, COORDINATE WITH THE ELECTRICAL CONTRACTOR TO PROVIDE ANY NEEDED MOTOR STARTERS AND DISCONNECTS.

6. CLEAN ALL INTERIOR AND EXTERIOR SURFACES OF EQUIPMENT AND FITTINGS. VACUUM ALL MATERIAL AND METAL SHAVINGS FROM WORK AREAS. APPLY TOUCH-UP PAINT WHERE NEEDED.

7. INSULATE & SEAL HOLES IN WALL BEHIND ANY WALL-MOUNTED EQUIPMENT WITH LOW VOLTAGE WIRING, INCLUDING THERMOSTAT SUB-BASE.

8. PROVIDE AS-BUILT DRAWINGS CLEARLY NOTING ALL DEVIATIONS FROM ORIGINAL DESIGN.

**VALVES**

- EVERY WATER APPLIANCE SHALL HAVE A CONTROL VALVE
- THE NEXUS WATER HEATER SHALL HAVE A TEMPERATURE AND PRESSURE VALVE
- A STEAM CHECK VALVE SHALL CONTROL FLOW FROM PRESSURE TANK TO PUMP
- THE COLD AND HOT SUPPLY OF THE WASHING MACHINE SHALL HAVE A GLOBE VALVE
- THE GREYWATER TANK SHALL HAVE A CHECK VALVE
- THE COLD WATER SUPPLY FOR THE KITCHEN SINK AS WELL AS THE HOT AND COLD SUPPLY OF THE BATHROOM SINK SHALL HAVE 2-WAY BALL VALVES
- THE SHOWER, HOT WATER SUPPLY FOR THE KITCHEN SINK, AND THE DISHWASHER SHALL HAVE 3-WAY BALL VALVES
- THE TOILET SHALL HAVE A QUARTER TURN ANGLE VALVE
- THE PRIMARY TANK MAIN SHUT OFF VALVE SHALL BE A QUARTER TURN BALL VALVE

**PIPING**

- THE PIPING FROM THE PRIMARY SUPPLY TANK TO THE MANIFOLD SHALL BE 2 INCH PEX PIPING
- THE SUPPLY PIPING FROM THE MANIFOLD TO EACH APPLIANCE SHALL BE 1/2 INCH PEX PIPING
- THE RETURN PIPING SHALL BE 2 INCH ABS PIPING
- THE PIPING FROM THE NEXUS COLLECTION TANK TO THE WATER HEATER SHALL BE 3/8 INCH COPPER PIPING

**FIXTURES**

- ALL FIXTURES SHALL BE OPERATIONAL
- THE CONTROL VALVES FOR THE CLEANSING ROOM SHOWER, TOILET, AND BATHROOM SINK SHALL BE CLOSED.

**INSULATION**

- OUTDOOR PIPES SHALL BE INSULATED WITH UVR ALUMINUM FOIL TAPE
- INDOOR PIPES SHALL BE INSULATED WITH VINYL FILM TAPE

**VENTILATION**

- PIPING SHALL BE 1 1/2 INCH ABS PIPING

**R322.1.7 PROTECTION OF WATER SUPPLY AND SANITARY SEWAGE SYSTEMS.**

NEW AND REPLACEMENT WATER SUPPLY SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOOD WATERS INTO THE SYSTEMS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE. NEW AND REPLACEMENT SANITARY SEWAGE SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELIMINATE INFILTRATION OF FLOODWATERS INTO SYSTEMS AND DISCHARGES FROM SYSTEMS INTO FLOODWATERS IN ACCORDANCE WITH THE PLUMBING PROVISIONS OF THIS CODE AND CHAPTER 3 OF THE INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE.

**P2503.5.1 ROUGH PLUMBING.**

DWV SYSTEMS SHALL BE TESTED ON COMPLETION OF THE ROUGH PIPING INSTALLATION BY WATER OR FOR PIPING SYSTEMS OTHER THAN PLASTIC, BY AIR WITH NO EVIDENCE OF LEAKAGE. EITHER TEST SHALL BE APPLIED TO THE DRAINAGE SYSTEM IN ITS ENTIRETY OR IN SECTIONS AFTER ROUGH PIPING HAS BEEN INSTALLED, AS FOLLOWS:  
 1. WATER TEST: EACH SECTION SHALL BE FILLED WITH WATER TO A POINT NOT LESS THAN 10 FEET (3048 MM) ABOVE THE HIGHEST FITTING CONNECTION IN THAT SECTION, OR TO THE HIGHEST POINT IN THE COMPLETED SYSTEM. WATER SHALL BE HELD IN THE SECTION UNDER TEST FOR A PERIOD OF 15 MINUTES. THE SYSTEM SHALL PROVE LEAK FREE BY VISUAL INSPECTION.  
 2. AIR TEST: THE PORTION UNDER TEST SHALL BE MAINTAINED AT A GAUGE PRESSURE OF 5 POUNDS PER SQUARE INCH (PSI) (34 KPA) OR 10 INCHES OF MERCURY COLUMN (34 KPA). THIS PRESSURE SHALL BE HELD WITHOUT INTRODUCTION OF ADDITIONAL AIR FOR A PERIOD OF 15 MINUTES.

**P2503.5.2 FINISHED PLUMBING.**

AFTER THE PLUMBING FIXTURES HAVE BEEN SET AND THEIR TRAPS FILLED WITH WATER, THEIR CONNECTIONS SHALL BE TESTED AND PROVED GAS TIGHT AND/OR WATER TIGHT AS FOLLOWS:  
 1. WATER TIGHTNESS. EACH FIXTURE SHALL BE FILLED AND THEN DRAINED. TRAPS AND FIXTURE CONNECTIONS SHALL BE PROVEN WATER TIGHT BY VISUAL INSPECTION.  
 2. GAS TIGHTNESS. WHEN REQUIRED BY THE LOCAL ADMINISTRATIVE AUTHORITY, A FINAL TEST FOR GAS TIGHTNESS OF THE DWV SYSTEM SHALL BE MADE BY THE SMOKE OR PEPPERMINT TEST AS FOLLOWS:  
 2.1. SMOKE TEST: INTRODUCE SMOKE INTO THE SYSTEM, WHEN THE SMOKE APPEARS AT VENT TERMINALS, SUCH TERMINALS SHALL BE SEALED AND A PRESSURE EQUIVALENT TO A 1-INCH WATER COLUMN (249 PA) SHALL BE APPLIED AND MAINTAINED FOR A TEST PERIOD OF NOT LESS THAN 15 MINUTES.  
 2.2. PEPPERMINT TEST: INTRODUCE 2 OUNCES (59 ML) OF OIL OF PEPPERMINT INTO THE SYSTEM, ADD 10 QUARTS (9464 ML) OF HOT WATER AND SEAL ALL VENT TERMINALS. THE ODOR OF PEPPERMINT SHALL NOT BE DETECTED AT ANY TRAP OR OTHER POINT IN THE SYSTEM.

P2503.6 SHOWER LINER TEST.  
 WHERE SHOWER FLOORS AND RECEPTORS ARE MADE WATER TIGHT BY THE APPLICATION OF MATERIALS REQUIRED BY SECTION P2709.2, THE COMPLETED LINER INSTALLATION SHALL BE TESTED. THE PIPE FROM THE SHOWER DRAIN SHALL BE PLUGGED WATER TIGHT FOR THE TEST. THE FLOOR AND RECEPTOR AREA SHALL BE FILLED WITH POTABLE WATER TO A DEPTH OF NOT LESS THAN 2 INCHES (51 MM) MEASURED AT THE THRESHOLD. WHERE A THRESHOLD OF AT LEAST 2 INCHES HIGH DOES NOT EXIST, A TEMPORARY THRESHOLD SHALL BE CONSTRUCTED TO RETAIN THE TEST WATER IN THE LINED FLOOR OR RECEPTOR AREA TO A LEVEL NOT LESS THAN 2 INCHES DEEP MEASURED AT THE THRESHOLD. THE WATER SHALL BE RETAINED FOR A TEST PERIOD OF NOT LESS THAN 15 MINUTES AND THERE SHALL BE NO EVIDENCE OF LEAKAGE.

P2503.8 INSPECTION AND TESTING OF BACKFLOW PREVENTION DEVICES.  
 INSPECTION AND TESTING OF BACKFLOW PREVENTION DEVICES SHALL COMPLY WITH SECTIONS P2503.8.1 AND P2503.8.2.

P2902.3 BACKFLOW PROTECTION.  
 A MEANS OF PROTECTION AGAINST BACKFLOW SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS P2902.3.1 THROUGH P2902.3.6. BACKFLOW PREVENTION APPLICATIONS SHALL CONFORM TO TABLE P2902.3, EXCEPT AS SPECIFICALLY STATED IN SECTIONS P2902.4 THROUGH P2902.5.5.

P2902.4 PROTECTION OF POTABLE WATER OUTLETS.  
 POTABLE WATER OPENINGS AND OUTLETS SHALL BE PROTECTED BY AN AIR GAP, REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER WITH ATMOSPHERIC VENT, ATMOSPHERIC-TYPE VACUUM BREAKER, PRESSURE-TYPE VACUUM BREAKER OR HOSE CONNECTION BACKFLOW PREVENTER.  
 P2902.5 PROTECTION OF POTABLE WATER CONNECTIONS.  
 CONNECTIONS TO THE POTABLE WATER SHALL CONFORM TO SECTIONS P2902.5.1 THROUGH P2902.5.5.  
 P2902.5.1 CONNECTIONS TO BOILERS.  
 THE POTABLE SUPPLY TO THE BOILER SHALL BE EQUIPPED WITH A BACKFLOW PREVENTER WITH AN INTERMEDIATE ATMOSPHERIC VENT COMPLYING WITH ASSE 1013 OR CSA B64.3. WHERE CONDITIONING CHEMICALS ARE INTRODUCED INTO THE SYSTEM, THE POTABLE WATER CONNECTION SHALL BE PROTECTED BY AN AIR GAP OR A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER COMPLYING WITH ASSE 1013, CSA B64.4 OR AWWA C511.  
 P2902.5.2 HEAT EXCHANGERS.  
 HEAT EXCHANGERS USING AN ESSENTIALLY TOXIC TRANSFER FLUID SHALL BE SEPARATED FROM THE POTABLE WATER BY DOUBLE WALL CONSTRUCTION. AN AIR GAP OPEN TO THE ATMOSPHERE SHALL BE PROVIDED BETWEEN THE TWO WALLS. HEAT EXCHANGERS UTILIZING AN ESSENTIALLY NONTOXIC TRANSFER FLUID SHALL BE PERMITTED TO BE OF SINGLE-WALL CONSTRUCTION.  
 P2902.5.3 LAWN IRRIGATION SYSTEMS.  
 THE POTABLE WATER SUPPLY TO LAWN IRRIGATION SYSTEMS SHALL BE PROTECTED AGAINST BACKFLOW BY AN ATMOSPHERIC VACUUM BREAKER, A PRESSURE VACUUM BREAKER ASSEMBLY OR A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY. VALVES SHALL NOT BE INSTALLED DOWNSTREAM FROM AN ATMOSPHERIC VACUUM BREAKER, WHERE CHEMICALS ARE INTRODUCED INTO THE SYSTEM, THE POTABLE WATER SUPPLY SHALL BE PROTECTED AGAINST BACKFLOW BY A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.  
 P2703.1 FIXTURE TAIL PIECES MINIMUM SIZE.  
 FIXTURE TAIL PIECES SHALL BE NOT LESS THAN 1-1/2 INCHES IN DIAMETER FOR SINKS, DISHWASHERS, LAUNDRY TUBS, BATHTUBS AND SIMILAR FIXTURES, AND NOT LESS THAN 1-1/4 INCHES IN DIAMETER FOR BIDETS, LAVATORIES AND SIMILAR FIXTURES.  
 P2704.1 JOINT ACCESS.  
 SLIP JOINTS SHALL BE MADE WITH AN APPROVED ELASTOMERIC GASKET AND SHALL BE INSTALLED ONLY ON THE TRAP OUTLET, TRAP INLET AND WITHIN THE TRAP SEAL. FIXTURES WITH CONCAVE SLIP-JOINT CONNECTIONS SHALL BE PROVIDED WITH AN ACCESS PANEL OR UTILITY SPACE NOT LESS THAN 12 INCHES IN ITS SMALLEST DIMENSION OR OTHER APPROVED ARRANGEMENT SO AS TO PROVIDE ACCESS TO THE SLIP CONNECTIONS FOR INSPECTION AND REPAIR.

P2709.2.4 LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS.  
 LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS SHALL MEET THE REQUIREMENTS OF ANSI A118.10 AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.  
 P2709.3 INSTALLATION.  
 LINING MATERIALS SHALL BE SLOPED ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TO WEEP HOLES IN THE SUBDRAIN BY MEANS OF A SMOOTH, SOLIDLY FORMED SUBBASE. SHALL BE PROPERLY RECESSED AND FASTENED TO APPROVED BACKING SO AS NOT TO OCCUPY THE SPACE REQUIRED FOR THE WALL COVERING, AND SHALL NOT BE NAILED OR PERFORATED AT ANY POINT LESS THAN 1 INCH ABOVE THE FINISHED THRESHOLD.  
 R307.2 BATHTUB AND SHOWER SPACES.  
 BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR.  
 P2705.1 INSTALLATION.  
 THE INSTALLATION OF FIXTURES SHALL CONFORM TO THE FOLLOWING:  
 1. FLOOR-OUTLET OR FLOOR-MOUNTED FIXTURES SHALL BE SECURED TO THE DRAINAGE CONNECTION AND TO THE FLOOR, WHERE SO DESIGNED, BY SCREWS, BOLTS, WASHERS, NUTS AND SIMILAR FASTENERS OF COPPER, BRASS OR OTHER CORROSION-RESISTANT MATERIAL.  
 2. WALL-HUNG FIXTURES SHALL BE RIGIDLY SUPPORTED SO THAT STRAIN IS NOT TRANSMITTED TO THE PLUMBING SYSTEM.  
 3. WHERE FIXTURES COME IN CONTACT WITH WALLS AND FLOORS, THE CONTACT AREA SHALL BE WATER TIGHT.  
 4. PLUMBING FIXTURES SHALL BE USABLE.  
 5. WATER CLOSETS, LAVATORIES AND BIDETS. A WATER CLOSET, LAVATORY OR BIDET SHALL NOT BE SET CLOSER THAN 15 INCHES FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER THAN 30 INCHES CENTER-TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES IN FRONT OF A WATER CLOSET, LAVATORY OR BIDET TO ANY WALL, FIXTURE OR DOOR.  
 6. THE LOCATION OF PIPING, FIXTURES OR EQUIPMENT SHALL NOT INTERFERE WITH THE OPERATION OF WINDOWS OR DOORS.  
 7. IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), PLUMBING FIXTURES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.7.  
 8. INTEGRAL FIXTURE-FITTING MOUNTING SURFACES ON MANUFACTURED PLUMBING FIXTURES OR PLUMBING FIXTURES CONSTRUCTED ON SITE, SHALL MEET THE DESIGN REQUIREMENTS OF ASME A112.19.2/CSA B45.1 OR ASME A112.19.3/CSA B45.1.  
 P2706.2 WASTE RECEPTOR STANDPIPES.  
 STANDPIPES SHALL EXTEND NOT LESS THAN OF 18 INCHES BUT NOT GREATER THAN 42 INCHES ABOVE THE TRAP WEIR. ACCESS SHALL BE PROVIDED TO STANDPIPE TRAPS AND DRAINS FOR RODDING.  
 WATER-CLOSET, LAVATORIES, LAUNDRY  
 P2711.3 LAVATORY WASTE OUTLETS.  
 LAVATORIES SHALL HAVE WASTE OUTLETS NOT LESS THAN 1-1/4 INCH IN DIAMETER. A STRAINER, POP-UP STOPPER, CROSSBAR OR OTHER DEVICE SHALL BE PROVIDED TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.  
 P2712.1 WATER CLOSETS.  
 WATER CLOSETS SHALL CONFORM TO THE WATER CONSUMPTION REQUIREMENTS OF SECTION P2903.2 AND SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS SHALL CONFORM TO THE HYDRAULIC PERFORMANCE REQUIREMENTS OF ASME A112.19.2/CSA B45.1. WATER CLOSET TANKS SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS THAT HAVE AN INVISIBLE SEAL AND UNVENTILATED SPACE OR WALLS THAT ARE NOT THOROUGHLY WASHED AT EACH DISCHARGE SHALL BE PROHIBITED. WATER CLOSETS THAT PERMIT BACKFLOW OF THE CONTENTS OF THE BOWL INTO THE FLUSH TANK SHALL BE PROHIBITED.

P2709.2.1 SHOWER CONSTRUCTION.  
 WHERE A SHOWER RECEPTOR HAS A FINISHED CURB THRESHOLD, IT SHALL BE NOT LESS THAN 1 INCH BELOW THE SIDES AND BACK OF THE RECEPTOR. THE CURB SHALL BE NOT LESS THAN 2 INCHES AND NOT MORE THAN 9 INCHES DEEP WHEN MEASURED FROM THE TOP OF THE CURB TO THE TOP OF THE DRAIN. THE FINISHED FLOOR SHALL SLOPE UNIFORMLY TOWARD THE DRAIN NOT LESS THAN 1/4 UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) NOR MORE THAN 1/2 UNIT VERTICAL PER 12 UNITS HORIZONTAL (4-PERCENT SLOPE) AND FLOOR DRAINS SHALL BE FLANGED TO PROVIDE A WATER-TIGHT JOINT IN THE FLOOR.  
 P2709.2.2 LINING REQUIRED.  
 THE ADJOINING WALLS AND FLOOR FRAMING ENCLOSING ON-SITE BUILT-UP SHOWER RECEPTORS SHALL BE LINED WITH ONE OF THE FOLLOWING MATERIALS:  
 3. PLASTIC LINER MATERIAL THAT COMPLIES WITH ASTM D 4068 OR ASTM D 4551;  
 5. SHEET-APPLIED LOAD-BEARING, BONDED WATERPROOF MEMBRANES THAT COMPLY WITH ANSI A118.10. THE LINING MATERIAL SHALL EXTEND NOT LESS THAN 2 INCHES BEYOND OR AROUND THE ROUGH JAMBS AND NOT LESS THAN 2 INCHES ABOVE FINISHED THRESHOLDS. SHEET-APPLIED LOAD BEARING, BONDED WATERPROOF MEMBRANES SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.  
 P2709.2.4 LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS.  
 LIQUID-TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS SHALL MEET THE REQUIREMENTS OF ANSI A118.10 AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.  
 P2709.3 INSTALLATION.  
 LINING MATERIALS SHALL BE SLOPED ONE-FOURTH UNIT VERTICAL IN 12 UNITS HORIZONTAL (2-PERCENT SLOPE) TO WEEP HOLES IN THE SUBDRAIN BY MEANS OF A SMOOTH, SOLIDLY FORMED SUBBASE. SHALL BE PROPERLY RECESSED AND FASTENED TO APPROVED BACKING SO AS NOT TO OCCUPY THE SPACE REQUIRED FOR THE WALL COVERING, AND SHALL NOT BE NAILED OR PERFORATED AT ANY POINT LESS THAN 1 INCH ABOVE THE FINISHED THRESHOLD.  
 R307.2 BATHTUB AND SHOWER SPACES.  
 BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET ABOVE THE FLOOR.  
 P2705.1 INSTALLATION.  
 THE INSTALLATION OF FIXTURES SHALL CONFORM TO THE FOLLOWING:  
 1. FLOOR-OUTLET OR FLOOR-MOUNTED FIXTURES SHALL BE SECURED TO THE DRAINAGE CONNECTION AND TO THE FLOOR, WHERE SO DESIGNED, BY SCREWS, BOLTS, WASHERS, NUTS AND SIMILAR FASTENERS OF COPPER, BRASS OR OTHER CORROSION-RESISTANT MATERIAL.  
 2. WALL-HUNG FIXTURES SHALL BE RIGIDLY SUPPORTED SO THAT STRAIN IS NOT TRANSMITTED TO THE PLUMBING SYSTEM.  
 3. WHERE FIXTURES COME IN CONTACT WITH WALLS AND FLOORS, THE CONTACT AREA SHALL BE WATER TIGHT.  
 4. PLUMBING FIXTURES SHALL BE USABLE.  
 5. WATER CLOSETS, LAVATORIES AND BIDETS. A WATER CLOSET, LAVATORY OR BIDET SHALL NOT BE SET CLOSER THAN 15 INCHES FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER THAN 30 INCHES CENTER-TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES IN FRONT OF A WATER CLOSET, LAVATORY OR BIDET TO ANY WALL, FIXTURE OR DOOR.  
 6. THE LOCATION OF PIPING, FIXTURES OR EQUIPMENT SHALL NOT INTERFERE WITH THE OPERATION OF WINDOWS OR DOORS.  
 7. IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), PLUMBING FIXTURES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.7.  
 8. INTEGRAL FIXTURE-FITTING MOUNTING SURFACES ON MANUFACTURED PLUMBING FIXTURES OR PLUMBING FIXTURES CONSTRUCTED ON SITE, SHALL MEET THE DESIGN REQUIREMENTS OF ASME A112.19.2/CSA B45.1 OR ASME A112.19.3/CSA B45.1.  
 P2706.2 WASTE RECEPTOR STANDPIPES.  
 STANDPIPES SHALL EXTEND NOT LESS THAN OF 18 INCHES BUT NOT GREATER THAN 42 INCHES ABOVE THE TRAP WEIR. ACCESS SHALL BE PROVIDED TO STANDPIPE TRAPS AND DRAINS FOR RODDING.  
 WATER-CLOSET, LAVATORIES, LAUNDRY  
 P2711.3 LAVATORY WASTE OUTLETS.  
 LAVATORIES SHALL HAVE WASTE OUTLETS NOT LESS THAN 1-1/4 INCH IN DIAMETER. A STRAINER, POP-UP STOPPER, CROSSBAR OR OTHER DEVICE SHALL BE PROVIDED TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.  
 P2712.1 WATER CLOSETS.  
 WATER CLOSETS SHALL CONFORM TO THE WATER CONSUMPTION REQUIREMENTS OF SECTION P2903.2 AND SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS SHALL CONFORM TO THE HYDRAULIC PERFORMANCE REQUIREMENTS OF ASME A112.19.2/CSA B45.1. WATER CLOSET TANKS SHALL CONFORM TO ANSI Z124.4, ASME A112.19.2/CSA B45.1, ASME A112.19.3/CSA B45.4 OR CSA B45.5. WATER CLOSETS THAT HAVE AN INVISIBLE SEAL AND UNVENTILATED SPACE OR WALLS THAT ARE NOT THOROUGHLY WASHED AT EACH DISCHARGE SHALL BE PROHIBITED. WATER CLOSETS THAT PERMIT BACKFLOW OF THE CONTENTS OF THE BOWL INTO THE FLUSH TANK SHALL BE PROHIBITED.

P2717.1 SINK WASTE OUTLETS.  
 SINKS SHALL BE PROVIDED WITH WASTE OUTLETS NOT LESS THAN 1-1/2 INCHES IN DIAMETER. A STRAINER, CROSSBAR OR OTHER DEVICE SHALL BE PROVIDED TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.  
 P2715.1 LAUNDRY TUB WASTE OUTLET.  
 EACH COMPARTMENT OF A LAUNDRY TUB SHALL BE PROVIDED WITH A WASTE OUTLET NOT LESS THAN 1-1/2 INCHES IN DIAMETER AND A STRAINER OR CROSSBAR TO RESTRICT THE CLEAR OPENING OF THE WASTE OUTLET.  
 P2717.1 PROTECTION OF WATER SUPPLY.  
 THE WATER SUPPLY FOR DISHWASHERS SHALL BE PROTECTED BY AN AIR GAP OR INTEGRAL BACKFLOW PREVENTER.  
 P2717.2 SINK AND DISHWASHER.  
 A SINK AND DISHWASHER ARE PERMITTED TO DISCHARGE THROUGH A SINGLE 1-1/2-INCH TRAP. THE DISCHARGE PIPE FROM THE DISHWASHER SHALL BE INCREASED TO NOT LESS THAN 3/4 INCH IN DIAMETER AND SHALL BE CONNECTED WITH A WYE FITTING TO THE SINK TAILPIECE. THE DISHWASHER WASTE LINE SHALL RISE AND BE SECURELY FASTENED TO THE UNDERSIDE OF THE COUNTER BEFORE CONNECTING TO THE SINK TAILPIECE.  
 P2718.1 WASTE CONNECTION.  
 THE DISCHARGE FROM A CLOTHES WASHING MACHINE SHALL BE THROUGH AN AIR BREAK.  
 P2719.1 FLOOR DRAINS.  
 FLOOR DRAINS SHALL HAVE WASTE OUTLETS NOT LESS THAN 2 INCHES IN DIAMETER AND A REMOVABLE STRAINER. THE FLOOR DRAIN SHALL BE CONSTRUCTED SO THAT THE DRAIN CAN BE CLEANED. ACCESS SHALL BE PROVIDED TO THE DRAIN INLET. FLOOR DRAINS SHALL NOT BE LOCATED UNDER OR HAVE THEIR ACCESS RESTRICTED BY PERMANENTLY INSTALLED APPLIANCES.  
 P2721.1 WATER HEATER SEISMIC BRACING.  
 IN SEISMIC DESIGN CATEGORIES D0, D1 AND D2 AND TOWNHOUSES IN SEISMIC DESIGN CATEGORY C, WATER HEATERS SHALL BE ANCHORED OR STRAPPED IN THE UPPER ONE-THIRD AND IN THE LOWER ONE-THIRD OF THE APPLIANCE TO RESIST A HORIZONTAL FORCE EQUAL TO ONE-THIRD THE OPERATING WEIGHT OF THE WATER HEATER, ACTING IN ANY HORIZONTAL DIRECTION, OR IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S RECOMMENDATIONS.  
 FIXTURES AND FITTING  
 P2722.1 GENERAL FIXTURE FITTING.  
 FIXTURE SUPPLY VALVES AND FAUCETS SHALL COMPLY WITH ASME A112.18.1/CSA B125.1 AS LISTED IN TABLE P2701.1. FAUCETS AND FIXTURE FITTINGS THAT SUPPLY DRINKING WATER FOR HUMAN INGESTION SHALL CONFORM TO THE REQUIREMENTS OF NSF 61, SECTION 9. FLEXIBLE WATER CONNECTORS SHALL CONFORM TO THE REQUIREMENTS OF SECTION P2905.7.  
 P2722.2 HOT WATER FIXTURE FITTING.  
 FIXTURE FITTINGS AND FAUCETS THAT ARE SUPPLIED WITH BOTH HOT AND COLD WATER SHALL BE INSTALLED AND ADJUSTED SO THAT THE LEFT-HAND SIDE OF THE WATER TEMPERATURE CONTROL REPRESENTS THE FLOW OF HOT WATER WHEN FACING THE OUTLET.  
 P2722.3 HOSE-CONNECTED OUTLETS.  
 FAUCETS AND FIXTURE FITTINGS WITH HOSECONNECTED OUTLETS SHALL CONFORM TO ASME A112.18.3 OR ASME A112.18.1/CSA B125.1.  
 VENTILATION  
 P17.2 STACK SIZE.  
 DRAINAGE STACKS SHALL BE SIZED IN ACCORDANCE WITH TABLE 917.2. STACKS SHALL BE UNIFORMLY SIZED BASED ON THE TOTAL CONNECTED DRAINAGE FIXTURE UNIT LOAD. THE STACK VENT SHALL BE THE SAME SIZE AS THE DRAINAGE STACK. A 3-INCH STACK SHALL SERVE NOT MORE THAN TWO WATER CLOSETS.  
 SECTION P3114 AIR ADMITTANCE VALVES  
 P3114.2 INSTALLATION.  
 THE VALVES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION AND THE MANUFACTURER'S INSTRUCTIONS. AIR ADMITTANCE VALVES SHALL BE INSTALLED AFTER THE DWV TESTING REQUIRED BY SECTION P2503.5.1 OR P2503.5.2 HAS BEEN PERFORMED.  
 P17.3 BRANCH SIZE.  
 HORIZONTAL BRANCHES CONNECTING TO A SINGLE STACK VENT SYSTEM SHALL BE SIZED IN ACCORDANCE WITH TABLE 710.1(2). NOT MORE THAN ONE WATER CLOSET SHALL DISCHARGE INTO A 3-INCH HORIZONTAL BRANCH AT A POINT WITHIN A DEVELOPED LENGTH OF 18 INCHES MEASURED HORIZONTALLY FROM THE STACK, WHERE A WATER CLOSET IS WITHIN 18 INCHES MEASURED HORIZONTALLY FROM THE STACK AND NOT MORE THAN ONE FIXTURE WITH A DRAIN SIZE OF NOT MORE THAN 1 1/2 INCH CONNECTS TO A 3-INCH HORIZONTAL BRANCH, THE BRANCH DRAIN CONNECTION TO THE STACK SHALL BE MADE WITH A SANITARY TEE.  
 P17.4 LENGTH OF HORIZONTAL BRANCHES.  
 THE LENGTH OF HORIZONTAL BRANCHES SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 917.4.1 THROUGH 917.4.3.  
 P17.4.1 WATER CLOSET CONNECTION.  
 WATER CLOSET CONNECTIONS SHALL BE NOT GREATER THAN 4 FEET IN DEVELOPED LENGTH MEASURED HORIZONTALLY FROM THE STACK, EXCEPTION: WHERE THE CONNECTION IS MADE WITH A SANITARY TEE, THE MAXIMUM DEVELOPED LENGTH SHALL BE 8 FEET.  
 P17.4.2 FIXTURE CONNECTIONS.  
 FIXTURES OTHER THAN WATER CLOSETS SHALL BE LOCATED NOT GREATER THAN 4 FEET IN DEVELOPED LENGTH, MEASURED HORIZONTALLY FROM THE STACK.  
 P17.4.3 VERTICAL PIPING IN BRANCH.  
 THE LENGTH OF VERTICAL PIPING IN A FIXTURE DRAIN CONNECTING TO A HORIZONTAL BRANCH SHALL NOT BE CONSIDERED IN COMPUTING THE FIXTURE'S DISTANCE IN DEVELOPED LENGTH MEASURED HORIZONTALLY FROM THE STACK.  
 P17.8 PROHIBITED LOWER CONNECTIONS.  
 STACKS GREATER THAN 2 BRANCH INTERVALS IN HEIGHT SHALL NOT RECEIVE THE DISCHARGE OF HORIZONTAL BRANCHES ON THE LOWER TWO FLOORS. THERE SHALL BE NO CONNECTIONS TO THE STACK BETWEEN THE LOWER TWO FLOORS AND A DISTANCE OF NOT LESS THAN 10 PIPE DIAMETERS DOWNSTREAM FROM THE BASE OF THE SINGLE STACK VENTED SYSTEM.  
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 P2801.2 FIXTURE CONNECTIONS.  
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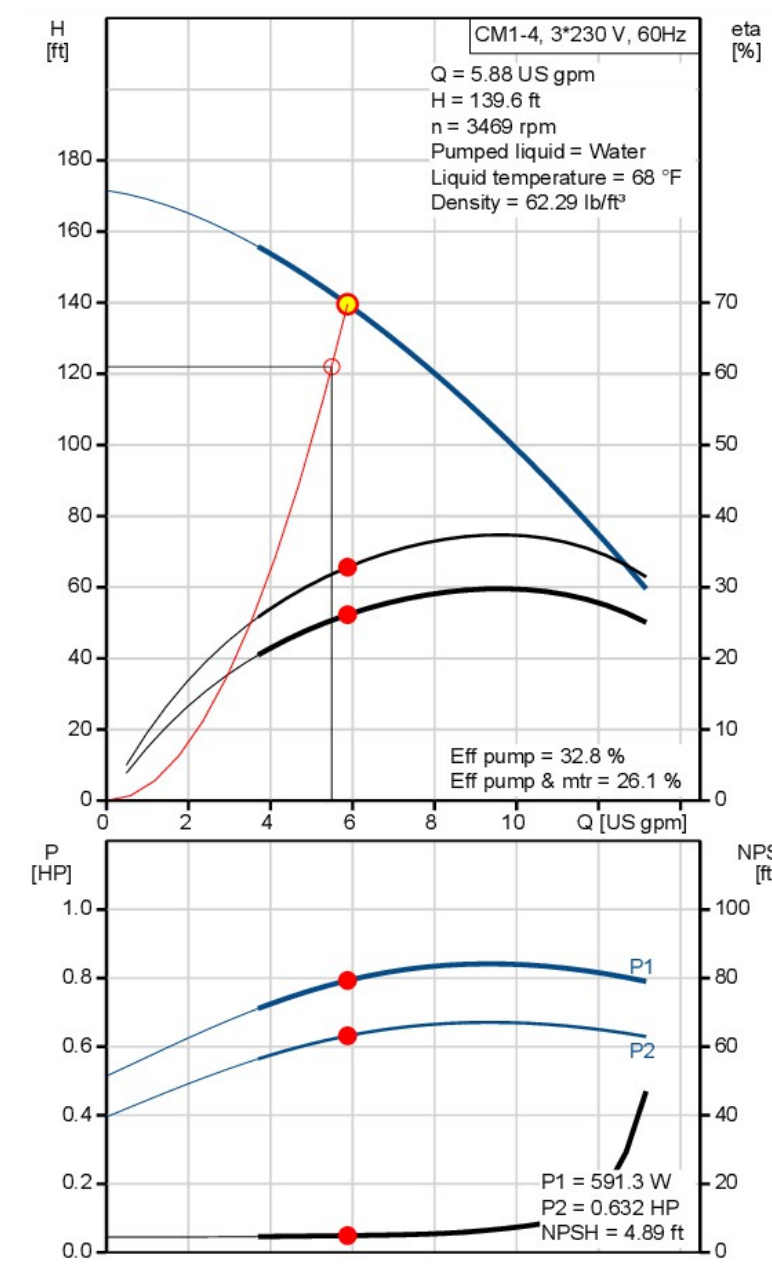
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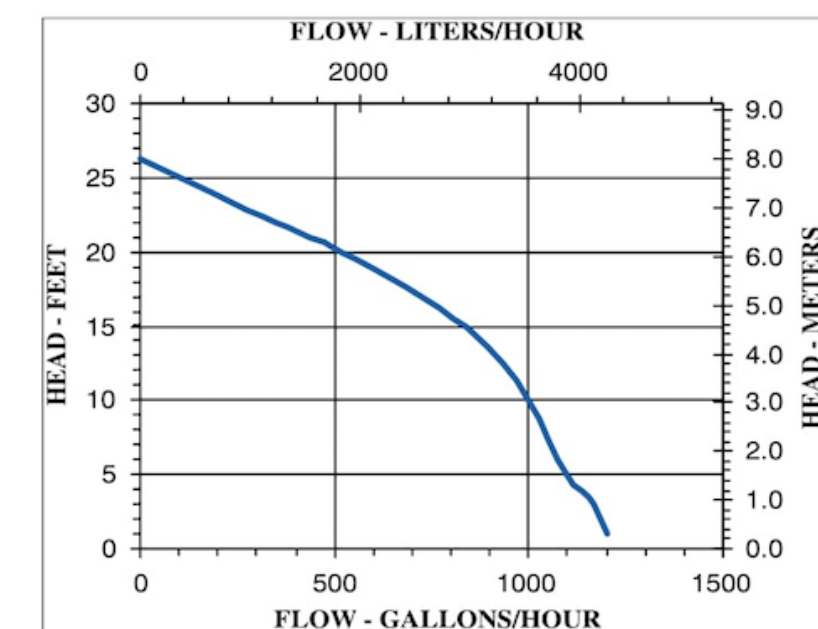
WATER HEATER SPECIFICATIONS		
NAME	VALUE	UNIT
BTU INPUT	210000	-
CAPACITY	55	GALLONS
CAPACITY (BOILER)	2.2	GALLONS
CAPACITY (DOMESTIC)	53.1	GALLONS
DHW OPERATING TEMPERATURE	160	FAHRENHEIT
RECOMMENDED FLOW RATE	8	GPM
WORKING PRESSURE (COIL)	145	PSI
WORKING PRESSURE (TANK)	150	PSI

DOMESTIC SUPPLY PUMP CALCULATIONS		
NAME	VALUE	UNIT
PUMP PRESSURE	53	PSI
PUMP HEAD	122.43	FT
PUMP FLOW RATE	5.4	GPM
PUMP FLOW RATE	0.01	CFS

DOMESTIC SUPPLY PUMP SPECIFICATIONS		
NAME	VALUE	UNIT
ACTUAL CALCULATED FLOW	5.88	GPM
RESULTING HEAD OF PUMP	139.6	FT
MAXIMUM OPERATING PRESSURE	145	PSI
RATED POWER	0.992	HP



SUMP PUMP SPECIFICATIONS		
NAME	VALUE	UNIT
POWER	1/6	HP
VOLTS	115	VOLTS
FREQUENCY	60	HERTZ
CURRENT	5	AMPS
HEAD	26.3	FT
PRESSURE	11.4	PSI



PRESSURE TANK SPECIFICATIONS			
NUMBER OF WATER FIXTURES	WATERWORKER CAPACITY (GAL)	MODEL NO.	EPOXY TANK EQUIVALENT (GAL)
2	2	HT-2B	-
2	4.4	HT-4B	12
2	5.3	HT-6HB	12
3	7.4	HT-8B	20
4	14	HT-14B	30
4	14	HT-14HB	30
6	20	HT-20B	42
6	20	HT-20HB	42
8	26	HT-30B	-
10	32	HT-32B	82
14	44	HT-44B	120
20	62	HT-62B	-
28	86	HT-86B	220
40	119	HT-119B	315

CLOTHES WASHER SPECIFICATIONS		
NAME	VALUE	UNIT
CURRENT	12	AMPS
ENERGY CONSUMPTION	84	KWH/YR
POWER	2300	WATTS
WATER CONSUMPTION	2320	GALLONS/YR

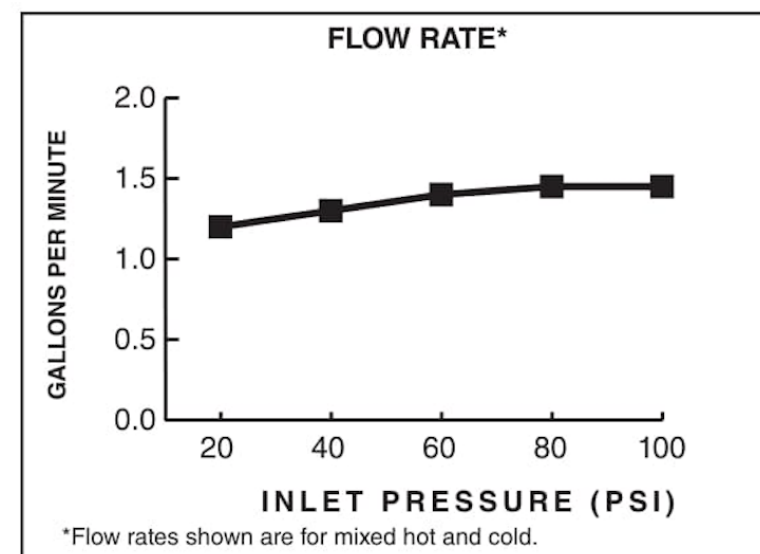
DISHWASHER SPECIFICATIONS		
NAME	VALUE	UNIT
ANNUAL ENERGY CONSUMPTION	234	KWH
ANNUAL WATER CONSUMPTION	477	GALLONS
POWER	1300	WATTS
WATER USAGE PER CYCLE	2.2	GALLONS

**BATHROOM FAUCET:**  
 WATER FLOW RATE IS 0.5 GPM. PRESSURE COMPENSATING, VANDAL-RESISTANT MULTI-LAMINAR SPRAY AND 1.5 GPM PRESSURE COMPENSATING, VANDAL-RESISTANT AERATOR. WATER PRESSURE RANGE FROM 20 TO 125 PSI.

