As Built Drawings Celcius
Solar Decathlon 2020
Team Celcius
68 m²
732 SF
**General**

All materials, workmanship, design and construction shall conform to the drawings, specifications, the building code, or eurocode criteria, per structural calculations document.

**Design loads**

- **Roof permanent load**: 0.45 kN/m²
- **Floor permanent load**: 0.45 kN/m²
- **Wall permanent load**: 2.0 kN/m²
- **Floor live load**: 2.0 kN/m²
- **Snow load**: 0.70 kN/m²
- **Wind speed**: 40.3 m/s

**Standards**

- **NEN-EN-1990** - Foundations for structural design
- **NEN-EN1991-1-1** - Volumic weights and imposed loads on buildings
- **NEN-EN1991-1-3** - Snowload
- **NEN-EN1991-1-4** - Wind
- **National Annex** - NEN
- **Consequence class** - CC2

**Steel**

The steel substructure consists is used for transportation purposes. Steel is conform structural calculations

- Beams:
  - HEA-360
  - HEA-180
  - HEA-320 (console)

**Wood**

The columns and beam are made out of the Suteki Wood System. There are two types of connectors used. S-3A connectors are used to connect beams to each other. HD-H6 is used to connect a column to a beam.

- **Wood strength class**: GL32H
- **Suteki Beams**: 120x280 mm
- **Suteki columns**: 120x120 mm

The roof and floor consist of FINN-Joists covered by OSB and plywood. Plating is screwed by 8x50 mm (or similar) lag screws. Differences in used screws have to be discussed with the team.
Steel structure framing plan

1 : 25

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2020 Build Challenge

Project number: 94-83
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          3584CJ Utrecht
Date: 04-01-2021
Client: Solar Decathlon
Company: Celcius HU
Project phase: Final Build

Drawing information
Title: Steel structure framing plan
Scale: 1 : 25
Sheet no.: 01-01
Status: Final Build
Sheet size: A3
Check: Calculations

Additional information
Suteki column plan
1:25

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Title: Suteki column plan

Additional information

Sheet: 1 of 1
Date: 11/02/19
Sheet size: ANSI D
Drawn by: Jelle van Rossum
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Project number: 01-01
Project phase: As-Built
Check: Calculations.
These walls provide the connections between the Suteki columns, that way the stability of the structure is maintained.

Wall framing plan
1 : 25
Structural section 1
1:25

Structural section 2
1:25

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Project number: 01-01
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Drawing information
Title: Structural sections
Scale: 1:25
Date: 11/02/19
Software: AutoCAD
Sheet size: A0
Status: Finished

Additional information:
Drawn by: Jelle van Rossum
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Facade structure:
- OSB 18mm
- Woodfiber insulation 240mm
- DWD agepan black 16mm
- Rabat slat 27mm
- Swedish rabat 20mm

Floor structure:
- Click PVC
- Underlayment 18mm
- OSB 18mm
- Woodfiber insulation 240mm
- DWD agepan black 16mm
Architectural isometric North view
Facade panels

- Facade panel
- Facade panel with window
- Facade panel with door
- Facade panel with opening
- Facade panel corner

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Project number: 01-01
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Client: Solar Decathlon

Sheet: 01-01
Date: 12/03/19
Sheet size: ANSI D

Checks: U.S. Department of Energy

Client: Solar Decathlon

Drawing information

Title: Facade panels
Sheet: 01-001
Date: 12/03/19
Sheet size: ANSI D

Additional information:

Facade panel
Facade panel with window
Facade panel with door
Facade panel with opening
Facade panel corner
Floor and roof panels

Floor panel

Roof panel

Ledge panel

Ledge corner panel
Wall panel overview

Wall panel with window
Wall panel with front door
Wall panel corner
Wall Facade with opening for ventilation unit

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Additional information
Ledge panels overview
1:25
Architectural isometric exploded view
Roofslope 16mm/m

Roof plan

1 : 25

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Roof plan
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Project number: 61-B3
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Client: Solar Decathlon

Sheet: 1 \- 25
Scale: 1 : 25

Status: Finished
Additional information

Title: Elevations
Drawing information
Sheet: 1 \- 25
Drawing number: 61-B3
View: AS\-Build
Detail: West elevation

South elevation
1 : 25

West elevation
1 : 25

South elevation
West elevation

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Detail overview floorplan

1 : 25
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Title: Detail H01 connection facade panel

Facade structure:
- Swedish rabat 20mm
- Rabat slat 27mm
- Woodfiber insulation 240mm
- DWD agepan black 16mm
- French cleat
- Okoume plywood 16mm
- Butyl airseal tape

