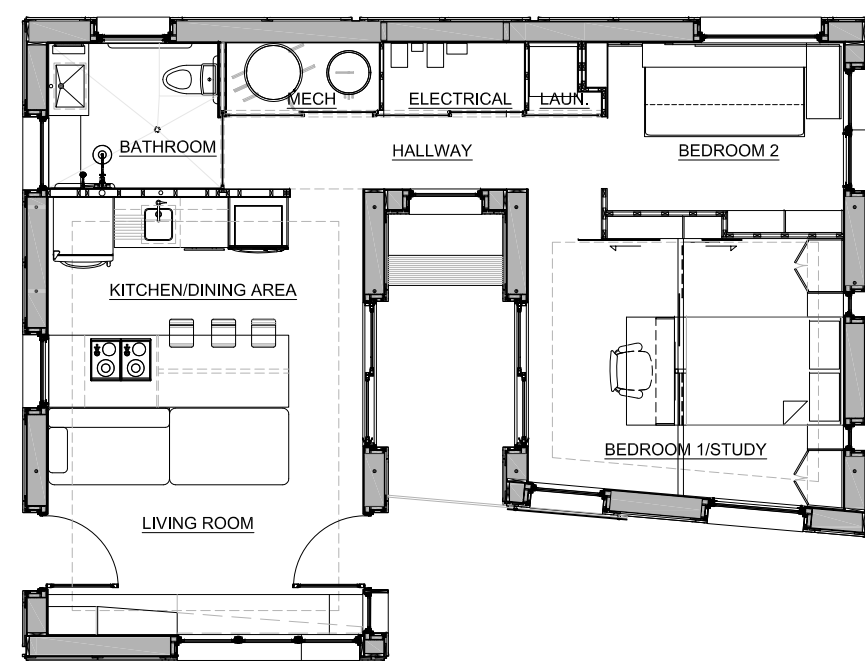


# Lawrence Technological University

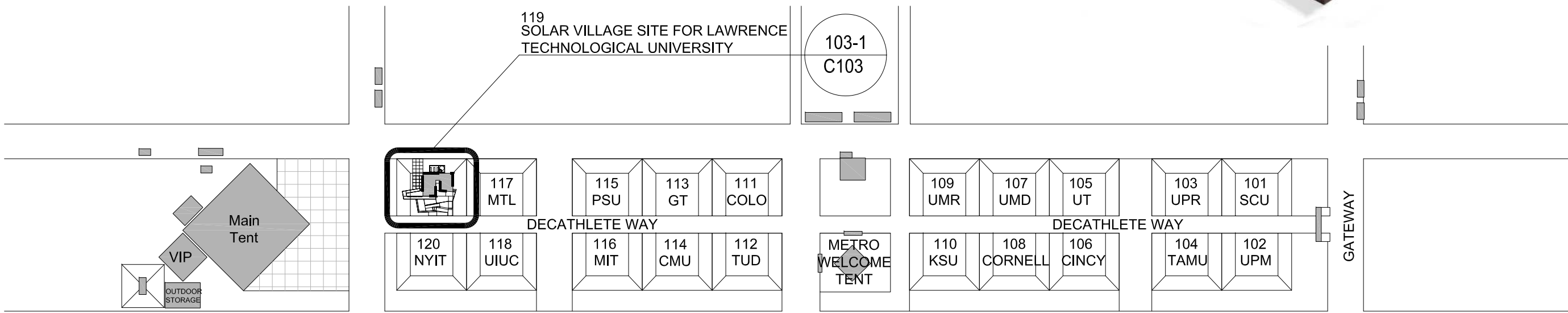
## Construction Document Submittal

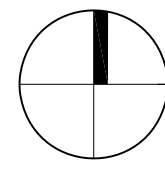
August 7, 2007

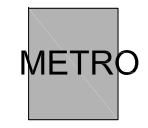
Our mission is to follow the principles of reduction, sustainability, and energy conservation to build a solar home that benefits the surrounding environment, without sacrificing aesthetics and comfort. Our goal is to demonstrate to the public how small changes in our building practices and habits can have a global impact, and excite people about the possibility of change.



 **FLOOR PLAN**  
SCALE: 1/8"=1'-0"



 **SOLAR VILLAGE**  
SCALE: 1/64"=1'-0"



//project

# aloeterra

LTU SOLAR DECATHLON 2007

//revisions

Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date  
7.Aug.2007

project number  
LTU\_001

scale  
N.T.S.

drawn  
SS

checked  
PP

drawing title

Cover

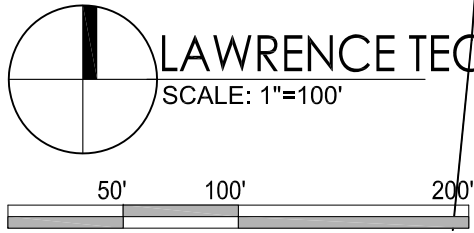
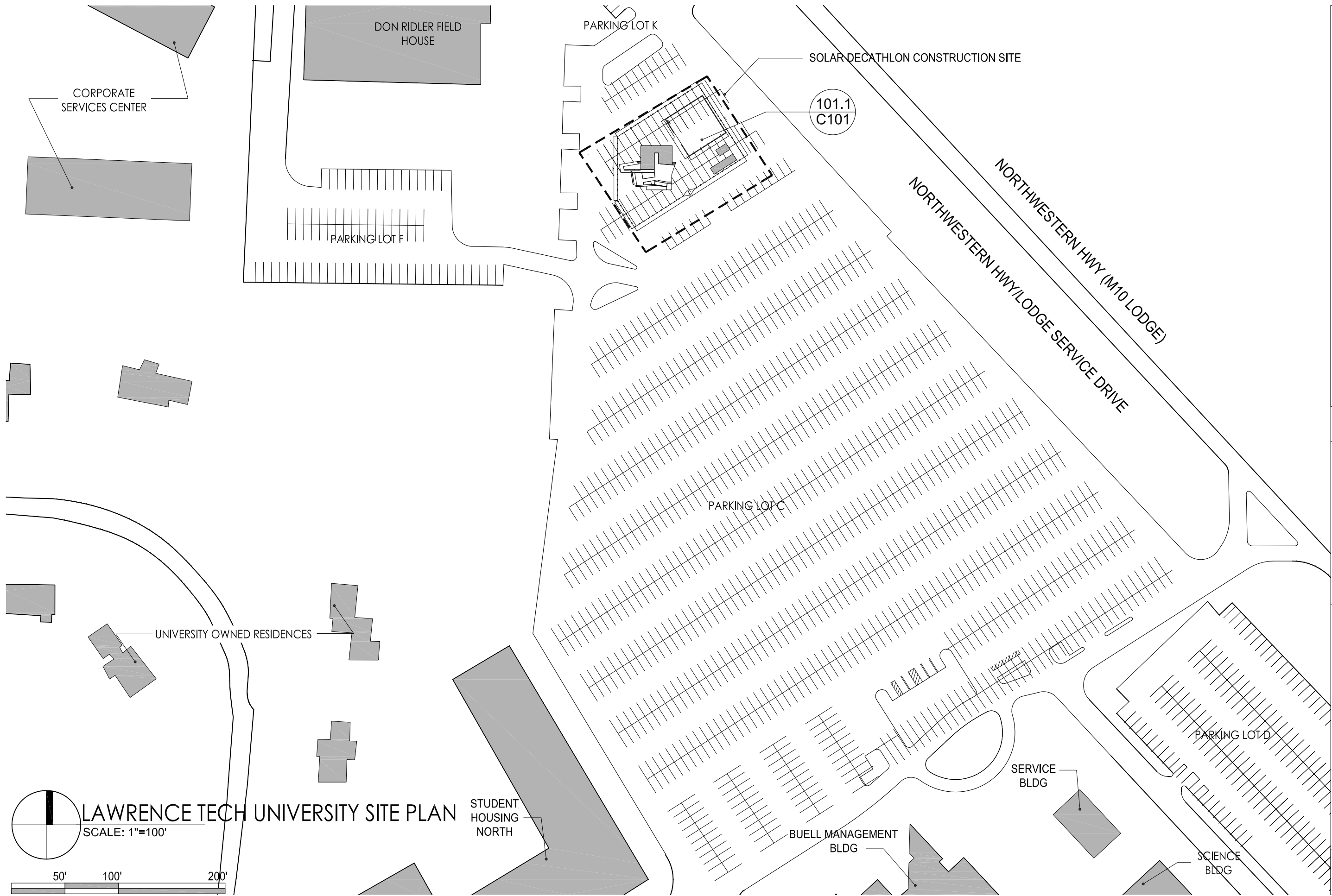
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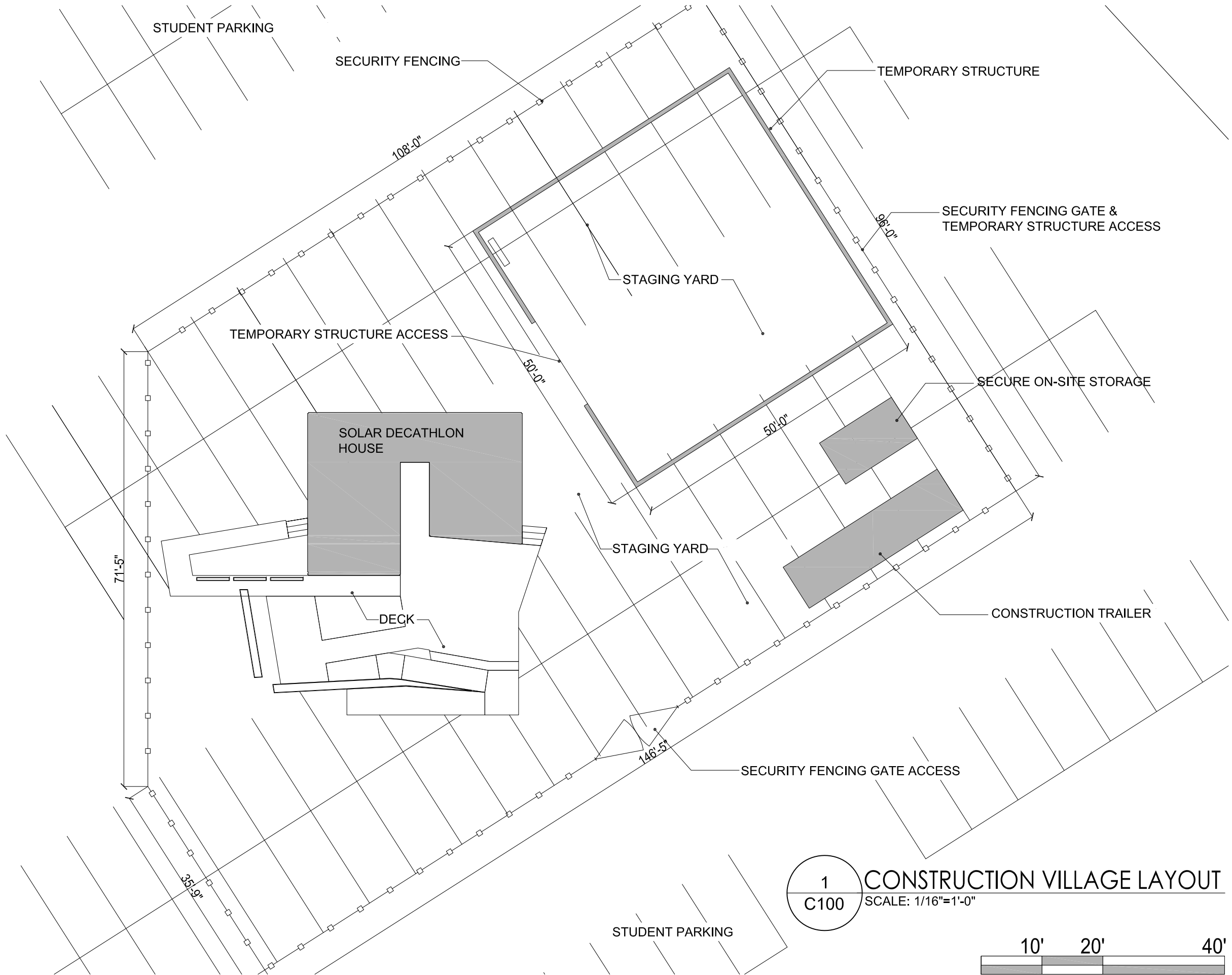


LAWRENCE TECH UNIVERSITY SITE PLAN

SCALE: 1"=100'

//revisions	
Issued for	Date
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7.Aug.2007	
//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	1"=100'
drawn	ST
checked	PP
drawing title	Lawrence Tech University Site Plan
//sheet number	C100





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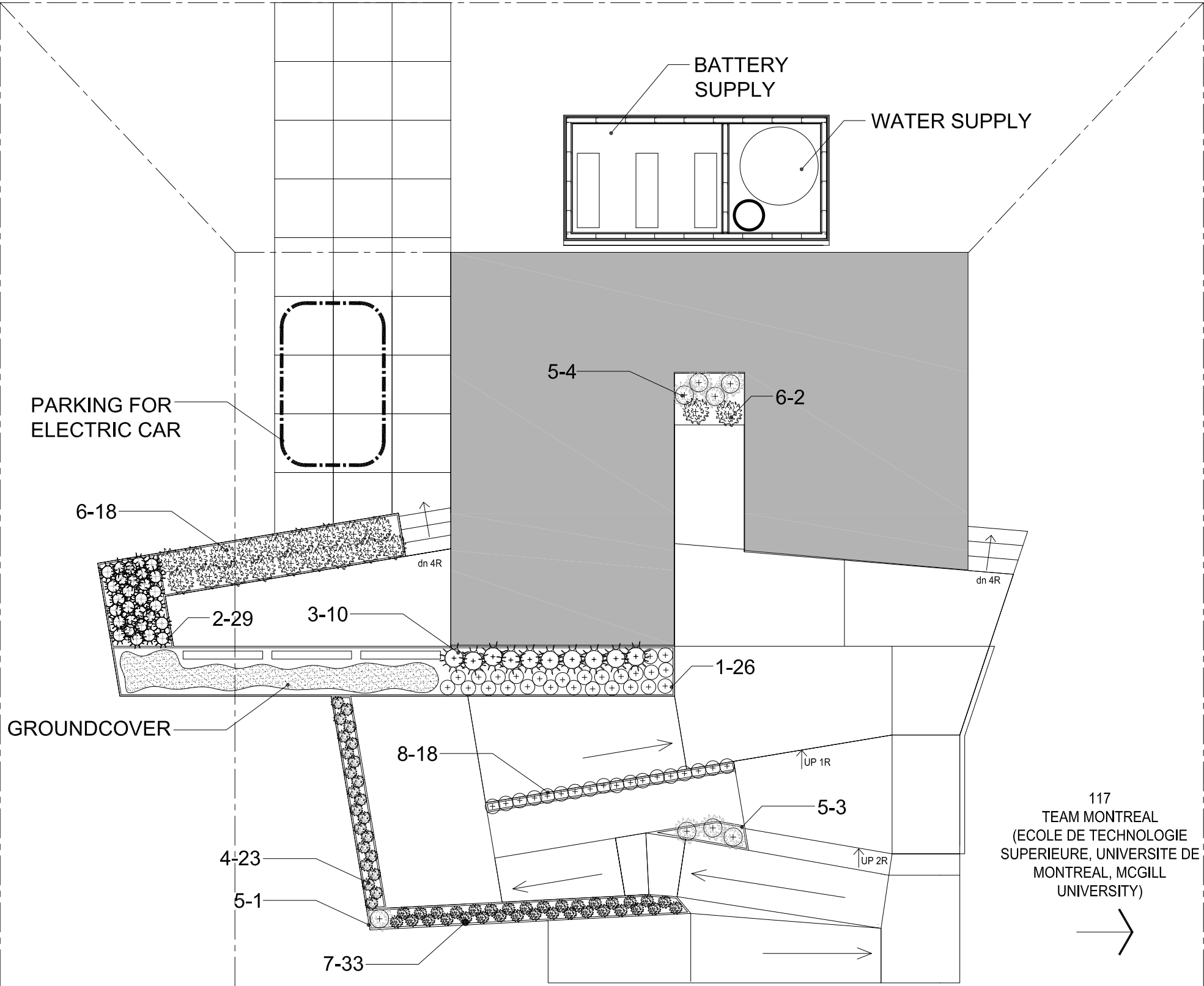
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007
//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	1/16"=1'-0"
drawn	ST
checked	PP
drawing title	
Construction Village Layout	
//sheet number	
<b>C101</b>	







PLANT MATERIAL LIST			
KEY	QUANT.	BOTANICAL NAME	COMMON NAME
1	26	CAMPANULA ROTUNDIFOLIA	HAREBELL
2	29	OSMUNDA CINNAMOMEA	CINNAMON FERN
3	10	ASCLEPIAS TUBEROSA	BUTTERFLY WEED
4	23	ASTER LAEVIS	SMOOTH ASTER
5	8	RHUS COPALLINA	WINGED SUMAC
6	20	HAMAMELIS VIRGINIANA	WITCH HAZEL
7	33	ERAGROSTIS SPECTABILIS	PURPLE LOVEGRASS
8	18	EUPHORBIA COROLLATA	FLOWERING SPURGE
NOTE: ALL PLANTS NATIVE TO SOUTHEAST MICHIGAN			

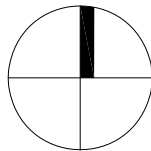


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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information	
date	1.June.2007
project number	LTU_001
scale	1/8" = 1'0"
drawn	SS
checked	PP
drawing title	

Washington  
D.C. Site  
Plan

← MAIN TENT

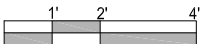


## WASHINGTON D.C. SITE PLAN

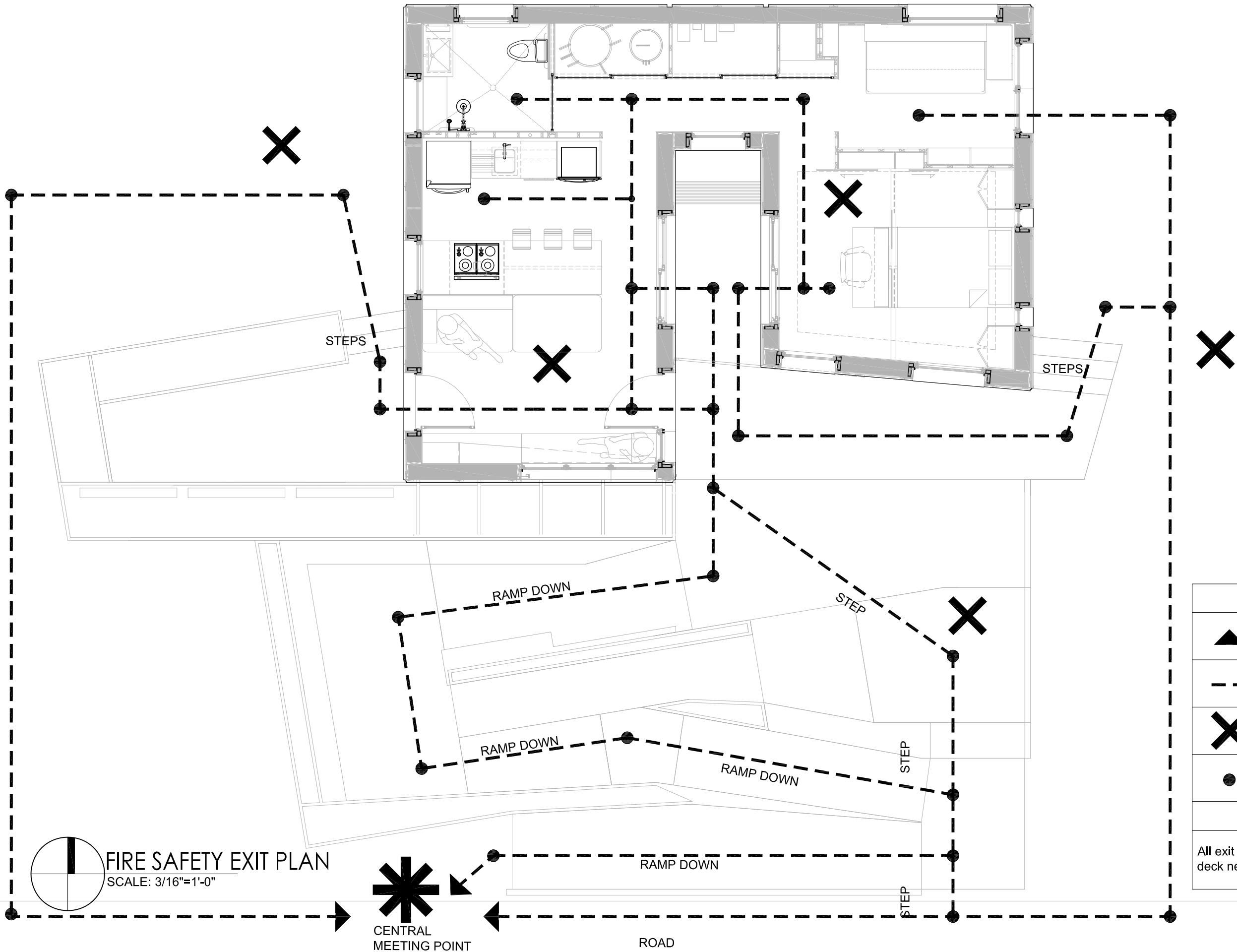
SCALE: 1/8" = 1'-0"

120  
NEW YORK INSTITUTE OF  
TECHNOLOGY

DECATHLETE WAY







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//revisions

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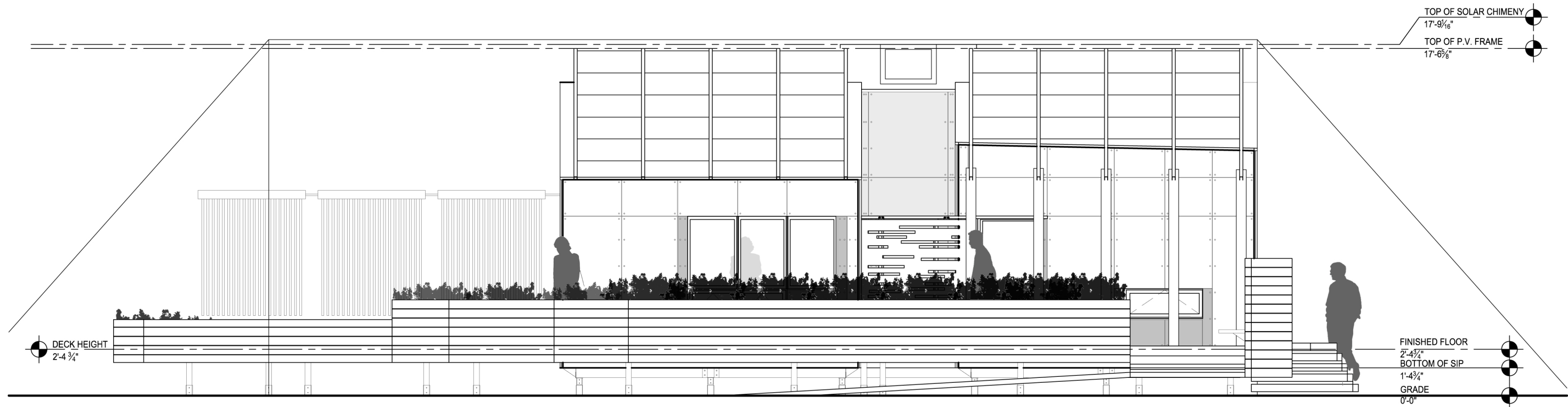
//sheet information

date	7.Aug.2007
project number	LTU_001
scale	3/16"=1'-0"
drawn	CW, ST
checked	PP
drawing title	Fire Safety Plan

//sheet number

**C104**





1 SOUTH SITE ELEVATION  
C105 SCALE: 1/4"=1'-0"

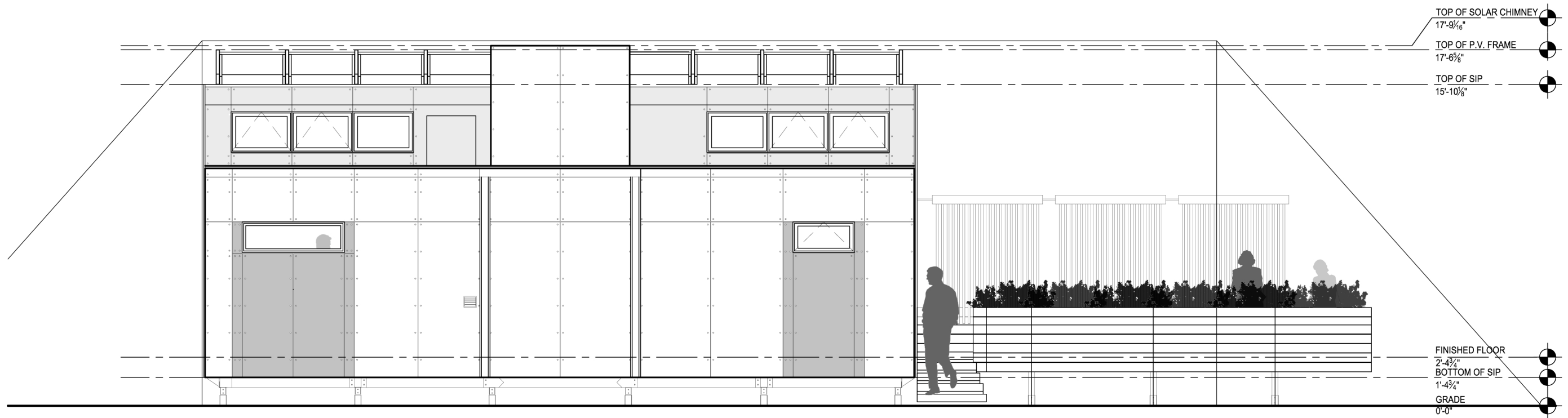
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3/16" = 1'-0"
drawn	CS
checked	PP
drawing title	

South Site  
Elevation

//sheet number
<b>C105</b>





1 NORTH SITE ELEVATION  
C106 SCALE: 3/16"=1'-0"



//project

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//revisions

Issued for	Date
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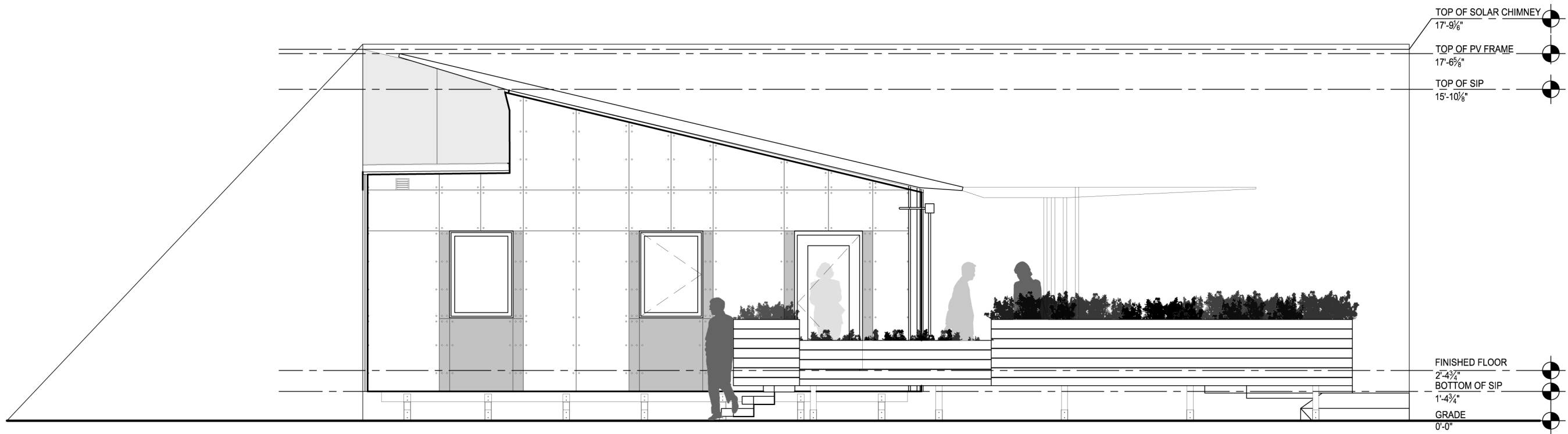
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project number	LTU_001
scale	3/16" = 1'-0"
drawn	CS
checked	PP
drawing title	North Site Elevation

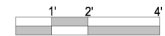
//sheet number

C106





1 WEST SITE ELEVATION  
C107 SCALE: 3/16"=1'-0"



//project

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//revisions

Issued for	Date
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//sheet information

date  
7.Aug.2007

project number  
LTU\_001

scale  
3/16" = 1'-0"

drawn  
CS

checked  
PP

drawing title  
West Site Elevation

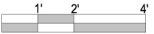
//sheet number

C107





1 EAST SITE ELEVATION  
C108 SCALE: 3/16"=1'-0"



//project

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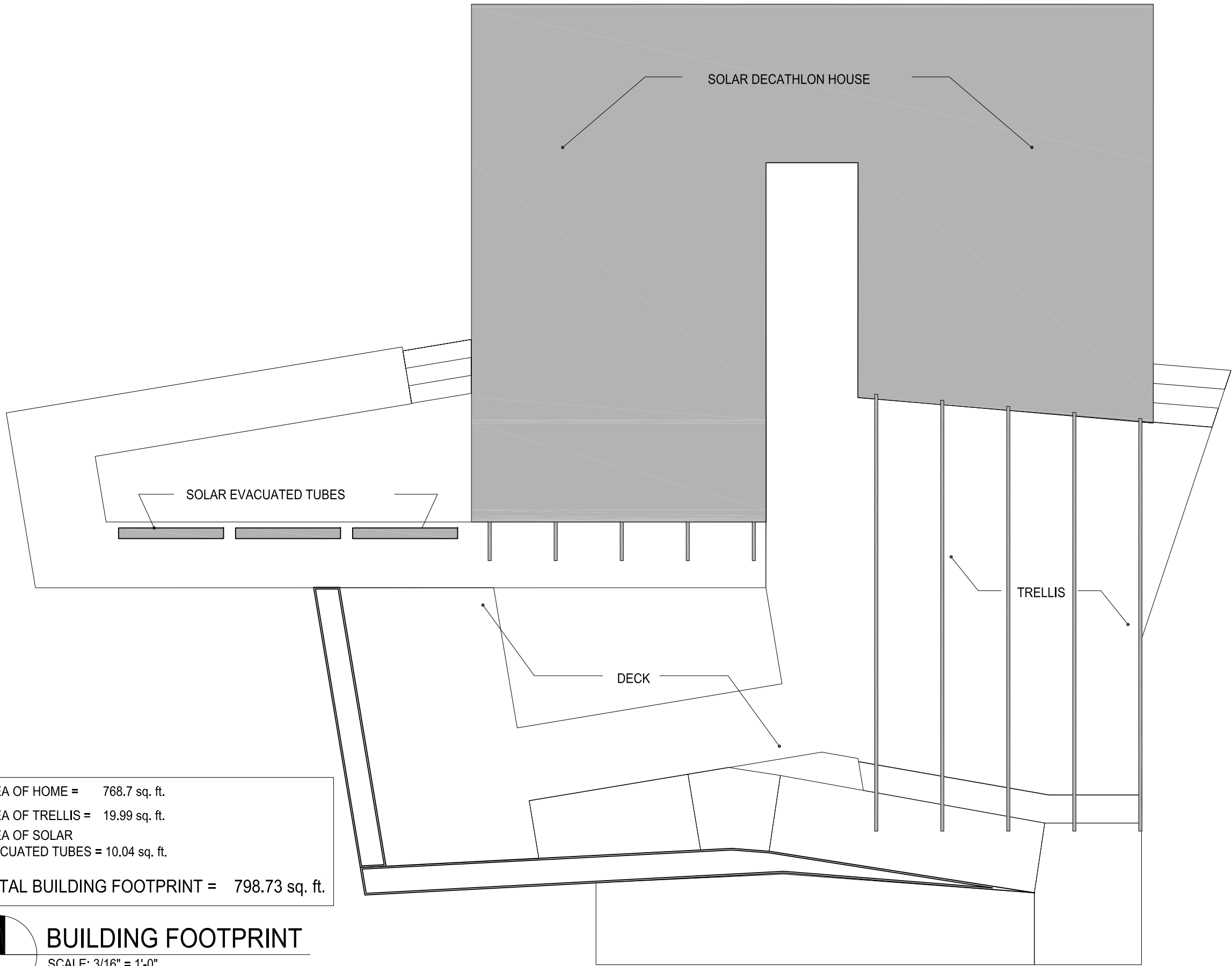
LTU SOLAR DECATHLON 2007

//revisions	
Issued for	Date
Final Construction Document Submittal	7.Aug.2007

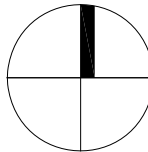
//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3/16" = 1'-0"
drawn	CS
checked	PP
drawing title	East Site Elevation

//sheet number
C108





AREA OF HOME = 768.7 sq. ft.  
AREA OF TRELLIS = 19.99 sq. ft.  
AREA OF SOLAR  
EVACUATED TUBES = 10.04 sq. ft.  
TOTAL BUILDING FOOTPRINT = 798.73 sq. ft.



**BUILDING FOOTPRINT**

SCALE: 3/16" = 1'-0"



//project

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//revisions

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Final Construction Document Submittal	7.Aug.2007

//sheet information

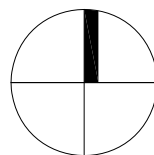
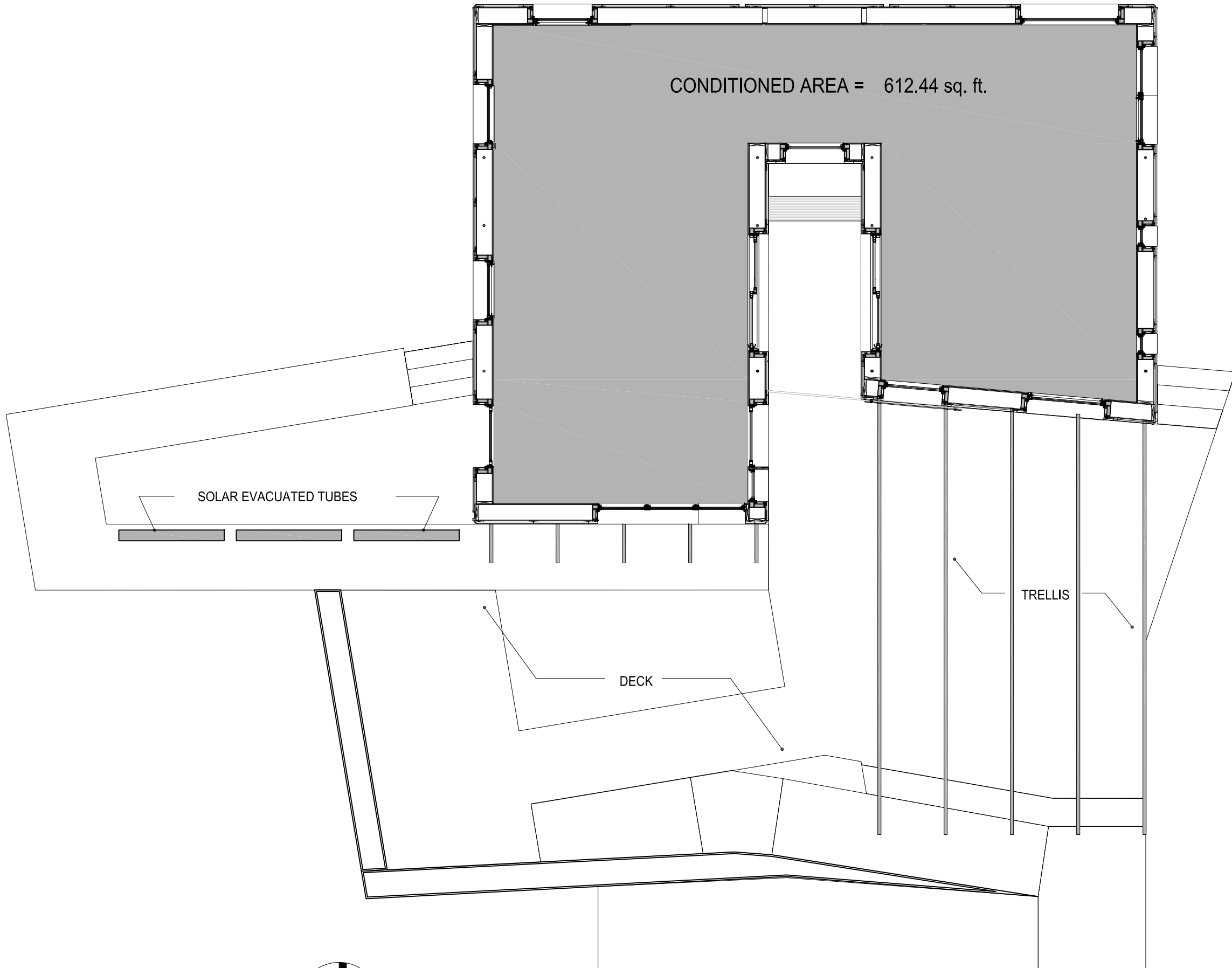
date  
7.Aug.2007  
project number  
LTU\_001  
scale  
3/16"=1'-0"  
drawn  
ST  
checked  
PP  
drawing title

Building  
Footprint

//sheet number

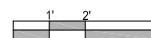
**C109**





## CONDITIONED AREA PLAN

SCALE:  $\frac{3}{16}$ " = 1'-0"



//project

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LTU SOLAR DECATHLON 2007

//revisions

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//sheet information

date

7.Aug.2007

project number

LTU\_001

scale

$\frac{3}{16}$ "=1'-0"

drawn

ST

checked

PP

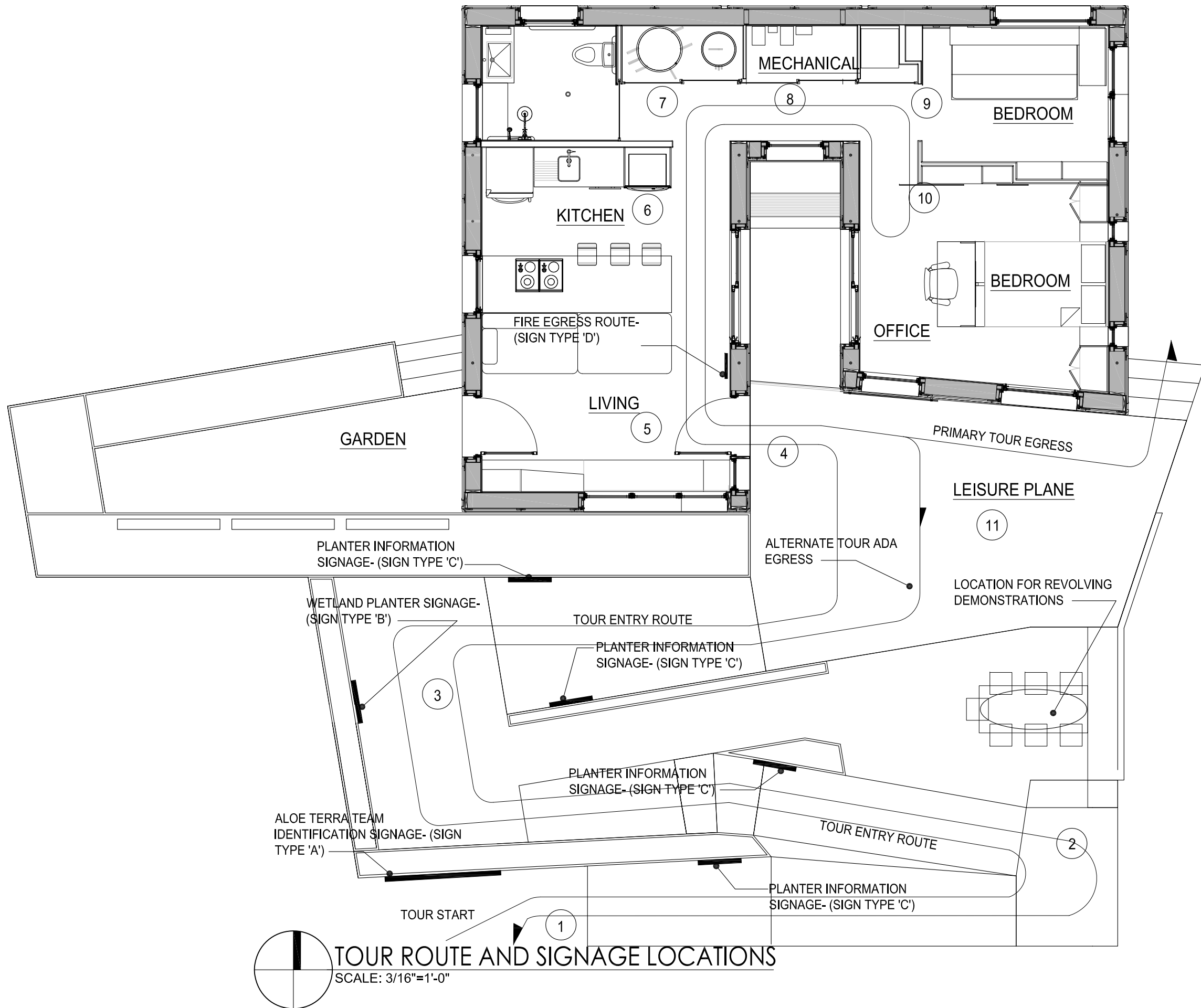
drawing title

Conditioned  
Area

//sheet number

**C110**





TOUR ROUTE DESTINATIONS	
1	TOUR START, INTRODUCTION OF FACILITY
2	OVERVIEW OF FACILITY EXTERIOR, DECK EXHIBITION
3	EVACUATED TUBE EXHIBITION, WETLAND PLANTER OVERVIEW
4	FACILITY ENTRY OVERVIEW OF COURTYARD BEYOND
5	LIVING ROOM EXHIBITION: IDENTIFICATION OF MATERIALS, STORAGE AREAS, BUILT-IN FURNITURE, RADIANT FLOORING SYSTEM
6	KITCHEN EXHIBITION: IDENTIFICATION OF APPLIANCES, VISUAL ACCESS TO COURTYARD / BEDROOMS BEYOND
7	BATHROOM AND MECHANICAL ROOM EXHIBITIONS: IDENTIFICATION OF 'WETROOM', TYPES OF MECHANICAL SYSTEMS, MAINTENANCE PROCEDURES
8	SOLAR CHIMINEY DEMONSTRATION
9	BEDROOM EXHIBITION: DEMONSTRATION OF MURPHY BED
10	BEDROOM EXHIBITION: SYNOPSIS/ DEMONSTRATION OF OFFICE FURNITURE'S VISUAL ACCESS FUNCTIONS
11	FACILITY EGRESS, GUESTS' QUESTIONS ANSWERED

//project

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SOLAR DECATHLON 2007

LTU

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//sheet information






date	1.June.2007
project number	LTU_001
scale	3/16"=1'-0"
drawn	J.L.
checked	H.R.
drawing title	Tour Route and Signage Locations

//sheet number

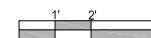
C111



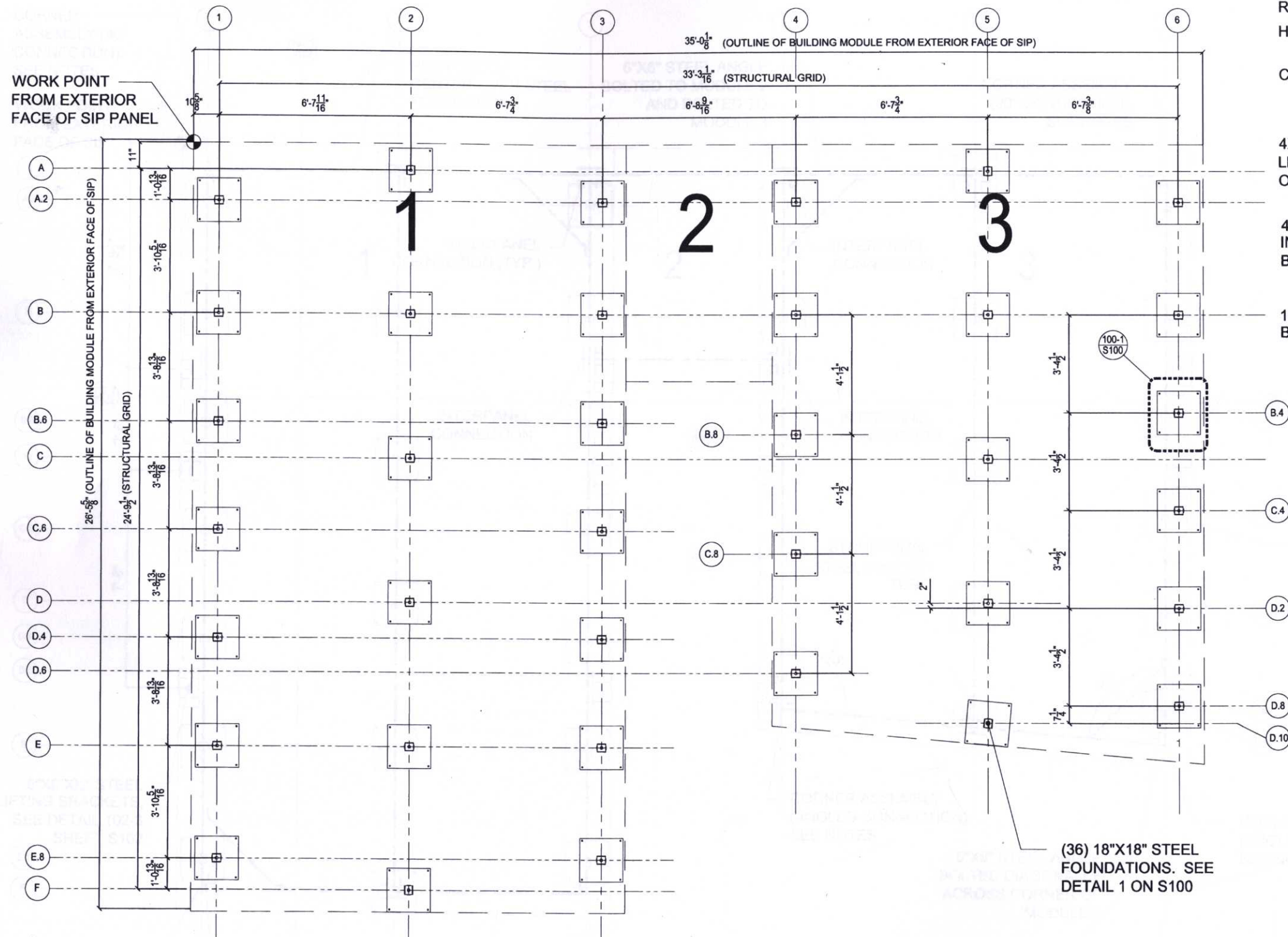


SYMBOLS AND NOTES	
	<p><b>MANEUVERING CLEARANCE FOR MANUAL SWINGING DOOR</b></p> <p>ADA COMPLIANT AS LISTED FIG 404.2.4.1 OF ICC/ANSI A117.1-2003</p>
	<p><b>T-SHAPED WHEELCHAIR TURN CLEARANCE</b></p> <p>ADA COMPLIANT AS LISTED FIG 304.3.2 OF ICC/ANSI A117.1-2003</p>
	<p><b><math>\frac{1}{2}</math>" DOOR THRESHOLD</b></p> <p>ADA COMPLIANT AS LISTED FIG 302.3 AND 303.2 OF ICC/ANSI A117.1-2003</p>
	<p><b>RAMP LANDINGS</b></p> <p>ADA COMPLIANT AS LISTED FIG 305.7.1 - 305.7.3 AND 303.2 OF ICC/ANSI A117.1-2003</p>
	<p><b>ADA TOUR ROUTE DIRECTION</b></p>

//revisions	
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3/16"=1'-0'
drawn	J.L.
checked	H.R.
drawing title	ADA Tour Accessibility and Door Approaches
//sheet number	
<b>C112</b>	







SIP FLOOR PANEL BY  
R-CONTROL  
HSS 6"X6"X1/4"

CUSTOM BENT 1/4" PLATES

4X4 WOOD POST.  
LENGTH VARIES BASED  
ON GROUND SLOPE.

4"X4"X1/4" STEEL TUBE 6"  
IN LENGTH, WELDED TO  
BEARING PLATE BELOW.

18"X18"X1/4" STEEL  
BEARING PLATE.

#5 REBAR, 24" LONG  
WITH A 4" BEND, DRIVEN  
INTO GROUND AT AN ANGLE  
NOT TO EXCEED 18" IN DEPTH  
VERTICALLY.

100-1  
S100 FOUNDATION DETAIL  
SCALE: 3/4"=1'-0"

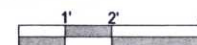
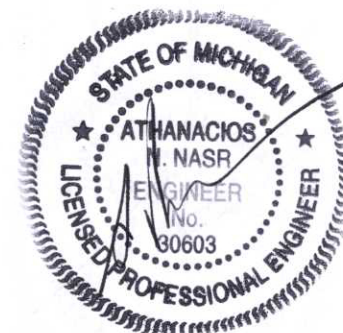
**NOTE:**  
SITE CONDITIONS CAN NOT BE  
PREDICTED. IN ORDER TO INSURE  
LEVEL FOUNDATION SHIMS WILL BE  
USED TO CORRECT ANY HEIGHT  
VARIANCES.

#### GENERAL NOTES

1. SOIL BEARING CAPACITY (MIN.) = 1500psf
2. PIER CAPACITY IS 2000psf

(36) 18"X18" STEEL  
FOUNDATIONS. SEE  
DETAIL 1 ON S100

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



//project

//revisions

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7.Aug.2007

//sheet information

date

7.Aug.2007

project number

LTU\_001

scale

1/4" = 1'-0"

drawn

CS

checked

HR

drawing title

Foundation

Plan

//sheet number

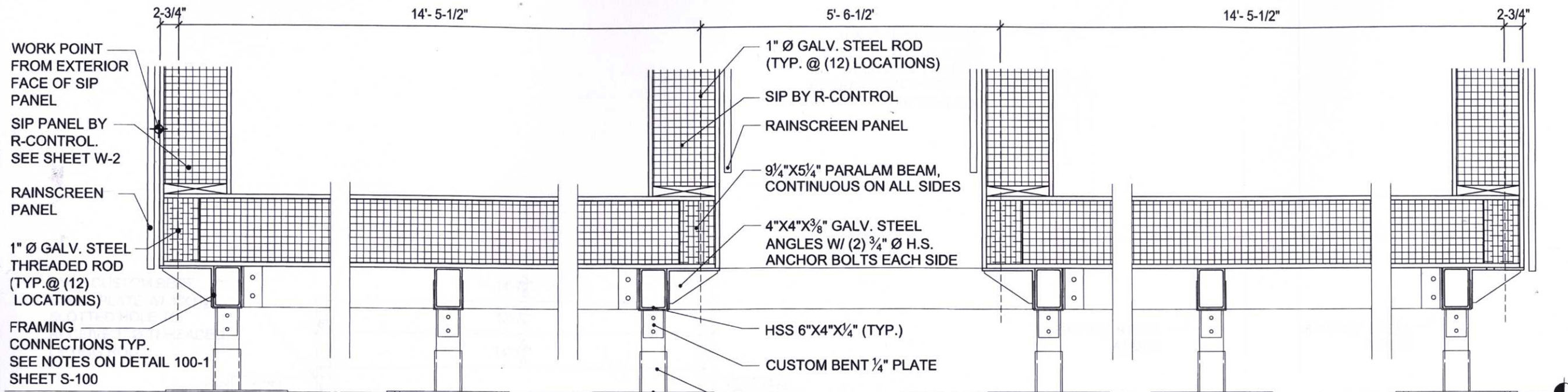
S100

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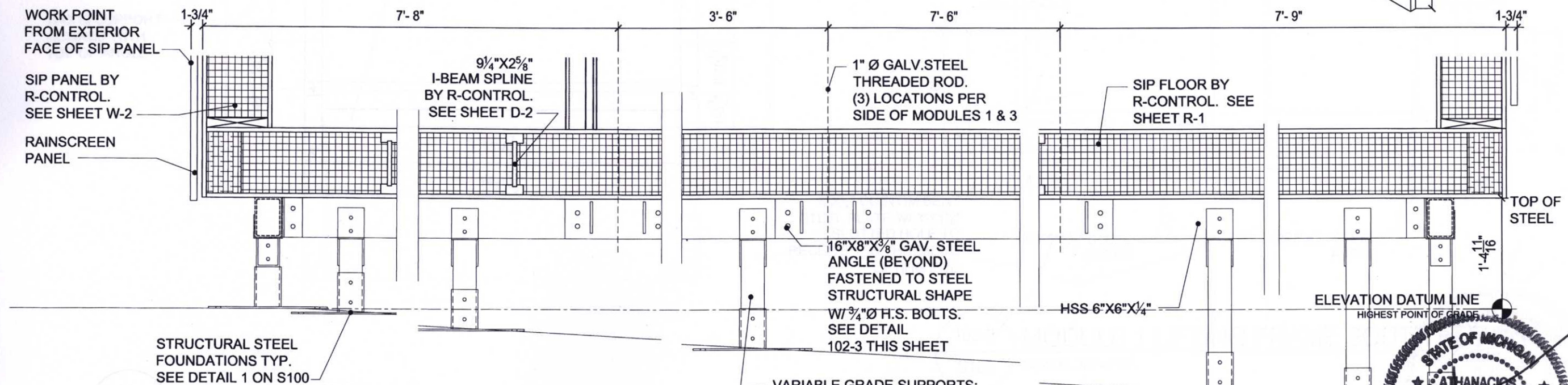
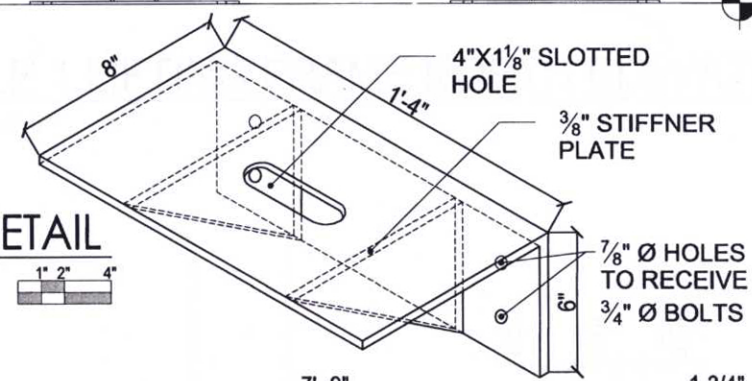




**102.2 STEEL FRAMING SECTION**  
**S101 A403**  
 SCALE: 3/4"=1'-0"

4" X 4" STEEL TUBE CUT TO 6" IN LENGTH AND WELDED TO THE BEARING PLATE BELOW  
 18" X 18" STEEL BEARING PLATE

**102.3 GALV. ANGLE DETAIL**  
**S102**  
 SCALE: 1 1/2"=1'-0"



**102.1 STEEL FRAMING SECTION**  
**S101 A402**  
 SCALE: 3/4"=1'-0"

VARIABLE GRADE SUPPORTS:  
 (1) CUSTOM BENT 1/4" CAP ON 4X4 STANDOFF POST SITTING IN 4" X 4" X 1/4" STEEL TUBE WELDED ON 18" X 18" X 1/4" STEEL PLATE



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//project

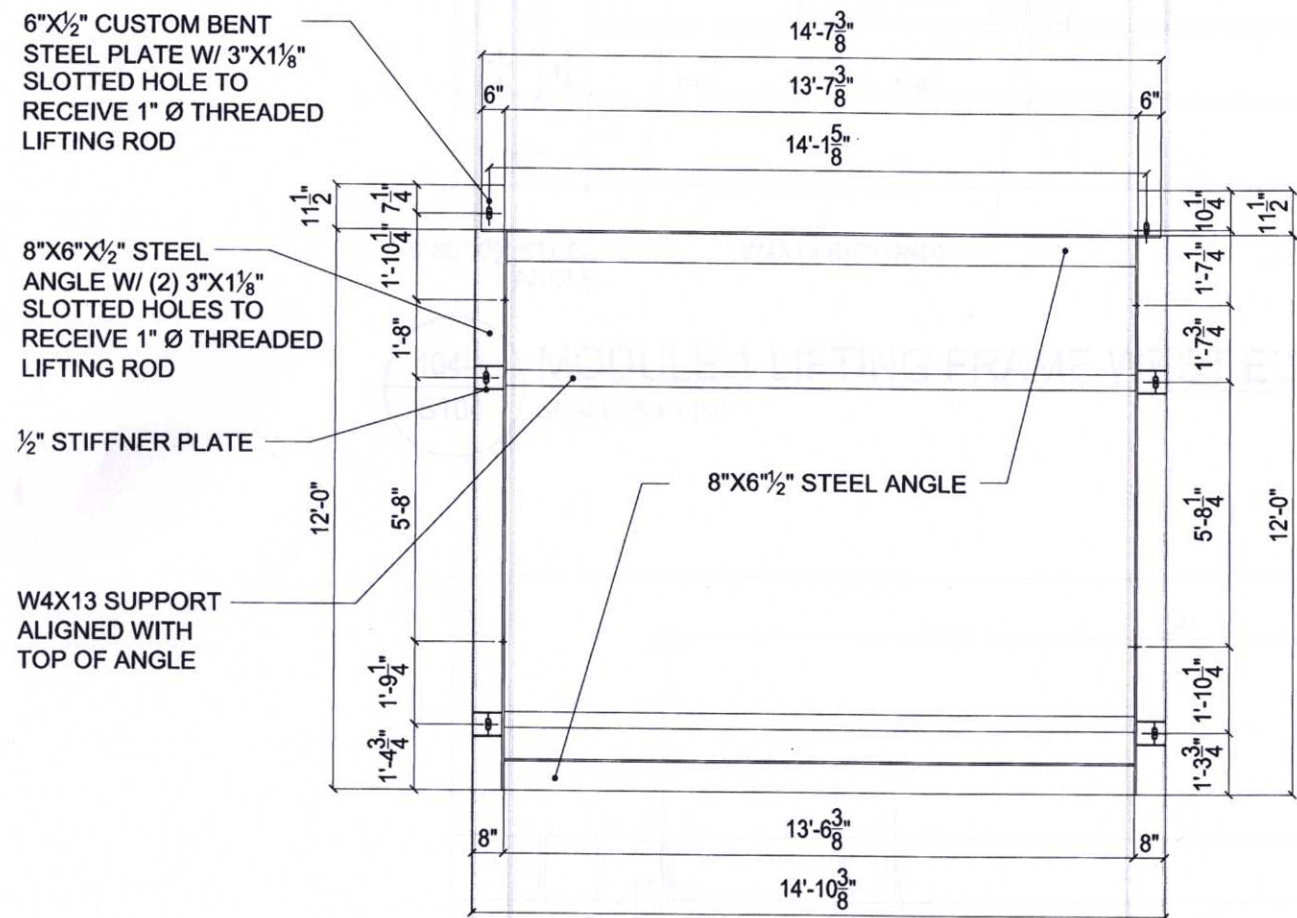
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//sheet information

date	7.Aug.2007
project number	LTU_001
scale	3/4" = 1'-0"
drawn	CS
checked	HR
drawing title	Steel Framing Sections
//sheet number	<b>S102</b>



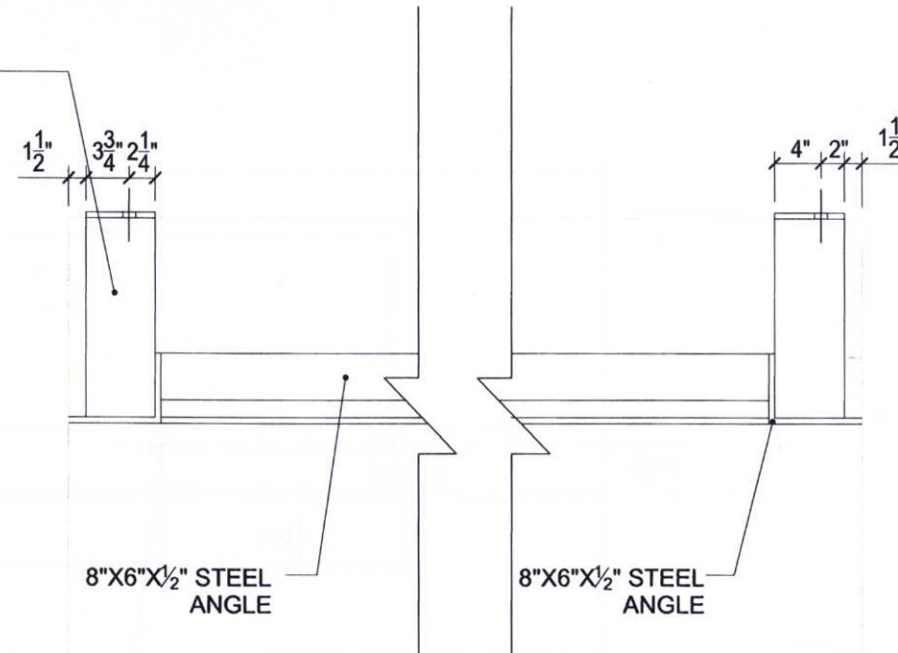


103-1  
S103

**MODULE 1 LIFTING FRAME**

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

6"X $\frac{1}{2}$ " CUSTOM BENT STEEL PLATE W/ 3"X $\frac{1}{8}$ " SLOTTED HOLE TO RECEIVE 1" Ø THREADED LIFTING ROD

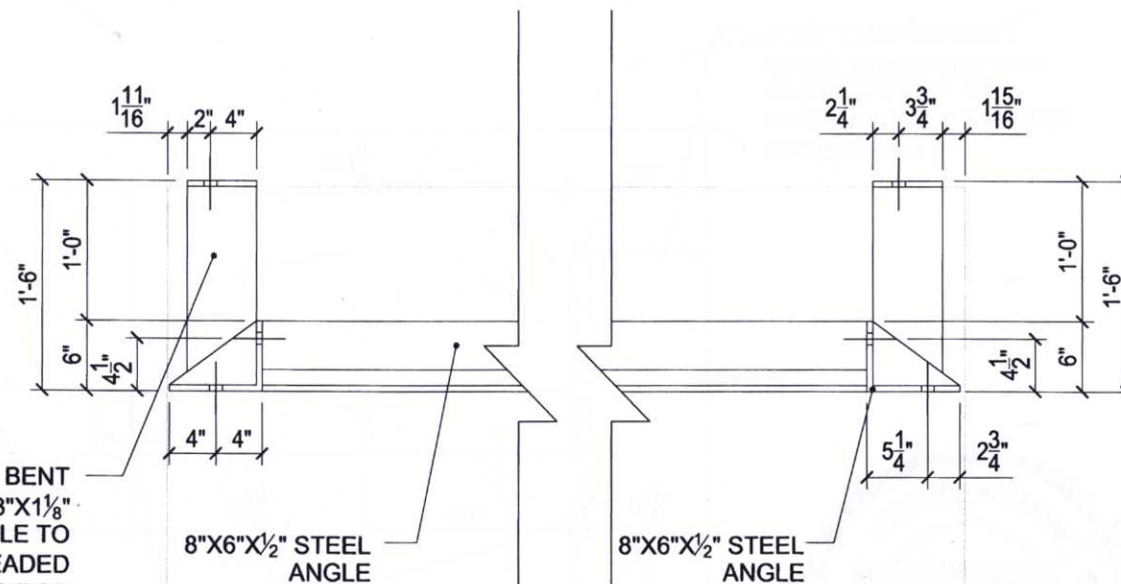


103-2  
S103

**MODULE 1 LIFTING FRAME NORTH ELEVATION**

SCALE: 3/4"=1'-0"

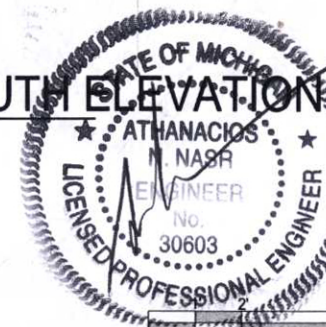
6"X $\frac{1}{2}$ " CUSTOM BENT STEEL PLATE W/ 3"X $\frac{1}{8}$ " SLOTTED HOLE TO RECEIVE 1" Ø THREADED LIFTING ROD



103-3  
S103

**MODULE 1 LIFTING FRAME SOUTH ELEVATION**

SCALE: 3/4"=1'-0"

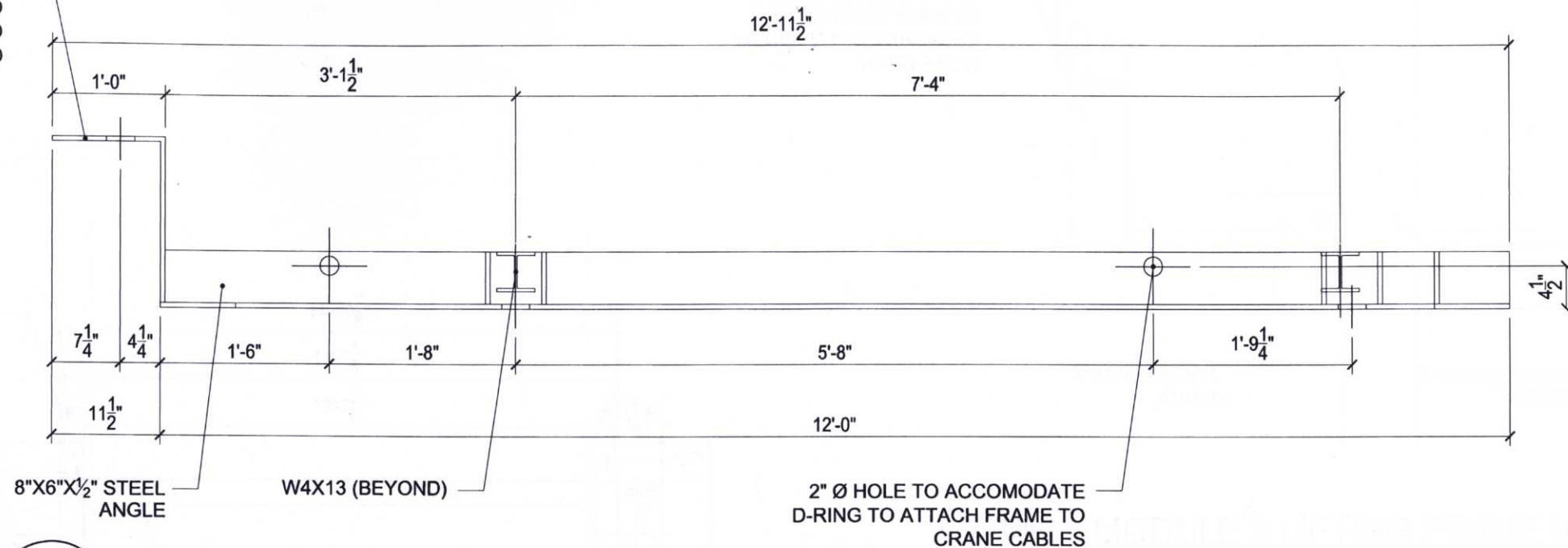


//revisions	
Issued for	Date
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3/4"=1'-0"
drawn	CS
checked	HR
drawing title	Module 1 Lower Lifting Frame



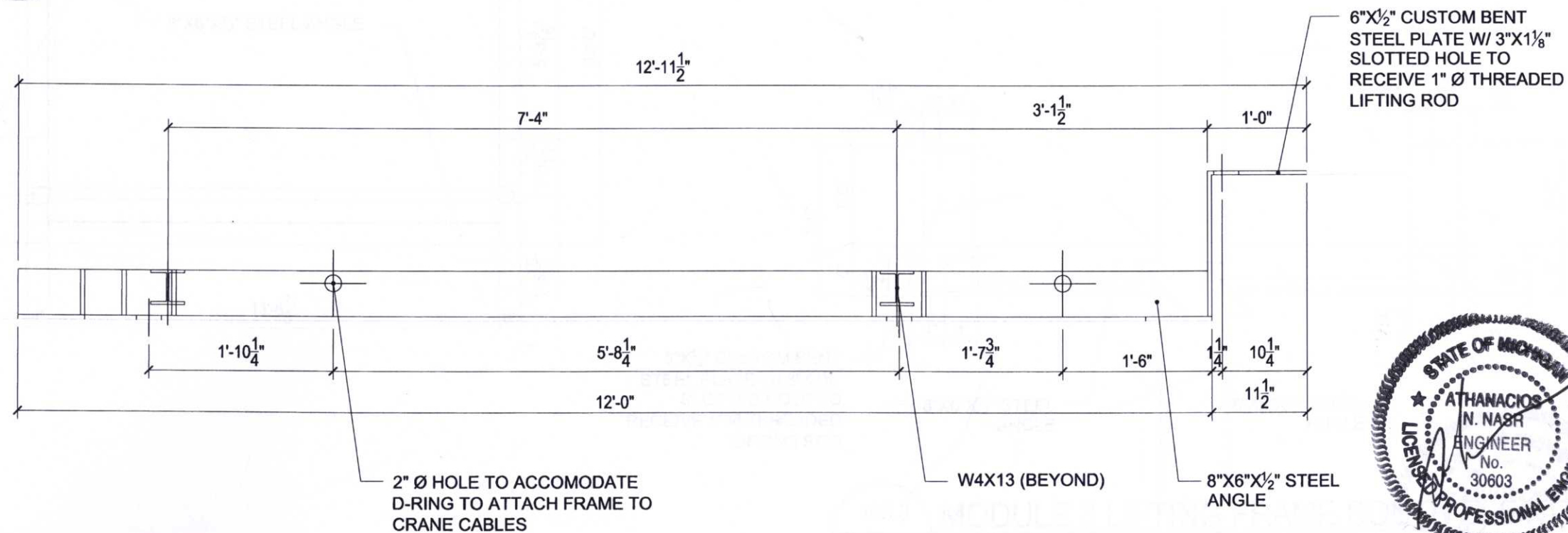
6"x1/2" CUSTOM BENT  
STEEL PLATE W/ 3"x1/8"  
SLOTTED HOLE TO  
RECEIVE 1" Ø THREADED  
LIFTING ROD



