



CONSTRUCTION DOCUMENTATION DRAWING

Deliverable #4
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National Chiao Tung University

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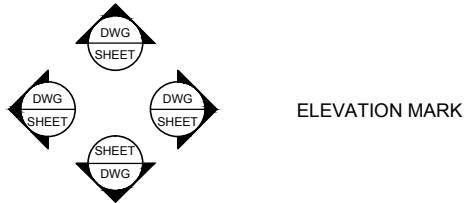
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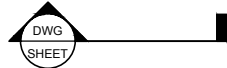
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GENERAL SYMBOLS



ELEVATION MARK



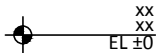
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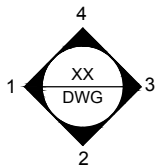
ROOM TAG



GRID NUMBER



ELEVATION MARKER



INTERIOR ELEVATION MARKER



DOOR TAG



WINDOW TAG



RECESSED DN LIGHT



WATERPROOF RECESSED DN LIGHT



SPRINKLER



SMOKE DETECTOR



SMOKE ALARM



FIRE EXTINGUISHER



EXIST SIGN



EXIST DIRECTION



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GENERAL SYMBOLS	
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GENERAL ABBREVIATIONS

# Pound: OR Number	MAX: Maximum
&: And	MO: Masonry Opening
@: At	MECH: Mechanical
ACT: Acoustic Ceiling Tile	MEMBR: Membrane
AD: Area Drain	MIN: Minimum
AFF: Above Finished Floor	MRGWB: Moisture-Resistant Gypsum Wall Board
ALUM: Aluminum	MTL: Metal
ANOD: Anodized	NIC: Not In Contract
BSMT: Basement	NO: Number
BYND: Beyond	NOM: Nominal
BOT: Bottom	OC: On Center
CIP: Cast In Place	OH: Opposite Hand
CHNL: Channel	OZ: Ounce
CJ: Control Joint	PCC: Pre-Cast Concrete
CLG: Ceiling	PLUMB: Plumbing
CLR: Clear	PLYD: Plywood
CMU: Concrete Masonry Unit	PT: Pressure Treated
COL: Column	PNT: Paint or Painted
COMPR: Compressible	PVC: Polyvinyl Chloride
CONC: Concrete	RBR: Rubber
CONT: Continuous	RCP: Reflected Ceiling Plan
CPT: Carpet	RD: Roof Drain
CT: Ceramic Tile	REQD: Required
CTYD: Courtyard	RM: Room
DBL: Double	SIM: Similar
DEMO: Demolish or Demolition	SPEC: Specified OR Specification
DIA: Diameter	SPK: Sprinkler or Speaker
DIM: Dimension	SSTL: Stainless Steel
DIMS: Dimensions	STC: Sound Transmission Coefficient
DN: Down	STL: Steel
DR: Door	STRUCT: Structure or Structural
DWG: Drawing	T&G: Tongue And Groove
EA: Each	TELE: Telephone
EJ: Expansion Joint	TLT: Toilet
EL: Elevation	TO: Top Of
ELEC: Electrical	TOC: Top Of Concrete
ELEV: Elevator or Elevation	TOS: Top Of Steel
EPDM: Ethylene Propylene Diene M-Class (Roofing)	TPD: Toilet Paper Dispenser
EQ: Equal	T/D: Telephone/Data
EXIST: Existing	TYP: Typical
EXP JT: Expansion Joint	UNO: Unless Noted Otherwise
EXT: Exterior	U/S: Underside
FD: Floor Drain or Fire Department	VIF: Verify In Field
FEC: Fire Extinguisher Cabinet	VP: Vision Panel
FIXT: Fixture	W/: With
FLR: Floor	WD: Wood
FM: Filled Metal	
FO: Face Of	
FND: Foundation	
GA: Gauge	
GALV: Galvanized	
GWB: Gypsum Wall Board	
HC: Hollow Core	
HI: High	
HM: Hollow Metal	
HP: High Point	
HR: Hour	
HVAC: Heating, Ventilating, And Air Conditioning	
IRGWB: Impact Resistant Gypsum Wall Board	
ILO: In Lieu Of	
INSUL: Insulated or Insulation	
INT: Interior	
LO: Low	



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GENERAL
ABBREVIATIONS

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Taipei, Taiwan

Population: 2,650,900 P
Area: 271.8 Km²
Density: 9,753 P/Km²



INTRODUCTION

Taiwan is a small, developed island country located on the Tropic of Cancer and mainly mountainous.

Most of the 22 million people of Taiwan live along the coast and as a result, urban areas such as the capital city, Taipei, have extremely high population densities.

Although Taipei is so small a city comparing to other cities, it has well-developed infrastructure and people can enjoy convenient life.

Comparing to other cities which are plain, Taipei has only 45% plat region available for developing. Therefore, Taipei is much more crowded than other cities.

This way of development has caused several problems.
First, Taipei city uses a lot of electricity that is supplied from a factory far outside the city limits.
Second, the numerous high-rises and lack of vegetation create a heat island effect.
Third, the sewage system cannot adequately handle heavy typhoon rains, which also contributes to storm water runoff problems.



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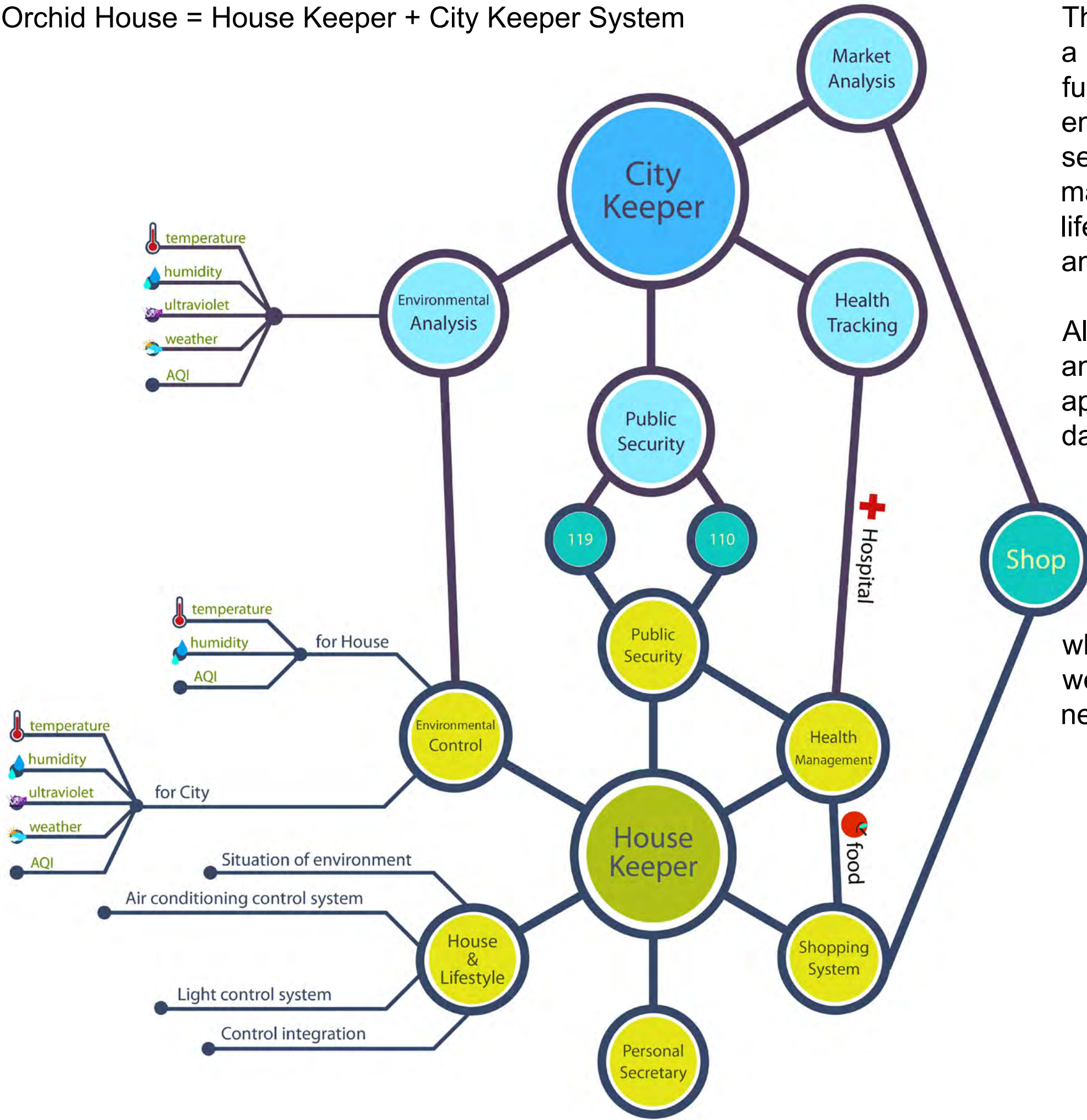
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Urban Project Location	
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Orchid House = House Keeper + City Keeper System



The house keeper system is a basic node including some functions, such as environment control, public security, health management, house and life-style, personal secretary and shopping system.

All the functions will act as an in-house intelligent application and create a database system.

The possibility of solar house prototype is to integrate the nodes and form a city keeper system which is highly well-interweaved in the city network.



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URBAN PROPOSAL
EXPLANATION 1

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GREEN CORE

Green Core serves as the heart/ engine of the Orchid House - it keeps the temperature in balance, provides the exchange of fresh air, and kicks off recycling system for the irrigation of plants. The difference in temperature will be immediately sensible to visible to the one who enters the Orchid House.

Green Core

Thermal Wall

THERMAL WALL

The liquid thermal mass wall on the west side of Orchid House, and it conserves energy and maintains comfortable temperature both day and night.

MECHANICAL ROOM

Mechanical Room serves as the engine/hub of the Orchid House - it is a storage of being dedicated to the mechanical and electrical equipment.

Mechanical Room

Circulation Integrate

CIRCULATION INTEGRATE

Orchid House is targeted to be developed and implemented in the future on rooftops over a great number of existing housing in Taiwan. To integrate the new system with old one is the key point.

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URBAN PROPOSAL
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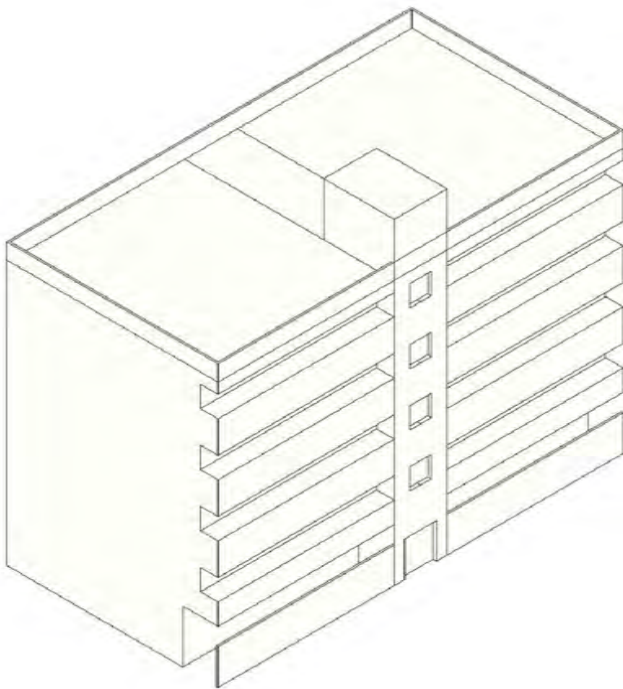
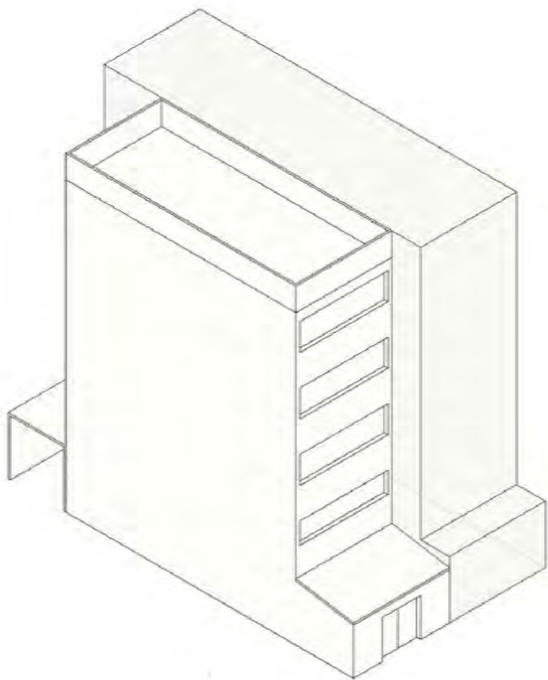
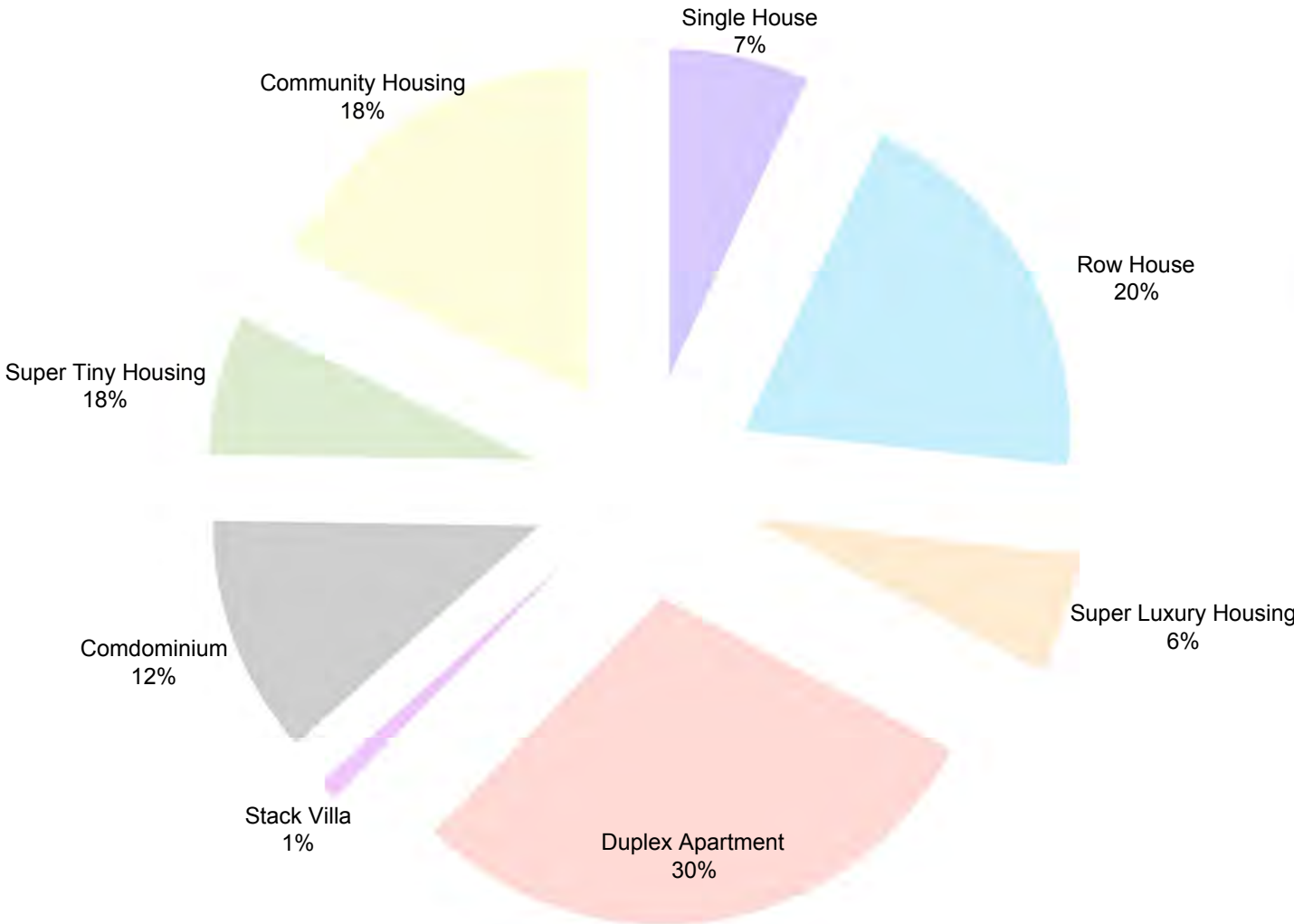
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Taipei Residential Type Analysis



DESCRIPTION

Row House and Duplex Apartment are the most number of Taipei residential building Type. These two types are usually 4 to 5 floor high and the oldest building in Taipei, which are about 20 to 30 years old and facing some following problems:

1. Top floor Leaking
2. Top floor is too hot
3. No Public Facility

Presently, most households live in flat-roofed row houses and duplex apartments, but due to a lack of space, people try to expand their living area by building on their roofs.

The illegal make-shift metal-roofed shelters that result are unregulated and displeasing to the eye. Lastly, social housing projects have fallen to the wayside and do not adequately consider the needs of disadvantaged groups, social justice, and the problems of housing for those with low-income.



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DWG. Title	
EXISTING BUILDING DRAWING AND ANALYSIS	
DWG. No.	PAGE
GE-320	10



Cheap & Light Weight Construction

Rooftop Pavilion

Tiny Alley

Rooftop Extension

Small-Scale Street

Extended Signboard

Steel Bar Window

Rooftop Garden

Extension Canopy



Project:



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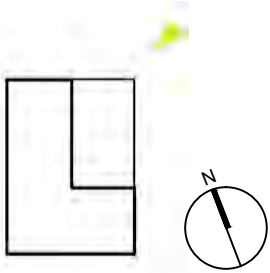
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DWG. Title	
COMPETITION DWELLING	
DWG. No.	PAGE
GE-330	11



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DWG. Title PAVILION EAST SIDE RENDERING	
DWG. No. GE-401	PAGE 12



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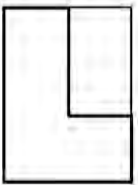
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Unit	-

DWG. Title PAVILION WEST SIDE RENDERING	
DWG. No. GE-402	PAGE 13





Project:



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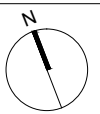
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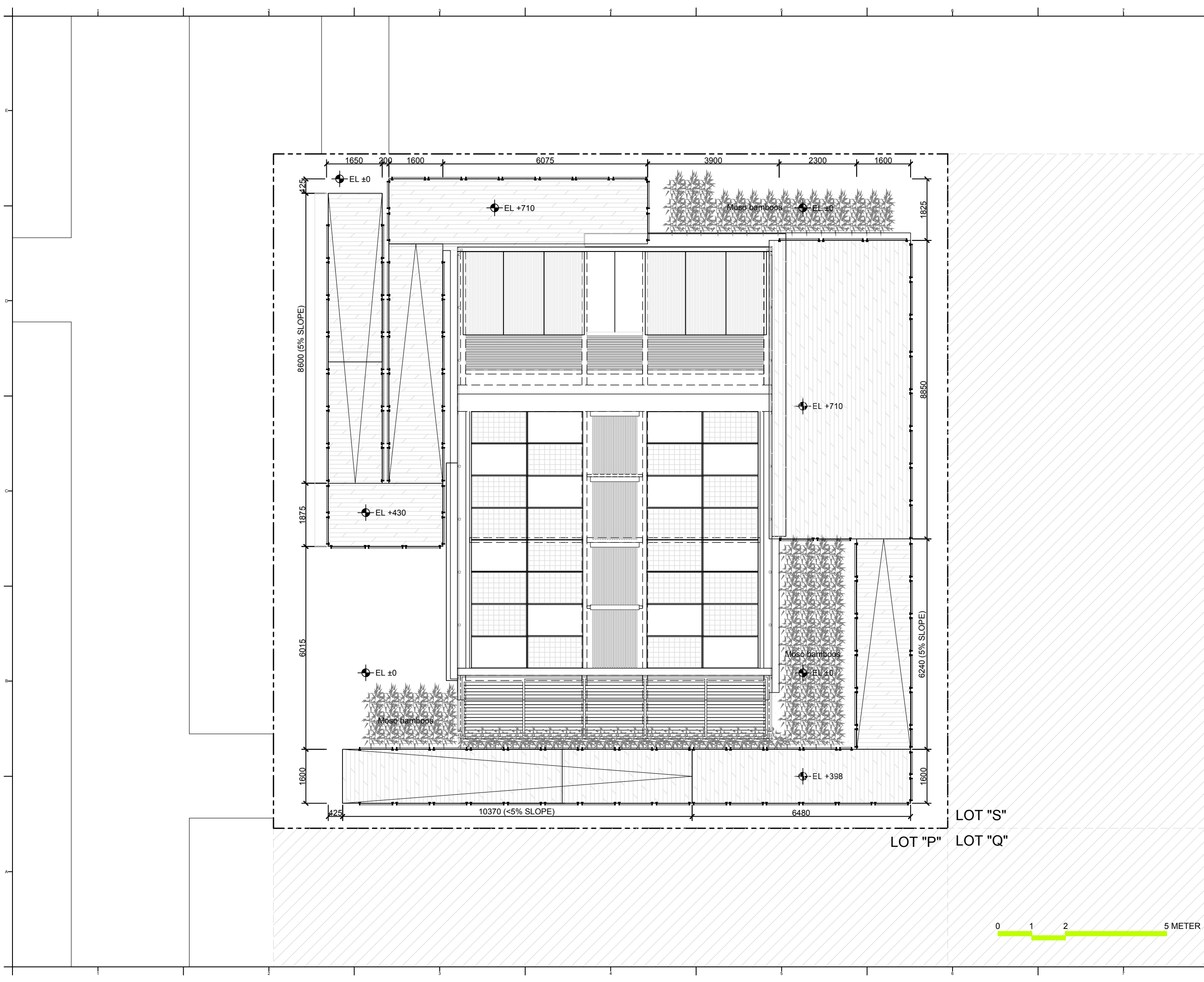
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ST	2014/03/03	CD Submission

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DWG. Title	
SOLAR VILLAGE PLAN	
DWG. No.	PAGE
AR-001	14



Project:



Institution:



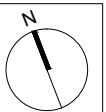
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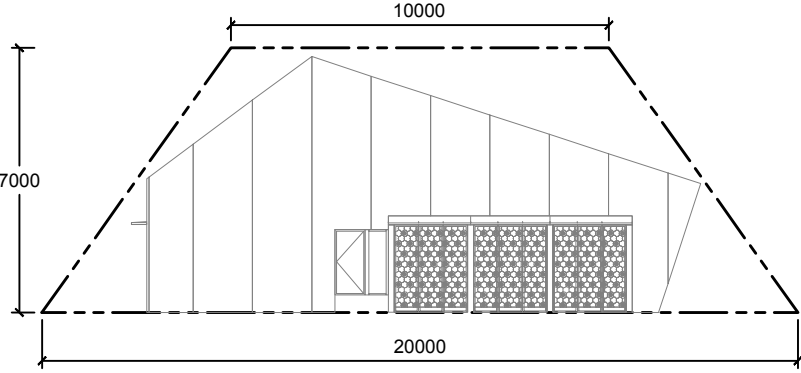
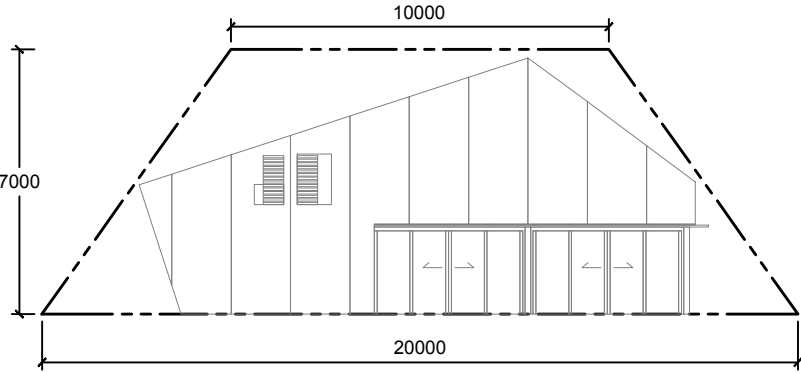
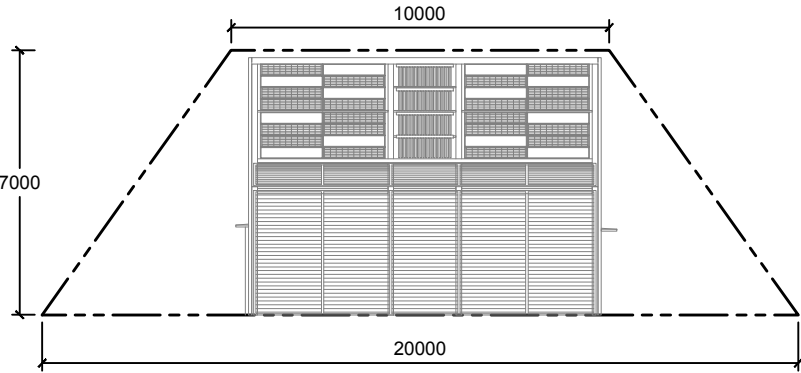
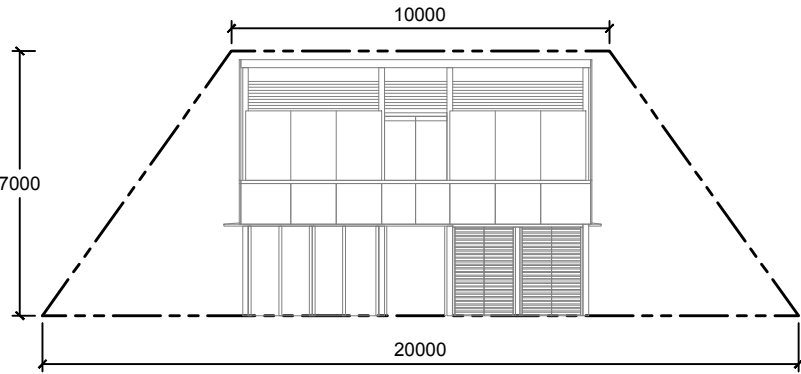
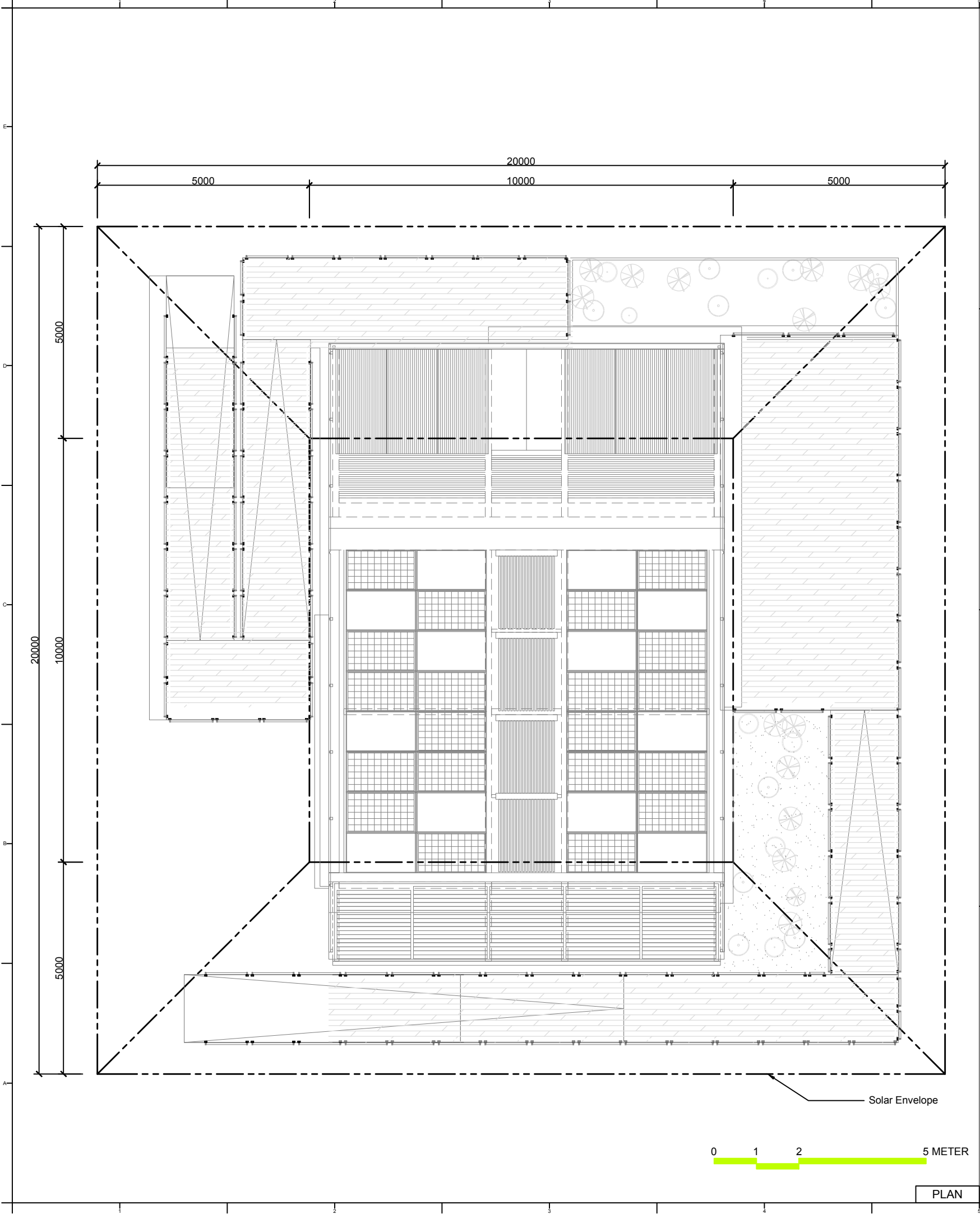
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DWG. Title	
SITE PLAN	
DWG. No.	PAGE
AR-002	15



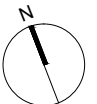
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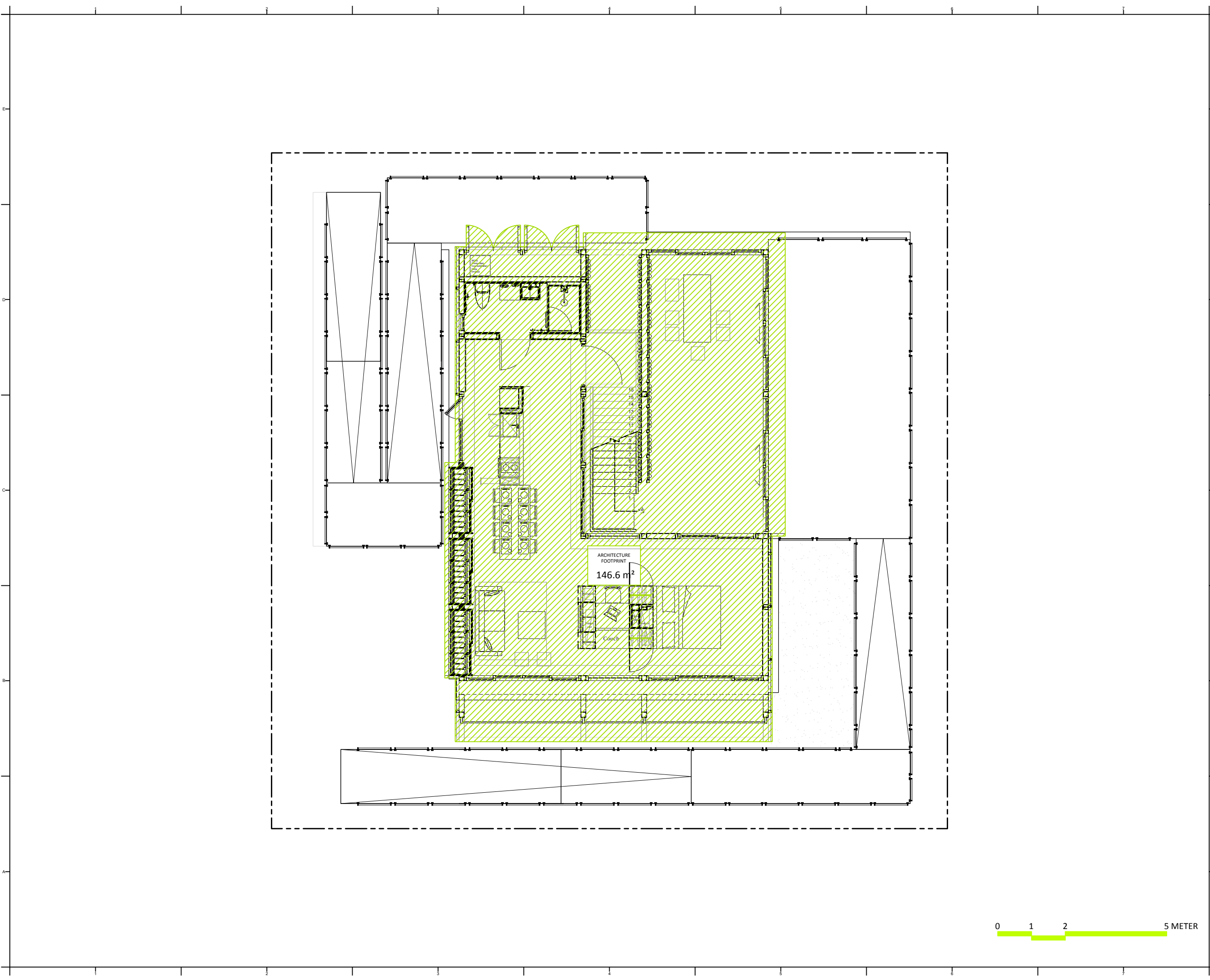
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DWG. Title	
SOLAR ENVELOPE	
DWG. No.	PAGE
AR-011	16



Project:



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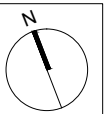
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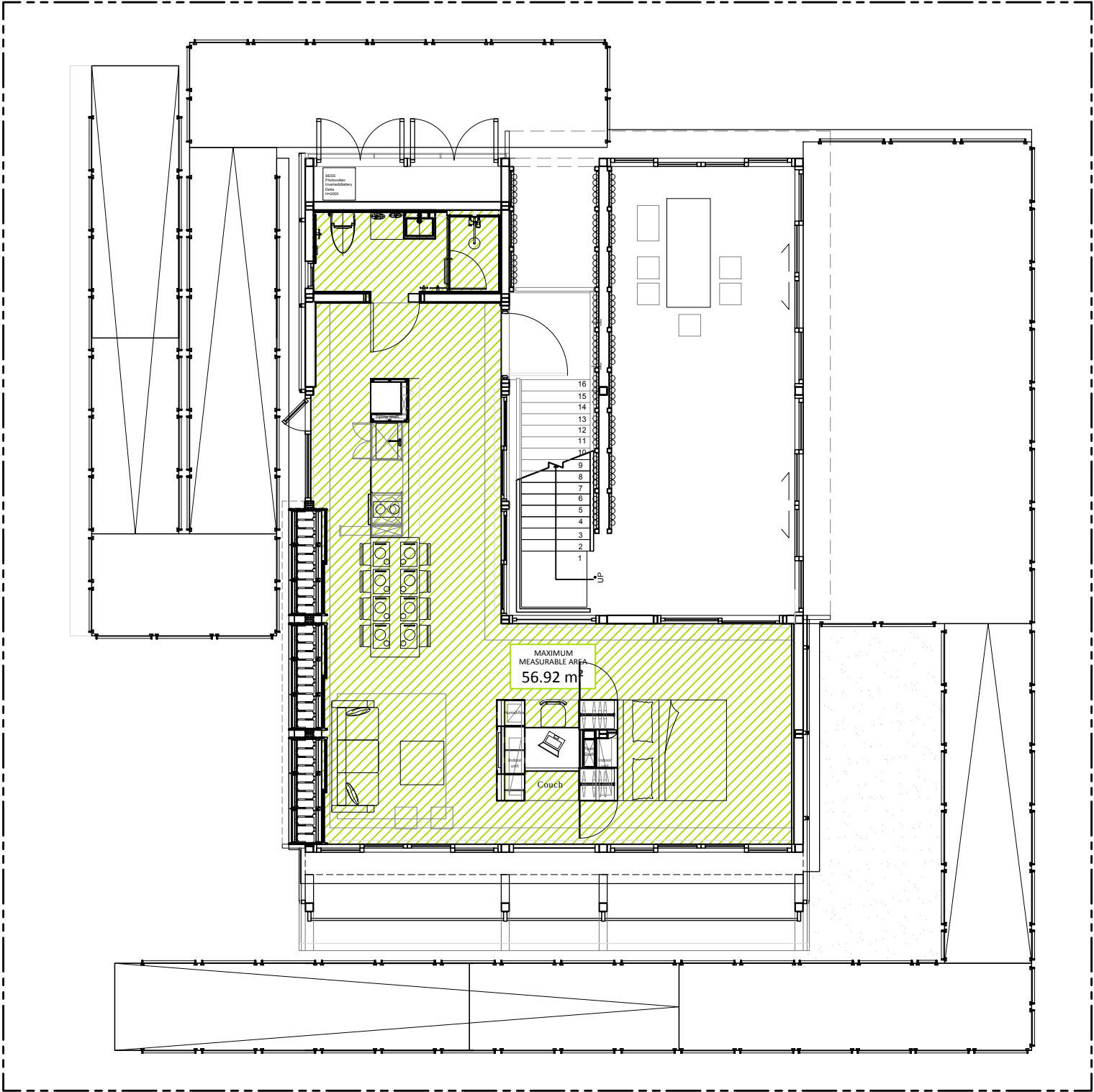
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DWG. Title	
ARCHITECTURE FOOTPRINT	
DWG. No.	PAGE
AR-014	17

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D
C
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1 2 3 4 5 6 7



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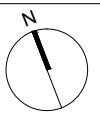
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DWG. Title	
MEASURABLE AREA	
DWG. No.	PAGE
AR-017	18



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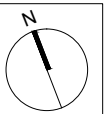
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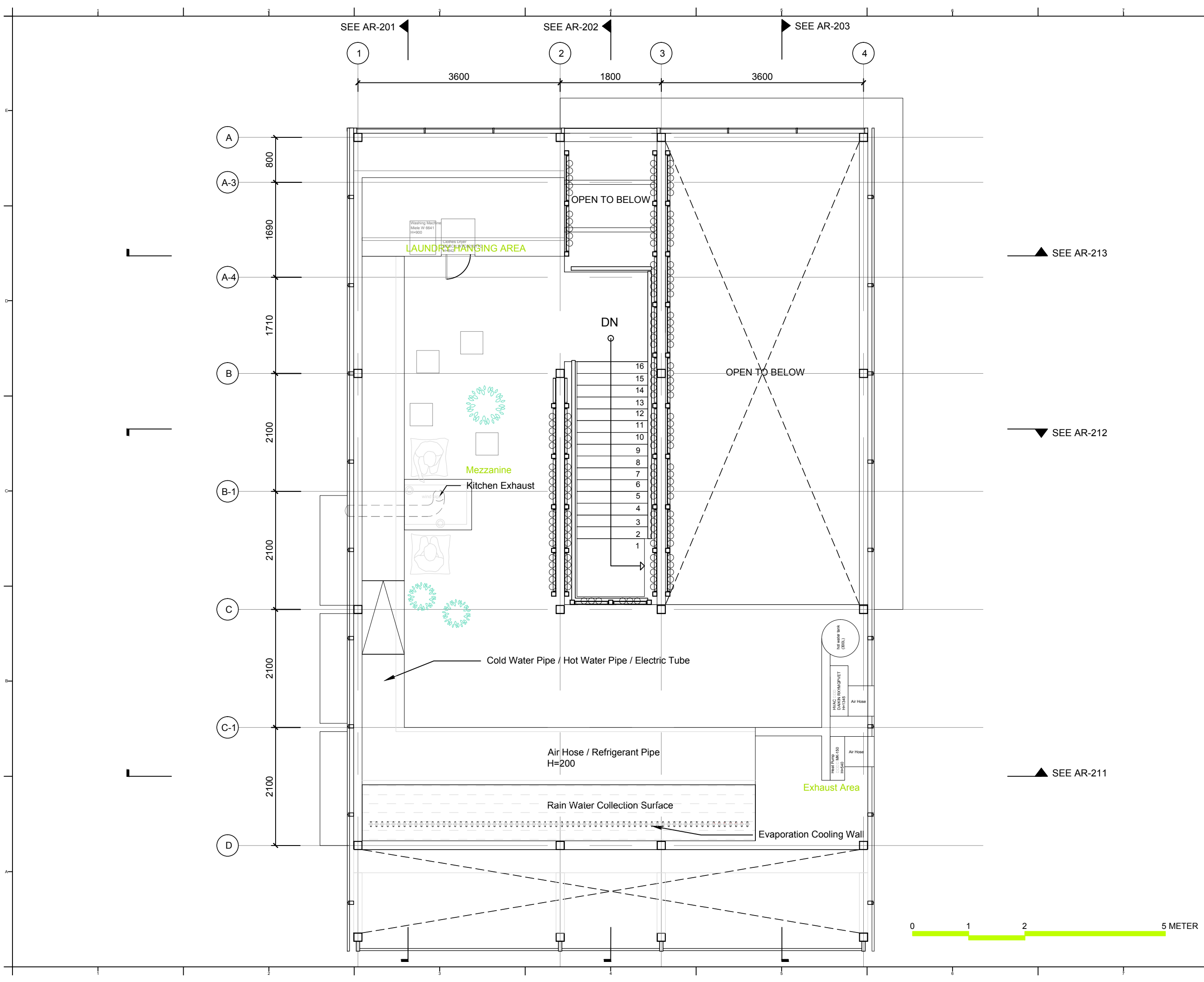
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DWG. Title	
GROUND LEVEL PLAN	
DWG. No.	PAGE
AR-021	19



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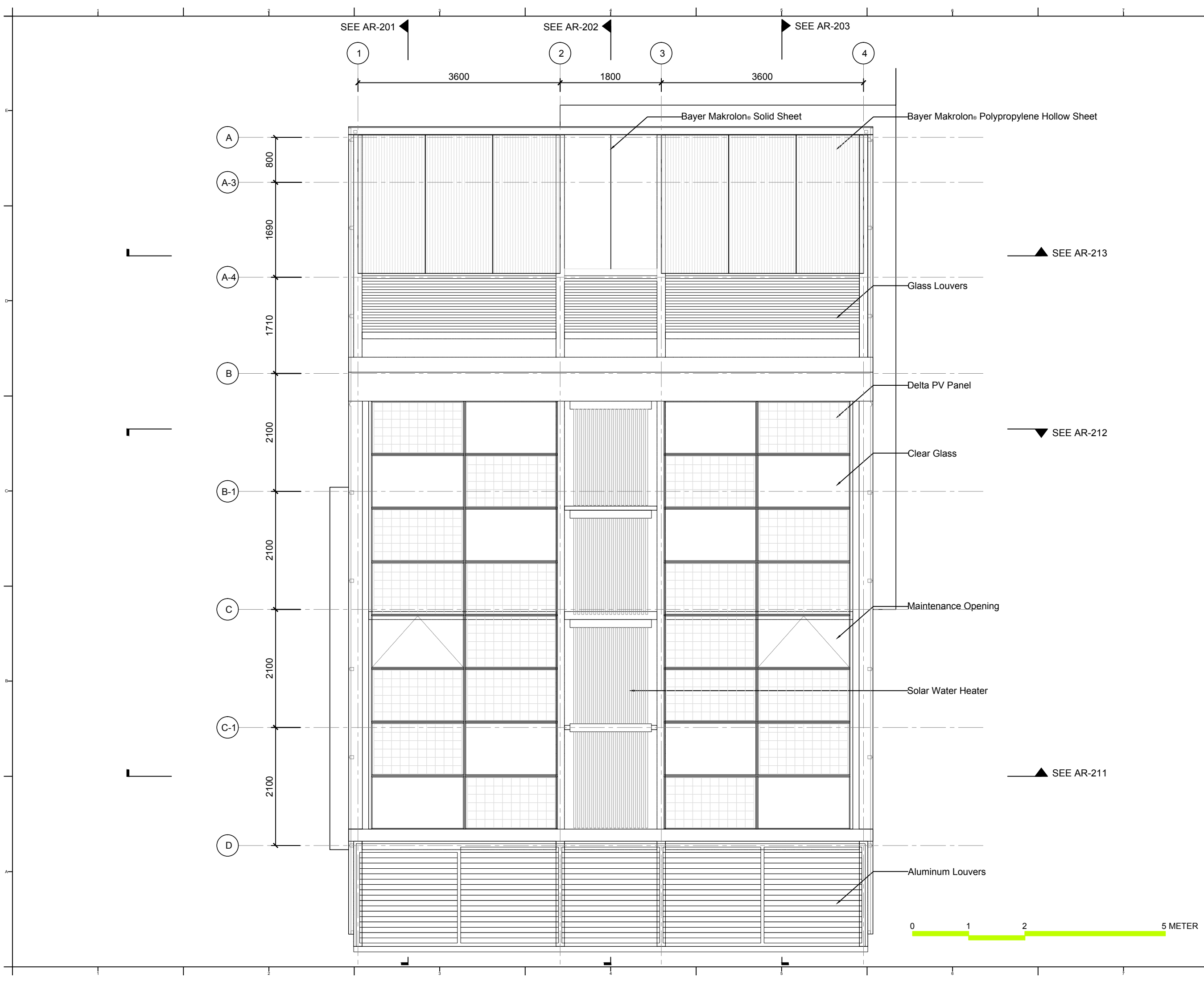
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DWG. Title	
MEZZANINE LEVEL PLAN	
DWG. No.	PAGE
AR-022	20



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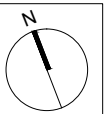
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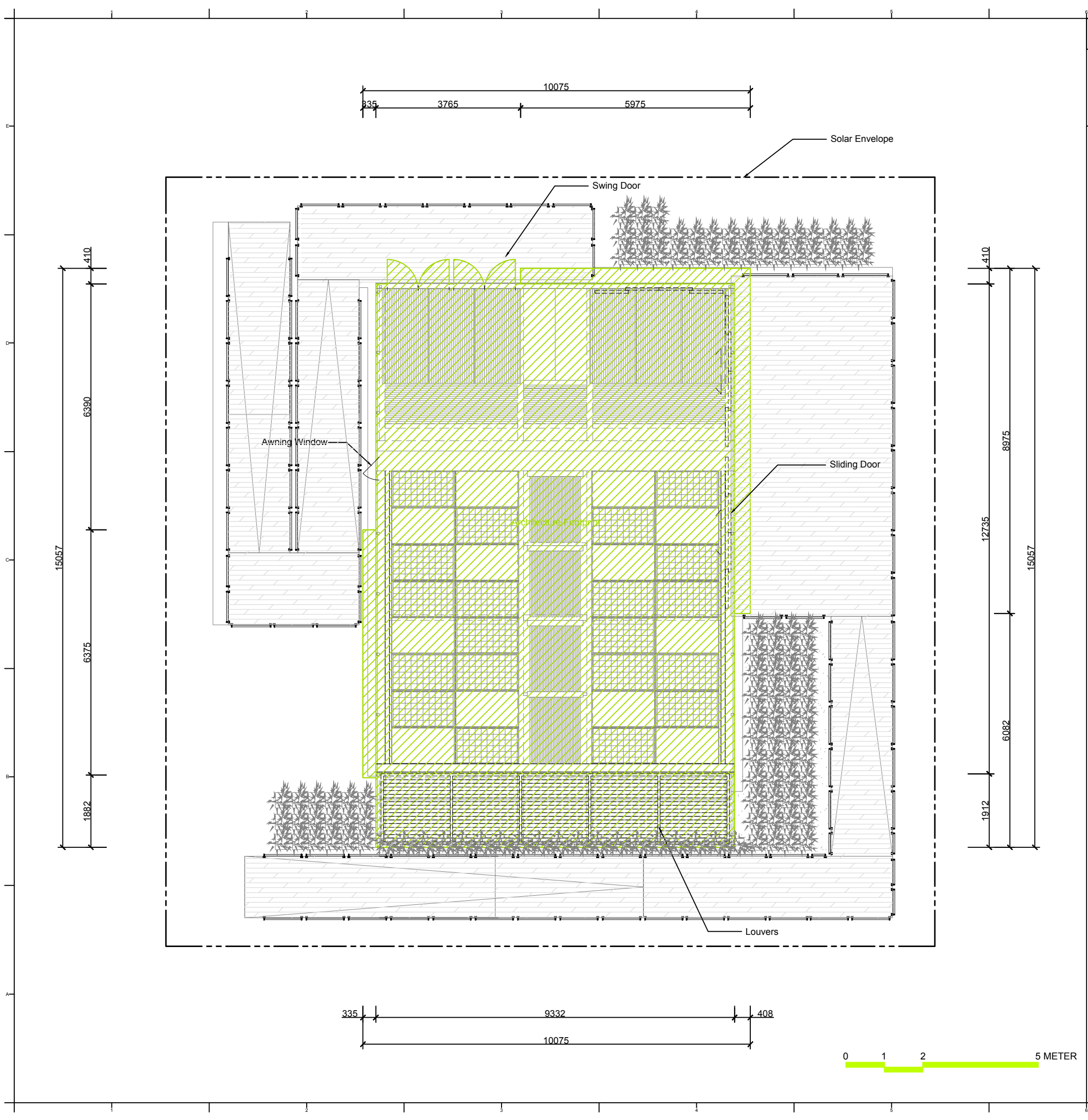
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Scale	1:60
Unit	mm

DWG. Title	
ROOF LEVEL PLAN	
DWG. No.	PAGE
AR-031	21



Footprint Calculation

House : 120.4 M2
Canopy : 8.7 M2
Louvers : 17.8 M2

Total : 146.9 M2

House
 $9.332 \times 12.735 + 0.6375 \times 0.7854 \times 3.14 = 120.4 \text{ (M2)}$

Canopy
 $5.975 \times 0.41 + (8.975 - 0.41) \times 0.408 + 6.375 \times 0.335 = 8.0 \text{ (M2)}$

Louvers
 $9.332 \times 1.912 = 17.8 \text{ (M2)}$

Total
 $120.41 + 8.05 + 17.84 = 146.3 \text{ (M2)}$

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Unit

mm

DWG. Title

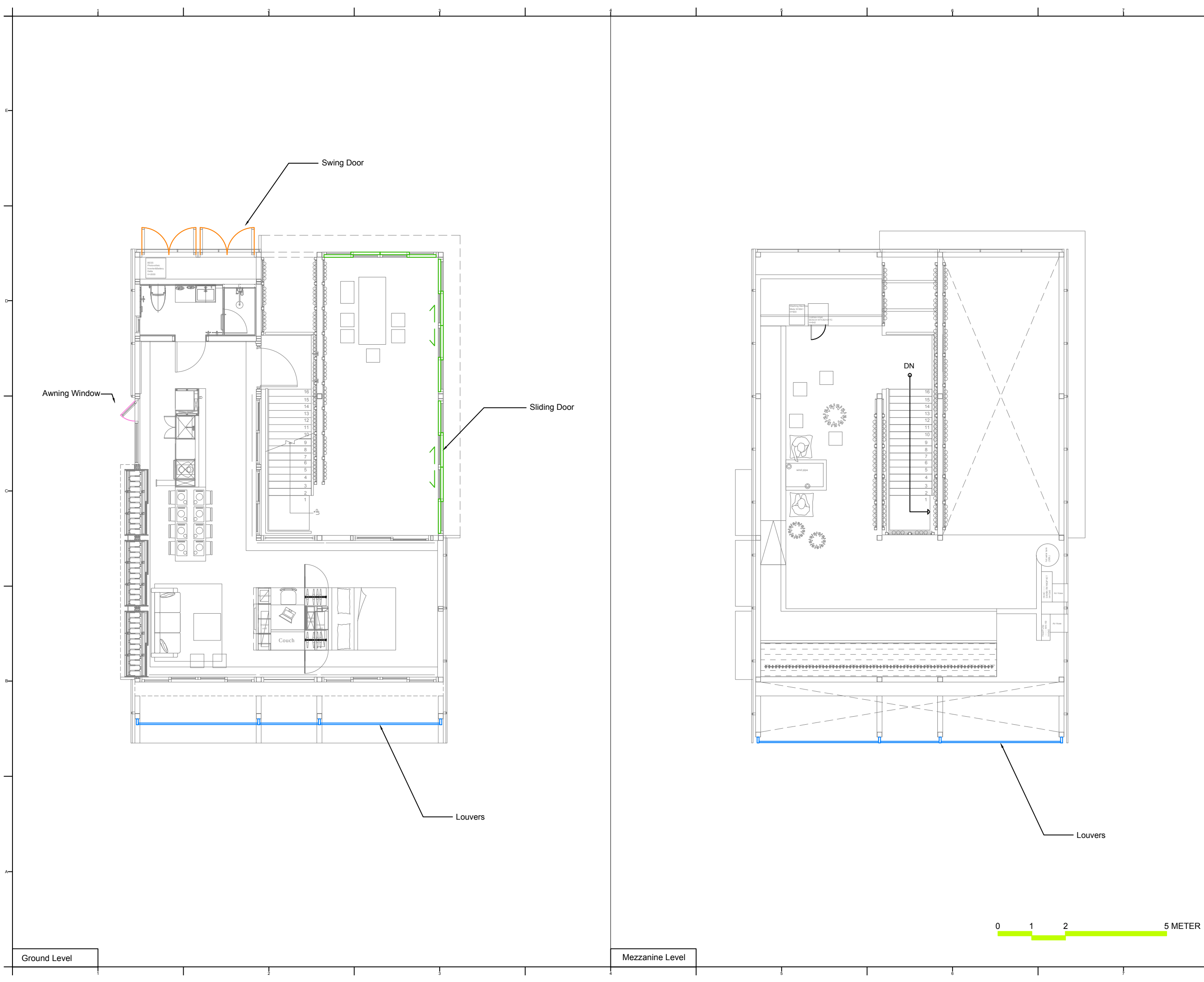
RECONFIGURABLE
FEATURES 1

DWG. No.

