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. Finishing square footage calculations for this house were made based on plan 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 total area of the home calculated according to ANSI Z765-2003 is 752 square feet, which is compliant with Rule 6-2: finished square footage. The area is between 600 square feet and 1000 square feet.
INTERIOR RENDERINGS 1
INTERIOR RENDERINGS 2
INTERIOR RENDERINGS 3
INTERIOR RENDERINGS 4
BASE ADJUSTMENT 1 (ROUGH ADJUSTMENT)

BASE ADJUSTMENT 2 (SUBTLE ADJUSTMENT)
### Structural Foundation Schedule

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**Grand total:** 48

### Structural Column Schedule

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**Grand total:** 167

### Structural Frame Schedule

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**Grand total:** 331
Section 5.3.3

### Design Loads

1. **Dead Load**
   - The dead load is calculated by finite element method software ANSYS.
   - **Floor Design Loads:**
     - Basic live load = 0.25 kPa
     - Floor live load = 0.55 kPa
   - **Roof Design Loads:**
     - Basic live load = 0.25 kPa
     - Roof live load = 0.55 kPa

2. **Basic Wind Load**
   - Basic wind load = 0.25 kPa
   - Factor of wind pressure = 0.16619
   - Height variation factor of wind pressure = 0.232666

3. **Snow Load**
   - Basic snow load = 0.25 kPa
   - Roof live load = 20 psf (0.958 kPa) (Roof inaccessible)

4. **Basic Lateral Wind Load**
   - **Roof Dead Load:** 15.59 psf (0.746 kPa) (Solar panel roof)
   - **Roof Live Load:** 20 psf (0.958 kPa) (Roof inaccessible)

5. **Basic Vertical Wind Load**
   - **Floor Dead Load:** 15.64 psf (0.748 kPa) (Indoor floor)
   - **Floor Live Load:** 50 psf (2.39 kPa)

6. **Wind Load**
   - **Design wind speed:** 60 mph (26.8 m/s)
   - **Basic Wind Pressure:** 174.42 N/m²
   - **Shape factor for wind load:** 1.0
   - **Lateral force resisting capacity:** $u(G-F_2)=0.2*(42.38233-2.147712)=8.046924$ KN > 5.637963 KN

7. **Combination of load effects**
   - Coefficient of structure importance: 1.35
   - Wind load factor: 1.5
   - Wind load combination factor: 1.5
   - **Total Combination of load effects:**
     - $1.35 \times 0.90 \text{ dead load} + 1.50 \times 0.90 \text{ live load} + 1.50 \times 0.54 \text{ wind load} > 1.5 \times 13.89399$

### Loads Diagrams

- **Dead Load Diagrams for each Container**
  - Total Weight per container:
    - 1.Roof: 208.80 KN
    - 2.Floor: 256.30 KN
    - 3.Wall: 687.94 KN
    - 4.Floor: 143.83 KN
    - 5.Solar System: 3000 KN

- **Total Weight for two containers**
  - 208.80 + 256.30 + 687.94 + 143.83 + 3000 = 4324.72 KN

- **Total Weight per container**
  - 208.80 + 256.30 + 687.94 + 143.83 + 1500 = 2084.97 KN

- **Total Weight for two containers**
  - 2084.97 + 2084.97 = 4169.94 KN

### Sliding and Overtuning Forces Calculation

- **Sliding forces = F_1**
  - $F_1 = u(G-F_2)=0.2*(42.38233-2.147712)=8.046924$ KN

- **Overturning moment = F_1 \times h/2 + F_2 \times b/2**

- **Resisting moment = lateral force resisting capacity = u(G-F_2)=0.2*(42.38233-2.147712)KN= 8.046924KN > 5.637963KN**

- **Sturcture weight per container, that is the total weight of the steel component of the container, is about 3000Kg**

- **Total weight (including the solar system lay open to every container) is 208.8 + 256.3 + 687.94 + 143.83 + 3000 = 4324.72 KN**
1. **Y CONTAINER**. The container here has two meanings. One stands for a large metal box of standard design and size used for the transportation of goods by road, rail, sea, or air. There are 11,978 miles from Shanghai to Washington results 33 days for the transportation, which containers provide easier way. Furthermore, the containers in our house come from the disused containers in the wharf.

