



THE OHIO STATE UNIVERSITY  
 2011 SOLAR DECATHLON TEAM  
 KNOWLTON SCHOOL OF ARCHITECTURE  
 275 W. WOODRUFF AVE.  
 COLUMBUS, OH 43210

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SHEET TITLE  
**COVER SHEET**

**G-000**



CONSTRUCTION DOCUMENTS

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SHEET TITLE  
**SHEET INDEX AND SYMBOLS**

**G-001**

**SYMBOL LEGEND**

Room name 101 150 SF	AREA TAG
	CALLOUT TAG
	DOOR TAG
	ELEVATION MARKER
	EXTERIOR ELEVATION TAG
	GRAPHIC SCALE
	INTERIOR ELEVATION TAG
06 10 00	KEYNOTE TAG
	MODULE SEAM TAG
	NORTH ARROW
Room name 101	ROOM TAG
	SECTION TAG
View Name 1/8" = 1'-0"	VIEW TITLE
	WINDOW TAG

**SHEET INDEX**

SHEET NUMBER	SHEET NAME
G-001	COVER SHEET
G-002	SHEET INDEX AND SYMBOLS
L-101	LANDSCAPE PLAN
L-102	LANDSCAPE ELEVATION
L-501	LANDSCAPE DETAILS
S-001	STRUCTURAL NOTES
S-101	FOUNDATION PLAN
S-102	FLOOR FRAMING
S-103	FLOOR FRAMING - CENTER
S-501	FLOOR FRAMING - DETAIL
S-502	FRAMING DETAIL
A-101	SITE PLAN
A-102	CALL OUTS AND DIMENSIONS
A-112	ROOF PLAN
A-113	ROOF PLAN W PV
A-121	REFLECTED CEILING PLAN
A-201	SITE ELEVATIONS
A-202	SITE ELEVATIONS
A-211	EXTERIOR ELEVATIONS NORTH AND SOUTH
A-212	EXTERIOR ELEVATIONS EAST AND WEST
A-215	INTERIOR ELEVATIONS
A-216	INTERIOR ELEVATIONS
A-217	INTERIOR ELEVATIONS
A-301	BUILDING SECTIONS
A-302	BUILDING SECTIONS
A-311	WALL SECTIONS - EXTERIOR
A-312	WALL SECTIONS - EXTERIOR
A-313	WALL SECTIONS - INTERIOR
A-314	WALL SECTIONS - LOGGIA
A-401	LARGE SCALE PLAN
A-402	LARGE SCALE PLAN
A-501	EXTERIOR DETAILS
A-502	EXTERIOR DETAILS
A-503	EXTERIOR DETAILS
A-504	INTERIOR DETAILS
A-581	MILLWORK
A-601	FINISH / ROOM SCHEDULE
A-602	WINDOW / DOOR SCHEDULE
A-901	3D VIEWS
A-902	3D VIEWS
P-101	WATER SUPPLY AND REMOVAL PLAN
P-102	DOMESTIC PIPING PLAN
P-103	SPRINKLER PLAN
P-201	BIOREMEDIATION ELEVATION
P-601	PLUMBING SCHEMATICS
P-602	PLUMBING SCHEDULES
P-901	PLUMBING SUPPLY ISOMETRIC
P-902	PLUMBING WASTE ISOMETRIC
M-101	HVAC PLAN
M-201	MECHANICAL CLOSET ELEVATION
M-601	MECHANICAL SCHEMATICS
M-602	MECHANICAL EQUIPMENT SCHEDULE
M-901	HVAC PERSPECTIVE
E-101	LIGHTING PLAN
E-102	POWER PLAN
E-103	DC ELECTRICAL ROOF PLAN
E-201	ELECTRICAL CLOSET ELEVATION
E-601	PANEL SCHEDULE
E-611	THREE LINE DIAGRAM
E-612	ONE LINE DIAGRAM
T-101	ENERGY MONITORING
O-101	ARRIVAL AND STAGING
O-102	ASSEMBLY AND DISASSEMBLY
O-103	TRANSPORTATION PLAN
X-101	PUBLIC EXHIBIT PLAN
X-102	PUBLIC EXHIBIT ELEVATIONS
X-103	PUBLIC EXHIBIT DETAILS

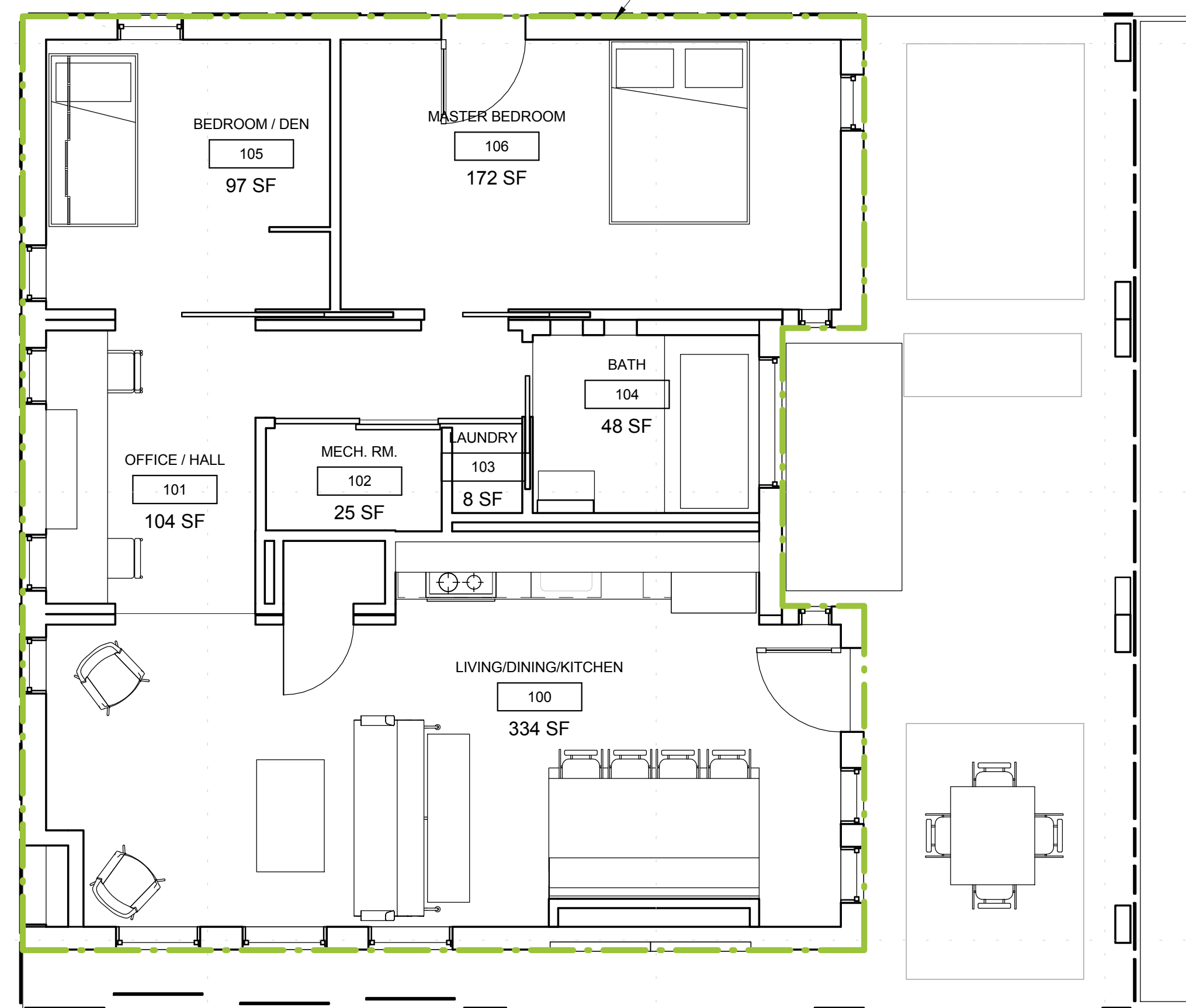


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### NOTES

1. Finished square footage calculations for this house were made based on measured dimensions only and may include unfinished areas, openings in floors not associated with stairs, or openings in floors exceeding the area of associated stairs.

ENCLOSED AREA  
971.54 SQ FT



AS 1ST FLOOR  
1/4" = 1'-0"



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SHEET TITLE  
**AREA PLANS**

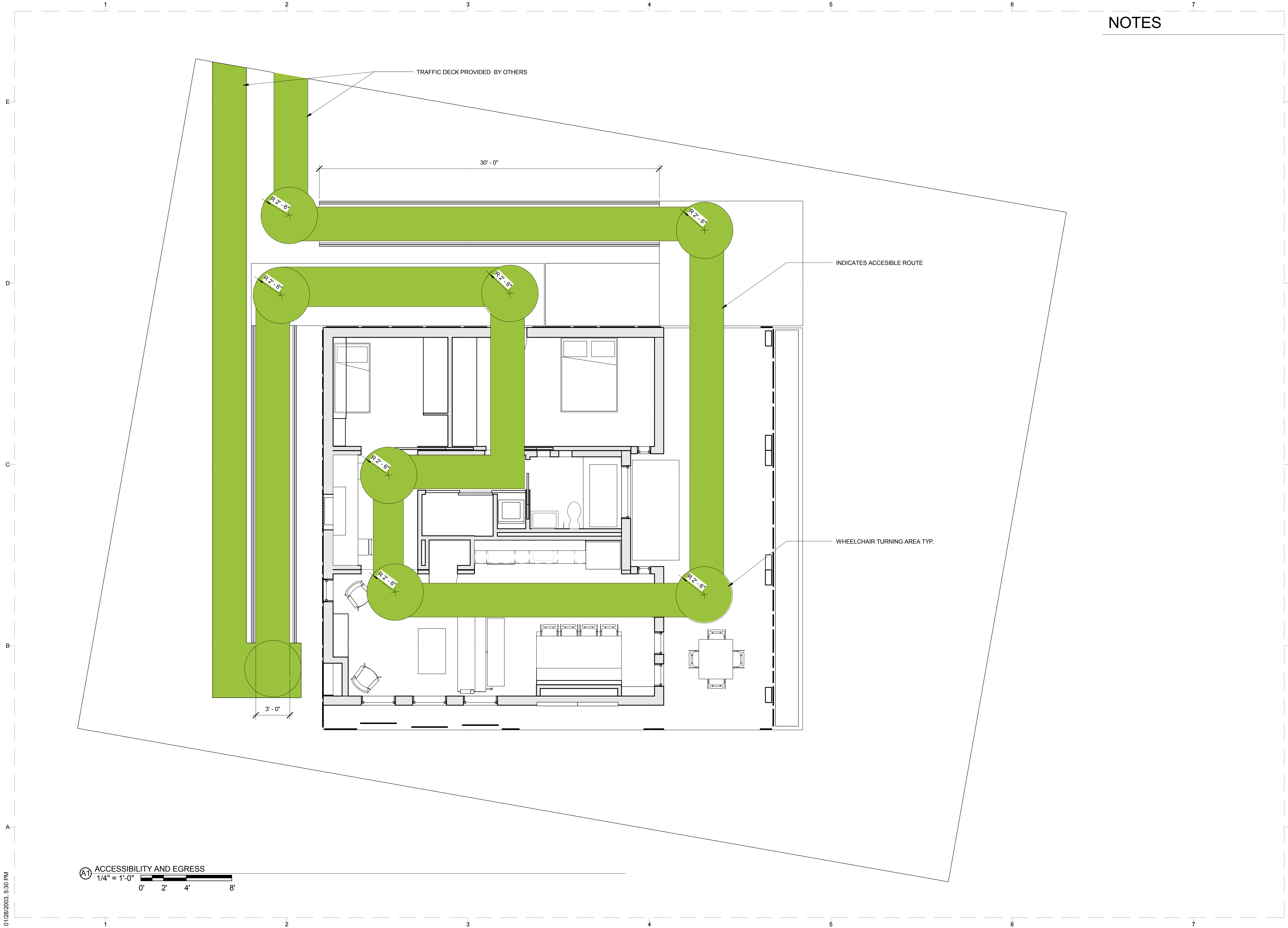
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NOTES



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SHEET TITLE  
**ACCESSIBILITY  
AND EGRESS**

**G-102**



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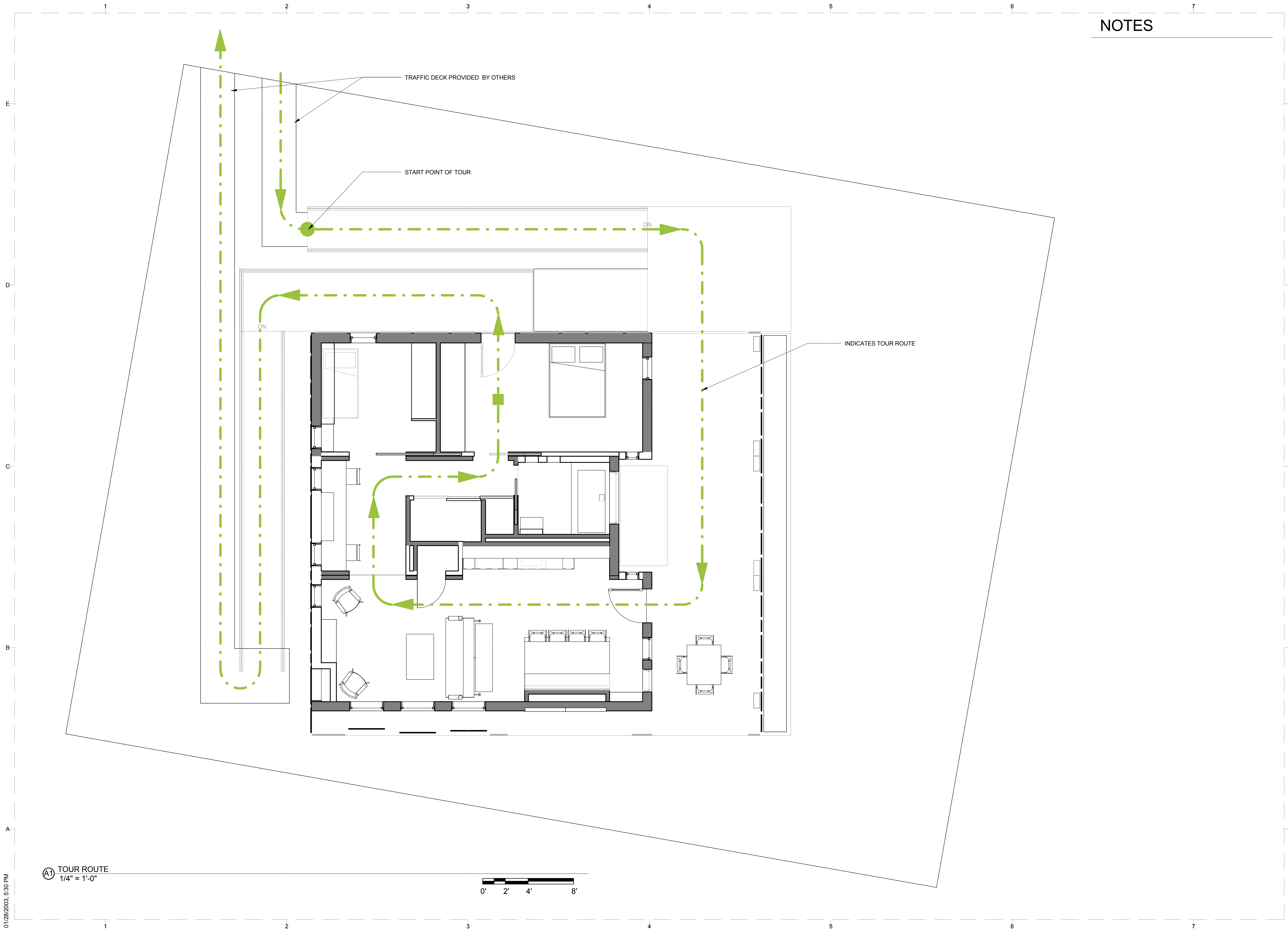
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SHEET TITLE

**TOUR ROUTE**

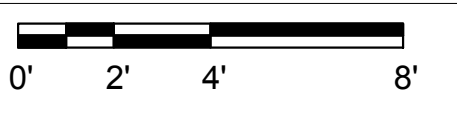
**G-103**

NOTES



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A1) TOUR ROUTE  
 1/4" = 1'-0"





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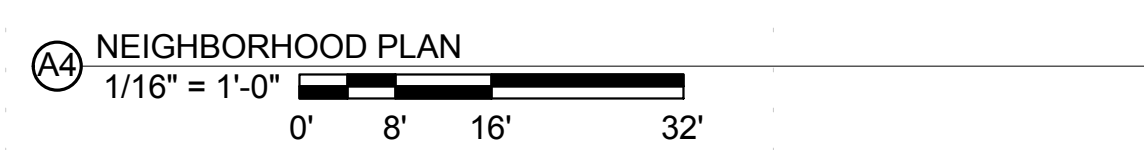


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**NEIGHBORHOOD PLAN**

**G-104**



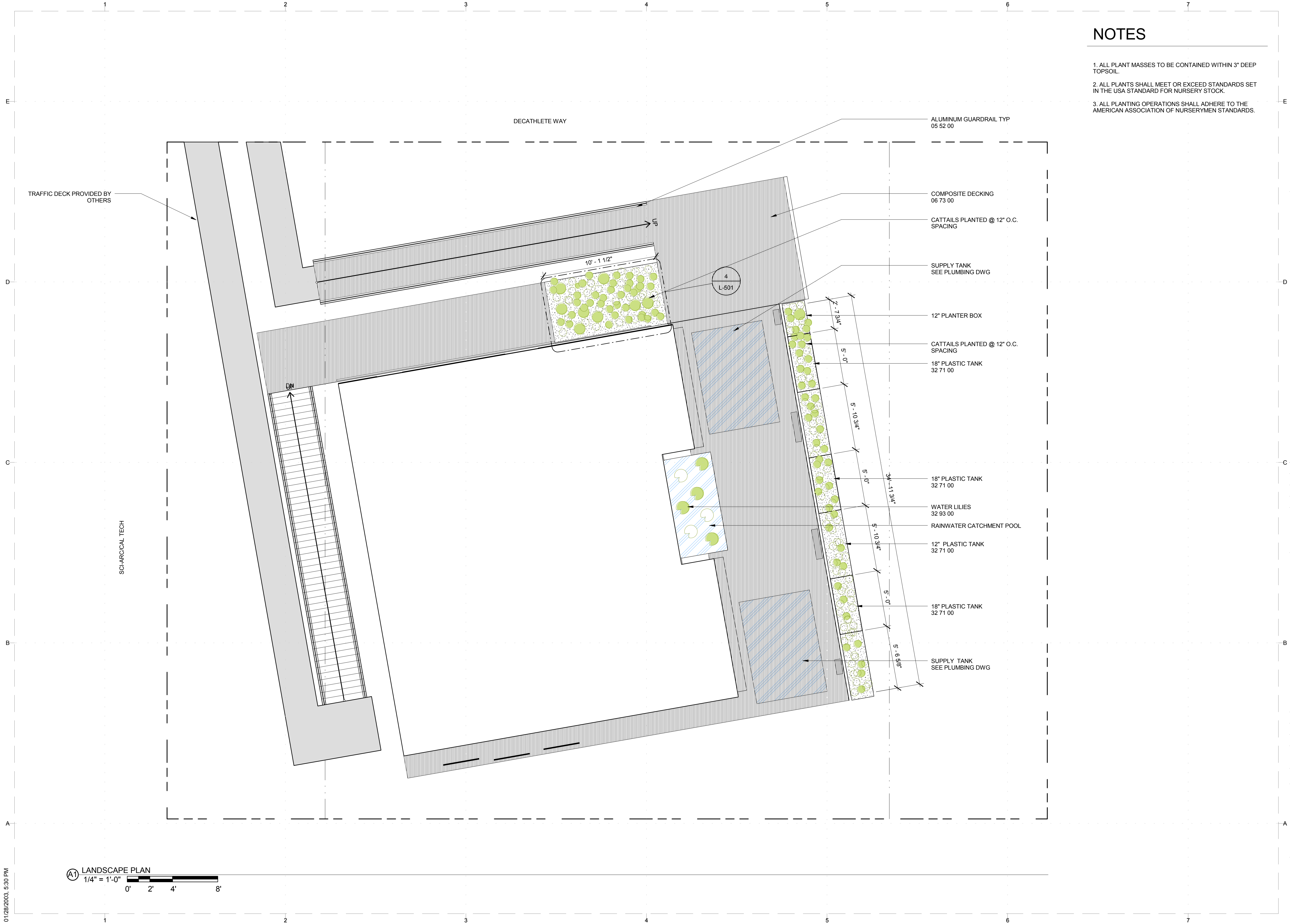
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**NOTES**

1. ALL PLANT MASSES TO BE CONTAINED WITHIN 3" DEEP TOPSOIL.
2. ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET IN THE USA STANDARD FOR NURSERY STOCK.
3. ALL PLANTING OPERATIONS SHALL ADHERE TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.



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SHEET TITLE  
**LANDSCAPE PLAN**

A1 LANDSCAPE PLAN  
 1/4" = 1'-0"



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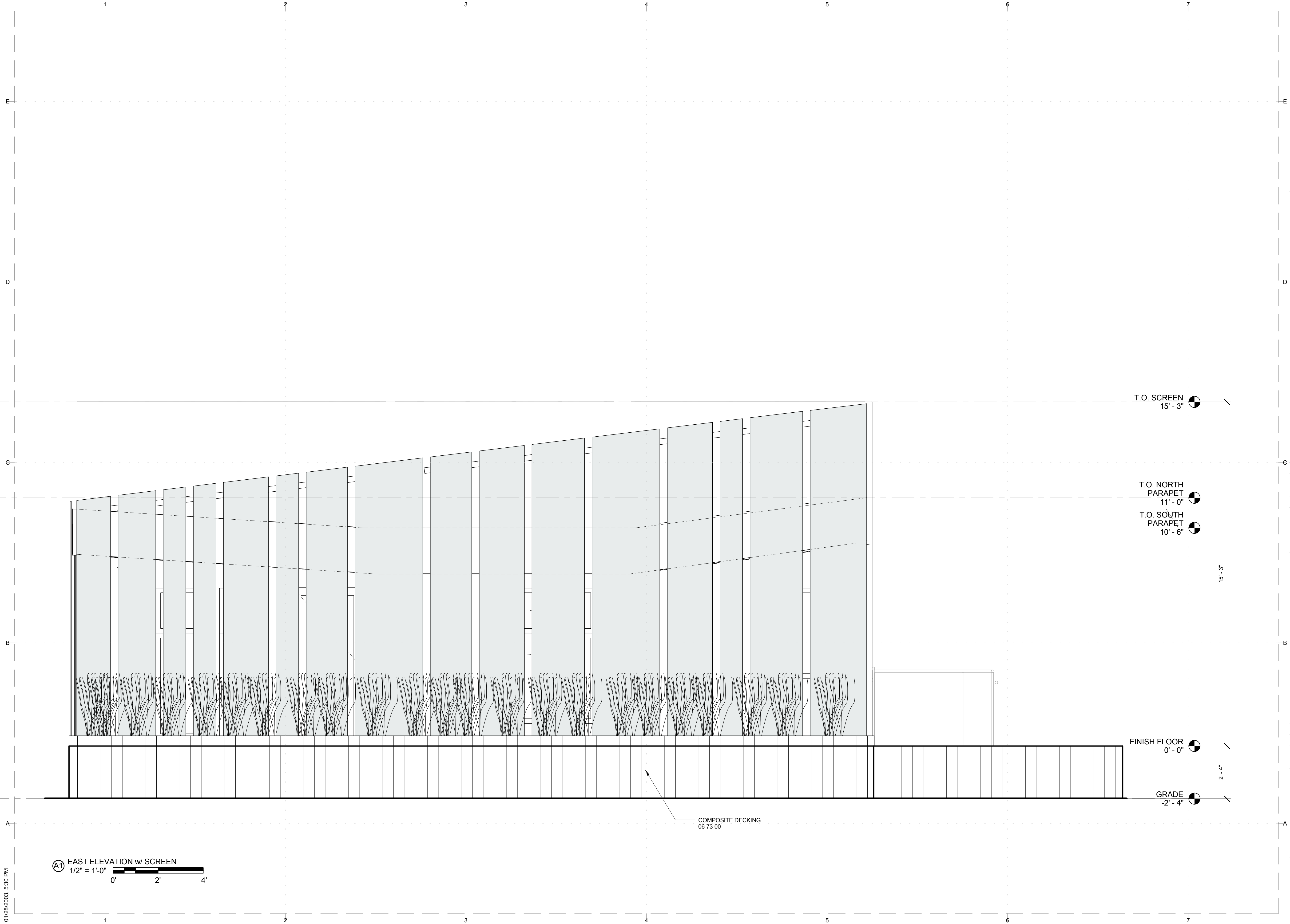
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SHEET TITLE

LANDSCAPE ELEVATIONS

L-102



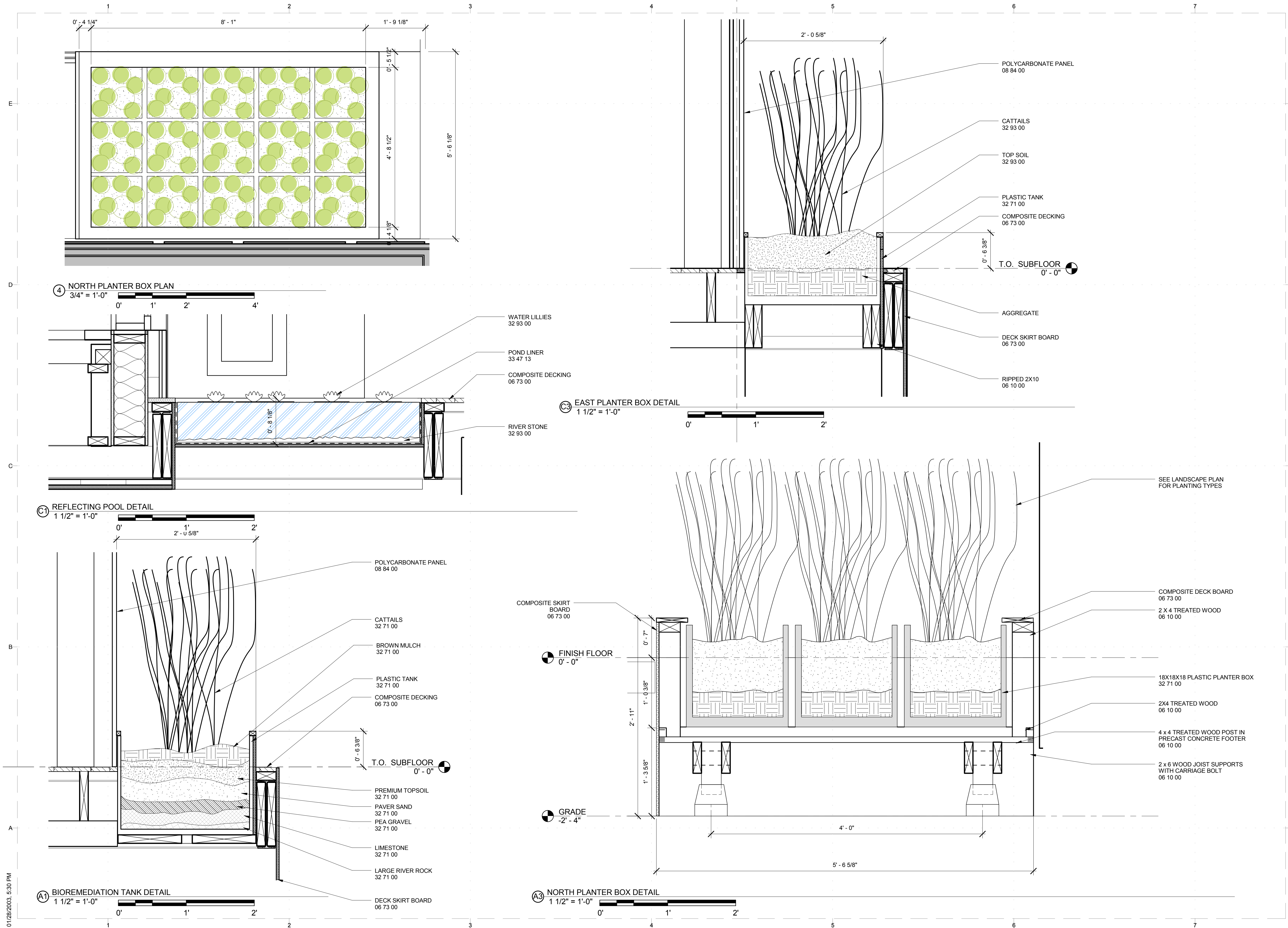
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① EAST ELEVATION w/ SCREEN  
 1/2" = 1'-0"





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**PLANTER BOX DETAILS**

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## DESIGN LOADS

WIND: 90 MPH; EXPOSURE C  
 FLOOR:  
 LIVE LOAD = 50 PSF  
 DEAD LOAD = 5 PSF  
 TOTAL LOAD = 55 PSF  
 WALL:  
 TOTAL LOAD = 12 PSF  
 ROOF:  
 SNOW LOAD = 20 PSF  
 PV LOAD = 10 PSF  
 DEAD LOAD = 10 PSF  
 TOTAL LOAD = 40 PSF  
 DECK:  
 TOTAL LOAD = 100 PSF  
 SOIL:  
 TOTAL LOAD = 1500 PSF

## GENERAL NOTES

- COMPETITION FOUNDATIONS CONSTRUCTED USING CMU FOUNDATION PIERS
- CMU'S SET ON PREFABRICATED PLASTIC PIER PLATES SPECIFIED BY THE MANUFACTURER
- PIERS INSTALLED TO MANUFACTURER'S RECOMMENDATIONS FOR ANCHORAGE. SEE PROJECT SPECIFICATIONS.
- SPECIFICATIONS, CODES, AND STANDARDS NOTED IN THE CONTRACT DOCUMENTS SHALL BE OF THE LATEST EDITION UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL FIELD VERIFY ALL JOB CONDITIONS AND DIMENSIONS. VARIATIONS THERE OF FROM THE DRAWINGS MUST BE REPORTED TO THE STRUCTURAL ENGINEER. DETAILS INDICATED ON THE DRAWINGS SHALL CONFORM TO BEST PRACTICE AND SHALL BE THE CONTRACTORS RESPONSIBILITY.
- DIMENSIONS SHALL NOT BE SCALED.
- ALL WORK SHALL CONFORM TO THE MINIMUM STANDARDS OF THE FOLLOWING CODES: THE 2011 SOLAR DECATHLON BUILDING CODE, THE INTERNATIONAL RESIDENTIAL CODE (2009 EDITION), AND ANY OTHER REGULATING AGENCIES WHICH HAVE AUTHORITY OVER ANY PORTION OF THE WORK.
- MANUFACTURED MATERIALS APPROVED BY THE CONTRACTOR PRIOR TO THEIR USE. ALL REQUIREMENTS OF THOSE APPROVALS SHALL BE FOLLOWED.
- NON-STRUCTURAL FEATURES NOT FULLY SHOWN OR NOTED ON THE STRUCTURAL DRAWINGS INCLUDE BUT ARE NOT LIMITED TO:
  - ARCHITECTURAL FEATURES
    - SIZE AND LOCATION OF ALL DOOR AND WINDOW OPENINGS.
    - SIZE AND LOCATION OF ALL FLOOR DRAINS, SLOPES, DEPRESSED AREAS.
    - SIZE AND LOCATION OF ALL FLOOR AND ROOF OPENINGS.
    - DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
  - MECHANICAL, ELECTRICAL, AND PLUMBING FEATURES
    - PIPE RUNS, SLEEVES, HANGERS, TRENCHES, WALL, ROOF, AND FLOOR OPENINGS, ETC.
    - ELECTRICAL CONDUIT RUNS, BOXES, OUTLETS IN WALLS
    - ANCHORAGE AND BRACING FOR ELECTRICAL, MECHANICAL, OR PLUMBING EQUIPMENT.
    - SIZE AND LOCATION OF MACHINE AND EQUIPMENT BASES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND SHALL CHECK ALL DIMENSIONS AND HOLES AND OPENING REQUIRED IN STRUCTURAL MEMBERS. ALL DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT AND SHALL BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
- THE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO BRACING AND SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT AND MATERIALS. OBSERVATIONS VISITS TO THE SITE BY THE STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS AND THE METHODS, TECHNIQUES, SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THE CONTRACTORS WORK. THE STRUCTURAL ENGINEER HAS NO SUPERVISORY AUTHORITY OR DIRECT RESPONSIBILITY FOR THE SPECIFIC WORKING CONDITIONS AT THE SITE AND/OR FOR ANY HAZARDS RESULTING FROM THE ACTIONS OF ANY TRADE CONTRACTOR.
- CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOFS. LOAD SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. PROVIDE ADEQUATE SHORING WHERE OVERLOAD IS ANTICIPATED.
- THE LATERAL SYSTEM OF THE STRUCTURE IS DESIGNED WITH LATERAL RESTRAINT AT EACH LEVEL. STRUCTURAL WALLS OR FRAMES ARE NOT LATERALLY SELF SUPPORTING UNTIL THE ENTIRE DESIGN LATERAL RESTRAINT SYSTEM IS IN PLACE. THE CONTRACTOR SHALL PROVIDE TEMPARY BRACING FOR THE STRUCTURE AND STRUCTURAL COMPONENTS UNTIL ALL FINAL CONNECTIONS HAVE BEEN COMPLETED IN ACCORDANCE WITH THE PLANS.
- UNLESS OTHERWISE NOTED, FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ALL STRUCTURAL PRODUCTS.
- CONTRACTOR INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ON SHOP DRAWINGS ONLY WILL NOT SATISFY REQUIREMENT.
- DRAWINGS INDICATED TO GENERAL AND TYPICAL DEATILS OF CONSTRUCTION. WHERE CONITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE ARCHITECT AND THE STRUCTURAL ENGINEER.

## FOUNDATIONS

- COMPETITION FOUNDATIONS CONSTRUCTED USING CMU FOUNDATION PIERS.
- CMU'S SET ON PREFABRICATED ABS PLASTIC PIER PADS DESIGNED FOR MANUFACTURED HOME FOUNDATIONS.
- PIERS INSTALLED TO MANUFACTURER'S RECOMMENDATIONS FOR ANCHORAGE. SEE PROJECT SPECIFICATIONS.
- CMU'S SHIMMED WITH 8"X16" HARDWOOD SHIMS TO ACCOMODATE A SLOPING SITE. SEE PROJECT SPECIFICATIONS.

## WOOD FRAME

- LIGHT WOOD FRAMING REQUIREMENTS CONFORM TO THE INTERNATIONAL RESIDENTIAL CODE (IRC).
- ALL SOLID WOOD FLOOR JOISTS AND WALL STUDS SHALL BE HEM-FIR #2.
- FLOOR JOISTS: 2 X 10 @ 16" O.C. ATTACHED TO 2X12 ATTACHED TO BEAM WEB, TYPICAL UNLESS OTHERWISE NOTED.
- ROOF JOISTS: 11 7/8" OPEN WEB JOISTS @ 24" O.C. CAPABLE OF SPANNING 14'-3" WITH A UNIFORM LIVE LOAD OF 40 PSF AND AN ALLOWABLE DEFLECTION OF L/360. ATTACHED WITH SIMPSON STRONG TIE HANGARS UNLESS OTHERWISE NOTED.
- LVL RIM JOISTS: 14" ENGINEERED LVL RIM JOIST CAPABLE OF SPANNING 18'-0" WITH AN ALLOWABLE DEFLECTION OF L/360.
- EXTERIOR BEARING WALLS: 2 X 6 WOOD STUDS AT 24" O.C. WITH 1/2" PLYWOOD SHEATHING. BEARING WALL SHEATHING NAILED 6" O.C. TO THE SILL PLATE DIRECTLY ATTACHED TO THE STEEL. STUDS CLIPPED AT TOP OF WALL TO THE ROOF JOIST USING MANUFACTURER RECOMMENED CLIP. SEE DETAILS FOR ADDITIONAL INFORMATION.
- SHEAR WALL: SHEAR WALL SHALL CONFORM TO IRC SECTION R602.10.3
- INTERIOR WALLS (NON-BEARING): 2 X 4 STUDS @ 16" O.C.
- SHEATHING: ALL SHEATHING INSTALLED USING CONSTRUCTION ADHESIVE AND A 12 & 6 (12" INSIDE; 6" OUTSIDE EDGES) PATTERN RECOMMENDED BY THE APA (AMERICAN PANEL ASSOCIATION) AND IRC TABLE R602.3(1) - FASTENER SCHEDULE FOR STRUCTURAL MEMEMBERS.  
 ALL SHEATHING INSTALLED WITH FACE GRAIN RUNNING PERPENDICULAR TO THE STUDS/JOISTS IN A STAGGARD PATTERN. PANELS GAPPED PER APA RECOMMENDATIONS.
  - FLOOR SHEATHING: 3/4" T&G OSB INSTALLED IN ACCORDANCE WITH APA RECOMMENDATIONS.
  - WALL SHEATHING: 1/2" OSB INSTALLED WITH 8D RING SHANK NAILS AND STRUCTURAL ADHESIVE IN ACCORDANCE WITH APA RECOMMENDATIONS. BLOCKING TO BE PLACED IN EXTERIOR WALLS AT HORIZONTAL SEEMS TO CREATE A BLOCKED DIAPHRAGM.
  - ROOF SHEATHING: 3/4" OSB SHEATHING INSTALLED WITH 8D RING SHANK NAILS IN ACCORDNCE WITH APA RECOMMENDATIONS.
- UNLESS OTHERWISE NOTED, USE SIMPSON STRONG-TIE CONNECTOR. USE EITHER STAINLESS STEEL OR HOT-DIPPED GALVANIZED FASTENERS FOR EXTERIOR APPLICATIONS. ALL CONNECTORS INSTALLED PER MANUFACTURERS RECOMMENDATIONS.

## STRUCTURAL STEEL / MISC. METALS

- ALL STRUCTURAL STEEL CONFORMS TO IRC R301.1.3
- UNLESS OTHERWISE NOTED, APPLY ONE COAT SHOP PRIMER AND TWO COATS OF FINISH PAINT TO ALL STEEL SUB-STRUCTURE.
- ALL STEEL CONNECTIONS FULLY WELDED ON BOTH SIDE OF FLANGE AND WEB UNLESS OTHERWISE NOTED.

## METAL CONNECTORS (SIMPSON STRONG-TIE)

MODEL #	DESCRIPTION	LOCATION
TB1460S	SELF TAPPING SCREWS	ATTACHMENT OF SILL PLATE TO STEEL STRUCTURE
LUS210	JOIST HANGER	ATTACHMENT OF 2 X 10 JOIST TO 2 X 12
LSSUH310	SKEWED JOIST HANGER	ATTACHMENT OF SLOPED ROOF JOIST TO LVL
IUT 312	JOIST HANGER	ATTACHMENT OF ROOF JOIST TO LVL
TB36	BRIDGING	BRIDIGNG FOR FLOOR AND ROOF JOISTS

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 STRUCTURAL NOTES

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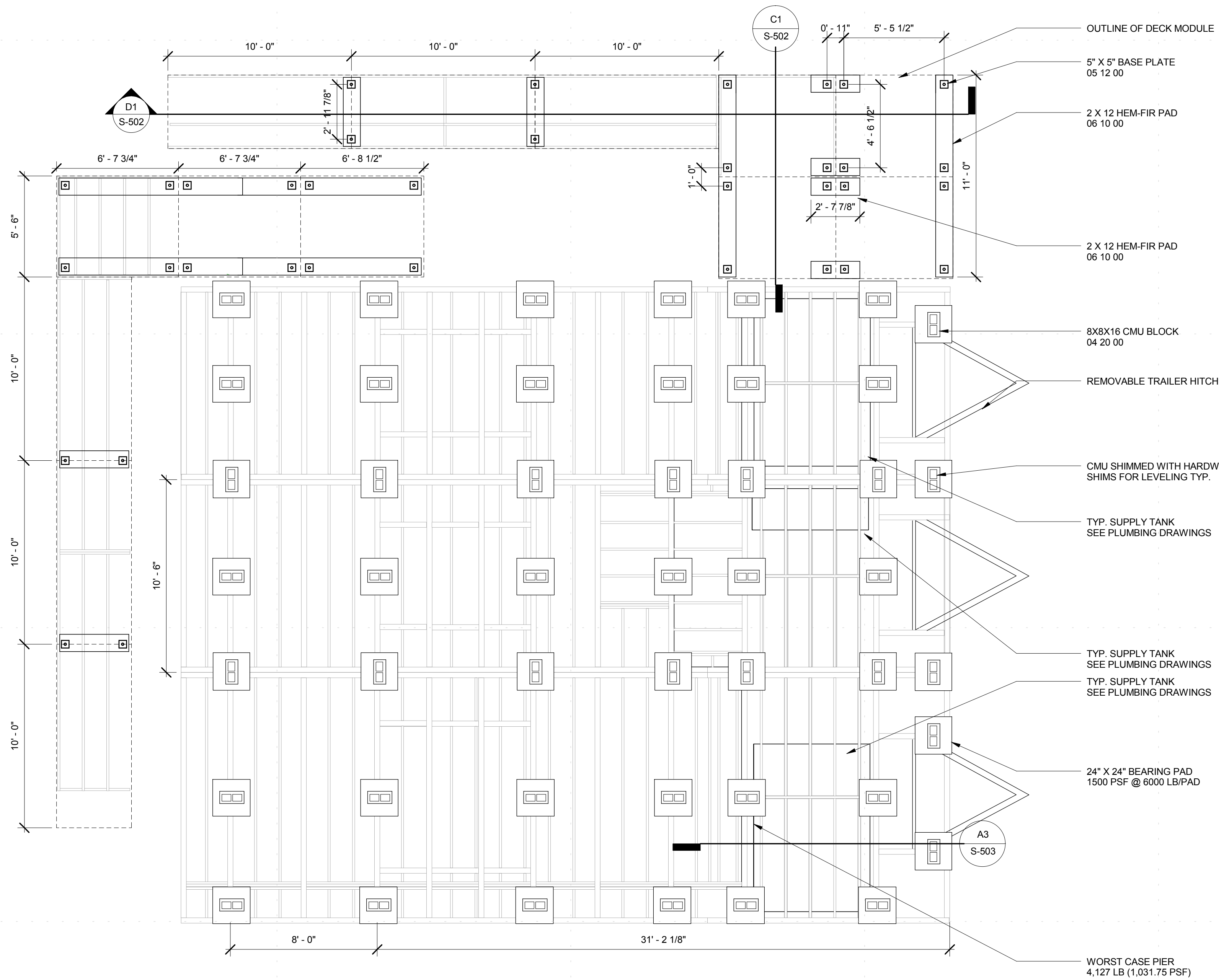
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## NOTES

1. TRAILERS ARE PRE-FABRICATED USING M12X10.8 STEEL MEMBERS, FULLY WELDED AT ALL FLANGES AND WEBS.
2. TRAILERS SHOWN DASHED.
3. DURING TRANSIT EACH MODULE IS SUPPORTED BY 2 AXLES CAPABLE OF SUPPORTING 6000 LBS. EACH.
5. TRAILERS ARE LEVELED WITH HARDWOOD SHIMS AS NEEDED.
6. TRAILERS ARE BOLTED TOGETHER.
7. TRAILERS ARE SUPPORTED ON A FOUNDATION OF CMU PIERS, HARDWOOD SHIMS AND CUT BLOCK TO BE USED FOR ADJUSTMENT FOR UP TO 18" OF ELEVATION CHANGE.
8. DECKS ARE SUPPORTED ON A FOUNDATION OF TUBE AND CLAMP SCAFFOLDING.
9. DECK FOUNDATION IS BUILT AND LEVELED ON SITE.
10. BEARING PADS CAPABLE OF BEARING UP TO 6000 LBS @ 1500 PSF.



