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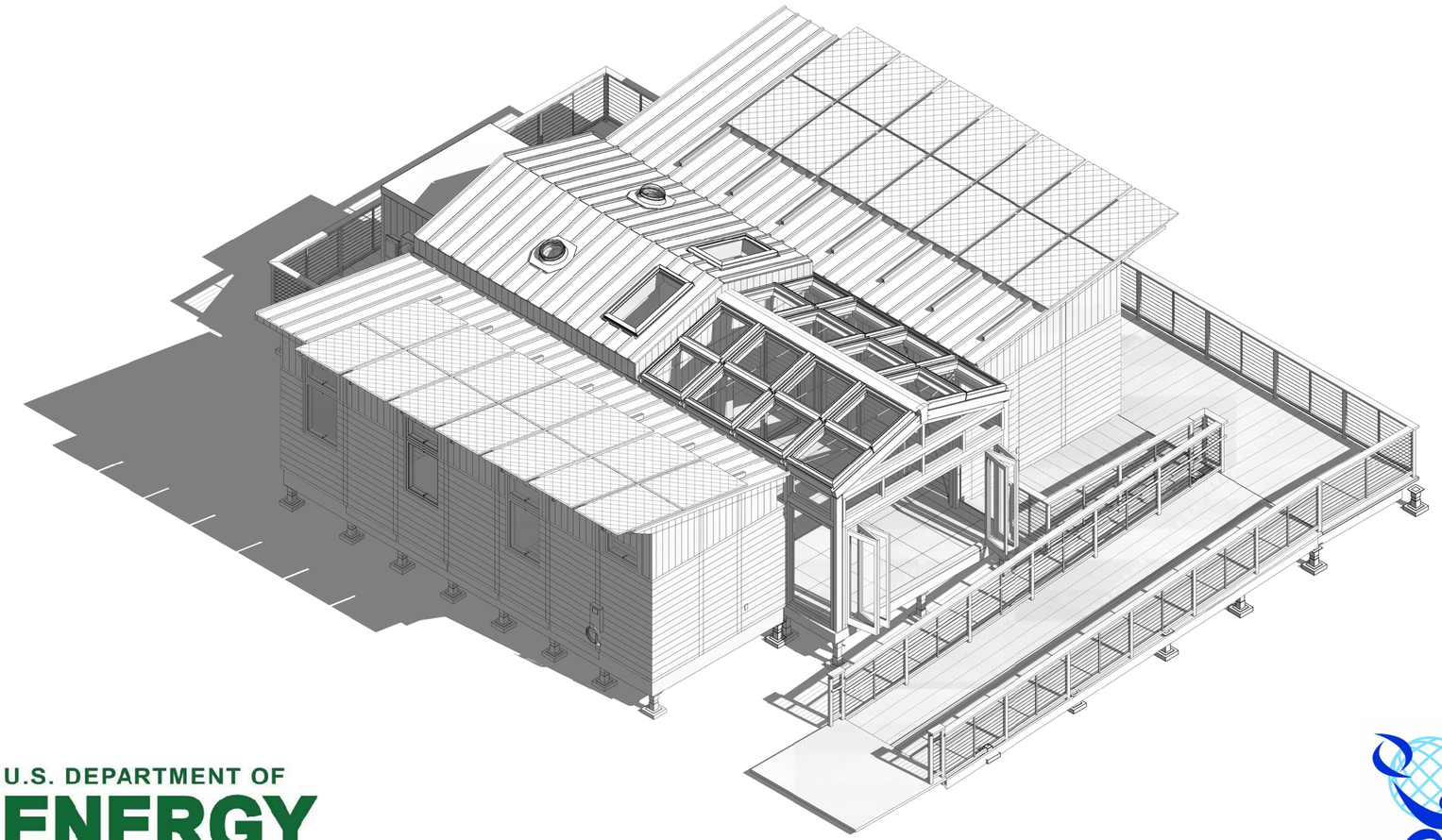
U.S. DEPARTMENT OF ENERGY - SOLAR DECATHLON 2017 SUBMISSION



U.S. DEPARTMENT OF ENERGY

U.S. DEPARTMENT OF ENERGY SOLAR DECATHLON

PROJECT ARCHITECT

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COLLEGE PARK, MD 20742

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UNIVERSITY OF MARYLAND, COLLEGE PARK
SOLAR DECATHLON 2017 SUBMISSION

Date	Description

PROJECT NO.	Project Number
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CHECKED	Checker

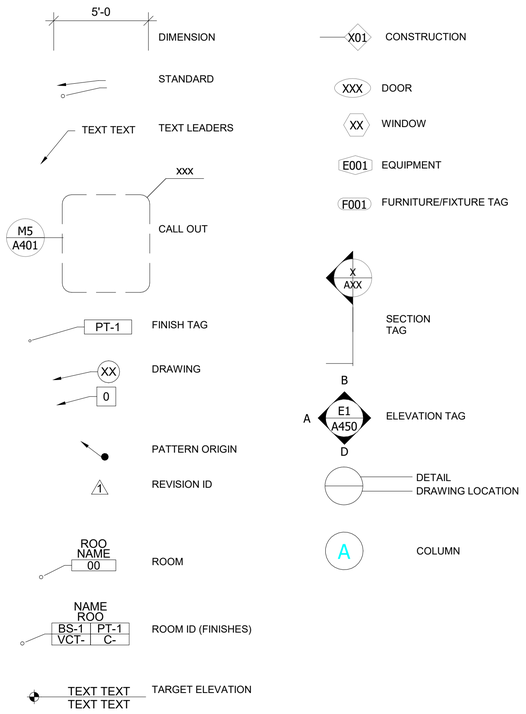
COVER SHEET

G-001

GENERAL NOTES

1. ALL PARTITIONS ARE DIMENSIONED TO FACE OF WALL FINISH, UNLESS NOTED OTHERWISE.
2. ALL FLOORS SHALL BE LEVELED AND FREE FROM IRREGULARITIES TO ASSURE A CONSTANT FLOOR HEIGHT.
3. ALL CONTRACTORS ARE RESPONSIBLE FOR LAYING OUT EQUIPMENT RUNS TO AVOID INTERFERENCE.
4. IF CEILING DIFFUSERS, LIGHT FIXTURES OR OTHER ELEMENTS ON OR ABOVE THE CEILING CANNOT BE LOCATED AS SHOWN ON PLAN DUE TO OBSTRUCTIONS, GENERAL CONTRACTOR SHALL NOTIFY ARCHITECT PRIOR TO COMMENCING WORK.
5. ALL WORK SHALL CONFORM TO TO ALL APPLICABLE CODES: FEDERAL, STATE AND LOCAL BUILDING CODES.
6. AFTER THE JOB IS IN PROGRESS, "CHANGE ORDERS" MUST BE APPROVED BY THE ARCHITECT IN WRITING PRIOR TO COMMENCING WORK.
7. INTERIOR ROOMS SHALL BE MECHANICALLY VENTILATED IN ACCORDANCE WITH STATE AND LOCAL BUILDING CODES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR BRACING PARTITION WALLS AS REQUIRED AND AT ALL DOOR OPENINGS.
9. ALL MISCELLANEOUS WOOD BLOCKING, SILLS, PLYWOOD, ETC. TO BE FIRE RETARDANT TREATED.
10. ALL MATERIALS ARE TO BE STORED PROPERLY. GENERAL CONTRACTOR IS RESPONSIBLE FOR THE SAFEKEEPING OF MATERIALS.
11. GENERAL CONTRACTOR RESPONSIBLE FOR COORDINATION OF SPECIAL SHIPPING ITEMS. CONTRACTOR SHALL PROVIDE ARCHITECT WITH REASONABLE CONSTRUCTION SCHEDULE TO ARRANGE SHIPPING.
12. THE GENERAL CONTRACTOR SHALL SUBSTITUTE MATERIALS, FINISHES, AND OR EQUIPMENT UPON WRITTEN SUBMITTAL AND APPROVAL TO THE PROJECT MANUAL.
13. NO SUBSTITUTIONS SHALL BE ALLOWED DURING THE CONSTRUCTION PROCESS UNLESS APPROVED BY THE ARCHITECT.
14. DIMENSIONS NOTED 'CLEAR' SHALL NOT BE ADJUSTED WITHOUT PRIOR APPROVAL BY THE ARCHITECT.
15. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL FIRE DAMPERS, SMOKE DETECTORS, AND SPRINKLER HEADS AS REQUIRED BY FIRE MARSHALL AND LOCAL CODES.
16. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF ALL CONSTRUCTION DEBRIS AND REFUSE.
17. UPON SUBSTANTIAL COMPLETION OF WORK, CONTRACTOR SHALL PREPARE A PUNCH LIST AND NOTIFY ARCHITECT TO REVIEW AND VERIFY PUNCH-LIST FOR CORRECTIONS.
18. ALL DOOR JAMBS SHALL BE INSTALLED PLUMB AND SQUARE.

SYMBOL LEGEND



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Sheet Type	Sheet Number	Sheet Name
00 - GENERAL	G-001	COVER SHEET
00 - GENERAL	G-002	DRAWING INDEX
00 - GENERAL	G-101	FINISHED SQUARE FOOTAGE COMPLIANCE PLAN
00 - GENERAL	G-102	SITE PLAN & VICINTIY PLAN
00 - GENERAL	G-103	EGRESS & EVACUATION PLAN
00 - GENERAL	G-104	ACCESSIBLE TOUR PATH PLAN
10 - LANDSCAPE	L-101	LANDSCAPE PLAN
10 - LANDSCAPE	L-200	LANDSCAPE ELEVATIONS
10 - LANDSCAPE	L-500	PLANTING DETAIL
10 - LANDSCAPE	L-501	VGP GREEN WALL DETAIL
10 - LANDSCAPE	L-600	PLANT SCHEDULE
20 - STRUCTURAL	S-001	STRUCTURAL NOTES
20 - STRUCTURAL	S-002	PANEL LAYOUT
20 - STRUCTURAL	S-100	FOUNDATION PLAN
20 - STRUCTURAL	S-101	FLOOR FRAMING PLAN
20 - STRUCTURAL	S-102	DECK FRAMING
20 - STRUCTURAL	S-103	ROOF FRAMING PLANS
20 - STRUCTURAL	S-300	WALL FRAMING SECTIONS
20 - STRUCTURAL	S-301	TYPICAL WALL FRAMING & DETAILS
20 - STRUCTURAL	S-302	WALL FRAMING AT COURTYARD & DETAILS
20 - STRUCTURAL	S-303	ANGLED ROOF WALL FRAMING AND DETAILS
20 - STRUCTURAL	S-305	CORE FRAMING SECTIONS
20 - STRUCTURAL	S-500	FLOOR DETAILS
20 - STRUCTURAL	S-501	WALL CONNECTION DETAILS
20 - STRUCTURAL	S-502	ROOF SECTION DETAILS
20 - STRUCTURAL	S-800	GREENHOUSE FRAMING PLANS & SECTIONS
20 - STRUCTURAL	S-801	GREENHOUSE CONSTRUCTION DETAILS
30 - ARCHITECTURE	A-101	GROUND CONTACT PLAN
30 - ARCHITECTURE	A-102	FLOOR PLAN
30 - ARCHITECTURE	A-103	ROOF PLAN
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30 - ARCHITECTURE	A-200	NORTH & SOUTH EXTERIOR ELEVATIONS
30 - ARCHITECTURE	A-201	EAST & WEST EXTERIOR ELEVATIONS
30 - ARCHITECTURE	A-300	BUILDING SECTIONS
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30 - ARCHITECTURE	A-410	ENLARGED BATHROOM PLANS & ELEVATIONS
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30 - ARCHITECTURE	A-440	ENLARGED BEDROOM/STUDY PLAN & ELEVATIONS
30 - ARCHITECTURE	A-450	ENLARGED BEDROOM PLAN & ELEVATIONS
30 - ARCHITECTURE	A-460	ENLARGED COURTYARD PLAN & ELEVATIONS
30 - ARCHITECTURE	A-510	WINDOW DETAIL
30 - ARCHITECTURE	A-600	DOOR & WINDOW SCHEDULE
30 - ARCHITECTURE	A-601	MATERIAL SCHEDULE
40 - FIRE PROTECTION	F-001	FIRE PROTECTION NOTES & SYMBOLS
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40 - FIRE PROTECTION	F-102	FIRE SUPPRESSION COVERAGE
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50 - PLUMBING	P-001	PLUMBING SYMBOLS AND NOTES
50 - PLUMBING	P-005	DOMESTIC SANITARY
50 - PLUMBING	P-100	DOMESTIC SUPPLY
50 - PLUMBING	P-102	DOMESTIC COLD
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50 - PLUMBING	P-105	DOMESTIC GREY
50 - PLUMBING	P-300	SPINE SECTION EAST
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50 - PLUMBING	P-700	DOMESTIC SUPPLY & RETURN DIAGRAMS
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50 - PLUMBING	P-905	DOMESTIC GREY ISOMETRIC
60 - MECHANICAL	M-001	MECHANICAL SYMBOLS AND NOTES
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60 - MECHANICAL	M-200	MECHANICAL ELEVATION
60 - MECHANICAL	M-600	MECHANICAL SCHEDULES
60 - MECHANICAL	M-700	MECHANICAL ATTIC DIAGRAM
70 - ELECTRICAL	E-001	ELECTRICAL SYMBOLS & NOTES
70 - ELECTRICAL	E-100	LIGHTING PLAN
70 - ELECTRICAL	E-101	ELECTRICAL DISTRIBUTION PLAN
70 - ELECTRICAL	E-102	AUTOMATION PLAN
70 - ELECTRICAL	E-103	HARD-WIRED EQUIPMENT PLAN
70 - ELECTRICAL	E-104	PHOTOVOLTAIC SYSTEMS INFORMATION
70 - ELECTRICAL	E-105	PHOTVOLTAIC ARRAY ROOF PLAN
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70 - ELECTRICAL	E-602	PV ONE LINE WIRE DIAGRAM
70 - ELECTRICAL	E-603	PV THREE LINE WIRE DIAGRAM
80 - OPERATIONS	O-100	COMPETITION SITE PLAN
80 - OPERATIONS	O-101	TRANSPORT PLAN
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80 - OPERATIONS	O-105	DEPARTURE SEQUENCE

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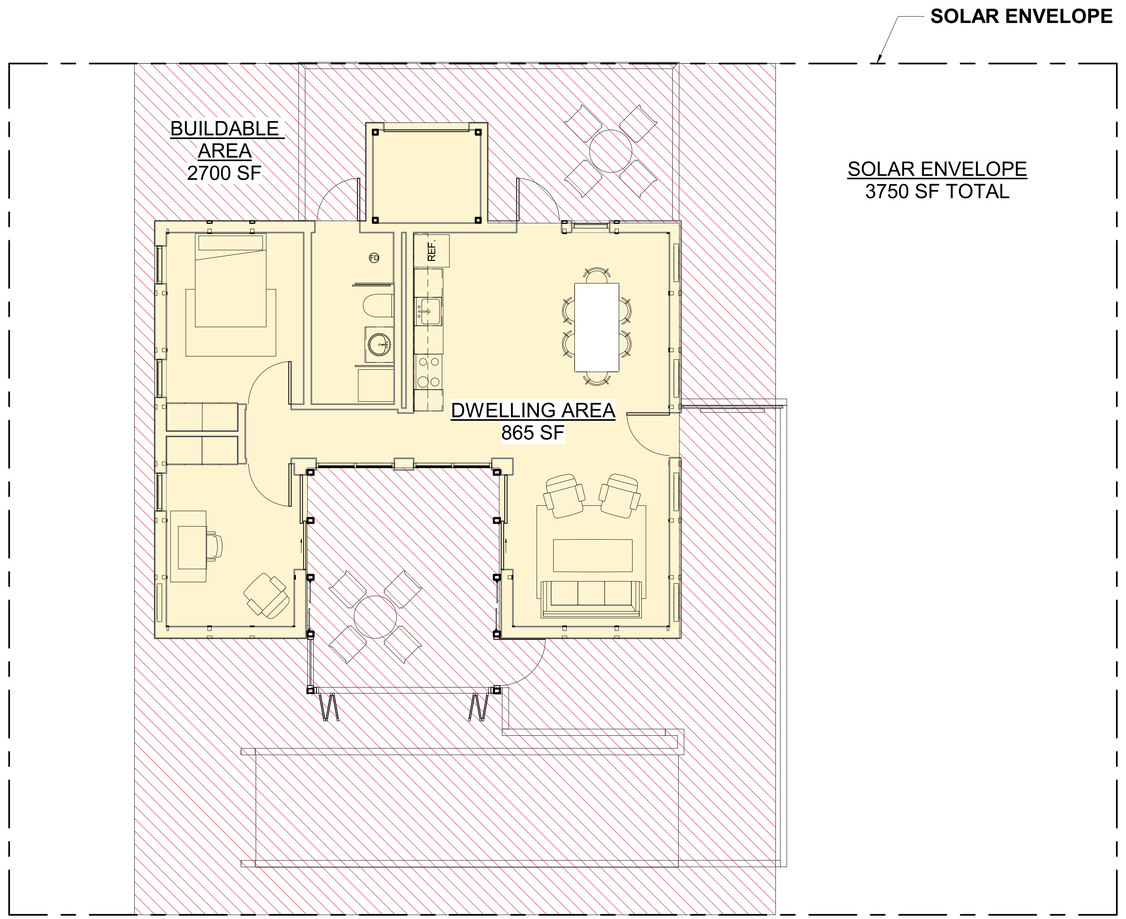
DRAWING INDEX

G-002



1 SQUARE FOOT AGE COMPLIANCE PLAN
3/16" = 1'-0"

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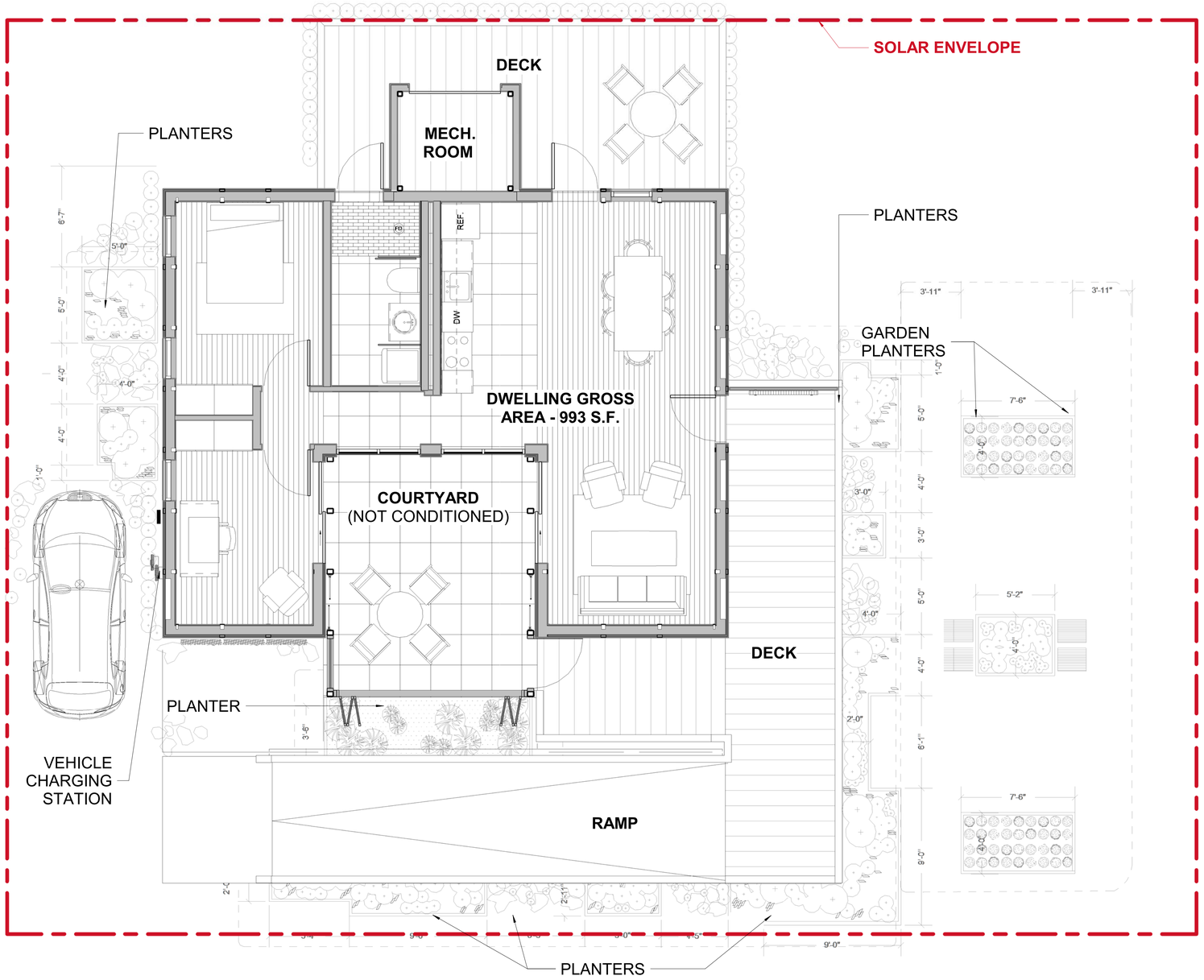
FINISHED SQUARE FOOTAGE COMPLIANCE PLAN

G-101

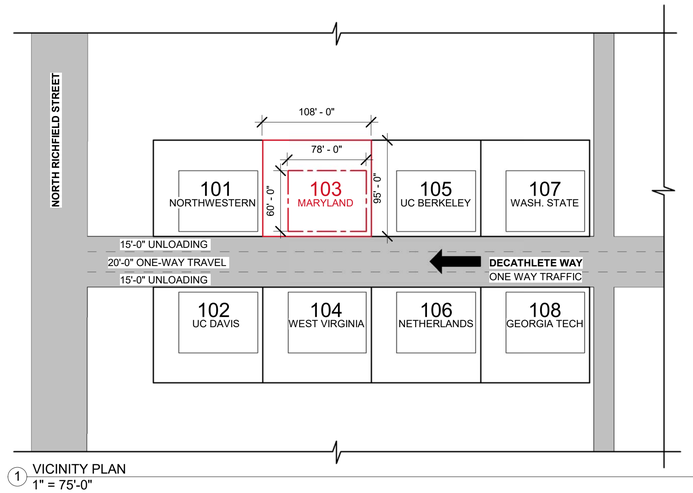
SITE PLAN NOTES

MARYLAND CONTEST SPACE: 108'-0" x 95'-0"

TOTAL DISTANCE: 60'-0" x 78'-0"



2 SITE PLAN
1/4" = 1'-0"



1 VICINITY PLAN
1" = 75'-0"

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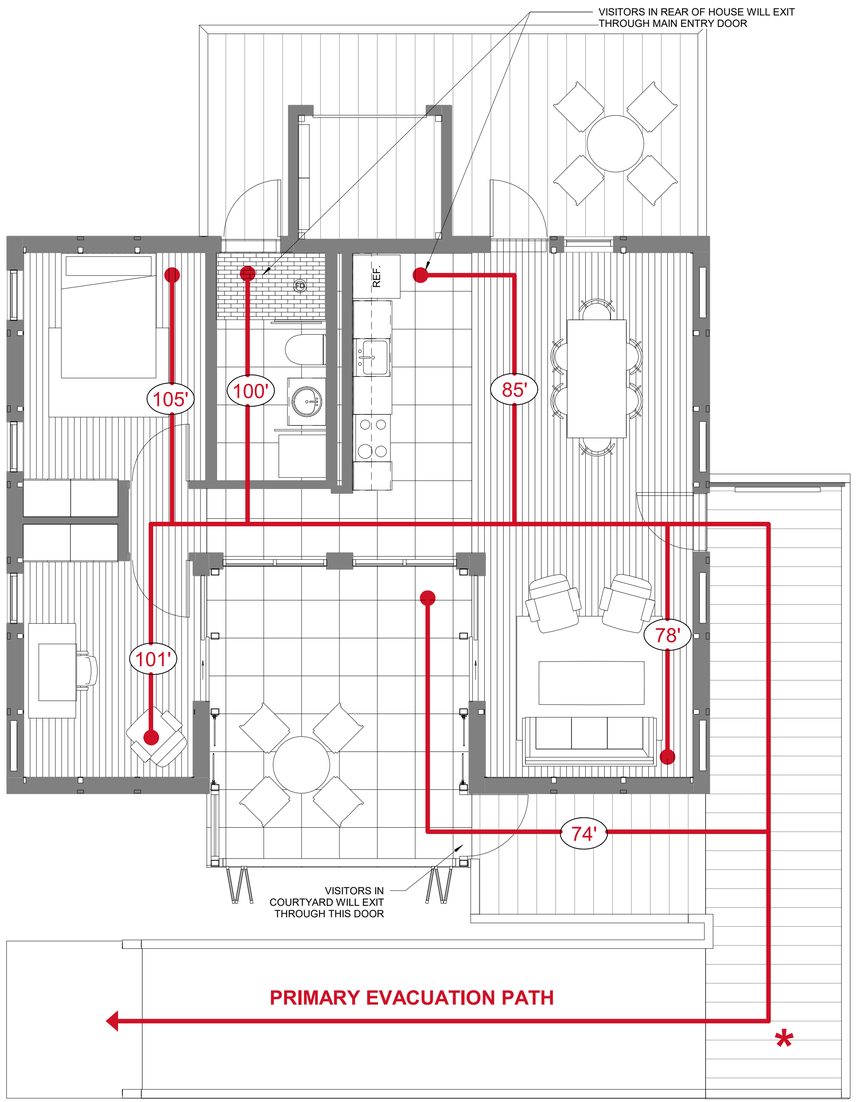
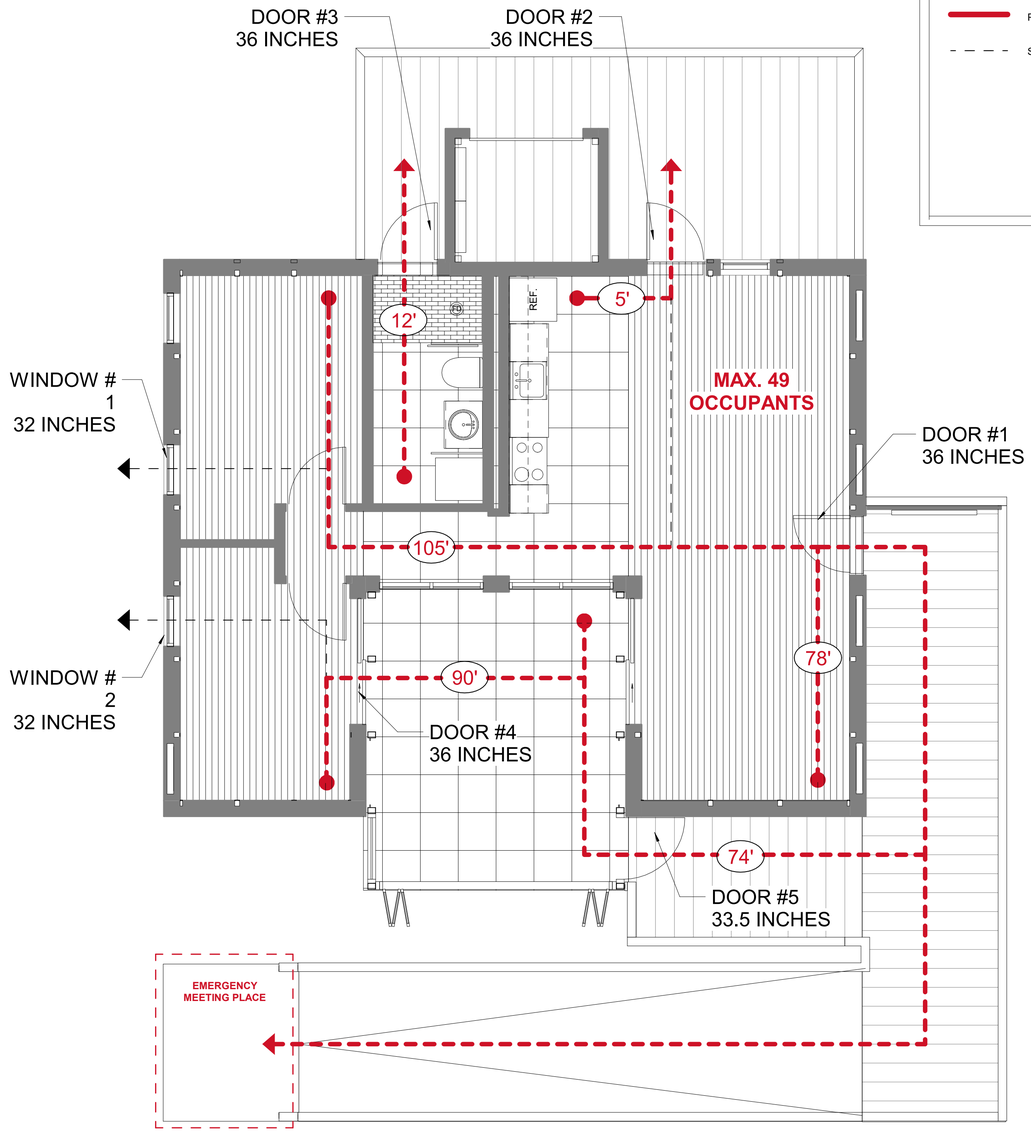
SITE PLAN & VICINTIY PLAN

G-102



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



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

LIFE SAFETY NOTES

MARYLAND CONTEST SPACE: 108'-0" x 95'-0"

TOTAL DISTANCE: 60'-0" x 78'-0"

MAXIMUM OCCUPANCY: 49 OCCUPANTS

LIFE SAFETY LEGEND

- COMMON PATH OF TRAVEL
- PRIMARY EGRESS PATH
- SECONDARY EGRESS PATH

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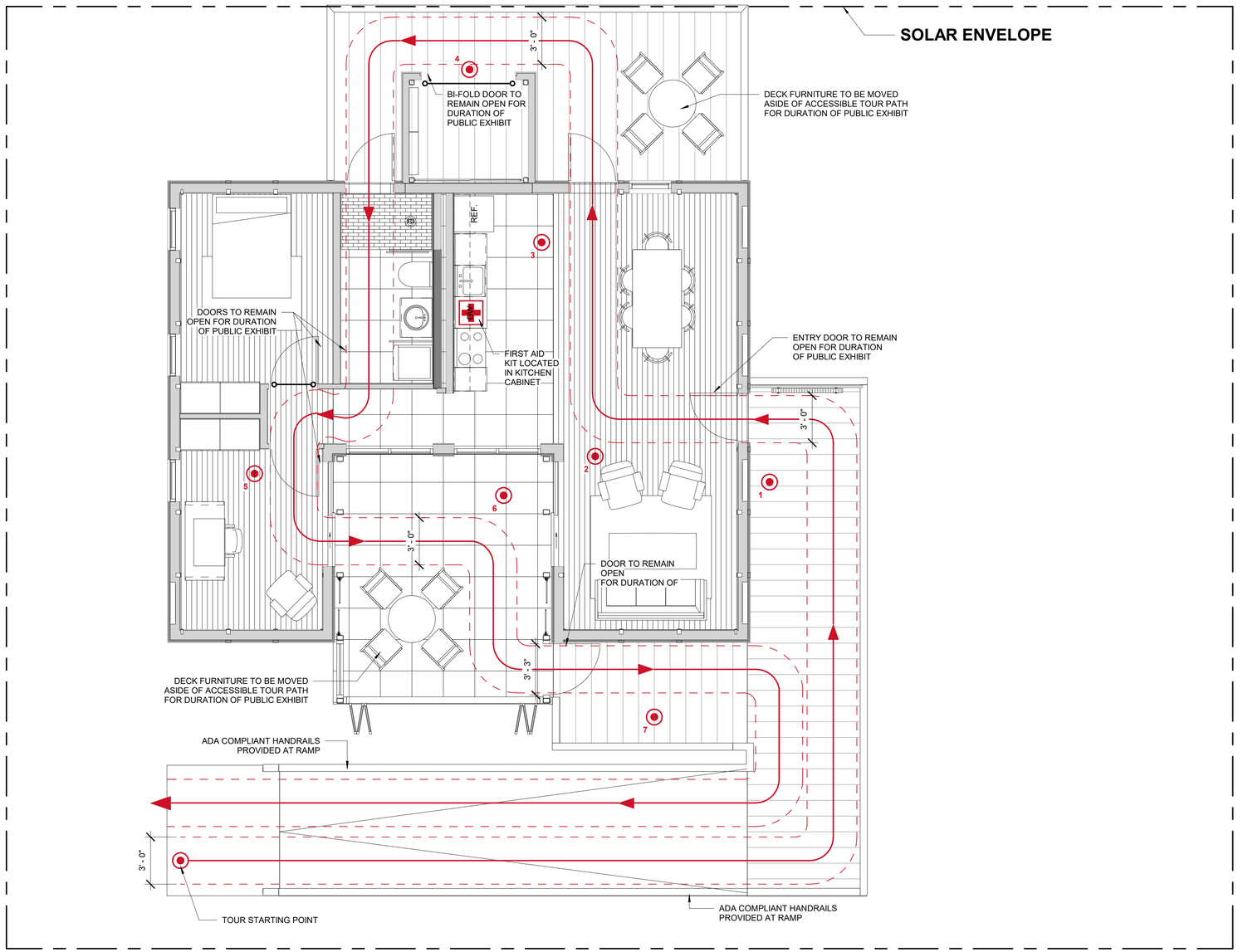
EGRESS & EVACUATION PLAN

G-103



1 ACCESIBLE TOUR PATH
1/4" = 1'-0"

ACCESSIBLITY NOTES

1. THE ACCESSIBLE ROUTE INDICATED SHALL COMPLY WITH THE 2010 STANDARD FOR ACESSIBLE DESIGN.
2. THE RUNNING SLOPE OF ALL WALKING SUFACES SHALL NOT BE STEEPER THAN 1:20.
3. HANDRAILS COMPLIANT WITH ALL ADA REQUIREMENTS SHALL BE PROVIDED AT THE ENTRY RAMP.
4. RAILING CABLES SHALL BE INSTALLED SO AS TO PREVENT THE PASSAGE OF A 4 INCH DIAMETER SPHERE WITHIN 4 INCHES OF THE GROUND SURFACE.
5. HANDRAIL HEIGHT IS TO BE WITHIN 34 - 38 INCHES ABOVE WALKING SURFACE. HANDRAIL DIAMETER IS TO BE WITHIN 1-1/2 TO 2 INCHES, AND MOUNTED AT LEAST 1-1/2" INCHES AWAY FROM MAIN RAILING

TOUR PLAN LEGEND

- TOUR PATH OF TRAVEL
- ACCESSIBLE PATH
- FIRST AID KIT
- TOUR GUIDE LOCATION
- DOOR BARRIER

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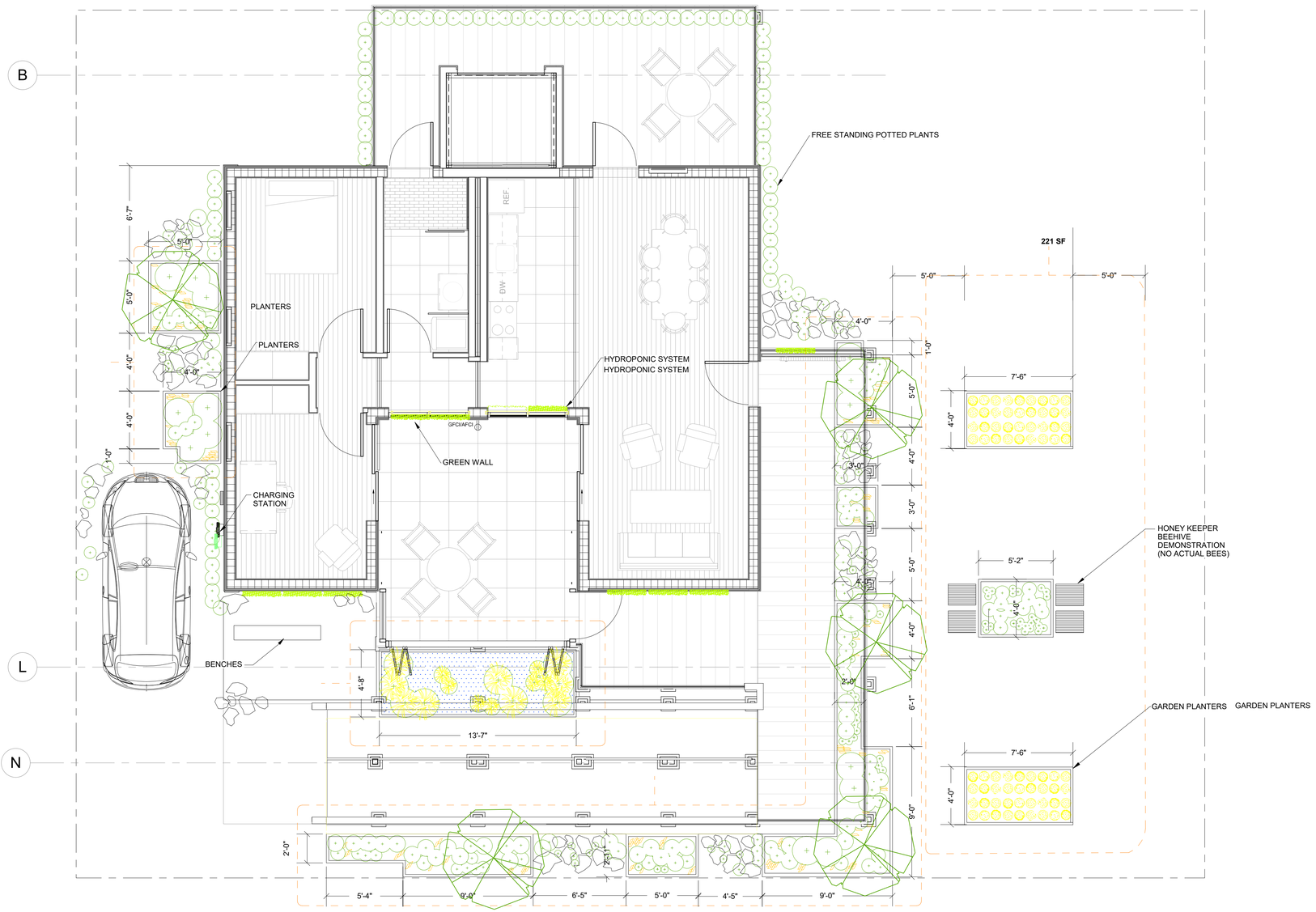
ACCESSIBLE TOUR PATH PLAN

G-104



2 LANDSCAPE PLAN
1/4" = 1'-0"

LANDSCAPE PLAN GENERAL NOTES

A.

B.

C.

D.

LANDSCAPE PLAN SHEET NOTES

A. TOTAL SQUARE FOOTAGE OF PLANTERS: 490SF

LANDSCAPE PLAN LEGEND

- SMALL BOULDER
- BOULDER
- VEGETABLES
- GRASS
- HERBACEOUS
- WETLANDS
- SHRUBS
- TREES

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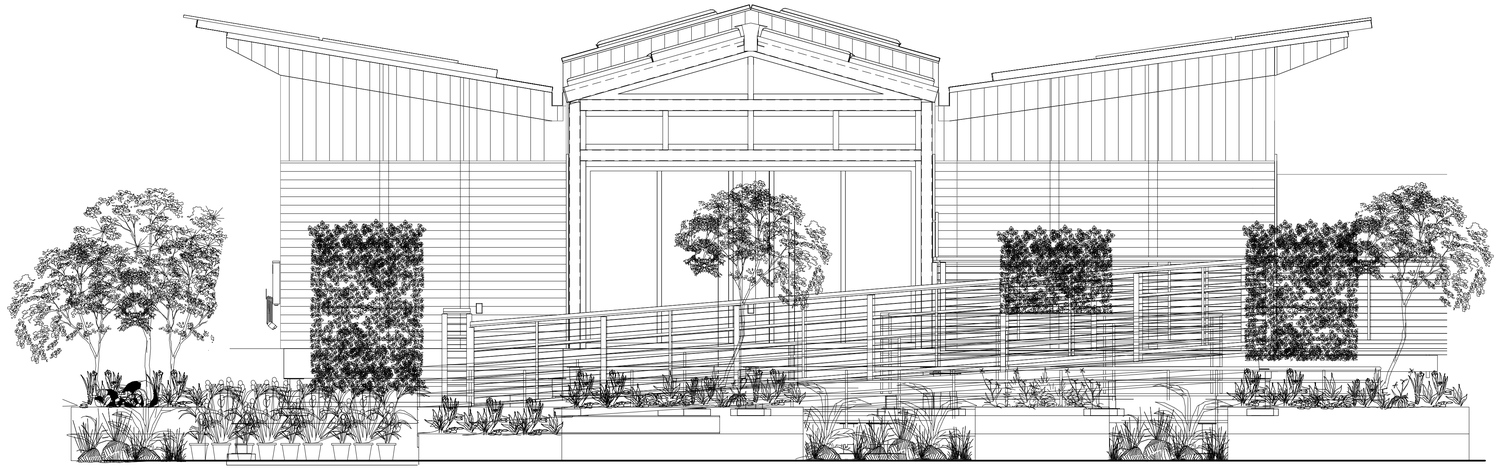
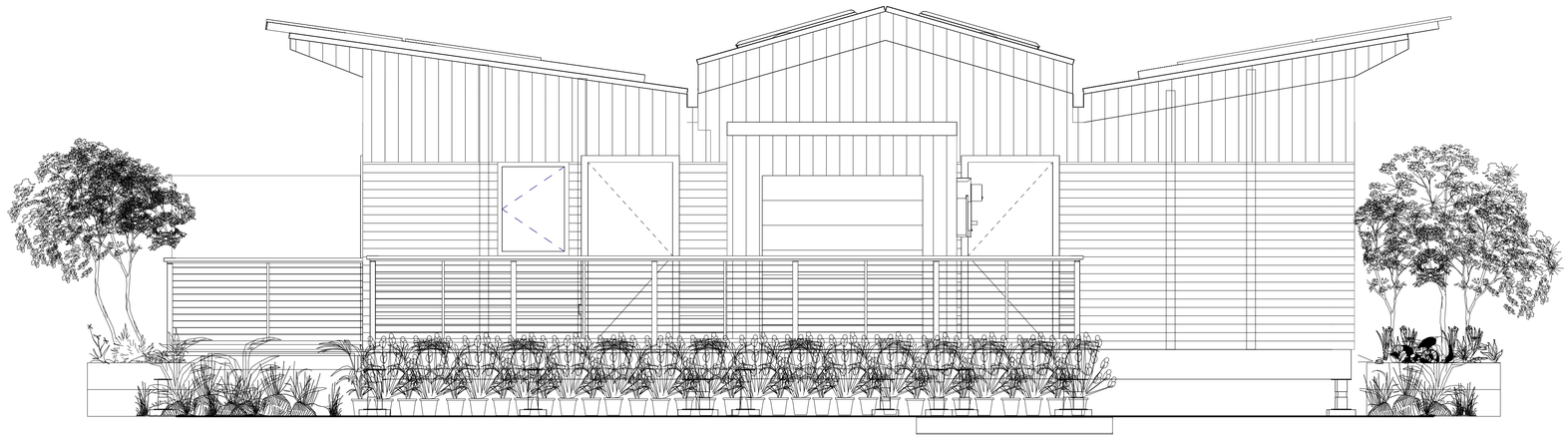
LANDSCAPE PLAN

L-101



1 LANDSCAPING SOUTH ELEVATION
3/8" = 1'-0"



4 Landscape North Elevation
3/8" = 1'-0"

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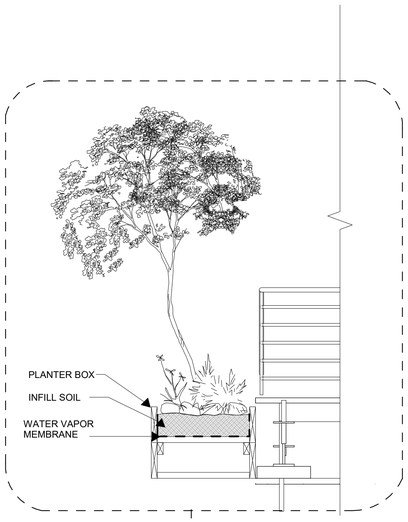
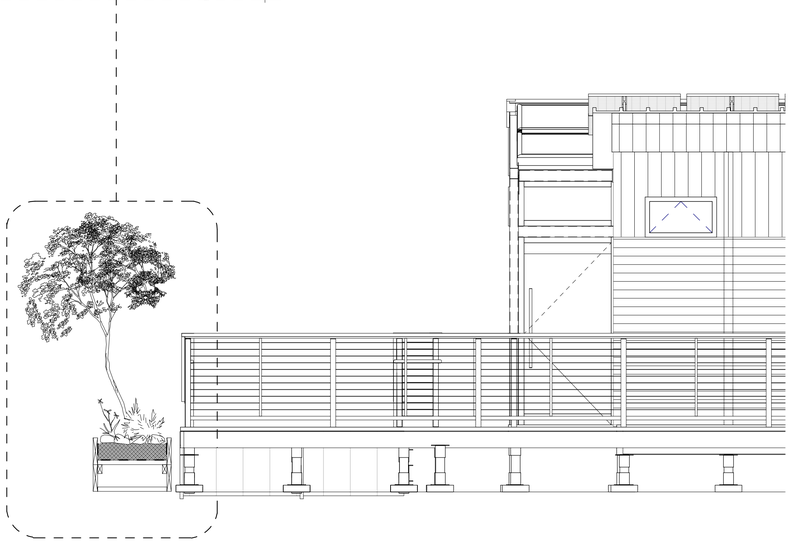
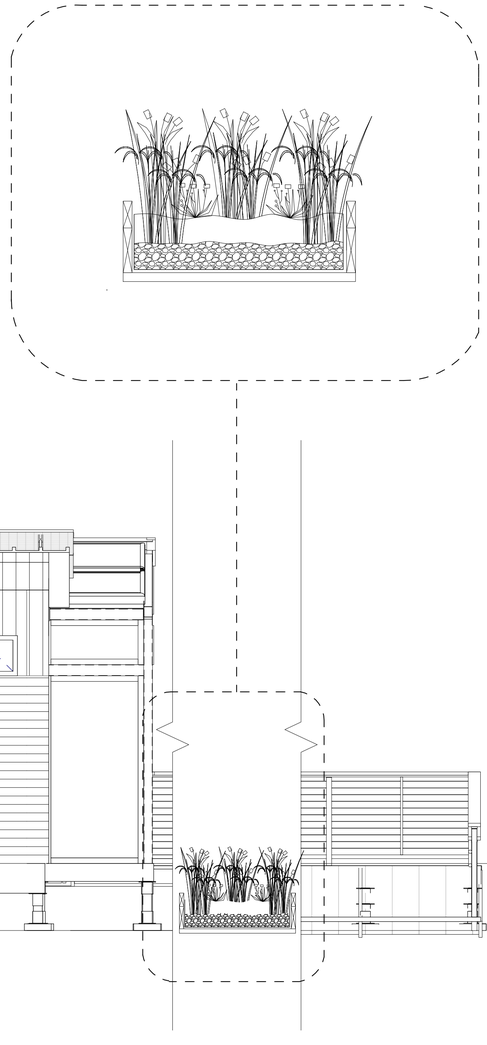
LANDSCAPE ELEVATIONS

L-200





2 PLANTER ASSEMBLY EAST ELEVATION
3/8" = 1'-0"



1 West Elevation Landscape
3/8" = 1'-0"

PLANTING DETAIL GENERAL NOTES

PLANTING DETAIL PLAN SHEET NOTES

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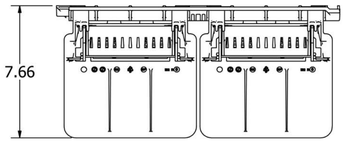
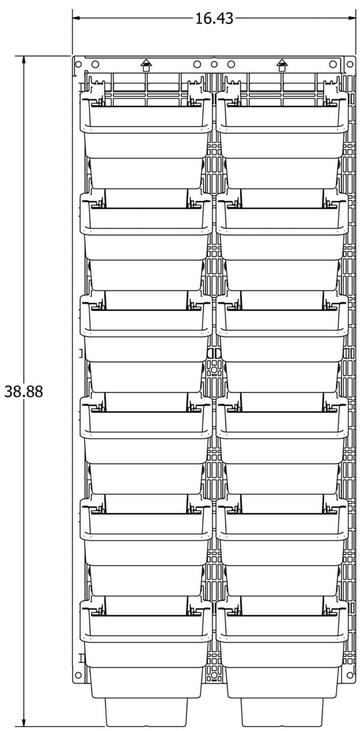
PLANTING DETAIL

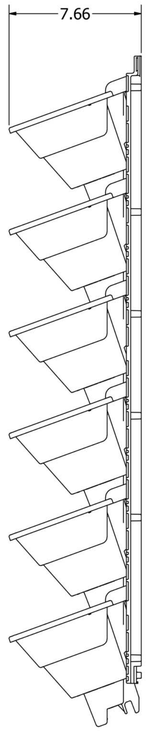
L-500



PLA



ELEVATIO



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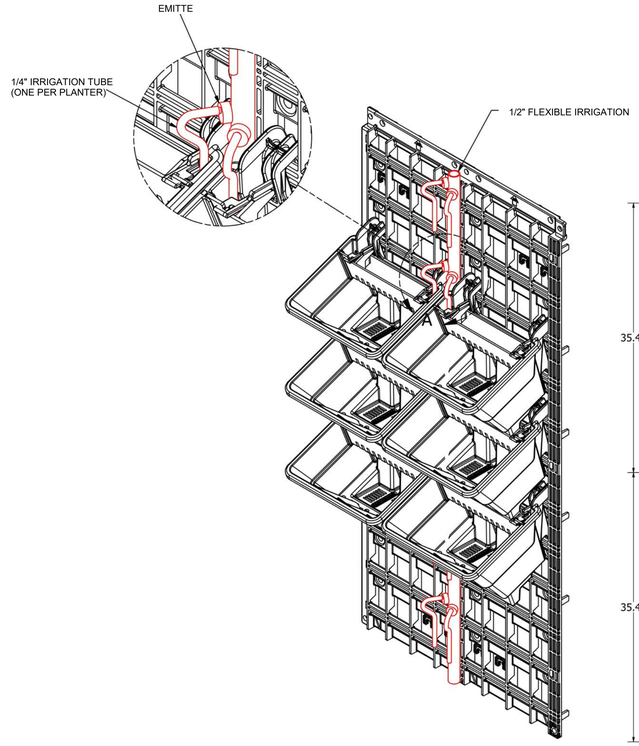
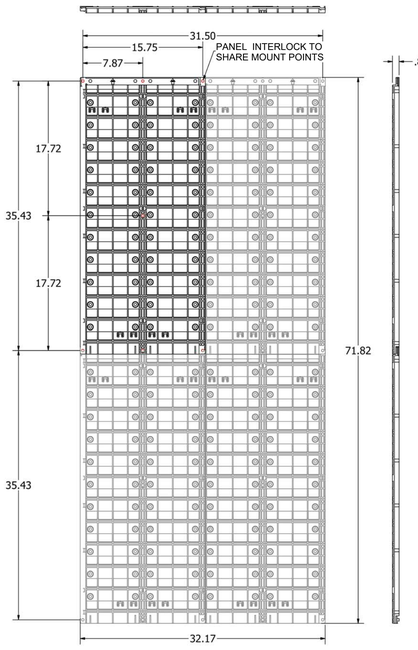
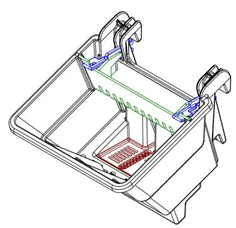


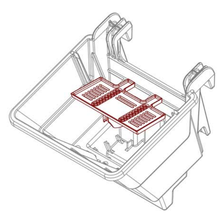
SAMPLE IRRIGATION



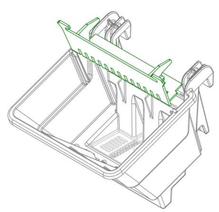
2 X 2 PANEL PATTERN SHOWN

(SECURE WITH 1/4"
HARDWARE)

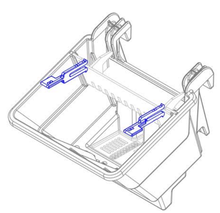




INSERT BOTTOM BAFFLE



INSERT UPPER BAFFLE



INSERT SAFETY CLIPS
(TO LOCK TO WALL PANEL)

GREEN WALL DETAIL GENERAL NOTES

GREEN WALL DETAIL SHEET NOTES

A. MATERIAL : 100%POST-CONSUMER RECYCLED POLYROPLENE
B. FINISH :
C. COLOR :
D. DIMENSIONS ARE NOMINAL: ACTUAL SIZE MAY VARY
E. REFRENCE DRAWING L-101 FOR LOCATION,
F. REFRENCE SPEC,

GREEN WALL DETAIL LEGEND

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VGP GREEN WALL DETAIL

L-501

LATIN NAME	COMMON NAME	EDIBILTIY	TYPE OF VEGETATION	SOIL	DESCRIPTION	HEIGHT	SPREAD	WATER	WILDLIFE	BLOOM TIME
Allium brevistylum	Shortstyle onion	Yes								
Amorpha canescens Pursh	Lead plant flowers	Yes								
				Medium to wet soil, need	requires extra care and preperation					
Arisaema triphyllum	Jack in the Pulpit	Yes		moisture	in order to use for culinary purposes	1-2'	1-1.5'	medium to wet		April top May
Asclepias speciosa	Showy milk weed	Yes	Herbaceous perennial			1-3'	1-1.5'	dry to medium	hummingbirds, butterflies	May to June
Calochortus gunnisonii	Mariposa lily, sego lily	Yes								May to July
Cedrus atlantica 'Glauca Pendula'	Blue atlas cedar	Yes/No			used for braising					
Dryopteris erythrosoa	Wood autnm fern	No								
Epilobium angustifolium	Fireweed	Yes			Entire plant is basically edible	4'		Wet medium to Dry		Jun to Aug
					Tolerates wet soil, deer, medicinal					
Lobelia cardinalis	Cardinal Flower	Yes	Herbaceous perennial		properties, low maintenance	2-4'	1-2'	Medium to Wet	Hummingbirds, Butterflies	July to Sept
Matteeuccia struthiopteris	Ostrich Fern	Yes								
Monarda fistulosa	Amaranth, Red root pigweed	Yes	Herbaceous Pernnial	makes a great spice for me	Tends to self seed tolerates drought	2-4'	2-3'	Dry to Medium	Hummingbirds, Butterflies	July to September
Monarda fistulosa	Wild bergmot	Yes								
					Prickly pear coulis, edible fruits &					
				Easily grown in dry, sandy,	petals, easily propogated, good for					
Opuntia compressa	Prickly pear	Yes	Herbaceous perennial	gravelly, well-drained soils	winter	.5-1'	1-1.5'	Dry		June to July
populus tremuloids	Quaking aspen	Yes	Tree							
Prunus virginiana	Chokecherries	Yes	Tree			20-30'	15-20'	Dry to Medium	Birds, butterflies	April to May
				Medium moisture, well						
Ribes uva-crispa	Gooseberry	Yes	Fruit	drained soil	Protect from wind and frost	2-5'	3-6'	Medium	Birds, Butterflies	April
Scutellaria incana	downy skullcap	No	Herbaceous perennial		Used for medicinal purposes only	2-3'	1.5-2'	Dry ot Medium		July to September
Typha latifolia	Common Cattail	Yes	Herbaceous perennial	Wet	Native to marshes, swamps	4-6'	4-6'	Wet	Birds	June to July
					Roots mized with tepid water drunk					
					for stomachache, root used to make				Nesting for small mammals,	
Yucca glauca	Soapweed yucca	Yes	Perennial		soap	4'	3-4'	Low	birds and reptiles	Jun to Aug
	Zucchini		Herbaceous perennial			2-4'	1-3'	Medium		April to September
	Eggplant	Yes				1-2'	2-3'			July to September
	Alfalfa		Garden/Green Wall							
	Bay		Garden/Green Wall							
	Beans		Garden/Green Wall							
	Buffalo berries		Garden/Green Wall							
	Cilantro		Garden/Green Wall							
	Cotton		Garden/Green Wall							
	Garlic		Garden/Green Wall							
	Grains		Garden/Green Wall							
	Grapes		Garden/Green Wall							
	Guayule		Garden/Green Wall							
	Juniper		Garden/Green Wall							
	Melons		Garden/Green Wall							
	Navajo robin's egg		Garden/Green Wall							
	Onion		Garden/Green Wall							
	Peaches		Garden/Green Wall							
	Pueblo Chiles		Garden/Green Wall							
	purslane		Garden/Green Wall							
	Seed crops		Garden/Green Wall							
	Spinach		Garden/Green Wall							
	Squash		Garden/Green Wall							
	Squash blossom		Garden/Green Wall							
	Strawberries		Garden/Green Wall							
	Sweet potatoes		Garden/Green Wall							

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PLANT SCHEDULE

L-600

GENERAL STRUCTURAL NOTES

STRUCTURAL SPECIFICATIONS AND GENERAL CONDITIONS GENERAL

1. WHERE THESE SPECIFICATIONS CONFLICT WITH OTHER PROJECT SPECIFICATIONS, THESE SPECIFICATIONS SHALL GOVERN.
2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL APPLICABLE CODES AND REGULATIONS. APPROPRIATE SAFETY MEASURES WHICH SATISFY LOCAL AND OSHA REQUIREMENTS SHALL BE PROVIDED.
3. PROPER TEMPORARY BRACING OF ALL CONSTRUCTION WORK IN PROGRESS IS THE CONTRACTOR'S RESPONSIBILITY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION AND THE REPAIR OF ANY DAMAGED FACILITIES.
5. SECTIONS AND DETAILS SHOWN, WHILE DRAWN FOR SPECIFIC LOCATIONS, ARE INTENDED TO ESTABLISH THE GENERAL TYPES OF DETAILS TO BE USED THROUGHOUT.
6. DRAWINGS SHOULD NOT BE SCALED. CONTACT THE ENGINEER FOR CLARIFICATION OF ANY DIMENSION IN QUESTION.
7. ALL DIMENSIONS SHALL BE VERIFIED BY THE CONTRACTOR. LAYOUT SHALL BE CHECKED AND COORDINATED BETWEEN ALL CONSTRUCTION DOCUMENTS AND SPECIFICATIONS PRIOR TO START OF WORK.
8. SHOP DRAWINGS PREPARED BY THE SUBCONTRACTORS, SUPPLIERS, ETC. SHALL BE REVIEWED BY THE ENGINEER FOR CONFORMANCE WITH DESIGN CONCEPT ONLY. EACH SHOP DRAWING SUBMITTED SHALL BE STAMPED, INITIALED AND DATED AS BEING REVIEWED BY THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR. WORK SHALL NOT BEGIN WITHOUT THE REVIEW BY THE ENGINEER.
9. ANY ENGINEERING DESIGN PROVIDED BY OTHERS AND SUBMITTED FOR REVIEW OR RECORD SHALL BEAR THE STAMP AND SIGNATURE OF A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE OF WEST VIRGINIA.