Butyl airseal tape
Subki column 120x120mm

Additional information
Detail H03 connection facade panel corner

- French cleath 22 mm
- Rabat corner piece
- Suteki beam 120x120 mm
- Butyl airseal tape
- Butyl airseal
- Celdex airseal
- 0.6" 18 240
- 0.7" 18 240
- 9.4" 240
- 1.8" 45
Detail H04 connection facade panel with door

- Butyl airseal tape
- Suteki beam 120x120 mm
- Celdex airseal
- Butyl airseal tape
- Pinewood beam 45x45
- Pinewood slat
- Pineword rabat
- Pineword plate
- French cleat
- Pinewood beam
- Pinewood plate
- Bioderam insulation
- Sudo window
- Semper green wall

Project number: 41-31
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City: Utrecht
Postal code: 3584CJ
Country: Netherlands
Project phase: As Build
U.S. Department of Energy Solar Decathlon 2020 Build Challenge

Sheet size: ANSI D
Sheet: 1-5
Date: 01-01-2020
Sheet size: A0/D
Sheet: Rowin van Schaik
Sheet: www.celciushu.nl
Sheet: celcius@hu.nl
Detail H05 connection interior walls

Flax core
Plasterboard with vinyl finish

0' - 2 1/2"

Wiring channel

Plywood Spring

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Solar Decathlon
Bolognalaan 101
3584CJ Utrecht

Project phase: As Build

As Drawn	1:5
Sheet: Detail H05
Sheet size: 8.5 X 14

Additional information
Detail H06 interior doors

- Door
- Prefab door framing
- Multiplex slat
- Suteki beam 120x120 mm
- Pinewood finishing plate
- French cleat
- Pinewood beam
- Pinewood finishing plate
- Bio-based insulation
- Butyl airseal tape
- Faay VP70 wall
- Door Celdex airseal
- Butyl airseal tape
Detail H07 connection interior walls corner

- Wiring channel
- Faay VP70
- Plywood spring

Prefab door framing
Multiplex slab

Door
Detail H08 connection interior walls inside corner
Detail H09 connection interior walls to facade panel

Faay VP35
Faay VP54
Pinewood plate
Biobased insulation
DWD-agepan
Swedish rabat

Rabat slat
1 – just
Pinewood beam
Detail H10 connection interior wall suteki column
Detail V01 connection roof top

- Gravel for mass
- EPDM rubber
- Sloping insulation
- Underlayment plate
- Pinewood plate
- Biobased insulation
- DWD agepan
- Rabat slat
- Swedish rabat
- Aluminium edging strip
- Mastic
- Bolt M12
- Composite bracket
- Butyl alread tape
- Composite bracket
- Pinewood plate
- Pinewood beam
- Biobased insulation
- DWD agapan
- Rabat slot
- Swedish rabat
- Suteki beam 120x280 mm
- Celdex airseal
- Butyl airseal tape
- FAAY VP54
- Bolt M12

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Drawing information
Title: Detail V01 connection roof top
Sheet: 1/2
Scale: 1:5
Date: 2020-03-20
Sheet size: A0 (0) S/C

Additional information
Detail V02 connection floor
Detail V03 connection interior walls roof

- Pinewood beam
- Compost bracket
- Plywood
- Suteki beam 120x280
- Celdex airseal

PROJECT NUMBER:

DRAWING INFORMATION:
- Title: Detail V03 connection interior walls roof
- Sheet: 4-07
- Scale: 1:10
- Date: 2020-08-30
- Sheet size: A0 0.5
- Status: Final

ADDITIONAL INFORMATION:
- U.S. Department of Energy Solar Decathlon 2020 Build Challenge
- Company: Celcius HU
- Contact: celcius@hu.nl
- Website: www.celciushu.nl
- Address: Bolognalaan 101, 3584CJ Utrecht
- Client: Solar Decathlon
- Project phase: As-Built
- Check: ANSI D

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Solar Decathlon
Bolognalaan 101
3584CJ Utrecht

Finished
As-Build

Detail V03 connection interior walls roof
Detail V04 connection interior walls floor

- Click PVC
- Underlayment plate
- Pinewood plate
- Bio-based insulation
- DWD agepan
- Butyl airseal tape
- Cellies airseal
- Pinewood beam
- Composed bracket
- Plywood
- Suteki beam 120x280
- Steel construction beam

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Detail V04 connection interior walls floor
Detail V05 connection roof panels

Aluminium edging strip
Gravel
EPDM rubber
Sloped insulation
Underlayment plate
DWD agepan
Biobased insulation
Pinewood plate