**FOUNDATION PLAN**  
 1/4" = 1'-0"  
 0' 2' 4' 8'

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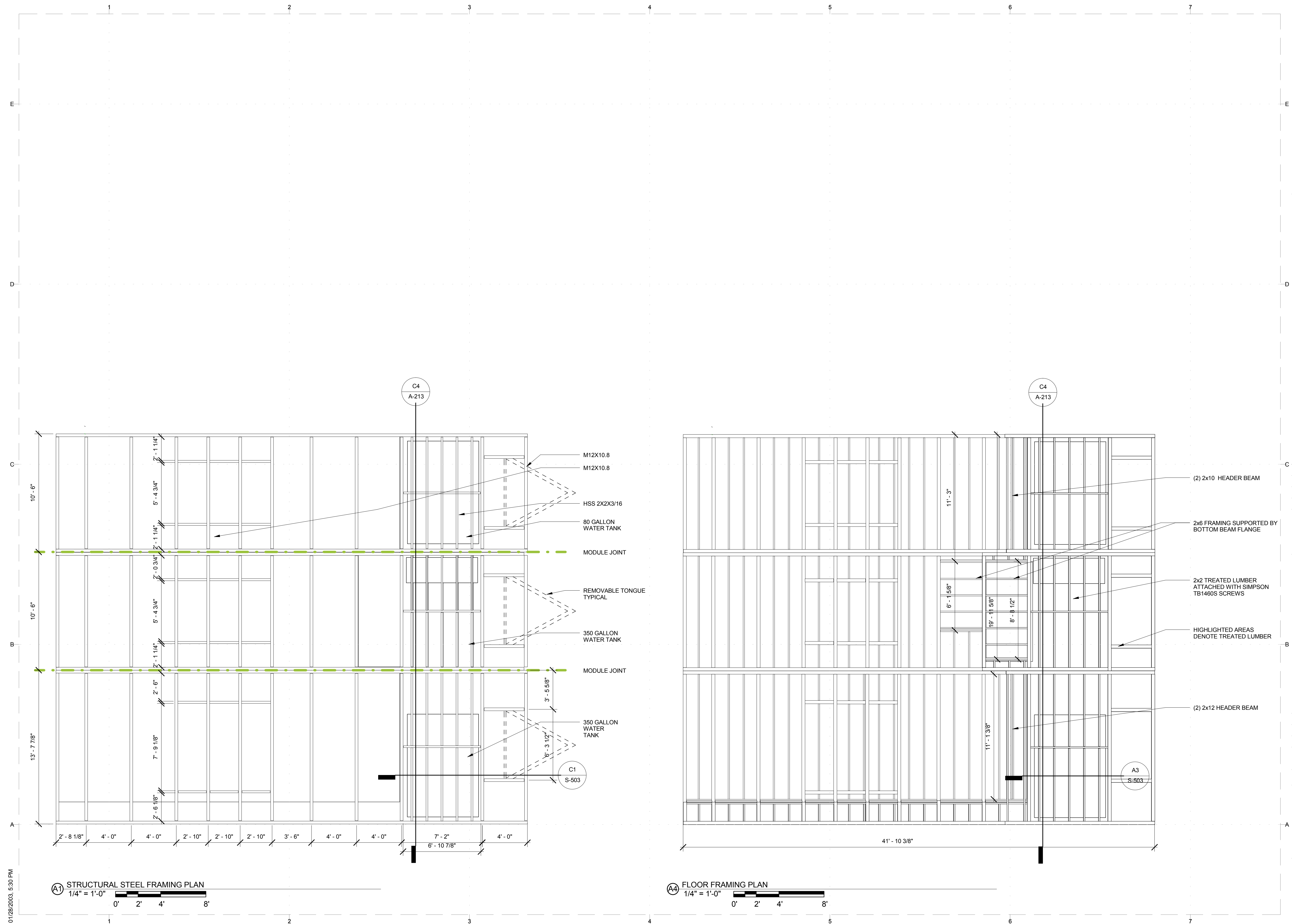
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**FOUNDATION PLAN**



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SHEET TITLE  
**FLOOR FRAMING**

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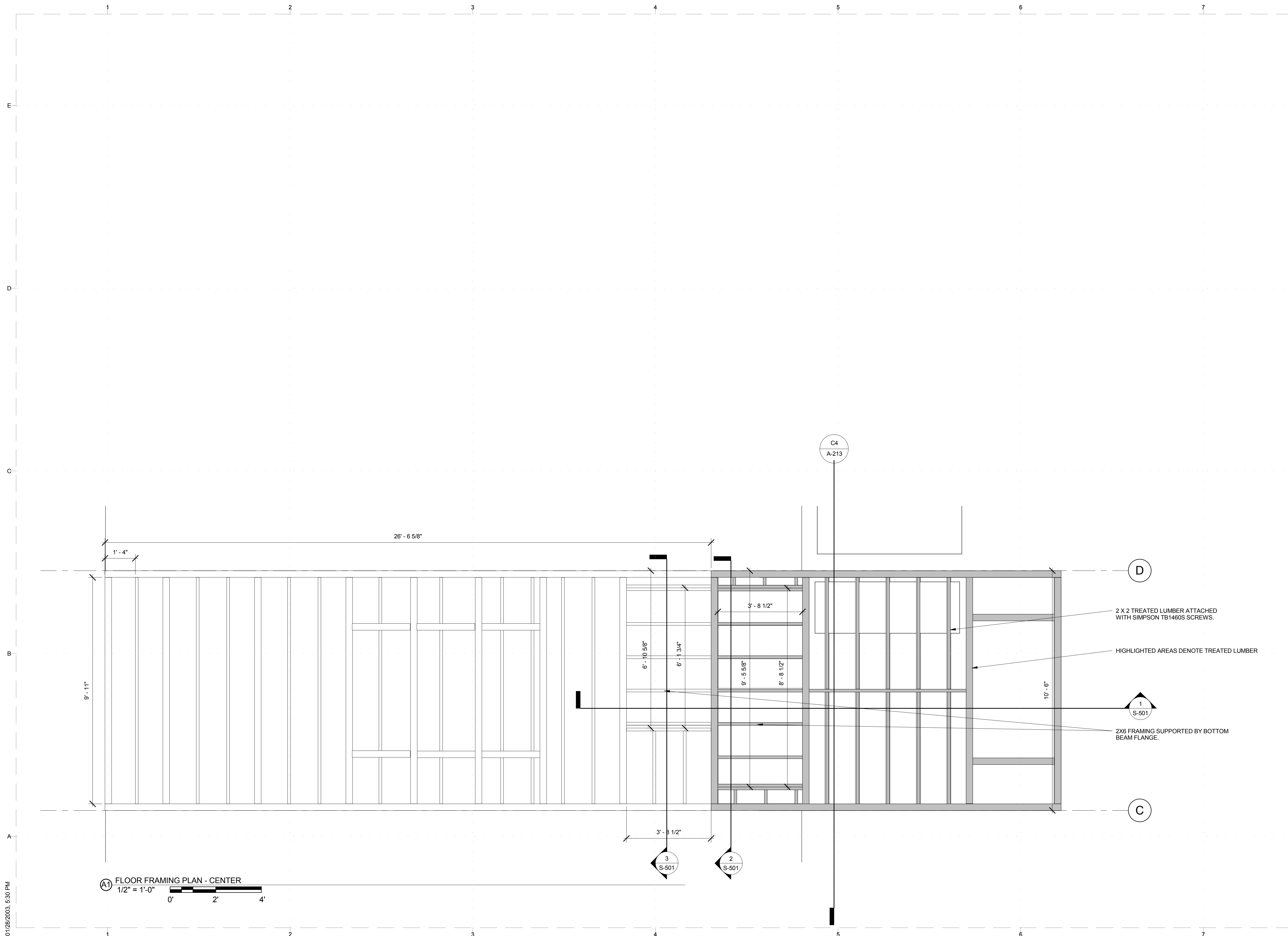
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FLOOR FRAMING PLAN - CENTER MODULE

S-103



Ⓐ FLOOR FRAMING PLAN - CENTER  
1/2" = 1'-0"  
0' 2' 4'

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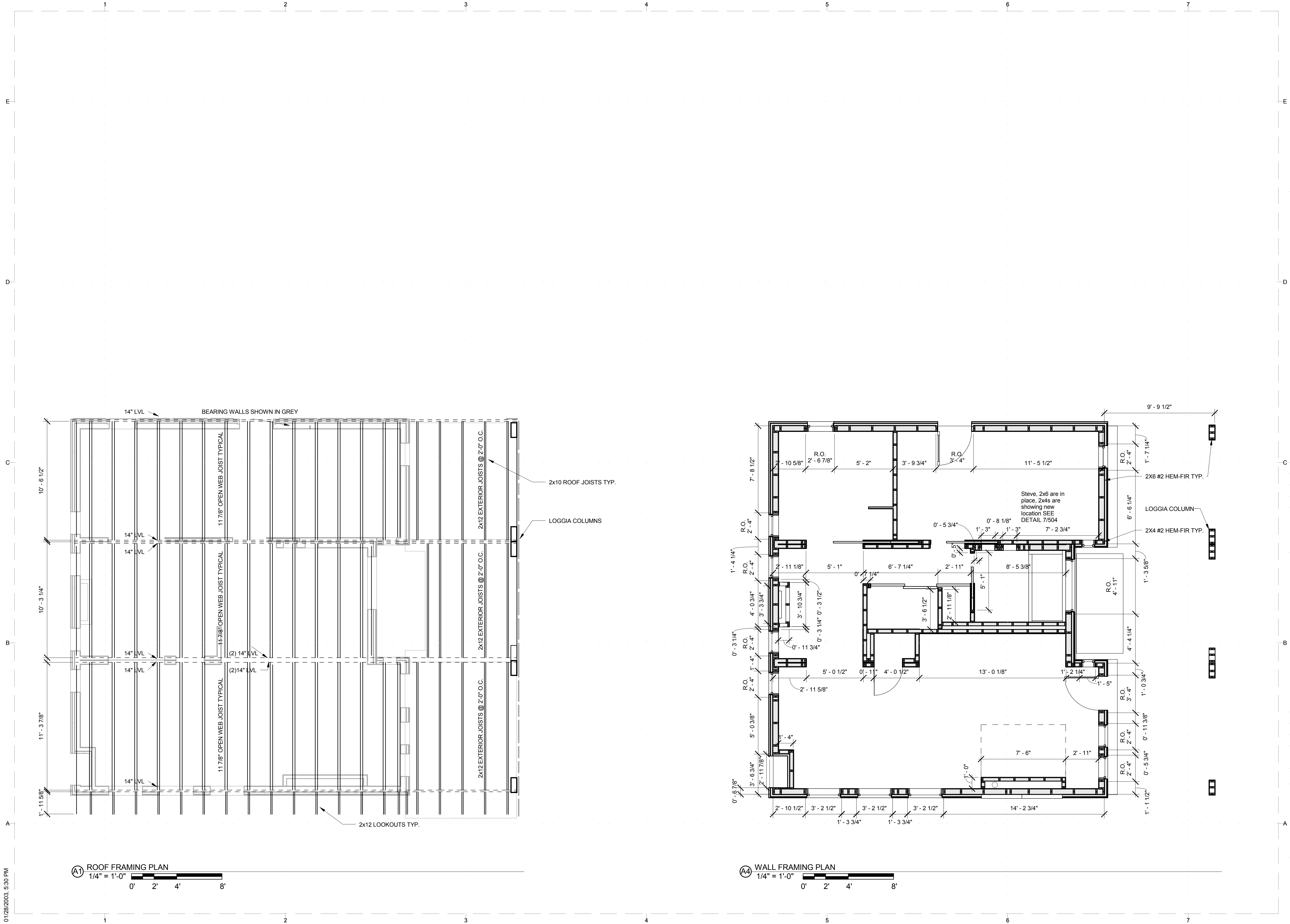
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ROOF AND WALL  
 FRAMING PLAN

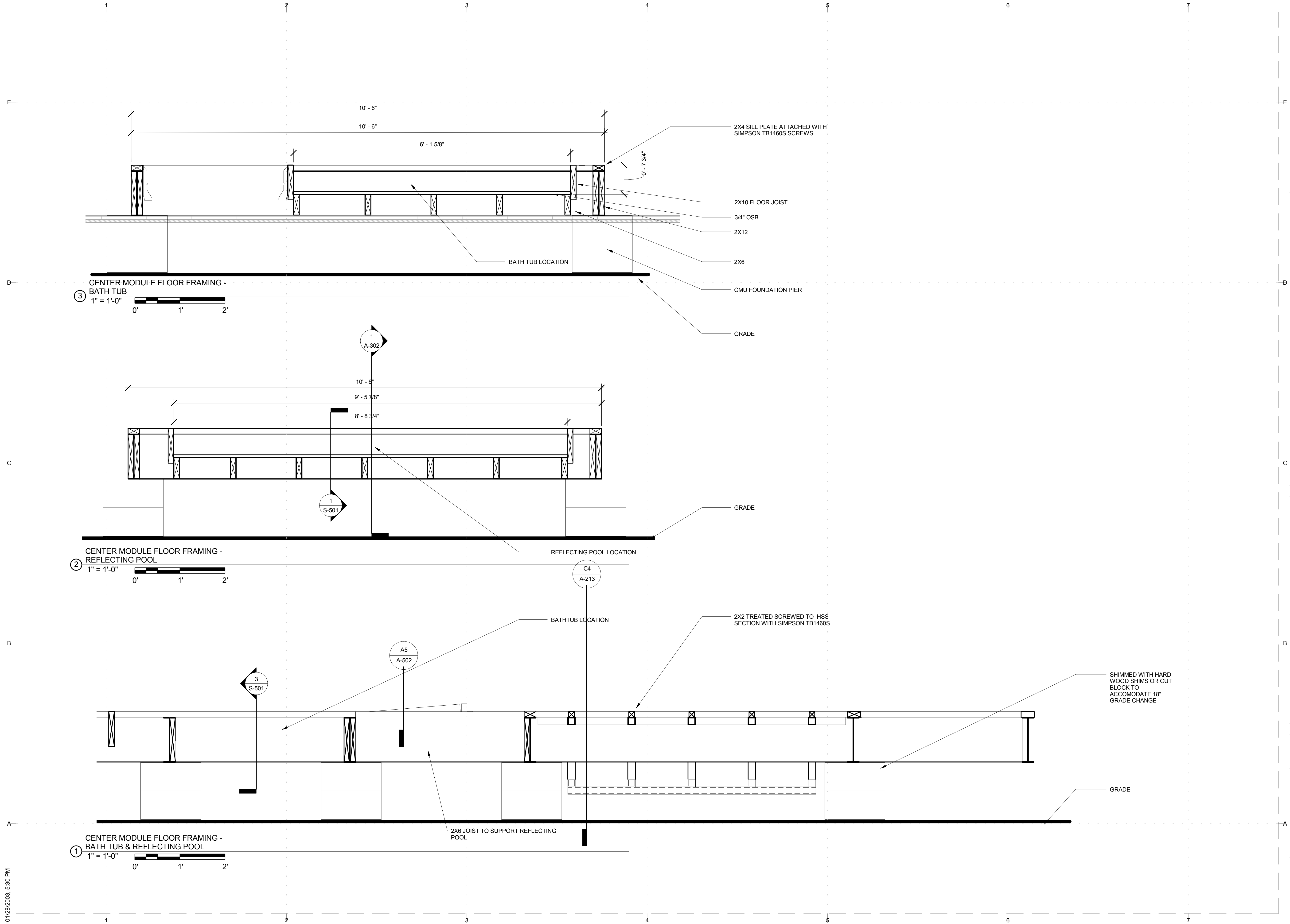
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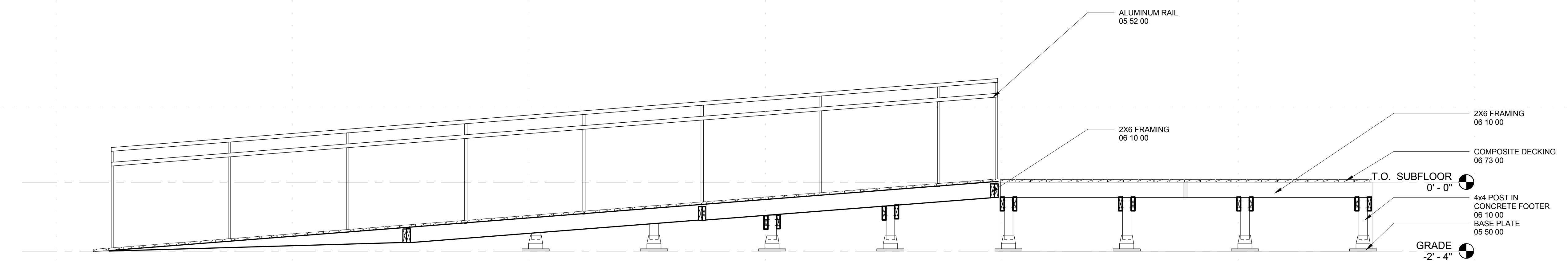
SHEET TITLE  
**FLOOR FRAMING DETAILS**

**S-501**

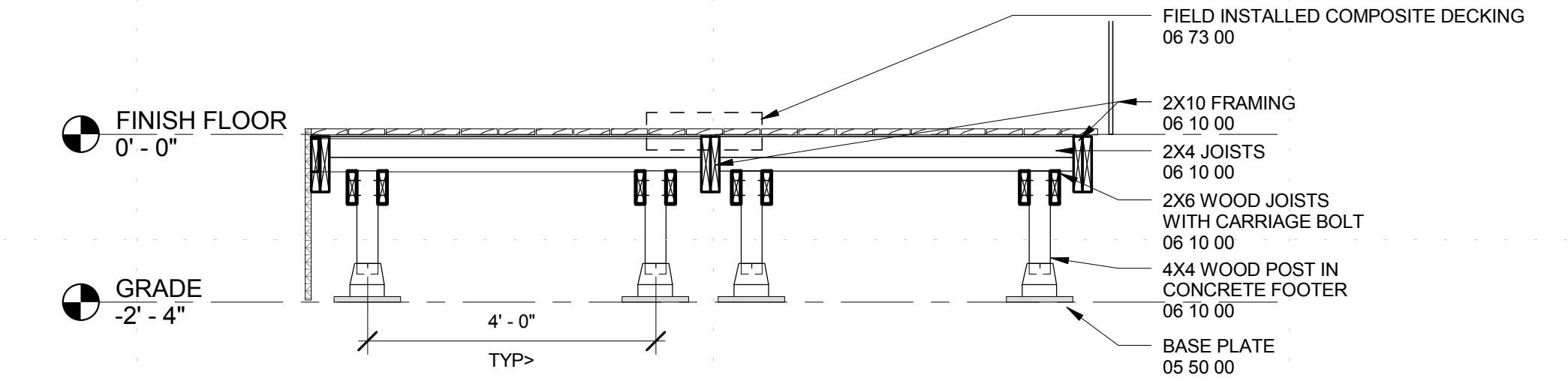
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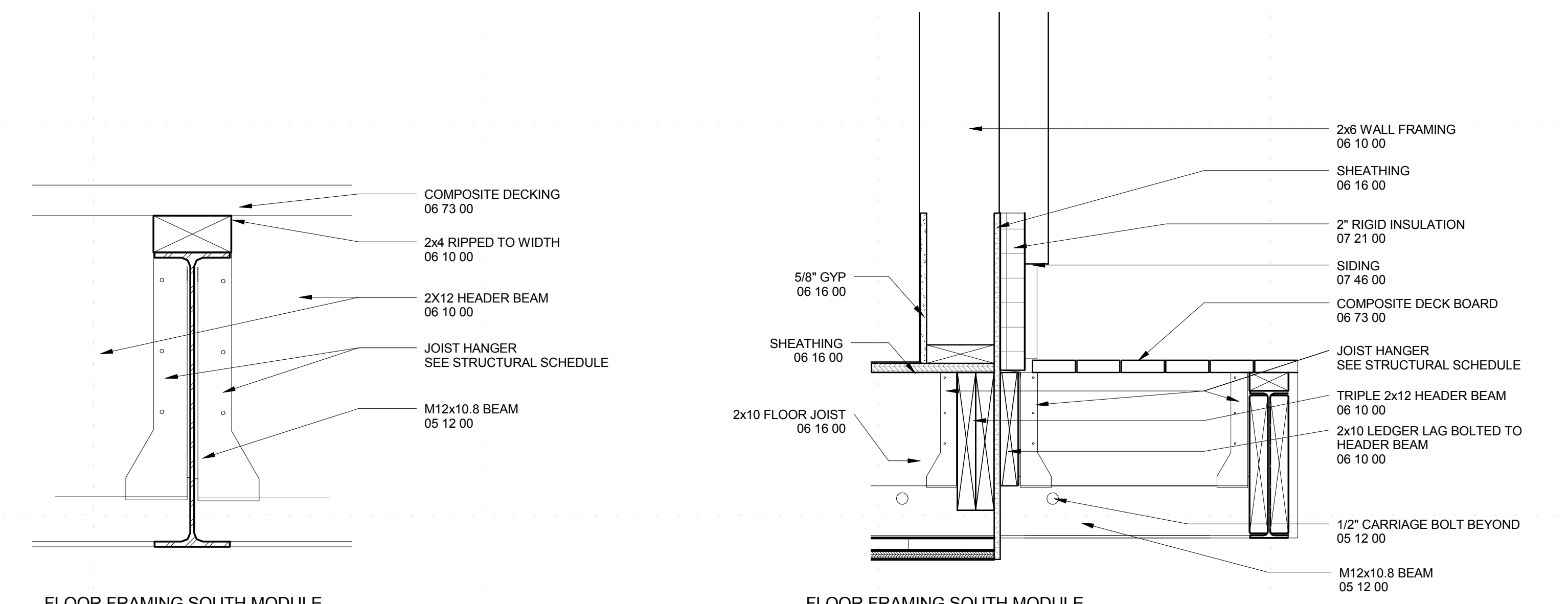
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(D) TYPICAL RAMP  
 1/2" = 1'-0"

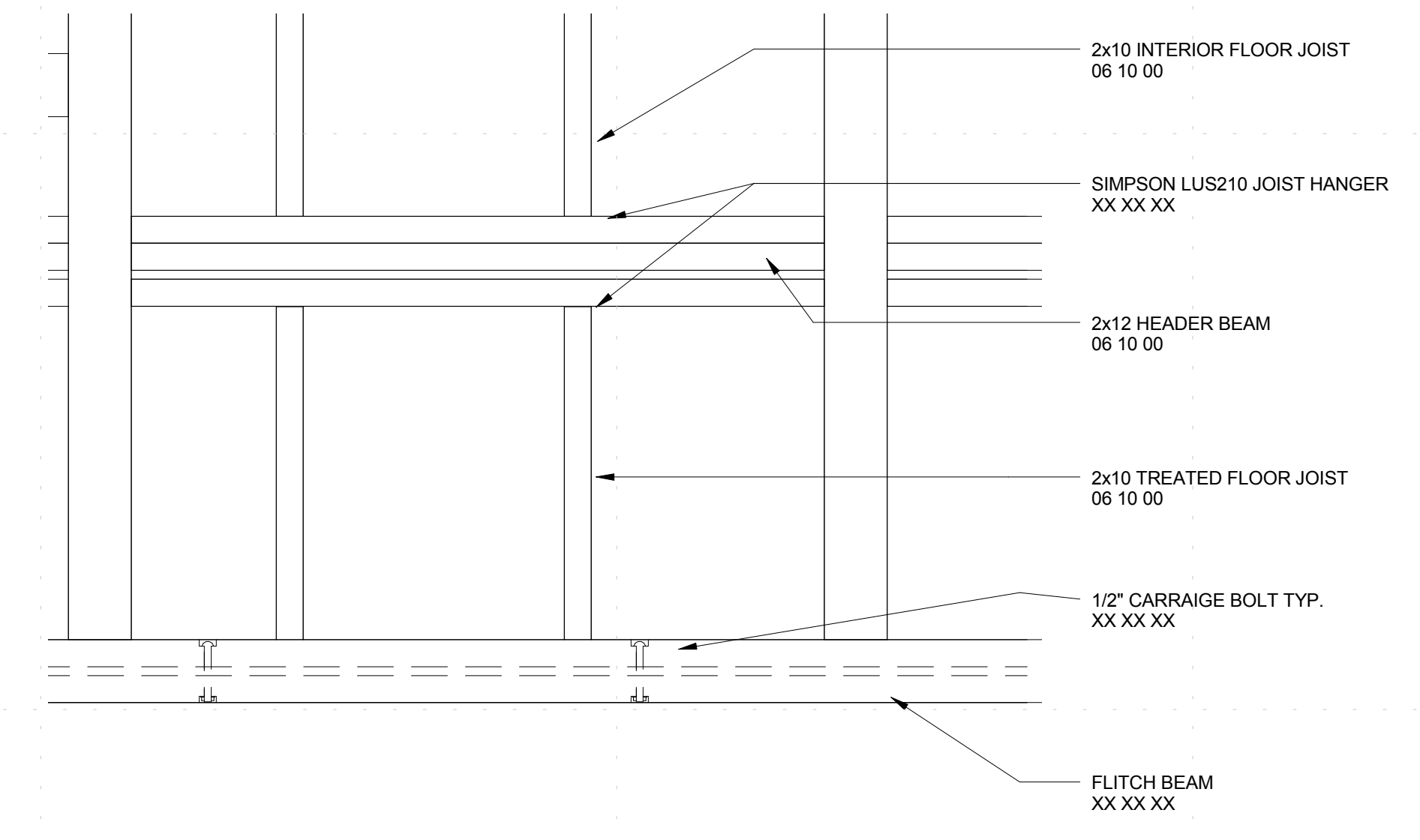


(C) RAMP DETAIL 2  
 1/2" = 1'-0"



(A1) FLOOR FRAMING SOUTH MODULE - DETAIL 2  
 3\"/>

(A3) FLOOR FRAMING SOUTH MODULE - DETAIL 1  
 1 1/2\"/>



(A5) DETAIL - FLOOR FRAMING PLAN  
 1 1/2\"/>

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SHEET TITLE  
**FRAMING DETAILS**





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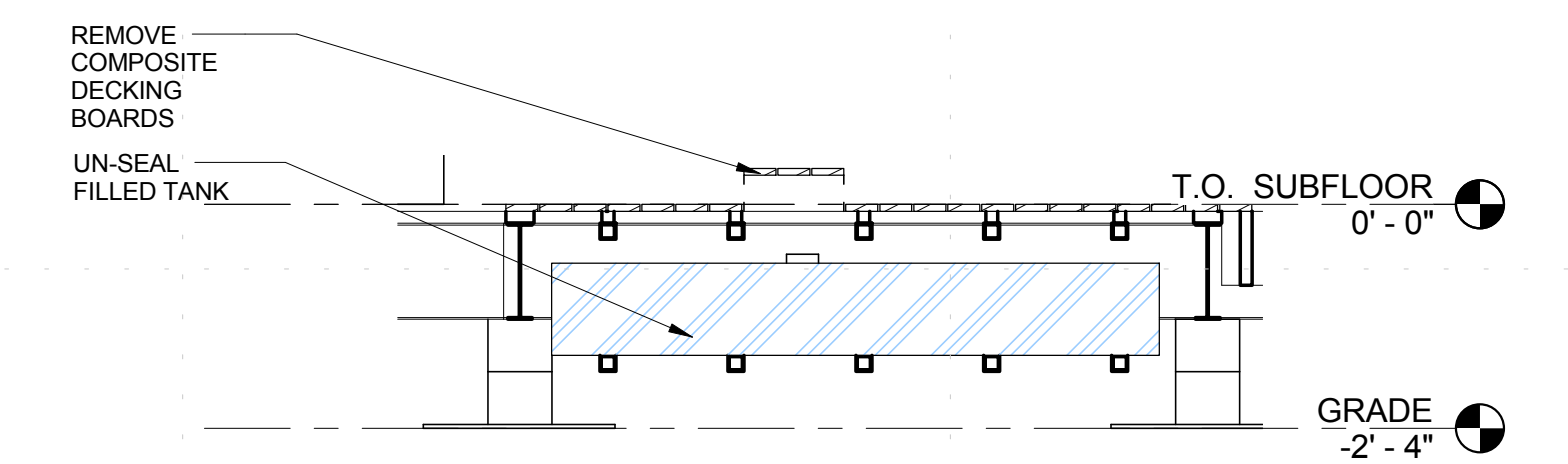
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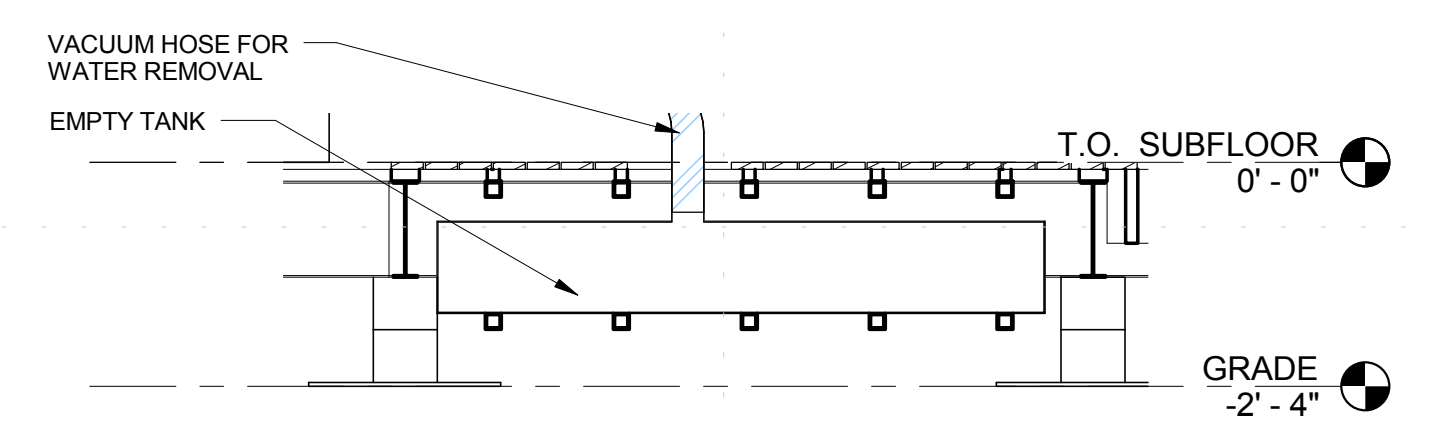
SHEET TITLE

TANK FRAMING DETAILS

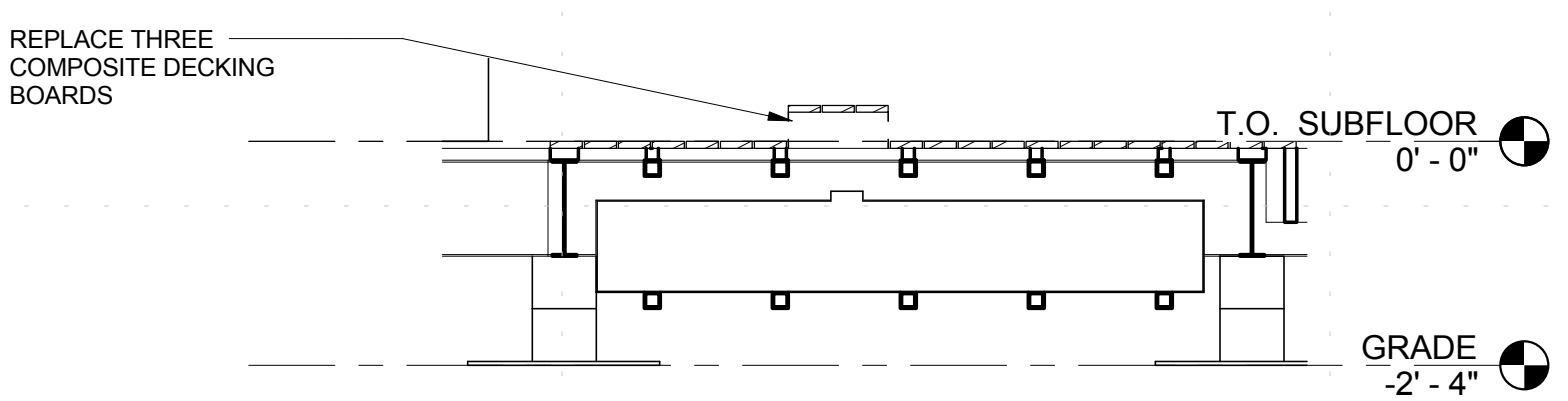
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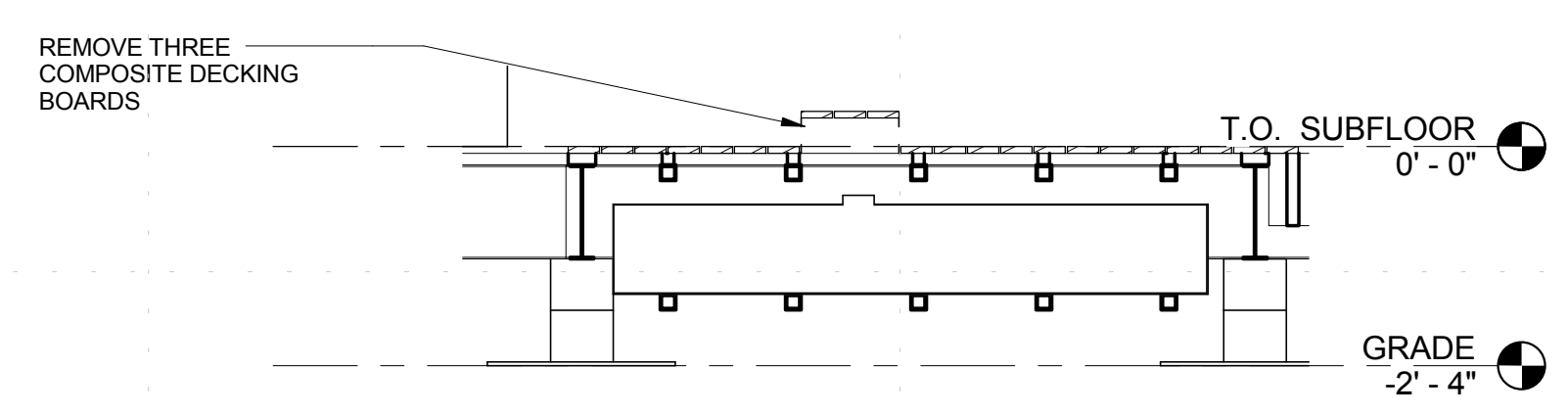
① WATER REMOVAL STEP 1  
1/2" = 1'-0"  
0' 2' 4'



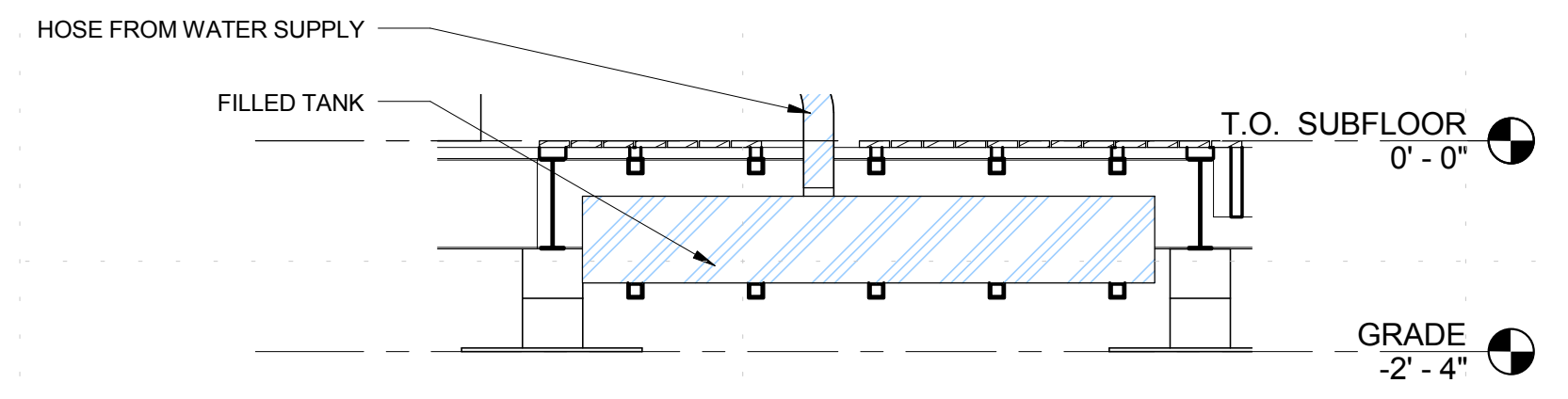
③ WATER REMOVAL STEP 2  
1/2" = 1'-0"  
0' 2' 4'



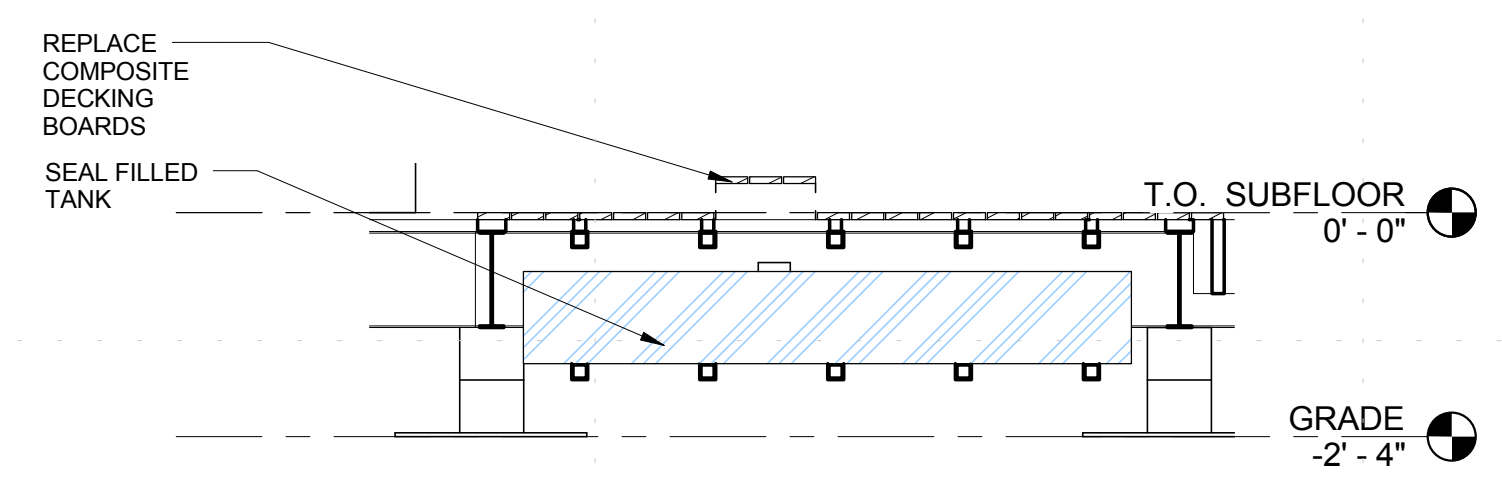
⑤ WATER REMOVAL STEP 3  
1/2" = 1'-0"  
0' 2' 4'



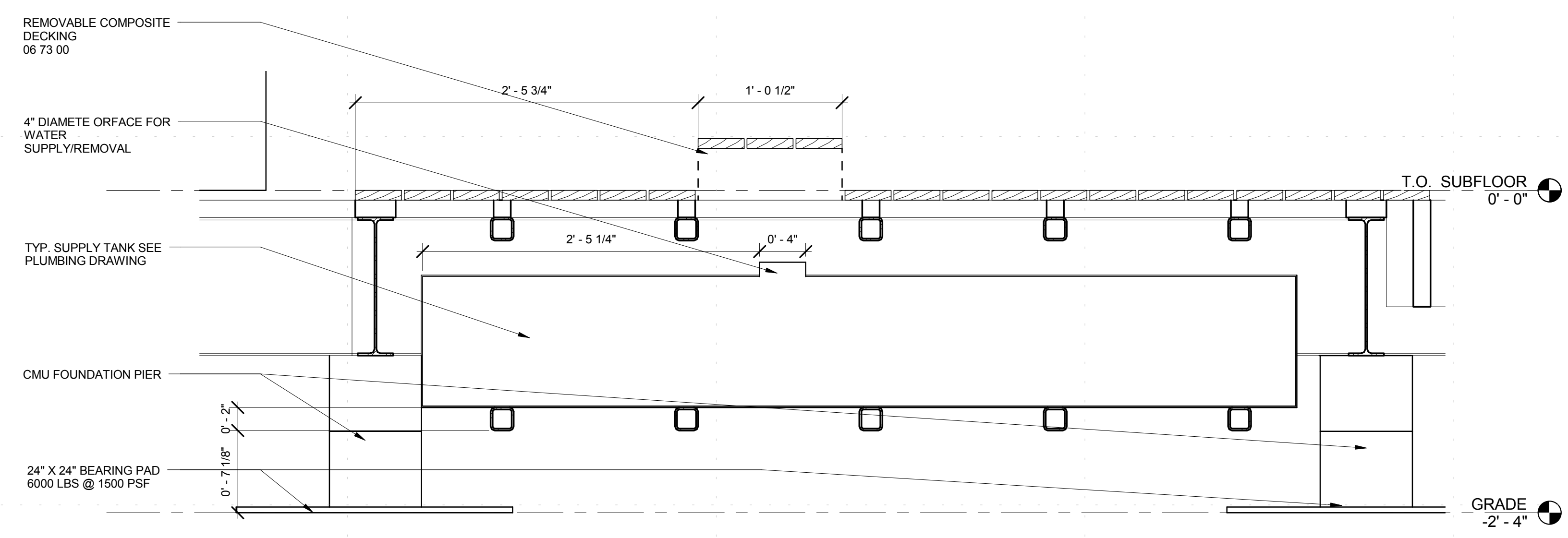
① WATER DELIVERY STEP 1  
1/2" = 1'-0"  
0' 2' 4'



③ WATER DELIVERY STEP 2  
1/2" = 1'-0"  
0' 2' 4'



⑤ WATER DELIVERY STEP 3  
1/2" = 1'-0"  
0' 2' 4'



③ DETAIL - WATER TANK FRAMING  
1 1/2" = 1'-0"  
0' 1' 2'

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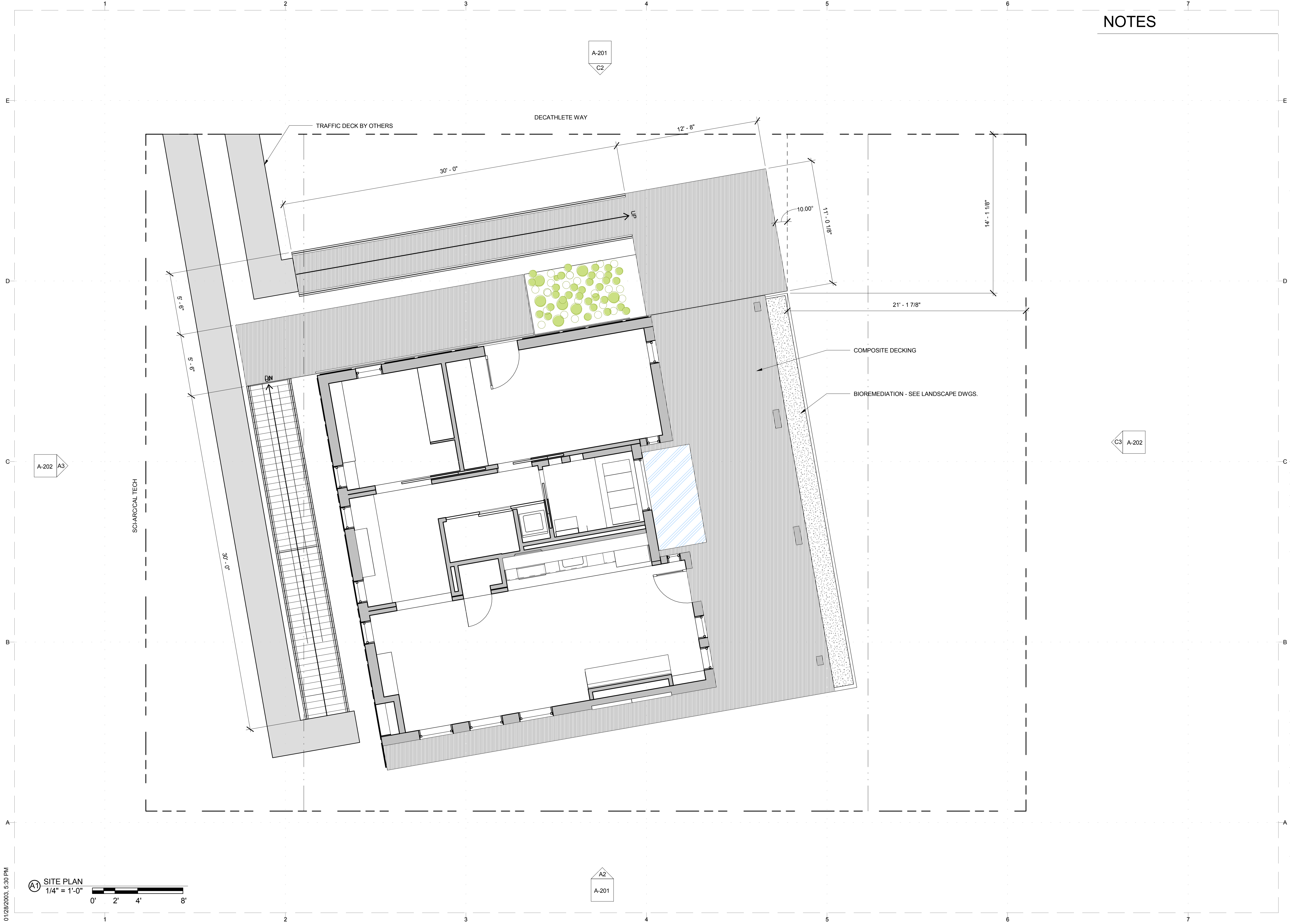


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SHEET TITLE  
**SITE PLAN**

# A-101

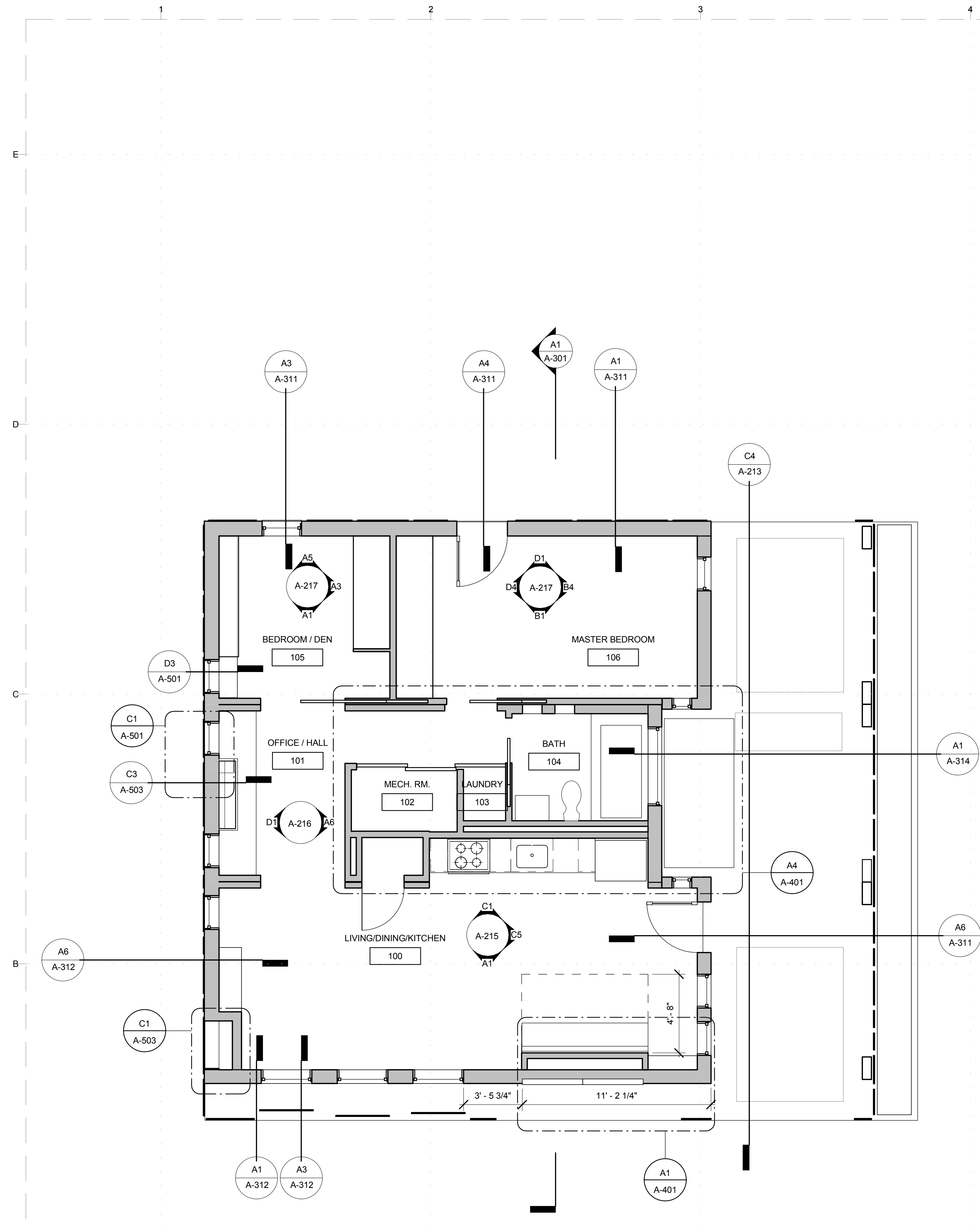




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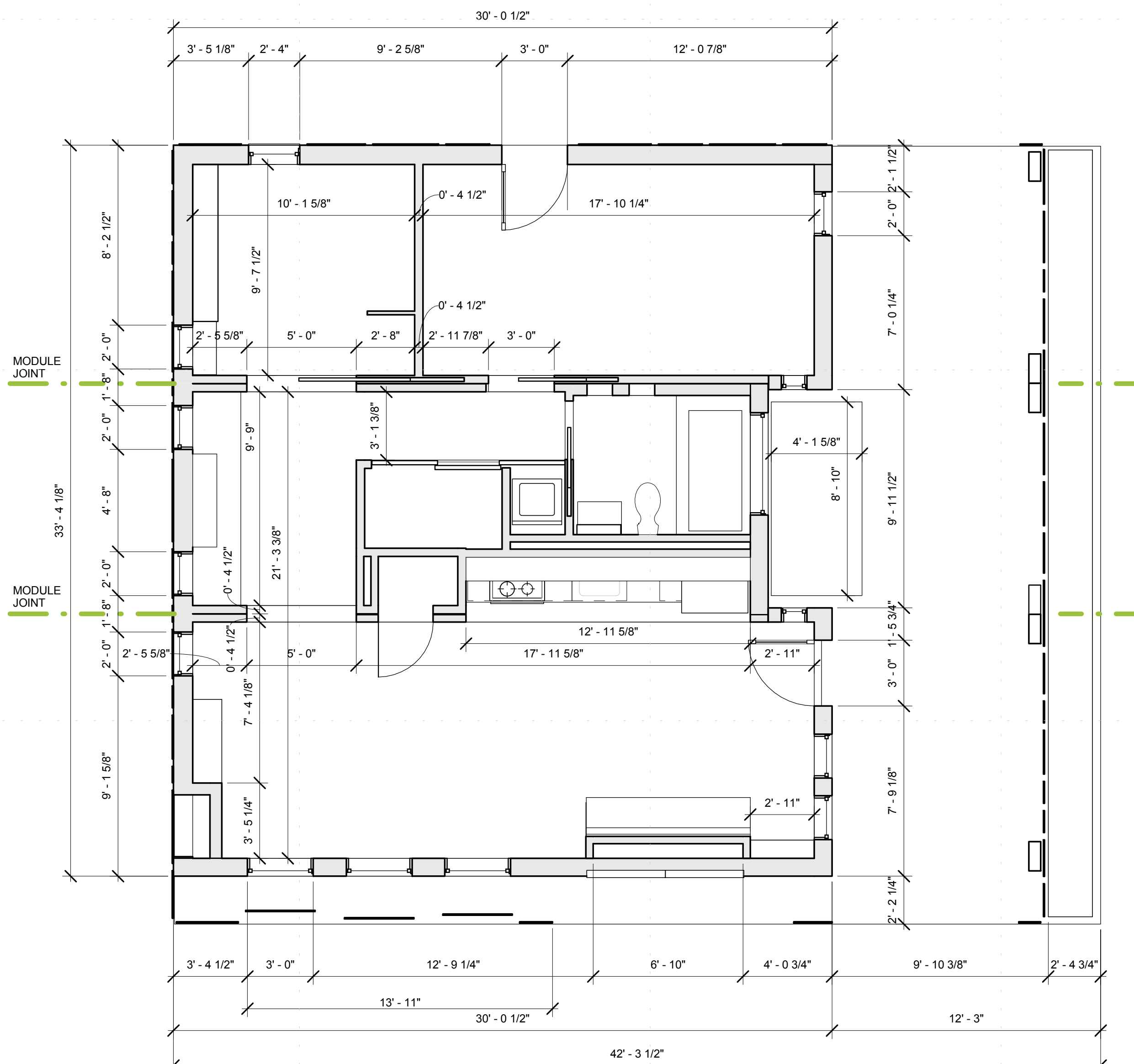
## NOTES