DESIGN DATA

1. BUILDING CODE = 2015 INTERNATIONAL BUILDING CODE.

2. FLOOR LOAD:
2.1 DEAD LOAD = 15 PSF
2.2 LIVE LOADS = 50 PSF

3. ROOF LOAD:
3.1. DEAD LOAD = 5,625 PSF (ROOF JOIST LOCATIONS); 25 PSF (ROOF TRUSS LOCATIONS)
3.2. LIVE LOAD = 30 PSF

4. SNOW LOAD:
4.1. GROUND SNOW LOAD, PG = 35 PSF

6. WIND LOAD:
6.1. BASIC WIND SPEED (3-SECOND GUST) = 115 MPH
6.2. WIND IMPORTANCE FACTOR, IW = 1.0
6.3. BUILDING CATEGORY = II
6.4. EXPOSURE CATEGORY = C

7. SEISMIC DESIGN:
7.1 SITE CLASS : B
7.2 SOIL CLASS : D

9. WOOD FRAMING DESIGN METHOD:
9.1. DESIGN PER LRFD
9.2. LOADS INDICATED ARE LRFD LOADS

SPECIAL INSPECTION REQUIREMENTS

1. THE FOLLOWING TYPES OF WORK REQUIRE SPECIAL INSPECTION BASED ON SECTION 1704 OF THE 2012 INTERNATIONAL BUILDING CODE. THE OWNER WILL EMPLOY SPECIAL INSPECTORS WHO SHALL PROVIDE SPECIAL INSPECTIONS FOR COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS AND OTHER REFERENCES NOTED. REPORTS SHALL BE SUBMITTED TO THE ENGINEER AND BUILDING OFFICIAL ON A PERIODIC BASIS. A FINAL REPORT SHALL BE SUBMITTED DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTION OF ANY DISCREPANCIES PRIOR TO THE END OF CONSTRUCTION.
2. WOOD CONSTRUCTION
2.1. INSPECT WOOD STRUCTURAL PANEL SHEATHING FOR HIGH-LOAD DIAPHRAGMS TO ENSURE CORRECT GRADE AND THICKNESS.
2.2. VERIFY NOMINAL SIZE OF FRAMING MEMBERS AT ADJOINING PANEL EDGES.
2.3. VERIFY FASTENER DIAMETER AND LENGTH, NUMBER OF FASTENER LINES, AND SPACING BETWEEN FASTENERS IN EACH LINE AND AT EDGE MARGINS.

CONSTRUCTION PROCEDURES AND SAFETY REQUIREMENTS

1. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE INDICATED, THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION.
2. PROVIDE ALL MEASURES NECESSARY TO PROTECT THE WORKMEN AND OTHER PERSONS DURING CONSTRUCTION. PROVIDE ALL NECESSARY MEASURES TO AVOID EXCESSIVE STRESSES AND HOLD THE STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT AND EARTHEN BANKS, FORMS, SCAFFOLDING, PLANKING, SAFETY NETS, SUPPORT/BRACING FOR CRANES AND HOISTS, GUYING, ETC.
3. ENGAGE PROPERLY QUALIFIED PERSONS TO DETERMINE WHERE AND HOW TEMPORARY PRECAUTIONARY MEASURES SHALL BE USED. OBSERVATIONAL VISITS TO THE SITE BY STRUCTURAL ENGINEER'S FIELD REPRESENTATIVE SHALL NOT INCLUDE THE ITEMS NOTED ABOVE.
4. SUPERVISE AND DIRECT THE WORK SO AS TO MAINTAIN SOLE RESPONSIBILITY FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. RETAIN THE SERVICES OF A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND TO DESIGN AND SUPERVISE ANY SCAFFOLDING FOR WORKMEN, AND ALL SHORING OF FORMS AND ELEMENTS OF THE CONSTRUCTION.

FOUNDATION CONSTRUCTION
1. ALLOWABLE SOIL BEARING PRESSURE (NET) ASSUMED IN DESIGN IS 2,500 PSF (POUNDS PER SQUARE FOOT) BASED ON THE SOLAR DECATHLON COMPETITION RULES.

STRUCTURAL STEEL
1. ALL STEEL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, MARCH 9, 2005 (AISC 360), THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004, THE CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES, MARCH 18, 2008 (AISC 303) AND THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION.
2. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AWS D1.1 STRUCTURAL WELDING CODE – STEEL, LATEST EDITION, AND AISC SPECIFICATIONS USING THE PROPER ELECTRODE FROM AWS D1.1 TABLE 3.1 AND PERFORMED ONLY BY QUALIFIED WELDERS.
3. STRUCTURAL STEEL PLATES AND ANGLES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A36, WITH A MINIMUM YIELD STRESS OF 36 KSI.
4. SQUARE OR RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO THE REQUIREMENTS OF ASTM A500, GRADE B, WITH A MINIMUM YIELD STRESS OF 46 KSI.
5. SHOP DRAWINGS FOR THE FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER PRIOR TO FABRICATION.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY FABRICATION OR ERECTION ERRORS OR DEVIATIONS AND RECEIVE WRITTEN APPROVAL BEFORE FIELD CORRECTIONS ARE MADE.
7. ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F1554, WITH A MINIMUM YIELD STRENGTH OF 36 KSI, UNLESS NOTED OTHERWISE. BOLTS SHALL BE 5/8" IN DIAMETER UNLESS NOTED OTHERWISE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY BRACING OF ALL STEEL DURING ERECTION AND UNTIL CONSTRUCTION IS COMPLETE.
9. THE CONTRACTOR SHALL FURNISH ALL PLATES, CLIP AND SEAT ANGLES, AND CONNECTIONS FOR COMPLETION OF THE STRUCTURE, EVEN IF SUCH ITEMS ARE NOT SPECIFICALLY CALLED FOR ON THE STRUCTURAL DRAWINGS.
10. STEEL FABRICATORS SHALL BE RESPONSIBLE FOR OBTAINING ALL FIELD DIMENSIONS NECESSARY FOR THE COMPLETION OF THEIR WORK.
11. MINIMUM SIZE OF FILLET WELDS, UNLESS OTHERWISE NOTED, IS TO BE 3/16-INCH FILLET. CHIP, WIRE BRUSH CLEAN AND PRIME PAINT ALL FIELD WELDS.
12. ALL STEEL MEMBERS ARE CONCEALED WITHIN WALLS AND THUS ONLY REQUIRE PRIMER COATING:
12.1. REFERENCE STEEL STRUCTURES PAINTING COUNCIL (SSPC) – A GUIDE TO THE SHOP PAINTING OF STRUCTURAL STEEL
12.2. SURFACE PREPARATION = SSPC-SP 2
12.3. PRE-TREAT = NONE REQUIRED
12.4. PRIMER = SSPC-PAINT 15
12.5. TOUCH-UP = AS PER MANUFACTURER SPECIFICATIONS
12.6. SURFACES WITHIN 2 INCHES OF WELDS SHALL BE FREE OF MATERIAL THAT WOULD PREVENT PROPER WELDING OR PRODUCE OBJECTIONABLE FUMES WHILE WELDING IS BEING DONE.

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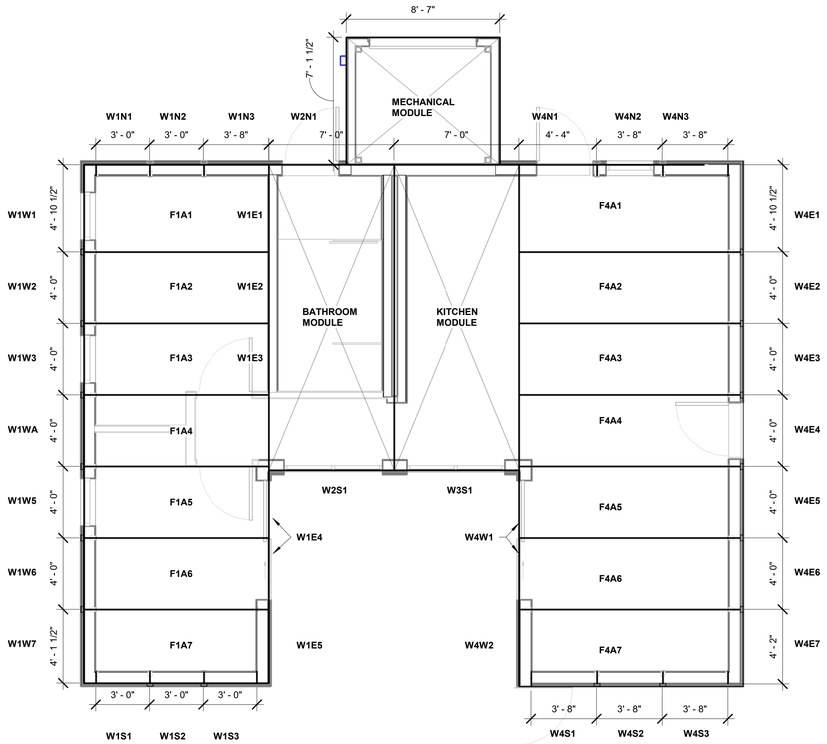
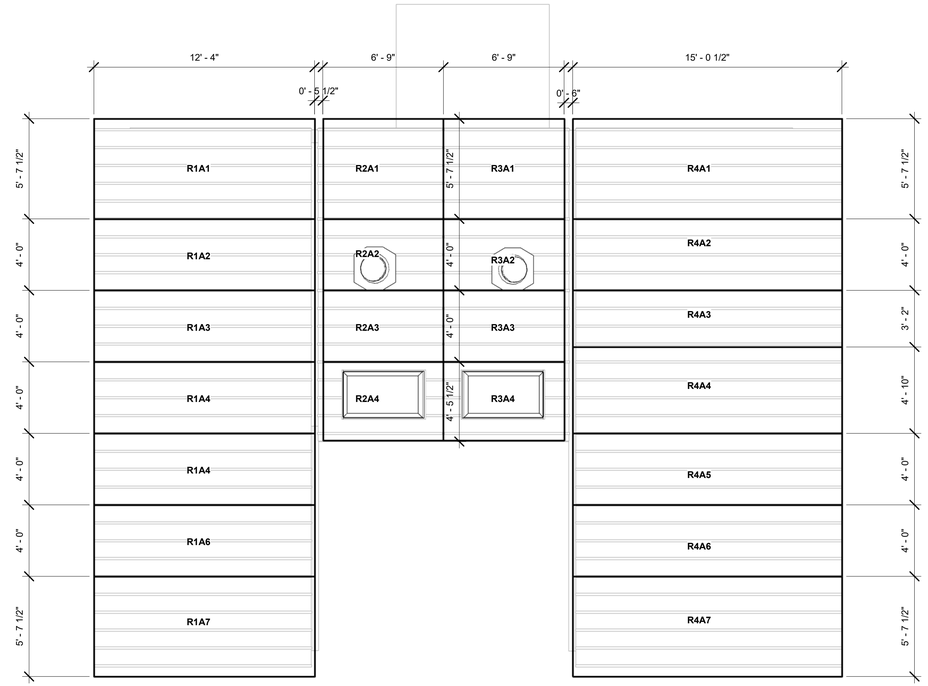
STRUCTURAL NOTES

S-001



1 MAIN FLOOR PANEL LAYOUT
1/4" = 1'-0"



2 ROOF PANEL LAYOUT
1/4" = 1'-0"

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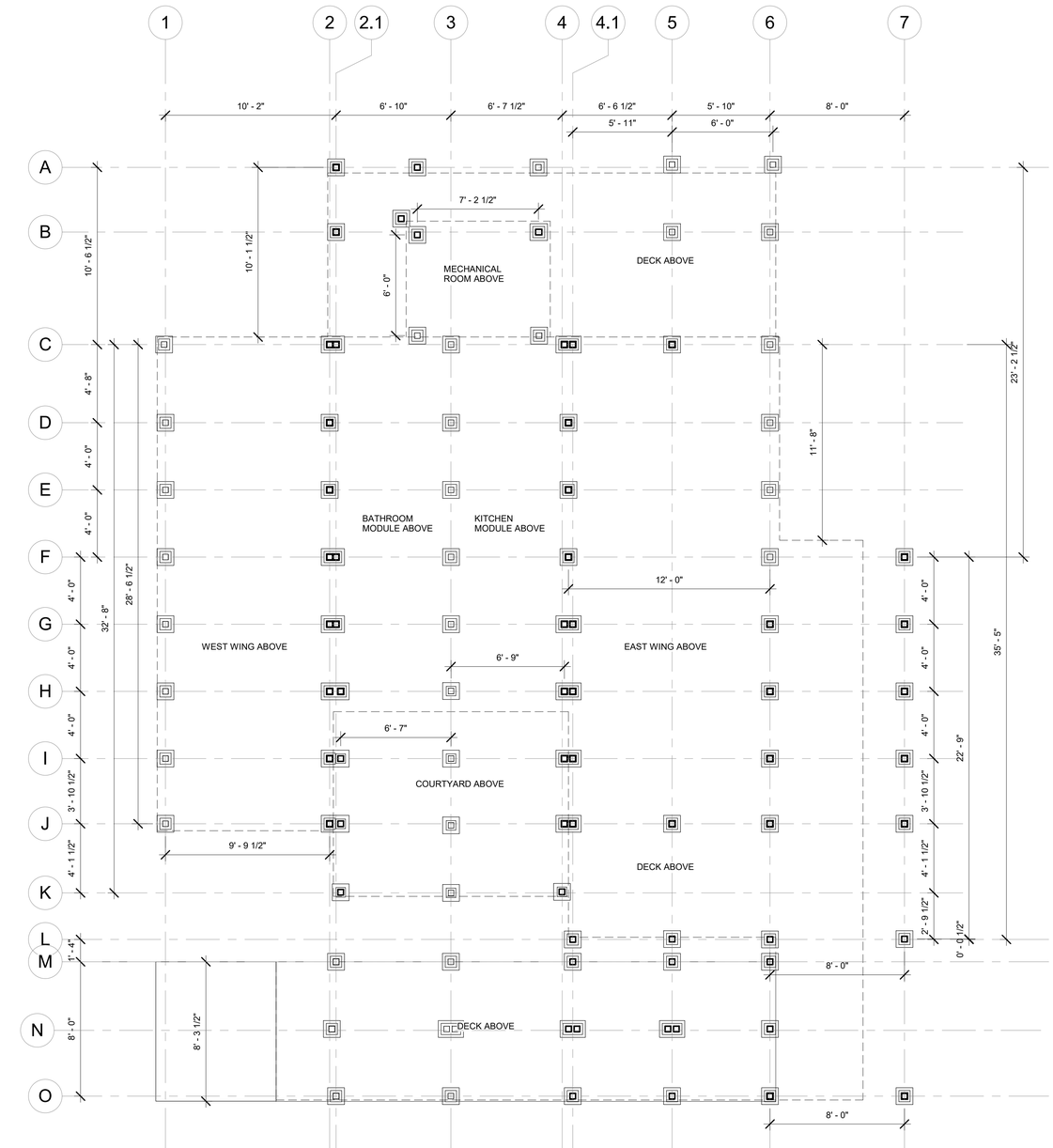
PANEL LAYOUT

S-002



1 FOUNDATION
1/4" = 1'-0"

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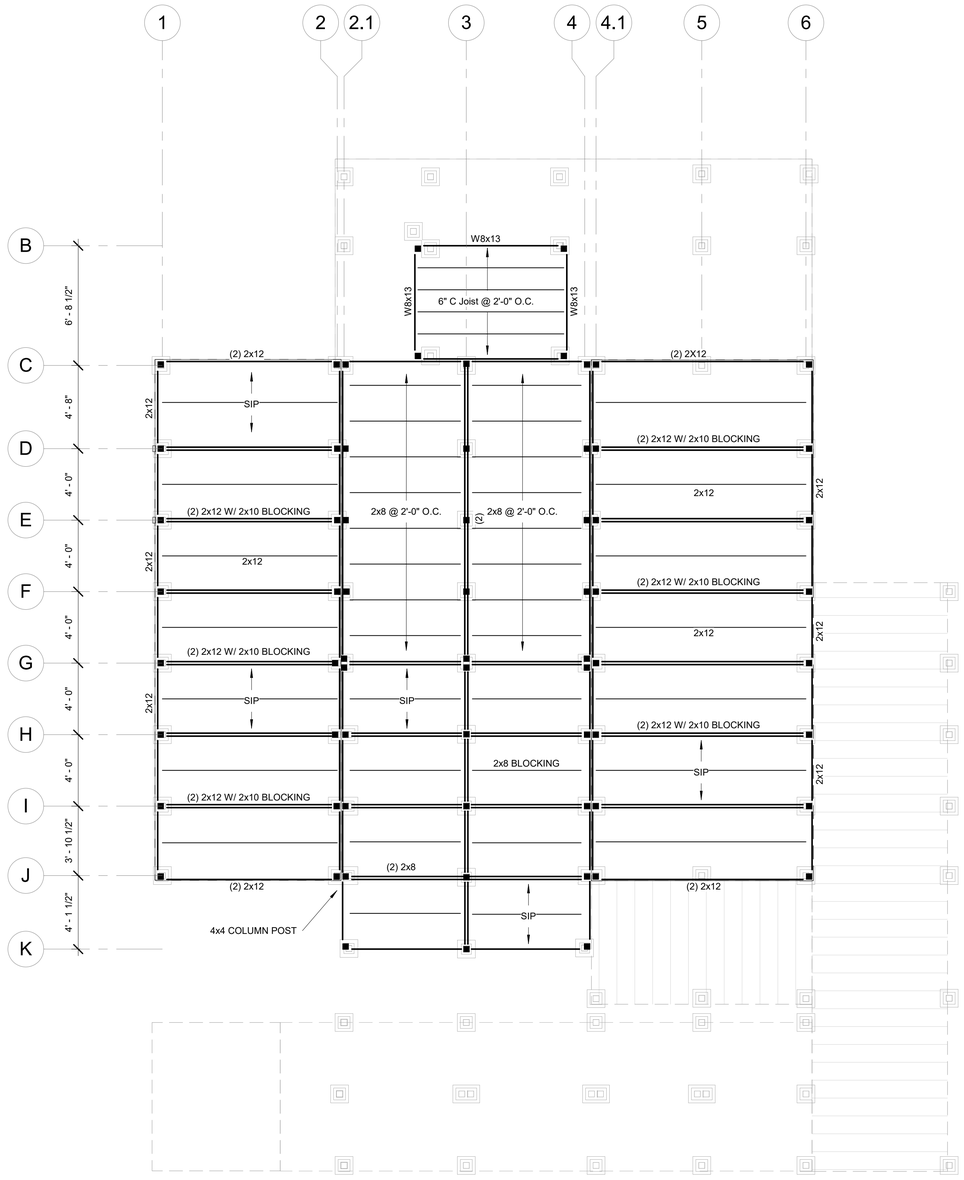
FOUNDATION PLAN

S-100



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

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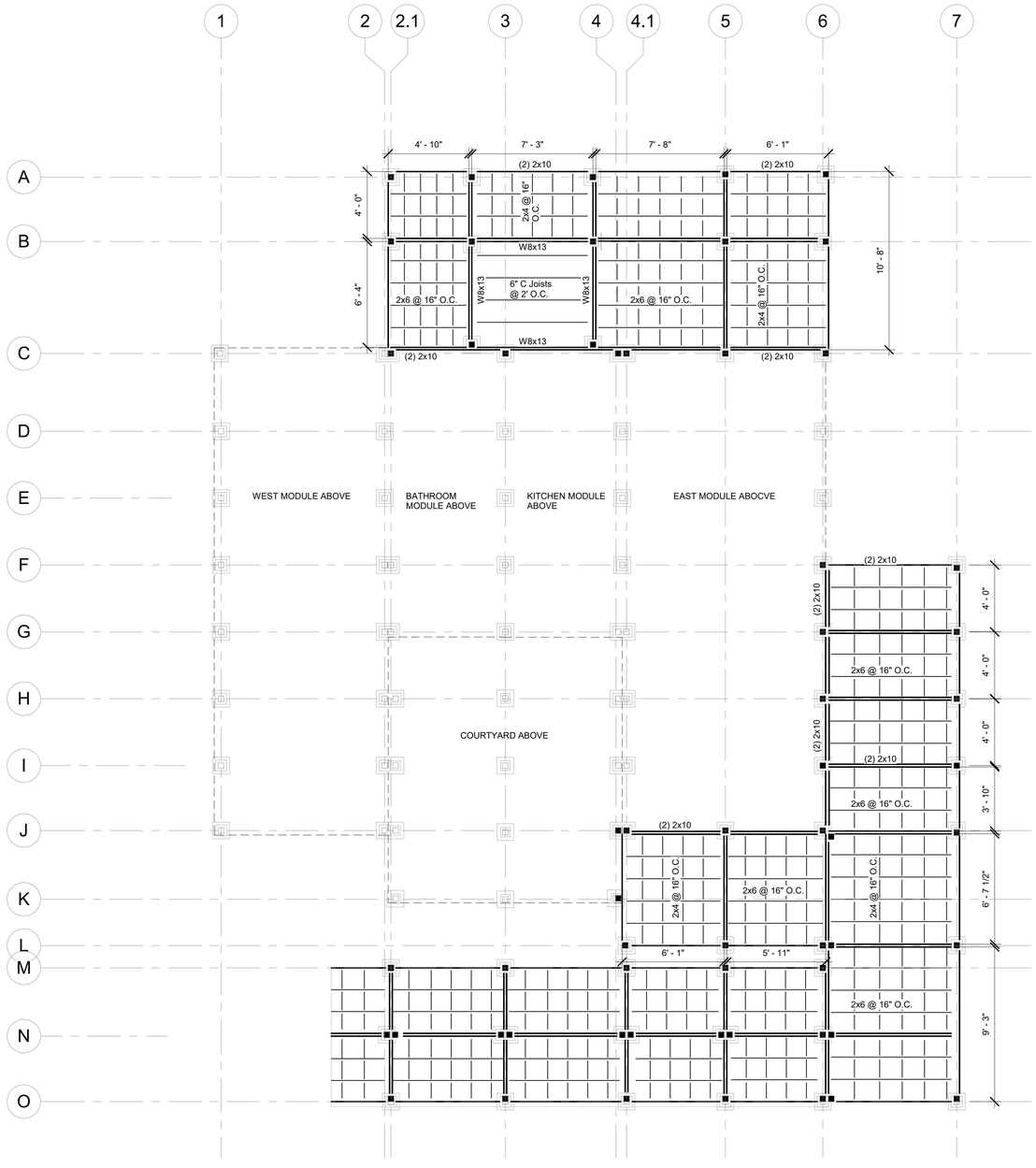
FLOOR FRAMING PLAN

S-101



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

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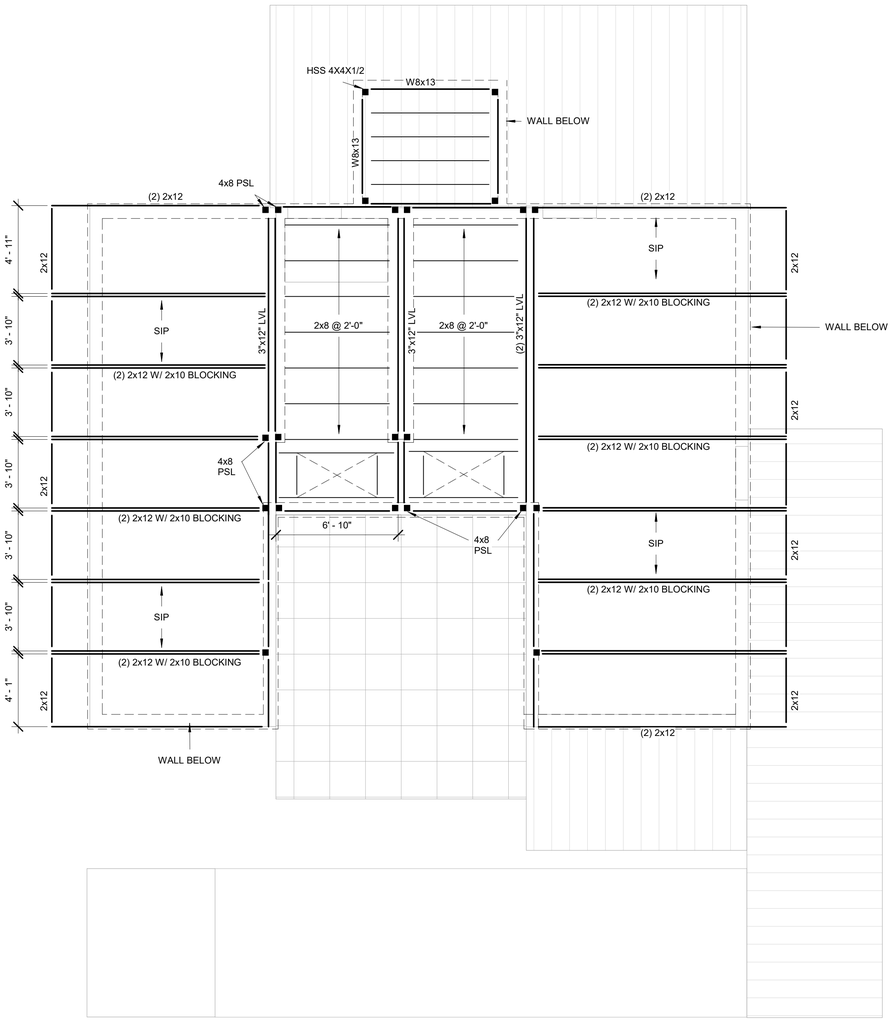
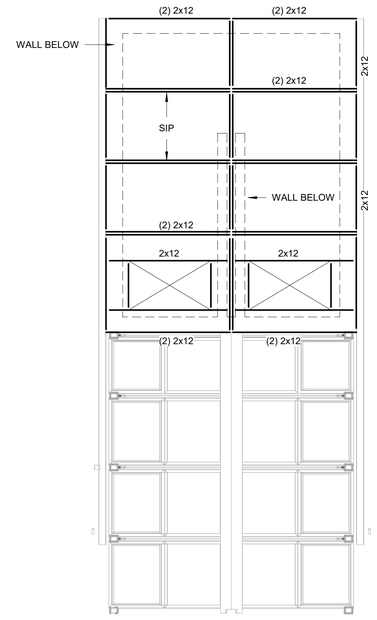
DECK FRAMING

S-102



1 MODULE & WINGS ROOF FRAMING PLAN
1/4" = 1'-0"



2 ATTIC ROOF FRAMING PLAN
1/4" = 1'-0"

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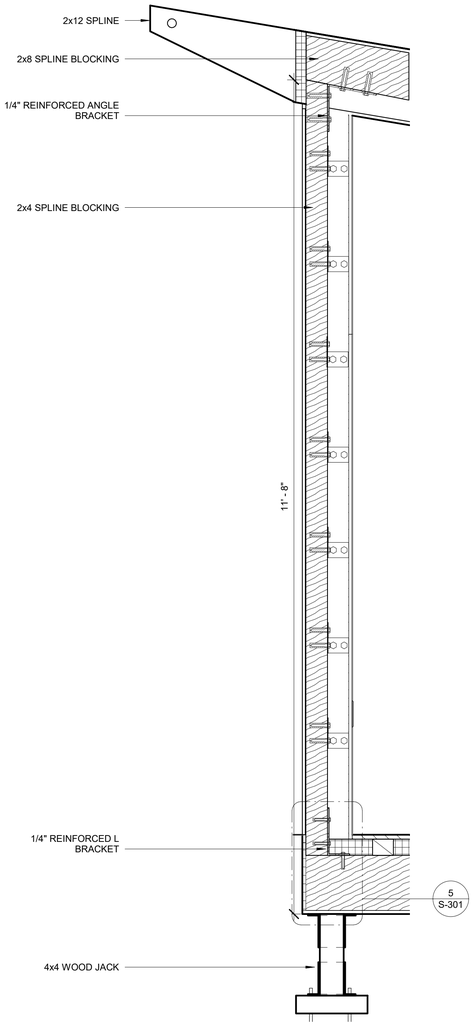
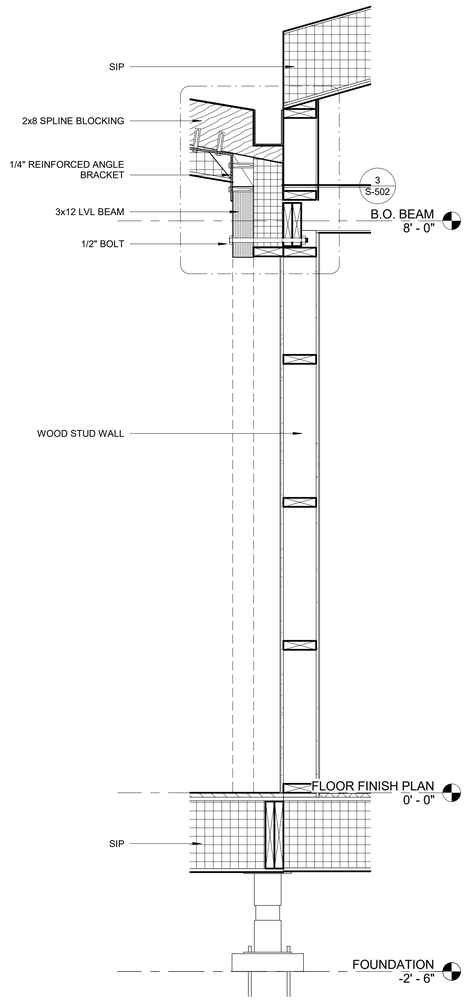
ROOF FRAMING PLANS

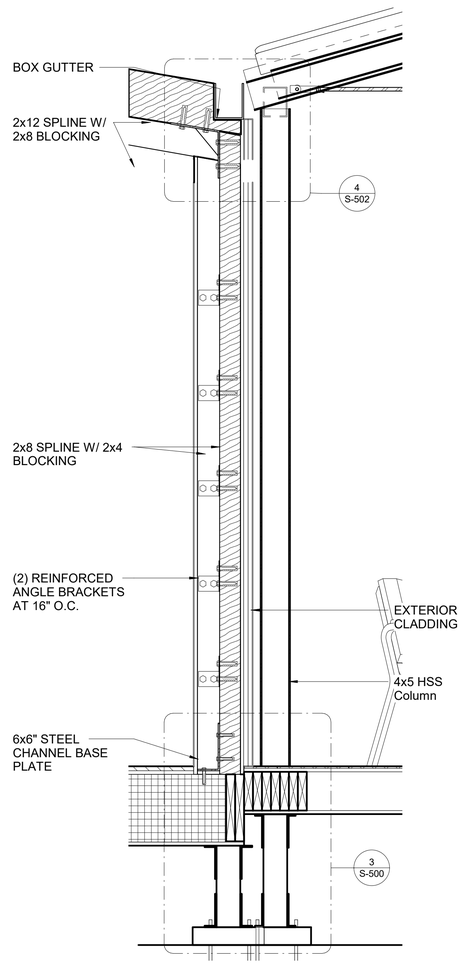
S-103



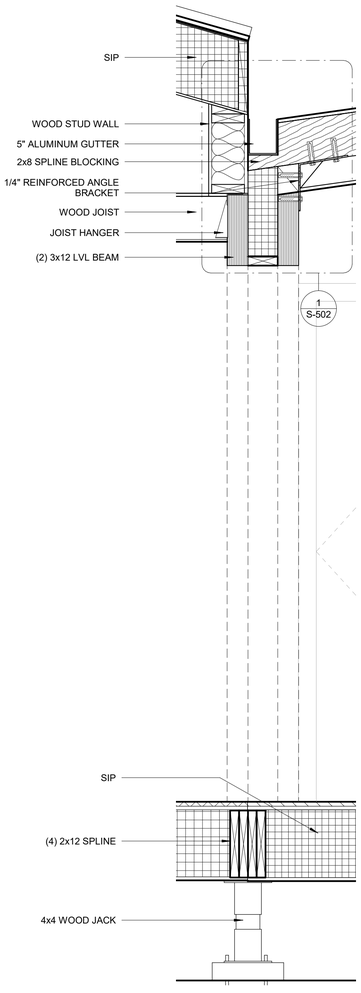
3 WALL FRAMING AT OFFICE
1" = 1'-0"



1 WALL FRAMING AT BEDROOM
1" = 1'-0"



4 WALL FRAMING AT COURTYARD
1" = 1'-0"



2 FRAMING AT DINING ROOM
1" = 1'-0"

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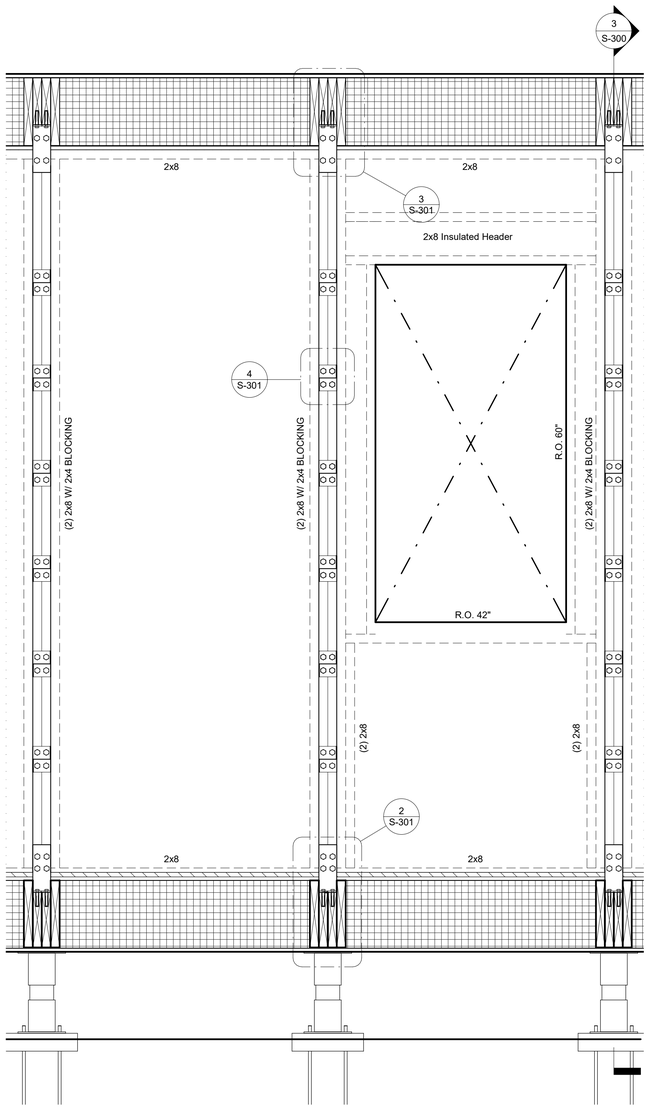
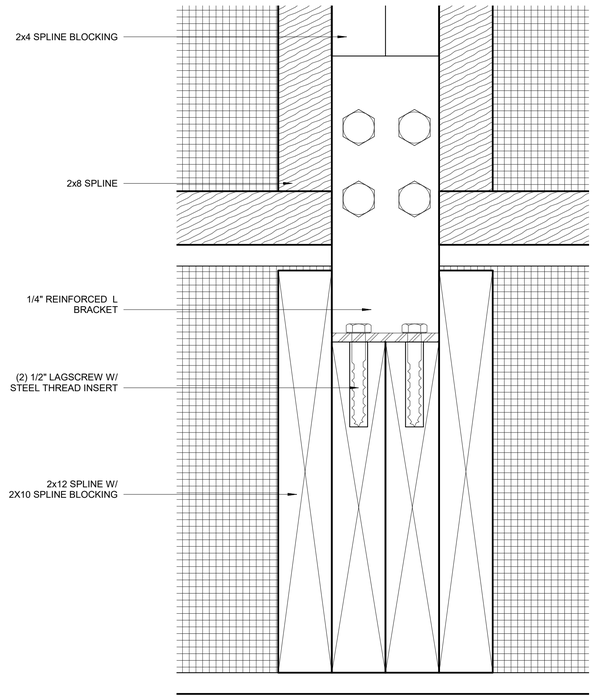
WALL FRAMING SECTIONS

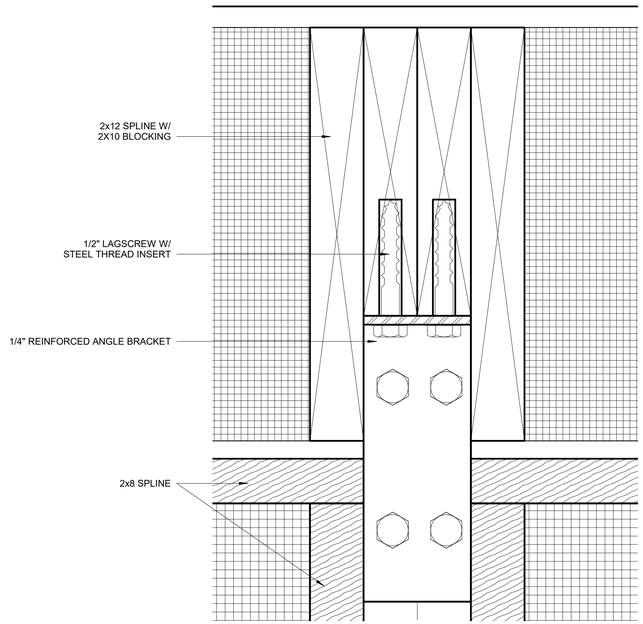
S-300



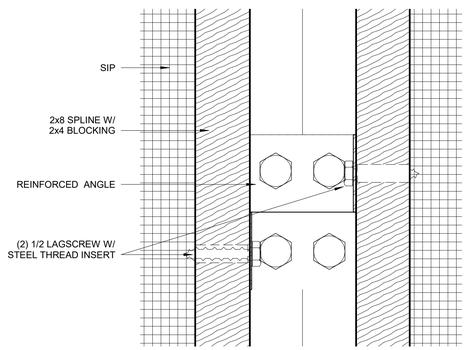
1 TYPICAL WALL FRAMING ELEVATION
1" = 1'-0"



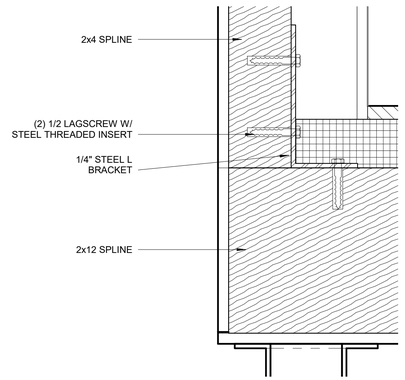
2 TYPICAL WALL ELEVATION AT FLOOR
6" = 1'-0"



3 TYPICAL WALL ELEVATION AT ROOF
6" = 1'-0"



4 TYPICAL WALL CONNECTION AT SPLINE
6" = 1'-0"



5 TYPICAL WALL TO FLOOR CONNECTION
3" = 1'-0"

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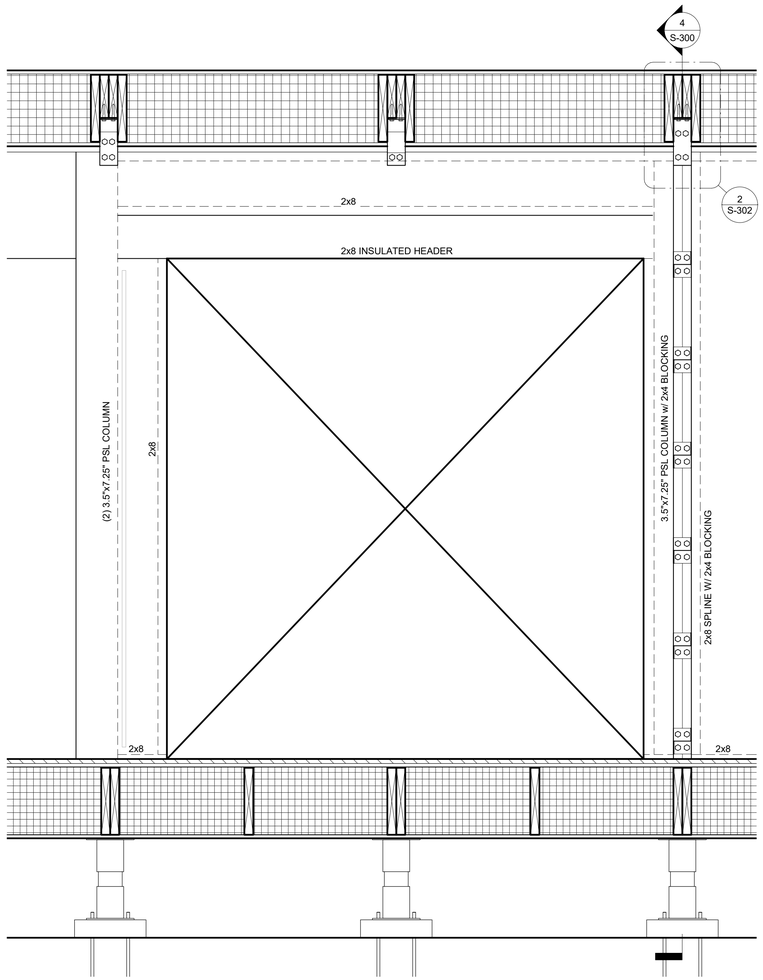
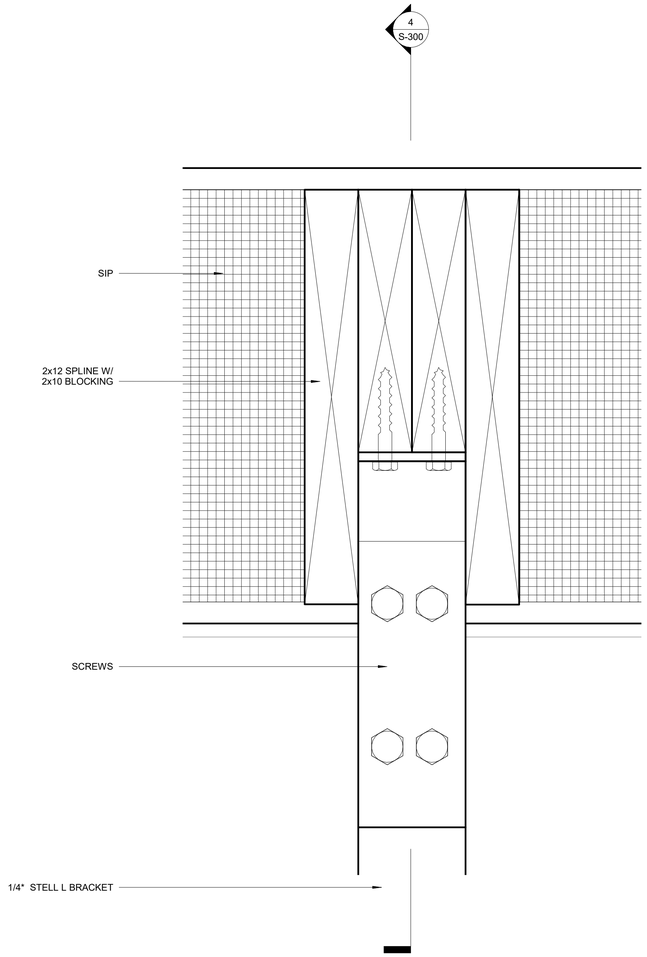
TYPICAL WALL FRAMING & DETAILS

S-301



1 WALL FRAMING AT COURTYARD
1" = 1'-0"



2 WALL TO ROOF CONNECTION ELEVATION AT COURTYARD
6" = 1'-0"

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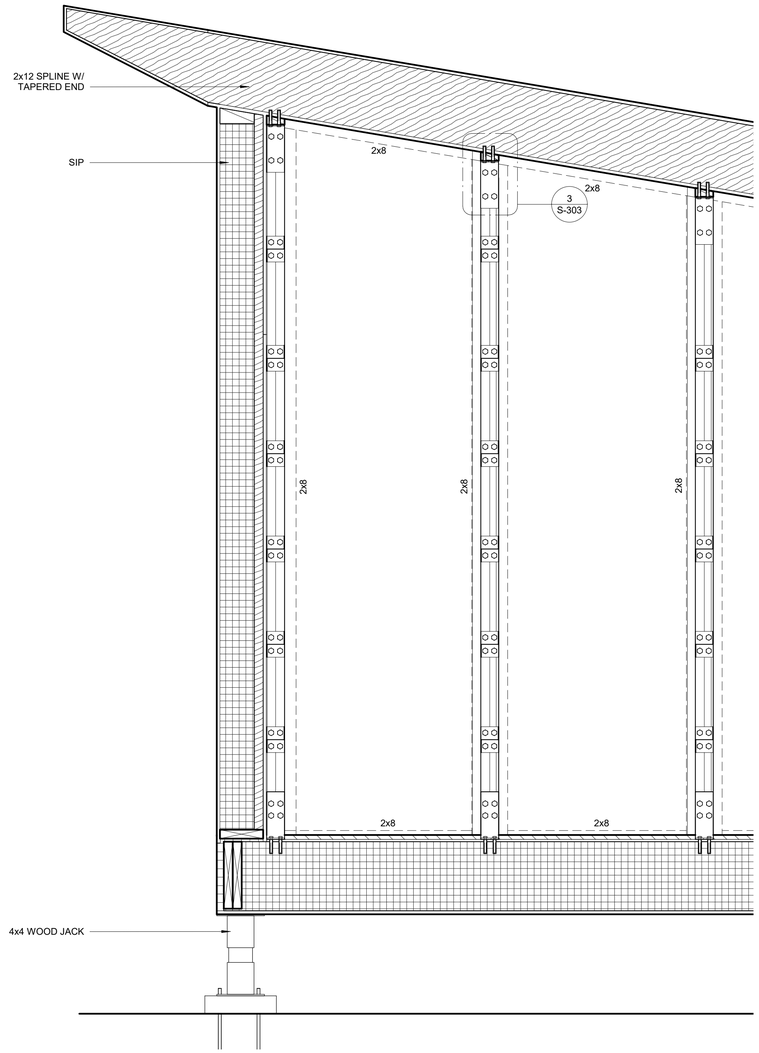
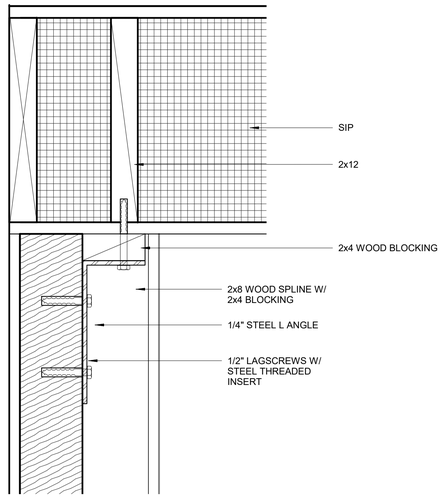
WALL FRAMING AT COURTYARD & DETAILS

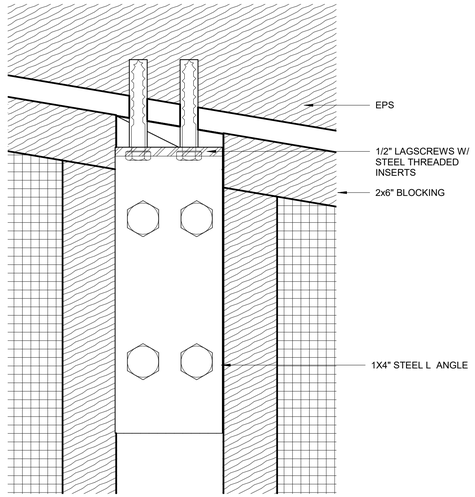
S-302



1 ANGLED ROOF FRAMING ELEVATION
1" = 1'-0"



2 ANGLED ROOF SECTION DETAIL
3" = 1'-0"



3 ANGLED ROOF ELEVATION DETAIL
6" = 1'-0"

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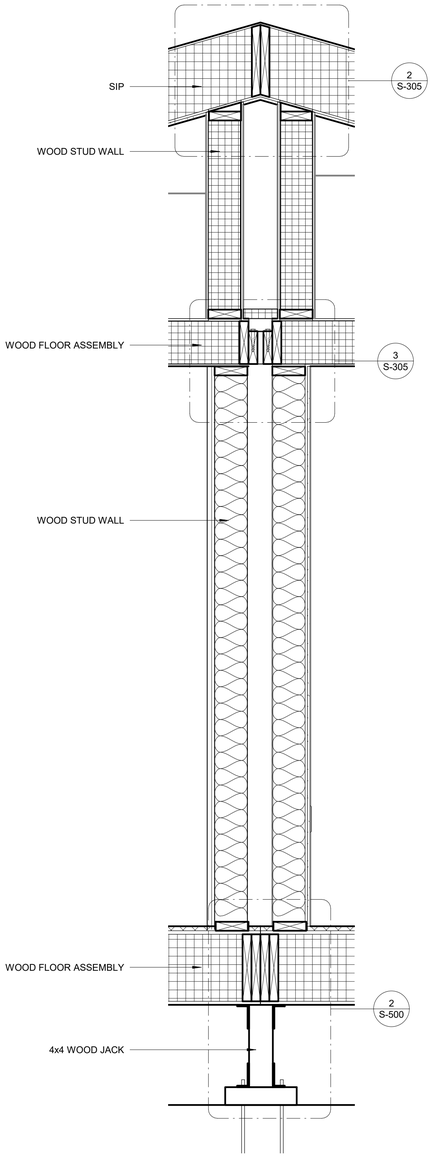
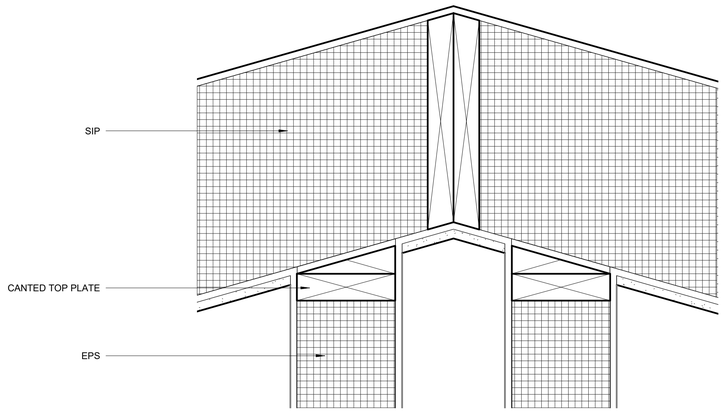
ANGLED ROOF WALL FRAMING AND DETAILS

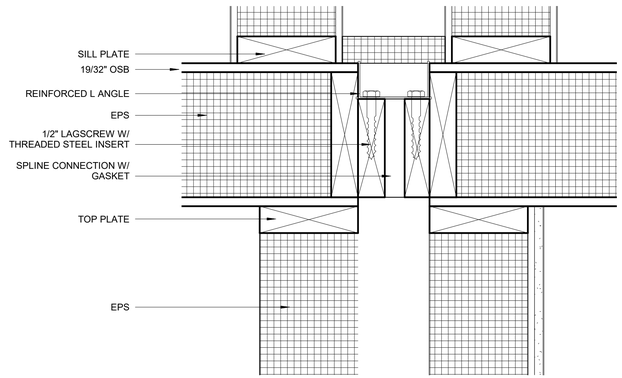
S-303



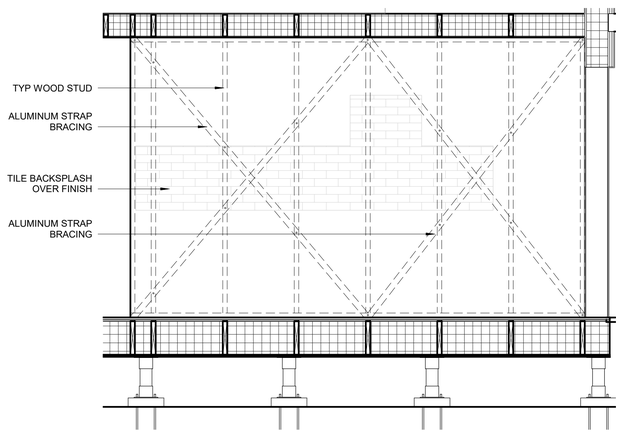
1 WALL FRAMING AT SPINE WALL
1" = 1'-0"



2 FRAMING AT RIDGE
3" = 1'-0"



3 FRAMING DETAIL AT ATTIC
3" = 1'-0"



4 TYPICAL PLUMBING WALL FRAMING
1/2" = 1'-0"

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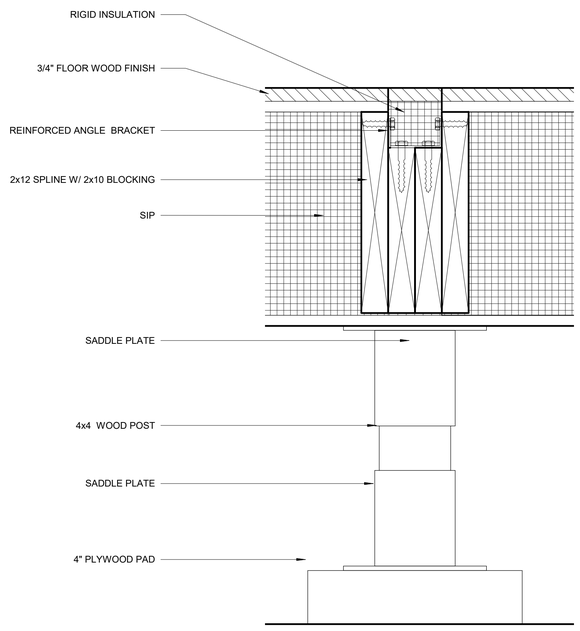
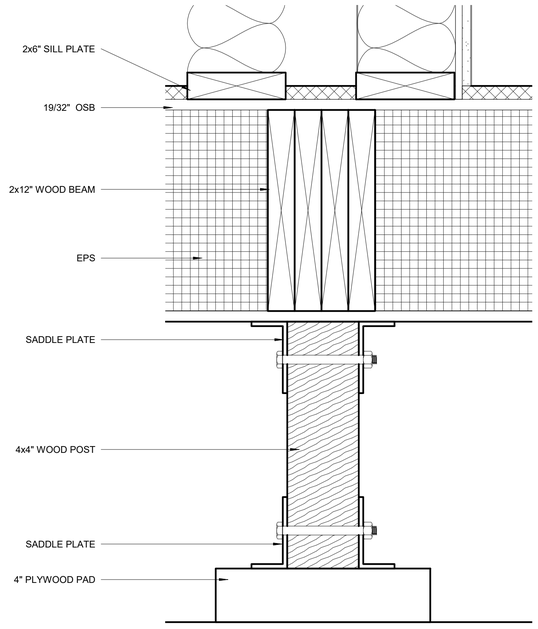
CORE FRAMING SECTIONS

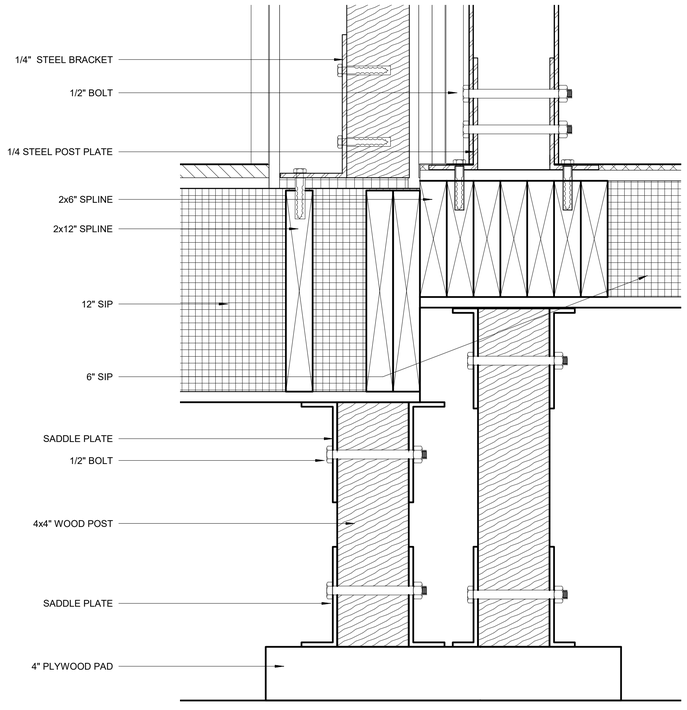
S-305



1 FLOOR SECTION CONNECTION DETAIL
3" = 1'-0"



2 FLOOR FRAMING DETAILS AT MODULE
3" = 1'-0"



3 DECK CONNECTION AT COURTYARD
3" = 1'-0"

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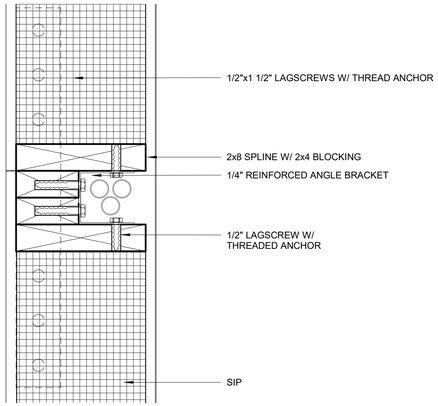
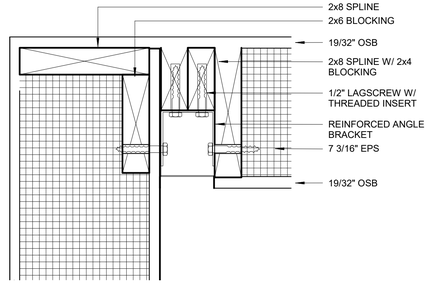
FLOOR DETAILS

