

# MIT SOLAR 7 2007 SOLAR DECATHLON



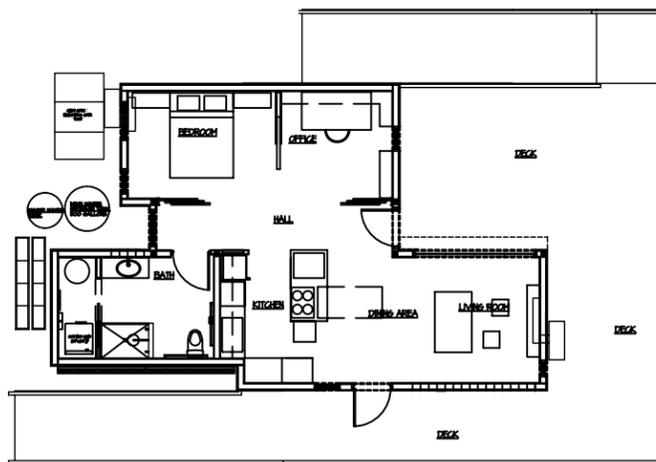
## MISSION STATEMENT

THE MIT SOLAR 7 HOUSE IS DESIGNED FOR COMMUNITY INTEGRATION. INCORPORATING A THERMAL-EXCHANGE WALL, INTERACTIVE-INFORMATION WALL AND PV SKIN PROVIDES A RESPONSIVE DWELLING AIMED AT REDUCING THE COMMUNAL ENERGY COST BY METERED BUDGETING OF ITS ENERGY CONSUMPTION AND GENERATION. THE SOUTH FACING THERMAL EXCHANGE WALL SUPPORTS THE OVERHEAD PV PANELS SPANNING A LIVING AREA WHICH OPENS INTO SEVERAL OUTDOOR DECK SPACES, BLURRING THE BOUNDARY BETWEEN THE ENCLOSURE AND COMMUNITY TO MAKE A SMOOTHER TRANSITION FROM THE EXTERNAL ENVIRONMENT TO THE MIT SOLAR 7 HOME.

RELIANCE UPON PASSIVE SOLAR ENERGY STORAGE AND PASSIVE HEATING STRATEGIES DICTATES MUCH OF THE DESIGN. THIS HOUSE HAS BEEN ENGINEERED TO BENEFIT FROM AMBIENT LIGHT MAKING A COMFORTABLE ATMOSPHERE DURING THE DAY. THE SOUTHERN WALL CONTAINS A SECTION OF "WARM LIGHT" BLOCKS, DAMPENING THE THERMAL FLUCTUATIONS AND PROVIDING HEAT THROUGHOUT THE NIGHT. ADDITIONALLY, SOLAR THERMAL EVACUATED CYLINDERS PROVIDE A PASSIVE SOLUTION TO HOT WATER AND RADIANT FLOOR HEATING. THE CONVERSION OF SUNLIGHT TO ELECTRICAL ENERGY RESULTS FROM THE PV PANELS EXTENDING FROM THE SOUTHERN "WARM-LIGHT" WALL, UPWARDS OVER THE WET-MECHANICAL AREA, LIVING ROOM AND KITCHEN AND TERMINATING IN CLERESTORY WINDOWS. SEPARATING THE ENTRANCE, STUDY AND BEDROOM ARE COVERED BY A PARAPET SURROUNDED QUIET HVAC SYSTEM.

THE PHILOSOPHICAL MOTIVATION FOR A PASSIVE STRATEGY IS DRIVEN BY THE POOR EXCHANGE TO ELECTRICAL ENERGY. ONE CRITICAL COMPONENT TO THE SUCCESSFUL PERFORMANCE OF OUR HOUSE IS IN ITS ABILITY TO MITIGATE WASTE IN EVERY WAY. WE ARE EXAMINING MATERIAL WASTE STREAMS AS INSPIRATION TO FIND MATERIALS THAT ARE RE-USABLE. ADDITIONALLY, THE RE-LINK INFORMATION PROVIDED BY THE CENTRAL BACKBONE DIRECTS THE DWELLING'S INHABITANTS ABOUT THE GRID-NORMALIZED ENERGY COSTS OF THE HOME AND SURROUNDING COMMUNITY.

## FLOOR PLAN



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### NOTE:

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

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SOLAR  
DECATHLON

TITLE SHEET

Draw. Number

Date  
08.06.07

Scale  
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T-1

TABLE OF CONTENTS

GENERAL

- T1 - TITLE SHEET
- T2 - TABLE OF CONTENTS

STRUCTURAL

- S1 - FOUNDATION
- S2 - FIRST FLOOR FRAMING
- S3 - LOFT/CLERESTORY FRAMING
- S4 - ROOF FRAMING
- S5 - DECK FRAMING
- S6 - MODULE DESCRIPTION
- S7 - ASSEMBLY PROCESS

ARCHITECTURAL

- A1 - FLOOR PLAN
- A1.1 - REFLECTED CEILING PLAN
- A1.2 - CONDITIONED SPACE PLAN
- A1.3 - FOOTPRINT ESTIMATE
- A2 - LOFT CLERESTORY PLAN
- A3 - REFLECTED CEILING PLAN
- A4 - EAST ELEVATION
- A5 - NORTH ELEVATION
- A6 - WEST ELEVATION
- A7 - SITE PLAN AND TOUR ROUTE
- A8 - SITE ELEVATIONS
- A9 - SITE ELEVATIONS
- A10 - SECTION A-A
- A11 - LOFT/CLERESTORY SECTION B-B
- A12 - SECTION C-C
- A13 - ROOF PLAN
- A14 - ACCESSIBILITY PLAN

ARCHITECTURAL INTERIORS

- A11 - INTERIOR ELEVATIONS
- A12 - INTERIOR ELEVATIONS
- A13 - INTERIOR ELEVATIONS
- A14 - INTERIOR ELEVATIONS

MECHANICAL

- M1 - PLUMBING PLAN
- M2 - HEATING SCHEMATIC
- M3- - RADIANT FLOOR LAYOUT

ELECTRICAL

- E1 - ELECTRICAL PLAN
- E2 - SOLAR ELECTRICAL SCHEMATIC
- E3 - CIRCUIT DIAGRAM
- E4 - ELECTRICAL NOTES

DETAILS

- D1 - SIPS DETAILS
- D2 - TRANSPORT DETAILS
- D3 - SIPS CONNECTION DETAILS
- D4 - WINDOW SCHEDULE
- D5 - LIGHTING SCHEDULE

GENERAL

- G1 - GENERAL NOTES

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FOUNDATION

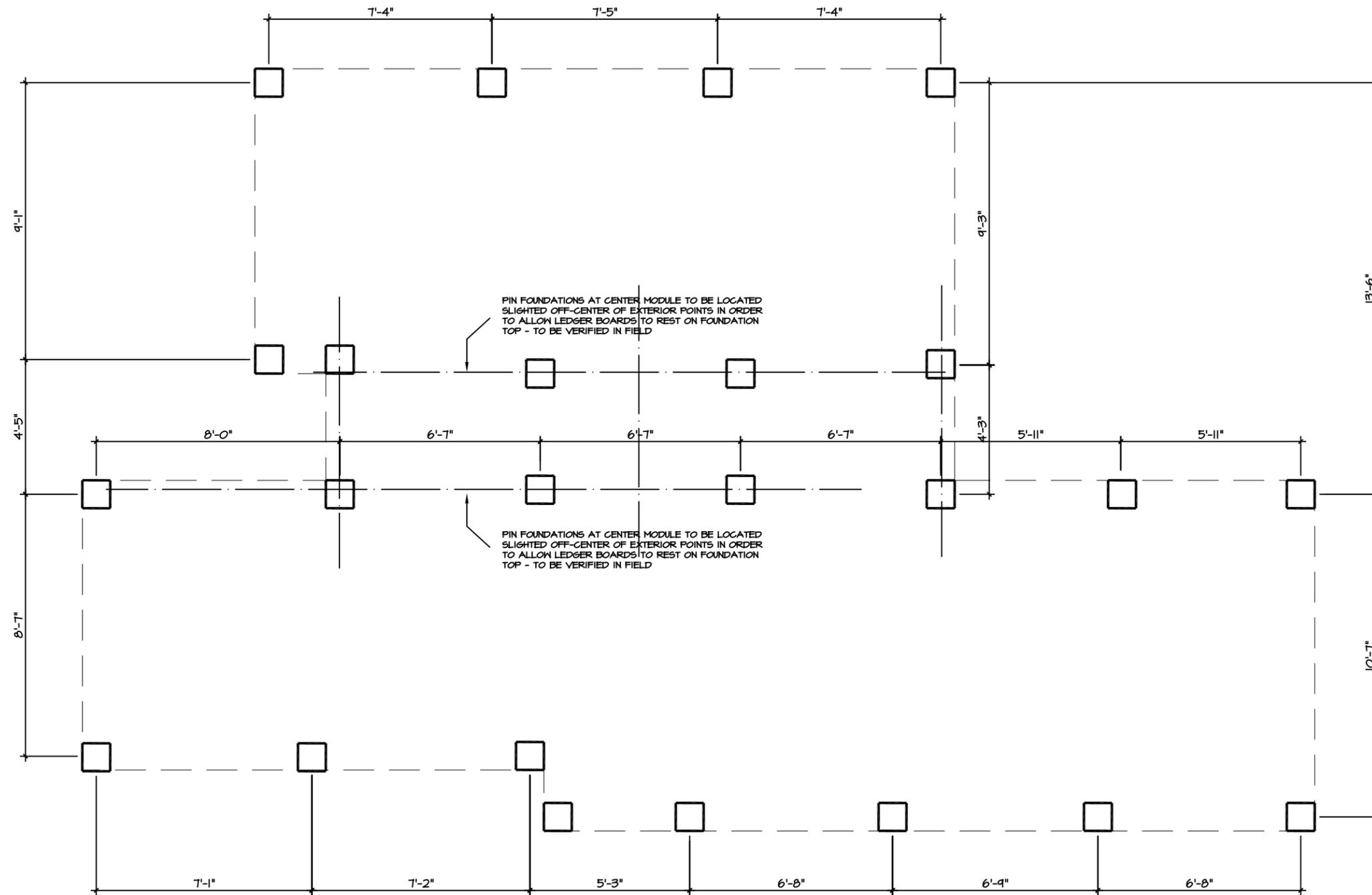
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S-1



PIN FOUNDATION PLACEMENT PLAN

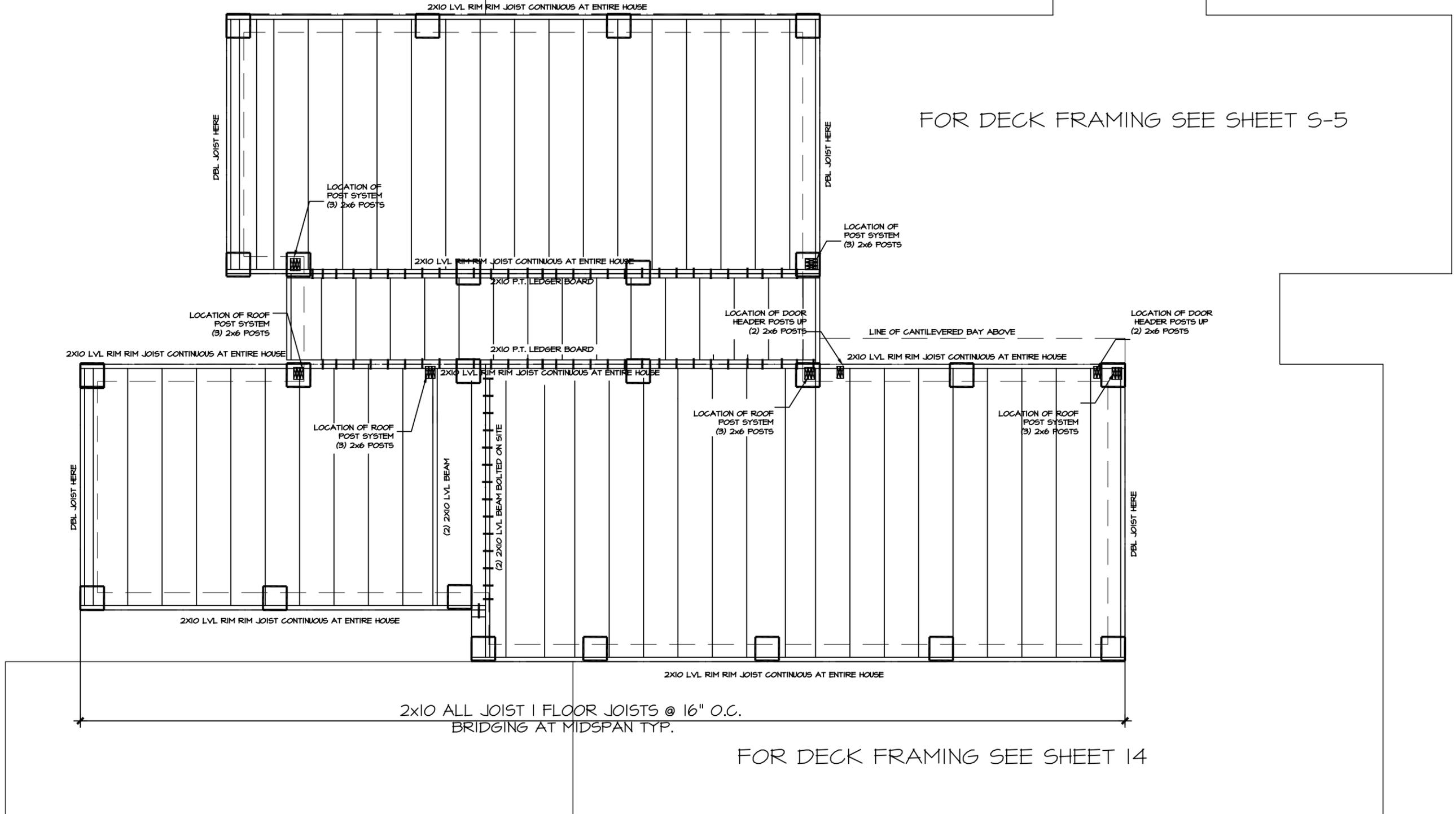
SCALE: 1/4" = 1'-0"



NOTE: 3x5 STEEL L BRACKET AT ALL MODULE 1,2&3 PERIMETERS. SEE MAJOR CONNECTION DETAIL AND DETAIL II. STEEL TO BE FABRICATED AFTER FIRST FLOOR DECK IS COMPLETED IN FIELD.

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FOR DECK FRAMING SEE SHEET S-5

FOR DECK FRAMING SEE SHEET 14

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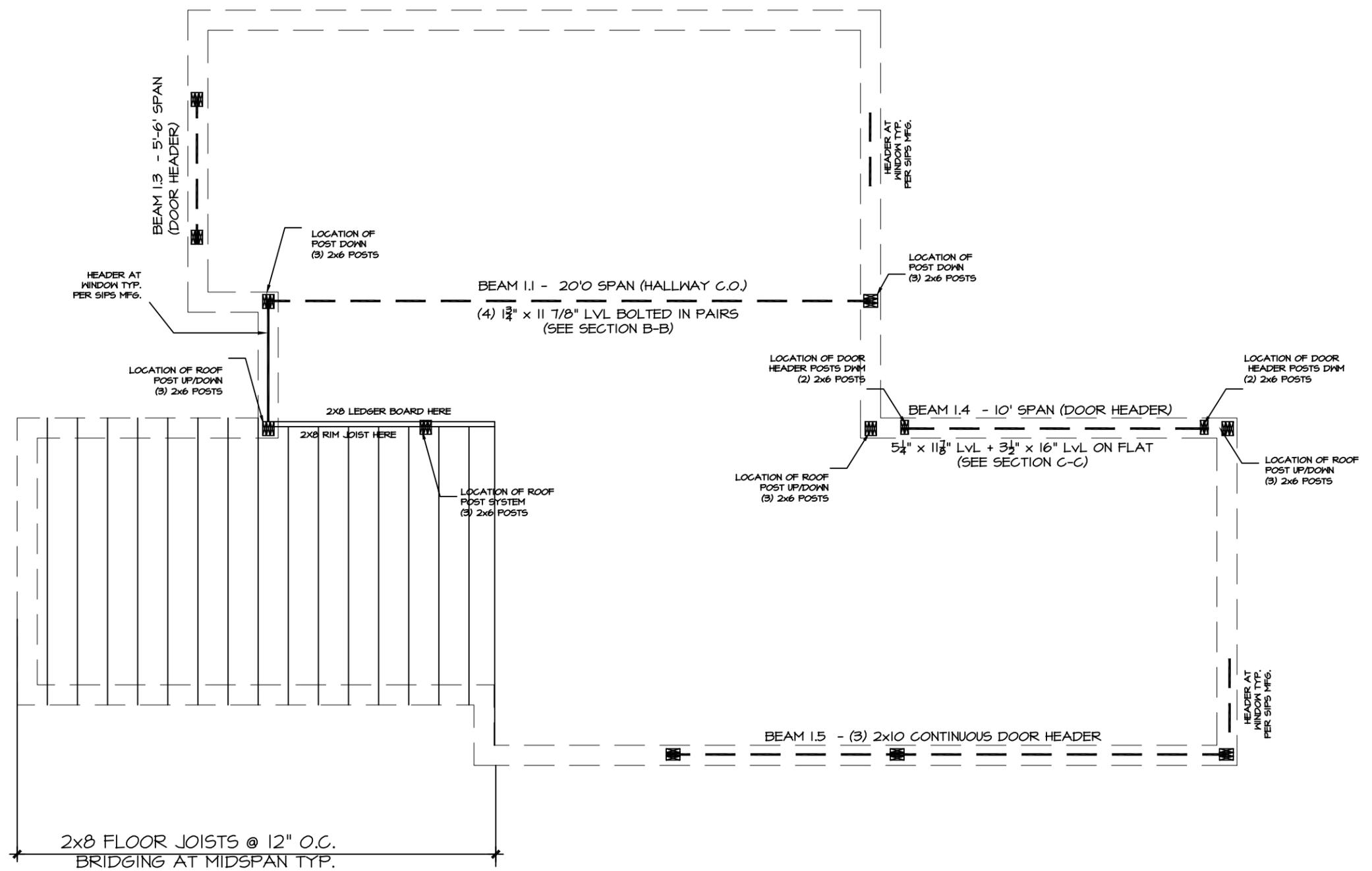
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FIRST FLOOR  
FRAMING

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1/2"=1'-0"

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S-2

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



# LOFT FLOOR FRAMING PLAN

SCALE: 1/4" = 1'-0"



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LOFT/CLERES.  
FRAMING

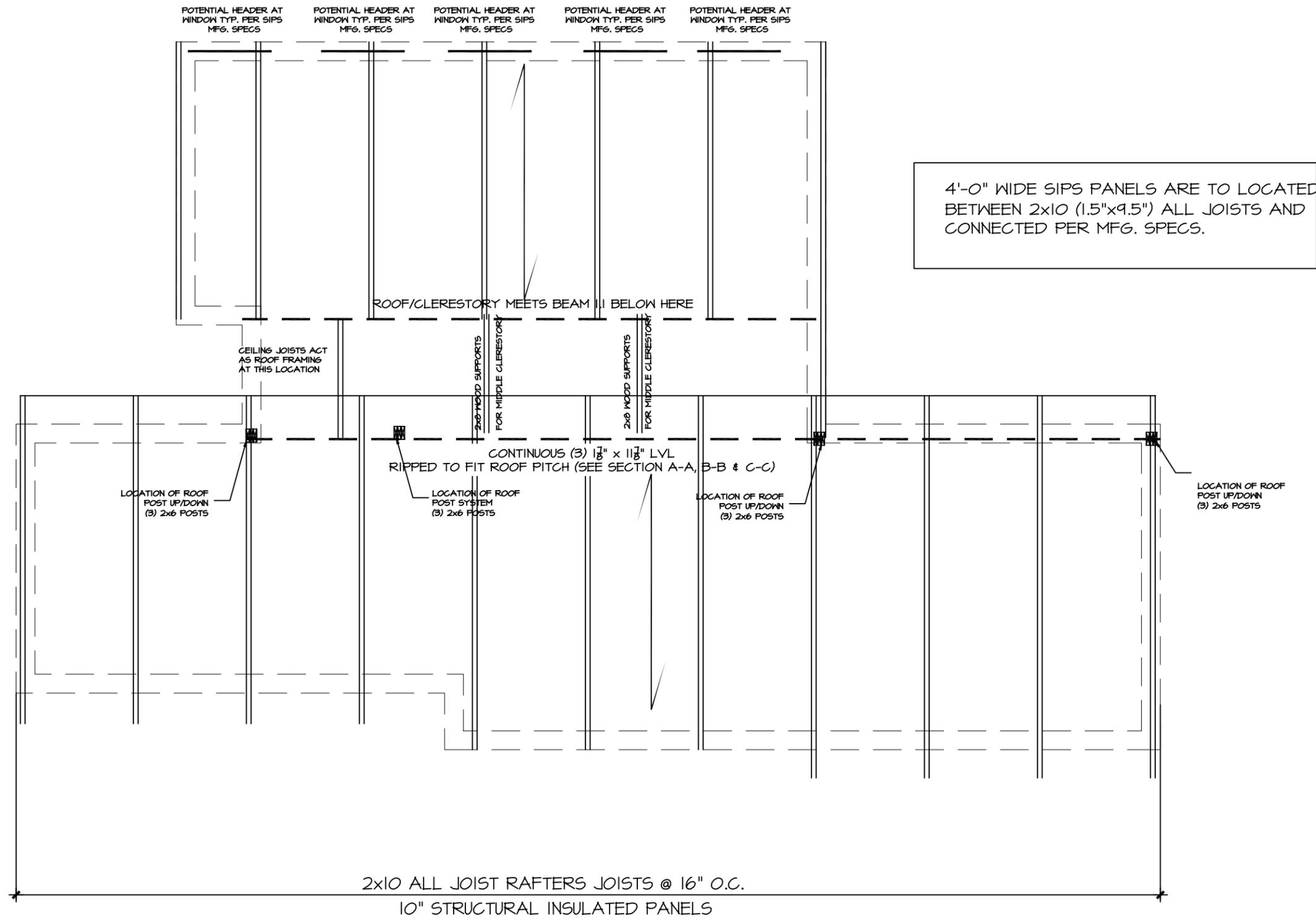
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S-3



4'-0" WIDE SIPS PANELS ARE TO LOCATED BETWEEN 2x10 (1.5"x9.5") ALL JOISTS AND CONNECTED PER MFG. SPECS.

# ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"



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SOLAR DECATHLON

ROOF FRAMING

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Scale  
1/2"=1'-0"

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S-4

NOTE:

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DECK FRAMING

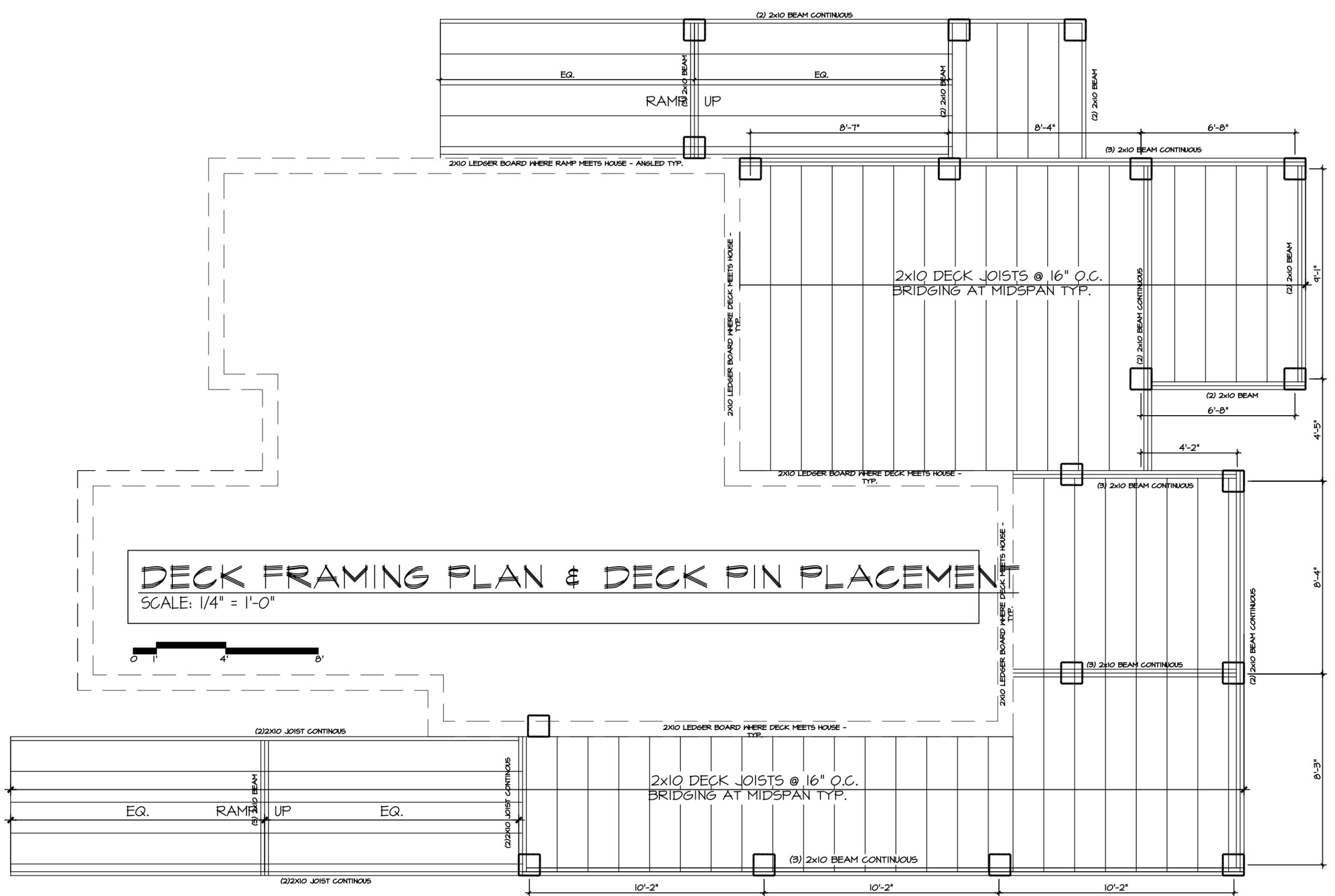
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Scale  
1/2"=1'-0"

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S-5



DECK FRAMING PLAN & DECK PIN PLACEMENT

SCALE: 1/4" = 1'-0"



NOTE:  
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MODULE  
DESCRIPTION

