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**LOT NUMBER:**

**DRAWN BY:**

**CHECKED BY:**

**STATUS:**

**U.S. DEPARTMENT OF ENERGY**

**SOLAR DECATHLON 2013**

**WWW.SOLARDECATHLON.GOV**

**SEALS**

**MARK**

**DATE**

**DESCRIPTION**

1. 04/29/2013  ISSUED FOR ELEC/MECH
2. 05/03/2013  ISSUED FOR CLADDING
3. 05/13/2013  ISSUED FOR STRUCTURAL REVIEW
4. 05/22/2013  ISSUED FOR CONSTRUCTION 95%
5. 08/22/2013  AS BUILT SET
TEAM ALBERTA
UNIVERSITY OF CALGARY
2500 UNIVERSITY DR NW
CALGARY, AB T2N 1N4
MOUNT ROYAL UNIVERSITY
4825 MT ROYAL GATE SW
CALGARY, AB T3E 6K6
WWW.SOLARDECATHLON.CA
INFO@SOLARDECATHLON.CA

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2013
WWW.SOLARDECATHLON.GOV

1. 04/29/2013
   ISSUED FOR ELEC/MECH
2. 05/03/2013
   ISSUED FOR CLADDING
3. 05/13/2013
   ISSUED FOR STRUCTURAL REVIEW
4. 05/22/2013
   ISSUED FOR CONSTRUCTION 95%
5. 08/22/2013
   AS BUILT SET

DATES: 22/08/2013 4:49:44 PM
BOREALIS is designed to provide modular, prefabricated housing for professionals in remote areas in Northern Alberta and beyond. It is an all-season system that comprises of three architecturally expressed modules, each designed to be easily transported and connected. The centre module provides the necessities for living: food preparation, dining, bathing, building systems. Two identical, mirrored modules provide flexible rest and work space for professional or managerial workers who work in the field on a rotational schedule. The design intention that underlies BOREALIS is to provide temporary residents in harsh environments with a comfortable and highly livable, sustainable housing model that easily and effectively combines remote geography with a high quality of living and working.

As described, the center module provides the necessities for living in the form of all services, channeling the energy gathered through photovoltaic arrays and solar thermal tubes into usable electricity, heating and air conditioning. The centre module also includes an efficient food preparation space, a large dining/work surface, and a bathroom area. A key feature in the bathroom are sun tunnels which bring in natural light and sustain a green wall in the center module. This green wall provides the residents with plant-life throughout the year, especially in the long and dark winter months. The green wall also helps detoxify the air.

In many cases, residents may be strangers to each other. BOREALIS has a flexible floor plan and accommodates this scenario through a series of sliding partitions that separate the rest and relaxation modules from the centre module. By closing or opening the sliding partitions, residents of BOREALIS have the ability to adjust their environment depending on their needs for public and private space. Within each of the rest and relaxation modules, residents of BOREALIS can further modify their space through reconfigurable furniture and millwork that adapts to the need of the resident, whether it be relaxation, working, or entertaining.

Finally, the exterior spaces have been designed so as to allow each resident a separate deck space, separated on the south side by a constructed pond that gathers rainwater from the down slope of the side modules.
1. The finished area of the house has been calculated in accordance with the American National Standard for Single-Family Residential Buildings Z765-2003.

2. Finished square footage calculations for this house were based on the planned dimensions only and may vary from the finished square footage of the house as built.

3. All measurements are rounded to the nearest whole square foot in accordance with ANSI Z765-2003.

4. The mechanical area in the house is considered a finished space and is therefore included in the total finished area.

5. The finished area in the house is 915 square feet, which is compliant with Rule 6-2 finished square footage requirements.

6. The house meets the compliance plan requirements as per the finished area calculations.
GENERAL SHEET NOTES

1. THE MAXIMUM SLOPE OF ALL RAMPS ON THE SITE SHALL BE 1:12. SLOPE MAY BE LESS DEPENDING ON SITE CONDITIONS.

2. HOUSE TOUR PLANS PROVIDED FOR COMPETITION PURPOSES ONLY AND HAS NO IMPACT ON CONSTRUCTION REQUIREMENTS OR SEQUENCING.

---

ADA TOUR ROUTE COMPLIANCE PLAN

---

TEAM ABSTRACT

UNIVERSITY OF CALGARY
2500 UNIVERSITY DR NW
CALGARY, AB T2N 1N4
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INFO@SOLARDECATHLON.CA

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2013
WWW.SOLARDECATHLON.GOV

116

LOT NUMBER:
DRAWN BY:
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STATUS:

CLIENT

UNIVERSITY OF CALGARY
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WWW.SOLARDECATHLON.CA
INFO@SOLARDECATHLON.CA

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05/13/2013
ISSUED FOR STRUCTURAL REVIEW