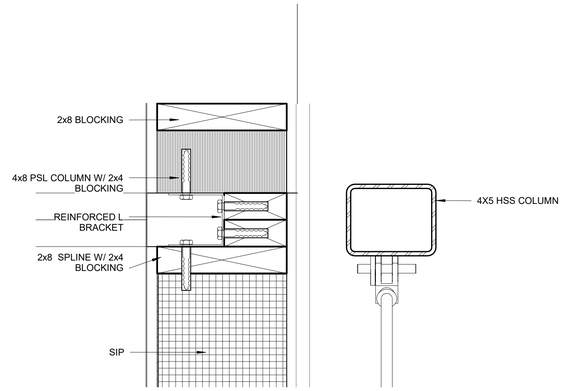
S-500



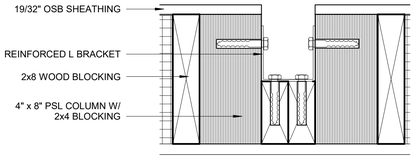
1 TYPICAL SPLINE CONNECTION
3" = 1'-0"



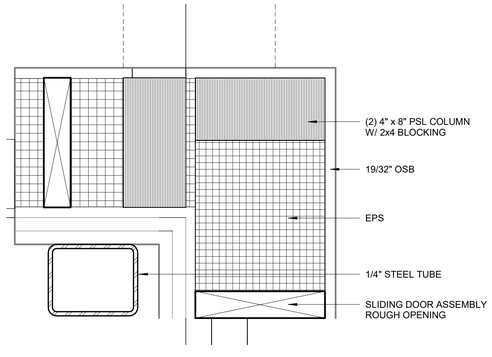
2 PANEL CONNECTION @ EXTERIOR CORNER
3" = 1'-0"



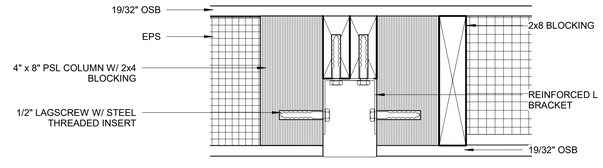
3 TYPICAL SPLINE CONNECTION @ COURTYARD
3" = 1'-0"



4 CONNECTION OF MODULES AT CENTERLINE
3" = 1'-0"



5 WALL CORNER DETAIL AT COURTYARD
3" = 1'-0"



6 PANEL CONNECTION @ MODULE
3" = 1'-0"

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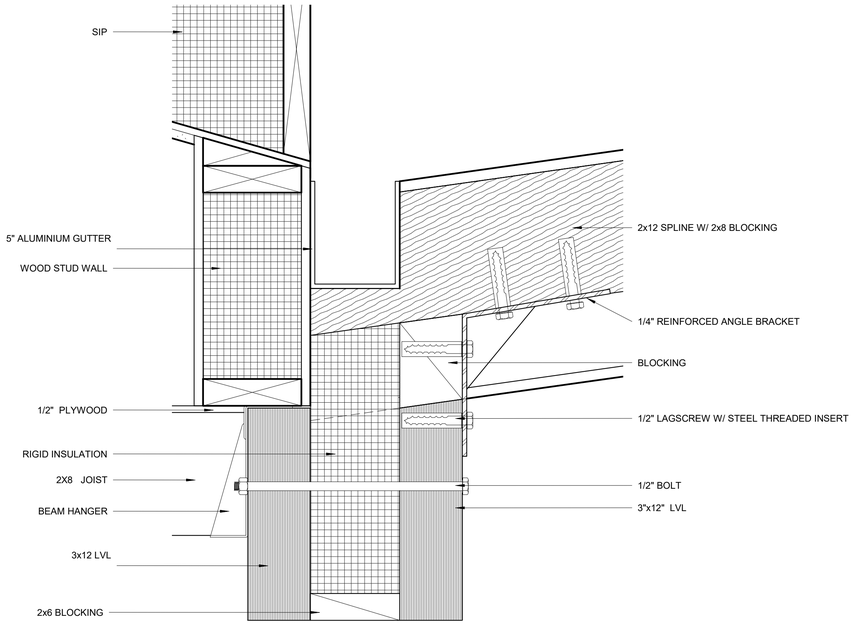
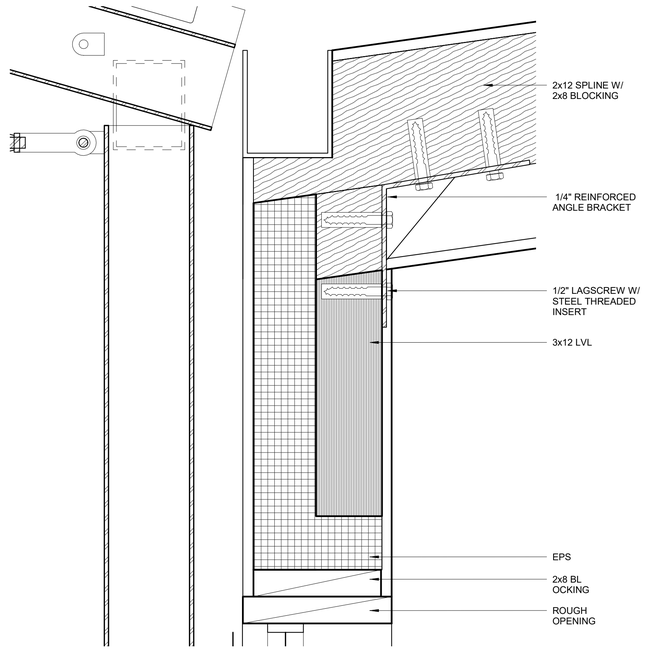
WALL CONNECTION DETAILS

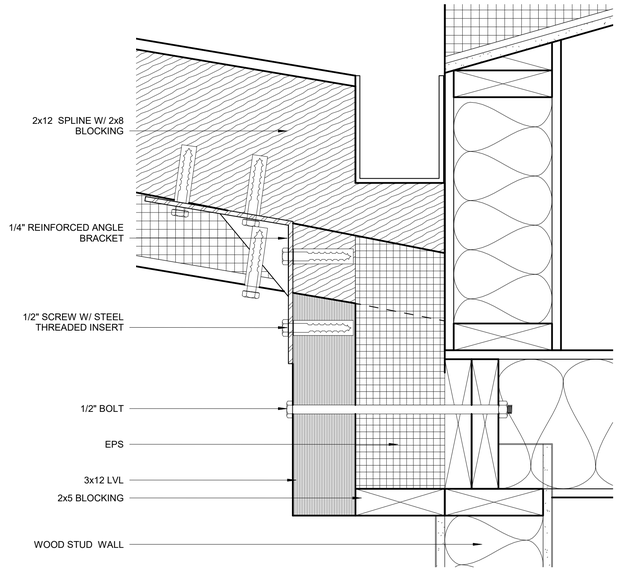
S-501



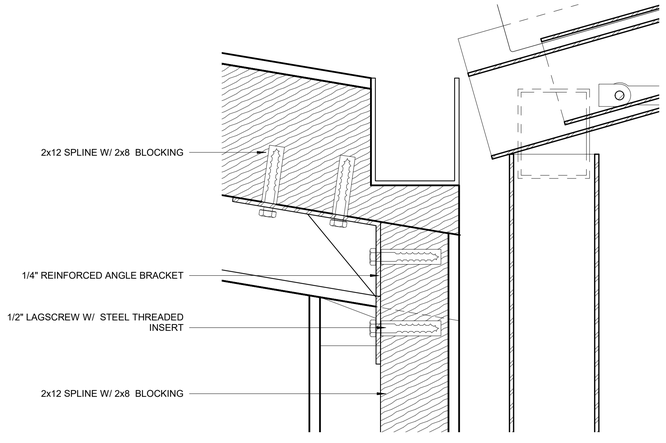
1 WALL TO BEAM DETAIL AT DINING ROOM
3" = 1'-0"



2 WALL SECTION DETAIL ABOVE HEADER
3" = 1'-0"



3 WALL TO ROOF DETAIL AT BEDROOM
3" = 1'-0"



4 WALL TO ROOF DETAIL AT COURTYARD
3" = 1'-0"

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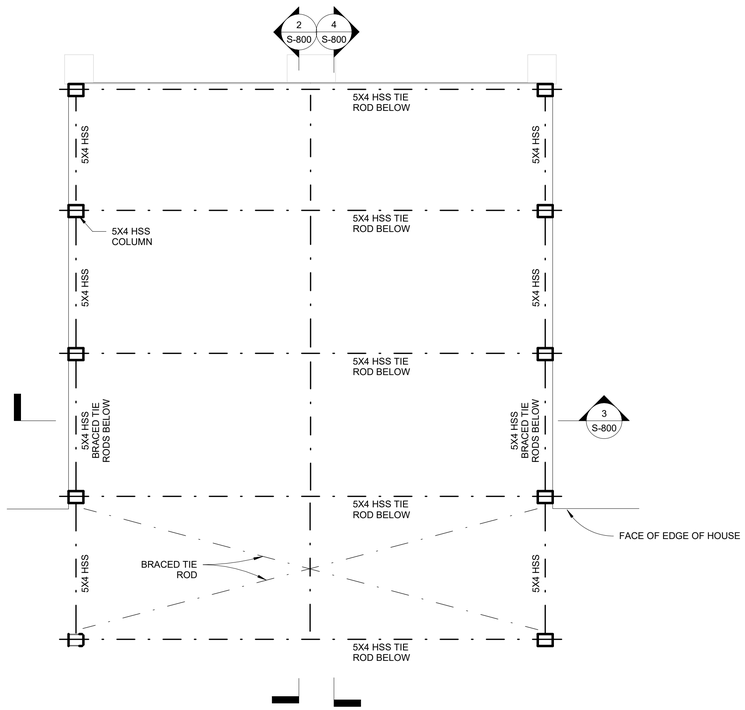
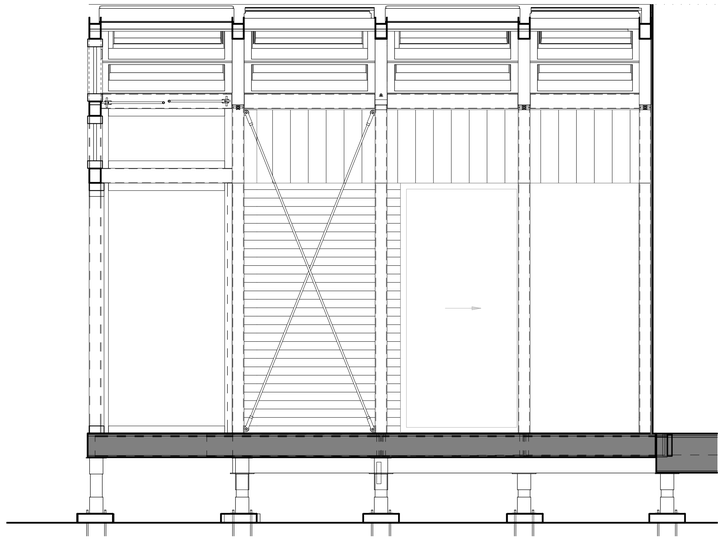
ROOF SECTION DETAILS

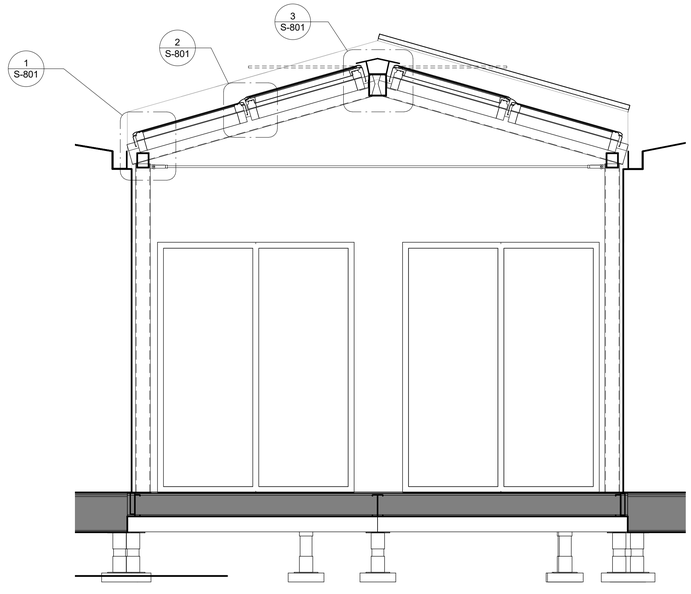
S-502



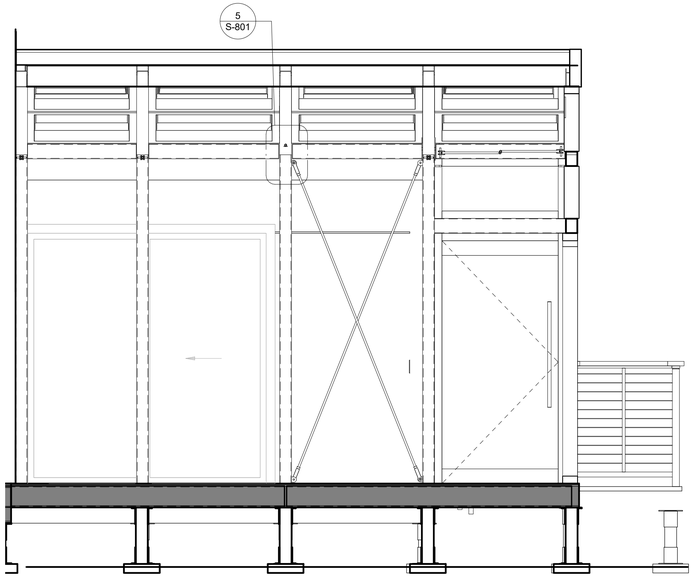
1 COURTYARD ROOF FRAMING PLAN
1/2" = 1'-0"



2 LONGITUDNAL SECTION A
1/2" = 1'-0"



3 TRANSVERSE SECTION AT COURTYARD
1/2" = 1'-0"



4 LONGITUDINAL SECTION B
1/2" = 1'-0"

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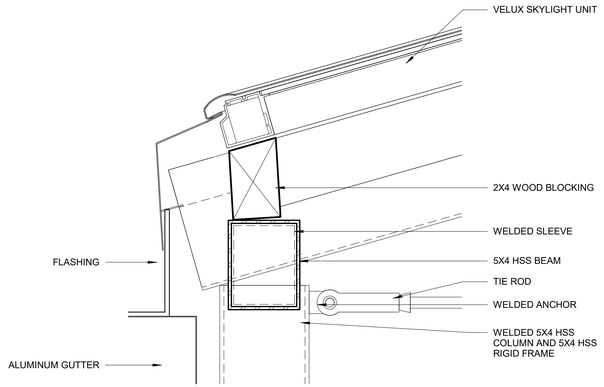
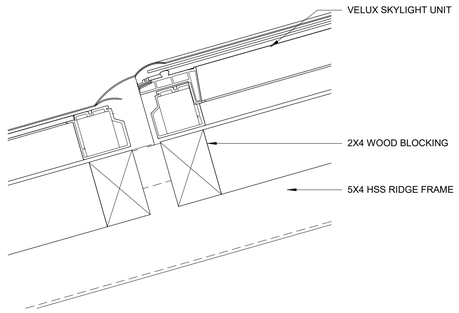
GREENHOUSE FRAMING PLANS & SECTIONS

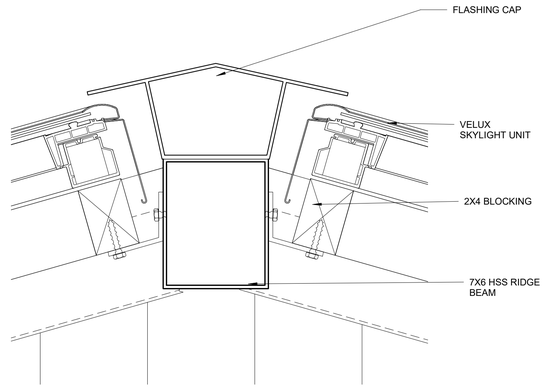
S-800



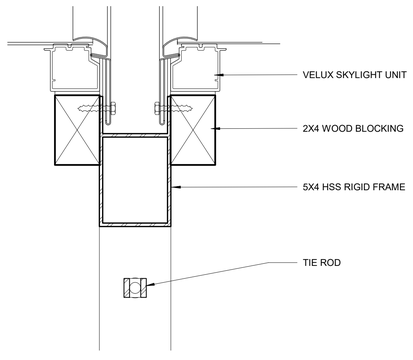
1 BOTTOM OF SKYLIGHT DETAIL AT BEAM
3" = 1'-0"



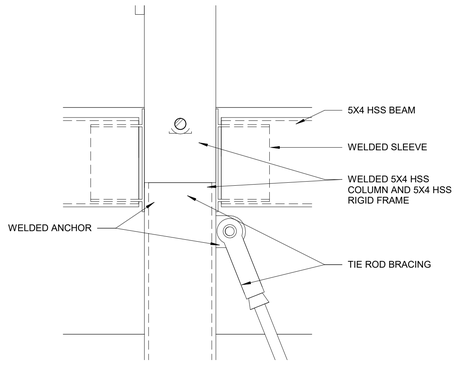
2 TOP OF SKYLIGHT DETAIL
3" = 1'-0"



3 TOP OF RIDGE DETAIL
3" = 1'-0"



4 LONGITUDINAL DETAIL
3" = 1'-0"



5 FRAME CONNECTION DETAIL
3" = 1'-0"

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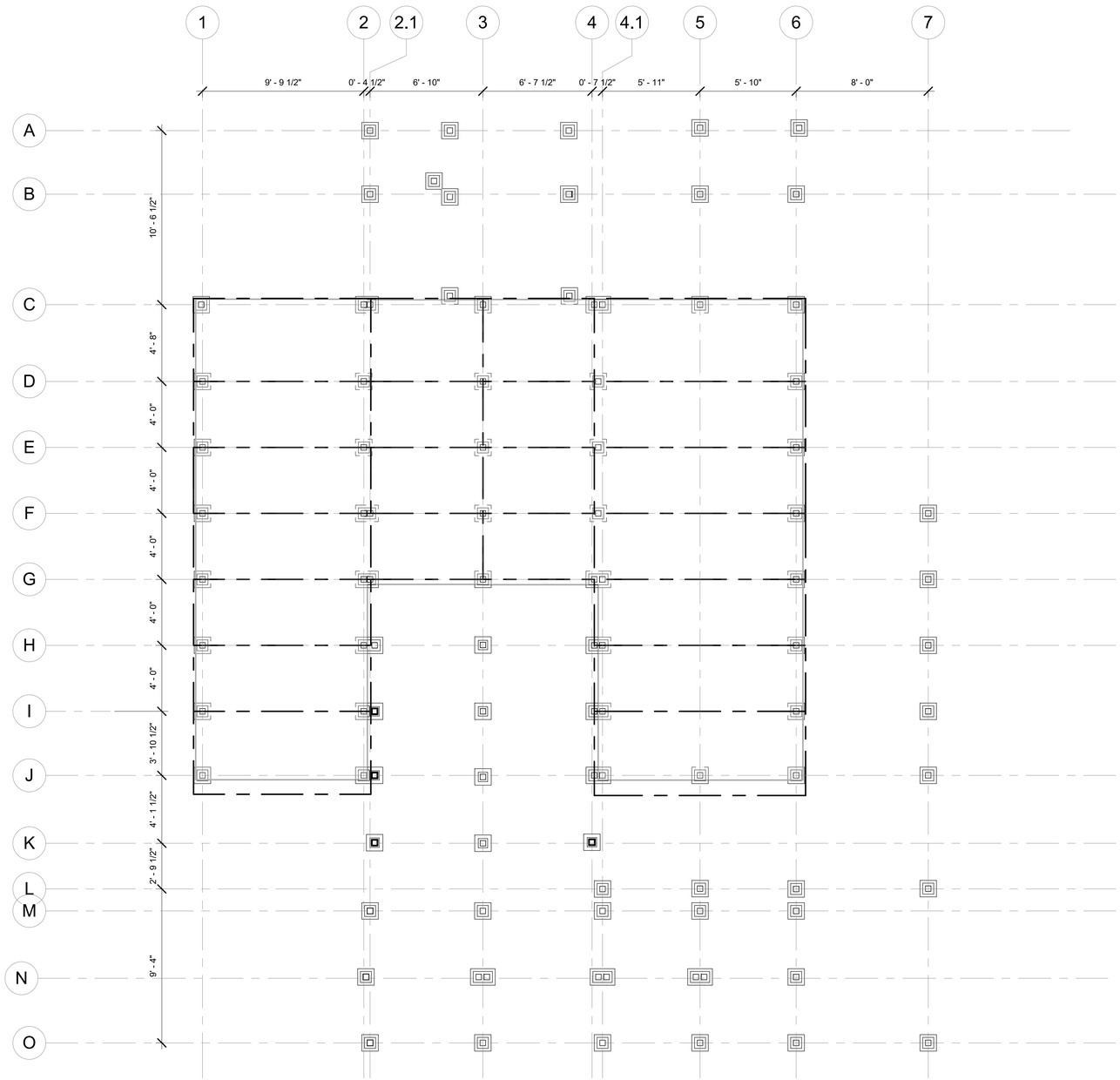
GREENHOUSE CONSTRUCTION DETAILS

S-801



1 GROUND CONTACT PLAN
1/4" = 1'-0"

GENERAL NOTES

A. SLEEPERS FOR PLANTERS, TYPICAL

B. THRESHOLD PLATE

C. SEE SPEC NO.093040 FOR PERMEABLE PAVERS FOR WALKING AND DRIVING

D. SLEEPERS FOR FILTERED WASTE TANK, TYPICAL

E. SLEEPERS FOR GREYWATER TANK, TYPICAL

F. ALL FOUNDATION AND AUDLIARY ELEMENTS RESIDING ON GRADE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE SOIL LOAD OF 2000 PSF AND SHALL COMPLT WITH WITH RULE XXX FOUNDATION

G. FOR FOOING DETAIL REFER TO S-500 SERIES

H. FOR ADJUSTABLE JACK REFER TO SPEC NO.109000

LEGEND

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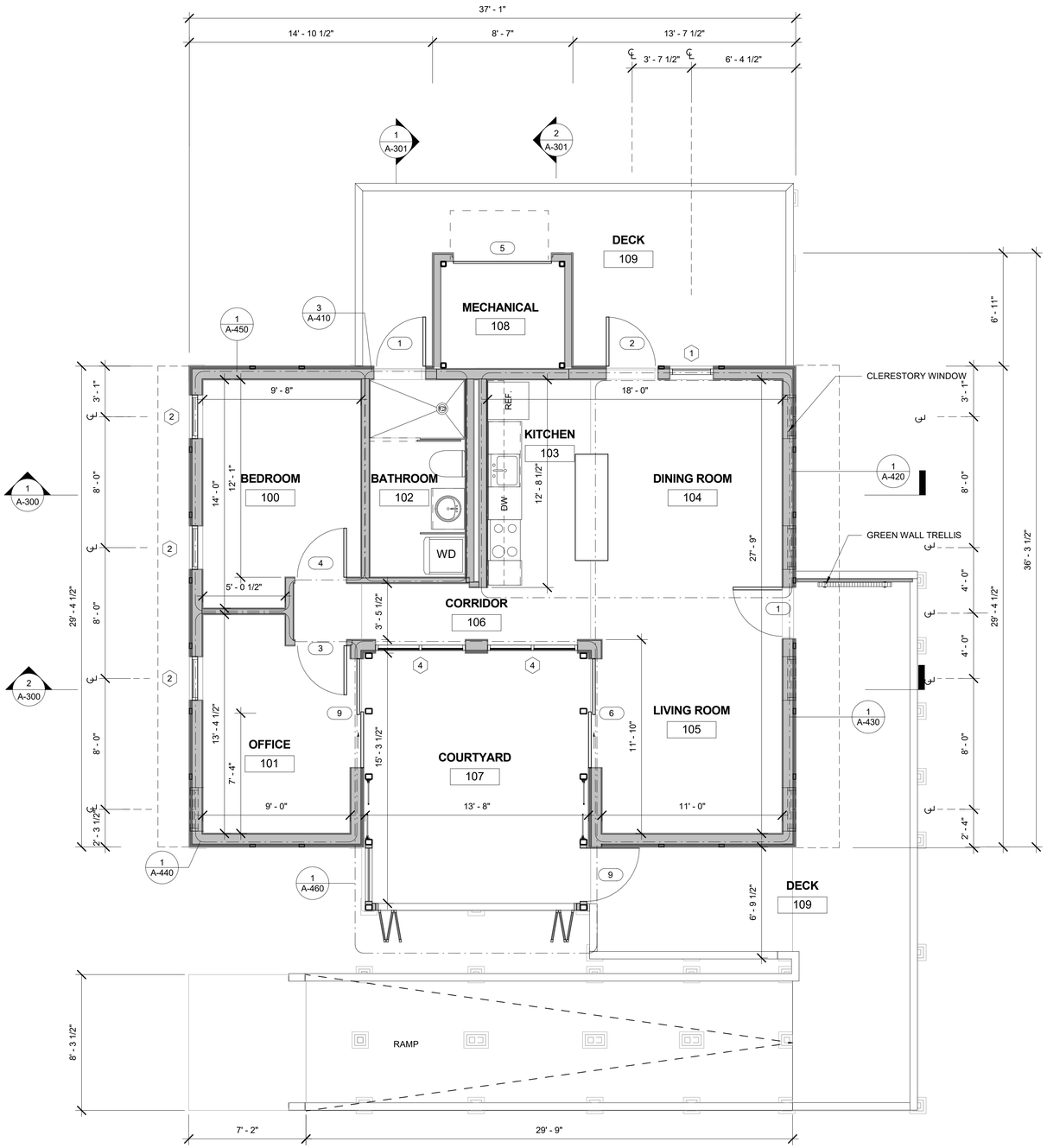
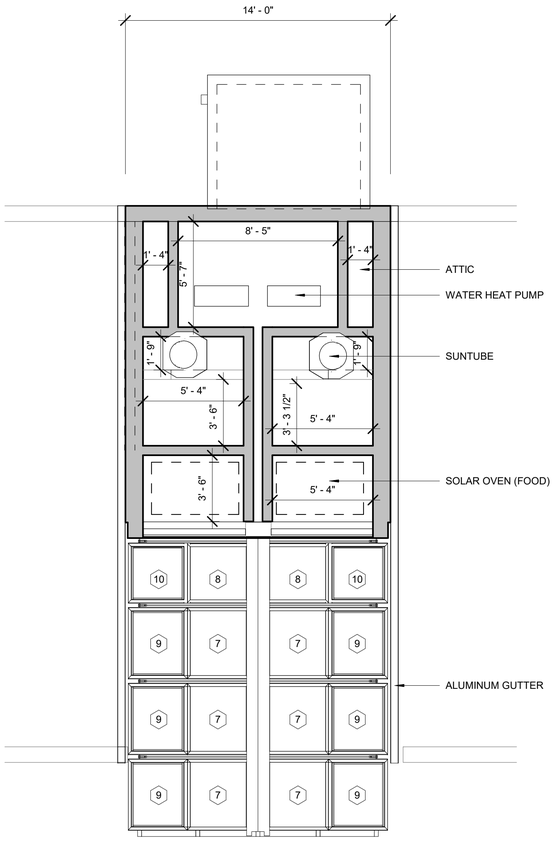
GROUND CONTACT PLAN

A-101



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



2 ATTIC PLAN
1/4" = 1'-0"

GENERAL NOTES

A. FOR FINISH LEGEND REFER TO A-106

B. FOR ADDITIONAL FINISH INFORMATION REFER TO A-400 SERIES - ENLARGED PLANS AND ELEVATIONS

C. FOR ADDITIONAL FINISH INFORMATION REFER TO A-103 FOR REFLECTED CEILING PLAN & FINISH LEGEND

D. FOR FINISH OF DOOR & FRAMES & THRESHOLD DETAILS REFER TO A-600 SERIES - DOOR AND WINDOW SCHEDULES

E. WHERE MULTIPLE FINISHES ARE SHOWN AT WALLS REFER TO INTERIOR ELEVATIONS OR ENLARGED DETAILS FOR CLARIFICATION

F. INTERIOR FINISHES AND MATERIALS REFER TO ARCHITECTURAL SPECIFICATIONS

LEGEND

FD FLOOR DRAIN

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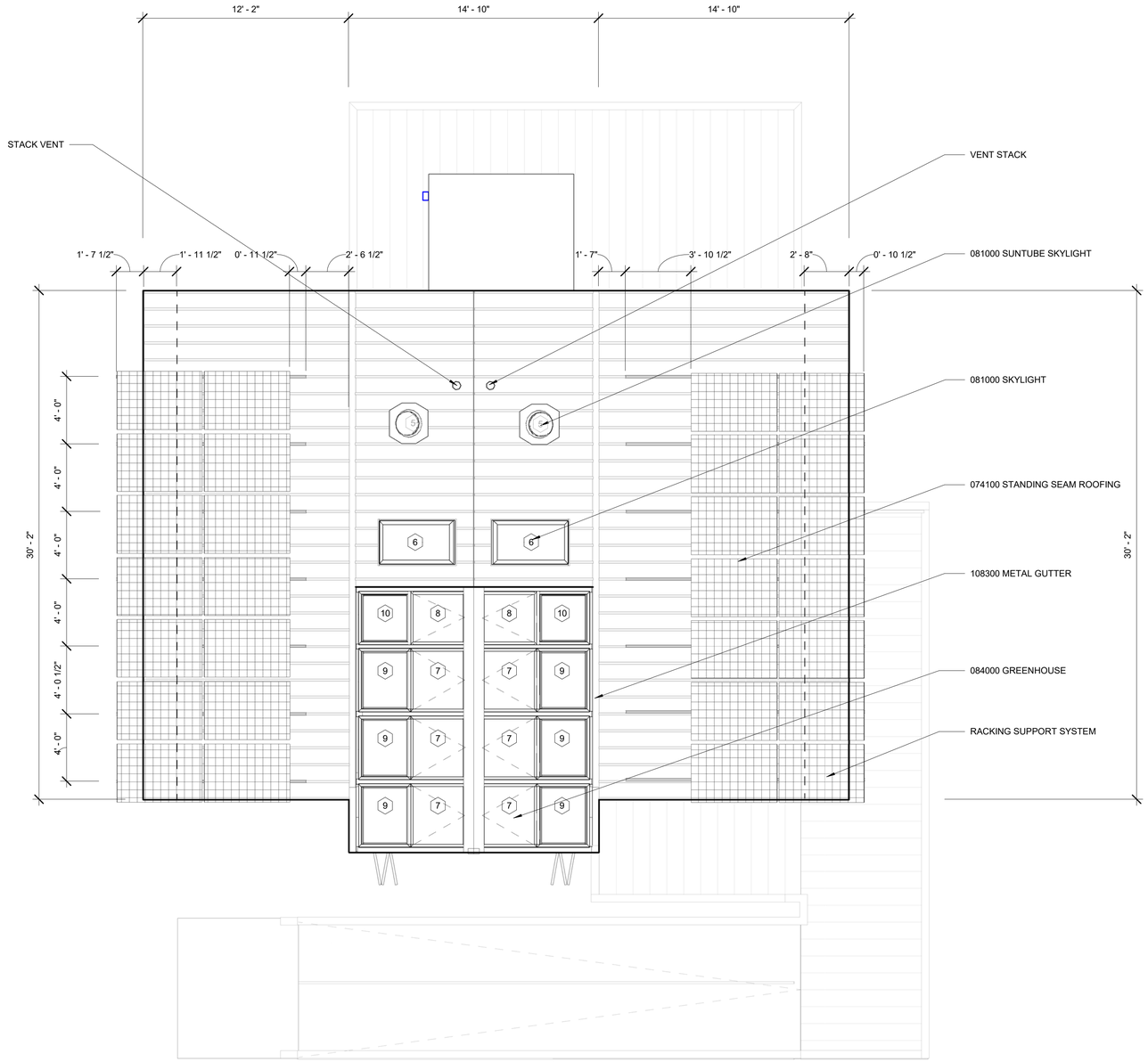
FLOOR PLAN

A-102



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

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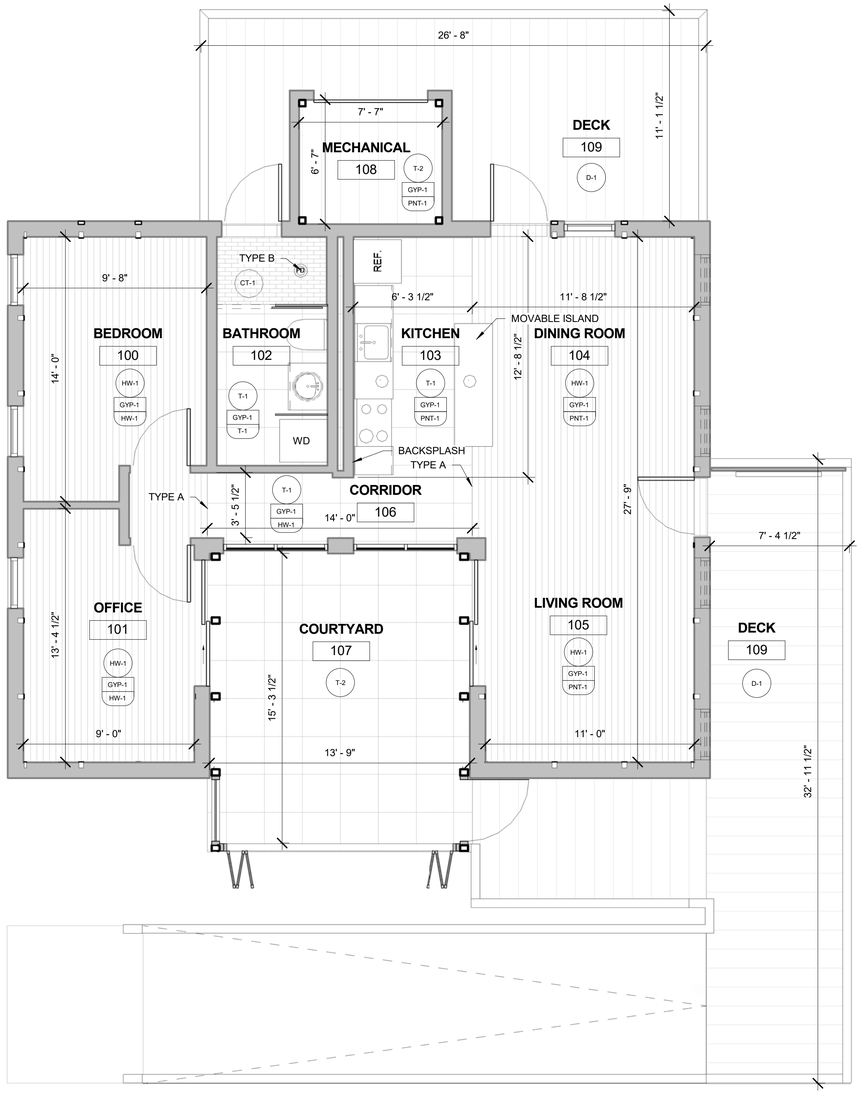
ROOF PLAN

A-103



1 FLOOR FINISH PLAN
1/4" = 1'-0"

GENERAL NOTES

A. TILE TO WOOD TRANSITION STRIP

B. FLOOR DRAIN TO BE CENTERED TO SHOWER

C. GYPSUM WALLBOARDS SHALL BE FINSIHED WITH PNT-1. REFER TO A-601 FOR MATERIAL SCHEDULE

FINISH FLOOR PLAN SHEET NOTES

1. CO-1: COUNTERTOP
2. CT-1: CERAMIC TILE
3. SS-1 COUNTERTOP
4. WD-1 COUNTERTOP

FINISH FLOOR PLAN FINISH LEGEND

- HW-1: HARDWOOD
- T-1: CERAMIC TILE
- CT-1: CERAMIC TILE
- T-2: CERAMIC PAVERS
- GYP-1: GYPSUM
- PL-1: PLYWOOD

FINISH TAG

Floor Finish — FLOOR FINISH
Wall Finish — WALL FINISH
Base Finish — BASE FINISH

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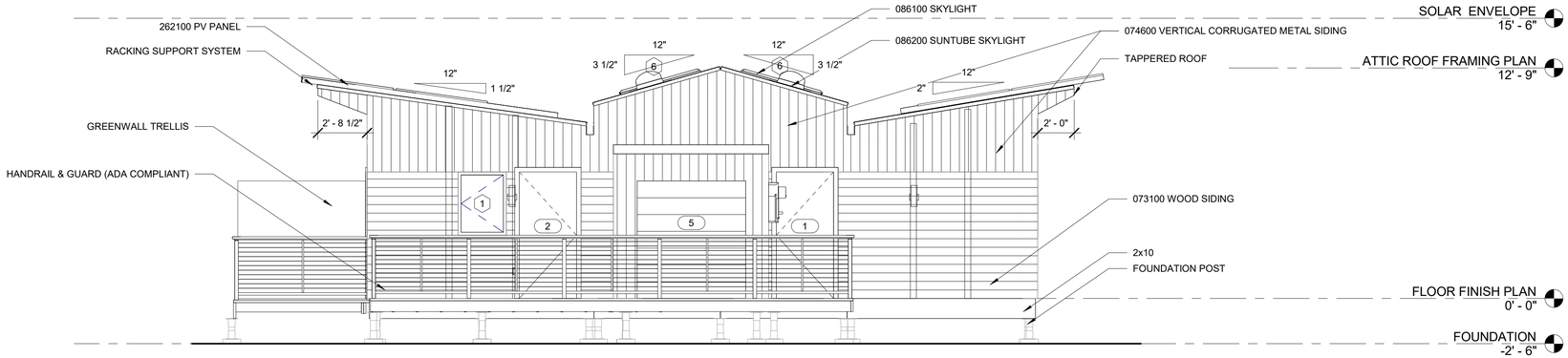
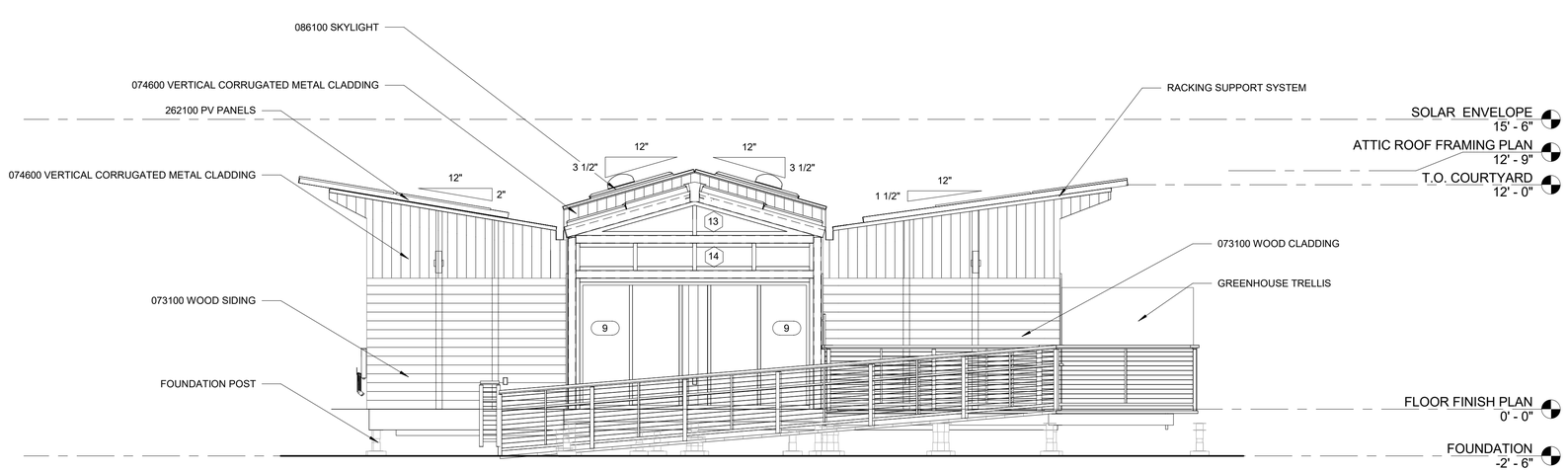
FINISH FLOOR PLAN

A-104



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



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

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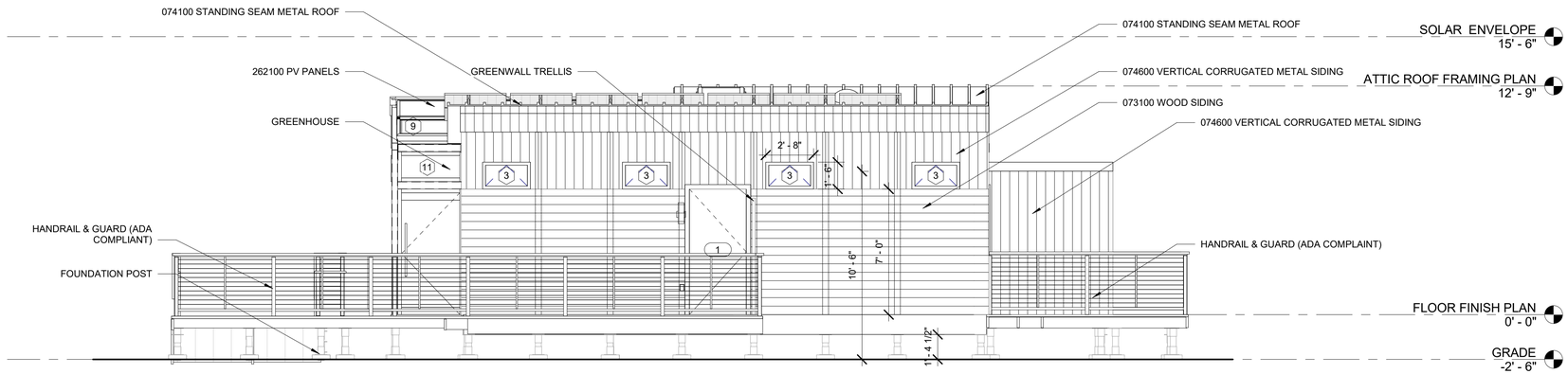
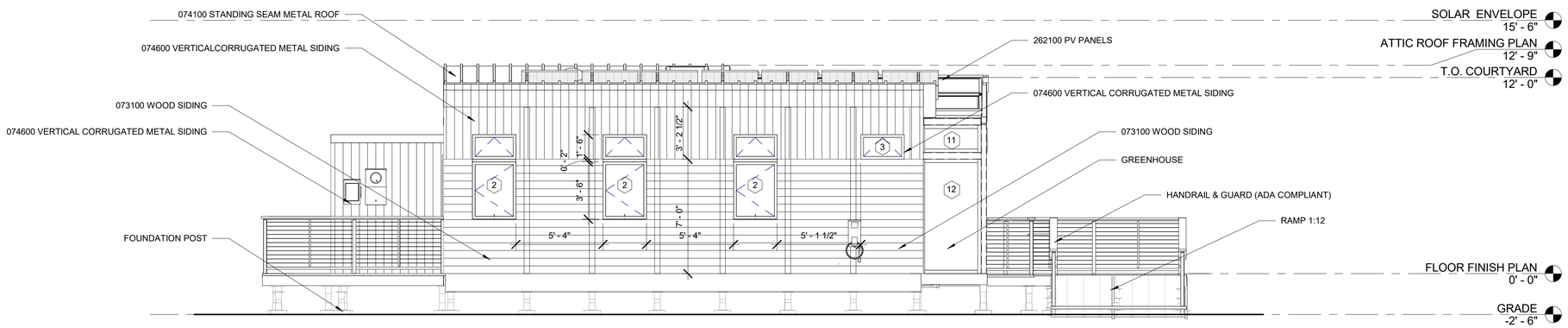
NORTH & SOUTH EXTERIOR ELEVATIONS

A-200



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



2 WEST ELEVATION
1/4" = 1'-0"

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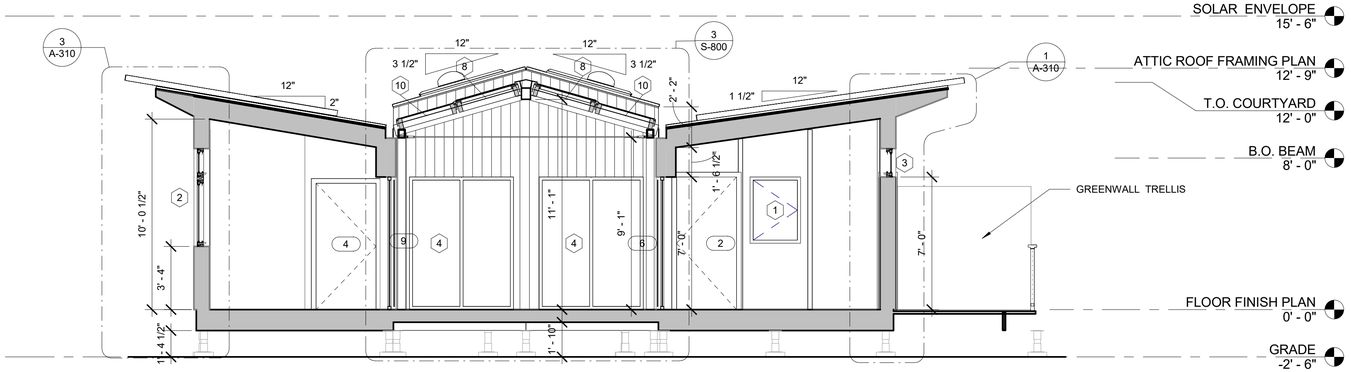
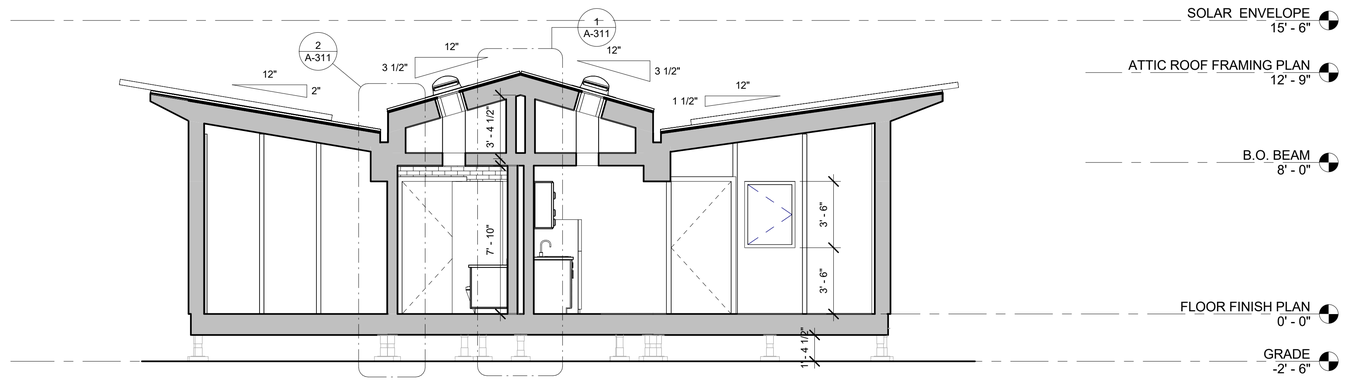
EAST & WEST EXTERIOR ELEVATIONS

A-201



2 EAST-WEST SECTION THROUGH COURTYARD
1/4" = 1'-0"



1 EAST-WEST SECTION THROUGH BATHROOM/KITCHEN CORE
1/4" = 1'-0"

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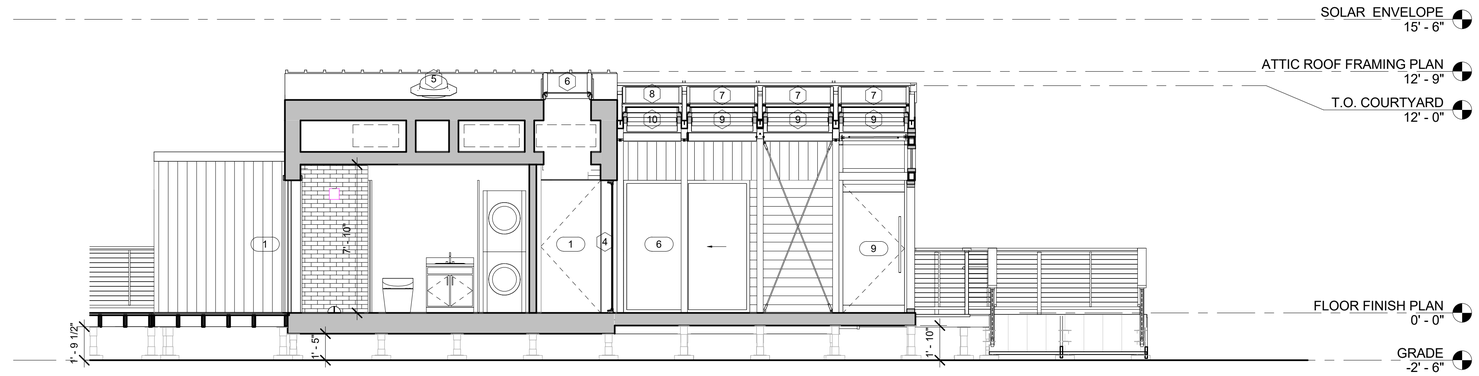
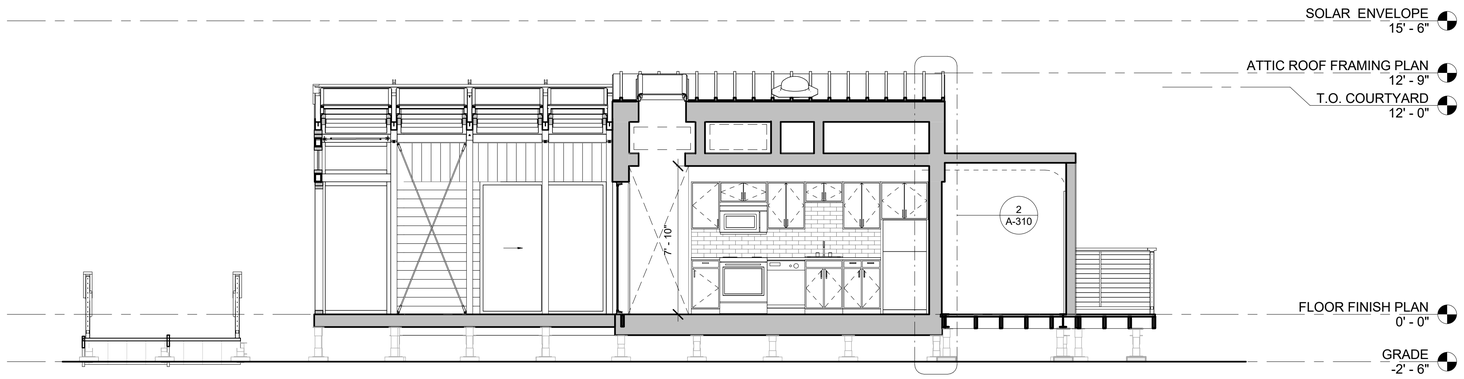
BUILDING SECTIONS

A-300



1 NORTH-SOUTH SECTION THROUGH BATHROOM/COURTYARD
1/4" = 1'-0"



2 NORTH-SOUTH SECTION THROUGH KITCHEN/COURTYARD
1/4" = 1'-0"

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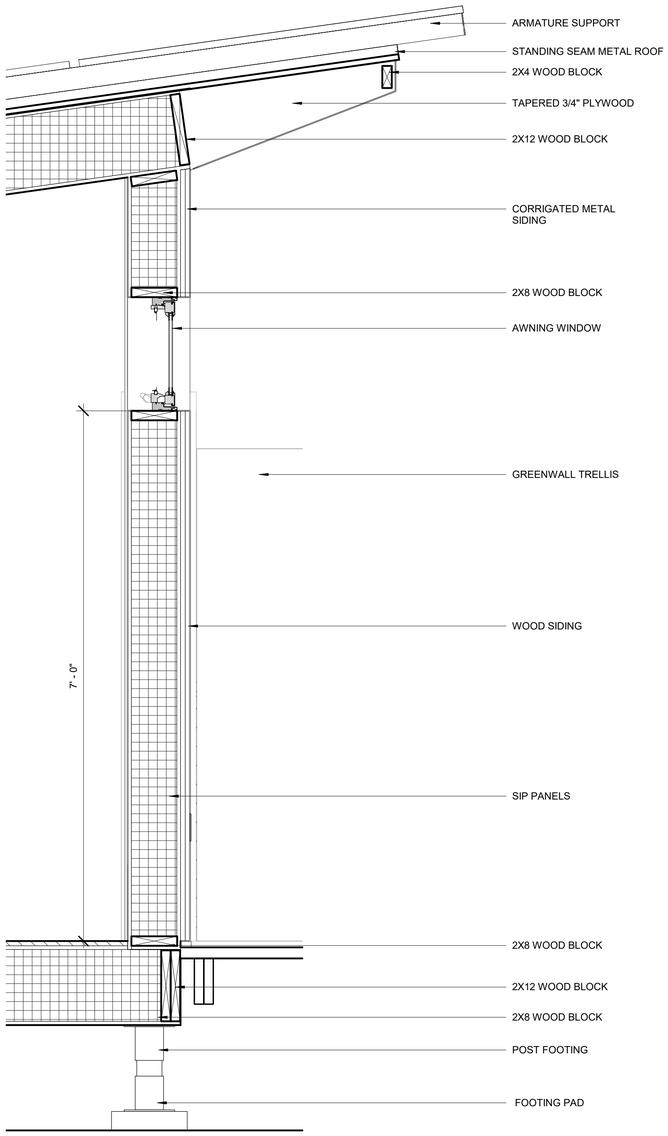
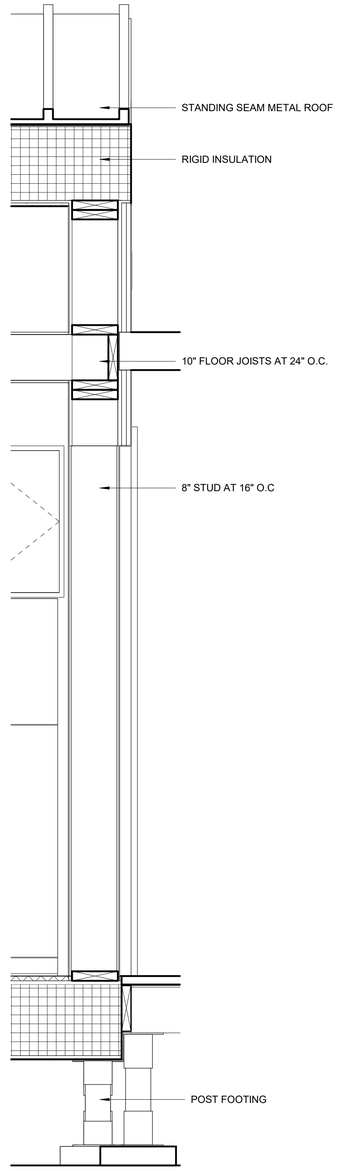
BUILDING SECTIONS

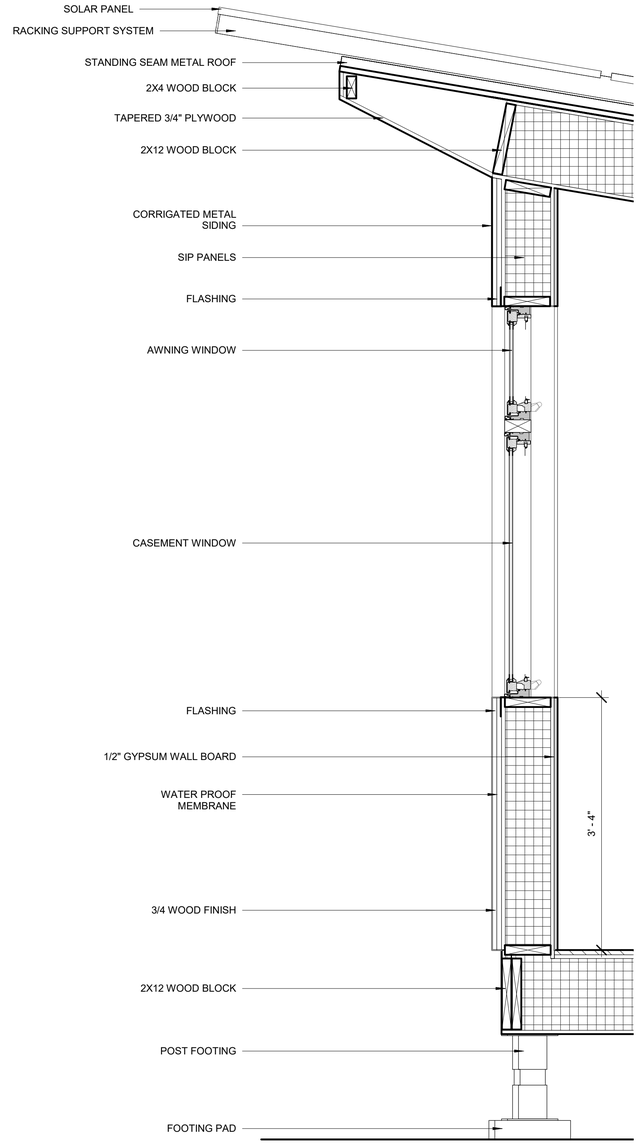
A-301



1 EAST WING WALL SECTION THROUGH AWNING
1" = 1'-0"



2 NORTH WALL SECTION
1" = 1'-0"



3 WEST WING EXTERIOR WALL SECTION THROUGH WINDOW
1" = 1'-0"

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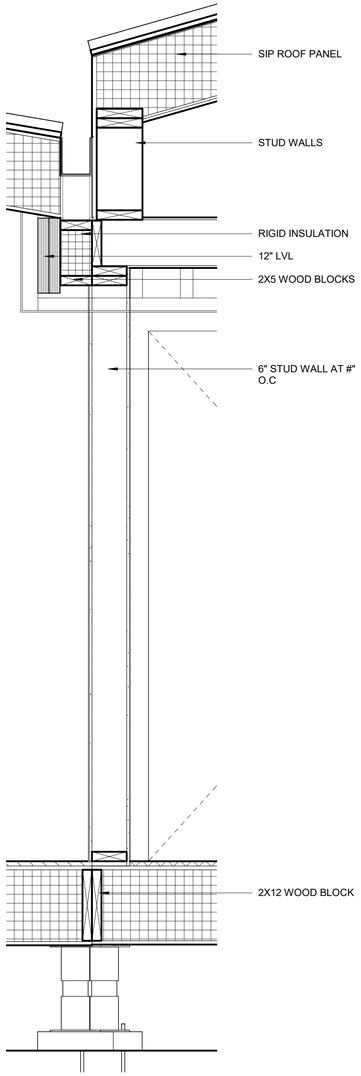
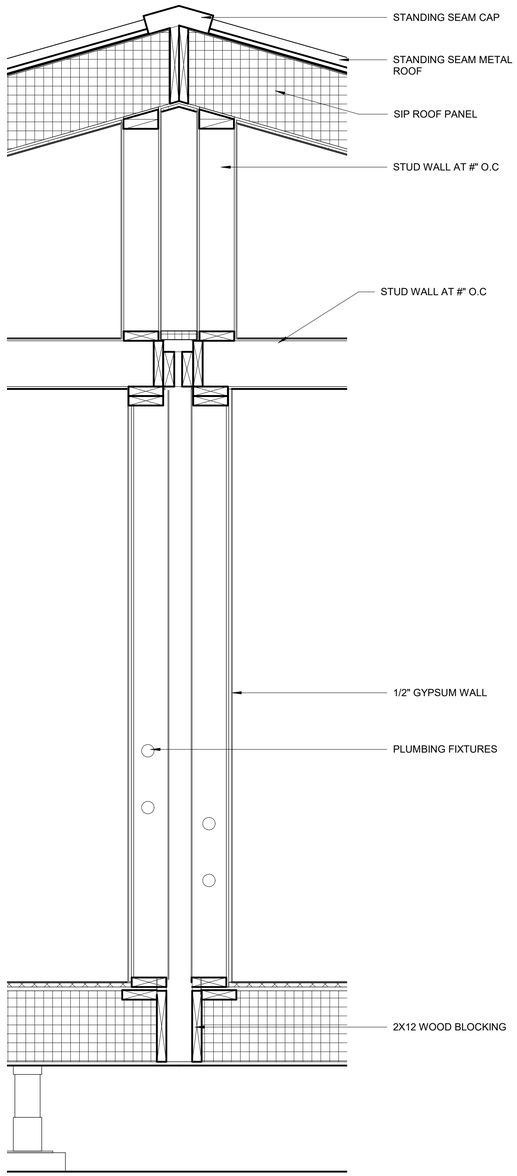
EXTERIOR WALL SECTIONS