1. DIMENSIONS ARE GIVEN FROM OUTSIDE FINISH SURFACE TO OUTSIDE FINISH SURFACE



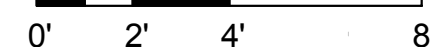
A1 FLOOR PLAN - CALLOUTS

1/4" = 1'-0"



A4 FLOOR PLAN - DIMENSIONS

1/4" = 1'-0"



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SHEET TITLE

FLOOR PLAN -  
CALLOUTS AND  
DIMENSIONS

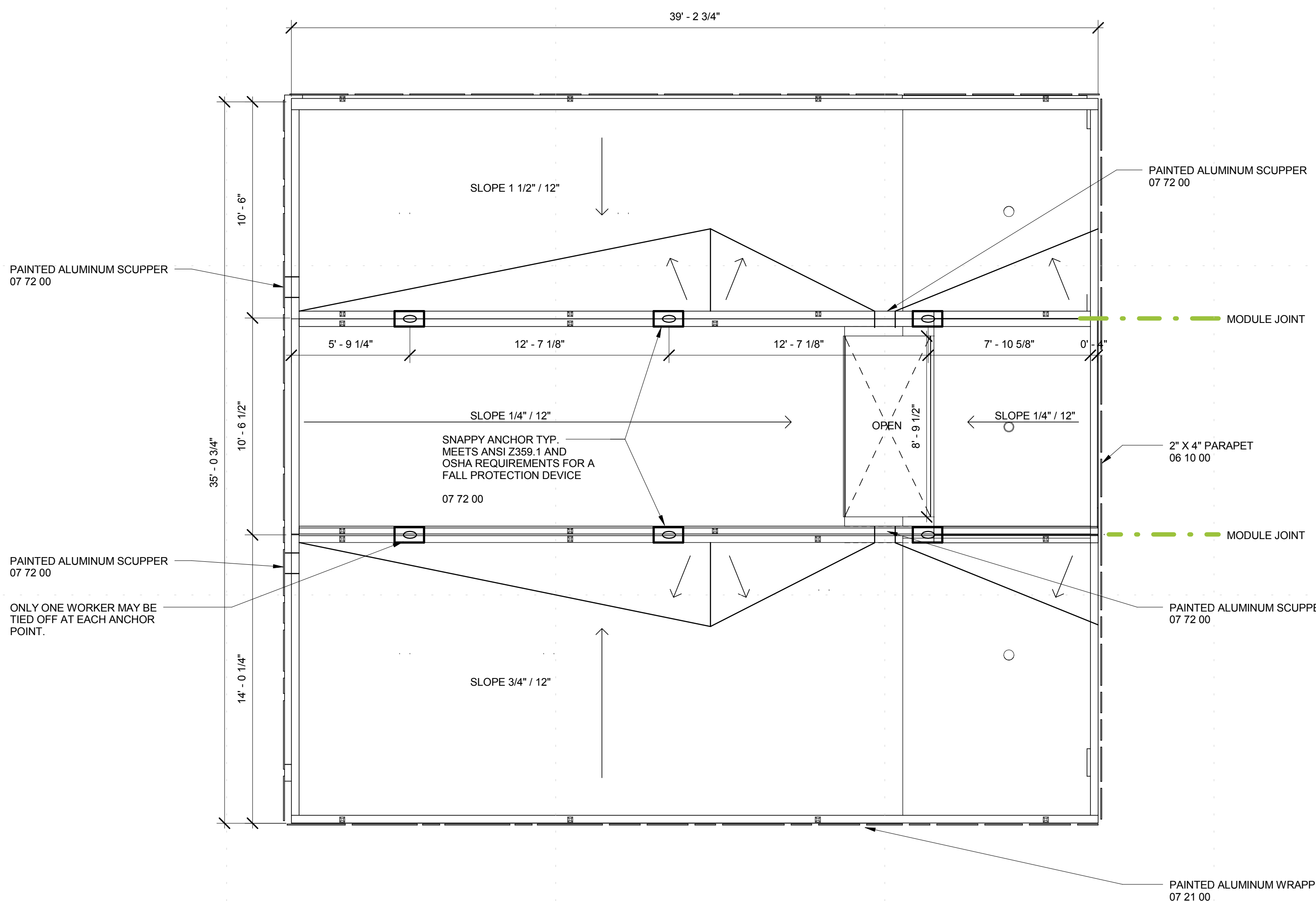
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SHEET TITLE

ROOF PLAN

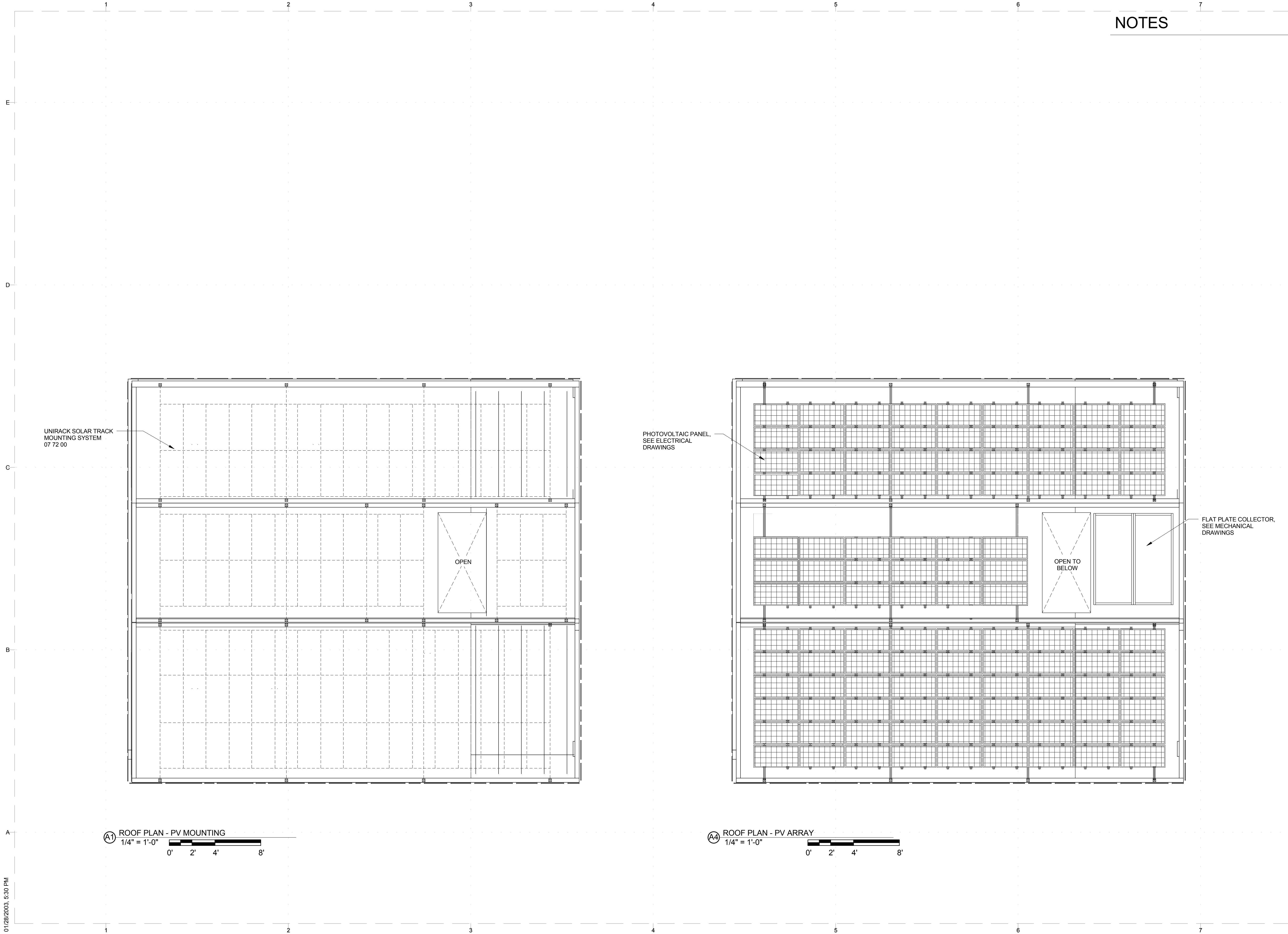
A4 ROOF PLAN  
1/4" = 1'-0"  
0' 2' 4' 8'

A-112



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NOTES



UNIRACK SOLAR TRACK  
 MOUNTING SYSTEM  
 07 72 00

PHOTOVOLTAIC PANEL,  
 SEE ELECTRICAL  
 DRAWINGS

FLAT PLATE COLLECTOR,  
 SEE MECHANICAL  
 DRAWINGS

OPEN

OPEN TO  
 BELOW

(A1) ROOF PLAN - PV MOUNTING  
 1/4" = 1'-0"

(A4) ROOF PLAN - PV ARRAY  
 1/4" = 1'-0"

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SHEET TITLE  
 ROOF PLAN WITH  
 PV

A-113

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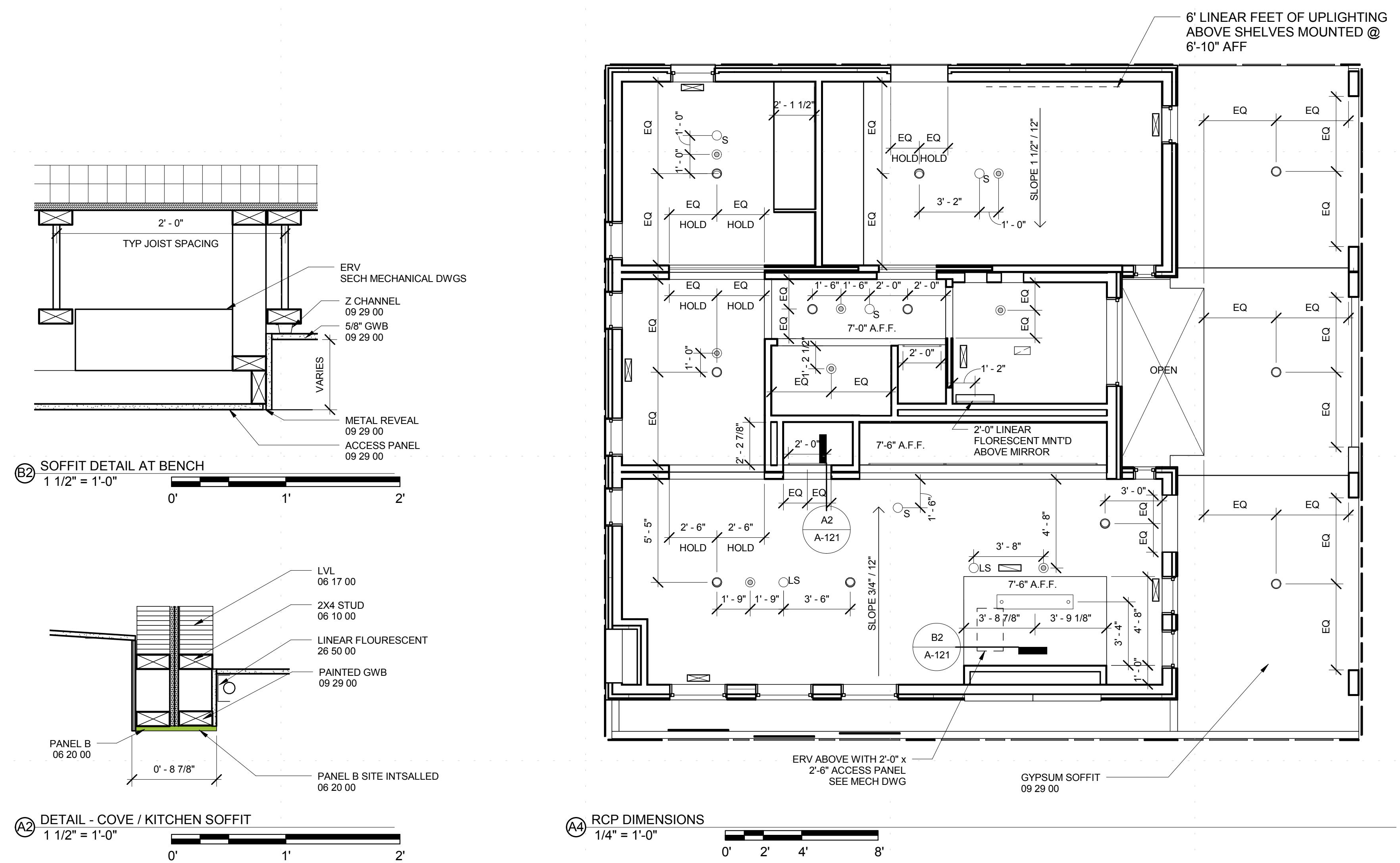
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### NOTES

1. SEE ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION REGARDING LIGHT FIXTURES, SENSORS, ETC.
2. ALL DIMENSIONS FROM WALL FINISHED FACE TO CENTER OF FIXTURE.
3. SEE MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION REGARDING HVAC EQUIPMENT.
4. ALL CEILINGS MINIMUM 7'-6 3/4" A.F.F. WITH INDICATED SLOPE UNLESS NOTED OTHERWISE.

### SYMBOL KEY

- BATHROOM EXHAUST
- CEILING-MOUNTED SHOWER HEAD
- COVE LIGHT
- LIGHT SENSOR
- LINEAR FLOURESCENT
- OCCUPANCY SENSOR
- PENDANT
- RECESSED DOWNLIGHT
- RETURN GRILLE
- SMOKE DETECTOR
- SPRINKLER HEAD
- SUPPLY GRILLE



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SHEET TITLE

RCP

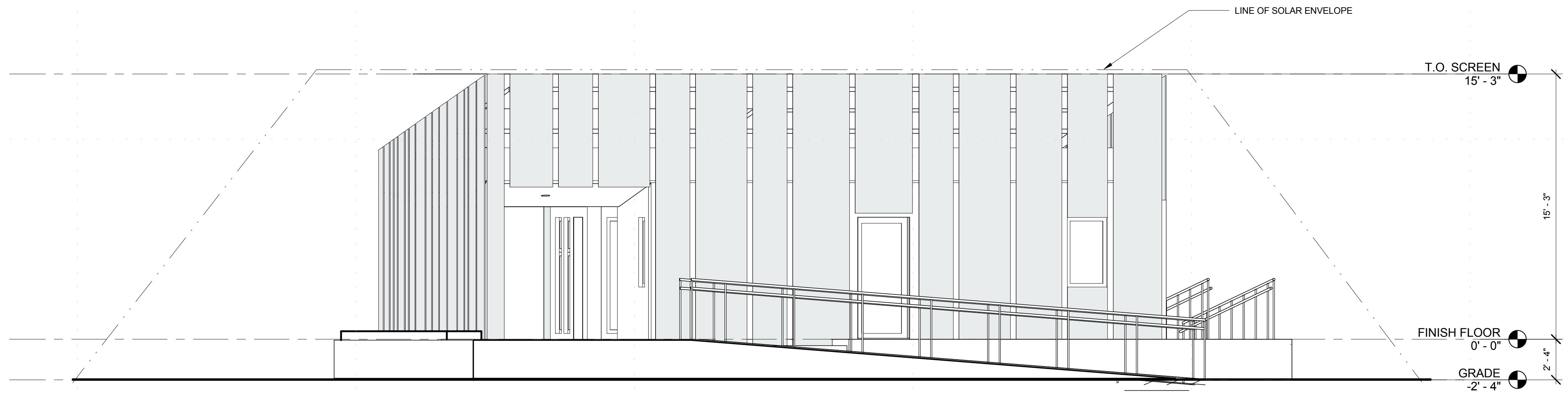
A-121



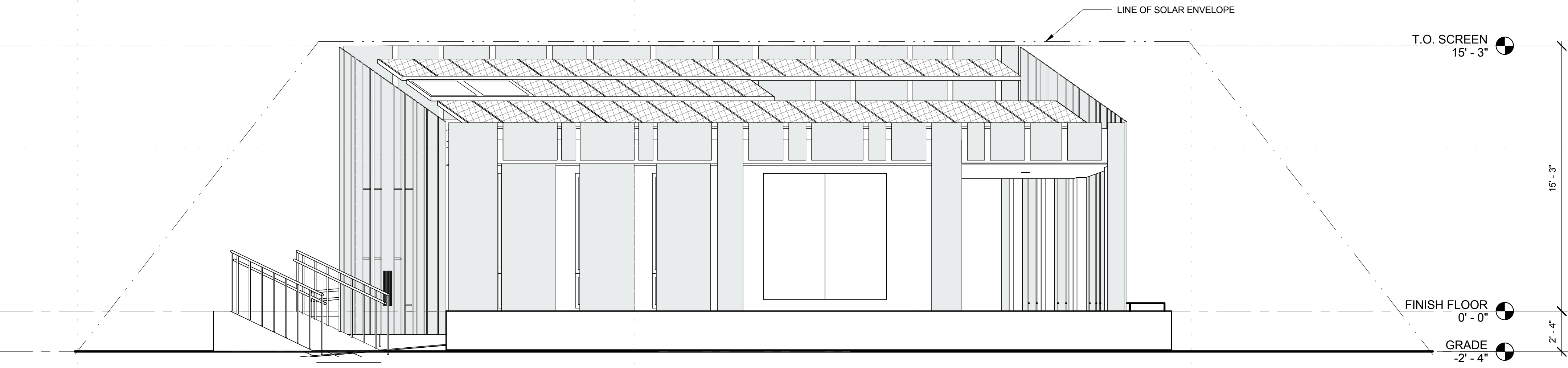
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NOTES

1. RAMP SLOPE 1/12"



23 SITE ELEVATION - NORTH  
1/4" = 1'-0"  
0' 2' 4' 8'



24 SITE ELEVATION - SOUTH  
1/4" = 1'-0"  
0' 2' 4' 8'

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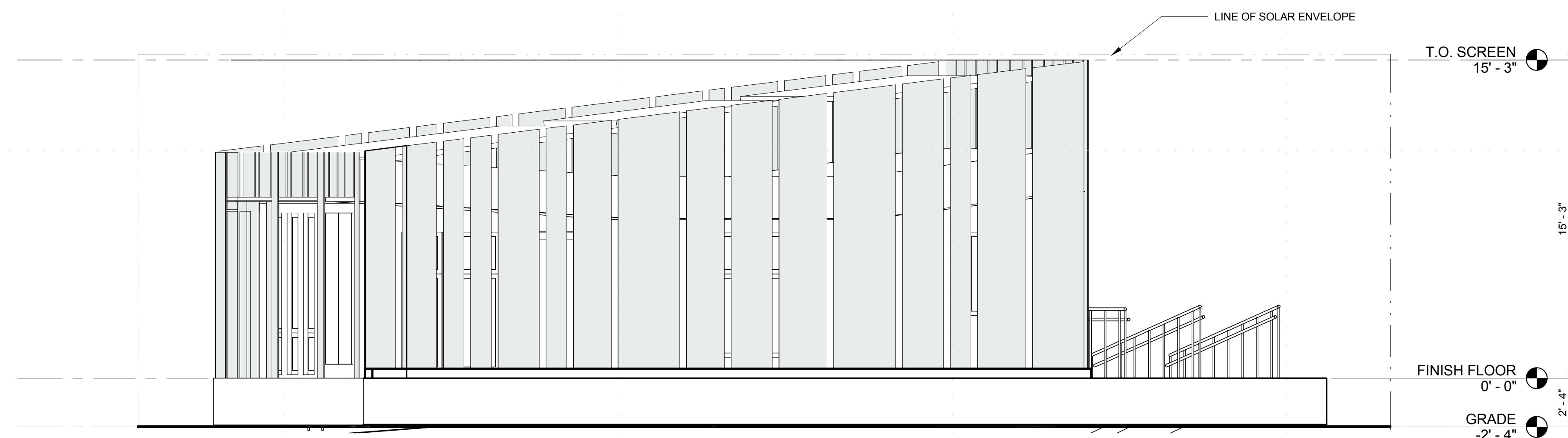
SHEET TITLE  
SITE ELEVATIONS



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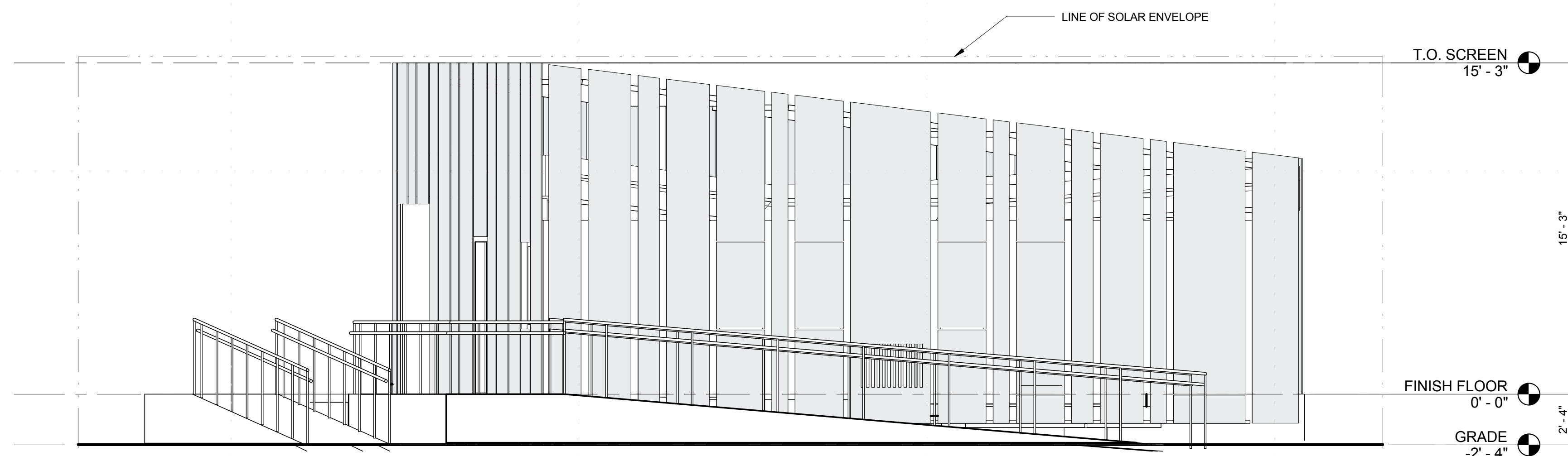
### NOTES

1. RAMP SLOPE 17/12"



ⓐ SITE ELEVATION - EAST

1/4" = 1'-0"  
 0' 2' 4' 8'



ⓑ SITE ELEVATION - WEST

1/4" = 1'-0"  
 0' 2' 4' 8'

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SHEET TITLE

### SITE ELEVATIONS

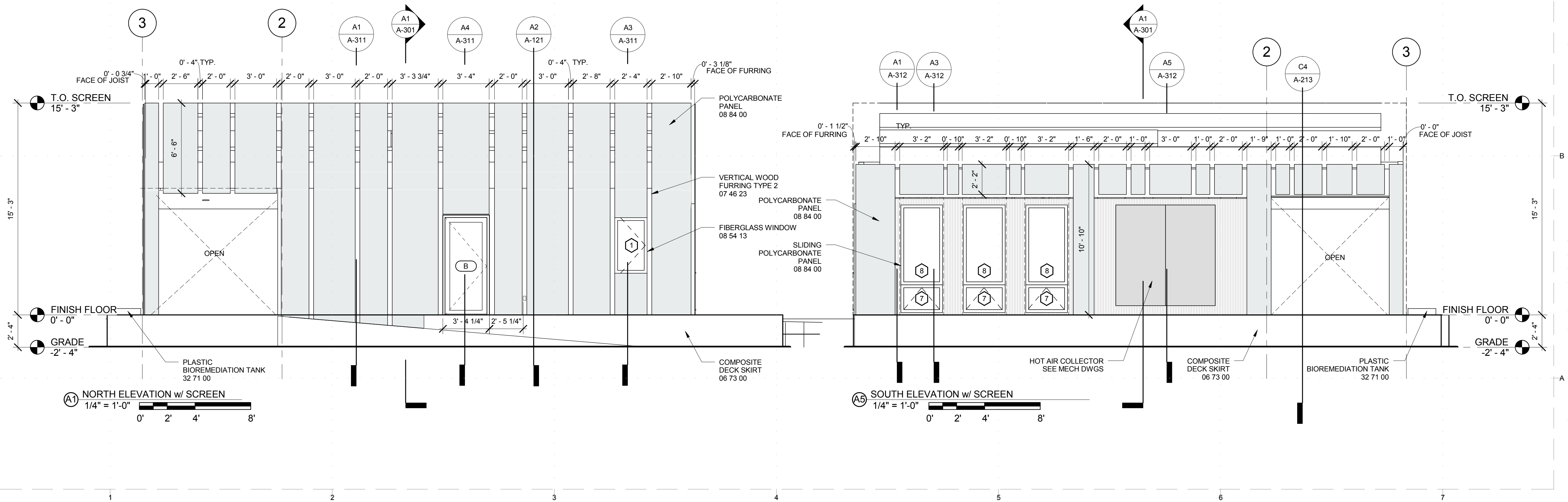
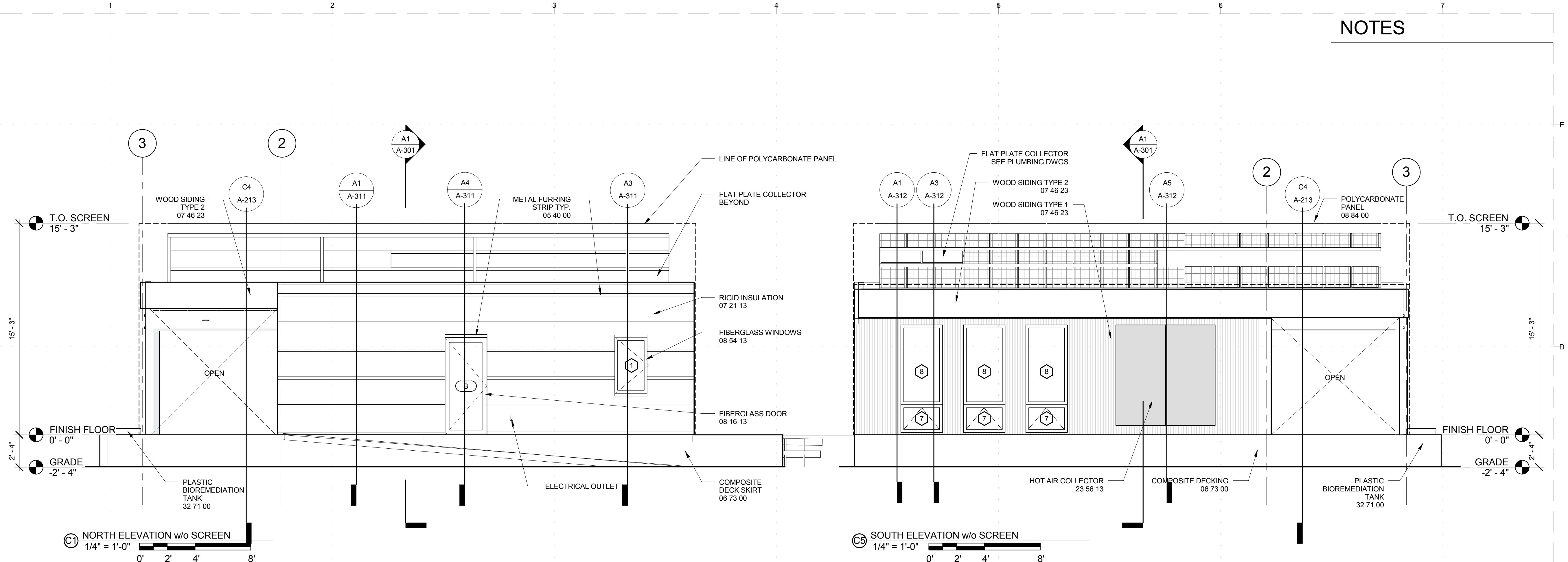
A-202





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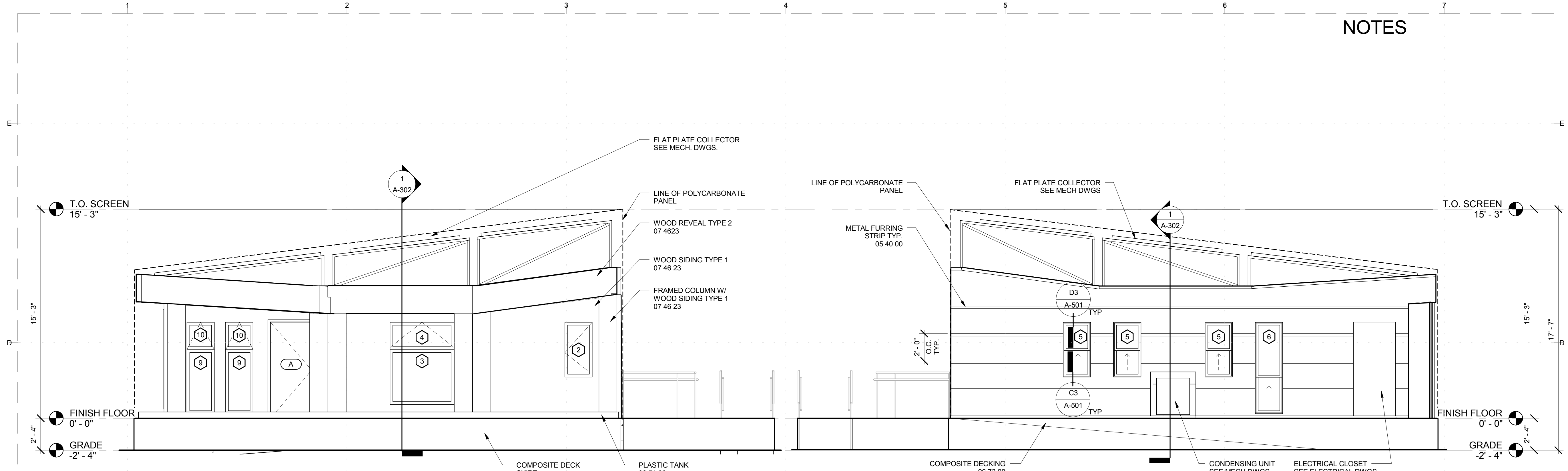
EXTERIOR ELEVATIONS - NORTH AND SOUTH

A-211



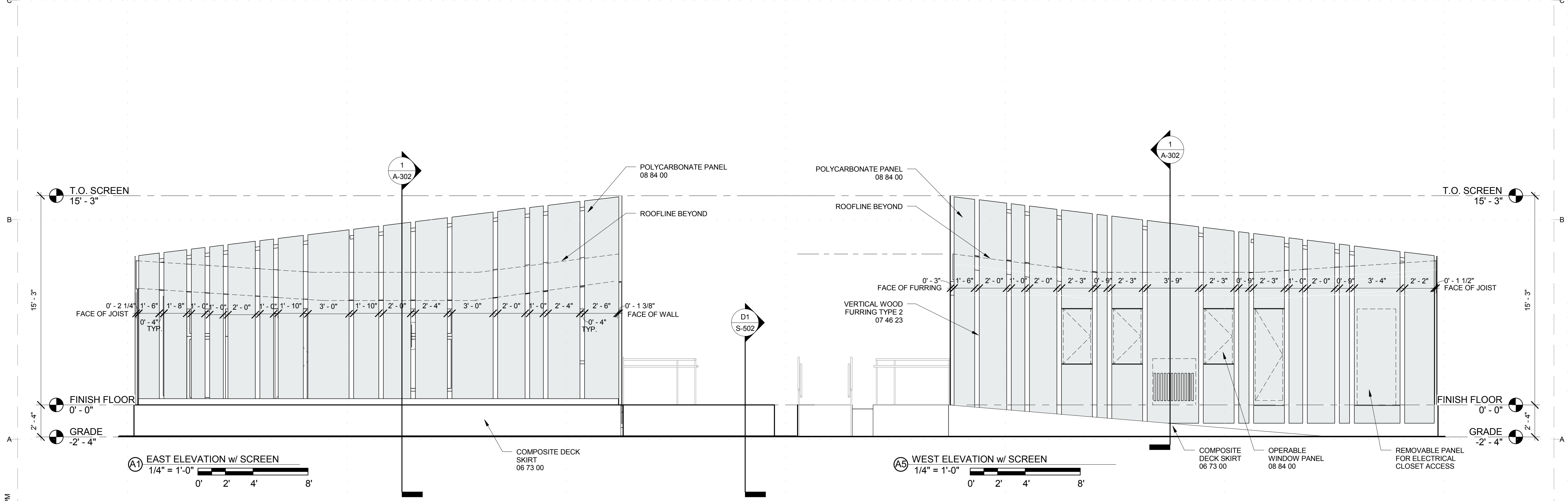
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NOTES



(C) EAST ELEVATION w/o SCREEN  
1/4" = 1'-0"

(C5) WEST ELEVATION w/o SCREEN  
1/4" = 1'-0"



(A1) EAST ELEVATION w/ SCREEN  
1/4" = 1'-0"

(A5) WEST ELEVATION w/ SCREEN  
1/4" = 1'-0"

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SHEET TITLE  
**EXTERIOR ELEVATIONS EAST AND WEST**

**A-212**





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### NOTES



INTERIOR - KITCHEN

INTERIOR - DINING AND KITCHEN

INTERIOR - DINING AND LIVING

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### INTERIOR ELEVATIONS

A-215

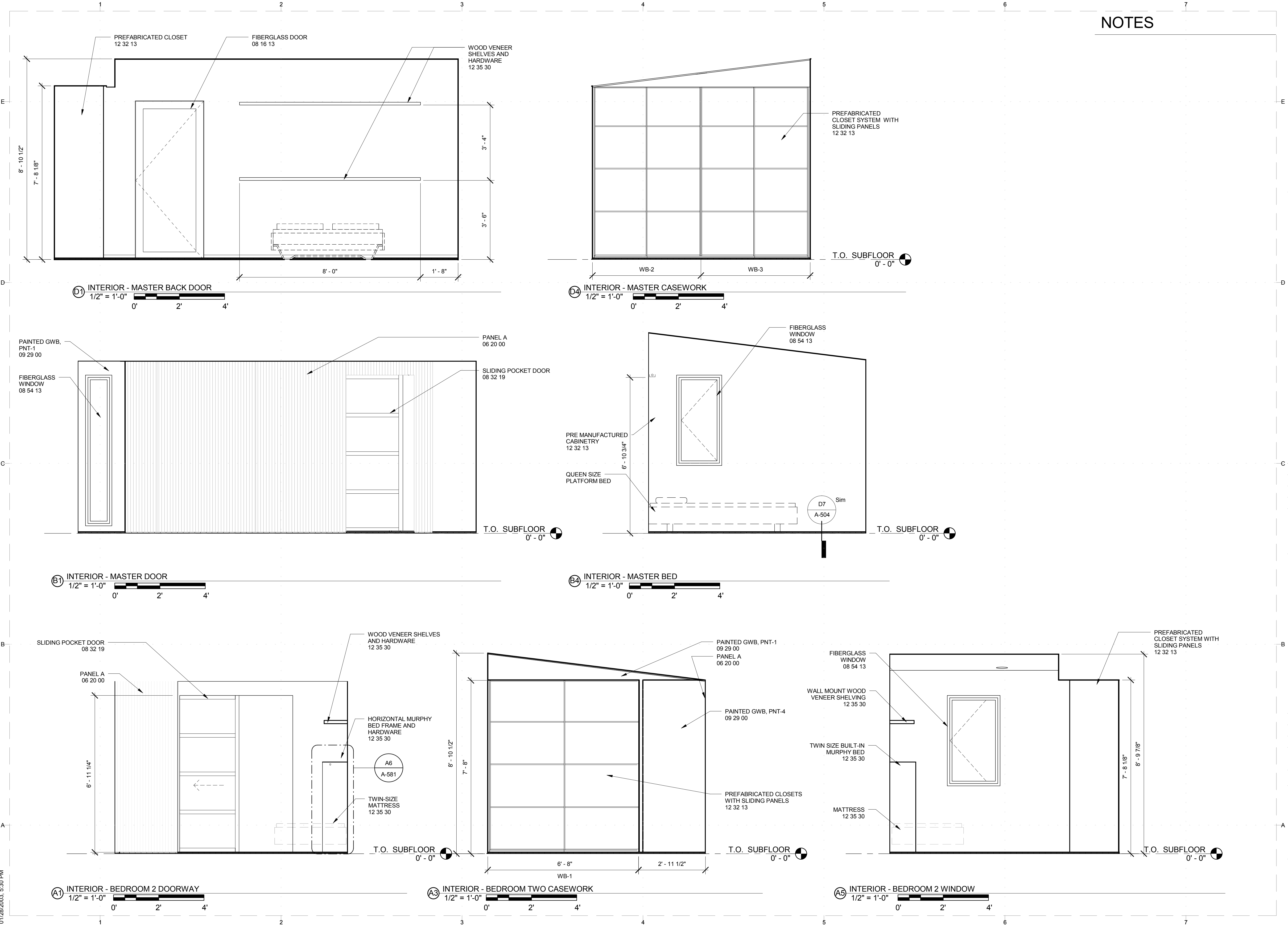




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SHEET TITLE

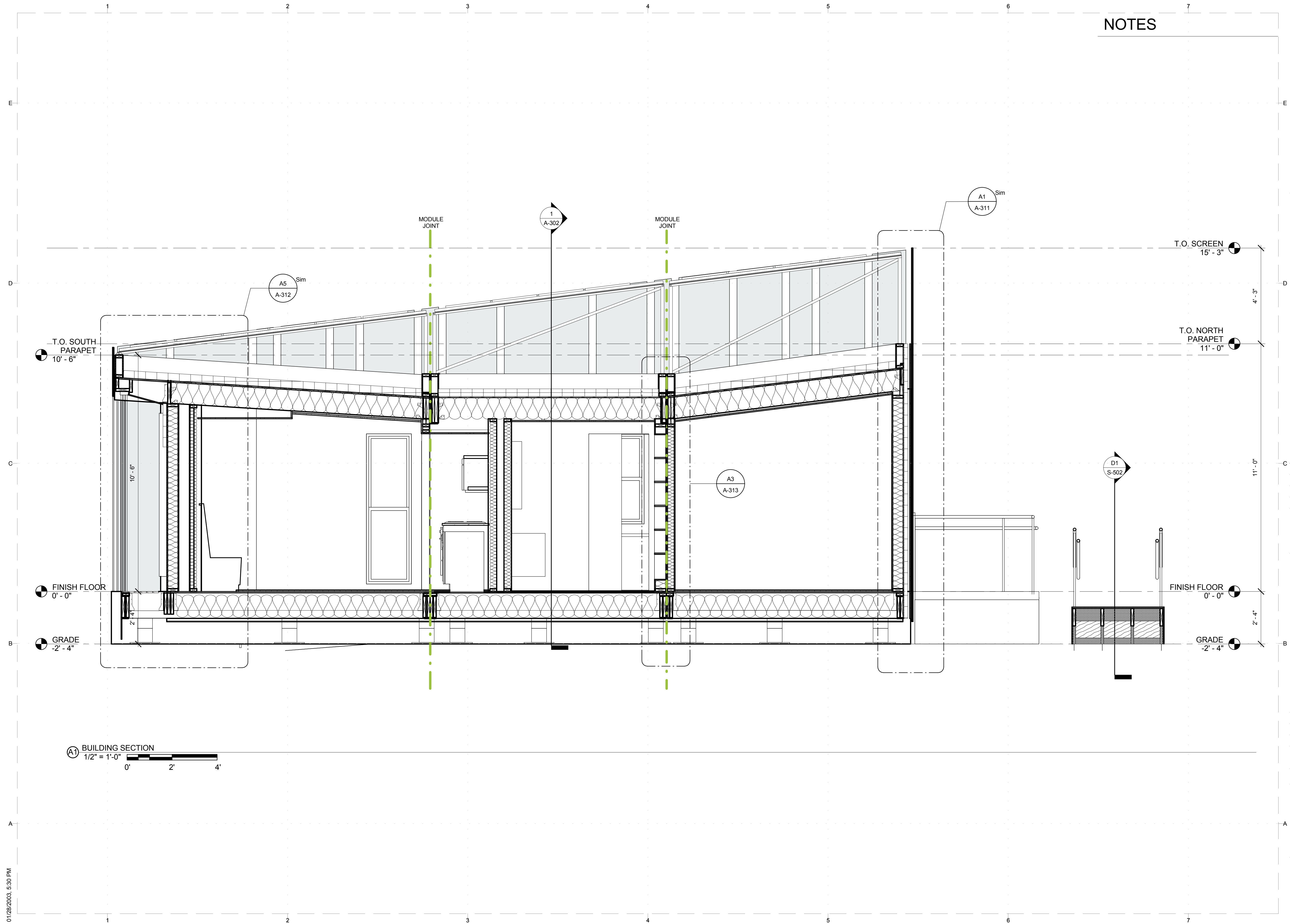
INTERIOR ELEVATIONS

A-217



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# NOTES



A1 BUILDING SECTION  
1/2" = 1'-0"  
0' 2' 4'

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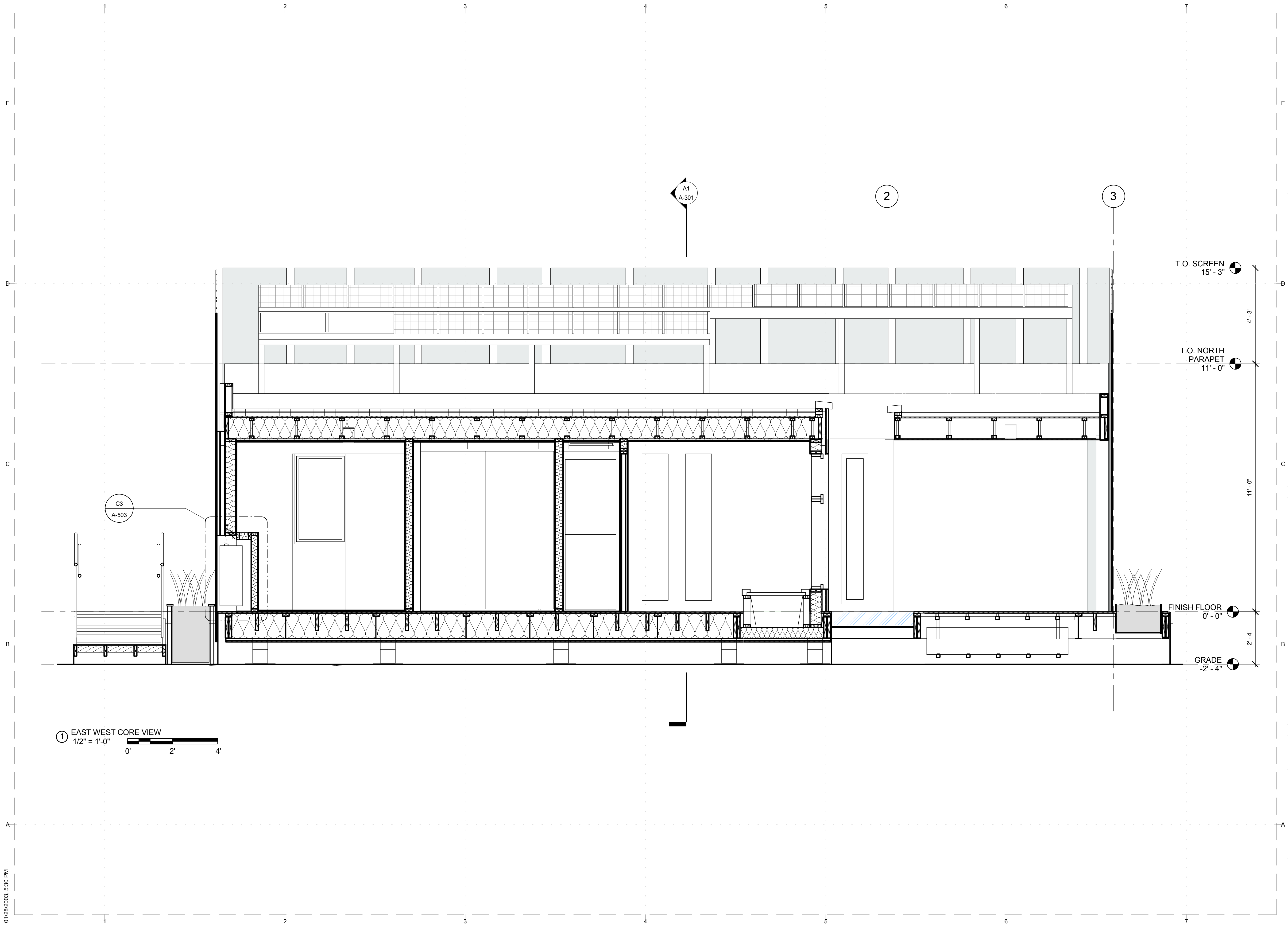
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DRAWN BY: AF, LFW, SH  
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SHEET TITLE  
**BUILDING SECTIONS**

# A-301



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① EAST WEST CORE VIEW  
 1/2" = 1'-0"  
 0' 2' 4'

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SHEET TITLE  
**BUILDING SECTIONS**

**A-302**

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### NOTES

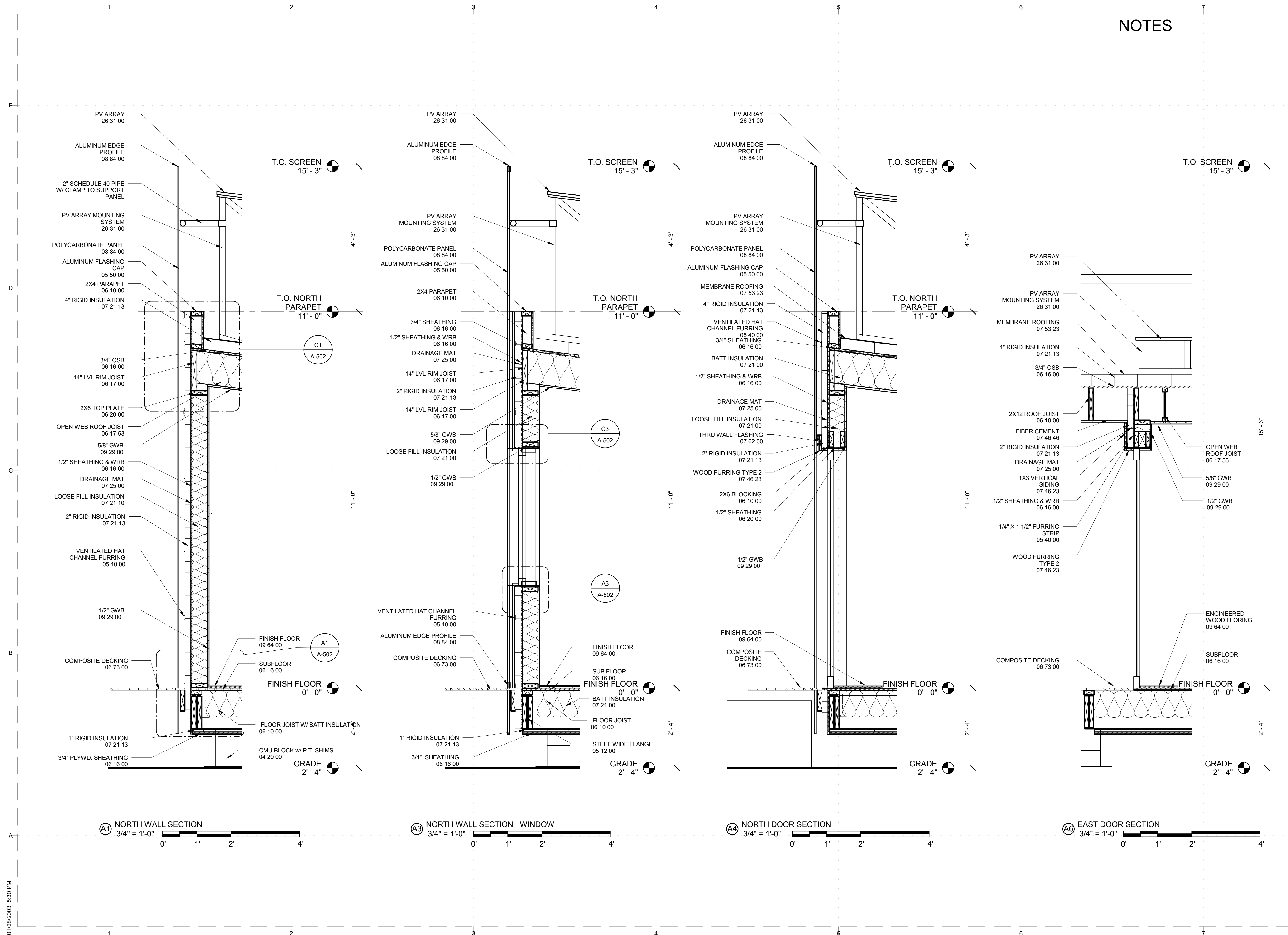
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SHEET TITLE  
**WALL SECTIONS - EXTERIOR**