**SHOWER HEAD:**  
 WATER FLOW RATE IS 2.4 GPM AND MINIMUM REQUIRED PRESSURE IS 30 PSI.

**TOILET:** EFFICIENT DUAL FLUSH PROVIDES A FLOW RATE OF 0.5 AND 0.95 GALLONS PER FLUSH.

**KITCHEN FAUCET:**  
 MAXIMUM FLOW RATE IS 1.5 GPM



1.5 gpm/5.7 L/min. FLOW RATE

**MANIFOLD SPECIFICATIONS**

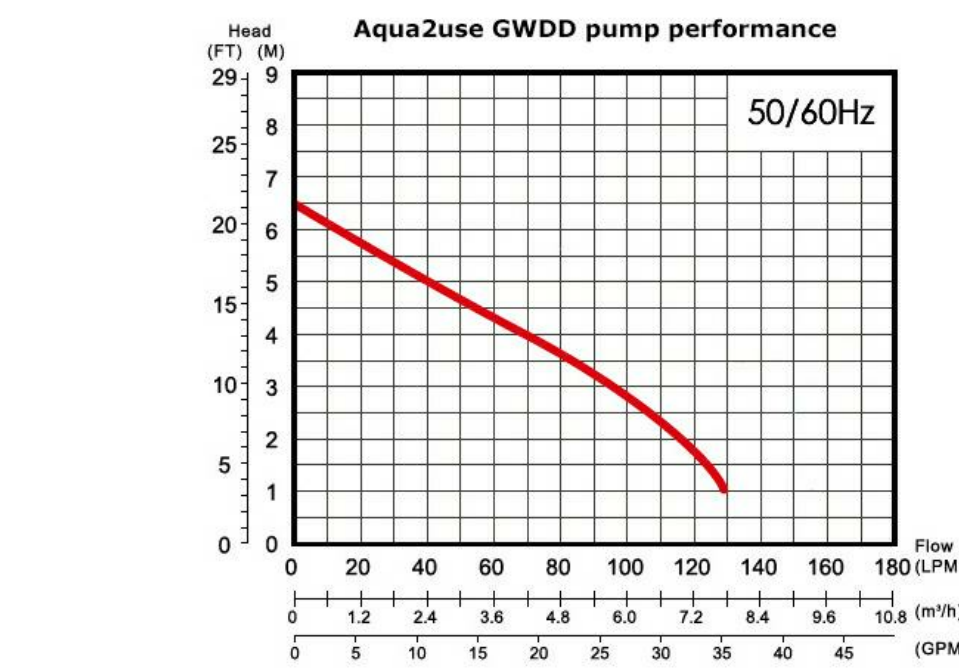
MANABLOC Dimensions	
Total Ports	Length
14	15 - 15/16"
18	19 - 3/8"
24	24 - 3/8"
30	29 - 1/2"
36	34 - 3/8"

Dimensions reflect stock MANABLOC sizes.

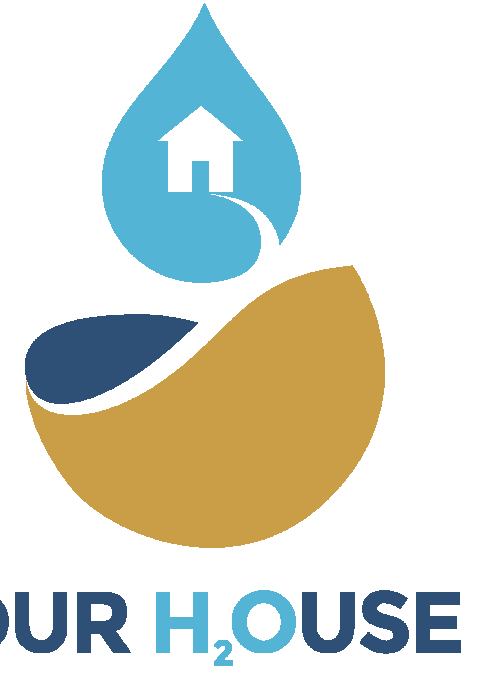
**MANABLOC Pressure Drop Table**

Expressed as PSI Drop Through Port		
Port Size	Rated Flow	PSI Drop
3/8"	2.5 gpm	2 psi
1/2"	4 gpm	3.4 psi

**GREYWATER FILTRATION SPECIFICATIONS:**



Specifications											
Model	Output	Outlet	Pass Solid	Max	Flow	Flow #	Head	Max	Dimension	Weight	
gP-32	1/4	200	32	1-1/4"	18	130	125	95	55	10	
									6.5	154 x 143 x 345	3.9



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 ADDRESS: 2151 HUTCHISON STREET DAVIS, CA 95616  
 CONTACT: (530) 752-5465  
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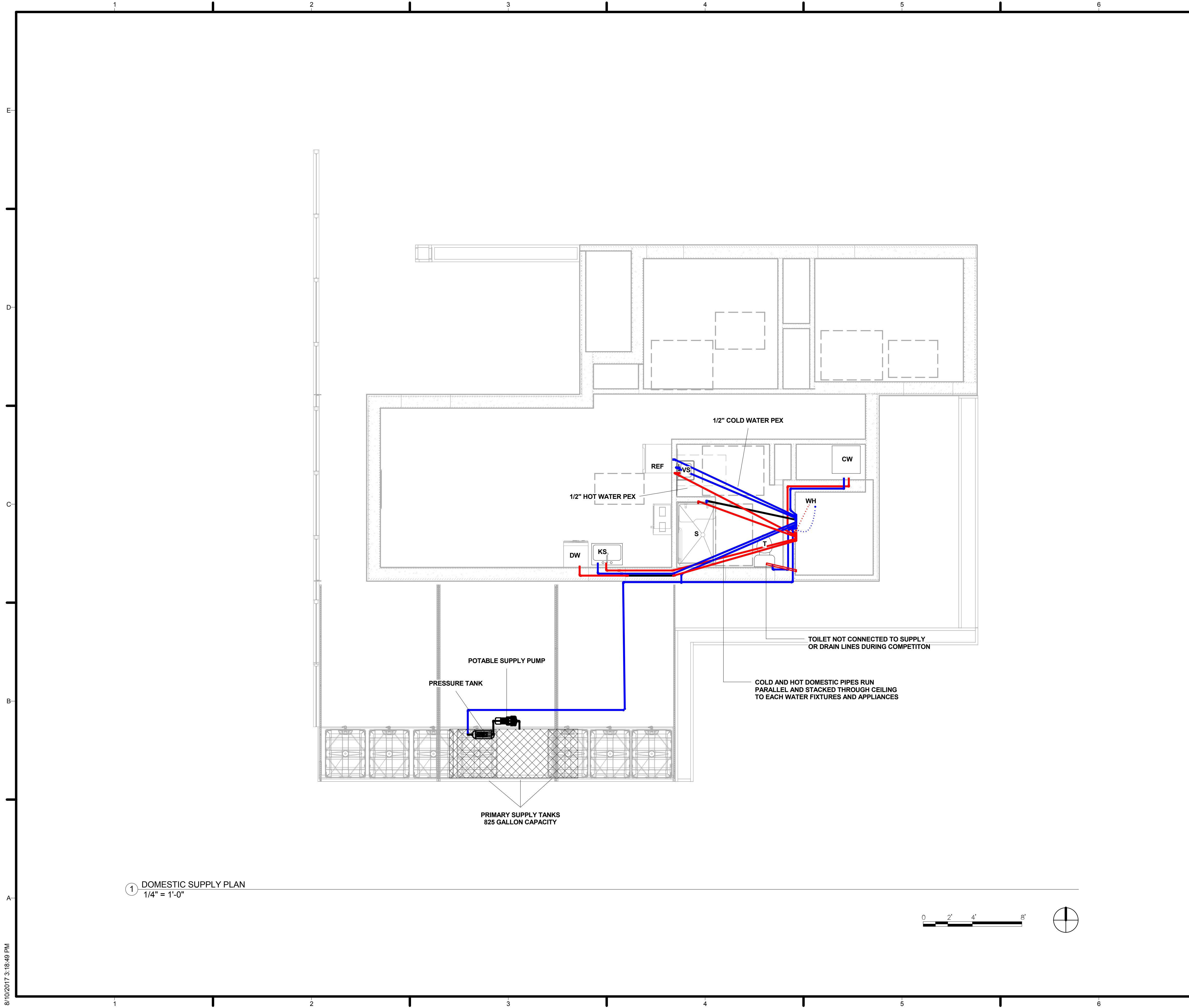


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SHEET TITLE  
**PLUMBING SPECIFICATIONS**

**P-002**



**GENERAL SHEET NOTES**

825 GALLON POTABLE SUPPLY CAPACITY.  
 800 GALLONS REQUESTED TO AND DELIVERED BY THE ORGANIZERS.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- PST POTABLE SUPPLY TANK
- PT PRESSURE TANK
- CW CLOTHES WASHER
- REF REFRIGERATOR
- S SHOWER
- T TOILET
- WH WATER HEATER
- VS VANITY SINK
- KS KITCHEN SINK
- DW DISHWASHER



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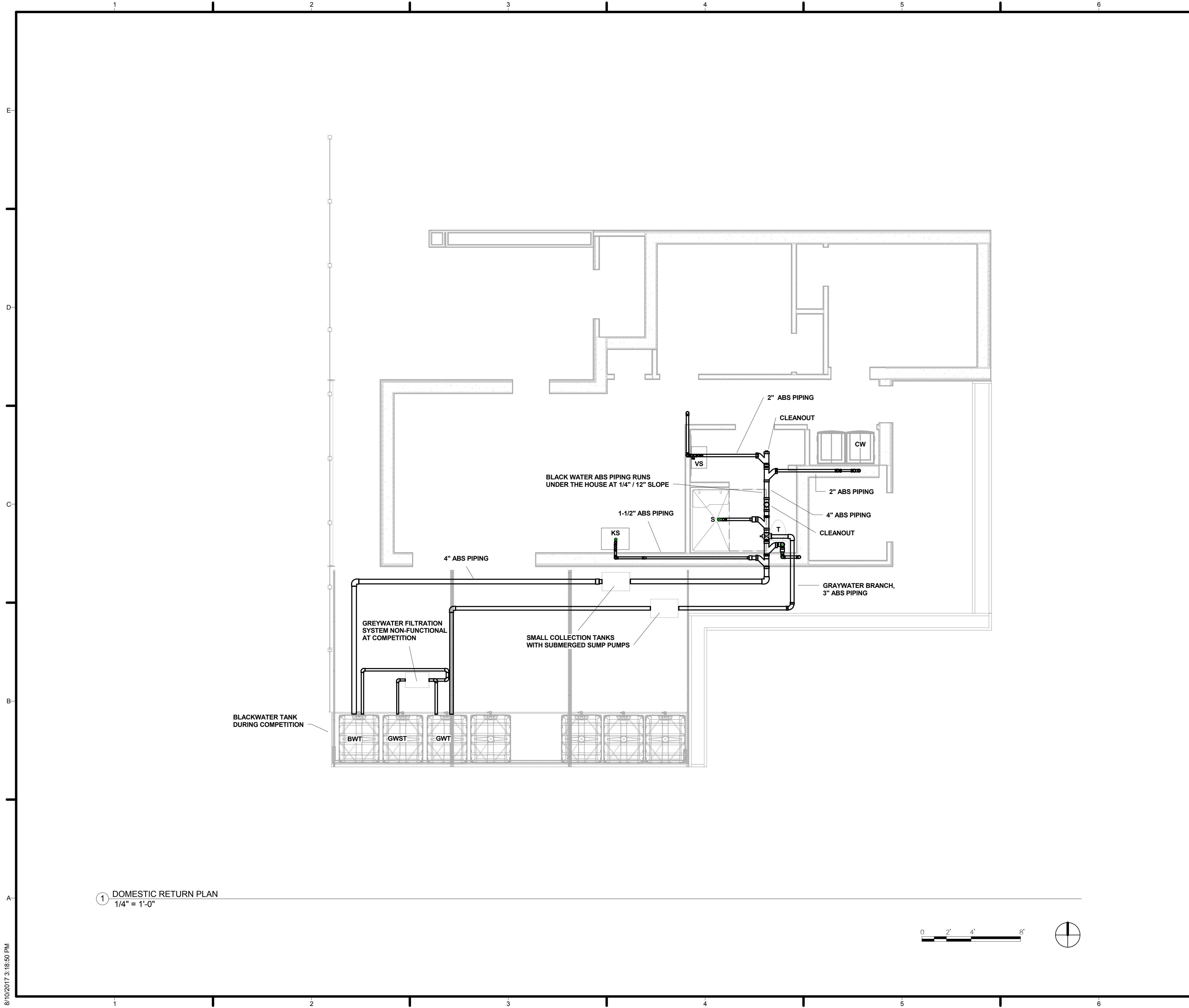
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SHEET TITLE  
**DOMESTIC SUPPLY PLAN**

**P-101**

8/10/2017 3:18:49 PM





**GENERAL SHEET NOTES**

ALL RETURN SYSTEM PIPING RUNS UNDERNEATH THE HOUSE AND DECK AT A SLOPE OF AT LEAST 1/4" PER FOOT.

GREYWATER RETURN SYSTEM CONNECTED TO BLACKWATER SYSTEM BY THREE-WAY VALVE, ALLOWING GREYWATER TO BE DIVERTED INTO BLACKWATER IF NECESSARY FOR MAINTENANCE PURPOSES.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- CW CLOTHES WASHER
- S SHOWER
- T TOILET
- VS VANITY SINK
- KS KITCHEN SINK
- BWT BLACKWATER TANK
- GWT GREYWATER COLLECTION TANK
- GWST FILTERED GREYWATER TANK



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SHEET TITLE  
**DOMESTIC RETURN PLAN**

**P-102**

1 DOMESTIC RETURN PLAN  
 1/4" = 1'-0"



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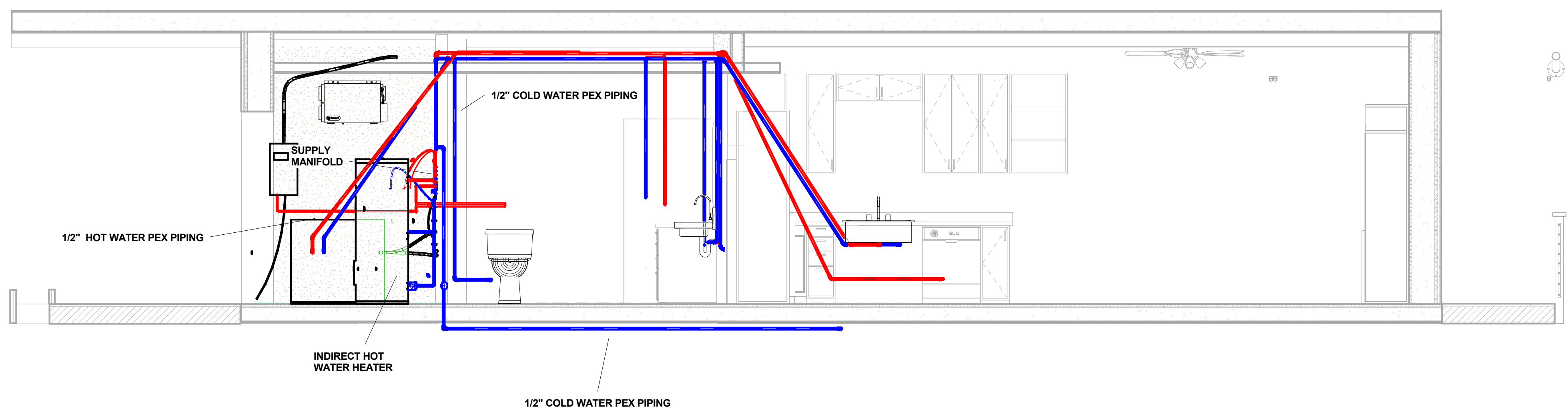


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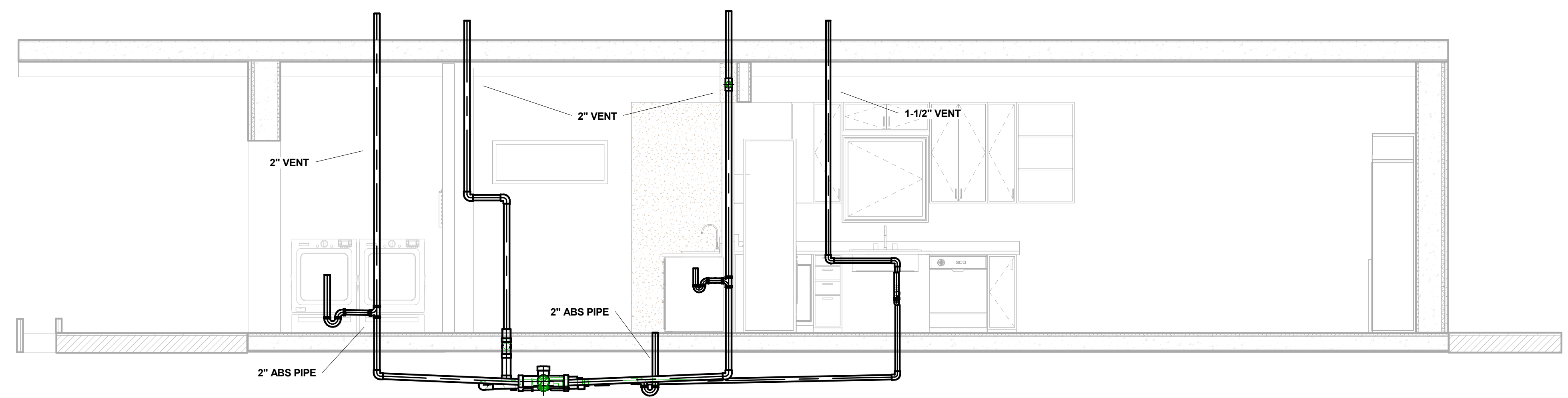
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SHEET TITLE  
**SOUTH SECTION  
 SUPPLY AND RETURN**

**P-301**

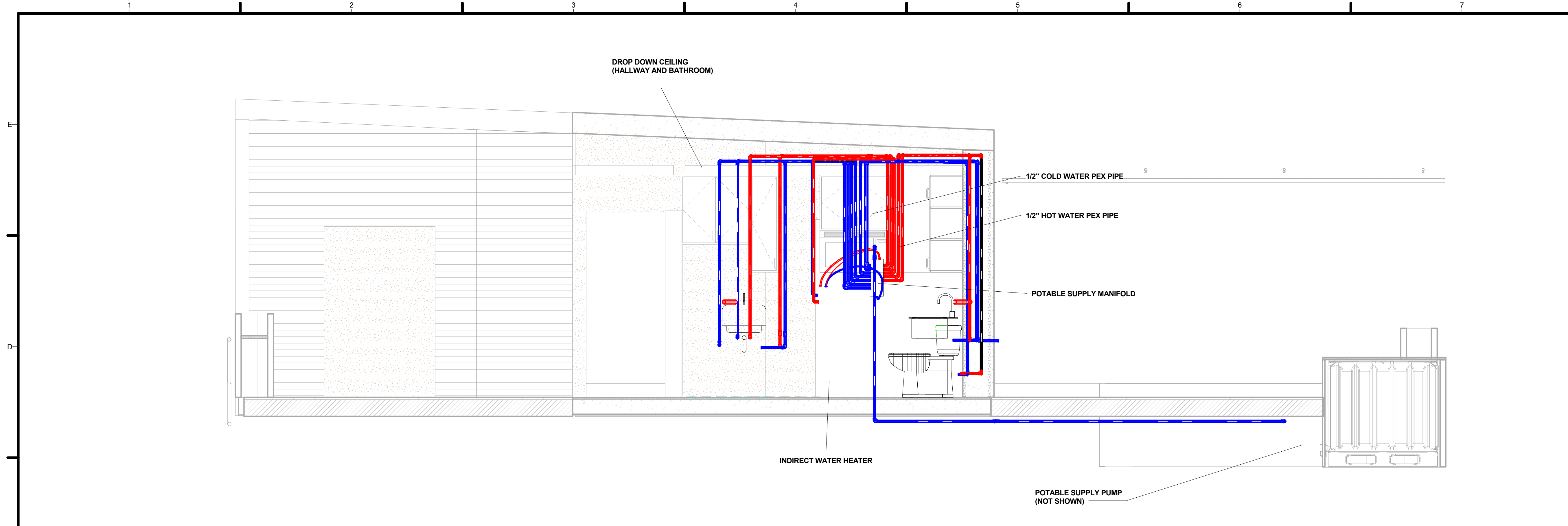


① SOUTH SECTION SUPPLY  
 3/8" = 1'-0"

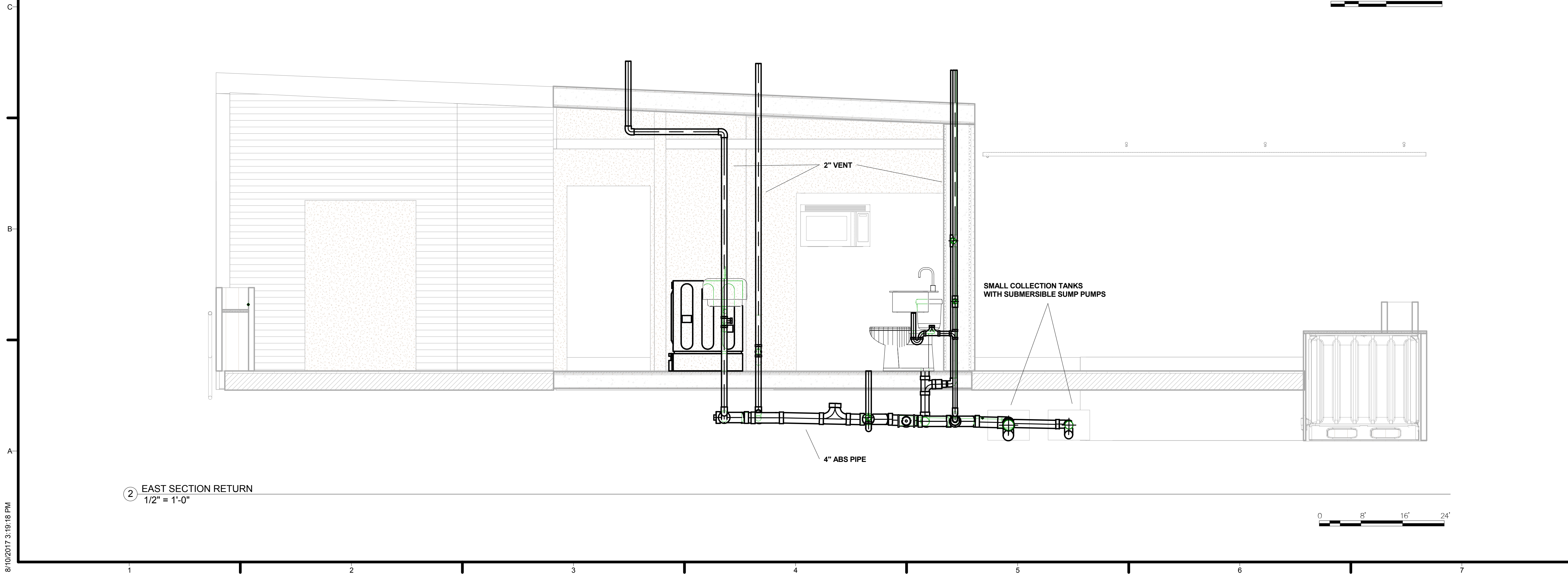
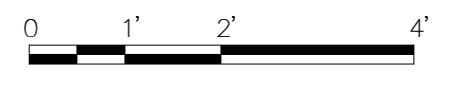


② SOUTH SECTION RETURN  
 3/8" = 1'-0"





① EAST SECTION SUPPLY  
1/2" = 1'-0"



② EAST SECTION RETURN  
1/2" = 1'-0"



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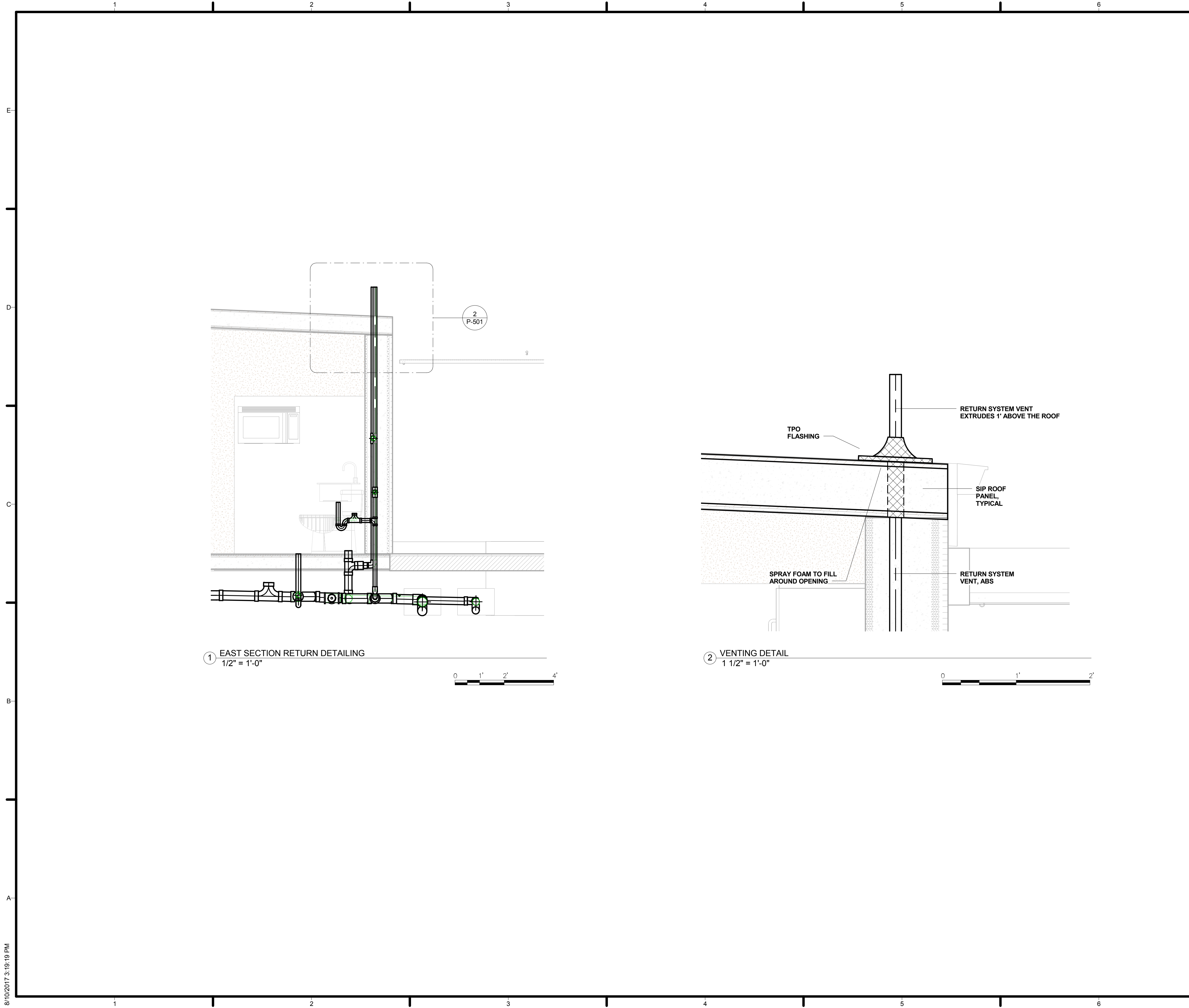
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SHEET TITLE

**EAST SECTION SUPPLY AND RETURN**

**P-302**

8/10/2017 3:18:18 PM



**GENERAL SHEET NOTES**

TOP OF RETURN SYSTEM VENT EXTRUDES 1 FOOT ABOVE THE ROOF

ROOF SIP PANELS CONSIST OF 5/8 INCH PLYWOOD LAYER, 11.25 INCH INSULATION, 5/8 INCH PLYWOOD

ROOF SLOPED AT 1/2 INCH PER FOOT

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**TYPICAL PLUMBING DETAILS**

**P-501**



PLUMBING EQUIPMENT SCHEDULES								
SYSTEM NAME	MANUFACTURER	MODEL NUMBER	QUANTITY	HEIGHT (IN)	WIDTH (IN)	LENGTH (IN)	WEIGHT (LBS)	DIAMETER (IN)
PRIMARY SUPPLY TANK	IBC TANK	--	3	46	40	48	135	
DOMESTIC SUPPLY PUMP	GRUNDFOS	CM1-4 A-S-A-E-AQQE	1	7.54	6.22	12.68	32.5	
PRESSURE TANK	WATER WORKER	HT62	1	47	22	22	92	22
WATER HEATER	WEIL MCLAIN	633-500-0022 (55 GALLONS)	1	60	21 7/8	21 7/8	122	21 7/8
DOMESTIC SUPPLY MANIFOLD	VEIGA	36243	1	26	9	4.5	9.2	
GREYWATER TANK	IBC TANK	--	2	46	40	48	135	
GREYWATER FILTRATION SYSTEM	AQUAZUSE	GWDD	1	20	15	24	30	
SUMP PUMP	LITTLE GIANT	5-ASP-LL	2	7.75	4.31	7.7	10	
BLACKWATER COLLECTION TANK	IBC TANK	--	1	46	40	48	135	

PIPING SCHEDULE					
SYSTEM NAME	MANUFACTURER	MODEL NUMBER	QUANTITY	DIAMETER (IN)	LENGTH (FT)
COLD WATER PEX	SHARK BITE	U860B300	2	1/2	100
HOT WATER PEX	SHARK BITE	U860B300	2	1/2	100
PVC PIPING	GEORG FISCHER	H0400050PW200B	3	1/2	20
COLD WATER PEX	SHARK BITE	U860B200	3	1	20
GW ABS PIPE	GRAINGER	80031F	5	3	10
BW ABS PIPING	GRAINGER	80041F	5	4	10
BW ABS PIPING	GRAINGER	80021F	6	2	10
BW ABS PIPING	GRAINGER	80011F	4	1.5	10

PIPE FITTINGS					
SYSTEM NAME	MATERIAL	MANUFACTURER	DIAMETER(IN)	QUANTITY	
COUPLING, PVC TO PVC	PVC	LASCO	1/2	1	
ELBOW- PEX	BRASS	SHARK BITE	1/2	3	
PVC TO PEX FEMALE ADAPTER	BRASS	SHARK BITE	1/2	1	
THREADED PVC, MALE ADAPTER	PVC	GRAINGER	1/2	3	
CHECK VALVE PVC	PVC	MUELLER GLOBAL	1/2	1	
ELBOW 90 DEGREE	ABS	GRAINGER	3	3	
ELBOW 90 DEGREE	ABS	GRAINGER	2	3	
SANITARY TEE	ABS	GRAINGER	2 x 2 x 2	1	
SANITARY TEE	ABS	GRAINGER	2 x 2 x 1.5	1	
P-TRAPS	ABS	GRAINGER	1.5	1	
P-TRAPS	ABS	GRAINGER	2	2	
WYE COMBO	ABS	GRAINGER	4 x 4 x 2	3	
WYE COMBO	ABS	GRAINGER	4 x 4 x 3	1	
WYE COMBO	ABS	GRAINGER	4 x 4 x 1.5	1	
SANITARY TEE	ABS	GRAINGER	1.5	1	
SANITARY TEE	ABS	GRAINGER	3 x 3 x 2	1	
ELBOW 90 DEGREE	ABS	GRAINGER	4	2	
ELBOW 90 DEGREE	ABS	GRAINGER	2	3	
ELBOW 90 DEGREE	ABS	GRAINGER	1.5	3	
P-TRAPS BW	ABS	GRAINGER	1.5	1	
COUPLING	ABS	GRAINGER	2	1	
COUPLING	ABS	GRAINGER	4	1	
COUPLING	ABS	GRAINGER	1.5	1	
PIPE REDUCER OR INCREASER	ABS	GRAINGER	2 x 4	1	
PIPE REDUCER OR INCREASER	ABS	GRAINGER	2 x 1.5	1	
WYE COMBO	ABS	GRAINGER	4 x 2 x 2	1	



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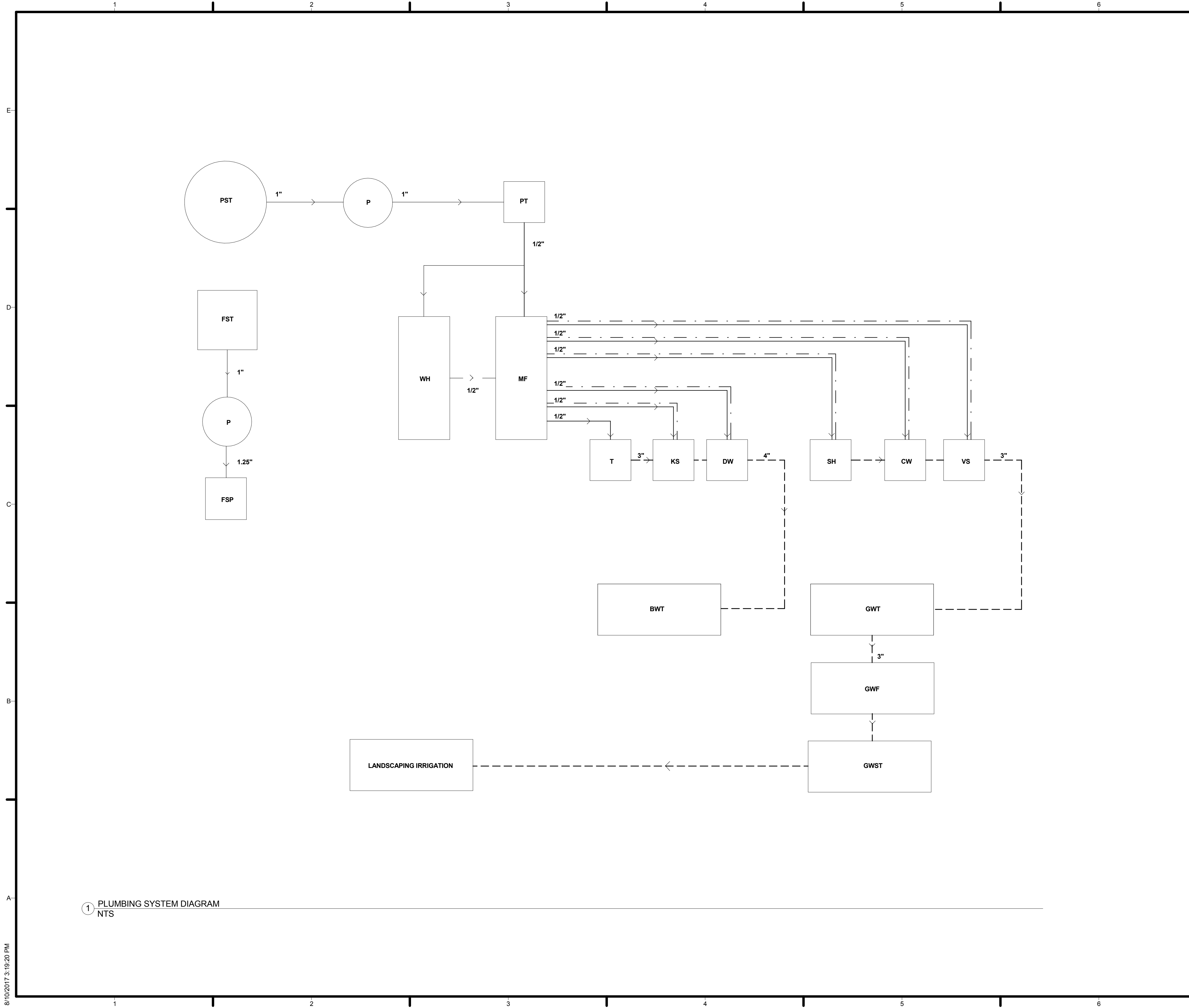
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SHEET TITLE  
**PLUMBING SCHEDULES**

**P-601**



1 PLUMBING SYSTEM DIAGRAM  
NTS

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

BWT	BLACK WATER TANK
CW	CLOTHES WASHER
DW	DISHWASHER
FSP	FIRE SUPPRESSION PLAN
FST	FIRE SUPPRESSION TANK
GWF	GREYWATER FILTER
GWST	FILTERED GREYWATER TANK
GWT	GREYWATER TANK
KS	KITCHEN SINK
MF	MANIFOLD
P	DOMESTIC WATER PUMP
PST	PRIMARY SUPPLY TANK
PT	PRESSURE TANK
SH	BATHROOM SHOWER
T	TOILET
VS	VANITY SINK IN BATHROOM
WH	WATER HEATER
—	COLD SUPPLY
•	HOT SUPPLY
- - -	WASTEWATER
—	REFRIDGERANT R410A