A-310



2 INTERIOR WALL SECTION @ BATHROOM & BEDROOM
1" = 1'-0"



1 WALL SECTION @ SPINE
1" = 1'-0"

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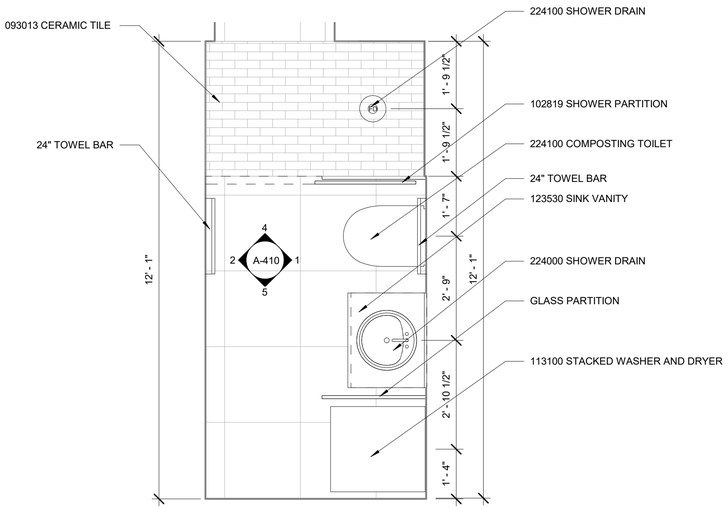
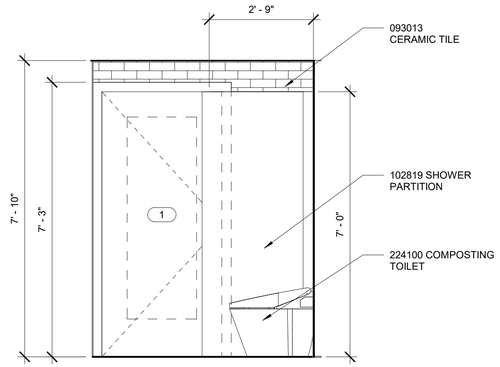
INTERIOR WALL SECTIONS

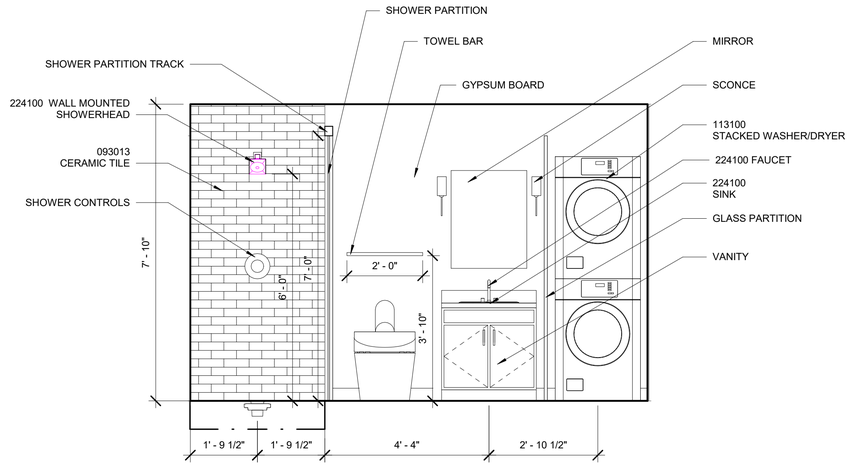
A-311



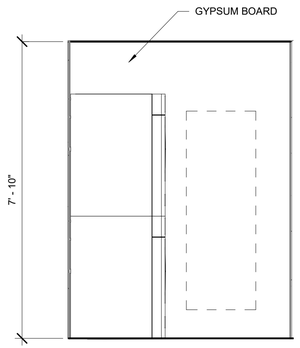
3 ENLARGED BATHROOM PLAN
1/2" = 1'-0"



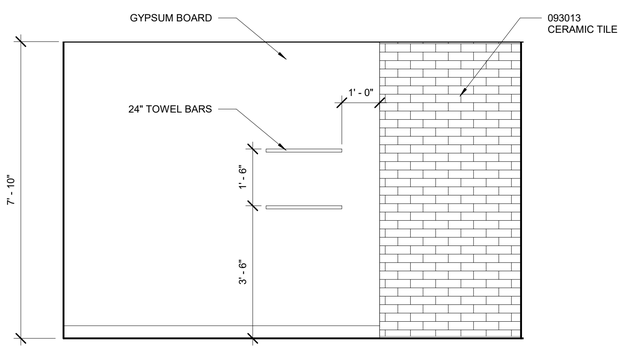
4 BATHROOM A
1/2" = 1'-0"



1 BATHROOM B (VANITY WALL)
1/2" = 1'-0"



5 BATHROOM C
1/2" = 1'-0"



2 BATHROOM D
1/2" = 1'-0"

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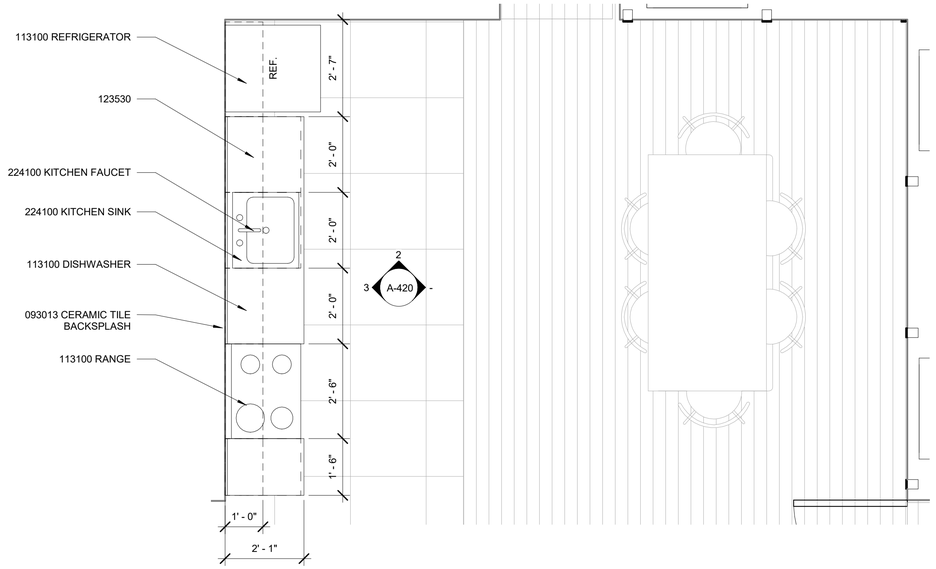
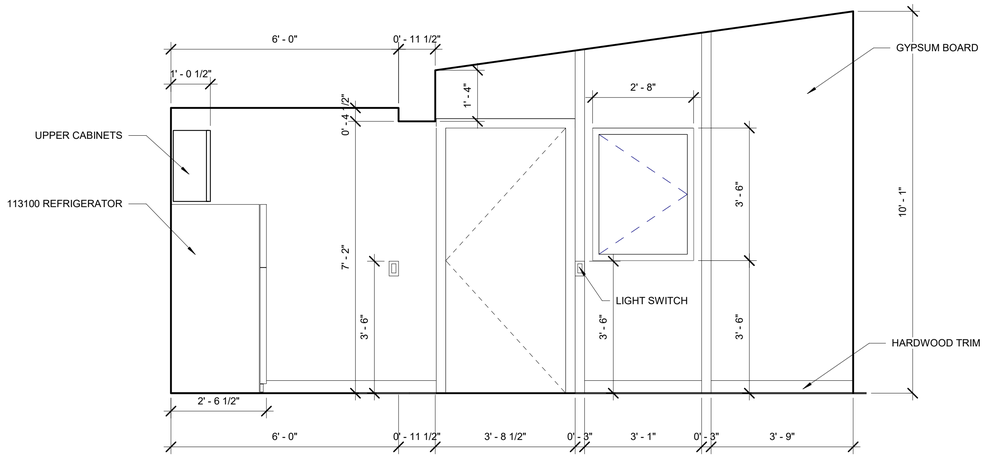
ENLARGED BATHROOM PLANS & ELEVATIONS

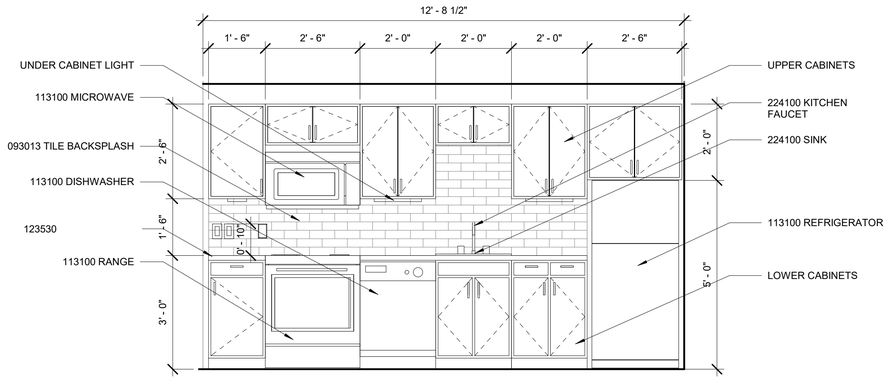
A-410



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



2 KITCHEN A
1/2" = 1'-0"



3 KITCHEN D
1/2" = 1'-0"

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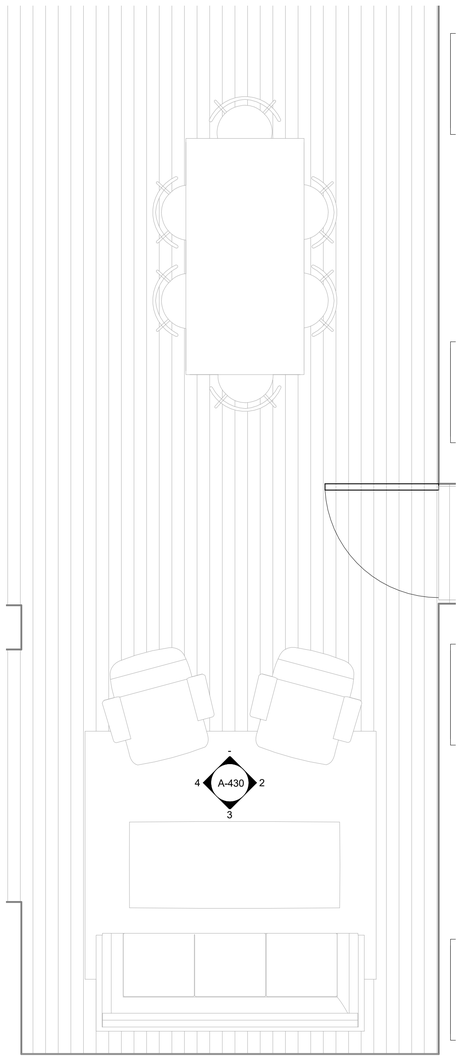
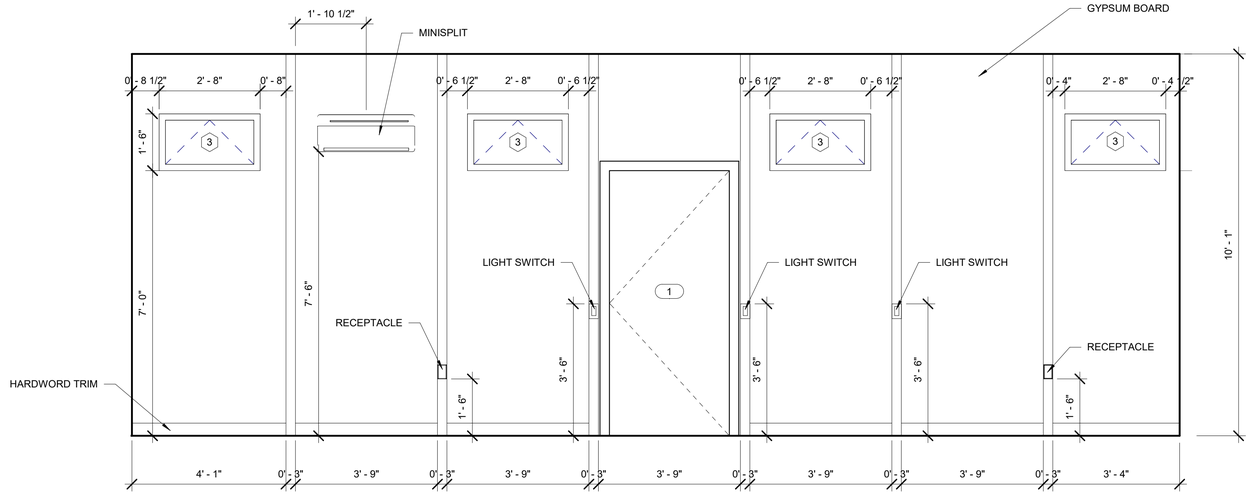
ENLARGED KITCHEN PLANS & ELEVATIONS

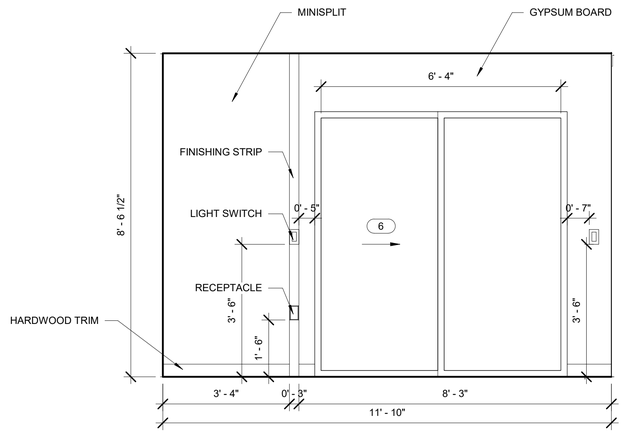
A-420



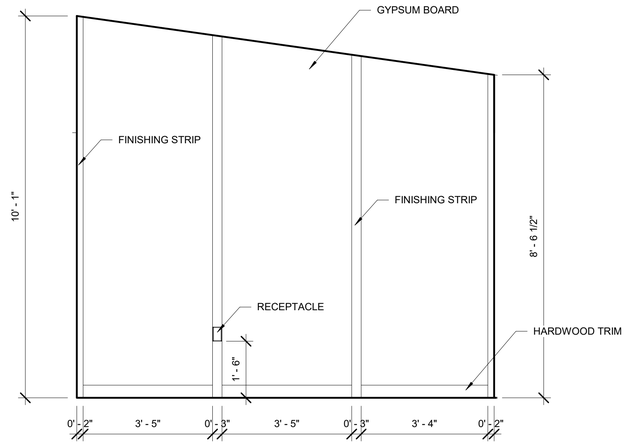
1 ENLARGED LIVING ROOM PLAN
1/2" = 1'-0"



2 LIVING ROOM B
1/2" = 1'-0"



4 LIVING ROOM D
1/2" = 1'-0"



3 LIVING ROOM C
1/2" = 1'-0"

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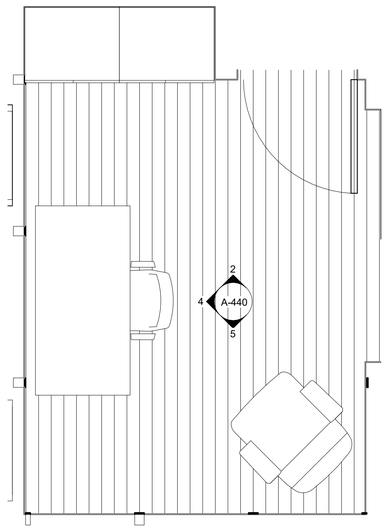
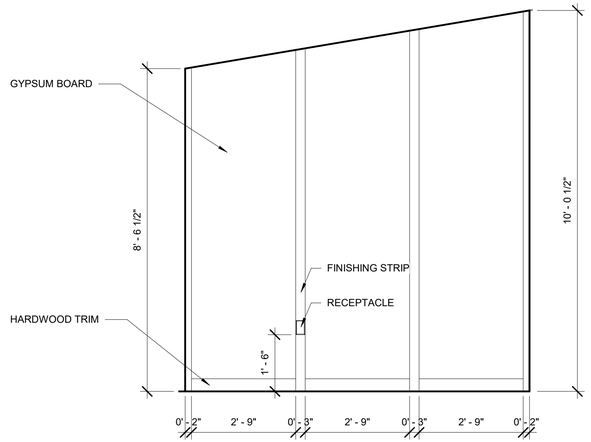
ENLARGED LIVING ROOM PLAN & ELEVATIONS

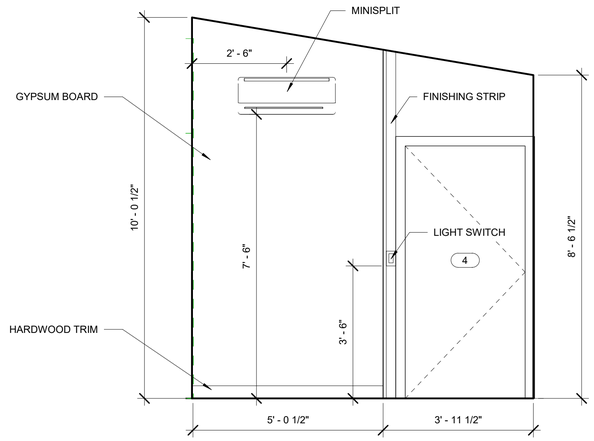
A-430



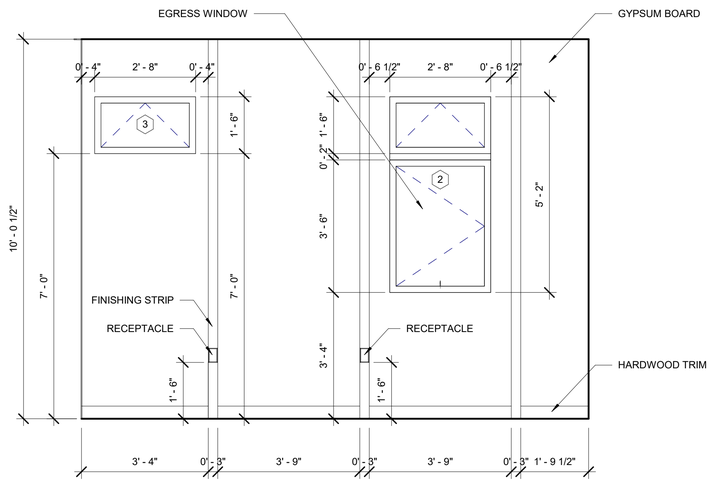
1 ENLARGED STUDY ROOM PLAN
1/2" = 1'-0"



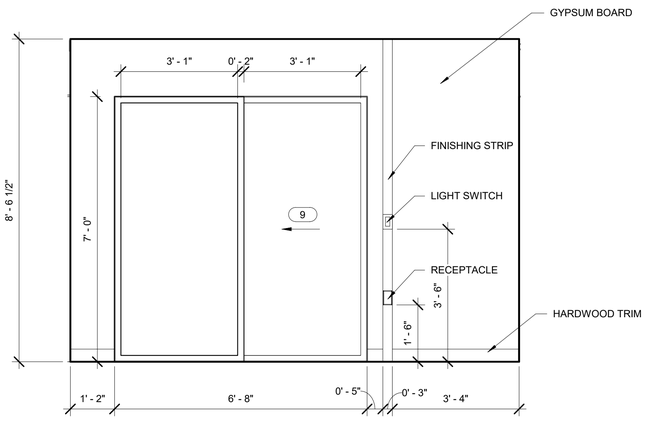
5 STUDY D
1/2" = 1'-0"



2 STUDY A
1/2" = 1'-0"



4 STUDY C
1/2" = 1'-0"



3 STUDY B
1/2" = 1'-0"

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ENLARGED BEDROOM/STUDY PLAN & ELEVATIONS

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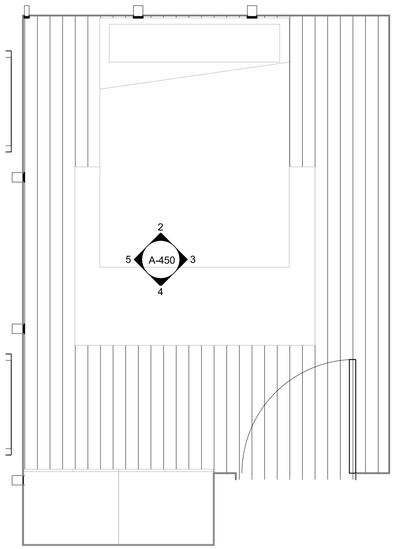
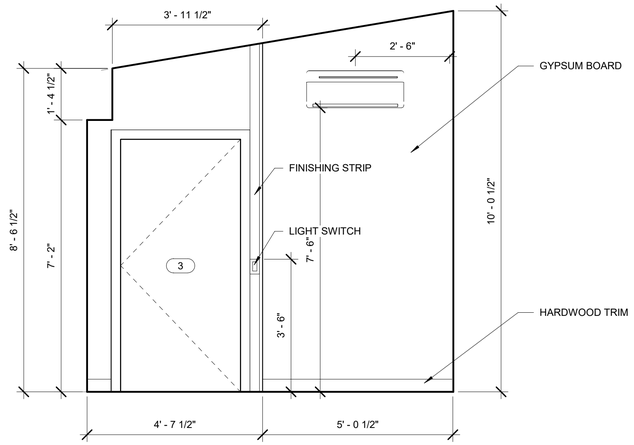
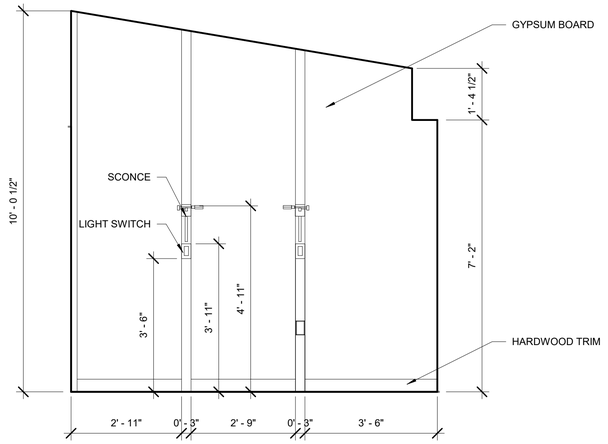


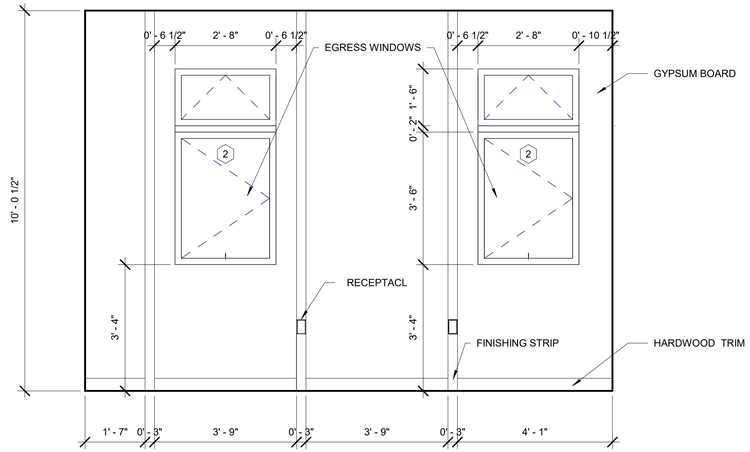
1 ENLARGED BEDROOM PLAN
1/2" = 1'-0"



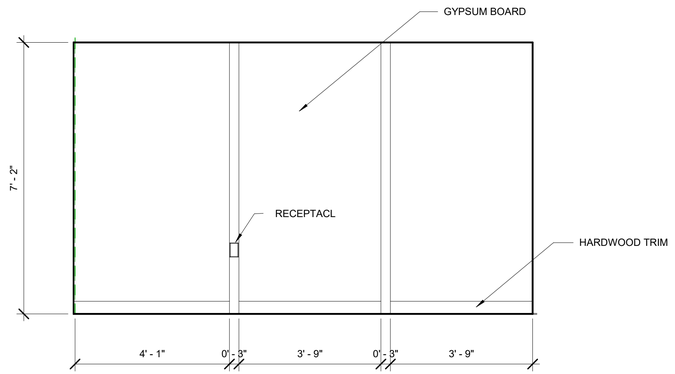
4 BEDROOM C
1/2" = 1'-0"



2 BEDROOM A
1/2" = 1'-0"



5 BEDROOM D
1/2" = 1'-0"



3 BEDROOM B
1/2" = 1'-0"

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ENLARGED BEDROOM PLAN & ELEVATIONS

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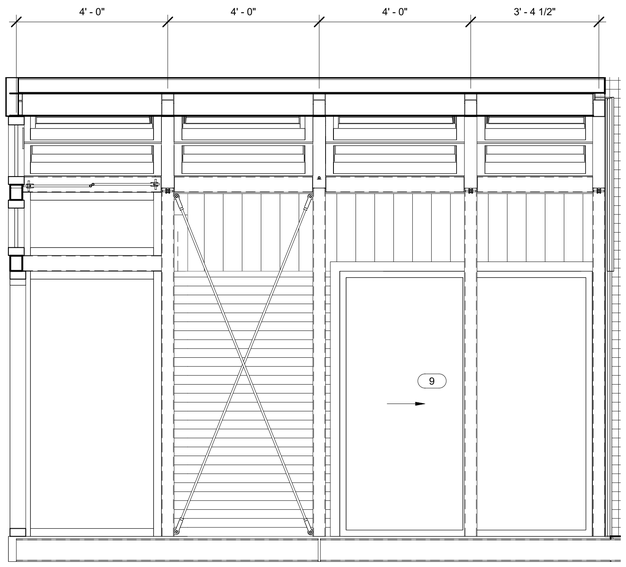
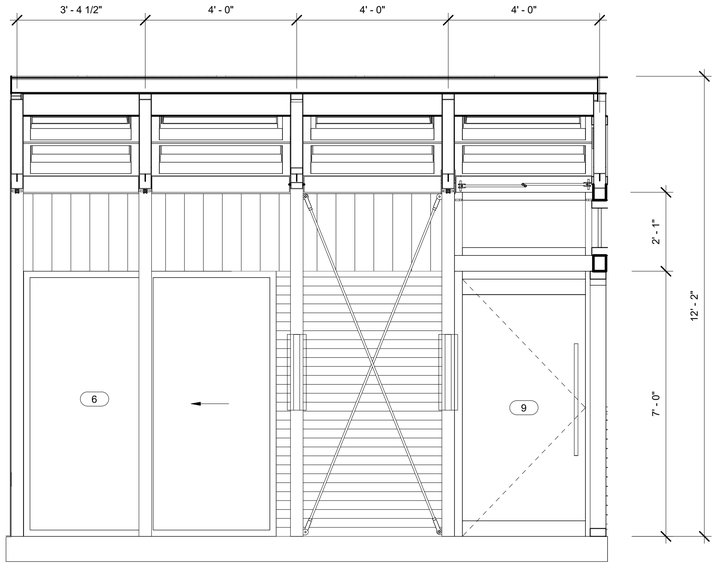
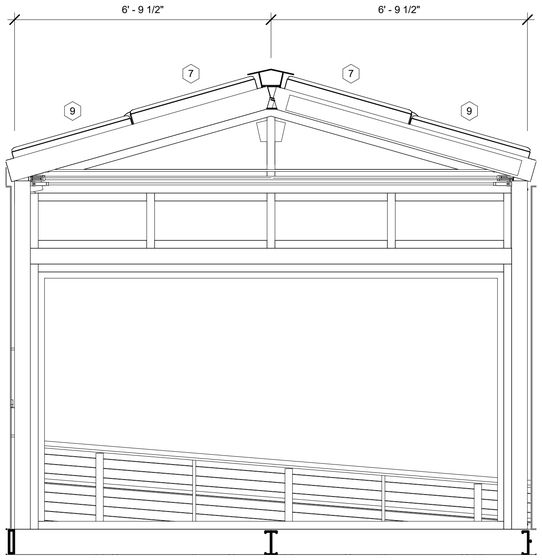


5 COURTYARD D - LOOKING WEST
1/2" = 1'-0"

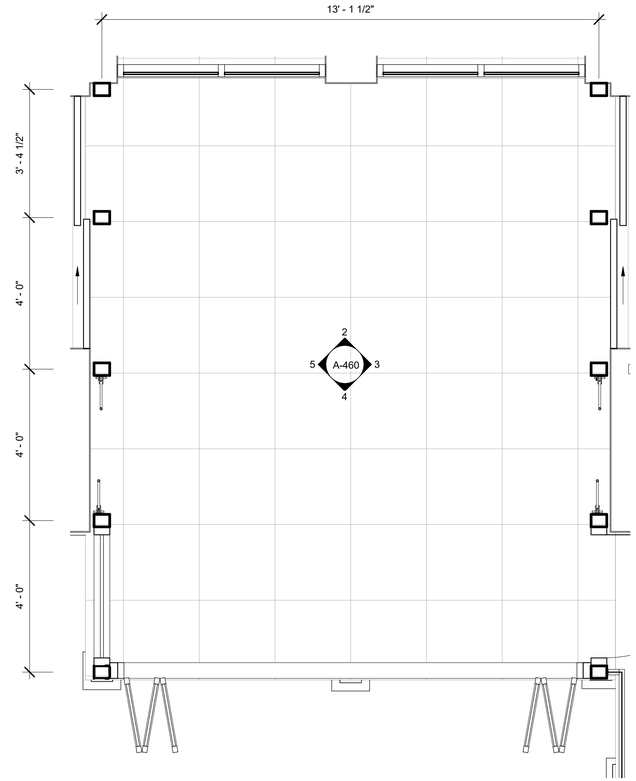


3 COURTYARD B - LOOKING EAST
1/2" = 1'-0"



4 COURTYARD C - LOOKING SOUTH
1/2" = 1'-0"

2 COURTYARD A - LOOKING NORTH
1/2" = 1'-0"



1 CALLOUT COURTYARD
1/2" = 1'-0"

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ENLARGED COURTYARD PLAN & ELEVATIONS

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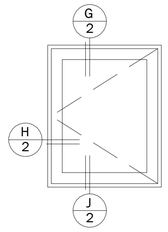
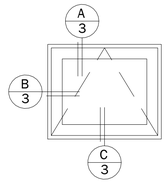
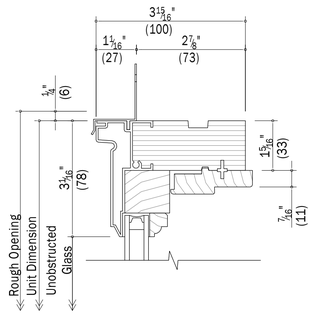


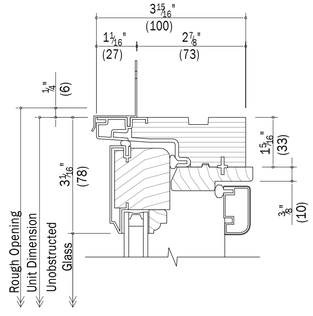
Casement



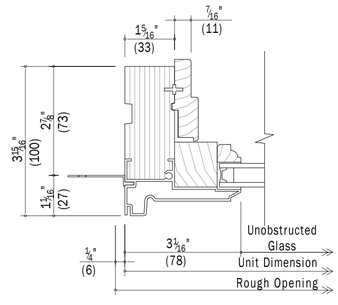
Awning



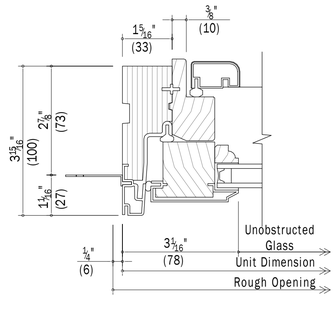
A 2 Head
1 Piece Stationary



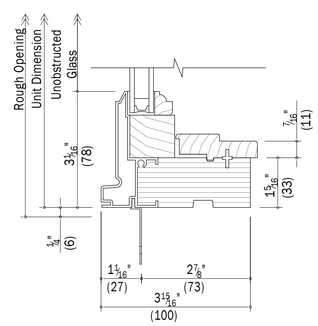
G 3 Head
Push Out Awning



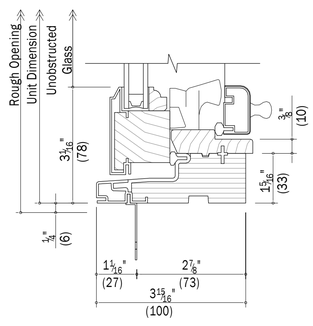
B 2 Jamb
1 Piece Stationary



H 3 Jamb
Push Out Awning



C 2 Sill
1 Piece Stationary



J 3 Sill
Push Out Awning

ANDERSEN CASEMENT AND AWNING WINDOWS

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WINDOW DETAIL

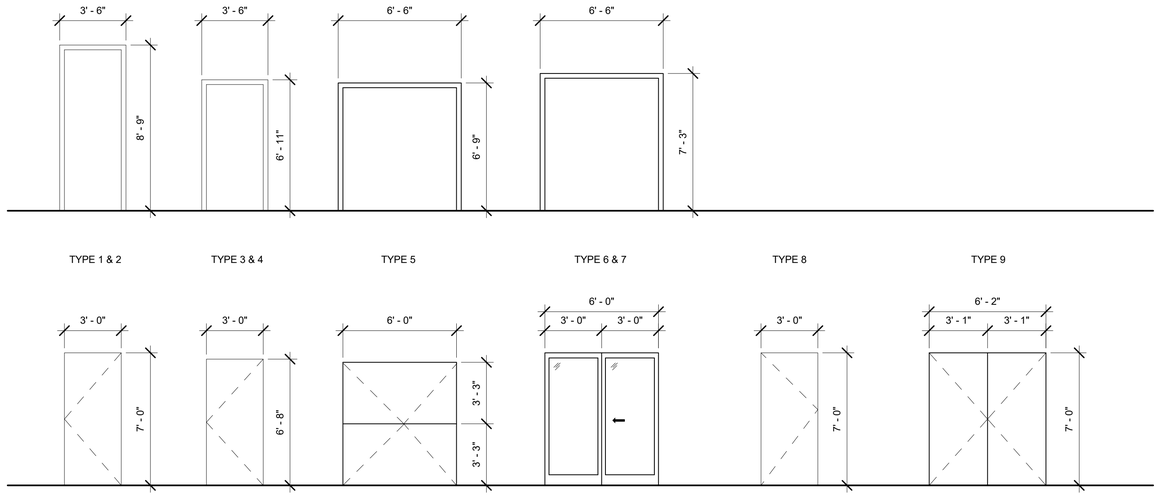
A-510

DOOR SCHEDULE

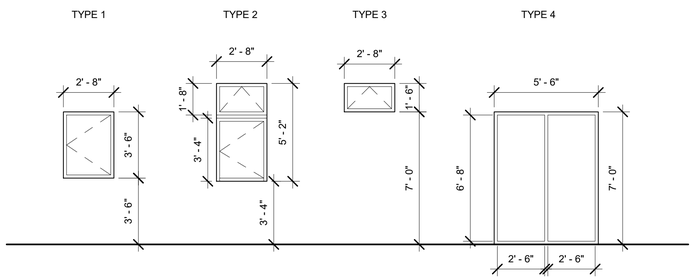
DOOR								FRAME				HARDWARE			
TYPE	LOCATION	WIDTH	HEIGHT	THICKNESS	MATERIAL	DOOR FINISH	OPERATION	TYPE	MATERIAL	FINISH	DETAIL	HW SET	HW FUNCTION	FIRE RATING	COMMENTS
1	LIVING ROOM	3'-0"	7'-0"	1.43"	WOOD	STAIN	RIGHT HAND	1	WD	STAIN	-	1	PASSAGE	-	
1	RESTROOM	3'-0"	7'-0"	1.43"	WOOD	STAIN	RIGHT HAND	1	WD	STAIN	-	1	PRIVATE	-	
2	DINING ROOM	3'-0"	7'-0"	1.43"	WOOD	STAIN	LEFT HAND	1	WD	STAIN	-	1	PASSAGE	-	
3	STUDY	3'-0"	6'-8"	1.43"	WOOD	STAIN	LEFT HAND	1	WD	STAIN	-	2	PRIVATE	-	
3	RESTROOM	3'-0"	6'-8"	1.43"	WOOD	STAIN	LEFT HAND	1	WD	STAIN	-	2	PRIVATE	-	
4	BEDROOM	3'-0"	6'-8"	1.43"	WOOD	STAIN	RIGHT HAND	1	WD	STAIN	-	2	PRIVATE	-	
5	MECHANICAL ROOM	6'-6"	6'-0"	-	STEEL	-	VERTICAL BI-FOLD	2	-	-	-	3	PASSAGE	-	
6	COURTYARD	3'-0" (2)	7'-0"	-	ALUMINUM	-	SLIDING	3	-	-	-	4	PASSAGE	-	SAFETY GLAZED
7	COURTYARD	3'-0" (2)	7'-0"	-	ALUMINUM	-	SLIDING	3	-	-	-	4	PASSAGE	-	SAFETY GLAZED
8	COURTYARD	3'-0"	7'-0"	-	ALUMINUM	-	LEFT HAND	4	-	-	-	5	PASSAGE	-	SAFETY GLAZED
9	COURTYARD	6'-0" (2)	7'-0"	-	ALUMINUM	-	HORIZ. BI-FOLD	5	-	-	-	6	PASSAGE	-	SAFETY GLAZED
9	COURTYARD	6'-0" (2)	7'-0"	-	ALUMINUM	-	HORIZ. BI-FOLD	5	-	-	-	6	PASSAGE	-	SAFETY GLAZED

WINDOW SCHEDULE

MARK	QNTY.	ROUGH OPENING WIDTH	HEIGHT	WINDOW TYPE	MANUFACTURER	MODEL	MATERIAL	GLAZING THICKNESS	GLAZING TYPE	HEAD HEIGHT	COMMENTS
DWELLING AREA											
1	1	2'-8"	3'-6"	CASEMENT	ANDERSEN	400 SERIES	WOOD INTERIOR, VINYL CLAD EXTERIOR	0.12"	LOW-E4 SMARTSUN™ GLASS	7'-0"	-
2	3	2'-8"	5'-2"	CASEMENT	ANDERSEN	400 SERIES	WOOD INTERIOR, VINYL CLAD EXTERIOR	0.12"	LOW-E4 SMARTSUN™ GLASS	8'-6"	-
3	5	2'-8"	1'-6"	PUSH OUT AWNING	ANDERSEN	400 SERIES	WOOD INTERIOR, VINYL CLAD EXTERIOR	0.12"	LOW-E4 SMARTSUN™ GLASS	8'-6"	NOT OPERABLE
4	2	5'-6"	7'-0"	CASEMENT	ANDERSEN						
5	2	1'- 2 1/2"	4'-0"	SUNTUBE	VELUX	TLR	ALUMINUM FRAME	-	LOW-E4 SMARTSUN™ GLASS	-	-
6	2	2'-7"	4'-7"	SKYLIGHT	VELUX	VSE	WOOD FRAME, ALUMINUM CAP	-	LOW-E4 SMARTSUN™ GLASS	-	NOT OPERABLE
COURTYARD											
7	6	3'-5"	2'-7"	SKYLIGHT	VELUX	MODULAR RIDGELIGHT	ALUMINUM FRAME	1/2"	TBD	-	COMFORT VENTILATION
8	3	2'-8"	3'-0"	SKYLIGHT	VELUX	MODULAR RIDGELIGHT	ALUMINUM FRAME	1/2"	TBD	-	COMFORT VENTILATION
9	6	3'-5"	2'-7"	SKYLIGHT	VELUX	FIXED	ALUMINUM FRAME	1/2"	TBD	-	NOT OPERABLE
10	2	2'-8"	3'-0"	SKYLIGHT	VELUX	FIXED	ALUMINUM FRAME	1/2"	TBD	-	NOT OPERABLE
11	2	3'-8"	1'-8"	CASEMENT			ALUMINUM FRAME	1/2"	TBD	-	
12	2	3'-8"	7'-0"	CASEMENT			ALUMINUM FRAME	1/2"	TBD	-	
13	1	VARIES	VARIES	CASEMENT			ALUMINUM FRAME	1/2"	TBD	-	TRIANGULAR CASEMENT
14	1	13'-0"	1'-6"	CASEMENT			ALUMINUM FRAME	1/2"	TBD	-	



1 DOOR ELEVATIONS
1/4" = 1'-0"



2 WINDOW ELEVATIONS
1/4" = 1'-0"

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DOOR & WINDOW SCHEDULE

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MATERIAL SCHEDULE

SYMBOL	ITEM	MANUFACTURER	NAME	COLOR/FINISH	SIZE	COMMENTS
INTERIOR MATERIALS						
FLOORING						
HW-1	HARD WOOD	US FLOORS	NATURAL BAMBOO TRADITIONS	ENDURA AR UV-CURED ALUMINUM OXIDE	3-3/4" PLANK	GREENGUARD GOLD CERTIFIED FOR INDOOR AIR QUALITY SUSTAINABLE AND RAPIDLY RENEWABLE
T-1	CERAMIC TILE	STONEPEAK CERAMICS	AREA 3D	AREA LIGHT	2' x 2'	ABILITY OF MATERIAL TO RESIST SURFACE WEAR
T-2	CERAMIC PAVERS	STONEPEAK CERAMICS	AREA 3D	AREA LIGHT	2' x 2'	ABILITY OF MATERIAL TO RESIST SURFACE WEAR
BASE						
B-1	HARD WOOD	US FLOORS	NATURAL BAMBOO TRADITIONS	ENDURA AR UV-CURED ALUMINUM OXIDE	-	GREENGUARD GOLD CERTIFIED FOR INDOOR AIR QUALITY SUSTAINABLE AND RAPIDLY RENEWABLE
B-2	CERAMIC TILE	STONEPEAK CERAMICS	AREA 3D	AREA LIGHT	-	ABILITY OF MATERIAL TO RESIST SURFACE WEAR
TRANSITIONS						
FT-1	HARD WOOD	US FLOORS	NATURAL BAMBOO TRADITIONS	ENDURA AR UV-CURED ALUMINUM OXIDE	-	GREENGUARD GOLD CERTIFIED FOR INDOOR AIR QUALITY SUSTAINABLE AND RAPIDLY RENEWABLE
WALLS						
GYP-1	GYPSUM BOARD	AMERICAN GYPSUM	FIREBLOC TYPE X	-	1/2" THICK	1-HOUR FIRE RATED
CT-1	CERAMIC TILE	FIRE CLAY TILE	TBD	TBD	TBD	KITCHEN BACKSPLASH & BATHROOM SHOWER; PATTERN TBD
PNT-1	PAINT - EGG SHELL	BENJAMIN MOORE	NATURA	WHITE/EGG SHELL - ACRYLIC LATEX	-	ZERO VOC (VOLATILE ORGANIC COMPOUNDS ACCORDING TO EPA METHOD 24 & CERTIFIED ASTHMA AND ALLERGY FRIENDLY
CEILINGS						
GYP-1	GYPSUM BOARD	AMERICAN GYPSUM	FIREBLOC TYPE X	WHITE	1/2" THICK	1-HOUR FIRE RATED
PNT-1	PAINT - EGG SHELL	BENJAMIN MOORE	NATURA	WHITE/EGG SHELL - ACRYLIC LATEX	-	ZERO VOC (VOLATILE ORGANIC COMPOUNDS ACCORDING TO EPA METHOD 24 & CERTIFIED ASTHMA AND ALLERGY FRIENDLY
CASEWORK						
C-1	COUNTERTOP	LG	HAUSYS-HI-MACS EDEN PLUS	-	1/2" THICK	12% RECYCLED CONTENT
EXTERIOR MATERIALS						
ROOF						
SS-1	STANDING SEAM	PAC-CLAD	SNAP CLAD PANELS	-	-	
WALLS						
CS-1	CORRUGATED STEEL	PAC-CLAD	CORRUGATED METAL PANELS	-	1-1/2" DEEP	
WC-1	WOOD CLADDING	LAMBOO	EXTERIOR GRADE BAMBOO	-	3/4" THICK	USDA CERTIFIED BIOBASED PRODUCT
DECK						
D-1	WOOD DECKING	LAMBOO	EXTERIOR GRADE BAMBOO	-	-	

INTERIOR FINISH SCHEDULE

ROOM NO.	ROOM NAME	FLOOR	BASE	WALLS				CEILING	COMMENTS
				NORTH	SOUTH	SOUTH	WEST		
100	BEDROOM	HW-1	B-1	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	
101	BEDROOM/STUDY	HW-1	B-1	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	
102	BATHROOM	T-1, T-2	T-1, T-2	GYP-1 & CT-1	GYP-1 & CT-1	GYP-1	GYP-1 & CT-1	GYP-1	
103	KITCHEN	T-1	B-1	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	
104	DINING ROOM	HW-1	B-1	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	
105	LIVING ROOM	HW-1	B-1	PL-1	PL-1	PL-1	PL-1	GYP-1	
106	CORRIDOR	T-1	B-2	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	
107	COURTYARD	T-2	-	-	-	-	-	GYP-1	
108	MECH ROOM	T-3	B-2	GYP-1	GYP-1	GYP-1	GYP-1	GYP-1	

EXTERIOR MATERIAL SCHEDULE

ELEVATION	WALL	DECK	COMMENTS
SOUTH	CS-1, WC-1	D-1	
NORTH	CS-1, WC-1	D-1	
EAST	CS-1, WC-1	D-1	
WEST	CS-1, WC-1	D-1	

UNIVERSITY OF MARYLAND
COLLEGE PARK, MD 20742

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UNIVERSITY OF MARYLAND, COLLEGE PARK
SOLAR DECATHLON 2017 SUBMISSION

Date	Description

PROJECT NO. Project Number
DESIGNED Author
CHECKED Checker

MATERIAL SCHEDULE

A-601

FIRE SUPRESSION NOTES

1. SPRINKLERS SYSTEMS ARE DESIGNED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS, IBC NJ 2009, NFPA-13D 2007 EDITION AND NJ UNIFORM CONSTRUCTION CODE.
2. ALL HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH NFPA-13D.
3. ALL MAIN, BRANCH PIPING AND FITTING 2" AND SMALLER TO BE CPVC ASTM F-442.
4. SPRINKLER HEADS TO BE RESIDENTIAL TYPE WHITE RECESSED UNLESS OTHERWISE NOTED.
5. OWNER'S NOTE: IT IS THE OWNER'S RESPONSIBILITY TO ENSURE THAT A MINIMUM OF 40° fAHRENHEIT IS MAINTAINED THROUGHOUT THE ENTIRE BUILDING WHERE WET SPRINKLER PIPING AND VALVE ASSEMBLIES ARE INSTALLED.
6. SMOKE ALARMS WILL BE PROVIDED PRIMARILY FROM THE BUILDING WIRING WITH BATTERIES AS BACKUPS.
7. SMOKE ALARMS WILL BE TIED TOGETHER SO THAT WHEN ONE ALARM IS TRIGGERED ALL ALARMS IN THE BUILDING WILL GO OFF.
8. FIRE EXTINGUISHERS HAVE MINIMUM RATING OF 2A-10BC.
9. FIRE SUPPRESSION WATER DISTRIBUTION PIPES WERE SIZED BY DETERMINING THE AVAILABLE PRESSURE TO OFFSET FRICTION LOSS IN PIPING AND IDENTIFYING A PIPING MATERIAL, DIAMETER, AND LENGTH USING THE EQUATION IN SECTION P2094.6.2 OF THE 2012 IRC.
10. ALL PIPING, FIXTURES, FITTINGS AND SPRINKLER HEADS MUST COMPLY WITH THE LEAD FREE REQUIREMENTS OF AB1953. ALL OF THE ABOVE NOTED ITEMS ARE NOT PERMITTED TO EXCEED 0.25% LEAD CONTENT. IF THESE REQUIREMENTS ARE NOT ABLE TO BE MET WITH THE CURRENTLY UTILIZED MATERIAL A SEPARATE PIPE FEEDING ALL POTABLE WATER FIXTURES MUST BE INSTALLED AND SEPARATED FROM THE NON AB1953 COMPLIANT MATERIAL.
11. "STAND ALONE" OR "MULTI-PURPOSE, WET PIPE" SYSTEMS ARE NOT PERMITTED TO USE ANTI-FREEZE, 2010 CRC R313.3.1.
12. SYSTEM MUST COMPLY WITH NFPA 13D, OR R313.3, WHICH IS CONSIDERED TO BE EQUIVALENT.
13. MODIFICATIONS ARE PROHIBITED. SPRINKLERS THAT HAVE BEEN PAINTED, CAULKED, MODIFIED OR DAMAGED MUST BE REPLACED. 2010 CRC R313.3.2.6.
14. WATER SHUT OFF VALVE IS NOT PERMITTED, 2010 CRC R313.3.2.
15. OWNERS MANUAL MUST BE PROVIDED TO THE OWNER, 2010 CRC R313.3.7.
16. MINIMUM SPACING BETWEEN SPRINKLERS IS 7'-0" REFER TO SPACING CHARTS FOR MAXIMUM SPACING BETWEEN SPRINKLERS AND FROM WALLS.
17. SPRINKLERS ARE NOT NECESSARILY CENTERED IN ROOMS DUE TO LIGHT FIXTURES OR OTHER CEILING MOUNTED OBSTRUCTIONS.

INSULATION GUIDE LINES PER NFPA 13D

- 8.3.1* WET PIPE SYSTEMS. A WET PIPE SYSTEM SHALL BE PERMITTED TO BE USED WHERE ALL PIPING IS INSTALLED IN AREAS MAINTAINED ABOVE 40°F, INCLUDING AREAS PROPERLY INSULATED TO MAINTAIN 40°F.
- 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 8.6 LOCATION OF SPRINKLERS
- 8.6.1 SPRINKLERS SHALL BE INSTALLED IN ALL AREAS EXCEPT WHERE OMISSION IS PERMITTED BY 8.6.2 THROUGH 8.6.7.
- 8.6.2 SPRINKLERS SHALL NOT BE REQUIRED IN BATHROOMS OF 55 FT2 AND LESS.
- 8.6.3 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 FT2.
  2. THE LEAST DIMENSION DOES NOT EXCEED 3 FT.
  3. THE WALLS AND CEILINGS ARE SURFACED WITH NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIALS AS DEFINED IN NFPA 220, STANDARD ON TYPES OF BUILDING CONSTRUCTION.
- 8.6.4 SPRINKLERS SHALL NOT BE REQUIRED IN GARAGES, OPEN ATTACHED PORCHES, CARPORTS, AND SIMILAR STRUCTURES.
- 8.6.5 SPRINKLERS SHALL NOT BE REQUIRED IN ATTICS, 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.
- 8.6.6 SPRINKLERS SHALL NOT BE REQUIRED IN COVERED UNHEATED PROJECTIONS OF THE BUILDING AT ENTRANCES/EXITS AS LONG AS THERE IS ANOTHER MEANS OF EGRESS FROM THE DWELLING UNIT.
- 8.6.7 SPRINKLERS SHALL NOT BE REQUIRED FOR CEILING POCKETS THAT MEET THE FOLLOWING CONDITIONS:
  1. THE TOTAL VOLUME OF UNPROTECTED CEILING POCKET DOES NOT EXCEED 100 FT3
  2. THE ENTIRE FLOOR UNDER THE UNPROTECTED VEILING 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 OF 10 FT HORIZONTAL DISTANCE.
  4. THE INTERIOR FINISH OF THE UNPROTECTED CEILING POCKET IS NONCOMBUSTIBLE OR LIMITED-COMBUSTIBLE MATERIAL.
  5. SKYLIGHTS NOT EXCEEDING 32 FT2 SHALL BE PERMITTED TO HAVE A PLASTIC COVER

(MOST DEMANDING AREA)

HYDRAULIC INFORMATION
HAZARD CLASS NFPA-13D
SYSTEM AREA 2 HDS
DENSITY 0.05 GPM
AREA PER SPRK 18X18 SPRK COVERAGE
PLUMB. DEMAND 0 GPM (SEPARATE SUPPLY)

TOTAL SYSTEM REQUIREMENTS
GALLON PER MINUTE 34.486 GPM
WATER PSI 41.794 PSI
AT STREET CONNECTION (TEST)

WATER SUPPLY INFORMATION
STATIC PRESSURE 60 PSI
RESIDUAL PRESSURE 52 PSI
GPM FLOWING 856 GPM

WATERFLOW TEST INFO
STATIC= 60 PSI
RESIDUAL= 52 PSI
FLOW RATE= 856 GPM
DATE: 12/5/2014
INFO BY: QUICK RESPONSE FIRE PROTECTION
LOCATION: OCEAN AVE/BLAINE AVENUE
SEASIDE HEIGHTS, NEW JERSEY

FIRE SPRINKLERS CODE REQUIREMENTS
R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SYSTEMS. AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN ON- AND 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 ANTIFREEZE. 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.FIRE SPRINKLERS CODE REQUIREMENTS
R313.2 ONE- AND TWO-FAMILY DWELLINGS AUTOMATIC FIRE SYSTEMS. AN AUTOMATIC RESIDENTIAL FIRE SPRINKLER SYSTEM SHALL BE INSTALLED IN ON- AND 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 ANTIFREEZE. 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 SPRINKLERS SHALL NOT BE REQUIRED IN THE REMAINDER OF THE SPACE.
2. CLOTHES CLOSETS, LINEN CLOSETS AND PANTRIES NOT EXCEEDING 24 SQUARE FEET IN AREA, WITH THE SMALLEST DIMENSION NOT GREATER THAN 3 FEET AND HAVING WALL AND CEILING SURFACES OF GYPSUM BOARD.
3. BATHROOMS NOT MORE THAN 55 SQUARE FEET IN AREA.
4. GARAGES; CARPORTS; EXTERIOR PORCHES; UNHEATED ENTRY AREAS, SUCH AS MUD ROOMS, THAT ARE ADJACENT TO AN EXTERIOR DOOR; AND SIMILAR AREAS.EXCEPTIONS:

P2904.2 SPRINKLERS
SPRINKLERS SHALL BE NEW 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 SQUARE FEET AND SHALL BE BASED ON THE SPRINKLER LISTING AND THE SPRINKLERS 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 SPRINKLER ARE 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 PART OF THE COLD WATER DISTRIBUTION PIPING SYSTEM.

P2904.3.1 NONMETALLIC PIPE AND TUBING.
NONMETALLIC PIPE AND TUBING SUCH AS CPVC, PEX AND PE-RT SHALL BE LISTED FOR USE IN RESIDENTIAL FIRE SPRINKLER SYSTEMS.

P2904.3.1.1 NONMETALLIC PIPR PROTECTION
NON METALLIC PIPE AND TUBING SYSTEMS SHALL BE PROTECTED FROM EXPOSURE TO THE LIVING SPACE BY A LATER OF NOT LESS THAN ⅜-INCH-THICK-GYPSUM WALLBOARD, ⅛-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 SHOULD 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 P2904.6.

P2904.5 WATER SUPPLY
THE WATER SUPPLY SHALL PROVIDE NOT LESS THAN THE REQUIRED DESIGN FLOW RATE FOR THE SPRINKLERS IN ACCORDANCE WITH THE 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 FIXTURE SHALL NOT BE REQUIRED TO THE SPRINKLER DESIGN FLOW.

P2904.7 INSTRUCTIONS AND SIGNS
AN OWNER'S MANUAL FOR THE SPRINKLER SYSTEM SHALL BE PROVIDED TO THE OWNER, A SIGN OR VALVE TAG SHALL BE UNISTALLED 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 FOR SPRINKLER SYSTEMS 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 PATTERN ARE OBSTRUCTED BY CONSTRUCTION FEATURES, LUMINARIES OF CEILING FANS , ADDITIONAL SPRINKLERS ARE INSTALLED AS REQUIRED BY SECTION P2904.2.4.2

SPRINKLERS ARE THE CORRECT TEMPERATURE RATING AND ARE INSTALLED AT OR BEYOND THE REQUIRED SEPARATION DISTANCES FROM HEAT SOURCES AS REQUIRED BY SECTION P2904.2.1 AND P2904.2.2.
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 THE SECTION PS904.6.1, THE SIZE USED IN THE HYDRAULIC CALCULATION.
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.
NONMETALLIC PIPING THAT CONVEYS WATER TO SPRINKLERS IS LISTED FOR USE WITH FIRE SPRINKLERS.
PIPING IS SUPPORTED IN ACCORDANCE WITH THE PIPE MANUFACTURER'S AND SPRINKLER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
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:
SPRINKLERS ARE NOT PAINTED, DAMAGED OR OTHERWISE HINDERED FROM OPERATION.
WHERE A PUMP IS REQUIRED TO PROVIDE WATER TO THE SYSTEM, THE PUMP STARTS AUTOMATICALLY UPON SYSTEM WATER DEMAND.
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.
THE SIGN OR VALVE TAG REQUIRED BY SECTION P2904.7 IS INSTALLED AND THE OWNER'S MANUAL FOR THE SYSTEM IS PRESENT.