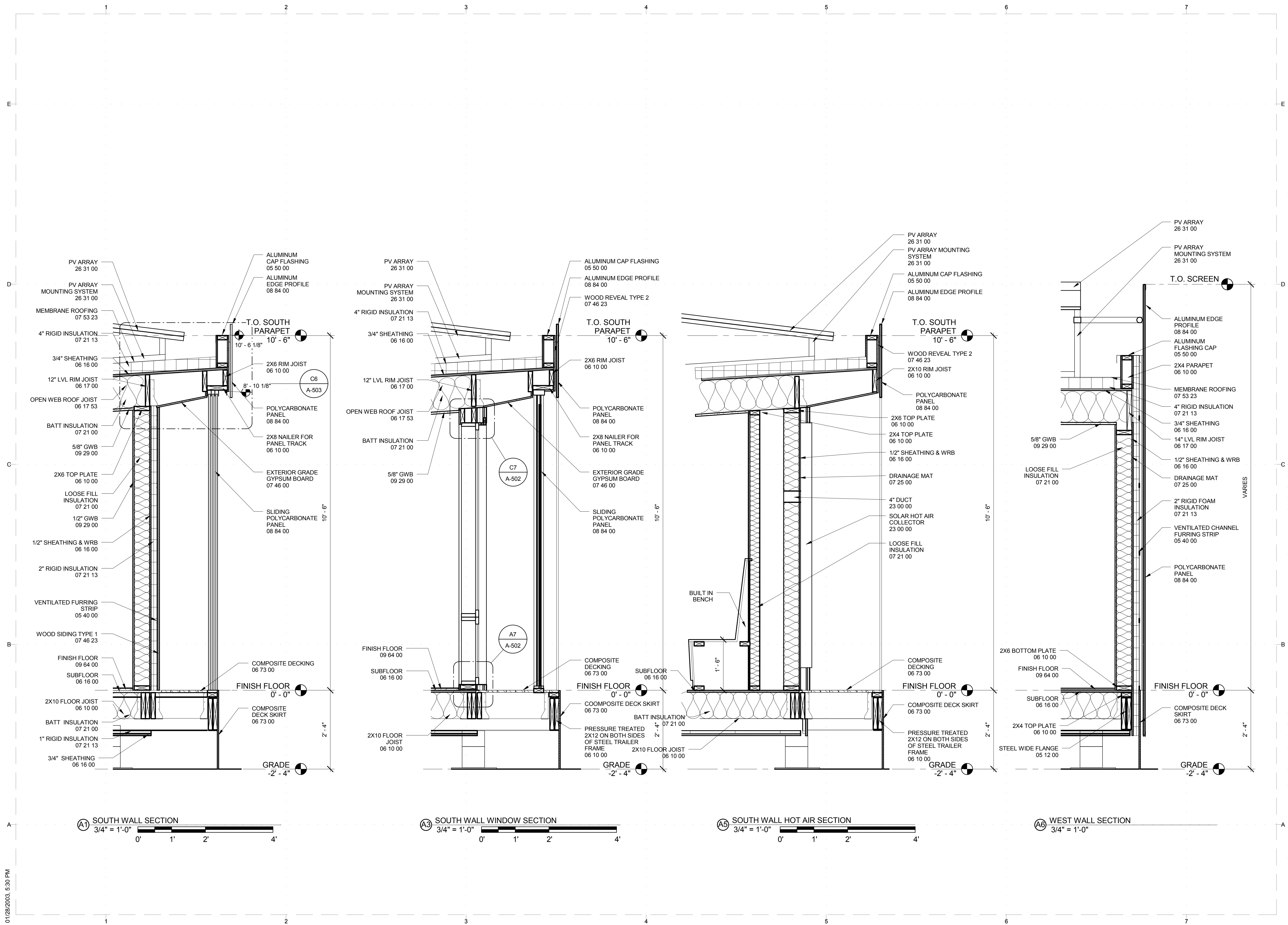
**A-311**



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**WALL SECTIONS - EXTERIOR**

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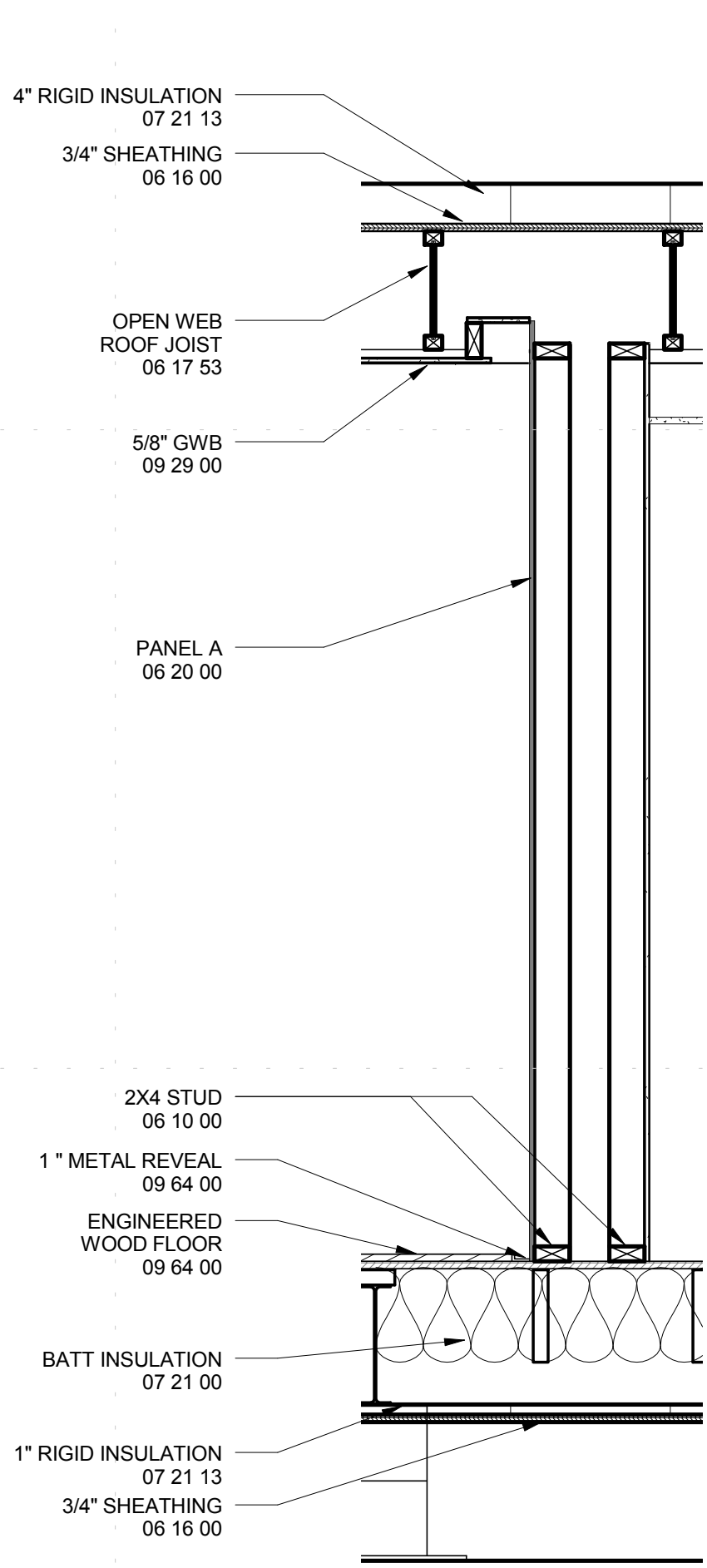


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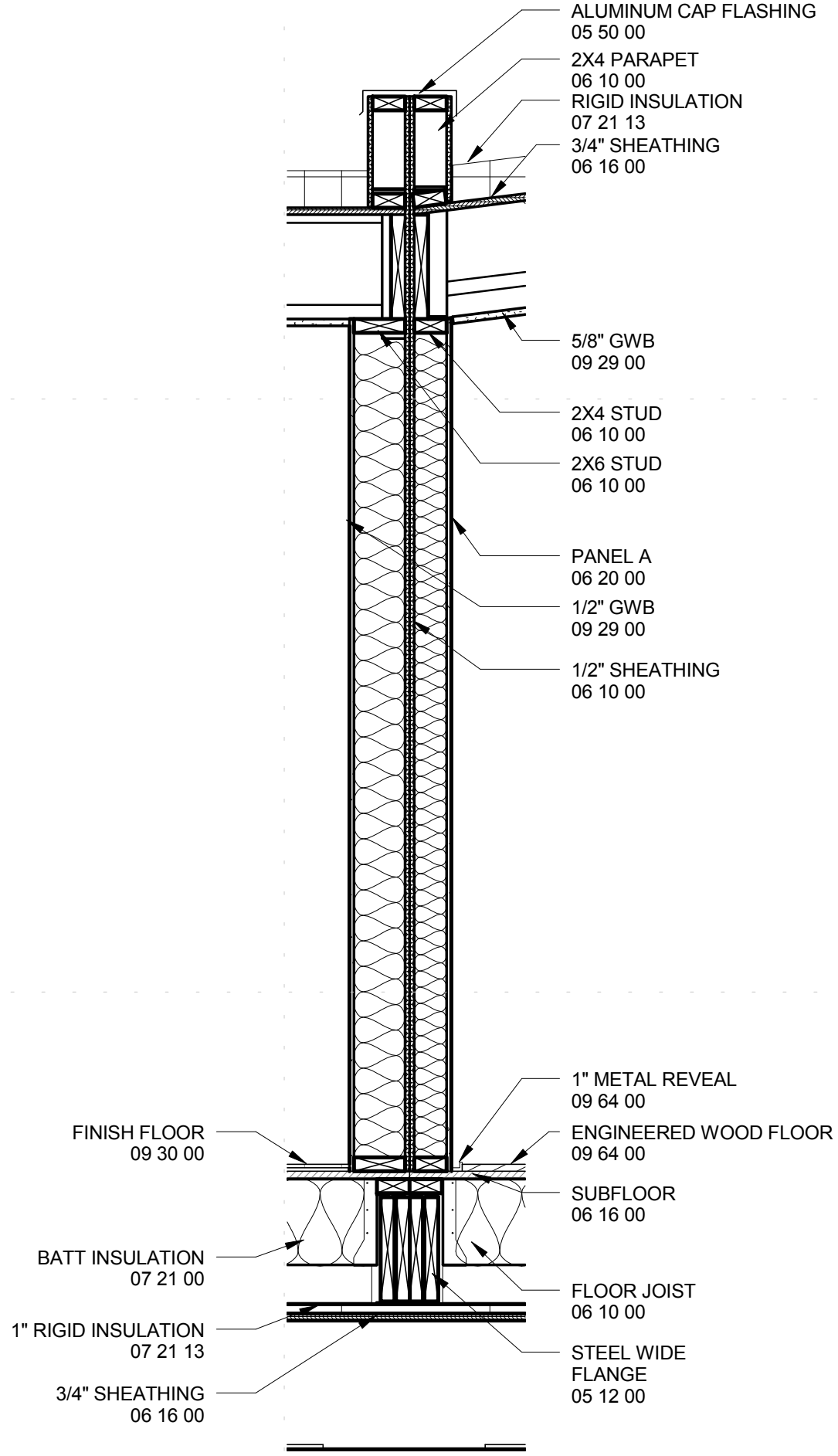
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 WALL SECTIONS - INTERIOR

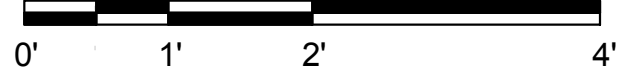
A-313



A1 WALL SECTION  
 3/4" = 1'-0"



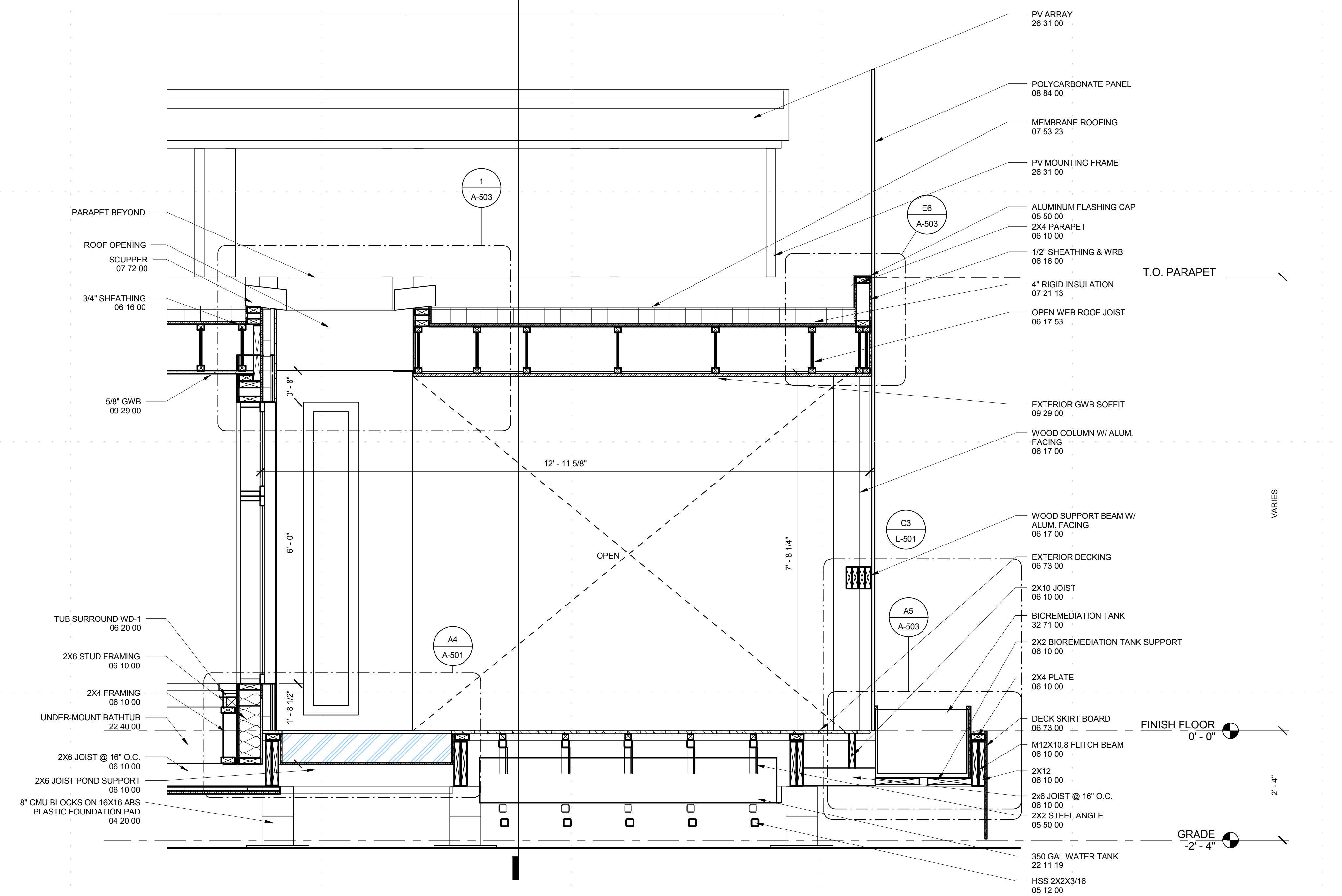
A2 WALL SECTION  
 3/4" = 1'-0"





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(A1) WALL SECTION  
 3/4" = 1'-0"  
 0' 1' 2' 4'

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SHEET TITLE

WALL SECTIONS - LOGGIA

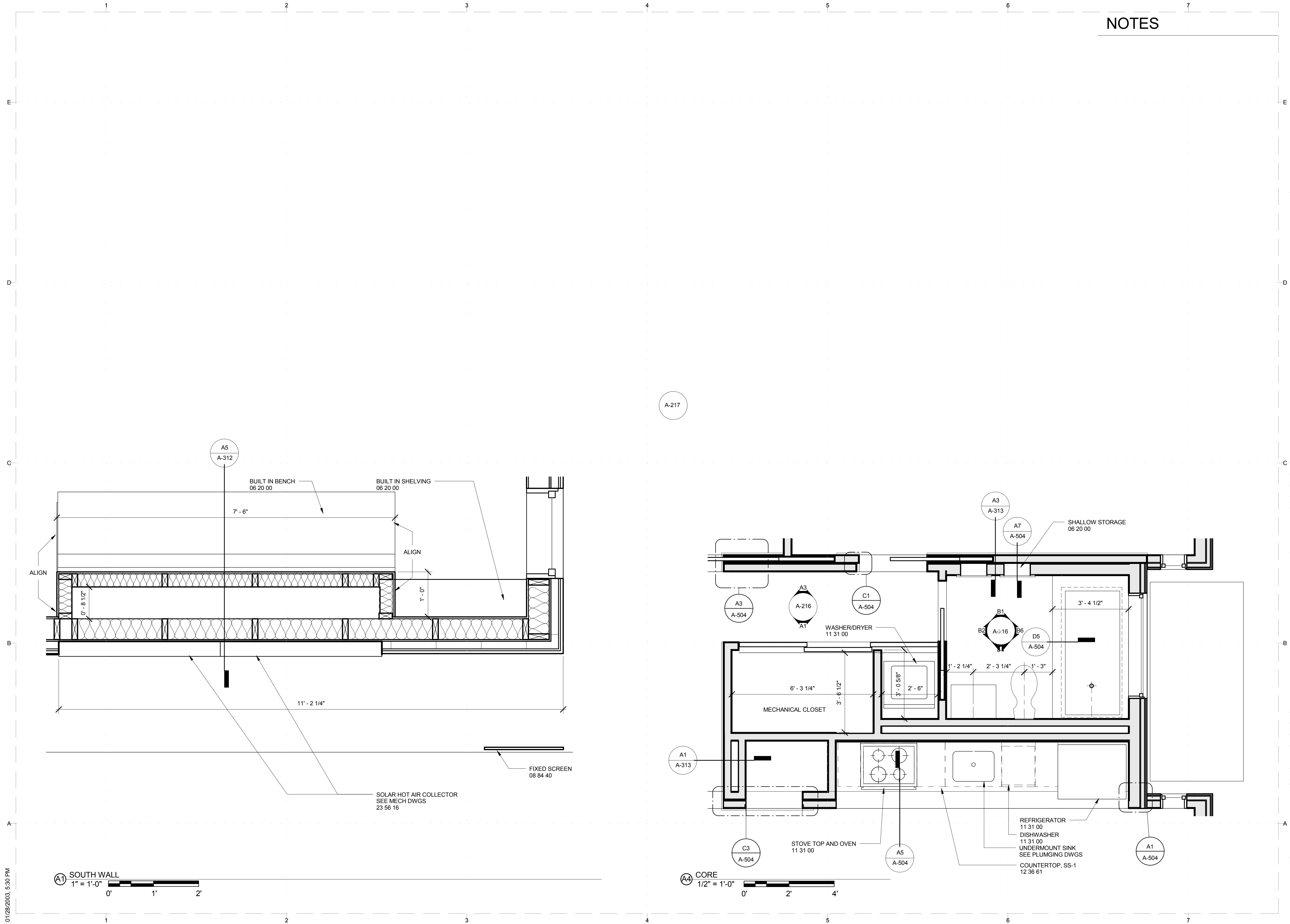
A-314

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# NOTES



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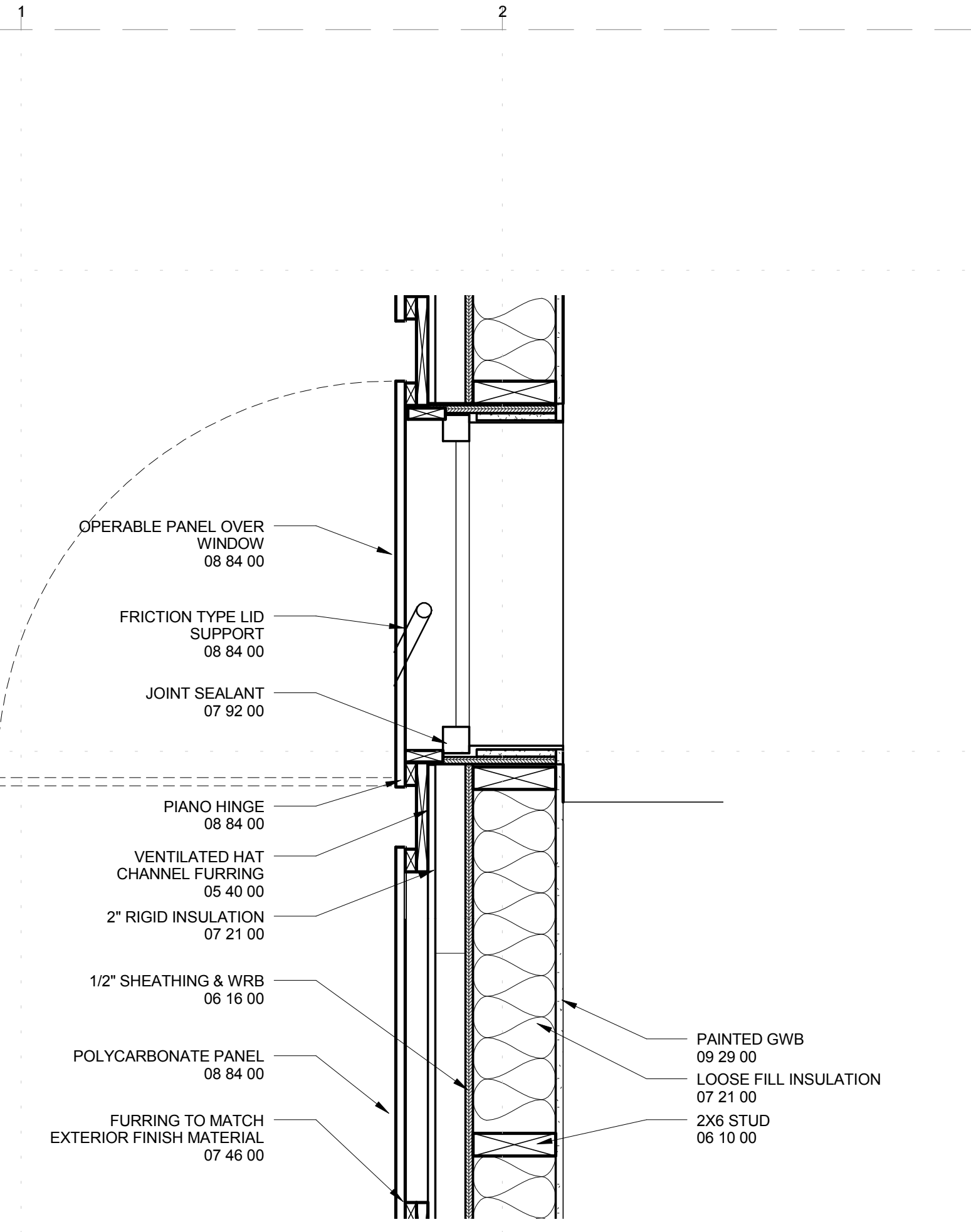
## SHEET TITLE LARGE SCALE PLAN

# A-401

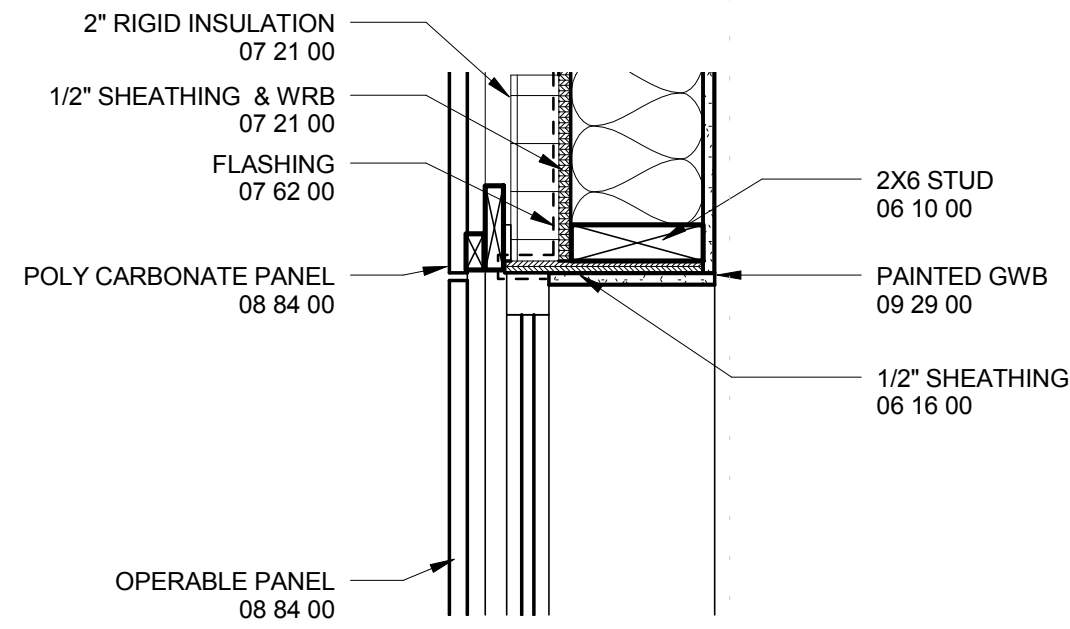
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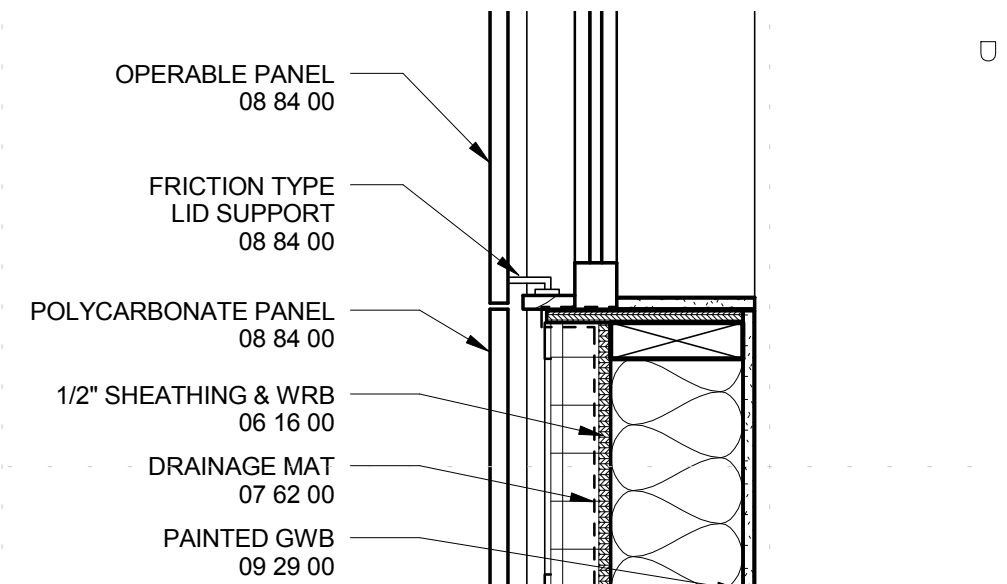
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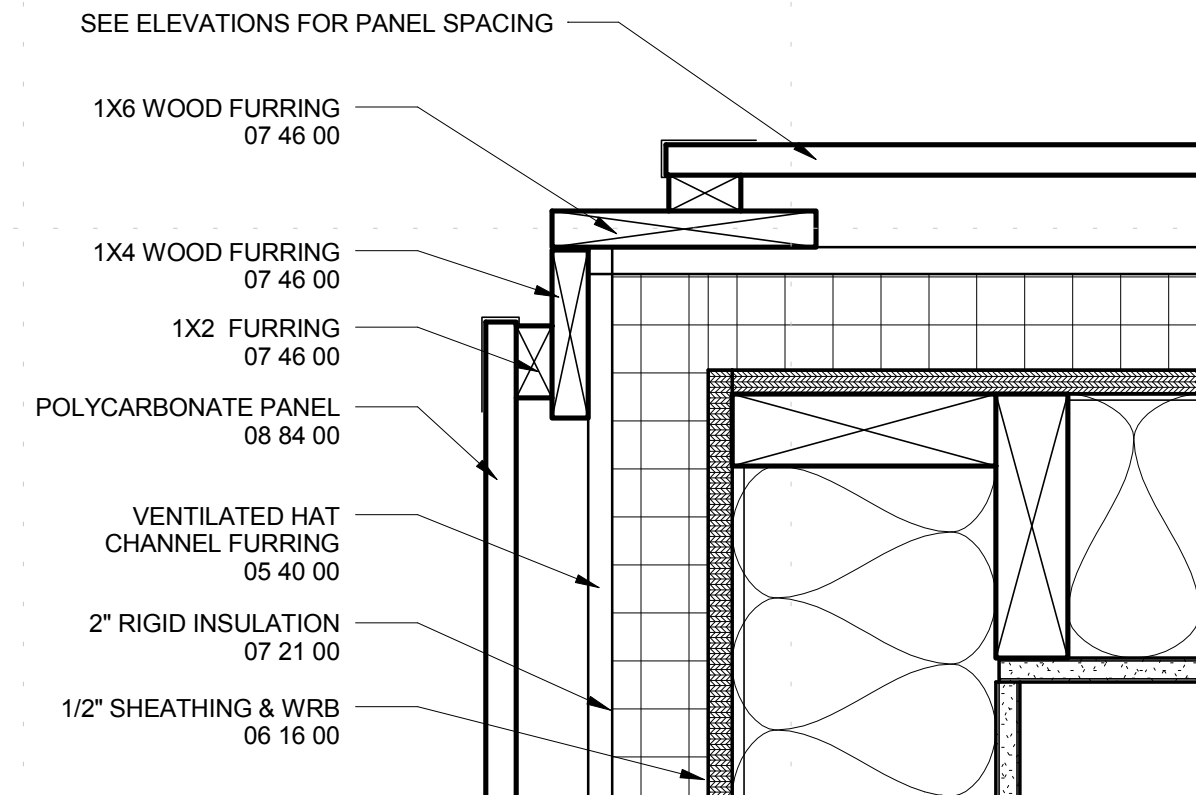
C1 DETAIL - PANEL ASSEMBLY  
 1 1/2" = 1'-0"



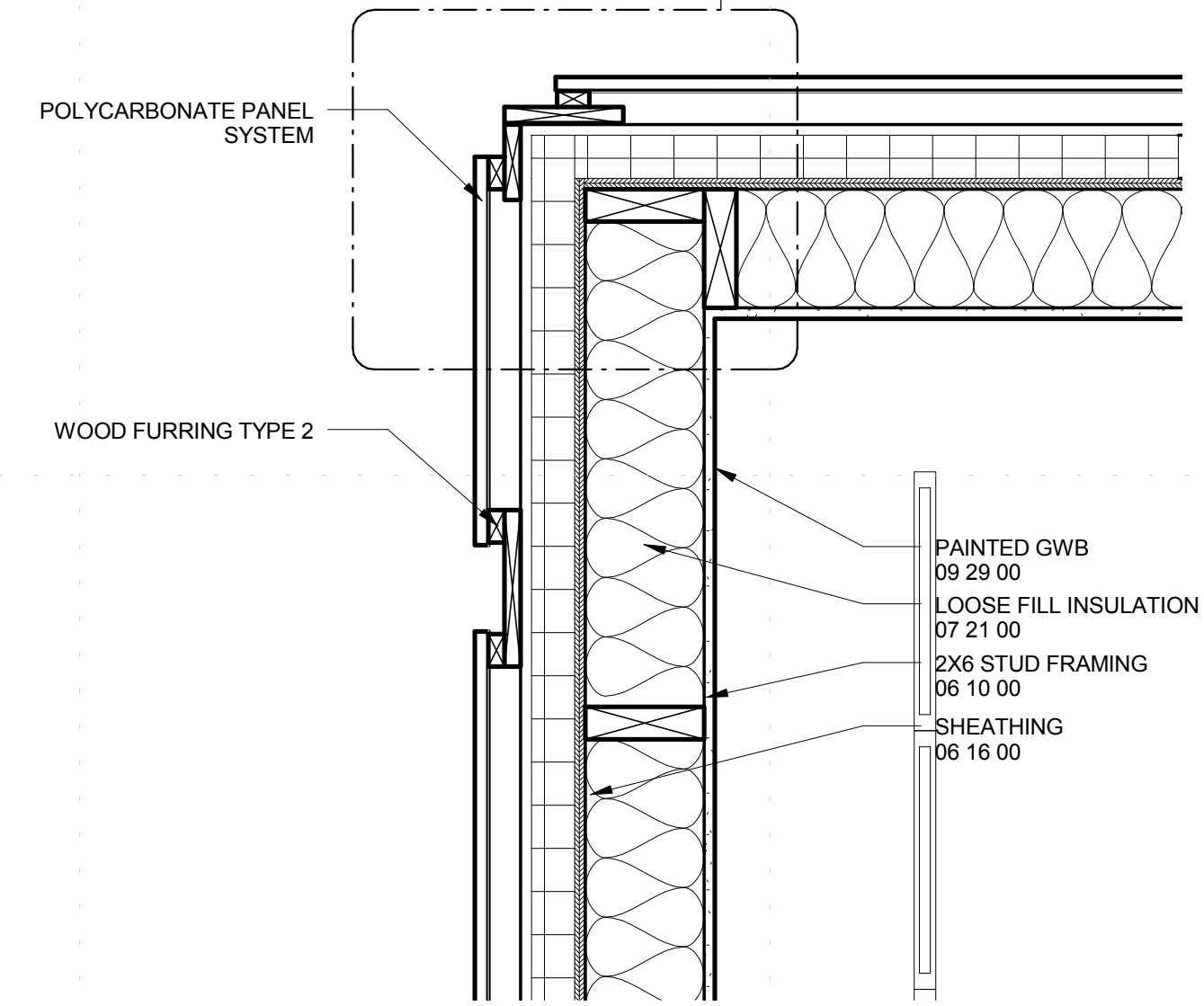
D3 WEST WINDOW HEADER  
 1 1/2" = 1'-0"



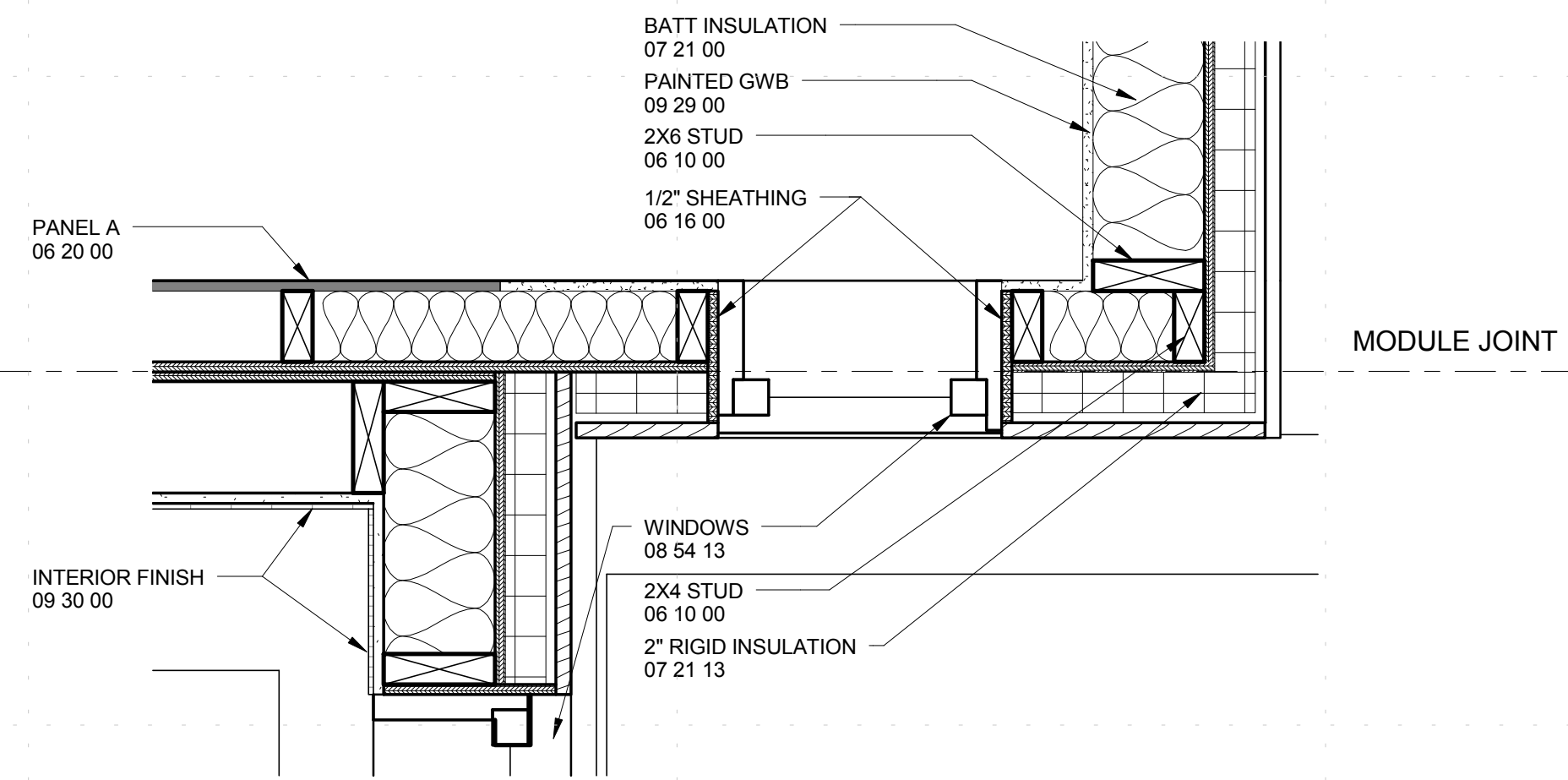
C3 WEST WINDOW SILL  
 1 1/2" = 1'-0"



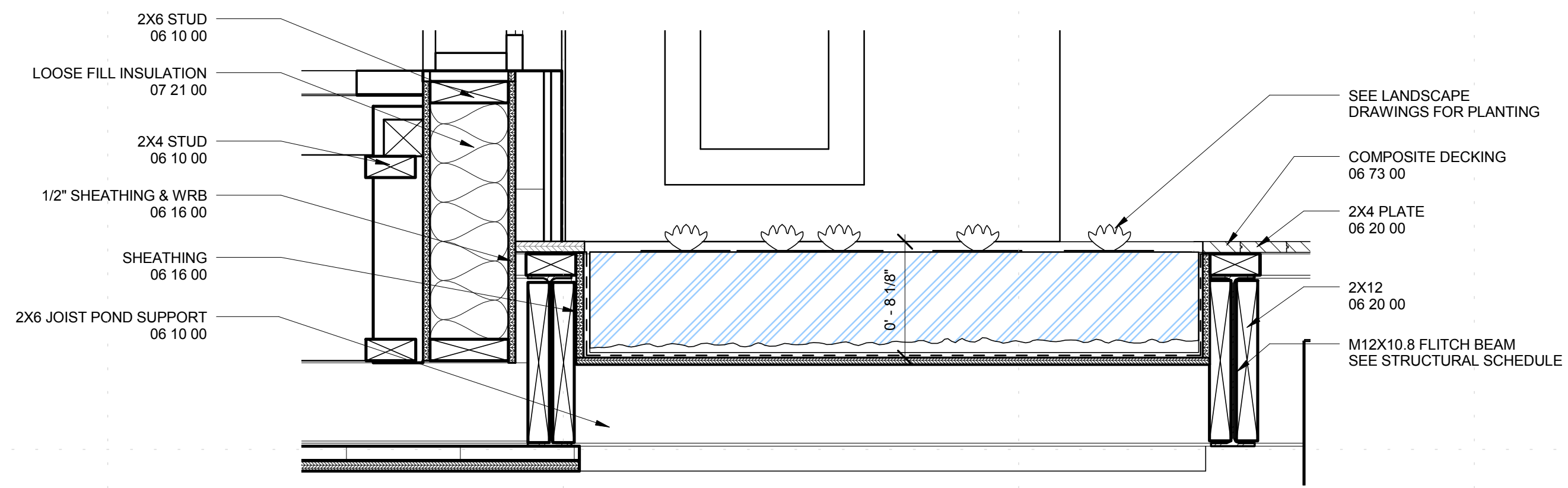
D5 DETAIL - EXTERIOR CORNER  
 3" = 1'-0"



D5 DETAIL - CORNER  
 1 1/2" = 1'-0"



A1 PLAN DETAIL  
 1 1/2" = 1'-0"



A4 POOL FRAMING DETAIL  
 1 1/2" = 1'-0"

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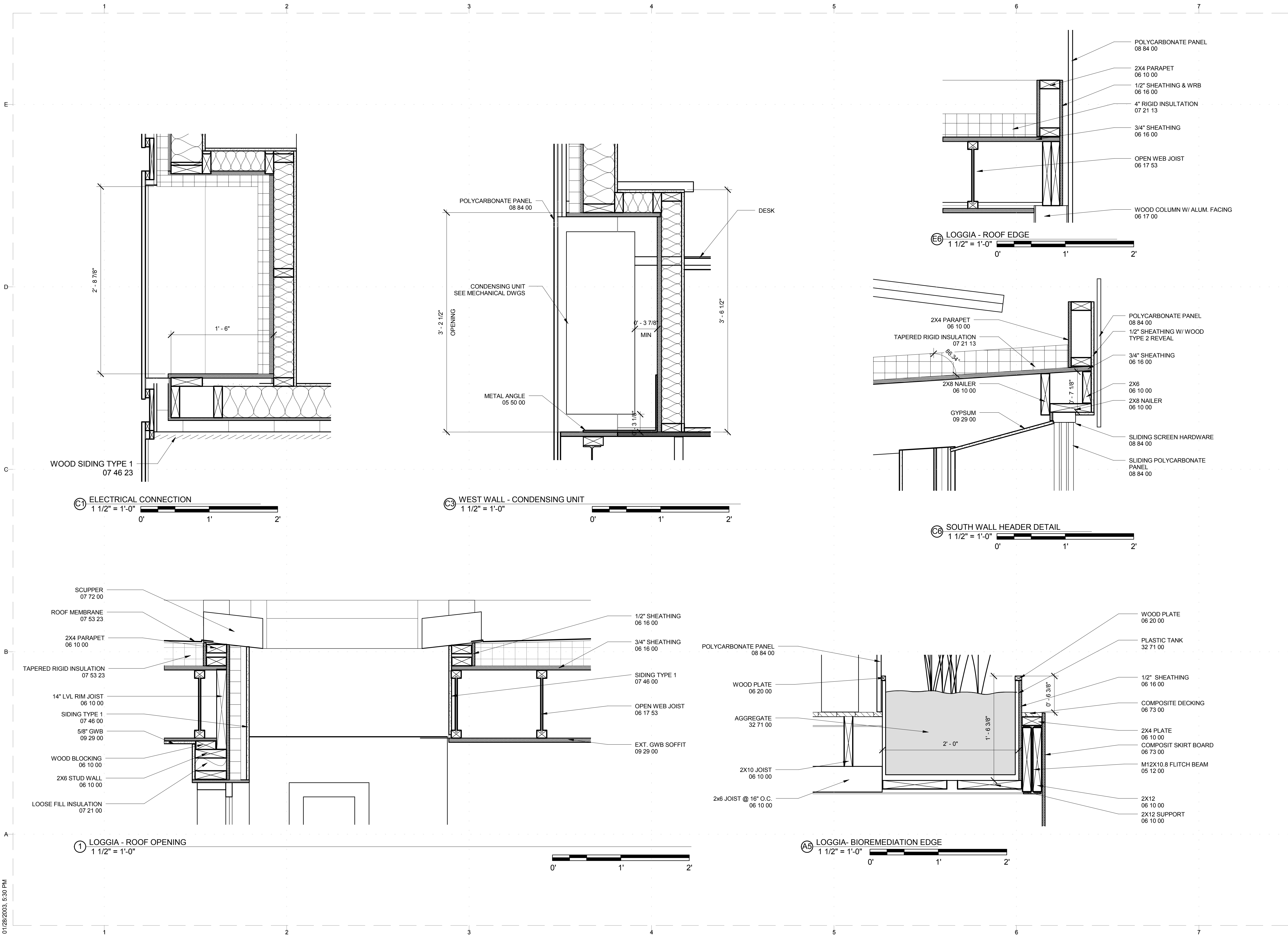
SHEET TITLE  
**EXTERIOR DETAILS**

**A-501**





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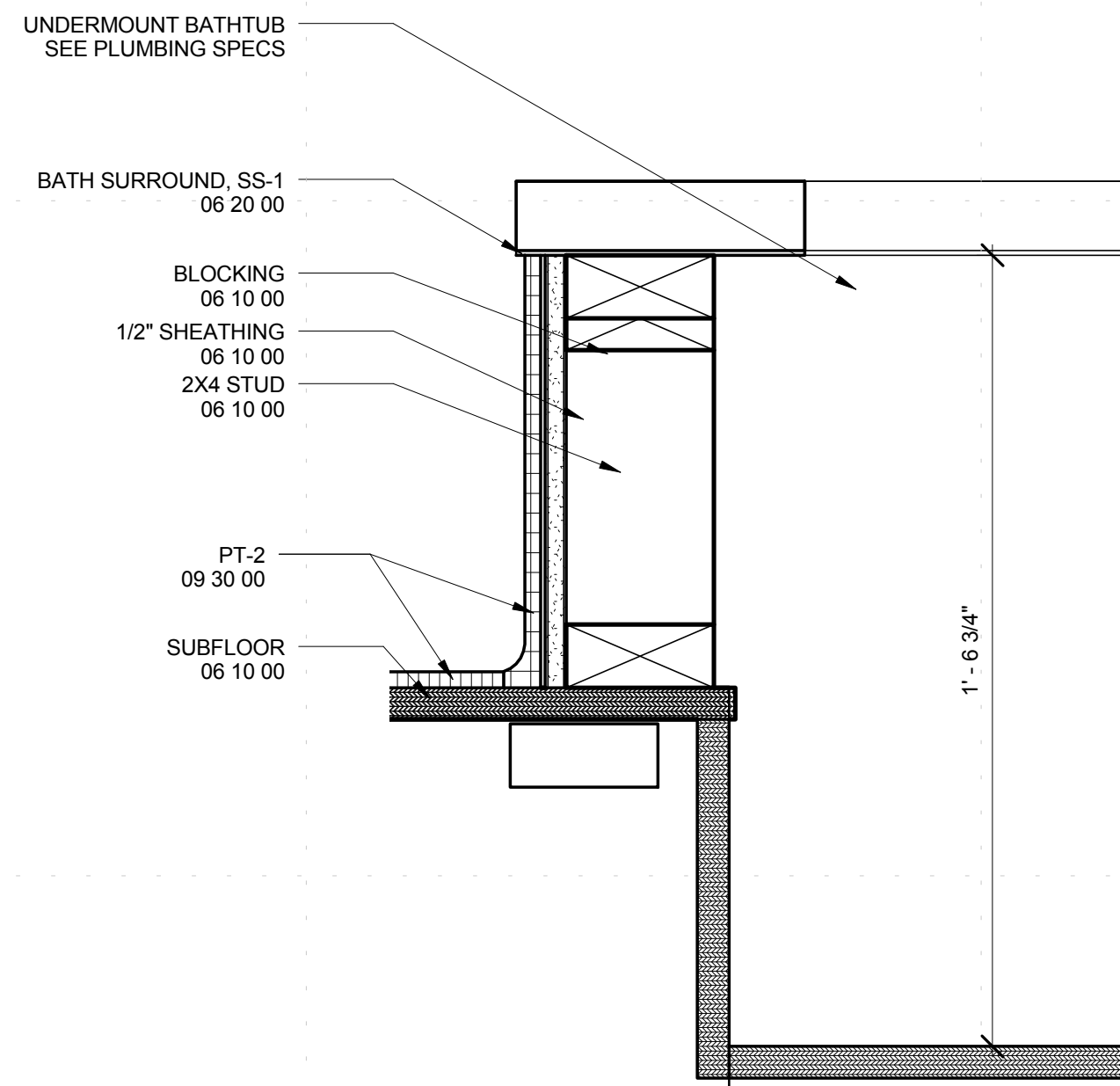
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 COPYRIGHT: NONE: PROJECT IS PUBLIC DOMAIN