104-1  
S104

**MODULE 1 LIFTING FRAME WEST ELEVATION**

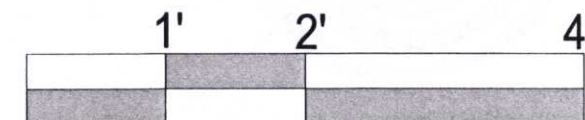
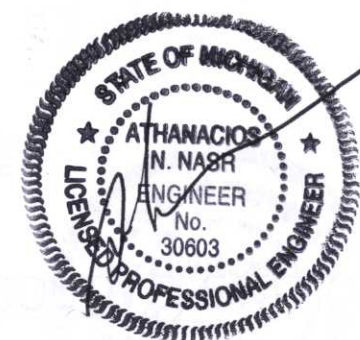
SCALE: 3/4"=1'-0"



104-2  
S104

**MODULE 1 LIFTING FRAME EAST ELEVATION**

SCALE: 3/4"=1'-0"



//project

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LTU

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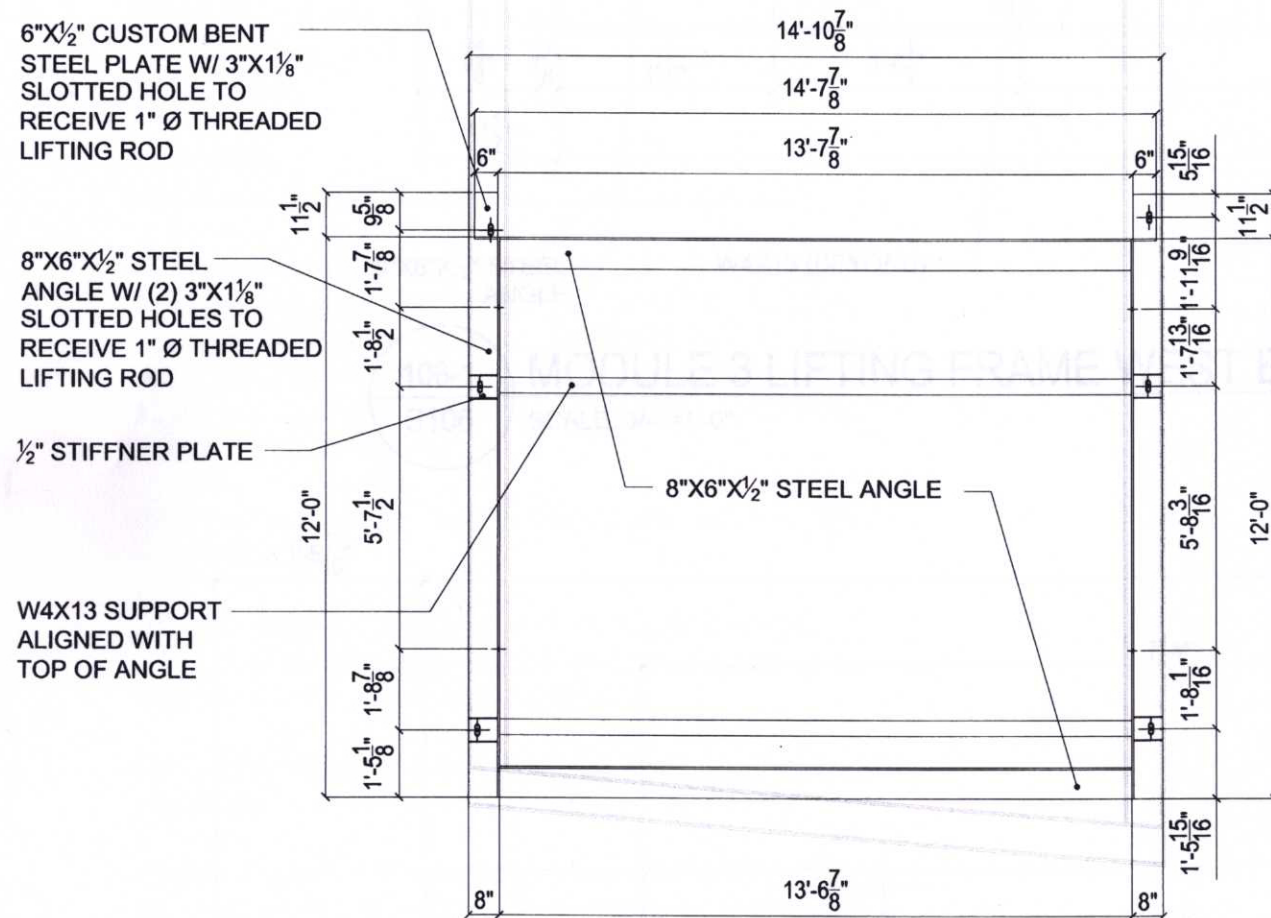
//sheet information

date 7.Aug.2007  
project number LTU\_001  
scale 3/4"=1'-0"  
drawn CS  
checked HR  
drawing title  
Module 1  
Lower  
Lifting Frame  
Elevation

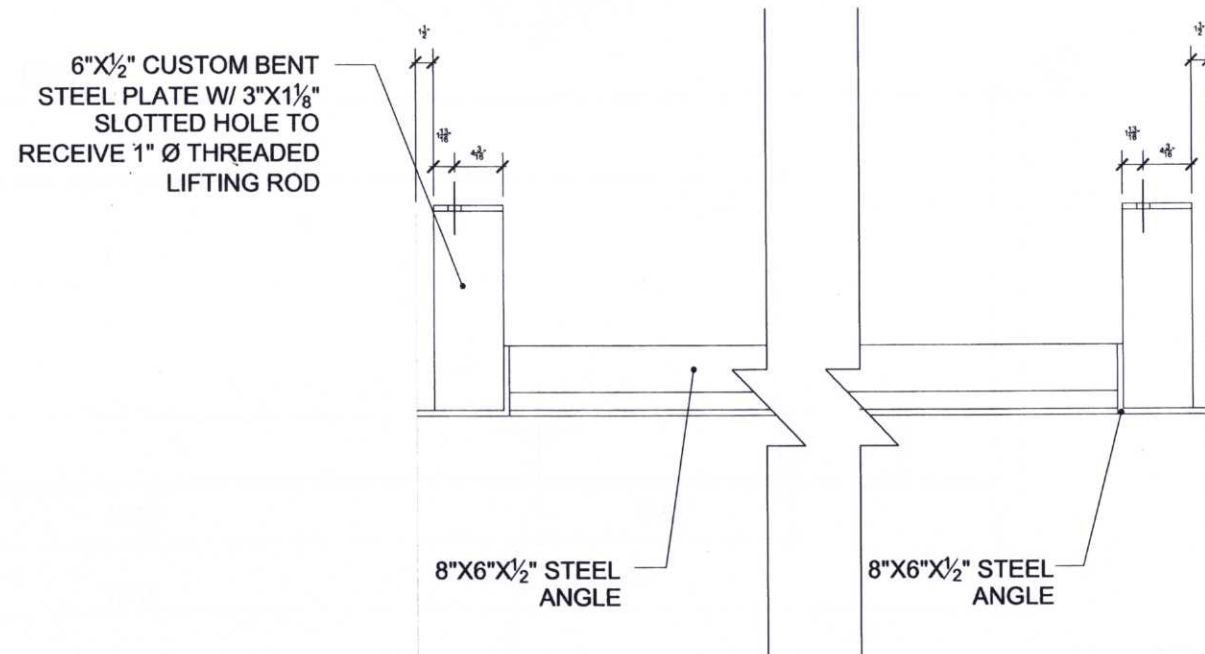
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**S104**

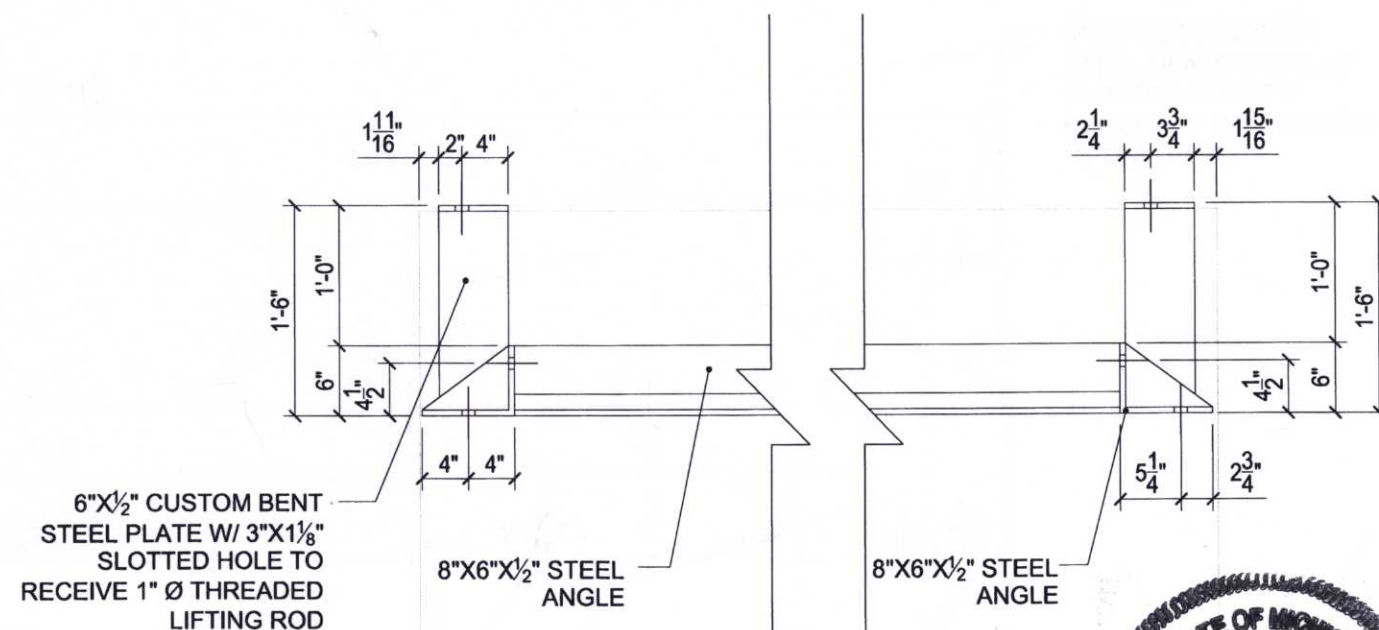




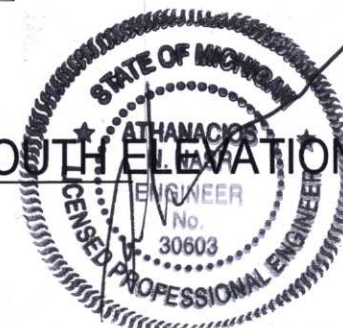
105.1 MODULE 3 LIFTING FRAME  
S105 SCALE: 1/4"=1'-0"



105-2 MODULE 3 LIFTING FRAME NORTH ELEVATION  
S105 SCALE: 3/4"=1'-0"



105.3 MODULE 3 LIFTING FRAME SOUTH ELEVATION  
S105 SCALE: 3/4"=1'-0"



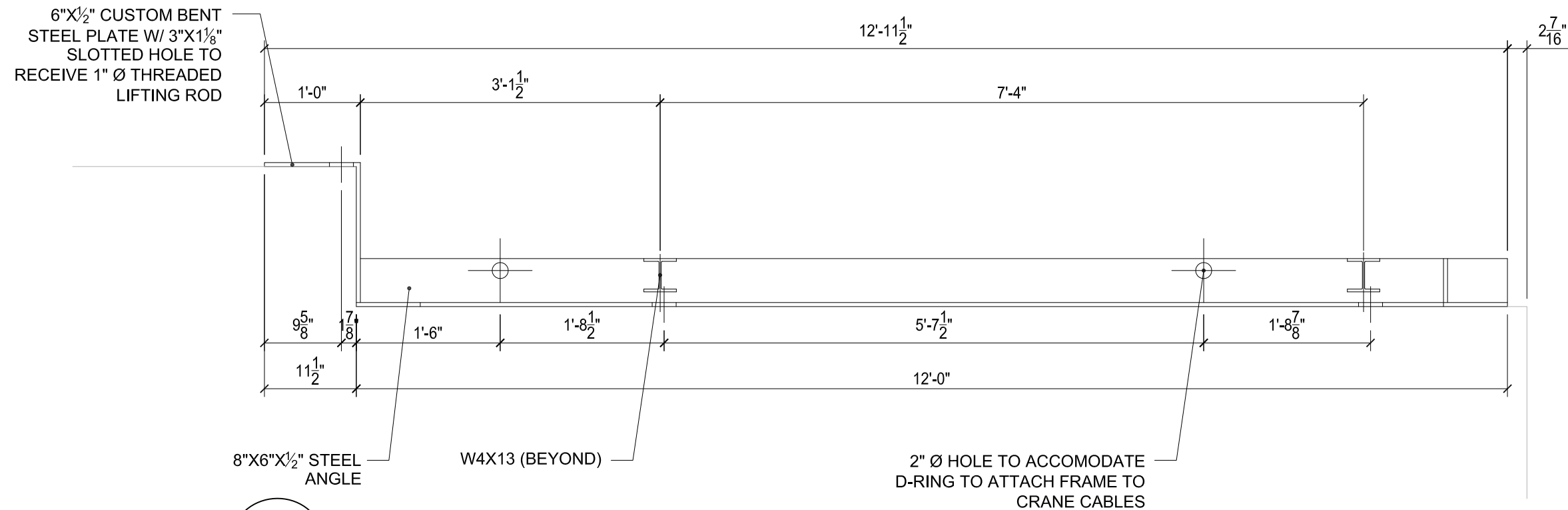
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**aloterra** SOLAR DECATHLON 2007  
LTU

//revisions  
Issued for Date  
Final Construction Document Submittal 7.Aug.2007

//sheet information  
date 7.Aug.2007  
project number LTU\_001  
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drawing title Module 3 Lower Lifting Frame

//sheet number  
**S105**

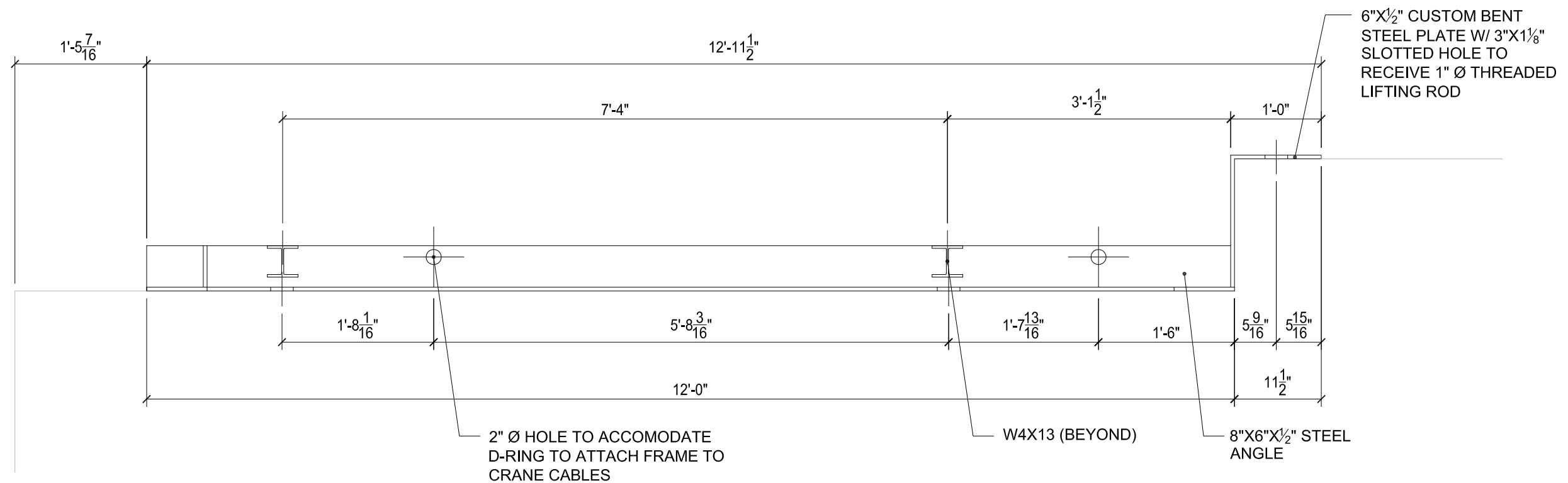




106-1  
S106

**MODULE 3 LIFTING FRAME WEST ELEVATION**

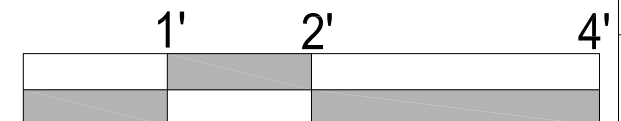
SCALE: 3/4"=1'-0"



106-2  
S106

**MODULE 3 LIFTING FRAME EAST ELEVATION**

SCALE: 3/4"=1'-0"



//project

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SOLAR DECATHLON 2007  
LTU

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//sheet information

date  
7.Aug.2007  
project number  
LTU\_001  
scale  
3/4"=1'-0"  
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CS  
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HR  
drawing title  
Module 3  
Lower  
Lifting Frame  
Elevation

//sheet number

**S106**



# ASSEMBLY / DISASSEMBLY:

## OVERVIEW:

LTU SOLAR DECATHLON home was designed as a system of modules and deliverable to any site via semi –trucks and trailers. Systematically these individual components shall be installed with the intention of minimizing energy consumption and labor man hours. These instructions are intended to direct the assembly and disassembly team in proper attachment and removal of foundation, building modules and system components.

**Note:** Not all of these steps comply to the final site installation and shall be noted throughout these instructions.

## SAFETY RULES:

Read all safety rules and instructions carefully.

A Geotechnical site survey shall be performed to verify that the site soil conditions meet a minimum bearing capacity of 1500psi. If site conditions do not meet this minimum bearing capacity, consult with a structural engineer licensed in the state where the home is being installed.

Adhere to all local zoning ordinances at final site installation.

Prior to digging foundations at final site installation, contact all local utility companies to verify and mark location of any underground utilities.

Make note of all overhead conditions prior to crane operation.

Proper Personal Protection Equipment (PPE) must be worn at all times during construction. Make note of the PPE items listed below and select the proper PPE for the task being performed.

- Hard hats
- Steel-toe boots
- Eye protection
  - impact or chemical
- Work Gloves
  - chemical resistant when working with batteries
- Climbing harness

Do not operate electrical power equipment in damp locations.



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LTU SOLAR DECATHLON 2007	
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Issued for	Date
Final Construction Document Submittal	
7.Aug.2007	
//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	N.T.S.
drawn	HR
checked	PP
drawing title	Assembly/ Disassembly
//sheet number	
A100	



ASSEMBLY:

FOUNDATION:

Determining foundation location:

It is important the home is sited so that the sloped roof surfaces face south. Measure off of each property line so that the home is situated within the required distances to maintain the local municipalities minimum set backs.

For the competition in Washington DC, measure off of the northern property line to beam “A” 17’ x 11”. Next measure off of the east property line to beam “B” 16’-10” (see Figure 1). Mark both of these distances with lines parallel to the property line.

Determining Foundation Height:

The high point of the grade at the building site must be determined to set proper foundation elevation. Using a rotating laser level determine the high point of the site and mark on a wood stake driven into the ground-- the top of the foundation beam will be 1’-4-3/4” above this mark. You are now ready to begin the installation of the foundation.

Foundation Installation:

The foundation is made up of four components; foundation beams, bent bracket, 4x4 wood posts and 1/4” thick steel bearing plates (Figure 2). Each of these four components will be connected mechanically to one another by the use of through bolts.

Begin the foundation installation at beam “B” shown in Figure 1. Construct a pier by using the found top of foundation beam height, begin cutting the 4 x 4 wood posts to support the foundation beams to conform to grade elevations maintaining a level top of foundation beam. Insert a post into the sleeve welded to the bearing plate and secure with two (2) 1/2” x 7” through bolts. At the top of the 4 x 4 post install a bent bracket and secure with two (2) 1/2” x 7” through bolts (see Figure 3). Repeat this process at each of the 36 pier locations. Temporarily support the piers with 2x4 kickers. Insert the beams and fasten to the bent brackets with two (2) 3/4” x 7” through bolts, do not tighten. Level both vertically and horizontally. Note shims may be required to achieve proper alignment, and check for square. All bolts now can be fully tightened.

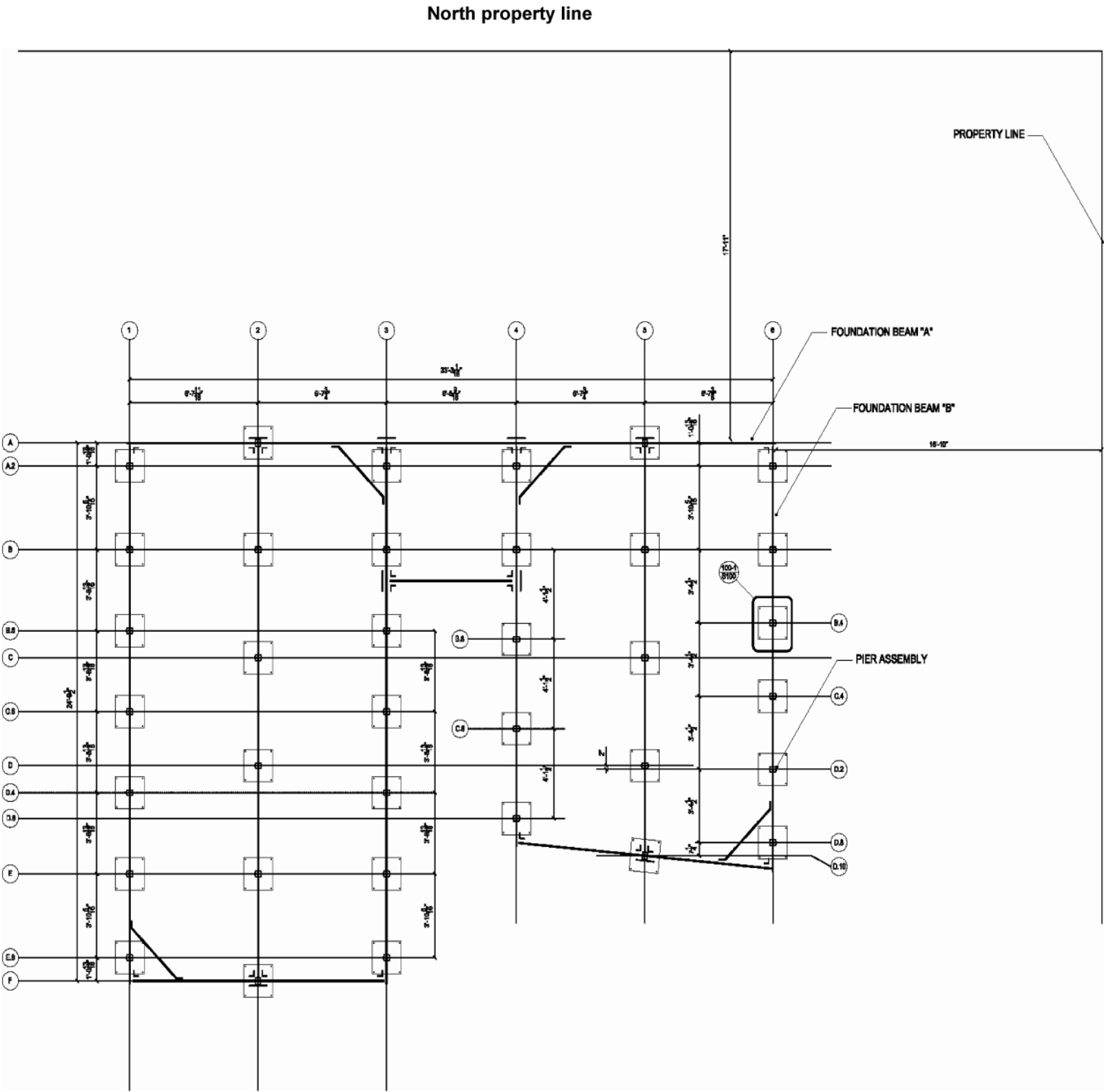


Figure 1: Washington DC Site Location



MODULES:

LTU SOLAR DECATHLON home is made up of three individual modules which are divided into an upper and lower section (see Figure 4). Each of the lower sections will be placed onto the foundation and the upper sections will be placed on the respective lower modules by the use of a crane.

Lower Module Placement:

Lower module 1 will be the first module to be placed on the foundation beams. Unwrap shrink wrap from module. Connect lifting straps from crane to “D” rings on steel lifting frame attached prior to shipment. Attach one guide line to each of the four outside corner lifting plates located under the module. These guide lines will be manned to keep the module steady while being lifted and lowered. Slowly and carefully lift and place module on the foundation beams aligning holes in lifting plate to the corresponding holes in the foundation beam. Insert four (4) 3/4” x 7” through bolts in the lifting plate at all six locations, and finger tighten. Do not detach crane from steel lifting frame. Undue nuts located at the top of the module at the six threaded rods, hoist steel lifting frame off of module 1 and place onto module 3. Reuse nuts and tighten. Disconnect crane from module 3 and prepare for installation of module 2.

Do to its light weight, lower module 2 will be lifted into place by the use of straps provided by crane supplier. Wrap straps around module at the open ends of the module. This will ensure that the south wall window will not be damaged. Carefully lift module into place. Note: this module does not have attachment plates underneath, align north wall of module 2 with the north wall of module 1. Attach module 2 to module 1 (and module 3 after placement) with 2-1/2” wood screws at north wall intersections (exterior only) and with 12” long red structural screws where south wall abuts adjacent wall of modules 1 & 3 (see Figure 5). Detach crane and reattach to module 3 at steel lifting frame.

For module 3 placement see lifting instruction above for module 1. Remove steel lifting frame and place on trailer, it will be used during the disassembly process.

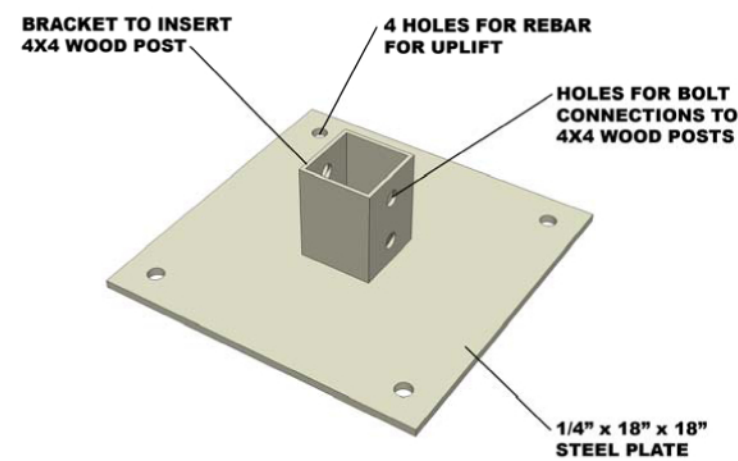


Figure 2: Bearing Plate

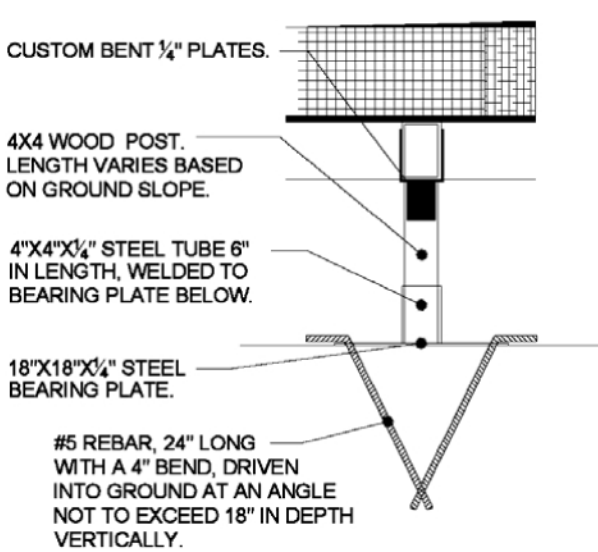


Figure 3: Pier Assembly

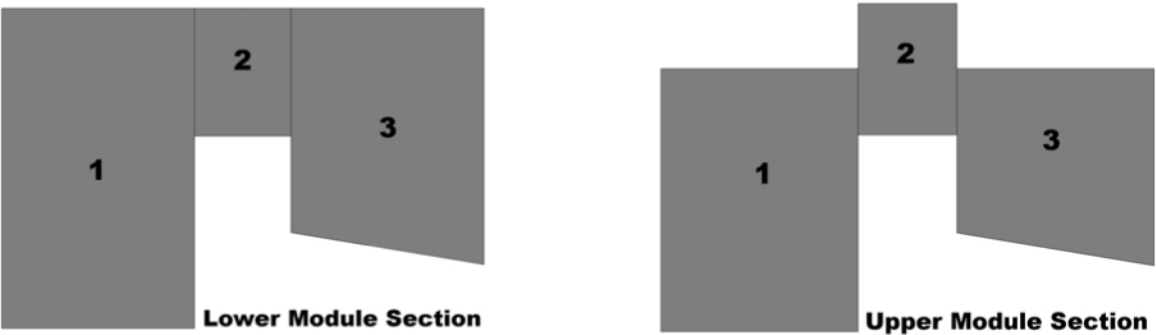


Figure 4: Module Configuration

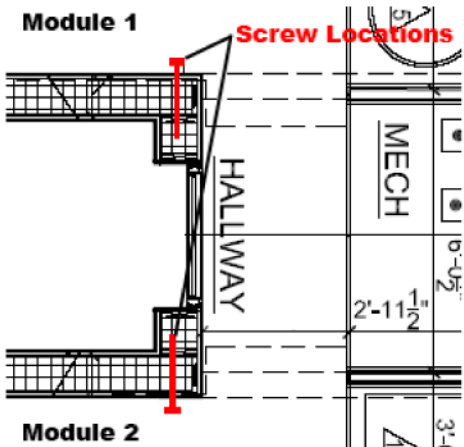


Figure 5: Module 2 Attachment



**(lower module placement continued)**

After all lower modules have been placed, tighten all bolts and screws. Install 5/8" backer rod insulation along the top edge of walls. For final installation backer rod will be replaced with R-Control Duo-Ply adhesive.

**Upper section module placement:**

**Note:** The placement of the upper sections of the modules does not follow the same sequence as previously stated in the lower module placement instructions.

The upper section of module 1 will be placed first. Prepare the section for lifting by installing the tubular lifting assembly. Attach frame with 3/4" diameter bolts (provided) to continuous metal plate installed on sidewalls of the upper section approximately 10" below the roof. There are two (2) attachment points per side. Install tubular spreader bars to frame and tighten. Frame is ready to be connected to the crane at upper holes, using "D" rings from steel lifting frame. Attach guide lines to each corner of lifting frame to steady section during lifting and placement. Lift section into place. Align guide holes in the base of walls of upper section with each of the treaded rods projecting from top of lower module 1 and 3. Fasten upper section to lower module with 2-1/2" long wood screw for both interior and exterior at holes provided. Detach lifting frame assembly and install on upper section of module 3.

Repeat this process for upper section of module 3.

Upper section of module 2 is the last to be installed. Prior to lifting, inspect underside of lower drip cap to ensure that weather stripping is in place. If not install 1/4" diameter foam rod (provided) at internal bend. This is important to ensure that no water will enter the home. Connect only one half of the lifting frame used for both upper section 1 and 3 to upper section 2 using 3/4" bolts (one per side of section). Attach guide lines and lift into place. Attach to lower module 2 with 2-1/2" wood screws from both interior and exterior at the holes provided.

Figure 6 is an illustration of the completed form of the home.

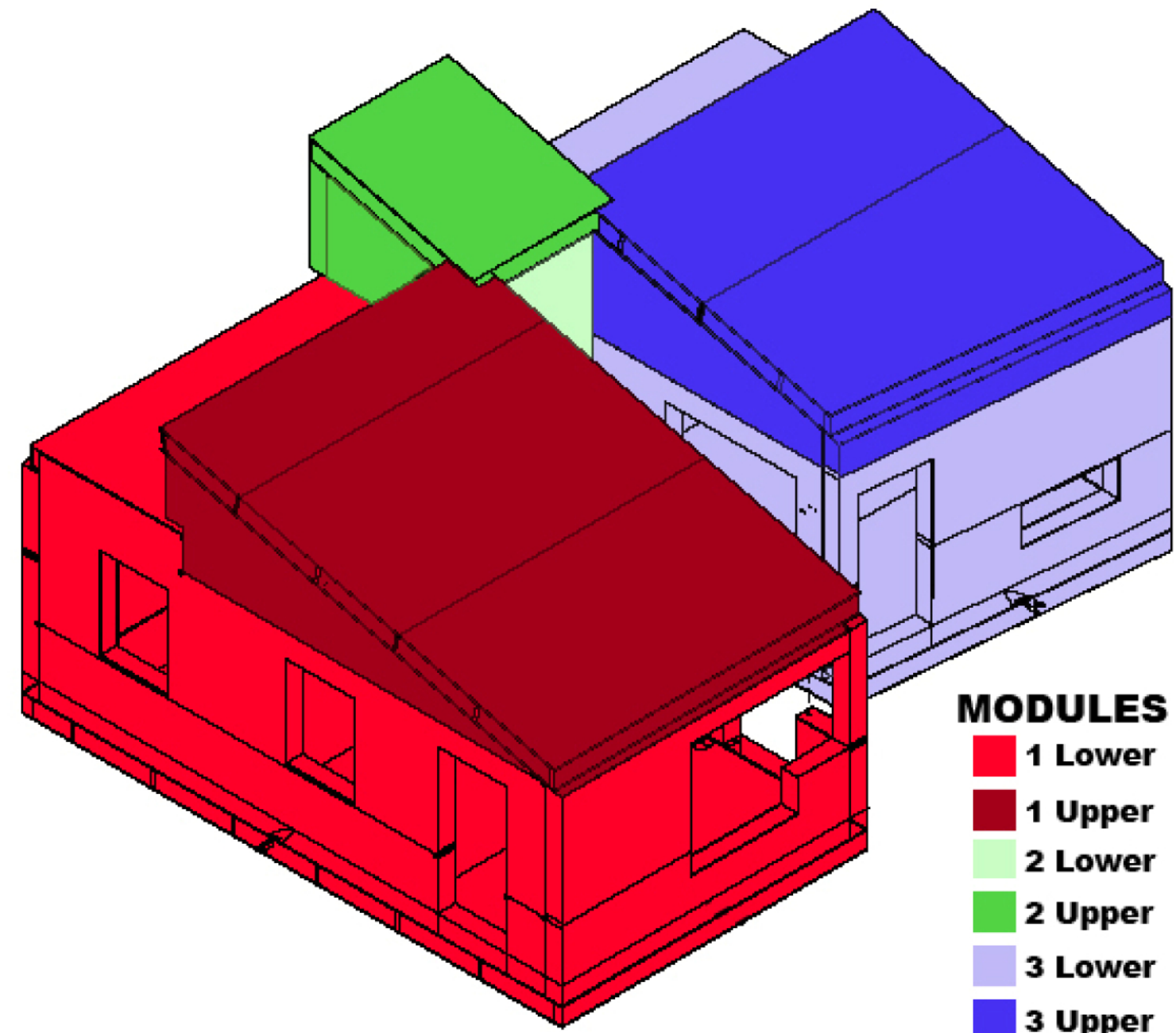


Figure 6: Completed Form



DECKS AND PLANTER:

With the installation of the home modules completed, the installation of the deck and planters can begin. The deck is broken up in to a series of 16 sections. The order in which these sections are installed is depicted in Figure 7.

Begin by installing section #1. This section is installed between module 1 and 3 of the home and is supported by the preinstalled 12” long angles. Fasten deck section to the home with 3/8” lags screws, insert into holes provided. Continue onto deck section #2, this section is again mounted to angles attached to the home and on section #1 as well as supported by additional piers ( see Figure 8) similar to those used on the home. Attach deck section #2 to home and temporarily support the deck at its outer edges. Level this with section #1. With the deck section level, begin installing the piers, beginning from the outer edge working inward towards the home. Make certain that the length of 4 x 4 posts for the piers are cut accurately. This will ensure no differential settling to occur. Fasten top of 4 x 4 post of pier to angles welded on deck frames with two (2) 1/2” x 6” through bolts.

The remaining deck sections including the ramps will be attached to the previous section at provided brackets setting its elevation. The installation of the piers will continue as described for deck section 2.

Once the deck sections are complete install the planter sections. Begin by inserting 2 x 8 cantilevered joists at outer parameter of the deck. Be careful to in install the numbered joist at their corresponding number on the deck frames. Fasten joist to metal stirrups with 1/2” x 3” through bolts (see Figure 8). Each planter is constructed with slots which allow them to be slid over the joists. Install numbered planters at corresponding number on deck frame. Remove upper planter base and fastened planters to joists with 1/4” x 2” wood screws from the interior concealing any connections.

At the evacuated tubes install nine 2” x 6” aluminum tube uprights in corresponding slots in planter and slide into place until they are completely seated in metal brackets welded to the side of deck section 5. Install 1/2” x 8” through bolt below deck fastening the uprights in place.

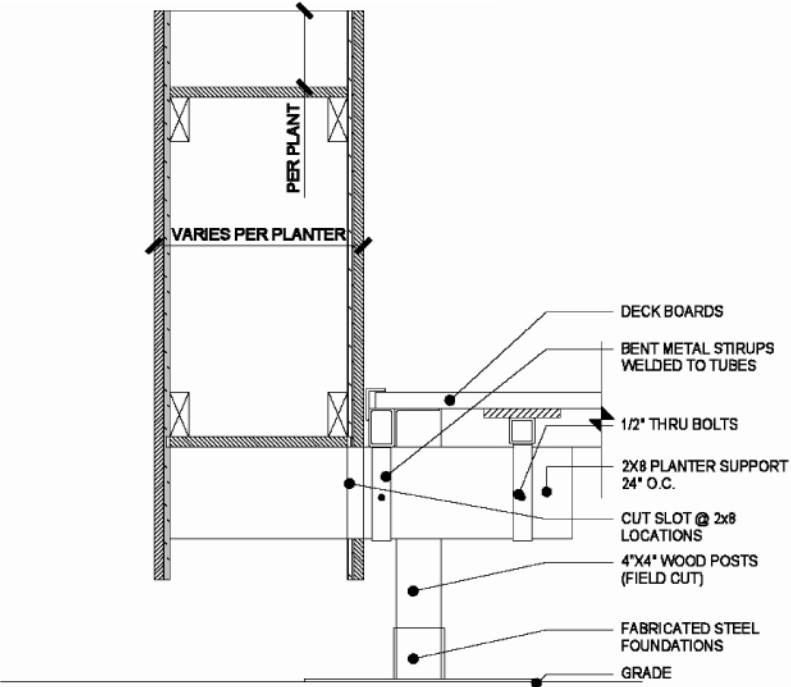


Figure 8: Deck Planter Section

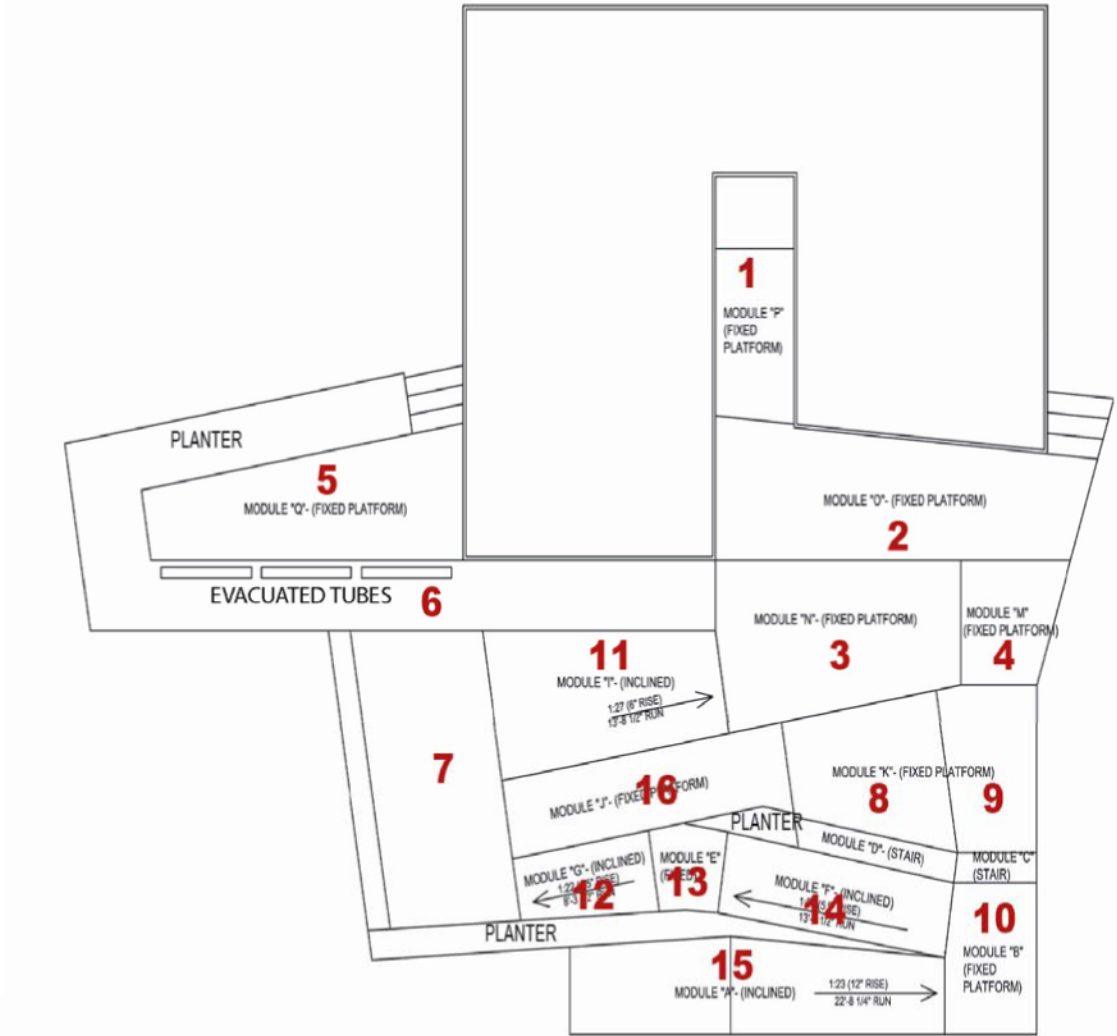


Figure 7: Deck Section Layout



EXTERIOR RAINSCREEN INSTALLATION:

Select areas of the exterior cladding system (rainscreen) have been removed prior to shipping. These areas allow for accessibility of attachment points between upper and lower module sections. With module and deck construction completed, installation of the rainscreen panels can be performed.

Shaded areas in figure 9 represent location of removed panels. These panels are numbered and have corresponding numbers marked on the side of module sections.

Install rainscreen from bottom. Insert upper rainscreen panels behind Rheinzink roof flashing. The rainscreen panels are predrilled and shall be fastened to the modules with stainless steel screws and stainless steel decorative washers. Do not over tighten the screws.

PHOTOVOLTAIC SUPPORT AND TRELLIS:

The roof modules are prepared for installation of 2"x6" extruded aluminum photovoltaic (PV) panel supports system which transitions into trellis system above the deck. Each support has been numbered and has corresponding number marked on aluminum roof supports.

Module 1, insert correctly numbered extruded aluminum support between aluminum angles secured to roof prior to shipping (see Figure 10). Fasten extruded aluminum with 1/2" x 3" through bolts. *Note: bolts installed in the field have been colored green in Figure 10.* There are a total of six supports on module 1.

Prior to installation of supports for module 3, install trellis posts and beams at pre installed anchor points. Temporarily brace these members until trellis is securely fastened. You may begin to install PV supports, following same procedure as outlined for module 1. PV support for module 3 will continue past south wall and will turn into the trellis of the deck. Fasten in place with 1/2" x 3" through bolts. Remove temporary supports and trellis columns and continue on to PV panel installation.

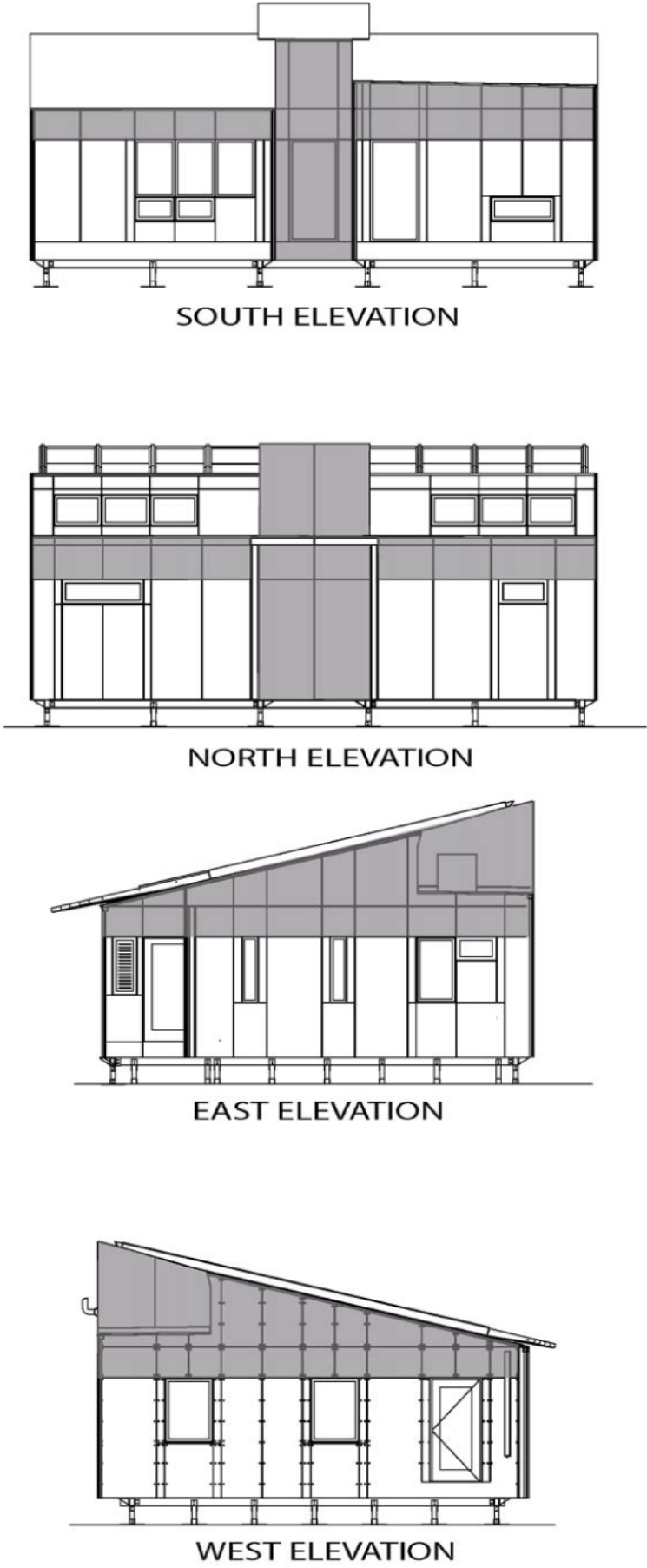


Figure 9: Rainscreen Panels

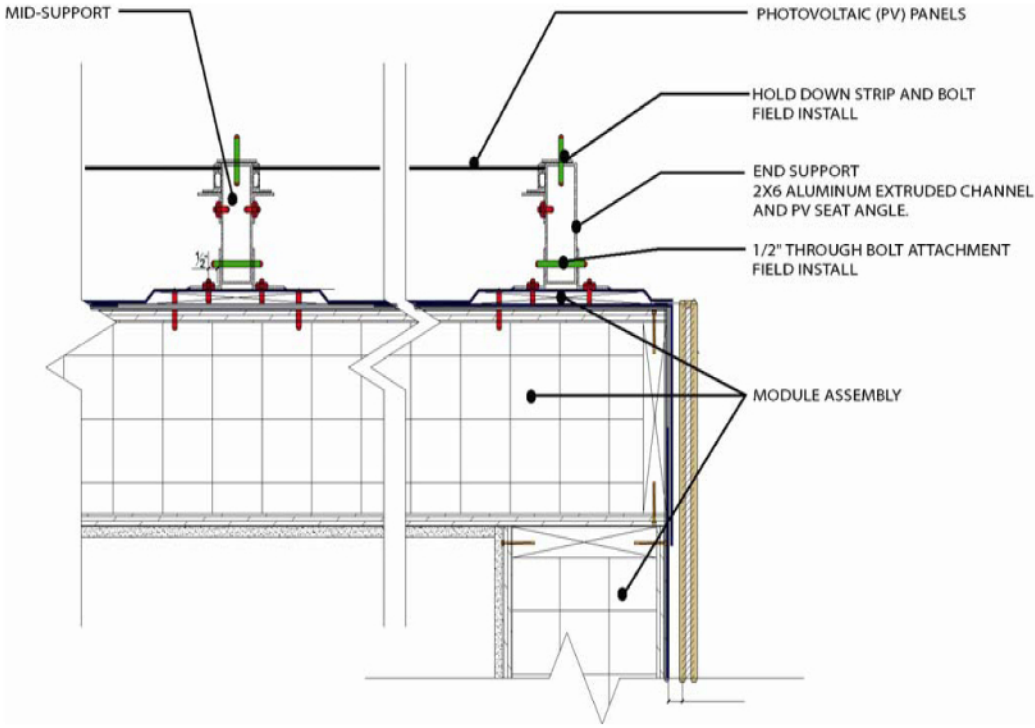


Figure 10: PV Support Detail



PHOTOVOLTAIC PANEL INSTALLATION:

Warning and Safety:

Verify proper grounding of integrated mounting system to earth prior to installation of PV panels.

The PV panels generate electricity when exposed to light. Arrays of many modules can cause lethal shock or burn. To reduce risk of shock or burn cover PV panels with opaque material during installation and wiring. Do not touch terminals with bare hands.

Do not step on PV panels.

Installation:

PV panels are installed between the 2 x 6 extruded aluminum tubes located on the roof (see Figure 10). Slide each panel in place from top down till they rest securely against stop at bottom of extrusion. Module 1 houses a total 20 panels and module 3 houses 16 panels. Connect necessary wiring of PV panels so that there are three panels in a string and 12 strings in a parallel. This is to be done at the same time the panels are laid in place. Secure panels in place by installing aluminum strip and fasten with supplied machine thread bolts (see Figure 10). Note: Strips are to be installed with neoprene gasket abutting frame of PV panels.

Route wires through wire loops located on inside of aluminum extrusions. All wires are to be routed towards top of roof and over to combiner boxes mounted on side of solar chimney.

BATTERY TRAILER AND ELECTRICAL CONNECTION:

A Trailer will only be utilized in Washington DC for the competition. Battery storage will be determined at later date for final site installation.

Refer to wiring diagrams in contract documents for proper installation of electrical system connection. Inter-module connections will be done in a series of junction boxes provided in the electrical closet located in module 2. All wires from modules are pre-labeled and connect via wire nuts to corresponding labeled wires leading to main breaker panel. **Important:** Verify that the main breaker is in the off position prior to connection of any wire.

MECHANICAL CONNECTIONS:

All of the rigid duct work will be installed in the modules. A flex duct connection for the supply ductwork will be made at the intersection of module 1 & 2 as well as between module 2 & 3.

Energy Recovery Ventilator:

Install the Energy Recovery Ventilator (ERV) in the upper portion of the solar chimney. Attach necessary electrical wiring to junction box located adjacent to ERV. Make duct connection from ERV to rigid sleeve penetrating ceiling of electrical closet with 6" diameter flex duct. Connect rigid duct in electrical closet to rigid duct stubs located a side walls of electrical closet. Connect ERV to exhaust duct and intake duct by means of 6" flex duct.

AC Condensing Unit:

Install DC Flex-Cool Condensing Unit on east exterior wall of solar chimney. Route refrigerant hoses from fan coil located above mechanical closet to condensing units through provided holes. Extreme care should be taken not to cut or crimp refrigerant hose. Follow manufactures installation manual for proper tightening torque specification for #6 and #10 hoses. Unit will be fully charged with R134A refrigerant prior to shipping.

Hydronic In-Floor Heating System:

All hydronic in-floor heating pipes will be installed in the modules prior to shipping. Remove finish floor panel in module 2 and route lines from module 1 and 3 through floor to copper fittings located approximately 4" above floor of electrical closet. Extreme care should be take when routing pipe to avoid crimping. System will be filled with distilled water prior to shipping. Remove end caps from tubes one at a time and connect to proper manifold lead. Pipes will be labeled return or supply. There are a total of eight pipes, four supply and four returns. Bleed system and check for leaks prior to reinstallation of finish floor panel.

PLUMBING CONNECTIONS:

Evacuated Tube Installation:

Three evacuated tube solar collectors are located at the southwest corner of the home (see Figure 7). Install evacuated tubes to aluminum uprights installed during the assembly of the deck and planter sections. Connect supply and return lines from the home to corresponding supply and return manifold located at top of the evacuated tubes.

Potable Water Supply:

Located on the trailer with the batteries will be one 450 gallon water supply tank, pressure tank and booster pump. Connect potable water line from trailer to fitting at module 1 along north wall. Connect threaded fitting in mechanical closet which were removed for shipping to minimize damage due to vibration. Pressurize and check for leaks.

Waste Water:

Connect remaining waste water pipe under home to leads installed prior to shipping. In line connection should be made using "Fernco" style flexible pipe connectors. Connect waste water line to waste water tank located beneath home (competition only).

For final site installation all connection shall be rigid PVC pipe couplings and fittings. Connect waste water line to municipal sanitary sewer or approved septic system.

INTERIOR FINISHES:

All interior finishes will be installed prior to shipping, with the exception of furniture. Portion of the interior trim was remove prior to shipping to access points of attachment.

These locations are:

- Sill below clerestory windows in kitchen and bedroom;
- Corner of wall leading from kitchen to back hall and corner of wall form master bedroom to back hall (see Figure 5);
- Trim above soffit in living room and master bedroom.

Reinstall listed trim pieces, inspect home for any cracks or damage which may have occurred during shipping, and repair and repaint as necessary.

LANDSCAPING:

Install plant material in planters and cover with mulch. Water plant material during installation and monitor during course of the competition.

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//revisions

Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date	7.Aug.2007
project number	LTU_001
scale	N.T.S.
drawn	HR
checked	PP
drawing title	Assembly/ Disassembly

//sheet number

A106



DISASSEMBLY:

IMPORTANT: STEPS LISTED BELOW ARE CRITICAL PRIOR TO DISASSEMBLING HOME IN REVERSE ORDER OF ASSEMBLY INSTRUCTIONS.

MECHANICAL DISASSEMBLY:

Refer to manufactures specification for ac condenser shut down procedures. Refrigerant will be evacuated for pipes and contained in compressor for disassemble and shipping. Verify that all valves are shut off to prevent and leaking of R134A refrigerant.

ATTENTION:

Disconnect PV and battery banks from DC Combiner Box by using the three PV disconnect and three battery bank disconnect switches. If there is any AC source present (from a generator or grid) disconnect that source as well. ALL Breakers must be switched to the off position in both the AC and DC distribution boxes.

CHARGE CONTROLLER DISASSEMBLY:

Open the front cover and disconnect the wiring from the PV+ and PV- terminals as well as the Bat+ and Bat- wiring. Remove the data cable from the charge controller. Unscrew the mounting screws from the charge controller mounts. Package the controller properly for shipping.

INVERTER/CHARGER DISASSEMBLY:

Open the front cover and disconnect the DC wiring from the DC combiner box. Unscrew the AC Inverter cover and remove the AC in and out source as well as the AC in and out load wiring. Disconnect the Remote Temperature Sensor on the main Inverter and disconnect the data cables from each of the inverters. Once disconnected, unscrew the four mounting screws. Please note that two screws on the inside of the mounting plate **WILL** hold the inverter in place even with the four mounting screws removed. Have a minimum of two people to lift and remove the inverter from the hanging screws and package the inverter properly for shipping.

MODULE ELECTRICAL DISASSEMBLY:

Prior to performing this step, verify that **ALL sources of power are disconnected**. Unscrew the junction box cover and unscrew the electrical nut on each of the branch conductors. Please note the labeling of the branch circuits and **DO NOT RECONNECT** without verifying the source and destination of each circuit.

BATTERY TRAILER DISASSEMBLY:

Prior to servicing or disassembly, **disconnect the battery bank with the battery disconnect switch inside the trailer**. Unbolt each conductor to the positive and negative bus bar. Take these conductors and feed them back to the electrical closet inside the home.

PHOTOVOLTAIC REMOVAL:

Cover PV panels with opaque material to avoid shock or burns prior to performing any of these steps. Disconnect PV wiring at the combiner box, and feed lines back to panels. Remove bolts on retainer strip and begin lifting out panels--work form the highest point down to lowest. Disconnect individual wire leads as panels are removed. Package for shipping.

GROUNDING ROD REMOVAL:

**Do this step after ALL disassembly is complete.** Remove the PVC pipe that covers the grounding conductor and grounding rod. Disconnect the #6 AWG conductor and place it to avoid damage during shipping. Remove the grounding rod from the soil and package properly for shipping.

PLUMBING DISSASSEMBLY:

**Important:** Waste water must be pumped from tank prior to removing sanitary pipes. Reverse steps during assembly for under-module and interior connection.

GENERAL DISASSEMBLY NOTES:

Remove furniture and items from interior prior to disassembly of home.

Use proper shoring and bracing to support sections of deck and foundation beams during disassembly to avoid injury.

Package and secure all items properly for shipping.

Shrink wrap modules prior to shipping to protect home from damage caused by adverse weather conditions, wind, and road debris.

Walk entire site picking up any construction debris and discard properly. Site must be left clean upon exiting.

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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

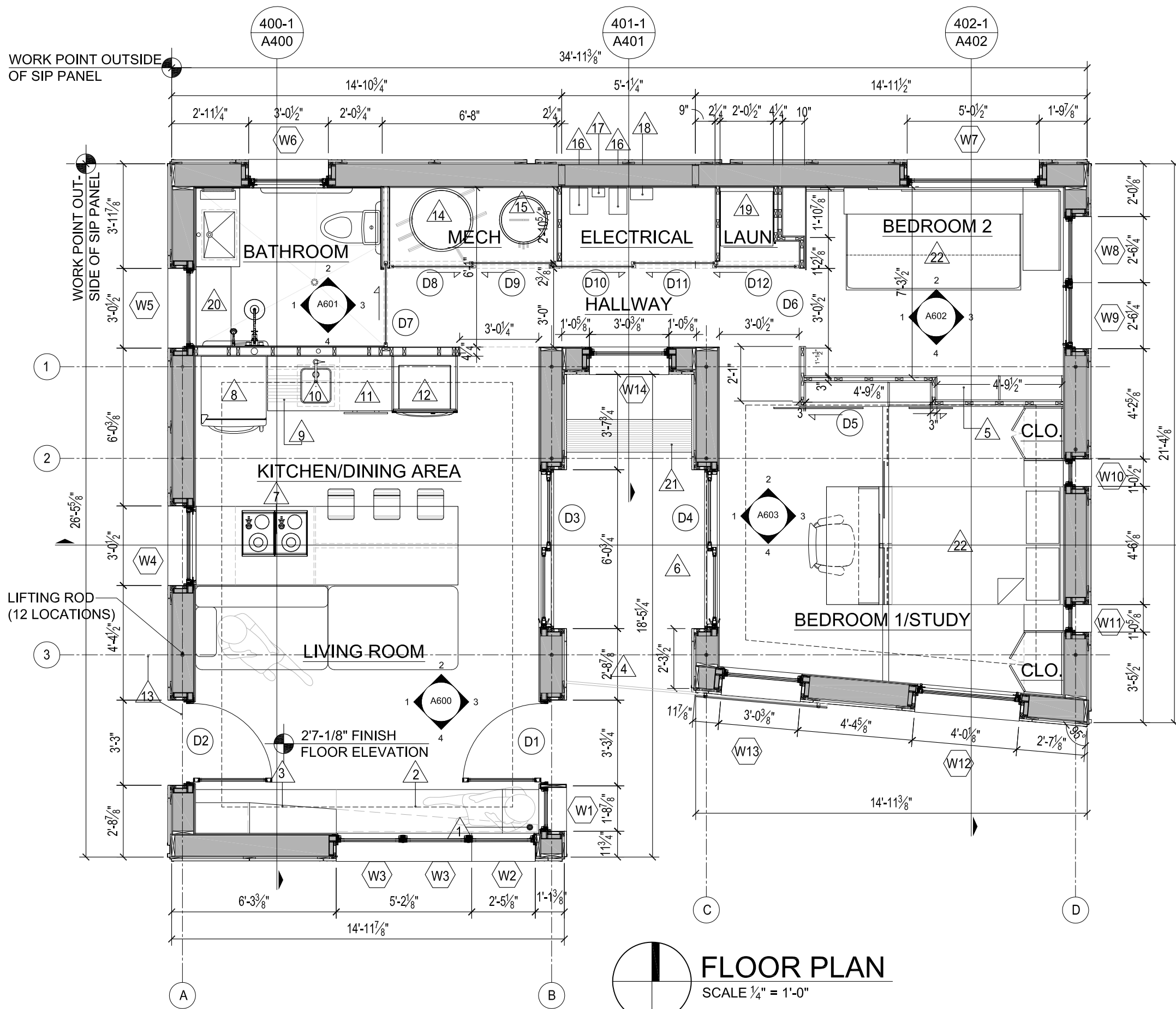
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date	7.Aug.2007
project number	LTU_001
scale	N.T.S.
drawn	HR
checked	PP
drawing title	Assembly/ Disassembly

//sheet number

A107





**NOTES BY SYMBOL "△"**

1. BENCH SEAT HEIGHT TRANSITIONS FROM 1'-6" TO 3'-0"
2. BENCH SEAT AT 1'-6" W/ STORAGE BELOW
3. BENCH SEAT BECOMES ENTERTAINMENT UNIT
4. SLIDING TRELLIS DOOR
5. SHELVING UNIT
6. EXTERIOR SLIDING DOORS CENTERED ON AXIS
7. BARRIER FREE SPACE BELOW COOKTOP
8. REFRIGERATOR
9. 34" HIGH COUNTER GROOVED FOR DRAINAGE
10. SINK AREA OPEN UNDERNEATH FOR ACCESSIBLTY
11. 34" HIGH COUNTER W/ DISHWASHER BELOW
12. BOTTOM OF CONVECTION OVEN AT 34" FROM FINISH FLOOR.
13. LIFTING POINT CENTERLINES - SEE SHEET S103 FOR DIMENSIONS
14. 60 GALLON HOT WATER TANK
15. 80 GALLON HOT WATER TANK
16. POWER INVERTER(S)
17. CHARGE CONTROLLER(S)
18. BREAKER BOX(ES)
19. STACKED WASHER/DRYER
20. FOLD DOWN SHOWER BENCH SEAT
21. COURTYARD BENCH SEAT
22. BUILT-IN BED/ DESK FURNITURE

**GENERAL NOTES**

1. BATTERIES ARE LOCATED OUTSIDE OF NORTH WALL
2. ALL EXTERIOR CORNER DIMENSIONS ARE MEASURED TO SIP PANEL EDGE AND ALL WINDOW AND DOOR DIMENSIONS ARE MEASURED TO ROUGH OPENING
3. DECK NO SHOWN FOR CLARITY

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



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SOLAR DECATHLON 2007

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LTU

//revisions

Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date	1.June.2007
project number	LTU_001
scale	-
drawn	SS
checked	PP
drawing title	Floor Plan

//sheet number

A202



ROOM FINISH SCHEDULE									
ROOM NAME	FLOOR		WALLS				CEILING		REMARKS
	SUB	FINISH	NORTH	SOUTH	EAST	WEST	MATERIAL	HEIGHT	
LIVING ROOM	SIP/ RADIANT HEATING BOARD	¾" ASH WOOD	N/A	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	OPEN TO KITCHEN/DINING AREA ON NORTH SIDE
KITCHEN/DINING ROOM	SIP/ RADIANT HEATING BOARD	¾" ASH WOOD	GYPSUM BOARD, ⅝"x⅝" GLASS TILE BACKSPLASH	N/A	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	OPEN TO LIVING ROOM ON SOUTH SIDE
BATHROOM	SIP/ MUD SET	3"x6"x⅝ <sub>16</sub> " GLASS TILE	⅝"x⅝ <sub>8</sub> " GLASS TILE	⅝"x⅝ <sub>8</sub> " GLASS TILE	⅝"x⅝ <sub>8</sub> " GLASS TILE	⅝"x⅝ <sub>8</sub> " GLASS TILE	WOOD STUDS, GYPSUM BOARD, WATER PROOF PAINT	VARIES	WET ROOM WITH ROLL ON WATERPROOF MEMBRANE ON ALL SIDES
MECHANICAL	SIP	METAL PAN	SIP, GYPSUM BOARD, PAINT	N/A	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	-
ELECTRICAL	SIP/ PLYWOOD	¾" ASH WOOD	SIP, GYPSUM BOARD, PAINT	N/A	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	-
LAUNDRY	SIP/ PLYWOOD	¾" ASH WOOD	SIP, GYPSUM BOARD, PAINT	N/A	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	-
BEDROOM	SIP/ RADIANT HEATING BOARD	¾" ASH WOOD	SIP, GYPSUM BOARD, PAINT	FINISH GRADE PLYWOOD, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	WOOD STUDS, GYPSUM BOARD, PAINT	VARIES	-
MASTER BEDROOM/STUDY	SIP/ RADIANT HEATING BOARD	¾" ASH WOOD	FINISH GRADE PLYWOOD, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	SIP, GYPSUM BOARD, PAINT	VARIES	-
EXTERIOR	N/A	N/A	SIP, CEDAR RAINSCREEN	SIP, CEDAR RAINSCREEN	SIP, CEDAR RAINSCREEN	SIP, CEDAR RAINSCREEN	N/A	N/A	SEE NOTE BELOW
EXTERIOR WALL NOTE:									
SIP - R-CONTROL STRUCTURAL INSULATED PANELS WITH OSB, COVERED WITH GYPSUM AND PAINTED ON INTERIOR, EXTERIOR WRAPPED WITH DUPONT TYVEK THERMAWRAP AND COVERED WITH CEDAR RAINSCREEN PANELS CUT TO FIT									

WINDOW SCHEDULE						
MARK	SIZE			TYPE	MATERIAL	REMARKS
	WIDTH	HEIGHT*	WINDOW HGT			
W1	1'-8"	6'-8"	3'-8"	44" PICTURE	FIBERGLASS	MOVEABLE TABLE / WINDOW SCREEN FITS INTO FRAME
W2	2'-6"	6'-8"	3'-8"	44" PICTURE	FIBERGLASS	
W3	2'-6"	6'-8"	5'-2"	44" PICTURE/18" AWNING	FIBERGLASS	WINDOW UNIT: BASE - 18" AWNING WINDOW; TOP- 44" PICTURE WINDOW. (2) MULLED TOGETHER AND MULLED TO W2
W4	3'-0"	6'-8"	4'-2"	CASEMENT	FIBERGLASS	-
W5	3'-0"	6'-8"	4'-2"	PICTURE	FIBERGLASS	FROSTED GLASS
W6	3'-0"	6'-8"	1'-6"	AWNING	FIBERGLASS	
W7	5'-0"	6'-8"	1'-6"	PICTURE	FIBERGLASS	
W8	2'-6"	6'-8"	1'-6"	PICTURE	FIBERGLASS	-
W9	2'-6"	6'-8"	4'-2"	CASEMENT	FIBERGLASS	EGRESS
W10	1'-0"	6'-8"	4'-2"	PICTURE	FIBERGLASS	-
W11	1'-0"	6'-8"	4'-2"	PICTURE	FIBERGLASS	-
W12	4'-0"	3'-0"	1'-6"	AWNING	FIBERGLASS	-
W13	3'-0"	6'-8"	6'-6"	60" PICTURE/ 18" HOPPER	FIBERGLASS	WINDOW UNIT: BASE - 18" HOPPER WINDOW; TOP - 42" PICTURE WINDOW.
W14	3'-0"	6'-8"	6'-6"	60" PICTURE/18" AWNING	FIBERGLASS	WINDOW UNIT: BASE - 18" AWNING WINDOW; TOP - 42" PICTURE WINDOW.
W15	3'-0"	14'- 6 1/2"	2'-0"	PICTURE	FIBERGLASS	-
W16	3'-0"	14'- 6 1/2"	2'-0"	AWNING	FIBERGLASS	-
WINDOW NOTE:						
FIBERGLASS FRAMING, ELECTROCHROMIC, TRIPLE GLAZED, LOW-E ON 2-3 SURFACES, ARGON/KRYPTON GAS INFILL, <b>U VALUE = &lt;.20</b> *HEIGHT FROM FINISH FLOOR						

DOOR SCHEDULE						
DOOR				HARDWARE	REMARKS	
MARK	SIZE					MATERIAL
	WDTH	HEIGHT	THICK			
D1	3'-0"	6'-8"	0'-2"	FIBERGLASS	ENTRANCE LOCK	FRONT DOOR W/ FULL GLASS LITE AND INTEGRATED ELECTROCHOMATIC SAGE GLASS
D2	3'-0"	6'-8"	0'-2"	FIBERGLASS	ENTRANCE LOCK	FRONT DOOR W/ FULL GLASS LITE AND INTEGRATED ELECTROCHOMATIC SAGE GLASS
D3	6'-0"	6'-8"	0'-1 3/4"	FIBERGLASS	ENTRANCE LOCK	EXTERIOR SLIDING DOOR
D4	6'-0"	6'-8"	0'-1 3/4"	FIBERGLASS	ENTRANCE LOCK	EXTERIOR SLIDING DOOR
D5	3'-5"	7'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D6	3'-4"	7'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D7	3'-0"	6'-8"	0'-1/2"	3FORM	POCKET DOOR	INTERIOR SLIDING DOOR
D8	3'-3 1/8"	8'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D9	3'-3 1/8"	8'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D10	3'-3 1/8"	8'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D11	3'-3 1/8"	8'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
D12	3'-3 1/8"	8'-0"	0'-1/2"	3FORM		INTERIOR SLIDING DOOR
DOOR NOTE:						
ALL EXTERIOR DOORS BY ACCURATE DORWIN, BLACK FIBERGLASS FRAME UNLESS OTHERWISE NOTED. ALL INTERIOR DOORS BY 3FORM, CHROMA DOOR PANELS IN ZIRCON FINISH						

1  
A001

SCHEDULES  
NOT TO SCALE

//project

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SOLAR DECATHLON 2007

LTU

//revisions

Issued for	Date
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//sheet information

date

7.Aug.2007

project number

LTU\_001

scale

N.T.S.

