

### THIRD TIMES THE CHARM

As an experienced decathlon participant, the 2007 Carnegie Mellon Solar Decathlon team is dedicated to expanding from the past experiences in order to push the solar housing boundary and create innovative solutions for sustainable home design.

### OUR VISION

This year, the team will offer a new way of looking at sustainable solar design by creating a modular “plug and play” housing product that answers the question: How does a maximum energy efficient home react and grow with the occupants living inside? Plug and play achieves flexibility by clustering utilities into one central space while additional pre-fabricated living units attach to it through a grid of connection points.

New units can be added or exchanged to allow the house to expand or modify with the home owner’s needs. In addition to adaptability, this design provides a comfortable living environment which allows for close interactions between the occupant, the house, and nature.

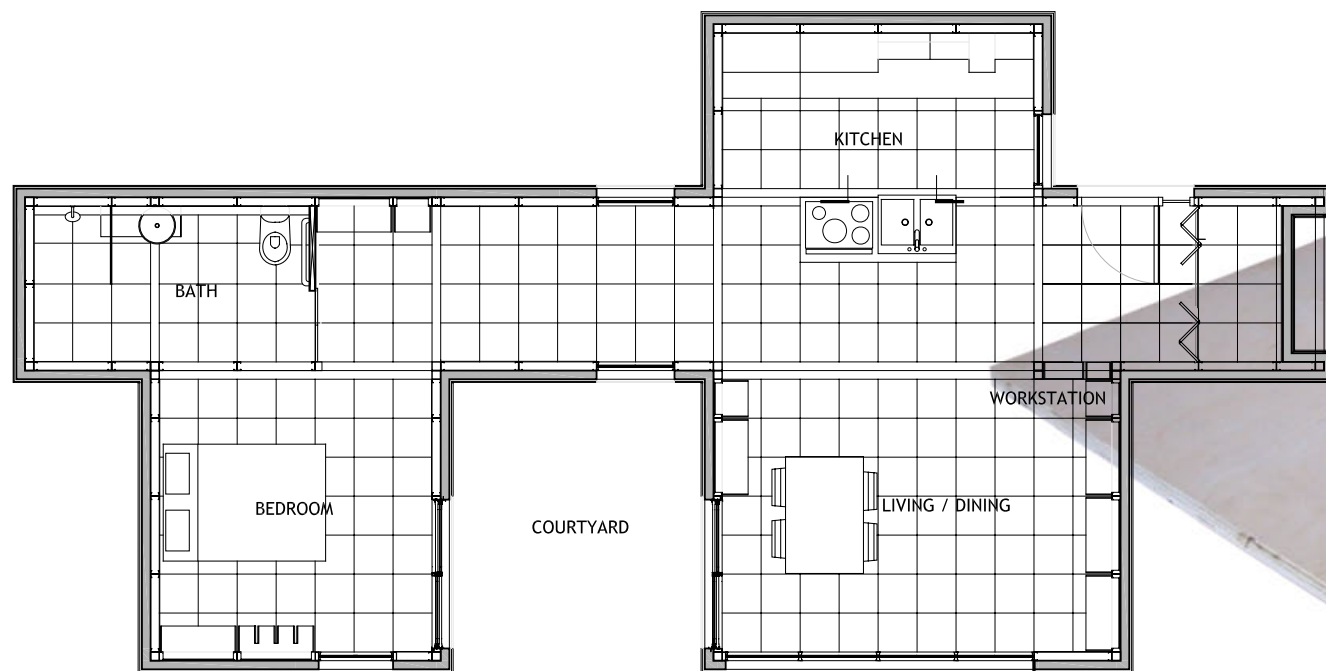
### LOOKING TOWARD THE FUTURE

The 2007 Carnegie Mellon Solar House will become a permanent addition to the facilities in Powder Mill Nature Reserve. Located 40 minutes outside of Pittsburgh in Westmoreland County, Powder Mill Nature Reserve is an outdoor educational center and natural field station affiliated with the Carnegie Museum of Natural History, which hosts more than 40,000 people annually with a series of public programs and workshops for educational institutions.



## CONSTRUCTION DOCUMENTATION AUGUST 7, 2007

LTU	MTL	PSU	GT	COLO	UMR	UMD	UT	UPR	SCU
119	117	115	113	111	109	107	105	103	101
DECATHLETE WAY									
120	118	116	114	112	110	108	106	104	102
NYIT	UIUC	MIT	CMU	TUD	KSU	CORNELL	CINCY	TAMU	UPM



tripOD



# ARCHITECTURAL

#	DRAWING NAME:	SCALE:
A0.0	LAYOUT DIAGRAMS	NO SCALE
A0.1	SITE PLAN	1/8" = 1'-0"
A0.2	SITE ELEVATIONS NORTH & SOUTH	1/8" = 1'-0"
A0.3	SITE ELEVATIONS EAST & WEST	1/8" = 1'-0"
A1.0	HOUSE PLAN	1/4" = 1'-0"
A1.1	FOOTPRINT & CONTAINED AREA PLAN	1/4" = 1'-0"
A1.2	REFLECTED CEILING PLAN	1/4" = 1'-0"
A1.3	ROOF PLAN w/ PV & SOLAR THERMAL	1/4" = 1'-0"
A1.4	ROOF PLAN w/ DRAINAGE	1/4" = 1'-0"
A2.0	EXTERIOR ELEVATION UPPER CORE	1/4" = 1'-0"
A2.1	EXTERIOR ELEVATION LOWER CORE	1/4" = 1'-0"
A2.A	EXTERIOR ELEVATIONS POD-A	1/4" = 1'-0"
A2.B	EXTERIOR ELEVATIONS POD-B	1/4" = 1'-0"
A2.C	EXTERIOR ELEVATIONS POD-C	1/4" = 1'-0"
A3.0	CORE SECTION AA	1/4" = 1'-0"
A3.1	CORE SECTION BB	1/4" = 1'-0"
A3.2	CORE SECTION CC & DD	1/4" = 1'-0"
A3.A	POD-A SECTIONS	1/4" = 1'-0"
A3.B	POD-B SECTIONS	1/4" = 1'-0"
A3.C	POD-C SECTIONS	1/4" = 1'-0"
A4.1	WALL SECTIONS IN CORE	1" = 1'-0"
A4.2	CLOSET WALL SECTIONS	1" = 1'-0"
A4.3	WALL SECTIONS IN POD	1" = 1'-0"
A4.4	CORE/POD CONNECTION SECTIONS	1-1/2" = 1'-0"
A4.5	WINDOW SCHEDULE, DETAILS	1/4" = 1'-0"
A4.6	SKYLIGHT & SOLAR THERMAL DETAILS	3/4" = 1'-0"
A4.7	ROOF DETAILS	3" = 1'-0"
A4.8	INTERIOR WALL SYSTEM	1/2" = 1'-0"
A4.9	INTERIOR WALL SYSTEM DETAIL	1" = 1'-0"
A4.10	INTERIOR WALL SYSTEM DETAIL	1" = 1'-0"
A4.11	BULKHEAD	1/2" = 1'-0"
A4.12	BULKHEAD DETAIL	1/4" = 1'-0"
A4.13	RAINSCREEN & SHADING DETAIL	3" = 1'-0"

# ADA

#	DRAWING NAME:	SCALE:
ADA1	SITE PLAN	1/8" = 1'-0"
ADA2	PLAN	1/4" = 1'-0"
ADA3	SECTION	1/2" = 1'-0"

# FIRE PROTECTION

#	DRAWING NAME:	SCALE:
F1	FIRE PROTECTION PLAN	1/4" = 1'-0"

# STRUCTURAL

#	DRAWING NAME:	SCALE:
S1.0	FOOTER PLAN	1/4" = 1'-0"
S1.1	FLOOR JOIST & STEEL PLAN	1/4" = 1'-0"
S1.2	ROOF JOIST & STEEL PLAN	1/4" = 1'-0"
S1.3	TOP OF CORE PLAN	1/4" = 1'-0"
S1.4	CENTRIA FLOOR LAYOUT	1/4" = 1'-0"
S1.5	CENTRIA ROOF LAYOUT	1/4" = 1'-0"
S2.0	CORE LONG ELEVATIONS	1/4" = 1'-0"
S2.1	CORE SHORT ELEVATIONS	1/4" = 1'-0"
S2.A	POD-A ELEVATIONS	1/4" = 1'-0"
S2.B	POD-B ELEVATIONS	1/4" = 1'-0"
S2.C	POD-C ELEVATIONS	1/4" = 1'-0"
S3.0	CORE SECTIONS	1/4" = 1'-0"
S3.1	CORE & POD SECTIONS	1/4" = 1'-0"
S3.AB	PODS-A &-B SECTIONS	1/4" = 1'-0"
S3.C	POD-C SECTIONS	1/4" = 1'-0"
S4.0	STRUCTURAL AXON	NO SCALE
S4.1	STEEL SCHEDULE	NO SCALE
S4.2	STEEL MEMBERS	3/4" = 1'-0"
S4.3	STEEL MEMBERS	VARIES
S4.4	STEEL MEMBERS	3/4" = 1'-0"
S4.5	STEEL MEMBERS	3/4" = 1'-0"
S4.6	STEEL MEMBERS	3" = 1'-0"
S4.7	STEEL MEMBERS	3" = 1'-0"
S4.8	CORE FRAMING DETAIL	3" = 1'-0"
S4.9	STEEL CONNECTION DETAILS	VARIES
S4.10	LGS SCHEDULE	1/4" = 1'-0"
S4.11	LGS SCHEDULE	1/4" = 1'-0"
S4.12	LGS DETAIL	NO SCALE
S4.13	VERSAWALL SCHEDULE	NO SCALE
S4.14	PANEL FRAMING	VARIES
S4.15	POD/CORE CONNECTION	VARIES
S4.16	GREENSCAPE STRUCTURE	1/4" = 1'-0"
S4.17	DECK SCHEDULE	1/4" = 1'-0"
S4.18	DECK SCHEDULE	VARIES
S4.19	DECK CONSTRUCTION DETAILS	1" = 1'-0"
S4.20	GLOBAL GARDENS STRUCTURE	1/4" = 1'-0"
S5.0	FRAMING SEQUENCE	NO SCALE
S5.1	FRAMING SEQUENCE	NO SCALE
S5.2	FRAMING SEQUENCE	NO SCALE

# MECHANICAL

#	DRAWING NAME:	SCALE:
M1	HVAC SCHEMATIC / SCHEDULE	NO SCALE
M2	HVAC PLAN	1/4" = 1'-0"
M3	VENTILATION PLANS	1/4" = 1'-0"
M4	RADIANT HEATING PLAN	1/4" = 1'-0"
M5	HVAC INSTALLATION DETAILS	VARIES

# ELECTRICAL

#	DRAWING NAME:	SCALE:
E1.0	PV/BOS WIRING DIAGRAM	NO SCALE
E1.1	AC PANEL LAYOUT	NO SCALE
E1.2	HOUSE ELECTRICAL PLANS	1/4" = 1'-0"
E2.0	ELECTRICAL LIGHTING PLAN	1/4" = 1'-0"
E2.1	LIGHTING DETAILS	VARIES
E3.0	DATA AQ. SCHEMATIC	NO SCALE
E3.1	DATA & COMM. SCHEDULE	1/4" = 1'-0"
E3.2	DATA WIRING PLAN	NO SCALE
E3.3	WEATHER STATION SCHEM.	NO SCALE
E3.4	WATER METERING SCHEM.	NO SCALE
E4.0	KIOSK & BATTERY DETAILS	1/4" = 1'-0"
E4.1	MECHANICAL CLOSET PLAN	3/4" = 1'-0"

# PLUMBING

#	DRAWING NAME:	SCALE:
P1	WATER SCHEMATIC	NO SCALE
P2	PLUMBING ISOMETRIC	NO SCALE
P3	PLUMBING - WASTE WATER	1/4" = 1'-0"
P4	SOLAR THERMAL / CONTESTS	

# CONSTRUCTION

#	DRAWING NAME:	SCALE:
C1.0	ASSEMBLY SEQUENCE	NO SCALE
C1.1	ASSEMBLY SEQUENCE	NO SCALE
C1.2	ASSEMBLY SEQUENCE	NO SCALE
C2.0	DISASSEMBLY SEQUENCE	NO SCALE
C2.1	DISASSEMBLY SEQUENCE	NO SCALE
C2.2	DISASSEMBLY SEQUENCE	NO SCALE

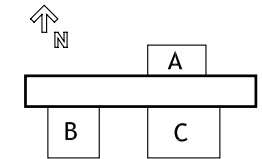


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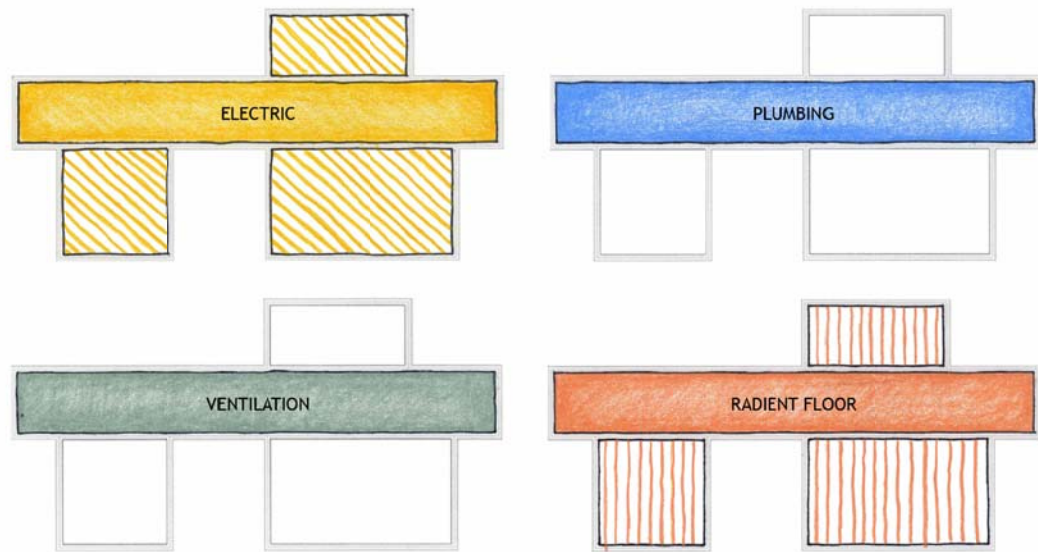
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CONTACT:  
Steve Lee  
p:412.726.6503  
f:412.268.7819

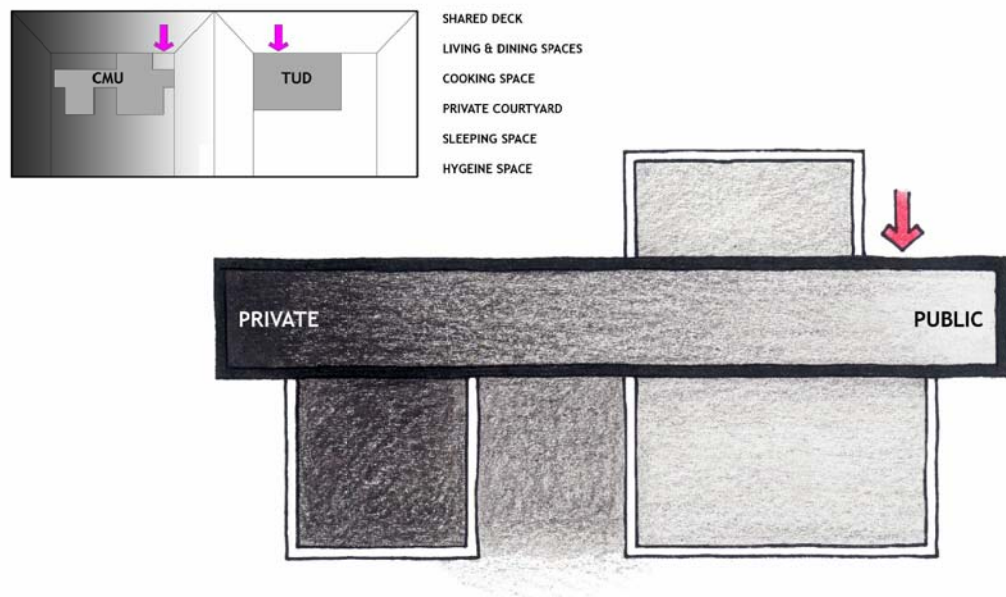


DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: DRAWING INDEX

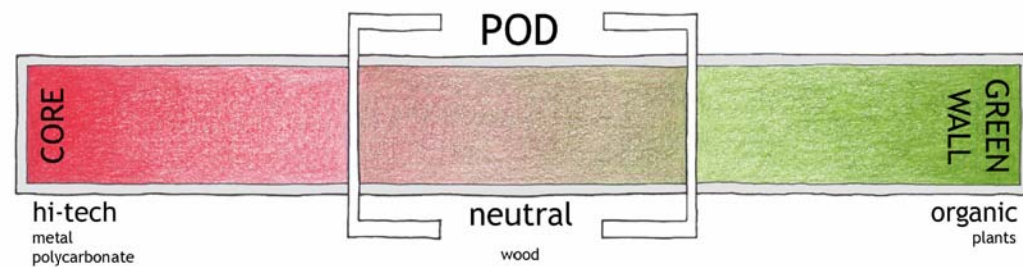




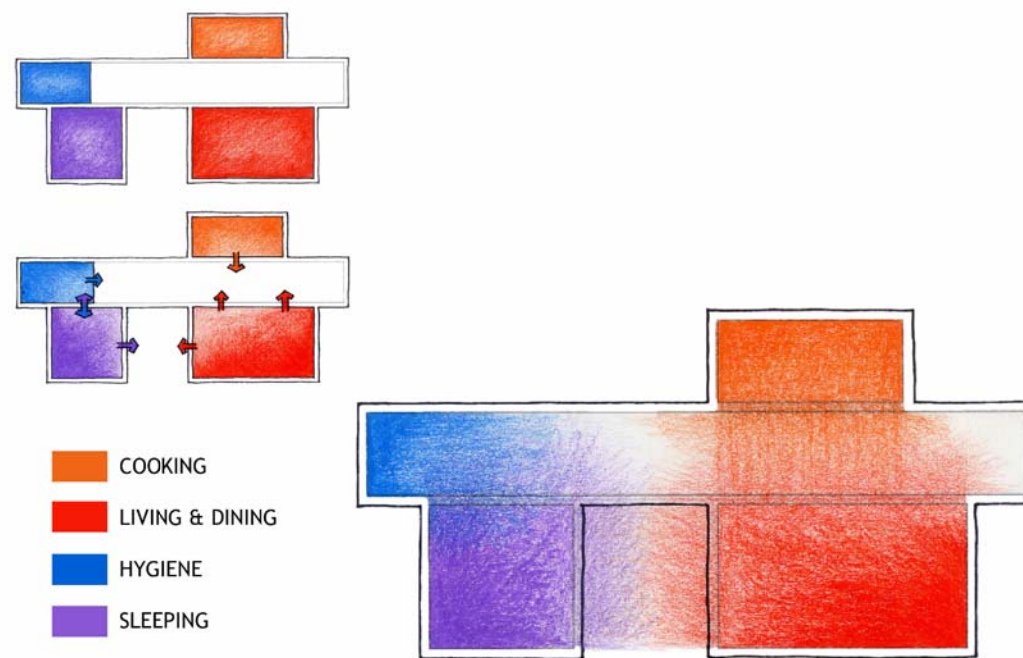
4 MECHANICAL SYSTEMS:  
LOCATIONS AND CONNECTIONS



2 COMMUNAL SPACE VS  
INDIVIDUAL SPACE



3 MATERIALITY:  
FROM MACHINE TO NATURE



1 SPACE USAGE:  
BLURRING THE BOUNDARIES

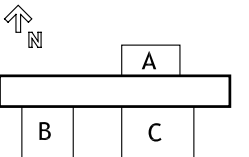


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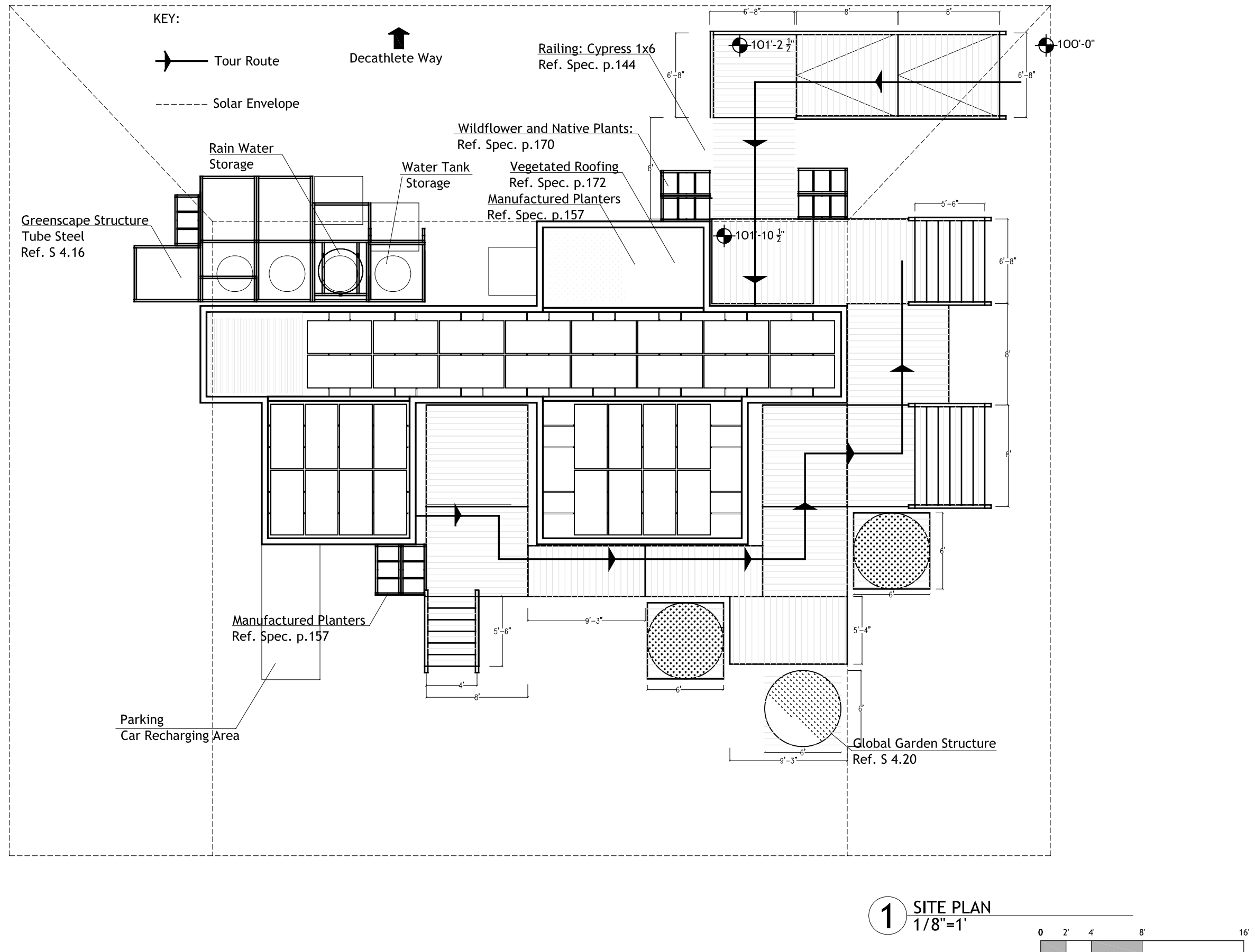
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p:412.726.6503  
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DRAWN BY:	MEREDITH MAGIN
DATE:	08/07/2007
TITLE:	SITE PLAN

# A 0.1



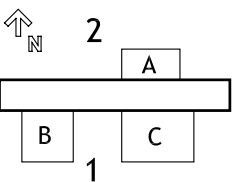


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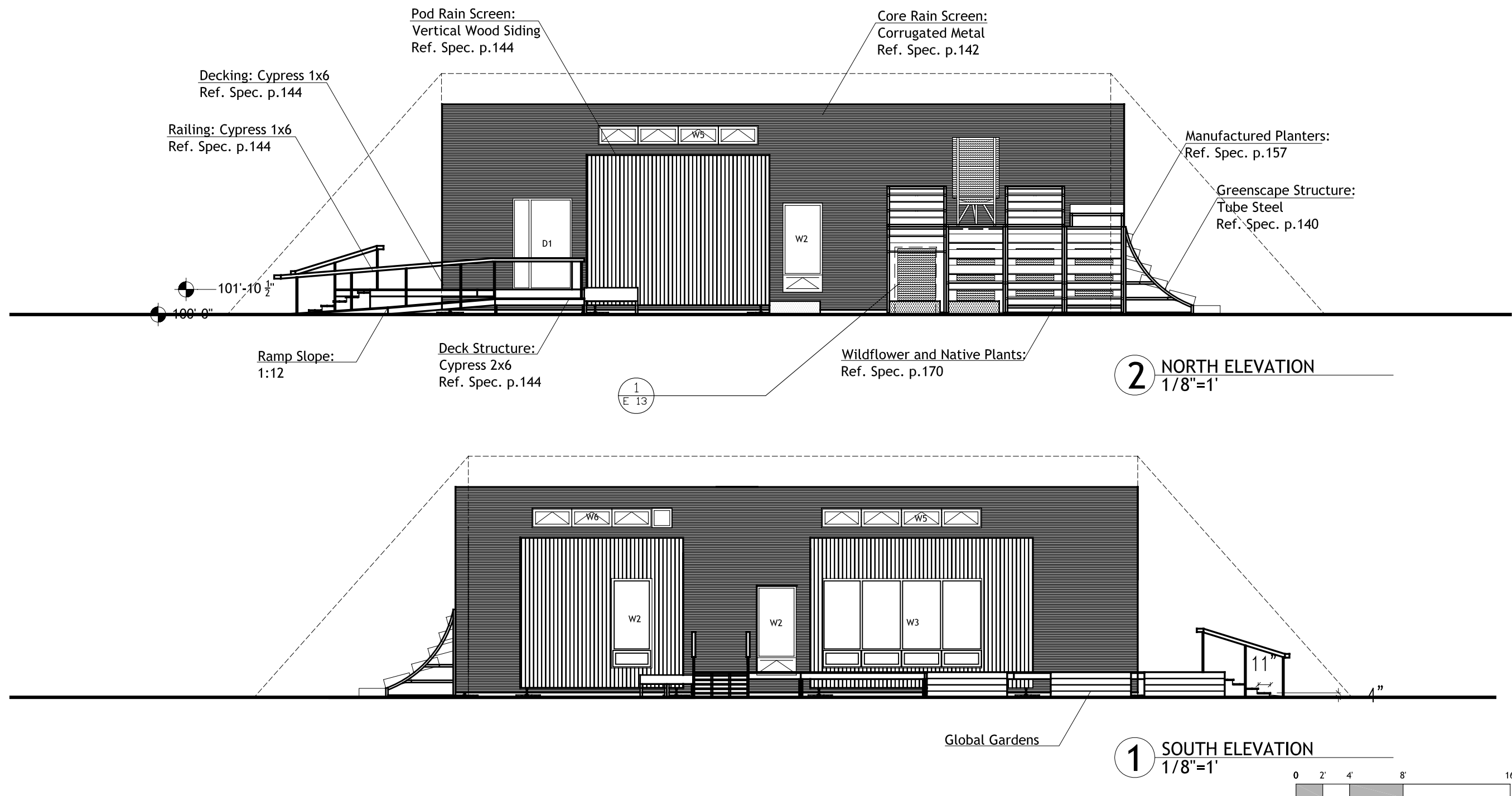
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 f:412.268.7819



DRAWN BY: MEREDITH MAGIN  
 DATE: 08/07/2007  
 TITLE: SITE ELEVATIONS N & S

**A 0.2**

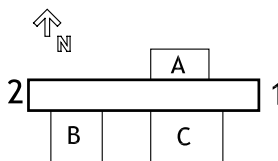


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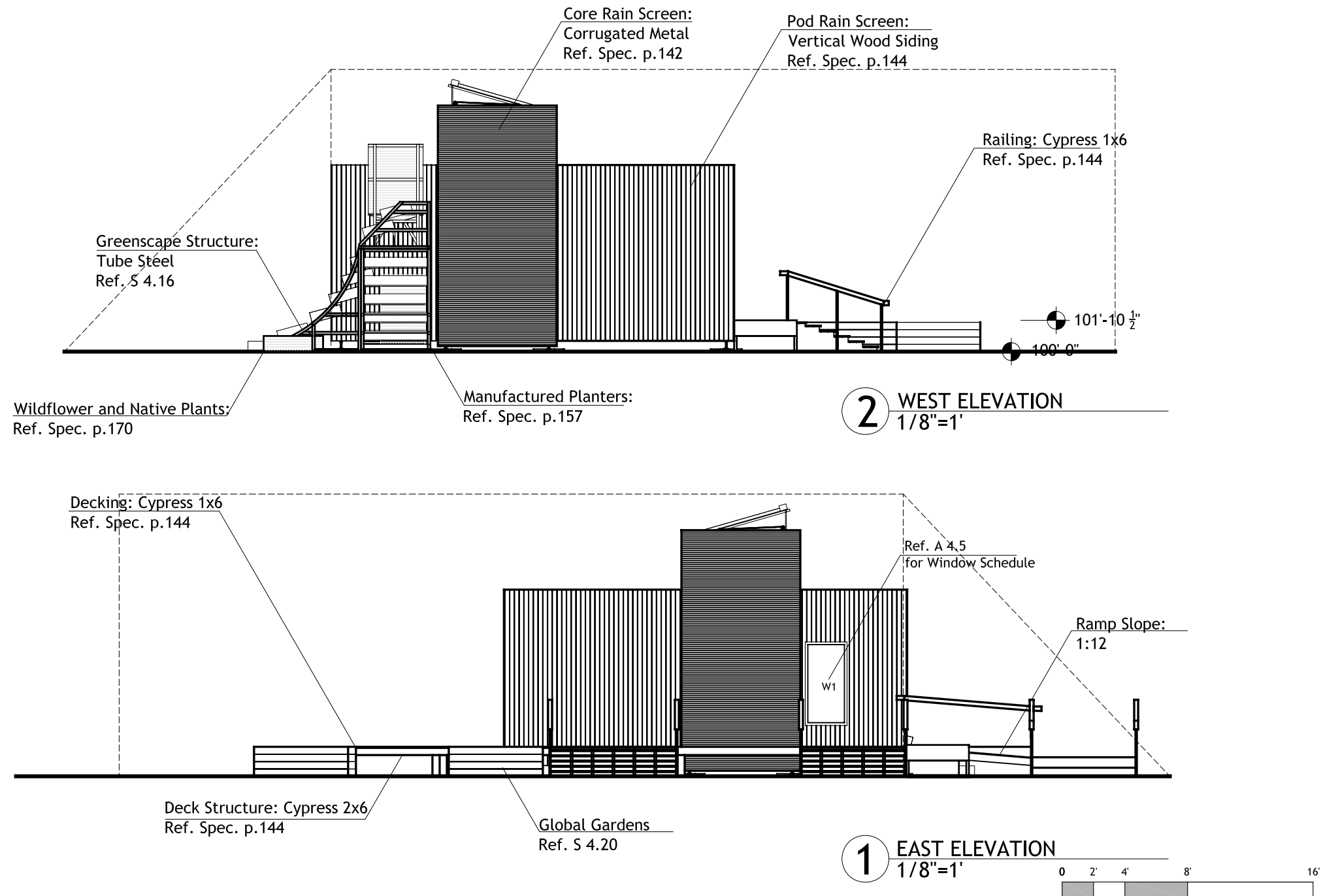
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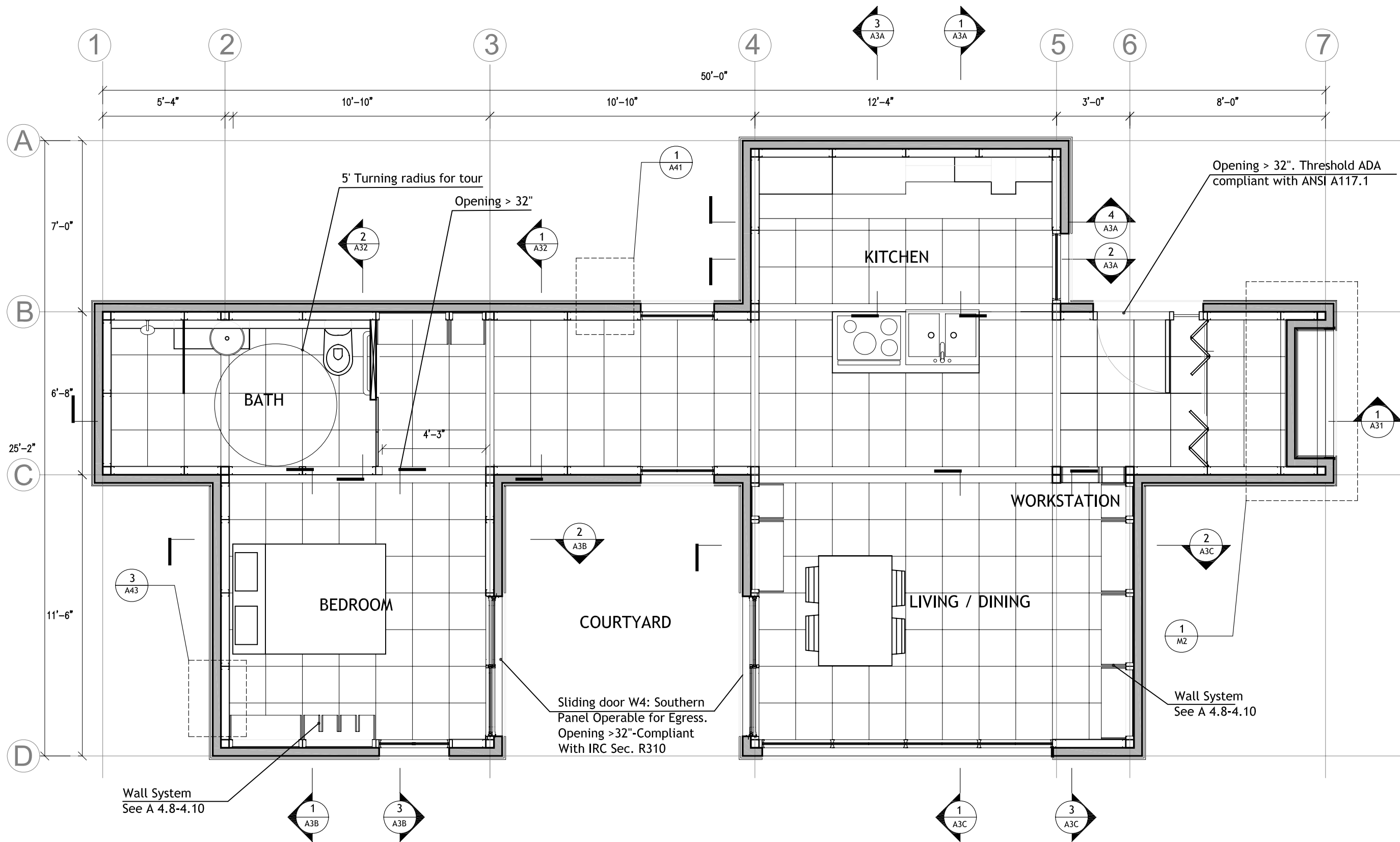
**CONTACT:**  
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 f:412.268.7819



DRAWN BY: MEREDITH MAGIN  
 DATE: 08/07/2007  
 TITLE: SITE ELEVATIONS E & W


**A 0.3**





**1** HOUSE PLAN  
1/4"=1'

0 1' 2' 4' 8'



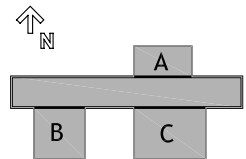
2007 National Solar Decathlon - Washington, D.C.

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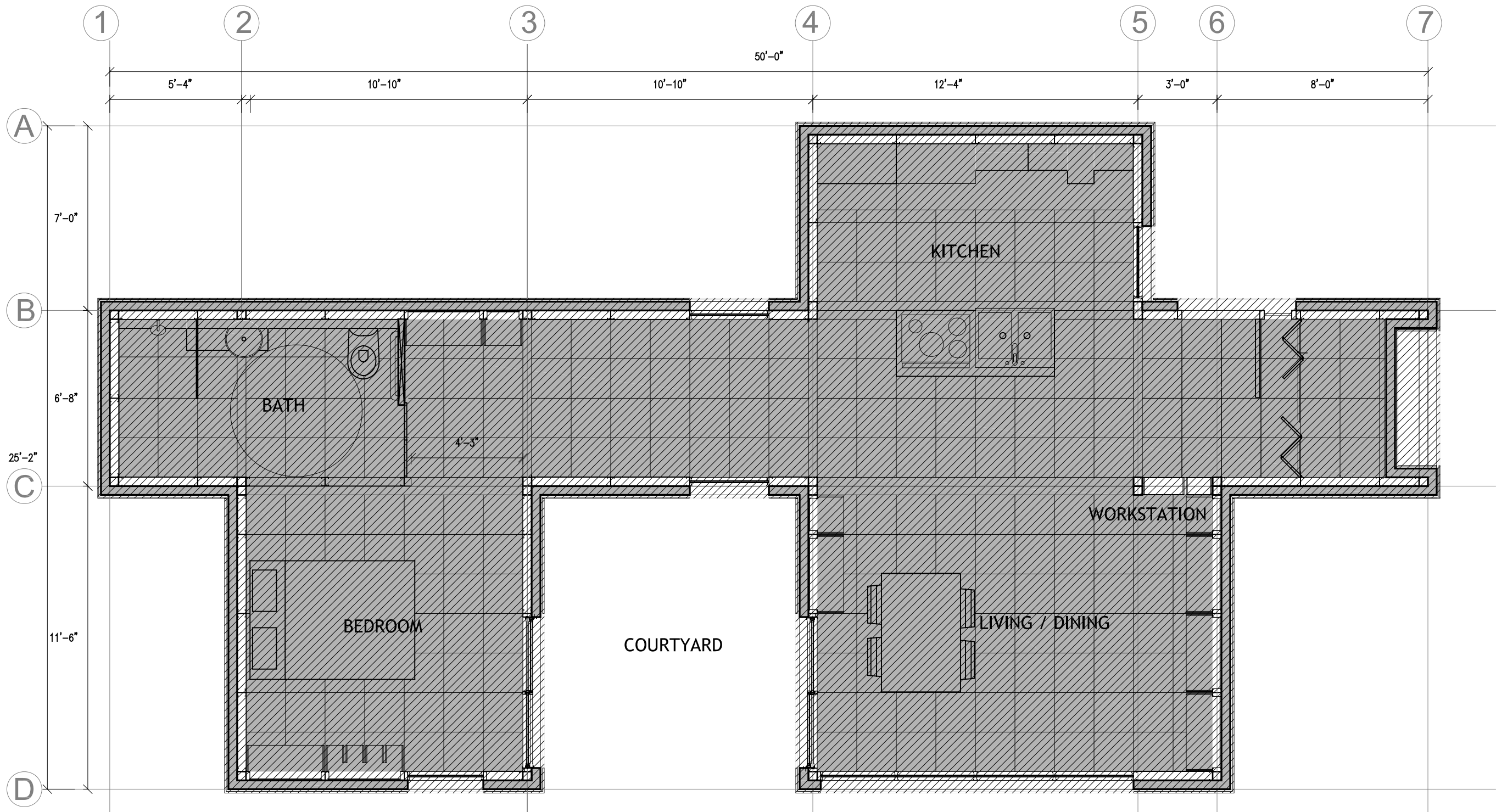
DRAWN BY:	DAVID WALDRON
DATE:	08/07/2007
TITLE:	HOUSE PLAN

**A 1.0**

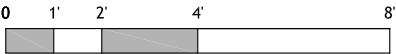


NOTES:

Building Footprint (hatched)  
798.85 SQ. FT. Including enclosure and rainscreen  
Total area is under the 800 SQ. FT. maximum.  
Conditioned Area (shaded)  
650.88 SQ. FT.  
Total conditioned interior space exceeds 450 SQ. FT. minimum.



1 HOUSE PLAN  
1/4"=1'

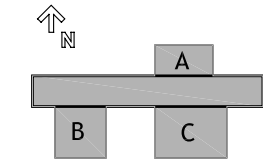


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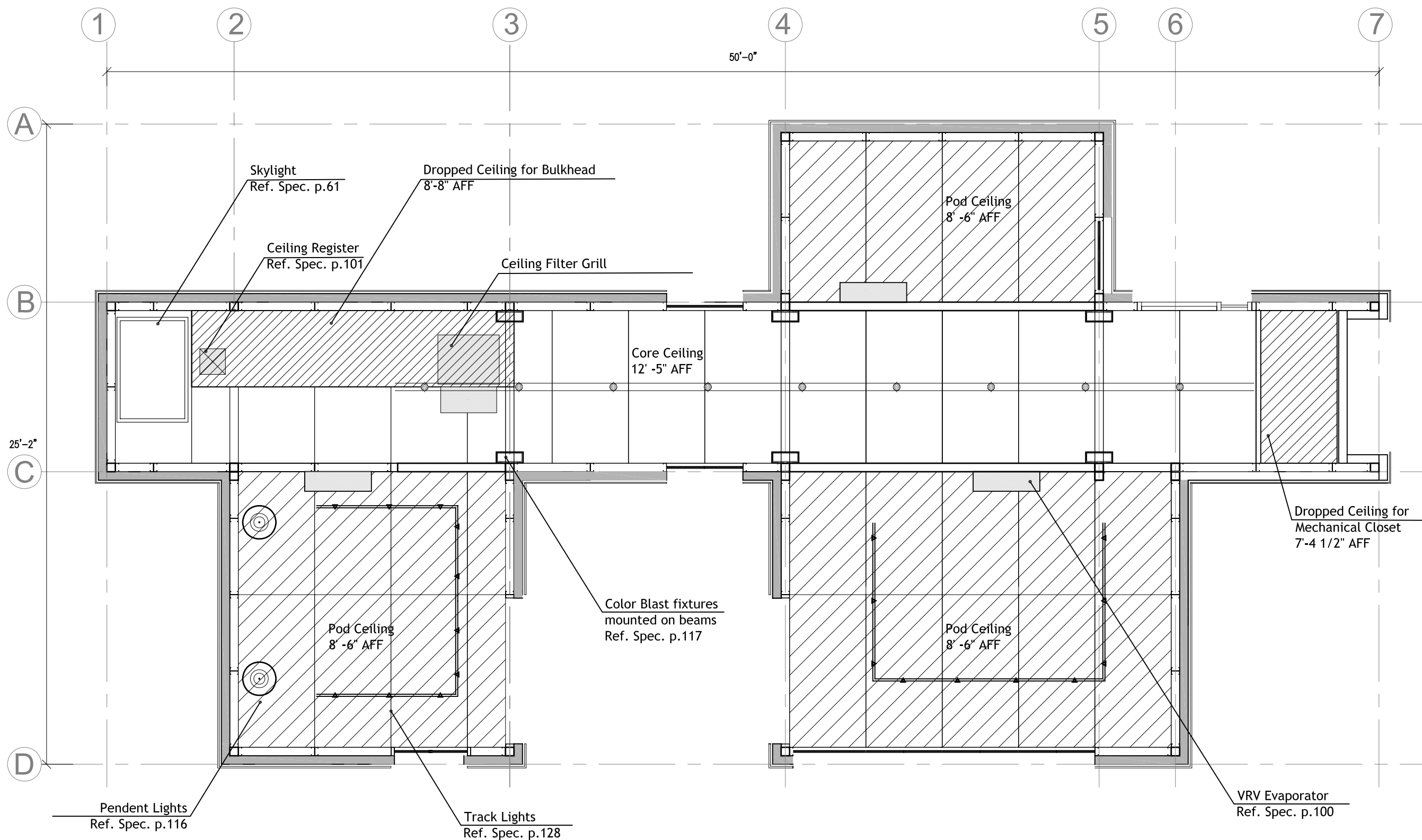
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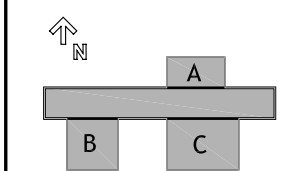
DRAWN BY: DAVID WALDRON  
DATE: 08/07/2007  
TITLE:FOOTPRINT/COND.AREA

A 1.1

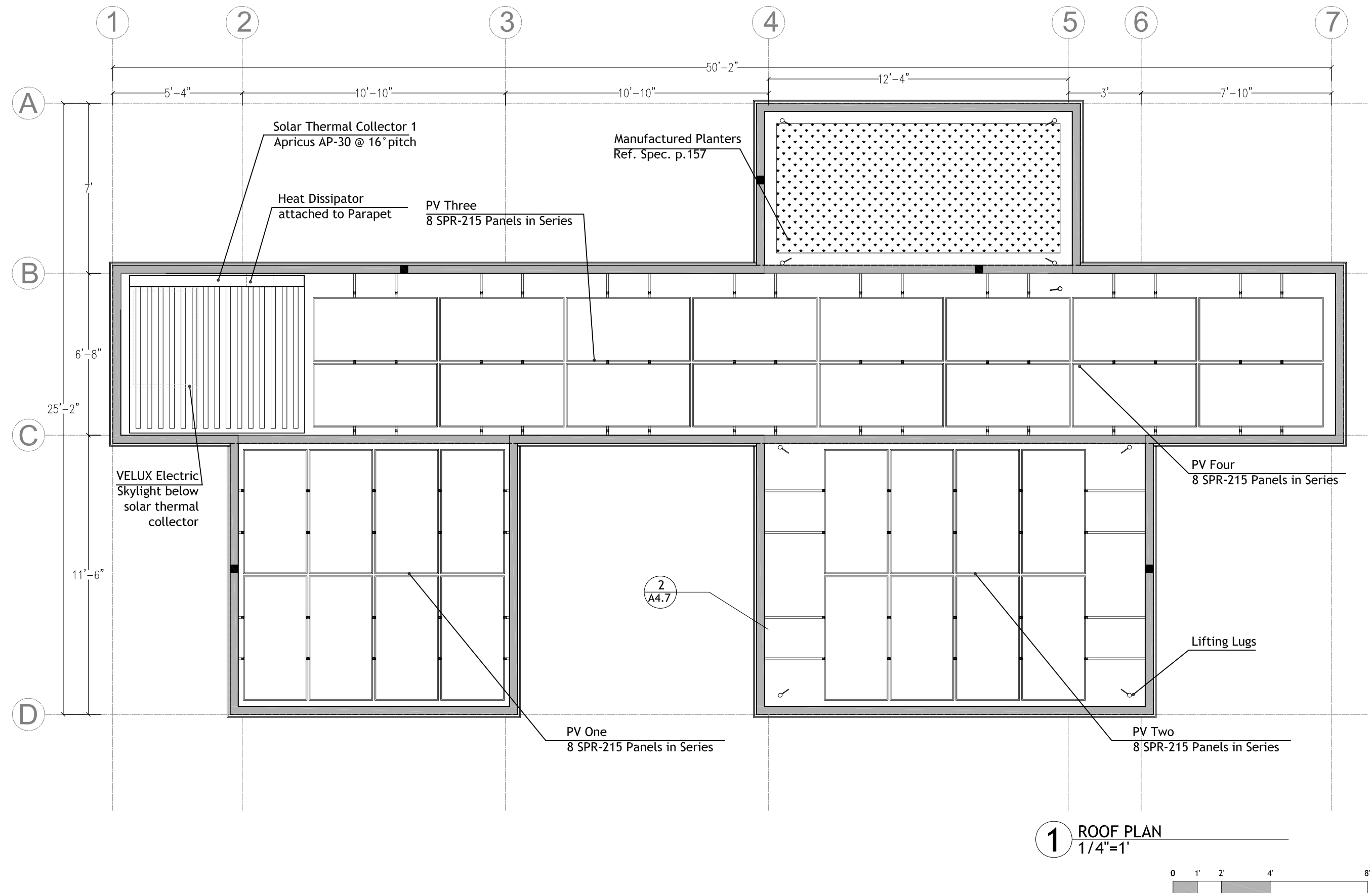


**1 REFLECTED CEILING PLAN**  
1/4"=1'



0 1' 2' 4' 8'



NOTE:  
1 solar thermal collector with 30 evacuated tubes is mounted with mid-angle stainless steel frame above skylight at 16° pitch



1 ROOF PLAN  
1/4"=1'

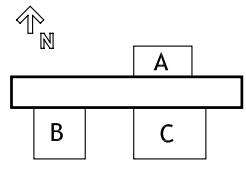


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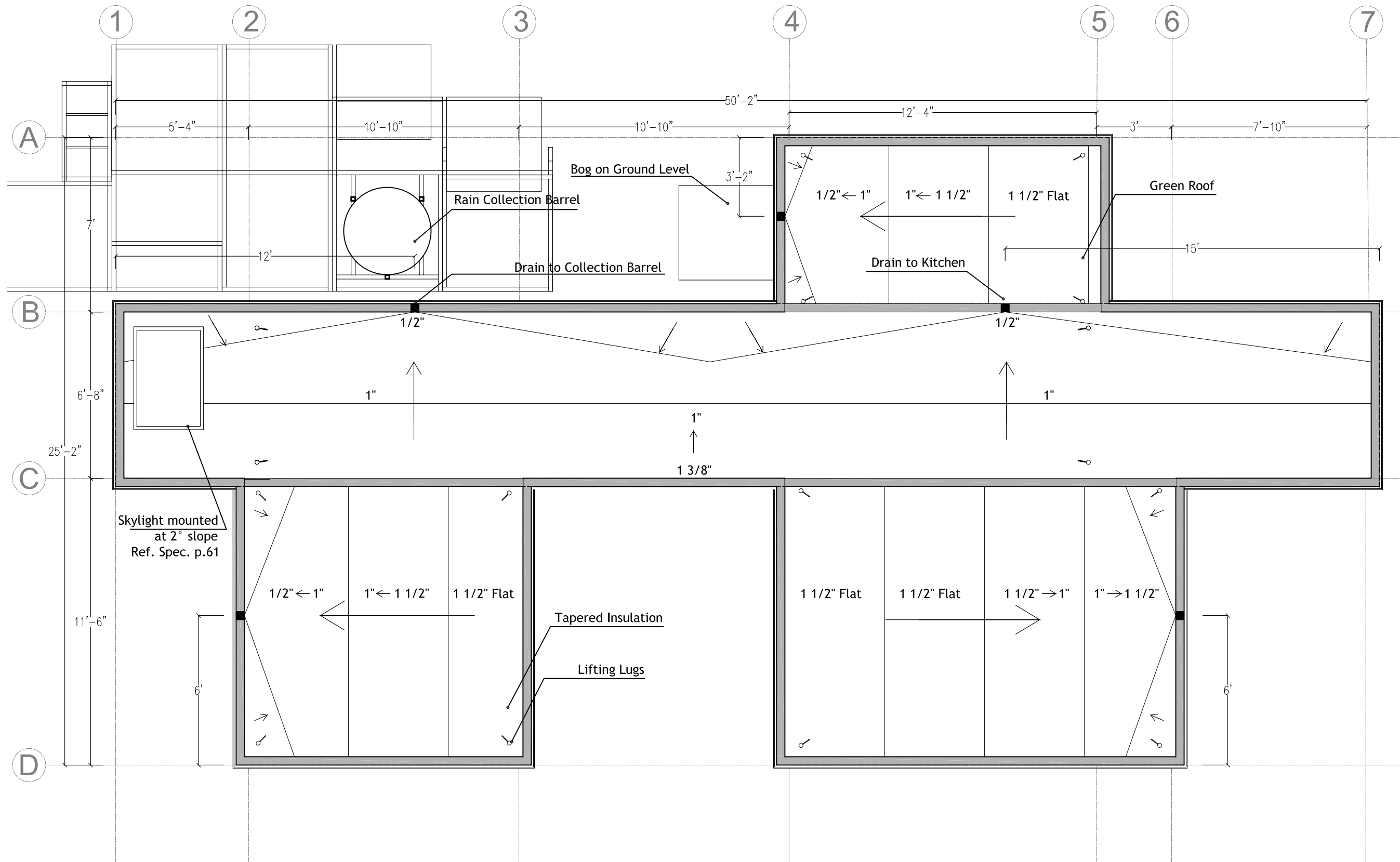
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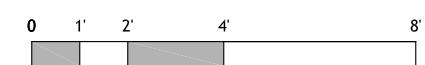
DRAWN BY:	ADAM LACKETT
DATE:	08/07/2007
TITLE:	ROOF PLAN

# A 1.3





**1** ROOF DRAINAGE PLAN  
1/4"=1'



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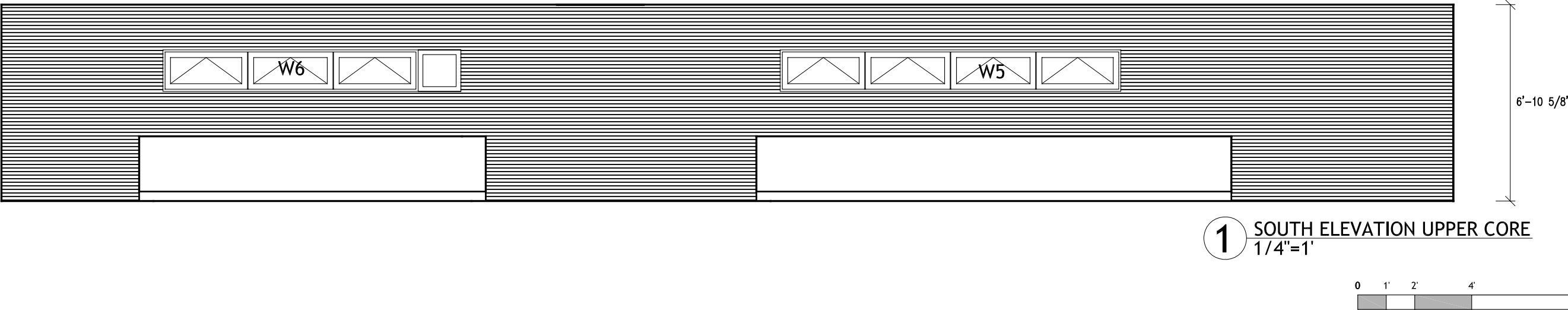
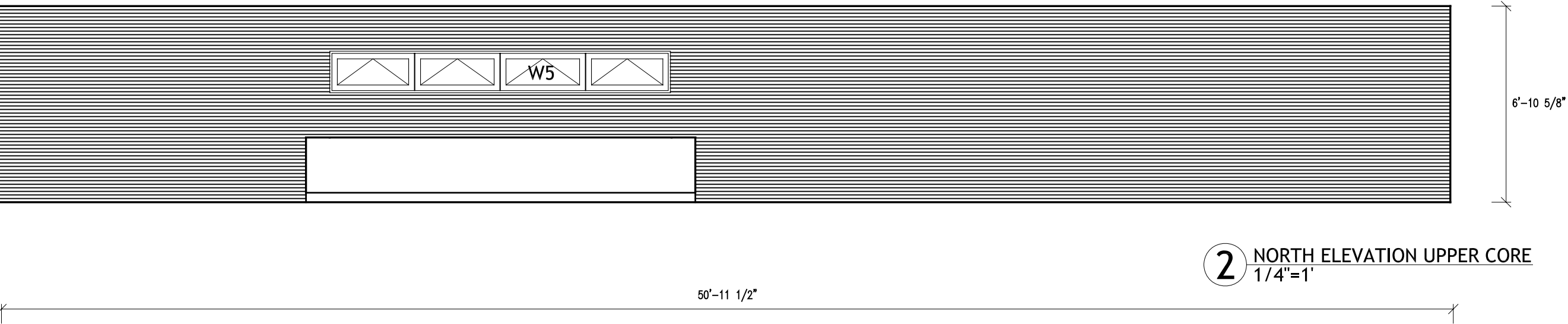
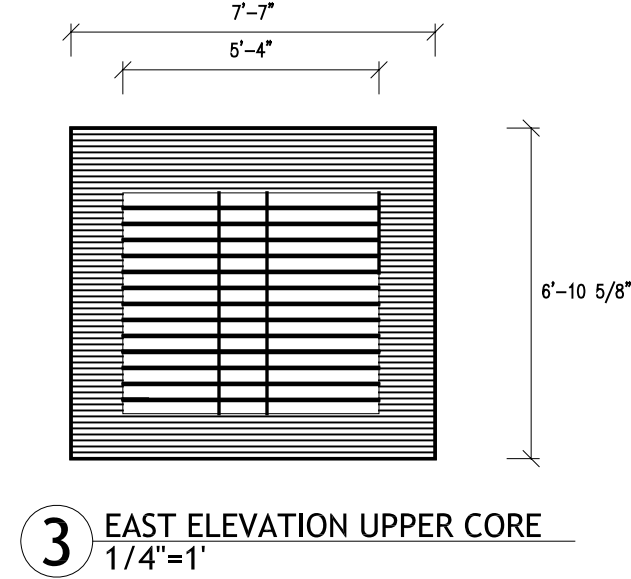
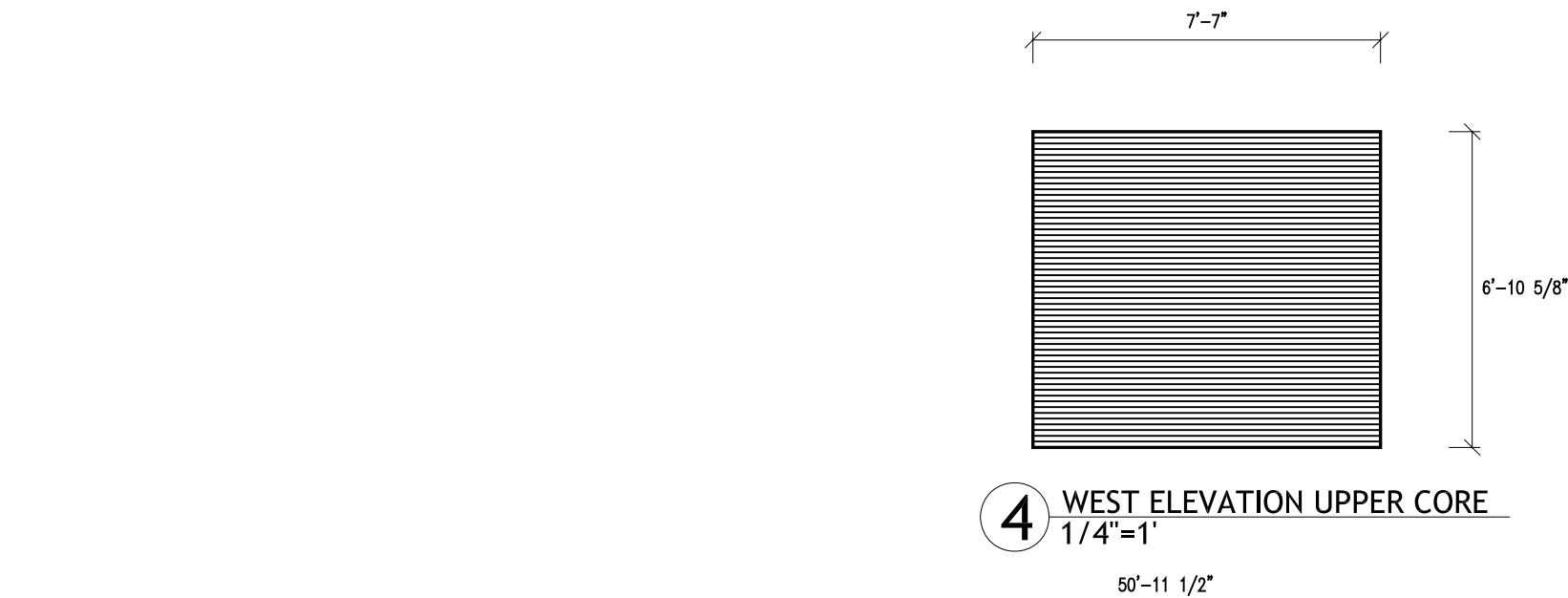
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 f:412.268.7819

DRAWN BY: CATHY CHUNG  
 DATE: 08/07/2007  
 TITLE: ROOF DRAINAGE PLAN

**A 1.4**

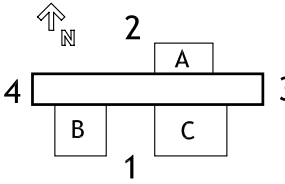


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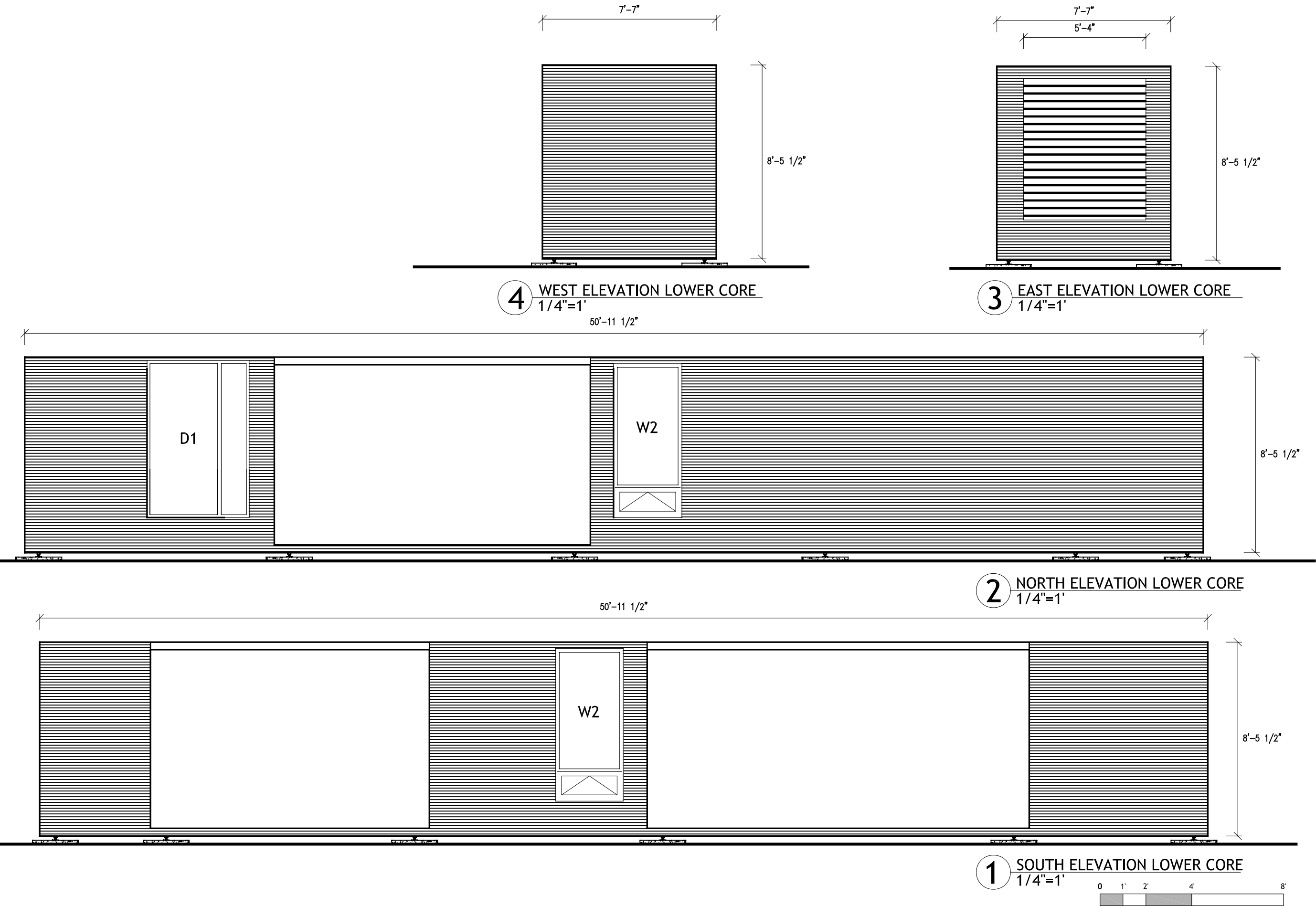
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DRAWN BY: MEREDITH MAGIN  
DATE: 08/07/2007  
TITLE: UPPER CORE EXTERIOR ELEVATIONS

**A 2.0**

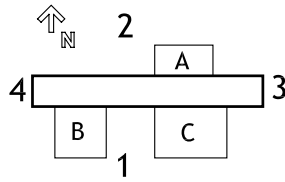


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DRAWN BY: MEREDITH MAGIN  
DATE: 08/07/2007  
TITLE: LOWER CORE EXTERIOR ELEVATIONS

**A 2.1**



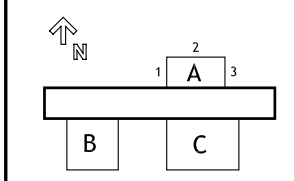


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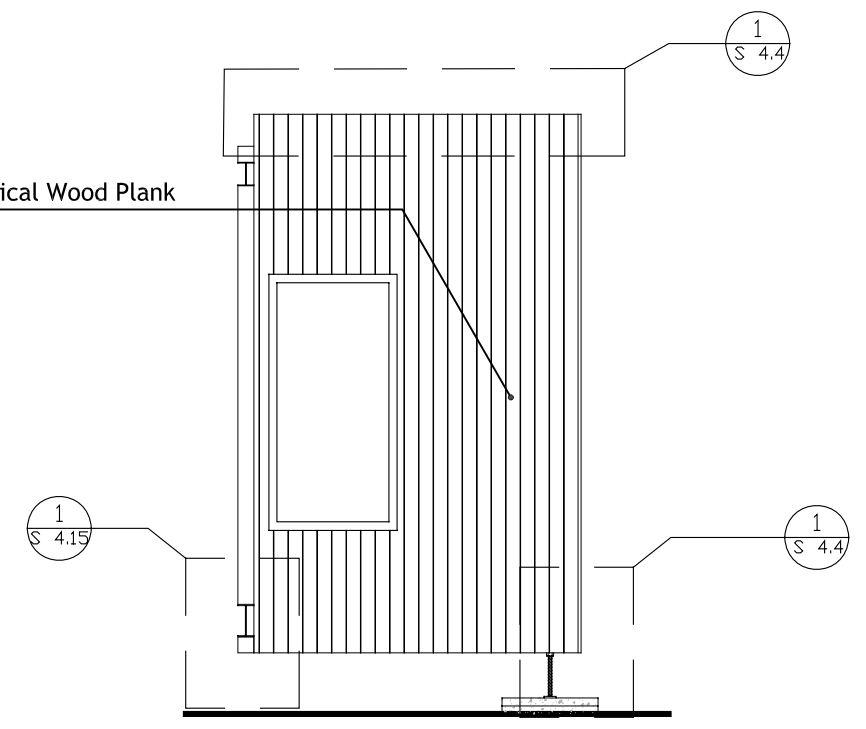
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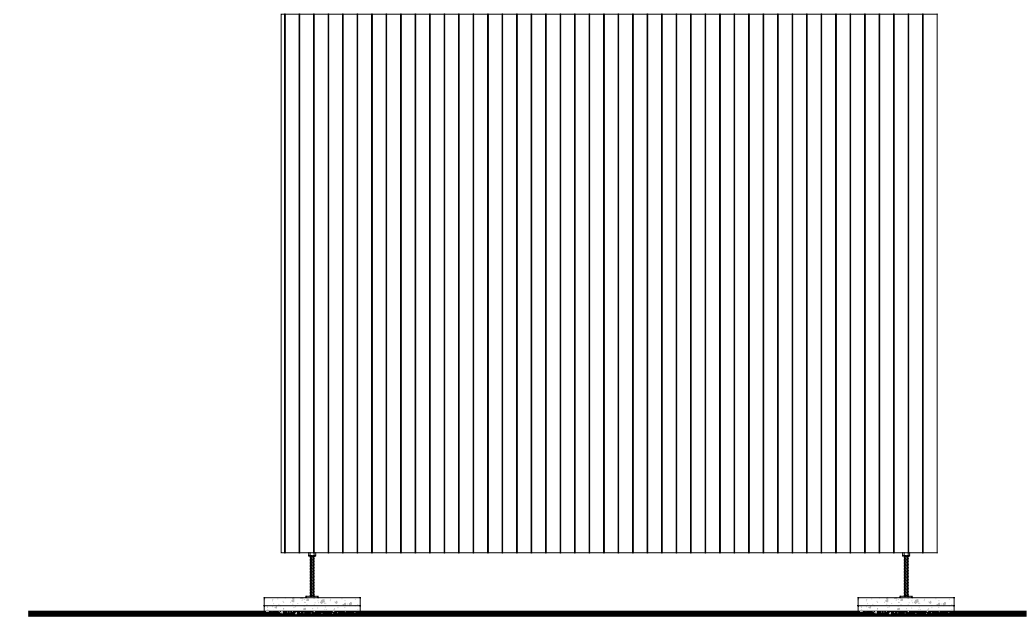
DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: POD A ELEVATIONS

**A 2.A**

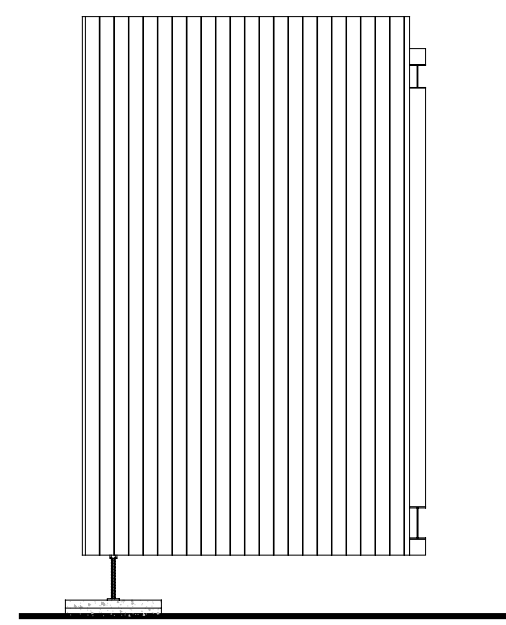
Rainscreen: Vertical Wood Plank  
Spec. Ref p. 152



**3** POD A - EAST ELEVATION  
1/4"=1'



**2** POD A - NORTH ELEVATION  
1/4"=1'



**1** POD A - WEST ELEVATION  
1/4"=1'

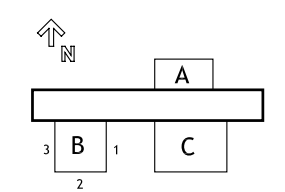


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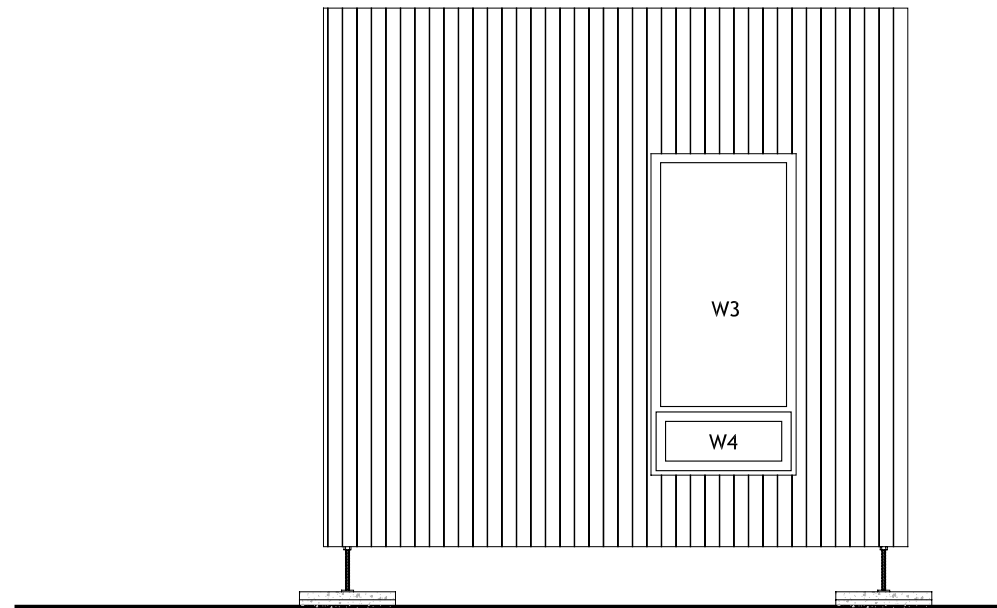
DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: POD B ELEVATIONS

**A 2.B**

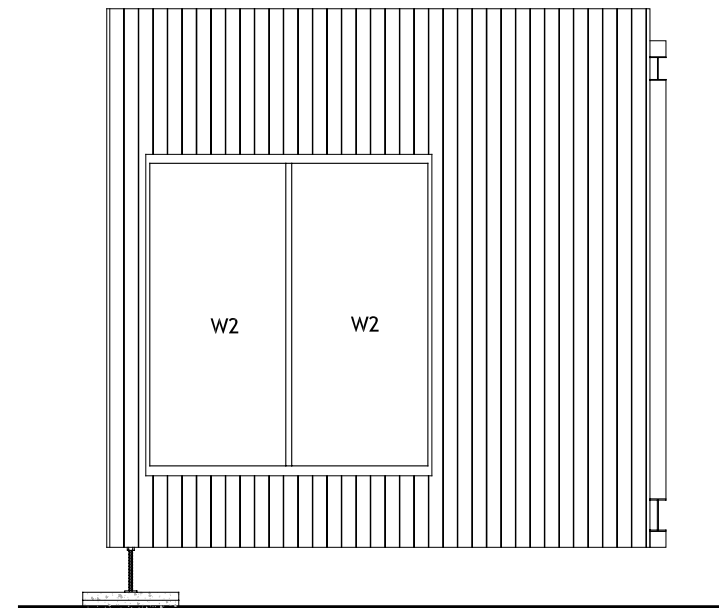
Rainscreen  
Vertical Wood Plank:  
Spec. Ref p. 152

1  
S 4.15

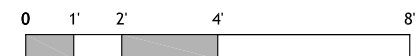
**3** POD B - WEST ELEVATION  
1/4"=1'



**2** POD B - SOUTH ELEVATION  
1/4"=1'



**1** POD B - EAST ELEVATION  
1/4"=1'



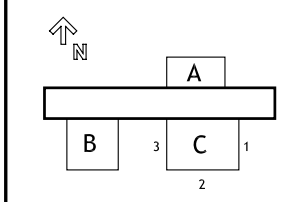


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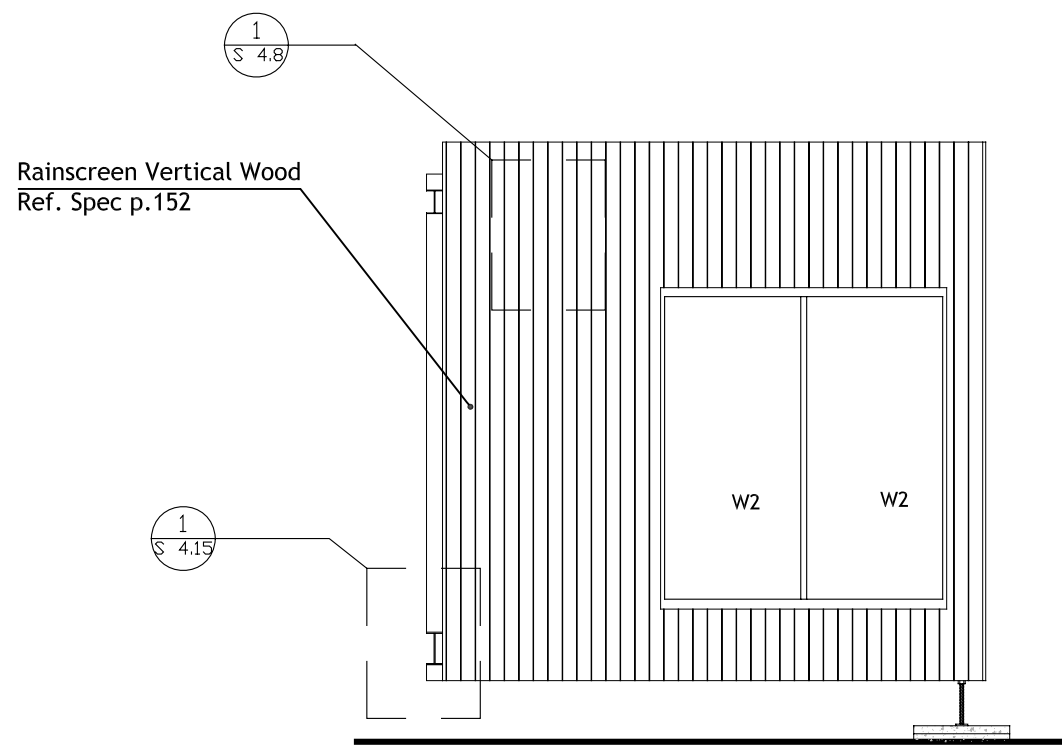
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**CONTACT:**  
Steve Lee  
p:412.726.6503  
f:412.268.7819