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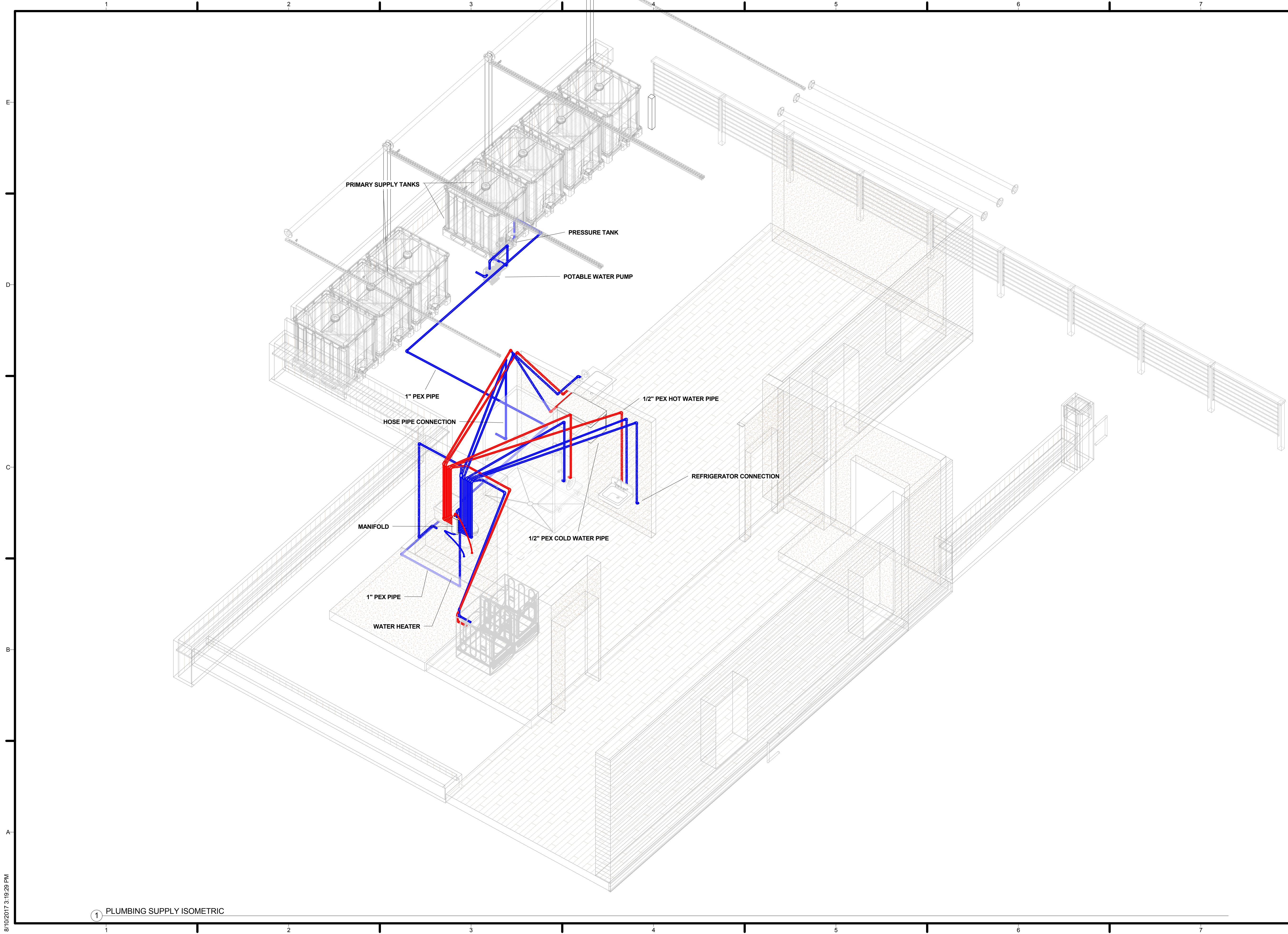
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SHEET TITLE  
**PLUMBING SYSTEM  
 DIAGRAMS**

**P-602**






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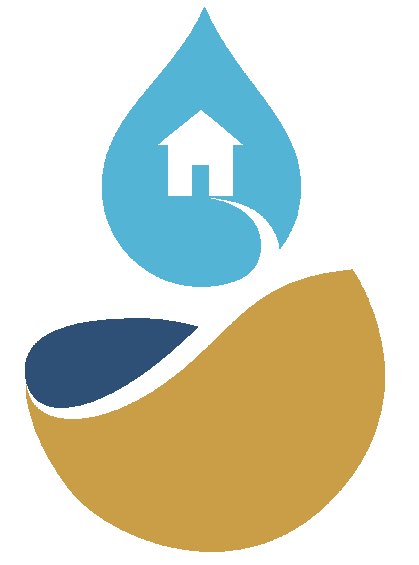
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SHEET TITLE  
**SUPPLY PIPING ISOMETRIC**

**P-901**

8/10/2017 3:19:29 PM





**OUR H<sub>2</sub>OUSE**

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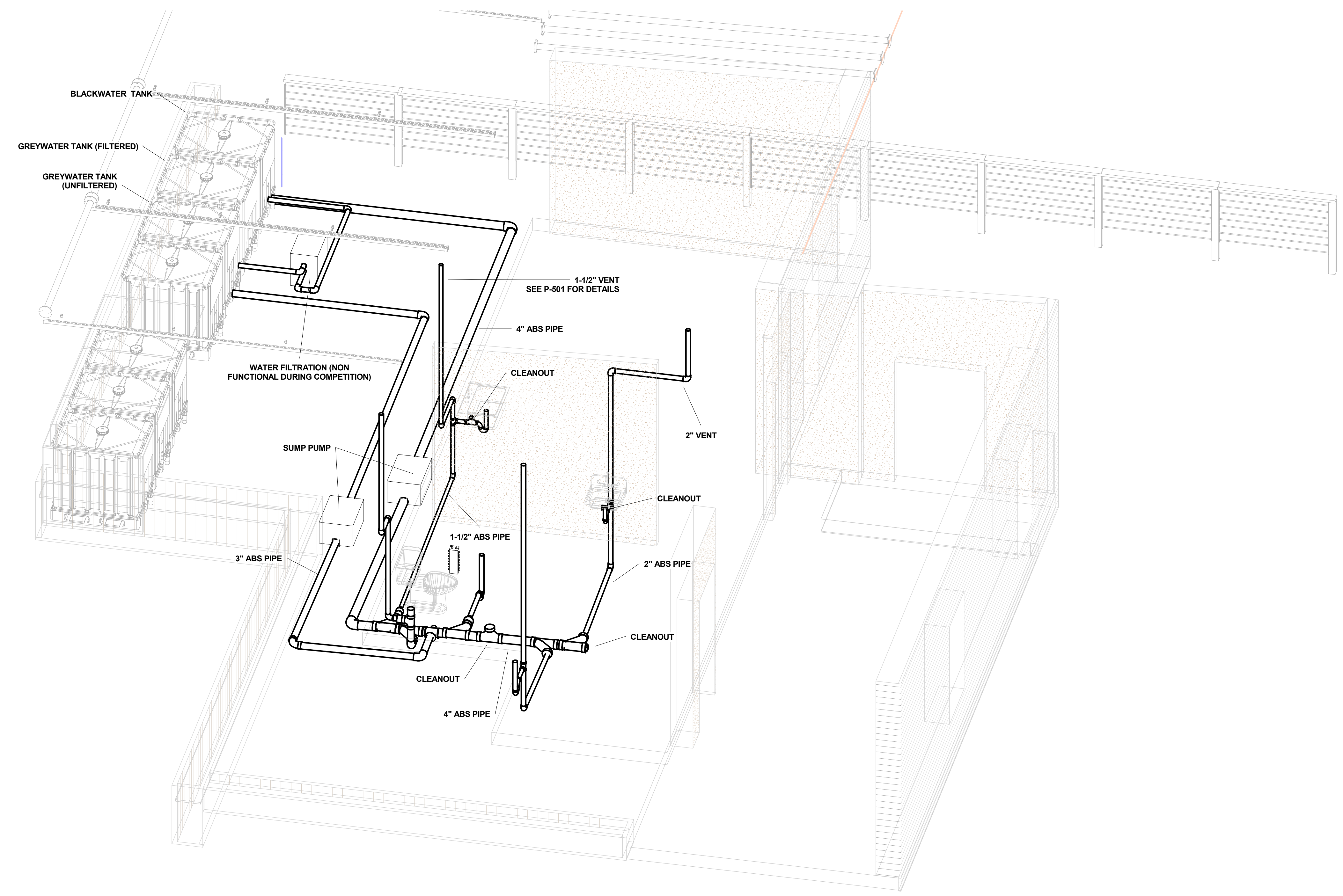


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SHEET TITLE  
**RETURN PIPING ISOMETRIC**

**P-902**



① PLUMBING RETURN ISOMETRIC

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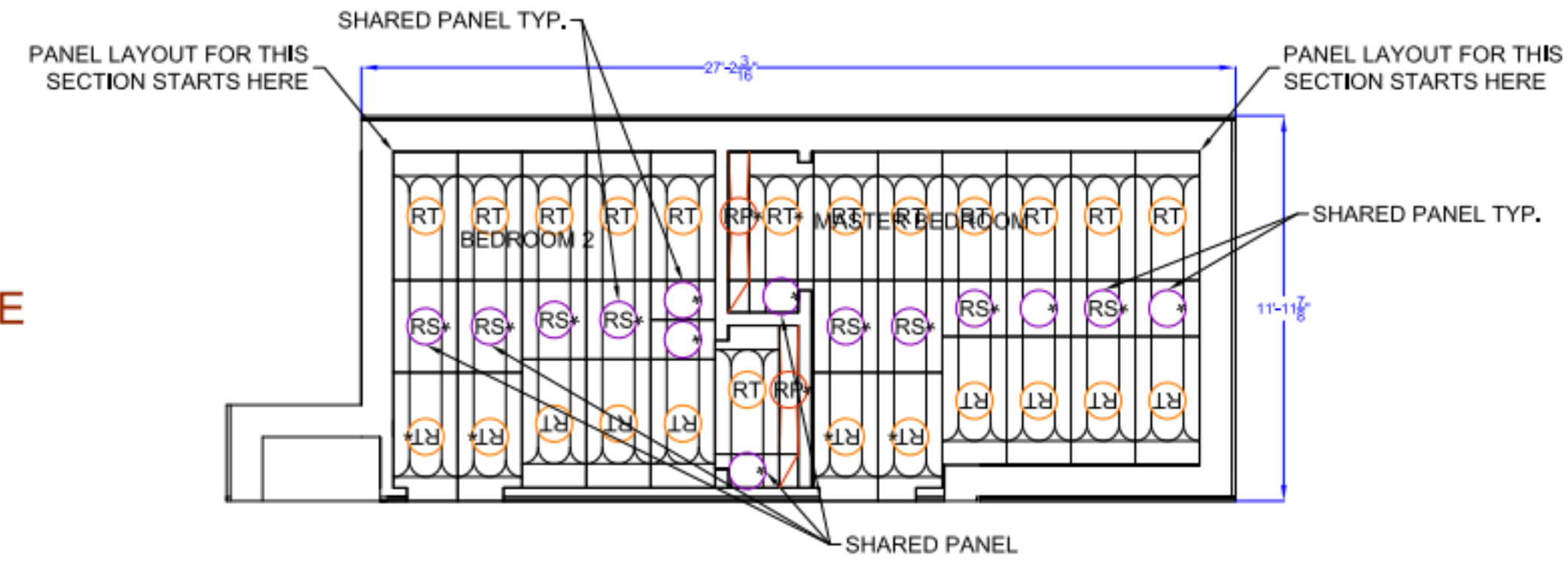






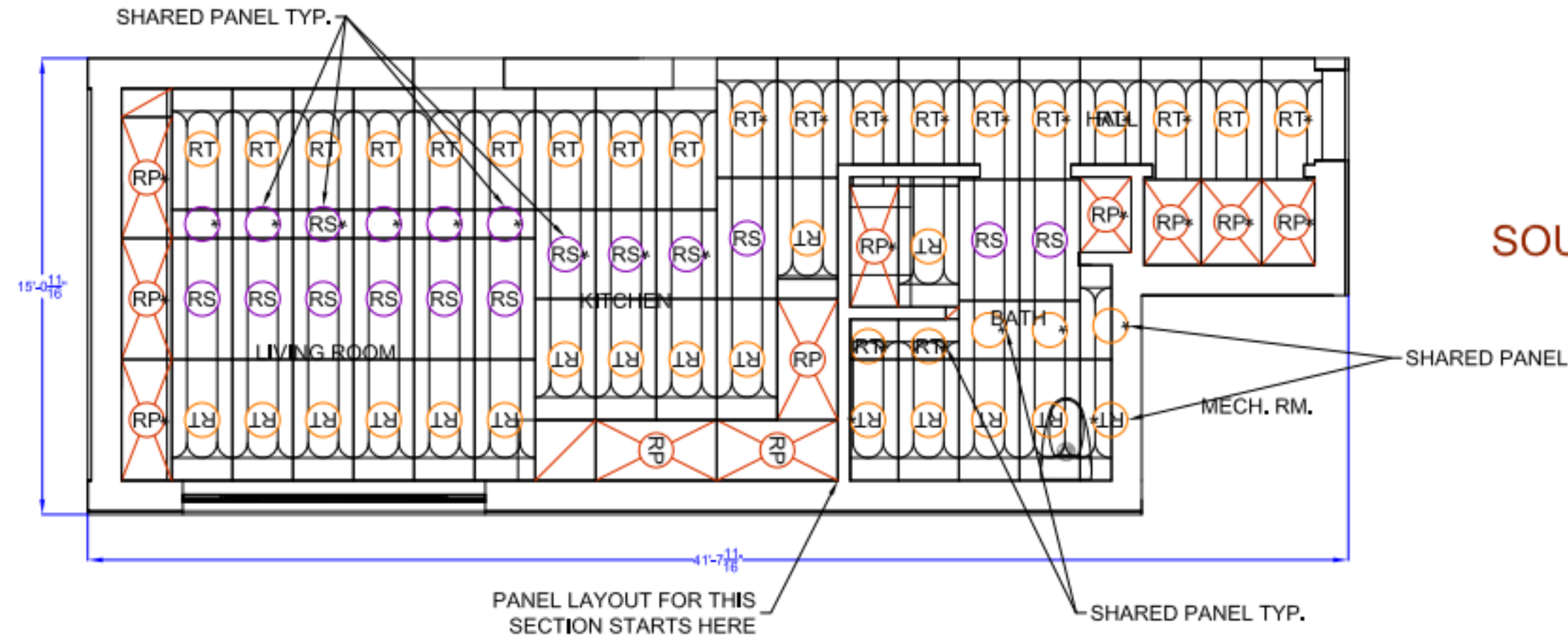


**NORTH MODULE**



- MANDATORY STRUCTURAL NOTES**
1. TO ENSURE OPTIMAL PANEL INSTALLATION, FOLLOW PANEL LAYOUT PLANS, ALL WARMBOARD INSTALLATION INSTRUCTIONS, AND APA GUIDELINES. FAILURE TO DO SO COULD CAUSE PANEL WASTE.
  2. WARMBOARD PLANS ARE CONCEPTUAL AND DO NOT SUPERSEDE STRUCTURAL PLANS WHICH MAY BE PART OF THE ARCHITECTURAL PLAN SET. SHOULD THERE BE A CONFLICT BETWEEN WARMBOARD PLANS AND THE STRUCTURAL PLANS, CONSULT IMMEDIATELY WITH WARMBOARD CUSTOMER SERVICE BEFORE PROCEEDING.
  3. INSTALLING CONTRACTOR IS RESPONSIBLE TO VERIFYING ALL MEASUREMENTS PRIOR TO THE INSTALLATION OF WARMBOARD PANELS.

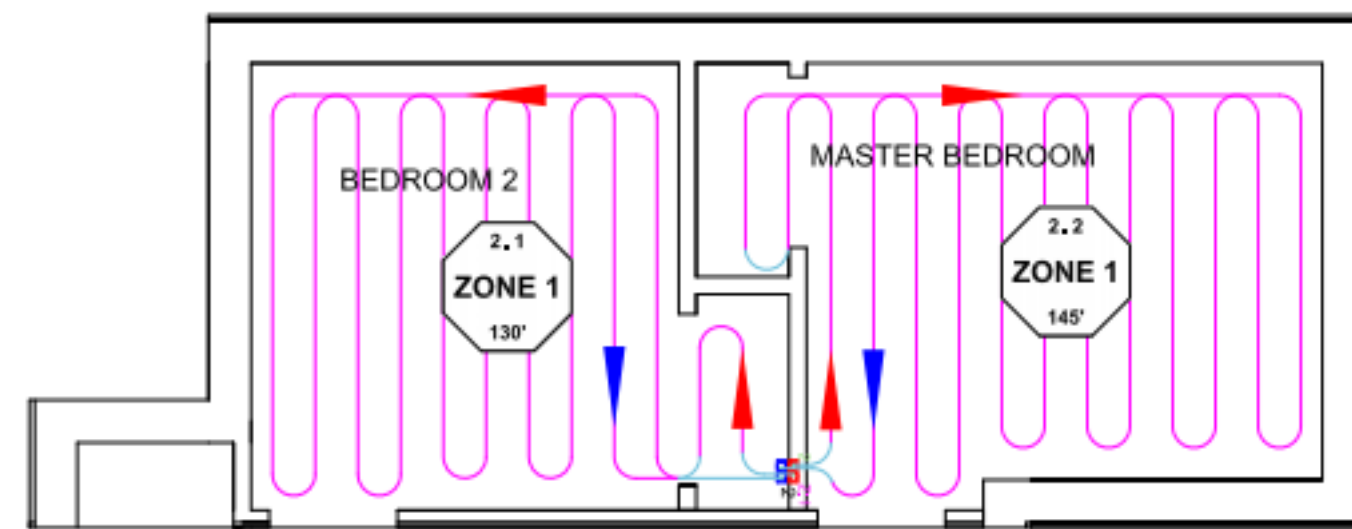
**SOUTH MODULE**



**FIRST FLOOR PANEL LAYOUT**

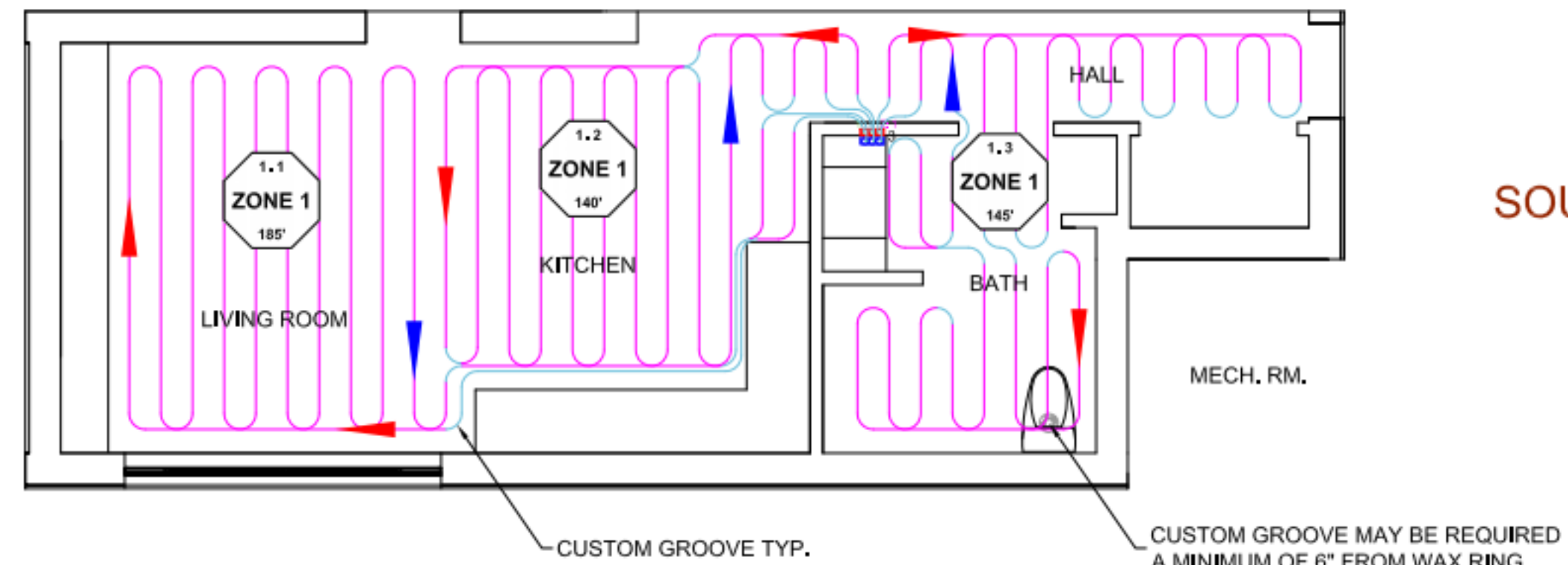
**SCALE: NTS**

**NORTH MODULE**



- MANDATORY TUBING NOTES**
1. USE ONLY WARMBOARD APPROVED TUBING. SEE INSTALLATION MANUAL
  2. USE AN APPROPRIATELY WEIGHTED ROLLER TO PRESS TUBING INTO CHANNELS.
  3. MINOR FIELD MODIFICATION OF TUBING PLAN IS WELCOME AND TYPICAL WHEN IN DOUBT CALL WARMBOARD CUSTOMER SERVICE.

**SOUTH MODULE**



**FIRST FLOOR TUBE LAYOUT**

**SCALE: NTS**

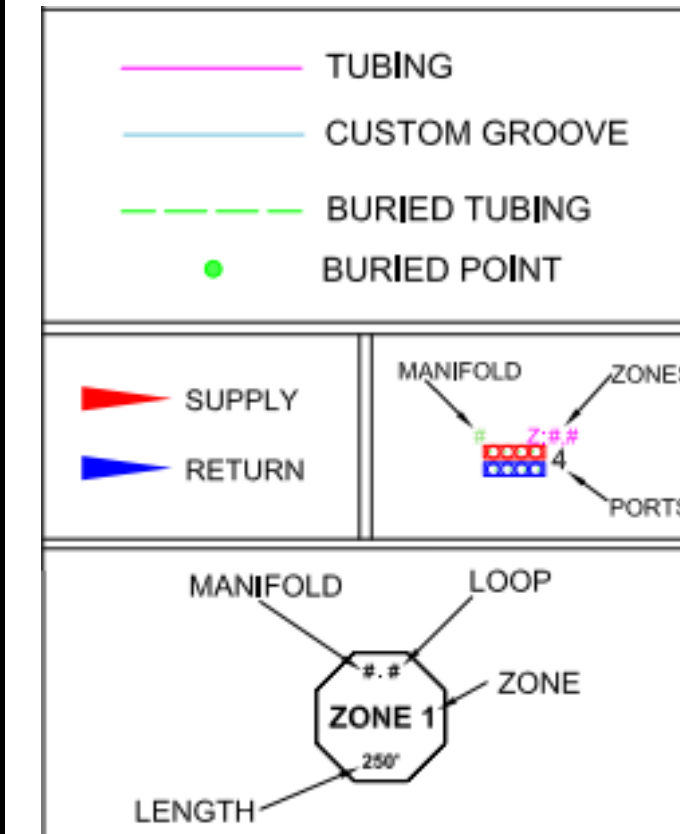
**GENERAL SHEET NOTES**

- THE RADIANT FLOOR SYSTEM IS DESIGNED TO ACCOMMODATE THE SEAM THAT SEPARATES THE TWO BUILDING MODS WITH A JUNCTION BOX FOR EACH SIDE.
- WATER FROM THE MAIN DISTRIBUTION MANIFOLD SUPPLIES THE HVAC PIPING CIRCUITS VIA EACH JUNCTION BOX.
- THE CURRENT PIPING LAYOUT WAS CHOSEN FOR COMPATIBILITY WITH WARMBOARD PRODUCTS AS WELL AS EFFICIENT INSTALLATION AND DISTRIBUTION PURPOSES.
- NO PIPING SHALL BE ROUTED BENEATH CABINETS, SINKS AND OTHER APPLIANCES/FIXTURES, NOR IN CLEANSING AND MECHANICAL ROOMS.
- RADIANT SYSTEM HEATING SHALL BE SUPPLIED THROUGH THE AW HP.
- THE AW HP SHALL BE STRAPPED TO THE WALLS IN COMPLIANCE WITH EARTHQUAKE CODES
- NO PIPING SHALL BE IN CLOSETS OR THE KITCHEN PANTRY (\*EXCEPT WHERE JUNCTION BOXES ARE LOCATED)
- PIPES SHALL BE 4" FROM WALLS AND 6" FROM OTHER PIPES (EXCEPT HOME RUNS)
- ALL RADIANT PIPING SHALL BE 1/2" PEX

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**HYDRONIC RADIANT FLOOR PLAN**

**M-101**





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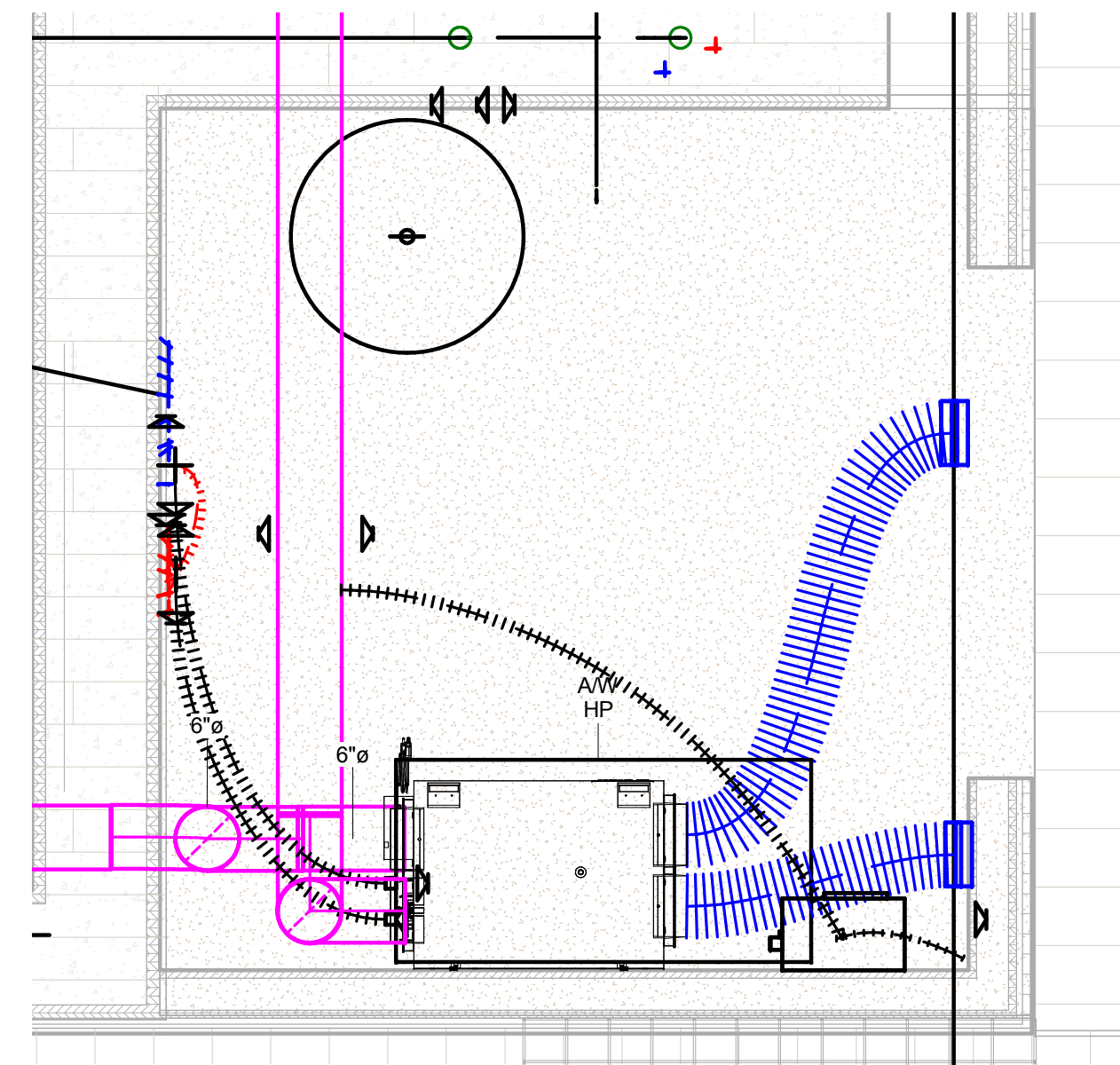


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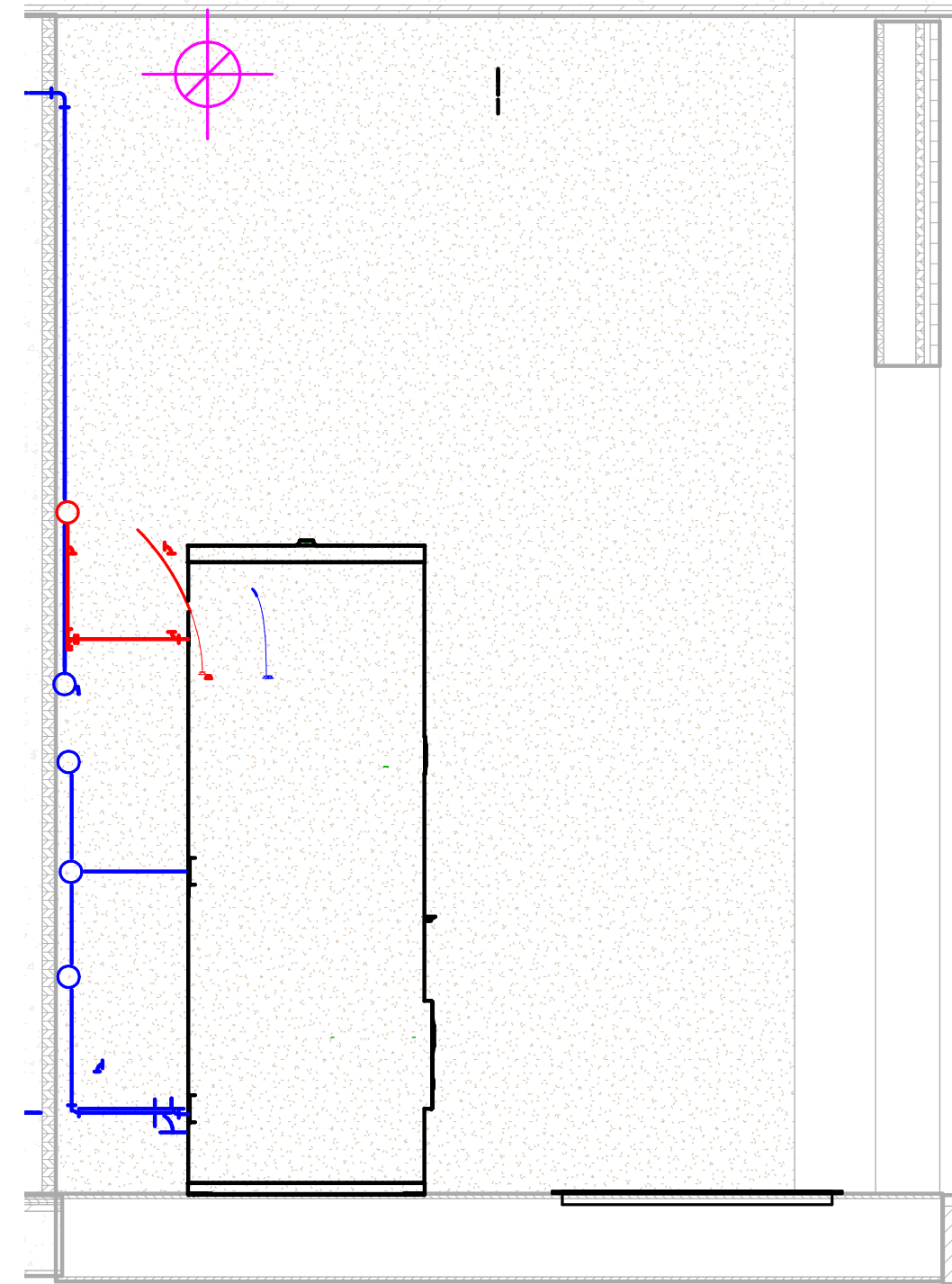
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SHEET TITLE  
 SOUTH MECHANICAL ROOM

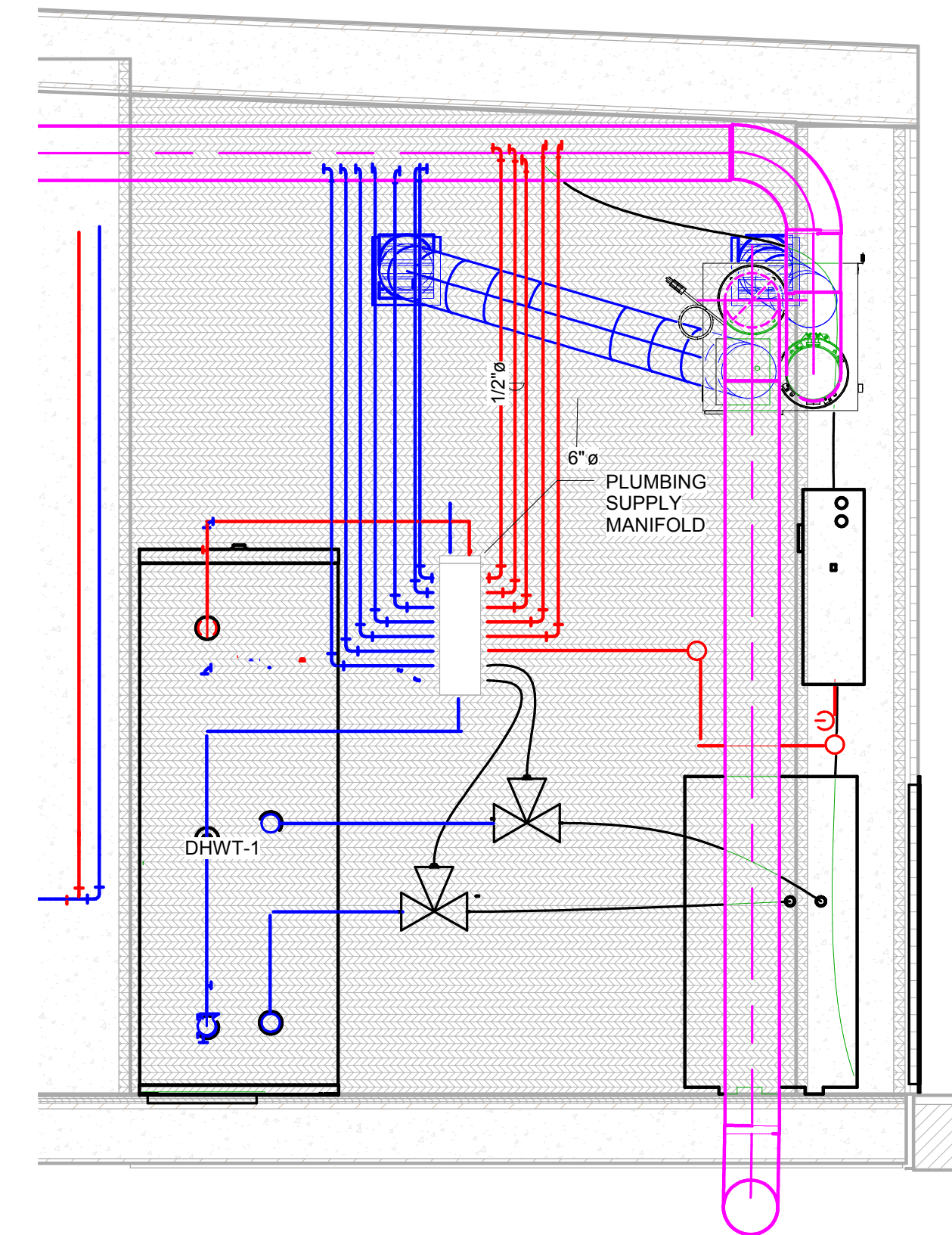
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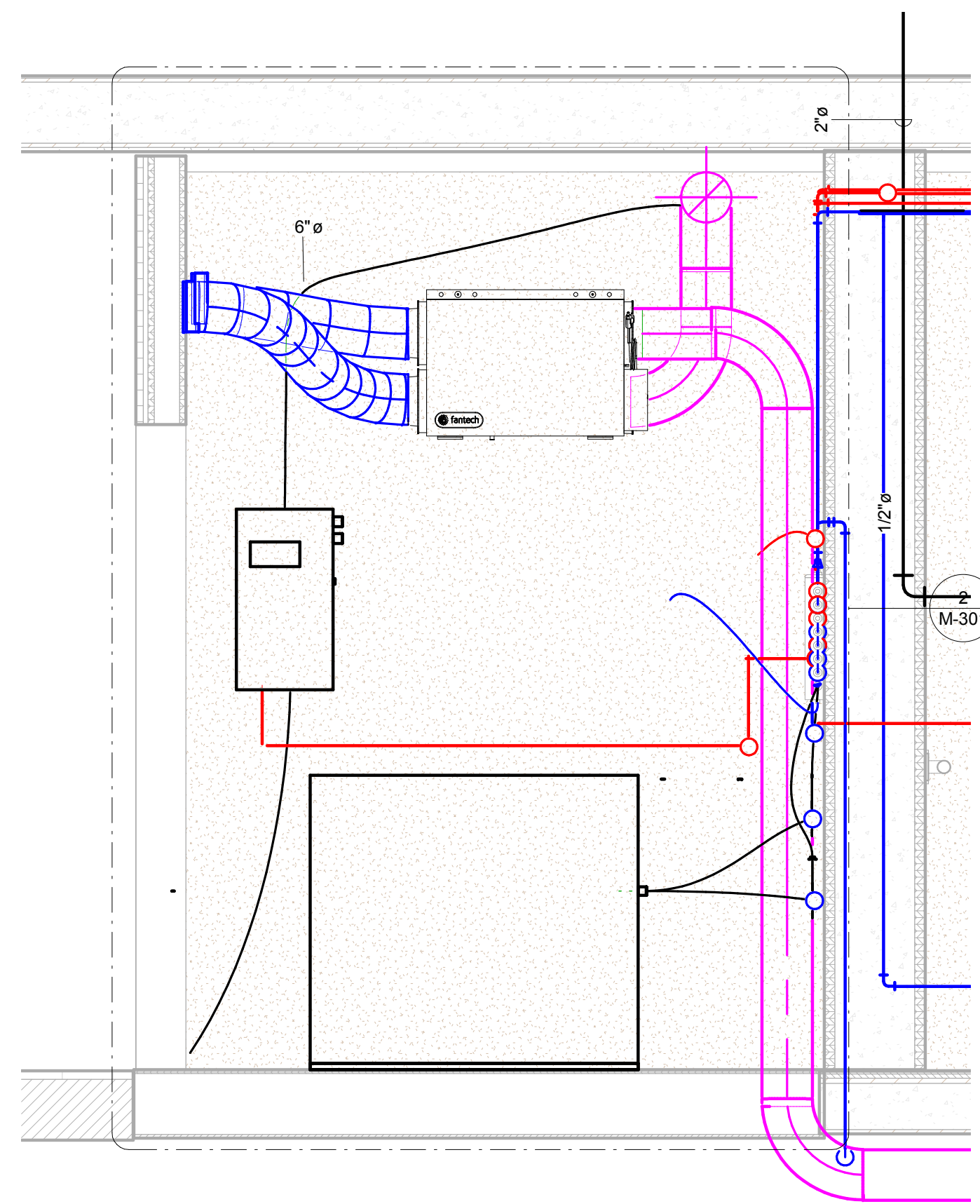
③ S. MECHANICAL ROOM LARGE SCALED VIEW  
 3/4" = 1'-0"



