





### GENERAL NOTES

- THE LOCATION OF EXISTING UNDERGROUND UTILITIES, SUCH AS WATER MAINS, SEWERS, GAS LINES, ETC. HAS NOT BEEN DETERMINED AND HAS NOT BEEN SHOWN ON THE PLANS. BEFORE CONSTRUCTION, OWNER SHOULD HIRE A LICENSED CIVIL ENGINEER TO DETERMINE LOCATION BASED ON THE BEST AVAILABLE INFORMATION. ALL INFORMATION SHOWN IS GIVEN FOR THE CONVENIENCE OF THE CONTRACTOR. THE OWNER AND THE ENGINEER DO NOT ASSUME RESPONSIBILITY IN THE EVENT THAT DURING CONSTRUCTION, UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED AND THAT THE ACTUAL LOCATION OF THOSE WHICH EXIST MAY BE DIFFERENT FROM THE LOCATION ASSUMED.
- CONTRACTOR SHALL NOTIFY THE OWNER, ENGINEER AND THE LOCAL PRESIDING MUNICIPALITY A MINIMUM OF 48 HOURS IN ADVANCE OF PERFORMING ANY WORK.
- ALL AREAS, ON OR OFF SITE, DISTURBED DURING CONSTRUCTION OPERATIONS AND NOT PART OF THE WORK AS SHOWN HERON SHALL BE RESTORED TO ORIGINAL CONDITION TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER. IT IS INCUMBENT UPON CONTRACTOR TO SHOW THAT DAMAGED AREAS WERE NOT DISTURBED BY CONSTRUCTION OPERATIONS
- THESE DRAWINGS ASSUME THAT THE CONTRACTOR WILL UTILIZE AN ELECTRONIC DRAWING FILE AND STAKE ALL SITE IMPROEVEMNTS USING COORDINATES TIED INTO THE CONTROL POINTS. THE DIMENSIONS INDICATED ON THE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY.
- IN THE CASE OF CONFLICT BETWEEN THESE DRAWINGS, THE FOUNDATION DRAWINGS AND THE ARCHITECTURAL SITE PLAN, THE USER OF THIS INFORMATION SHALL CONTACT THE ENGINEER IMMEDIATELY.
- OWNER TO COORDINATE THE EXACT LOCATIONS OF ALL UTILITY SERVICE LINES WITH PLUMBING DRAWINGS. REFER TO PLUMBING DRAWINGS FOR CONTINUATION OF ALL UTILITIES WITHIN 5 FEET OF BUILDING AREA
- CONTRACTOR SHALL FIELD VERIFY INVERT & LOCATIONS OF EXISTING UTILITY MAINS PRIOR TO INSTALLING ANY ON-SITE UTILITIES OR STRUCTURES.
- SEPARATION OF WATER AND SEWER LINES SHALL BE 10' MINIMUM HORIZONTALLY. IF 10' IS NOT POSSIBLE, SEWER SHALL BE OF WATER MAIN QUALITY MATERIAL AND CONSTRUCTION.
- CLEAN OUT ALL EXISTING AND PROPOSED STORM INLETS AND CATCH BASISNS AT THE COMPLETION OF CONSTRUCTION
- THE "STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN PURDUE" CURRENT EDITION SHALL GOVERN WORK WHERE APPLICABLE.

### ABBREVIATIONS

& AND	OC ON CENTER
@ AT	OD OUTSIDE DIAMETER
CL CENTER LINE	OH OPPOSITE HAND
D DIAMETER	OPNG OPENING
# POUND OR NUMBER	OPP OPPOSITE
ADJ ADJACENT	PL PLATE
AFF ABOVE FINISH FLOOR	PLWD PLYWOOD
AGR AGGREGATE	PLUM PLUMBING
AL ALUMINUM	PR PAIR
APPROX APPROXIMATE	PT PAINT
ARCHARCHITECTURAL	QTY QUANTITY
B/ BOTTOM OF	RAD RADIUS
BD BOARD	RCP REFLECTED CEILING PLAN
BLDG BUILDING	REINF REINFORCED
BLOG BLOCKING	REQ'D REQUIRED
BLK BLOCK	REV REVERSE
BM BEAM	RM ROOM
CER CERAMIC	RO ROUGH OPENING
CJ CONTROL JOING	S SOUTH
CLG CEILING	SCHED SCHEDULE
CL CLOSET	SECT SECTION
CLR CLEAR	SHT SHEET
COL COLUMN	SIM SIMILAR
CONC CONCRETE	SPEC SPECIFICATION
CONCR CONSTRUCTION	SQ SQUARE
CONT CONTINUOUS	SS STAINLESS STEEL
CONTR CONTRACTOR	ST STAIN
CT CERAMIC TILE	STD STANDARD
CTR CENTER	STL STEEL
DBL DOUBLE	SUSP SUSPENDED
DET DETAIL	SYM SYMMETRICAL
DIA DIAMETER	T/ TOP OF
DIM DIMENSION	THK THICK
DN DOWN	THSH THRESHOLD
DO DOOR OPENING	TYP TYPICAL
DR DOOR	UNO UNLESS NOTED OTHERWISE
DS DOWNSPOUT	VERT VERTICAL
DWG DRAWING	V.I.F. VERIFY IN FIELD
E EAST	VOL VOLUME
EA EACH	W WEST
ELEC ELECTRICAL	WC WATER CLOSET
ELEV ELEVATION	WD WOOD
E.P. ELECTRICAL PANEL	WP WATER PROOF
EP EPOXY PAINT	WT WEIGHT
EQ EQUAL	W/ WITH
EQUIP EQUIPMENT	W/O WITH OUT
EXP EXPOSED	YD YARD
EXT EXTERIOR	
FD FLOOR DRAIN	
FDN FOUNDATION	
FF FINISH FLOOR	
FE FIRE EXTINGUISHER	
FIN FINISH	
FLR FLOOR	
FOS FACE OF STUD	
FT FOOT OR FEET	
FTG FOOTING	
GA GAUGE	
GALV GALVANIZED	
GB GYPSUM BOARD	
GL GLASS	
GND GROUND	
GR GRADE	
GYP GYPSUM	
HC HANDICAPPED	
HDWR HARDWARE	
HM HOLLOW METAL	
HORIZ HORIZONTAL	
HP HIGHPOINT	
HR HOUR	
HT HEIGHT	
ID INSIDE DIAMETER	
IN INCH	
INSUL INSULATION	
INT INTERIOR	
INV INVERT	
KD KNOCK DOWN	
KIT KITCHEN	
KO KNOCKOUT	
KW KILOWATT	
KWH KILOWATT HOUR	
LBR LUMBER	
LG LONG	
LL LIVE LOAD	
LP LOW POINT	
LT LIGHT	
MATL MATERIAL	
MAX MAXIMUM	
MECH MECHANICAL	
MTL METAL	
MFR MANUFACTURER	
MIN MINIMUM	
MISC MISCELLANEOUS	
N NORTH	
NIC NOT IN CONTRACT	
NO NUMBER	
NOM NOMINAL	
NTS NOT TO SCALE	

### SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DRAWING SCALE
	GRID LINES
	NORTH ARROW
	SECTION VIEW TAG SECTION IDENTIFICATION SHEET PLACEMENT OF SECTION
	SHEET KEYNOTE
	WINDOW TAG
	DOOR TAG
	REFERENCE KEYNOTE TAG WITH REFERENCE NUMBER
	ELEVATION TAG ELEVATION IDENTIFICATION SHEET PLACEMENT OF ELEVATION
	ROOM IDENTIFICATION TAG ROOM IDENTIFICATION ROOM NUMBER
	DRAWING BLOCK TITLE VIEW TITLE TITLE SCALE
	ELEVATION MARKER
	DETAIL VIEW TAG



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11/23/2010	DOE REVIEW
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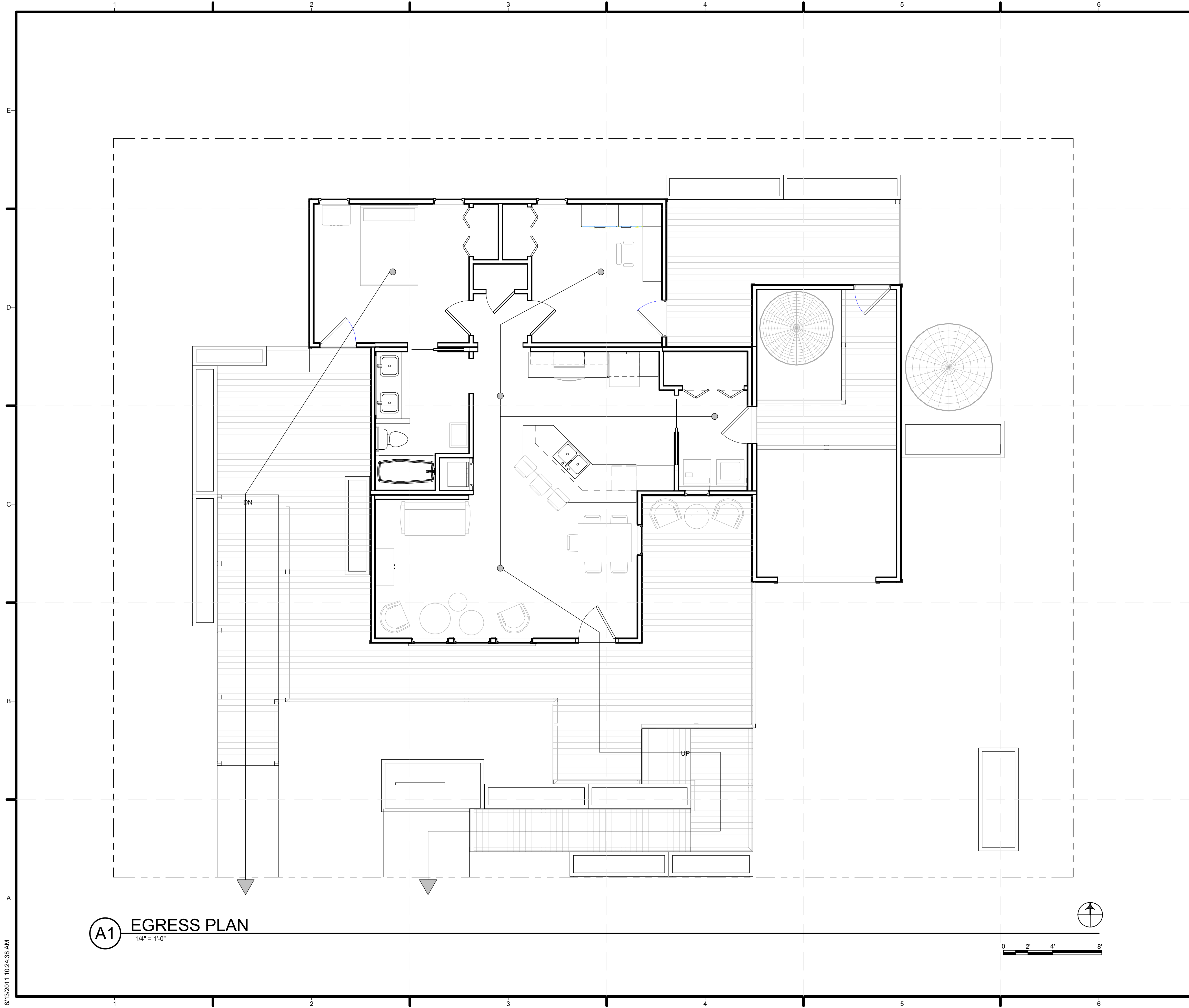
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SHEET TITLE  
**GENERAL NOTES AND SYMBOLS**

# G-002





**A1** EGRESS PLAN  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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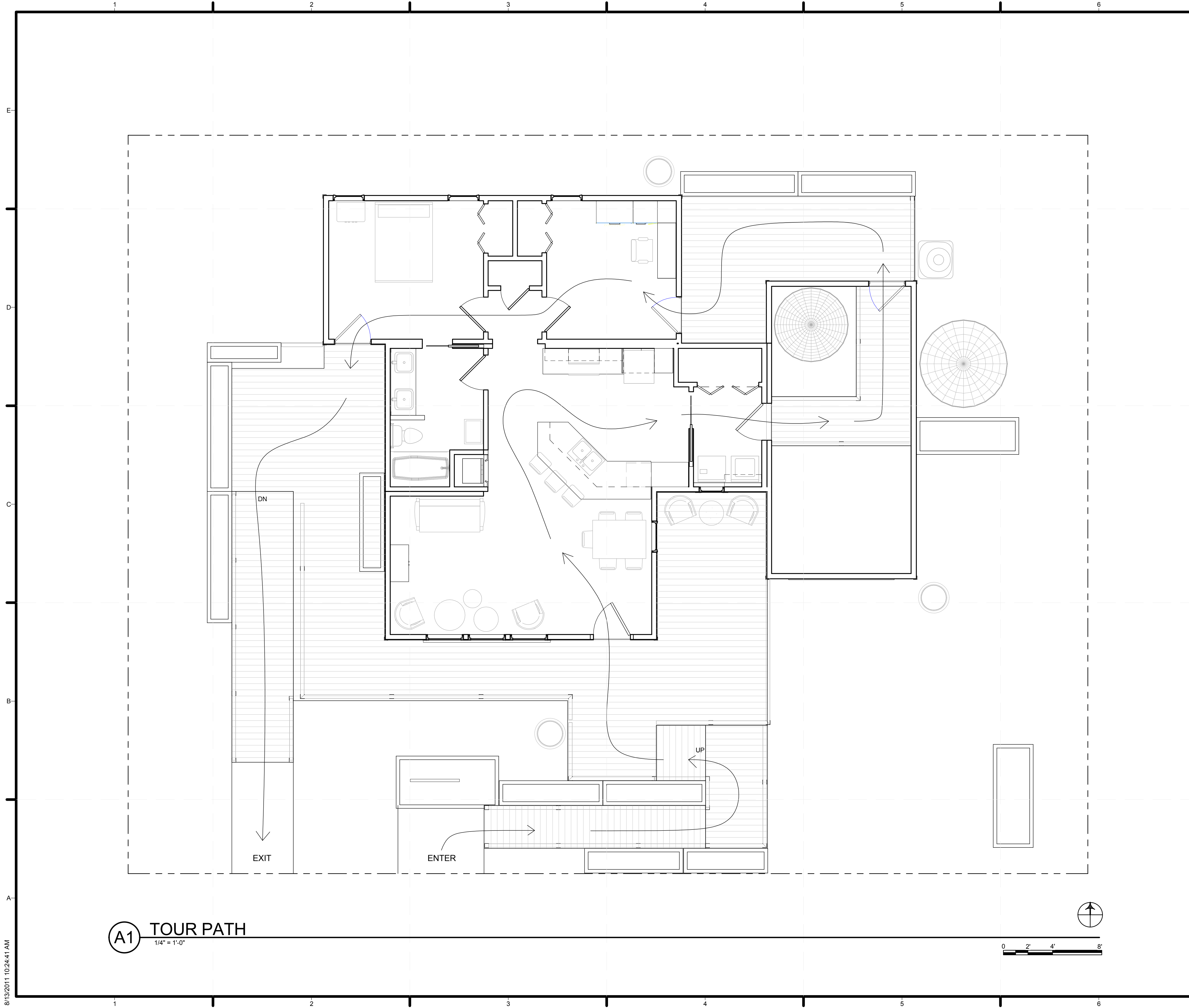
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SHEET TITLE  
**EGRESS PLAN**

**G-102**

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**GENERAL SHEET NOTES**

1. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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**ADA TOUR ROUTE COMPLIANCE PLAN**

**G-103**

**(A1) TOUR PATH**  
 1/4" = 1'-0"

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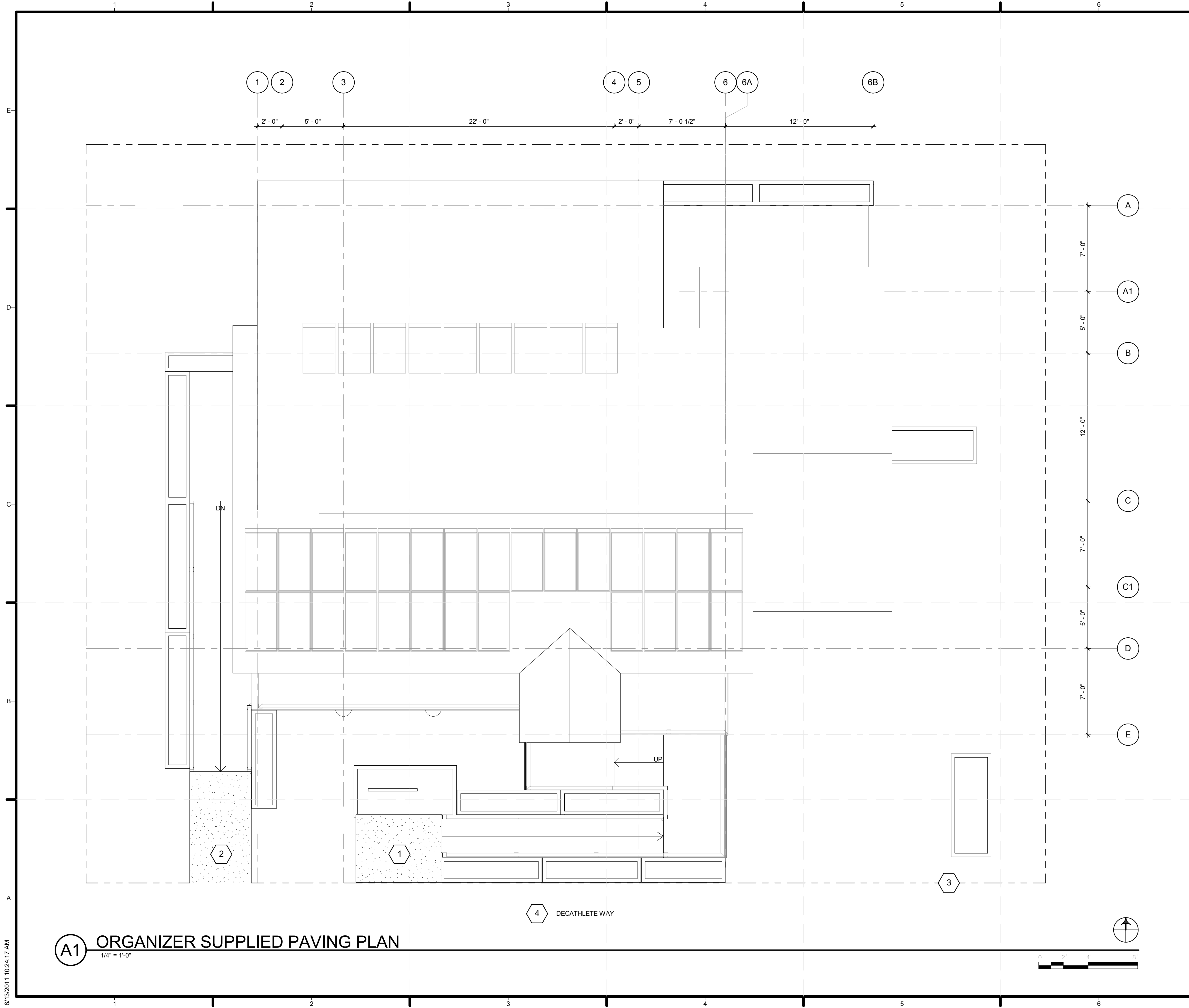












**GENERAL SHEET NOTES**

1. ORGANIZER TO PROVIDE TEMPORARY WALKWAY AS SHOWN AND SHALL HAVE ADDITIONAL SURFACES AVAILABLE TO ACCOMMODATE VARIATIONS IN SITE CONDITIONS.
2. DIMENSIONS SHOWN ASSUME FLAT SITE CONDITIONS, WITH A 1:25 SLOPED WALKWAY. SITE GRADE CAN VARY UP TO 5" BEFORE ADDITIONAL LENGTH MUST BE ADDED. ORGANIZER SHALL MAINTAIN ENOUGH PROTECTIVE WALKWAY ON-HAND TO ACCOMMODATE UP TO AN 18" CHANGE IN GRADE.
3. WALKWAY TO BE CONSTRUCTED TO MEET ANSI 117.1 STANDARDS AND SHALL REMAIN ACCESSIBLE THROUGHOUT ALL PUBLIC TOURS AND OPENINGS. WIDTH OF WALKWAY TO BE DETERMINED BY SITE ORGANIZERS AND SHALL MEET ADA AND NATIONAL PARK SERVICE REQUIREMENTS AT ALL TIMES.
4. TOTAL PRESSURE ON SOIL WILL NOT EXCEED 1500 PSF. AT ANY POINT OF GROUND CONTACT. SEE PROJECT MANUAL FOR STRUCTURAL CALCULATIONS.
5. FOUNDATIONS TO BE LOCATED TO ACCEPT HOME AS REQUIRED. DIMENSIONS SHOWN HERE ARE FOR REFERENCE ONLY. CONTRACTOR TO VERIFY CONDITIONS OF PRE-CONSTRUCTED ELEMENTS AND ADJUST ACCORDINGLY.
6. THIS DRAWING SHOWS ALL POTENTIAL GROUND SURFACE CONTACT AND IS NOT MEANT TO DISPLAY ORDER OF CONSTRUCTION.
7. BUILDING HAS SUFFICIENT WEIGHT AND DESIGN TO RESIST OVERTURNING AND DOES NOT REQUIRE ANY GROUND PENETRATIONS FOR TIE DOWNS. SEE STRUCTURAL CALCULATIONS IN PROJECT MANUAL.
8. ONLY GROUND PENETRATIONS TO BE GROUNDING LIGHTING ROD AND SHALL BE INSTALLED PER MANUF. SPECIFICATIONS. LOCATION TO BE COORDINATED WITH EVENT ORGANIZERS.
9. OWNER SHALL REPAIR AND/OR REPLACE GRASS AFTER REMOVAL OF HOUSE.
10. SITE TO BE AND SHALL REMAIN ADA COMPLIANT AT ALL TIMES ONCE COMPLETE.
11. ALL EXISTING UTILITIES, FIXTURES, & PROPERTY TO REMAIN WITHOUT MODIFICATION.

**REFERENCE KEYNOTES**



**SHEET KEYNOTES**

- 1 ENTRY FROM DECATHLETE WAY PATHWAY
- 2 EXIT TO DECATHLETE WAY PATHWAY
- 3 SOLAR ENVELOPE
- 4 DECATHLETE WAY



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SHEET TITLE  
**ORGANIZER SUPPLIED  
 PAVING PLAN**


**C-102**

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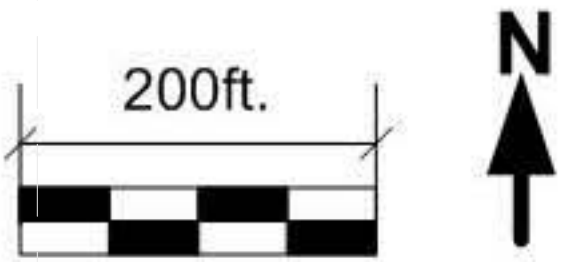
- Notes:
- 40 ft wide Decathlete Way
  - 24 ft wide between house lots on the non-Decathlete Way side
  - 5 ft between house lots in the east-west direction
  - Yellow path is for both construction vehicles and pedestrians
  - Direction arrows show one way construction vehicle traffic
  - Not shown are office trailers, all tents, all pedestrian paths, restrooms, dumpsters, medical, nighttime lighting and electrical & IT connection points.
  - Baseball infields cannot be used



Assembly/Disassembly  
14 March 2011  
Revision

Solar Decathlon 2011  
West Potomac Park  
Washington, DC

200ft.



### GENERAL SHEET NOTES

1. TOTAL PRESSURE ON SOIL WILL NOT EXCEED 1500 PSF. AT ANY POINT OF GROUND CONTACT. SEE PROJECT MANUAL FOR STRUCTURAL CALCULATIONS.
2. BUILDING HAS SUFFICIENT WEIGHT AND DESIGN TO RESIST OVERTURNING AND DOES NOT REQUIRE ANY GROUND PENETRATIONS FOR TIE DOWNS. SEE STRUCTURAL CALCULATIONS IN PROJECT MANUAL.
3. ONLY GROUND PENETRATION TO BE GROUNDING LIGHTING ROD AND SHALL BE INSTALLED PER MANUF. SPECIFICATIONS. LOCATION TO BE COORDINATED WITH EVENT ORGANIZERS.
4. SITE TO BE AND SHALL REMAIN ADA COMPLIANT AT ALL TIMES ONCE COMPLETE.
5. ALL EXISTING UTILITIES, FIXTURES, & PROPERTY TO REMAIN WITHOUT MODIFICATION.
6. ALL CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF ENERGY SOLAR DECATHLON 2011 BUILDING CODE AS WELL AS THE CODE OF THE LOCAL GOVERNMENT HAVING JURISDICTION.
7. UPON COMPETITION OF WORK, CONTRACTOR TO REPAIR SURROUNDING AREAS TO PRIOR CONDITION. ANY DAMAGED PUBLIC FACILITIES MUST BE REPLACED TO THE SATISFACTION OF THE CITY INSPECTOR.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR FINE GRADING AND POSITIVE SURFACE DRAINAGE IN ALL LANDSCAPE AREAS.
9. CONTRACTOR SHALL REMOVE FROM THE SITE AND LEGALLY DISPOSE OF ALL DEBRIS AND UNSUITABLE MATERIAL GENERATED BY OPERATIONS.
10. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL REQUIRED PERMITS FROM THE RESPONSIBLE JURISDICTIONS PRIOR TO CONSTRUCTION, INCLUDING BUT NOT LIMITED TO, GRADING PERMITS, TRANSPORTATION PERMITS, BUILDING PERMITS, FIRE HYDRANT PERMITS, AND TREE REMOVAL PERMITS.
11. NO GREYWATER SHALL BE USED FOR IRRIGATION OF LANDSCAPING ELEMENTS. ALL WATER USED FOR IRRIGATION TO BE OBTAINED FROM RAINWATER OR WATER DELIVERED TO THE INHOME PRIOR TO START OF COMPETITION.

### REFERENCE KEYNOTES

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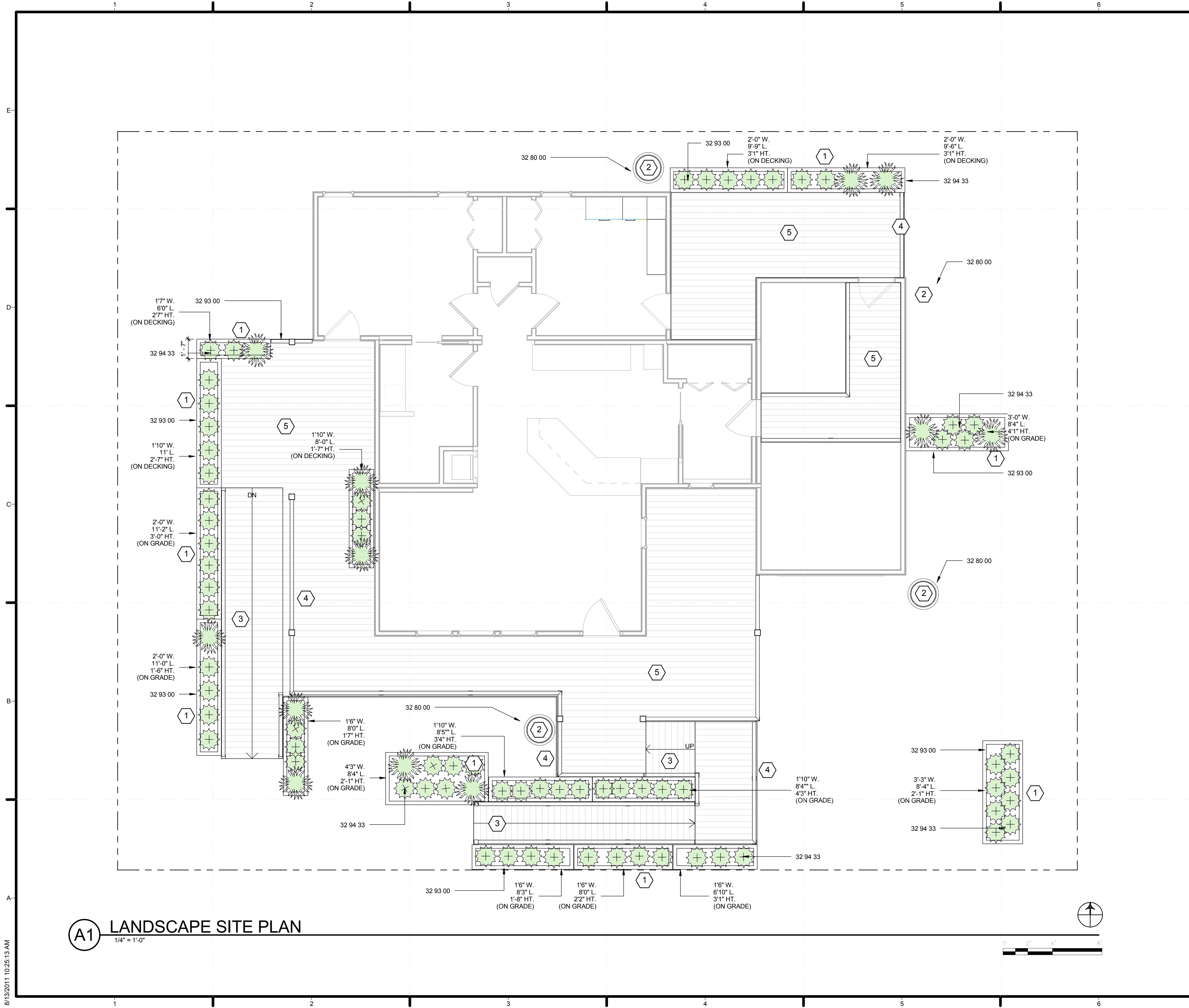
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SHEET TITLE  
 SITE LOCATION

C-103





**(A1) LANDSCAPE SITE PLAN**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

1. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY.
2. GENERAL NOTES SHALL APPLY TO ALL WORK SHOWN.
3. ALL PLANTING CONTAINERS WILL BE PLUGGED TO CONTAIN ALL LIQUIDS AT ANY POINT DURING THE EVENT.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING THE NECESSARY EQUIPMENT TO PROVIDE A COMPLETE AND APPROVED LANDSCAPE PLAN.
5. ALL FINAL PLANT PLACING PER LANDSCAPE DESIGNER.
6. ALL FINAL EXTERIOR STAIN/PAIN COLORS PER LANDSCAPE DESIGNER.
7. ALL CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF ENERGY SOLAR DECATHLON 2011 BUILDING CODE AS WELL AS THE CODE OF THE LOCAL GOVERNMENT HAVING JURISDICTION.
8. RAIN BARRELS SHALL NOT BE EMPTIED ON LOT.
9. RAIN COLLECTION BARRELS SHALL BE DRAINED BY THE NORMAL WATER REMOVAL PROCEDURES. SIX STUDENTS SHALL QUICKLY AND PROMPTLY MOVE THE WATER REMOVAL HOSE TO AND FROM ALL WATER REMOVAL LOCATIONS.

**REFERENCE KEYNOTES**

- DIV 32 - LANDSCAPING
- 32 80 00 57 GALLON RAIN BARREL
- 32 93 00 PLANTS
- 32 94 33 PLANTERS

**SHEET KEYNOTES**

- 1 MOVABLE PLANTER BOX LOCATIONS
- 2 57 GALLON RAIN COLLECTION BARREL
- 3 ENTRY/EXIT WOOD RAMPS
- 4 36" HEIGHT WOOD RAILING
- 5 PRESSURE TREATED WOOD DECKING



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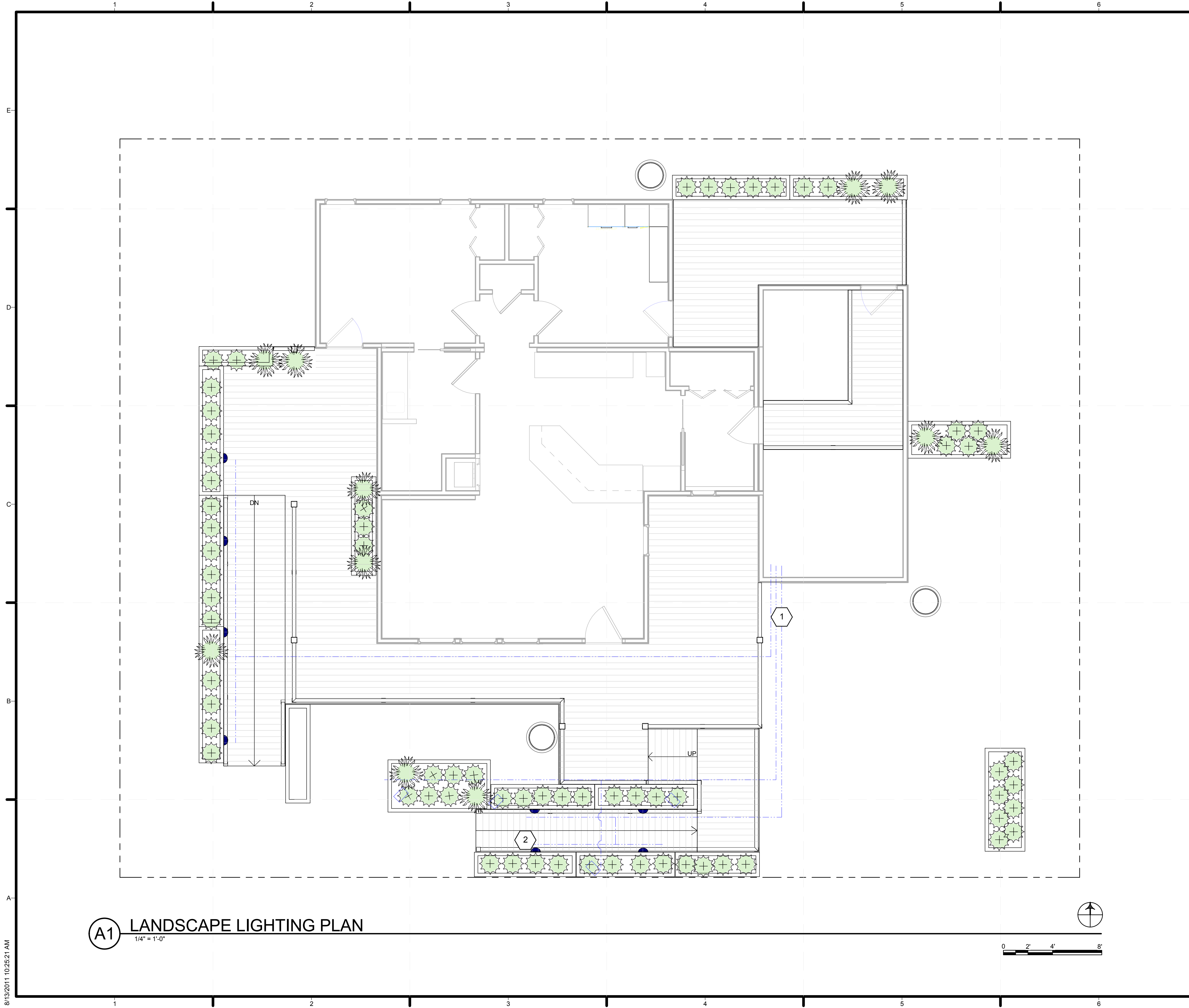
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**LANDSCAPE SITE PLAN**

**L-101**

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

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6. ALL FINAL EXTERIOR STAIN/PAIN T COLORS PER LANDSCAPE DESIGNER.
7. ALL CONSTRUCTION SHALL CONFORM TO THE DEPARTMENT OF ENERGY SOLAR DECATHLON 2011 BUILDING CODE AS WELL AS THE CODE OF THE LOCAL GOVERNMENT HAVING JURISDICTION

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 WIRE FOR LANDSCAPE LIGHTING
- 2 LANDSCAPE FIXTURE



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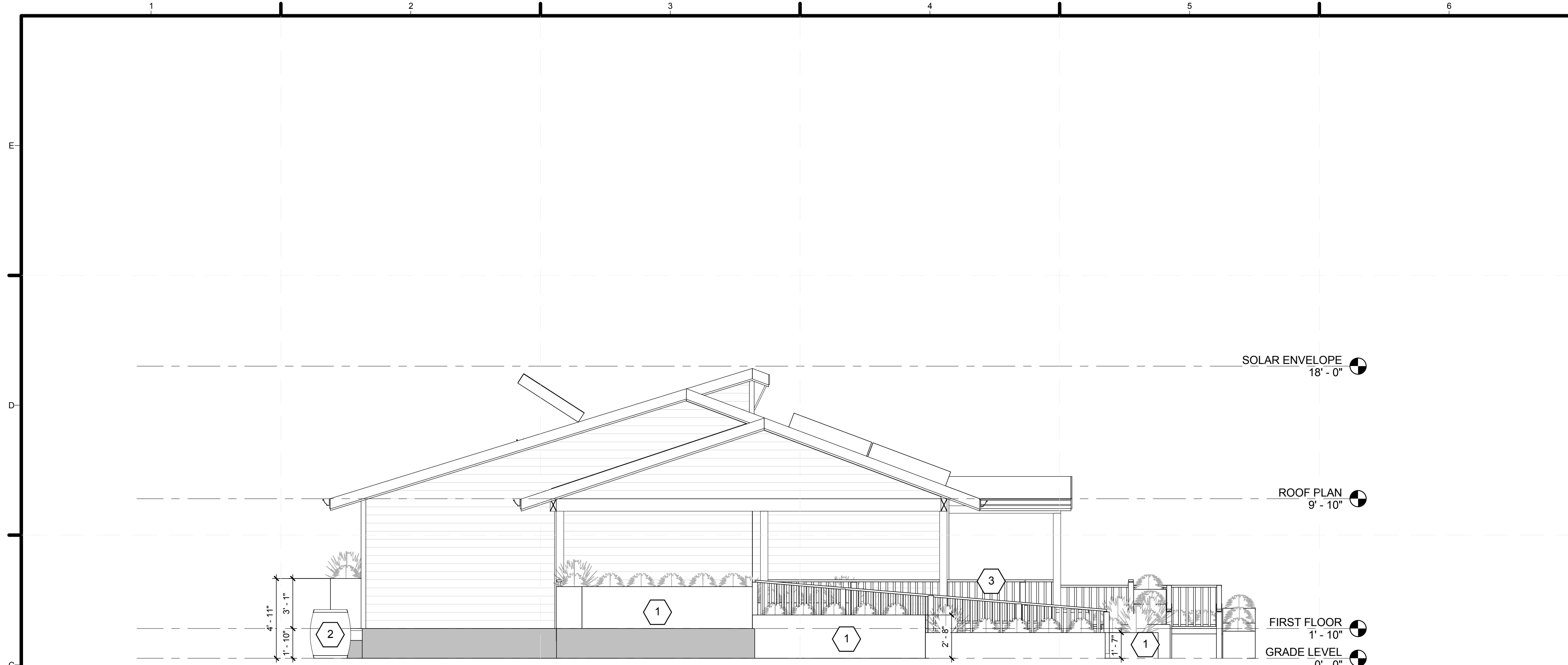
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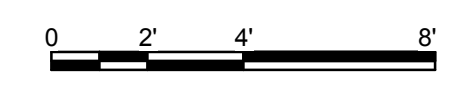




**C1 WEST LANDSCAPING ELEVATION**  
1/4" = 1'-0"



**A1 SOUTH LANDSCAPING ELEVATION**  
1/4" = 1'-0"



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**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 MOVABLE PLANTER BOX LOCATIONS
- 2 RAIN COLLECTION BARREL
- 3 36" HEIGHT WOOD RAILING



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 KNOY HALL, ROOM 107  
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SHEET TITLE  
**LANDSCAPE ELEVATIONS**

**L-201**









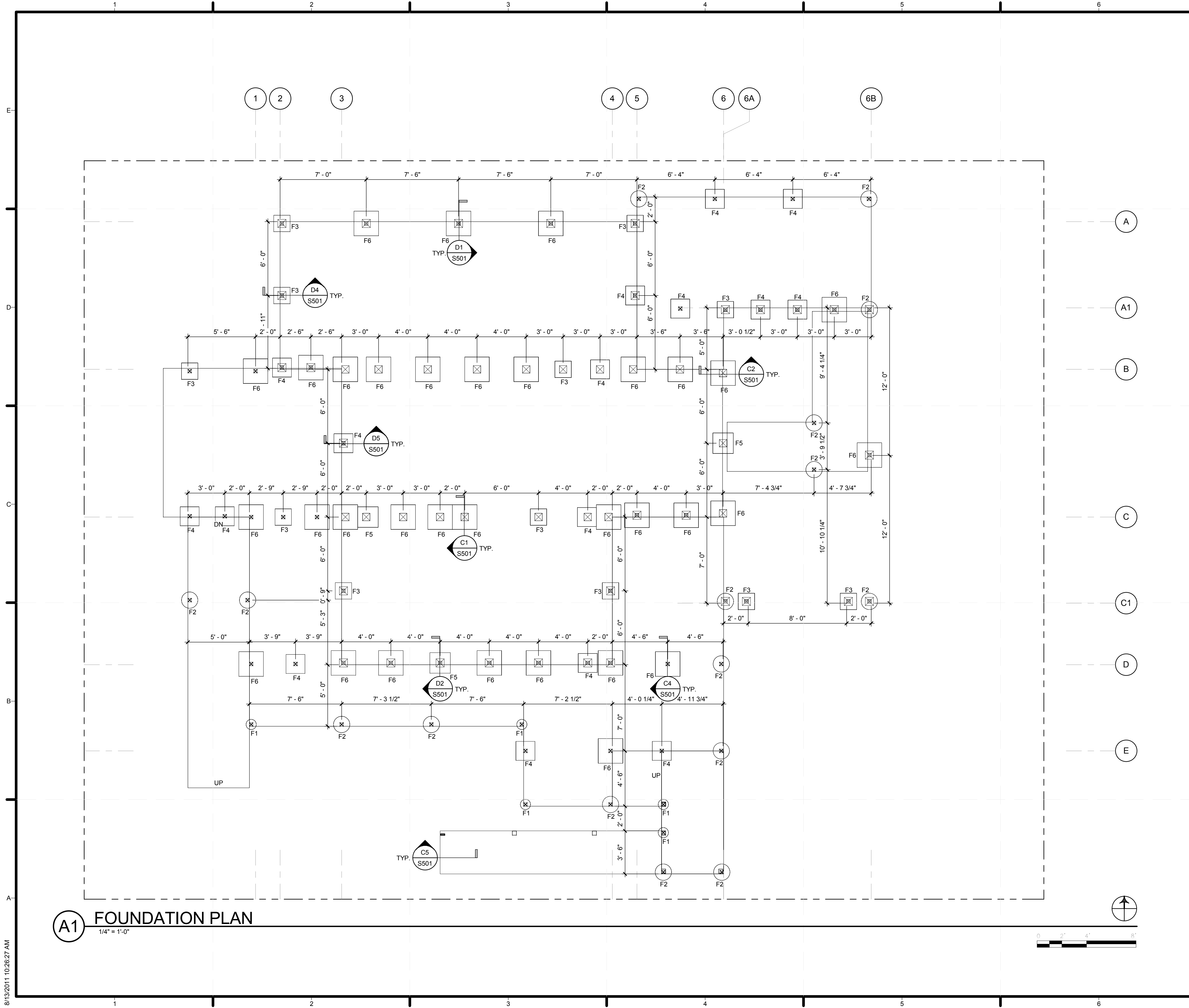












**A1 FOUNDATION PLAN**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

1. STRUCTURAL SHEETS VALID ONLY WHEN STAMPED BY A LICENSED STRUCTURAL ENGINEER

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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**FOUNDATION PLAN**