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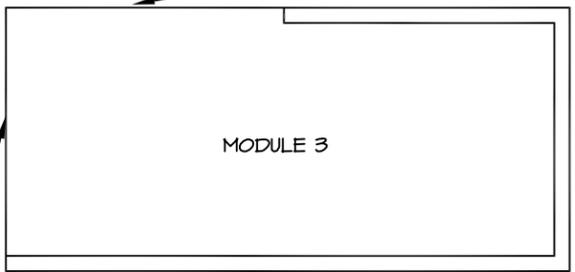
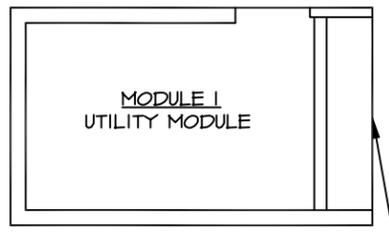
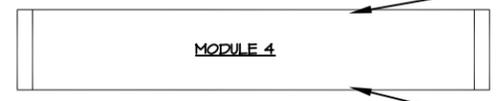
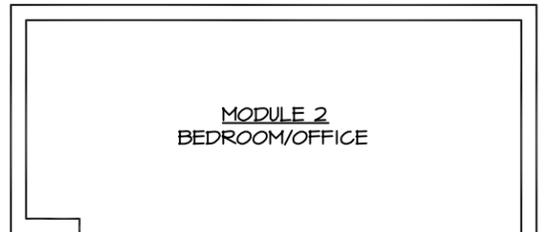
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S-6

NOTE: THIS MATERIAL IS A SCALED GRAPHIC  
TO SUPPLEMENT WRITTEN DOCUMENTATION  
OF THE ASSEMBLY PROCESS.  
WRITTEN DOCUMENTATION TO PROVIDE MORE  
DETAILED SPECIFICATIONS



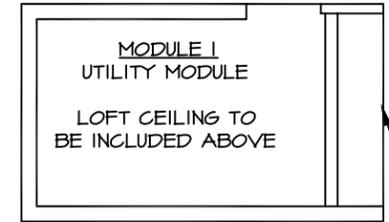
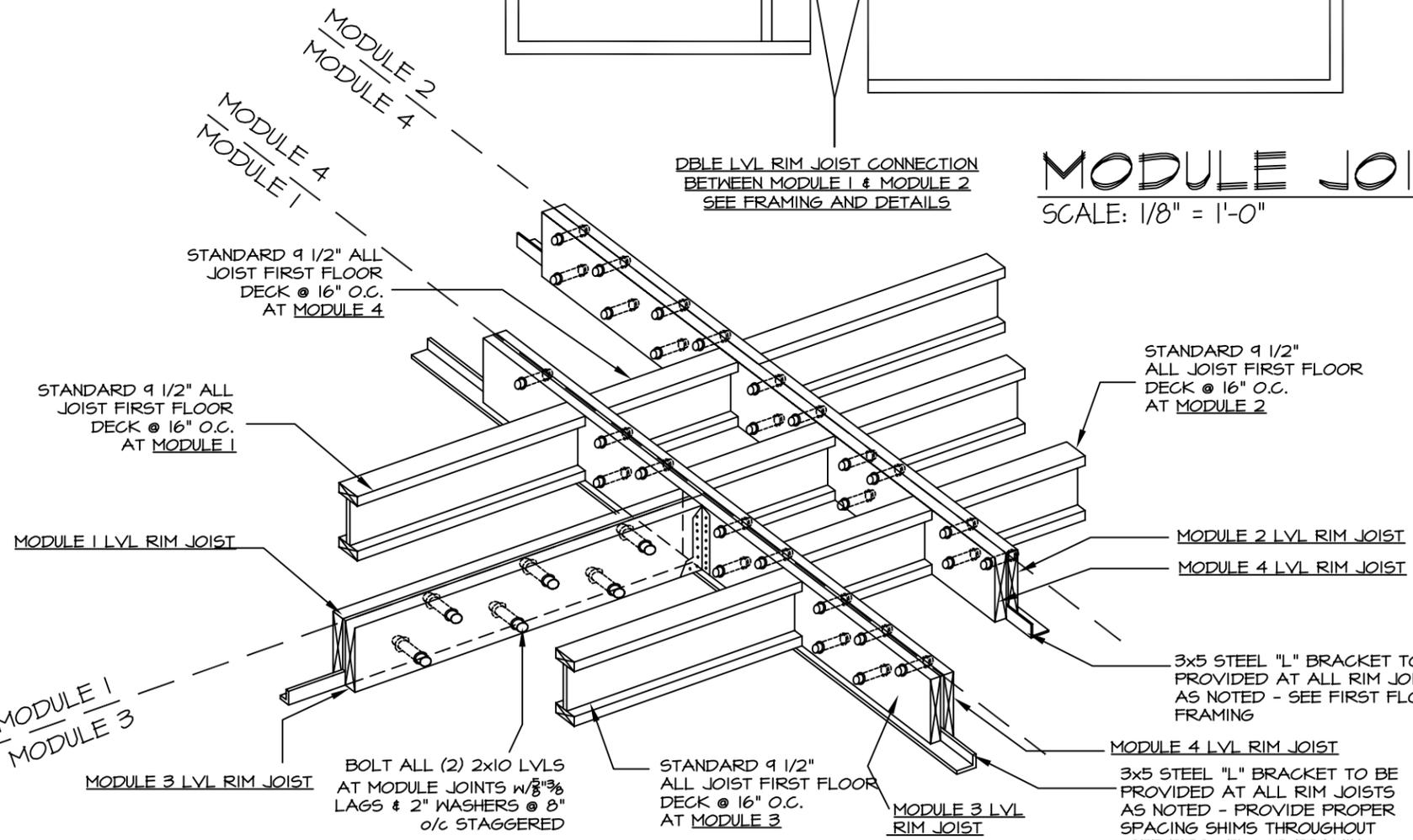
DBLE LVL RIM JOIST CONNECTION  
BETWEEN MODULE 4 & MODULE 2  
SEE FRAMING AND  
MAJOR CONNECTION DETAIL

DBLE LVL RIM JOIST CONNECTION  
BETWEEN MODULE 3 & MODULE 4  
SEE FRAMING AND  
MAJOR CONNECTION DETAIL

DBLE LVL RIM JOIST CONNECTION  
BETWEEN MODULE 1 & MODULE 2  
SEE FRAMING AND DETAILS

### MODULE JOINTS

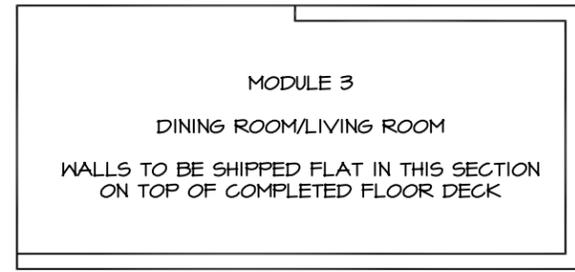
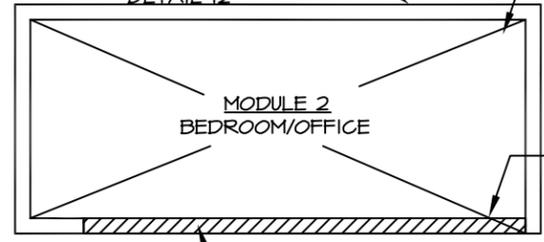
SCALE: 1/8" = 1'-0"



THIS AREA HERE TO BE  
TEMPORARILY SHEATHED IN  
PLYWOOD DURING  
TRANSPORTATION

ROOF TO BE LOWERED  
ON HINGED MECHANISM  
AND TIED DOWN AT  
NORTH EDGE PER  
DETAIL 12

FULL LATERAL BRACING TO BE  
PROVIDED ACROSS MODULE 2  
SEE DETAIL 13



### MODULE BREAKDOWN

SCALE: 1/8" = 1'-0"



### MODULE AXON OF MAJOR CONNECTION DETAIL

SCALE: NTS



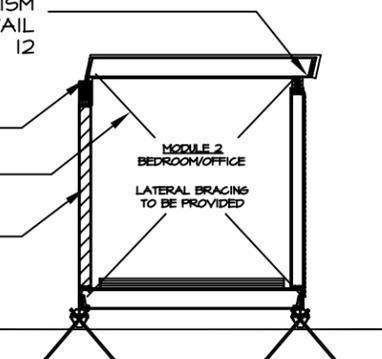
NOTE: THE FOLLOWING ASSEMBLY DESCRIPTION DETAILS THE STRUCTURAL CONSTRUCTION OF THE HOUSE UPON ARRIVAL IN D.C. NON-STRUCTURAL ITEMS (I.E. WINDOWS, DOORS, FINISH MATERIALS) ARE NOT INCORPORATED HERE. FOR A DETAILED STAGING OF ALL HOUSE COMPONENTS AS CHRONOLOGICALLY INSTALLED, PLEASE REFER TO WRITTEN ASSEMBLY DOCUMENTATION

ROOF TO BE LOWERED ON HINGED MECHANISM AND TIED DOWN AT NORTH EDGE PER DETAIL 12

CUSTOM HINGE JOINT WHERE NORTH ROOF MEETS BEAM ABOVE TO ALLOW FOR TRANSPORTATION - SEE DETAIL

FULL LATERAL BRACING TO BE PROVIDED ACROSS MODULE 2 SEE DETAIL 13

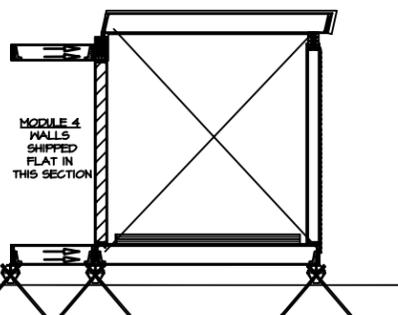
TEMPORARY 2x4 STUD WALL (HATCHED REGION) TO BE CONSTRUCTED AT HALLWAY OPENING DURING TRANSPORTATION



**PROPOSED ASSEMBLY ON SITE - STAGE 1**

SCALE: 1/4" = 1'-0"

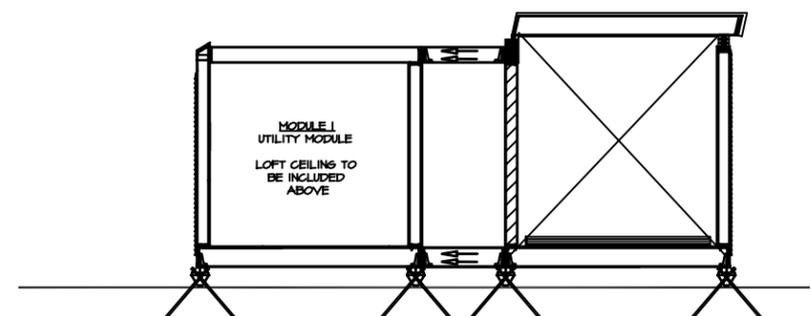
Module #2 Bedroom/office off loaded from trailer  
The module will be placed on planks and rollers for final adjustments in placement on site  
Once the module is correctly located on the site the footings will be located and installed  
Module will be lowered onto footings and adjusted for level from site survey



Module #4 Interconnecting hallway floor section will be attached to the first module with connecting bolts  
Footings located and installed  
Adjusted for leveled

**PROPOSED ASSEMBLY ON SITE - STAGE 2**

SCALE: 1/4" = 1'-0"



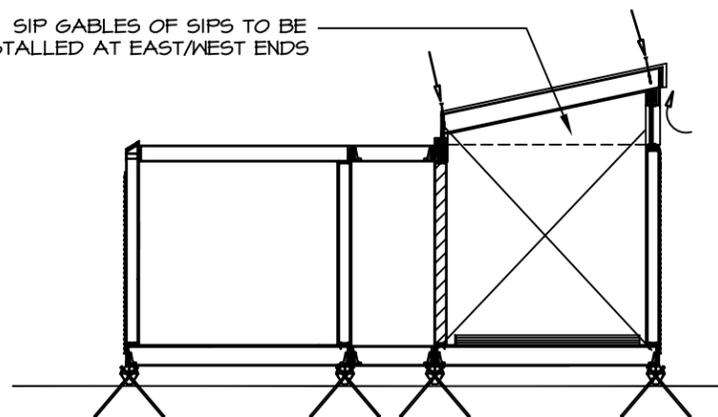
Module #1 off loaded from trailer  
Placed on planks and rollers for final adjustments on site  
Adjust to align with interconnecting hallway  
Locate footings and install  
Lower onto footings and level module  
Install connecting bolts

(NOT SHOWN IN GRAPHIC)  
Module #3 Living room floor section off loaded from trailer  
Placed on planks and rollers for final adjustments on site  
Aligned with Mod #1 & 4 footings located and installed  
Adjusted for level and install connecting bolts

**PROPOSED ASSEMBLY ON SITE - STAGE 3/4**

SCALE: 1/8" = 1'-0"

SIP GABLES OF SIPs TO BE INSTALLED AT EAST/WEST ENDS



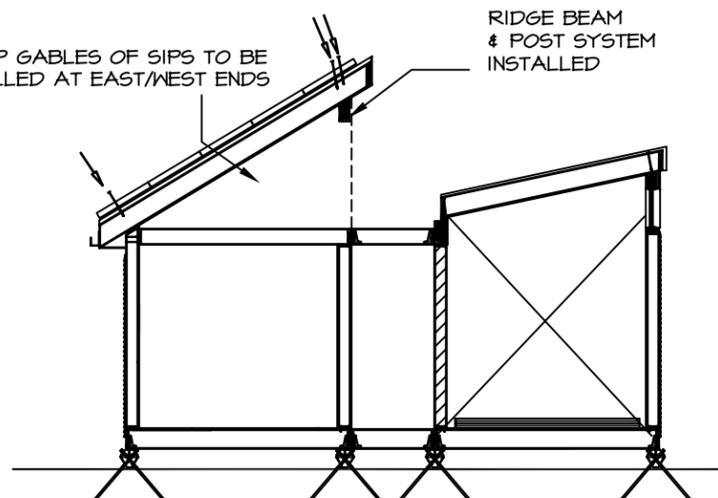
**PROPOSED ASSEMBLY ON SITE - STAGE 5**

SCALE: 1/4" = 1'-0"

**Module #2 Bedroom/office**

Steps to completion after module is set in place  
Roof is hinged flat for transportation and secured (pre-finished)  
Remove shipping bracing  
Detach roof brackets  
Roof jacked into position  
Gables slid into place and secured  
North wall clerestory wall panels and windows installed and secured  
Roof secured to gables and clerestories

SIP GABLES OF SIPs TO BE INSTALLED AT EAST/WEST ENDS  
RIDGE BEAM & POST SYSTEM INSTALLED



**PROPOSED ASSEMBLY ON SITE - STAGE 6**

SCALE: 1/4" = 1'-0"

**South Roof assembly**

After all exterior walls and beams are in place and securely braced  
Roof sections rigged and lifted into place with a lull  
Starting at the south west wall and continuing towards the east  
As each roof section is placed, it is secured and fastened as shown in plans  
Roofing membrane in already in place and left with overlapping joints  
Membrane at panel connections overlapped and secured  
Pre installed furring strips for PV array  
Exposed roof edges finished  
PV array installed  
Eave and rake trim installed  
Water recovery system installed

**South Roof assembly**

After all exterior walls and beams are in place and securely braced  
Roof sections rigged and lifted into place with a lull  
Starting at the south west wall and continuing towards the east  
As each roof section is placed, it is secured and fastened as shown in plans  
Roofing membrane in already in place and left with overlapping joints  
Membrane at panel connections overlapped and secured  
Pre installed furring strips for PV array  
Exposed roof edges finished  
PV array installed  
Eave and rake trim installed  
Water recovery system installed

**PROPOSED ASSEMBLY ON SITE - STAGE 6**

SCALE: 1/4" = 1'-0"

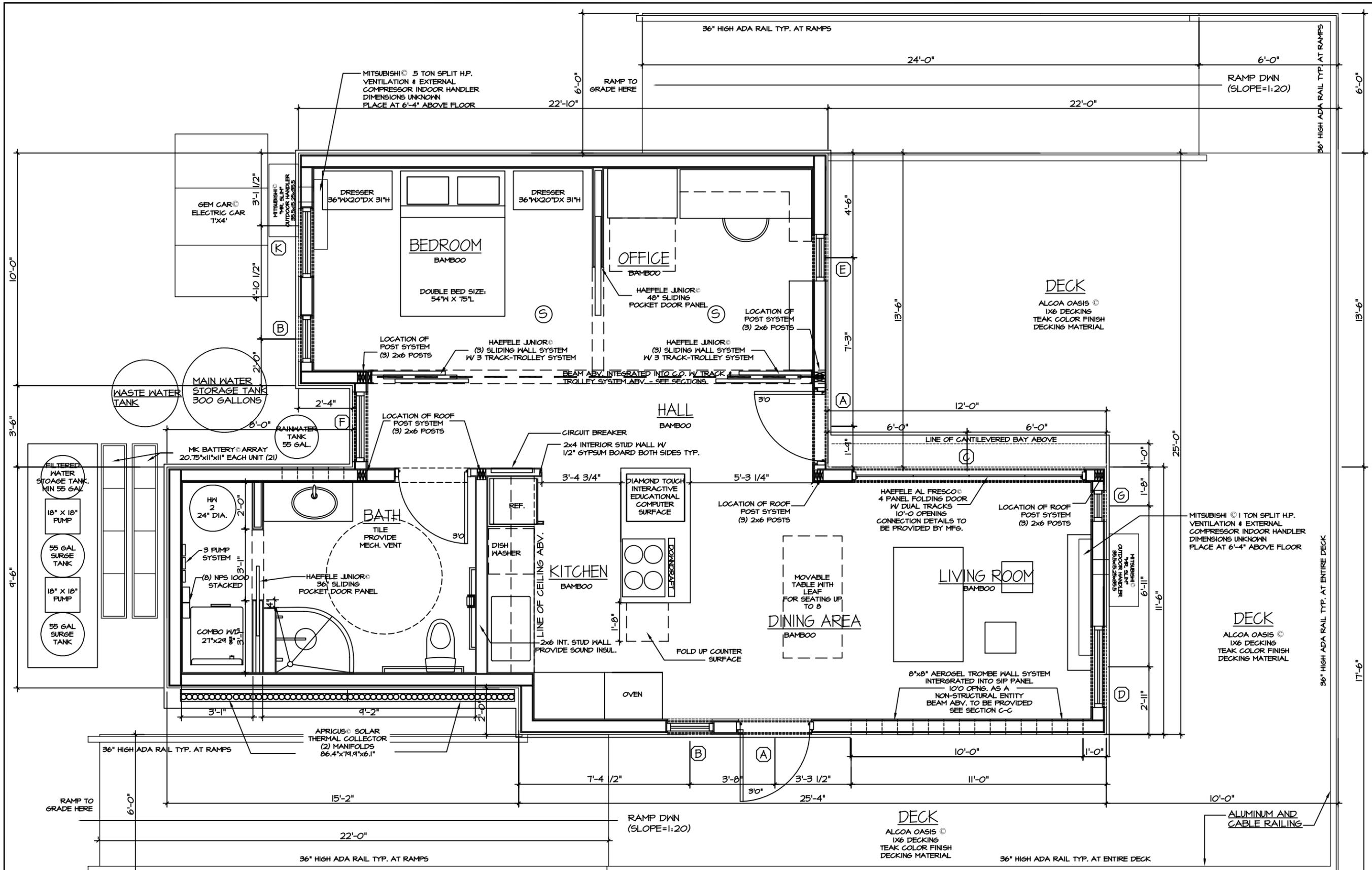
NOTE:  
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SOLAR  
DECATHLON  
**FLOOR PLAN**

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Date  
08.06.07  
Scale  
1/2"=1'-0"

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A=1

# PROPOSED FLOOR PLAN

SCALE: 1/4" = 1'-0"



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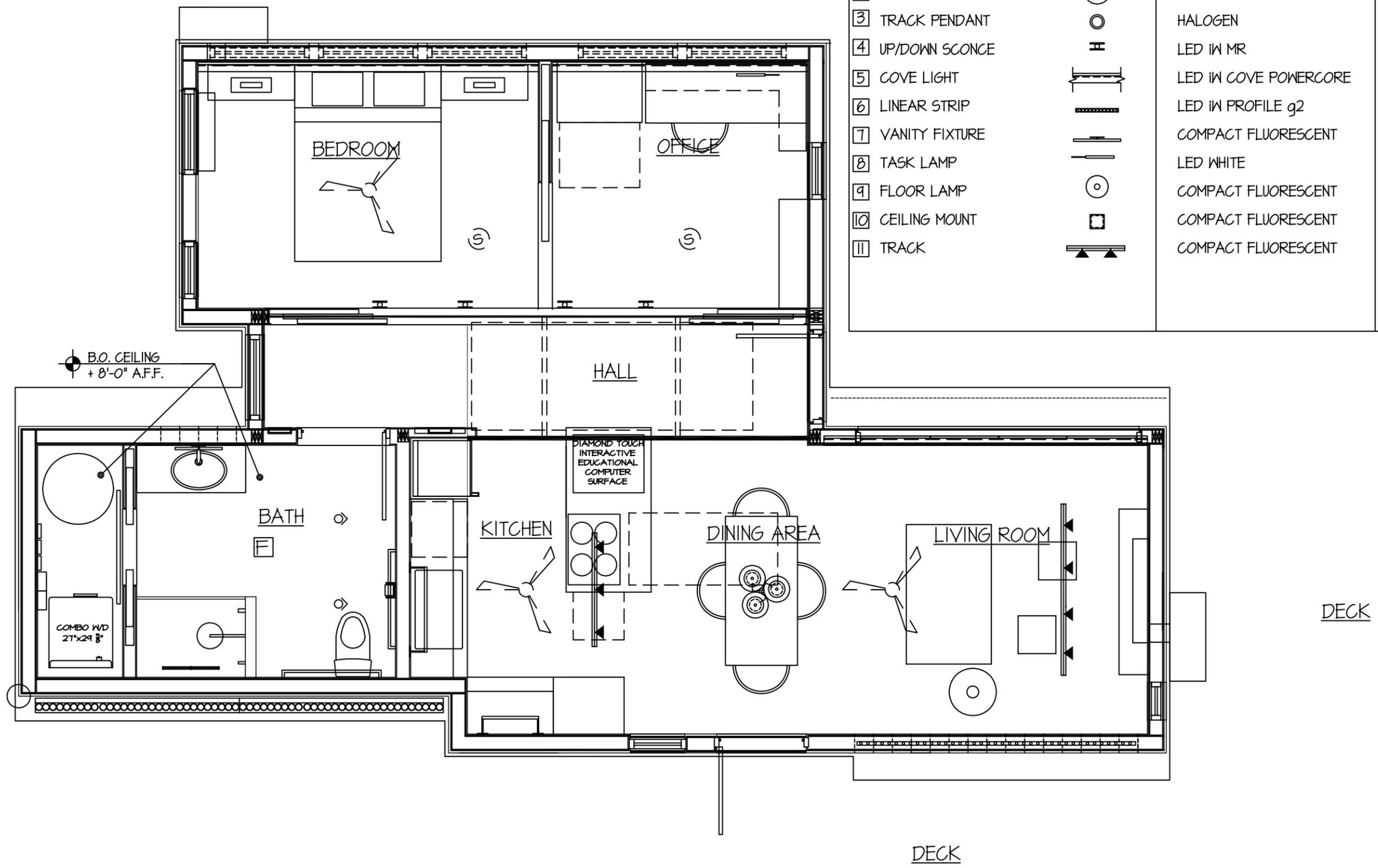
REFLECTED  
CEILING PLAN

Proj. Number  
Date  
08.06.07  
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1/4"=1'-0"

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A-1.1

### CEILING LEGEND

FIXTURE TYPE		LAMP TYPE	FEATURES
1 RECESSED	○	COMPACT FLUORESCENT	DIMMABLE
2 CHANDELIER PENDANT	⊙	COMPACT FLUORESCEN	DIMMABLE
3 TRACK PENDANT	○	HALOGEN	DIMMABLE
4 UP/DOWN SCNCE	⊥	LED IN MR	
5 COVE LIGHT	⌌	LED IN COVE POWERCORE	
6 LINEAR STRIP	—	LED IN PROFILE g2	
7 VANITY FIXTURE	—	COMPACT FLUORESCENT	COLOR CORRECTIVE
8 TASK LAMP	—	LED WHITE	
9 FLOOR LAMP	⊙	COMPACT FLUORESCENT	
10 CEILING MOUNT	□	COMPACT FLUORESCENT	DIMMABLE
11 TRACK	⌌	COMPACT FLUORESCENT	DIMMABLE



## REFLECTED CEILING PLAN

SCALE: 1/4" = 1'-0"

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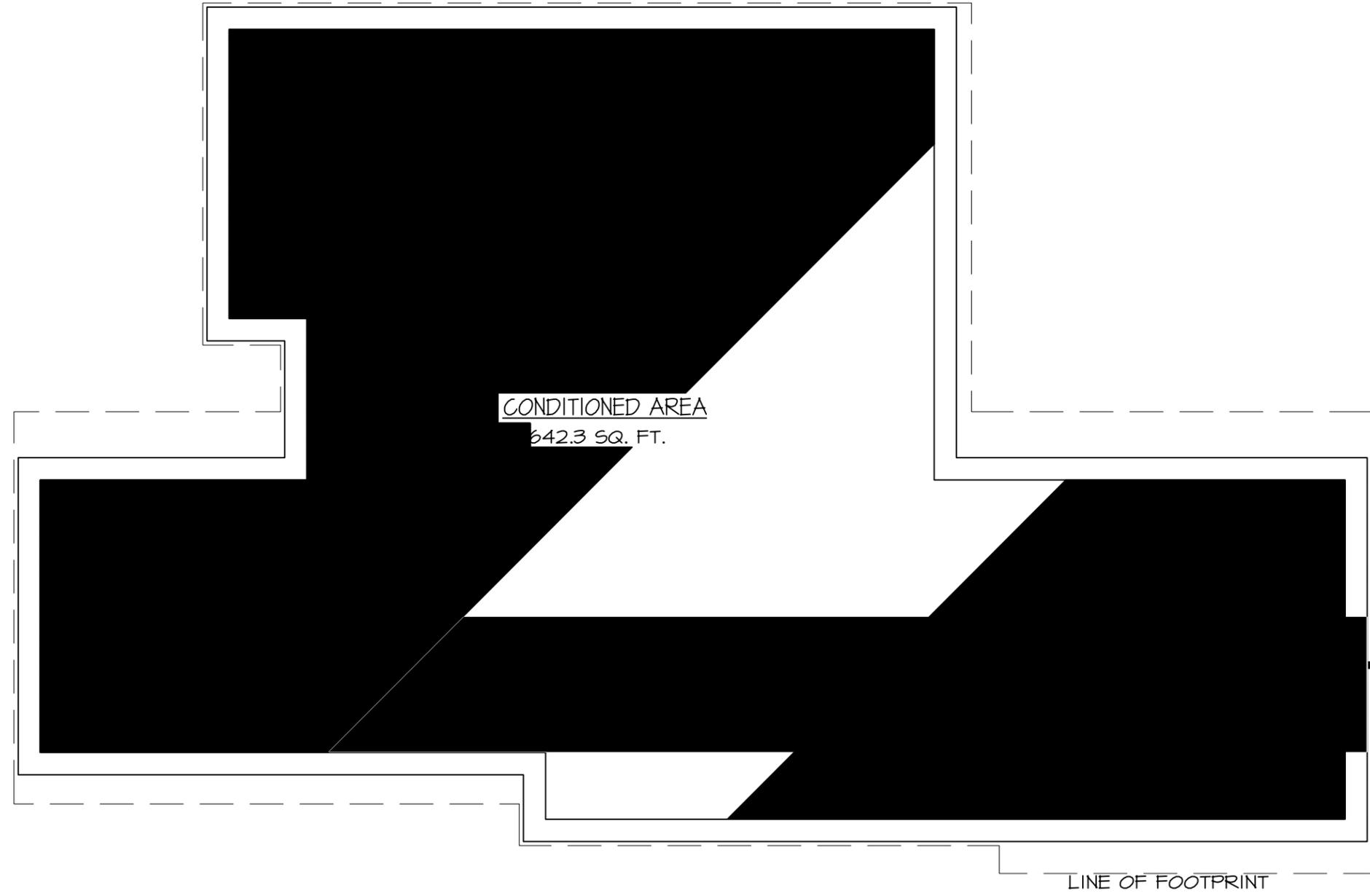
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SOLAR  
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CONDITIONED  
AREA

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1/2"=1'-0"

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CONDITIONED AREA  
642.3 SQ. FT.