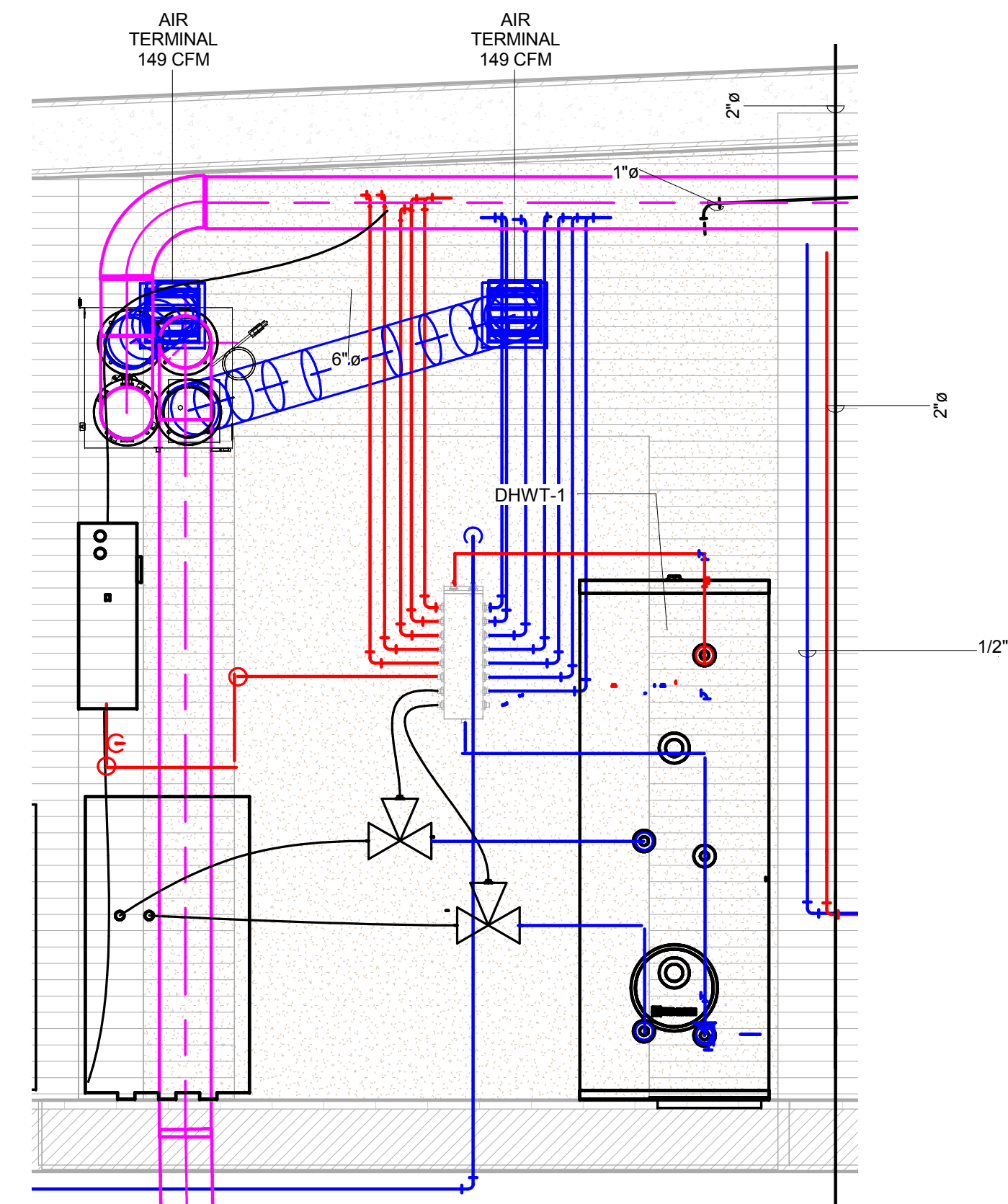
② THIS ONE IS THE ONE  
 3/4" = 1'-0"



① EAST ELEVATION S. MECH.  
 3/4" = 1'-0"

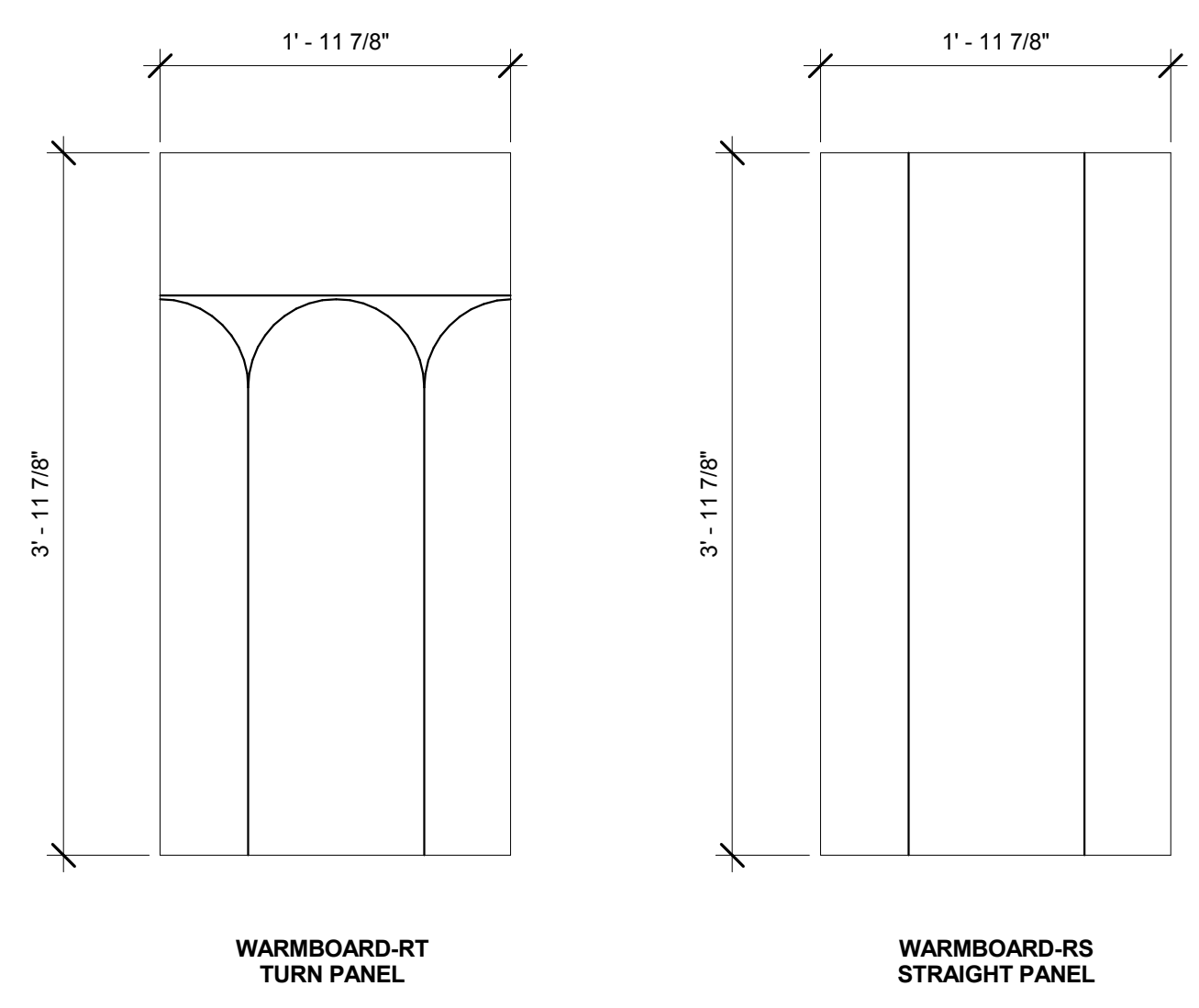


⑤ SOUTH ELEVATION S. MECH.  
 3/4" = 1'-0"

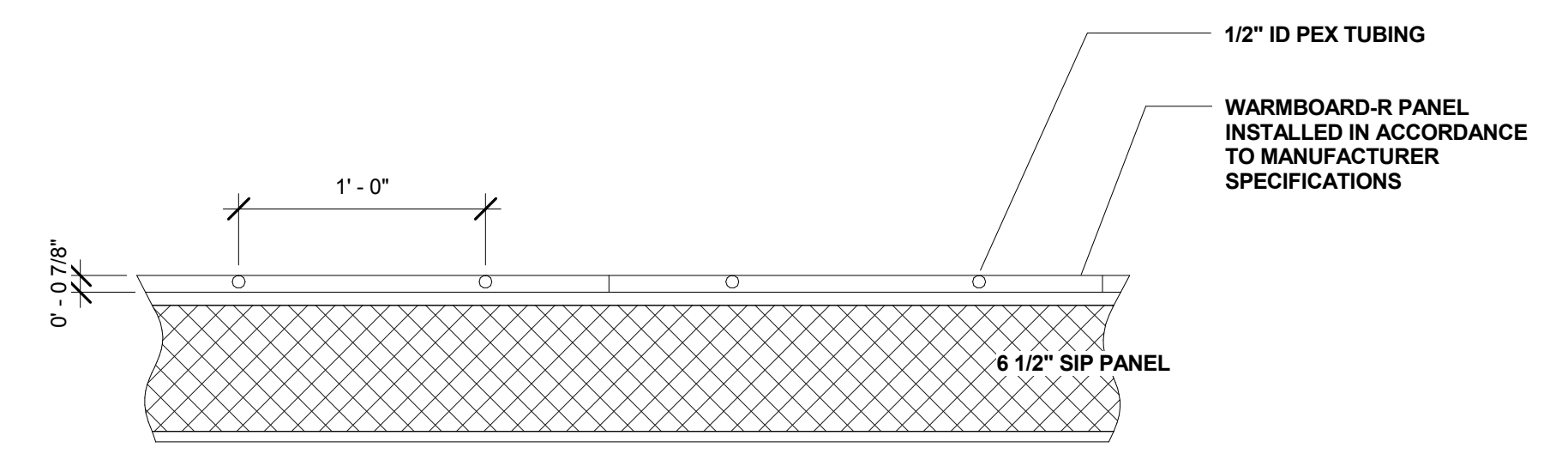


④ WEST ELEVATION S. MECH.  
 3/4" = 1'-0"

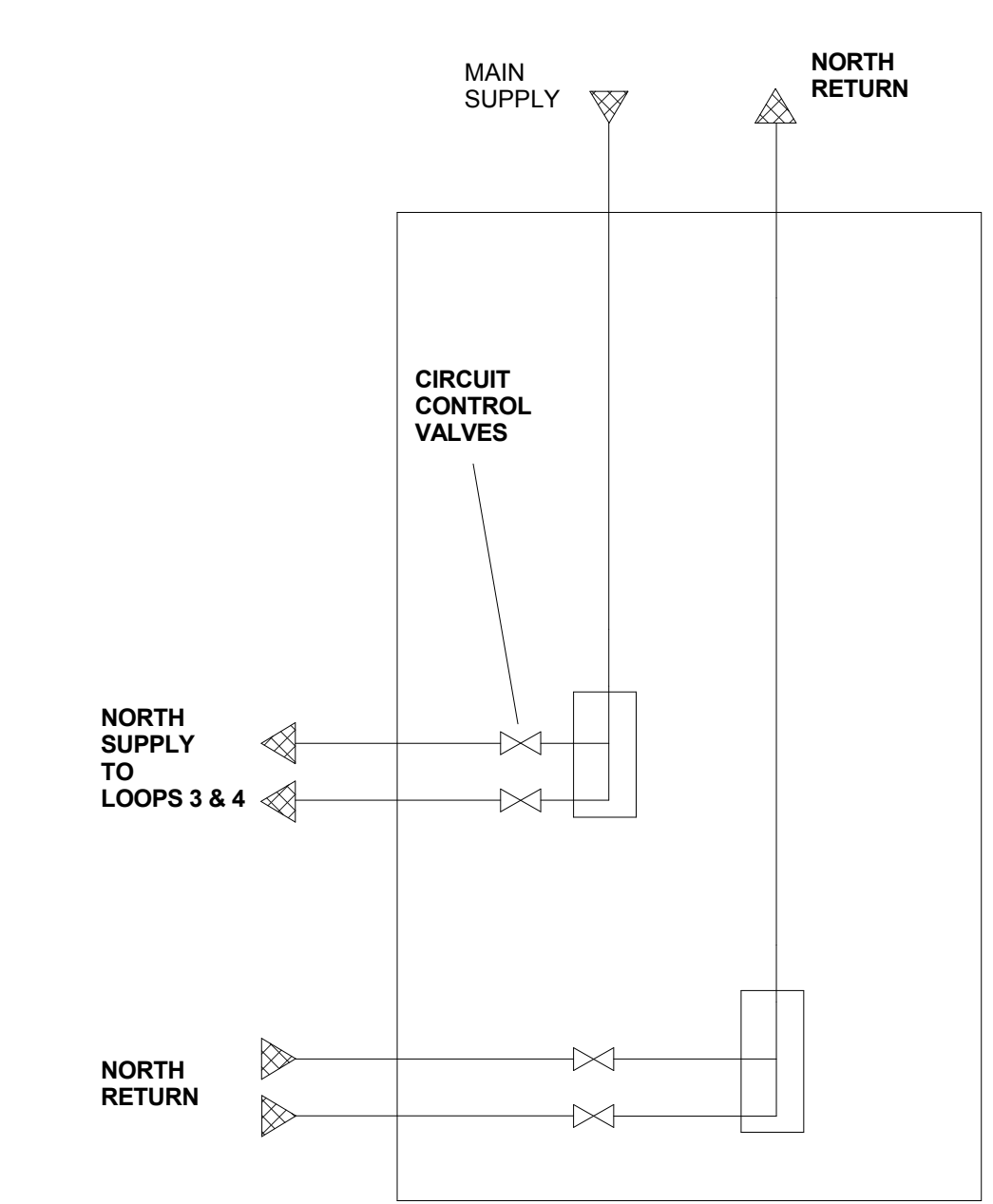




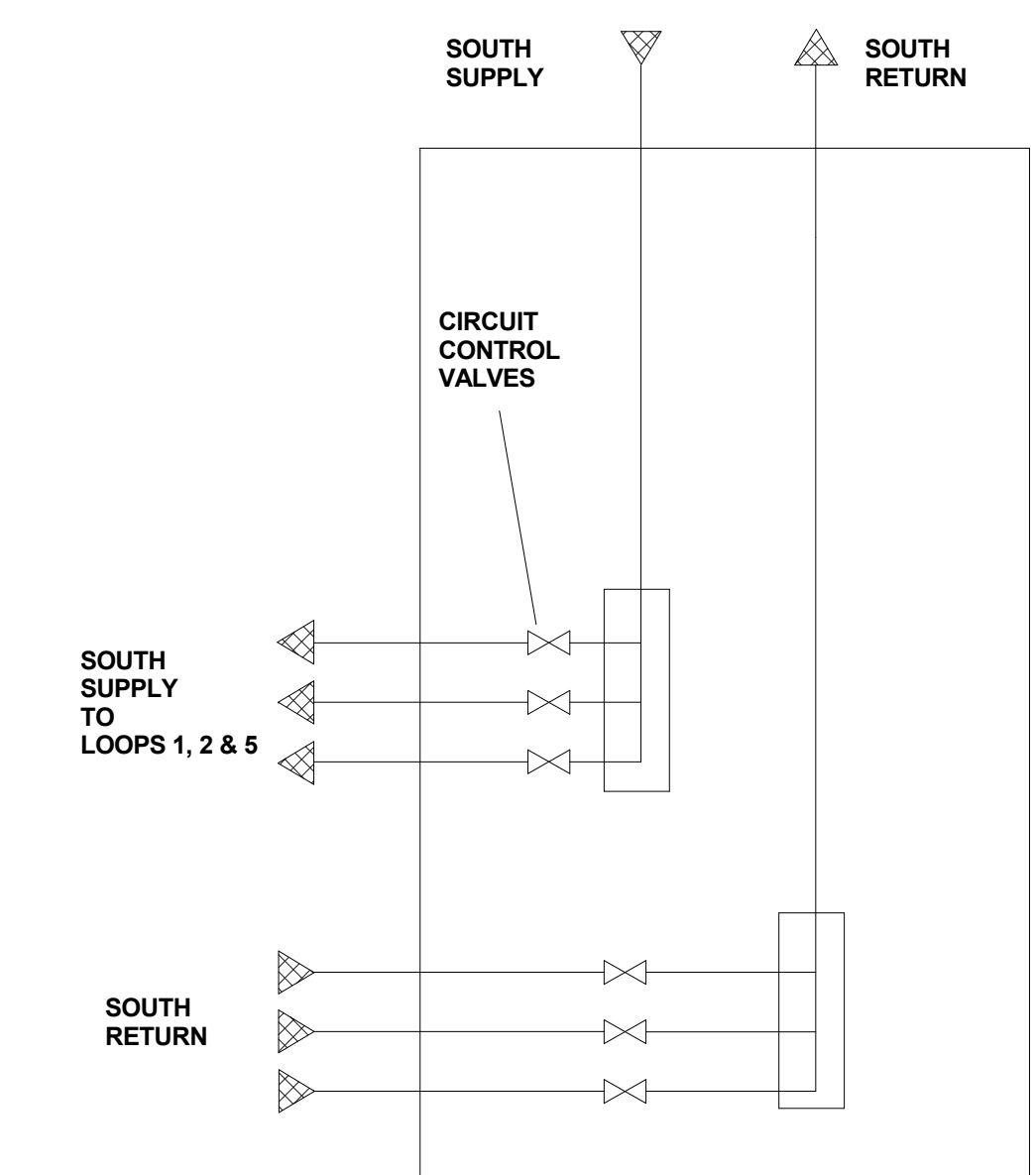
① WARMBOARD PANELS  
1" = 1'-0"



② TYPICAL HYDRONIC DETAIL  
1 1/2" = 1'-0"



③ MECH RADIANT NORTH JUNCTION  
NTS



④ MECH SOUTH JUNCTION  
NTS



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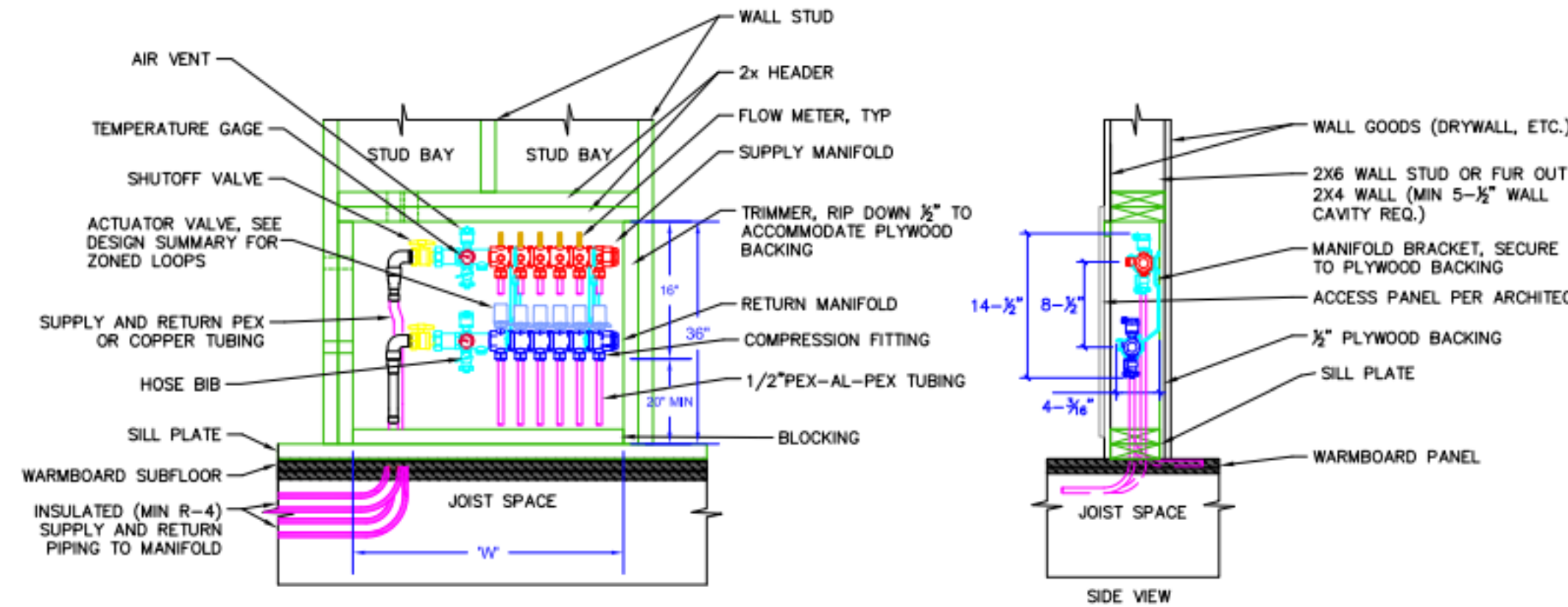


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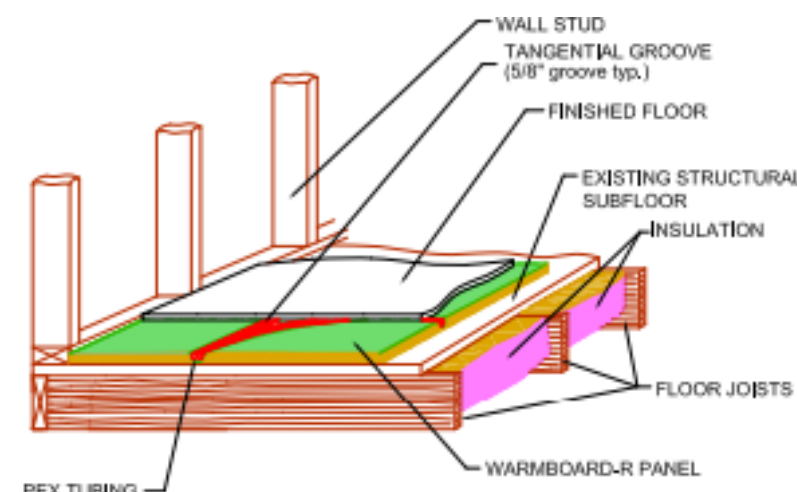
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SHEET TITLE  
**HYDRONIC RADIANT DETAILS**

**M-501**



1 MULTI-ZONE INSTALLATION  
NTS



1 - WARMBOARD-R OVER EXISTING  
STRUCTURAL SUBFLOOR

2 PANEL INSTALLATION  
NTS

A. GENERAL INFORMATION

1. WARMBOARD-R IS ONE COMPONENT OF A HYDRONIC SYSTEM. THIS CONCEPTUAL PLAN COVERS ONLY PANEL AND TUBING LAYOUTS AND DOES NOT CONSTITUTE A COMPLETE INSTALLATION GUIDE FOR A HYDRONIC SYSTEM. Installation of a hydronic system employing Warmboard-R panels requires a combination of carpentry and plumbing skills. The general contractor shall be responsible for the skills, training, and experience of the installers. Warmboard, Inc. refers to Architectural Floor Plan Information supplied by the customer. Deviations should be brought to the immediate attention of Warmboard, Inc. The hydronic contractor shall follow the tubing layout plan and tubing installation instructions supplied. They shall also be responsible for providing an accurate heat loss analysis and the installation of the hydronic system as a whole in accordance with Radiant Panel Association (RPA) guidelines. Design floor and supply water temperatures for a given floor covering will follow RPA guidelines and the Warmboard, Inc. recommended water temperatures chart.
2. It is the installer's responsibility to assure the system functions properly, safely, and meets all local, state, and regional codes.
3. The installer is to supply and install all materials shown on this plan; as well as all other materials needed to complete this hydronic system and any incidental work not shown or specified, which can be reasonably inferred as belonging to the work necessary to provide the complete system.
4. Warmboard, Inc. makes no guarantee for any material to be installed in this hydronic system other than the Warmboard-R panels.

B. WARMBOARD-R INSTALLATION

1. WARMBOARD-R shall verify the compatibility of their layout with the attached floor plan.
2. All supply and return tubing below subfloor in unconditioned space shall be insulated with pipe insulation.
3. Custom grooves shall be routed as indicated on the plans using supplied router templates, a properly sized router equipped with a template guide, and the supplied 5/8" core box router bit. All router use shall conform to supplied instructions, and all safety instructions provided by manufacturer of the router you plan to use.
4. When applicable, installation contractor shall coordinate with the plumbing contractor so as to have all plumbing stubbed out 12" above sub-floor prior to installation.
5. Alignment pins shall be used for proper alignment of panels.
6. Any excess adhesive that may interfere with tubing installation shall be removed.
7. All burrs left by custom routing and on angle holes shall be removed.
8. Refer to manufacturer's installation manual for additional guidelines for this product.

C. TUBING INSTALLATION

1. Holes for routing below sub-floor shall be drilled using a 3/4" bit at the correct location and in the appropriate direction, so that the end of the tube can be passed from the groove to under the floor area in the right direction, leading to the appropriate manifold location or the boiler panel.
2. All grooves shall be inspected and cleaned of any debris prior to tubing installation.
3. Tubing for radiant floor heating shall be 1/2" PEX approved by Warmboard, Inc. (See approved tubing list).  
The installation of nails plates are required to hold down tubing in channels, remove plates before finish floors are installed. **Caution**, do not install silicone or other types of adhesives in tubing channel
4. Tubing shall be and remain pressurized immediately following installation into the panel diaphragm for the duration of all construction.
5. Installer is responsible for protecting tubing from freezing during construction. Should climatic conditions occur, this would require adding antifreeze and corrosion inhibiting fluids upon completion of work.
6. Installer to record length of every pipe and photograph completed installation.
7. Special note for carpeted areas: 'Fix-It-All' or 'Portland Cement' shall fill all any unused groove areas. This provides support for the pad & carpet.

WARMBOARD-R INSTALLATION NOTES - MANDATORY:

The contractor(s) responsible for the installation of the Warmboard-R panels, as well as any hydronic tubing supplied by other, shall review these plans for accuracy and completeness. These contractors will also be responsible to verify all measurements prior to any Warmboard-R installations. Any discrepancy between these plans and the existing framing of the project for which they apply shall be brought to the immediate attention of Warmboard, Inc.



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SHEET TITLE  
HYDRONIC RADIANT  
INSTALLATION DETAILS

M-502





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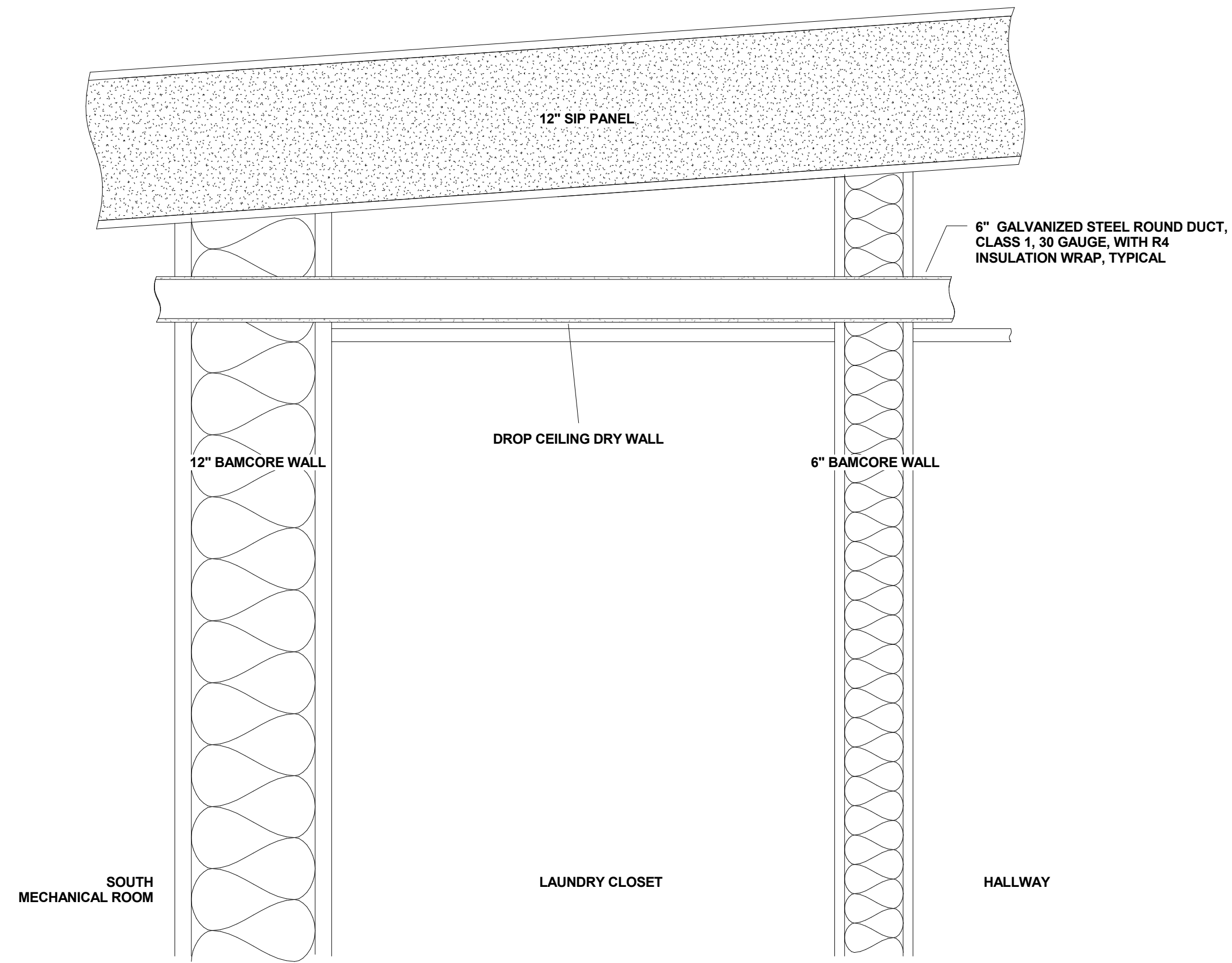


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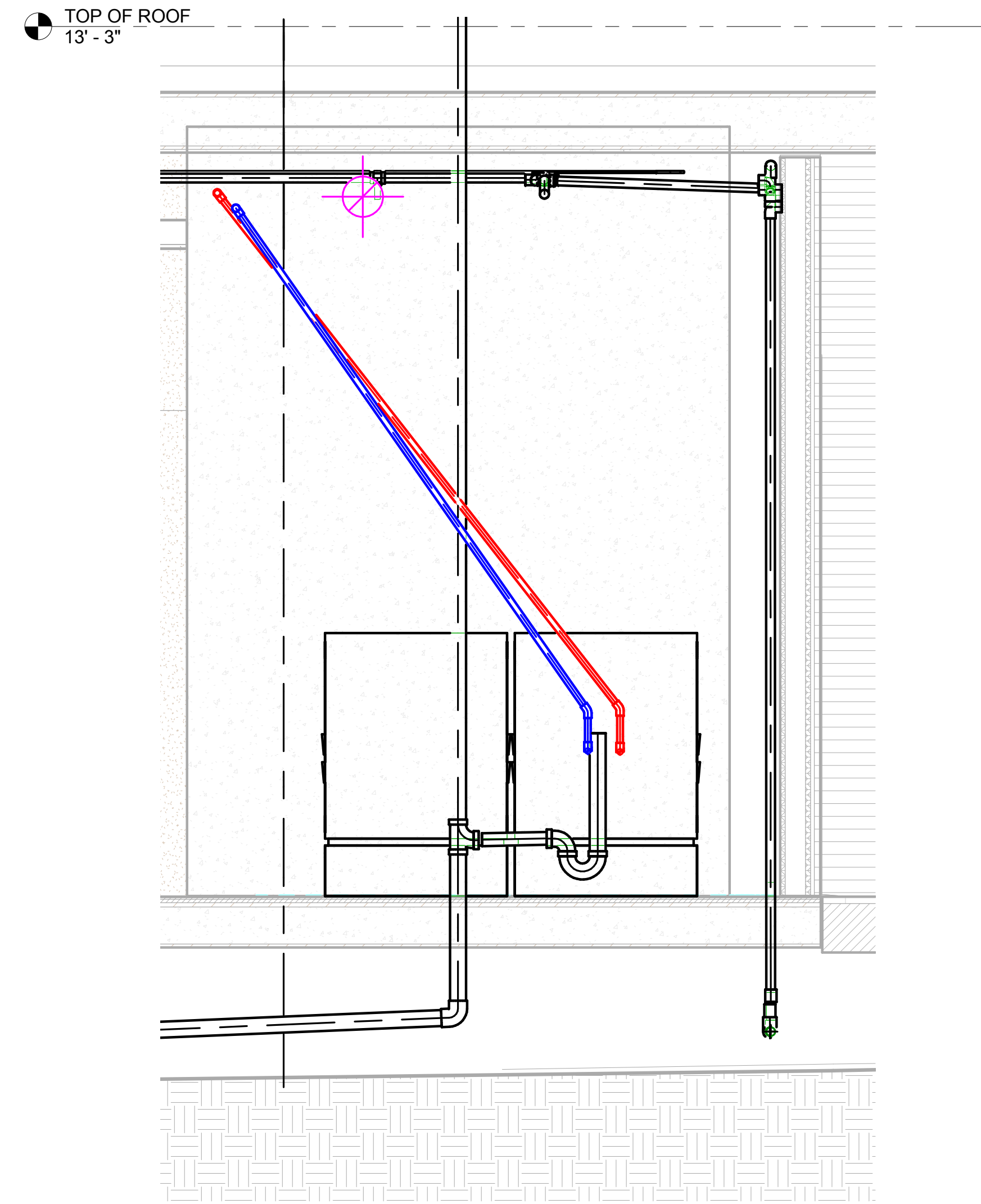
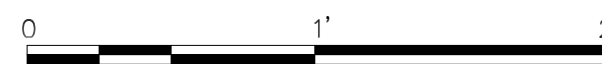
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SHEET TITLE  
**LAUNDRY ROOM  
 DETAIL**

**M-503**

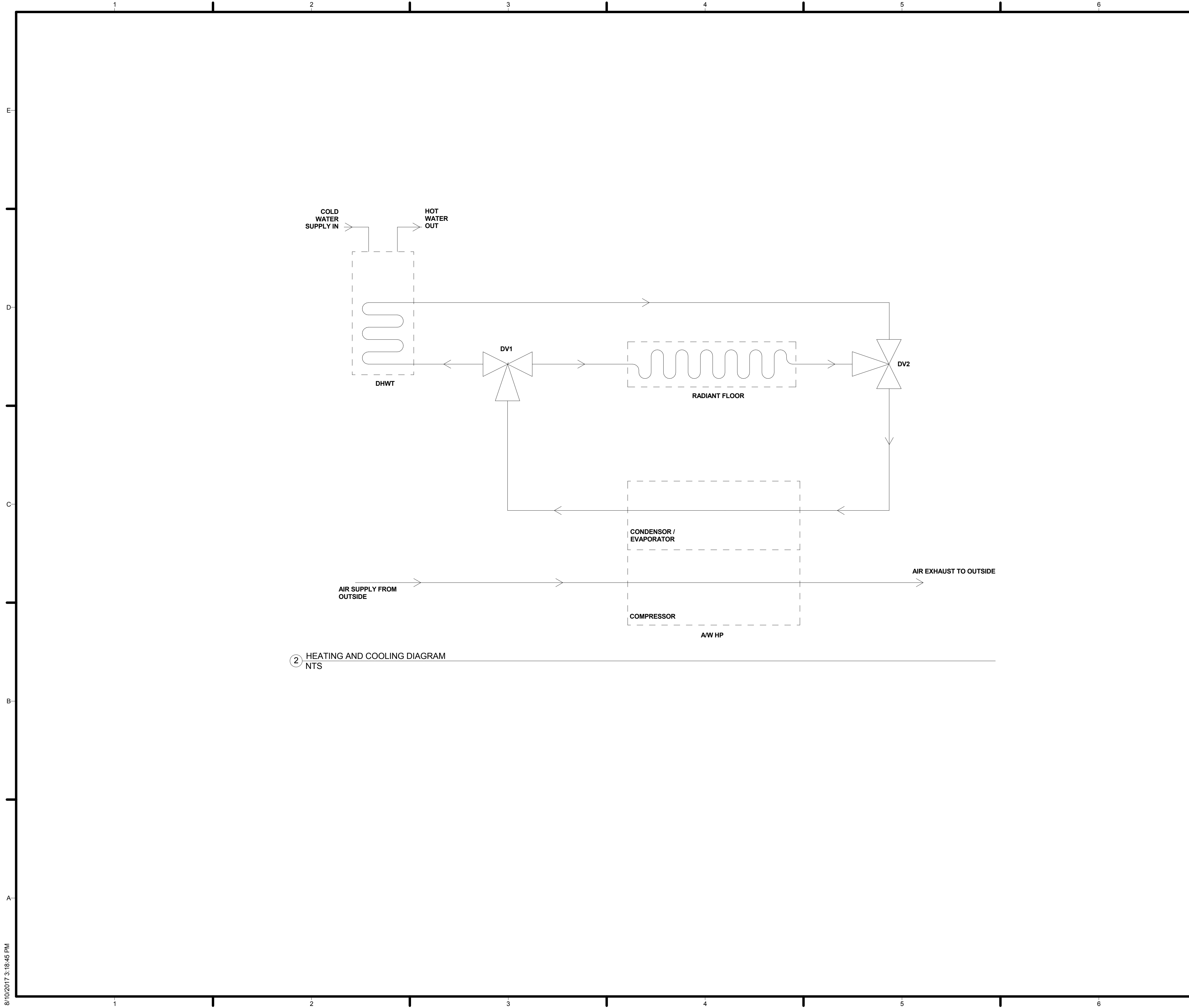


① DUCTING DETAIL  
 1 1/2" = 1'-0"



② MECHANICAL LAUNDRY  
 3/4" = 1'-0"





② HEATING AND COOLING DIAGRAM  
NTS

**GENERAL SHEET NOTES**

THERE ARE THREE LOOPS: AIR, WATER, REFRIGERANT. THE LOOPS ARE SPECIFIED AS FOLLOWS:

**AIR:**  
OUTDOOR AIR IS DIRECTED TO THE SOURCE SIDE OF THE A/W HP.

**WATER:**  
THE WATER LOOP RUNS HOT WATER FROM THE A/W HP INTO A CLOSED COIL INSIDE THE INDIRECT HOT WATER TANK, WHICH RETURNS BACK TO THE A/W HP. IN ANOTHER SCENARIO, THE DIVERTING VALVES SWITCH MODES. THE HOT OR COLD WATER (DEPENDING ON A/W HP MODE) NOW RUNS THROUGH THE RADIANT FLOOR SYSTEM, AND BACK TO THE A/W HP.