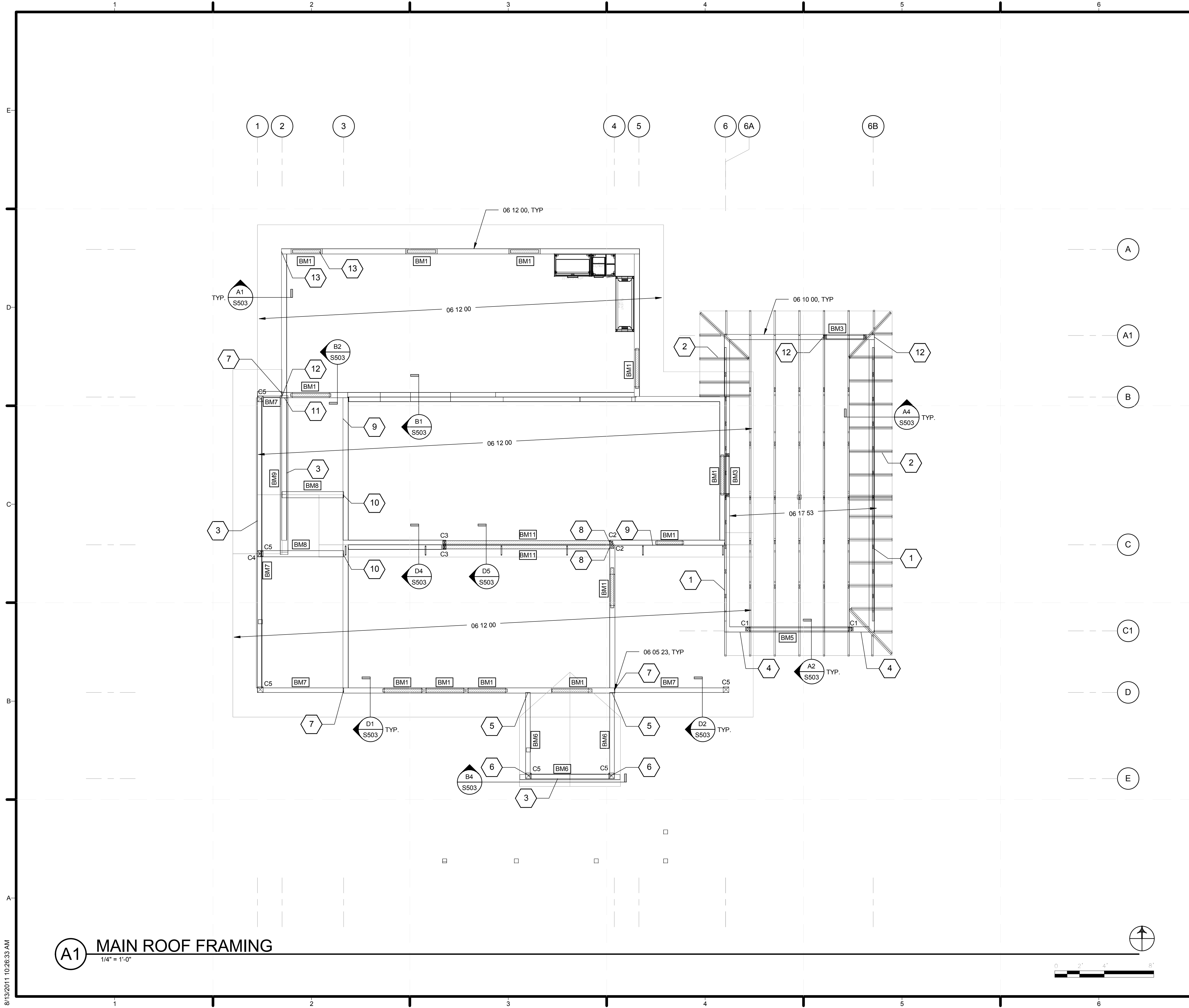
**S-101**

8/13/2011 10:28:27 AM









**GENERAL SHEET NOTES**

1. STRUCTURAL SHEETS VALID ONLY WHEN STAMPED BY A LICENSED STRUCTURAL ENGINEER
2. ALL ROOFS SHALL BE 8" STRUCTURAL INSULATED PANELS UNO
3. GARAGE ROOF SHALL BE SHOP-FABRICATED WOOD TRUSSES @ 24" OC W/ 5/8" APA RATED SHEATHING
4. ALL EXTERIOR RESIDENCE WALLS SHALL BE 4" STRUCTURAL INSULATED PANELS UNO
5. ALL INTERIOR RESIDENCE MARRIAGE WALLS SHALL BE 2X4 FRAMING UNO
6. ALL GARAGE WALLS SHALL BE 2X4 FRAMING W/ 1/2" APA RATED SHEATHING ON ONE SIDE, UNO

**REFERENCE KEYNOTES**

- DIV 06 WOOD, PLASTICS, AND COMPOSITES
- 06 05 23 WOOD, PLASTIC, AND COMPOSITE FASTENINGS
- 06 10 00 ROUGH CARPENTRY
- 06 12 00 STRUCTURAL INSULATED PANELS
- 06 17 53 SHOP-FABRICATED WOOD TRUSSES

**SHEET KEYNOTES**

- 1 DROP CHORD GABLE TRUSS
- 2 2X8 OUTLOOKER @ 24" OC
- 3 PONY WALL ABOVE
- 4 PORTAL FRAME, SEE DET A2/S501
- 5 SIMPSON HUC26-3 MAX HANGER W/ 2X COL IN SIP
- 6 (3) SIMPSON SDS25800 SCREWS FROM BM5 TO BM5
- 7 SIMPSON HUC210-3 HANGER W/ 2X COL IN SIP
- 8 SIMPSON HUC12 MAX HANGER
- 9 ATTACH LEDGER TO 2X NAILER (WITHIN SIPS) W/ SIMPSON SDS25500 SCREWS @ 8" OC, TYP
- 10 SIMPSON HGUS28-4 HANGER
- 11 USE (4) SIMPSON SDS25312 SCREWS FROM LEDGER TO 2X NAILER @ BEAM LOC
- 12 SIMPSON LSTA12 STRAP FROM WALL TO RIM JOIST BELOW



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SHEET TITLE  
**MAIN ROOF FRAMING PLAN**

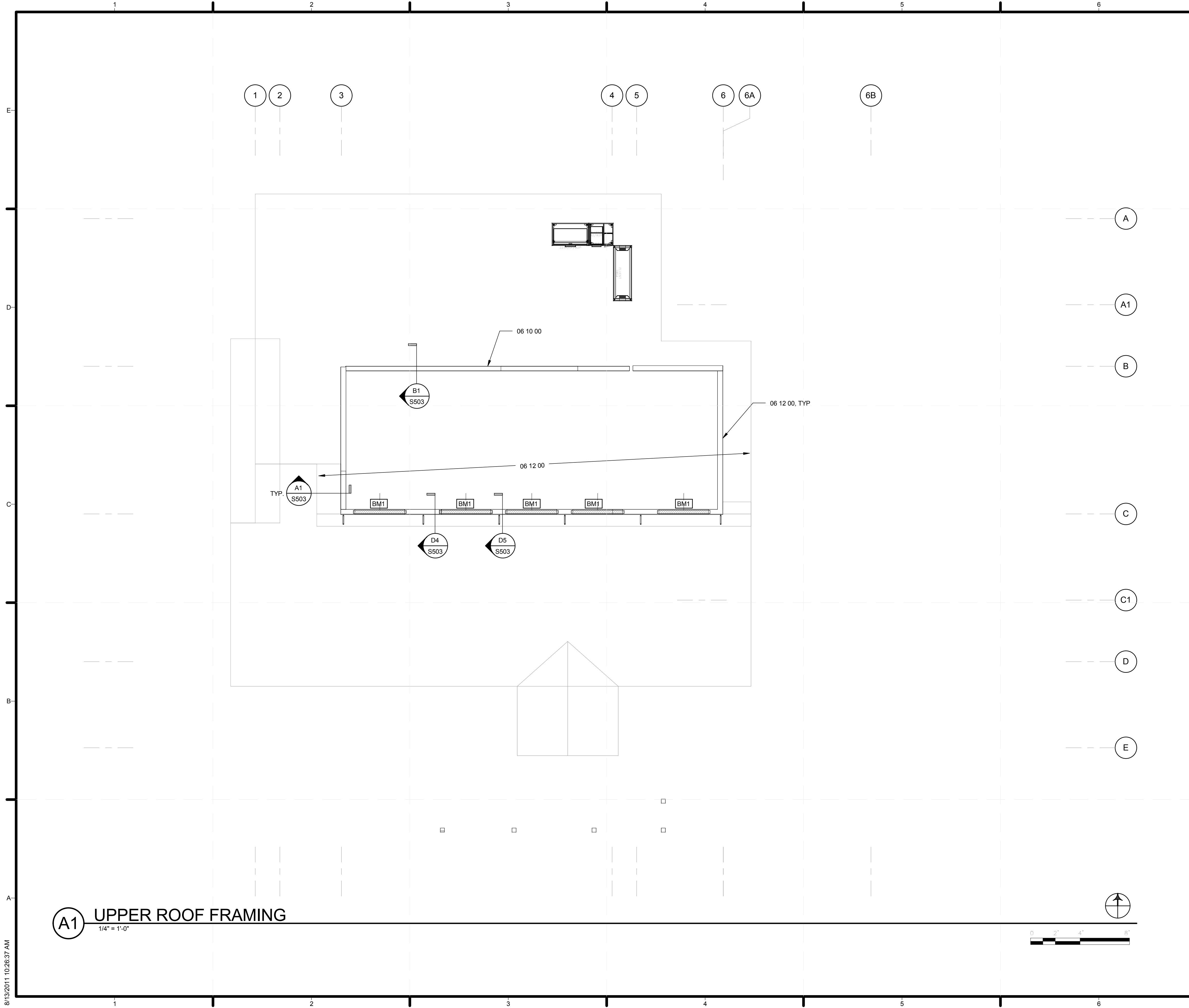
**S-103**

**A1 MAIN ROOF FRAMING**  
 1/4" = 1'-0"



8/13/2011 10:26:33 AM





**(A1) UPPER ROOF FRAMING**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

1. STRUCTURAL SHEETS VALID ONLY WHEN STAMPED BY A LICENSED STRUCTURAL ENGINEER
2. ALL ROOFS SHALL BE 8" STRUCTURAL INSULATED PANELS UNO
3. ALL EXTERIOR RESIDENCE WALLS SHALL BE 4" STRUCTURAL INSULATED PANELS UNO
4. ALL INTERIOR RESIDENCE MARRIAGE WALLS SHALL BE 2X4 FRAMING UNO

**REFERENCE KEYNOTES**

- DIV 06 WOOD, PLASTICS, AND COMPOSITES
- 06 10 00 ROUGH CARPENTRY
- 06 12 00 STRUCTURAL INSULATED PANELS

**SHEET KEYNOTES**



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SHEET TITLE  
**UPPER ROOF FRAMING PLAN**

**S-104**

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**GENERAL SHEET NOTES**

1. STRUCTURAL SHEETS VALID ONLY WHEN STAMPED BY A LICENSED STRUCTURAL ENGINEER
2. ALL EXTERIOR RESIDENCE WALLS SHALL BE 4" STRUCTURAL INSULATED PANELS UNO
3. ALL INTERIOR RESIDENCE MARRIAGE WALLS SHALL BE 2X4 FRAMING UNO
4. ALL GARAGE WALLS SHALL BE 2X4 FRAMING UNO
5. ALL DECK JOISTS SHALL BE 2X8 SOUTHERN PINE NO 2 @ THE SPECIFIED SPACING UNO
- 6.

**REFERENCE KEYNOTES**

- DIV 06 WOOD, PLASTICS, AND COMPOSITES
- 06 05 23 WOOD, PLASTIC, AND COMPOSITE FASTENINGS
- 06 10 00 ROUGH CARPENTRY

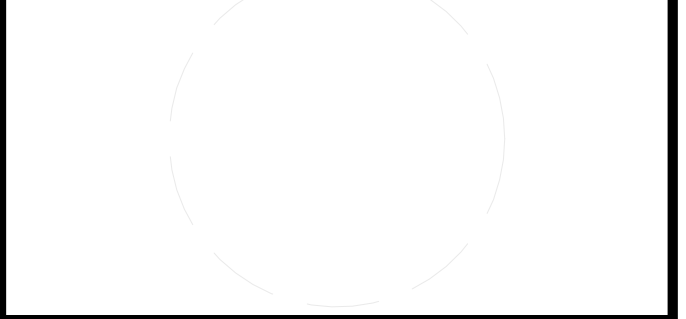
**SHEET KEYNOTES**

- 1 2X8 SOUTHERN PINE NO 2 @ 12" OC W/ SIMPSON JB28 HANGER EACH END
- 2 2X8 SOUTHERN PINE NO 2 @ 16" OC W/ SIMPSON JB28 HANGER EACH END
- 3 (2) 2X8 SOUTHERN PINE NO 2 @ 12" OC W/ SIMPSON HUS228-TF HANGER EACH END
- 4 2X8 SOUTHERN PINE NO 2 LEDGER W/ SIMPSON SDS25312 SCREWS @ 8" OC, STAGGERED
- 5 2X8 SOUTHERN PINE NO 2 LEDGER W/ SIMPSON SDS25312 SCREWS @ 4" OC, STAGGERED
- 6 SIMPSON HUC28-2 MAX HANGER
- 7 SIMPSON HUC28-3 MAX HANGER
- 8 SIMPSON HGUS26-3 HANGER



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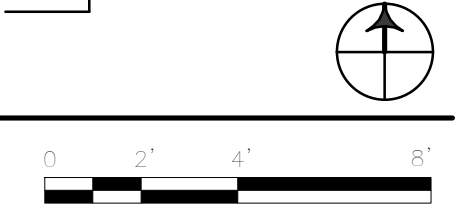
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SHEET TITLE  
**DECK FRAMING PLAN**

**S-105**

**A1 DECK FRAMING**  
 1/4" = 1'-0"



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**GENERAL SHEET NOTES**

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**REFERENCE KEYNOTES**



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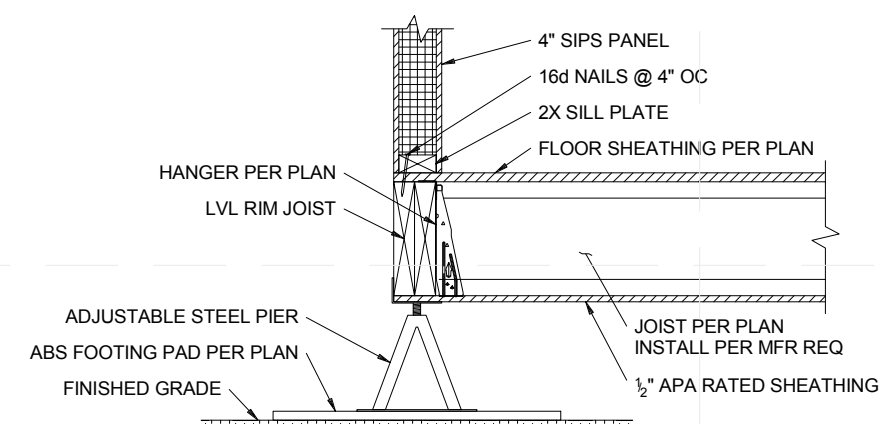
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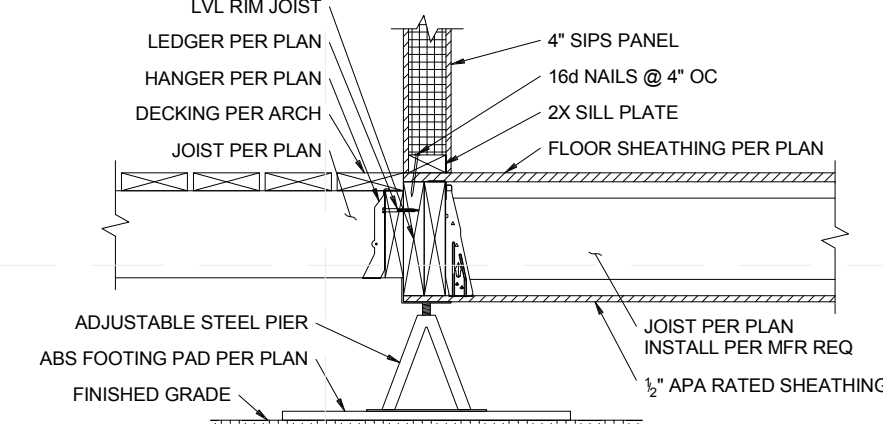
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**STRUCTURAL DETAILS**

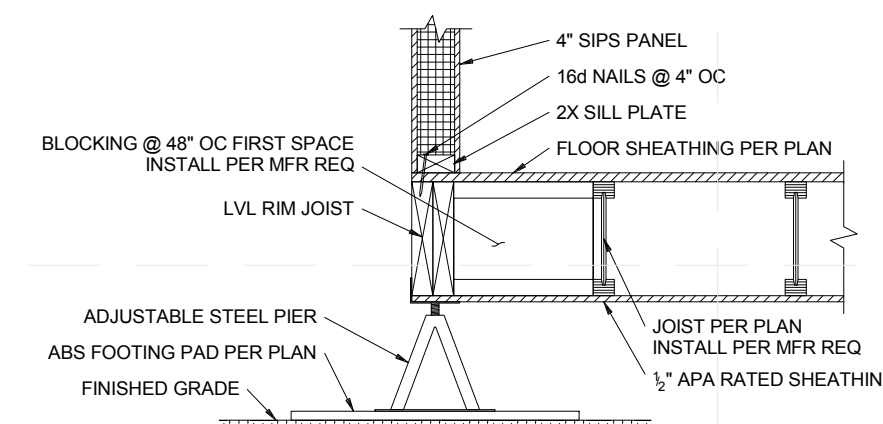
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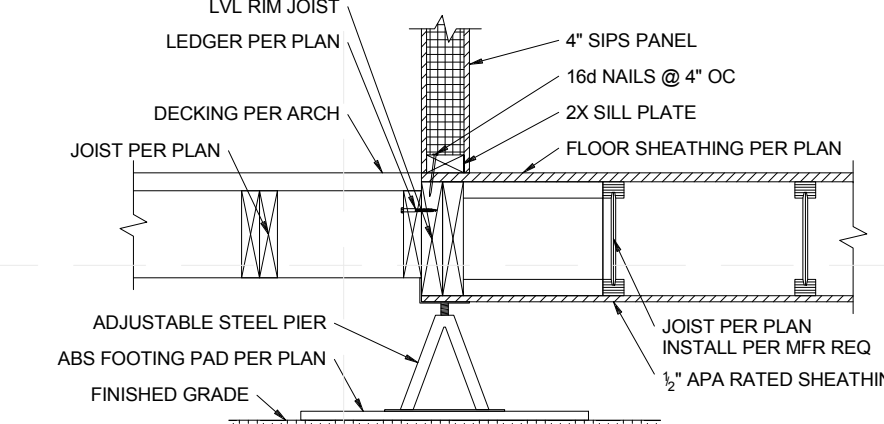
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 Scale: NTS



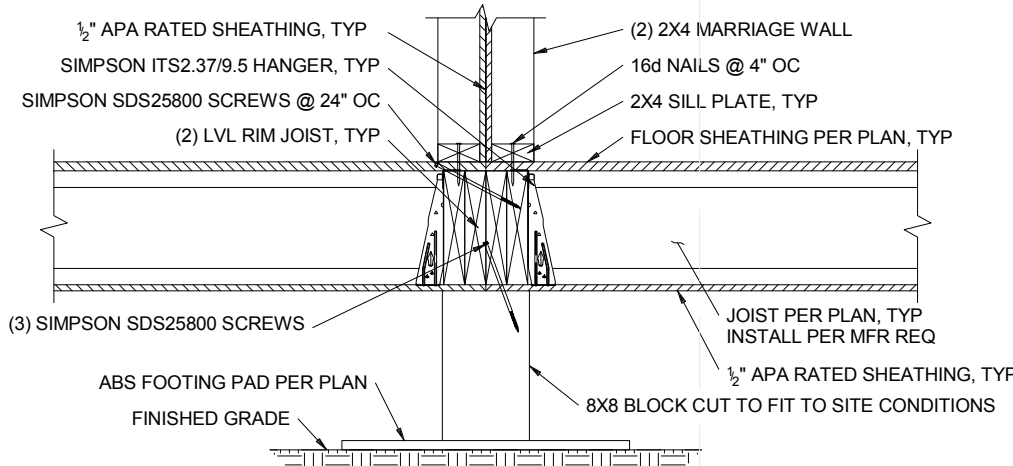
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 Scale: NTS



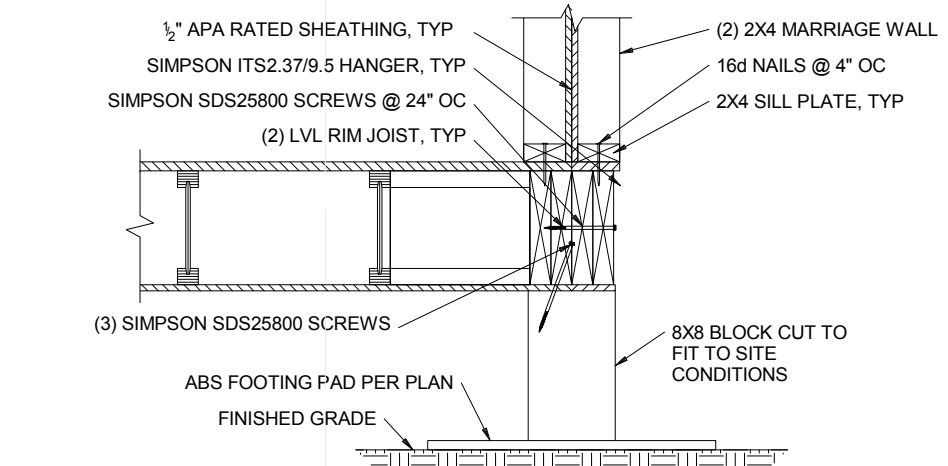
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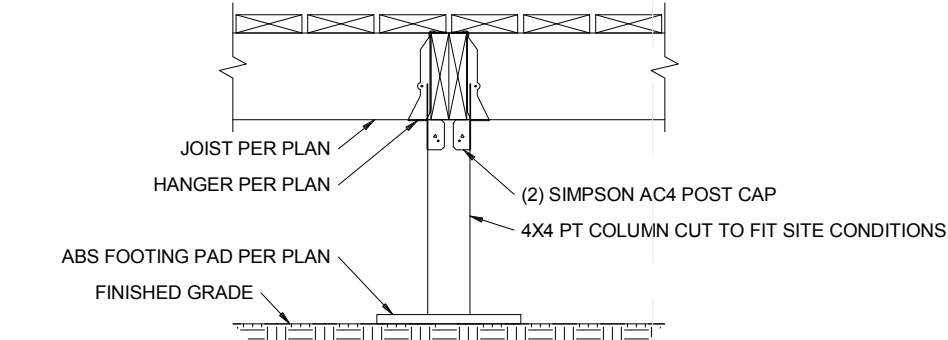
**FOUNDATION DETAIL D5**  
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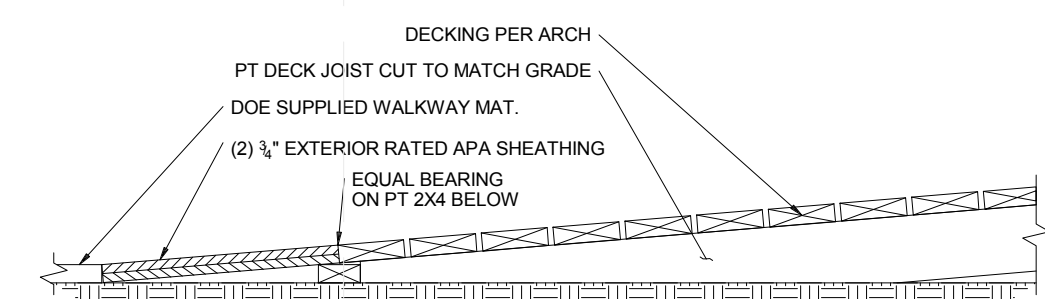
**FOUNDATION DETAIL C1**  
 Scale: NTS



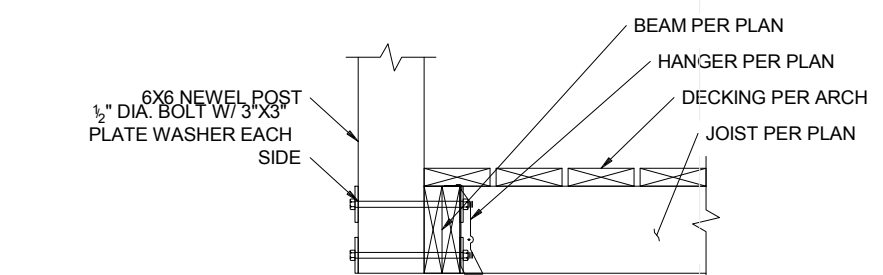
**FOUNDATION DETAIL C2**  
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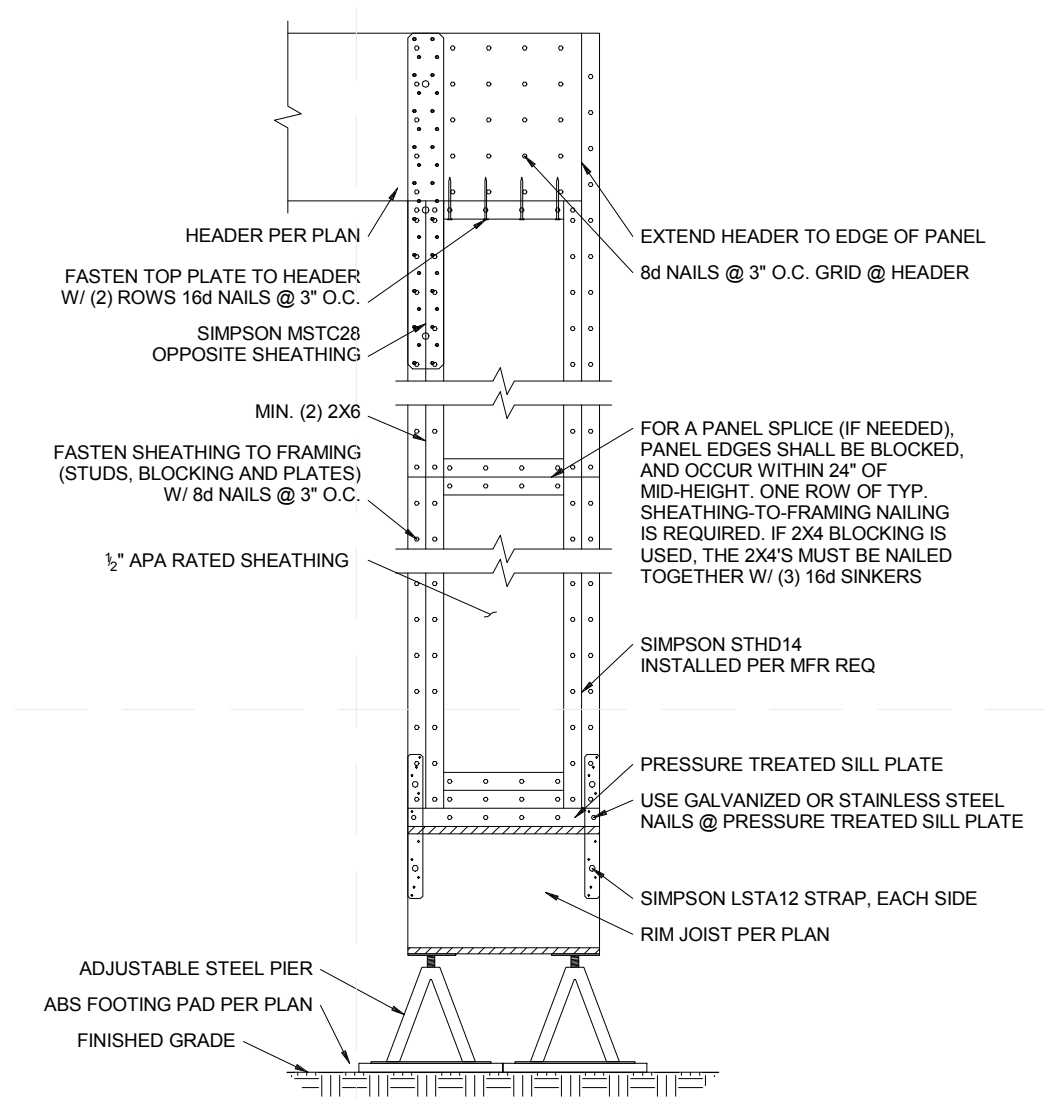
**DECK FOUNDATION DETAIL C4**  
 Scale: NTS



**DECK FOUNDATION DETAIL C5**  
 Scale: NTS

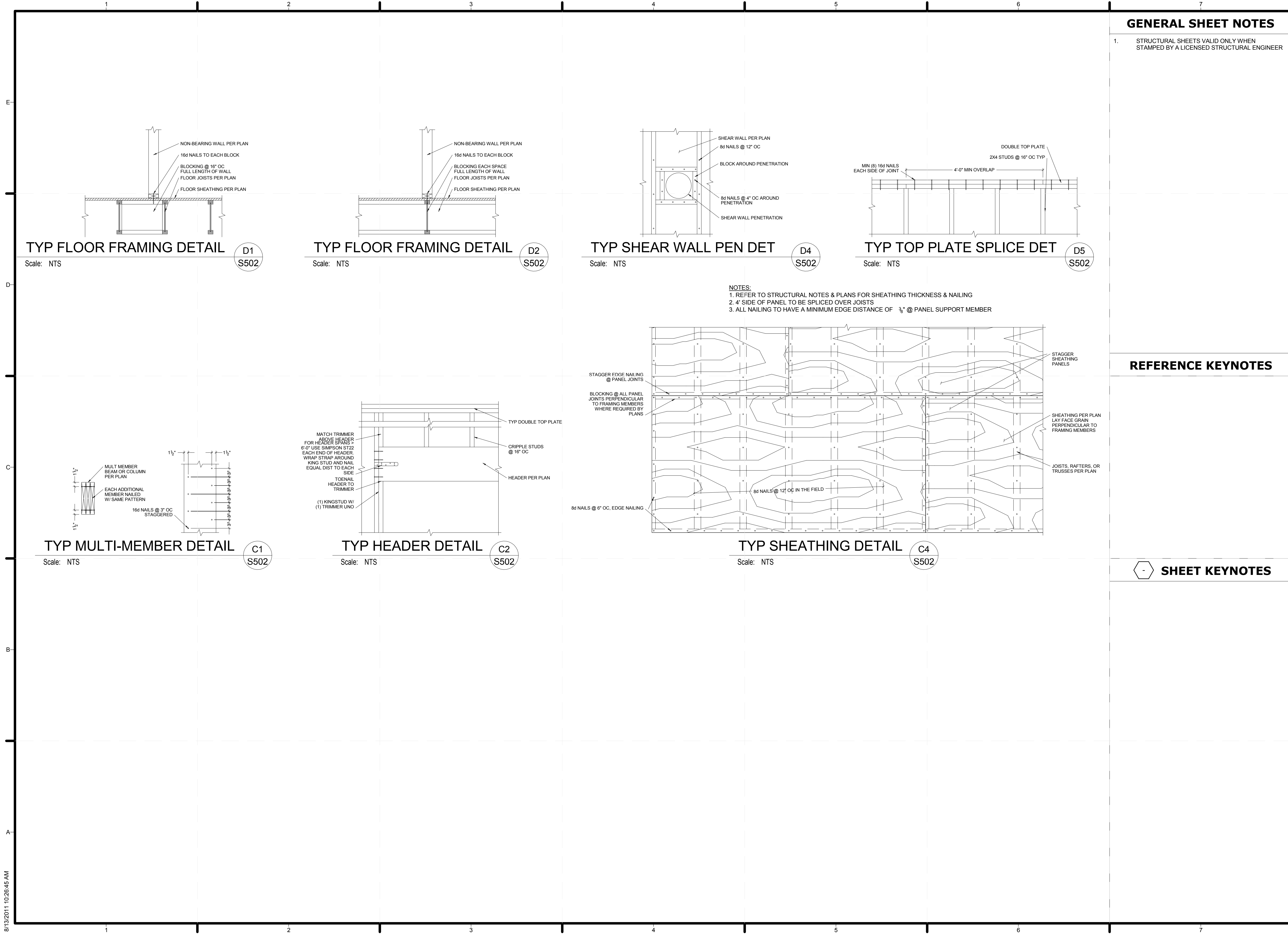


**DECK RAILING ATTACH. DETAIL A1**  
 Scale: NTS



**PORTAL FRAME DETAIL A2**  
 Scale: NTS

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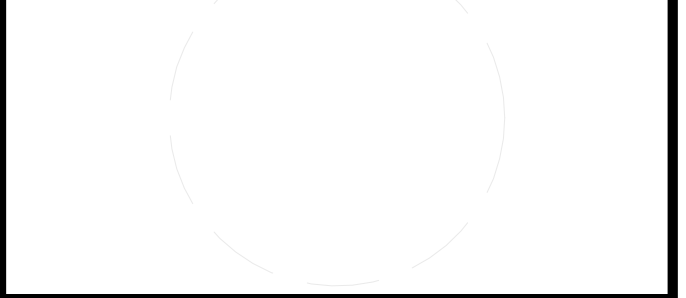
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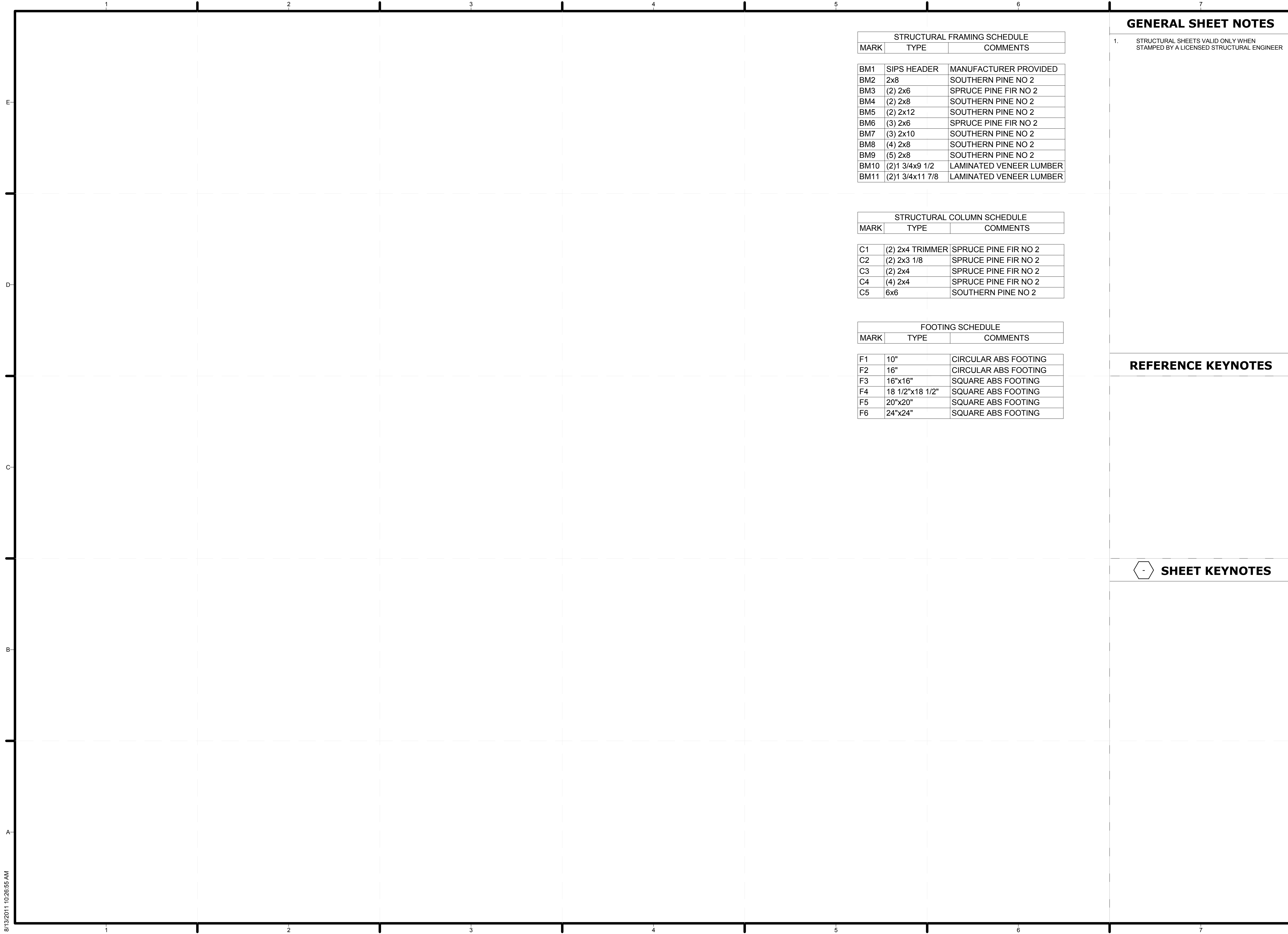
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**STRUCTURAL DETAILS**

**S-502**







STRUCTURAL FRAMING SCHEDULE		
MARK	TYPE	COMMENTS
BM1	SIPS HEADER	MANUFACTURER PROVIDED
BM2	2x8	SOUTHERN PINE NO 2
BM3	(2) 2x6	SPRUCE PINE FIR NO 2
BM4	(2) 2x8	SOUTHERN PINE NO 2
BM5	(2) 2x12	SOUTHERN PINE NO 2
BM6	(3) 2x6	SPRUCE PINE FIR NO 2
BM7	(3) 2x10	SOUTHERN PINE NO 2
BM8	(4) 2x8	SOUTHERN PINE NO 2
BM9	(5) 2x8	SOUTHERN PINE NO 2
BM10	(2)1 3/4x9 1/2	LAMINATED VENEER LUMBER
BM11	(2)1 3/4x11 7/8	LAMINATED VENEER LUMBER

STRUCTURAL COLUMN SCHEDULE		
MARK	TYPE	COMMENTS
C1	(2) 2x4 TRIMMER	SPRUCE PINE FIR NO 2
C2	(2) 2x3 1/8	SPRUCE PINE FIR NO 2
C3	(2) 2x4	SPRUCE PINE FIR NO 2
C4	(4) 2x4	SPRUCE PINE FIR NO 2
C5	6x6	SOUTHERN PINE NO 2

FOOTING SCHEDULE		
MARK	TYPE	COMMENTS
F1	10"	CIRCULAR ABS FOOTING
F2	16"	CIRCULAR ABS FOOTING
F3	16"x16"	SQUARE ABS FOOTING
F4	18 1/2"x18 1/2"	SQUARE ABS FOOTING
F5	20"x20"	SQUARE ABS FOOTING
F6	24"x24"	SQUARE ABS FOOTING

**GENERAL SHEET NOTES**

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SHEET TITLE  
**STRUCTURAL SCHEDULES**

**S-601**







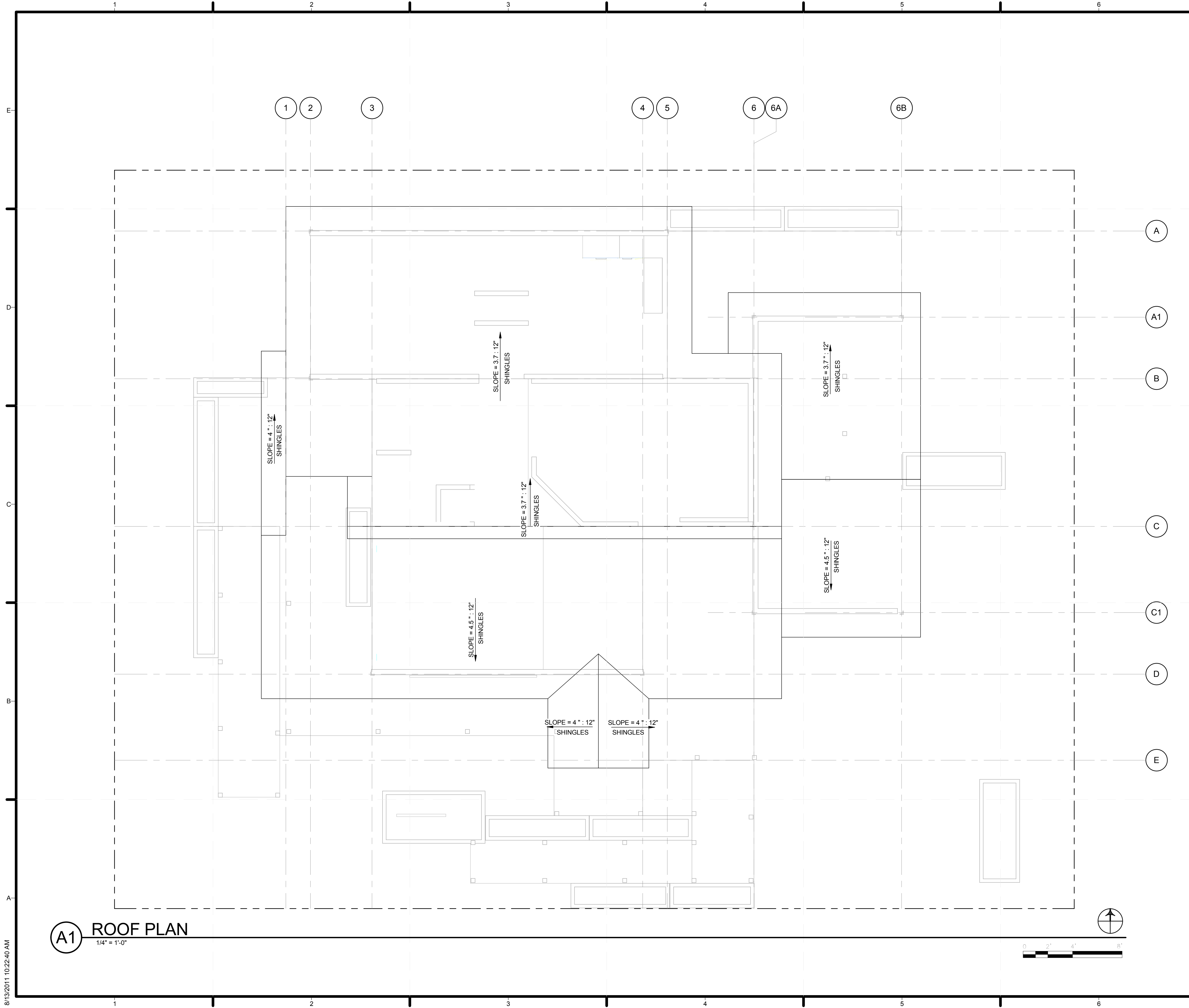




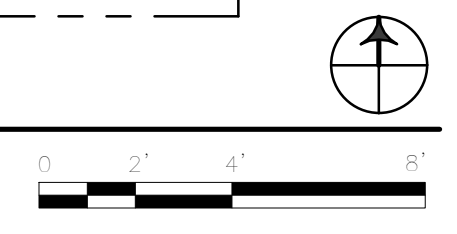








**A1** ROOF PLAN  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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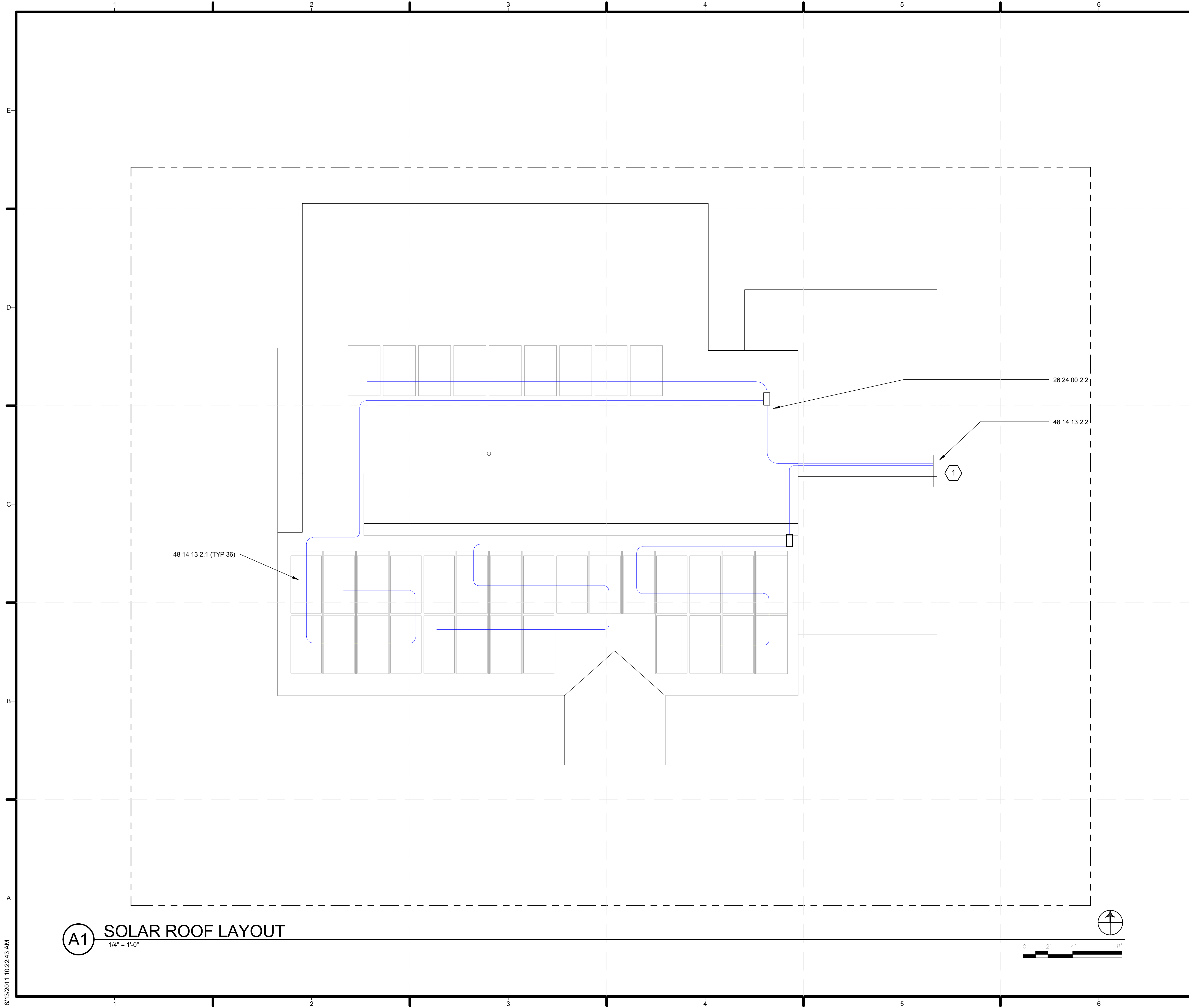
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SHEET TITLE  
**ROOF PLAN**