LINE OF FOOTPRINT

PROPOSED CONDITIONED AREA

SCALE: 1/4" = 1'-0"



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FOOTPRINT  
ESTIMATE

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1/2"=1'-0"

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A-1.3

LINE OF FOOTPRINT

FOOTPRINT ESTIMATE = 798.2 SQ. FT.

LINE OF FOOTPRINT:  
LOCATION OF ROOF OVERHANG

LINE OF FOOTPRINT:  
LOCATION OF ROOF OVERHANG

LINE OF FOOTPRINT:  
LOCATION OF SOLAR THERMAL OVERHANG

LINE OF FOOTPRINT:  
LOCATION OF TROMBE WALL OVERHANG

# PROPOSED FOOTPRINT ESTIMATE

SCALE: 1/4" = 1'-0"



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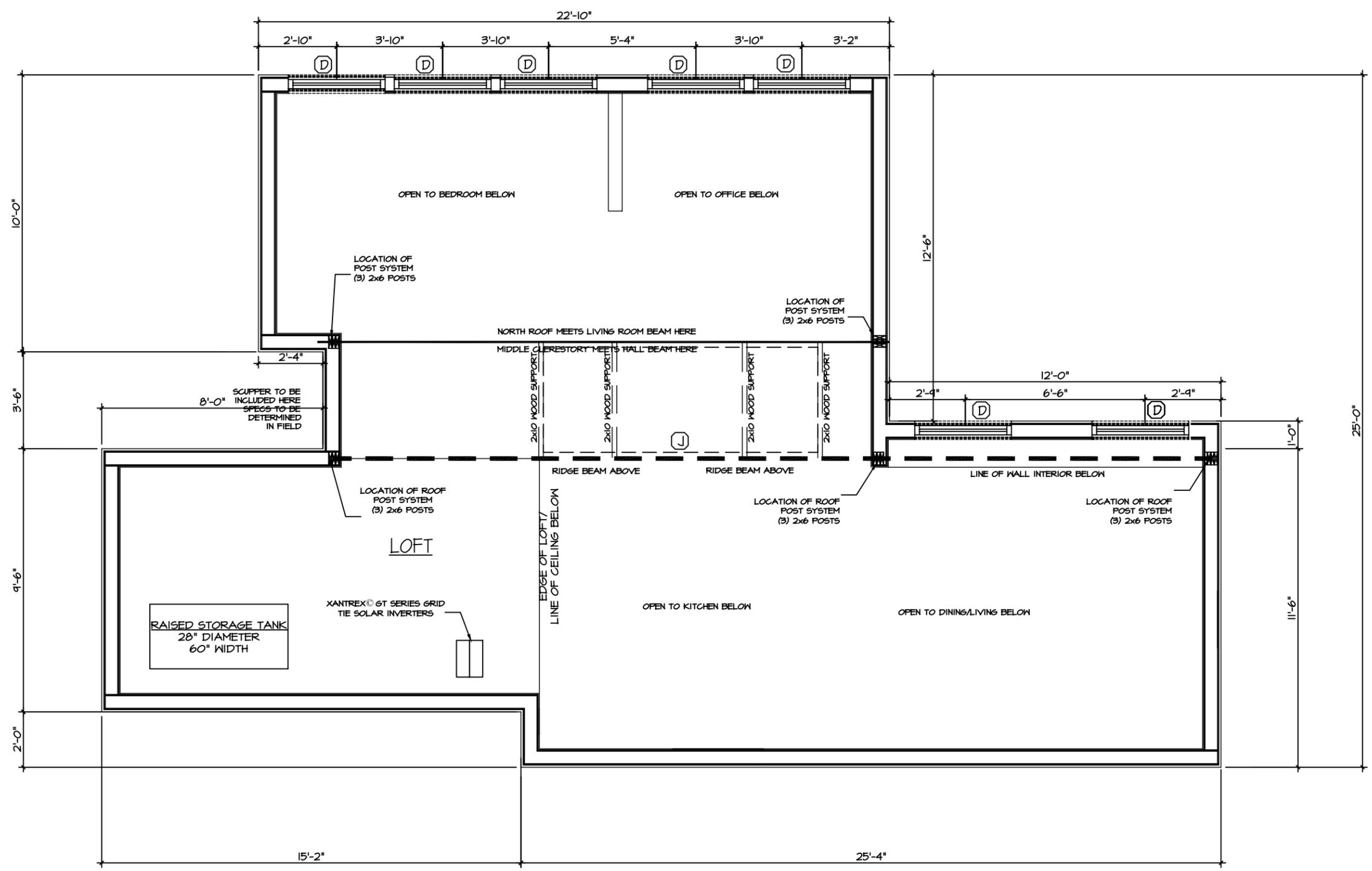
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SOLAR  
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LOFT/CLERES.  
PLAN

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# PROPOSED LOFT/CLERESTORY PLAN

SCALE: 1/4" = 1'-0"

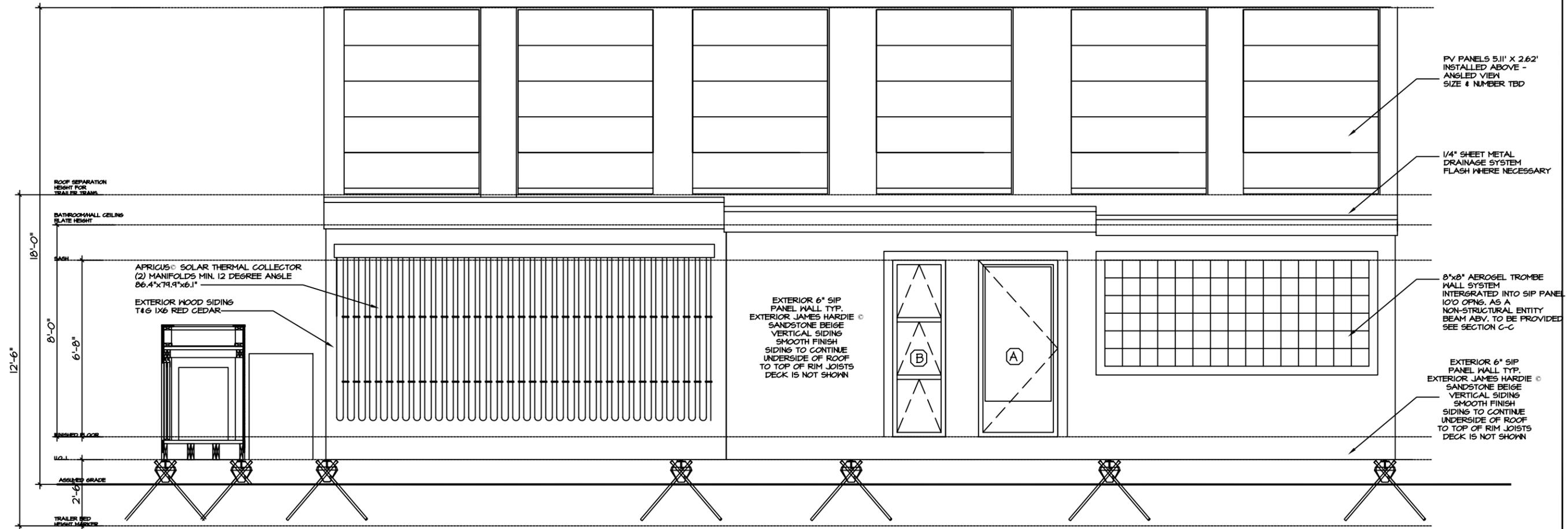


NOTE:

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NOTE: TRIM MATERIAL TO BE 1x6 RED CEDAR - TO MATCH SIDING MATERIAL AT ALL EXTERIOR WINDOWS AND DOORS, FASCIA & SOFFIT BOARD

NOTE: DECK NOT SHOWN HERE TO ALLOW FOR CLEAR ELEVATION OF HOUSE EXTERIOR WITH PIN FOUNDATIONS. PLEASE SEE SITE ELEVATIONS, DECK FRAMING PLAN AND DECK PIN PLACEMENT PLAN FOR LOCATION/DETAILS.



**PROPOSED SOUTH ELEVATION**

SCALE: 1/4" = 1'-0"



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SOLAR DECATHLON

SOUTH ELEV.

Proj. Number

Date  
08.06.07

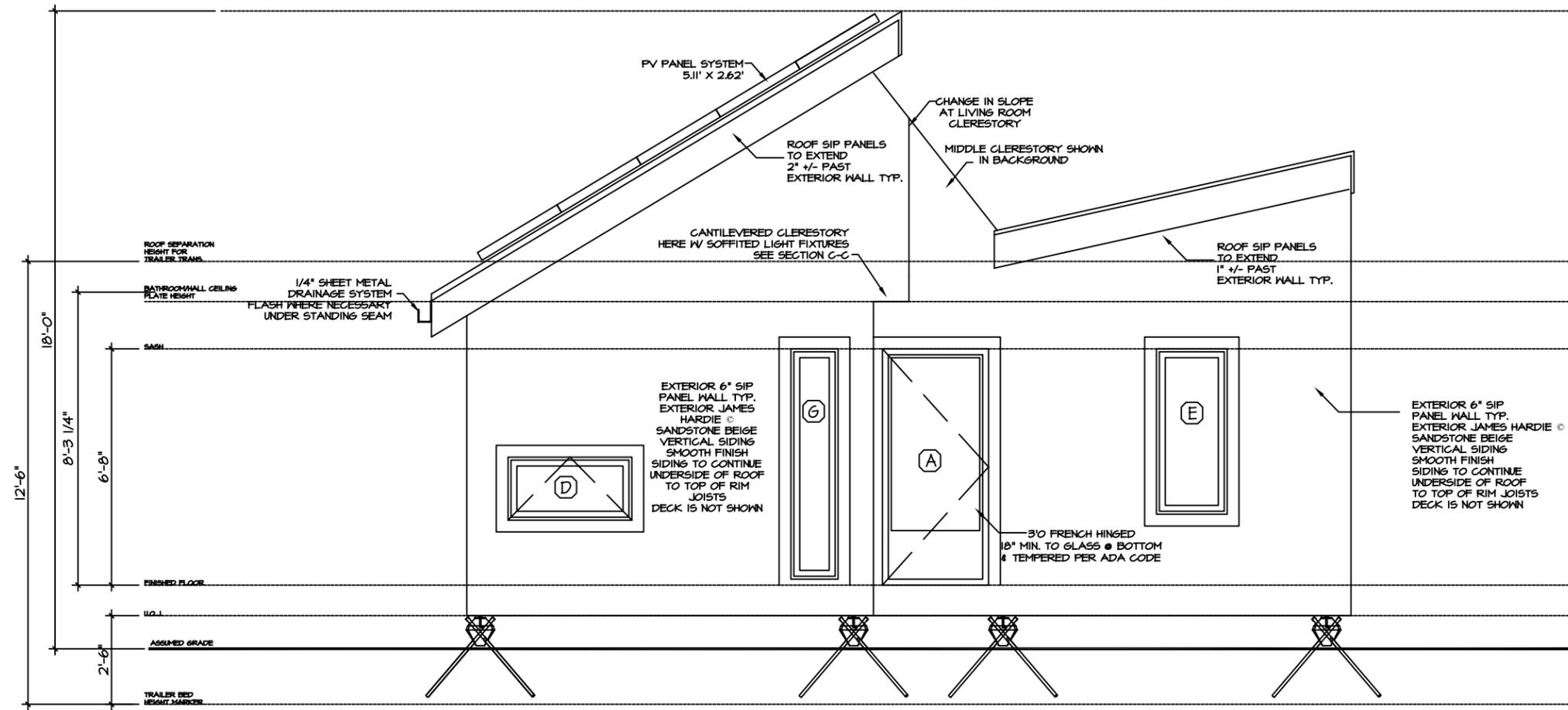
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1/2" = 1'-0"

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A-3

NOTE: TRIM MATERIAL TO BE 1x6 RED CEDAR - TO MATCH SIDING MATERIAL AT ALL EXTERIOR WINDOWS AND DOORS, FASCIA & SOFFIT BOARD

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# PROPOSED EAST ELEVATION

SCALE: 1/4" = 1'-0"



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SOLAR DECATHLON

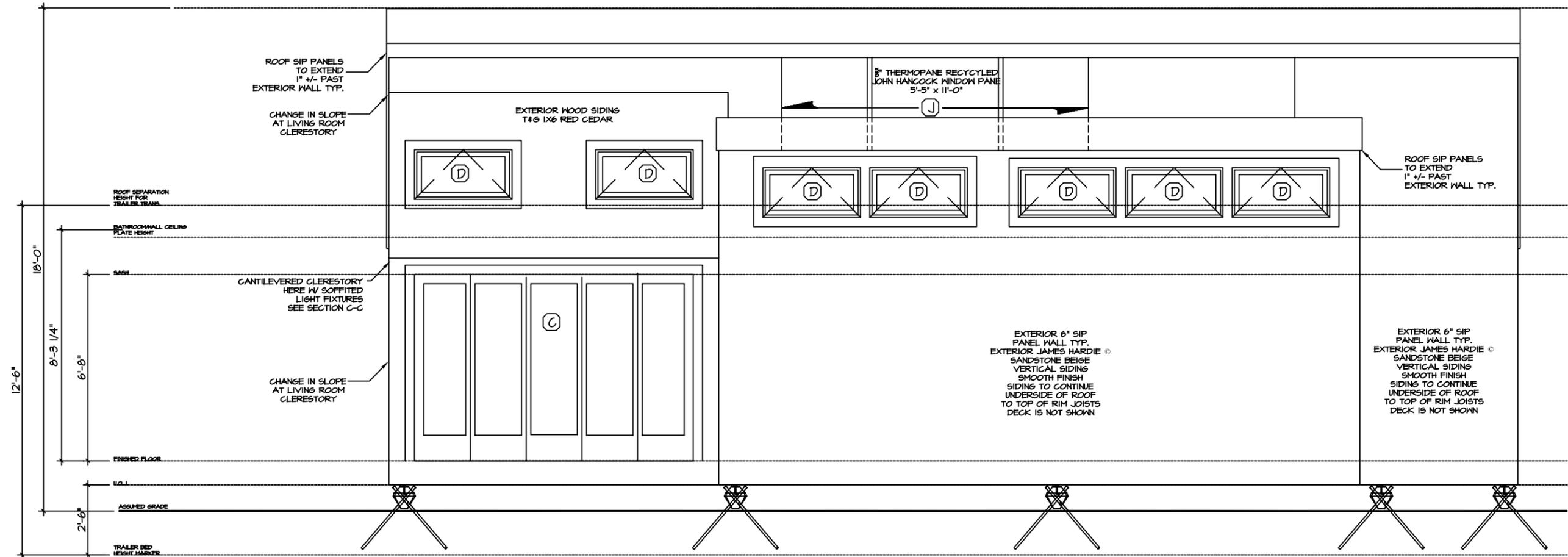
EAST ELEVATION PLAN

Proj. Number  
Date  
08.06.07  
Scale  
1/2"=1'-0"

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A-4

NOTE: TRIM MATERIAL TO BE 1x6 RED CEDAR - TO MATCH SIDING MATERIAL AT ALL EXTERIOR WINDOWS AND DOORS, FASCIA & SOFFIT BOARD

NOTE: DECK NOT SHOWN HERE TO ALLOW FOR CLEAR ELEVATION OF HOUSE EXTERIOR WITH PIN FOUNDATIONS. PLEASE SEE SITE ELEVATIONS, DECK FRAMING PLAN AND DECK PIN PLACEMENT PLAN FOR LOCATION/DETAILS.



# PROPOSED NORTH ELEVATION

SCALE: 1/4" = 1'-0"



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**NOTE:**

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

4	
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SOLAR  
DECATHLON

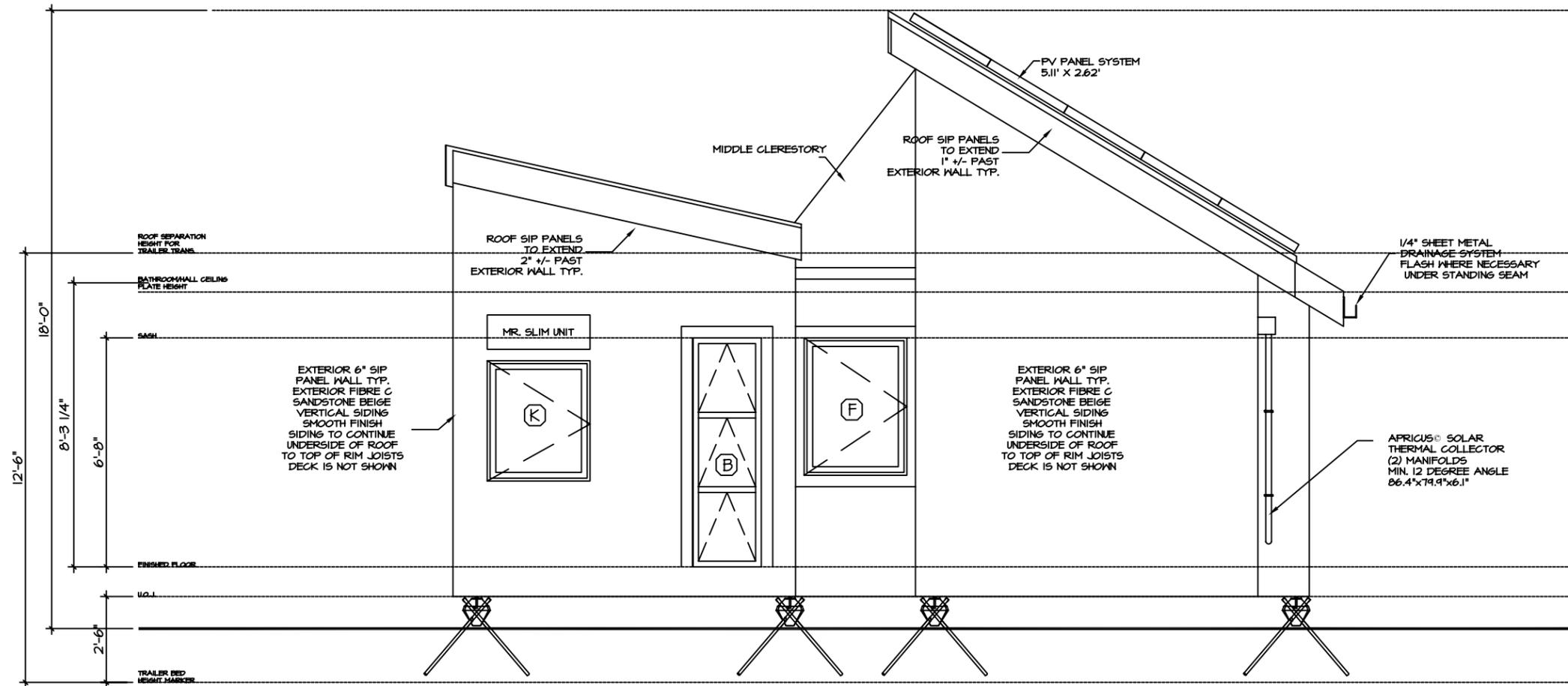
NORTH ELEV.

Orig. Number  
Date  
08.06.07  
Scale  
1/2"=1'-0"

Sheet  
A-5

NOTE: TRIM MATERIAL TO BE 1x6 RED CEDAR - TO MATCH SIDING MATERIAL AT ALL EXTERIOR WINDOWS AND DOORS, FASCIA & SOFFIT BOARD

NOTE: DECK NOT SHOWN HERE TO ALLOW FOR CLEAR ELEVATION OF HOUSE EXTERIOR WITH PIN FOUNDATIONS. PLEASE SEE SITE ELEVATIONS, DECK FRAMING PLAN AND DECK PIN PLACEMENT PLAN FOR LOCATION/DETAILS.



# PROPOSED WEST ELEVATION

SCALE: 1/4" = 1'-0"



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CAMBRIDGE MA

**NOTE:**

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

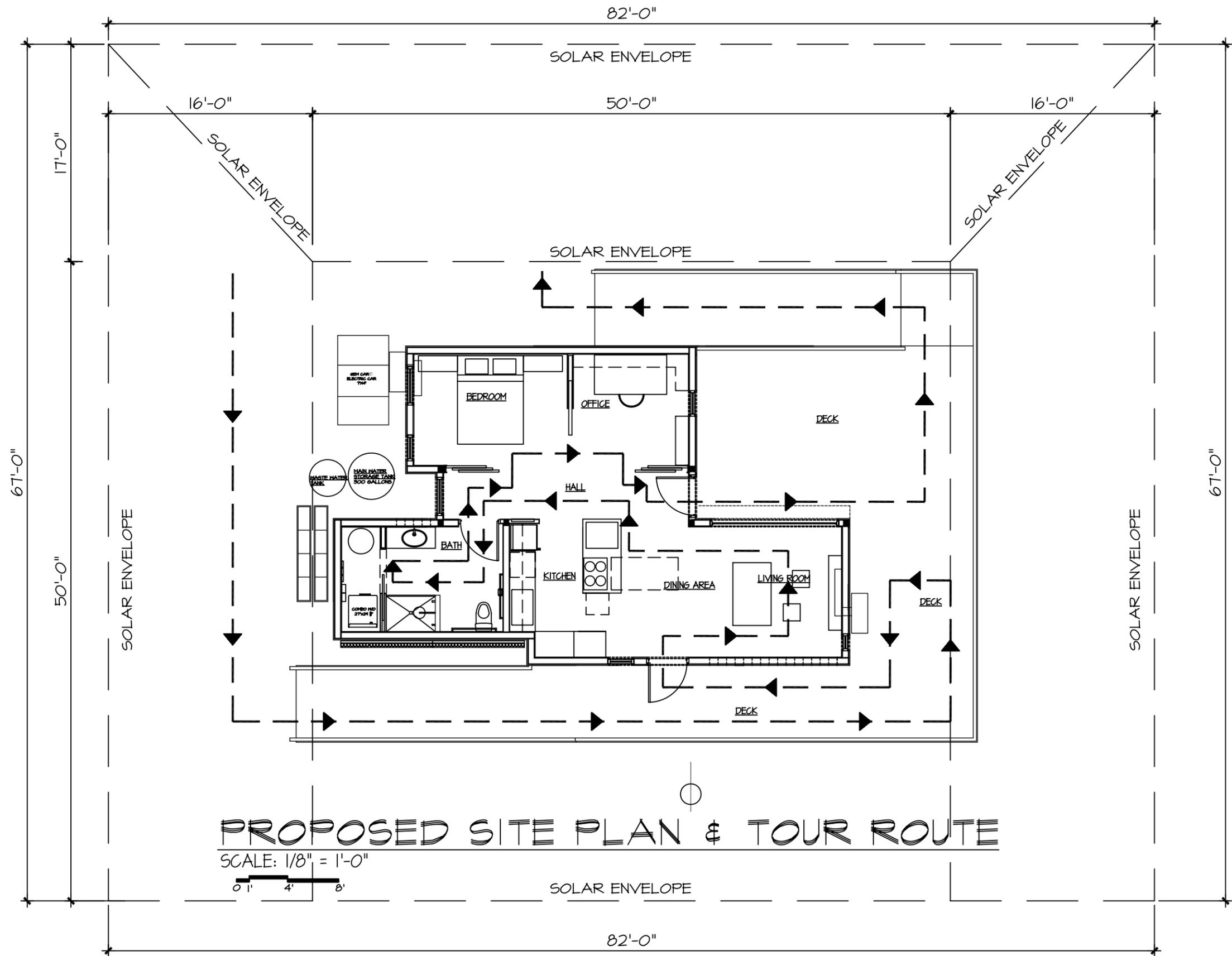
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SOLAR  
DECATHLON

WEST ELEV.