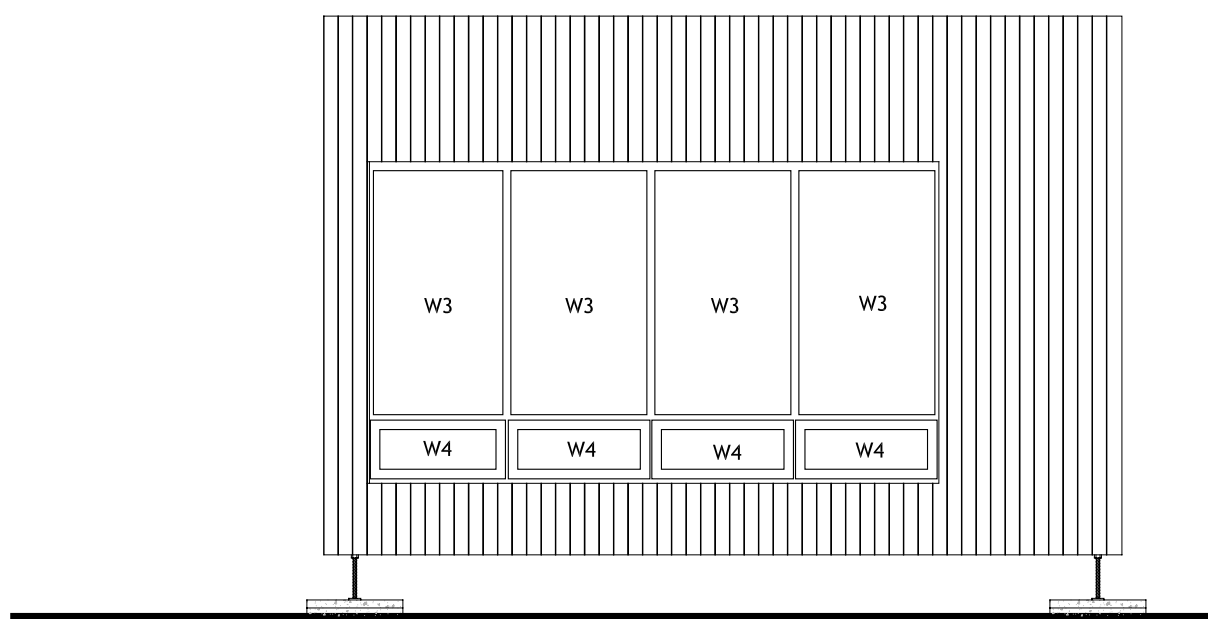


DRAWN BY:	EMMA DAVISON
DATE:	08/07/2007
TITLE:	POD C ELEVATIONS

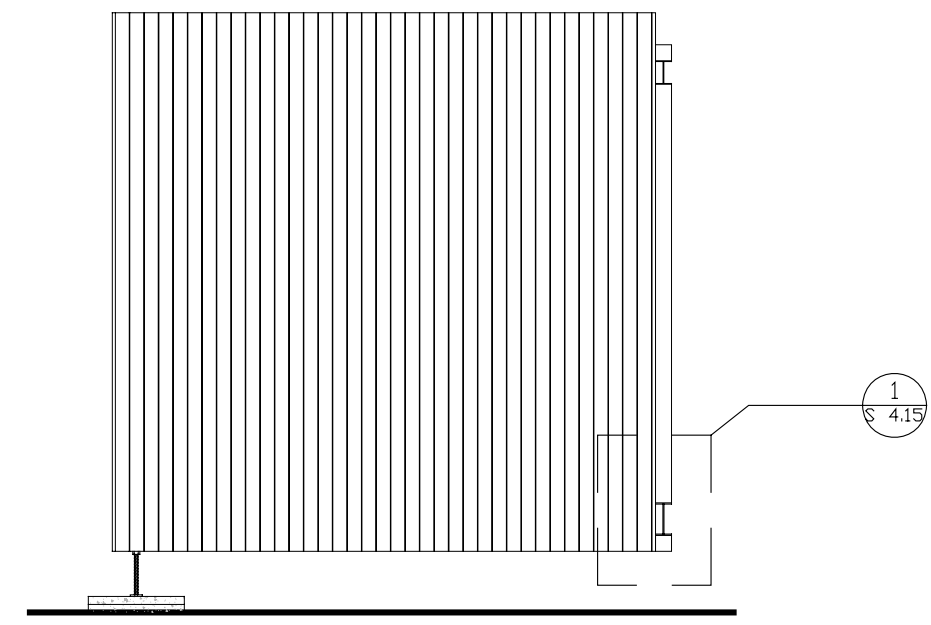
**A 2.C**



**3** **POD C - WEST ELEVATION**  
1/4"=1'



**2** **POD C - SOUTH ELEVATION**  
1/4"=1'



**1** **POD C - EAST ELEVATION**  
1/4"=1'



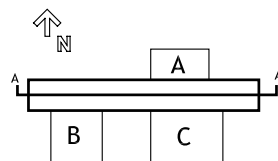


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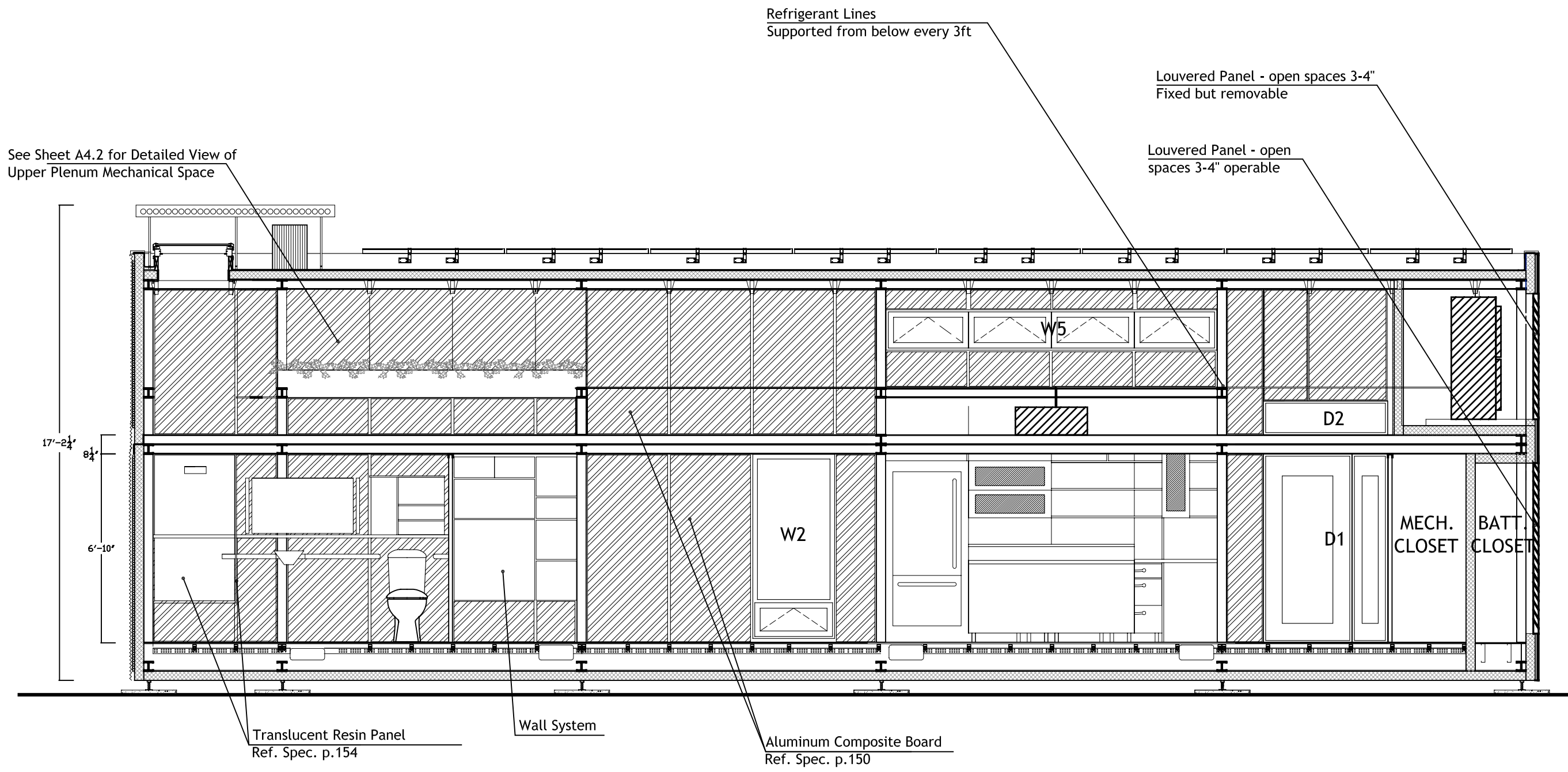
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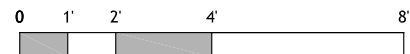


DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: CORE SECTION AA

**A 3.0**



**1** CORE SECTION - AA  
1/4"=1'

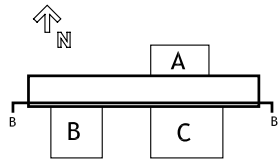


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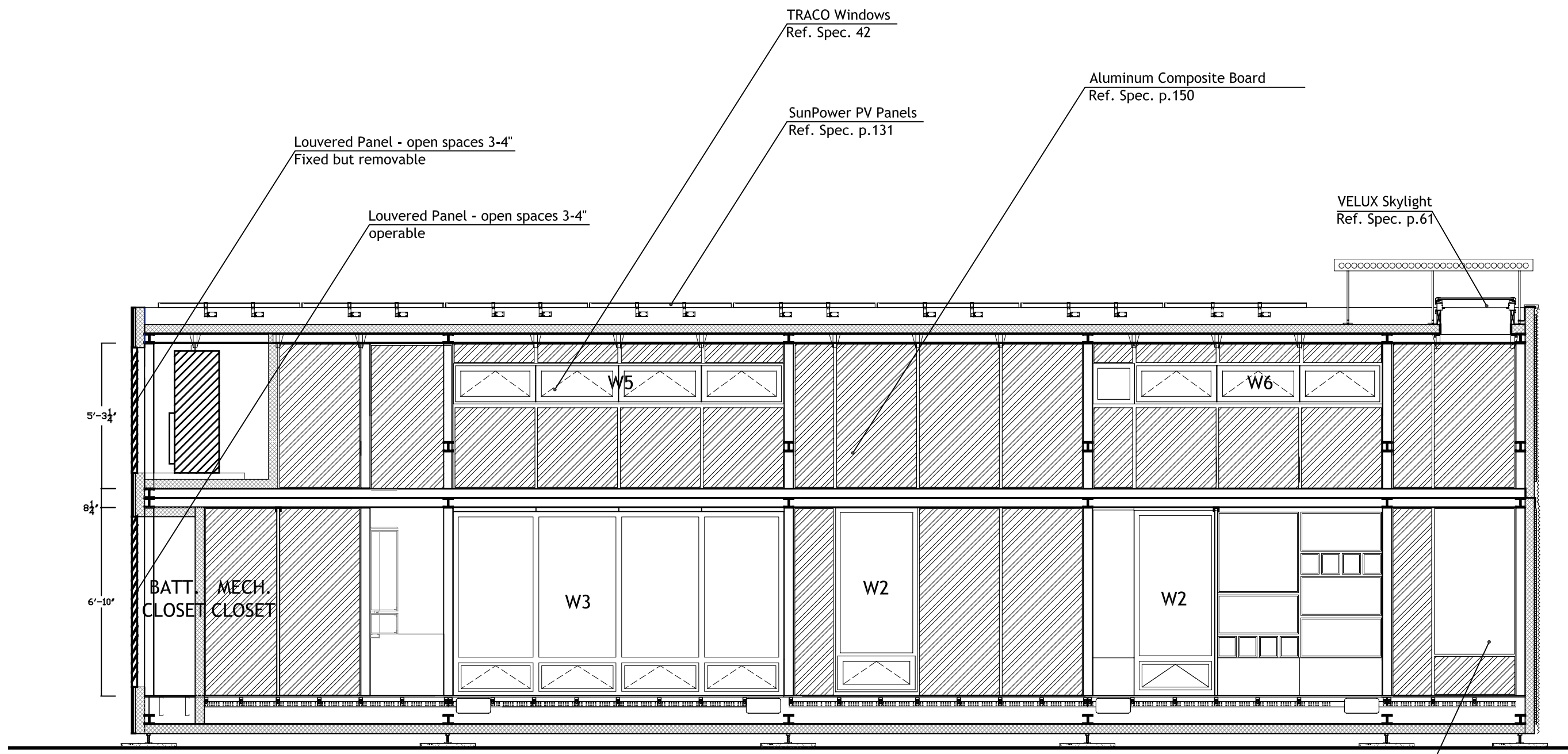
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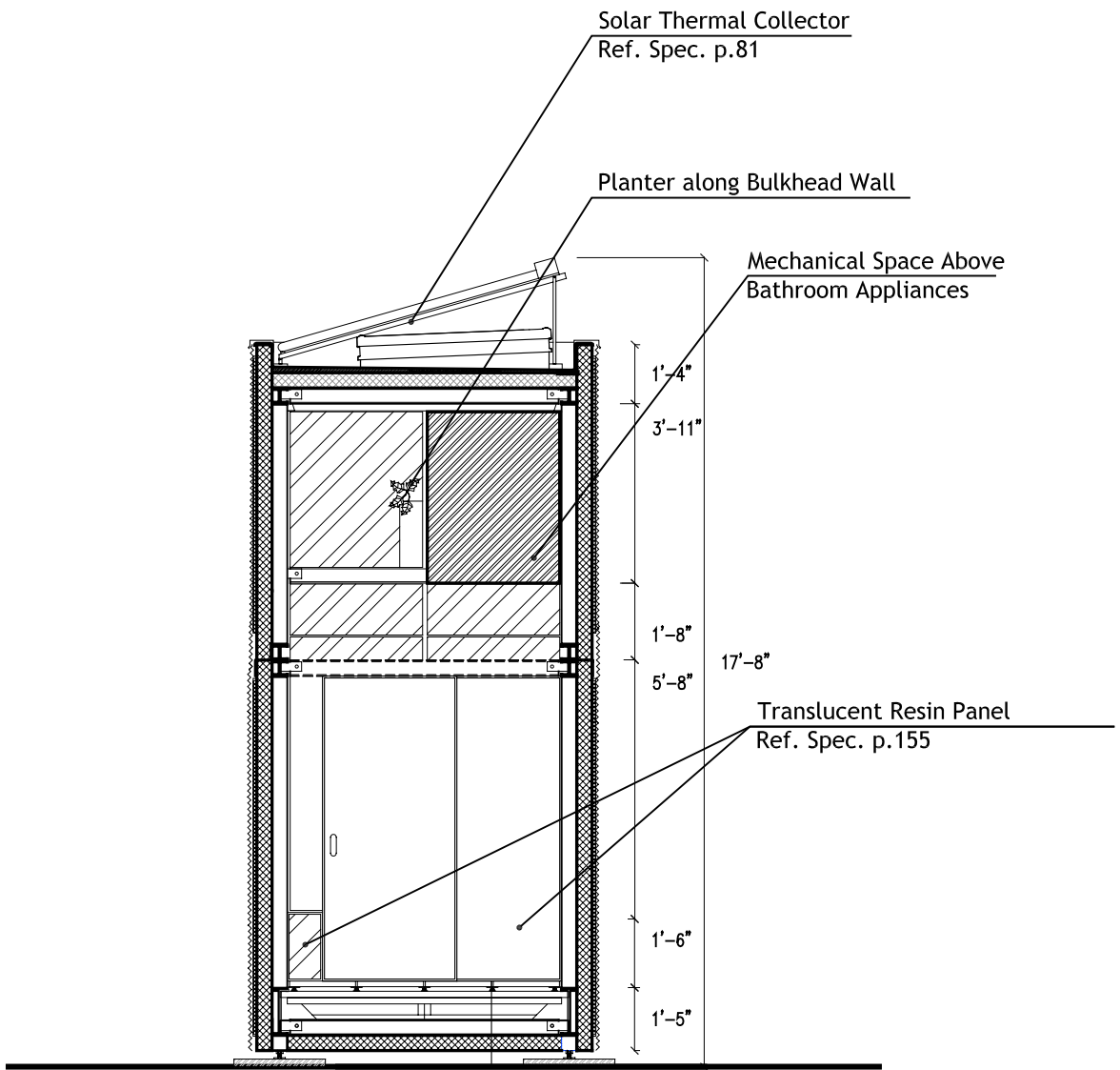
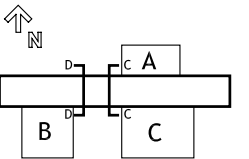
DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: CORE SECTION BB

**A 3.1**

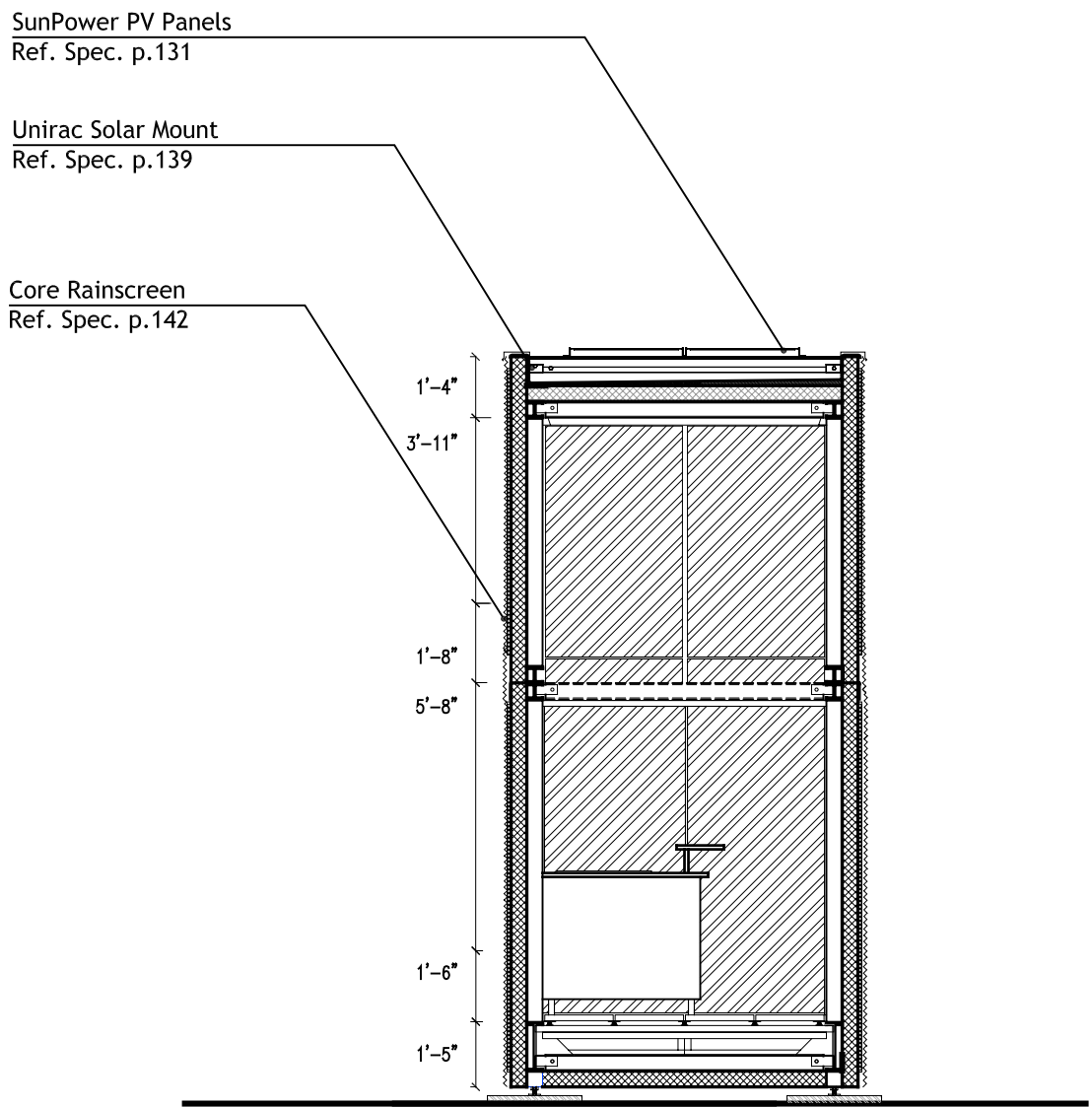


**1** CORE SECTION - BB  
1/4"=1'

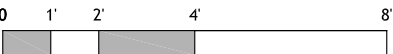


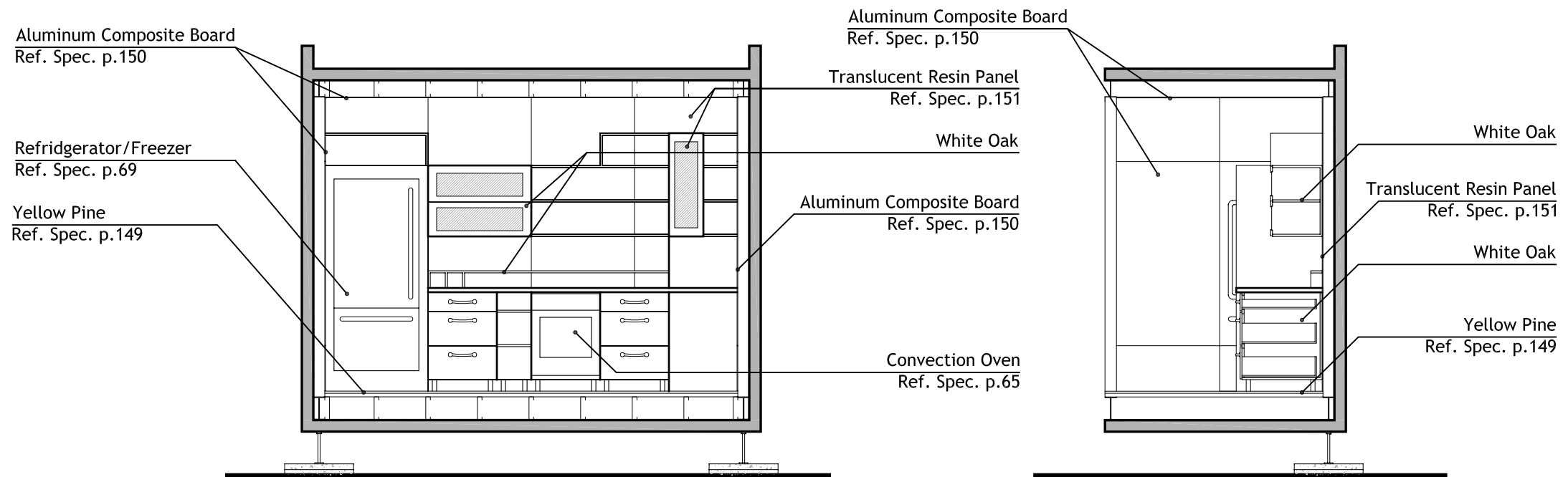


**2** CORE SECTION - DD  
 1/4"=1'



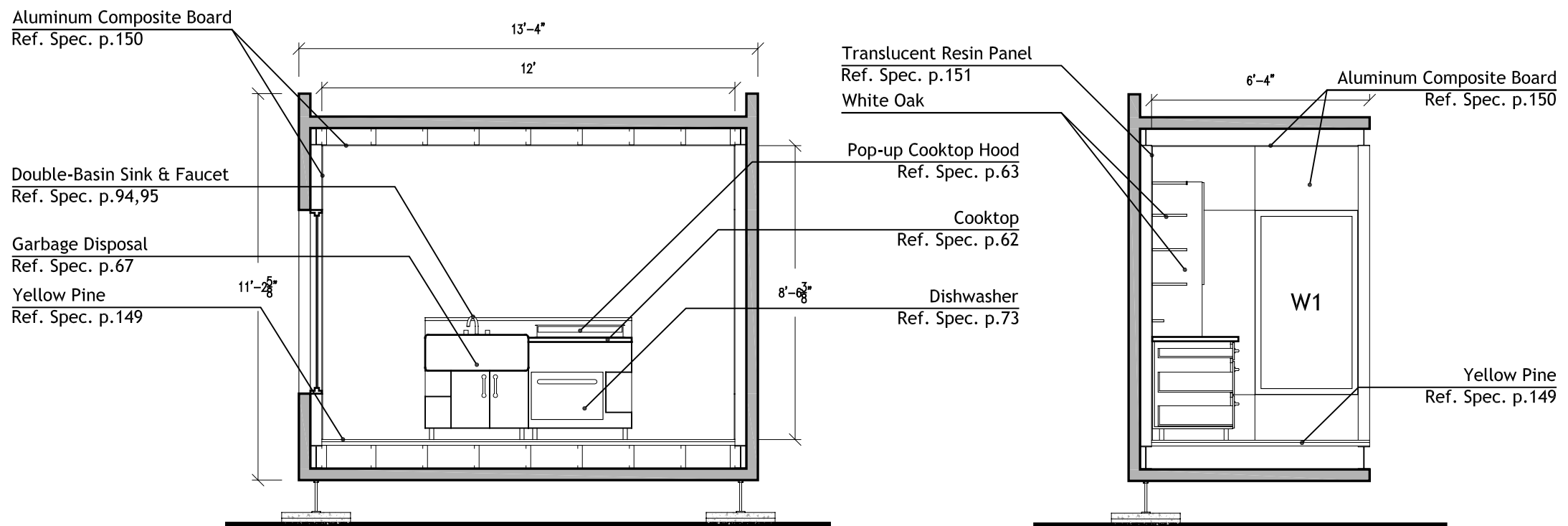
**1** CORE SECTION - CC  
 1/4"=1'





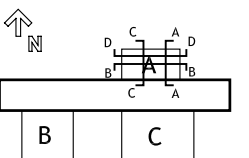
**4** POD A - SECTION DD  
1/4"=1'

**3** POD A - SECTION CC  
1/4"=1'



**2** POD A - SECTION BB  
1/4"=1'

**1** POD A - SECTION AA  
1/4"=1'

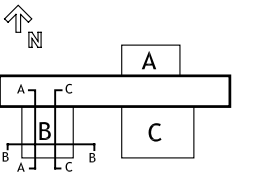


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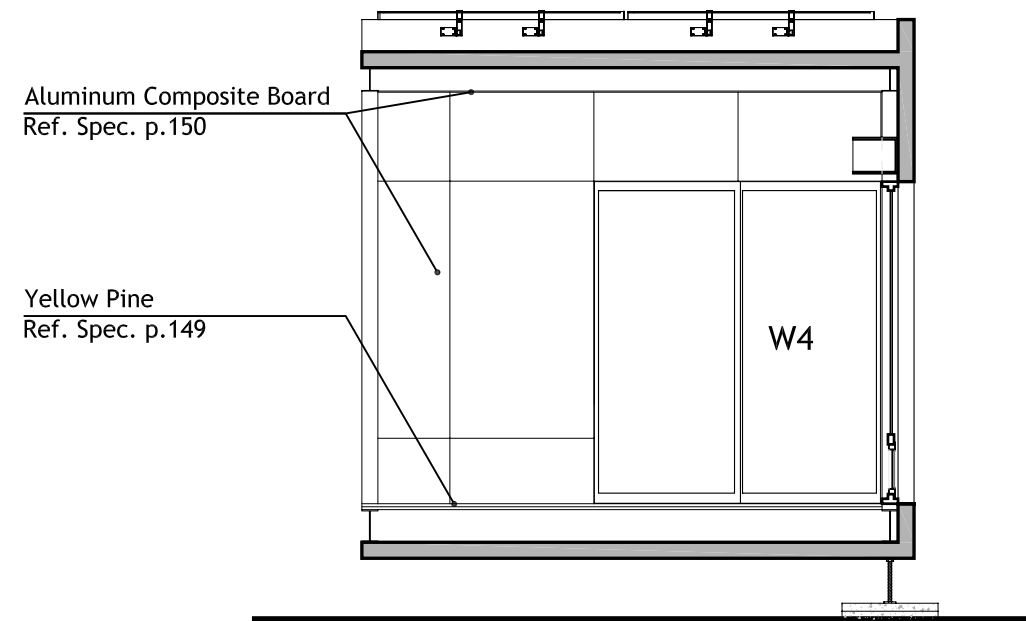
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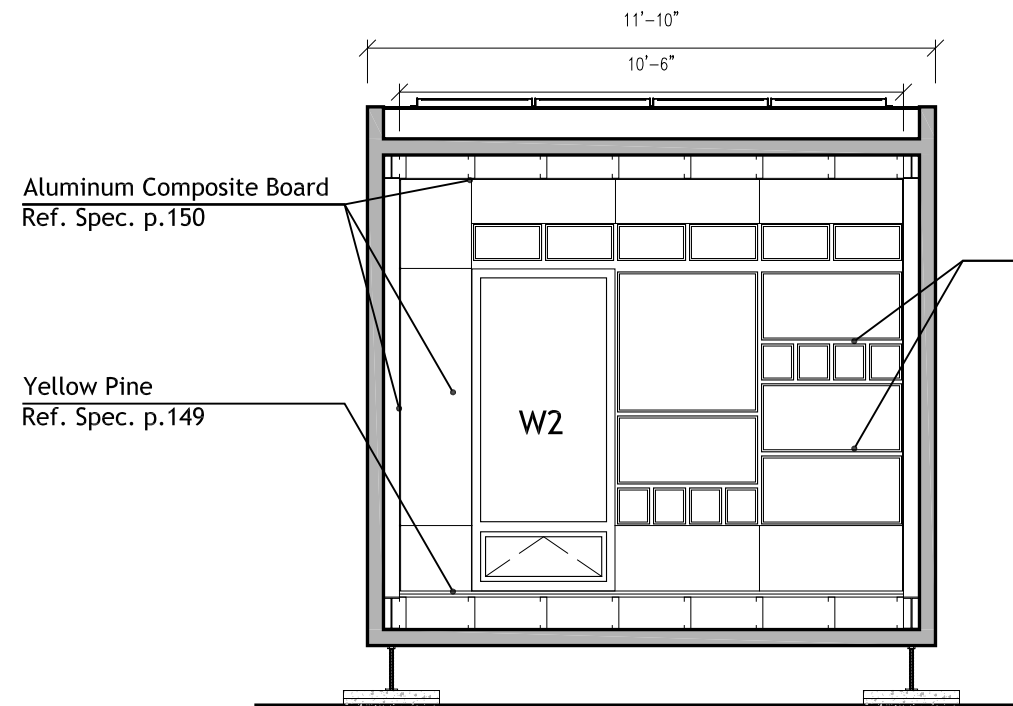


DRAWN BY: EMMA DAVISON  
 DATE: 08/07/2007  
 TITLE: POD B SECTIONS

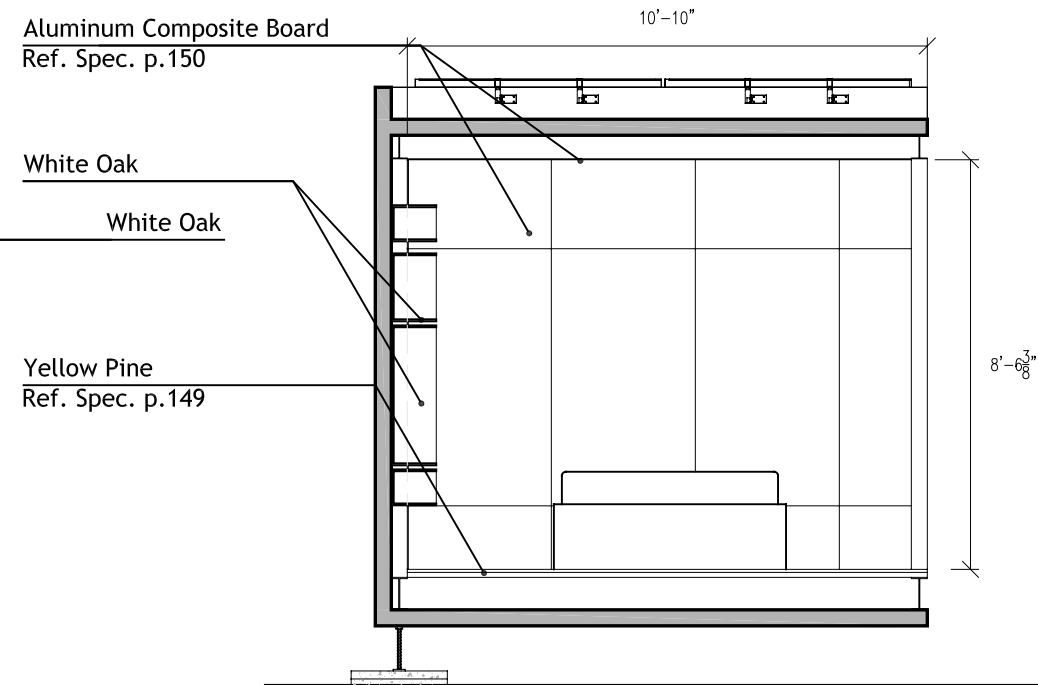
**A 3.B**



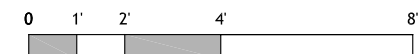
**3** POD B - SECTION CC  
 1/4"=1'



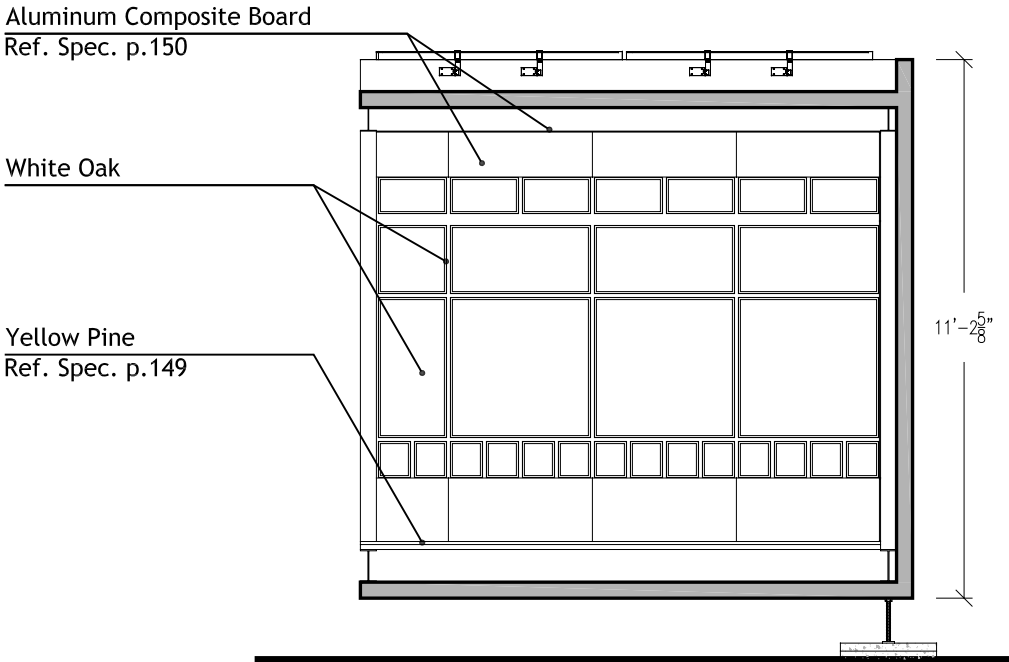
**2** POD B - SECTION BB  
 1/4"=1'



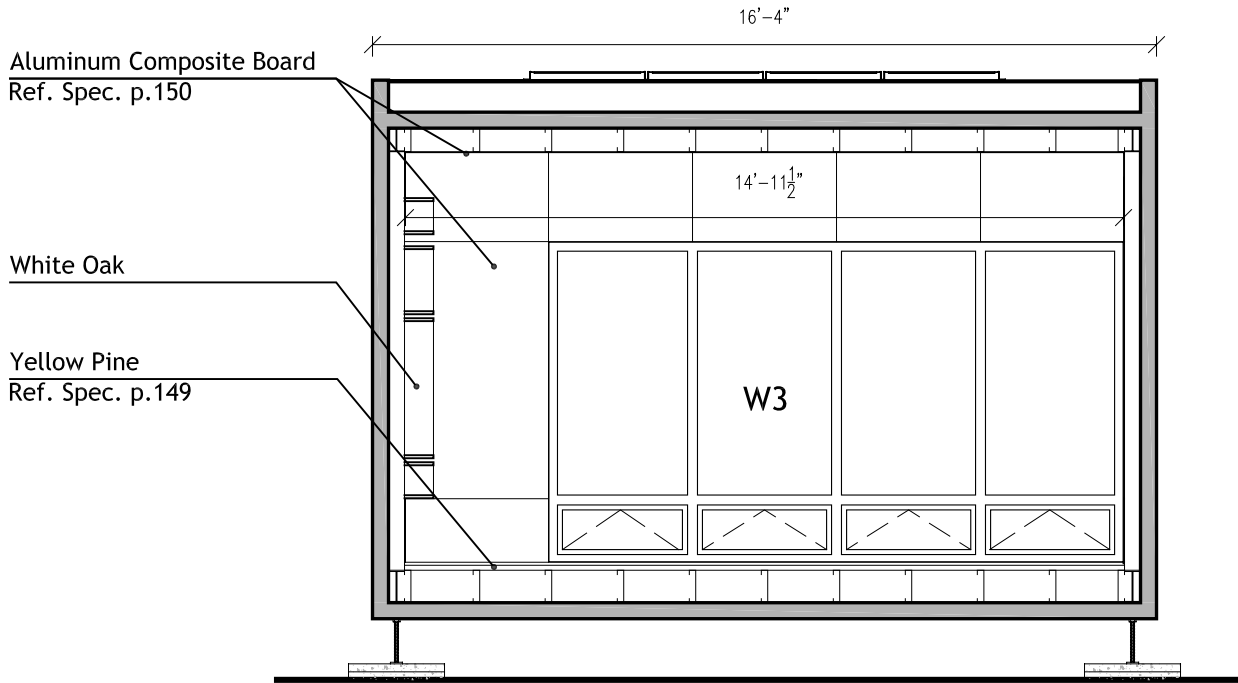
**1** POD B - SECTION AA  
 1/4"=1'



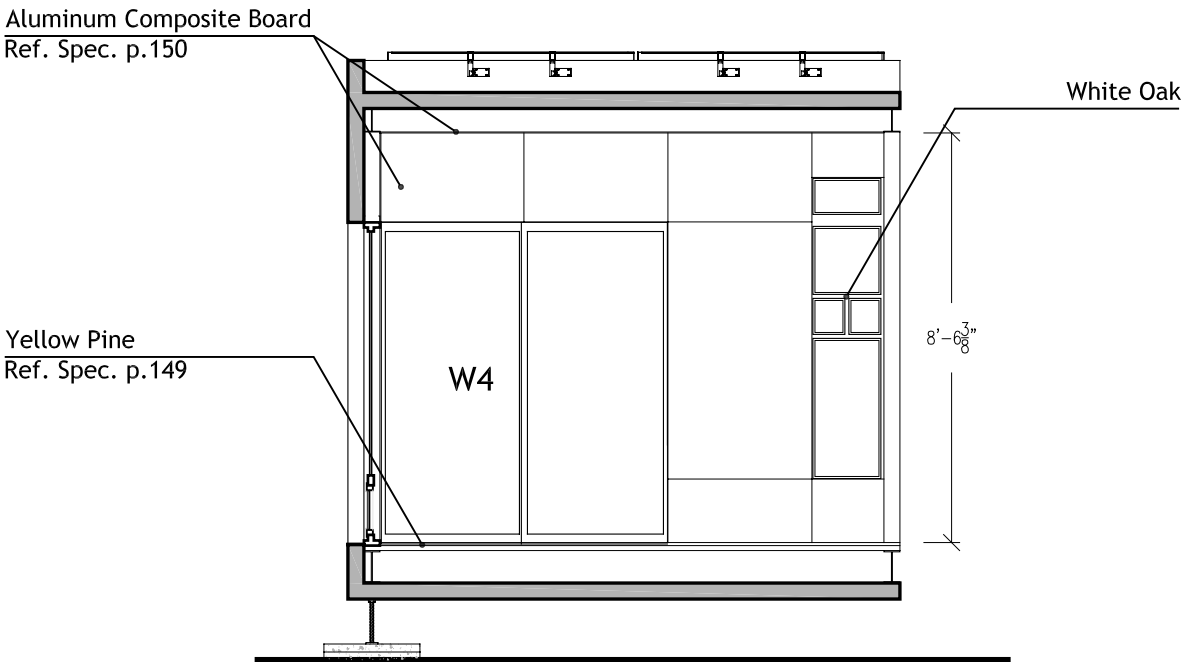




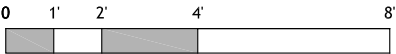
3 POD C - SECTION CC  
1/4"=1'



2 POD C - SECTION BB  
1/4"=1'



1 POD C - SECTION AA  
1/4"=1'

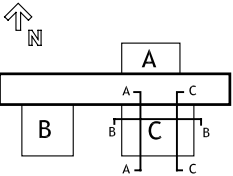


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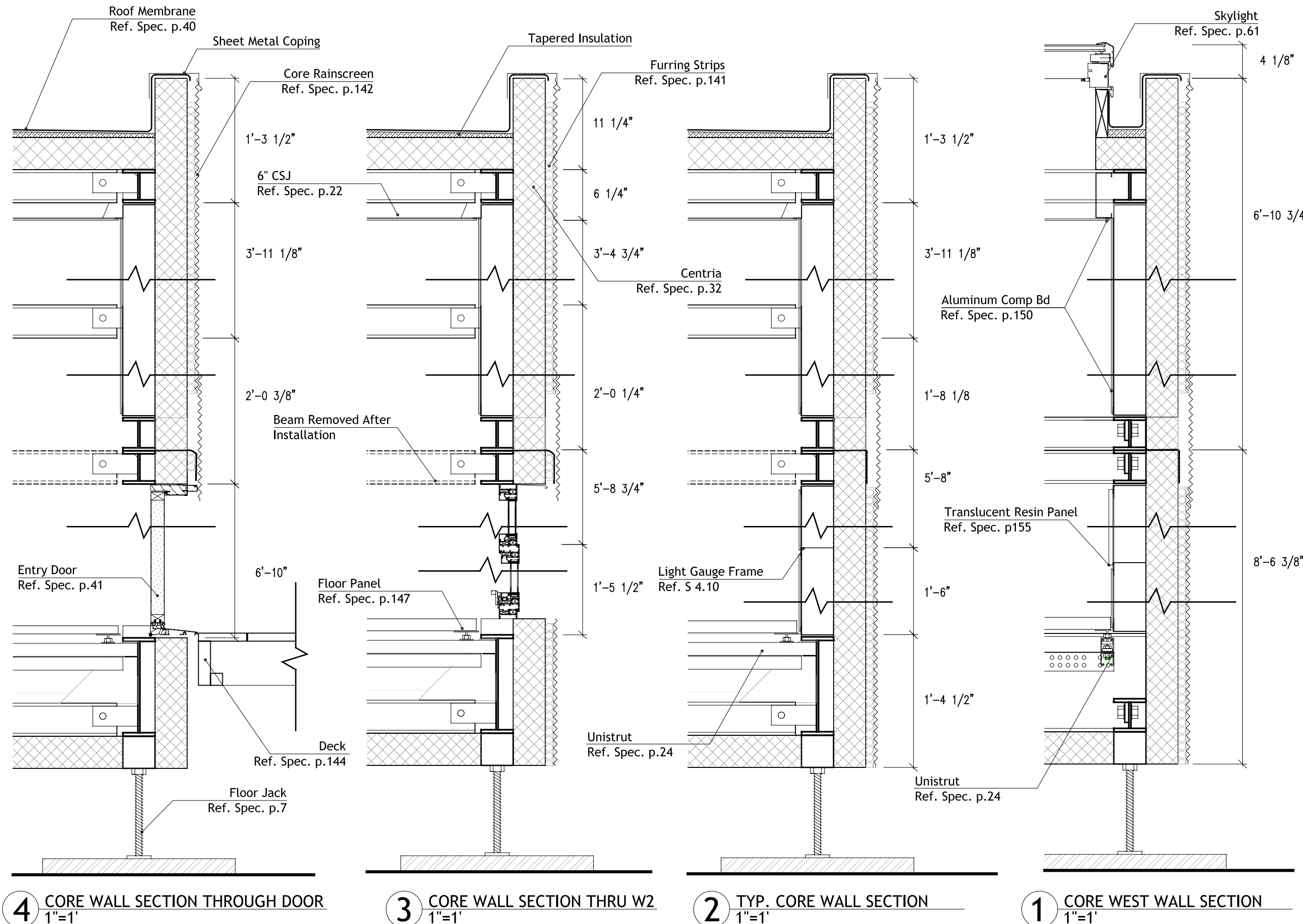
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DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: POD C SECTIONS

A 3.C

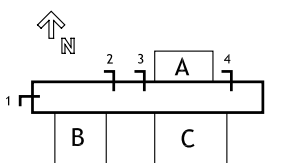


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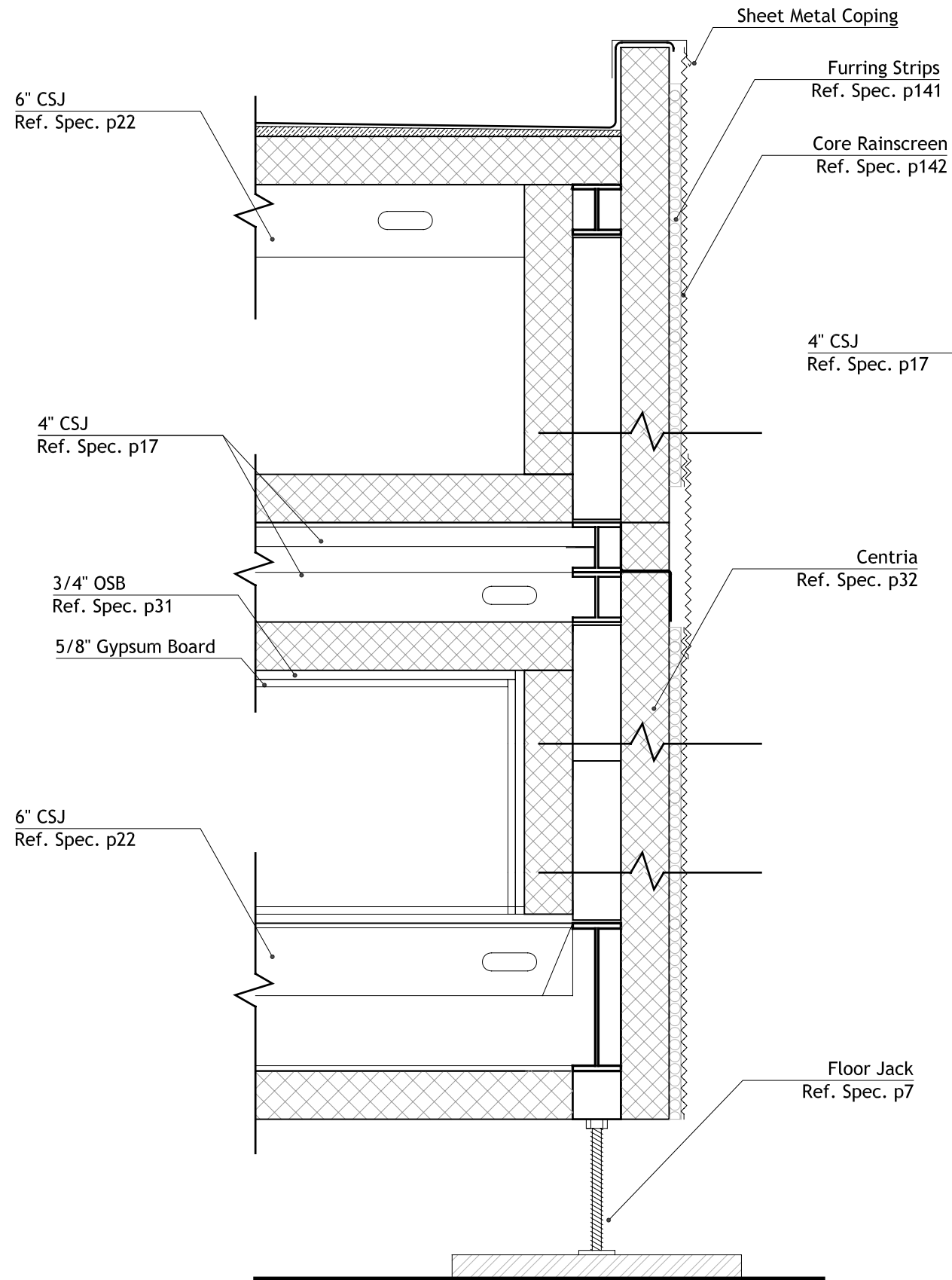
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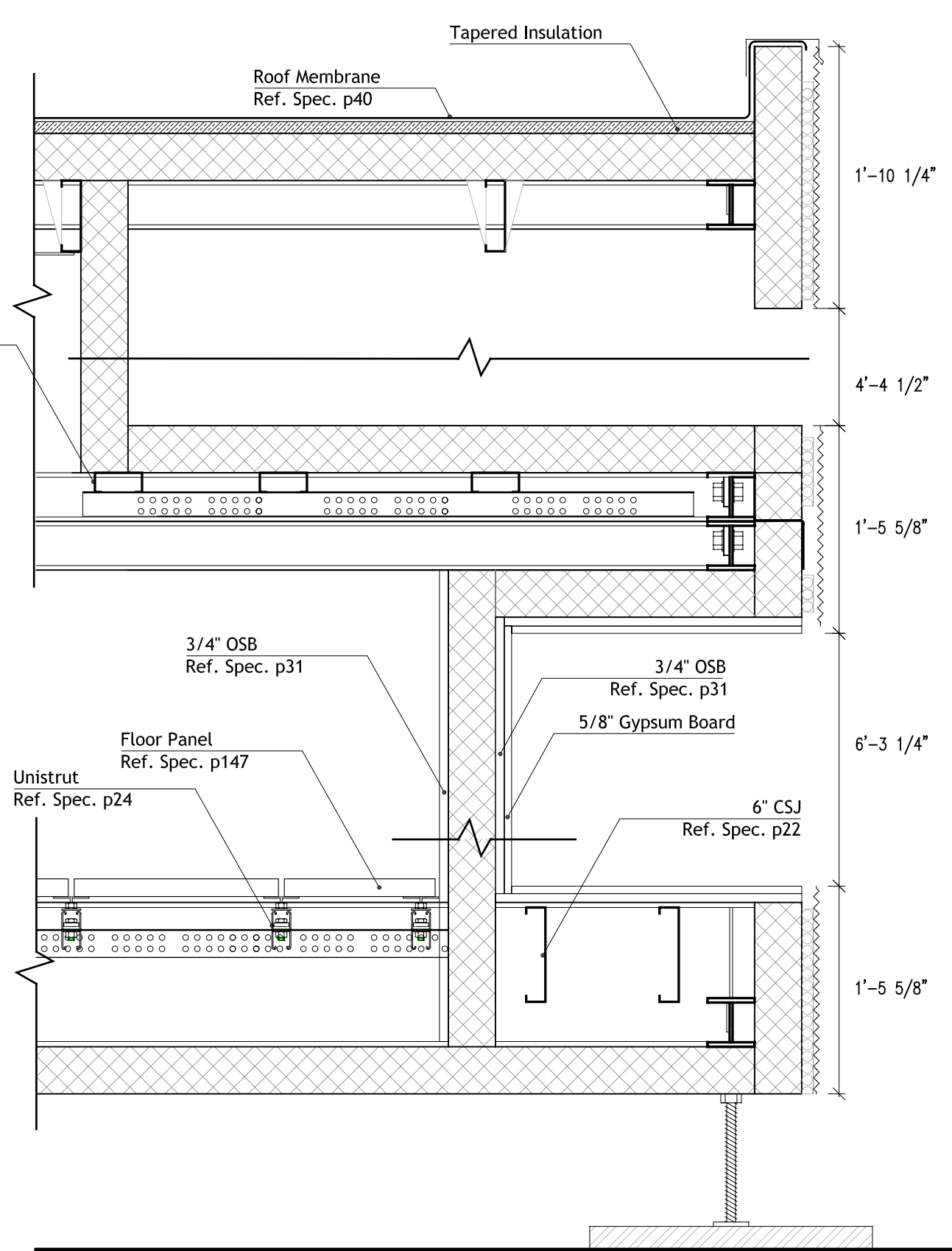


DRAWN BY: CATHY CHUNG  
 DATE: 08/07/2007  
 TITLE: CORE WALL SECTIONS

**A 4.1**



**2** CORE WALL SECTION THROUGH CLOSET  
1"=1'



**1** CORE EAST WALL SECTION  
1"=1'

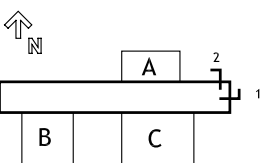


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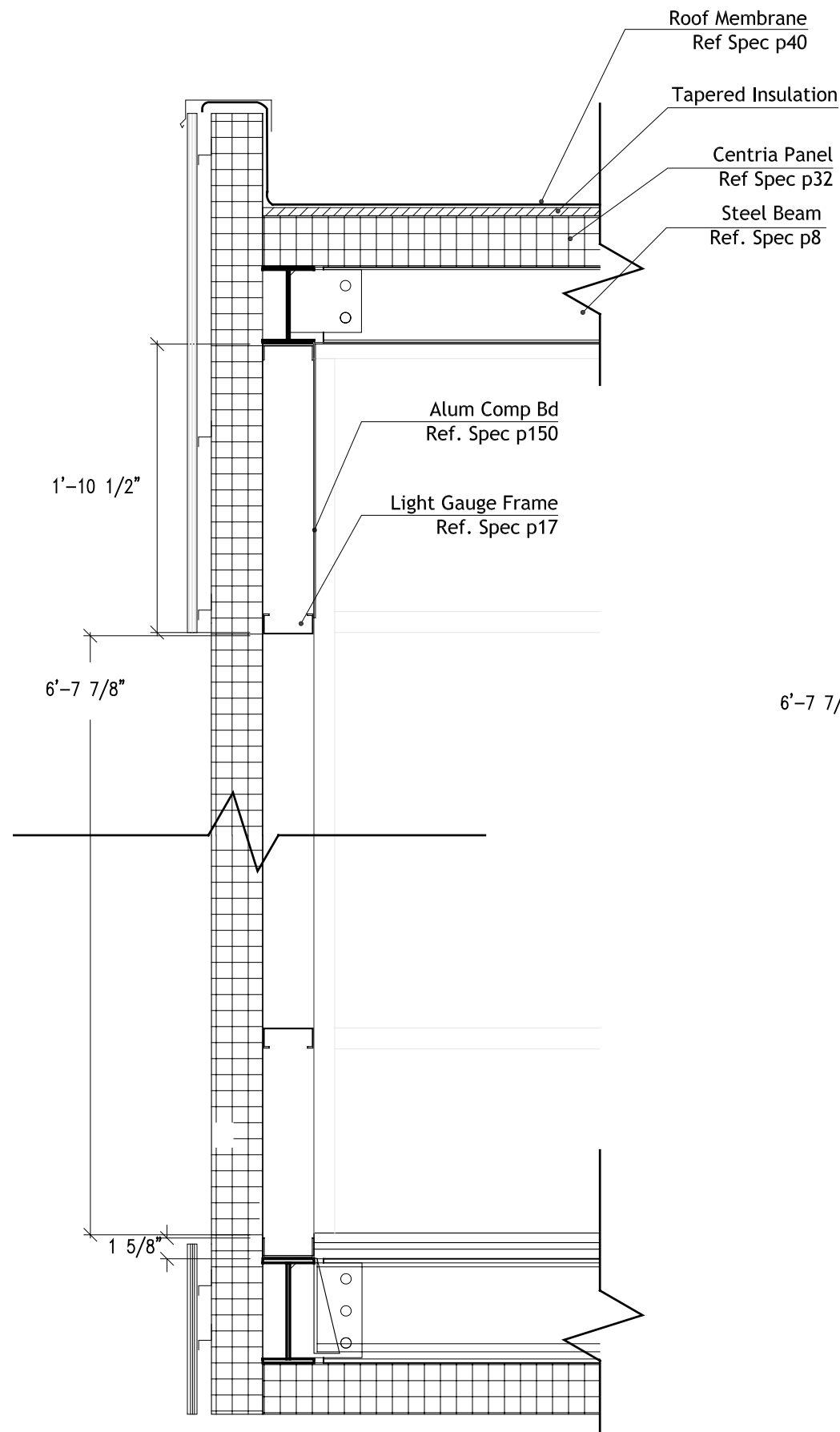
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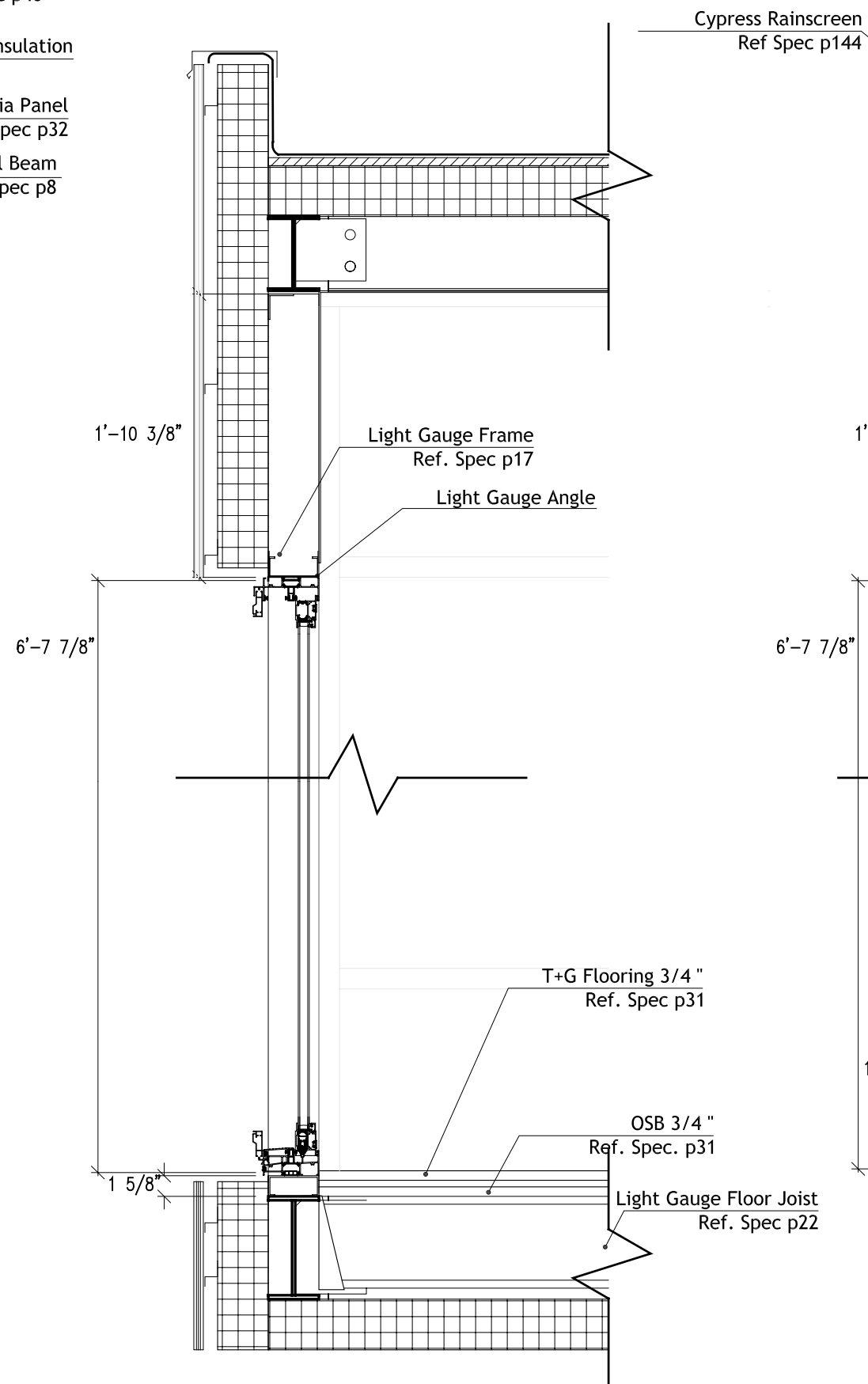


DRAWN BY: CATHY CHUNG  
DATE: 08/07/2007  
TITLE: CORE WALL SECTIONS

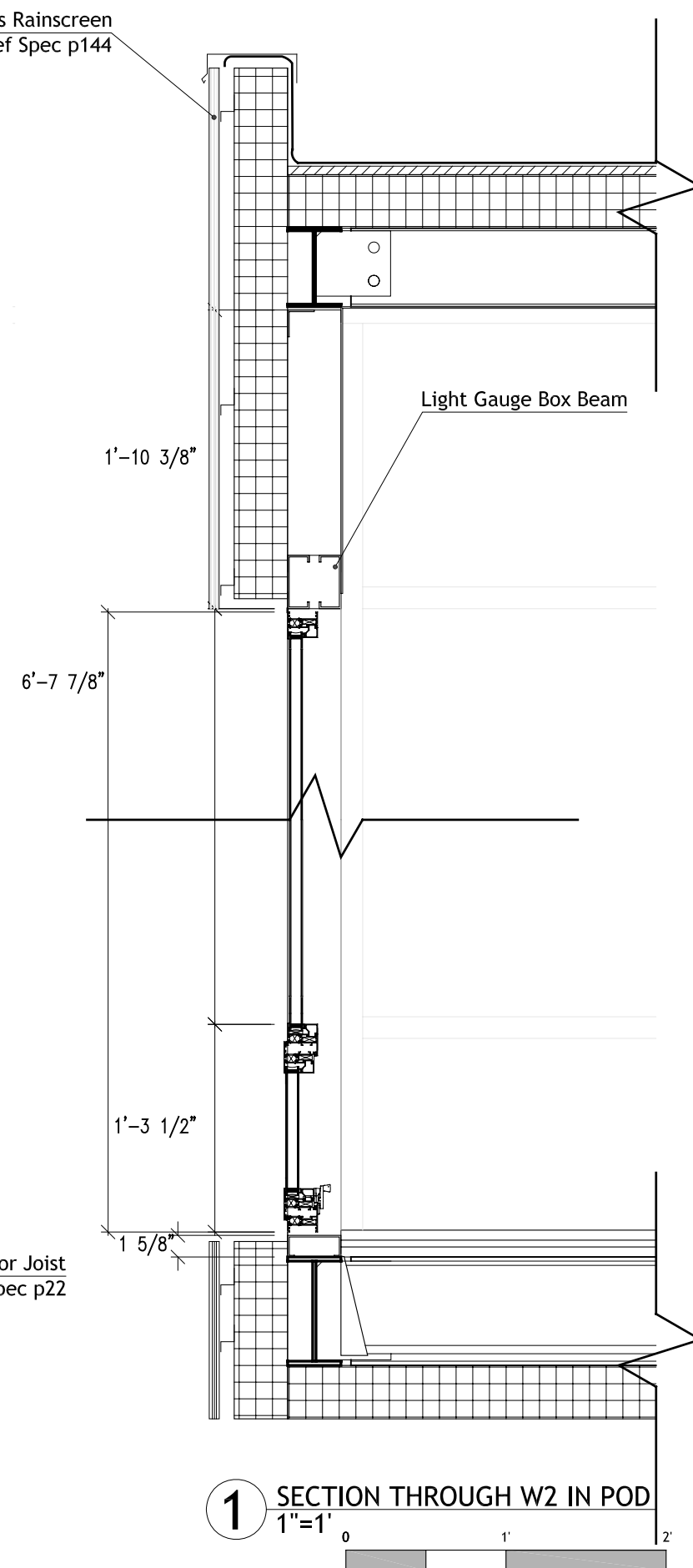
**A 4.2**



**3** SECTION THROUGH POD WALL  
1"=1'



**2** SECTION THROUGH W4  
1"=1'



**1** SECTION THROUGH W2 IN POD  
1"=1'

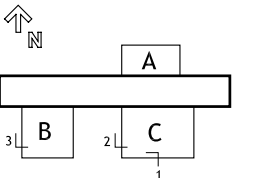


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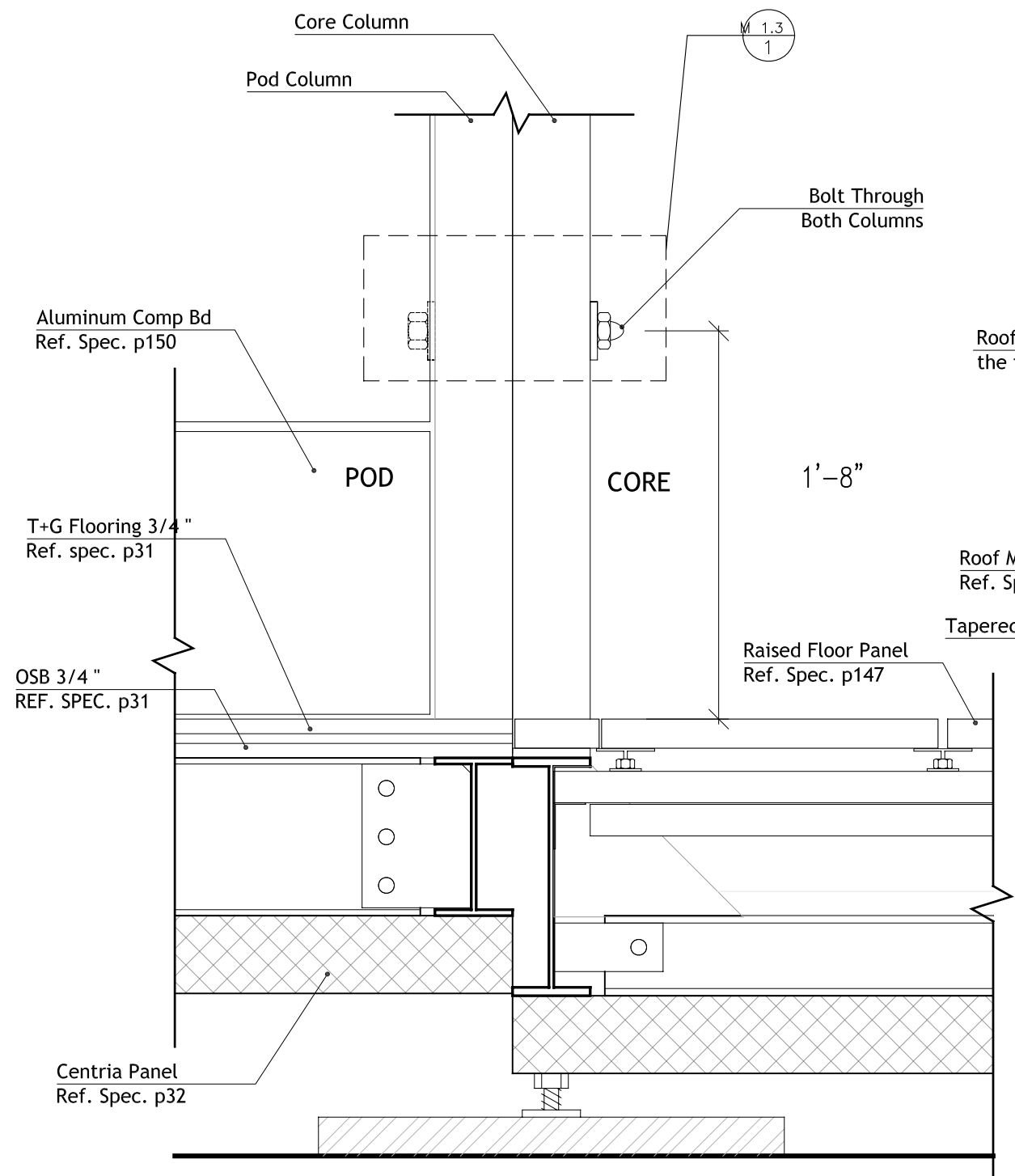
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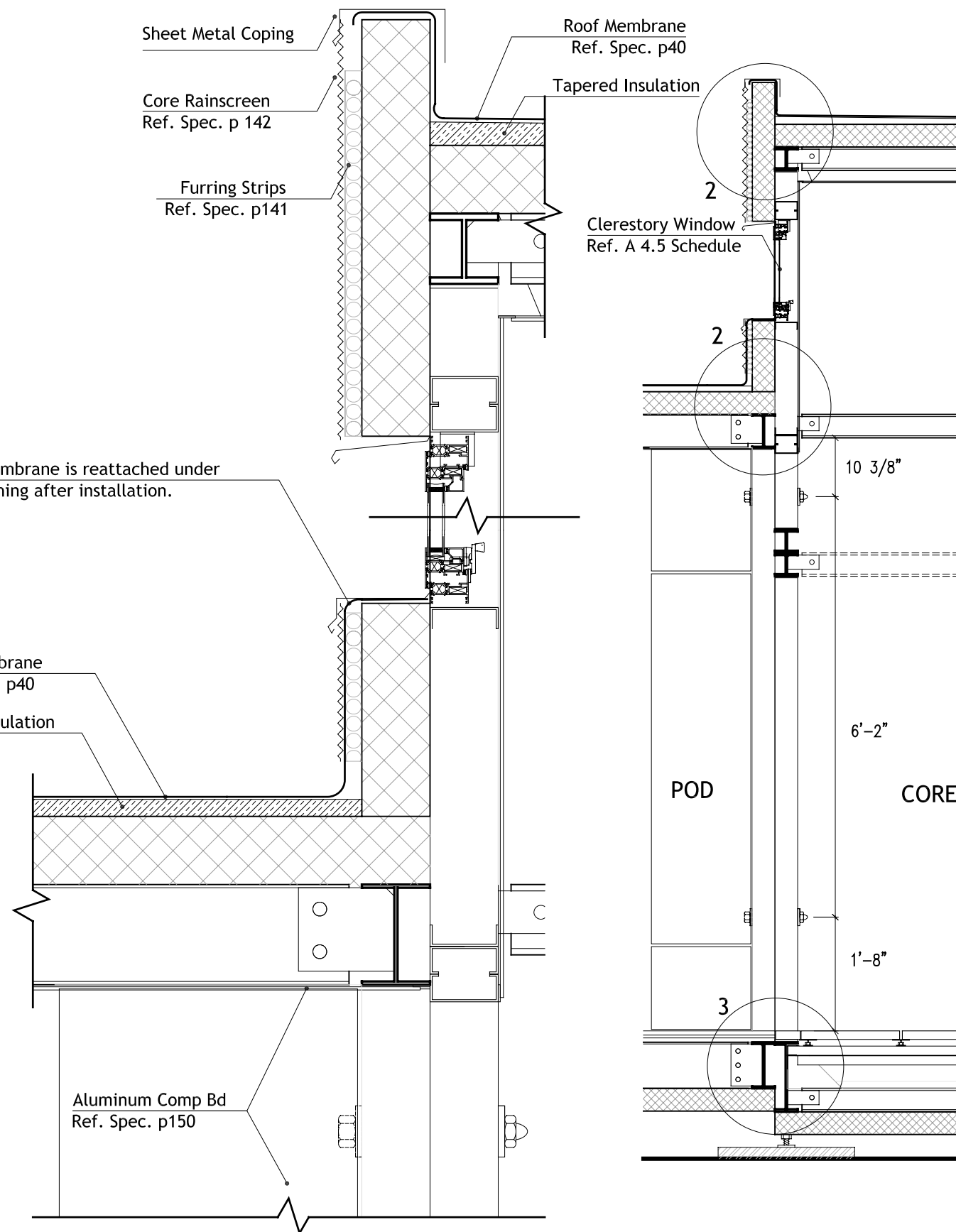


DRAWN BY: CATHY CHUNG  
DATE: 08/07/2007  
TITLE: POD WALL SECTIONS

**A 4.3**

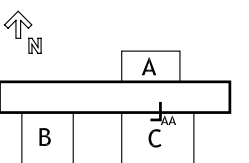


**3** DETAIL OF TYPICAL FLOOR CONNECTION  
1 1/2"=1'



**2** DETAIL OF TYPICAL ROOF CONN.  
1 1/2"=1'

**1** SECTION THROUGH CONNECTION  
1/2"=1'





SKYLIGHT SCHEDULE

MARK	UNIT	MODEL #	INT. DIM.	EXT DIM.	GLAZING	CLADDING	QUANTITY	Ref. Spec.
S1	PROJECTED	VELUX CURB-MOUNTED ELECTRIC VCE 3046	30 1⁄2" X 46 1⁄4"	33 1⁄2" X 49 1⁄2"	COMPLUS PLUS (TEMPERED)	BLACK ALUMINIUM	1	p 61

ENTRY SYSTEM SCHEDULE

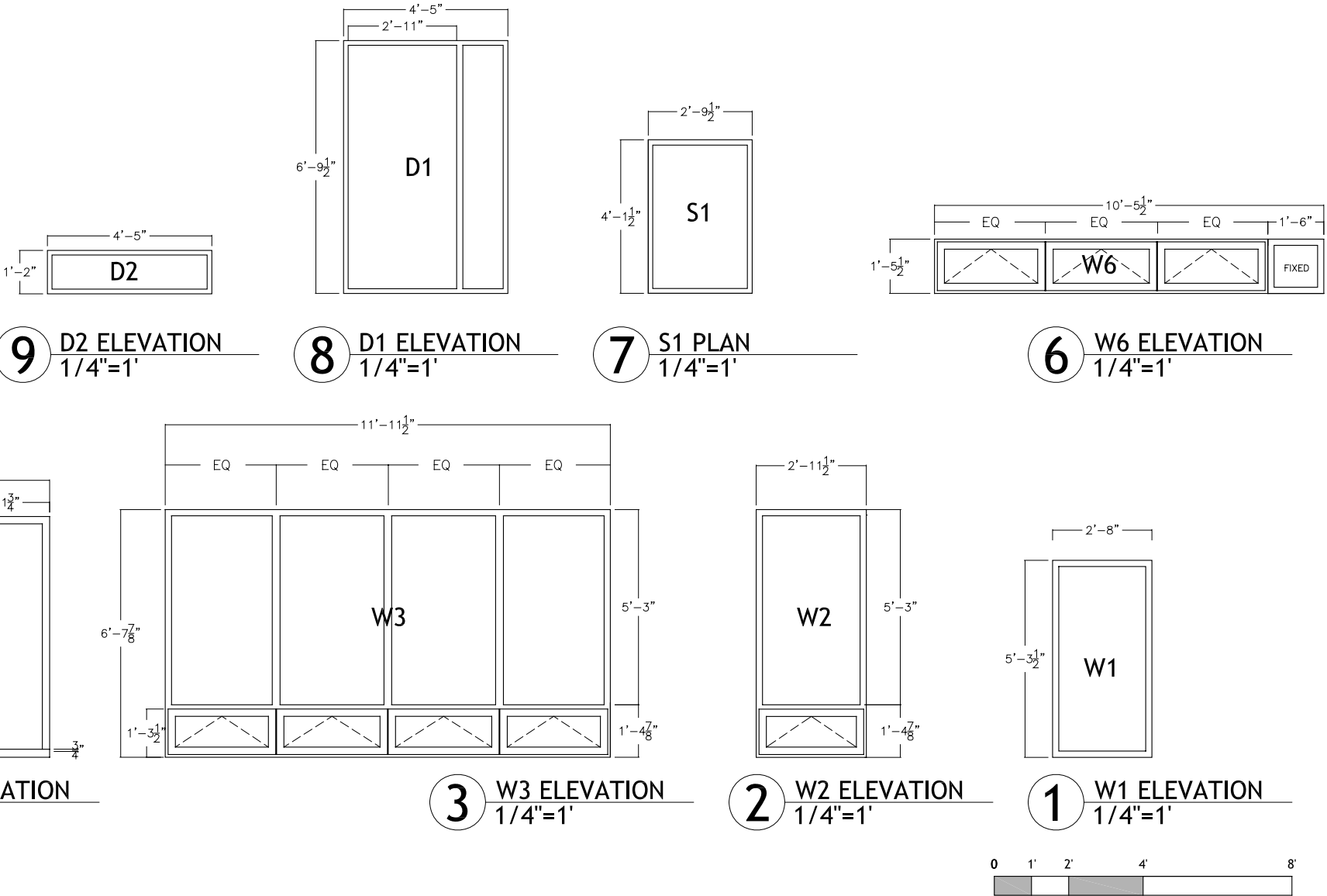
MARK	UNIT	MODEL #	R. O.	UNIT DIM.	GLAZING	CLADDING	QUANTITY	Ref. Spec.
D1	FIXED / INSWING	FIXED	53 3⁄4" X 82"	53" X 81 1⁄2"	LOW E COATING ARGON (TEMPERED)	BROWN	1	p 41
D2	FIXED	FIXED	53 3⁄4" X 14 3⁄4"	53" X 14"	LOW E COATING ARGON (TEMPERED)	BROWN	1	p 41