SMOKE ALARMS
R314.2 SMOKE DETECTION SYSTEMS.
HOUSEHOLD FIRE ALARM SYSTEMS INSTALLED IN ACCORDANCE WITH THE 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:
IN EACH SLEEPING ROOM.
OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.

R314.4 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.

R314.5 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.

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.

R315.2 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 72, 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.

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.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.

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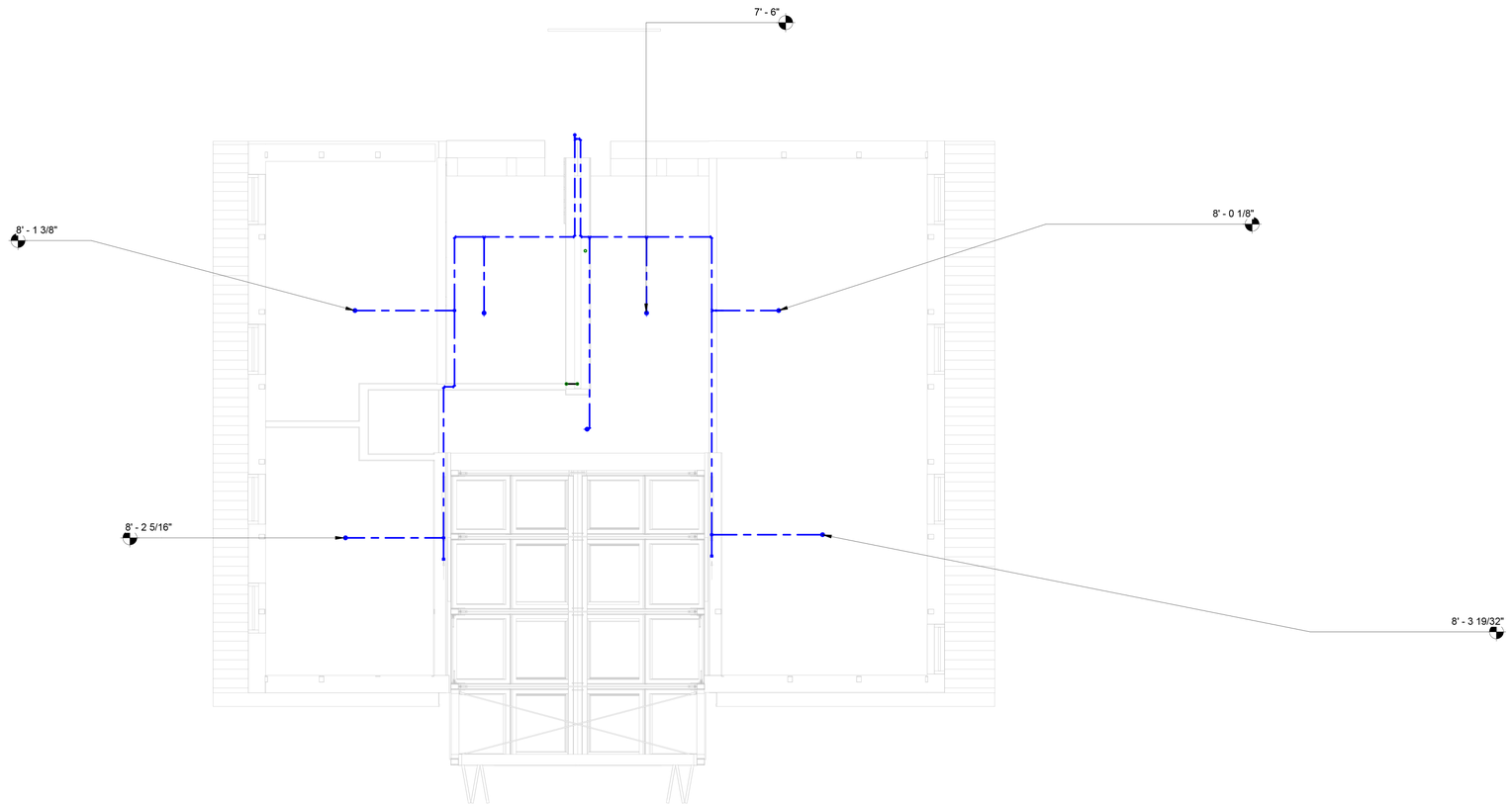
DESIGNED Author
CHECKED Checker

FIRE PROTECTION NOTES & SYMBOLS

F-001



1 - Ceiling Sprinkler
1/4" = 1'-0"

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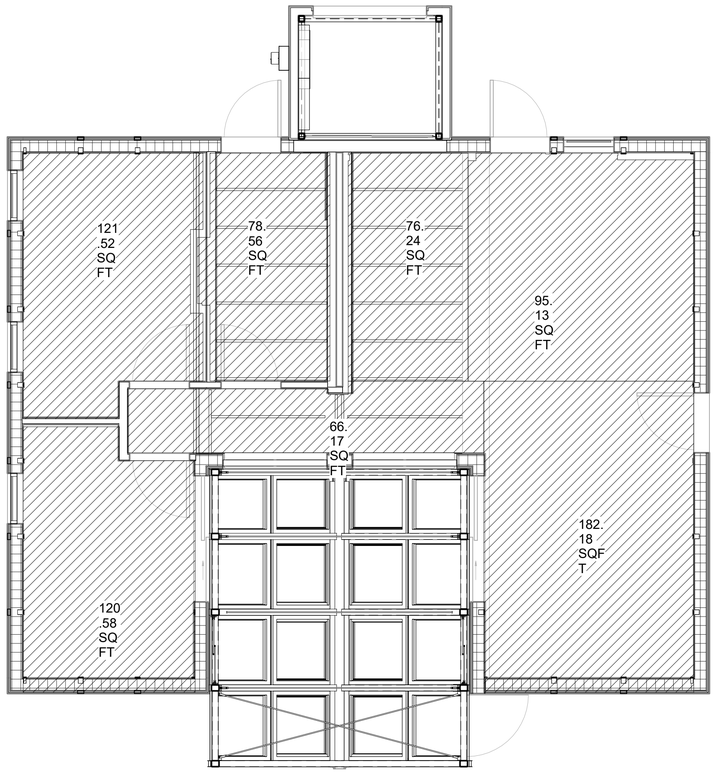
FIRE DETECTION & ALARM

F-101



1 FIRE SUPRESSION COVERAGE
1/4" = 1'-0"

FIRE SUPRESSION OVERAGE PLAN
12" = 1'-0"

FIRE SUPRESSION COVERAGE GENERAL NOTES

FIRE SUPRESSION COVERAGE SHEET NOTES

1. HATCHED AREA INDICATES EXTENT OF SPRINKLER COVERAGE

FIRE SUPRESSION COVERAGE PLAN LEGEND

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FIRE SUPPRESSION COVERAGE

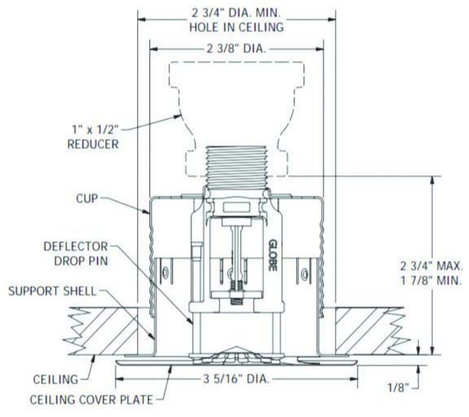
F-102

FIRE PROTECTION SCHEDULE

MANUFACTURER	MODEL	K FACTOR	THREAD SIZE	LENGTH	PLATE FINISH	COMMENTS
GLOBE FIRE SPRINKLER CORPORATION	GL4906	4.9	1/2" NPT	3"	WHITE PAINTED	-

SPRINKLER COVERAGE

SPRINKLER TEMPERATURE 155º	MAX. AREA OF COVERAGE (feet)	MIN. PRESSURE (psi)	MIN. FLOW (gpm)	MIN. DISTANCE BETWEEN SPRINKLERS
X	12' x 12'	7.00	13	9 FEET
X	14' x 14'	7.00	13	
X	16' x 16'	7.00	13	
X	18' x 18'	12.00	17	
X	20' x 20'	16.70	20	



1 FIRE SPRINKLER SECTION
12" = 1'-0"

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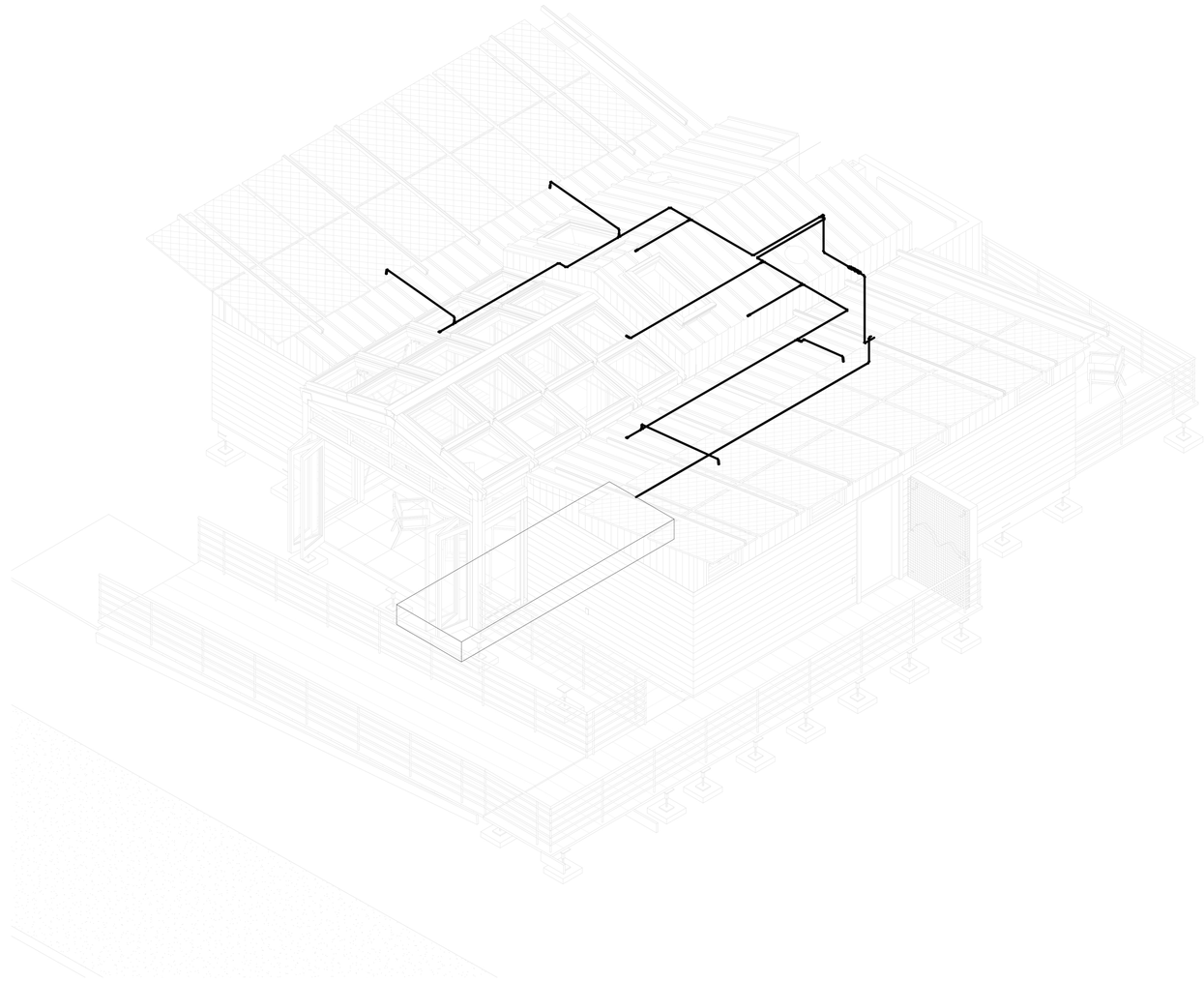
FIRE PROTECTION SCHEDULES

F-600



1 SPRINKLER ISOMETRIC

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SPRINKLER ISOMETRIC

F-901

R.322.1.7 PROTECTION OF WATER SUPPLY AND SANITARY SEWAGE SYSTEMS
NEW AND REPLACEMENT WATER SUPPLY SYSTEMS SHALL BE DESIGNED TO MINIMIZE OR ELMINATE 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 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 MERVURY COLUMN (34 KPS). 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 A PUNGENT, THICK 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
WHERER 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 ,EASURED 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 AND P2503.8.2

P2902.3 BACKFLOW PREVENTION
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 1012 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 WALL. 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 JOINT 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 CONCEALED SLIP-JOINT CONNECTIONS SHLL 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.

P2705.1 INSTALLATION
THE INSTALLATION OF FIXTURES SHALL CONFORM TO THE FOLLOWING:

1). FLOOR- OUTLETS OR FLOOR- MOUNTED FIXTURES SHALL BE SECURED TO THE DRAINAGE CONNECTION AND TO THE FLOOR, WHERE SO DESIGNED, BY SCRES, BOLTS, WASHERS, NUTS AND SIMILAR FASTENERS OF COPPPER, BRASS OR OTER CORROSION- RESISTANT MATERIAL.
2). WALL- HUNG FIXTURES SHALL BE RIGIDLY SUPPORTED SO THAT STAIN 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 OPERSTION 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 A 112.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.

SHOWERS
P2708.1 SHOWERS
SHOWER COMPARTMENTS SHALL HAVE NOT LESS THAN 900 SQUARE INCHES OF INTERIOR CROSS-SECTIONAL AREA. SHOWER COMPARTMENTS SHAL BE NOT LESS THAN 30 INCHES IN MINIMUM DIMENSION MEASURED FROM THE FINISHED INTERIOR DIMENSION MEASURED FROM THE FINISHED INTERIOR DIMENSION OF THE SHOWER COMPARTMENT, EXCLUSIVE OF FIXTURE VALVES, SHOWER HEADS, SOAP DISHES, AND SAFETY GRAB BARS OR RAILS. THE MINIMUM REQUIRED AREA AND DIMENSION SHALL BE MEASURED FROM THE FINISHED INTERIOR DIMENSION AT A HEIGHT EQUAL TO THE TOP OF THE THRESHOLD AND AT A POINT TANGENT TO ITS CENTERLINE AND SHALL BE CONTINUED TO A HEIGHT OF NOT LESS THAN 70 INCHES ABOVE THE SHOWER DRAIN OUTLET. HINGED SHOWER DOORS SHALL OPEN OUTWARD.

P2708.3 SHOWER CONTROL VALVES
INDIVIDUAL SHOWER AND TUB/SHOWER COMBINATION VALVES SHALL BE EQUIPPED WITH CONTROL VALVES OF THE PRESSURE BALANCE, THERMOSTATIC- MIXING OR COMBINATION PRESSURE- BALANCE/ THERMOSTATIC- MIXING VALVE TYPES WITH A HIGH LIMIT STOP IN ACCORDANCE WITH ASSE 1016 OR ASME A112.18.1/ CSA B125.1. THE HIGH LIMIT STOP SHALL BE SET TO LIMIT THE WATER TEMPERATURE TO NOT GREATER THAN 120 DEGREE F. IN-LINE THERMOSTATIC VALVES SHALL NOT BE USED FOR COMPLIANCE WITH THIS SECTION.

P2709.1 SHOWER CONSTRUCTION
WHER A SHOWER RECPETOR HAS A FINISHED CURB THRESHOLD, IT SHALL BE NOT LESS THAN 1 INCH BELOW THE SIDES AND BACL OF THE RECEPTOR. THE CURB SHALL NOT BE 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 FOOR.

P2709.2 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 A 118.10.

THE LINING MATERIAL SHALL EXTEND NOT LESS THAN 2 INCHES BEYOND OR AROUND THE ROUGH JAMBS AND NOT LESS THAN 2 INCHES ABOVE THE FINISHED THRESHOLDS. SHEET- APPLIED LOAD BEARING, BONDED WATERPROOF MEMBRANES SHALL BE APPLIED IN ACCORFANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

P2709.2.4 LIQUID- TYPE, TROWEL-APPLIED, LOAD-BEARING, BONDED WATERPROOF MATERIALS
LIQUID- TYPE, TROWEL-APPLIED, LAD-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, ANDSHALL NOT BE NAILED OR PERFORATED AT ANY POINT LESS THAN 1 INCH ABOVE THE FINISHEDD THRESHOLD.

R307.2 BATHTUB AND SHOWER SPACES
BAHTTUB 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.

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 RESTICT THE CLEAR OPENING OF THE WASTE OUTLET.

P2712.1 WATER CLOSET
WATER CLOSET 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 TANK SHALL CONFORM TO ANSI Z124.4 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.

P2714.1 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 STAINER 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 NTEGRAL BACKFLOW PREVENTER.

P2717.2 SINK AND DISHWASHER
A SINK AND DISHWASHER ARE PERMITED TO DISCHARGE THROUGH A SINGLE 1-1/2-INCH TRAP. THE DISCHARGE PIPE FROM THE DISHWASHER SHALL BE INCREACED 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 IN STALLED APPLIANCES.

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 FIXTURES 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 FITTING AND FAUCETS THAT ARE SUPPLIED WITH BOTH HOT AND COLD WATER SHALL BE INSTALLED AND ADJUSTED SO THAT THE ;EFT-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 HOSE-CONNECTED OUTLETS SHALL CONFORM TO ASME A112.18.3 OR ASME A112.18.1/ CSA B125.1.

VENTILLATION
917.2 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 P2503.2 HAS BEEN PERFORMED.

917.3 BRANCH SIZE
HORIZONTAL BRANCHES CONNECTION 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 1½ INCH, CONNECTS TO A 2-INCH HORIZONTAL BRANCH, THE BRANCH DRAIN CONNECTION TO THE STACK SHALL BE MADE WITH A SANITARY FEE.

917.4 LENGTH OF HORIZONTAL BRANCHES
THE LENGTH OF HORIZONTAL BRANCHES SHALL CONFORM TO THE REQUIREMENTS OF SECTIONS 917.4.1 THROUGH 917.4.3.

917.4.1 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.

917.4.2 FIXTURE CONNECTIONS
FIXTURES OTHER THAN WATER CLOSETS SHALL BE LOCATED NOT GREATER THAN 12 FEET (3657 M) IN DEVELOPED LENGTH, MEASURED HORIZONTALLY FROM THE STACK.

917.4.3 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.

917.8 PROHIBITED LOWER CONNECTIONS
STACKS GREEATER 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.

P2801.5 REQUIRED PAN
WHERE A STORAGE TANK- TYPE WATER HEATER OR A HOT WATER STORAGE TANK IN INSTALLED IN A LOCATION WHERE WATER LEAKAGE FROM THE TANK WILL CAUSE DAMAGE, THE TANK SHALL BE INSTALLED WILL CAUSE DAMAGE, THE TANK SHALL BE INSTALLED IN A GALVANIZED STEEL PAN HAVING A MATERIAL THICKNESS OF NOT LESS THAN 0.0236 INCH (0.6010 MM) (NO. 24 GAGE), OR OTHER PANS APPROVED FOR SUCH USE. LISTED PANS SHALL COMPLY WITH CSA LC3

P2801.7 WATER HEATER SEISMIC BRACING
IN SIESMIC 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 AND IN THE LOWER ONE- THIRD OF THE APPLIANCE TO RESIST A HORIZONTAL FORCE EQUAL TO ONE- THIRD OF THE OPERATING WEIGHT OF THE WATER HEATER, ACTING IN ANY HORIZONTAL DIRECTION, OR IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S RECOMMENDATION.

P2705.1 GENERAL
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 RIGISLY 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 (381 MM) FROM ITS CENTER TO ANY SIDE WALL, PARTITION OR VANITY OR CLOSER TO ANY SIDE WALL,PARTITION OR VANITY OR CLOSER THAN 30 INCHES (762 MM) CENTER- TO-CENTER BETWEEN ADJACENT FIXTURES. THERE SHALL BE A CLEARANCE OF NOT LESS THAN 21 INCHES (533 MM) 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 AND 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.

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 (25.4 MM) ABOVE THE FINISHED THRESHOLD.

P3005.1 DRAINAGE FITTINGS AND CONNECTIONS
CHANGES IN DIRECTION IN DRAINAGE PIPING SHALL BE MADE BY THE APPROPRIATE USE OF SANITARY TEES, WYES, SWEEPS, BENDS OR BY A COMBINATION OF THESE DRAINAGE FITTINGS IN ACCORDANCE WITH TABLE P3005.1. CHANGE IN DIRECTION BY COMBINATION FITTINGS, HEEL OR SIDSE INLETS OR INCREASERS SHALL BE INSTALLED IN ACCORDANCE WITH TABLES P3005.1.4. BASED ON THE PATTERN OF FLOW CREATED BY THE FITTING.

TABLE P3005.1 FITTINGS FOR CHANGE IN DIRECTION

TYPE OF FITING PATTERN	CHANGE IN DIRECTION		
	HORIZ. TO VERT.	VERT. TO HORIZ.	HORIZ. TO HORIZ.
SIXTEENTH BEND	X	X	X
EIGHTH BEND	X	X	X
SIXTH BEND	X	X	X
QUARTER BEND	X	X[A]	X[A]
SHORT SWEEP	X	X[A,B]	X[A]
LONG SWEEP	X	X	X
SANITARY TEE	X	-	-
WYE	X[C]	X	X
COMBINATION WYE AND EIGHTH BEND	X	X	X

FOR SI: 1 INCH = 25.4 MM
A. THE FITTINGS SHALL ONLY BE OERMITTED FOR A 2-INCH OR SMALLER FIXTURE DRAIN.
B. THREE INCHES AND LARGER
C. FOR A LIMITATION ON MULTIPLE CONNECTION FITTINGS, SEE SECTION P3005.1.1.

PLUMBING ABBREVIATIONS

WFSU	WATER SUPPLY FIXTURE UNITS
DFU	DRAINAGE FIXTURE UNITS
VTR	VENT TO ROOF
DBP	DOMESTIC BOOSTER PUMP
SP	SUMP- PUMP
BA	BASIN
DHW	DOMESTIC HOT WATER
PWT	POTABLE WATER TANK
WWT	WASTE WATER TANK
ET	EXPANSION TANK
PM	PLUMBING MANIFORLD
WM	WASHING MACHINE
LAV	LAVATORY
SK	SINK
DW	DISHWASHER
SH	SHOWER
WC	WATER CLOSET

SYMBOLS

COLD WATER
HOT WATER
GATE VALVE
CHECK VALVE
BALL VALVE
PUMP
CLEANOUT
BREAK
HEAT TRAP
P-TRAP
SUMP PUMP
FLOOR DRAIN
TRANSITION (FLOOR PLAN)
DOUBLE CHECK VALVE
DUAL OUTLET SHUTOFF VALVE

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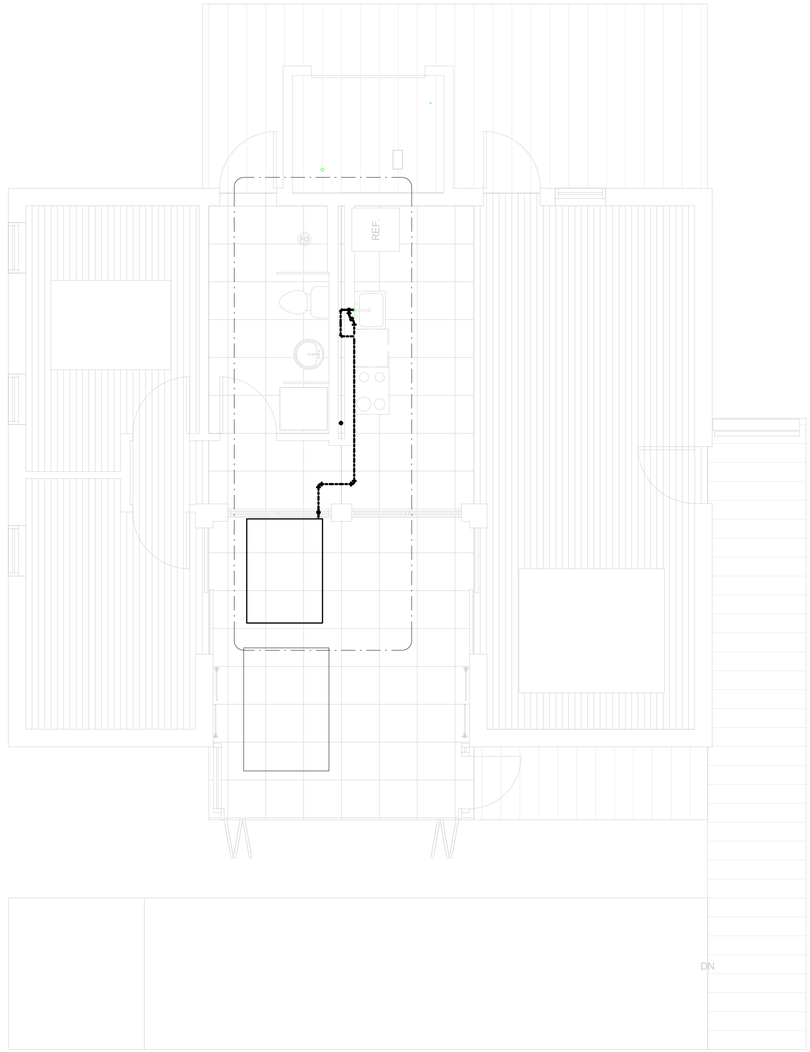
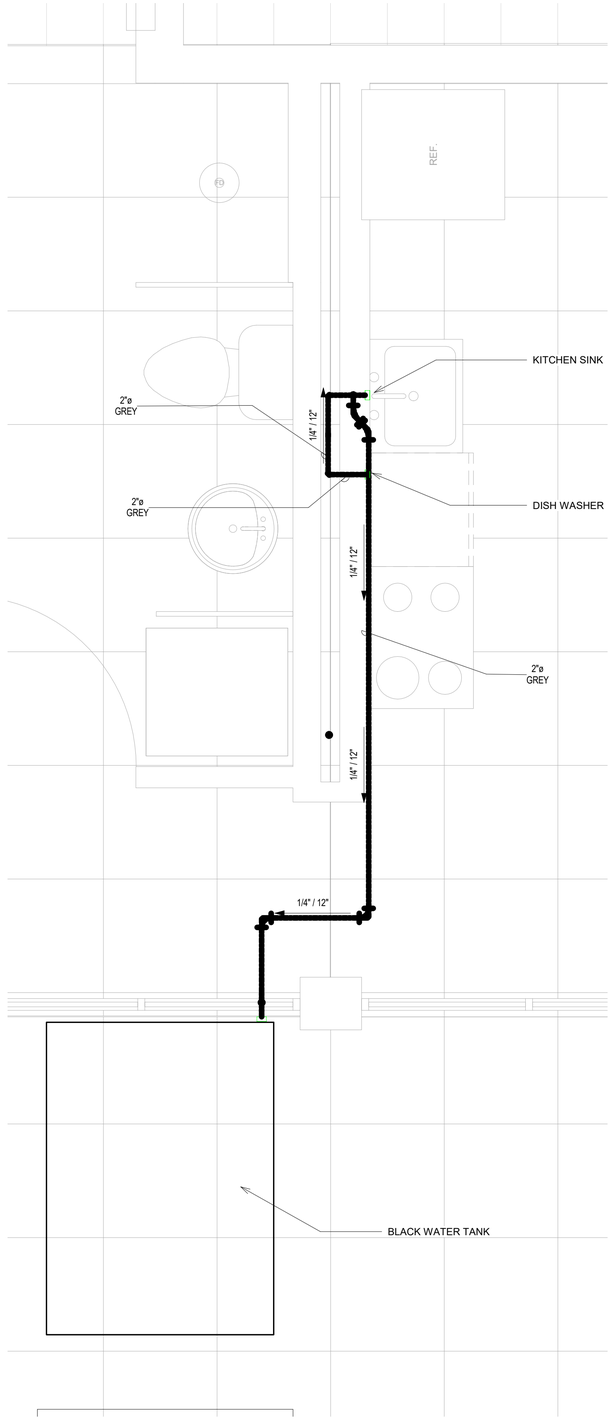
PLUMBING SYMBOLS AND NOTES

P-001



1 PLUMBING PLAN SANITARY
1/4" = 1'-0"



2 PLUMBING PLAN SANITARY CALLOUT
3/4" = 1'-0"

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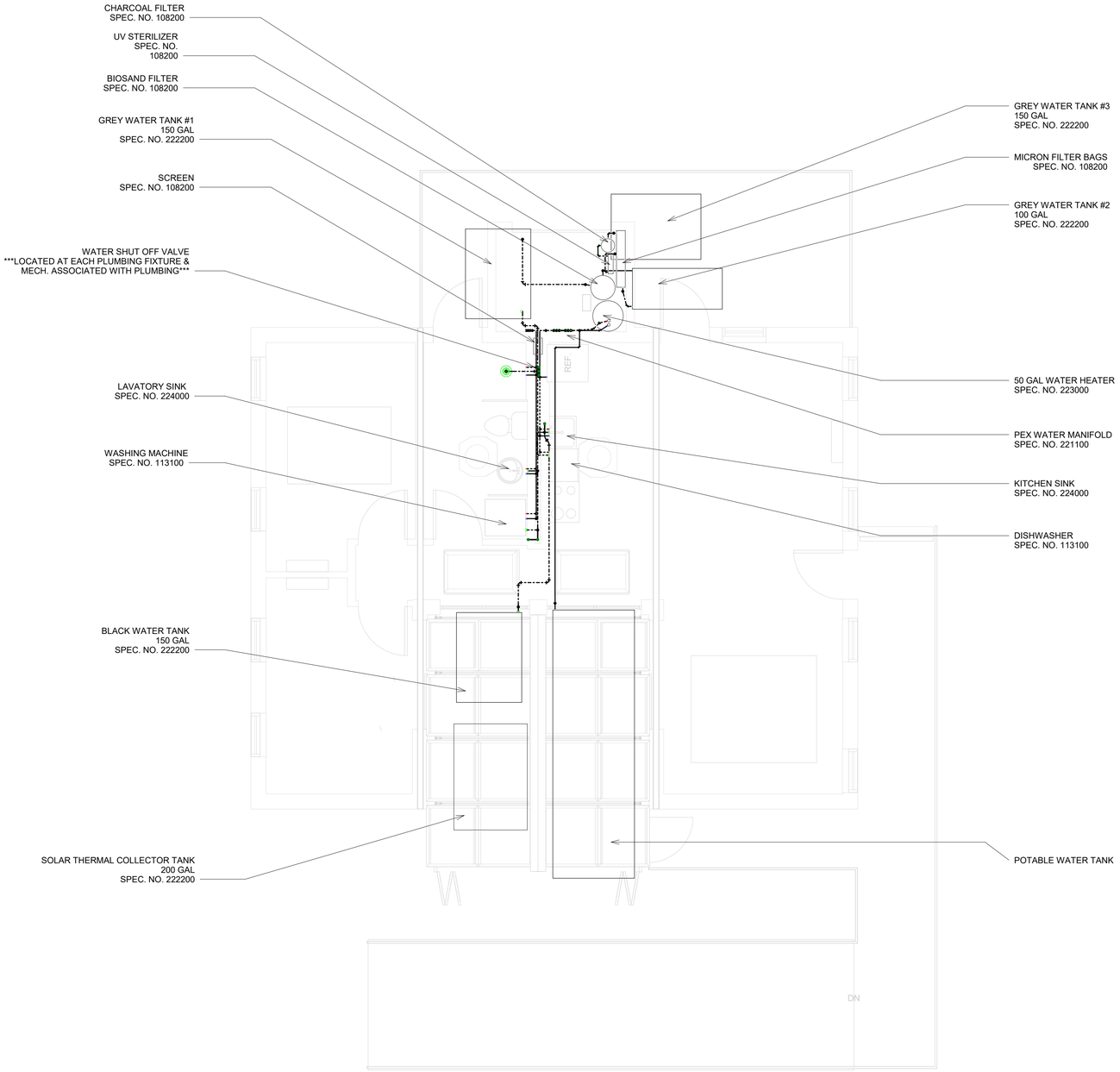
DOMESTIC SANITARY

P-005



1 PLUMBING
1/4" = 1'-0"

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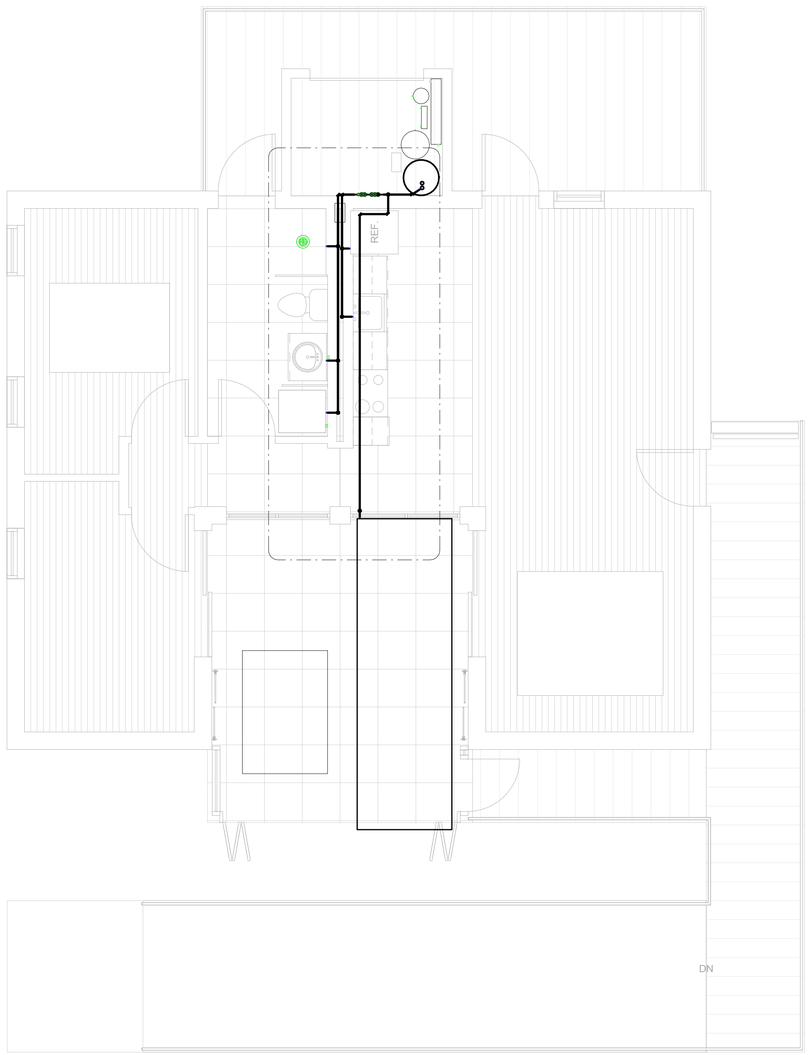
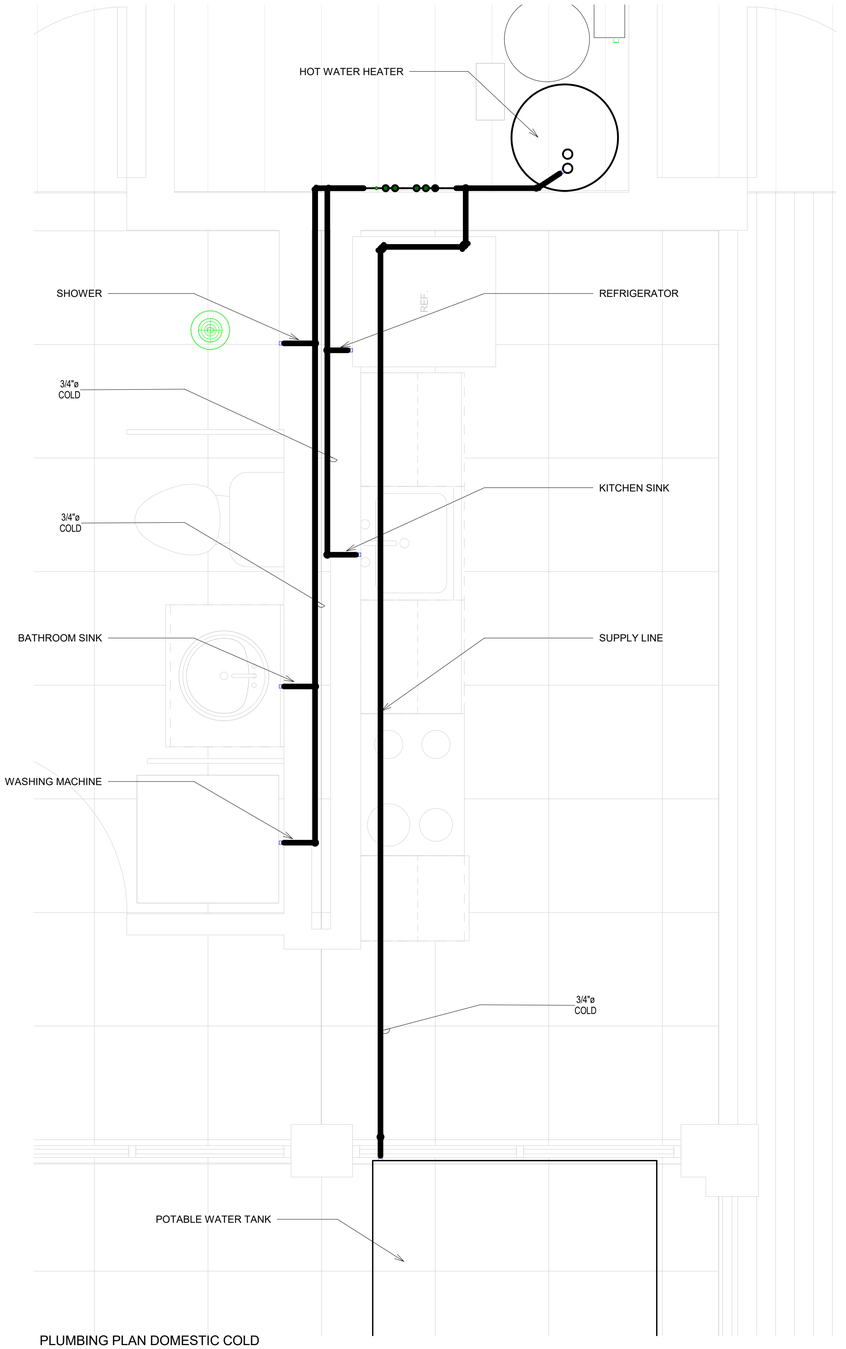
DOMESTIC SUPPLY

P-100



1 PLUMBING PLAN DOMESTIC COLD WATER
1/4" = 1'-0"



2 PLUMBING PLAN DOMESTIC COLD WATER CALLOUT
3/4" = 1'-0"

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DOMESTIC COLD

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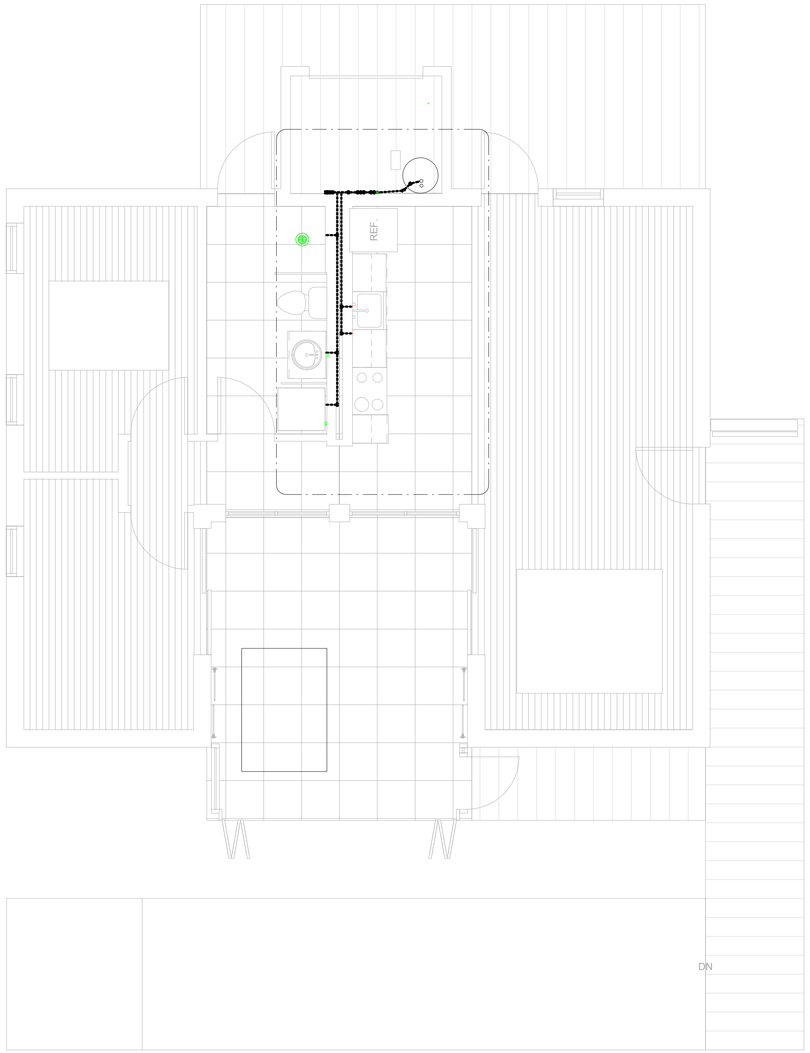
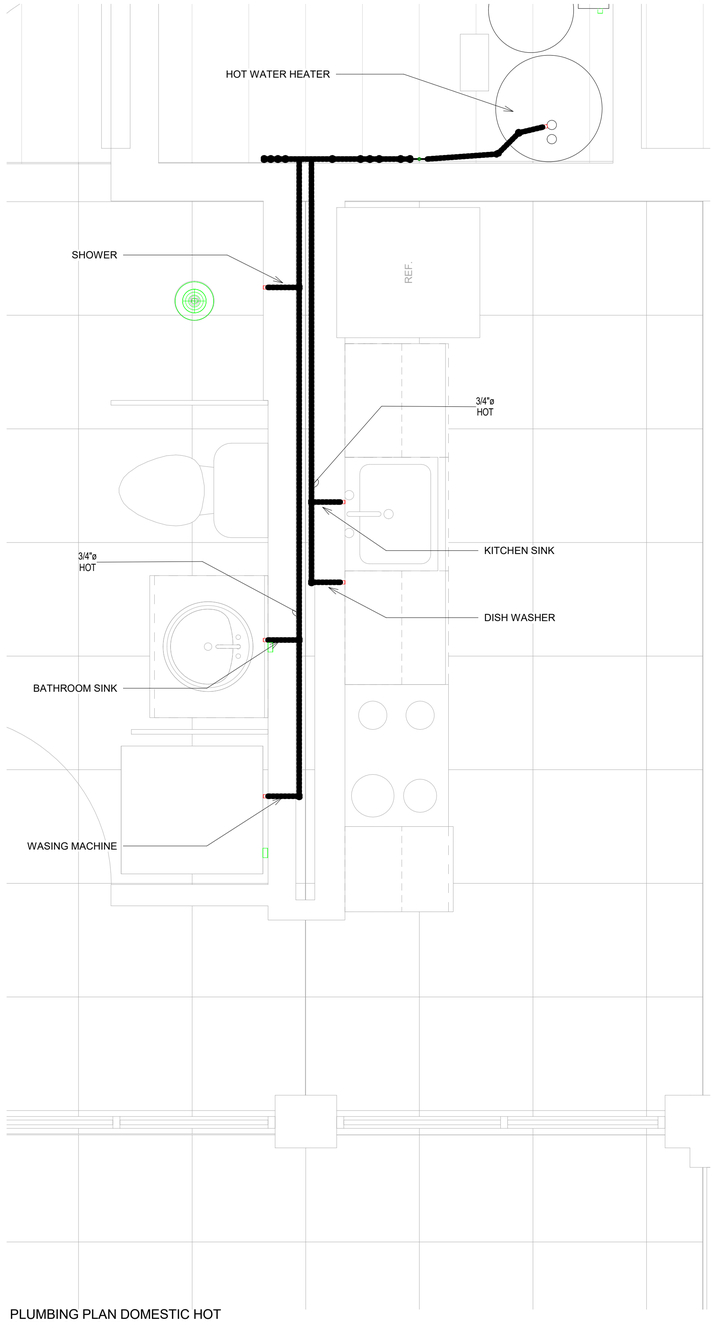


1 PLUMBING PLAN DOMESTIC HOT WATER
1/4" = 1'-0"



2 PLUMBING PLAN DOMESTIC HOT WATER CALLOUT
3/4" = 1'-0"

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DOMESTIC HOT

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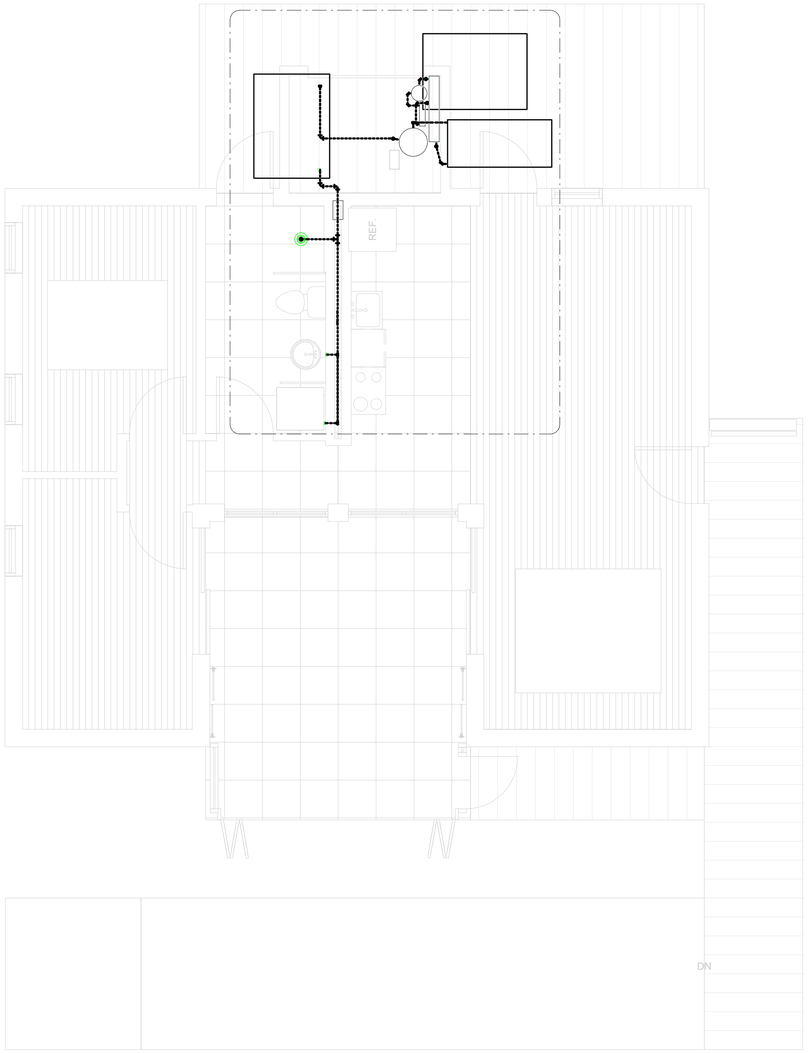
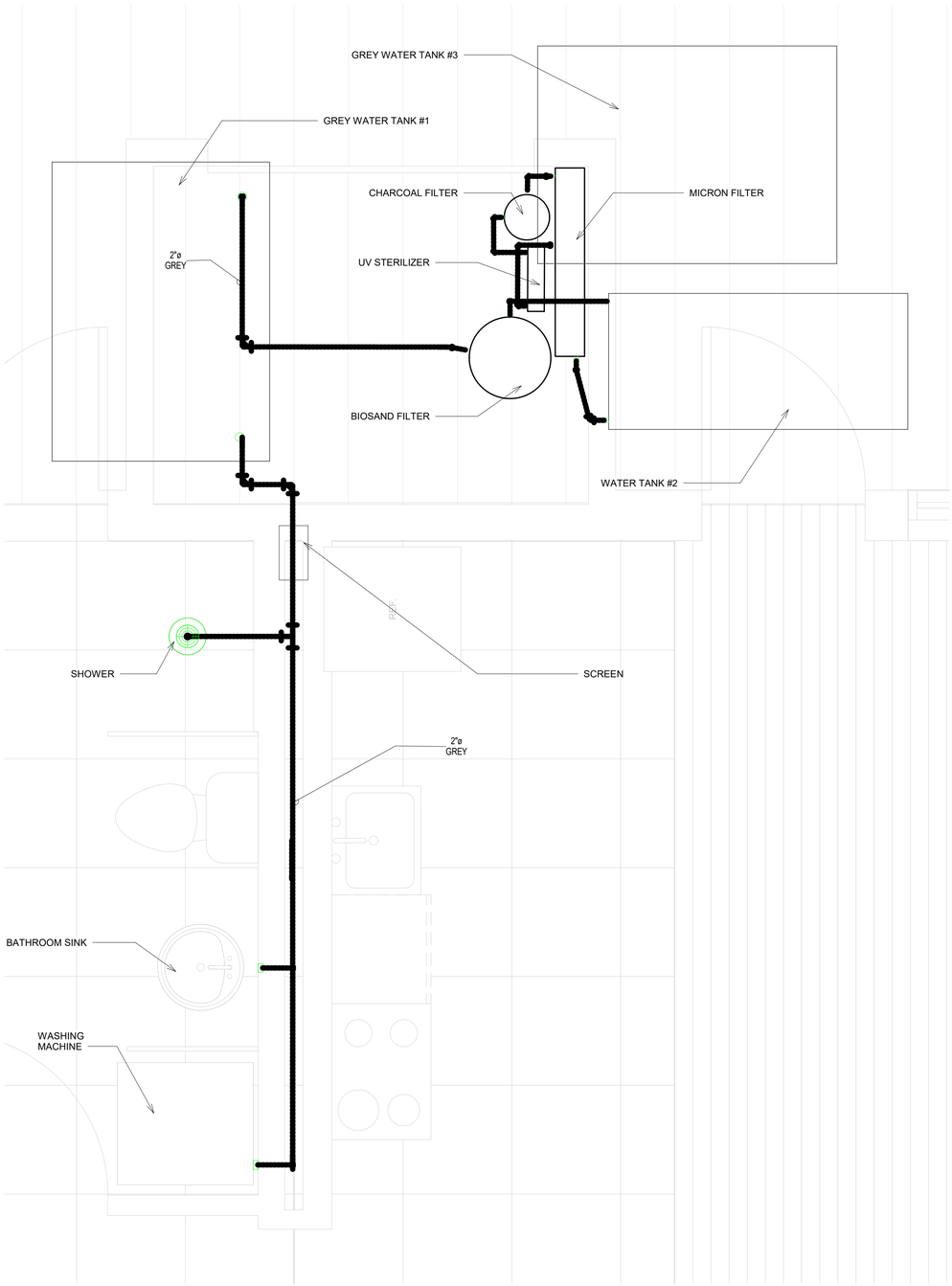


1 PLUMBING PLAN GREY
1/4" = 1'-0"



2 PLUMBING PLAN GREY CALLOUT
3/4" = 1'-0"

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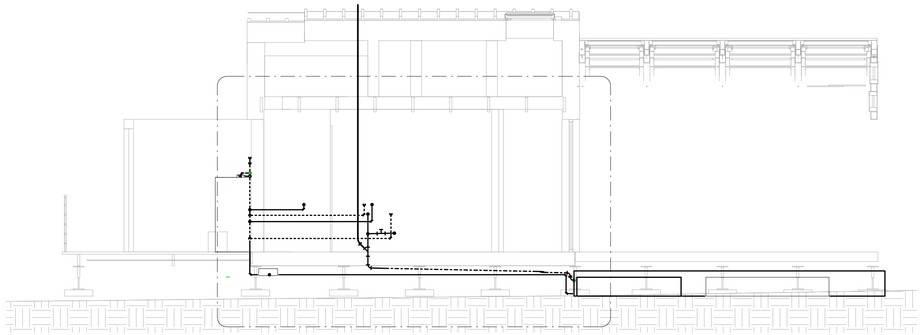
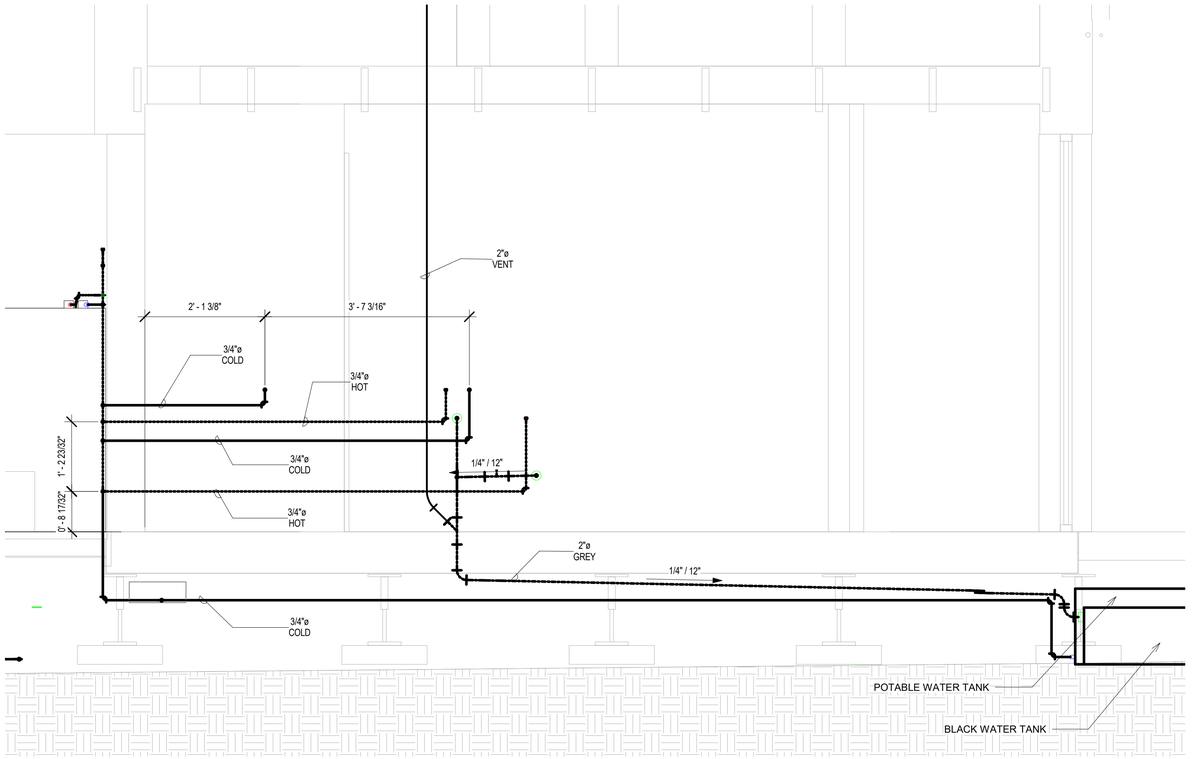
DOMESTIC GREY

P-105



1 PLUMBING SECTION EAST
1/4" = 1'-0"



2 PLUMBING SECTION EAST CALLOUT
3/4" = 1'-0"

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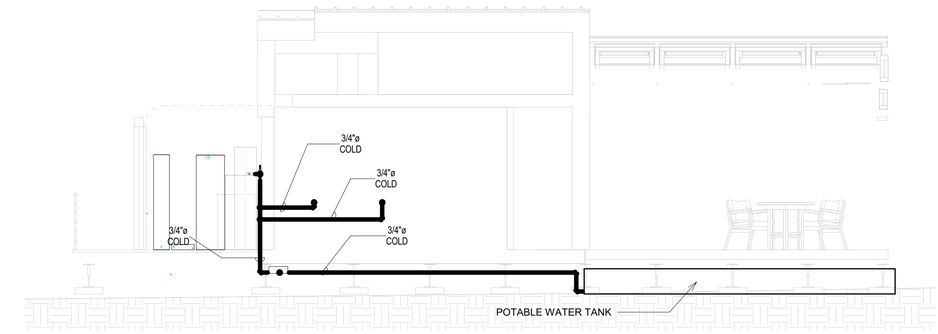
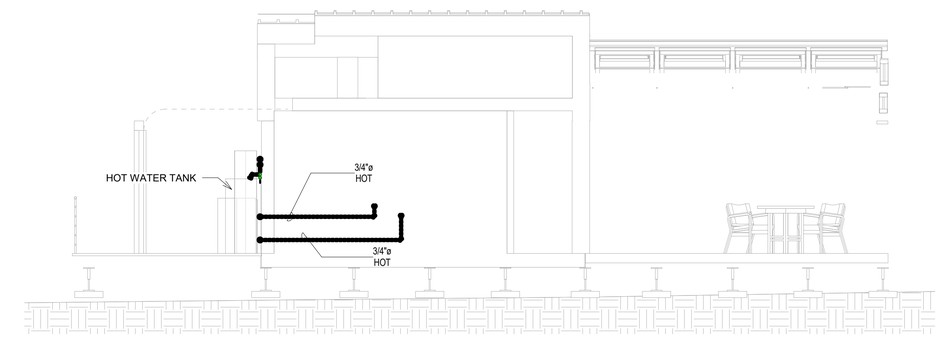
SPINE SECTION EAST