**REFRIGERANT:**  
REFRIGERANT RUNS IN A CLOSED INTERNAL LOOP INSIDE THE A/W HP.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- CHECK VALVE (CV)
- DIVERTING VALVE (DV)
- OBJECT ENVELOPE
- FLUID LINES



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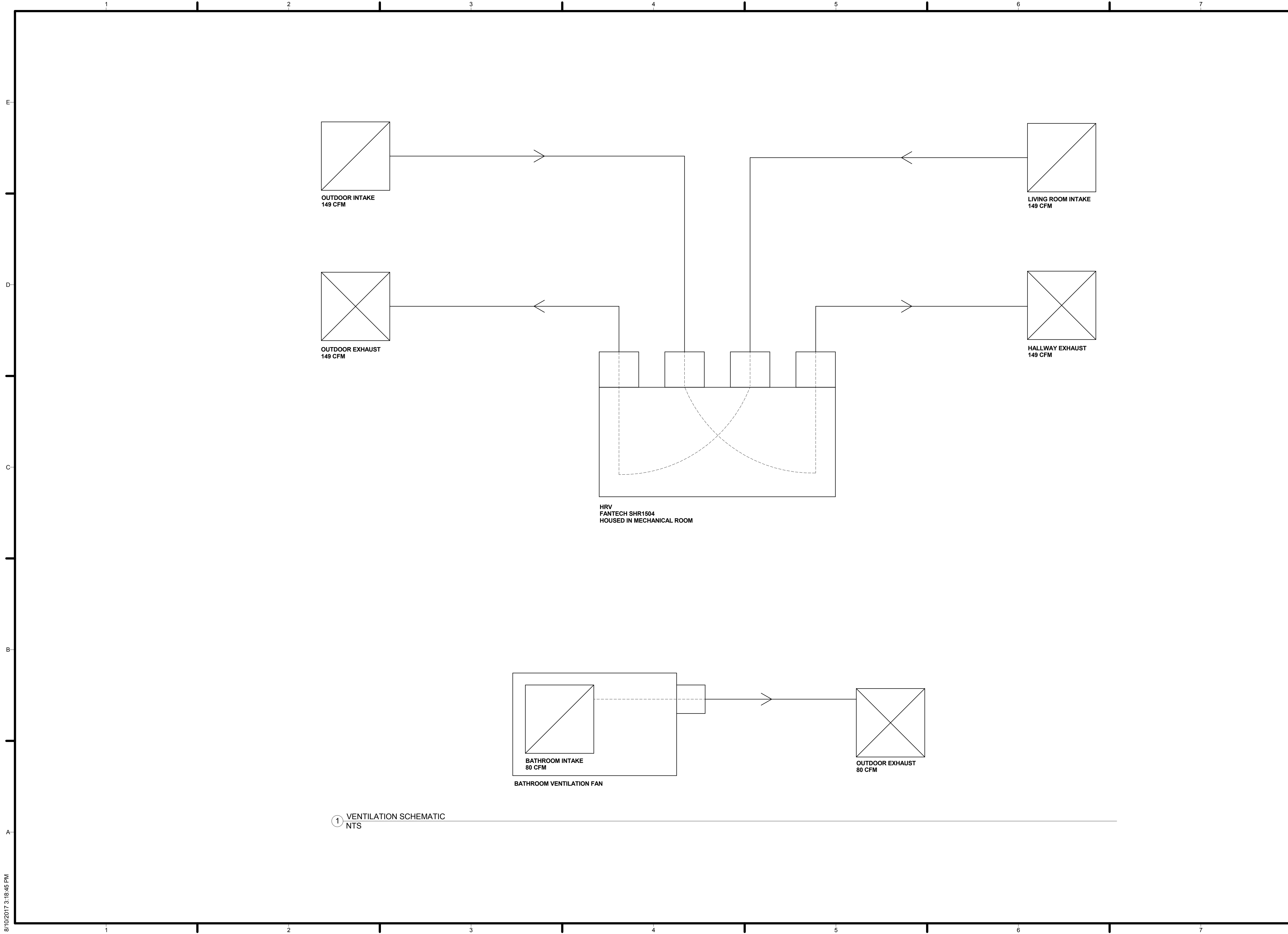
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SHEET TITLE  
**HEATING AND COOLING DIAGRAM**

**M-601**





① VENTILATION SCHEMATIC  
NTS



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SHEET TITLE  
**VENTILATION DIAGRAM**

**M-602**

MECHANICAL EQUIPMENT SCHEDULES

DESCRIPTION	ABBREVIATION	MANUFACTURER	MODEL NUMBER	QUANTITY	DIAMETER (IN)	HEIGHT (IN)	WIDTH (IN)	DEPTH (IN)	WEIGHT (LB)	AIRFLOW (CFM)	CAPACITY (CU. FT.)	WATER FLOW (CFM)	HEATING (BTU/H)	COOLING (BTU/H)	VOLTAGE (V)	CURRENT (A)	POWER (W)	URL
AIR TO WATER HEAT PUMP	A/W HP	PHNIX	HERO SERIES H8	1	N/A	35.43	38.583	18.307	243	N/A	N/A	0.942	30600	23800	230	11.8	2600	<a href="https://ucdavis.app.box.com/file/135123883418">https://ucdavis.app.box.com/file/135123883418</a>
BATH EXHAUST FAN		PANSONIC	WHISPERCEILING FV-08VQ5	1	N/A	13.00	13	8.37	10.4	80	N/A	N/A	N/A	50	120	0.125	15	<a href="http://www.homedepot.com/p/Panasonic-WhisperCeiling-80-CFM-Ceiling-Exhaust-Bath-Fan-ENERGY-STAR-FV-08VQ5/203762021">http://www.homedepot.com/p/Panasonic-WhisperCeiling-80-CFM-Ceiling-Exhaust-Bath-Fan-ENERGY-STAR-FV-08VQ5/203762021</a>
CIRCULATOR PUMP	P	GRUNDFOS	59896341	2	N/A	6.50	5.25	N/A	7.25	N/A	N/A	2.273	N/A	N/A	115	.66	80	<a href="http://www.supplyhouse.com/Grundfos-59896341-UPS15-58FC-3-Speed-Circulator-Pump-1-25-HP-115-volt-4701000-p?gclid=CLTAnL7-mtICFRB4fgoda3sO0g">http://www.supplyhouse.com/Grundfos-59896341-UPS15-58FC-3-Speed-Circulator-Pump-1-25-HP-115-volt-4701000-p?gclid=CLTAnL7-mtICFRB4fgoda3sO0g</a>
ELECTRIC STOVE		GENERAL ELECTRIC	ABS45DFWS	1	N/A	44.50	30	29	150	N/A	5	N/A	N/A	N/A	208/240	31.9/33.3	2500	<a href="http://products.geappliances.com/appliance/gea-specs/ABS45DFWS">http://products.geappliances.com/appliance/gea-specs/ABS45DFWS</a>
HEAT RECOVERY VENTILATOR	HRV	FANTECH	VHR-704	1	N/A	8.50	8.5	8	30	58	N/A	N/A	N/A	N/A	120	0.4	48	<a href="http://www.hvacquick.com/products/residential/HRVs-and-ERVs/Residential-HRV-ERV/Fantech-Residential-Heat-Recovery-Ventilators">http://www.hvacquick.com/products/residential/HRVs-and-ERVs/Residential-HRV-ERV/Fantech-Residential-Heat-Recovery-Ventilators</a>
HUMIDIFIER		HONEYWELL	HM700A	1	N/A	11.50	6.75	21.5	15	N/A	N/A	N/A	N/A	N/A	120	12	1440	<a href="https://customer.honeywell.com/resources/TechLit/TechLitDocuments/33-00000s/33-00118EFS.pdf">https://customer.honeywell.com/resources/TechLit/TechLitDocuments/33-00000s/33-00118EFS.pdf</a>
PRESSURE AND TEMPERATURE GAUGE		WATTS	121662	2	3	1.94	3	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<a href="http://www.supplyhouse.com/Watts-0121662-LFDPTG-3-3-Pressure-Temperature-Gauge-0-200-psi?gclid=CNq_3t28mNICFUIFgod1ycF2A">http://www.supplyhouse.com/Watts-0121662-LFDPTG-3-3-Pressure-Temperature-Gauge-0-200-psi?gclid=CNq_3t28mNICFUIFgod1ycF2A</a>
RADIANT HEAT MANIFOLD		BLUEFIN	HM5	1	1, 3/4	10.00	14	3.86	N/A	N/A	N/A	0.176	N/A	N/A	N/A	N/A	N/A	<a href="http://www.supplyhouse.com/Bluefin-HM5-5-Loop-Stainless-Steel-Radiant-Heat-Manifold">http://www.supplyhouse.com/Bluefin-HM5-5-Loop-Stainless-Steel-Radiant-Heat-Manifold</a>
REFRIGERATOR		FRIGIDAIRE	FFHT1621TS	1	N/A	63.38	28	30.125	150	N/A	11.5	N/A	N/A	N/A	115	15	1725	<a href="http://www.homedepot.com/p/Frigidaire-11-5-cu-ft-Top-Freezer-Refrigerator-in-Black-ENERGY-STAR-FFET1222QB/205785620?cm_mmc=Shopping[THD][google]D29+Appliances&amp;mid=s7W1k8ldOdc_mtld_8903tb925190_pcrd_47645852622_pkw_pmt_product_205785620_slid_&amp;gclid=CNWHILOUjtICFYOTfodQocLRg">http://www.homedepot.com/p/Frigidaire-11-5-cu-ft-Top-Freezer-Refrigerator-in-Black-ENERGY-STAR-FFET1222QB/205785620?cm_mmc=Shopping[THD][google]D29+Appliances&amp;mid=s7W1k8ldOdc_mtld_8903tb925190_pcrd_47645852622_pkw_pmt_product_205785620_slid_&amp;gclid=CNWHILOUjtICFYOTfodQocLRg</a>
REGISTER		TRUAIRE	H103M 08X04	4	N/A	4.00	8	N/A	0.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<a href="http://www.homedepot.com/p/TruAire-8-in-x-4-in-Steel-3-Way-Wall-Ceiling-Register-H103M-08X04/202524885">http://www.homedepot.com/p/TruAire-8-in-x-4-in-Steel-3-Way-Wall-Ceiling-Register-H103M-08X04/202524885</a>
WASHER DRYER COMBO: DRYER		BEKO	HPD244112W	1	N/A	33.31	23.375	24.5	116	N/A	4.1	N/A	N/A	N/A	208-240	5	900	<a href="http://download.beko.com/Download.UsageManualsBeko/US/en_US_20160324140966_Product%20FormengUSA.pdf">http://download.beko.com/Download.UsageManualsBeko/US/en_US_20160324140966_Product%20FormengUSA.pdf</a>
WASHER DRYER COMBO: PEDESTAL		BEKO	WMZ20490	1	N/A	15.38	23.625	23.25	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<a href="http://www.abt.com/product/63371/Bosch-24-White-Dryer-Pedestal-WMZ20500.html">http://www.abt.com/product/63371/Bosch-24-White-Dryer-Pedestal-WMZ20500.html</a>
WASHER DRYER COMBO: WASHER		BEKO	WMY10148C0	1	N/A	33.13	23.625	24.625	185	N/A	2.5	N/A	N/A	N/A	208-240	15	4500	<a href="http://download.beko.com/Download.UsageManualsBeko/US/en_US_201605111814715_Product%20Formen_US.pdf">http://download.beko.com/Download.UsageManualsBeko/US/en_US_201605111814715_Product%20Formen_US.pdf</a>

MECHANICAL PIPING AND DUCTS SCHEDULE

DESCRIPTION	MANUFACTURER	MODEL NUMBER	QUANTITY	DIAMETERS (IN)	LENGTH (FT)
1/2" PEX-AL-PEX TUBING	BLUEFIN	T050-300-PAP	3	1/2	900
1" PEX PIPE	SHARKBITE	U880W100	1	1	100
INSULATED FLEXIBLE DUCT	SPEEDI-PRODUCTS	FD-25R4 06	2	6	80
GALVANIZED ROUND DUCT PIPE	IMPERIAL	GVL0125	2	6	60
INSULATION	THERMAFLEX	0509-0600-0005	5	6	5



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SHEET TITLE  
 MECHANICAL SCHEDULES

M-603



**NORTH MODULE**

PANEL SCHEDULE		
TYPE	QUANTITY	COMMENTS
RS	8	①
RT	24	①
RP	2	②

- ① ANY PANELS IN THE DRAWING THAT ARE MARKED WITH AN "OUTERBOX" INDICATE A PANEL THAT IS TO BE TRIMMED. A CAREFUL MEASUREMENT SHOULD BE MADE TO GUARANTEE A CORRECT INSTALLATION.
- ② OSB PLYWOOD PANELS USED TO FILL IN EMPTY SPACES WHERE W8-HEX MODEL PANEL MAY NOT BE APPROPRIATE.

ESTIMATED CUSTOM ROUTES	
TURNS	43
TOTAL LINEAR LENGTH OF STRAIGHT ROUTES	26'

LOOP SCHEDULE			
ZONE	MANIFOLD	LOOP	LENGTH
1	1	1	185'
1	1	2	140'
1	1	3	145'
1	2	1	130'
1	2	2	145'
Total			745'-0"

**MANIFOLD & TUBING MATERIALS LIST**

QTY	DESCRIPTION	NOTES
	1000' X 1/2" AL PEX ROLL	
1	500' X 1/2" AL PEX ROLL	(1.1,1.2,1.3) 470'
1	300' X 1/2" AL PEX ROLL	(2.1,2.2) 275'
	SINGLE SUPPLY & RETURN	
1	2 PORT SUPPLY & RETURN MANIFOLD KIT	SINGLE ZONE
1	3 PORT SUPPLY & RETURN MANIFOLD KIT	SINGLE ZONE
	4 PORT SUPPLY & RETURN MANIFOLD KIT	
	5 PORT SUPPLY & RETURN MANIFOLD KIT	
	6 PORT SUPPLY & RETURN MANIFOLD KIT	
	7 PORT SUPPLY & RETURN MANIFOLD KIT	
	8 PORT SUPPLY & RETURN MANIFOLD KIT	
	9 PORT SUPPLY & RETURN MANIFOLD KIT	
	10 PORT SUPPLY & RETURN MANIFOLD KIT	
10	1/2" COMPRESSION FITTINGS	
0	24 VOLT ACTUATORS	

**SOUTH MODULE**

PANEL SCHEDULE		
TYPE	QUANTITY	COMMENTS
RS	13	①
RT	38	①
RP	11	②

- ① ANY PANELS IN THE DRAWING THAT ARE MARKED WITH AN "OUTERBOX" INDICATE A PANEL THAT IS TO BE TRIMMED. A CAREFUL MEASUREMENT SHOULD BE MADE TO GUARANTEE A CORRECT INSTALLATION.
- ② OSB PLYWOOD PANELS USED TO FILL IN EMPTY SPACES WHERE W8-HEX MODEL PANEL MAY NOT BE APPROPRIATE.



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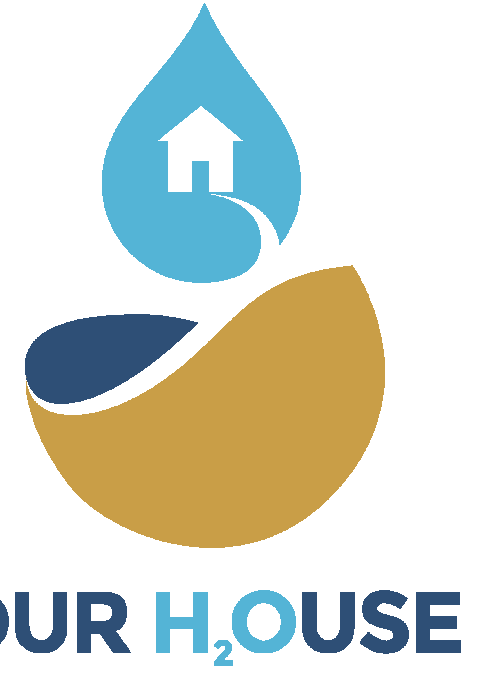


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SHEET TITLE  
**HYDRONIC RADIANT SCHEDULES**

**M-604**



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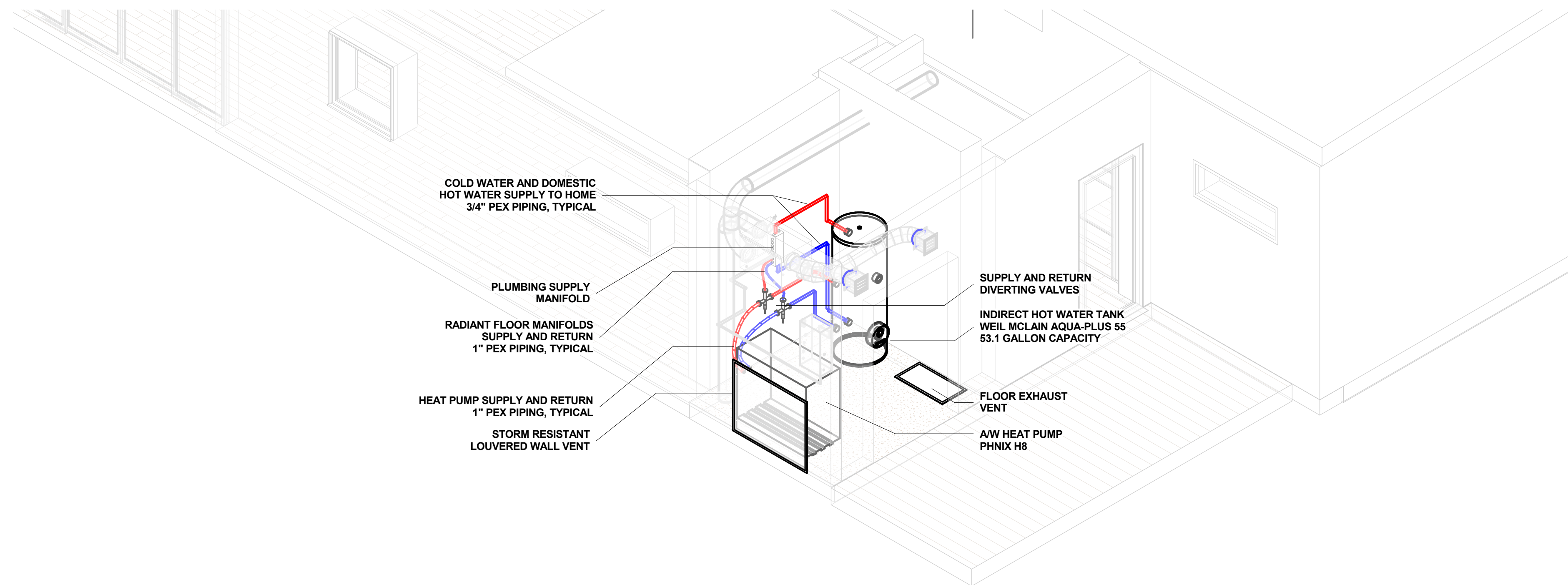
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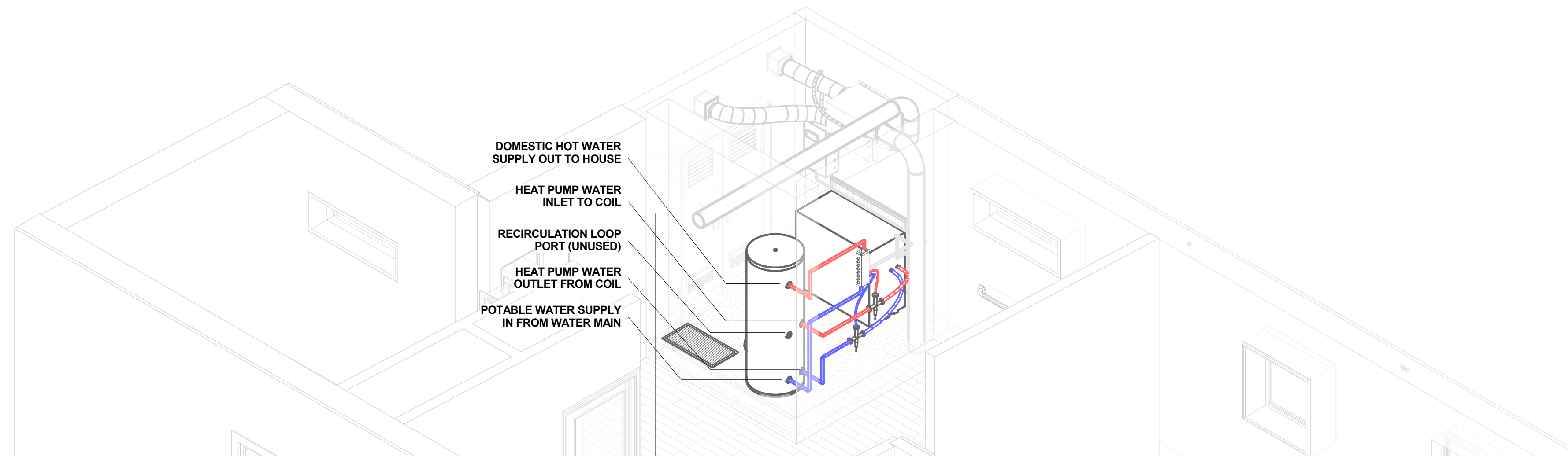
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SHEET TITLE  
 HEATING/COOLING  
 ISOMETRIC

M-901

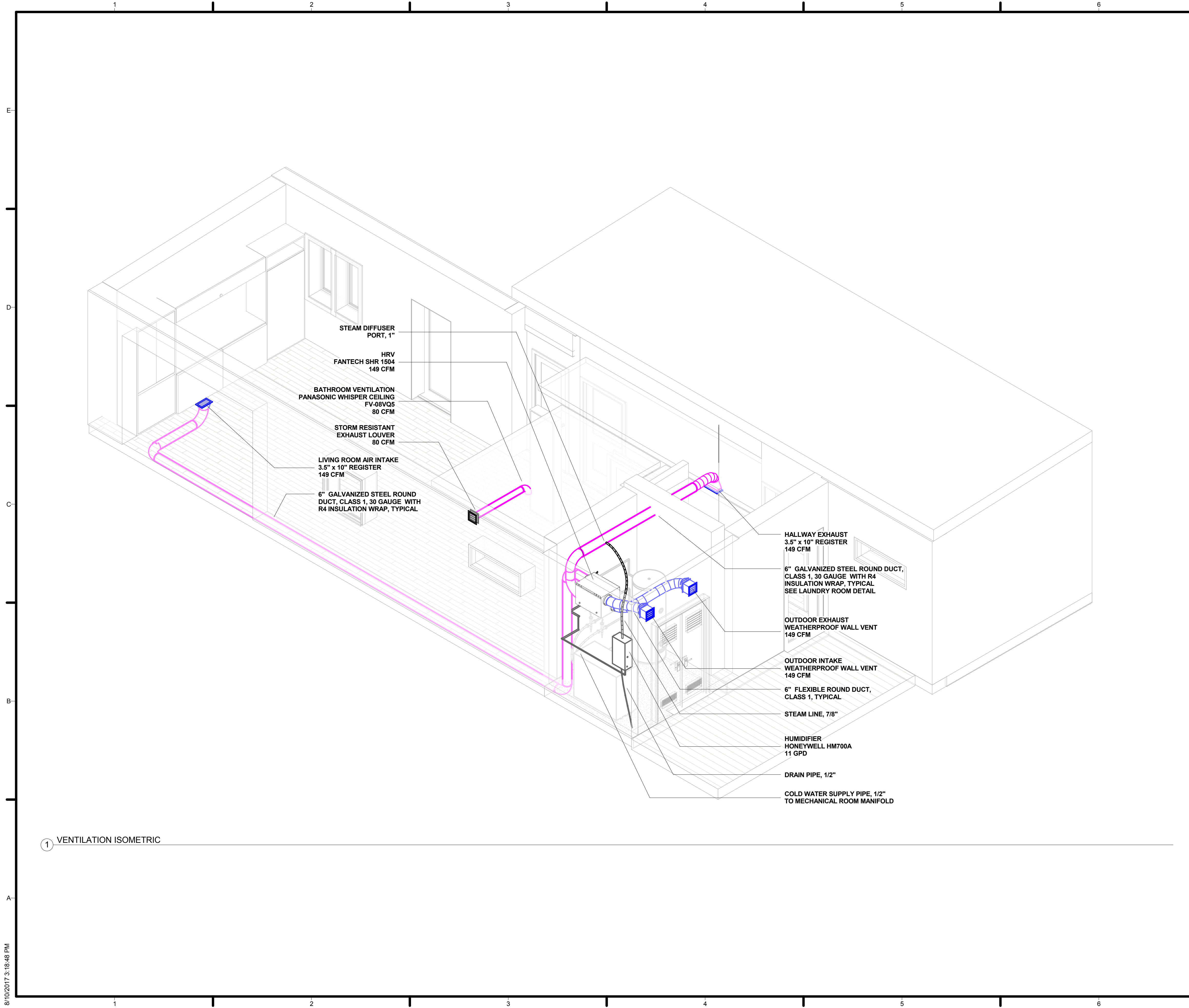


① SOUTHEAST VIEW



② NORTHWEST VIEW





1 VENTILATION ISOMETRIC

**GENERAL SHEET NOTES**

PER CMC 2016, TABLE 403.3:  
 TWO BEDROOM DWELLING = 4 PERSON OCCUPANCY  
 15 CFM / PERSON x 4 PERSONS = 60 CFM REQUIRED MECHANICAL VENTILATION  
 DESIRED AIR CHANGES PER HOUR: 0.6  
 900 SQFT \* 10 FT / 60 MIN PER HOUR \* 0.6 AIR CHANGES PER HOUR = 90 CFM  
 HRV MAXIMUM CAPACITY: 149 CFM

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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SHEET TITLE  
**VENTILATION ISOMETRIC**

**M-902**

**ELECTRICAL NOTES AND SPECIFICATIONS**

**NOTES**

- 1 ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2015 INTERNATIONAL RESIDENTIAL CODE, THE 2016 CALIFORNIA ELECTRICAL CODE, THE US 2014 NATIONAL ELECTRIC CODE, AND THE SOLAR DECATHLON 2017 BUILDING CODE.
- 2 REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS FOR LOCATIONS OF ALL CEILING ELEMENTS AND OTHER WALL-MOUNTED DEVICES NOT INCLUDED IN ELECTRICAL DRAWINGS.

**SPECIFICATIONS:**

- 1 ALL PENETRATIONS OF WALLS OR CEILINGS SHALL BE SLEEVED AND SEALED.
- 2 MOUNTING HEIGHTS FOR RECEPTACLES SHALL BE AT LEAST 15" ABOVE FINISHED FLOOR. MOUNTING HEIGHTS FOR SWITCHES SHALL BE AT LEAST 48" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
- 3 EXTERIOR RECEPTACLES SHALL BE GFCI-TYPE DEVICES WITH WEATHER-PROOF COVERS.
- 4 ALL BATHROOM, OUTDOOR, CRAWLSPACE, KITCHEN COUNTERTOP, AND LAUNDRY AREA RECEPTACLES SHALL BE PROTECTED WITH GFCI BREAKERS UNLESS DENOTED AS A GFCI-TYPE DEVICE.
- 5 INTERIOR 120V 15A AND 20A BRANCH CIRCUITS IN THE KITCHEN, LIVING ROOM, BEDROOMS, CLOSETS, HALLWAY, AND LAUNDRY ROOM SHALL BE PROTECTED WITH A COMBINATION AFCI BREAKER.
- 6 ALL INTERIOR NON-LOCKING BRANCH CIRCUIT RECEPTACLES SHALL BE TAMPER-RESISTANT.
- 7 THE MINIMUM WIRE SIZE FOR ALL AC LOADS SHALL BE #14 AWG.
- 8 THE MINIMUM WIRE SIZE FOR ALL DC LOADS SHALL BE #12 AWG.
- 9 AN ELECTRODE GROUNDING CONDUCTOR OF MINIMUM SIZE #4 AWG COPPER SHALL CONNECT THE MAIN SERVICE EQUIPMENT TO THE ORGANIZER UTILITY PANEL AND BE BONDED TO THE ORGANIZER GROUNDING SYSTEM.
- 10 ALL GENERAL BUILDING WIRING CONDUCTORS WILL BE COPPER THHN/THWN WITH 600V INSULATION UNLESS OTHERWISE NOTED.
- 11 THE COLOR OF ALL CONDUCTORS WILL BE DETERMINED BY PHASE: BLACK FOR PHASE A, RED FOR PHASE B, WHITE FOR NEUTRAL, PINK OR PURPLE FOR SWITCH LEG/TRAVELERS, AND GREEN FOR GROUND

ELECTRICAL ABBREVIATIONS	
ABBREVIATION	TERM
AC	ALTERNATING CURRENT
AWG	AMERICAN WIRE GAUGE
AFCI	ARC FAULT CIRCUIT INTERRUPTER
DC	DIRECT CURRENT
EMT	ELECTRICAL METALLIC TUBING
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
PV	PHOTOVOLTAIC
SPR	SUNPOWER
THHW	THERMOPLASTIC HIGH-HEAT RESISTANT WIRE
WP	WEATHERPROOF (GFCI-type)

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E-102	ROOF POWER PLAN
E-103	LIGHTING PLAN
E-104	APPLIANCE WIRING
E-105	NIGHT LIGHTING
E-201	ELECTRICAL ELEVATIONS
E-401	ENLARGED NORTH MECH ROOM
E-501	SNAP N RACK DETAILS
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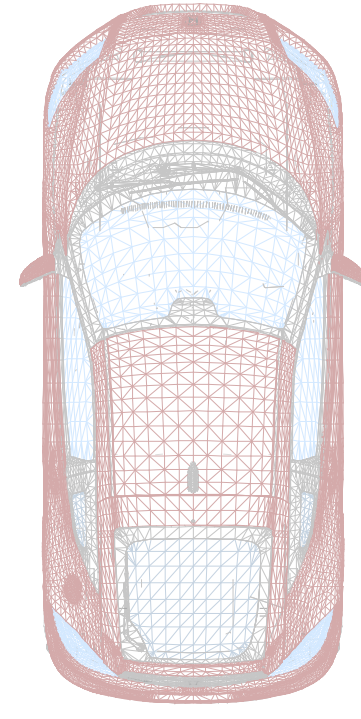
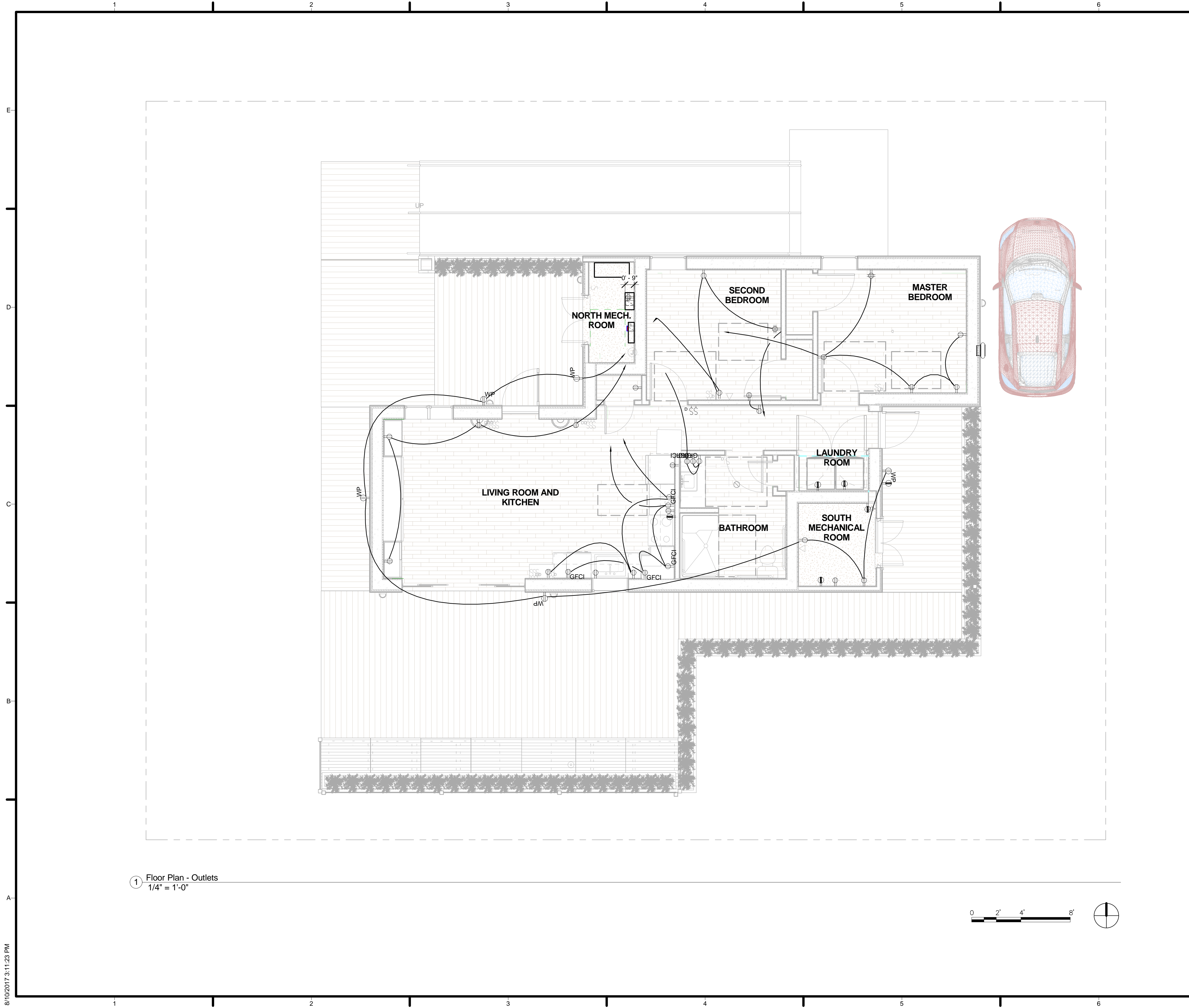
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**ELECTRICAL NOTES,  
 SPECIFICATIONS, AND  
 ABBREVIATIONS**

**E-001**





GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

- 240V Receptacle
- Duplex Receptacle
- Weather-Proof Receptacle
- GFCI Receptacle
- Quad Receptacle
- Smoke Detector
- EV Car Charger
- Inverter SPR-4000
- 120V/240V MCB Single Phase Panel
- 120V PV Disconnect
- Sunverge Panel
- 3 Way Switch
- Dimmer Switch
- Single Switch



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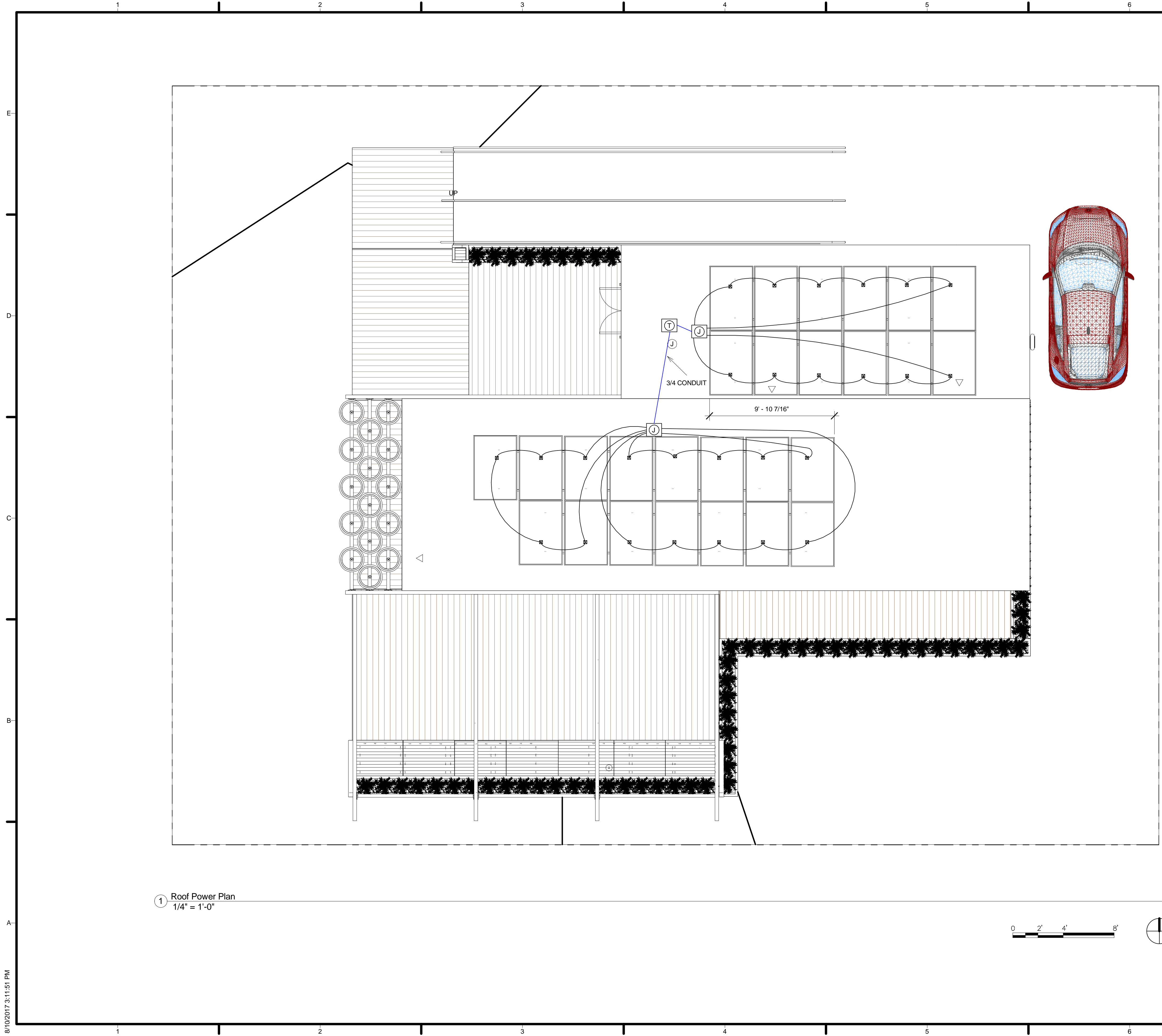


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05	5/08/2017	DCM SET
04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

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SHEET TITLE  
**FIRST FLOOR POWER PLAN**

**E-101**



GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

- 12 AWG PV/RHW WIRE IN 3/4" NON-METALLIC CONDUIT
- PV WIRING AS PER MANUFACTURER
- TRANSITION BOX TO INVERTERS
- JUNCTION BOX
- SPR-X22-360 SOLAR PANELS