AR-041

PAGE

22



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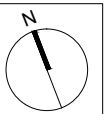
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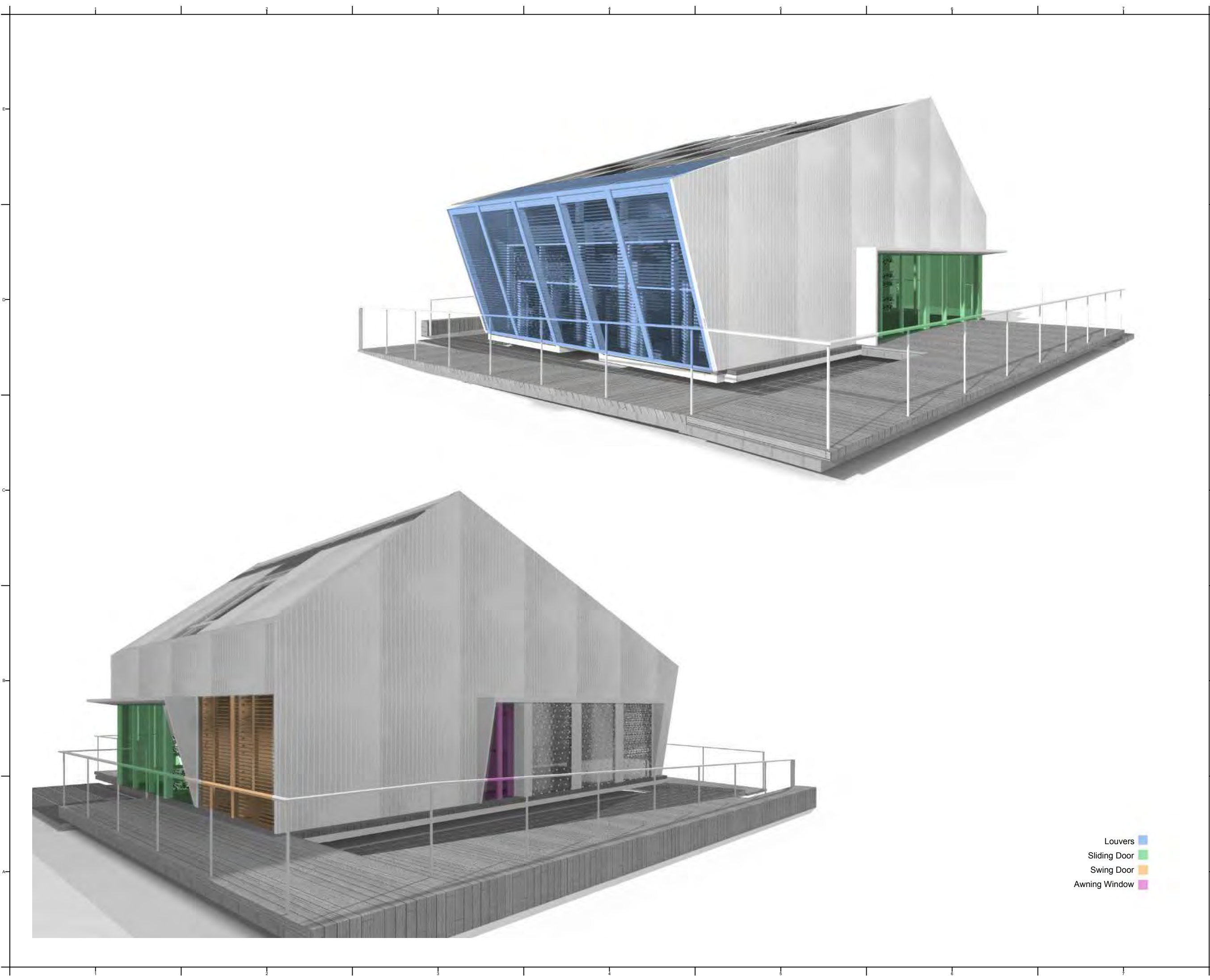
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Unit	mm

DWG. Title	
RECONFIGURABLE FEATURES 2	
DWG. No.	PAGE
AR-042	23



- Louvers
- Sliding Door
- Swing Door
- Awning Window



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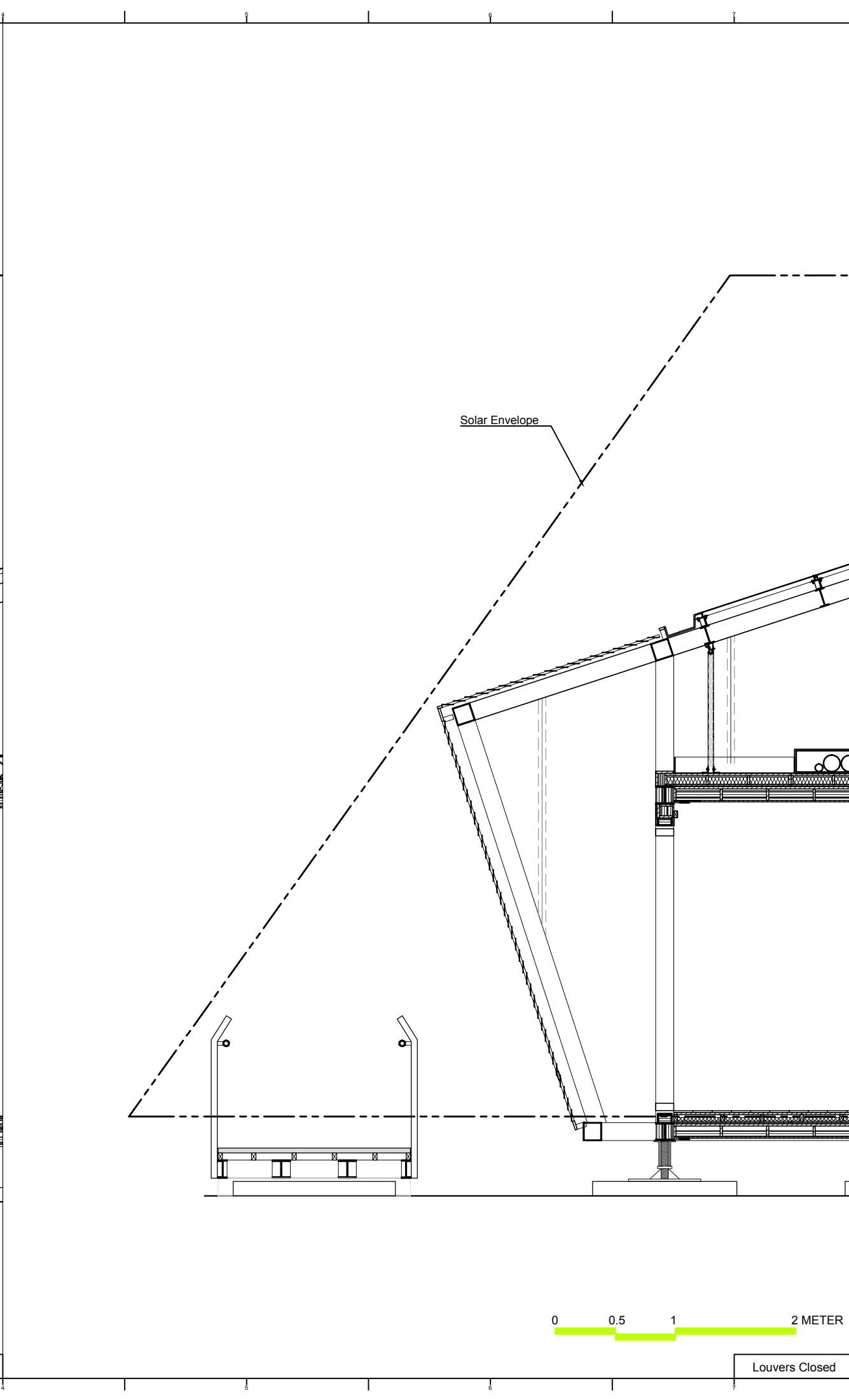
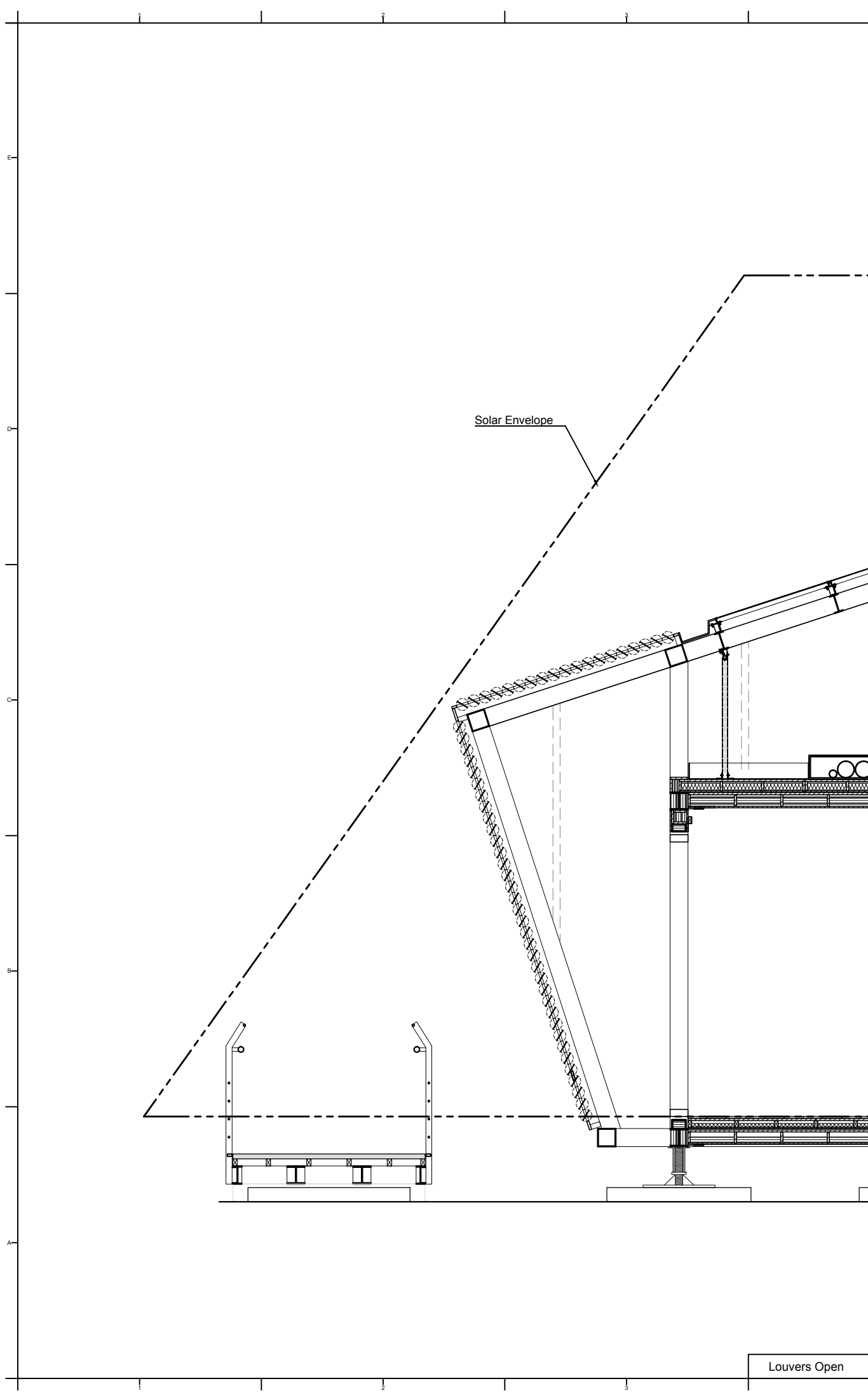
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DWG. Title	
RECONFIGURABLE FEATURES 3	
DWG. No.	PAGE
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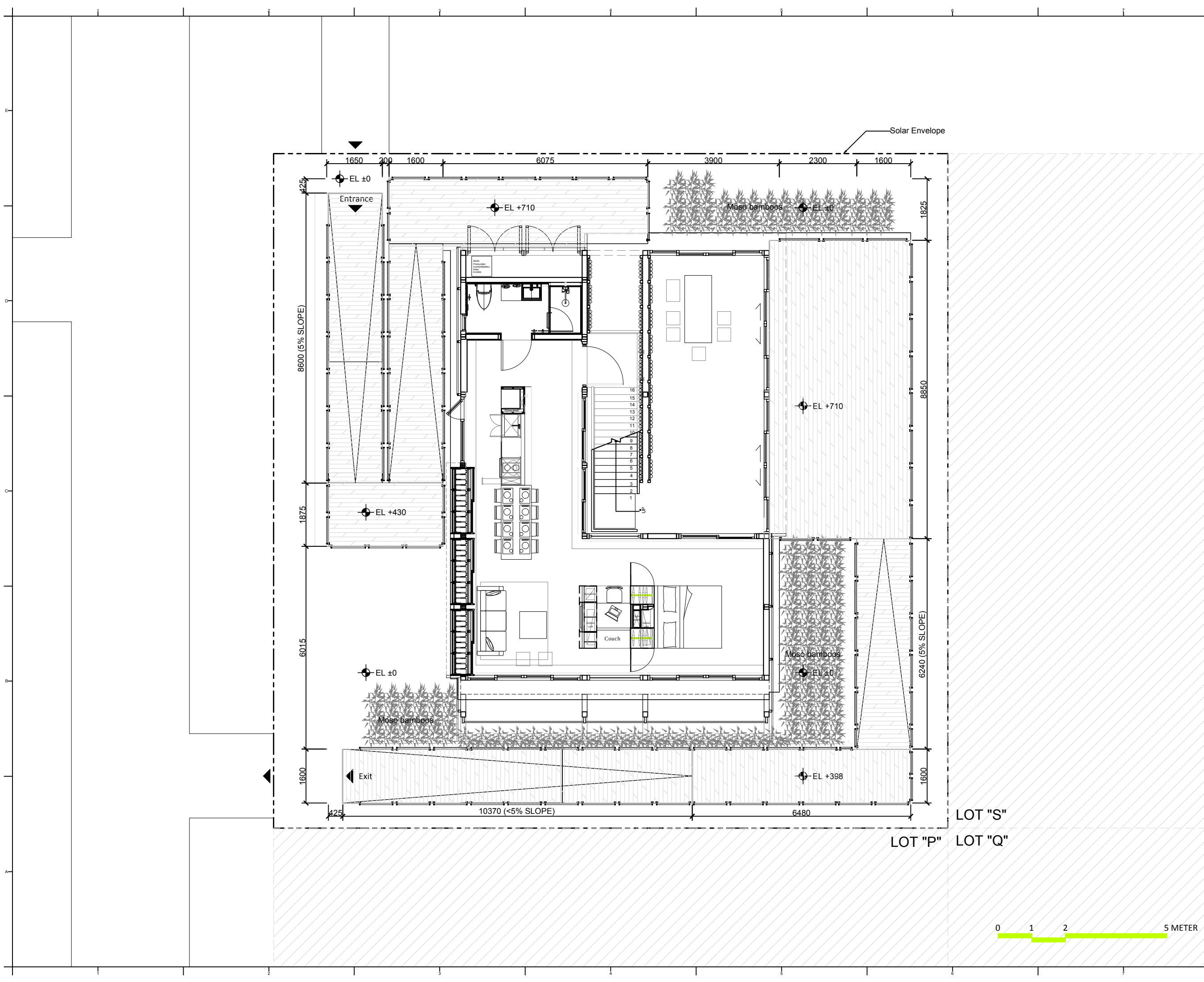
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DWG. Title

RECONFIGURABLE
FEATURES 4

DWG. No.	PAGE
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Project:



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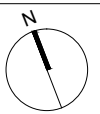
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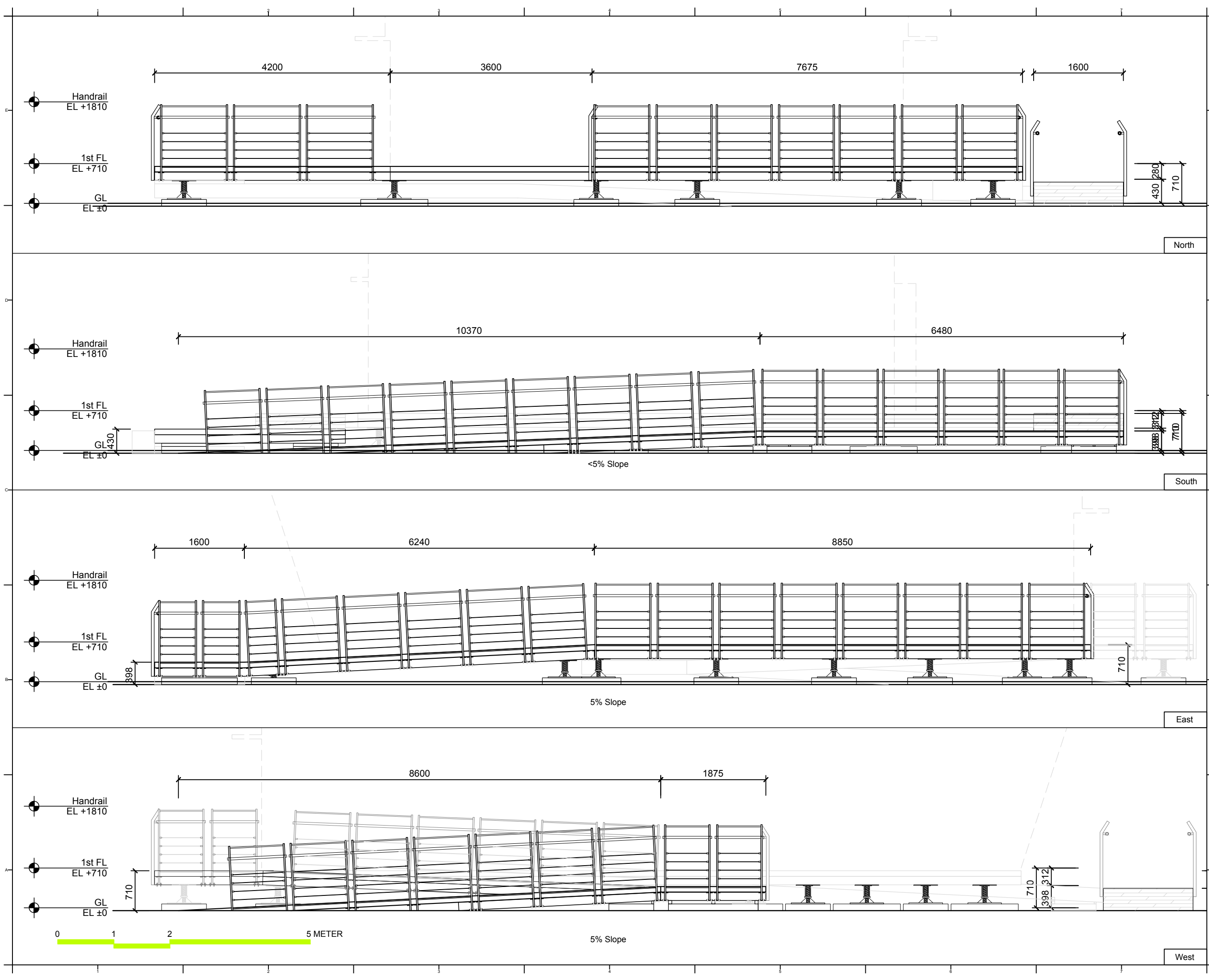
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DWG. Title	
SITE ENTRANCE AND EXIT	
DWG. No.	PAGE
AR-051	26



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Unit	mm

DWG. Title	
SITE ELEVATION	
DWG. No.	PAGE
AR-101	27

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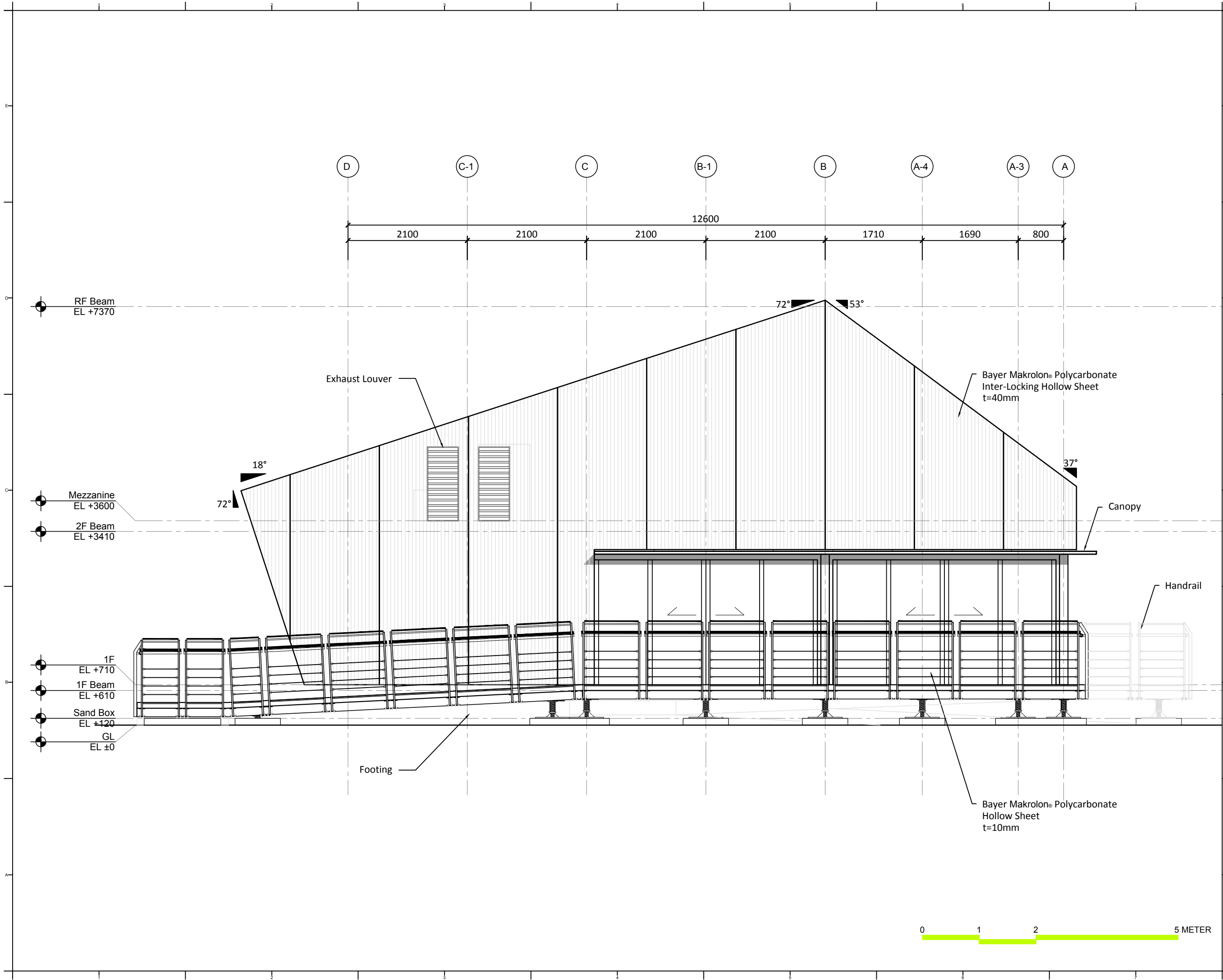
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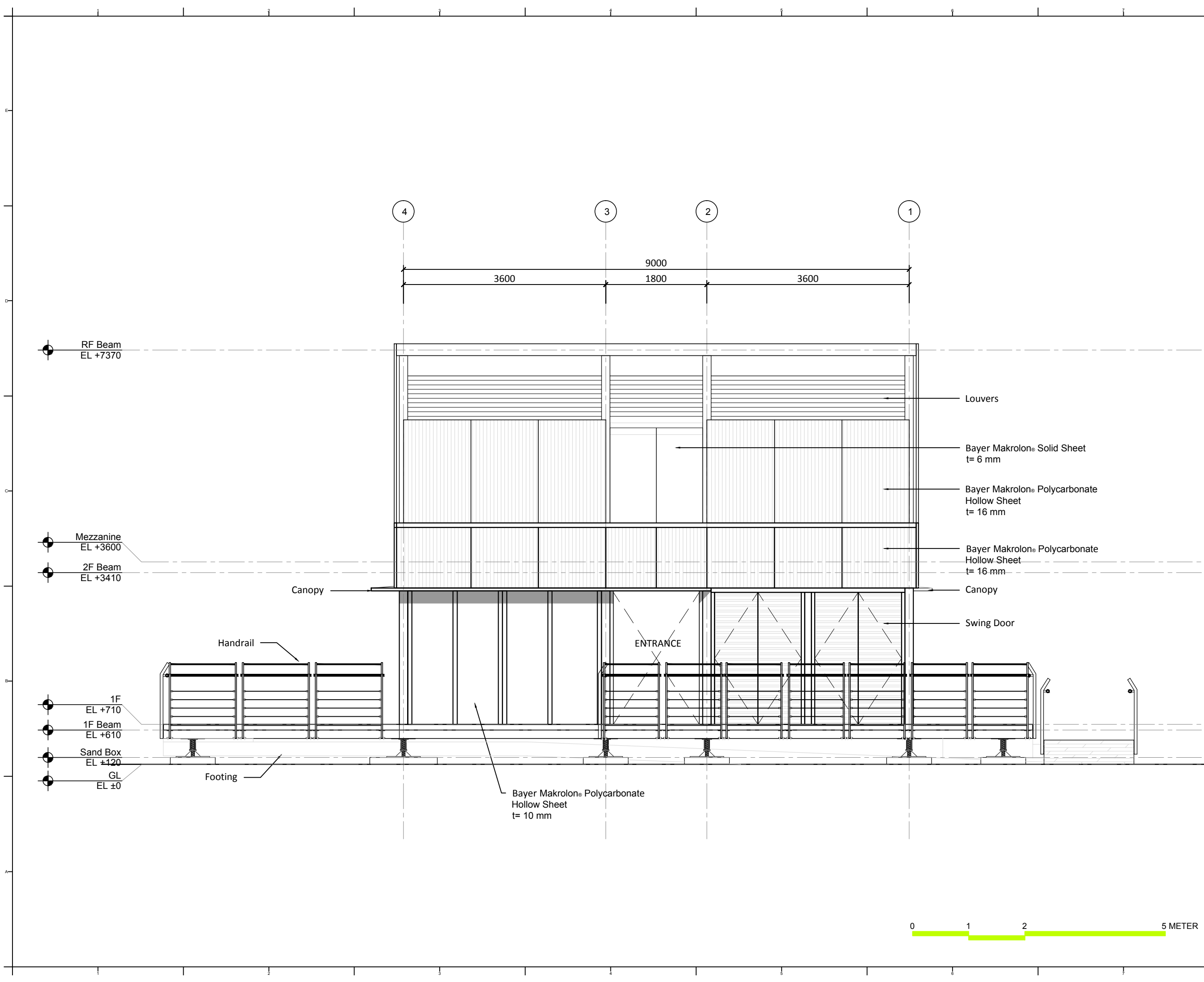
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Unit	mm

DWG. Title	
EAST ELEVATION	
DWG. No.	PAGE
AR-111	28







Solar Decathlon Europe

Project:



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DWG. Title

NORTH ELEVATION

DWG. No.	PAGE
AR-112	29



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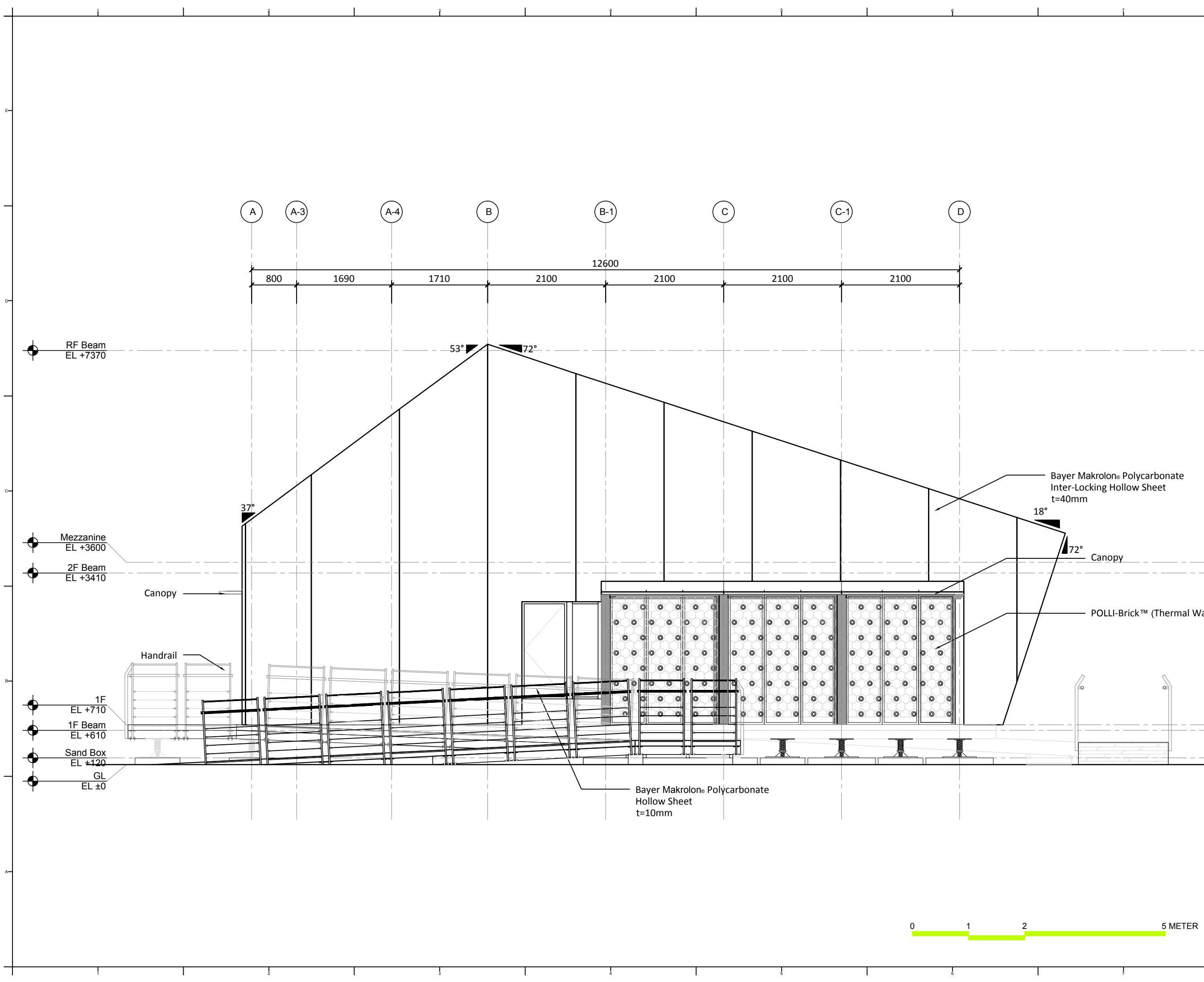
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DWG. Title	
SOUTH ELEVATION	
DWG. No.	PAGE
AR-113	30



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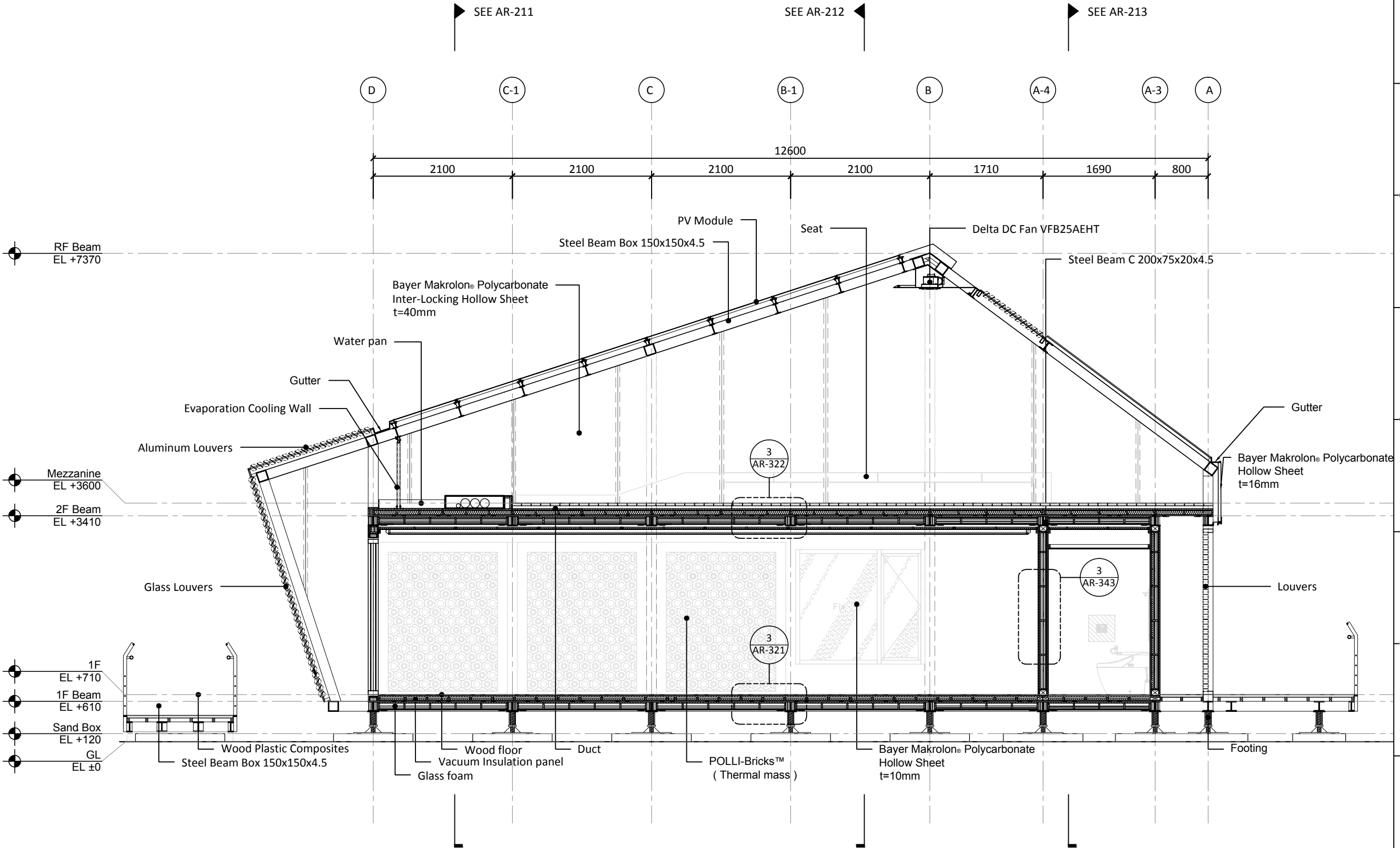
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WEST ELEVATION	
DWG. No.	PAGE
AR-114	31

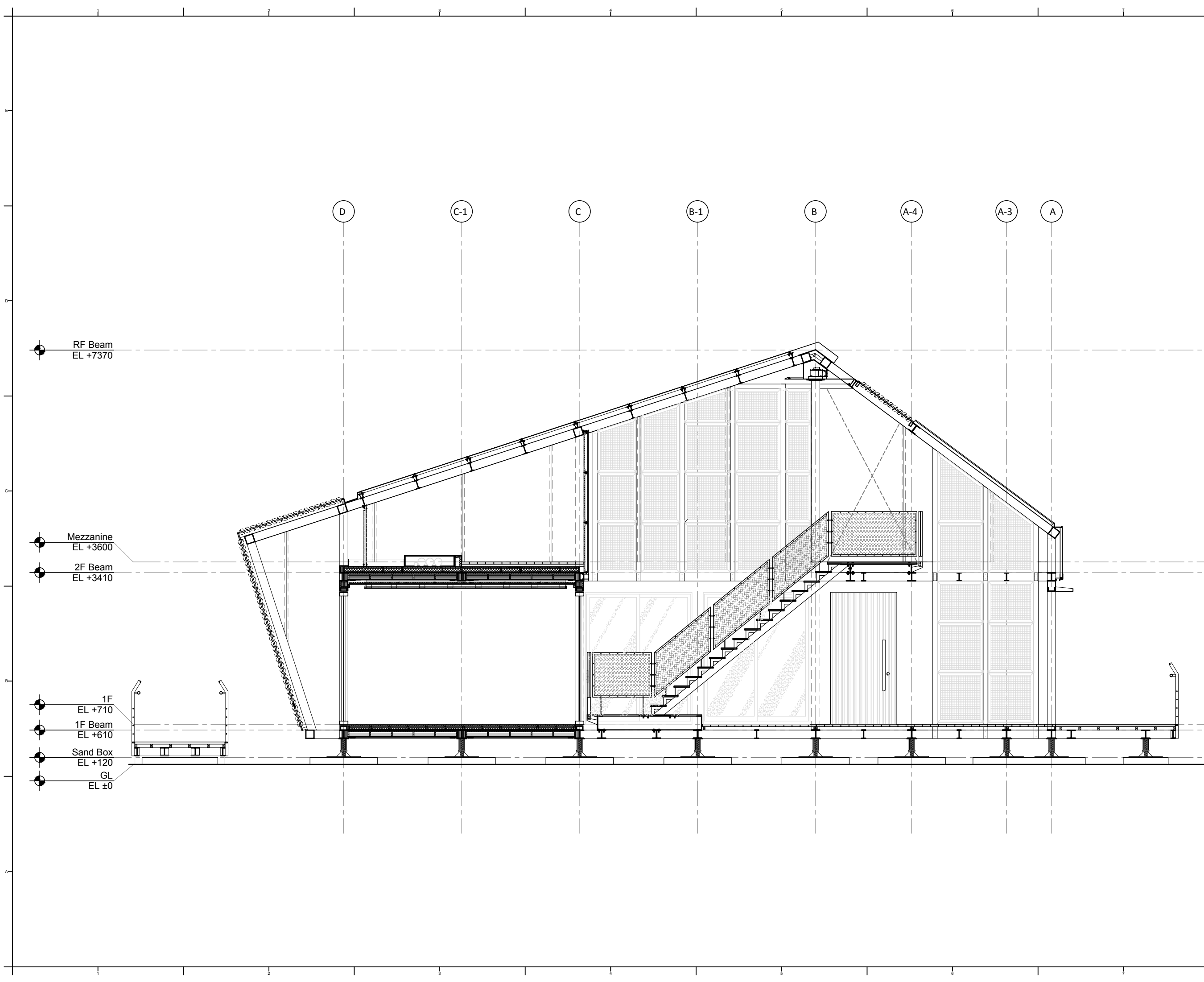


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DWG. Title	
LONGITUDINAL SECTION 1	
DWG. No.	PAGE
AR-201	32





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DWG. Title	
LONGITUDINAL SECTION 2	
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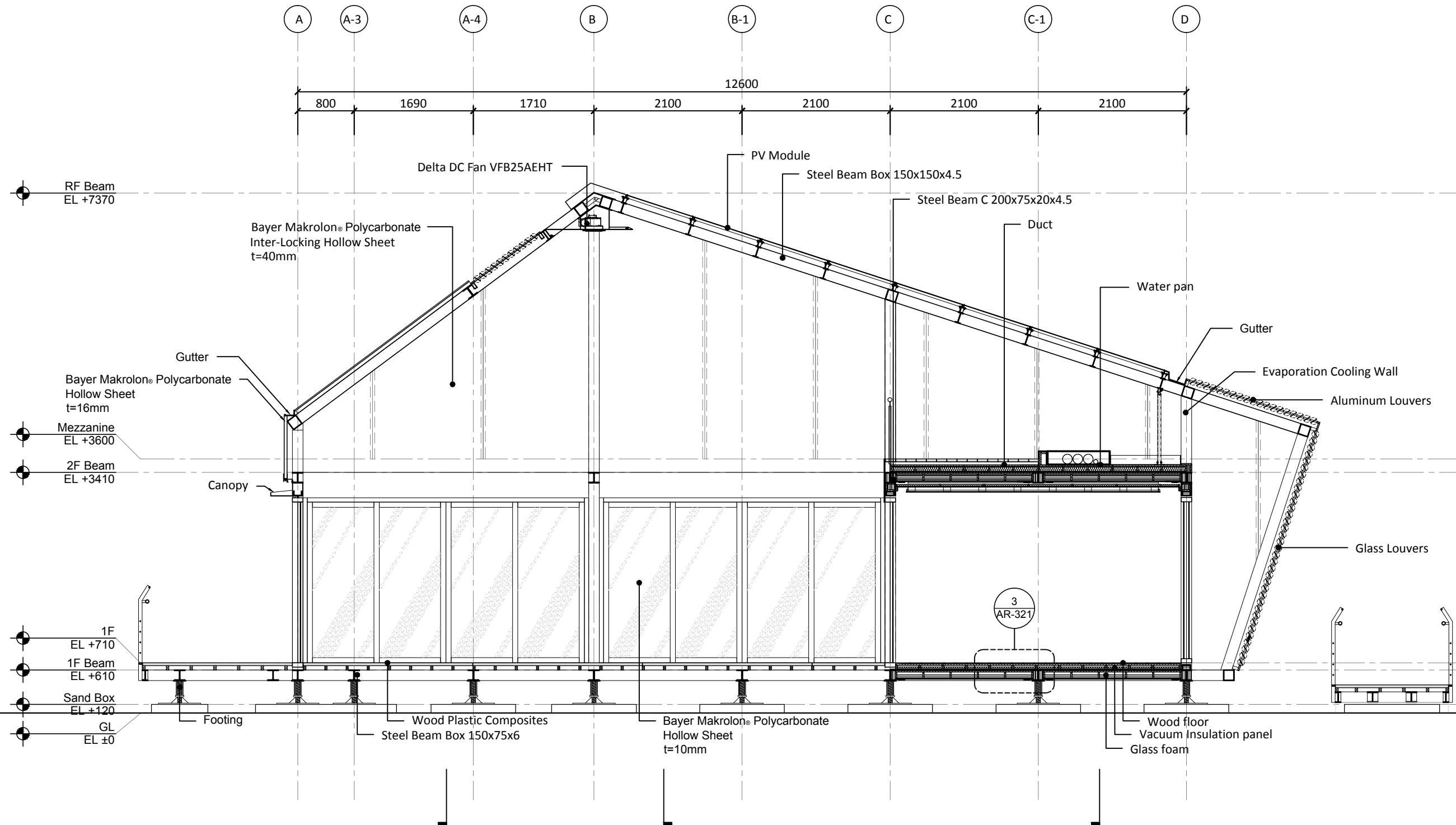
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SEE AR-213

SEE AR-212

SEE AR-211



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Hsinchu City 30010
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Consultants:

Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:60
Unit	mm

DWG. Title

TRANSVERSAL SECTIONS
1

DWG. No.

AR-211

PAGE

35

SEE AR-201

SEE AR-202

SEE AR-203

1

2

3

4

3600 9000 1800 3600

Clear Glass

PV Module

Solar Water Heater

Bayer Makrolon® Polycarbonate
Solid Sheet
t=6mm

RF Beam
EL +7370

Gutter

Gutter

Mezzanine
EL +3600
2F Beam
EL +3410

Water pan

Bayer Makrolon® Polycarbonate
Inter-Locking Hollow Sheet
t=40mm

Canopy

AC

POLLI-Bricks™ (Thermal mass)

3
AR-342

Kitchen

Work Station

Bedroom

Bed

Living Room

Footing

1F
EL +710
1F Beam
EL +610
Sand Box
EL +120
GL
EL ±0

2
AR-351

0 1 2 5 METER



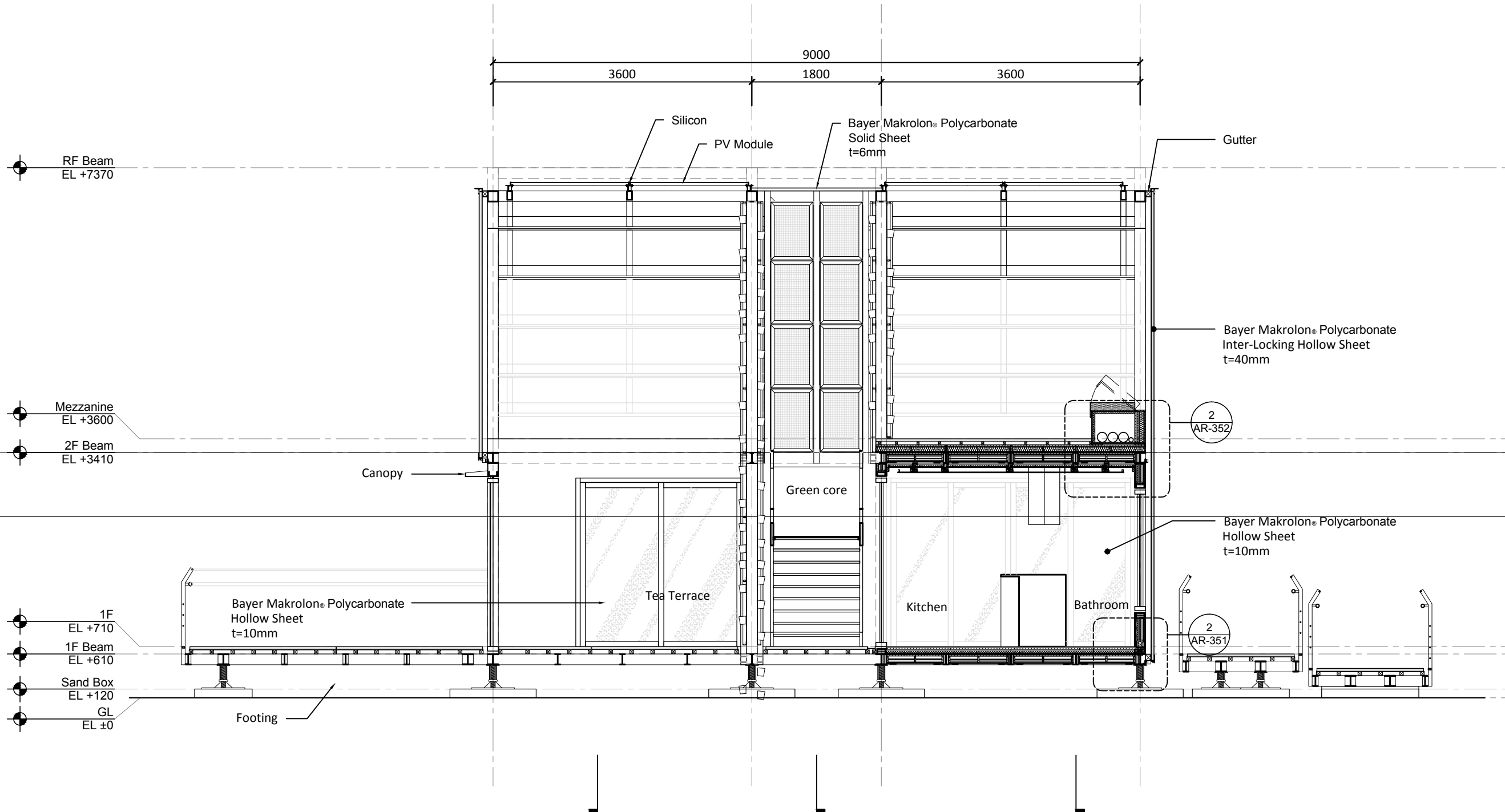
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CH
Checked by	DN
Scale	1:60
Unit	mm

SEE AR-201

SEE AR-202

SEE AR-203





Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by CF

Checked by DN

Scale 1:60

Unit mm

DWG. Title

TRANSVERSAL SECTIONS
3

DWG. No.