WINDOW SCHEDULE

MARK	UNIT	MODEL #	R. O.	UNIT DIM.*	IGM GL	MULLION COLOR OUTER / INNER	QUANTITY	Ref. Spec.
W1	FIXED	NX-380	32 1⁄2" X 64	32" X 63 1⁄2"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	1	1
W2	FIXED (TOP) PROJECTED (BOTTOM)	NX-350	36" X 80 3⁄8"	35 1⁄2" X 79 7⁄8"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	3	1
W3	FIXED (TOP) PROJECTED (BOTTOM)	NX-350	144" X 80 3⁄8"	143 1⁄2" X 79 7⁄8"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	1	1
W4	SLIDING	NX-840	72" X 82 3⁄8"	71 1⁄2" X 81 1⁄4"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	2 1 LEFT / 1 RIGHT	1
W5	PROJECTED	NX-350	144" X 18"	143 1⁄2" X 17 1⁄2"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	2	1
W6	PROJECTED/ FIXED	NX-350	126" X 18"	125 1⁄2" X 17 1⁄2"	SOLARBAN XL70 ARGON (TEMPERED)	UC 95934XL / UC 43350	1	1

\*1/4" TOLERANCE ON ALL SIDES EXCEPT W4 FOR ADA COMPLIANCE

Note:  
All Glazing Products are Unit Dimensioned

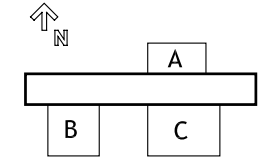


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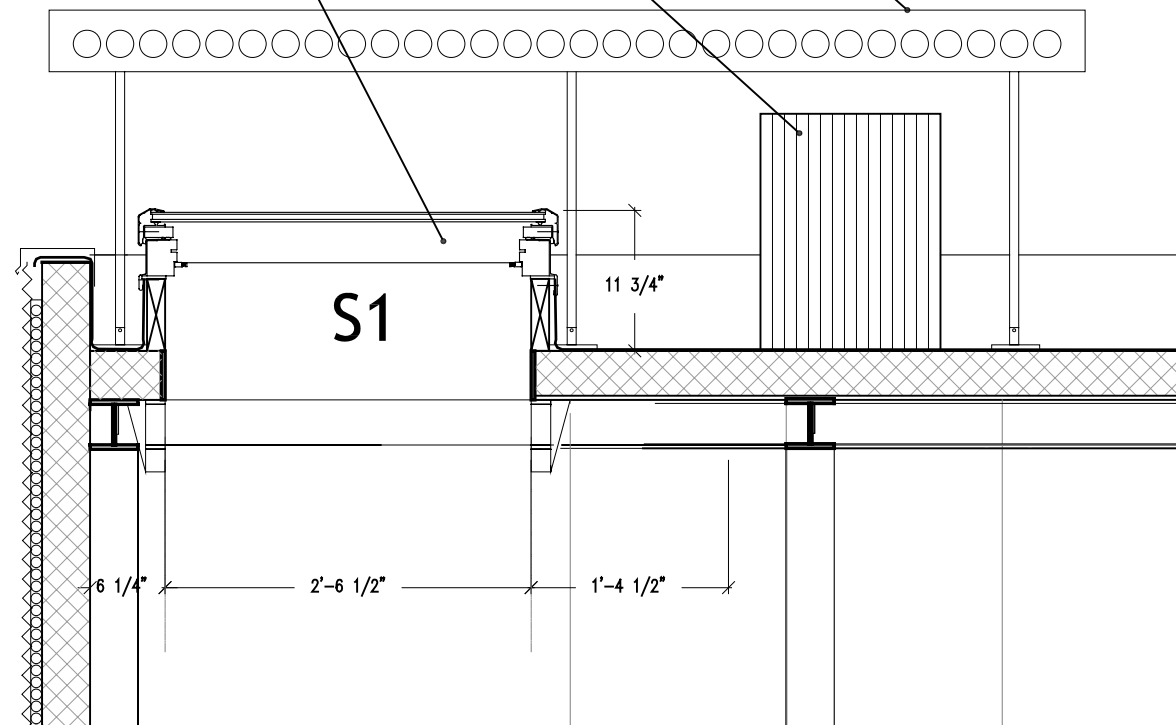
DRAWN BY: CATHY CHUNG  
DATE: 08/07/2007  
TITLE: WINDOW SCHEDULE

**A 4.5**

Solar Thermal Collector  
Ref. Spec. p.81

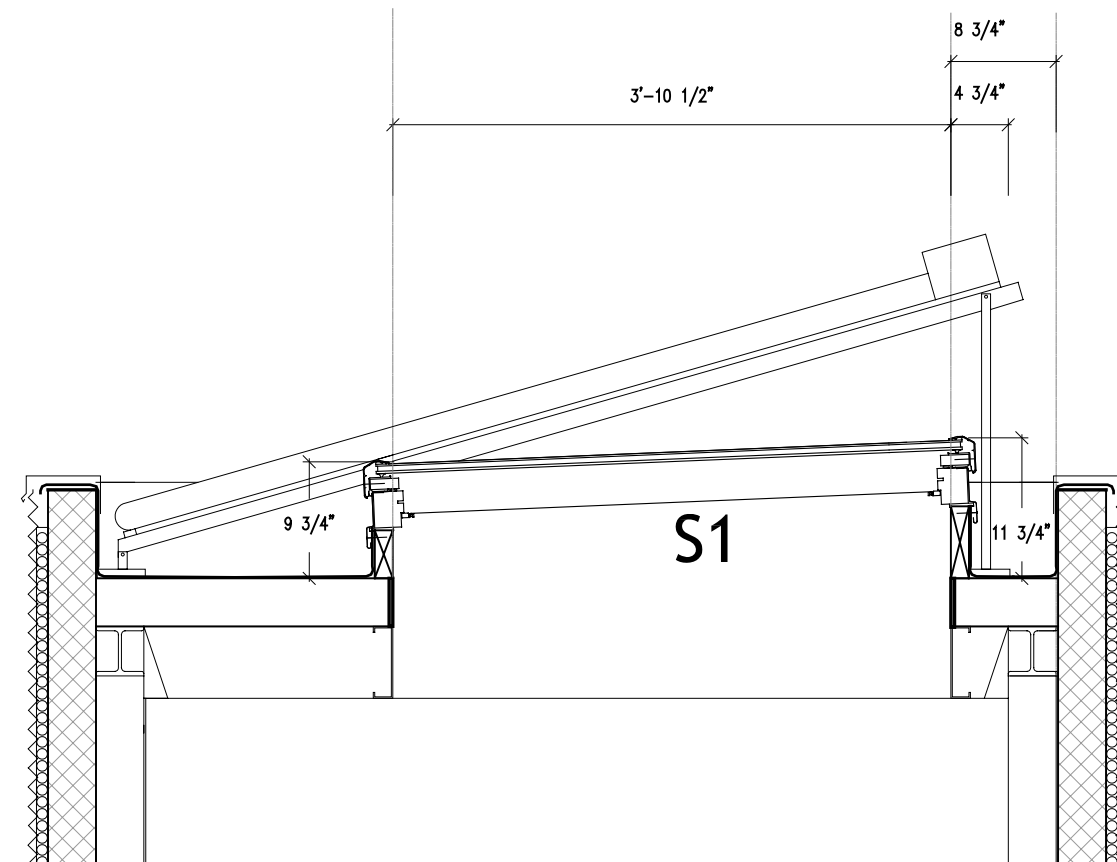
Apricus Heat Dissipator  
Ref. Spec. p.84

VELUX Skylight  
Ref. Spec. p.61

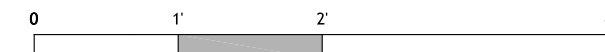


**2** BB- SKYLIGHT DETAIL SECTION  
3/4"=1'

Note:  
Skylight is mounted on light-gauge steel curb.  
Curb is 4" tall at lower side, 6" at higher side  
for slope of 2.5°



**1** AA- SKYLIGHT DETAILSECTION  
3/4"=1'

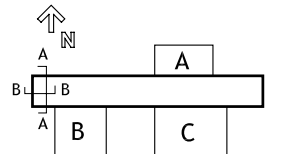


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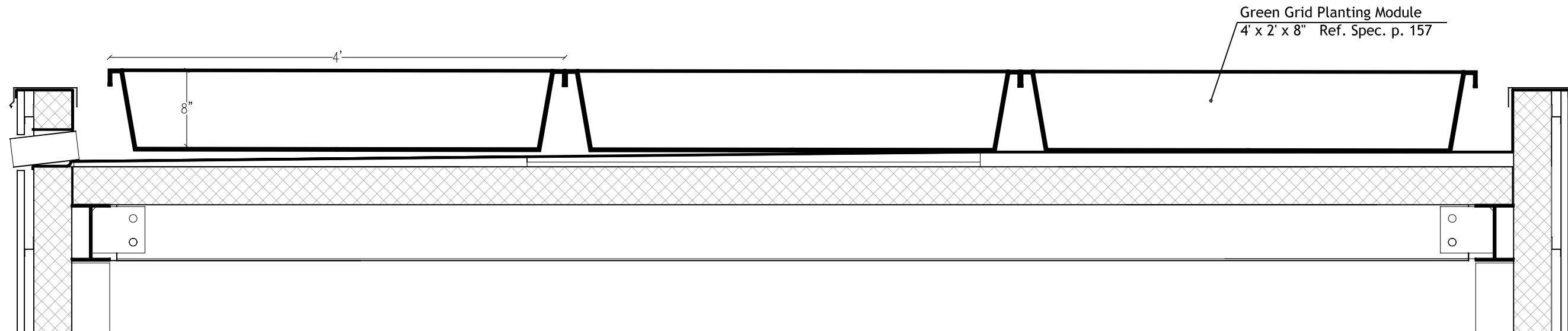
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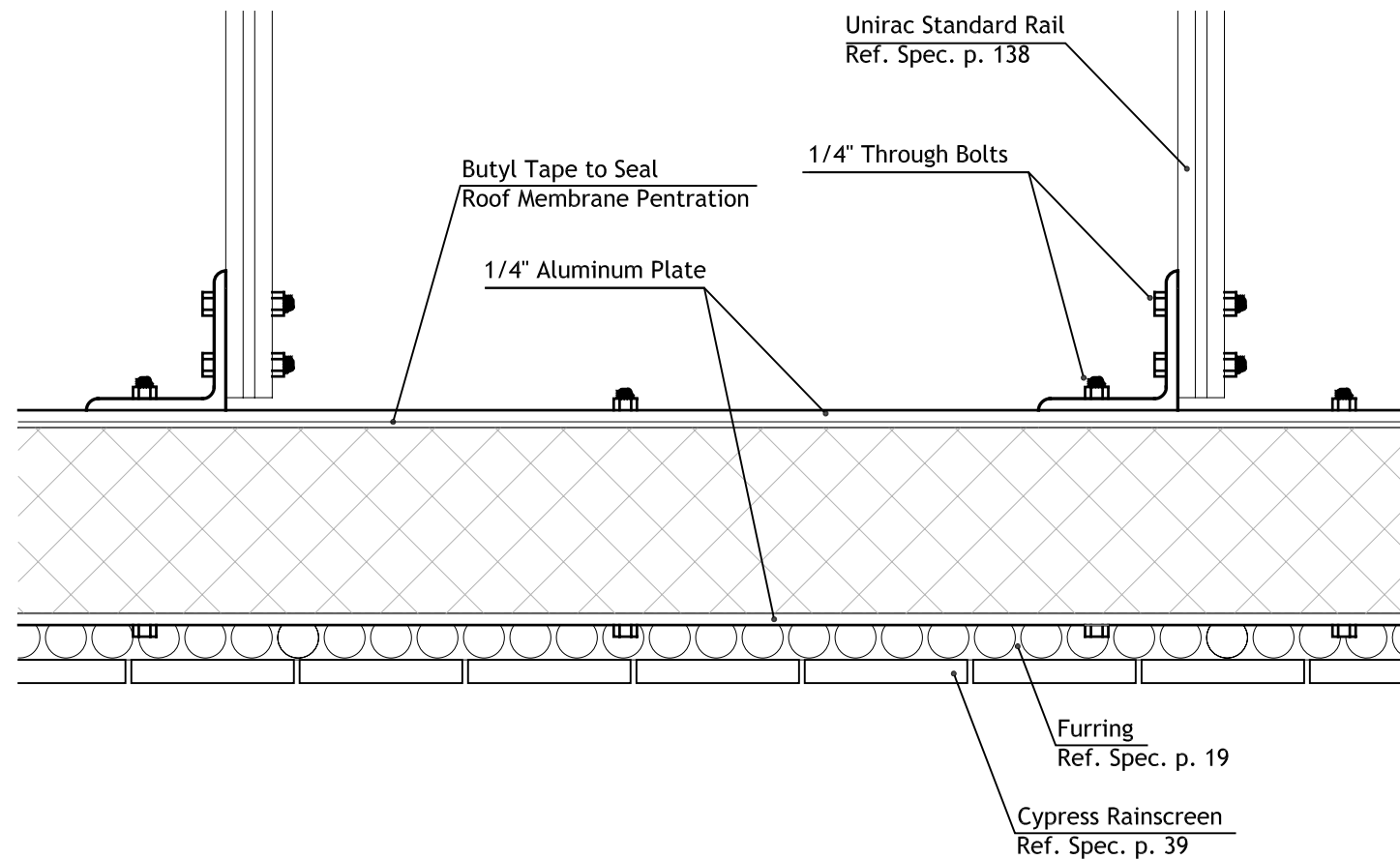


DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: SKYLIGHT SECTIONS

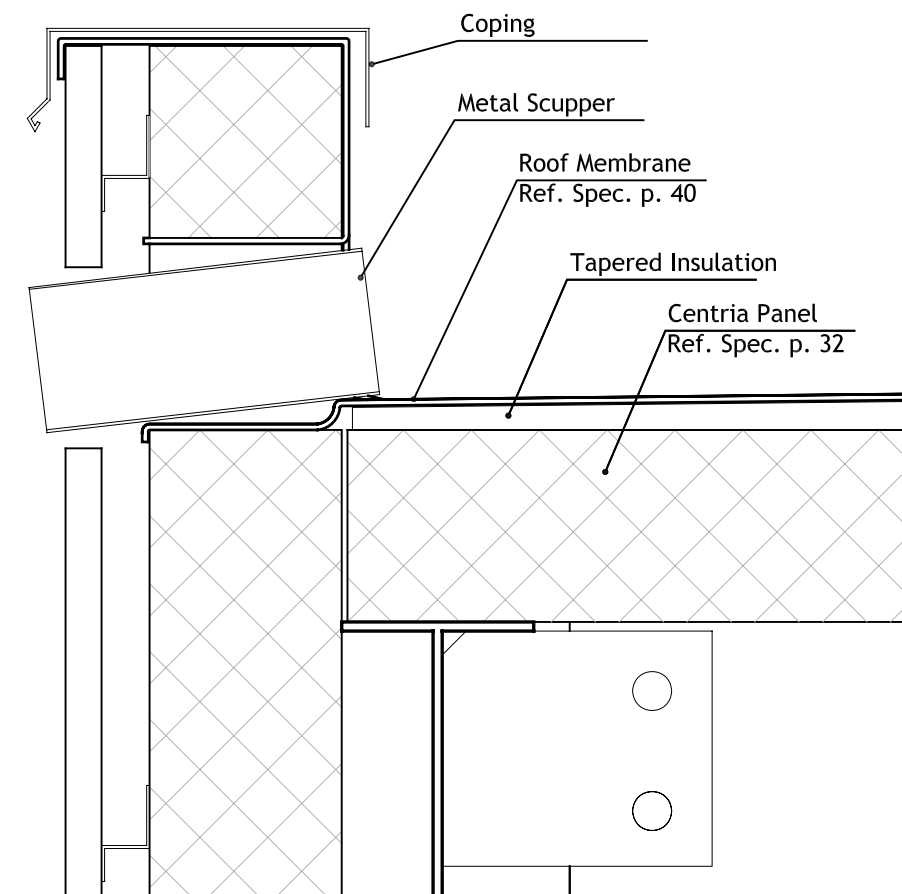
**A 4.6**



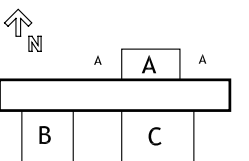
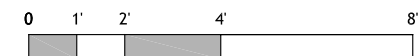
**3 GREEN ROOF DETAIL - SECTION**  
1"=1'-0"



**2 ROOF PV MOUNTING DETAIL - PLAN**  
3"=1'-0"



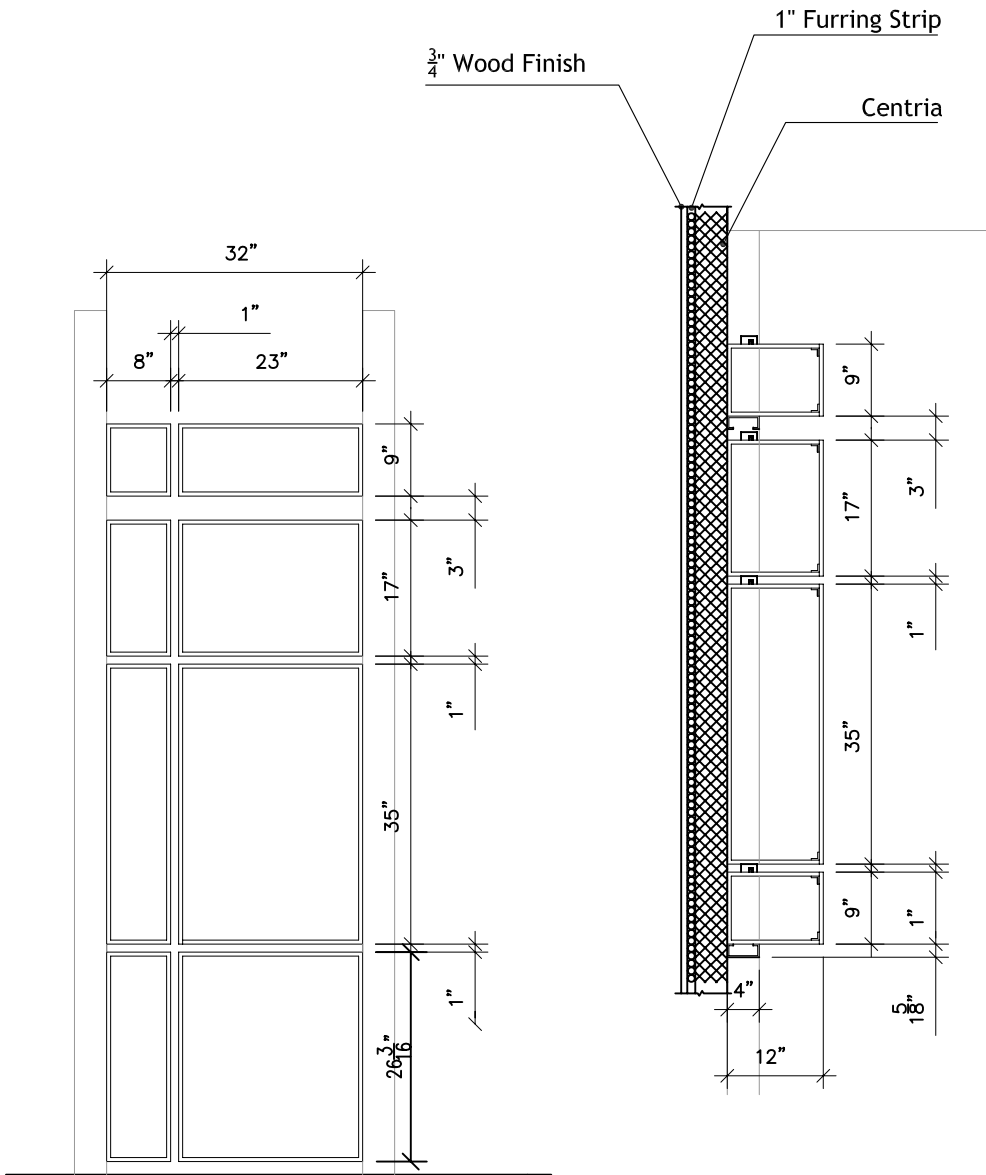
**1 ROOF DRAINAGE DETAIL - SECTION**  
3"=1'-0"



## WALL SYSTEM SCHEDULE

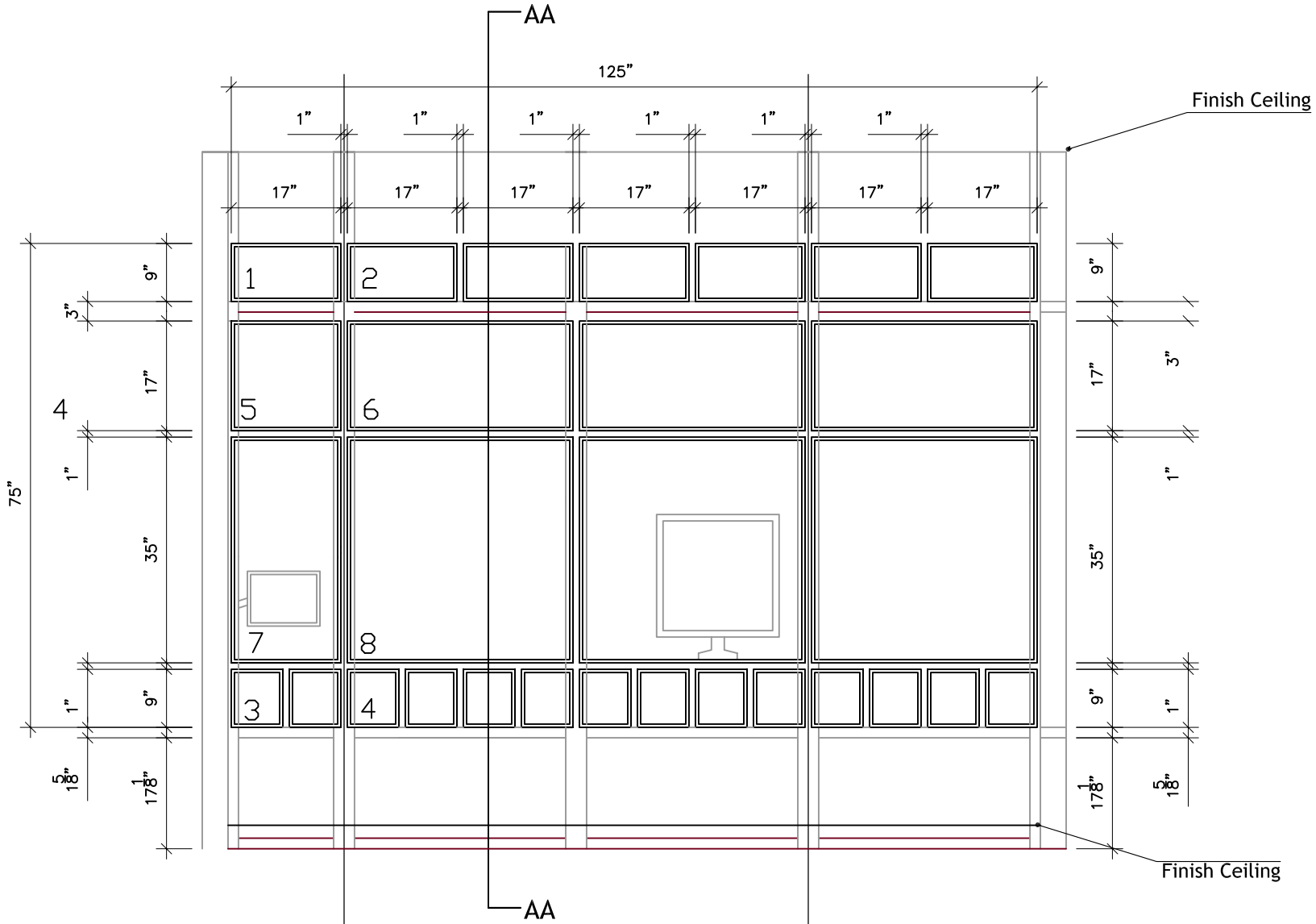
WALL SYSTEM SCHEDULE *		QTY.
WS 1	9" x 18" x 12"	3
WS 2	9" x 36" x 12"	7
WS 3	9" x 18" x 12"	1
WS 4	9" x 36" x 12"	7
WS 5	17" x 18" x 12"	4
WS 6	18" x 18" x 12"	12
WS 7	18" x 9" x 12"	1
WS 8	36" x 36" x 12"	8

\* Dimensions are nominal and refer to the overall dimensions of the box

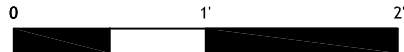


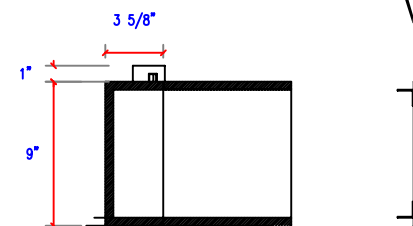
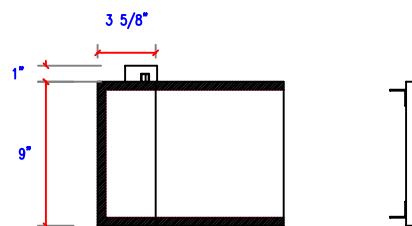
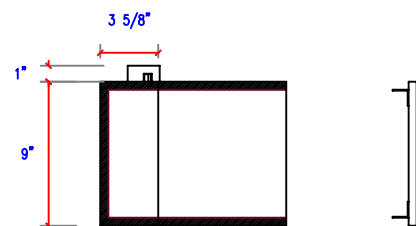
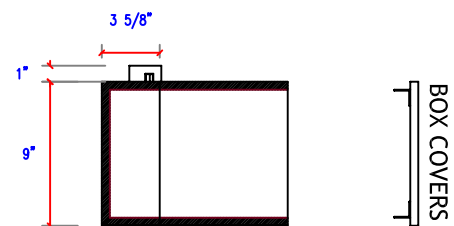
**3** KIOSK LAYOUT  
1/2"=1'

**2** SECTION AA  
1/2"=1'

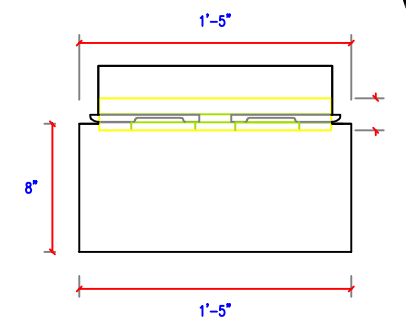
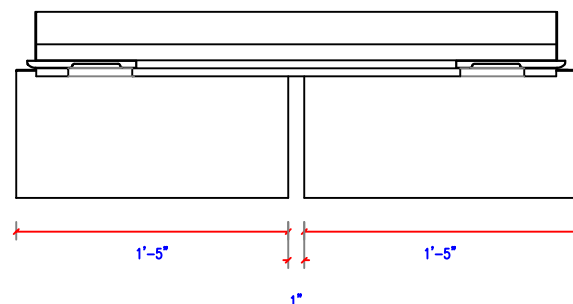
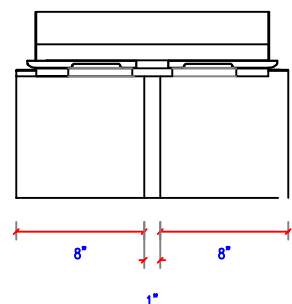
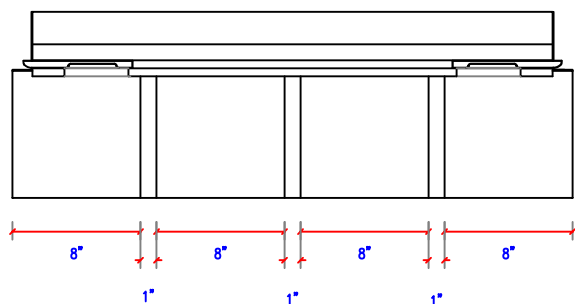


**1** LIVINGRM EAST WALL LAYOUT  
1/2"=1'

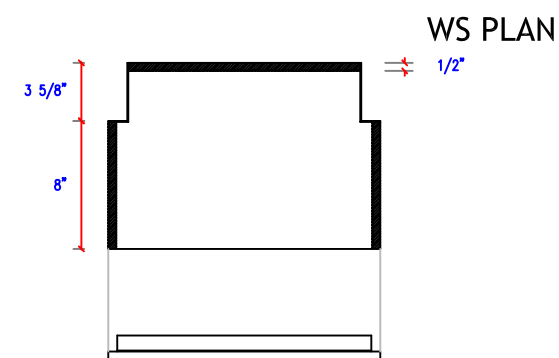
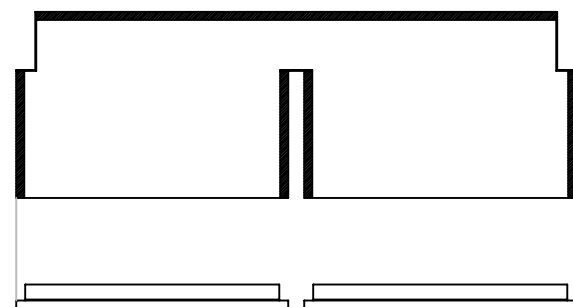
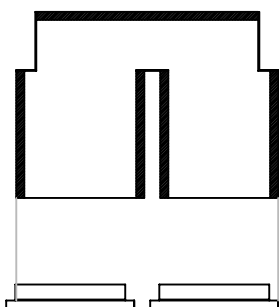
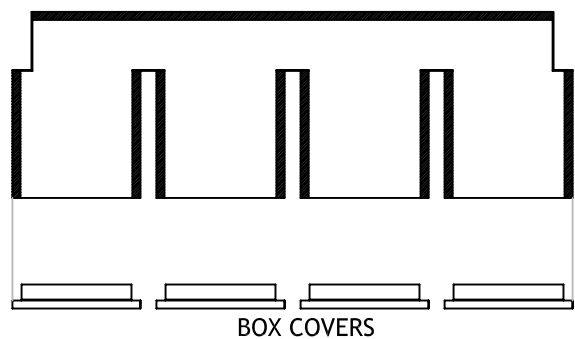




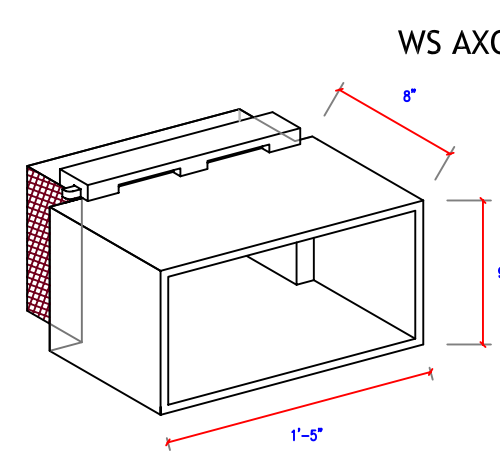
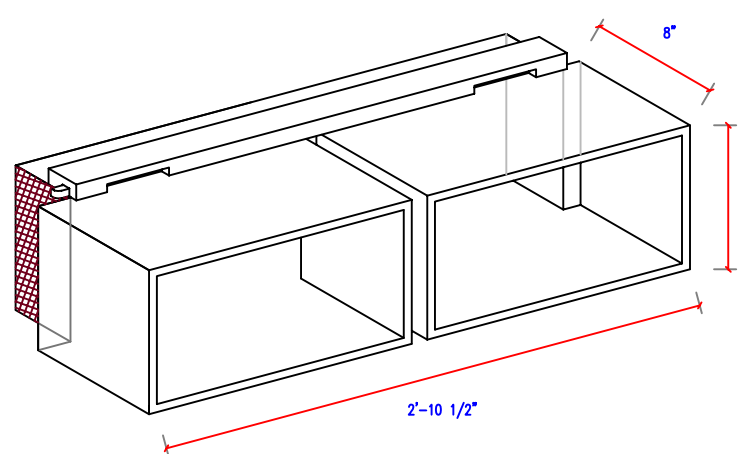
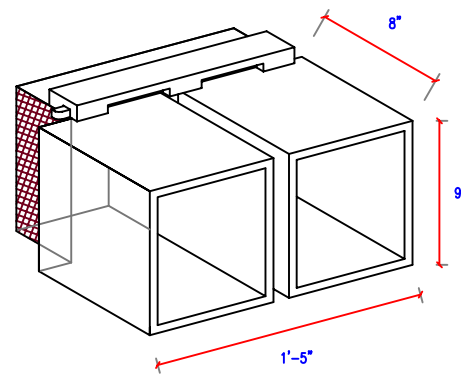
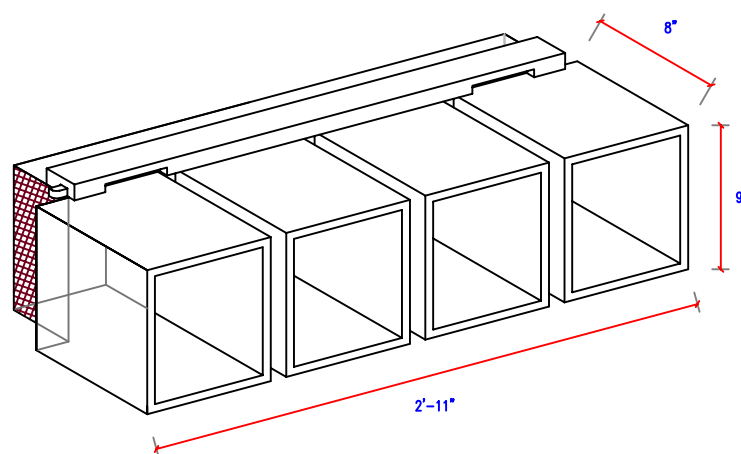
WS SIDE ELEVATION



WS BOX TOP



WS PLAN



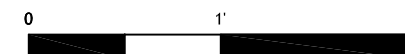
WS AXON

④ WS4 DETAIL  
1"=1'-0"

③ WS3 DETAIL  
1"=1'-0"

② WS2 DETAIL  
1"=1'-0"

① WS1 DETAIL  
1"=1'-0"

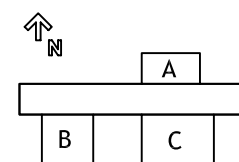


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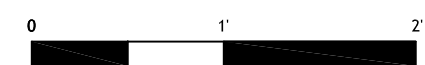
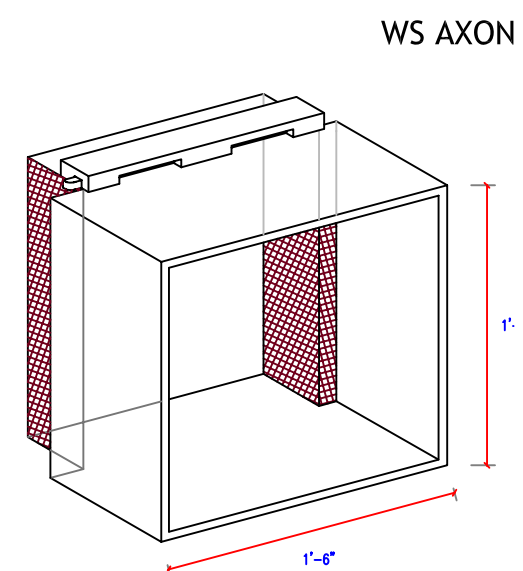
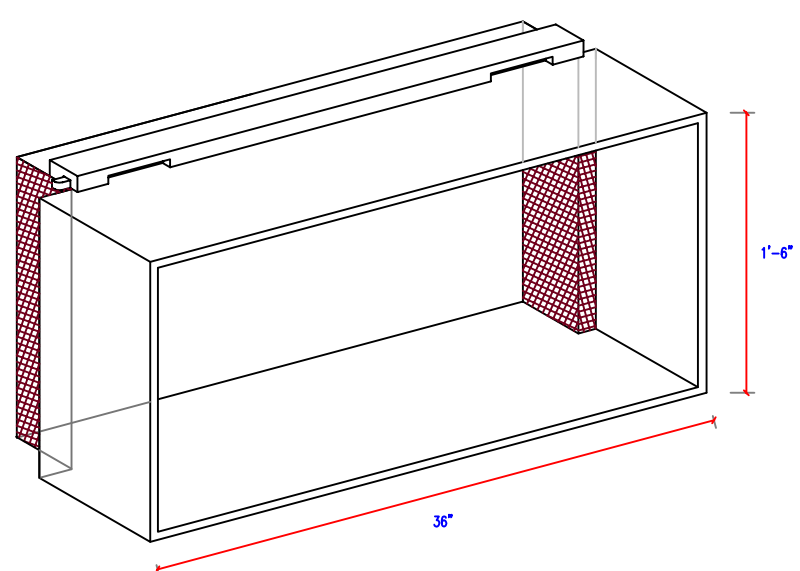
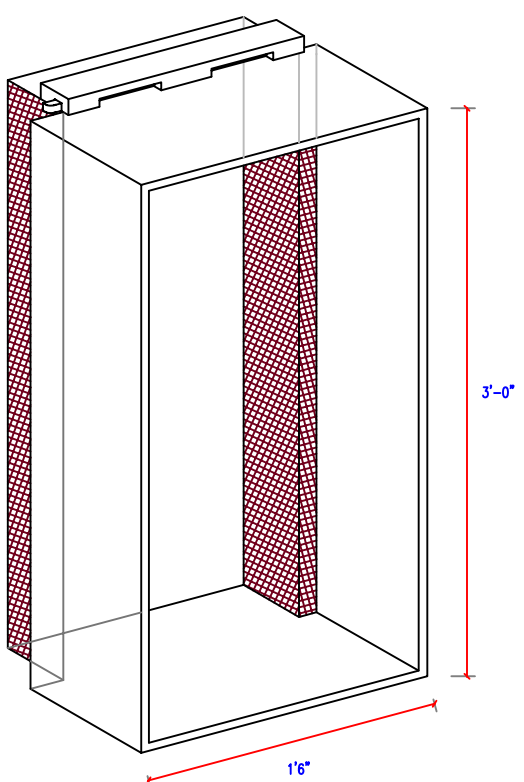
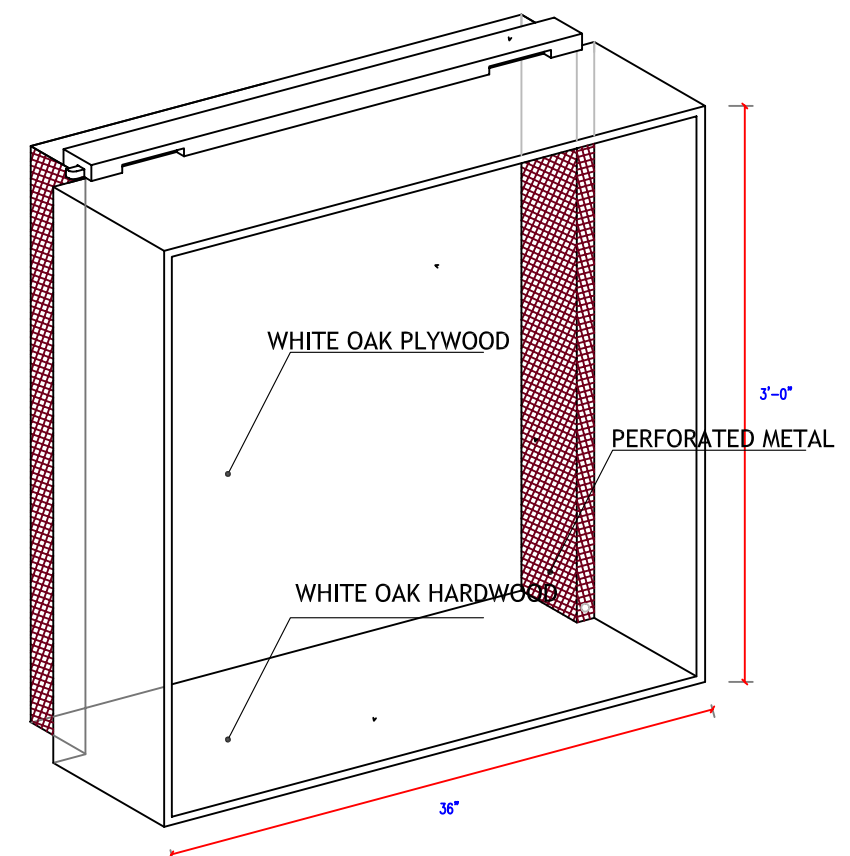
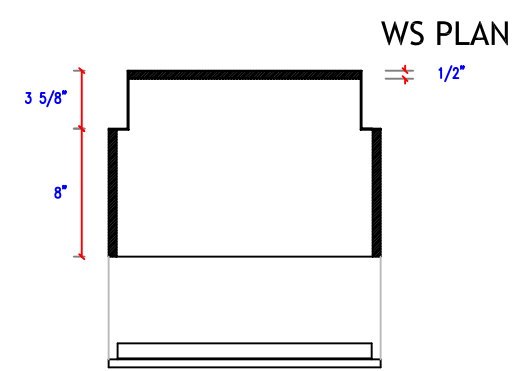
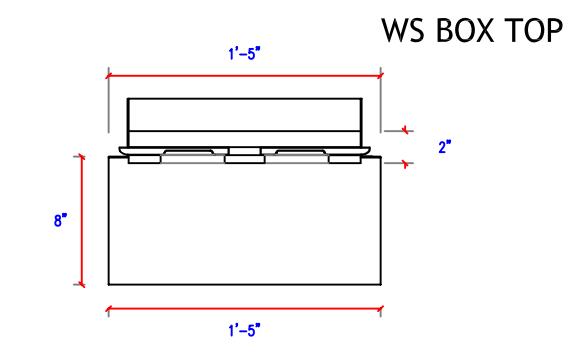
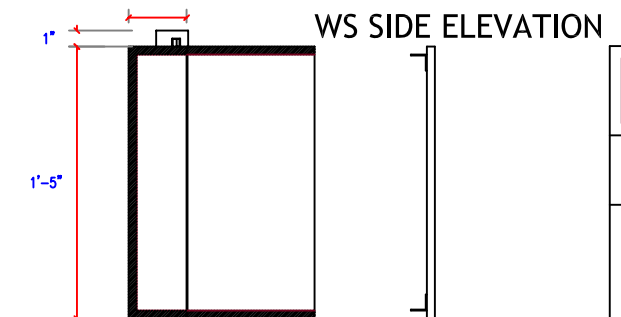
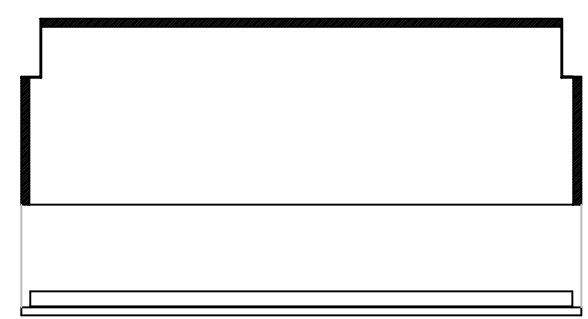
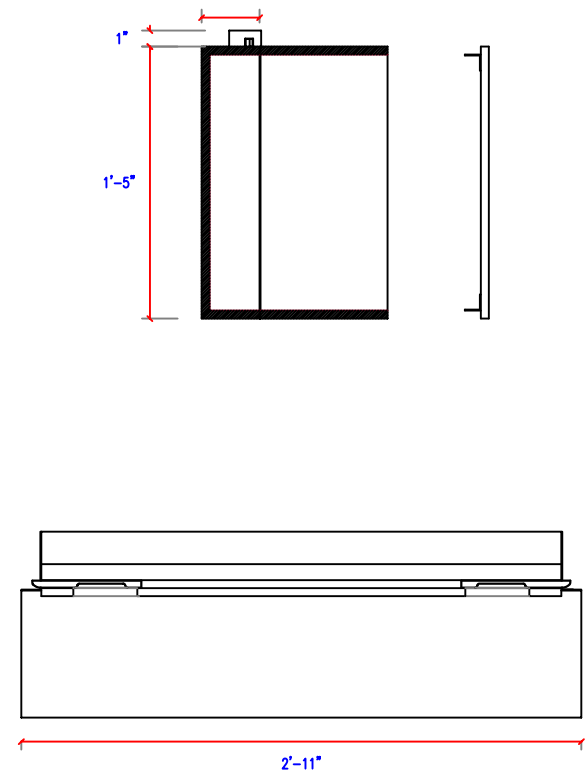
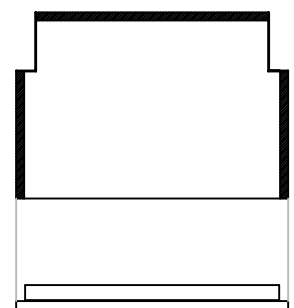
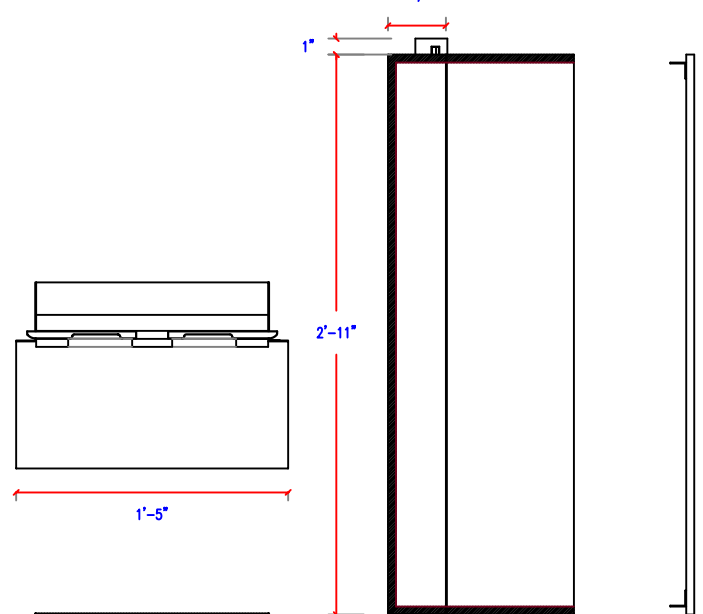
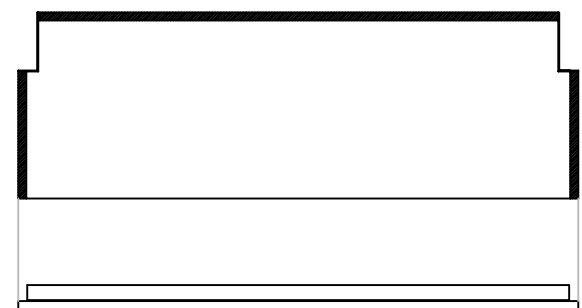
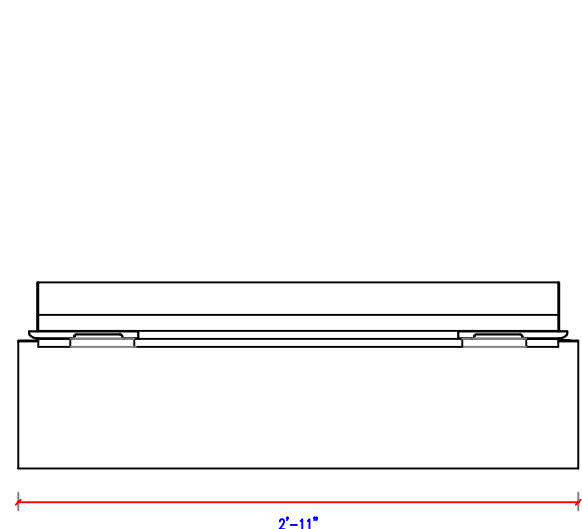
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DRAWN BY: KIKO RESTREPO  
DATE: 08/07/2007  
TITLE: WALL SYSTEM DETAILS

A4.9

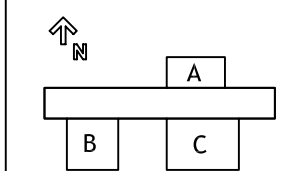


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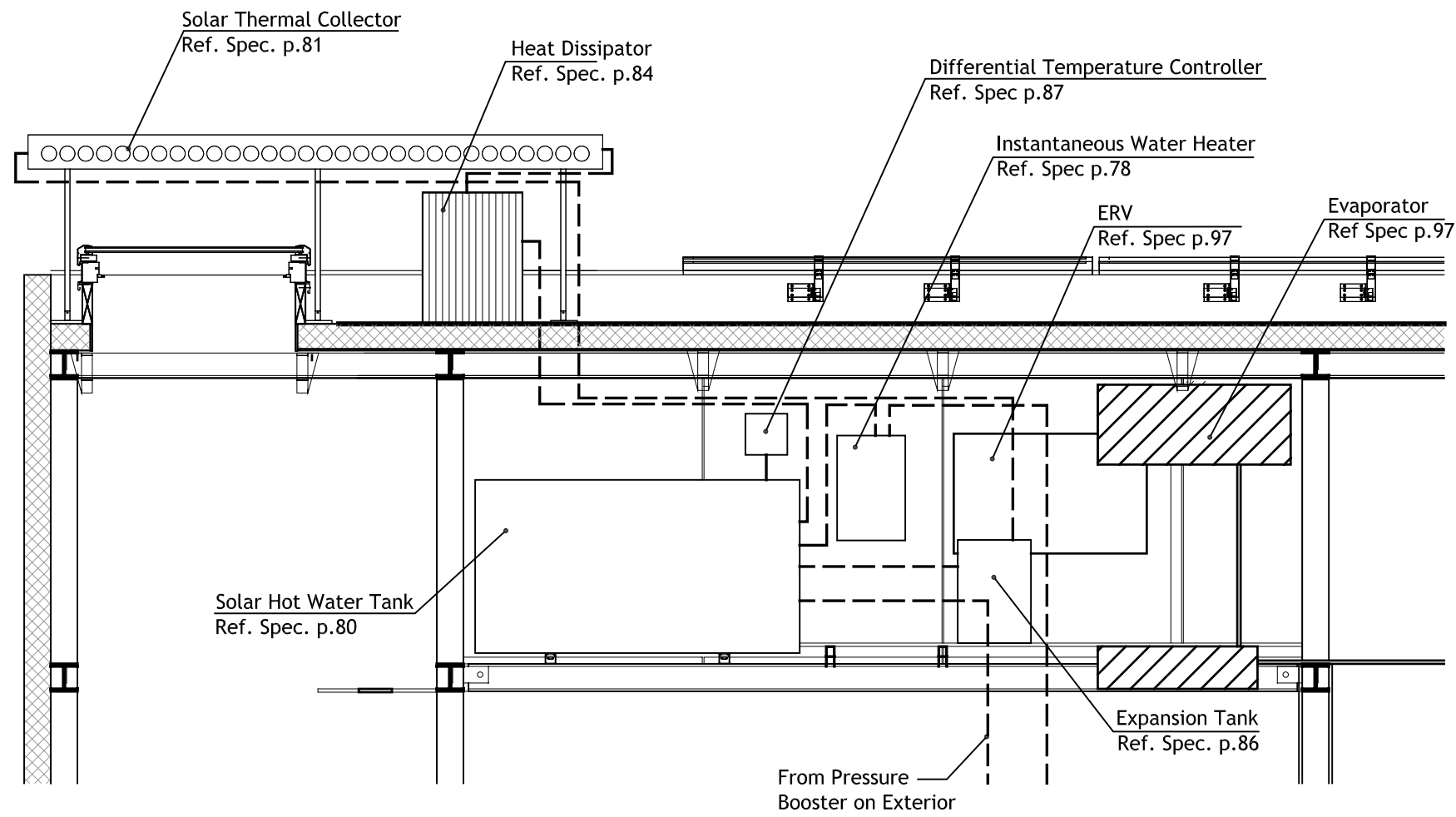
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DATE: 08/07/2007  
TITLE: WALL SYSTEM DETAILS

**A4.10**

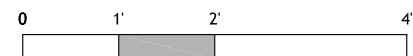


KEY:  
 - - - - Plumbing Connections

Note:  
 For Layout Diagram Of Water Distribution Path, Refer To Sheet P2.  
 All Plumbing Is Maintained In Core. Systems In Upper Plenum And Distribution/Manifolds Under Tiled/Accessible Floor



**1 MECHANICAL SYSTEMS IN UPPER PLENUM - SECTION AA**  
 1/2" = 1'-0"



Calculations for Solar Hot Water Structure

Main Supporting structure Unistrut B12 series Specifications:

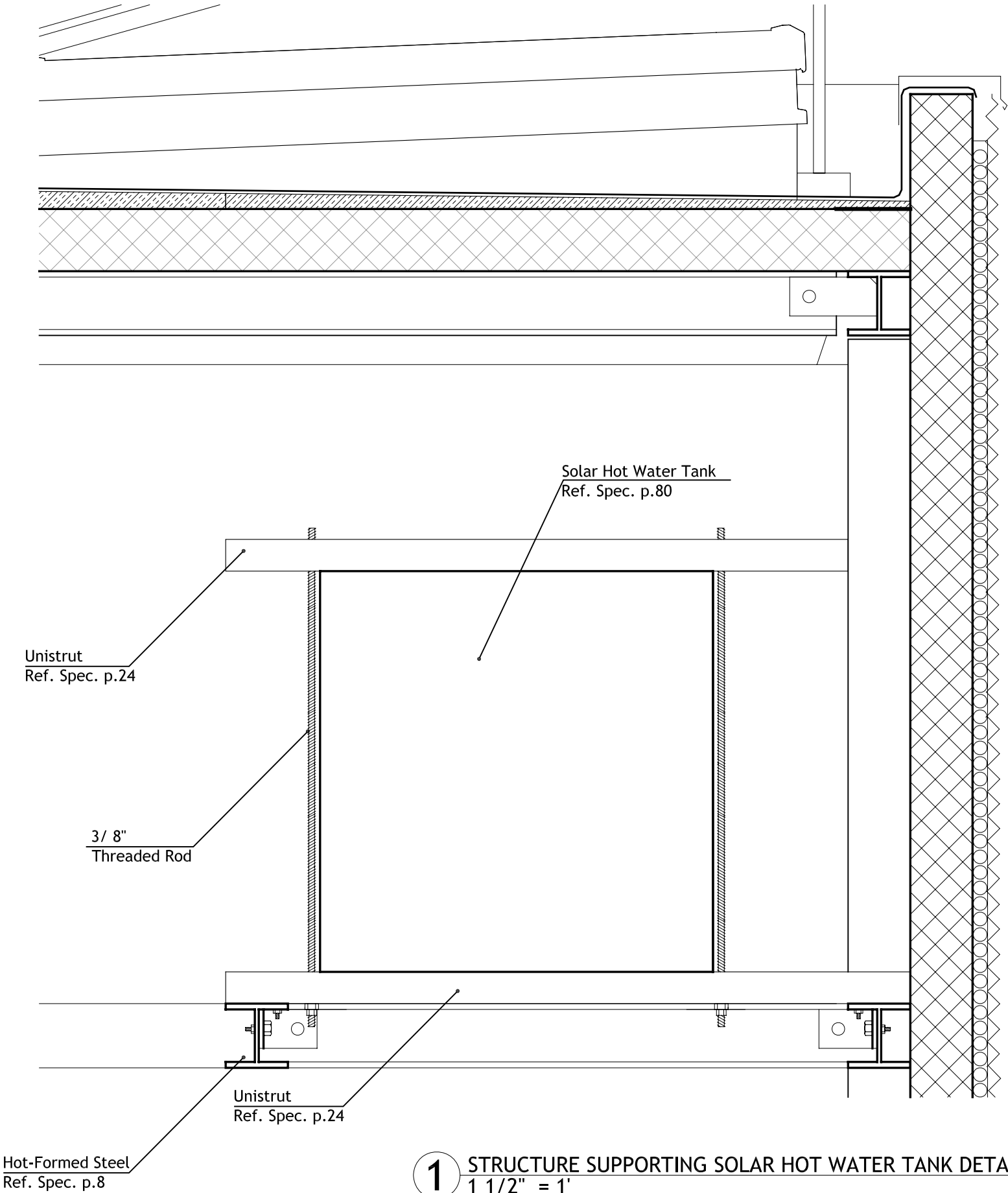
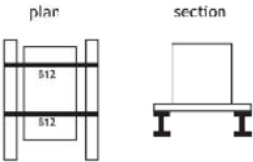
Dimensions- 2 7/16" x 1 5/8" x 6"  
I- 0.5349 in<sup>4</sup>  
S<sub>x</sub>- 0.4061 in<sup>3</sup>

Span - 2.67 ft  
Weight = 650 lbs  
Regulations require 50 psf  
W= 9 sq.ft. x 55 PSF = 495 lbs

$M = WL/8 = (650\text{lbs} \times 32") / 8 = 2.6\text{K-in}$

$S_x = 2.6 \text{ K-in} / 25 \text{ ksi} = 0.104 \text{ in}^3$

$0.406 \text{ in}^3 > 0.104 \text{ in}^3 \quad \text{OK}$



**1** STRUCTURE SUPPORTING SOLAR HOT WATER TANK DETAIL AA  
1 1/2" = 1'

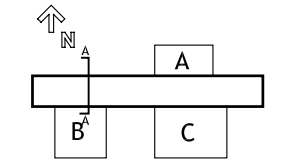


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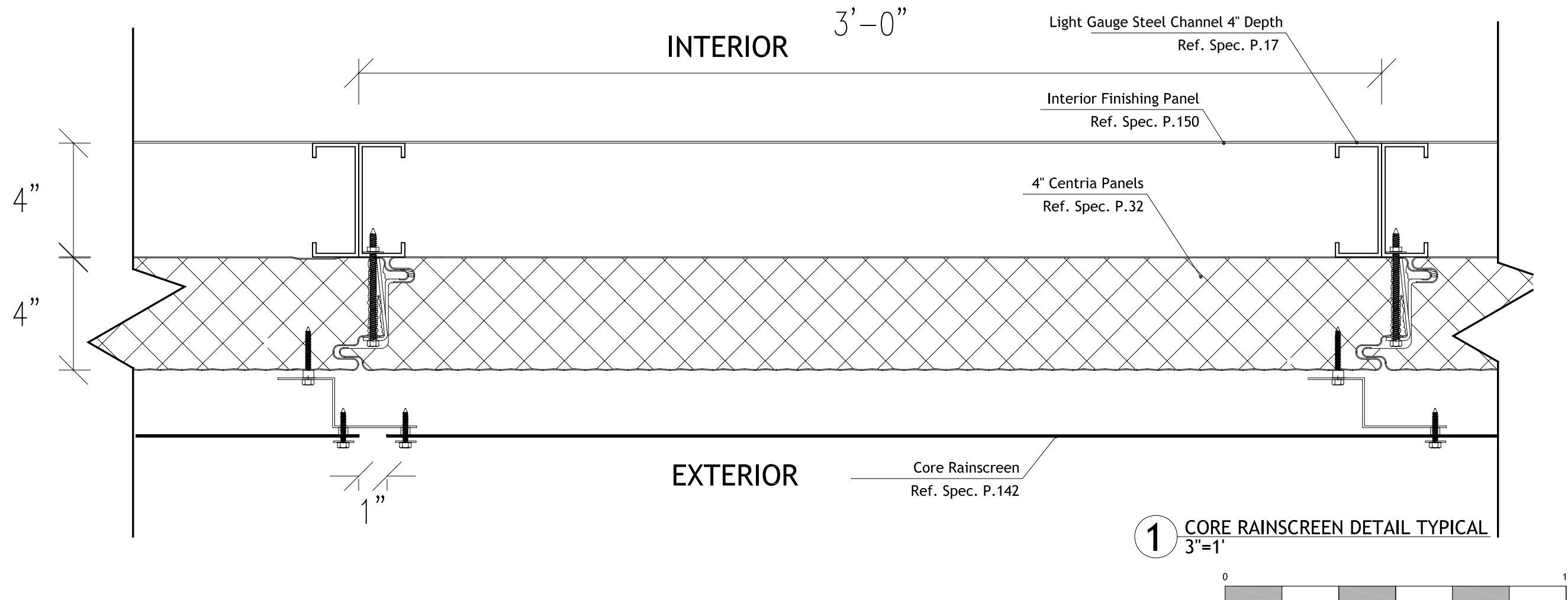
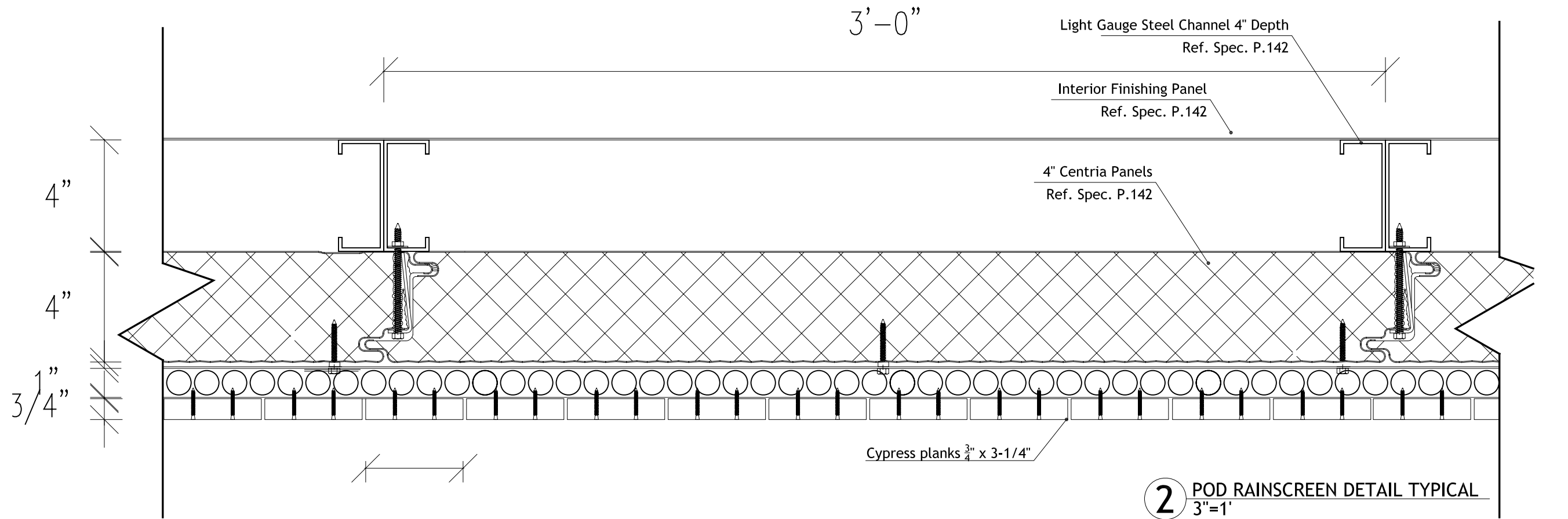
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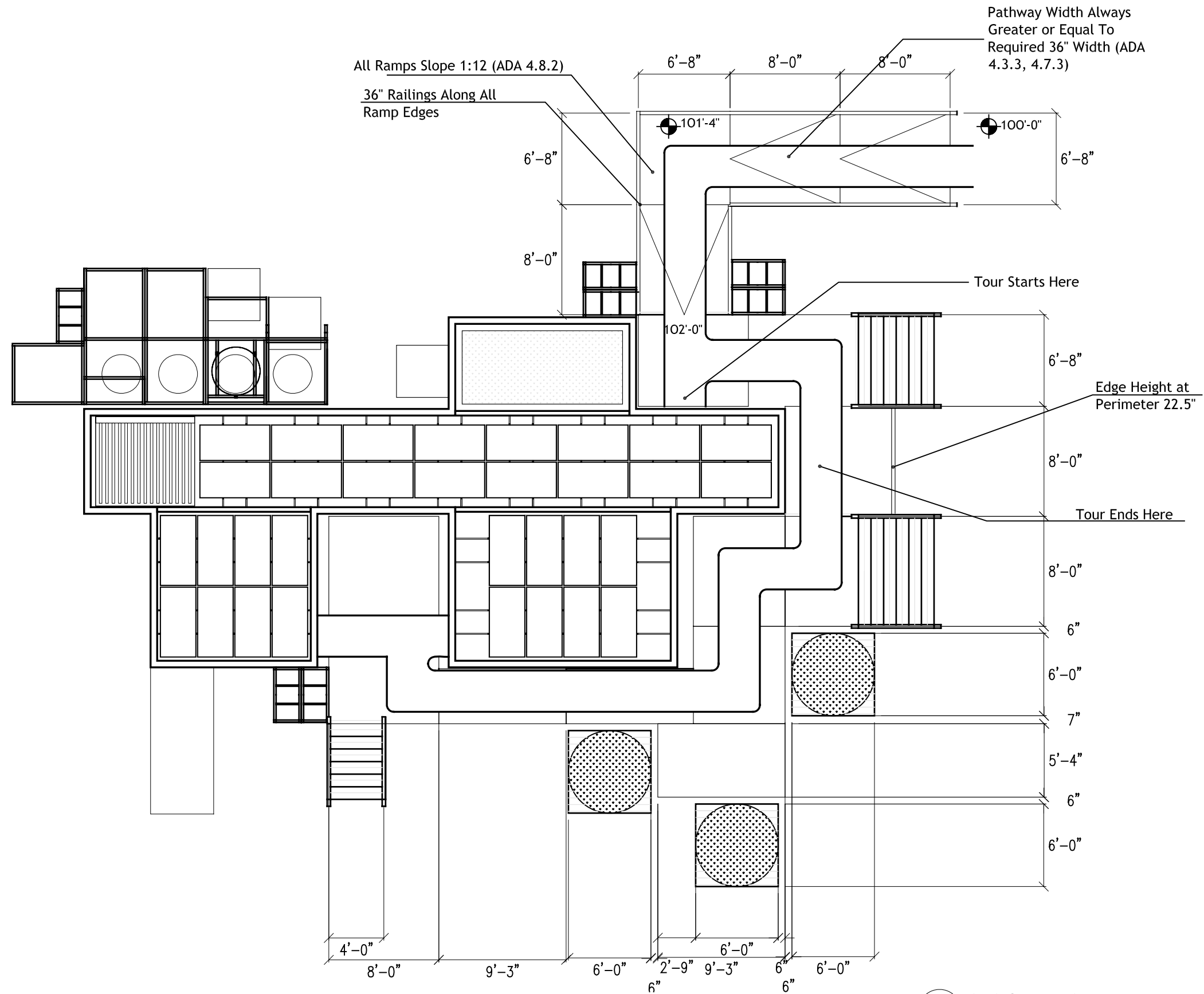
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DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: BULKHEAD DETAIL



**A4.12**





**1** ADA SITE PLAN  
1/8"=1'

0 2' 4' 8' 16'

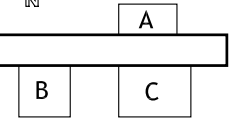



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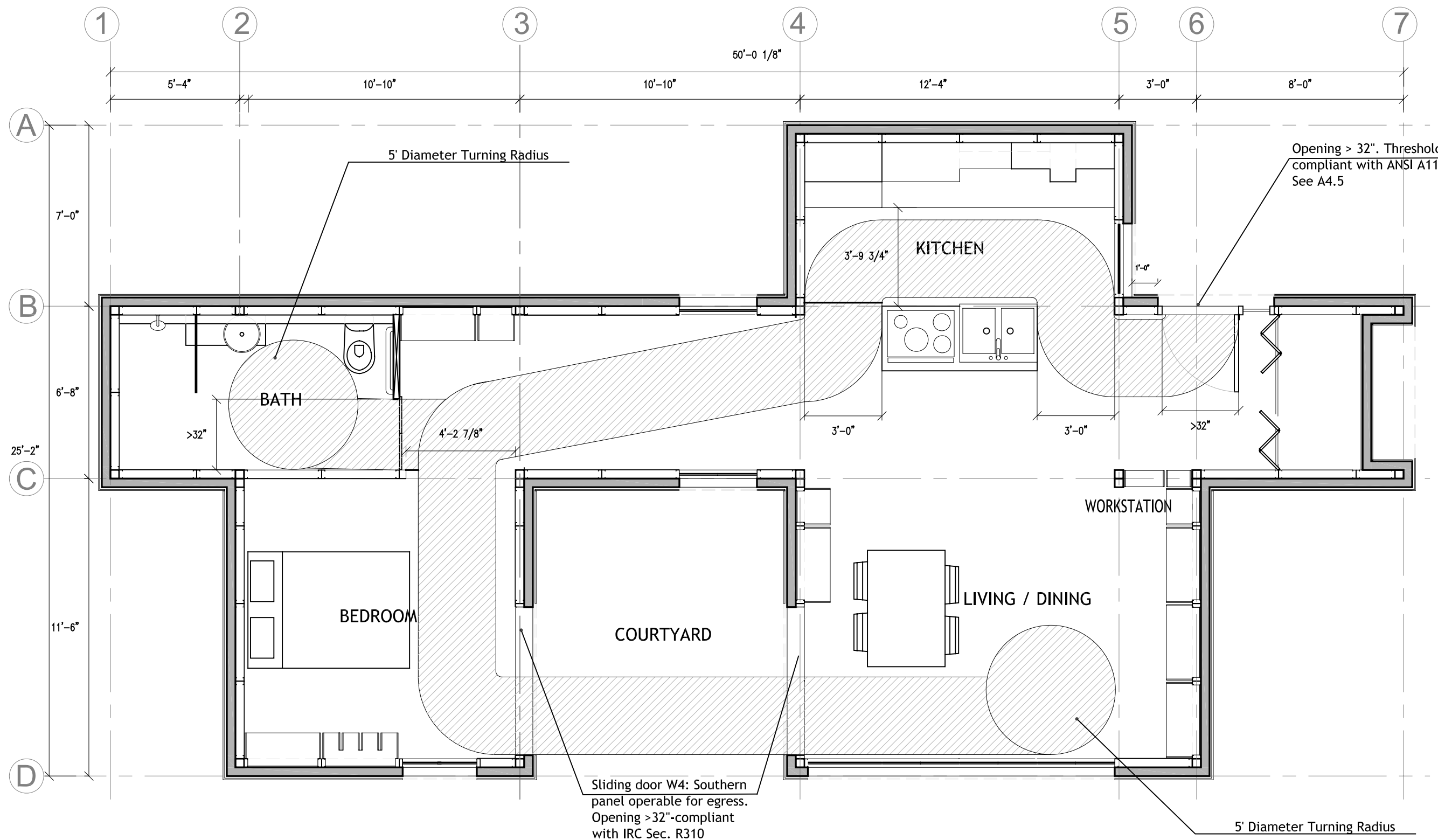
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# ADA1





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↑ N

A

B C

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DATE: 08/07/2007  
TITLE: ADA PLAN

**ADA2**

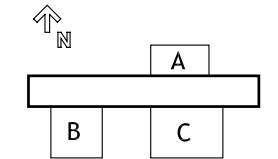
**1 ADA HOUSE PLAN**  
1/4"=1'  
0 1' 2' 4' 8'

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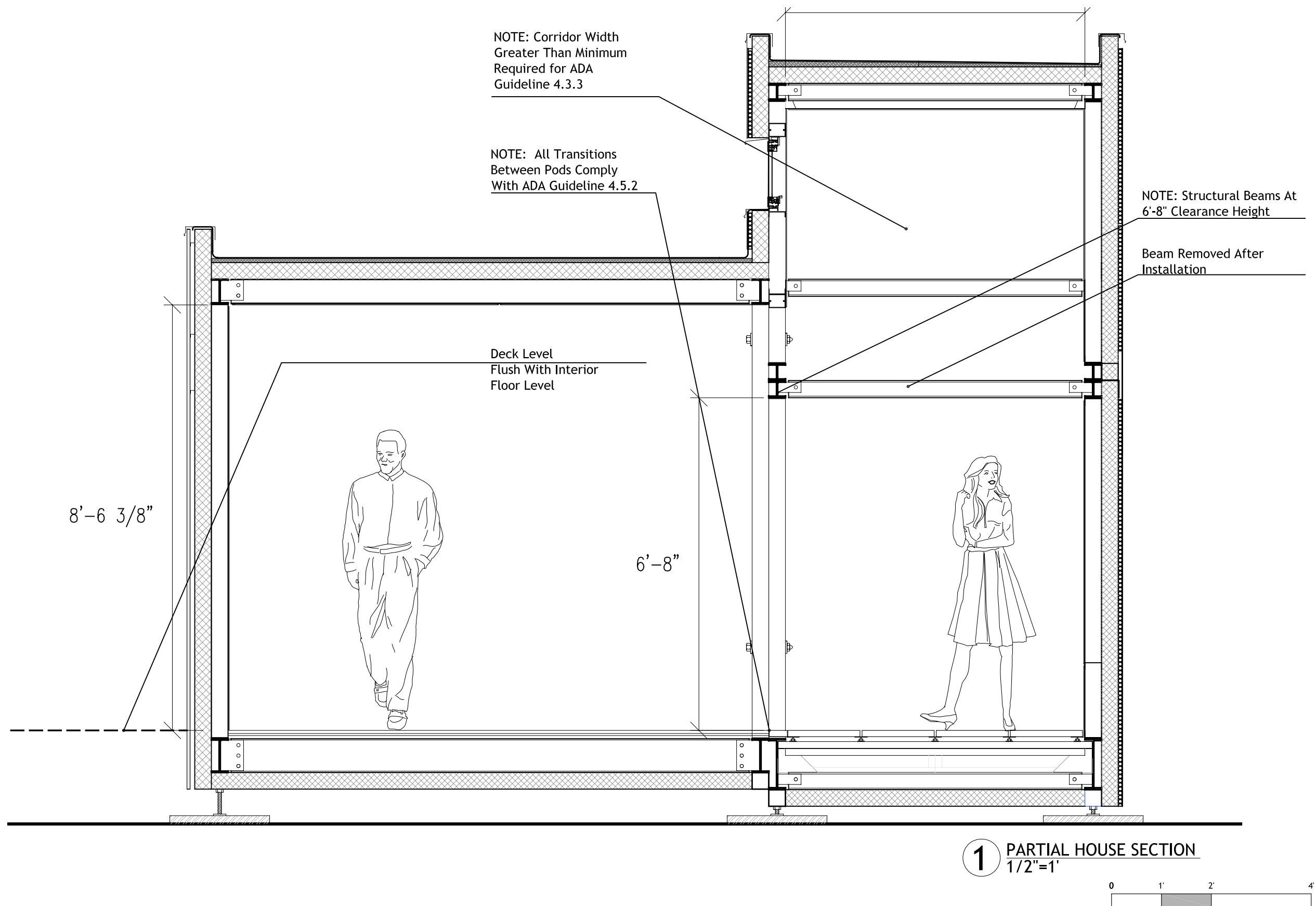
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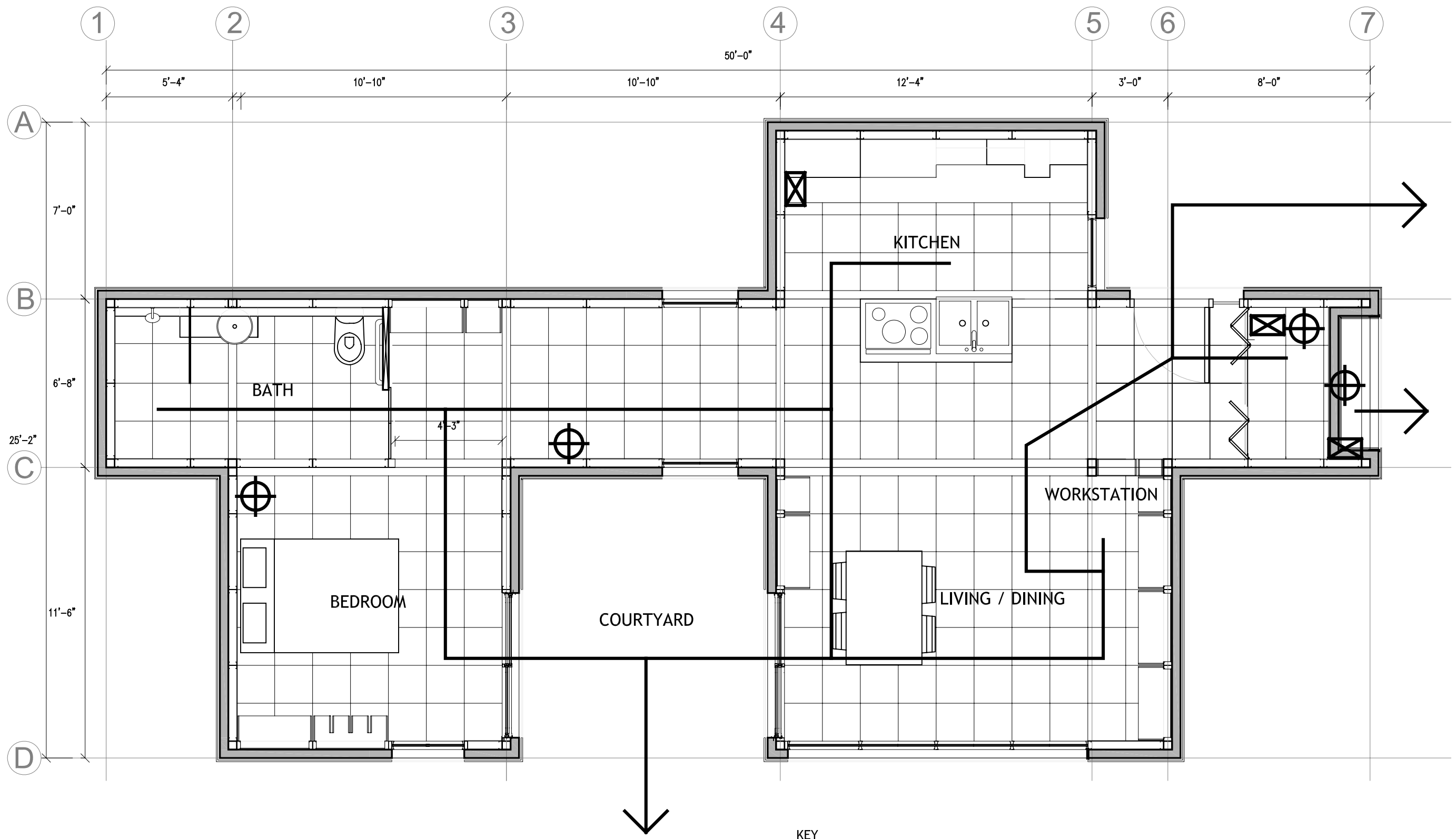