05/22/2013
ISSUED FOR CONSTRUCTION 95%

08/22/2013
AS BUILT SET

22/08/2013 4:50:11 PM

G-104

ADA TOUR ROUTE COMPLIANCE PLAN

---

1. THE MAXIMUM SLOPE OF ALL RAMPS ON THE SITE SHALL BE 1:12. SLOPE MAY BE LESS DEPENDING ON SITE CONDITIONS.

2. HOUSE TOUR PLANS PROVIDED FOR COMPETITION PURPOSES ONLY AND HAS NO IMPACT ON CONSTRUCTION REQUIREMENTS OR SEQUENCING.

---

GENERAL SHEET NOTES

1. THE MAXIMUM SLOPE OF ALL RAMPS ON THE SITE SHALL BE 1:12. SLOPE MAY BE LESS DEPENDING ON SITE CONDITIONS.

2. HOUSE TOUR PLANS PROVIDED FOR COMPETITION PURPOSES ONLY AND HAS NO IMPACT ON CONSTRUCTION REQUIREMENTS OR SEQUENCING.
GENERAL SHEET NOTES

1. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

2. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.

SHEET KEYNOTES

1. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

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   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

4. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

5. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

6. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

7. DRAWINGS SHOW SHADING AS OF OCTOBER 1, 2013 IN IRVINE, CA.
   DRAWINGS DEMONSTRATE COMPLIANCE WITH RULE 9-1. WATER TANKS ARE FULLY SHADEDFROM DIRECT SOLAR RADIATION BETWEEN 8AM AND 4PM (SOLAR TIME) ON OCTOBER 1.

SHADING DIAGRAMS

C1  8AM SHADING - PLAN
C4  4PM SHADING - PLAN

A1  8AM SHADING - NE PERSPECTIVE
A4  4PM SHADING - NE PERSPECTIVE
**GENERAL SHEET NOTES**

1. SHEET DEPICTS DECK PLAN LAYOUT AT VARIOUS RELATIVE ELEVATIONS.
2. STRUCTURAL REQUIREMENTS PER S-0013. LIVE LOAD 4.8 KPA (100 PSF).
3. ALL EXTERIOR LUMBER TO BE ACQ PRESSURE TREATED SPF NO.2 GRADE OR BETTER.
4. EXPOSED FINISH MATERIALS TO BE WESTERN RED CEDAR.
5. ALL RAMPS TO MEET 1:12 SLOPE REQUIREMENT.

---

**DECK PLAN 1 - 30" OR LESS ELEVATION**

**DECK PLAN 2 - 30" TO 39" ELEVATION**

**DECK PLAN 3 - 39" TO 45" ELEVATION**
7.5 SEISMIC LOADS:

a) ORANGE COUNTY, CAL

\[ S_s = 1.496; \ S_1 = 0.555 \] (ORANGE COUNTY, CAL)

2013), INTERNATIONAL RESIDENTIAL CODE 2012 (IRC 2012), AND NATIONAL BUILDING CODE OF

DESIGN LOADS FOR ALBERTA HAVE BEEN SELECTED TO MEET OR EXCEED THE CLIMATIC VALUES FOR CALGARY, ALBERTA,

TO FACILITATE POSSIBLE RELOCATION OF THE STRUCTURE WITHIN THE PROVINCE. WHERE DESIGN LOADS EXCEED THE

GENERAL NOTES

- FULL CONFORMITY WITH STRUCTURAL
- CONTRACT DOCUMENTS AND SPECIFICATIONS.

REVIEW DURING THIS REVIEW DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE REQUIREMENTS OF THE STRUCTURAL CONTRACT DOCUMENTS AND SPECIFICATIONS, NOR DO THEY AUTHORIZE ANY CHANGES TO THE CONTRACT.

1. FOOTING BEARING RESISTANCE: MAXIMUM 3000 PSF AT SLS (SERVICEABILITY LIMIT STATES

- ALL LUMBER TO BE KILN DRIED.
- ALL LUMBER TO BE GRADE MARKED TO CONFORM TO CSA O141.
- ALL LUMBER TO BE SPF NO. 2 OR BETTER UNLESS OTHERWISE STATED

H/Ds = 4.0 / 3.65 = 1.1 m

**SHOP DRAWING REVIEW**

1. REVIEW OF SHOP DRAWINGS IS ONLY FOR GENERAL CONFORMANCE WITH STRUCTURAL

CONTRACT DOCUMENTS AND SPECIFICATIONS. COMMENTS MADE ON THE SHOP DRAWINGS

EFFECTIVE SEISMIC WEIGHT, W = 355 kN

\[ \text{MINIMAL SNOW LOAD REQUIRED (ASCE 7.3.4)} = 1.0 \text{ kPa} \]

\[ \text{MINIMAL SNOW LOAD REQUIRED (WESS)} = 0.5 \text{ kPa} \]

\[ \text{MINIMAL SNOW LOAD REQUIRED (SSS)} = 0.3 \text{ kPa} \]

\[ \text{MINIMAL SNOW LOAD REQUIRED (ASCE 7.3.4)} = 1.0 \text{ kPa} \]

\[ \text{MINIMAL SNOW LOAD REQUIRED (WESS)} = 0.5 \text{ kPa} \]