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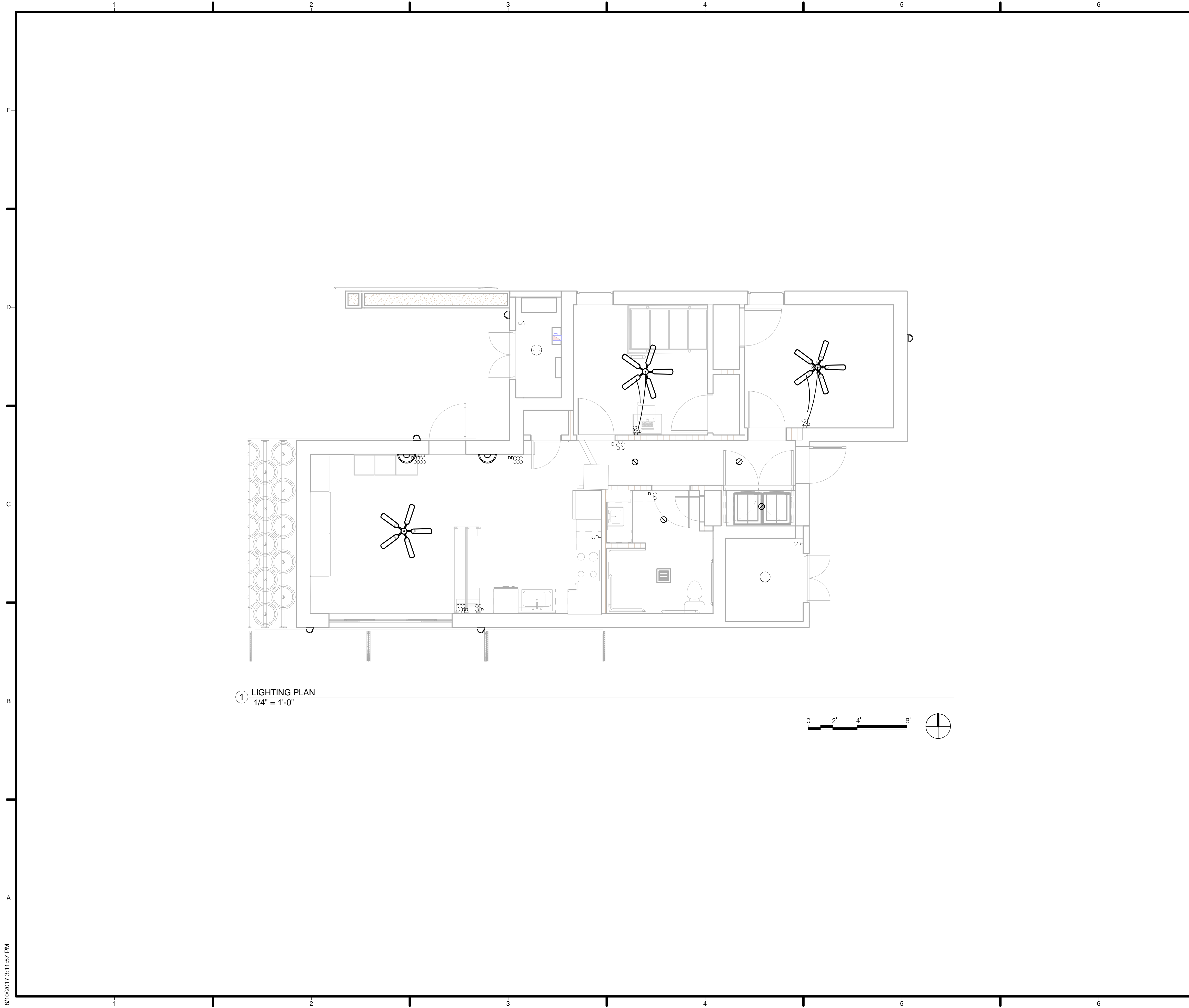
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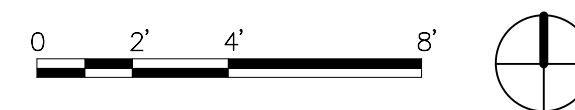
SHEET TITLE  
**ROOF POWER PLAN**

**E-102**





① LIGHTING PLAN  
1/4" = 1'-0"

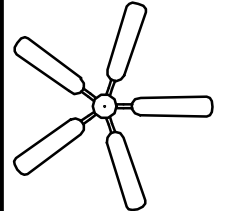










GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

-  CEILING FAN WITH 4 40W LIGHTS
-  60W SURFACE MOUNT UTILITY LIGHT
-  6" 60W RECESSED CAN LIGHT
-  80W EXTERIOR WALL SCONCE
-  60W INTERIOR WALL SCONCE
-  20W LED STRIP LIGHTING
-  3 Way Switch
-  Dimmer Switch
-  Single Switch



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SHEET TITLE  
**LIGHTING PLAN**

**E-103**



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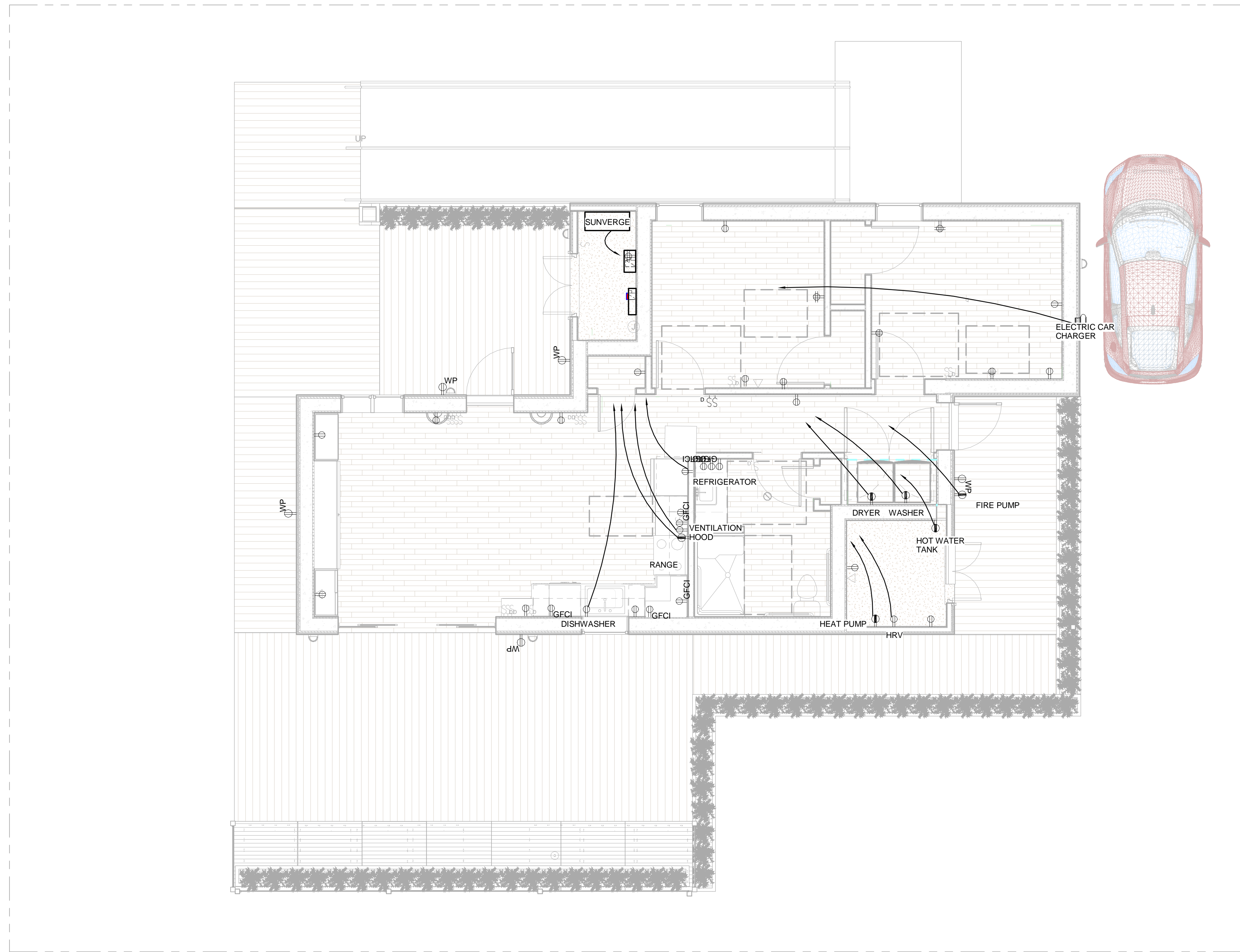
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MARK	DATE	DESCRIPTION
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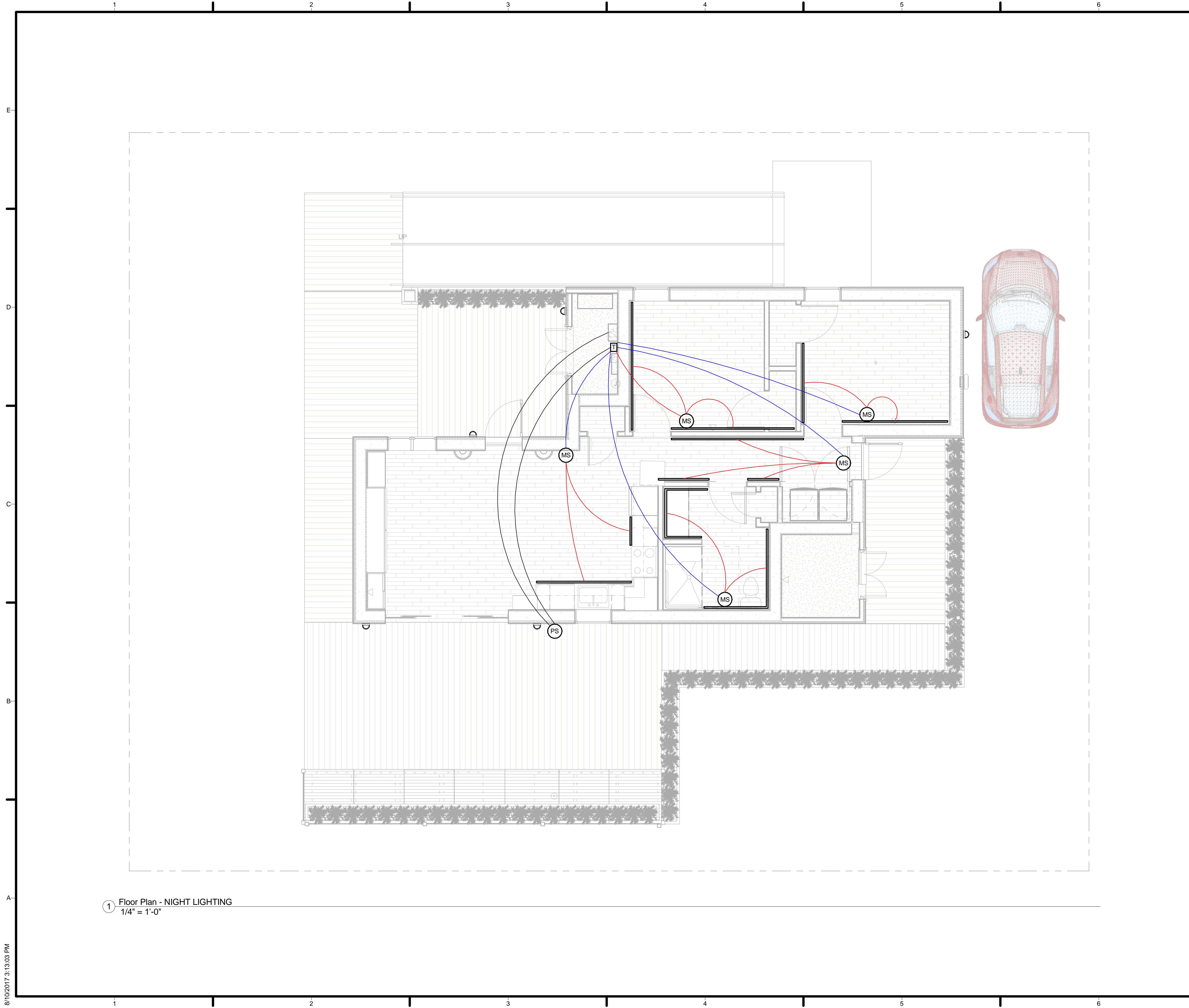
SHEET TITLE  
 APPLIANCE WIRING

E-104



1 Floor Plan - APPLIANCES  
 1/4" = 1'-0"





① Floor Plan - NIGHT LIGHTING  
1/4" = 1'-0"

8/10/2017 3:13:03 PM

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

- 14 AWG - 12V LINE FROM LED STRIP LIGHTING TO MOTION SENSOR
- 14 AWG - 12V LINE FROM MOTION SENSOR TO TRANSFORMER
- 14 AWG - 110V LINE
- MS MOTION SENSOR
- PS PHOTO SWITCH
- T TRANSFORMER 120 VAC TO 12 VDC



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SHEET TITLE  
 NIGHT LIGHTING

E-105



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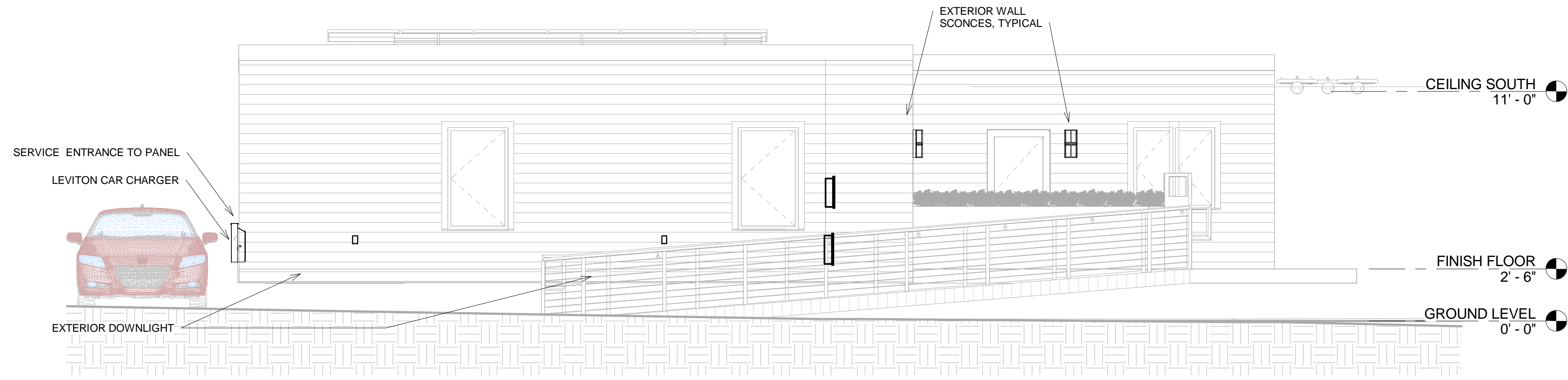


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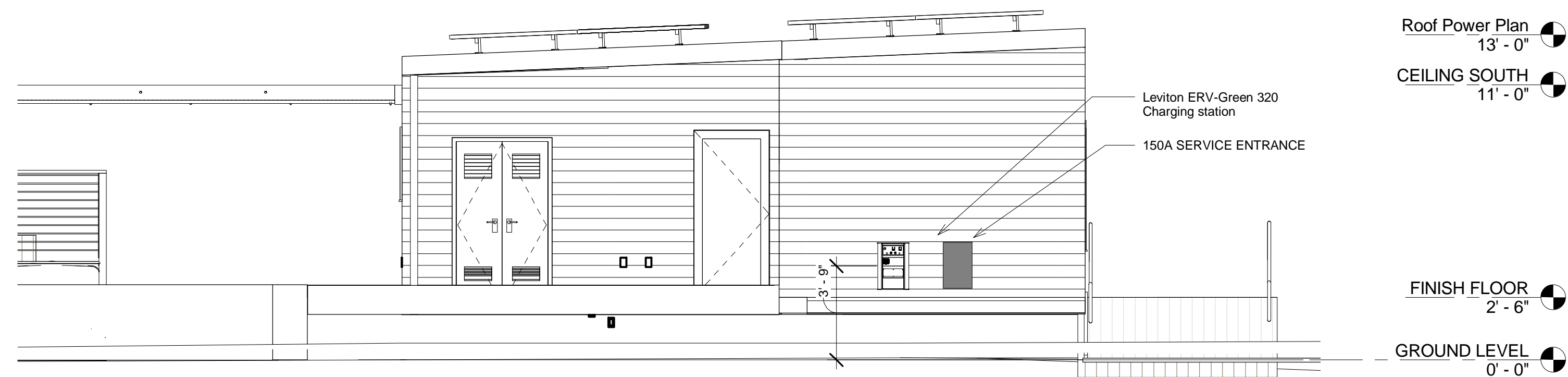
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SHEET TITLE  
**ELECTRICAL ELEVATIONS**

**E-201**



① SOUTH ELEVATION  
 1/4" = 1'-0"



② East - Electrical  
 1/4" = 1'-0"







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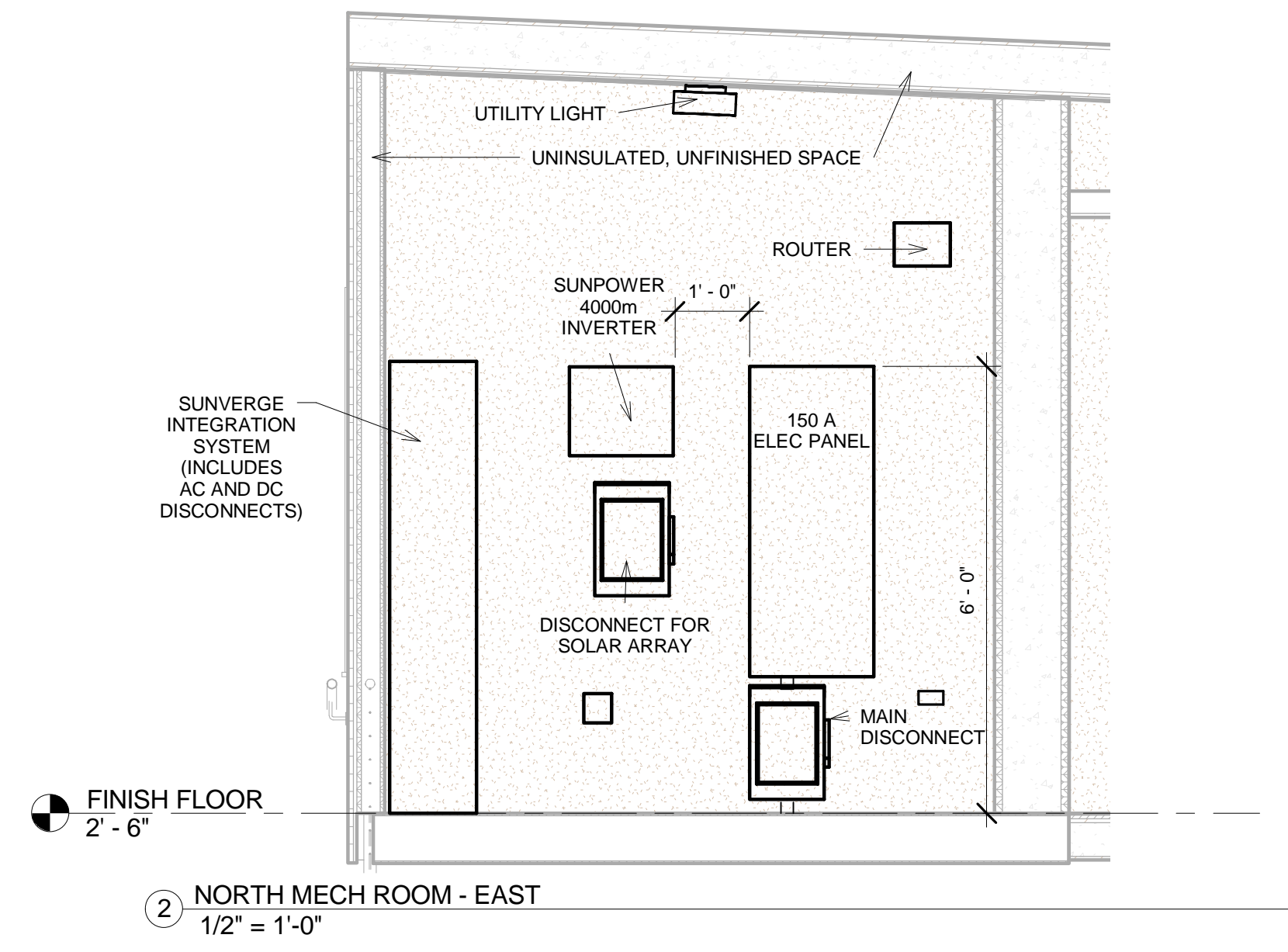
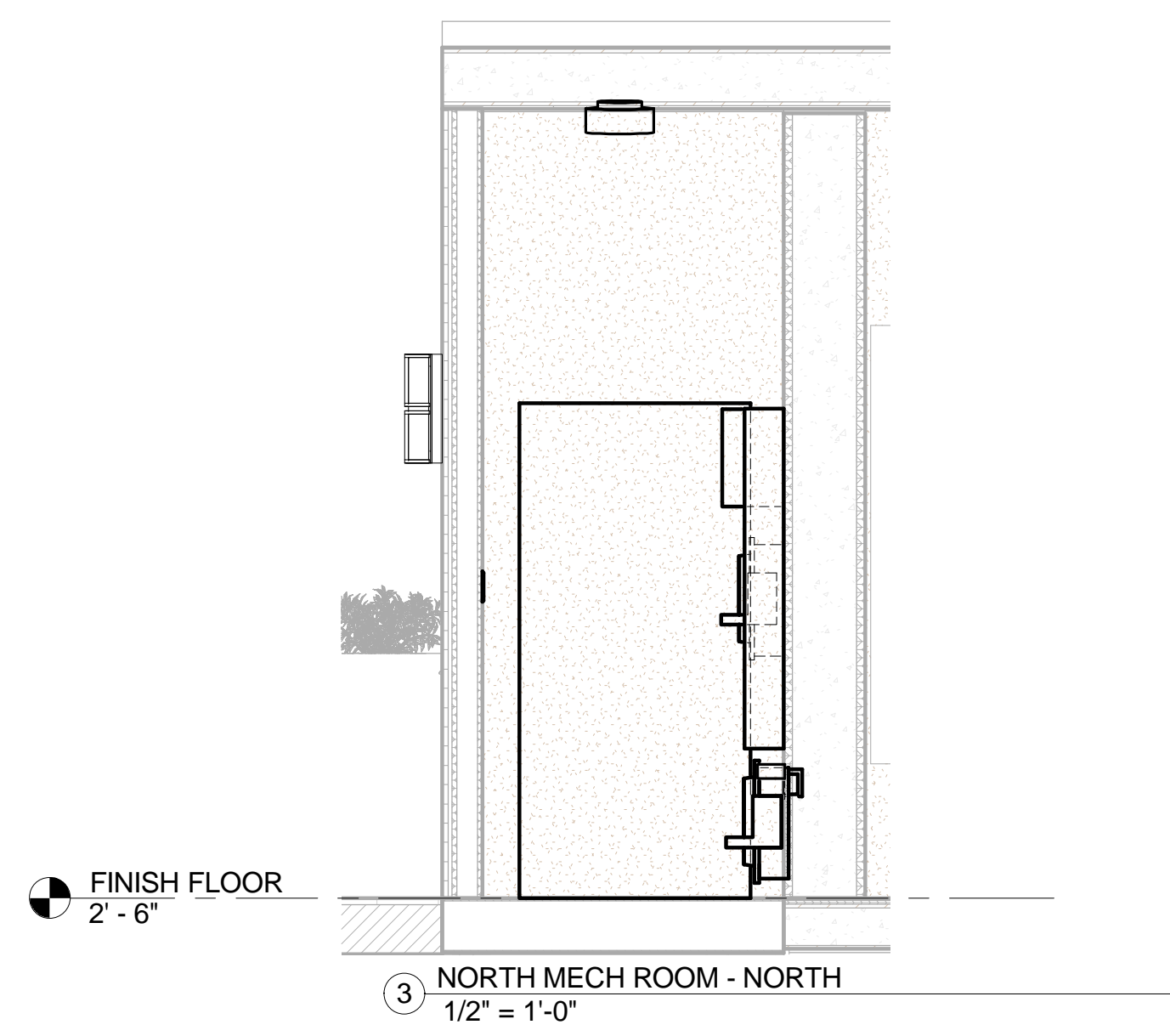
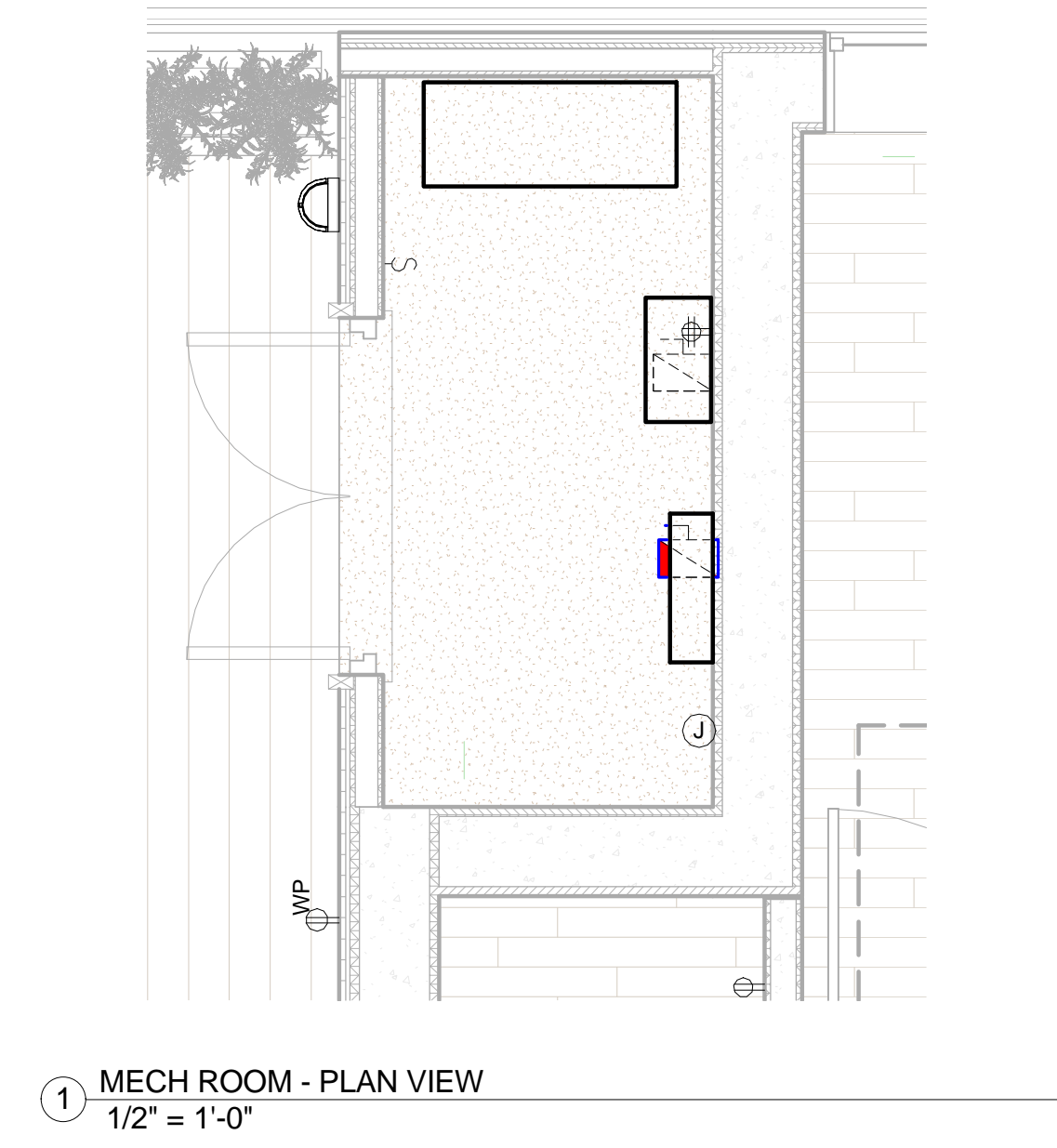
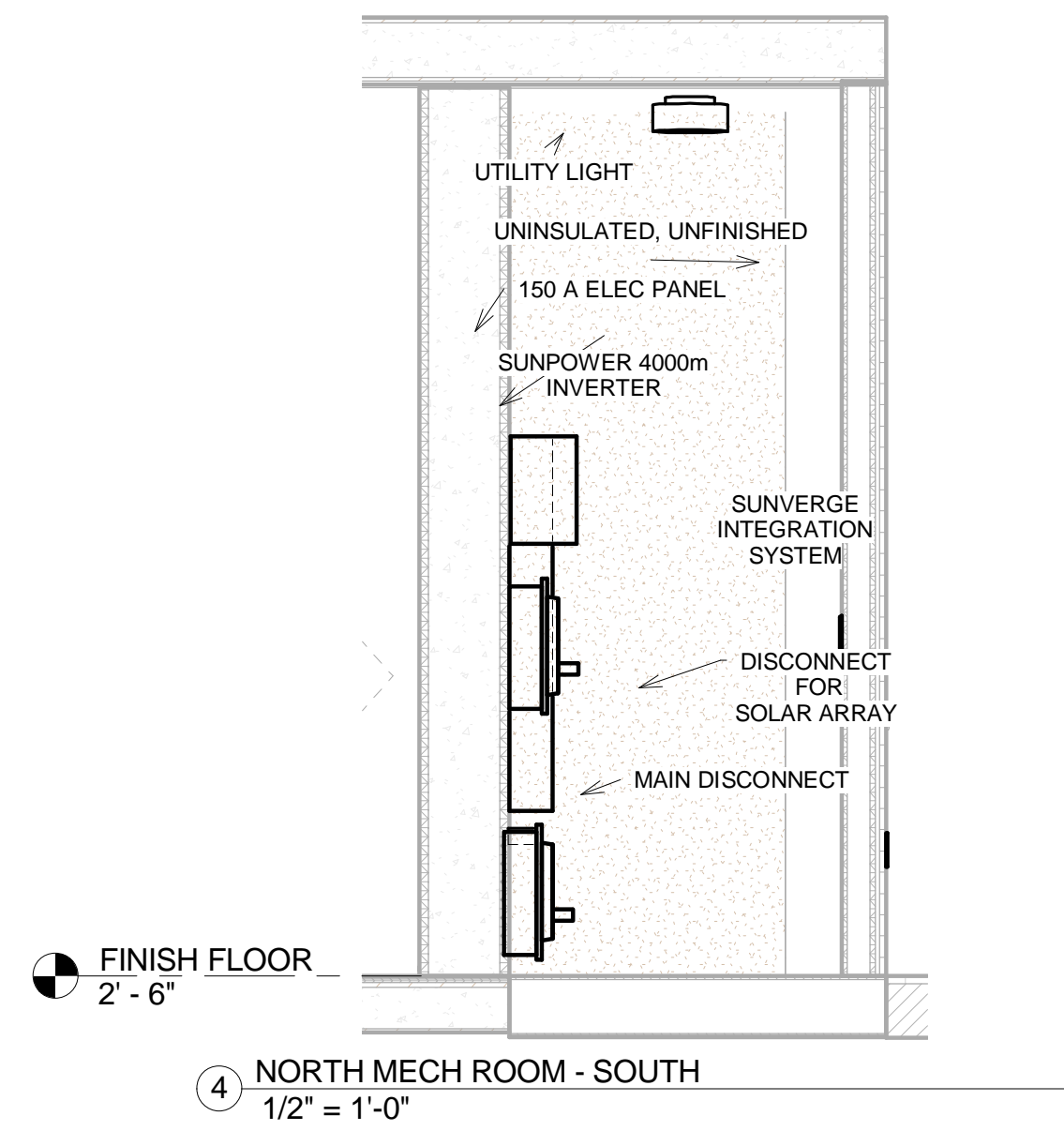


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SHEET TITLE  
 ENLARGED NORTH MECH ROOM

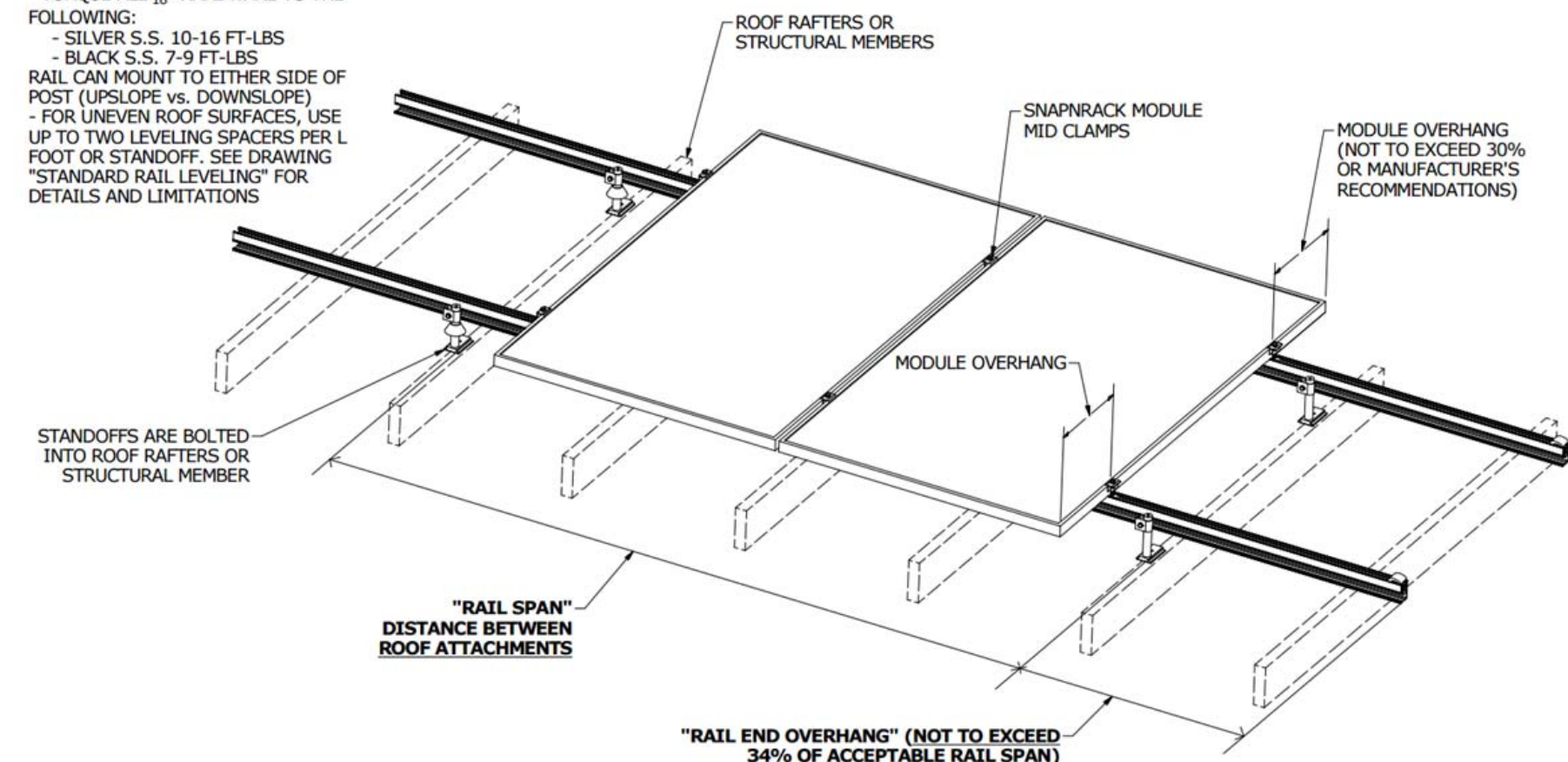
E-401





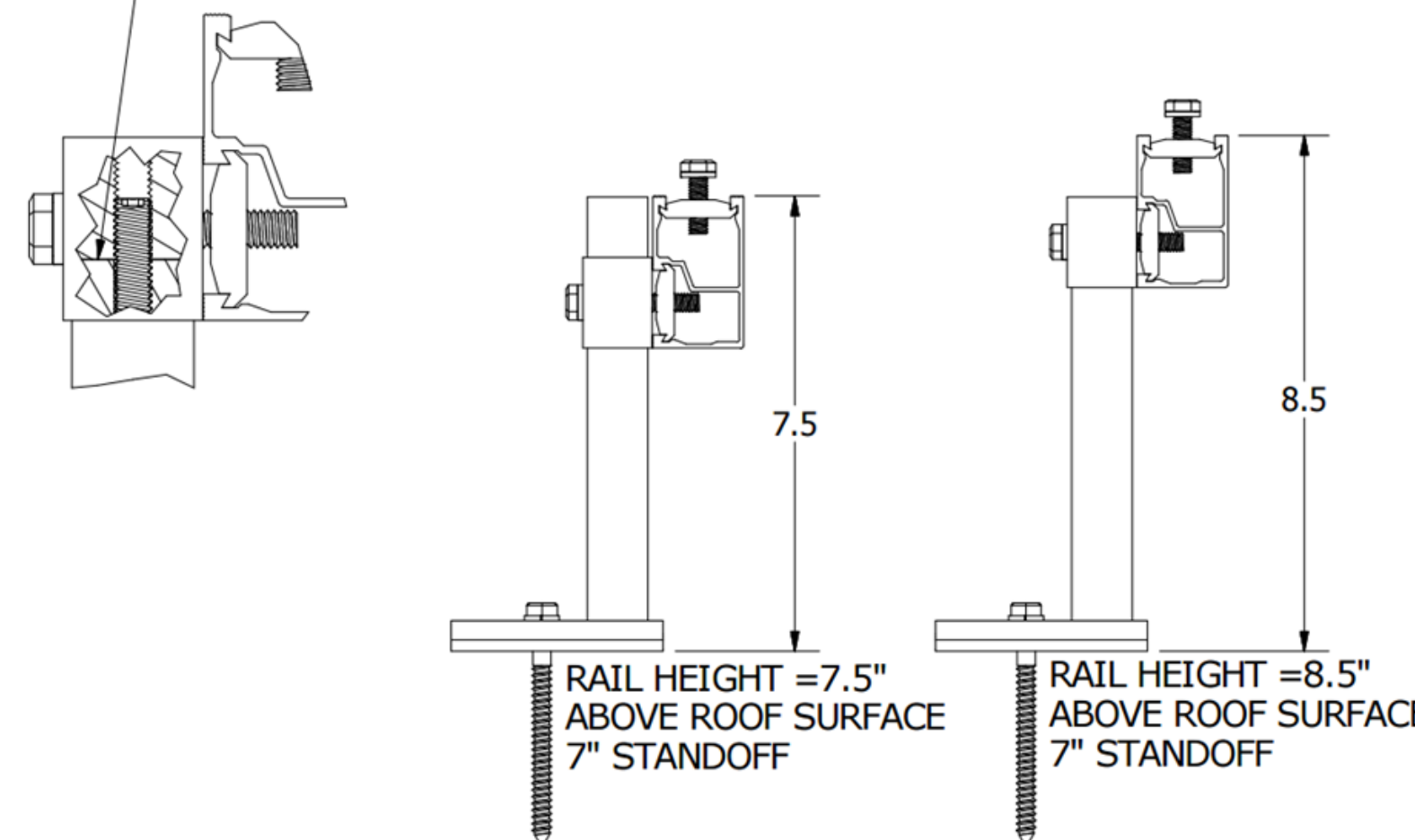
SNAPRACK SERIES 100 RACKING SYSTEM TYPICAL ROOF LAYOUT

NOTES:  
 - STANDARD LAG BOLT SPEC ASSUMES 5/16" LAG BOLTS WITH 2.5" EMBEDMENT IN ROOF STRUCTURAL MEMBERS/RAFTERS  
 - TORQUE ALL 1/2" HARDWARE TO THE FOLLOWING:  
 - SILVER S.S. 10-16 FT-LBS  
 - BLACK S.S. 7-9 FT-LBS  
 RAIL CAN MOUNT TO EITHER SIDE OF POST (UPSLOPE vs. DOWNSLOPE)  
 - FOR UNEVEN ROOF SURFACES, USE UP TO TWO LEVELING SPACERS PER L FOOT OR STANDOFF. SEE DRAWING "STANDARD RAIL LEVELING" FOR DETAILS AND LIMITATIONS