drawn

SS

checked

PP

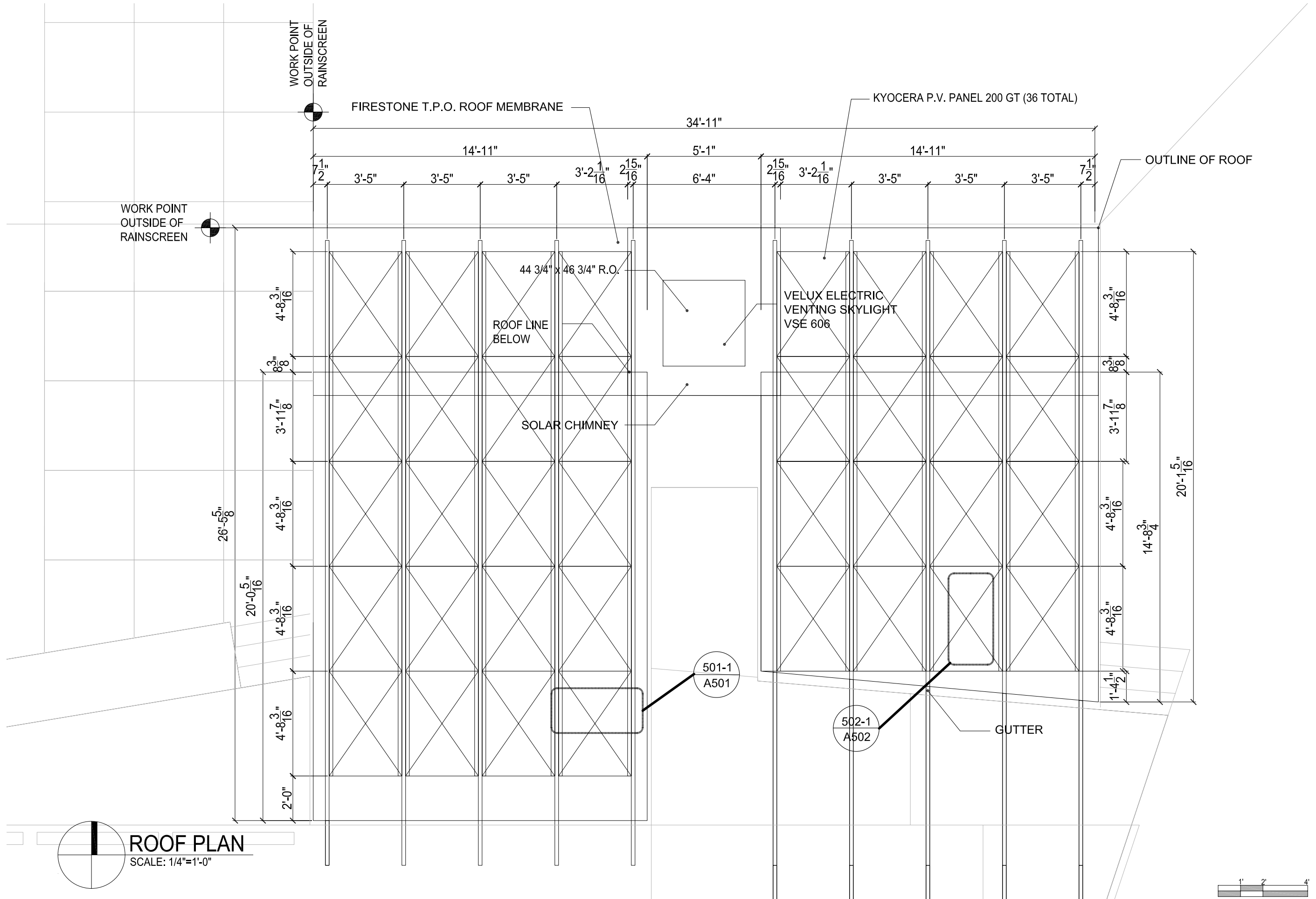
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Schedules

//sheet number

A203





//project

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Final Construction Document Submittal	7.Aug.2007

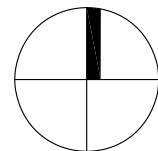
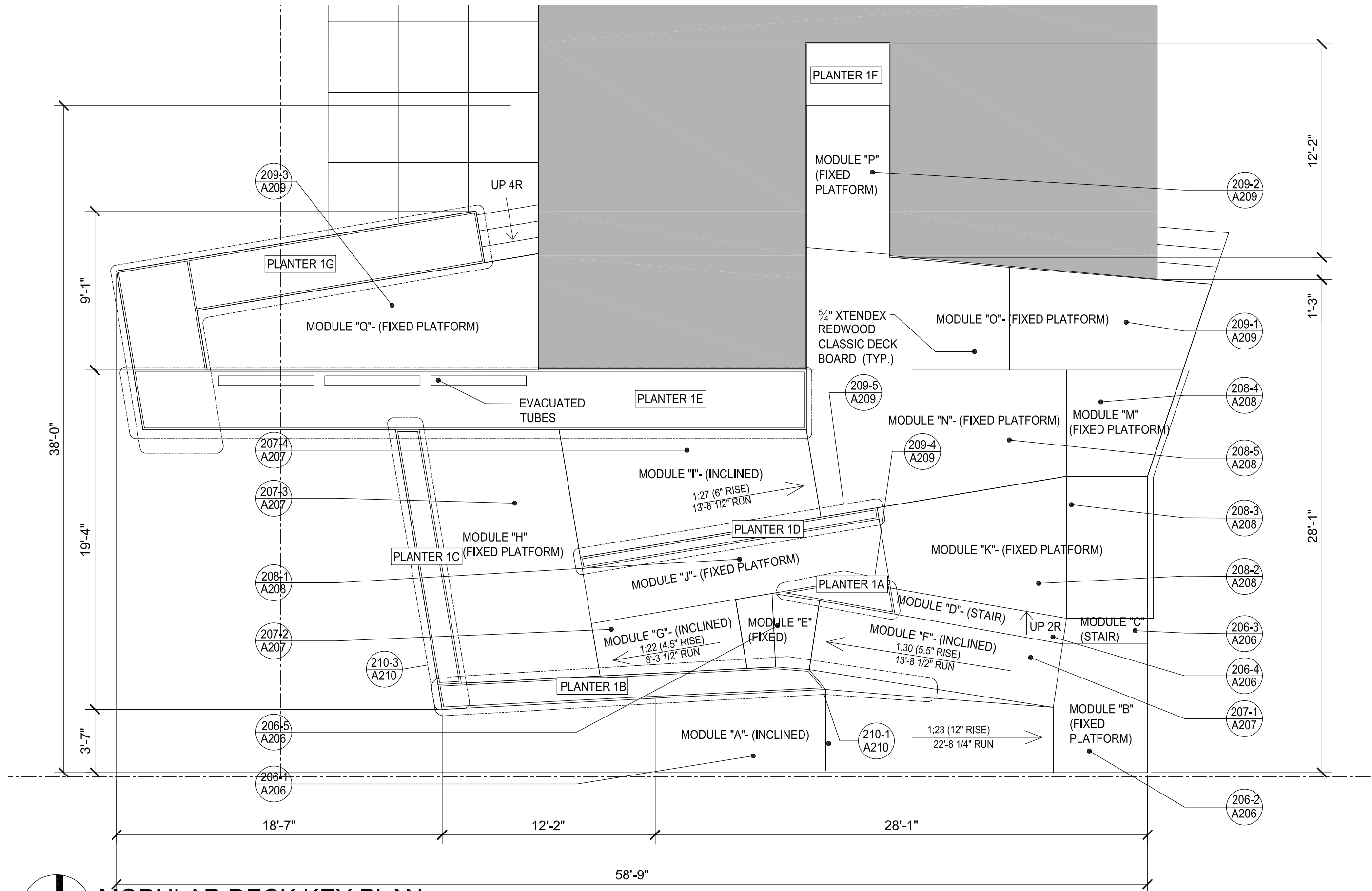
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date	7.Aug.2007
project number	LTU_001
scale	1/4"=1'-0"
drawn	CS
checked	PP
drawing title	Roof Plan

//sheet number

**A204**





# MODULAR DECK KEY PLAN

SCALE: 3/16" = 1'-0"



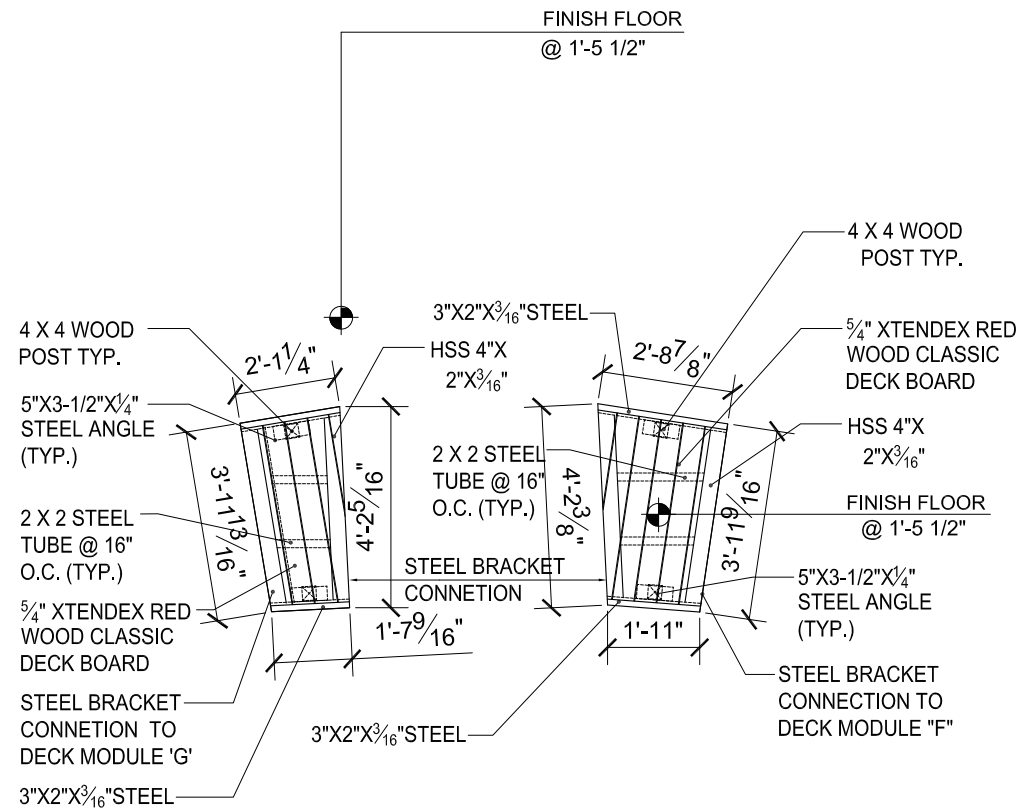
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

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drawn	CS
checked	HR
drawing title	

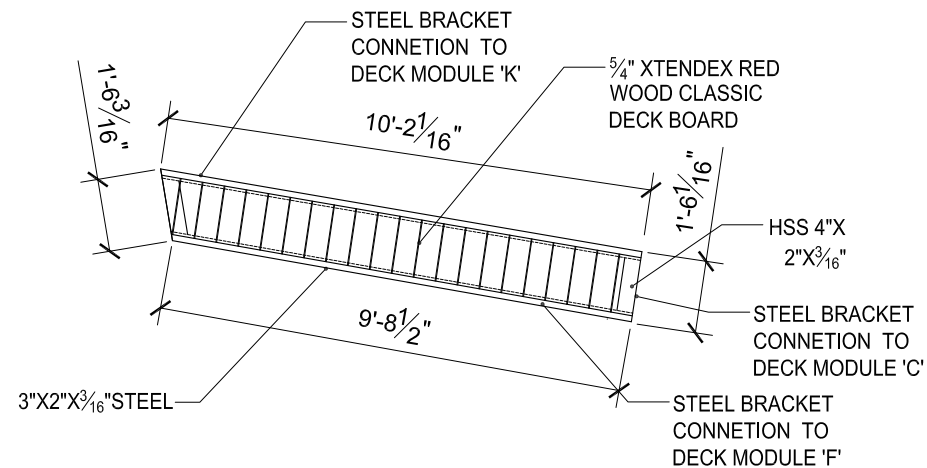
Deck Plan

//sheet number
<b>A205</b>

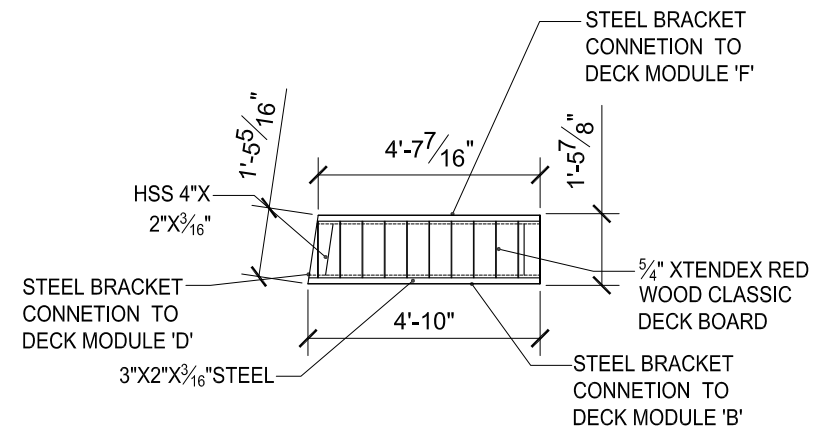




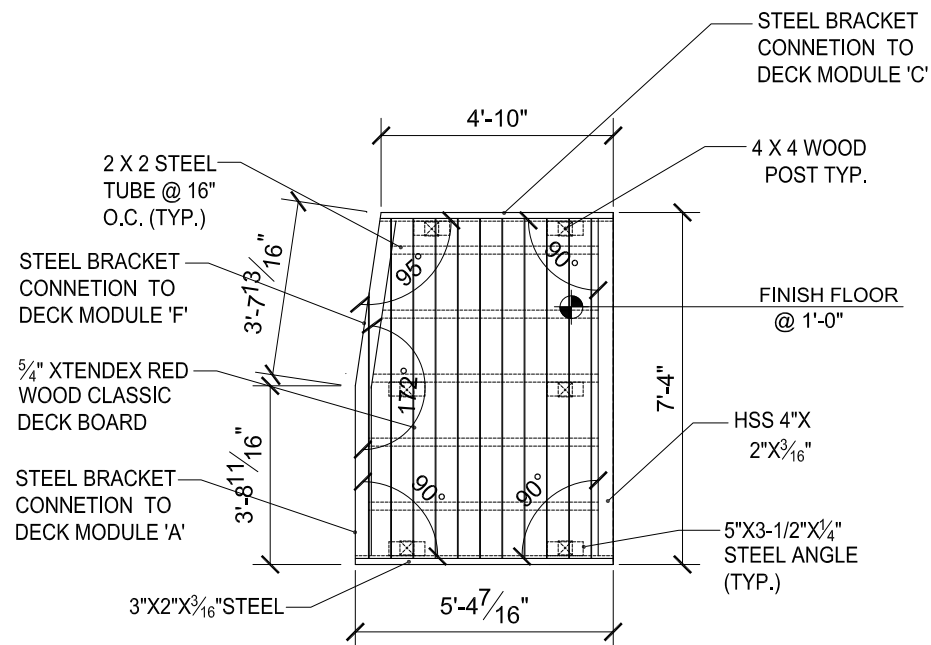
206-5  
A205 DECK MODULE "E"- (FIXED PLATFORM)  
SCALE: 1/4" = 1'-0"



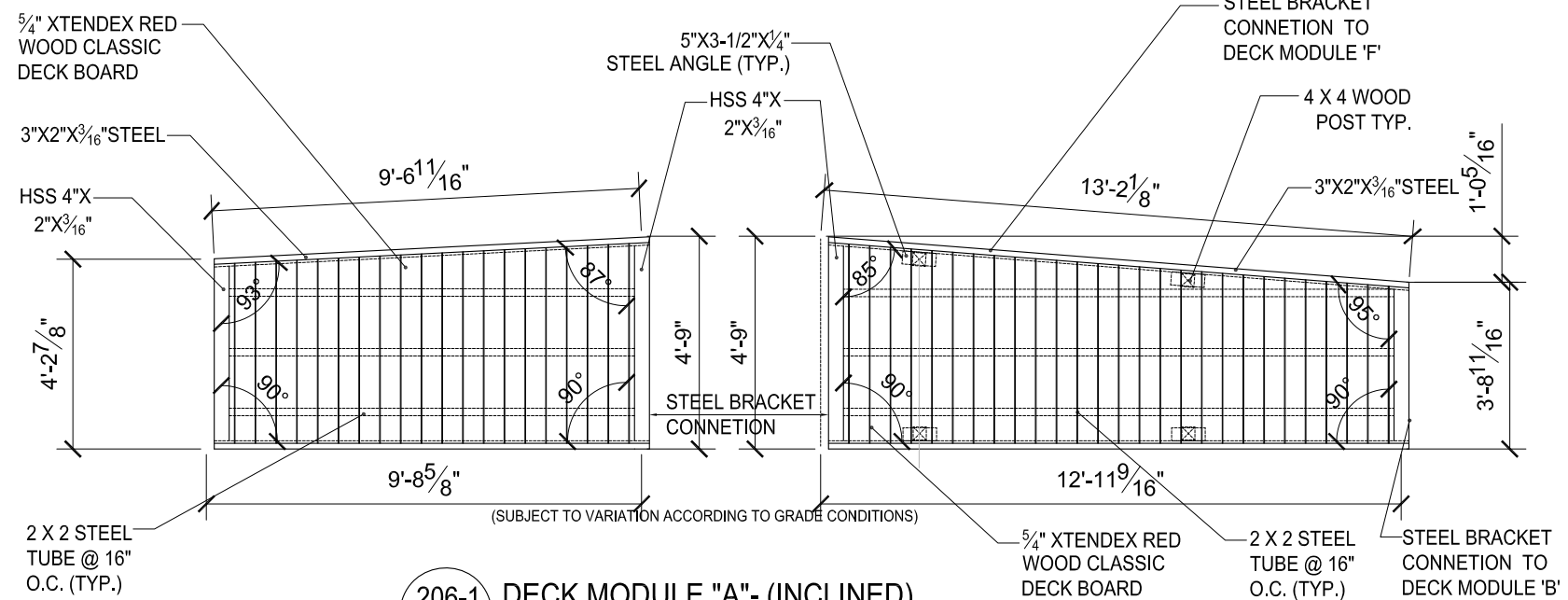
206-4  
A205 DECK MODULE "D"- (FIXED PLATFORM)  
SCALE: 1/4" = 1'-0"



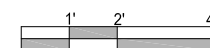
206-3  
A205 DECK MODULE "C"- (FIXED PLATFORM)  
SCALE: 1/4" = 1'-0"



206-2  
A205 DECK MODULE "B"- (FIXED PLATFORM)  
SCALE: 1/4" = 1'-0"



206-1  
A205 DECK MODULE "A"- (INCLINED)  
SCALE: 1/4" = 1'-0"



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//sheet information

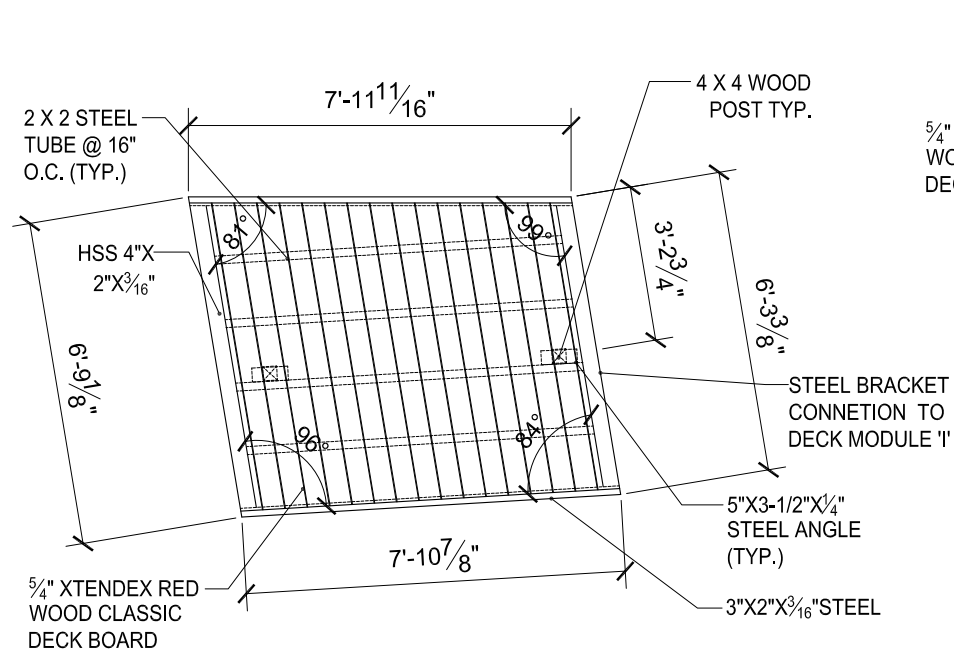
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7.Aug.2007  
project number  
LTU\_001  
scale  
-  
drawn  
CS, SS  
checked  
PP  
drawing title

Deck Module  
Details

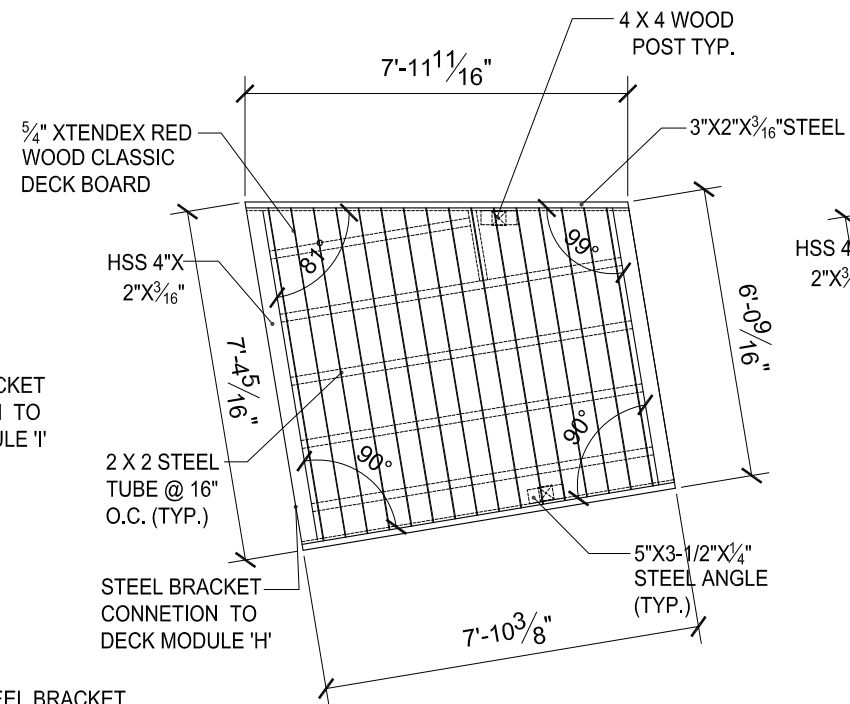
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**A206**

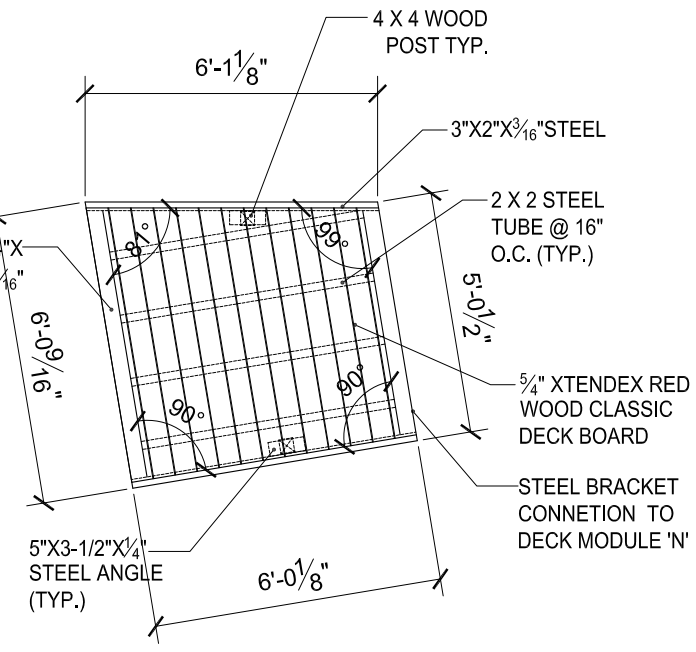




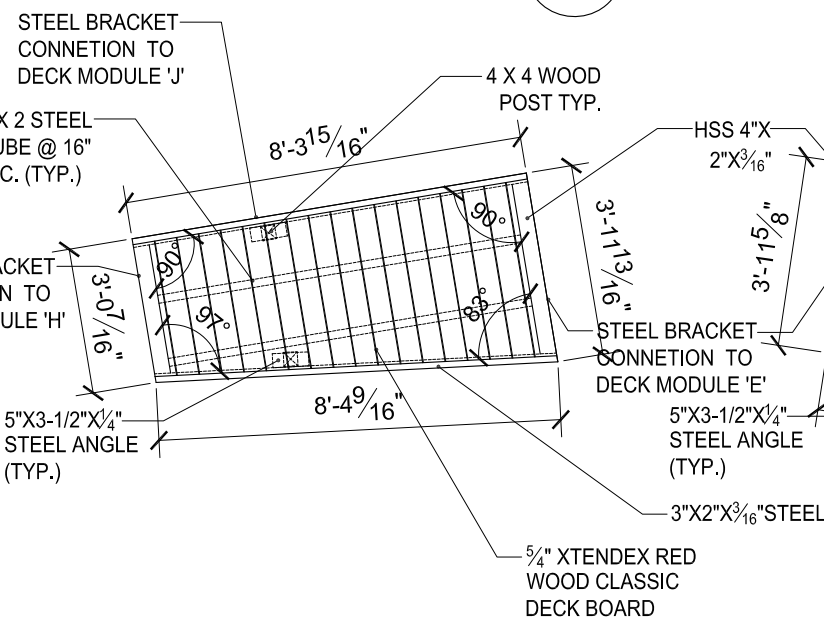
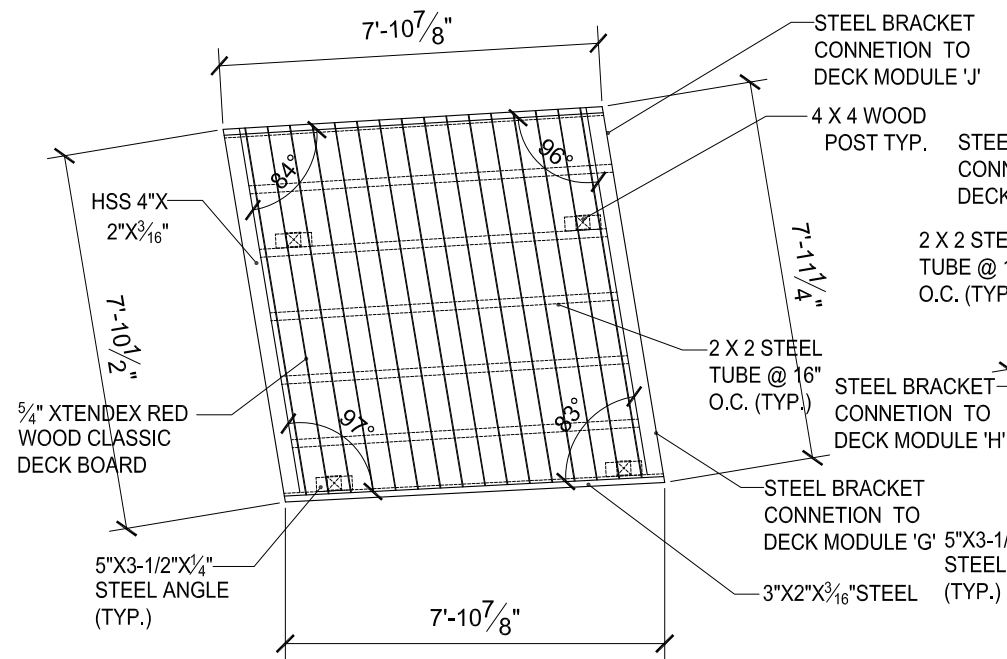
207-3  
A205 DECK MODULE "H"- (FIXED PLATFORM)  
SCALE: 1/4" = 1'-0"



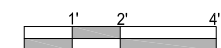
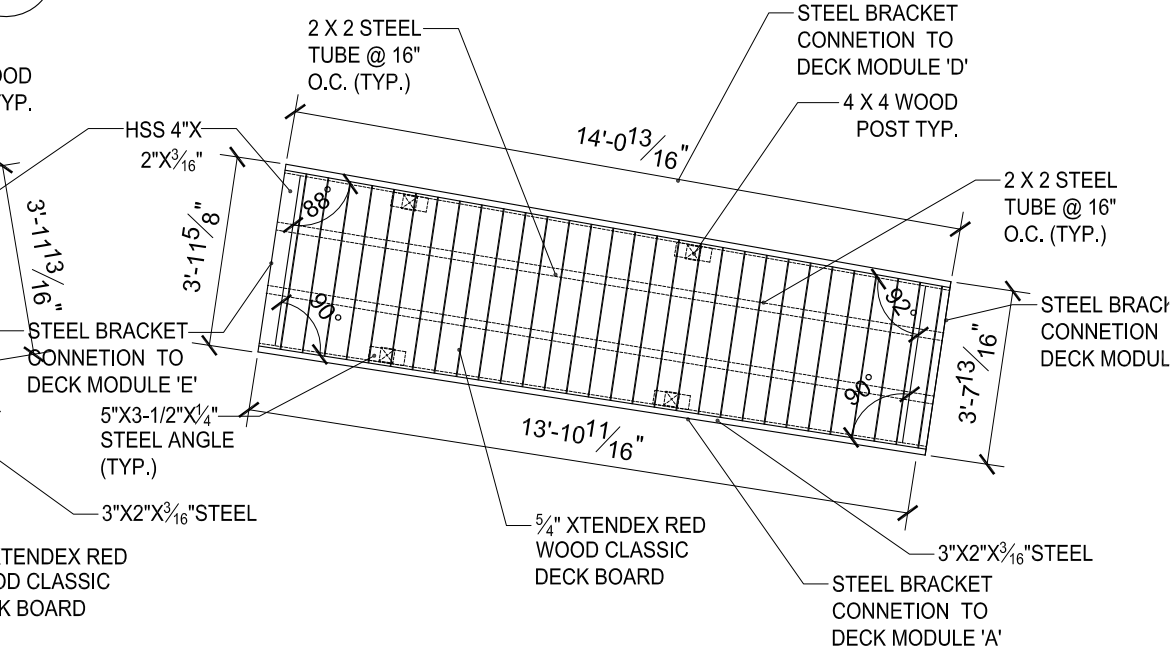
207-4  
A205 DECK MODULE "I"- (INCLINED)  
SCALE: 1/4" = 1'-0"



207-1  
A205 DECK MODULE "F"- (INCLINED)  
SCALE: 1/4" = 1'-0"



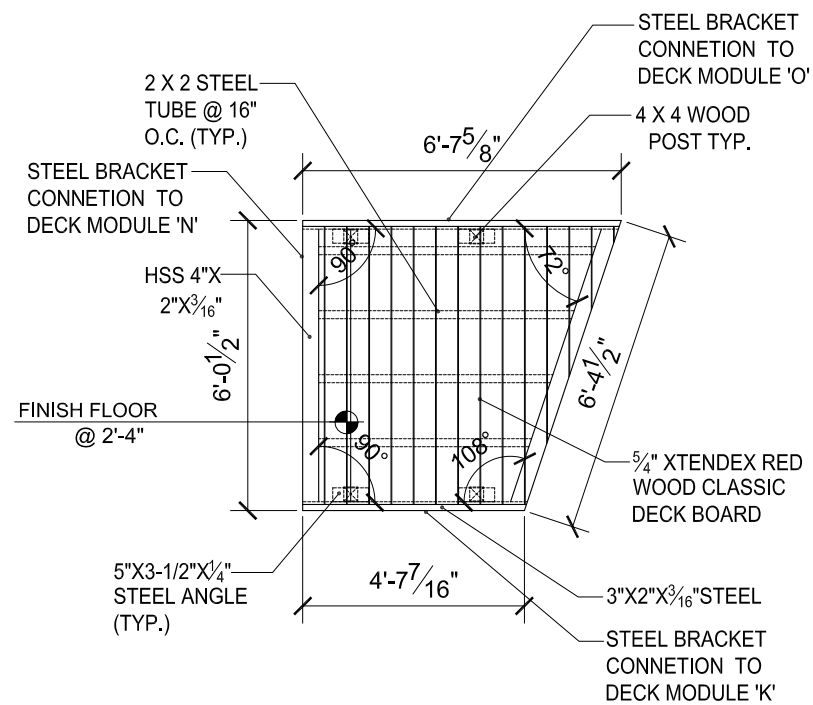
207-2  
A205 DECK MODULE "G"- (INCLINED)  
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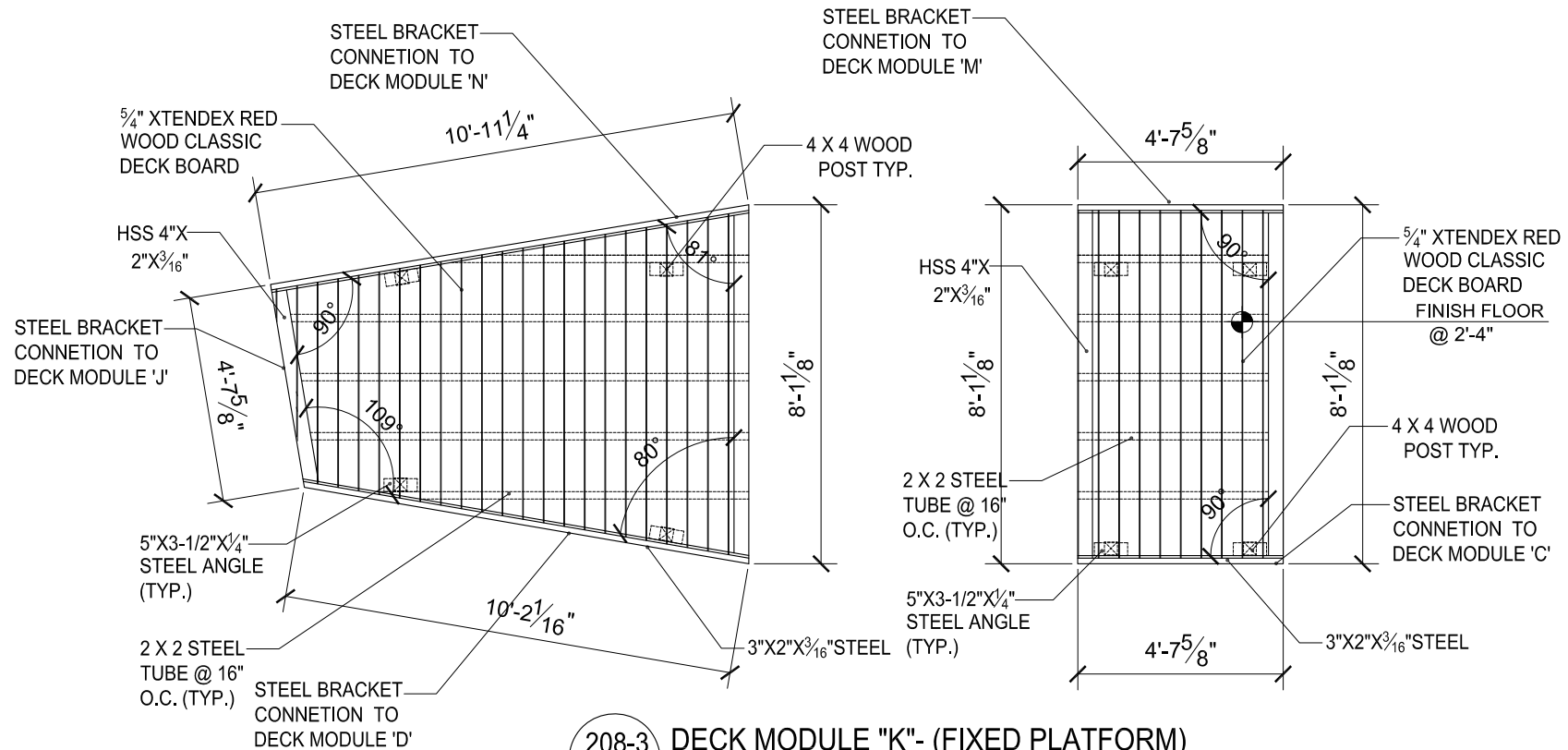
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

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date	7.Aug.2007
project number	LTU_001
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drawn	CS, SS
checked	PP
drawing title	Deck Module Details

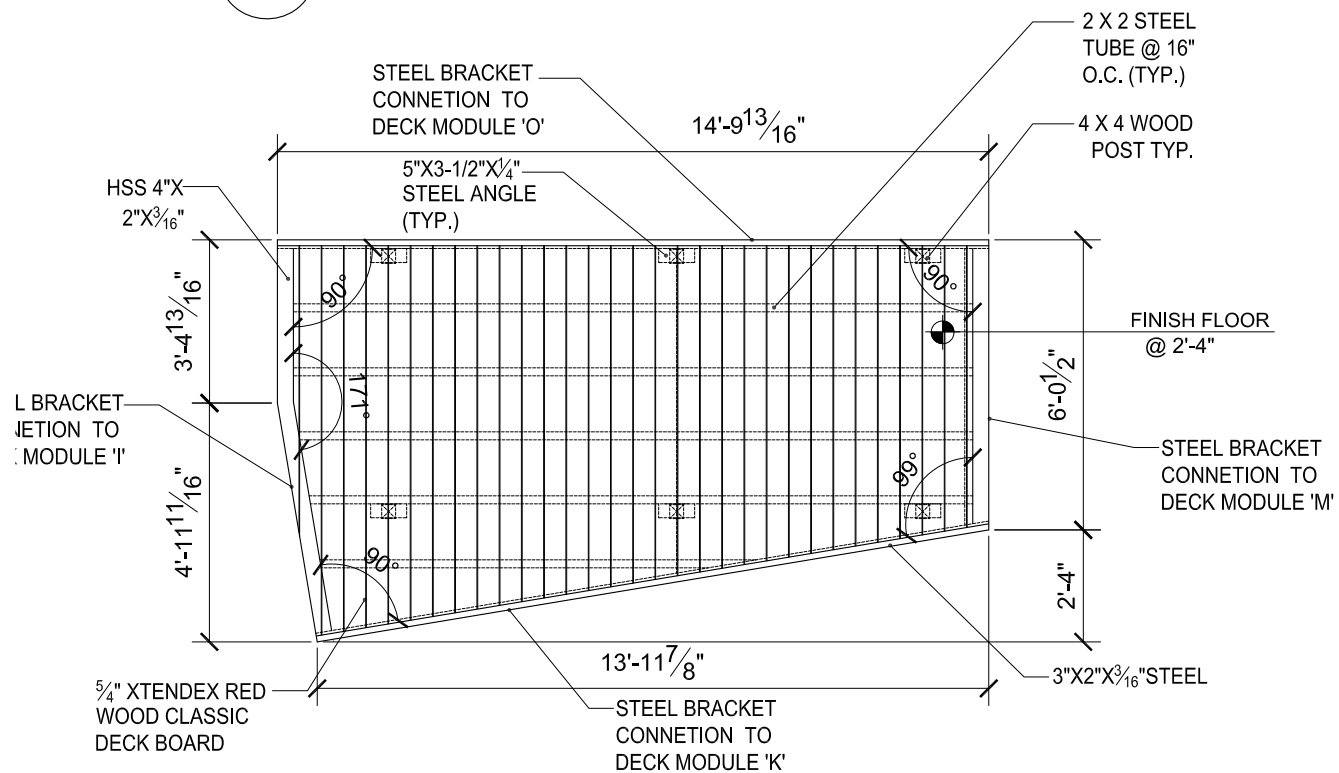




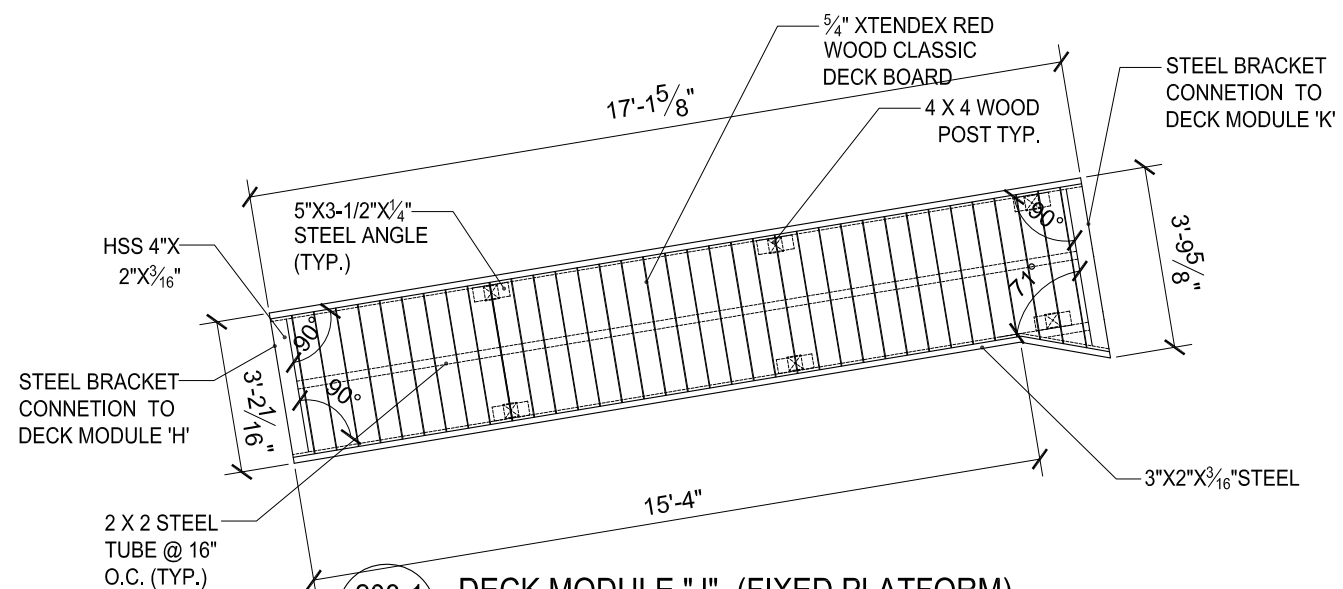
**208-4 DECK MODULE "M"- (FIXED PLATFORM)**  
A205 SCALE: 1/4" = 1'-0"



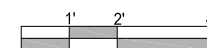
**208-3 DECK MODULE "K"- (FIXED PLATFORM)**  
A205 SCALE: 1/4" = 1'-0"



**208-5 DECK MODULE "N"- (FIXED PLATFORM)**  
A205 SCALE: 1/4" = 1'-0"



**208-1 DECK MODULE "J"- (FIXED PLATFORM)**  
A205 SCALE: 1/4" = 1'-0"



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date 7.Aug.2007  
project number LTU\_001  
scale -  
drawn CS, SS  
checked PP  
drawing title

Deck Module Details

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**A208**



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Issued for	Date
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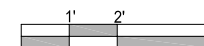
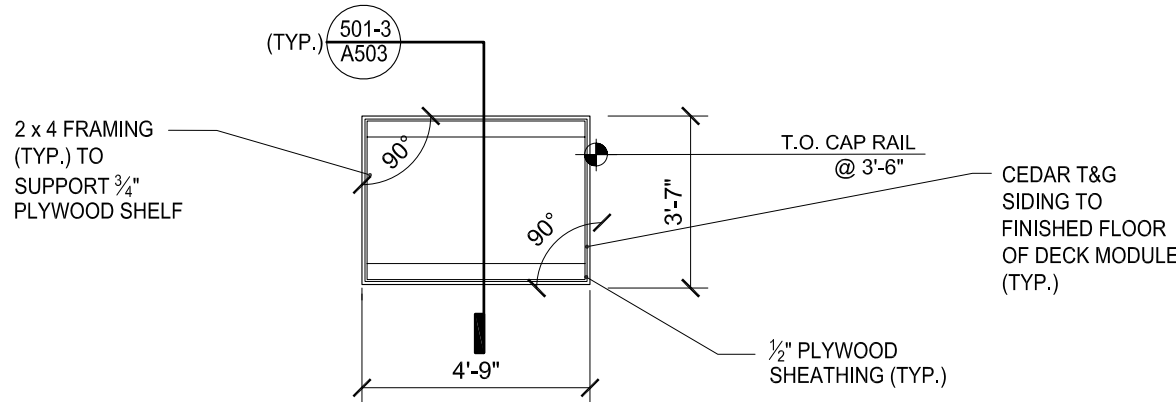
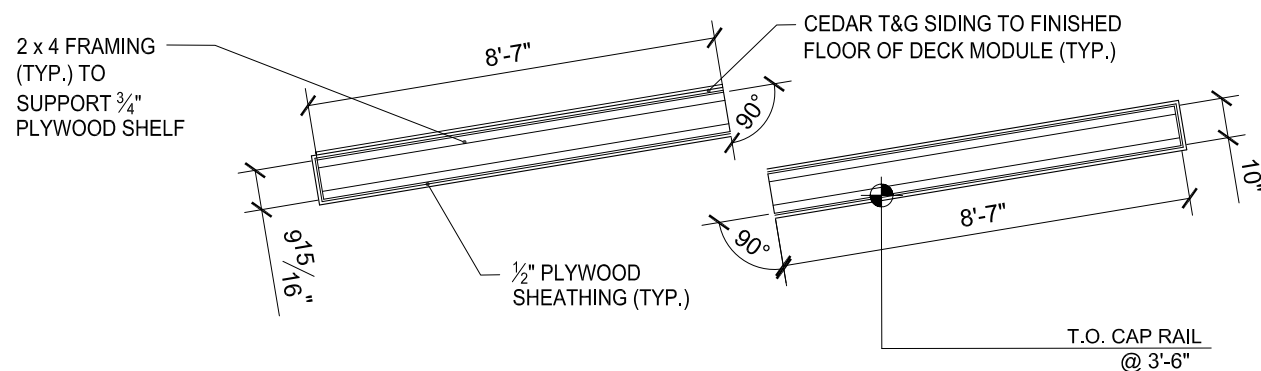
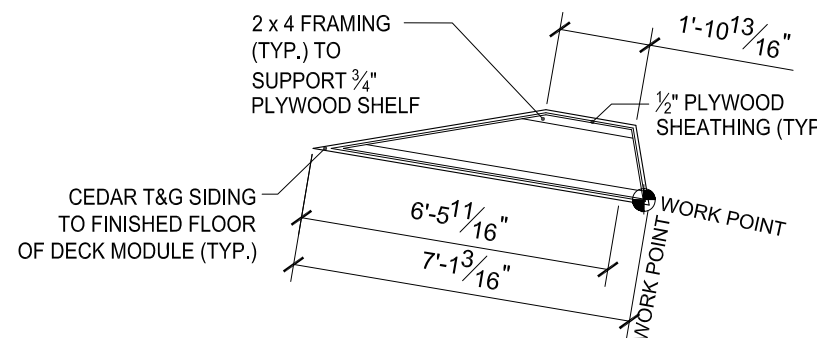
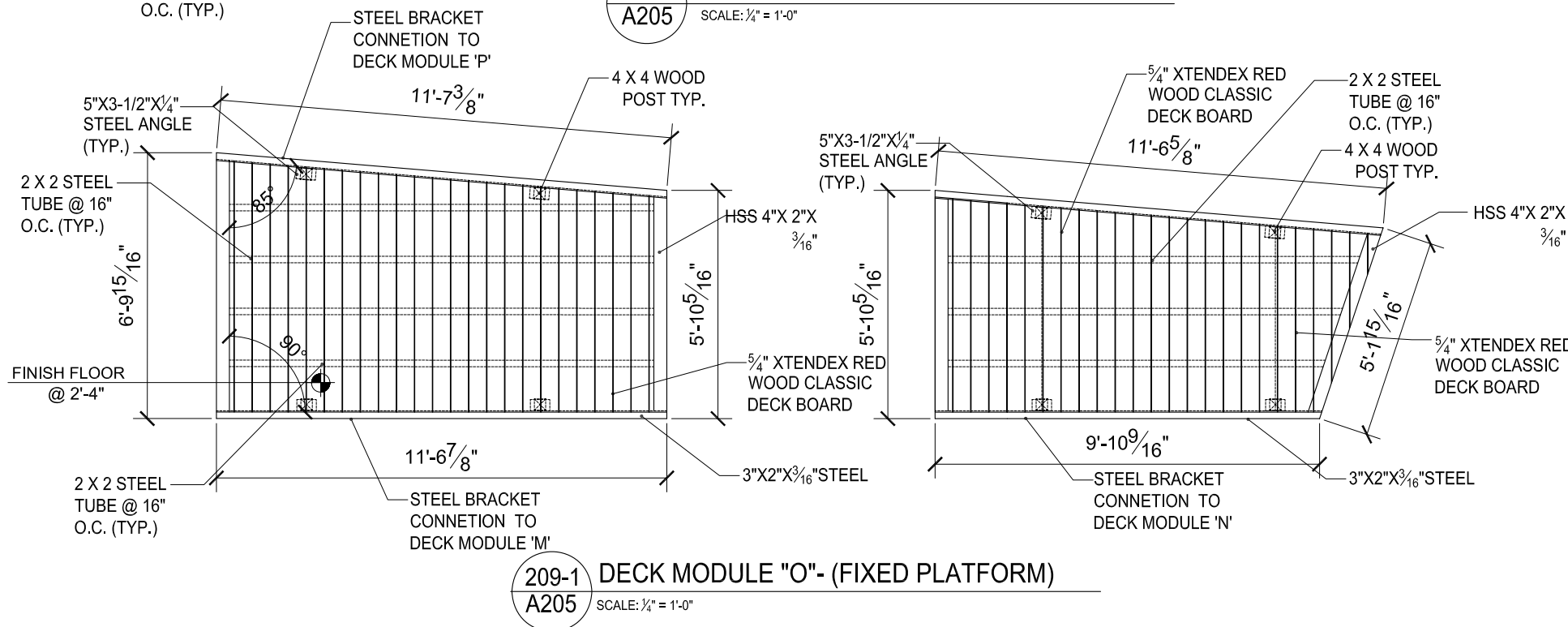
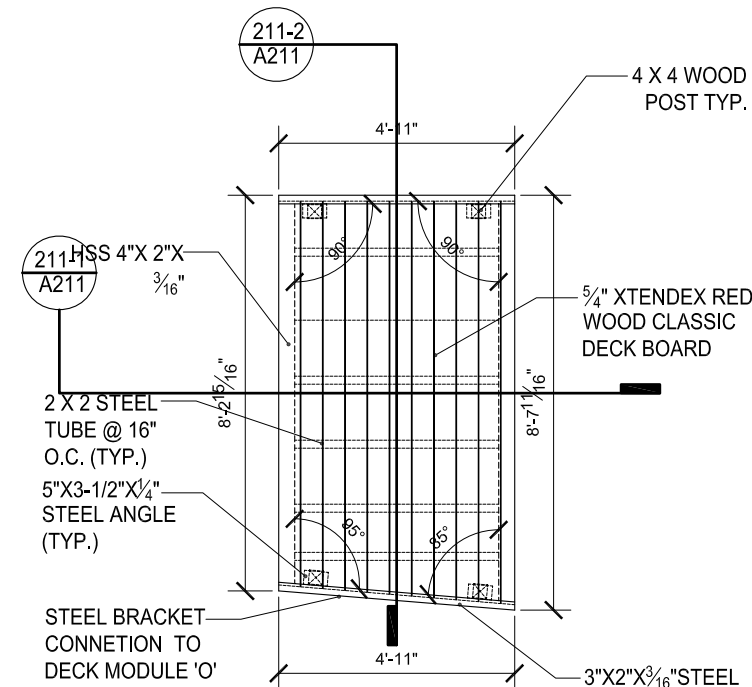
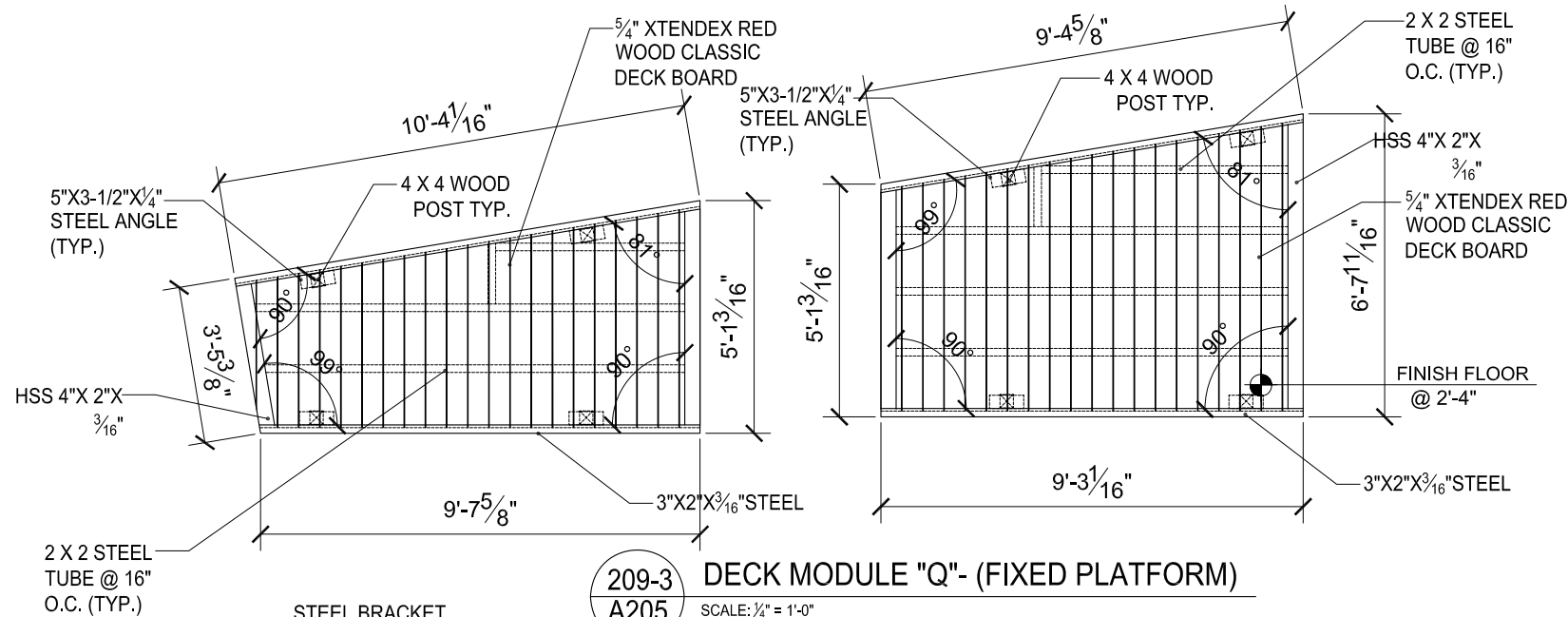
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drawn	CS, SS
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drawing title	Deck Module Details

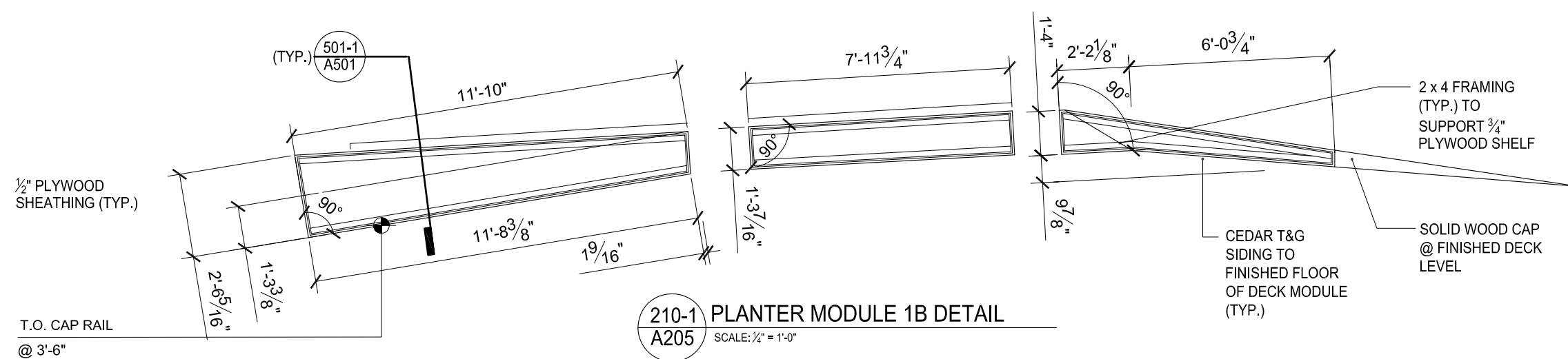
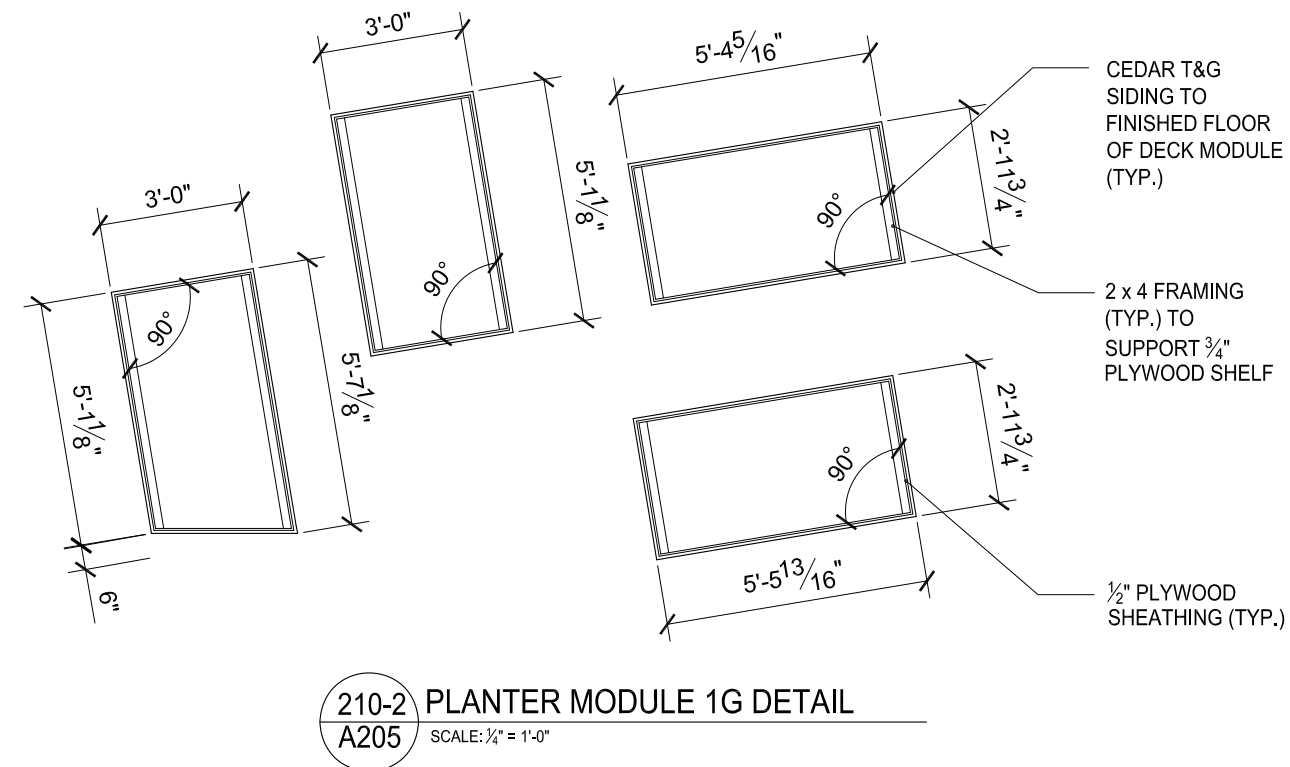
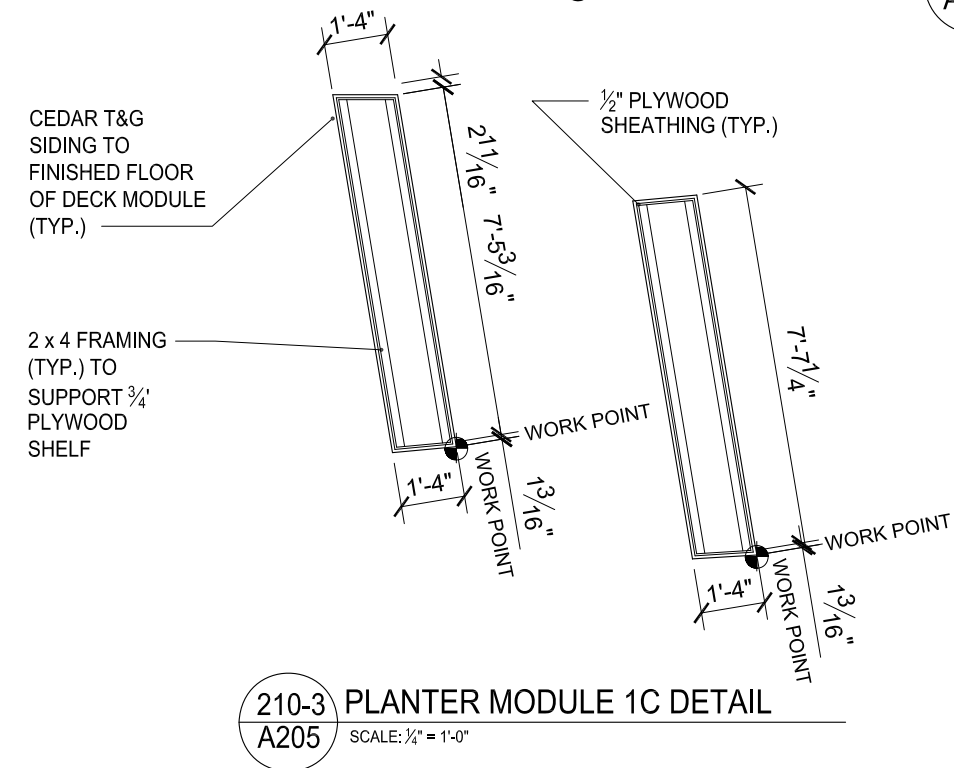
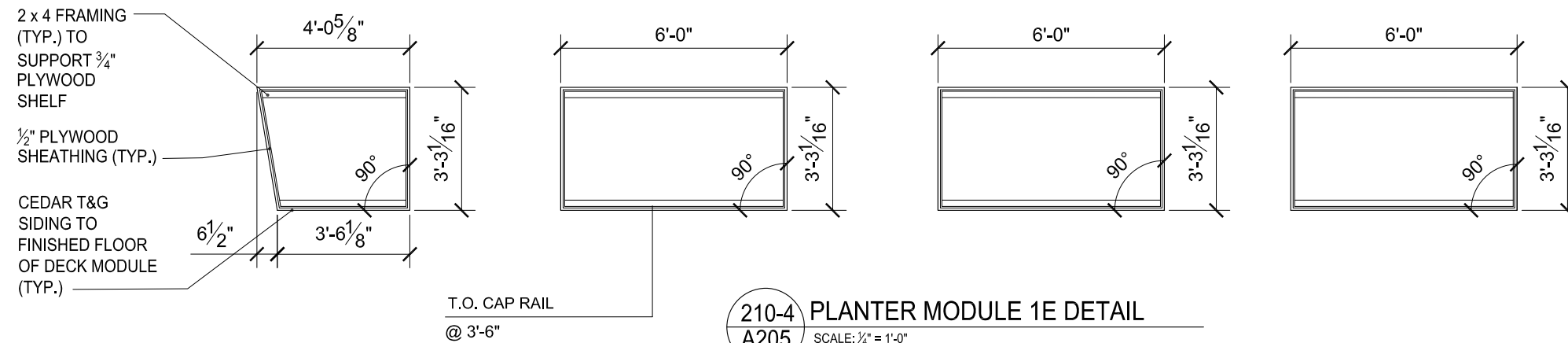
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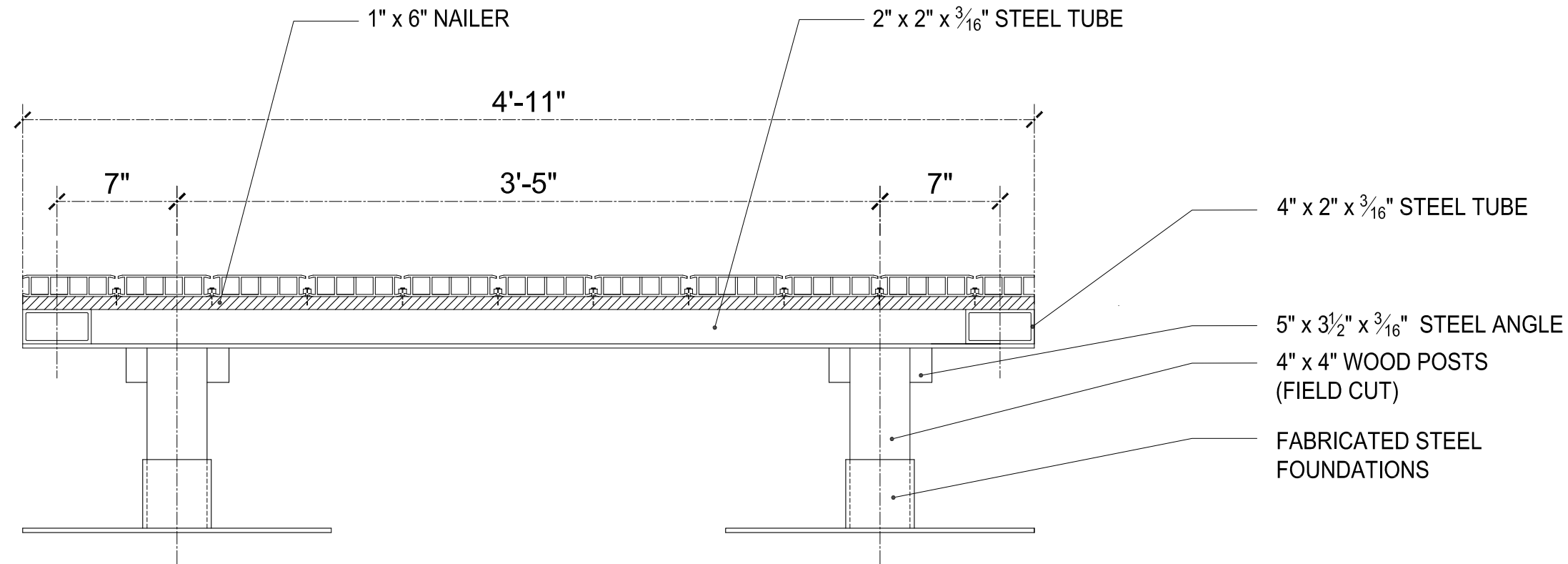
**A209**



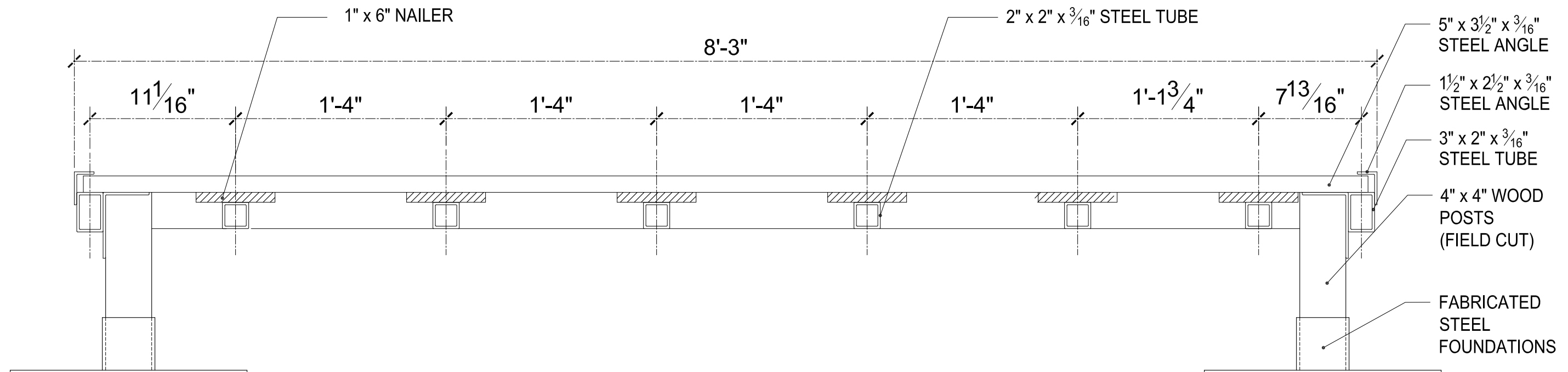




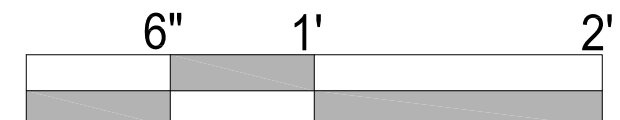




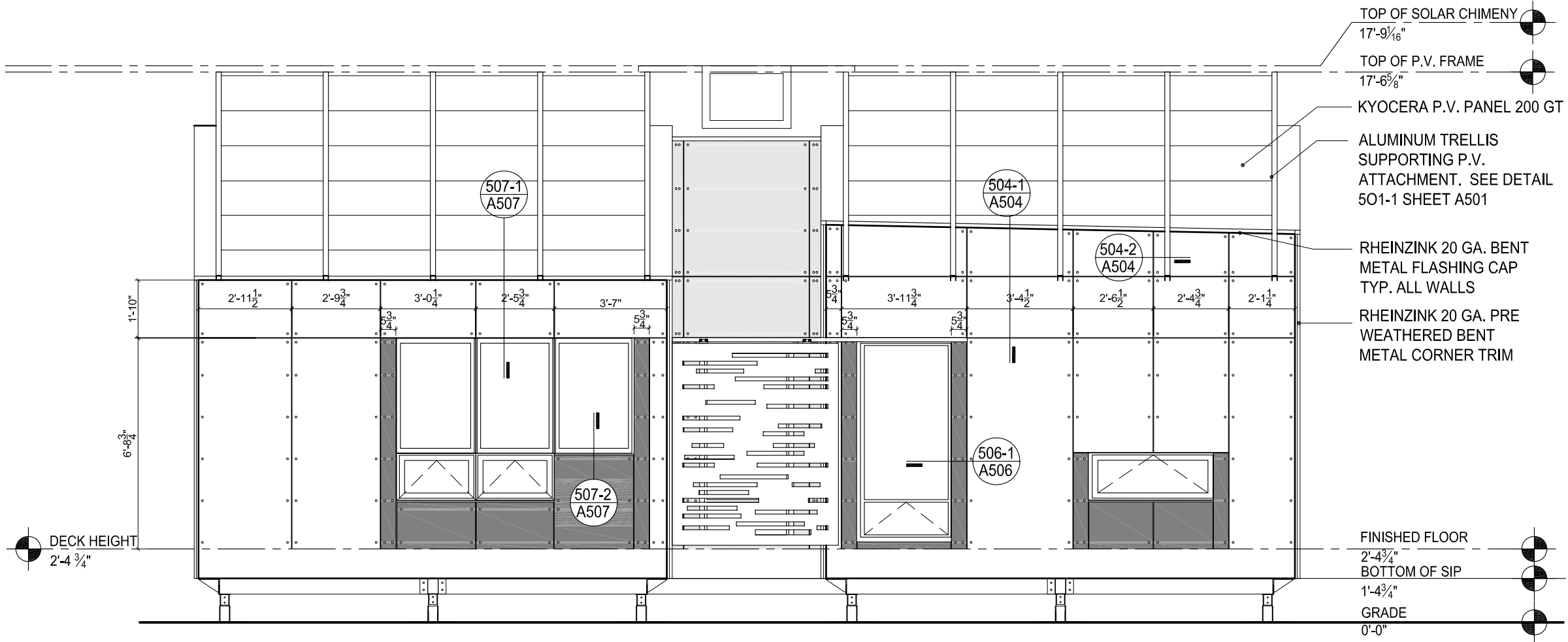
211-1 SECTION OF DECK MODULE "P"  
A209 SCALE: 1 1/2"=1'-0"  
A211