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\[ \text{MINIMAL SNOW LOAD REQUIRED (WESS)} = 0.5 \text{ kPa} \]
GENERAL SHEET NOTES
1. MAXIMUM BEARING PRESSURE 3000 PSF
   PER SD BUILDING CODE
2. FOUNDATION JACKS ADJUST TO ACCEPT A
   18" ELEVATION CHANGE OVER THE
   COMPETITION SITE

SHEET KEYNOTES
4. DRILLING LOCATION FOR 1" ANCHOR ROD

A1 FOUNDATION PLAN

FOUNDATION PLAN

S-101
GENERAL SHEET NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING S-001

2. ALL DIMENSIONAL LUMBER TO BE SPRUCE-PINE-FIR NO. 2 GRADE OR BETTER

3. DESIGN SHEAR FOR WELDED CONNECTION
   V = 20 KN (FACTORED)

4. 3/8" = 1'-0"
GENERAL SHEET NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING

2. ALL DIMENSIONAL LUMBER TO BE SPRUCE-PINE-FIR NO.2 GRADE OR BETTER

3. FLOOR LIVE LOAD = 50 PSF PER SDBC 2013

4. 2X6 BOLTED USING 3/8" GALV BOLTS @ 32" O.C.
GENERAL SHEET NOTES
1. SEE GENERAL REQUIREMENTS ON DRAWING
2. ALL NON-STRUCTURAL LUMBER TO BE 2X4 8D
3. SHOW ALL HOLES DEEPER THAN 1/4" SHOWN BY SHEET KEYNOTES

SHEET KEYNOTES
9 STRONGTIE HDU2-SDS2.5 HOLDDOWN
10 STRONGTIE HDU4-SDS2.5 HOLDDOWN

GENERAL SHEET NOTES
1. SEE GENERAL REQUIREMENTS ON DRAWING
2. ALL DIMENSIONAL LUMBER TO BE SPRUCE-PINE-FIR NO.2 GRADE OR BETTER
3. SHEAR WALL HOLD-DOWNS PLACED AS SHOWN BY SHEET KEYNOTES

WALL FRAMING PLAN

SCALE: 3/8" = 1'-0"
GENERAL SHEET NOTES

1. See drawing requirements on drawing S-001.
2. All dimensional lumber to be spruce-pine-fir No.2 grade or better.
3/8" = 1'-0"
GENERAL SHEET NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING
2. ALL DIMENSIONAL LUMBER TO BE SPRUCE-PINE-FIR NO.2 GRADE OR BETTER

SHEET KEYNOTES

9 STRONGTIE HDU2-SDS2.5 HOLDDOWN

A2 CM SOUTH FRAMING

A4 CM NORTH FRAMING

3/8" = 1'-0"
GENERAL SHEET NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING S-001
2. ALL DIMENSIONAL LUMBER TO BE APPLIED: PINE-LS-5.5′ OR BETTER

SIDE MODULE EXTERIOR FRAMING SECTION
A1
SM NORTH FRAMING

SIDE MODULE INTERIOR FRAMING SECTION
A4
SM SOUTH FRAMING

1/4" = 1'-0"

1/4" = 1'-0"

3/8" = 1'-0"

GENERAL SHEET NOTES

1. SEE GENERAL REQUIREMENTS ON DRAWING S-001
2. ALL DIMENSIONAL LUMBER TO BE APPLIED: PINE-LS-5.5′ OR BETTER

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SIDE MODULE INTERIOR FRAMING SECTION
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SM SOUTH FRAMING

1/4" = 1'-0"

1/4" = 1'-0"

3/8" = 1'-0"
1. SEE E-102 FOR RELEVANT LIGHTING PLAN
2. SEE M-101 FOR RELEVANT DUCTWORK PLAN
3. ITEMS REST ON CEDAR SUSPENDED CEILING SUPPORTED BY CONCEALED WOODBLOCKING AS NEEDED
A - MODULES CONNECTION WALL SECTION

1/2" POLYISO INSULATION
SLOPED FOR DRAINAGE

BUILDING PAPER WRAP OVER PARAPET
TPO TERMINATED UNDER FURRING STRIPS
WALL JOINT, SPRAY FOAMED AND TRIMMED
COMPRESSIBLE TUBE AND LAPPED TPO MEMBRANE
COMPRESSIBLE TUBE AND LAPPED TPO MEMBRANE
CAP FLASHING
METAL CAP FLASHING (WHITE)
CONCEALED SLIDING DOOR TRACKS
CONCEALED MODULE CONNECTION ABOVE DOORWAY
SLIDING DOOR WITH FROSTED GLASS INSERT X3