SHEET TITLE  
**EXTERIOR DETAILS**

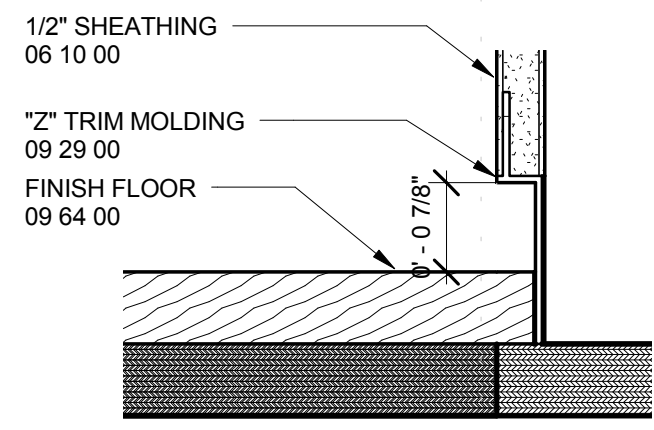




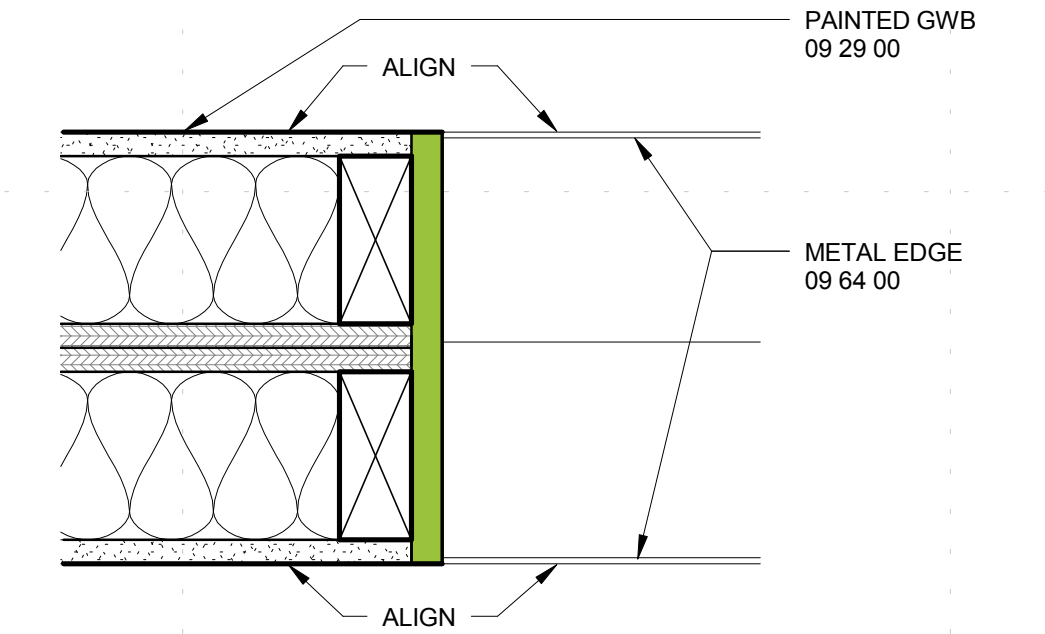
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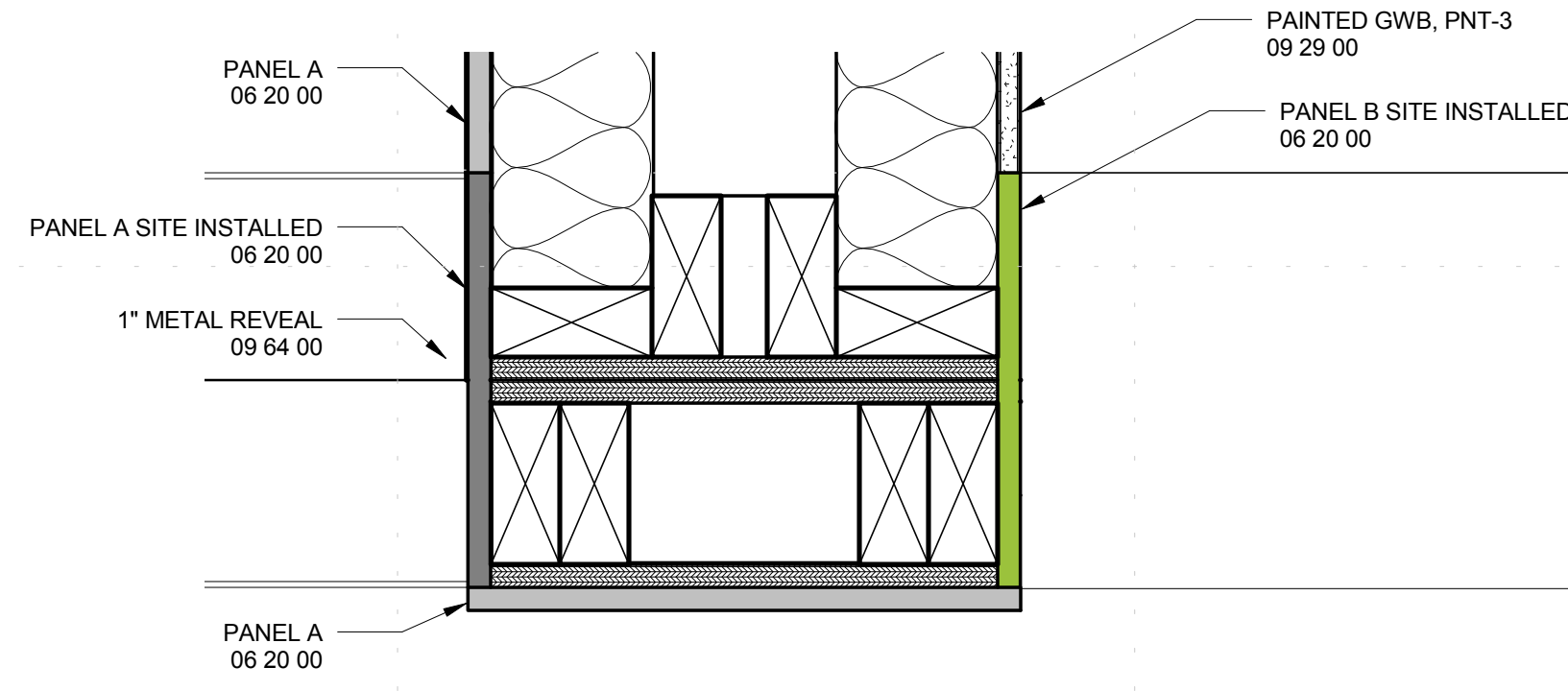
05 DETAIL - BATHTUB EDGE  
 3" = 1'-0"



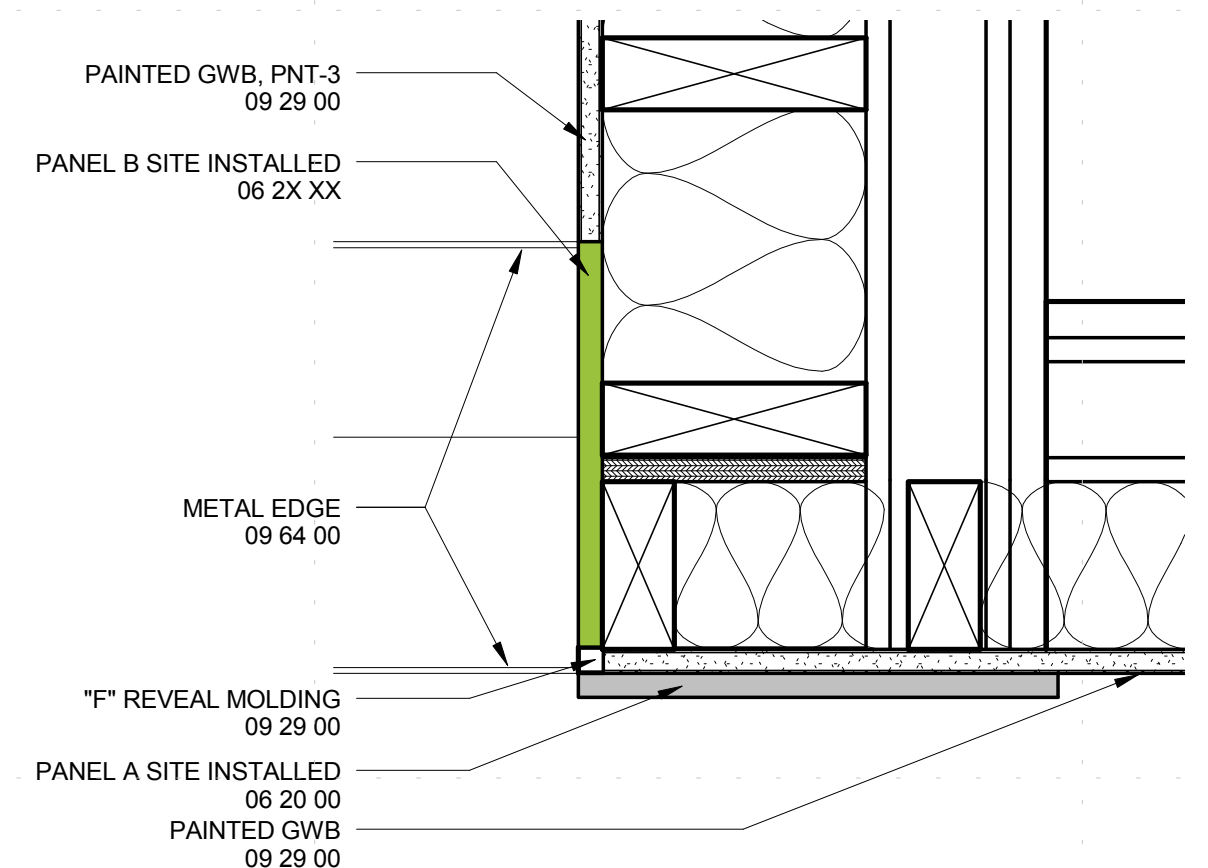
07 TYP. FLOOR BASE DETAIL  
 6" = 1'-0"



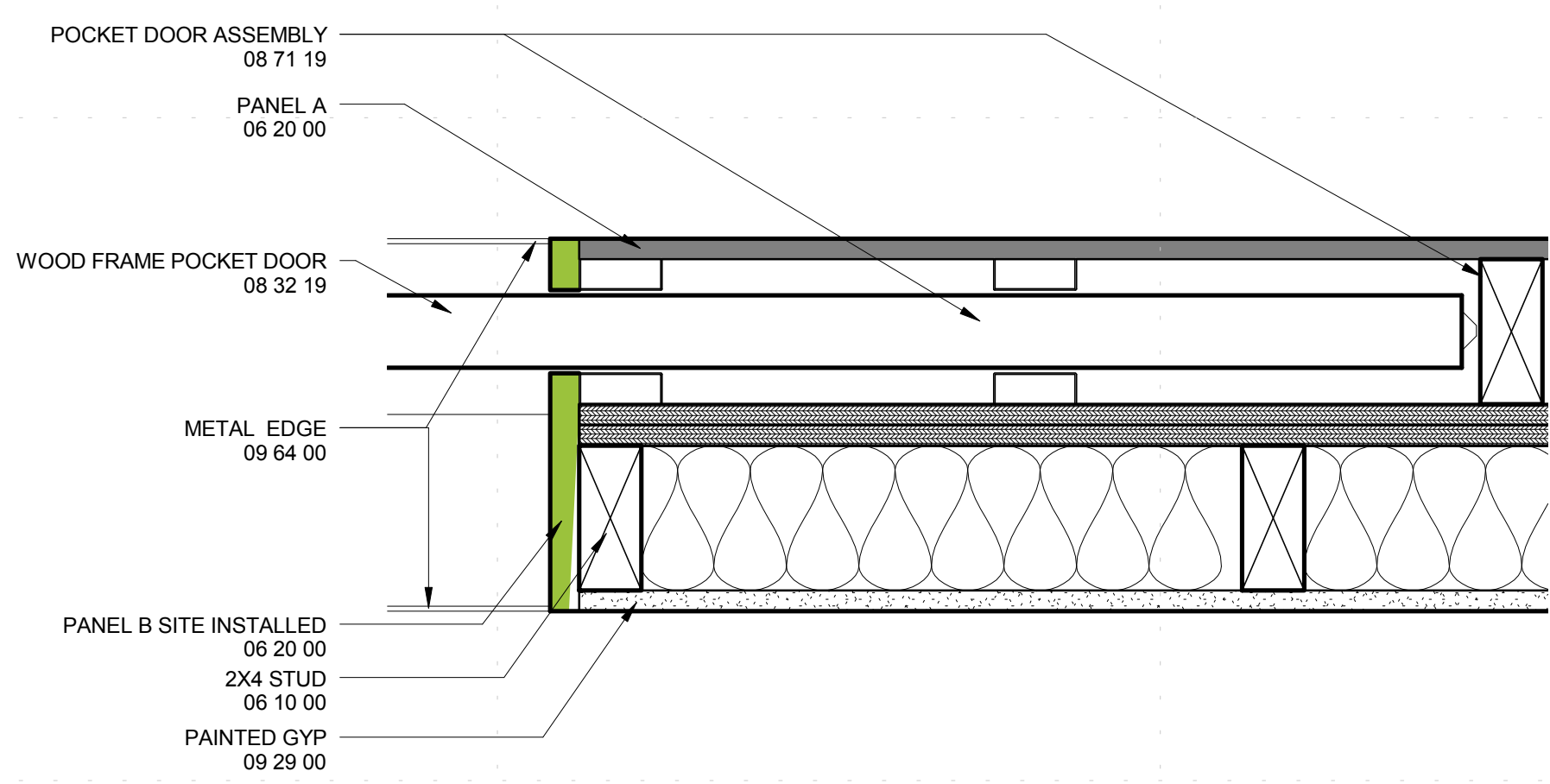
01 DETAIL - TRAILER JOINT OPENING PLAN  
 3" = 1'-0"



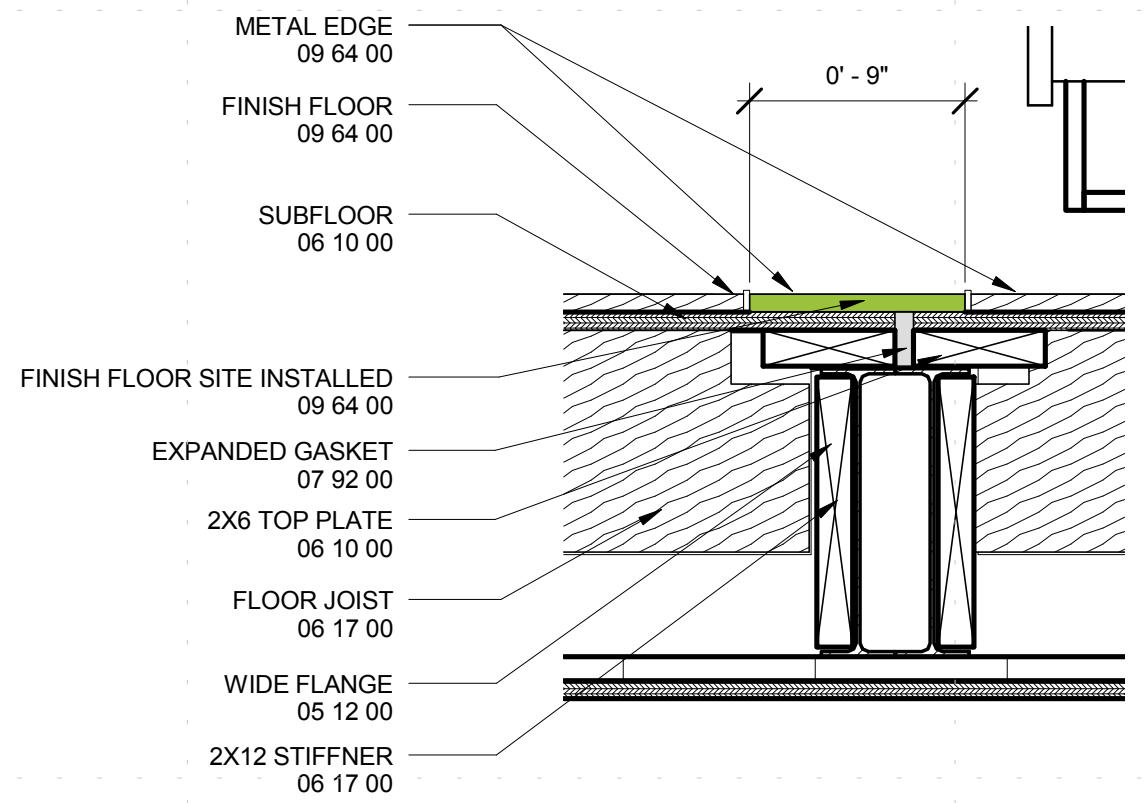
03 DETAIL - KITCHEN WEST  
 3" = 1'-0"



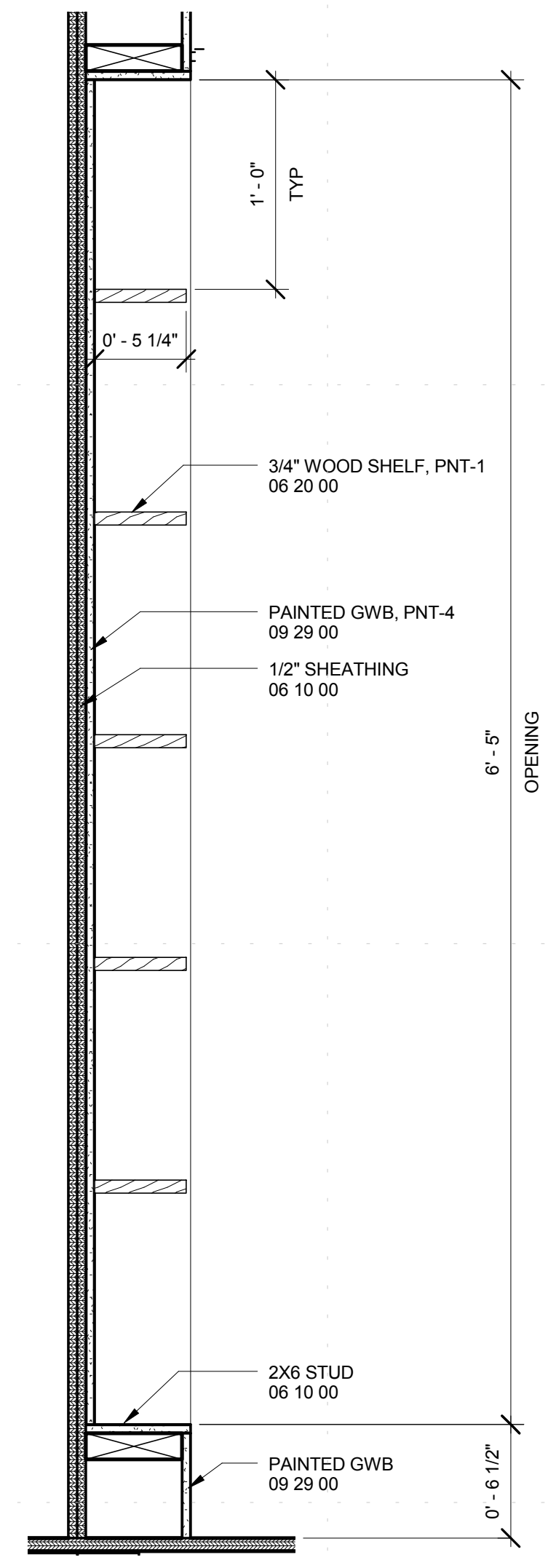
01 DETAIL - KITCHEN EAST  
 3" = 1'-0"



03 DETAIL - TRAILER JOINT POCKET DOOR PLAN  
 3" = 1'-0"



05 WALL SECTION  
 1 1/2" = 1'-0"



07 BATHROOM STORAGE  
 1 1/2" = 1'-0"

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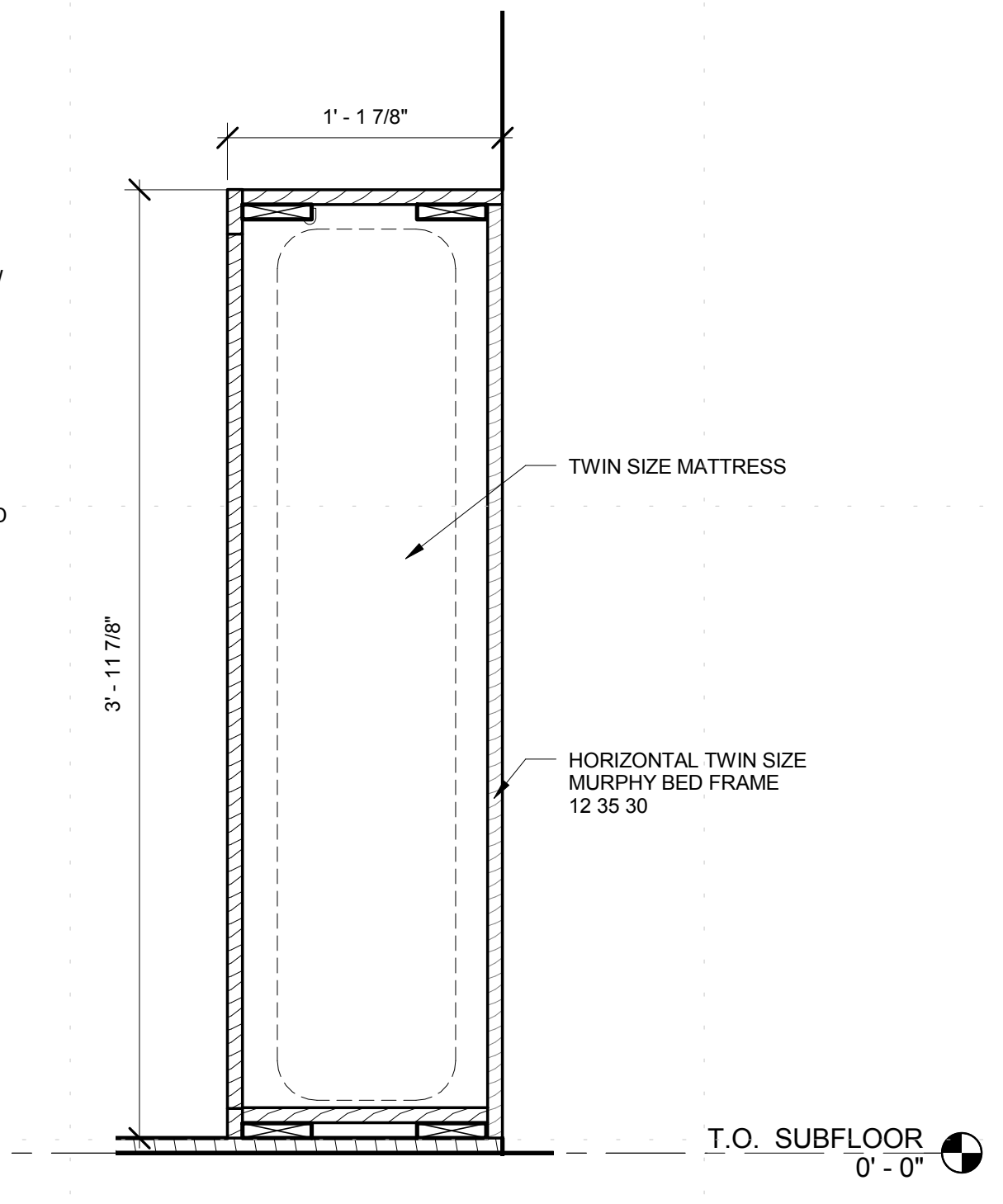
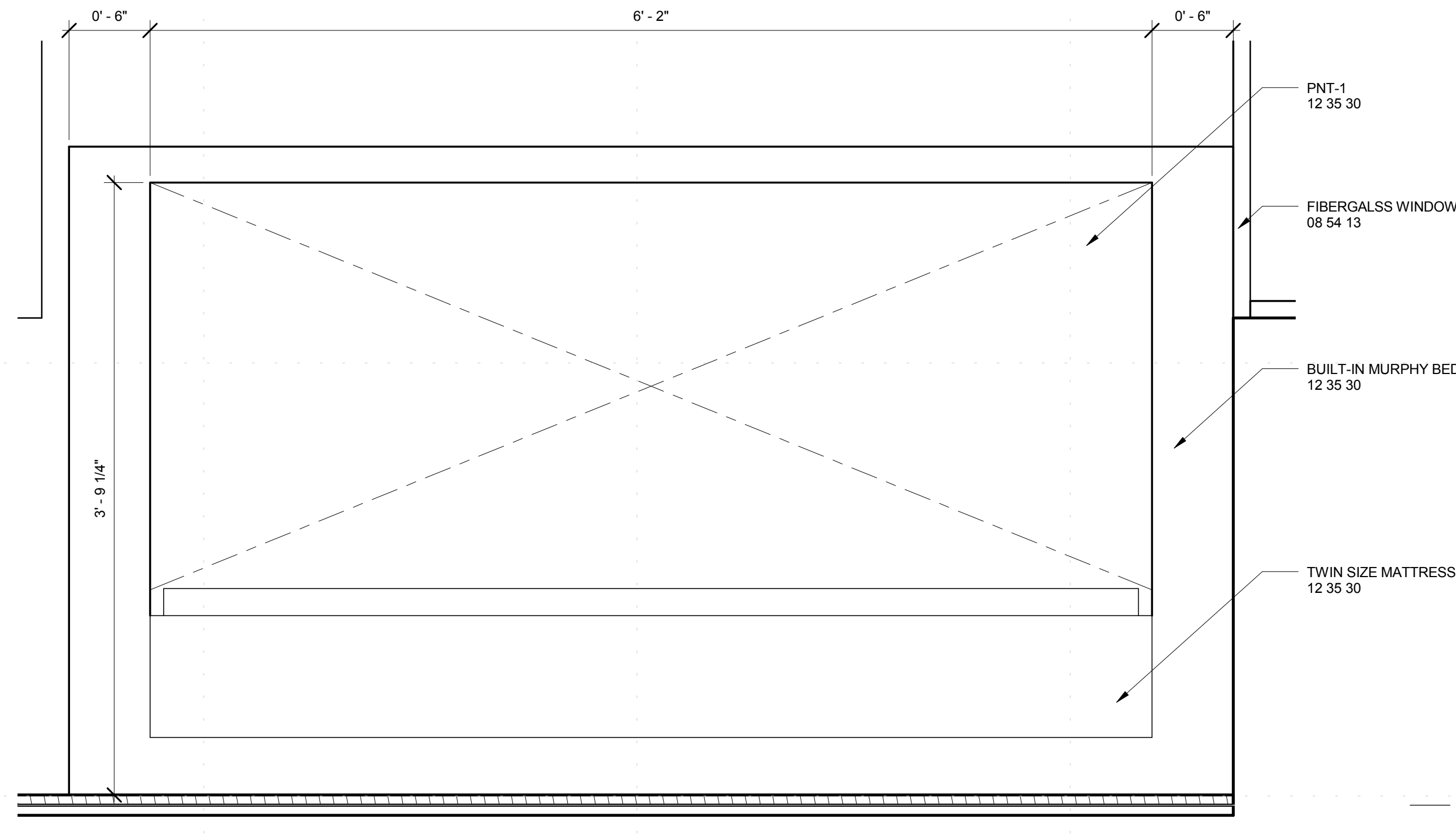
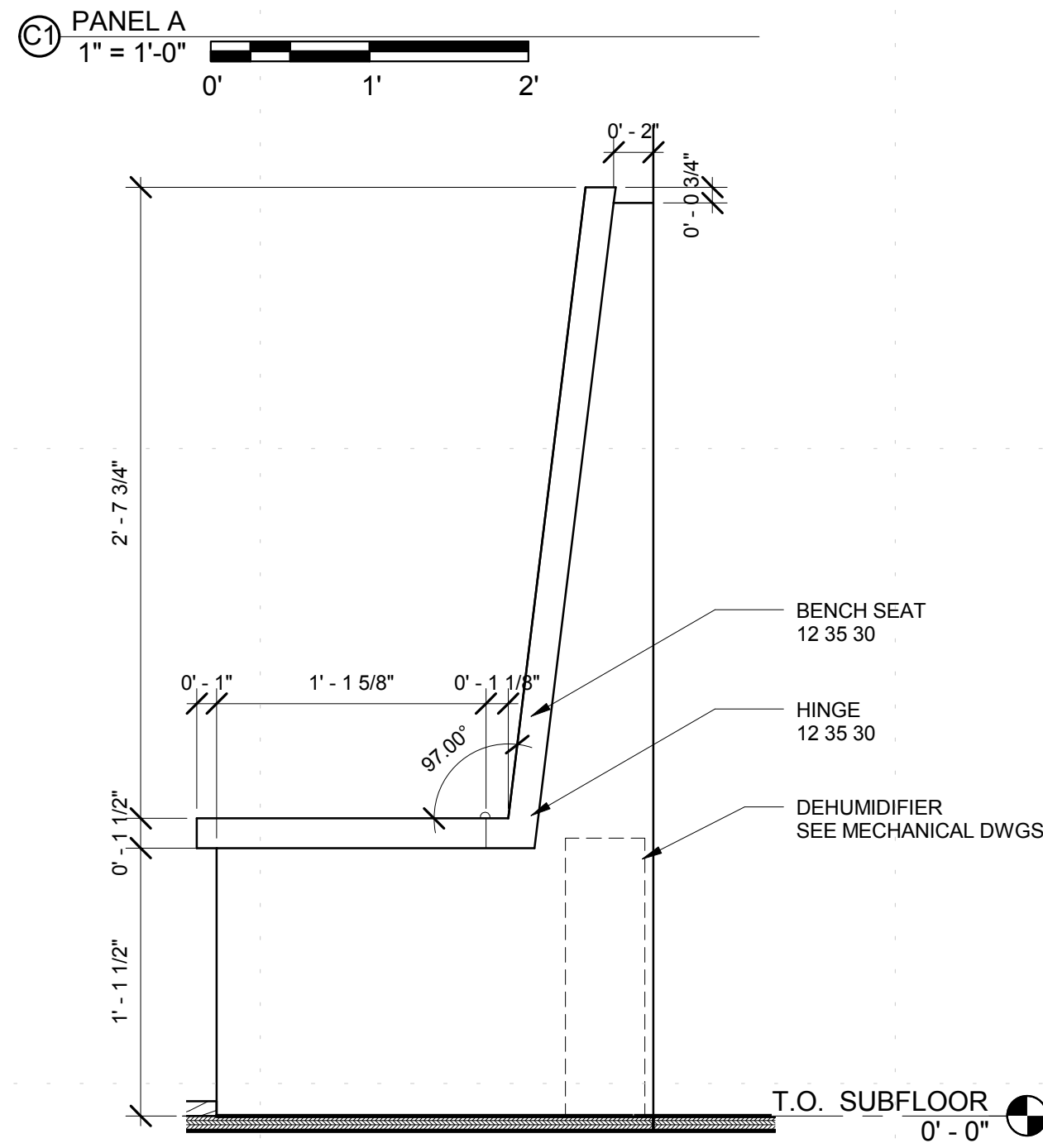
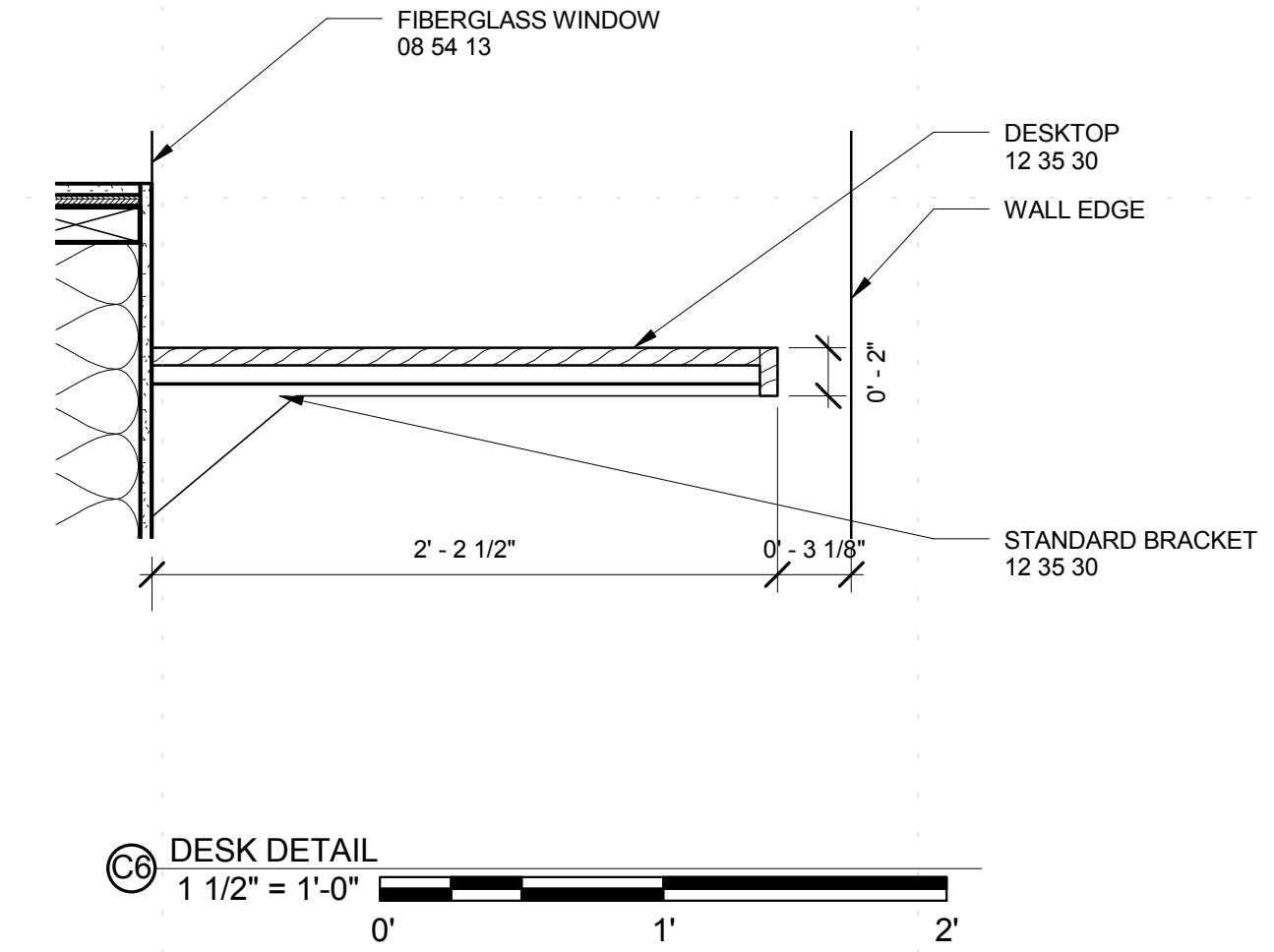
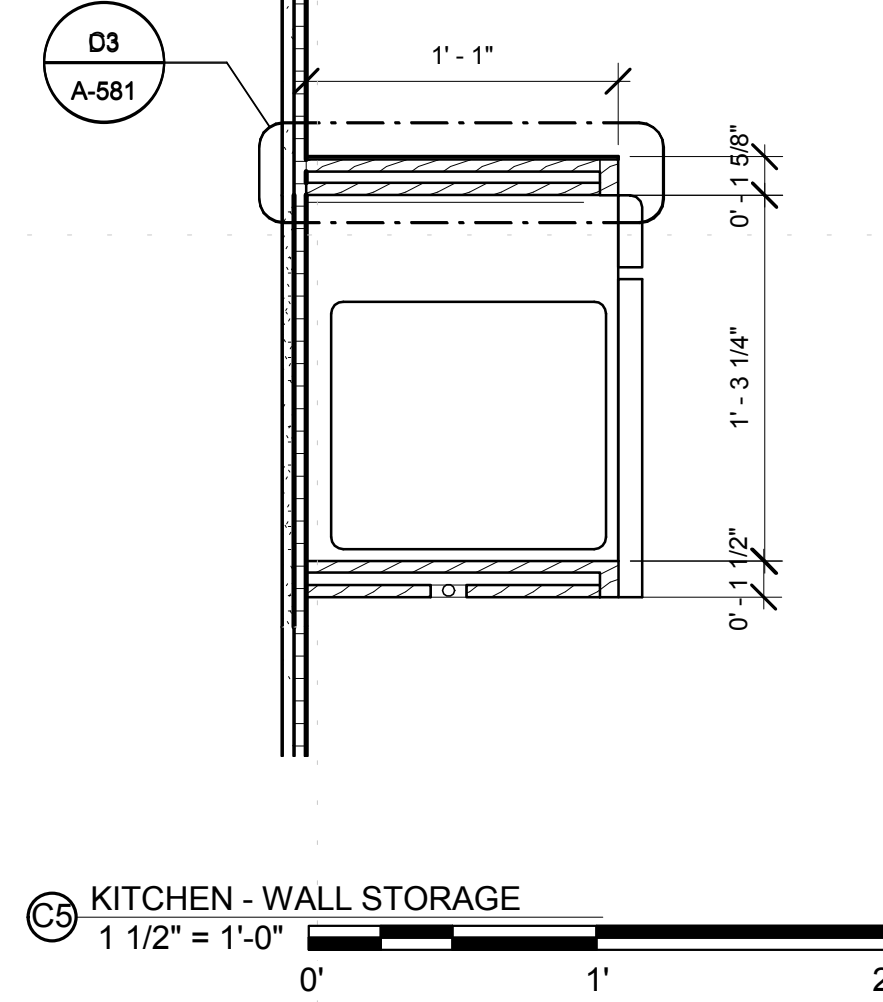
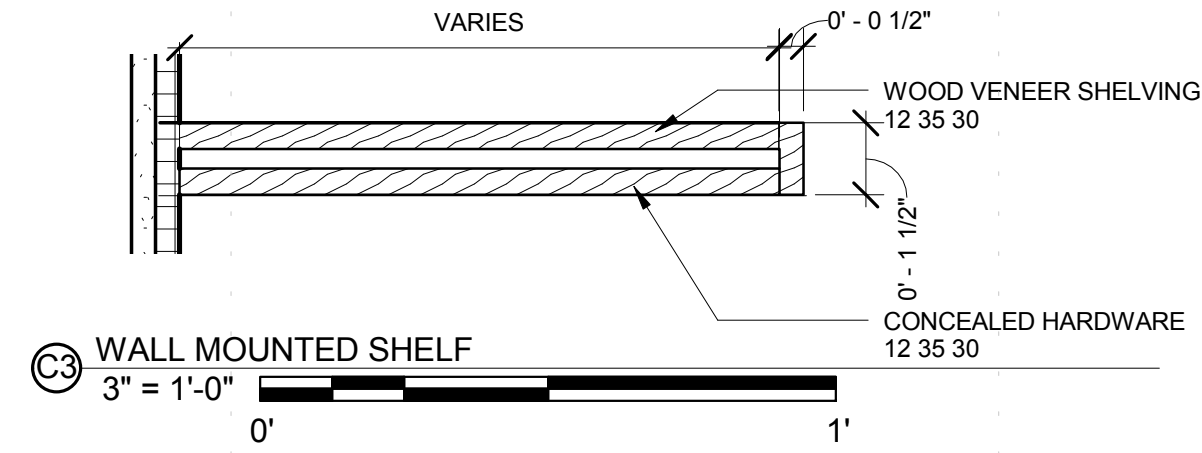
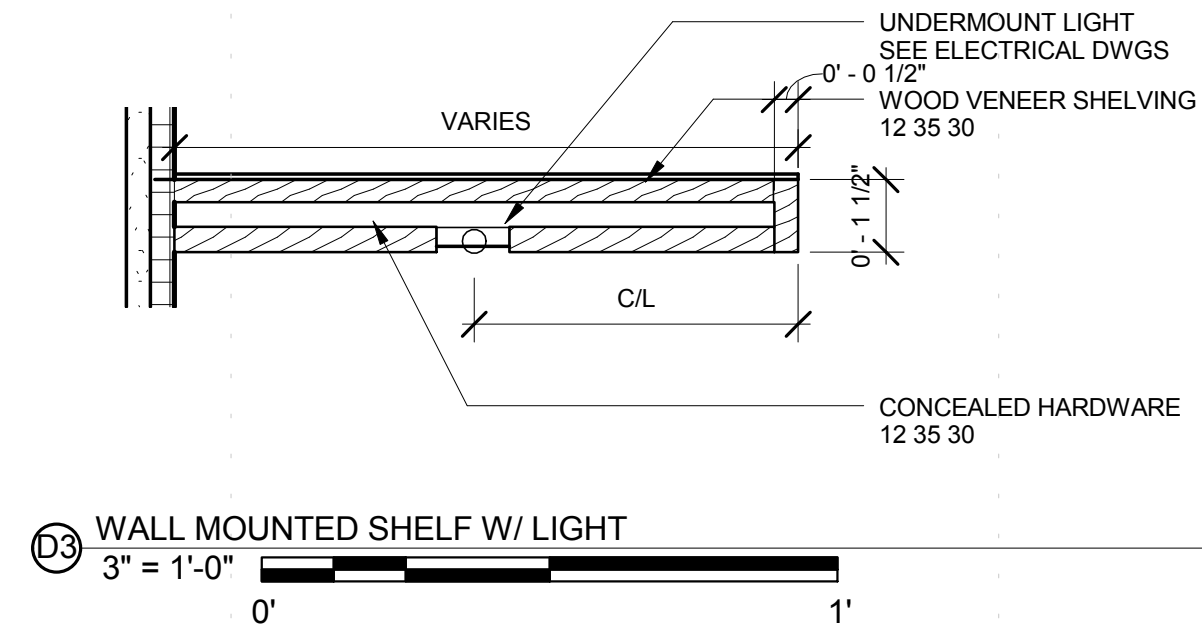
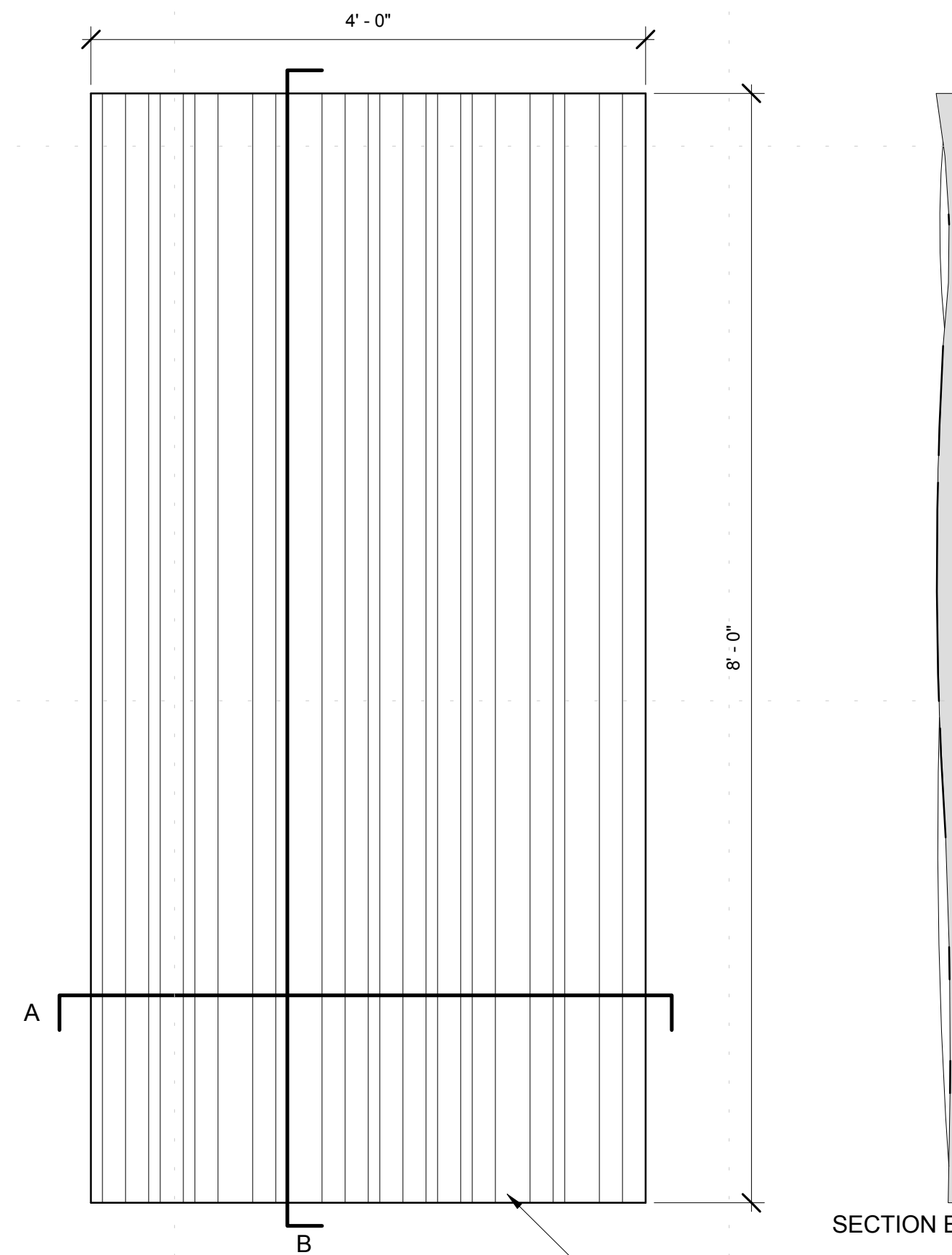
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SHEET TITLE  
**INTERIOR DETAILS**



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**A1** BENCH SEAT  
 1 1/2" = 1'-0"