211-2 SECTION OF DECK MODULE "P"  
A209 SCALE: 1 1/2"=1'-0"  
A211







1  
A300

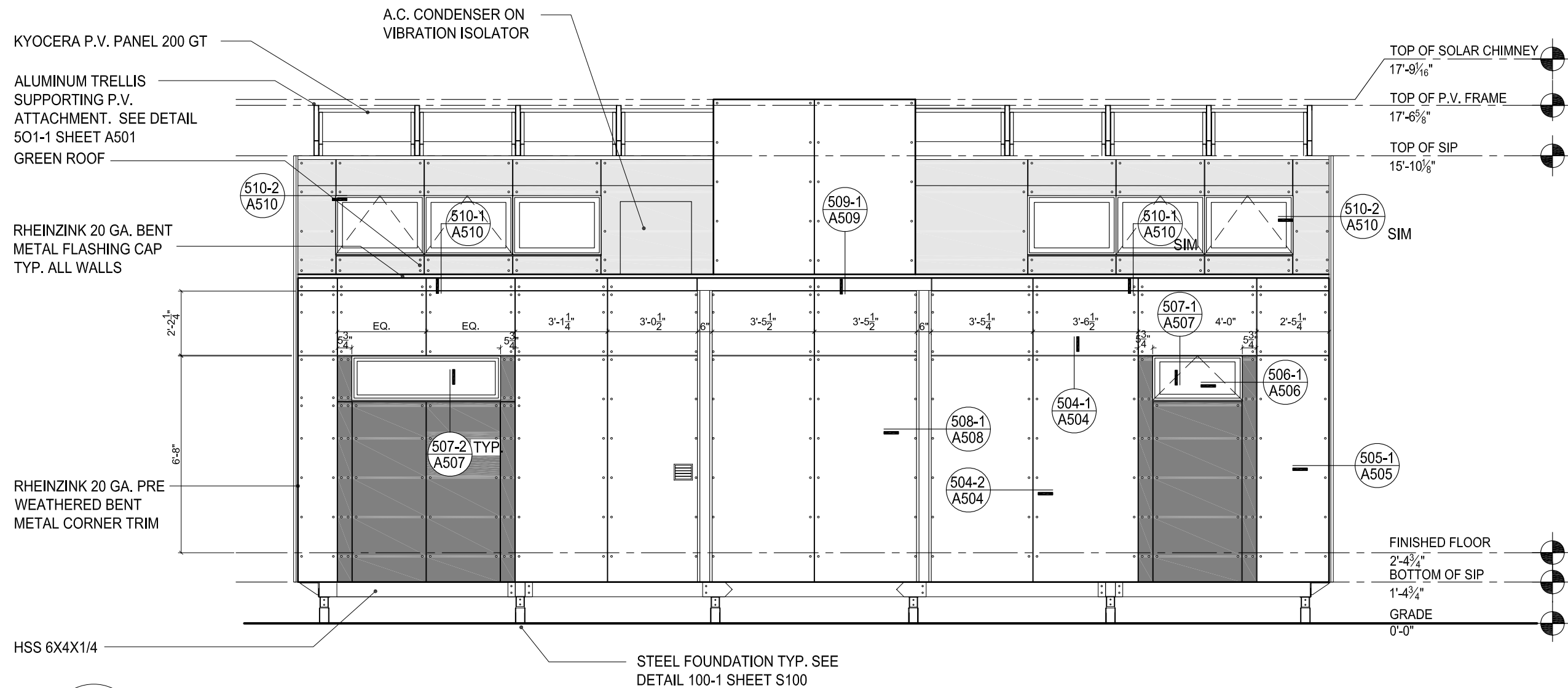
SOUTH ELEVATION

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

- VERTICALLY ORIENTED CEDAR  
RAINSCREEN PANEL
- HORIZONTALLY ORIENTED  
CEDAR RAINSCREEN PANEL



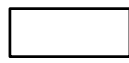



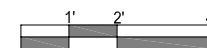


1  
A301

**NORTH ELEVATION**

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

-  VERTICALLY ORIENTED CEDAR  
RAINSCREEN PANEL
-  HORIZONTALLY ORIENTED  
CEDAR RAINSCREEN PANEL



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date  
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LTU\_001

scale  
1/4" = 1'-0"

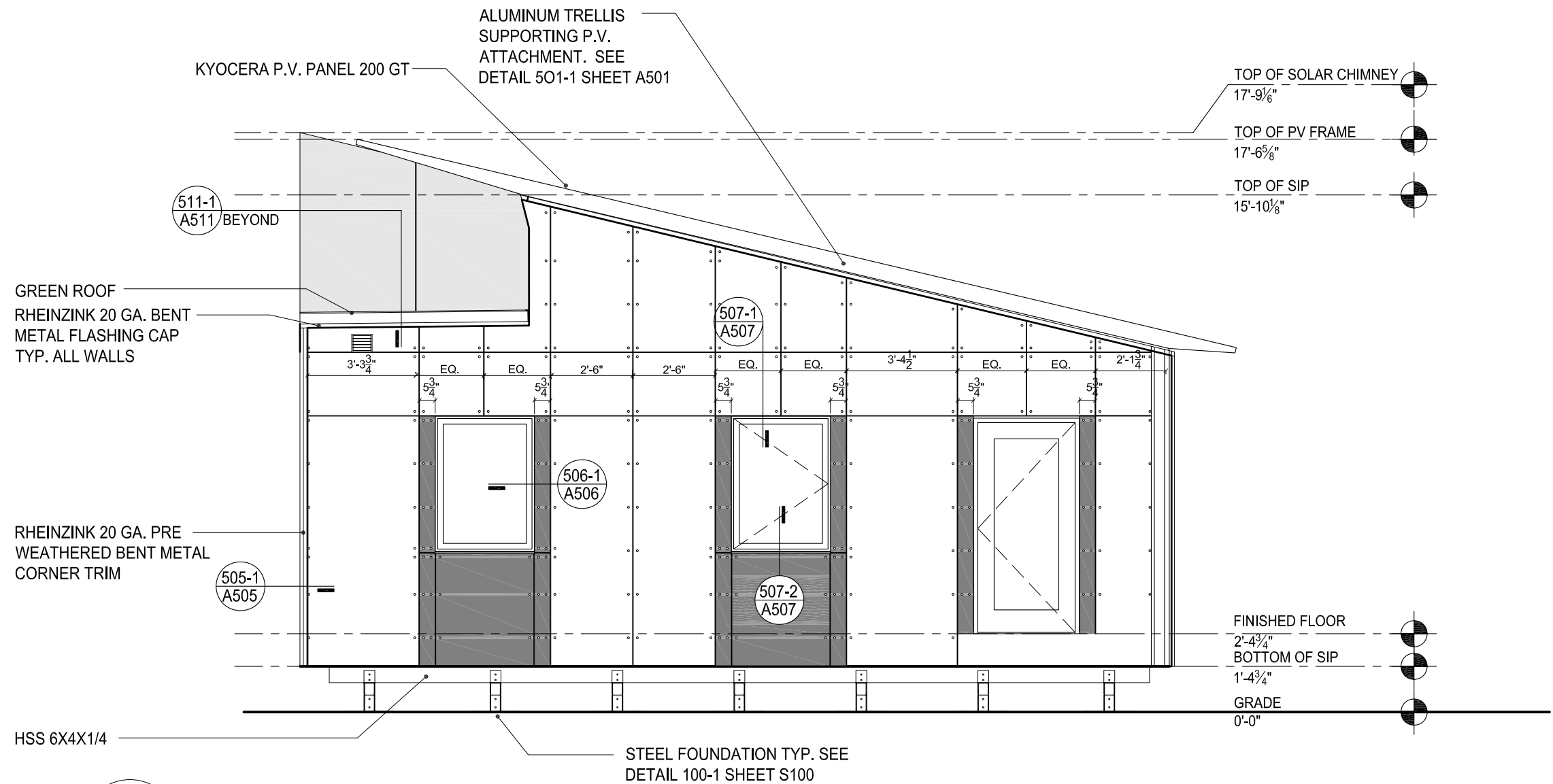
drawn  
SS, CS

checked  
PP

drawing title  
North  
Elevation

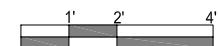
//sheet number  
**A301**





1 WEST ELEVATION  
A302 SCALE: 1/4"=1'-0"

- VERTICALLY ORIENTED CEDAR RAINSCREEN PANEL
- HORIZONTALLY ORIENTED CEDAR RAINSCREEN PANEL



//project

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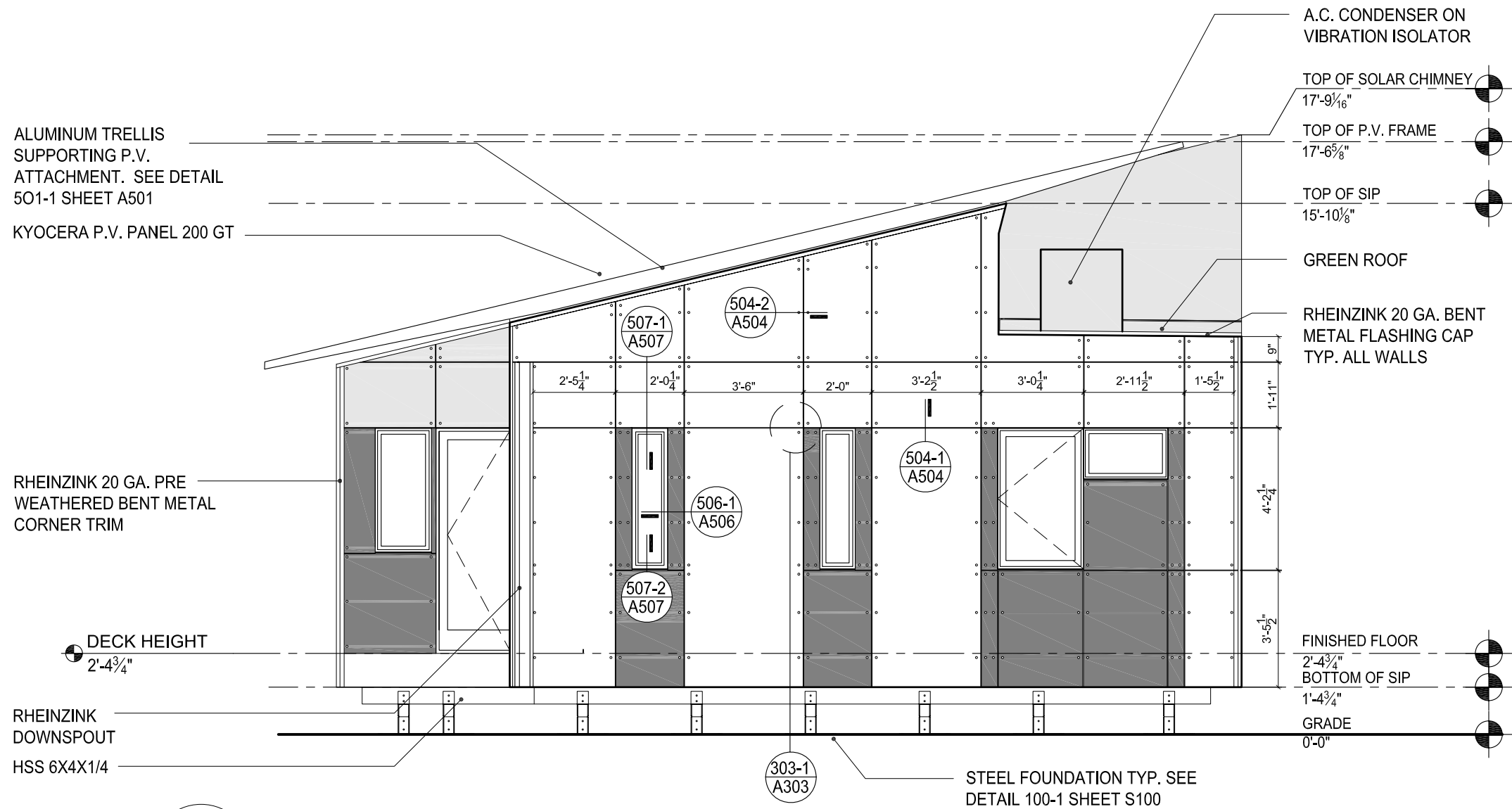
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project number	LTU_001
scale	1/4" - 1'-0"
drawn	SS, CS
checked	PP
drawing title	West Elevation



//sheet number

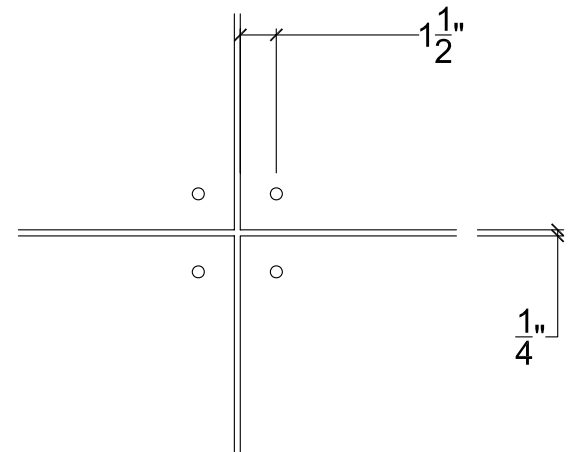
**A302**





1 EAST ELEVATION  
A303  
SCALE: 1/4"=1'-0"

-  VERTICALLY ORIENTED CEDAR RAINSCREEN PANEL
-  HORIZONTALLY ORIENTED CEDAR RAINSCREEN PANEL



502-1 RAINSCREEN DETAIL  
A400  
A401  
A402  
SCALE: 1-1/2" = 1'-0"



//project

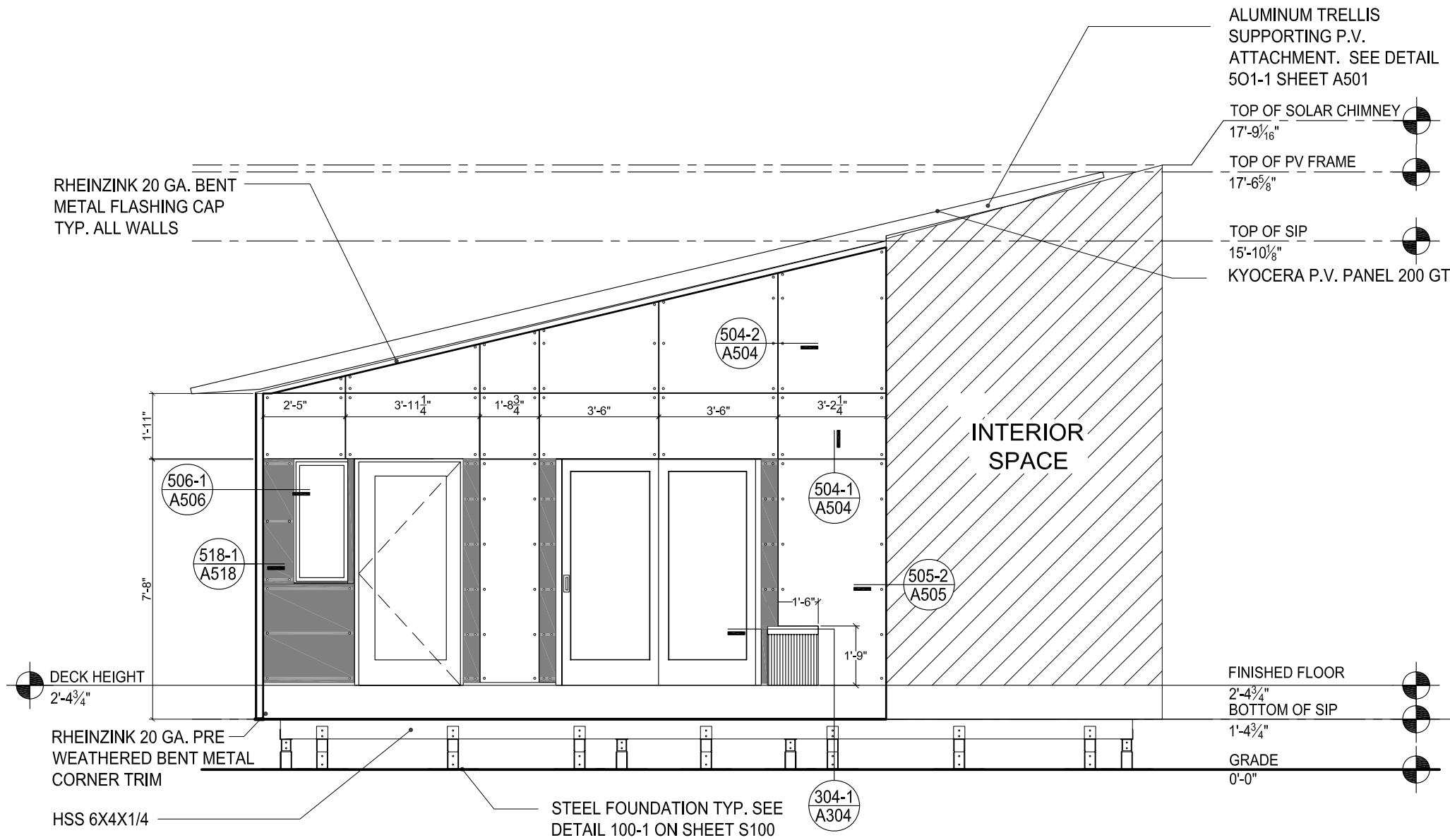
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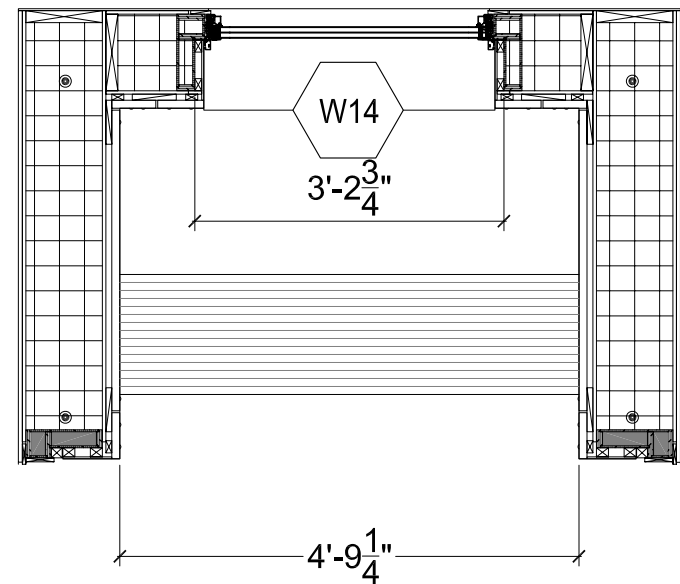
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Final Construction Document Submittal	7.Aug.2007
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project number	LTU_001
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checked	PP
drawing title	East Elevation
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A303	



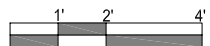


1 EAST COURTYARD ELEVATION  
A304 SCALE: 1/4"=1'-0"

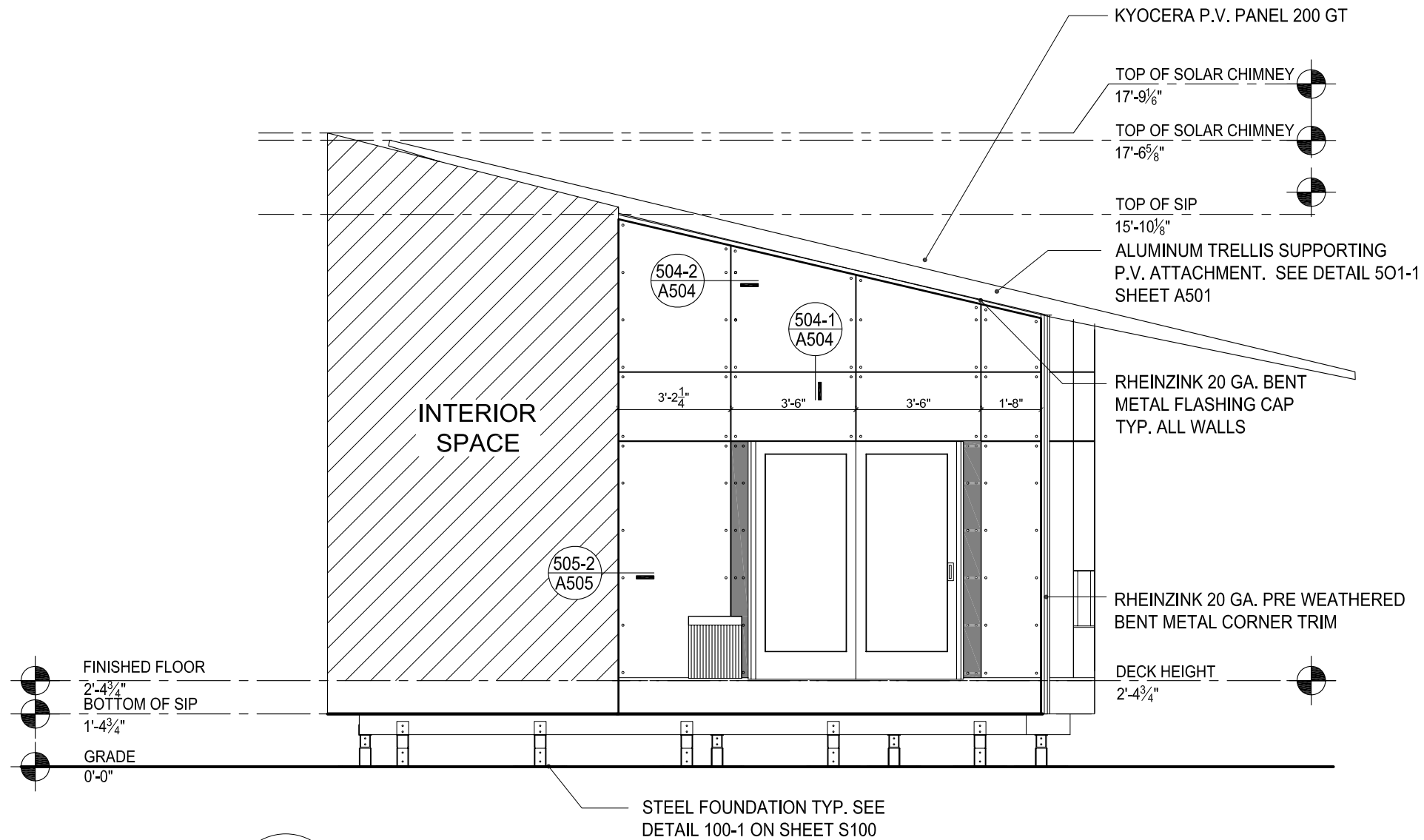
- VERTICALLY ORIENTED CEDAR RAINSCREEN PANEL
- HORIZONTALLY ORIENTED CEDAR RAINSCREEN PANEL



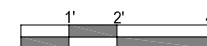
304-1 COURTYARD BENCH  
A304 SCALE: 1/2"=1'-0"







- VERTICALLY ORIENTED CEDAR  
RAINSREEN PANEL
- HORIZONTALLY ORIENTED  
CEDAR RAINSCREEN PANEL



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//sheet information

date  
7.Aug.2007

project number  
LTU\_001

scale  
1/4" = 1'-0"

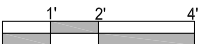
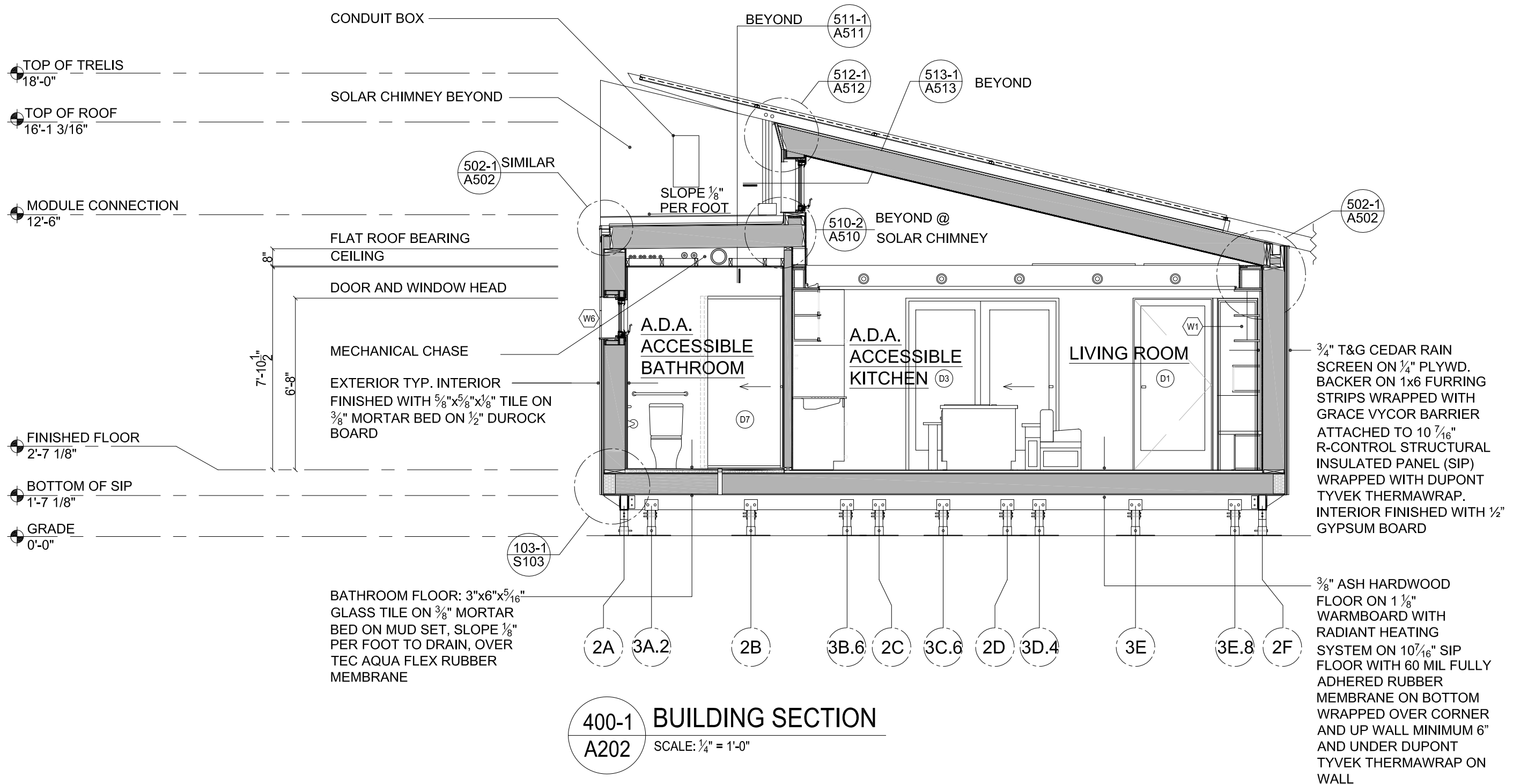
drawn  
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checked  
PP

drawing title  
West Courtyard Elevation

//sheet number  
**A305**





//project

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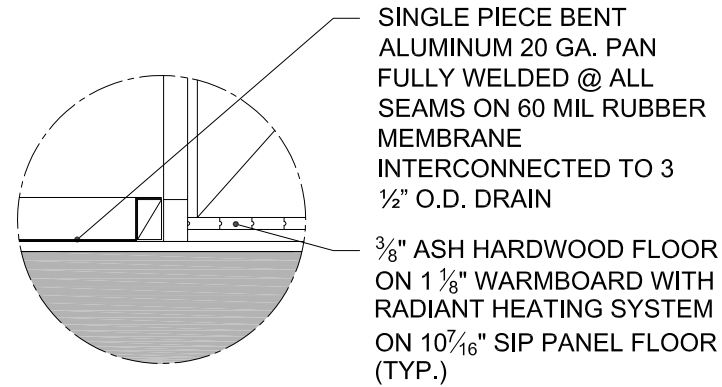
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date	7.Aug.2007
project number	LTU_001
scale	1/4"=1'-0"
drawn	J.S., C.T.
checked	P.P., H.R.
drawing title	Building Module 1 Section

//sheet number

**A400**





401-2 DRAIN PN IN PLUMBING CLOSET  
A202 SCALE: 1/4" = 1'-0"

TOP OF TRELLIS  
18'-0"

TOP OF SOLAR CHIMNEY  
18'-0"

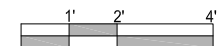
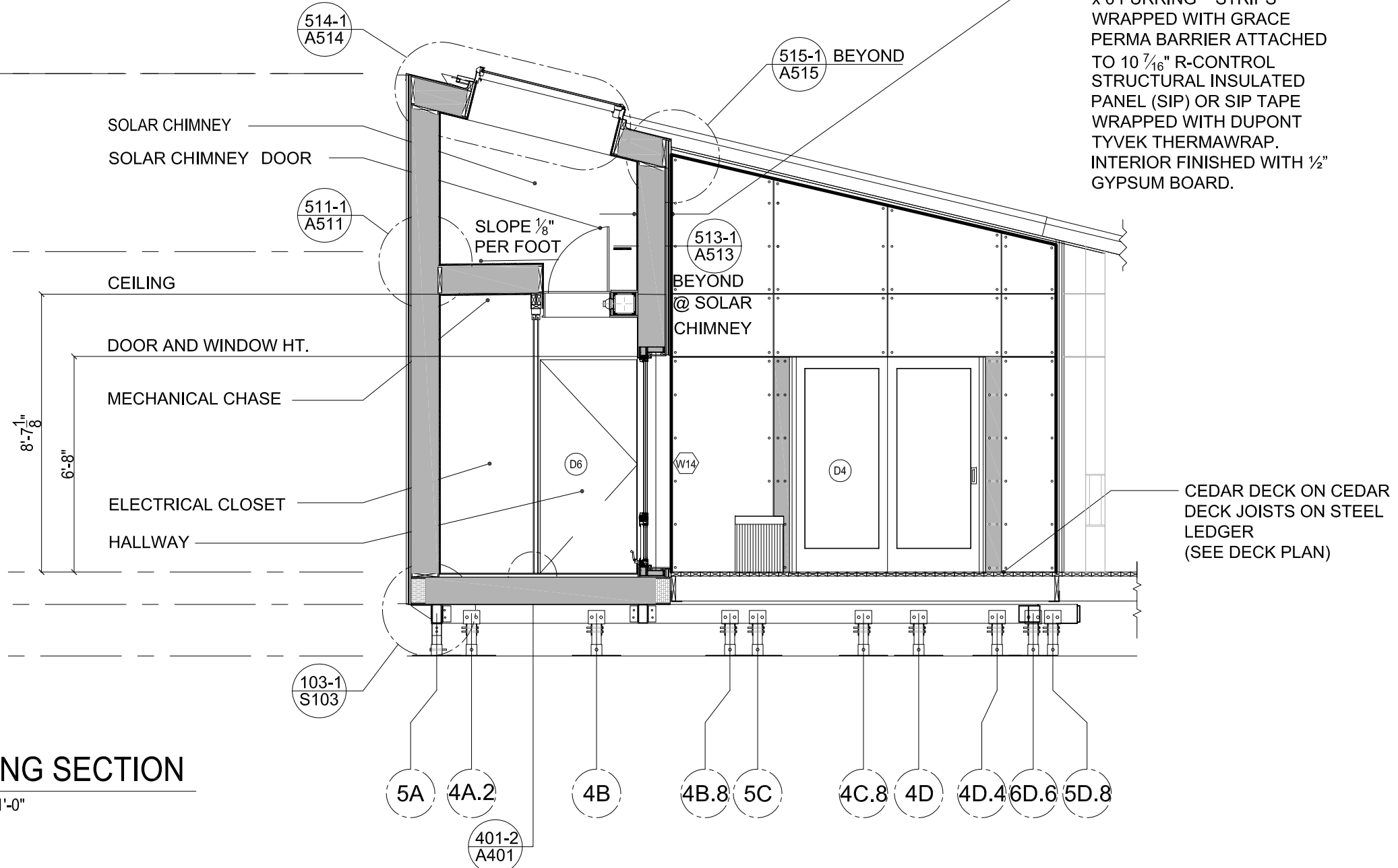
MODULE CONNECTION  
12'-6"

FINISHED FLOOR  
2'-7 1/8"

BOTTOM OF SIP  
1'-7 1/8"

GRADE  
0'-0"

401-1 BUILDING SECTION  
A202 SCALE: 1/4" = 1'-0"



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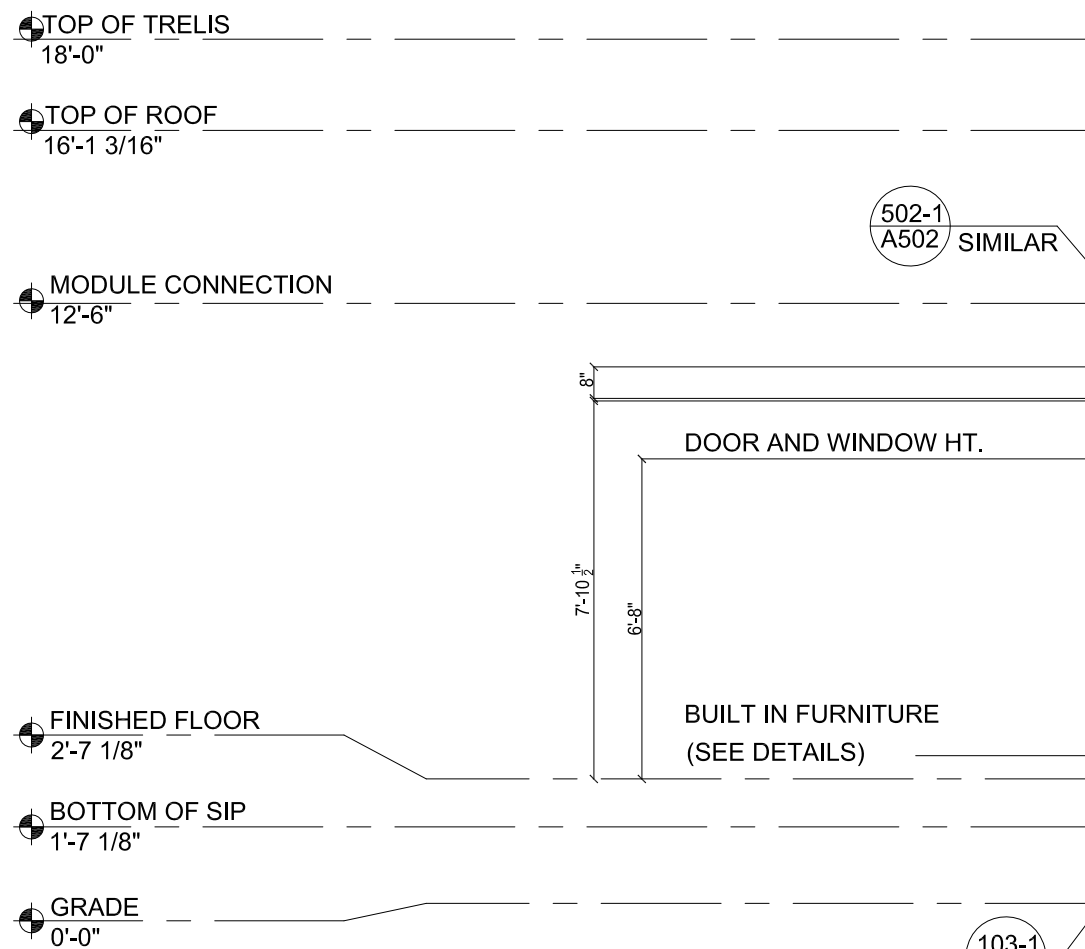
date	7.Aug.2007
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drawn	J.S., C.T.
checked	P.P., H.R.
drawing title	

Building  
Module 2  
Section

//sheet number

A401

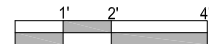




402-1 BUILDING SECTION  
A202 SCALE: 1/4" = 1'-0"

3/4" T&G CEDAR RAIN SCREEN ON 1/4" PLYWD. BACKER ON 1 x 6 FURRING STRIPS WRAPPED WITH GRACE PERMA BARRIER ATTACHED TO 10 7/16" R-CONTROL STRUCTURAL INSULATED PANEL (SIP) OR SIP TAPE WRAPPED WITH DUPONT TYVEK THERMAWRAP. INTERIOR FINISHED WITH 1/2" GYPSUM BOARD.

3/8" ASH HARDWOOD FLOOR ON 1 1/8" WARMBOARD WITH RADIANT HEATING SYSTEM ON 10 7/16" SIP FLOOR WITH 60 MIL FULLY ADHERED RUBBER MEMBRANE ON BOTTOM WRAPPED OVER CORNER AND UP WALL MINIMUM 6" AND UNDER DUPONT TYVEK THERMAWRAP ON WALL.



//project

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SOLAR DECATHLON 2007

LTU

//revisions

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//sheet information

date  
7.Aug.2007

project number  
LTU\_001

scale  
1/4"=1'-0"

drawn  
J.S., C.T.

checked  
P.P., H.R.

drawing title  
Building Module 3 Section

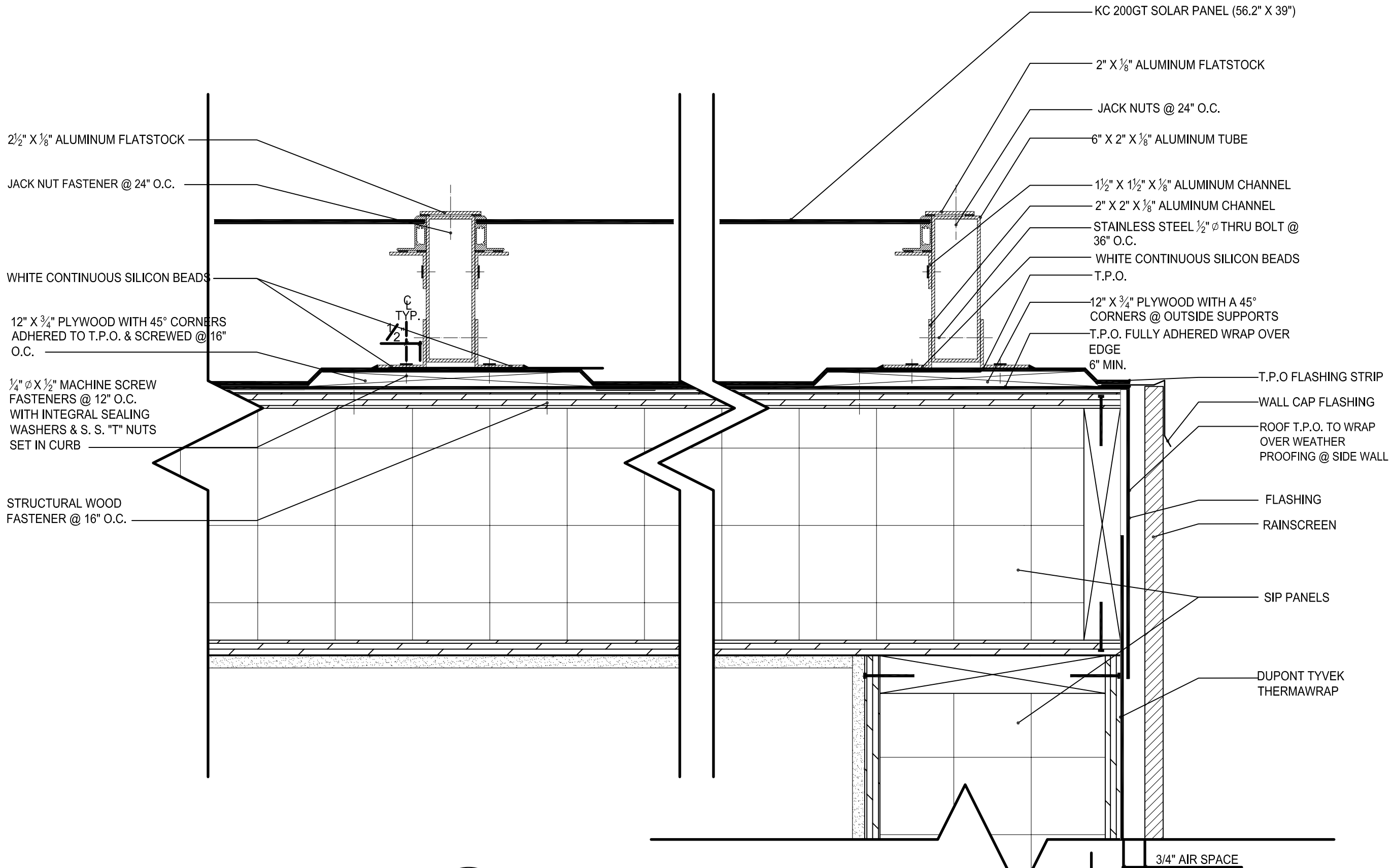
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A402





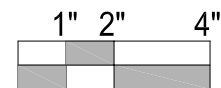




501-1  
A204  
A403

P.V. ATTACHMENT DETAIL @ SIDE SUPPORT

SCALE: 3"=1'-0"



//revisions	
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	CS
checked	HR
drawing title	P.V. Attachment Detail



//revisions  
Issued for Date  
Final Construction Document Submittal 7.Aug.2007

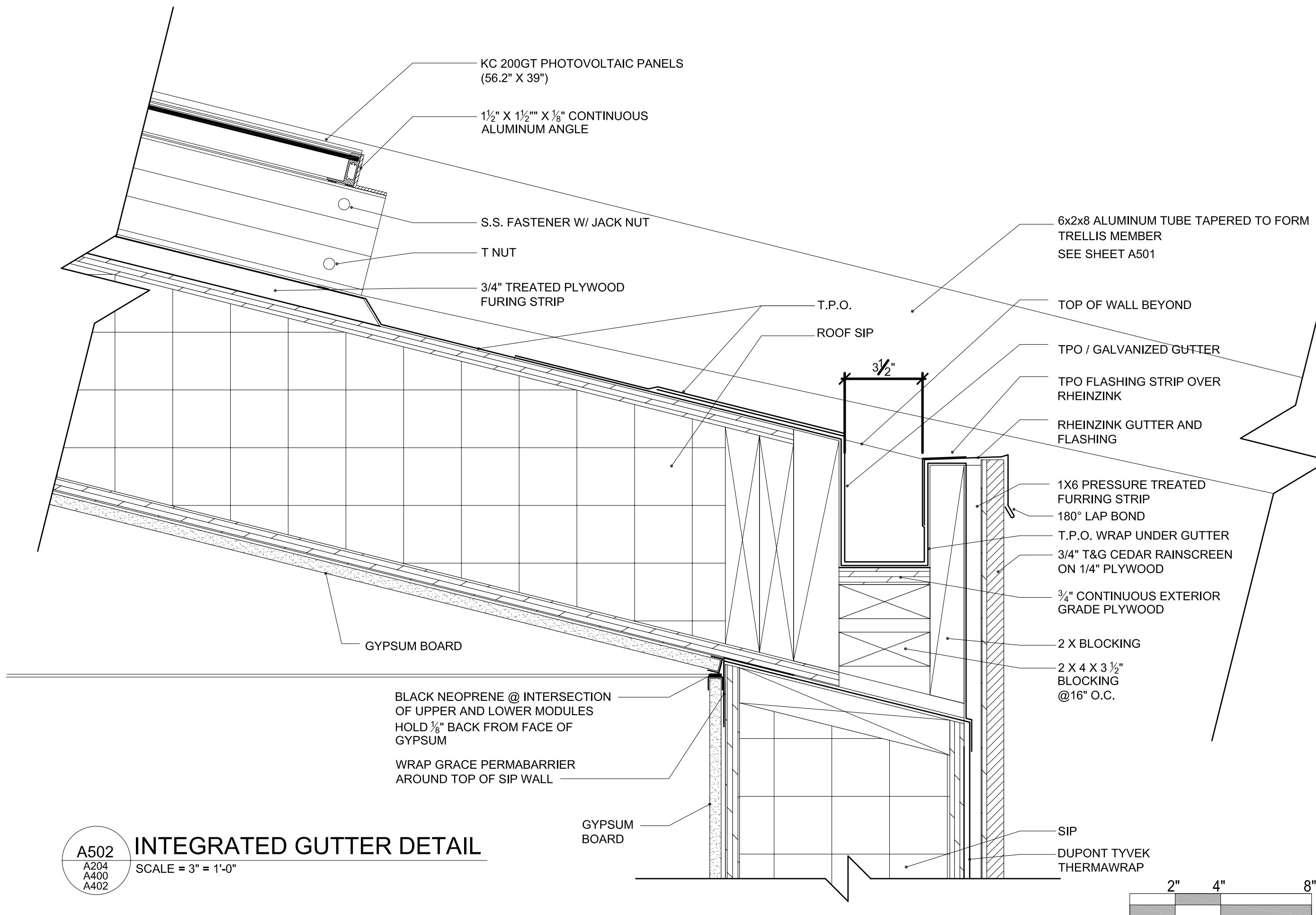
//sheet information

date 7.Aug.2007  
project number LTU\_001  
scale 3"=1'-0"  
drawn ST  
checked PP  
drawing title

Integrated Gutter Detail

//sheet number

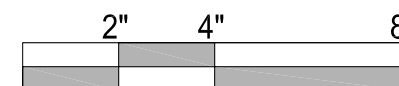
**A502**



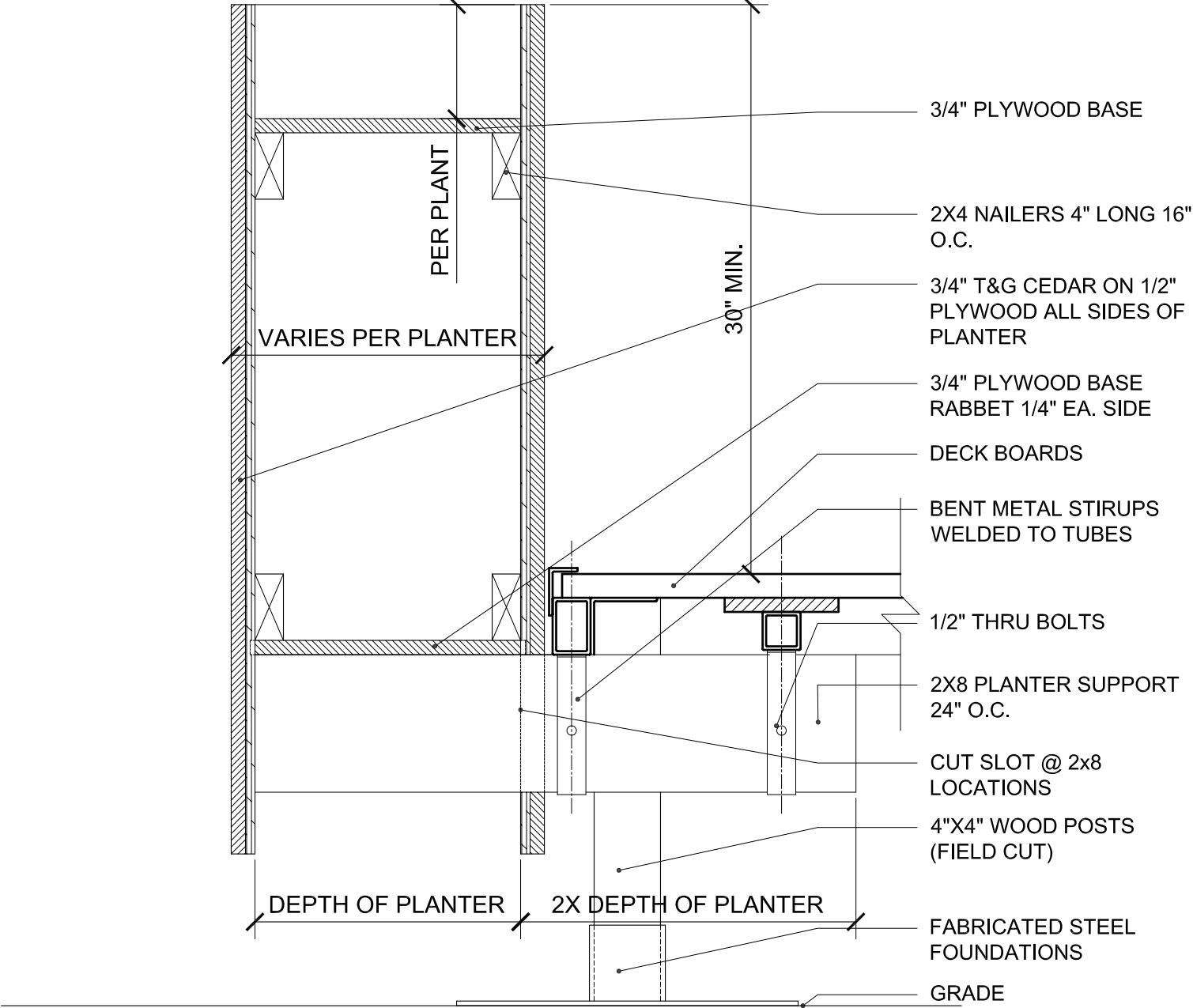
A502  
A204  
A400  
A402

## INTEGRATED GUTTER DETAIL

SCALE = 3" = 1'-0"



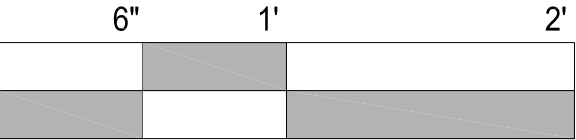




503.1  
A209

**TYPICAL PLANTER SECTION**

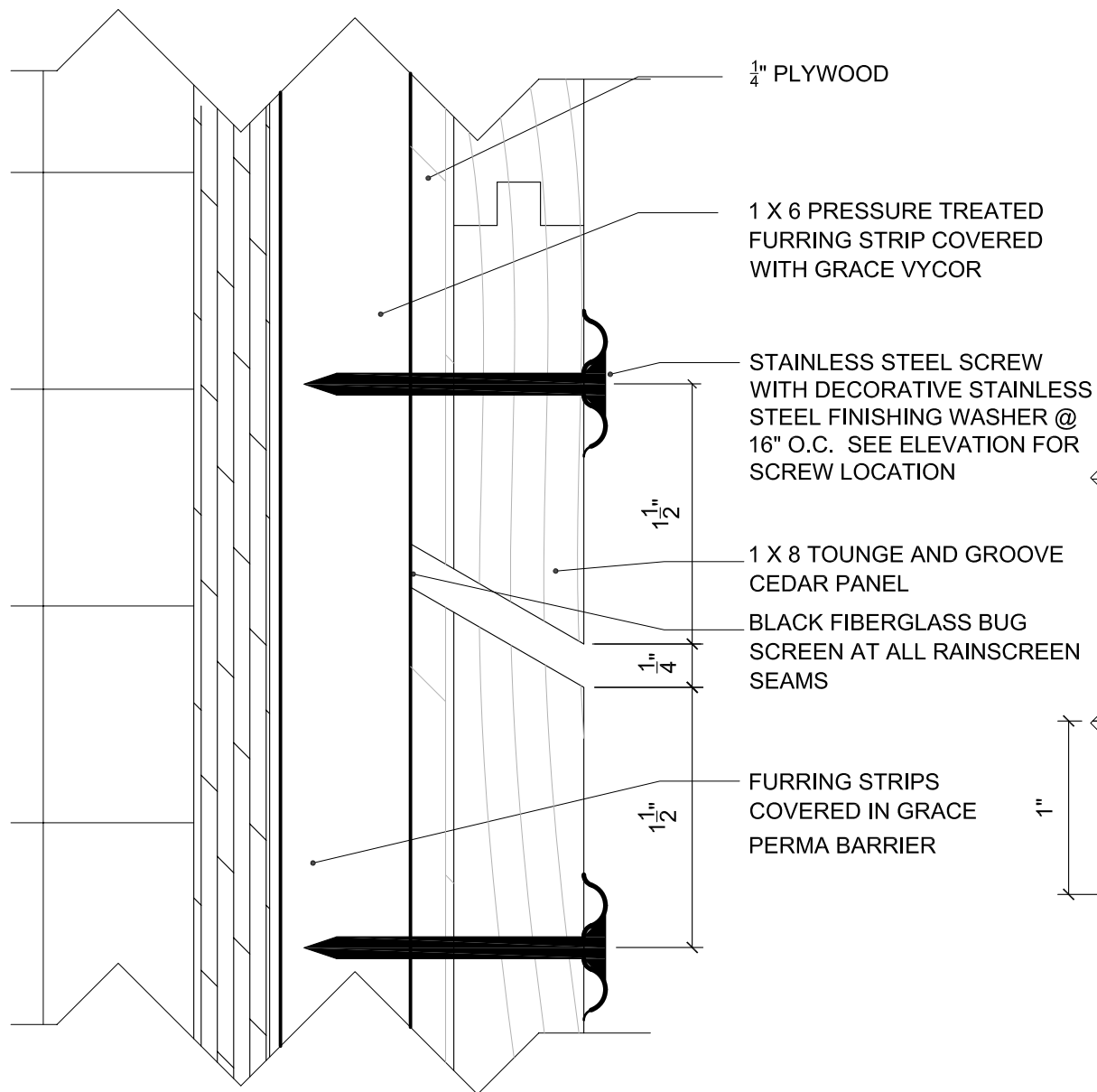
SCALE: 1 1/2"=1'-0"



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//revisions	
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	1-1/2"=1'-0"
drawn	J.L.
checked	PP
drawing title	Typical Planter Section
//sheet number	<b>A503</b>

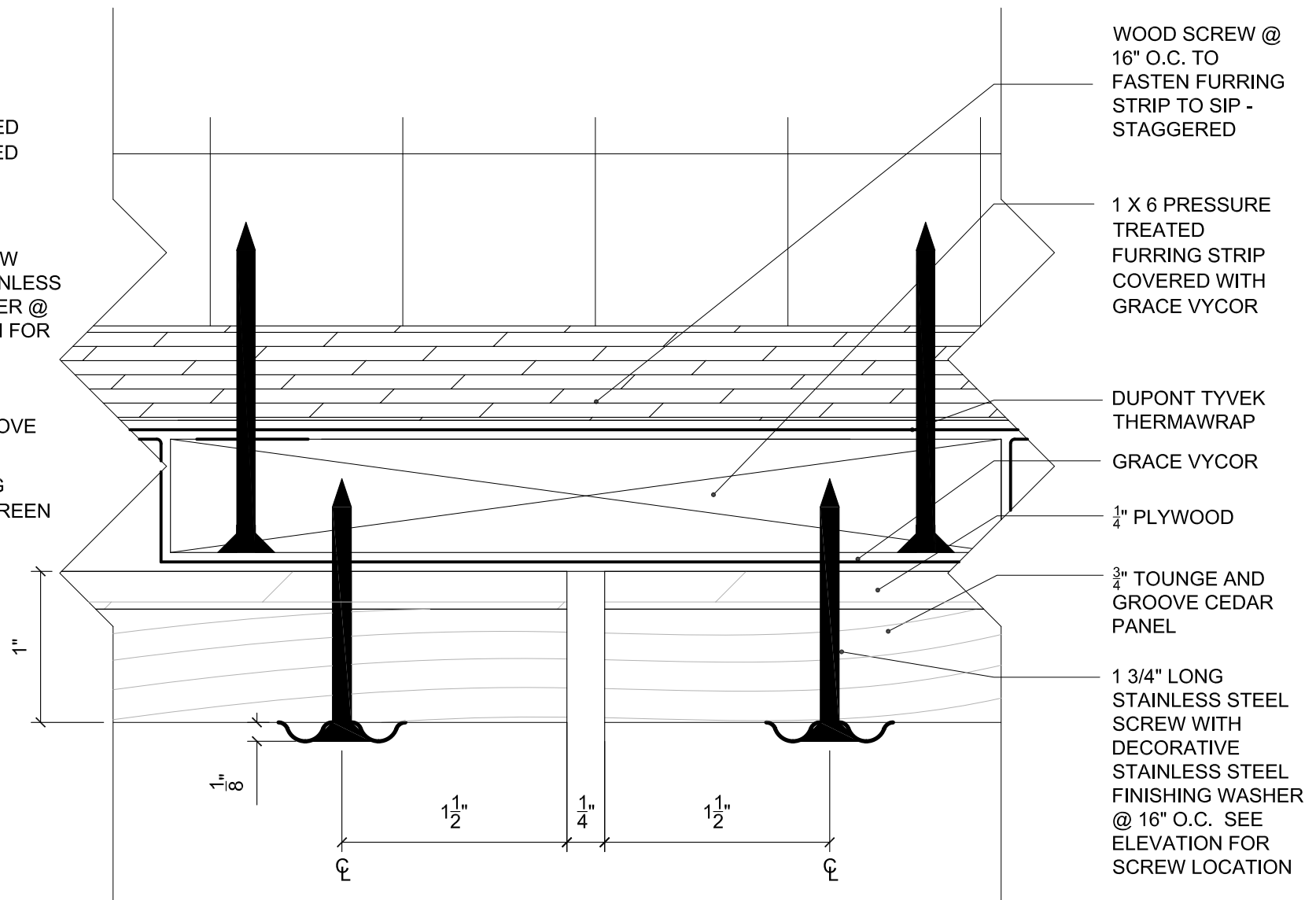




504-1  
A300  
A301

## HORIZONTAL JOINT TYP.

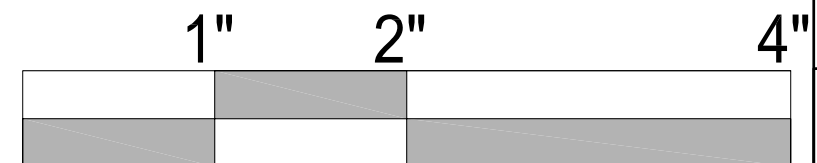
SCALE = ACTUAL SIZE



504-2  
A300  
A301

## VERTICAL JOINT TYP.

SCALE = ACTUAL SIZE

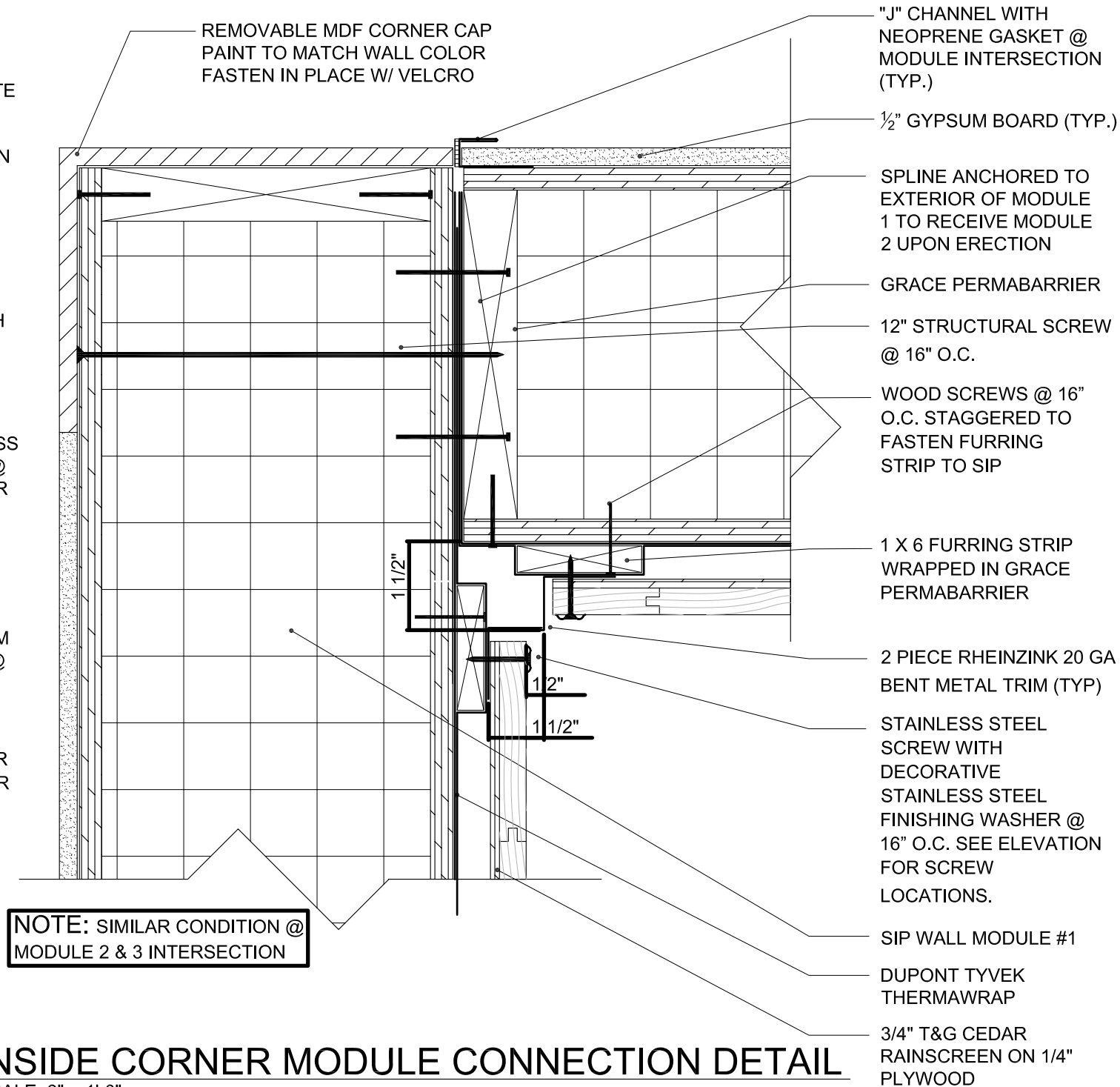
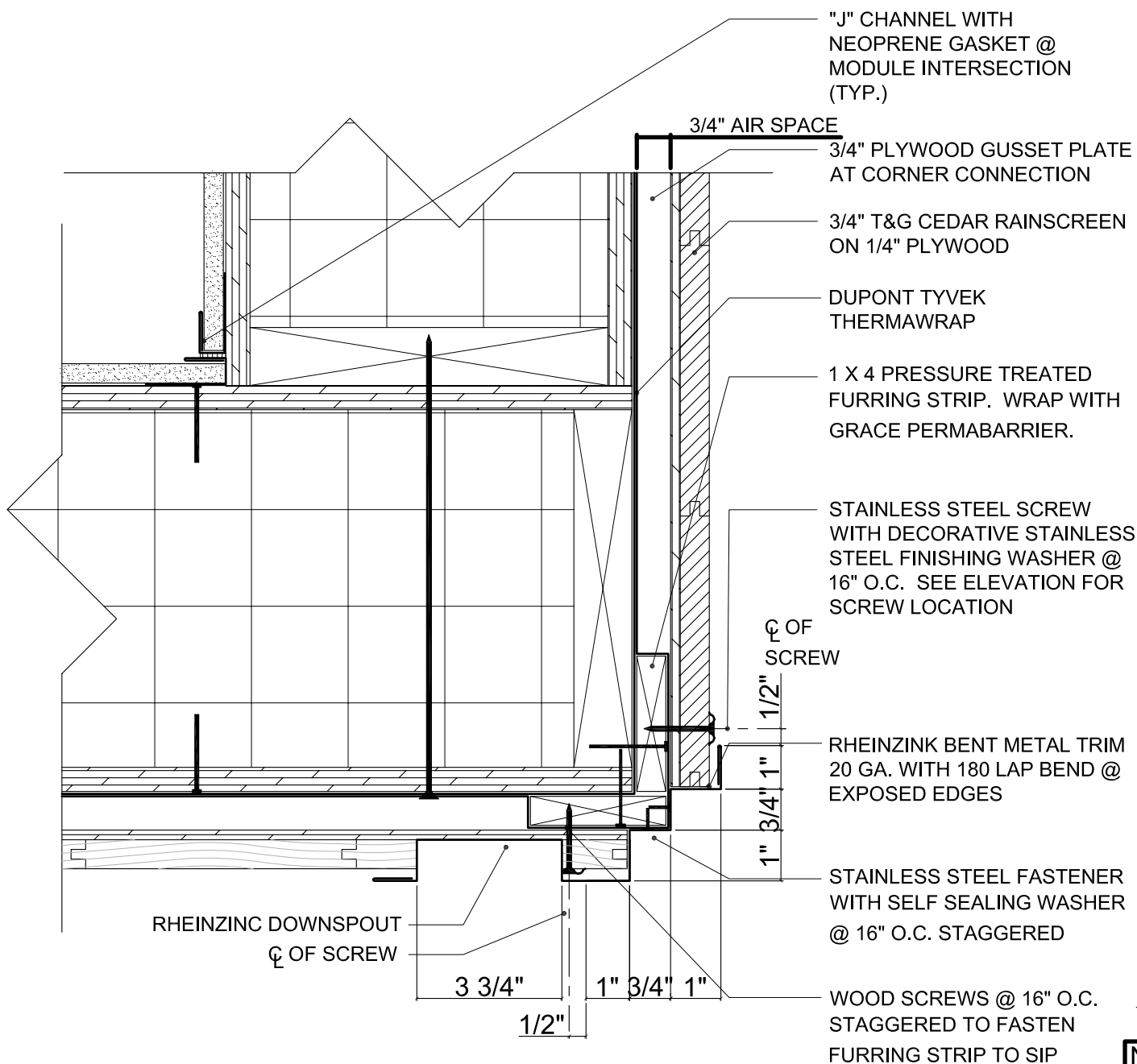


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Issued for	Date
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	1'-0"=1'-0"
drawn	A.F., S.T.
checked	PP
drawing title	Rainscreen Joint Details

//sheet number
<b>A504</b>





NOTE: SIMILAR CONDITION @  
MODULE 2 & 3 INTERSECTION

505-1  
A300  
A301

## TYPICAL PLANTER SECTION

SCALE: 3" = 1'-0"

505-2  
A300

## INSIDE CORNER MODULE CONNECTION DETAIL

SCALE: 3" = 1'-0"



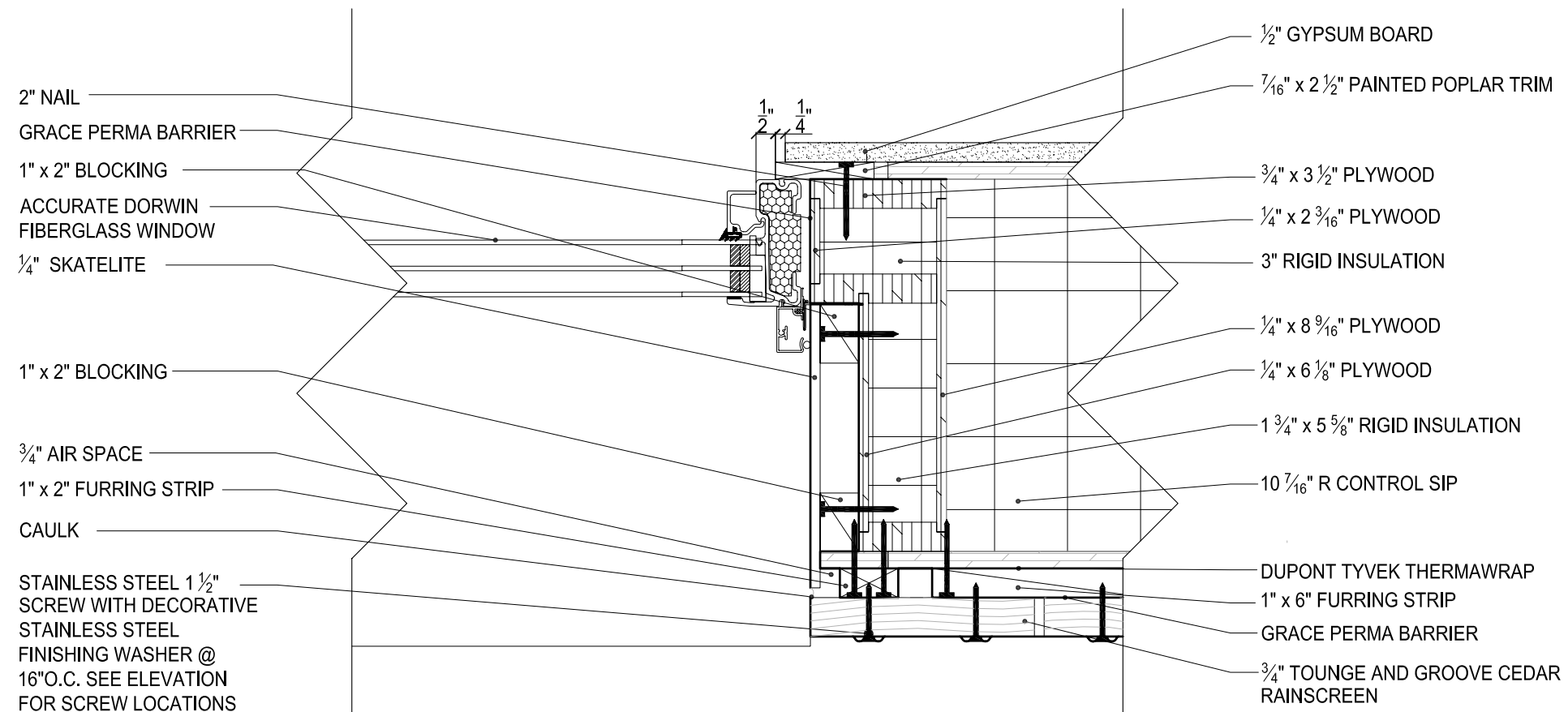
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3"-1'-0"
drawn	ST
checked	PP
drawing title	