Solar panels
Plywood
Celotex arisedal
Subeki beam 120x280 mm
Composite bracket
Pinewood beam 45x45
Butyl arisedal tape
Composite bracket
Suspended ceiling
Filt ceiling

Bolt M12
Detail V06 connection floor panels

Click PVC
Underlayment plate
Pinewood plate
Birchwood insulation
DVD agapan

Suteki column 120x120
Plywood
Composite bracket
Butyl airseal tape
Suteki beam 120x280
Pinewood beam 45x45
Steel construction beam

Suteki colomn 120x120
Plywood
Composit bracket
Butyl airseal tape
Suteki beam 120x280
Pinewood beam 45x45
Steel construction beam

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Additional information
Detail V08 connection window top

- Sun blinds
- HR++ glass
- Wooden frame
- Pinewood plate
- Biobased insulation
- DWD agepan
- Rabat slat
- Swedish rabat
- Suspended ceiling
- Composit bracket
- Pinewood beam 45x45
- Pinewood plate
- Pinewood plate
- 8,0”
- 203
- 2,2”
- 55
- 13,8”
- 350
- 0,6”
- 16
- 9,4”
- 240
- 0,7”
- 18
- 203
- 0,7”
- 18
- 203
- 0,7”
- 18

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Detail V08 connection window top

Additional information

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Status: Finished
As-Built

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Detail V08 connection window top

Additional information

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Address: Bolognalaan 101 3584CJ Utrecht
Status: Finished
As-Built
Detail V10 connection door top

Pinewood plate
Biobased insulation
DWD epoxan
Rabat slot
Swedish rabat

Pinewood plate
HR++ glass
Pinewood plate
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Title: HVAC Isometric

Scale: M-100

Date: 12/03/19

Drawing Information

Title: HVAC Isometric

Scale: M-100

Date: 12/03/19

Sheet: M-100

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Check:
Wiring diagram: Celcius
Wiring diagram: Celcius

Bathroom, fridge, and TR Outlets, lighting, and Supply

Bathroom toilet

Kitchen dishwasher

Reserve

Livingroom and bedroom outlets

Technical room ventilation

Kitchen washing machine/Dryer

Oven
## Group numbering

<table>
<thead>
<tr>
<th>Breaker code</th>
<th>Group</th>
<th>Name</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1F1</td>
<td>Group 9</td>
<td>Main breaker</td>
<td>Transformer solar panels</td>
</tr>
<tr>
<td>1F2</td>
<td>Group 10</td>
<td>Car charger</td>
<td></td>
</tr>
<tr>
<td>1F4</td>
<td>Group 8</td>
<td>Cooking plate with oven</td>
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<tr>
<td>1F5</td>
<td>Group 9</td>
<td>Heat pump (380V)</td>
<td></td>
</tr>
<tr>
<td>2F1</td>
<td>Group 1</td>
<td>Earth fault breaker 2F1.1 till 2F4</td>
<td>Bathroom, fridge, and TN, Outlets, lighting, and Supply</td>
</tr>
<tr>
<td>2F1.1</td>
<td>Group 2</td>
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<td></td>
</tr>
<tr>
<td>2F2</td>
<td>Group 5</td>
<td>Bathroom toilet</td>
<td></td>
</tr>
<tr>
<td>2F3</td>
<td>Group 9</td>
<td>Kitchen dishwasher</td>
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</tr>
<tr>
<td>2F4</td>
<td>Group 1</td>
<td>Reserve</td>
<td></td>
</tr>
<tr>
<td>2F5</td>
<td>Group 1</td>
<td>Earth fault breaker 2F5.1 till 2F8</td>
<td>Living room and bedroom outlets</td>
</tr>
<tr>
<td>2F5.1</td>
<td>Group 3</td>
<td></td>
<td>Technical room ventilation</td>
</tr>
<tr>
<td>2F6</td>
<td>Group 7</td>
<td>Kitchen washing machine/Dryer</td>
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</tr>
<tr>
<td>2F8</td>
<td>Group 1</td>
<td>Reserve</td>
<td></td>
</tr>
</tbody>
</table>
U.S. Department of Energy Solar Decathlon 2020 Build Challenge

Project number: AS-01
Name: CelciusHU
Contact: celcius@hu.nl
Website: www.celciushu.nl
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Client: Solar Decathlon
Company: Delivertable

Additional information

Drawing information

Sheet: 01.01
Sheet size: 02/12/20
Scale: 01/03

Title: Staging inside

Drawn by: Mike Zuydendorp
Check:
Transportation frame isometric