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DATE: 08/07/2007  
TITLE: ADA SECTION

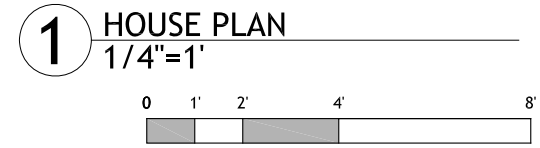
**ADA3**







- KEY
- FIRE EXTINGUISHER
  - SMOKE DETECTOR
  - ESCAPE ROUTES



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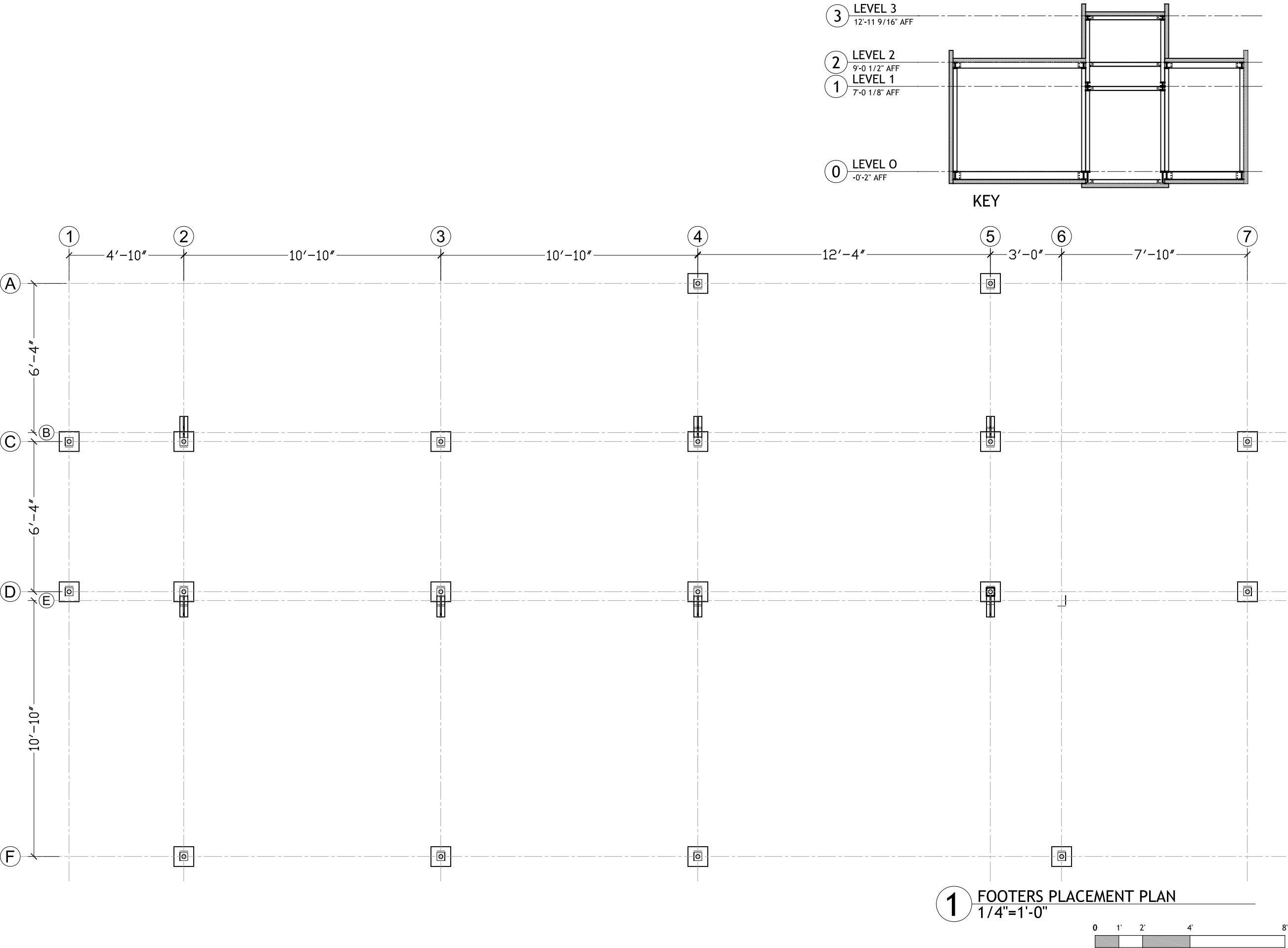
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DRAWN BY:	JOHN EASTRIDGE
DATE:	08/07/2007
TITLE:	HOUSE PLAN

F1

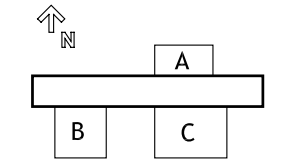


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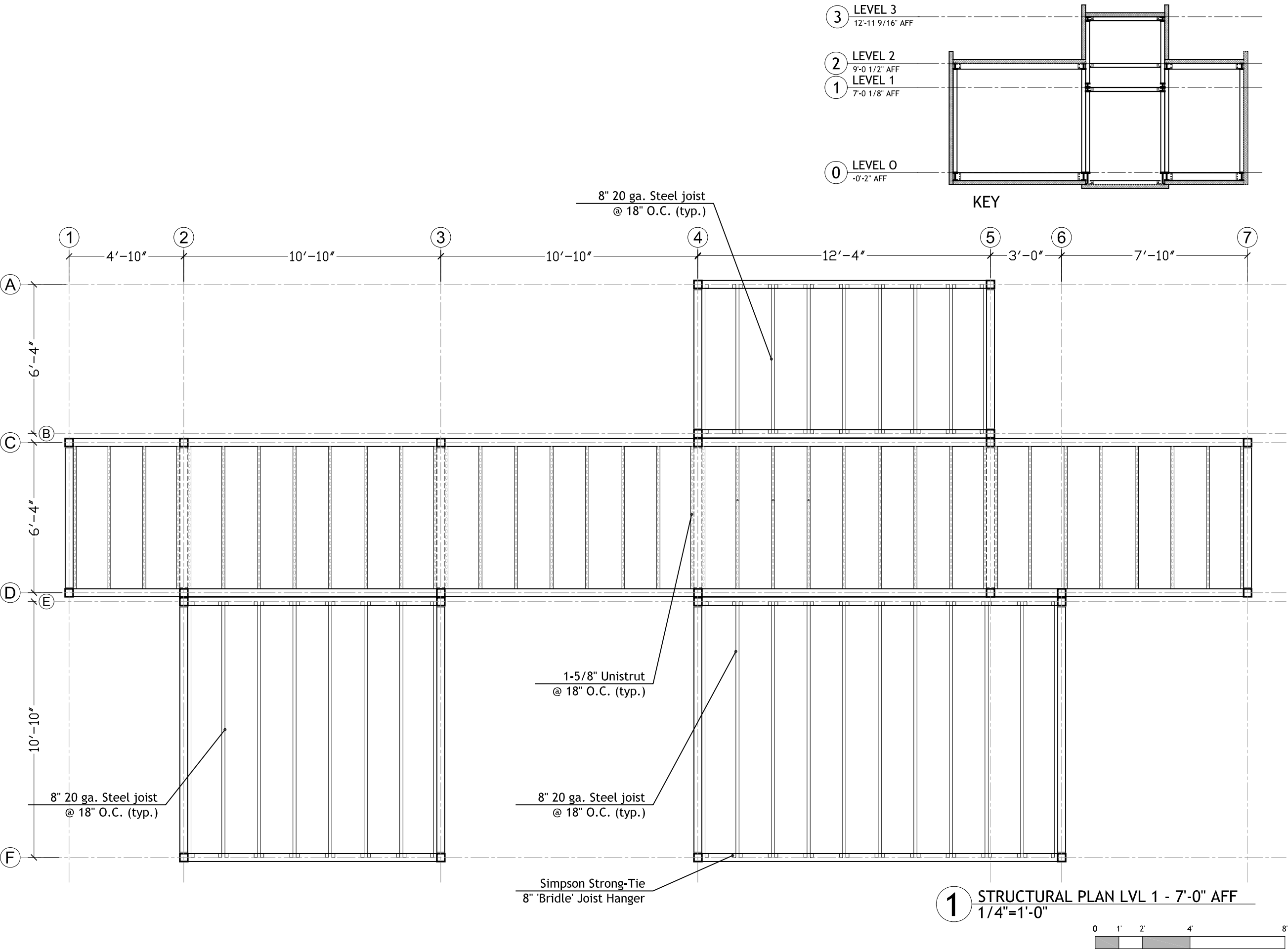
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DRAWN BY: JEFF BOURKE  
DATE: 08/07/2007  
TITLE: FOOTER PLAN

**S 1.0**



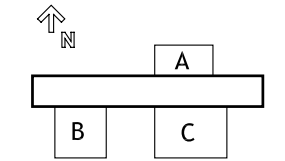
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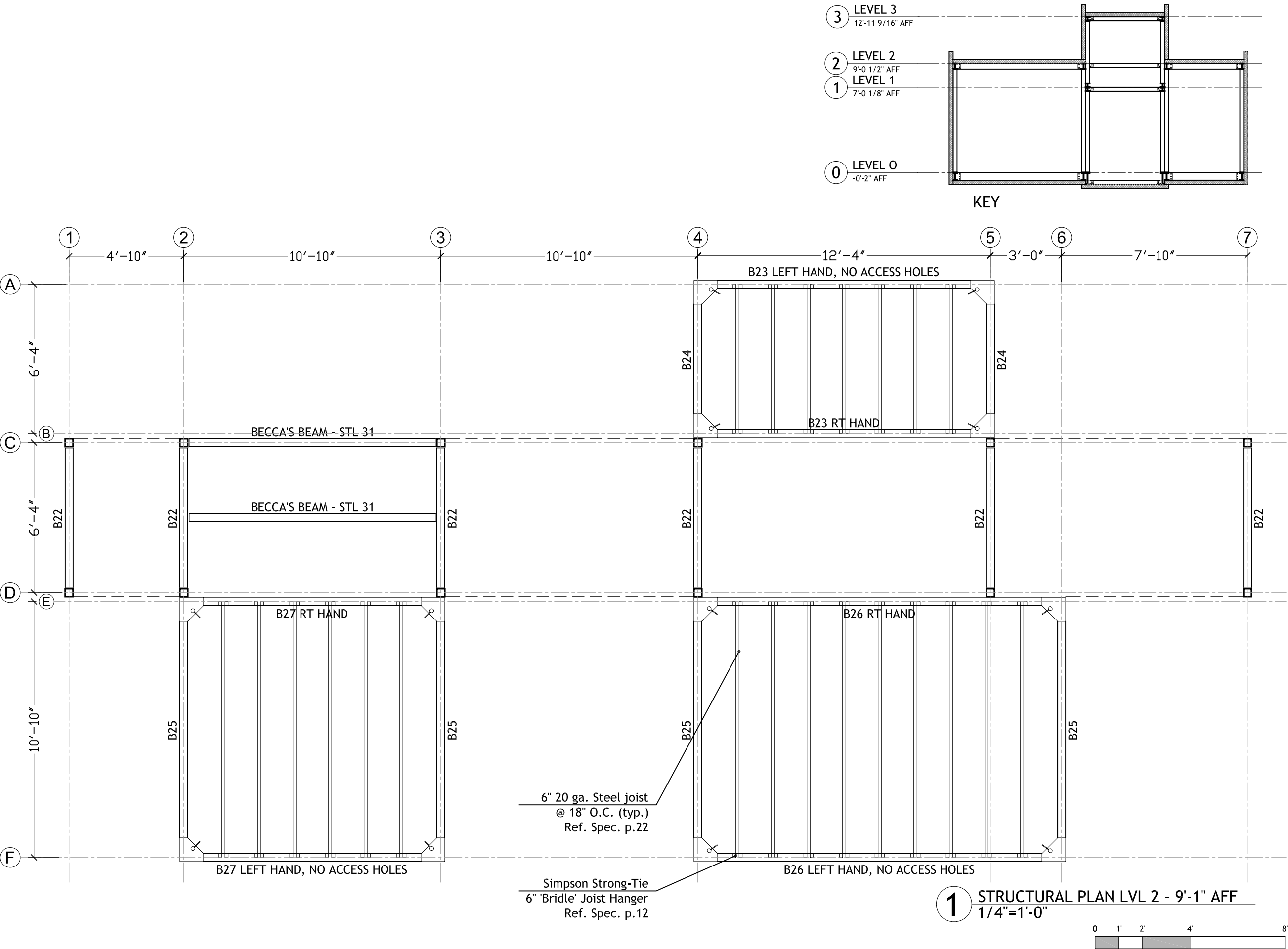
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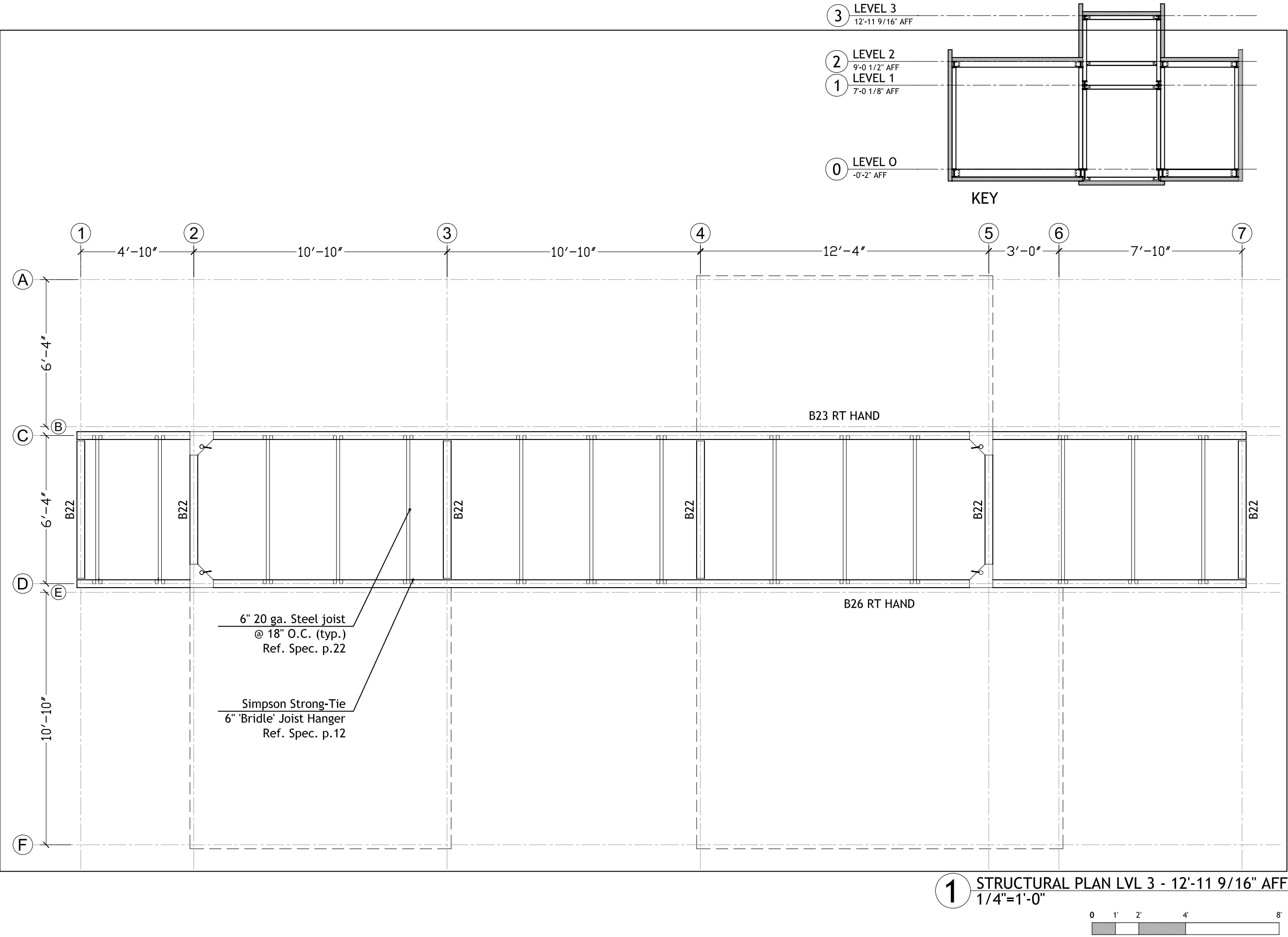
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DRAWN BY: JEFF BOURKE  
DATE: 08/07/2007  
TITLE: STRUCTURAL PLANS

**S 1.1**





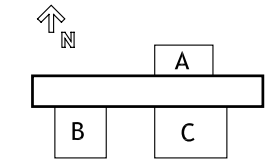
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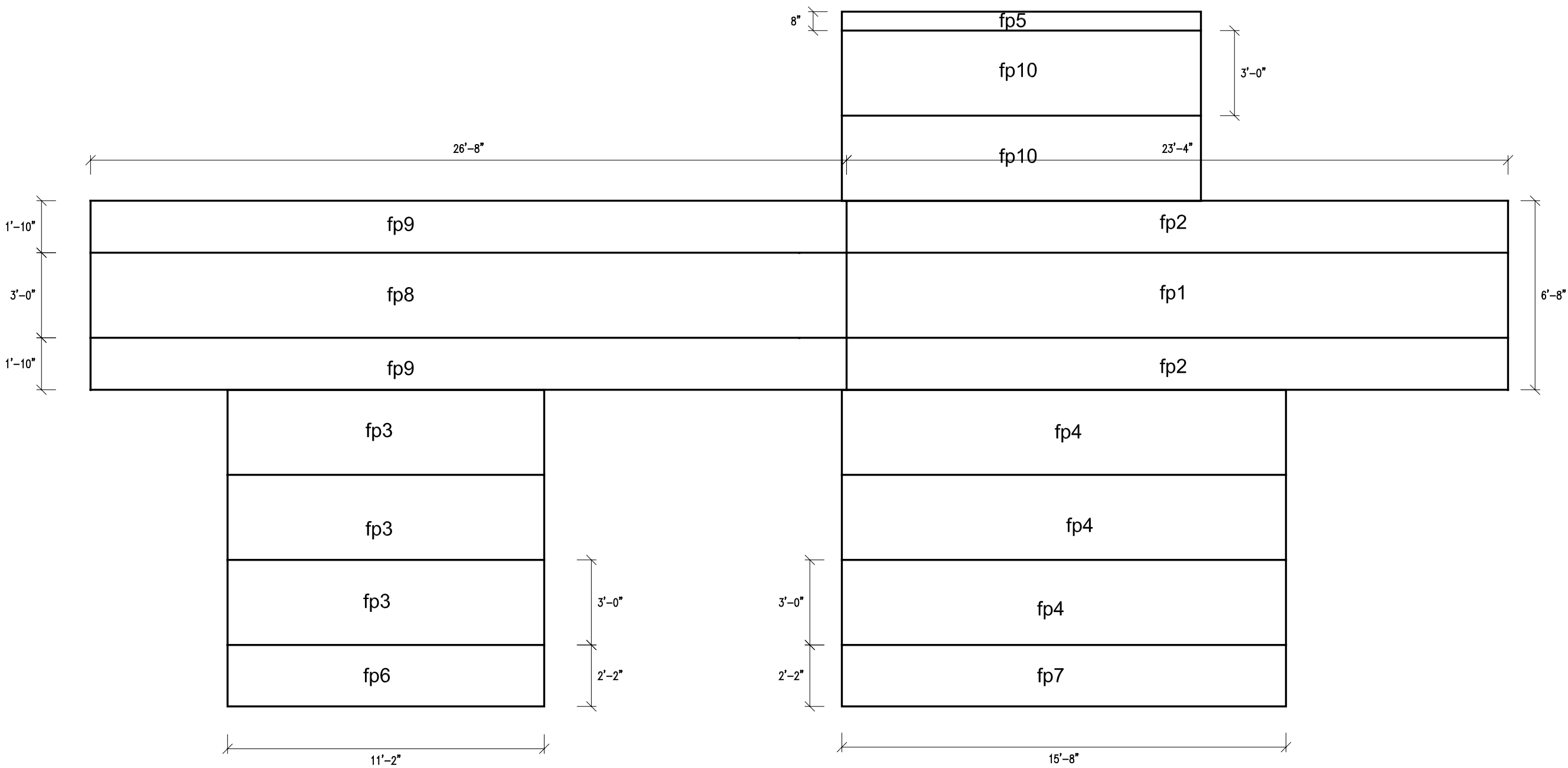
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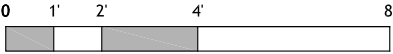
DRAWN BY: JEFF BOURKE  
DATE: 08/07/2007  
TITLE: STRUCTURAL PLANS

S 1.3



SEE S4.13 FOR SCHEDULE

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

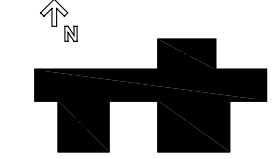


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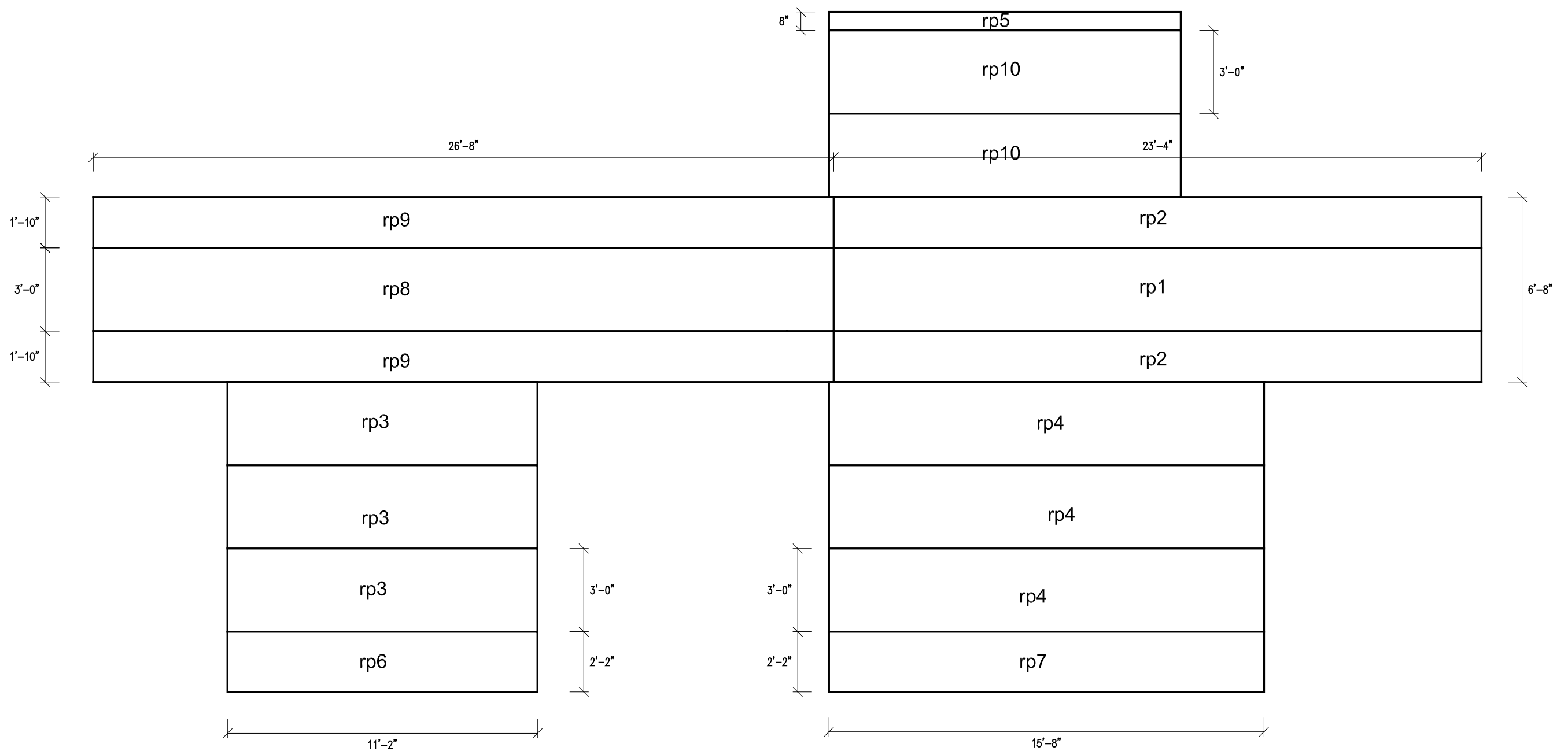
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DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: FLOOR PANEL PLAN

**S 1.4**







SEE S4.13 FOR SCHEDULE

**1** PANEL LAYOUT ROOF PLAN  
1/4"=1'-0"



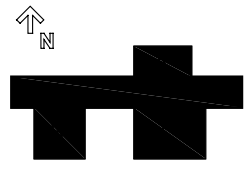


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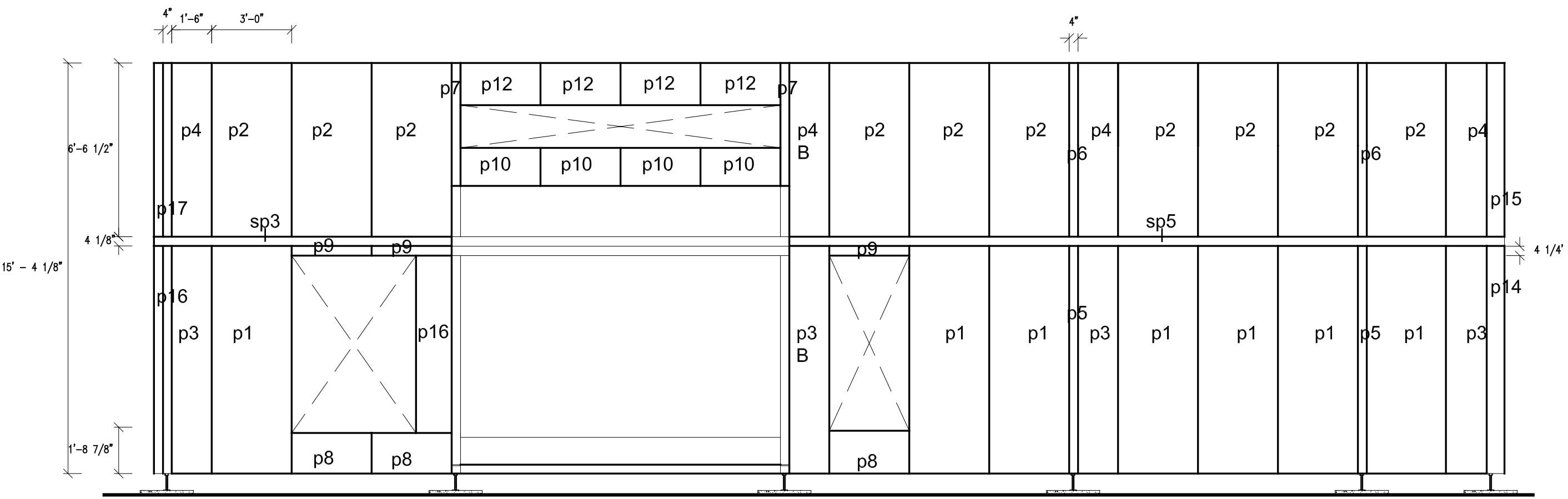
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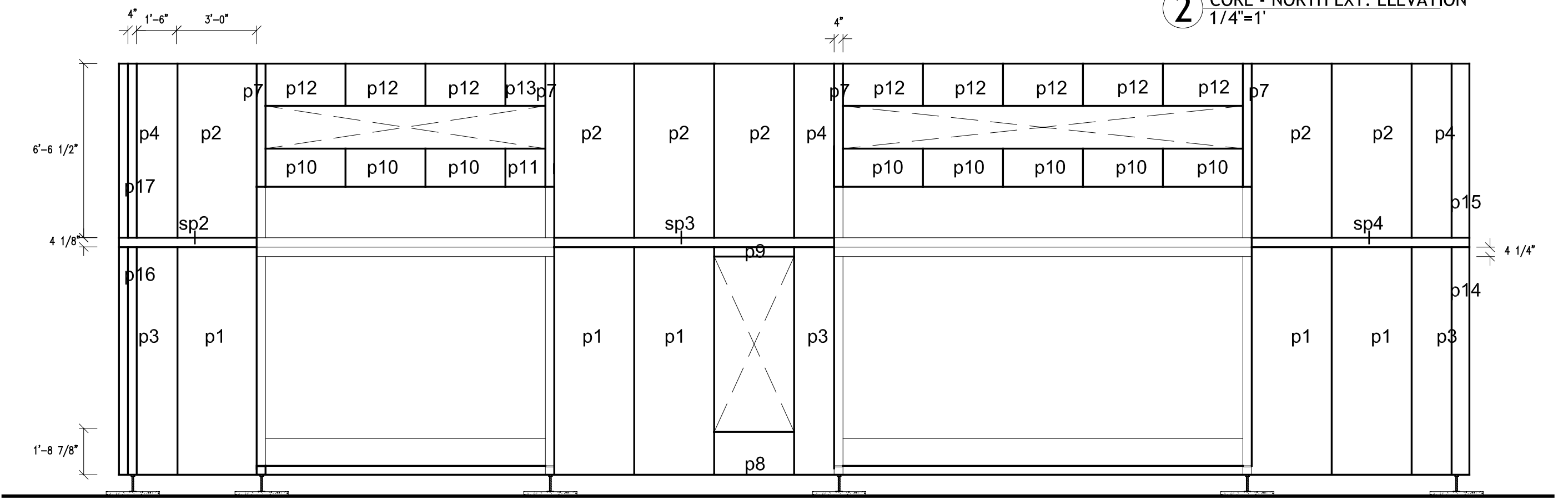


DRAWN BY:	JOHN EASTRIDGE
DATE:	08/07/2007
TITLE:	ROOF PANEL PLAN

S 1.5



2 CORE - NORTH EXT. ELEVATION  
1/4"=1'



SEE S4.13 FOR SCHEDULE

1 CORE - SOUTH EXT. ELEVATION  
1/4"=1'

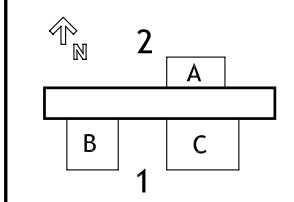


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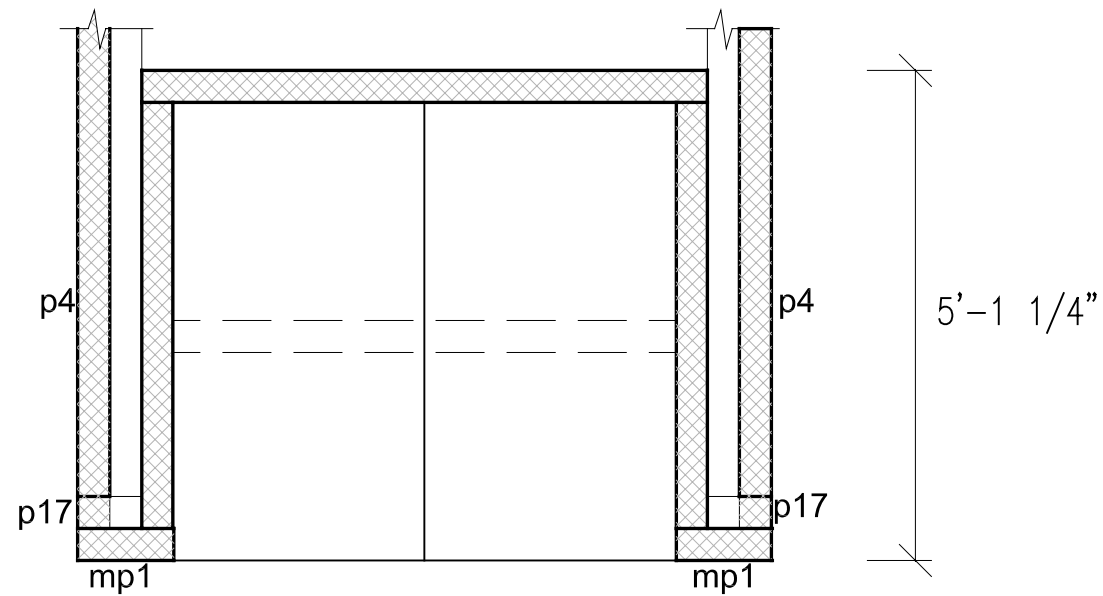
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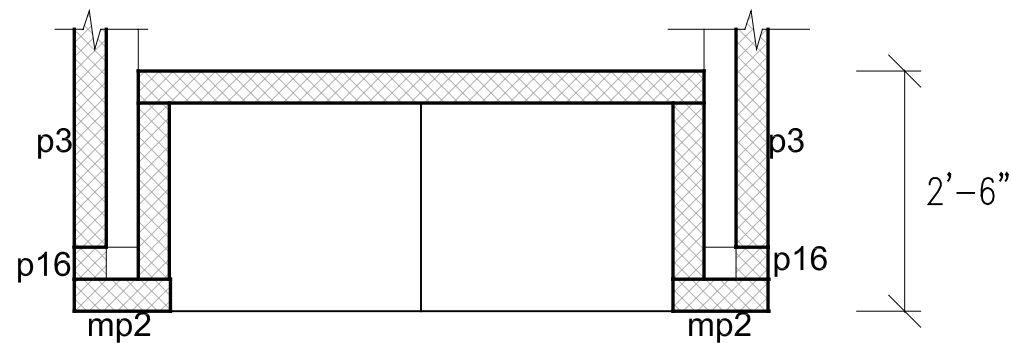


DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: CORE N-S PANEL ELEVATIONS

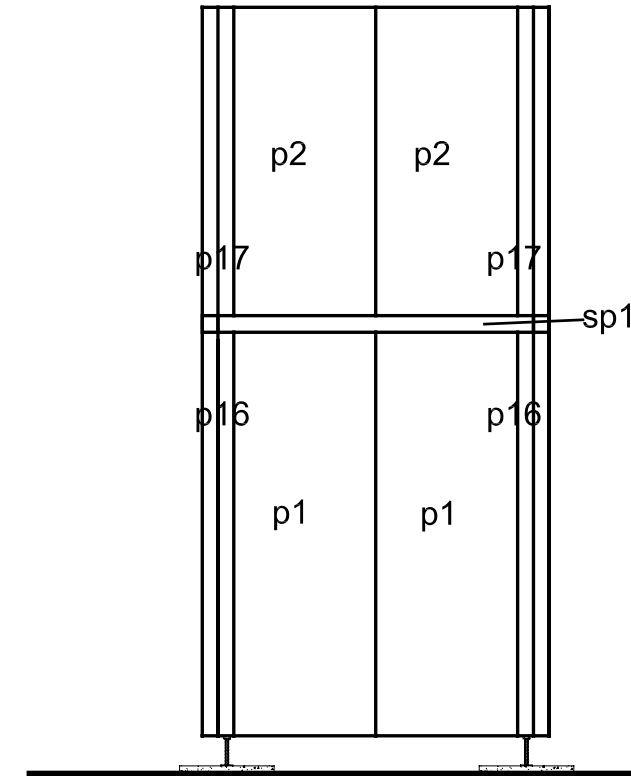
S 2.0



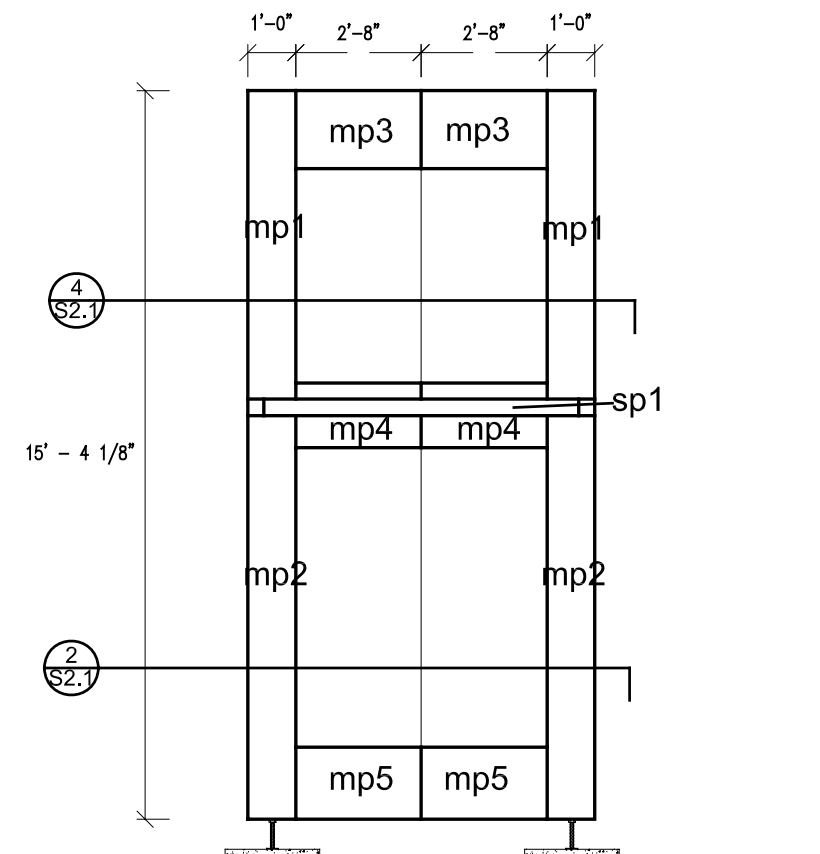
4 CORE - EAST PLAN DETAIL  
1/2"=1'



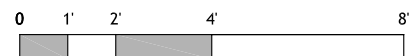
2 CORE - EAST PLAN DETAIL  
1/2"=1'



3 CORE - WEST EXT. ELEVATION  
1/4"=1'



1 CORE - EAST EXT. ELEVATION  
1/4"=1'

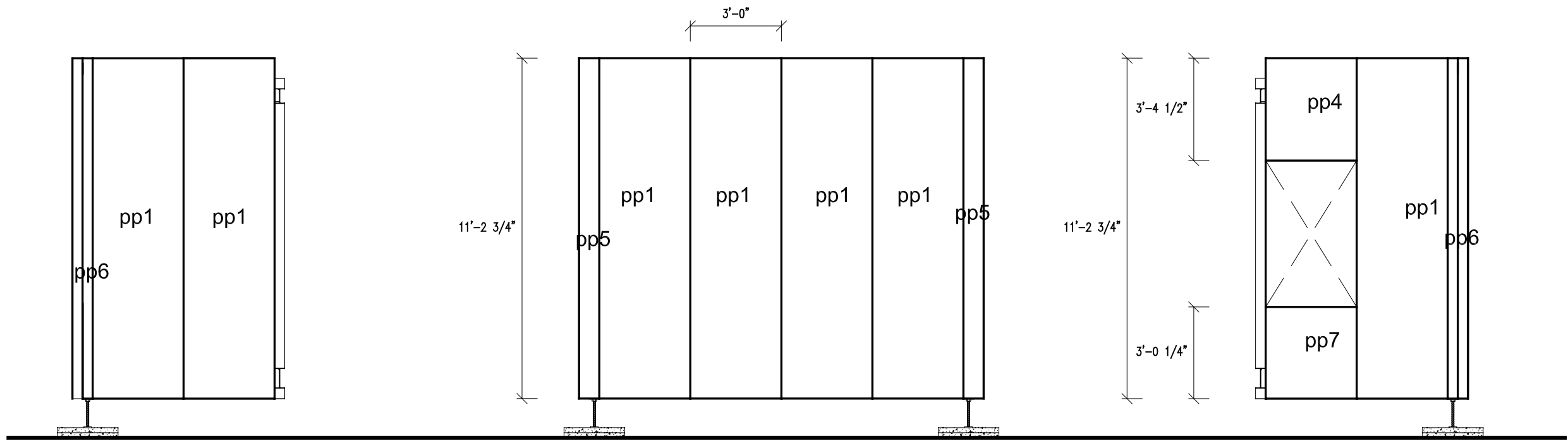


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SEE S4.13 FOR SCHEDULE



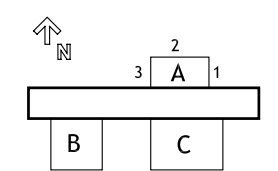
**3** POD A - WEST EXT. ELEVATION  
1/4"=1'

**2** POD A - NORTH EXT. ELEVATION  
1/4"=1'

**1** POD A - EAST EXT. ELEVATION  
1/4"=1'



CONTACT:  
Steve Lee  
p:412.726.6503  
f:412.268.7819



DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: POD A PANEL ELEVATION

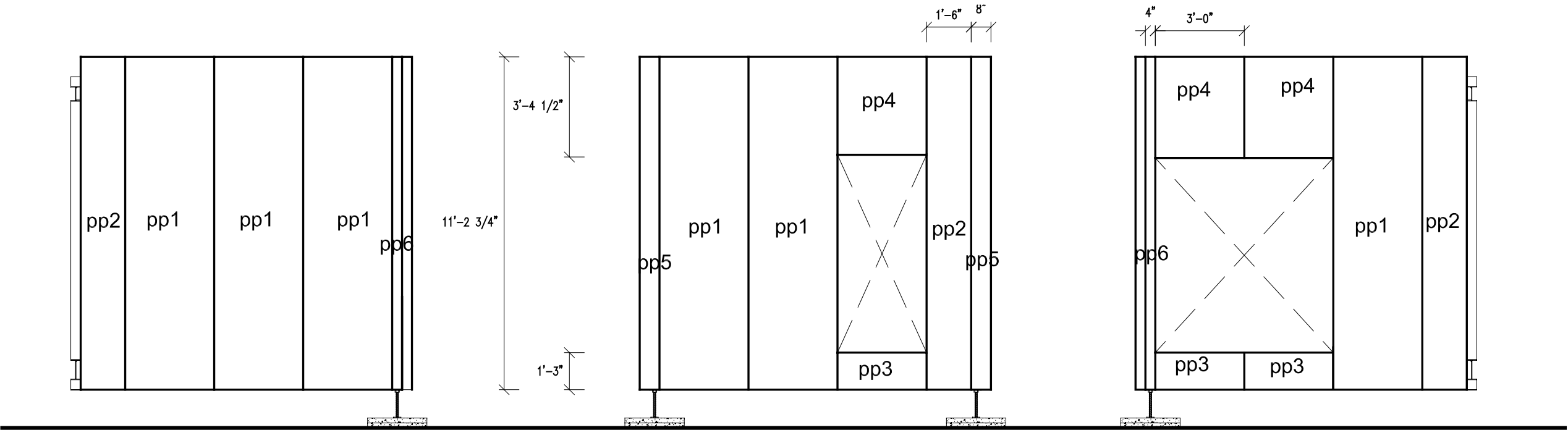
**S 2.A**

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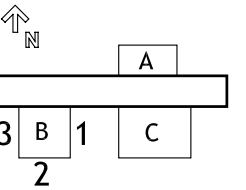


**3** POD B - WEST EXT. ELEVATION  
1/4"=1'

**2** POD B - SOUTH EXT. ELEVATION  
1/4"=1'

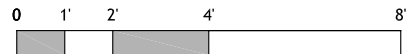
**1** POD B - EAST EXT. ELEVATION  
1/4"=1'

CONTACT:  
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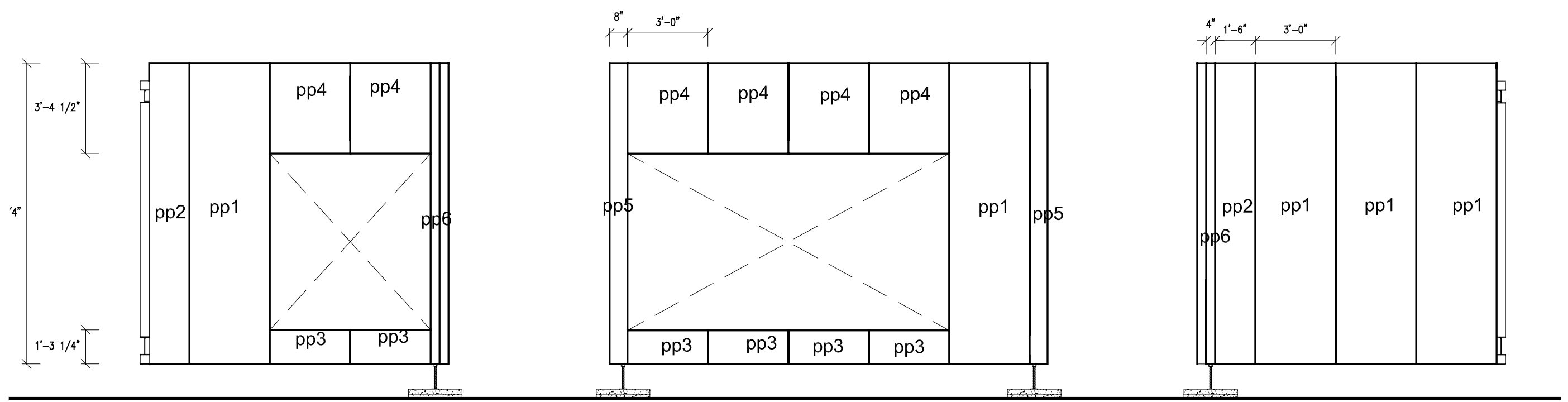


DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: POD B PANEL ELEVATIONS

**S 2.B**



SEE S4.13 FOR SCHEDULE



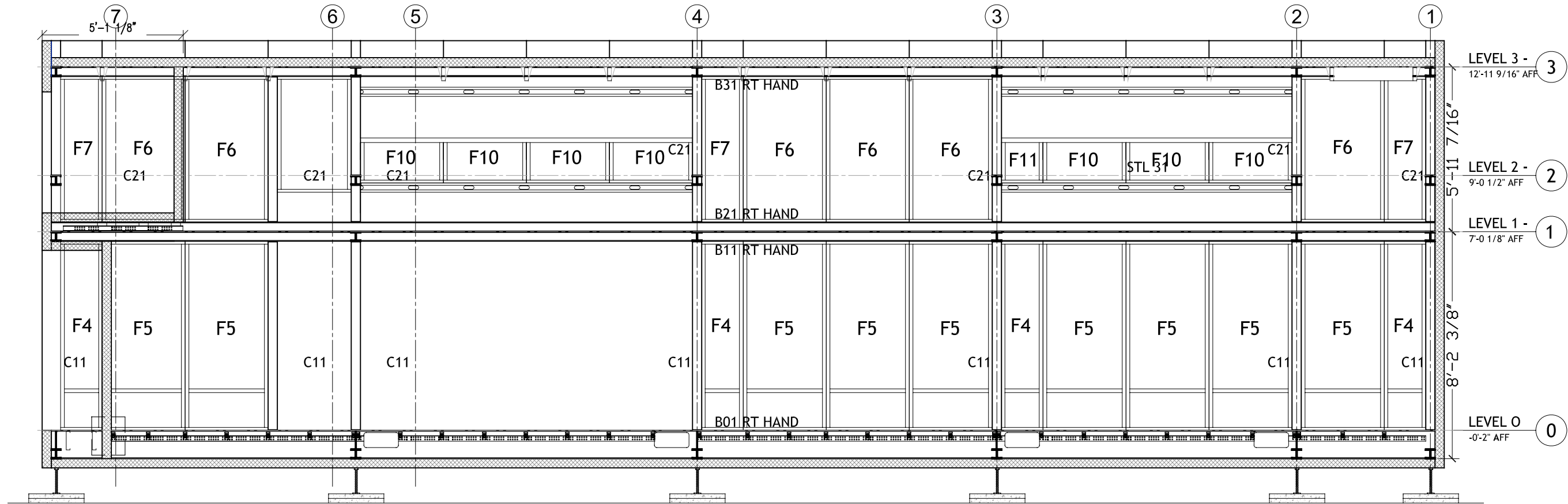
**3** POD C - WEST EXT. ELEVATION  
1/4"=1'

**2** POD C - SOUTH EXT. ELEVATION  
1/4"=1'

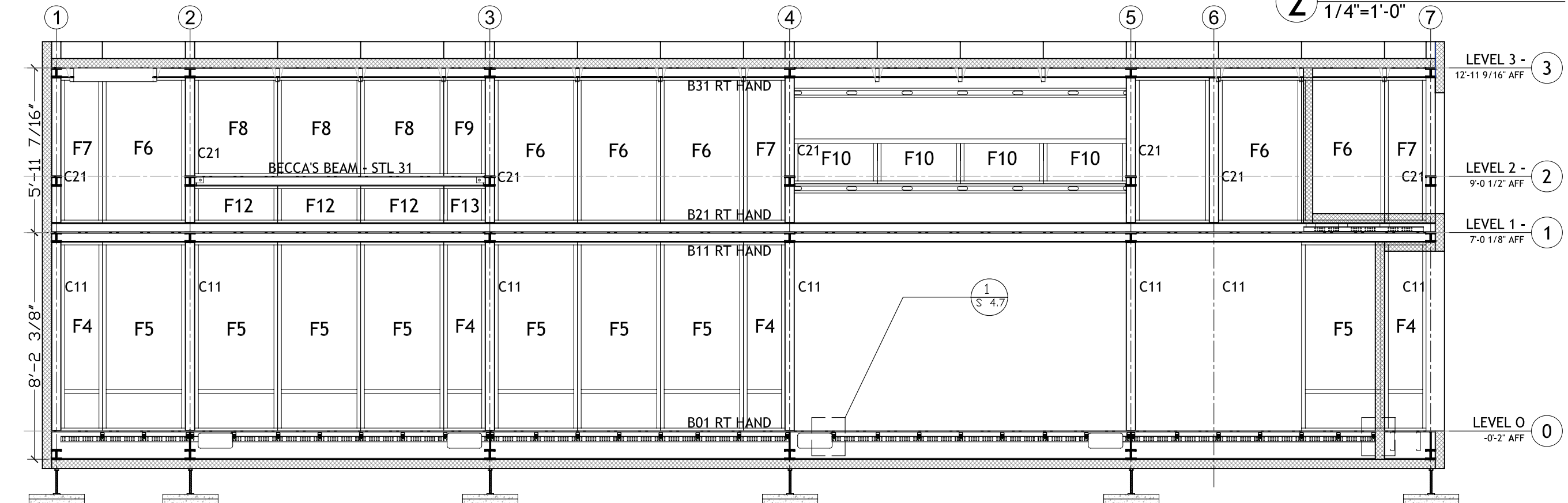
**1** POD C - EAST EXT. ELEVATION  
1/4"=1'







**2** STRUCTURAL SECTION BB  
1/4"=1'-0"



**1** STRUCTURAL SECTION AA  
1/4"=1'-0"



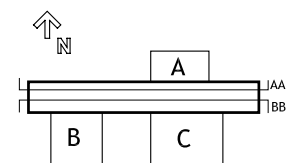
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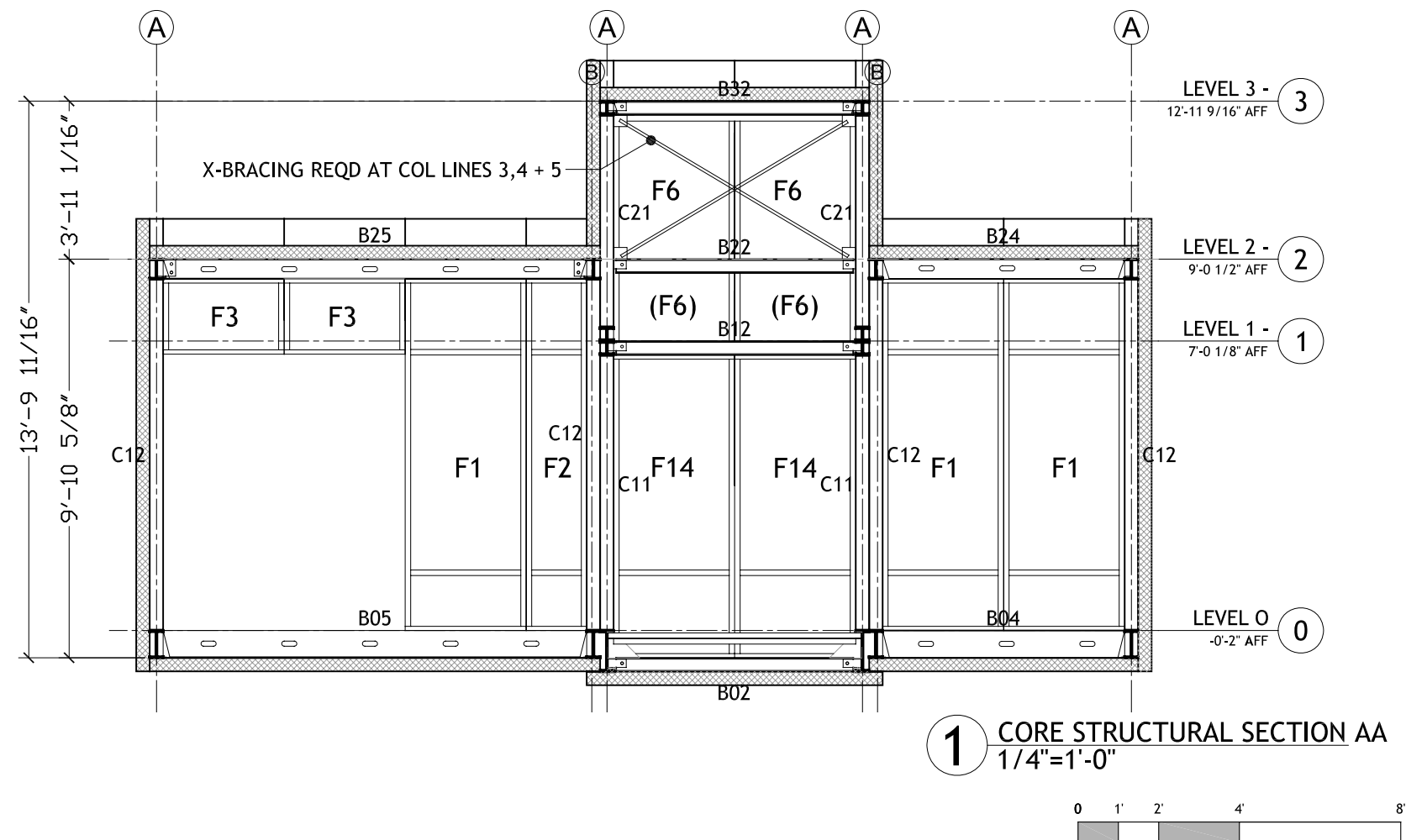
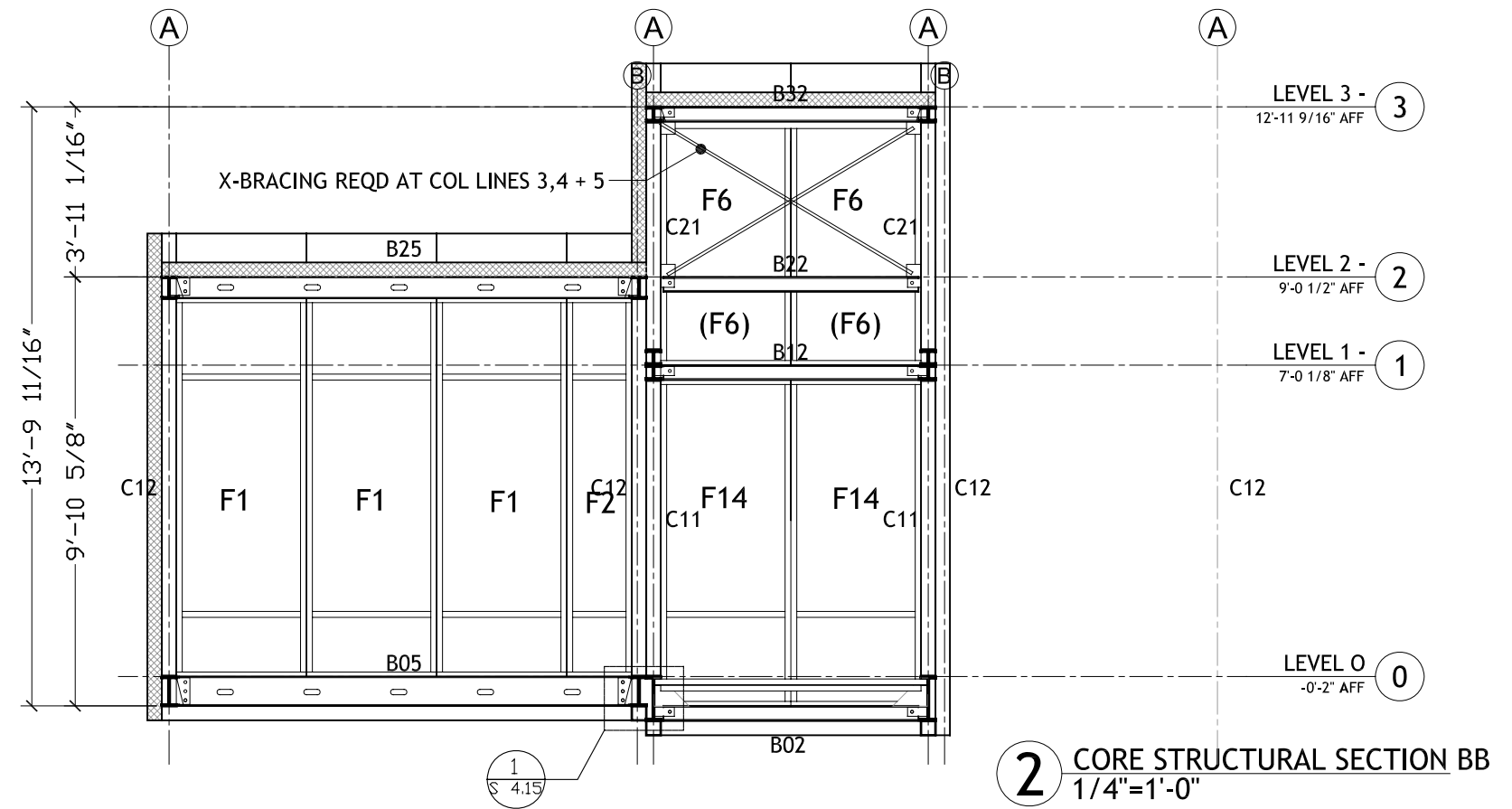
REVISED 7/19 DMW  
REVISED 8/05 DMW

**CONTACT:**  
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DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: STEEL FRAMING-CORE

**S 3.0**

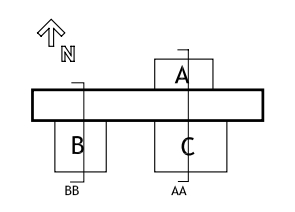


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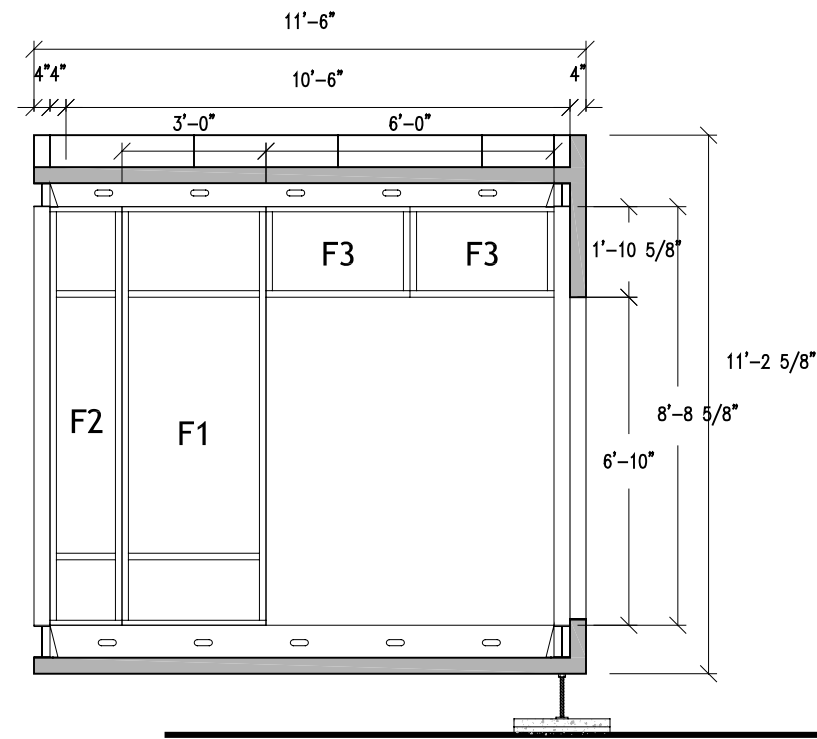
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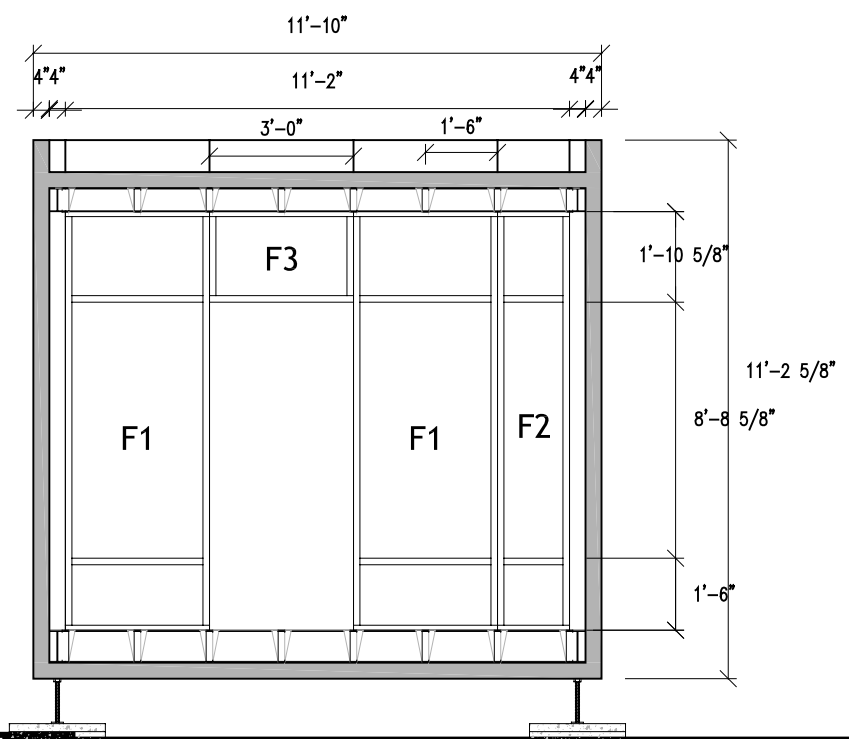


DRAWN BY: DAVID WALDRON  
DATE: 08/07/2007  
TITLE: STRUCTURAL SECTION- CORE

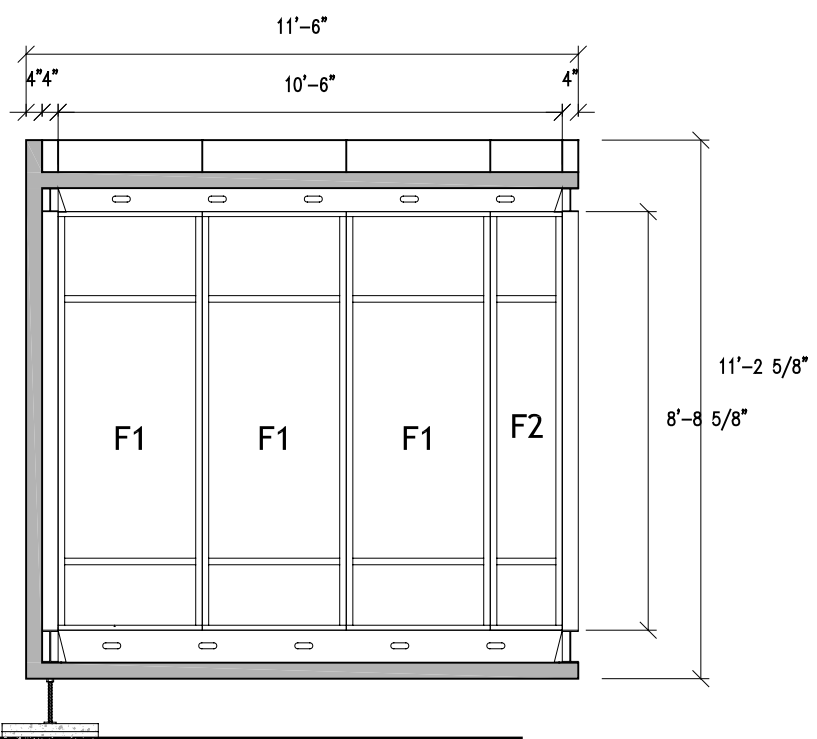
**S 3.1**



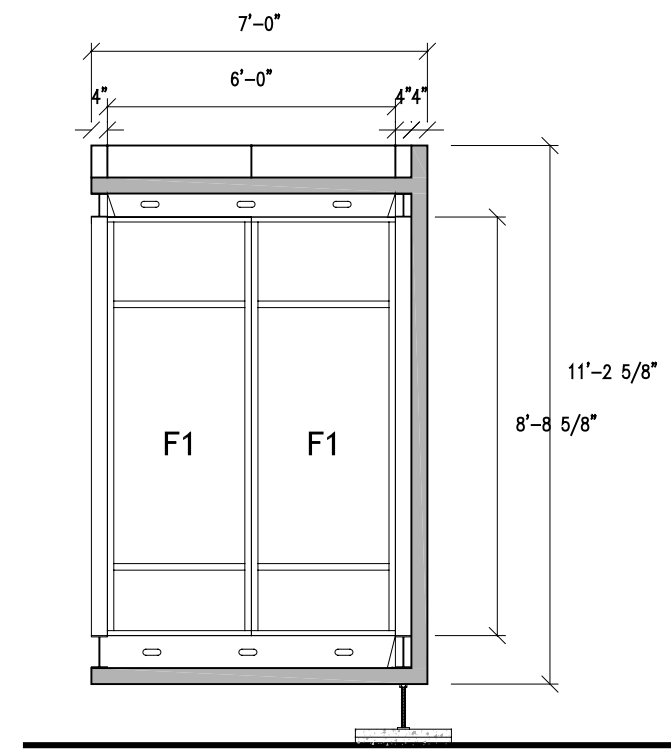
**6** POD B FRAMING SECTION FF  
1/4"=1'-0"



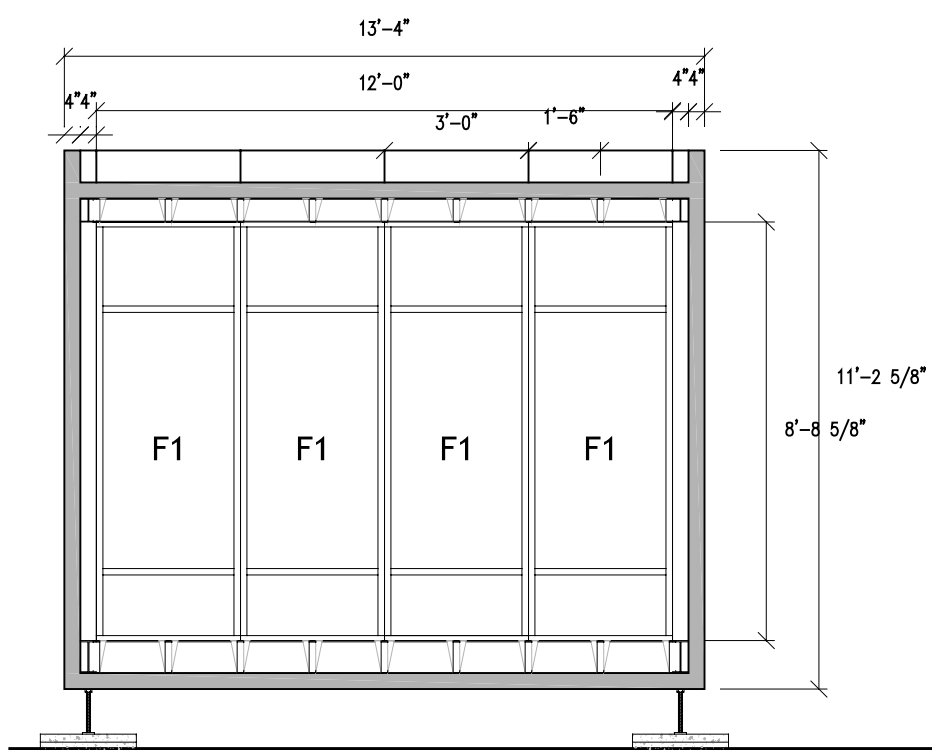
**5** POD B FRAMING SECTION EE  
1/4"=1'-0"



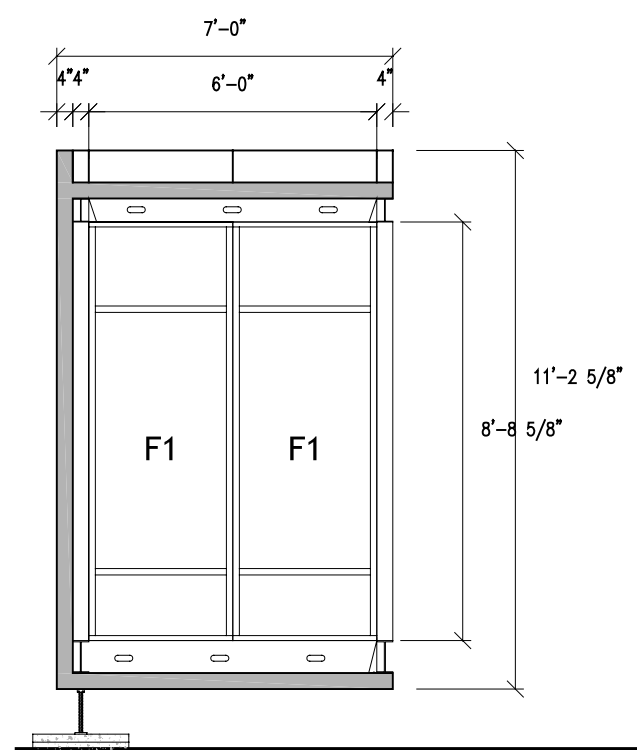
**4** POD B FRAMING SECTION DD  
1/4"=1'-0"



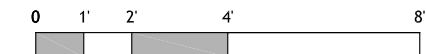
**3** POD A FRAMING SECTION CC  
1/4"=1'-0"



**2** POD A FRAMING SECTION BB  
1/4"=1'-0"



**1** POD A FRAMING SECTION AA  
1/4"=1'-0"

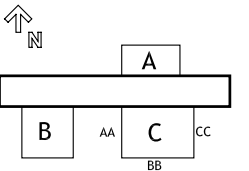


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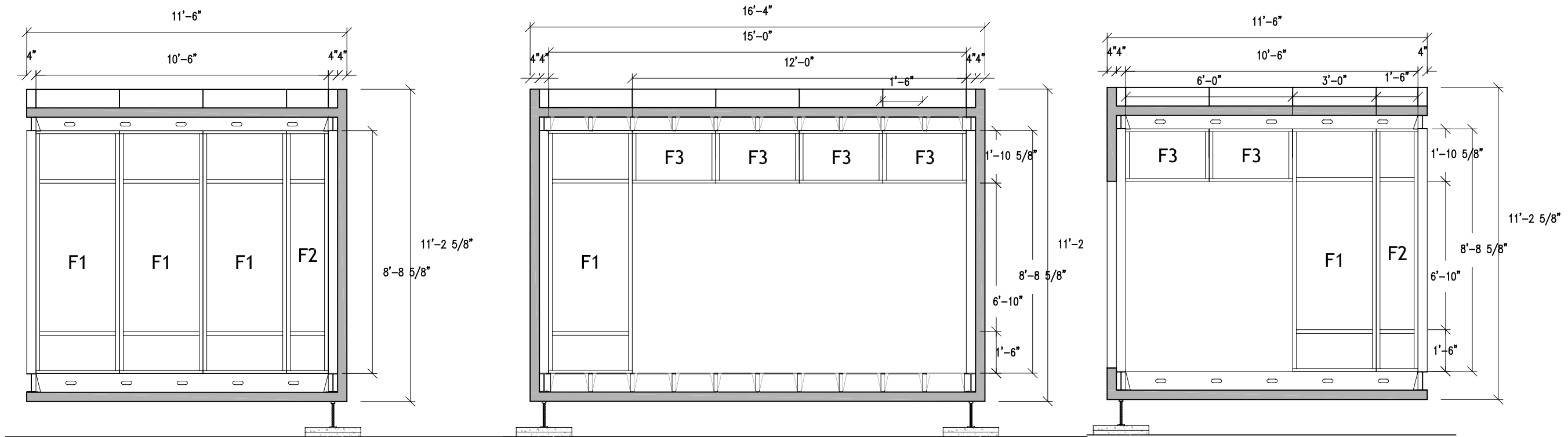
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 f:412.268.7819