Corner Trim and  
Corner  
Connection  
Details

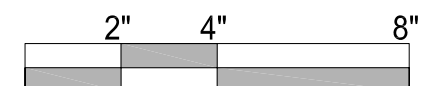
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**A505**





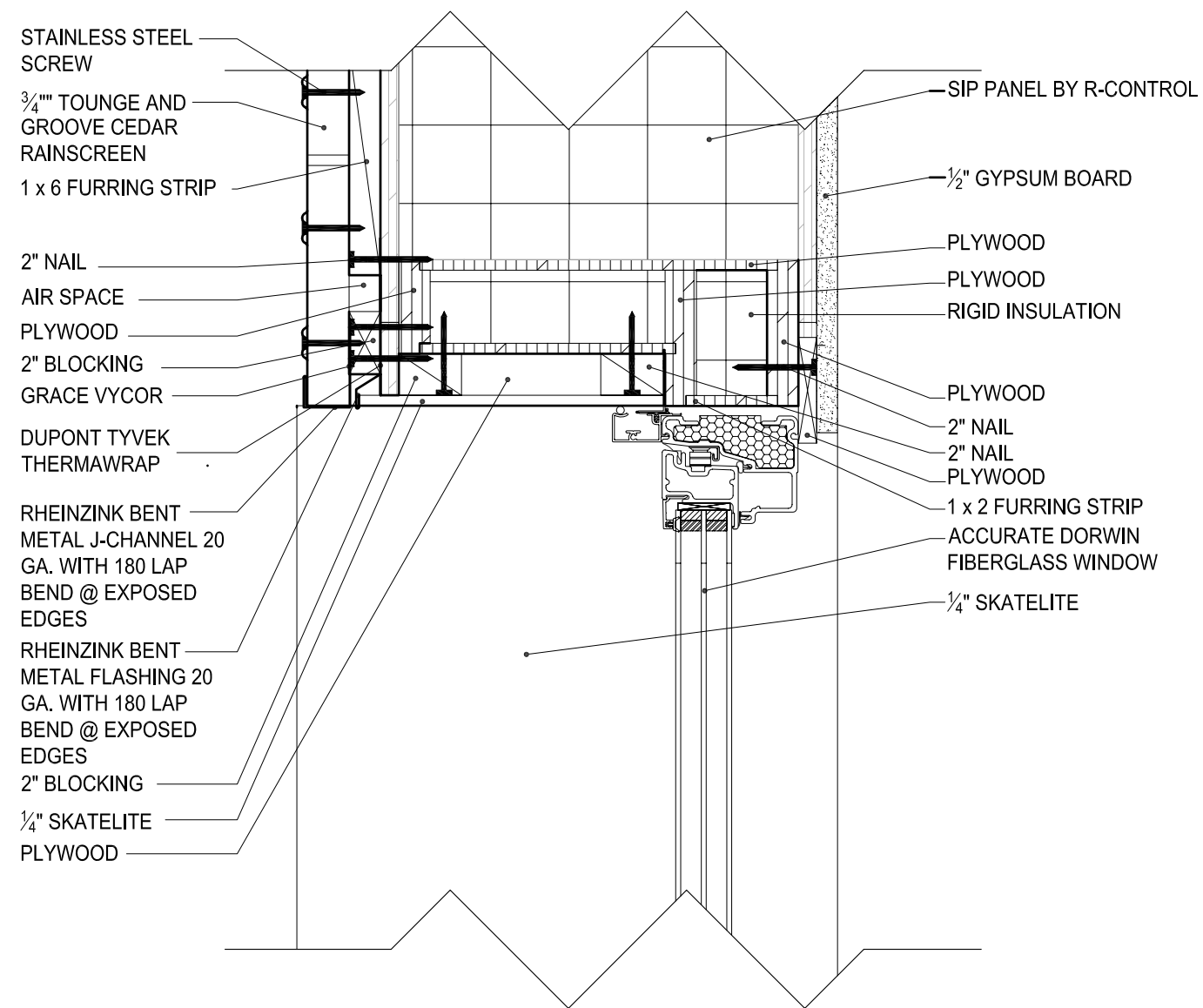
A506  
 A301

**WINDOW JAMB DETAIL**  
 SCALE = 3" = 1'-0"



//revisions	
Issued for	Date
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	CW, ST
checked	PP
drawing title	Window Jamb Detail
//sheet number	
<b>A506</b>	

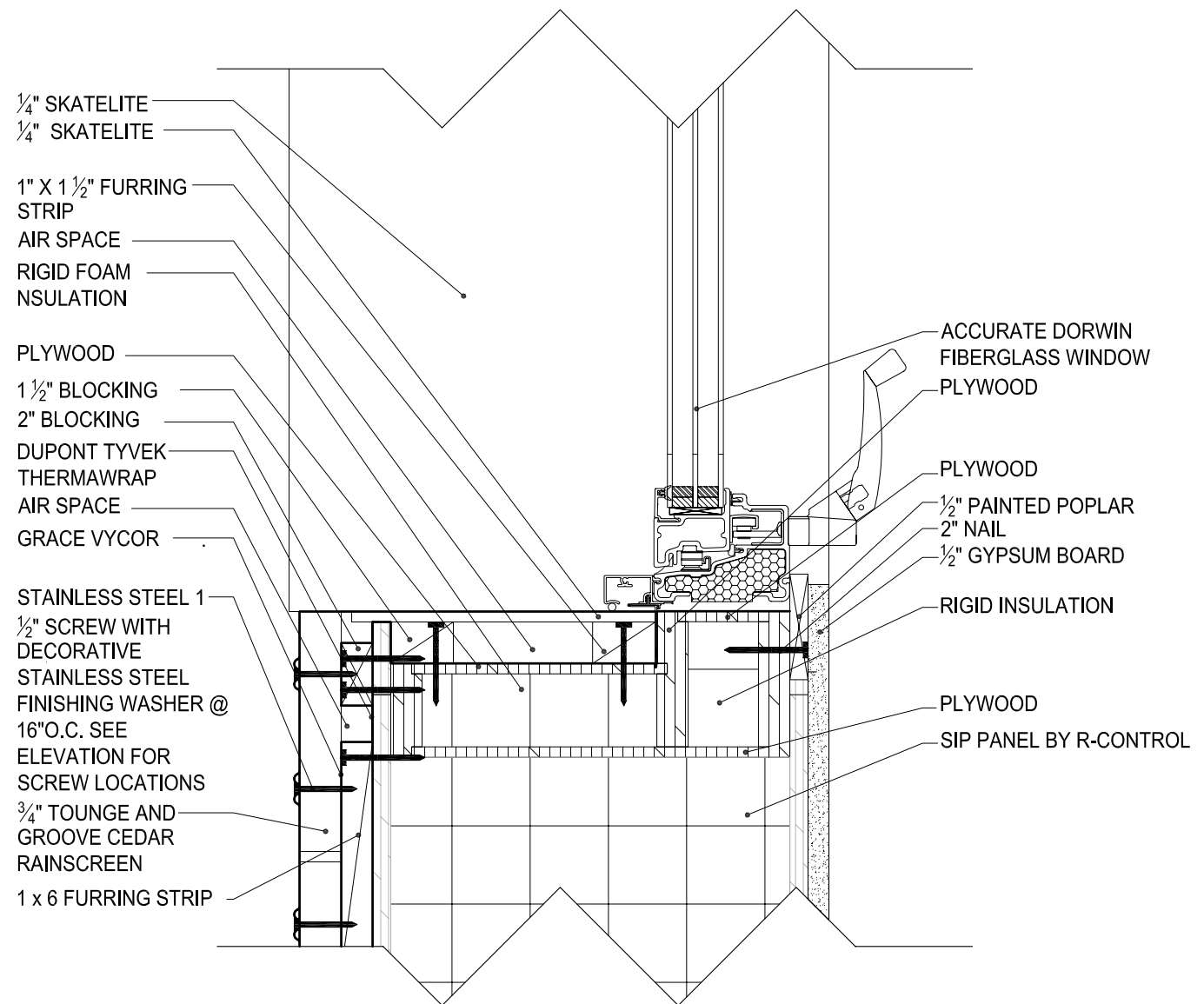




507-1  
A301

**WINDOW HEAD DETAIL**

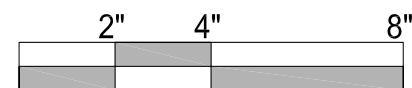
SCALE = 3" = 1'-0"



507-2  
A301

**WINDOW SILL DETAIL**

SCALE = 3" = 1'-0"



//project

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//revisions

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//sheet information

date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	CW
checked	PP
drawing title	Window Head and Sill Detail

//sheet number

**A507**

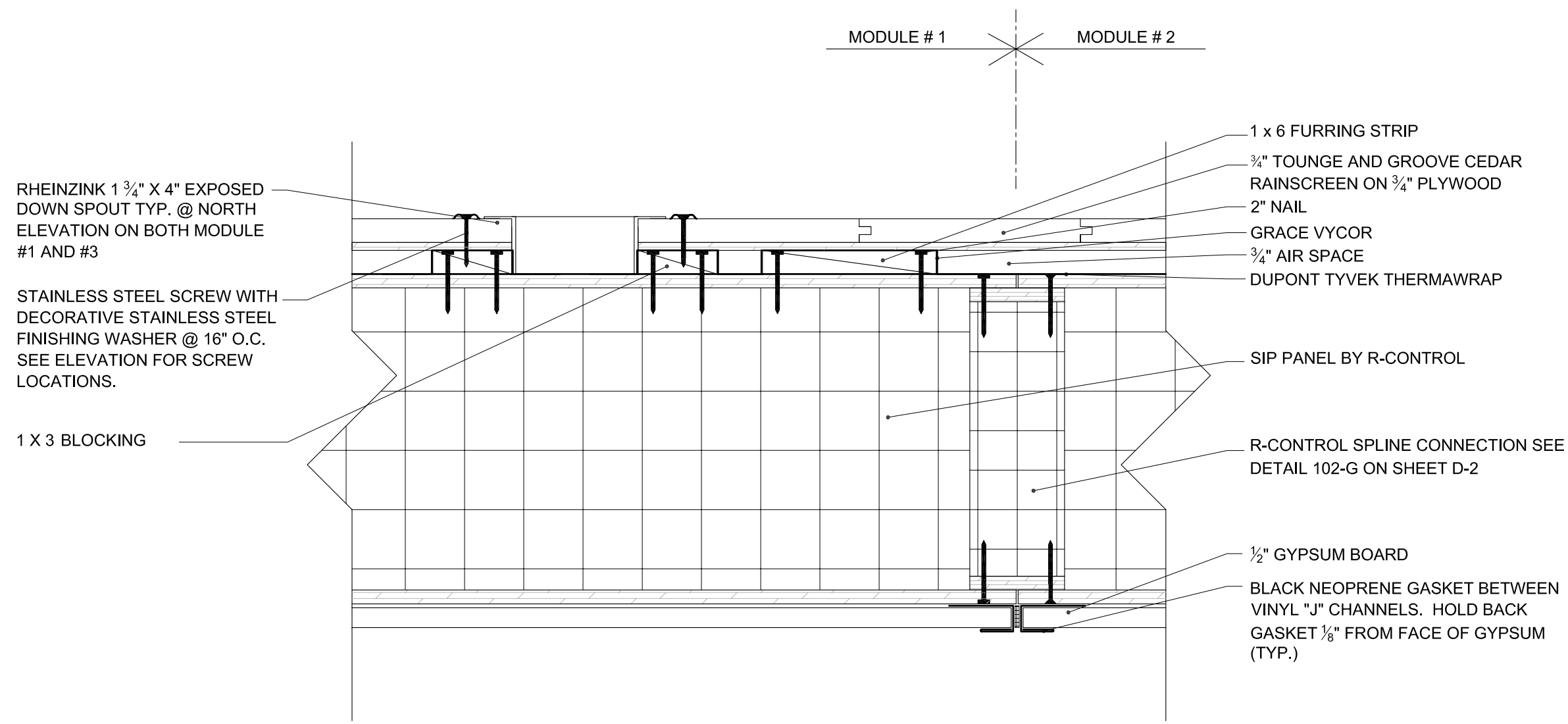


//revisions

Issued for	Date
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//sheet information

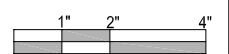
date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	CW
checked	PP
drawing title	Module Connection Detail



A508  
A301

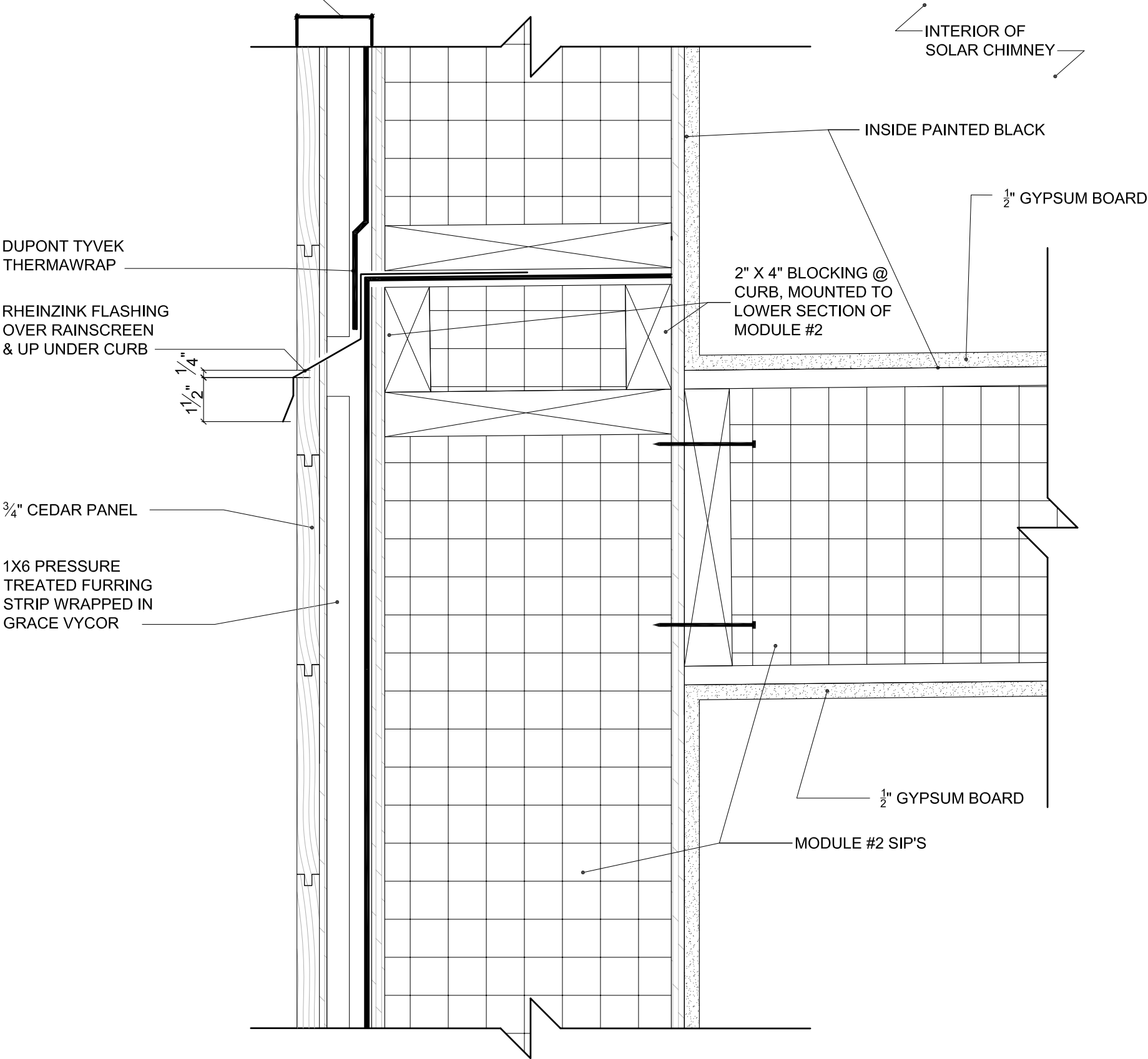
MODULE CONNECTION DETAIL

SCALE = 3" = 1'-0"

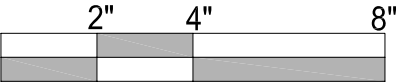




SPACE IS EXAGGERATED FOR  
CLARITY OF MATERIALS



A509 CURB DETAIL @ NORTH WALL OF SOLAR CHIMNEY  
A301 SCALE = 3" = 1'-0"



//project

aloterra

LTU SOLAR DECATHLON 2007

//revisions

Issued for	Date
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//sheet information

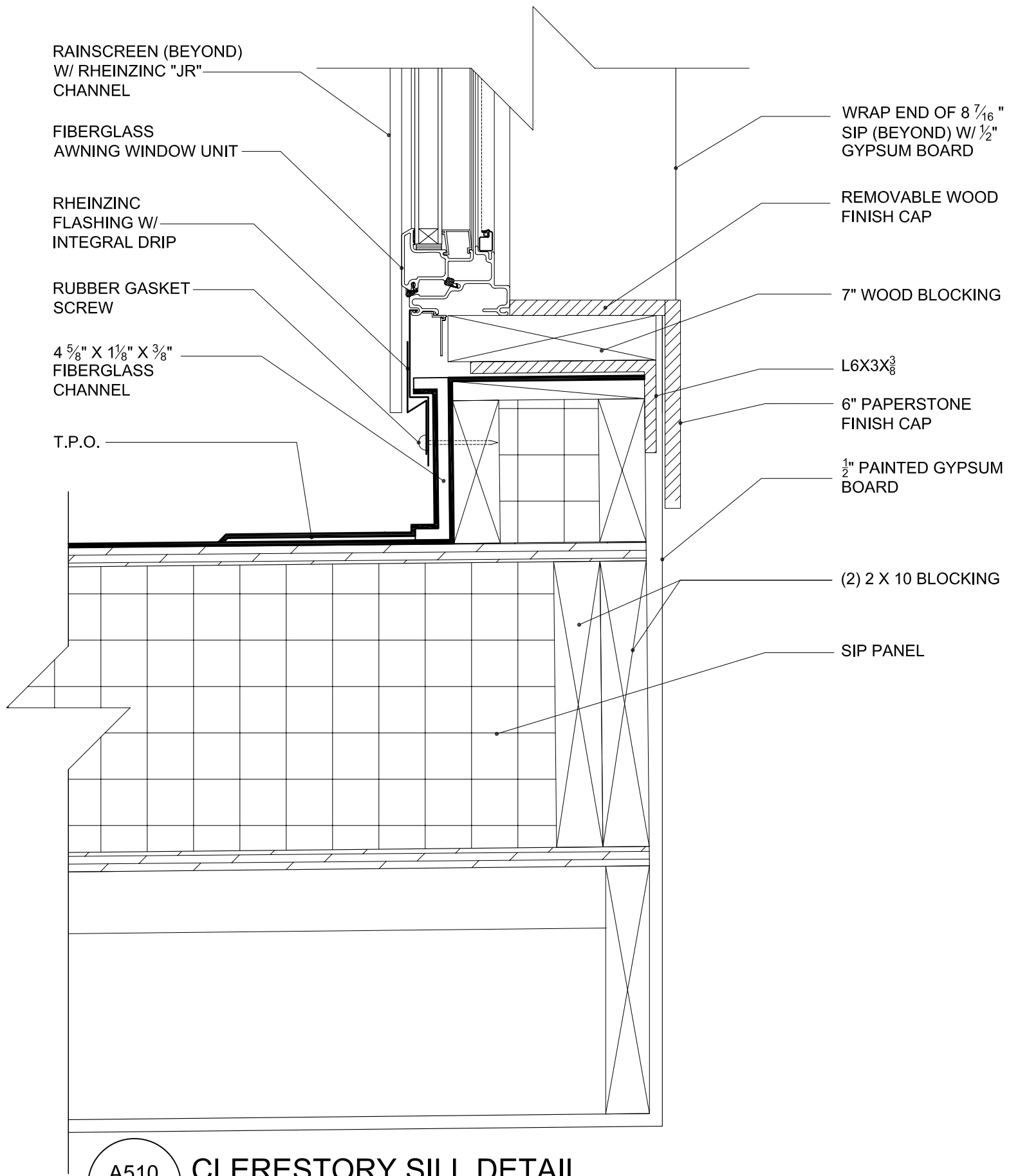
date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	INITIALS
checked	PP
drawing title	

Curb Detail @ North Wall of Solar Chimney

//sheet number

A509

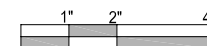




A510  
A301

## CLERESTORY SILL DETAIL

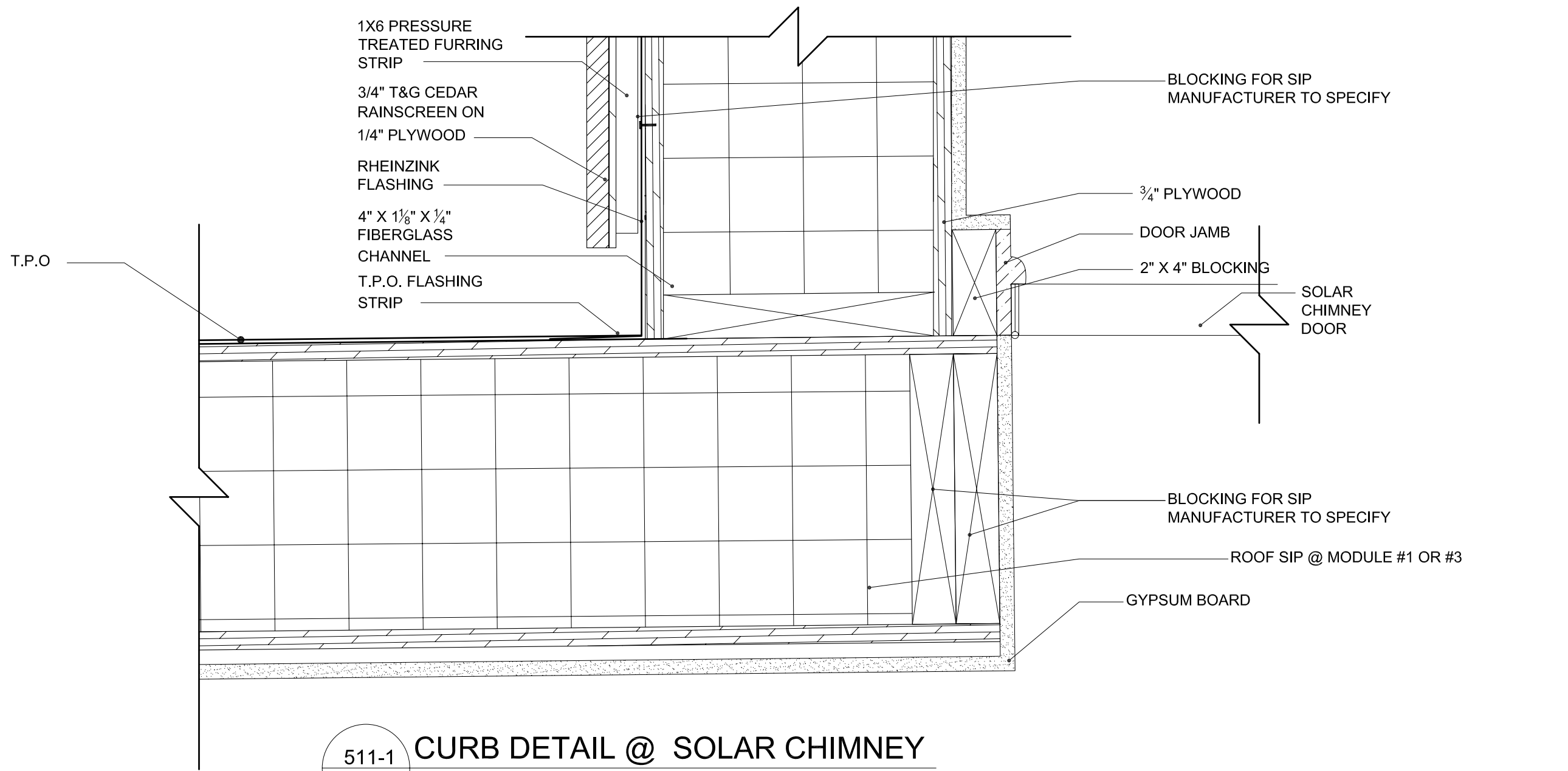
SCALE: 3" = 1'-0"



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Issued for	Date
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//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	1/4"=1'-0"
drawn	SS
checked	PP
drawing title	Window Detail
//sheet number	
<b>A510</b>	





511-1  
A-302

**CURB DETAIL @ SOLAR CHIMNEY**

SCALE = 3" = 1'-0"



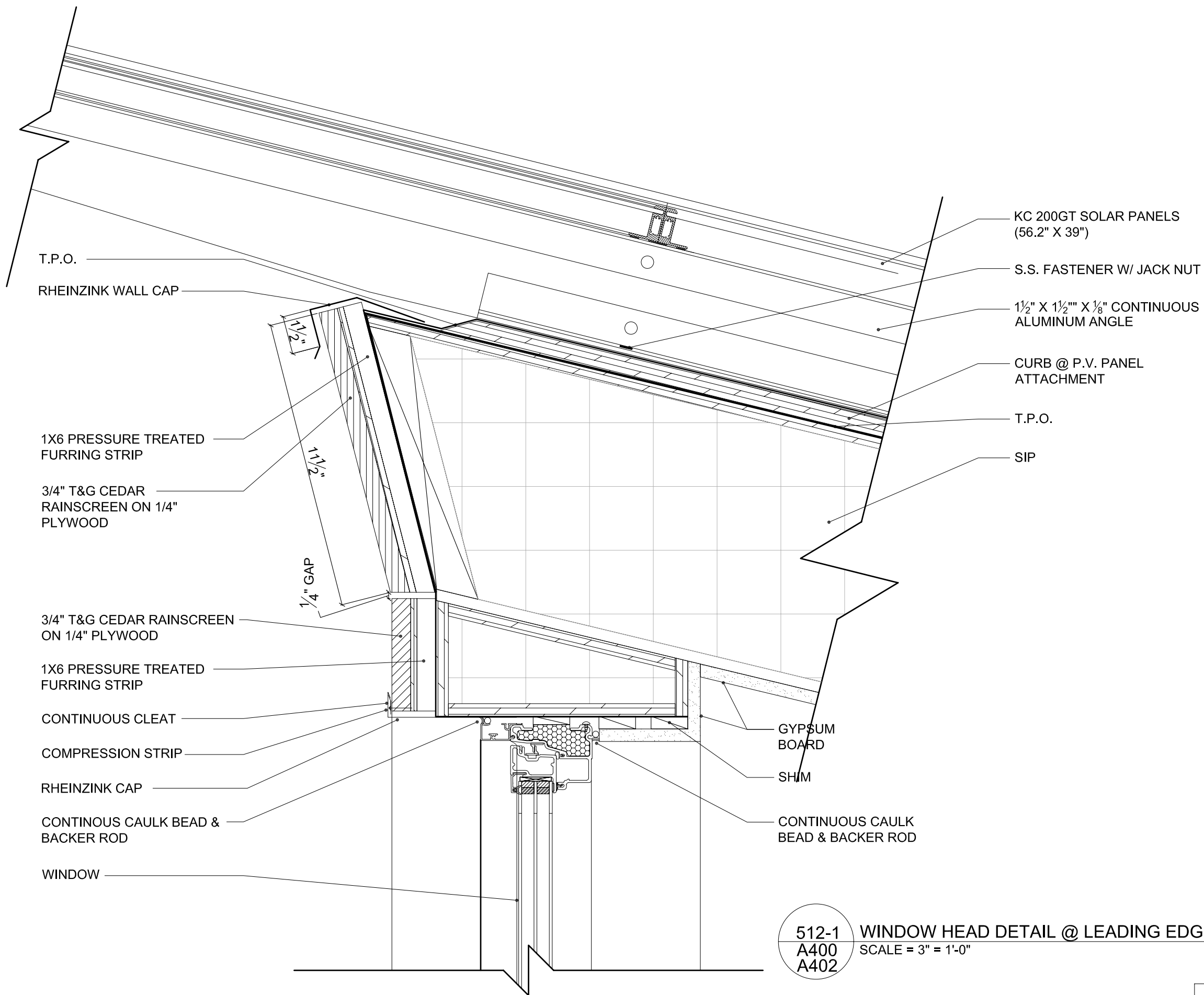
aloeterra

SOLAR DECATHLON 2007

LTU

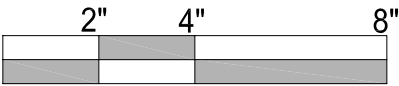
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Issued for	Date
Final Construction Document Submittal	7.Aug.2007
//sheet information	
date	7.Aug.2007
project number	LTU_001
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drawn	INITIALS
checked	PP
drawing title	Curb Detail
//sheet number	
A511	





512-1  
A400  
A402

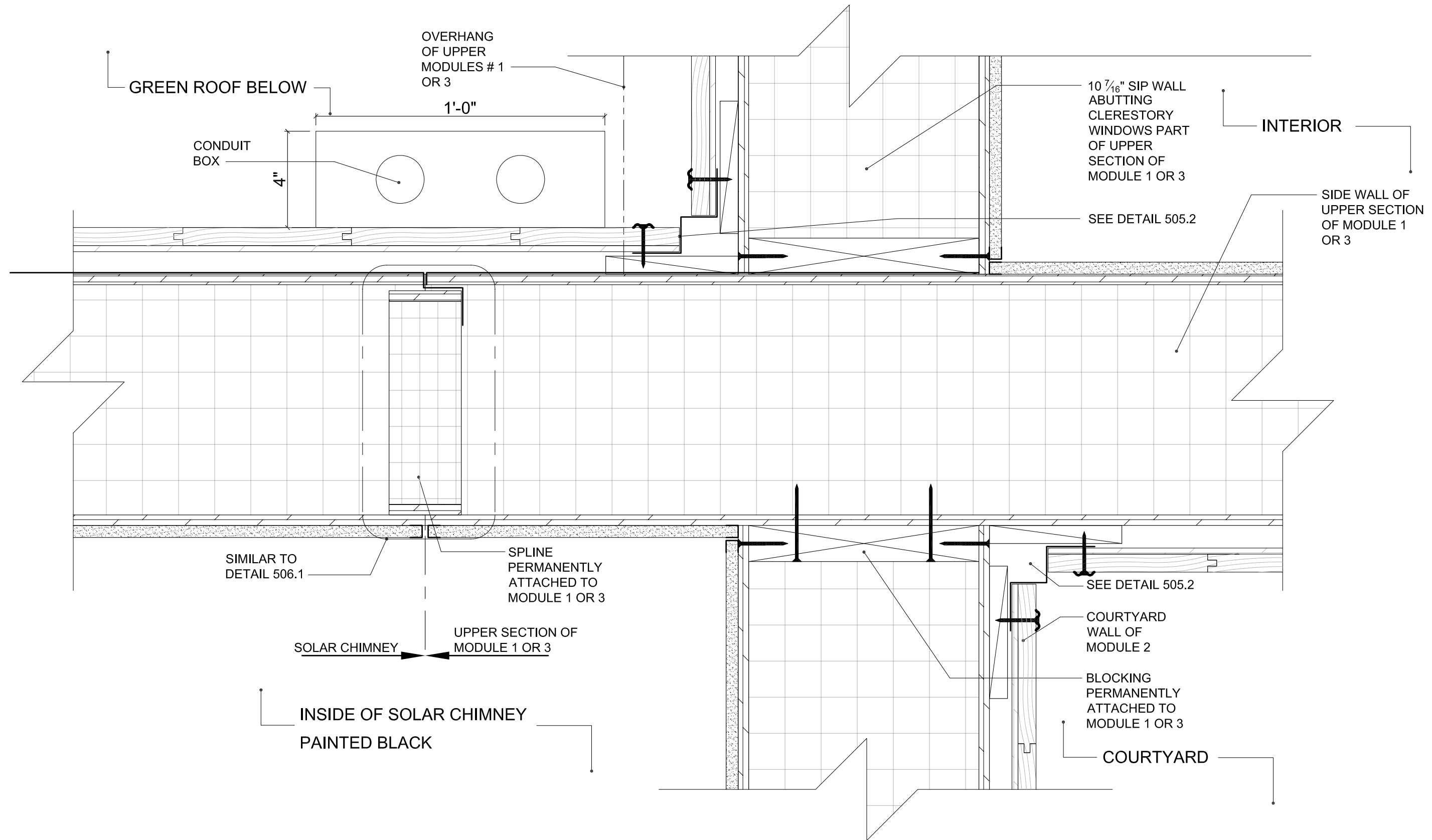
WINDOW HEAD DETAIL @ LEADING EDGE OF ROOF  
SCALE = 3" = 1'-0"



//revisions	
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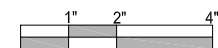
//sheet information	
date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	J.L.
checked	PP
drawing title	Window Head Detail @ Leading Edge of Roof





513-1  
A401

SOLAR CHIMNEY CONNECTION DETAIL  
SCALE = 3" = 1'-0"



//project

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//revisions

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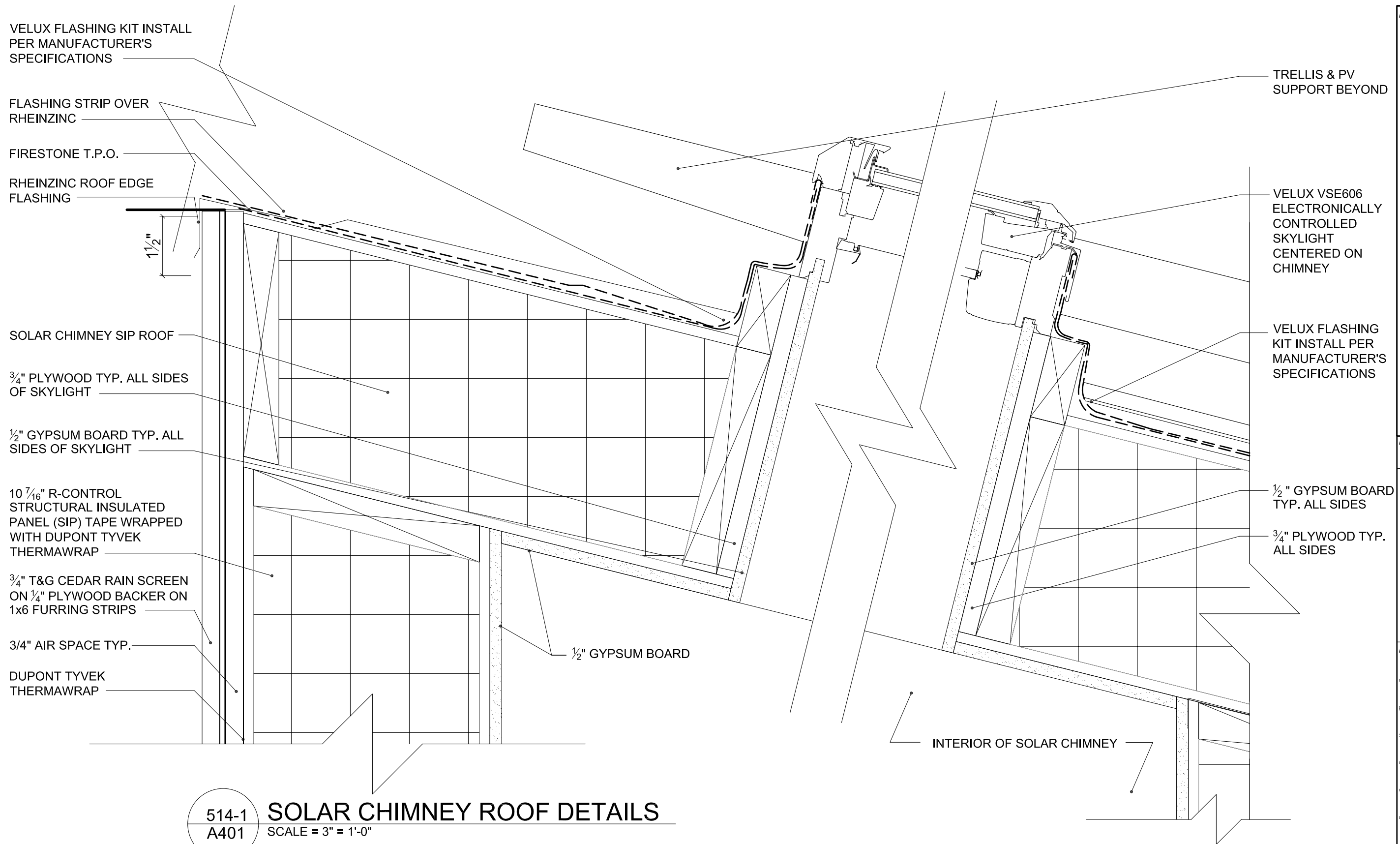
//sheet information

date	7.Aug.2007
project number	LTU_001
scale	3"=1'-0"
drawn	SS
checked	PP
drawing title	CHIMNEY CONNECTION DETAIL

//sheet number

**A513**





//project

**aloeterra**  
LTU SOLAR DECATHLON 2007

//revisions

Issued for	Date
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//sheet information

date  
7.Aug.2007  
project number  
LTU\_001  
scale  
3"=1'-0"  
drawn  
J.S.  
checked  
PP  
drawing title

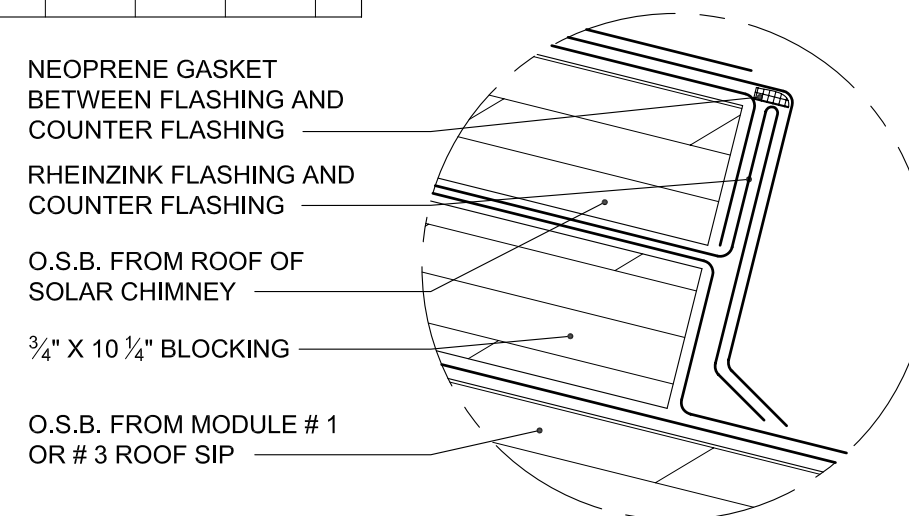
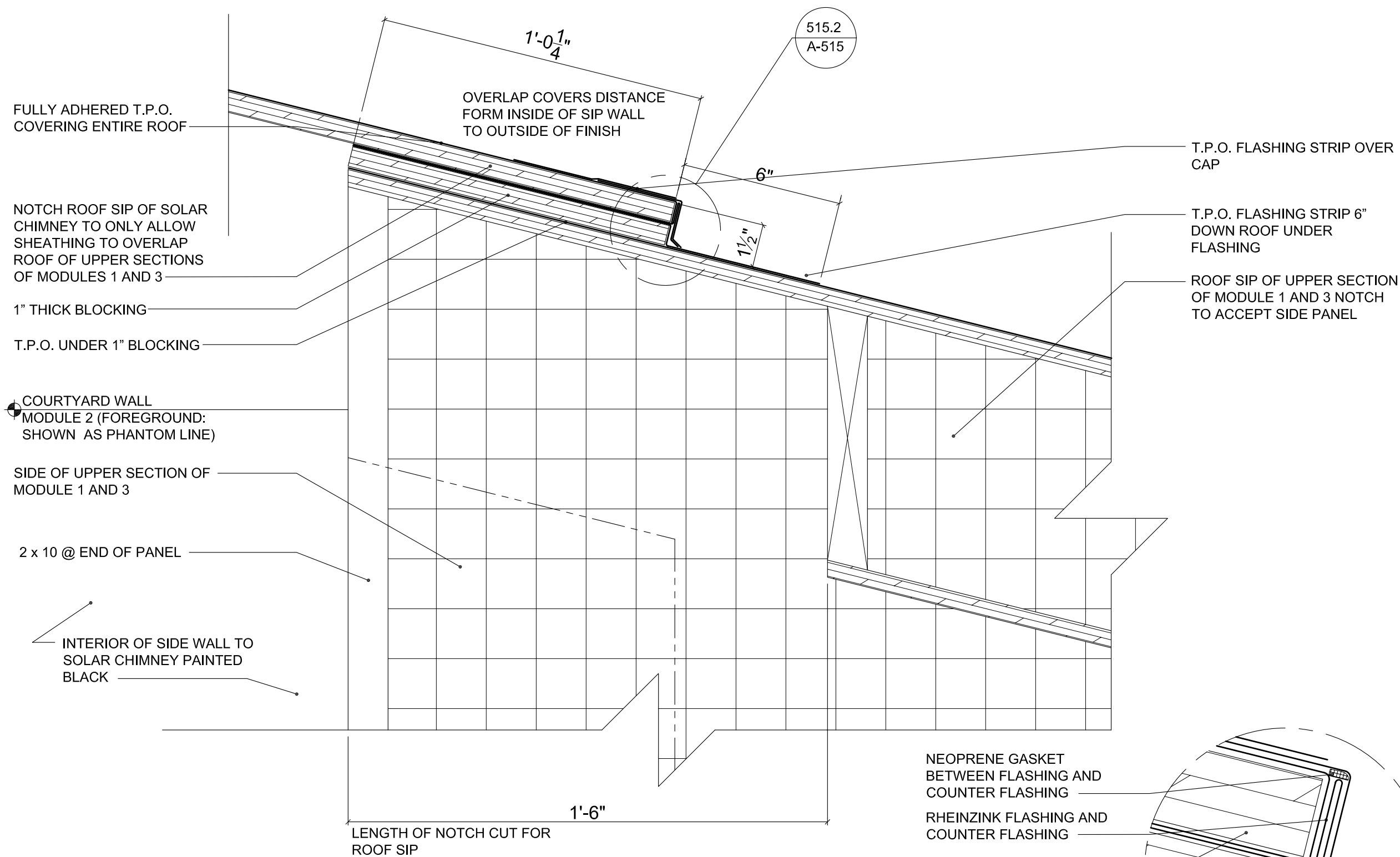
Skylight Detail

//sheet number

**A514**







515-1  
A401

### DETAIL @ SOLAR CHIMNEY ROOF OVERLAP

SCALE = 3" = 1'-0"

515-2  
A515

FLASHING

SCALE = ACTUAL SIZE

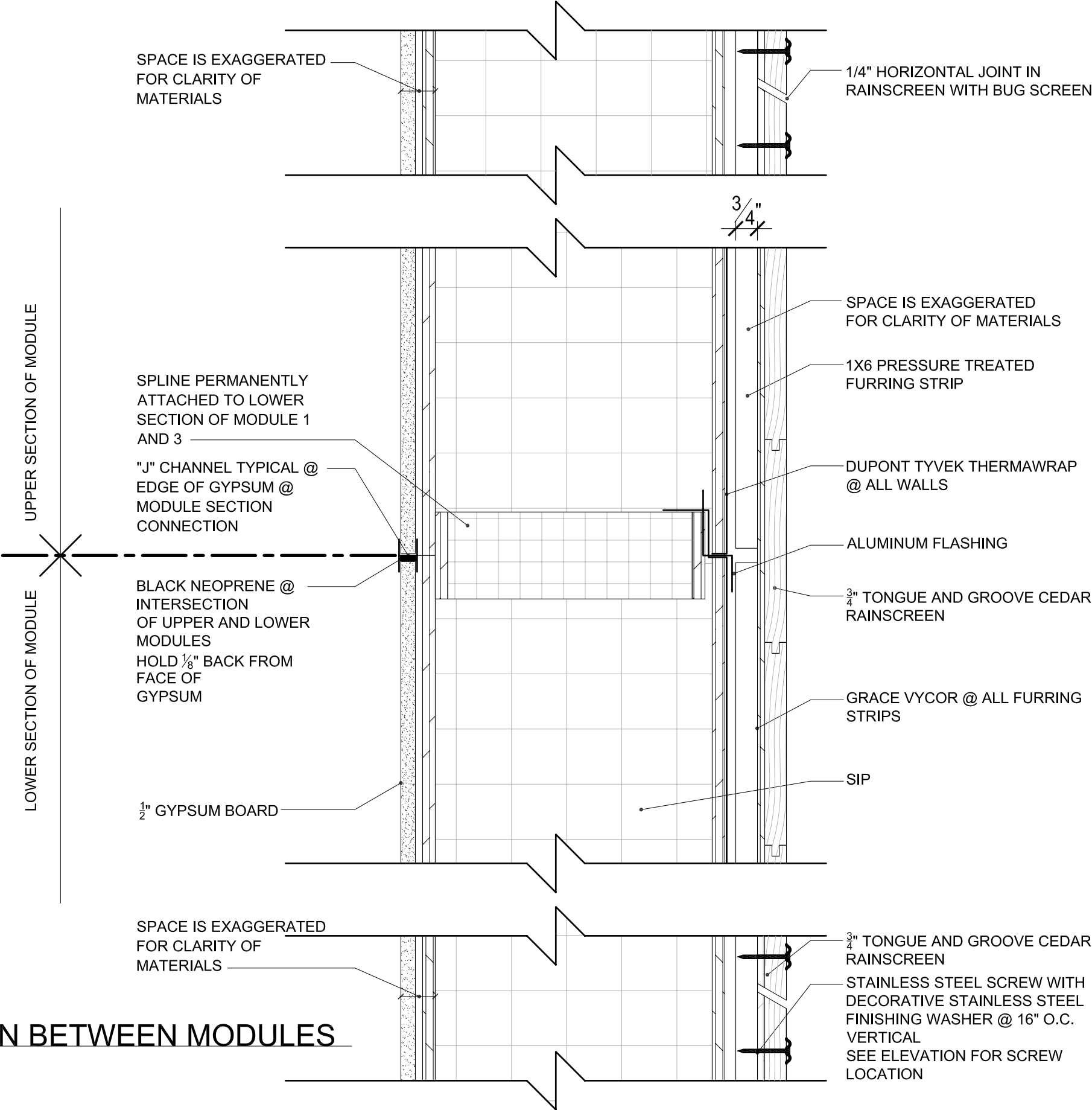




516-1  
A403

# CONNECTION BETWEEN MODULES

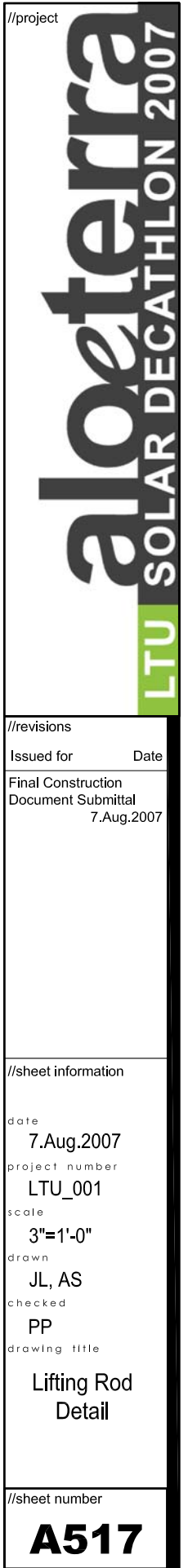
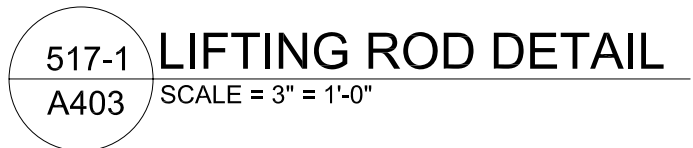
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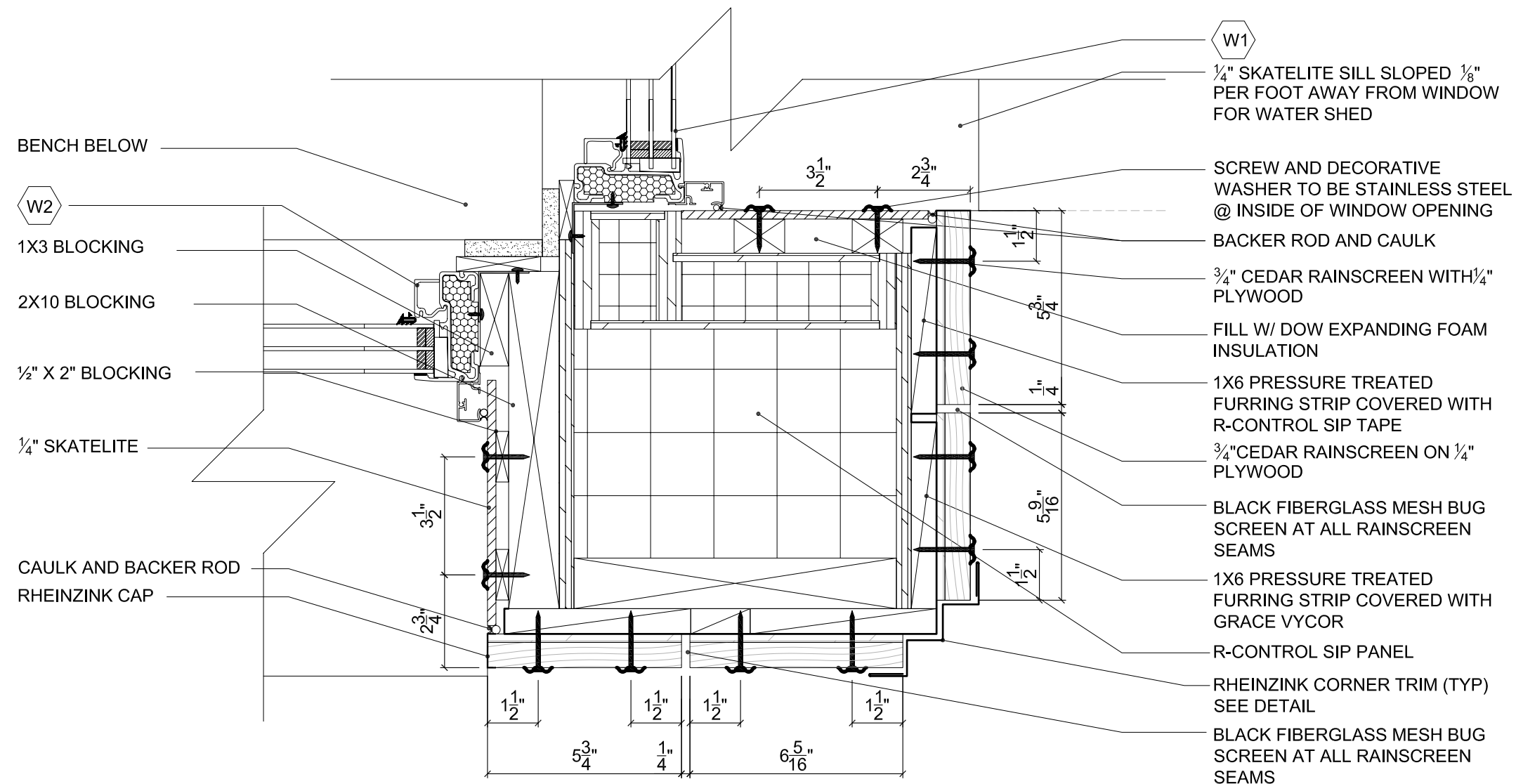
**aloeterra**  
LTU SOLAR DECATHLON 2007

//revisions	
Issued for	Date
Final Construction Document Submittal	7.Aug.2007
//sheet information	
date	7.Aug.2007
project number	LTU_001
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drawn	SS, ST
checked	PP
drawing title	Module Connection Detail
//sheet number	<b>A516</b>









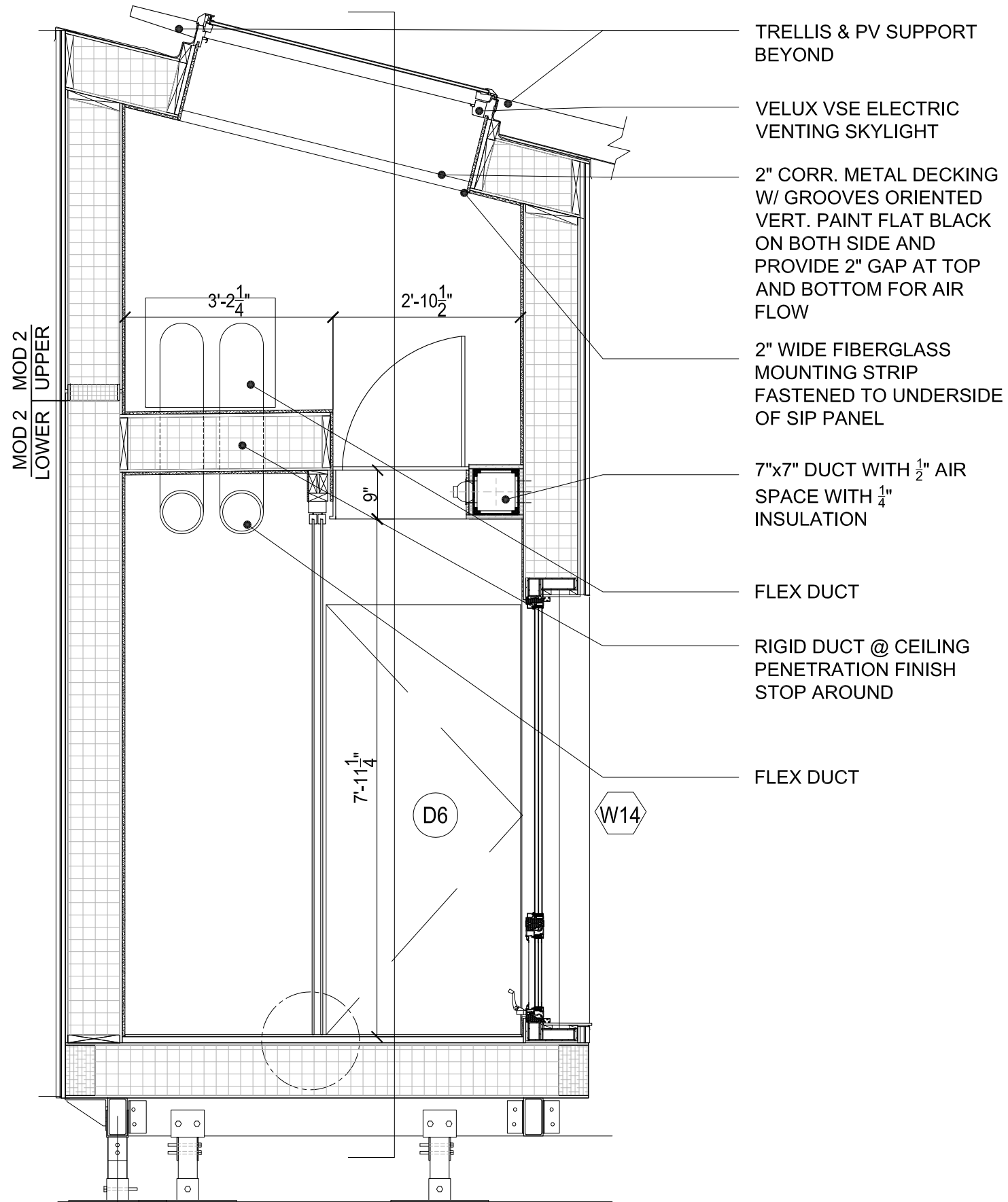
518-1  
A304

**CORNER STRUCTURE DETAIL**

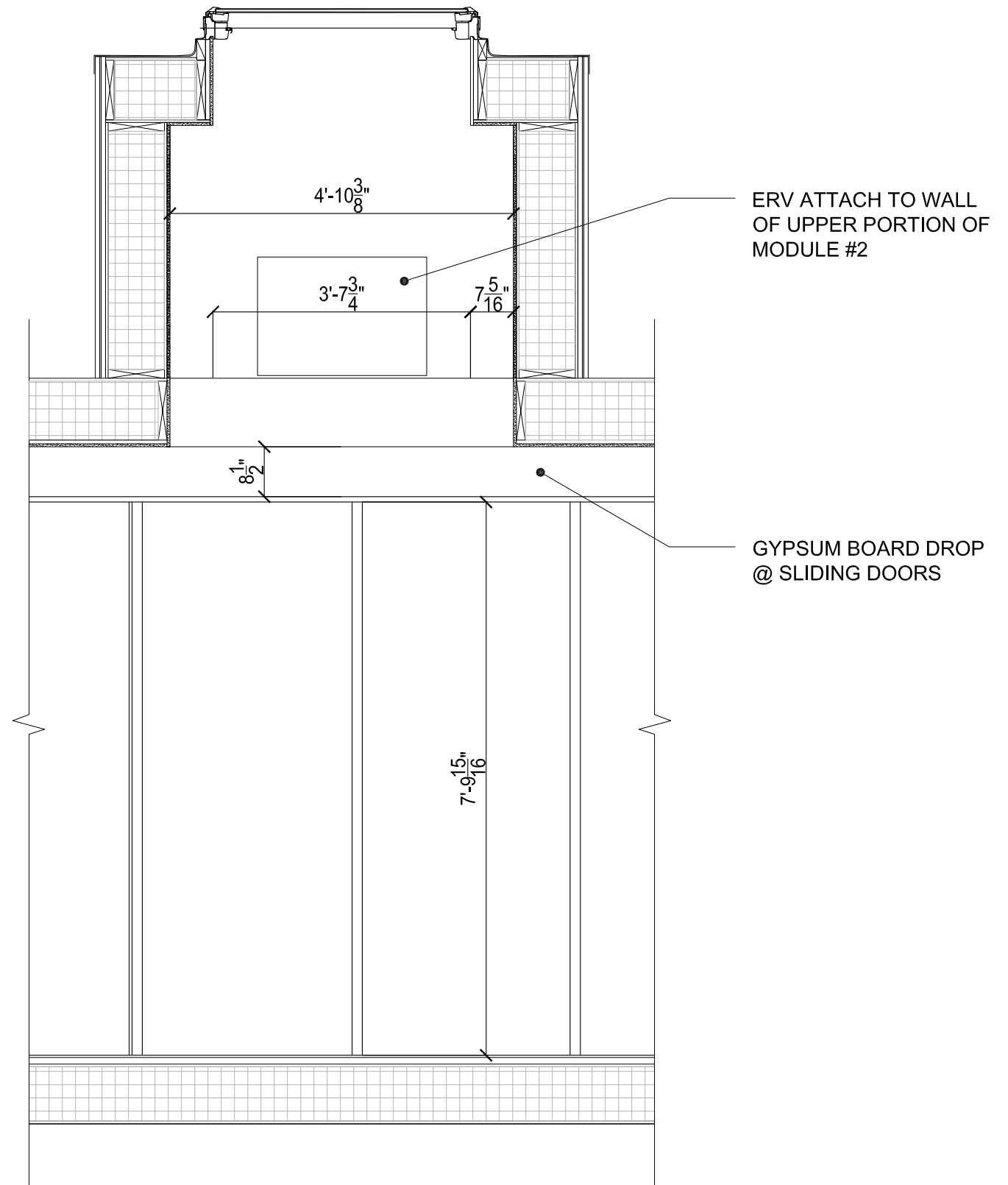
SCALE = 3" = 1'-0"



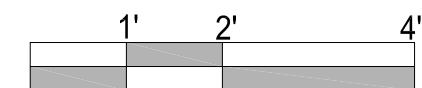




1  
A521  
SOLAR CHIMNEY  
SCALE:  $\frac{1}{2}$ " = 1'-0"



2  
A521  
SOLAR CHIMNEY  
SCALE:  $\frac{1}{2}$ " = 1'-0"





date

3.AUG.2007

project number

LTU\_001

cale

$$\frac{1}{2}'' = 1'$$

drawn

JD, SS, ST

check

PF

drawing title

### iving Room

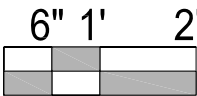
## Living R

## Millwork

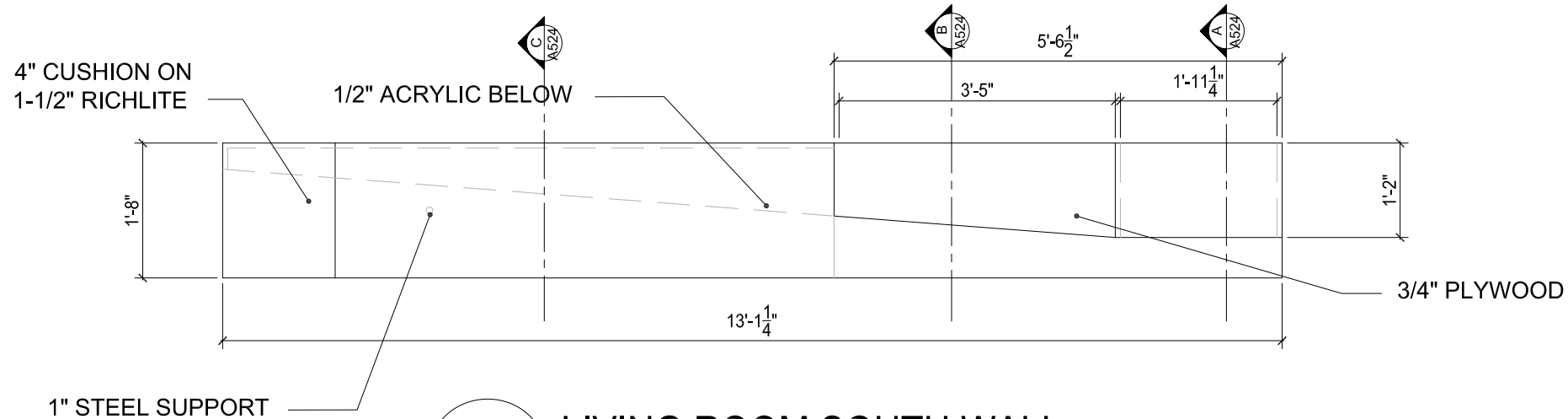
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Sheet Number

# A522



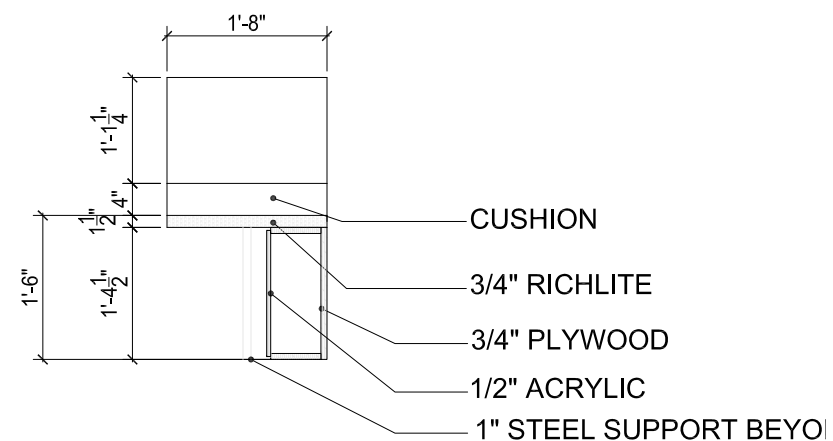




524-1  
A524

## LIVING ROOM SOUTH WALL

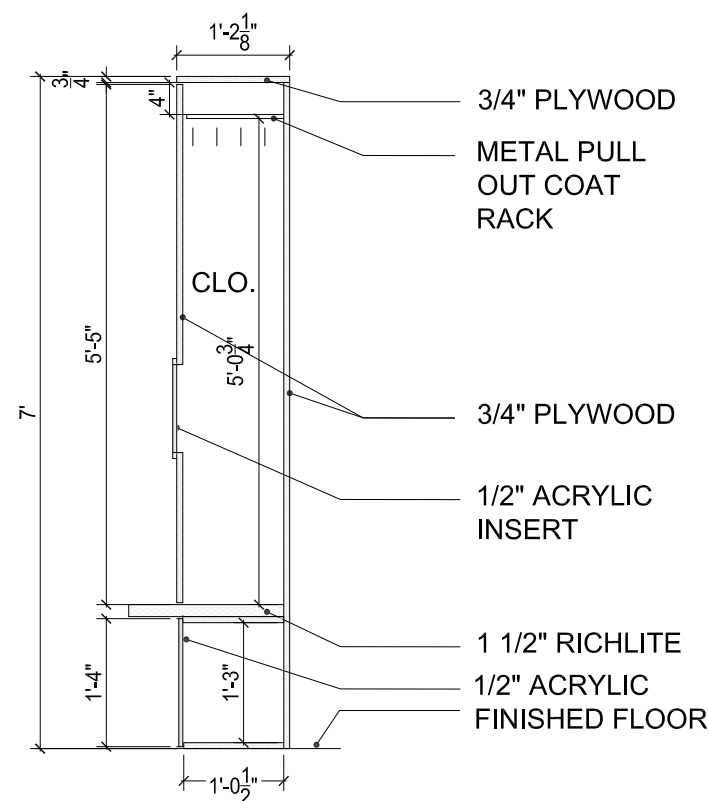
SCALE: 1/2" = 1'-0"



524-4  
A524

## SECTION C

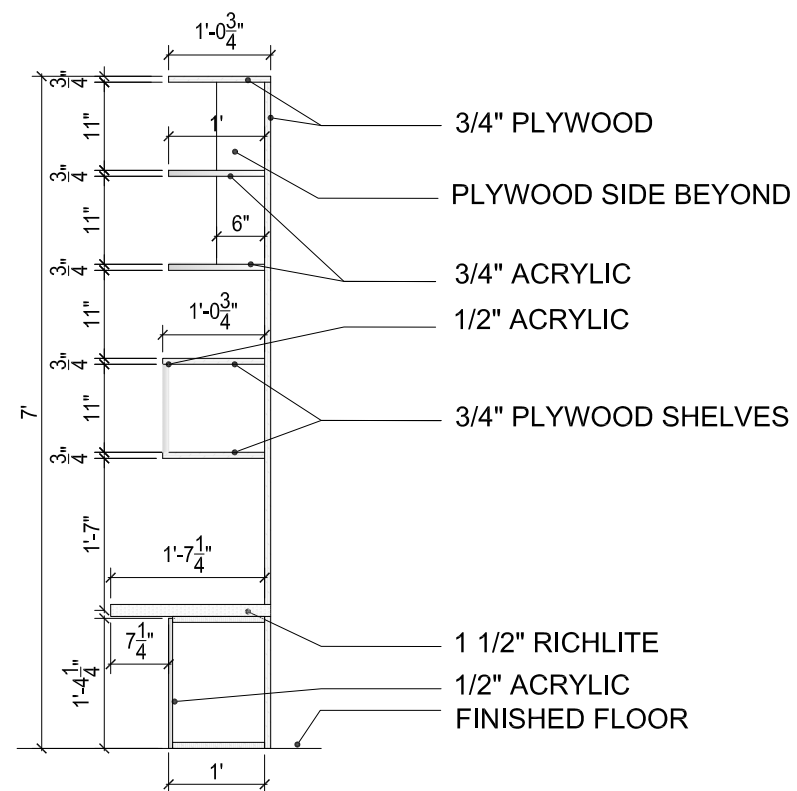
SCALE: 1/2" = 1'-0"



524-2  
A524

## SECTION A

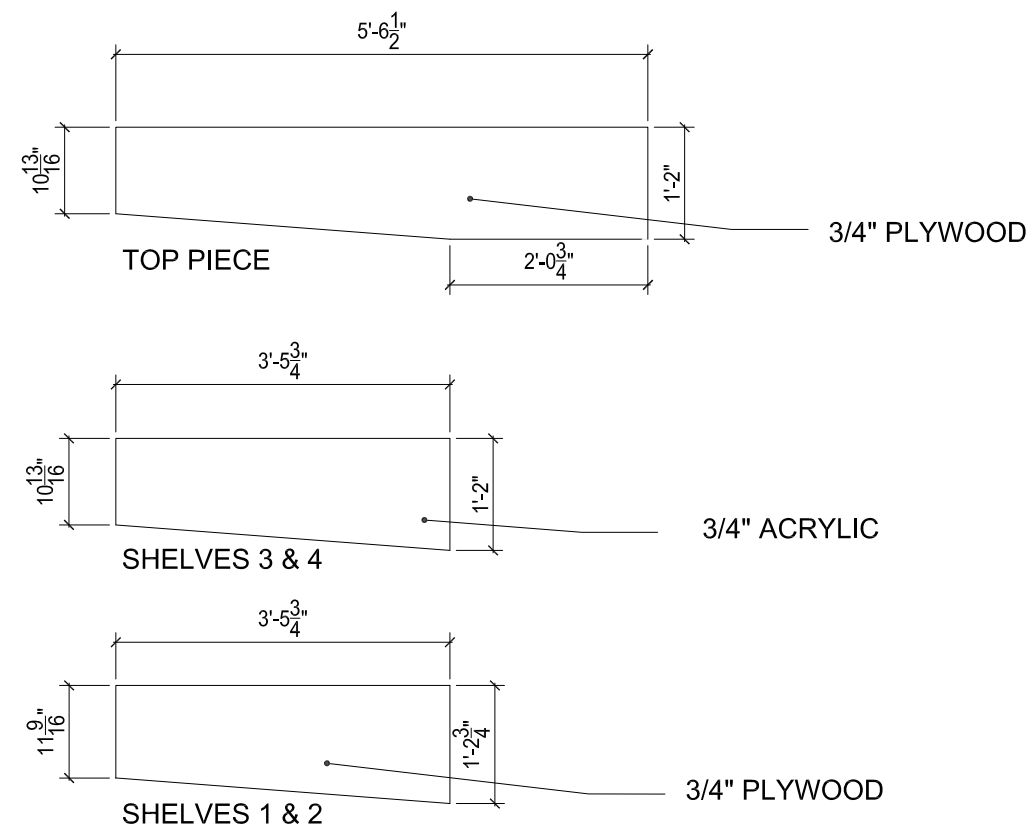
SCALE: 1/2" = 1'-0"