2. **ALSO, CONTAINER** means an object that can be used to hold something. The PV panels on the roof generate the energy covering all the electric consumption for the household electrical appliances. The exterior deck is made of several triangular components. Parts of triangular components are served as the rainwater collection system that provides the water for life. In short, **Y CONTAINER** is a box absorbing the solar energy; the rain from the natural eventually contributes to the better life in the future.
INTERIOR BALCONY ELEVATION

INTERIOR EQUIPMENT ELEVATION

INTERIOR LIVING ROOM ELEVATION

INTERIOR EQUIPMENT ELEVATION

GENERAL SHEET NOTES

REFERENCE KEYNOTES

SHEET KEYNOTES

PRODUCED BY AN AUTODESK STUDENT PRODUCT
FIRST FLOOR LARGE SCALE PLAN
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**SUMMARY**

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**FLOOR VIP SCHEDULE2**
REFERENCE KEYNOTES

06 20 13 EXTERIOR FINISH CARPENTRY
06 20 23 INTERIOR FINISH CARPENTRY

SHEET KEYNOTES

06 20 23 EXTERIOR FINISH CARPENTRY
06 20 13 EXTERIOR FINISH CARPENTRY

GENERAL SHEET NOTES

1. THE DiagramS SHOW THE VERTICAL SECTIONS OF THE OPENINGS.
06 20 13 EXTERIOR FINISH CARPENTRY
06 20 23 INTERIOR FINISH CARPENTRY

REFERENCE KEYNOTES:

A1 DETAIL-S2 VERTICAL TOP RIGHT
B1 DETAIL-S2 VERTICAL LOWER LEFT
B3 DETAIL-S2 VERTICAL LOWER RIGHT
B5 DETAIL-S2 VERTICAL TOP LEFT
A3 DETAIL-W1 HORIZONTAL LEFT
A5 DETAIL-W1 HORIZONTAL RIGHT
C1 DETAIL-S2 HORIZONTAL MIDDLE
C3 DETAIL-S2 HORIZONTAL LEFT
C5 DETAIL-S2 HORIZONTAL RIGHT

SHEET KEYNOTES:

06 20 13 EXTERIOR FINISH CARPENTRY
06 20 23 INTERIOR FINISH CARPENTRY

GENERAL SHEET NOTES:
1. THE DRAWINGS SHOW THE DETAIL SECTIONS OF THE OPENINGS.
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Checked By:

Copyright:

Client:

U.S. Department of Energy
Solar Decathlon
www.solardecathlon.gov

Team Name:

Address:

Contact:

FANTASTIC ARCHITECTS

CONSULTANTS

AMAZING ENGINEERS

PERFECT LANDSCAPING

SAFETY FIRST CODE CONSULTANTS

None: Project is public domain

8/13/2011 11:03:36 AM

PRODUCED BY AN AUTODESK STUDENT PRODUCT

Sheet Keynotes:

General Sheet Notes:

Mark Date Description

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1m

0.5

0.2

3m

1

2

0.5

3m

1

2

0.5

3m

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2

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Roof PV System Plan

Roof Skylight Plan Detail

Roof Skylight Section 1

Roof Skylight Plan Detail 1

Roof Skylight Plan Detail 2

Reference Keynotes:

05 31 00.B0 Metal Deck

06 01 00 Maintenance of Wood, Plastics, and Composites

06 11 00.A4 Existing Joists

06 16 13 Insulating Sheathing

07 71 00 B3 Downspout

08 05 00 Common Work Results for Openings

08 12 13.13 Standard Hollow Metal Frames

08 45 13 Structured-Polycarbonate-Panel Assemblies

08 63 00 Metal-Framed Skylights

09 53 33 Plastic Acoustical Ceiling Suspension Assemblies

22 14 26.13 Roof Drains

23 56 13.19 Heating Solar Vacuum-Tube Collectors

26 31 00 Photovoltaic Collectors

Roof Skylight Section 2

Roof Skylight Plan Detail 2
## Schedule for Residential Electrical Equipment

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CONTENT

F-001 - FIRE PROTECTION NOTES AND SYMBOLS
F-101 - FIRE DETECTION AND ALARM

ABBREVIATE
LR - LIVING ROOM
BR - BEDROOM
RR - RESTROOM
MR - MECHANICAL ROOM
BD - BACK DOOR
KC - KITCHEN
HMI - HUMAN MACHINE INTERFACE
CB - CONTROL BOX
DB - DISTRIBUTION BOX
1. THE DRAWINGS AND DETAILS SHALL BE TAKEN AS A DIAGRAMMATIC MEANS OF PROVIDING PIPING AND DUCTWORK. THEY DO NOT SHOW EVERY FITTING AND OFFSET NON-STRUCTURAL, ELECTRICAL, PIPING OR DUCTWORK DETAILS THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF WORK.