AR-213

PAGE

37

SEE AR-201

SEE AR-202

SEE AR-203

1

2

3

4

3600

9000

1800

3600

RF Beam
EL +7370

Mezzanine
EL +3600

2F Beam
EL +3410

1F
EL +710

1F Beam
EL +610

Sand Box
EL +120

GL
EL ±0

Gutter

Bayer Makrolon® Polycarbonate
Solid Sheet
t=6mm

Greencore

Silicon

PV Module

Gutter

Bayer Makrolon® Polycarbonate
Inter-Locking Hollow Sheet
t=40mm

2
AR-352

Bayer Makrolon® Polycarbonate
Inter-Locking Hollow Sheet
t=40mm

Canopy

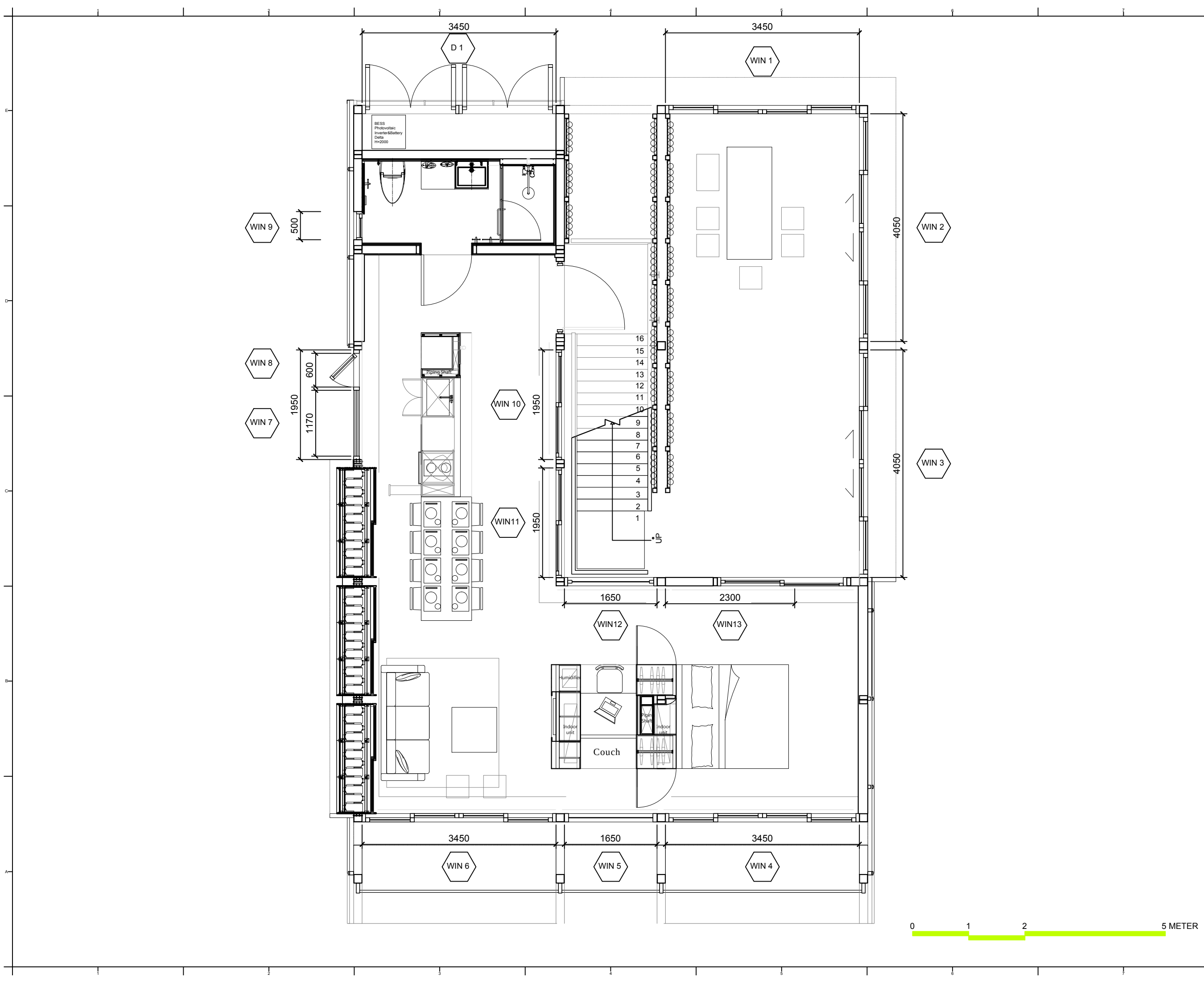
3
AR-341

Bayer Makrolon® Polycarbonate
Hollow Sheet
t=10mm

2
AR-351

1410

0 1 2 5 METER



Project:



Institution:



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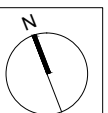
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Note:



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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:60
Unit	mm

DWG. Title
WINDOW SCHEDULE AND DETAILS 1

DWG. No.	PAGE
AR-301	38

Project:



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Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	DN
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Unit	mm

DWG. Title

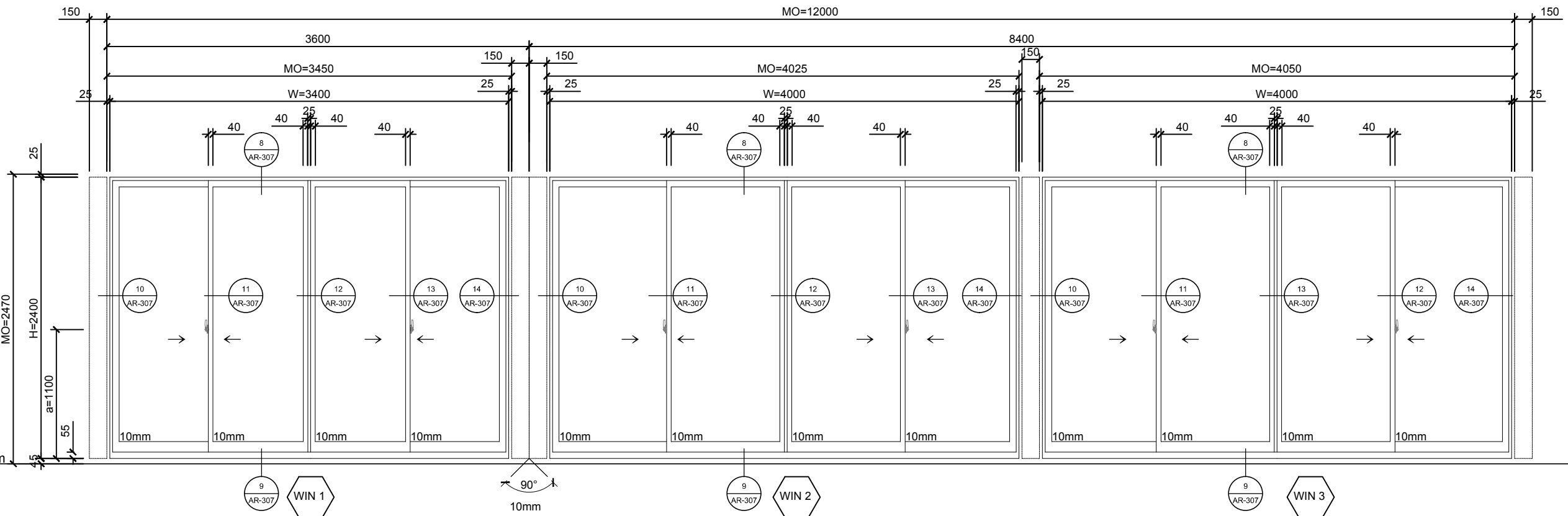
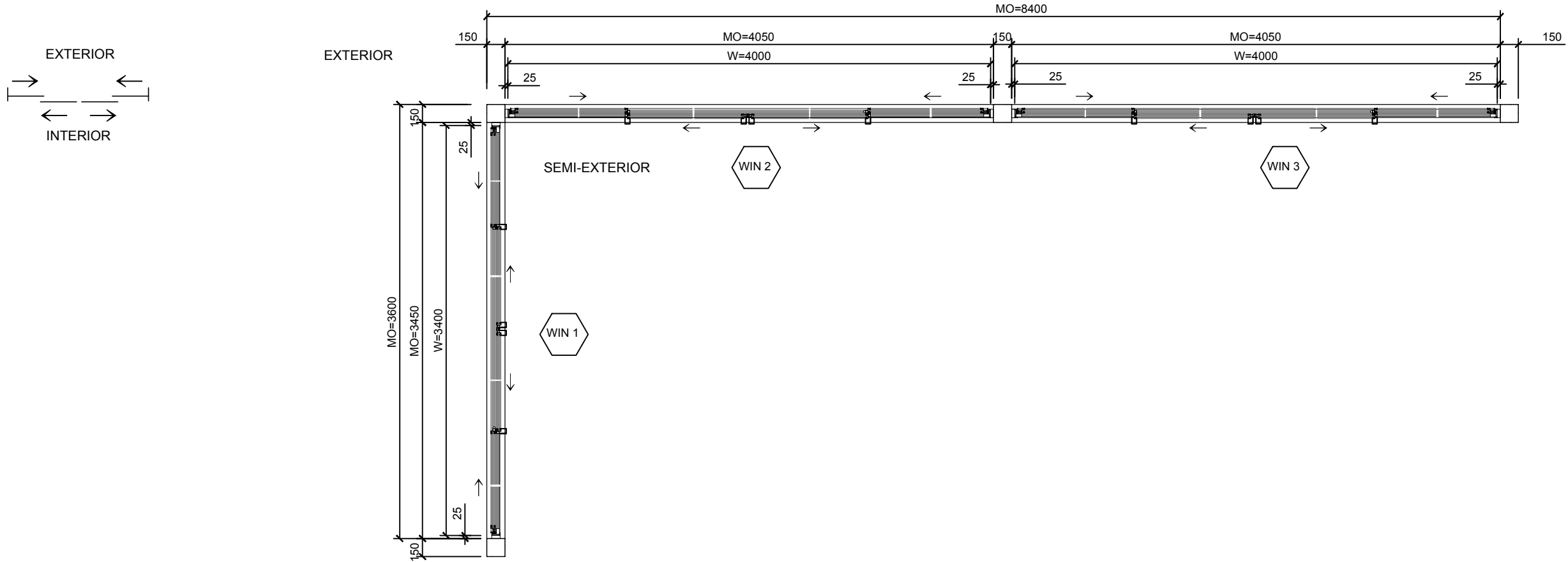
WINDOW SCHEDULE AND
DETAILS 2

DWG. No.

AR-302

PAGE

39



0 0.5 1 2 METER

Project:



Institution:



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Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	DN
Scale	1:40
Unit	mm

DWG. Title

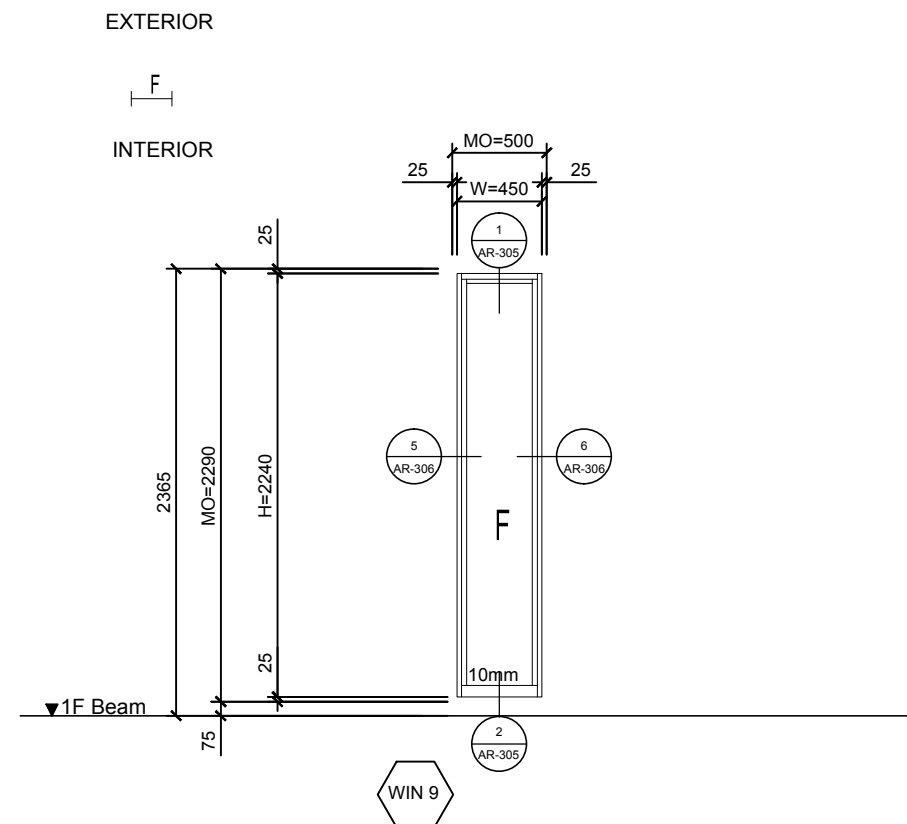
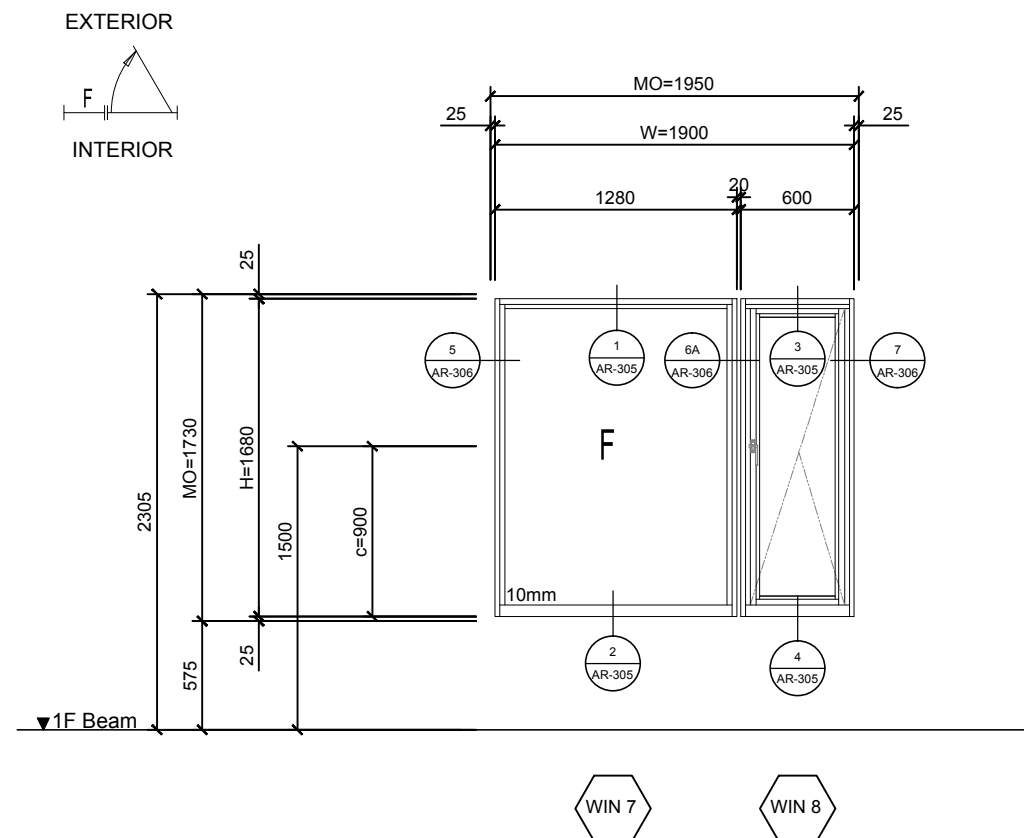
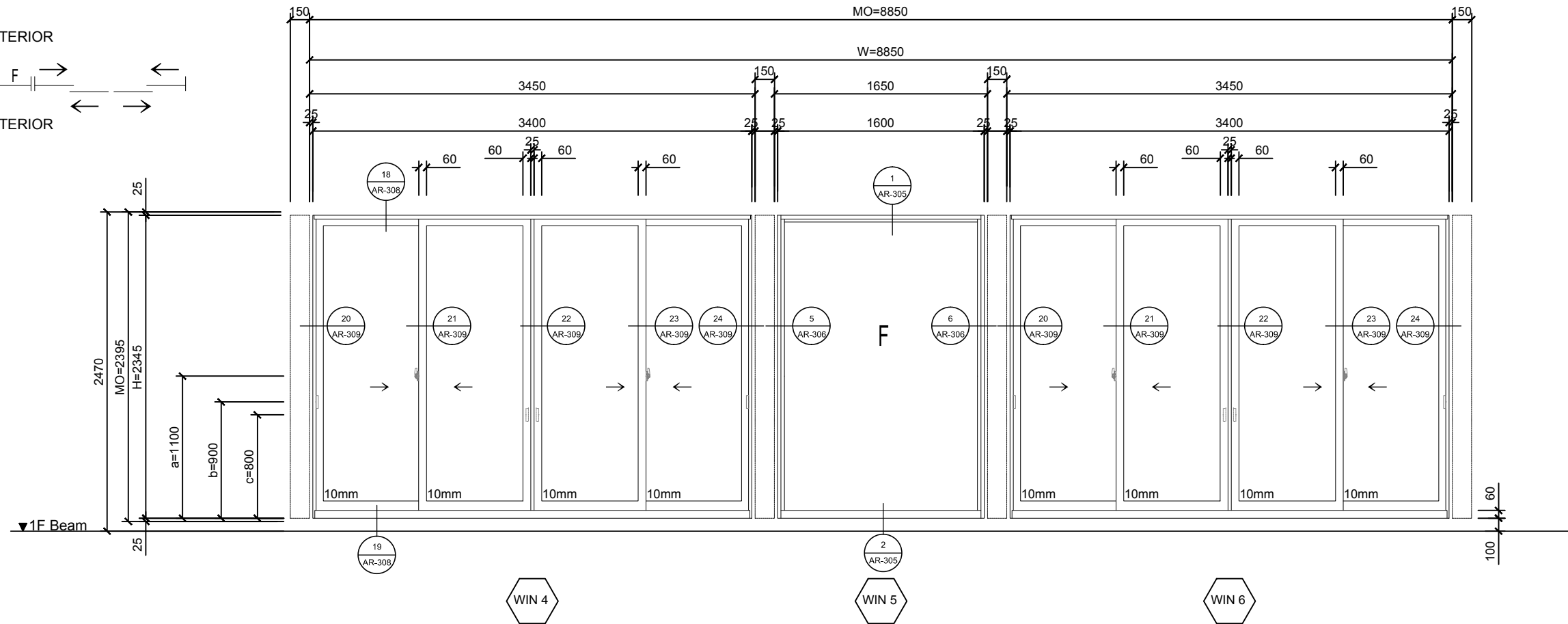
WINDOW SCHEDULE AND
DETAILS 3

DWG. No.

AR-303

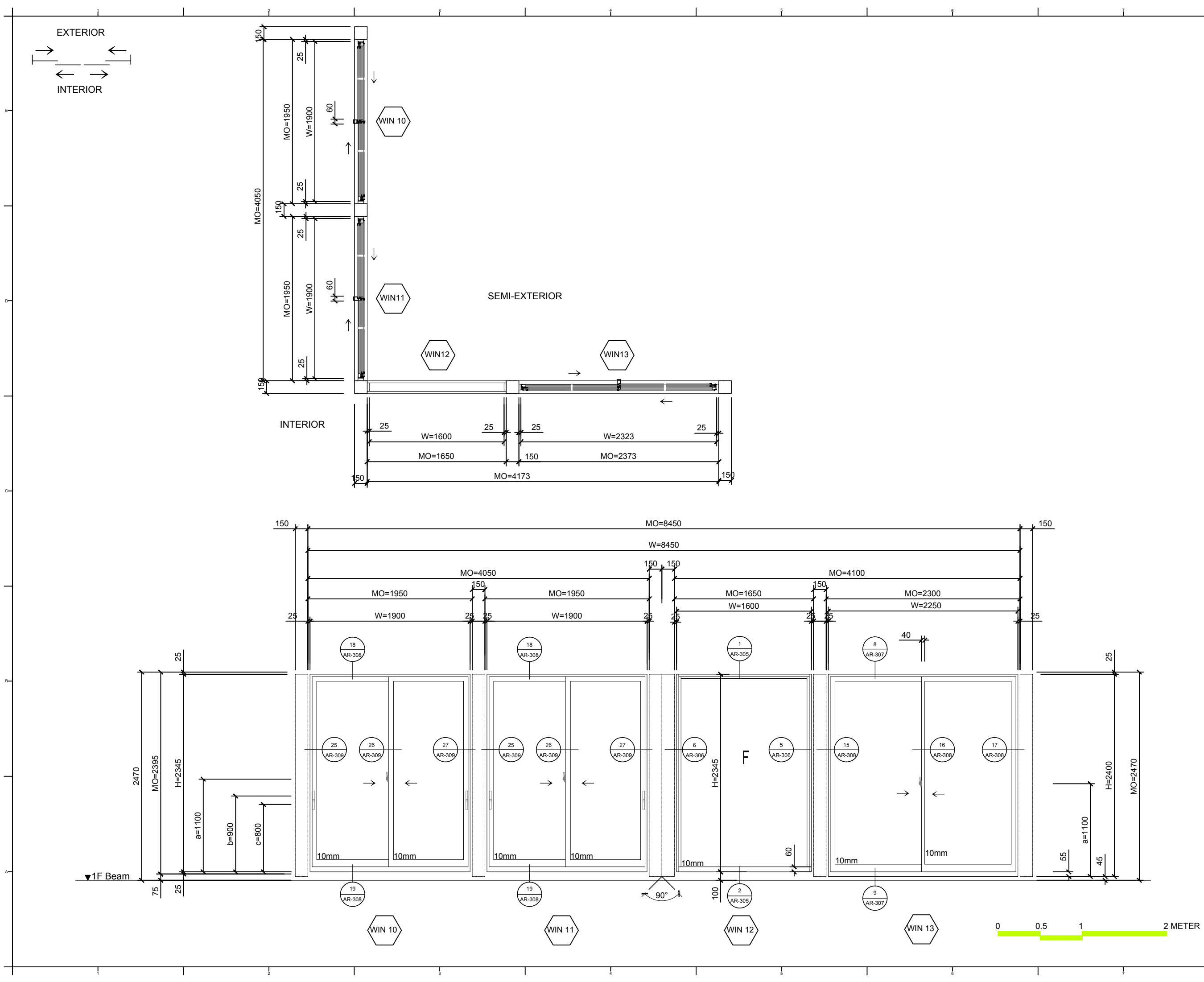
PAGE

40



0 0.5 1 2 METER

0 0.5 1 2 METER



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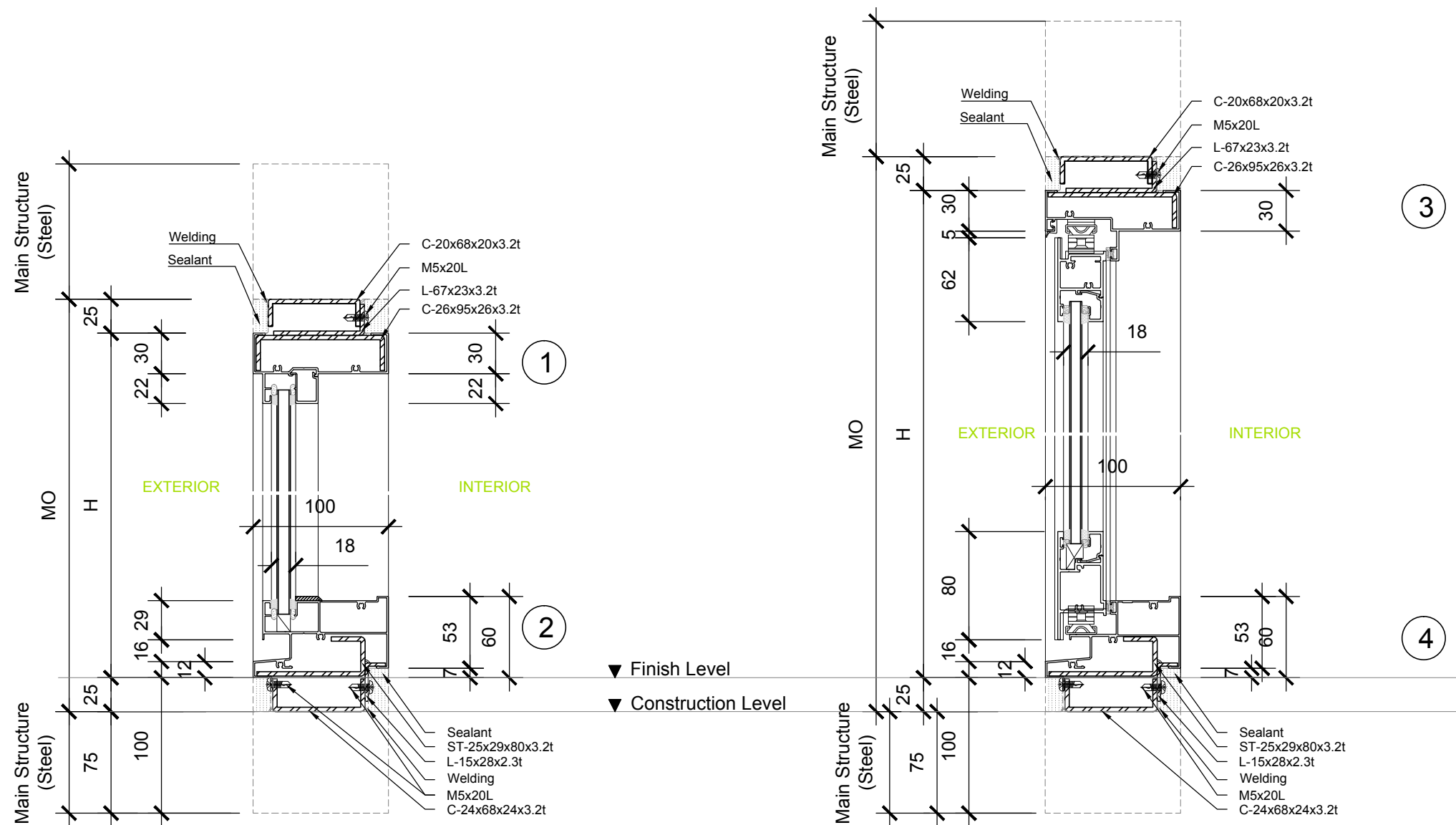
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:40
Unit	mm

DWG. Title
**WINDOW SCHEDULE AND
DETAILS 4**

DWG. No.	PAGE
AR-304	41



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by CF

Checked by DN

Scale 1:4

Unit mm

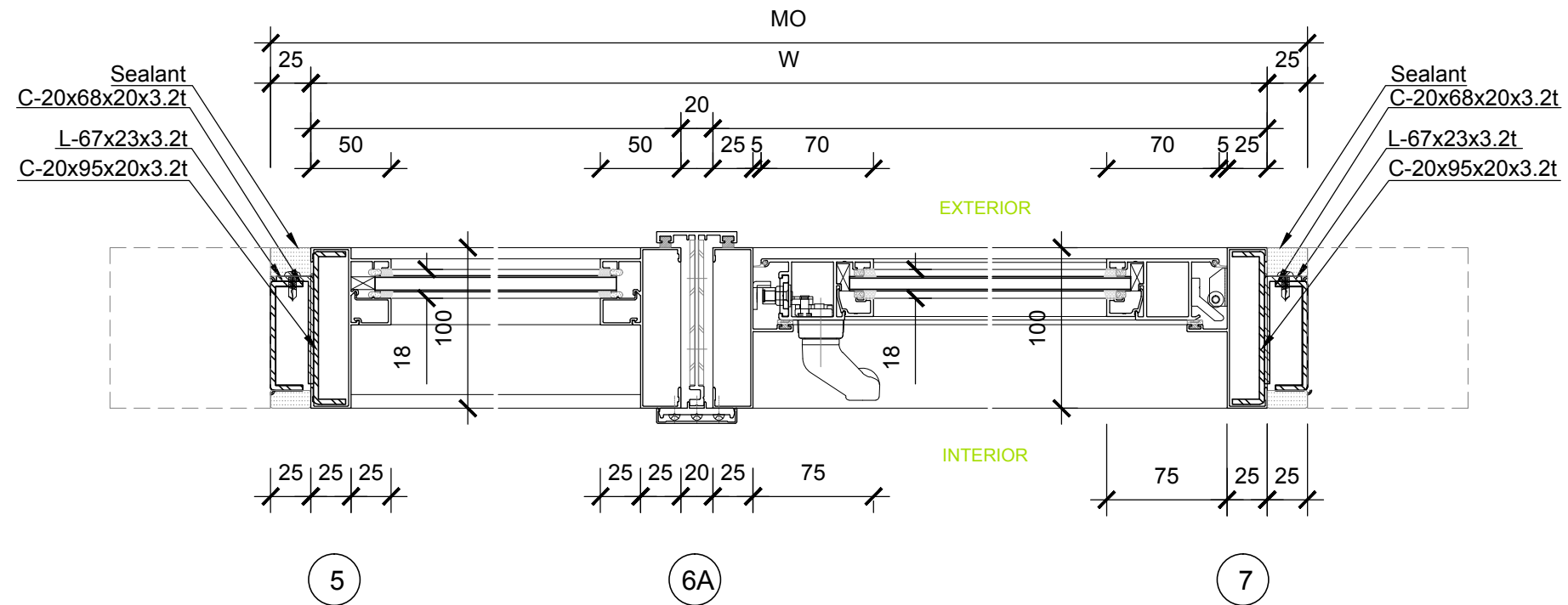
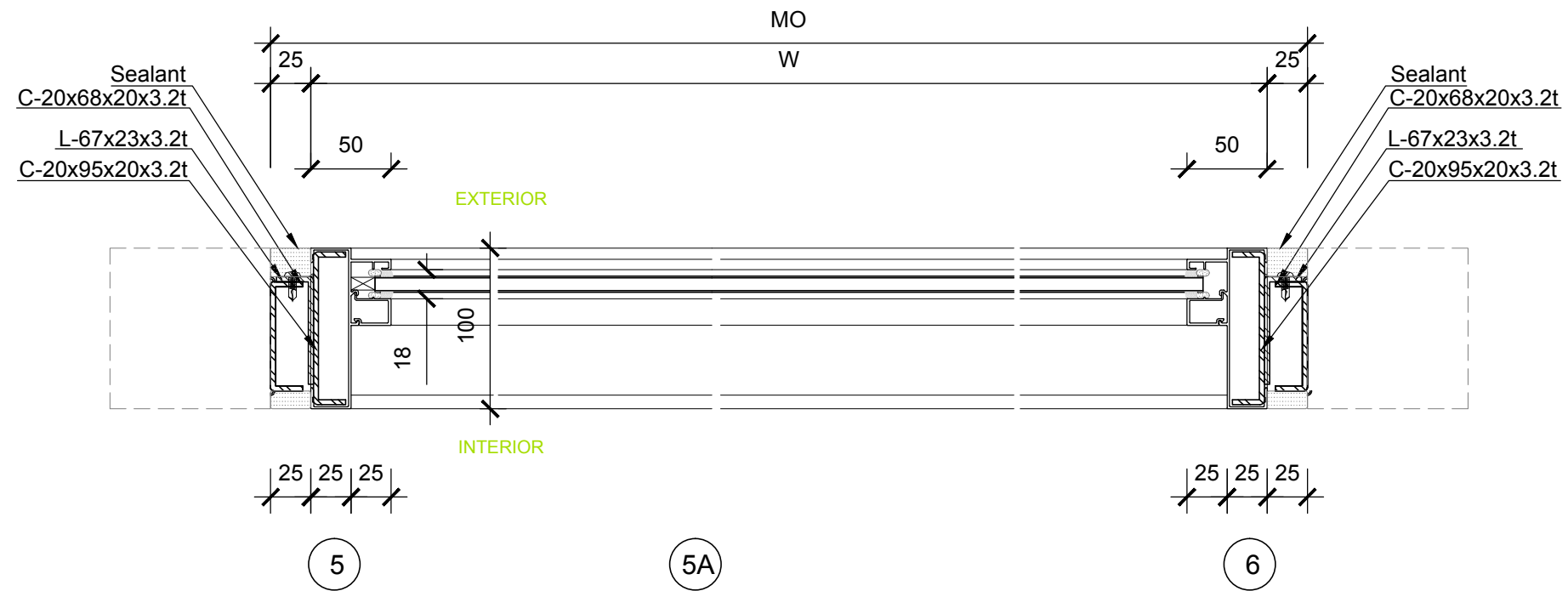


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

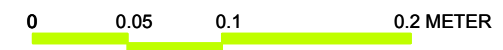
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Checked by	DN
Scale	1:4
Unit	mm

DWG. Title
WINDOW SCHEDULE AND DETAILS 6

DWG. No.	PAGE
AR-306	43



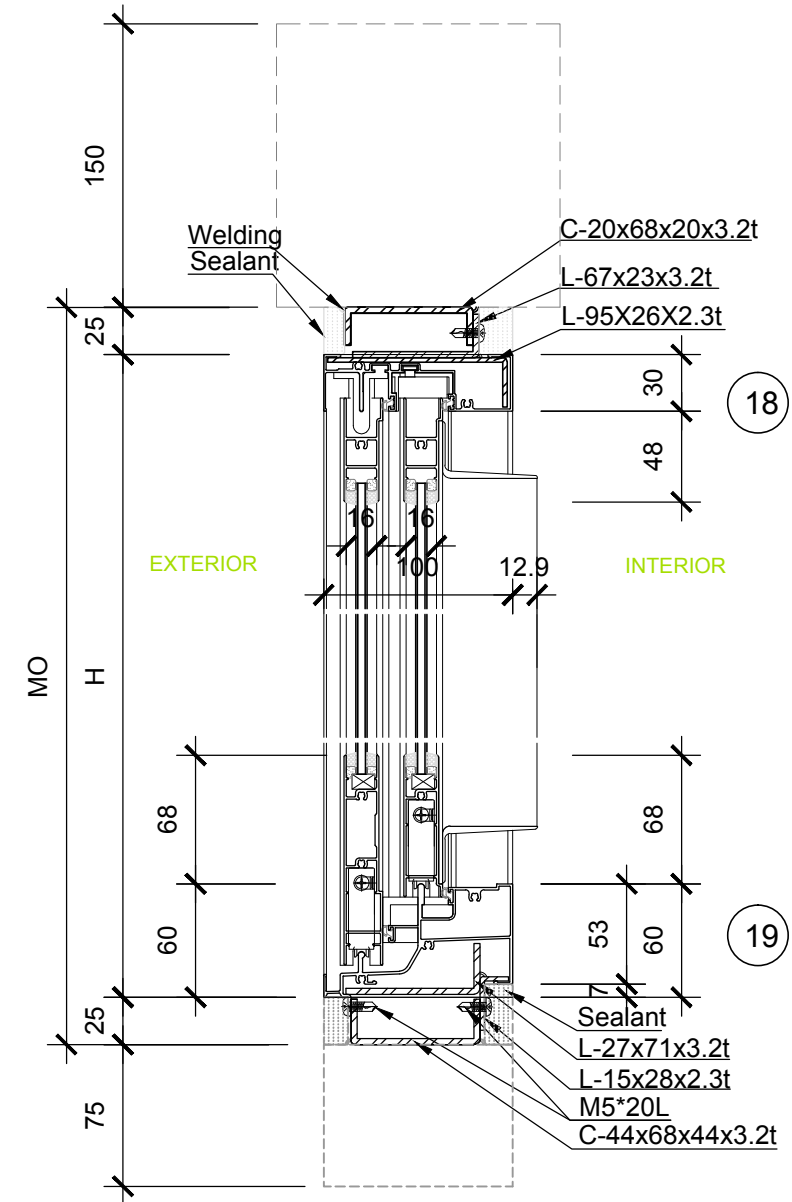
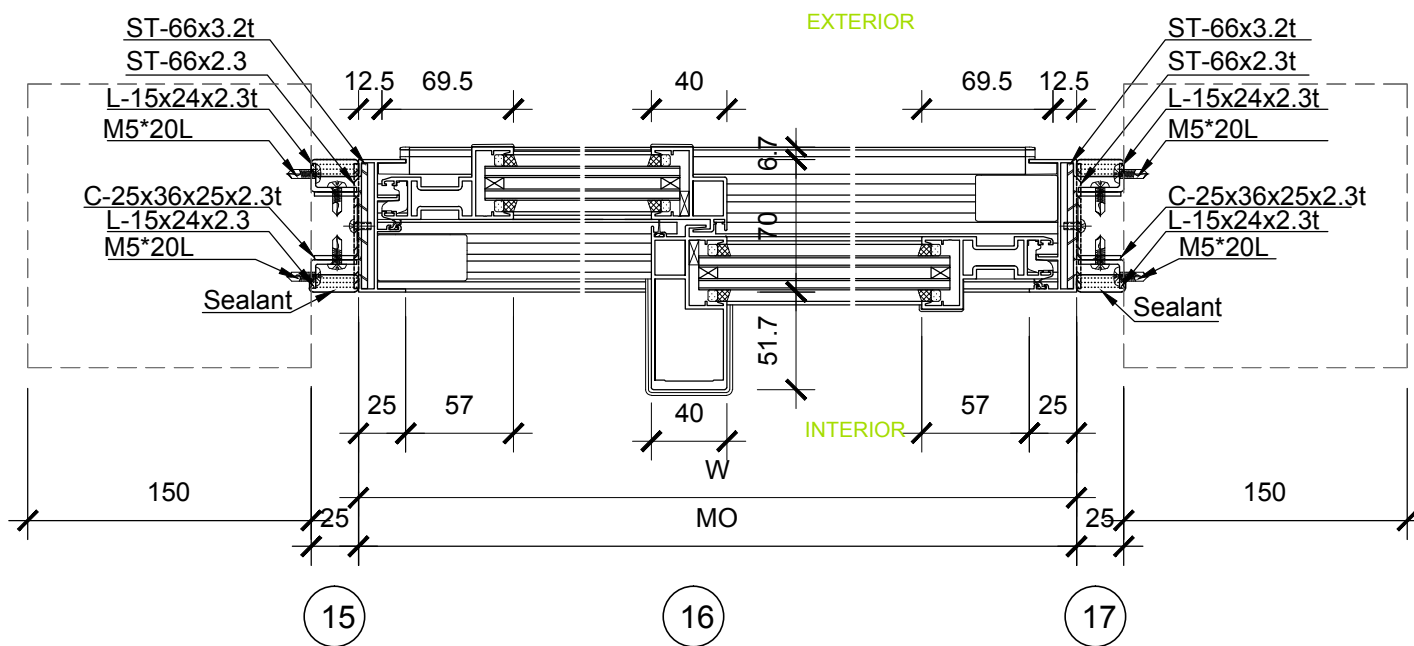
0 0.05 0.1 0.2 METER





Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:4
Unit	mm



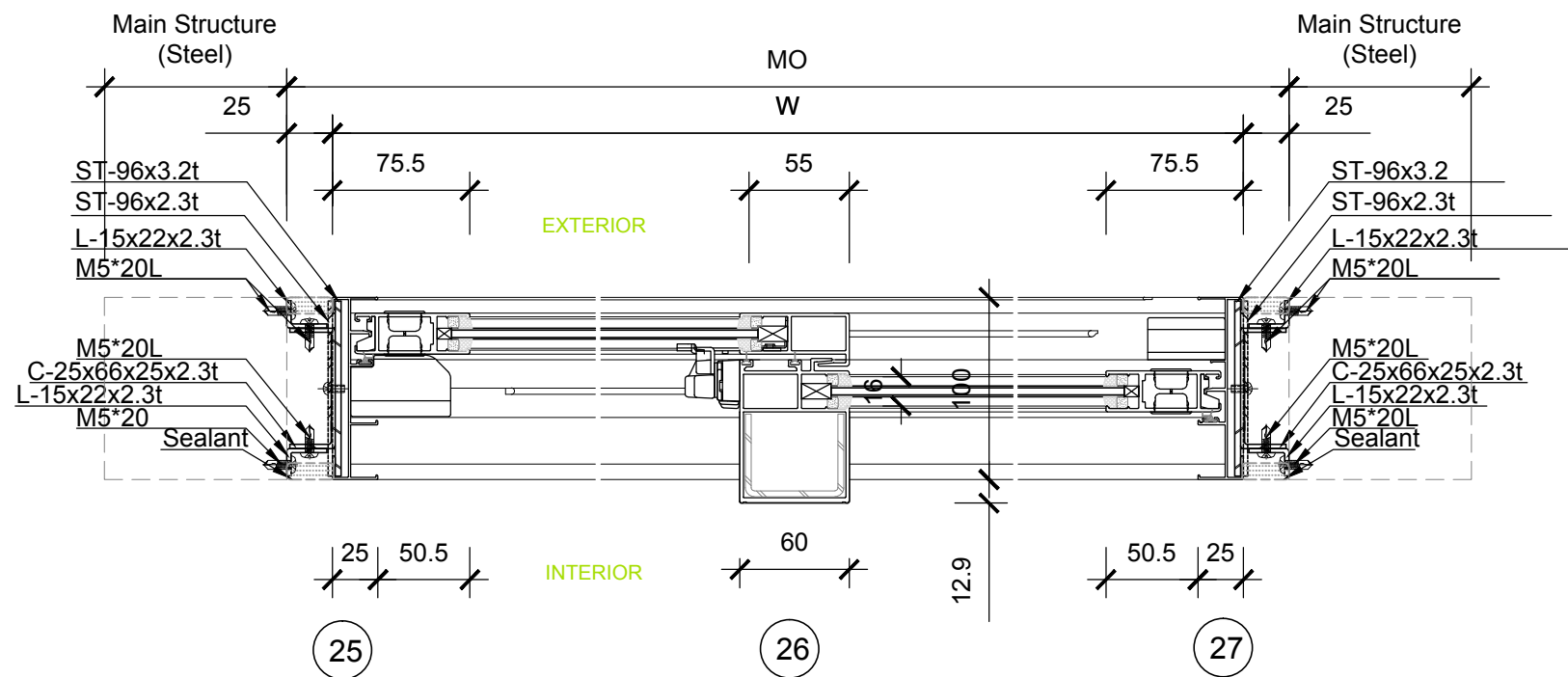
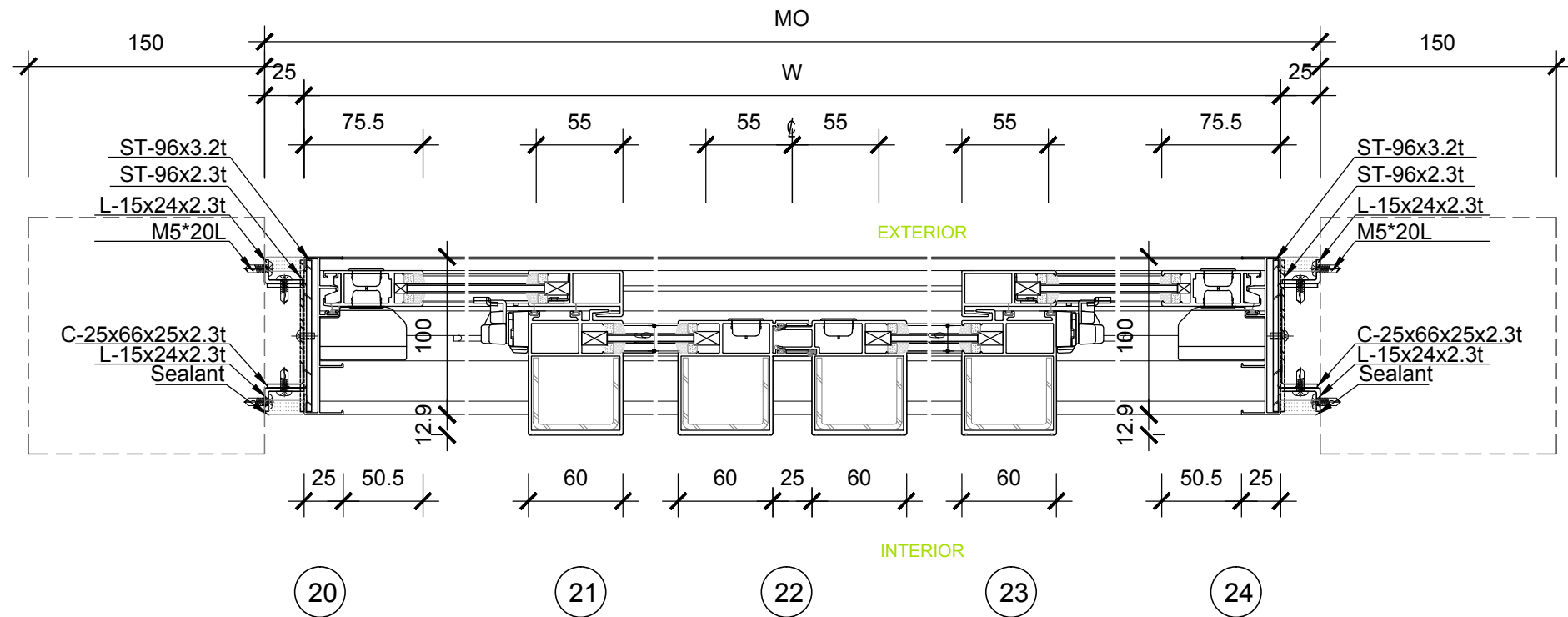


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

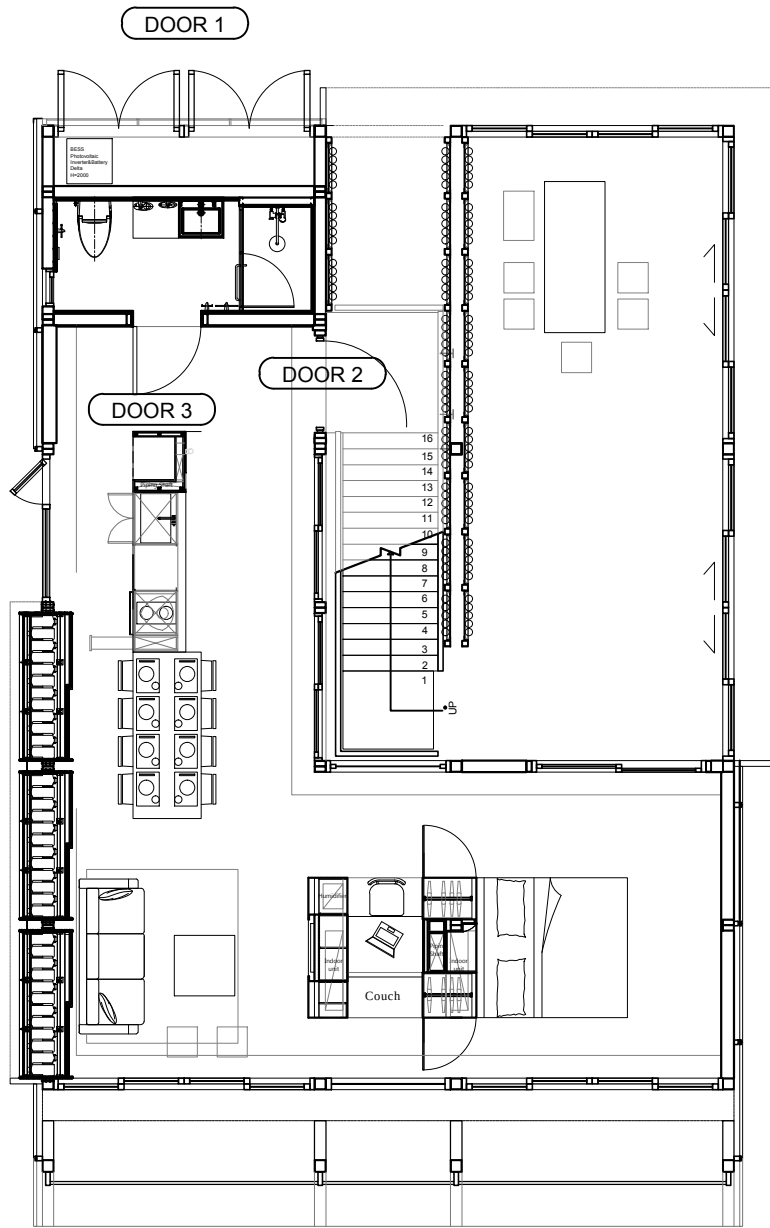
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Checked by	DN
Scale	1:4
Unit	mm

DWG. Title
WINDOW SCHEDULE AND DETAILS 9

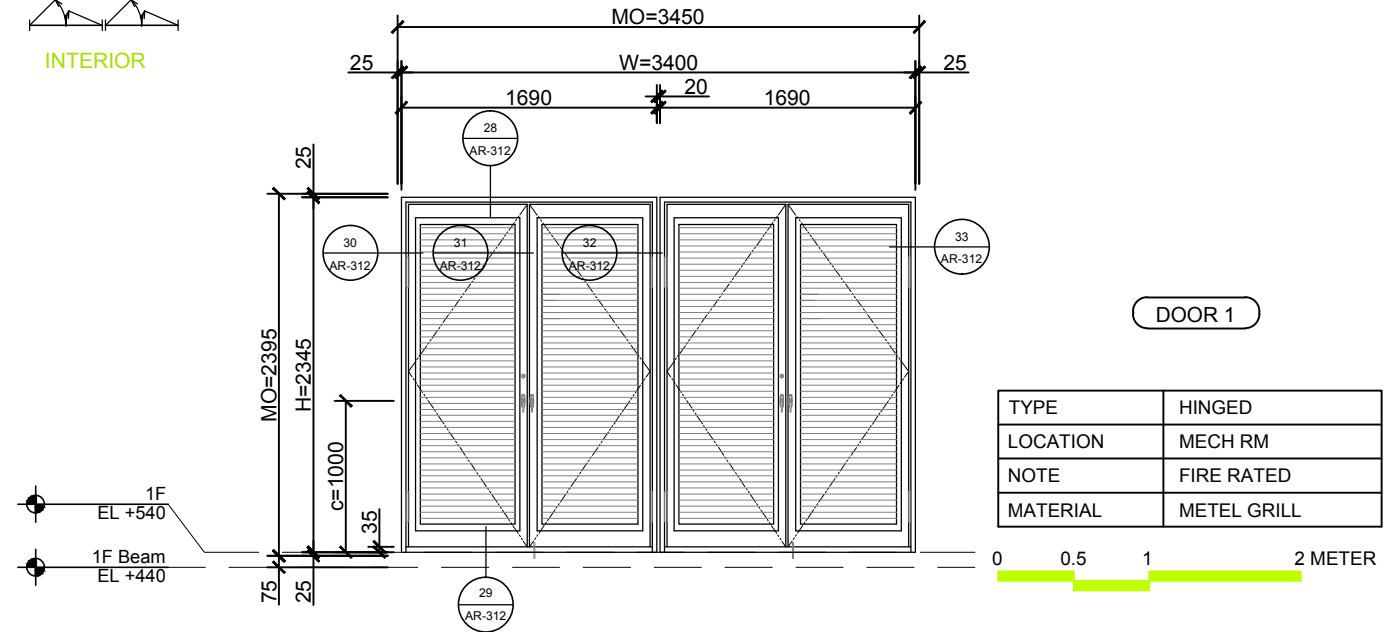
DWG. No.	PAGE
AR-309	46



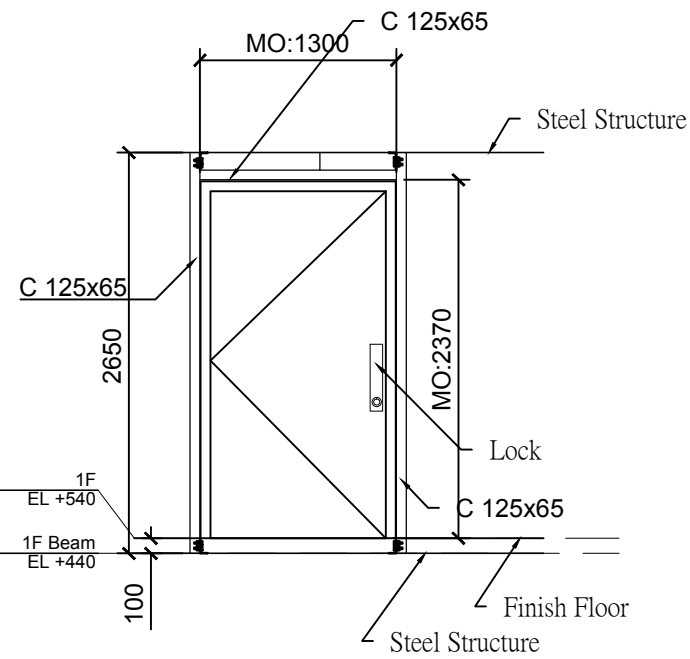
0 0.05 0.1 0.2 METER



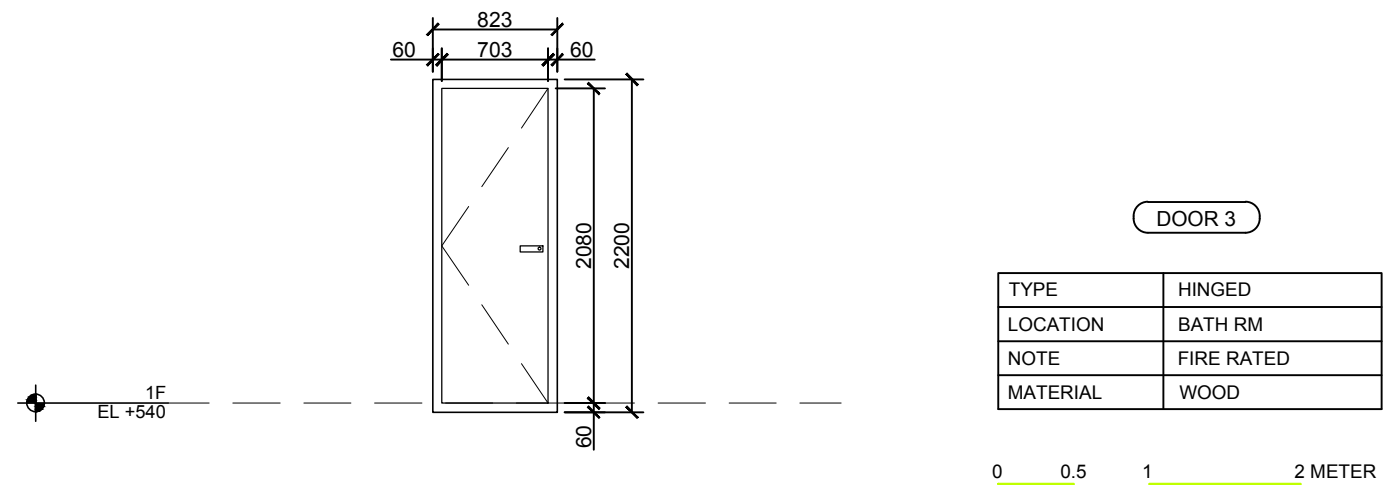
EXTERIOR
INTERIOR



TYPE	HINGED
LOCATION	MECH RM
NOTE	FIRE RATED
MATERIAL	METEL GRILL



TYPE	HINGED
LOCATION	ENTRANCE
NOTE	FIRE RATED
MATERIAL	METEL+GLASS



TYPE	HINGED
LOCATION	BATH RM
NOTE	FIRE RATED
MATERIAL	WOOD



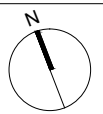
NCTU Architecture
國立交通大學建築研究所

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Contact: www.sde.tw



Consultants:

Note:



Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

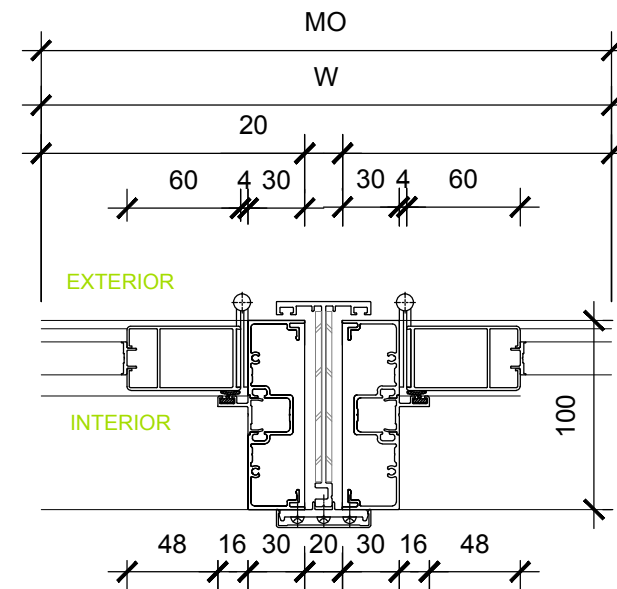
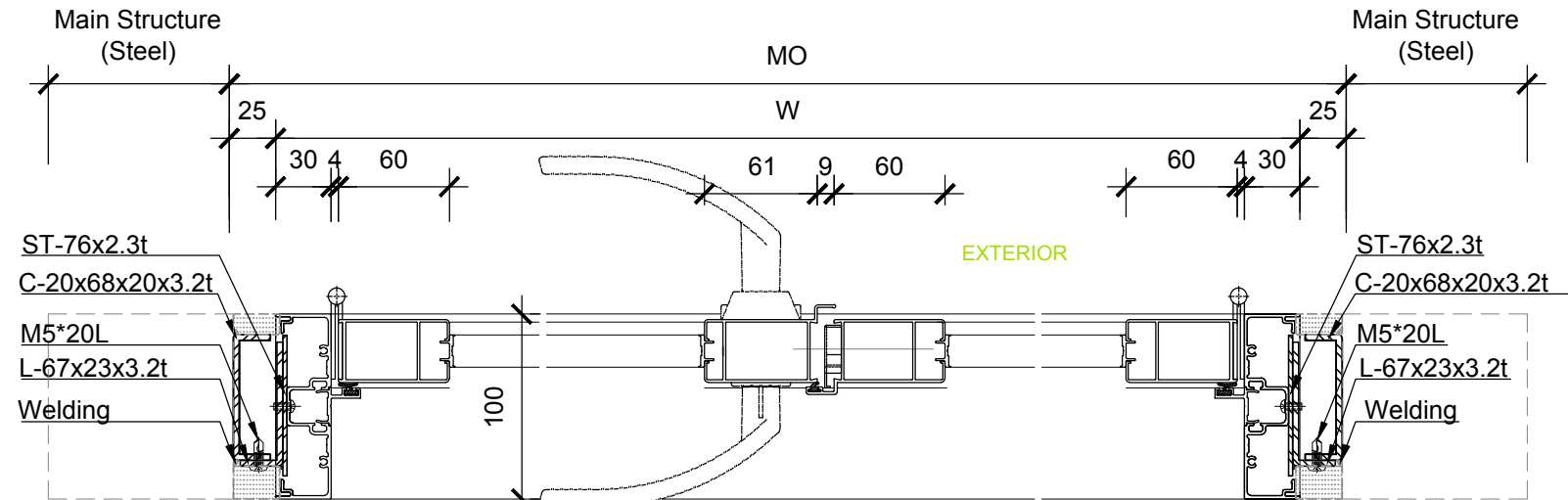
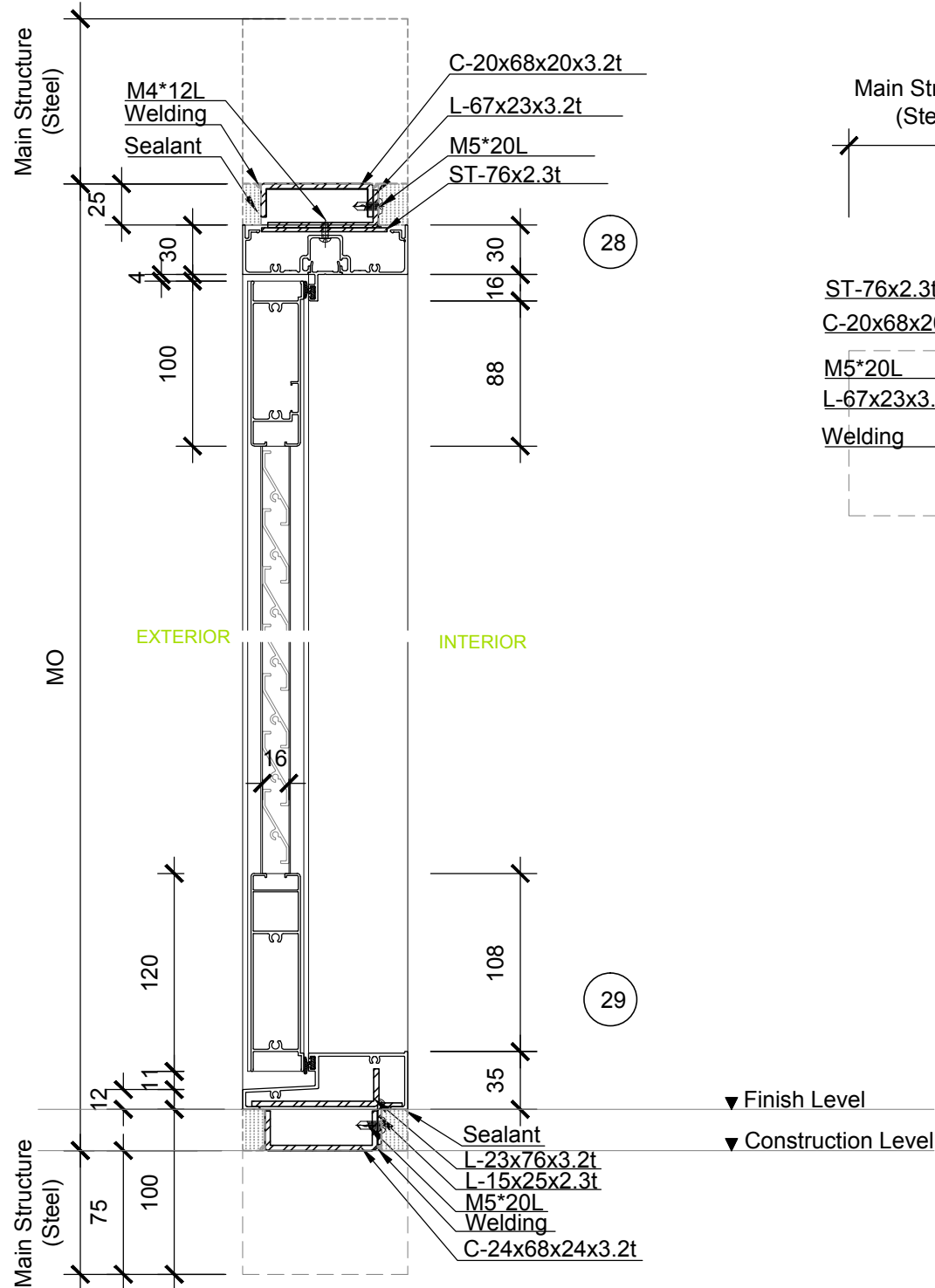
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Checked by	DN
Scale	1:50
Unit	mm

DWG. Title	
DOOR SCHEDULE AND DETAILS 1	
DWG. No.	PAGE
AR-311	47



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:4
Unit	mm



Project:



Institution:



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Address:

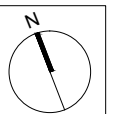
1001 Ta-Hsueh Road
Hsinchu City 30010
Taiwan
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Contact:



Consultants:

Note:

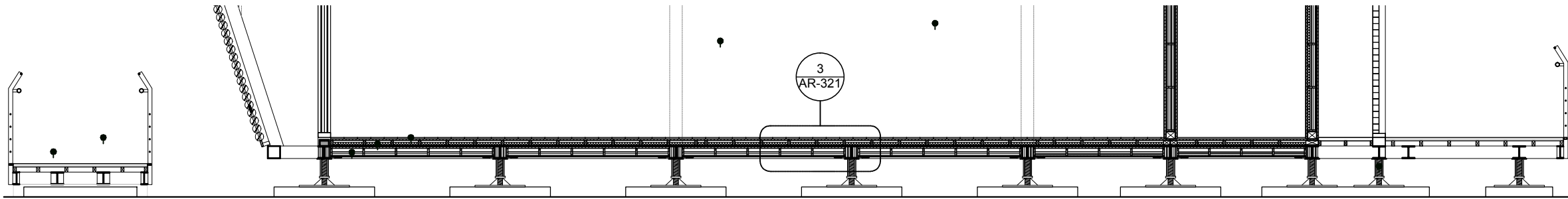


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DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

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Checked by	DN
Scale	1:10
Unit	mm

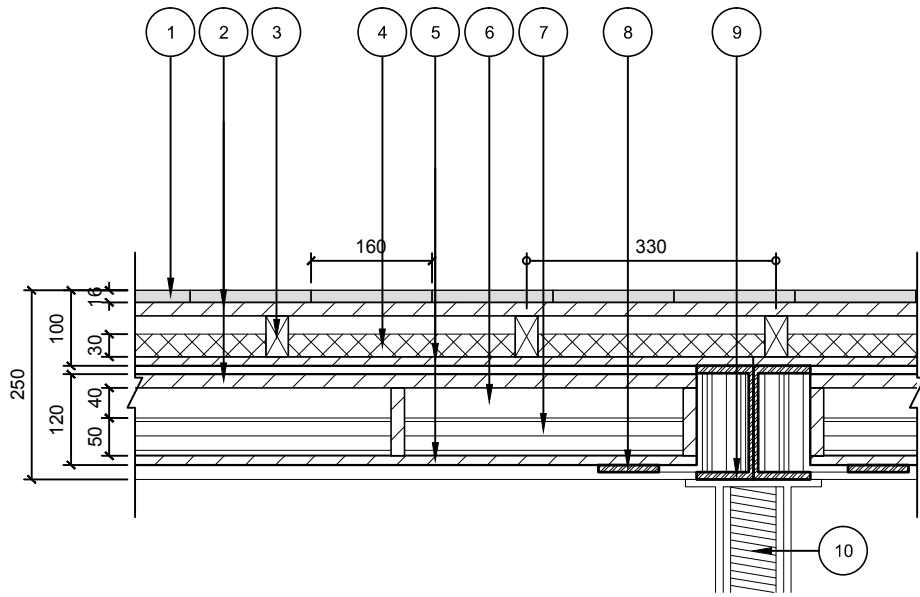
DWG. Title
**FLOOR CONSTRUCTION
GROUNDLEVEL**

DWG. No.	PAGE
AR-321	49



0 1 2 5 METER

1



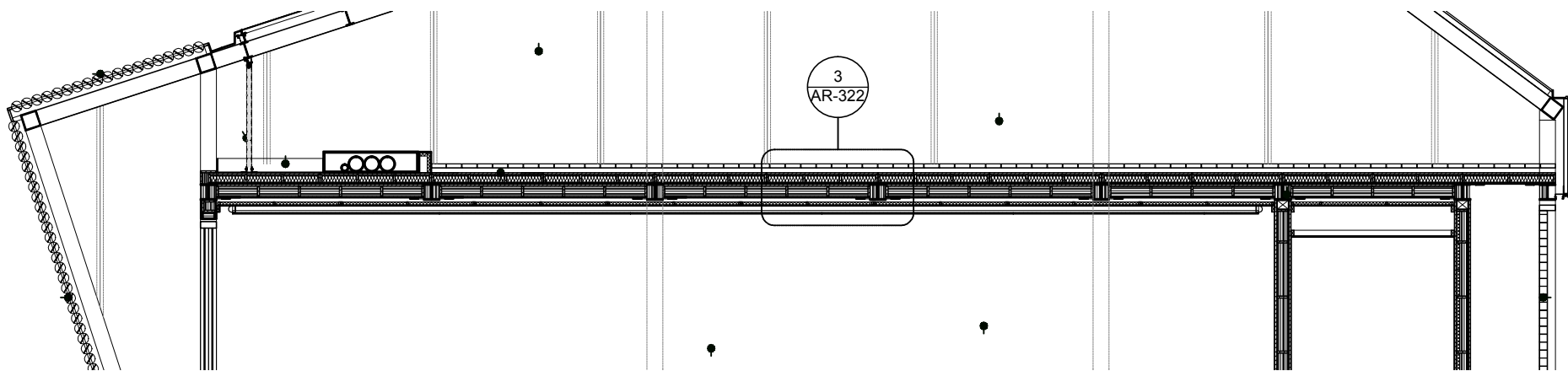
- 1 Finished Flooring 16mm
- 2 Plywood 18mm
- 3 Timber 30mm*54mm
- 4 Vacuum Insulation 30mm
- 5 Plywood 12mm
- 6 Air gap 40mm
- 7 E-foam 50mm
- 8 Floor supporting
- 9 Girder C-150x75 t=9.5mm
- 10 Footing

Thermal conductivity $R = 7.7 \text{ (m}^2\text{K/W)}$

0 0.1 0.2 0.5 METER

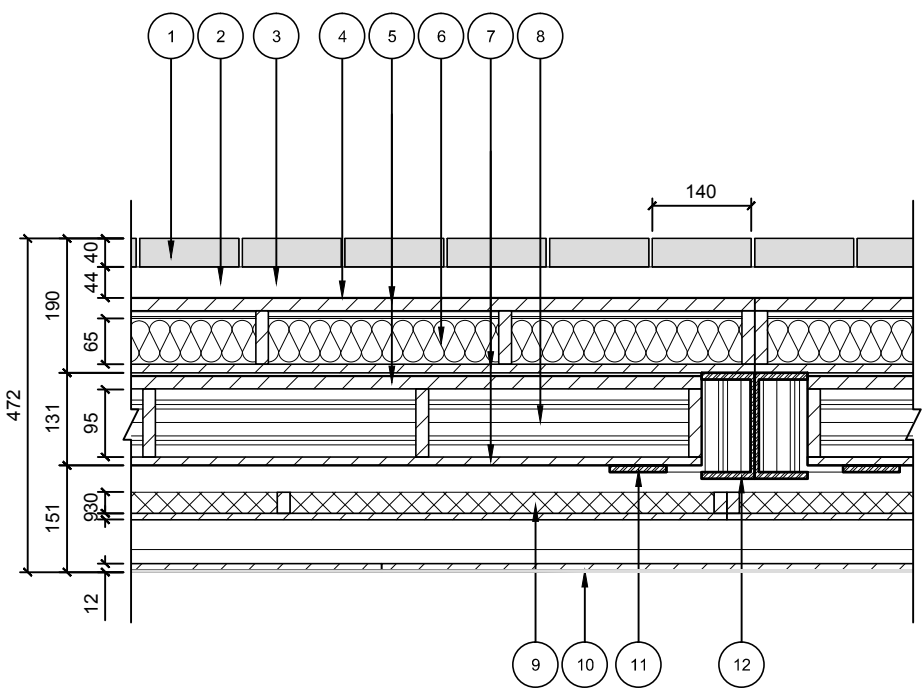
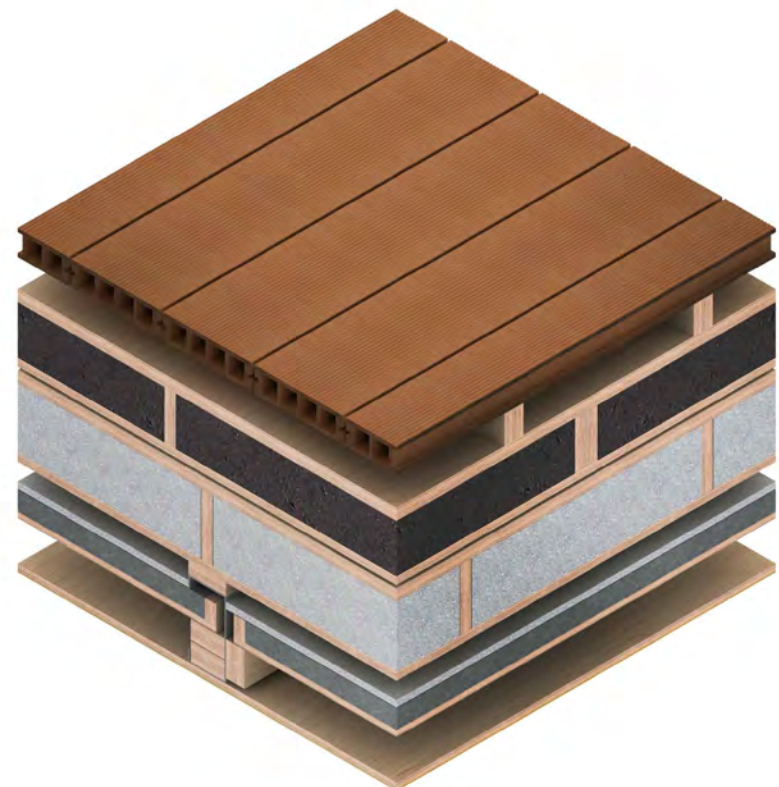
4

3



0 1 2 5 METER

1



- Wood Plastic Composites 40mm
- Timber 30mm*44mm
- Air gap 44mm
- Water proving 2mm
- Plywood 18mm
- Glass foam 65mm
- Plywood 12mm
- E-foam 95mm
- Vacuum Insulation 30mm
- Ceiling 12mm
- Floor supporting
- Girder C-150x75 t=9.5mm

Thermal conductivity R = 13.7 (m²K/W)

0 0.1 0.2 0.5 METER

3



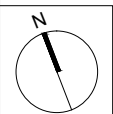
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Consultants:

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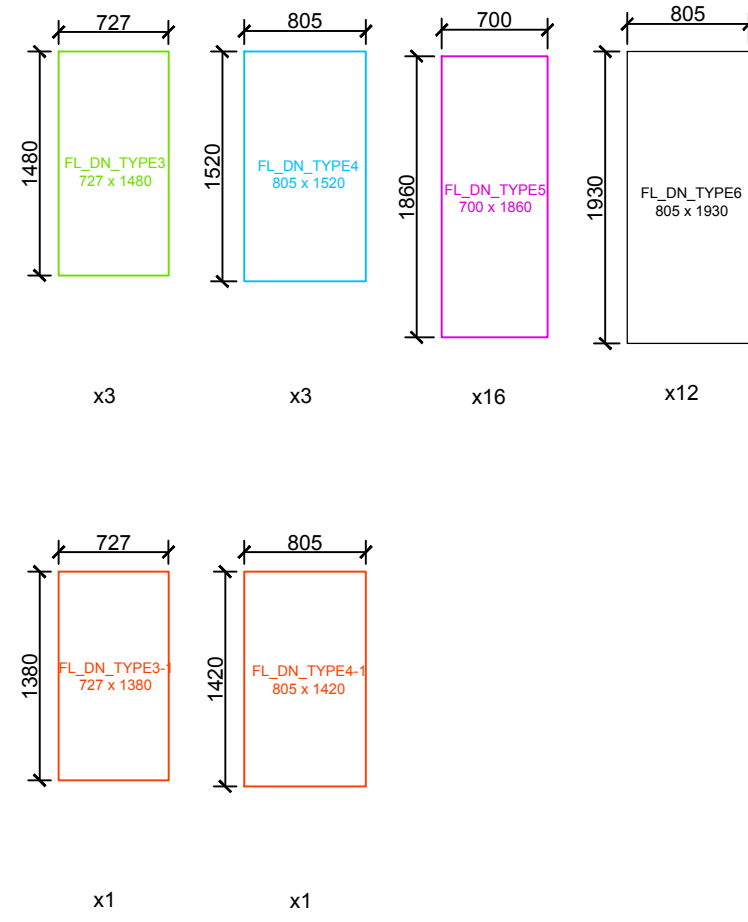
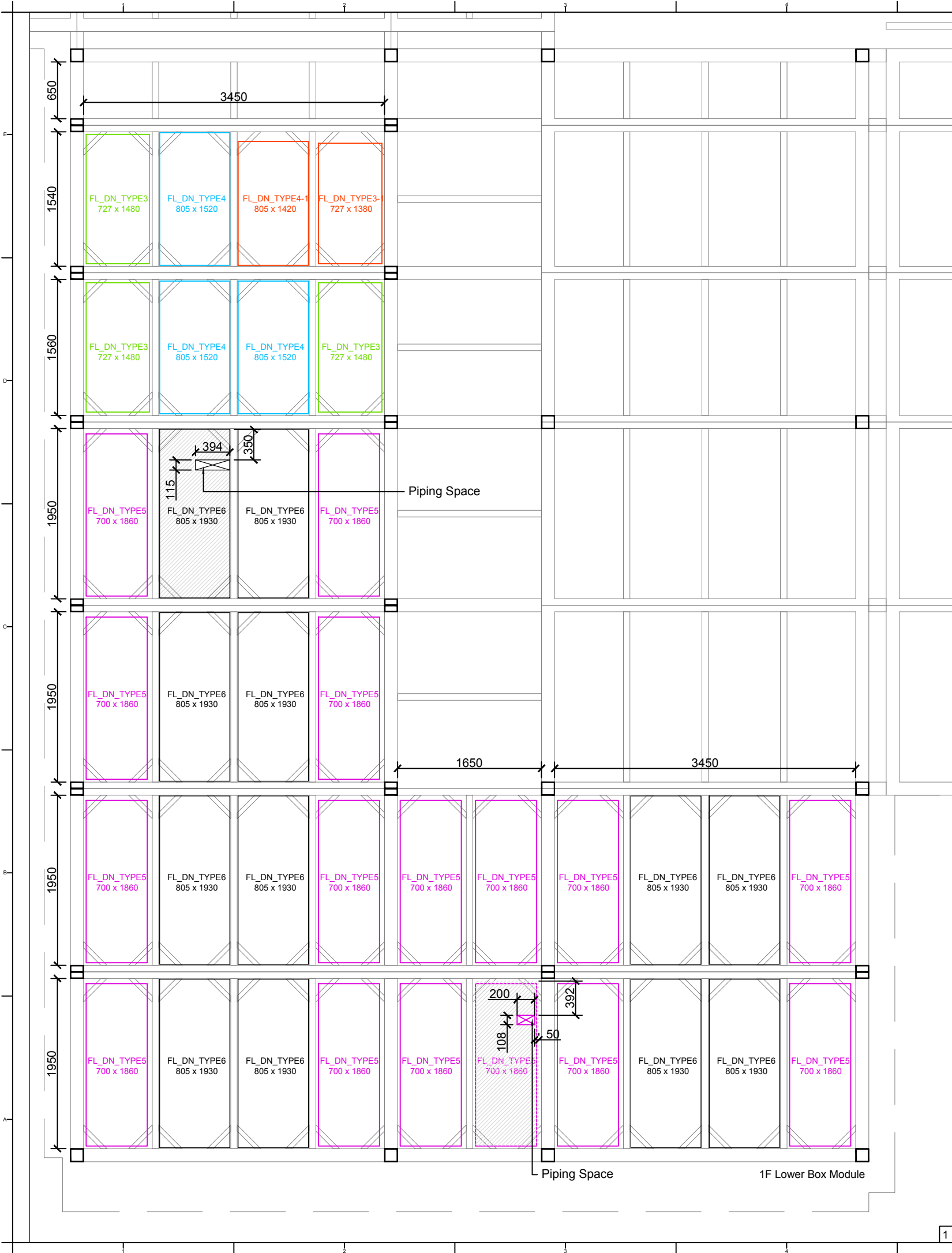


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CH
Checked by	DN
Scale	1:10
Unit	mm

DWG. Title
FLOOR CONSTRUCTION
MEZZANINE LEVEL

DWG. No.	PAGE
AR-322	50



Special Module



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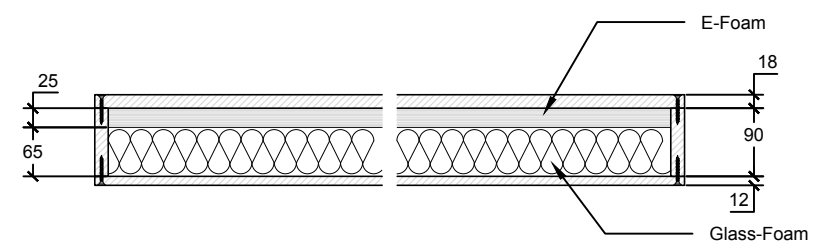
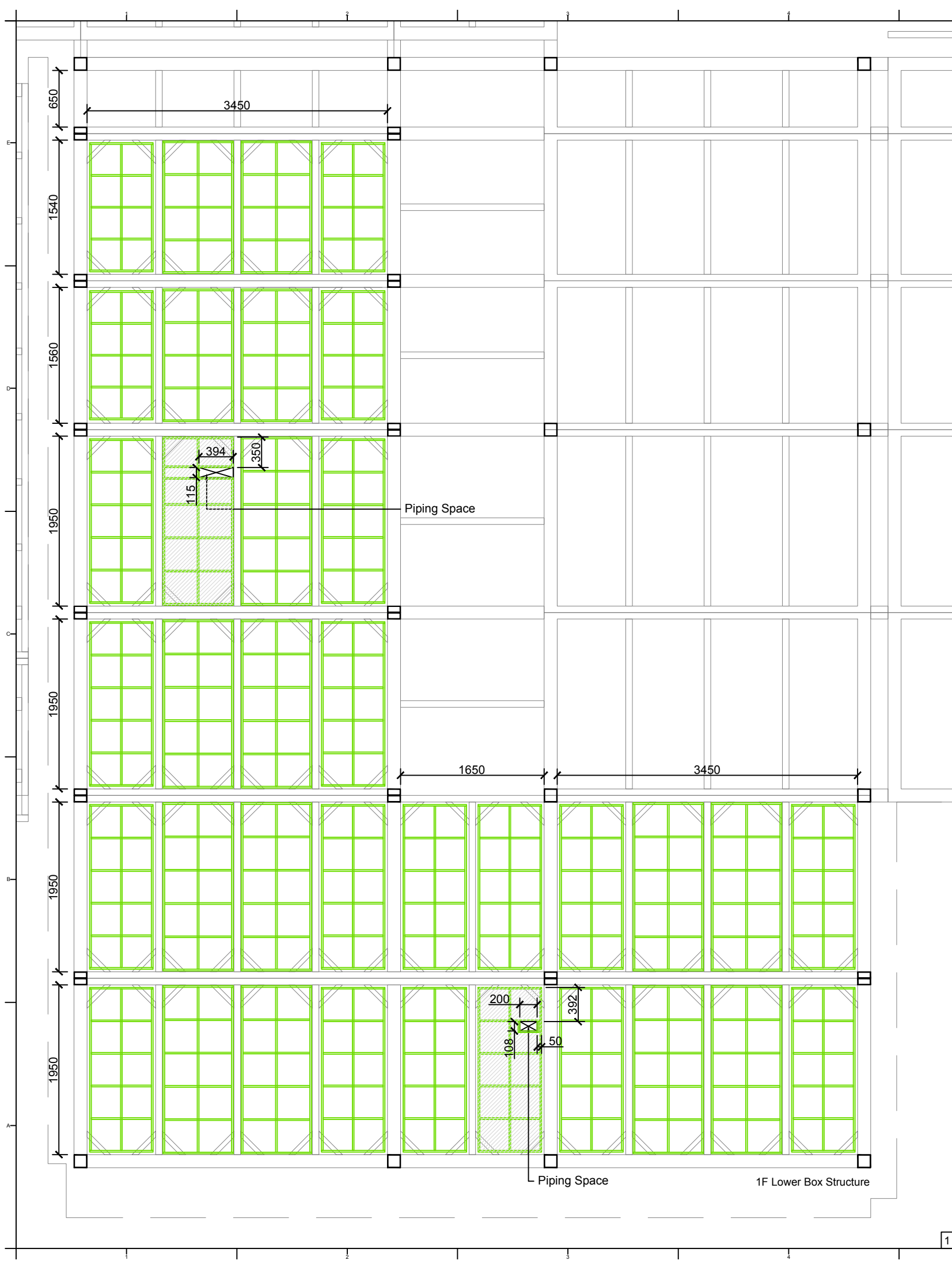
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by CF
Checked by ST
Scale 1:50
Unit mm

DWG. Title
FLOOR CONSTRUCTION
DETAILS
GROUND LEVEL1

DWG. No. AR-323
PAGE 51



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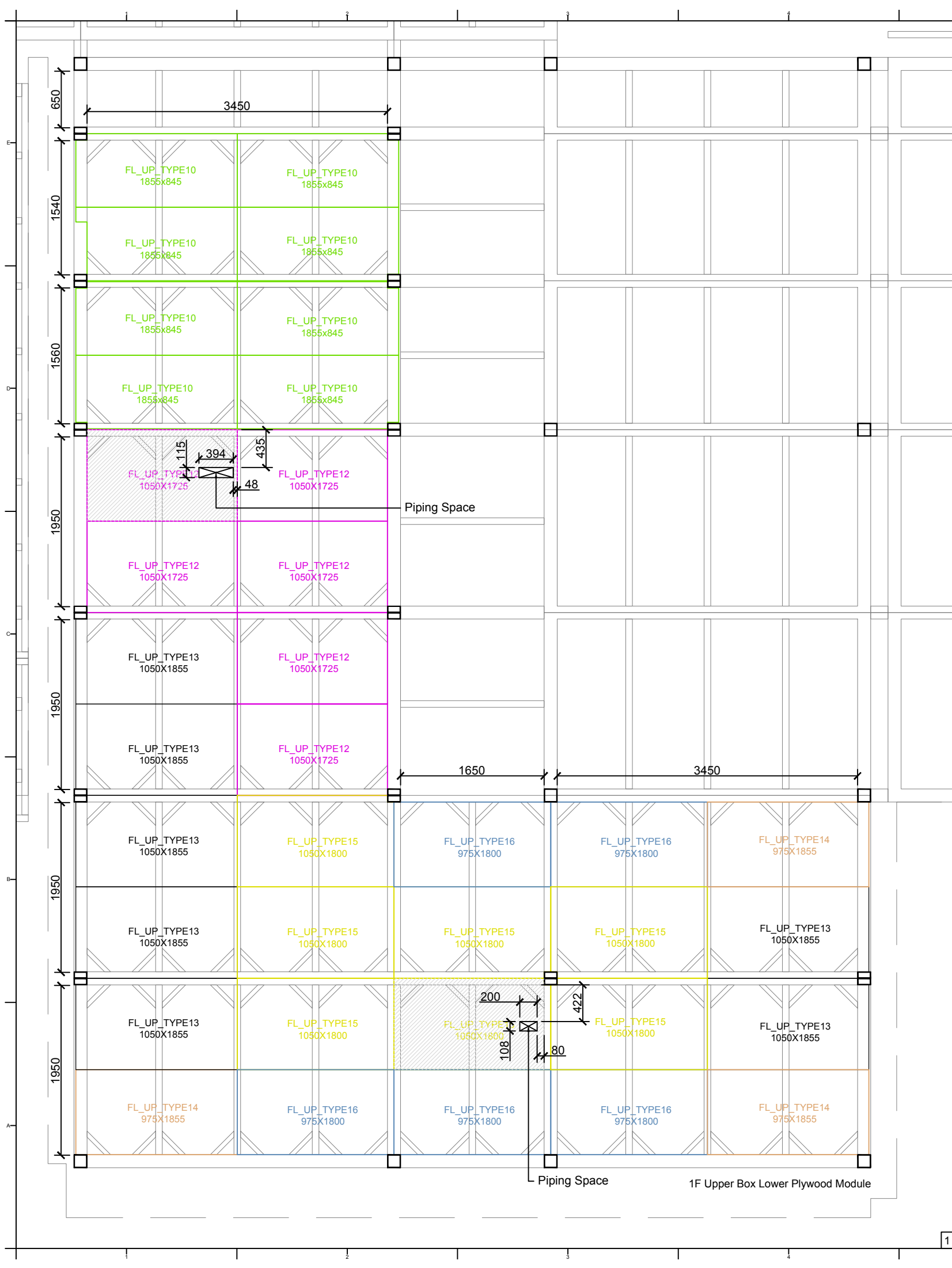


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	-
Scale	1:50
Unit	mm

DWG. Title
FLOOR CONSTRUCTION
DETAILS
GROUND LEVEL 2

DWG. No.	PAGE
AR-324	52





Project:



Institution:



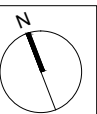
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Hsinchu City 30010
Taiwan
Contact: www.sde.tw



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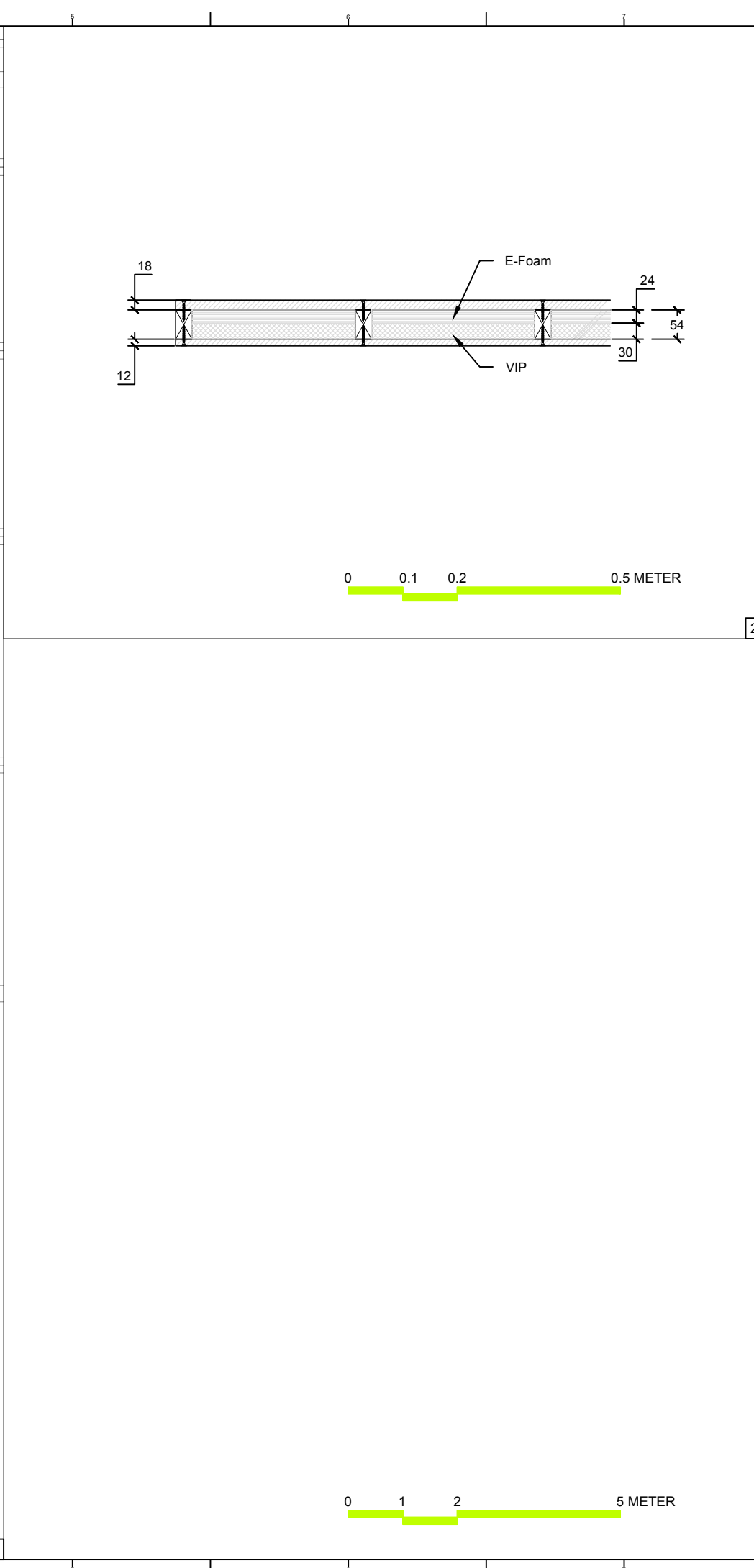
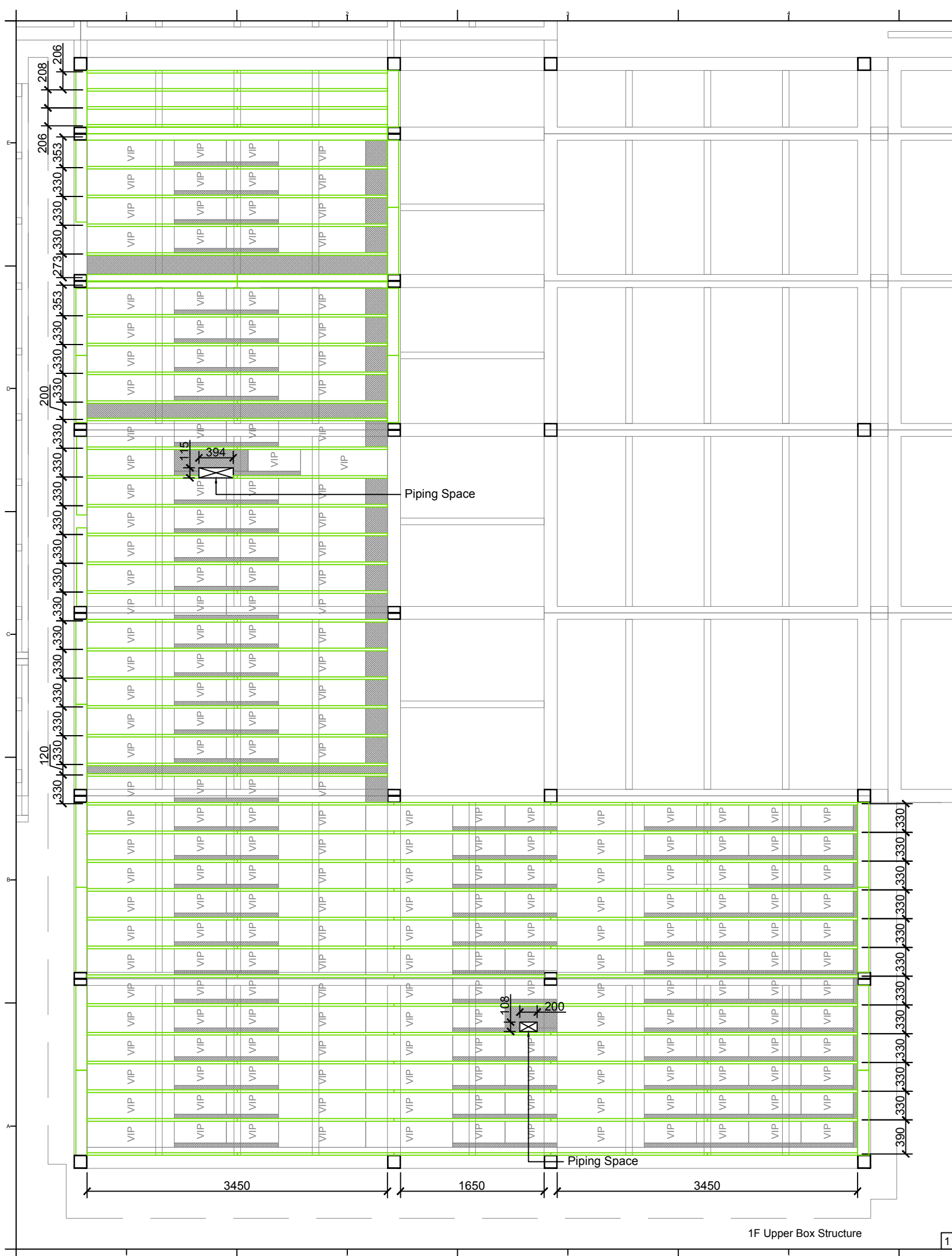
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ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	ST
Scale	1:50
Unit	mm

DWG. Title	
FLOOR CONSTRUCTION DETAILS GROUND LEVEL 3	
DWG. No.	PAGE
AR-325	53





Solar Decathlon Europe



ORCHID HOUSE



NCTU Architecture
國立交通大學建築研究所

Project:

Institution:

Team Name:

Address:

Contact:

Consultants:

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Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by

Checked by

Scale

Unit

CF

ST

1:50

mm

DWG. Title

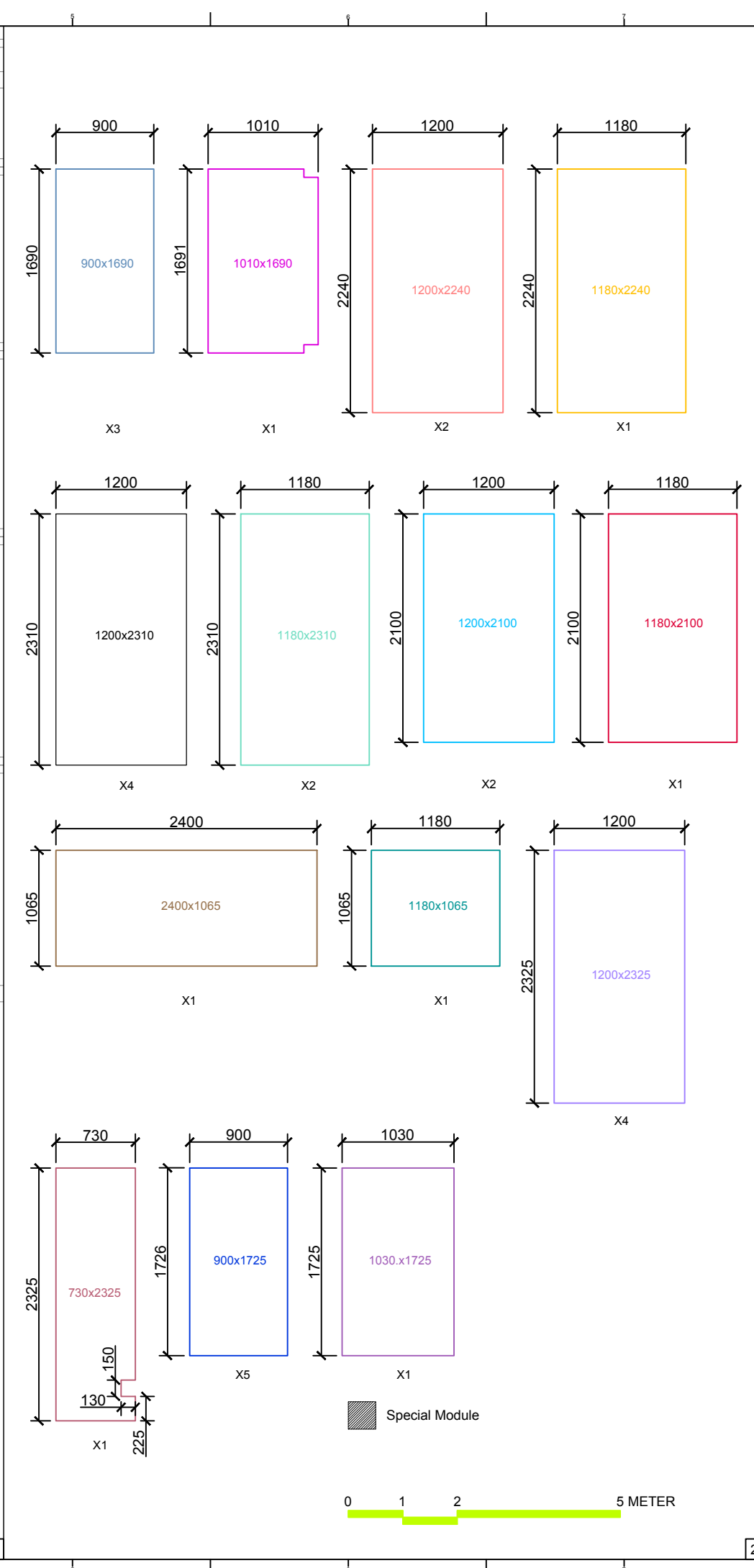
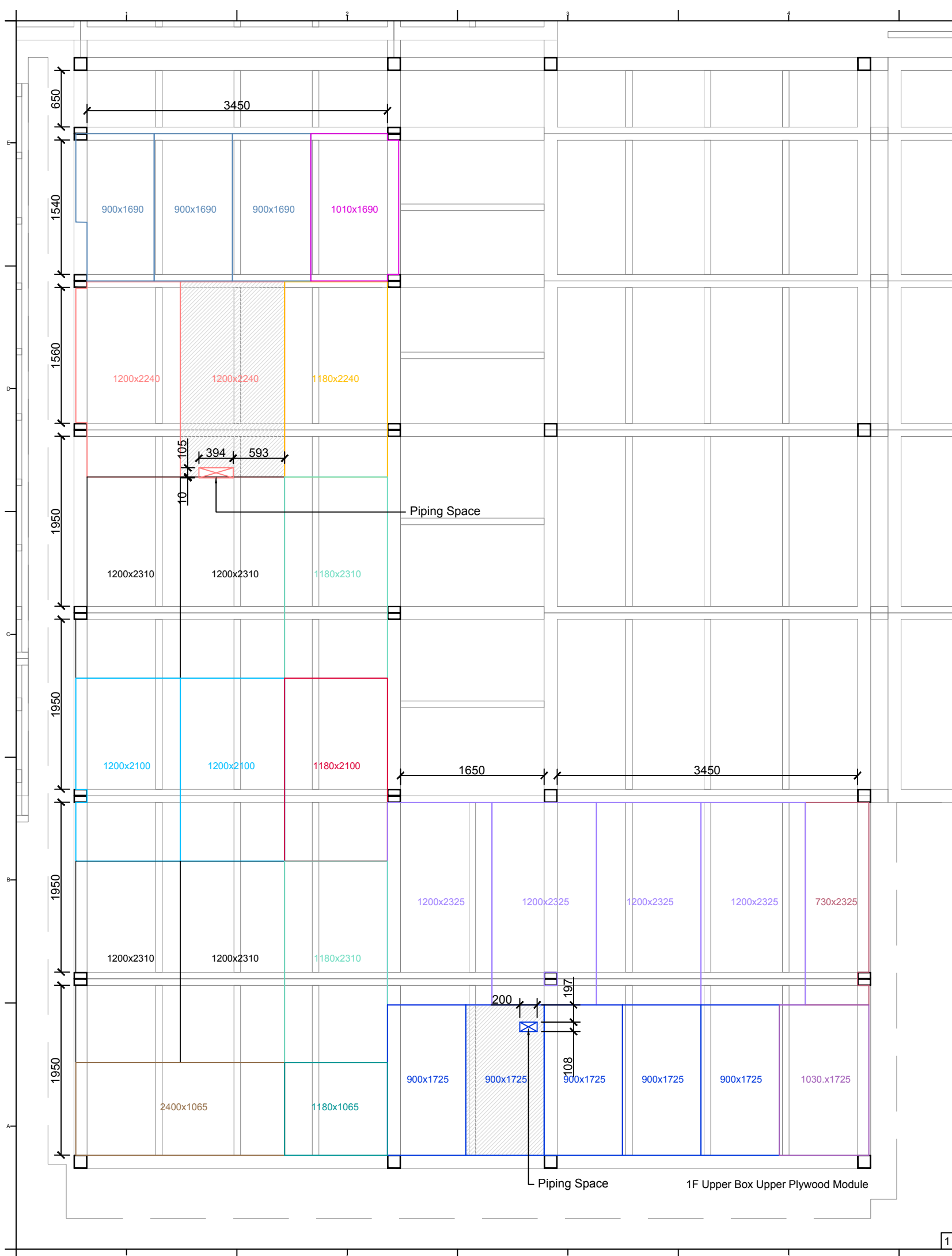
FLOOR CONSTRUCTION DETAILS
GROUND LEVEL 4

DWG. No.