524-3  
A524

## SECTION B

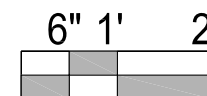
SCALE: 1/2" = 1'-0"



524.5  
A524

## LIVING ROOM SOUTH WALL

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



### //revisions

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### //sheet information

date

3.AUG.2007

project number

LTU\_001

scale

1/2"=1'

drawn

JD,SS, ST

checked

PP

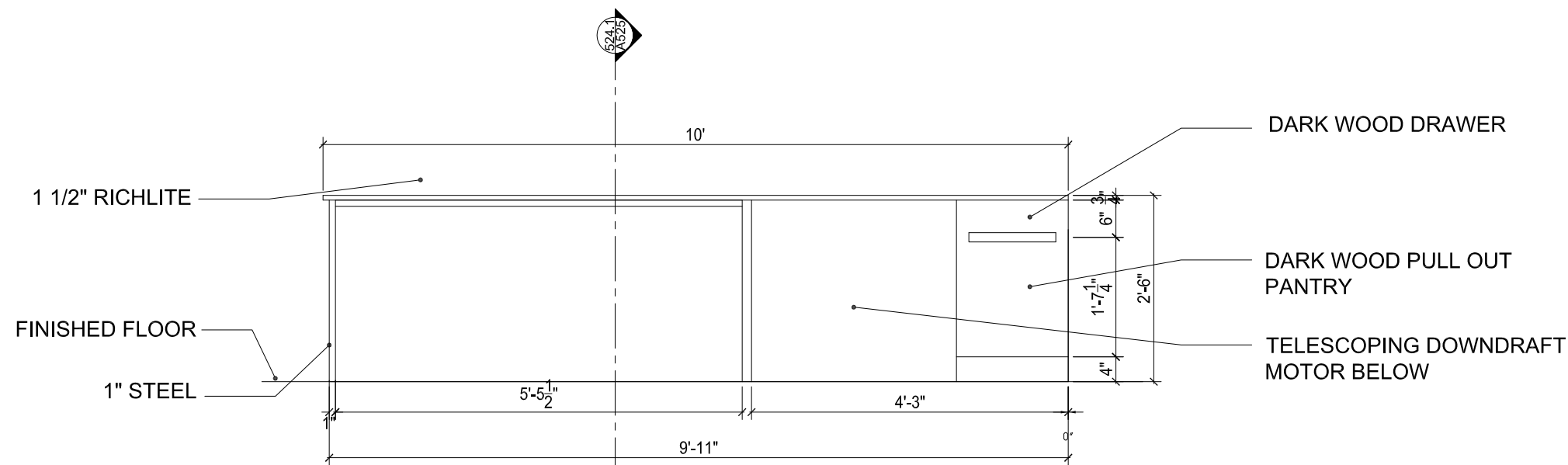
drawing title

Living Room Millwork

//sheet number

**A524**

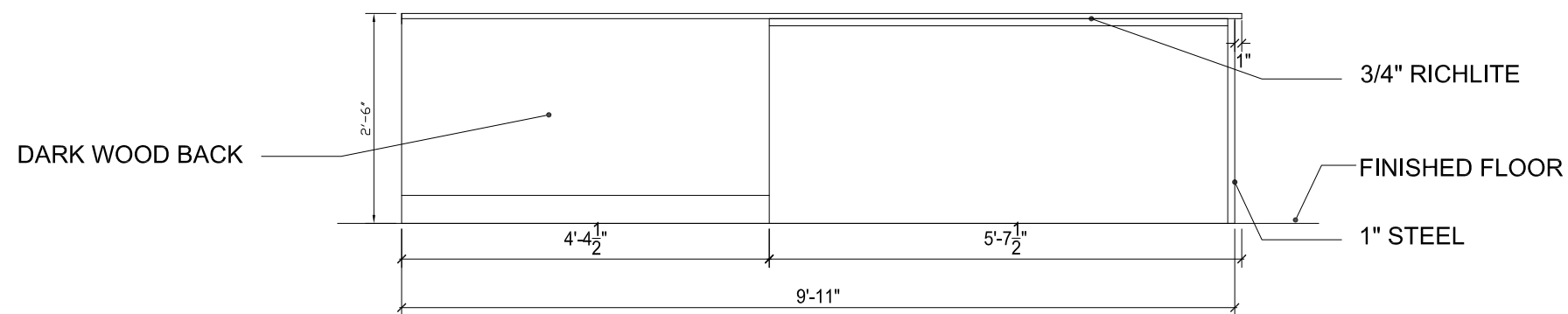




525-2  
A525

## KITCHEN ISLAND

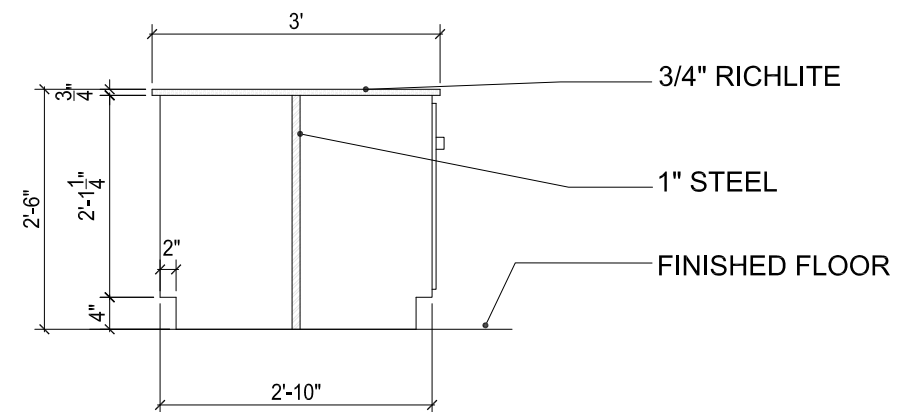
SCALE: 1/2" = 1'-0"



526-2  
A526

## KITCHEN ISLAND

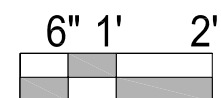
SCALE: 1/2" = 1'-0"



525-1  
A525

## COUNTER SECTION

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



//revisions

Issued for Date

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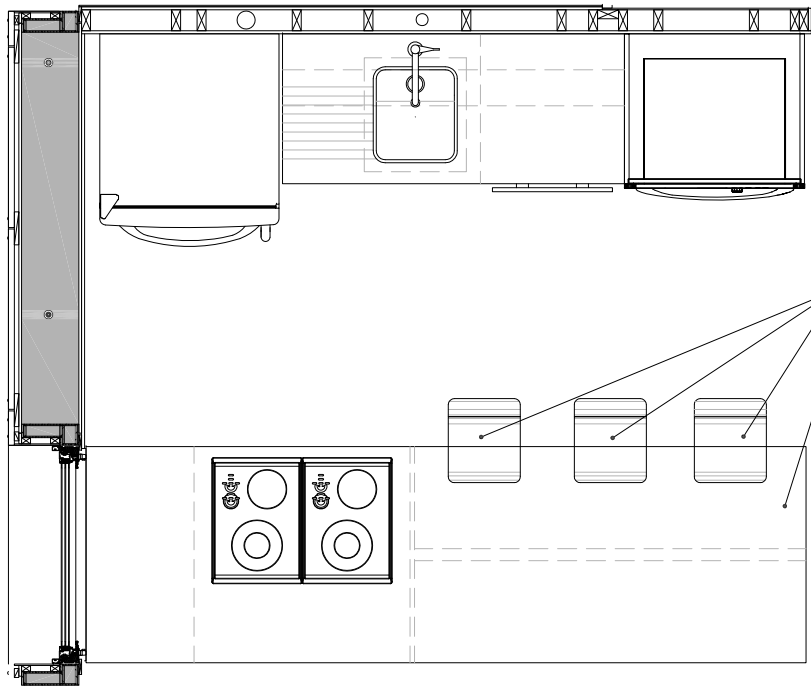
//sheet information

date  
1.June.2007  
project number  
LTU\_001  
scale  
1/2"=1'  
drawn  
JD, SS, ST  
checked  
PP  
drawing title  
Kitchen  
Millwork

//sheet number

**A525**





KITCHEN SEATING  
RICHLITE

526-1  
A202

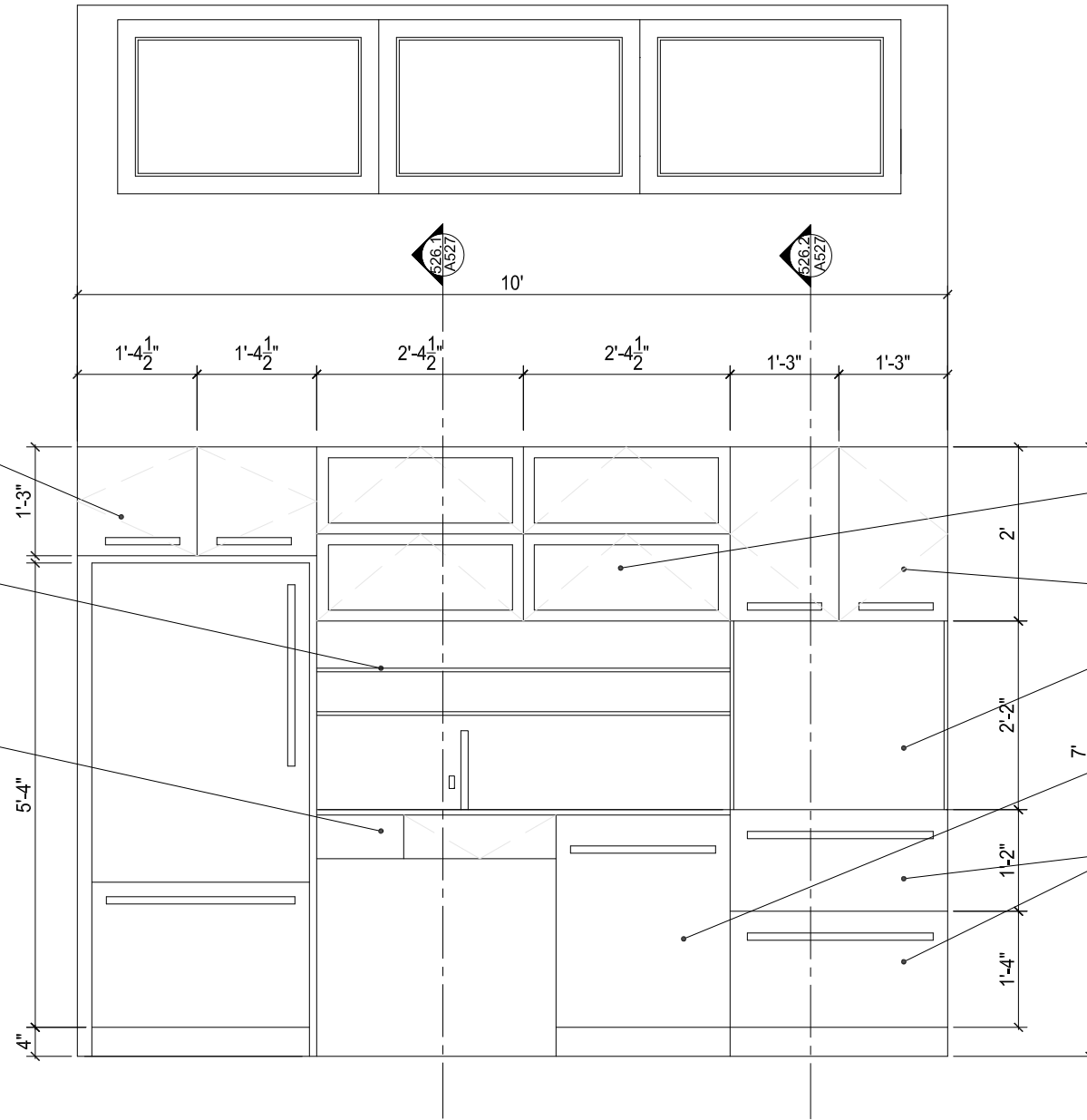
## KITCHEN DETAIL PLAN

SCALE: 3/8" = 1'-0"

DARK WOOD CABINET

STAINLESS STEEL UTENSIL RACKS

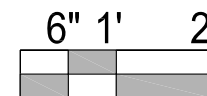
DARK WOOD DRAWER



526-1  
A526

## KITCHEN ELEVATION

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



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//sheet information

date

1.June.2007

project number

LTU\_001

scale

1/2"=1'

drawn

JD, SS, ST

checked

PP

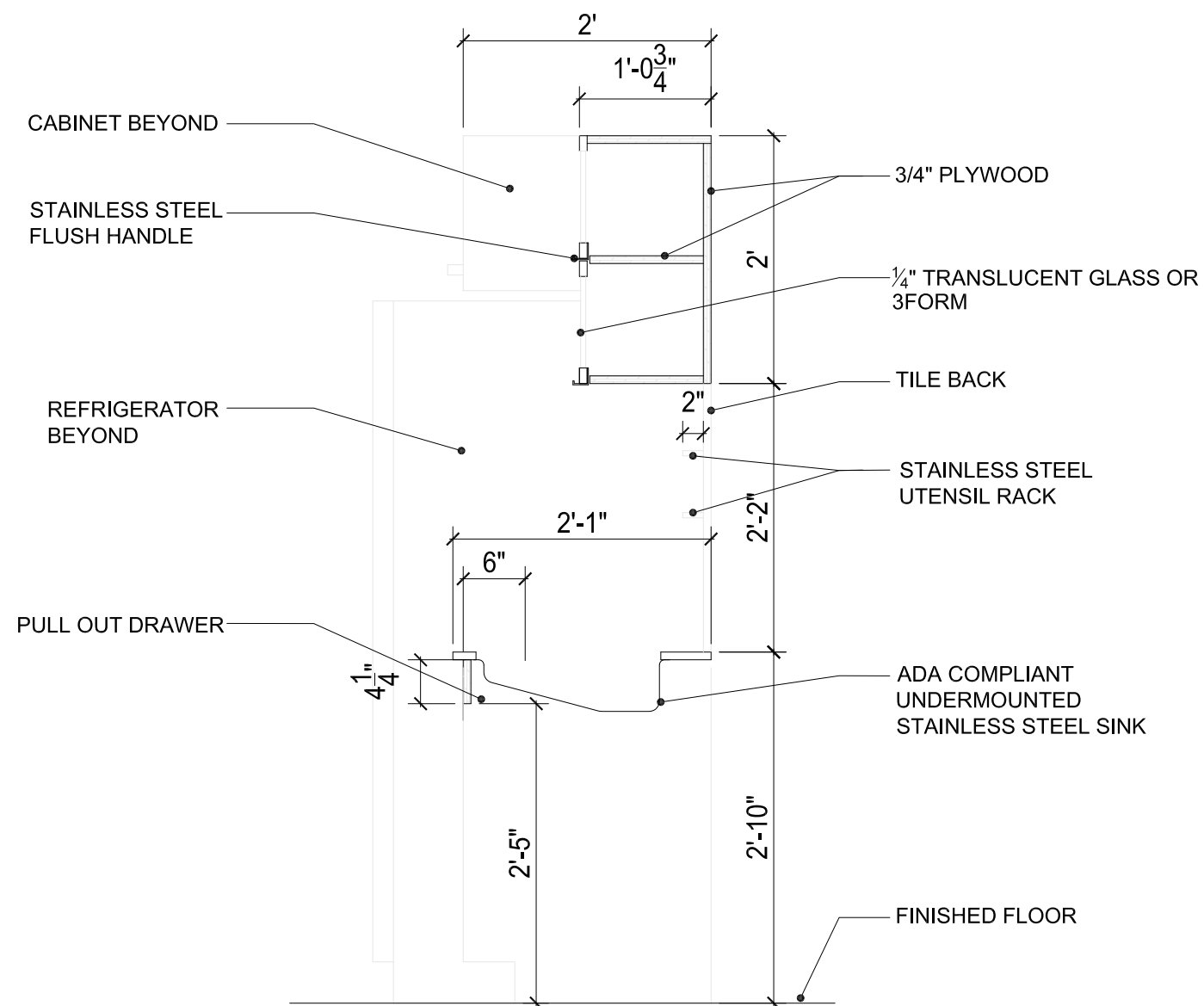
drawing title

Kitchen  
Millwork

//sheet number

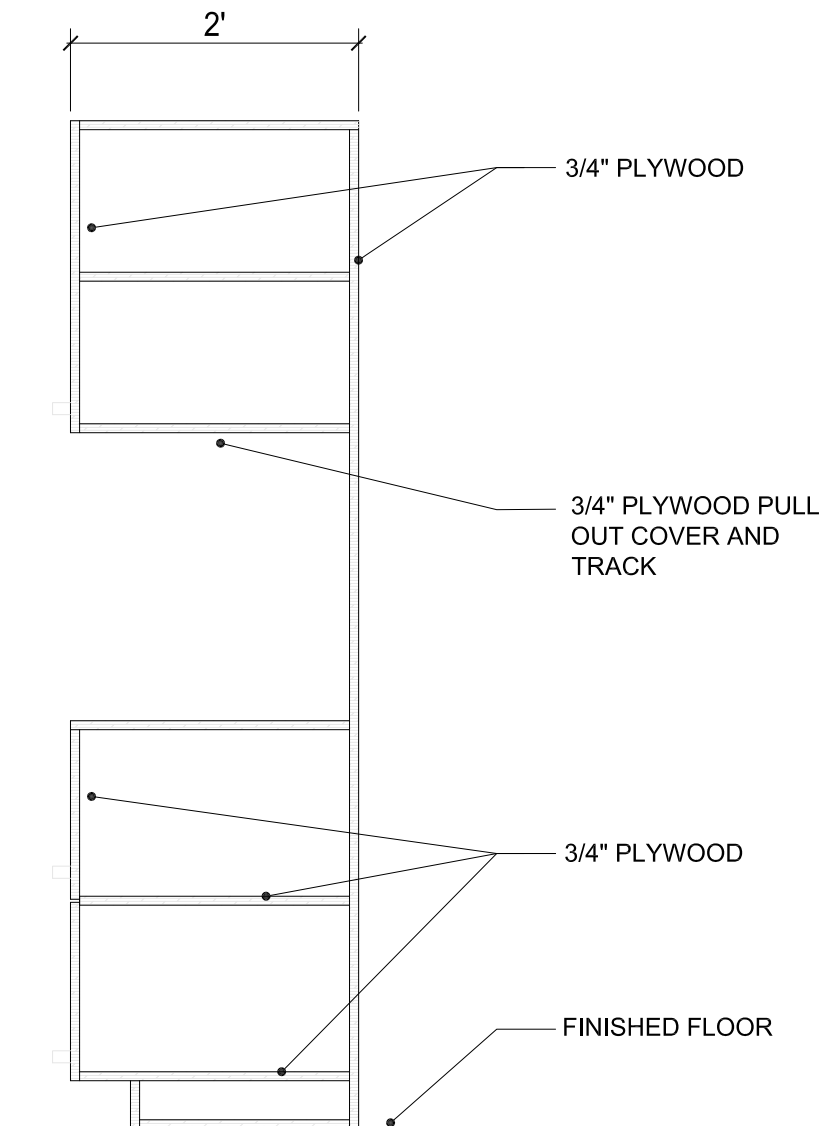
**A526**





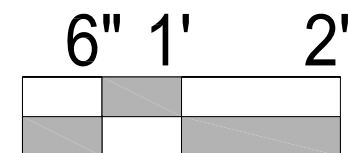
527-1  
A525

**SECTION A**  
SCALE: 3/4" = 1'-0"



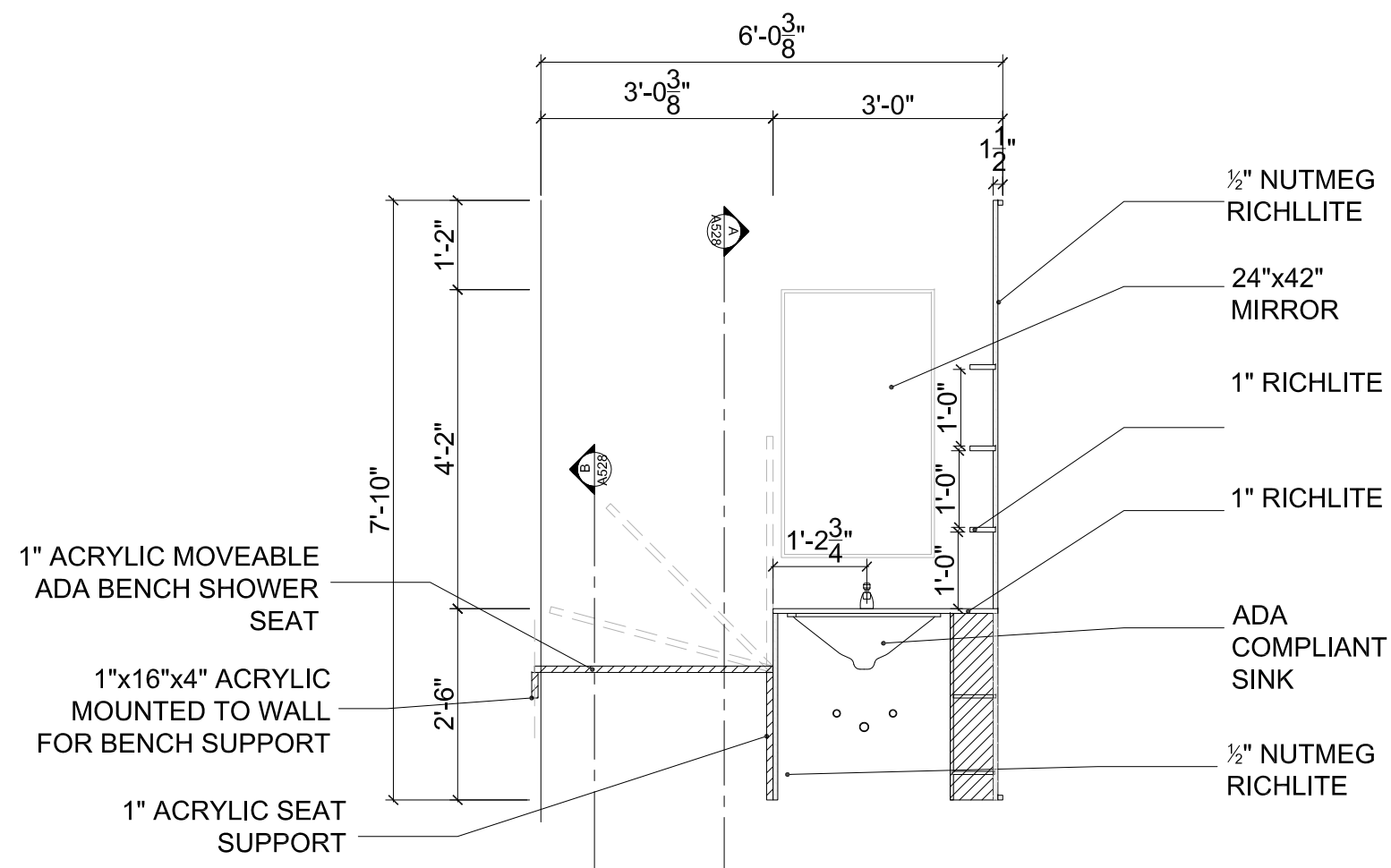
527-2  
A525

**SECTION B**  
SCALE: 3/4" = 1'-0"

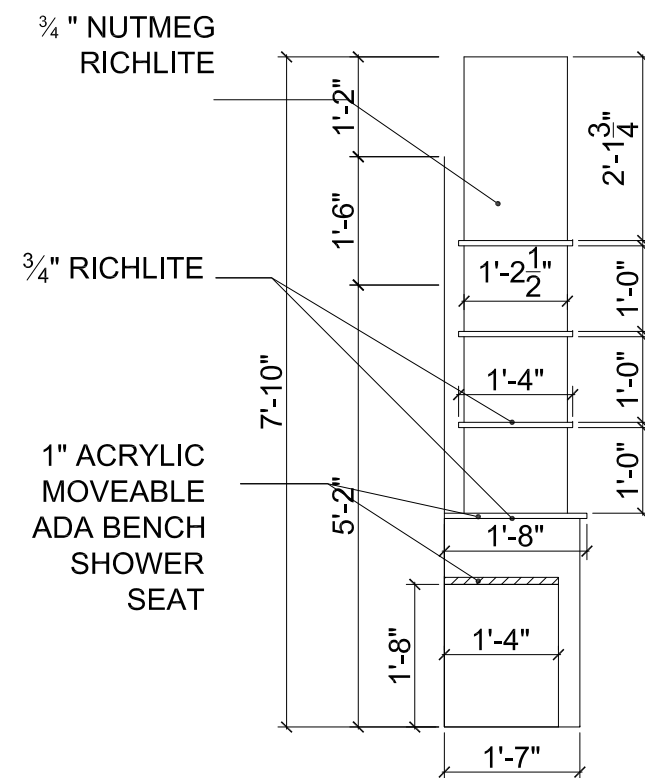


<b>aloeterra</b> LTU SOLAR DECATHLON 2007	
//revisions	
Issued for	Date
Final Construction Document Submittal	7.Aug.2007
//sheet information	
date	4.AUG.2007
project number	LTU_001
scale	3/4"=1'
drawn	JD, SS, ST
checked	PP
drawing title	Kitchen Millwork
//sheet number	<b>A527</b>

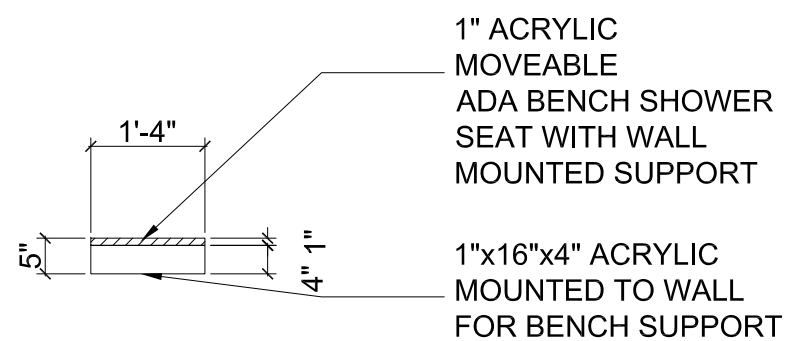




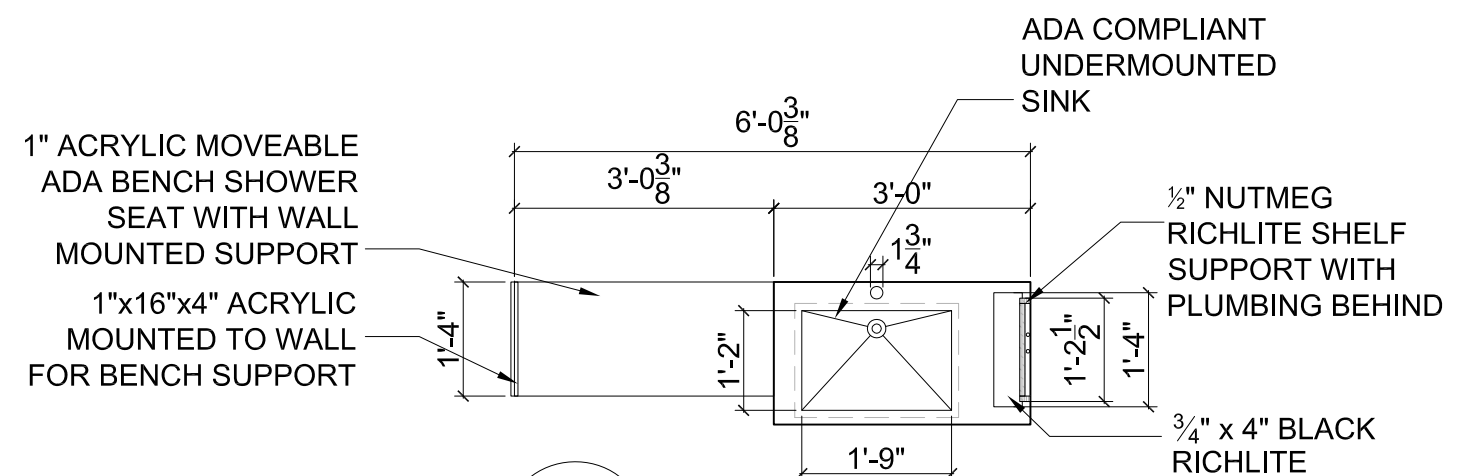
528-1 BATHROOM VANITY  
A528 SCALE: 1/2" = 1'-0"



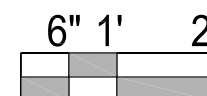
528-2	SECTION A
A528	SCALE: 1/2" = 1'-0"



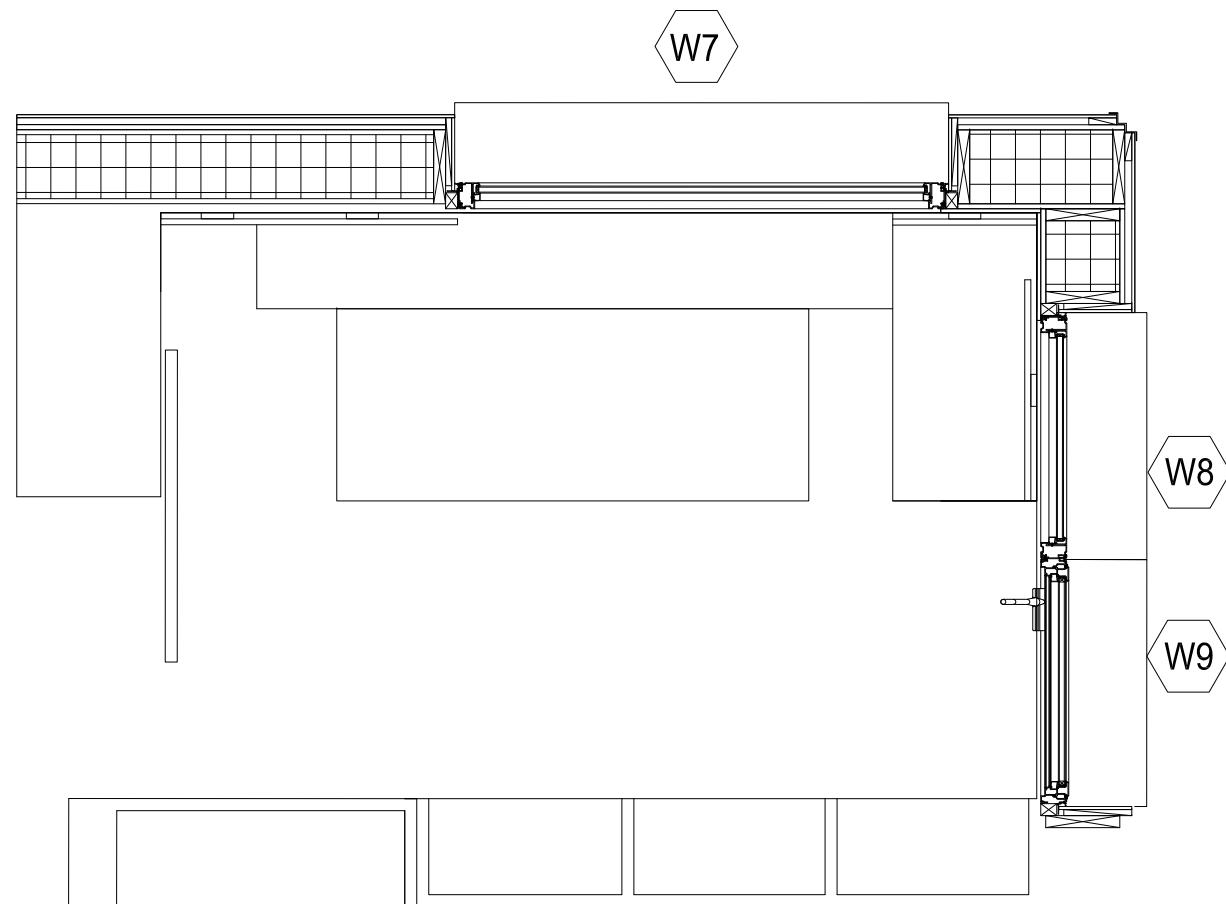
528-3	SECTION B
A528	SCALE: 1/2" = 1'-0"



528-4 BATHROOM VANITY PLAN  
A528 SCALE: 1/2" = 1'-0"



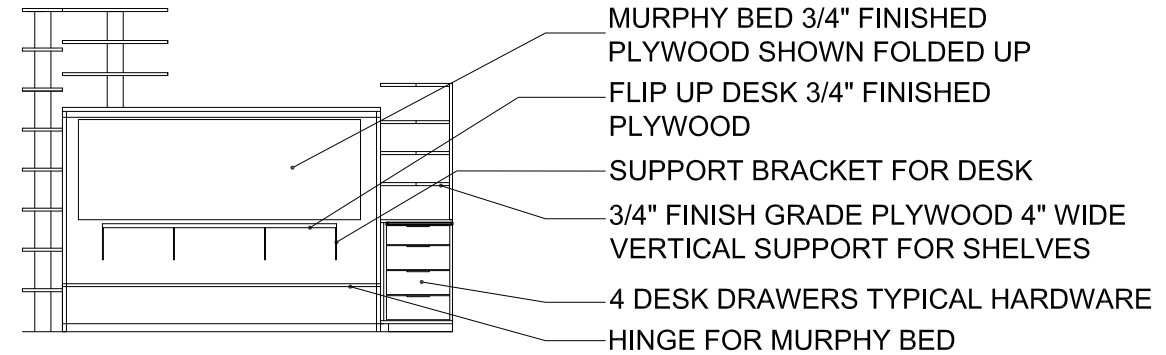




529-1  
A529

## PLAN DETAIL BEDROOM 2

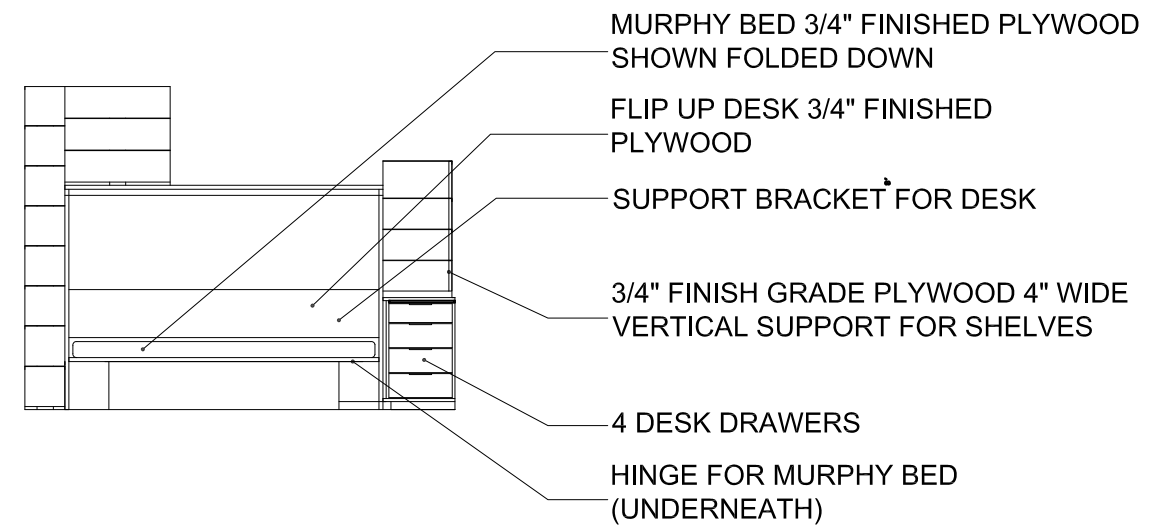
SCALE: 1/2" = 1'-0"



529-3  
A529

## BEDROOM 2 NORTH WALL

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



529-2  
A529

## BEDROOM 2 NORTH WALL

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

//project

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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date  
7.Aug.2007

project number  
LTU\_001

scale  
1/2"=1'-0"

drawn  
CS

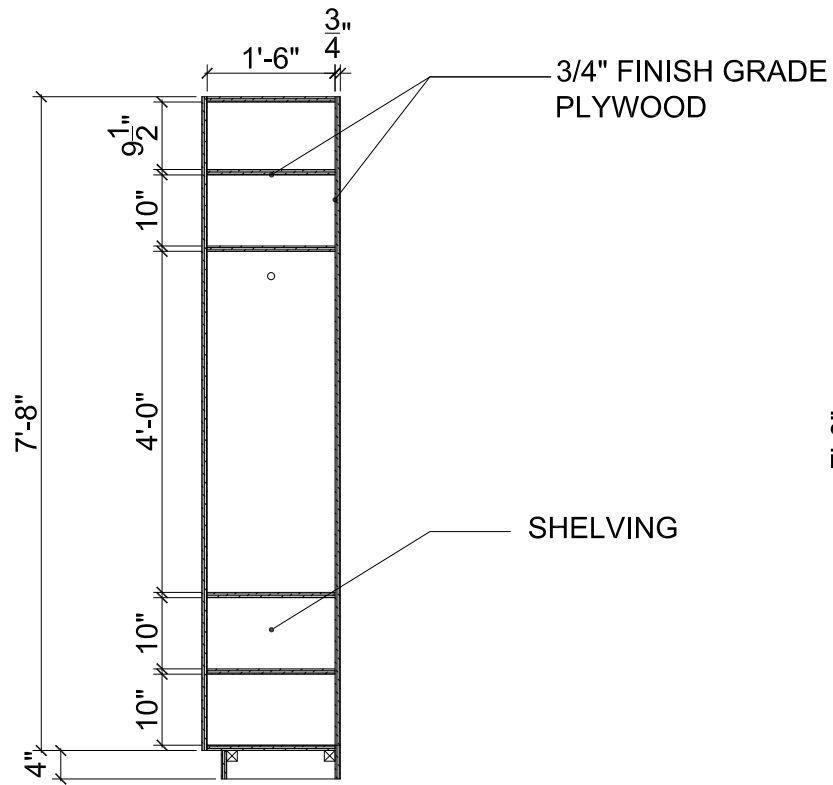
checked  
PP

drawing title  
Murphy Bed Details

//sheet number

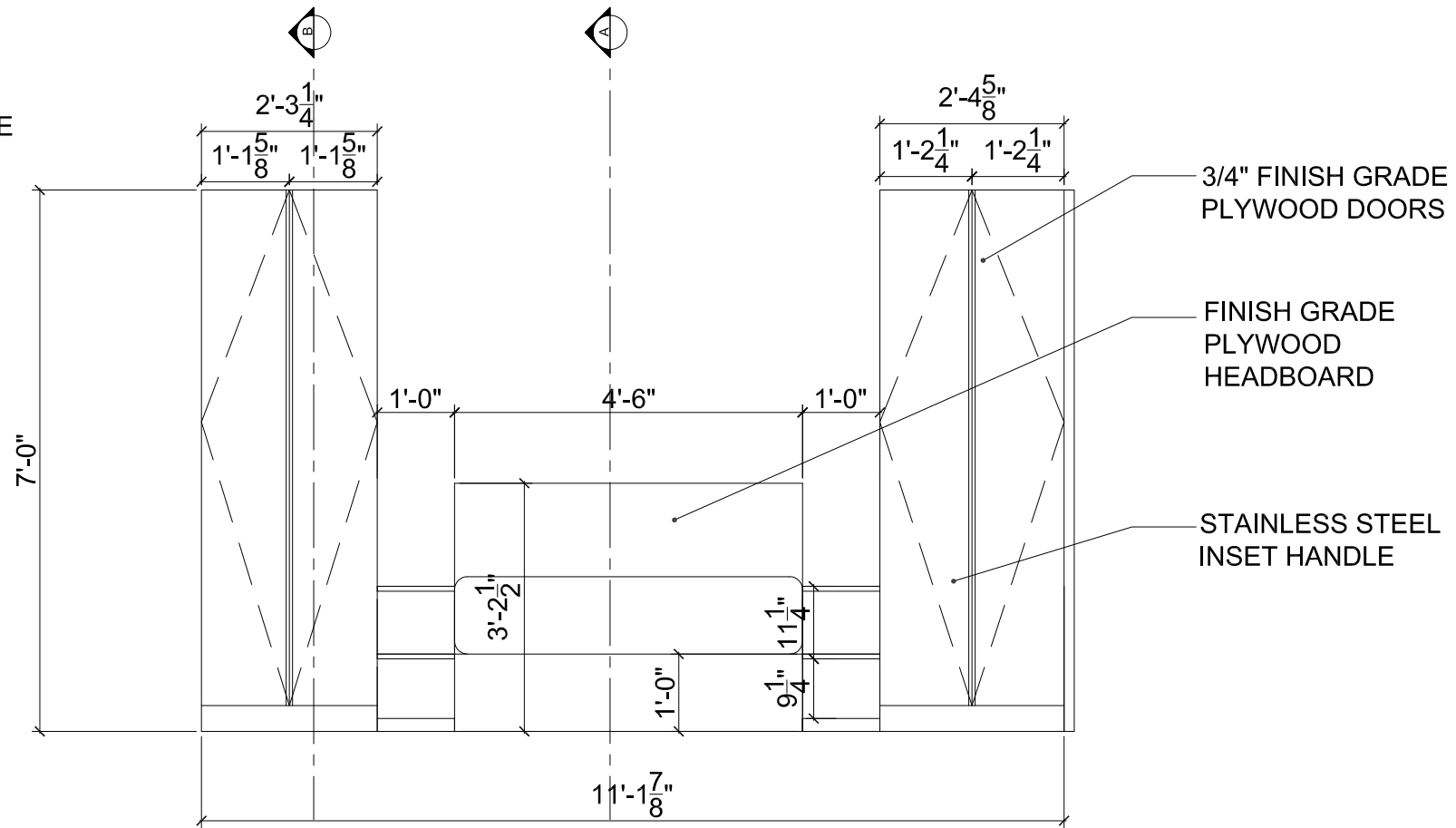
**A529**





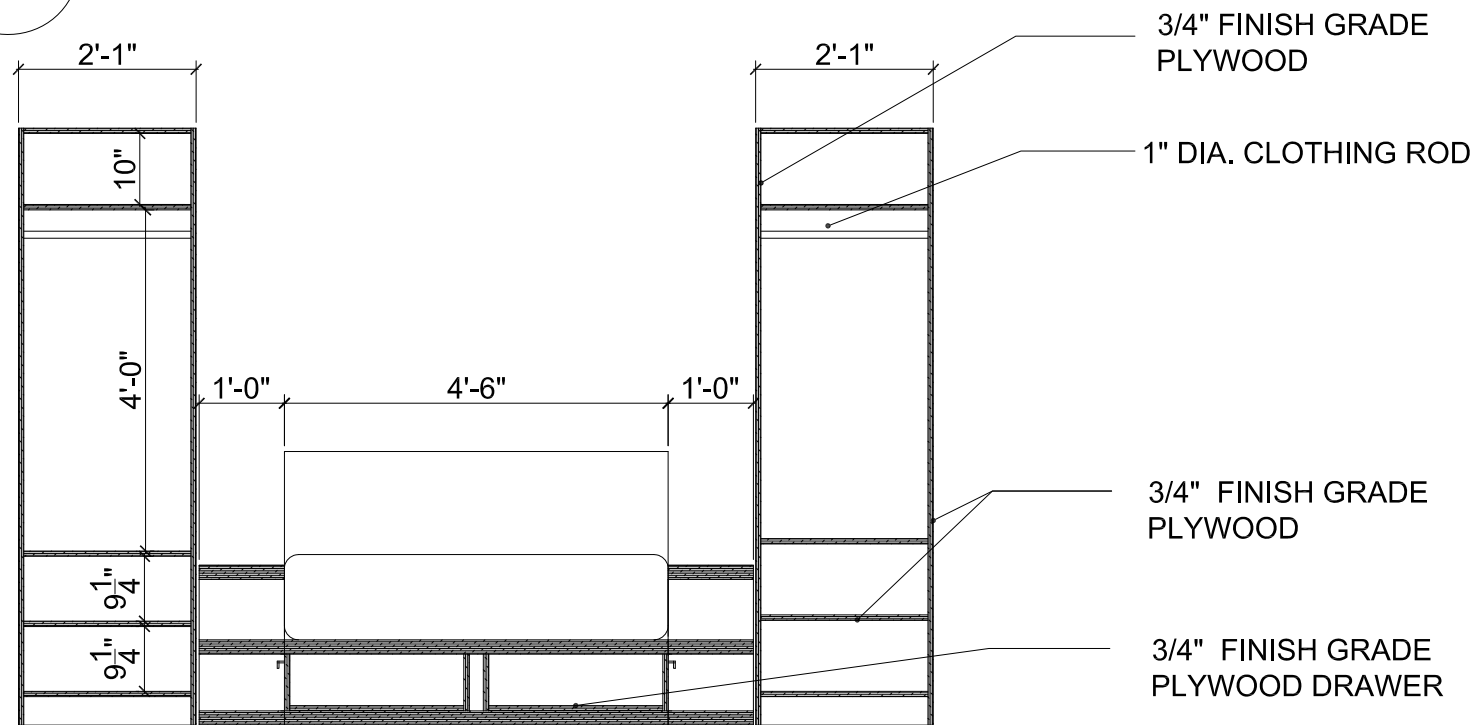
533-1  
A533

**SECTION B**  
SCALE: 1/2" = 1'-0"



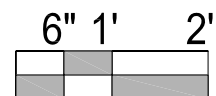
533-2  
A533

**MASTER BEDROOM MILLWORK ELEVATION**  
SCALE: 1/2" = 1'-0"



533-4  
A533

**MASTER BEDROOM MILLWORK SECTION**  
SCALE: 1/2" = 1'-0"

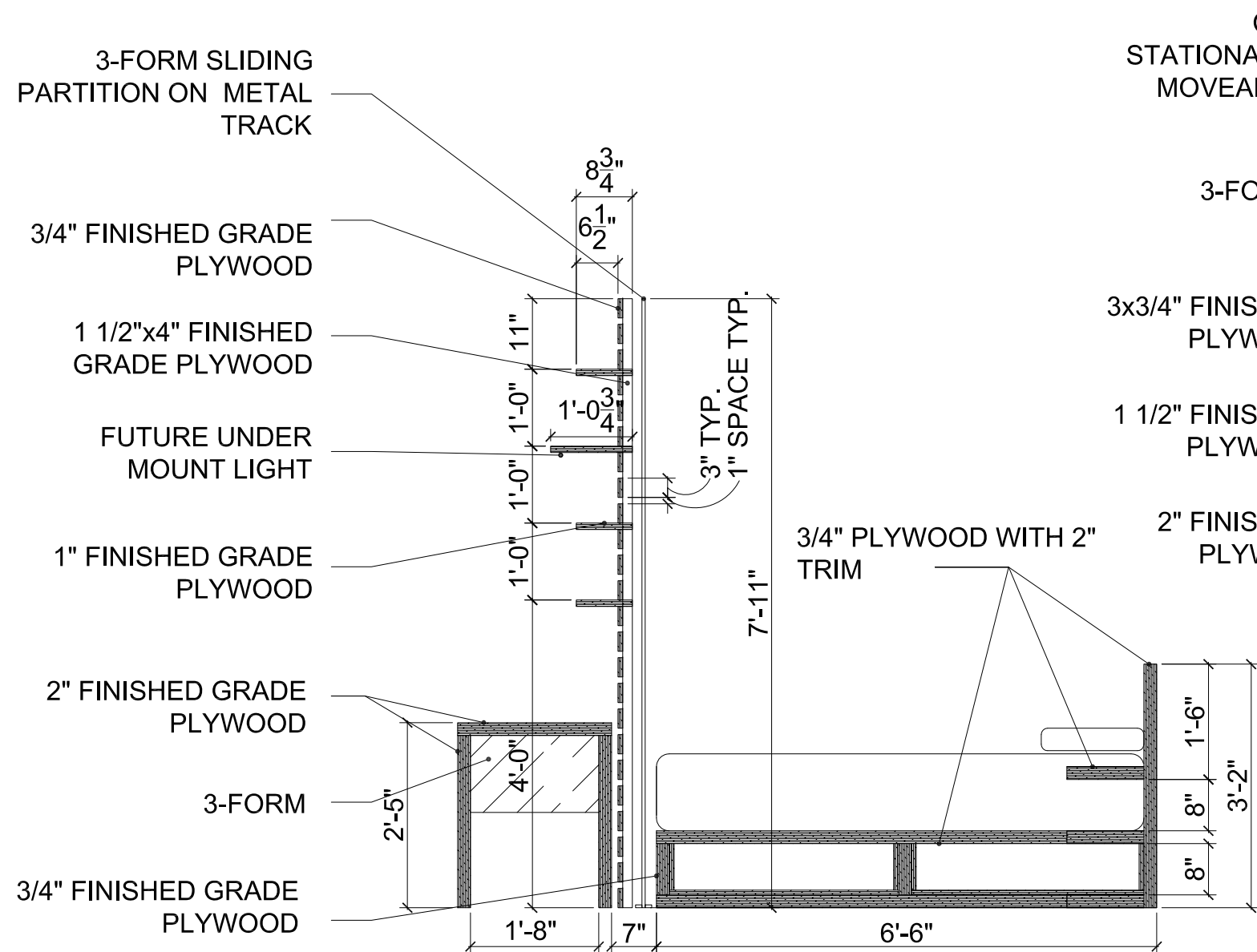


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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

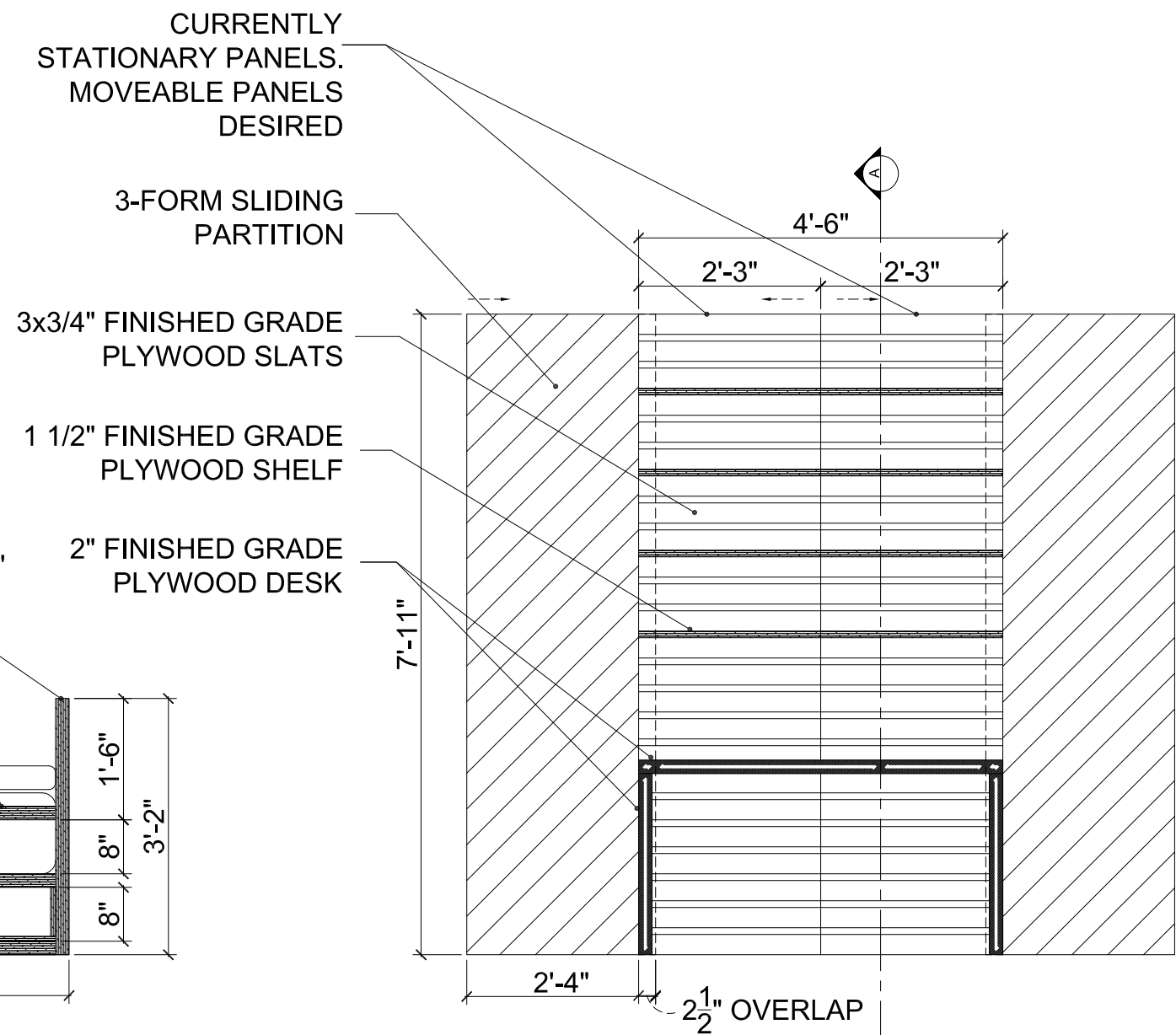
//sheet information	
date	1.June.2007
project number	LTU_001
scale	1/2"=1'
drawn	SS, ST
checked	PP
drawing title	Master Bed Millwork

//sheet number
<b>A533</b>

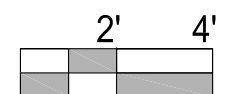




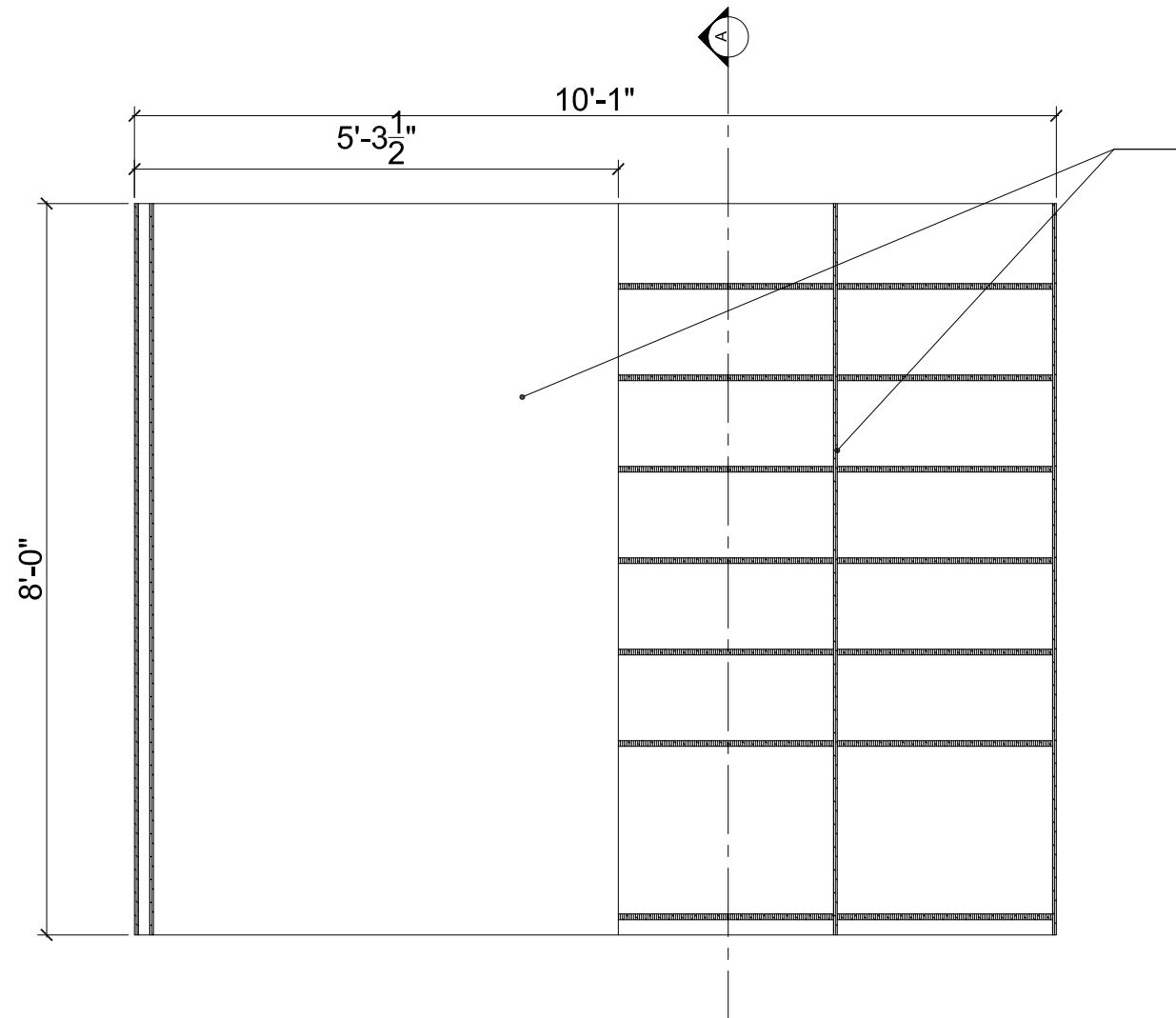
534-2 SECTION A  
A534 SCALE: 1/2" = 1'-0"



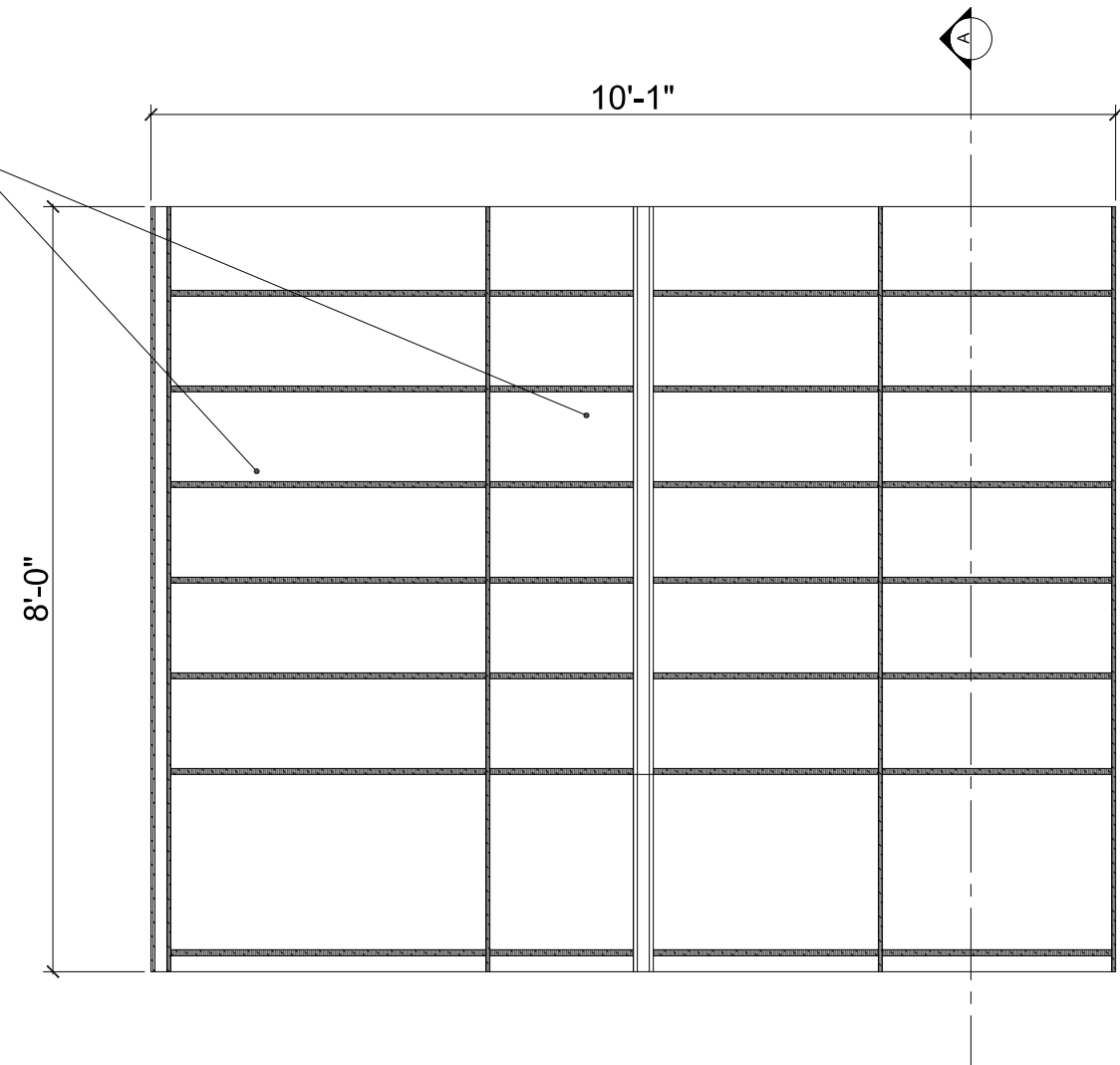
534-1 MASTER BEDROOM MILLWORK ELEVATION  
A534 SCALE: 1/2" = 1'-0"







FINISH-GRADE  
PLYWOOD

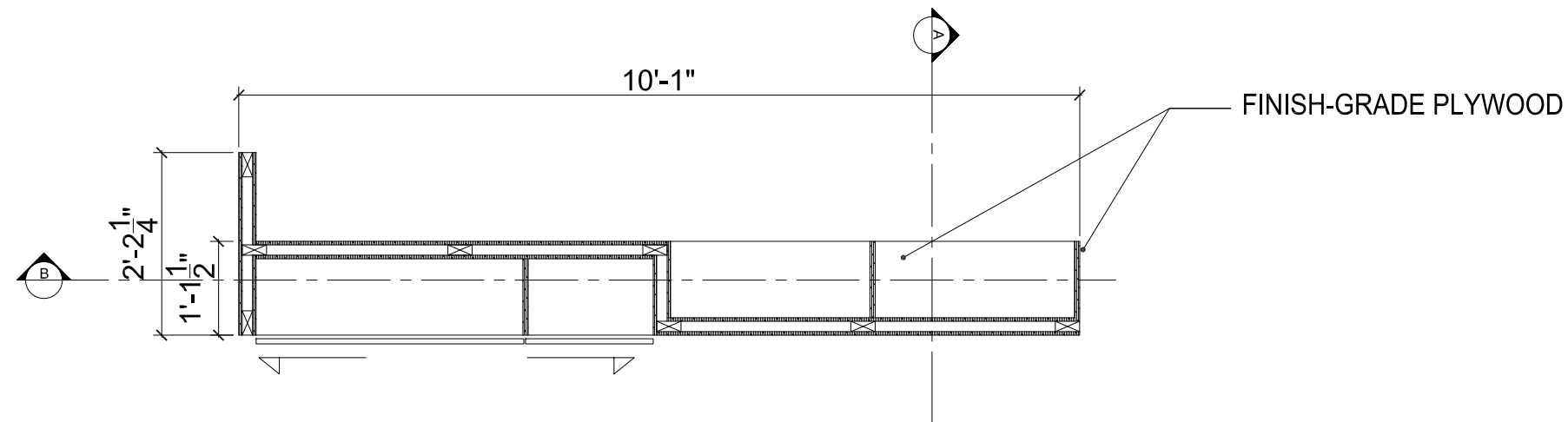


535-3  
A535

**BEDROOM PARTITION NORTH ELEVATION**  
SCALE: 1/2" = 1'-0"

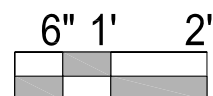
535-4  
A535

**SECTION B**  
SCALE: 1/2" = 1'-0"



535-1  
A535

**BEDROOM PARTITION PLAN**  
SCALE: 1/2" = 1'-0"



//revisions	
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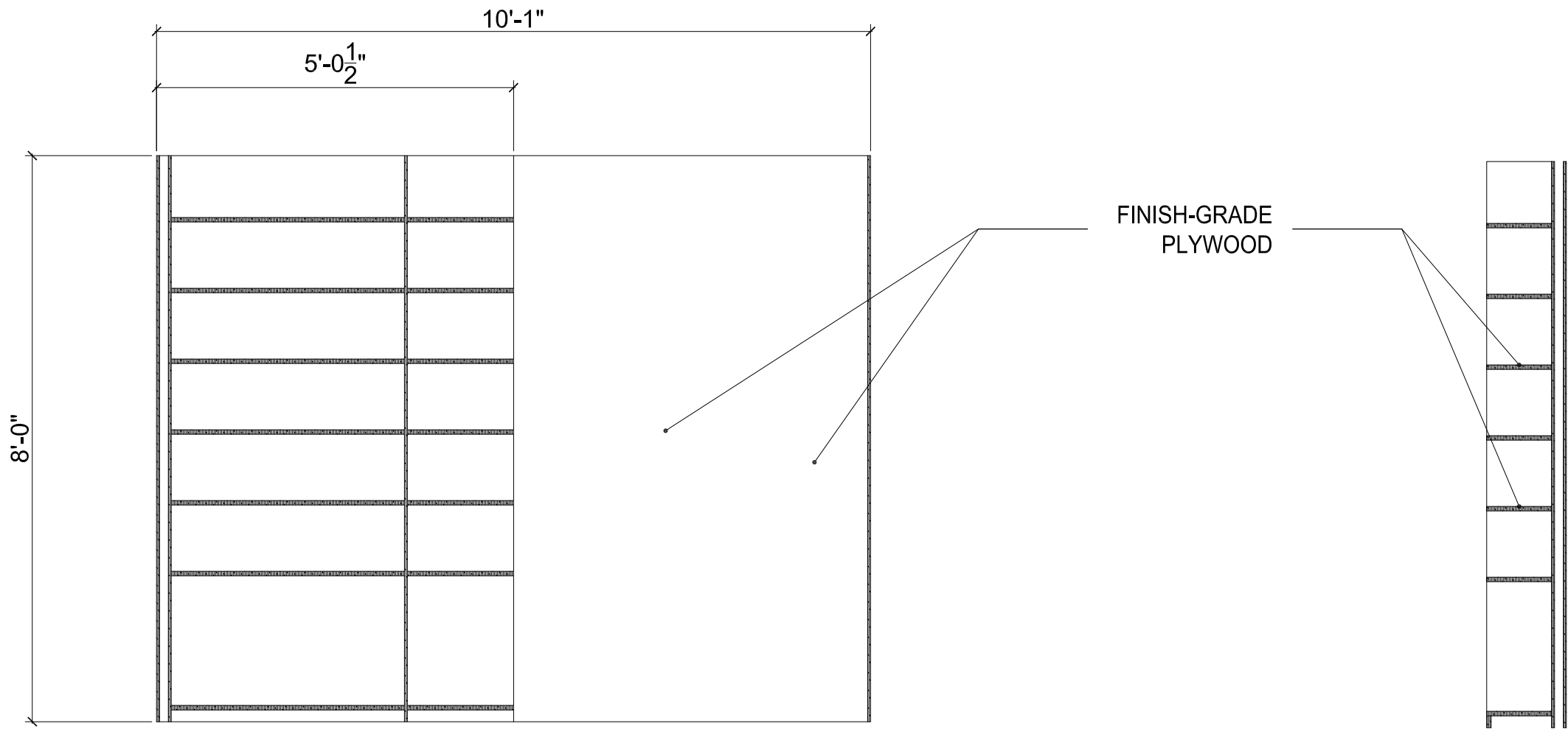
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date	1.June.2007
project number	LTU_001
scale	1/2"=1'
drawn	SS, ST
checked	PP
drawing title	Partition Wall



//revisions		
Issued for	Date	
Final Construction Document Submittal	7.Aug.2007	

//sheet information	
date	1.June.2007
project number	LTU_001
scale	1/2"=1'
drawn	SS, ST
checked	PP
drawing title	Partition Wall