DRAWN BY: DAVID WALDRON  
 DATE: 08/07/2007  
 TITLE: POD FRAMING- LIGHT GAUGE STEEL

**S 3.C**



**3** Pod C Framing Section East CC  
 1/4"=1'-0"

**2** POD C FRAMING SECTION BB  
 1/4"=1'-0"

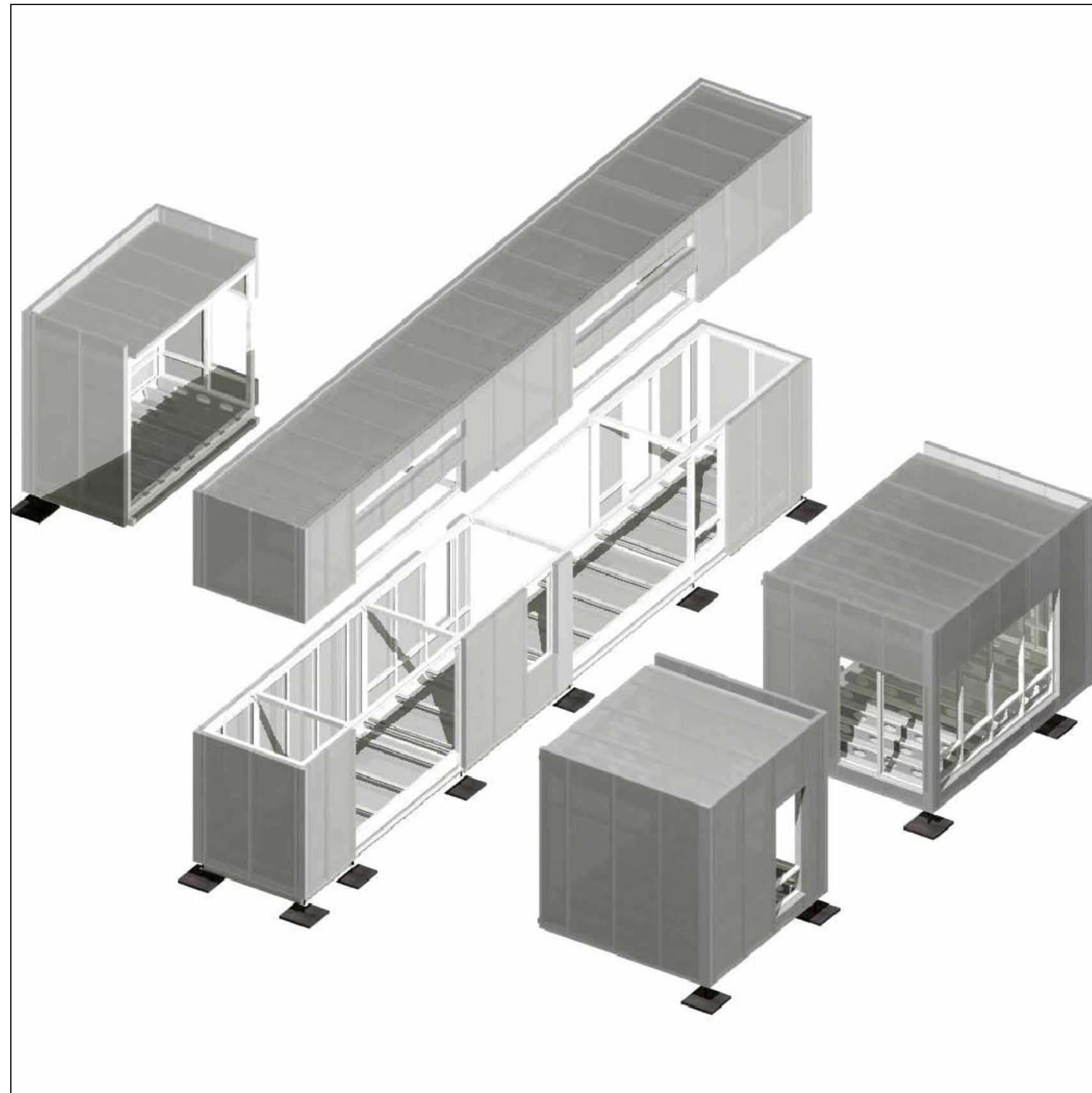
**1** POD C FRAMING SECTION AA  
 1/4"=1'-0"



4 HOT ROLLED STEEL  
NOT TO SCALE

3 COLD FORMED STEEL  
NOT TO SCALE

2 CENTRIA  
NOT TO SCALE



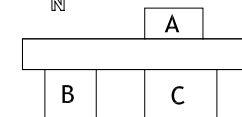
1 FULL STRUCTURAL AXON  
NOT TO SCALE

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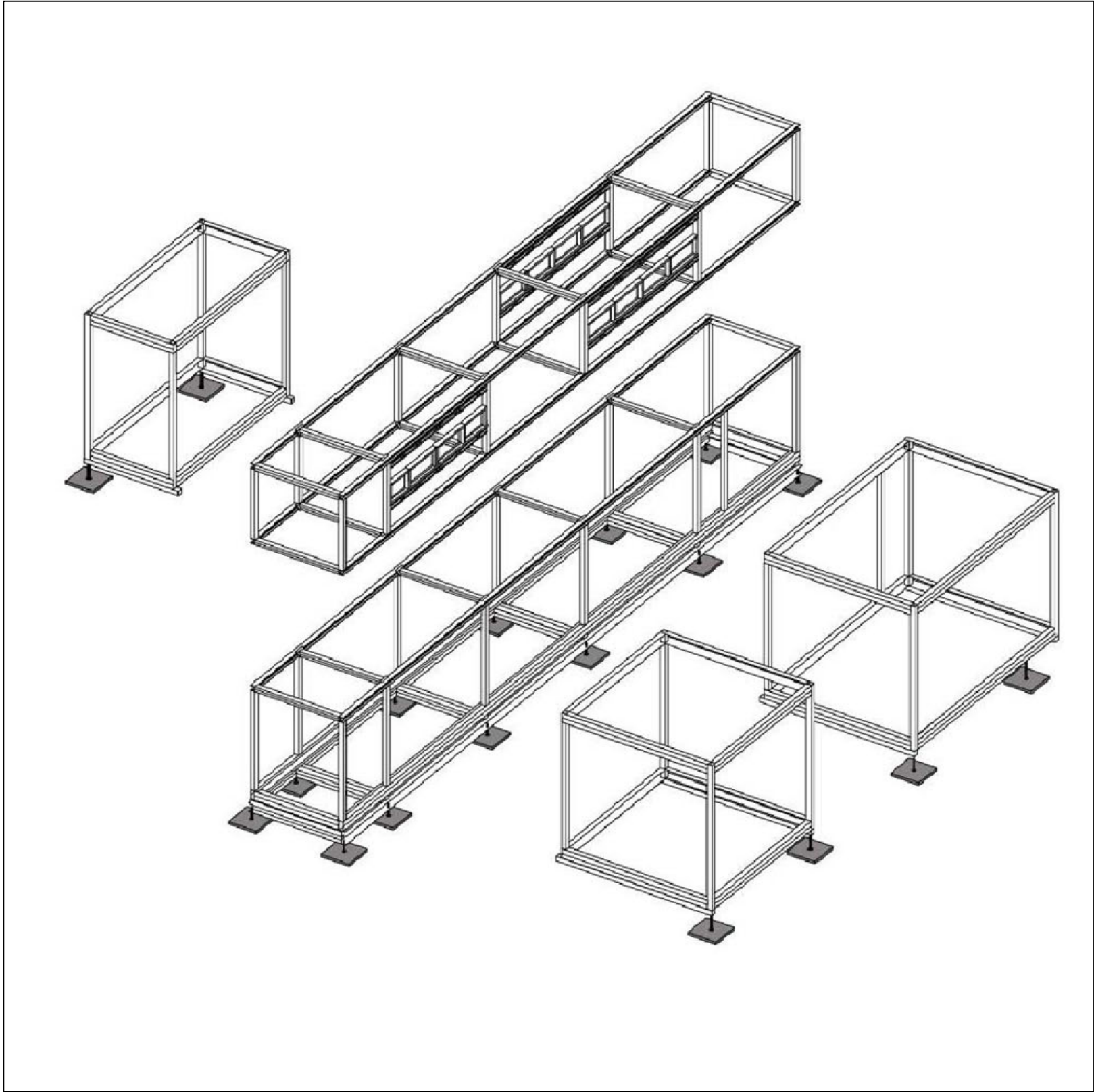
DRAWN BY: KIKO RESTREPO

DATE: 08/07/2007

TITLE: STRUCTURAL AXON

**S 4.0**





2 EXPLODED AXON  
NOT TO SCALE

BEAM SCHEDULE	TYPE	SIZE	LENGTH	QUANTITY
B01	W4 x 13		50'-0"	2
B02, B12, B22, B32	W4 x 13		5'-10 1/2"	24
B03	W8 x 15		12'-8"	2
B04	W8 x 15		5'-10 1/2"	2
B05	W8 x 15		10'-4 1/2"	4
B06	W8 x 15		15'-8"	2
B07	W8 x 15		11'-2"	2
B11, B31	W4 x 13		50'-0"	4
B21	W4 x 13		50'-0"	2
B23	W6 x 9		12'-8"	2
B24	W6 x 9		5'-10 1/2"	2
B25	W6 x 9		10'-4 1/2"	4
B26	W6 x 9		15'-8"	2
B27	W6 x 9		11'-2"	2
COLUMN SCHEDULE				
C01	TUBE COLUMN		4 1/8"	19
C11	TUBE COLUMN		6'-10"	13
C12	TUBE COLUMN		8'-8 5/8"	12
C21	TUBE COLUMN		5'-3 1/16"	13
LOOSE STEEL				
MOMENT BRACE	1/4" PLATE STL	8"x 12"		12
LEDGE COLUMN	SEE STL 24			6
LIFTING BRACKET	SEE STL 30			16
LIFTING PLATE	1/4" PLATE STL	12"x 12"		16
THREADED ROD	1/4" DIA ROD		6'-10"	6

1 STEEL SCHEDULE  
NOT TO SCALE

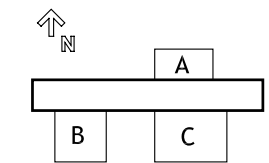


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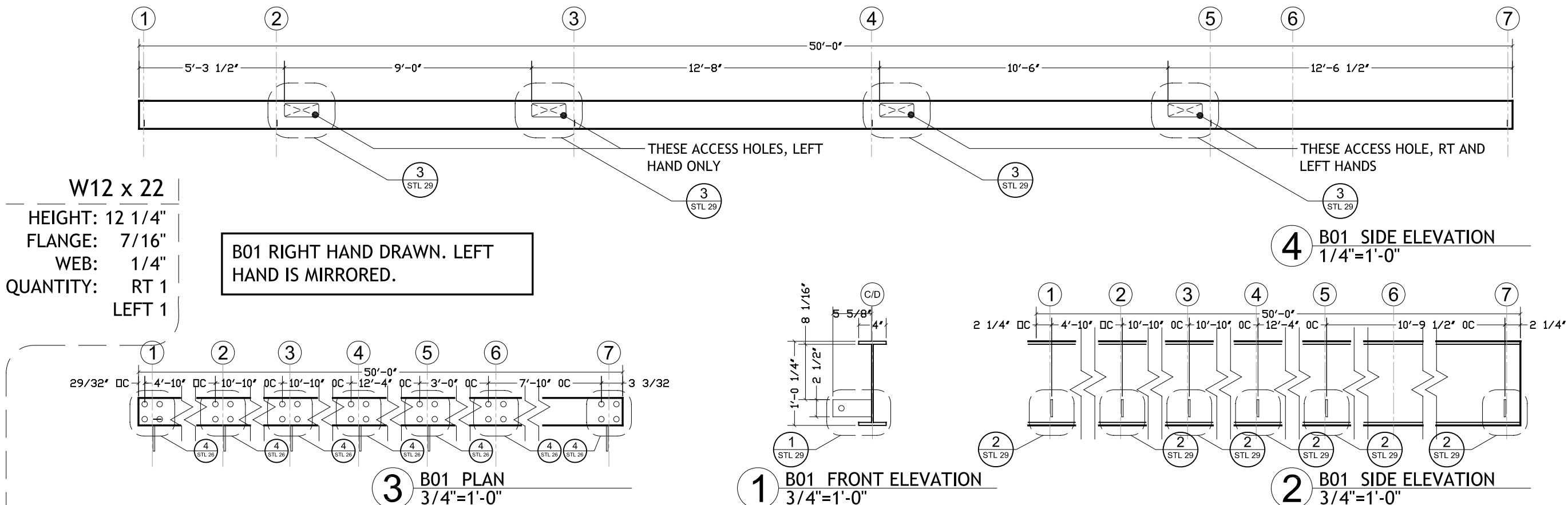
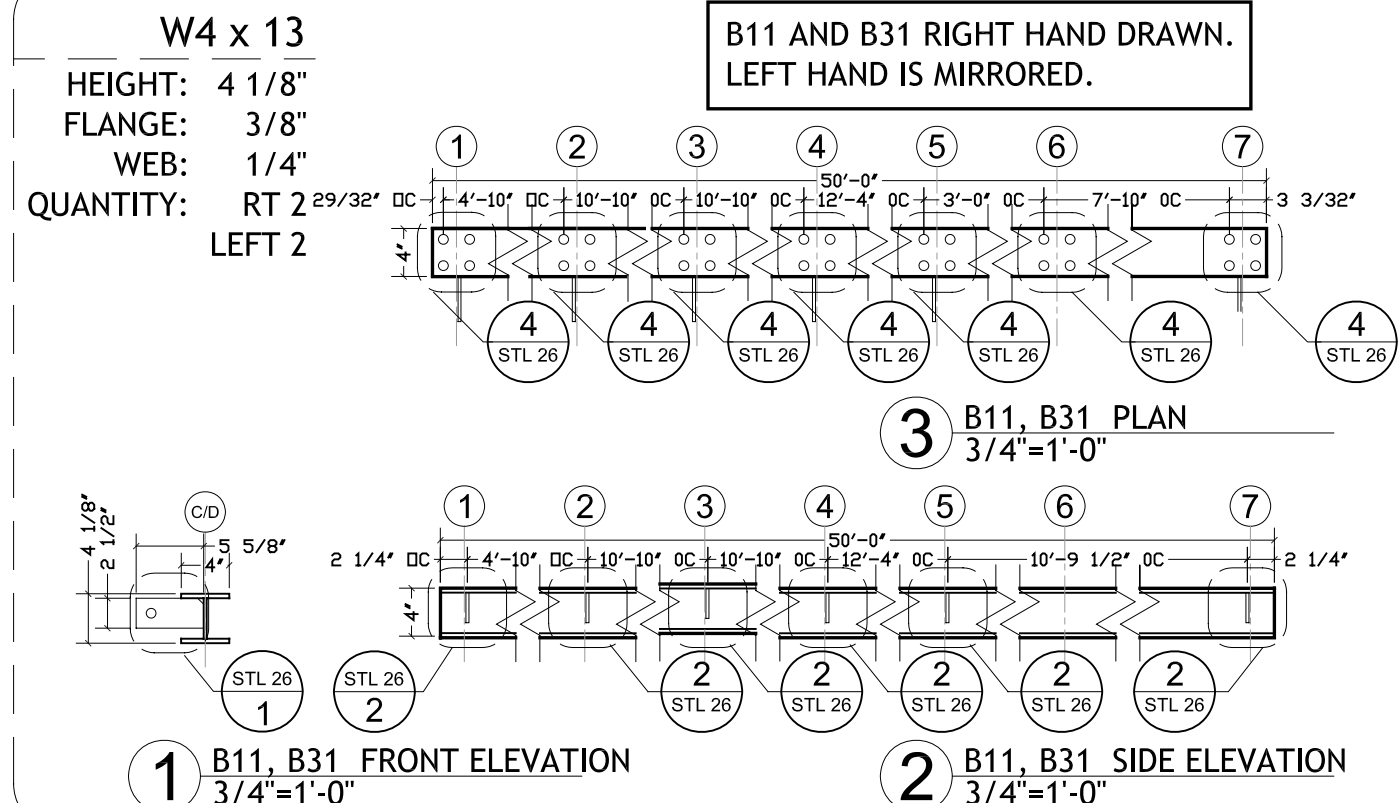
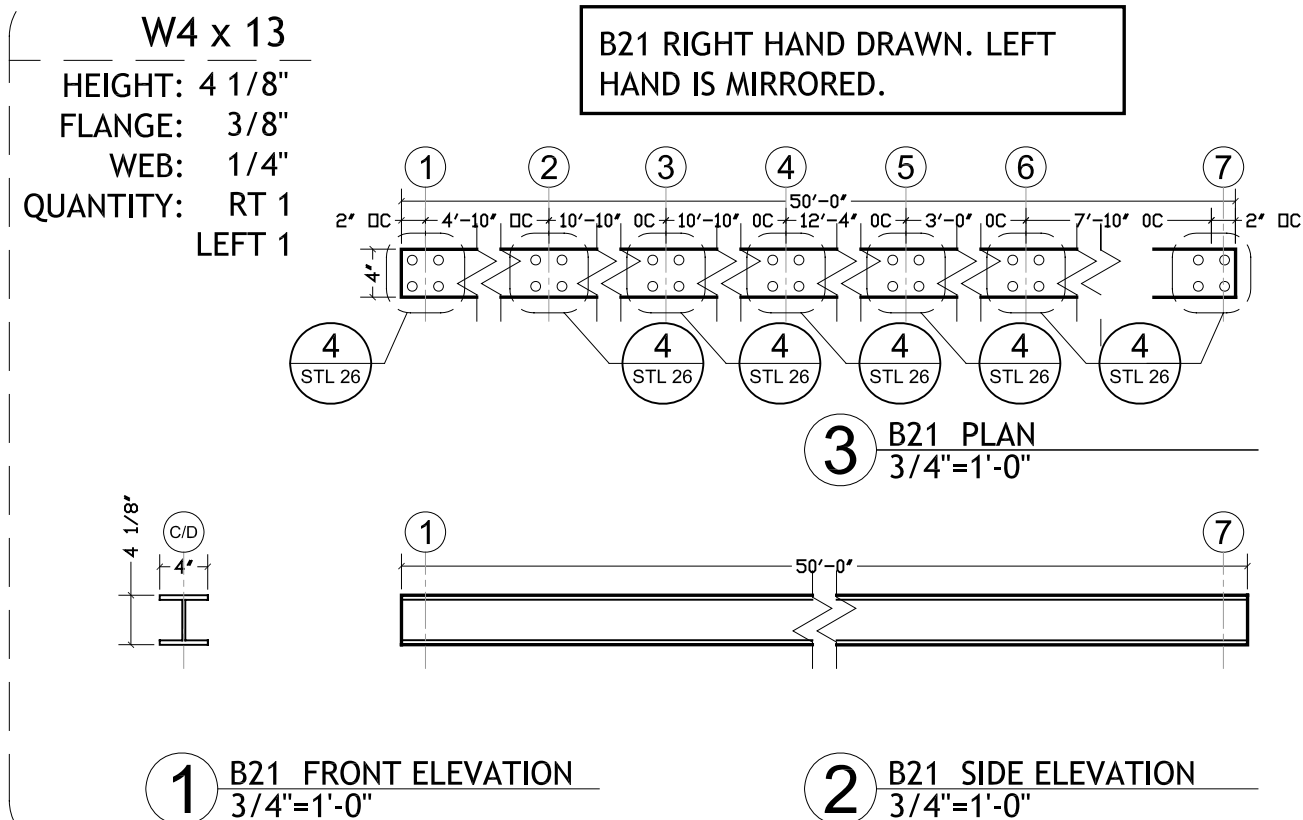
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f:412.268.7819



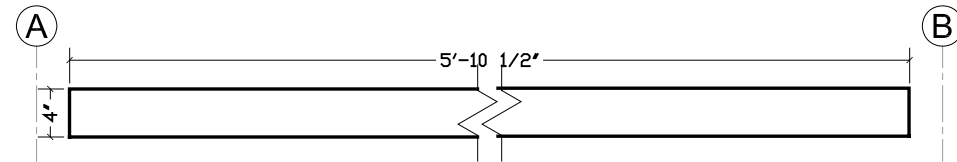
DRAWN BY: JEFF BOURKE  
DATE: 08/07/2007  
TITLE: STEEL SCHEDULE

S 4.1

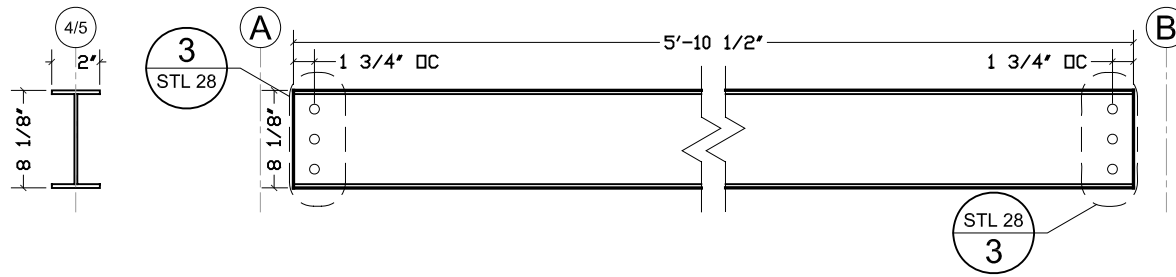




W8 x 15  
 HEIGHT: 8 1/8"  
 FLANGE: 5/16"  
 WEB: 1/4"  
 QUANTITY: 2



3 B04 PLAN  
 1 1/2"=1'-0"

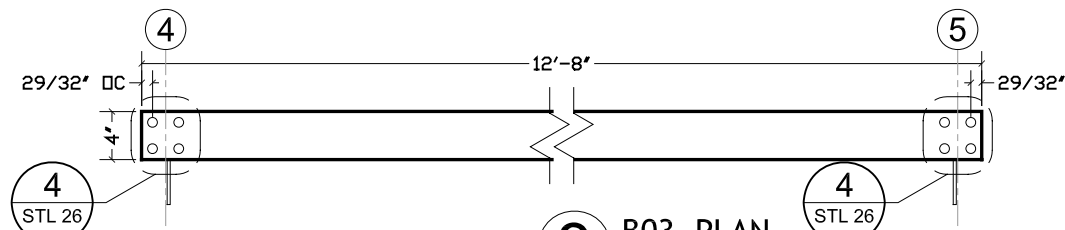


1 B04 FRONT ELEVATION  
 1 1/2"=1'-0"

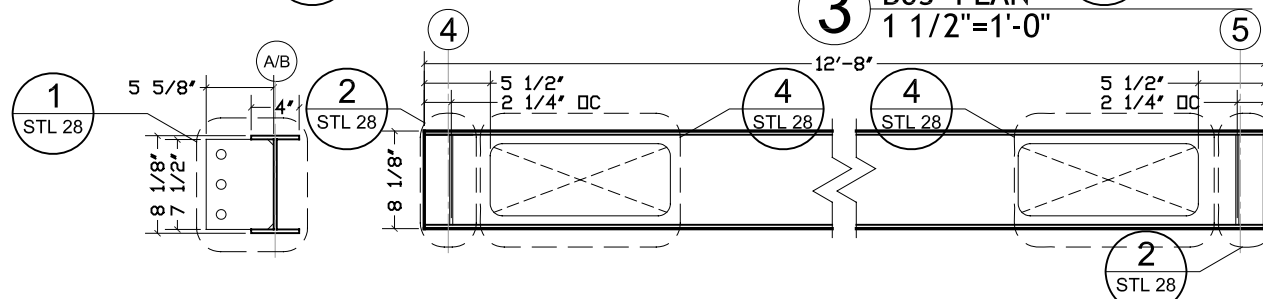
2 B04 SIDE ELEVATION  
 1 1/2"=1'-0"

W8 x 15  
 HEIGHT: 8 1/8"  
 FLANGE: 5/16"  
 WEB: 1/4"  
 QUANTITY: RT 1  
 LEFT 1

B03 RIGHT HAND DRAWN. LEFT  
 HAND HAS NO ACCESS HOLES IN  
 THE WEB.



3 B03 PLAN  
 1 1/2"=1'-0"

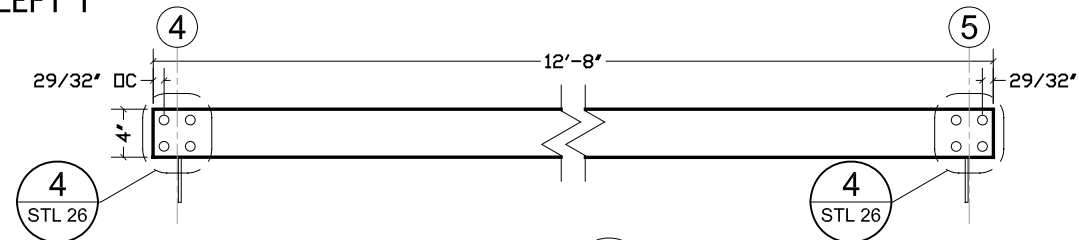


1 B03 FRONT ELEVATION  
 1 1/2"=1'-0"

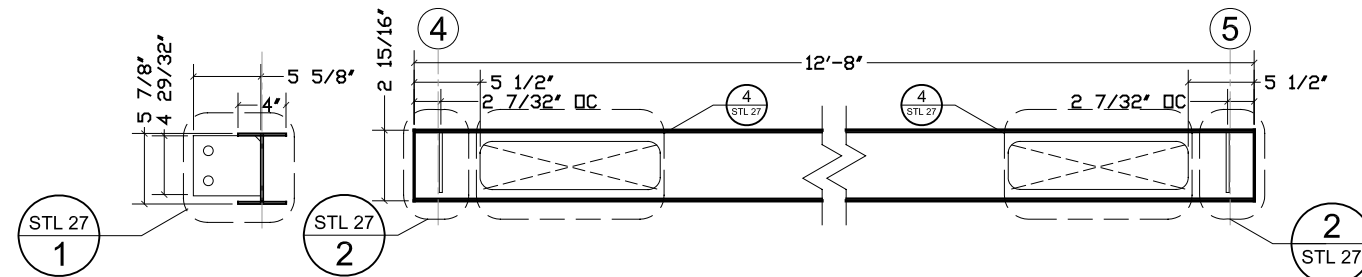
2 B03 SIDE ELEVATION  
 1 1/2"=1'-0"

W6 x 9  
 HEIGHT: 6 1/4"  
 FLANGE: 3/16"  
 WEB: 3/16"  
 QUANTITY: RT 1  
 LEFT 1

B23 RIGHT HAND DRAWN. LEFT  
 HAND HAS NO ACCESS HOLES IN  
 THE WEB.



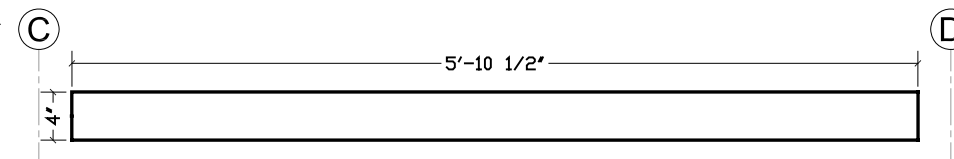
3 B23 PLAN  
 1 1/2"=1'-0"



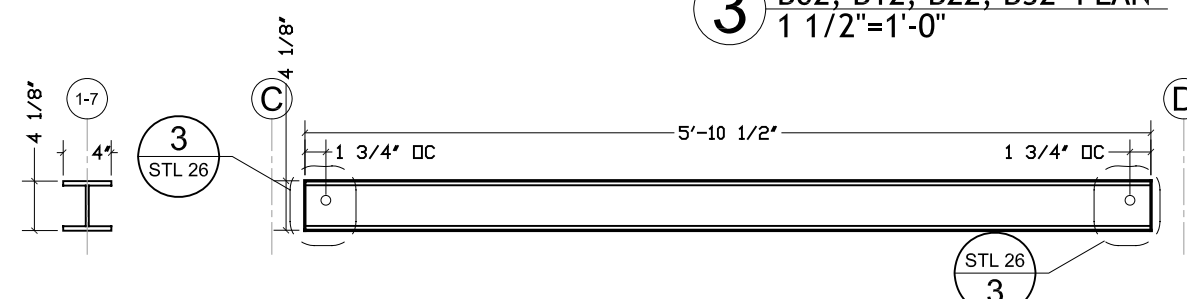
1 B23 FRONT ELEVATION  
 1 1/2"=1'-0"

2 B23 SIDE ELEVATION  
 1 1/2"=1'-0"

W4 x 13  
 HEIGHT: 4 1/8"  
 FLANGE: 3/8"  
 WEB: 1/4"  
 QUANTITY: 24

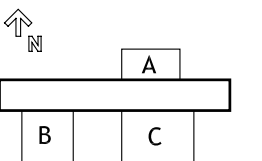


3 B02, B12, B22, B32 PLAN  
 1 1/2"=1'-0"



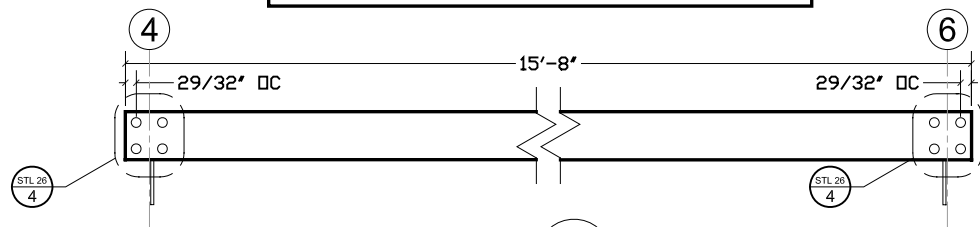
1 B02, B12, B22, B32 FRONT ELE  
 1 1/2"=1'-0"

2 B02, B12, B22, B32 SIDE ELE  
 3/4"=1'-0"

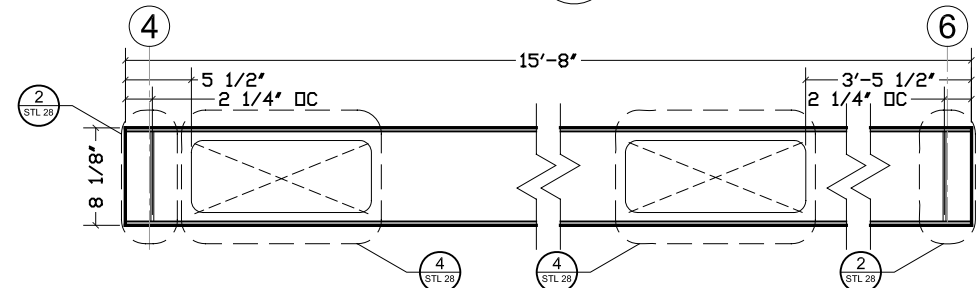
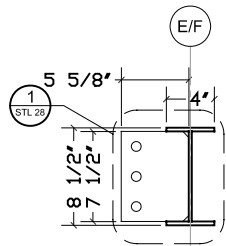


W8 x 15  
HEIGHT: 8 1/8"  
FLANGE: 5/16"  
WEB: 1/4"  
QUANTITY: RT 1  
LEFT 1

B06 RIGHT HAND DRAWN. LEFT  
HAND HAS NO ACCESS HOLES IN  
THE WEB.



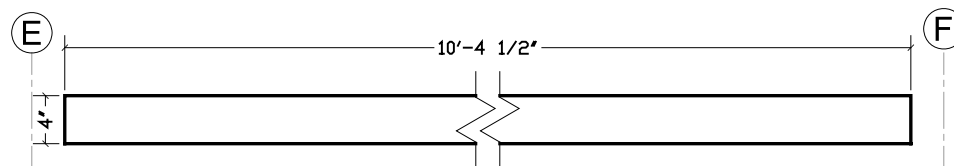
3 B06 PLAN  
3/4"=1'-0"



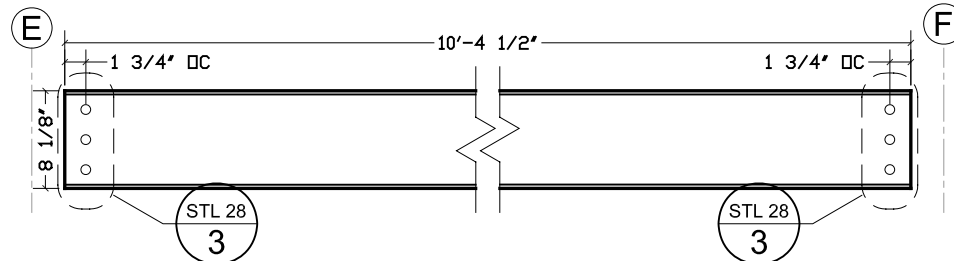
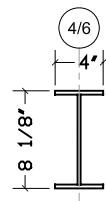
1 B06 FRONT ELEVATION  
3/4"=1'-0"

2 B06 SIDE ELEVATION  
3/4"=1'-0"

W8 x 15  
HEIGHT: 8 1/8"  
FLANGE: 5/16"  
WEB: 1/4"  
QUANTITY: 4



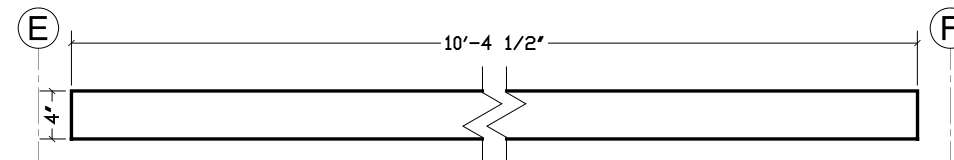
3 B05 PLAN  
3/4"=1'-0"



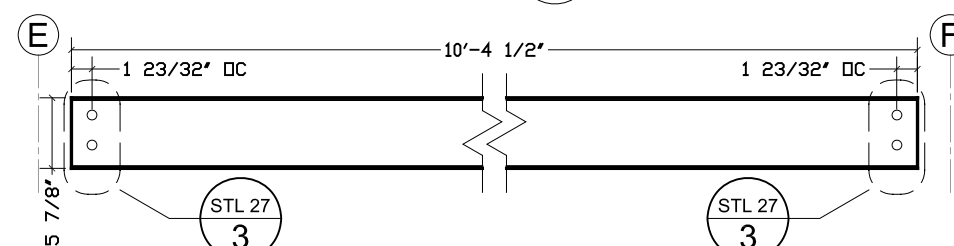
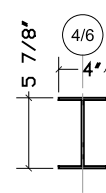
1 B05 FRONT ELEVATION  
3/4"=1'-0"

2 B05 SIDE ELEVATION  
3/4"=1'-0"

W6 x 9  
HEIGHT: 6 1/4"  
FLANGE: 3/16"  
WEB: 3/16"  
QUANTITY: 4



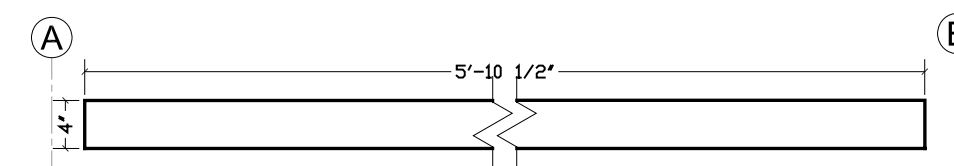
3 B25 PLAN  
3/4"=1'-0"



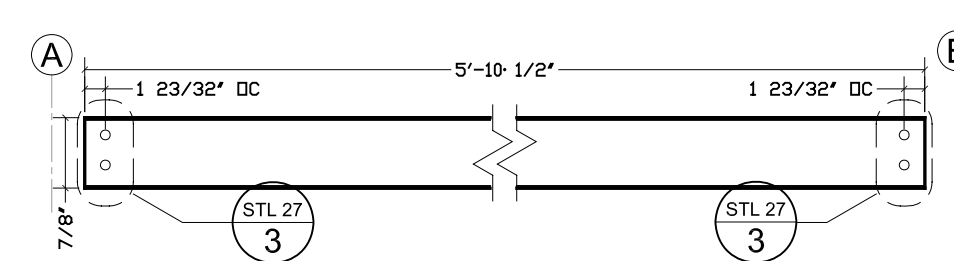
1 B25 FRONT ELEVATION  
3/4"=1'-0"

2 B25 SIDE ELEVATION  
3/4"=1'-0"

W6 x 9  
HEIGHT: 6 1/4"  
FLANGE: 3/16"  
WEB: 3/16"  
QUANTITY: 2

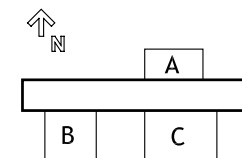


3 B24 PLAN  
3/4"=1'-0"



1 B24 FRONT ELEVATION  
3/4"=1'-0"

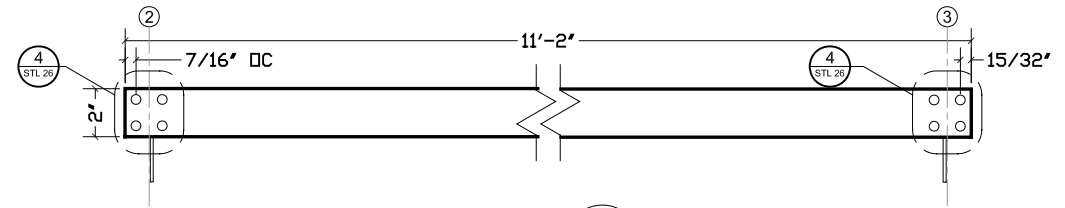
2 B24 SIDE ELEVATION  
3/4"=1'-0"



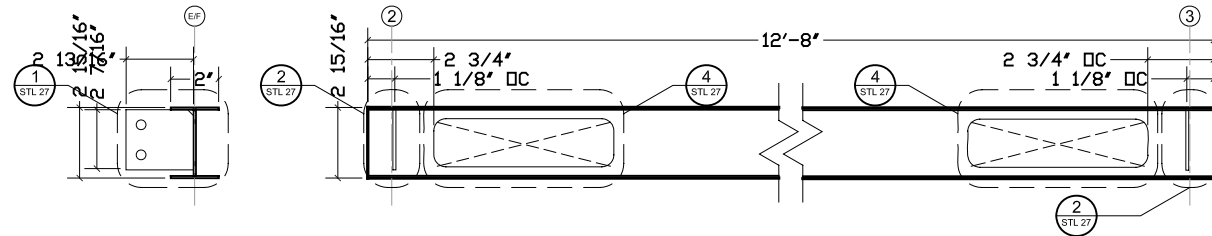
B27 RIGHT HAND DRAWN. LEFT  
HAND HAS NO ACCESS HOLES IN  
THE WEB.

W6 x 9

HEIGHT: 6 1/4"  
FLANGE: 3/16"  
WEB: 3/16"  
QUANTITY: RT 1  
LEFT 1



3 B27 PLAN  
3/4"=1'-0"



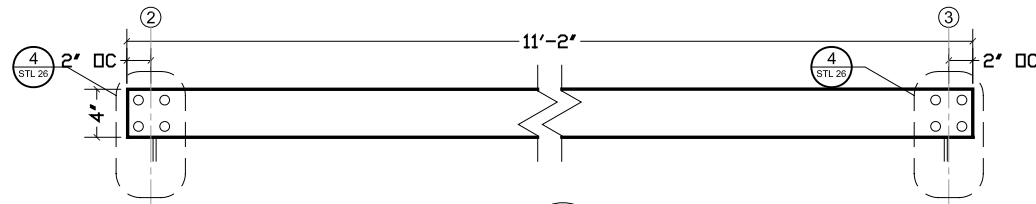
1 B27 FRONT ELEVATION  
3/4"=1'-0"

2 B27 SIDE ELEVATION  
3/4"=1'-0"

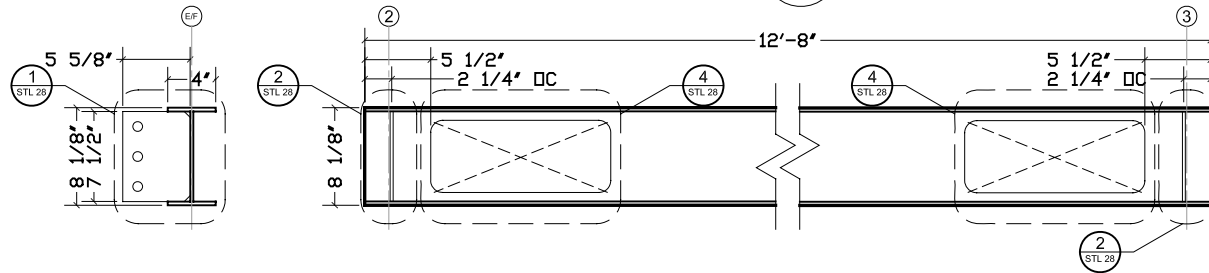
W8 x 15

HEIGHT: 8 1/8"  
FLANGE: 5/16"  
WEB: 1/4"  
QUANTITY: RT 1  
LEFT 1

B07 RIGHT HAND DRAWN. LEFT  
HAND HAS NO HOLES IN THE WEB.



3 B07 PLAN  
3/4"=1'-0"



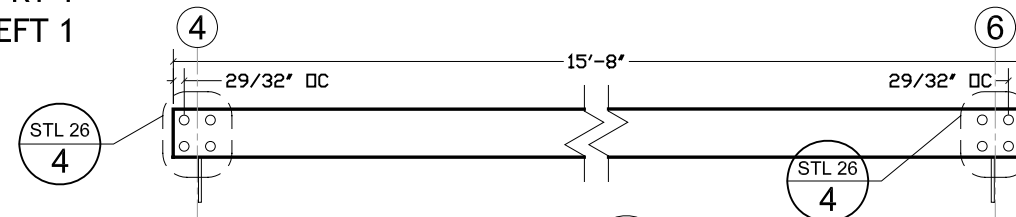
1 B07 FRONT ELEVATION  
3/4"=1'-0"

2 B07 SIDE ELEVATION  
3/4"=1'-0"

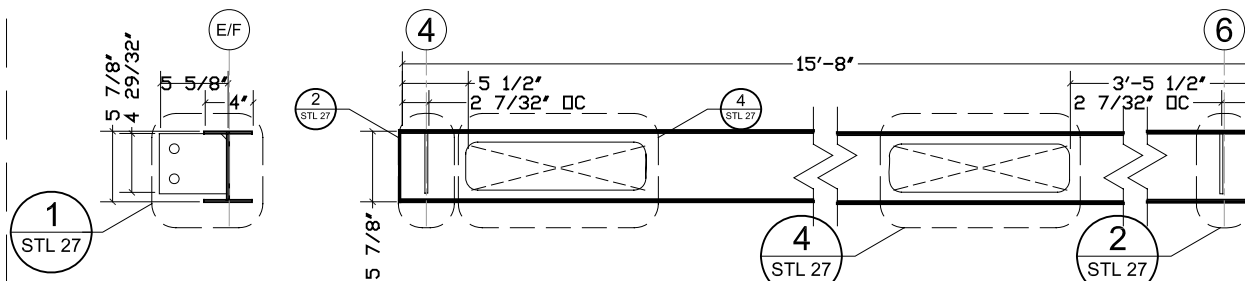
W6 x 9

HEIGHT: 6 1/4"  
FLANGE: 3/16"  
WEB: 3/16"  
QUANTITY: RT 1  
LEFT 1

B26 RIGHT HAND DRAWN. LEFT  
HAND HAS NO ACCESS HOLES IN  
THE WEB.

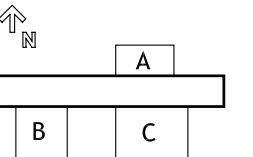


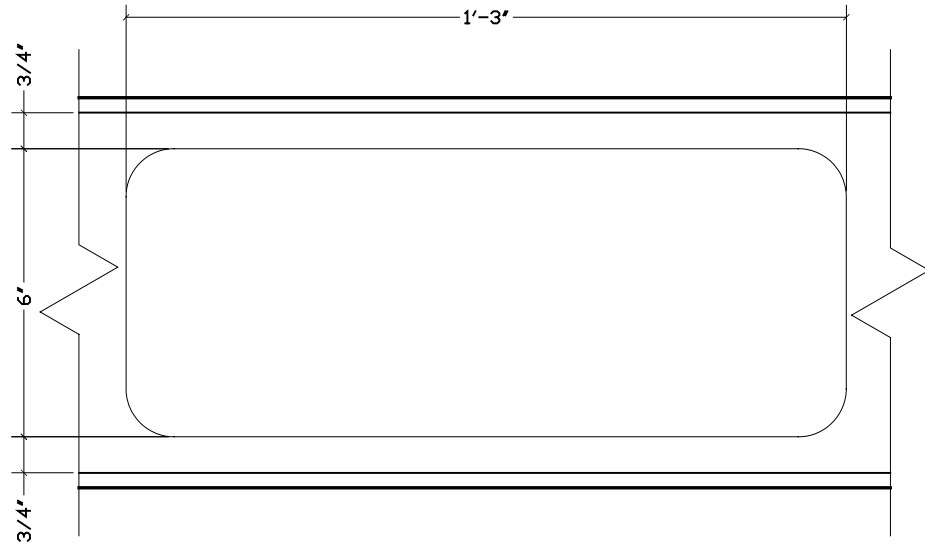
3 B26 PLAN  
3/4"=1'-0"



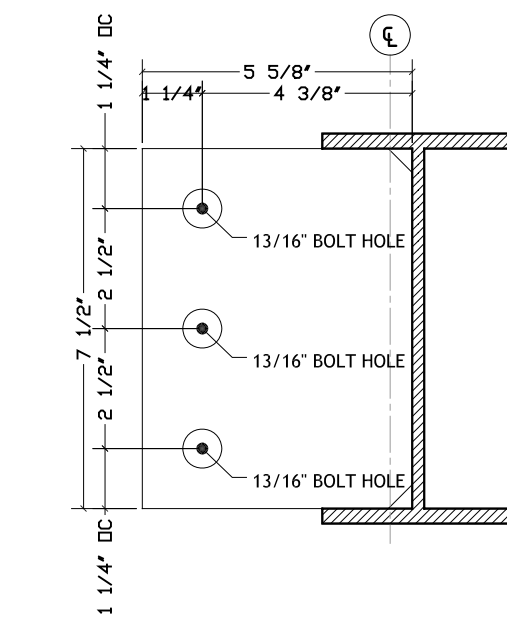
1 B26 FRONT ELEVATION  
3/4"=1'-0"

2 B26 SIDE ELEVATION  
3/4"=1'-0"

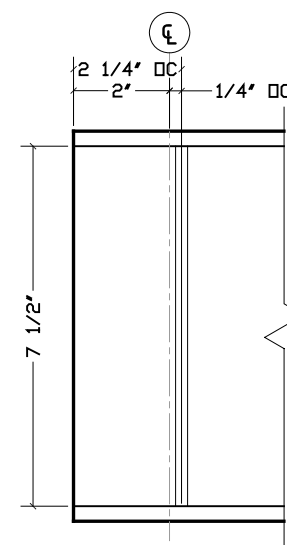




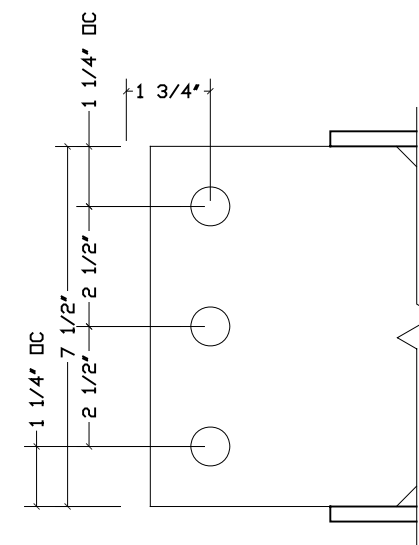
**12** 8" BEAM - ACCESS HOLE  
3"=1'-0"



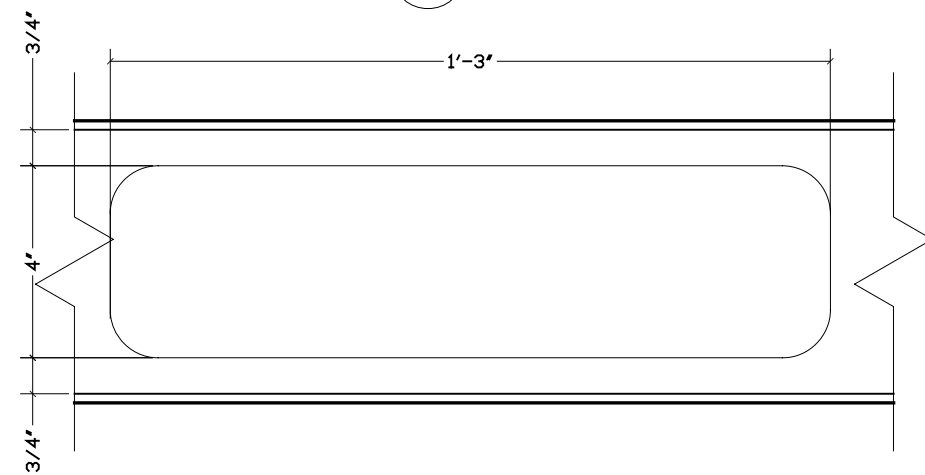
**11** 8" BEAM - FRONT ELEVATION  
3"=1'-0"



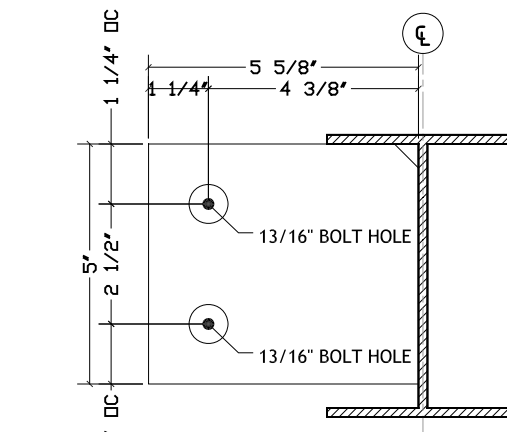
**10** 8" BEAM - SIDE ELEVATION  
3"=1'-0"



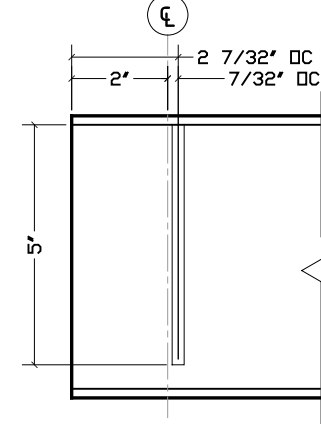
**9** 8" BEAM - SIDE ELEVATION  
3"=1'-0"



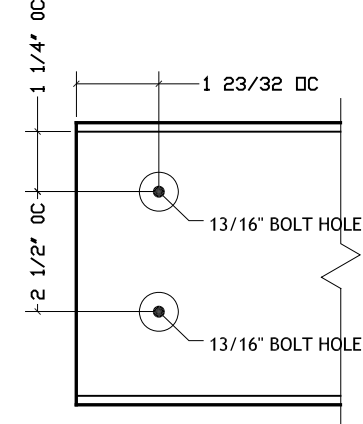
**8** 6" BEAM - SIDE ELEVATION  
3"=1'-0"



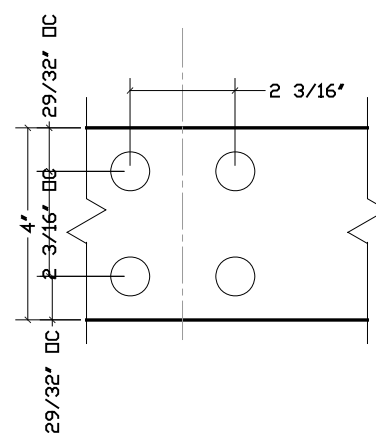
**7** 6" BEAM - FRONT ELEVATION  
3"=1'-0"



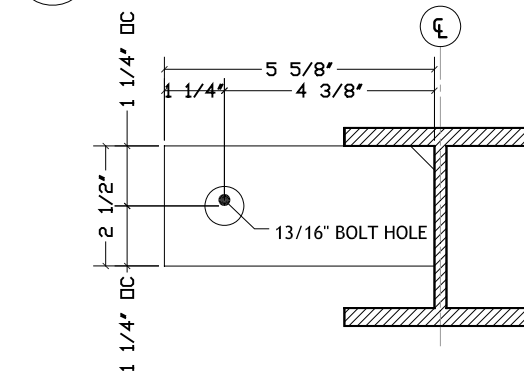
**6** 6" BEAM - SIDE ELEVATION  
3"=1'-0"



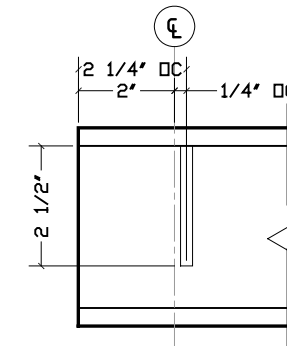
**5** 6" BEAM - SIDE ELEVATION  
3"=1'-0"



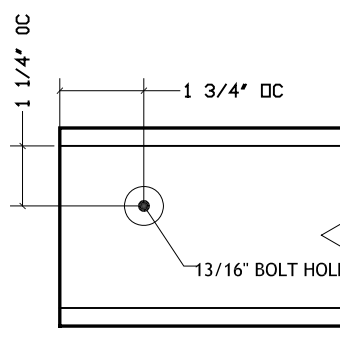
**4** 4", 6", 8", 12" BEAMS - PLAN  
3"=1'-0"



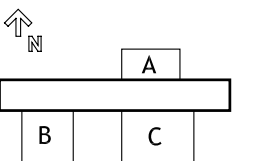
**3** 4" BEAM - FRONT ELEVATION  
3"=1'-0"



**2** 4" BEAM - SIDE ELEVATION  
3"=1'-0"



**1** 4" BEAM - SIDE ELEVATION  
3"=1'-0"

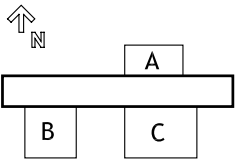


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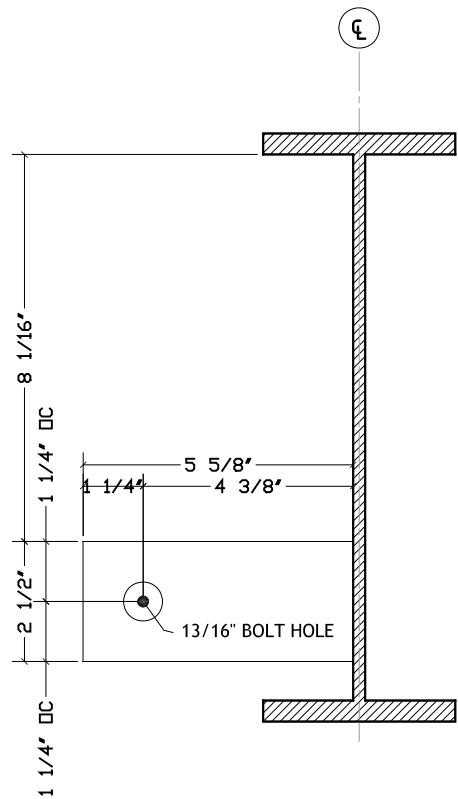
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p:412.726.6503  
f:412.268.7819

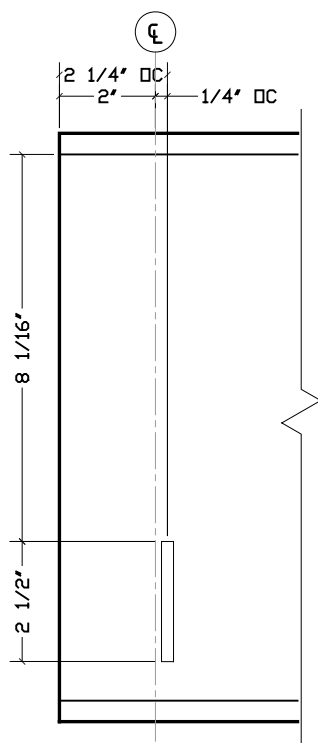


DRAWN BY:	JEFF BOURKE
DATE:	08/07/2007
TITLE:	STEEL FABRICATION

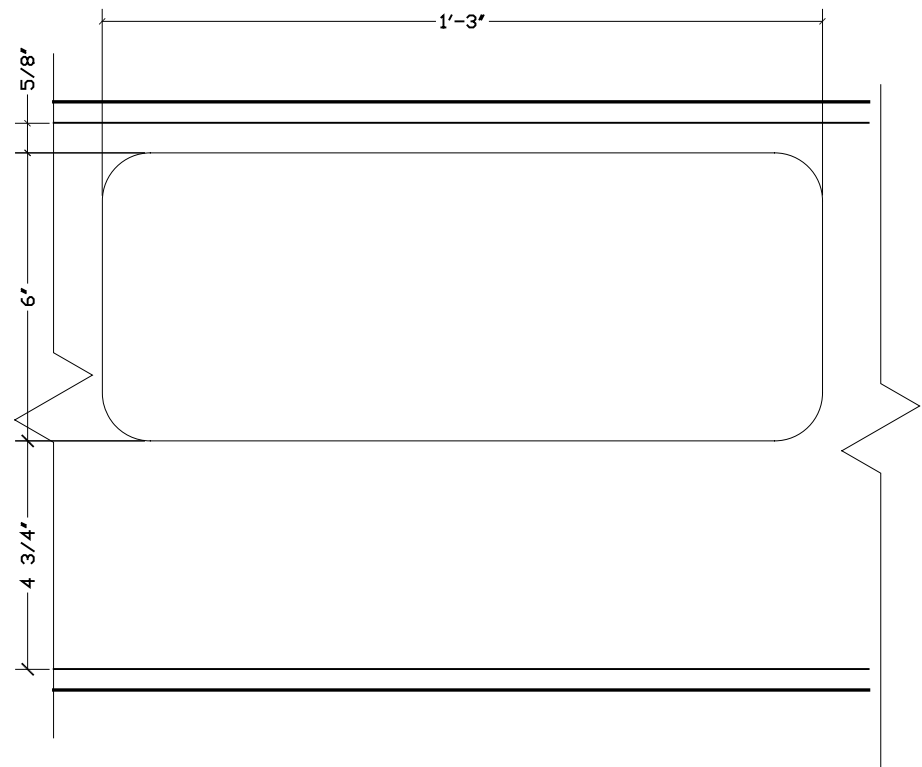
**S 4.7**



**3** 12" BEAM - FRONT ELEVATION  
3"=1'-0"



**2** 12" BEAM - SIDE ELEVATION  
3"=1'-0"



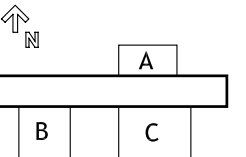
**1** 12" BEAM - ACCESS HOLE  
3"=1'-0"

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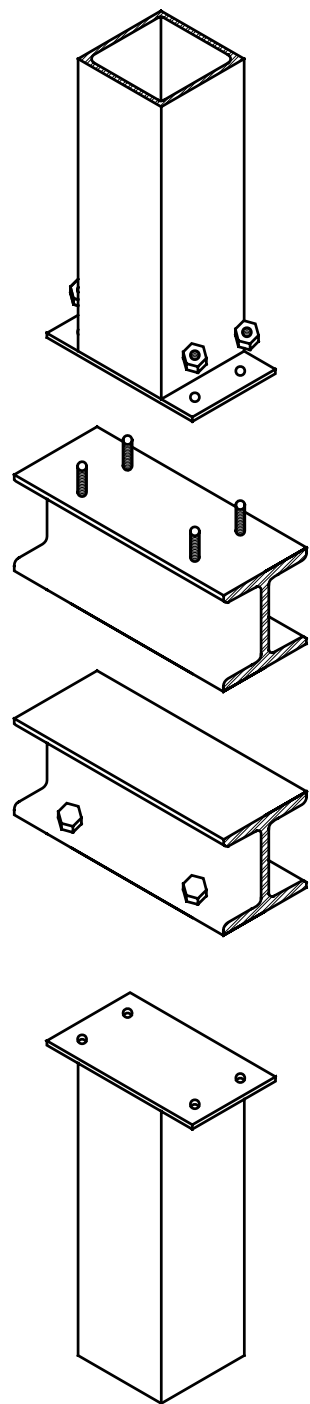
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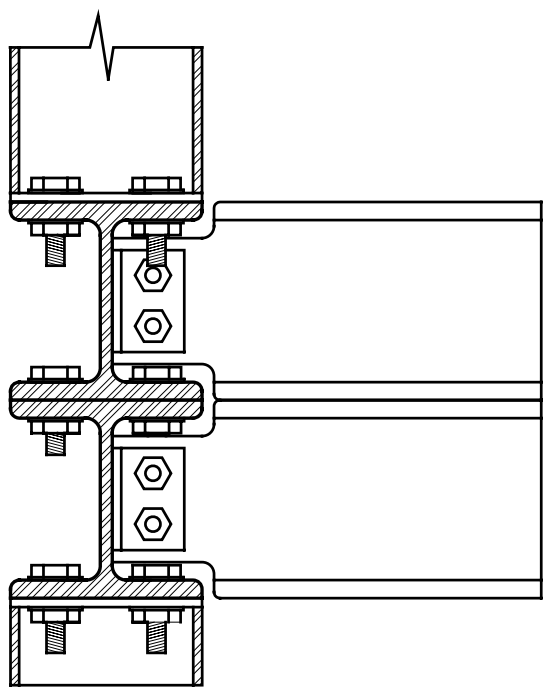


DRAWN BY: JOHN EASTRIDGE  
 DATE: 08/07/2007  
 TITLE: CORE FRAMING DETAIL

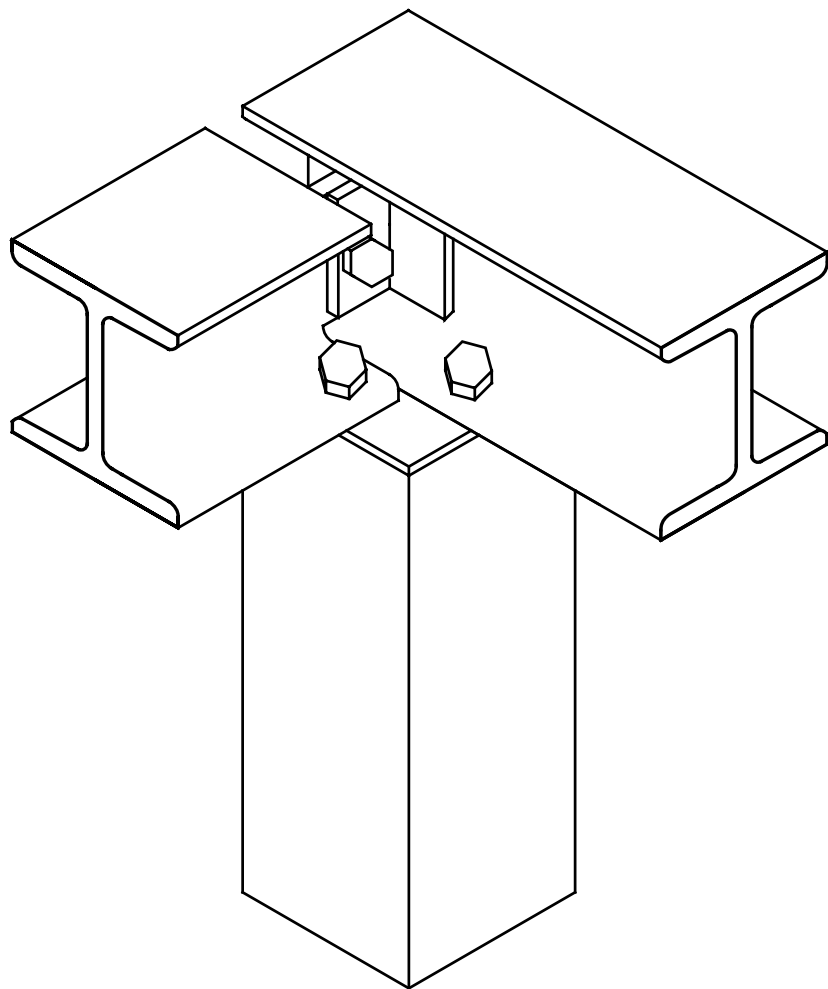
**S 4.8**



**3** TYP. CORNER AXON  
 1"=1'



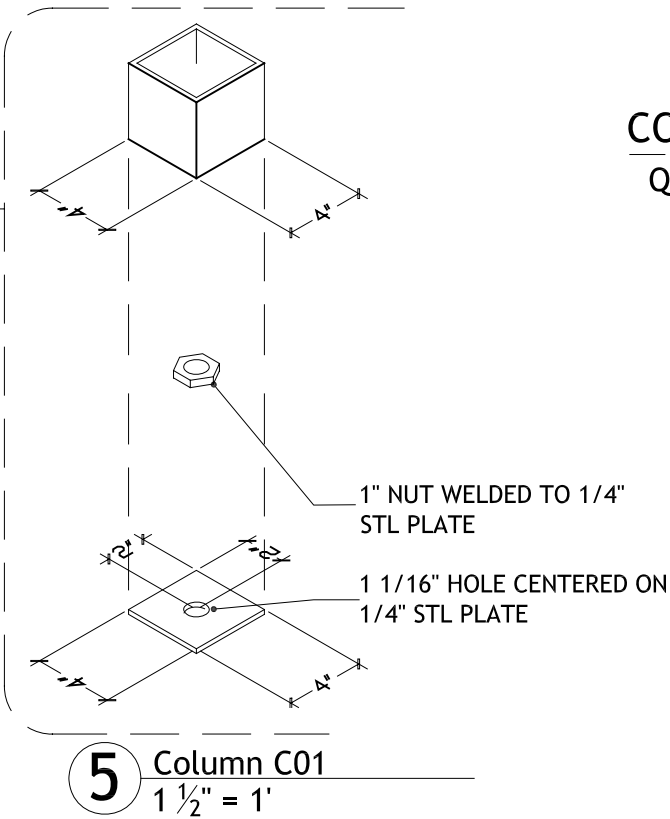
**2** BEAM TIE SECTION  
 3"=1'



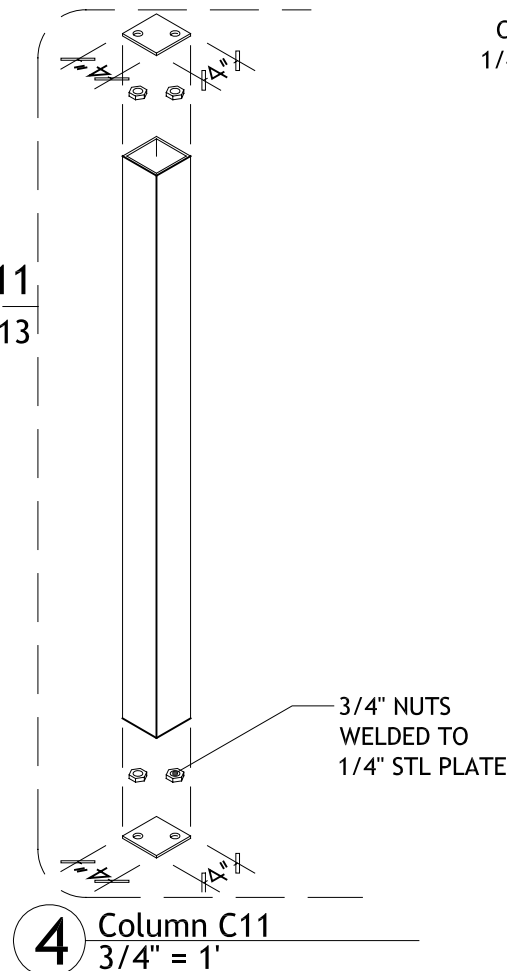
**1** TYP. EXPLODED AXON  
 3"=1'



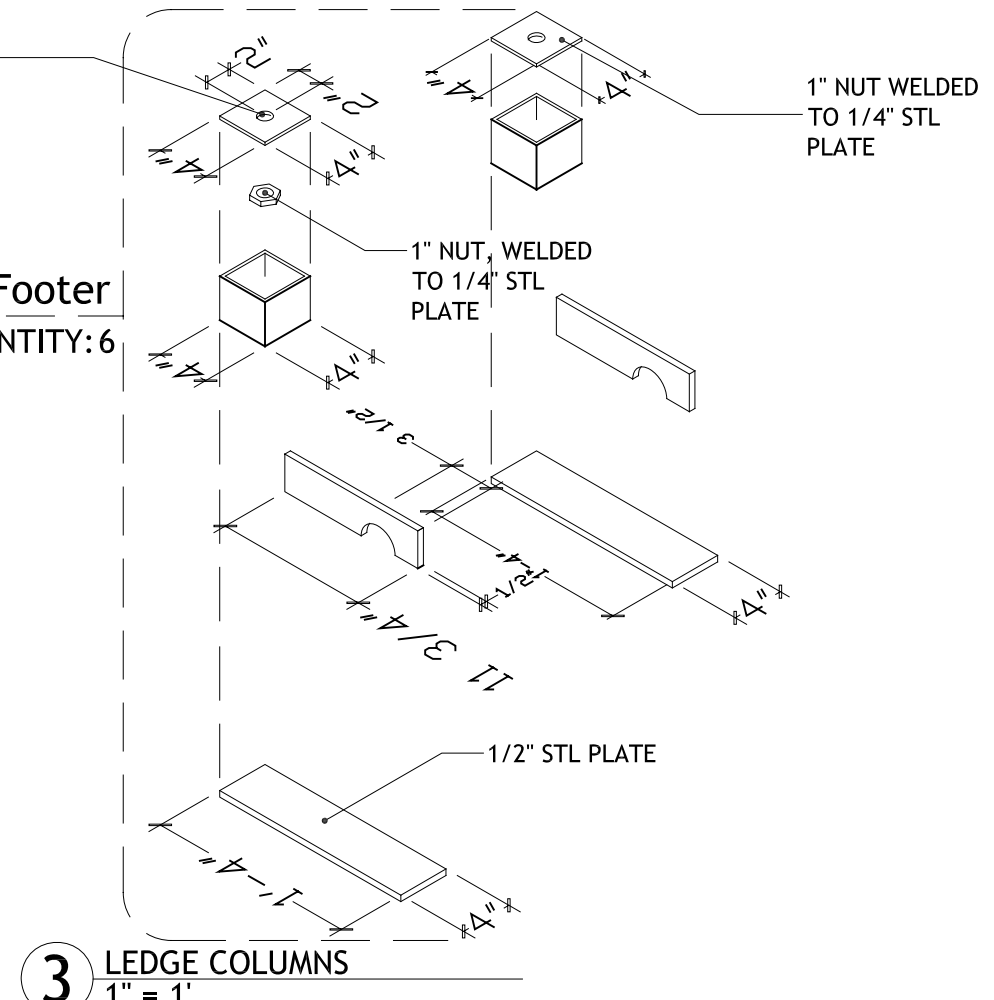
Footer  
QUANTITY: 19



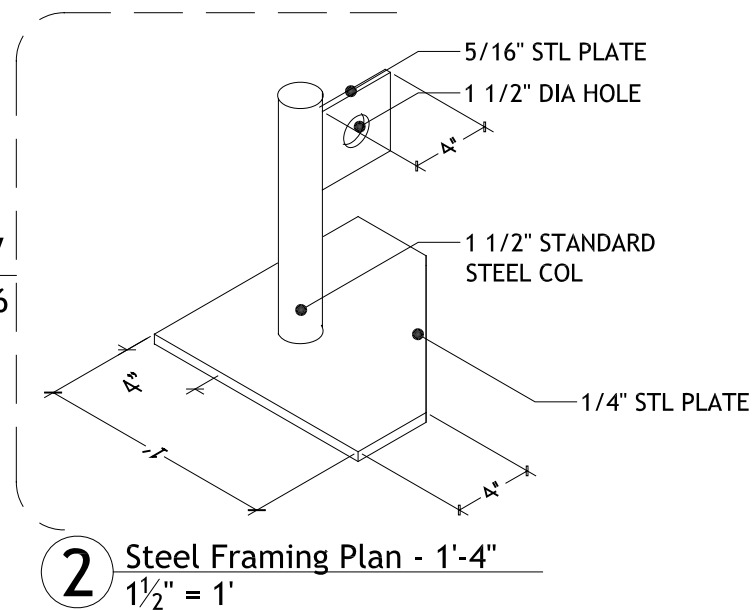
COLUMN C11  
QUANTITY: 13



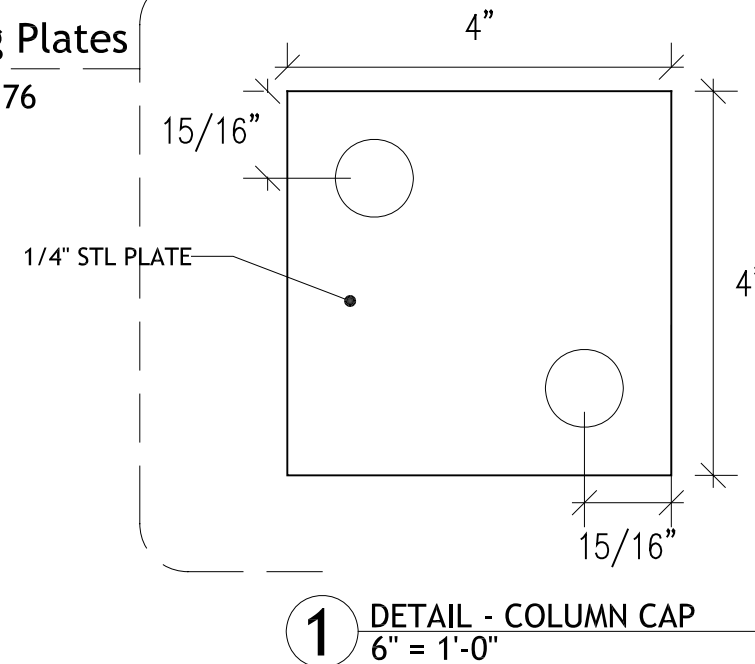
Shared Footer  
QUANTITY: 6



Lifting Assembly  
QUANTITY: 16



Connecting Plates  
QUANTITY: 76

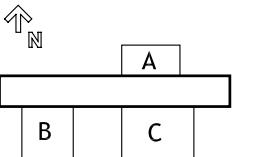


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DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: STEEL CNCT.DETAIL

**S 4.9**



LIGHT GAUGE STEEL FRAME COMPONENT SCHEDULE

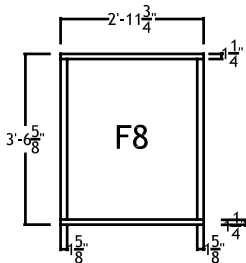
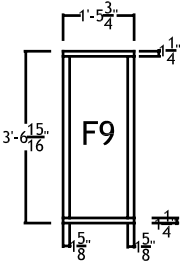
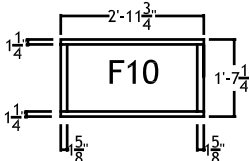
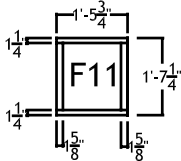
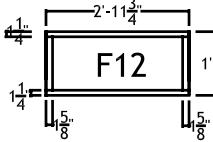
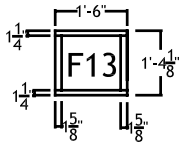
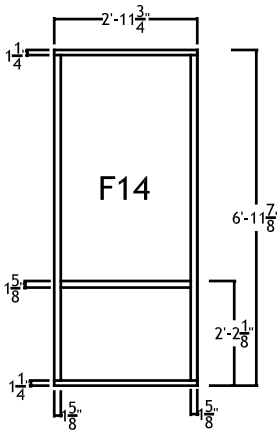
	SSMA REF.	PRODUCT NAME	DEPTH	FLANGE	RETURN	THICKNESS	APPROX. LINEAL FEET
TRACK	1-T100-33	TSA	4"	1-1/4"	-	20 ga.	552
C-STUD	400S162-33	CSJ	4"	1-5/8"	1/2"	20 ga.	1140

LIGHT GAUGE STEEL JOIST SCHEDULE

	SSMA REF.	PRODUCT	DEPTH	FLANGE	RETURN	THICKNESS	LENGTH	QTY.
TYPE F1	-	CSJ Joist	8"	1-5/8"	5/8"	18 ga.	5'-11-1/2"	9
TYPE F2	-	CSJ Joist	8"	1-5/8"	5/8"	18 ga.	10'-5-1/2"	19
TYPE C1	600S162-33	CSJ Joist	6"	1-5/8"	1/2"	20 ga.	10'-5-1/2"	19
TYPE C2	600S162-33	CSJ Joist	6"	1-5/8"	1/2"	20 ga.	5'-11-1/2"	39
		Bridle Joist Hangar	6"					134
		Bridle Joist Hangar	8"					60

LIGHT GAUGE STEEL FRAME SCHEDULE

	LIGHT GAUGE STEEL FRAME SCHEDULE	QTY.
F 1	8'- 8 3/8" x 2'- 11 3/4"	19
F 2	8'- 8 3/8" x 1'- 5 3/4"	5
F 3	1'- 10 3/8" x 2'- 11 3/4"	9
F 4	6'- 9 3/4" x 1'- 5 3/4"	8
F 5	6'- 9 3/4" x 2'- 11 3/4"	17
F 6	5'- 2 15/16" x 2'- 11 3/4"	12
F 7	5'- 2 15/16" x 1'- 5 3/4"	6
F 8	3'- 6 5/8" x 2'- 11 3/4"	3
F 9	3'- 6 5/8" x 1'- 5 3/4"	1
F 10	1'- 7 1/4" x 2'- 11 3/4"	11
F 11	1'- 7 1/4" x 1'- 5 3/4"	1
F 12	1'- 3 7/8" x 1'- 5 3/4"	3
F 13	3'- 6 5/8" x 1'- 5 3/4"	1
F 14	6'- 11 7/8" x 2'- 11 3/4"	2