**A-112**

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**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

DIV 26 - ELECTRICAL  
 26 24 00 2.2 PV JUNCTION BOX (SOLADECK 0786)  
 DIV 48 - SOLAR ENERGY COLLECTORS  
 48 14 13 2.1 SUNPOWER SPR-238 PV PANEL  
 48 14 13 2.2 CENTRAL INVERTER

**SHEET KEYNOTES**

1 CENTRAL INVERTER



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SHEET TITLE  
**SOLAR ROOF LAYOUT**

**A-113**

**(A1) SOLAR ROOF LAYOUT**  
 1/4" = 1'-0"

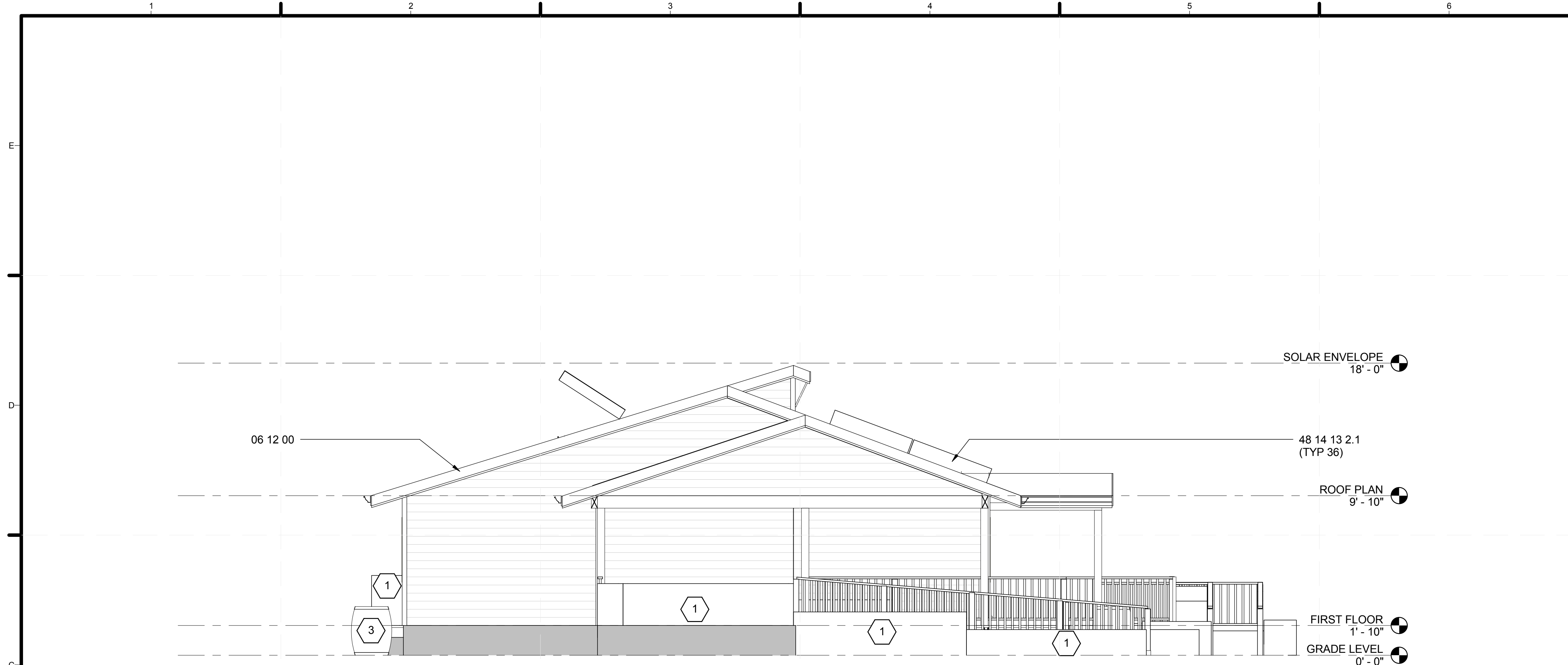
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**(C1) WEST ARCHITECTURAL ELEVATION**  
1/4" = 1'-0"



**(A1) SOUTH ARCHITECTURAL ELEVATION**  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

- ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY

**REFERENCE KEYNOTES**

- DIV 06 - WOOD, PLASTICS, AND COMPOSITES  
06 12 00 STRUCTURAL INSULATED PANELS  
06 17 53 SHOP-FABRICATED WOOD TRUSSES
- DIV 07 - THERMAL AND MOISTURE PROTECTION  
07 71 23 MANUFACTURED GUTTERS AND DOWNSPOUTS
- DIV 08 - OPENINGS  
08 36 18 RESIDENTIAL GARAGE DOORS
- DIV 48 - SOLAR ENERGY COLLECTORS  
48 14 13 2.1 SUNPOWER SPR-238 PV PANELS

**SHEET KEYNOTES**

- 1 PLANTER BOXES
- 2 1050 GALLON WASTE TANK
- 3 57 GALLON RAIN BARREL



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ADDRESS: PURDUE UNIVERSITY  
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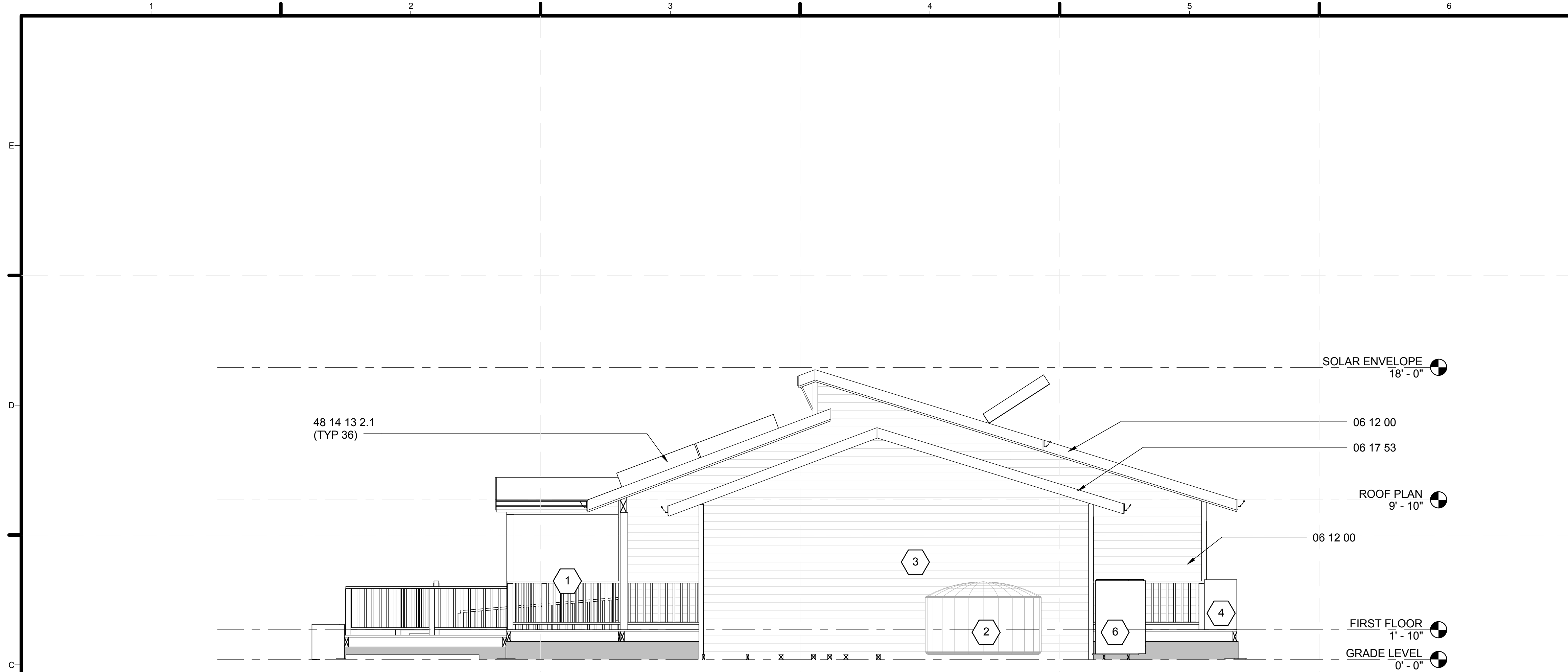
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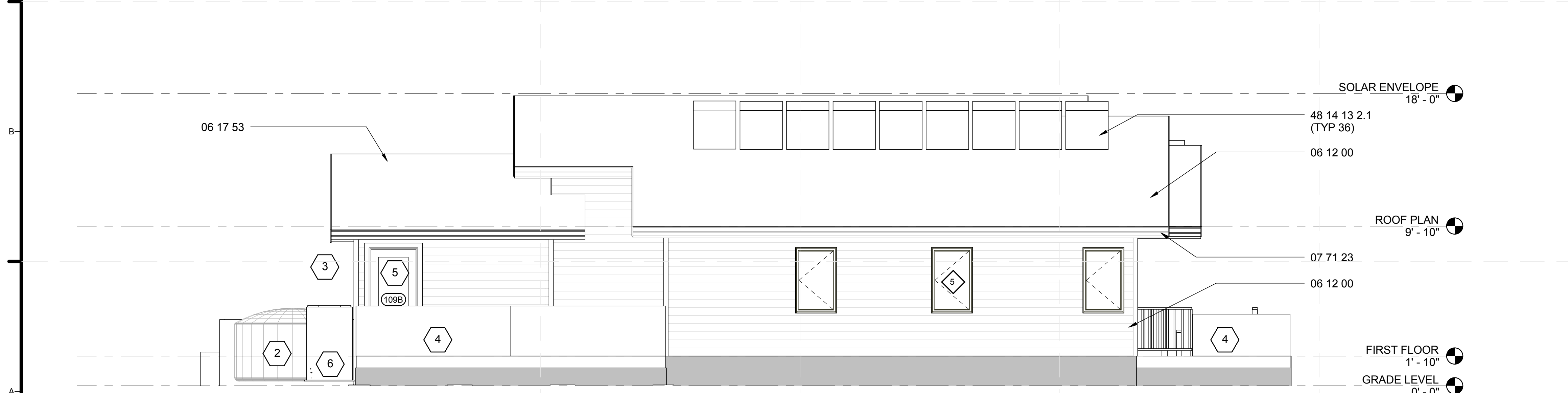
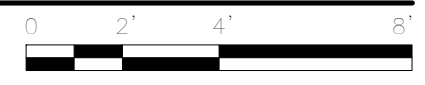
SHEET TITLE  
**EXTERIOR ELEVATIONS**

**A-211**

8/13/2011 10:22:52 AM



**C1 EAST ARCHITECTURAL ELEVATION**  
1/4" = 1'-0"



**A1 NORTH ARCHITECTURAL ELEVATION**  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

- ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY

**REFERENCE KEYNOTES**

- DIV 06 - WOOD, PLASTICS, AND COMPOSITES  
06 12 00 STRUCTURAL INSULATED PANELS  
06 17 53 SHOP-FABRICATED WOOD TRUSSES
- DIV 07 - THERMAL AND MOISTURE PROTECTION  
07 71 23 MANUFACTURED GUTTERS AND DOWNSPOUTS
- DIV 48 - SOLAR ENERGY COLLECTORS  
48 14 13 2.1 SUNPOWER SPR-238 PV PANELS

**SHEET KEYNOTES**

- 1 RAILING
- 2 1050 GALLON WASTE TANK
- 3 ORGANIZER SUPPLIED UTILITY METER
- 4 PLANTER BOXES
- 5 WATER DELIVERY ACCESS
- 6 HVAC HEAT PUMP UNIT



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SHEET TITLE  
**EXTERIOR ELEVATIONS**

**A-212**





**GENERAL SHEET NOTES**

1. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 PROPOSED DATA LOGGER POSITION 1: LOCATED ABOVE REFRIGERATOR
- 2 PROPOSED DATA LOGGER POSITION 2: LOCATED ON TOP OF COUNTER



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SHEET TITLE  
**INTERIOR ELEVATIONS**

**A-213**



**C2 EAST SECTION VIEW**  
1/4" = 1'-0"

**A2 WEST SECTION VIEW**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

1. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY

**REFERENCE KEYNOTES**

DIV 06 - WOODS, PLASTICS, AND COMPOSITS  
06 12 00 STRUCTURAL INSULATED PANELS

DIV 12 - FURNISHINGS  
12 35 00 RESIDENTIAL CASEWORK

DIV 48 - SOLAR ENERGY COLLECTORS  
48 14 13 2.1 SUNPOWER SPR-238 PV PANELS

**SHEET KEYNOTES**



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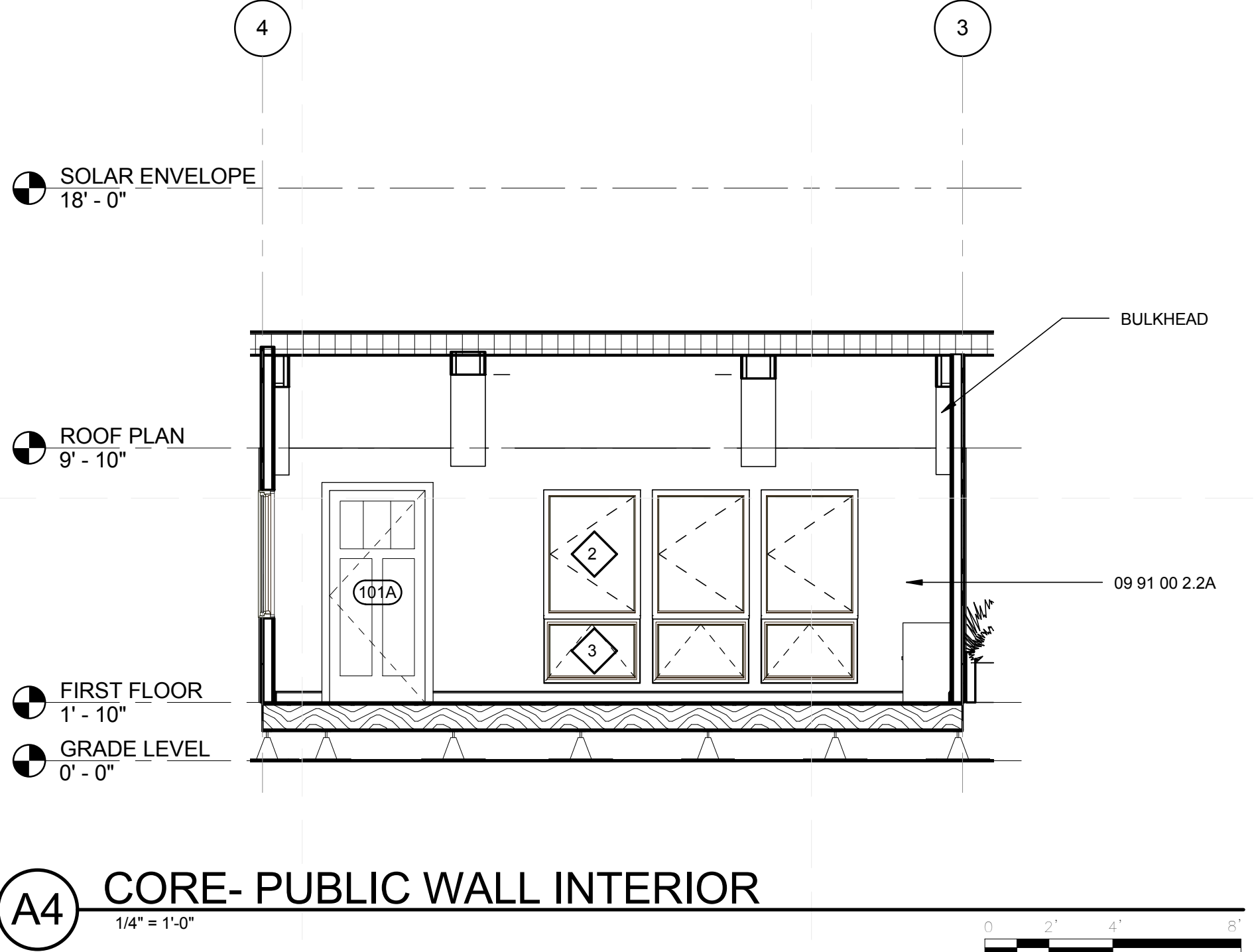
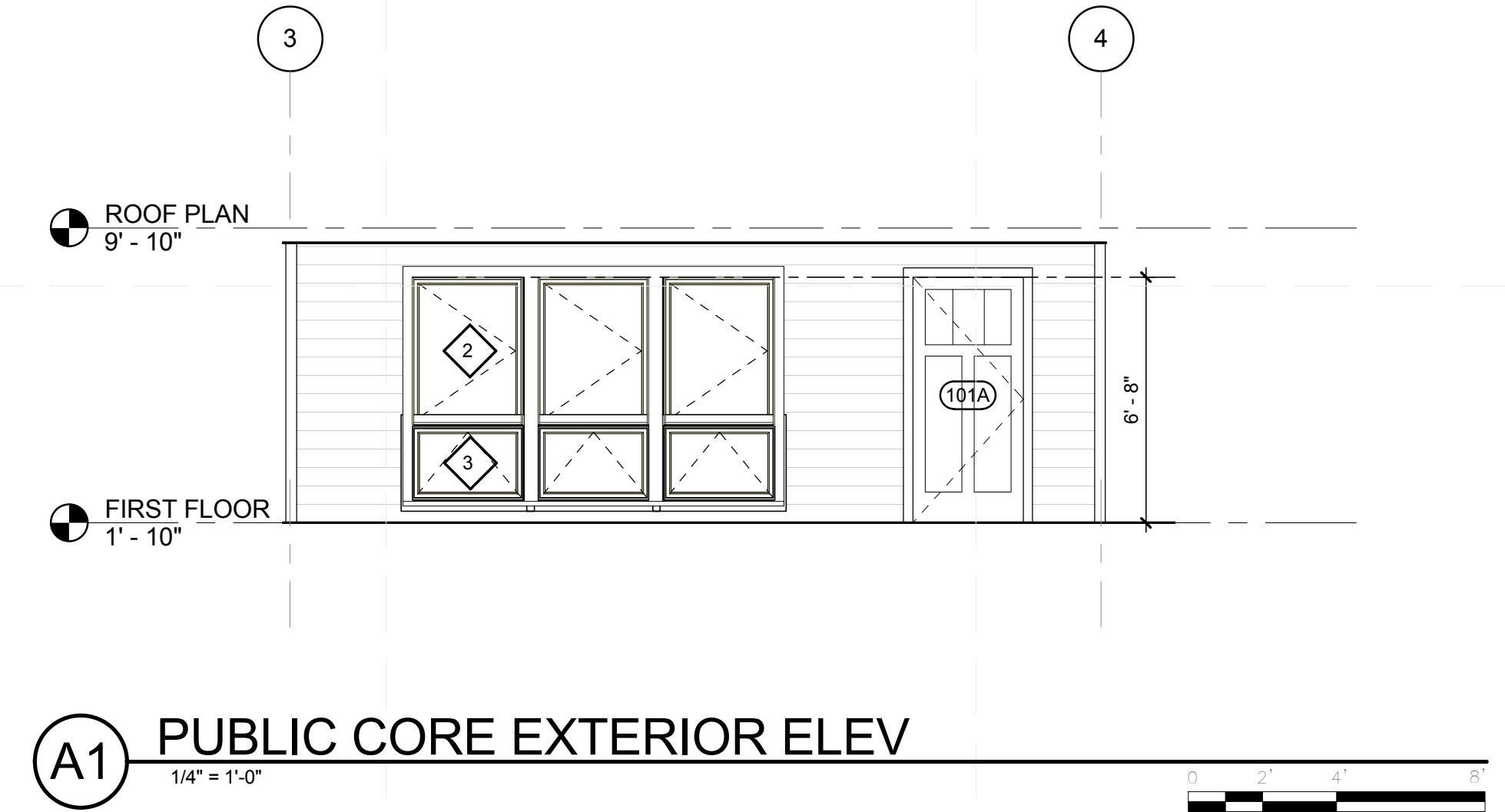
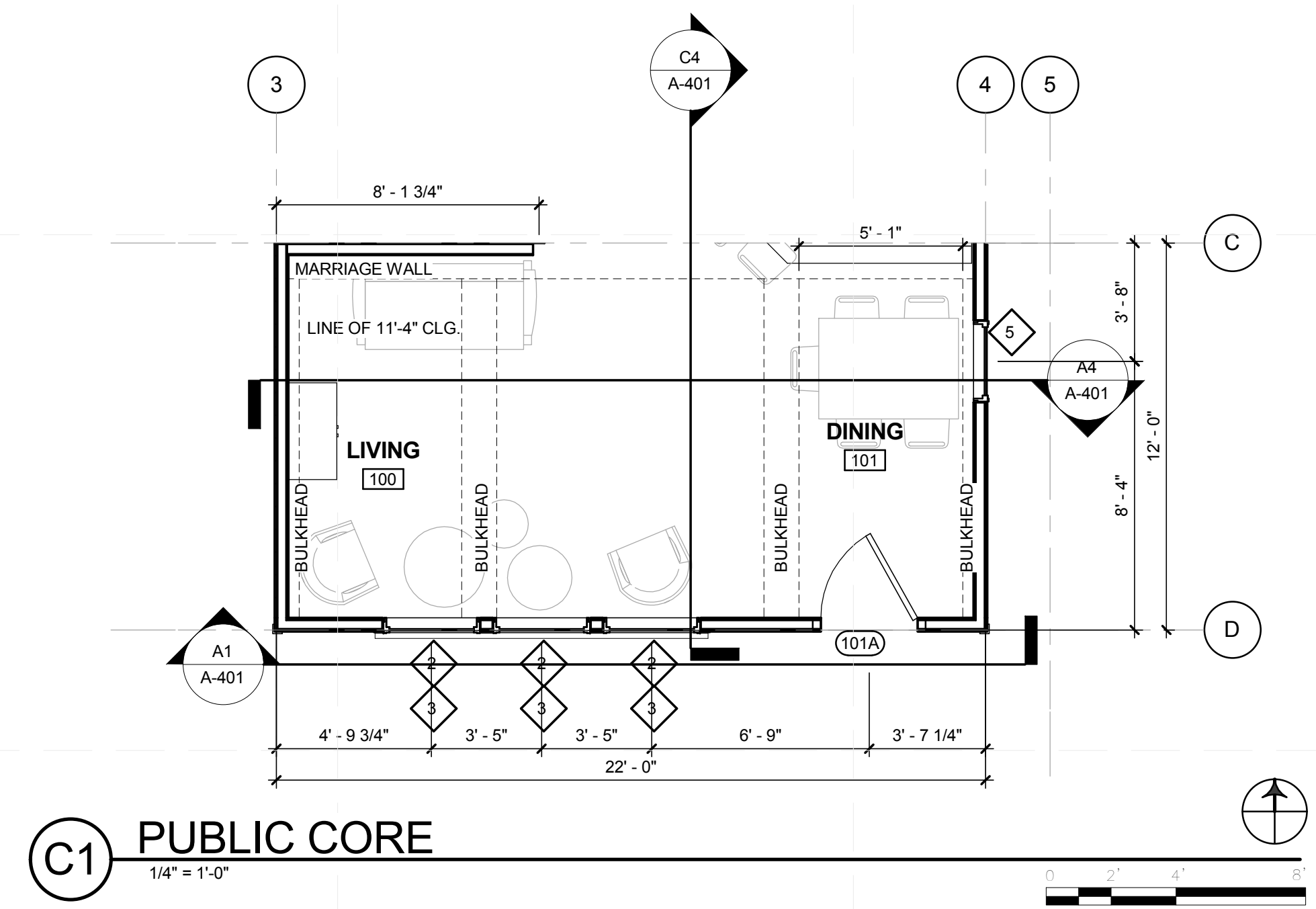
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**INTERIOR ELEVATIONS**

**A-214**

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8/13/2011 10:23:09 AM



**GENERAL SHEET NOTES**

1. DUE TO COORDINATION WITH FRAMING AND MECHANICAL INSTALLATIONS, FINAL DIMENSIONS MAY VARY SLIGHTLY FROM DIMENSIONS AS SHOWN ON CONSTRUCTION DRAWINGS.
2. SPECIFIC CABINET LAYOUT TO BE DESIGNED BY CABINET SUPPLIER. CABINET SUPPLIERS DESIGN TAKES PRECEDENCE OVER ILLUSTRATIONS SHOWN HERE.
3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.

**REFERENCE KEYNOTES**

- DIV 06 - WOOD, PLASTICS, AND COMPOSITES  
06 22 00 MILLWORK
- DIV 09 - FINISHES  
09 91 00 PAINTING

**SHEET KEYNOTES**



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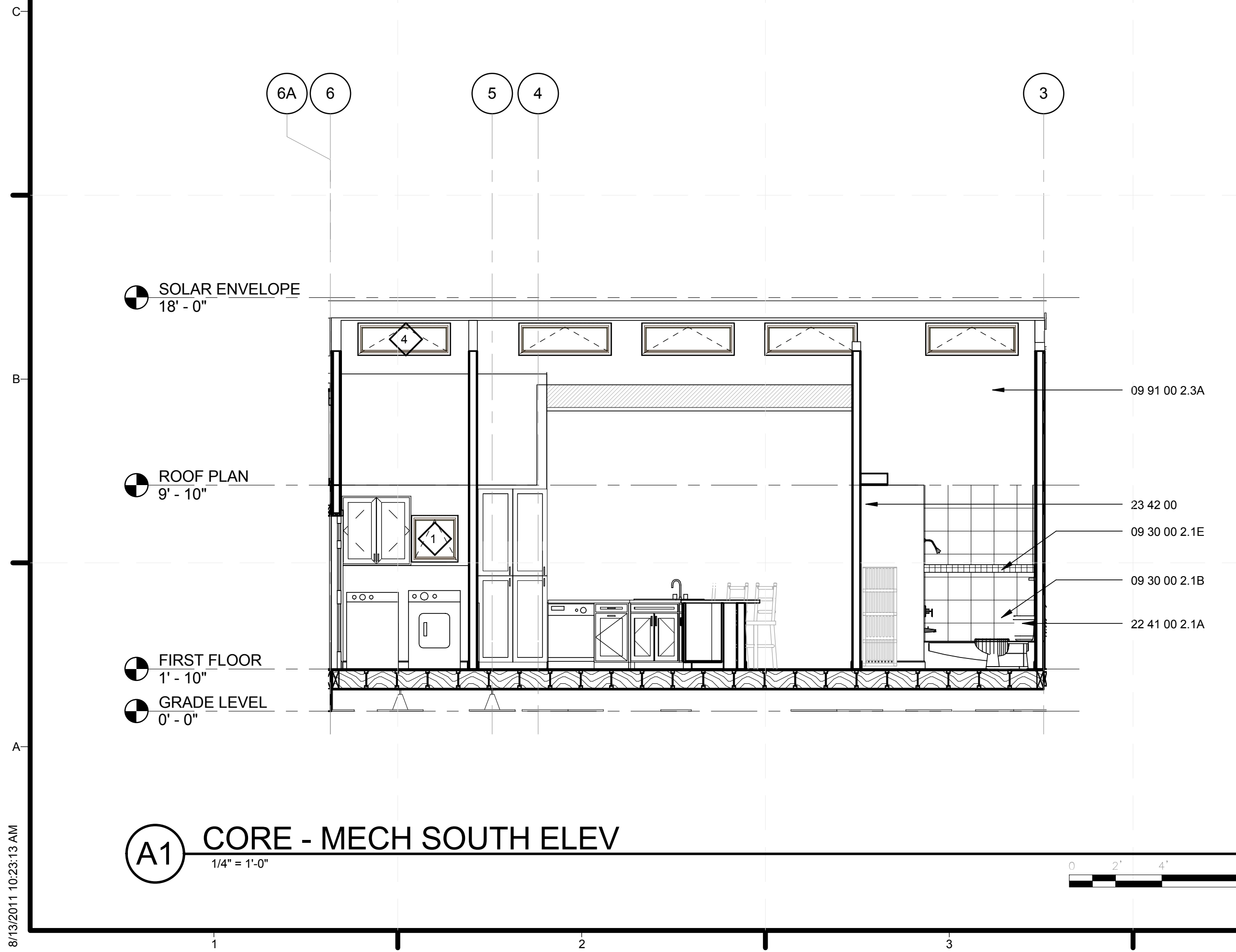
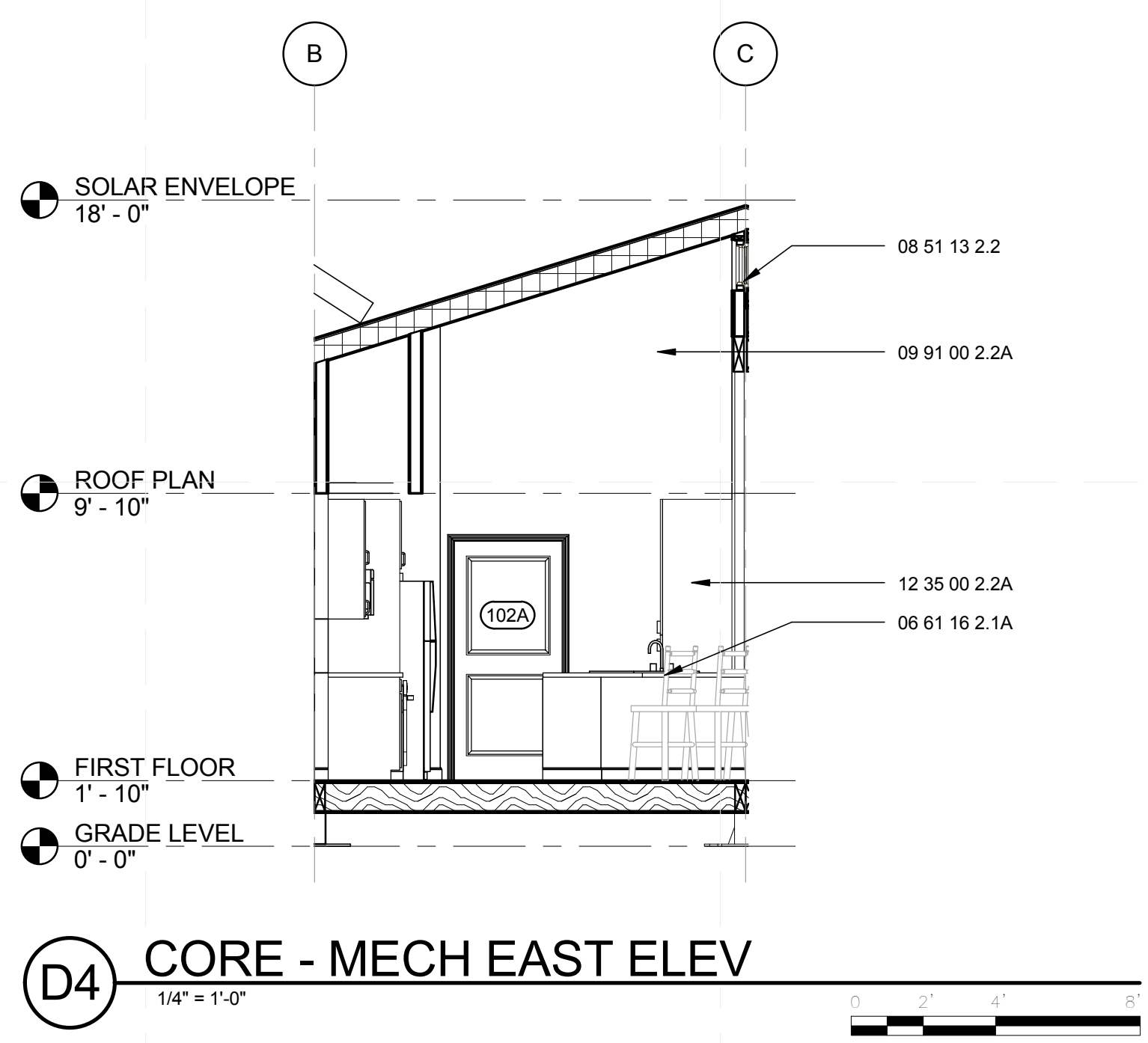
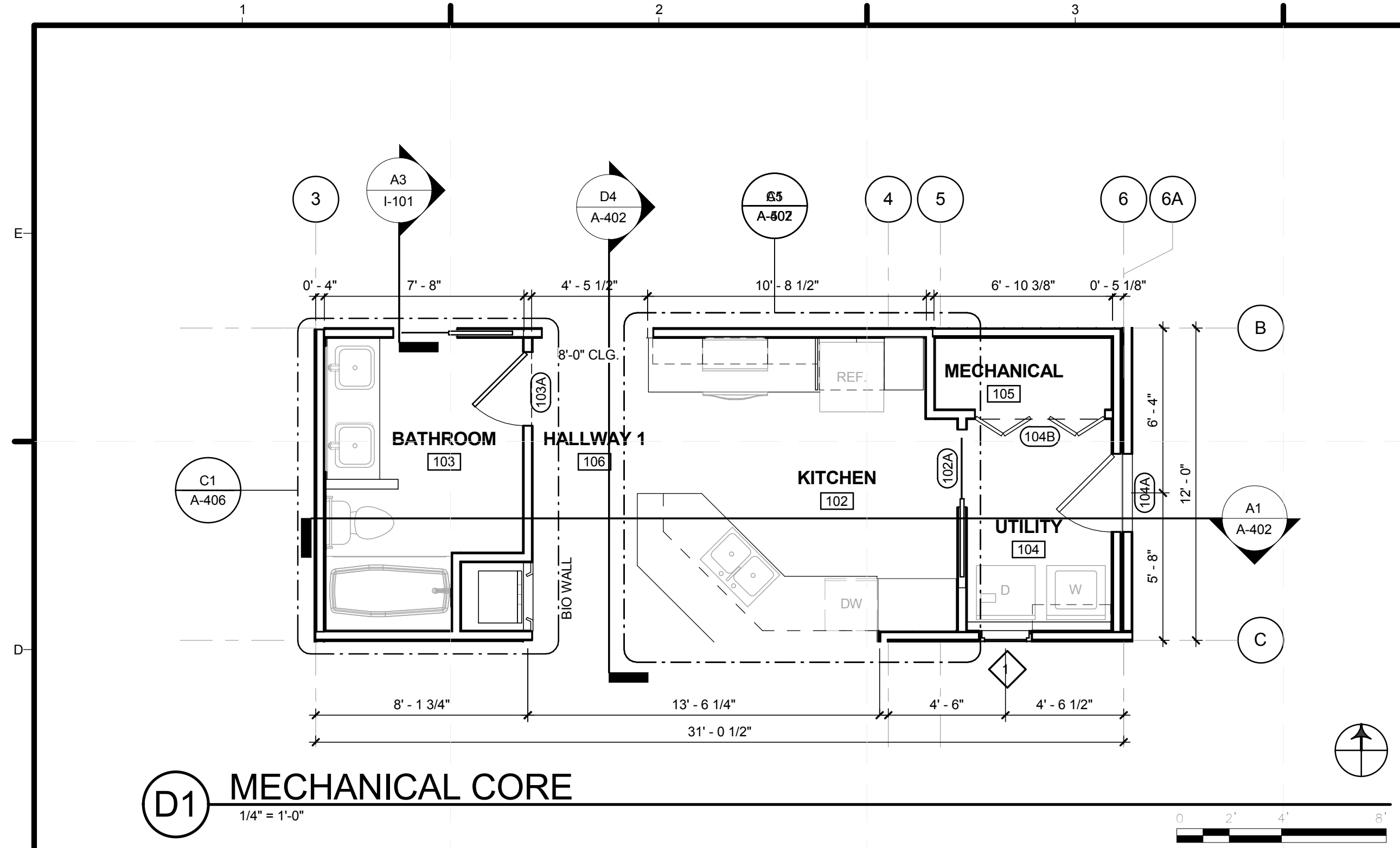
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SHEET TITLE

PUBLIC CORE

**A-401**



**GENERAL SHEET NOTES**

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3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.