**A3** MURPHY BED ELEVATION  
 1 1/2" = 1'-0"

**A6** MURPHY BED SECTION  
 1 1/2" = 1'-0"

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SHEET TITLE  
**MILLWORK**

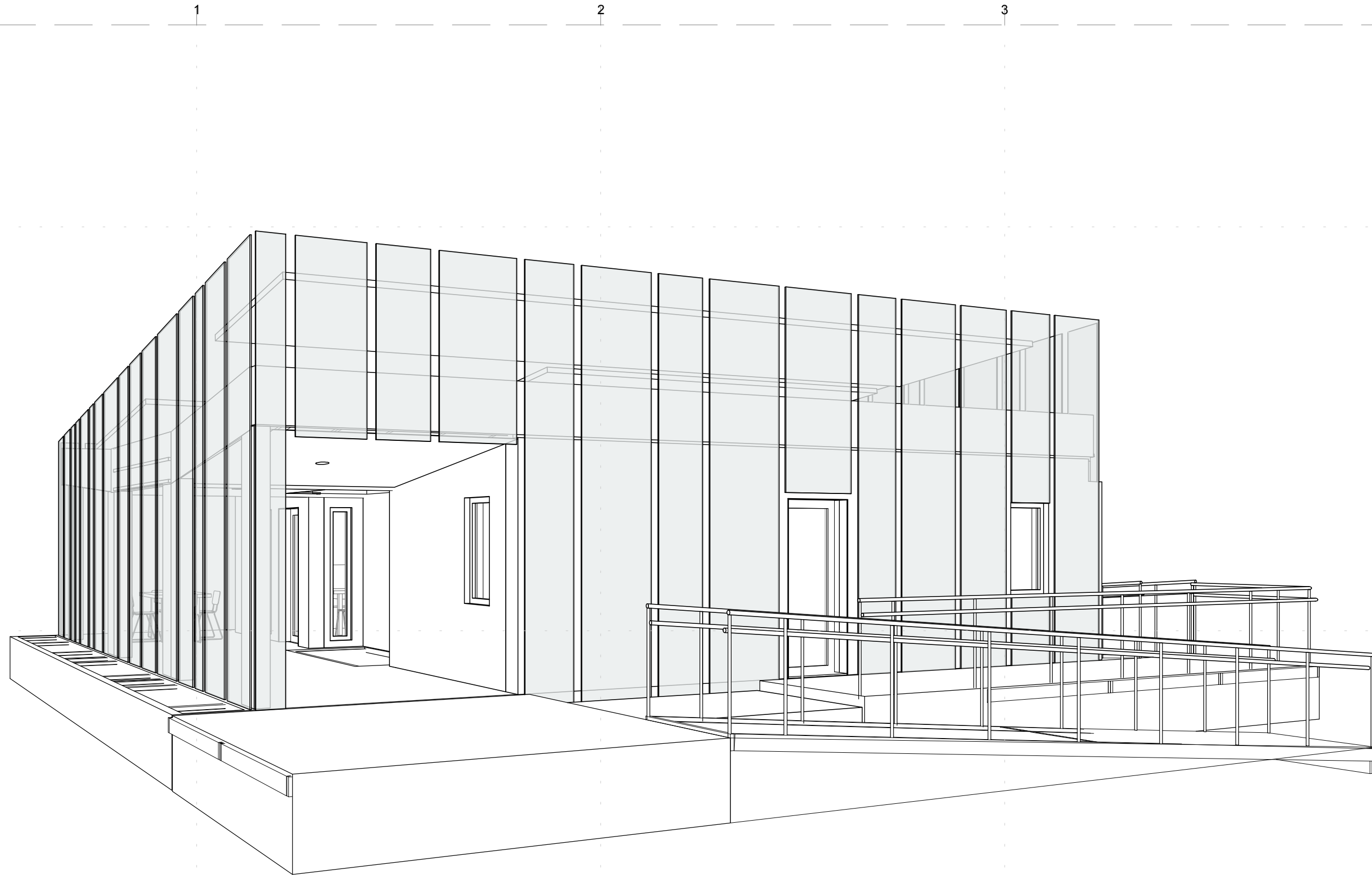
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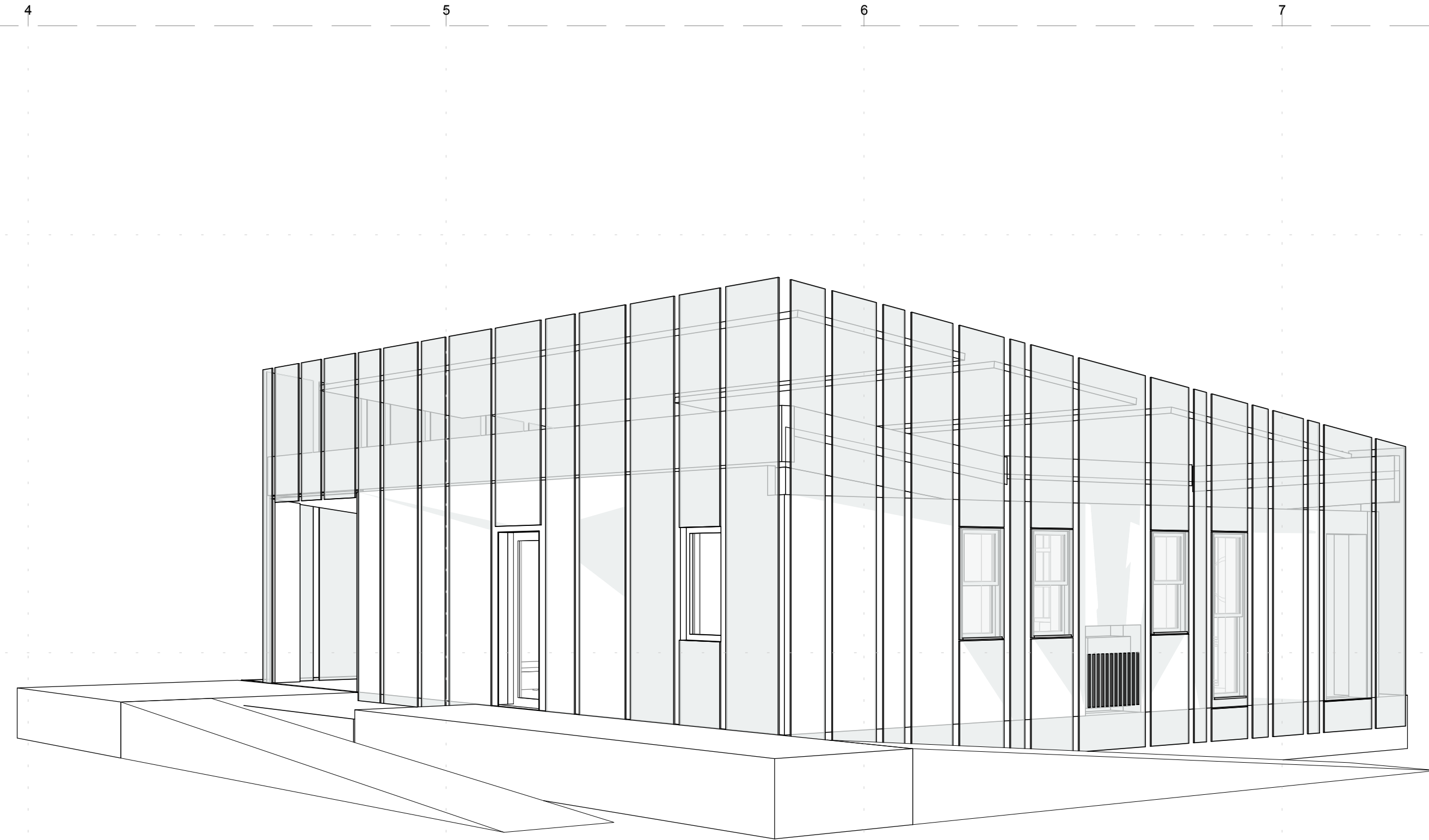




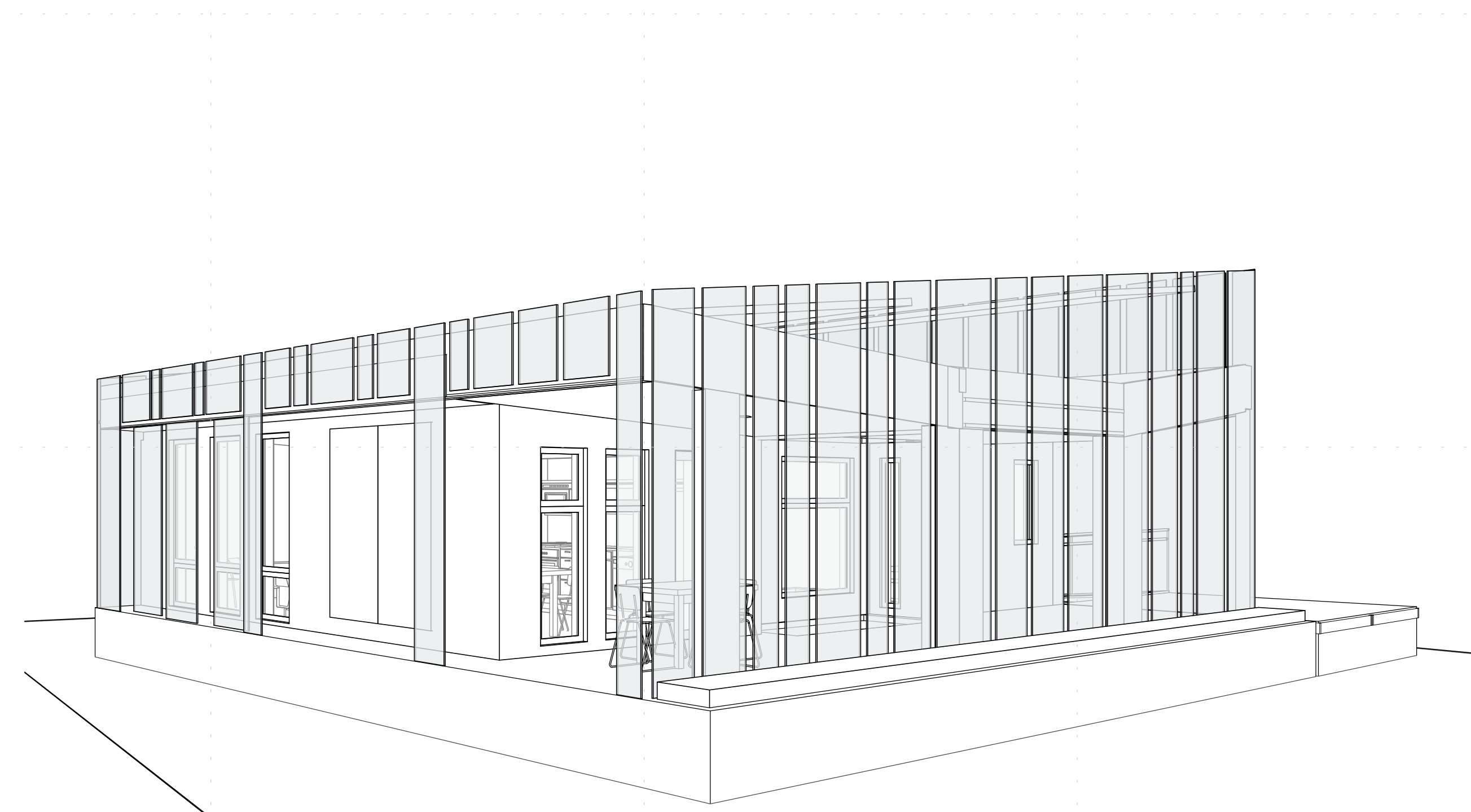
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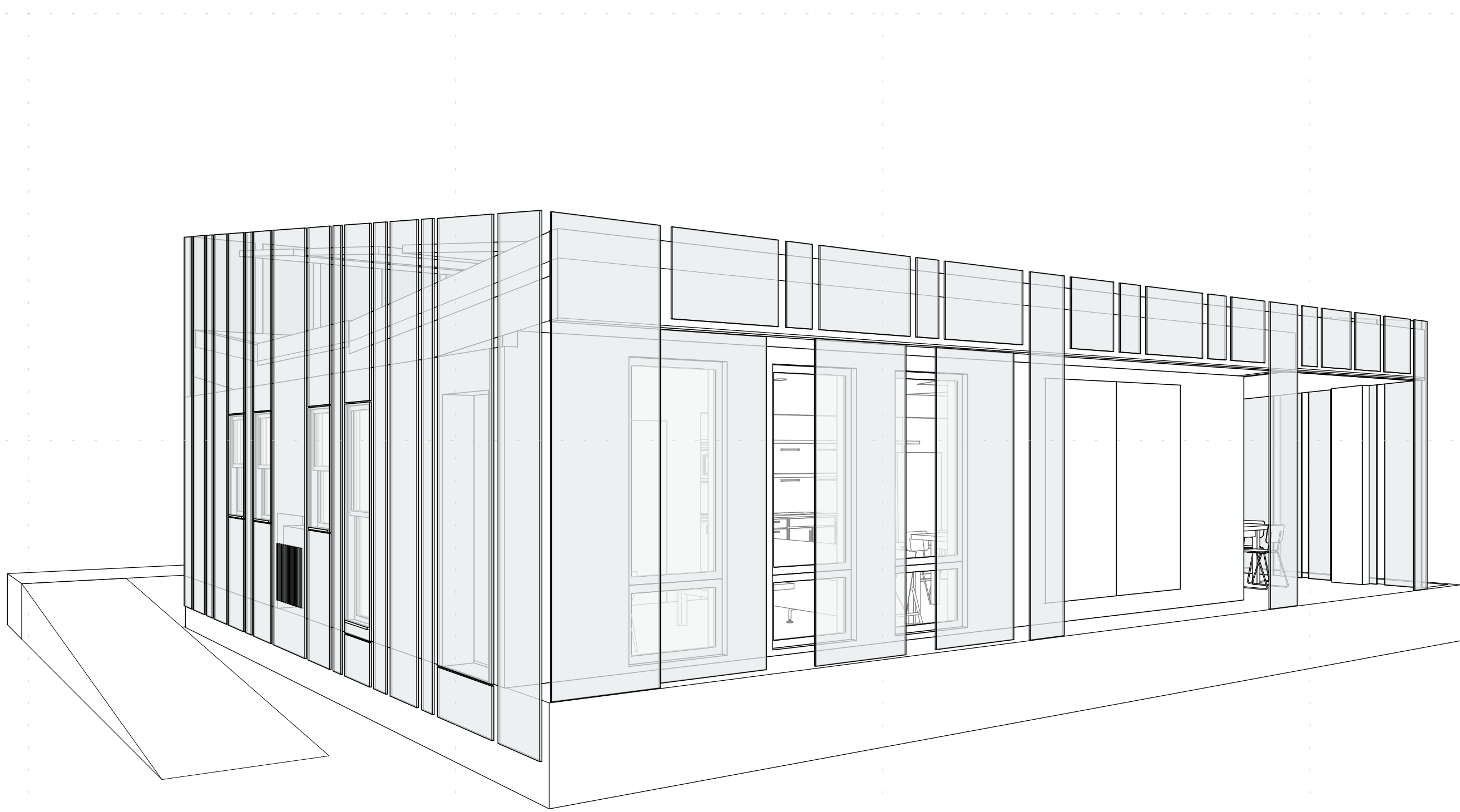
① EXTERIOR VIEW - NORTHEAST



② EXTERIOR VIEW - NORTHWEST



③ EXTERIOR VIEW - SOUTHEAST



④ EXTERIOR VIEW - SOUTHWEST

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SHEET TITLE

**3D VIEWS**

**A-901**



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(A1) EXTERIOR VIEW - LOGGIA

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3D VIEWS

A-902





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GENERAL SHEET NOTES

1. ALL WASTE PIPING AND VENTING IS BE SCHEDULE 40 PVC
2. PROVIDE A CLEANOUT IN EVERY 90 DEGREE BEND IN WASTE PIPING.
3. ALL WASTE PIPING MUST SLOPE A MINIMUM OF 1/4" PER 1'
4. VENTILATION STACK SHALL BE 2" IN DIAMETER.
5. DISHWASHER SHARES A TRAP WITH SINK DRAIN
6. HORIZONTAL CLEANOUTS LOCATED BELOW SUBFLOOR, TYP
7. WATER CLOSET SUPPLY AND DRAIN STUBBED OFF FOR COMPETITION.
8. DRAIN HEAT EXCHANGER SHALL BE INSTALLED ACCORDING TO MANUFACTURER GUIDELINES
9. SUPPLY AND WASTE TANKS SHALL BE MOUNTED BELOW DECK IN NON-CONDITIONED SPACE OF THE HOUSE. THEY ARE MOUNTED WITHIN TRAILER STRUCTURE AND DO NOT LIE ON THE GROUND.

SHEET KEYNOTES

1. SUPPLY PIPING TO BOOSTER PUMP
2. DECK BOARDS OVER SUPPLY/EFFLUENT TANKS SHALL BE REMOVED FOR WATER DELIVERY/REMOVAL. REMOVAL OF DECKBOARDS WILL RESULT IN A MINIMUM OF 12" OF ACCESS TO TANKS. SUPPLY OPENING ON TANKS SHALL BE 4" IN DIAMETER

REFERENCE KEYNOTES

- 221119-2.1A
- 221119-2.4E
- 221353-2.2A
- 221353-2.2B
- 221353-2.2C
- 221353-2.2D

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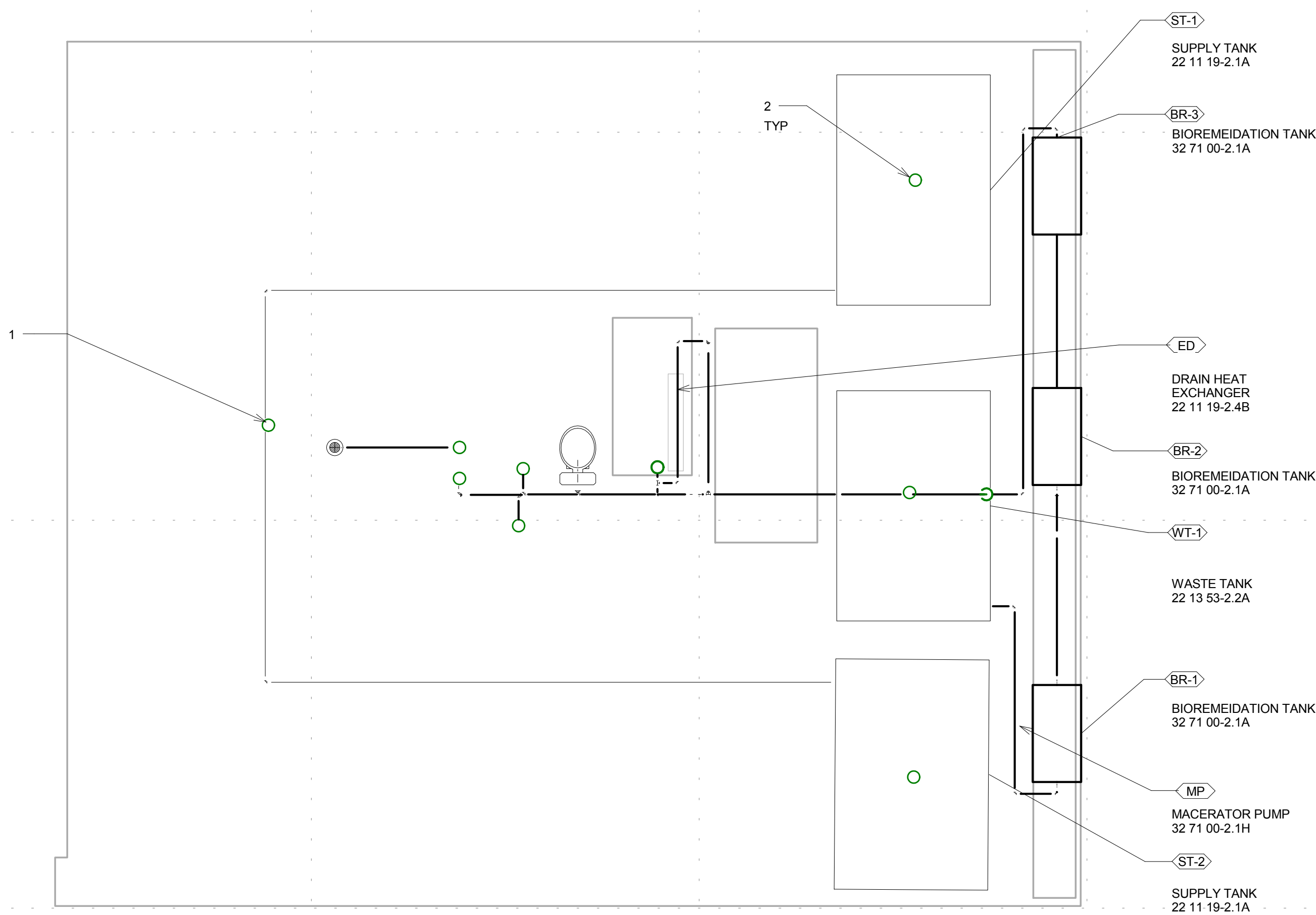
MARK	DATE	DESCRIPTION

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 DRAWN BY: Ali Cerrato  
 CHECKED BY: Matthew O'Kelly  
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SHEET TITLE

WATER SUPPLY AND REMOVAL PLAN

P-101



1 WATER SUPPLY AND REMOVAL PLAN  
 1/4" = 1'-0"

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**GENERAL SHEET NOTES**

1. ALL SUPPLY PIPING IS 1/2" PEX UNLESS OTHERWISE SPECIFIED.
2. ALL SUPPLY PIPING SHOWN IN PLAN WILL BE ROUTED THROUGH THE CEILING.
3. SECURE PIPING EVERY 24" TO JOISTS WITH PLASTIC CLIPS
4. ALL PEX TUBING SHALL NOT BEND IN A RADIUS LESS THAN MANUFACTURER'S RECOMMENDED BENDING RADIUS.
5. A BALL VALVE SHALL BE PLACED BEFORE PEX CONNECTION TO EACH FIXTURE.

**SHEET KEYNOTES**

1. TOILET SUPPLY SHALL BE STUBBED OFF FOR COMPETITION.

**REFERENCE KEYNOTES**

- 22 11 19-2.4C
- 22 11 19-2.4E
- 22 40 00-2.1A
- 22 40 00-2.2
- 22 40 00-2.3
- 22 40 00-2.4
- 22 33 01-2.2B

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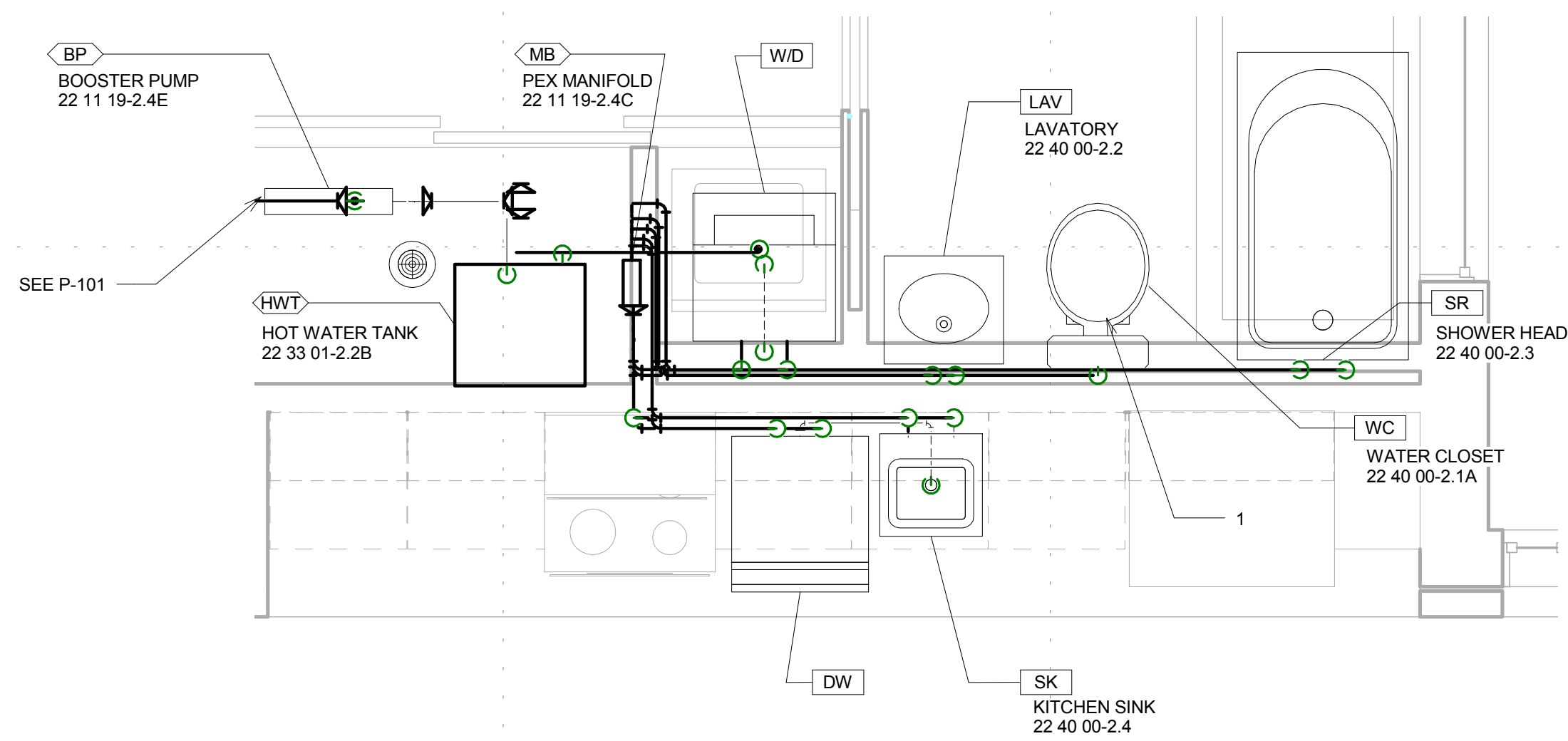


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SHEET TITLE  
**DOMESTIC PIPING PLAN**

**P-102**



① Domestic Plumbing Plan  
 1/2" = 1'-0"





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SHEET TITLE  
**SPRINKLER PLAN**

**P-103**

**GENERAL SHEET NOTES**

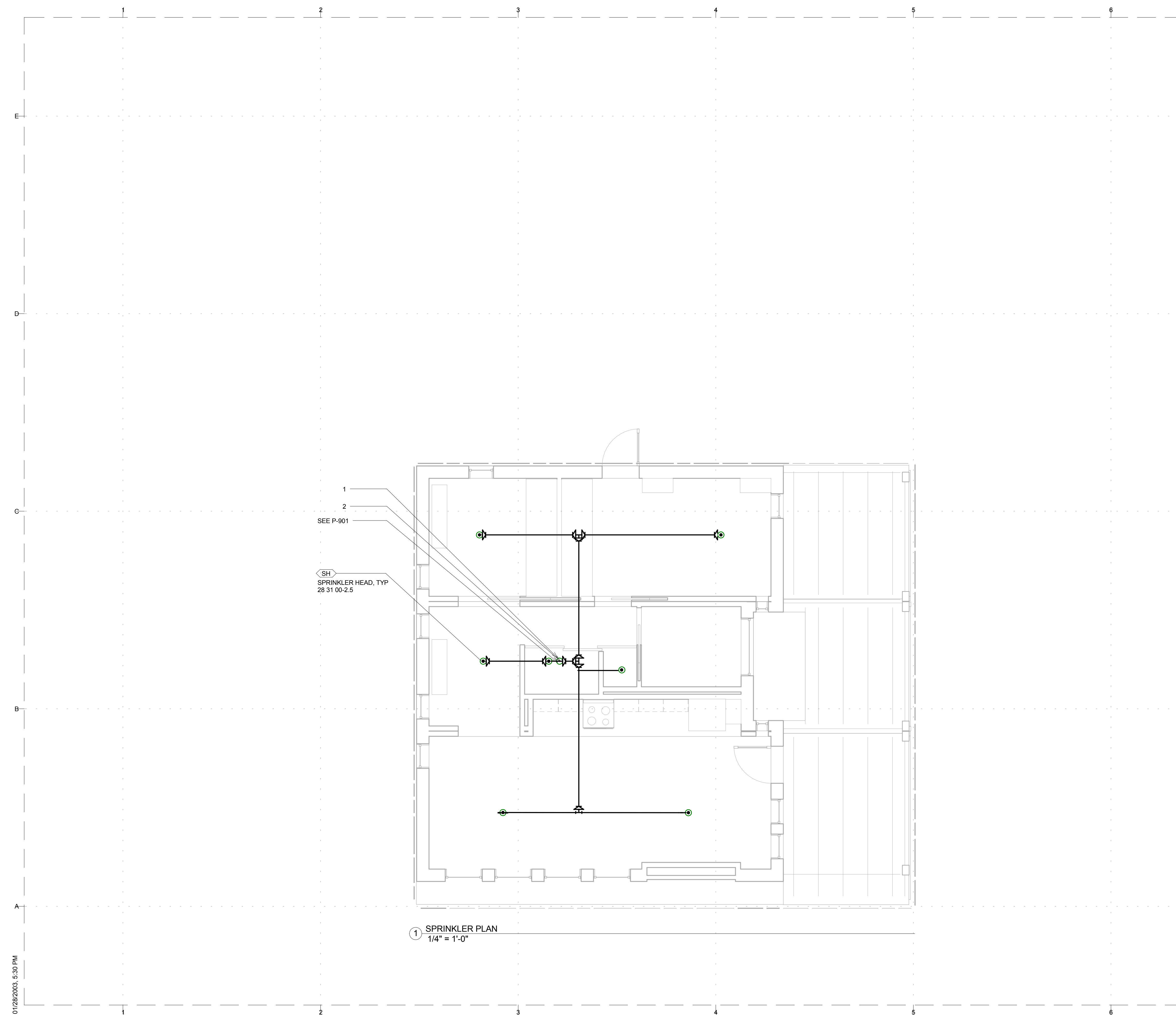
1. SPRINKLER SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.  
2. SPRINKLER PIPING SHALL BE 1" PEX TUBING.

**SHEET KEYNOTES**

1. SPRINKLER SYSTEM SHALL BE CONNECTED TO POTABLE SUPPLY DIRECTLY FOLLOWING SUPPLY BOOSTER PUMP. A SAFETY FACTOR WAS INCLUDED IN WATER BUDGET TO ENSURE ENOUGH WATER IS AVAILABLE FOR SPRINKLERS.  
2. A BALL VALVE SHALL BE BEFORE THE SYSTEM FOR COMPETITION, BUT WILL REMAIN IN A NORMALLY OPEN POSITION.

**REFERENCE KEYNOTES**

22 83 100-2.5



**SPRINKLER PLAN**  
1/4" = 1'-0"

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GENERAL SHEET NOTES

SHEET KEYNOTES

REFERENCE KEYNOTES

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SHEET TITLE

BIOREMEDIATION  
ELEVATION

P-201



① BIOREMEDIATION SECTION  
1/4" = 1'-0"

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SHEET TITLE  
**PLUMBING SCHEMATICS**

**P-601**

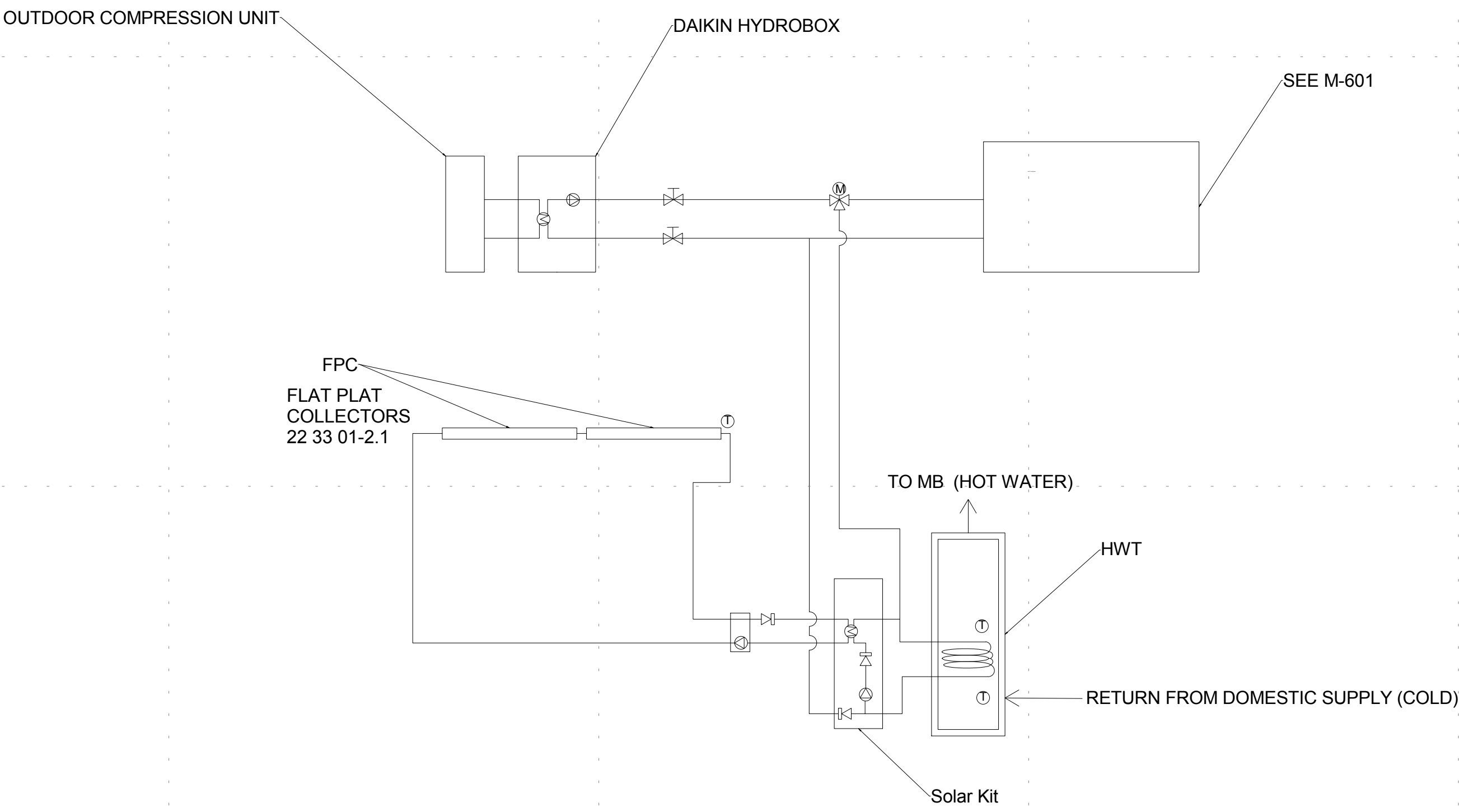
### GENERAL SHEET NOTES

- 1. SOLAR THERMAL SYSTEM SHALL BE INSTALLED BY A MANUFACTURER APPROVED PROFESSIONAL.
- 2. SOLAR THERMAL PIPING SHALL BE COPPER MATERIAL.

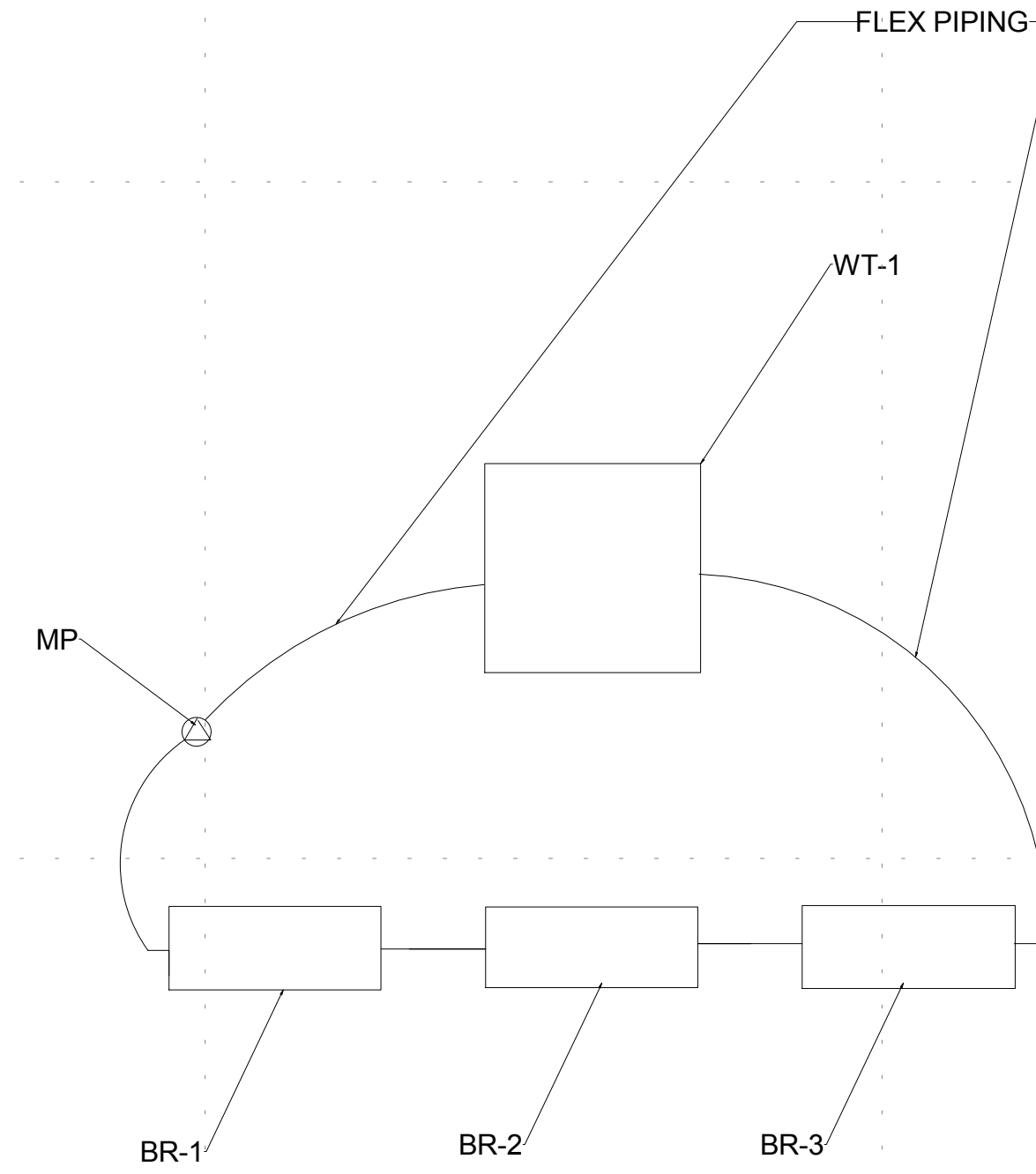
### SHEET KEYNOTES

### REFERENCE KEYNOTES

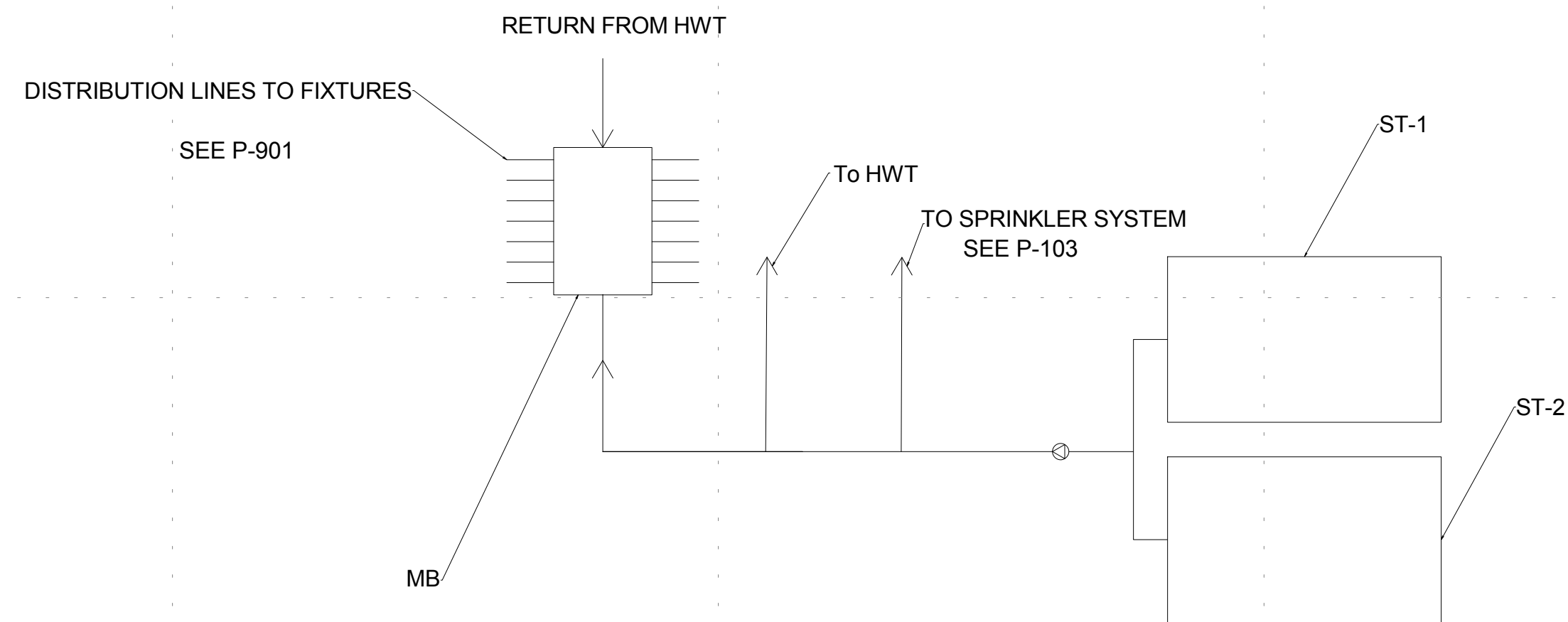
22 33 01-2.1



① SOLAR THERMAL SCHEMATIC  
NOT TO SCALE



③ BIO-REMEDICATION SCHEMATIC  
NOT TO SCALE



② SUPPLY PLUMBING SCHEMATIC  
NOT TO SCALE

	TEMPERATURE SENSOR
	HEAT EXCHANGER
	THREE WAY VALVE
	GATE VALVE
	CIRCULATION PUMP
	DIRECTION OF FLOW



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**PLUMBING SCHEDULES**

**P-602**

PLUMBING FIXTURE SCHEDULE							
MARK	MANUFACTURER	MODEL	DESCRIPTION	COUNT	CW	HW	TRAP
LAV	KOHLER	K-2826-96	BATHROOM SINK	1	1/2"	N/A	1 1/2"
SR	KOHLER	K-997-CP	SHOWER HEAD	1	N/A	N/A	N/A
DW	KITCHENAID	KUDD03ST	DISHWASHER	1	1/2"	1/2"	1 1/2"
W/D	WHIRLPOOL	WFC7500V	CLOTHES WASHER	1	1/2"	1/2"	1 1/2"
SK	KOHLER	K-3325	KITCHEN SINK	1	1/2"	N/A	1 1/2"
WC	KOHLER	K-2564	TOILET	1	1/2"	N/A	1 1/2"
F-1	KOHLER	K-T944-4-CP	LAVATORY FAUCET	1	1/2"	1/2"	N/A
F-2	KOHLER	K-6127-4-CP	KITCHEN FAUCET	1	1/2"	1/2"	N/A
F-3	KOHLER	K-6946-CP	BATH FAUCET	1	1/2"	1/2"	N/A
SV	KOHLER	K-T10940-4-CP	SHOWER VALVE	1	1/2"	1/2"	N/A
SD	KOHLER	K-9136	SHOWER DRAIN	1	1/2"	N/A	1 1/2"
SA	KOHLER	K-7397-CP	SHOWER ARM	1	N/A	N/A	N/A
R	LG	LFC25776	REFRIGERATOR	1	N/A	N/A	N/A

PLUMBING EQUIPMENT SCHEDULE				
MARK	MANUFACTURER	MODEL	DESCRIPTION	COUNT
MP	JABSCO	JA1409	MACEATER PUMP	1
BP	GRUNDFOS	MQ3-45	BOOSTER PUMP	1
HWT	DAIKIN	EKHWS080BA3VJU	HOT WATER TANK	1
SK	DAIKIN	EKSOLHWBAVJU	SOLAR KIT	1
ED	ECODRAIN	A1000	DRAIN HEAT RECOVERY	1
FPC	SUNMAXX SOLAR	TITANPOWER PLUS-SU2	FLAT PLATE COLLECTORS	2
PEX-S	VIEGA	32061	1" PEX	SEE SPEC
PEX-B	VIEGA	32225	1/2" PEX	SEE SPEC
MB	VIEGA	32225	1/2" PEX MANIFOLD	1
SH	RELIABLE	RFC43	SPRINKLER HEAD	7
TP	MIFAB	M-500	TRAP PRIMER	1

PLUMBING TANK SCHEDULE						
MARK	MANUFACTURER	MODEL	DESCRIPTION	COUNT	FILL CONNECTION	SYSTEM CONNECTION
ST-1	PLASTIC MART	R325T	SUPPLY 325 GALLONS	1	4"	1"
ST-2	PLASTIC MART	R325T	SUPPLY 325 GALLONS	1	4"	1"
WT-1	PLASTIC MART	R325T	WASTE 325 GALLONS	1	4"	1"
BR-1	PLASTIC MART	OTR602418	BIO-REMEDIATION 102 GALLONS	1	N/A	2X2"
BR-2	PLASTIC MART	OTR602418	BIO-REMEDIATION 102 GALLONS	1	N/A	2X2"
BR-3	PLASTIC MART	OTR602418	BIO-REMEDIATION 102 GALLONS	1	N/A	2X2"

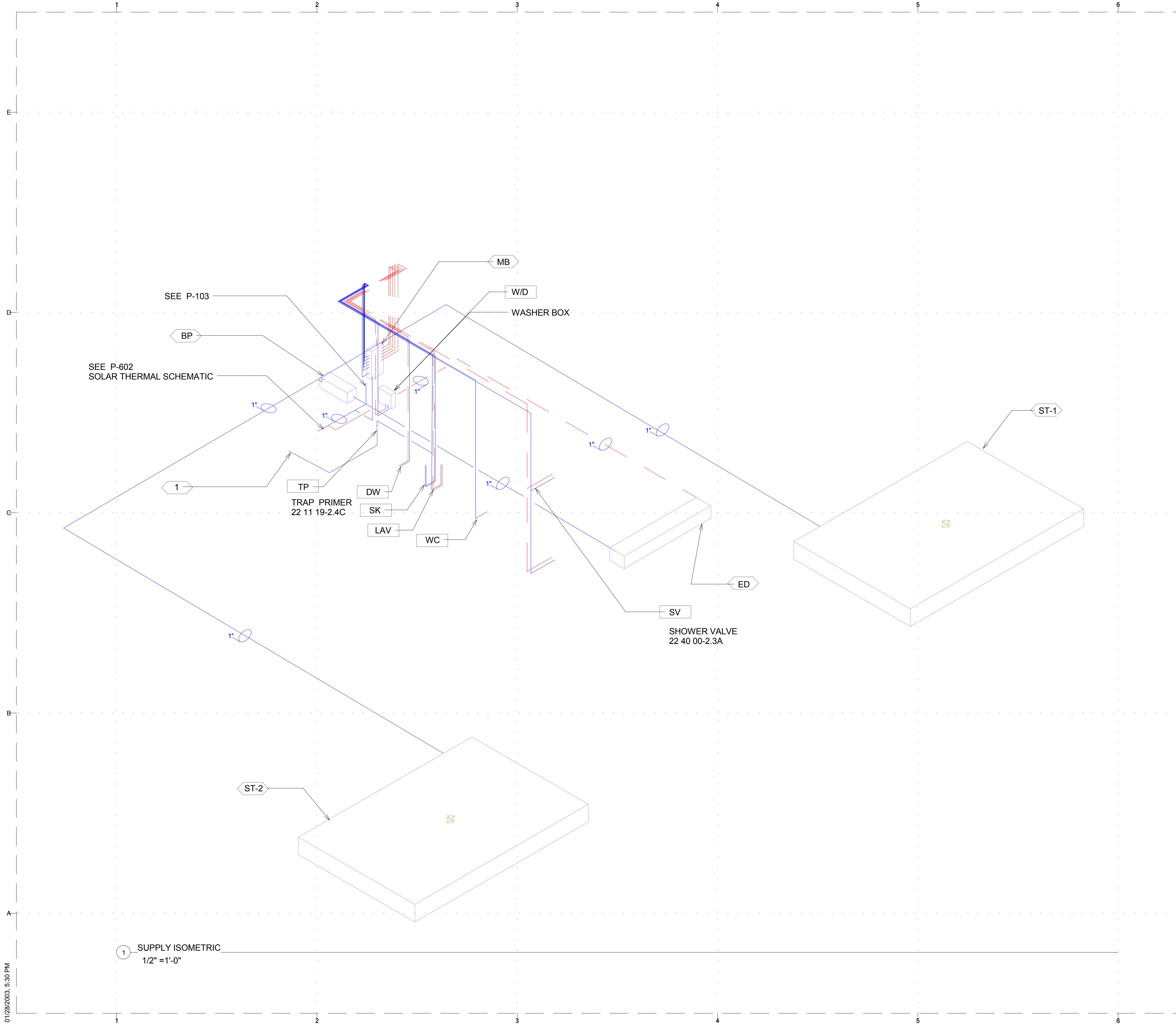
GENERAL SHEET NOTES

SHEET KEYNOTES

REFERENCE KEYNOTES



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 2011 SOLAR DECATHLON TEAM  
 KNOWLTON SCHOOL OF ARCHITECTURE  
 275 W. WOODRUFF AVE.  
 COLUMBUS, OH 43210



GENERAL SHEET NOTES

1. ALL MAIN SUPPLY PIPING TO MANIFOLD AND DRAIN HEAT EXCHANGER TO DOMESTIC HOT WATER TANK IS 1" PEX.
2. ALL BRANCH SUPPLY PIPING FROM MANIFOLD IS 1/2" PEX UNLESS OTHERWISE NOTED.
3. ALL SUPPLY PIPING SHOWN IS ROUTED IN THE CEILING.
4. SECURING PIPING EVERY 24" TO JOISTS WITH PLASTIC CLIPS.
5. ALL PEX TUBING SHALL NOT BEND IN A RADIUS LESS THAN MANUFACTURER'S RECOMMENDED BENDING RADIUS.
6. A BALL VALVE SHALL BE PLACED IN EACH BRANCH LINE BEFORE CONNECTION TO FIXTURE OR APPLIANCE.