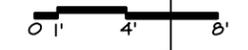
Dwg. Number  
Date  
08.06.07  
Scale  
1/2"=1'-0"

Sheet  
A-6



# PROPOSED SITE PLAN & TOUR ROUTE

SCALE: 1/8" = 1'-0"



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CAMBRIDGE MA

**NOTE:**  
ALL DIMENSION TO  
BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

SITE PLAN  
& TOUR ROUTE

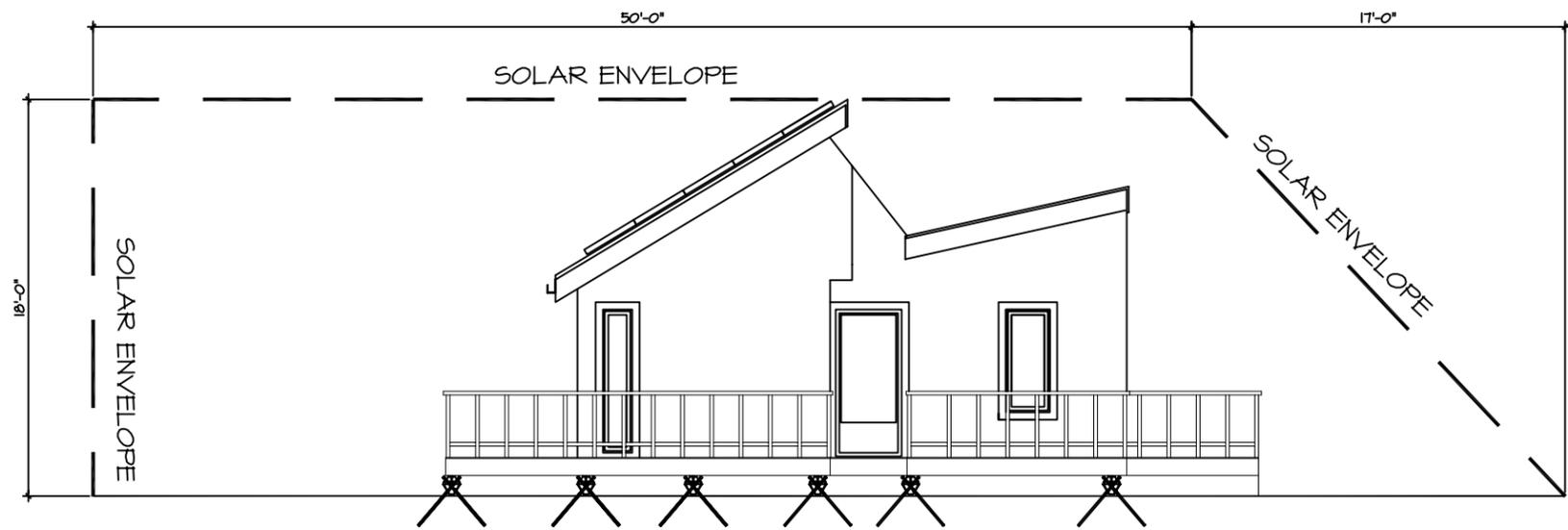
Dwg. Number

Date  
08.06.07

Scale  
1/8"=1'-0"

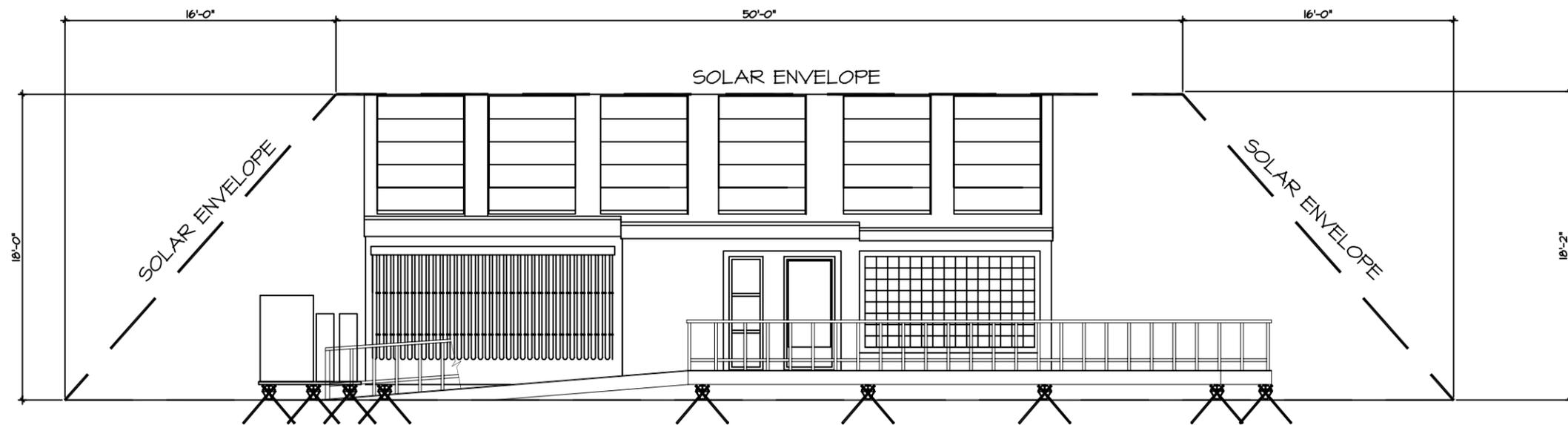
Sheet

A = 7



**PROPOSED EAST SITE ELEVATION**

SCALE: 1/8" = 1'-0"



**PROPOSED SOUTH SITE ELEVATION**

SCALE: 1/8" = 1'-0"



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**NOTE:**

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BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

SITE  
ELEVATIONS

Dwg. Number

Date  
08.06.07

Scale  
1/8"=1'-0"

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A=8

**NOTE:**

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

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SOLAR  
DECATHLON

SITE  
ELEVATIONS

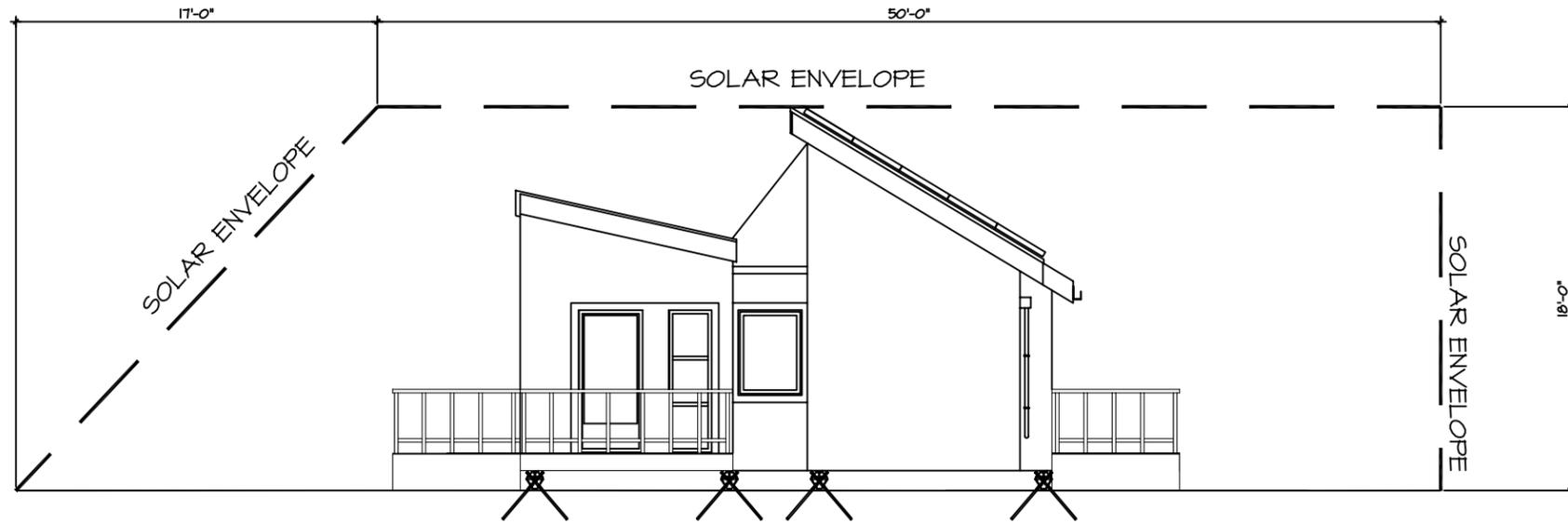
Desg. Number

Date  
08.06.07

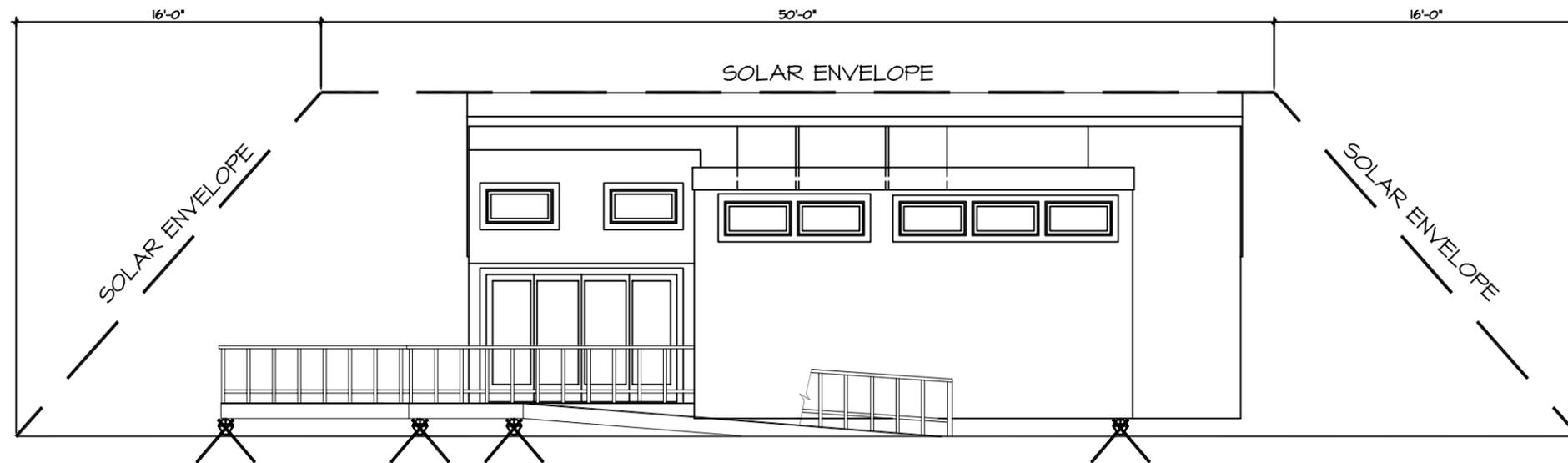
Scale  
1/4"=1'-0"

Sheet

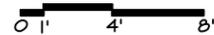
A-9



**PROPOSED WEST SITE ELEVATION**  
SCALE: 1/8" = 1'-0"



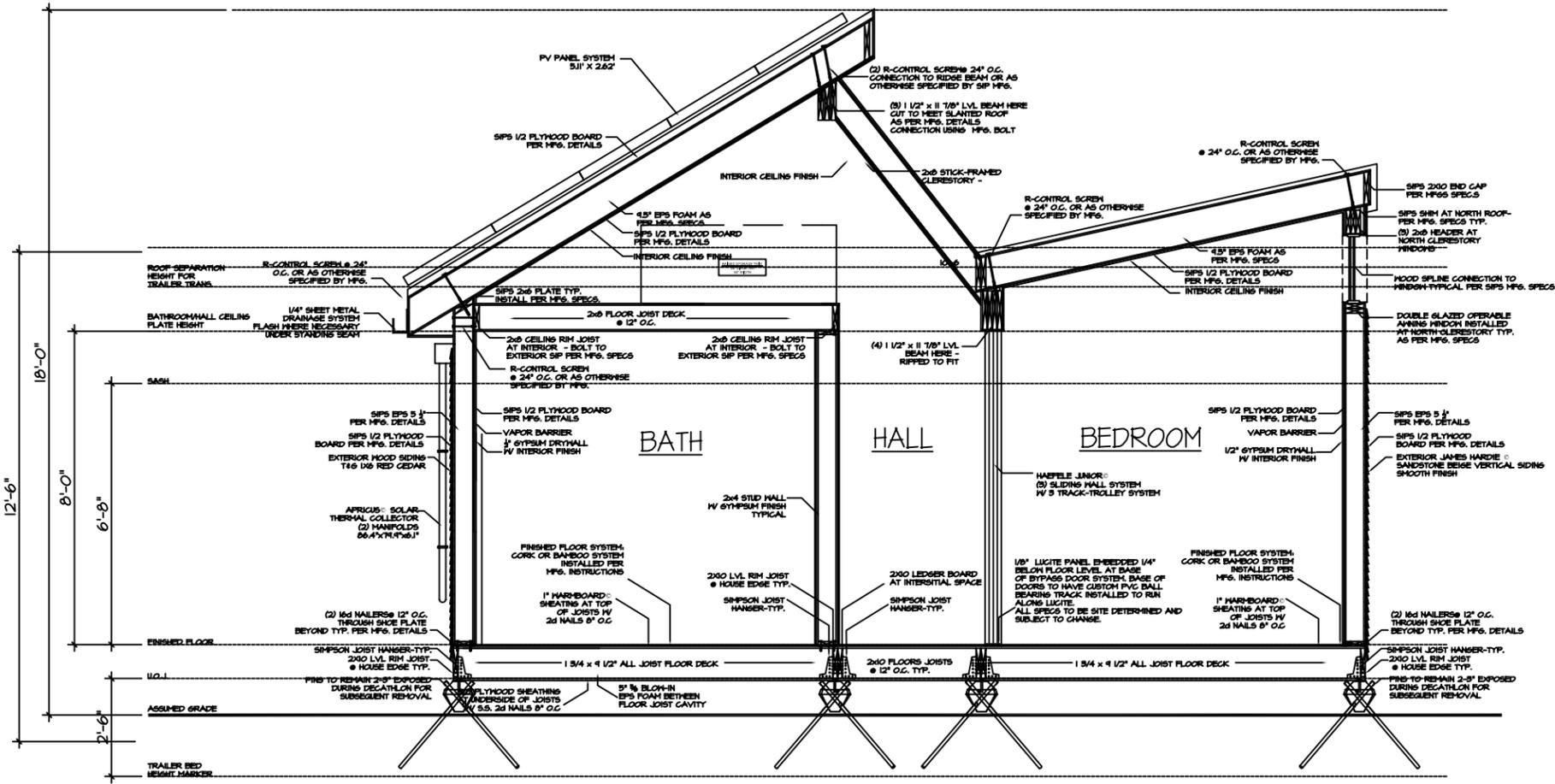
**PROPOSED NORTH SITE ELEVATION**  
SCALE: 1/8" = 1'-0"



NOTE:

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

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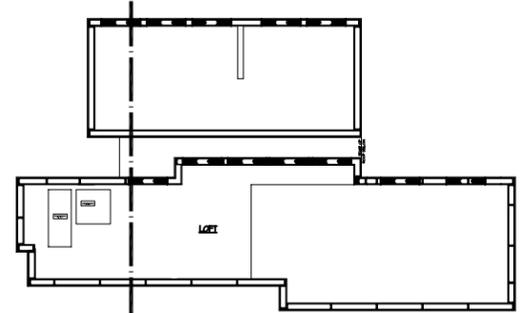
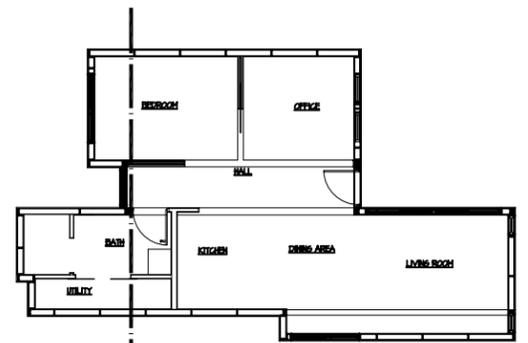


PIN FOUNDATION SYSTEM PROVIDED BY  
PINNED FOUNDATIONS INC.  
INSTALLED PER MFG. INSTRUCTIONS  
1250 SYSTEM -  
HEIGHT = 50 lbs  
WIDTH = 10.5" @ MIDPOINT  
HEIGHT = 11" BRACKET  
SEAT = 9.5" SQUARE

PIN FOUNDATION SYSTEM PROVIDED BY  
PINNED FOUNDATIONS INC.  
INSTALLED PER MFG. INSTRUCTIONS  
1250 SYSTEM -  
HEIGHT = 50 lbs  
WIDTH = 10.5" @ MIDPOINT  
HEIGHT = 11" BRACKET  
SEAT = 9.5" SQUARE

# PROPOSED SECTION A-A

SCALE: 1/4" = 1'-0"



## KEY PLANS

SCALE: 1/8" = 1'-0"

SOLAR  
DECATHLON

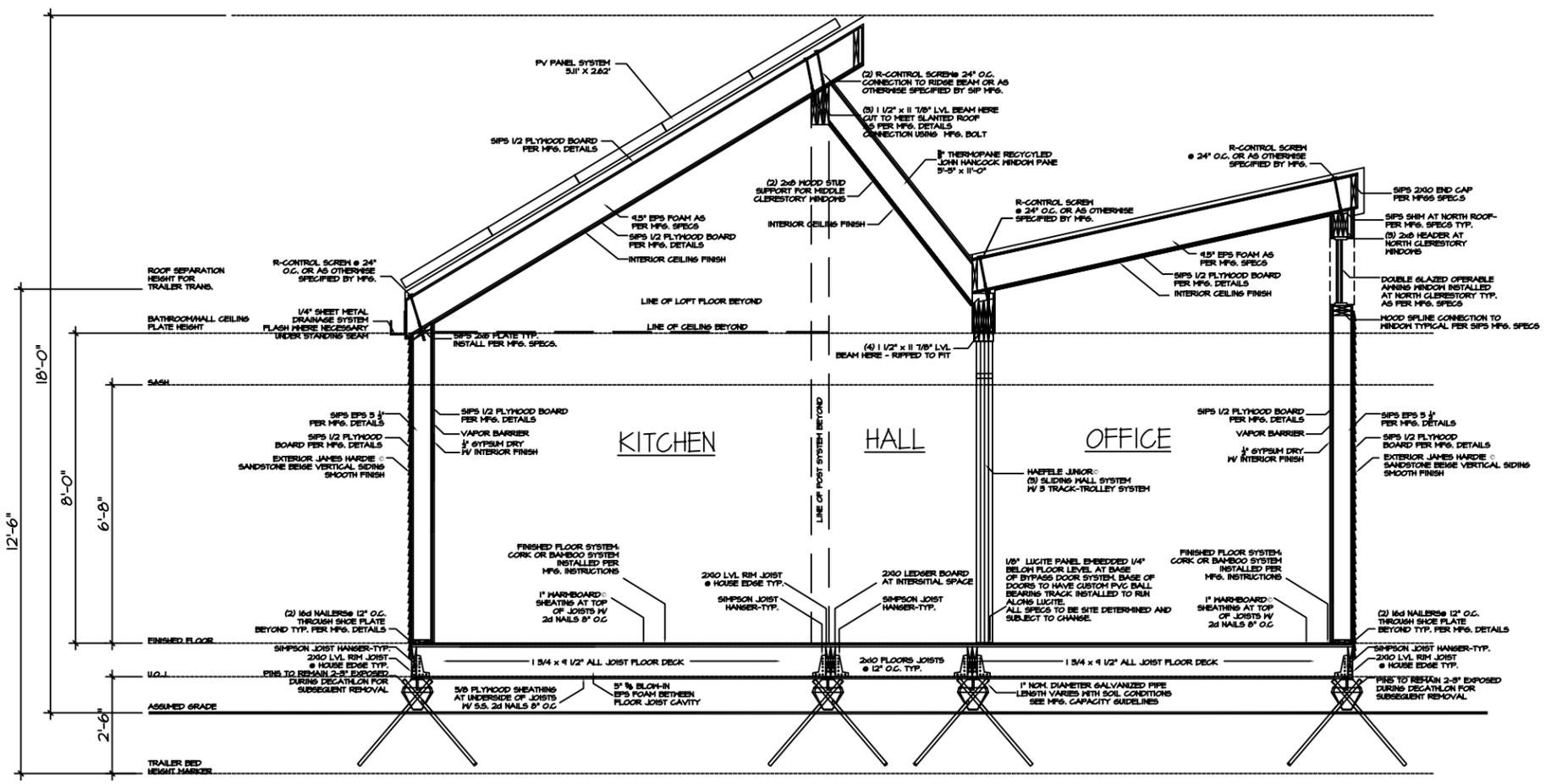
### SECTION A-A

Dwg. Number  
Date  
08.06.07  
Scale  
1/2" = 1'-0"

Sheet  
A-10

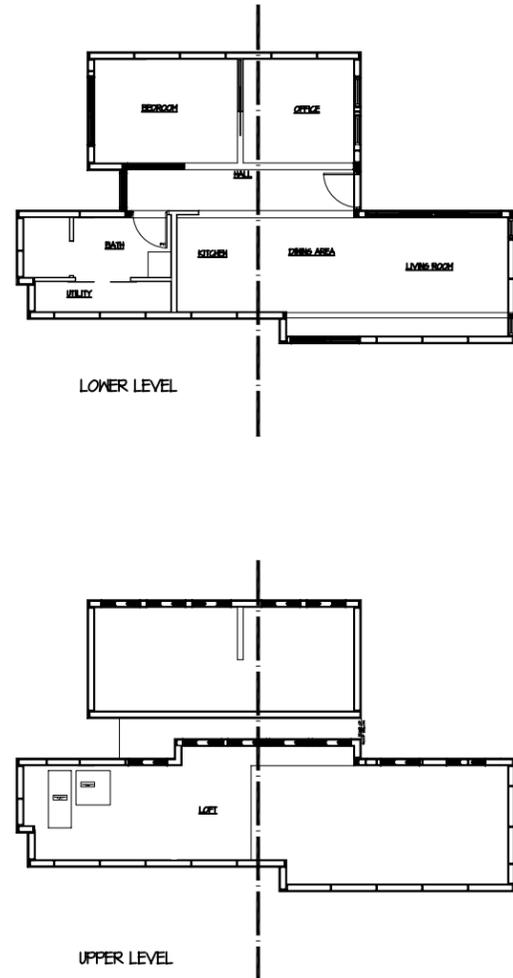
NOTE:

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.



PIN FOUNDATION SYSTEM PROVIDED BY  
PINNED FOUNDATIONS INC.  
INSTALLED PER MFG. INSTRUCTIONS  
C/SQ SYSTEM  
HEIGHT = 30 IN  
WIDTH = 10.5\"/>

PIN FOUNDATION SYSTEM PROVIDED BY  
PINNED FOUNDATIONS INC.  
INSTALLED PER MFG. INSTRUCTIONS  
C/SQ SYSTEM  
HEIGHT = 30 IN  
WIDTH = 10.5\"/>



**KEY PLANS**  
SCALE: 1/8" = 1'-0"

**PROPOSED SECTION B-B**

SCALE: 1/4" = 1'-0"



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SOLAR  
DECATHLON

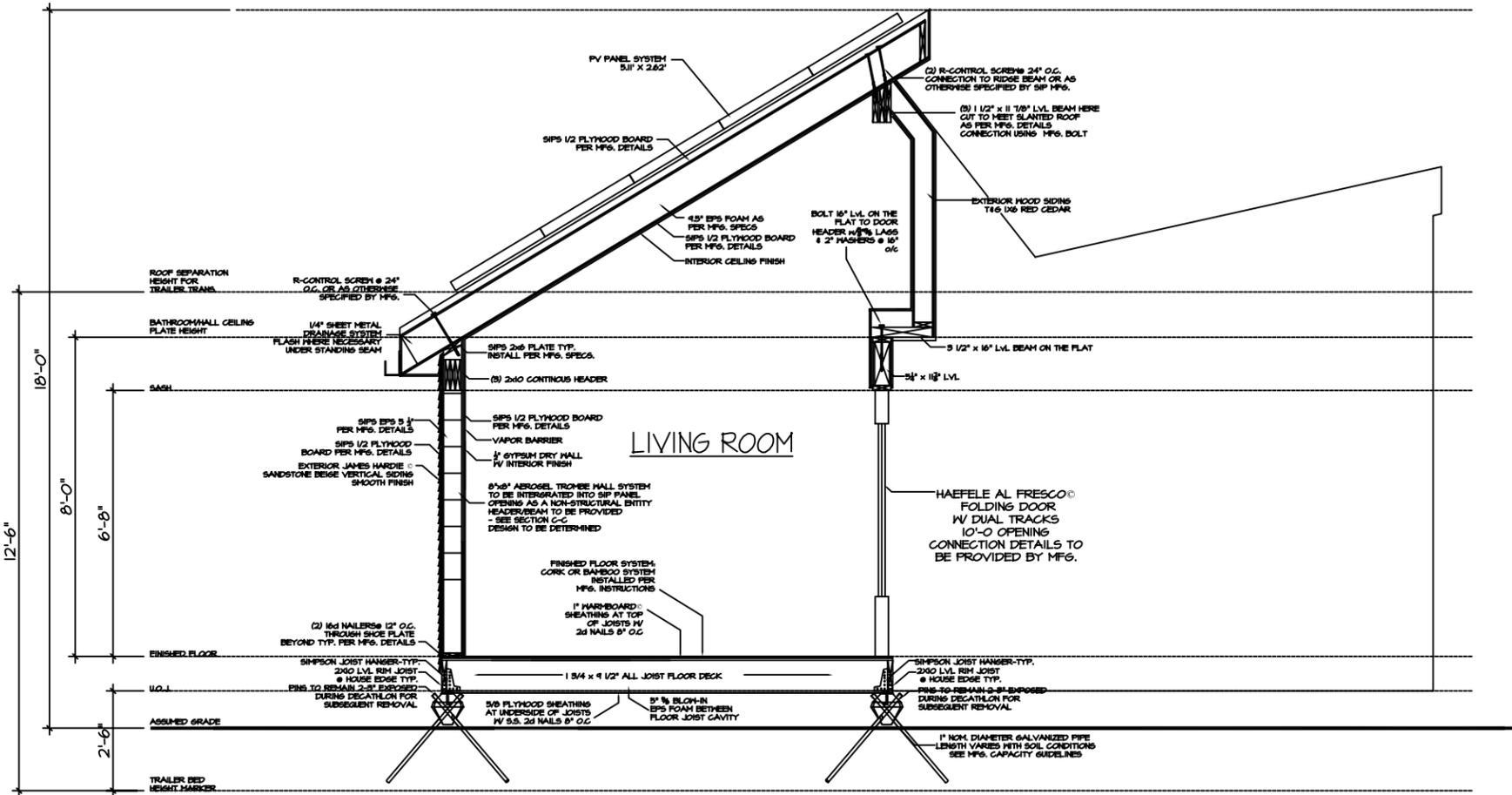
LOFT/CLERES.  
SECTION B-B

Proj. Number  
Date  
08.06.07  
Scale  
1/2" = 1'-0"

Sheet  
A=11

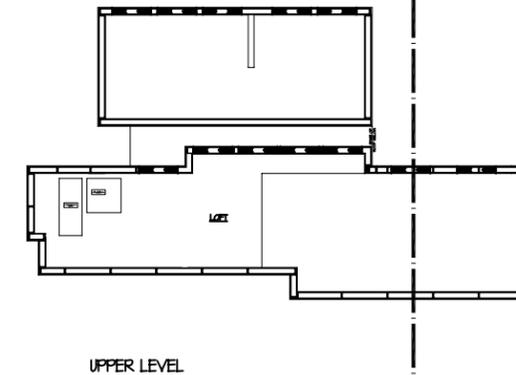
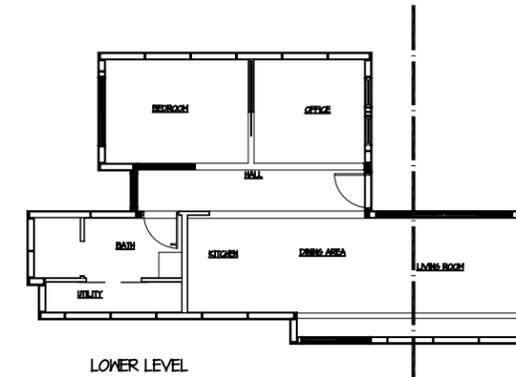
NOTE:

ALL DIMENSION TO  
BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.