**REFERENCE KEYNOTES**

- DIV 06 - WOOD, PLASTICS, AND COMPOSITES  
06 61 16 SOLID SURFACING FABRICATIONS
- DIV 08 - OPENINGS  
08 51 13 ALUMINUM WINDOWS
- DIV 09 - FINISHES  
09 91 00 PAINTING  
09 30 00 TILING
- DIV 12 - FURNISHINGS  
12 35 00 RESIDENTIAL CASEWORK
- DIV 22 - PLUMBING  
22 41 00 RESIDENTIAL PLUMBING FIXTURES
- DIV 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)  
23 42 00 GAS-PHASE AIR FILTRATION

**SHEET KEYNOTES**



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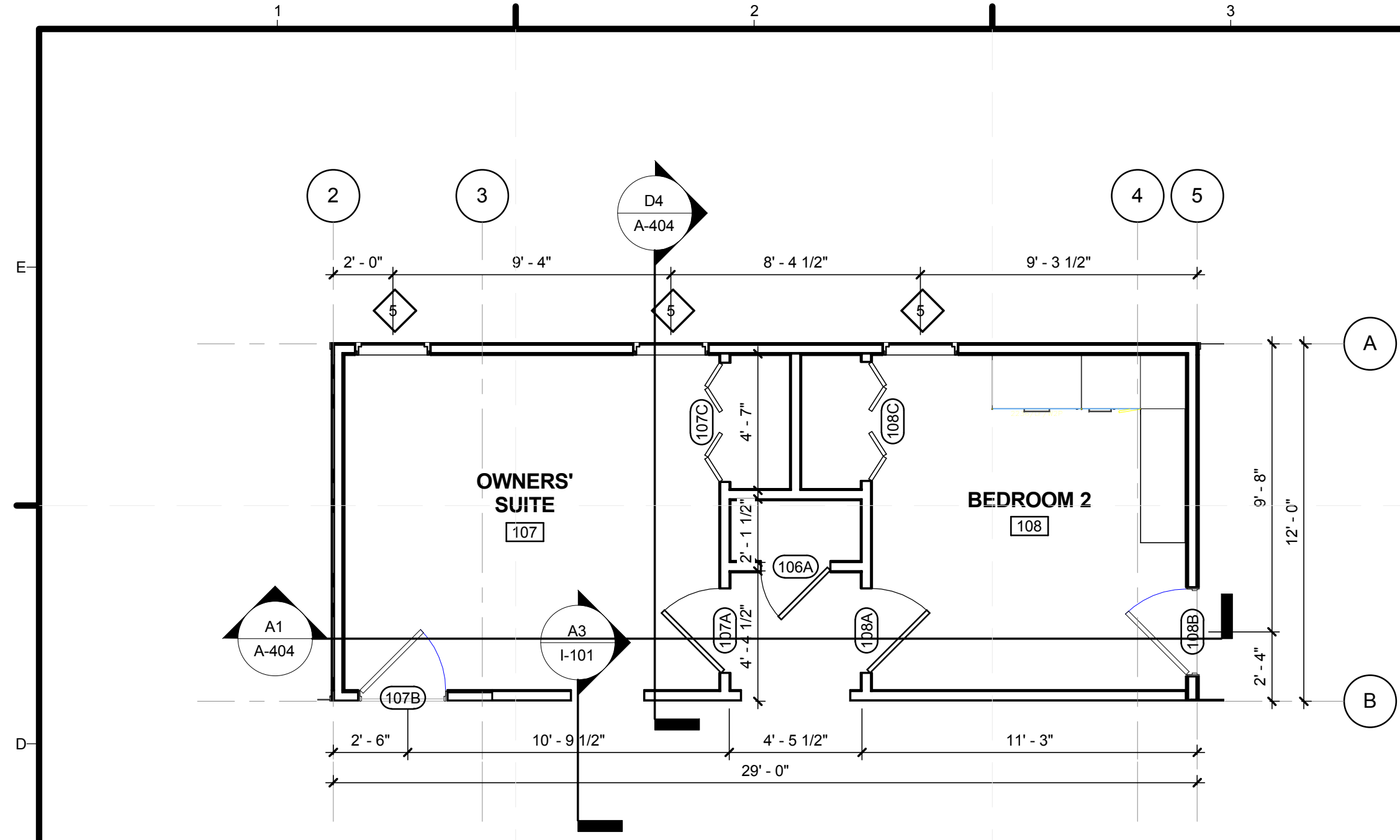
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**MECHANICAL CORE**

**A-402**

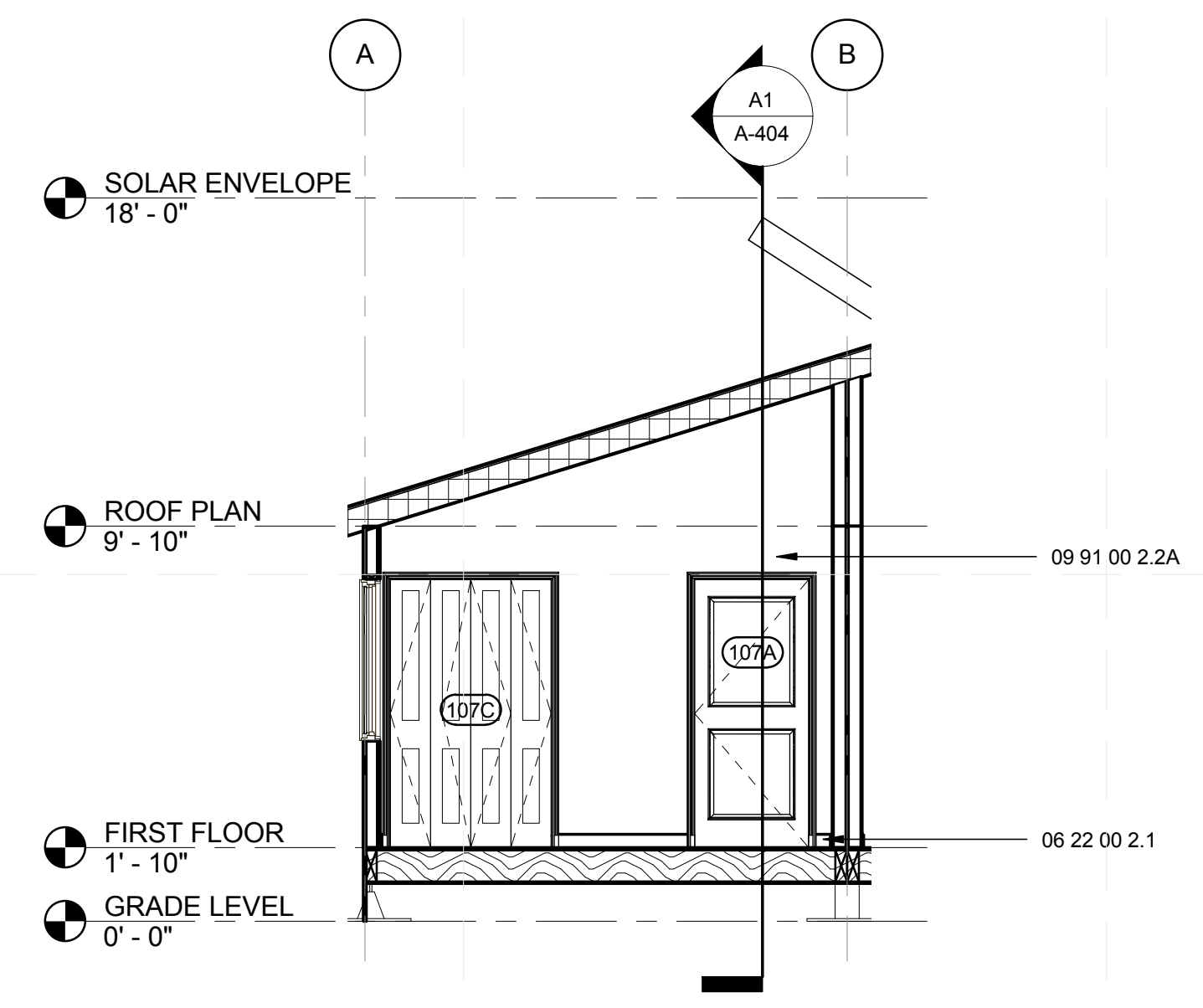
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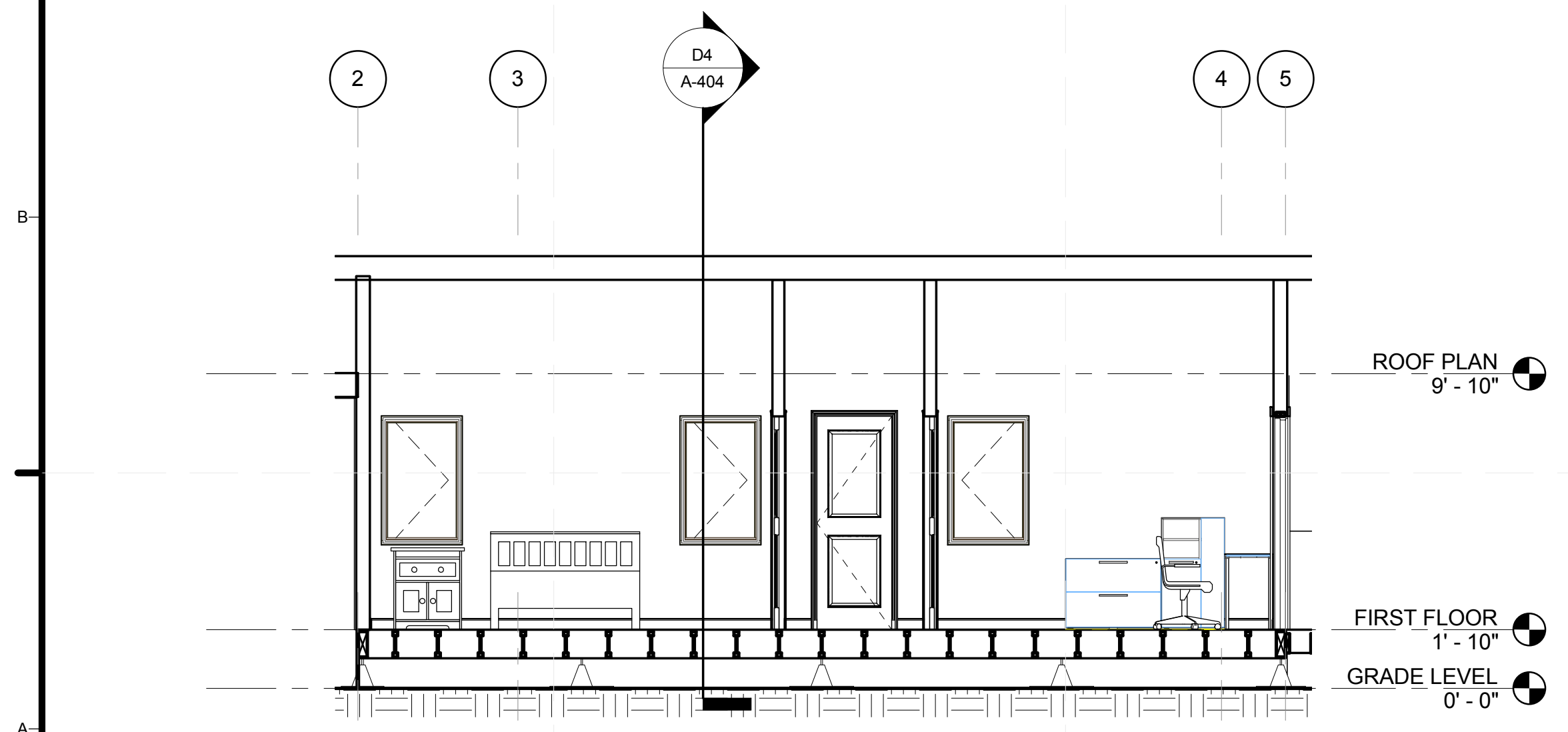




**D1 PRIVATE CORE**  
1/4" = 1'-0"



**D4 CORE - PRIVATE OWNER'S EAST WALL**  
1/4" = 1'-0"



**A1 CORE - PRIVATE NORTH WALL**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

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3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.

**REFERENCE KEYNOTES**

- DIV 06 - WOODS, PLASTICS, AND COMPOSITS  
06 22 00 MILLWORK
- DIV 09 - FINISHES  
09 91 00 BASEBOARD

**SHEET KEYNOTES**



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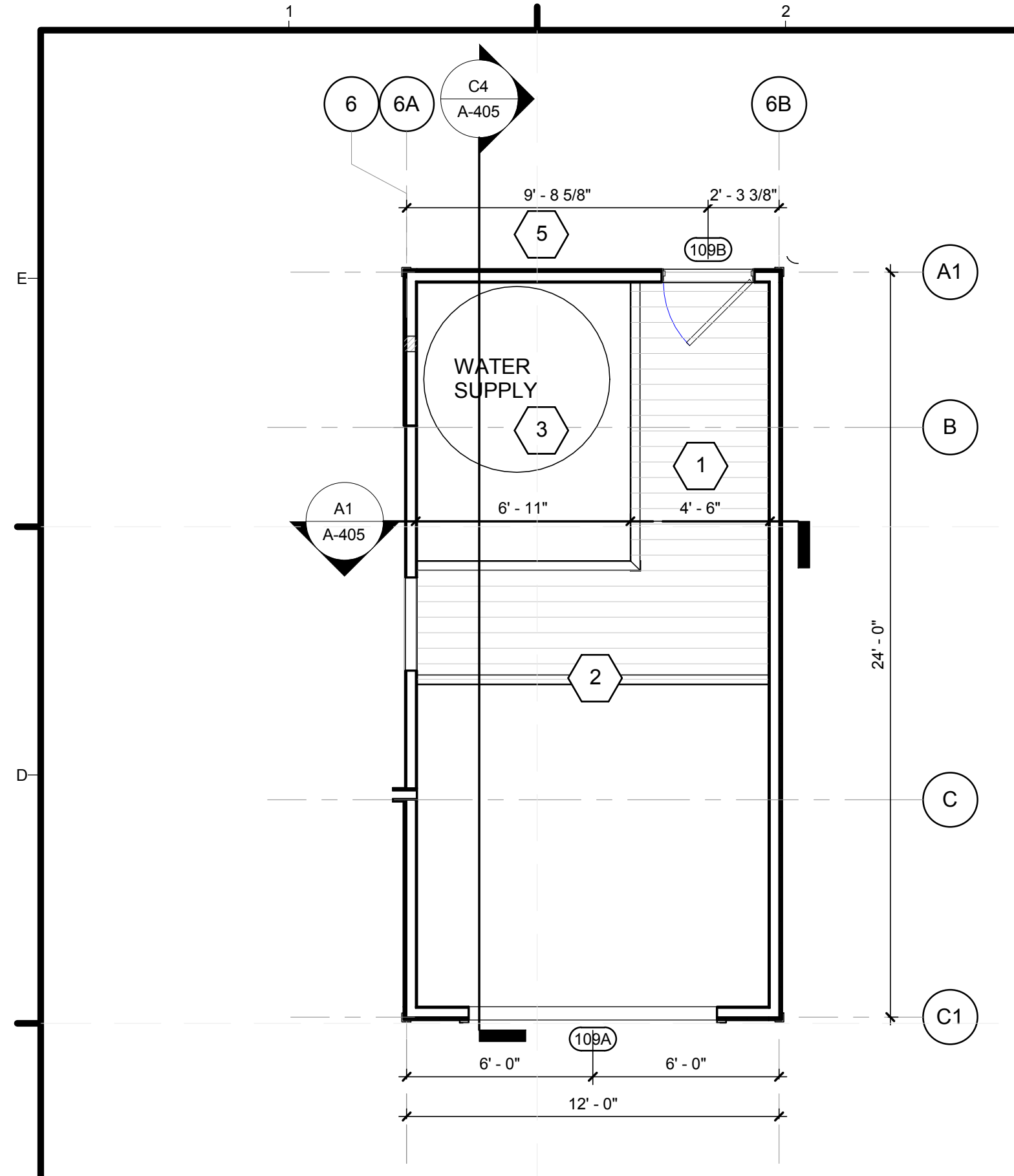
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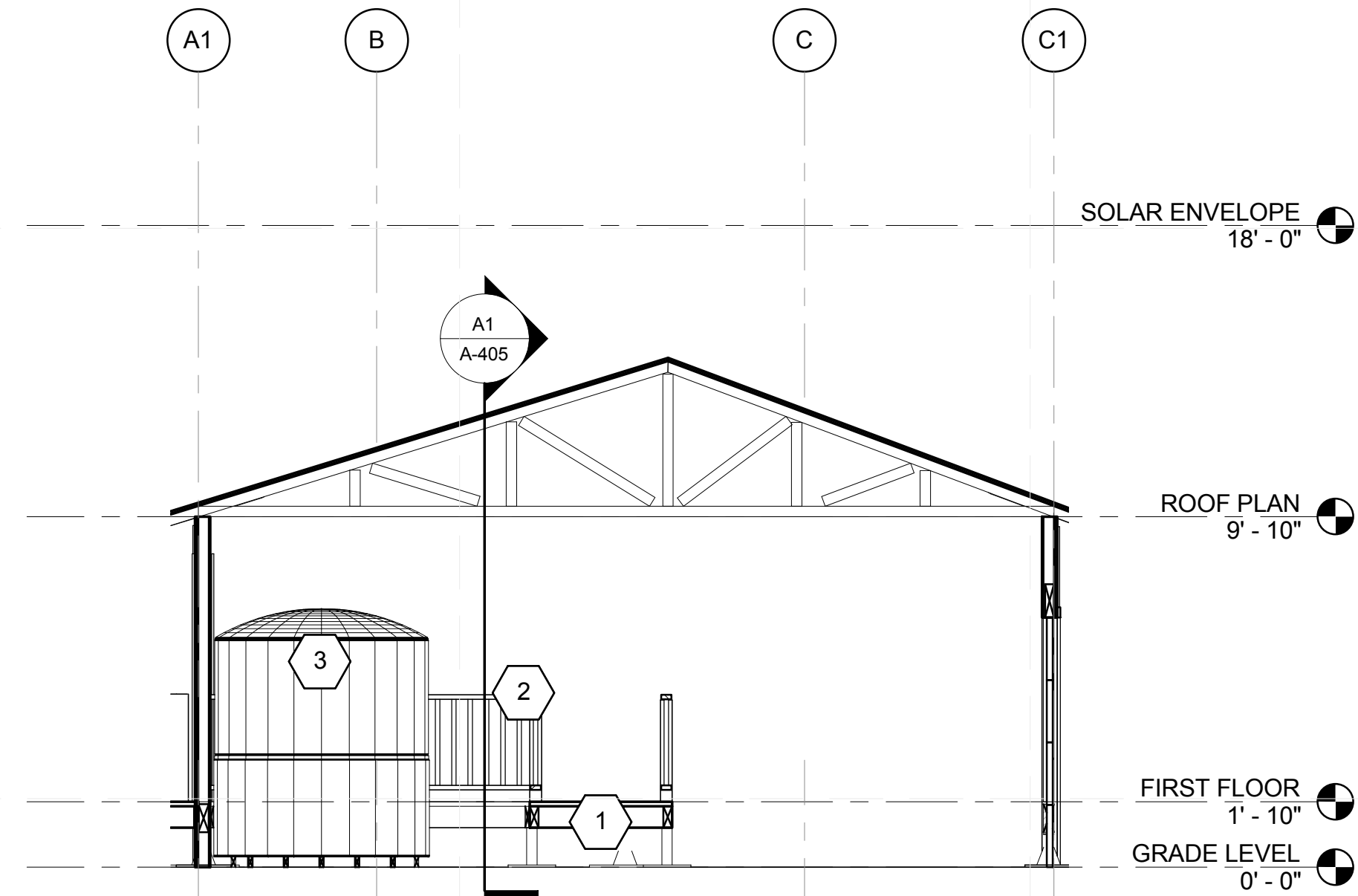
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**PRIVATE CORE**

**A-404**

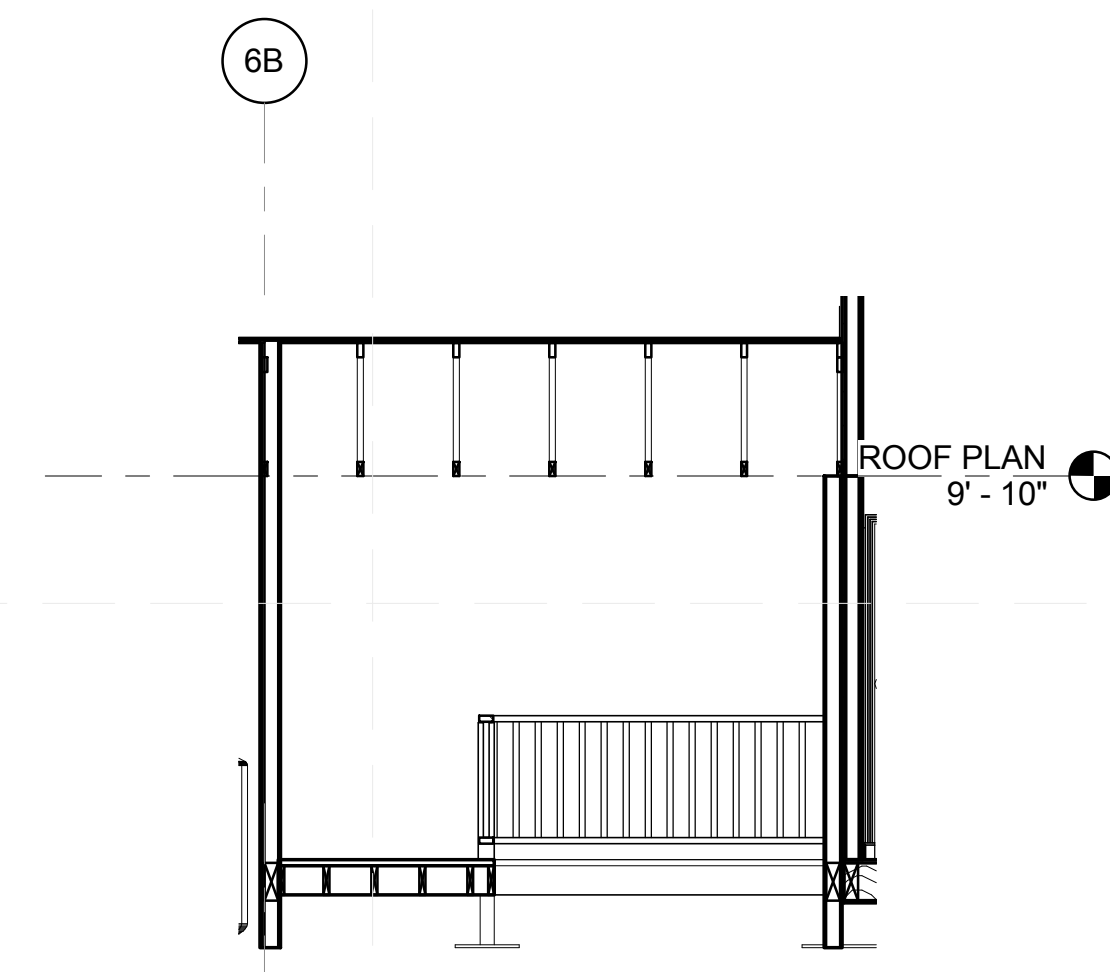




**C1 GARAGE CORE**  
1/4" = 1'-0"



**C4 CORE - GARAGE EAST WALL**  
1/4" = 1'-0"



**A1 CORE - GARAGE NORTH WALL**  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

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3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.
5. GARAGE DOOR OPENING IS NOT PERMITTED WITHIN 4' OF THE BUILDING CORNER UNLESS BUILDING HAS "CONTINUOUSLY SHEATHED WALLS" AS PER IRC R602.10.5 AND COMPLIES WITH INDIANA AMENDMENTS EXCEPTION TO IRC R602.10.5 AND FIGURE IRC R602.10.5(2) WHICH INCLUDES SPECIAL INSTRUCTIONS PERTAINING TO THE GARAGE DOOR HEADER, THE WALL SHEATHING, ANCHOR BOLTS AND STRAPS ON BOTH SIDES OF THE GARAGE DOOR.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 DECKING FOR TOUR ROUTE
- 2 36" HEIGHT WOOD RAILING
- 3 1050 GALLON WATER SUPPLY TANK
- 4 COMBINER/BREAKER BOX
- 5 WATER DELIVERY ACCESS



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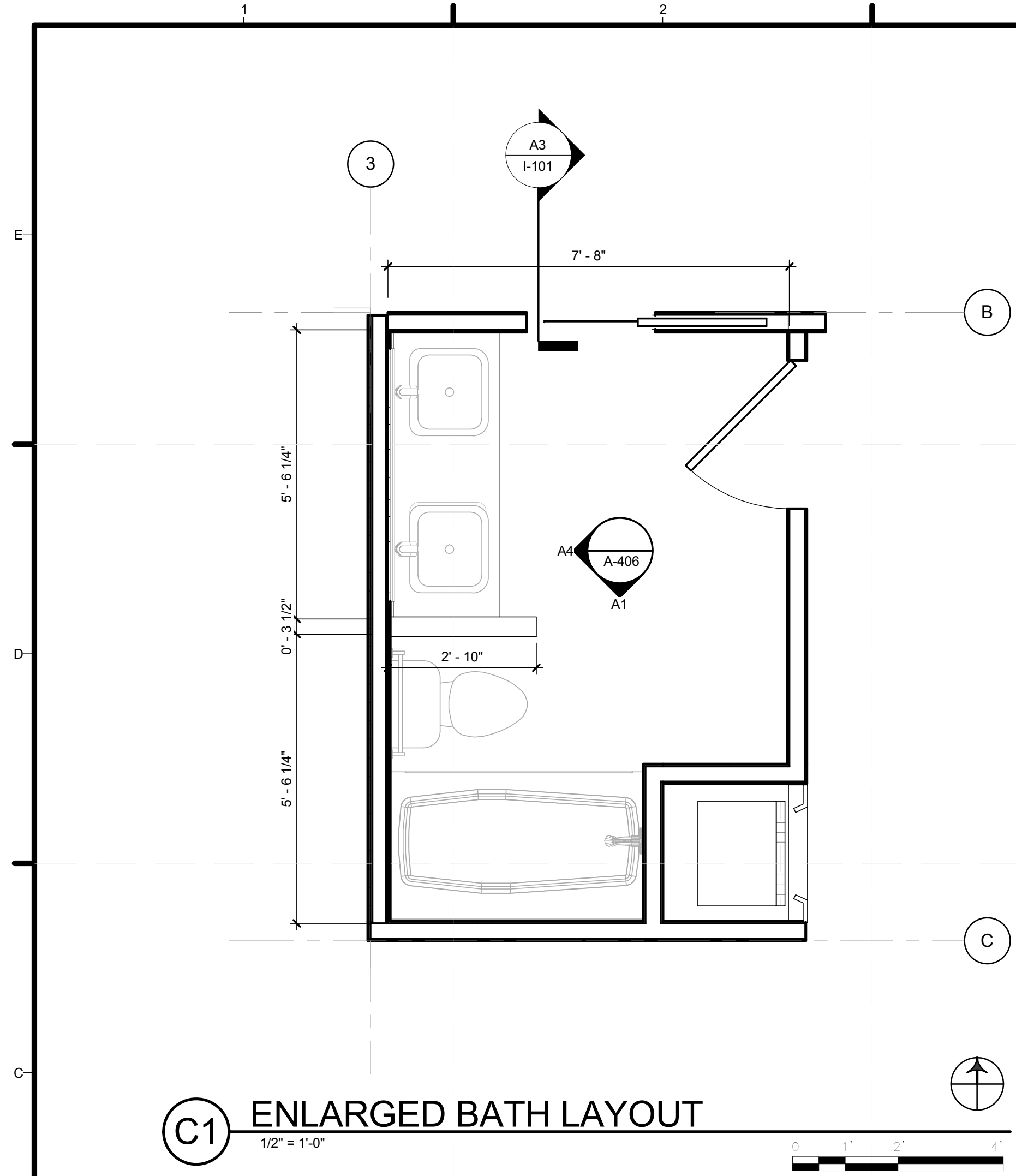
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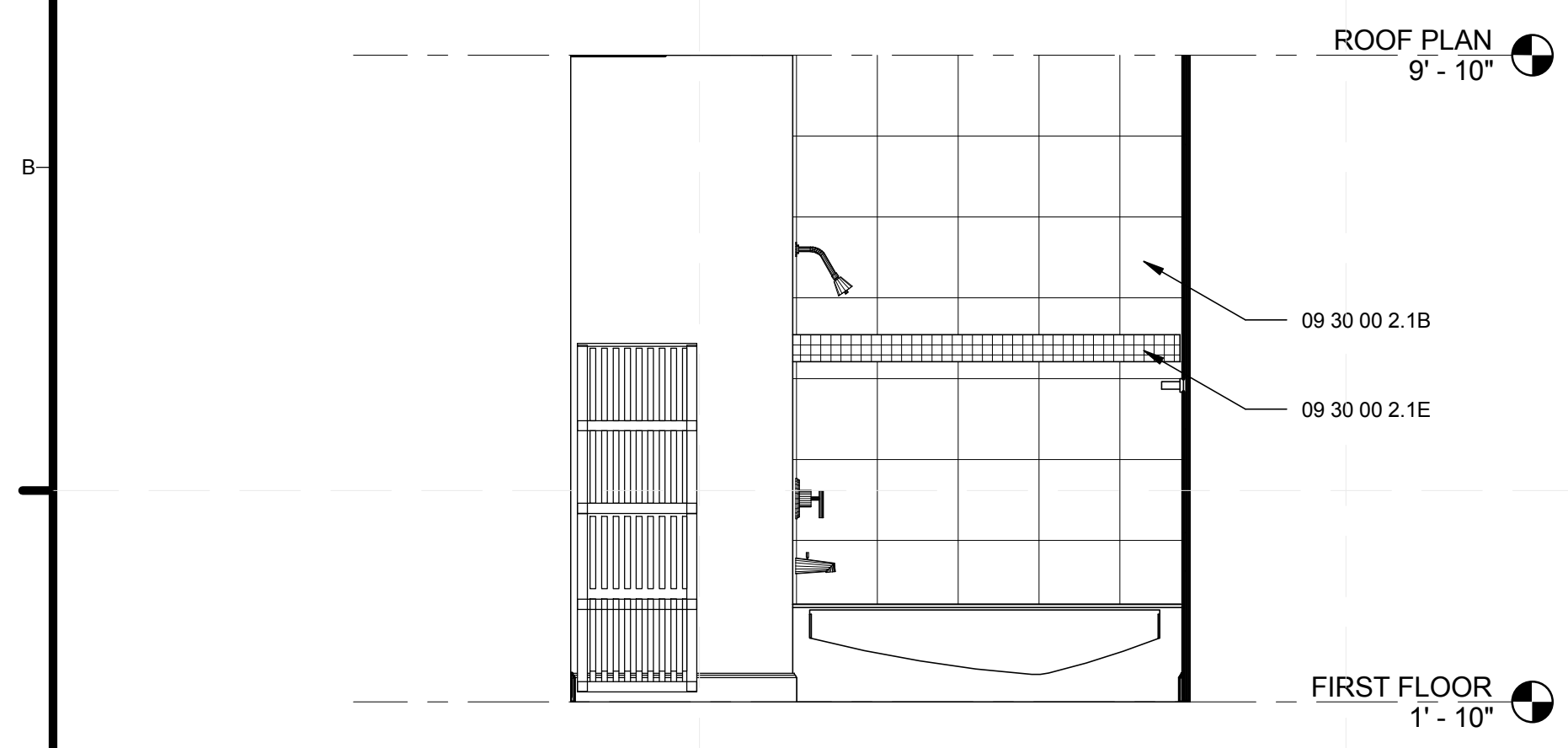
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SHEET TITLE  
**GARAGE CORE**

**A-405**

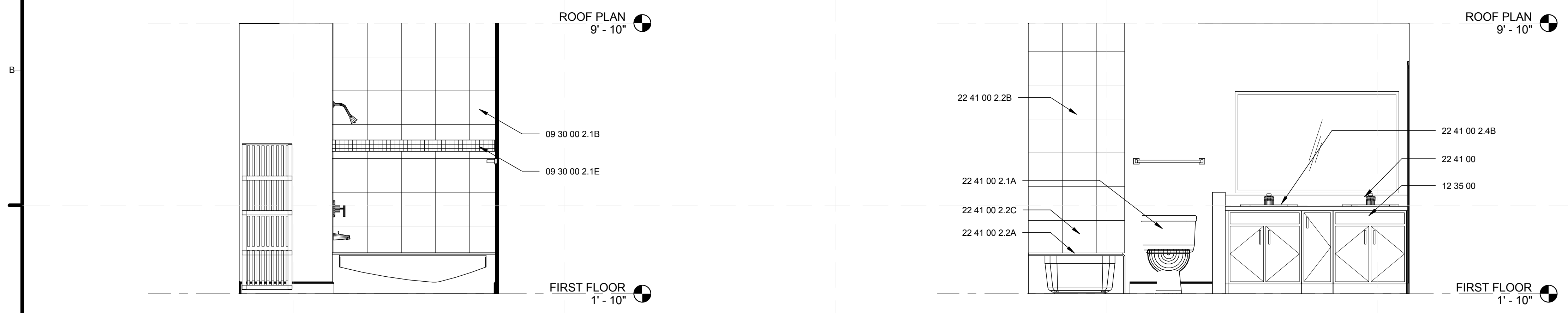


**C1 ENLARGED BATH LAYOUT**  
1/2" = 1'-0"



**A1 BATH - SOUTH WALL**  
1/2" = 1'-0"

8/13/2011 10:23:41 AM



**A4 BATH - WEST WALL**  
1/2" = 1'-0"

**GENERAL SHEET NOTES**

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3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.
5. SEE P-601 FOR PLUMBING SCHEDULE.

**REFERENCE KEYNOTES**

- DIV 09 - FINISHES  
09 30 00 2.1 B GLAZED CERAMIC WALLTILE  
09 30 00 2.1 E GLASS WALL TILE
- DIV 12 - FURNISHINGS  
12 35 00 RESIDENTIAL CASEWORK
- DIV 22 PLUMBING  
22 41 00 RESIDENTIAL PLUMBING FIXTURES  
22 41 00 2.1A WATER CLOSET  
22 41 00 2.2A BATH TUB  
22 41 00 2.2B SHOWER TRIM  
22 41 00 2.3A BATH FAUCET  
22 41 00 2.4B BATH SINK

**SHEET KEYNOTES**



TEAM NAME: TEAM PURDUE  
ADDRESS: PURDUE UNIVERSITY  
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WEST LAFAYETTE, IN 47907  
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RYAN JUSTAK, SCHOLER CORPORATION  
MARK BEALS, J & T SYSTEMS, INC.  
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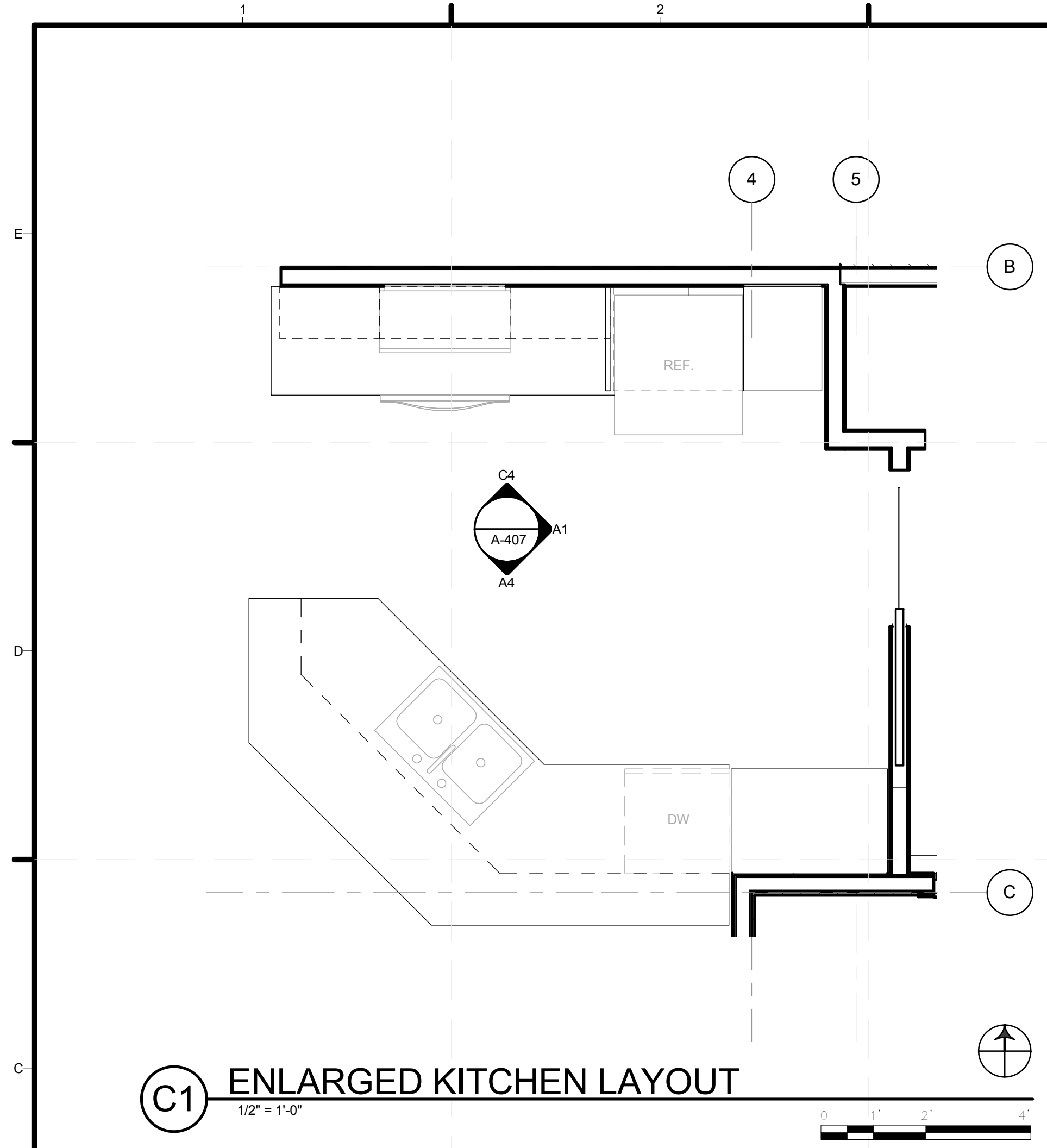
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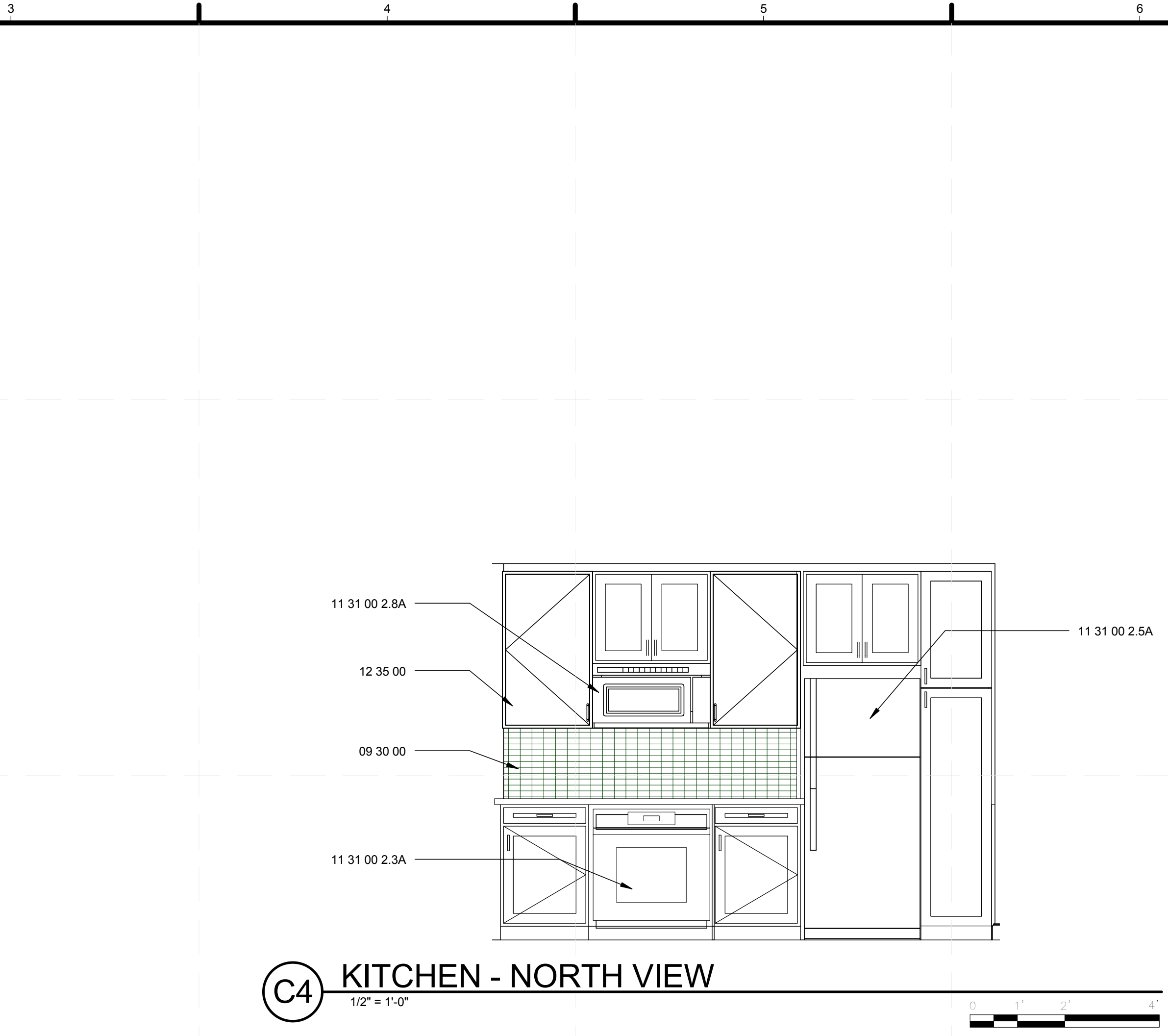
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**LARGE SCALE PLANS - BATHROOM**

**A-406**

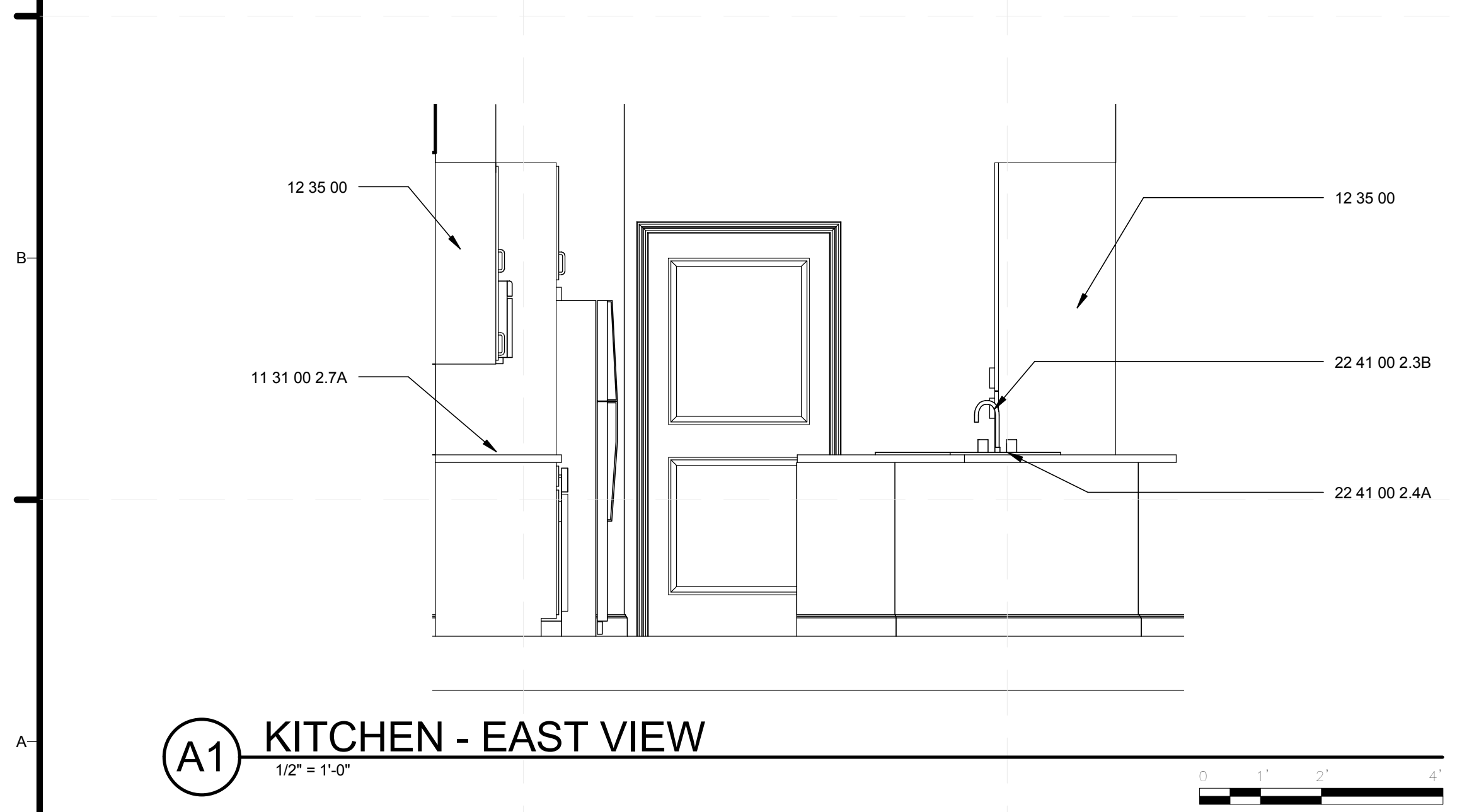




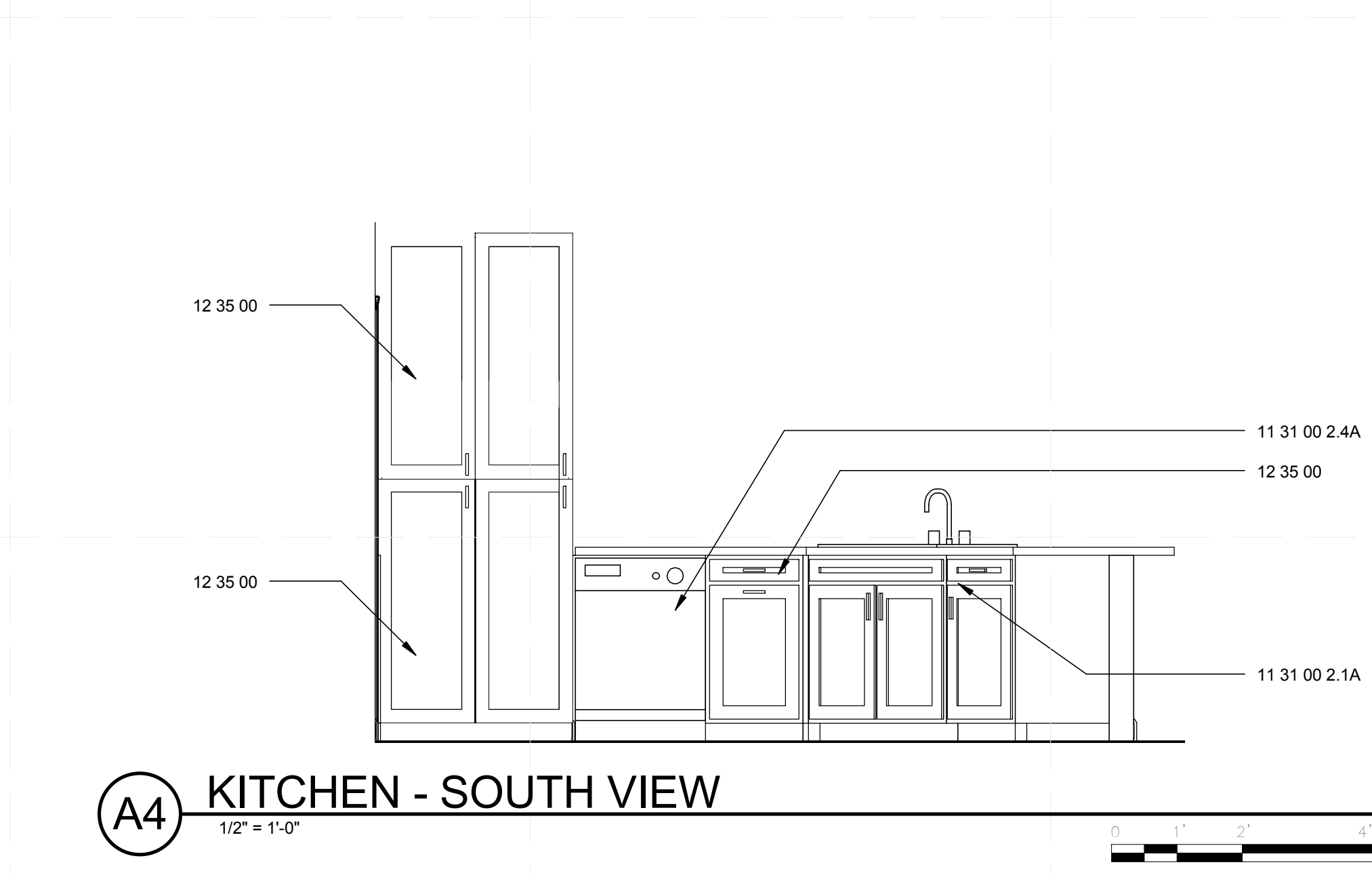
**C1 ENLARGED KITCHEN LAYOUT**  
1/2" = 1'-0"



**C4 KITCHEN - NORTH VIEW**  
1/2" = 1'-0"



**A1 KITCHEN - EAST VIEW**  
1/2" = 1'-0"



**A4 KITCHEN - SOUTH VIEW**  
1/2" = 1'-0"

**GENERAL SHEET NOTES**

1. DUE TO COORDINATION WITH FRAMING AND MECHANICAL INSTALLATIONS, FINAL DIMENSIONS MAY VARY SLIGHTLY FROM DIMENSIONS AS SHOWN ON CONSTRUCTION DRAWINGS.
2. SPECIFIC CABINET LAYOUT TO BE DESIGNED BY CABINET SUPPLIER. CABINET SUPPLIER'S DESIGN TAKES PRECEDENCE OVER ILLUSTRATIONS SHOWN HERE.
3. ALL ANGLES ARE 45 DEGREES UNLESS OTHERWISE NOTED.
4. CENTER ALL INTERIOR OPENINGS WHERE APPLICABLE.