AR-326

PAGE

54



Solar Decathlon Europe

Project:

ORCHID HOUSE

Institution:

國立交通大學
National Chiao Tung University

NCTU Architecture
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Taiwan

Contact: www.sde.tw

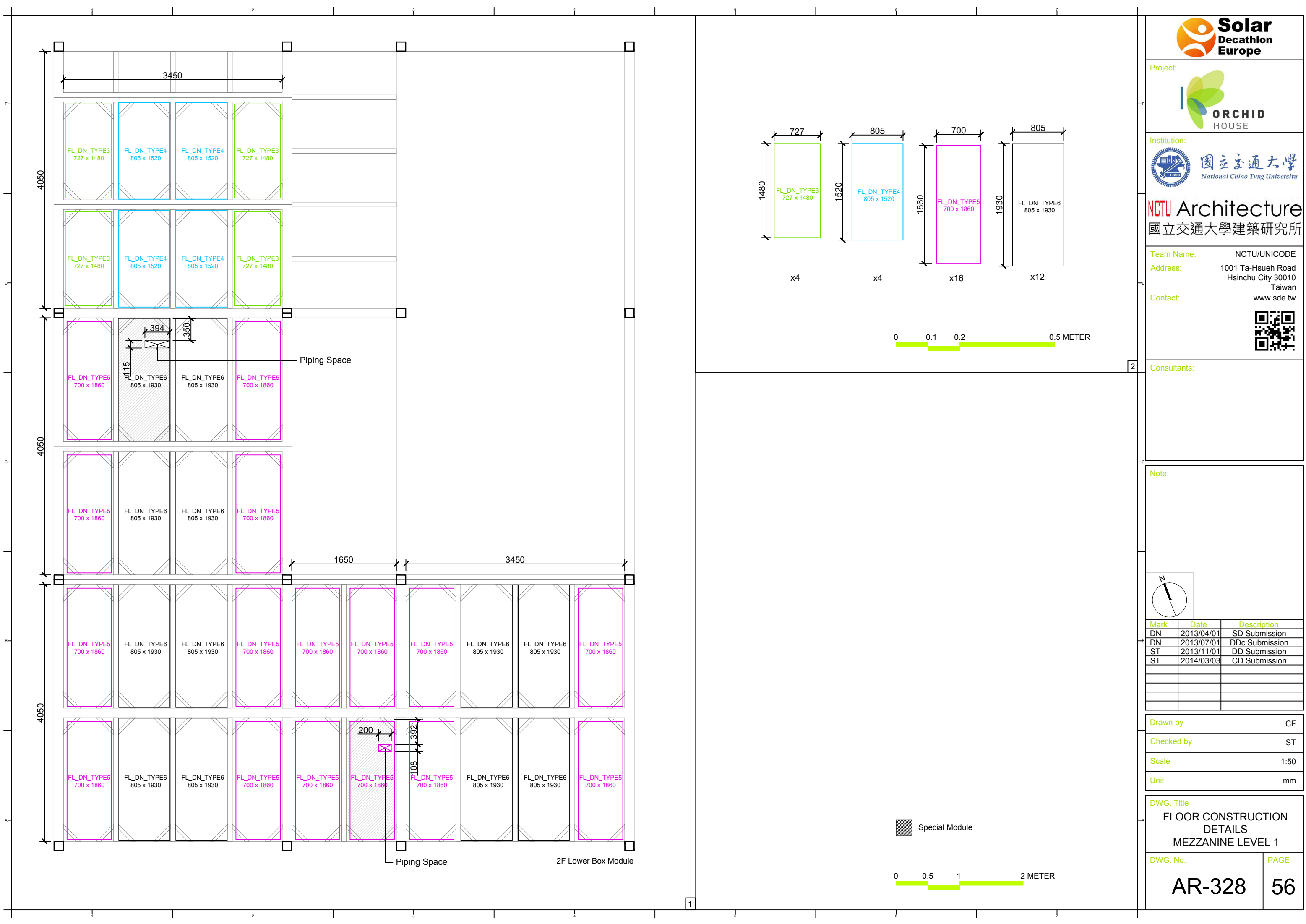
Consultants:

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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	ST
Scale	1:50
Unit	mm

DWG. Title	FLOOR CONSTRUCTION DETAILS GROUND LEVEL 5
DWG. No.	AR-327
PAGE	55



Project:



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Hsinchu City 30010
Taiwan

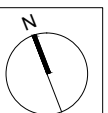
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www.sde.tw



Consultants:

Note:

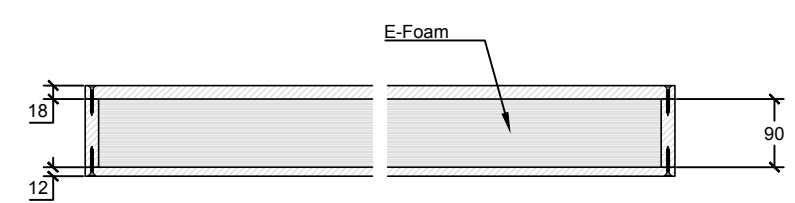


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	ST
Scale	1:50
Unit	mm

DWG. Title
**FLOOR CONSTRUCTION
DETAILS
MEZZANINE LEVEL 1**

DWG. No.	PAGE
AR-328	56



Special Module



Project:

Institution:

國立交通大學
National Chiao Tung University

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Consultants:

Note:

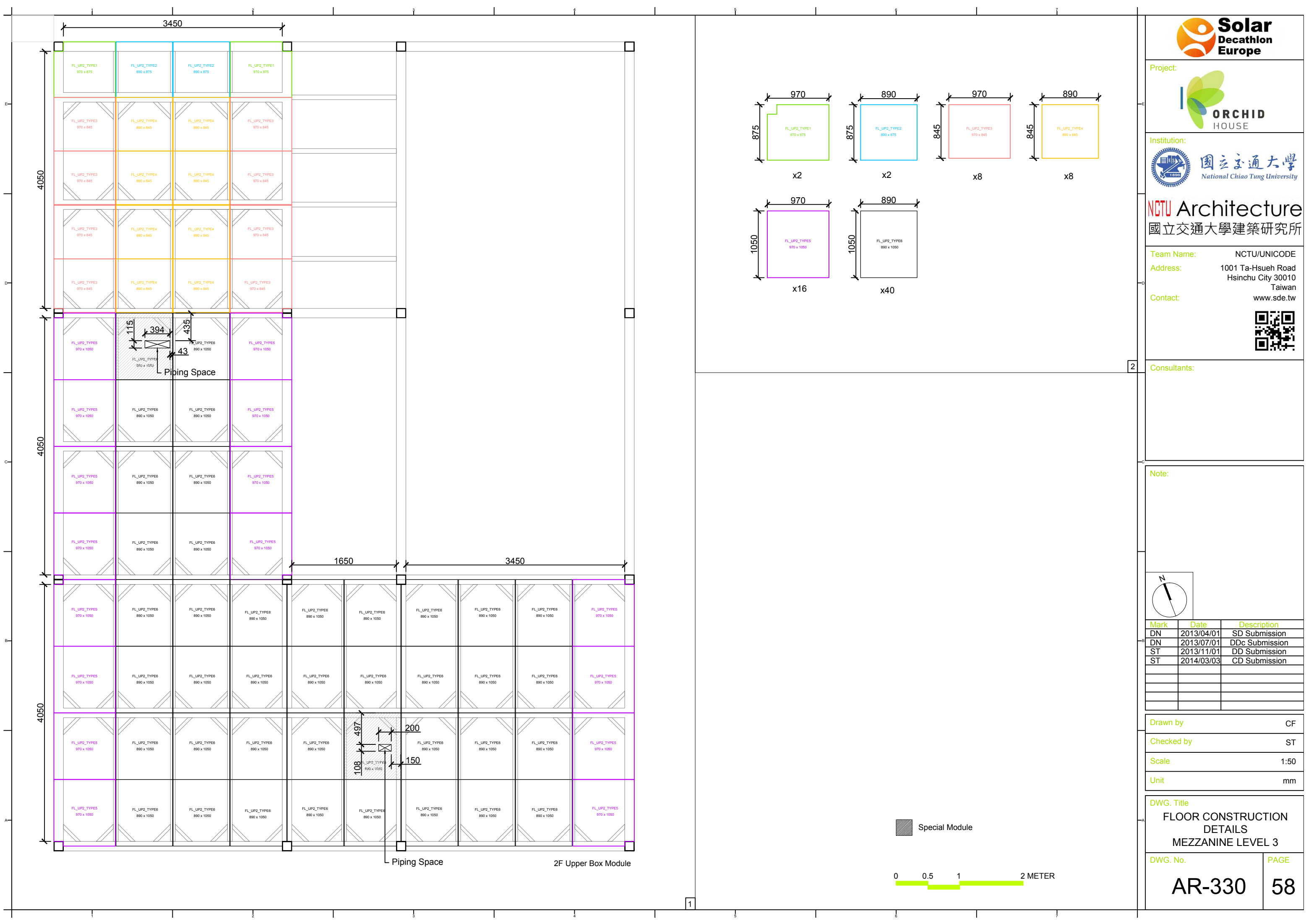
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Checked by	-
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DWG. Title

**FLOOR CONSTRUCTION
DETAILS
MEZZANINE LEVEL 2**

DWG. No.	PAGE
AR-329	57



Project:



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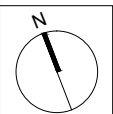
NCTU Architecture
國立交通大學建築研究所

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Hsinchu City 30010
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Note:

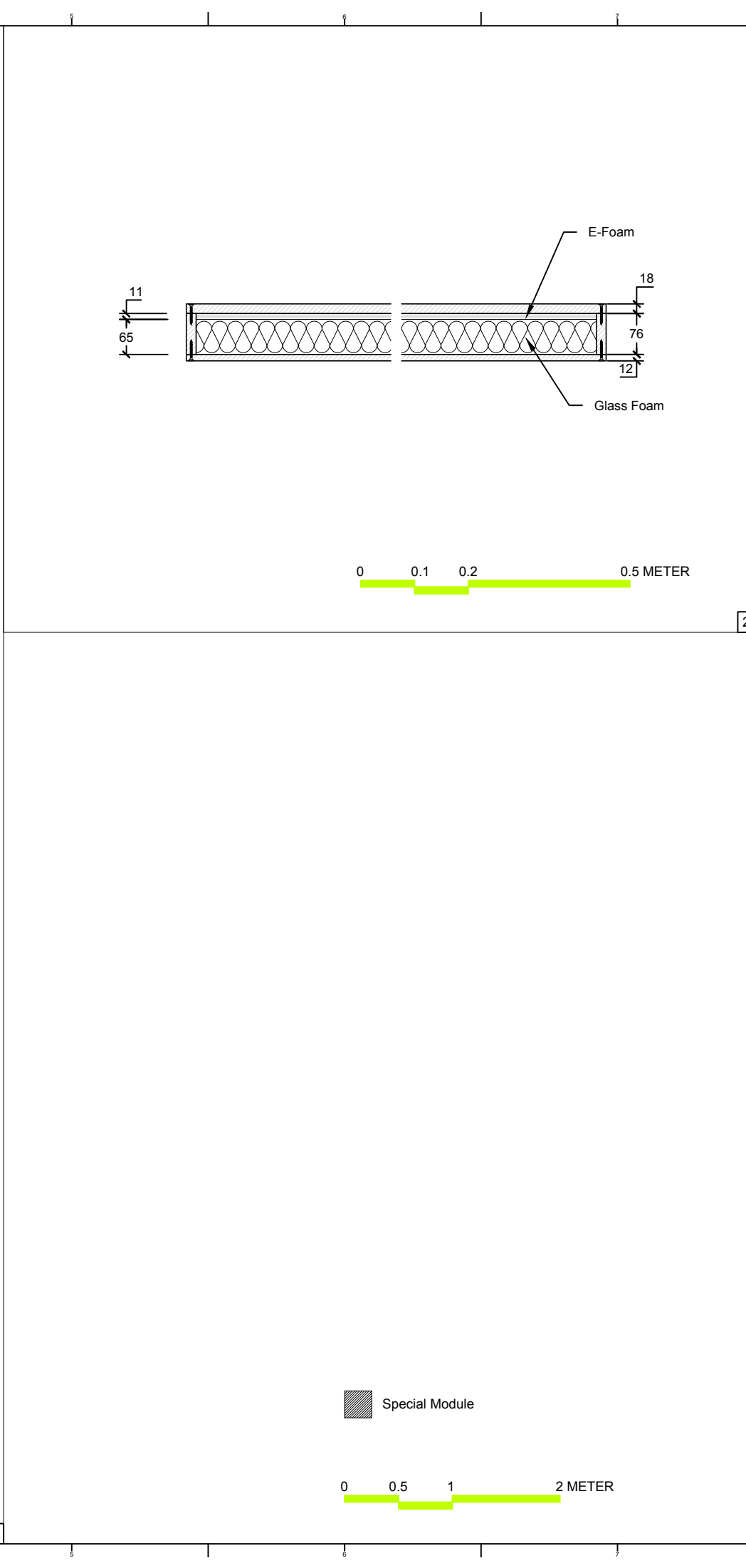
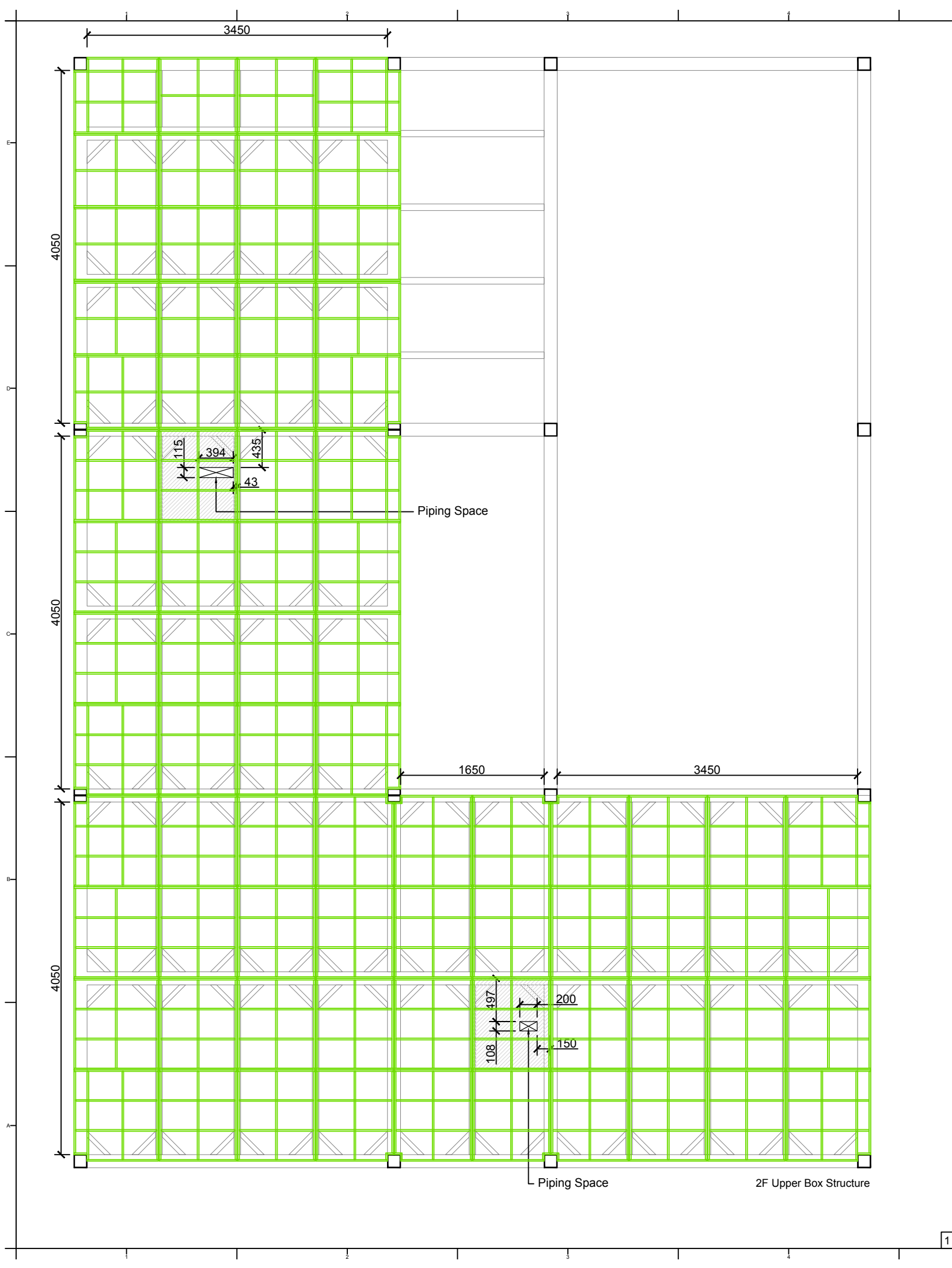


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale	1:50
Unit	mm

DWG. Title
**FLOOR CONSTRUCTION
DETAILS
MEZZANINE LEVEL 3**

DWG. No.	PAGE
AR-330	58





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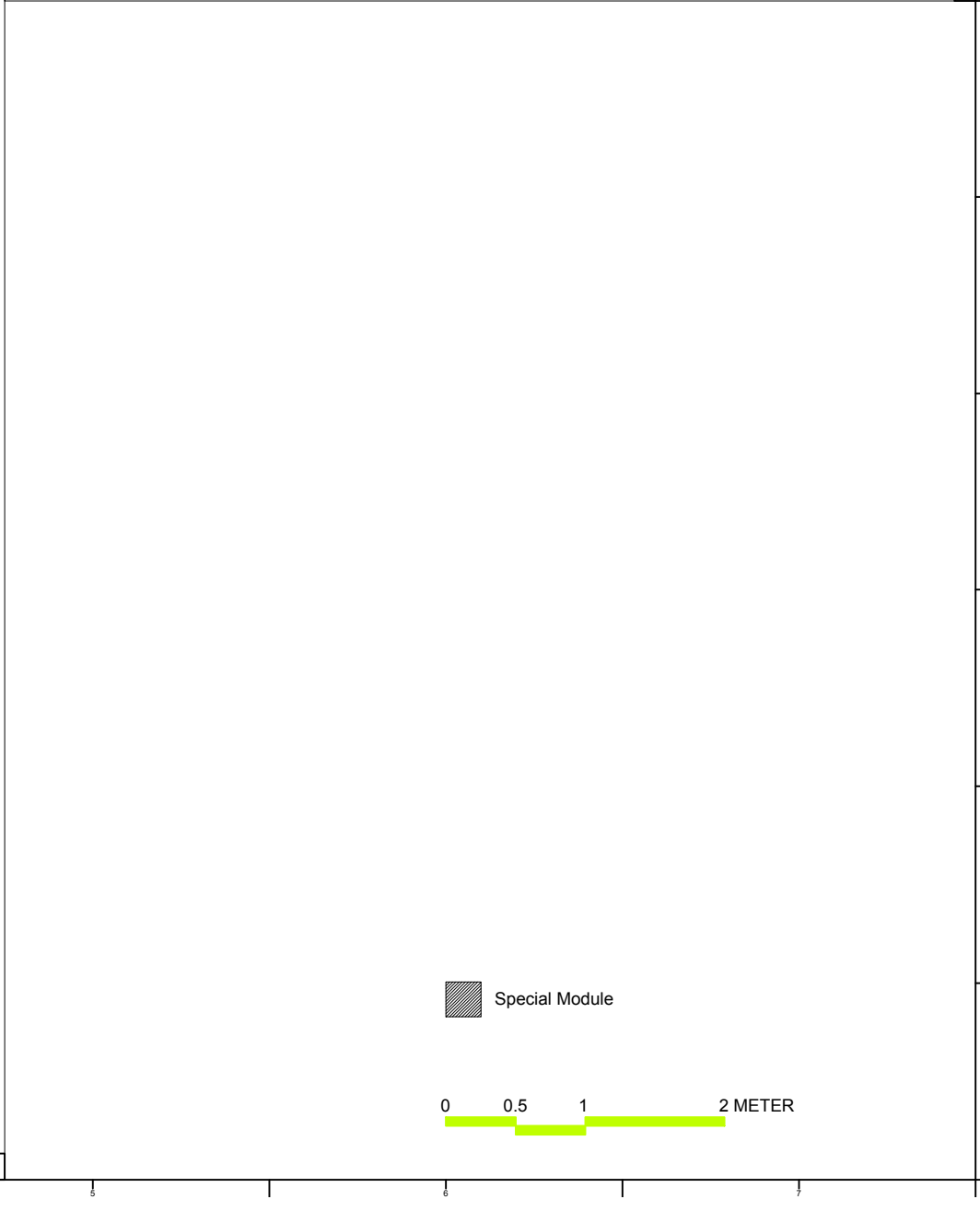
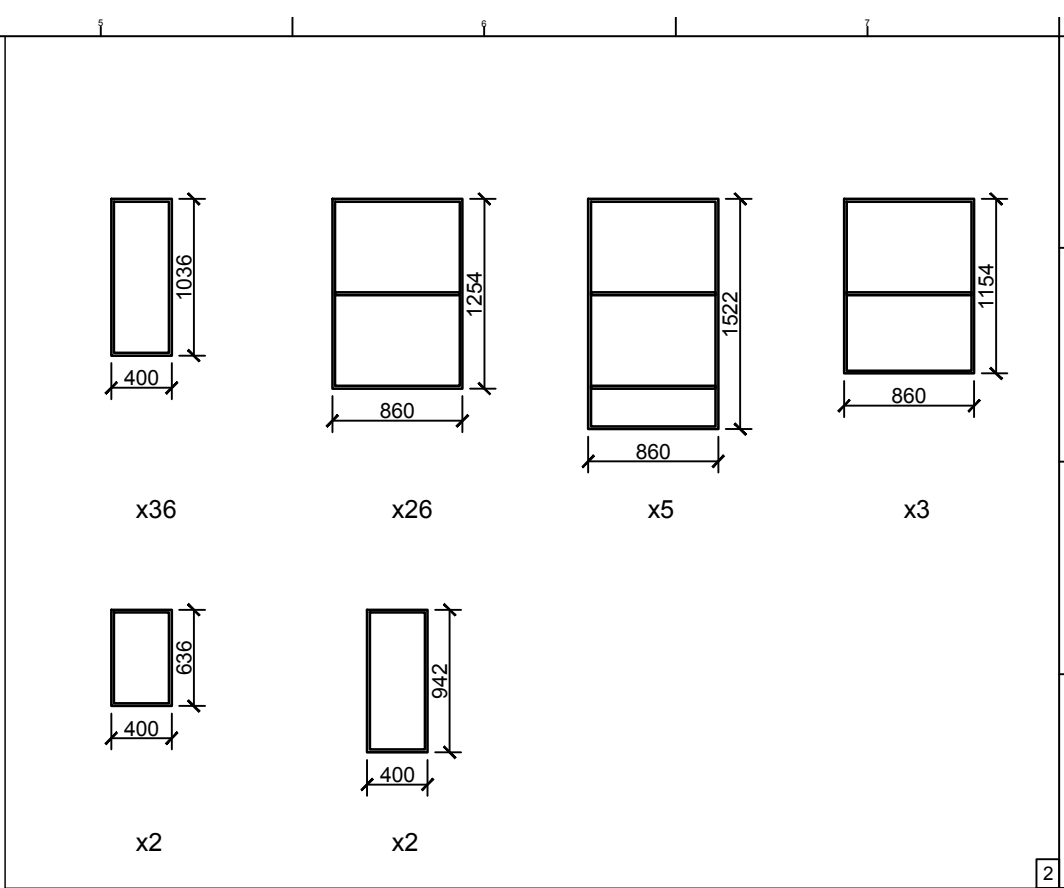
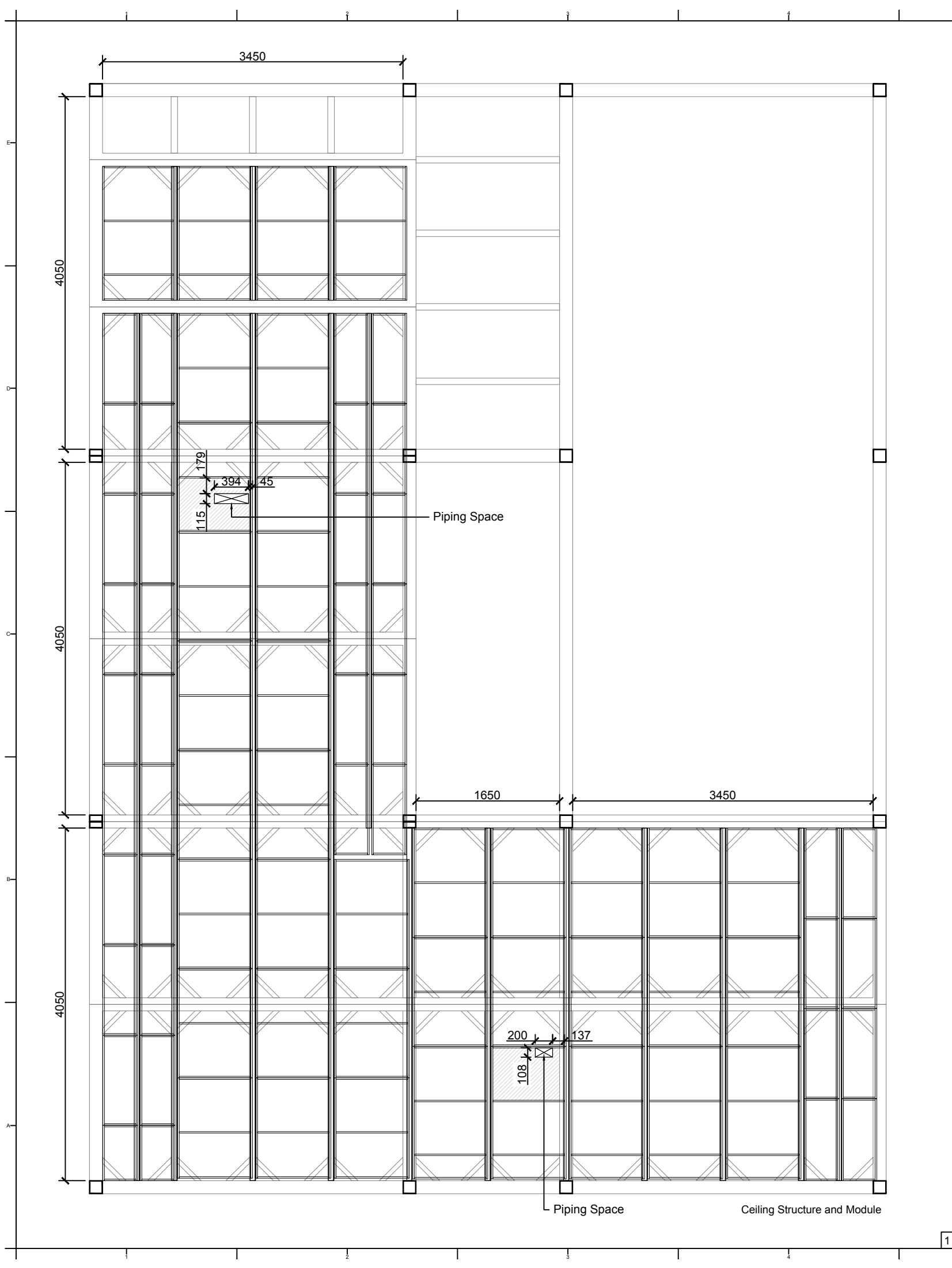
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ST	2014/03/03	CD Submission

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Scale	1:50
Unit	mm

DWG. Title

FLOOR CONSTRUCTION DETAILS

DWG. No.	PAGE
AR-331	59



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DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

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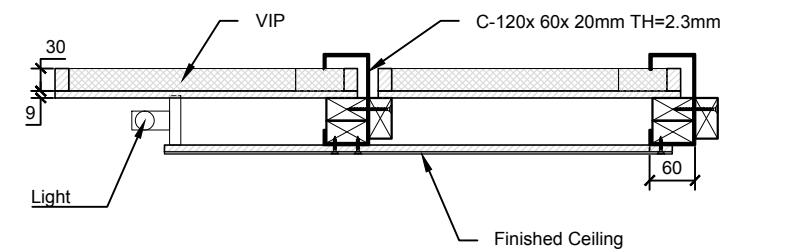
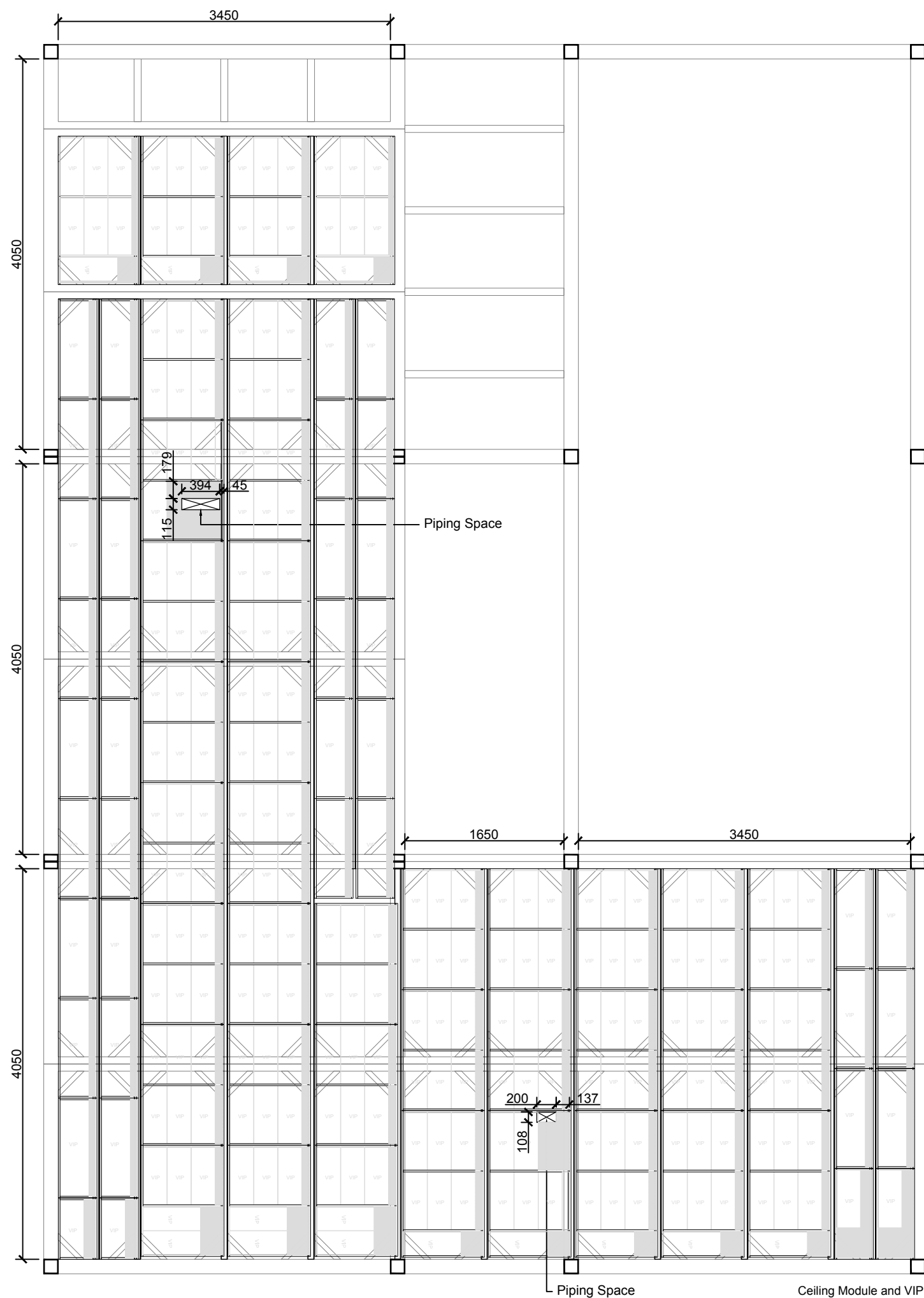
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Unit mm

DWG. Title

CEILING CONSTRUCTION DETAILS

DWG. No.	PAGE
AR-332	60



Project:



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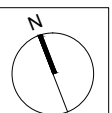
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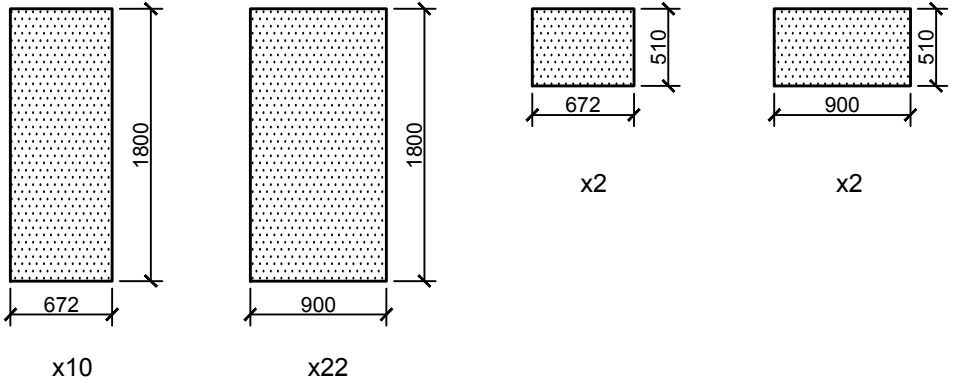
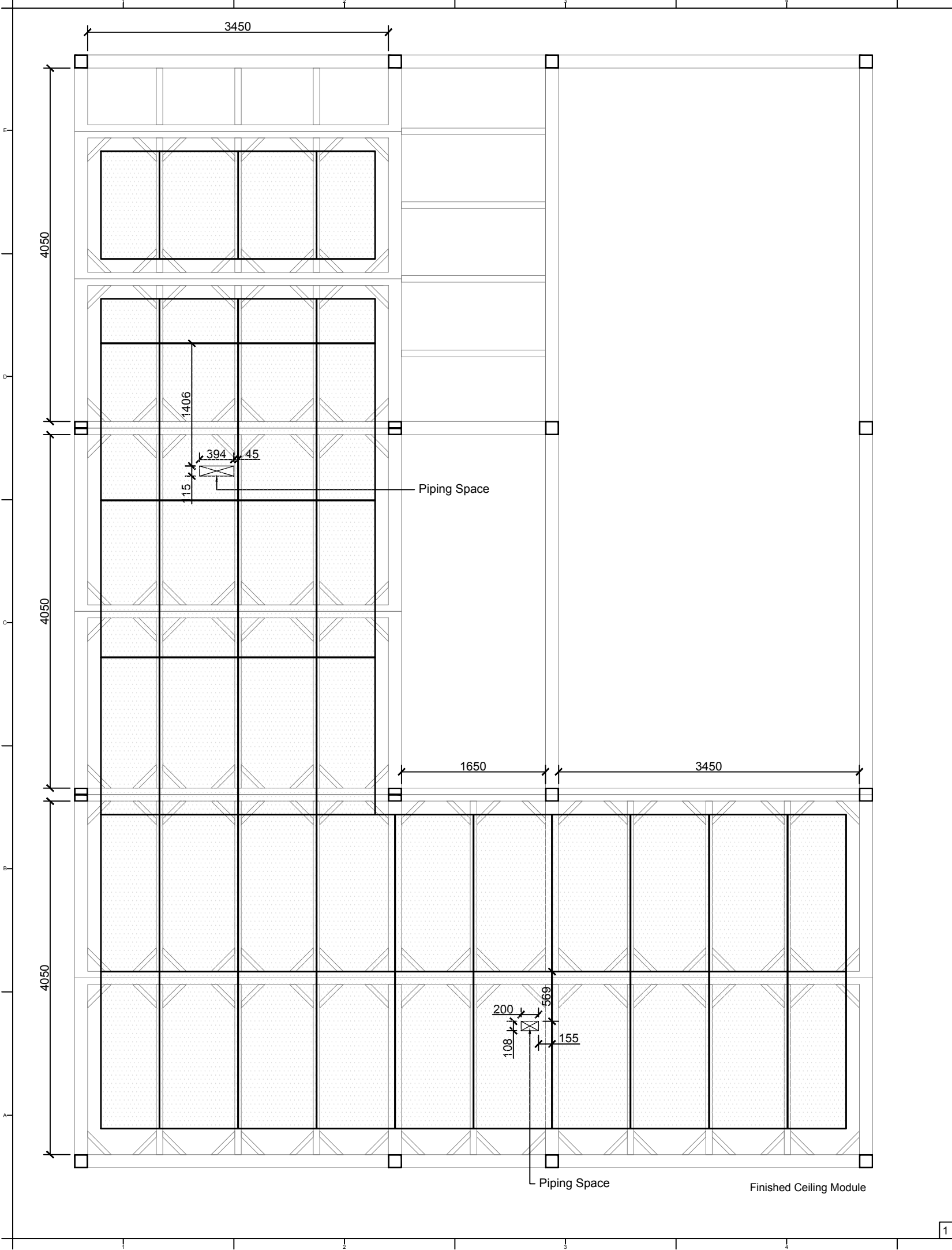
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ST	2014/03/03	CD Submission

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Checked by	DN
Scale	1:50
Unit	mm

DWG. Title

CEILING CONSTRUCTION
DETAILS

DWG. No.	PAGE
AR-333	61



Project:



Institution:



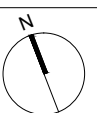
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:50
Unit	mm

DWG. Title CEILING CONSTRUCTION DETAILS	
DWG. No. AR-334	PAGE 62



Mark	Date	Description
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ST	2014/03/03	CD Submission

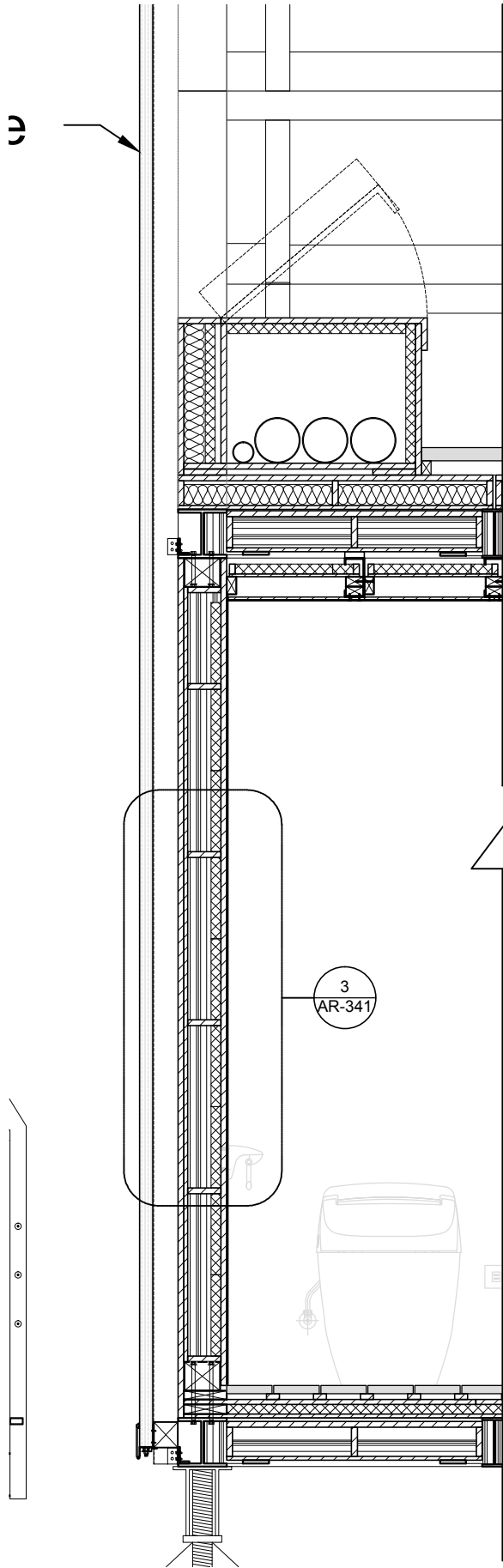
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Checked by	DN
Scale	1:10
Unit	mm

DWG. Title
WALL SECTION AND CONSTRUCTION DETAILS
1

DWG. No.	PAGE
AR-341	64

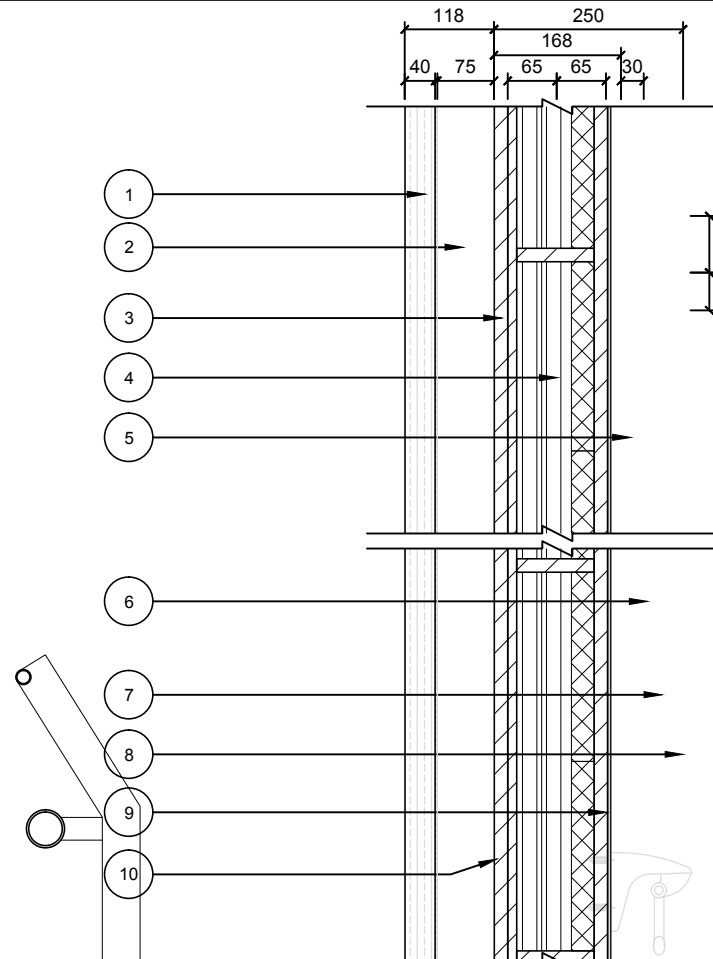


2



0 0.2 0.4 1 METER

1

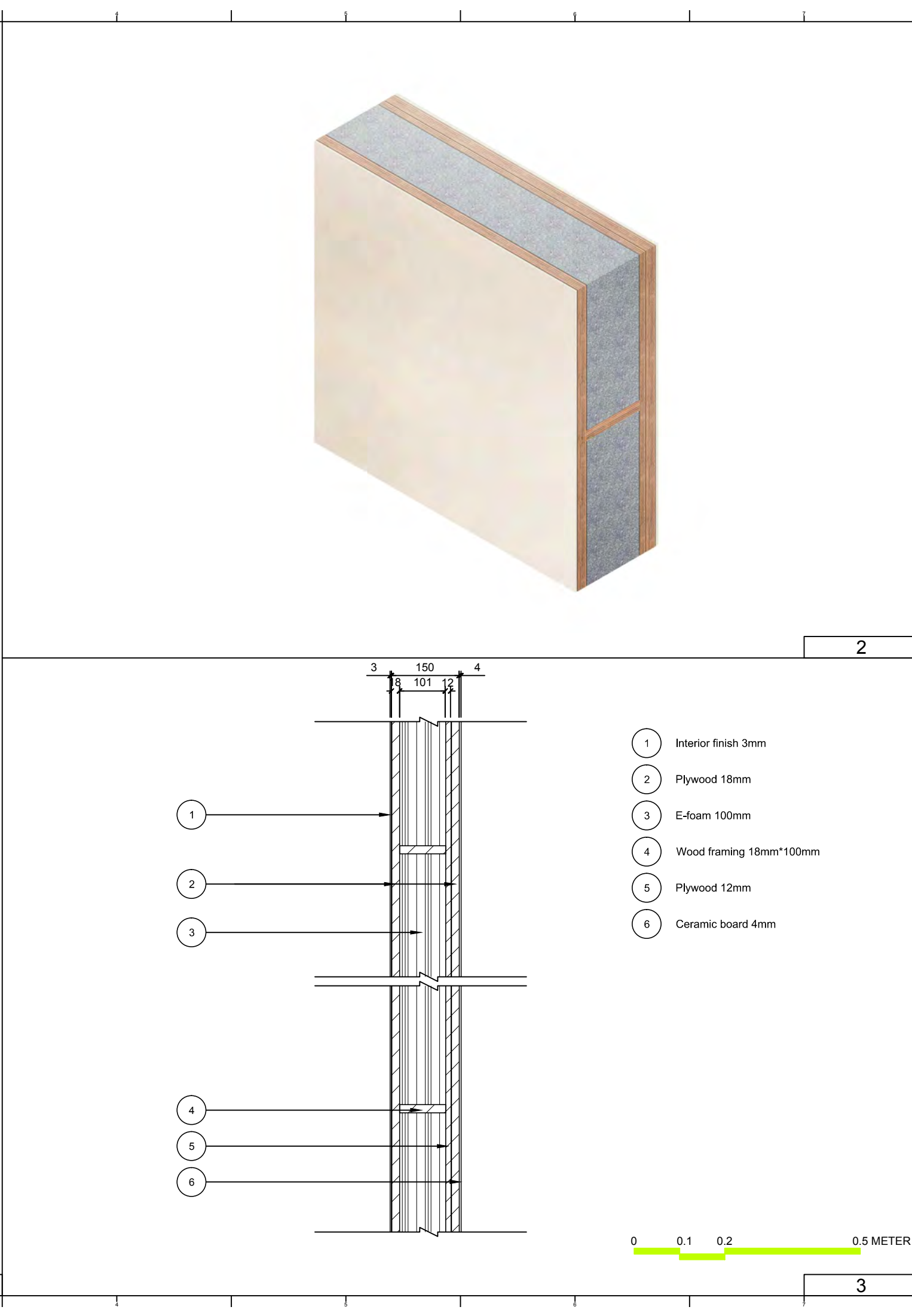
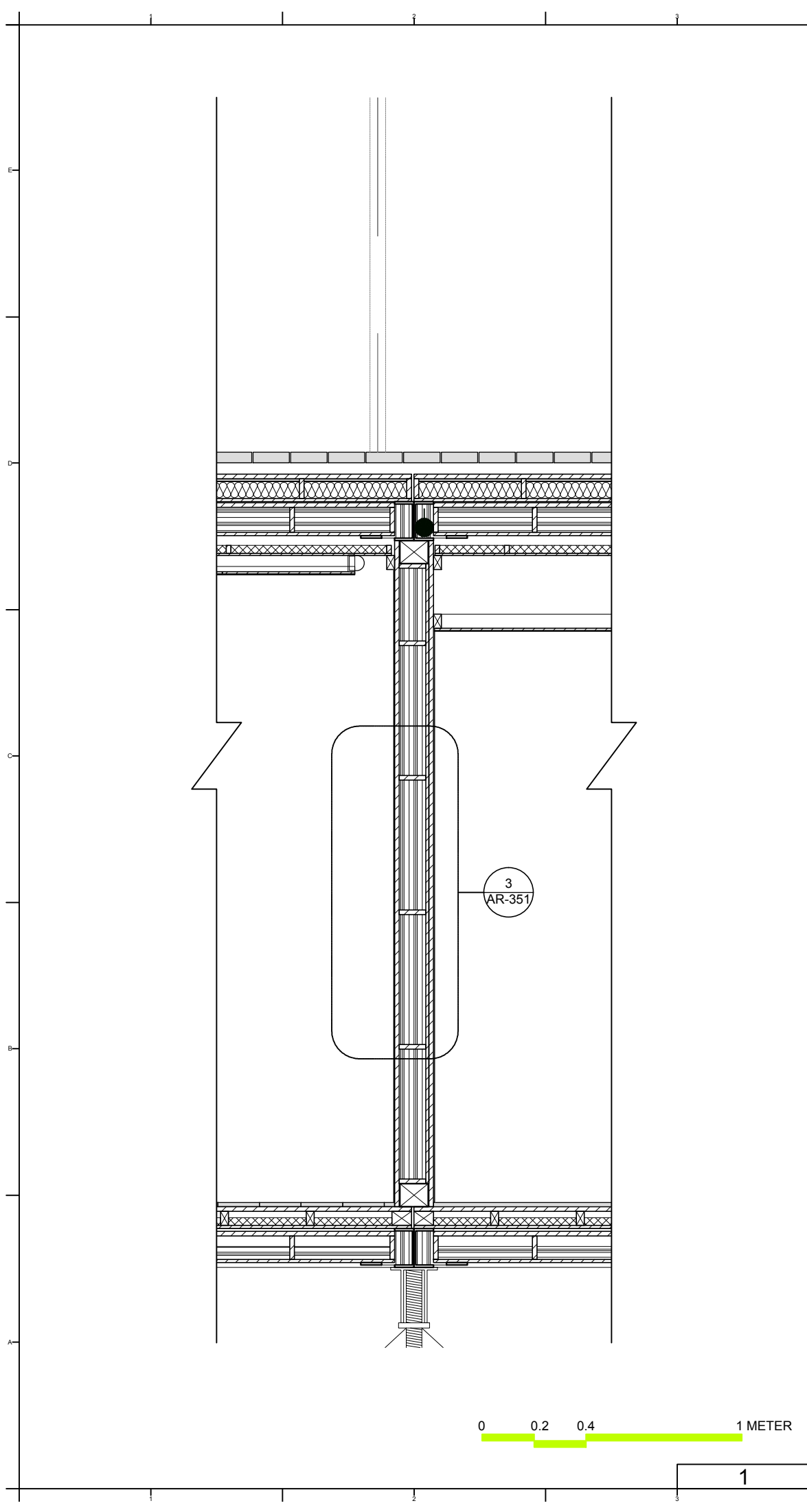


Thermal conductivity $R = 13.5 \text{ (m}^2\text{K/W)}$

- 1 Bayer Makrolon® Polycarbonate Inter-locking Hollow Sheet t=40mm
- 2 Inter-locking Sheet supporting 75mm
- 3 Plywood 18mm
- 4 Glass foam 65mm *2
- 5 Vacuum Insulation 30mm
- 6 Framing 42mm
- 7 Framing 24mm
- 8 Finished wall 16mm
- 9 L shape steel
- 10 Sub-beam -125x75 t=4.5mm