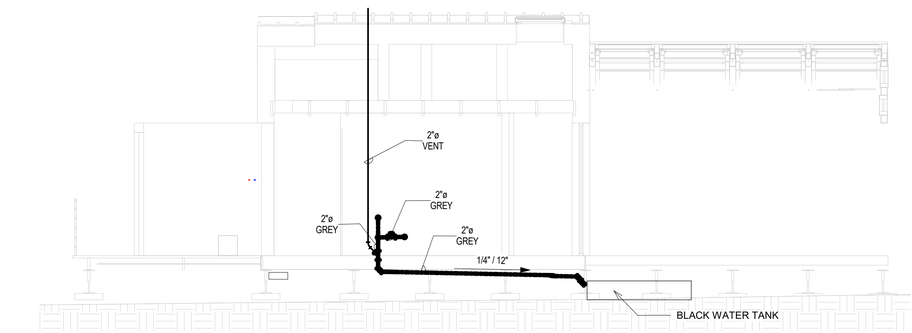
P-300



1 PLUMBING SECTION EAST COLD WATER
1/4" = 1'-0"



2 PLUMBING SECTION EAST HOT WATER
1/4" = 1'-0"



3 PLUMBING SECTION EAST SANITARY
1/4" = 1'-0"

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SPINE SECTION EAST - HOT, COLD, SANITARY

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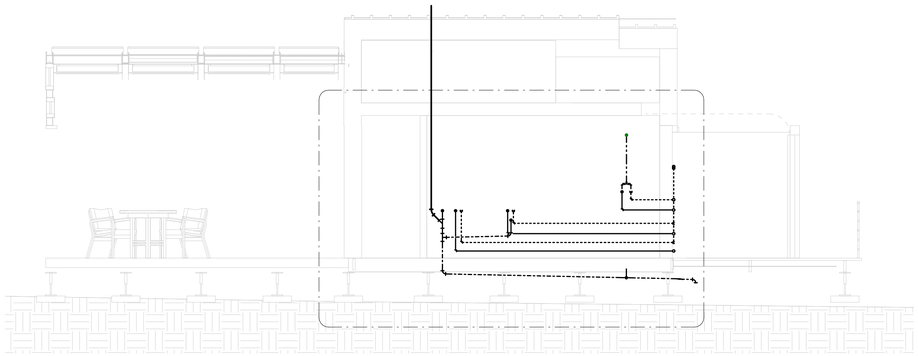
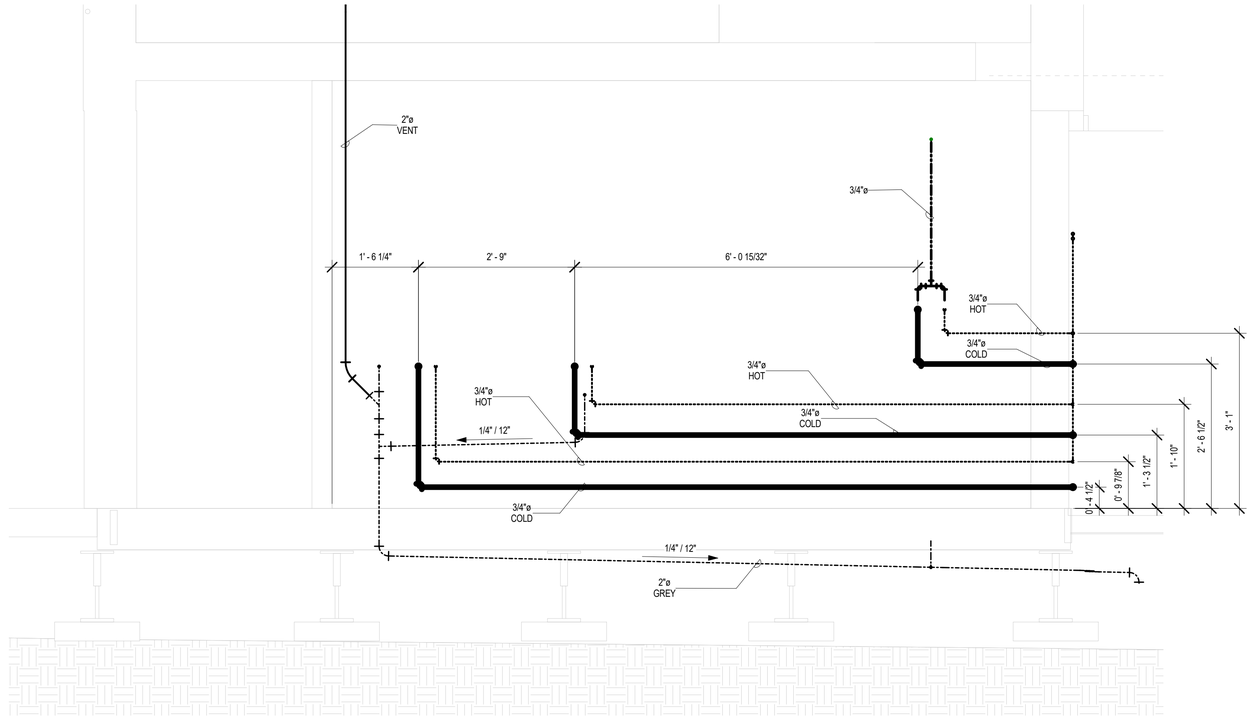


1 PLUMBING SECTION WEST
1/4" = 1'-0"



2 PLUMBING SECTION WEST CALLOUT
3/4" = 1'-0"

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SPINE SECTION WEST

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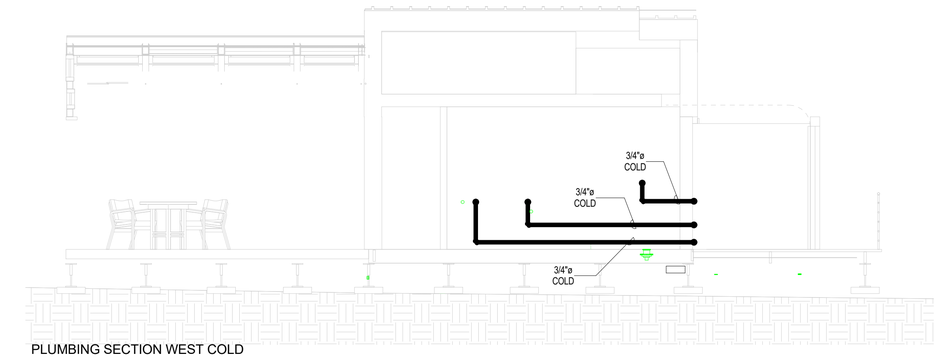
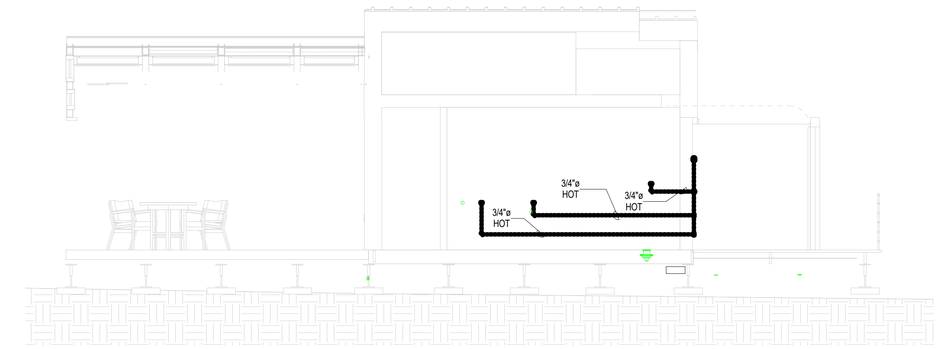
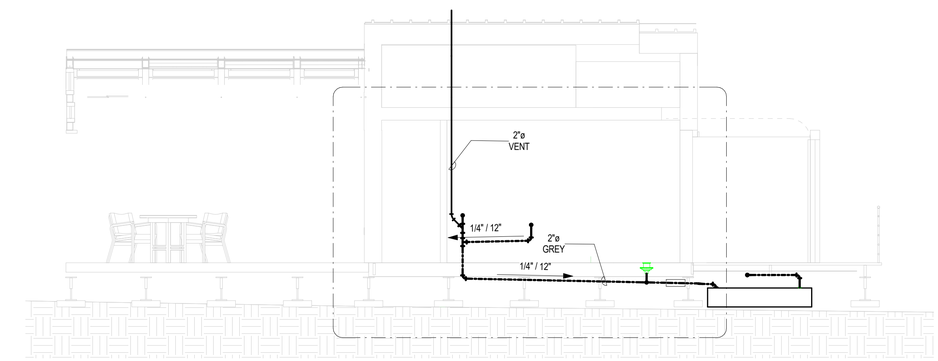


1 PLUMBING SECTION WEST COLD WATER
1/4" = 1'-0"



2 PLUMBING SECTION WEST HOT WATER
1/4" = 1'-0"



3 Plumbing Section WEST Grey
1/4" = 1'-0"

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SPINE SECTION WEST - HOT, COLD, GREY

P-303

DOMESTIC WATER MANIFOLD					
HOT			COLD		
PORT SIZE	FIXTURE DESCRIPTION	PORT NUMBER & TYPE	PORT NUMBER & TYPE	FIXTURE DESCRIPTION	PORT SIZE
3/4"	LAVATORY			LAVATORY	3/4"
3/4"	SHOWER			SHOWER	3/4"
3/4"	WASHING MACHINE			WASHING MACHINE	3/4"
3/4"	DISHWASHER			KITCHEN SINK	3/4"
3/4"	KITCHEN SINK			GREEN WALL	3/4"
				GARDEN	3/4"
				SOLAR THERMAL	3/4"

***Port size may be 3/8", but that will be determined later on.

PLUMBING FIXTURE SCHEDULE				
FIXTURE	CW	HW	GW	WASTE
LAVATORY	3/4"	3/4"	2"	N/A
SHOWER	3/4"	3/4"	2"	N/A
WASHING MACHINE	3/4"	3/4"	2"	N/A
DISHWASHER	3/4"	3/4"	N/A	2"
KITCHEN SINK	3/4"	3/4"	N/A	2"

GREY WATER FILTRATION SCHEDULE					
COMPONENT/FIXTURE	MANUFACT.	MODEL #	FLOW RATE	POWER REQ.	PIPE SIZE
BIOSAND FILTER	N/A	N/A	70 GPD	N/A	3/4"
MICRON FILTER	EVERPURE	EV9328-06		N/A	3/4"
CARBON FILTER	US WATER SYSTEMS	FSF-150	6 GPM	120 V, 60 Hz	3/4" or 1"
UV STERILIZER	BIO-LOGIC	BIO-1.5	1.5 GPM	16.5 W	3/8"

PUMP SCHEDULE				
MANUFACTURER	MODEL NUMBER	POWER REQUIREMENT	FLOW RATE	PIPE SIZE
ECO PLUS	728310	120V, 60Hz, .30A	363 GPH	1/2"
AMTROL	RP-15HP	60Hz, AC	15 GPM	1"
GRUNDFOS	15 BMQE05A-110	110-115V, 9.2A	22 GPM	1"
GRUNDFOS	SCALA2 - 98562817	600W	16 GPM	1"

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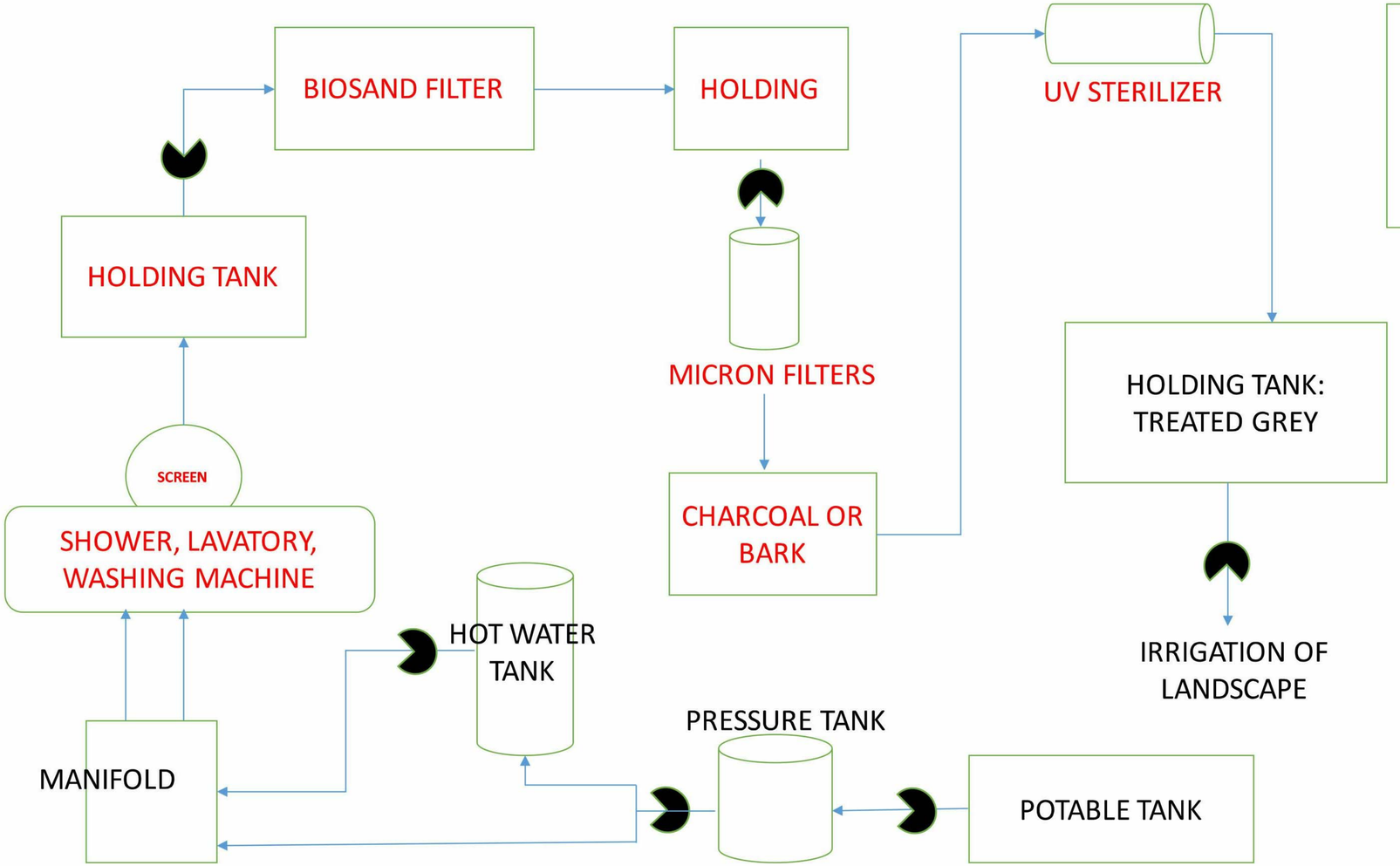
PLUMBING SCHEDULE

P-600



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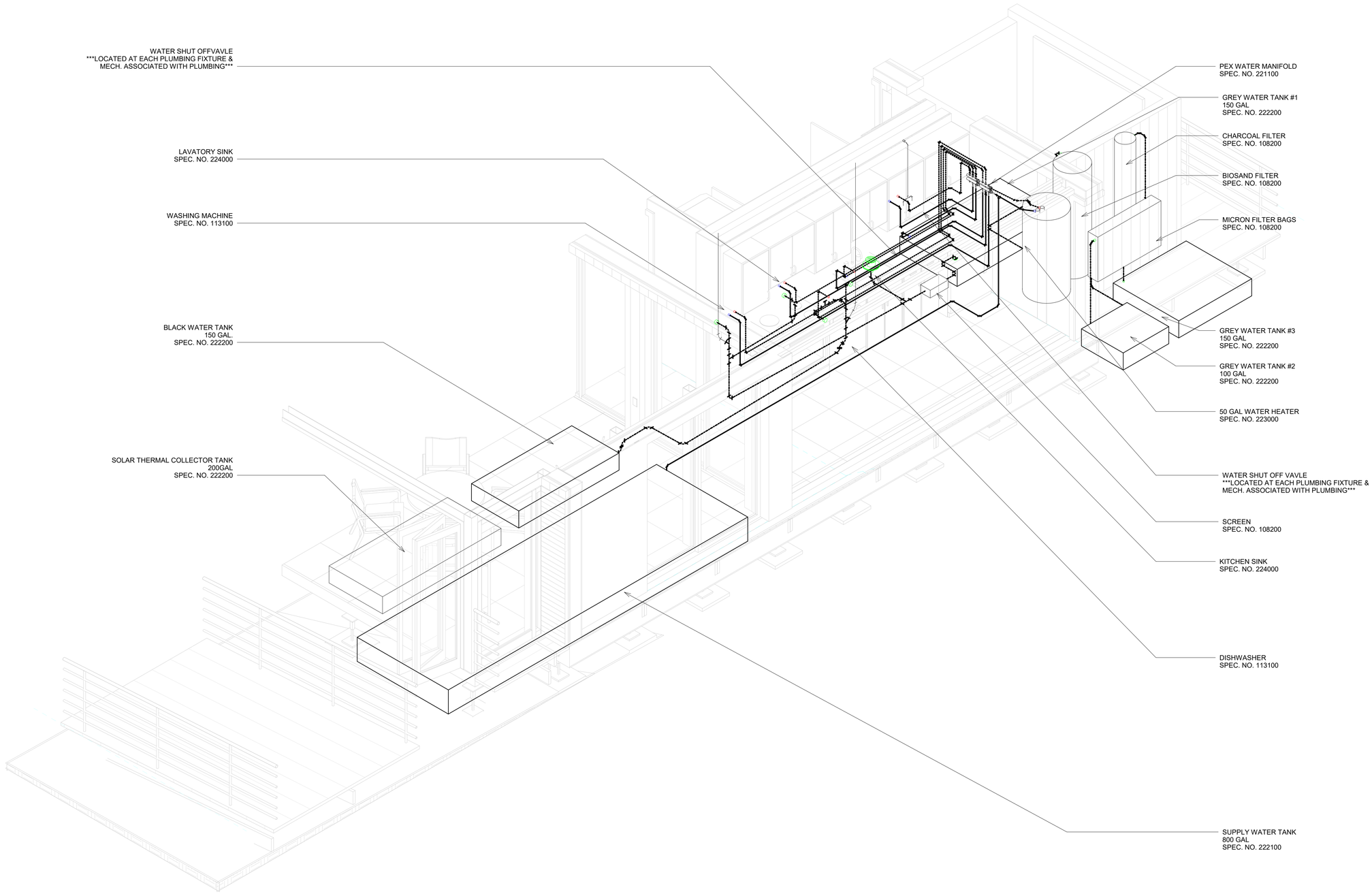
DOMESTIC SUPPLY & RETURN DIAGRAM

P-700



1 PLUMBING AXON

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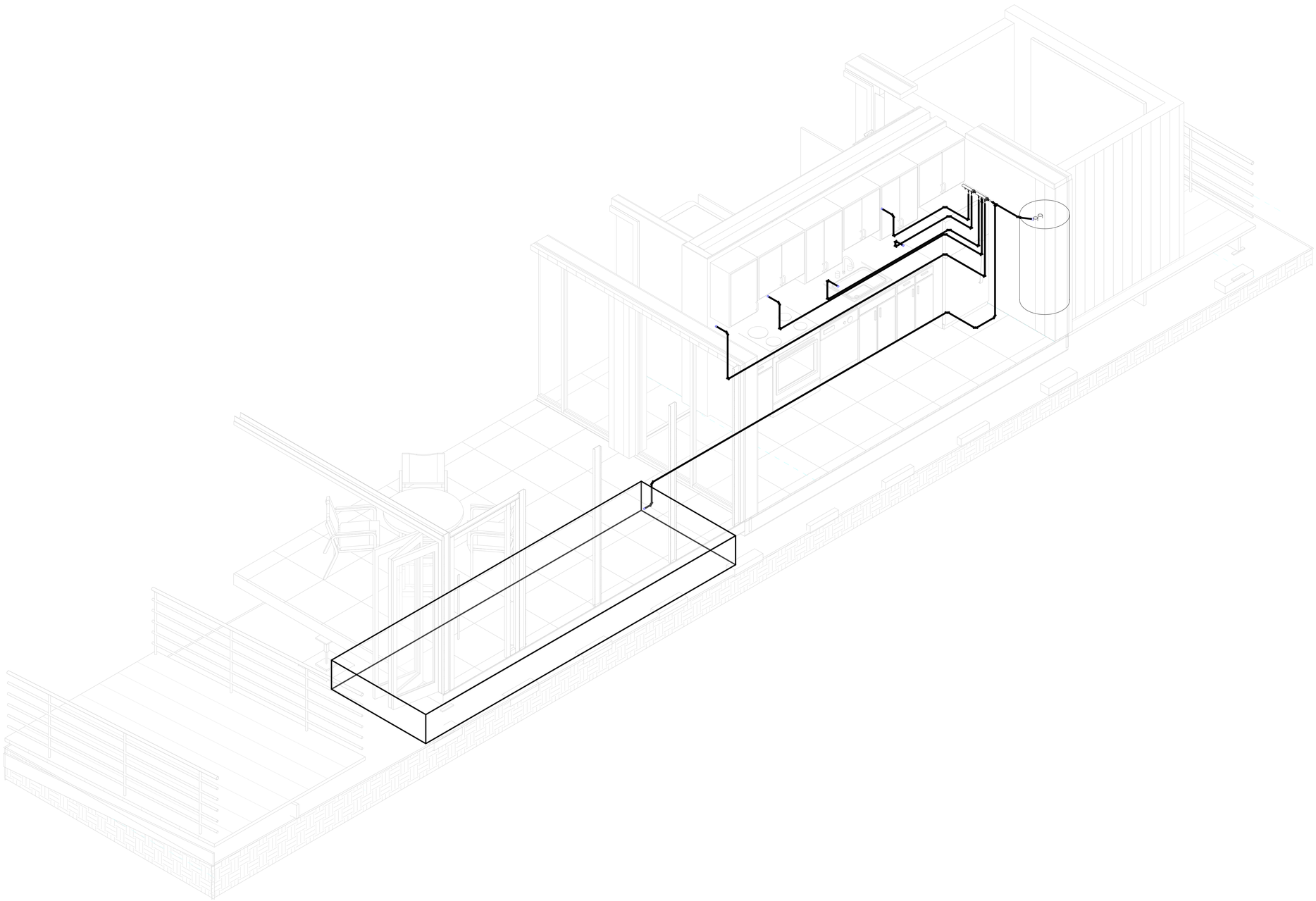
SUPPLY
ISOMETRIC

P-901



1 PLUMBING AXON DOMESTIC COLD

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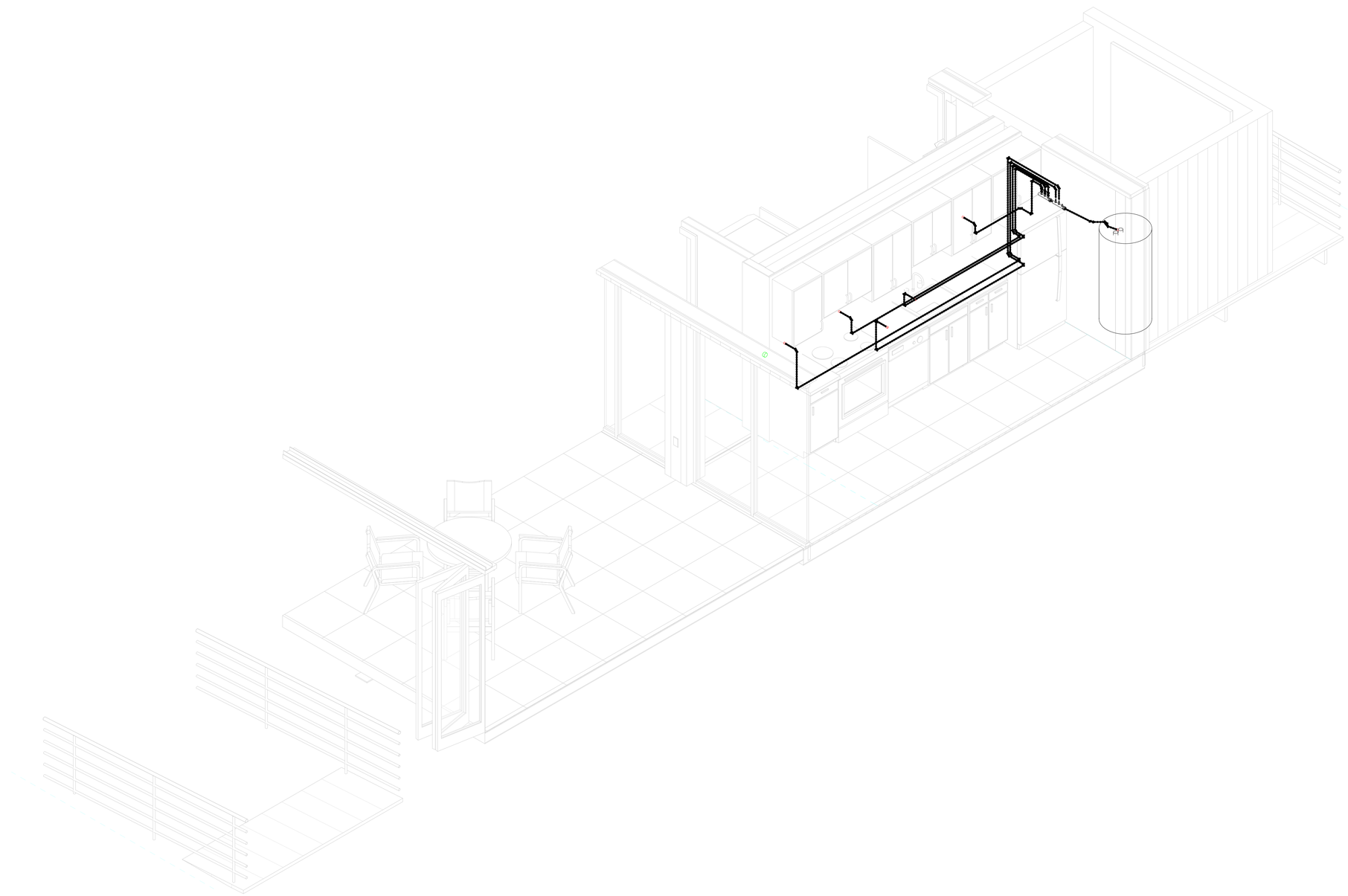
DOMESTIC COLD ISOMETRIC

P-902



1 PLUMBING PLAN DOMESTIC HOT

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DOMESTIC HOT ISOMETRIC

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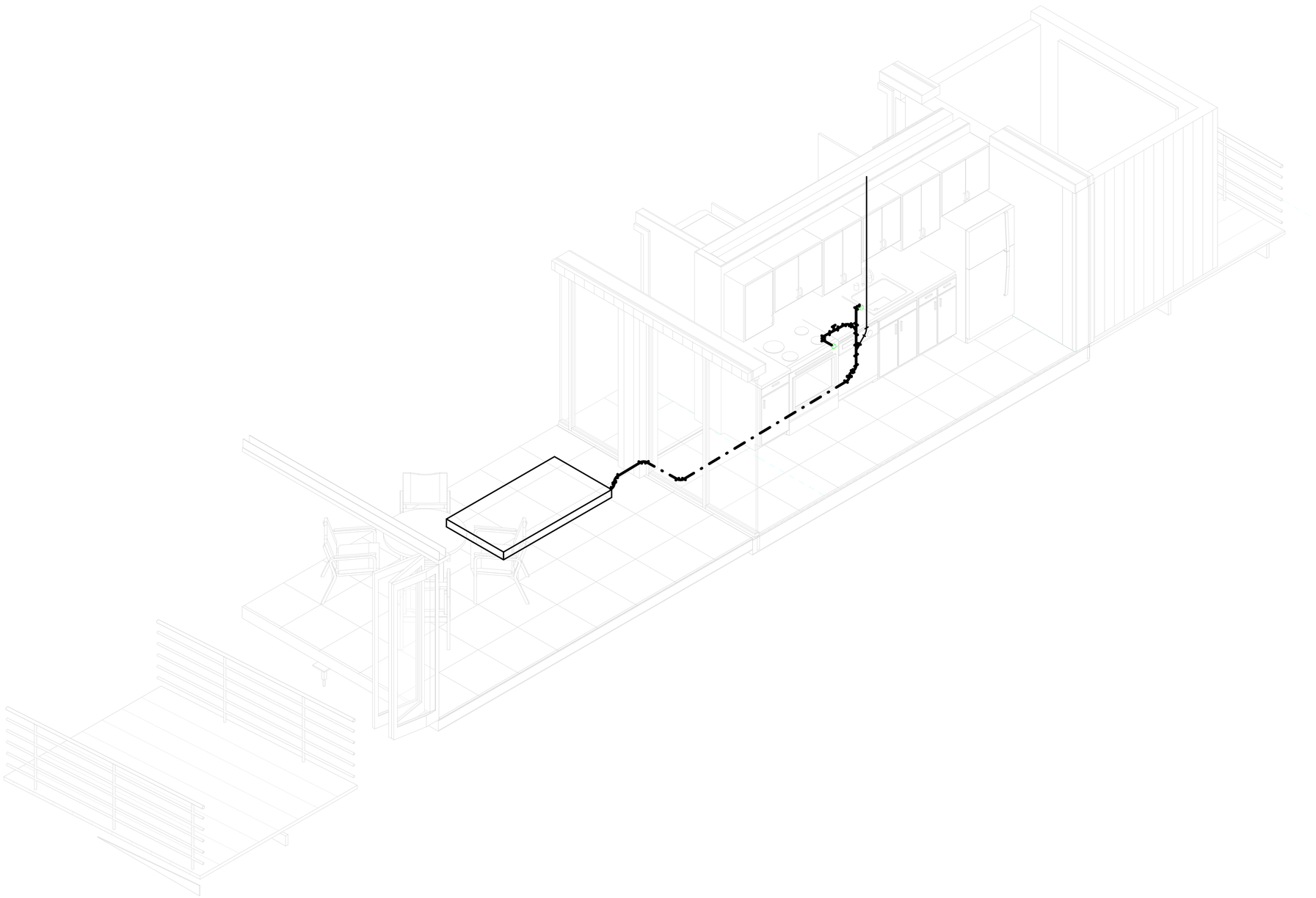

1 PLUMBING AXON SANITARY

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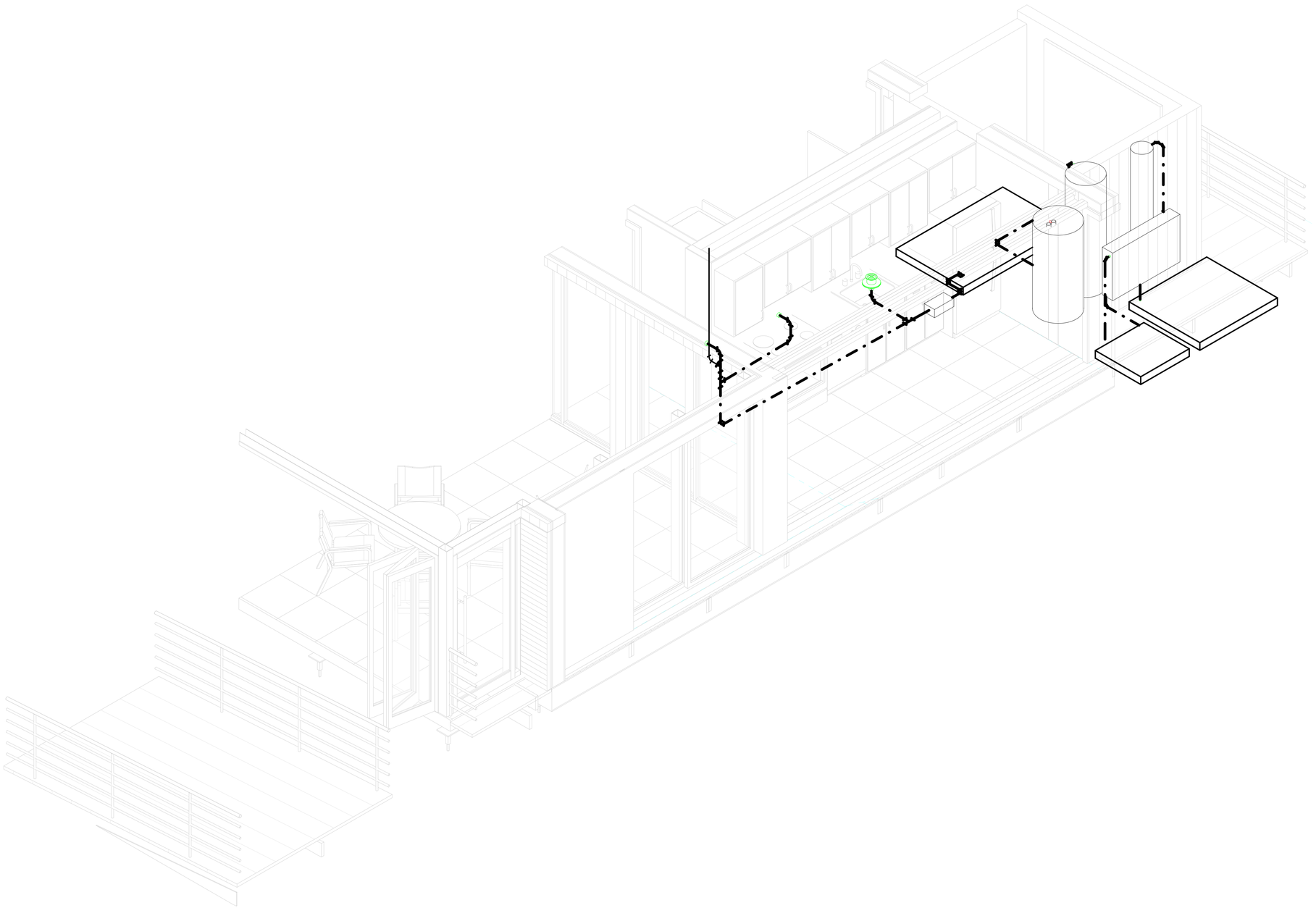
DOMESTIC SANITARY ISOMETRIC

P-904



1 PLUMBING AXON GREY

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DOMESTIC GREY ISOMETRIC

P-905

SECTION R106.1.1
INFORMATION ON CONSTRUCTION DOCUMENTS

CONSTRUCTION DOCUMENTS SHALL BE DRAWN UPON SUITABLE MATERIAL. ELECTRONIC MEDIA DOCUMENTS ARE PERMITTED TO BE SUBMITTED WHEN APPROVED BY THE BUILDING OFFICIAL. CONSTRUCTION DOCUMENTS SHALL BE OF SUFFICIENT CLARITY TO INDICATE THE LOCATION, NATURE AND EXTENT OF THE WORK PROPOSED AND SHOW IN DETAIL THAT IT WILL CONFORM TO THE PROVISIONS OF THE CODE AND RELEVANT LAWS, ORDINANCES, RULES AND REGULATIONS, AS DETERMINED BY THE BUILDING OFFICIAL. WHERE REQUIRED BY THE BUILDING OFFICIAL, ALL BRACED WALL LINES, SHALL BE IDENTIFIED ON THE CONSTRUCTION DOCUMENTS AND ALL PERTINENT INFORMATION INCLUDING, BUT NOT LIMITED TO, BRACING METHODS, LOCATION AND LENGTH OF BRACED PANELS, FOUNDATION REQUIREMENTS OF BRACED WALL PANELS AT TOP AND BOTTOM SHALL BE PROVIDED.

SECTION M1307
APPLIANCE INSTALLATION

M1307.1 GENERAL.
INSTALLATION OF APPLIANCES SHALL CONFORM TO THE CONDITIONS OF THEIR LISTING AND LABEL AND THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE MANUFACTURER'S OPERATING AND INSTALLATION INSTRUCTIONS SHALL REMAIN ATTACHED TO THE APPLIANCE.

M1307.2 ANCHORAGE OF APPLIANCES.
APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE FASTENED OR ANCHORED IN AN APPROVED MANNER. IN SEISMIC DESIGN CATEGORIES D1 AND D2, WATER HEATERS SHALL BE ANCHORED OR STRAPPED TO RESIST HORIZONTAL DISPLACEMENT CAUSED BY EARTHQUAKE MOTION. STRAPPING SHALL BE AT POINTS WITHIN THE UPPER ONE-THIRD AND LOWER ONE-THIRD OF THE APPLIANCE'S VERTICAL DIMENSIONS. AT THE LOWER POINT, THE STRAPPING SHALL MAINTAIN A MINIMUM DISTANCE OF 4 INCHES ABOVE THE CONTROLS.
M1307.5 ELECTRICAL APPLIANCES
ELECTRICAL APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH CHAPTERS 14, 15, 19, 20 AND 34 THROUGH 43 OF THIS CODE.
M1307.6 PLUMBING CONNECTIONS
POTABLE WATER AND DRAINAGE SYSTEM CONNECTIONS TO EQUIPMENT AND APPLIANCES REGULATED BY THIS CODE SHALL BE IN ACCORDANCE WITH CHAPTER 29 AND 30.

SECTION M1308
MECHANICAL SYSTEMS INSTALLATION

M1308.1 DRILLING AND NOTCHING.
WOOD-FRAMED STRUCTURAL MEMBERS SHALL BE DRILLED, NOTCHED OR ALTERED IN ACCORDANCE WITH THE PROVISIONS OF SECTIONS R602.8, R602.6, R602.6.1 AND R802.7. HOLES IN LOAD-BEARING MEMBERS OF COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION SHALL BE PERMITTED ONLY IN ACCORDANCE WITH SECTIONS R505.2.5, R603.2.5 AND R804.2.5. IN ACCORDANCE WITH THE PROVISIONS OF SECTIONS R505.3.5, R603.3.4 AND R804.3.4, CUTTING AND NOTCHING OF FLANGES AND LIPS OF LOAD-BEARING MEMBERS OF COLD FORMED STEEL LIGHT FRAME CONSTRUCTION SHALL NOT BE PERMITTED. STRUCTURAL INSULATED PANELS (SIPS) SHALL BE DRILLED AND NOTCHED OR ALTERED IN ACCORDANCE WITH THE PROVISIONS OF SECTION R613.7.

M1308.2 PROTECTION AGAINST PHYSICAL DAMAGE.
IN CONCEALED LOCATIONS WHERE PIPING, OTHER THAN CAST-IRON OR GALVANIZED STEEL, IS INSTALLED THROUGH HOLES OR NOTCHES IN STUDS, JOISTS, RAFTERS OR SIMILAR MEMBERS LESS THAN 1.5 INCHES FROM THE NEAREST EDGE OF THE MEMBER, THE PIPE SHALL BE PROTECTED BY SHIELD PLATES. PROTECTIVE STEEL SHIELD PLATES HAVING A MINIMUM THICKNESS OF 0.0575-INCH, SHALL COVER THE AREA OF THE PIPE WHERE THE MEMBER IS NOTCHED OR BORED, AND SHALL EXTEND MINIMUM OF 2 INCHES ABOVE SOLE PLATES AND BELOW TOP PLATES.

SECTION M1401
GENERAL

M1401.1 INSTALLATION.
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE REQUIREMENTS OF THIS CODE.

M1401.2 ACCESS.
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE LOCATED WITH RESPECT TO BUILDING CONSTRUCTION AND OTHER EQUIPMENT AND APPLIANCES TO PERMIT MAINTENANCE, SERVICING AND REPLACEMENT. CLEARANCES SHALL BE MAINTAINED TO PERMIT CLEANING OF HEATING AND COOLING SURFACES; REPLACEMENT OF FILTERS, BLOWERS, MOTORS, CONTROLS AND VENT CONNECTIONS; LUBRICATION OF MOVING PARTS; AND ADJUSTMENTS.

EXCEPTION: ACCESS SHALL NOT BE REQUIRED FOR DUCTS, PIPING, OR OTHER COMPONENTS APPROVED FOR CONCEALMENT.

M1401.3 SIZING
HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE SIZED IN ACCORDANCE WITH ACCA MANUAL S BASED ON BUILDING LOADS CALCULATED IN ACCORDANCE WITH ACCA MANUAL J OR OTHER APPROVED HEATING AND COOLING CALCULATION METHODOLOGIES.

M1401.4 EXTERIOR INSTALLATIONS.
EQUIPMENT AND APPLIANCES INSTALLED OUTDOORS SHALL BE LISTED AND LABELED FOR OUTDOOR INSTALLATION. SUPPORTS AND FOUNDATIONS SHALL PREVENT EXCESSIVE VIBRATION, SETTLEMENT OR MOVEMENT OF THE EQUIPMENT. SUPPORTS AND FOUNDATIONS SHALL BE IN ACCORDANCE WITH SECTION M1305.1.4.1.

M1401.5 FLOOD HAZARD.
IN FLOOD HAZARD AREAS AS ESTABLISHED BY TABLE R301.2(1), HEATING AND COOLING EQUIPMENT AND APPLIANCES SHALL BE LOCATED OR INSTALLED IN ACCORDANCE WITH SECTION R322.1.6.

SECTION M1403
HEAT PUMP EQUIPMENT

M1403.1 HEAT PUMPS.
THE MINIMUM UNOBSTRUCTED TOTAL AREA OF THE OUTSIDE AND RETURN AIR DUCTS OR OPENINGS TO A HEAT PUMP SHALL BE NOT LESS THAN 6 SQUARE INCHES PER 1,000 BTU/H OUTPUT RATING OR AS INDICATED BY THE CONDITIONS OF THE LISTING OF THE HEAT PUMP. ELECTRICAL HEAT PUMPS SHALL CONFORM TO UL 1995.

M1403.2 FOUNDATIONS AND SUPPORTS
SUPPORTS AND FOUNDATIONS FOR THE OUTDOOR UNIT OF A HEAT PUMP SHALL BE RAISED AT LEAST 3 INCHES ABOVE THE GROUND TO PERMIT FREE DRAINAGE OF DEFROST WATER, AND SHALL CONFORM TO THE MANUFACTURER'S INSTALLATION INSTRUCTION.

SECTION M1411
HEATING AND COOLING EQUIPMENT

M1411.1 APPROVED REFRIGERANTS.
REFRIGERANTS USED IN DIRECT REFRIGERATING SYSTEMS SHALL CONFORM TO THE APPLICABLE PROVISIONS OF ANSI/ASHRAE 34.

M1411.3 CONDENSATE DISPOSAL.
CONDENSATE FROM ALL COOLING COILS OR EVAPORATORS SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO AN APPROVED PLACE OF DISPOSAL. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN ¼ UNIT VERTICAL IN 12 UNITS HORIZONTAL (1-PERCENT SLOPE). CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY OR OTHER AREAS WHERE IT WOULD CAUSE A NUISANCE.

M1411.3.1 AUXILIARY AND SECONDARY DRAIN SYSTEMS.
IN ADDITION TO THE REQUIREMENTS OF SECTION M1411.3, A SECONDARY DRAIN OR AUXILIARY DRAIN PAN SHALL BE REQUIRED FOR EACH COOLING OR EVAPORATOR COIL WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW FROM THE EQUIPMENT DRAIN PAN OR STOPPAGE IN THE CONDENSATE DRAIN PIPING. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL (1-PERCENT SLOPE). DRAIN PIPING SHALL BE A MINIMUM OF 3/4-INCH NOMINAL PIPE SIZE. ONE OF THE FOLLOWING METHODS SHALL BE USED:

1. AN AUXILIARY DRAIN PAN WITH A SEPARATE DRAIN SHALL BE INSTALLED UNDER THE COILS ON WHICH CONDENSATION WILL OCCUR. THE AUXILIARY PAN DRAIN SHALL DISCHARGE TO A CONSPICUOUS POINT OF DISPOSAL TO ALERT OCCUPANTS IN THE DEPTH OF 1.5 INCHES (38 MM), SHALL NOT BE LESS THAN 3 INCHES LARGER THAN THE UNIT OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL. GALVANIZED SHEET STEEL PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0236-INCH (NO. 24 GAGE). NONMETALLIC PANS SHALL HAVE A MINIMUM THICKNESS OF NOT LESS THAN 0.0625 INCH.
2. A SEPARATE OVERFLOW DRAIN LINE SHALL BE CONNECTED TO THE DRAIN PAN INSTALLED WITH THE EQUIPMENT. THIS OVERFLOW DRAIN SHALL DISCHARGE TO A CONSPICUOUS POINT OF DISPOSAL TO ALERT OCCUPANTS IN THE EVENT OF A STOPPAGE OF THE PRIMARY DRAIN. THE OVERFLOW DRAIN LINE SHALL CONNECT TO THE DRAIN PAN AT A HIGHER LEVEL THAN THE PRIMARY DRAIN CONNECTION.
3. AN AUXILIARY DRAIN PAN WITHOUT A SEPARATE DRAIN LINE SHALL BE INSTALLED UNDER THE COILS ON WHICH CONDENSATION WILL OCCUR. THIS PAN SHALL BE EQUIPPED WITH A WATER LEVEL DETECTION DEVICE CONFORMING TO UL 508 THAT WILL SHUT OFF THE EQUIPMENT SERVED PRIOR TO OVERFLOW OF THE PAN. THE PAN SHALL BE EQUIPPED WITH A FITTING TO ALLOW FOR DRAINAGE. THE AUXILIARY DRAIN PAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH ITEM 1 OF THIS SECTION.
4. A WATER LEVEL DETECTION DEVICE CONFORMING TO UL 508 SHALL BE INSTALLED THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED. THE DEVICE SHALL BE INSTALLED IN THE PRIMARY DRAIN LINE, THE OVERFLOW DRAIN LINE OR THE EQUIPMENT-SUPPLIED DRAIN PAN, LOCATED AT A POINT HIGHER THAN THE PRIMARY DRAIN LINE CONNECTION AND BELOW THE OVERFLOW RIM OF SUCH PAN.

M1411.3.1.1 WATER-LEVEL MONITORING DEVICES.
ON DOWN-FLOW UNITS AND ALL OTHER COILS THAT HAVE NO SECONDARY DRAIN OR PROVISIONS TO INSTALL A SECONDARY OR AUXILIARY DRAIN PAN, A WATER-LEVEL MONITORING DEVICE SHALL BE INSTALLED INSIDE THE PRIMARY DRAIN PAN. THIS DEVICE SHALL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN BECOMES RESTRICTED. DEVICES SHALL NOT BE INSTALLED IN THE DRAIN LINE.

M1411.3.2 DRAIN PIPE MATERIALS AND SIZES.
COMPONENTS OF THE CONDENSATE DISPOSAL SYSTEM SHALL BE CAST IRON, GALVANIZED STEEL, COPPER, POLYBUTYLENE, POLYETHYLENE, ABS, CPVC OR PVC PIPE OR TUBING. ALL COMPONENTS SHALL BE SELECTED FOR THE PRESSURE AND TEMPERATURE RATING OF THE INSTALLATION. JOINTS AND CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE MATERIALS SPECIFIED IN CHAPTER 30. CONDENSATE WASTE AND DRAIN LINE SIZE SHALL BE NOT LESS THAN 3/4-INCH (19 MM) INTERNAL DIAMETER AND SHALL NOT DECREASE IN SIZE FROM THE DRAIN PAN CONNECTION TO THE PLACE OF CONDENSATE DISPOSAL. WHERE THE DRAIN PIPES FROM MORE THAN ONE UNIT ARE MANIFOLDED TOGETHER FOR CONDENSATE DRAINAGE, THE PIPE OR TUBING SHALL BE SIZED IN ACCORDANCE WITH AN APPROVED METHOD.

M1411.3.3 APPLIANCES, EQUIPMENT AND INSULATION IN PANS.
WHERE APPLIANCES, EQUIPMENT OR INSULATION ARE SUBJECT TO WATER DAMAGE WHEN AUXILIARY DRAIN PANS FILL, THOSE PORTIONS OF THE APPLIANCES, EQUIPMENT AND INSULATION SHALL BE INSTALLED ABOVE THE FLOOD LEVEL RIM OF THE PAN. SUPPORTS LOCATED INSIDE OF THE PAN TO SUPPORT THE APPLIANCE OR EQUIPMENT SHALL BE WATER RESISTANT AND APPROVED.

M1411.4 AUXILIARY DRAIN PAN.
CATEGORY IV CONDENSING APPLIANCE SHALL HAVE AN AUXILIARY DRAIN PAN WHERE DAMAGE TO ANY BUILDING COMPONENT WILL OCCUR AS A RESULT OF STOPPAGE IN THE CONDENSATION DRAINAGE SYSTEM. THESE PANS SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF T=SECTION M1411.3.

EXCEPTION: FUEL-FIRED APPLIANCES THAT AUTOMATICALLY SHUT DOWN OPERATION IN THE EVENT OF A STOPPAGE IN THE CONDENSATE DRAINAGE SYSTEM.

M1411.5 INSULATION OF REFRIGERANT PIPING.
PIPING AND FITTINGS FOR REFRIGERANT VAPOR (SUCTION) LINES SHALL BE INSULATED WITH INSULATION HAVING A THERMAL RESISTIVITY OF AT LEAST R-4 AND HAVING EXTERNAL SURFACE PERMEANCE NOT EXCEEDING 0.05 PERM WHEN TESTED IN ACCORDANCE WITH ASTM E 96.

M1411.6 LOCKING ACCESS PORT CAPS.
REFRIGERANT CIRCUIT ACCESS PORTS LOCATED OUTDOORS SHALL BE FITTED WITH LOCKING-TYPE TAMPER-RESISTANT CAPS OR SHALL BE OTHERWISE SECURED TO PREVENT UNAUTHORIZED ACCESS.

SECTION M1503
RANGE HOODS

M1503.1 GENERAL
RANGE HOODS SHALL DISCHARGE TO THE OUTDOORS THROUGH A SINGLE-WALL DUCT. THE DUCT SERVING THE HOOD SHALL HAVE A SMOOTH INTERIOR SURFACE, SHALL BE AIR TIGHT, SHALL BE EQUIPPED WITH A BACK-DRAFT DAMPER, AND SHALL BE INDEPENDENT OF ALL OTHER EXHAUST SYSTEMS. DUCTS SERVING RANGE HOODS SHALL NOT TERMINATE IN AN ATTIC OR CRAWL SPACE OR AREAS INSIDE THE BUILDING.

EXCEPTION: WHERE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND WHERE MECHANICAL OR NATURAL VENTILATION IS OTHERWISE PROVIDED, LISTED AND LABELED DUCTLESS RANGE HOODS SHALL NOT BE REQUIRED TO DISCHARGE TO THE OUTDOORS.

SECTION M1506
EXHAUST DUCTS AND EXHAUST OPENINGS

M1506.1 DUCTS.

WHERE EXHAUST DUCT CONSTRUCTION IS NOT SPECIFIED IN THIS CHAPTER, CONSTRUCTION SHALL COMPLY WITH CHAPTER 16.

M1506.2 EXHAUST OPENINGS.
AIR EXHAUST OPENINGS SHALL TERMINATE NOT LESS THAN 3 FEET FROM PROPERTY LINES; 3 FEET FROM OPERABLE AND NONOPERABLE OPENINGS INTO THE BUILDING AND 10 FEET FROM MECHANICAL AIR INTAKES EXCEPT WHERE THE OPENING IS LOCATED 3 FEET ABOVE THE AIR INTAKE. OPENINGS SHALL COMPLY WITH SECTIONS R303.5.2 AND R303.6.

SECTION M1601
DUCT CONSTRUCTION

M1601.1 DUCT DESIGN.
DUCT SYSTEMS SERVING HEATING, COOLING AND VENTILATION EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS SECTION AND ACCA MANUAL D OR OTHER APPROVED METHODS.

M1601.1.1 ABOVE-GROUND DUCT SYSTEMS.
ABOVE-GROUND DUCT SYSTEMS SHALL CONFORM TO THE FOLLOWING:

1.EQUIPMENT CONNECTED TO DUCT SYSTEMS SHALL BE DESIGNED TO LIMIT DISCHARGE AIR TEMPERATURE TO A MAXIMUM OF 250°F.

2. FACTORY-MADE AIR DUCTS SHALL BE CONSTRUCTED OF CLASS 0 OR CLASS 1 MATERIALS AS DESIGNATED IN TABLE M1601.1.1(1).

3.FIBROUS DUCT CONSTRUCTION SHALL CONFORM TO THE SMACNA FIBROUS GLASS DUCT CONSTRUCTION STANDARDS OR NAIMA FIBROUS GLASS DUCT CONSTRUCTION STANDARDS.

4. MINIMUM THICKNESS OF METAL DUCT MATERIAL SHALL BE AS LISTED IN TABLE M1601.1.1(2). GALVANIZED STEEL SHALL CONFORM TO ASTM A 653. METALLIC DUCTS SHALL BE FABRICATED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE.

5.USE OF GYPSUM PRODUCTS TO CONSTRUCT RETURN AIR DUCTS OR PLENUMS IS PERMITTED, PROVIDED THAT THE AIR TEMPERATURE DOES NOT EXCEED 125°F AND EXPOSED SURFACES ARE NOT SUBJECT TO CONDENSATION.

6. DUCT SYSTEMS SHALL BE CONSTRUCTED OF MATERIALS HAVING A FLAME SPREAD INDEX NOT GREATER THAN 200.

7. STUD WALL CAVITIES AND THE SPACES BETWEEN SOLID FLOOR JOISTS TO BE USED AS AIR PLENUMS SHALL COMPLY WITH THE FOLLOWING CONDITIONS:

7.1. THESE CAVITIES OR SPACES SHALL NOT BE USED AS A PLENUM FOR SUPPLY AIR.

7.2. THESE CAVITIES OR SPACES SHALL NOT BE PART OF A REQUIRED FIRE-RESISTANCE-RATED ASSEMBLY.

7.3 STUD WALL CAVITIES SHALL NOT CONVEY AIR FROM MORE THAN ONE FLOOR LEVEL.

7.4. STUD WALL CAVITIES AND JOIST-SPACE PLENUMS SHALL BE ISOLATED FROM ADJACENT CONCEALED SPACED SPACES BY TIGHT-FITTING FIREBLOCKING IN ACCORDANCE WITH SECTION R602.8.

7.5 STUD WALL CAVITIES IN THE OUTSIDE WALLS OF BUILDING ENVELOPE ASSEMBLIES SHALL NOT BE UTILIZED AS AIR PLENUMS.

M1601.2 FACTORY-MADE DUCTS.
FACTORY-MADE AIR DUCTS OR DUCT MATERIAL SHALL BE APPROVED FOR THE USE INTENDED, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. EACH PORTION OF A FACTORY-MADE AIR DUCT SYSTEM SHALL BEAR A LISTING AND LABEL INDICATING COMPLIANCE WITH UL 181 AND UL 181A OR UL 181B.

M1601.2.1 VIBRATION ISOLATORS.
VIBRATION ISOLATORS INSTALLED BETWEEN MECHANICAL EQUIPMENT AND METAL DUCTS SHALL BE FABRICATED FROM APPROVED MATERIALS AND SHALL NOT EXCEED 10 INCHES IN LENGTH.

M1601.3 DUCT INSULATION MATERIALS.
DUCT INSULATION MATERIALS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: 1. DUCT COVERINGS AND LININGS, INCLUDING

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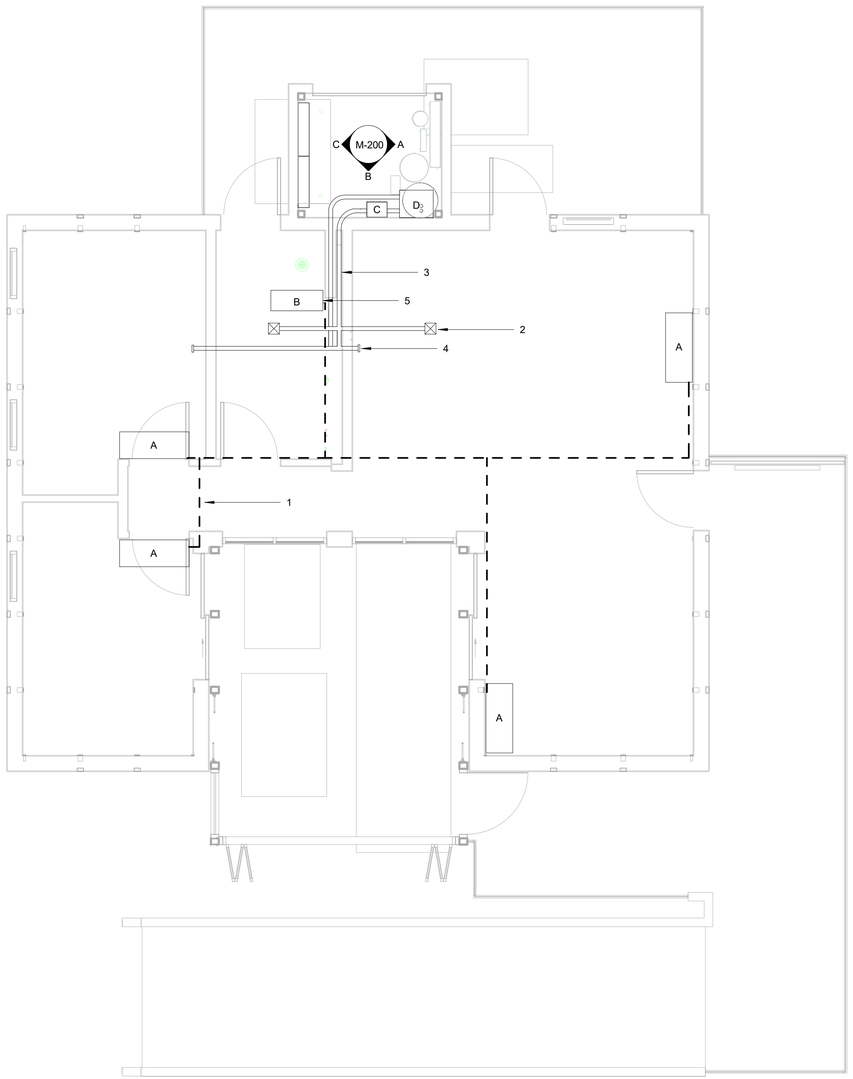
MECHANICAL SYMBOLS AND NOTES

M-001



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

HVAC EQUIPMENT AND DISTRIBUTION PLAN GENERAL NOTES

REFRENCE E-600 FOR LOAD CALCULATIONS

HVAC EQUIPMENT AND DISTRIBUTION SHEET NOTES

1. REFRIGERANT LINE FROM MINI SPLIT VARIABLE REFRIGERANT FLOW SYSTEM
2. FRESH AIR SUPPLY
3. 3" DUCT FROM FRESH AIR INTAKE TO ERV.
4. EXHAUST
5. CONDENSING UNIT TO BE PLACED IN ATTIC SPACE; NOTE THAT NO OTHER EQUIPMENT SHOULD BE PLACED WITHIN 3' IN FRONT OF THE FAN.