**REFERENCE KEYNOTES**

- DIV 09 - FINISHES  
09 30 00 TILING
- DIV 11 - EQUIPMENT  
11 31 00 - RESIDENTIAL APPLIANCES  
11 31 00 2.1A - GARBAGE DISPOSAL  
11 31 00 2.3A - OVEN  
11 31 00 2.4A - DISHWASHER  
11 31 00 2.5A - REFRIGERATOR  
11 31 00 2.7A - COOKTOP  
11 31 00 2.8A - MICROWAVE
- DIV 12 - FURNISHINGS  
12 35 00 RESIDENTIAL CASEWORK
- DIV 22 - PLUMBING  
22 41 00 2.3B KITCHEN FAUCET  
22 41 00 2.4B KITCHEN SINK

**SHEET KEYNOTES**



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SHEET TITLE  
**LARGE SCALE PLANS - KITCHEN**

**A-407**

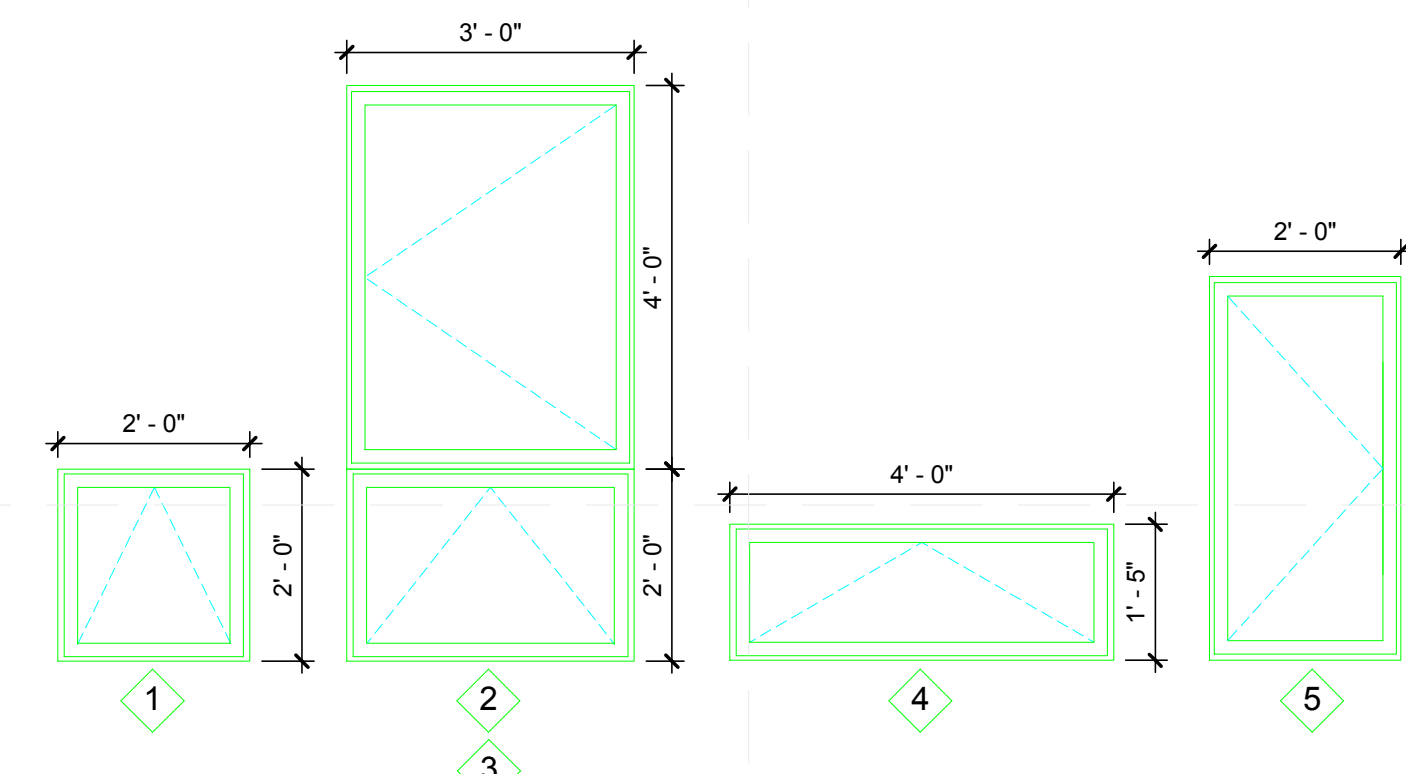
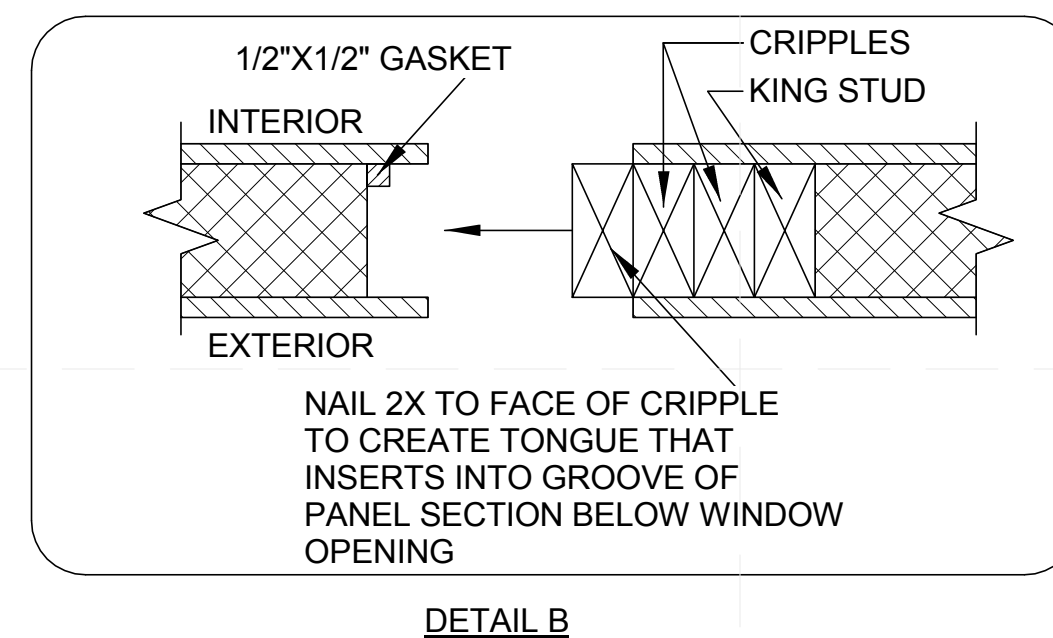
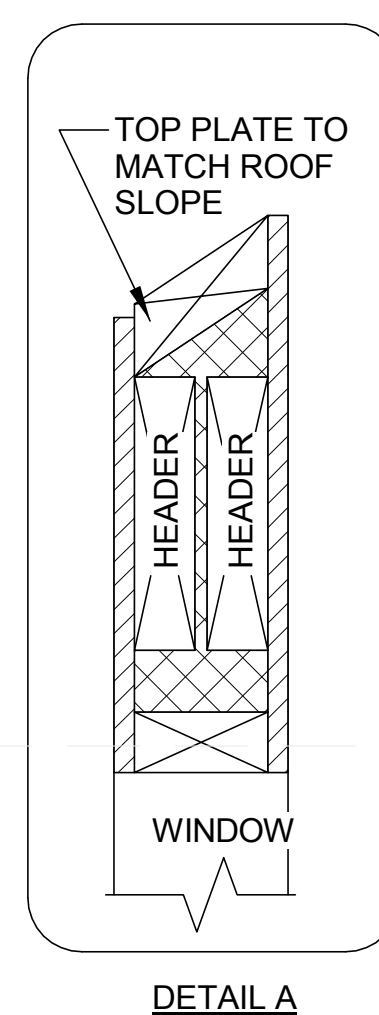
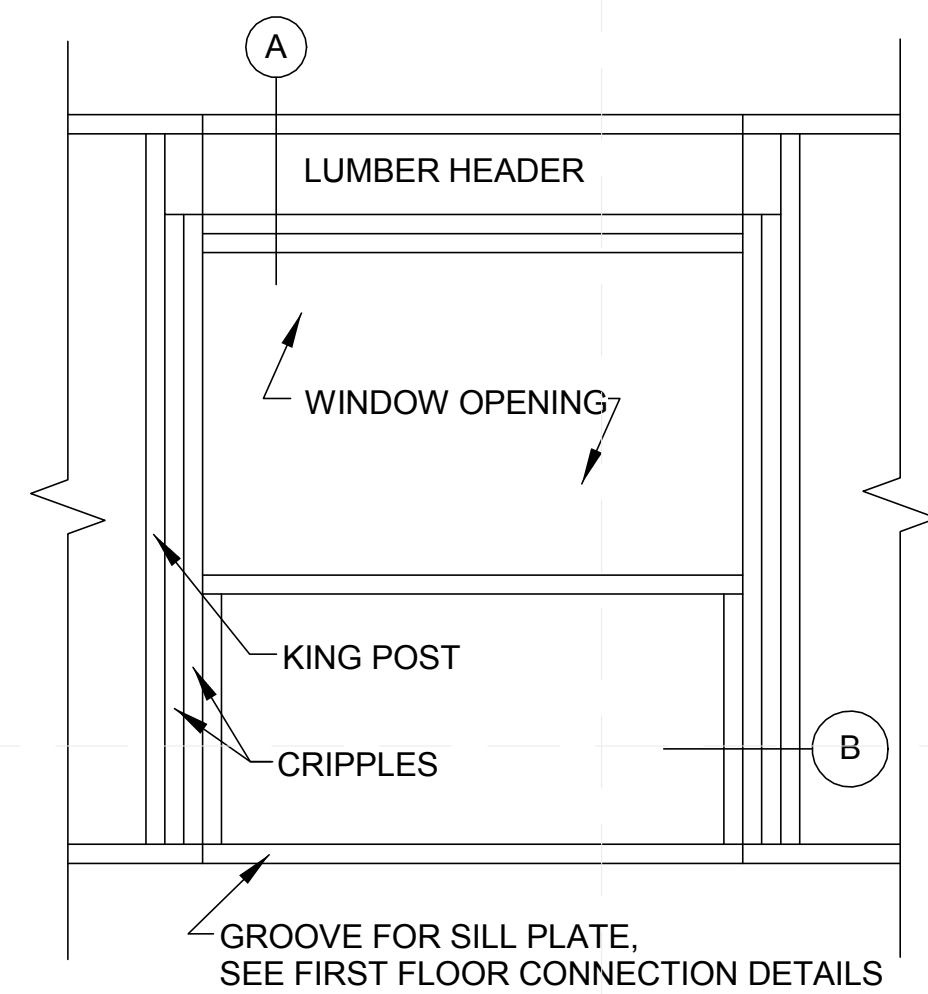




MARK	Count	SIZE		TYPE	MATERIAL	GLAZING	DETAIL					NOTES	
		WIDTH	HEIGHT				HEAD	JAMB	SILL	U-Value	SHGC		Tv
1	1	2'-0"	2'-0"	AWNING	ALUMINUM CLAD	CLEAR LoE-179 #2LoE-179 #5, ARGON		4-9/16"		22	.38	.45	UTILITY ROOM
2	3	3'-0"	4'-0"	CRANK CASEMENT	ALUMINUM CLAD	CLEAR LoE-179 #2LoE-179 #5, ARGON		4-9/16"		19	.44	.54	SOUTH LIVING ROOM
3	3	3'-0"	2'-0"	CRANK AWNING	ALUMINUM CLAD	CLEAR LoE-179 #2LoE-179 #5, ARGON		4-9/16"		22	.38	.45	SOUTH LIVING ROOM
4	5	4'-0"	1'-4 1/2"	OPERABLE CLERESTORY AWNING	ALUMINUM CLAD	CLEAR LoE-179 #2LoE-179 #5, ARGON		4-9/16"		22	.38	.45	MARVEL OPERATOR PRE-INSTALLED
5	4	2'-6"	4'-0"	CRANK CASEMENT	ALUMINUM CLAD	CLEAR LoE-270 #2LoE-179 #5, ARGON		4-9/16"		21	.22	.4	MASTER/OFFICE/LIVING

### GENERAL SHEET NOTES

- EGRESS WINDOW NOTE: VERIFY THAT THE WINDOW MANUFACTURER WINDOW MEETS THE IRC 2009 AND IRC 2000 INDIANA AMENDMENTS.
- SECTION R-310.1.1 "MINIMUM NET CLEAR OPENING OF 5.7 SF"
- SECTION R-310.1.2 "MINIMUM NET CLEAR OPENING HEIGHT 24"
- SECTION R-310.1.3 "MINIMUM NET CLEAR OPENING WIDTH 22"



**C1** SIPS OPENING DETAIL  
3/16" = 1'-0"

**C5** WINDOW TYPES  
1/2" = 1'-0"

MARK	SIZE		ROUGH OPENING		MANUFACTURER	MODEL	FIRE RATING	GLAZING	DESCRIPTION	FINISH	HARDWARE			NOTES
	WIDTH	HEIGHT	WIDTH	HEIGHT							MANUFACTURER	MODEL	FINISH	
101A	3'-0"	6'-8"	3'-4"	6'-10"	THERMA TRU	CCA230		PASSAGE	STAINED	SCHLAGE	F60 CAM 619	SATIN NICKEL	FRONT DOOR	
102A	3'-0"	6'-8"	3'-4"	6'-10"	MASONITE	MDF 1 PANEL SQUARE SMOOTH		POCKET	WHITE PAINT	SCHLAGE		SATIN NICKEL		
103A	2'-10"	6'-8"	3'-2"	6'-10"	MASONITE	MDF 1 PANEL SQUARE SMOOTH		PASSAGE	WHITE PAINT	SCHLAGE	F40 CAM 619	SATIN NICKEL	BATH & BED	
104A	3'-0"	6'-8"	3'-4"	6'-10"	THERMA TRU	TS210	20 MIN	PASSAGE	WHITE PAINT	SCHLAGE	BE365 CAM 619, FA51 AND 619	SATIN NICKEL	GARAGE INTO HOUSE	
104B	5'-0"	7'-0"	5'-4"	7'-2"	MASONITE	PLANTATION MDF LOUVER		BIFOLD	WHITE PAINT	SCHLAGE	F10 ACC 619	SATIN NICKEL	BIFOLD	
106A	2'-4"	6'-8"	2'-8"	6'-10"	MASONITE	MDF 1 PANEL SQUARE SMOOTH		PASSAGE	WHITE PAINT	SCHLAGE	F10 ACC 619	SATIN NICKEL	LINEN IN HALLWAY	
107A	2'-10"	6'-8"	3'-2"	6'-10"	MASONITE	MDF 1 PANEL SQUARE SMOOTH		PASSAGE	WHITE PAINT	SCHLAGE	F40 ACC 619	SATIN NICKEL	BATH & BED	
107B	3'-0"	6'-8"	3'-4"	6'-10"	THERMA TRU	CCV10020-LE		LOW-E	PASSAGE	WHITE PAINT	SCHLAGE	F51 ACC 619, JD60619	SATIN NICKEL	107B
107C	4'-0"	6'-8"	4'-4"	6'-10"	MASONITE	PLANTATION MDF		BIFOLD	WHITE PAINT	SCHLAGE	F10 ACC 619	SATIN NICKEL	BIFOLD	
108A	2'-10"	6'-8"	3'-2"	6'-10"	MASONITE	MDF 1 PANEL SQUARE SMOOTH		PASSAGE	WHITE PAINT	SCHLAGE	F40 ACC 619	SATIN NICKEL	BATH & BED	
108B	3'-0"	6'-8"	3'-4"	6'-10"	THERMA TRU	CCV10020-LE		LOW-E	PASSAGE	WHITE PAINT	SCHLAGE	F51 ACC 619, JD 60619	SATIN NICKEL	107B
108C	4'-0"	6'-8"	4'-4"	6'-10"	MASONITE	PLANTATION MDF		BIFOLD	WHITE PAINT	SCHLAGE	F51 ACC 619	SATIN NICKEL	BIFOLD	
108I	2'-5 1/2"	6'-8"			MASONITE	MDF 1 PANEL SQUARE SMOOTH		POCKET						
109A	8'-0"	7'-0"	8'-4"	7'-2"				GARAGE	WHITE PAINT	SCHLAGE		SATIN NICKEL		
109B	3'-0"	6'-8"	3'-4"	6'-10"	THERMA TRU	CCV10020-LE		PASSAGE	WHITE PAINT	SCHLAGE	F51 ACC 619, JD60619	SATIN NICKEL	107B	

### REFERENCE KEYNOTES

DIV 08 - OPENINGS  
08 10 00 DOORS AND FRAMES  
08 51 13 ALUMINUM WINDOWS

### SHEET KEYNOTES



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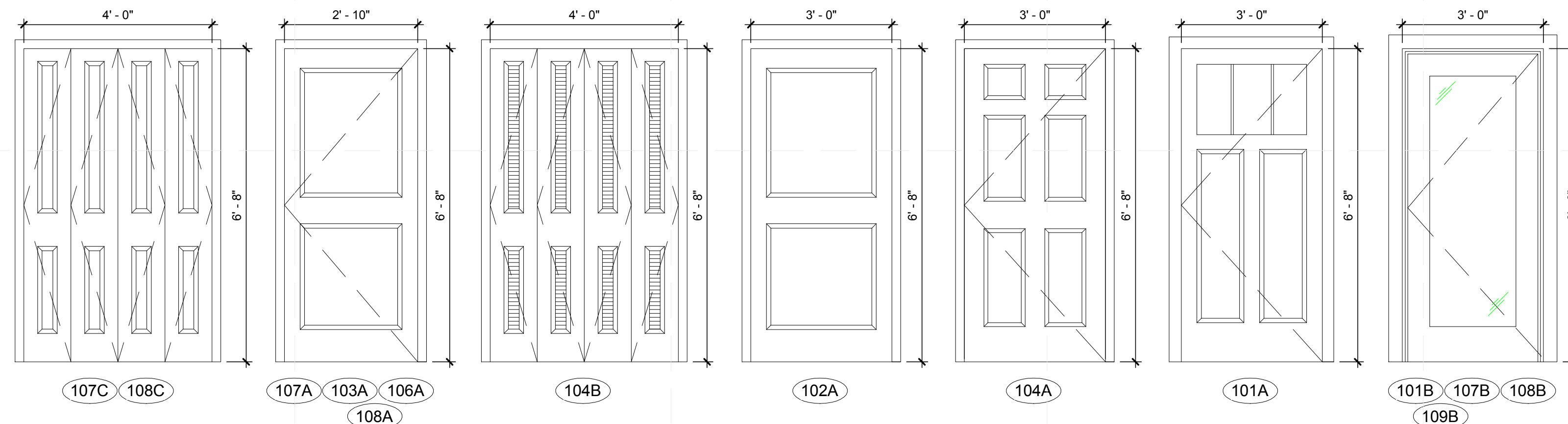


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SHEET TITLE  
**SCHEDULES**

**A-601**



**A1** DOOR TYPES  
1/2" = 1'-0"

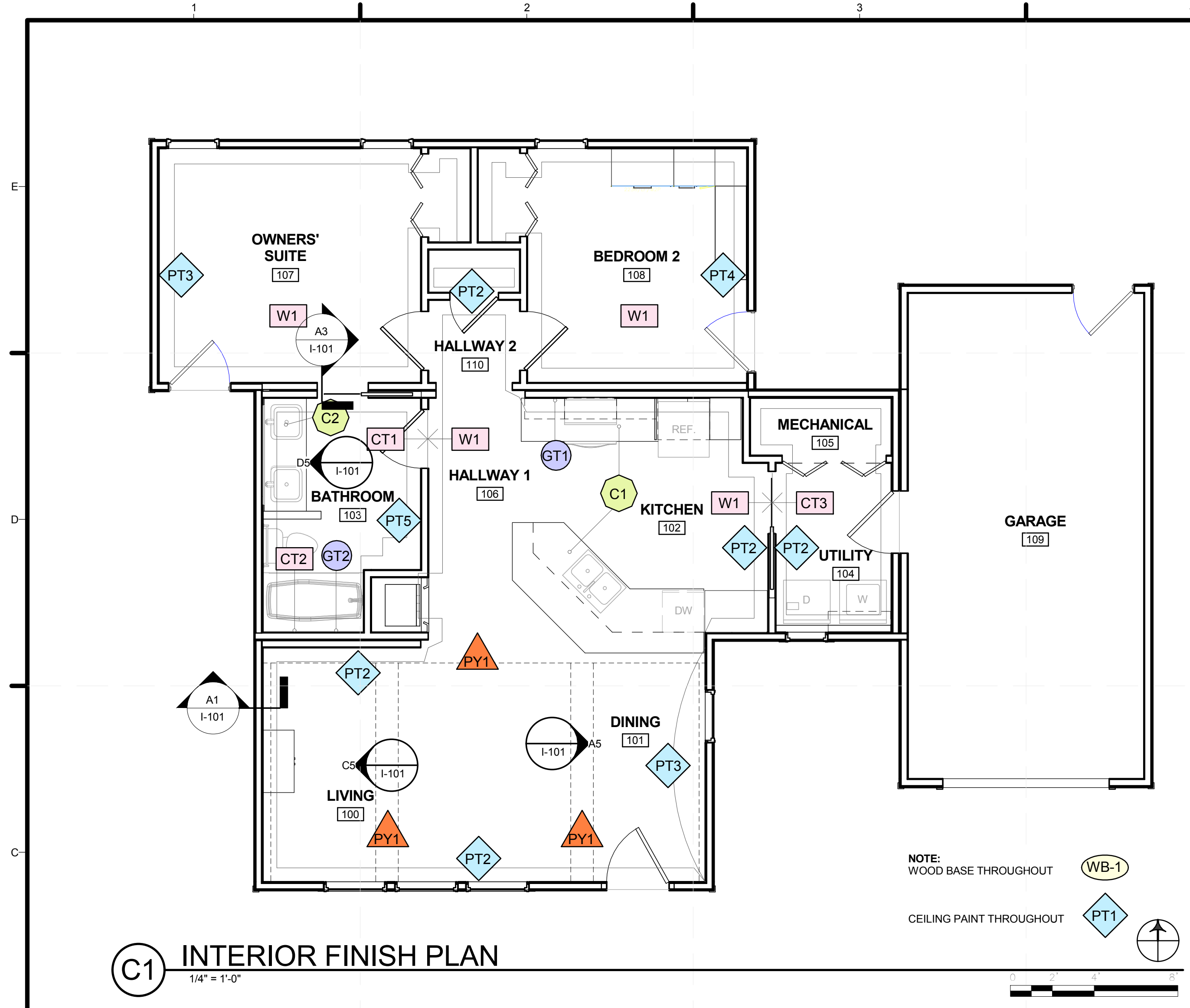
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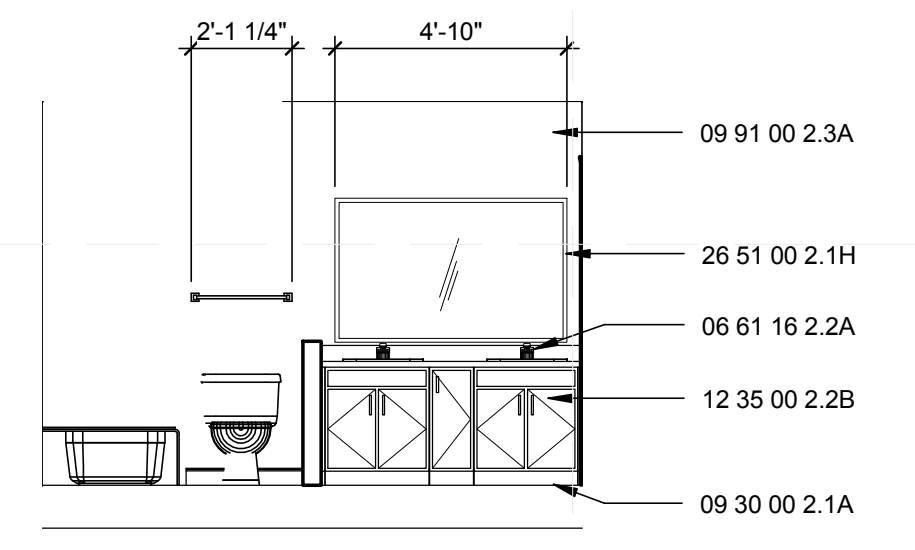




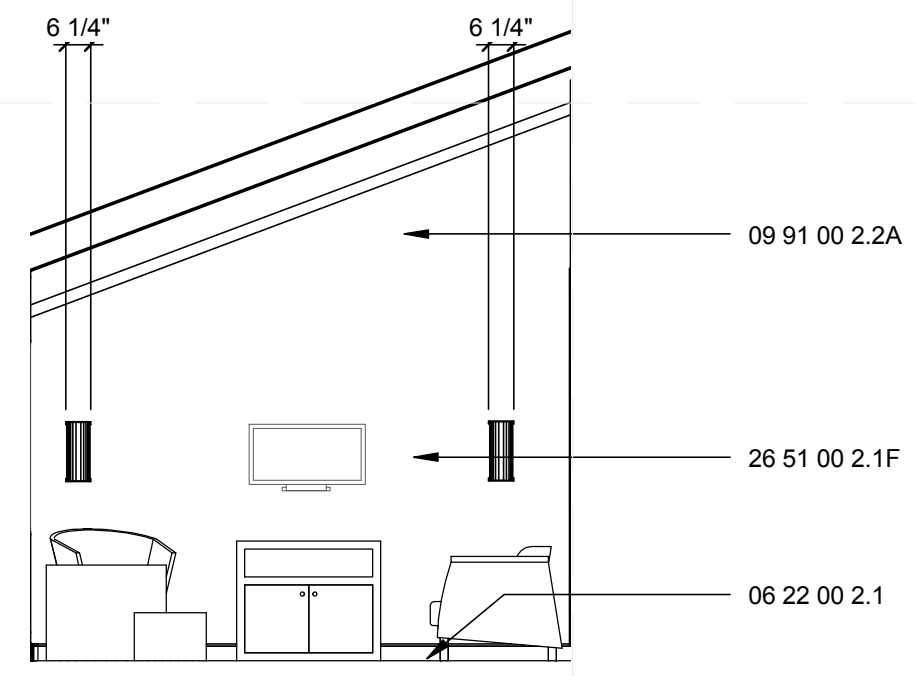




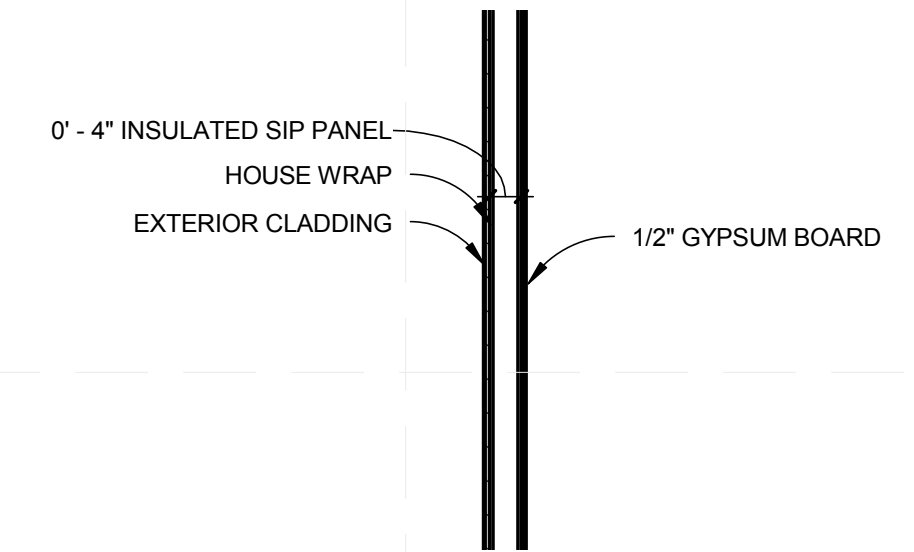
**C1** INTERIOR FINISH PLAN  
1/4" = 1'-0"



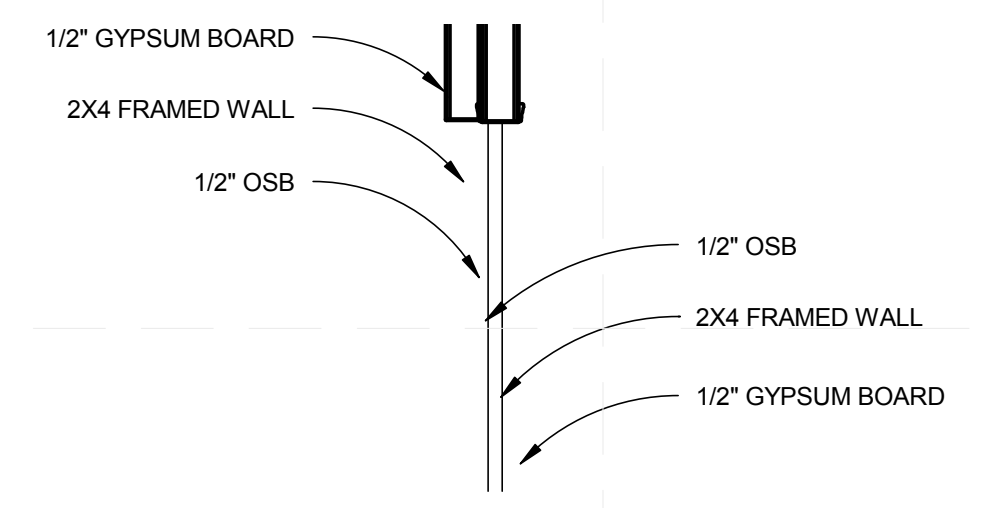
**D5** BATH WEST WALL  
1/4" = 1'-0"



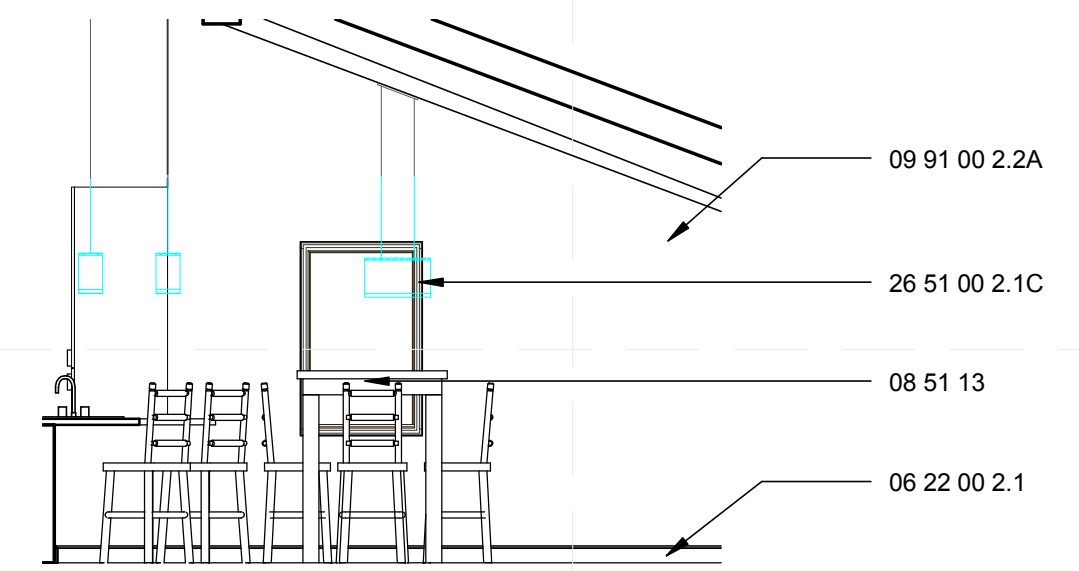
**C5** LIVING WEST WALL  
1/4" = 1'-0"



**A1** EXTERIOR SIP WALL SECTION  
1/2" = 1'-0"



**A3** INTERIOR MARRIAGE WALL DETAIL  
1/2" = 1'-0"



**A5** DINING EAST WALL  
1/4" = 1'-0"

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

- DIV 06 - WOOD, PLASTICS, AND COMPOSITES
- 06 22 00 MILLWORK
- 06 61 16 SOLID SURFACING FABRICATIONS
- DIV 08 - OPENINGS
- 08 51 13 ALUMINUM WINDOWS
- DIV 09 - FINISHES
- 09 30 00 TILING
- 09 91 00 PAINTING
- DIV 12 - FURNISHINGS
- 12 35 00 RESIDENTIAL CASEWORK
- DIV 26 - ELECTRICAL
- 26 51 00 INTERIOR LIGHTING

**SHEET KEYNOTES**



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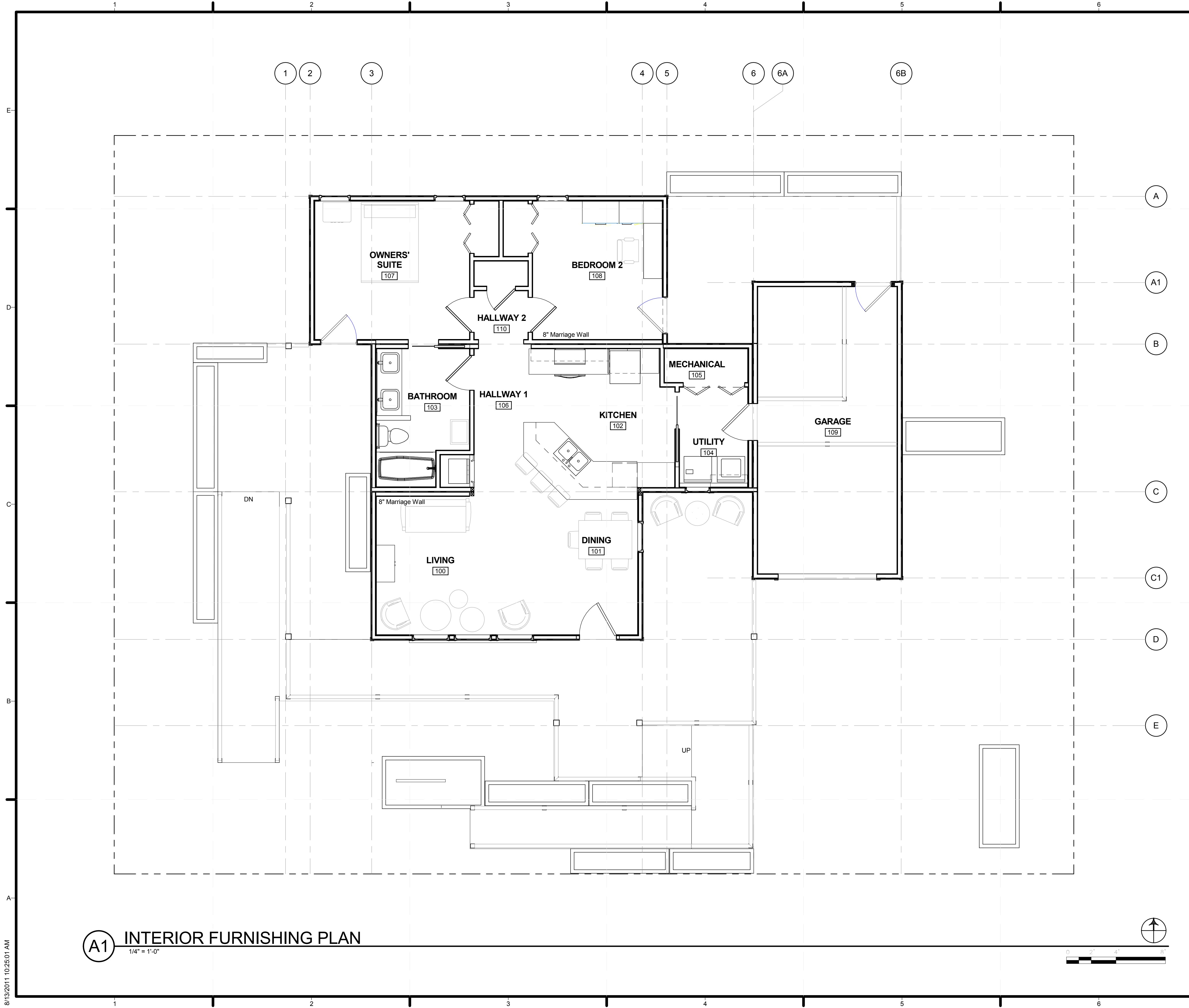
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SHEET TITLE  
**INTERIOR DESIGN PLAN**

**I-101**





**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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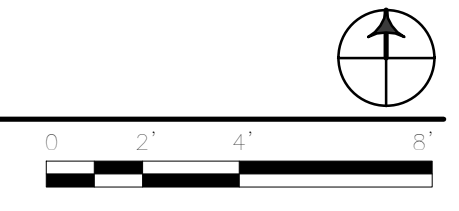
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**INTERIOR FURNISHINGS**

**I-102**

**(A1) INTERIOR FURNISHING PLAN**  
 1/4" = 1'-0"



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ROOM FINISH SCHEDULE											
ROOM NO	ROOM NAME	FLOOR	BASE	NORTH	SOUTH	EAST	WEST	CEILING	CEILING HEIGHT	COMMENTS	Area
100	LIVING	WD1	WB/PT6	PT2	PT2	N/A	PT2	PT1/PY1	VAULTED		57 SF
101	DINING	WD1	WB/PT6	PT2	PT2	PT3	N/A	PT1/PY1	VAULTED		59 SF
102	KITCHEN	WD1	WB/PT6	PT2/GT1	PT2	PT2	PT2	PT1	VAULTED		134 SF
103	BATHROOM	CT1	WB/PT6	PT5	PT5/GT2/CT2	PT5/GT2/CT2	PT5/GT2/CT2	PT1	8'-0", THEN VAULTED		77 SF
104	UTILITY	CT3	WB/PT6	PT2	PT2	PT2	PT2	PT1	VAULTED		43 SF
105	MECHANICAL	WD1	WB/PT6	PT2	PT2	PT2	PT2	PT1	VAULTED		19 SF
106	HALLWAY 1	WD1	WB/PT6	PT2	PT2	PT2	PT2	PT1	VAULTED		59 SF
107	OWNERS' SUITE	WD1	WB/PT6	PT3	PT3	PT3	PT3	PT1	VAULTED		142 SF
108	BEDROOM 2	WD1	WB/PT6	PT4	PT4	PT4	PT4	PT1	VAULTED		119 SF
109	GARAGE									UNFINISHED	266 SF
110	HALLWAY 2	WD1	WB/PT6	PT2	PT2	PT2	PT2	PT1	8'-0"		19 SF

COUNTER TOP SCHEDULE	
COUNTER TOPS	
MARK	DESCRIPTION
C1	MANF: LG HAUSYS STYLE: HI-MACS EDEN PLUS COLOR: PECAN FINISH: G515R
C2	MANF: LG HAUSYS STYLE: HI-MACS EDEN PLUS COLOR: BIRCH BARCH FINISH: G514R

WALL TILE SCHEDULE	
GLASS TILES	
MARK	DESCRIPTION
GT1	MANF: AMERICAN OLEAN STYLE: CANDALARA GLASS COLOR: ENGLISH IVY CL52 FINISH: GLOSSY
GT2	MANF: AMERICAN OLEAN STYLE: LEGACY GLASS COLOR: PEWTER LG28 FINISH: GLOSSY

SEALANT SCHEDULE	
SEALANT	
MARK	DESCRIPTION
PY1	MANF: PORTER PAINTS STYLE: WATER-BASED POLYURETHANE GLOSS: SATIN

FLOOR COVERING SCHEDULE	
ENGINEERED WOOD PLANKS	
MARK	DESCRIPTION
W1	MANF: SHAMROCK PLANK FLOORING STYLE: ENVIRONEERED HICKORY
ENGINEERED WOOD PLANKS	
MARK	DESCRIPTION
CT1	MANF: AMERICAN OLEAN STYLE: POZZALO CERAMIC TILE COLOR: COASTAL BEIGE P292
CT2	MANF: AMERICAN OLEAN STYLE: POZZALO CERAMIC TILE COLOR: COASTAL BEIGE P292
CT3	MANF: STYLE SELECTIONS STYLE: JACKSON RIDGE COLOR: GROTTO BLACK S52

BASE BOARD SCHEDULE	
WOOD BASE	
MARK	DESCRIPTION
WB-1	MANF: MOULDING AND MILLWORK PROFILE: COLONIAL BASE #620 FINISH: PT1

PAINT SCHEDULE	
PAINT	
MARK	DESCRIPTION
PT1	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: GYPSOM 520-1 FINISH: FLAT
PT2	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: PARRAFIN 521-2 FINISH: FLAT
PT3	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: CANARY GRASS 311-3 FINISH: FLAT
PT4	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: TOASTED ALMOND 414-3 FINISH: FLAT
PT5	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: PAROFFIN 521-2 FINISH: SEMI-GLOSS
PT6	MANF: PORTER PAINTS STYLE: PURE PERFORMANCE COLOR: GYPSOM 520-1 FINISH: SEMI-GLOSS

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

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SHEET TITLE  
**INTERIOR DESIGN SCHEDULES**

**I-601**

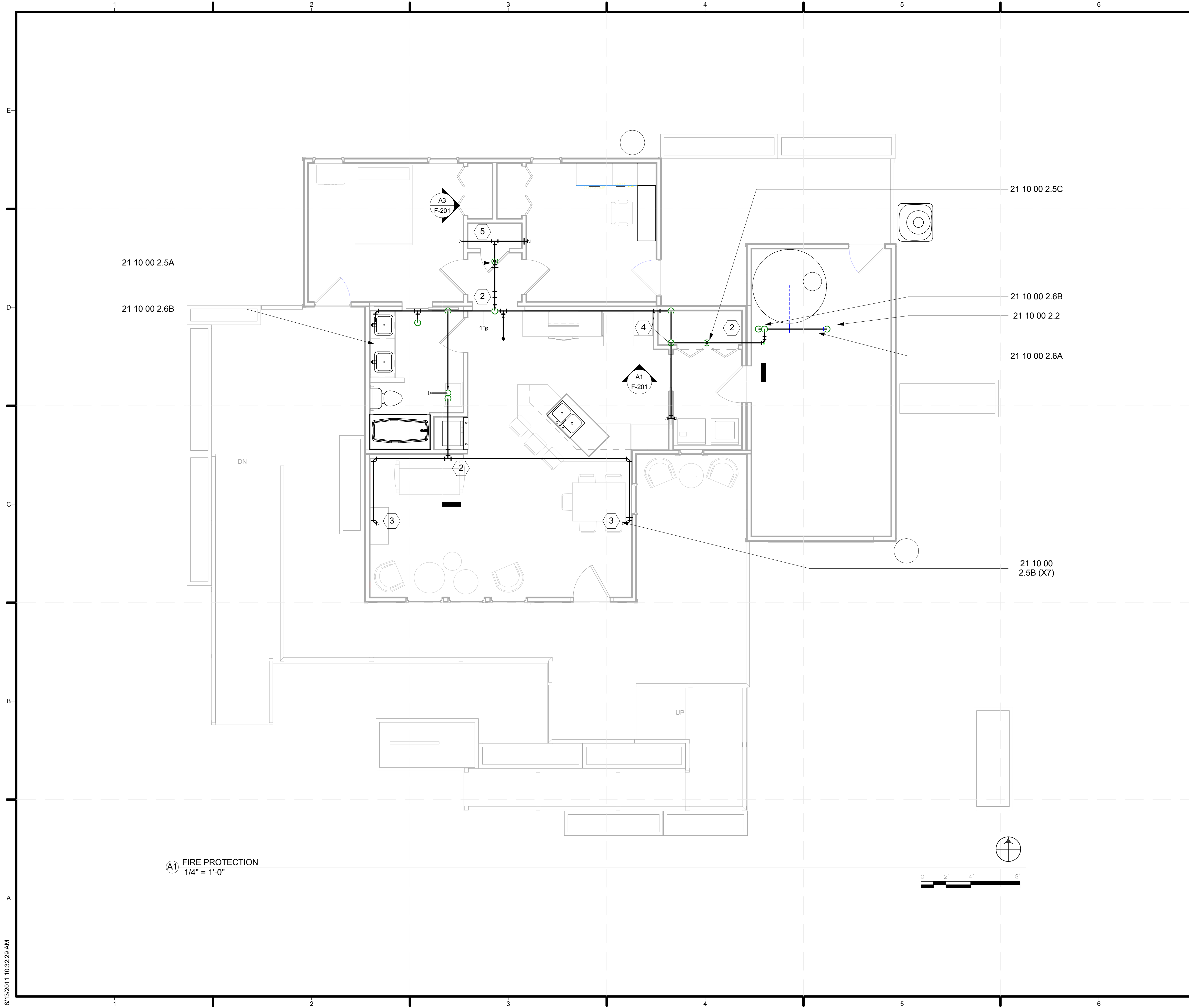












**GENERAL SHEET NOTES**

1. GENERAL NOTES SHALL APPLY TO ALL WORK SHOWN
2. VERIFY ALL MEASUREMENTS TO PROPERLY LOCATE COMPONENTS
3. ALL NOTES COINCIDE WITH SIMILAR DRAWINGS
4. COORDINATE ALL WORK AND PLACEMENT OF COMPONENTS WITH OTHER TRADES
5. ALL PIPING SHALL BE CONCEALED ACCORDING TO NFPA AND INDIANA DEPARTMENT OF FIRE AND BUILDING SERVICES CODE
6. THIS SYSTEM DESIGNED AND INSTALLED PER STANDARDS OF NFPA-13D.
7. SEE CALCULATIONS AND REMOTE AREA NOTED OR PLAN.
8. ALL MAIN PIPING TO BE CPVC PLASTIC.
9. ALL LINE PIPING TO BE CPVC PLASTIC.
10. ALL PIPING TO BE CENTER TO CENTER DIMENSIONS.
11. ALL FITTINGS TO BE CPVC PLASTIC.
12. ALL PAINTING OF PIPING AND DEVICES TO BE BY OTHERS.
13. ALL SPRINKLER HEADS MUST BE 5" FROM AND PARALLEL TO CEILING.
14. SPRINKLERS UNDER 7'-0" ELEVATION TO HAVE WIRE HEAD GUARDS.
15. HANGER PER NFPA 13 AND 13R.
16. ALL DIFFUSERS TO BE A MINIMUM OF 2' - 0" AWAY FROM ALL SPRINKLERS.
17. INSULATION SHALL BE COMPATIBLE WITH CPVC.
18. DEFLECTOR SHALL BE NO MORE THAN 12" DOWN FROM CEILING IN LIVING AND DINING ROOMS.
19. BOTTOM OF LIVING/DINING ROOM BULKHEAD SHALL BE AT LEAST 3" DOWN FROM CENTERLINE OF SPRINKLER.
20. ALL PIPE SHALL BE 1" Ø.
21. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE "TEMPORARY FOR COMPETITION PURPOSES ONLY."
22. FIRESTOPPING INSULATION SHALL BE APPLIED WHERE PIPE TRANSITIONS FROM GARAGE INTO MECHANICAL ROOM.