SHEET KEYNOTES

1. 1/2" PIPE TO CONNECT TRAP PRIMER TO DRAIN

REFERENCE KEYNOTES

22 40 00-2.3A

CLIENT  
 U.S. DEPARTMENT OF ENERGY  
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SHEET TITLE

PLUMBING SUPPLY  
 ISOMETRIC

P-901

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GENERAL SHEET NOTES

1. ALL WASTE PIPING AND VENTING IS BE SCHEDULE 40 PVC
2. PROVIDE A CLEANOUT IN EVERY 90 DEGREE BEND IN WASTE PIPING.
3. ALL WASTE PIPING MUST SLOPE A MINIMUM OF 1/4" PER 1'
4. VENTILATION STACK SHALL BE 2" IN DIAMETER.
5. HORIZONTAL CLEANOUTS LOCATED BELOW SUBFLOOR, TYP
6. ALL MAIN LINES SHALL BE 3" IN DIAMETER UNLESS OTHERWISE NOTED.
7. ALL BRANCH LINES SHALL BE 2" IN DIAMETER UNLESS OTHERWISE NOTED.

SHEET KEYNOTES

1. DISHWASHER SHARES TRAP WITH KITCHEN SINK.
2. MECHANICAL ROOM DRAIN SHALL HAVE A TRAP PRIMER.
3. WATER CLOSET DRAIN STUBBED OFF FOR COMPETITION.

REFERENCE KEYNOTES

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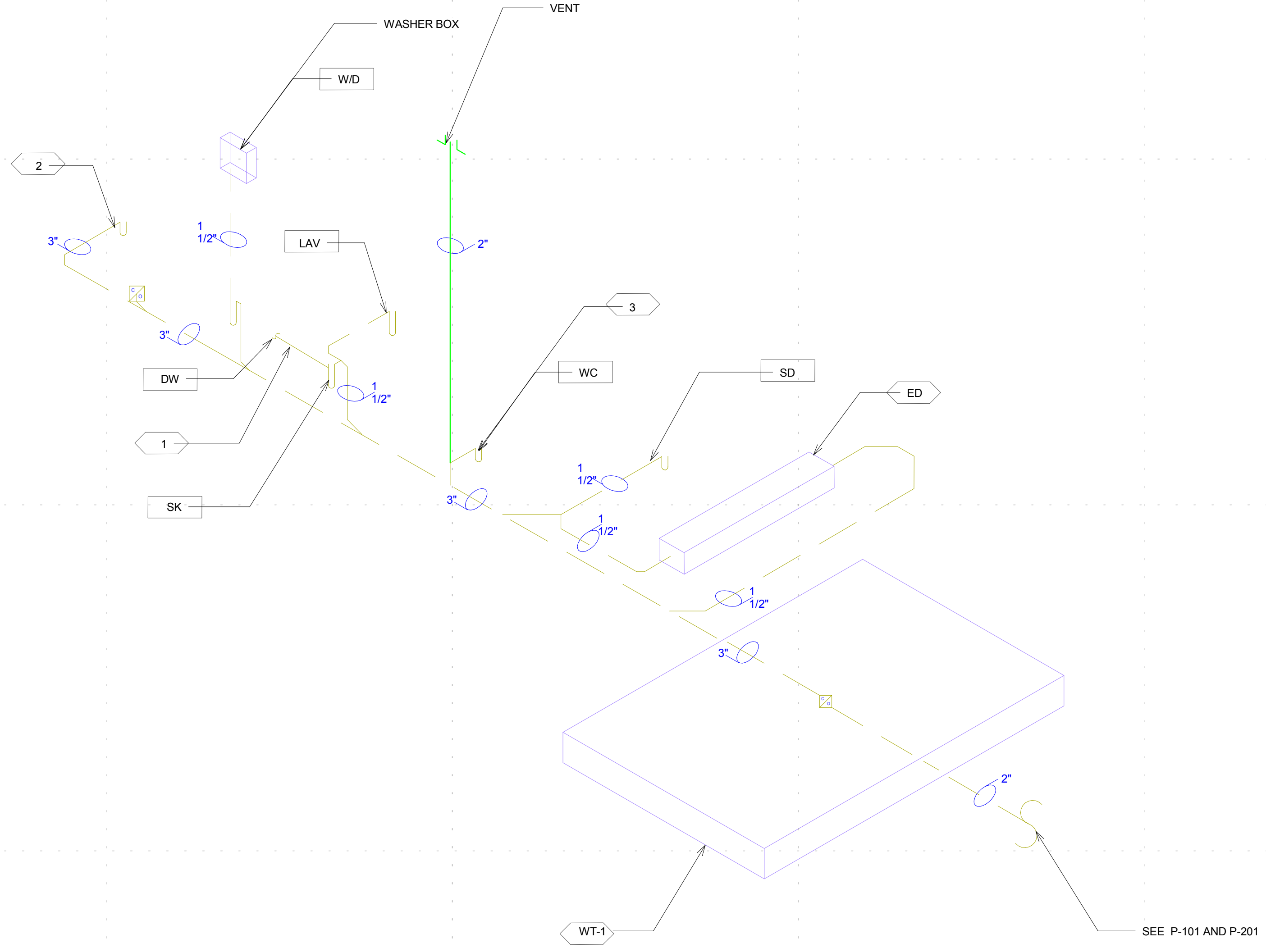


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SHEET TITLE  
**PLUMBING WASTE ISOMETRIC**

**P-902**



① WASTE ISOMETRIC  
 1/2" = 1'-0"

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GENERAL NOTES

1. DUCT LAYOUT IS SCHEMATIC. PROVIDE ALL FITTINGS AND TRANSITIONS NECESSARY TO INSTALL DUCT SYSTEM.
2. DUCT SIZES ARE SHOW AS NET CLEAR INSIDE DIMENSIONS.
3. EXTERIOR HEAT PUMP UNIT MUST BE MOUNTED ON A PAD AS NOTED BY MANUFACTURER.
4. EXHAUST FROM MECHANICAL ROOM AND BATHROOM FAN ARE LOCATED A MINIMUM OF 10' FROM THE OUTDOOR FRESH AIR INTAKE FOR THE ERV.
5. FOLLOW SMACNA GUIDELINES FOR DUCTWORK.
6. ALL DUCTS ARE TO BE CONTINUOUSLY INSULATED.

SHEET KEYNOTES

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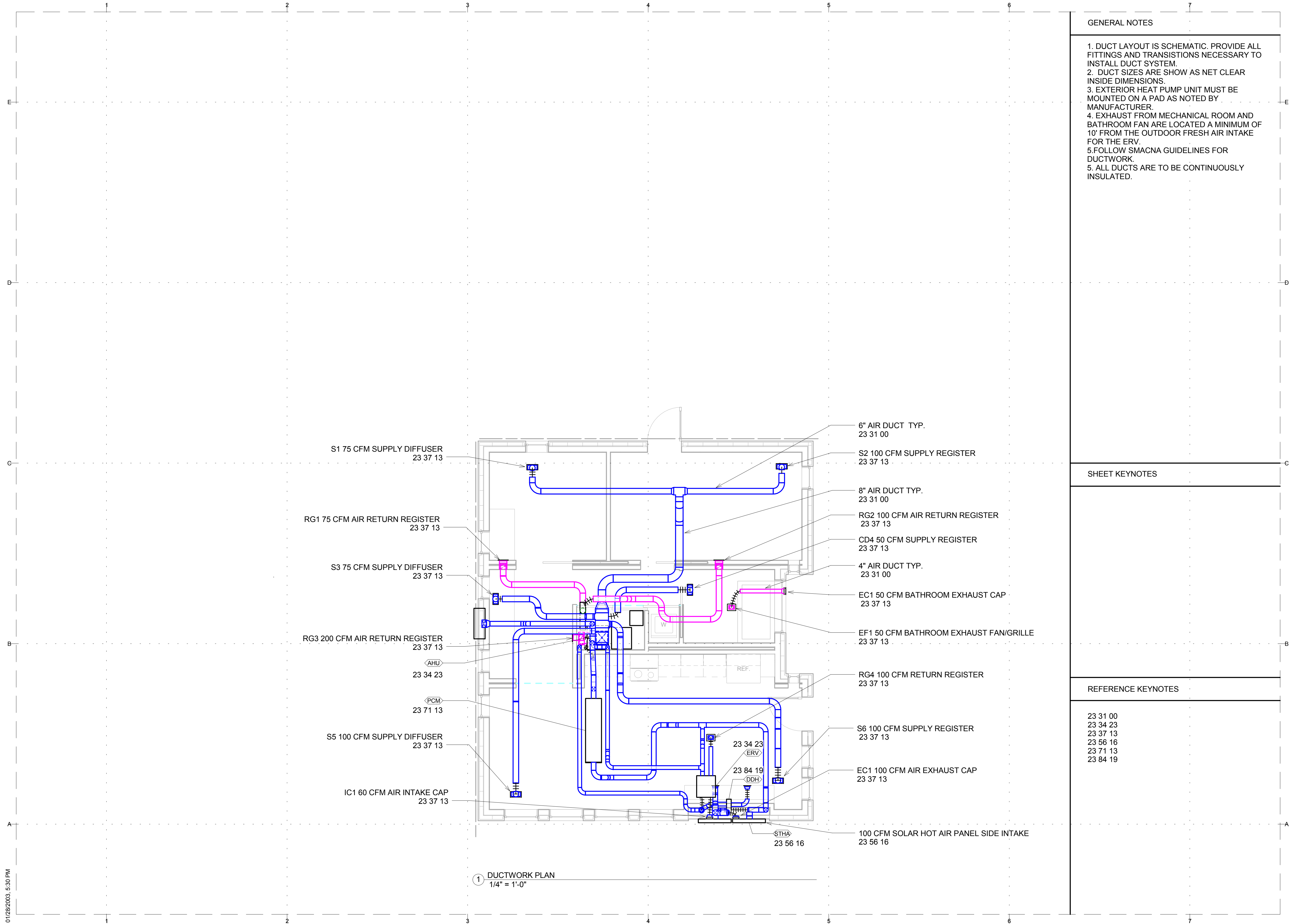
23 31 00  
 23 34 23  
 23 37 13  
 23 56 16  
 23 71 13  
 23 84 19

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SHEET TITLE

DUCTWORK PLAN

M-101



S1 75 CFM SUPPLY DIFFUSER  
23 37 13

RG1 75 CFM AIR RETURN REGISTER  
23 37 13

S3 75 CFM SUPPLY DIFFUSER  
23 37 13

RG3 200 CFM AIR RETURN REGISTER  
23 37 13

(AHU)  
23 34 23

(PCM)  
23 71 13

S5 100 CFM SUPPLY DIFFUSER  
23 37 13

IC1 60 CFM AIR INTAKE CAP  
23 37 13

6" AIR DUCT TYP.  
23 31 00

S2 100 CFM SUPPLY REGISTER  
23 37 13

8" AIR DUCT TYP.  
23 31 00

RG2 100 CFM AIR RETURN REGISTER  
23 37 13

CD4 50 CFM SUPPLY REGISTER  
23 37 13

4" AIR DUCT TYP.  
23 31 00

EC1 50 CFM BATHROOM EXHAUST CAP  
23 37 13

EF1 50 CFM BATHROOM EXHAUST FAN/GRILLE  
23 37 13

RG4 100 CFM RETURN REGISTER  
23 37 13

S6 100 CFM SUPPLY REGISTER  
23 37 13

EC1 100 CFM AIR EXHAUST CAP  
23 37 13

100 CFM SOLAR HOT AIR PANEL SIDE INTAKE  
23 56 16

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



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#### GENERAL NOTES

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4. EXHAUST FROM MECHANICAL ROOM AND BATHROOM FAN ARE LOCATED A MINIMUM OF 10' FROM THE OUTDOOR FRESH AIR INTAKE FOR THE ERV.
5. FOLLOW SMACNA GUIDELINES FOR DUCTWORK.
5. ALL DUCTS ARE TO BE CONTINUOUSLY INSULATED.

#### SHEET KEYNOTES

#### REFERENCE KEYNOTES

- 233423 2.1 F 4
- 233423 2.1 F 5
- 238142 2.1 B
- 238143 3.1 C
- 238143 3.1 F
- 238143 3.2 B
- 238419 3.2 B

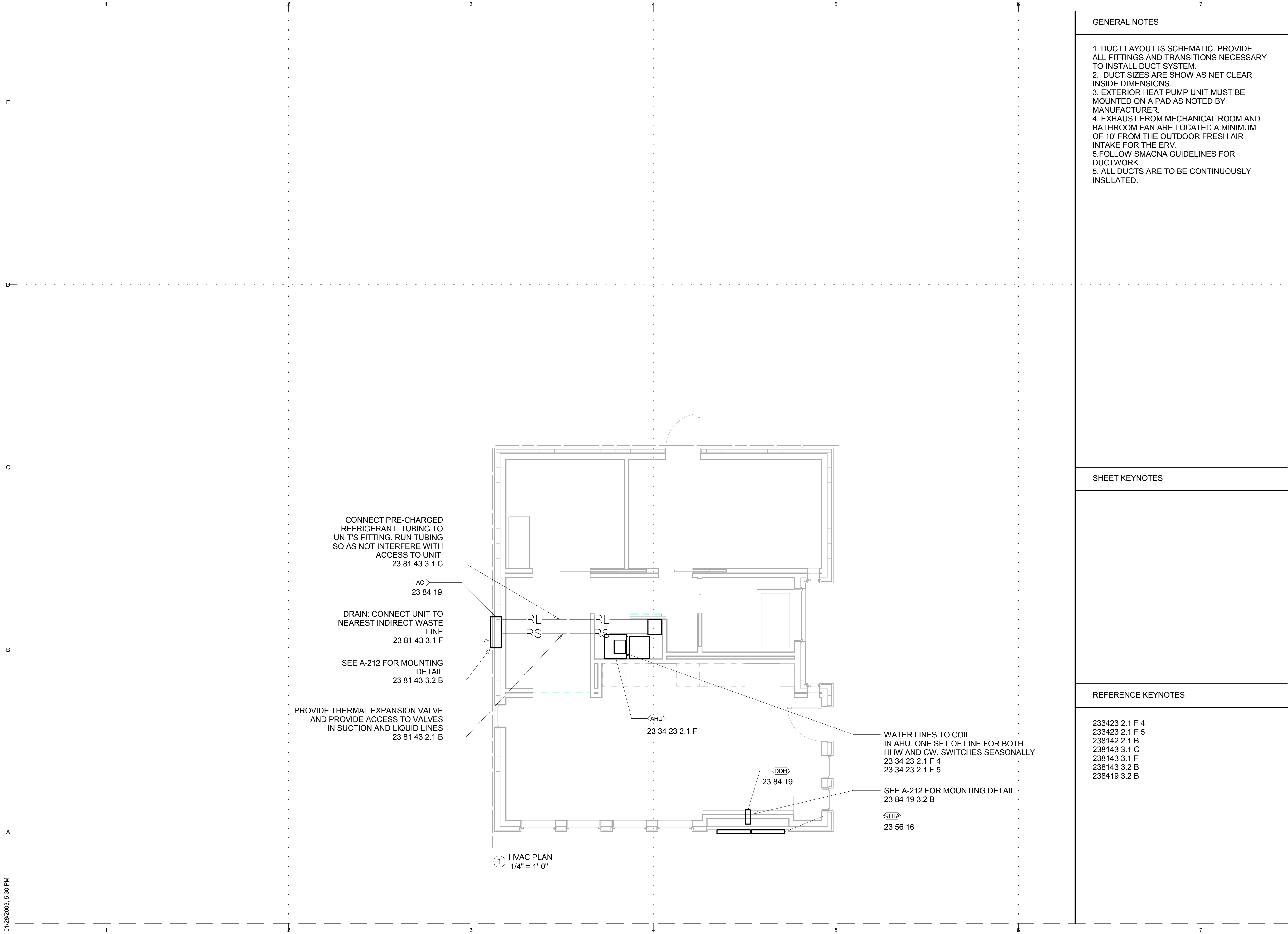
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SHEET TITLE  
**HVAC EQUIPMENT PLAN**

# M-102



- CONNECT PRE-CHARGED REFRIGERANT TUBING TO UNIT'S FITTING. RUN TUBING SO AS NOT INTERFERE WITH ACCESS TO UNIT.  
23 81 43 3.1 C
- AC  
23 84 19
- DRAIN: CONNECT UNIT TO NEAREST INDIRECT WASTE LINE  
23 81 43 3.1 F
- SEE A-212 FOR MOUNTING DETAIL  
23 81 43 3.2 B
- PROVIDE THERMAL EXPANSION VALVE AND PROVIDE ACCESS TO VALVES IN SUCTION AND LIQUID LINES  
23 81 43 2.1 B

- WATER LINES TO COIL IN AHU. ONE SET OF LINE FOR BOTH HHW AND CW. SWITCHES SEASONALLY  
23 34 23 2.1 F 4  
23 34 23 2.1 F 5

- SEE A-212 FOR MOUNTING DETAIL.  
23 84 19 3.2 B
- STH  
23 56 16

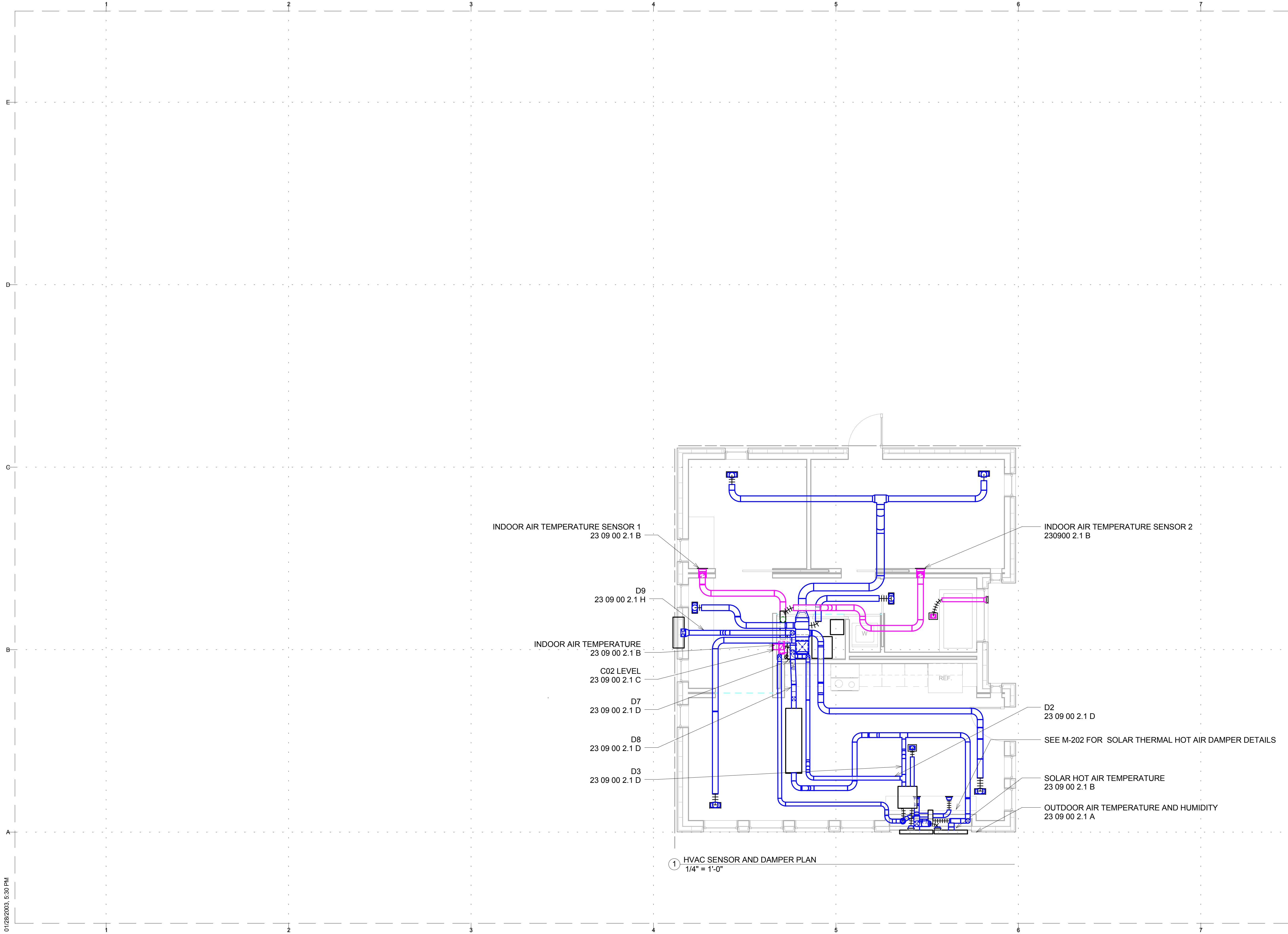
① HVAC PLAN  
1/4" = 1'-0"

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① HVAC SENSOR AND DAMPER PLAN  
 1/4" = 1'-0"

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SHEET TITLE  
**HVAC SENSOR AND DAMPER PLAN**

**M-103**

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GENERAL NOTES

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5. FOLLOW SMACNA GUIDELINES FOR DUCTWORK.
5. ALL DUCTS ARE TO BE CONTINUOUSLY INSULATED.

SHEET KEYNOTES

REFERENCE KEYNOTES

- 22 33 00 2.2 A 1
- 23 34 23 2.1 F
- 23 37 13
- 23 81 43 2.1 D

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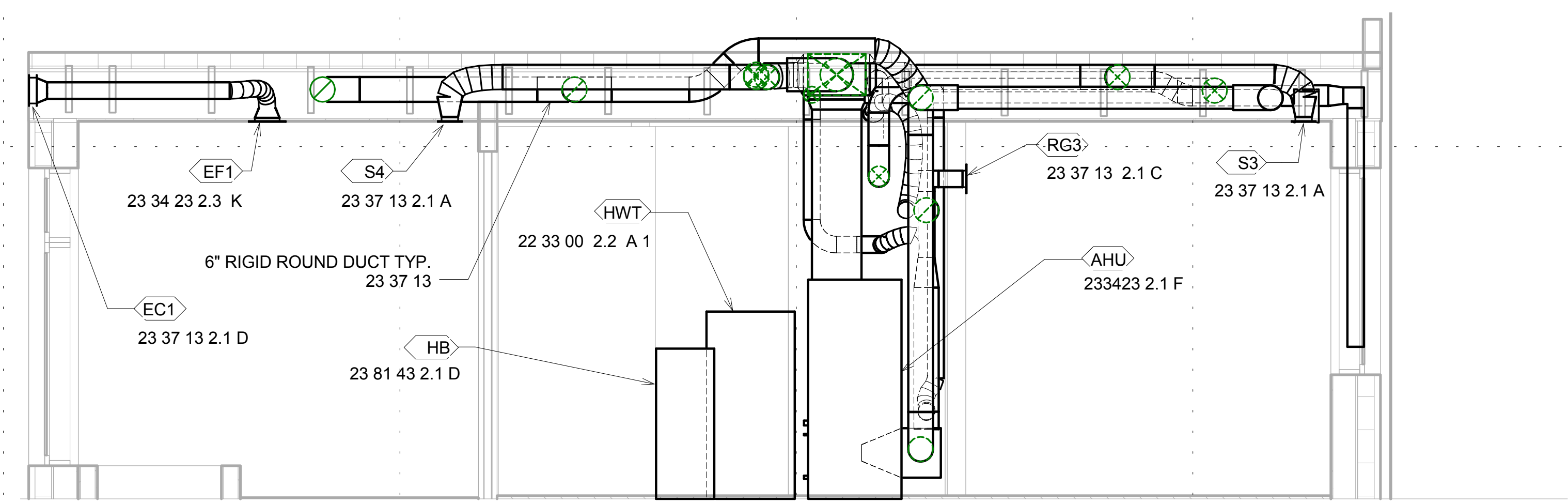
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SHEET TITLE

MECHANICAL CLOSET ELEVATION

M-201



MECHANICAL CLOSET SOUTH ELEVATION  
1/2" = 1'-0"

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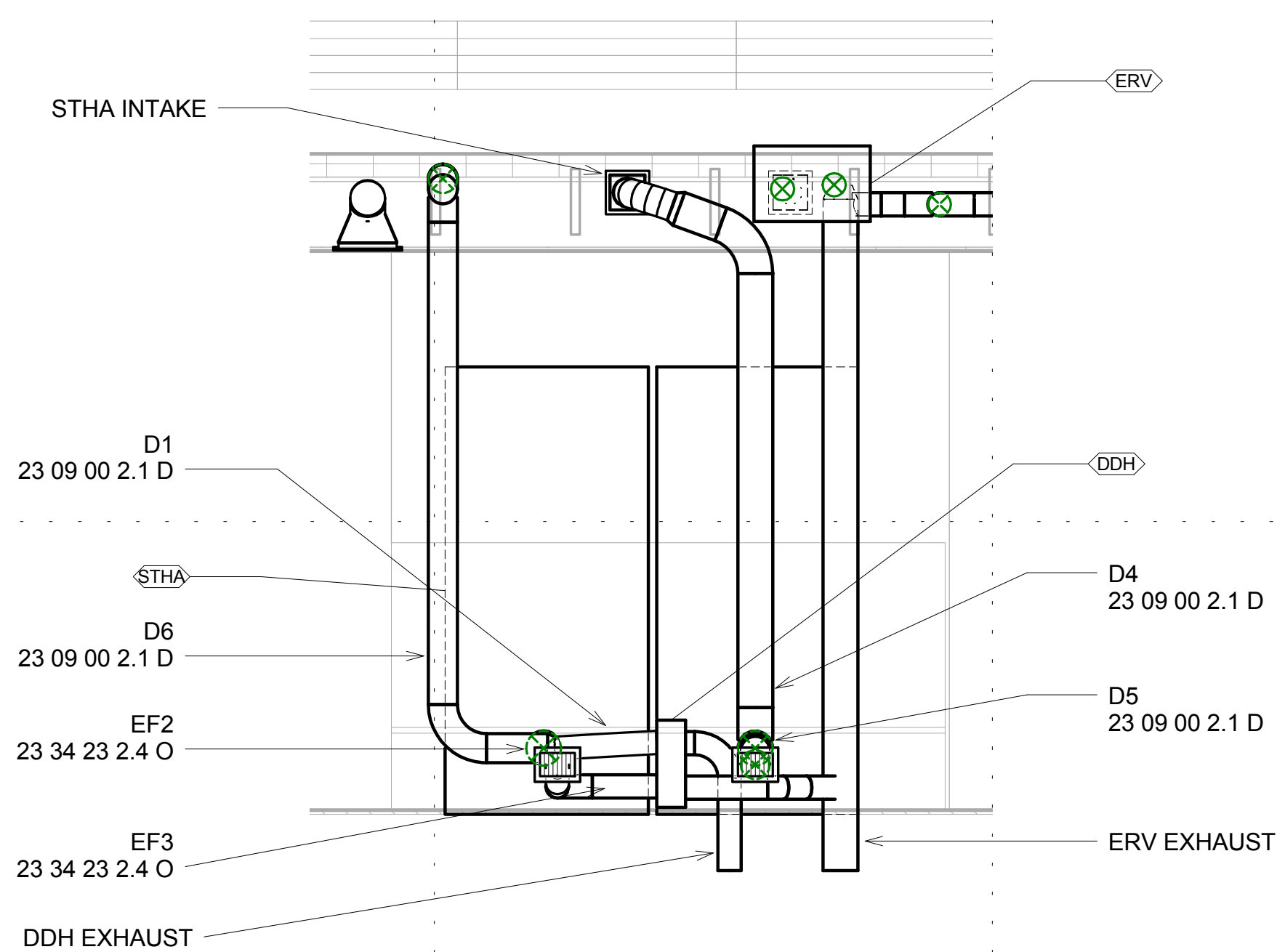
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SHEET TITLE

### SOLAR THERMAL HOT AIR DAMPER SYSTEM

# M-202



SOLAR THERMAL HOT AIR DAMPER  
SYSTEM  
1/2" = 1'-0"



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GENERAL NOTES

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5. FOLLOW SMACNA GUIDELINES FOR DUCTWORK.
5. ALL DUCTS ARE TO BE CONTINUOUSLY INSULATED.

SHEET KEYNOTES

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MARK	DATE	DESCRIPTION

REFERENCE KEYNOTES

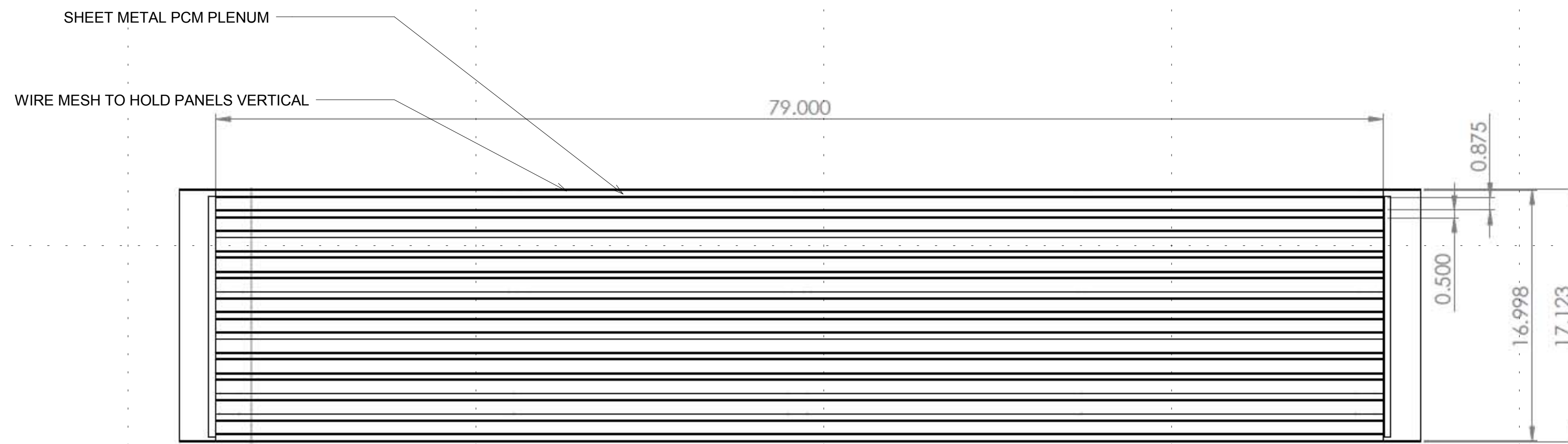
- 23 71 13 1.2 A
- 23 71 13 1.2 B
- 23 31 00 2.1 A
- 23 21 00 1.1 G

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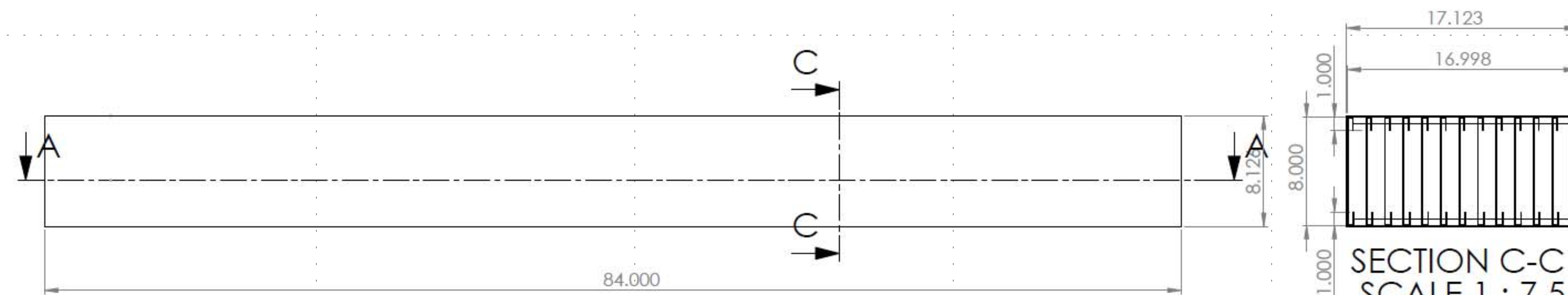
SHEET TITLE

MECHANICAL DETAILS

M-501



SECTION A-A  
SCALE 1 : 7.5

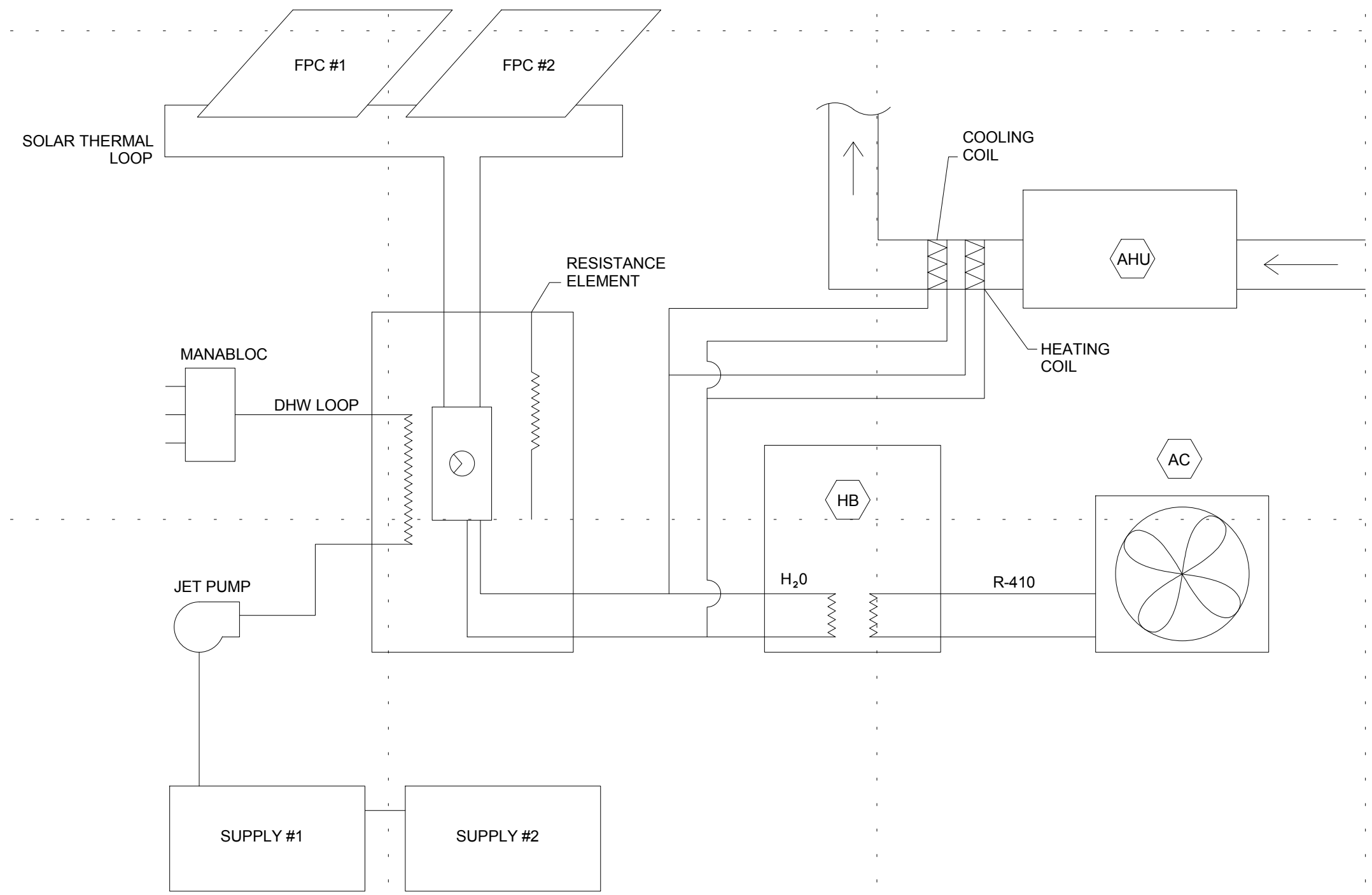


SECTION C-C  
SCALE 1 : 7.5

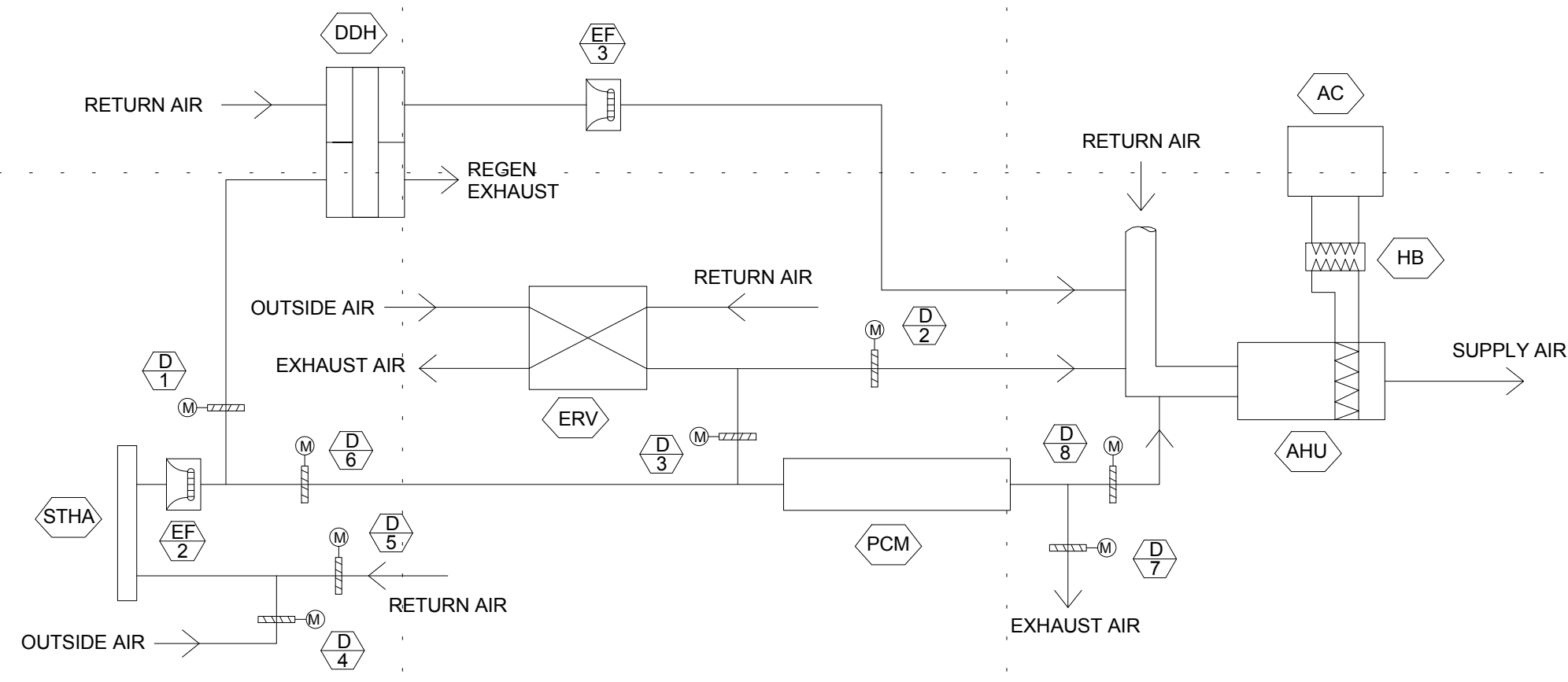
PHASE CHANGE MATERIAL PLENUM  
DETAIL  
①  
3" = 1'-0"



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① HVAC SCHEMATIC  
 NOT TO SCALE



② SOLAR THERMAL HOT AIR SCHEMATIC  
 NOT TO SCALE

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**MECHANICAL SCHEMATICS**

# M-601





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LUMINARY SCHEDULE				
MARK	MANUFACTURER	DESCRIPTION	POWER (WATTS)	QUANTITY
CFL	PRESCOTTEL	COMPACT FLUORESCENT VERTICAL 4-PIN DOWNLIGHT	26	1
LED	ITHONIA	6" LED RECESSED DOWNLIGHT	12	9
LF-1	BARTCO	LINEAR T5 FLUORESCENT FIXTURE	28	8
LF-2	BARTCO	LINEAR T5 FLUORESCENT LOW-PROFILE FIXTURE (DOUBLE)	28	3
LF-3	BARTCO	LINEAR T5 FLUORESCENT LOW-PROFILE FIXTURE (SINGLE)	14	1
LPUCK	EURO LIGHTINGS	LED PUCK LIGHT	1	4
PL	ET2 LIGHTING	LED PENDANT LIGHT	6	1
SCNC	PROGRESS LIGHTING	OUTDOOR LED SCNCE	5	1

- GENERAL SHEET NOTES
- ALL PV SYSTEM WILL BE DESIGNED AND INSTALLED IN FULL COMPLIANCE WITH THE 2008 NATIONAL ELECTRICAL CODE (NEC) AND THE 2009 SD RULES AND REGULATIONS
  - PV MODULES, SOURCE-CIRCUIT COMBINERS, AND UTILITY- INTERACTIVE INVERTERS MUST BE SAFETY CERTIFIED (LISTED) TO THE APPROPRIATE UNDERWRITERS LABORATORIES (UL) STANDARD (UL 1741 FOR INVERTERS AND COMBINERS, UL 1703 FOR PV MODULES) AND MUST BE TESTED AND CERTIFIED BY ONE OF THE FOLLOWING US NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL); UL, CSA, ETL, OR TUV RHEINLAND OF NORTHAMERICA. THE EUROPEAN CE DESIGNATION AND TESTS BY LABORATORIES IN OTHER COUNTRIES ARE NOT ACCEPTABLE (690.4)
  - DC CIRCUITS FROM THE PV MODULES TO THE DC PV DISCONNECT MUST BE IN METAL CONDUITS (RACEWAYS) WHERE INSIDE THE STRUCTURE (690.31(E))
  - ALL PV STRINGS TO USE MANUFACTURED PROVIDED CABLE
  - ALSO SEE ME-603 AND P-602

- SHEET KEYNOTES
- STRAIGHT LINES ARE SWITCH LINES CURVED LINES ARE POWER LINES

REFERENCE KEYNOTES

MARK	DATE	DESCRIPTION
26 50 00 2.3 B		
26 50 00 2.3 F		

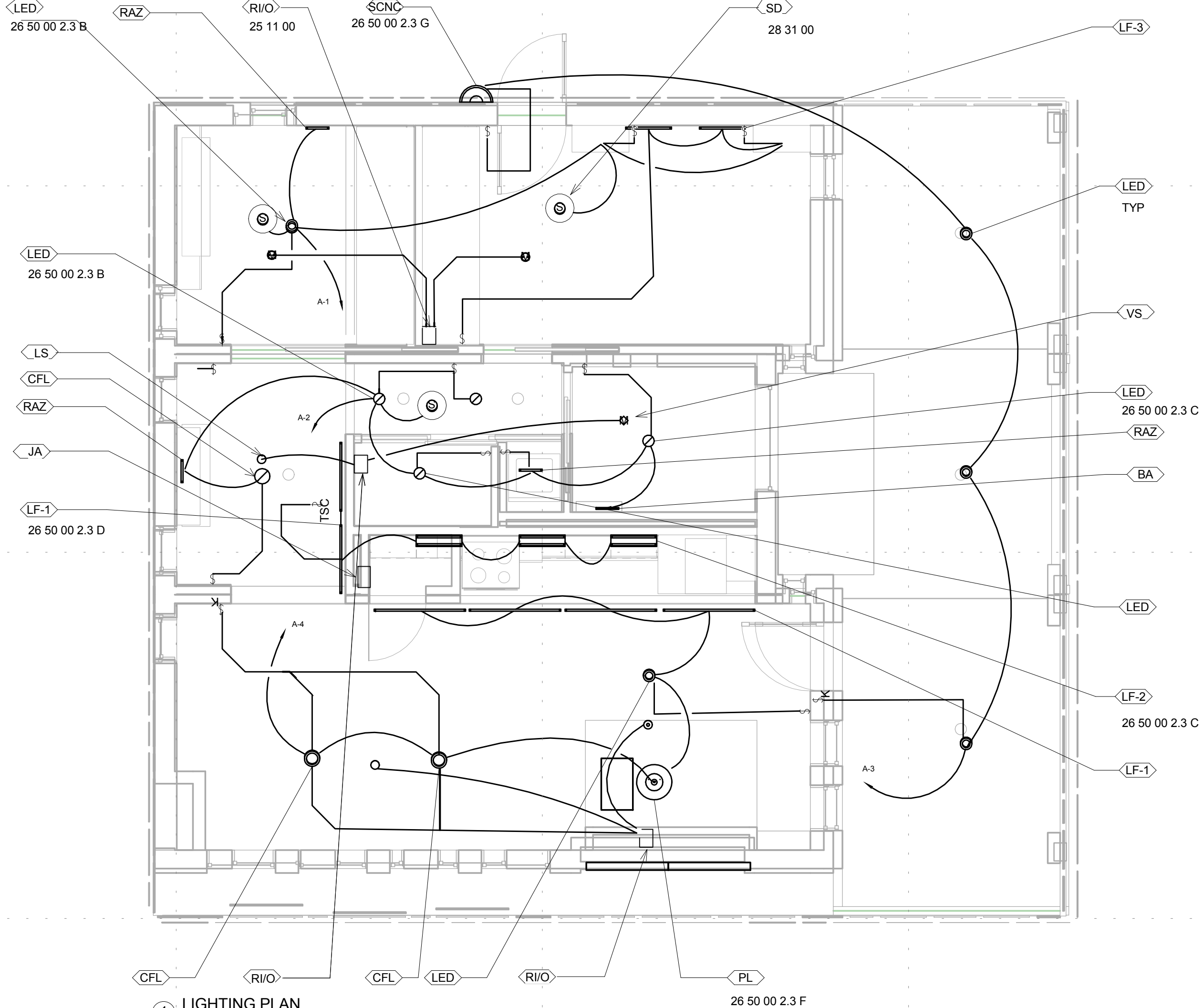
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SHEET TITLE  
**LIGHTING PLAN**

**E-101**



① LIGHTING PLAN  
 1/4" = 1'-0"



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GENERAL SHEET NOTES

1. ALL OUTDOOR RECEPTILES ARE IN A WEATHERPROOF HOUSING (406.8 (B)(1))
2. ALL RECEPTILES ARE TAMPER-RESISTANT(408.11)
3. ALL CIRCUIT BREAKERS FOR OUTLETS ARE ARC FAULT UNLESS NOTED AS BEING GFCI
4. ALSO SEE M-603 AND P-602
5. OUTDOOR AC DISCONNECT IS SERVICE DISCONNECT.
6. TEAM PANEL BOARD AND ORGANISER ENCLOSER IN ELECTRICAL CLOSET ON SOUTHWEST CORNER OF HOUSE.