1/2" GYPSUM
3/8" PLYWOOD
1/2" PLYWOOD
3/8" PLYWOOD
2' - 0"

A1 - MODULES CONNECTION WALL SECTION

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UNIVERSITY OF CALGARY
2500 UNIVERSITY DR NW
CALGARY, AB T2N 1N4

MOUNT ROYAL UNIVERSITY
4825 MT ROYAL GATE SW
CALGARY, AB T3E 6K6

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DATE
04/29/2013
05/03/2013
05/13/2013
05/22/2013
08/22/2013

ISSUED FOR ELEC/MECH
ISSUED FOR CLADDING
ISSUED FOR STRUCTURAL REVIEW
ISSUED FOR CONSTRUCTION 95%
AS BUILT SET

MARK
SEALS
04/29/2013
05/03/2013
05/13/2013
05/22/2013
08/22/2013

DRAWN BY
CHECKED BY
STATUS

0.3333333333333333
1/3
0.3333333333333333
0.3333333333333333
0.3333333333333333
0.3333333333333333
0.3333333333333333
1/2" GYPSUM SHEATHING
2x8
INNOTECH TRIPLE PANE TILT AND TURN WINDOW PROFILE
1/2" PLYWOOD SHEATHING
BUILDING PAPER
3/8" PLYWOOD FURRING STRIPS
5/16" CEMENT FIBRE BOARD
26 GAUGE WHITE J-TRIM
30 GREY METAL TRIM

2X4 STAGGERED STUD WALL CONSTRUCTION
2X8 STUD WALL CONSTRUCTION
2X2 FOR ADDED SUPPORT
2X6
3" PVC DOWNPIPE

SPRAY FOAM INSULATION
1/2" PLYWOOD SHEATHING
1/2" GYPSUM BOARD
SPRAY FOAM INSULATION
2X4 STAGGERED STUD SPACED 8" O.C.
3/8" PLYWOOD
1/2" GYPSUM BOARD
3/8" WOOD FURRING STRIP
1X4 CEDAR SIDING
CEDAR CORNER TRIM
5/16" CEMENT FIBRE BOARD
30 GAUGE GREY METAL TRIM

A- TYPICAL WALL ASSEMBLY PLAN VIEW -G
A - CENTER MODULE TO SIDE MODULE PLAN VIEW -G
A WALL TO WINDOW PLAN VIEW -G
CONCEALED DOWNPIPE

NOTE: ALL VICWEST ARCHITECTURAL PANELS REVISED TO BE VICWEST AD-300 SERIES

GENERAL SHEET NOTES
NOTES: ALL VISIBLE ARCHITECTURAL PANELS REVISED TO BE VICWEST AD-300 SERIES

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Issued for:
1. Electrical/Mech.
2. Cladding
3. Structural Review
4. Construction 95%
5. As Built Set

A-501
SLOPE DN 2X8 WOOD JOIST ROOF FRAMING SPACED 16" O.C.
1/2" PLYWOOD SHEATHING
VELUX SUN TUNNEL SKYLIGHT FASTENED AND SKIRTED TO MANUFACTURER'S SPECS. LAPPED AND SEALED WITH TPO MEMBRANE
2" POLY ISO INSULATION, SLOPED FOR ROOF DRAINAGE
ULTRAPLY TPO ROOFING MEMBRANE AND ADHESIVE
SPRAY FOAM INSULATION
VAPOUR BARRIER
1/2 GYPSUM

2X4 DROP CEILING STRUCTURE
7/16 X4 T&G CEDAR CEILING
MIRRORED FLEXIBLE TUBE
CONCEALED LED LIGHT FIXTURE
FROSTED LENS
FLANGE RESTS ON CEDAR
ULTRAPLY TPO MEMBRANE AS FLASHING
ULTRAPLY TPO BONDING ADHESIVE
2" WELDED SPLICE MIN.
1" MIN.
FIRESTONE FASTENER AND HD OR HD PLUS SEAM PLATE AT 12" O.C. MAX
ULTRAPLY TPO MEMBRANE AS FLASHING
ULTRAPLY TPO BONDING ADHESIVE
2" POLY ISO INSULATION SHAPED FOR ROOF DRAINAGE
1/2" FIBRE BOARD
SPRAY FOAM INSULATION IN RAFTER SPACE
8" MIN.