**REFERENCE KEYNOTES**

DIV 21 - FIRE SUPPRESSION

21 10 00	WATER BASED FIRE PROTECTION
21 10 00 2.2	LEGEND 13D PUMP
21 10 00 2.3	PRESSURE GAUGE
21 10 00 2.4	1" PIPE
21 10 00 2.5A	RECESSED PENDENT
21 10 00 2.5B	RECESSED HSW
21 10 00 2.5C	PENDENT
21 10 00 2.6A	WILKINS 950 XL DOUBLE CHECK VALVE
21 10 00 2.6B	GLOBE DRAIN VALVE

**SHEET KEYNOTES**

- 1 5" BELOW AND PARALLEL TO CEILING
- 2 GROOVED COUPLING FOR DISCONNECT IN MARRIAGE WALL. SEE DETAIL A-1, (F-501)
- 3 SPRINKLER DEFLECTOR SHALL BE AT SAME ELEVATION AT BOTTOM OF BULKHEAD IN CENTER OF LIVING ROOM
- 4 STEEL TO PLASTIC TRANSITION
- 5 ACCESS PANEL THROUGH CLOSET.



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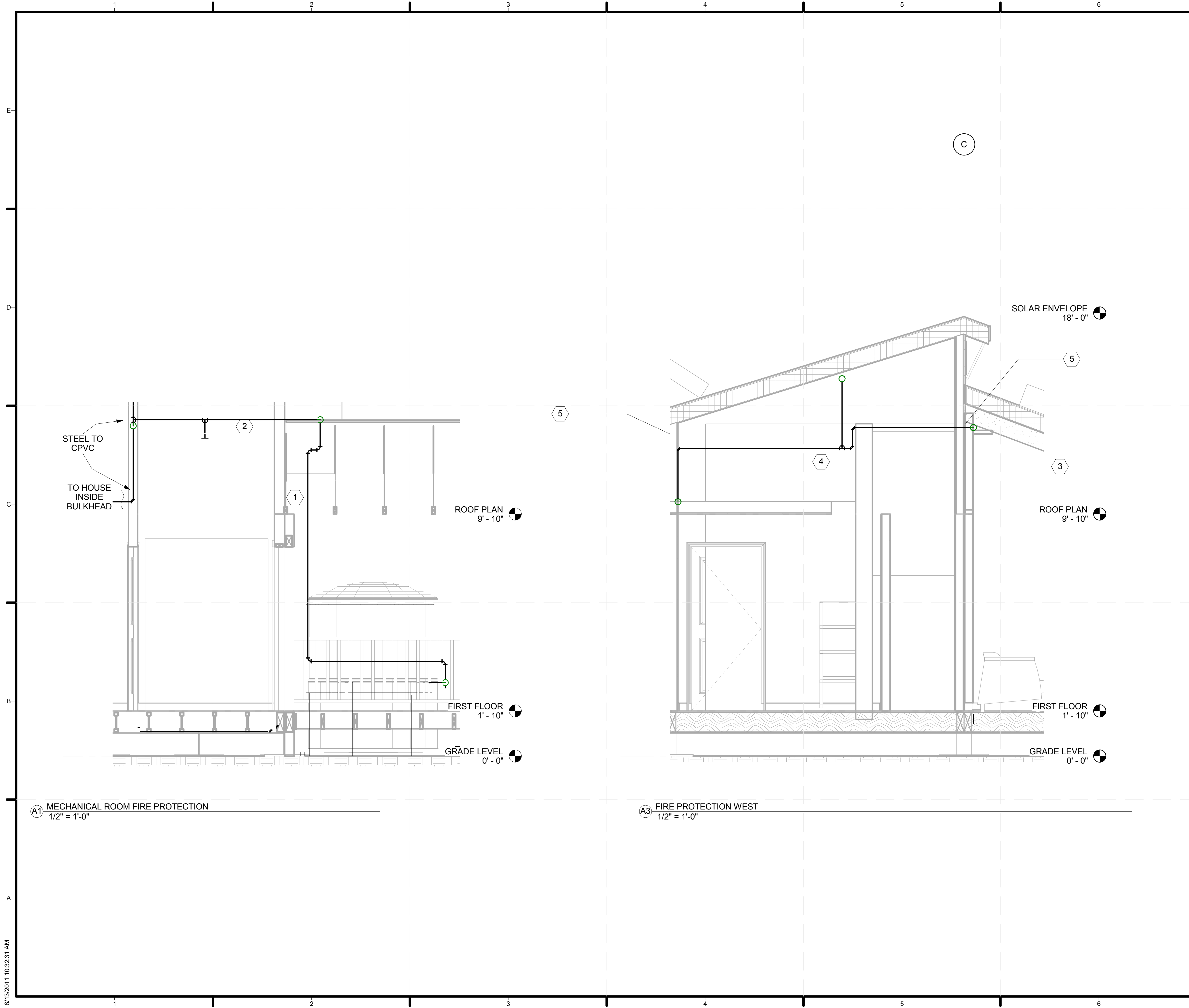
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MARK	DATE	DESCRIPTION

SHEET TITLE  
**FIRE SUPPRESSION PLAN**

**F-102**





**GENERAL SHEET NOTES**

1. ALL PIPE BEFORE BACKFLOW SHALL BE GALVANIZED.
2. ALL EXPOSED PIPE IN CLOSET AND GARAGE SHALL BE STEEL.

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 SUPPLY IN FROM GARAGE. COORDINATE WITH PLUMBING CONTRACTOR
- 2 RUN 4" FROM CEILING
- 3 RUN 8" FROM CEILING
- 4 ACCESS PANEL THROUGH BATHROOM
- 5 GROOVED COUPLING DISCONNECT IN MARRIAGE WALL



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SHEET TITLE  
**MECHANICAL CLOSET**

**F-201**

A1 MECHANICAL ROOM FIRE PROTECTION  
 1/2" = 1'-0"

A3 FIRE PROTECTION WEST  
 1/2" = 1'-0"

**GENERAL SHEET NOTES**

**PENETRATING FIRE RATED PARTITIONS**

BEFORE PENETRATING FIRE RATED WALLS AND PARTITIONS, CONSULT BUILDING CODES AND AUTHORITIES HAVING JURISDICTION IN YOUR AREA. SEVERAL UL CLASSIFIED THROUGH-PENETRATION FIRESTOP SYSTEMS ARE AVAILABLE FOR USE WITH CPVC PIPE. CONSULT THE PIPE MANUFACTURERS OR NOVEON FOR FURTHER INFORMATION. WARNING: SOME FIRESTOP SEALANTS OR WRAP STRIPS CONTAIN SOLVENTS OR PLASTICIZERS THAT MAY BE DAMAGING TO CPVC. ALWAYS CONSULT THE MANUFACTURER OF THE FIRE STOP MATERIAL FOR COMPATIBILITY WITH CPVC PIPE AND FITTINGS.

**RECOMMENDED PRACTICES AND PRECAUTIONS**  
DOS AND DON'TS

WHILE NOT A COMPLETE LIST, THE FOLLOWING IS INTENDED TO HIGHLIGHT MANY OF THE "DOS" AND "DON'TS" ADDRESSED IN THE MANUAL.

**DOS**

- INSTALL PRODUCT ACCORDING TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND DESIGN MANUAL.
- FOLLOW RECOMMENDED SAFE WORK PRACTICES.
- MAKE CERTAIN THAT THREAD SEALANTS, GASKET LUBRICANTS, OR FIRE STOP MATERIALS ARE COMPATIBLE WITH BLAZEMASTER CPVC PIPE AND FITTINGS.
- USE ONLY LATEX-BASED PAINTS IF PAINTING IS DESIRED.
- KEEP PIPE AND FITTINGS IN ORIGINAL PACKAGING UNTIL NEEDED.
- COVER PIPE AND FITTINGS WITH AN OPAQUE TARP IF STORED OUTDOORS.
- FOLLOW PROPER HANDLING PROCEDURES.
- USE TOOLS SPECIFICALLY DESIGNED FOR USE WITH PLASTIC PIPE AND FITTINGS.
- USE PROPER SOLVENT CEMENT AND FOLLOW APPLICATION INSTRUCTIONS.
- USE A DROP CLOTH TO PROTECT INTERIOR FINISHES.
- CUT THE PIPE ENDS SQUARE.
- DEBURR AND BEVEL THE PIPE END BEFORE SOLVENT CEMENTING.
- ROTATE THE PIPE ONE EIGHTH TO ONE QUARTER TURN WHEN BOTTOMING PIPE IN FITTING SOCKET.
- AVOID PUDDLING OF SOLVENT CEMENT IN FITTINGS AND PIPE.
- MAKE CERTAIN THAT SOLVENT CEMENT DOES NOT RUN AND PLUG THE SPRINKLER HEAD ORIFICE.
- FOLLOW THE MANUFACTURER'S RECOMMENDED CURE TIMES PRIOR TO PRESSURE TESTING.
- FILL LINES SLOWLY AND BLEED THE AIR FROM THE SYSTEM PRIOR TO PRESSURE TESTING.
- SUPPORT SPRINKLER HEAD PROPERLY TO PREVENT LIFT UP OF THE HEAD THROUGH THE CEILING WHEN ACTIVATED.
- KEEP THREADED ROD WITHIN 1/16" (1.588 mm) OF THE PIPE.
- INSTALL BLAZEMASTER CPVC IN WET FIRE SPRINKLER SYSTEMS ONLY.
- USE ONLY INSULATION AND/OR GLYCERIN AND WATER SOLUTIONS FOR FREEZE PROTECTION.
- ALLOW FOR MOVEMENT DUE TO EXPANSION AND CONTRACTION.
- RENEW YOUR BLAZEMASTER CPVC FIRE SPRINKLER INSTALLATION TRAINING EVERY TWO YEARS.
- WHEN RISING UP IN WALLS BE AWARE OF ELECTRICAL OUTLETS AND SWITCHES
- NAIL GARDS TO BE PLACED ON TOP AND BOT PLATES OF ALL WALLS WITH CPVC PIPE IN IT.

**DON'TS**

- DO NOT USE EDIBLE OILS SUCH AS CRISCO AS A GASKET LUBRICANT.
- DO NOT USE PETROLEUM OR SOLVENT-BASED PAINTS, SEALANTS, LUBRICANTS OR FIRE STOP MATERIALS.
- DO NOT USE ANY GLYCOL BASED SOLUTIONS AS AN ANTI-FREEZE.
- DO NOT MIX GLYCERIN AND WATER SOLUTIONS IN CONTAMINATED CONTAINERS.
- DO NOT USE BOTH TEFLON TAPE AND THREAD SEALANTS SIMULTANEOUSLY.
- DO NOT USE SOLVENT CEMENT THAT EXCEEDS ITS SHELF LIFE OR HAS BECOME DISCOLORED OR GELLED.
- DO NOT ALLOW SOLVENT CEMENT TO PLUG THE SPRINKLER HEAD ORIFICE.
- DO NOT CONNECT RIGID METAL COUPLERS TO BLAZEMASTER CPVC GROOVED ADAPTERS.
- DO NOT THREAD, GROOVE OR DRILL BLAZEMASTER CPVC PIPE.
- DO NOT USE SOLVENT CEMENT NEAR SOURCES OF HEAT, OPEN FLAME, OR WHEN SMOKING.
- DO NOT PRESSURE TEST UNTIL RECOMMENDED CURE TIMES ARE MET.
- DO NOT USE DULL OR BROKEN CUTTING TOOL BLADES WHEN CUTTING BLAZEMASTER PIPE.
- DO NOT USE BLAZEMASTER CPVC PIPE THAT HAS BEEN STORED OUTDOORS, UNPROTECTED AND IS FADED IN COLOR.
- DO NOT ALLOW THREADED ROD TO COME IN CONTACT WITH THE PIPE.
- DO NOT INSTALL BLAZEMASTER CPVC PIPE AND FITTINGS IN COLD WEATHER WITHOUT ALLOWING FOR EXPANSION.
- DO NOT INSTALL BLAZEMASTER CPVC PIPE AND FITTINGS IN DRY SYSTEMS.
- DO NOT PRESSURE TEST WITH AIR OR COMPRESSED GAS.

NOTE: THIS LIST DOES NOT CONSTITUTE A COMPLETE INSTALLATION GUIDE



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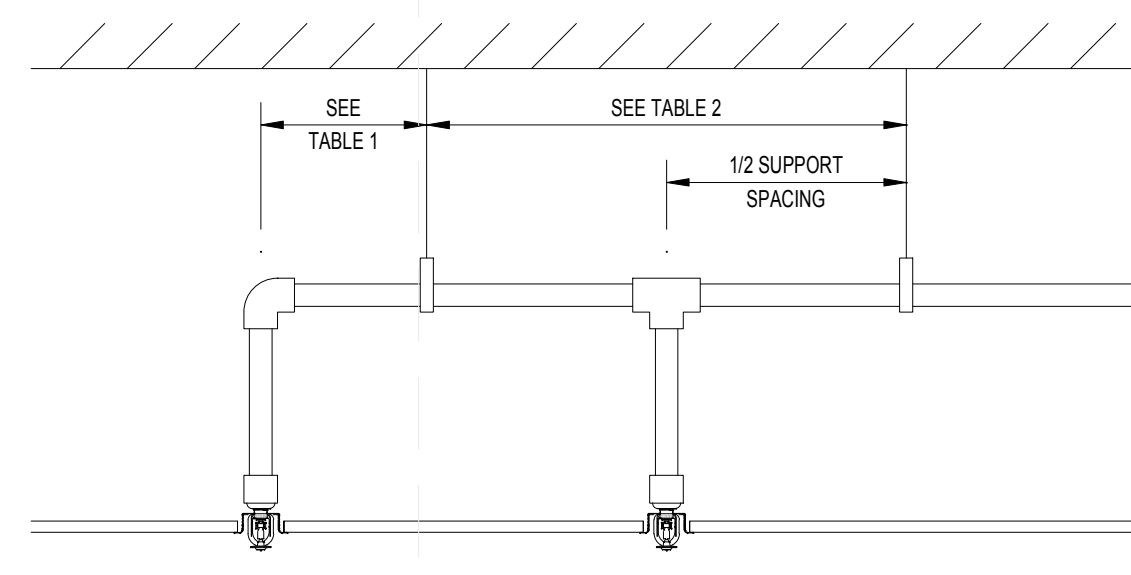
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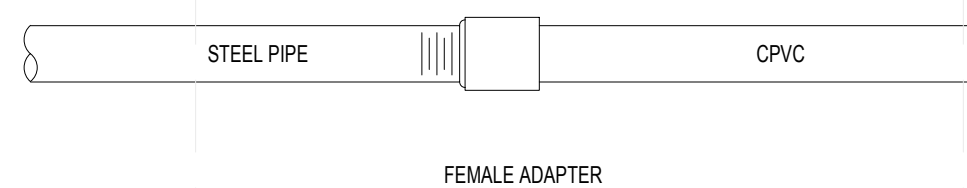
**SHEET TITLE**

**FIRE PROTECTION  
DETAILS**

**F-501**



**HANGER SPACING DETAIL**  
N.T.S.



**TRANSITION BETWEEN MATERIALS**  
DETAIL A-1

**HANGERS AND BRACING**

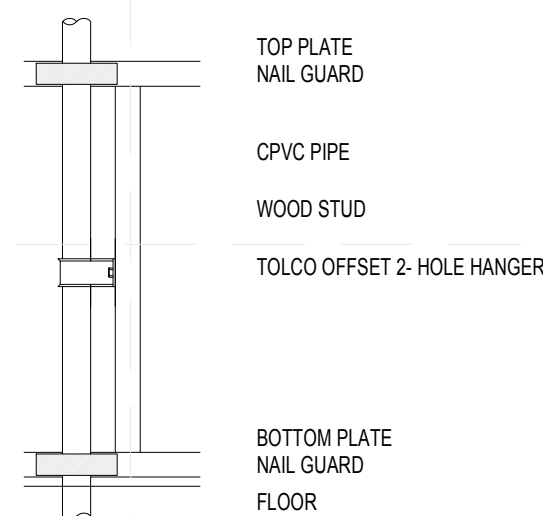
BECAUSE BLAZEMASTER PIPE IS RIGID, IT REQUIRES FEWER SUPPORTS THAN FLEXIBLE PLASTIC SYSTEMS. MOST HANGERS DESIGNED FOR METAL PIPE ARE SUITABLE FOR BLAZEMASTER PIPE. DO NOT USE UNDERSIZED HANGERS. HANGERS WITH SUFFICIENT LOAD BEARING SURFACE SHALL BE SELECTED BASED ON PIPE SIZE, I.E., 1 1/2" HANGERS FOR 1 1/2" PIPE. THE HANGER SHALL NOT HAVE ROUGH OR SHARP EDGES WHICH COME IN CONTACT WITH THE PIPE. THE PIPE HANGERS MUST COMPLY WITH THE REQUIREMENTS IN NFPA 13, 13R, AND 13D. FOR QUICK RESPONSE UPRIGHT SPRINKLERS, RIGID HANGERS SECURED TO THE CEILING SHALL BE USED. FOR INSTALLATION OF EXPOSED BLAZEMASTER CPVC, LISTED SUPPORT DEVICES FOR THERMOPLASTIC SPRINKLER PIPING OR OTHER LISTED SUPPORT DEVICES SHALL BE USED WHICH MOUNT THE PIPING DIRECTLY TO THE CEILING OR SIDEWALL.

WHEN A SPRINKLER HEAD ACTIVATES, A SIGNIFICANT REACTIVE FORCE CAN BE EXERTED ON THE PIPE. WITH A PENDENT HEAD, THIS REACTIVE FORCE CAN CAUSE THE PIPE TO LIFT VERTICALLY IF IT IS NOT PROPERLY SECURED, ESPECIALLY IF THE SPRINKLER DROP IS FROM SMALL DIAMETER PIPE. THE CLOSEST HANGER SHALL BRACE THE PIPE AGAINST VERTICAL LIFT-UP.

SINCE BLAZEMASTER CPVC IS MORE DUCTILE THAN METALLIC SPRINKLER PIPE, IT HAS A GREATER CAPACITY TO WITHSTAND EARTHQUAKE DAMAGE. IN AREAS SUBJECT TO EARTHQUAKES, BLAZEMASTER FIRE SPRINKLER SYSTEMS SHALL BE DESIGNED AND BRACED IN ACCORDANCE WITH LOCAL CODES OR NFPA 13.

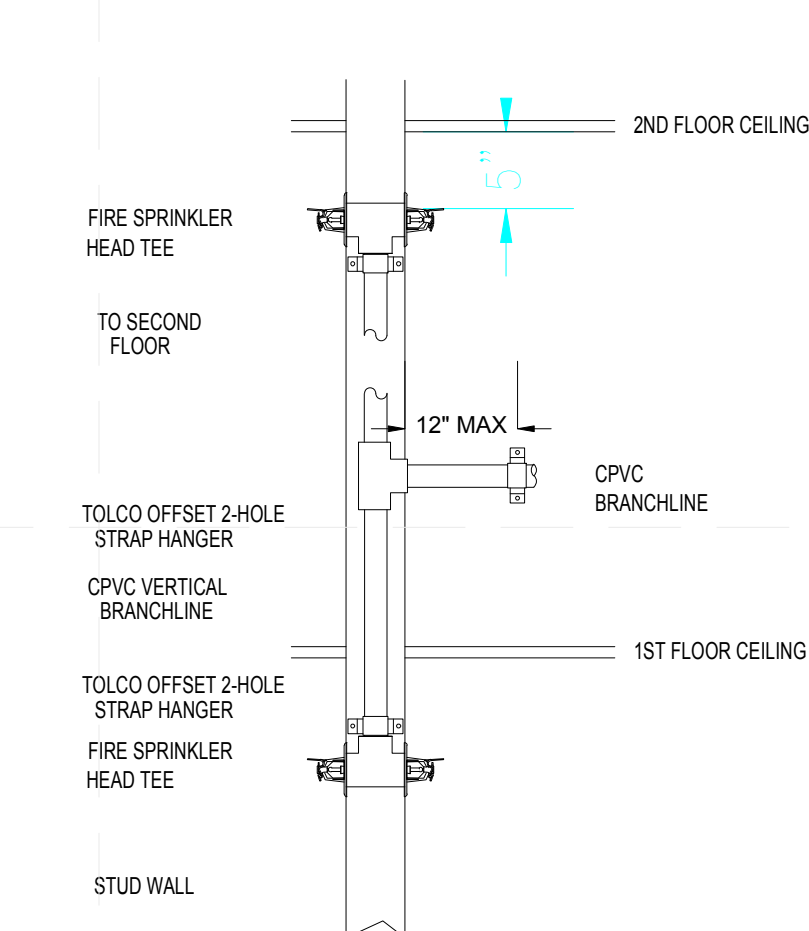
PIPE SIZE inches	SYSTEM PRESSURE	
	< 100 psi	> 100 psi
3/4"	9'	6'
1"	12'	9'
1 1/4"	16'	12'
1 1/2"-3"	24'	12'

PIPE SIZE inches	SYSTEM PRESSURE	
	< 100 psi	> 100 psi
3/4"	4'	3'
1"	5'	4'
1 1/4"	6'	5'
1 1/2"-3"	7'	7'

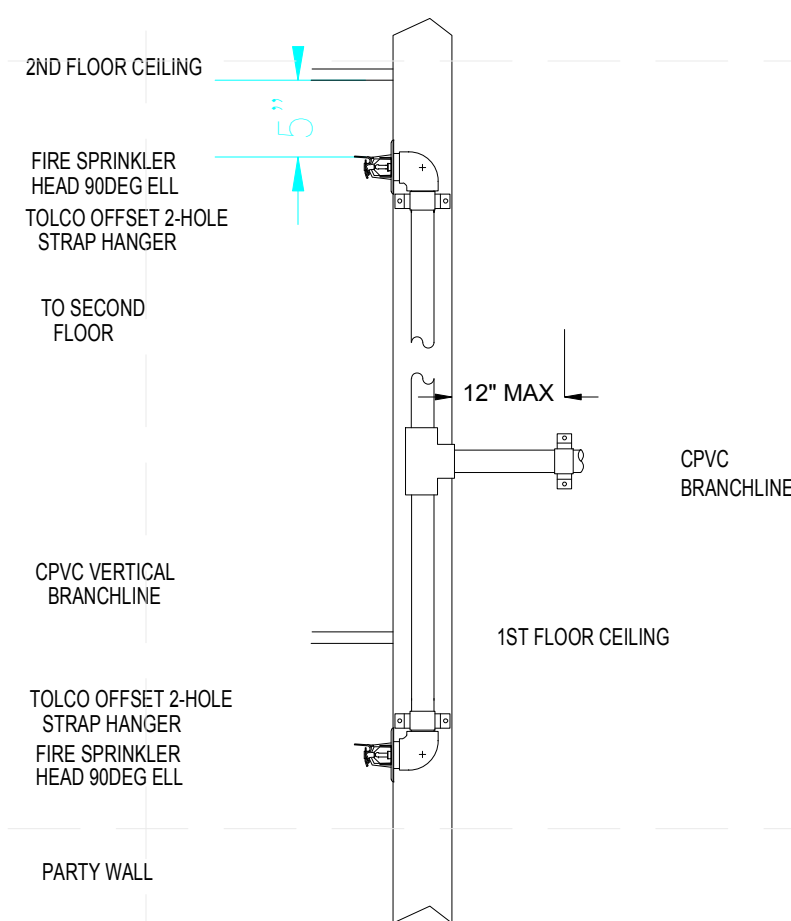


**VERTICAL SUPPORT OF CPVC PIPE  
AT MID FLOOR LOCATION**

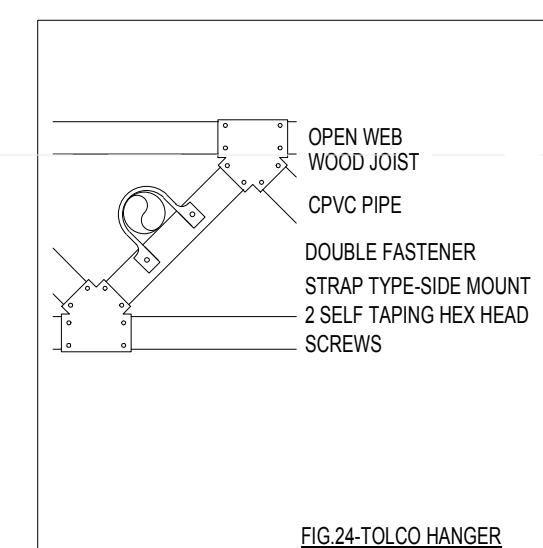
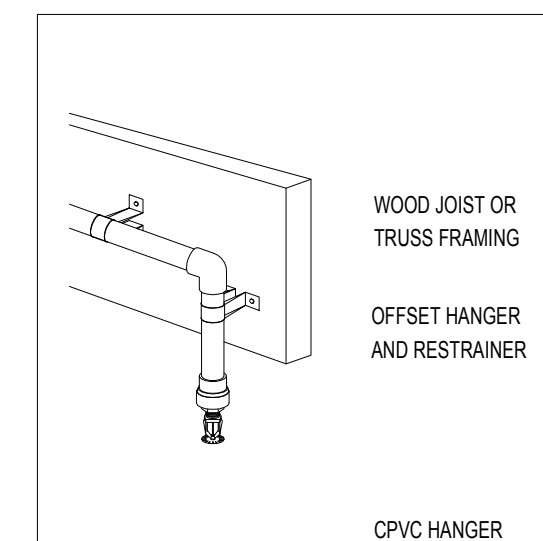
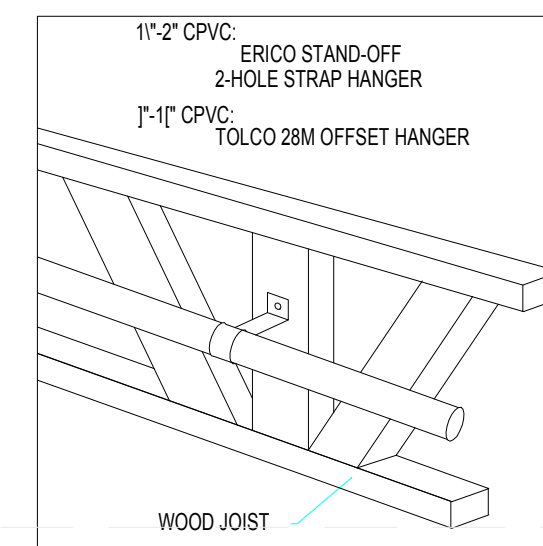
VERTICAL PIPING SHALL BE SUPPORTED AT EACH FLOOR LEVEL OR AT 10 FOOT INTERVALS, WHICHEVER IS LESS. NAIL GUARD TO BE INSTALLED ON THE TOP AND BOT. PLATE TO PROTECT THE CPVC PIPE.



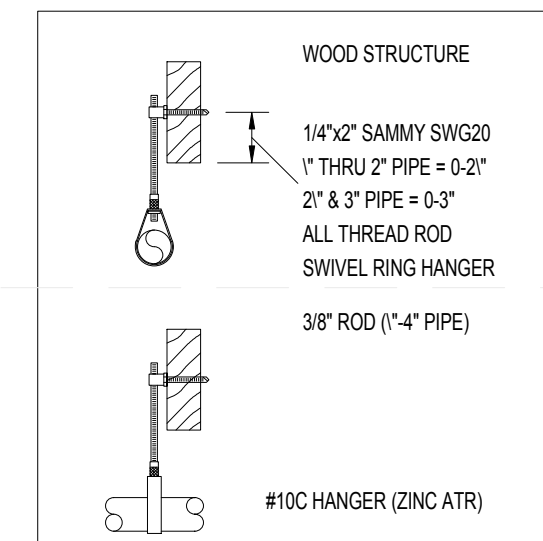
**PIPING IN STUD WALL DETAIL**  
N.T.S.



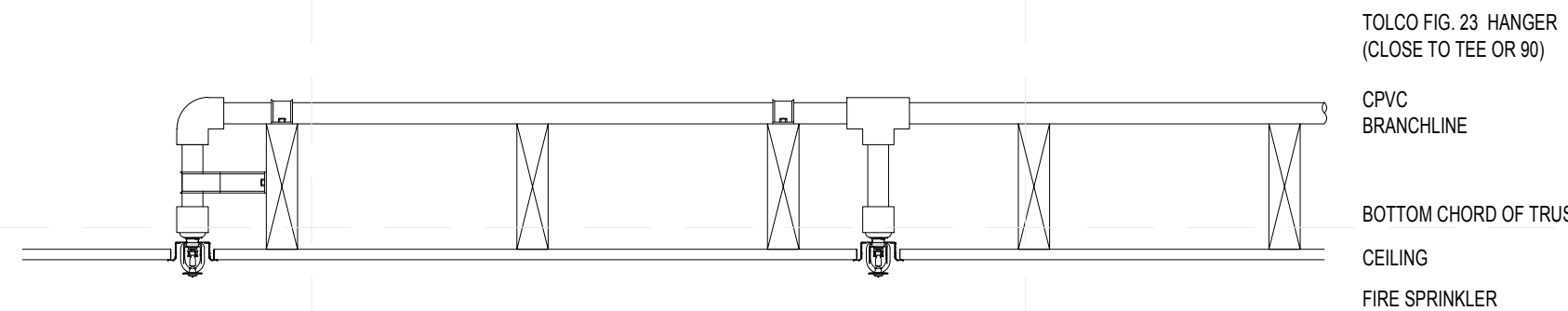
**PIPING IN STUD WALL DETAIL 2**  
N.T.S.



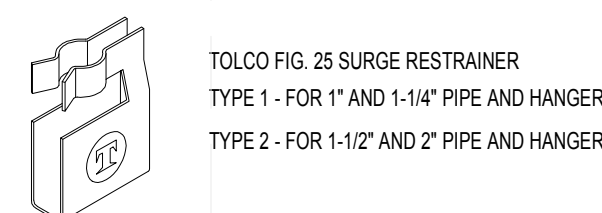
**#10C**



**#10C HANGER (ZINC ATR)**



**PIPING DETAIL**  
N.T.S.



**TOLCO FIG. 25 SURGE RESTRAINER**  
TYPE 1 - FOR 1" AND 1-1/4" PIPE AND HANGER  
TYPE 2 - FOR 1-1/2" AND 2" PIPE AND HANGER

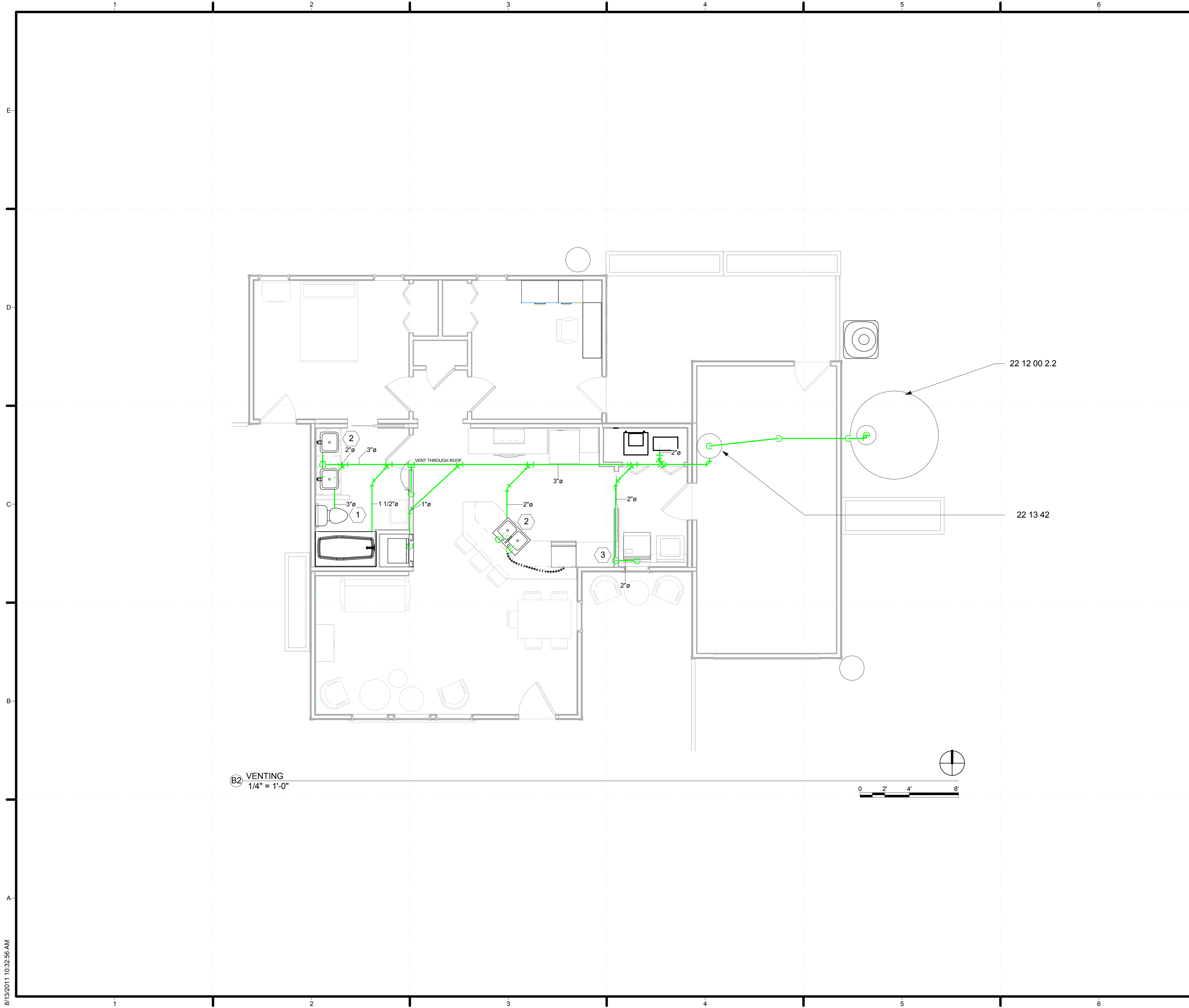




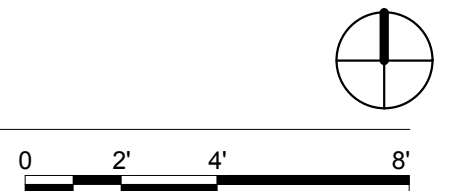








B2 VENTING  
1/4" = 1'-0"



**GENERAL SHEET NOTES**

1. CONTRACTOR SHALL FOLLOW 2009 IRC AND OTHER APPLICABLE BUILDING CODES.
2. ALL DIMENSIONS PROVIDED FOR REFERENCE ONLY. CONTRACTOR TO USE FIELD MEASUREMENTS.
3. CONTRACTOR SHALL FOLLOW EQUIPMENT MANUFACTURER'S INSTRUCTIONS FOR HANDLING AND INSTALLATION.
4. CONTRACTOR SHALL COORDINATE AND PERFORM NECESSARY MODIFICATIONS TO PROVIDE A COMPLETE INSTALLATION. MODIFICATIONS INCLUDE BUT ARE NOT LIMITED TO STRUCTURAL, ELECTRICAL, ARCHITECTURAL, PLUMBING, PIPING AND DUCTWORK. WATER CLOSET SHALL NOT BE PLUMBED FOR COMPETITION.
5. ALL WASTE LINES SHALL BE RAN AT 1/8" SLOPE PER FOOT THROUGH TJI.
6. NO PEX CONNECTIONS PERMITTED IN FLOOR SYSTEM.
7. THE WASTER WATER TANK WILL NOT BE USED FOR ANY VEGETATION OR ALTERNATE USE AND WILL BE REMOVED AT THE END OF THE EVENT.
8. ALL PORTABLE TANKS, PUMPS, AND VALVES INTENDED TO MIMIC PUBLIC UTILITY WATER SUPPLY AND SEWAGE ARE TEMPORARY FOR COMPETITION PURPOSES ONLY.\*
9. FOR WATER REMOVAL, 6 STUDENTS SHALL MANUALLY MOVE HOSE FROM PRECEDING HOME TO THE INHOME. ALL THREE RAIN BARRELS SHALL BE EMPTIED FIRST AND THEN THE WASTE TANK LOCATED ON THE EAST SIDE OF GARAGE. TANK OPENING - 18"Ø.
10. EJECTOR PIT PUMP SHALL INITIATE AT 20 GALLON CAPACITY.