SHEET KEYNOTES

REFERENCE KEYNOTES

25 11 00  
28 00 00

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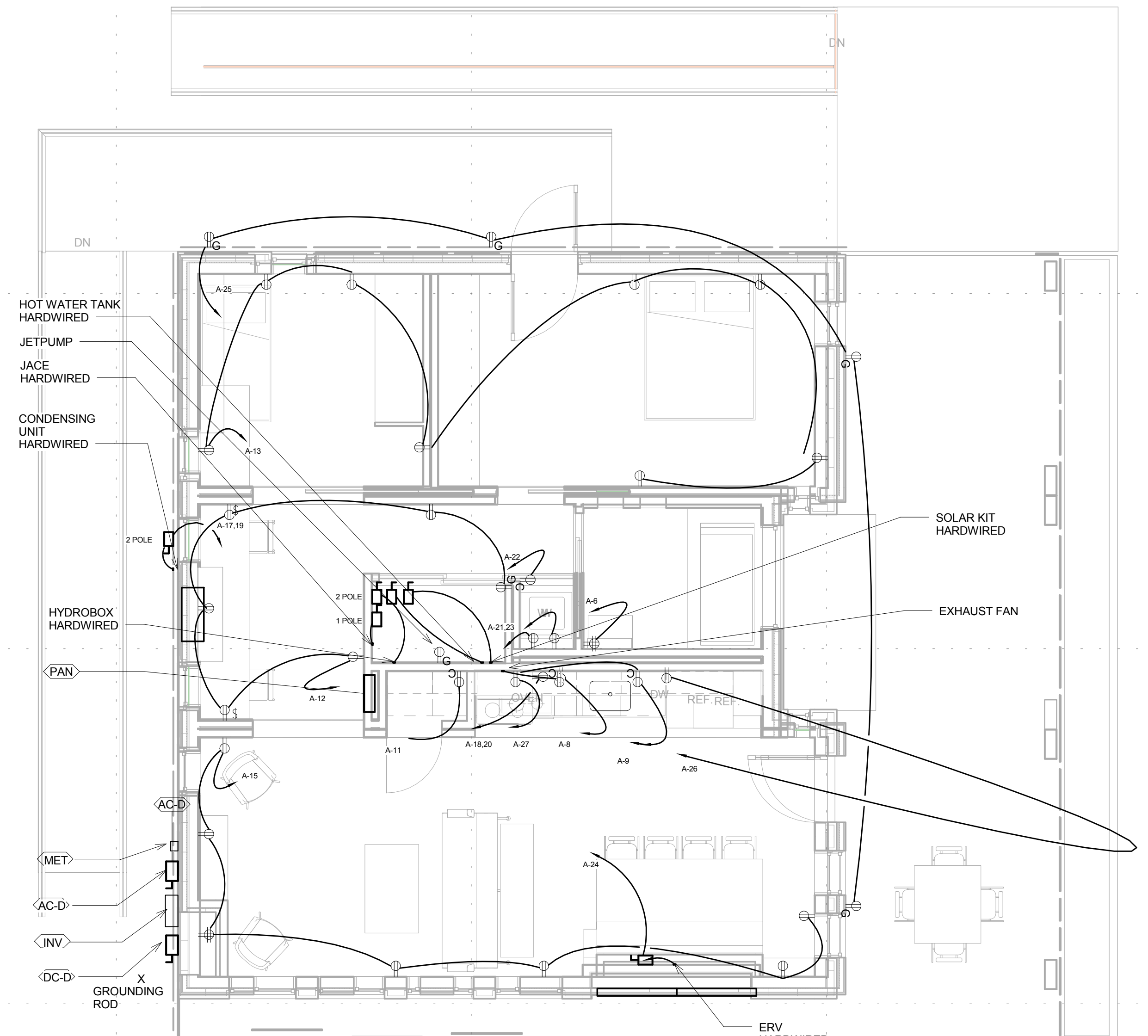


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SHEET TITLE  
**POWER PLAN**

**E-102**



1 ELECTRICAL POWER PLAN  
1/4" = 1'-0"

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GENERAL SHEET NOTES

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3. DC CIRCUITS FROM THE PV MODULES TO THE DC PV DISCONNECT MUST BE IN METAL CONDUITS (RACEWAYS) WHERE INSIDE THE STRUCTURE (690.31 (E))
4. ALL PV STRINGS TO USE MANUFACTURER PROVIDED CABLE

SHEET KEYNOTES

REFERENCE KEYNOTES

26 31 00 3.2  
 26 31 00 3.6  
 26 31 00 2.2 E

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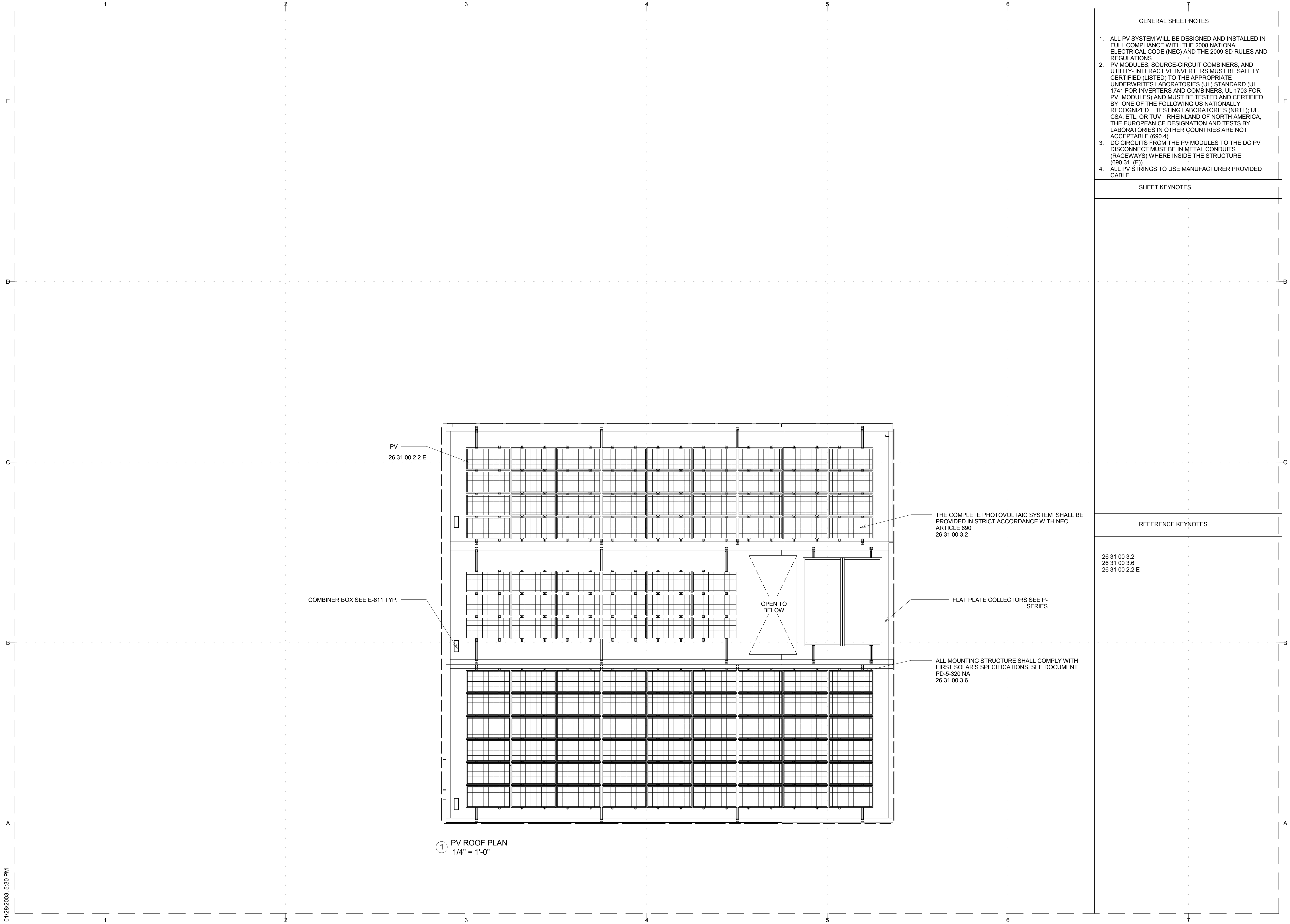
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SHEET TITLE

PHOTOVOLTAIC  
 ROOF PLAN

E-103



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GENERAL SHEET NOTES

SHEET KEYNOTES

- 1.) THE DATALOGGER ENCLOSURE SHALL BE PLACED IN THE PANTRY AREA OF THE CENTRAL MODULE. THIS AREA IS CONVENIENTLY LOCATED CLOSE TO THE KITCHEN. FURTHERMORE, IT CONTAINS THE HOUSE ELECTRICAL BREAKER PANEL AND HOME AUTOMATION SYSTEMS. A RECEPTACLE WILL BE LOCATED WITHIN THE CLOSET FOR USE WITH THE DATALOGGER.
- 2.) THE ORGANIZER ENCLOSURE SHALL BE PLACED IN THE PROVIDED ELECTRICAL CLOSET. THE ELECTRICAL CLOSET IS LOCATED ON THE WEST WALL OF THE SOUTH MODULE.
- 3.) THE TEAM SHALL RUN CONDUIT FOR TWO REDUNDANT NETWORK CABLES BETWEEN THE ORGANIZER ENCLOSURE AND THE DATALOGGER ENCLOSURE. A POWER CABLE WILL ALSO USE THIS ROUTE. A JUNCTION BOX WILL CONNECT THE CABLES AS THEY CROSS BETWEEN MODULES. THIS JUNCTION WILL BE DISASSEMBLED BEFORE SHIPPING OF THE HOUSE AND REASSEMBLED UPON ARRIVAL IN WASHINGTON DC. PULL THROUGH STRING WILL BE SUPPLIED.
- 4.) THE CONDUIT SHALL ALSO HOUSE SENSOR WIRING FROM THE TEAM METER HOUSING TO THE ORGANIZER DATALOGGER. AGAIN PULL THROUGH STRING WILL BE PROVIDED.
- 5.) THE TEAM WILL PROVIDE A TEAM METER HOUSING TO ACCEPT A STANDARD 4-JAW, RINGLESS, ROUND UTILITY-GRADE SOCKET METER FOR USE WITH 240/120 V SERVICE LOCATED ON THE EXTERIOR FACE OF THEIR HOUSE AT 50'-65" ABOVE GRADE OR ACCESSIBLE WALKING SURFACE. ORGANIZERS WILL INSTALL UTILITY METER IN THE TEAM METER HOUSING.
- 6.) TEAM TO PROVIDE AND INSTALL 2/0 COPPER, 4/0 ALUMINUM OR EQUIVALENT CROSS SECTIONAL AREA POWER CABLE FROM THE TEAM PANEL BOARD VIA THE TEAM METER HOUSING TO THE ORGANIZER UTILITY PANEL. ORGANIZERS WILL MAKE FINAL CONNECTION AT ORGANIZER UTILITY PANEL.
- 7.) ORGANIZER PROVIDED WIRED CONVENIENCE NETWORK IN THEIR HOUSE SHALL BE PREPARED TO ACCEPT A SINGLE ETHERNET CABLE ORIGINATING AT THE ORGANIZER ENCLOSURE.

REFERENCE KEYNOTES

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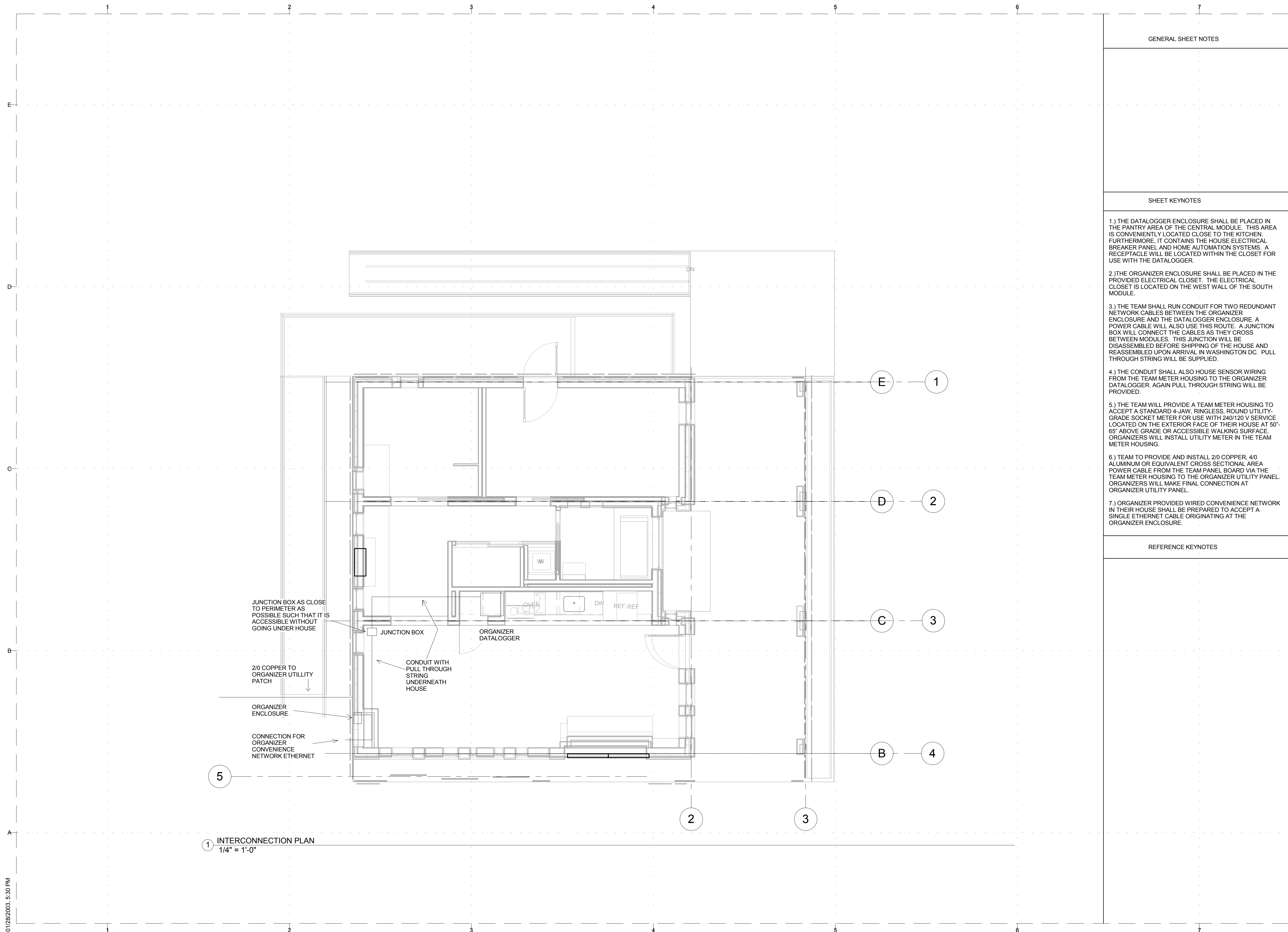
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SHEET TITLE

**INTERCONNECTION  
PLAN DRAFT**

**E-104**



① INTERCONNECTION PLAN  
1/4" = 1'-0"



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 2011 SOLAR DECATHLON TEAM  
 KNOWLTON SCHOOL OF ARCHITECTURE  
 275 W. WOODRUFF AVE.  
 COLUMBUS, OH 43210

GENERAL SHEET NOTES

1. ALL PV SYSTEM WILL BE DESIGNED AND INSTALLED IN FULL COMPLIANCE WITH THE 2008 NATIONAL ELECTRICAL CODE (NEC) AND THE 2009 SD RULES AND REGULATIONS
2. PV MODULES, SOURCE-CIRCUIT COMBINERS, AND UTILITY-INTERACTIVE INVERTERS MUST BE SAFETY CERTIFIED (LISTED) TO THE APPROPRIATE UNDERWRITES LABORATORIES (UL) STANDARD (UL 1741 FOR INVERTERS AND COMBINERS, UL 1703 FOR PV MODULES) AND MUST BE TESTED AND CERTIFIED BY ONE OF THE FOLLOWING US NATIONALLY RECOGNIZED TESTING LABORATORIES (NRTL): UL, CSA, ETL, OR TUV RHEINLAND OF NORTHAMERICA. THE EUROPEAN CE DESIGNATION AND TESTS BY LABORATORIES IN OTHER COUNTRIES ARE NOT ACCEPTABLE (690.4)
3. DC CIRCUITS FROM THE PV MODULES TO THE DC PV DISCONNECT MUST BE IN METAL CONDUITS (RACEWAYS) WHERE INSIDE THE STRUCTURE (690.31(E))
4. ALL PV STRINGS TO USE MANUFACTURED PROVIDED CABLE
5. SUBMITTALS: PRODUCT DATA.
6. ELECTRICAL COMPONENTS DEVICES AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY AND MARKED FOR INTENDED LOCATION AND APPLICATION.

SHEET KEYNOTES

REFERENCE KEYNOTES

- 26 28 16 2.1-A
- 26 31 00 2.3-E
- 26 28 16 2.1-C

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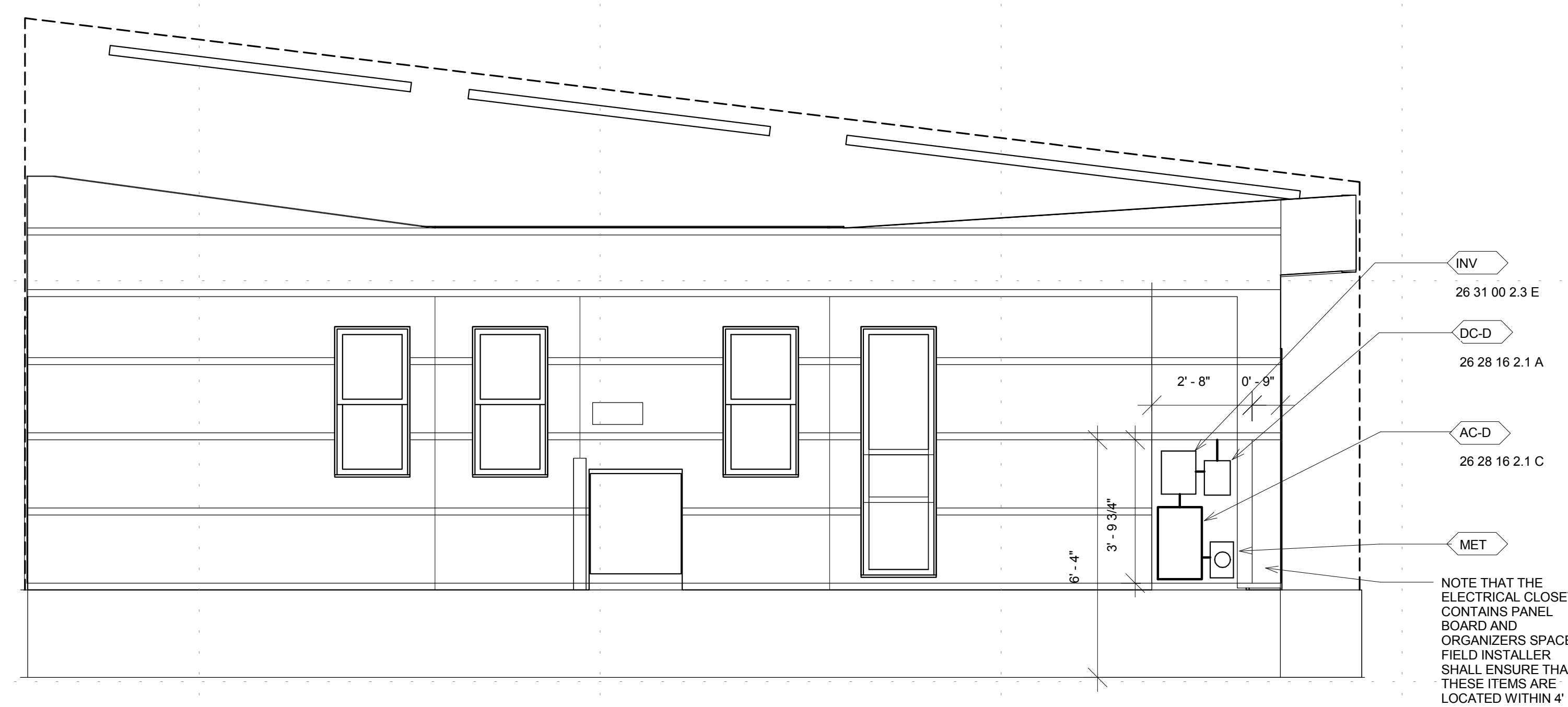
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SHEET TITLE

**ELECTRICAL CLOSET ELEVATION**

**E-201**



1 ELECTRICAL CLOSET ELEVATION  
 3/8" = 1'-0"

NOTE THAT THE ELECTRICAL CLOSET CONTAINS PANEL BOARD AND ORGANIZERS SPACE. FIELD INSTALLER SHALL ENSURE THAT THESE ITEMS ARE LOCATED WITHIN 4' OF EACH OTHER.





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### LIGHTING EQUIPMENT SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	NO.
PL	Z-LITE	173-36W-NC	PENANT LIGHT	1
LED	CAPRI	CRL6K-14-30K	120V LED 6 IN	5
-	CAPRI	CRL6R-WHT	WHITE REFLECTOR	5
CFL	ELCO	EL27H26ICDA	26W 120V PL HSG	8
-	ELCO	ELM-422W	REFL W/ BFFL LENS	8
BA	FORECAST LIGHT	F3506-36U	BATHROOM MIRROR	1
LF-#	LITHONIA	Z COMPACT T5	VARIOUS LENGTH T5	11
RAZ	LITHONIA	RAZ12	RAYZER LED LAMP	3
SCNC	Y LIGHTING	AWL.18	OUTDOOR WALL LIGHT	1





### CONTROLS EQUIPMENT SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	NO.
LS	ECT	MK7-B-CCF-0/10	LIGHT SENSOR	2
SD			SMOKE DETECTOR	3
VS	WATTSTOPPER	DT-305	OCCUPANCY SENSOR	2
R I/O	VYKON	IO-16-485	REMOTE INPUT/OUTPUT	4
-	ACI	A/AN-D-4"-GD	TEMPERATURE SENSOR	4
-	APRILAIRE	10K	THERMOCOUPLE	4
-	ACI	A/CO2-010-D	CO2 SENSOR	1
-	DUROZONE	NSPRD024-4	DAMPER ACTUATOR	8
-	HONEYWELL	C7400A1004	ENTHALPY SENSOR	1
-	GEORGIA CTRL	P/N 236-803	VPV CONVERTER	1

### ELECTRICAL EQUIPMENT SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	NO.
INV	SMA	7000	7000 VA INVERTER	1
DC-D	SQUARE D	DHU361RB	30 AMP VDC DISCONNECT	1
AC-D	EATON	BRN222GD	200 AMP AC DISCONNECT	1
MET	N/A	N/A	METER	1
JA	VYKON	600	JACE	1
PAN	EATON	BR4040B200V	200 AMP PANEL	1
COM	MIDNITE SOLAR	MNPV12	COMBINER BOX	3

#### RECEPTACLES LEGEND

	DUPLEX
	QUADRUPLEX
	GFCI
	COUNTER HEIGHT GFCI 48"

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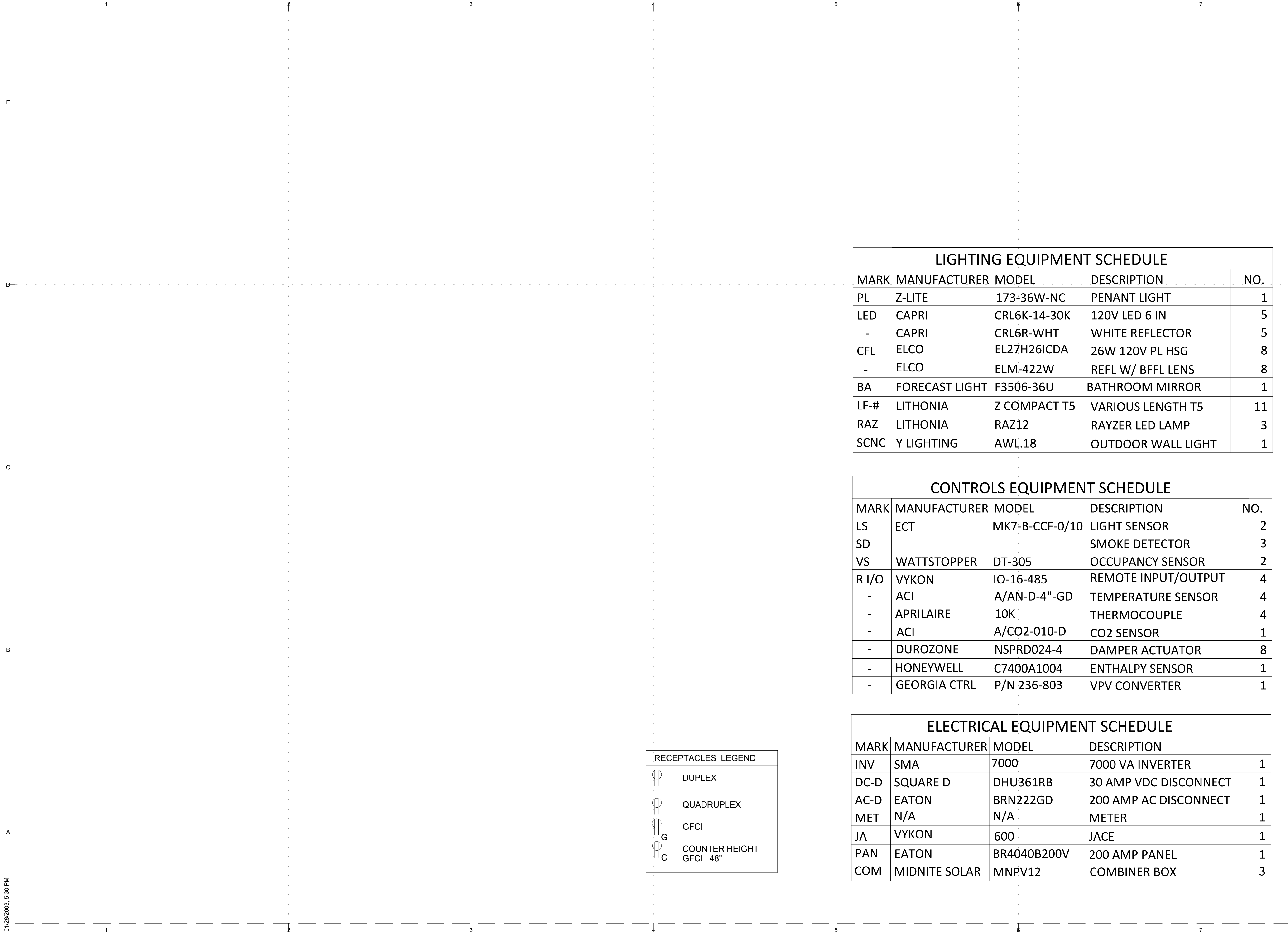


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**ELECTRICAL SCHEDULES**

# E-602



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**GENERAL SHEET NOTES**

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- DC CIRCUITS FROM THE PV MODULES TO THE DC PV DISCONNECT MUST BE IN METAL CONDUITS (RACEWAYS) WHERE INSIDE THE STRUCTURE (690.31(E))
- ALL PV STRINGS TO USE MANUFACTURED PROVIDED CABLE

**SHEET KEYNOTES**

- BACK-FED CIRCUIT BREAKERS ARE INSIDE MAIN PANEL
  - COLOR CODING
    - HOT - ANY COLOR OTHER THAN GREEN OR WHITE/GRAY
    - NEUTRAL - WHITE/GRAY
    - GROUND - GREEN OR BARE
- DC WILL USE BLACK CABLE WITH MARKINGS OF THE COLARS SHOWN BELOW ON ALL TERMINATION POINTS BY NEC 200.6
- UNGROUND CONDUCTOR - ANY COLOR OTHER THAN GREEN OR WHITE/GRAY
  - GROUND CONDUCTOR - WHITE/GRAY
  - EQUIPMENT GROUND - GREEN OR BARE
- ALL WIRING CONDUCTOR MATERIAL IS COPPER
  - "EXTERIOR" & "INTERIOR" CORRELATE TO OUTSIDE OR INSIDE THE HOUSE STRUCTURE, RESPECTIVELY

**D.C. CALCULATIONS**

ALL STRINGS ARE IDENTICAL

A.  
 PV STRING TO COMBINER BOX:  
 (ISC OF MODULES) \* (1.25) \* (1.25)  
 (1.23) \* (1.25) \* (1.25) = 1.92 AMPS

COMBINER BOX TO INVERTER:  
 AMPS FROM PV STRINGS TO COMBINER BOX x  
 STRINGS COMBINED  
 1.92 AMPS x 6 STRINGS = 11.53 AMPS

B.  
 VDI = (AMPS x FEET) / (%VOLT DROP x VOLTAGE)  
 = (11.53 x 25) / (2 x (6 x 96.33))  
 = 0.25

C.  
 PER TABLE 310.16  
 FROM COMBINER BOXES TO DC DISCONNECT  
 90 DEG C, RATED CABLE  
 10 AWG = 40  
 71-80 DEG C CORRECTION FACTOR = .41  
 CORRECTED FACTOR = 16.4 (GREATER THAN 11.53)

FROM DC DISCONNECT TO INVERTER  
 90 DEG. C, RATED CABLE  
 10 AWG = 40  
 3 LINES = 11.53 \* 3 = 34.59  
 41-45 DEG C CORRECTION FACTOR = .87  
 (SHADED AND NOT DIRECTLY OUTSIDE)

CORRECTED FACTOR = 34.8 (GREATER THAN 34.59)

REQUIRED CABLE:  
 12 AWG UF COPPER

REQUIRED INVERTER FUSE:  
 11.53 MAX AMPS SO 12 AMP FUSE

AMPCAPACITY FOR CONDUCTORS AT 25 CELSIUS  
 (SUM OF ALL I<sub>sc</sub> IN PARALLEL) x 1.25 x 1.25  
 (6 x 1.22) x 1.25 x 1.25  
 = 11.43 A

MAX INVERTER AC OUTPUT IS 7000VA TAKEN FROM SPEC SHEET

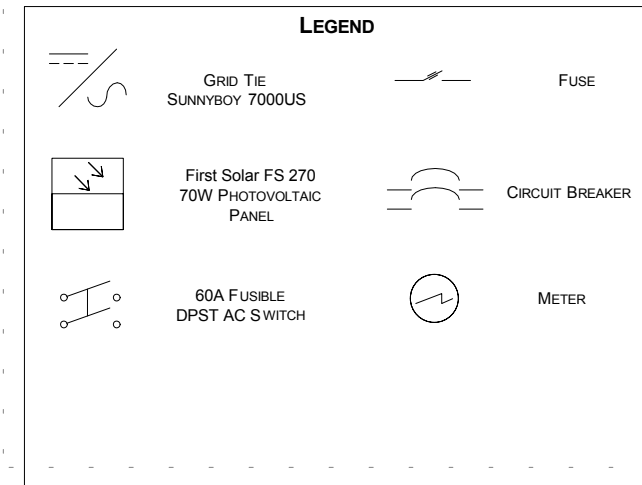
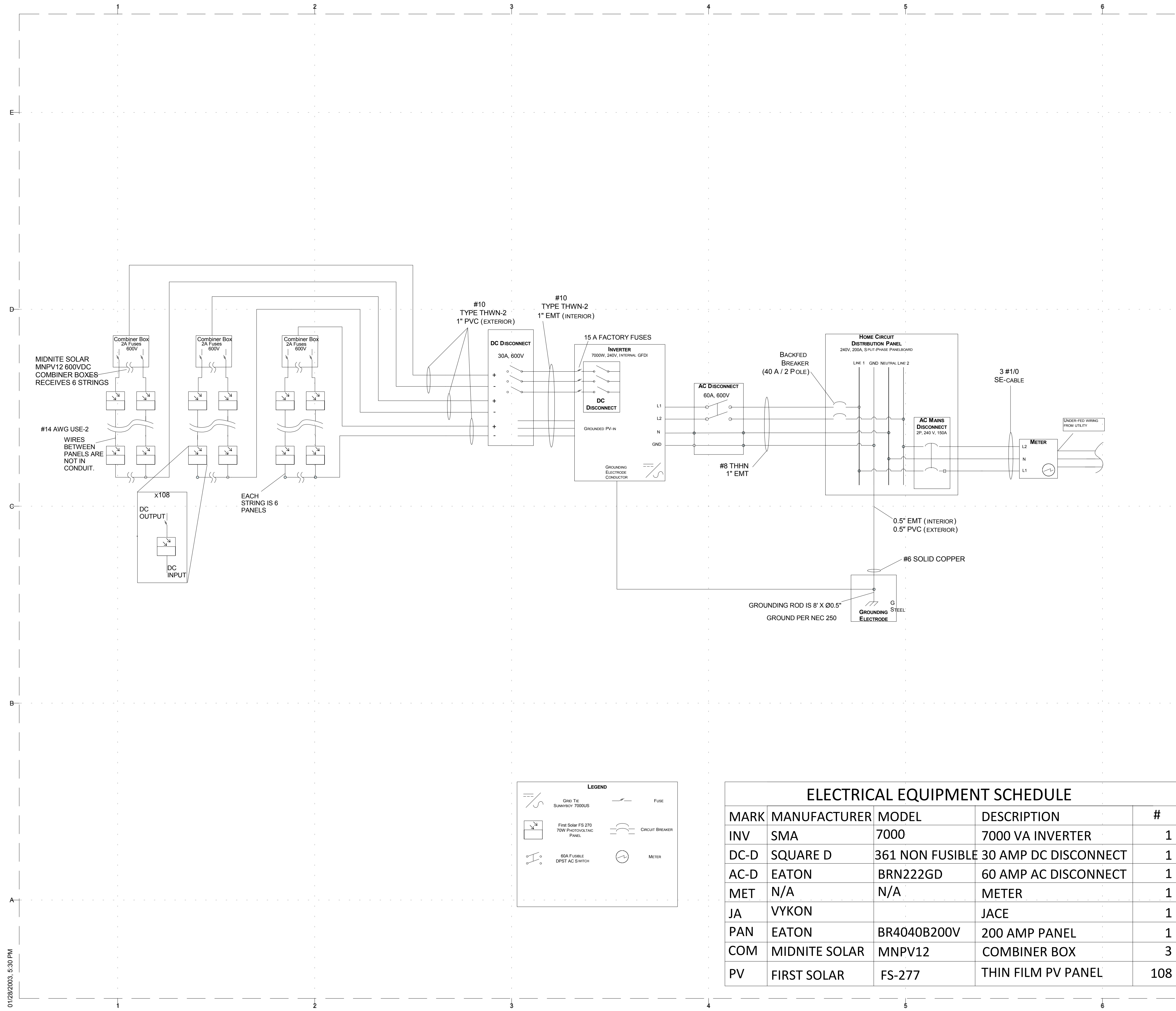
**BUS RATING**

I<sub>sc</sub> x SAFETY FACTOR x 1.2  
 1.22 x 1.25 x 1.2  
 = 1.83 A WHICH IS LESS THAN THE 2A FUSE AT THE BUS

DC OVERCURRENT PROTECTION BETWEEN COMBINER BOXES AND INVERTER  
 (SUM OF ALL I<sub>sc</sub> OF PARRALLE MODULES) x 1.25 SAFETY FACTOR  
 6 x (1.22) x 1.25 x 1.25  
 = 11.44 A 12 A FUSE IS NEEDED

DC OVERCURRENT PROTECTION BETWEEN MODULES AND COMBINER BOXES

I<sub>sc</sub> x 1.56  
 1.22 x 1.56  
 = 1.9A 2A FUSE USED



ELECTRICAL EQUIPMENT SCHEDULE				
MARK	MANUFACTURER	MODEL	DESCRIPTION	#
INV	SMA	7000	7000 VA INVERTER	1
DC-D	SQUARE D	361 NON FUSIBLE	30 AMP DC DISCONNECT	1
AC-D	EATON	BRN222GD	60 AMP AC DISCONNECT	1
MET	N/A	N/A	METER	1
JA	VYKON		JACE	1
PAN	EATON	BR4040B200V	200 AMP PANEL	1
COM	MIDNITE SOLAR	MNPV12	COMBINER BOX	3
PV	FIRST SOLAR	FS-277	THIN FILM PV PANEL	108

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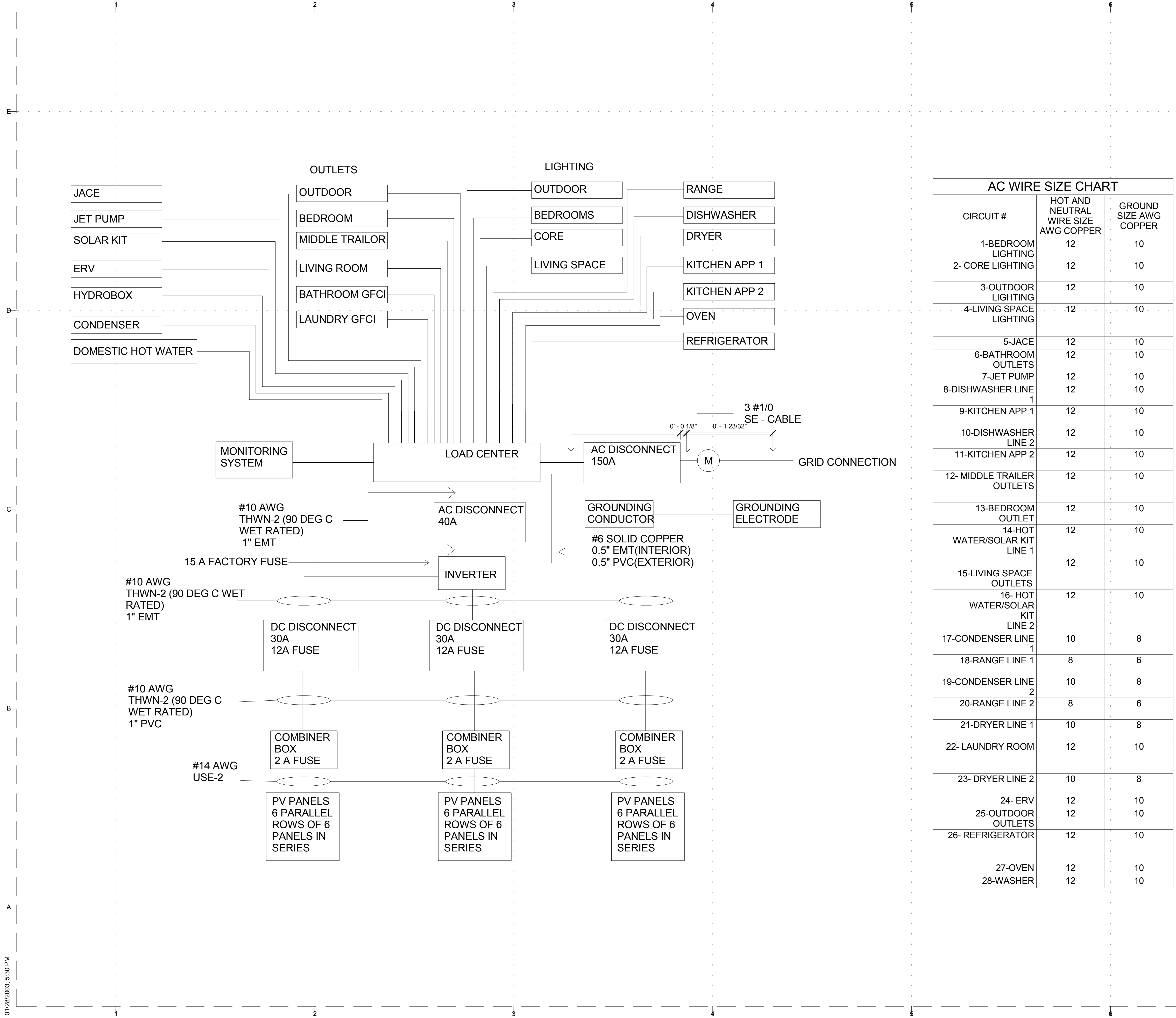
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THREE LINE DIAGRAM

E-611



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**AC WIRE SIZE CHART**

CIRCUIT #	HOT AND NEUTRAL WIRE SIZE AWG COPPER	GROUND SIZE AWG COPPER
1-BEDROOM LIGHTING	12	10
2-CORE LIGHTING	12	10
3-OUTDOOR LIGHTING	12	10
4-LIVING SPACE LIGHTING	12	10
5-JACE	12	10
6-BATHROOM OUTLETS	12	10
7-JET PUMP	12	10
8-DISHWASHER LINE 1	12	10
9-KITCHEN APP 1	12	10
10-DISHWASHER LINE 2	12	10
11-KITCHEN APP 2	12	10
12-MIDDLE TRAILER OUTLETS	12	10
13-BEDROOM OUTLET	12	10
14-HOT WATER/SOLAR KIT LINE 1	12	10
15-LIVING SPACE OUTLETS	12	10
16-HOT WATER/SOLAR KIT LINE 2	12	10
17-CONDENSER LINE 1	10	8
18-RANGE LINE 1	8	6
19-CONDENSER LINE 2	10	8
20-RANGE LINE 2	8	6
21-DRYER LINE 1	10	8
22-LAUNDRY ROOM	12	10
23-DRYER LINE 2	10	8
24-ERV	12	10
25-OUTDOOR OUTLETS	12	10
26-REFRIGERATOR	12	10
27-OVEN	12	10
28-WASHER	12	10

GENERAL SHEET NOTES

SHEET KEYNOTES

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SHEET TITLE  
**ONE LINE DIAGRAM**

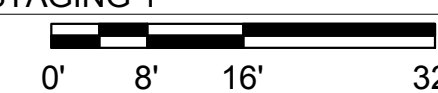
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A1 ARRIVAL AND STAGING 1  
 1/16" = 1'-0"



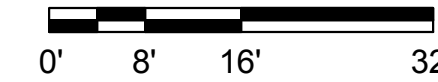
A3 ARRIVAL AND STAGING 2  
 1/16" = 1'-0"



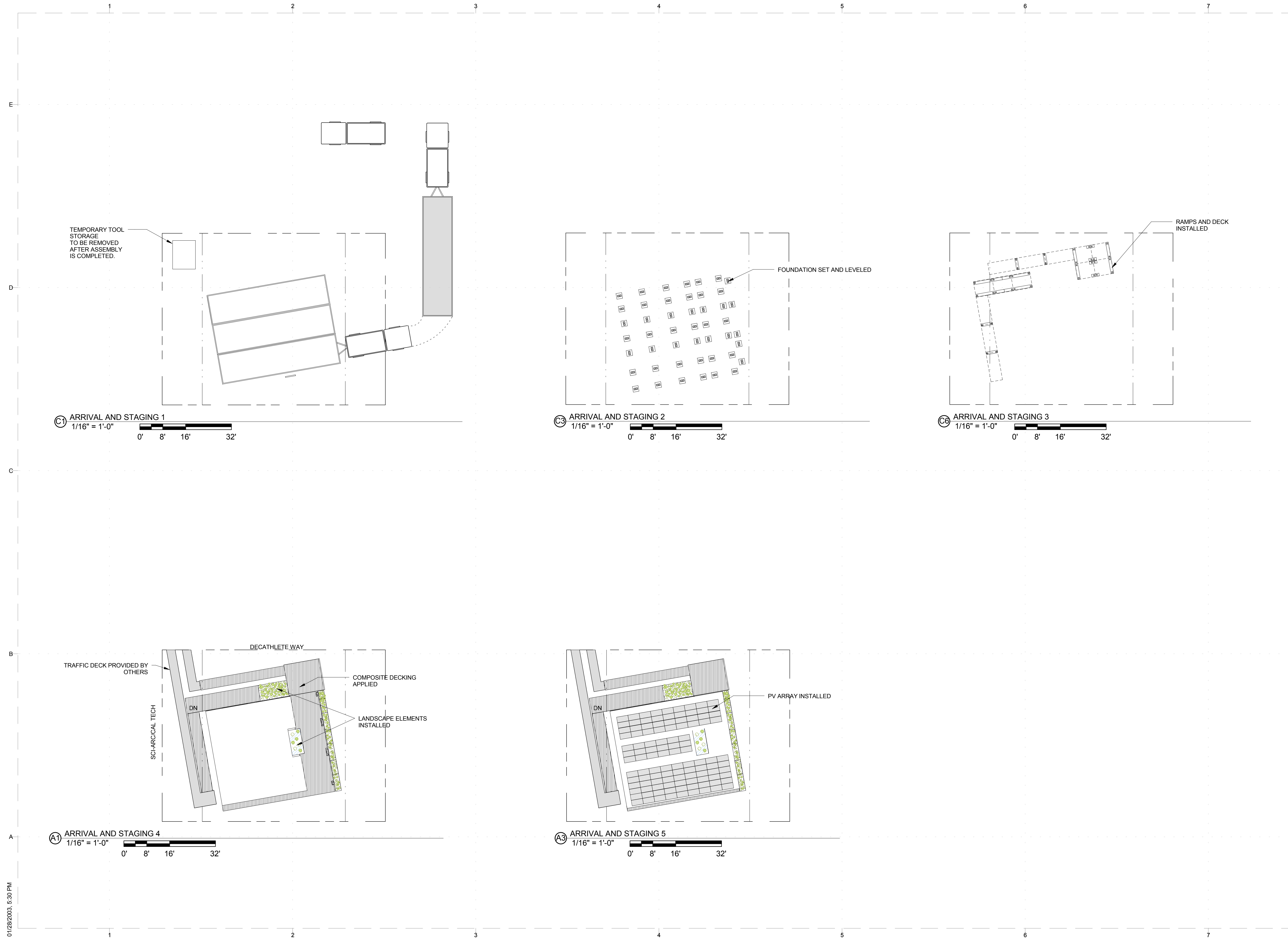
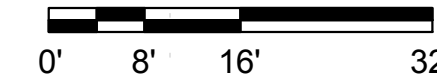
A6 ARRIVAL AND STAGING 3  
 1/16" = 1'-0"



A1 ARRIVAL AND STAGING 4  
 1/16" = 1'-0"



A3 ARRIVAL AND STAGING 5  
 1/16" = 1'-0"



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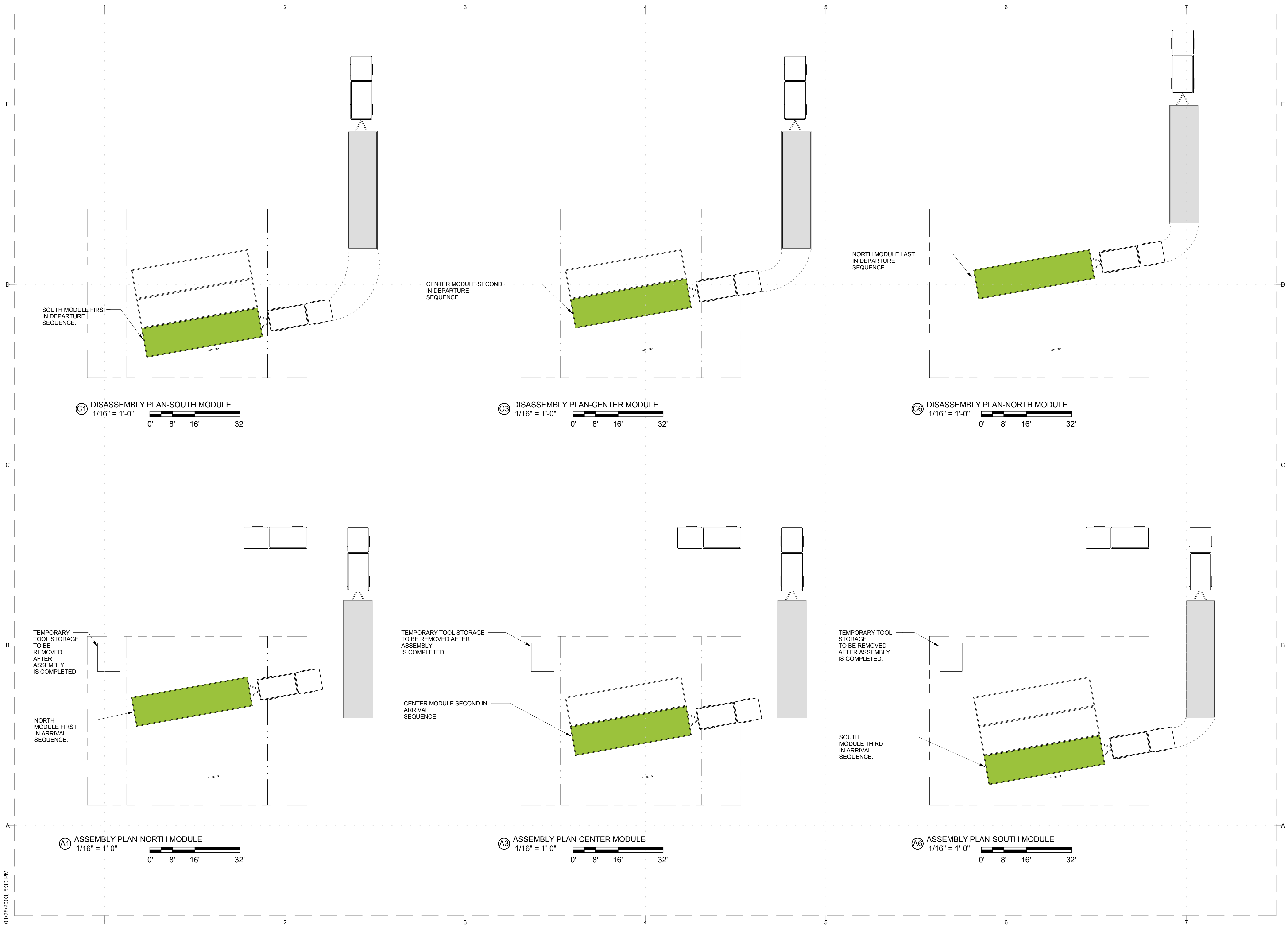
SHEET TITLE  
 ARRIVAL AND STAGING





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**ASSEMBLY AND  
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