//sheet number
A536

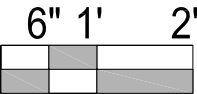


536-2  
A536

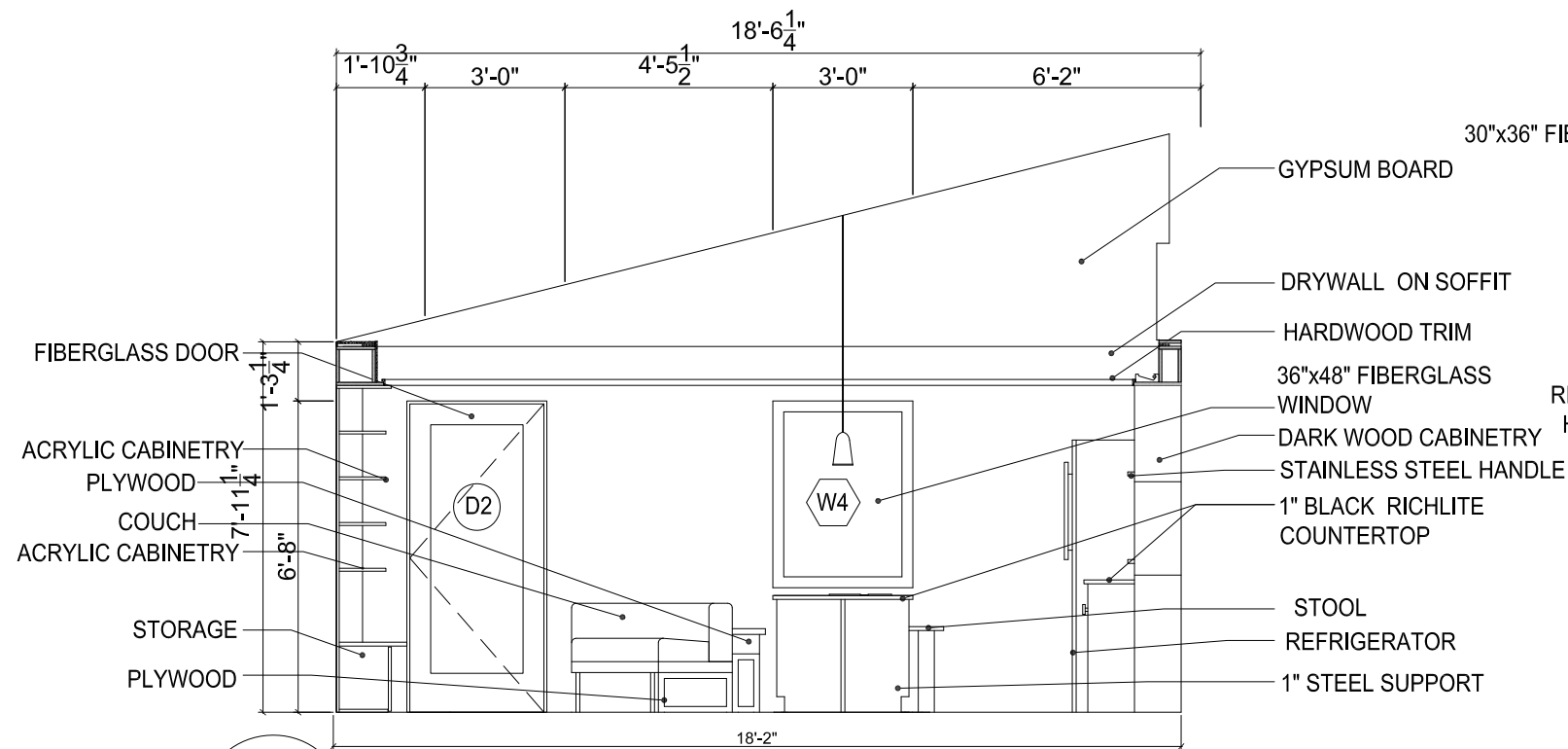
BEDROOM PARTITION SOUTH ELEVATION  
SCALE: 1/2" = 1'-0"

536-4  
A536

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



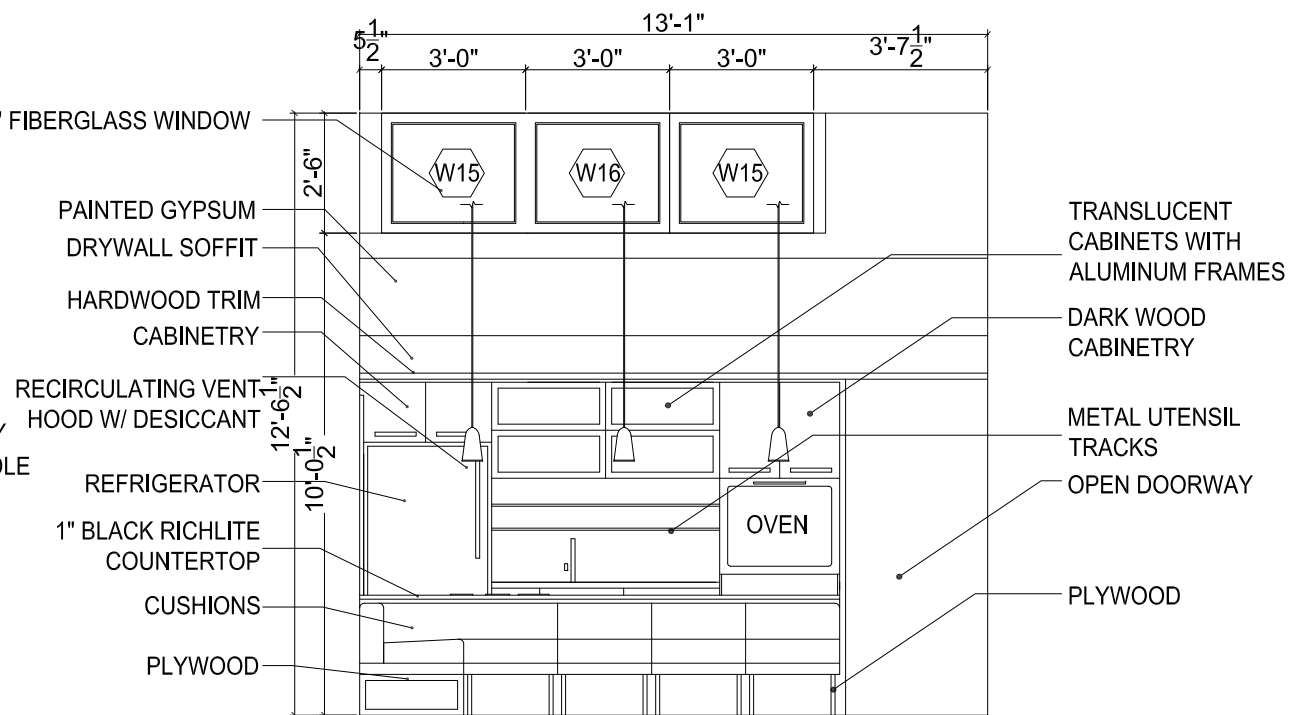




A600-1  
A600

### LIVING/KITCHEN ELEVATION 1

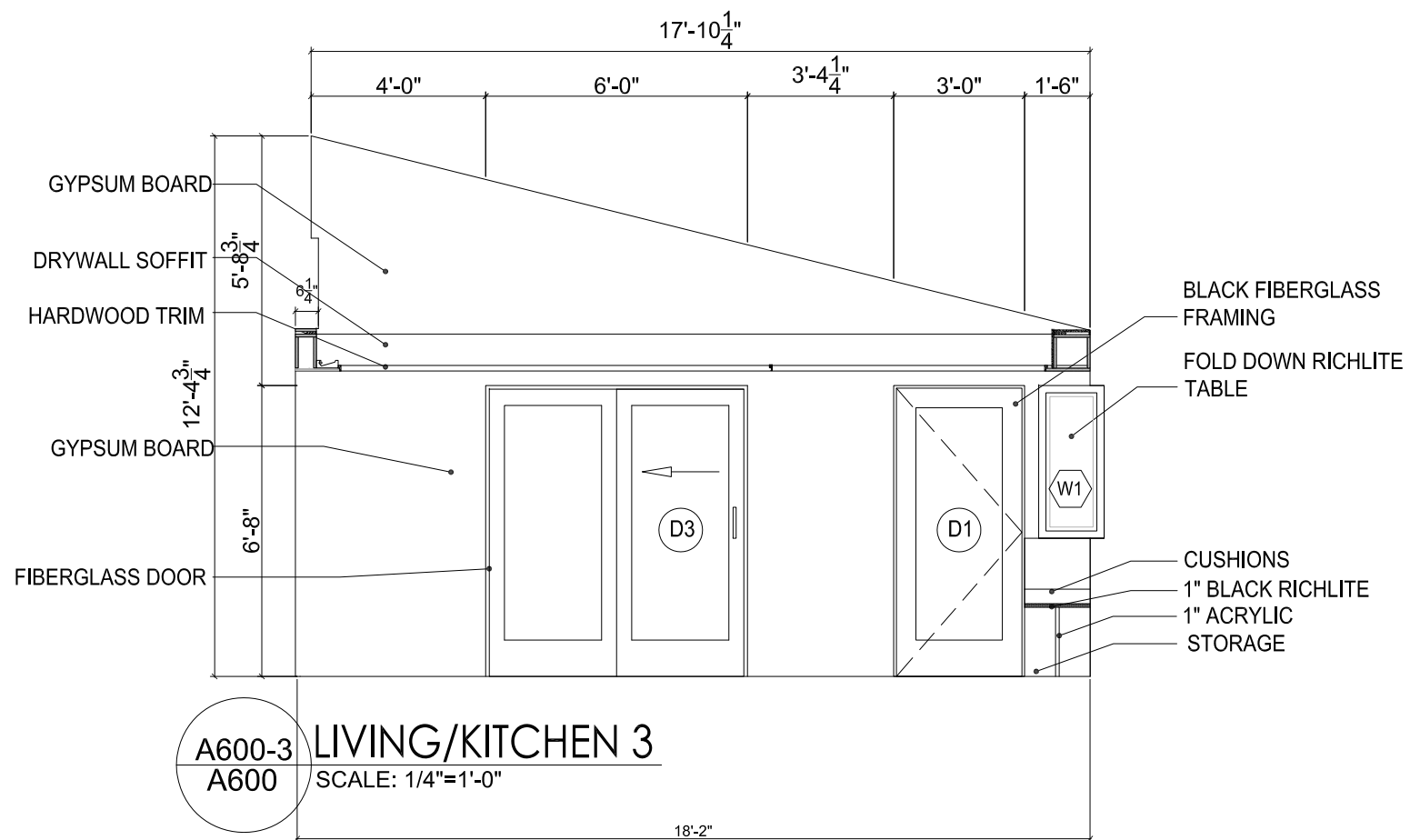
SCALE: 1/4"=1'-0"



A600-2  
A600

### LIVING/KITCHEN ELEVATION 2

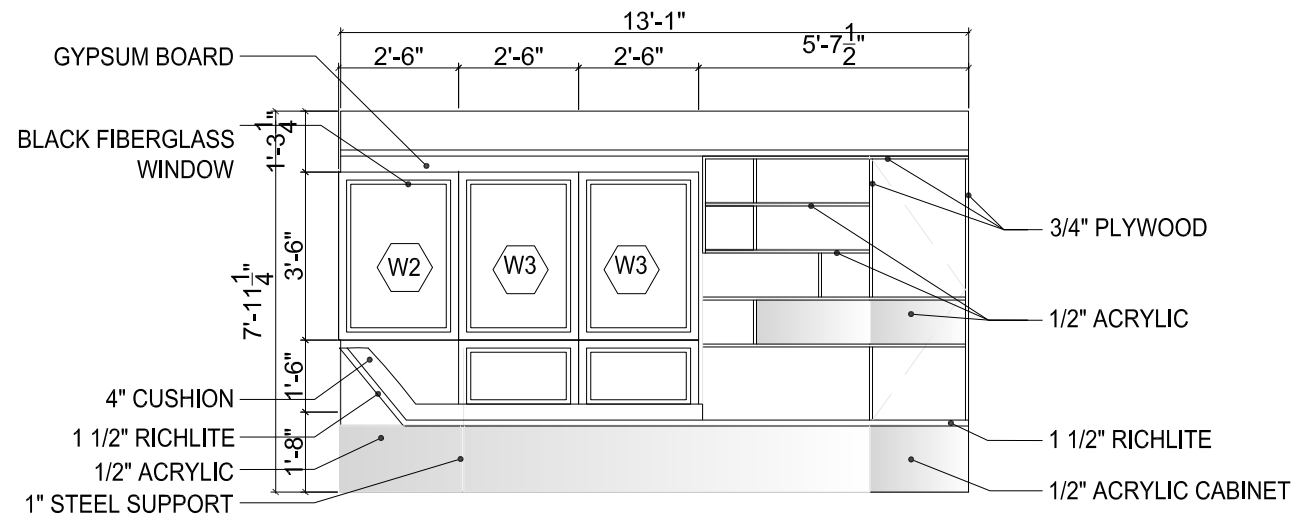
SCALE: 1/4"=1'-0"



A600-3  
A600

### LIVING/KITCHEN 3

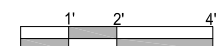
SCALE: 1/4"=1'-0"



A600-4  
A600

### LIVING/KITCHEN ELEVATION 4

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



//project

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Document Submittal  
7.Aug.2007

//sheet information

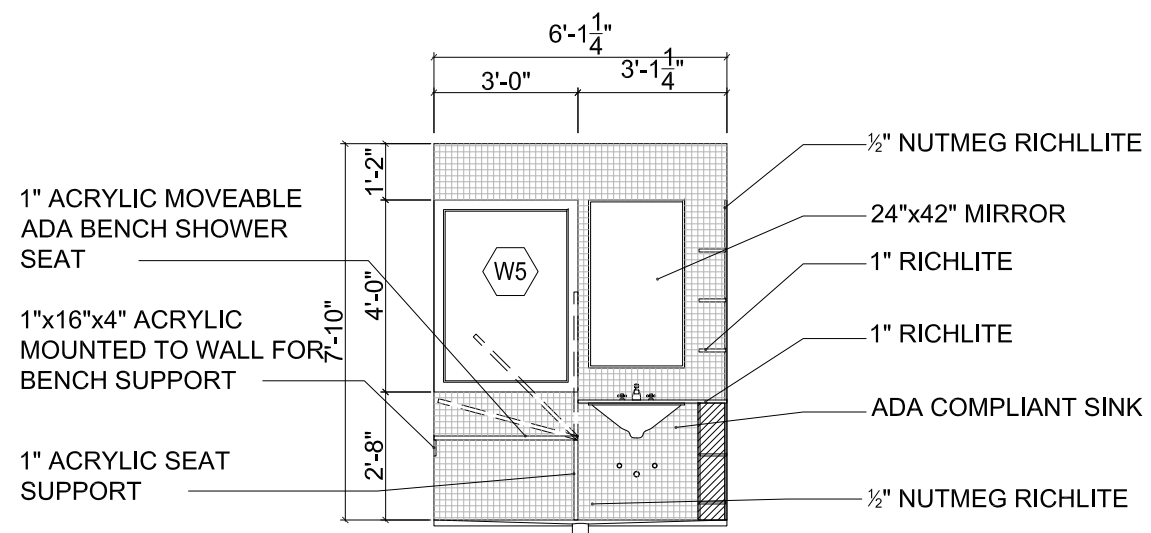
date 7.Aug.2007  
project number LTU\_001  
scale 1/4"-1'-0"  
drawn S.S.  
checked PP  
drawing title

Interior  
Elevations

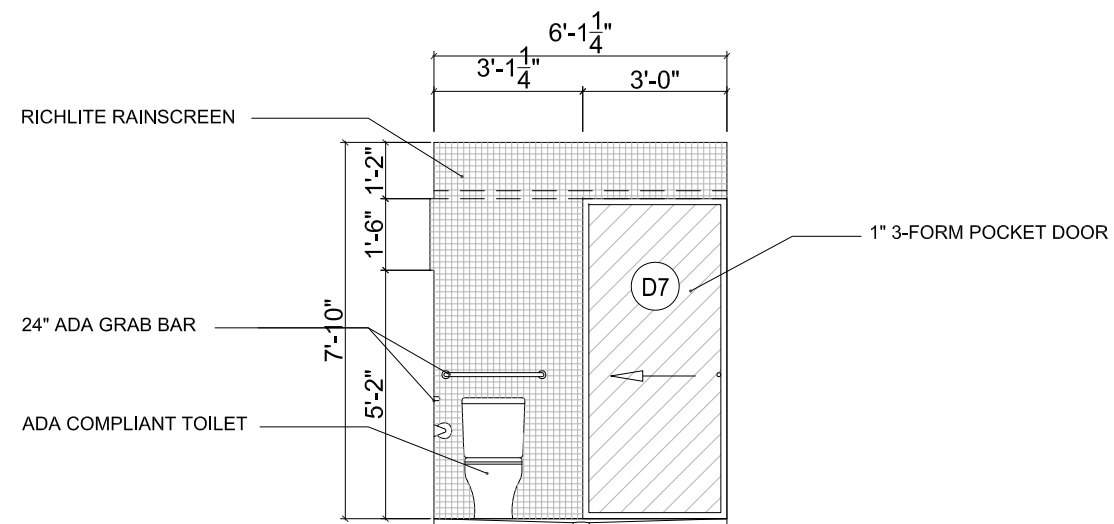
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**A600**

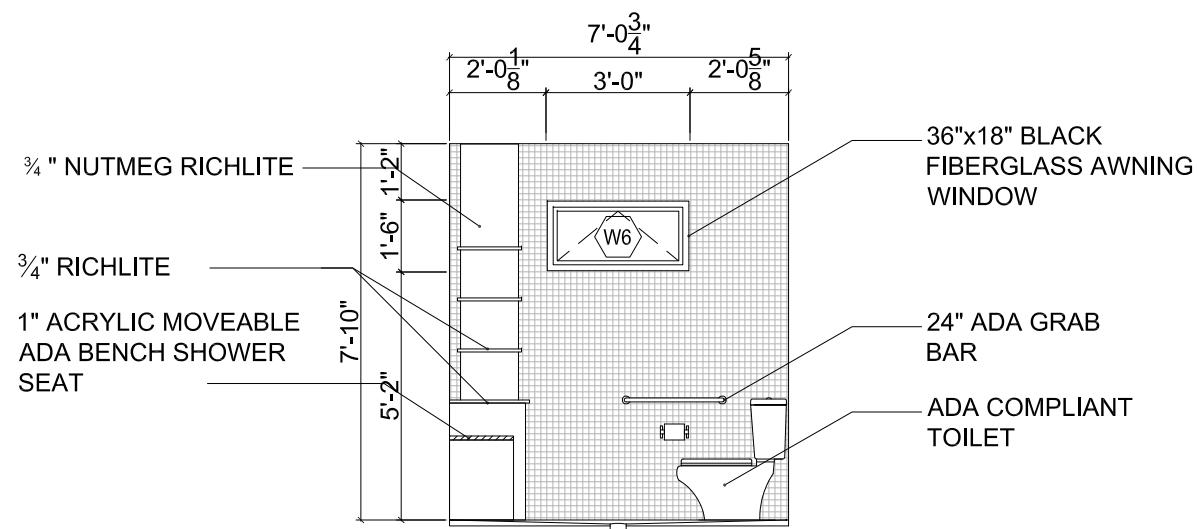




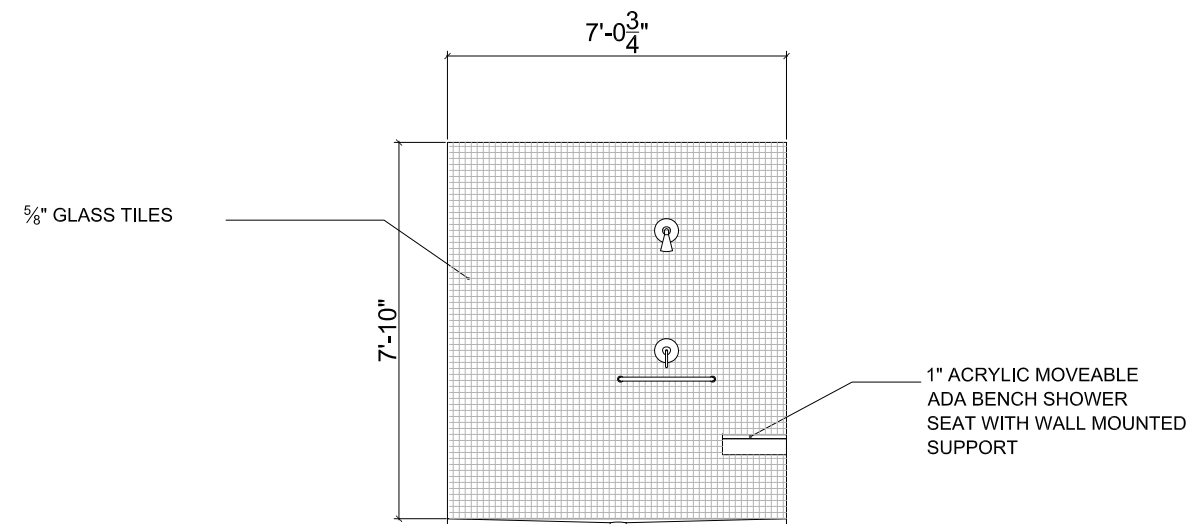
A601-1 BATHROOM ELEVATION 1  
A601 SCALE: 1/4"=1'-0"



A601-3 BATHROOM ELEVATION 3  
A601 SCALE: 1/4"=1'-0"



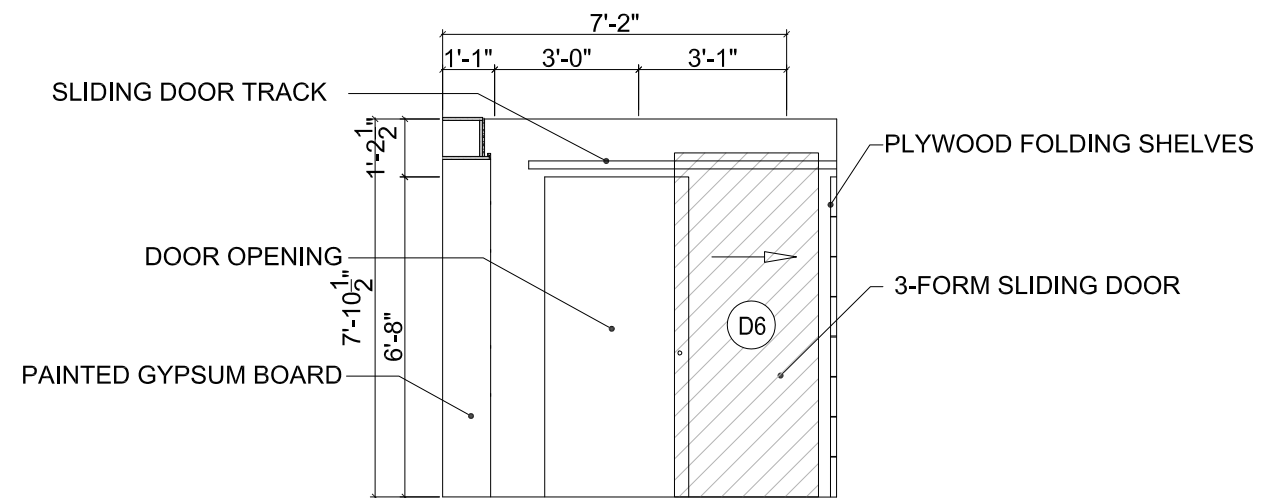
**BATHROOM ELEVATION 2**  
SCALE: 1/4"=1'-0"



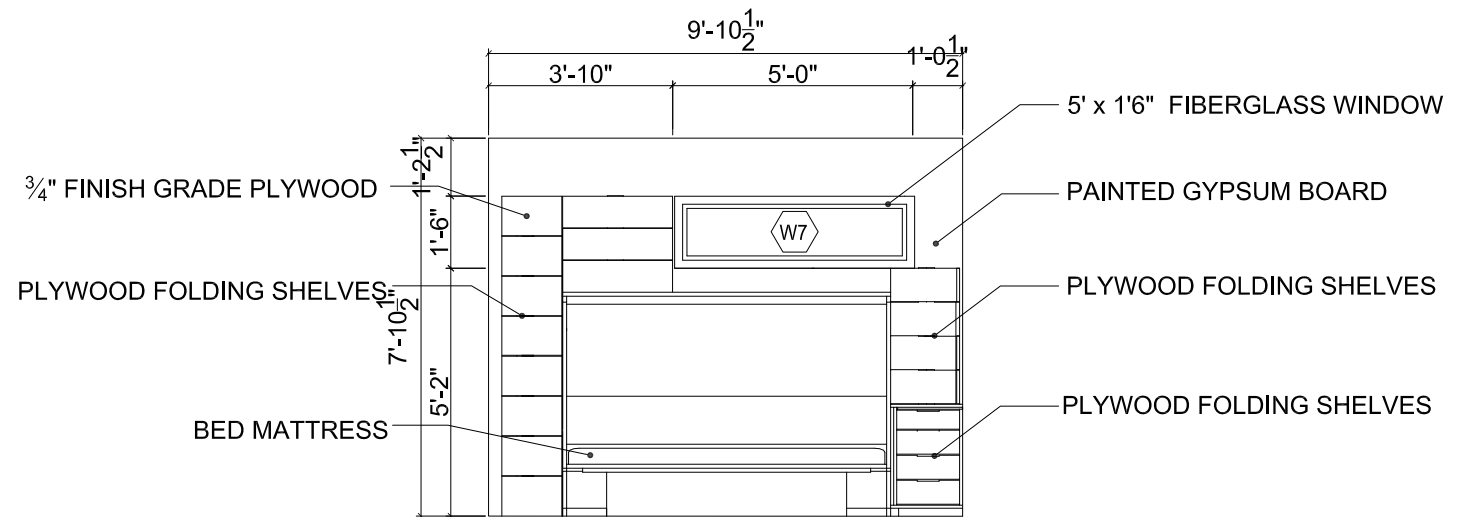
A601-4 BATHROOM ELEVATION 4  
A601 SCALE: 1/4"=1'-0"



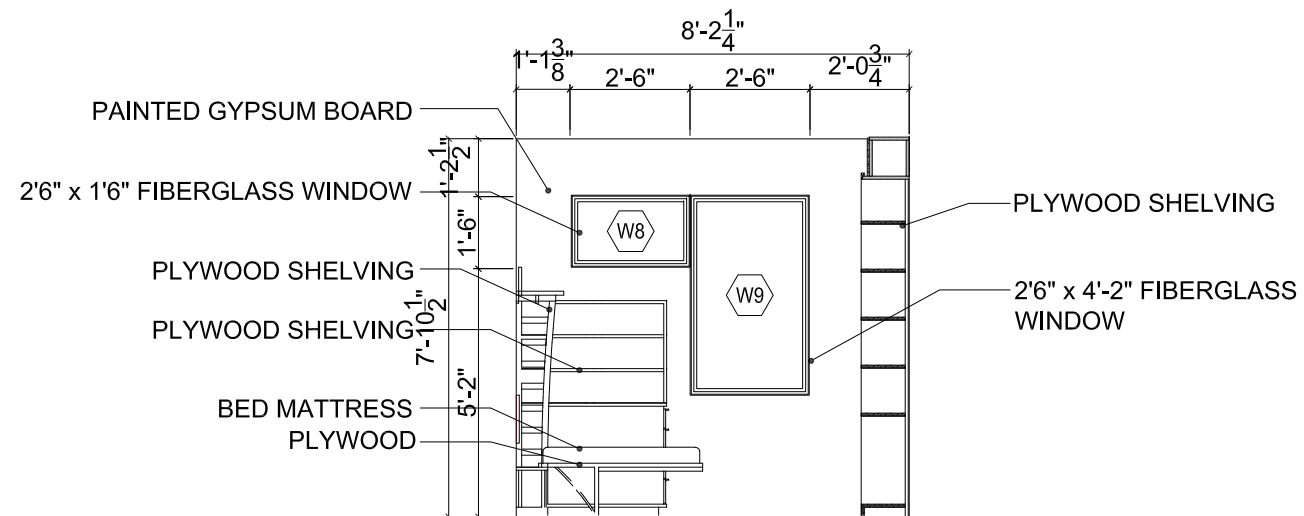




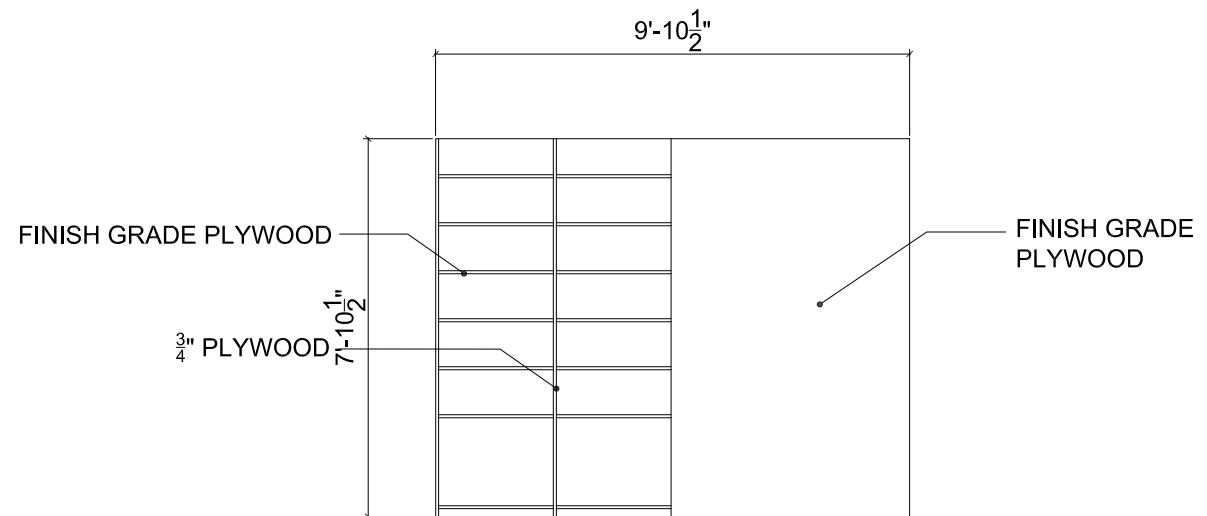
A602-1  
A602 BEDROOM ELEVATION 1  
SCALE: 1/4"=1'-0"



A602-2  
A602 BEDROOM ELEVATION 2  
SCALE: 1/4"=1'-0"



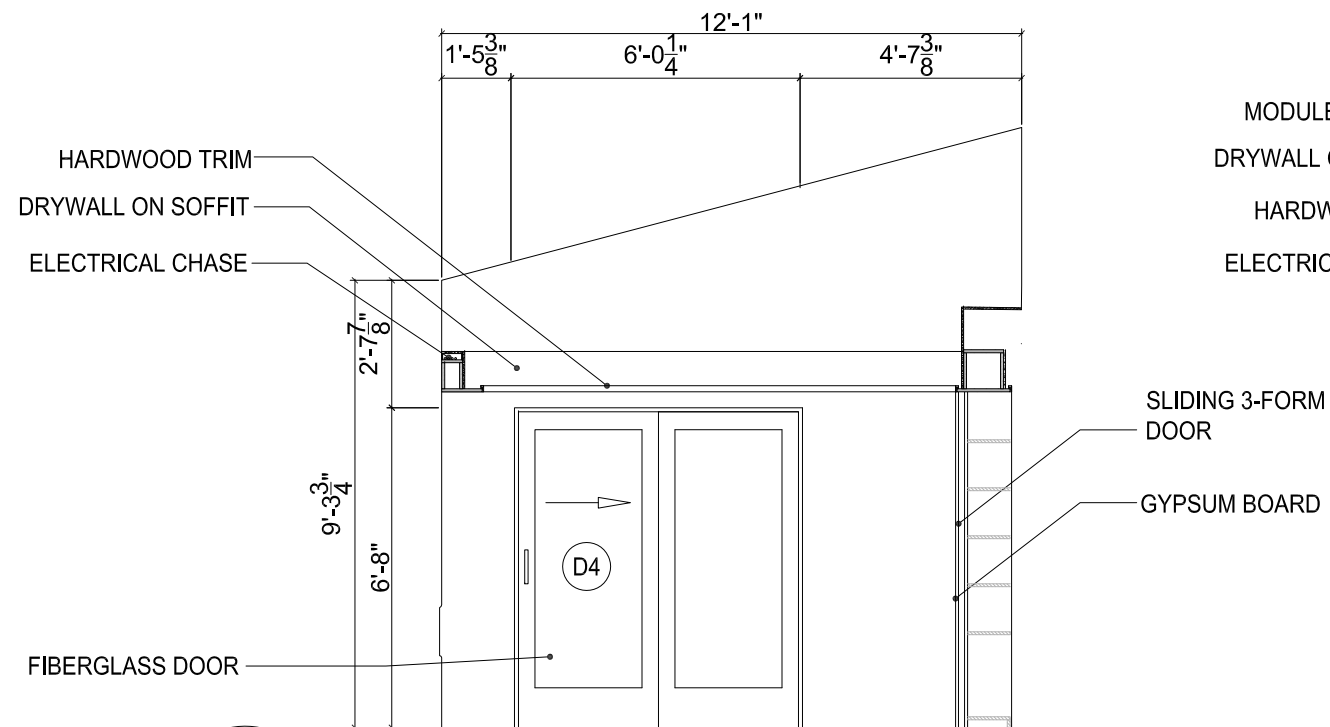
A602-3  
A602 BEDROOM ELEVATION 3  
SCALE: 1/4"=1'-0"



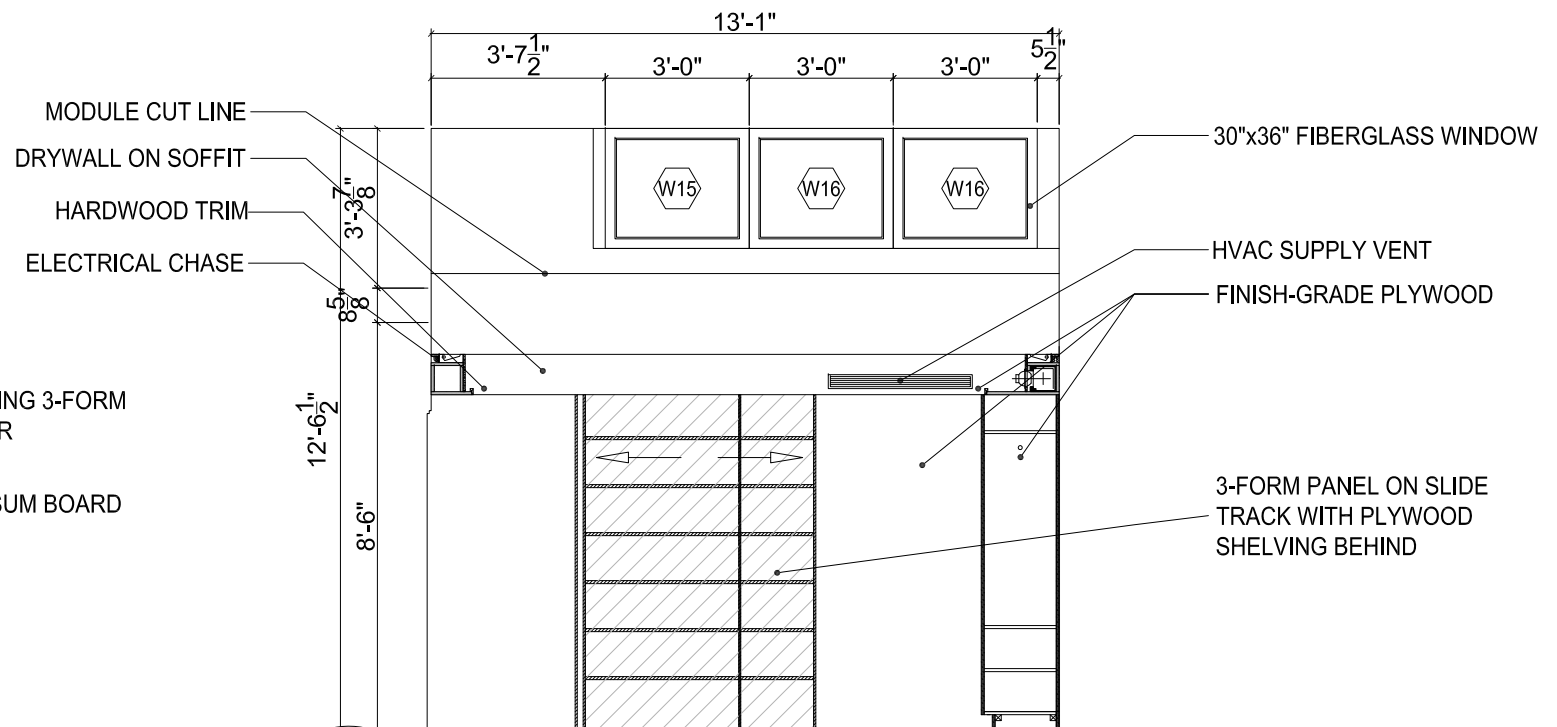
A600-4  
A600 LIVING/KITCHEN ELEVATION 4  
SCALE: 1/4"=1'-0"



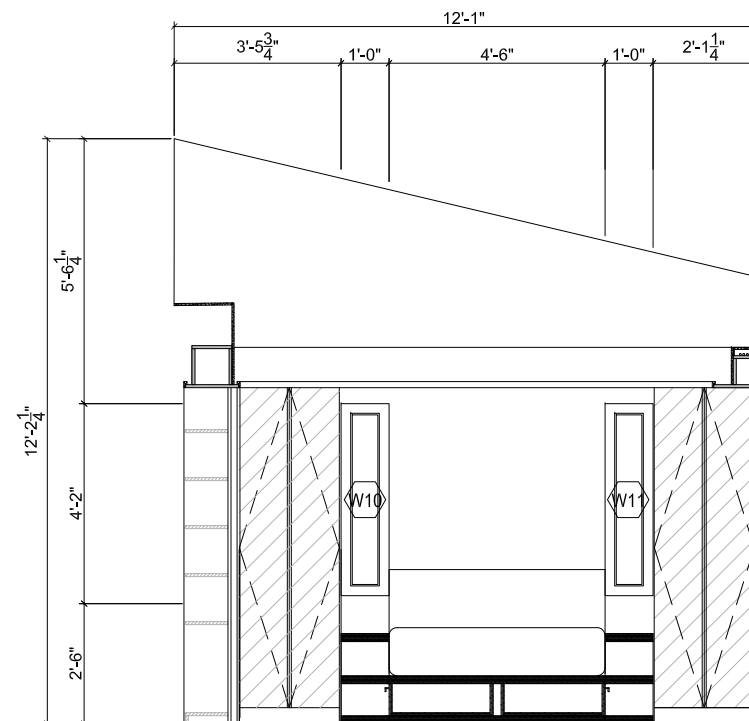




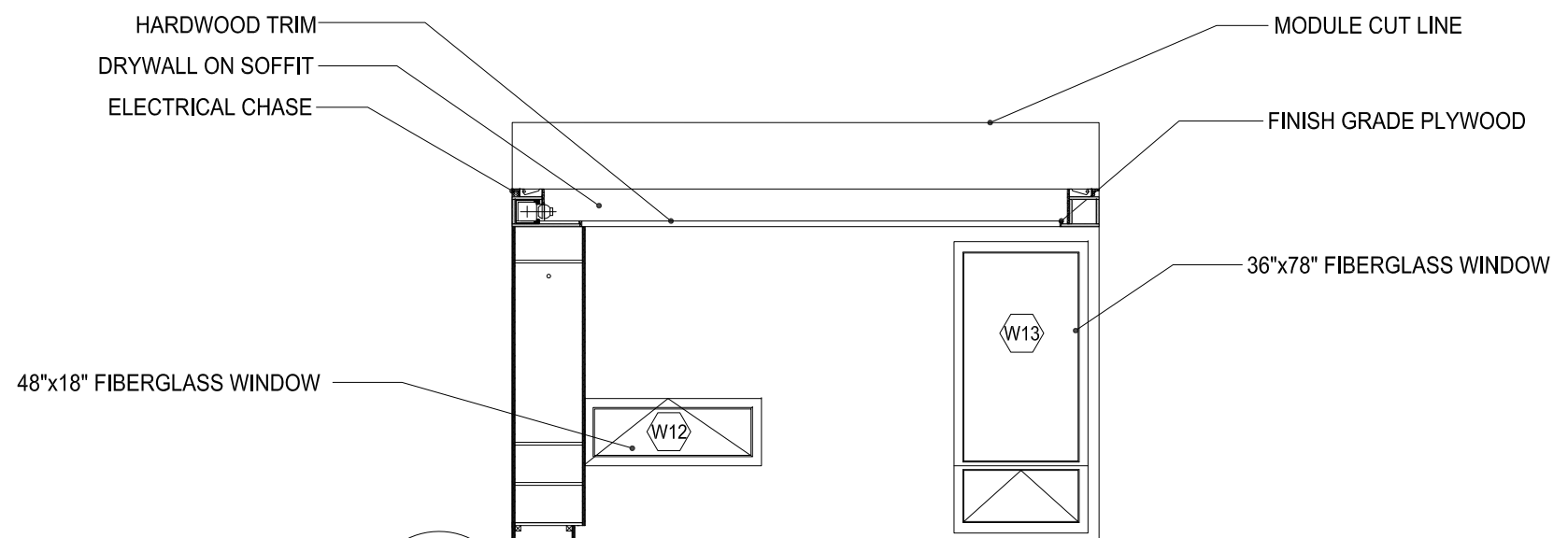
A603-1  
A603 MASTER BEDROOM ELEVATION 1  
SCALE: 1/4"=1'-0"



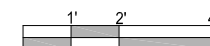
A603-2  
A603 MASTERBEDROOM ELEVATION 2  
SCALE: 1/4"=1'-0"



A603-3  
A603 MASTER BEDROOM ELEVATION 3  
SCALE: 1/4"=1'-0"



A603-4  
A603 MASTER BEDROOM ELEVATION 4  
SCALE: 1/4"=1'-0"



//project

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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date 7.Aug.2007  
project number LTU\_001  
scale 1/4"-1'-0"  
drawn S.S.  
checked PP  
drawing title

Interior Elevations

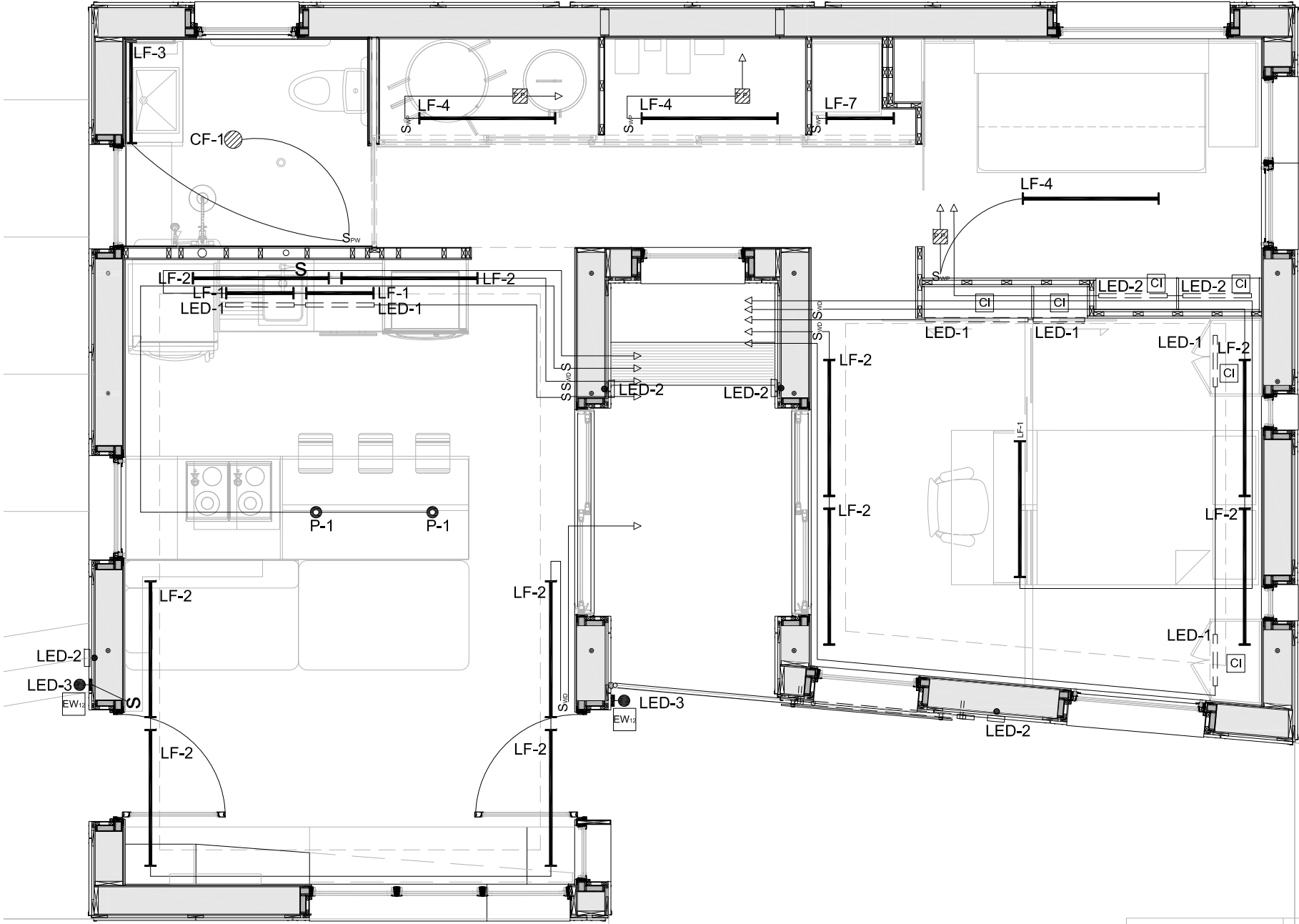
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**A603**







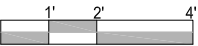


1  
E101

**LIGHTING SCHEMATIC**  
SCALE: 1/4" = 1'-0"

LIGHTING FIXTURE SCHDULE			
TYPE	DESCRIPTION	MANUFACTURER	LAMP
LF-1	UNDERCABINET LIGHTING WITH SWITCH OR FIXTURE.	Alkco	ONE 28W T5 FLUORESCENT 3500K, 80 CRI
LF-2	COVE LIGHTING WITH DIMMABLE BALLAST.	LITE CONTROL COVE 25	ONE 54W T5 HO FLUORESCENT 3500K, 80 CRI
LF-3	WET LOCATION WALL MOUNTED FIXTURE.	Prolite	ONE 21 W T5 FLUORESCENT 3500K 80 CRI
LF-4	RECESSED FIXTURE WITH 48VDC BALLAST.	Lithonia	One T5 Fluorescent 3500k 80 CRI
P-1	White Mini Pendant 8.5"	Lightolier	One 18W CFL
CF-1	WET LOCATION RECESSED COMPACT FLUORESCENT FIXTURE.	-	ONE 26W COMPACT FLUORESCENT, 3500K, 80 CRI
LED-1	EXTERIOR LED STEP LIGHT, WHITE LED ON PLANE.	IQ PLANE SERIES	9.75 WATT WHITE LED
LED-2	STRIP LED	-	
LED-3	OUTDOOR LED FLOOD LIGHT	-	6 Watt White LED

SYMBOL LEGEND		
TYPE	DESCRIPTION	MODEL NUMBERS
S	SINGLE POLE SWITCH, 15A SWITCH	-
S <sub>WD</sub>	SINGLE POLE, VACANCY SENSOR WITH DIMMER, 15A	WD-170
S <sub>WP</sub>	SINGLE POLE, VACANCY SENSOR, 15A	WPIR
S <sub>PW</sub>	SINGLE POLE, VACANCY SENSOR, 20A WITH CFGI	PW-100
CI	PASSIVE INFARED SENSOR FOR 12VDC	CI-12
EW <sub>12</sub>	OUTDOOR MOTION SENSOR FOR 12V SYSTEM	EW-105-24
EW	OUTDOOR MOTION SENSOR FOR 120VAC SYSTEM	EW-100-120
P.P.	POWER PACK	B120E-P



//project

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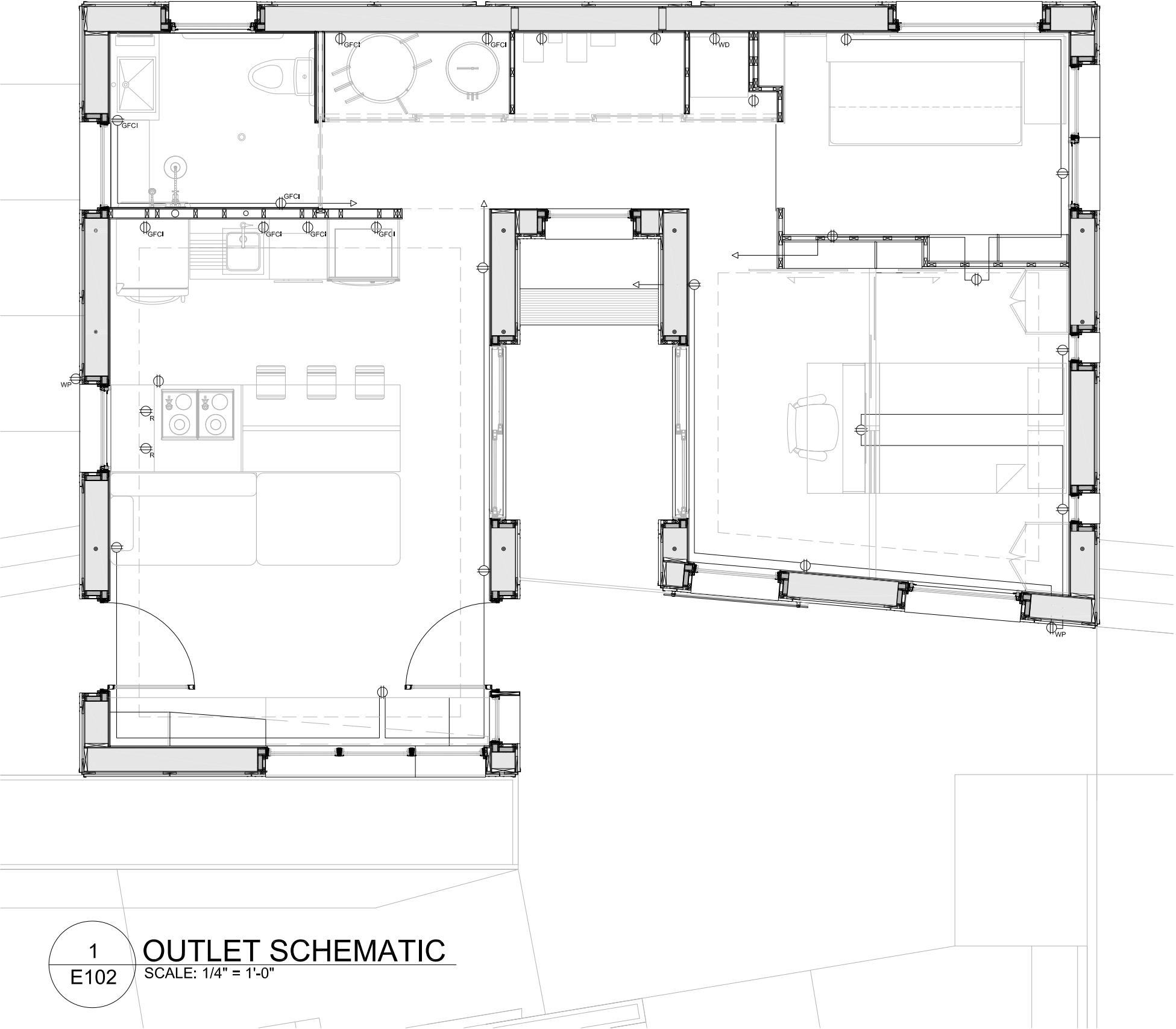
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project number	LTU_001
scale	1/4" = 1'-0"
drawn	CM, SS
checked	PP
drawing title	Lighting Plan

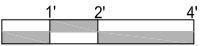
//sheet number

**E101**





SYMBOL LEGEND		
	SINGLE POLE DUPLEX RECEPTACLE.	-
	SINGLE POLE DUPLEX RECEPTACLE WITH GROUND FAULT CIRCUIT INTERRUPTER.	-
	SINGLE POLE DUPLEX RECEPTACLE WEATHER-PROOF (GFCI)	-
	TWO POLE DUPLEX RECEPTACLE FOR WASHER/DRYER.	-
	TWO POLE RECEPTACLE FOR RANGE.	-



//project

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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date	7.Aug.2007
project number	LTU_001
scale	-
drawn	CM, SS
checked	PP
drawing title	Outlet Plan

//sheet number

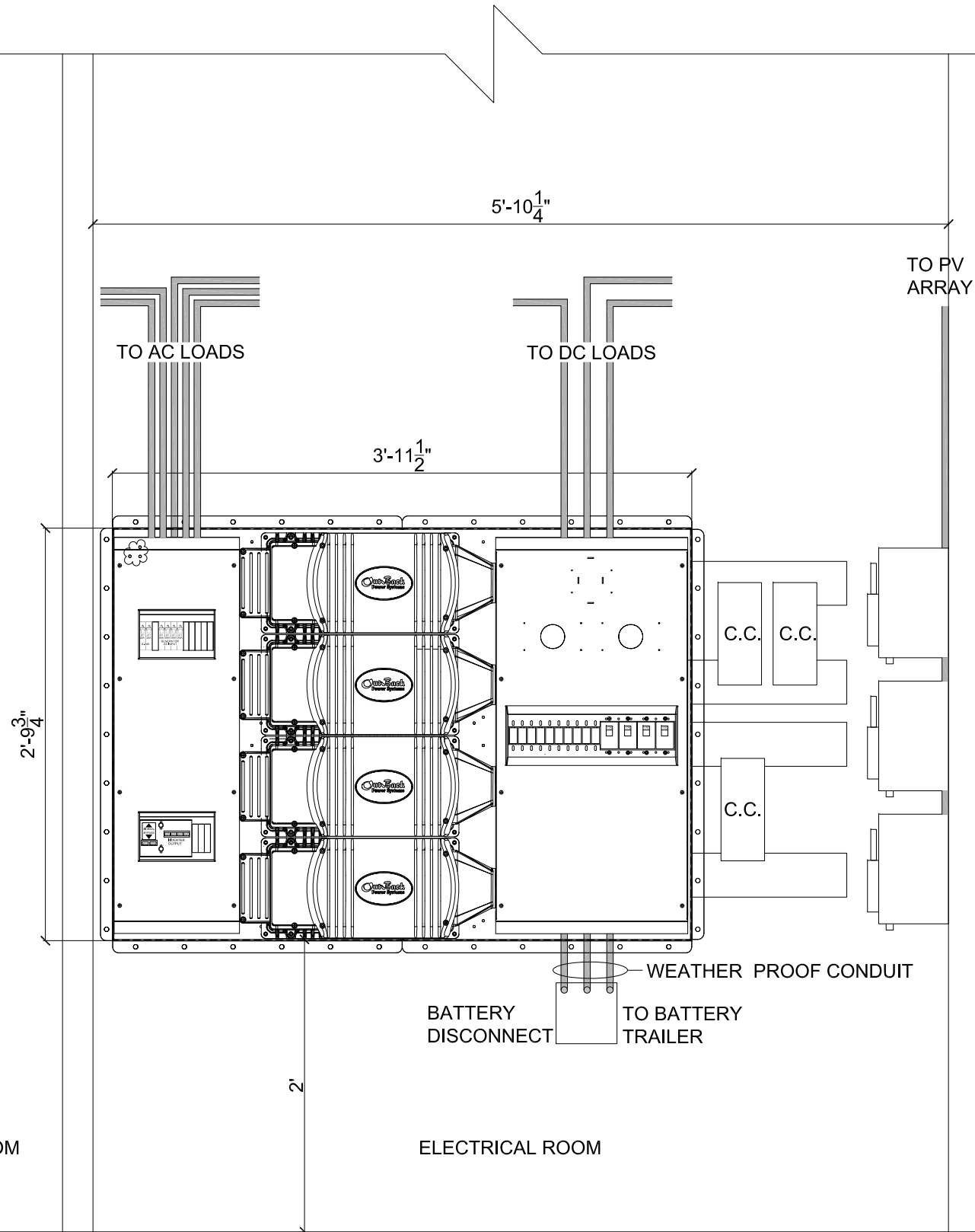
**E102**



MECHANICAL ROOM

ELECTRICAL ROOM

LAUNDRY ROOM



1  
E103

**ELECTRICAL ROOM LAYOUT**  
SCALE = 1" = 1'-0"

//project

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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

//sheet information

date	7.Aug.2007
project number	LTU_001
scale	1-1/2" = 1'-0"
drawn	SS
checked	PP
drawing title	Electrical Room Layout

//sheet number

**E103**



AC Distribution Panel

TRIP	POLES	CONDUIT	WIRE SIZE	LOAD SERVED	TOTAL VA	NO.		NO.	TOTAL VA	LOAD SERVED	WIRE SIZE	CONDUIT	POLES	TRIP	
15	1		#10 AWG	Living Room (Outlets & Lighting)	352	1		2	148	Kitchen/Dining Room (Lighting)	#10 AWG			1	15
15	1		#10 AWG	Study/Office (Outlets & Lighting)	84	3		4	56	Master Bedroom (Outlets & Lighting)	#10 AWG			1	15
15	1		#10 AWG	Guest Bedroom (Outlets)	-	5		6	-	Smoke Detector	#10 AWG			1	15
15	1		#10 AWG	Dishwasher	1800	7		8	1800	Kitchen (Outlets for Appliances) Microwave	#10 AWG			1	15
20	1		#10 AWG	Kitchen (Outlets for Appliances) Refrigerator	900	9		10	47	Bathroom (Outlets & Lighting)	#10 AWG			1	20
20	1		#10 AWG	HVAC (ERV, Air Handling Units, & Controllers)	472	11		12	1650	Car Charger	#10 AWG			1	20
30	2		#10 AWG	Tankless Water Heater	7200	13		14	4800	Washer & Dryer	#10 AWG			2	30
						15		16							
20	2		#10 AWG	Cooktop	3400	17		18	3400	Cooktop	#10 AWG			2	20
						19	20								
15	2		-	Watt Node		21	22		Spare						
						22	24		Spare						

1

E104

AC DISTRIBUTION PANEL

NOT TO SCALE

//project

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ITIL SOLAR DECATON 2007

//revisions

Issued for	Date
CD Submittal	1.June.2007

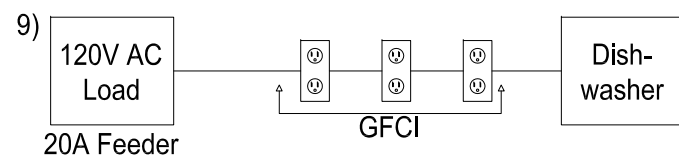
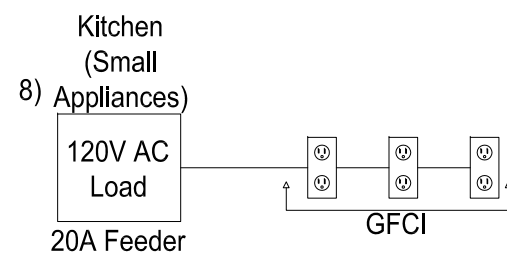
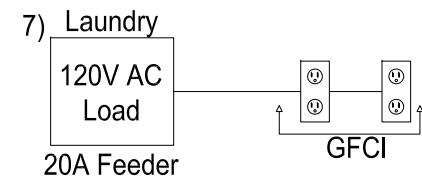
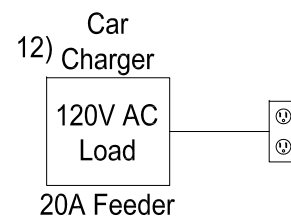
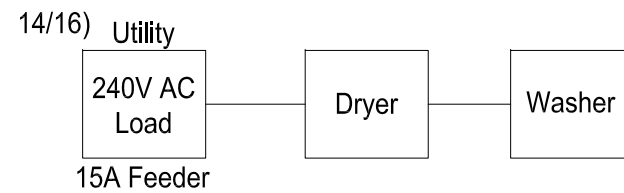
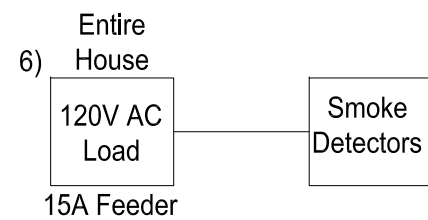
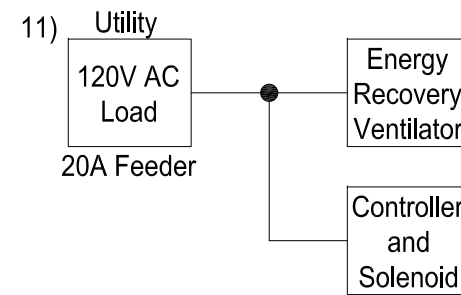
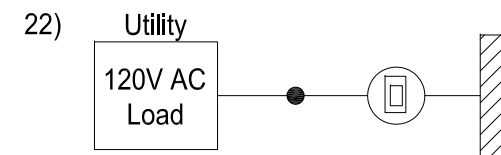
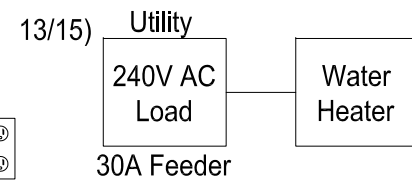
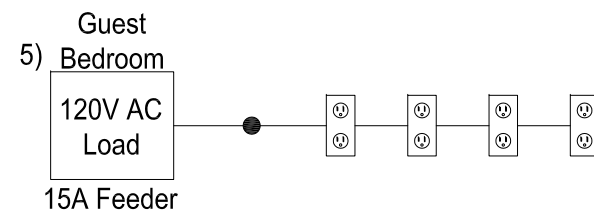
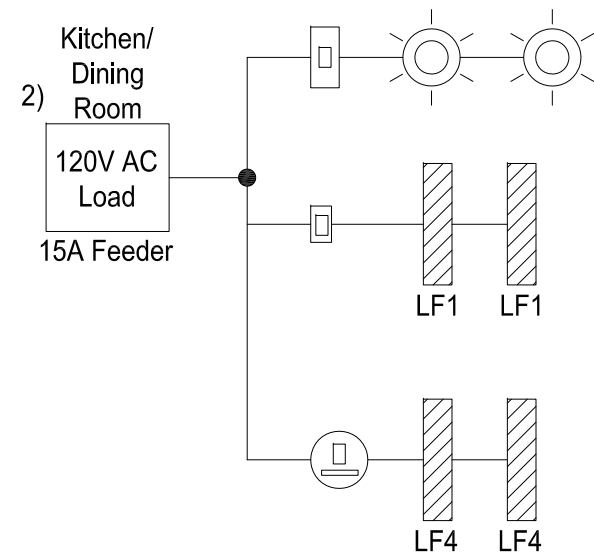
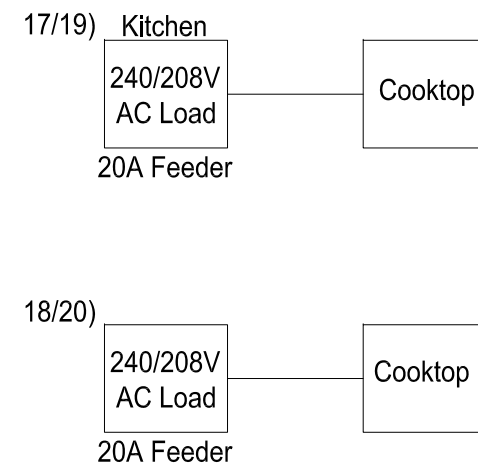
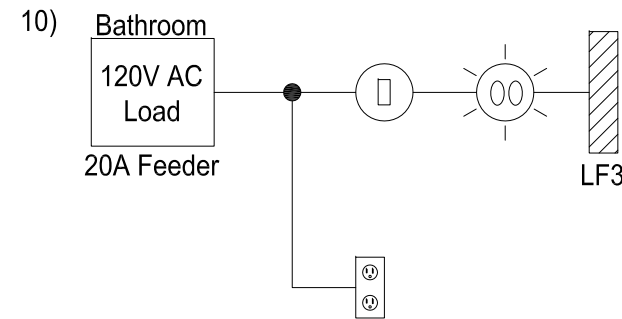
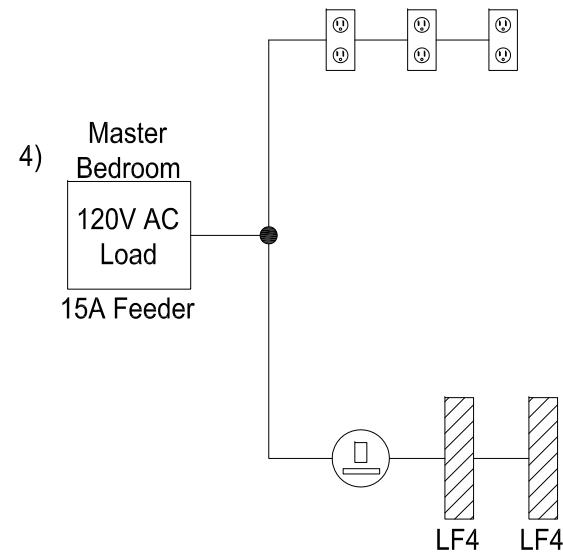
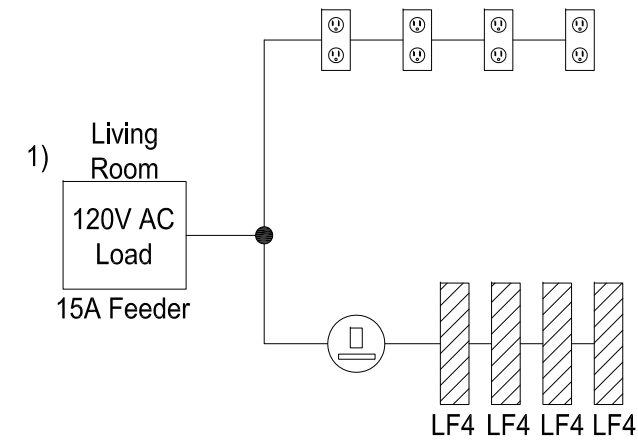
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project number	LTU_001
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drawn	CM_SS
checked	PP
drawing title	AC Distribution Panel

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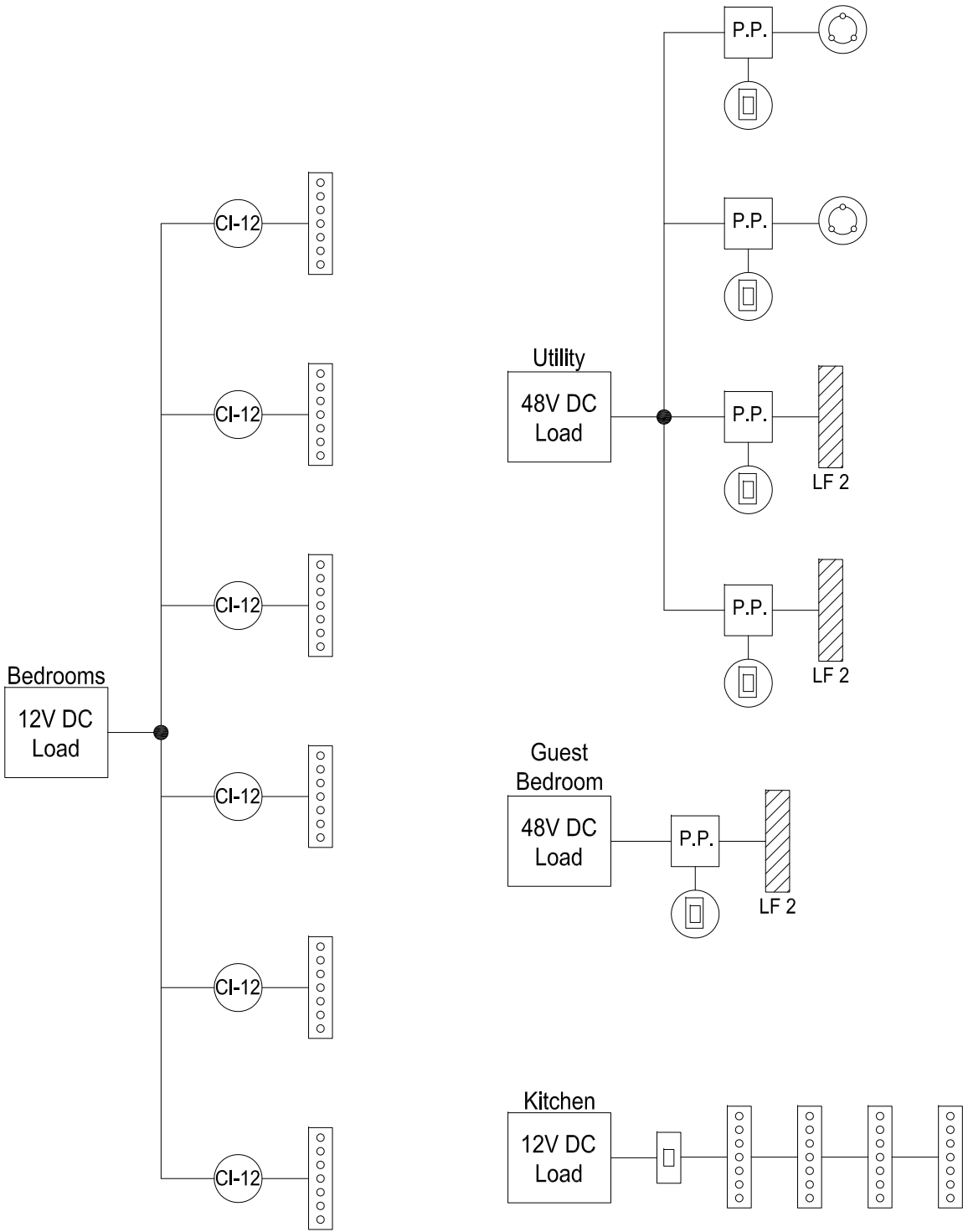
E104





LIGHT AND SENSOR LEGEND		
SYMBOL	DESCRIPTION	MODEL NUMBER
	STANDARD TWO PLUG SINGLE POLE OUTLET	-
	UNDERCABINET LIGHTING WITH SWITCH OR FIXTURE	-
	WET LOCATION WALL MOUNTED FIXTURE	-
	RECESSED FIXTURE WITH 48VDC BALLAST	-
	WHITE MINI PENDANT 8.5"	-
	WET LOCATION COMPACT FLUORESCENT FIXTURE	-
	SINGLE POLE VACANCY SENSOR WITH DIMMER, 15A	WD-170
	SINGLE POLE VACANCY SENSOR WITH DIMMER, 20A, WITH CFGI	PW-100





LIGHT AND SENSOR LEGEND		
SYMBOL	DESCRIPTION	MODEL NUMBER
	12V DC LED STRIP LIGHT	-
	12V DC LED FLOOD LIGHT	-
	COVE LIGHTING WITH DIMMABLE BALLAST	-
	PASSIVE INFARED SENSOR FOR 12V DC	CI-12
	SINGLE POLE, 15A SWITCH	-
	SINGLE POLE VACANCY SENSOR 15A	WPIR
	POWER PACK	B120E-P
	OUTDOOR MOTION SENSOR FOR 12V DC	EW-105-24





//revisions	
Issued for	Date
Final Construction Document Submittal	7.Aug.2007

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//sheet information

date
7.Aug.2007

project number
LTU_001

scale
1/4"=1'-0"

drawn
GR, JS

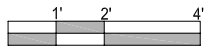
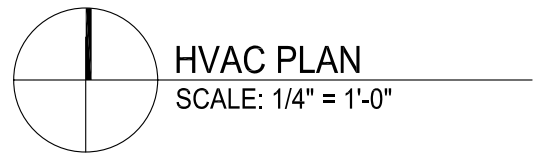
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drawing title
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HVAC Plan

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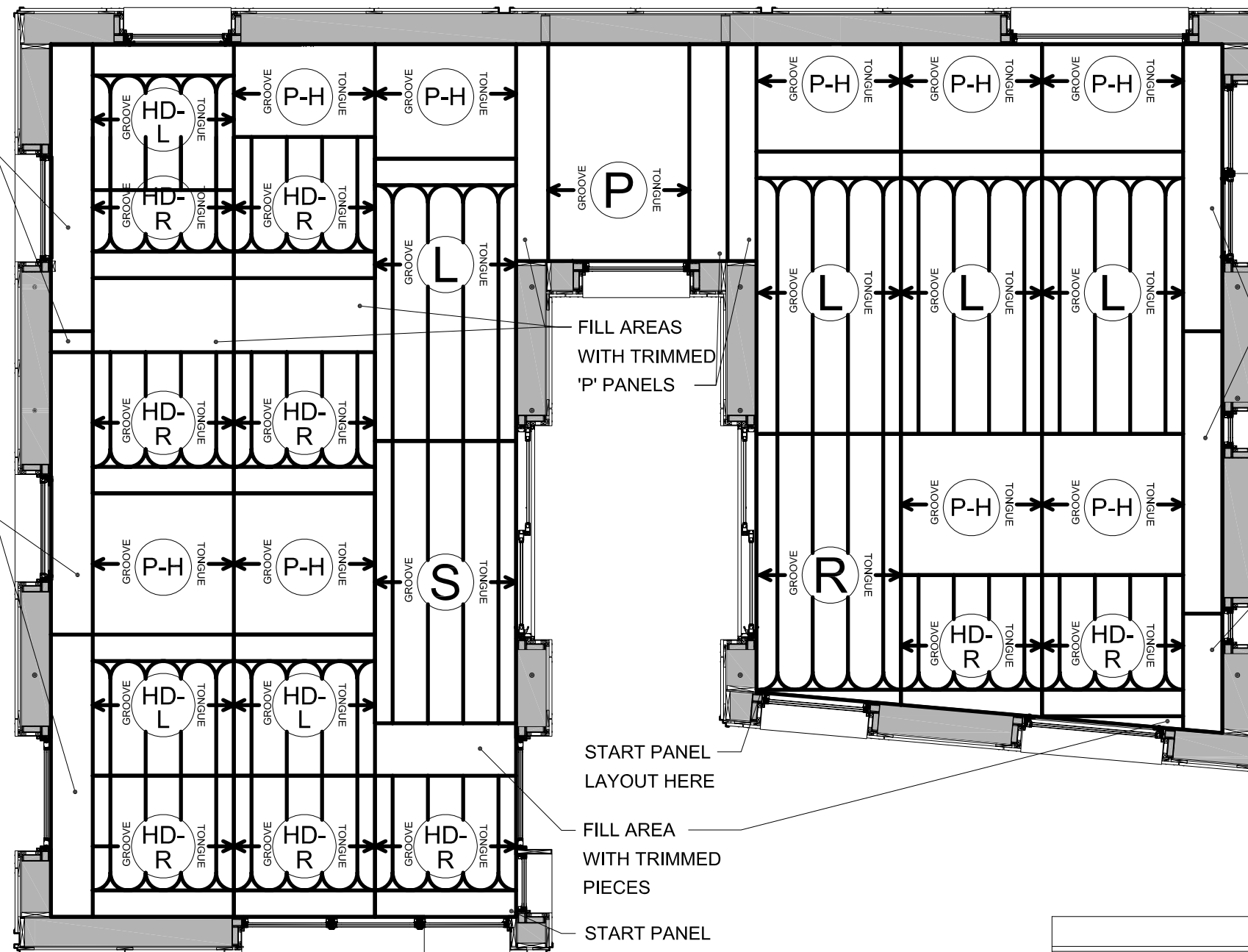
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FILL AREAS ALONG  
WALL WITH 1'-1" STRIPS  
OF 'P' PANELS

FILL AREAS ALONG  
WALL WITH 1'-1" STRIPS  
OF 'P' PANELS



FILL AREAS  
WITH TRIMMED  
'P' PANELS

START PANEL  
LAYOUT HERE

FILL AREA  
WITH TRIMMED  
PIECES

START PANEL  
LAYOUT HERE

FILL AREAS ALONG  
WALL WITH 1'-1" STRIPS  
OF 'P' PANELS

FILL AREAS ALONG  
WALL WITH 1'-1" STRIPS  
OF 'P' PANELS

PANEL SCHEDULE		
TYPE	QUANTITY	COMMENTS
S	1	①
L	4	①
R	1	①
D	6	① ②
P	8	③

① ANY PANELS IN THE DRAWING THAT ARE MARKED WITH AN ASTERIX (\*) INDICATE A PANEL THAT IS TO BE TRIMMED. A CAREFUL MEASUREMENT SHOULD BE MADE TO GUARENTEE A CORRECT INSTALLATION.