0 0.1 0.2 0.5 METER

3





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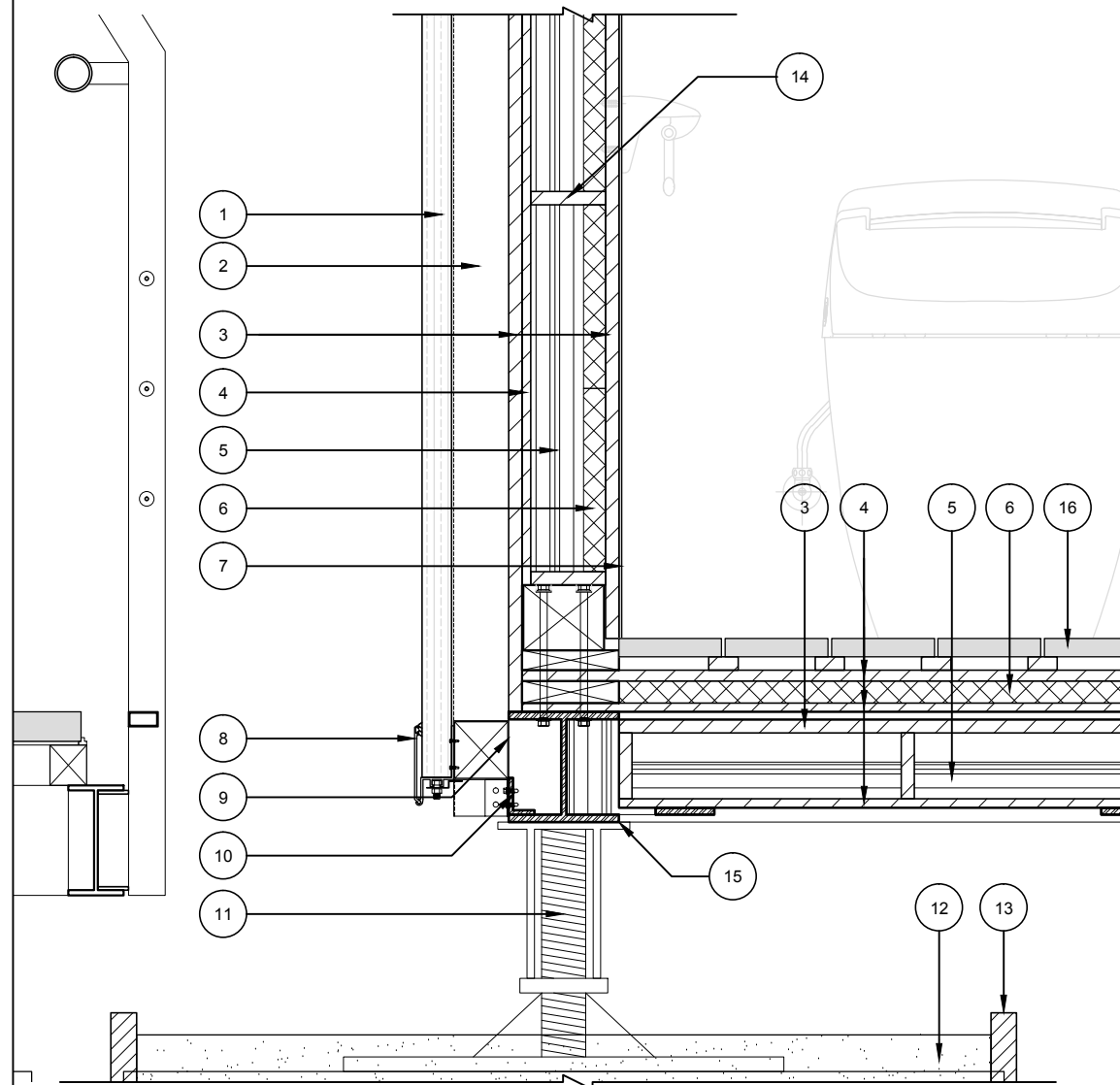
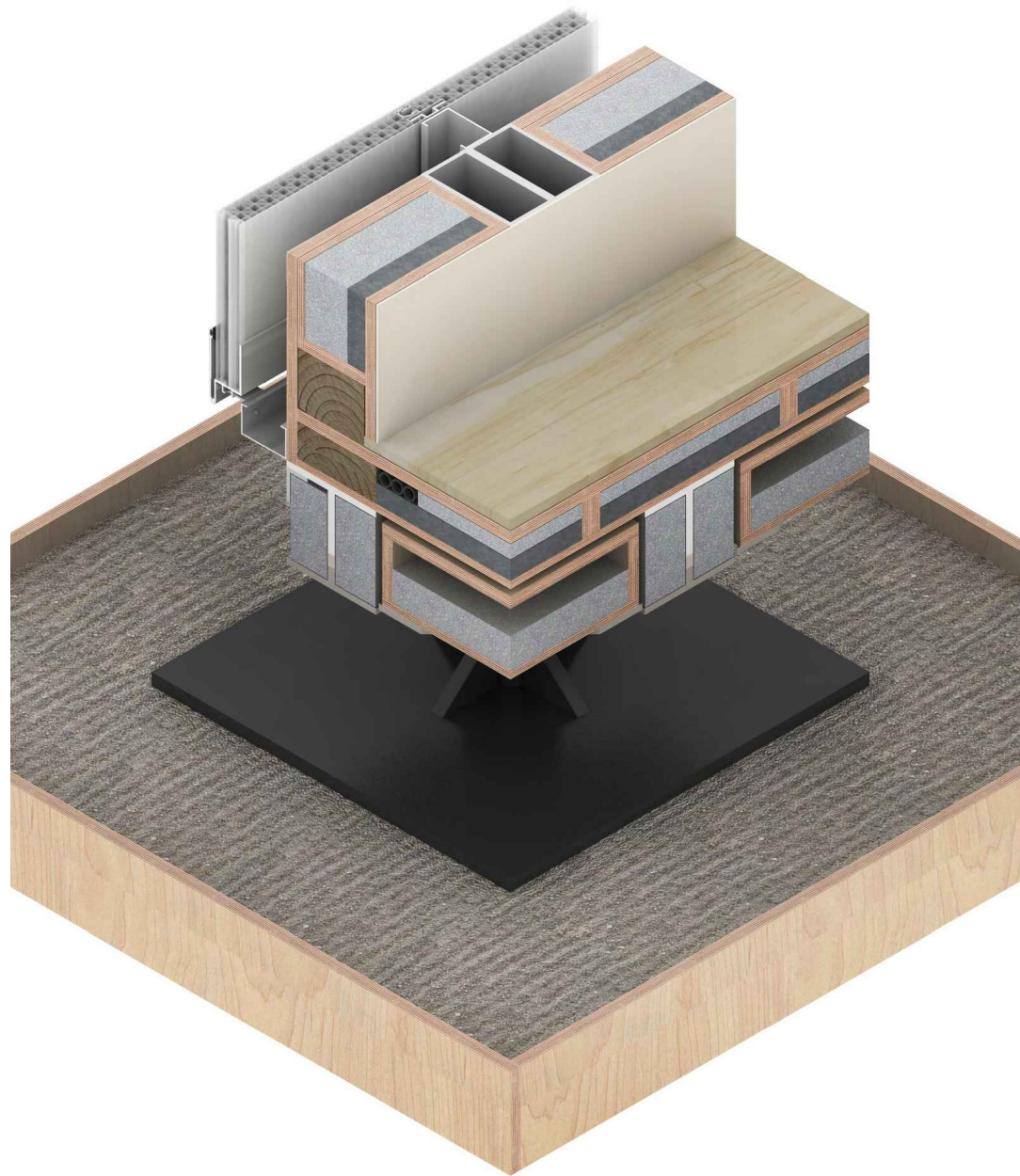
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by CH
Checked by DN
Scale 1:10
Unit mm

DWG. Title
PARTITION DETAILS

DWG. No. AR-351	PAGE 65
---------------------------	-------------------



- | | | | |
|---|---|----|------------------------------|
| 1 | Bayer Makrolon® Polycarbonate Inter-locking Hollow Sheet t=40mm | 9 | Supporting -75x75 t=1.5mm |
| 2 | Inter-locking Sheet supporting 75mm | 10 | L shape steel -50x35 t=6mm |
| 3 | Plywood 18mm | 11 | Footing |
| 4 | Plywood 12mm | 12 | Sand |
| 5 | E-foam 70mm | 13 | Wood frame (sand box) |
| 6 | Vacuum Insulation 30mm | 14 | Wood frame (wall) |
| 7 | Ceramic board 4mm | 15 | H -150x150 t=10mm |
| 8 | Aluminum profile | 16 | Wood Plastic Composites 25mm |

0 0.1 0.2 0.5 METER



Mark	Date	Description
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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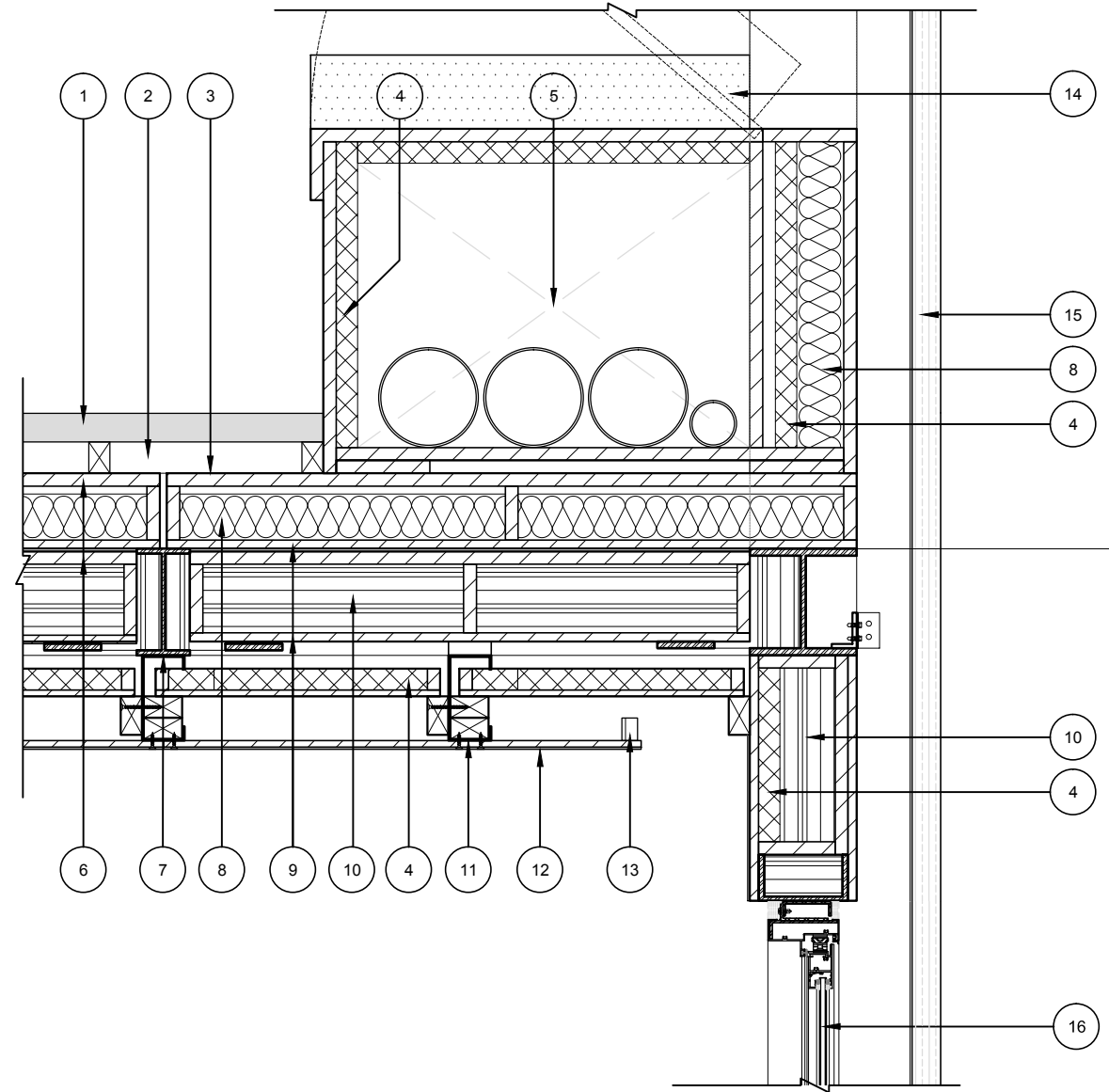
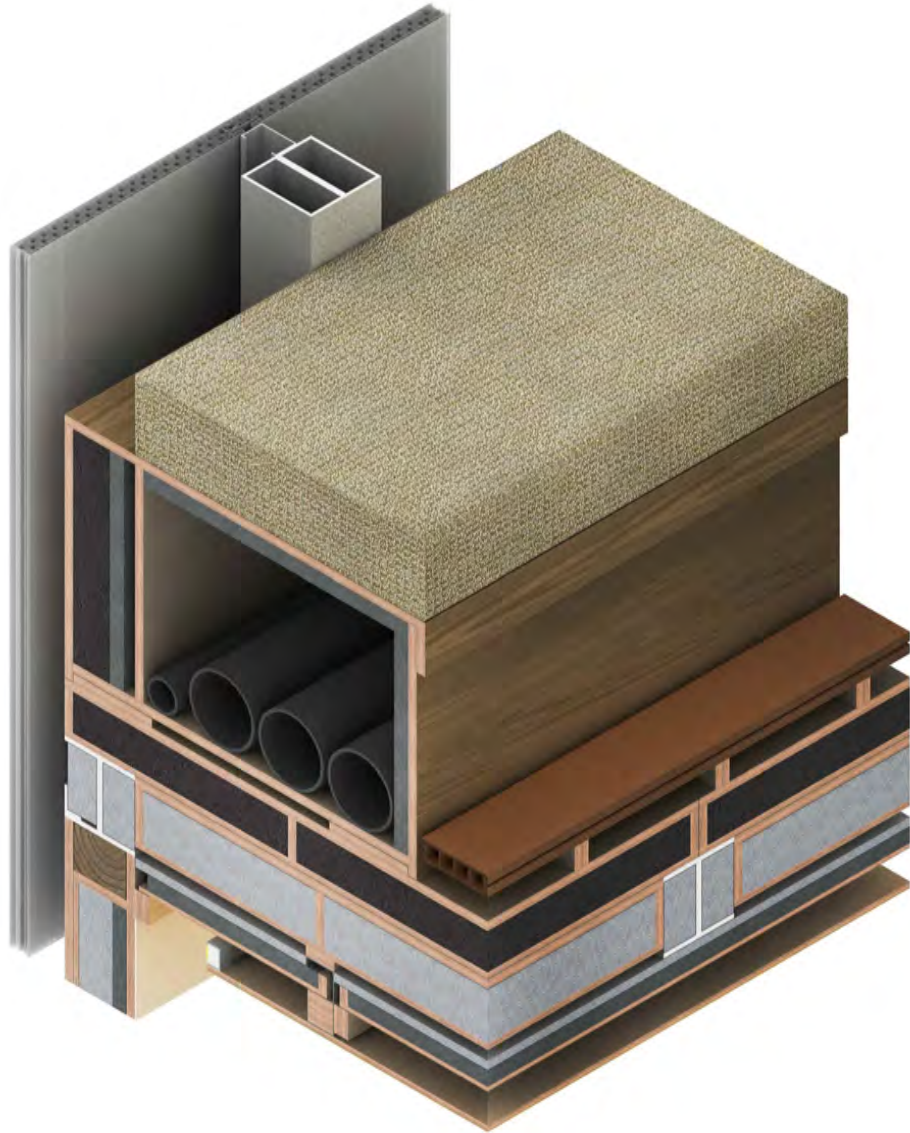
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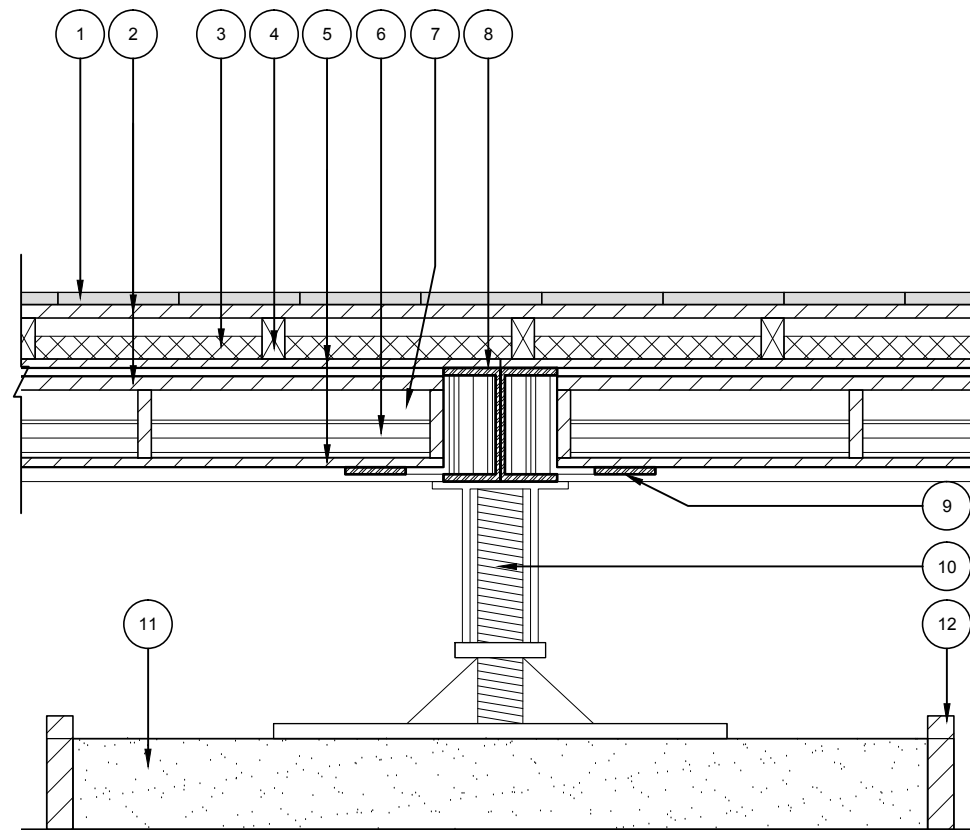
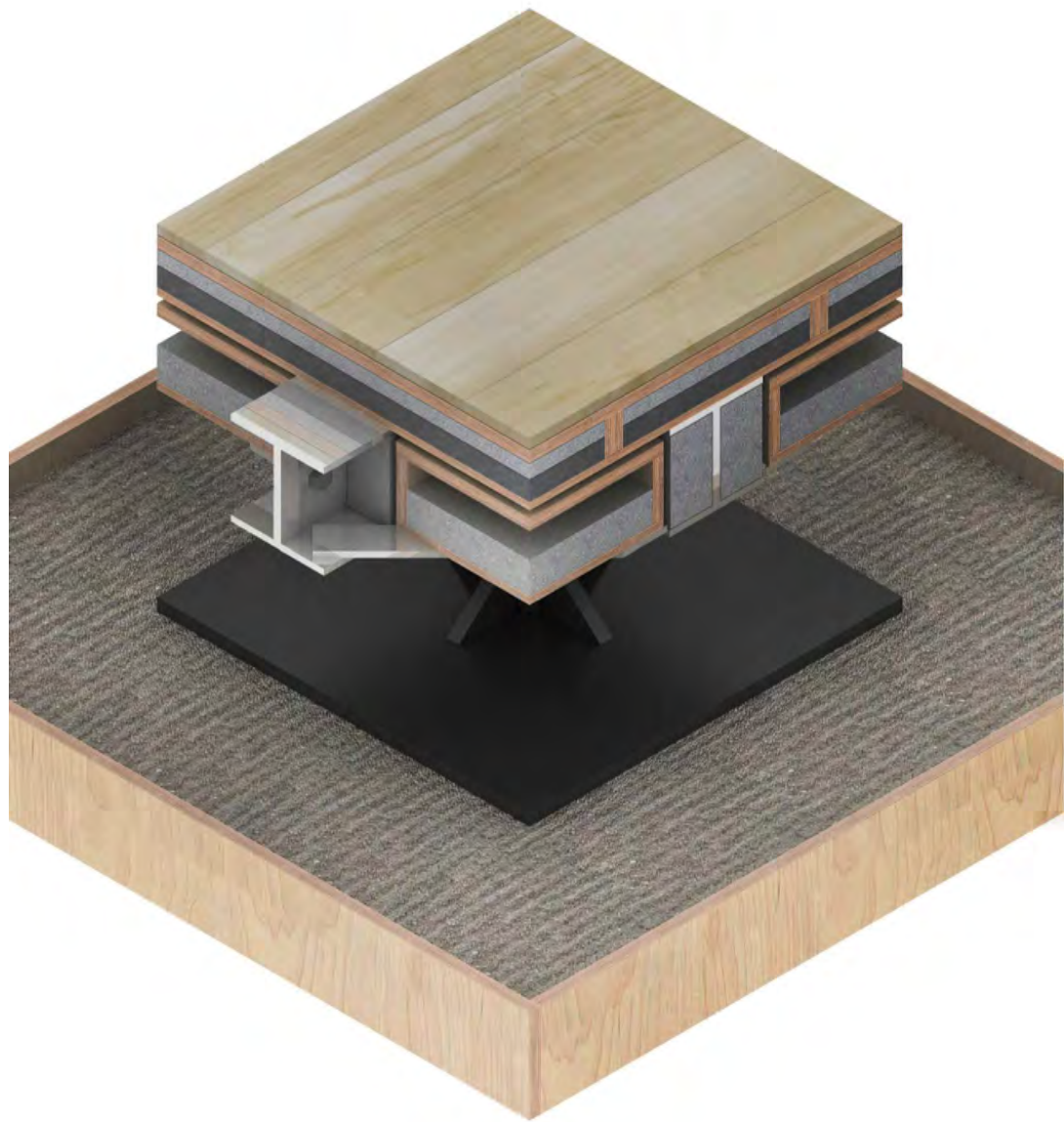
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Checked by	DN
Scale	1:10
Unit	mm

DWG. Title	
JOINT DETAIL 2	
DWG. No.	PAGE
AR-362	67



- | | | | |
|---|------------------------------|----|---|
| 1 | Wood Plastic Composites 40mm | 9 | Plywood 12mm |
| 2 | Air gap 44mm | 10 | E-foam 95mm |
| 3 | Building paper 1mm | 11 | C -120x60x20 t=2.3mm (ceiling system) |
| 4 | Vacuum Insulation 30mm | 12 | Ceiling 12mm
(plywood 9mm+ceiling finish 3mm) |
| 5 | Duct | 13 | T5 LED Link Light |
| 6 | Plywood 18mm | 14 | Soft seat |
| 7 | Sub-beam -150x75 t=7mm | 15 | Bayer Makrolon® Polycarbonate
Inter-locking Hollow Sheet
t=40mm |
| 8 | Glass foam 65mm | 16 | Bayer Makrolon® Polycarbonate
Hollow Sheet
t=16mm |

0 0.1 0.2 0.5 METER



- 1 Finished Flooring 16mm
- 2 Plywood 18mm
- 3 Vacuum Insulation 30mm
- 4 Wood frame 54mm
- 5 Plywood 12mm
- 6 E-foam 50mm
- 7 Air gap 40mm
- 8 Beam -C -150x75 t=9.5mm
- 9 Floor supporting
- 10 Footing
- 11 Sand box
- 12 Wood frame



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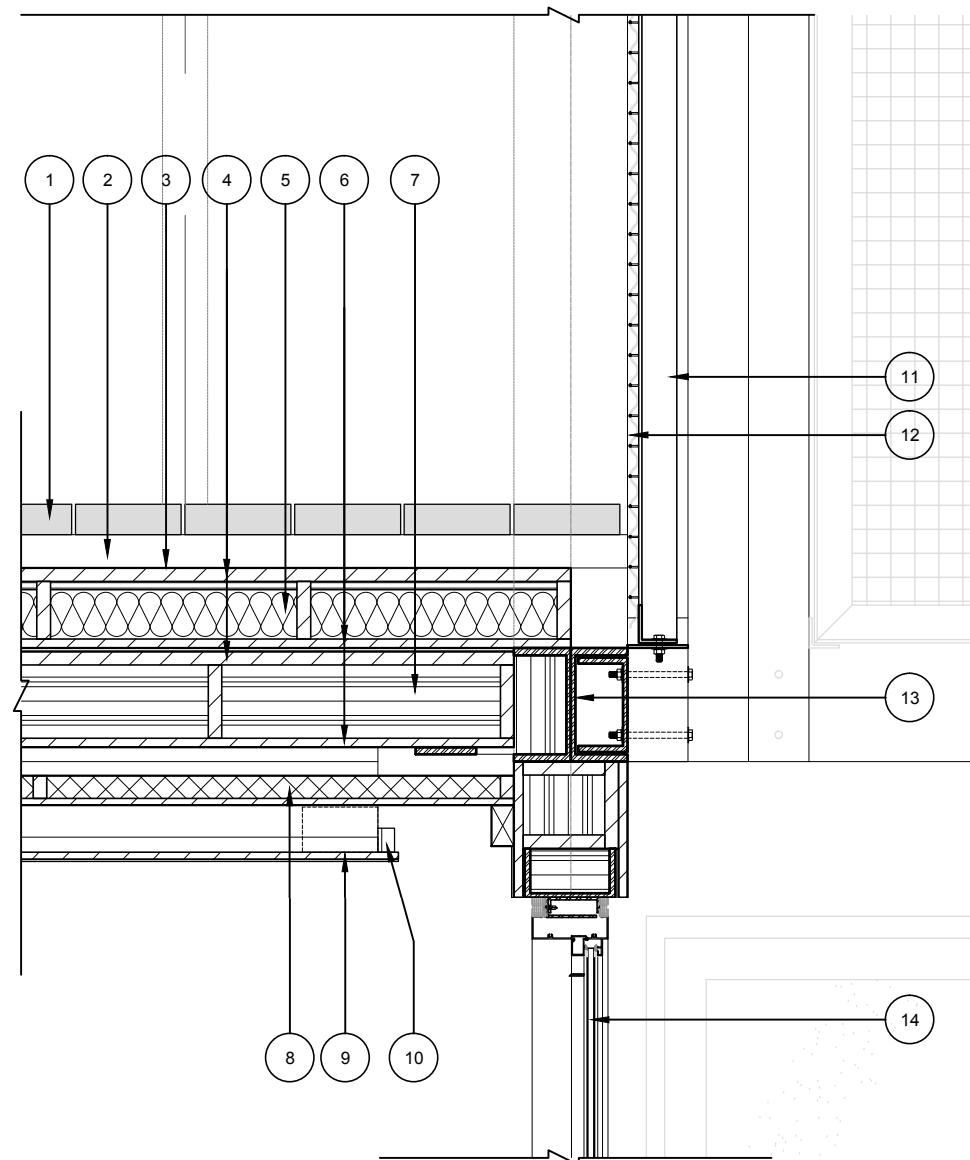
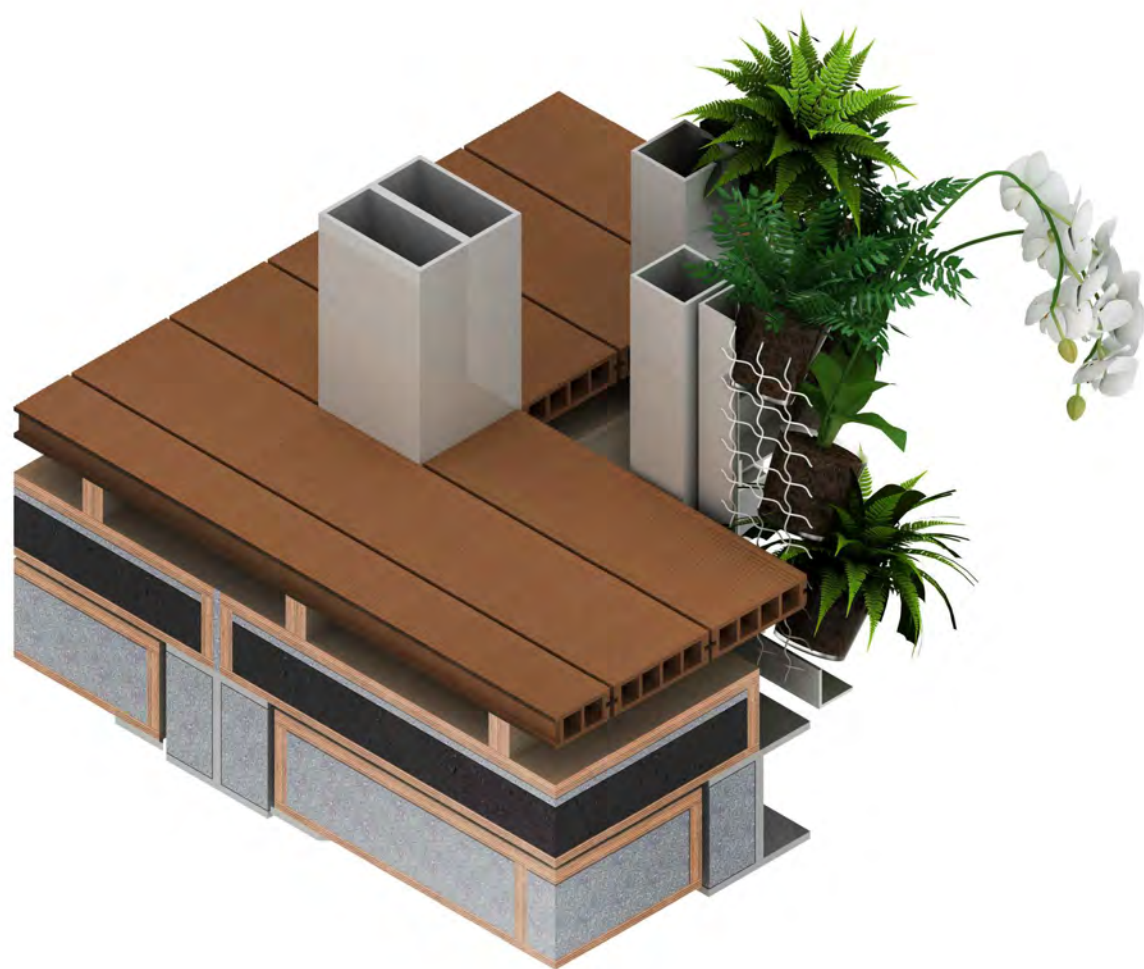
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Drawn by	CH
Checked by	YW
Scale	DN
Unit	1:10

DWG. Title	
JOINT DETAIL 3	
DWG. No.	PAGE
AR-363	68



- | | | | |
|---|-----------------------------|----|---|
| 1 | Wooden Flooring 40mm | 8 | Vacuum Insulation 30mm |
| 2 | Framing 60mm / Air gap 44mm | 9 | Ceiling 12mm
(plywood 9mm+ceiling finish 3mm) |
| 3 | Water proofing 2mm | 10 | T5 LED Link Light |
| 4 | Plywood 18mm | 11 | Green core |
| 5 | Glass foam 65mm | 12 | barbed wire $\phi=2\text{mm}$ (for plants supporting) |
| 6 | Plywood 12mm | 13 | Beam C-150x75 t=9.5mm |
| 7 | E-foam 95mm | 14 | Bayer Makrolon® Polycarbonate
Hollow Sheet
t=16mm |

0 0.1 0.2 0.5 METER

Project:

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Scale DN

Unit 1:10

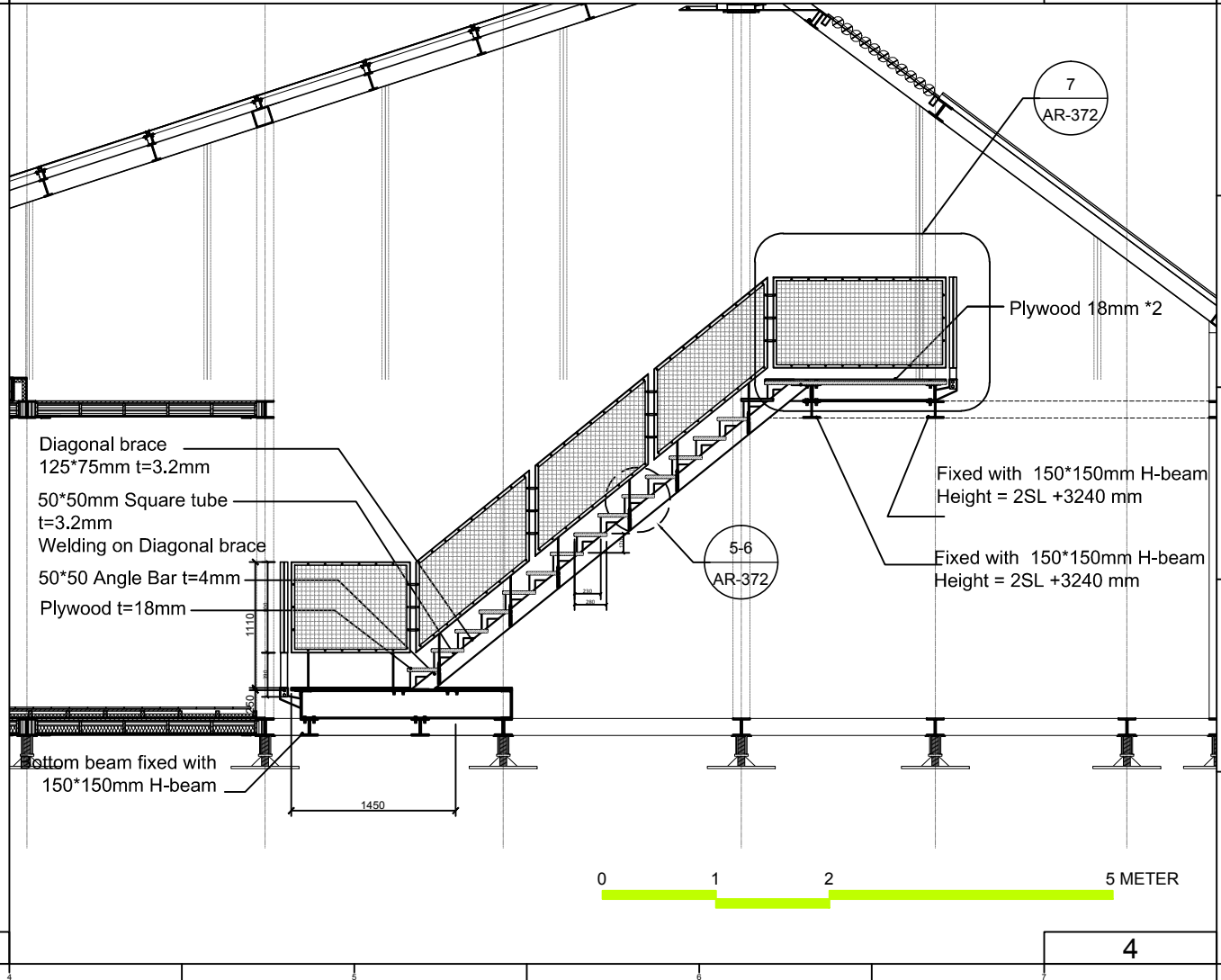
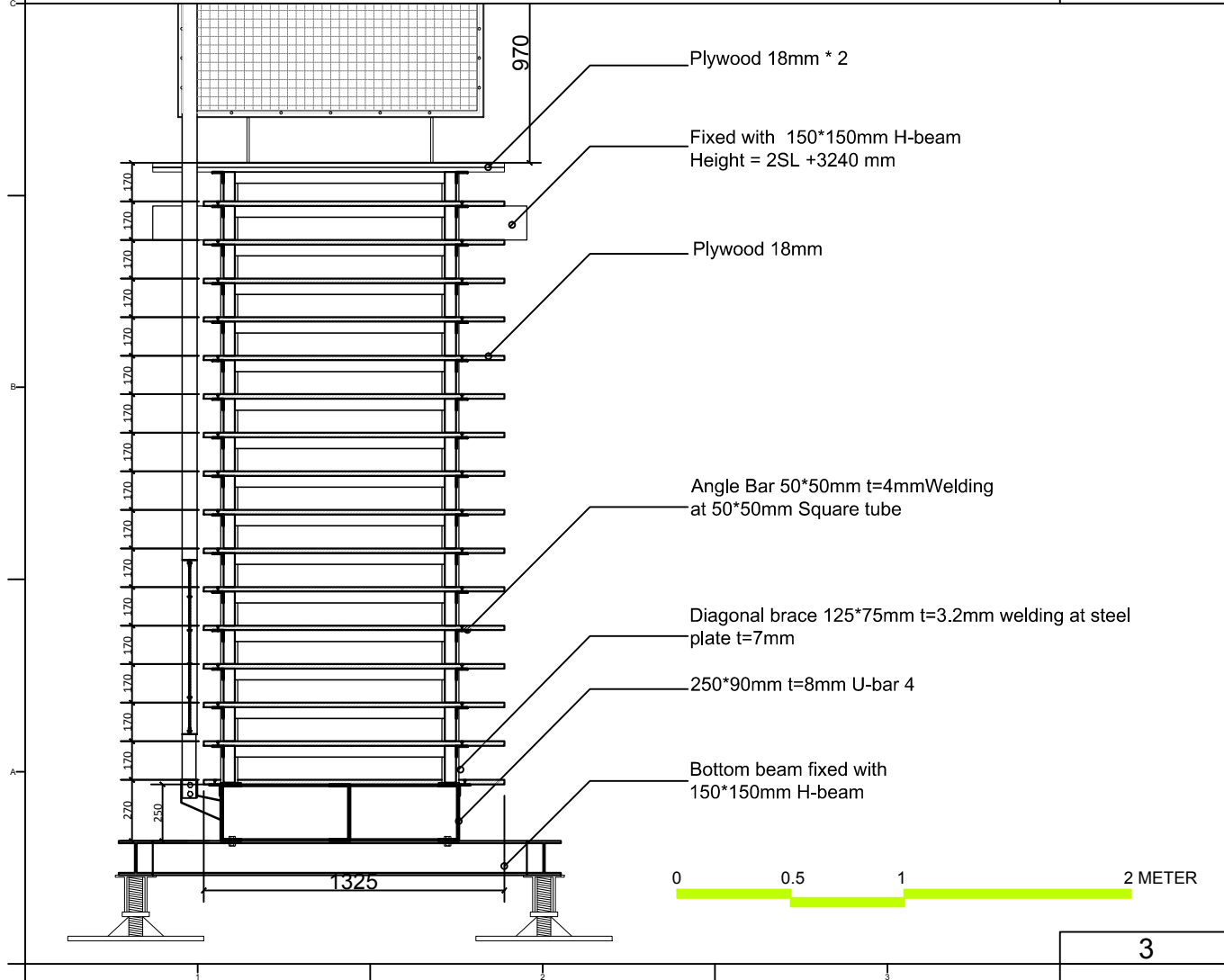
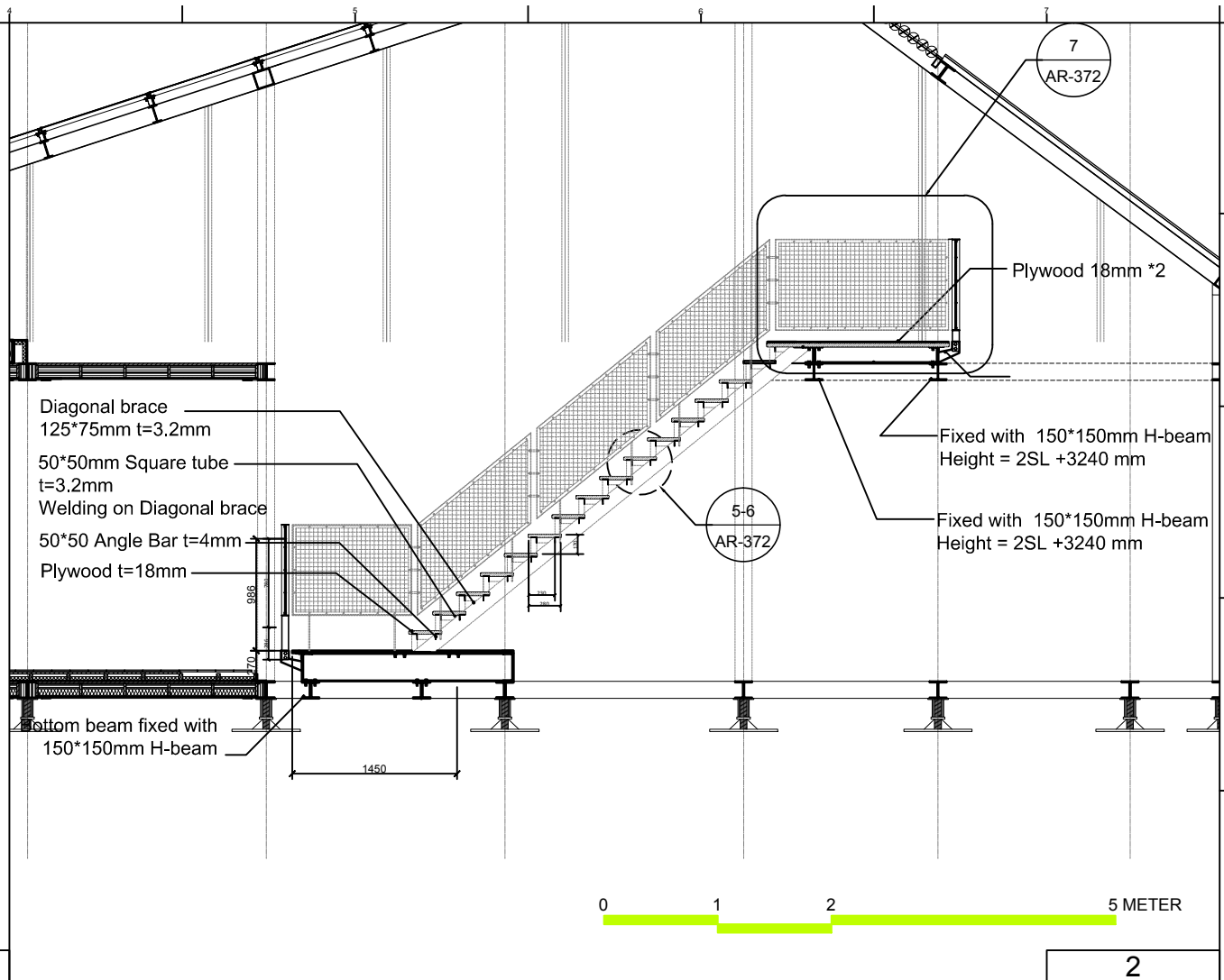
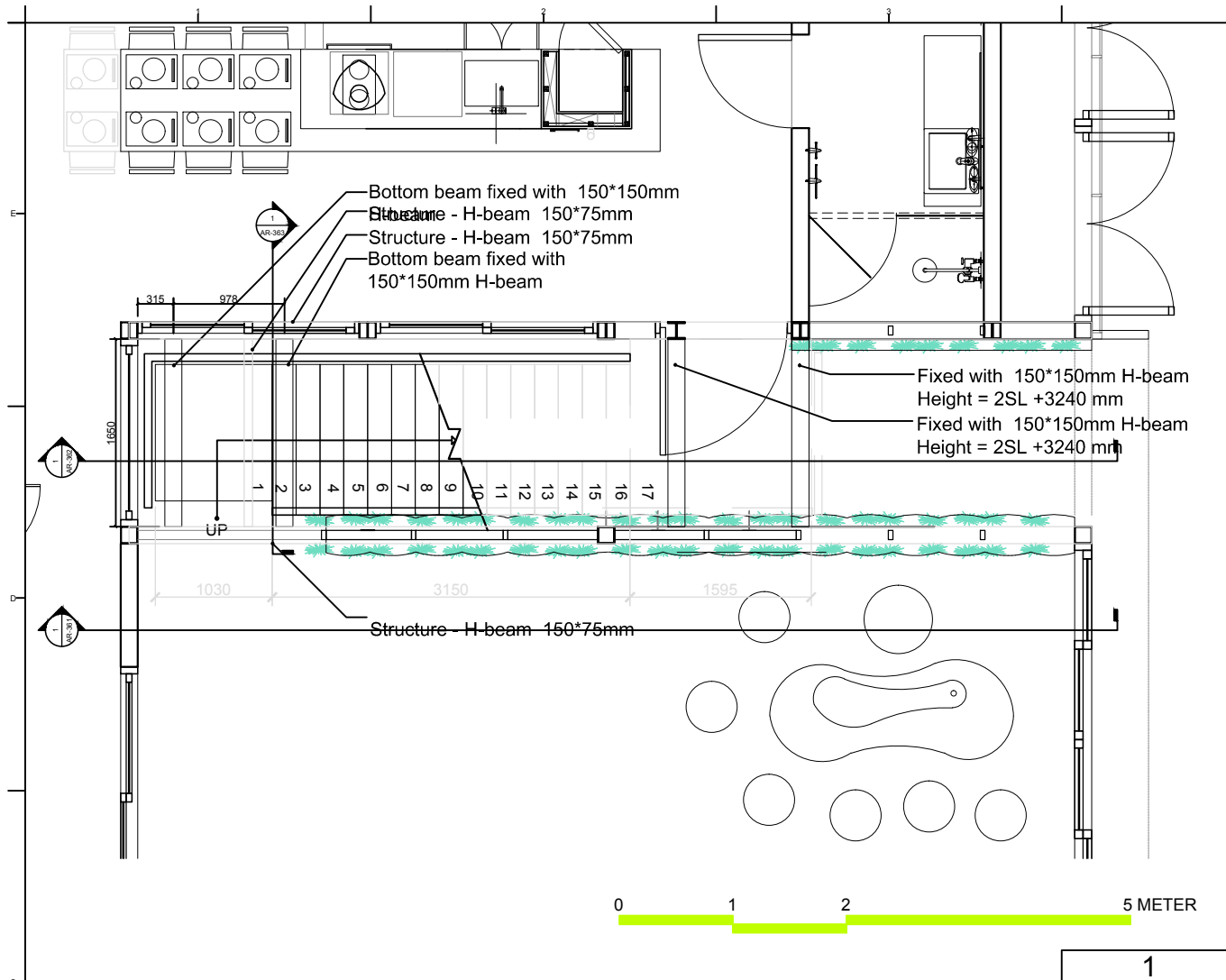
DWG. Title

JOINT DETAIL 4

DWG. No. PAGE

AR-364

69



Solar Decathlon Europe

Project:

ORCHID HOUSE

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國立交通大學
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Checked by DN

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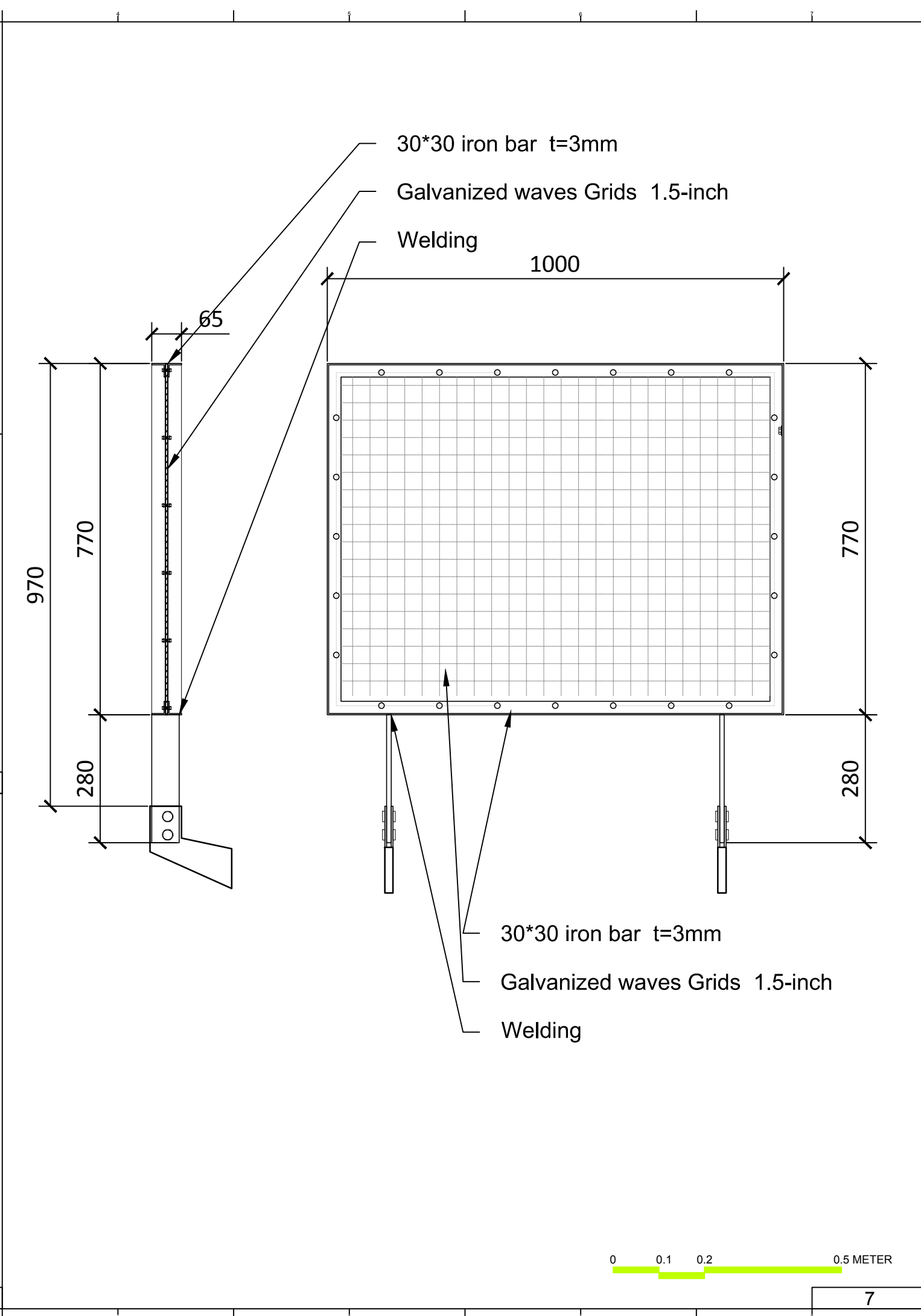
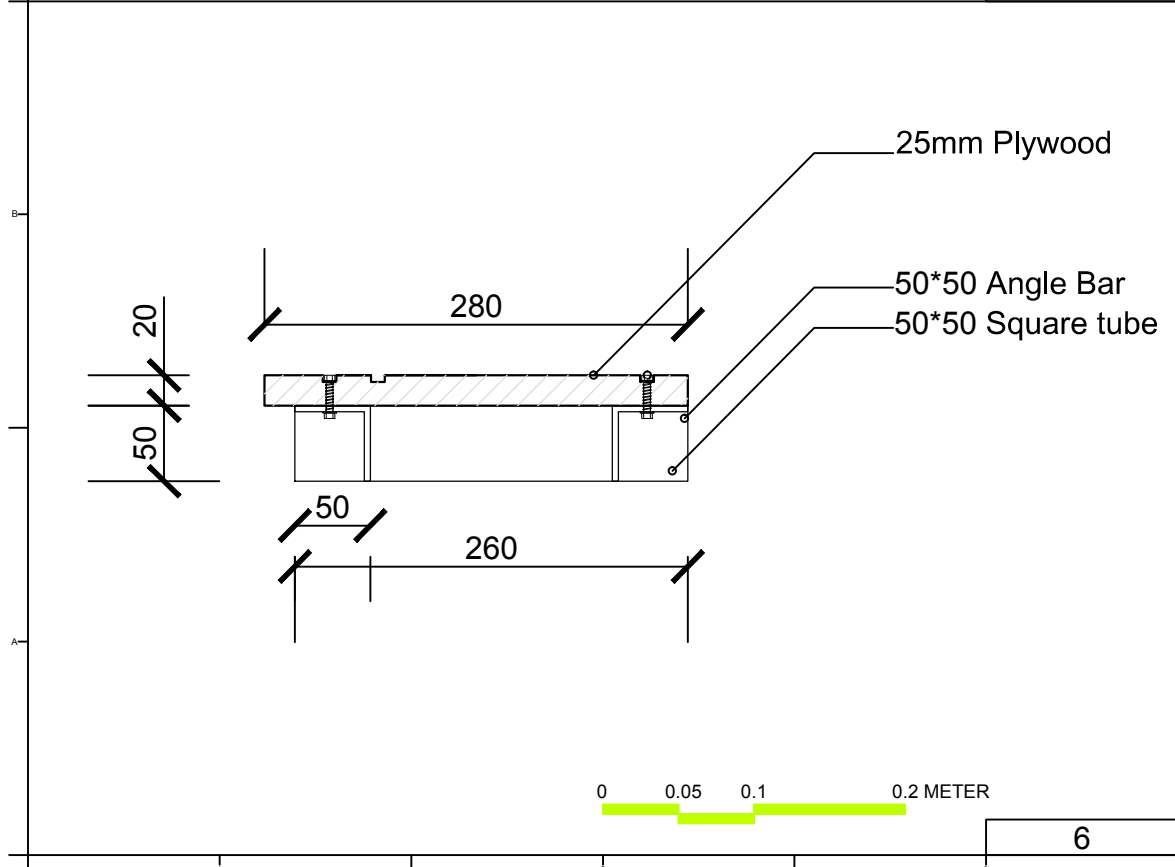
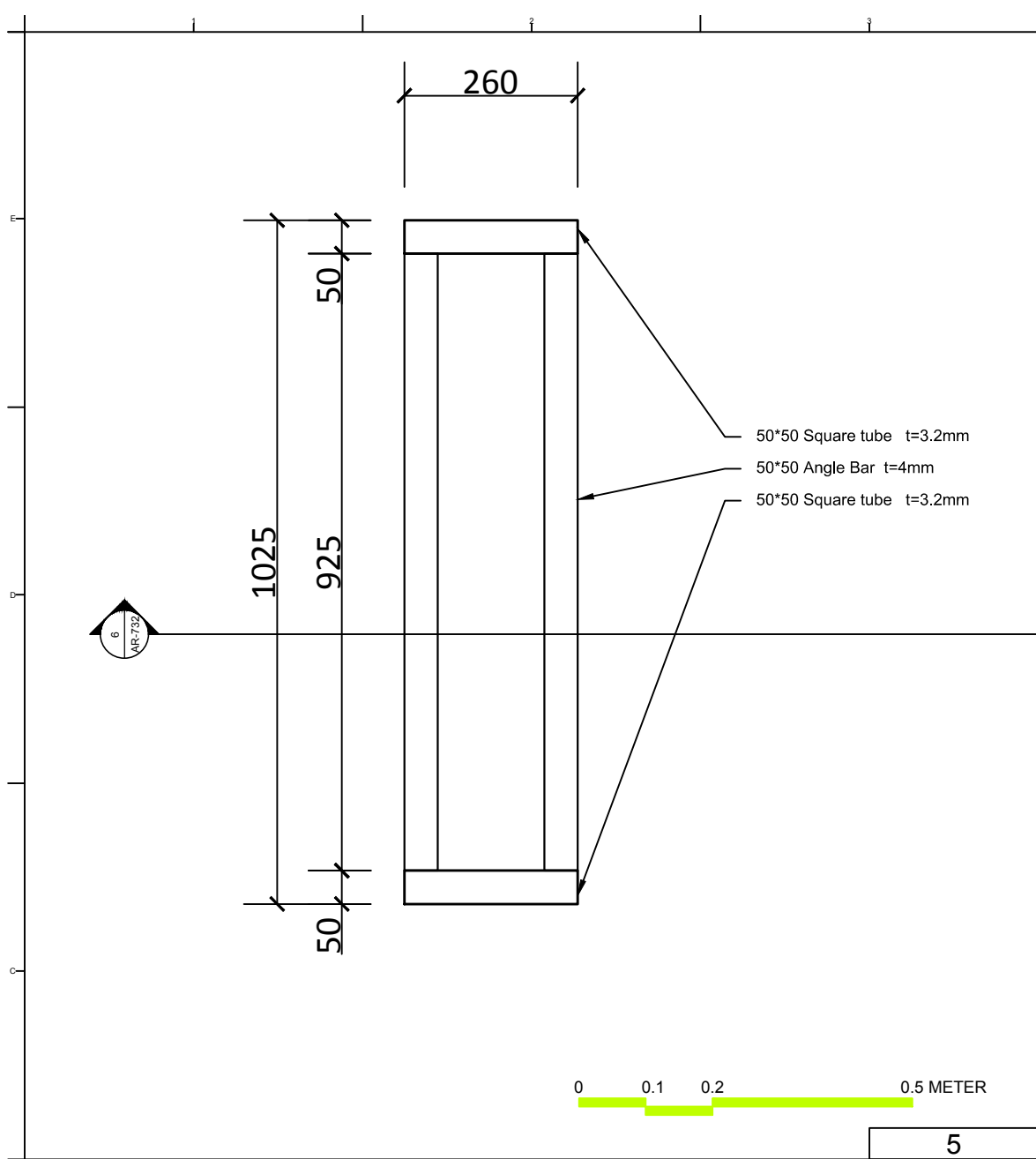
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DWG. Title