2. THE WORK HAS BEEN DESIGNED FOR THE EQUIPMENT INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MODIFICATIONS TO THE WORK INCLUDING BUT NOT LIMITED TO DUCTWORK, PIPING, ELECTRICAL, PLUMBING, FIRE PROTECTION, STRUCTURAL FRAMES, ETC. REQUIRED TO PROPERLY PROVIDE EQUIPMENT OTHER THAN THAT INDICATED ON THE DRAWINGS.

3. ANY EXPOSED DUCTWORK, PIPING, ELECTRICAL, TEMPERATURE CONTROLS, CONDUIT AND ASSOCIATED COMPONENTS TO BE METAL FINISH. COORDINATE WITH OWNER PRIOR TO INSTALLATION.

4. THE POTABLE WATER TANK CAN BE HEATED BY THE FOLLOWING METHODS: SOLAR COLLECTOR TO TANK HEAT EXCHANGE, NOT PUMP TO TANK HEAT EXCHANGE, DOMESTIC WATER PUMP TO TANK HEAT EXCHANGE, OR ELECTRIC HEATING.

5. THE FLOOR HEATING WATER TANK CAN ONLY BE HEATED BY SOLAR COLLECTOR.

6. THE WATER IN GREY TANK IS FROM DOMESTIC SEWAGE AND COLLECTED RAIN, AND THE WATER IN WATER RECYCLE MODULE IS JUST FROM THE GREY TANK.
1. THE DRAWINGS AND DETAILS SHALL BE TAKEN AS A DIAGRAMMATIC MEANS OF PROVIDING PIPING AND DUCTWORK. THEY DO NOT SHOW EVERY FITTING AND OFFSET FOR EVERY STRUCTURAL, ELECTRICAL, PIPING, DRAINAGE, AIR DUCT, etc. THAT MAY BE ENCOUNTERED DURING THE INSTALLATION OF WORK.

2. THE WORK HAS BEEN DESIGNED FOR THE EQUIPMENT INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY PROVIDING ANY MODIFICATIONS TO THE WORK, INCLUDING BUT NOT NECESSARILY LIMITED TO DUCTWORK, PIPING, ELECTRICAL, FLUSHING, ETC. REQUIRED TO PROPERLY PROVIDE EQUIPMENT OTHER THAN THAT INDICATED ON THE DRAWINGS.

3. ANY EXPOSED DUCTWORK, PIPING, ELECTRICAL CONDUIT, TEMPERATURE CONTROLS, CONDUIT AND ASSOCIATED COMPONENTS TO BE METAL FINISH. COORDINATE WITH OWNER PRIOR TO INSTALLATION.

4. TRUNK DRAINAGE SLOPE OF 2.5%.

5. WATER TANKS ARE ALREADY ELEVATED 3.5 INCHES ABOVE THE GROUND.
After a preliminary calculation, it is noted, solar collector tubes raise to 4 groups instead of 2 groups.

2. The MEP model is different from the ARCHITECTURE model on the roof, because energy system-solar collectors and solar panels are still under adjusting. We will update the ARCHITECTURE model in accordance with MEP model as soon as possible.

3. The Pressure Regulating Valves are used to control the pressure of the solar hot water system, and the location them located is safe to persons.
1. Grey water tank is composed of two rectangular bodies, they are connected by a short tube.
2. Supply water tank is used to provide domestic water, which includes domestic hot water for daily use and cold water for domestic equipment such as dish washer, washing machine and fountains.
3. Grey water tank is used to collect water from shower, washing machine and basin in bathrooms, while black water tank is used to collect water, which may contain too much oil, from dish washer and trash in kitchen.
4. Grey water tank is also used as a container in the water cycle system. The site water cycle system is both a purification system and rain-water collection system. Four tanks including grey water tank, wet land and two water modules are connected by tubes to form this cycle.
### Pipe Accessory Schedule

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### Plumbing Fixture Schedule