② DOUBLE PANELS WILL CONSIST OF A "HALF DOUBLE-LEFT" PANEL AND A "HALF DOUBLE-RIGHT" PANEL. ON THE PANEL LAYOUT, YOU MAY SEE A PANEL MARKED AS "HD-L" OR "HD-R". THIS MEANS THAT YOU CUT ONE OF THESE DOUBLE PANELS IN HALF AND USE THE APPROPRIATE SIDE AS MARKED FOR THE INSTALLATION.

③ CONVENTIONAL TONGUE AND GROOVE PLYWOOD PANELS USED TO FILL IN EMPTY SPACES WHERE WARMBOARD MAY NOT BE APPROPRIATE.

#### MANDATORY

INSTALLING CONTRACTOR IS RESPONSIBLE  
TO VERIFY ALL MEASUREMENTS PRIOR TO  
ANY WARMBOARD INSTALLATION.

FOLLOW ALL WARMBOARD INSTALLATION  
INSTRUCTIONS AND RPA GUIDELINES.

USE ONLY WARMBOARD  
APPROVED TUBING.

USE AN APPROPRIATE AMOUNT OF  
SILICONE UNDER TUBING.

USE AN APPROPRIATE WEIGHTED ROLLER  
TO PRESS TUBING INTO CHANNELS.

QUESTIONS? FOR IMMEDIATE ASSISTANCE  
1-888-842-9725 (8 AM - 5 PM)

#### WARMBOARD LEGEND

- S** STRAIGHT PANEL
- R** RIGHT TURN PANEL
- L** LEFT TURN PANEL
- D** DOUBLE TURN PANEL
- HD-R** HALF DOUBLE PANEL-RIGHT TURN
- HD-L** HALF DOUBLE PANEL-LEFT TURN
- P** CONVENTIONAL PLYWOOD PANEL

- TUBING
- BURIED TUBING
- HIDDEN
- CUSTOM GROOVE

**#.#** MANIFOLD LOOP

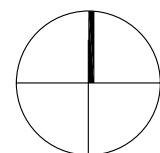
**X** MANIFOLD

**→** SUPPLY

**←** RETURN

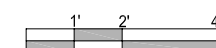
**○** BURY POINTS

**IMPORTANT NOTE:** INSULATION BELOW WARMBOARD IS MANDATORY FOR PROPER PERFORMANCE.



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

DRAWING PROVIDED BY PERFORMANCE ENGINEERING GROUP

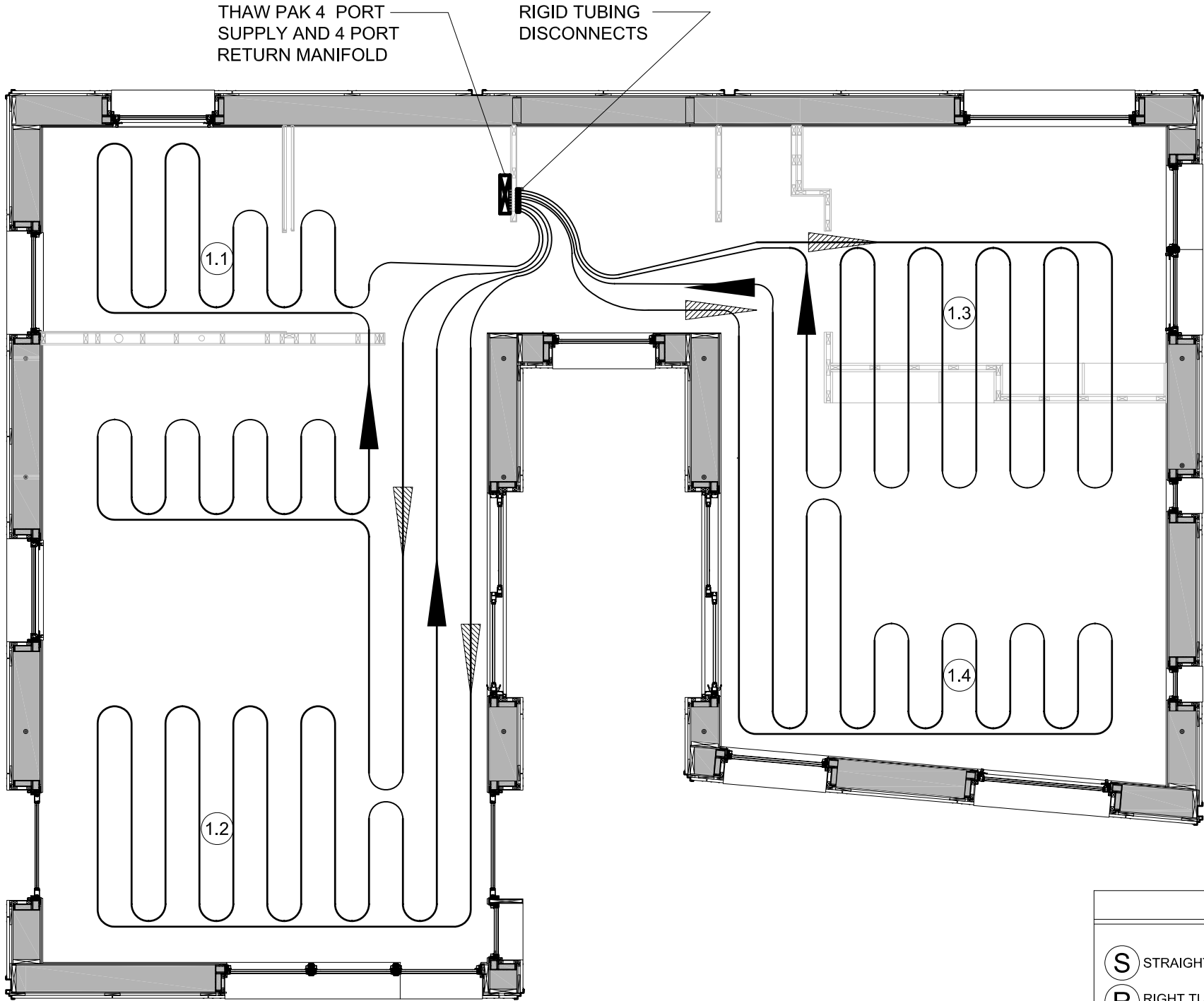


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Issued for Date  
Final Construction Document Submittal 7.Aug.2007

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date 7.Aug.2007  
project number LTU\_001  
scale 1/4"=1'-0"  
drawn JS (modified)  
checked PP  
drawing title Radiant Board Plan

//sheet number  
**M101**





LOOP SCHEDULE			
MANIFOLD	LOOP	ZONE	LENGTH
1	1	1	120'
1	2	1	120'
1	3	1	107'
1	4	1	103'
		TOTAL	450'

MANDATORY

INSTALLING CONTRACTOR IS RESPONSIBLE TO VERIFY ALL MEASUREMENTS PRIOR TO ANY WARMBOARD INSTALLATION.

FOLLOW ALL WARMBOARD INSTALLATION INSTRUCTIONS AND RPA GUIDELINES.

USE ONLY WARMBOARD APPROVED TUBING.

USE AN APPROPRIATE AMOUNT OF SILICONE UNDER TUBING.

USE AN APPROPRIATE WEIGHTED ROLLER TO PRESS TUBING INTO CHANNELS.

QUESTIONS? FOR IMMEDIATE ASSISTANCE

1-888-842-9725 (8 AM - 5 PM)

WARMBOARD LEGEND

S

STRAIGHT PANEL

R

RIGHT TURN PANEL

L

LEFT TURN PANEL

D

DOUBLE TURN PANEL

HD-R

HALF DOUBLE PANEL-RIGHT TURN

HD-L

HALF DOUBLE PANEL-LEFT TURN

P

CONVENTIONAL PLYWOOD PANEL

TUBING

BURIED TUBING

HIDDEN

CUSTOM GROOVE

##

MANIFOLD LOOP

MANIFOLD

SUPPLY

RETURN

BURY POINTS

IMPORTANT NOTE: INSULATION BELOW WARMBOARD IS MANDATORY FOR PROPER PERFORMANCE.

RADIANT TUBING PLAN

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

DRAWING PROVIDED BY PERFORMANCE ENGINEERING GROUP







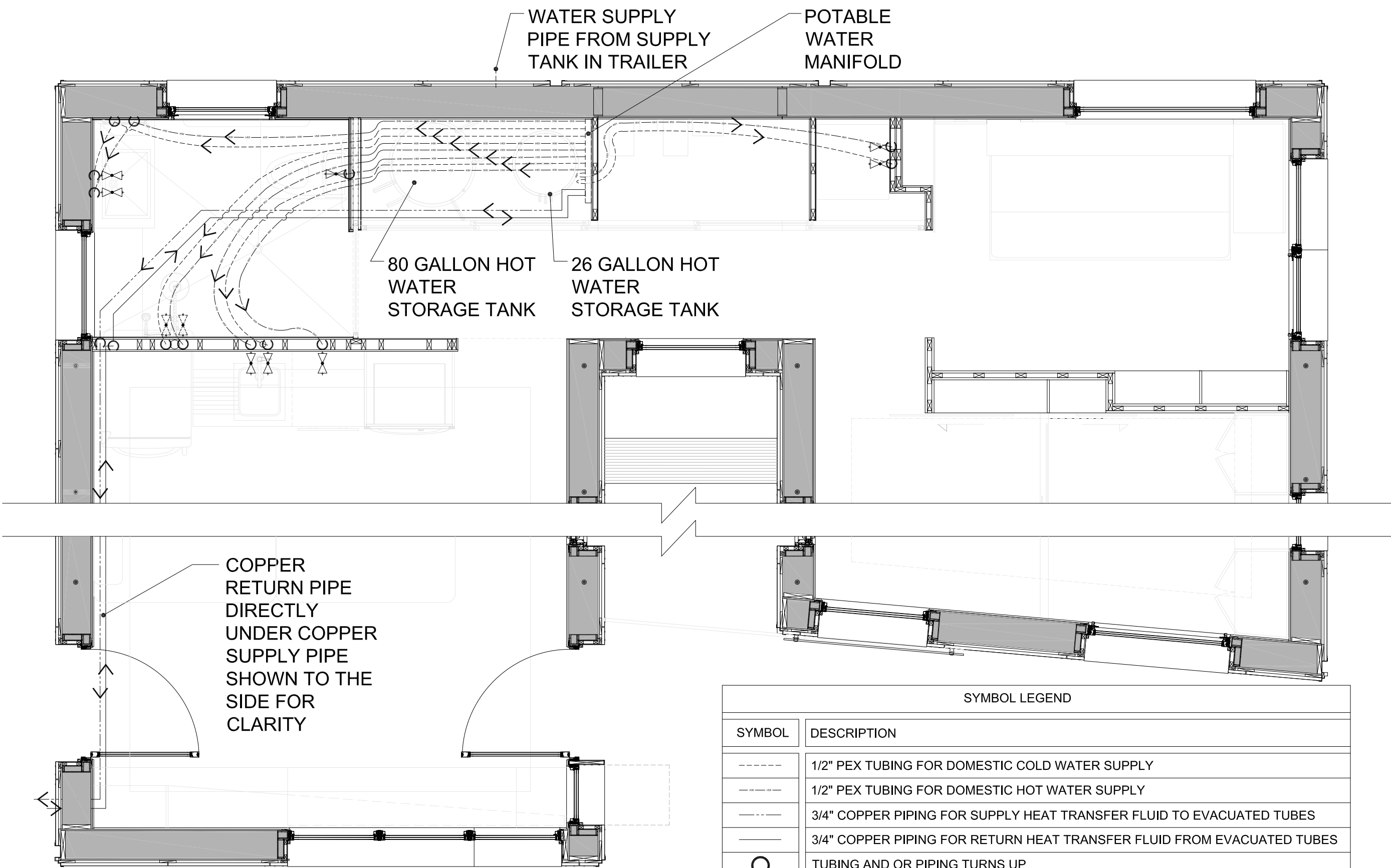


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Issued for	Date
Final Construction Document Submittal	7.Aug.2007

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drawn	JS, ST
checked	PP
drawing title	

Plumbing Plan

//sheet number
<b>P100</b>



**RADIANT TUBE PLAN**  
SCALE: 3/8" = 1'-0"

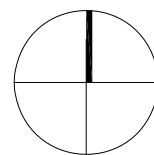
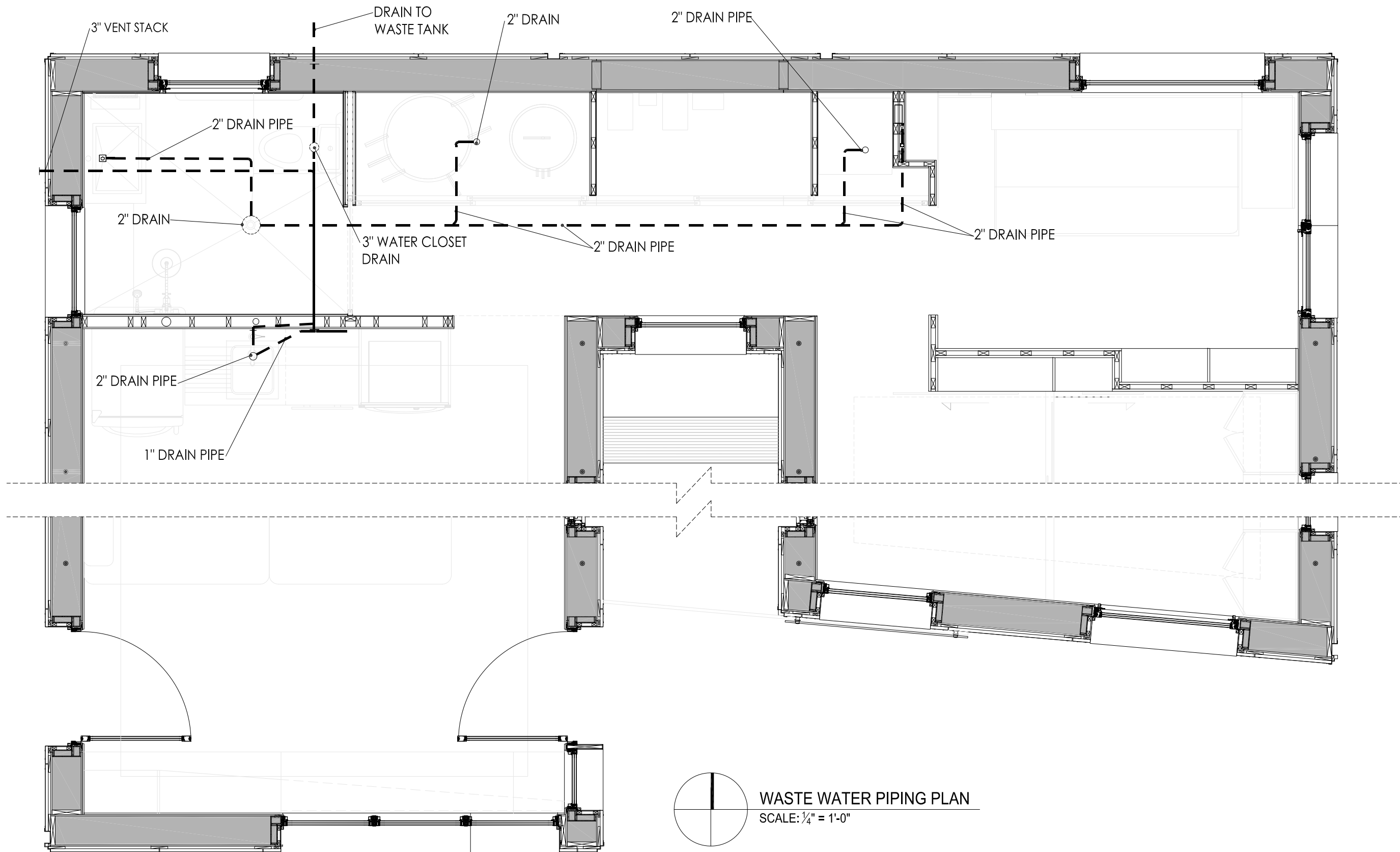
SYMBOL LEGEND	
SYMBOL	DESCRIPTION
----	1/2" PEX TUBING FOR DOMESTIC COLD WATER SUPPLY
----	1/2" PEX TUBING FOR DOMESTIC HOT WATER SUPPLY
----	3/4" COPPER PIPING FOR SUPPLY HEAT TRANSFER FLUID TO EVACUATED TUBES
----	3/4" COPPER PIPING FOR RETURN HEAT TRANSFER FLUID FROM EVACUATED TUBES
⤴	TUBING AND OR PIPING TURNS UP
⤵	TUBING AND OR PIPING TURNS DOWN
↗	TUBING AND OR PIPING FLUID DIRECTION
⋈	FIXTURE VALVE



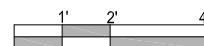








WASTE WATER PIPING PLAN  
SCALE: 1/4" = 1'-0"



//revisions

Issued for	Date
Final Construction Document Submittal	7.Aug.2007

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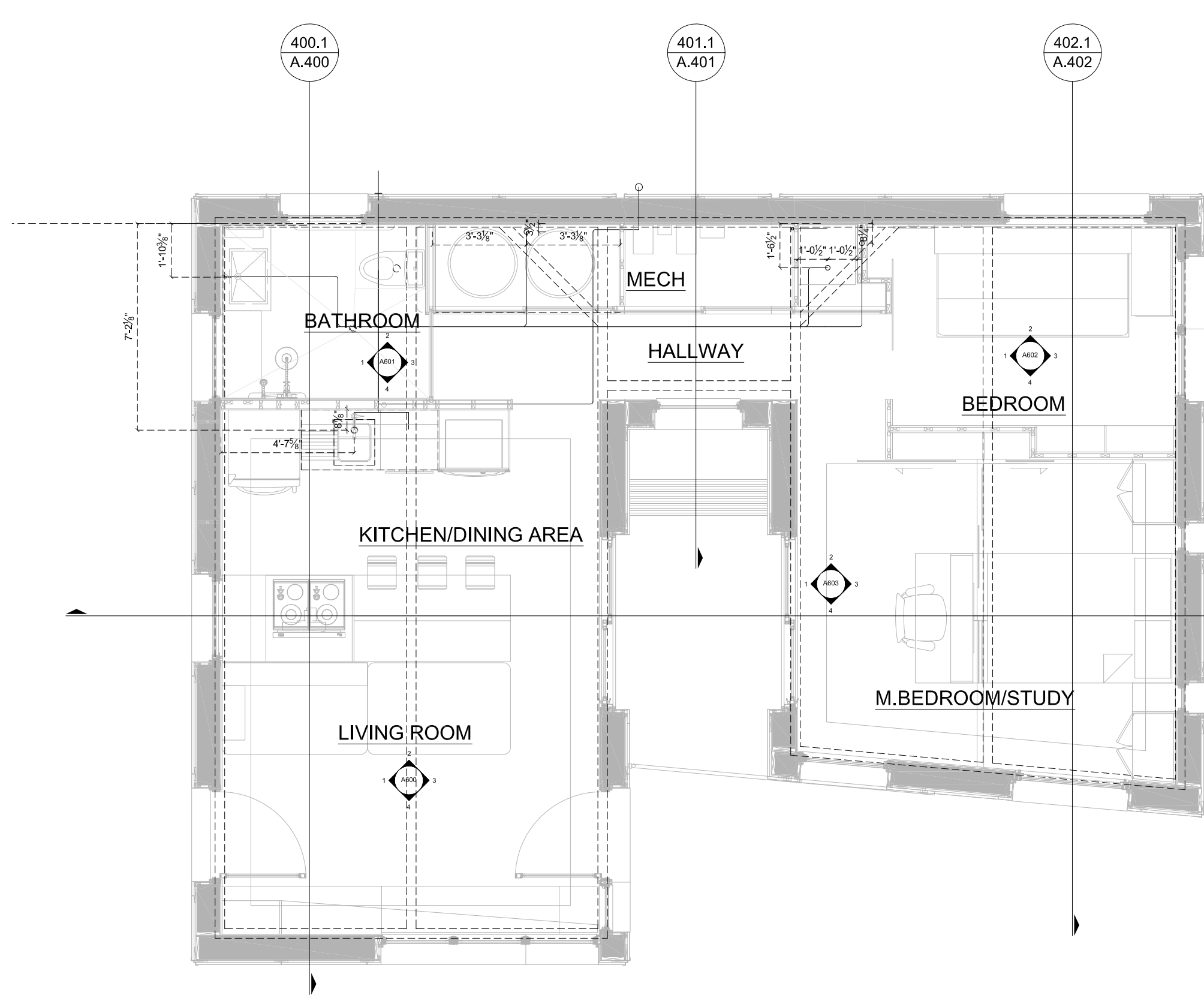
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scale  
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drawn  
ST, SS  
checked  
PP  
drawing title

Waste Water  
Piping Plan

//sheet number

**P102**






 **WASTE WATER PIPING PLAN**  
SCALE: 1/4" = 1'-0"

1. BENCH SEAT HEIGHT TRANSITIONS FROM 1'-6" TO 3'-0"
2. BENCH SEAT AT 1'-6" W/ STORAGE BELOW
3. BENCH SEAT BECOMES ENTERTAINMENT UNIT
4. SLIDING TRELLIS DOOR
5. SHELVING UNIT
6. EXTERIOR SLIDING DOORS CENTERED ON AXIS
7. BARRIER FREE SPACE BELOW COOKTOP
8. REFRIGERATOR
9. 34" HIGH COUNTER GROVED FOR DRAINAGE
10. SINK OPEN UNDERNEATH FOR ACCESSIBLTY
11. 34" HIGH COUNTER W/ DISHWASHER BELOW
12. TOP OF CONVECTION OVEN AT 36" HIGH.
13. LIFTING POINT CENTERLINES - SEE SHEET S103 FOR DIMENSIONS
14. 60 GALLON HOT WATER TANK
15. 80 GALLON HOT WATER TANK
16. POWER INVERTER(S)
17. CHARGE CONTROLLER(S)
18. BREAKER BOX(ES)
19. STACKED WASHER/DRYER
20. FOLD DOWN SHOWER BENCH SEAT
21. COURTYARD BENCH SEAT
22. BUILT-IN BED/ DESK FURNITURE

1. BATTERIES ARE LOCATED OUTSIDE OF NORTH WALL
2. ALL EXTERIOR CORNER DIMENSIONS ARE MEASURED TO SIP PANEL EDGE AND ALL WINDOW AND DOOR DIMENSIONS ARE MEASURED TO ROUGH OPENING

//project

 **LTU SOLAR DECATHLON 2007**

//revisions

Issued for	Date
Final Construction Document Submittal	7.Aug.2007

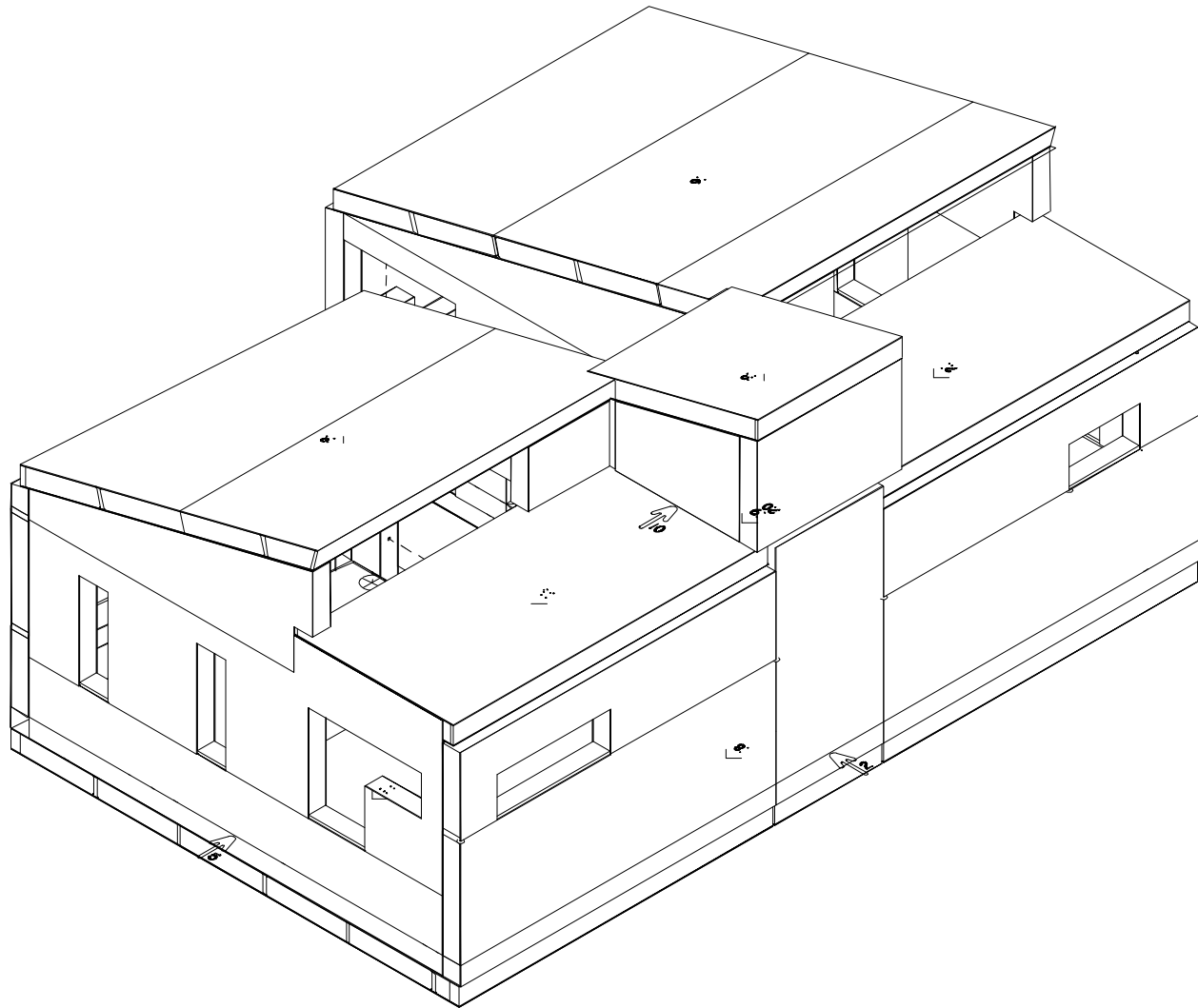
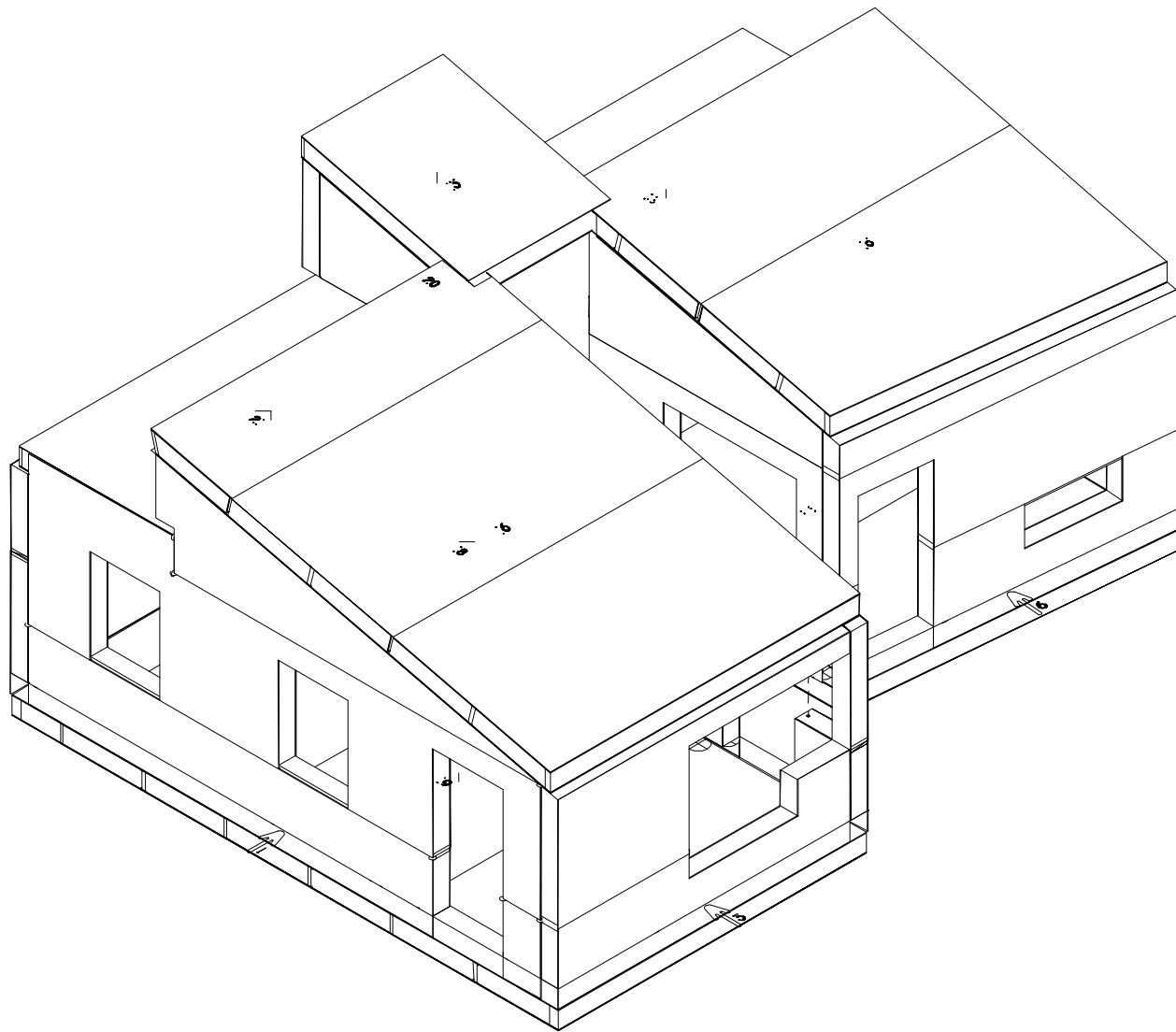
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**P103**





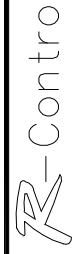
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## R-Control Panel Layout

Title Sheet  
Solar Decathlon  
Lawrence Tech.



Structural Building Panel

MANUFACTURED BY:  
TEAM Industries Inc.  
17000 W. 10th Avenue  
4806 Arden St. S.E.  
Grand Rapids MI 49508-0609  
PHONE (616) 598-0551 TOLL (800) 355-5548 FAX (616) 598-5605



DRAWN	BY.
05/04/07	C.Prine
CHECKED	BY.

REVISED
CWP 05/10/07
CWP 05/15/07
CWP 05/17/07
CWP 05/21/07

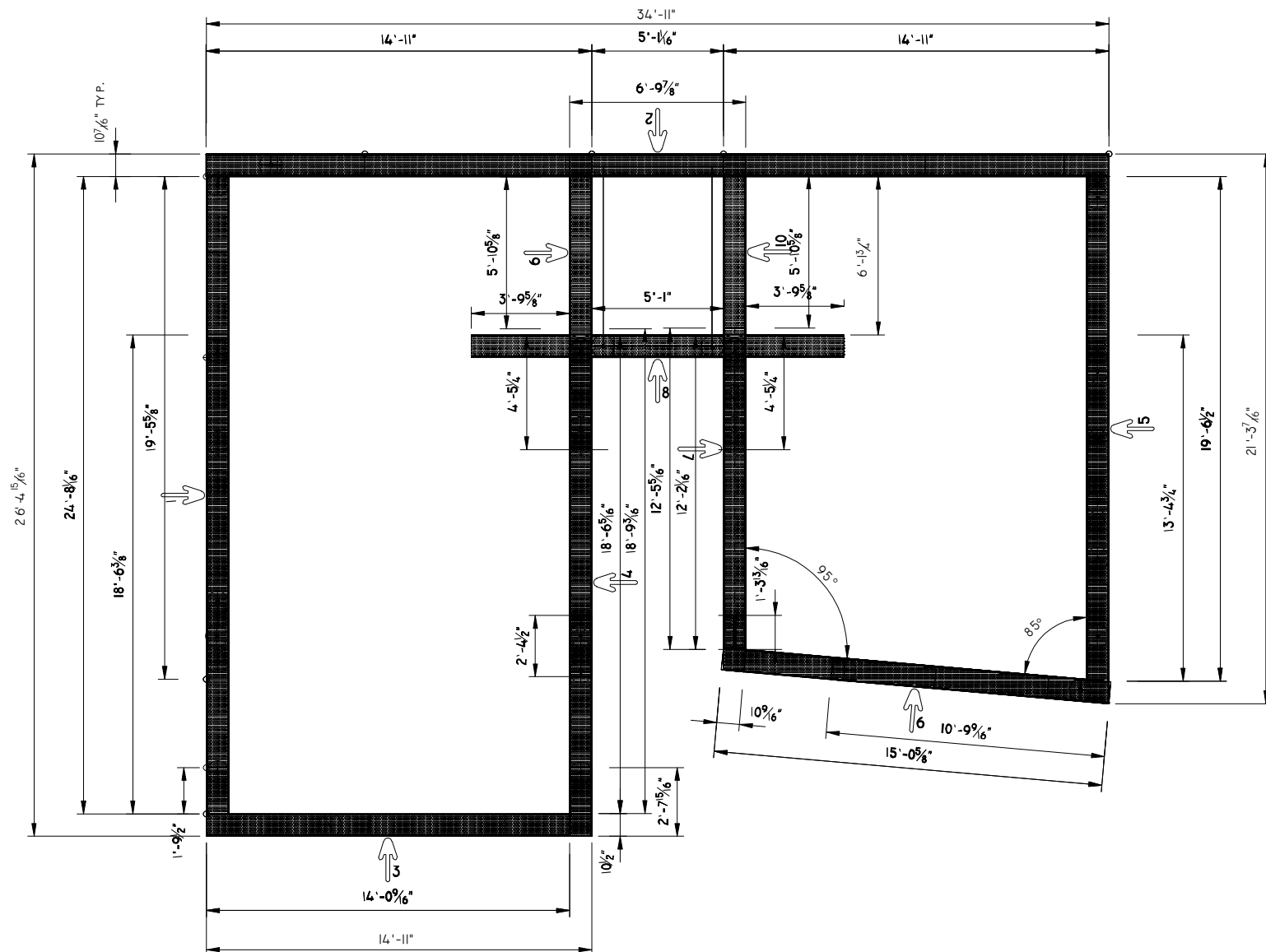
JOB	NO.
612063	

SHEET	NO.
T	



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- Verify all Dimensions
- Verify all Window and Door Locations
- Verify all Rough Opening Sizes
- Verify all Point Load Locations
- Verify Beam Pocket Locations and Sizes
- Verify wirechases and special requirements

Interior wall connections SIP-111  
Connections Labeled in "1/2" increments are  
Dimensional lumber -- Supplied by Other  
Connections Labeled "SIP-102g" are Block Spline  
Connections-- Supplied by TEAM  
Connections Labeled "SIP-102b" are I-Beam  
Connections-- Supplied by TEAM  
SIP Connections for Curtain wall system to be  
determined by Architect / Engineer

Refer to technical bulletins 2048 & 2049 for  
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Approved by \_\_\_\_\_ Date \_\_\_\_\_

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Structural Building Panel  
MANUFACTURED BY:  
TEAM Industries Inc.



Grand Rapids MI 49588-8691  
PHONE (616) 698-2001 TOLL (800) 356-5548 FAX (616) 698-0685

## R-Control Panel Layout

Wall Plan View  
Solar Decathlon  
Lawrence Tech.

DRAWN	BY.
05/04/07	C.Prine
CHECKED	BY.

REVISED
CWP 05/10/07
CWP 05/15/07
CWP 05/17/07
CWP 05/21/07

JOB	NO.
612063	

SHEET	NO.
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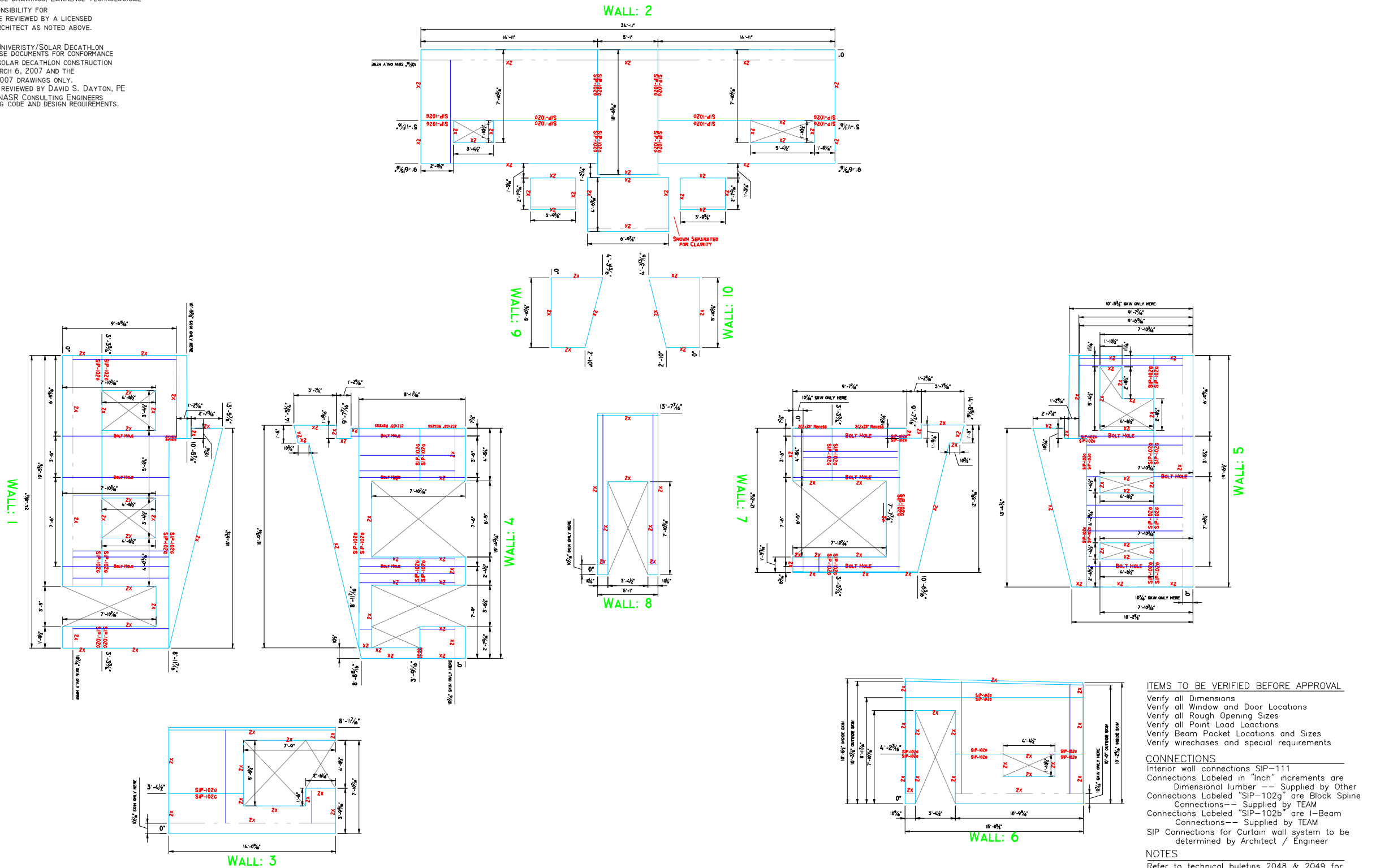
W-1



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Verify all Window and Door Locations  
Verify all Rough Opening Sizes  
Verify all Point Load Locations  
Verify Beam Pocket Locations and Sizes  
Verify wirechases and special requirements

CONNECTIONS  
Interior wall connections SIP-111  
Connections Labeled in "Inch" increments are Dimensional Lumber -- Supplied by Other  
Connections Labeled "SIP-102g" are Block Spine Connections -- Supplied by TEAM  
Connections Labeled "SIP-102b" are I-Beam Connections -- Supplied by TEAM  
SIP Connections for Curtain wall system to be determined by Architect / Engineer

NOTES  
Refer to technical buletins 2048 & 2049 for Do-All-Ply application  
Structural Headers to be Determined by Architect/Engineer, and supplied by others  
Dimensional Lumber where shown on plans to be furnished and installed by others  
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Scale 1/4" = 1'-0"

R-Control  
Structural Building Panel  
MANUFACTURED BY:  
TEAM Industries Inc.  
4280 Route 1E  
Grand Rapids, MI 49508-6649  
PHONE (616) 698-2121 TOLL (800) 356-5548 FAX (616) 698-6655

R-Control Panel Layout  
Wall Elevations  
Solar Decathlon  
Lawrence Tech.

DRAWN BY:  
05/04/07 612063  
CHECKED BY:

REVISED  
CWP 05/10/07  
CWP 05/15/07  
CWP 05/17/07  
CWP 05/21/07

JOB NO.  
612063

SHEET NO.

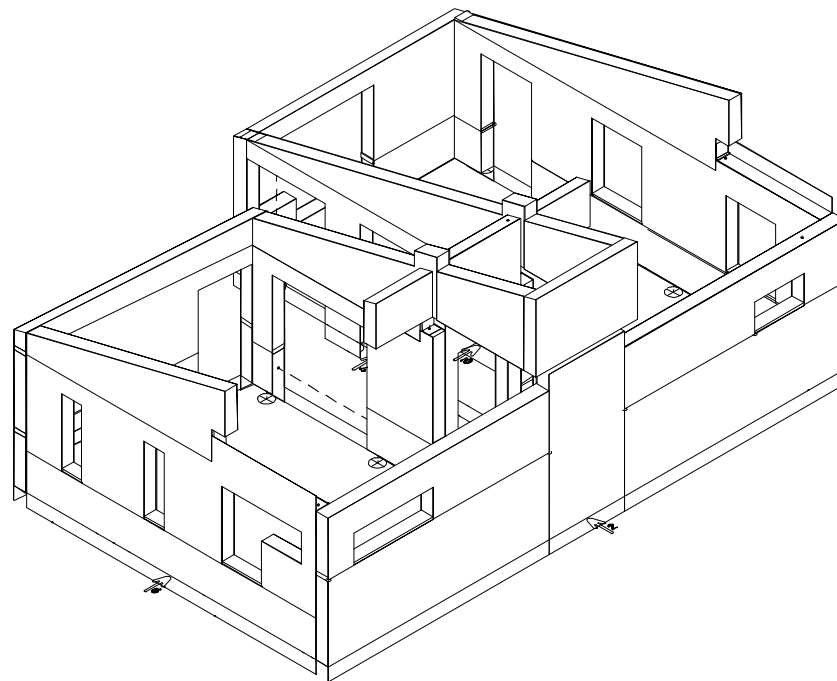
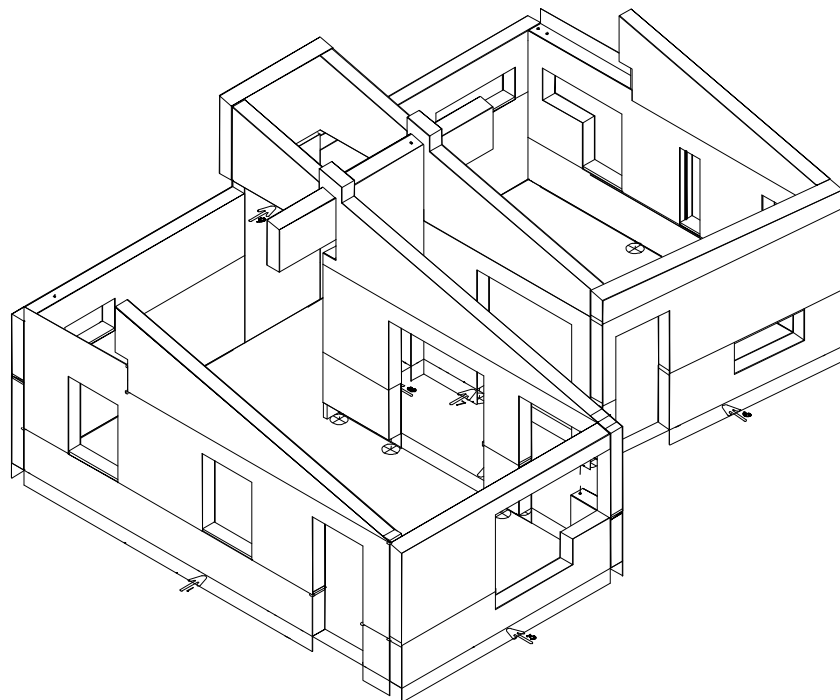
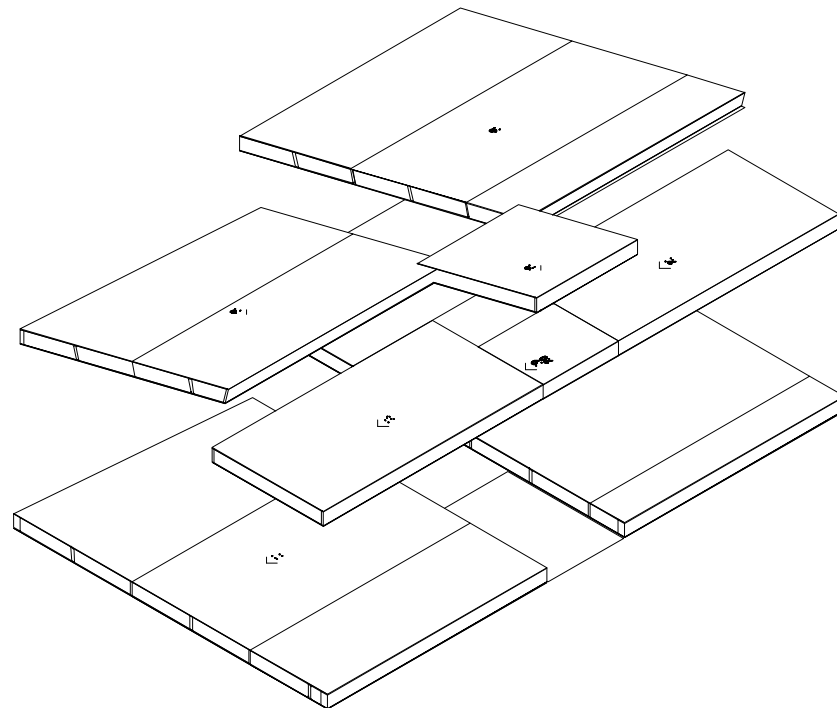
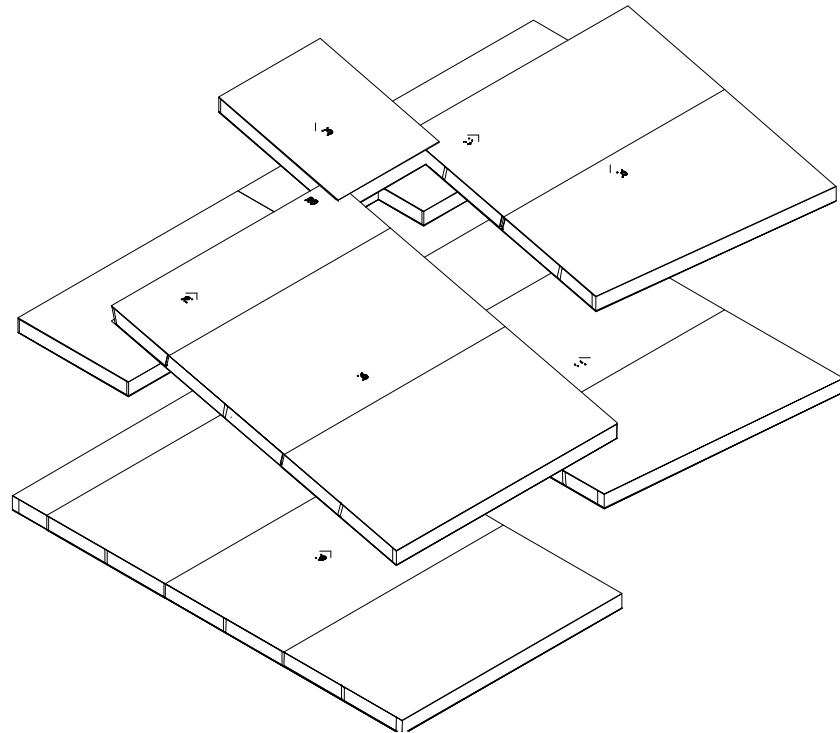
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## ITEMS TO BE VERIFIED BEFORE APPROVAL

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- Verify Beam Pocket Locations and Sizes
- Verify wirechases and special requirements

## CONNECTIONS

**CONNECTIONS**

Interior wall connections SIP-111

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Connections Labeled "SIP-102g" are Block Spline  
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## NOTES

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Approved by \_\_\_\_\_ Date \_\_\_\_\_

Scale  $1/4" = 1'-0"$

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**R-Control**  
Structural Building Panel  
MANUFACTURED BY:  
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**R-Control Panel Layout**

**Wall and Roof Isometric**

**Solar Decathlon**

**Lawrence Tech.**

DRAWN	BY.
05/04/07	C.Prine
CHECKED	BY.

REVISED
CWP 05/10/07
CWP 05/15/07
CWP 05/17/07
CWP 05/21/07

JOB	NO.
612063	

SHEET	NO.
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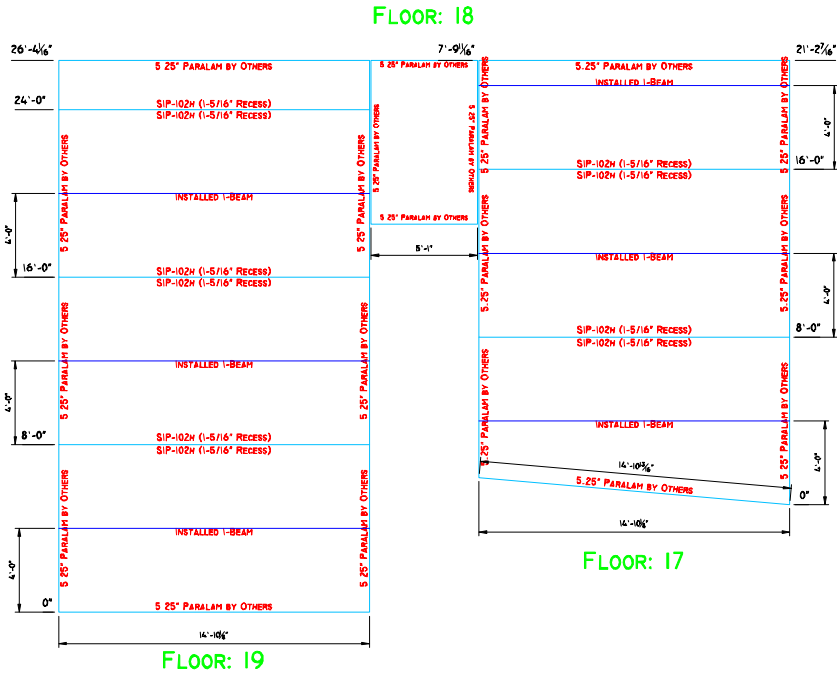
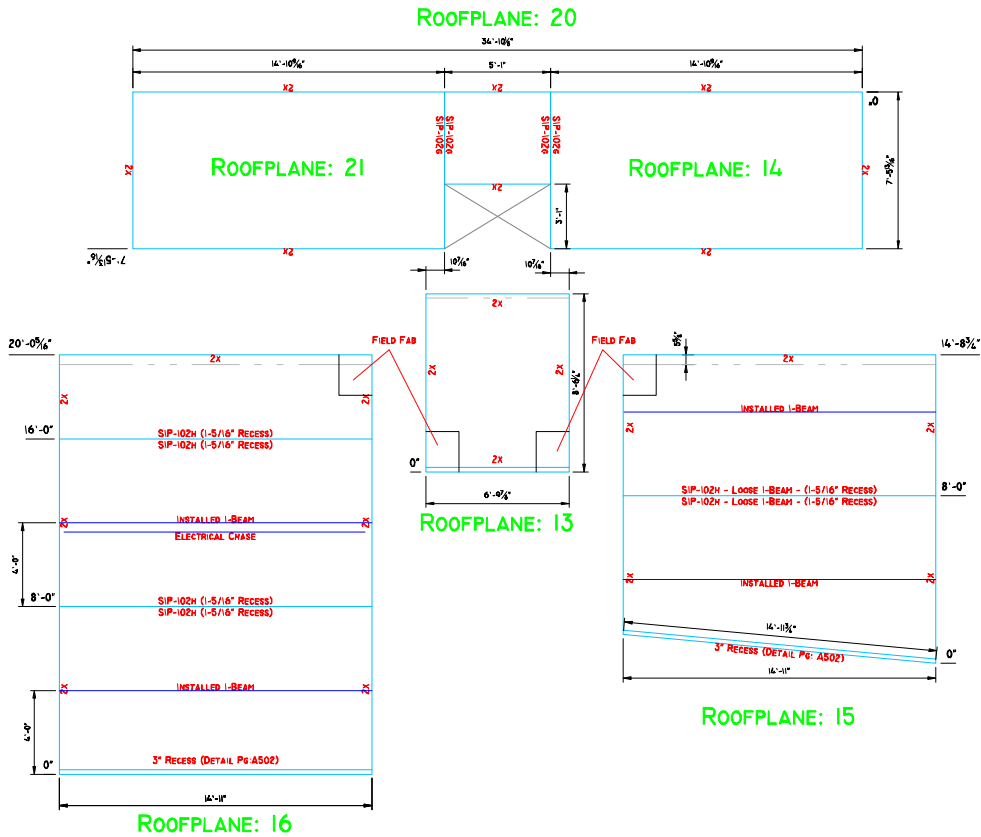
W-3



NOTES:  
YOUR R-CONTROL SIPs WARRANTY MAY BE ENFORCED FOR ANY BUILDING, ONLY IF THE R-CONTROL SIPs HAVE BEEN INSTALLED PER PLAN REVIEW BY A LICENSED STRUCTURAL ENGINEER/ARCHITECT. OTHER TERMS AND CONDITIONS APPLY. PLEASE REVIEW YOUR R-CONTROL SIPs FOR FURTHER DETAILS.

BY SIGNING/APPROVING THESE DRAWINGS, LAWRENCE TECHNOLOGICAL UNIVERSITY, ASSUMES RESPONSIBILITY FOR THIS DESIGN, WHICH IS TO BE REVIEWED BY A LICENSED STRUCTURAL ENGINEER / ARCHITECT AS NOTED ABOVE.

LAWRENCE TECHNOLOGICAL UNIVERSITY/SOLAR DECATHLON PROJECT HAS REVIEWED THESE DOCUMENTS FOR CONFORMANCE TO THE INTENTIONS OF THE SOLAR DECATHLON CONSTRUCTION DOCUMENT DRAWINGS OF MARCH 6, 2007 AND THE SIP\_CUTS\_REVISION\_4\_18\_2007 DRAWINGS ONLY. ENGINEERING DETAILS TO BE REVIEWED BY DAVID S. DAYTON, PE AND COORDINATED DESAI / NASR CONSULTING ENGINEERS FOR COMPLIANCE TO BUILDING CODE AND DESIGN REQUIREMENTS.



ITEMS TO BE VERIFIED BEFORE APPROVAL:

Verify all Dimensions  
Verify all Window and Door Locations  
Verify all Rough Opening Sizes  
Verify all Point Load Locations  
Verify Beam Pocket Locations and Sizes  
Verify wirechases and special requirements

CONNECTIONS

Interior wall connections SIP-111  
Connections Labeled in "Inch" increments are Dimensional Lumber -- Supplied by Other  
Connections Labeled "SIP-102g" are Block Spline Connections-- Supplied by TEAM  
Connections Labeled "SIP-102b" are I-Beam Connections-- Supplied by TEAM  
SIP Connections for Curtain wall system to be determined by Architect / Engineer

NOTES

Refer to technical buletins 2048 & 2049 for Do-All-Ply application  
Structural Headers to be Determined by Architect/Engineer, and supplied by others  
Dimensional Lumber where shown on plans to be furnished and installed by others  
Panels must be installed per AFM Corp and TEAM Industries, Inc specifications  
Prior to panel installation--  
Review "Before You Build" information  
TEAM Industries, Inc is Not Responsible for Any Variation In Panel Layout--After Approval  
Approved by \_\_\_\_\_ Date \_\_\_\_\_

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

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DO NOT  
DROP  
PANELS ON  
THE CORNERS

#4

DO

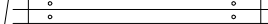
PROVIDE  
ADEQUATE  
SUPPORT

KEEP PANELS COVERED



MAKE SURE  
THE PANELS  
LIE FLAT

DON'T




DO SUPPORT THE  
ENTIRE LENGTH  
OF THE PANEL

#5

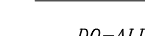
*DO NOT ALLOW THE  
DO-ALL-PLY TO FREEZE*

*STORE R-CONTROL PANEL ADHESIVE &  
SEALANT IN A HEATED AREA FOR BEST  
FLOWABILITY IN COLD WEATHER*



#7 MAKE SURE THE FOUNDATION OR FLOOR  
IS VERY LEVEL & SQUARE PRIOR TO START

#9 USE THE DO-ALL-PLY AS RECOMMENDED  
IN THE R-CONTROL CONSTRUCTION DETAIL MANUAL



BOTTOM PLATE


DO-ALL-PLY  
3/8" BEAD

DO-ALL-PLY  
3/8" BEAD  
(BOTH SIDES OF PLATE)

I-BEAM SPLINE


DO-ALL-PLY  
3/8" BEAD

DO-ALL-PLY  
3/8" BEAD



*EPS SPLINE*

*DO-ALL-PLY*  
*3/8" BEAD*



The diagram shows a cross-section of two EPS panels joined by a spline. The spline is a rectangular piece with a circular hole in the center, positioned between the two panels. Arrows point from the text 'DO-ALL-PLY 3/8" BEAD' to the top and bottom edges of the spline, indicating the bead location.

*DO-ALL-PLY*  
*3/8" BEAD*

*R-CONTROL DO-ALL-PLY (SEALANT & ADHESIVE COMBINED)  
IS USED ON ALL WOOD TO WOOD, WOOD TO FOAM & FOAM TO FOAM JOINTS*

#11 \*CHECK EACH PANEL BEFORE SETTING TO ENSURE IT HAS BEEN MADE TO PROPER SPECIFICATIONS.

#12 *MAKE YOUR ELECTRICIAN HAPPY.*  
*DRILL ACCESS HOLES TO YOUR ELECTRICAL CHASES THROUGH ALL PLATES*  
*& STUDS AS YOU GO, USING A 1-1/4" DRILL BIT.*

#13 DON'T INSTALL PANELS DIRECTLY ON CONCRETE  
SEE PAGES SIP-104 & SIP-104A OF THE R-CONTROL DETAIL MANUAL

#14 DO PROVIDE ADEQUATE BEARING  
FOR BOTH SKINS AT ALL LOCATIONS.

FLUSH RIM & PANEL

FOUNDATION

NOTE:  
SET BOTTOM PLATE 1/2" IN FROM EDGE OF RIM

#15 DON'T CUT THE SKINS  
BEYOND CORNER, THEY ARE  
THE STRUCTURAL SUPPORT.

#18  
R-CONTROL PANELS ARE PRODUCED IN STRICT COMPLIANCE WITH  
QUALITY CONTROL INSPECTIONS BY UNDERWRITERS LABORATORIES, INC. (NER-QA 403)  
ES REPORT ESP-1006  
ICC EVALUATION SERVICES, INC  
WWW.ICC-ES.ORG



R-Control SIPs Do's and Don'ts

1) Do handle SIPs with care

2) Do provide adequate support for SIPs when storing them. Store SIPs laying flat and covered

3) Do store R-Control Do-All-Ply in a warm area for best application results in cold weather

4) Do place Do-All-Ply along the leading edge of wood being inset into panel

5) Do use R-Control Do-All-Ply on wood-to-wood, wood-to-EPS and EPS-to-EPS connections

6) Do use only continuous 2X's, I-Beams, and Insulated I-Beams for spline connections

7) Do provide level and square foundations or floors that support SIP walls

8) Do hold sill plate back from edge of floor system 7/16" to allow full bearing of SIP OSB skins

9) Do provide 1-1/2" diameter access holes in plating to align with electrical wire chases in SIPs

10) Do provide adequate bracing of panels during erection

11) Do remove debris from plate area prior to panel placement

12) Don't install SIPs directly on concrete

13) Don't drop SIPs on corners

14) Don't lift SIPs by top skin.

15) Don't put plumbing in R-Control SIPs without consulting panel manufacturer

16) Don't overcut the skins for field-cut openings

17) Don't cut the skins for electrical chases, use factory provided chases in SIP core

Updated 6-1-02

R-Control® SIP

TITLE: Panel Precautions

NO. SIP-100

Don't have unsupported OSB Skins

Don't have additional wall top plate less than full panel width

Don't have unsupported horizontal joints in wall

Don't have cuts in lumber or I-beam splines

Don't overcut OSB skins at openings

Don't have OSB skins and untreated plates in direct contact with concrete.

Don't have additional wall top plate less than full panel width

Don't have cuts in lumber or I-beam splines

Note. Please refer to R-Control SIP details for proper installation techniques

Updated 9-2-03

R-Control® SIP

TITLE: Panel DON'Ts

NO. SIP-100a

Optional blocking to increase point load capacity. Design as req'd for specific case.

Spacer board (optional) where required for standard 8' drywall application

8d Nails or 14 ga 1 1/2" staples @ 6" o.c. each side, or equivalent. Typical top & bottom

Factory electrical chase

1 1/2"

1 1/2"

Varies

NOTE. OSB skins must be fully supported by foundation system

NOTE Use minimum grade SPF #2 or engineered equivalent for 2x plating

SECTION

Scale NTS

Updated 9-2-03

R-Control® SIP

TITLE: Plate Connections

NO. SIP-101

3"

1 7/16"

1 7/16"

R-Control Do-All-Ply continuous

Continuous Double 2X spline

R-Control SIP

R-Control Do-All-Ply continuous each side, top & bottom.

Factory electrical chase

R-Control Do-All-Ply, continuous

10d Nails @ 12" o.c. two rows, staggered

Fasten with 8d nails or 14 ga 1 1/2" staples @ 6" o.c. both sides of panel joint or equivalent. Typical each side of panel

Note Continuous vapor retarder required on interior of panel

SECTION/PLAN

Scale NTS

Updated 9-2-03

R-Control® SIP

TITLE: Spline Connection Double 2x

NO. SIP-102d

3"

1 7/16"

1 7/16"

R-Control Do-All-Ply continuous

Spline Beam

R-Control SIP

Factory electrical chase.

R-Control Do-All-Ply each side, top & bottom, continuous

Fasten with 8d nails or 14 ga 1 1/2" staples @ 6" o.c. both sides of panel joint or equivalent. Typical each side of panel

Note Vapor retarder recommended on interior of panel when mandated by code or climatic conditions

SECTION/PLAN

Scale NTS

Updated 9-2-03

R-Control® Panel

TITLE: Block Spline Connection

NO. SIP-102g

2 5/8"

1 1/4"

1 1/4"

R-Control Do-All-Ply continuous

Factory electrical chase

R-Control SIP.

R-Control Do-All-Ply both flanges, each side, continuous

Continuous R-Control I-Beam Spline

Note See Load Design Chart #3A for capacities

Fasten with 8d nails or 14 ga 1 1/2" staples @ 6" o.c. both sides of panel joint or equivalent. Typical each side of panel

Note Vapor retarder recommended on interior of panel when mandated by code or climatic conditions

SECTION/PLAN

Scale NTS

Updated 9-2-03

R-Control® SIP

TITLE: Spline Connection I-Beam Spline Connection

NO. SIP-102h

Notes:  
1 Factory provided electrical chases must be pre-arranged with the R-Control SIP manufacturer prior to fabrication of the panels  
2 SIP installer shall provide field drilled holes in top plates, sill/base plates, vertical plates and through floors to access electrical chases  
3 Follow local code requirements for electrical installation

Factory provided electrical chases. Contact manufacturer for typical spacings. Also, refer to local codes for specific requirements

ISOMETRIC

Scale NTS

Updated 5-1-99

R-Control® SIP

TITLE: Chases - Electrical Locations in SIPs

NO. SIP-129

Case 1: SIPs up to 16' long.  
SIPs 16' or less in length require 4 R-Control screws per support for one & two span conditions (See Diags 1 & 2)

Diagram 1. Single span condition (2 points of attachment)

Diagram 2. Two span condition (3 points of attachment)

Case 2: SIPs 16'-24' long.  
SIPs greater than 16' in length require 6 R-Control screws per support for one & two span conditions (See Diags 3 & 4)

Diagram 3 Single span condition (2 points of attachment)

Diagram 4 Two span condition (3 points of attachment)

Case 3: SIPs with 3 or more spans.  
SIPs any length with 3 or more spans require 4 R-Control screws per support (See Diag 5)

Diagram 5 3 spans or greater (multiple points of attachment)

Notes:  
1 Perimeter attachment of roof panels requires a minimum of 1 fastener per 2 lineal feet of panel  
2 The recommendations are based on 90 psf of uplift resistance with a minimum screw penetration of 1" for R-Control Wood and Driller screws  
3 The bottom of screw head must remain flush with top skin  
4 Attachment recommendations are for uplift only. Requirements for diaphragm or other bracing by others

Updated 11-1-01

R-Control® SIP

TITLE: Panel Fastening Patterns

NO. SIP-135

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Not to Scale

R-Control

Structural Building Panel

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R-Control Panel Layout

Detail Sheet

Solar Decathlon

Lawrence Tech.

DRAWN BY: 05/04/07 C.Pine

CHECKED BY:

REVISED

CWP 05/10/07

CWP 05/15/07

CWP 05/17/07

CWP 05/21/07

JOB NO. 612063

SHEET NO.

D-2