14 CORE: FRM TYPE 14  
1/4"=1'

13 CORE: FRM TYPE 13  
1/4"=1'

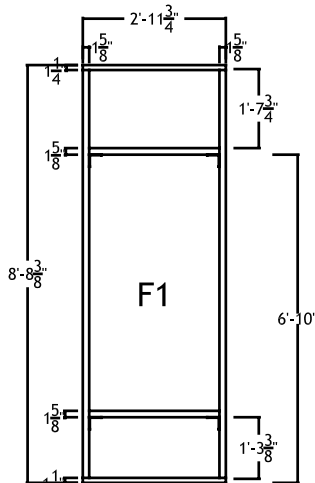
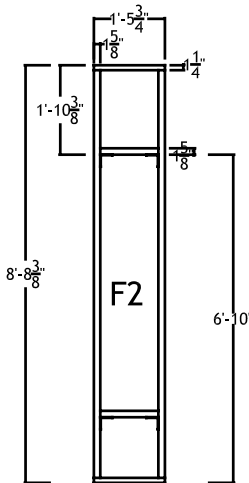
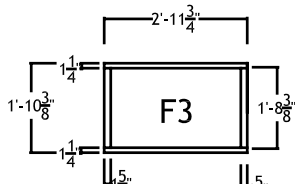
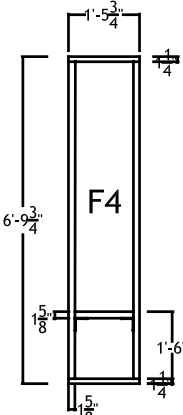
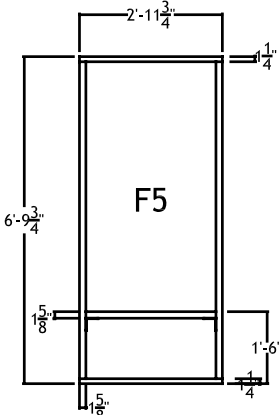
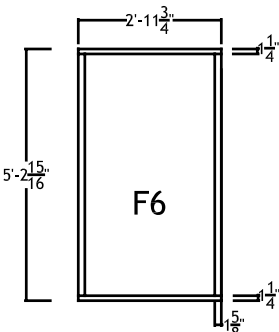
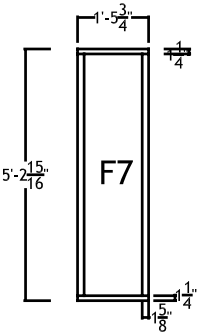
12 CORE: FRM TYPE 12  
1/4"=1'

11 CORE: FRM TYPE 11  
1/4"=1'

10 CORE: FRM TYPE 10  
1/4"=1'

9 CORE: FRM TYPE 9  
1/4"=1'

8 CORE: FRM TYPE 8  
1/4"=1'



7 CORE: FRM TYPE 7  
1/4"=1'

6 CORE: FRM TYPE 6  
1/4"=1'

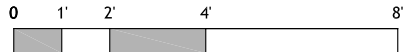
5 CORE: FRM TYPE 5  
1/4"=1'

4 CORE: FRM TYPE 4  
1/4"=1'

3 POD: FRM TYPE 3  
1/4"=1'

2 POD: FRM TYPE 2  
1/4"=1'

1 POD: FRM TYPE 1  
1/4"=1'

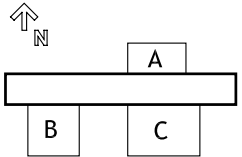


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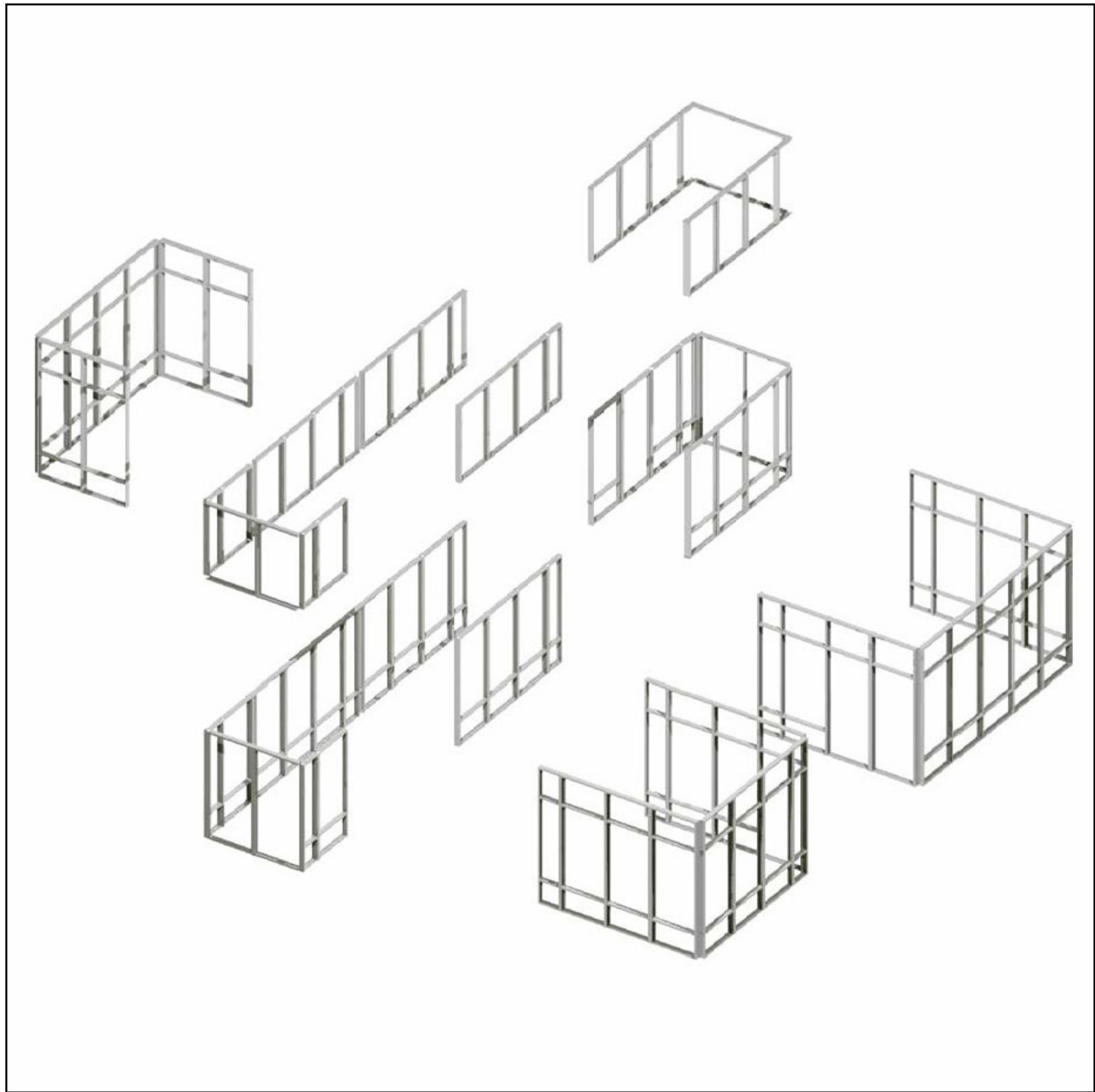
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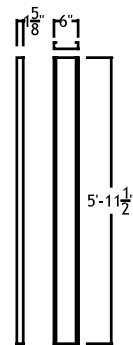


DRAWN BY: DAVID WALDRON  
DATE: 08/07/2007  
TITLE: LIGHT GAUGE STEEL SCHEDULES

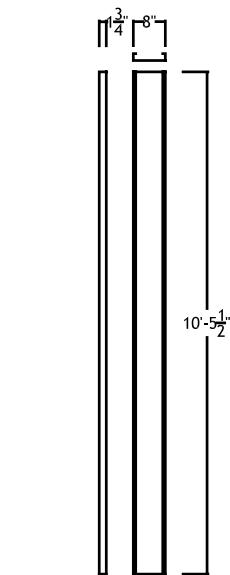
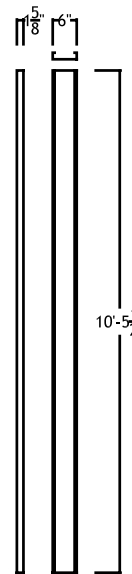
S4.10



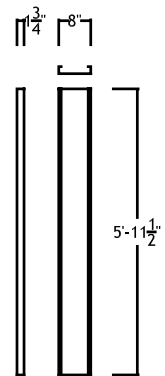
4 C2 CLG JOIST: CORE & POD A  
1/4"=1'



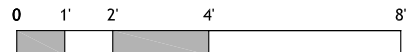
3 C1 CLG JOIST: POD B & C  
1/4"=1'



2 F2 FLR JOIST: POD B & C  
1/4"=1'



1 F1 FLR JOIST: POD A  
1/4"=1'

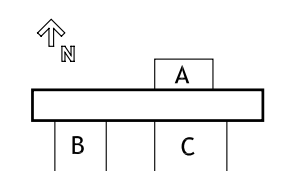


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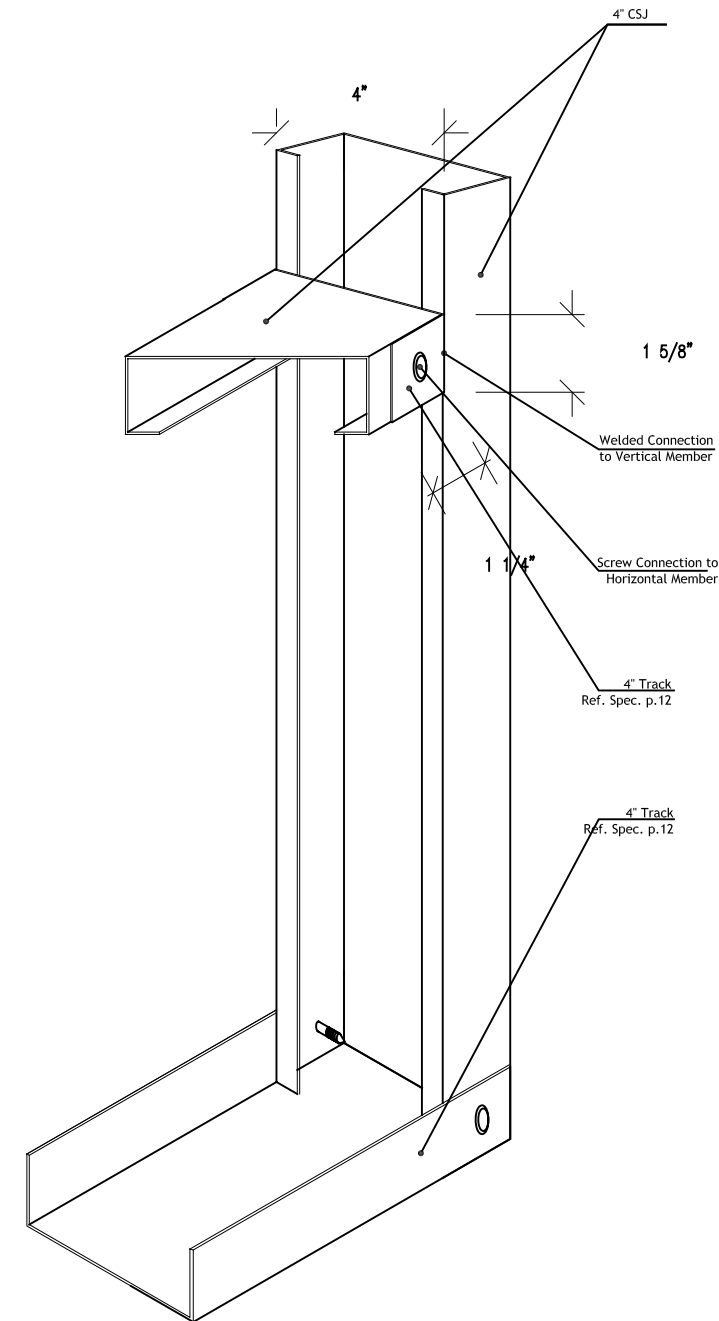
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DRAWN BY: DAVID WALDRON  
DATE: 08/07/2007  
TITLE: JOISTS



**1** DETAIL: FRAME CORNER & CROSS PIECE (TYP.)  
3" = 1'-0"

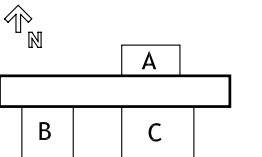


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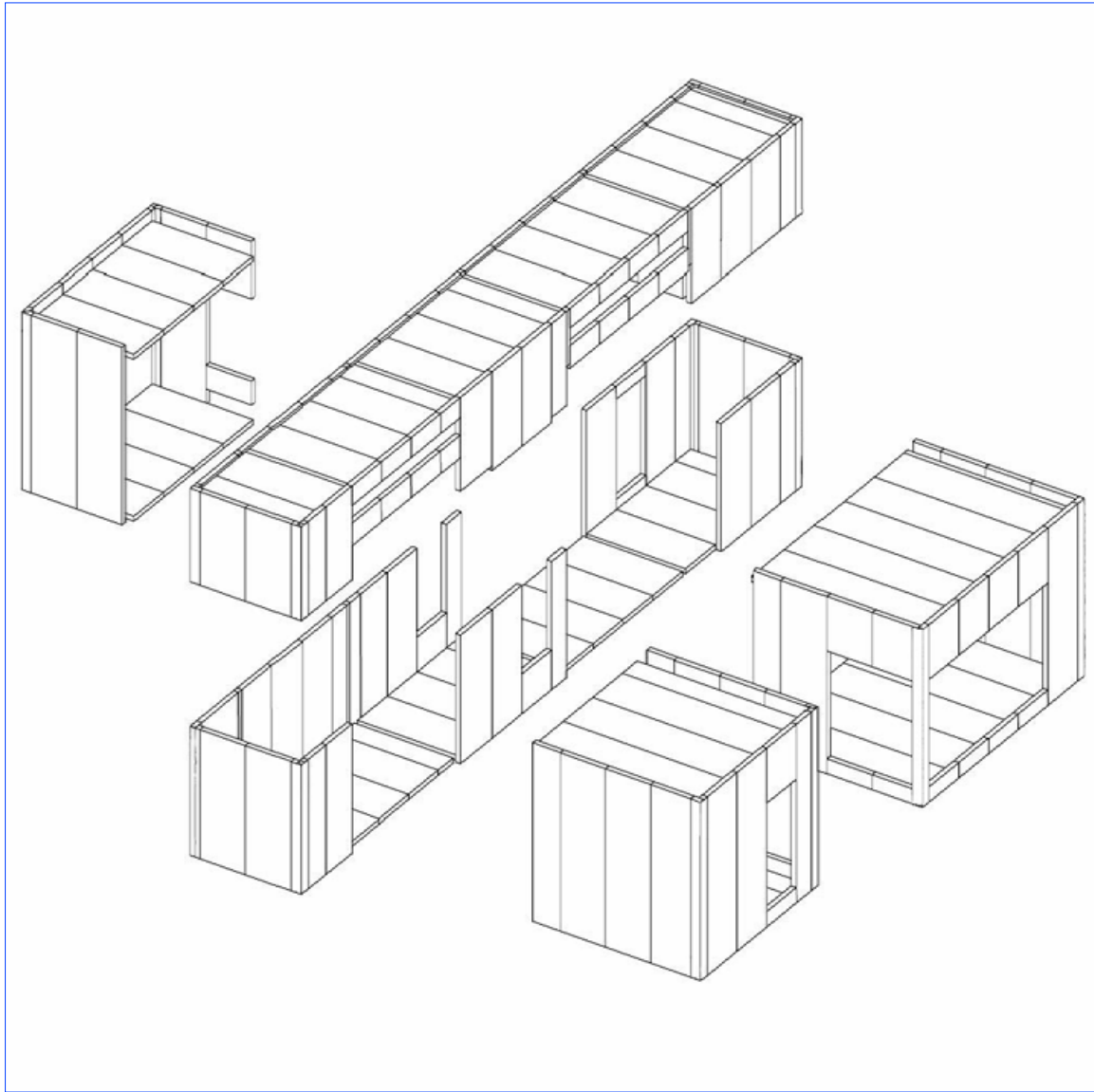
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f:412.268.7819



DRAWN BY: DAVID WALDRON  
DATE: 08/07/2007  
TITLE: DETAIL - HORIZONTAL MEMBERS

**S4.12**



1 EXPLODED PANEL AXON  
NOT TO SCALE

Versawall Schedule cont'd

panel des.	width	length	total quantity
rp1	36"	23'-4"	1
rp2	22"	23'-4"	2
rp3	36"	11'-2"	3
rp4	36"	15'-8"	3
rp5	8"	12'-8"	1
rp6	26"	11'-2"	1
rp7	26"	15'-8"	1
rp8	36"	26'-8"	1
rp9	22"	26'-8"	2
rp10	36"	12'-8"	2
mp1	12"	6'-6 1/2"	2
mp2	12"	8'-6"	2
mp3	32"	19 1/2"	2
mp4	32"	8"	2
mp5	32"	18"	2
sp1	6'-8"	4"	2
sp2	5'-2"	4"	1
sp3	10'-6"	4"	1
sp4	8'-2"	4"	1
sp5	26'-10"	4"	1

Versawall Schedule

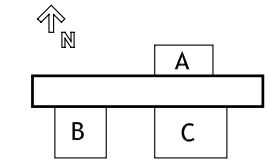
panel des.	width	length	total quantity
p1	36"	8'-8"	16
p2	36"	6'-6.25"	20
p3	18"	8'-8"	7
p4	18"	6'-6.25"	7
p5	4"	8'-8"	6
p6	4"	6'-6.25"	6
p7	4"	4'-3.25"	6
p8	36"	1'-6.25"	4
p9	36"	4"	4
p10	36"	1'-5.125"	12
p11	18"	1'-5.125"	1
p12	36"	1'-4.125"	12
p13	18"	1'-4.125"	1
p14	8"	8'-8"	4
p15	8"	6'-6.25"	4
pp1	36"	11'-6.75"	18
pp2	18"	11'-6.75"	5
pp3	36"	1'-6.25"	9
pp4	36"	3'-1.75"	10
pp5	8"	11'-6.75"	6
pp7	36"	3'-0.25"	1
fp1	36"	23'-4"	1
fp2	22"	23'-4"	2
fp3	36"	11'-2"	3
fp4	36"	15'-8"	3
fp5	8"	12'-8"	1
fp6	26"	11'-2"	1
fp7	26"	15'-8"	1
fp8	36"	26'-8"	1
fp9	22"	26'-8"	2
fp10	36"	12'-8"	2

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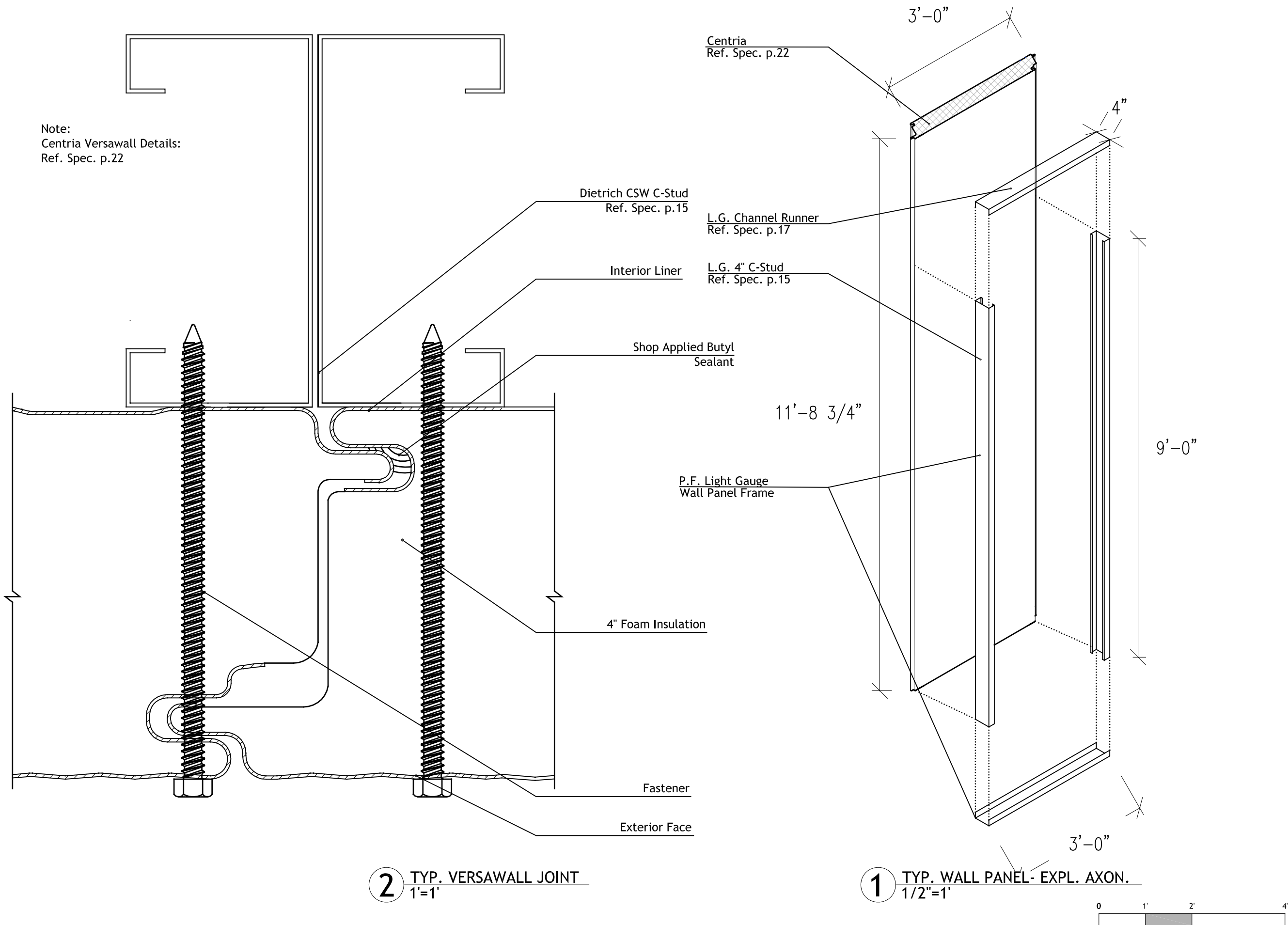
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p:412.726.6503  
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DRAWN BY: JOHN EATRIDGE  
DATE: 08/07/2007  
TITLE: VERSAWALL SCHEDULE

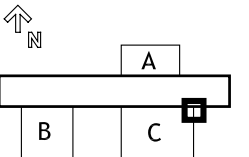


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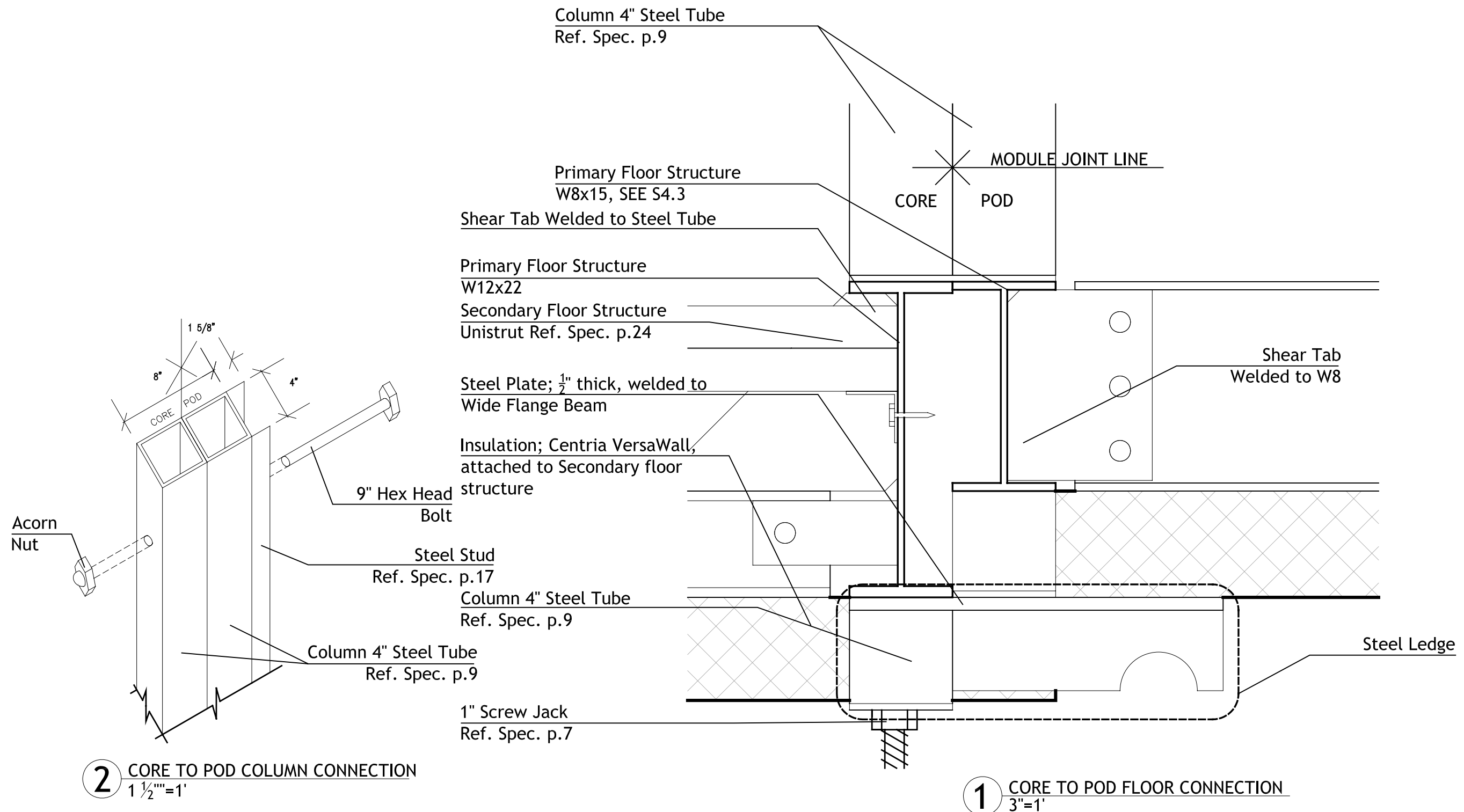
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**CONTACT:**  
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p:412.726.6503  
f:412.268.7819

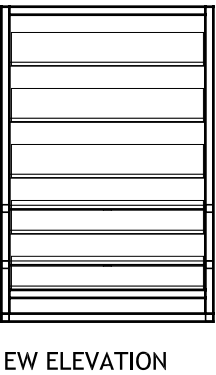
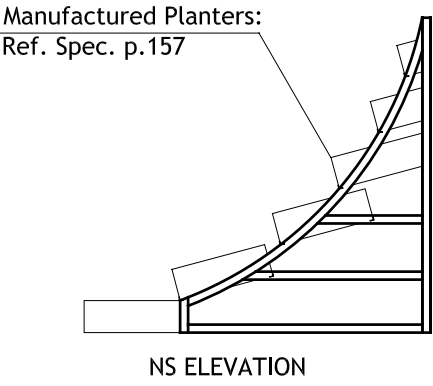
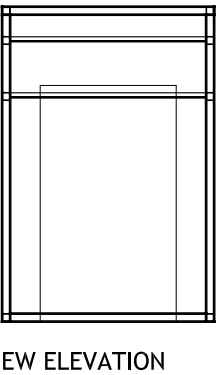
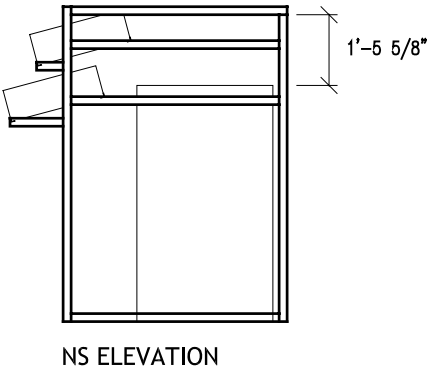
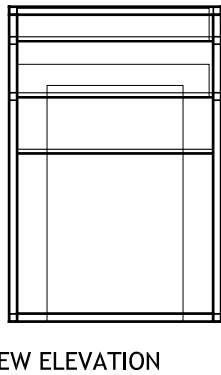
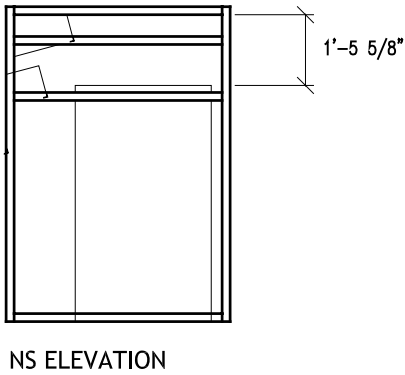
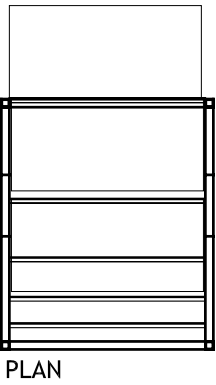
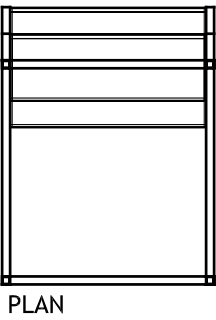
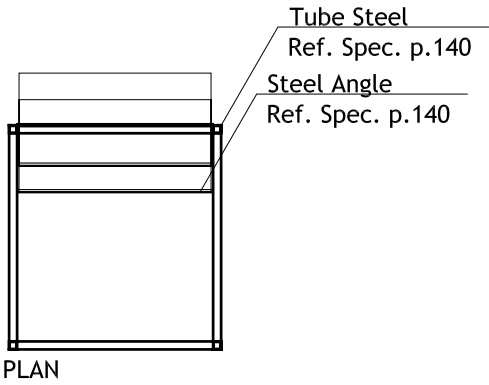


DRAWN BY: JOHN EASTRIDGE  
DATE: 08/07/2007  
TITLE: POD-CORE CONNECT.

**S4.15**



Note:  
The structure allows for over a foot of clearance above the lid of the water tanks in order for access to fill or empty the tanks.

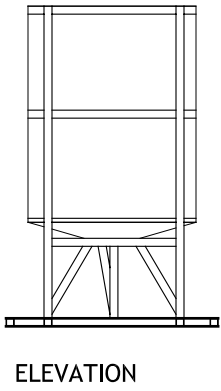
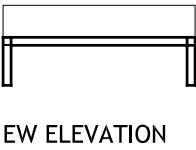
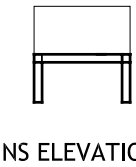
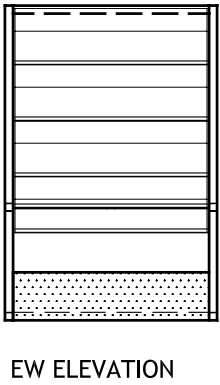
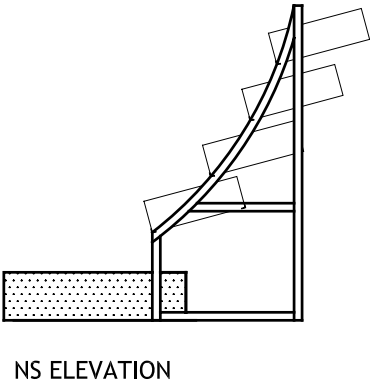
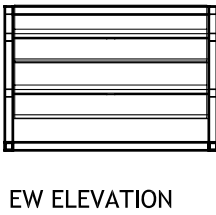
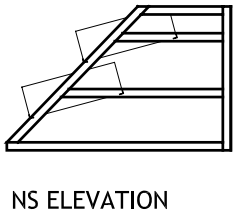
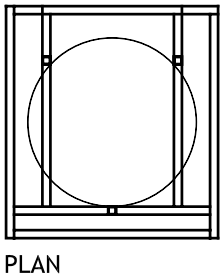
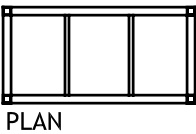
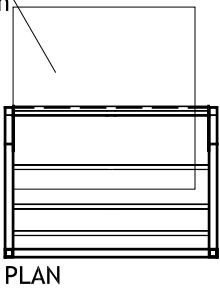
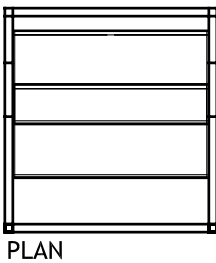


7 SEGMENT A  
1/4"=1'

6 SEGMENT B  
1/4"=1'

5 SEGMENT C  
1/4"=1'

1' Deep Bog  
Used for rainwater collection

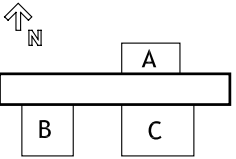
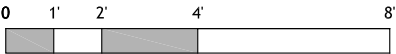


4 SEGMENT D  
1/4"=1'

3 SEGMENT E  
1/4"=1'

2 SEGMENT F  
1/4"=1'

1 SEGMENT G  
1/4"=1'



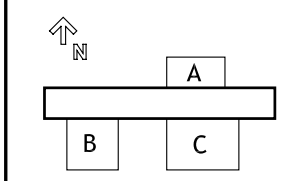


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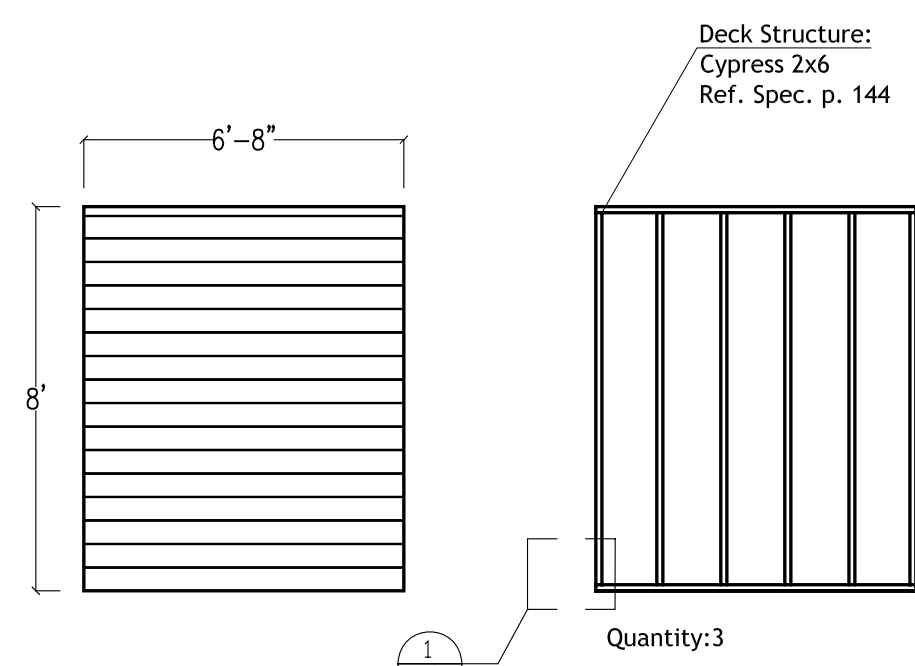
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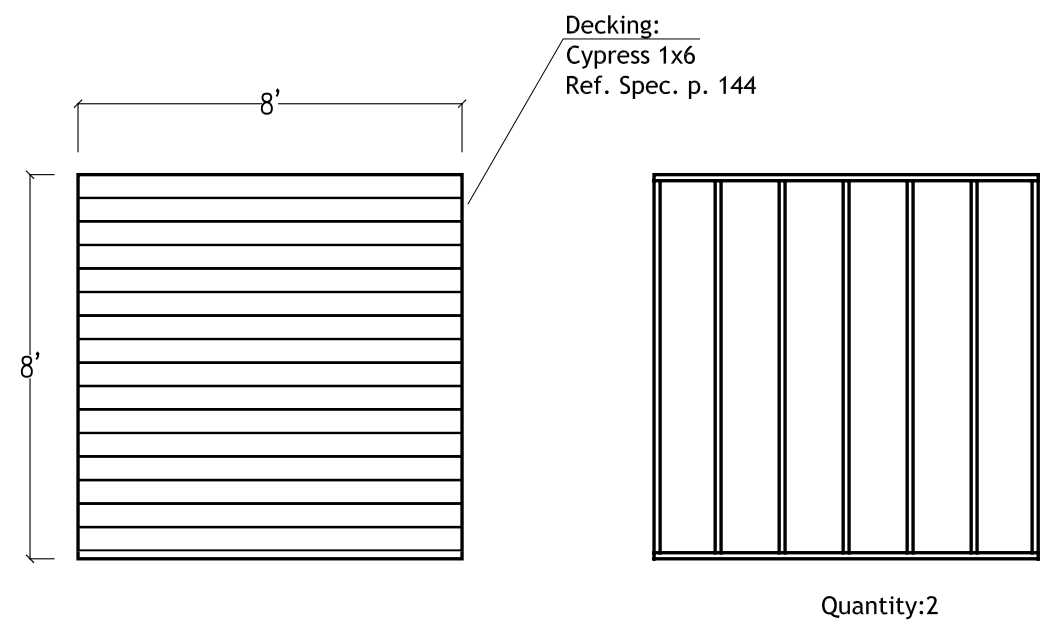


DRAWN BY:	MEREDITH MAGIN
DATE:	08/07/2007
TITLE:	DECK SCHEDULE

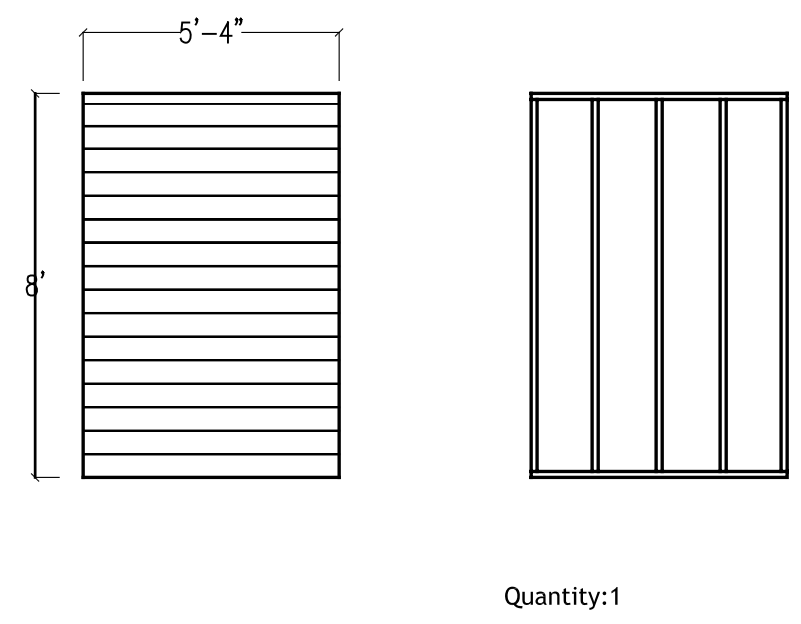
**S 4.17**



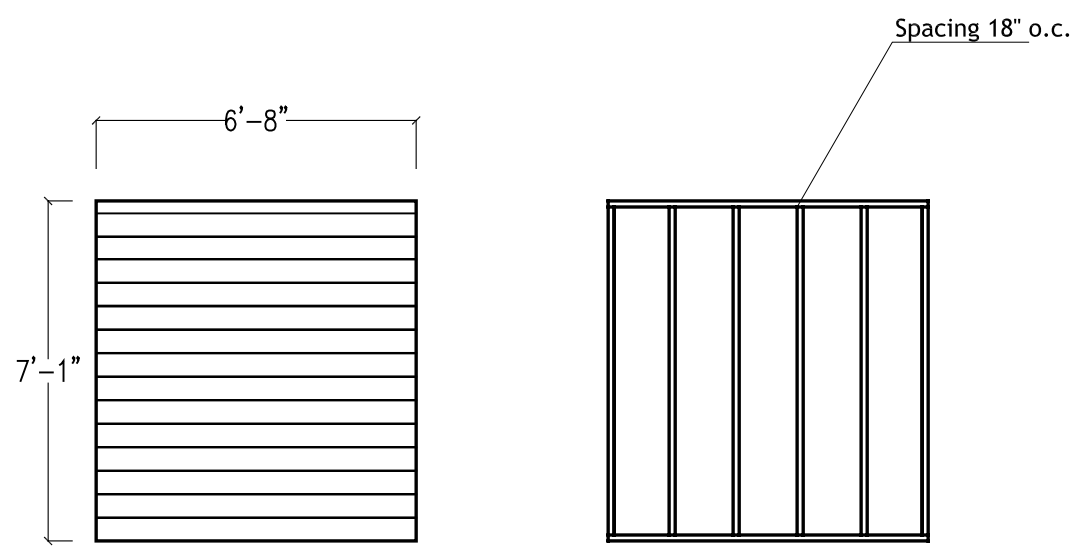
**4** DECK SCHEDULE A Qty: 3  
1/4"=1'



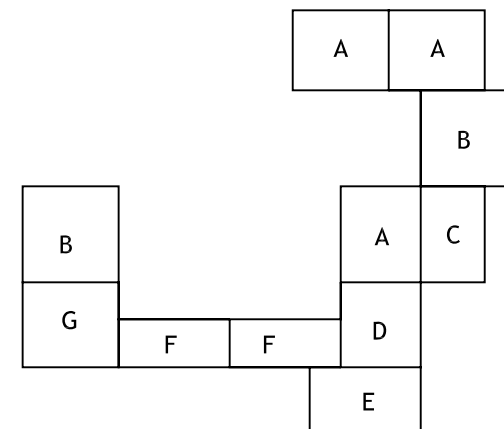
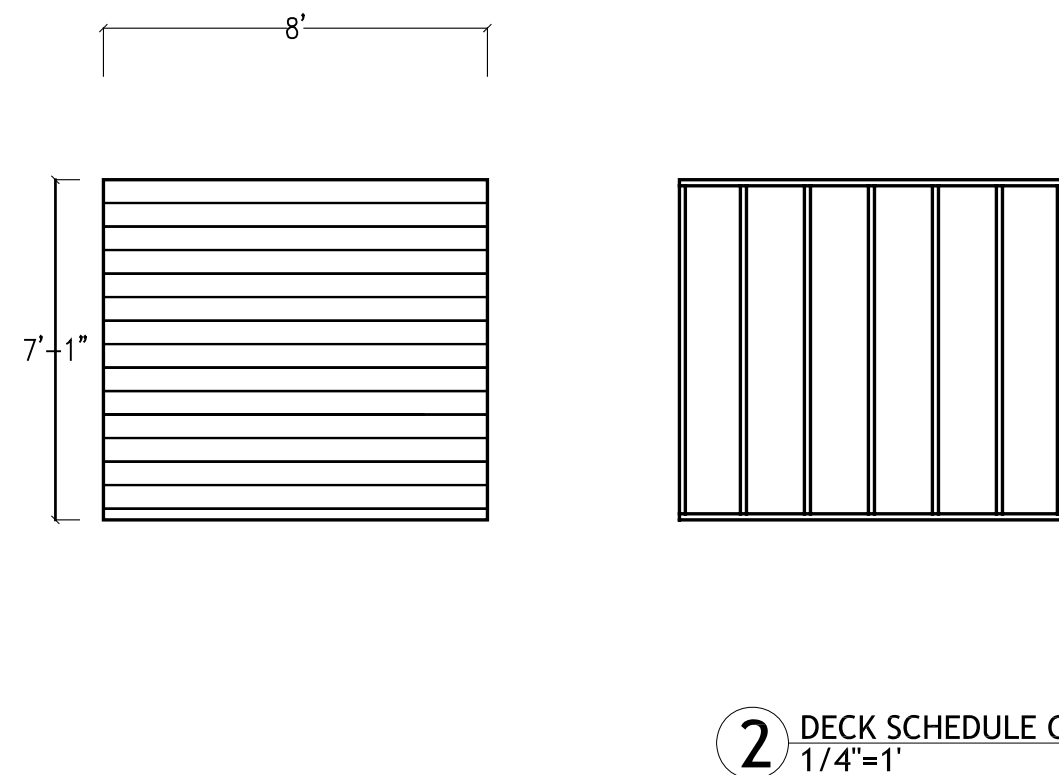
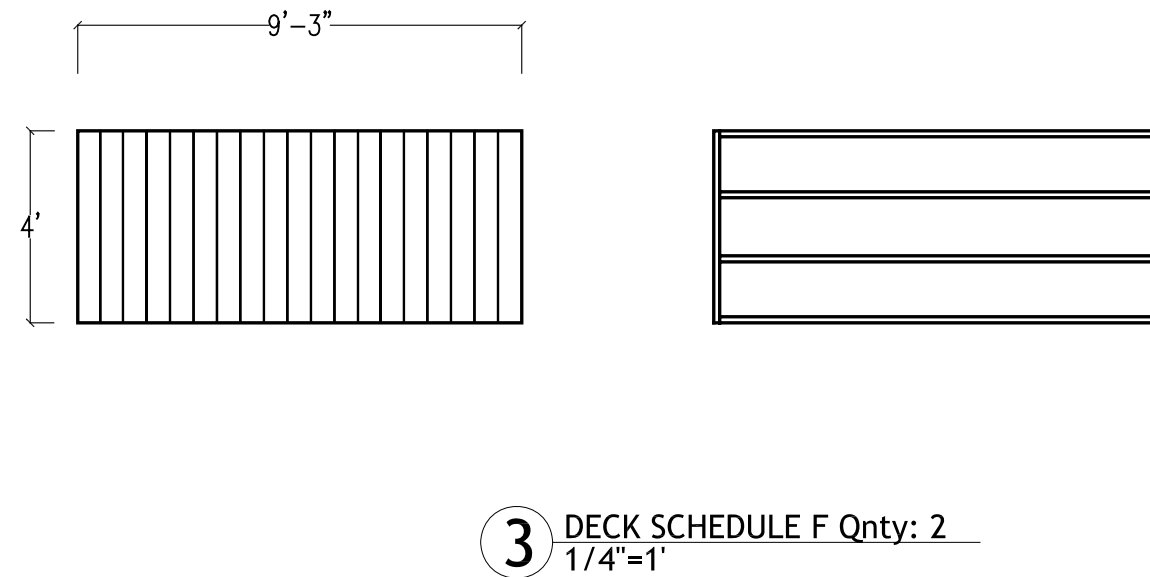
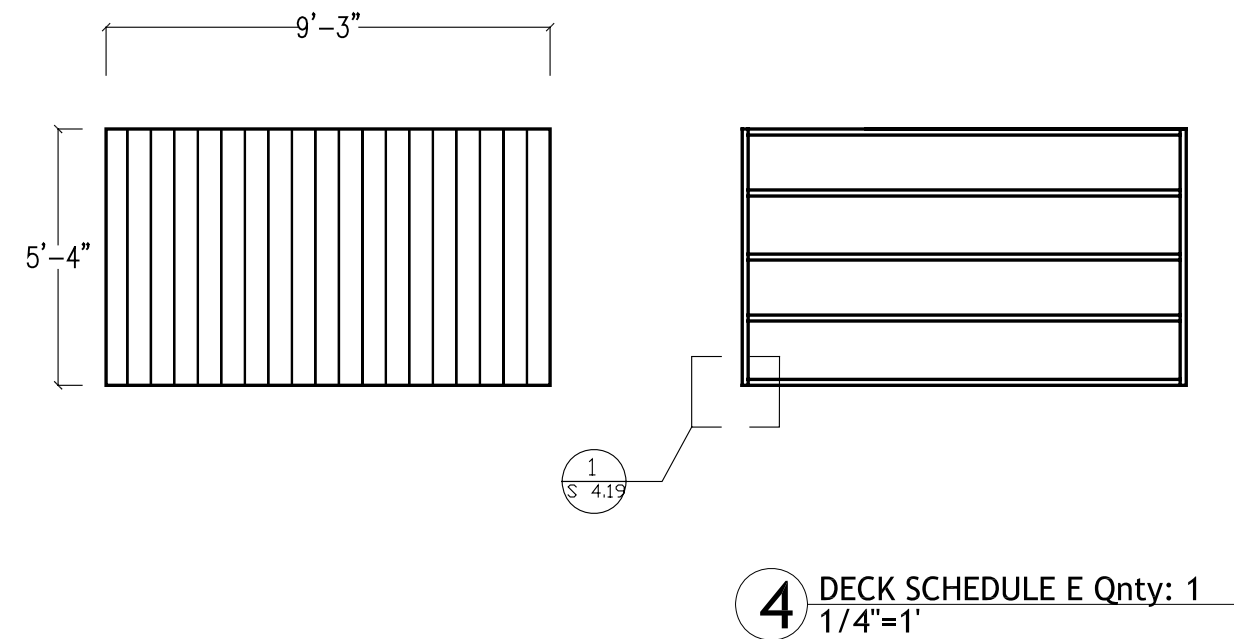
**3** DECK SCHEDULE B Qty: 2  
1/4"=1'



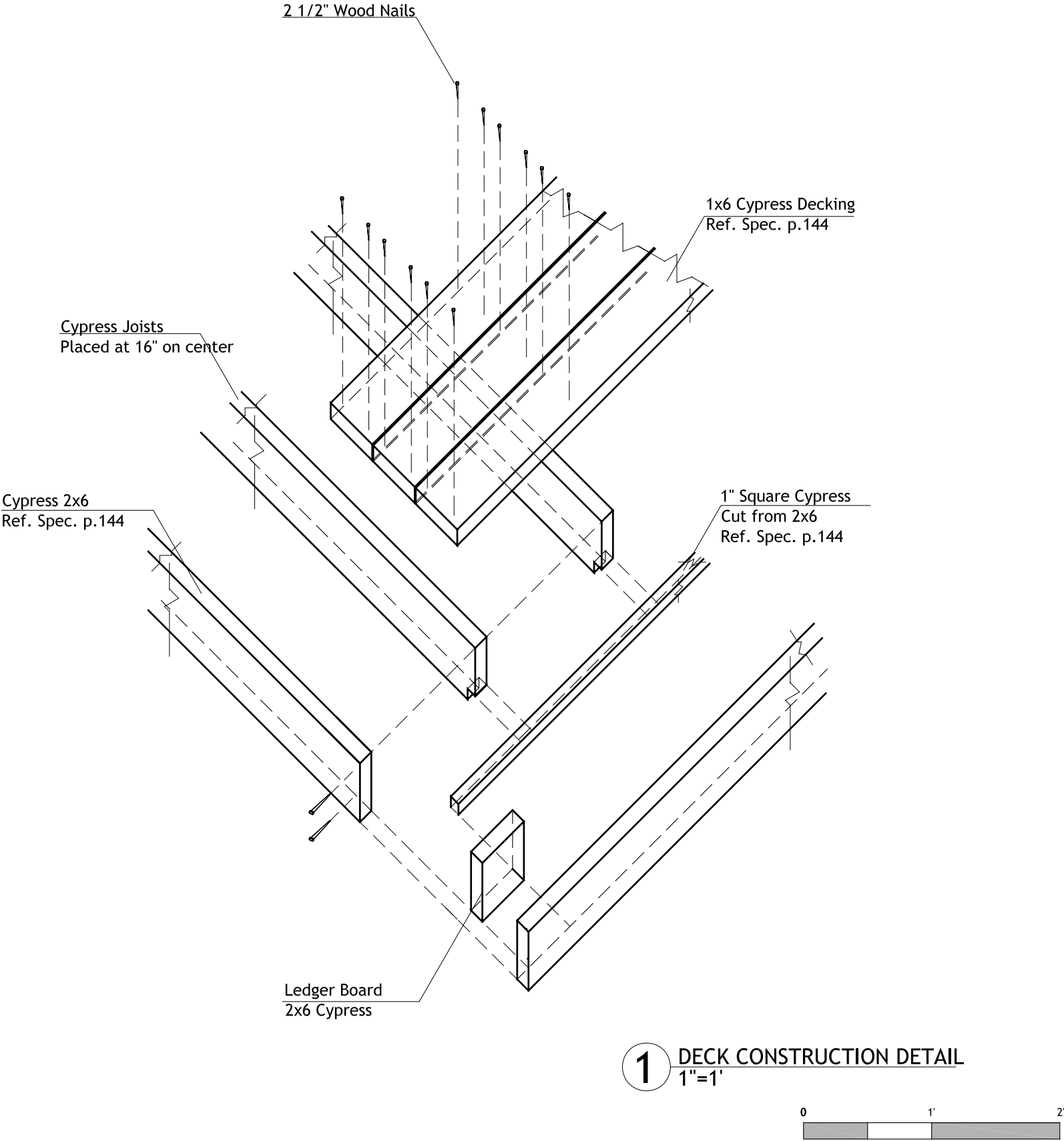
**2** DECK SCHEDULE C Qty: 1  
1/4"=1'



**1** DECK SCHEDULE D - Qty: 1  
1/4"=1'



The inner 2x6 joists have 1" notches cut out of them, these joists then sit on a 1" square piece of cypress. The joists are also toenailed into the outer cypress framing. A piece of 2x6 server as a ledger board in order to prevent nailing into the end grain.





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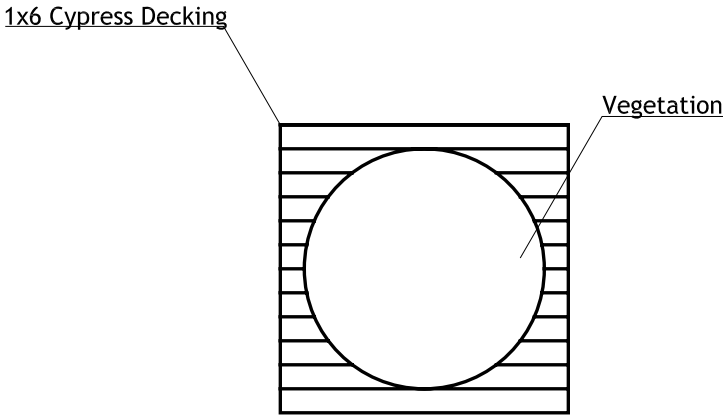


DRAWN BY:	MEREDITH MAGIN
DATE:	08/07/2007
TITLE:	DECK CONSTRUCTION DETAIL

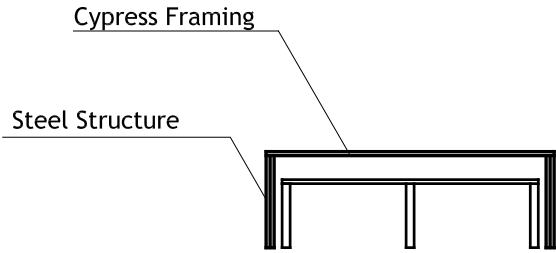
S4.19

Note:

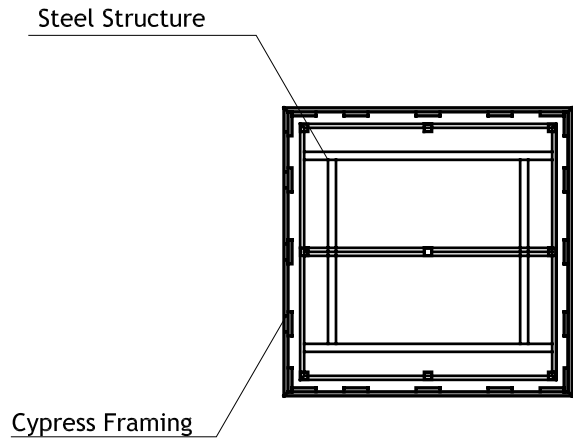
The global gardens are made up of inner steel structures which support the weight of planters, as well as outer structures of cypress which match the material of the decks. The steel structure utilized 2" square tube steel as well as 1" steel angle. The wood exterior is made of 1x6 cypress decking.



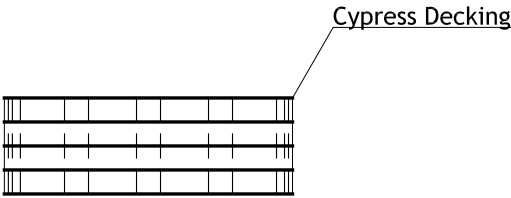
4 GLOBAL GARDEN UPPER PLAN  
1/4"=1'



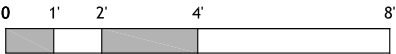
3 GLOBAL GARDEN SECTION  
1/4"=1'



2 GLOBAL GARDEN LOWER ELEVATION  
1/4"=1'



1 GLOBAL GARDEN ELEVATION  
1/4"=1'

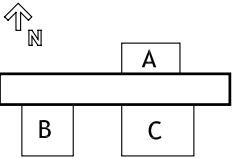


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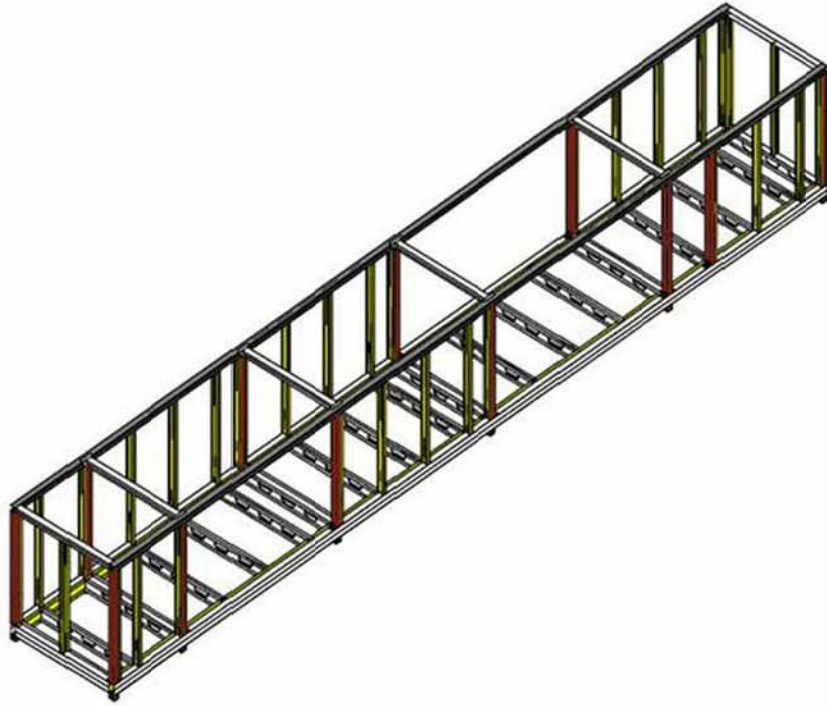
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f:412.268.7819

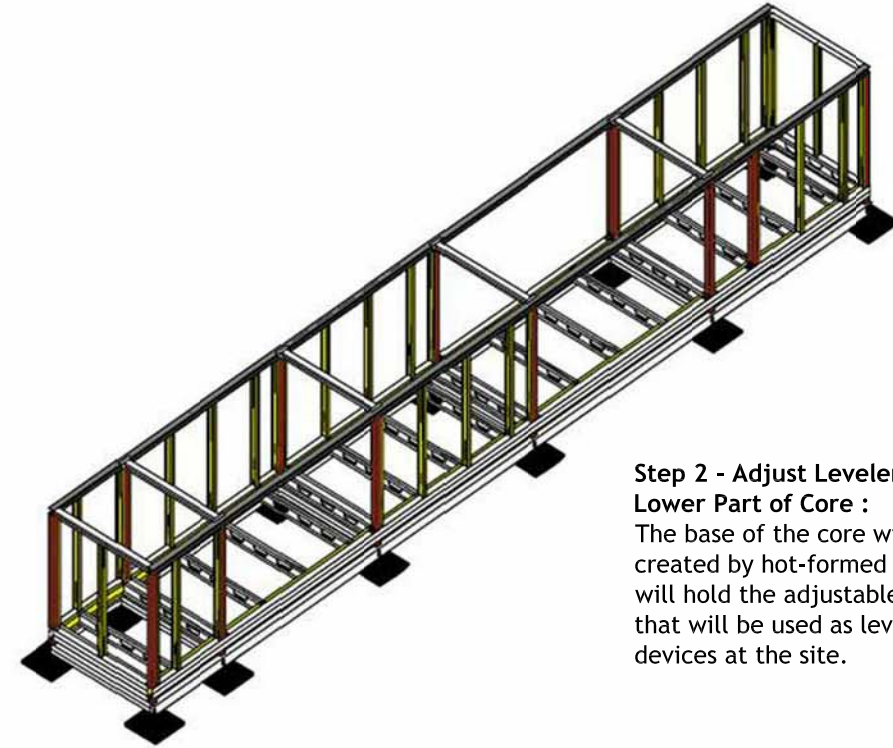


DRAWN BY: MEREDITH MAGIN  
DATE: 08/07/2007  
TITLE: GLOBAL GARDEN STRUCTURE

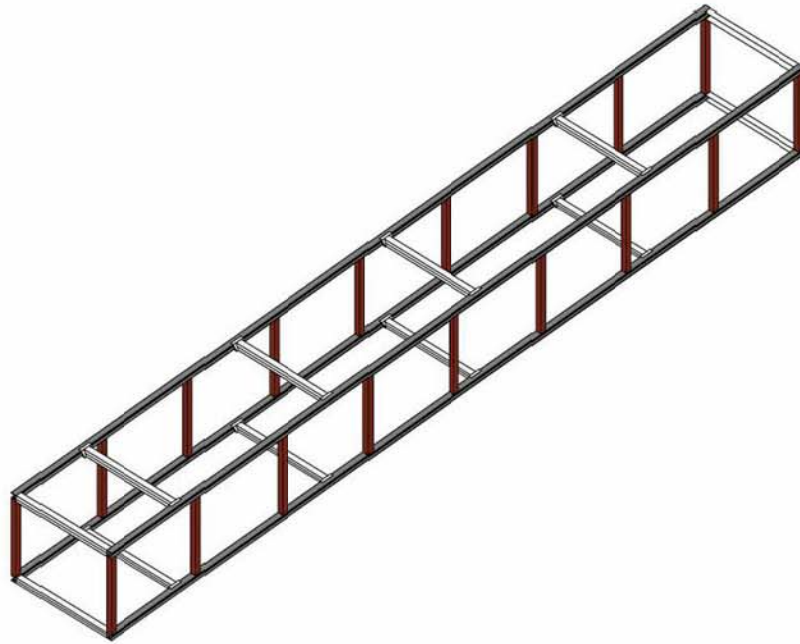
**S 4.20**



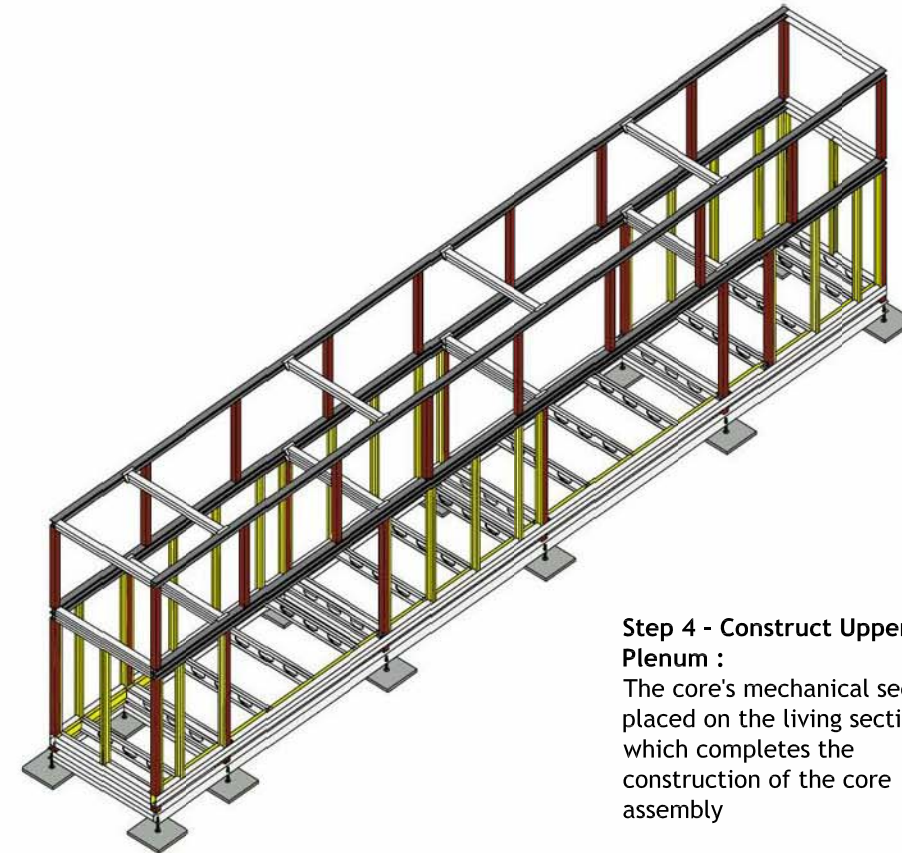
**Step 1 - Construct Core Frame :**  
A steel cage will form the outer frame using hot-formed MC channels. Cold-formed C channels will support the floor system and hang from joist-hangers off the outer frame.



**Step 2 - Adjust Levelers on Lower Part of Core :**  
The base of the core will be created by hot-formed steel and will hold the adjustable footers that will be used as leveling devices at the site.

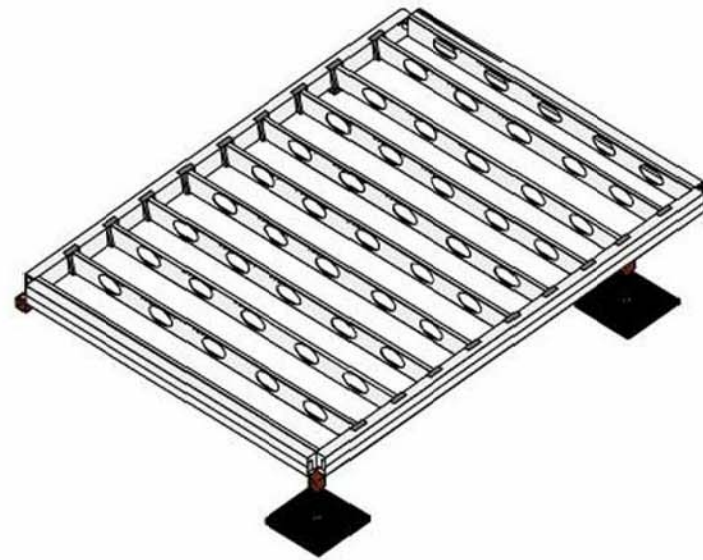


**Step 3 - Construct Upper Plenum :**  
The core's mechanical section above the living section will be a box truss constructed in steel tubes and hot formed MC channels

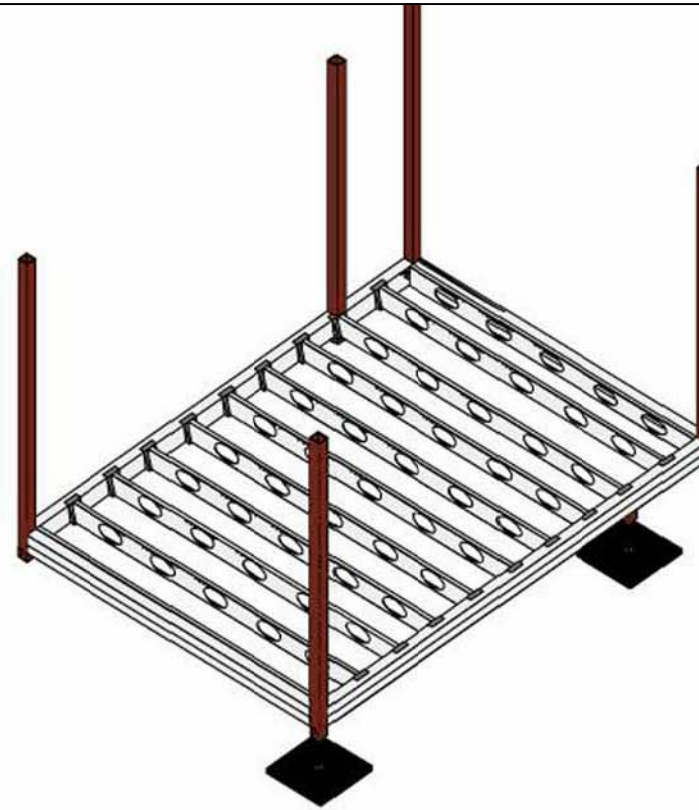


**Step 4 - Construct Upper Plenum :**  
The core's mechanical section is placed on the living section which completes the construction of the core assembly

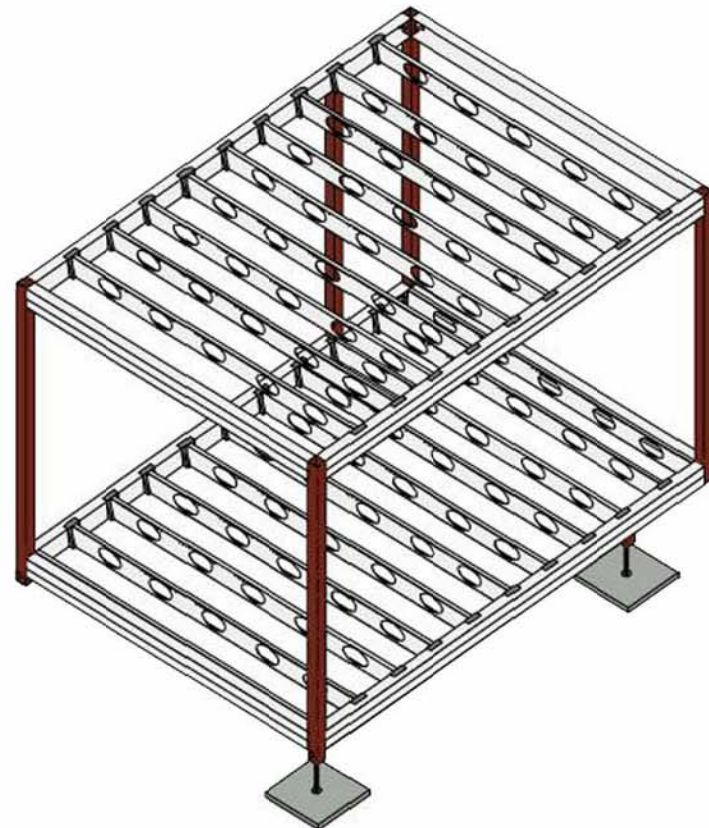




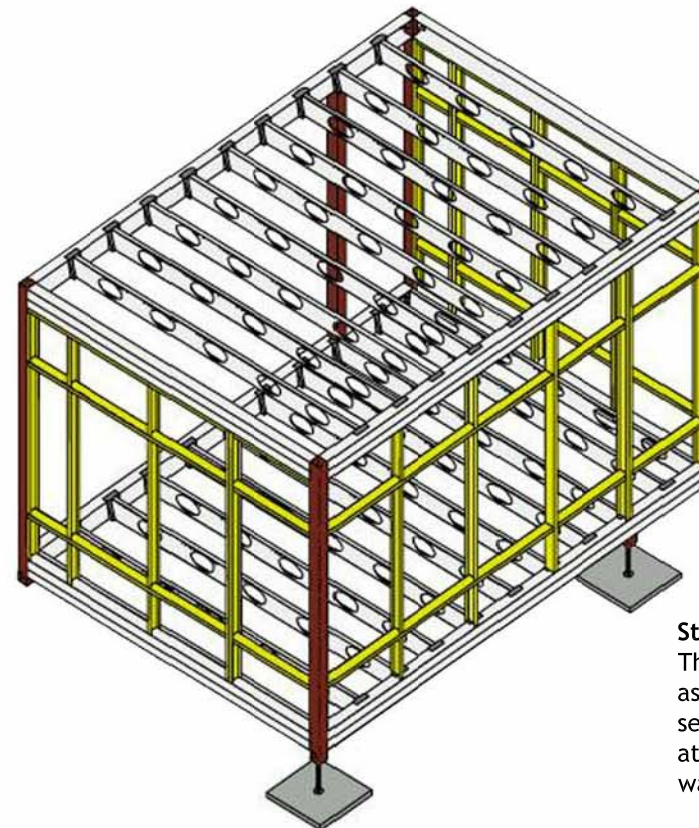
**Step 5 - Construct Pod C Base :**  
Framed by hot-formed MC channels, the base will have joist hangers holding the cold-formed trade-ready steel pieces.



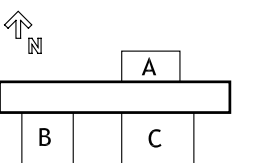
**Step 6 - Assemble Columns :**  
Steel tube columns will support the roof structure and bring together the frame of the floor structure.



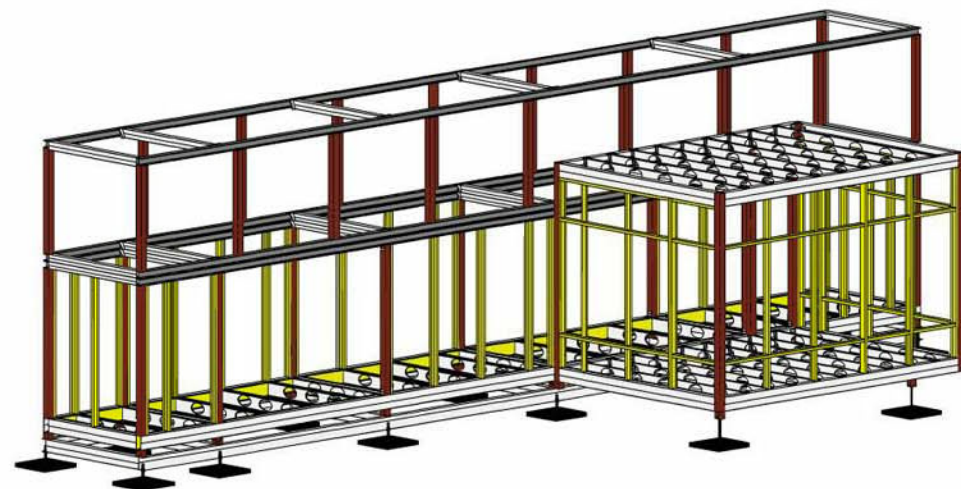
**Step 7 - Assemble Roof Structure :**  
Like the base, the roof structure is framed by hot-formed MC channels that will have joist hangers holding the cold-formed trade-ready steel pieces.



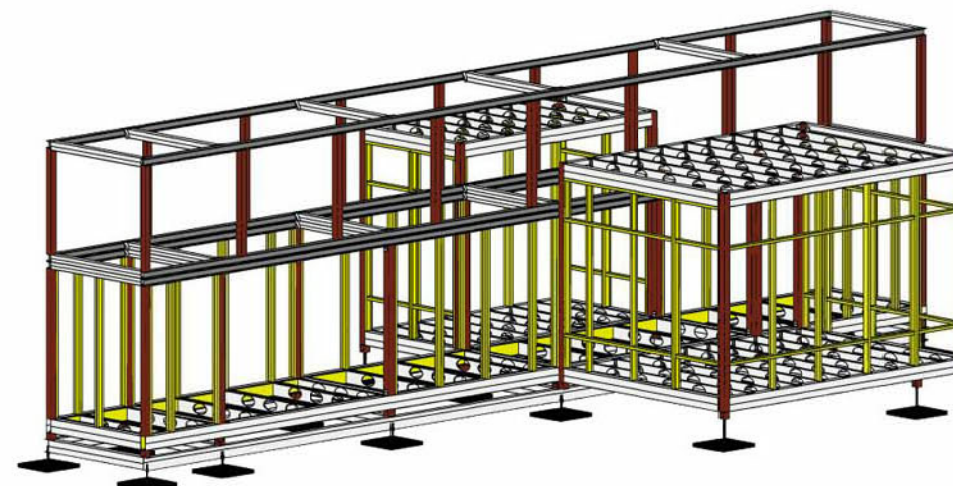
**Step 8 - Assemble Wall Sections:**  
The cold formed C channels are assembled back to back to form separate frames that can be attached or detached to create wall openings.