FIN FOUNDATION SYSTEM PROVIDED BY  
PINNED FOUNDATIONS INC.  
INSTALLED PER MFG. INSTRUCTIONS  
DE-SO SYSTEM  
HEIGHT = 50 IN  
WIDTH = 10.5\"/>

SECTION C-C  
SCALE: 1/4" = 1'-0"



KEY PLANS  
SCALE: 1/4" = 1'-0"

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SOLAR  
DECATHLON

SECTION C-C

Proj. Number  
Date  
08.06.07  
Scale  
1/2" = 1'-0"

Sheet  
A-12

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NOTE:

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& CHECKED.  
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REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

ROOF PLAN

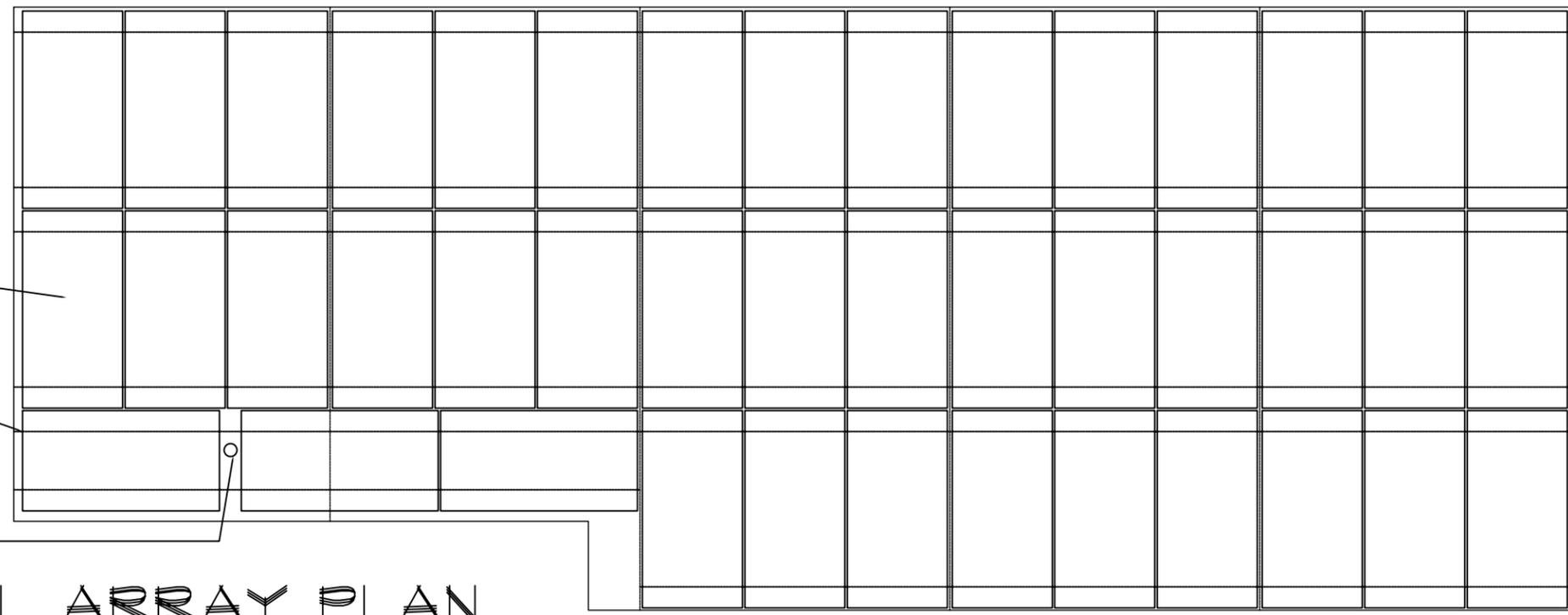
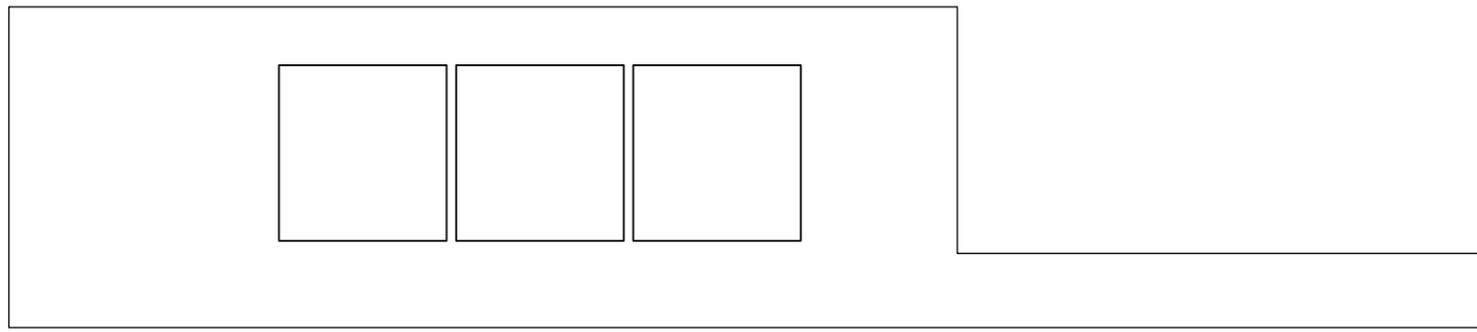
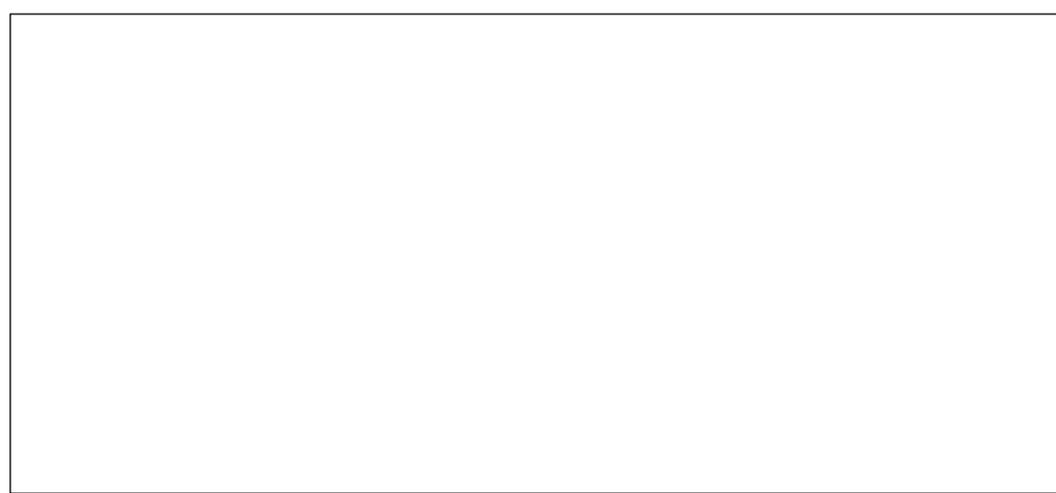
Dwg. Number

Date  
08.06.07

Scale  
1/2"=1'-0"

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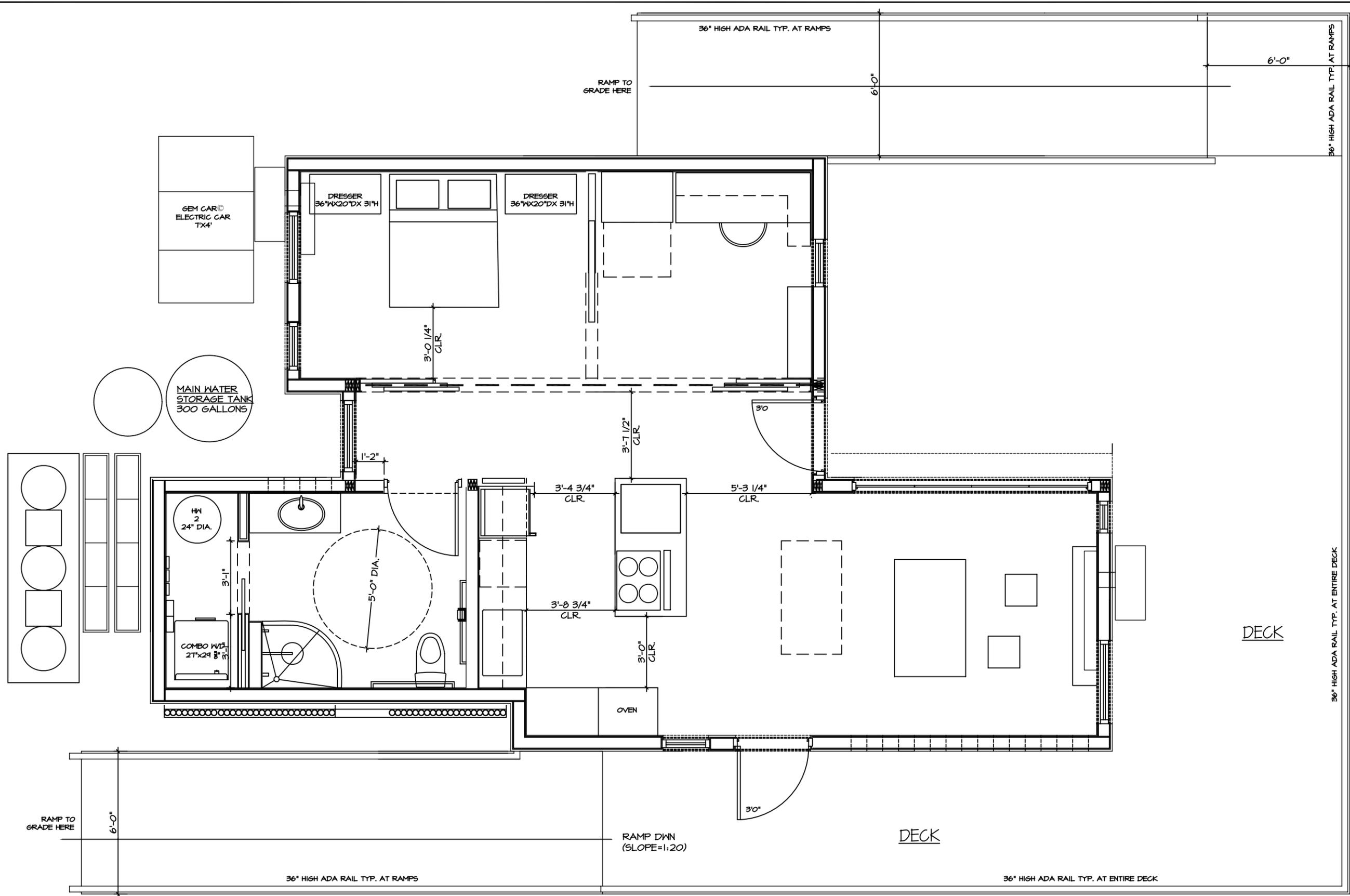
A-13



# SOLAR PANEL ARRAY PLAN

SCALE: 1/4" = 1'-0"





**NOTE:**  
 ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

SOLAR

AC PLAN

Draw. Number  
 Date 08.06.07  
 Scale 1/2"=1'-0"

Sheet  
 A-14

**ACCESSIBILITY PLAN**  
 SCALE: 1/4" = 1'-0"



NOTE:

ALL DIMENSION TO  
BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

INTERIOR  
ELEVATIONS

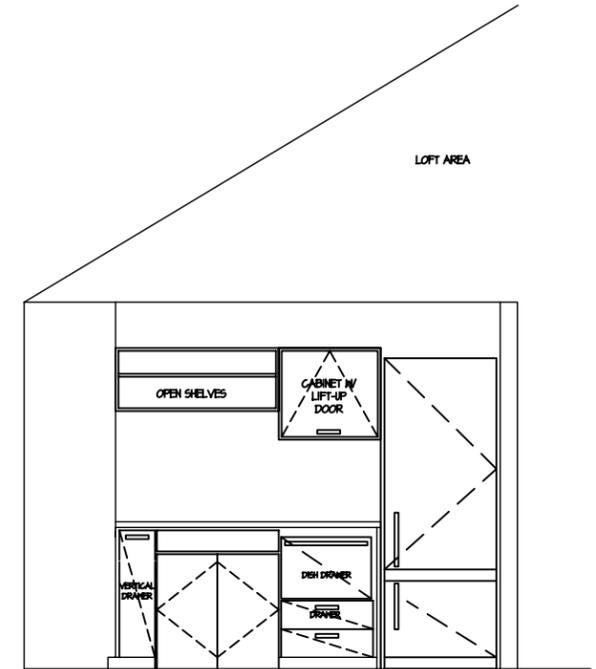
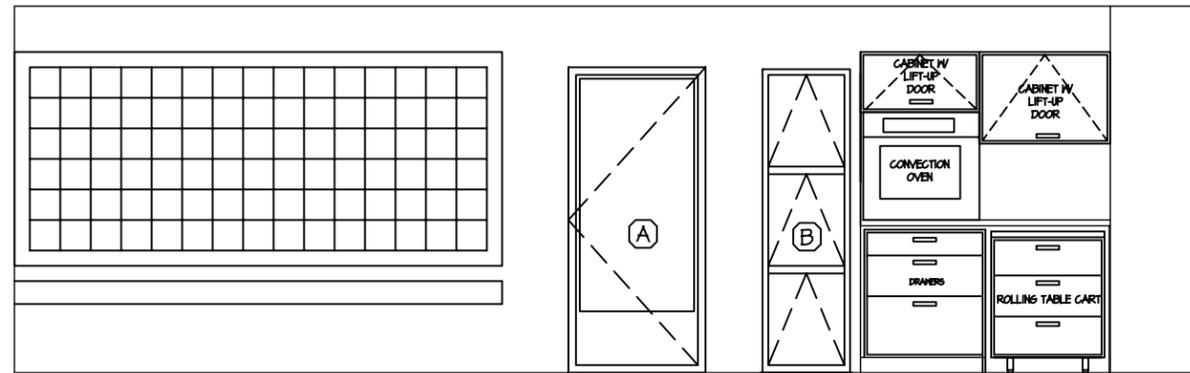
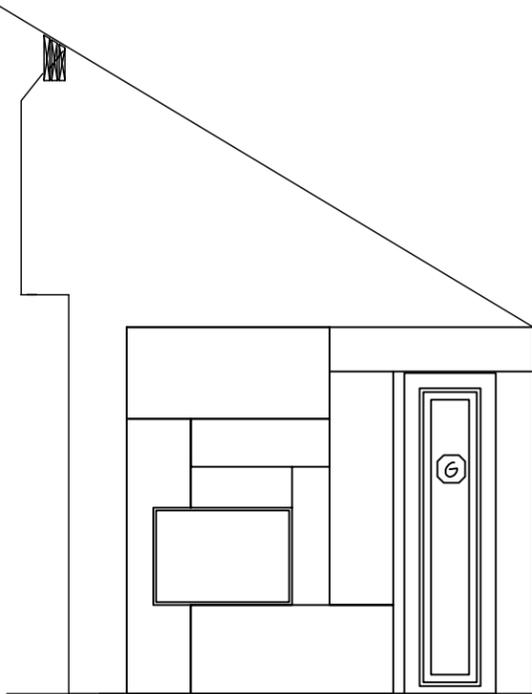
Dwg. Number

Date  
08.06.07

Scale  
1/4"=1'-0"

Sheet

A | = |



KITCHEN AND LIVING SPACE ELEVATIONS  
SCALE: 1/2" = 1'-0"

NOTE:

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BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
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AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

INTERIOR  
ELEVATIONS

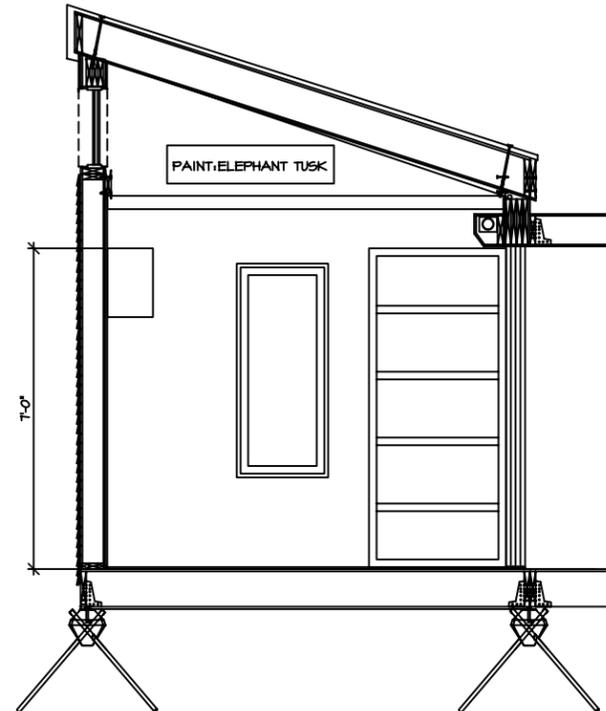
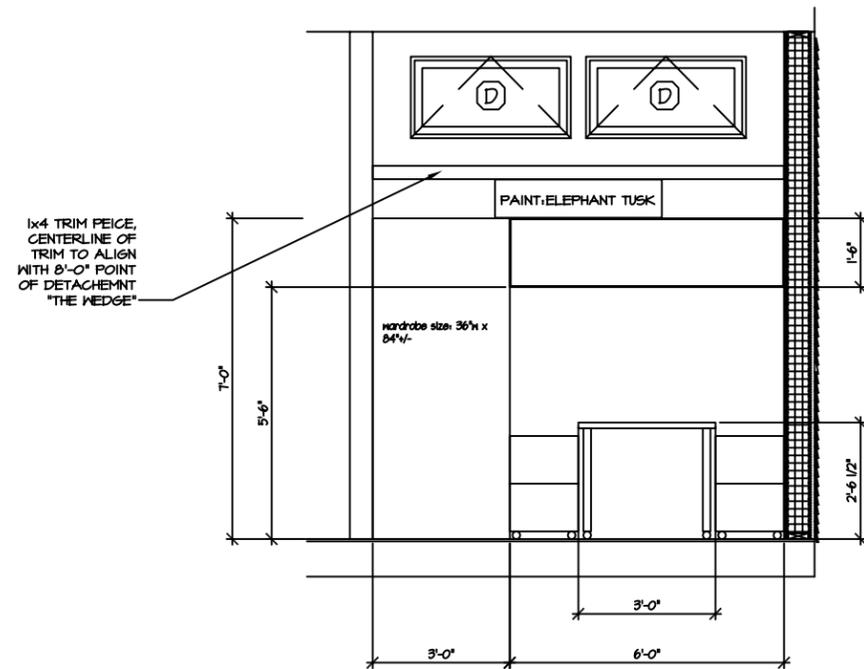
Dwg. Number

Date  
08.06.07

Scale  
1/4"=1'-0"

Sheet

A1-2

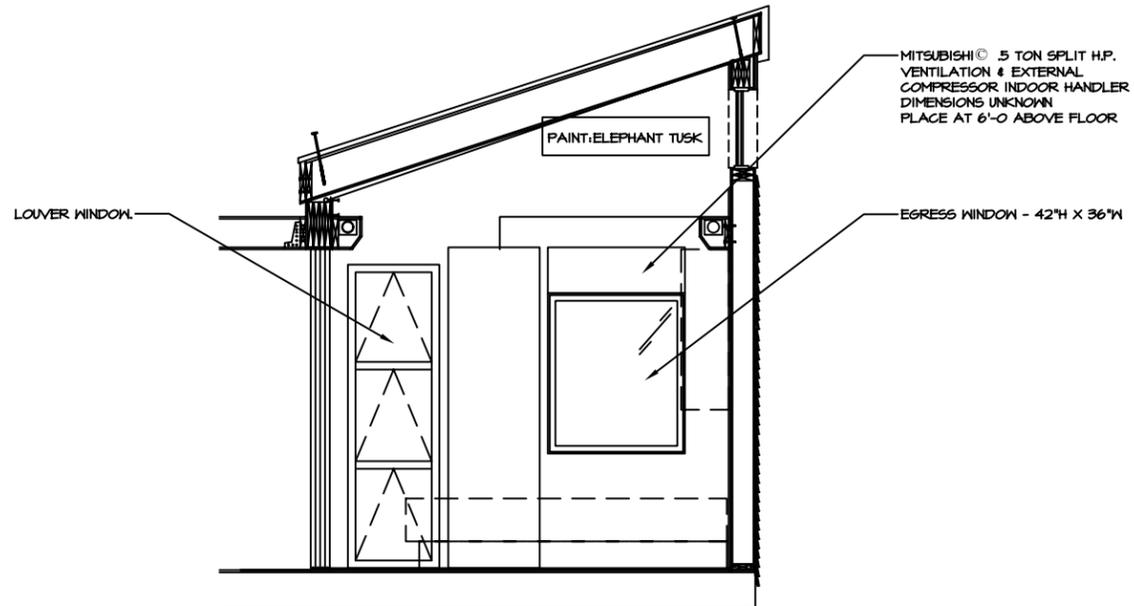
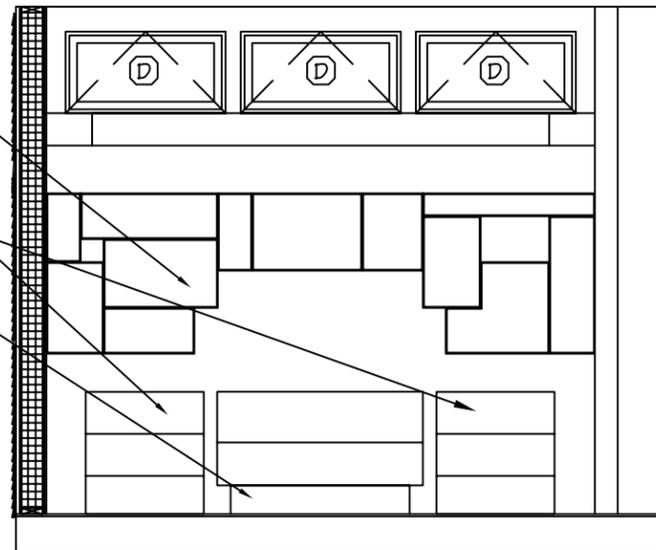


OFFICE ELEVATIONS  
SCALE: 1/2" = 1'-0"

PAINT: ELEPHANT TUSK

CUBIC SHAPED STORAGE BOXES  
IN VARIOUS SIZES, ALL TO BE 12"  
DEEP. BUILD OUT OF 1/2"  
PLYWOOD.

3 DRAWER DRESSER FROM IKEA  
STYLE: MALM  
COLOR: BLACK-BROWN  
SIZE: 31 1/2"W X 14"D X 30 3/8"H  
FULL SIZE BED FRAME FROM  
IKEA  
STYLE: MALM  
COLOR: BLACK-BROWN  
SIZE: ??"W X ??"D X ??"H



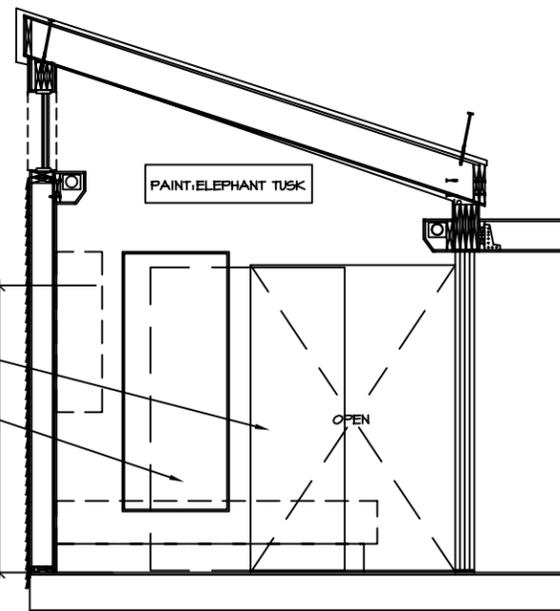
POCKET DOOR THAT CONNECTS  
OFFICE WITH BEDROOM

FULL LENGTH MIRROR

6'-3 3/8"

PAINT: ELEPHANT TUSK

OPEN



### BEDROOM ELEVATIONS

SCALE: 1/2" = 1'-0"

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#### NOTE:

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& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

INTERIOR  
ELEVATIONS

Dwg. Number

Date  
08.06.07

Scale  
1/4"=1'-0"

Sheet

A1-3

NOTE:

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BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

INTERIOR  
ELEVATIONS

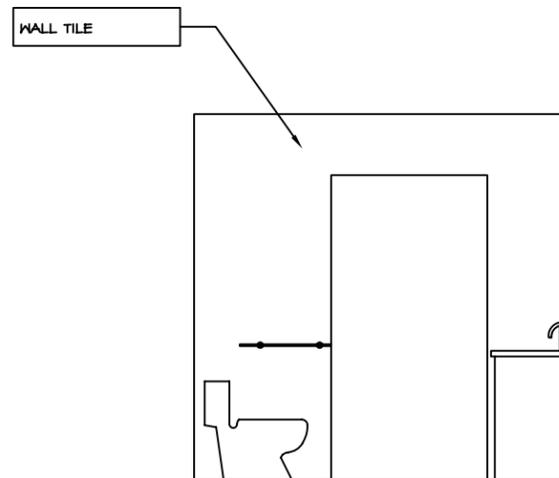
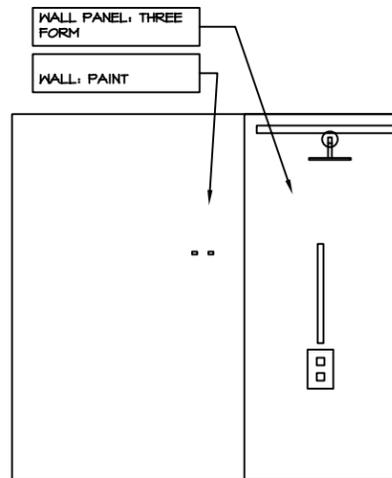
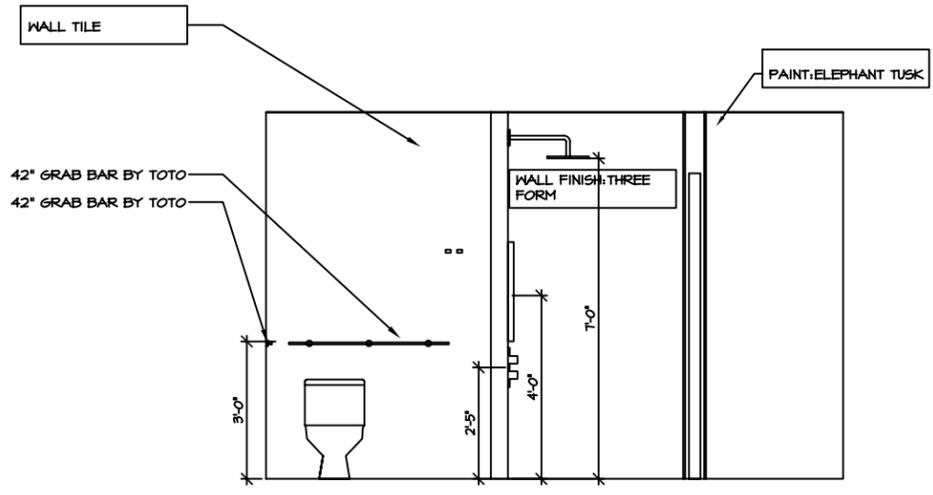
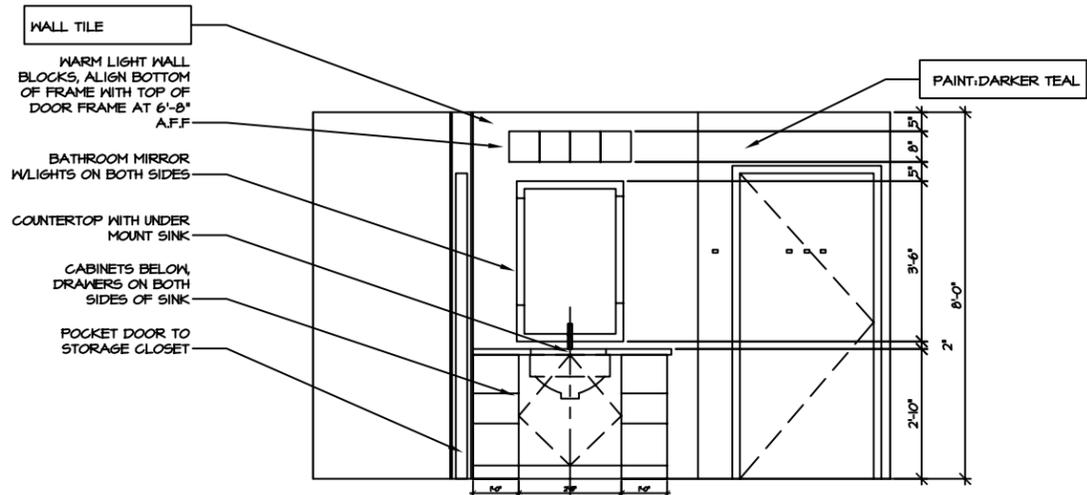
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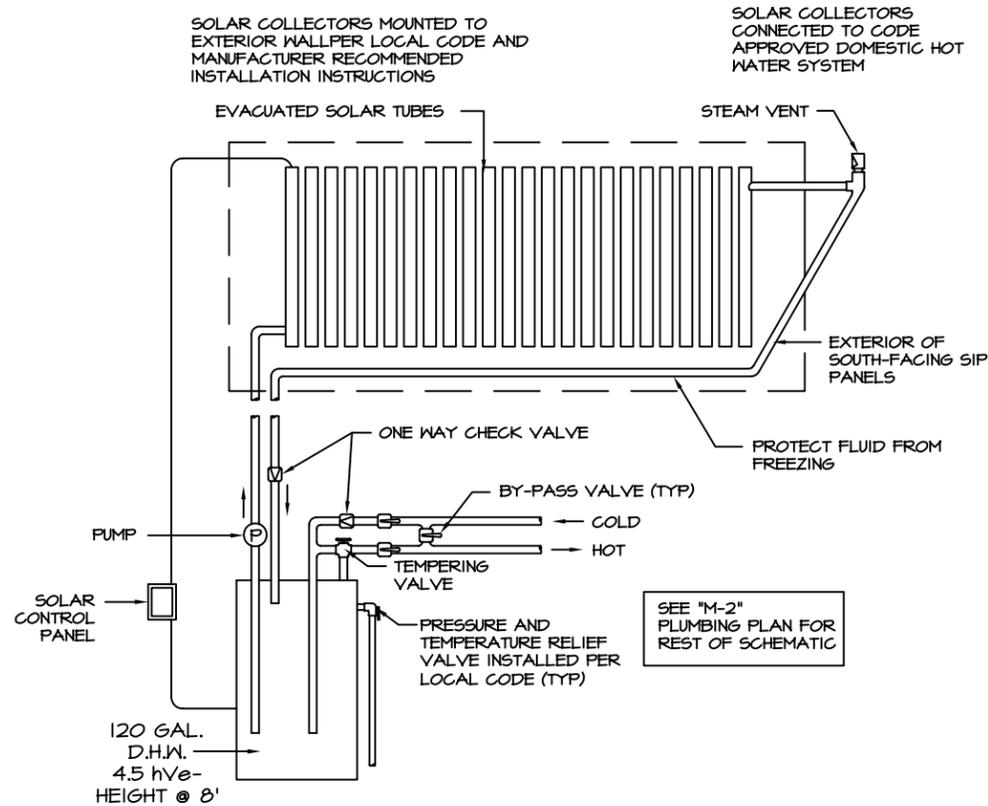
Scale  
1/4"=1'-0"