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**GENERAL SHEET NOTES**

**REFERENCE KEYNOTES**

**SCHEDULES**

**P-601**
1. ISOMETRIC DRAWING SHOWN FOR INFORMATION PURPOSES ONLY. REFER TO DETAIL VIEWS AND PLANS FOR PLACEMENT, SYSTEM AND INSTALLATION REQUIREMENTS.
1. ISOMETRIC DRAWING SHOWN FOR INFORMATION PURPOSES ONLY. REFER TO DETAIL VIEWS AND PLANS FOR PLACEMENT, SYSTEM AND INSTALLATION REQUIREMENTS.
1. Isometric drawing shown for information purposes only. Refer to detail views and plans for placement, system and installation requirements.
2. After preliminary calculations, 1 x 6 tubes were taken to 3 groups instead of 2 groups.
3. Photovoltaic panels increased to 33.
1. THIS SHEET GIVES TWO ELEVATION VIEWS OF OUR MECHANICAL SYSTEM, INCLUDING THE AIR-COMFORT PART AND THE FLOOR HEATING-RADIATION PART.

REFERENCE KEYNOTES:
- 23 13.13 BACKWATER VALVES
- 22 35 13.13 HEATING-FLUID-IN-COIL, INSTANTANEOUS DOMESTIC WATER HEAT EXCHANGERS
- 23 23 16 REFRIGERANT PIPING SPECIALTIES
- 23 31 13.13 RECTANGULAR METAL DUCTS
- 23 31 16.19 PVC DUCTS
- 23 37 13.A1 DIFFUSER
- 23 72 19 FIXED-PLATE AIR-TO-AIR ENERGY-RECOVERY EQUIPMENT
- 23 73 23 CUSTOM INDOOR CENTRAL-STATION AIR HANDLING UNITS
- 23 74 13 PACKAGED, OUTDOOR, CENTRAL-STATION AIR-HANDLING UNITS
- 23 83 16 RADIANT-HEATING HYDRONIC PIPING
- 33 11 13 PUBLIC WATER UTILITY DISTRIBUTION PIPING

SHEET KEYNOTES:
- 3 PLENUM CHAMBER
- 6 260L HOT WATER STORAGE TANK
- 7 300L HOT WATER STORAGE TANK
- 9 REPLACEMENT AIR PORTS

GENERAL SHEET NOTES:
- THIS SHEET GIVES TWO ELEVATION VIEWS OF OUR MECHANICAL SYSTEM, INCLUDING THE AIR-COMFORT PART AND THE FLOOR HEATING-RADIATION PART.
M-501

WIND DUCT HANGER

INSTALLATION STYLE OF WIND DUCT IN EXTERNAL WALL

RECTANGULAR WIND DUCT CONNECTION IN FLANGE

FLEXIBLE JOINT CANVAS CONNECTION

REFERENCE KEYNOTES

1 : 20

A1 WIND DUCT OCCLUSION STYLE

B1 INSTALLATION STYLE OF WIND DUCT IN EXTERNAL WALL

D1 WIND DUCT HANGER

D3 WIND DUCT REINFORCING MEMBER

B3 RECTANGULAR WIND DUCT CONNECTION IN FLANGE

A3 FLEXIBLE JOINT CANVAS CONNECTION

GENERAL SHEET NOTES

PROJECT LOGO

REFERENCE KEYNOTES

SHEET KEYNOTES

MARK DATE DESCRIPTION

D1 : 20

D3 : 20

A1 : 20

B3 : 20

A3 : 20

INSERT VIBRATION ISOLATION HANGER

EXPANSION ANCHOR

SPRING WASHER NUT

LONG NUT

HANGER ROD

STEEL ANGLE

WIN DUCT OCCLUSION STYLE

INSTALLATION STYLE OF WIND DUCT IN EXTERNAL WALL

REFERENCES
### E-001 - ELECTRICAL SYMBOLS AND NOTES

#### SYMBOLS

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<td>WP</td>
<td>CHINESE STANDARD DOUBLE SOCKET-OUTLET INSERT, 2-POLE/3-POLE</td>
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<tr>
<td>GFCI</td>
<td>CHINESE STANDARD SPLASHED-PROOF SOCKET</td>
</tr>
<tr>
<td>3</td>
<td>CHINESE STANDARD PROTECTED OUTDOOR SOCKET</td>
</tr>
<tr>
<td>MEB</td>
<td>CHINESE STANDARD PROTECTED SOCKET WITH SWITCH</td>
</tr>
<tr>
<td>LEB</td>
<td>LIGHTING SWITCH</td>
</tr>
<tr>
<td>MEB</td>
<td>EQUIVALENT POTENTIAL TERMINAL BOX (MEB)</td>
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<tr>
<td>LEB</td>
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#### ABBREVIATIONS