GENERAL SHEET NOTES

NOTE: ALL VICWEST ARCHITECTURAL PANELS REVISED TO BE VICWEST AD-300 SERIES

SHEET KEYNOTES

C1 - A - PV MOUNTING DETAIL -G
B4 - A - VENT PENETRATION DETAIL
A1 - A - SOLAR TUNNEL DETAIL -G
**GENERAL SHEET NOTES**

- **B4** A - WINDOW HEADER AND PARAPET DETAIL - G
- **A1** DRRAINAGE SECTION AT DECK
- **A3** DRRAINAGE SECTION AT DECK
- **B1** DRAINAGE SECTION AT PARAPET
- **A2** PARAPET SECTION SOUTH SIDE MODULE

**Sheet Keynotes**

- **B1** DRAINAGE SECTION AT PARAPET
- **B4** A - WINDOW HEADER AND PARAPET DETAIL - G
- **A1** DRRAINAGE SECTION AT DECK

---

**Construction Details**

**A-503**

**Sheet Title**

**Lot Number:**

**Drawn By:**

**Checked By:**

**Status:**

**Client:**

**U.S. Department of Energy**

**Solar Decathlon 2013**

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**Notes:**

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

---

**Date**

**Description**

1 04/29/2013 ISSUED FOR ELECTRICAL

2 05/03/2013 ISSUED FOR CLADDING

3 05/13/2013 ISSUED FOR STRUCTURAL REVIEW

4 05/22/2013 ISSUED FOR CONSTRUCTION 95%

5 08/22/2013 AS BUILT SET
PENETRATING VENT PIPE
STAINLESS STEEL CLAMP RING
CONTINUOUS BEAD OF
ULTRAPLY TPO GP SEALANT
ULTRAPLY TPO MEMBRANE AS FLASHING
ULTRAPLY TPO BONDING ADHESIVE
2" WELDED SPLICE MIN.
1" MIN.
FIRESTONE FASTENER AND HD OR
HD PLUS SEAM PLATE AT 12" O.C. MAX
ULTRAPLY TPO MEMBRANE AS FLASHING
ULTRAPLY TPO MEMBRANE
1/2" FIBRE BOARD
1/2" FIBRE BOARD
SPRAY INSULATION
IN RAFTER SPACE
8" MIN.

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EVDS – PF-2182
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www.solardecathlon.ca

A1 VENT PENETRATION DETAIL SI

1 1/2" = 1'-0"
2X4 STAGGERED STUD WALL CONSTRUCTION

2X8 WALL SILL

3/4" PLYWOOD

2X6 W8X18 STEEL BEAM ADJUSTABLE JACK FOUNDATION

3/4" PLYWOOD

1" ADJUSTABLE FROM 1'-8" TO 2'-6"

VARIABLE

2'-0"

2X6 TREATED BUILDING PAPER

LAPS OVER DRAINAGE FLASHING

GALVANIZED FLASHING DEFLECTS WATER FROM STEEL BEAM

WHITE FLASHING CONCEALS TREATED 2X6, SPANS 1/2" GAP, RESTS ON DECKING

2X8 TREATED 5/4X5 CEDAR DECKING

PVC ELBOW COUPLING, SEALED

MIN 2% SLOPE

PIPE CONNECTS TO RAINWATER RESERVOIR

ULTRAPLY TPO MEMBRANE AND BONDING ADHESIVE

TPO ROOFING MEMBRANE BROUGHT OVER PARAPET

BUILDING PAPER TERMINATED AT PARAPET

3" DI. PVC DRAINAGE PIPE LAPPED WITH TPO

CONTINUOUS FLAT DRAINAGE SURFACE INTO PVC PIPE

3" DI. PVC CONCEALED DOWNPIPE (HEAT-TRACED, 1" INSULATION)

2X6 TREATED 1/2" PLYWOOD

1X4 T&G CEDAR

10" CAP FLASHING

1/2" PLYWOOD DISCONTINUOUS FOR RAINSCREEN VENTILATION

2X4 PARAPET (2X4 CUT BELOW FOR DRAINAGE PIPE)

2" POLYISO INSULATION SLOPED FOR DRAINAGE

2X8 ROOF CONSTRUCTION

SPRAY FOAM INSULATION

ULTRAPLY TPO MEMBRANE AND BONDING ADHESIVE

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BUILDING PAPER TERMINATED AT PARAPET

3" DI. PVC DRAINAGE PIPE LAPPED WITH TPO

CONTINUOUS FLAT DRAINAGE SURFACE INTO PVC PIPE

3" DI. PVC CONCEALED DOWNPIPE (HEAT-TRACED, 1" INSULATION)
A-HARDIE PANEL AND FURRING
REFER TO EAST/WEST CLADDING ELEVATION A-511. JOINTS FOLLOW AROUND ON THE NORTH AND SOUTH ELEVATIONS.

SOFFIT IS CEDAR 4' - 0 15/16".