**REFERENCE KEYNOTES**

- DIV 22 - PLUMBING
- 22 12 00 2.2 1050 GALLON WASTE TANK
- 22 13 42 PACKAGED SEWAGE PUMP
- 22 13 16 2.2A AIR ADMITTANCE VALVE

**SHEET KEYNOTES**

- 1 DO NOT CONNECT WATER CLOSET DURING COMPETITION
- 2 INSTALL AIR ADMITTANCE VALVE UNDER COUNTER
- 3 INSTALL AIR ADMITTANCE VALVE INSIDE WALL CAVITY



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SHEET TITLE  
**WASTE REMOVAL & VENTING**

**P-103**

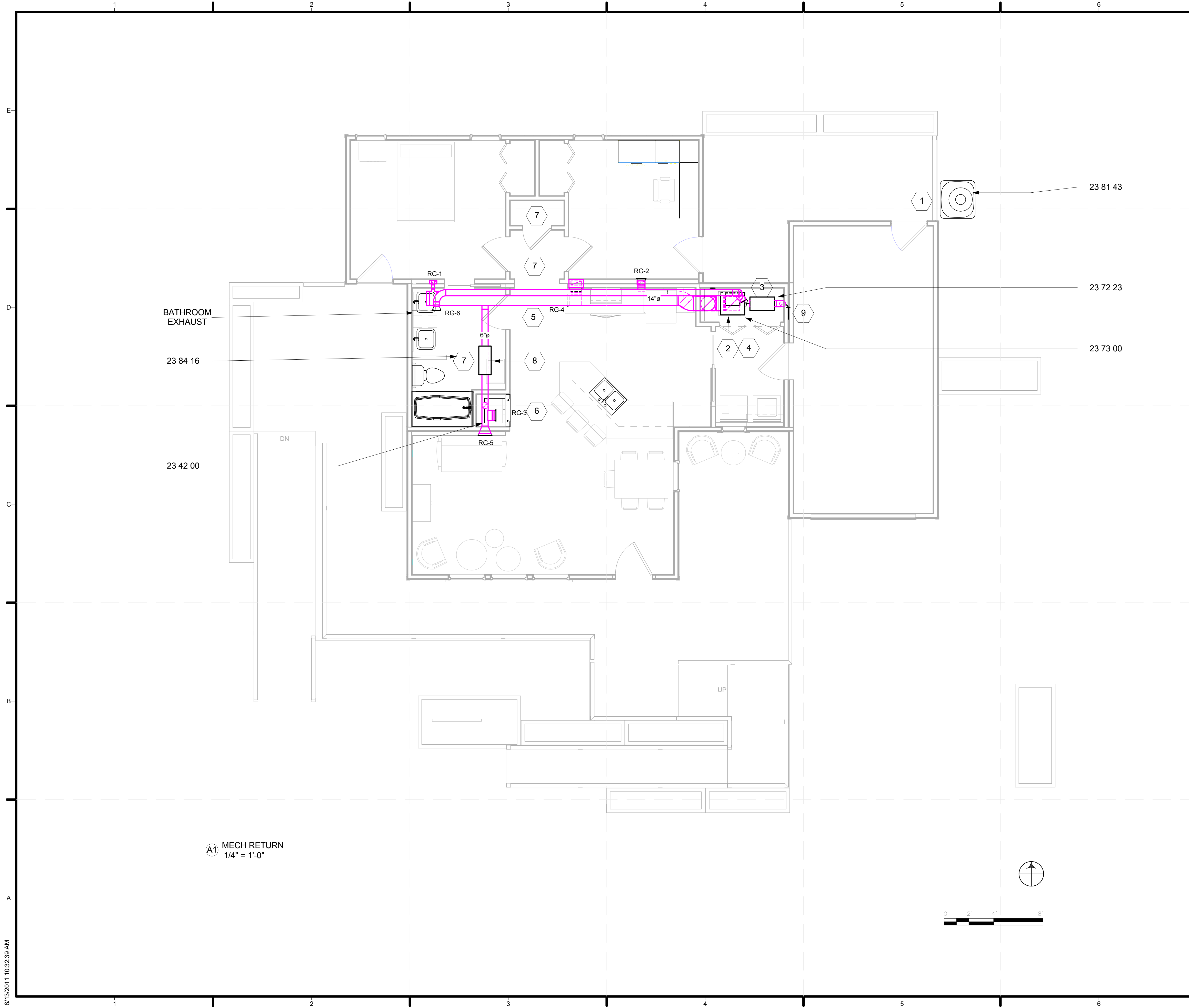












**GENERAL SHEET NOTES**

1. GENERAL NOTES SHALL APPLY TO ALL WORK SHOWN
2. VERIFY ALL MEASUREMENTS TO PROPERLY LOCATE COMPONENTS
3. ALL NOTES COINCIDE WITH SIMILAR DRAWINGS
4. COORDINATE ALL WORK AND PLACEMENT OF COMPONENTS WITH OTHER TRADES
5. CONTRACTOR SHALL FOLLOW EQUIPMENT MANUFACTURER'S INSTRUCTIONS FOR HANDLING AND INSTALLATION
6. CONTRACTOR SHALL COORDINATE AND PERFORM NECESSARY MODIFICATIONS TO PROVIDE A COMPLETE INSTALLATION. MODIFICATIONS INCLUDE BUT ARE NOT LIMITED TO STRUCTURAL, ELECTRICAL, ARCHITECTURAL, PLUMBING, PIPING AND DUCTWORK.
7. ACCESS PANELS SHALL BE FABRICATED TO ALLOW FOR EASY ACCESS AT SECTIONED CONNECTIONS.
8. ERV EXHAUST SHALL HAVE APPROVED GRILLE.

**REFERENCE KEYNOTES**

DIV 23 - HVAC

23 07 00	DUCT INSULATION
23 07 00 2.1	BLANKET INSULATION
23 07 00 2.2	SELF-ADHESIVE INSULATION
23 31 00	HVAC DUCTS AND CASINGS
23 31 2.2	RECTANGLE DUCT
23 31 2.3	SPIRAL ROUND
23 37 00	AIR INLETS AND OUTLETS
23 37 00 2.2A	6" X 6"
23 37 00 2.1B	8" X 6"
23 37 00 2.1C	8" X 8"
23 37 00 2.1D	18" X 3"
23 40 00 2.1	TRANE CLEANEFFECTS AIR PURIFIER
23 42 00	BIOWALL
23 72 23	TRANE FRESHEFFECTS ERV
23 73 00	TRANE SERIES 8 HYPERION AHU
23 81 43	TRANE XL20i HEAT PUMP
23 84 16	ULTRA-AIRE INLINE DEHUMIDIFIER

**SHEET KEYNOTES**

1	TRANE XL20i HEAT PUMP
2	TRANE HYPERION AHU
3	TRANE FRESH EFFECTS ERV
4	TRANE CLEANEFFECTS
5	RETURN DUCT - SEE M-203
6	LIVING WALL - SEE M-202
7	ACCESS PANEL
8	HEAT PUMP DEHUMIDIFIER SYSTEM - COILS IN RETURN DUCT.
9	ERV EXHAUST. SEE M-203.



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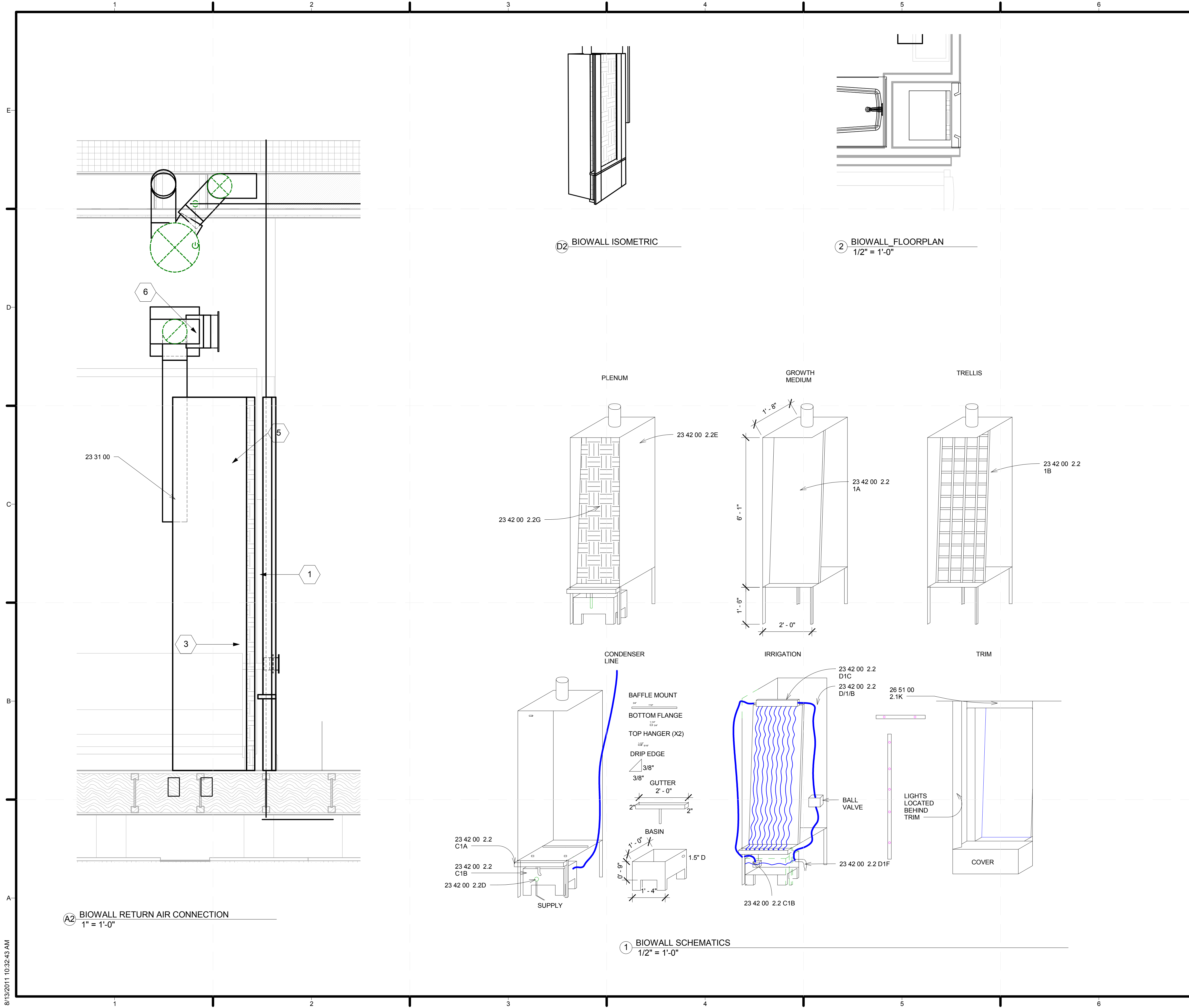
SHEET TITLE  
**HVAC RETURN PLAN**

**M-102**

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1. GENERAL NOTES SHALL APPLY TO ALL WORK SHOWN.
2. VERIFY ALL MEASUREMENTS TO PROPERLY LOCATE COMPONENTS.
3. COORDINATE ALL WORK AND PLACEMENT OF COMPONENTS WITH OTHER TRADES.
4. CONTRACTOR SHALL FOLLOW EQUIPMENT MANUFACTURER'S INSTRUCTIONS FOR HANDLING AND INSTALLATION.
5. CONTRACTOR SHALL COORDINATE AND PERFORM NECESSARY MODIFICATIONS TO PROVIDE A COMPLETE INSTALLATION. MODIFICATIONS INCLUDE BUT ARE NOT LIMITED TO ELECTRICAL, ARCHITECTURAL, PLUMBING, PIPING AND DUCTWORK.
6. ACCESS PANELS SHALL BE FABRICATED TO ALLOW FOR EASY ACCESS AT SECTIONED CONNECTIONS.

**REFERENCE KEYNOTES**

- DIV 23 - HVAC  
 23 42 00 GAS-PHASE AIR FILTRATION  
 23 42 00 2.2G VEGETATION  
 23 42 00 2.2E PLENUM  
 23 42 00 2.21A GROWTH MEDIUM  
 23 42 00 2.21B TRELLIS  
 23 42 00 2.2D FLOAT VALVE  
 23 42 00 2.2C1A GUTTER  
 23 42 00 2.2C1B BASIN  
 23 42 00 2.2D1C PVC MANIFOLD  
 23 42 00 D/1B WASTE LINE  
 23 42 00 2.2D1F OVER FLOW  
 23 42 00 2.2F PUMP
- DIV 26 - ELECTRICAL  
 26 51 00 2.1K LIGHT RACEWAY

**SHEET KEYNOTES**

- 1 MATRIX MATERIAL
- 2 WATER BASIN
- 3 AIR PLENUM
- 4 VEGETATION
- 5 ALTERNATE RETURN
- 6 MAIN RETURN CONNECTION
- 7 EXISTING WALL



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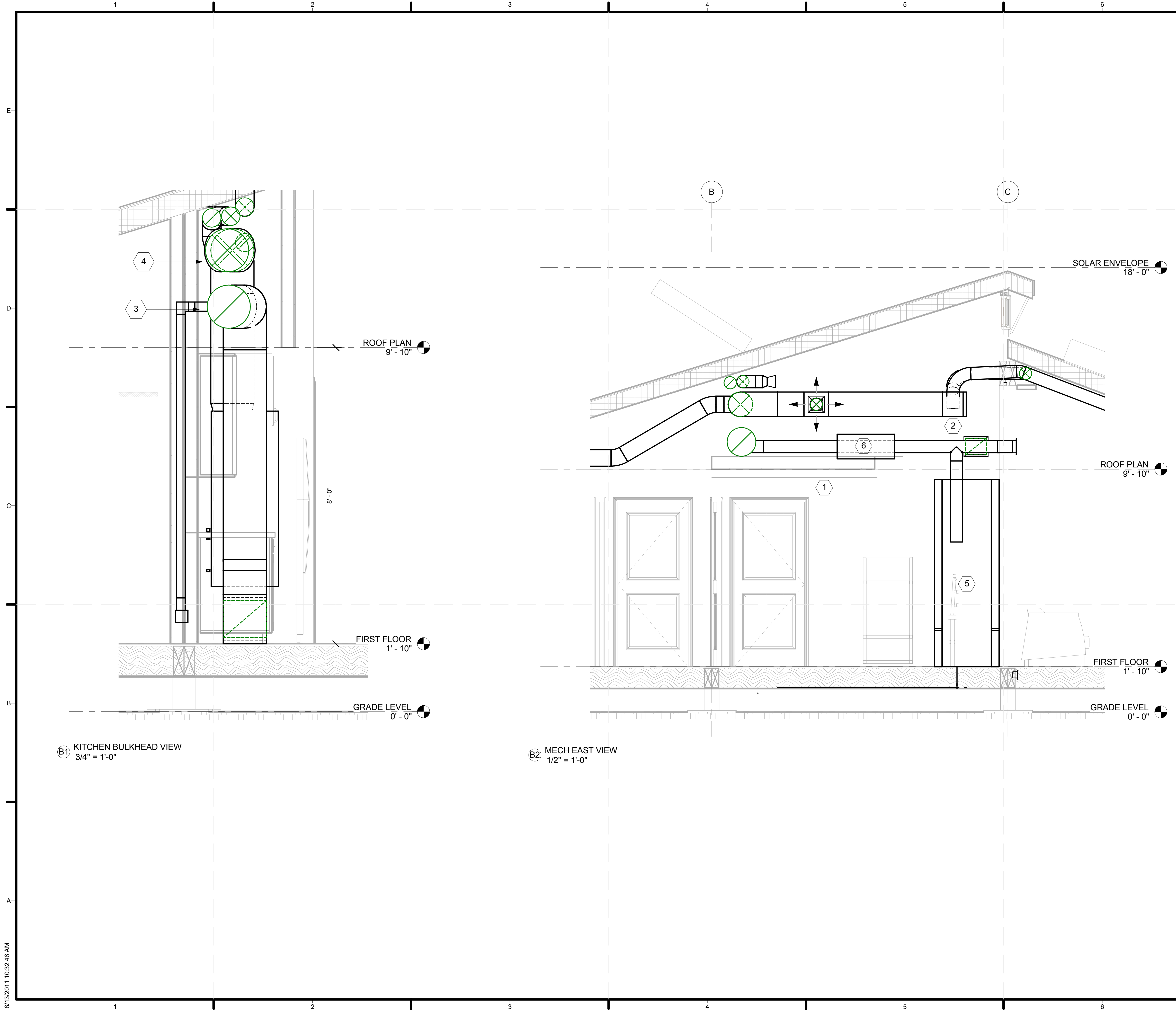
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SHEET TITLE  
**BIOWALL DETAILS**

**M-202**

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**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

- 1 BATH CEILING ACCESS PANEL
- 2 BIOWALL ACCESS PANEL THROUGH BATHROOM
- 3 14" Ø RETURN DUCT
- 4 14" Ø SUPPLY DUCT AFTER KITCHEN SUPPLY
- 5 BIOWALL
- 6 DEHUMIDIFIER



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SHEET TITLE  
**MECHANICAL SECTION VIEWS**

**M-203**





**GENERAL SHEET NOTES**



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**SHEET TITLE**

**MECHANICAL SCHEDULES**

**M-601**

DIFFUSER, REGISTER, AND GRILLE SCHEDULE				
MARK	MANUFACTURER	MODEL	NECK SIZE	USE
RG-1	ACCORD	ABRGW8 6	8" X 6"	MASTER (RETURN)
RG-2	ACCORD	ABRGW8 6	8" X 6"	OFFICE (RETURN)
RG-3	ACCORD	ABRGW8 6	8" X 6"	HIGH WALL (RETURN)
RG-4	CUSTOM	N/A	18" X 3"	KITCHEN (RETURN)
RG-5	ACCORD	ABRGW H66	6" X 6"	LIVING ROOM (RETURN BIOWALL ALT)
RG-6	ACCORD	ABRGW8 6	8" X 6"	BATHROOM(RETURN TO ERV)
RG-7	ACCORD	ABRGW8 8	8" X 8"	BATH ERV (RETURN)
SD-1	ACCORD	ABSWW H488	8" X 8"	OFFICE (SUPPLY)
SD-3	ACCORD	ABSWW H488	10" X 8"	KITCHEN (SUPPLY)
SD-4	ACCORD	ABSWW H466	6" X 6"	BATHROOM(SUPPLY)
SD-5	ACCORD	ABSWW H466	6" X 6"	HALLWAY(SUPPLY)
SD-6	ACCORD	ABSWW H488	8" X 8"	LIVING ROOM(SUPPLY)
SD-7	ACCORD	ABSWW H46	6" X 6"	ERV (SUPPLY)

DUCT SCHEDULE		
SIZE	DESCRIPTION	NOTES
14"Ø	SINGLE-WALL SPIRAL ROUND	
14"Ø	SINGLE-WALL SPIRAL ROUND	MAIN RETURN
14"x14"	FLAT RECTANGULAR	
14"x14"	FLAT RECTANGULAR	
14"x12"	FLAT RECTANGULAR	
12"Ø	SINGLE-WALL SPIRAL ROUND	
12"Ø	SINGLE-WALL SPIRAL ROUND	
10"x8"	FLAT RECTANGULAR	
10"x4"	FLAT RECTANGULAR	TOE KICK RETURN IN HALLWAY
8"Ø	SINGLE-WALL SPIRAL ROUND	
8"Ø	DOUBLE-WALL INSULATED ROUND	MASTER/OFFICE SUPPLY
8"x4"	FLAT RECTANGULAR	
7"x3"	FLAT RECTANGULAR	
7"x3"	FLAT RECTANGULAR	MASTER BEDROOM RETURN
6"Ø	SINGLE-WALL SPIRAL ROUND	
6"Ø	SINGLE-WALL SPIRAL ROUND	
6"Ø	DOUBLE-WALL INSULATED ROUND	MASTER/OFFICE SUPPLY
6"Ø	SINGLE-WALL SPIRAL ROUND	ALTERNATE BIOWALL RETURN
6"Ø	SINGLE-WALL SPIRAL ROUND	BIOWALL TIED TO MASTER RETURN
6"Ø	INSULATED FLEXIBLE DUCT	
6"x6"	FLAT RECTANGULAR	
3"x3"	FLAT RECTANGULAR	

MECHANICAL EQUIPMENT SCHEDULE					
MARK	MANUFACTURER	MODEL	DESCRIPTION	COUNT	NOTES
1	TRANE	4TWZ0024A	XL20i - 2 TON, DUAL COMPRESSOR HEAT PUMP	1	
4	TRANE	TFD215ALAH000C	CLEANEFFECTS WHOLE HOUSE AIR CLEANER	1	
5	TRANE	BAYEVAC05 BAYEVAC05	ELECTRIC RESISTENCE AUXILLARY HEAT	1	
6	CUSTOM	CUSTOM	BIOWALL RETURN	1	SEE M-102
7	TRANE	TAM7A0B30H21SAA	HYPERION AIR HANDLER	1	
8	THERMA-STOR	ULTRA-AIRE 70H	IN-LINE HEAT PUMP DEHUMIDIFIER	1	SEE M-102
9	TRANE	TERVR100A9POOA	FRESHEFFECTS ENERGY RECOVERY VENTILATOR	1	





**ELECTRICAL CALCULATIONS**

**ELECTRICAL SYSTEM DESIGN DETAILS**

**AMBIENT TEMPERATURE**

TEMPERATURE IN INDIANA RANGES FROM -34 DEG C TO 47 DEG C.  
TEMPERATURE IN WASHINGTON DC RANGES FROM -44 DEG C TO 48 DEG C.  
OPERATING TEMPERATURE OF THE PV MODULES CAN VARY BETWEEN -40 DEG C TO 50 DEG C

**ELECTRICAL SYSTEM BLOCK DIAGRAM**

E-601 PROVIDES AN OVERVIEW OF THE ELECTRICAL SYSTEM. 36 SUNPOWER MODULES WILL BE INSTALLED IN FOUR STRINGS OF 9. EACH NEGATIVE STRING IS PROTECTED BY A 12A FUSE SECURELY MOUNTED ON THE ROOF IN A SOLADECK JUNCTION BOX. STRINGS A AND D ARE FUSED ON THE NORTH ROOF SOLADECK. STRINGS B AND C ARE FUSED ON THE SOUTH ROOF SOLADECK. ALL FOUR STRINGS ARE THEN ROUTED TO AND COMBINED AT THE MAIN DC DISCONNECT ATTACHED TO THE CENTRAL INVERTER LOCATED IN THE GARAGE.

**NEC 690.7 MAXIMUM VOLTAGE CALCULATION**

SUNPOWER PROVIDED TEMPERATURE COEFFICIENT VOLTAGE (Voc) = -132.5 mV/K  
(FOR LOWEST AMBIENT TEMPERATURE) -40C = 233.15K, 25C = 298.15K  
4 STRINGS OF 9 AT LOWEST AMBIENT TEMPERATURE OF -40C OR 233.15K  
DIFFERENCE BETWEEN RATED AND LOWEST EXPECTED TEMPERATURE  
25C OR 298.15K @ STC, -40C OR 233.15K @ LOWEST EXPECTED TEMPERATURE  
TEMPERATURE DIFFERENCE = 65 C OR K

**MAXIMUM PV OPEN CIRCUIT (PVOC) V DC**

VOLTAGE (VOC) = -132.5 MV/K  
V OPEN CIRCUIT = 48.5V PER MODULE  
48.5 V DC (-132.5 MV/K X -65K) = (-0.1325V/K X -65K = 8.6125V)  
48.5 V DC OPEN CIRCUIT + 8.6125 V DC = 57.1125 V DC OPEN CIRCUIT / MODULE  
57.1125 V DC X 9 MODULES/STRING = 514.01 V DC MAXIMUM VOLTAGE PER STRING AT -40C OR 233.15K

**NEC 690.53 DIRECT-CURRENT PV POWER SOURCE REQUIREMENTS FOR LABEL/MARKING**

(1) RATED MAXIMUM POWER-POINT CURRENT (IMP) = (5.88A X NUMBER OF STRINGS IN PARALLEL)  
IMP = 5.88A X 1 = 5.88A  
(2) RATED MAXIMUM POWER-POINT VOLTAGE (VMP) = (MODULE VMP X NUMBER OF MODULES/STRING)  
VMP = 40.5V X 9 = 364.5 VDC  
(3) MAX SYSTEM VOLTAGE (PV VOC) = (PVOC X TEMP CORRECTION FACTOR X NUMBER OF MODULES/STRING)  
PV VOC = 57.1125 X 9 = 514.01 VDC (FROM ABOVE CALCULATION)  
(4) SHORT-CIRCUIT CURRENT (ISC) = (MODULE ISC X 1.25 X NUMBER OF STRINGS IN PARALLEL)  
ISC = (6.25A X 1.25) X 1 = 7.81A

**OVERCURRENT PROTECTION DEVICE CALCULATIONS PV OUTPUT CIRCUIT FUSE**

**NEC 690.8 (A) (2) MAXIMUM OUTPUT CIRCUIT CURRENT**

MAX OUTPUT CKT CURRENT = (MODULE ISC X 1.25 X NUMBER OF STRINGS IN PARALLEL)  
MAX OUTPUT CKT CURRENT = (6.25 X 1.25 X 1) = 7.81A MAX OUTPUT CIRCUIT CURRENT

**NEC 690.8 (B) AMPACITY AND OVERCURRENT DEVICE (OCPD) RATINGS**

"OVERCURRENT DEVICES MUST BE SIZED NOT LESS THAN 125 PERCENT OF NEC 690.8 (A) CIRCUIT CURRENT"  
VERIFY TOUCH SAFE FUSE CALCULATION FOR PV OUTPUT CIRCUIT:  
OCPD (OVER CURRENT PROTECTION DEVICE) = (MAX OUTPUT CIRCUIT CURRENT X 1.25)  
OCPD = (7.81A X 1.25) = 9.76A PER STRING

**AT 50C FOR ROOFTOP CONDITIONS, USING 12A TOUCHSAFE FUSE**

150C-50C/125 = 0.8  
SQRT(0.8) = 0.894  
(12A) X (0.894) = 10.728A  
VERIFIED: 10.728A > 9.76A; 12A DC TOUCH SAFE FUSE, OK

**MAXIMUM NUMBER OF ALLOWABLE CONDUCTORS IN ELECTRICAL METALLIC TUBING (EMT)**

(2) STRINGS OF 2 PV OUTPUT CIRCUITS TO INVERTER IN 3/4" EMT. (4 CURRENT CARRYING CONDUCTORS)  
FROM NEC TABLE C.1 - "10 CURRENT CARRYING CONDUCTORS IS THE LIMIT FOR #10 THWN IN 3/4" EMT"  
CONDUCTOR TYPE THWN SIZE IN 3/4" EMT (4 CURRENT CARRYING CONDUCTORS).

**VERIFY AMPACITY OF CONDUCTORS IN CONDITIONS OF USE**

CONTINUOUS USE STRING AMPERAGE: 6.25 ISC X 1.25 = 7.81A  
OVER IRRADIANCE: 7.81A X 1.25 = 9.765 A

**AMPACITY OF CONDUCTORS**

**PVOC (INSIDE HOME/GARAGE)**

#10 AWG THWN 75C (167F) - FROM NEC TABLE 310.16 = 35 AMPS

**DERATED AMPACITY OF # 10 AWG CONDUCTORS**

CONDUIT FILL CORRECTION DERATING NEC TABLE 310.15 (B) (2) (A) - ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY = 4-6 CONDUCTORS IN 3/4" EMT = 0.80 DERATION  
TEMPERATURE CORRECTION NEC TABLE 310.15 (B) (2) (A), AMBIENT TEMPERATURE BASED ON DESIGN TEMPERATURE OF 55 C TEMPERATURE INSIDE HOME

**75 C TEMPERATURE RATING OF THWN # 10 AT 55C = 0.67 DERATION**

CONDUCTOR DERATING = 35A X 0.8 X 0.67 = 18.76A  
18.76A IS GREATER THAN OCPD OF 10A. OK

**PVSC (ON ROOF)**

#10 USE-2 CONDUCTORS FOR ALL (4) PVSC STRINGS.

**DERATED AMPACITY OF # 10 USE-2 CONDUCTORS (STRINGS A AND D)**

PVSC STRINGS A AND STRING D ARE IN 3/4" CONDUIT ON THE ROOF TO PROTECT THE CONDUCTORS.

**CONDUIT FILL CORRECTION DERATING NEC TABLE 310.15 (B) (2) (A) - ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY = 4-6 CONDUCTORS IN 3/4" EMT = 0.80 DERATION**

**FROM NEC TABLE 310.16 USE-2 FOR #10 IN A RACEWAY = 40A (APPLICABLE FOR STRINGS A AND D)**

ROOFTOP CONDITION OF USE 75 DEG C CORRECTION FACTOR OF (0.41) FROM BOTTOM OF 2008 NEC TABLE 310.16  
CONDUCTOR DERATING = 40A X 0.8 X 0.41 = 13.12A  
13.12A IS GREATER THAN OCPD OF 10A. OK

**ELECTRICAL CALCULATIONS CONTINUED**

**DERATED AMPACITY OF # 10 USE-2 CONDUCTORS (STRINGS B AND C)  
PVSC STRINGS B AND C ARE IN FREE AIR ON THE ROOF.**

FROM NEC TABLE 310.17 #10 USE-2 = 55A (APPLICABLE FOR STRINGS B AND C)  
ROOFTOP CONDITION OF USE 75 DEG C CORRECTION FACTOR OF (0.41) FROM BOTTOM OF 2008 NEC TABLE 310.16  
CONDUCTOR DERATING = 55A X 0.41 = 22.5A  
22.5A IS GREATER THAN OCPD OF 10A. OK

**TERMINAL RATING**

CONDUCTOR AMPACITY AT TERMINAL RATED TEMPERATURE, DERATED FOR CONDUIT FILL AND TEMPERATURE, MUST BE GREATER THAN OR EQUAL TO THE SHORT CIRCUIT CURRENT  
ISC X 1.56 (1.25 FOR CONTINUOUS USE X 1.25 FOR OVER IRRADIANCE)  
ISC = SUNPOWER 238 6.25A, 6.25A X 1.56 = 9.75A

OCPD INPUT AND OUTPUT TERMINALS ARE RATED AT 75C. FROM 2008 NEC TABLE 310.16, TERMINAL RATING OF #10 AWG @ 75C= 35A

CONDITIONS OF USE: SOLADECK IN DIRECT SUN, CORRECTION FACTOR OF 60C FROM NEC310.16 = .58 FOR TEMPERATURES OTHER THAN 30 C, 35A X .58 = 20.3A  
20.3A IS GREATER THAN OR EQUAL TO THE 9.75A MAX (A) PVSC, MAX PVOC. TERMINAL RATING IS OK

**VOLTAGE DROP CALCULATIONS**

VD = 364V MAX POWER-POINT  
CONDUCTOR = #10 AWG THWN  
R = 1.29 (FROM NEC CH.9 TABLE 8)  
IMP = 5.88A  
D= 120FT (LONGEST ONE WAY DISTANCE OF THE STRINGS FROM ARRAY TO DC COMBINER AT INVERTER)

VERIFY VOLTAGE DROP LESS THAN (1%)  
1% VD = 364 V X 0.01 = 3.64V

R = (VD) X 1000 / (2) X (I) X (D)  
R = 3.64V X 1000 / (2) X (5.88A) X (120FT)  
R = 2.579

1.29 IS LESS THAN 2.579. OK

**MAIN PANEL DESIGN**

BREAKER SIZING  
THE MAIN PANEL INCLUDES A 40A DOUBLE POLE BACK-FED PV BREAKER AND A 200A MAIN BREAKER.

**MAIN DISTRIBUTION PANEL RATING**

NEC 690.64(B)(2)  
MAIN PANEL RATING = (40 + 200) / 1.2 = 200A

**AC SIDE EQUIPMENT GROUNDING**

NEC 250.122  
10AWG BARE CU CONDUCTORS WILL BE USED.  
NEC 250.66  
GROUNDING ELECTRODE CONDUCTOR: 4AWG BARE CU CONDUCTORS.  
AS DICTATED BY THE RULES, THE GROUND ROD WILL BE 8' DRIVEN INTO THE EARTH.

**ELECTRICAL SYMBOLS**

**ELECTRICAL LEGEND**

SYM	DESCRIPTION
	120 VOLT ELECTRICAL DUPLEX WALL OUTLET @ +12" (UNLESS NOTED OTHERWISE)
	120 VOLT ELECTRICAL DUPLEX OUTLET - GROUND FAULT INTERRUPTOR CIRCUIT
	120 VOLT ELECTRICAL DUPLEX OUTLET - GROUND FAULT INTERRUPTOR CIRCUIT (WP = WEATHERPROOF)
	240 VOLT ELECTRICAL RECEPTACLE OR WIRE DIRECT WHERE REQUIRED BY ELEC. CODE
	COAXIAL CABLE
	DATA/PHONE
	GROUND, 8', 5/8" COPPER ROD
	UTILITY METER
	PANEL-SEE PANEL SCHEDULES
	DISCONNECT SWITCH
	SMOKE AND CO DETECTOR
	UNDERCOUNTER PLUGMOLD GFCI RECEPTACLES
	CEILING MOUNTED LIGHT FIXTURE TYPE 1
	CEILING MOUNTED LIGHT FIXTURE TYPE 2
	PENDANT LIGHT FIXTURE TYPE 1
	PENDANT LIGHT FIXTURE TYPE 2
	PENDANT LIGHT FIXTURE TYPE 3
	WALL MOUNTED LIGHT FIXTURE TYPE 1
	WALL MOUNTED LIGHT FIXTURE TYPE 2
	WALL MOUNTED LIGHT FIXTURE TYPE 3
	WALL MOUNTED LIGHT FIXTURE TYPE 4
	CEILING FAN LIGHT FIXTURE TYPE 1
	COVE STRIP LIGHT FIXTURE TYPE 1
	BIOWALL GROW LIGHT FIXTURE TYPE 1
	LANDSCAPE LIGHT FIXTURE TYPE 1
	LANDSCAPE LIGHT FIXTURE TYPE 2
	LIGHT SWITCH
	LIGHT SWITCH (3-WAY)
	FUSED BREAKER
	AC DISCONNECT
	CENTRAL INVERTER

**GENERAL SHEET NOTES**

1. GENERAL NOTES SHALL APPLY TO ALL WORK SHOWN

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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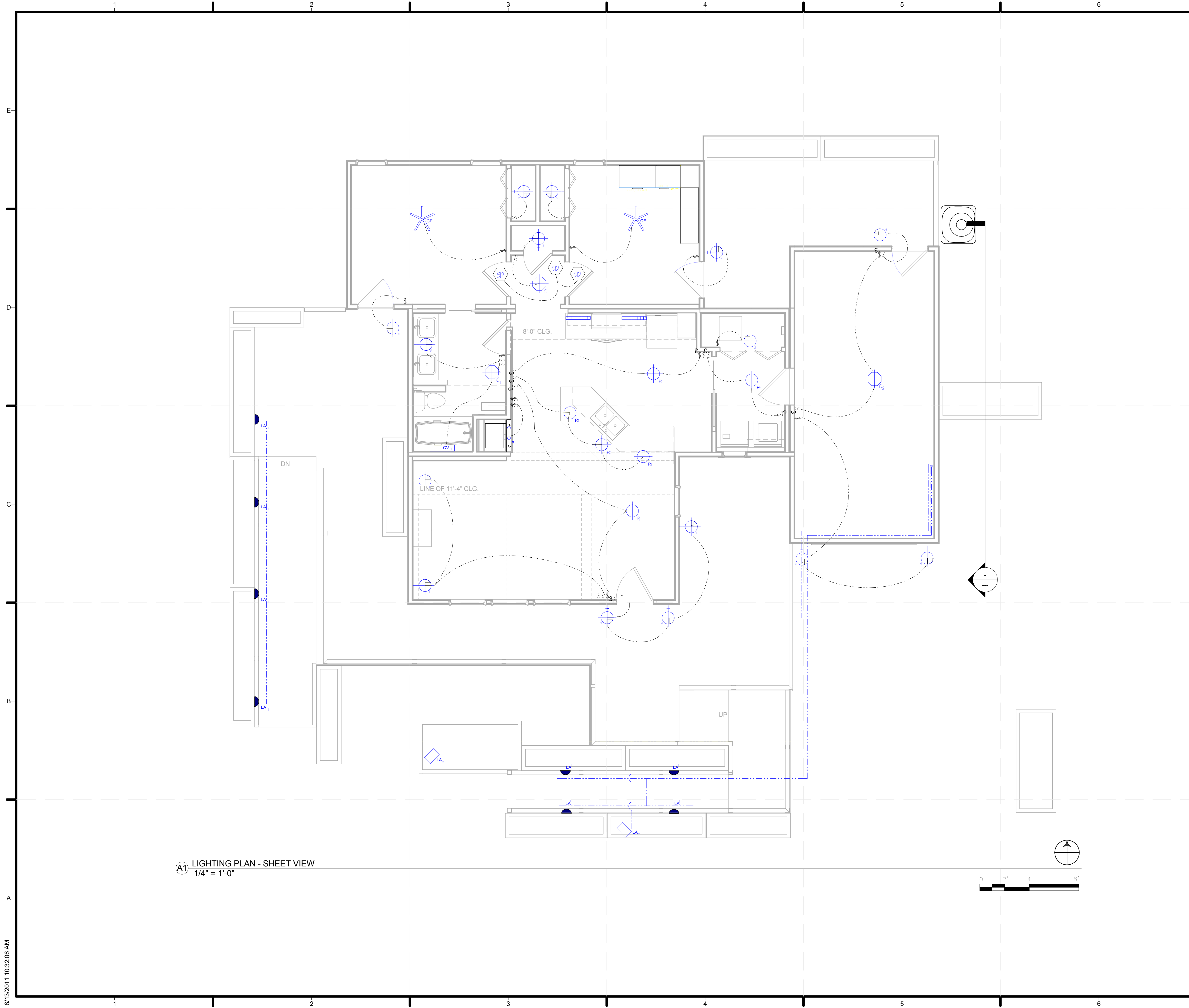
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**ELECTRICAL SYMBOLS  
AND NOTES**

**E-001**



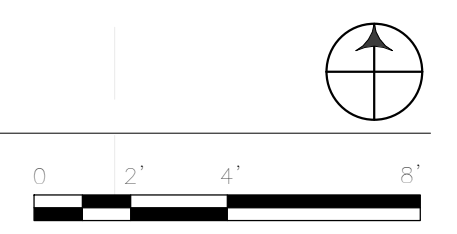
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4. COORDINATE ALL WORK AND PLACEMENT OF COMPONENTS WITH OTHER TRADES

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**

(A1) LIGHTING PLAN - SHEET VIEW  
1/4" = 1'-0"



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SHEET TITLE  
**LIGHTING PLAN**

**E-103**

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**AMBIENT TEMPERATURE**  
TEMPERATURE IN INDIANA RANGES FROM -34 DEG C TO 47 DEG C.  
TEMPERATURE IN WASHINGTON DC RANGES FROM -44 DEG C TO 48 DEG C.  
OPERATING TEMPERATURE OF THE PV MODULES CAN VARY BETWEEN -40 DEG C TO 50 DEG C

**ELECTRICAL SYSTEM BLOCK DIAGRAM**  
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**NEC 690.7 MAXIMUM VOLTAGE CALCULATION**  
SUNPOWER PROVIDED TEMPERATURE COEFFICIENT VOLTAGE (Voc) = -132.5 mV/K  
(FOR LOWEST AMBIENT TEMPERATURE) -40C = 233.15K, 25C = 298.15K  
4 STRINGS OF 9 AT LOWEST AMBIENT TEMPERATURE OF -40C OR 233.15K  
DIFFERENCE BETWEEN RATED AND LOWEST EXPECTED TEMPERATURE  
25C OR 298.15K @ STC, -40C OR 233.15K @ LOWEST EXPECTED TEMPERATURE  
TEMPERATURE DIFFERENCE = 65 C OR K

**MAXIMUM PV OPEN CIRCUIT (PVOC) V DC**  
VOLTAGE (VOC) = -132.5 MV/K  
V OPEN CIRCUIT = 48.5V PER MODULE  
48.5 V DC (-132.5 MV/K X -65K) = (-132.5V/K X -65K = 8.6125V)  
48.5 V DC OPEN CIRCUIT + 8.6125 V DC = 57.1125 V DC OPEN CIRCUIT / MODULE  
57.1125 V DC X 9 MODULES/STRING = 514.01 V DC MAXIMUM VOLTAGE PER STRING AT -40C OR 233.15K

**NEC 690.53 DIRECT-CURRENT PV POWER SOURCE REQUIREMENTS FOR LABEL/MARKING**  
(1) RATED MAXIMUM POWER-POINT CURRENT (IMP) = (5.88A X NUMBER OF STRINGS IN PARALLEL)  
IMP = 5.88A X 1 = 5.88A  
(2) RATED MAXIMUM POWER-POINT VOLTAGE (VMP) = (MODULE VMP X NUMBER OF MODULES/STRING)  
VMP = 40.5V X 9 = 364.5 VDC  
(3) MAX SYSTEM VOLTAGE (PV VOC) = (PVOC X TEMP CORRECTION FACTOR X NUMBER OF MODULES/STRING)  
PV VOC = 57.1125 V X 9 = 514.01 VDC (FROM ABOVE CALCULATION)  
(4) SHORT-CIRCUIT CURRENT (ISC) = (MODULE ISC X 1.25 X NUMBER OF STRINGS IN PARALLEL)  
ISC = (6.25A X 1.25) X 1 = 7.81A

**OVERCURRENT PROTECTION DEVICE CALCULATIONS PV OUTPUT CIRCUIT FUSE**

NEC 690.8 (A) (2) MAXIMUM OUTPUT CIRCUIT CURRENT  
MAX OUTPUT CKT CURRENT = (MODULE ISC X 1.25 X NUMBER OF STRINGS IN PARALLEL)  
MAX OUTPUT CKT CURRENT = (6.25 X 1.25 X 1) = 7.81A MAX OUTPUT CIRCUIT CURRENT

**NEC 690.8 (B) AMPACITY AND OVERCURRENT DEVICE (OCPD) RATINGS**  
OVERCURRENT DEVICES MUST BE SIZED NOT LESS THAN 125 PERCENT OF NEC 690.8 (A) CIRCUIT CURRENT  
VERIFY TOUCH SAFE FUSE CALCULATION FOR PV OUTPUT CIRCUIT  
OCPD (OVER CURRENT PROTECTION DEVICE) = (MAX OUTPUT CIRCUIT CURRENT X 1.25)  
OCPD = (7.81A X 1.25) = 9.76A PER STRING

**AT 50C FOR ROOFTOP CONDITIONS, USING 12A TOUCHSAFE FUSE**  
150C-50C/25 = 0.8  
SQRT(0.8) = 0.894  
(12A) X (0.894) = 10.728A  
VERIFIED: 10.728A > 9.76A; 12A DC TOUCH SAFE FUSE, OK

**MAXIMUM NUMBER OF ALLOWABLE CONDUCTORS IN ELECTRICAL METALLIC TUBING (EMT)**  
(2) STRINGS OF 2 PV OUTPUT CIRCUITS TO INVERTER IN 3/4" EMT. (4 CURRENT CARRYING CONDUCTORS)  
FROM NEC TABLE C.1 - "10 CURRENT CARRYING CONDUCTORS IS THE LIMIT FOR #10 THWN IN 3/4" EMT"  
CONDUCTOR TYPE THWN SIZE IN 3/4" EMT (4 CURRENT CARRYING CONDUCTORS).

**VERIFY AMPACITY OF CONDUCTORS IN CONDITIONS OF USE**  
CONTINUOUS USE STRING AMPERAGE: 6.25 ISC X 1.25 = 7.81A  
OVER IRRADIANCE: 7.81A X 1.25 = 9.765 A

**AMPACITY OF CONDUCTORS**

PVOC (INSIDE HOME/GARAGE)  
#10 AWG THWN 75C (167F) - FROM NEC TABLE 310.16 = 35 AMPS

**DERATED AMPACITY OF #10 AWG CONDUCTORS**  
CONDUIT FILL CORRECTION DERATING NEC TABLE 310.15 (B) (2) (A) - ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY = 4-6 CONDUCTORS IN 3/4" EMT = 0.80 DERATION TEMPERATURE CORRECTION NEC TABLE 310.15 (B) (2) (A), AMBIENT TEMPERATURE BASED ON DESIGN TEMPERATURE OF 55 C TEMPERATURE INSIDE HOME

75 C TEMPERATURE RATING OF THWN #10 AT 55C = 0.67 DERATION  
CONDUCTOR DERATING = 35A X 0.8 X 0.67 = 18.76A  
18.76A IS GREATER THAN OCPD OF 10A. OK

**PVSC (ON ROOF)**  
#10 USE-2 CONDUCTORS FOR ALL (4) PVSC STRINGS.

**DERATED AMPACITY OF #10 USE-2 CONDUCTORS (STRINGS A AND D)**  
PVSC STRINGS A AND STRING D ARE IN 3/4" CONDUIT ON THE ROOF TO PROTECT THE CONDUCTORS.