Sheet

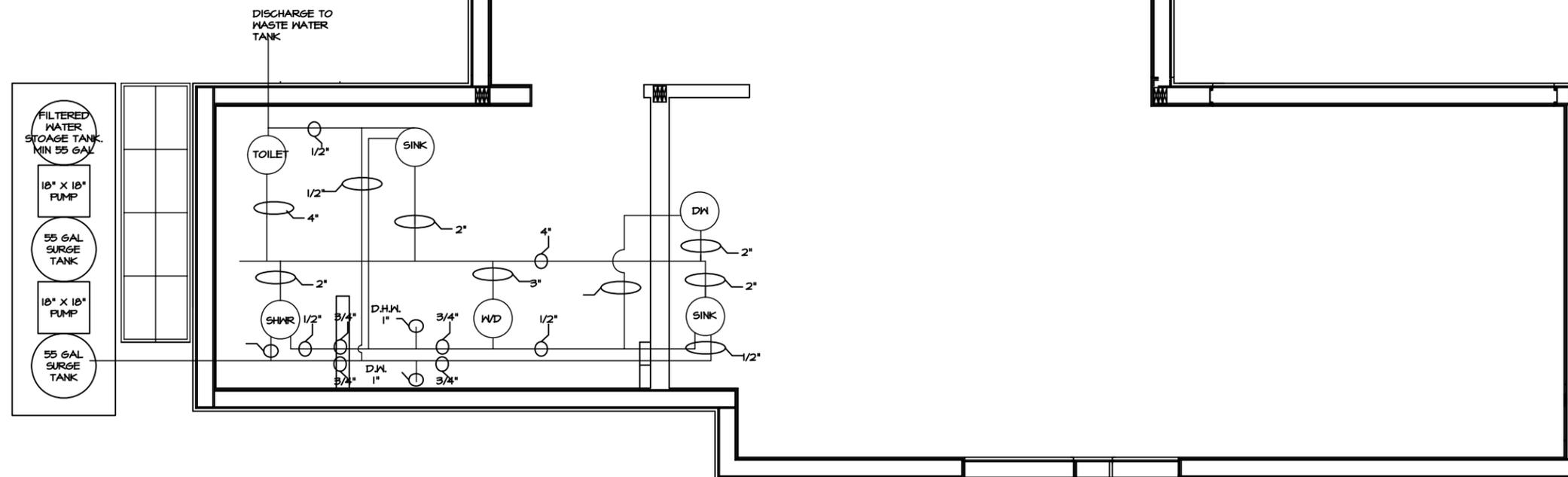
A | = 4



**BATHROOM ELEVATIONS**  
SCALE: 1/2" = 1'-0"



**SOLAR THERMAL PLAN**  
SCALE: NTS



**PLUMBING PLAN**  
SCALE: NTS

**PLUMBING SYSTEM DETAILS:**

SINK & TOILET TUBING = 3/8" O.D. COPPER

DISHWASHER: 3/8" ID COPPER TUBING

ALL ISOLATION VALUES STANDARD REDUCING STOP VALVES

PRIMARY DISCHARGE PIPE IS PITCHED AT MAXIMUM ANGLE ALLOWABLE, BASED ON PLACEMENT OF WASTE WATER TANK.

PRIMARY DISCHARGE IS SCH. 40 PVC

**NOTES:**

CONNECTION TO SERVICES ARE COMMON TYPE COMPRESSION - COPPER FITTING BETWEEN COPPER TUBING & PIPE

SHOWER VALVE W/ BODY TEMP. CONTROL PRESSURE, BALANCE & INTEGRAL STOPS.

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**NOTE:**

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SOLAR DECATHLON

PLUMBING PLAN

Dwg. Number

Date 08.06.07

Scale NTS

Sheet

M=1

NOTE:  
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BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

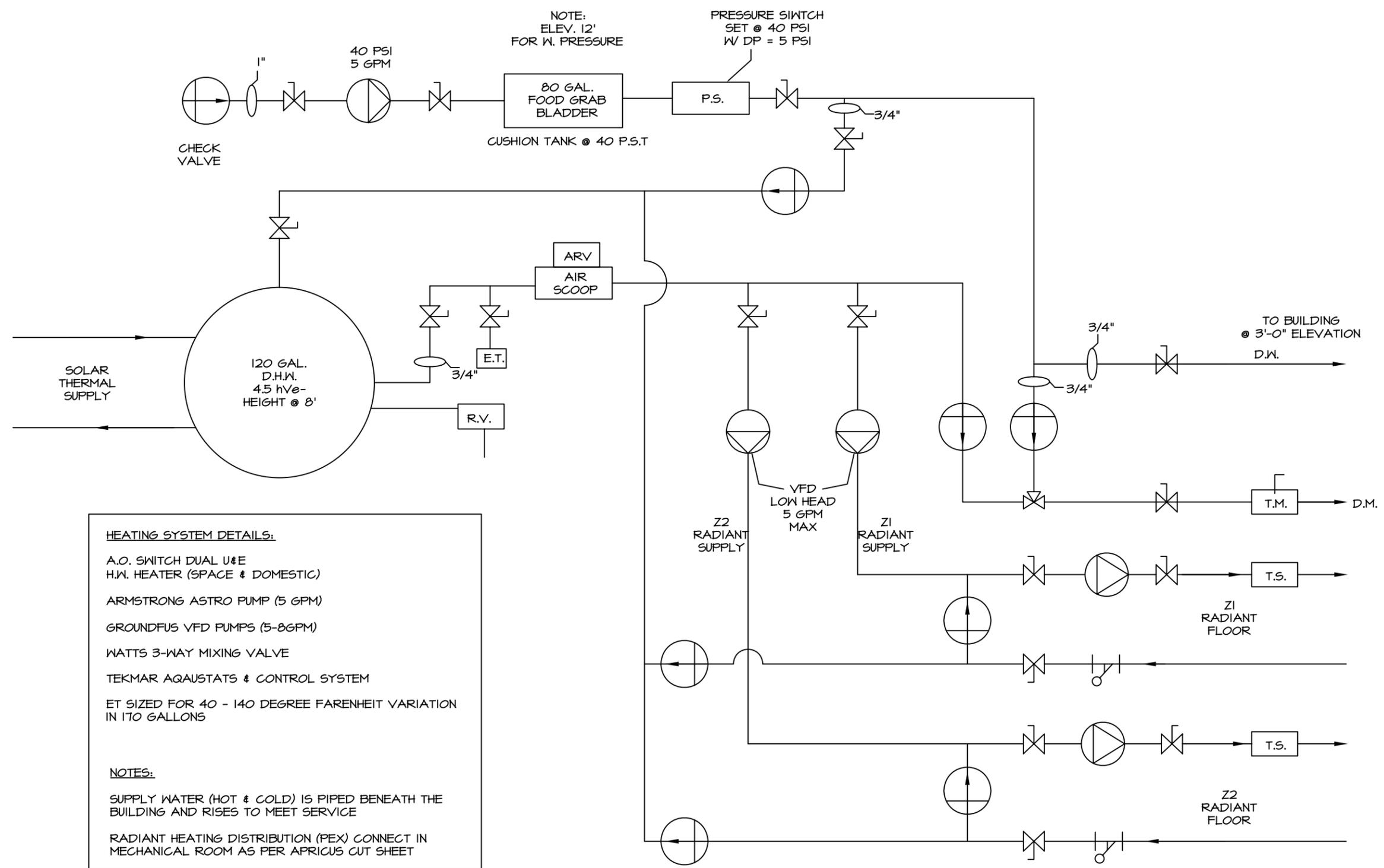
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SOLAR  
DECATHLON

HEATING  
SCHEMATIC

Dwg. Number  
Date  
07.04.07  
Scale  
NTS

Sheet  
M-2



NOTE:  
ELEV. 12'  
FOR W. PRESSURE

PRESSURE SWITCH  
SET @ 40 PSI  
W/ DP = 5 PSI

**HEATING SYSTEM DETAILS:**  
A.O. SWITCH DUAL U&E  
H.W. HEATER (SPACE & DOMESTIC)  
ARMSTRONG ASTRO PUMP (5 GPM)  
GROUNDFUS VFD PUMPS (5-8GPM)  
WATTS 3-WAY MIXING VALVE  
TEKMAR AQAUSTATS & CONTROL SYSTEM  
ET SIZED FOR 40 - 140 DEGREE FARENHEIT VARIATION  
IN 170 GALLONS

**NOTES:**  
SUPPLY WATER (HOT & COLD) IS PIPED BENEATH THE  
BUILDING AND RISES TO MEET SERVICE  
RADIANT HEATING DISTRIBUTION (PEX) CONNECT IN  
MECHANICAL ROOM AS PER APRICUS CUT SHEET

# HEATING SCHEMATIC

SCALE: NTS

**NOTE:**  
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BE FIELD VERIFIED  
& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

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SOLAR  
DECATHLON

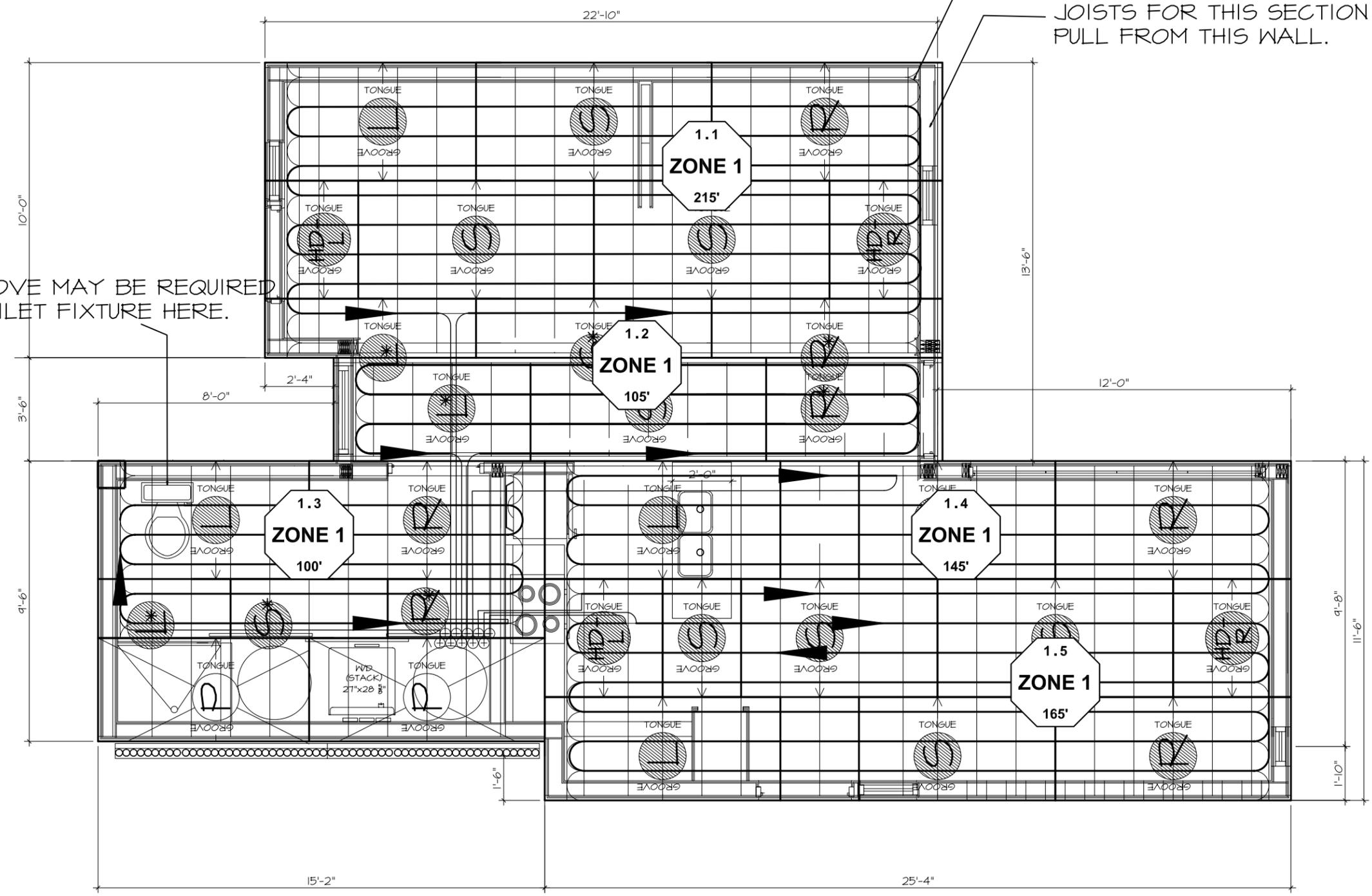
RADIANT FLOOR  
LAYOUT

Dwg. Number  
Date  
08.06.07  
Scale  
NTS

Sheet  
M-3

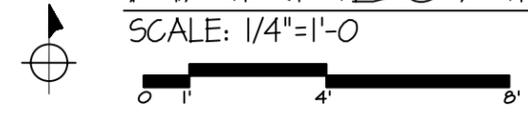
PANEL LAYOUT FOR THIS  
SECTION STARTS HERE.  
JOISTS FOR THIS SECTION  
PULL FROM THIS WALL.

CUSTOM GROOVE MAY BE REQUIRED  
TO AVOID TOILET FIXTURE HERE.



# WARMBOARD PANEL SCHEMATIC

SCALE: 1/4" = 1'-0"



NOTE:

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

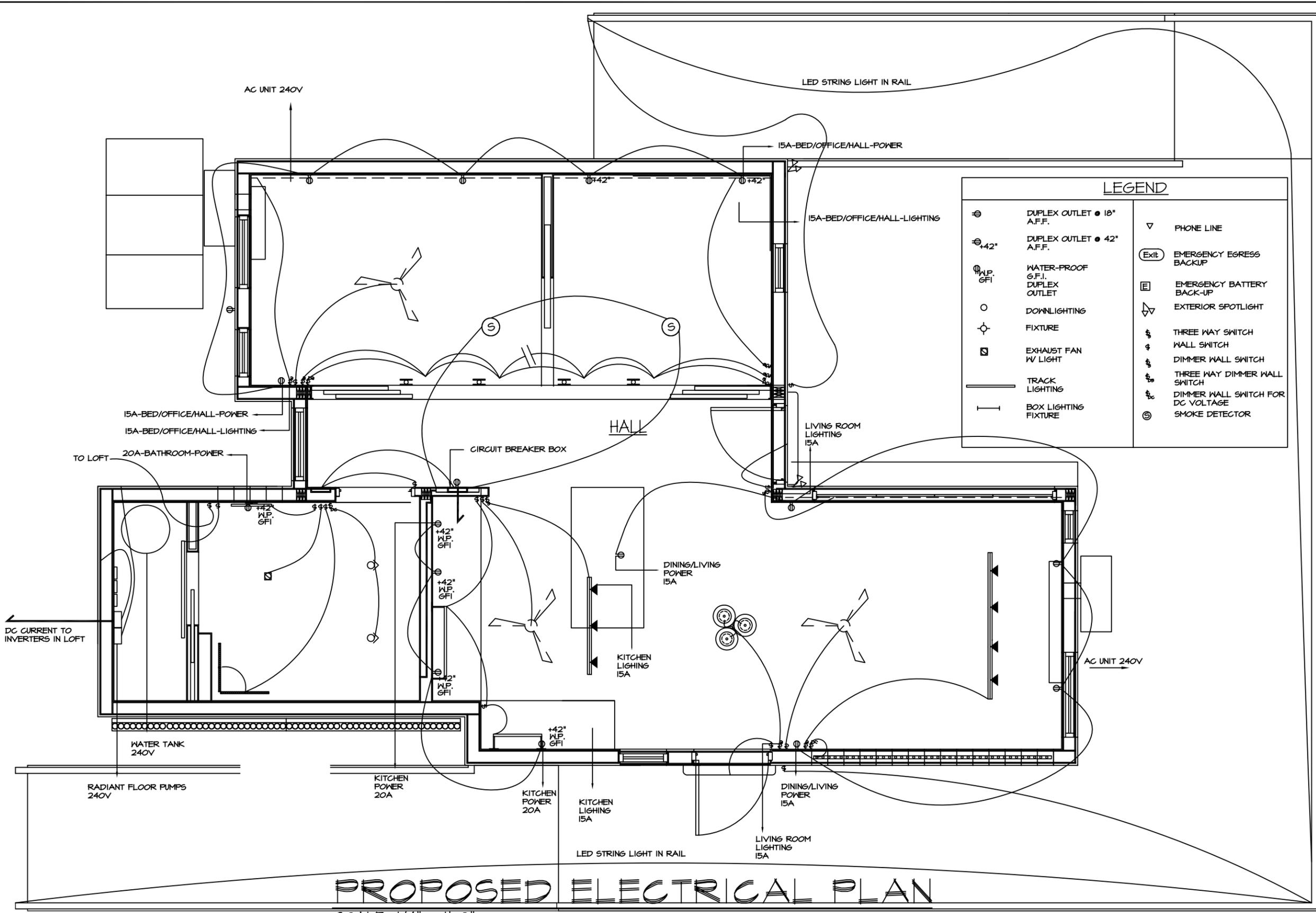
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SOLAR  
DECATHLON

ELECTRICAL  
PLAN

Dwg. Number  
Date  
08.06.07  
Scale  
1/2"=1'-0"

Sheet  
E-1



PROPOSED ELECTRICAL PLAN

SCALE: 1/4" = 1'-0"



# PROPOSED SOLAR-ELECTRIC SCHEMATIC

SCALE: NTS

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**NOTE:**  
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& CHECKED.  
CONTRACTOR TO  
REPORT CHANGES  
AND OMISSIONS TO  
ARCHITECT.

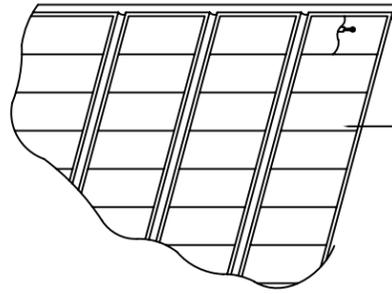
4	
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SOLAR  
DECATHLON

SOLAR ELECTRIC  
SCHEMATIC

Dwg. Number  
Date  
08.06.01  
Scale  
NTS

Sheet  
E-2



ROOFING PRODUCTS AND  
UNDERLAYMENT INSTALLED  
ACCORDING TO LOCAL  
BUILDING CODE AND  
MANUFACTURER  
INSTRUCTIONS

ARRAY OF 42 SUNPOWER 215W PV PANELS

NOTE: ONLY ONE PV CONNECTION IS  
SHOWN FOR GRAPHICAL PURPOSES. A  
TOTAL OF 42 SEPARATE CONNECTIONS  
TO EACH NPS SYSTEM WILL COMPRISE  
THE ENTIRE PV NETWORK. INSTALLED  
PER MANUFACTURERS SPECS

SEE A-13 FOR PANEL LAYOUT.

ELECTRICAL CONNECTIONS AND WIRING  
PER MANUFACTURER AND NATIONAL OR  
LOCAL ELECTRICAL CODE

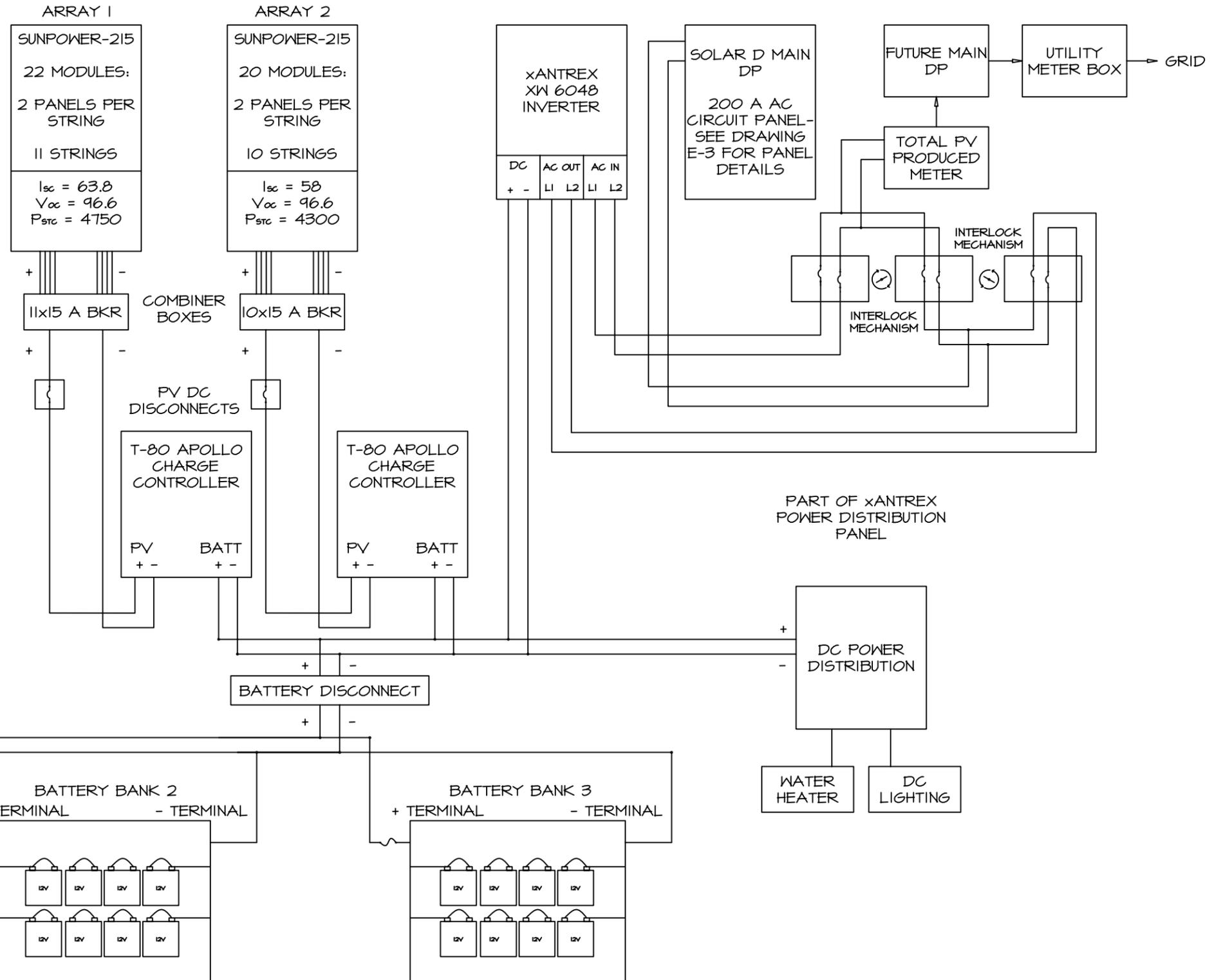
24 MK 8A8D © BATTERY SYSTEM

2 PARALLEL STRINGS OF 4  
SERIES (48V DC), TYP. OF 3

245 A-H/STRING  
1470 A-H TOTAL

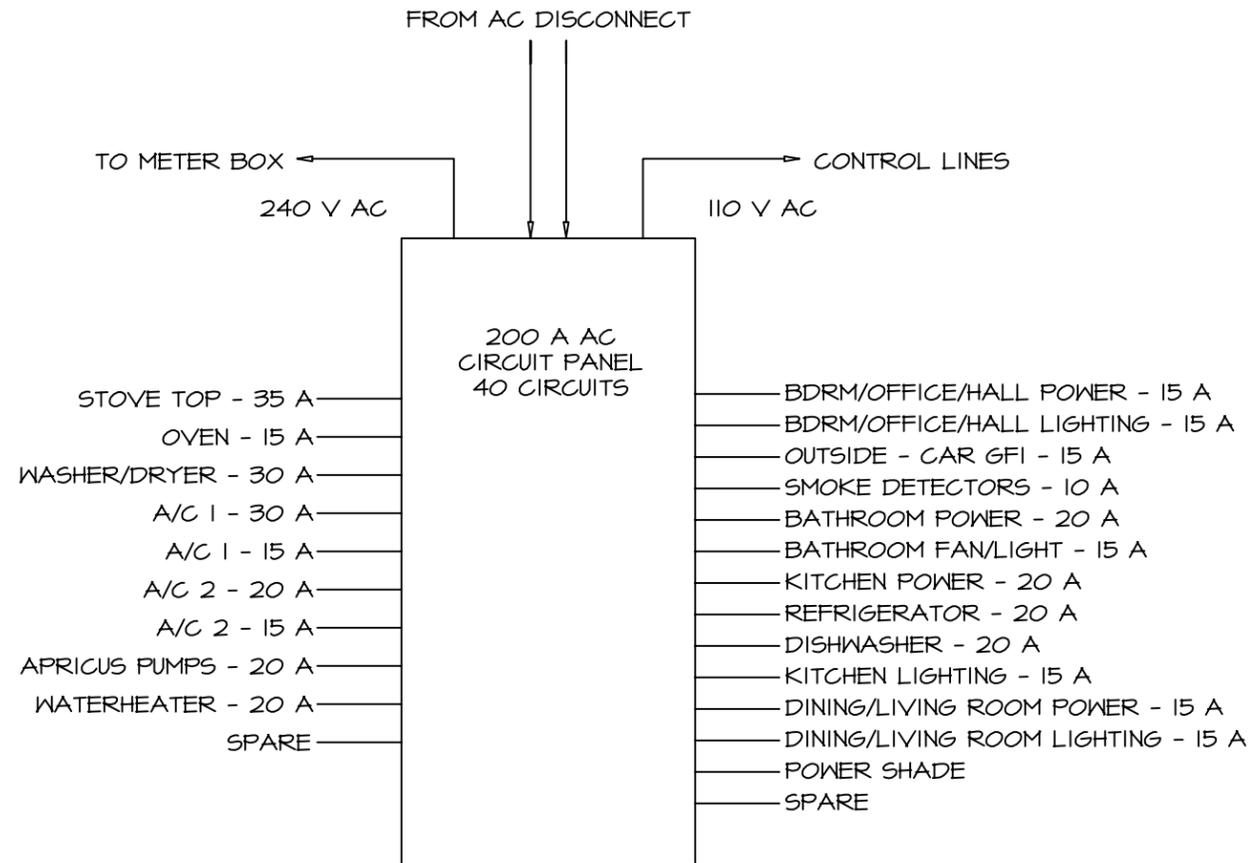
EACH BATTERY BOX WILL HAVE A #4  
FEED TO THE INVERTORS AND MAIN BUSES

ALL GROUNDS WILL BE COMMON WITH #00  
CABLE



NOTE:

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BE FIELD VERIFIED  
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PROPOSED CIRCUIT DIAGRAM

SCALE: NTS

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SOLAR  
DECATHLON

CIRCUIT  
DIAGRAM

Dwg. Number

Date  
08.06.07

Scale  
NTS

Sheet

E-3

ELECTRICAL SYSTEM DETAILS:

PROPOSED CIRCUIT BOARD LAYOUT FOR  
MIT SOLAR DECATHLON

- 1x200A 40 CIRCUIT FUSE BOARD - LOCATION AT HALL
- 15A BEDROOM/OFFICE/HALL - POWER
- 15A BEDROOM/OFFICE/HALL/OUTSIDE - LIGHTING
- 15A EXTERIOR GFI - CAR
- 15A SMOKE DETECTORS - HARDWIRED W/ BATTERY  
BACK- UP AND CONNECTED TO ALARM TOGETHER -  
WIRED ACCORDING TO NFPA72
- 20A BATHROOM - POWER
- 15A BATHROOM - FAN/LIGHT
- 20A KITCHEN - COUNTER TOP POWER
- 20A REFRIGERATOR
- 20A DISHWASHER
- 15A KITCHEN - LIGHTING
- 15A DINING AREA / LIVING ROOM - POWER
- 15A DINING AREA / LIVING ROOM - LIGHTING

ADDITIONALS TO BE INCORPORATED IN FIELD:

CEILING FANS IN LIVING ROOM/BEDROOM  
KITCHEN APPLIANCE EXTRAS

MECHANICAL SERVICES:

SOLAR THERMAL CONTROLLERS, PUMP,  
240V  
(RATING TO BE FINALIZED IN FIELD)

80 GALLON WATER TANK  
240V 3800W 20A  
RATING TO BE FINALIZED IN FIELD

AC UNITS  
AC 1 = 1 TON UNIT  
AC2 = 1/2 TON UNIT  
240V  
RATING TO BE FINALIZED IN FIELD

RADIANT FLOOR PUMPS  
240V  
RATING TO BE FINALIZED IN FIELD

NOTE: ALL FIRST FLOOR ELECTRICAL  
WIRING TO BE RUN THROUGH SIP PANEL  
CHASES PER MANUFACTURERS SPECS.  
CHASES HAVE BEEN LOCATED AT 18"  
STANDARD AND AT 40" WHERE RAISED  
HEIGHT APPLICABLE. VERTICAL  
CHASES HAVE BEEN PROVIDED AT  
CERTAIN PANELS FOR ACCESS TO  
LIGHTING AND FAN OUTLETS.

SYMBOL	DESCRIPTION
▼	RETRO I6 LINE VOLTAGE TRACK HEAD
≡ T	BASIS CEILING STRAIGHT RAIL TRACK LENGTH
⊙	RECESSED LENS WALL WASHER
—	VANITY MIRROR EXTRUDED ANODIZED ALUMINUM FINISH
◎	CHANDELIER PENDANT
⌞	CORELIGHT COVE LIGHT (WITH DIMMABLE T8 FLUORESCENT
—	T8 LINEAR STRIP ABOVE BATHROOM CLOSET DOOR AND IN LOFT
┌	ULTRASLIM LITE LINEAR STRIP W/ 6" STEM UNDER CABINETS
H	ULTRA SLIMLITE DOUBLE SIDED SCONCE
▬	RECTANGULAR DENEK STEP LIGHT- COMES WITH HOUSING AND 12V/120/ TRANSFORMER
—	12'-0" LED LINEAR STRIP
⌞	IN TROMBE WALL
✂	CEILING FAN BRUSHED ALUMINUM FINISH

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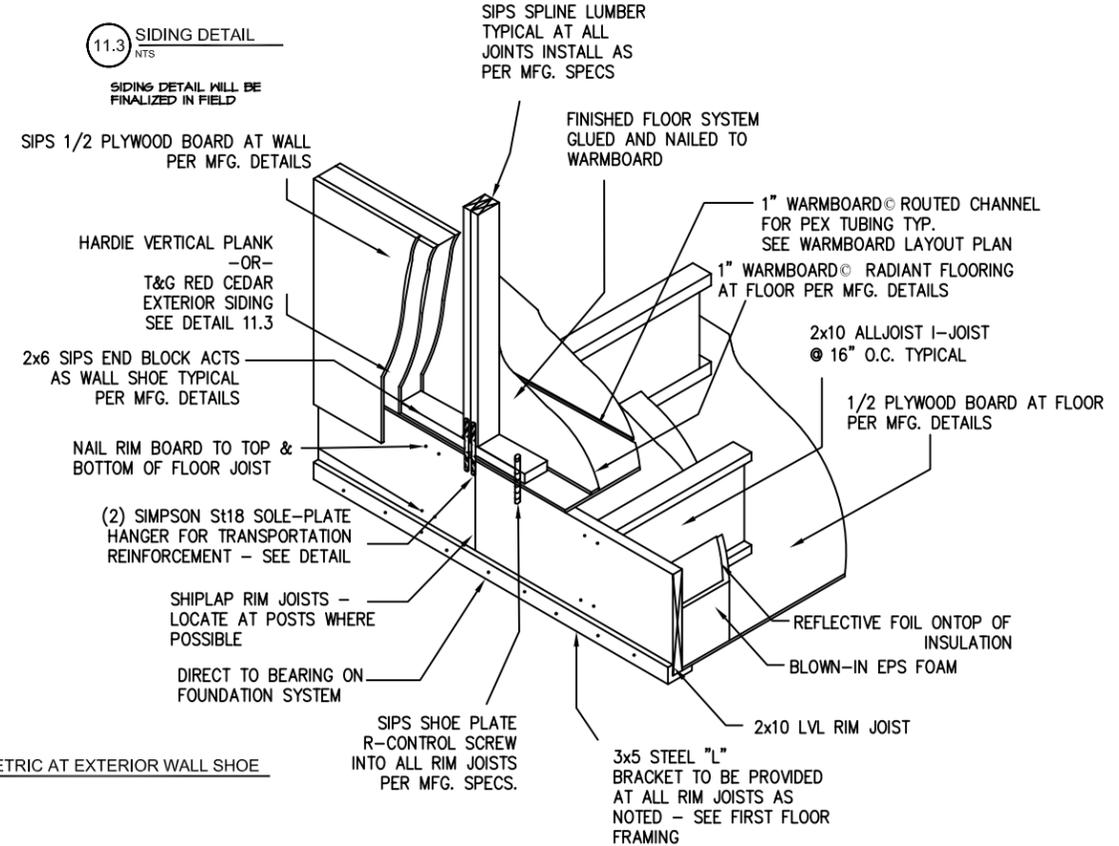
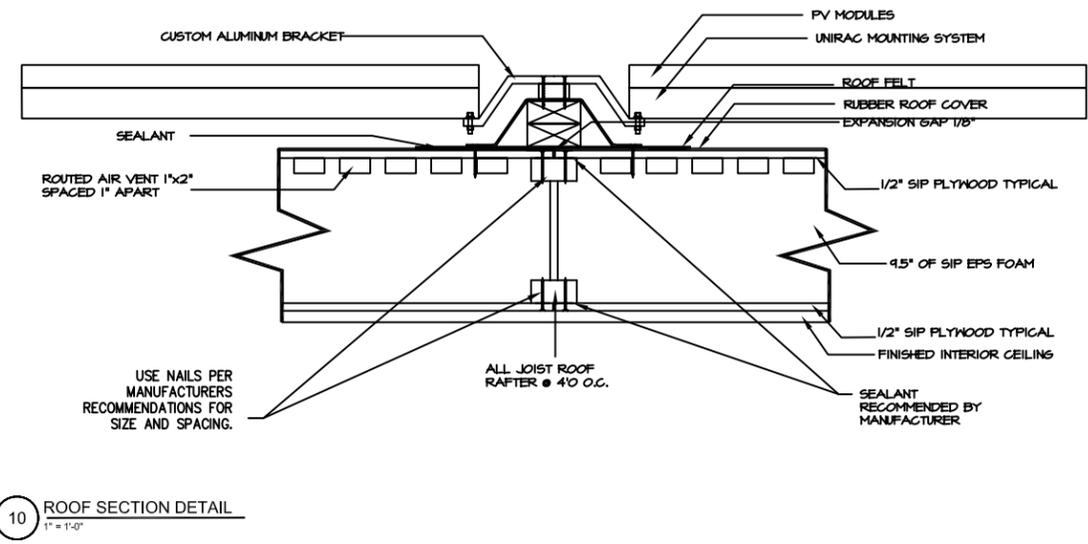
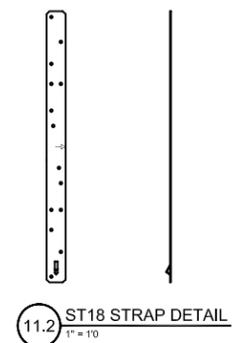
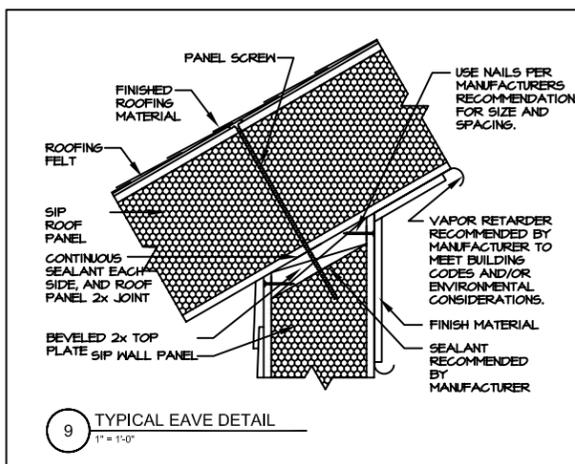
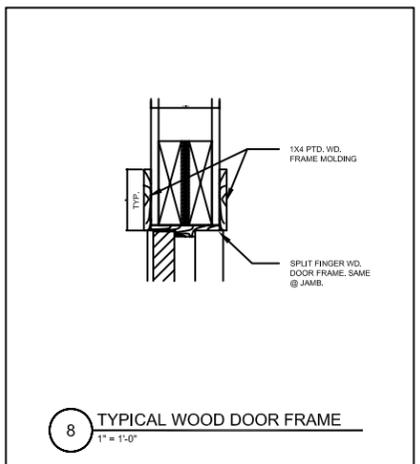
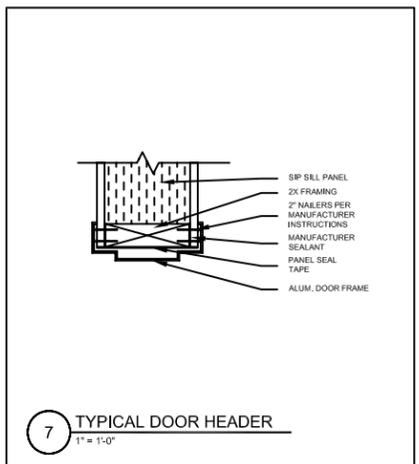
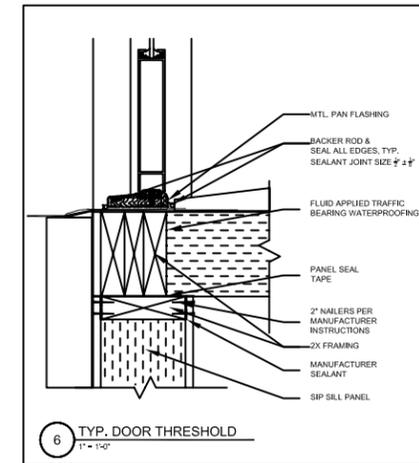
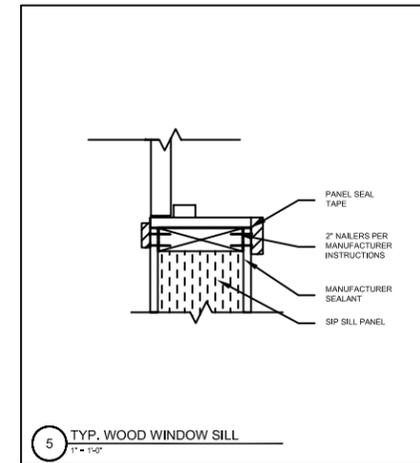
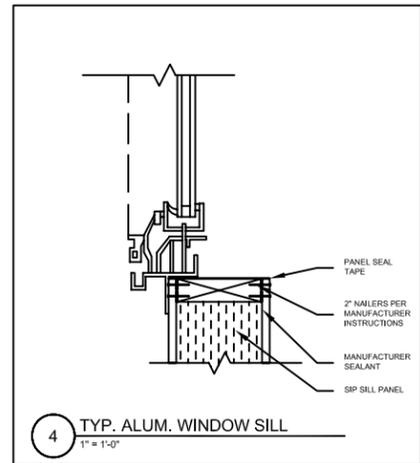
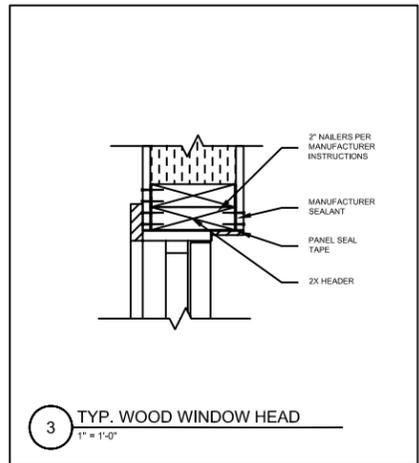
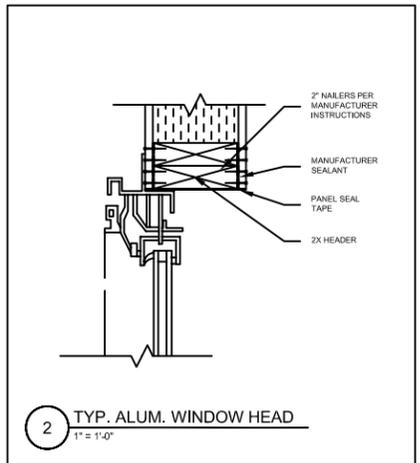
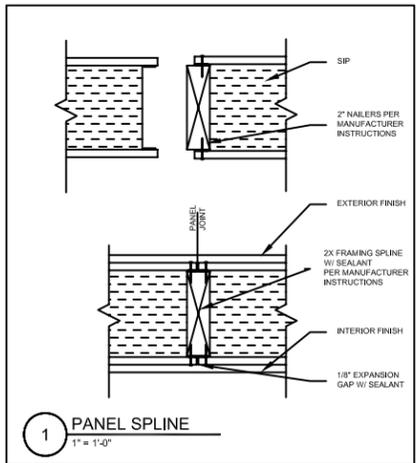
**ELECTRICAL  
NOTES**

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Scale  
1/2"=1'-0"

Sheet  
E-4

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SIPS DETAILS

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Date

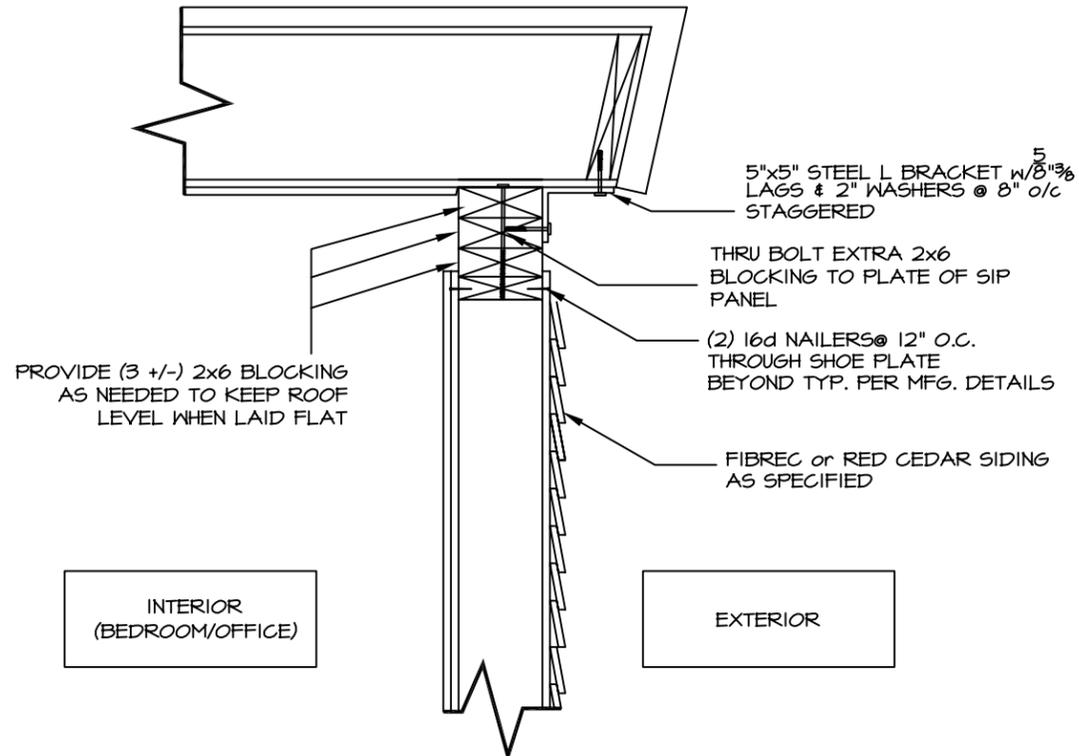
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D-1



12 NORTH ROOF TIE-DOWN DURING TRANSPORTATION  
1" = 1'-0"

MOUNTING PLATE CONNECTS TO WALL FACE AND BEARS ON THE BRACE SIDE OF THE WALL. IT IS MANUFACTURED FROM 3/8" THICK STEEL PLATE CONFORMING TO ASTM A36. THE PIPE BRACE IS ATTACHED WITH A 5/8" DIAMETER HEAD PIN.

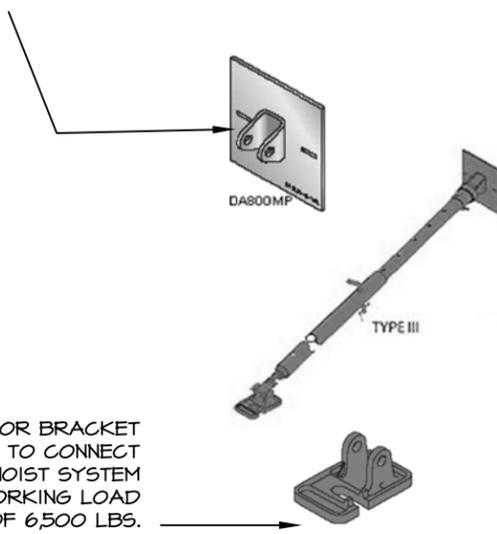
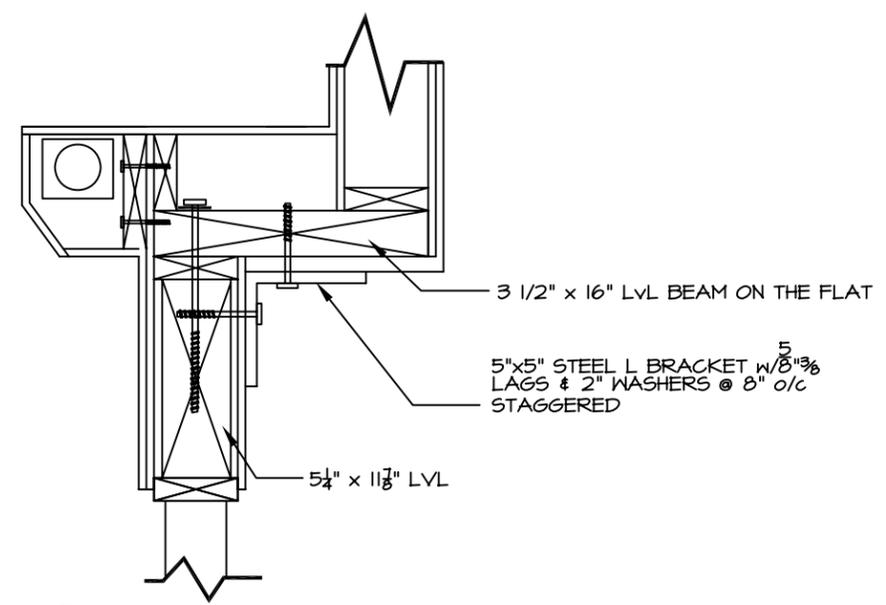


Table 1 - Safe Working Loads for Braces\*

BRACE LENGTH	BRACE DESIGNATION		
	BR20	BR23	BR39
13'-0"	5800	NA	NA
14'-0"	5000	NA	NA
15'-0"	4200	6500	NA
16'-0"	3460	6500	NA
17'-0"	2975	6270	NA
18'-0"	2750	5250	NA
19'-0"	2275	4100	NA
20'-0"	1975	3575	NA
21'-0"	NA	2890	NA
22'-0"	NA	2410	NA
23'-0"	NA	2080	5585
24'-0"	NA	NA	4905
25'-0"	NA	NA	4250
26'-0"	NA	NA	3325
27'-0"	NA	NA	2715
28'-0"	NA	NA	2280
29'-0"	NA	NA	1850
30'-0"	NA	NA	1600
31'-0"	NA	NA	1250

\*Safe Working Load based on a safety factor of 1.5.