JOINT LINES FOLLOW AROUND TO PERPENDICULAR INSIDE WALLS. 3 HORIZONTAL JOINTS.

NORTH ELEVATION HARDIE
REFER TO EAST/WEST CLADDING ELEVATION. JOINTS FOLLOW AROUND ON TO THE NORTH AND SOUTH ELEVATIONS.

SOFFIT IS CEDAR.

JOINT LINES FOLLOW AROUND TOP PERPENDICULAR INSIDE WALLS. 3 HORIZONTAL JOINTS.
GENERAL SHEET NOTES

LETTERS REFER TO PLAN ON SHEET. ALL LENGTHS ARE +~6", MORE MAY BE NECESSARY TO ACCOUNT FOR TRIMMING AND ERROR. END CAPS ARE REQUIRED ON PARAPET AT APPROX 4.5 DEGREES, DOUBLE STAR DENOTES END THAT WILL NEED TO BE CUT ON SITE AT AN ANGLE AS CIRCLED AT INTER-MODULE EDGES

90 DEGREE CORNER FLASHING:

NOTE: * AFTER A LETTER DENOTES A PARAPET AT A ~4.5 DEGREE ANGLE OFF HORIZONTAL ALONG THEIR LENGTH. THESE ANGLED EDGES MEET FLAT 0 DEGREE EDGES (THOSE WITHOUT *) AT CORNERS. CORNER PIECES MUST BE FABRICATED TO SUIT

WEST MODULE
A=* B
C M=
G L=
H A=

CENTRE MODULE
K=C O=D

EAST MODULE
J=H N=G
F P=

BUILD OUT PARAPET AND WALL END CAP TO DESIGNED DIMENSIONS

FLASHING TRANSITION LOCATIONS: REQUIRE CUSTOM TRANSITION PIECE AS SHOWN ON SHEET

NOTE: * AFTER A LETTER DENOTES A PARAPET AT A ~4.5 DEGREE ANGLE OFF HORIZONTAL ALONG THEIR LENGTH. THESE ANGLED EDGES MEET FLAT 0 DEGREE EDGES (THOSE WITHOUT *) AT CORNERS. CORNER PIECES MUST BE FABRICATED TO SUIT

A - ROOF FLASHING

A-514 ROOF FLASHING

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SEALS

MARK

DATE

DESCRIPTION

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SEALS

MARK

DATE

DESCRIPTION
<table>
<thead>
<tr>
<th>TAG</th>
<th>DESCRIPTION</th>
<th>MANUFACTURER</th>
<th>MODEL</th>
<th>POWER</th>
<th>VOLTAGE</th>
<th>FLA</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHU-1</td>
<td>AIR HANDLER BLOWER MODULE</td>
<td>UNICO</td>
<td>MB2430-EC2</td>
<td>1344 VA</td>
<td>240 V</td>
<td>6 A</td>
<td>CONTROLLED BY HVAC CONTROLLER, INTERCONNECTED WITH HRV-1</td>
</tr>
<tr>
<td>DH-1</td>
<td>DEHUMIDIFIER</td>
<td>HONEYWELL</td>
<td>TRUDRY DR65</td>
<td>624 VA</td>
<td>120 V</td>
<td>5 A</td>
<td>CONTROLLED BY HUMIDSTAT</td>
</tr>
<tr>
<td>DHW-1</td>
<td>SOLAR DOMESTIC HOT WATER TANK</td>
<td>VELUX</td>
<td>TFF 060 0205U S</td>
<td>4500 VA</td>
<td>240 V</td>
<td>19 A</td>
<td>CONTROLLED BY PRESSURE SWITCH</td>
</tr>
<tr>
<td>EX-1</td>
<td>BATHROOM FAN</td>
<td>BROAN</td>
<td>XB110C</td>
<td>120 VA</td>
<td>120 V</td>
<td>1 A</td>
<td>CONTROLLED BY BATHROOM SWITCH, INTERCONNECTED WITH HRV-1</td>
</tr>
<tr>
<td>EX-2</td>
<td>KITCHEN HOOD FAN</td>
<td>WHIRLPOOL</td>
<td>UXT5230AYS</td>
<td>25 VA</td>
<td>120 V</td>
<td>2 A</td>
<td>INTERCONNECTED WITH HRV-1</td>
</tr>
<tr>
<td>HP-1</td>
<td>REVERSIBLE HEAT PUMP</td>
<td>LENNOX</td>
<td>XP21-024</td>
<td>3424 VA</td>
<td>230 V</td>
<td>15 A</td>
<td>CONTROLLED BY HVAC CONTROLLER</td>
</tr>
<tr>
<td>HRV-1</td>
<td>HEAT RECOVERY VENTILATOR</td>
<td>KUBIX</td>
<td>44102</td>
<td>120 VA</td>
<td>120 V</td>
<td>1 A</td>
<td>INTERCONNECTED WITH EX-1, EX-2, &amp; AHU-1. RELAY BYPASS CONTROLLED BY HVAC CONTROLLER</td>
</tr>
<tr>
<td>PU-1</td>
<td>DOMESTIC WATER PUMP</td>
<td>GRUNDFOS</td>
<td>MQ-3-45</td>
<td>680 VA</td>
<td>120 V</td>
<td>13 A</td>
<td></td>
</tr>
<tr>
<td>PU-2</td>
<td>FIRE SUPPRESSION PUMP</td>
<td>ECONOFLOW</td>
<td>XPS15</td>
<td>2400 VA</td>
<td>240 V</td>
<td>10 A</td>
<td>CONTROLLED BY PRESSURE SWITCH</td>
</tr>
<tr>
<td>PU-3</td>
<td>SEWAGE PUMP</td>
<td>PRO SERIES</td>
<td>ST 1033</td>
<td>564 VA</td>
<td>120 V</td>
<td>4 A</td>
<td>CONNECTED TO RECEPTACLE INSTALLED UNDER CENTRAL MODULE</td>
</tr>
<tr>
<td>PU-4</td>
<td>SOLAR THERMAL PUMP</td>
<td>VELUX</td>
<td>TFF 060 0205US</td>
<td>240 VA</td>
<td>120 V</td>
<td>2 A</td>
<td>VARIABLE SPEED DISCONNECT/CONTROL BY RESOL SOLAR CONTROLLER</td>
</tr>
</tbody>
</table>
GENERAL SHEET NOTES