**CONDUIT FILL CORRECTION DERATING NEC TABLE 310.15 (B) (2) (A) - ADJUSTMENT FACTOR FOR MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN A RACEWAY = 4-6 CONDUCTORS IN 3/4" EMT = 0.80 DERATION**

FROM NEC TABLE 310.16 USE-2 FOR #10 IN A RACEWAY = 40A (APPLICABLE FOR STRINGS A AND D)  
ROOFTOP CONDITION OF USE 75 DEG C CORRECTION FACTOR OF (0.41) FROM BOTTOM OF 2008 NEC TABLE 310.16  
CONDUCTOR DERATING = 40A X 0.8 X 0.41 = 13.12A  
13.12A IS GREATER THAN OCPD OF 10A. OK

**DERATED AMPACITY OF #10 USE-2 CONDUCTORS (STRINGS B AND C)**  
PVSC STRINGS B AND C ARE IN FREE AIR ON THE ROOF.

FROM NEC TABLE 310.17 #10 USE-2 = 55A (APPLICABLE FOR STRINGS B AND C)  
ROOFTOP CONDITION OF USE 75 DEG C CORRECTION FACTOR OF (0.41) FROM BOTTOM OF 2008 NEC TABLE 310.16  
CONDUCTOR DERATING = 55A X 0.41 = 22.5A  
22.5A IS GREATER THAN OCPD OF 10A. OK

**TERMINAL RATING**

CONDUCTOR AMPACITY AT TERMINAL RATED TEMPERATURE. DERATED FOR CONDUIT FILL AND TEMPERATURE, MUST BE GREATER THAN OR EQUAL TO THE SHORT CIRCUIT CURRENT  
ISC X 1.56 (1.25 FOR CONTINUOUS USE X 1.25 FOR OVER IRRADIANCE)  
ISC = SUNPOWER 238 6.25A, 6.25A X 1.56 = 9.75A

OCPD INPUT AND OUTPUT TERMINALS ARE RATED AT 75C. FROM 2008 NEC TABLE 310.16, TERMINAL RATING OF #10 AWG @ 75C = 35A

CONDITIONS OF USE: SOLADECK IN DIRECT SUN, CORRECTION FACTOR OF 60C FROM NEC310.16 = .58 FOR TEMPERATURES OTHER THAN 30 C. 35A X .58 = 20.3A  
20.3A IS GREATER THAN OR EQUAL TO THE 9.75A MAX (A) PVSC, MAX PVOC. TERMINAL RATING IS OK

**VOLTAGE DROP CALCULATIONS**

VD = 364V MAX POWER-POINT  
CONDUCTOR = #10 AWG THWN  
R = 1.29 (FROM NEC CH.9 TABLE 8)  
IMP = 5.88A  
D = 120FT (LONGEST ONE WAY DISTANCE OF THE STRINGS FROM ARRAY TO DC COMBINER AT INVERTER)

**VERIFY VOLTAGE DROP LESS THAN (1%)**  
1% VD = 364 V X 0.01 = 3.64V

R = (VD) X 1000 / (2) X (I) X (D)  
R = 3.64V X 1000 / (2) X (5.88A) X (120FT)  
R = 2.579  
1.29 IS LESS THAN 2.579. OK

**MAIN PANEL DESIGN**

THE MAIN PANEL INCLUDES A 40A DOUBLE POLE BACK-FED PV BREAKER AND A 200A MAIN BREAKER.

**MAIN DISTRIBUTION PANEL RATING**

NEC 690.64(B)(2)  
MAIN PANEL RATING = (40 + 200) / 1.2 = 200A

**AC SIDE EQUIPMENT GROUNDING**

NEC 250.122  
10AWG BARE CU CONDUCTORS WILL BE USED.  
NEC 250.66  
GROUNDING ELECTRODE CONDUCTOR: 4AWG BARE CU CONDUCTORS.  
AS DICTATED BY THE RULES, THE GROUND ROD WILL BE 8' DRIVEN INTO THE EARTH.

**GENERAL SHEET NOTES**

- PROPERLY COLOR CODE DC AND AC CONDUCTORS PER NEC 200.6, 200.7, 210.5, 215.12, AND 250.119.
- SET THE INVERTER'S VOLTAGE JUMPER TO MATCH THE VOLTAGE AT THE UTILITY POINT OF CONNECTION. SEE SECTION 4 OF THE INVERTER MANUAL FOR DETAILED INSTRUCTIONS.
- SET THE INVERTER'S INTERNAL GROUNDING CONFIGURATION TO MATCH THE SOLAR MODULE'S GROUNDING CONFIGURATION.
- THE USE OF FLEXIBLE CONDUITS IS NOT PERMITTED. RIGID CONDUITS ARE REQUIRED.
- ENSURE THAT ALL WIRING CONNECTIONS ARE PROPERLY SECURED / TORQUED PER MANUFACTURER INSTRUCTION.
- NEC 690.64(B)(7) A CONNECTION IN A PANELBOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. AS APPLICABLE.
- REFER TO SITE PLAN DRAWING FOR LOCATIONS OF EQUIPMENT SHOWN IN EQUIPMENT SCHEDULE. REFER TO ELECTRICAL PARAMETER MONITORING EQUIPMENT'S INSTALLATION MANUALS FOR MORE DETAILED CONDUCTOR AND DATA CABLING ARRANGEMENTS.
- PROVIDE CUSTOMER WITH THE FOLLOWING SPARE PARTS: (1) KLIK FUSEHOLDER, (1) PVSC KLIK 12A FUSE, (1) GFPD KLIK FUSE & (1) ISC CLASS L FUSE. REFER TO THE PROPOSAL / CONTRACT FOR THE DETAILED SCOPE OF WORK.
- GENERALLY, CONDUITS ARE TO BE SUPPORTED AS PER NEC CHAPTER 3 REQUIREMENTS.



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**REFERENCE KEYNOTES**

**DIV 26 - ELECTRICAL**

26 24 00 SWITCHBOARDS AND PANELBOARDS  
26 24 00 2.1 MAIN DISTRIBUTION PANEL  
26 24 00 2.2A PV DC JUNCTION BOX (SOLADECK 0786)  
26 24 00 2.2B PV AC JUNCTION BOX  
26 24 00 2.3A PV AC DISCONNECT (60A)  
26 24 00 2.5 TEAM UTILITY METER

**DIV 48 - ELECTRICAL POWER GENERATION**

48 14 13 SOLAR ENERGY COLLECTORS  
48 14 13 2.1 PV MODULE SUNPOWER SPR-238  
48 14 13 2.2 CENTRAL INVERTER (SUNPOWER SPR-8000m)  
48 14 13 2.4 PV MONITORING  
48 14 13 2.5 LIGHTNING ARRESTOR (DC SIDE)

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MARK	DATE	DESCRIPTION
	11/23/2010	80% DESIGN DRAWINGS
	01/25/2011	80% W/DOE REVISIONS
	03/22/2011	100% CONSTR. DRAWINGS
	05/03/2011	100% W/DOE REVISIONS
	08/11/2011	100% AS BUILT DRAWINGS

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SHEET TITLE  
**THREE LINE DIAGRAM**

**E-602**

ITEM	QTY	DESCRIPTION	MANUFACTURER	MANUFACTURER PART #	NOTES
1	36	PV MODULE	SUNPOWER	SPR-238E-WHT-D	240WDC
2	2	PVSC JUNCTION BOX	RSTC ENTERPRISES	SOLADECK 0786	INCLUDING (3) TERMINAL BUS (UNGROUND, GROUNDED, GROUND) (2 PER PVSC) 10A TOUCHSAFE FUSE
3	1	CENTRAL INVERTER WITH COMBINER / DC DISCONNECT	SUNPOWER	SPR-8000m	8000WAC, INCLUDING (4) 15ADC PVSC KLIK FUSE & (1) 1A GFPD KLIK FUSE
4	1	JUNCTION BOX FOR ORGANIZER ENCLOSURE METER BASE AND IT HOUSING	ORGANIZER SUPPLIED	ORGANIZER SUPPLIED	METER HOUSING SHALL BE 1PH, 200AAC, NEMA3R ORGANIZER ENCLOSURE IS ACCESSED THROUGH PV AC JUNCTION BOX FOR QUICK WIRING
5	1	NON-FUSED SAFETY SWITCH AC DISCONNECT	GE	TN46SR1CP	240VAC (80AAC, NEMA3R)
6	1	CIRCUIT BREAKER (UTILITY LOAD SIDE CONNECTION)	GE	CH, CL, OR CH2, 40AAC 2 POLE OR EQUAL	APPLICABLE WHERE MAIN BREAKER IS >=200AAC. INSTALL CL FOR GE, CH FOR Eaton (E, SQUARE-D HOME LINE, GENERIC, CHQ FOR SQUARE-D) OR GENERALLY APPLICABLE.
7	1	UTILITY POINT OF CONNECTION	GE	TLM4020	UTILITY POINT OF CONNECTION NAME: MAIN, PROVIDED BY CUSTOMER
8	1	UTILITY METER	XXX	XXX	UTILITY METER NAME: MAIN, UTILITY ACCOUNT NAME: MAIN, PROVIDED BY CUSTOMER
9	1	ELECTRICAL PRODUCTION/CONSUMPTION MONITORING	MONITOR	MONITOR-44r	INCLUDING (1) NETWORK HUB AS NECESSARY
10	1	NETWORK POINT OF CONNECTION	EXISTING EQUIPMENT	EXISTING EQUIPMENT	NETWORK POINT OF CONNECTION NAME: NETWORK, PROVIDED BY CUSTOMER
11	1	LIGHTNING ARRESTOR (DC SIDE)	DELTA	LA 602 DC	ADDED IN PARALLEL TO DC DISCONNECT

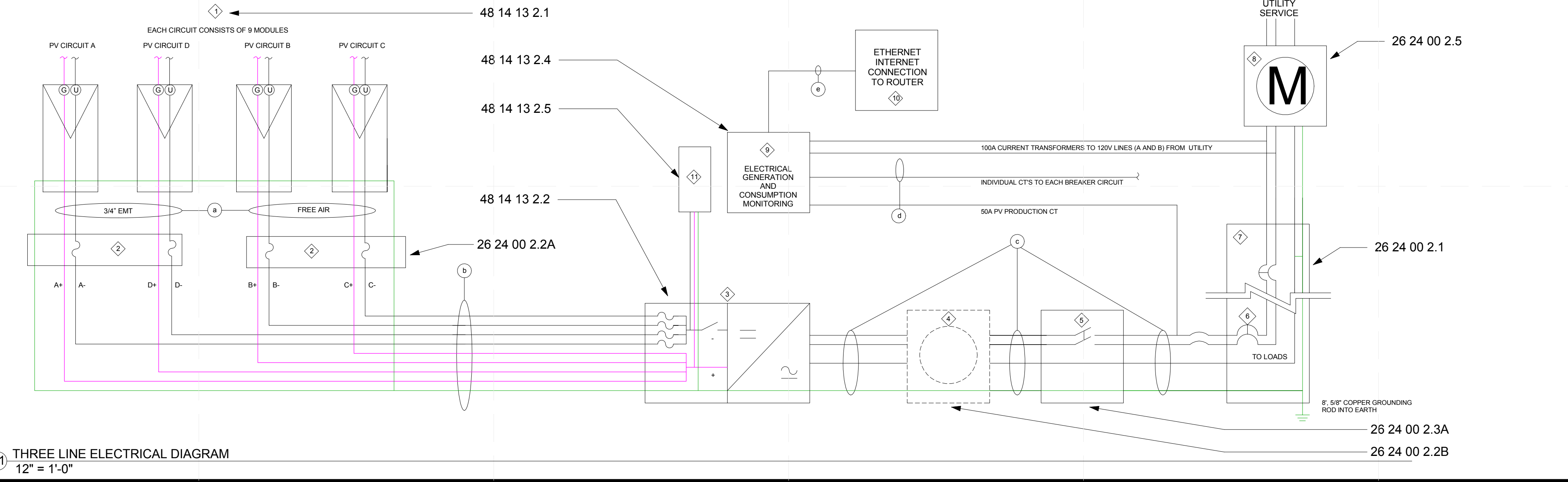
TAG	DESCRIPTION	CONDUIT TYPE/SIZE	CONDUCTOR SIZE/TYPE	ROUGHLY ESTIMATED RUN LENGTH (FT)	RUN LENGTH (FT), NOT TO EXCEED
a	PV SOURCE CIRCUIT (PVSC) & EQUIPMENT GROUNDING CONDUCTOR (WITHIN PV ARRAY FOOTPRINT)	STRINGS B AND C IN FREE AIR STRINGS A AND D IN 3/4" EMT CONDUIT IF OUTSIDE PV ARRAY FOOTPRINT	(2 PER PVSC FOR STRINGS A,B,C,D) #10 USE-2 (1) SHARED #6 BARE, SOLID EGC	50	3198
b	PV OUTPUT CIRCUIT & EQUIPMENT GROUNDING CONDUCTOR (FROM SOLADECK BOXES TO DC DISCONNECT AND COMBINER IN GARAGE)	3/4" EMT EXPOSED IN GARAGE UP TO SOLADECK BOXES. EXTERIOR EMT IS VERTICAL AND SHARED	(2 PER PVOC A,B,C,D) #10 AWG THHN/THWN (1 PER NORTH AND SOUTH ARRAYS) #10 AWG THHN OR THWN EGC	50	N/A
c	INVERTER SOURCE CIRCUIT & MULTIPLE FUNCTION GROUNDING CONDUCTOR	1" EMT (OR RMC WHERE SUBJECT TO CORROSION OR SEVERE PHYSICAL DAMAGE, OR PVC IF UNDERGROUND)	(3) #6 THWN-2 OR THHN (1) #8 THWN-2 OR THHN ACGEG/DCGEG/EGC	10	N/A
*d	POWER TO MONITORING	N/A	PROVIDED	10	N/A
*e	MONITORING TO ETHERNET COMM.	N/A	CAT-5e	10	3600

\* AS APPLICABLE

INPUT DATA		VALUE	UNIT
<b>PV ARRAY:</b>			
QUANTITY OF PV MODULES PER PV SOURCE CIRCUIT:		9	N/A
QUANTITY OF PV SOURCE CIRCUIT PER PV OUTPUT CIRCUIT:		4	N/A
<b>PV MODULE:</b>			
MANUFACTURER PART #:		SPR-238E-WHT-D	N/A
MAXIMUM OVERCURRENT DEVICE RATING:		10	Adc
OPEN-CIRCUIT VOLTAGE (Voc):		48.5	Vdc
OPERATING VOLTAGE (Vmp):		40.5	Vdc
MAXIMUM PERMISSIBLE SYSTEM VOLTAGE (VmaxPERMISSIBLE):		514	Vdc
OPERATING CURRENT (Imp):		5.88	Adc
SHORT CIRCUIT CURRENT (Isc):		7.81	Adc
MAXIMUM POWER (Pmp):		238	Wdc
VOLTAGE TEMPERATURE COEFFICIENT (IF %/C AVAILABLE, ENTER (%/C)/Voc):		0.1325	Vdc/C
<b>INVERTER:</b>			
MANUFACTURER PART #:		SPR-8000m	N/A
AC OUTPUT CURRENT (Imp):		32.0	Aac
NOMINAL OPERATING AC VOLTAGE (Vnominal):		240	Vac

NEC 2008 COMPLIANCE DETAIL			
DESCRIPTION	ARTICLE	FORMULA	RESULT
Vdc MAX	690.7	Vdc MAX = (Voc) X QUANTITY OF PV MODULES PER PV SOURCE CIRCUIT + (2) X QUANTITY OF PV MODULES PER PV SOURCE CIRCUIT X (MANUFACTURER TEMPERATURE COEFFICIENT OF Voc) X NUMBER OF PV SOURCE CIRCUITS	Vdc MAX = 514 Vdc
Isc MAX PVSC	690.8 (A)(1)	Isc MAX PVSC = (Isc) X QUANTITY OF PV SCHEMATIC	Isc MAX PVSC = 7.81 Adc
Isc MAX PVOC	690.8 (A)(2)	Isc MAX PVOC = (Isc) X QUANTITY OF PVSC PER PVOC	Isc MAX PVOC = 9.76 Adc
Vdc DROP PVSC (%)	215.19 (A)(1) FPN A & 215.2 (A) (2) FPN B & 215.3 (A)(1) FPN 1 & CH 9 TABLE B & CH 9 TABLE 8	Vdc DROP PVSC (%) = (VD) / (Vmp) X 100%	ONE WAY L = 120 FT
Vdc DROP PVOC (%)	215.19 (A)(1) FPN A & 215.2 (A) (2) FPN B & 215.3 (A)(1) FPN 1 & CH 9 TABLE B & CH 9 TABLE 8	Vdc DROP PVOC (%) = (VD) / (Vmp) X 100%	ONE WAY L = 120 FT
Vdc DROP ISC (%)	215.19 (A)(1) FPN A & 215.2 (A) (2) FPN B & 215.3 (A)(1) FPN 1 & CH 9 TABLE B & CH 9 TABLE 8	Vdc DROP ISC (%) = (VD) / (Vmp) X 100%	ONE WAY L = 120 FT

PV ARRAY DETAILS	
QUANTITY OF PV MODULES PER PV SOURCE CIRCUIT	9
QUANTITY OF PV SOURCE CIRCUITS PER PV OUTPUT CIRCUIT / INVERTER	4



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FIXTURE	DESCRIPTION	LAMPS			FINISH	NOTES
		TYPE	NUMBER	WATTS		
C1	Kichler Semi Flush ZLI Product no. 3620N1	GE Helical 13W Compact Fluorescent	4	52	Brushed Nickel	
C2	American Fluorescent Corp. 48" performance utility light	T8 Electronic Ballast	2	64	White	
P1	Forecast Pacifica pendant. No. F1930-36	GE Helical 13W Compact Fluorescent	4	52	Satin Nickel, Sand	
P2	Forecast Pacifica pendant. No. F1932-36	GE Helical 13W Compact Fluorescent	3	39	Satin Nickel, Sand	
P3	Kichler Family Space pendant 3lt. No. 2752N1	GE Helical 13W Compact Fluorescent	6	78	Brushed Nickel & Satin etched White glass	
W1	Forecast Pacifica Edge Bow Wall Sconce No. F5467-36U	GE Helical 13W Compact Fluorescent	4	52	Satin Nickel, Sand on Clear Glass	
W2	LED Lighting Inc. Versa Bar No. V10WW12V	3.5 W LED	4	14		
W3	Kichler Pira Bath Vanity, No. 10424BAW	39W T5	1	39	Brushed Aluminum	Dimmable
CF1	Craftmade Ceiling Fan w. 5 Blades No. 225705	Neptun 14W Dimmable Compact Fluorescent	4	56	Satin Nickel, Maple Blade	
CV1	Ziotek 120V LED Strip No. 0014-0002	LED, 120V/1.45W	3	4.35	White	
BH1	Custom Biowall	2.6 W LED Grow Lights	12	31.2		
W4	Forecast Hollywood Hills Outdoor Wall Light, No. F8491-68NV	GE Helical 13W Compact Fluorescent	8	104	Deep Bronze	
LA1	Kichler Deck Light No. 15064AZT	10W BPI	8	80	Hand Paint	
LA2	Kichler Accent Light No. 15384BK7	35W BPI	2	70	Black	

PANEL	LOCATION	VA	VOLTS	AMPS	CB SIZE	WIRE TYPE	G/AFCI	NOTES
1,3	MECHANICAL CLOSET	5000	240	20.83	30, 2P	10 THWN		AIR HANDLER
2	KITCHEN	1500	120	12.5	20	12 THWN	GFCI	KITCHEN RECEPTACLES
4	LAUNDRY	1440	120	12	20	12 THWN		CLOTHES WASHER
5,7	OUTDOOR	2760	240	11.5	20, 2P	10 THWN		XL200 HEAT PUMP UNIT
6	KITCHEN	780	120	6.5	15	14 THWN		REFRIGERATOR
8	KITCHEN	1500	120	12.5	20	12 THWN	GFCI	UNDER CABINET PLUG/MOLD RECEPTACLES
9,11	MECHANICAL CLOSET	4500	240	18.75	30, 2P	10 THWN		HEAT PUMP WATER HEATER, SINGLE OUTLET
10	KITCHEN	1700	120	14.2	20	12 THWN	GFCI	ADVANTUM MICROWAVE OVEN
12	KITCHEN / LAUNDRY	84	120	0.7	15	14 THWN	AFCI	KITCHEN / LAUNDRY LIGHTING/ CLERESTORY
13,15	KITCHEN	2400	240	10	20, 2P	12 THWN	GFCI	OVEN
14	GARAGE	96	120	0.8	15	14 THWN		GARAGE LIGHTING
16	BATHROOM	1500	120	12.5	20	12 THWN	GFCI	BATHROOM GFCI
17, 19	KITCHEN	7700	240	32.08	40, 2P	8 THWN-2		COOKTOP
18	BATHROOM	250	120	2.08	15	14 THWN		BATHROOM LIGHTING / CLERESTORY
20	MASTER BEDROOM	540	120	4.5	15	14 THWN	AFCI	MASTER BEDROOM RECEPTACLES
21	KITCHEN	373	120	3.11	15	14 THWN		1/2HP GARBAGE DISPOSAL
22	OFFICE	920	120	7.7	15	14 THWN	AFCI	OFFICE RECEPTACLES
23	KITCHEN	1200	120	10	15	14 THWN		DISHWASHER
24	MASTER BEDROOM / OFFICE	714	120	5.95	15	14 THWN	AFCI	MASTER BEDROOM / OFFICE LIGHTING
25,27	GARAGE	3300	240	13.75	20	12 THWN		3/4HP FIRE PUMP
26	SMOKE / CO DETECTORS	15.6	120	0.13	15	14 THWN	AFCI	SMOKE / CO DETECTORS
28	KITCHEN	153.5	120	1.28	15	14 THWN	AFCI	BIOWALL / KITCHEN LIGHTING
29,31	LAUNDRY	5600	240	23.33	30, 2P	10 THWN		CLOTHES DRYER
30	LIVING ROOM	1325	120	11	15	14 THWN	AFCI	LIVING ROOM
32	GARAGE	256	120	2.13	20	12 THWN	GFCI	GARAGE & CONTROL POWER
33	GARAGE	1032	120	8.6	20	12 THWN		WATER SUPPLY PUMP
34	EXTERIOR	200	120	1.67	20	12 THWN	GFCI	EXTERIOR LIGHTING
35	GARAGE	450	120	3.75	20	14 THWN		WASTE EJECTOR PUMP, SINGLE OUTLET
36	BLANK	120	120					
37,39	GARAGE	240	240					ORGANIZER ACCESS PV MONITORING
38,40	GARAGE	8640	240	36	40, 2P	8 THWN-2		PV BACK FEED

**GENERAL SHEET NOTES**

- ALL INSTALLATION PER NEC 2008
- ALL BRANCH CIRCUITS GO TO "AC BREAKER PANEL" IN ELECTRICAL CLOSET
- ALL BEDROOM OUTLETS, HALLWAY, LAUNDRY, AND BEDROOM LIGHTS SHALL BE PROTECTED BY AFCI BREAKERS.
- ALL SMOKE ALARMS TO BE INSTALLED IN ACCORDANCE WITH NFPA72. FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION.
- SMOKE ALARMS SHALL BE INTERCONNECTED AND AFCI PROTECTED.
- U.N.O. ALL RECEPTACLES TO BE LOCATED AT 12" A.F.F.
- U.N.O. ALL SWITCHES TO BE LOCATED AT 48" A.F.F. TO CENTERLINE OF FIXTURE
- WHILE ON NATIONAL MALL, ORGANIZERS SHALL LOCK OUT & TAG OUT METER HOUSING UNTIL FINAL APPROVAL IS GRANTED
- ALL RECEPTACLES SHALL BE TAMPER RESISTANT AND COMPLY WITH 2008 NEC 406.11.
- ALL OUTSIDE RECEPTACLES SHALL BE WEATHER RESISTANT AND COMPLY WITH NEC 406.8(1).



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**REFERENCE KEYNOTES**

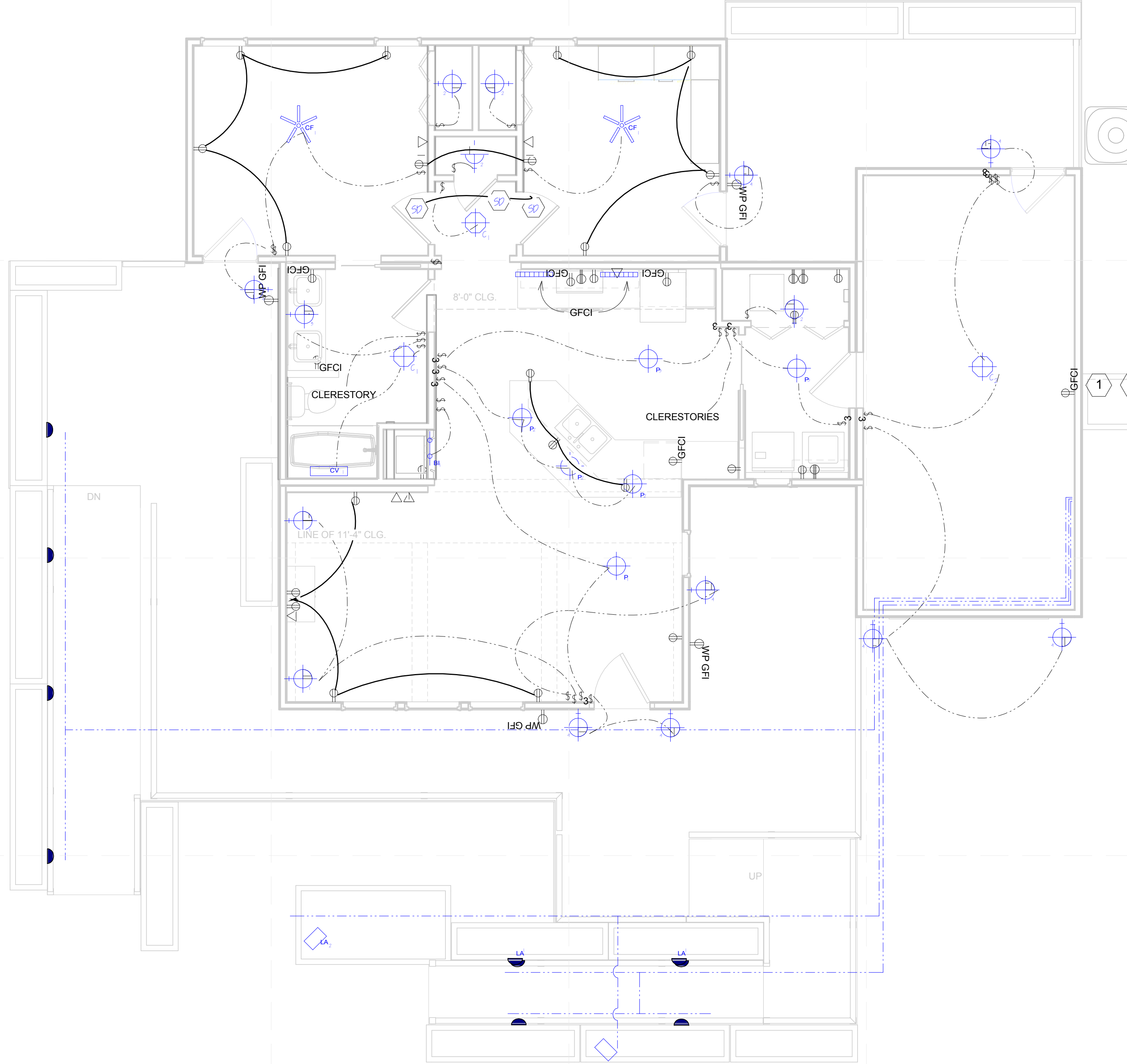
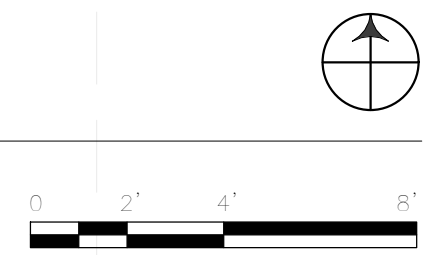
- DIV 26 - ELECTRICAL
- 26 24 00 PANELS AND SWITCHBOARDS
  - 26 24 00 2.1 MAIN PANEL
  - 26 24 00 2.4B CIRCUIT BREAKERS
  - 26 27 26 WIRING DEVICES
  - 26 27 26 2.2A GFCI RECEPTACLES
  - 26 27 26 2.2B GFCI OUTDOOR RECEPTACLES
  - 26 27 26 2.3 240V RECEPTACLES
  - 26 27 26 2.4 120V RECEPTACLES
  - 26 27 26 2.5A SINGLE POLE SWITCH
  - 26 27 26 2.5B 3-WAY SWITCH
  - 26 27 26 2.5C WIRELESS ON/OFF SWITCH
  - 26 27 26 2.5D CLERESTORY SWITCH
  - 26 27 26 2.5E DIMMER FAULIGHT SWITCH

**SHEET KEYNOTES**

- ELECTRIC METER HOUSING AT 65" ABOVE GRADE (48" A.F.F.) TO ACCEPT STANDARDS. 4-JAW RINGLESS ROUND, UTILITY GRADE SOCKET METER FOR USE WITH 240/120V SERVICE.
- AC DISCONNECT AT 65" ABOVE GRADE (48" A.F.F.)

SERVICE LOADS	CALCULATIONS	VA RATING	AMP RATING
984 FT <sup>2</sup> @ 3VA	(984) X (3) =	2,952	
(7) 20A APPLIANCE OUTLET CIRCUIT AT 1500 VA EACH	(7) X (1500) =	10,500	
LAUNDRY CIRCUIT (CLOTHES WASHER)	NAMEPLATE RATING	1,500	
OVEN & COOKTOP	(COOKTOP: 7,700VA) + (OVEN: 2,400VA) =	10,100	
WATER HEATER	NAMEPLATE RATING	4,500	
DISHWASHER	NAMEPLATE RATING	1,200	
CLOTHES DRYER	NAMEPLATE RATING	5,600	
SUB-TOTAL GENERAL LOADS		34,852	
FIRST 10kVA @ 100%		10,000	
REMAINDER OF GENERAL LOAD @ 40%	(24,852VA) X (0.4) =	9,941	
TOTAL NET GENERAL LOAD		19,941	
HEAT PUMP AND SUPPLEMENTARY HEAT		2,760	
8kW ELECTRIC HEAT: HEAT PUMP VA + ((5,000VA * 0.65)	(2,760VA) + ((5,000VA) X (0.65)) =	6,010	
TOTAL NET GENERAL LOAD		19,941	
HEAT PUMP AND SUPPLEMENTARY HEAT		6,010	
FIRE PROTECTION PUMP		3,300	
WATER SUPPLY PUMP		1,032	
TOTAL		(19,941VA) + (10,342VA) =	30,283
CALCULATED LOAD FOR SERVICE		(30,283VA) / (240V) =	126.2A

1 SERVICE CALCULATIONS  
 6" = 1'-0"



A1 POWER PLAN - SHEET VIEW  
 1/4" = 1'-0"

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SHEET TITLE  
**POWER PLAN AND SCHEDULES**

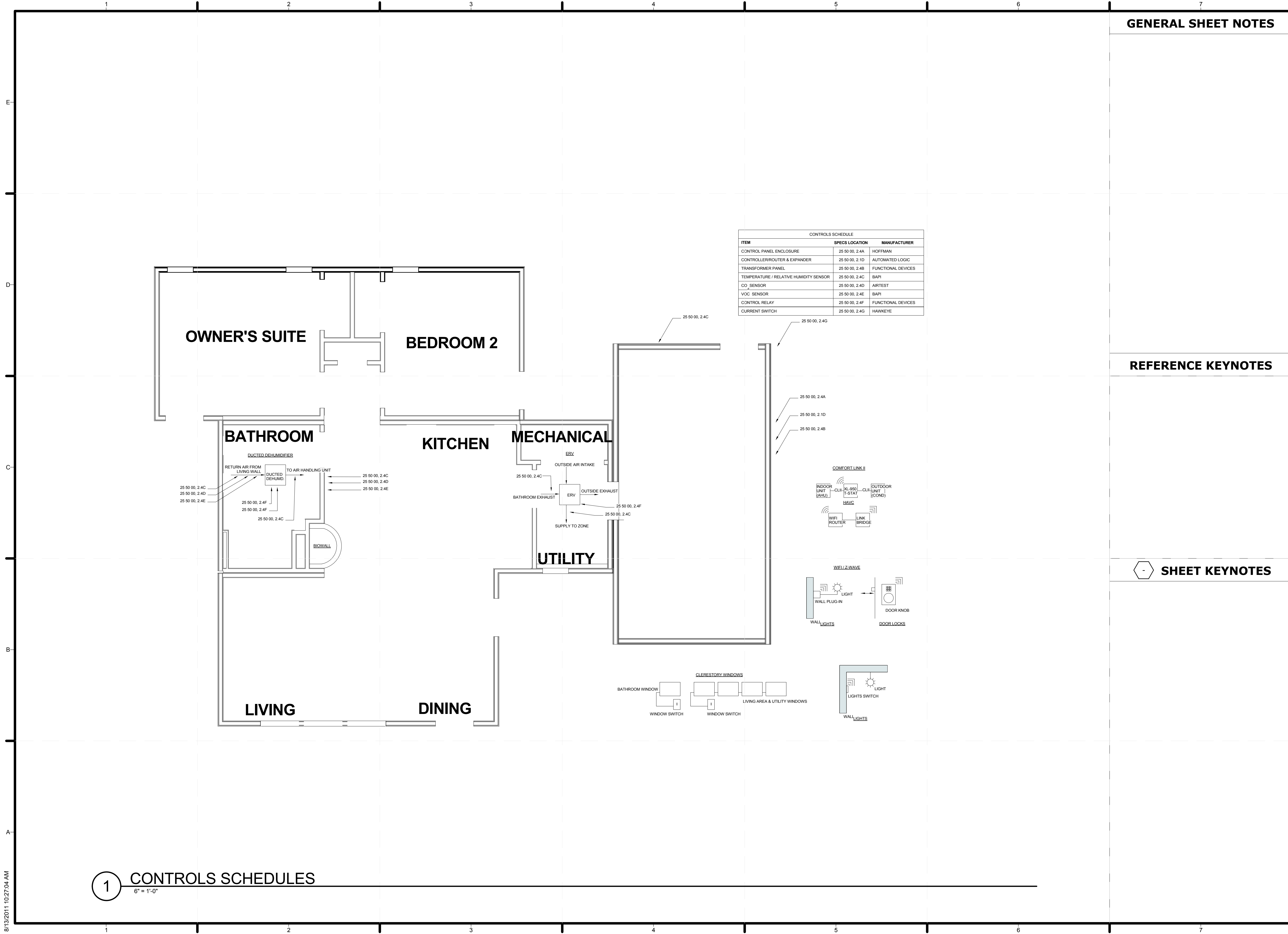
**E-603**

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CONTROLS SCHEDULE		
ITEM	SPECS LOCATION	MANUFACTURER
CONTROL PANEL ENCLOSURE	25 50 00, 2.4A	HOFFMAN
CONTROLLER/ROUTER & EXPANDER	25 50 00, 2.1D	AUTOMATED LOGIC
TRANSFORMER PANEL	25 50 00, 2.4B	FUNCTIONAL DEVICES
TEMPERATURE / RELATIVE HUMIDITY SENSOR	25 50 00, 2.4C	BAPI
CO2 SENSOR	25 50 00, 2.4D	AIRTEST
VOC SENSOR	25 50 00, 2.4E	BAPI
CONTROL RELAY	25 50 00, 2.4F	FUNCTIONAL DEVICES
CURRENT SWITCH	25 50 00, 2.4G	HAWKEYE

**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SHEET KEYNOTES**



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**BUILDING CONTROL  
 OVERVIEW SCHEMATIC**

**T-601**

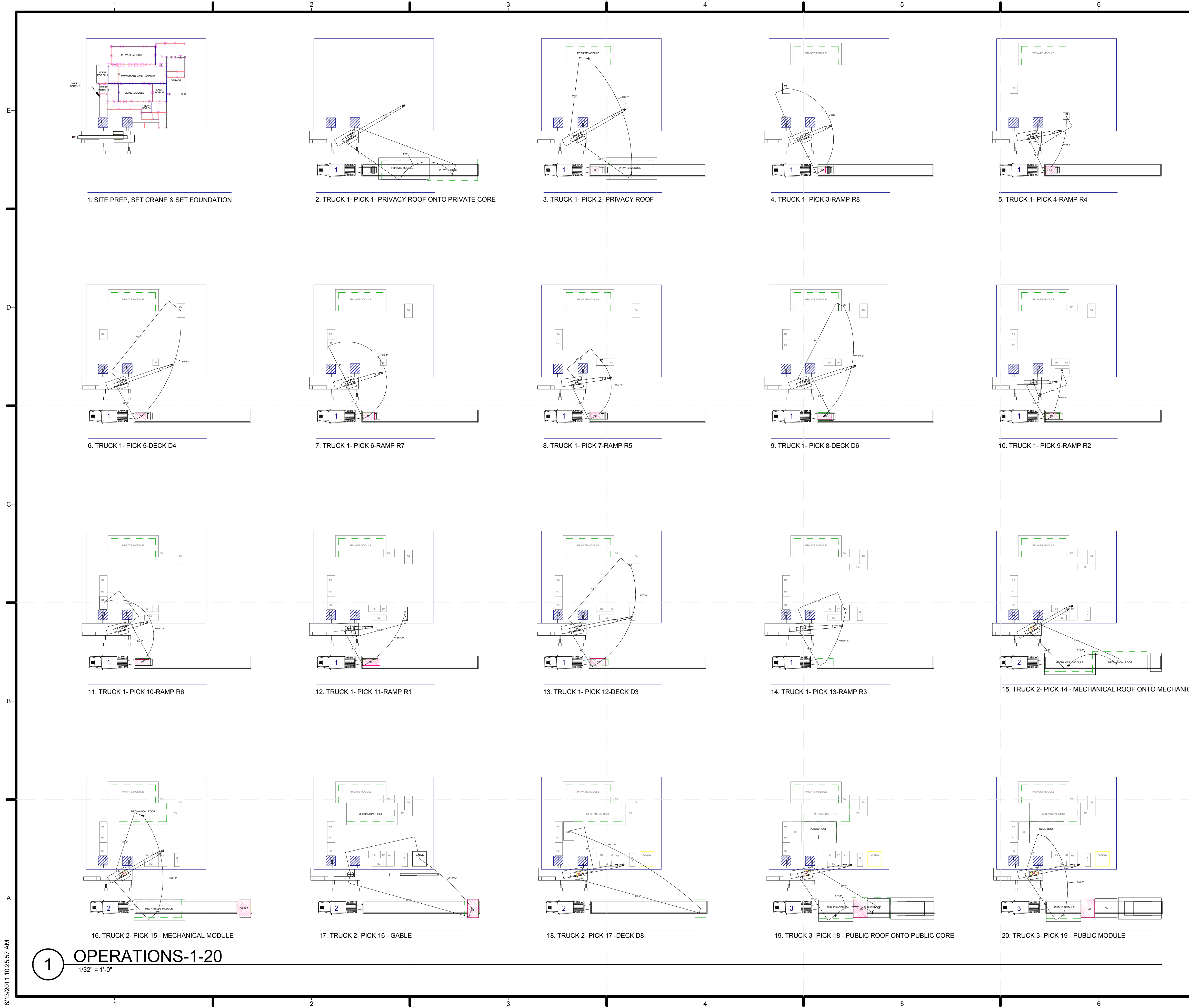
**1 CONTROLS SCHEDULES**  
 6" = 1'-0"

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**GENERAL SHEET NOTES**

- LOADING REPRESENTS A SUGGESTED METHOD OF LOADING. EXACT PLACEMENT OF EACH ITEM TO BE COORDINATED WITH SHIPPING COMPANIES SO THAT TRANSPORTATION REQUIREMENTS ARE MET. LOADS ARE DISTRIBUTED AND CONSTRUCTION SEQUENCE IS OPTIMIZED.
- CONTRACTOR TO DETERMINE APPLICABLE SHIPPING ROUTE FROM CONSTRUCTION SITE TO NATIONAL MALL IN WASHINGTON D.C. AND VERIFY WITH OWNER PRIOR TO TRANSPORTATION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND TRANSPORTATION VEHICLES TO MOVE TRUCKS FROM CONSTRUCTION LOCATION TO THE NATIONAL MALL IN WASHINGTON D.C. AND BACK. ALL ITEMS TO BE SECURED TO THE TRUCK PER REQUIREMENTS SET FORTH BY THE DEPARTMENT OF TRANSPORTATION, THE SHIPPING COMPANY AND ANY OTHER APPLICABLE LEGAL BODIES.

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SHEET TITLE  
**ARRIVAL/ DEPARTURE SEQUENCE PLANS 1-20**

**O-101**

**1 OPERATIONS-1-20**  
 1/32" = 1'-0"

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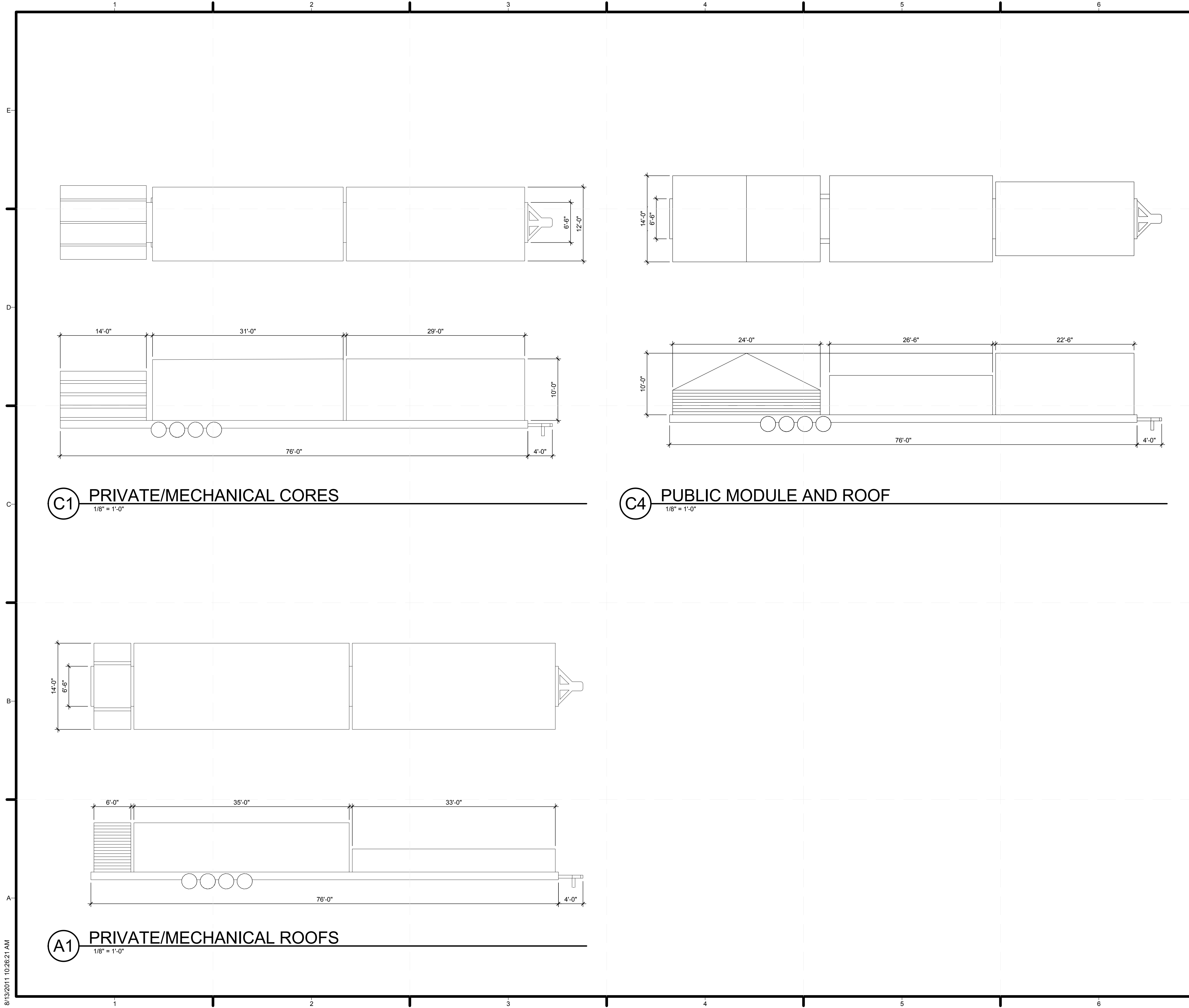
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 SEQUENCE PLANS  
 21-40

**O-102**

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