HVAC EQUIPMENT AND DISTRIBUTION ABREIATIONS LEGEND

A	MINI SPLIT UNITS
D	ERV
C	HUMIDIFER
B	CONDENSOR UNIT (LOCATED IN ATTIC)
	FRESH AIR SUPPLY
	EXHAUST FAN
	REFRIGERANT LINE
	DUCT

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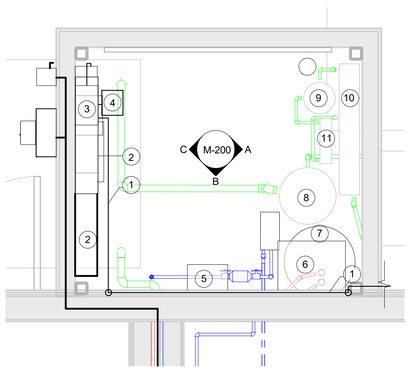
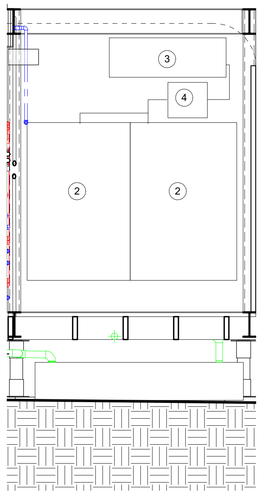
HVAC EQUIPMENT AND DISTRIBUTION PLAN

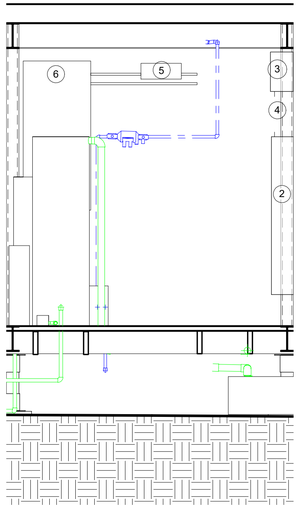
M-100



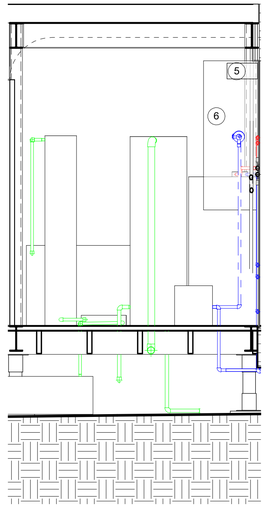
1 MECHANICAL ROOM PLAN
1/2" = 1'-0"



C MECHANICAL C
1/2" = 1'-0"



B MECHANICAL B
1/2" = 1'-0"



A MECHANICAL A
1/2" = 1'-0"

MECHANICAL ELEVATIONS GENERAL NOTES

MECHANICAL ELEVATIONS SHEET NOTES

1. 10 AWG PV WIRE
2. TESLA POWER WALL 1
3. SOLAREDGE INVERTER SE7600A-USS
4. SOLAREDGE AUTO TRANSFORMER SEAUTO-TX-5000 WALL MOUNTED UNDER INVERTER
5. CONDENSING UNIT
6. ERV
7. 50 GAL WATER HEATER SPEC. NO. 223000
8. GRAY WATER TANK NO. 1 150 GALLONS SPEC. NO. 222200
9. CHARCOAL FILTER SPEC. 108200
10. MICRON FILTER BAGS SPEC. 108200
11. UVA STERILIZER SPEC. NO. 108200

MECHANICAL ELEVATION PLAN LEGEND

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MECHANICAL ELEVATION

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HVAC EQUIPMENT SCHEDULE									
MARK	DESCRIPTION	MANUFACTURER	MODEL	ROOM NAME	COUNT	DESCRIPTION	WIDTH	HEIGHT	DEPTH
A	INDOOR MINI SPLIT UNITS	LG	LMN078HVT	BEDROOM/STUDY/LIVING/DININ	4	VRF MINI SPLIT WALL MOUNTED UNIT	37.40625"	32 27/32"	15.65625"
B	CONDENSOR UNIT	LG	LMU30CHV	ATTIC	1	VRF MINI SPLIT CONDENSOR	37.4”	32.8”	15.7”
C	HUMIDIFIER	HONEYWELL	HE 120	MECHANICAL ROOM	1	INSTALL WITHIN ERV TO ENABLE EASY DISTRIBUTION OF HUMIDITY TO ALL PARTS OF HOUSE	9.2”	10.9”	12.8”
D	ERV	ZENEHDER	COMOFOAir 200	MECHANICAL ROOM	1	ENERGY RECOVERY VENTILATOR INTEGRATED WITH HUMIDIFIER TO PROVIDE MOISTURE FOR T	21.40”	47.25”	12.50”
	HEAT PUMP WATER HEATER – INDOOR UNIT	LG	HU031.UE2	ATTIC	1	THIS WILL BE CONNECTED TO THE OUTDOOR UNIT FOR OPERATION AS HEAT PUMP. THE WATER IN HOT WATER TANK WILL HEATED BY THIS UNIT.	12.40"	33.46"	19.29"

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MECHANICAL SCHEDULES

M-600

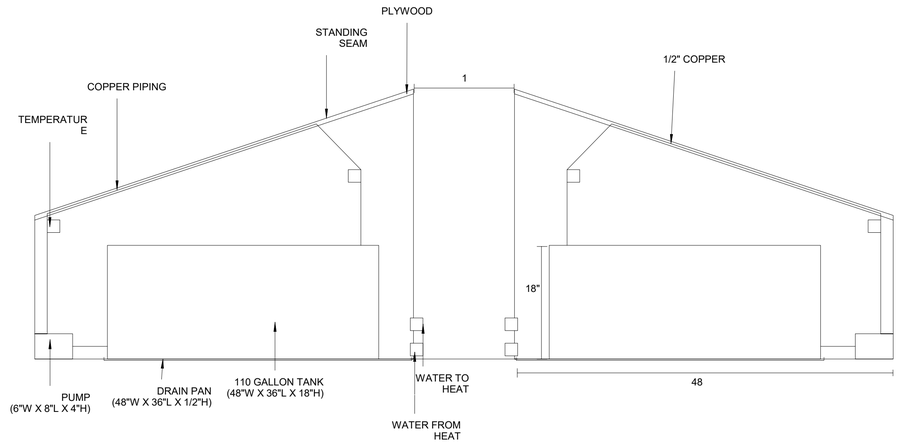
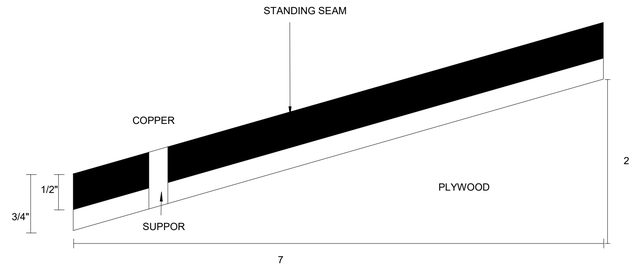
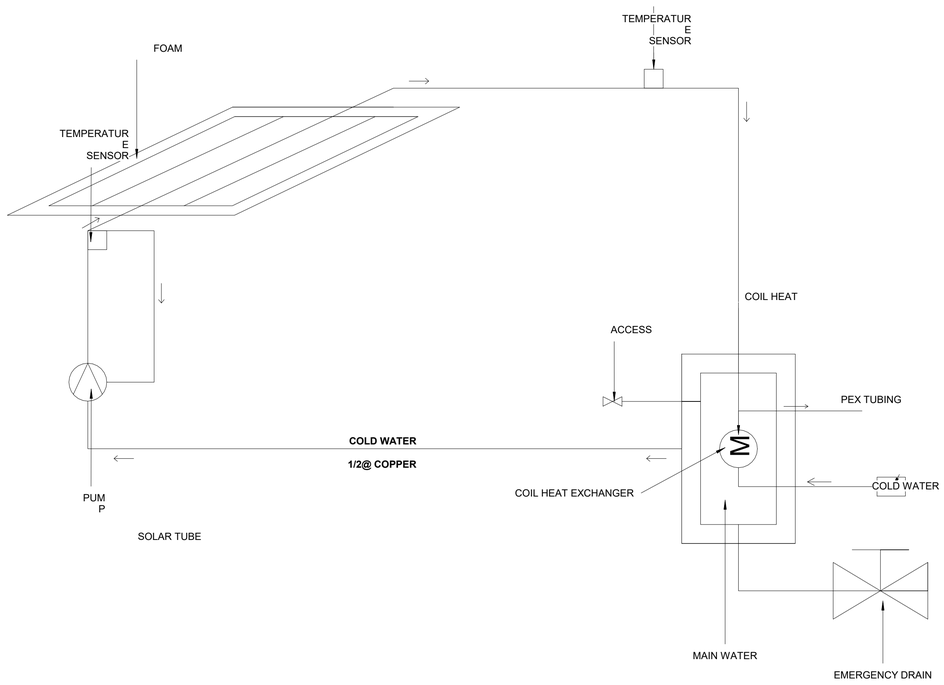


DIAGRAM OF SOLAR TUBES IN ATTIC



SECTION THROUGH



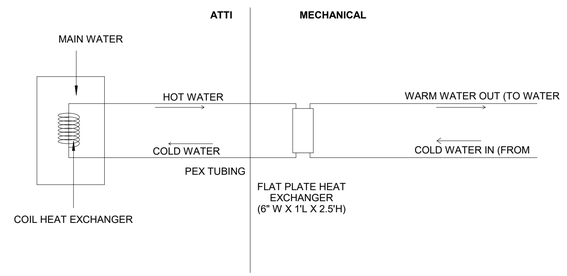


DIAGRAM ILLUSTRATING ATTIC TO MECHANICAL

MECHANICAL ATTIC DIAGRAM GENERAL NOTES

MECHANICAL DIAGRAM SHEET NOTES

MECHANICAL ATTIC DIAGRAM LEGEND

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MECHANICAL ATTIC DIAGRAM

M-700

ELECTRICAL SYMBOLS

	DUPLEX RECEPTACLE
GFCI	GROUND-FAULT CIRCUIT
WP	WEATHERPROOF IN-USE 120V DUPLEX RECEPTACLE
R	GROUND-FAULT CIRCUIT INTERRUPTER 250V DUPLEX RECEPTACLE
D	GROUND-FAULT CIRCUIT INTERRUPTER 250V DRYER RECEPTACLE
	WALL MOUNTED DATA OUTLET
TV	TELEVISION OUTLET
	DISCONNECT SWITCH
	METER BOX
	CAR CHARGING STATION
NP	NON-CRITICAL PANEL
CP	CRITICAL PANEL

ELECTRICAL ABBRIVIATIONS

ACC	AIR COOLED CONDENSING
AHU	AIR HANDLING
CT	CURRENT TRANSFORMER
DHW	DOMESTIC HOT
DSC	DC
DW	DISHWASHER
DX	LIGHT
ER	ENERGY RECOVERY
E	ELECTRIC VEHICLE
GFCI	GROUND-FAULT CIRCUIT
MC	MAIN CIRCUIT
MLO	MAIN LUG ONLY
REF	REFRIGERATOR
W/D	WASHER/DRYER

GENERAL ELECTRICAL NOTES

INSTALLATION OF ELECTRICAL CONDUCTORS, RACEWAYS, AND DEVICES SHALL CONFORM TO THE 2014 NATIONAL ELECTRIC CODE AND THE 2017 SOLAR DECATHLON BUILDING CODE.

ALL ELECTRICAL EQUIPMENT SHALL CARRY AN APPROVED TESTING AGENCY LISTING IN ACCORDANCE WITH IRC SECTION 140.11 AND SECTION 110.2 OF THE NEC, OR SHALL HAVE BEEN APPROVED BY THE SOLAR DECATHLON BUILDING OFFICIAL AND SOLAR DECATHLON ELECTRICAL INSPECTORS FOR EMPORARY USE DURING THE SOLAR DECATHLON 2017 EVENT.

THE GROUNDING ELECTRODE CONDUCTOR FROM THE MAIN SERVICE EQUIPMENT TO THE SOLAR DECATHLON 2017 RGANIZER UTILITY PANEL SHALL BE A MINIMUM SIZE OF 4 AWG COPPER AND SHALL BE BONDED BY QUALIFIED ELECTRICAL PERSONNEL TO THE ORGANIZER GROUNDING ELECTRODE SYSTEM AT THE ORGANIZER UTILITY PANEL LOCATION.

THE EQUIPMENT GROUNDING ELECTRODE CONDUCTOR SHALL BE THE FIRST TO BE CONNECTED AND LAST TO DISCONNECTED DURING INSTALLATION, DE-INSTALLATION, OR SERVICING OF PHOTOVOLTAIC MODULES AND INVERTERS.

BRANCH CIRCUIT CONDUCTORS SHALL HAVE AN AMPACITY NOT LESS THAN THE MAXIMUM LOAD TO BE SERVED. CONDUCTORS SHALL BE SIZED TO CARRY NOT LESS THAN THE LARGER OF NEC 210.19(A)(1)(a) OR (b).

CONDUCTORS SPECIFIED IN THE ELECTRICAL PLAN SHALL BE SIZED IN COMPLIANCE WITH NEC TABLE 310.15(B)(16). MINIMUM AC CONDUCTOR SIZE SHALL BE #14 AWG. MINIMUM DC CONDUCTOR SIZE SHALL BE #12 AWG.

EXCEPT WHERE OTHERWISE NOTED, CONDUCTORS SHALL BE COPPER WITH 600 VOLT INSULATION.

RACEWAYS BETWEEN PULL BOXES SHALL NOT CONTAIN MORE THAN THE EQUIVALENT OF FOUR QUARTER BENDS (360 DEGREES TOTAL).

EXTERIOR RACEWAYS AND WIRING DEVICES BELOW THE FIRST LEVEL FLOOR SHALL BE SELECTED FOR MECHANICAL PROTECTION. EXTERIOR FITTINGS FOR RACEWAYS SHALL BE COMPRESSION TYPE AND LIQUIDTIGHT.
ALL PANELBOARDS SHALL BE PROVIDED WITH A FACTORY-INSTALLED GROUND BUS FOR CONNECTING TO GROUND THE GREEN OR BARE GROUND WIRE IN ALL BRANCH CIRCUITS.

PLUG-IN TYPE OVERCURRENT PROTECTION DEVICES OR PLUG-IN TYPE MAIN LUG ASSEMBLIES THAT ARE BACKFED SHALL BE SECURED IN PLACE BY AN ADDITIONAL FASTENER THAT REQUIRES OTHER THAN A PULL TO RELEASE THE DEVICE FROM THE MOUNTING MEANS ON THE PANEL PER NEC 408.37(D).

PROVIDE IDENTIFICATION OF ALL BRANCH CIRCUITS ON A TYPEWRITTEN DIRECTORY CARD IN THE PANELBOARD DOOR.

FOR MECHANICAL EQUIPMENT DETAIL REFER TO MECHANICAL DRAWINGS AND EQUIPMENT SPECIFICATIONS IN THE
PROJECT MANUAL.

ALL EXTERIOR 125V BRANCH CIRCUIT RECEPTACLES SHALL BE LISTED AS WEATHER-RESISTANT, GROUND FAULT PROTECTED, AND EQUIPPED WITH "IN-USE" TYPE WEATHER PROTECTION.

ALL INTERIOR NON-LOCKING 125V BRANCH CIRCUIT RECEPTACLES SHALL BE TAMPER RESISTANT PER NEC 406.12.

ALL 120V SINGLE PHASE 15 AMP AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS OR DEVICES INSTALLED IN THE LOCATIONS SPECIFIED IN NEC SECTION 210.12(A) SHALL INCLUDE ARC FAULT CIRCUIT INTERRUPTER PROTECTION BY ANY OF THE MEANS SPECIFIED IN NEC 210.12(A) NUMBERS (1) THROUGH (6). ARC FAULT CIRCUIT INTERRUPTER PROTECTION SHALL BE INSTALLED IN

ALL 125V SINGLE PHASE 15 AMP AND 20 AMP RECEPTACLES INSTALLED IN THE LOCATIONS

SPECIFIED IN NEC SECTION 210.8(A) NUMBERS (1) THROUGH (10) SHALL HAVE GROUND FAULT CIRCUIT INTERRUPTER PROTECTION FOR PERSONNEL.

AN OUTLET INSTALLED FOR THE PURPOSE OF CHARGING ELECTRIC VEHICLES SHALL BE SUPPLIED BY A SEPARATE BRANCH CIRCUIT HAVING NO OTHER OUTLETS PER NEC 210.17.

TEAM SHALL PROVIDE A CLEAR INSTALLATION ROUTE FOR ORGANIZER ETHERNET AND POWER CABLES FROM THE ORGANIZER UTILITY PANEL TO THE ORGANIZER ENCLOSURE.

TEAM SHALL SUPPLY A DEDICATED 15A 2P BRANCH CIRCUIT BREAKER AND ADEQUATE GROUND AND NEUTRAL BUS BAR TERMINALS IN THE TEAM PANEL BOARD FOR VOLTAGE SENSE CIRCUITRY CONNECTIONS TO THE ORGANIZER PV MONITORING METER TO BE CONNECTED BY ORGANIZER'S QUALIFIED ELECTRICAL PERSONNEL.

TEAM SHALL PROVIDE AN ORGANIZER ENCLOSURE OF REQUIRED SPECIFICATIONS PER SOLAR DECATHLON 2017 TEAM INTERCONNECTION CHECKLIST WITH ADEQUATE CONDUIT FILL AND PULL BOX ACCESS FOR ENTRANCE OF ORGANIZER SENSOR WIRES.

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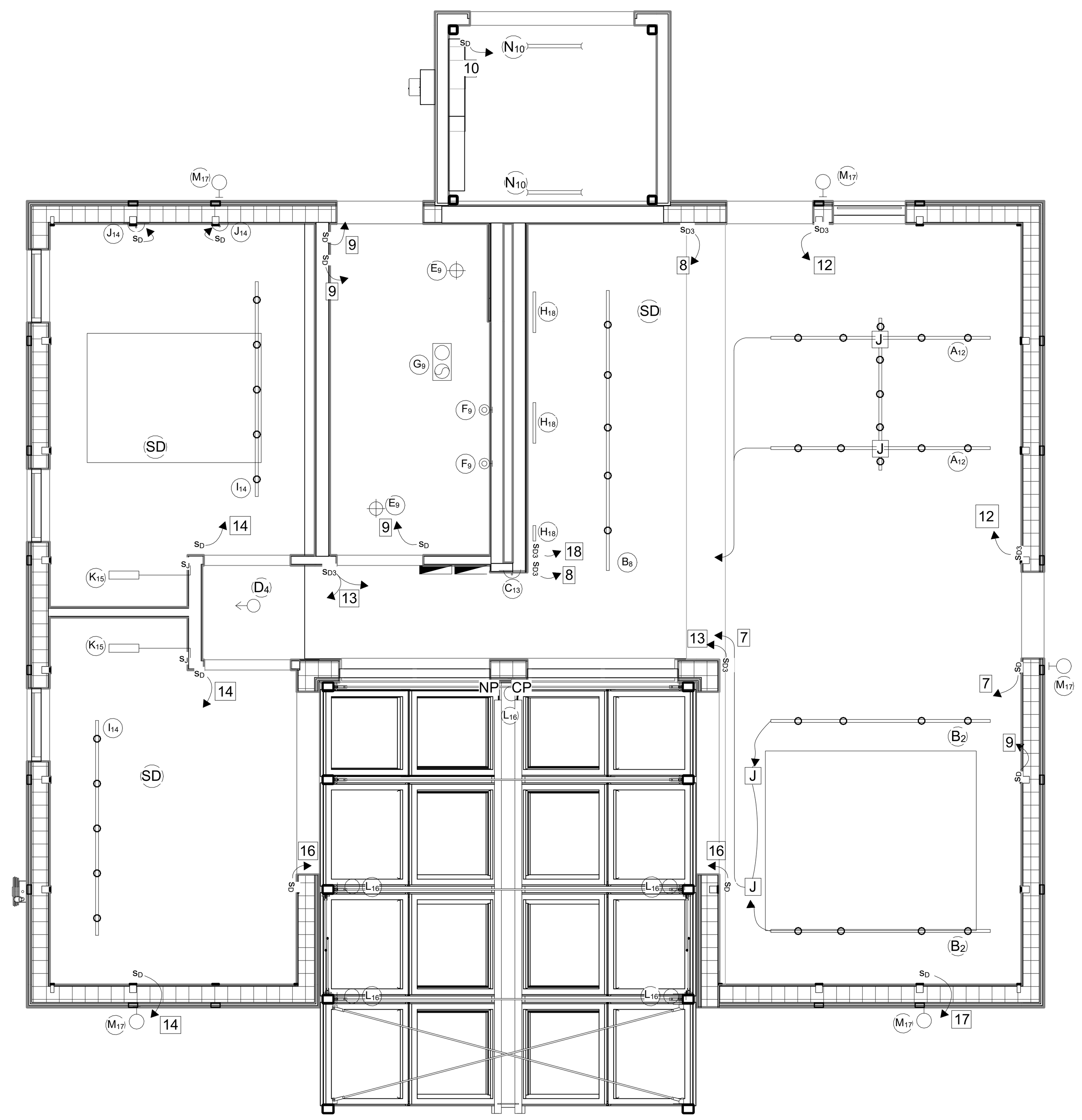
DESIGNED	Author
CHECKED	Checker

ELECTRICAL SYMBOLS & NOTES

E-001



1 LIGHTING
1/4" = 1'-0"

LIGHTING PLAN GENERAL NOTES

LIGHTING PLAN SHEET NOTES

REFRENCE SHEET E-600 FOR LIGHTING SCHEDULE AND CIRCUIT SCHEDULE

EXAMPLE

A_1

A: FIXTURE TYPE 1: CIRCUIT

1. LED INTERIOR LIGHTING, SPEC #265119
2. LED EXTERIOR LIGHTING, SPEC #265619
3. VENT DAMPERS, SPEC #235113.16

LIGHTING PLAN SYMBOLS LEGEND

Symbol	Description
	TRACK LIGHTING
	WALL MOUNTED EXTERIOR LIGHTING
	RECESSED (DIRECTIONAL) LIGHTING
	CEILING MOUNTED LIGHTING
	WARDROBE LIGHTING
	WALL SCONCES
	FAN/LIGHT COMBINATION
	UNDERCABINET LIGHTING
S_D	DIMMER SWITCH
S_{D3}	3-WAY DIMMER SWITCH
SD	SMOKE ALARM
J	JUNCTION BOX
NP	NON - CRITICAL PANEL
CP	CRITICAL PANEL
	VANITY LIGHT

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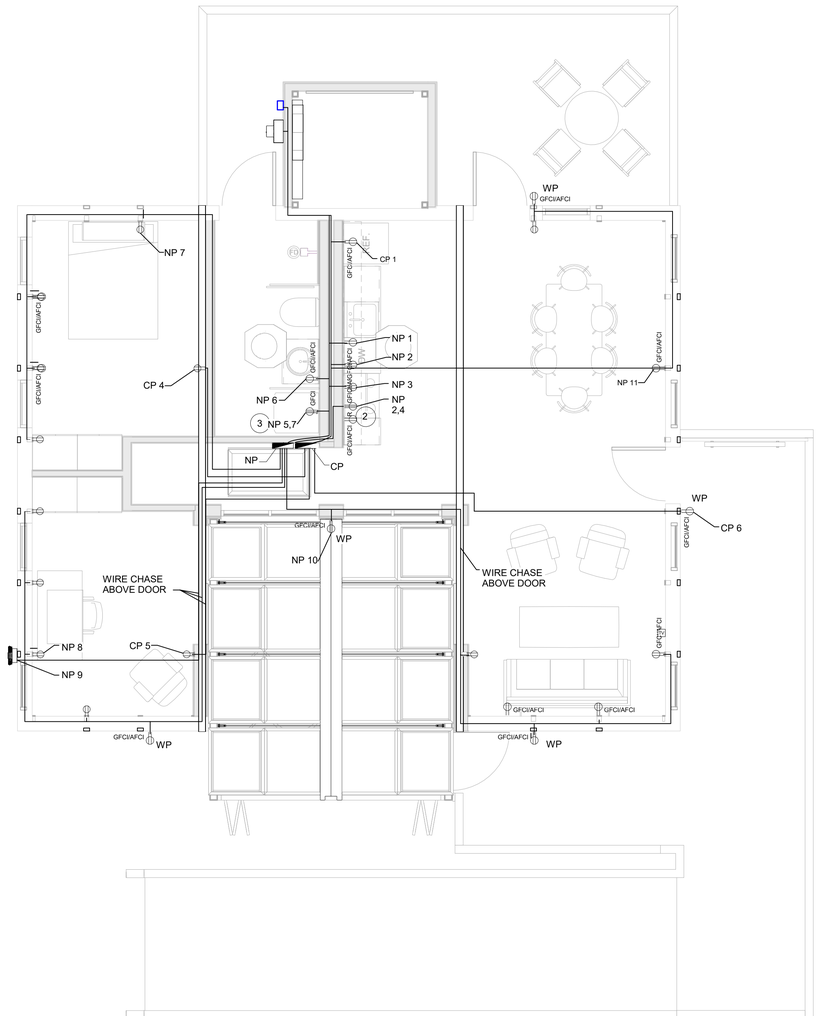
LIGHTING PLAN

E-100



1 ELECTRICAL DISTRIBUTION
1/4" = 1'-0"

ELECTRICAL DISTRIBUTION PLAN GENERAL NOTES

ELECTRICAL DISTRIBUTION PLAN SHEET NOTES

1. REFER TO PANEL SCHEDULES ON E-600 FOR MORE INFORMATION
2. GFCI RANGE IS A 50 AMP 250 VOLT RECEPTACLE NEMA 14-50R. SHOWN AS NP 4. 6-3 NM WIRE TO RECEPTACLE FROM PANEL
3. WASHER/DRYER USE 30 AMP 250 VOLT RECEPTACLE NEMA 14-30R. SHOWN AS NP5. 10-5 NM WIRE TO RECEPTACLE FROM PANEL.

1. PANEL BOARD (JUNCTION BOX), SPEC #262416
2. ENCLOSED SWITCHES AND CIRCUIT BREAKER, SPEC #262816

ELECTRICAL DISTRIBUTION LEGEND

	DUPLEX RECEPTACLE
GFCI, AFCI	GROUND FAULT CIRCUIT INTERRUPTERS/ ARC-FAULT CIRCUIT INTERRUPTER
WP	GFCI WEATHER PROOF RECEPTACLE
R	GFCI RANGE RECEPTACLE
D	GFCI DRYER RECEPTACLE
	WALL MOUNTED DATA OUTLET
TV	TELEVISION OUTLET
	DISCONNECT
	METER BOX
	CAR CHARGING STATION
NP	NON-CRITICAL PANEL
CP	CRITICAL PANEL

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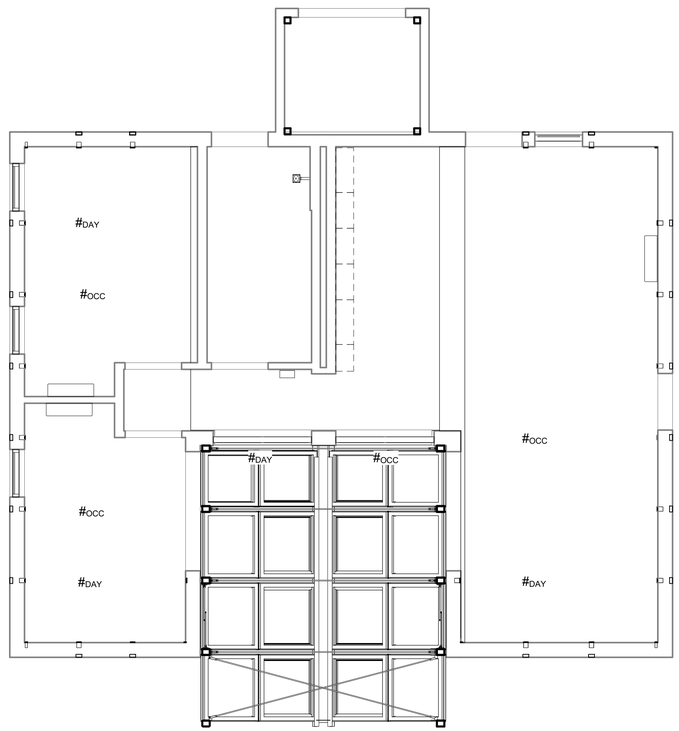
ELECTRICAL DISTRIBUTION PLAN

E-101

SCHEMATIC LIGHTING CONTROL DIAGRAM

* Dimmer may be installed in either location.



1 AUTOMATION
1/4" = 1'-0"

AUTOMATION PLAN GENERAL NOTES

A. THE LIGHTING CONTROL WILL ALLOW FOR AUTOMATIC CONTROL OF THE LIGHTING. THIS WILL ALLOW FOR ADVANCED ENERGYSAVING CAPABIITIES AND THE ABILITY OF THE OCCUPANTS TO CONTROL THE LIGHTING IN EACH PORTION OF THE HOUSE BY SMARTPHONE OR TABLET 'APPS'. THE SENSOR WILL ALSO WORK TO ANALYSE WHEN THERE IS OCCUPANCY IN THE HOUSE AND WHEN THERE ISNT, RESPONDING TO THIS IN TERMS OF LIGHTING ACCORDINGLY.

B. PLEASE REFRENCE LIGHTING CONTROL SPECIFICATION

AUTOMATION PLAN SHEET NOTES

AUTOMATION PLAN FINISH LEGEND

#DAY	DAY SENSOR
#OCC	OCCUPANCY SENSOR
	RASPBERRY PI + TABLET

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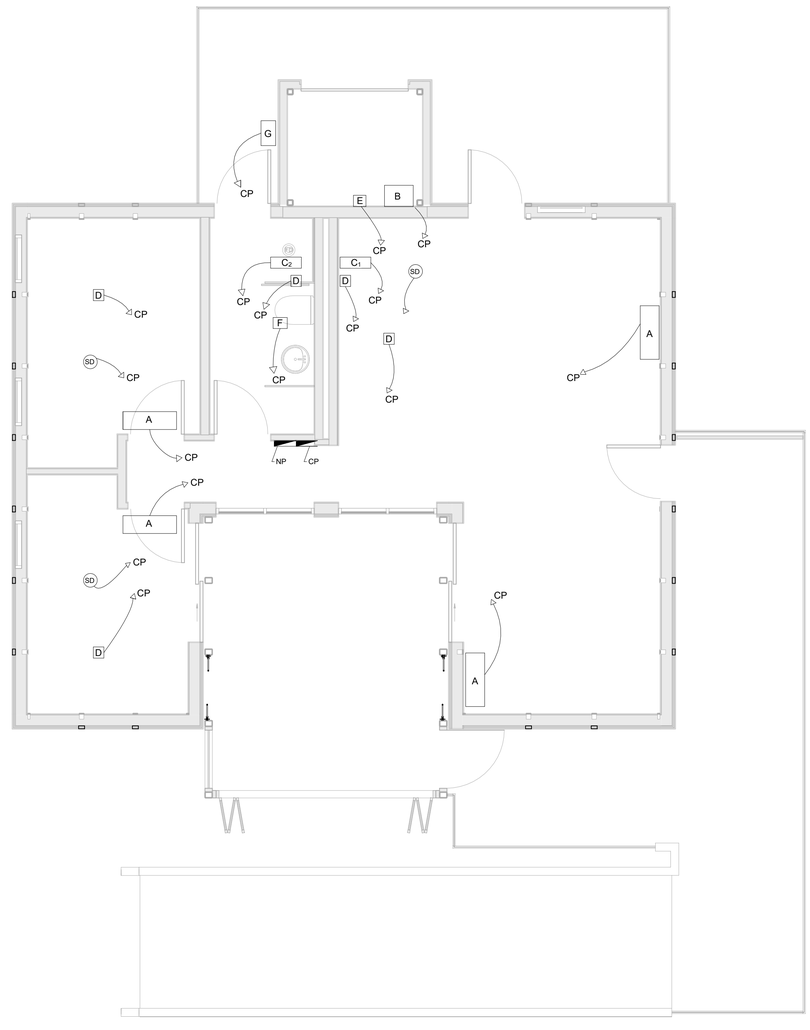
AUTOMATION PLAN

E-102



1 ELECTRIC HARD-WIRED EQUIPMENT
1/4" = 1'-0"

HARD-WIRED EQUIPMENT PLAN GENERAL NOTES

HARD-WIRED EQUIPMENT PLAN SHEET NOTES

A. SYSTEM AIR CONDITIONERS, SPEC #
B. ENERGY RECOVERY VENTAILATOR (ERV), SPEC
C_1. CONDENSOR - HOT WATER HEATER, SPEC
C_2. CONDENSOR - AIR, SPEC
D. DAMPER ALONG AIR DUCT, SPEC
E. HUMIDIFIER, SPEC
F. EXHAUST FAN, SPEC
G. METER BOX, SPEC

1. PANEL BOARD (JUNCTION BOX), SPEC #262416
2. WATER PUMP, SPEC #222400
3. SPLIT SYSTEM AIR CONDITIONS, SPEC #238126

HARD-WIRED EQUIPMENT PLAN ABREIATIONS LEGEND

A	MINI SPLIT SYSTEM
B	ERV
C_1	CONDENSOR - HOT WATER
C_2	CONDESER -
D	DAMPER ALONG AIR
E	HUMIDIFIER
F	EXHAUST FAN
G	METER BOX
NP	NON CRITICAL PANEL
CP	CRITICAL PANEL
SD	SMOKE DETECTOR

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HARD-WIRED EQUIPMENT PLAN

E-103

PV MODULE RATINGS @ STC	
MODULE MAKE	Sunpower
MODULE MODEL	SPR-X21-335-BLK
MAX POWER-POINT CURRENT IMP	5.83A
MAX POWER-POINT VOLTAGE VMP	57.3V
OPEN CIRCUIT VOLTAGE VOC	67.9V
SHORT CIRCUIT CURRENT ISC	6.23A
MAX SERIES FUSE (OCPD)	20A
MAXIMUM POWER PMAX	335W
MAX VOLTAGE (TYP 600VDC)	600V UL
VOC TEMPERATURE COEFFICIENT(mV/c)	-167 mV/C

SIGNS (for warning etc.)	
RATED MPP CURRENT	17.49A
RATED MPP VOLTAGE	573V
MAX SYSTEM VOLTAGE	1143.67V

OPERATING CONDITION AND MECHANICAL DATA	
TEMPERATURE	– 40°F to +185°F (– 40°C to +85°C)
MAX LOAD	Wind: 50 psf, 2400 Pa, 245 kg/m² front & back Snow: 112 psf, 5400 Pa, 550kg/m² front
IMPACT RESISTANCE	1 inch (25 mm) diameter hail at 52 mph (23 m/s)
SOLAR CELL TYPE	96 Monocrystalline Maxeon Gen III Cells
WEIGHT	41 lb (18.6 kg)
DIMENSIONS (in)	61.24 x 41.18 x 1.81

AUTO TRANSFORMER RATINGS	
TRANSFORMER MAKE	SolarEdge
MODEL	SEAUTO-TX-5000
MAX RATED POWER (PEAK)	7600VA for 10sec
RATED POWER (CONTINUOUS)	5000VA
SPLIT PHASE IMBALANCE(@RATED POWER)	Upto 25A
NOMINAL AC VOLTAGE	240V
MAX AC CURRENT	25A
OPERATING CONDITION AND MECHANICAL DATA	
TEMPERATURE	– 13°F to +140°F (– 25°C to +60°C)
WEIGHT	29.7 lb (13.5 kg)
PROTECTION RATING	NEMA 3R
DIMENSIONS (in)	6.7 x 7.9 x 5.5 (wall mounted)

INVERTER RATINGS	
INVERTER MAKE	SolarEdge
INVERTER MODEL	SE7600A-USS
MAX DC VOLT RATING	500V
MAX POWER @ 40C	5000W @STC
NOMINAL AC VOLTAGE	240V
MAX AC CURRENT	32A
OPERATING CONDITION AND MECHANICAL DATA	
TEMPERATURE	– 13°F to +140°F (– 25°C to +60°C)
WEIGHT	58.5 lb (26.5 kg)
DIMENSIONS (in)	37 x 12.5 x 7.2

DC-DC OPTIMIZER RATINGS	
OPTIMIZER MAKE	SolarEdge
OPTIMIZER MODEL	P400
MAX DC INPUT VOLTAGE	80V
MAX DC INPUT CURRENT	10A
MAX INPUT POWER @ 40C	400W @STC
MAXIMUM OUTPUT VOLTAGE	60V
MAXIMUM OUTPUT CURRENT	15A
MAX OCPD RATING	20A
OPERATING CONDITION AND MECHANICAL DATA	
TEMPERATURE	– 40°F to +185°F (– 40°C to +85°C)
WEIGHT	1.5 lb (700g)
DIMENSIONS (in)	8.2 x 6.1 x 1.16

BATTERY RATINGS (POWERWALL 1)	
BATTERY MAKE	TESLA
BATTERY MODEL	Daily Powerwall Home Battery
DC VOLT RATING	350V-450V
POWER continuous and peak	3.3kW
ENERGY @ 25C, 2kW charge/discharge power	6.4 kWh
DC CURRENT, continuous and peak	9.5A

BATTERY RATINGS (POWERWALL 2)	
BATTERY MAKE	TESLA
BATTERY MODEL	POWERWALL 2 AC
AC VOLT (Nominal)	208 V, 220 V, 230 V, 277 V, 100/200 V, 120/240 V
AC ENERGY 1	13.2kWh
REAL POWER, max continuous	5 kW (charge and discharge)
REAL POWER PEAK	7 kW (discharge only)
INTERNAL BATTERY DC VOLTAGE	50V

1 Values provided for 25°C (77°F), 3.3 kW charge/discharge power

OPERATING CONDITION AND MECHANICAL DATA (PowerWall 2)	
TEMPERATURE	Operating: – 4°F to +122°F (– 20°C to +50°C) Storage: -22F to 140F (-30C to 60C)
WEIGHT	269 lb (122kg) Floor or Wall Mount
DIMENSIONS (in)	45.3 x 29.7 x 6.1

OPERATING CONDITION AND MECHANICAL DATA (Powerwall 1)	
TEMPERATURE	Operating: – 4°F to +122°F (– 20°C to +50°C) Storage: -22F to 140F (-20C to 30C)
WEIGHT	209.439 lb (95kg)
DIMENSIONS (in)	51.18 x 33.85 x 7.08

PHOTOVOLTAIC SYSTEMS INFORMATION GENERAL NOTES

PHOTOVOLTAIC MOUNTING DETAIL SHEET NOTES

THE SYSTEM USED (P400 + STORRDGE INVERTERS) HAS A BUILT IN CONTROL MECHANISM THAT MAINTAINS THE STRING VOLTAGE AT A CONSTANT MAXIMUM OF 350V AND THE PER MODULE VOLTAGE AT A MAXIMUM OF 60V. THIS NEGATES THE NEED FOR ANY SEPERATE CONCERNS OVER THE FLUCTUATION OF VOLTAGES WITH THE LOCATION TEMPERATE.

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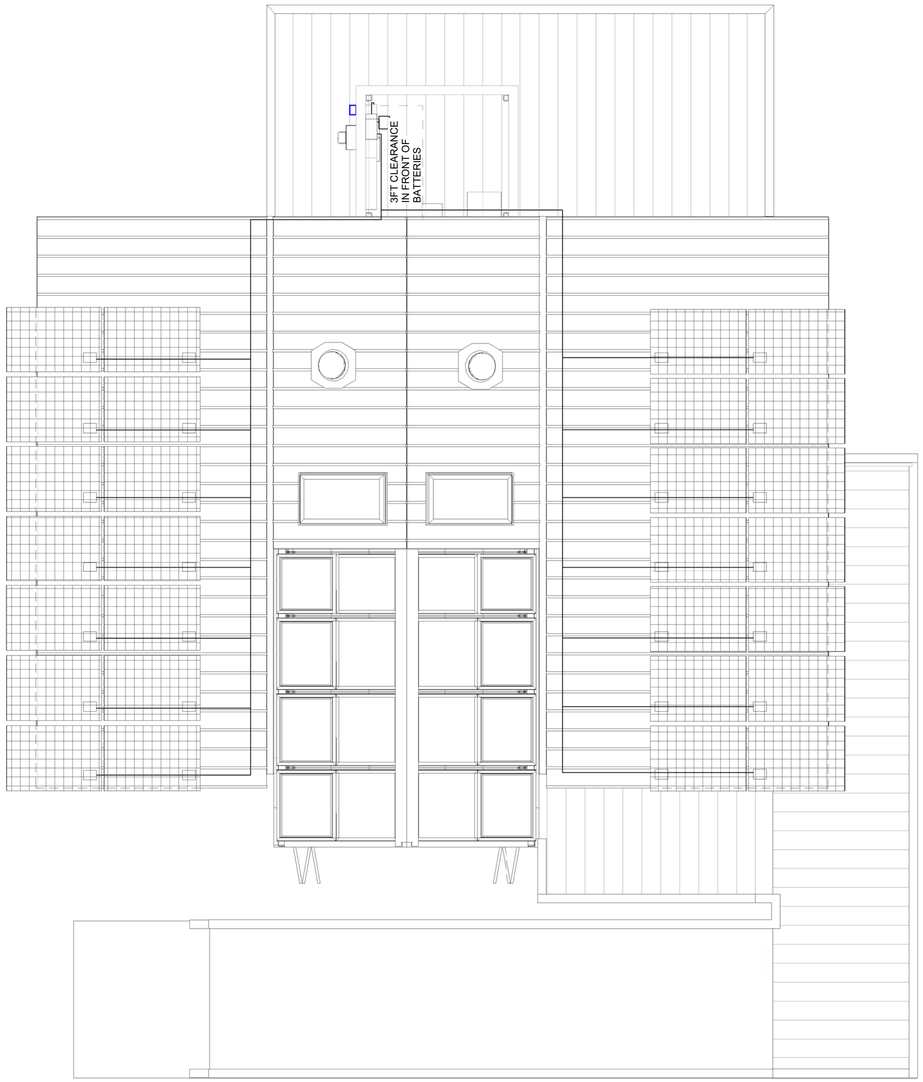
PHOTOVOLTAIC SYSTEMS INFORMATION

E-104



1 SOLAR ARRAY PLAN
1/4" = 1'-0"

PHOTOVOLTAIC ARRAY ROOF PLAN GENERAL NOTES

A. REFER TO SHEET E-500 FOR PANEL INSTALLATION.

PHOTOVOLTAIC ARRAY ROOF PLAN SHEET NOTES

A. REFER TO SHEET E-601 ADN E-602 FOR MORE INFORMATION

B. REFER TO SHEET E-104 FOR PHOTOVOLTAIC SYSTEMS INFORMATION

C. PV MODULE SPEC. #263100

D. WEATHER STATION SPEC. #230923-43

SUNPOWER X21-355 BLK PC MODULE

SOLAR EDGE, P400 DC-DC OPTIMIZER

10 AWG PV WIRE

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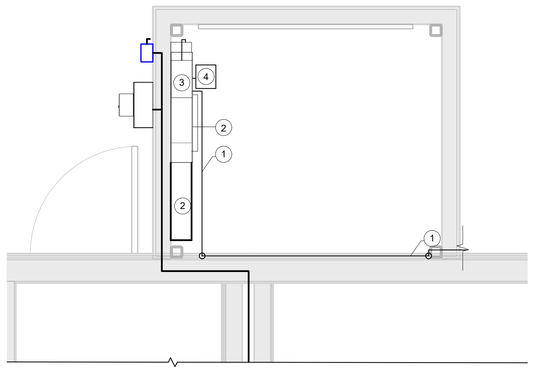
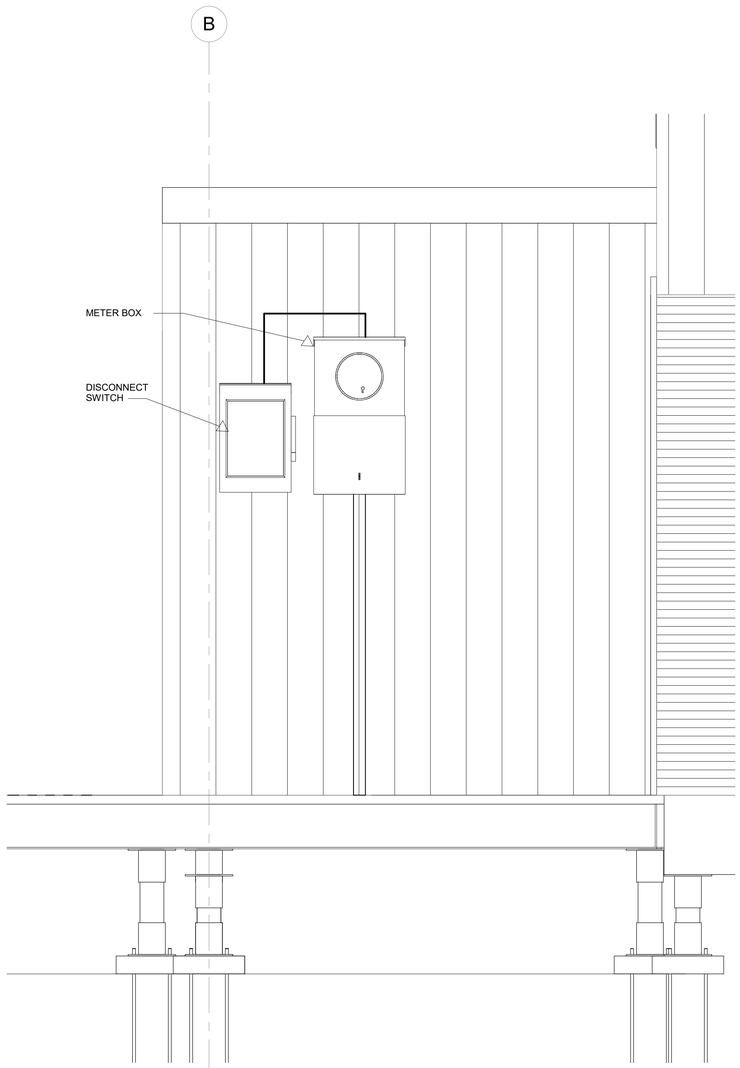
PHOTVOLTAIC ARRAY ROOF PLAN

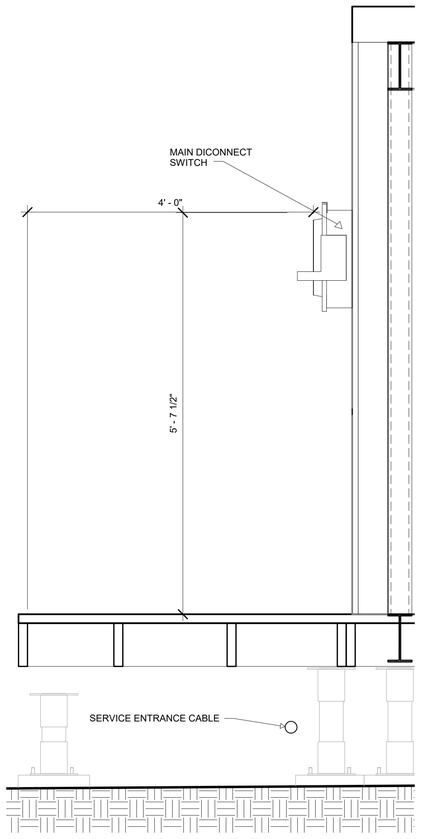
E-105



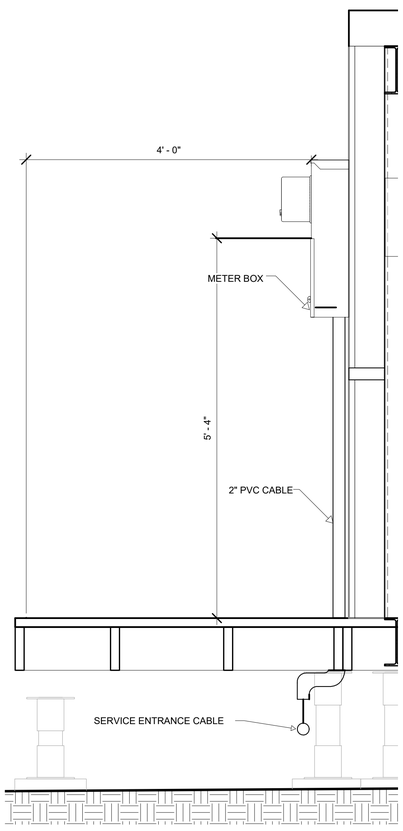
4 PV/BATTERY CONNECTION DETAIL
1/2" = 1'-0"



3 METER BOX AND DISCONNECT SWITCHCONNECTION
1" = 1'-0"



2 DISCONNECT SECTION
1" = 1'-0"



1 METER BOX SECTION
1" = 1'-0"

ELECTRICAL ELEVATIONS GENERAL NOTES

ELECTRICAL ELEVATIONS SHEET NOTES

1. 10 AWG PV WIRE
2. TESLA POWER WALL 1
3. SOLAREDGE INVERTER SE7600A-USS
4. SOLAREDGE AUTO TRANSFORMER SEAUTO-TX-5000 WALL MOUNTED UNDER INVERTER

ELECTRICAL ELEVATION PLAN LEGEND

- GFCI — GROUND FAULT CIRCUIT INTERRUPTER
- WP — GFCI WEATHER PROOF RECEPTACLE
- DISCONNECT SWITCH
- METERBOX

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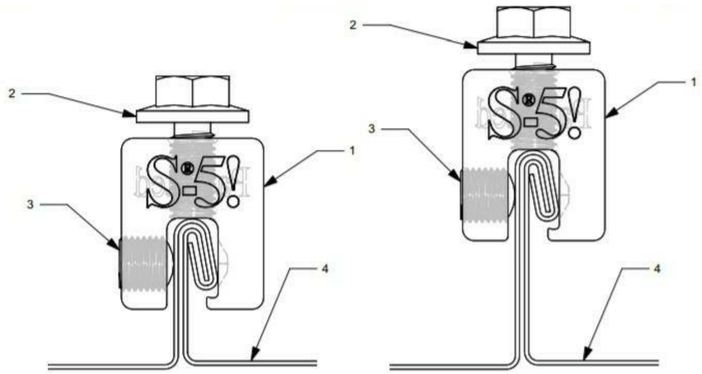
ELECTRICAL ELEVATIONS

E-200

General Notes
1. S-5-E (M8)
2. M8 Hex Flange Bolt (A2 / 18/8 Stainless Steel)
3. 3/8 - 24 x 0.80" Round Point Setscrew
4. Example Roof



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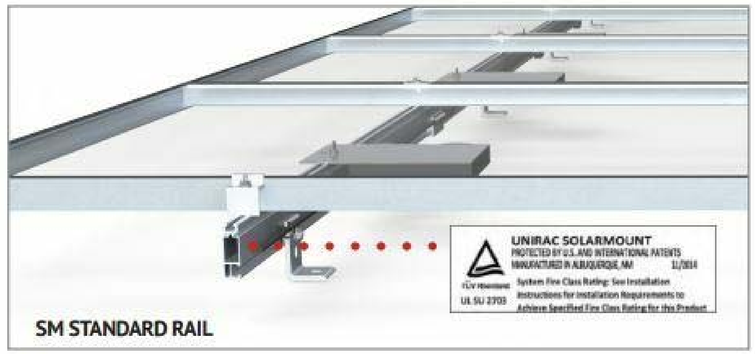
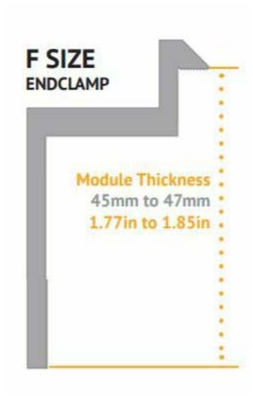
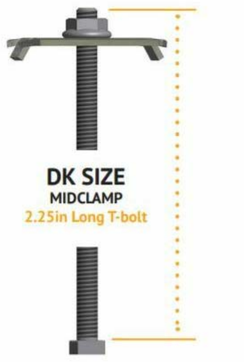


2

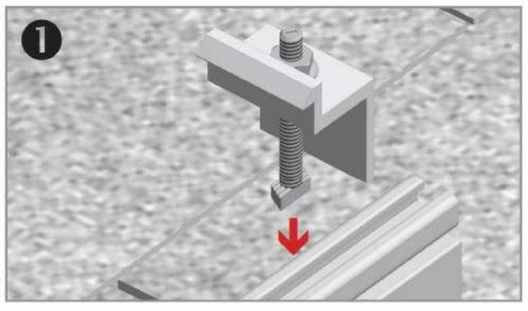
Rail Type	Module Type	System Level Fire Rating	Rail Direction	Module Orientation	Mitigation Required
Standard Rail	Type 1, Type 2, Type 3 & Type 10	Class A, Class B & Class C	East-West	Landscape OR Portrait	None Required
			North-South	Landscape OR Portrait	None Required



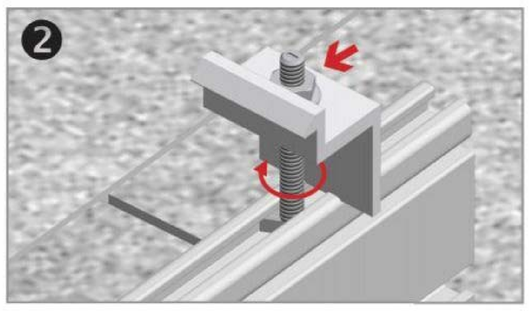
MODULE ENDCLAMP: PROVIDES BOND FROM RAIL TO ENDCLAMP. PRE-ASSEMBLED ALUMINUM CLAMP AVAILABLE IN CLEAR OR DARK FINISH. SUPPLIED WASHER DEEPS CLAMP AND BOLT UPRIGHT FOR EASE OF ASSEMBLY.



MODULE MIDCLAMP: PRE-ASSEMBLED CLAMP PROVIDES MODULE TO MODULE AND MODULE TO RAIL BOND. STAINLESS STEEL CLAMP AND T-BOLT.



INSERT ENDCLAMP T-BOLT; INSERT 1/4" T-BOLT INTO RAIL.



ENDCLAMPS ARE POSITIONED ON RAILS PRIOR TO THE FIRST END MODULE AND INSTALLED AFTER THE LAST END MODULE.