- LR - LIVING ROOM
- BR - BEDROOM
- RR - RESTROOM
- MR - MECHANICAL ROOM
- BD - BACK DOOR
- KC - KITCHEN
- HMI - HUMAN MACHINE INTERFACE
- CB - CONTROL BOX
- DB - DISTRIBUTION BOX
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGI XXA" in each branch circuit "WC X".
2. Receptacles are all tamper-resistant.
3. Lamps for all light fixtures are LED source.
4. All exterior receptacles are Chinese standard protected outdoor sockets from Schneider Electric with the feature of weather-resistant.
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIKXXA" in each branch circuit "WC X".

2. Receptacles are all tamper-resistant.

3. Lamps for all light fixtures are LED source.

Solar Panels *21
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGI" in each branch circuit "WC X".
2. Receptacles are all tamper-resistant.
3. Lamps for all light fixtures are LED sources.
1. AFCI PROTECTION FOR BRANCH CIRCUITS WOULD BE EXECUTED BY CIRCUIT BREAKERS MARKED "DPNVIGI XXA" IN EACH BRANCH CIRCUIT "WC X".

2. RECEPTACLES ARE ALL TAMPER-RESISTANT.

3. LAMPS FOR ALL LIGHT FIXTURES ARE LED SOURCE.
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGI XXA" in each branch circuit "WC X".
2. Receptacles are all tamper-resistant.
3. Lamps for all light fixtures are LED source.
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGXXA" in each branch circuit "WC X".

2. Receptacles are all tamper-resistant.

3. Lamps for all light fixtures are LED source.
PV SYSTEM SECTION 1

PV SYSTEM SECTION 2

REFERENCE KEYNOTES

05 31 00.B0 METAL DECK
08 12 13.13 STANDARD HOLLOW METAL FRAMES
08 12 19 STAINLESS-STEEL FRAMES
08 45 13 STRUCTURED-POLYCARBONATE-PANEL ASSEMBLIES
26 31 00 PHOTOVOLTAIC COLLECTORS

SHEET KEYNOTES

1. AFCI PROTECTION FOR BRANCH CIRCUITS WOULD BE EXECUTED BY CIRCUIT BREAKERS MARKED "DPNVIGI XXA" IN EACH BRANCH CIRCUIT "WC X".
2. RECEPTACLES ARE ALL TAMPER-RESISTANT.
3. LAMPS FOR ALL LIGHT FIXTURES ARE LED SOURCE.
DATA LOGGER ENCLOSURE

METER HOUSING

ORGANIZER ENCLOSURE
1. AFCI PROTECTION FOR BRANCH CIRCUITS WOULD BE EXECUTED BY CIRCUIT BREAKERS MARKED "DPNVIGI XXA" IN EACH BRANCH CIRCUIT "WC X".
2. RECEPTACLES ARE ALL TAMPER-RESISTANT.
3. LAMPS FOR ALL LIGHT FIXTURES ARE LED SOURCE.
**Main Equipments and Materials in PV System**

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<td>MCB 50 MULTI-CIRCUIT MONITORING UNIT</td>
<td>SCHNEIDER-ELECTRIC</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>100X100X5 HOT DIP GALVANIZED STEEL PLATE</td>
<td>SCHNEIDER-ELECTRIC</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>25X4 HOT DIP GALVANIZED FLAT STEEL</td>
<td>SCHNEIDER-ELECTRIC</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>GROUNDING TEST POINT</td>
<td>TONGJI ARCHITECTURE.C.</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>10X10X100 H/DI GALVANIZED STEEL PLATE</td>
<td>TONGJI ARCHITECTURE.C.</td>
<td>1</td>
</tr>
</tbody>
</table>

**System Description**

- The PV system consists of PV panels, junction boxes, surge protective device boxes, inverters and cables for connection. The system is designed to generate electricity from solar energy.
- The PV panels are designed for flat roof installation. They are installed with a 0° tilt angle to capture maximum solar radiation. The system is designed to meet the energy requirements of the building.
- The electrical system is designed using the following criteria:
  1. IEC 60364-7-712
  2. GB/T 19939-2005