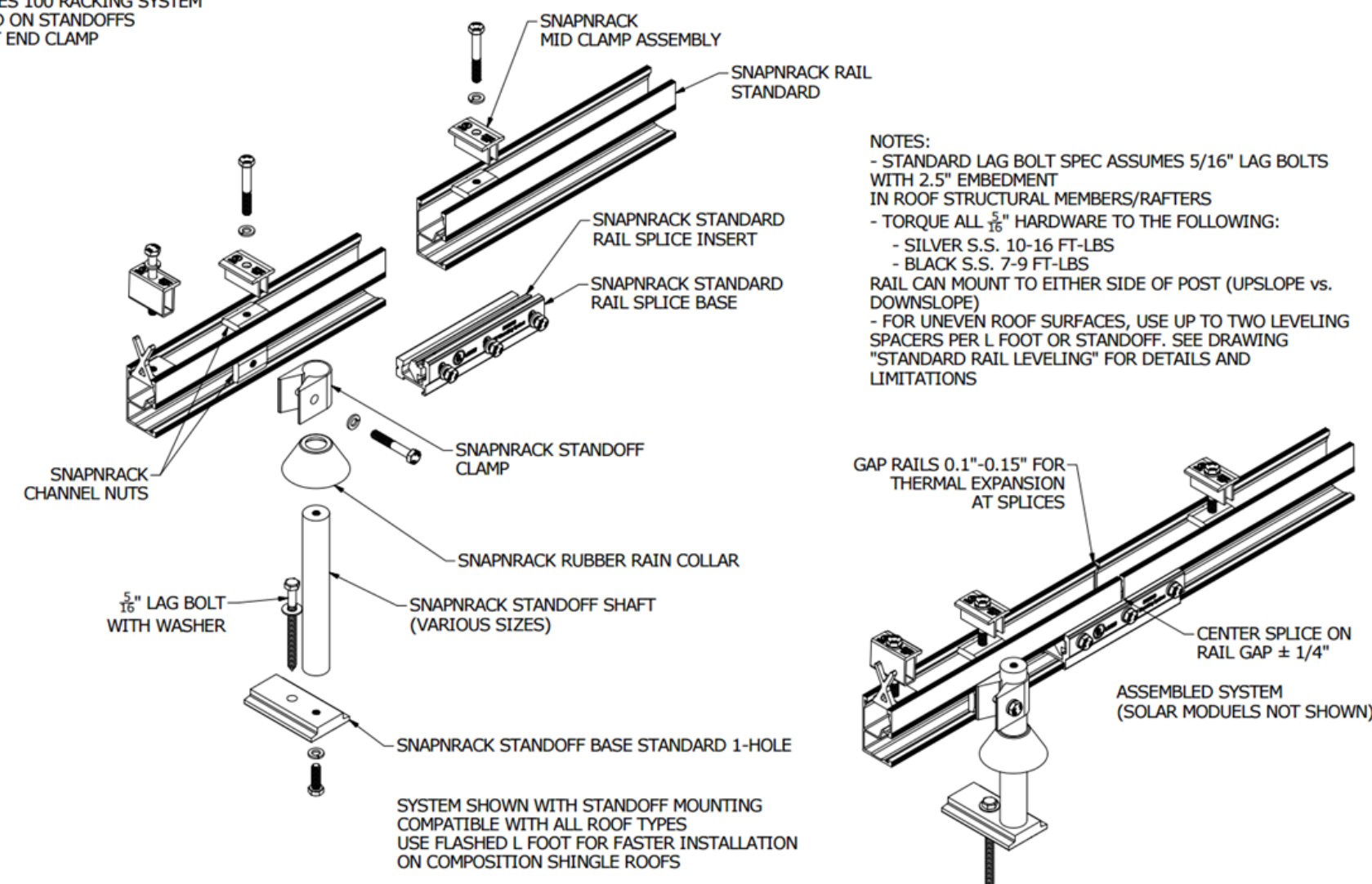
1 Solar Array Racking System\_Typical Layout  
NTS

USE CARE DURING INSTALLATION TO ENSURE THAT THE SET SCREW IS ROUGHLY CENTERED BETWEEN THE TWO PIECES BEING JOINED

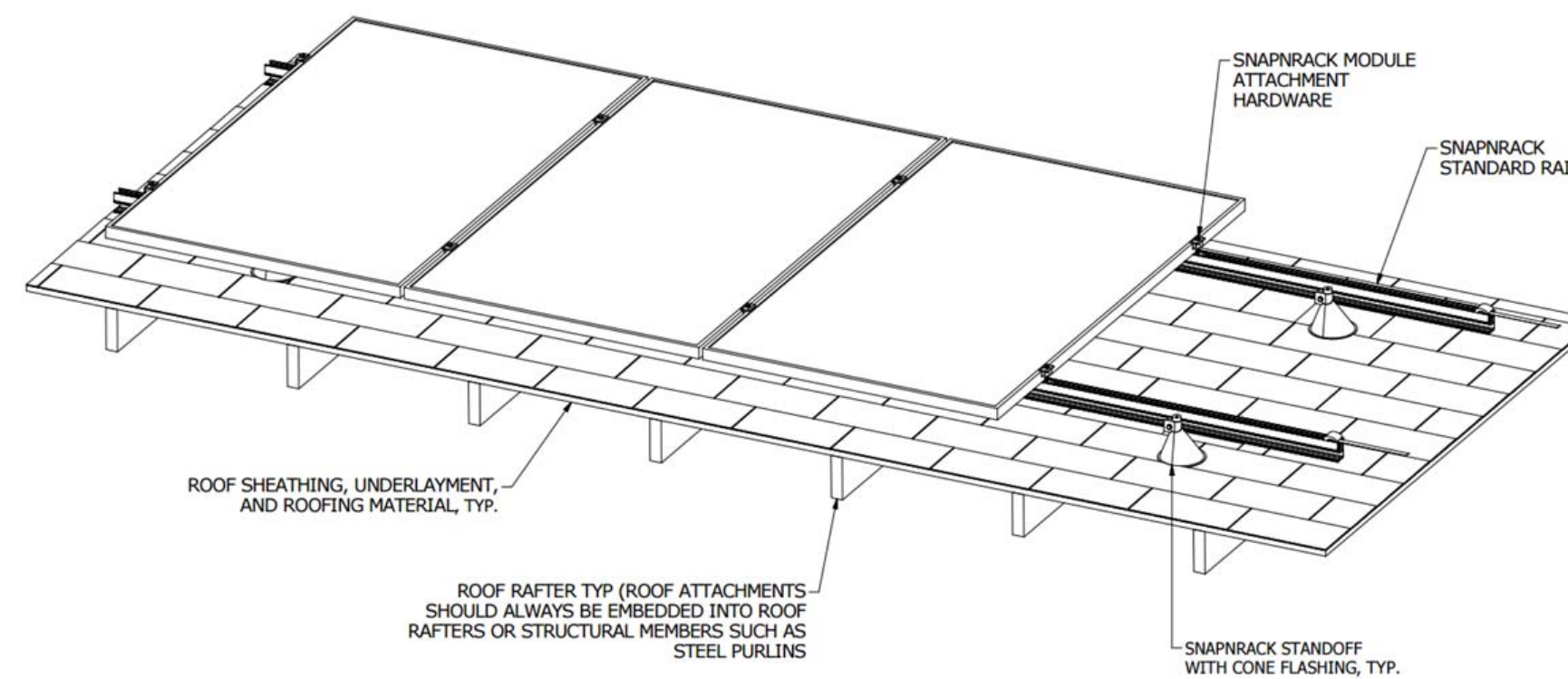


2 Solar Array Racking System\_Rail Leveling  
NTS

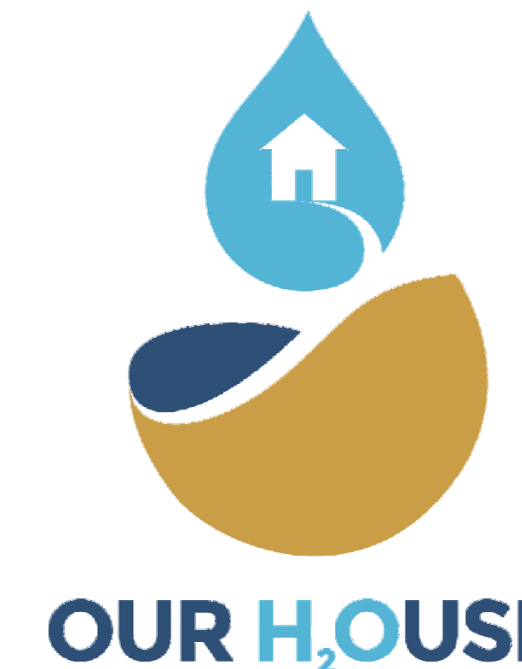
SNAPRACK SERIES 100 RACKING SYSTEM SHOWN MOUNTED ON STANDOFFS WITH TOP MOUNT END CLAMP



4 Solar Array Racking System\_Sytem Details  
NTS



5 Solar Array Racking System\_Overview  
Standoffs  
NTS



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SHEET TITLE  
 SNAP N RACK DETAILS

E-501





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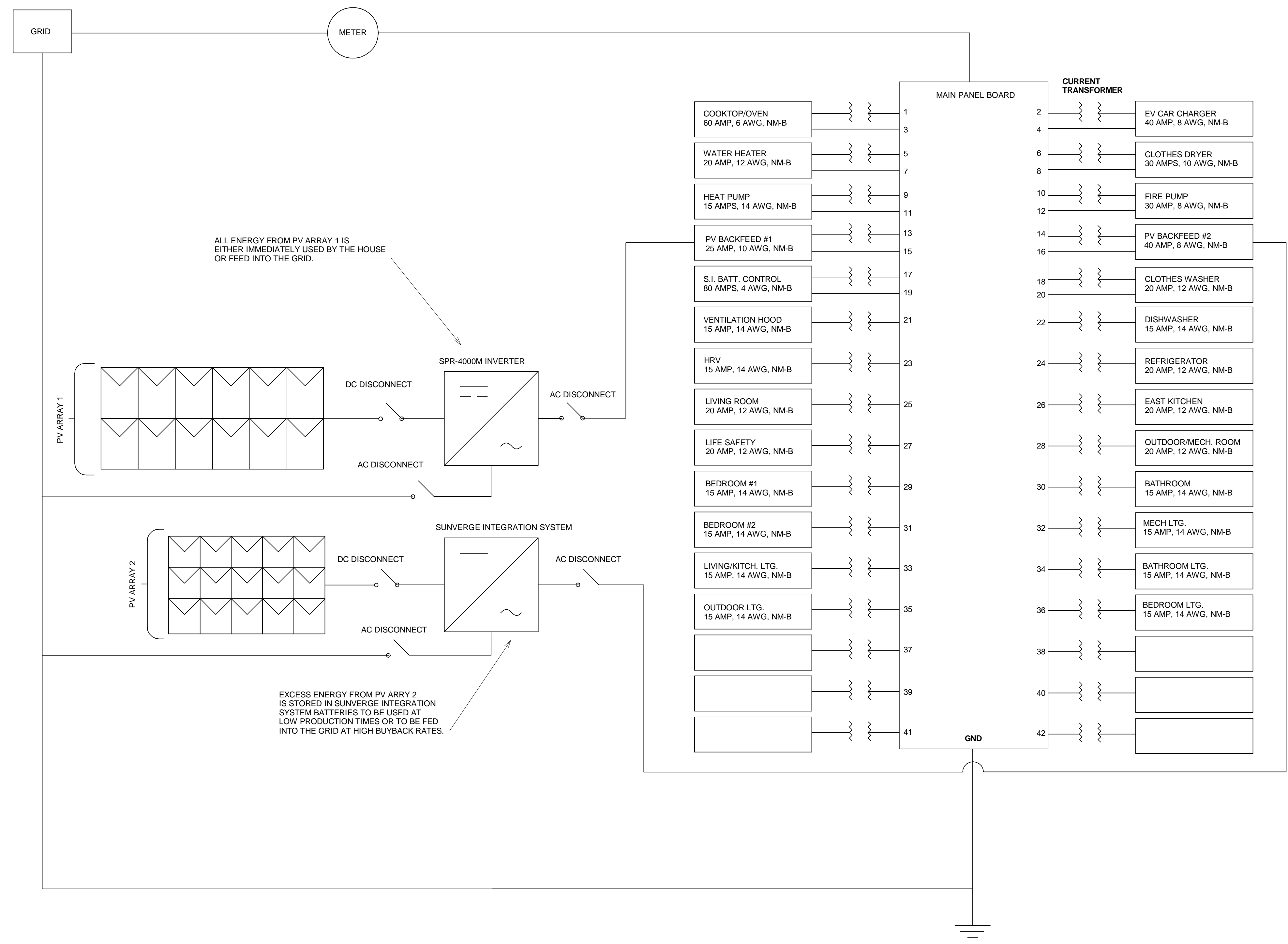


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SHEET TITLE  
 ONE-LINE DIAGRAM

E-601



① One-Line Diagram

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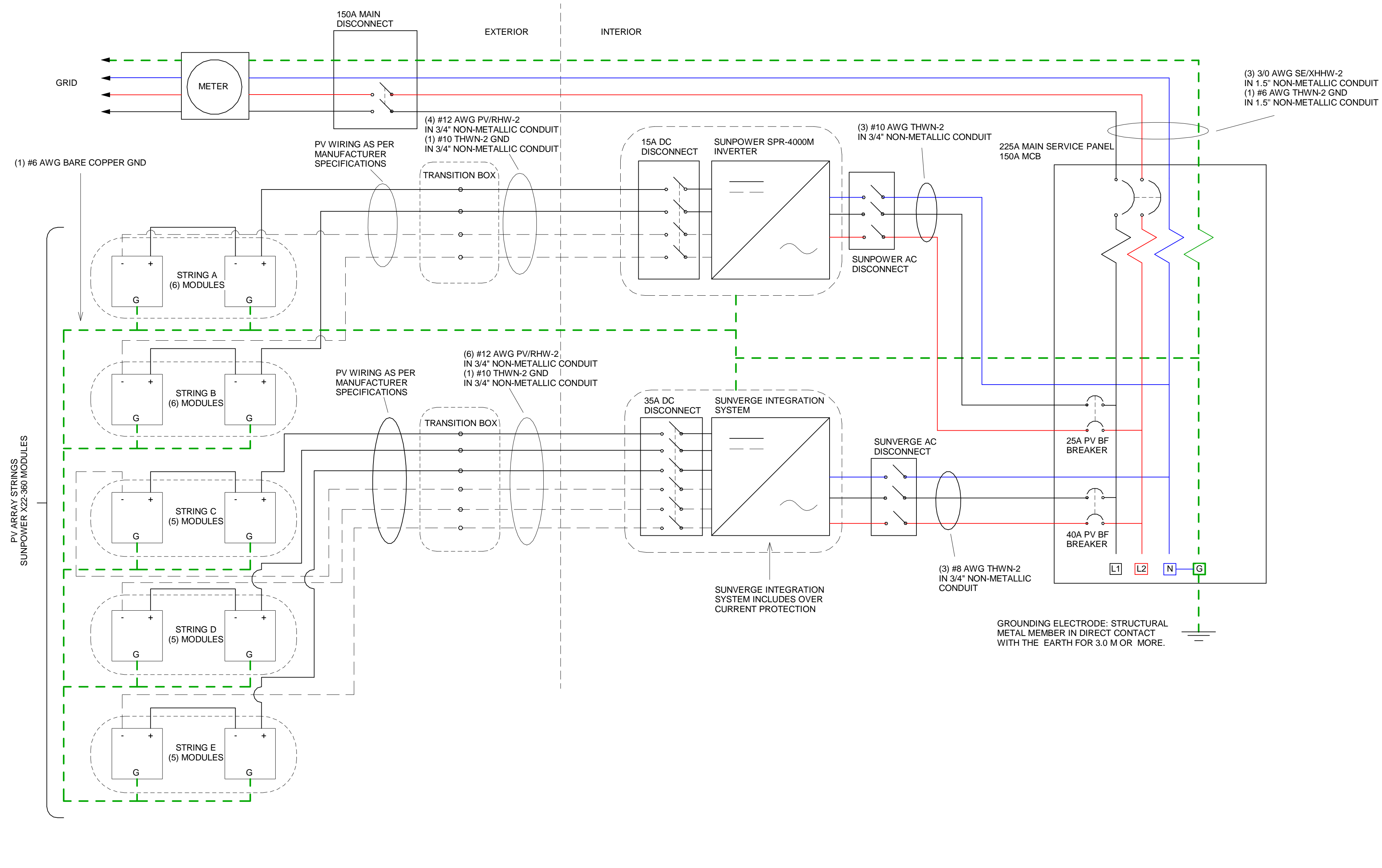


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SHEET TITLE  
 THREE-LINE DIAGRAM

E-602



1 Three-Line Diagram



**Branch Panel:**

Location: NORTH MECH. ROOM 7  
 Supply From:  
 Mounting: Surface  
 Enclosure: 3R

Volts: 120/240 Single  
 Phases: 1  
 Wires: 3

A.I.C. Rating: 22000 A  
 Mains Type:  
 Mains Rating: 150 A  
 MCB Rating: 150 A

Notes:

CKT	Circuit Description	Trip	Poles	A	B	Poles	Trip	Circuit Description	CKT
1	COOKTOP/OVEN	60 A	2	5500 VA / 3600...	5500 VA / 3600...	2	40 A	EV CAR CHARGER	2
3									4
5	WATER HEATER	20 A	2	2250 VA / 1400...	2250 VA / 1400...	2	30 A	CLOTHES DRIER	6
7									8
9	HEAT PUMP	15 A	2	1675 VA / 1656...	1675 VA / 1656...	2	30 A	FIRE PUMP	10
11									12
13	PV BACKFEED #1	25 A	2	1625 VA / 2650...	1625 VA / 2650...	2	40 A	PV BACKFEED #2	14
15									16
17	SI BATTERY PACK	80 A	2	3350 VA / 1150...	3350 VA / 1150...	2	20 A	CLOTHES WASHER	18
19									20
21	VENTALATION HOOD	15 A	1	180 VA / 1440 VA	180 VA / 1440 VA	1	15 A	DISHWASHER	22
23	HRV	20 A	1	48 VA / 180 VA	48 VA / 180 VA	1	20 A	REFRIGERATOR	24
25	LIVING ROOM	20 A	1	900 VA / 540 VA	900 VA / 540 VA	1	20 A	EAST KITCHEN	26
27	LIFE SAFETY	20 A	1	150 VA / 1260 VA	150 VA / 1260 VA	1	20 A	OUTDOOR/MECH. ROOM	28
29	BEDROOM 1	15 A	1	1080 VA / 540 VA	1080 VA / 540 VA	1	15 A	BATHROOM	30
31	BEDROOM 2	15 A	1	1080 VA / 60 VA	1080 VA / 60 VA	1	15 A	MECH LTG.	32
33	LIVING/KITCH. LTG.	20 A	1	120 VA / 60 VA	120 VA / 60 VA	1	20 A	BATHROOM LTG.	34
35	OUTDOOR LTG.	20 A	1	720 VA / 120 VA	720 VA / 120 VA	1	20 A	BEDROOM LTG.	36
37									38
39									40
41									42

<b>Total Load:</b>	29716 VA	28474 VA
<b>HVAC Load:</b>	1675 VA	1723 VA
<b>First 10,000 VA (@100%):</b>	5000 VA	5000 VA
<b>General Load (Everything above 10,000 VA, not including HVAC @40%):</b>	8978 VA	8700 VA
<b>Total Demand:</b>	15653 VA	15423 VA
<b>Total Amps (Total Demand /120):</b>	130 A	129 A

Notes:



**OUR H<sub>2</sub>OUSE**

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SHEET TITLE

**ELECTRICAL  
 SCHEDULE**

**E-604**



**LOAD SCHEDULE CALCULATIONS**

PANEL #	DESCRIPTION	CALCULATION	LOAD [VA]
1	HOUSE LIGHTING	853 FT2 * 3 VA/FT2	2559
2	SMALL APPL./LAUNDRY	3 CKT * 1500 VA/CKT	4500
3	VENTILATION HOOD	1 CKT * 240 VA/CKT	240
4	COOKTOP RANGE	1 CKT * 1500 VA/CKT	1500
5	TELEVISION	1 CKT * 50 VA/CKT	50
6	EV CAR CHARGER	1 CKT * 8000 VA/CKT	8000
7	DISHWASHER	1 CKT * 1800 VA/CKT	1800
8	CLOTHES DRYER	1 CKT * 4000 VA/CKT	4000
9	OVEN	1 CKT * 3000 VA/CKT	3000
10	WATER HEATER	1 CKT * 700 VA/CKT	700
11	REFRIGERATOR	1 CKT * 400 VA/CKT	400
12	AIR DISTRIBUTION	1 CKT * 3000 VA/CKT	3000
<b>TOTAL LOAD [VA]</b>			<b>29749</b>
<b>FIRST 10000 VA [VA]</b>			<b>10000</b>
<b>REMAINING LOAD * 40% [VA]</b>			<b>7900</b>
<b>HVAC LOAD [VA]</b>			<b>6825</b>
<b>NET GENERAL LOAD [VA]</b>			<b>24725</b>
<b>TOTAL CURRENT [A]</b>			<b>103</b>
<b>MAIN BREAKER SIZE [A]</b>			<b>150</b>

**SOLAR CALCULATIONS**

SOLAR MODULE SPECIFICATIONS	INVERTER SPECIFICATIONS	LOCATION SPECIFICATIONS		
Voltage (Open Current) [V]	69.5	DAVIS, CA	DENVER, CO	
Voltage (Max Power) [V]	60.6	Low Temp. [°C]	-3	-25
Open Current Correction	-0.003	High Temp. [°C]	37	34
Max Power Correction	-0.0042	Elev. Temp. [°C]	59	56
Nominal Power [W]	360	Temp. Correction	0.76	0.76
Current (Isc) [A]	6.48			

**MAXIMUM NUMBER OF SOLAR MODULES IN SERIES**

Max Voltage = Voltage (Open Current) + ((Low Temp. - 25°C) \* Open Current Correction \* Voltage (Open Current))

	DAVIS, CA	DENVER, CO
Max Voltage [V]	75.34	79.93
Max # Panels w/SPR-4000m	7	7
Max # Panels w/Sunverge	7	6

**MINIMUM NUMBER OF SOLAR MODULES IN SERIES**

Min Voltage = Voltage (Max Power) + ((High Temp. + Elev. Temp. - 25°C) \* Max Power Correction \* Voltage (Max Power))

	DAVIS, CA	DENVER, CO
Min Voltage [V]	42.53	44.06
Min # Panels w/SPR-4000m	6	6
Min # Panels w/Sunverge	5	5

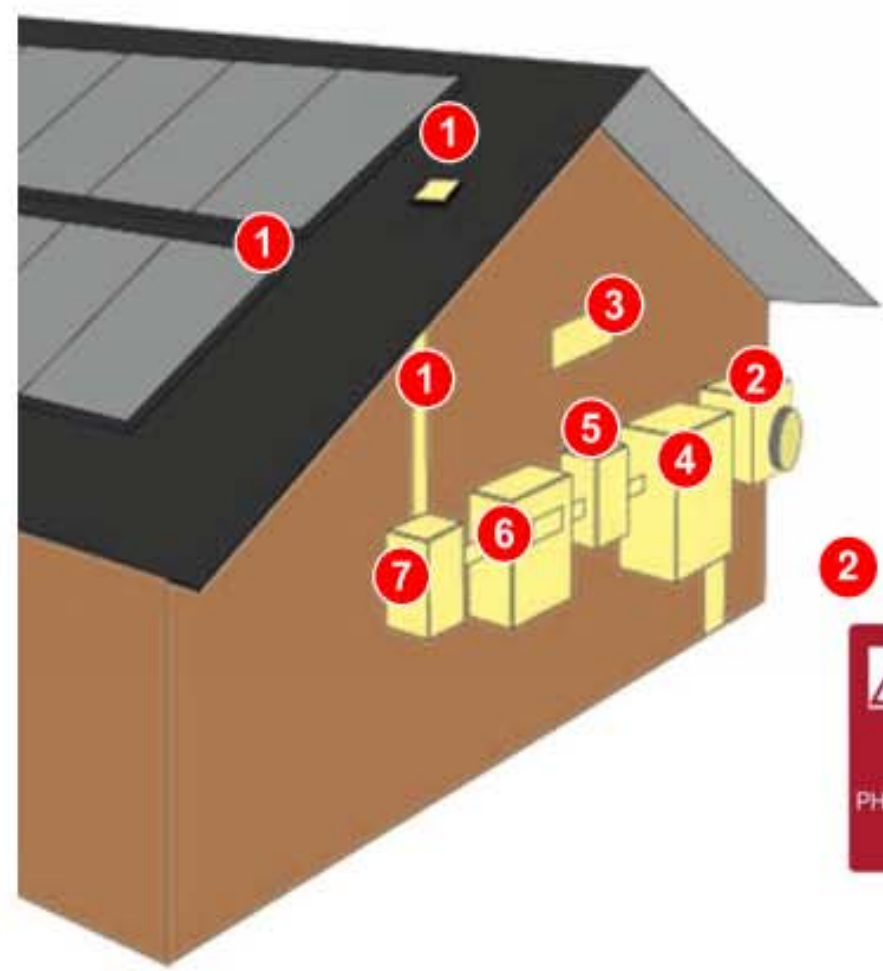
**MODULE STRING ARRANGEMENT**

Inverter Model	Number of Strings	Number of Modules in Series Per String
SPR-4000m	2	6
SUNVERGE	3	5

**CONDUCTOR SIZING**

ARRAY TO TRANSITION:	INVERTER 1 TO PANELBOARD:	PANELBOARD TO METER:	
Max Current [A]	10.13	21.25	85
Corrected Current [A]	12.66	26.4	150
Conductor Size	12 AWG	10 AWG	10 AWG
Conductor Type	PV/RHW-2	THWN-2	THWN-2
Corrected Ampacity [A]	10.65	40	36.4
Pass?	Yes	Yes	Yes
Conductor OCPD [A]	40	40	167.5
Conductor OCPD [A]	40	40	30 AWG
Pass?	Yes	Yes	SE/XHHW-2
Total Conductor Size [in2]	0.0633	0.0633	159.75
Required Conduit Size [in2]	0.15825	0.15825	Yes
Conduit Size	0.5"	0.5"	Yes
Conduit Type	EMT	EMT	Yes
Corrected Ampacity [A]	28.40	3.79	2.77586
Pass?	Yes	Yes	Yes
Jam Ratio	3.79	Pass?	Pass?
Pass?	Yes	Pass?	Pass?
Total Conductor Size [in2]	0.11	43.75	45
Required Conduit Size [in2]	0.25	45	45
Conduit Size	0.5"	14 AWG	14 AWG
Conduit Type	EMT	THWN-2	THWN-2
Corrected Ampacity [A]	3.79	22.75	22.75
Pass?	Yes	Yes	Yes
Jam Ratio	3.79	Current OCPD [A]	45
Pass?	Yes	Conductor OCPD [A]	45
Pass?	Yes	Pass?	Yes
Max Current [A]	30.38	Total Conductor Size [in2]	0.0399
Corrected Current [A]	37.97	Required Conduit Size [in2]	0.09975
Conductor Size	8 AWG	Conduit Size	0.5"
Conductor Type	THWN-2	Conduit Type	EMT
Corrected Ampacity [A]	39.05	Jam Ratio	4.78
Pass?	Yes	Pass?	Yes
Conduit OCPD [A]	45	Pass?	Yes
Conduit OCPD [A]	45	Pass?	Yes
Pass?	Yes	Pass?	Yes
Total Conductor Size [in2]	0.26	Pass?	Yes
Required Conduit Size [in2]	0.64	Pass?	Yes
Conduit Size	1"	Pass?	Yes
Conduit Type	EMT	Pass?	Yes
Jam Ratio	4.86	Pass?	Yes
Pass?	Yes	Pass?	Yes

**THE FOLLOWING LABELS WILL BE PLACED IN THE SPECIFIED LOCATIONS:**



Materials used for marking shall be reflective, weather resistant, and suitable for the environment.  
**IFC 605.11.1.1.**

The markings shall be of sufficient durability to withstand the environment involved.  
**NEC 110.21**

**1 MAIN SERVICE DISCONNECT**

**WARNING** ELECTRICAL SHOCK HAZARD  
DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.  
Per NEC 690.17 (4)

**WARNING:** TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL.  
Per NEC 110.27(C)

**WARNING** ELECTRICAL SHOCK HAZARD  
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED.  
Per NEC 690.35(F)

**PHOTOVOLTAIC POWER SOURCE**  
NEC690.4(F) Where circuits are embedded under roofing and not covered by PV modules, they shall be clearly marked.

**PHOTOVOLTAIC POWER SOURCE**  
DC conduit, raceways, enclosures, cable assemblies and junction boxes. Use every 10', at every turn, above and below penetrations, and all DC combiner junction boxes per IFC 605.11.1.4 & NEC 690.31 (E)(3).

**4 Main Service Disconnect**  
Per NEC690.14(2)

**MAIN PV SYSTEM DISCONNECT**  
Per NEC690.14(2)

**CAUTION:** SOLAR ELECTRIC SYSTEM CONNECTED  
Per NEC690.33(E)(2)

**SOLAR DISCONNECT**

**4 Breaker Panel/ Pull Boxes**

**WARNING** DUAL POWER SOURCE  
SECOND SOURCE IS PV SYSTEM

**CAUTION** PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED  
Per NEC 705.12(D)(4) & NEC 690.64

**DO NOT DISCONNECT UNDER LOAD**  
Per NEC690.33(E)(2)

At the location of the ground-fault protection, normally at the inverter, warning of a shock hazard (NEC 690.5[C]).

Conductors at switch or circuit breakers (pull boxes) per NEC 690.4 Main circuit breaker panel and meter per NEC 690.17, Dual power source NEC 705.12(D)(4) and Back-Fed Breakers per NEC705.22.4 and NEC690.64.

**5 AC Disconnect / Breaker / Points of Connection**

**PHOTOVOLTAIC AC DISCONNECT**

Per NEC 690.14(C)(2) & 690.15

**6 Inverter**

**PHOTOVOLTAIC AC DISCONNECT**

MAXIMUM AC OPERATING CURRENT: \_\_\_\_\_  
MAXIMUM AC OPERATING VOLTAGE: \_\_\_\_\_  
Per NEC 690.54

**7 DC Disconnect/Breaker**

RATED MAX POWER-POINT CURRENT: \_\_\_\_\_  
RATED MAX POWER-POINT VOLTAGE: \_\_\_\_\_  
MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_  
SHORT CIRCUIT CURRENT: \_\_\_\_\_  
MAX RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER IF INSTALLED: \_\_\_\_\_  
Per NEC 690.52

**PV SYSTEM DC DISCONNECT**

OPERATING CURRENT: \_\_\_\_\_  
OPERATING VOLTAGE: \_\_\_\_\_  
MAXIMUM SYSTEM VOLTAGE: \_\_\_\_\_  
SHORT CIRCUIT CURRENT: \_\_\_\_\_  
Per NEC 690.53

**PHOTOVOLTAIC DC DISCONNECT**

**WARNING** ELECTRICAL SHOCK HAZARD  
DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.  
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT  
Per NEC 690.17(4)



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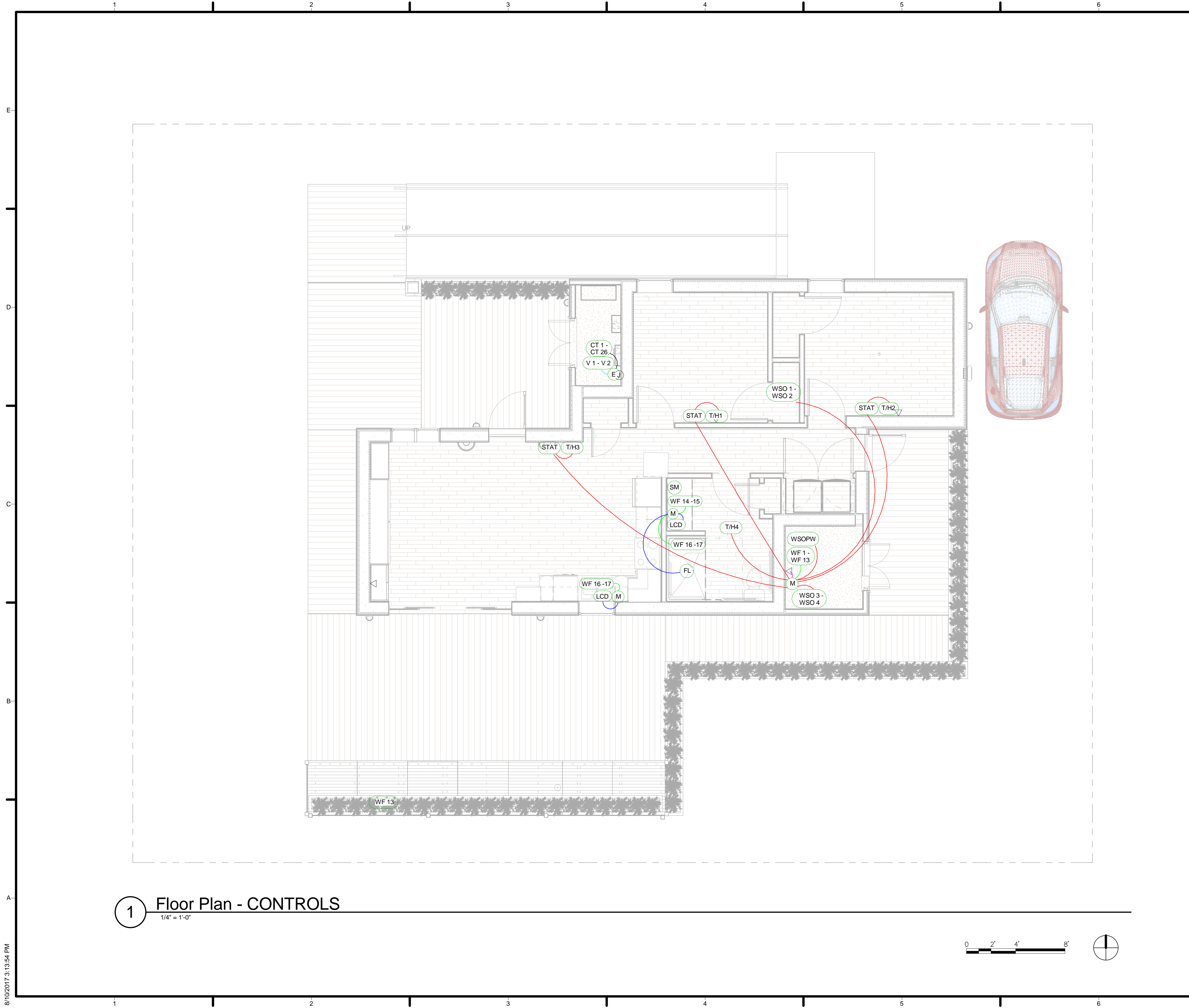
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04	3/07/2017	DCM SET
03	2/23/2017	100% CD SET
02	11/17/2016	90% DD SET
01	7/19/2016	50% DD SET

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SHEET TITLE  
**SOLAR CALCULATIONS**

**E-605**





1 Floor Plan - CONTROLS  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

- (LCD) USER FEEDBACK DISPLAY
- (M) MICRO-CONTROLLER
- (FL) FEEDBACK RGB LIGHT
- (SM) SMART MIRROR
- (CT) CURRENT SENSOR (IN MAIN PANEL)  
FACTORY PROVIDED WIRES
- (WSO) WATER SHUTOFF (UNDER HOUSE,  
IN LINE WITH RADIANT PIPING)  
3 WIRE, 18 GAUGE
- (T/H) TEMP/HUMIDITY SENSOR (ON CEILING)  
3 WIRE SHIELDED, 22 GAUGE
- (V) VOLTAGE SENSOR (IN MAIN PANEL)  
14 GAUGE WIRE
- (WF) WATER FLOW SENSOR (IN MECH ROOM,  
MOUNTED ON WALL)  
2 WIRE SHIELDED, 22 GAUGE
- (E) EGAUGE DATA LOGGER
- ▽ ETHERNET PORT
- (STAT) THERMOSTAT (ON WALL,  
54 IN ABOVE FLOOR)  
3 WIRE SHIELDED, 22 GAUGE

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**

- 2 WIRES 18 AWG
- 3 WIRE 18 AWG
- 3 WIRE 14 AWG
- FACTORY WIRE
- 4 WIRE 18 AWG
- CAT 6A



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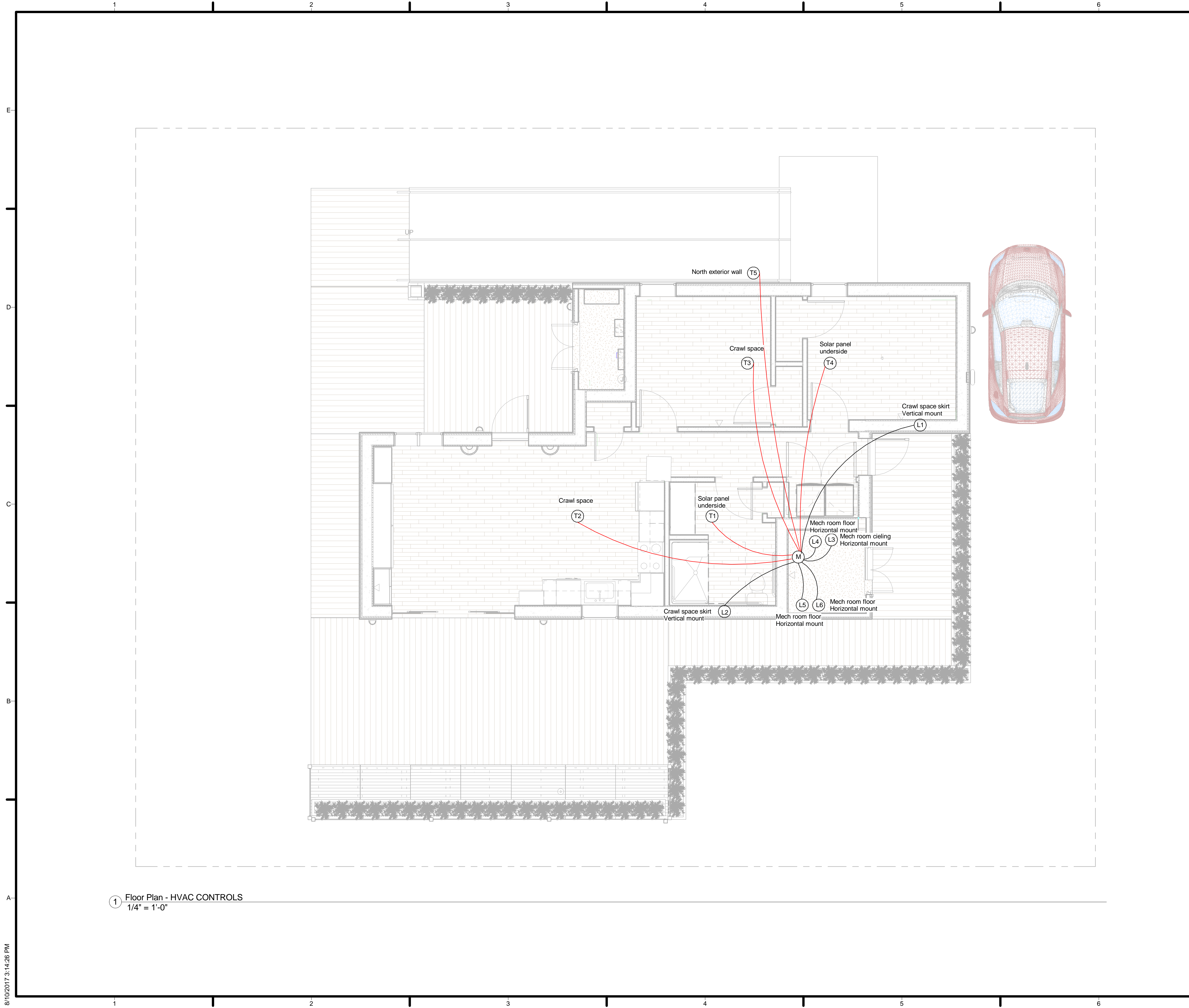