13 CROSS-BRACING SYSTEM FOR MOD. 2 DURING TRANSPORT  
1 1/2" = 1'-0"



15 CONNECTION DETAIL AT LIVING ROOM CLERESTORY  
1" = 1'-0"

NOTE:  
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TRANSPORT DETAILS

Dwg. Number  
Date 08.06.07  
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Sheet  
D-2

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**SIPS CONNECTION  
DETAILS**

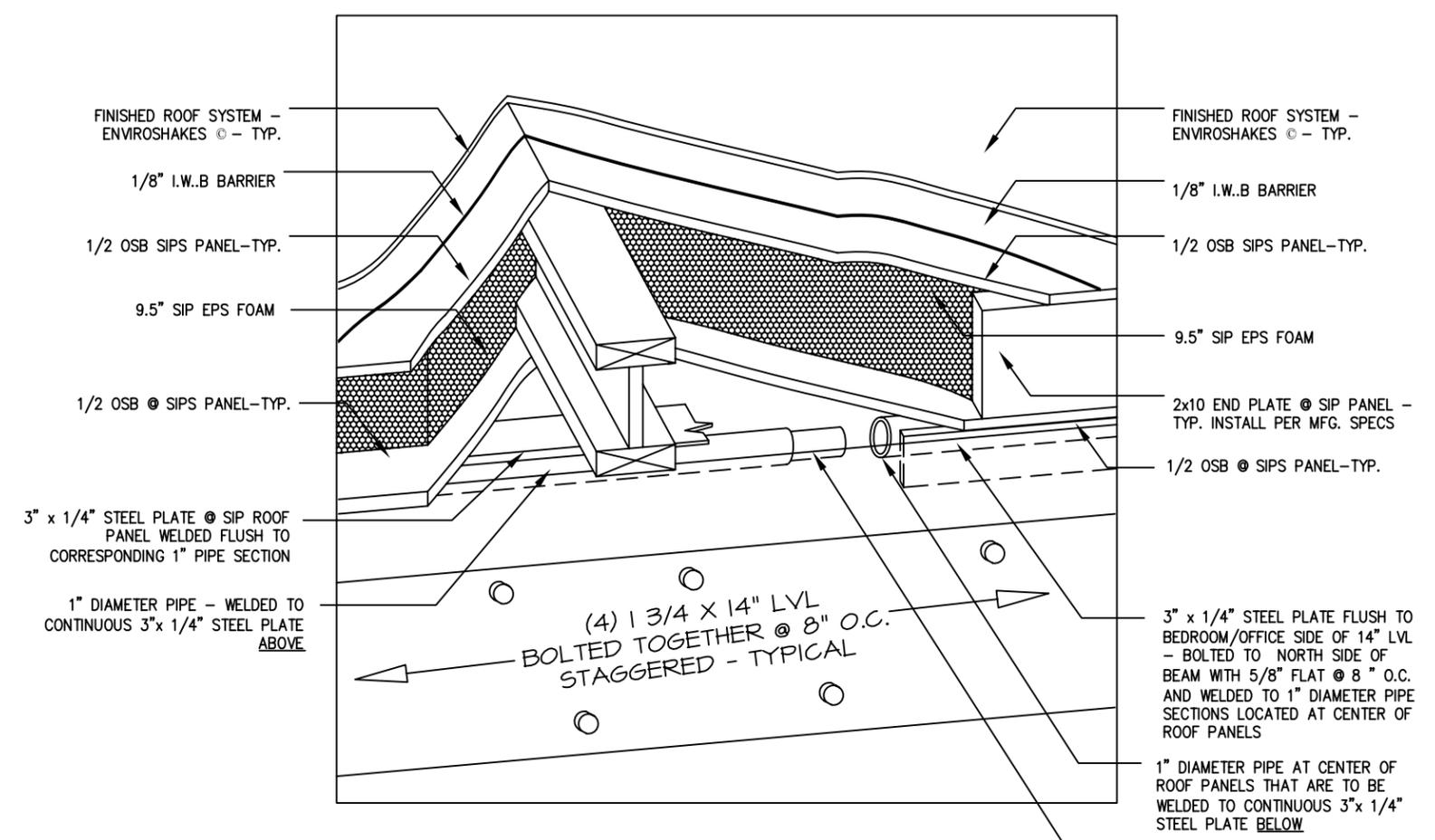
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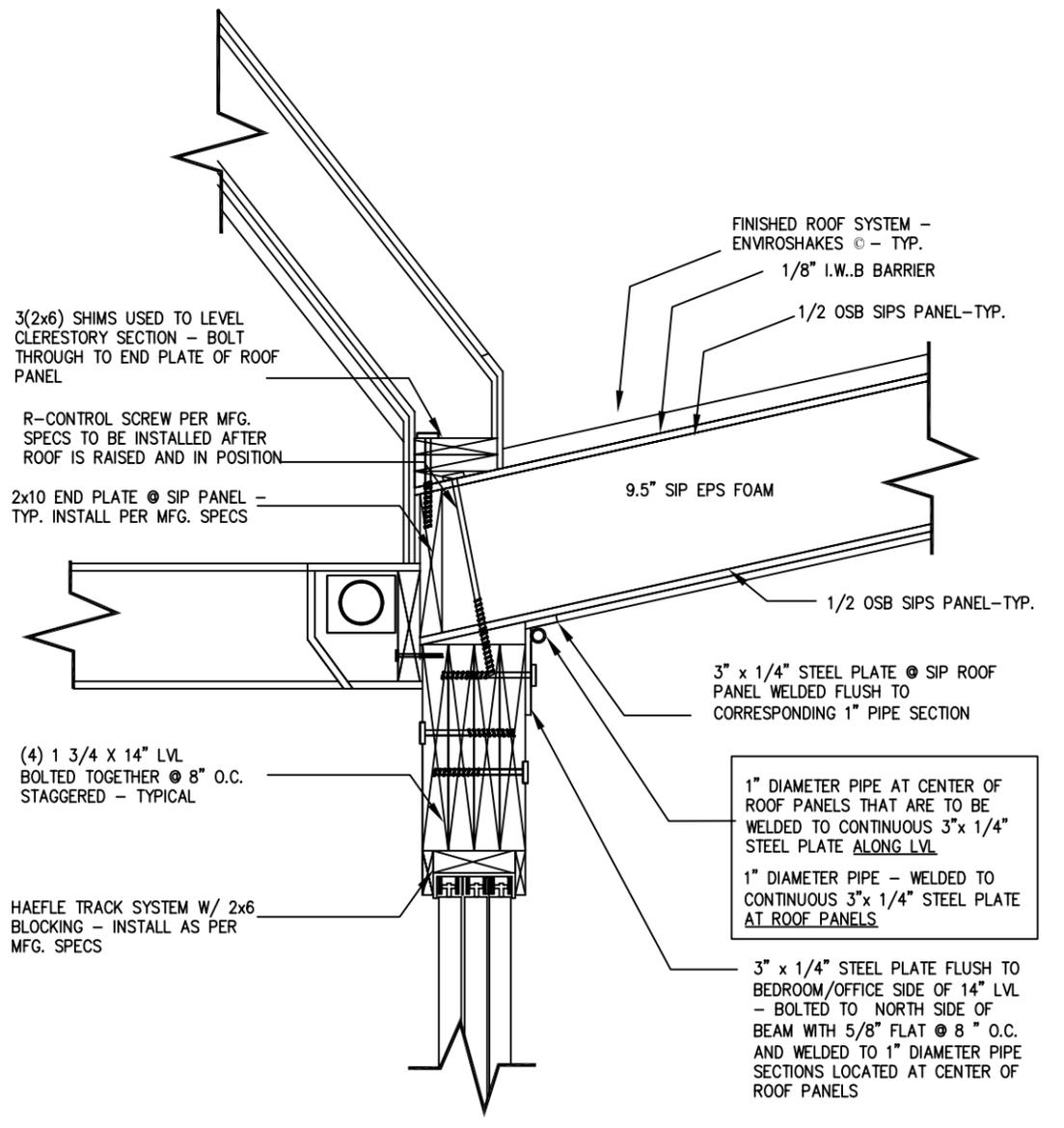
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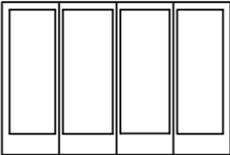
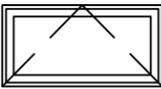
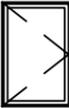
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15 CONNECTION DETAIL AT LIVING ROOM CLERESTORY  
1" = 1'-0"



TAG	QUANTITY	GRAPHIC	R.O.	LOCATION	DESCRIPTION
(A)	2		↑ SIPS ARE CUT ON SITE ↓	EAST ELEVATION HALLWAY ENTRY  SOUTH ELEVATION DINING ROOM ENTRY	3'0 FRENCH HINGED 18" MIN. TO GLASS @ BOTTOM & TEMPERED PER ADA CODE
(B)	2			WEST ELEVATION BEDROOM ENTRY  SOUTH ELEVATION DINING ROOM ENTRY	2'0X 6'-8 STACKED AWNINGS
(C)	1			NORTH ELEVATION LIVING ROOM ENTRY	10'0 FRENCH SLIDER FAR LEFT/RIGHT PANELS TO BE FIXED & CUSTOM MATERIAL T.B.D
(D)	8			NORTH ELEVATION LIVING ROOM (2) OFFICE (2) BEDROOM (3) LOFT (1)	3'-6 x 1'-8 OPERABLE AWNING WINDOWS AT CLERESTORY
(E)	1			EAST ELEVATION OFFICE	2'-0 x 4'-8 FIXED
(F)	1			WEST ELEVATION HALL	3'-0 x 4'-0 OPERABLE CASEMENT WINDOWS
(G)	1			EAST ELEVATION LIVING ROOM	1'-4 x 6'-6 FIXED PICTURE WINDOW
(J)	1			NORTH ELEVATION MIDDLE CLERESTORY	RECYCLED JOHN HANCOCK THERMOPANE WINDOW ON 2x8 WOOD SUPPORTS SEE SECTION B-B
(K)	1			WEST ELEVATION BEDROOM	3'-0" x 3'-6" OPERABLE CASEMENT WINDOW

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SOLAR  
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WINDOW  
SCHEDULE

Dwg. Number

Date  
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## LIGHT FIXTURE SCHEDULE

SYMBOL	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	VOLTS	WATTS	MOUNTING	LAMP(S)	REMARKS
▼	WAC LIGHTING	MODEL 775	LINE VOLTAGE TRACK HEAD	120	11 WATT CFL	TRACK	16 LAMPS PAR38 CFL	AMBIENT, DIMMABLE LIVING ROOM, OFFICE & KITCHEN
≡ <sub>T</sub>	WAC LIGHTING	HTK-775	TRACK LENGTH - BLACK	120	N/A	SURFACE	2-2'-0" TRACKS 4-4'-0" TRACKS 1-6'-0" TRACKS	LIVING ROOM, OFFICE & KITCHEN
○	WAC LIGHTING	MODEL R5VT-21	5" TRIM RECESSED	120?	15-20 WATT CFL	RECESSED	3 LAMPS PAR30 CFL	AMBIENT, DIMMABLE BATHROOM & HALLWAY
□	WAC LIGHTING	MODEL R5V1	COMPATIBLE HOUSING	120?	0	RECESSED	N/A	BATHROOM & HALLWAY
—	REZEK MIRRORS	VANITY MIRROR 818	VANITY MIRROR WHITE EXTRUDED ALUMINUM FINISH	120	100	WALL MOUNT	3000 KELVIN HIGH COLOR RENDITION LAMPS INCLUDED	TASK, COLOR CORRECTIVE BATHROOM VANITY
—	COLOR KINETICS	LED 1W PROFILE g2	LINEAR STRIP	24 VDC	15	SURFACE	LED INCLUDED 9 FIXTURES	TASK UNDER CABINET IN KITCHEN
⊙	?	?	CHANDELIER PENDANT	120 VAC	11 WATT CFL	SUSPENDED	2 LAMPS CFL	TASK DINING ROOM TABLE
○	?	?	TRACK PENDANT	12 VDC	4	SUSPENDED	4 LAMPS GE HALOGENS	TASK KITCHEN ISLAND
—	COLOR KINETICS	LED 6W COVE POWERCORE	COVE LIGHT	100, 120, OR 230 VAC OR DC??	6	SURFACE	LED INCLUDED	ACCENT BEDROOM
H	COLOR KINETICS	LED 1W MR	UP/DOWN SCONCE	DC?	?	WALL	LED INCLUDED	ACCENT BEDROOM, OFFICE & LIVING ROOM
—	?	LED	TASK LAMP	?	?	N/A	LED INCLUDED	ACCENT BEDROOM & OFFICE
○	?	?	FLOOR LAMP	?	?	N/A	CFL	ACCENT LIVING ROOM
—	COLOR KINETICS	LED ROPE	TROMBE WALL	DC?	?	INSIDE TROMBE WALL	LED INCLUDED	ACCENT LIVING ROOM
—	MODERN FAN	MOD-cirrusshort	CEILING FAN BRUSHED ALUMINUM FINISH	?	?	N/A	3 FIXTURES	LIVING ROOM, BEDROOM, AND KITCHEN
	MODERN FAN	MOD-DRD	DOWNRODS FOR CEILING FAN BRUSHED ALUMINUM FINISH	?	?	N/A	2-36" RODS	LIVING ROOM, BEDROOM, AND KITCHEN
	MODERN FAN	MOD-045	SLOPED CEILING ADAPTER FOR CEILING FAN BRUSHED ALUMINUM FINISH	?	?	N/A	2 FIXTURES	LIVING ROOM AND KITCHEN

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SOLAR  
DECATHLON

LIGHTING  
SCHEDULE

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D-5

GENERAL

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LATEST EDITION OF THE COMMONWEALTH OF MASSACHUSETTS BUILDING CODE (780CMR) AND THE CONTRACT DOCUMENTS. IN CASE OF A CONFLICT, THE MOST STRINGENT REQUIREMENT SHALL GOVERN.

THE CONTRACTOR MUST HAVE THE EXPERTISE TO EXECUTE ALL WORK INDICATED ON THE DRAWINGS OR SHALL HIRE QUALIFIED HELP.

THE CONTRACTOR SHALL VERIFY AND COORDINATE DIMENSIONS RELATED TO THIS PROJECT.

THE CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR VERIFICATION OF LOCATION AND DIMENSIONS OF CHASES, INSERTS, OPENINGS, SLEEVES, WASHES, DRIPS, REVEALS, DEPRESSIONS, AND OTHER PROJECT REQUIREMENTS.

ALL REQUESTS FOR CHANGES FROM THE CLIENT, THE CONTRACTORS, ETC., OR ANY OTHER PARTY MUST BE MADE IN WRITING TO THE STRUCTURAL ENGINEER OR ANY OTHER CHANGES TO DRAWINGS MADE ON THE SITE MUST BE FOLLOWED UP IN WRITING TO THE STRUCTURAL ENGINEER.

THE USE OF EXPLOSIVES IS NOT PERMITTED WITHOUT THE WRITTEN PERMISSION OF THE STRUCTURAL ENGINEER.

THE CONTRACTOR SHALL NOTIFY THE ARCHITECT WHEN, IN THE COURSE OF CONSTRUCTION OR DEMOLITION, CONDITIONS ARE UNCOVERED WHICH ARE UNANTICIPATED OR OTHERWISE APPEAR TO PRESENT A DANGEROUS CONDITION.

WHERE NEW WORK WILL BE ADJACENT TO OR FRAMING EXISTING CONSTRUCTION, VERIFY DIMENSIONS OF EXISTING CONSTRUCTION, PRIOR TO FABRICATION OF NEW MEMBERS.

PROVIDE ALL LABOR AND MATERIAL FOR ANY FRAMING REQUIRED TO CONNECT NEW FRAMING TO EXISTING CONSTRUCTION. WHEREVER IT IS NECESSARY TO REMOVE EXISTING CONSTRUCTION IN ORDER TO CONSTRUCT NEW WORK, THE AFFECTED AREA SHALL BE PATCHED AND REBUILT TO MATCH EXISTING ADJACENT WORK TO SATISFACTION OF THE ARCHITECT.

STRUCTURAL ALTERATION SHALL BE PRECEDED BY ADEQUATE SHORING AND BRACING.

SCREW-TYPE SHORING POSTS SHALL BE PROVIDED FOR EXISTING WORK DURING THE REMOVAL OF EXISTING BEARING WALLS AND STRUCTURAL MEMBERS AND THE INSTALLATION OF NEW STRUCTURAL WORK.

TEMPORARY SHORES SHALL BE PLACED AS CLOSE AS PRACTICABLE TO THE EXISTING STRUCTURAL WORK BEING REMOVED.

HEADERS SHALL BE PLACED ACROSS TOP OF SHORING POSTS AND SHALL BE SNUG TIGHT AGAINST UNDERSIDE OF STRUCTURE ABOVE.

SHORING SHALL BEAR ON SLEEPERS TO PREVENT DAMAGE TO THE STRUCTURE BELOW.

TEMPORARY SHORES SHALL BE INDIVIDUALLY DESIGNED, ERECTED, SUPPORTED, BRACED AND MAINTAINED BY THE CONTRACTOR TO SAFELY SUPPORT ALL DEAD LOADS PRESENTLY CARRIED BY THE EXISTING STRUCTURAL WORK BEING REMOVED AND ANY CONSTRUCTION LIVE LOADS.

NEW STRUCTURAL FRAMING SHALL BE COMPLETELY INSTALLED BEFORE REMOVING ANY SHORES.

SHORES SHALL BE RELEASED GRADUALLY AND LEFT LOOSELY IN PLACE FOR AT LEAST 2 DAYS TO ALLOW FOR STRUCTURAL SHAKE OUT.

FOUNDATIONS

FOOTINGS SHALL BE FOUNDED ON UNDISTURBED MATERIAL HAVING A MINIMUM BEARING CAPACITY OF 2 TONS PER SQUARE FOOT OR ON GRAVEL FILL, SELECTED AND COMPACTED TO 95% OF ITS MAXIMUM PROCTOR DRY DENSITY IN 6" LIFTS.

EXTERIOR CONSTRUCTION SHALL BE CARRIED DOWN BELOW FINISHED EXTERIOR GRADE TO A MINIMUM DEPTH OF 4 FEET UNLESS OTHERWISE NOTED.

FOOTING EXCAVATIONS ARE TO BE FINISHED WITH A SMOOTH BUCKET OR BY HAND.

NO EXCAVATION ADJACENT TO EXISTING FOUNDATION WILL ENCROACH A PYRAMID STARTING AT THE PERIMETER OF THE EXISTING FOOTING WITH SLOPES OF ONE VERTICAL TO TWO HORIZONTAL UNLESS OTHERWISE NOTED.

NO FOUNDATION CONCRETE SHALL BE PLACED IN WATER OR ON FROZEN GROUND.

MAKE NO EXCAVATIONS TO THE FULL DEPTH INDICATED WHEN FREEZING TEMPERATURE MAY BE EXPECTED, UNLESS THE FOUNDATIONS OR SLABS CAN BE PLACED IMMEDIATELY AFTER THE EXCAVATION HAS BEEN COMPLETED. PROTECT THE BOTTOM SO EXCAVATED FROM FROST IF PLACING OF CONCRETE IS DELAYED. SHOULD PROTECTION FAIL, REMOVE FROZEN MATERIALS AND REPLACE WITH CONCRETE OR GRAVEL FILL, AS DIRECTED, AT NO COST TO THE OWNER.

FOOTINGS SHALL BE PROTECTED AGAINST FROST UNTIL PROJECT IS COMPLETED.

FOUNDATIONS (cont.)

BACKFILL UNDER ANY PORTION OF THE BUILDING SHALL BE COMPACTED IN 6" LIFTS.

UNLESS OTHERWISE NOTED, FOOTINGS SHALL BE CENTERED UNDER SUPPORTED MEMBERS.

BACKFILL NO EXTERIOR WALLS UNTIL PERMANENT LATERAL STRUCTURAL SUPPORT SYSTEM IS IN PLACE AND OF FULL STRENGTH.

BACKFILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDES OF THE BUILDING IN ORDER TO MINIMIZE UNBALANCED EARTH PRESSURES.

CONCRETE

CONCRETE WORK SHALL CONFORM TO BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).

CONCRETE SHALL HAVE A 3000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS.

CONCRETE TO BE EXPOSED TO THE WEATHER IN THE FINISHED PROJECT SHALL HAVE 6% ENTRAINED AIR.

EXERCISE CARE WHEN FIELD APPLYING FORM RELEASE AGENTS TO PREVENT COATING ADJACENT CONSTRUCTION JOINT SURFACES OR REINFORCING STEEL.

ALL KEYS SHALL BE 2"x 4" (NOMINAL) UNLESS OTHERWISE NOTED.

ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN OR PASS THROUGH CONCRETE.

REINFORCEMENT

DETAILING, FABRICATION, AND ERECTION OF REINFORCEMENT, UNLESS OTHERWISE NOTED, SHALL CONFORM TO ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318)" AND ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315)".

STEEL REINFORCEMENT UNLESS OTHERWISE SHOWN SHALL CONFORM TO ASTM 615 GRADE 60.

THE CONCRETE PROTECTIVE COVERING FOR REINFORCEMENT SHALL BE IN ACCORDANCE WITH THE LATEST ACI BUILDING CODE BUT SHALL NOT BE LESS THAN ONE INCH.

WHERE CONTINUOUS BARS ARE CALLED FOR, THEY SHALL BE RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. LAPS SHALL BE NOT LESS THAN 36 BAR DIAMETERS UNLESS NOTED. GENERALLY, LAP TOP BARS AT MID-SPAN AND BOTTOM BARS AT SUPPORTS.

WHERE REINFORCEMENT IS CALLED FOR IN SECTION, REINFORCEMENT IS CONSIDERED TYPICAL WHEREVER THE SECTION APPLIES.

REINFORCEMENT COUPLER SPLICES SHALL BE MECHANICAL DEVICES CAPABLE OF TRANSMITTING THE ULTIMATE TENSILE AND COMPRESSIVE STRENGTH OF THE BAR.

INSTALLATION OF REINFORCEMENT SHALL BE COMPLETED AT LEAST 24 HOURS PRIOR TO SCHEDULED CONCRETE PLACEMENT. NOTIFY THE ARCHITECT OR HIS DESIGNATE OF COMPLETION AT LEAST 24 HOURS PRIOR TO SCHEDULED COMPLETION OF PLACEMENT OF

STRUCTURAL TIMBER CONSTRUCTION

TIMBER CONSTRUCTION SHALL CONFORM TO PART II "DESIGN SPECIFICATIONS" AS PUBLISHED IN THE "TIMBER CONSTRUCTION MANUAL" (AITC) AND TO "NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION" (NDS), AMENDED TO DATE.

TIMBER CONSTRUCTION SHALL CONFORM TO ARTICLE 21, "BUILDING CODE PROVISIONS FOR ONE AND TWO FAMILY DWELLINGS" OF THE COMMONWEALTH OF MASSACHUSETTS STATE BUILDING CODE.

NEW TIMBER SHALL HAVE A 1100 PSI ALLOWABLE BENDING STRESS. THE MODULUS OF ELASTICITY SHALL BE A MINIMUM OF 1,400,000 PSI.

LAMINATED VENEER LUMBER BEAMS SHALL HAVE A MINIMUM ALLOWABLE BENDING STRESS OF 2800 PSI AND A MINIMUM MODULUS OF ELASTICITY OF 2,000,000 PSI

NEW TIMBER FOR STRUCTURAL USE SHALL HAVE A MOISTURE CONTENT OF 15%.

TIMBER SHALL BE SO HANDLED AND COVERED AS TO PREVENT MARRING, AND MOISTURE ABSORPTION FROM SNOW OR RAIN.

JOIST CONSTRUCTION SPANNING OVER 8' MUST HAVE CROSS BRIDGING AT NO MORE THAN 8' O.C.

NO JOIST SHALL BE NOTCHED OR DRILLED WITH HOLES WITHOUT THE SPECIFIC APPROVAL OF THE ENGINEER.

NO JOIST SHALL BE REPAIRED OR REINFORCED IN ANY WAY WITHOUT THE SPECIFIC APPROVAL OF THE ENGINEER.

STRUCTURAL TIMBER CONSTRUCTION (cont.)

RAFTERS AND JOISTS OVER 8'-0" SHALL BE SUPPORTED ON METAL HANGERS.

SILLS SHALL BE 2x4 OR 2x6. THEY SHALL BE ANCHORED WITH 1/2" DIAMETER BY 12" LONG ANCHOR BOLTS SPACED NOT MORE THAN 4'-0" O.C. AND AT EACH CORNER. PROVIDE 2" DIA. WASHERS UNDER EACH NUT.

USE DOUBLE JOISTS UNDER ALL PARALLEL PARTITIONS.

BEARING WALLS WILL BE 2x4 AT 16" O.C., UNLESS OTHERWISE NOTED.

BEARING PARTITIONS AND OUTSIDE STUD WALLS SHALL BE BRIDGED ONCE IN THEIR STORY HEIGHT OR AT LEAST EVERY 6'-0".

PLYWOOD SHALL BE NAILED WITH 8d COMMON OR 6d THREADED NAILS. NAILS SHALL BE 6" O.C. AT ALL BEARING.

STUDS SHALL BE NAILED TO THE SOLE PLATE WITH (3)10d OR (4) 8d TOE NAILS.

WHERE STRUCTURAL SHEATHING OVERLAPS SOLE PLATE NAIL SHEATHING TO SOLE PLATE AT 8" MAX. O.C.

DOUBLE JOIST AT EACH SIDE OF FLOOR OPENINGS UP TO 2'-0"

LARGER OPENINGS SHALL BE CALLED TO THE ATTENTION OF THE STRUCTURAL ENGINEER.

DOUBLE STUDS SHALL BE USED AT ALL WALL OPENING.

HEADER SHALL BE SUPPORTED ON JAMB STUD AND BE SIZED TO SUPPORT LOAD IMPOSED.

JAMB STUD SHALL EXTEND IN ONE PIECE FROM HEADER TO SOLE PLATE.

ALL STUDS TO BE CONTINUOUS FROM FLOOR TO FLOOR OR FLOOR TO ROOF.

SOLE PLATES SHALL BE NAILED TO SUB-FLOOR AND JOISTS WITH 16d NAILS AT EACH JOIST.

TOP PLATES FOR BEARING PARTITIONS SHALL BE TWO 2x4'S OR A CONTINUOUS HEADER. PLATE MEMBERS OF PRINCIPAL PARTITIONS SHALL BE LAPPED OR ANCHORED TO EXTERIOR WALL FRAMING. SPLICES IN LOWER MEMBER OF TOP PLATE SHALL OCCUR OVER STUDS. NAIL PLATES TO STUDS WITH TWO 16d NAILS 24" O.C.

TOP PLATES FOR NON-BEARING PARTITIONS MAY BE SINGLE AND WILL SPLICE AT STUD CENTERLINES ONLY. NAIL PLATE TO STUD WITH 16d NAILS. WHEN TOP PLATE IS PARALLEL TO CEILING OR FLOOR FRAMING, INSTALL 2x4 ACROSS BLOCKING NOT MORE THAT 4" O.C.

WHEN TOP PLATES ARE CUT FOR PIPING OR DUCTWORK, REINFORCE WITH STEEL STRAPS.

WHERE BEAMS AND GIRDERS OF NOMINAL 2" MEMBERS ARE SHOWN NAIL WITH TWO ROWS OF 16d NAILS SPACED NOT MORE THAT 24" O.C.

ALL BEAMS MUST SPLICE ONLY OVER SUPPORTS UNLESS SPECIFICALLY INSTRUCTED OTHERWISE BY STRUCTURAL ENGINEER.

FLOOR AND ROOF PLYWOOD WILL BE 5/8" THICK INSTALLED WITH GRAIN OF OUTER PLIES AT RIGHT ANGLES TO JOISTS AND BE STAGGERED SO THAT END JOINTS IN ADJACENT PANELS OCCUR OVER DIFFERENT JOISTS OR RAFTERS.

PANEL EDGES SHOULD BE TONGUE-AND-GROOVE OR SUPPORTED BY 2" LUMBER BLOCKING BETWEEN JOISTS. STAGGER PANEL ENDS DIRECTLY OVER FRAMING AND SPACE 1/16".

NOTES:  
1. ALL HEADERS SHALL BE 2-2x10'S WITH 1/2" PLYWOOD FLITCH PLATE UNLESS OTHERWISE NOTED.  
2. FRAMER TO INSTALL DOUBLE FLOOR JOISTS UNDER PARTITION WALLS PARALLEL TO JOIST DIRECTION.  
3. PROVIDE CROSS-BRIDGING AT MID POINT OF SPAN OR 8'-0" O.C. MAXIMUM IN ALL FLOORS.  
4. ROOF DECKING SHALL BE 5/8" CDX PLYWOOD.  
5. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES, REGULATIONS AND FH/VIA MPS. CONTRACTORS SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT SITE BEFORE BEGINNING CONSTRUCTION.  
6. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT FOR JUSTIFICATION AND/OR CORRECTION BEFORE PROCEEDING WITH WORK. CONTRACTORS SHALL ASSUME RESPONSIBILITY FOR ERRORS NOT REPORTED. ALL DIMENSIONS SHOULD BE READ OR CALCULATED NEVER SCALED.  
7. ALL FOOTINGS TO BE BELOW FROST LINE AND MUST REST ON UNDISTURBED SOIL OR LEDGE CAPABLE OF HANDLING THE BUILDING. CONTRACTORS SHALL INSURE COMPATIBILITY OF THE BUILDING WITH ALL SITE REQUIREMENTS.  
8. IF BACKFILL EXCEEDS 4' AGAINST ANY FOUNDATION WALL, REINFORCE AS PER CODE.  
9.  
10.

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NOTE:

ALL DIMENSION TO BE FIELD VERIFIED & CHECKED. CONTRACTOR TO REPORT CHANGES AND OMISSIONS TO ARCHITECT.

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SOLAR  
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NOTES

Dwg. Number

Date  
07.04.07

Scale

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