**Calculation for 1 House**

- **General Lighting Load:**
  - Total general load: 21,000W
  - Subtotal: 21,000W
- **System Load for Service:**
  - Distributor: 20,500W (per 150X-A (penny rating))
- **Distributor Load for Neutree:**
  - Current: 12,430A
  - Voltage: 380V

**CIRCUITS AND CONDUIT SIZE**

<table>
<thead>
<tr>
<th>CIRCUITS</th>
<th>CONDUIT SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WC1</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC2</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC3</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC4</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC5</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC6</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC7</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC8</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC9</td>
<td>BV-2x2.5+PVC</td>
</tr>
<tr>
<td>WC10</td>
<td>BV-2x2.5+PVC</td>
</tr>
</tbody>
</table>

**WIRE & CONDUIT SIZE**

- **Electric Meter:**
  - SCHNEIDER-ELECTRIC
- **Current Transformer:**
  - SCHNEIDER-ELECTRIC
- **Multi-Circuit Monitoring Unit:**
  - SCHNEIDER-ELECTRIC
- **Surge Protection Device Box:**
  - SCHNEIDER-ELECTRIC
- **Inverter:**
  - SCHNEIDER-ELECTRIC
- **PV Panel:**
  - SANYO HIT-205__200_DNKHE1SANYO
- **Junction Box:**
  - SANYO
- **Inverter:**
  - SMA
GENERAL SHEET NOTES

1. AFCI PROTECTION FOR BRANCH CIRCUITS WOULD BE EXECUTED BY CIRCUIT BREAKERS MARKED "DPNVIGI XXA" IN EACH BRANCH CIRCUIT "WC X".

2. RECEPTACLES ARE ALL TAMPER-RESISTANT.

3. LAMPS FOR ALL LIGHT FIXTURES ARE LED SOURCE.

REFERENCE KEYNOTES

SHEET KEYNOTES

PROJECT LOGO

TEAM NAME:
FANTASTIC ARCHITECTURE
AMAZING ENGINEERS
PERFECT LANDSCAPING
SAFETY FIRST CODE CONSULTANTS

CLIENT:
U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2011
WWW.SOLARDECATHLON.GOV

MARK DATE DESCRIPTION

NONE: PROJECT IS PUBLIC DOMAIN

E-601 ONE-LINE DIAGRAM

PRODUCED BY AN AUTODESK STUDENT PRODUCT
1. Notes:
   - Uo = 240Vac ± 10/-15%  (f = 60±0.5Hz)
   - We think 150 amp from the microgrid is unnecessary for us as our maximum current is less than 40 amp.

2. Block diode is necessary to prevent short current.

3. System description:
   - xsm1, qj; Photovoltaic System

4. The electrical system is designed using the following criteria:
   - sm1.5, qj;
   - (1) The US 2008 National Electrical Code (NEC) is used for the project manual.
   - 2.1.1 and 2.2.
   - We think 30 amp from the microgrid is unnecessary for us as our maximum current is less than 40 amp.

5. According to NEC 690.8: 8000(W) ÷ 240(V) × 1.25 = 41.67(A); We adjust conductor size from BVR-3*6(mm²) to BVR-3*10(mm²).

6. Details please refer to project manual.

7. We think 150 amp from the microgrid is unnecessary for us as our maximum current is less than 40 amp.

8. 60 Hz AC Disconnect & Distribution Panel

9. According to NEC 690.8: We adjust conductor size from BVR-3*6(mm²) to BVR-3*10(mm²).

10. The SMA SB 8000-US does have L1, L2 and PV modules, three wires plus PE for the 240 volt AC output. It is shown in E-602.

11. No switch or breaker is the neutral conductor anymore.

12. The SMA SB 8000-US generator PV generator PV modules.

For details please refer to relevant documentation (Construction specification)
PV System Three-Line Diagram

System Description:
Photovoltaic System consists of PV panels, PV Junction Box, surge protective devices, Inverter and cables for connection. PV panels are designed to be placed on three flat roofs. PV panels collect solar energy with zero solar angle. Under the PV panels, there are ventilation channels with the height of 598mm for air ventilation. Surplus heat accumulated behind PV panels will be taken away by air ventilation in channels and will be released outdoors.