1. WATER STORAGE CONSISTS OF (6) 385 GALLON POTABLE WATER STORAGE TANKS FOR A TOTAL CAPACITY OF 1155 GALLONS.
2. WATER TANKS HAVE AN OPENING DIAMETER OF 12".
3. WATER TANKS ARE FULLY SHADED IN ENCLOSED WOOD LANDSCAPING STRUCTURE.
4. LANDSCAPING STRUCTURE INCLUDES REMOVABLE TOP PANELS TO ACCESS FILLING LOCATIONS MEETING MINIMUM 12" CLEARANCE REQUIREMENT.
5. SEE P-501 FOR SECTION DETAILS.
6. SEE MECHANICAL SCHEMATIC (M-602) FOR DETAILS OF INTERCONNECTION.

DOMAIN: ELECTRICAL

DATE: 04/29/2013
ISSUED FOR ELECTRICAL/MECHANICAL

DATE: 05/03/2013
ISSUED FOR CLADDING

DATE: 05/13/2013
ISSUED FOR STRUCTURAL REVIEW

DATE: 05/22/2013
ISSUED FOR CONSTRUCTION 95%

DATE: 08/22/2013
AS BUILT SET

22/08/2013 5:20:16 PM

P-101

A1 DOMESTIC PLUMBING PLAN

DOMESTIC PLUMBING PLAN

FACILITY GROUND-MOUNTED POTABLE WATER STORAGE TANKS

DOMESTIC WATER TANKS AND PLATE HEAT EXCHANGERS

150 GAL. RAINWATER COLLECTION TANK

150 GAL. RAINWATER COLLECTION TANK
<table>
<thead>
<tr>
<th>COUNT</th>
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**P-601**
PV WIRING DIAGRAM

PV WIRING PLAN

E-101
1. Switch for the switched half receptacles

General Sheet Notes

1. Refer to Luminaire Schedule on E-001 for Luminaire Type

Lighting Plan
1. MOUNTED IN CABINETRY AT 3' AFF
2. FAN DISCONNECT SWITCH TO BE COORDINATED WITH LIGHTING SWITCH
3. 20 A RECEPTACLES MOUNTED ABOVE COUNTER AT 3' 6" AFF
4. MOUNTED INTO ISLAND AT 2' 6" AFF

GENERAL SHEET NOTES
1. REFER TO MECHANICAL SCHEDULE ON E-501 FOR DESCRIPTION
2. REFER TO SMALL EQUIPMENT SCHEDULE ON E-501 FOR DETAILS
ARRAY #1

- CANADIANSOLAR CS6P-250M PANEL (TYP.)
- MC4 CONNECTORS TO ENPHASE ENGAGE CABLE (TYP.)
- JUNCTION BOX 20A-2P

ARRAY #2

- ENPHASE 215
- ENPHASE AC INTERCONNECT CABLE ADAPTOR (TYP.)
- JUNCTION BOX 20A-2P

ARRAY #3

- 3-#2/0 AWG + 1-#6 AWG BOND
- 3-#10 AWG + 1-#12 AWG & 1-#8 AWG BOND
- 1-#6 AWG GROUND IN A 1/2" PVC CONDUIT
- 1-#8 AWG SYSTEM BOND IN A 3/4" CONDUIT
- MC4 CONNECTORS TO ENGAGE CABLE (TYP.)
- SEALS 6" = 1'-0"