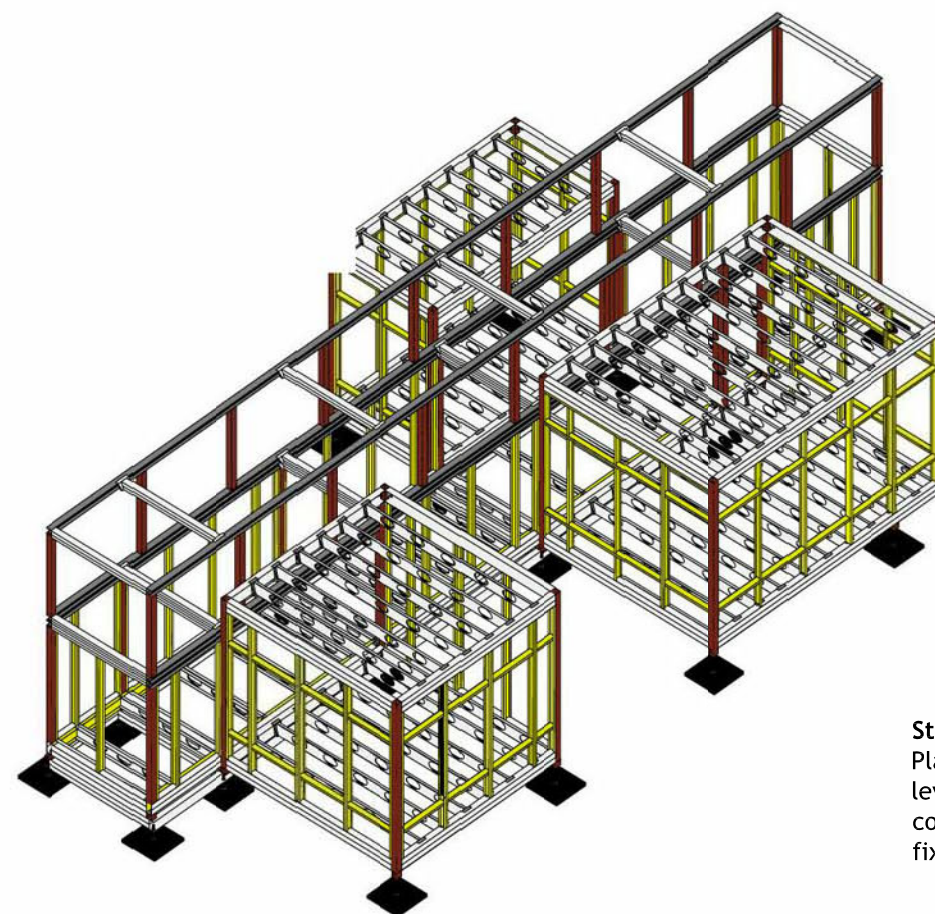




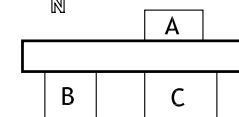
**Step 9 - Place Pod C**  
Place Pod C upon MC primary leveling structure. Using a come-along draw pod to core and fix with steel plate wedges.



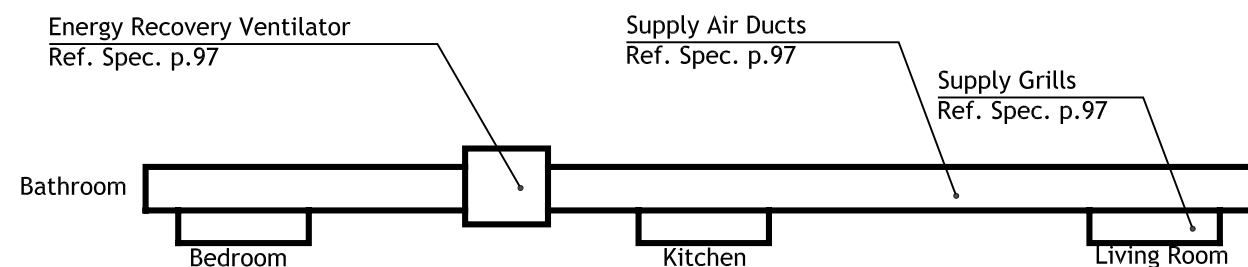
**Step 10 - Place Pod A**  
Place Pod A upon MC primary leveling structure. Using a come-along draw pod to core and fix with steel plate wedges.



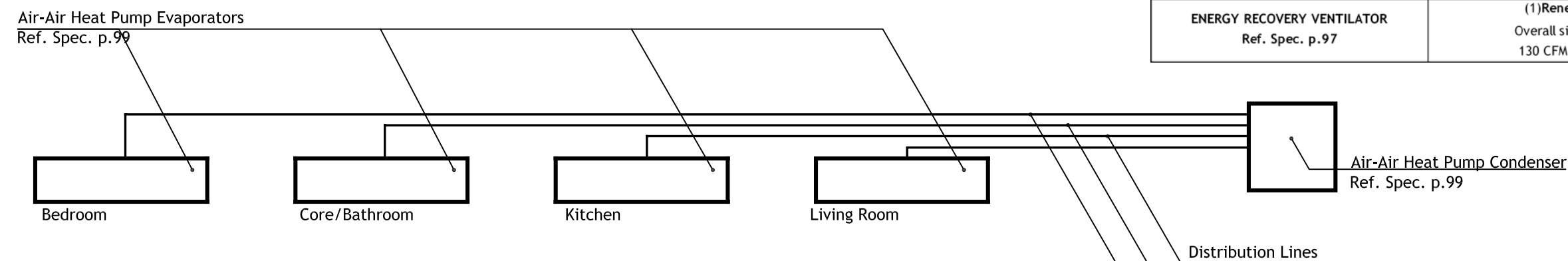
**Step 11 - Place Pod B**  
Place Pod B upon MC primary leveling structure. Using a come-along draw pod to core and fix with steel plate wedges.



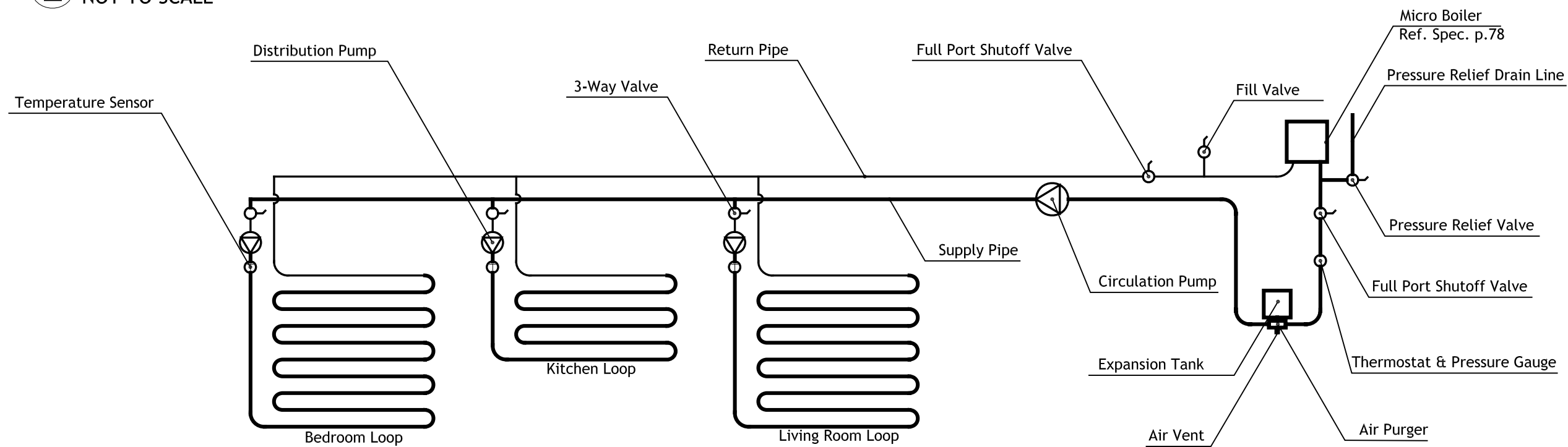




**3** VENTILATION DIAGRAM  
NOT TO SCALE



**2** HEATING/COOLING DIAGRAM  
NOT TO SCALE



**1** RADIANT HEATING DIAGRAM  
NOT TO SCALE

HVAC EQUIPMENT SCHEDULE	
VRV-HEAT PUMP CONDENSER Ref. Spec. p.99	(1)Daikin VRV heat pump condenser - RXYMQ36MVJU Overall size: 35' 7/16" x 13' 3/4" x 52' 15/16" Weight: 310 lbs Scroll Compressor
WALL- MOUNTED EVAPORATOR Ref. Spec. p.99	(3) Daikin Wall-mounted Evaporators - FXAQ09MVJU Overall Size: 31' 1/4" x 9'1/8" x 11 3/8"
CEILING EVAPORATOR Ref. Spec. p.99	(3) Daikin Ceiling-mounted Evaporators - FXDQ09MVJU Overall Size: 27' 9/16" x 24' 7/16" x 7 7/8"
INSTANTANEOUS WATER HEATER Ref. Spec. p.78	(1) SEISCO SH-5 Tankless Water Heater Overall Size: 10.25"x15.75"x6.25" Weight: 15 lbs 240V, 2.5 kW Max temp increase: 25 °F @ 1.4 GPM
PEX TUBING FOR RADIANT FLOOR HEATING	HePex Tubing Diameter: 5/8"
THERMOSTAT Ref. Spec. p.99	(4) Daikin 7 Day Programmable Controller- BRC1D71 60 degrees to 90 degrees set-point range 7-Day time clock 5-Temp Settings set-back function
ENERGY RECOVERY VENTILATOR Ref. Spec. p.97	(1)RenewAir® ERV - EV130 Overall size: 21"x 32" x 17 1/2" 130 CFM 80% Efficiency

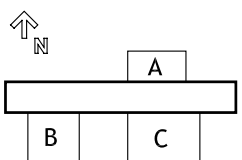


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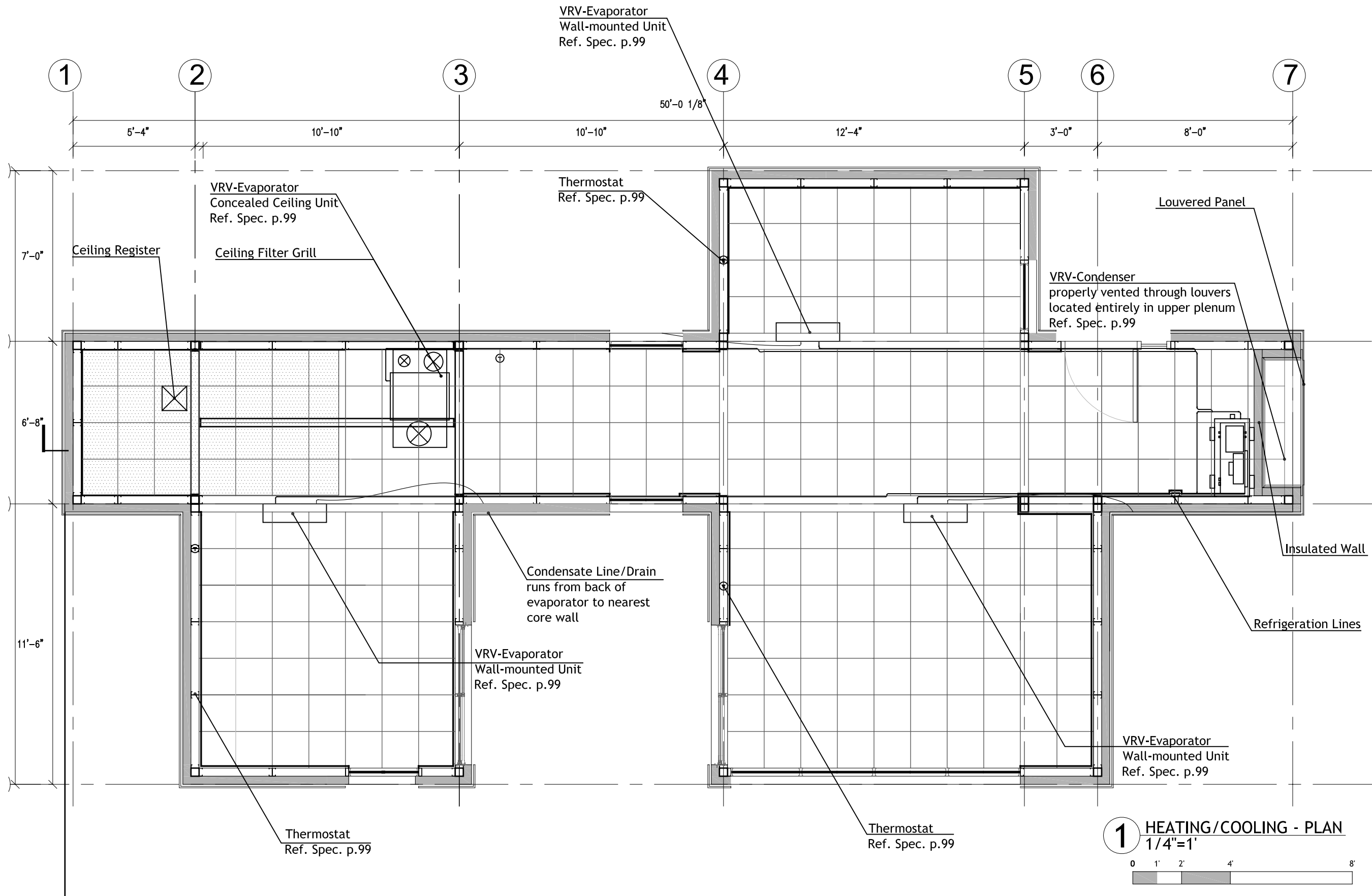
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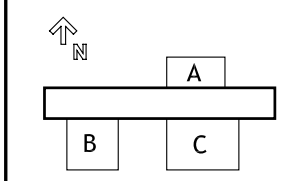
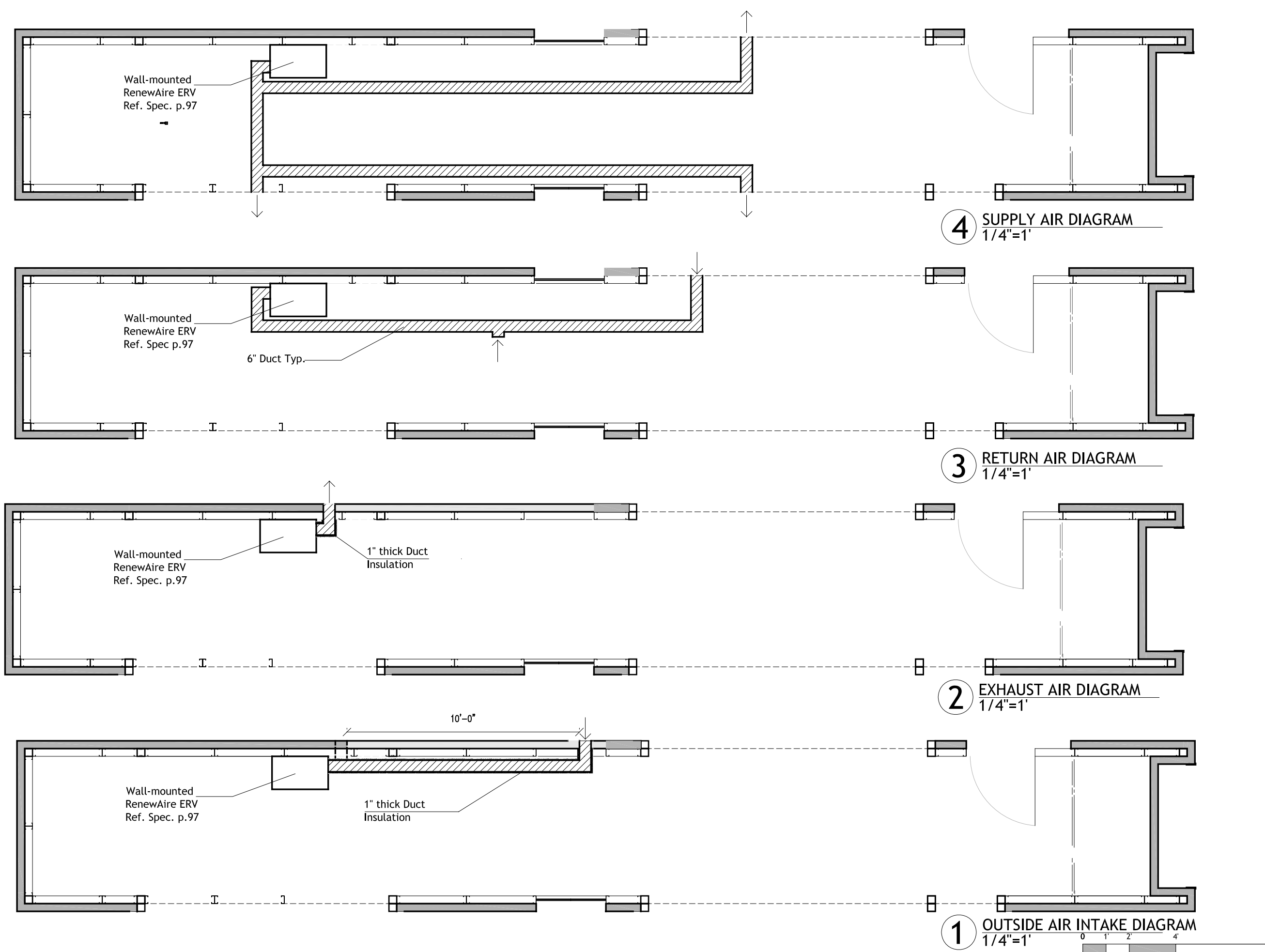
CONTACT:  
Steve Lee  
p:412.726.6503  
f:412.268.7819

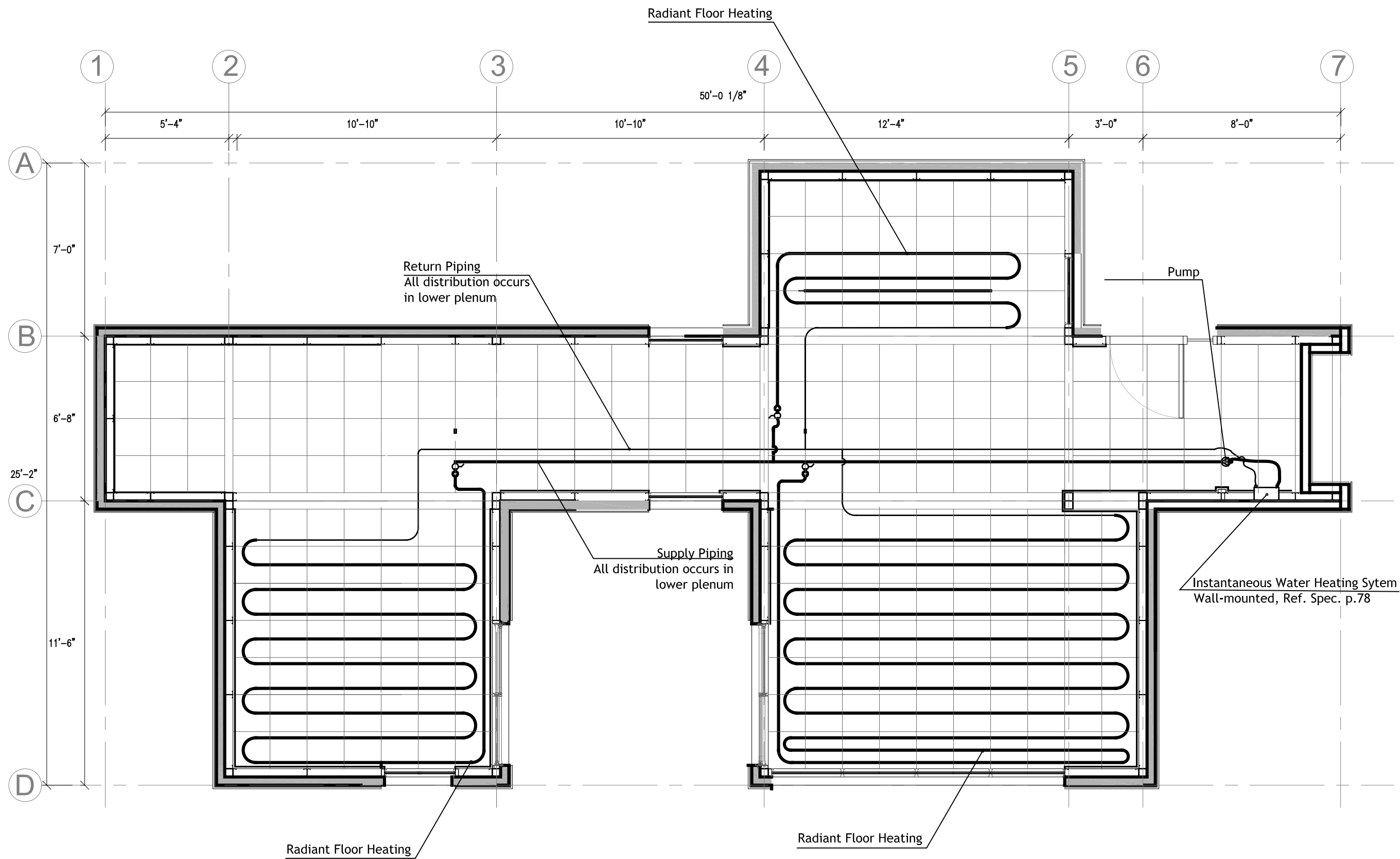


DRAWN BY: LEAH WOLKOVICH  
DATE: 08/07/2007  
TITLE: HVAC SCHEMATIC

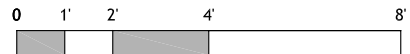
**M1**









**1** RADIANT HEATING PLAN  
1/4"=1'



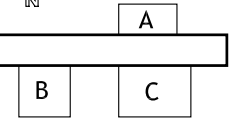



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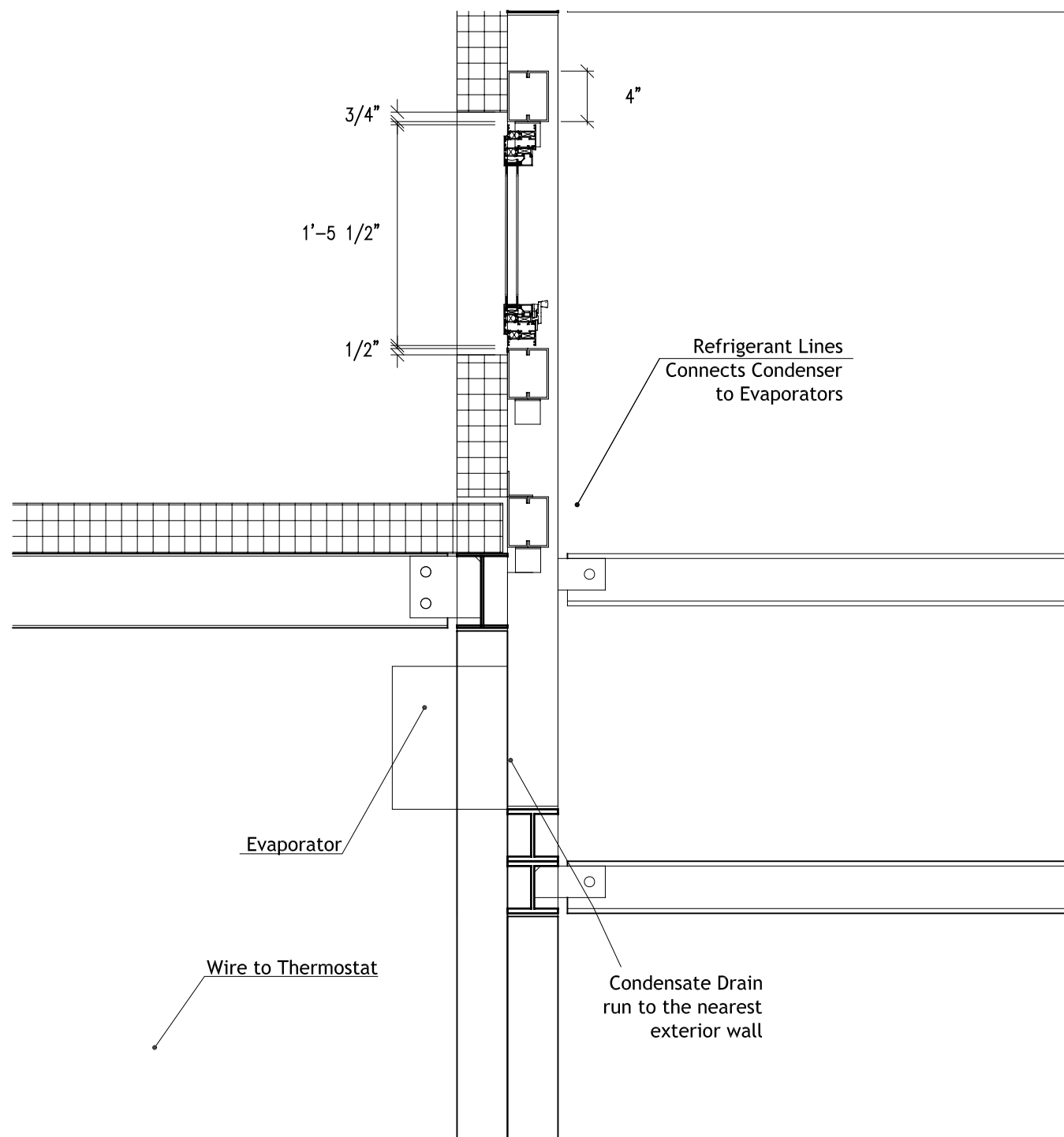
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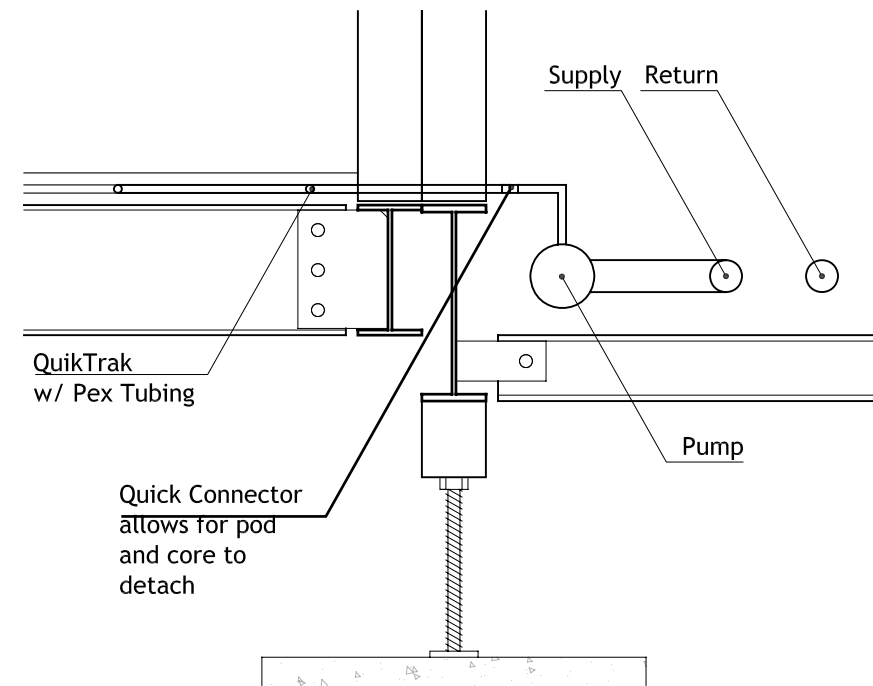


DRAWN BY:	LEAH WOLKOVICH
DATE:	08/07/2007
TITLE:	RADIANT HEATING

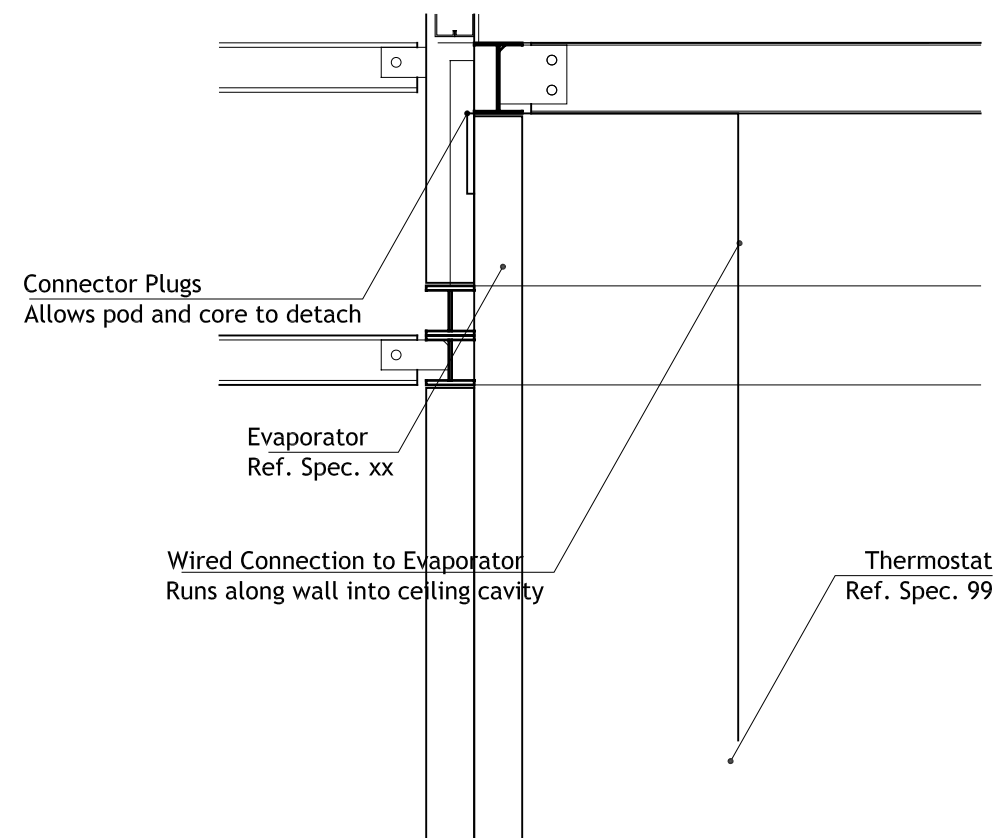
**M4**



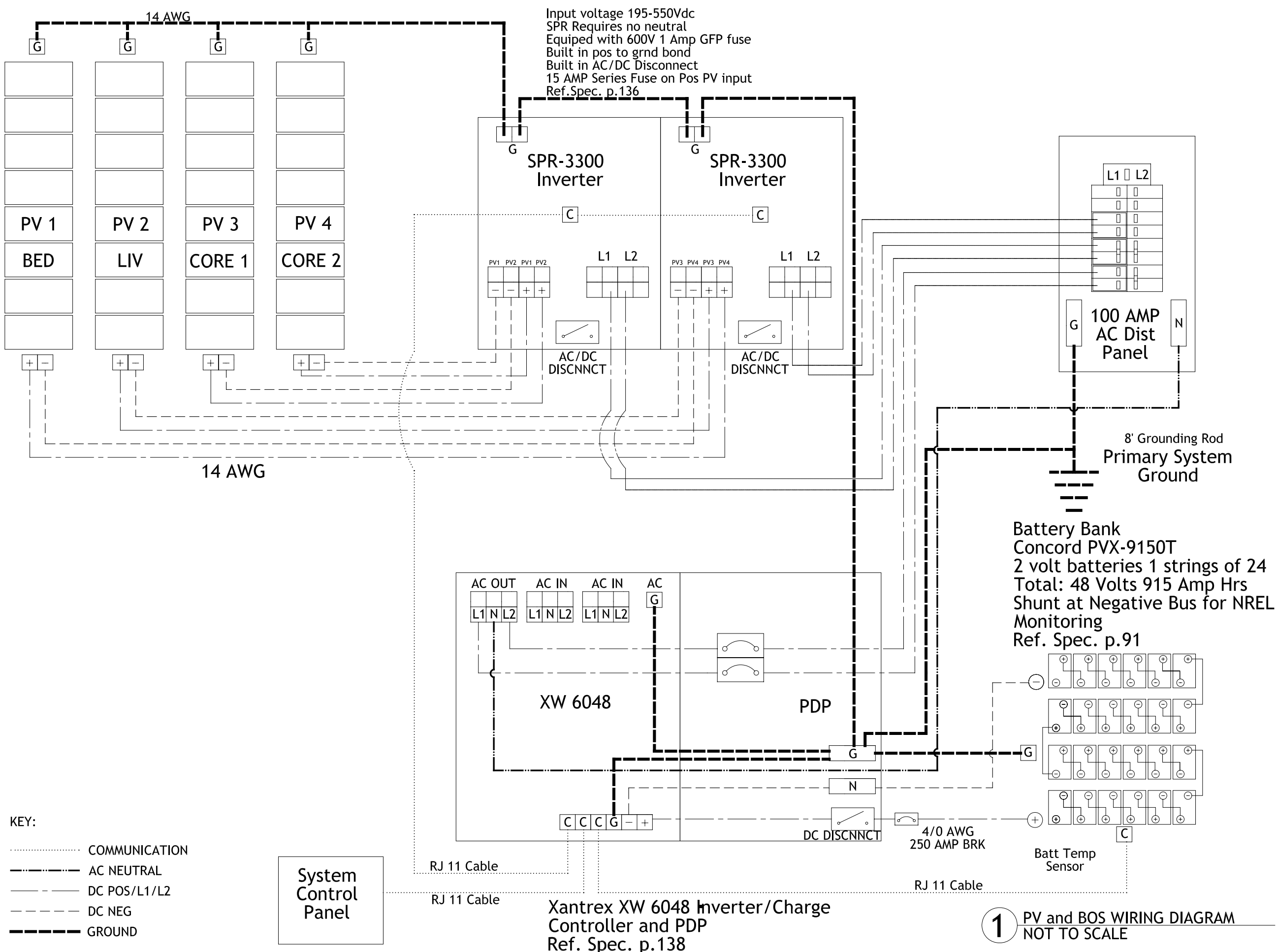
**2** DETAIL OF VRV CONNECTIONS  
1"=1'




**3** DETAIL OF RADIANT FLOOR CONNECTIONS  
1"=1'



**1** DETAIL OF THERMOSTAT CONNECTION  
3/4"=1'



1 PV and BOS WIRING DIAGRAM  
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DRAWN BY: ADAM LACKETT  
DATE: 08/07/2007  
TITLE: PV/BOS WIRING

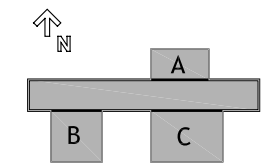
**E 1.0**

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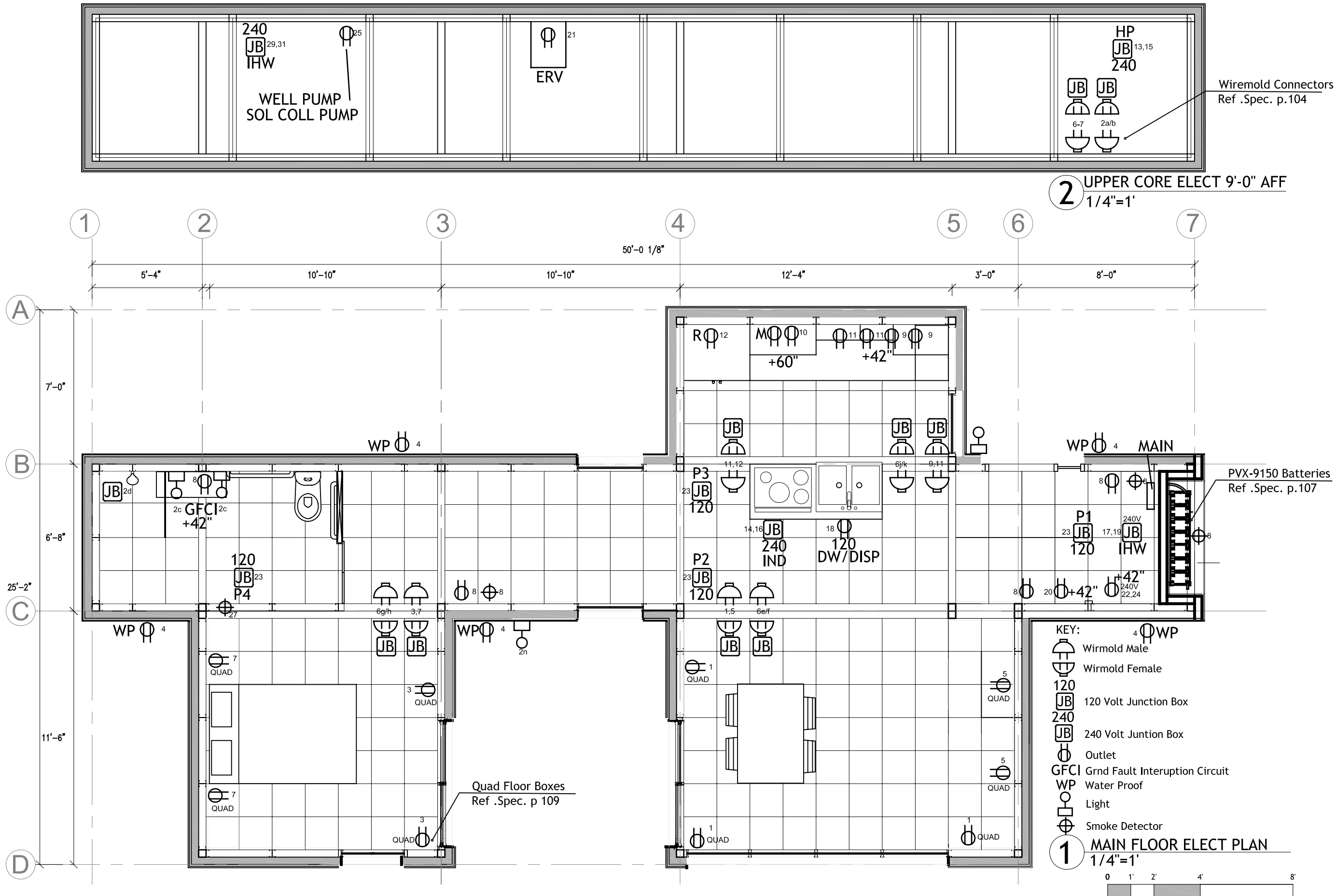
DRAWN BY: ADAM LACKETT  
DATE: 08/07/2007  
TITLE: AC PANEL LAYOUT


**E 1.1**

Panel Slot	Realistic Max Current (A)	Breaker Current Rating (A)	Circuit Description	Phase		Circuit Description	Breaker Current Rating (A)	Realistic Max Current (A)	Panel Slot
Utility Mains									
LEFT			Mains	A	B	Mains			RIGHT
AC Distribution Panel									
1	15	15	Living room receptacles #1	A		Upper core, lower core, outdoor lights	15		2
3	15	15	Bedroom receptacles #1	B		Outside receptacles	20	20	4
5	15	15	Living room receptacles #2	A		Living room, bedroom, kitchen lights	15		6
7	15	15	Bedroom receptacles #2	B		Lower core, bathroom, miscellaneous GFCI	20	20	8
9	20	20	Kitchen receptacles #1	A		Microwave	20		10
11	20	20	Kitchen receptacles #2	B		Refrigerator	20		12
13	26	30	Heat pump	A		Oven range	30		14
15				B	16				
17				A	18				
19		30	Instantaneous water heater (space heating)	B		Clothes washer	15		20
21		15	ERV	A		Clothes dryer	30		22
23		15	Radiant floor pump and controls	B					24
25		15	Well pump, SWH pump	A		SPARE			26
27			SPARE	B		SPARE			28
29	26	30	Instantaneous water heater (DHW)	A		SunPower inverter #1		13.8	30
31				B	32				
33			SPARE	A		SunPower inverter #2		13.8	34
35			SPARE	B					36
37	<1	15	WattNodes	A		Xantrex inverter/charger		25	38
39				B	40				

**1** AC PANEL LAYOUT  
NOT TO SCALE







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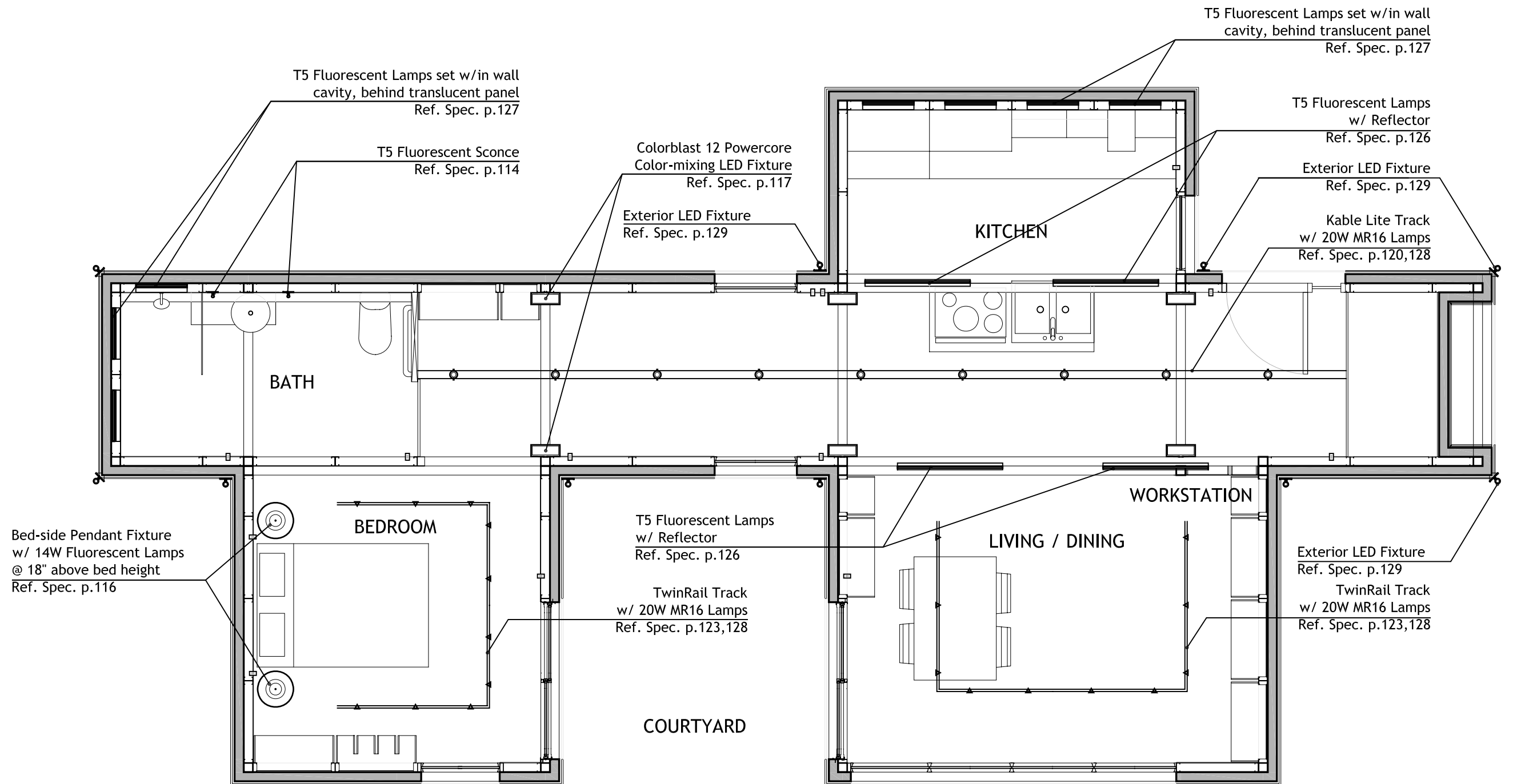
**CONTACT:**  
Steve Lee  
p:412.726.6503  
f:412.268.7819

DRAWN BY: ADAM LACKETT  
DATE: 08/07/2007  
TITLE: HOUSE ELECTRICAL

**E 1.2**

KEY:

- Lutron Wallstation Entry Panel
- Color Kinetics Colordial



1 ELECTRICAL LIGHTING PLAN  
1/4"=1'

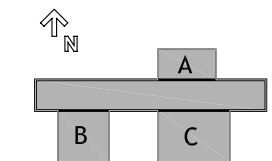


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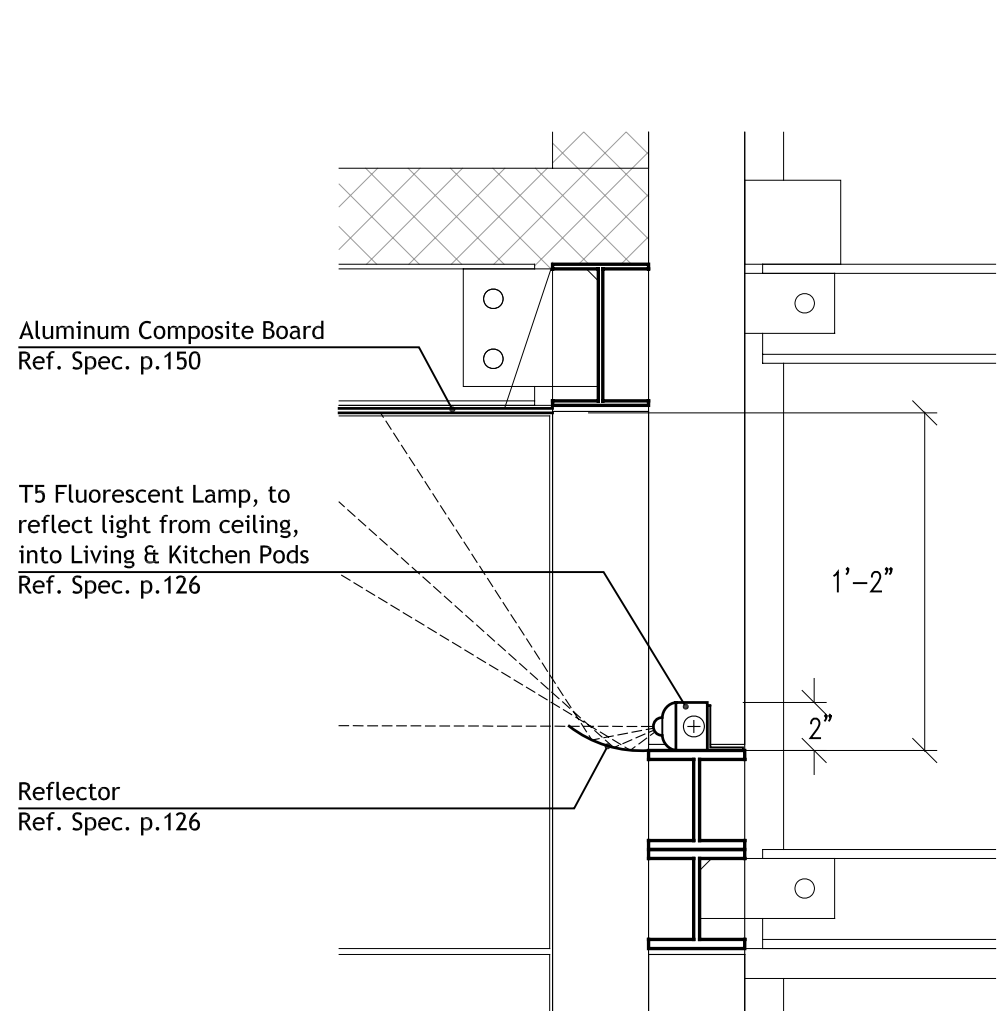
**CONTACT:**  
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p:412.726.6503  
f:412.268.7819



DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: LIGHTING PLAN

**E 2.0**

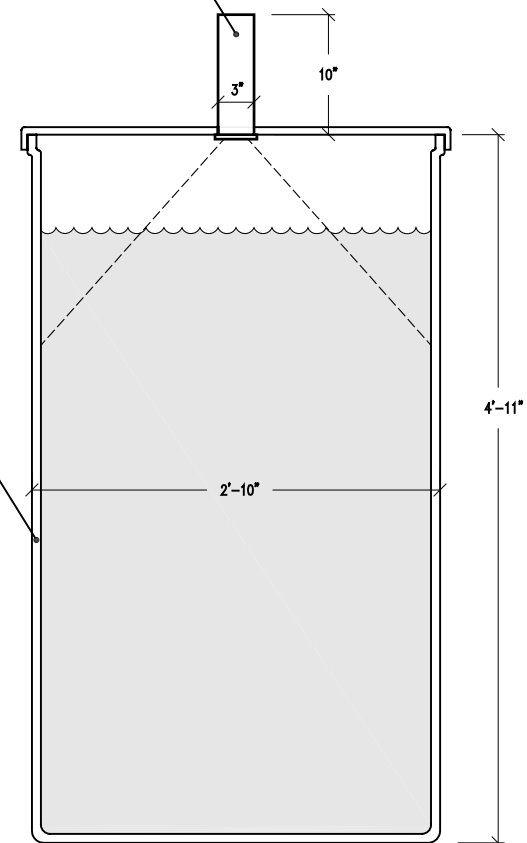
LIGHT FIXTURE SCHEDULE							
Company	Fixture	Ref. Spec.	Lamp	Location	# Lamps	Watts / Lamp	
COLOR KINETICS	ColorBlast 12 Powercore	p.117	LED	Upper Core	6	50	300
LOUIS POULSON	P1 Poul PH 4/3P/100A19/120/WHT	p.116	Fluorescent	Bedroom Nightstands	2	14	28
TECH LIGHTING	Kable Lite System (1 track)	p.120	Halogen	Upper Core	9	20	180
	TwinRail System (2 tracks)	p.123	Halogen	Bedroom & Living Pods	20	20	400
SYSTEMALUX	FreeLight 0841-14-120	p.114	Fluorescent	Bathroom Vanity	2	14	28
LITHONIA	ST4 LITH MS5 1 14T5 MVOLT	p.126	Fluorescent	Kitchen & Living Pods	4	14	56
WINONA	geLED-3001-12V-LO-BKT-FO-SH6-C2-STD	P.130	LED	Core Exterior	10	9	90
	UP WINO BI LED LO BKT FO SHO	p.130	LED	Water Tanks	5	9	45
						TOTAL WATTS:	1127
						WATTS/ft <sup>2</sup> :	1.41



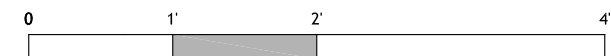
**2** FLUORESCENT MOUNTING DETAIL  
1"=1'

Waterproof LED Fixture, mounted  
upside-down to lid of Watertank  
Ref. Spec. p.130

Potable Water Tank  
Ref. Spec. p.77



**1** WATERTANK LIGHTING DETAIL  
3/4"=1'

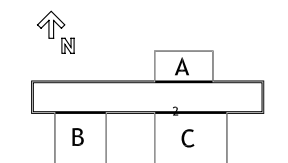


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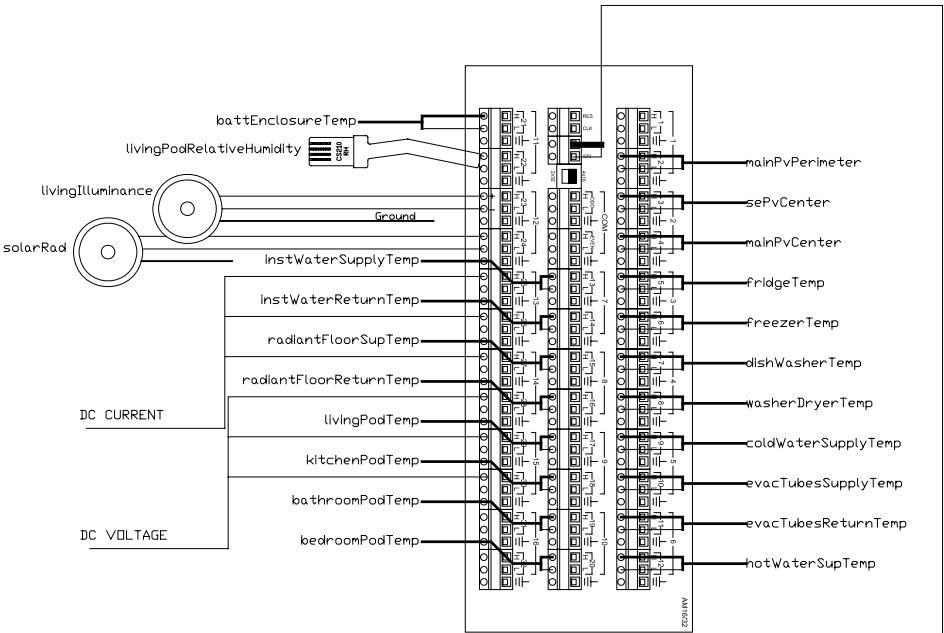


DRAWN BY: EMMA DAVISON  
DATE: 08/07/2007  
TITLE: LIGHT FIXTURE DETAILS

**E 2.1**

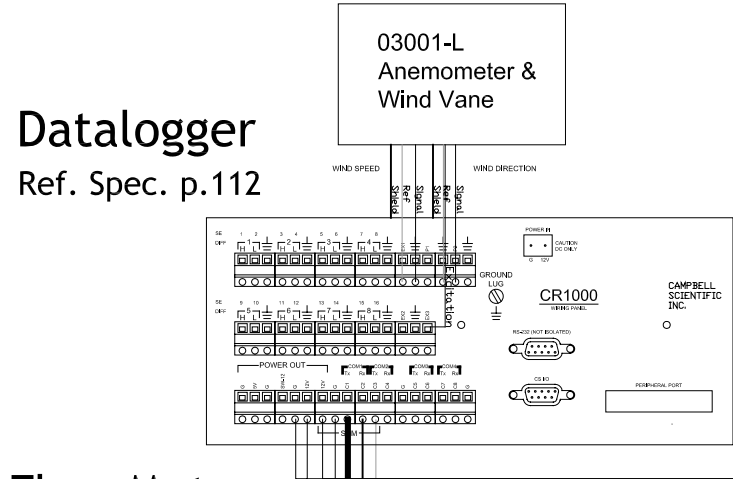
Multiplexer

Ref. Spec. p.112



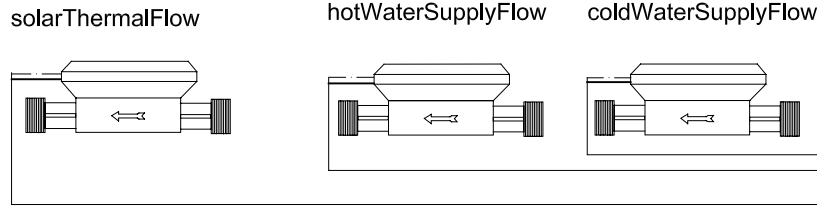
Various Sensors

Ref. Spec. p.113



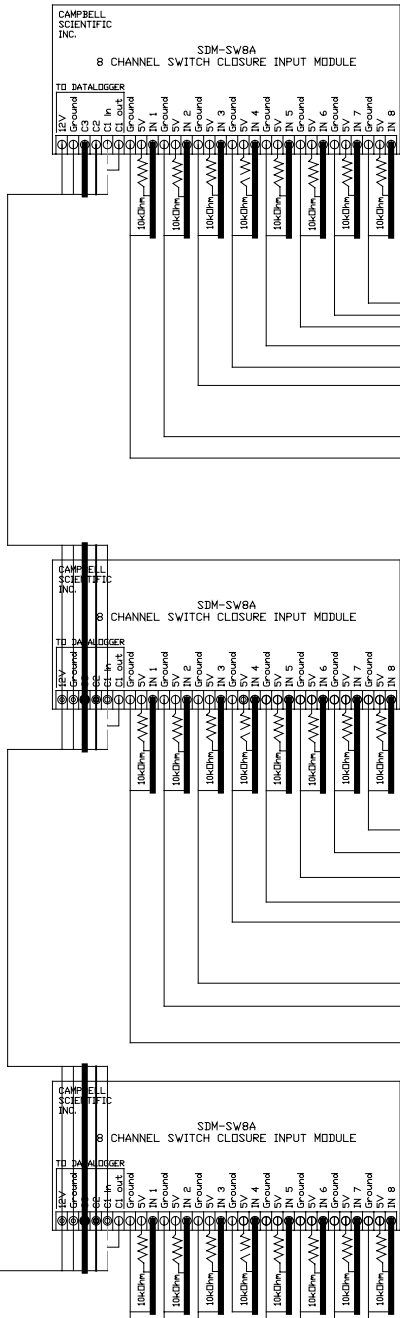
Flow Meters

Ref. Spec. p.113



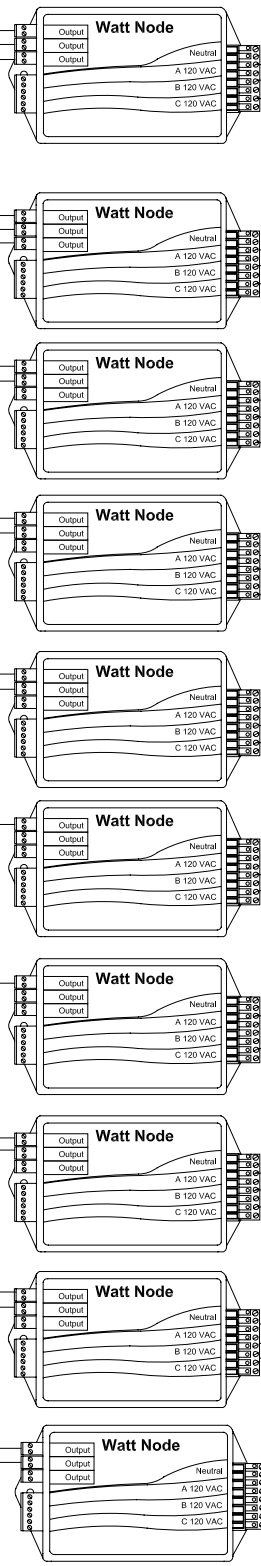
Switch Closures Modules

Ref. Spec. p. 112



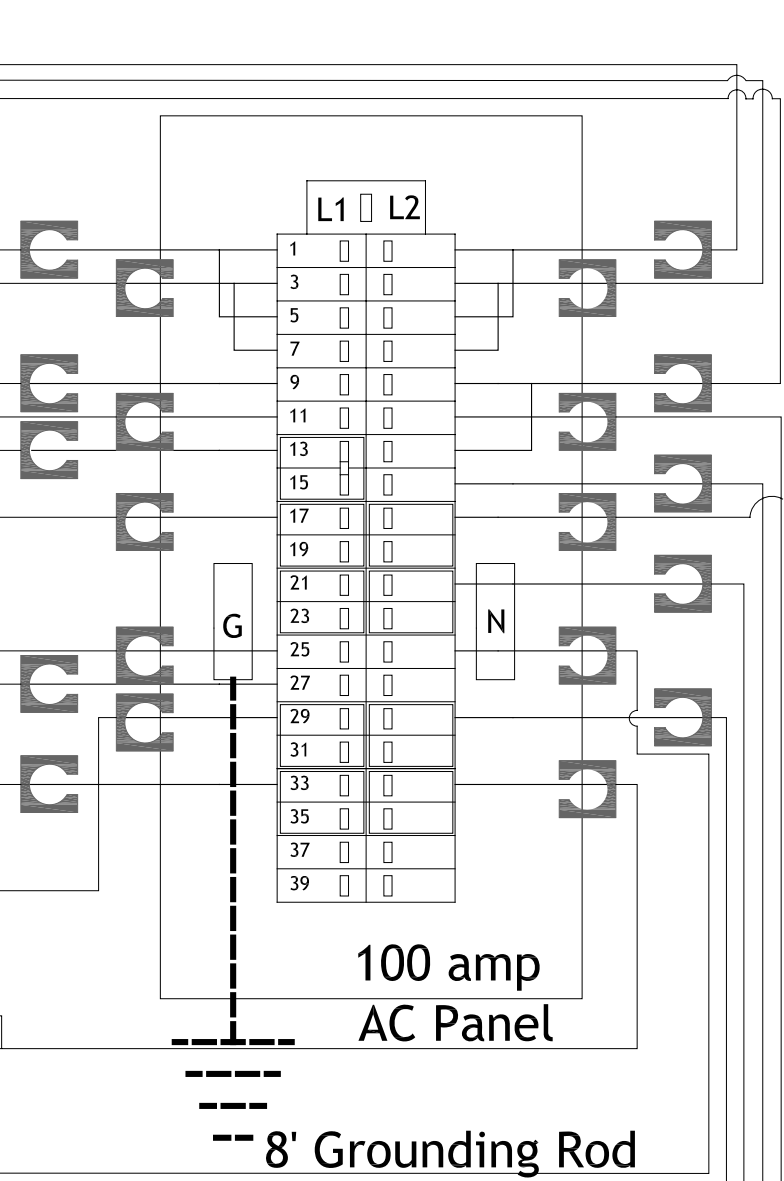
Watt nodes

Ref. Spec. p.111



Current Transducers

Ref. Spec. p.111





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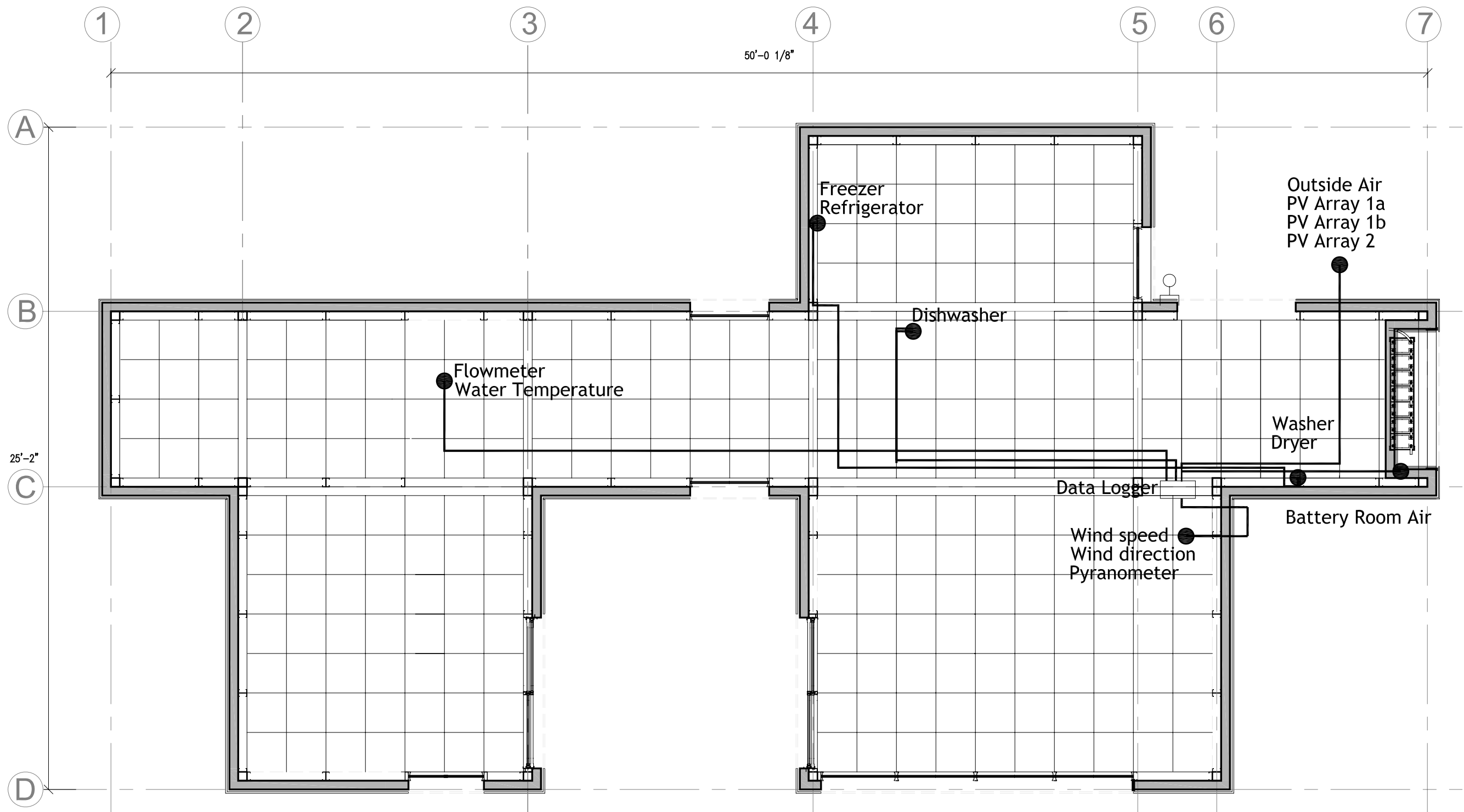
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DRAWN BY: Stephanie Chu  
DATE: 08/07/2007  
TITLE: DATA ACQUISITION & COMMUNICATION SCHEMATIC  
**E 3.0**



**1 MAIN FLOOR WIRING PLAN**  
1/4"=1'

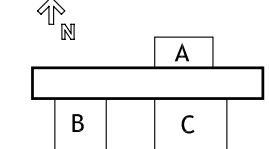


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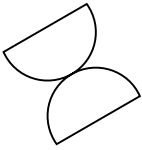


DRAWN BY: STEPHANIE CHU  
DATE: 08/07/2007  
TITLE: D & A - Installation of Thermocouple Wire

**E 3.2**

WEATHER STATION SCHEDULE	Ref. Spec. p. 113
Pyranometer	Global Horizontal LI-200SZ-50
PV Main array (Perimeter)	Thermocouple Wire SA1 - T - 72
PV Main array (Center)	" "
PV SE arrya (Perimeter)	" "
Wine Vane	Wind Sentry Set R.M. Young 03001
Wine Anemometer	" "

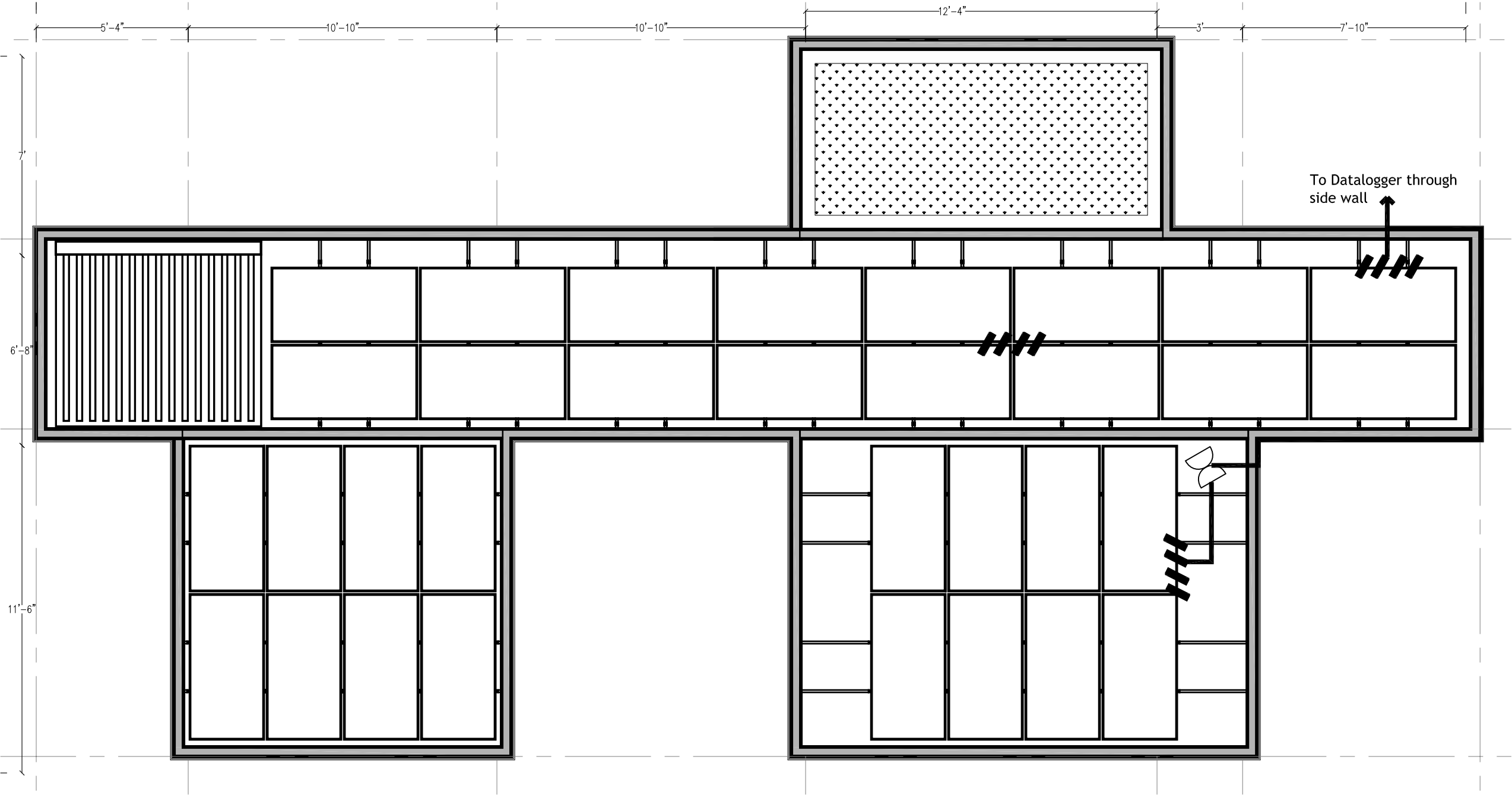
Key



Wind Vane & Anemometer



Thermocouple Wire



1 WEATHER STATION DIAGRAM  
NOT TO SCALE

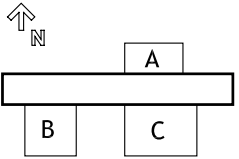


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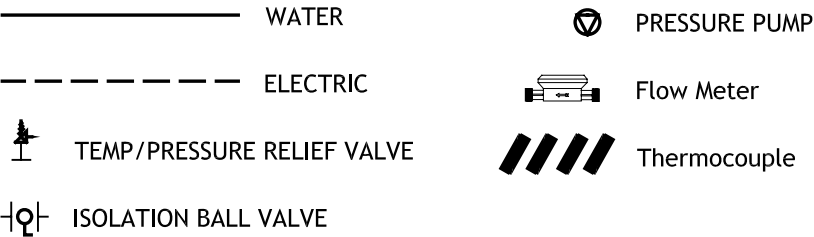


DRAWN BY: STEPHANIE CHU  
DATE: 08/07/2007  
TITLE: WEATHER STATION SCHEMATIC

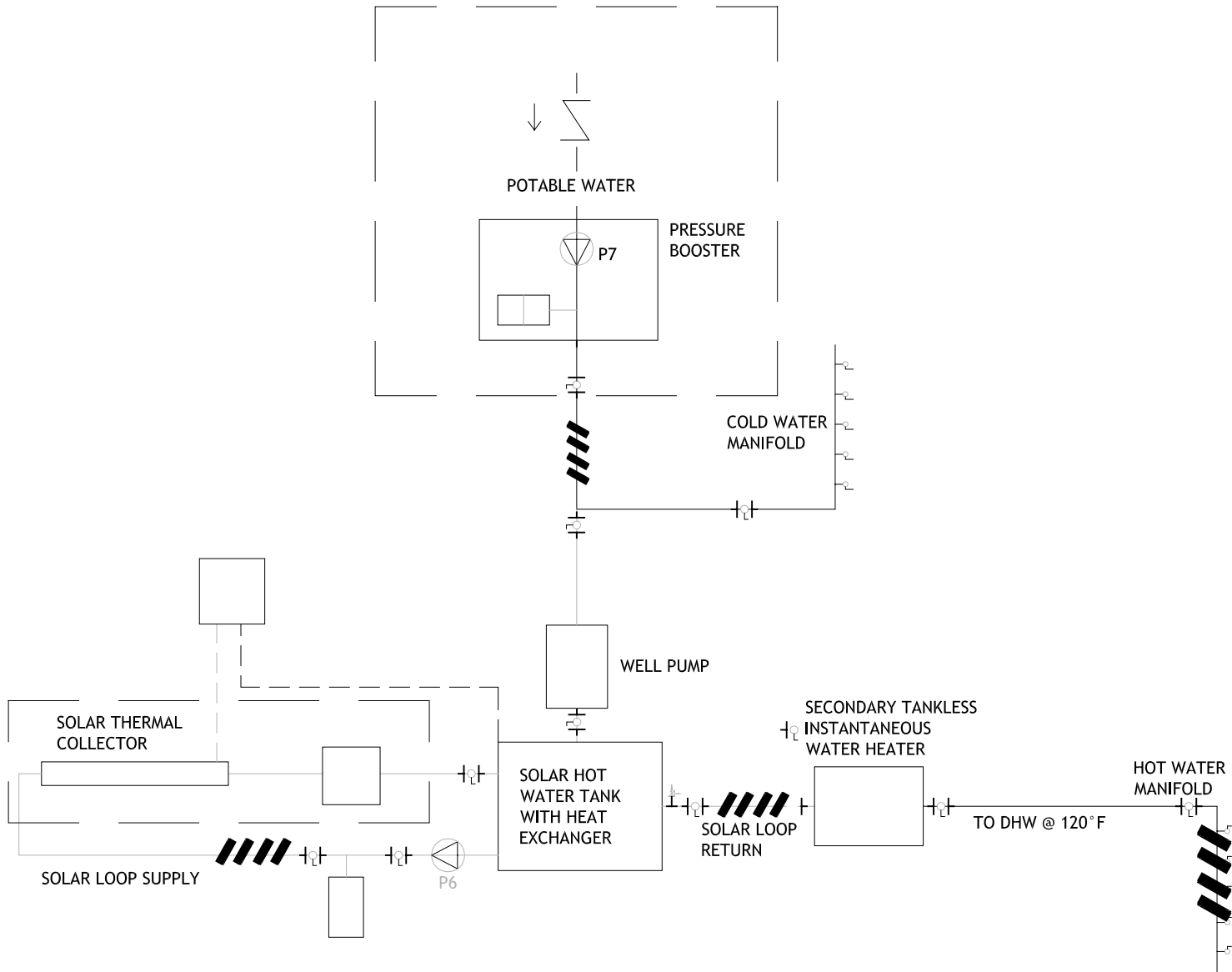
E 3.3

WATER METERING SCHEDULE	Ref. Spec. p. XX
SOLAR HOT WATER LOOP FLOW METER	(1) OMEGA 3/4" Pulse Flow meter FTB4607
COLD WATER SUPPLY FLOW METER	Ditto
HOT WATER SUPPLY FLOW METER	Ditto
Cold water supply	(2) Surface-mount (adhesive) SA1-T-72
Hot water supply	Ditto
Solar water heater supply	Ditto

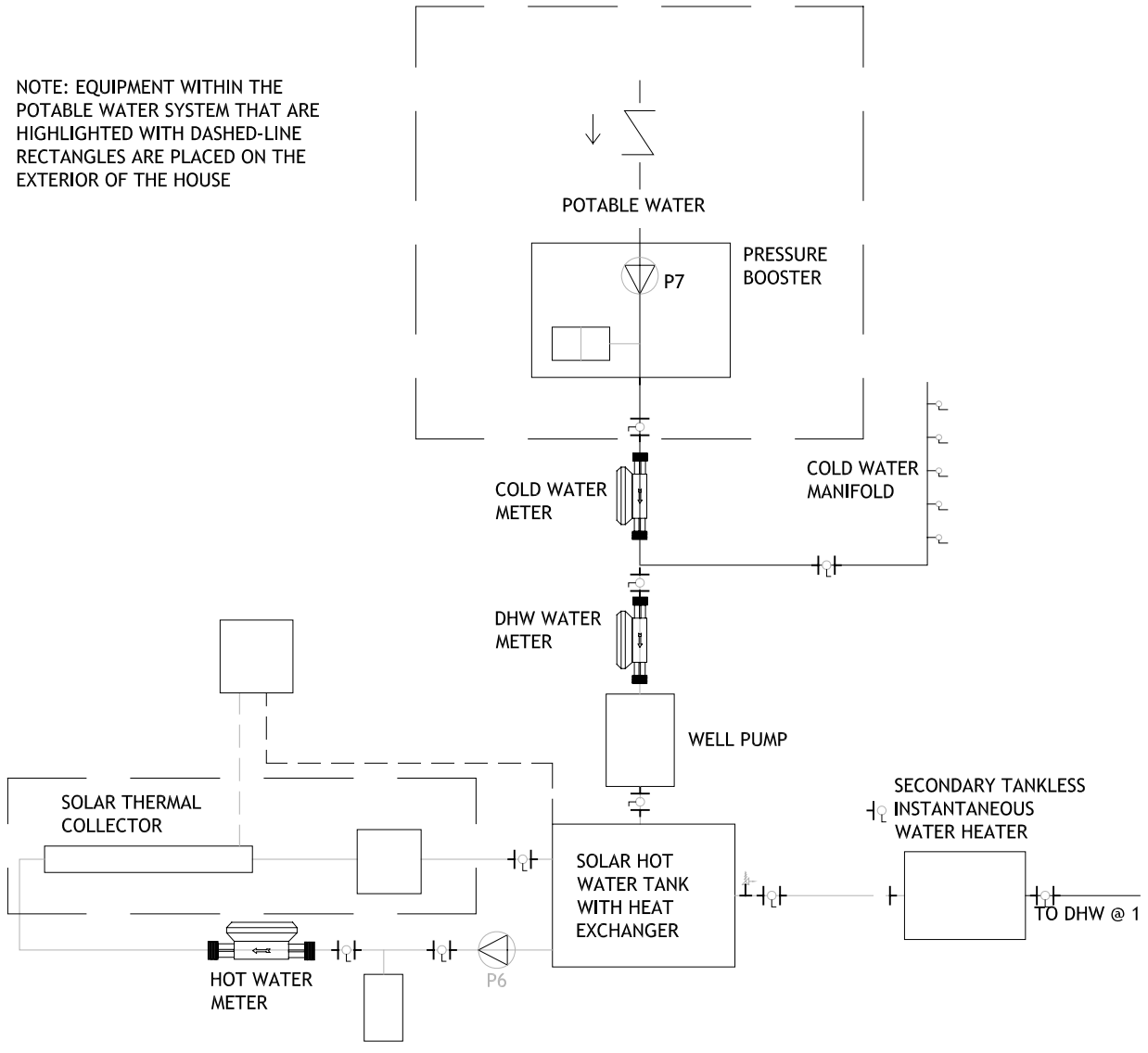
KEY:



NOTE: EQUIPMENT WITHIN THE POTABLE WATER SYSTEM THAT ARE HIGHLIGHTED WITH DASHED-LINE RECTANGLES ARE PLACED ON THE EXTERIOR OF THE HOUSE



2 TEMPERATURE METERING DIAGRAM  
NOT TO SCALE



1 FLOW RATE METERING DIAGRAM  
NOT TO SCALE

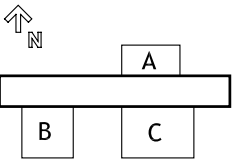


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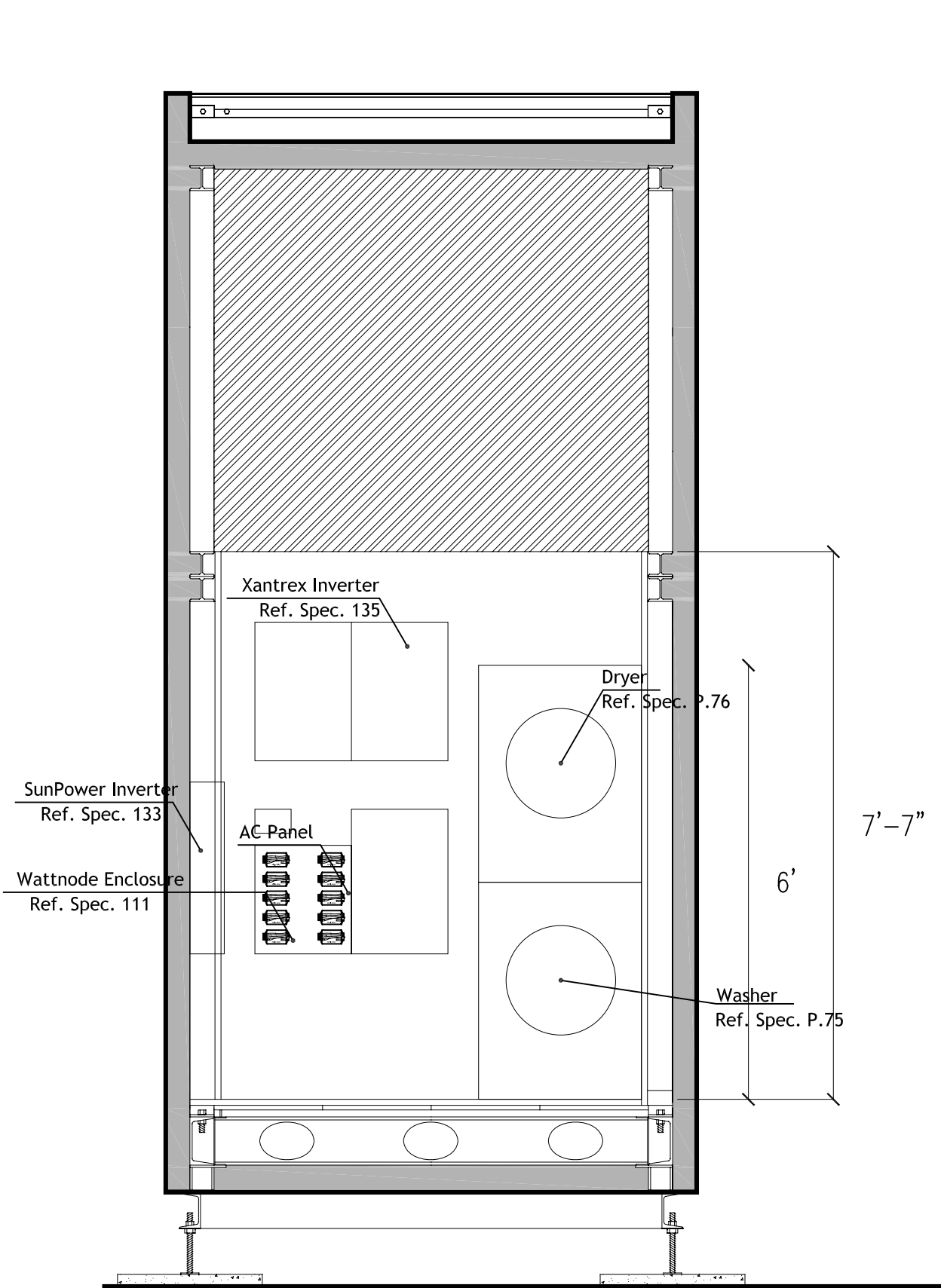
CONTACT:  
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f:412.268.7819



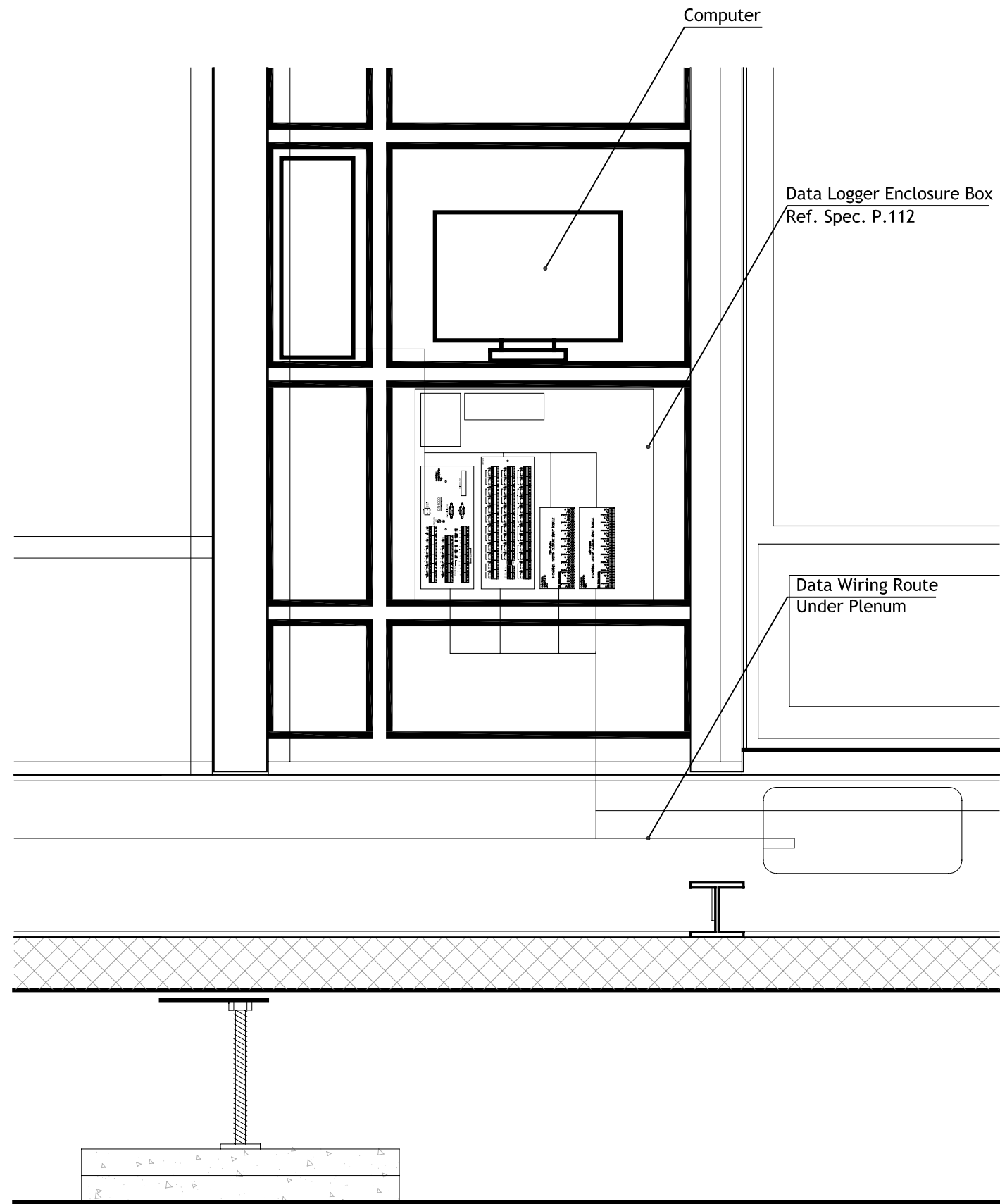
DRAWN BY: STEPHANIE CHU  
DATE: 08/07/2007  
TITLE: WATER METERING SCHEMATIC

E 3.4





**2** End wall elevation - Data system installation  
1/4"=1'



**1** WORK STATION ELEVATION - SYSTEM INSTALLATION  
NOT TO SCALE

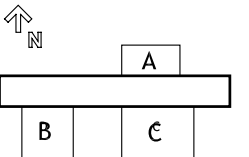


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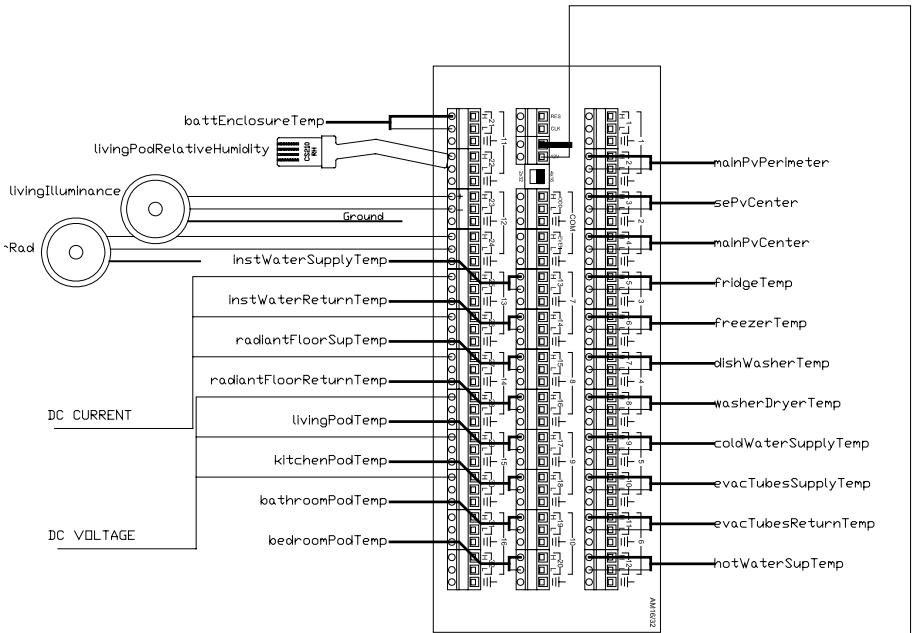


DRAWN BY: STEPHANIE CHU  
DATE: 08/07/2007  
TITLE: DATA ACQUISITION AND COMMUNICATION - INSTALLATION

**E 4.0**

Multiplexer

Ref. Spec. p.112

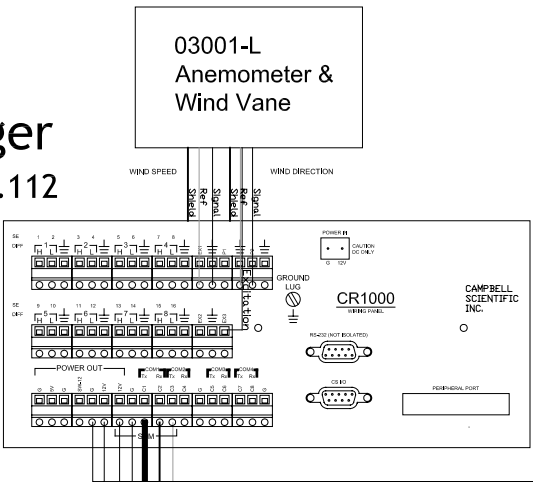


Various Sensors

Ref. Spec. p.113

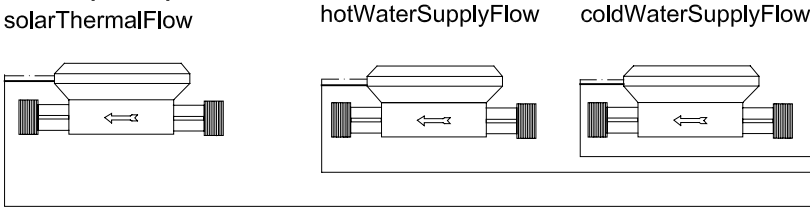
Datalogger

Ref. Spec. p.112



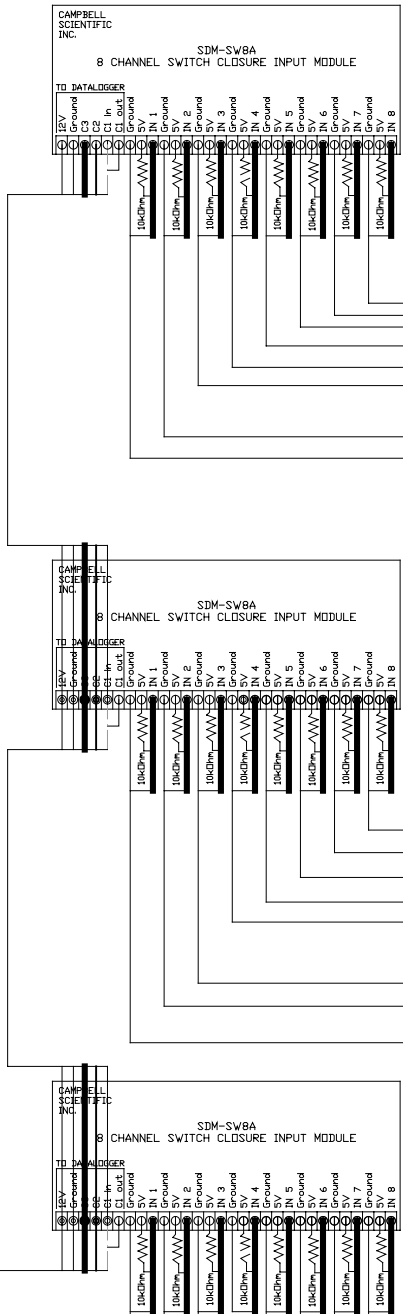
Flow Meters

Ref. Spec. p.113



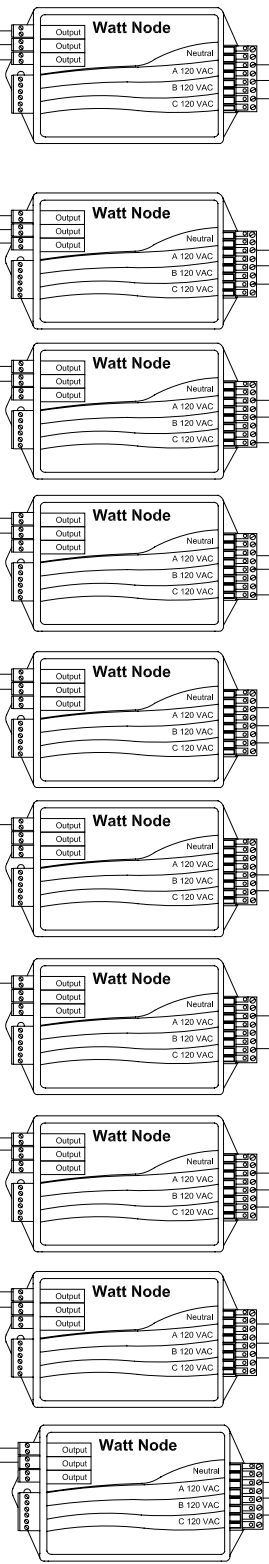
Switch Closures Modules

Ref. Spec. p. 112



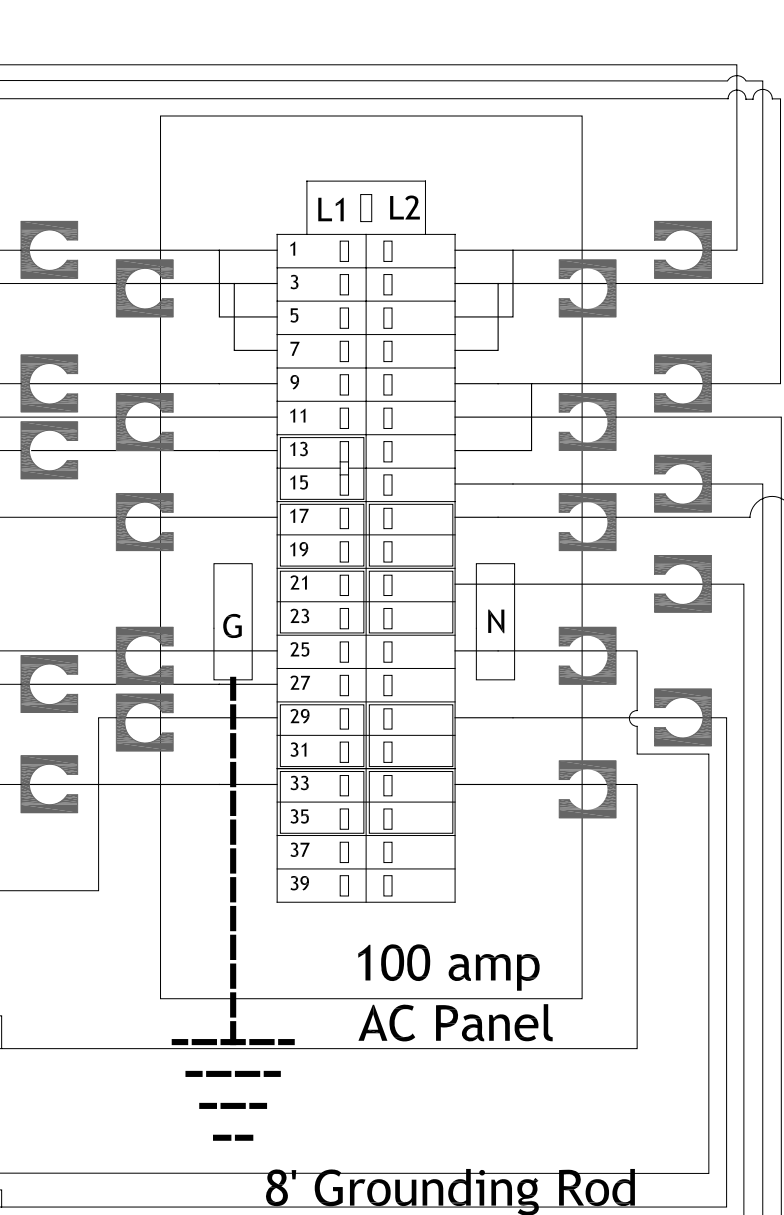
Watt nodes

Ref. Spec. p.111



Current Transducers

Ref. Spec. p.111



1

DATA ACQUISITION & COMMUNICATION WIRING SCHEMATIC  
Not to Scale



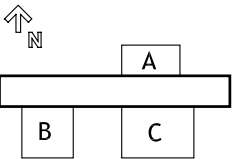
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DRAWN BY: Stephanie Chu

DATE: 08/07/2007

TITLE: DATA ACQUISITION &  
COMMUNICATION SCHEMATIC

E4.1



Carnegie Mellon University 2007 Solar Decathlon Team Pittsburgh, PA INSTRUMENTATION LIST							Datalogger: CR1000 w/ 4MB Mem	Phone #:
							Multiplexer: AM25T 16/32	Date Installed:
							Switch Closure "0":	Installer 1:
							Switch Closure "1":	Installer 2:
Data Logger Eqpmnt.			Unit	Model	Description	Manufacturer/Type/Setting		
				CR1000	Datalogger	Campbell Scientific		
				AM16/32 (2x32 mode)	MUX	Campbell Scientific		
			Unit "0"	SDM-SW8A	8 Channel Switch Closure Module	Campbell Scientific		
			Unit "1"	SDM-SW8A	8 Channel Switch Closure Module	Campbell Scientific		
			Unit "2"	SDM-SW8A	8 Channel Switch Closure Module	Campbell Scientific		
Weather	Unit	Channel	Measuring	Channel Description	Sensor	Manufacturer/Type/Setting	Notes/Action	
	AM16/32	1H	Temp (deg. F)	Outdoor temp				
	AM16/32	1L	Temp (deg. F)	Outdoor RH	HMP50	Campbell Scientific		
	AM16/32	24H&L	W/m <sup>2</sup>	Solar Radiation	LI-200X Pyranometer	Campbell Scientific		
	CR1000	P1	m/s	Wind Speed	3001-L Anemometer	Campbell Scientific		
	CR1000	P2	deg.	Wind Direction	3001 - L Wind Vane	Campbell Scientific		
Environment & Comfort	Unit	Channel	Measuring	Channel Description	Sensor	Manufacturer/Type/Setting	Notes/Action	
	AM16/32	2H & L	Temp (deg. F)	Back of main PV array (surface mounted – array perimeter)	Type-T TC	Omega	mainPvPerimeterTemp	
	AM16/32	3H&L	Temp (deg. F)	Back of southeast PV array (surface mounted – array center)	Type-T TC	Omega	sePvCenterTemp	
	AM16/32	4H & L	Temp (deg. F)	Back of main PV array (surface mounted – array center)	Type-T TC	Omega	mainPvCenterTemp	
	AM16/32	5H & L	Temp (deg. F)	Refrigerator (exposed)	Type-T TC	Omega	fridgeTemp	
	AM16/32	6H&L	Temp (deg. F)	Freezer (exposed)	Type-T TC	Omega	freezerTemp	
	AM16/32	7H & L	Temp (deg. F)	Dishwasher (exposed)	Type-T TC	Omega	dishWasherTemp	
	AM16/32	8H&L	Temp (deg. F)	Clothes washer/dryer (exposed)	Type-T TC	Omega	washerDryerTemp	
	AM16/32	9H & L	Temp (deg. F)	Cold water supply (thermowell submersed or copper surface mounted)	Type-T TC	Omega	coldWaterSupplyTemp	
	AM16/32	10H&L	Temp (deg. F)	Evac tubes supply (thermowell or surface mounted)	Type-T TC	Omega	evacTubesSupplyTemp	
	AM16/32	11H&L	Temp (deg. F)	Evac tubes return (thermowell or surface mounted)	Type-T TC	Omega	evacTubesReturnTemp	
	AM16/32	12H&L	Temp (deg. F)	Hot water tank supply (thermowell or surface mounted)	Type-T TC	Omega	hotWaterSupTemp	
	AM16/32	13H&L	Temp (deg. F)	Instantaneous water heater supply (thermowell or surface mounted)	Type-T TC	Omega	instWaterSupplyTemp	
	AM16/32	14H&L	Temp (deg. F)	Instantaneous water heater return (thermowell or surface mounted)	Type-T TC	Omega	instWaterReturnTemp	
	AM16/32	15H&L	Temp (deg. F)	Radiant floor supply (thermowell or surface mounted)	Type-T TC	Omega	radiantFloorSupTemp	
	AM16/32	16H&L	Temp (deg. F)	Radiant floor return (thermowell or surface mounted)	Type-T TC	Omega	radiantFloorReturnTemp	
	AM16/32	17H&L	Temp (deg. F)	Living module (inside radiation shield)	Type-T TC	Omega	livingPodTemp	
	AM16/32	18H&L	Temp (deg. F)	Kitchen module (inside radiation shield)	Type-T TC	Omega	kitchenPodTemp	
	AM16/32	19H&L	Temp (deg. F)	Bathroom module (inside radiation shield)	Type-T TC	Omega	bathroomPodTemp	
	AM16/32	20H&L	Temp (deg. F)	Bedroom module (inside radiation shield)	Type-T TC	Omega	bedroomPodTemp	
	AM16/32	21H&L	Temp (deg. F)	Battery enclosure (inside radiation shield) Thermocouple (Type)	Type-T TC	Omega	battEnclosureTemp	
	AM16/32	22H&L	RH (%)	Exhibition module (inside radiation shield)	CS210/10162 (Capacitive RH chip )	Campbell Scientific	livingPodRelativeHumidity	
	AM16/32	23H&L	Lux	Illuminance in Living Module	LI-210 Lux Sensor	Li-Cor	livingIlluminance	
Electrical Power	Unit	Channel	Measuring	Channel Description	Sensor	Manufacturer/Type/Setting	Notes/Action	
	SDM-SW8A "0"		4 Watt	All Lights	WNB-3Y-208-P3-050Hz, CTS-0750-15	Continental Control Systems		
	SDM-SW8A "0"		5 Watt	Living module receptacles	WNB-3Y-208-P3-050Hz, CTS-0750-15	Continental Control Systems		
	SDM-SW8A "0"		6 Watt	Kitchen module receptacles	WNB-3Y-208-P3-050Hz, CTS-0750-15	Continental Control Systems		
	SDM-SW8A "0"		7 Watt	Bedroom module receptacles	WNB-3Y-208-P3-050Hz, CTS-0750-15	Continental Control Systems		
	SDM-SW8A "0"		8 Watt	Dishwasher		Continental Control Systems		
	SDM-SW8A "1"		1 Watt	Well Pump, SDHW Pump, ERV, Wattnode Circuit		Continental Control Systems		
	SDM-SW8A "1"		2 Watt	Microwave		Continental Control Systems		
	SDM-SW8A "1"		3 Watt	Refrigerator		Continental Control Systems		
	SDM-SW8A "1"		4 Watt	Dryer				
	SDM-SW8A "1"		5 Watt	Washer				
	SDM-SW8A "1"		6 Watt	Oven Range and Cook Top Hood				
	SDM-SW8A "1"		7 Watt	Instant H2O Heater (SDHW)				
	SDM-SW8A "1"		8 Watt	HVAC Heat Pump				
	SDM-SW8A "2"		1 Watt	Outside outlet				
	SDM-SW8A "2"		2 Watt	SunPower Inverter 1				
	SDM-SW8A "2"		3 Watt	SunPower Inverter 2				
	SDM-SW8A "2"		4 Watt	Xantrex Inverter / Chrger				
	SDM-SW8A "2"		5 Watt	Radiant Floor Heat Pump				
	SDM-SW8A "2"		6 Watt					
	SDM-SW8A "2"		7 Watt					
	SDM-SW8A "2"		8 Watt					
Water Flow	Unit	Channel		Channel Description	Sensor	Manufacturer/Type/Setting	Notes/Action	
	SDM-SW8A "0"		1 Gallons	Cold Water Supply	FTB-460x	Omega	coldWaterSupplyFlow	
	SDM-SW8A "0"		2 Gallons	Hot water Supply	FTB-460x	Omega	hotWaterSupplyFlow	
	SDM-SW8A "0"		3 Gallons	Solar Thermal Loop	FTB-460x	Omega	solarThermalFlow	
DC	Unit	Channel		Channel Description	Sensor	Manufacturer/Type/Setting	Notes/Action	
	AM16/32	25H&L	DC Current	PV array #1,2 → SPR-3300 #1 tied together	Shunt	Canadian Shunt Industries	pv1pv2Shunt	
	AM16/32	26H&L	DC Current	PV array #3,4 → SPR-3300 #2 tied together	Shunt	Canadian Shunt Industries	pv3pv4Shunt	
	AM16/32	27H&L	DC Current	Batteries ↔ XW 6048 will remain	Shunt	Canadian Shunt Industries	battShunt	
	AM16/32	28H&L	DC Voltage	PV array #1,2 → SPR-3300 #1	Voltage Divider	NREL	pv1pv2Volt	
	AM16/32	29H&L	DC Voltage	PV array #3,4 → SPR-3300 #2	Voltage Divider	NREL	pv3pv4Volt	
	AM16/32	30H&L	DC Voltage	Batteries ↔ XW 6048	Voltage Divider	NREL	battVolt	

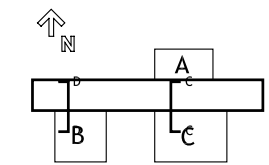


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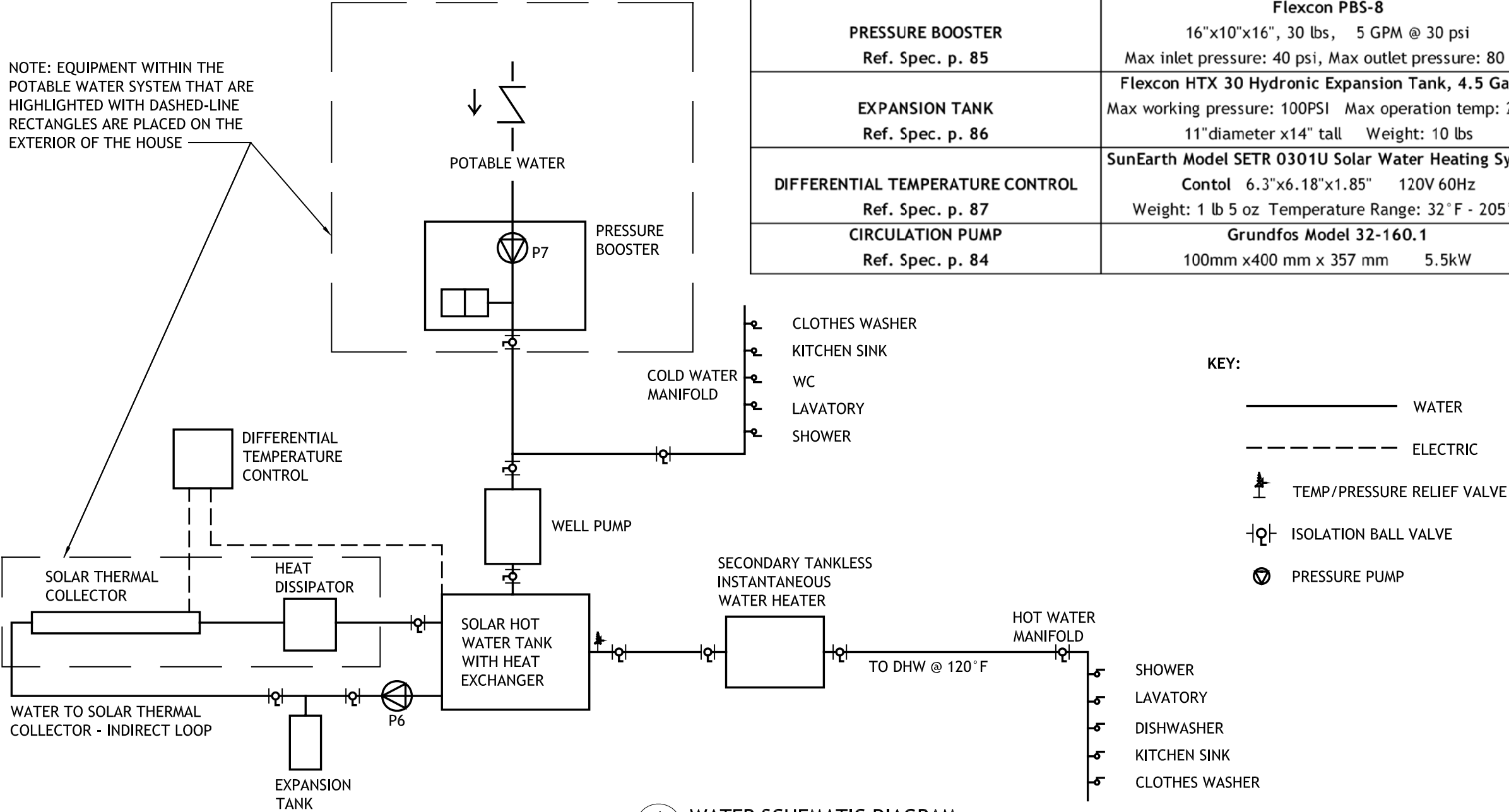


DRAWN BY: STEPHANIE CHU  
DATE: 08/07/2007  
TITLE: Data Acquisition and  
Communication - Schedule

E 4.2.1

PLUMBING EQUIPMENT SCHEDULE	
SOLAR THERMAL COLLECTOR Ref. Spec. p. 81	(1) Apricus AP-30 Solar Collector - 30 evacuated tubes Overall size: 77.9"x86.4"x6.1 Collector Size: 43.1 ft <sup>2</sup> Weight: 209 lbs Fluid Capacity: 28.2 fl. oz.
HEAT DISSIPATOR	Apricus Heat Dissipator - 1.3kW heat dissipation capacity Overall Size: 13 1/4"x 6 3/4"x 19 3/4"
SOLAR HOT WATER STORAGE Ref. Spec. p. 80	Viessmann Vitocell-H 300 Model No. EHA-200 Overall Size: 48.75"x25.25"x25.75" Storage Capacity: 53 gal Weight: 185 lbs Internal Heat Exchanger
INSTANTANEOUS WATER HEATER Ref. Spec. p. 78	SEISCO SH-5 Tankless Water Heater Overall Size: 10.25"x15.75"x6.25" Weight: 15 lbs 240V, 2.5 kW Max temp increase: 25° F @ 1.4 GPM
PRESSURE BOOSTER Ref. Spec. p. 85	Flexcon PBS-8 16"x10"x16", 30 lbs, 5 GPM @ 30 psi Max inlet pressure: 40 psi, Max outlet pressure: 80 psi
EXPANSION TANK Ref. Spec. p. 86	Flexcon HTX 30 Hydronic Expansion Tank, 4.5 Gallon Max working pressure: 100PSI Max operation temp: 212° F 11"diameter x14" tall Weight: 10 lbs
DIFFERENTIAL TEMPERATURE CONTROL Ref. Spec. p. 87	SunEarth Model SETR 0301U Solar Water Heating System Contol 6.3"x6.18"x1.85" 120V 60Hz Weight: 1 lb 5 oz Temperature Range: 32° F - 205° F
CIRCULATION PUMP Ref. Spec. p. 84	Grundfos Model 32-160.1 100mm x400 mm x 357 mm 5.5kW

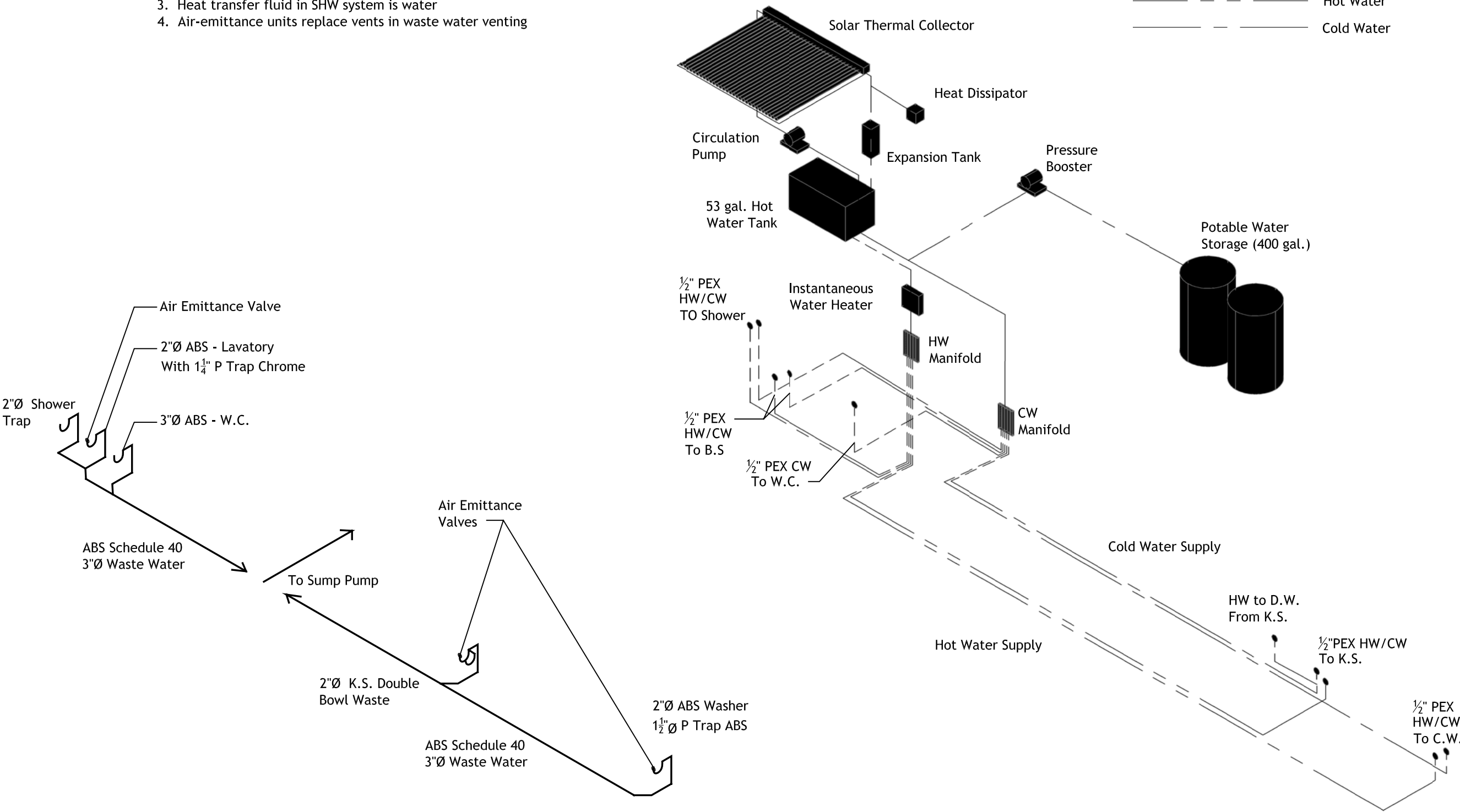
NOTE: EQUIPMENT WITHIN THE POTABLE WATER SYSTEM THAT ARE HIGHLIGHTED WITH DASHED-LINE RECTANGLES ARE PLACED ON THE EXTERIOR OF THE HOUSE



1 WATER SCHEMATIC DIAGRAM  
NOT TO SCALE



- Note:
- 1. Plumbing systems comply with All IRC codes.
  - 2. Isometric drawing is a diagram and does not represent actual slope of waste pipes.
  - 3. Heat transfer fluid in SHW system is water
  - 4. Air-emittance units replace vents in waste water venting





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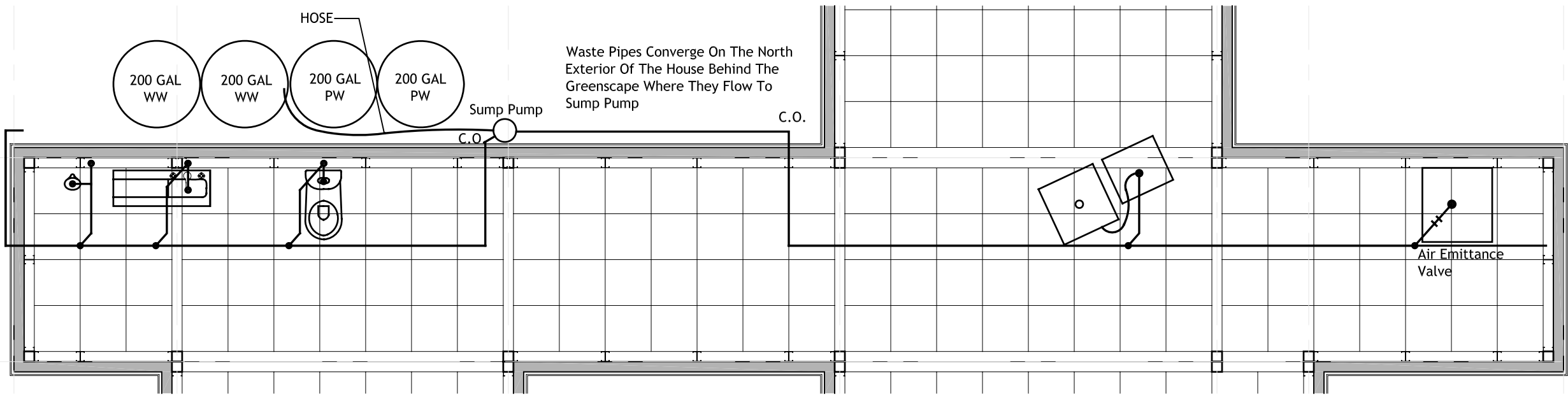
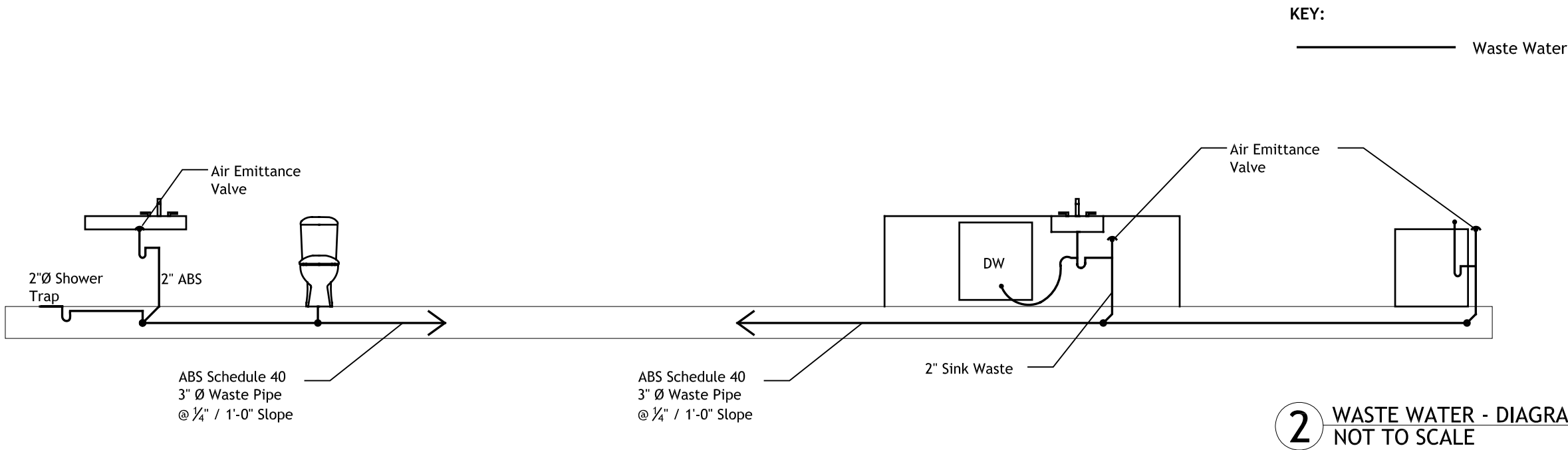
B

C

DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: PLUMBING ISOMETRIC

P2

- Note:
- 1. Air-Emittance Units Replace Venting Pipes
  - 2. Two Separate Waste Pipes Converge On The Exterior To Minimize Height Of Lower Plenum

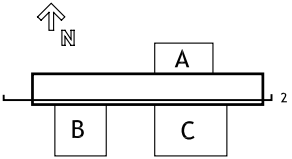


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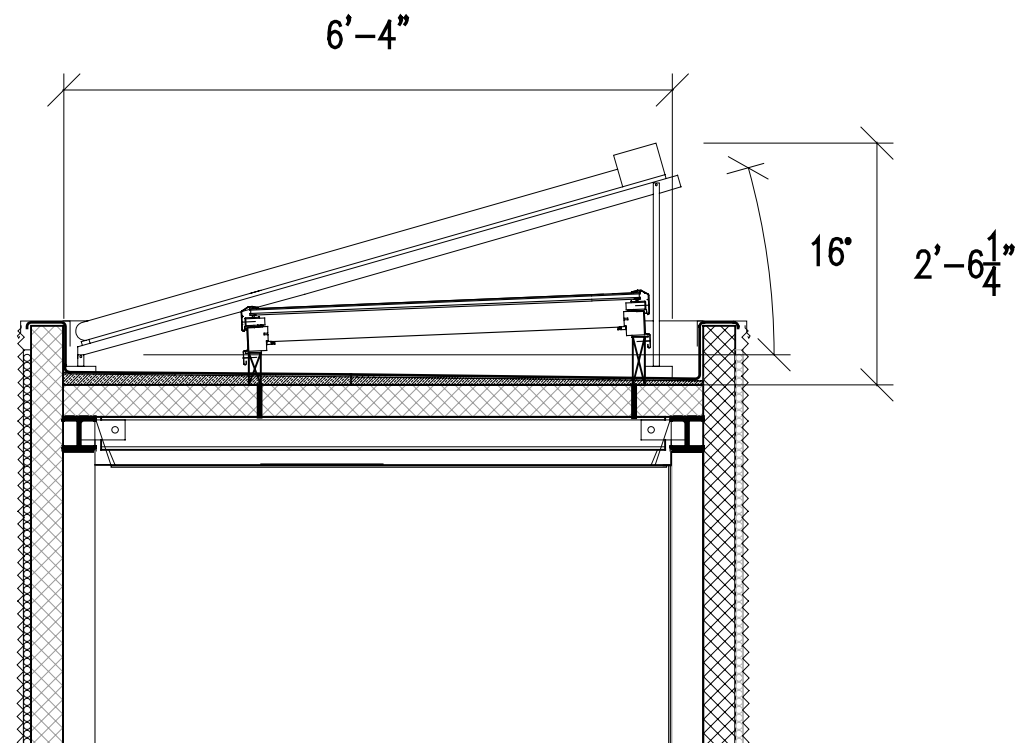
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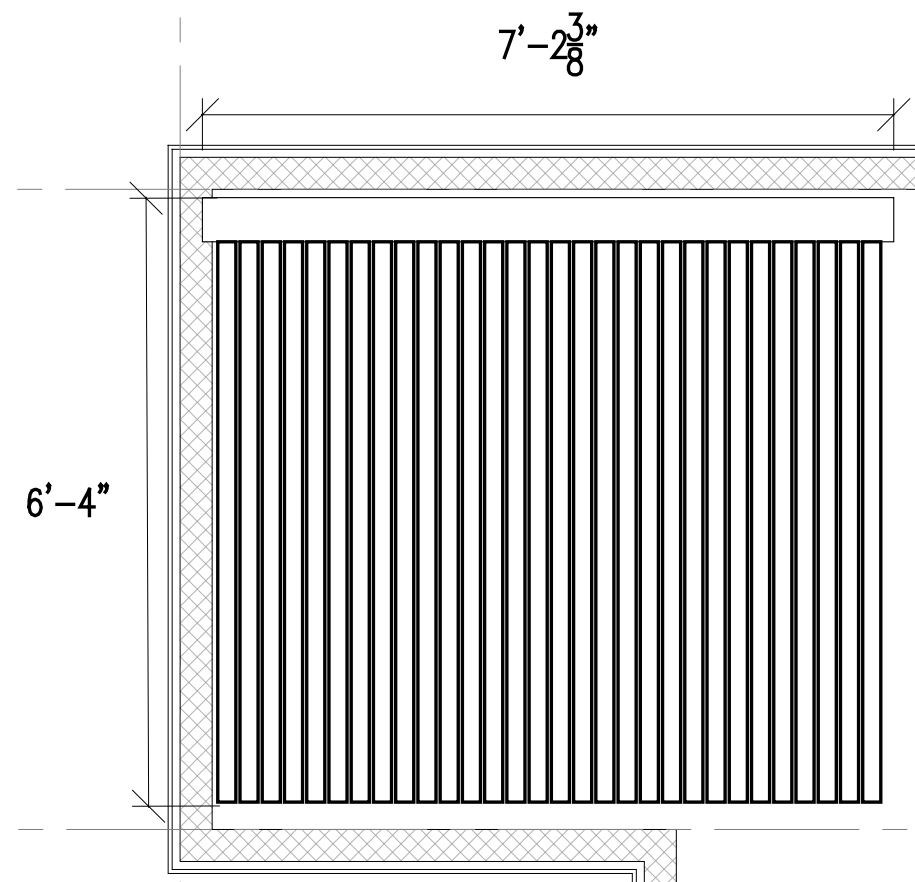


DRAWN BY: REBECCA SHORE  
DATE: 08/07/2007  
TITLE: PLUMBING - WASTE

P3



**4** SOLAR THERMAL PANEL - SECTION  
1/2" = 1'-0"



**3** SOLAR THERMAL PANEL - ROOF PLAN  
1/2" = 1'-0"

#### SOLAR HOT WATER SYSTEM -DETAILS

##### Solar Collector:

Apricus AP-30. Ref. Spec. p. 65

30 evacuated tubes

71.7% initial efficiency

80" x 86.4" X 6.14"

46.8 ft gross area

208.5 lbs

Optimal flow rate: 1.8 gallons/tube/hour

##### Storage Tank:

Viessmann Vitocell-H 300. Ref. Spec. p. 64

Storage Capacity: 53 gallons

48.75" x 25.25" x 25.75"

185 lbs

Tubular heat exchanger coil

Heat up time ( $\Delta T$ ) 50 - 140°F: 18 min

Domestic hot water draw rate: 2.6 GPM

**2** SOLAR HOT WATER EQUIPMENT DETAILS

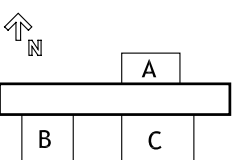
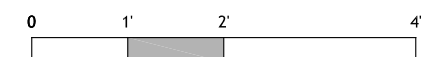
#### NOTES:

1. The total amount of water necessary for competition requirements is 340.6 gallons.

2. Two 200 gallon tanks are available for supply water storage, and two 200 gallon tanks are available for waste water storage. Both supply tanks will be filled to capacity (200 gallons). One will be used initially to fill up the 53 gallon tank.

Contest	Volume (gal) for Contest	Estimated Volume/Day	Comments
Shower	150	30.0	Total of 10 contests, 15 gallons in less than 10 minutes per test. Max points for $T_{in} > 110^\circ\text{F}$ . 0 points for $T_{in} < 100^\circ\text{F}$
Clotheswash	64	12.8	Total of 2 tests washing 12 bath-sized towels. Temperature must reach $110^\circ\text{F}$ at some point during cycle
Dishwash	23.6	4.7	Total of 4 tests where temperature must reach $120^\circ\text{F}$ at one point
Miscellaneous	50	10.0	Handwashing / Cooking / Gardening. Total of 1 dinner prepared
Water Tank Capacity	53		Initial fill-up for solar thermal storage tank
<b>TOTAL</b>	<b>340.6</b>	<b>68.1</b>	<b>400 gallons of water storage available &gt; 340.6 gallons needed</b>

**1** CONTEST REQUIREMENTS WATER USAGE



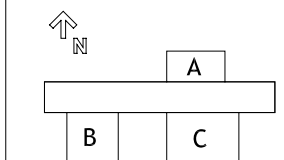


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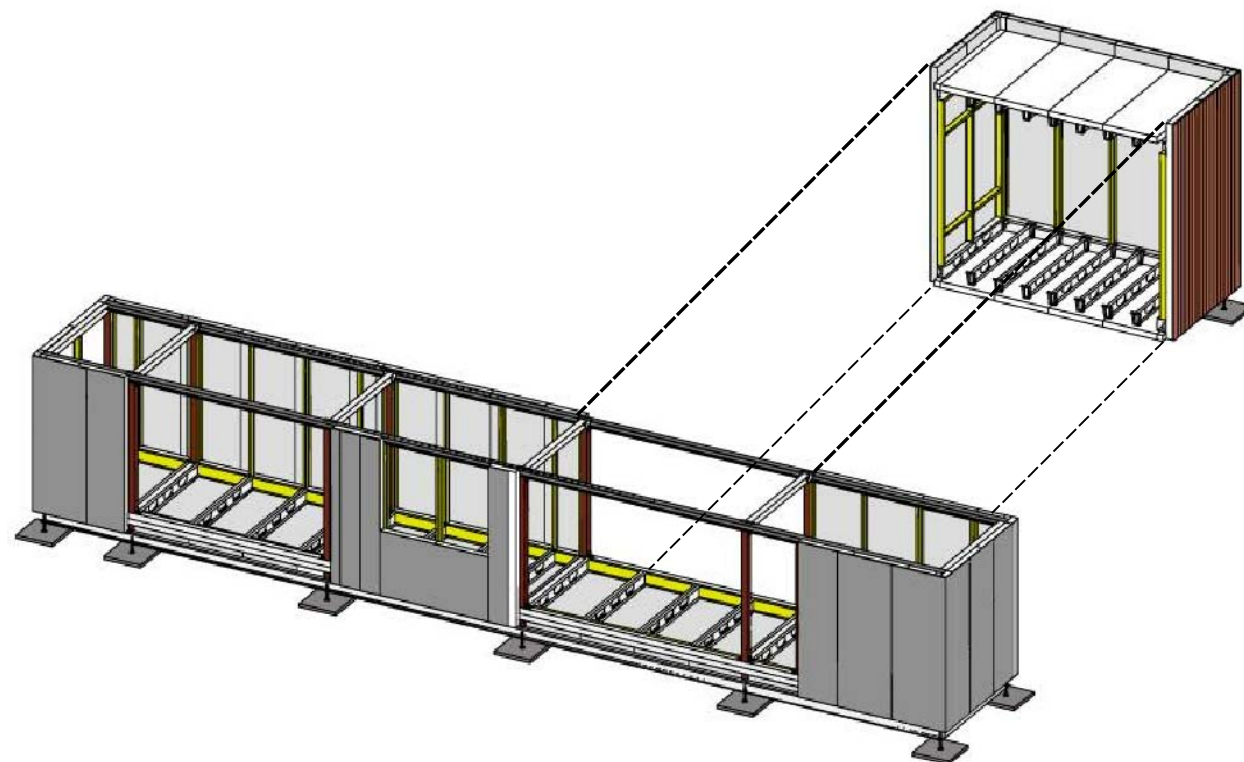
DRAWN BY: KIKO RESTREPO  
 DATE: 08/07/2007  
 TITLE: ASSEMBLY SEQUENCE

**C1.0**

POD-A PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO CRIBBING AND LEVELLED.

THE POD WILL BE ANGLED SO THAT ITS UPPER EDGE IS 6 INCHES FROM THE CORE WHEN IT IS SET DOWN. THIS WILL ALLOW FOR THE UPPER PLENUM OF THE CORE TO BE LOWERED INTO PLACE. WE ARE ABLE TO ACHIEVE THIS ANGLE BY USING ADJUSTABLE FEET WHICH HAVE A RANGE OF 4 INCHES.

2HRS: 60 TON GROVE CRANE



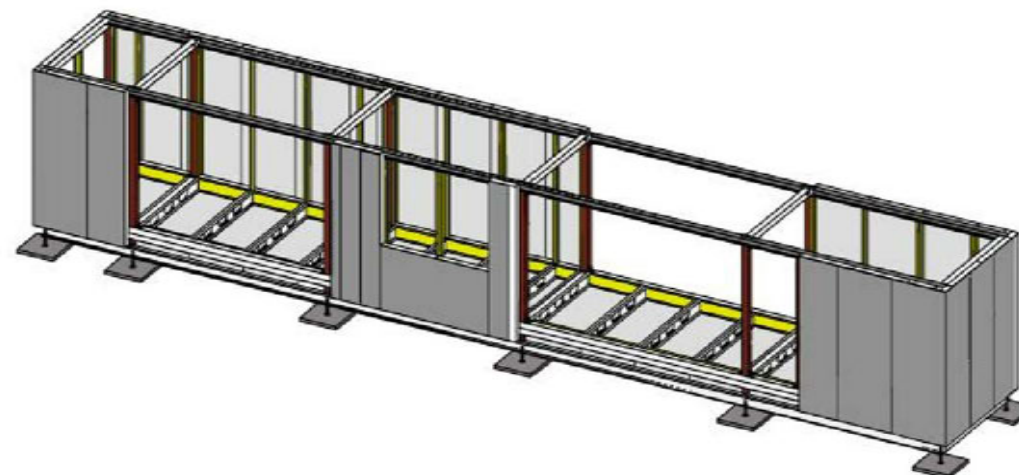
**2 KITCHEN POD PLACEMENT**  
 NO SCALE

BOTTOM CORE PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO CRIBBING AND LEVELLED.

2HRS: 60 TON GROVE CRANE

CONCRETE FOOTING STONES WILL BE LEVELLED

2 HRS: MANUAL LABOR



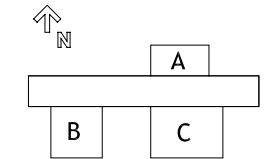
**1 CORE and LEVELING PLATFORM**  
 NO SCALE

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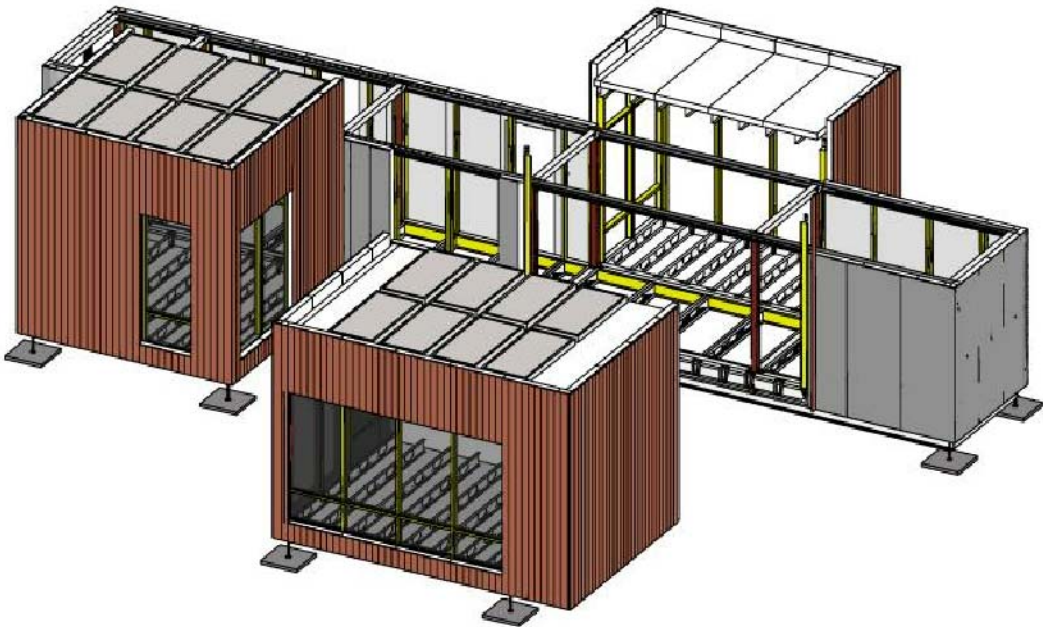
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DATE: 08/07/2007  
TITLE: ASSEMBLY SEQUENCE

C1.1

POD-C PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO CRIBBING AND LEVELLED.

THE POD WILL BE ANGLED SO THAT ITS UPPER EDGE IS 6 INCHES FROM THE CORE WHEN IT IS SET DOWN. THIS WILL ALLOW FOR THE UPPER PLENUM OF THE CORE TO BE LOWERED INTO PLACE. WE ARE ABLE TO ACHIEVE THIS ANGLE BY USING ADJUSTABLE FEET WHICH HAVE A RANGE OF 4 INCHES.

2HRS: 60 TON GROVE CRANE

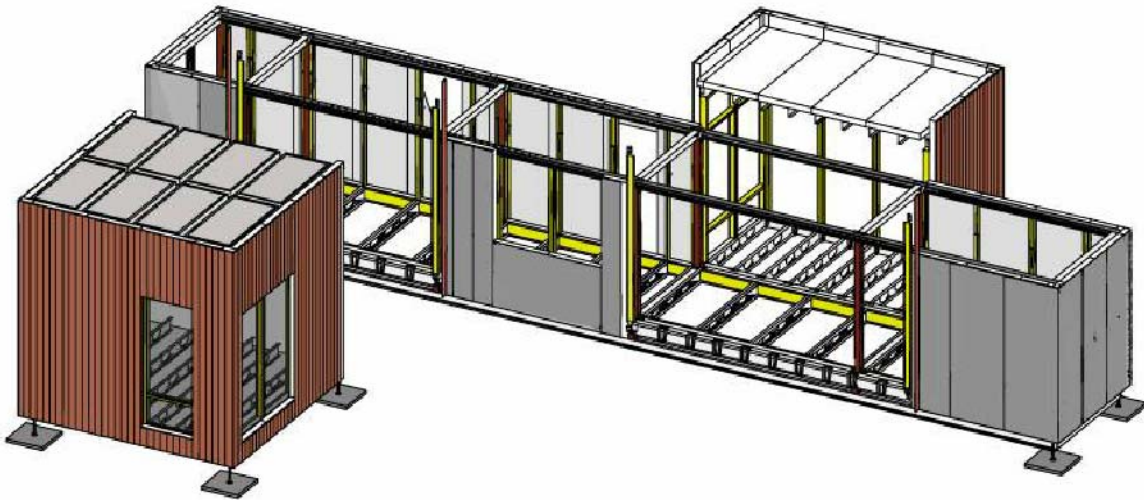


4 POD-B PLACEMENT  
NO SCALE

POD-B PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO CRIBBING AND LEVELLED.

THE POD WILL BE ANGLED SO THAT ITS UPPER EDGE IS 6 INCHES FROM THE CORE WHEN IT IS SET DOWN. THIS WILL ALLOW FOR THE UPPER PLENUM OF THE CORE TO BE LOWERED INTO PLACE. WE ARE ABLE TO ACHIEVE THIS ANGLE BY USING ADJUSTABLE FEET WHICH HAVE A RANGE OF 4 INCHES.

2HRS: 60 TON GROVE CRANE



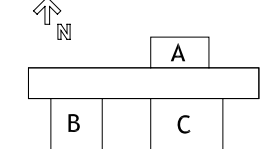
3 POD-A PLACEMENT  
NO SCALE

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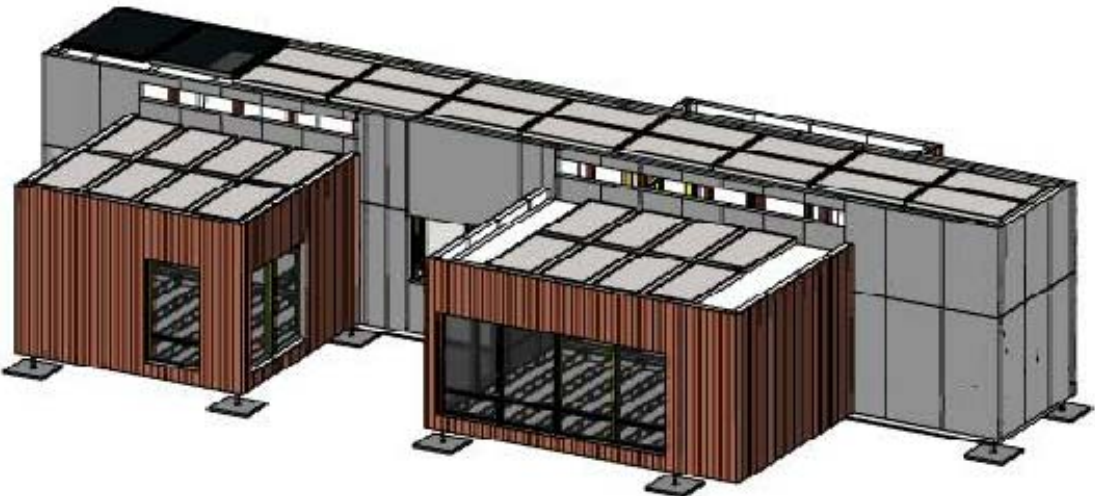
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TITLE: ASSEMBLY SEQUENCE

C1.2

ALL CONNECTION POINTS WILL BE FLASHED AND SEALED.

POD PIECES WILL BE LEVELED USING THE THREADED ADJUSTABLE FOOTERS .

2HRS



6 LEVEL and SEAL  
NO SCALE

UPPER CORE PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO THE LEVEL PLATFORM

2HRS: 60 TON GROVE CRANE



5 CORE TOP PLACEMENT  
NO SCALE

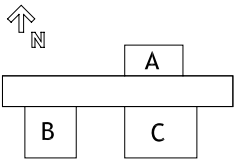


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TITLE: DISASSEMBLY SEQUENCE

**C2.0**

UPPER CORE PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES AND FITTINGS WILL BE LOWERED BY CRANE ONTO THE LEVEL PLATFORM

2HRS: 60 TON GROVE CRANE

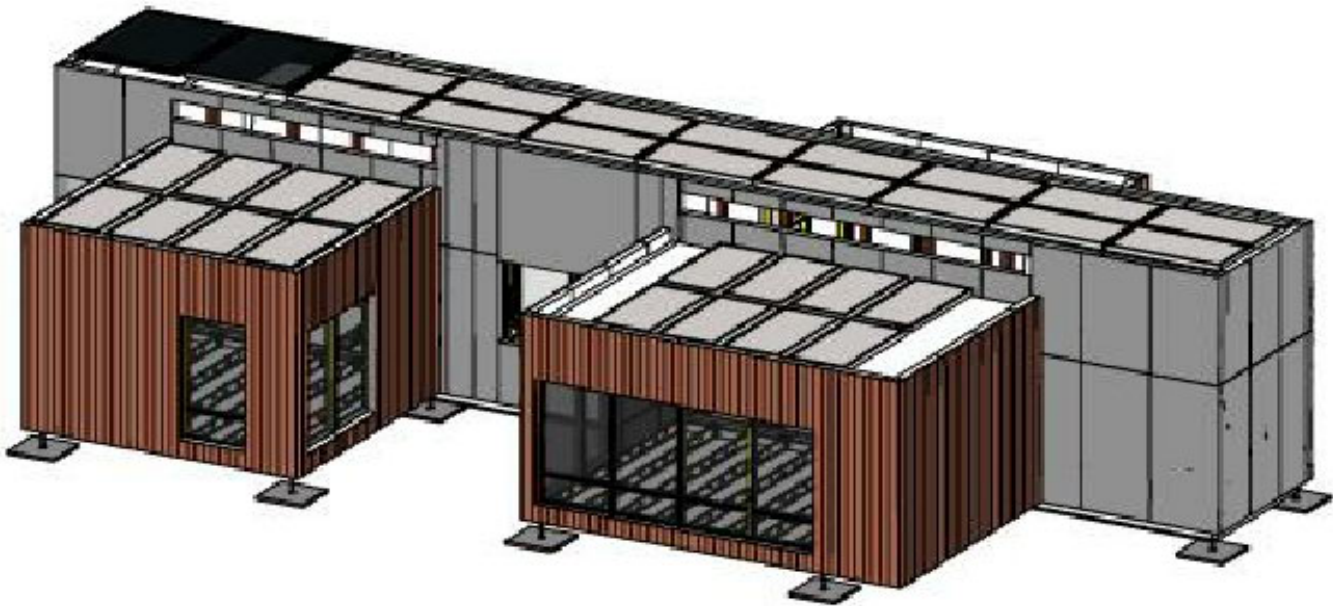


**2** CORE TOP DETACHMENT  
NO SCALE

FLASHINGS AND ALL SEALS WILL BE REMOVED.

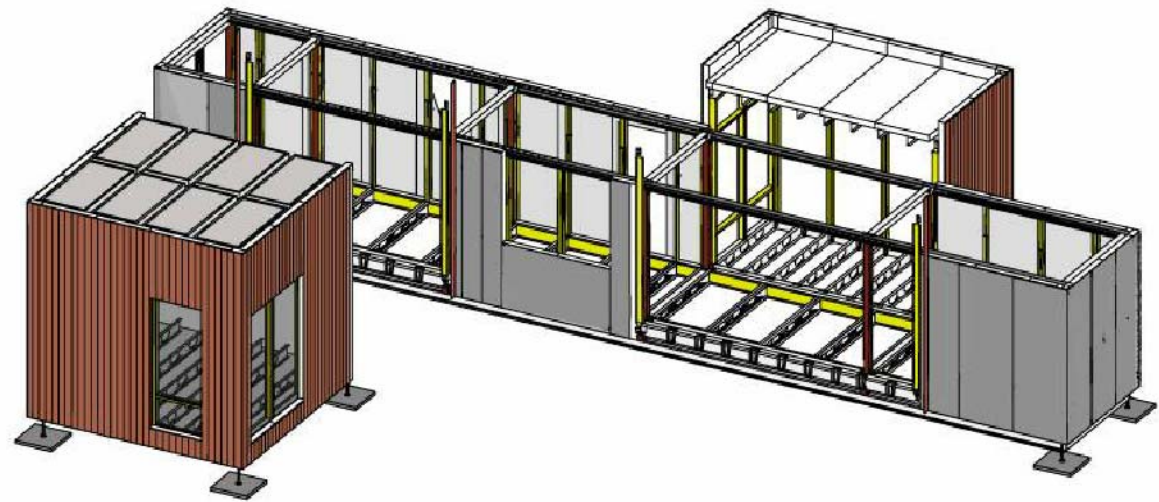
PODS WILL BE ANGLED ONCE AGAIN 6 INCHES AWAY FROM THE CORE AT THE TOP TO LET THE UPPER PLENUM BE REMOVED.

2HRs



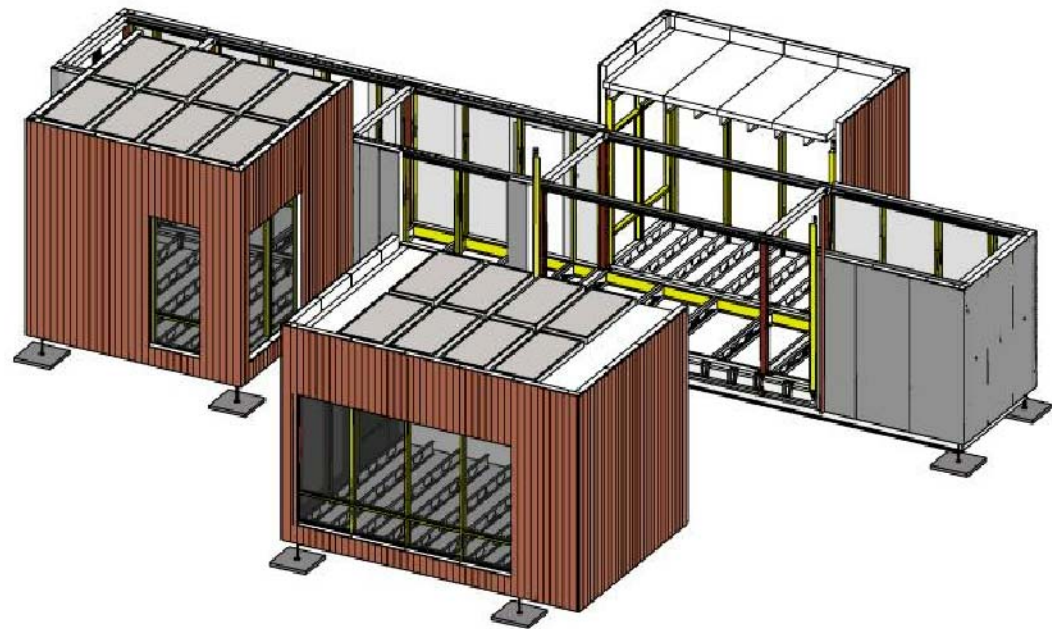
**1** DE-LEVEL and REMOVE SEAL  
NO SCALE

POD-C PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES  
AND FITTINGS WILL BE RAISED BY CRANE ONTO THE TRAILER  
2HRS: 60 TON GROVE CRANE



4 POD-C DETACHMENT  
NO SCALE

POD-B PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES  
AND FITTINGS WILL BE RAISED BY CRANE ONTO THE TRAILER  
2HRS: 60 TON GROVE CRANE



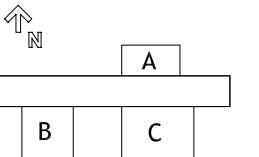
3 POD-B DETACHMENT  
NO SCALE

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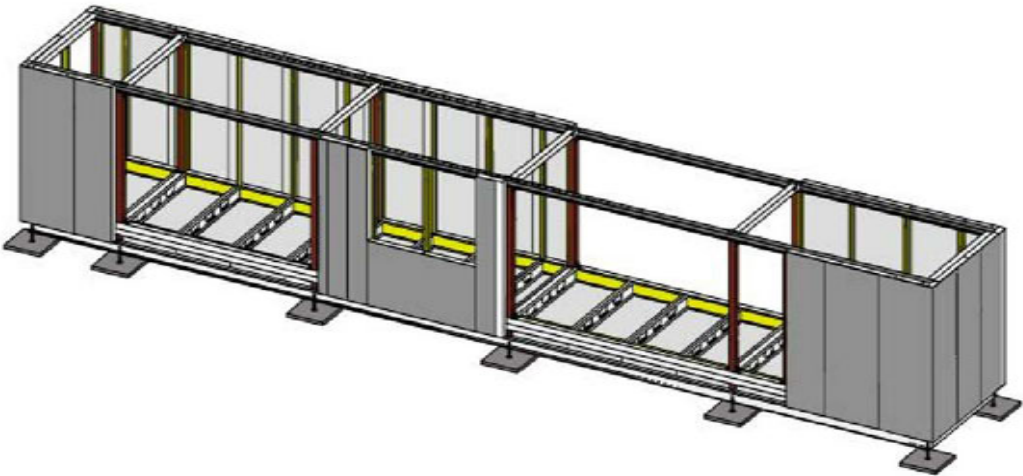
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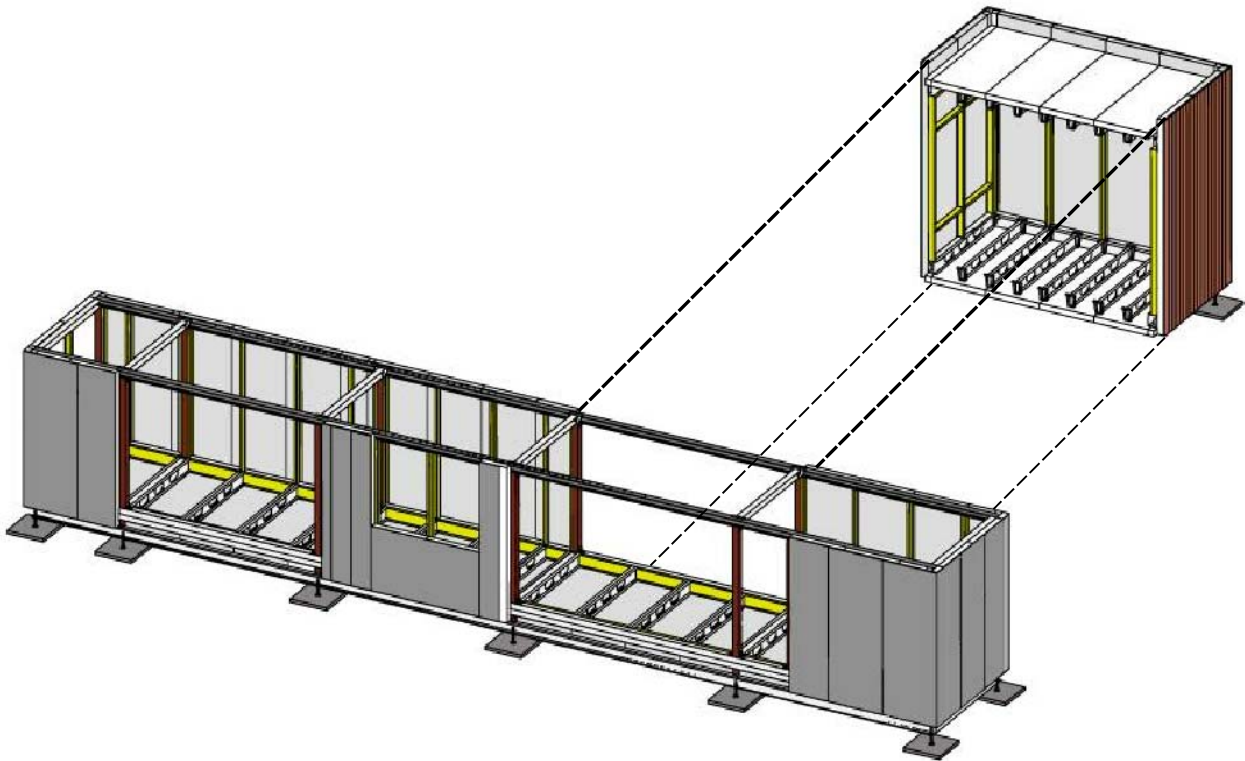
C2.1

CORE PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES  
AND FITTINGS WILL BE RAISED BY CRANE ONTO THE TRAILER  
2HRS: 60 TON GROVE CRANE



6 CORE and LEVELING PLATFORM  
NO SCALE

POD-A PIECE WITH ALL FINISHES, WINDOWS, DOORS, FIXTURES  
AND FITTINGS WILL BE RAISED BY CRANE ONTO THE TRAILER  
2HRS: 60 TON GROVE CRANE



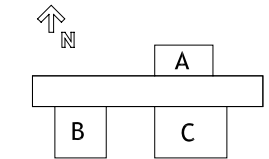
5 KITCHEN POD DETACHMENT  
NO SCALE

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C2.2