The electrical system is designed using the following criteria:
(1) IEC60364-7-712
(2) Blocking diode: U=1000 V; I=10 A
(3) PV string cable: Solar cable, 4 mm (copper) Double insulation connector is compatible with MC4 plug.
(4) The cable insulator voltage: 1000 V
(5) Color of conductor:
  - Line N & Line N1 & Line N2: Light blue
  - Line L & Line L1 & Line L2: Brown
  - PV Cable: Black

Notes:
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGI XXA" in each branch circuit "WC X".
2. Receptacles are all tamper-resistant.
3. Lamps for all light fixtures are LED source.
1. AFCI protection for branch circuits would be executed by circuit breakers marked "DPNVIGI XXA" in each branch circuit "WC X".

2. Receptacles are all tamper-resistant.

3. Lamps for all light fixtures are LED source.
1. After a preliminary calculation, it is noted that solar collector tubes raise to 4 groups, instead of 2 groups.
2. Photovoltaic panels increased to 36 pieces.
3. The MEP model is different from the ARCHITECTURE model on the roof, because energy system—solar collectors and solar panels—is still under adjusting and will update the ARCHITECTURE model in accordance with the MEP model as soon as possible.
4. The details of PV system please refer to the "Interconnection application form" in the project manual.
1. AFCI protection for branch circuits would be executed by circuit breakers marked “DPNVIGI XXA” in each branch circuit “WC X”.

2. Receptacles are all tamper-resistant.

3. Lamps for all light fixtures are LED source.
1. AFCI PROTECTION FOR BRANCH CIRCUITS WOULD BE EXECUTED BY CIRCUIT BREAKERS MARKED "DPNVIGI XXA" IN EACH BRANCH CIRCUIT "WC X".
2. RECEPTACLES ARE ALL TAMPER-RESISTANT.
3. LAMPS FOR ALL LIGHT FIXTURES ARE LED SOURCE.
CONTENT

T-001 - TELECOMMUNICATIONS SYMBOLS AND NOTES
T-101 - TELECOMMUNICATIONS WIRING PLAN
T-601 - SCHEMATIC DIAGRAM

ABBREVIATE
LR - LIVING ROOM
BR - BEDROOM
RR - RESTROOM
MR - MECHANICAL ROOM
BD - BACK DOOR
KC - KITCHEN
HMI - HUMAN MACHINE INTERFACE
CB - CONTROL BOX
DB - DISTRIBUTION BOX
1. Telecommunications plan consists of HMI and the measurement of CO2, temperature, and humidity.
2. The wiring interface of HMI, RJ45 interface, is located in the kitchen, and the ones of CO2, temperature, and humidity are located on the wall of the living room and bedroom.
3. The location of wiring interfaces in the drawing is the primary plan for telecommunications appliances.
1. TELECOMMUNICATION PLAN CONSISTS OF HMI AND THE MEASUREMENT OF CO2, TEMPERATURE AND HUMIDITY.
2. THE WIRING INTERFACE OF HMI, RJ45 INTERFACE, IS LOCATED IN THE KITCHEN AND THE ONES OF CO2, TEMPERATURE AND HUMIDITY ARE LOCATED ON THE WALL OF LIVING ROOM AND BEDROOM.
3. THE LOCATION OF WIRING INTERFACES IN THE DRAWING IS PRIMARY PLAN FOR TELECOMUNICATION APPLIANCES.
SHANGHAI
WASHINGTON DC
NEW YORK PORT
YANGSHAN PORT

438 MILES/6-7 HOURS DRIVING
111 MILES/1-2 HOURS DRIVING

PANAMA CANAL
32-34 DAYS OVERSEAS SHIPPING

REFERENCE KEYNOTES

GENERAL SHEET NOTES

STEP 1: JUL 9TH-12TH (3 DAYS), LOAD HOUSES COMPONENTS TO CONTAINERS, TRANSPORT TO YANGSHAN PORT

STEP 2: JUL 13TH-15TH (3 DAYS), PASS CHINA CUSTOMS, HOST TO THE SHIP

STEP 3: JUL 16TH-17TH (2 DAYS), OVERSEA SHIPPING

STEP 4: AUG 1ST-2ND (10 DAYS), PASS USA CUSTOMS, HOST TO THE TRAILERS

STEP 5: SEP 3RD-4TH (6-7 HOURS), TRANSPORT TO WASHINGTON DC.