TABLES:

- PV MODULE SPECIFICATIONS
- MICROINVERTER SPECIFICATIONS
- APPLICATION
- INPUT DATA (DC)
- OUTPUT DATA (AC)
- OPERATING RANGE

DESCRIPTION:

- MAXIMUM POWER 250W
- MINIMUM START/VOLTAGE 22V/45V
- MAXIMUM CURRENT PER INVERTER 0.9A
- MAXIMUM ISC 15A
- OPEN SHORT CURRENT (ISC) 8.740000
- OPEN CIRCUIT VOLTAGE (VOC) 37.50000
- MAXIMUM POWER (PMAX) 250W
- MAXIMUM VOLTAGE 45V
- MINIMUM VOLTAGE 37.5V
- INPUT POWER (IEC) 12AWG(UL)
- SHORT CURRENT (ISC) 8.22A
- OPTIMUM OPERATING VOLTAGE (VMP) 30.400000
- MAXIMUM FUSE SIZE 20A
- MAXIMUM CURRENT STRING 7.2A
- MINIMUM CURRENT STRING 2.2A
- FAULT CURRENT 1.05A
- CURRENT COEFFICIENT 0.60%/°C
- TEMPERATURE COEFFICIENT 0.35%/°C
- TEMP 46±
- AMBIENT RANGE -40°C TO 40°C
- OPERATING RANGE 240V/206V
- EXTENDED RANGE 240V/211V
- NOMINAL VOLTAGE 22V/45V
- NO. OF UNITS 17(SINGLE PHASE)
- EXTENDED POWER 215W
- NOMINAL POWER 200W
- RATED INPUT 260W
- RATED INPUT 36V
- RATED OUTPUT 22V
- RATED OUTPUT 36V
- NOMINAL VOLTAGE/RANGE 240V/211V
- MAXIMUM VOLTAGE/RANGE 60.0/59.3
- MAXIMUM CURRENT 0.9A
- MIN/MAX CURRENT PER INVERTER 0.9A
- MAXIMUM FUSE SIZE 20A
- MAXIMUM CURRENT STRING 7.2A
- CURRENT COEFFICIENT 0.60%/°C

ENPHASE ENGAGE CABLE (+) (-)

IN A 2" PVCCONDUIT FROM METER SOCKET TO TEAM PANELBOARD

THREE LINE DIAGRAM

E-401
### Branch Panel: A

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#### LUMINARIE SCHEDULE

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#### SMALL EQUIPMENT SCHEDULE

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NOTE: All fixtures are to be supplied by a licensed electrical contractor.
GENERAL SHEET NOTES

1. WATER STORAGE CONSISTS OF (6) 385 GALLON WATER TANKS FOR A TOTAL CAPACITY OF 1155 GALLONS STORAGE AND WASTE.

2. WATER TANKS HAVE AN OPENING DIAMETER OF 12".

3. WATER TANKS ARE ENCLOSED IN WOOD-CLAD LANDSCAPING STRUCTURE.

4. PANELS ON BOX SURFACE REMOVE FOR UNRESTRICTED FILLING.

3. SEE L-501 FOR SECTION DETAILS.

SHEET KEYNOTES

1. TRUCK #1 - 48' FLATBED
2. TRUCK #2 - EXTENDABLE DOUBLE DROP TRUCK
3. TRUCK #3 - 30' DOUBLE DROP TRUCK
4. TRUCK #4 - 30' DOUBLE DROP TRUCK
5. TRUCK #2 - SPARE

B1 SITE LAYOUT & MAJOR EQUIPMENT

A4 TRUCK LOADING PLAN

0-101 SITE OPERATION PLAN

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2013
WWW.SOLARDECATHLON.GOV

78' - 0" 85' - 0" 60' - 0" 100' - 0" 20' - 0"
### ASSEMBLY SEQUENCE

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### EDITIONS
- **04/29/2013**: ISSUED FOR ELECTRICAL/Mechanical
- **05/03/2013**: ISSUED FOR CLADDING
- **05/13/2013**: ISSUED FOR STRUCTURAL REVIEW
- **05/22/2013**: ISSUED FOR CONSTRUCTION 95%
- **08/22/2013**: AS BUILT SET

**SEALS & MARKS**: 22/08/2013 5:19:35 PM

**RECORDS**
- **NAME**: [List of names]
- **DATE**: [List of dates]
- **DESCRIPTION**: [List of descriptions]

**NOTES**
- [List of notes]

**DATE MARKER**: 1/16
- **DRAWN BY**: [Name]
- **DRAWN REV**: [Revision]
- **PRINTED**: [Date]