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SHEET TITLE  
**MONITORING LAYOUT**

**T-101**



1 Floor Plan - HVAC CONTROLS  
1/4" = 1'-0"

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

LEGEND

- (L#) MOTORIZED LOUVER  
2 WIRE, 14 GAUGE
- (T#) TEMPERATURE SENSOR  
2 WIRE, 22 GAUGE
- 2 WIRE 14 AWG
- 2 WIRE 22 AWG



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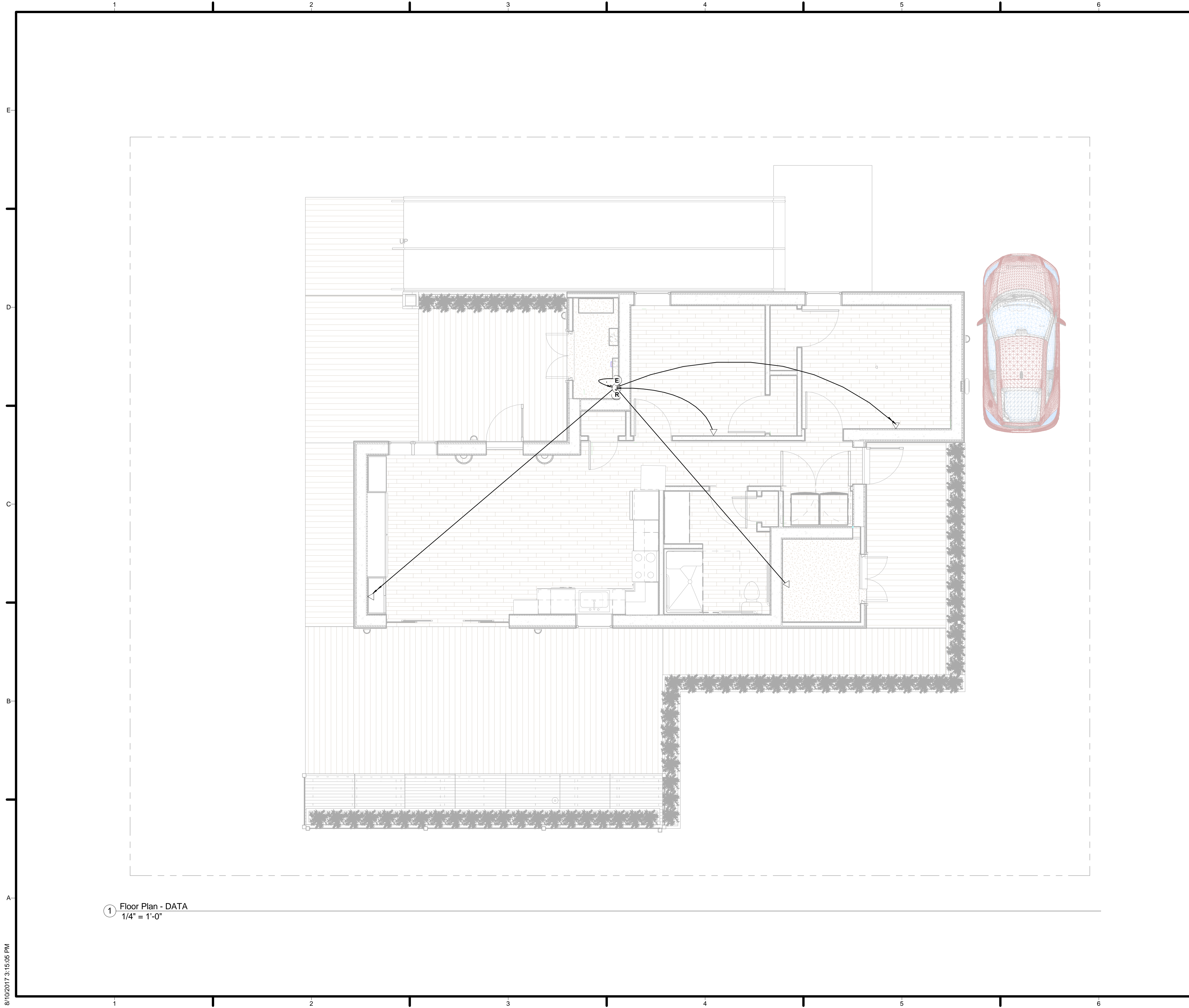
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SHEET TITLE  
 HVAC CONTROLS LAYOUT

T-102





① Floor Plan - DATA  
1/4" = 1'-0"

8/10/2017 3:15:05 PM

**GENERAL SHEET NOTES**

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**REFERENCE KEYNOTES**


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**SHEET KEYNOTES**

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**LEGEND**

- ⊙ J      ETHERNET JUNCTION BOX
- ⊙ R      ROUTER/MODEN
- ▽      ETHERNET PORT  
CAT 6A CABLES
- CAT 6A CABLE




**OUR H<sub>2</sub>OUSE**

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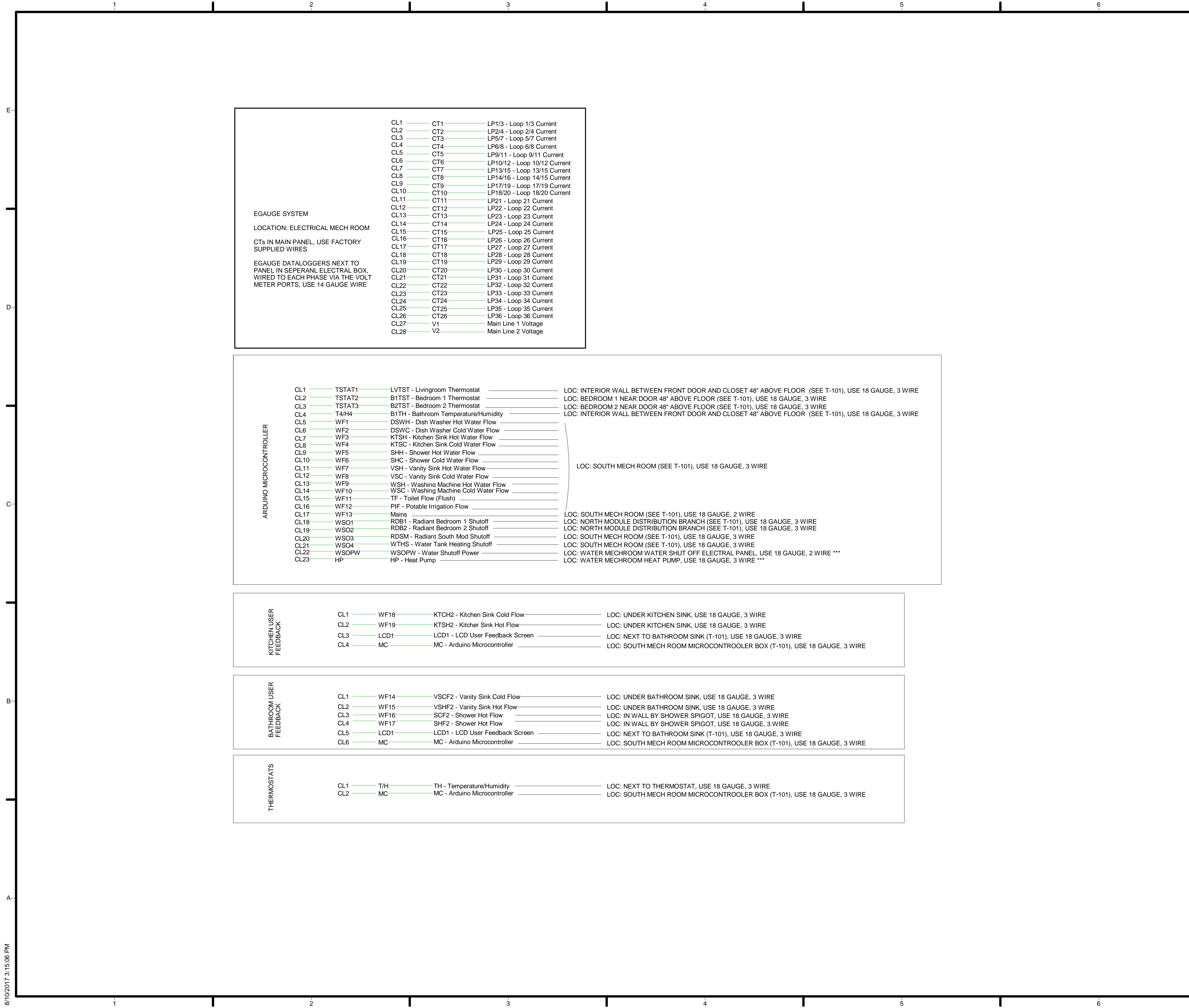


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SHEET TITLE  
**DATA**

**T-103**



**GAUGE SYSTEM**  
 LOCATION: ELECTRICAL MECH ROOM  
 CTs IN MAIN PANEL, USE FACTORY SUPPLIED WIRES  
 EGauge DATALOGGERS NEXT TO PANEL IN SEPERANL ELECTRAL BOX, WIRED TO EACH PHASE VIA THE VOLT METER PORTS, USE 14 GAUGE WIRE

CL1	CT1	LP1/3 - Loop 1/3 Current
CL2	CT2	LP2/4 - Loop 2/4 Current
CL3	CT3	LP5/7 - Loop 5/7 Current
CL4	CT4	LP6/8 - Loop 6/8 Current
CL5	CT5	LP9/11 - Loop 9/11 Current
CL6	CT6	LP10/12 - Loop 10/12 Current
CL7	CT7	LP13/15 - Loop 13/15 Current
CL8	CT8	LP14/16 - Loop 14/15 Current
CL9	CT9	LP17/19 - Loop 17/19 Current
CL10	CT10	LP18/20 - Loop 18/20 Current
CL11	CT11	LP21 - Loop 21 Current
CL12	CT12	LP22 - Loop 22 Current
CL13	CT13	LP23 - Loop 23 Current
CL14	CT14	LP24 - Loop 24 Current
CL15	CT15	LP25 - Loop 25 Current
CL16	CT16	LP26 - Loop 26 Current
CL17	CT17	LP27 - Loop 27 Current
CL18	CT18	LP28 - Loop 28 Current
CL19	CT19	LP29 - Loop 29 Current
CL20	CT20	LP30 - Loop 30 Current
CL21	CT21	LP31 - Loop 31 Current
CL22	CT22	LP32 - Loop 32 Current
CL23	CT23	LP33 - Loop 33 Current
CL24	CT24	LP34 - Loop 34 Current
CL25	CT25	LP35 - Loop 35 Current
CL26	CT26	LP36 - Loop 36 Current
CL27	V1	Main Line 1 Voltage
CL28	V2	Main Line 2 Voltage

**ARDUINO MICROCONTROLLER**

CL1	TSTAT1	LVTST - Livingroom Thermostat	LOC: INTERIOR WALL BETWEEN FRONT DOOR AND CLOSET 48" ABOVE FLOOR (SEE T-101), USE 18 GAUGE, 3 WIRE
CL2	TSTAT2	B1TST - Bedroom 1 Thermostat	LOC: BEDROOM 1 NEAR DOOR 48" ABOVE FLOOR (SEE T-101), USE 18 GAUGE, 3 WIRE
CL3	TSTAT3	B2TST - Bedroom 2 Thermostat	LOC: BEDROOM 2 NEAR DOOR 48" ABOVE FLOOR (SEE T-101), USE 18 GAUGE, 3 WIRE
CL4	T4/H4	B1TH - Bathroom Temperature/Humidity	LOC: INTERIOR WALL BETWEEN FRONT DOOR AND CLOSET 48" ABOVE FLOOR (SEE T-101), USE 18 GAUGE, 3 WIRE
CL5	WF1	DSWH - Dish Washer Hot Water Flow	
CL6	WF2	DSWC - Dish Washer Cold Water Flow	
CL7	WF3	KTSH - Kitchen Sink Hot Water Flow	
CL8	WF4	KTSC - Kitchen Sink Cold Water Flow	
CL9	WF5	SHH - Shower Hot Water Flow	
CL10	WF6	SHC - Shower Cold Water Flow	
CL11	WF7	VSH - Vanity Sink Hot Water Flow	
CL12	WF8	VSC - Vanity Sink Cold Water Flow	LOC: SOUTH MECH ROOM (SEE T-101), USE 18 GAUGE, 3 WIRE
CL13	WF9	WSH - Washing Machine Hot Water Flow	
CL14	WF10	WSC - Washing Machine Cold Water Flow	
CL15	WF11	TF - Toilet Flow (Flush)	
CL16	WF12	PIF - Potable Irrigation Flow	
CL17	WF13	Mains	LOC: SOUTH MECH ROOM (SEE T-101), USE 18 GAUGE, 2 WIRE
CL18	WSO1	RDB1 - Radiant Bedroom 1 Shutoff	LOC: NORTH MODULE DISTRIBUTION BRANCH (SEE T-101), USE 18 GAUGE, 3 WIRE
CL19	WSO2	RDB2 - Radiant Bedroom 2 Shutoff	LOC: NORTH MODULE DISTRIBUTION BRANCH (SEE T-101), USE 18 GAUGE, 3 WIRE
CL20	WSO3	RDSM - Radiant South Mod Shutoff	LOC: SOUTH MECH ROOM (SEE T-101), USE 18 GAUGE, 3 WIRE
CL21	WSO4	WTHS - Water Tank Heating Shutoff	LOC: SOUTH MECH ROOM (SEE T-101), USE 18 GAUGE, 3 WIRE
CL22	WSOPW	WSOPW - Water Shutoff Power	LOC: WATER MECHROOM WATER SHUT OFF ELECTRAL PANEL, USE 18 GAUGE, 2 WIRE ***
CL23	HP	HP - Heat Pump	LOC: WATER MECHROOM HEAT PUMP, USE 18 GAUGE, 3 WIRE ***

**KITCHEN USER FEEDBACK**

CL1	WF18	KTCH2 - Kitchen Sink Cold Flow	LOC: UNDER KITCHEN SINK, USE 18 GAUGE, 3 WIRE
CL2	WF19	KTSH2 - Kitcher Sink Hot Flow	LOC: UNDER KITCHEN SINK, USE 18 GAUGE, 3 WIRE
CL3	LCD1	LCD1 - LCD User Feedback Screen	LOC: NEXT TO BATHROOM SINK (T-101), USE 18 GAUGE, 3 WIRE
CL4	MC	MC - Arduino Microcontroller	LOC: SOUTH MECH ROOM MICROCONTROOLER BOX (T-101), USE 18 GAUGE, 3 WIRE

**BATHROOM USER FEEDBACK**

CL1	WF14	VSCF2 - Vanity Sink Cold Flow	LOC: UNDER BATHROOM SINK, USE 18 GAUGE, 3 WIRE
CL2	WF15	VSHF2 - Vanity Sink Hot Flow	LOC: UNDER BATHROOM SINK, USE 18 GAUGE, 3 WIRE
CL3	WF16	SCF2 - Shower Hot Flow	LOC: IN WALL BY SHOWER SPIGOT, USE 18 GAUGE, 3 WIRE
CL4	WF17	SHF2 - Shower Hot Flow	LOC: IN WALL BY SHOWER SPIGOT, USE 18 GAUGE, 3 WIRE
CL5	LCD1	LCD1 - LCD User Feedback Screen	LOC: NEXT TO BATHROOM SINK (T-101), USE 18 GAUGE, 3 WIRE
CL6	MC	MC - Arduino Microcontroller	LOC: SOUTH MECH ROOM MICROCONTROOLER BOX (T-101), USE 18 GAUGE, 3 WIRE

**THERMOSTATS**

CL1	T/H	TH - Temperature/Humidity	LOC: NEXT TO THERMOSTAT, USE 18 GAUGE, 3 WIRE
CL2	MC	MC - Arduino Microcontroller	LOC: SOUTH MECH ROOM MICROCONTROOLER BOX (T-101), USE 18 GAUGE, 3 WIRE

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

**LEGEND**



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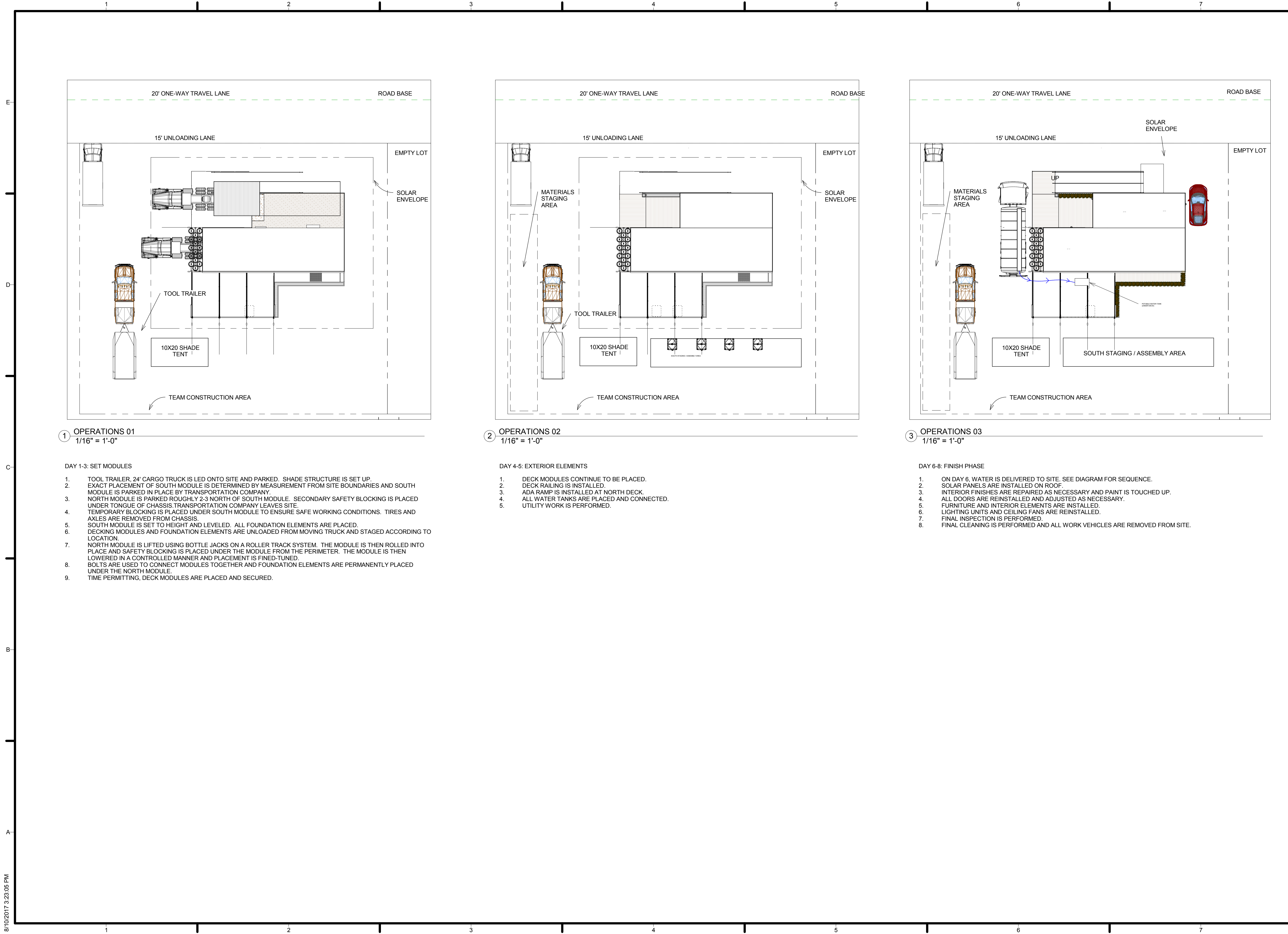
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SHEET TITLE  
**MONITORING ONE LINE DIAGRAM**

**T-601**





① OPERATIONS 01  
1/16" = 1'-0"

DAY 1-3: SET MODULES

1. TOOL TRAILER, 24' CARGO TRUCK IS LED ONTO SITE AND PARKED. SHADE STRUCTURE IS SET UP.
2. EXACT PLACEMENT OF SOUTH MODULE IS DETERMINED BY MEASUREMENT FROM SITE BOUNDARIES AND SOUTH MODULE IS PARKED IN PLACE BY TRANSPORTATION COMPANY.
3. NORTH MODULE IS PARKED ROUGHLY 2-3 NORTH OF SOUTH MODULE. SECONDARY SAFETY BLOCKING IS PLACED UNDER TONGUE OF CHASSIS. TRANSPORTATION COMPANY LEAVES SITE.
4. TEMPORARY BLOCKING IS PLACED UNDER SOUTH MODULE TO ENSURE SAFE WORKING CONDITIONS. TIRES AND AXLES ARE REMOVED FROM CHASSIS.
5. SOUTH MODULE IS SET TO HEIGHT AND LEVELED. ALL FOUNDATION ELEMENTS ARE PLACED.
6. DECKING MODULES AND FOUNDATION ELEMENTS ARE UNLOADED FROM MOVING TRUCK AND STAGED ACCORDING TO LOCATION.
7. NORTH MODULE IS LIFTED USING BOTTLE JACKS ON A ROLLER TRACK SYSTEM. THE MODULE IS THEN ROLLED INTO PLACE AND SAFETY BLOCKING IS PLACED UNDER THE MODULE FROM THE PERIMETER. THE MODULE IS THEN LOWERED IN A CONTROLLED MANNER AND PLACEMENT IS FINED-TUNED.
8. BOLTS ARE USED TO CONNECT MODULES TOGETHER AND FOUNDATION ELEMENTS ARE PERMANENTLY PLACED UNDER THE NORTH MODULE.
9. TIME PERMITTING, DECK MODULES ARE PLACED AND SECURED.

② OPERATIONS 02  
1/16" = 1'-0"

DAY 4-5: EXTERIOR ELEMENTS

1. DECK MODULES CONTINUE TO BE PLACED.
2. DECK RAILING IS INSTALLED.
3. ADA RAMP IS INSTALLED AT NORTH DECK.
4. ALL WATER TANKS ARE PLACED AND CONNECTED.
5. UTILITY WORK IS PERFORMED.

③ OPERATIONS 03  
1/16" = 1'-0"

DAY 6-8: FINISH PHASE

1. ON DAY 6, WATER IS DELIVERED TO SITE. SEE DIAGRAM FOR SEQUENCE.
2. SOLAR PANELS ARE INSTALLED ON ROOF.
3. INTERIOR FINISHES ARE REPAIRED AS NECESSARY AND PAINT IS TOUCHED UP.
4. ALL DOORS ARE REINSTALLED AND ADJUSTED AS NECESSARY.
5. FURNITURE AND INTERIOR ELEMENTS ARE INSTALLED.
6. LIGHTING UNITS AND CEILING FANS ARE REINSTALLED.
7. FINAL INSPECTION IS PERFORMED.
8. FINAL CLEANING IS PERFORMED AND ALL WORK VEHICLES ARE REMOVED FROM SITE.



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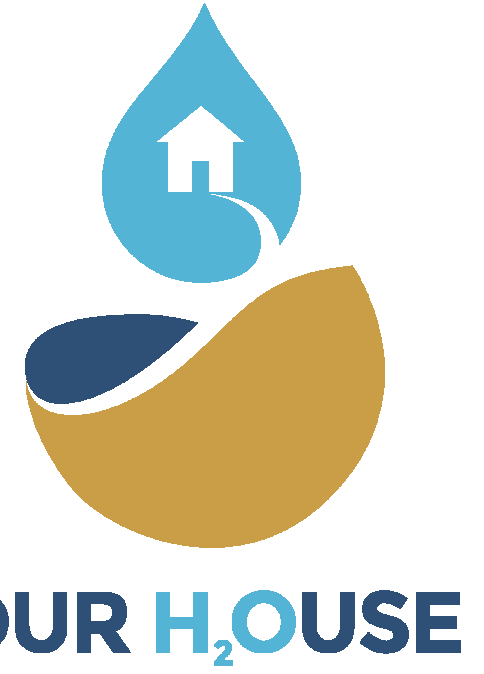


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SHEET TITLE  
 ARRIVAL SEQUENCE PLAN

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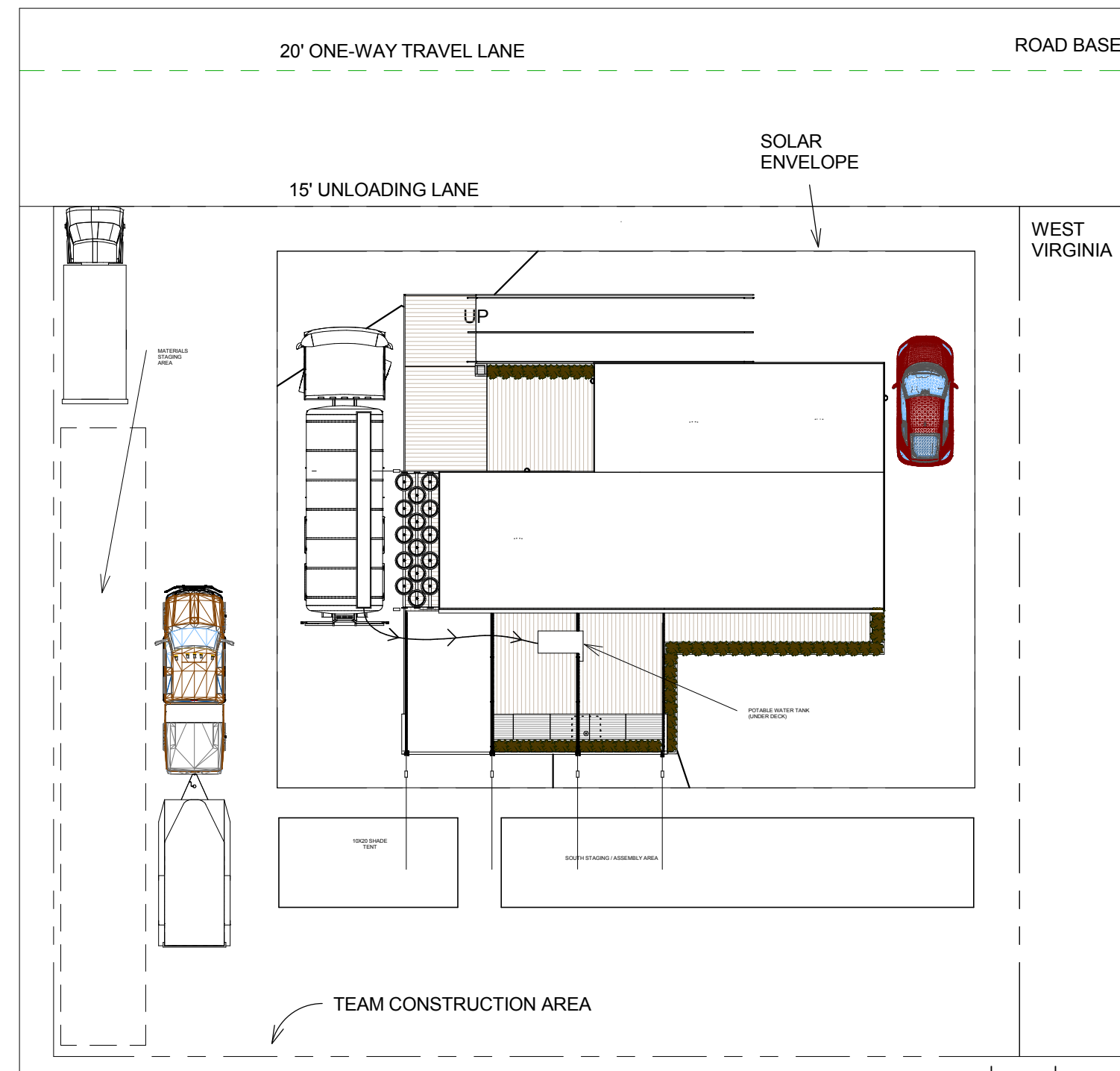


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SHEET TITLE  
**DEPARTURE SEQUENCE PLAN**

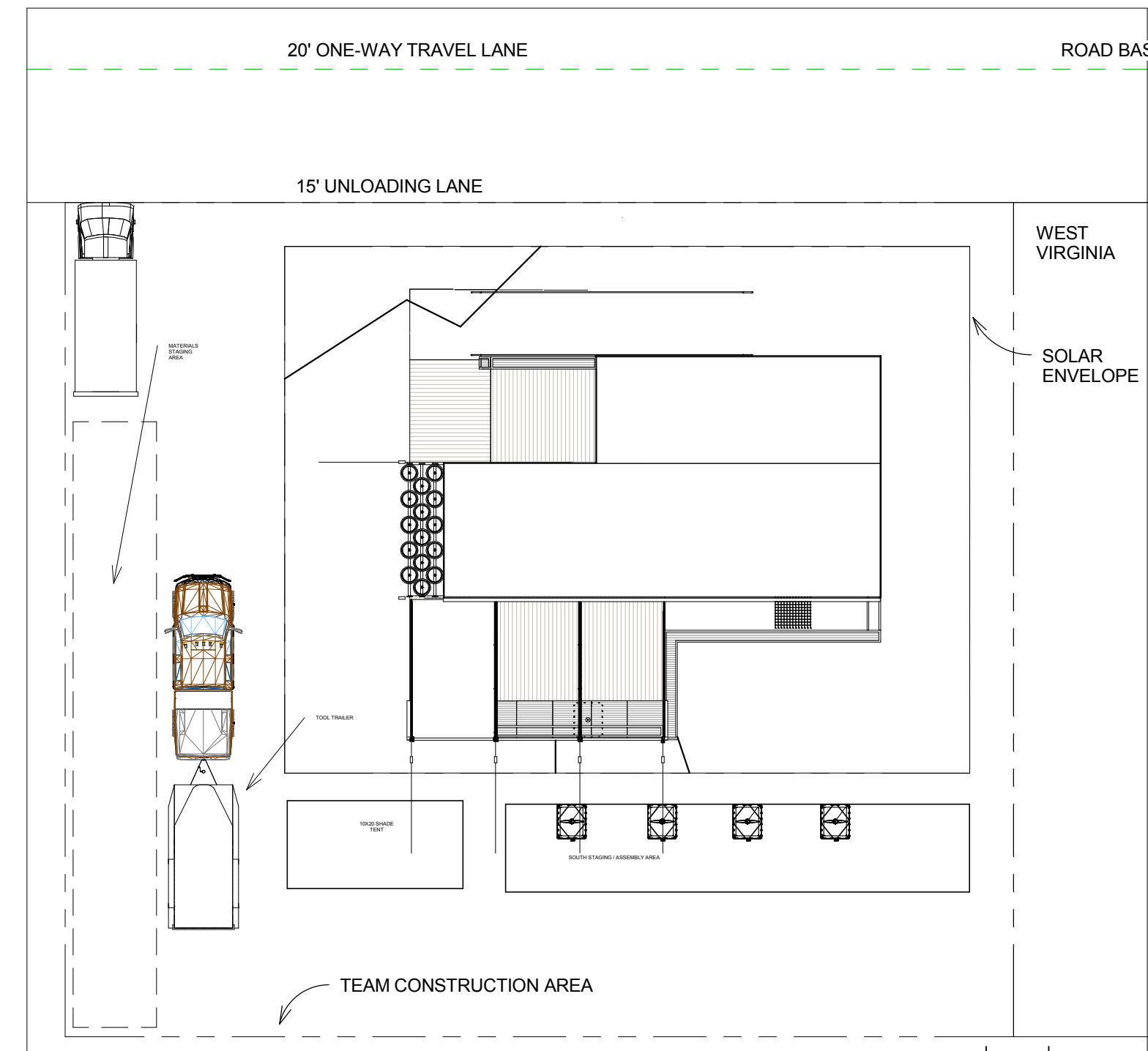
**O-102**



① OPERATIONS 04  
 1/16" = 1'-0"

DAY 22-23

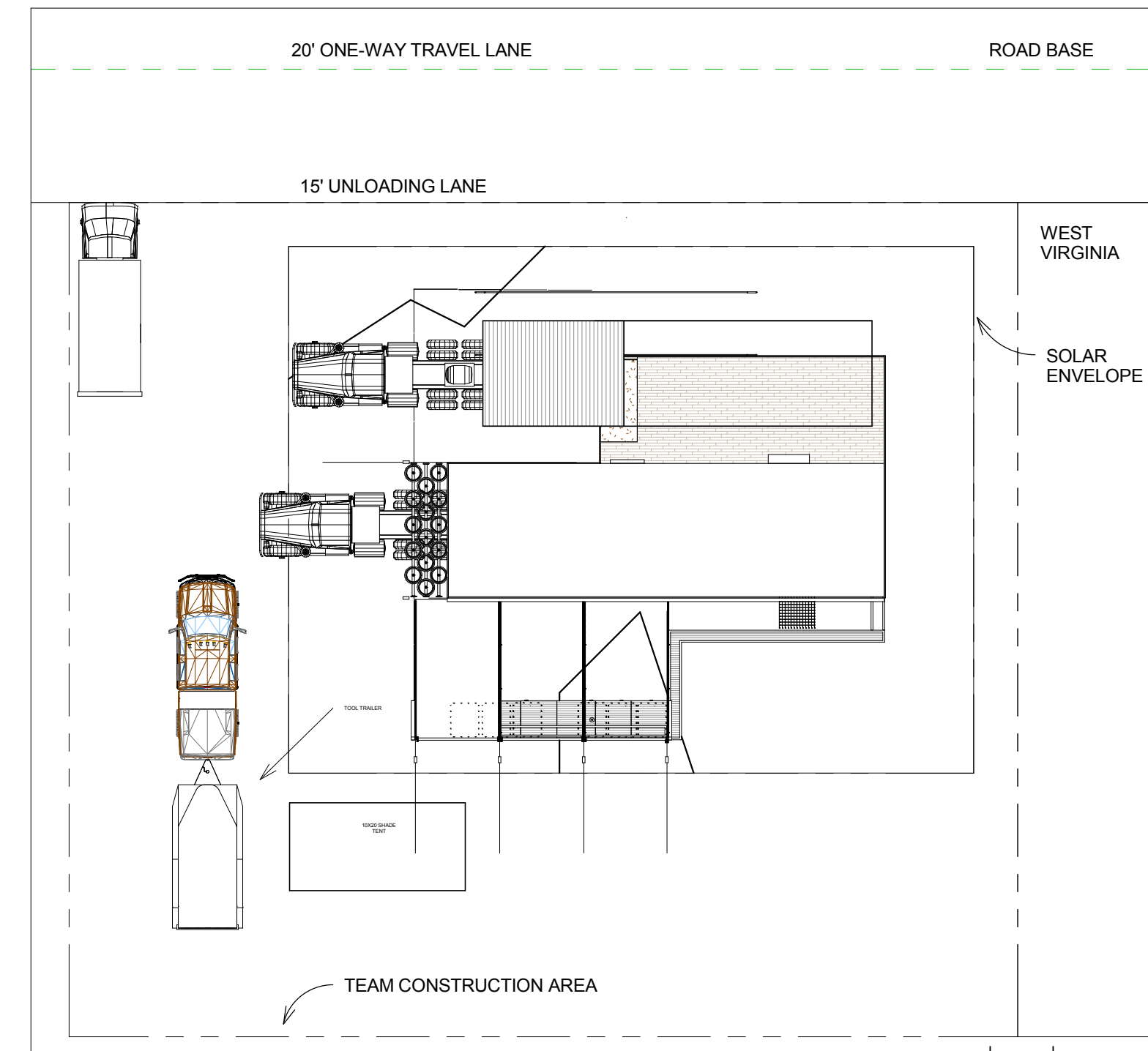
- TOOL TRAILER, 24' CARGO TRUCK IS LED ONTO SITE AND PARKED. SHADE STRUCTURE IS SET UP.
- SOLAR PANELS ARE REMOVED FROM ROOF.
- INTERIOR ELEMENTS ARE REMOVED AND PACKED FOR TRANSPORT.
- ALL DOORS ARE UNINSTALLED AND SECURED FOR TRANSPORT.
- FURNITURE AND STAGED ELEMENTS ARE REMOVED FROM HOUSE AND STAGED ON NORTH OF LOT FOR REMOVAL BY INTERIOR DESIGN COMPANY.
- LIGHTING UNITS AND CEILING FANS ARE UNINSTALLED AND PACKED FOR TRANSPORT.
- DECK RAILING IS UNINSTALLED.
- WATER REMOVAL OCCURS ACCORDING TO EVENT ORGANIZERS SCHEDULE.
- PLANTING IS REMOVED FROM EXTERIOR AND STAGED FOR REMOVAL BY NURSERY.



② OPERATIONS 05  
 1/16" = 1'-0"

DAY 24

- SKIRTING IS REMOVED AND DECK MODULES ARE UNINSTALLED.
- ADA RAMP IS UNINSTALLED AT NORTH DECK.
- ALL WATER TANKS ARE DISCONNECTED AND REMOVED TO STAGING AREAS.
- ALL UTILITIES ARE DISCONNECTED FROM HOUSE MODULES.



③ OPERATIONS 06  
 1/16" = 1'-0"

DAY 25-27

- NORTH MODULE IS SEPARATED AND PARKED ROUGHLY 2-3 NORTH OF SOUTH MODULE. SECONDARY SAFETY BLOCKING IS PLACED UNDER TONGUE OF CHASSIS. MODULE IS PREPPED FOR TRANSPORT. TEMPORARY BLOCKING IS PLACED UNDER SOUTH MODULE TO ENSURE SAFE WORKING CONDITIONS. MODULE IS RAISED WITH JACKS AND TIRES AND AXLES ARE INSTALLED UNDER CHASSIS. MODULE IS PREPPED FOR TRANSPORT.
- TRANSPORTATION COMPANY ARRIVES AND REMOVES BOTH HOUSE MODULES. ALL FOUNDATION ELEMENTS ARE REMOVED AND PACKED FOR TRANSPORT.
- FINAL CLEANING IS PERFORMED AND ALL WORK VEHICLES ARE REMOVED FROM SITE.
- FINAL INSPECTION IS PERFORMED.