REFERENCE KEYNOTES

Sheets:

ARRIVAL SEQUENCE
PLANS

O-101

TRANSPORT ROUT
TRANSPORTATION METHOD

3MM RUBBER WATERPROOF STRIP
4MM PROFILED STEEL SHEET
BOLTS ON EVERY SIDE

SHANGHAI
MODULE 2

ON THE ROAD
WASHIONTON DC

ON THE ROAD

CONTAINER 1
CONTAINER 2
CONTAINER 3

3MM RUBBER WATERPROOF STRIP
4MM PROFILED STEEL SHEET
BOLTS ON EVERY SIDE

113
DECATHLETE WAY

TENT FOR TOOLS & REST

AREA FOR FORKLIFT TO TURN AROUND

TEMPORARY STORAGE

CONSTRUCTION PATH FOR FORKLIFT

临时储藏

临时施工通道

DECATHLETE WAY

CALG

GHENT

UMD

1: 1

OPERATION PLAN

PRODUCED BY AN AUTODESK STUDENT PRODUCT
Day 4
Stand-alone assembly (24 hours)

Step 11: Bring in and unload ventilation pipes/Radiant heating floor.
Step 12: Install ventilation pipes indoors.
Step 13: Install ceiling and wallpaper.
Step 14: Debug.

Day 5
Stand-alone assembly (midnight - 8 A.M.)

Step 11: Bring in and unload ventilation pipes/Radiant heating floor.
Step 12: Install ventilation pipes indoors.
Step 13: Install ceiling and wallpaper.
Step 14: Install plumbing/electrical/ac systems.
Step 15: Install landscape components disposal exhibition.

Day 6
Debug

Day 7
Stand-alone grid-tie assembly (24 hours)

Step 11: Bring in and unload ventilation pipes/Radiant heating floor.
Step 12: Install ventilation pipes indoors.
Step 13: Install ceiling and wallpaper.
Step 14: Install plumbing/electrical/ac systems.
Step 15: Install landscape components disposal exhibition.
Step 16: Remove the rest/tools/ tent clean up.
STEP 1  DISASSEMBLE FURNITURES
DISASSEMBLE CONNECTIONS
DISASSEMBLE FACADE COMPONENTS
DISASSEMBLE THERMAL-COLLECTING TUBES

STEP 2   DISASSEMBLE PV PANELS
DISASSEMBLE CONNECTIONS INDOOR/CEILING/WALL PAPER

STEP 3  DISASSEMBLE PLUMBING/ELECTRICAL/AC SYSTEMS

STEP 4  SET UP THE CRANE
DISASSEMBLE DECKS
CONTINUING DISASSEMBLE PLUMBING/ELECTRICAL/AC SYSTEMS

STEP 5  DISASSEMBLE DECKS
AND SEAT OUTDOOR
DISASSEMBLE ECOLOGICAL POND/WATER TANKS/WATER MODULES

STEP 6  DISASSEMBLE BASES/BEAMS/WOOD BLOCKS OUTDOOR
DISASSEMBLE GLASS AND OTHER COMPONENTS OF THE TRIANGLE ROOF
DISASSEMBLE RADIANT HEATING FLOOR OF CENTER AREA

STEP 7   HOIST THE FRAME OF TRIANGLE ROOF
HOIST HOUSE MODULES

STEP 8  HOIST HOUSE MODULES
DISASSEMBLE BASES/BEAMS/WOOD BLOCKS INDOOR

STEP 9  REMOVE THE CRANE
CLEAN THE LOT

STEP 2  DISASSEMBLE PV PANELS
DISASSEMBLE CONNECTIONS INDOOR/CEILING/WALL PAPER

DAY 2
DISASSEMBLY (24 HOURS)
WATER REMOVAL (8 A.M. - 6 P.M.)

DAY 3
DISASSEMBLY (24 HOURS)

DAY 4
DISASSEMBLY (24 HOURS)

DISASSEMBLY SCHEDULE

TEAM NAME:
ADDRESS:
CONTACT:

TONGJI UNIVERSITY SIPING ROAD
YANGPU SHANGHAI
CHINA

SHEET TITLE
LOT NUMBER:
DRAWN BY:
CHECKED BY:
COPYRIGHT:

U.S. DEPARTMENT OF ENERGY
SOLAR DECATHLON 2011
WWW.SOLARDECATHLON.GOV

TEAM NAME:
ADDRESS:
CONTACT:

FANTASTIC ARCHITECTURE
CONSULTANTS
AMAZING ENGINEERS
PERFECT LANDSCAPING
SAFETY FIRST CODE CONSULTANTS

DISASSEMBLY SCHEDULE

HEET KEYNOTES
REFERENCE KEYNOTES
GENERAL SHEET NOTES

DISASSEMBLY SCHEDULE

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