PHOTOVOLTAIC MOUNTING DETAIL GENERAL NOTES

PHOTOVOLTAIC MOUNTING DETAIL SHEET NOTES

1. S-5-E SEAM CLAMP FOR STANDING SEAM METAL ROOF PANELS.
2. SOLARMOUNT STANDARD RAIL MOUNTED UNTO S-5-E SEAM CAMP.

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PHOTOVOLTAIC MOUNTING DETAILS

E-500

Sno.	LOAD TYPE	LOAD VALUE (VA)	MULTIPLIER/DEMAND	TOTAL (STANDARD METHOD)	OPTIONAL METHOD	NEC ref.
1	General Lighting					220.12+220.42
2	Small Appliance branch circuit	min. 2 x 1500VA = 3000VA	3000@ 100% 4998@ 35%	4750 VA		220.11(C)(1)+220.52(A)
3	Laundry Circuit	1 circuit @ 1500 VA				220.11(C)(2)+220.52(B)
4	Electric Dryer	1 Dryer @ max(5000 VA, nameplate rating)	5000@ 100%	5000 VA		220.54
5	Hot water heater					
6	Dishwasher	Fixed-appliance loads total = 1400 (for dishwasher) + 7200 (for EV charger)	Total of 4 fixed appliances @ 75%	10227 VA		220.53
7	EV charger	+16 (for UV lamp) + 5020 (for water heater) = 13,636VA				
8	UV Lamp					
9	Electric Range	1 range @ 13300 VA	8000 VA + 5%(8000) = 8400VA	8400 VA	Total of 45,704VA: 10,000VA @ 100% 35,704VA @ 40%	Table 220.19
10	Pump (SCALA)	550 VA	550 VA@ 100%	550 VA		
11	Pump (BMQ)	2400 VA	2400 VA@ 100%	2400 VA		
12	Mini-split condenser unit	max(2490 W for heating, 2310W for cooling) = 2490W	2490VA	2490VA		
13	Mini split indoor units (x4)	184VA	184VA	184VA		
14	ERV unit + Drum Humidifier	143W+3VA	146VA	146VA		
15	Highest motor load	2400VA	2400@25%	600VA		220.14(C)
		TOTAL = 45,704 VA		**Total = 34,747VA**	**Total = 24,281VA**	
				Closest Amp rating = 150A	**Closest Amp rating = 100A**	
				2/0 AWG Aluminium or 1AWG copper		

NEUTRAL LOADS

LOAD TYPE	CONTRIBUTION (100%unless otherwise indicated)	TOTAL (STANDARD METHOD)
GENERAL LIGHTING		
SMALL APPLIANCE BRANCH CIRCUIT	7998	7998 VA
LAUNDRY CIRCUIT		
ELECTRIC DRYER	5000 @ 70%	3500 VA
HOT WATER HEATER		
DISHWASHER	TOTAL OF 4 FIXED APPLIANCES= 13636	13636 VA
EV CHARGER		
UV LAMP		
ELECTRIC RANGE	8000 VA + 5%(8000) = 8400VA @ 70%	5880 VA
PUMP (SCALA)	550 VA	550 VA
PUMP (BMQ)	2400 VA	2400 VA
MINI-SPLIT CONDENSER UNIT	2490VA	2490VA
MINI SPLIT INDOOE UNITS (X4)	184VA	184VA
ERV UNIT + DRUM HUMIDIFIER	146VA	146VA
HIGHEST MOTOR LOAD	2400@25%	600VA
		TOTAL = 37,384VA NEUTRAL CONDUCTOR SIZE = 3/0 COPPER OR ALUMINIUM

LIGHTING FIXTURE SCHEDULE

LETTER	DESCRIPTION	TYPE	COUNT	WATTAGE	MOUNTING	NOTES
A	TRACK LIGHTING DINING ROOM (3)	LED	15	105W (7W PER BULB)	CEILING 2" SUSPENSION	FIXTURE: TECH LIGHTING 800CBL5PN BULB: MAXLITE LED GU5.3 7MR16 LAMPS INCLUDING A JUNCTION BOX
B	TRACK LIGHTING LIVING ROOM (2)	LED	10	70W (7W PER BULB)	CEILING 2" SUSPENSION	FIXTURE: TECH LIGHTING 800CBL5PN BULB: MAXLITE LED GU5.3 7MR16 LAMPS INCLUDING A JUNCTION BOX
C	HALLWAY	LED	1	22W	SPINE WALL	FIXTURE: QB LED WALL SCONCE, FINISH: BLACK, BRUSHED CHROME, OPTION: DIMMABLE
D	HALLWAY	LED	1	75W	CEILING	FIXTURE: TM603 RECESSED LIGHTING 6" LINE VOLTAGE TRIMS, 30DEGREE ADJUSTABLE FROM VERTICA, PAR30 LED LIGHT BULB
E	BATHROOM MOISTURE RESISTANT	LED	1	6W	CEILING	FIXTURE: TITANIUM LED SERIES 4.0 MR16 - MAY REQUIRE HOUSING SUCH AS WAC LIGHTING HR-8401E RECESSED LOW VOLTAGE WITH AN ELECTRIC TRANSFORMER BULB: MR16 12V 6W DIMMABLE
F	BATHROOM VANITY LIGHT	LED	2	6W (3W PER BULB)	INTERNAL WALL (SPINE)	FIXTURE: UNILUME LED MICRO CHANNEL BULB: BUILT IN - CAN BE REPLACED WITH A 3W REPLACEMENT - LED LIGHT BULB - FESTOON BASE - BULBRITE"
G	EXHAUST FAN LIGHT	LED	1	11.5W	CEILING	FIXTURE: BROAN 0.7 SONES 110-CFM WHITE BATHROOM FAN GU24 WITH LIGHT ENERGY STARBULB: SATCO A19 LED LAM
H	KITCHEN UNDERCABINET	LED	3	9W (3W PER BULB)	UNDER KITCHEN CABINETS	FIXTURE: UNILUME LED MICRO CHANNEL BULB: BUILT IN - CAN BE REPLACED WITH A 3W REPLACEMENT - LED LIGHT BULB - FESTOON BASE - BULBRITE
I	WARDROBE LIGHTS	LED	2	-	MOUNTED ON CEILING ON WARDROBE	FIXTURE: LED LIGHT STRIP, ALUMINUM COLOR BUILT IN LED EMITTS 340 LUMENS
J	BEDROOM SCONCES	LED	2	22W (11W PER BULB)	NORTH FACING WALL	FIXTURE: KOVACS P4308-084 BULB: MAXLITE 11A19DLED30/G4
K	TRACK LIGHTING BEDROOM (1)	LED	5	35W (7W PER BULB)	CEILING 2" SUSPENSION	FIXTURE: TECH LIGHTING 800CBL5PN BULB: MAXLITE LED GU5.3 7MR16 LAMPS
L	WALL SCONCES COURTYARD	LED	5	100W (20W PER BULB)	MOUNTED ALONG CHANNELS	FIXTURE: WINDFALL EXTERIOR WALL SCONCES STAINLESS STEEL, MOUNTED VERTICALLY, BULB: MAXLITE 7W LED MR16 LAMP
M	EXTERIOR LIGHTING	LED	5	30W (6W PER BULB)	MOUNTED ALONG CHANNELS	FIXTURE: PROGRESS LIGHTING P5675-20/30K BULB: GU10 6W DIMMABLE
N	MECHANICAL ROOM LIGHTING	LED	2	70W(35 P34 BULB)	CEILING MOUNTED	FIXTURE: LITHONIA LIGHTING FMLL 9 30840 WHITE LITEPUFF" FLUSH MOUNT 4000K LED CEILING

SCHEDULES GENERAL NOTES

SCHEDULES SHEET NOTES

SCHEDULES LEGEND

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SOLAR DECATHLON 2017 SUBMISSION

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SCHEDULES

E-600

CIRCUIT DIRECTORY FOR CRITICAL LOADS PANEL											
	AMPS	POLE	WIRE SIZE	CIRCUIT NO.	PHASE LOAD A (W)	PHASE LOAD B (W)	CIRCUIT NO.	WIRE SIZE	POLE	AMP	
REFRIGERATOR	1.9	1	14	1	51	3.1	2	14	1	0.17	TV
COMPUTER	0.67	1	14	3	80	900	4	14	1	15	BEDROOM RECEPTACLE
OFFICE RECEPTACLE	15	1	14	5	900	720	6	14	1	15	FRONT DOOR WEATHER PROOF RECEPTACLE
LIVING ROOM LIGHTING	15	1	14	7	70	9	8	14	1	15	KITCHEN LIGHTING
BATHROOM LIGHTING	5	1	14	9	12	70	10	14	1	15	MECHANICAL ROOM LIGHTS
LIVING SYSTEMS PUMP	2.5	1	14	11	600	200	12	14	1	0.9	SPRINKLER SYSTEM
SPARE				13			14				SPARE
SPARE				15			16				SPARE
SPARE				17			18				SPARE
SPARE				19			20				SPARE
SPARE				21			22				SPARE
SPARE				23			24				SPARE
SPARE				25			26				SPARE
SPARE				27			28				SPARE
SPARE				29			30				SPARE
				TOTALS (W)	1713	1902.1					
					3615.1						
					4717.9/240						
				AMPS	15.06						

CIRCUIT DIRECTORY FOR NON-CRITICAL LOADS PANEL											
	AMPS	POLE	WIRE SIZE	CIRCUIT NO.	PHASE LOAD A (W)	PHASE LOAD B (W)	CIRCUIT NO.	WIRE SIZE	POLE	AMP	
DISHWASHER	12	1	14	1	1440	1350	2	14	2	11.5	RANGE
MICROWAVE RECEPTACLE	14.3	1	14	3	1710	1350	4	14	2	11.5	RANGE
WASHER/DRYER RECEPTA	11.5	2	14	5	1350	180	6	14	1	15	BATHROOM RECEPTACLE
WASHER/DRYER RECEPTA	11.5	2	14	7	1350	1000	8	14	1	1.5	GARBAGE DISPOSAL
WATER HEATER	15	2	14	9	2250	180	10	14	1	15	EXTERIOR OUTLET
WATER HEATER	15	2	14	11	2250	105	12	14	1	15	DINING ROOM LIGHTS
HALLWAY LIGHTS	15	1	14	13	95	57	14	14	1	15	MASTER BEDROOM LIGHTING
OFFICE LIGHTING	15	1	14	15	35	100	16	14	1	15	COURTYARD LIGHTING
SPARE				17		9	18	14	1	15	KITCH UNDERCABNET LIGHTING
SPARE				19			20				SPARE
SPARE				21			22				SPARE
SPARE				23			24				SPARE
SPARE				25			26				SPARE
INVERTER INPUT	40	2		27			28				SPARE
INVERTER INPUT	40	2		29			30				SPARE
				TOTAL (W)	10480	4331					
					14811						
					14811/240						
				AMPS	61.71						

LIGHTING ZONING (CIRCUITS) SCHEDULE				
CIRCUIT	DESCRIPTION	PANEL	AMPERAGE	VOLTAGE
12	DINING ROOM	NC	15	120
7	LIVING ROOM	CP	15	120
8	KITCHEN	CP	15	120
13	HALLWAY	NC	15	120
9	BATHROOM	CP	15	120
14	MASTER BEDROOM	NC	15	120
15	OFFICE	NC	15	120
16	COURTYRAD	NC	15	120
17	EXTERIOR	NC	15	120
10	MECHANICAL ROOM	CP	15	120
18	KITCHEN UNDERCABINET	NC	15	120

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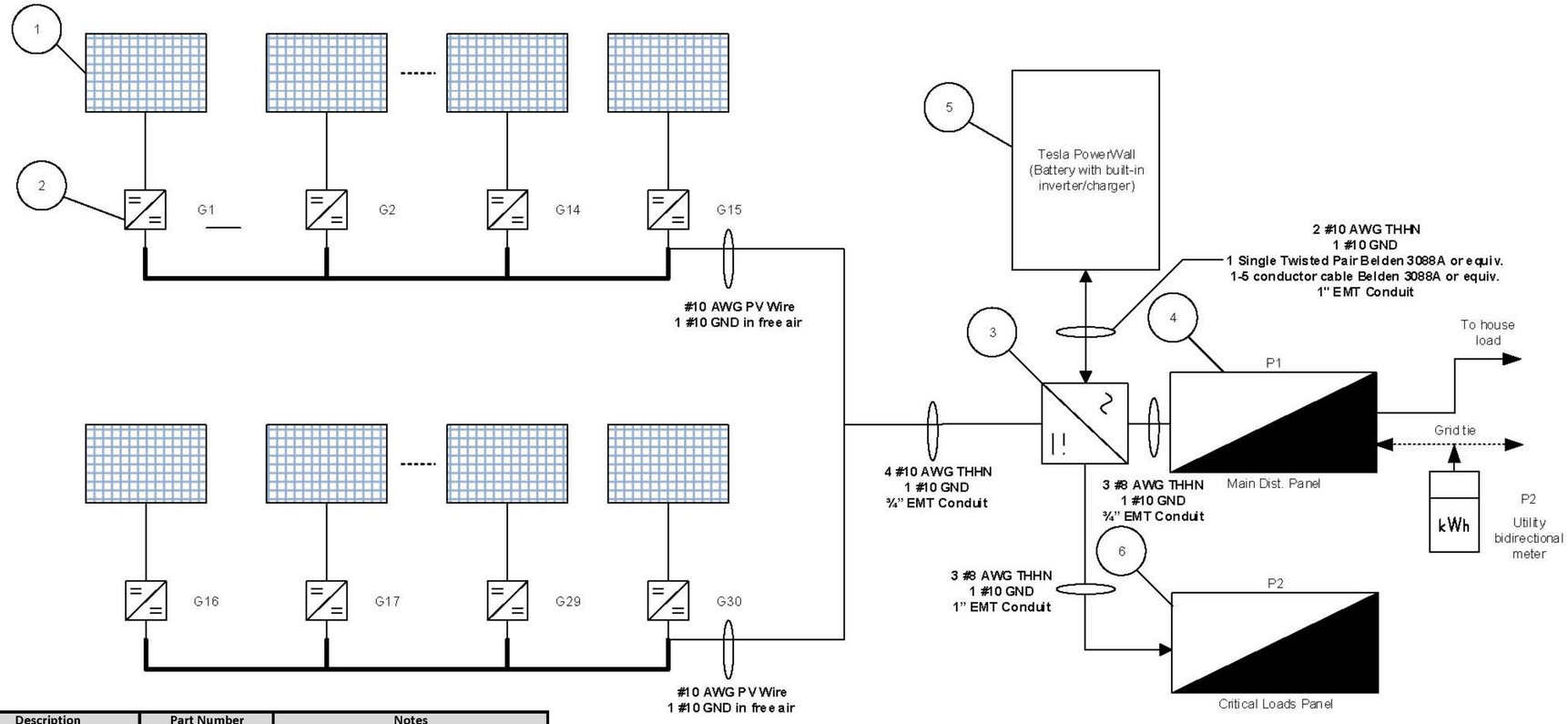
PANEL SCHEDULES

E-601

One Wire Diagram: StorEdge GridTie (with battery backup)



Tag	Description	Part Number	Notes
1	PV module	X21-335 BLK	SunPower, Quantity - 30 modules
2	DC-DC optimizer	P400	SolarEdge, Quantity - 30 units
3 a)	DC-AC String Inverter	SE7600A-USS	SolarEdge, Quantity - 1 units
3 b)	Auto Transformer	SEAUTO-TX-5000	SolarEdge, Quantity -1 units, Connected to the inverter with 3 #8 AWG THHN, 1 #10 GND, 1 Single twisted Pair Belden 3099 or equiv. 3/4" EMT Conduit
4	Main Service Panel	HOM3060M150PCVP	SquareD Homeline 150A, 30 space, 60 Circuit
5	Battery Pack	Tesla PowerWall	Tesla, integrated with StorEdge inverter
6	Emergency Sub-Panel	HOM1224L125PGCVP	Square D Homeline 125A, 12 Space, 24 Circuit

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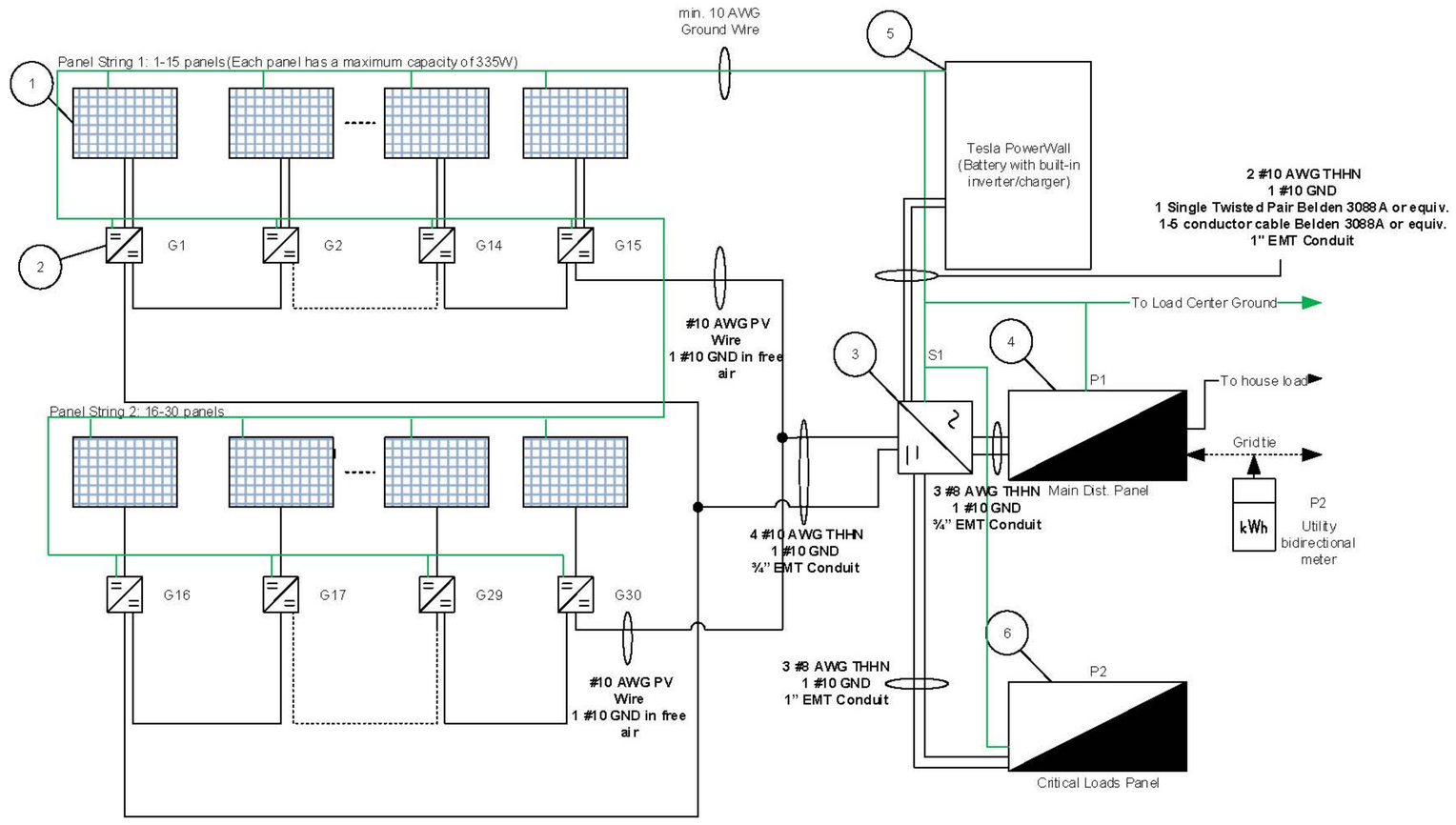
PV ONE LINE WIRE DIAGRAM

E-602

Three Line Diagram: StorEdge GridTie (with battery backup)



Tag	Description	Part Number	Notes
1	PV module	X21-335 BLK	SunPower, Quantity - 30 modules
2	DC-DC optimizer	P400	SolarEdge, Quantity - 30 units
3 a)	DC-AC String Inverter	SE7600A-USS	SolarEdge, Quantity - 1 units
3 b)	Auto Transformer	SEAUTO-TX-5000	SolarEdge, Quantity -1 units, Connected to the inverter with 3 #8 AWG THHN, 1 #10 GND, 1 Single twisted Pair Belden 3099 or equiv. 3/4" EMT Conduit
4	Main Service Panel	HOM3060M150PCVP	SquareD Homeline 150A, 30 space, 60 Circuit
5	Battery Pack	Tesla PowerWall	Tesla, integrated with StorEdge inverter
6	Emergency Sub-Panel	HOM1224L125PGCVP	Square D Homeline 125A, 12 Space, 24 Circuit

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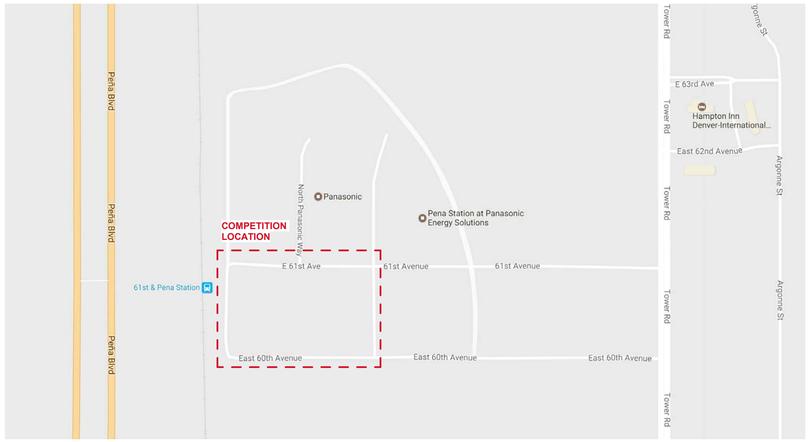
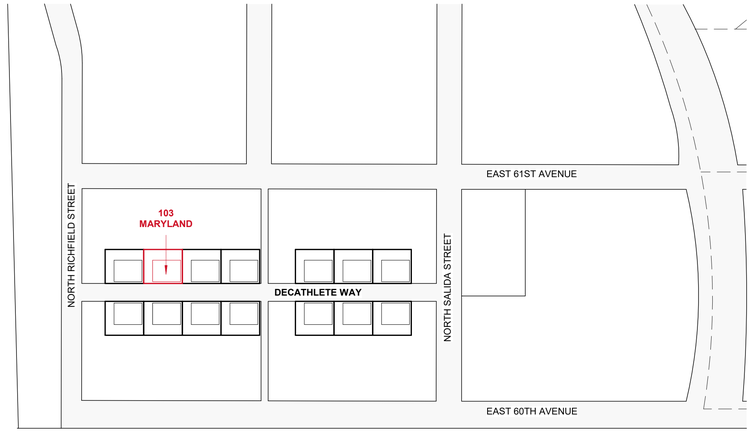
PV THREE LINE WIRE DIAGRAM

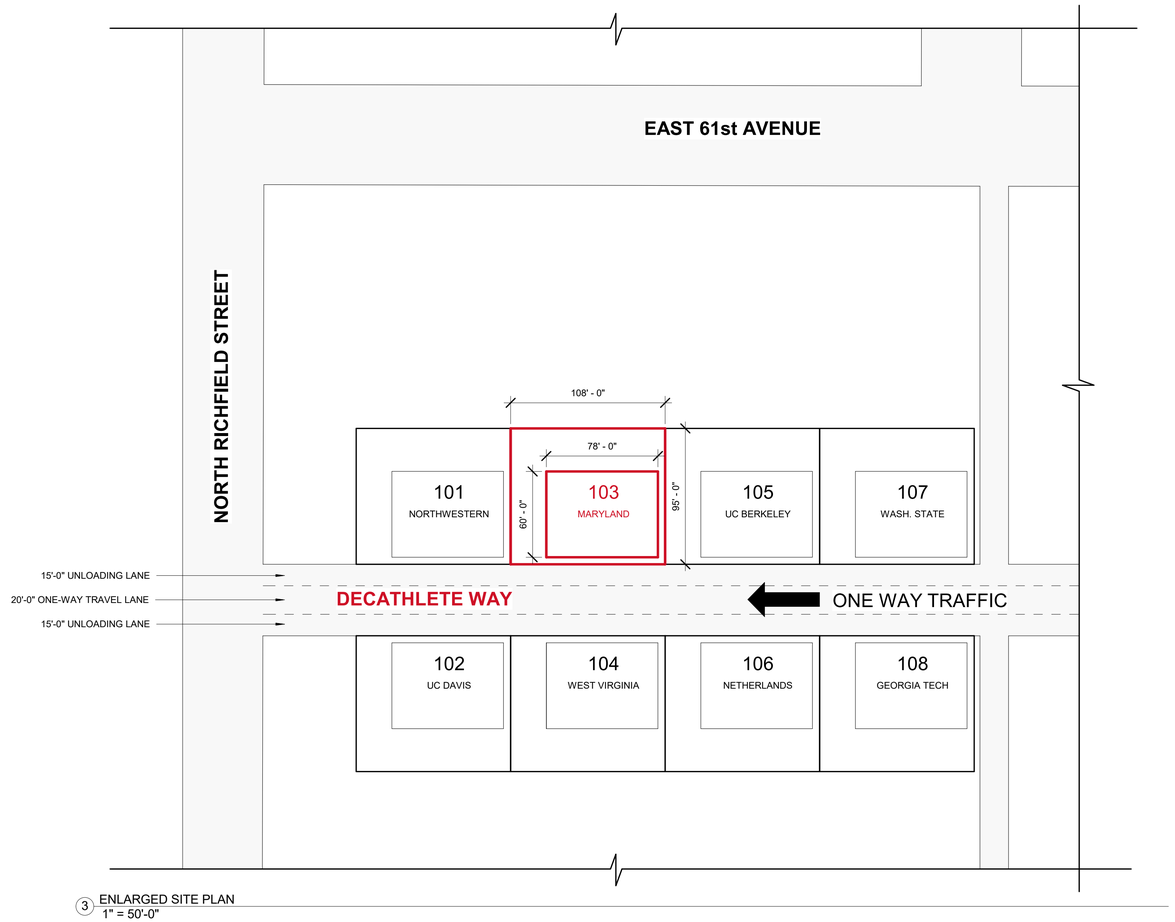
E-603



1 COMPETITION SITE KEY PLAN
1/4" = 1'-0"



2 COMPETITION SITE PLAN
1" = 200'-0"



3 ENLARGED SITE PLAN
1" = 50'-0"

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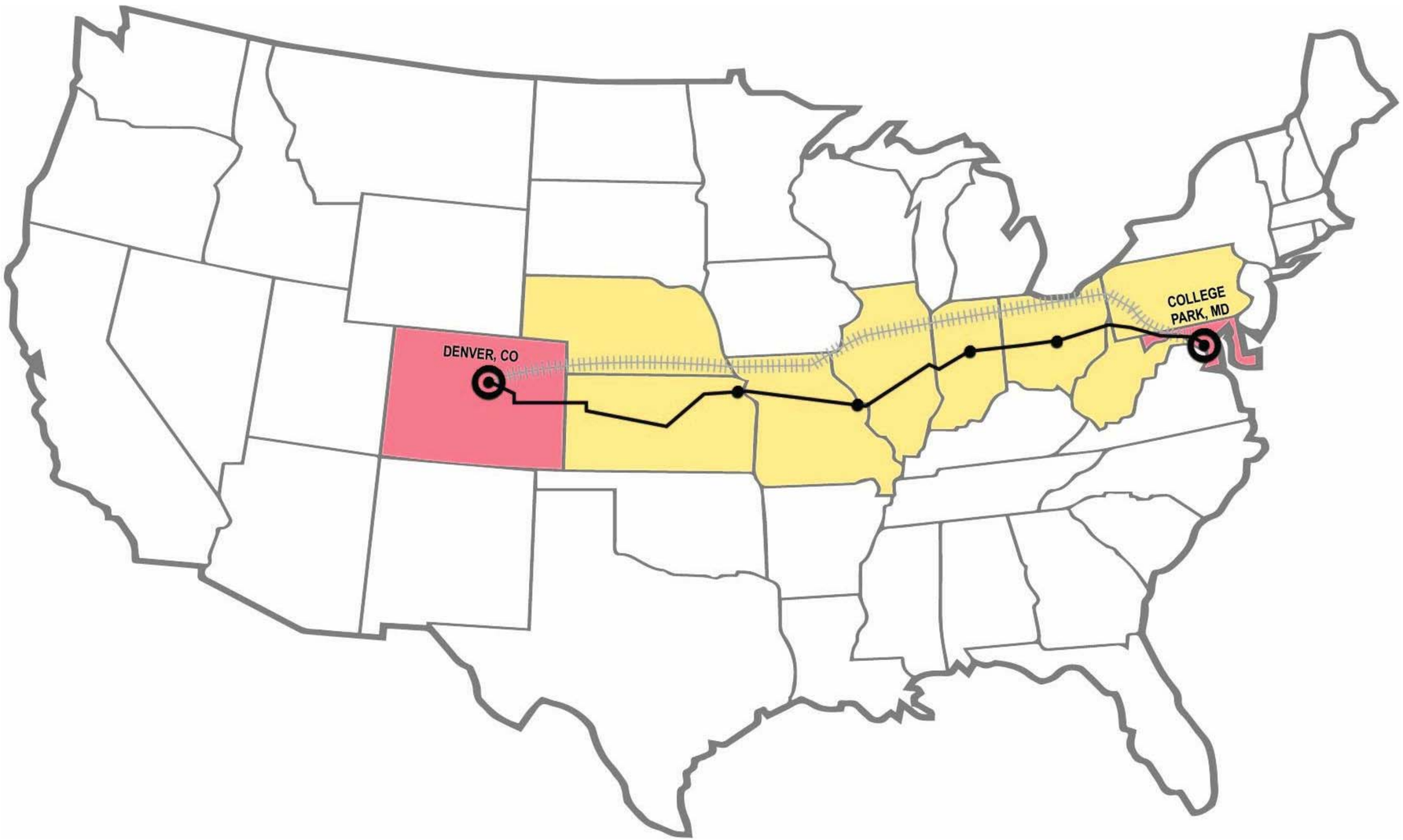
COMPETITION SITE PLAN

O-100



TRANSPORT NOTES

DEPARTURE POINT: UNIVERSITY OF MARYLAND
COLLEGE PARK, MD 20742

TOTAL DISTANCE: 1,658 MILES

ESTIMATED TRAVEL TIME: TRUCK - 25 HOURS
RAIL - 14 HOURS

SITE LOCATION: RTD 61ST & PEÑA STATION
6045 N RICHFIELD ST.
DENVER, CO 80249

STATES WHICH MAY REQUIRE TRUCK TRANSPORATION PERMITS:

1. MARYLAND
2. WEST VIRGINIA
3. PENNSYLVANIA
4. OHIO
5. INDIANA
6. ILLINOIS
7. MISSOURI
8. KANSAS
9. COLORADO

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TRANSPORT PLAN

O-101

TRANSPORTATION ANALYSIS

TYPE	SMALL TRUCK (SM)	MEDIUM TRUCK (MD)	LARGE TRUCK (LG)	SELECTED TRUCK (LG)	RAILCAR	AIR
LOAD DIMENSIONS (LENGTH x WIDTH x HEIGHT)	16'-0" x 8'-6" x 9'-2"	26'-0" x 8'-6" x 9'-2"	48'-0" x 8'-6" x 12'	48'-0" x 8'-6" x 12'	44'-4" x 8'-6" x 8'-10"	65,000 ft^3
MAXIMUM LOAD CAPACITY (LB.)	7,000	15,000	80,000	80,000	200,000	250,000
FUEL PER DISTANCE TRAVELED	7.9mpg	6.5mpg	5.8mpg	5.8mpg	476 ton-mpg	1.6mpg
ESTIMATED CO^2 PRODUCED FROM COLLEGE PARK TO DENVER (TONS)	2.097	2.549	2.857	2.857	0.313	10.356

AMOUNT OF VEHICLES REQUIRED FOR HOUSE TRANSPORTATION

	SMALL TRUCK (SM)	MEDIUM TRUCK (MD)	LARGE TRUCK (LG)	SELECTED TRUCK (LG)	RAILCAR	AIR
TOTAL NUMBER OF VEHICLE TYPES	6	4	2	1	2	1
ESTIMATED CO^2 PRODUCED FROM COLLEGE PARK TO DENVER (TONS)	12.582	10.196	5.714	2.857	0.313	10.356

TRUCK WEIGHT AND SIZE LIMITS

	WIDTH	HEIGHT	SEMI-TRAILER	FULL TRAILER (EACH)	GVW (LB.)
INTERSTATES / U.S. NUMBERED ROUTES	8'-6"	13'-6"	***48'-0"	***28'-0"	80,000
MARYLAND	*8'-0"	13'-6"	48'-0"	28'-0"	80,000
COLORADO	8'-0"	**13'-0"	57'-4"	28'-6"	85,000

*8'-6" ON ALL INTERSTATE AND CERTAIN DESIGNATED STATE HIGHWAYS
**14'-6" ON STATE DESIGNATED HIGHWAYS ONLY
*** THE FEDERAL LENGTH LIMITS ARE PRINCIPALLY MINIMUMS THAT STATES MUST ALLOW FOR ON INTERSTATES/U.S. NUMBERED ROUTES

DIMENSIONS PER RAILCAR/TRUCK TRAILER

	LENGTH	WIDTH	HEIGHT	AMOUNT NEEDED
***TRUCK**	48'-0"	8'-6"	12'-0"	2
RAIL	44'-4"	8'-6"	8'-10"	2

*CUSTOM TRUCK OUTFITTED AS TANDEM LOWBOY WITH 40'-0" OF THE TRAILER ALLOWING CARGO HEIGHT UP TO 12'-0", WITH 4' IN FRONT AND BACK ONLY ALLOWING 10'-4" WITH BUILT-IN CRANE AND ONE ADDITIONAL LOWBOY TRAILER, IN TOTAL NOT EXCEEDING 95'-0" IN LENGTH. SEE SHEET O-102 FOR IMAGE.

OPTIMAL ROUTE OPTIONS

FACTORS	TRUCK ROUTE	RAIL ROUTE
MILES	1,657	1,667
HOURS	25	14
ESTIMATED CO^2 PRODUCED FROM COLLEGE PARK TO DENVER (TONS)	2.857	0.317

*BOTH OPTIONS ARE STILL BEING CONSIDERED

TRANSPORT ANALYSIS NOTES

1. TRUCK DIMENSIONS BASED ON AVERAGE ESTIMATES
2. 2CO/2 TRUCK ESTIMATES BASED ON ESTIMATE OF 20LBS OF CO/2 PRODUCED PER GALLON OF GASOLINE AND ROUTE OF 1657 MILES
3. RAILCAR DIMENSIONS BASED 45' HIGH INTERMODAL SHIPPING CONTAINER INTERIOR DIMENSIONS
4. RAILCAR FUEL PER DISTANCE TRAVELED TAKEN FROM ASSOCIATION OF AMERICAN RAILROADS AVERAGE
5. CO/2 RAIL ESTIMATE BASED ON OF AN ESTIMATED HOUSE WEIGHT OF 9 TONS HAULED BY ONE TRAIN
6. AIR DIMENSIONS BASED ON BOEING 747 DREAMLIFTER
7. CO/2 AIR ESTIMATE BASED ON ONE PLANE CARRYING 11 HOMES AT 9 TONS PER HOME
8. CUSTOM TRUCK CAN OUTFITTED AS A TANDEM (TWO TRAILERS), LOWBOY (TRAILER ABLE TO CARRY ITEMS 12' TALL), AND WITH A BUILT-IN CRANE WITH A BOOM LENGTH BETWEEN 60-160' AND BOOM CAPACITY BETWEEN 15-40 TONS
9. OVERSIZED LOADS CAN BE ACCOMMODATED FOR TRUCKS CARRYING LOADS WITH WIDTHS GREATER THAN 8'6". SPECIAL PERMITS ARE REQUIRED. TYPICALLY A PILOT CAR WOULD NEED TO ACCOMPANY THE TRUCK.

OPTIMAL ROUTE DETAILS

TRUCK ROUTE ——

START: UNIVERSITY OF MARYLAND

Take BALTIMORE AVE. > I-495 WEST
I-495 W > I-70 WEST
I-70 W > I-68 WEST
I-68 W > US-40 WEST
US-40W > I-70 WEST
I-70 W > US-287 WEST
US-297W > US-40 WEST
US-40W > EXIT INTO DENVER

END: RTD 61ST & PEÑA STATION

RAIL ROUTE ////////

START: UNIVERSITY OF MARYLAND

Take Baltimore Ave. > I-495 WEST
I-495 W > US-50 WEST
US-50 W > NEW CARROLTON TRAIN STATION

TRANSFER TO RAIL, TRANSPORT TO DENVER INTERMODAL FACILITY

TRANSFER TO TRUCK > RTD 61ST & PEÑA STATION

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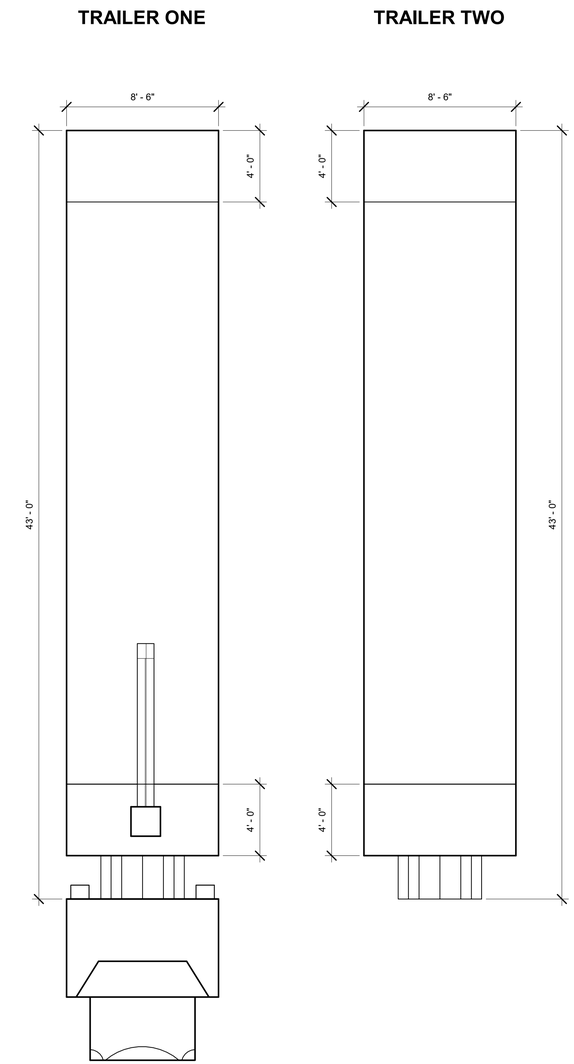
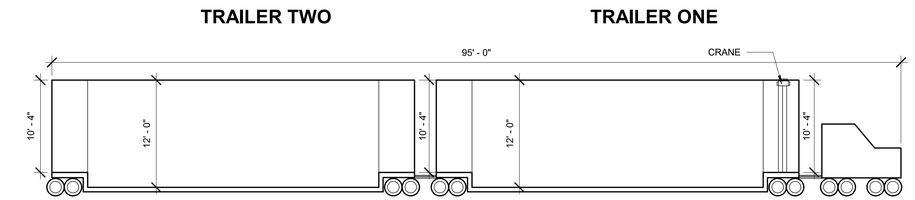
TRANSPORT DETAILS

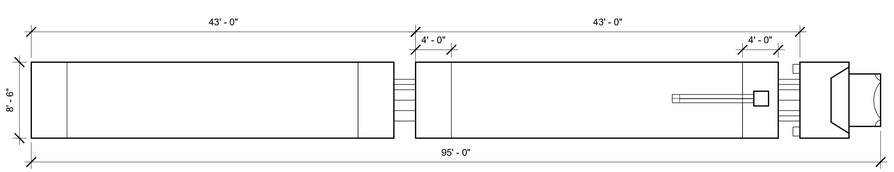
O-102



1 TRUCK PLAN DETAIL
1/4" = 1'-0"



3 TANDEM TRUCK PLAN
1/8" = 1'-0"



2 TANDEM TRUCK PLAN
1/8" = 1'-0"

TRUCK DETAILS

1. TRAILER ONE CONTENTS: FOUNDATIONS, CORE MODULES, FLOOR PANELS, DECKING, RAILINGS, SIPS, ROOF PANELS
2. TRAILER TWO CONTENTS: STRUCTURAL FRAME, PV PANELS, COURTYARD WALLS, COURTYARD ROOF, TRUSS', ADDITIONAL ROOF PANELS, TOOLS, FURNITURE, MECHANICAL EQUIPMENT, VEGETATION
3. CUSTOM TRUCK OUTFITTED AS TANDEM LOWBOY WITH 40' OF THE TRAILER ALLOWING CARGO HEIGHT UP TO 12' WITH 4' IN FRONT AND BACK ONLY ALLOWING 10'4" WITH BUILT-IN CRANE AND ONE ADDITIONAL LOWBOY TRAILER, IN TOTAL NOT EXCEEDING 95' IN LENGTH
4. TRAILERS TO BE FLATBEDS TO MAXIMIZE DIMENSIONS FOR HOUSE COMPONENTS
5. CRANE EQUIPPED WITH 80' BOOM WITH BOOM CAPACITY OF 15 TONS. EXTENSION LENGTH 70' FROM EDGE OF EITHER SIDE OF EXTENDED OUTRIGGERS. CRANE'S WEIGHT AND WEIGHT OF THE OBJECTS PICKED UP ARE DISTRIBUTED TO THE OUTRIGGERS RESTING ON 6'-0" X 6'-0" REINFORCED CRIBBING.

PHASING

PHASE ONE: DISASSEMBLE CONSTRUCTED HOUSE IN COLLEGE PARK

PHASE TWO: WEATHERPROOF AND PROTECT COMPONENTS FOR TRANSPORT

PHASE THREE: PACK COMPONENTS ONTO THEIR DESIGNATED TRAILER

PHASE FOUR: SECURE ITEMS FOR TRANSPORT

PHASE FIVE: ATTACH TRAILERS AND DEPART

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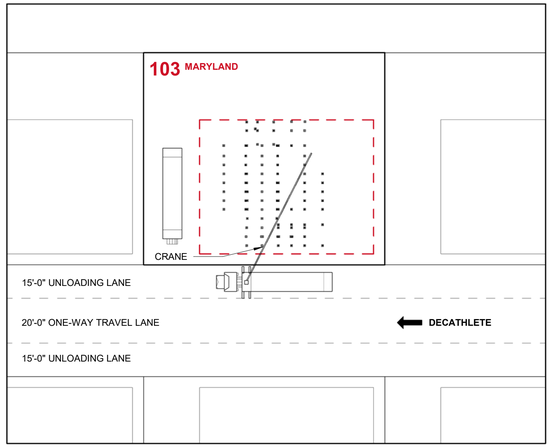
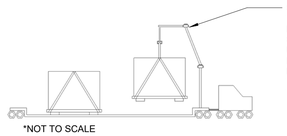
CARRIER LOADING SEQUENCE

O-103

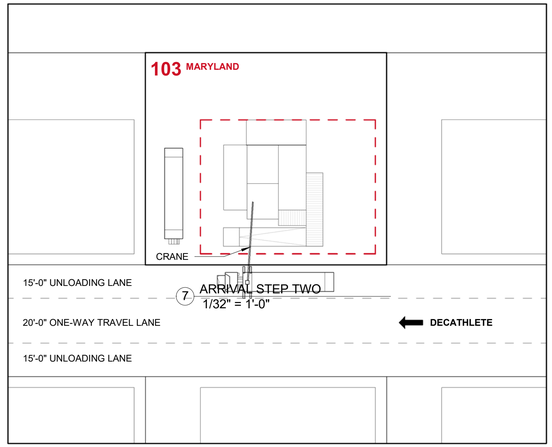


PHASE ONE:

TEAM ARRIVES AND TRAILER 1 WITH CRANE IS SITUATED SOUTH OF SOLAR ENVELOPE. TRAILER TWO IS TEMPORARILY PARKED WEST OF THE HOUSE WITHIN THE MARYLAND TEAM SITE CONTEST AREA TO BE ACCESSED BY THE TEAM AND CRANE. FOUNDATIONS ARE PLACED FOR THE HOUSE AND DECK USING THE CRANE.



*NOT TO SCALE

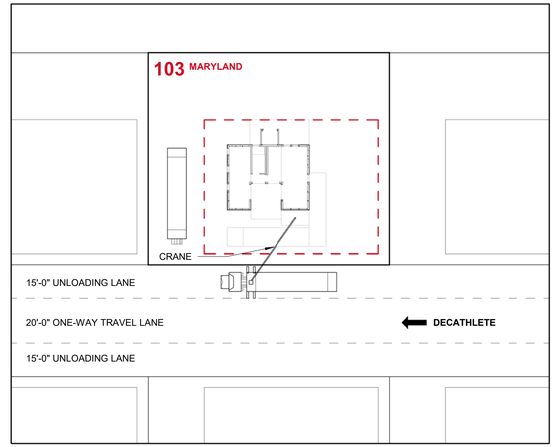


7 ARRIVAL STEP TWO
1/32" = 1'-0"

PHASE TWO:

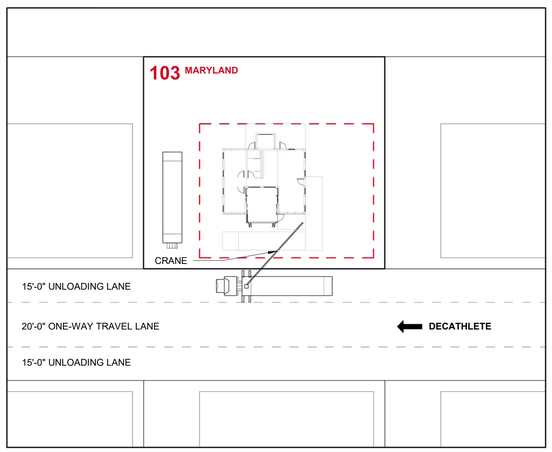
ASSEMBLE FLOOR PANELS AND DECKING ON TOP OF FOUNDATIONS. PROFESSIONAL TEAM CREW DIRECTS CRANE WHICH ASSISTS IN MOVING HOUSE COMPONENTS.

CRANE'S CABLES ARE ATTACHED TO THE CARRIERS OF THE CHASSIS MODULES, LIFTS EACH AND PLACES THE CARRIER CRADLE MODULE INTO POSITION AND IT IS LOWERED, THE MODULE RESTS UPON THE PREPLACED, LEVELED FOUNDATIONS AND THE CARRIERS DROP BELOW THE MODULE WITH MINIMAL CLEARANCE SO AS TO BE PULLED WITH A RUBBER TRACK OR RUBBER TIRE LOADER. CRIBBING SHALL BE USED IF NEEDED IN ORDER TO SLIDE THE CARRIERS WITHOUT DISTURBING THE EARTH. THE CARRIER MAY BE PULLED TOWARDS THE CRANE AS GRADE ALLOWS. THE CRANE'S OUTRIGGERS WOULD BE TEMPORARILY RETRACTED GIVING CLEARANCE FOR THE CARRIER TO EXIT FROM BELOW THE MODULE. ESTIMATED TIME TO REMOVE OBSTRUCTION FROM GHENT IS APPROXIMATELY 20 TO 30 MINUTES. THE EMPTY CARRIER IS TEMPORARILY PLACED OUT OF THE WAY NEXT TO THE CRANE IN THE UNLOADING LANE.



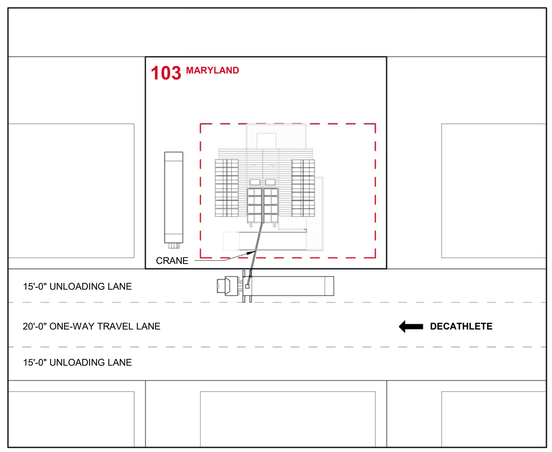
PHASE THREE:

SIP PANELS ARE PUT INTO PLACE AND SECURED. CRANE ASSISTS WHERE NECESSARY.



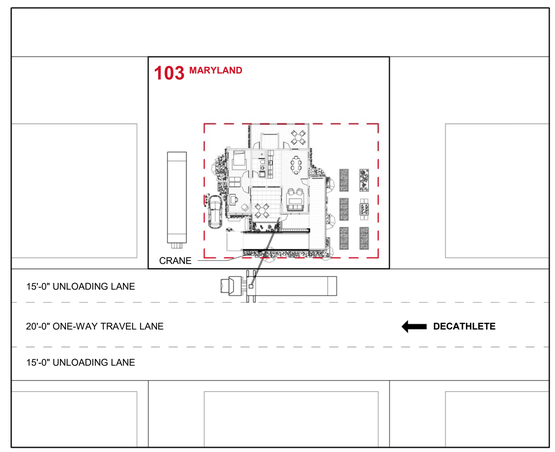
PHASE FOUR:

ASSEMBLE COURTYARD STRUCTURE. INSTALL ALL DOORS AND WINDOWS. CRANE ASSISTS WHERE NECESSARY.



PHASE FIVE:

ROOF PANELS ARE LIFTED BY THE CRANE AND SECURED INTO PLACE. PV PANELS ARE INSTALLED ON FINISHED ROOF.



PHASE SIX:

INSTALL ALL DOORS AND WINDOWS. VEGETATIVE BEDS AND PLANTINGS ARE PUT IN PLACE AROUND THE HOUSE. ELECTRIC CAR CHARGING STATION INSTALLED. FURNITURE AND OTHER ACCESSORIES ARE TAKEN IN TO THE HOUSE AND PUT INTO PLACE.

1 ARRIVAL PLAN
1/32" = 1'-0"

ARRIVAL NOTES

1. SEQUENCING IS BASED ON MOST RECENT SITE INFORMATION PROVIDED BY COMPETITION ORGANIZERS. ALL SEQUENCING IS SUBJECT TO CHANGE PENDING FURTHER REGULATION ADJUSTMENTS AND SITE CONDITIONS
2. TRAILER ONE CONTENTS: FOUNDATIONS, CORE MODULES, FLOOR PANELS, DECKING, RAILINGS, SIPS, ROOF PANELS
3. TRAILER TWO CONTENTS: STRUCTURAL FRAME, PV PANELS, COURTYARD WALLS, COURTYARD ROOF, TRUSS', ADDITIONAL ROOF PANELS, TOOLS, FURNITURE, MECHANICAL EQUIPMENT, VEGETATION.

CONSTRUCTION EQUIPMENT SCHEDULE

ARRIVAL/ DEPARTURE EQUIPMENT	COMPETITION SITE	CAMPUS SITE
CUSTOM TRUCK W/CRANE	X	X
SKID STEER LOADER	X	X
HYDRAULIC JACK STANDS	X	X
GENERAL CONSTRUCTION EQUIPMENT		
(2) GAS GENERATOR	X	X
LULL (BOOM-ARM ARTICULATED FORKLIFT)	X	X
PORTABLE TOILET		X
(2) SHIPPING CONTAINER 40'-0" x 8'-0" x 8'-0"		X
20 CU. YARD DUMPSTER		X
20 CU. YARD RECYCLING CONTAINER		X
SITE LIGHTING	X	X
(3-4) MOUNTED SPOT LIGHTS	X	X
TASK LIGHTING	X	X
GENERAL HAND & POWER TOOLS	X	X
STAGING/SCAFFOLDING		X
GRAVEL PAD		X
SITE FENCING		X
OFFICE TRAILER		X
24" MATERIAL TRANSPORTATION VEHICLE	X	X
SOLAR GENERATOR	X	X

NOTES AND SPECS

1. CRANE EQUIPPED WITH 80' BOOM WITH BOOM CAPACITY OF 15 TONS. EXTENSION LENGTH 70' FROM EDGE OF EITHER SIDE OFEXTENDED OUTRIGGERS. CRANE'S WEIGHT AND WEIGHT OF THE OBJECTS PICKED ARE DISTRIBUTED TO THE OUTRIGGERS.
2. RUBBER TRACK LOADER GROUND CLEARANCE-12", 6.4' IN HEIGHT, 10.7' IN LENGTH X 5' IN WIDTH, WEIGHING 6200 POUNDS DISPERSING WEIGHT VIA WIDE 15" RUBBER TRACKS RESULTING IN GROUND PRESSURE OF 3.5 PSI.
3. ACTUAL SITE CONDITIONS WILL DICTATE THE FINAL ELEVATIONS OF THE SUPPORT BEAMS, AS SPACE FOR THE TANKS UNDER THE MODULES AND ADEQUATE FLOW INTO THESE TANKS ARE IMPERATIVE. THUS, REMOVAL OF THE CARRIERS WHEELS MAY NOT BE NECESSARY AND CLEARANCE TO REMOVE THE CARRIERS MAY SIMPLY BE ACHIEVED BY DEFLATING THE TIRES SOMEWHAT. IN EITHER CASE, THE PROFESSIONAL TEAM CREW WILL BE ON-HAND TO DETERMINE, COORDINATE AND PERFORM THESE TASKS.

UNIVERSITY OF MARYLAND
COLLEGE PARK, MD 20742

reACT

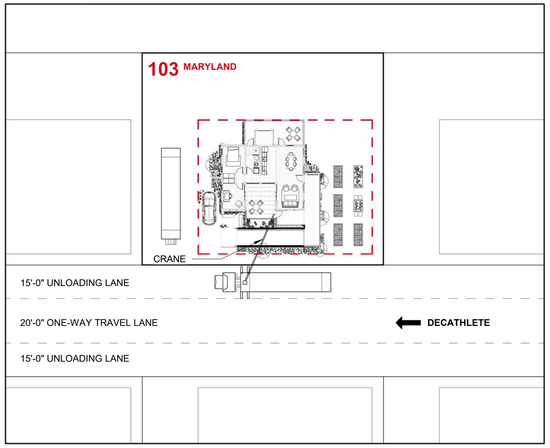
UNIVERSITY OF MARYLAND, COLLEGE PARK
SOLAR DECATHLON 2017 SUBMISSION

Date	Description

PROJECT NO. Project Number
DESIGNED Author
CHECKED Checker

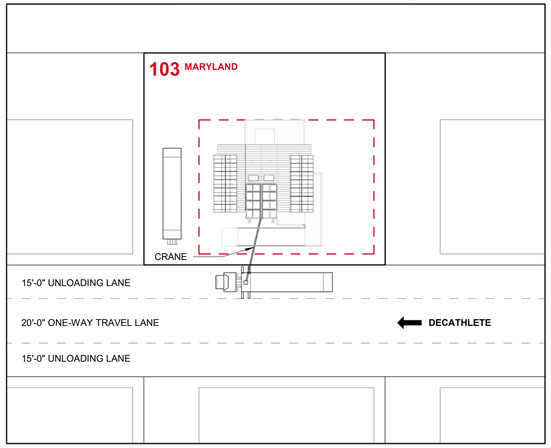
ARRIVAL SEQUENCE

O-104



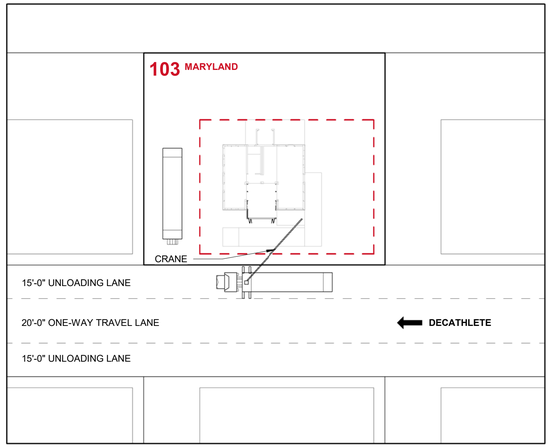
PHASE ONE:

VEGETATIVE BEDS AND FURNITURE ARE PACKED UP AND LOADED INTO TRAILER 2. REMOVE ALL DOORS AND WINDOWS.



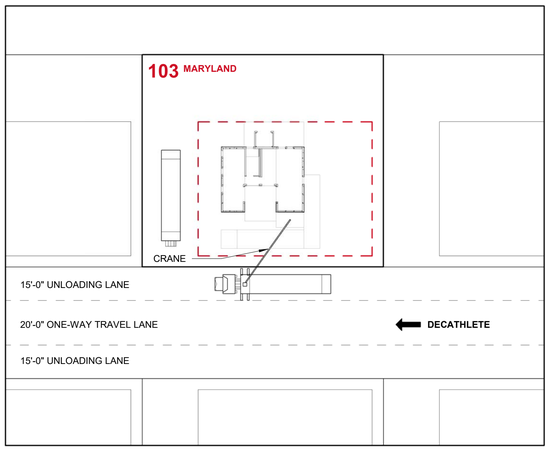
PHASE TWO:

ROOF PANELS AND PHOTOVOLTAIC PANELS ARE DETACHED AND LIFTED BY CRANE INTO TRAILER 2 BED.



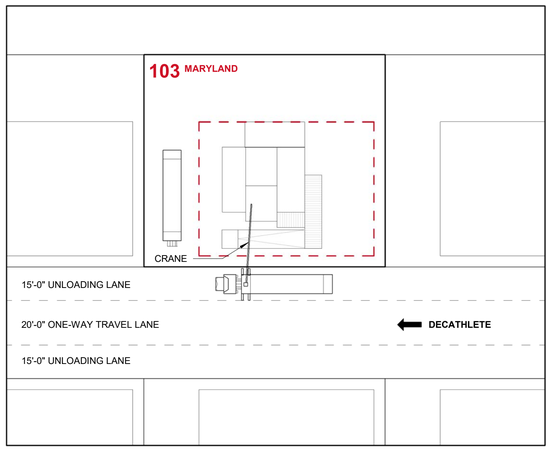
PHASE THREE:

COURTYARD STRUCTURE AND DOORS REMOVED USING THE CRANE'S ASSISTANCE WHERE NECESSARY.



PHASE FOUR:

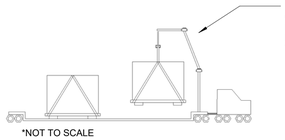
SIP PANELS ARE DETACHED AND REMOVED FROM STRUCTURAL FRAME USING THE CRANES ASSISTANCE WHERE NECESSARY.



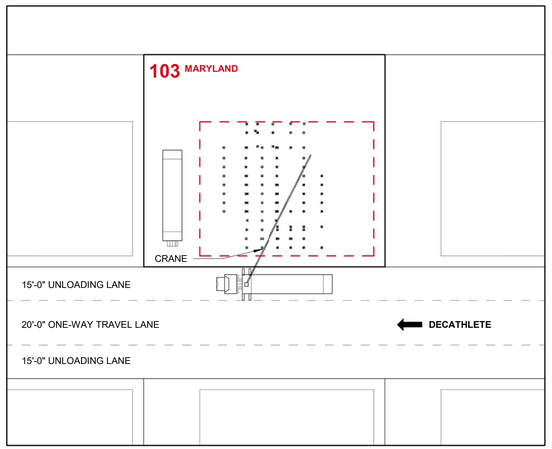
PHASE FIVE:

FLOOR, DECK, AND RAILING COMPONENTS ARE DISASSEMBLED AND LOADED ONTO THE TRAILER BED USING CRANE ASSISTANCE WHERE NECESSARY.

ONCE FLOOR AROUND CHASSIS MODULES HAVE BEEN REMOVED, THE CARRIERS OF THE MODULES ARE PLACED UNDER THEM. CRANE'S CABLES ARE ATTACHED TO THE CARRIERS OF THE CHASSIS MODULES, LIFTS EACH AND PLACES THE CARRIER CRADLE MODULE INTO POSITION AND IS LOWERED INTO TRUCK TRAILER 1.



*NOT TO SCALE



PHASE SIX:

FOUNDATIONS ARE REMOVED AND LOADED INTO TRAILER BED.

1 DEPARTURE PLAN
1/32" = 1'-0"

DEPARTURE NOTES

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CONSTRUCTION EQUIPMENT SCHEDULE

ARRIVAL/ DEPARTURE EQUIPMENT	COMPETITION SITE	CAMPUS SITE
CUSTOM TRUCK W/CRANE	X	X
SKID STEER LOADER	X	X
HYDRAULIC JACK STANDS	X	X
GENERAL CONSTRUCTION EQUIPMENT		
(2) GAS GENERATOR	X	X
LULL (BOOM-ARM ARTICULATED FORKLIFT)	X	X
PORTABLE TOILET		X
(2) SHIPPING CONTAINER 40'-0" x 8'-0" x 8'-0"		X
20 CU. YARD DUMPSTER		X
20 CU. YARD RECYCLING CONTAINER		X
SITE LIGHTING	X	X
(3-4) MOUNTED SPOT LIGHTS	X	X
TASK LIGHTING	X	X
GENERAL HAND & POWER TOOLS	X	X
STAGING/SCAFFOLDING		X
GRAVEL PAD		X
SITE FENCING		X
OFFICE TRAILER		X
24" MATERIAL TRANSPORTATION VEHICLE	X	X
SOLAR GENERATOR	X	X

NOTES AND SPECS

1. CRANE EQUIPPED WITH 80' BOOM WITH BOOM CAPACITY OF 15 TONS, EXTENSION LENGTH 70' FROM EDGE OF EITHER SIDE OF EXTENDED OUTRIGGERS. CRANE'S WEIGHT AND WEIGHT OF THE OBJECTS PICKED ARE DISTRIBUTED TO THE OUTRIGGERS.
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UNIVERSITY OF MARYLAND, COLLEGE PARK
SOLAR DECATHLON 2017 SUBMISSION

Date	Description

PROJECT NO.	Project Number
DESIGNED	Author
CHECKED	Checker

DEPARTURE SEQUENCE

O-105