STAIR DETAIL 1

DWG. No. **AR-371**

PAGE **70**





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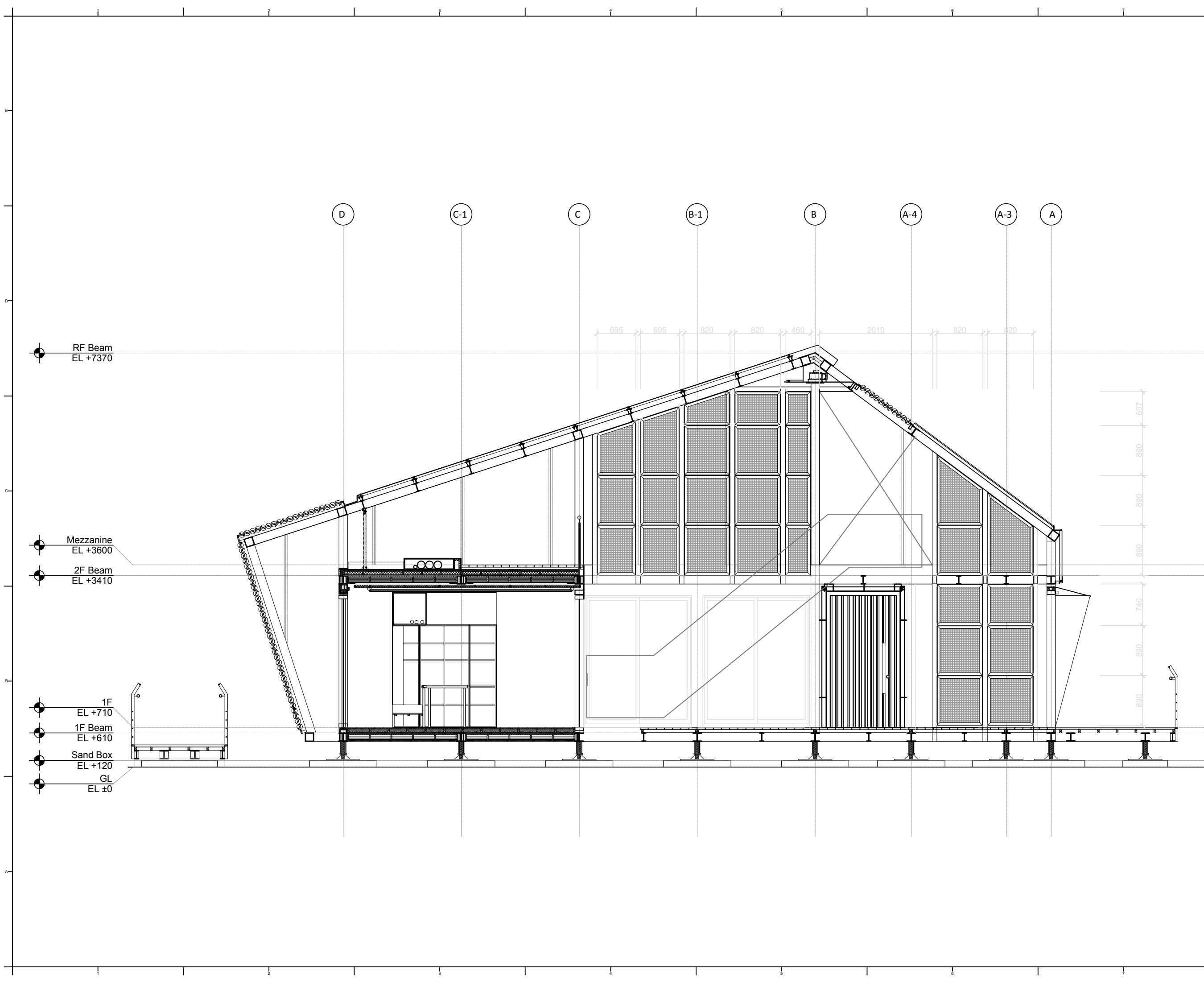
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ST	2014/03/03	CD Submission

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Unit: mm

DWG. Title: STAIR DETAIL 2

DWG. No.	PAGE
AR-372	71



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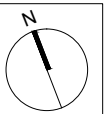
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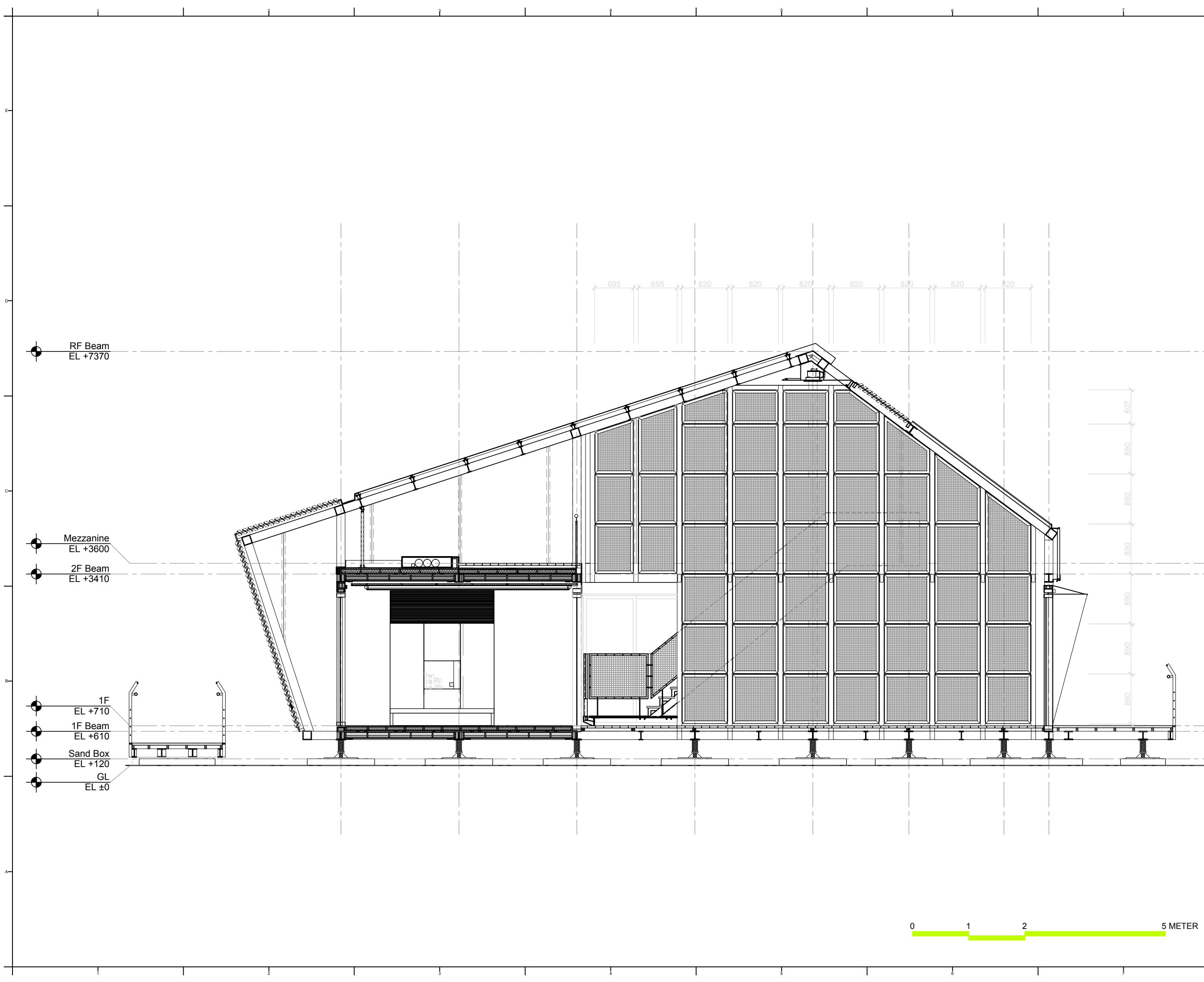
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ST	2014/03/03	CD Submission

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Checked by	DN
Scale	1:60
Unit	mm

DWG. Title	
GREEN CORE DETAIL 1	
DWG. No.	PAGE
AR-401	72



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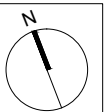
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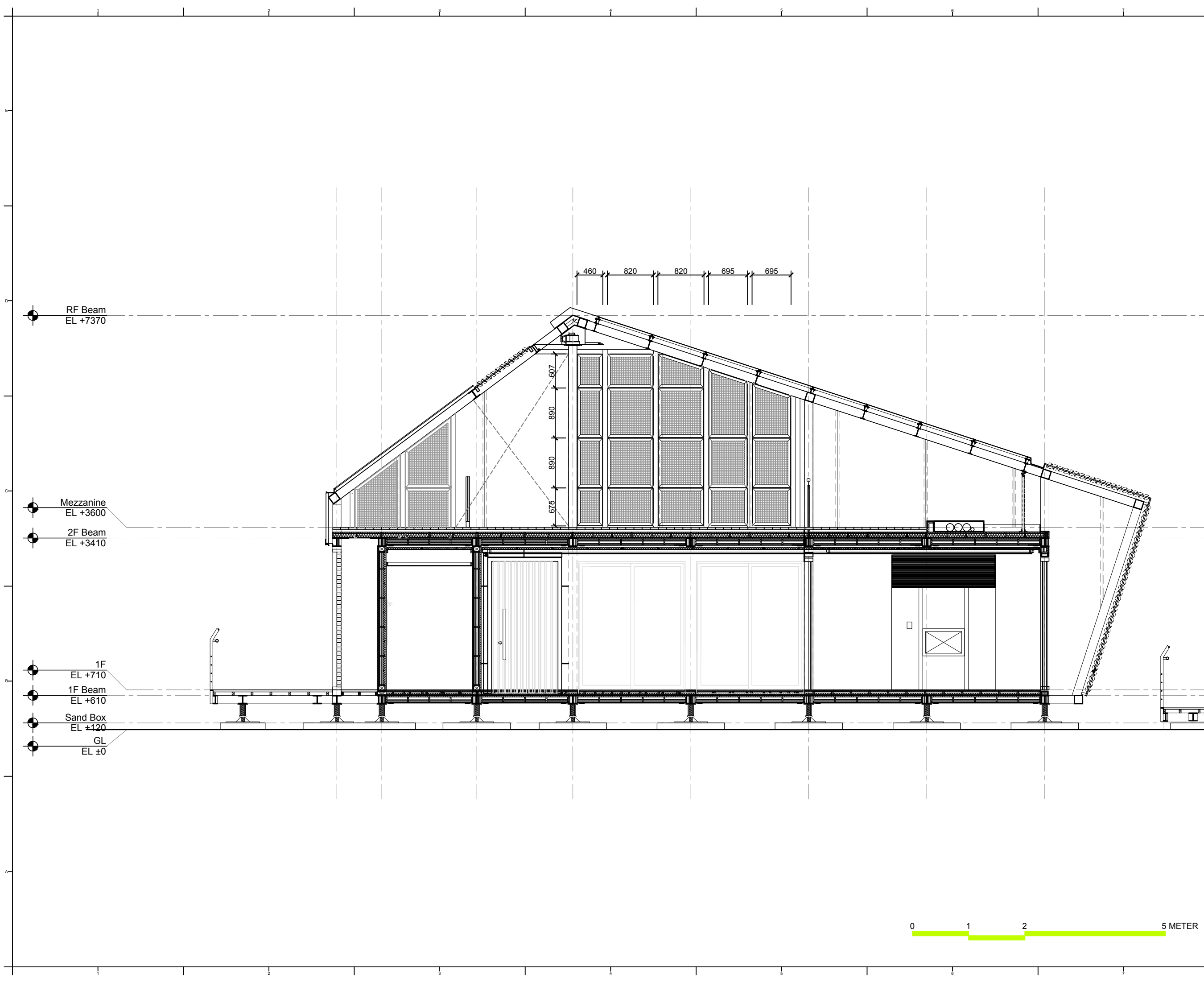
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DWG. Title	
GREEN CORE DETAIL 2	
DWG. No.	PAGE
AR-402	73



Project:



Institution:



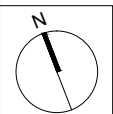
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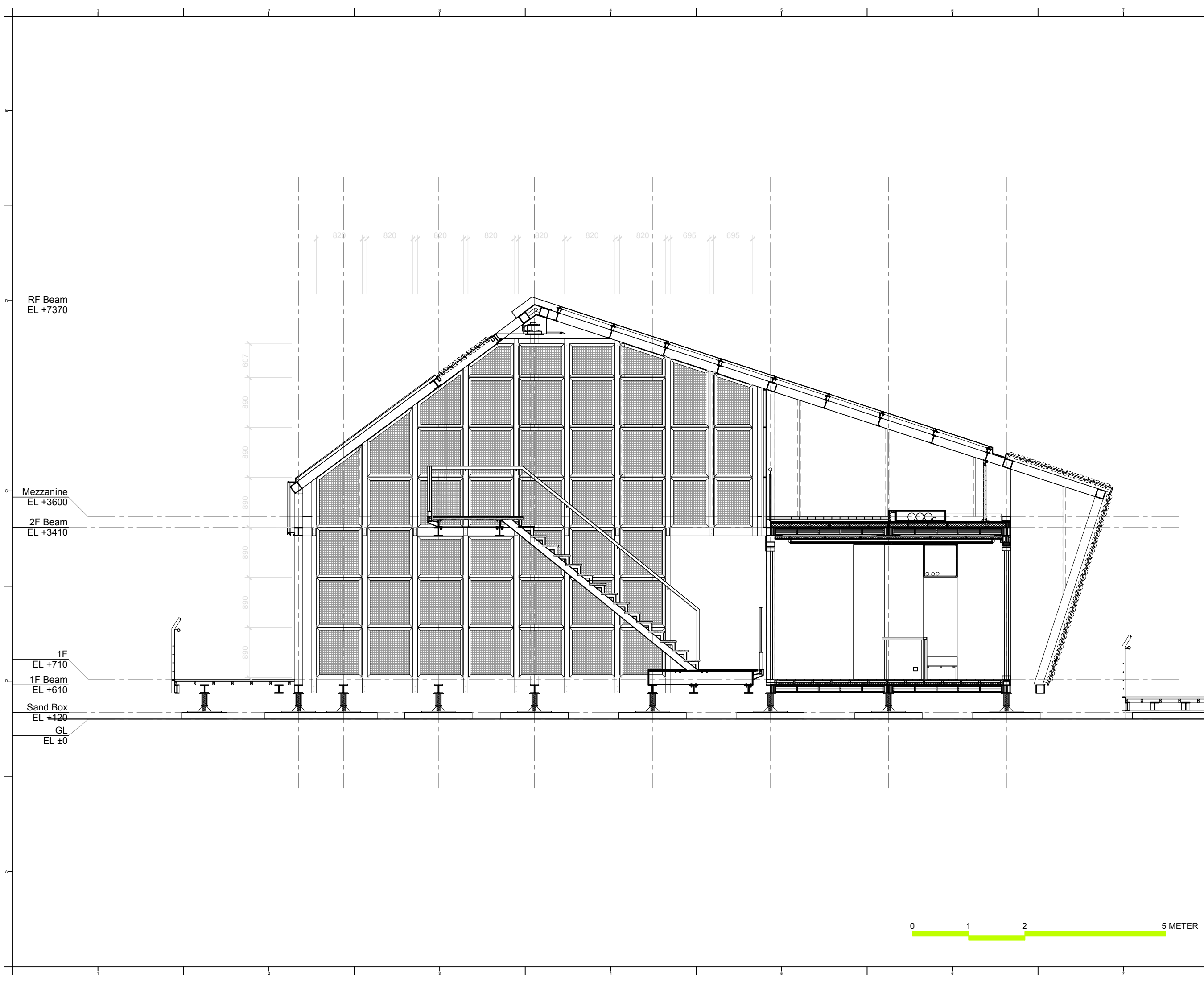


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ST	2014/03/03	CD Submission

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Unit	mm

DWG. Title	
GREEN CORE DETAIL 3	
DWG. No.	PAGE
AR-403	74





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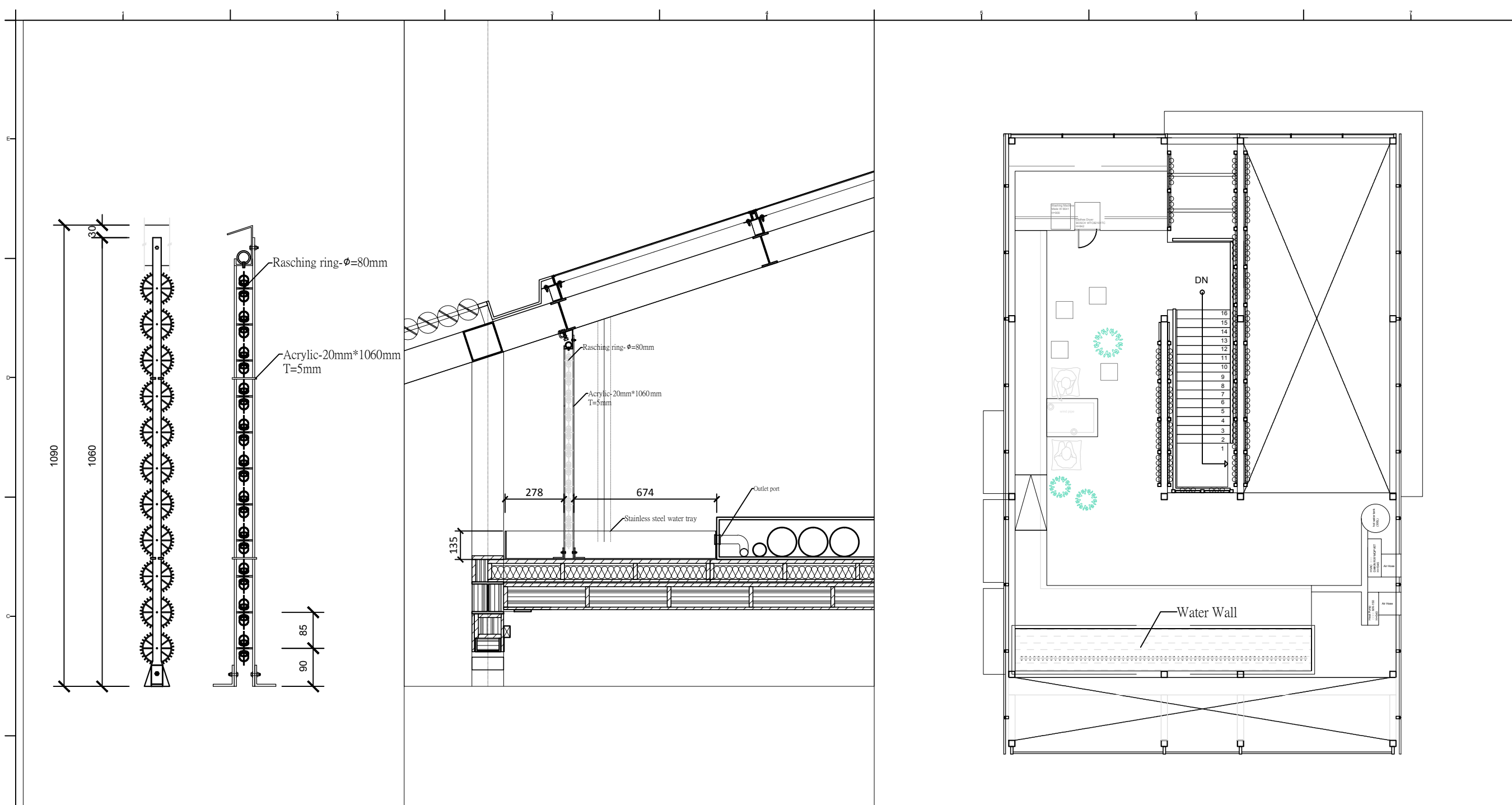
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Note:

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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	DN
Scale	1:60
Unit	mm

DWG. Title	
GREEN CORE DETAIL 4	
DWG. No.	PAGE
AR-404	75





Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



國立交通大學
National Chiao Tung University

NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE

Address: 1001 Ta-Hsueh Road
Hsinchu City 30010
Taiwan

Contact: www.sde.tw



Consultants:

Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by CH

Checked by DN

Scale N/A

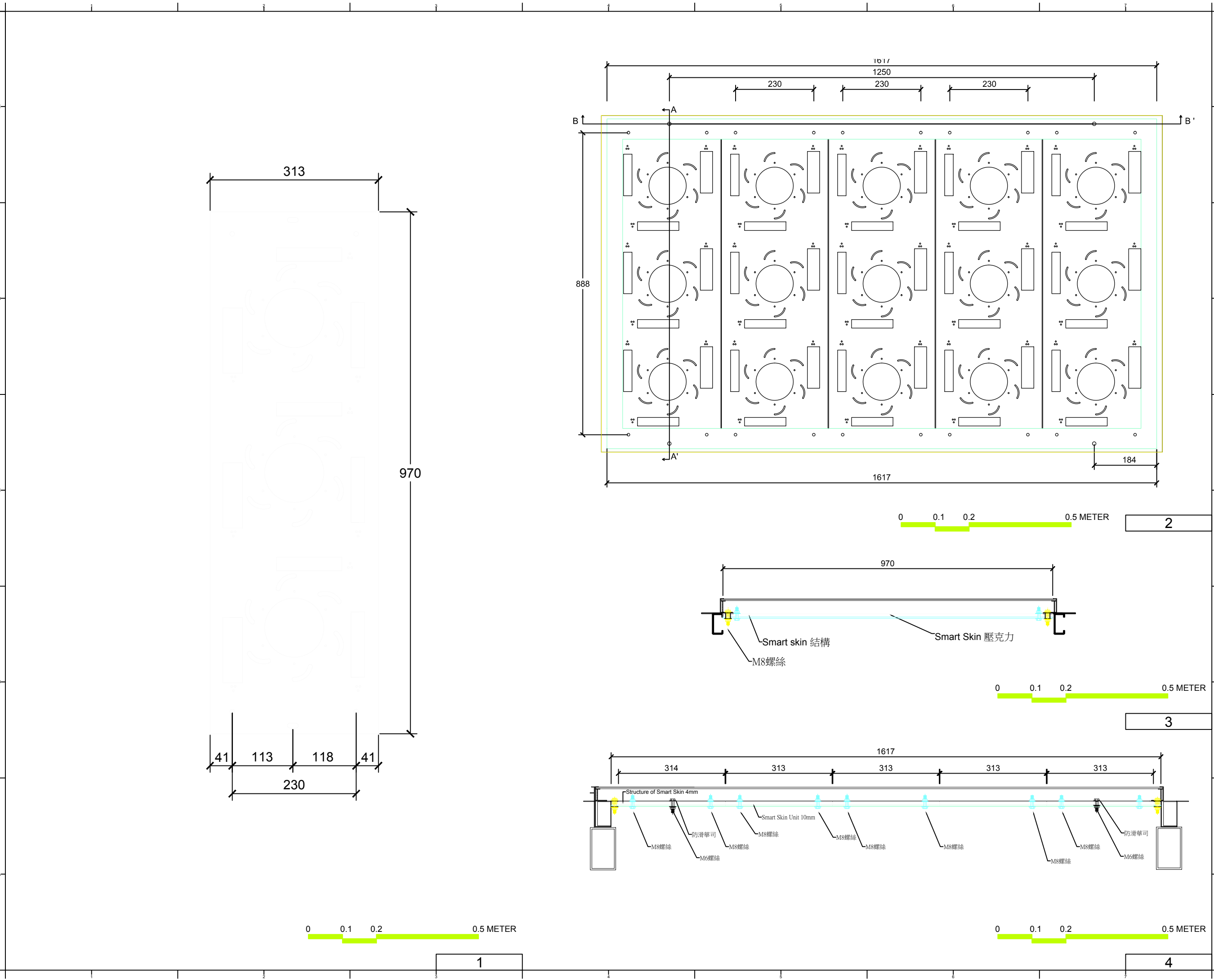
Unit N/A

DWG. Title

WATER WALL DETAILS

DWG. No. AR-411

PAGE 76



Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	RT
Checked by	-
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Unit	mm

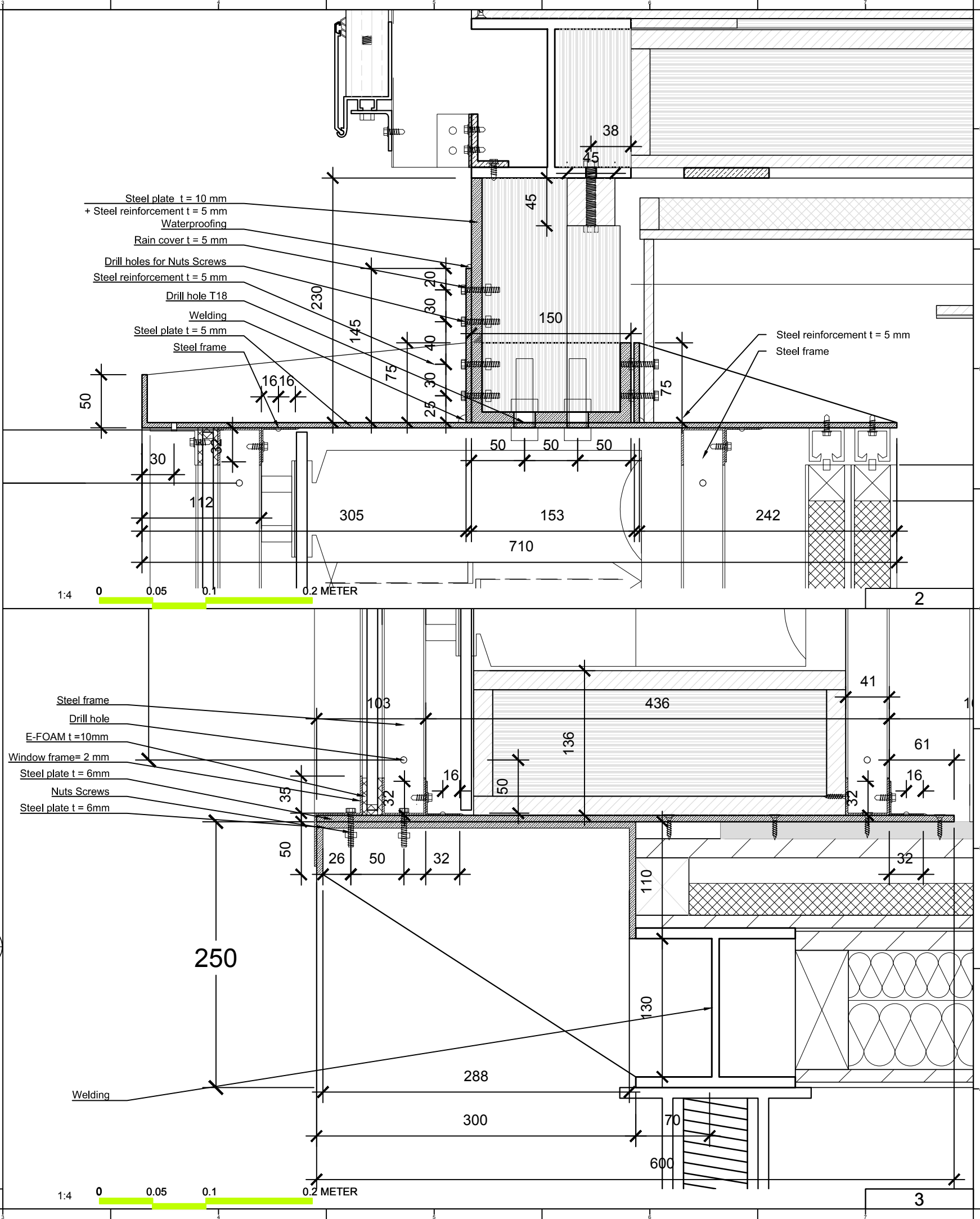
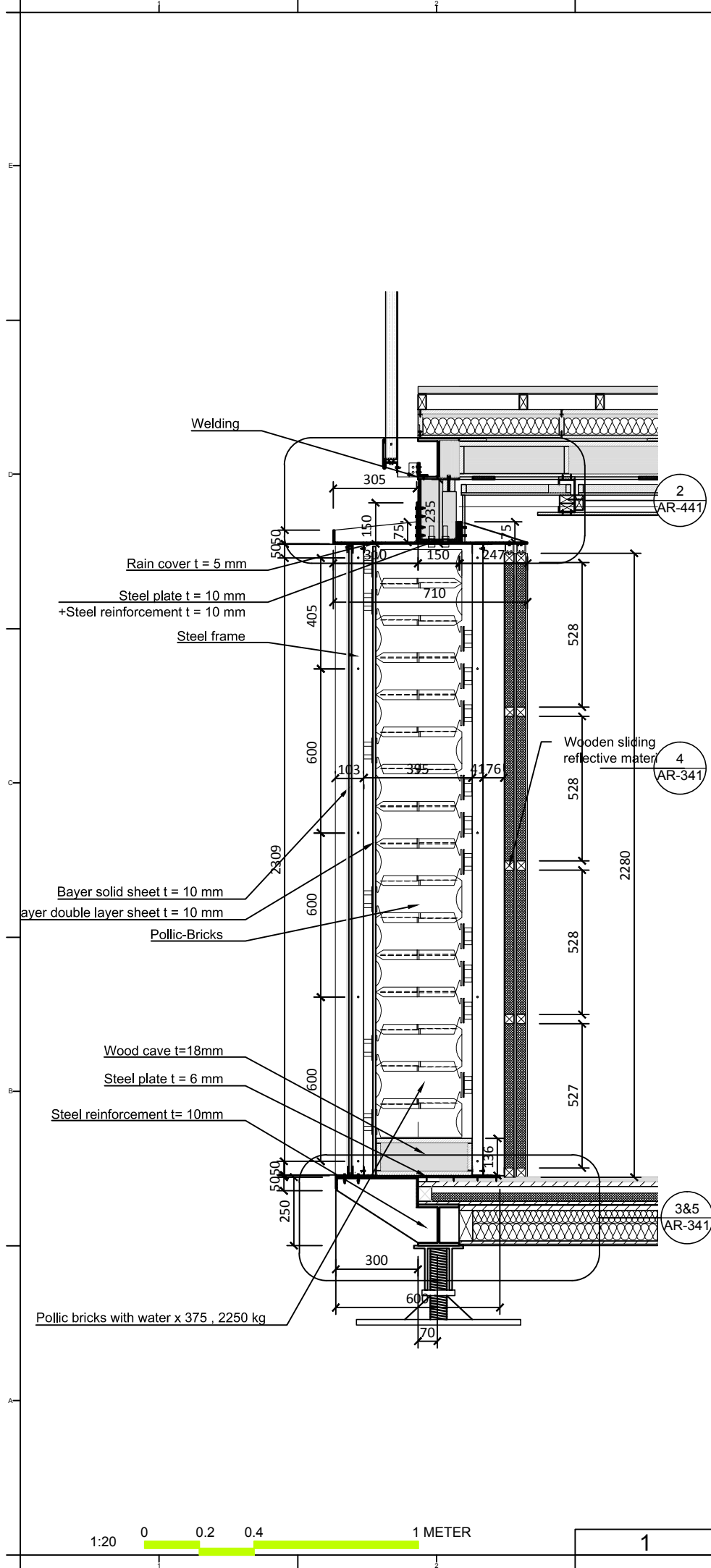
DWG. Title	
SMART SKIN DETAIL	
DWG. No.	PAGE
AR-421	77



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	1:20 & 1:04
Unit	mm

DWG. Title	
THERMAL WALL DETAILS 1	
DWG. No.	PAGE
AR-431	78



Project:



Institution:



NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE
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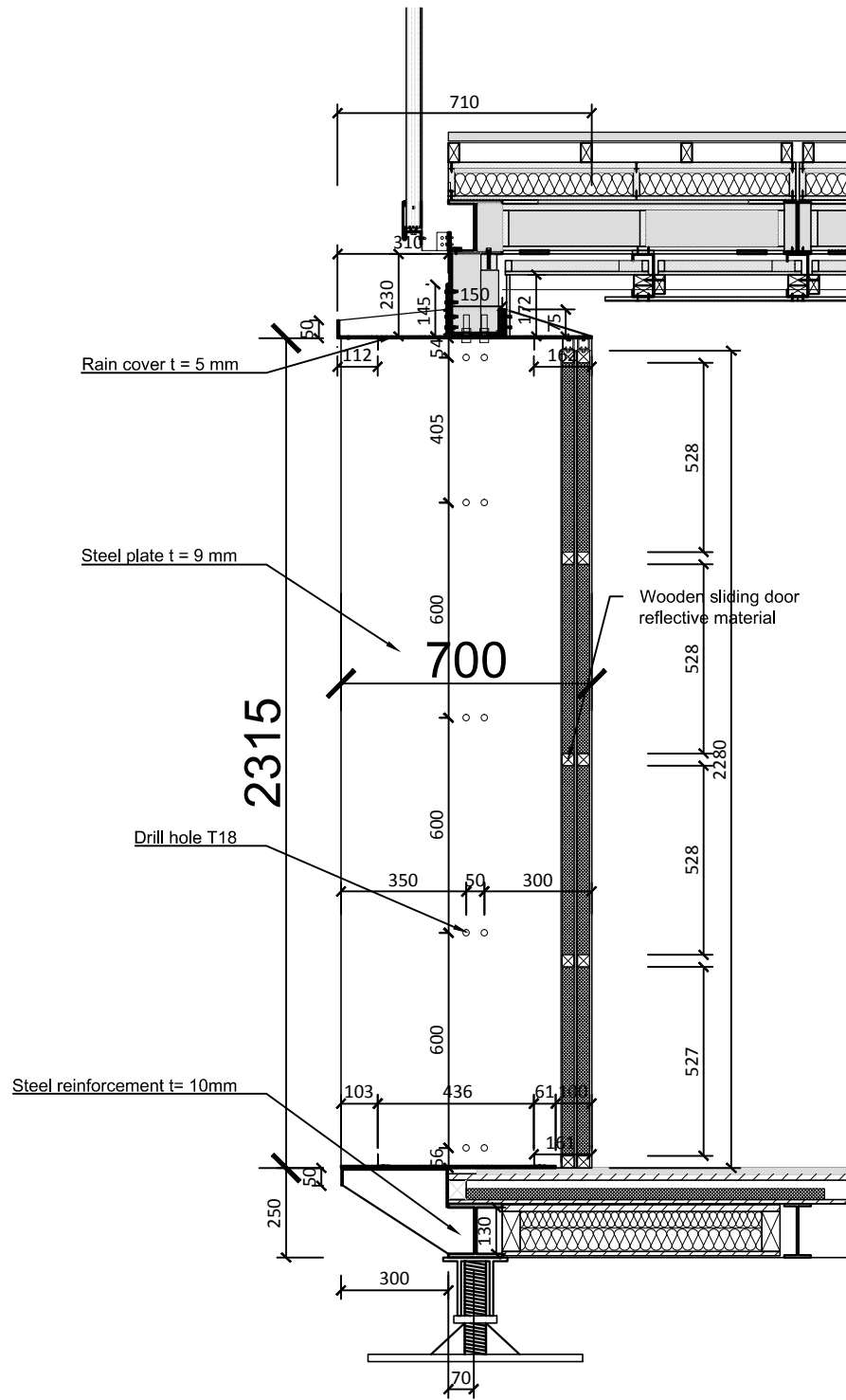
Consultants:

Note:

Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

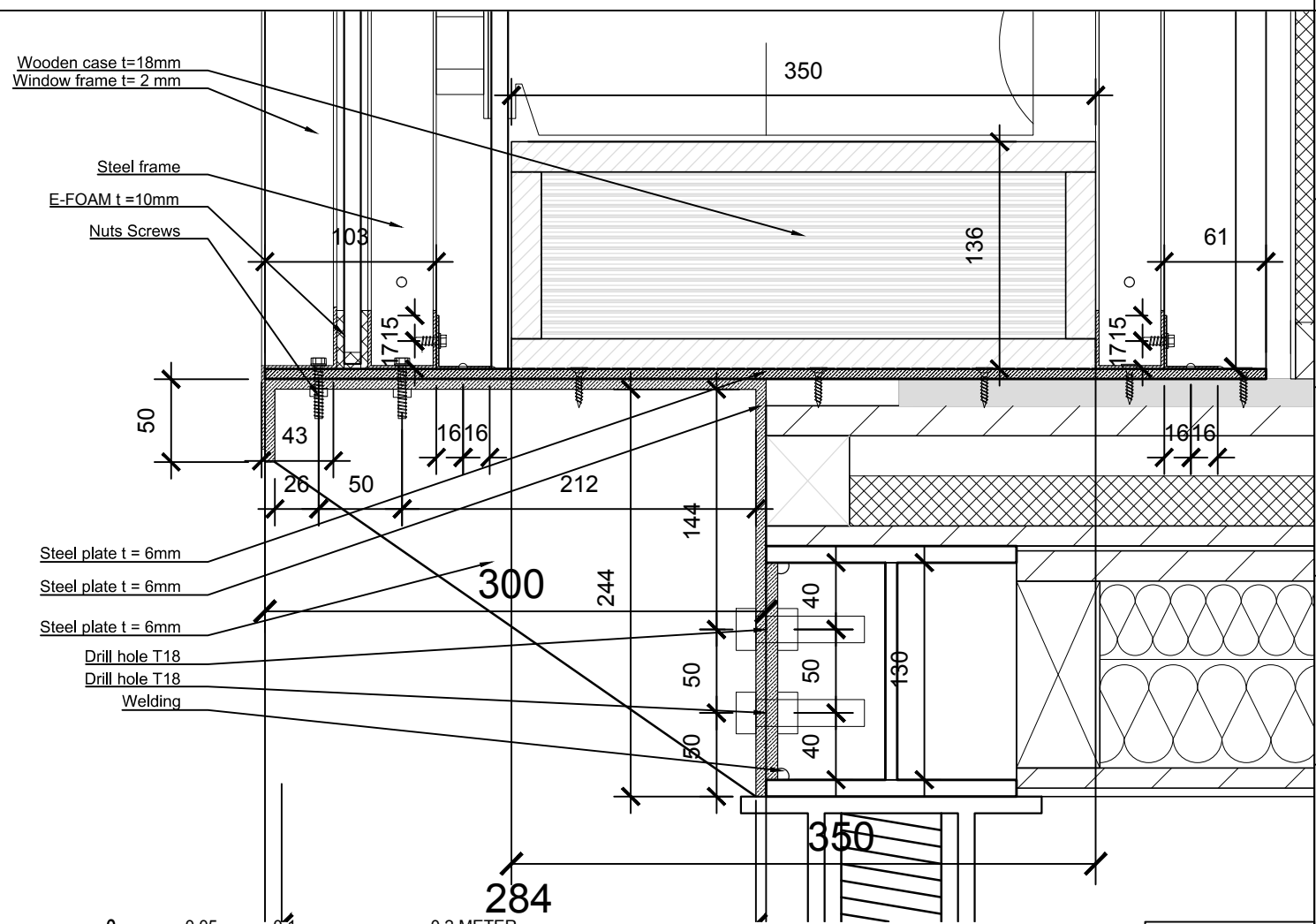
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Checked by	DN
Scale	1:20 & 1:04
Unit	mm

DWG. Title THERMAL WALL DETAILS 2	
DWG. No. AR-432	PAGE 79



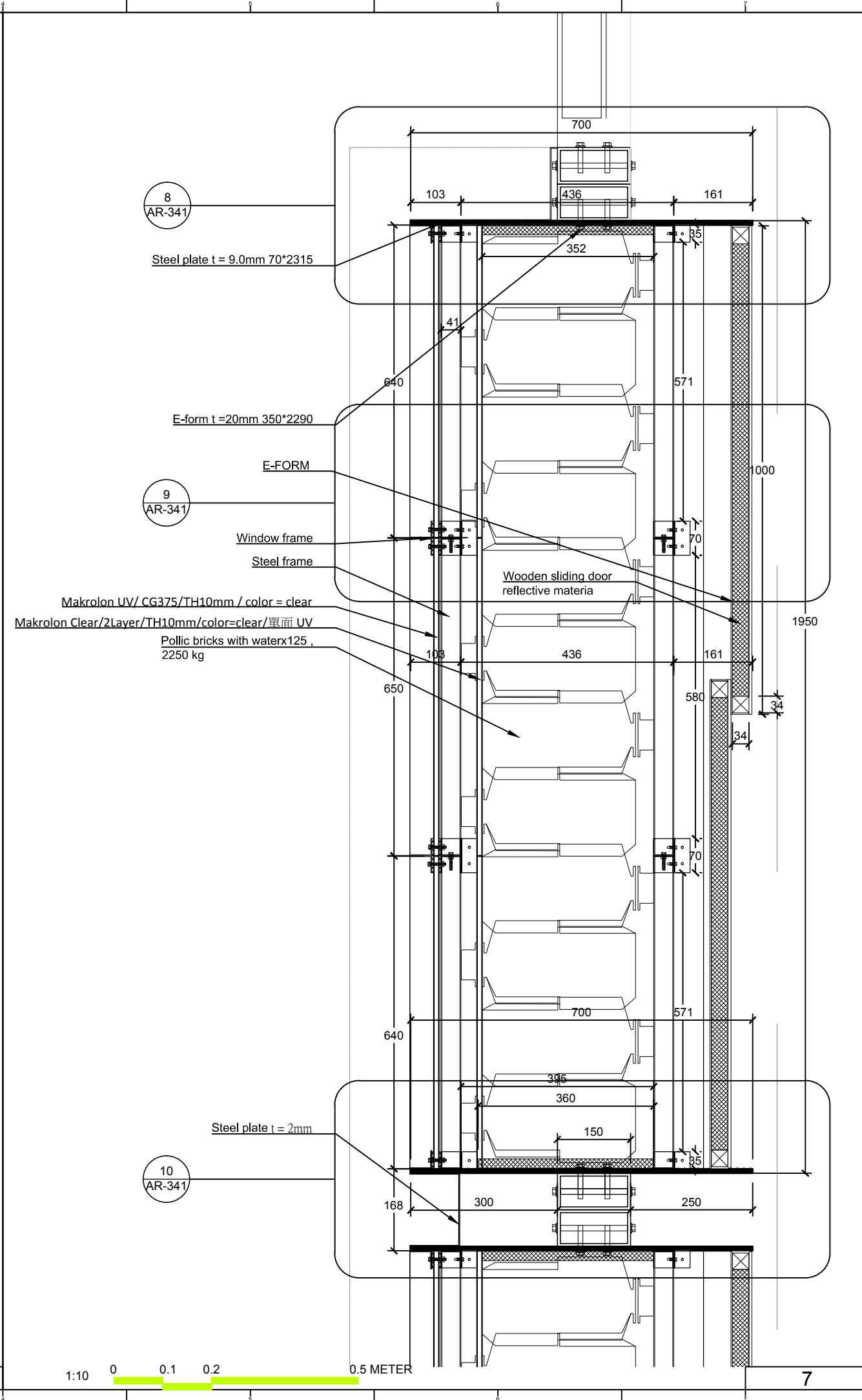
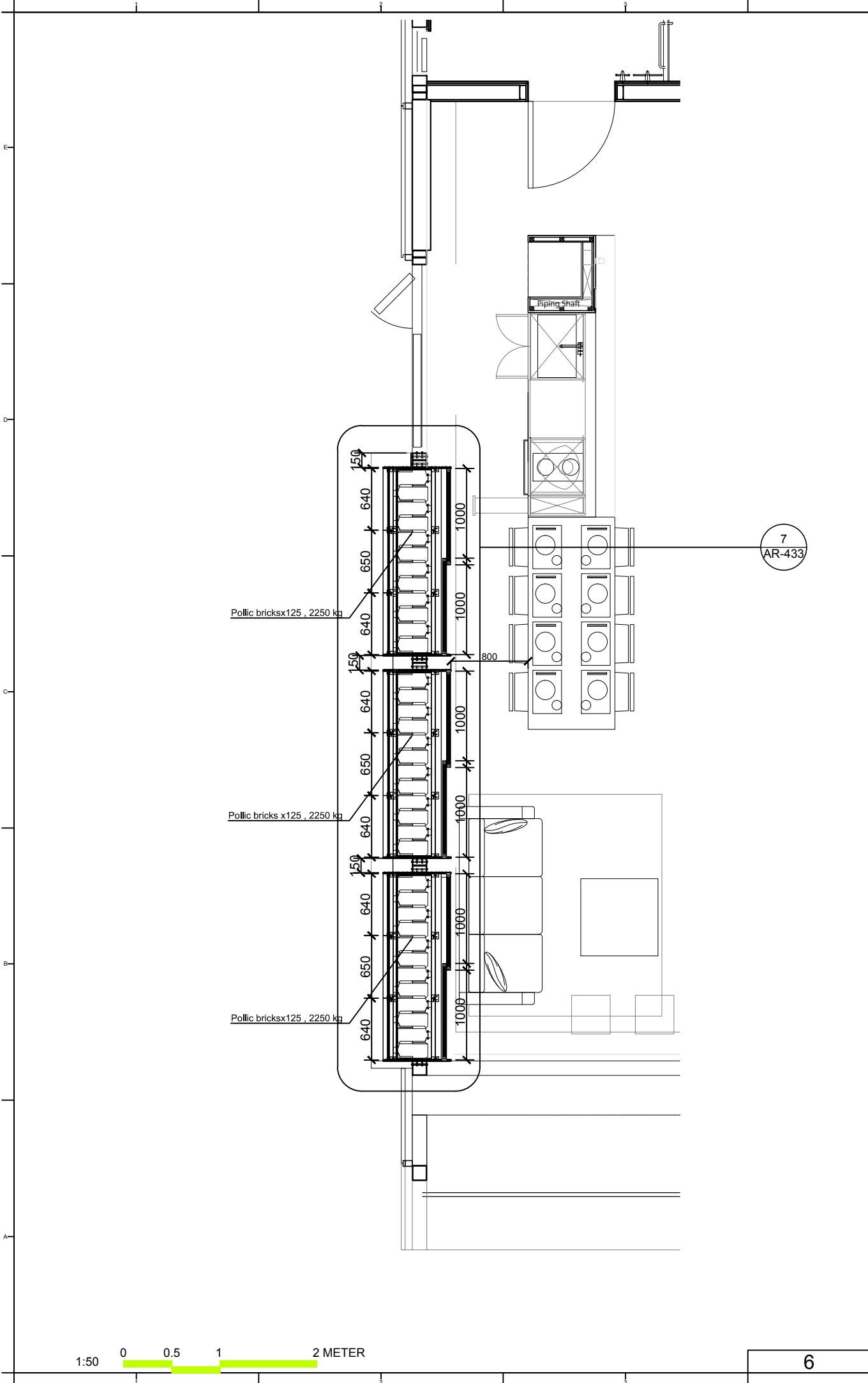
1:20 0 0.2 0.4 1 METER

4



1:4 0 0.05 0.1 0.2 METER

5



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Project:



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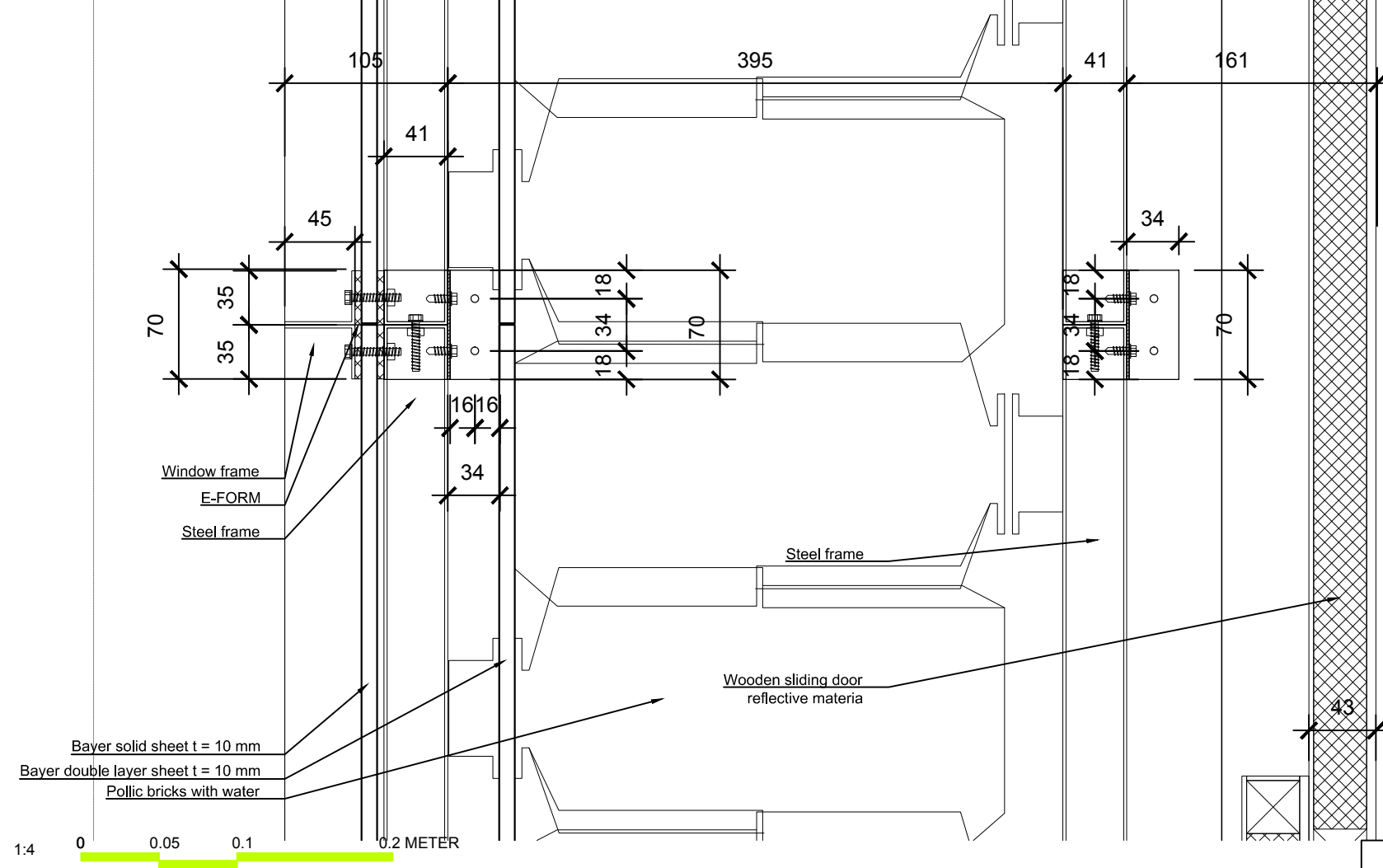
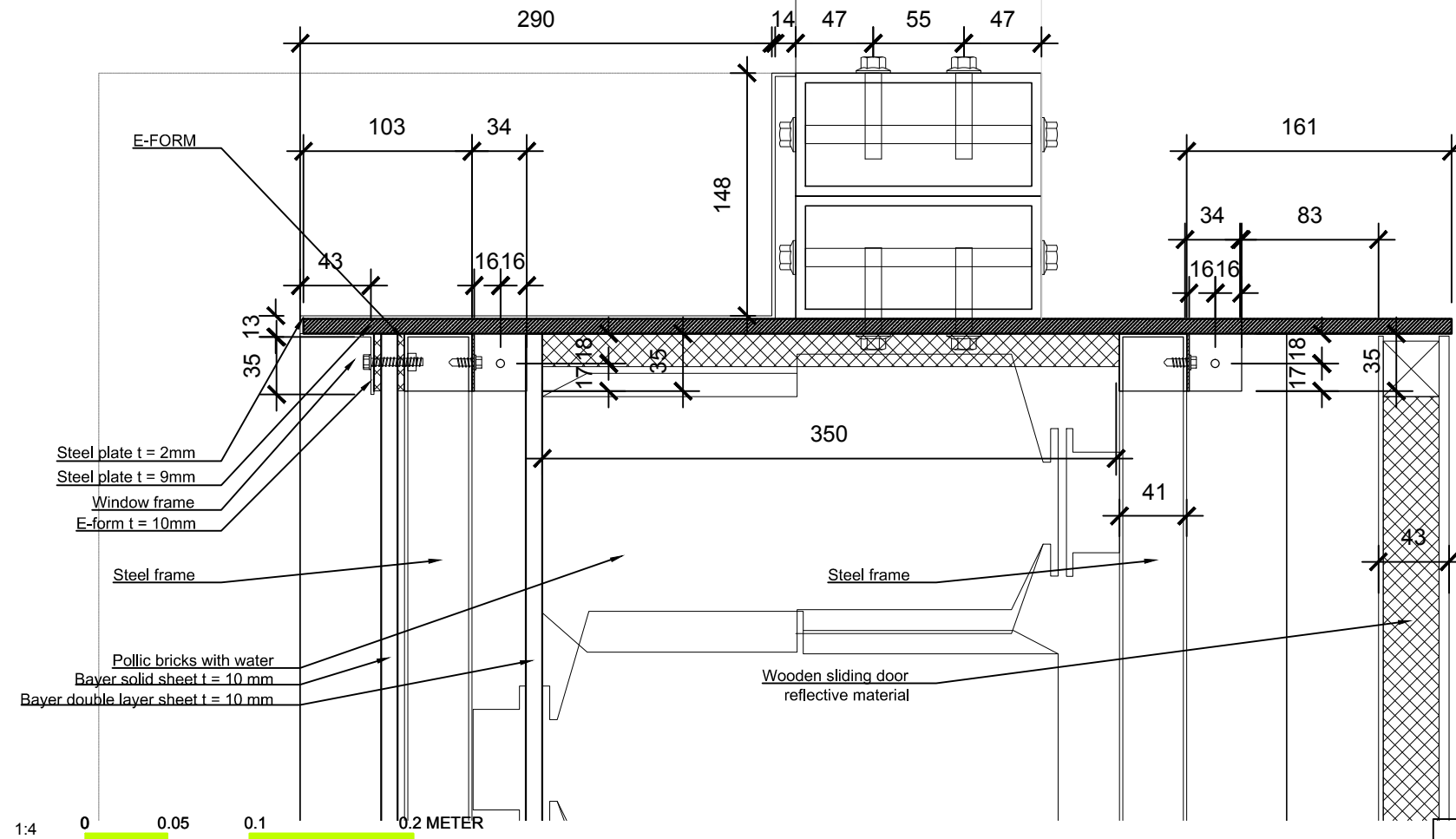
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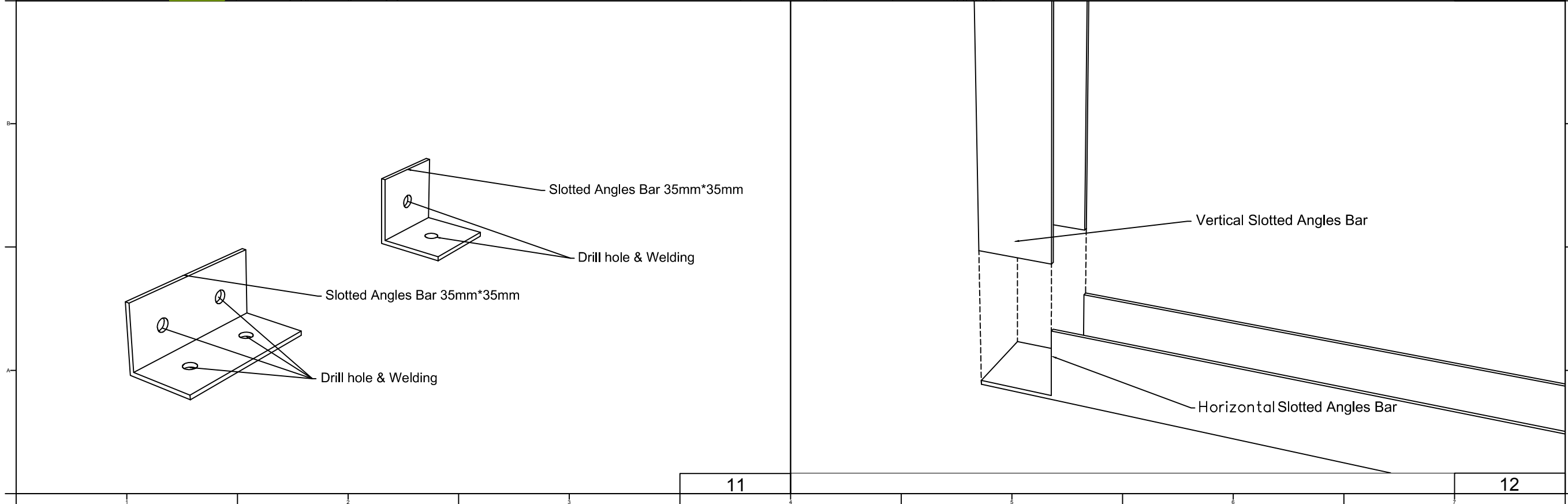
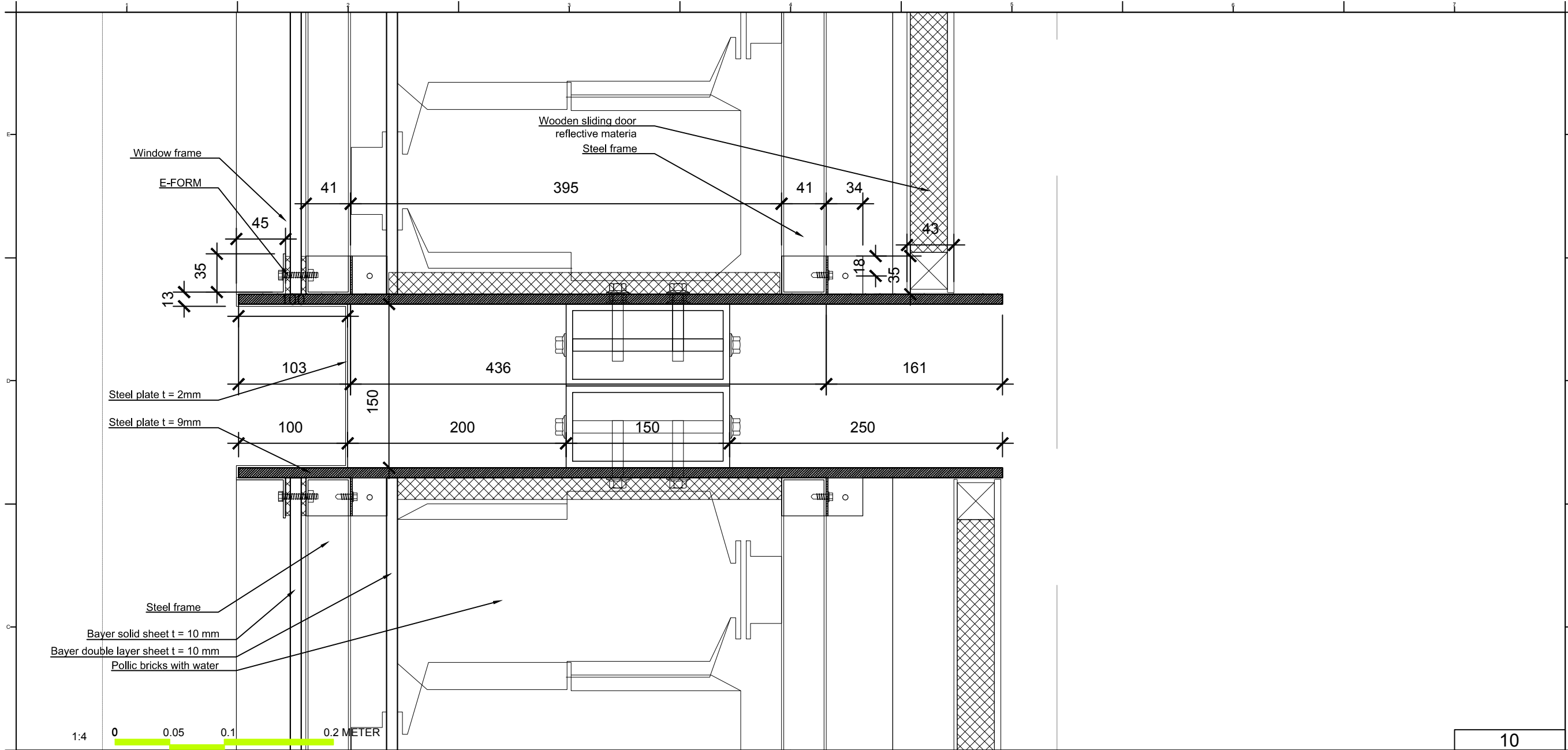
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	1: 04
Unit	mm

DWG. Title	
THERMAL WALL DETAILS 4	
DWG. No.	PAGE
AR-434	81





Project:



Institution:



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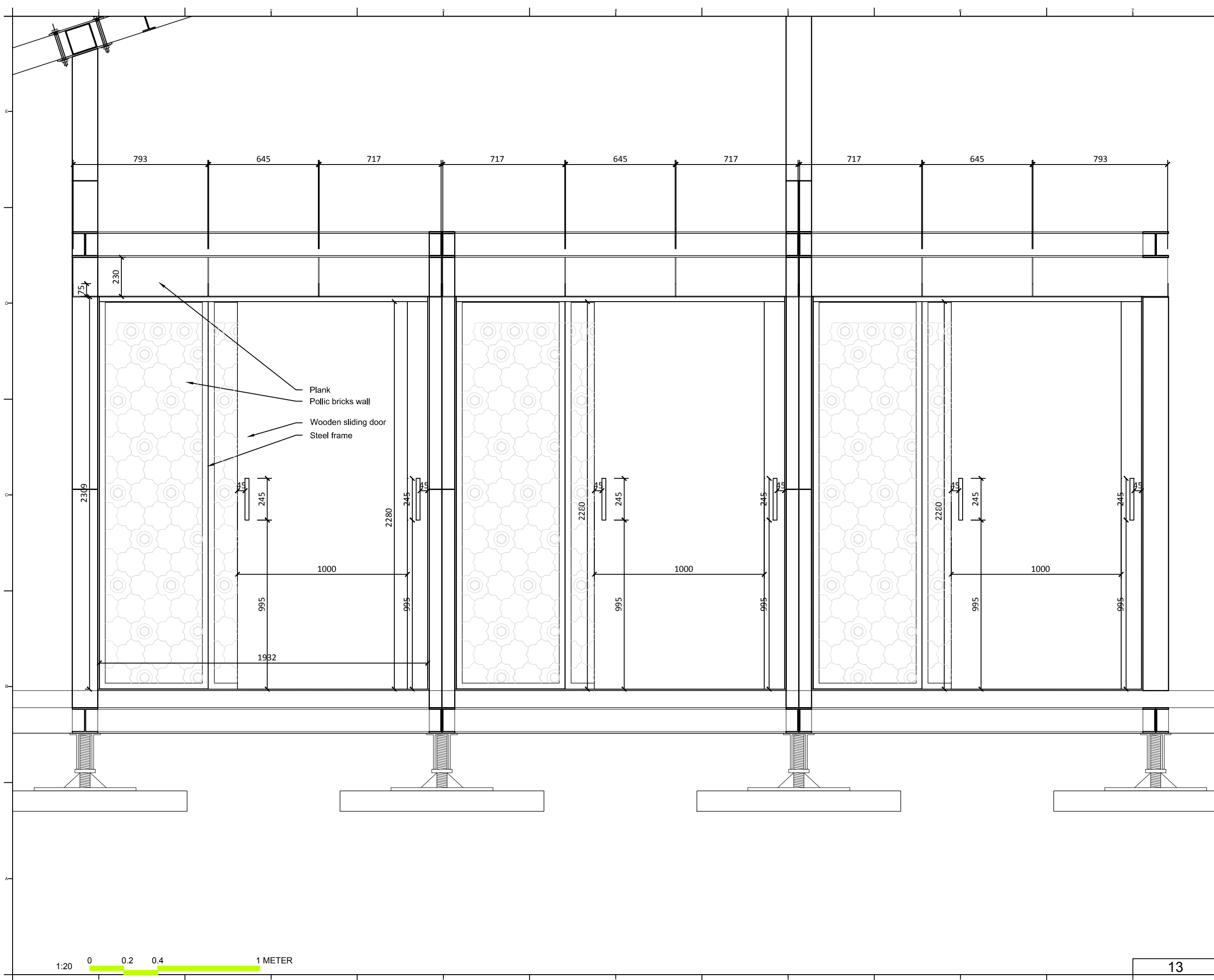
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	1:04
Unit	mm

DWG. Title	
THERMAL WALL DETAILS 5	
DWG. No.	PAGE
AR-435	82



Project:



Institution:



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Contact:



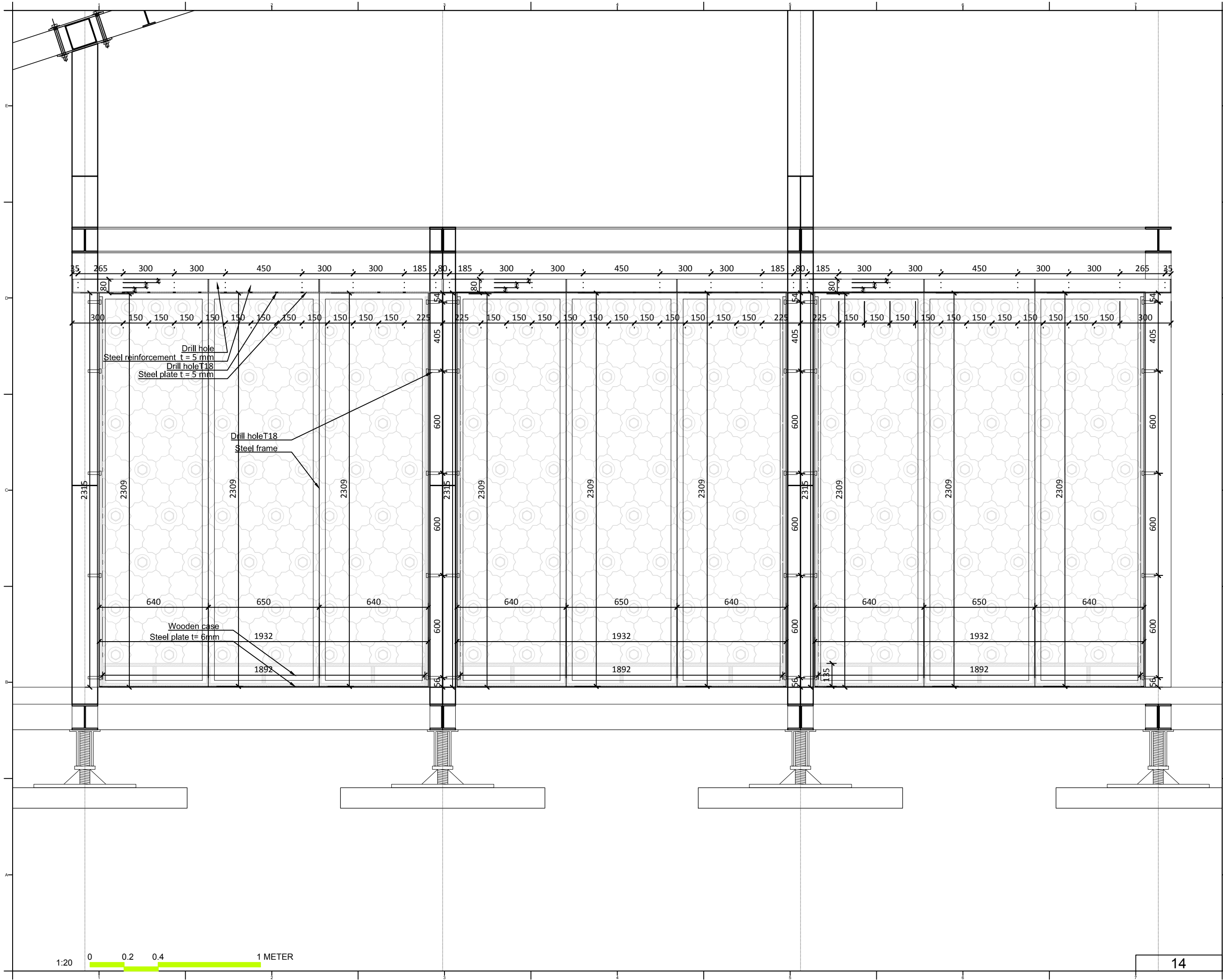
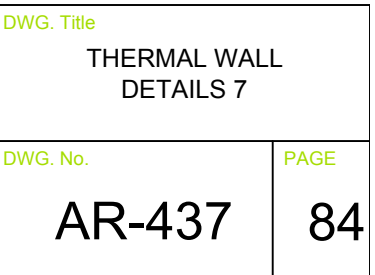
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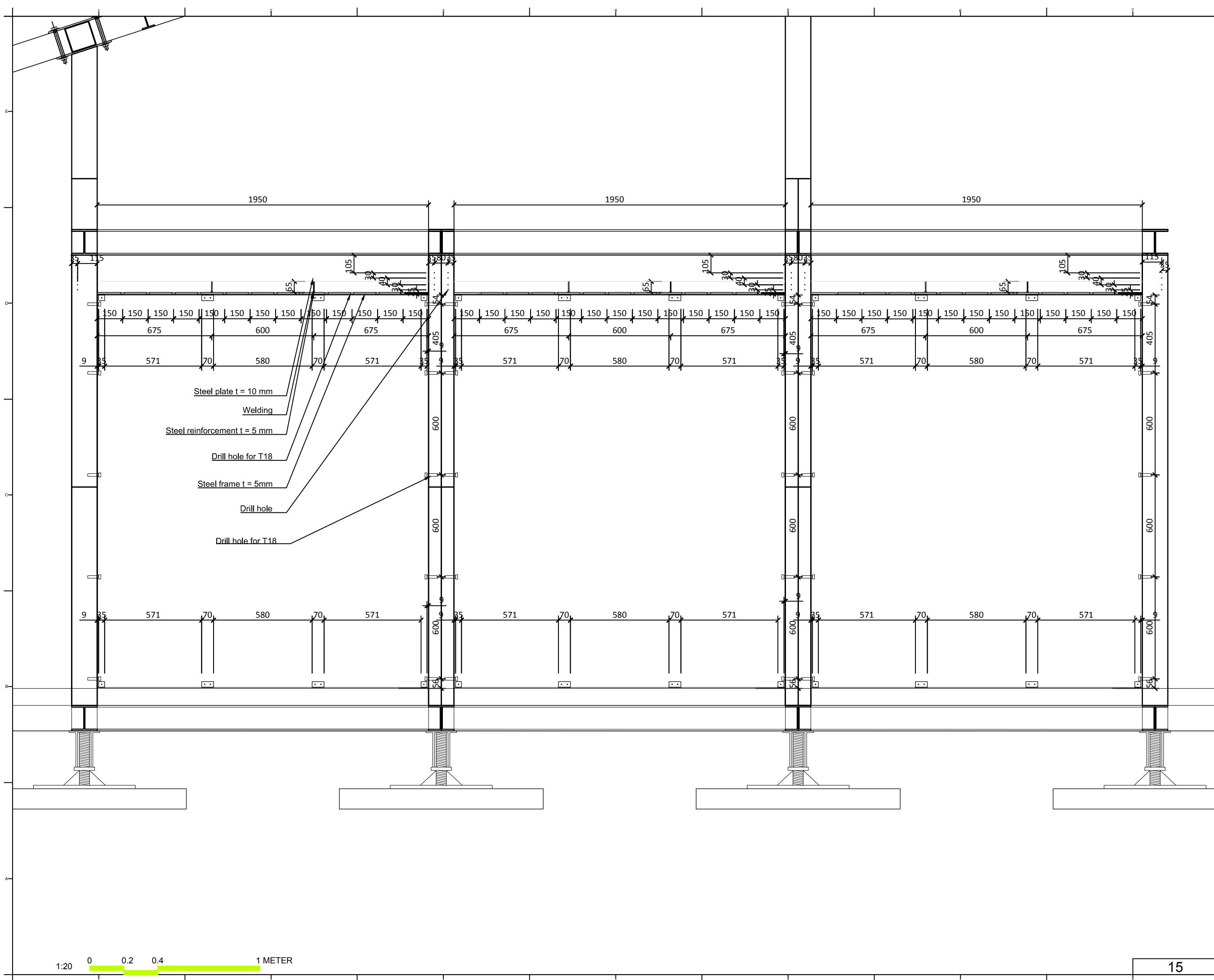
Note:

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DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	1: 20
Unit	mm

DWG. Title	
THERMAL WALL DETAILS 6	
DWG. No.	PAGE
AR-436	83





Project:



Institution:



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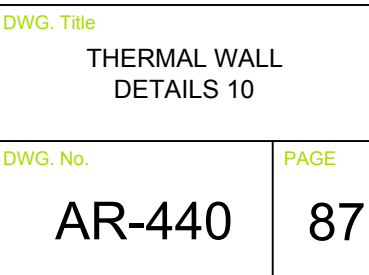
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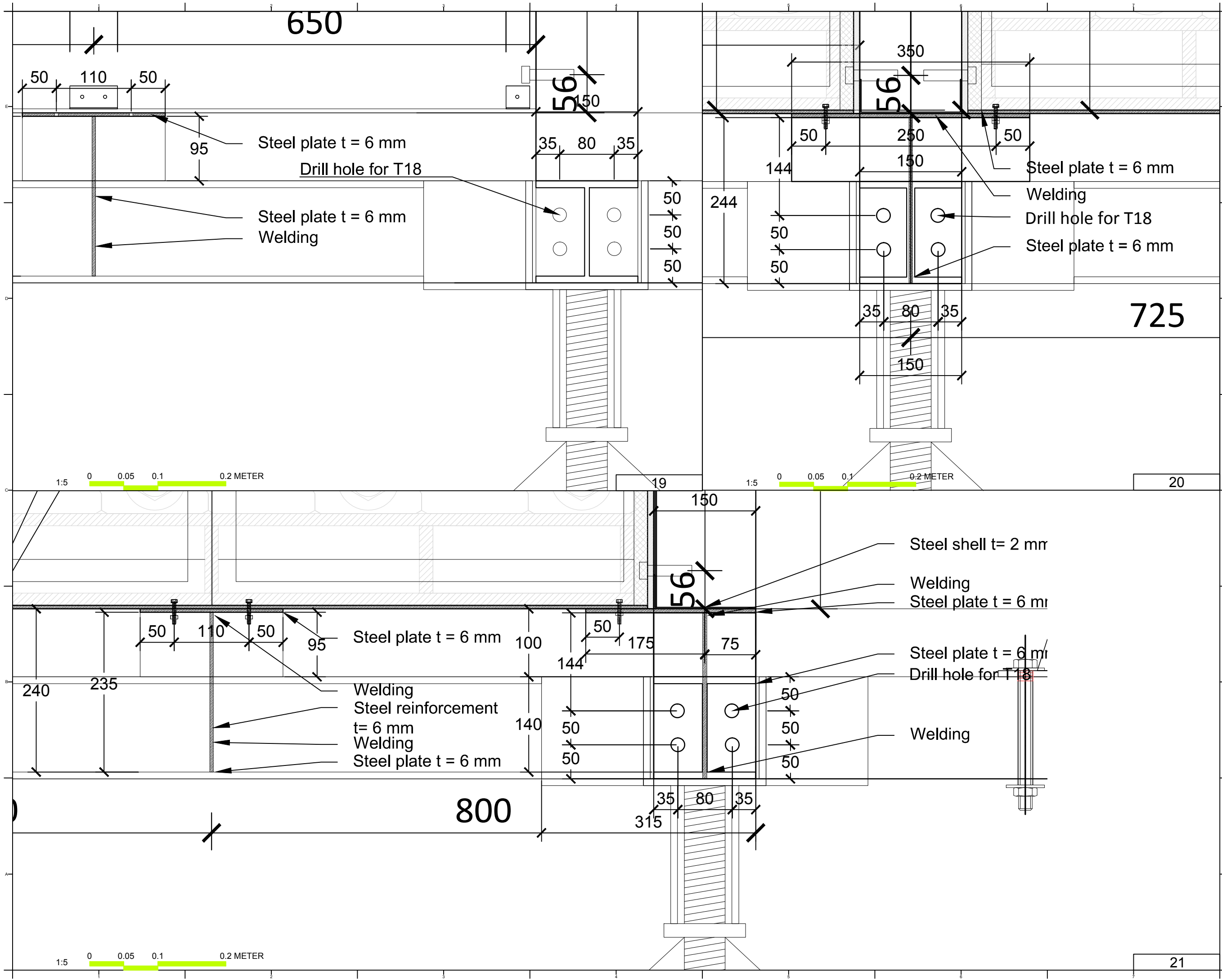
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	1: 20
Unit	mm

DWG. Title	
THERMAL WALL DETAILS 8	
DWG. No.	PAGE
AR-438	85







Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



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Consultants:

Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by JL

Checked by DN

Scale 1:20

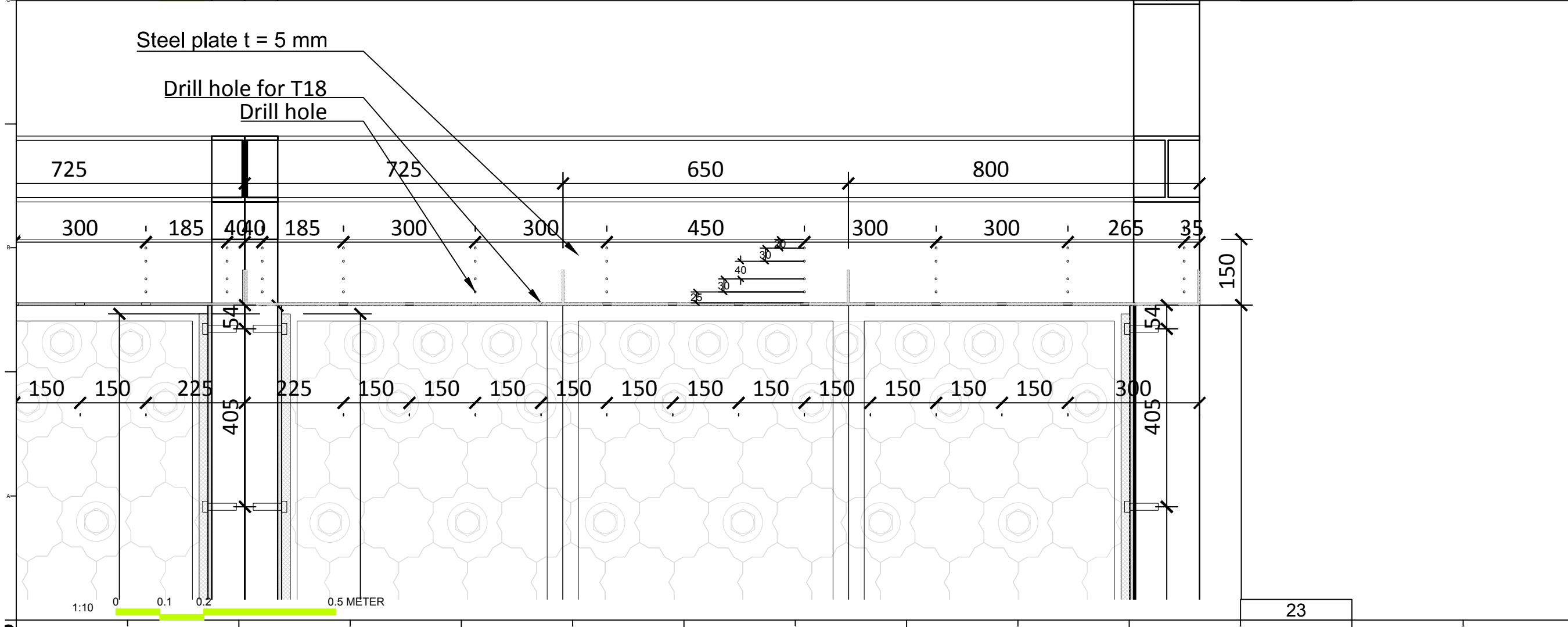
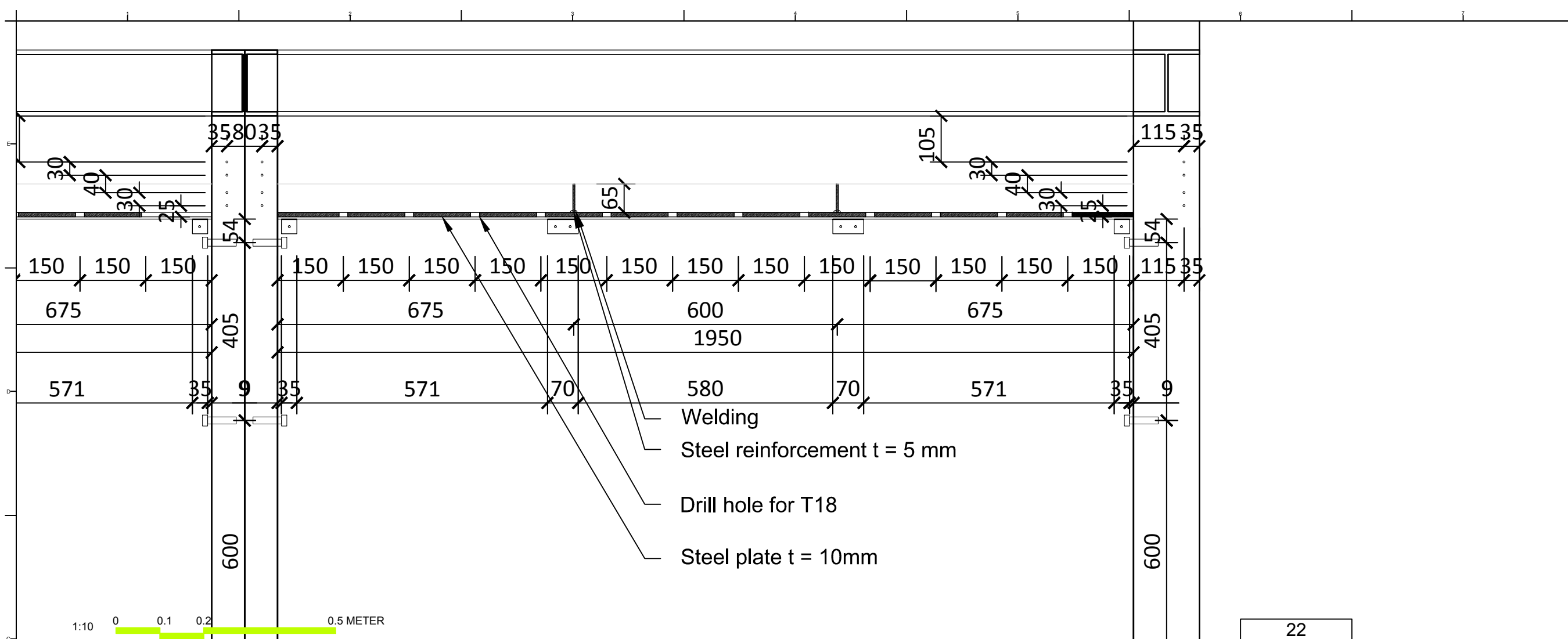
Unit mm

DWG. Title

**THERMAL WALL
DETAILS 12**

DWG. No. **AR-442**

PAGE **89**





Project:



Institution:



NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE
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Consultants:

Note:

Mark	Date	Description
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

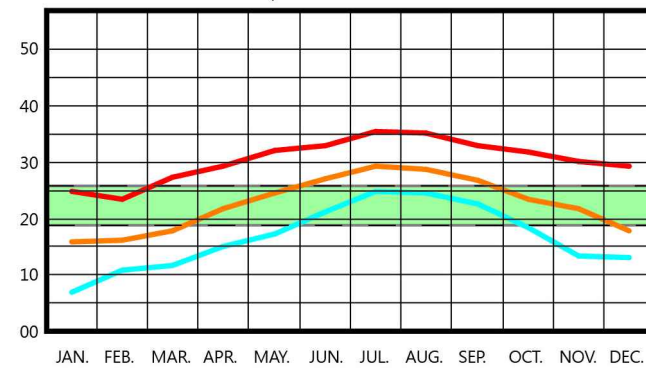
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Checked by: DN
Scale: 1: 20
Unit: mm

DWG. Title: THERMAL WALL DETAILS 13

DWG. No. AR-443	PAGE 90
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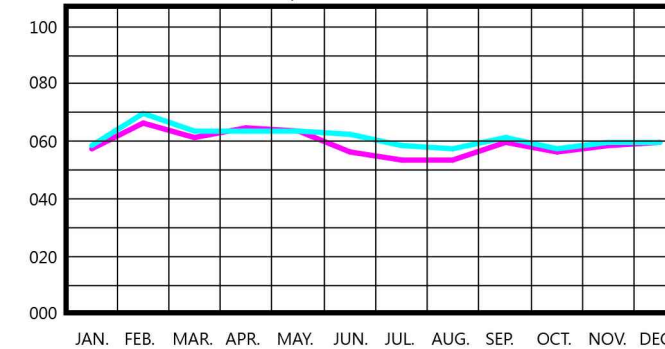
TEMPERATURE (°C)

LOCATION: TAIPEI, TWN



HUMIDITY (%)

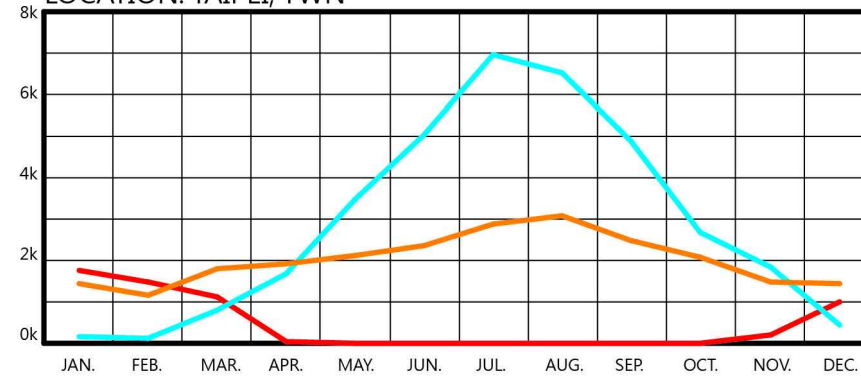
LOCATION: TAIPEI, TWN



DEGREE HOURS

(HEATING, COOLING AND SOLAR)

LOCATION: TAIPEI, TWN



PSYCHROMETRIC CHART

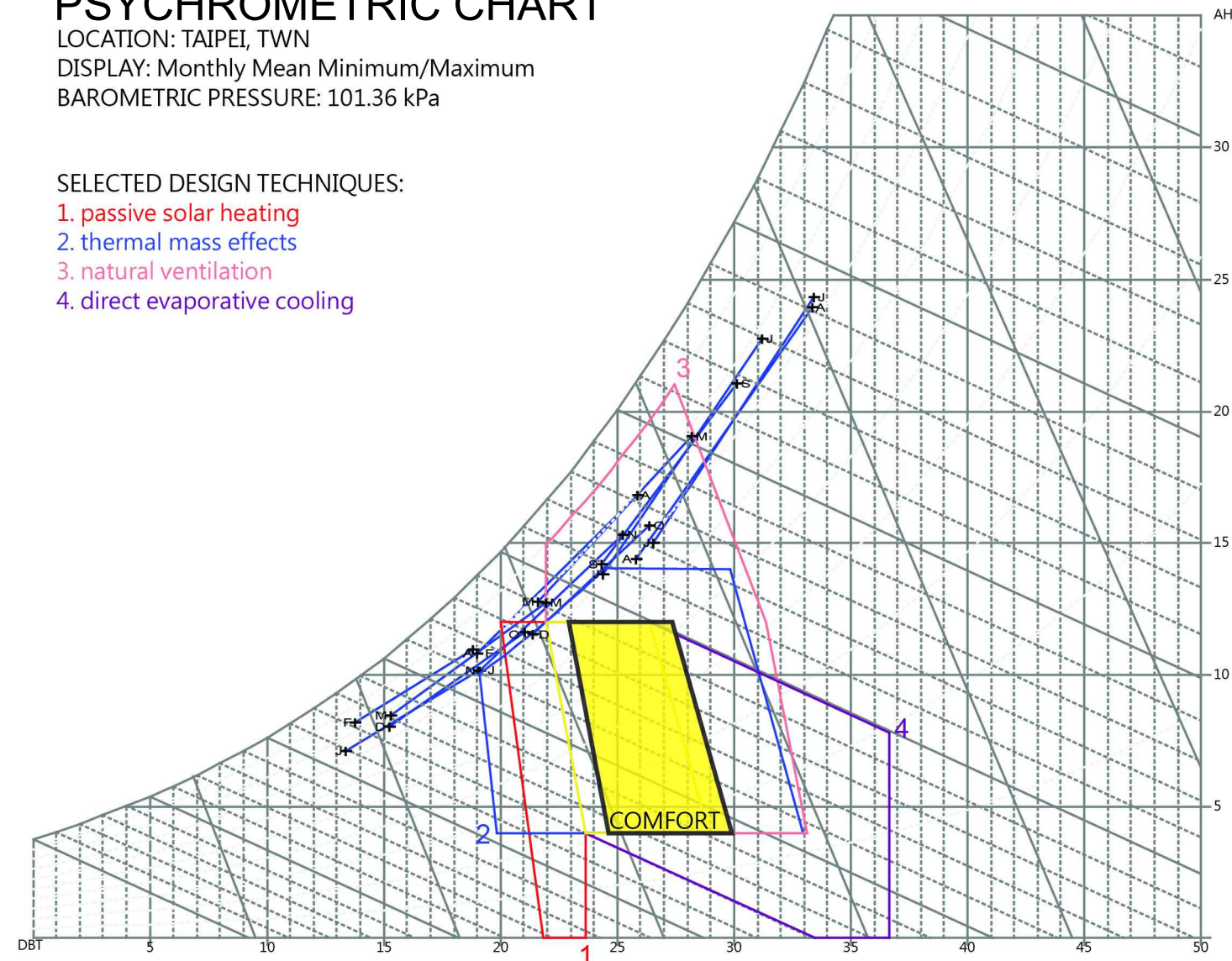
LOCATION: TAIPEI, TWN

DISPLAY: Monthly Mean Minimum/Maximum

BAROMETRIC PRESSURE: 101.36 kPa

SELECTED DESIGN TECHNIQUES:

1. passive solar heating
2. thermal mass effects
3. natural ventilation
4. direct evaporative cooling



DEGREE-HOURS

ANNUAL

HEATING DEGREE-HOURS	5795
SOLAR EXCESS DEGREE-HOURS	24511
COOLING DEGREE-HOURS	34668

Project:

Institution:

NCTU Architecture
國立交通大學建築研究所

Team Name:

NCTU/UNICODE

Address:

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Taiwan

Contact:

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Consultants:

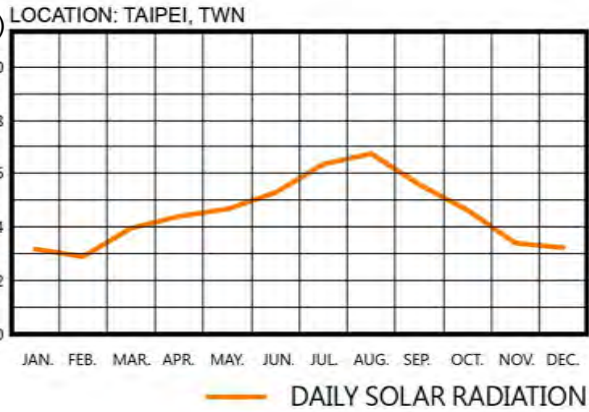
Note:

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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

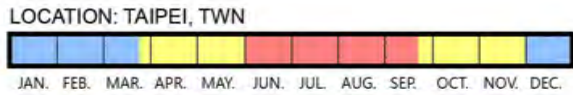
Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
TAIPEI CLIMATE ANALYSIS	
DWG. No.	PAGE
BA-001	91

RADIATION (W/m)

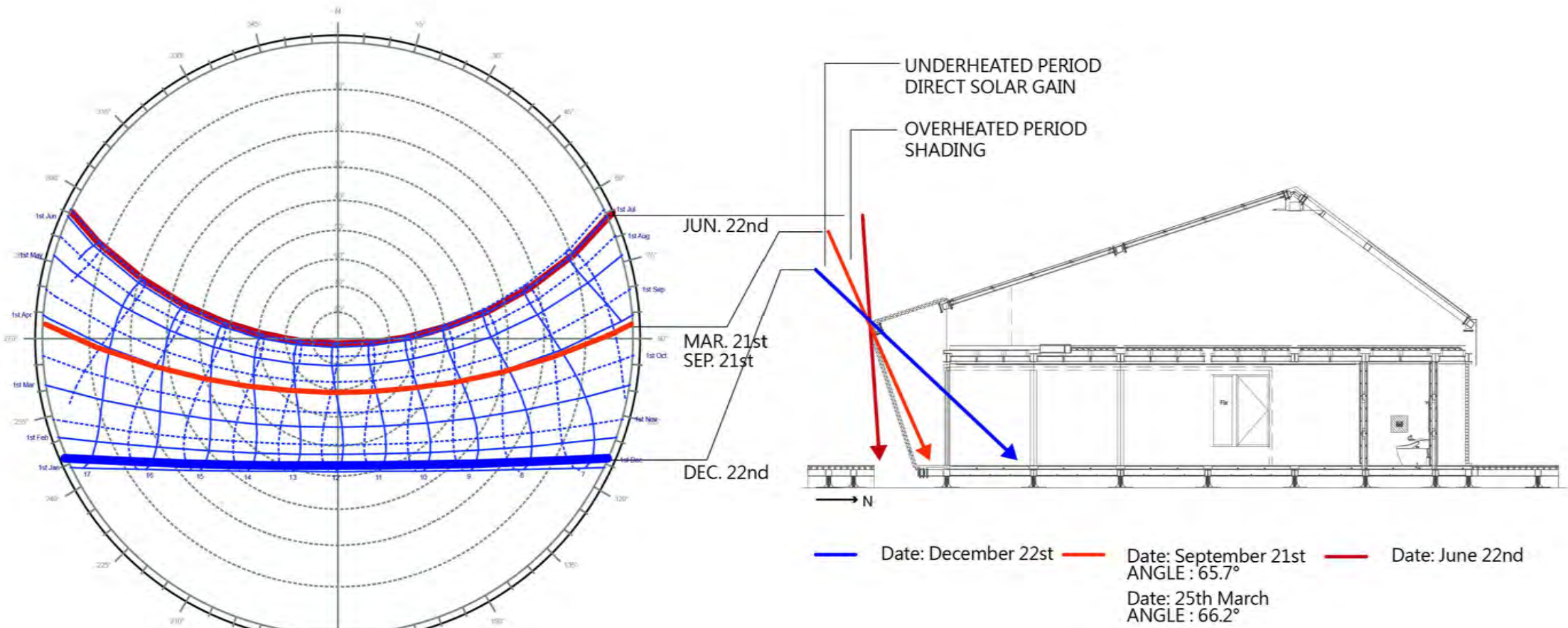


BASIC CLIMATIC CONDITION



- OVERHEATED PERIOD (JUN.01-SEP.21)
- UNDERHEATED PERIOD (DEC.01-MAR.21)
- COMFORTABLE PERIOD (MAR.21-JUN.01 & SEP.21-DEC.01)

SOLAR PATH DIAGRAM



Solar Decathlon Europe

Project: **ORCHID HOUSE**

Institution: **國立交通大學**
National Chiao Tung University

NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE
Address: 1001 Ta-Hsueh Road
Hsinchu City 30010
Taiwan
Contact: www.sde.tw

Consultants:

Note:

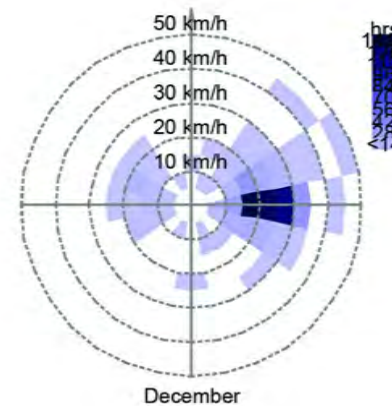
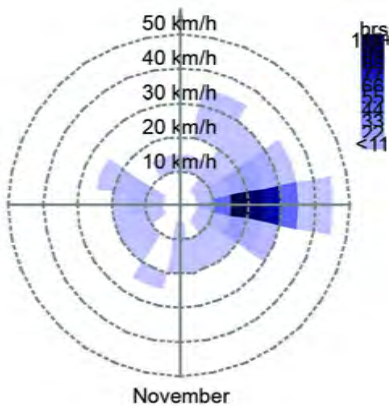
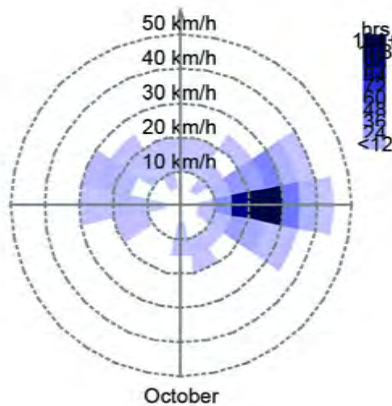
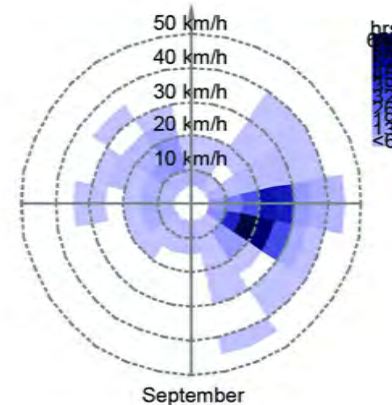
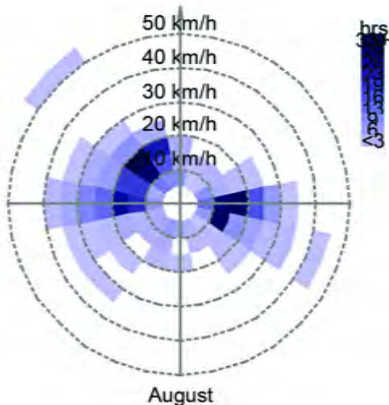
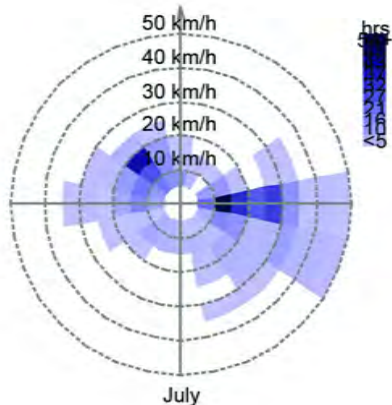
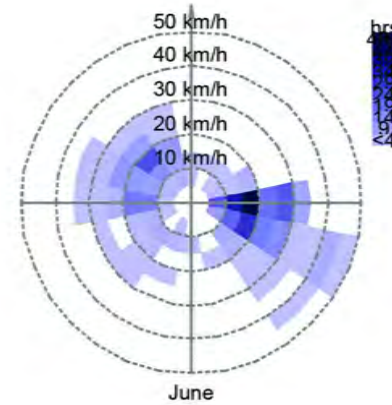
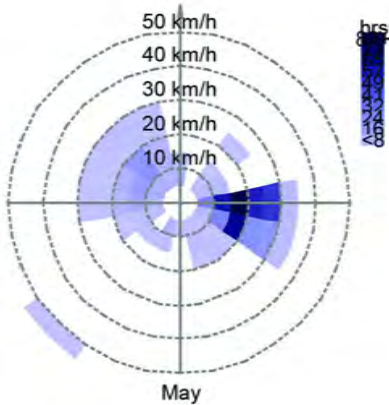
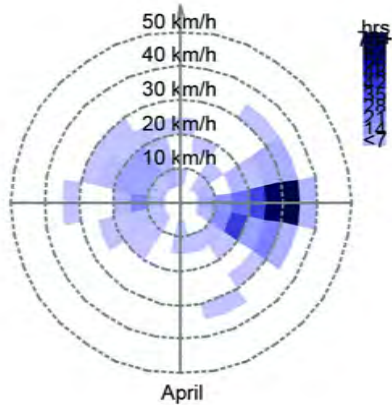
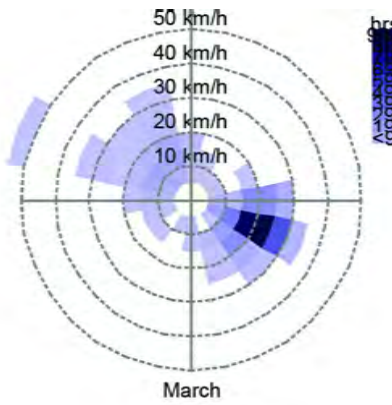
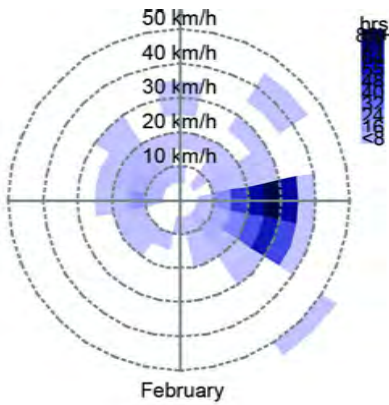
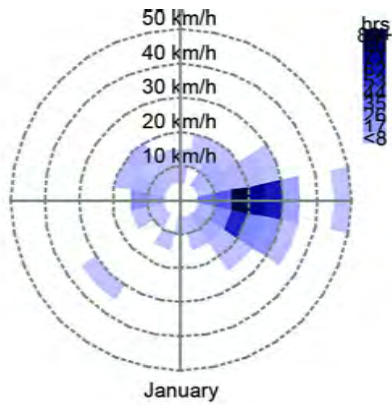
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
TAIPEI SHADING ANALYSIS	
DWG. No.	PAGE
BA-002	92

PREVALING WINDS

Wind Frequency (Hrs)
Location: TAIPEI, TWN
Date: January 1st - December 31st
Time: 00:00 - 24:00



Project:



Institution:



NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE
Address: 1001 Ta-Hsueh Road
Hsinchu City 30010
Taiwan
Contact: www.sde.tw



Consultants:

Note:

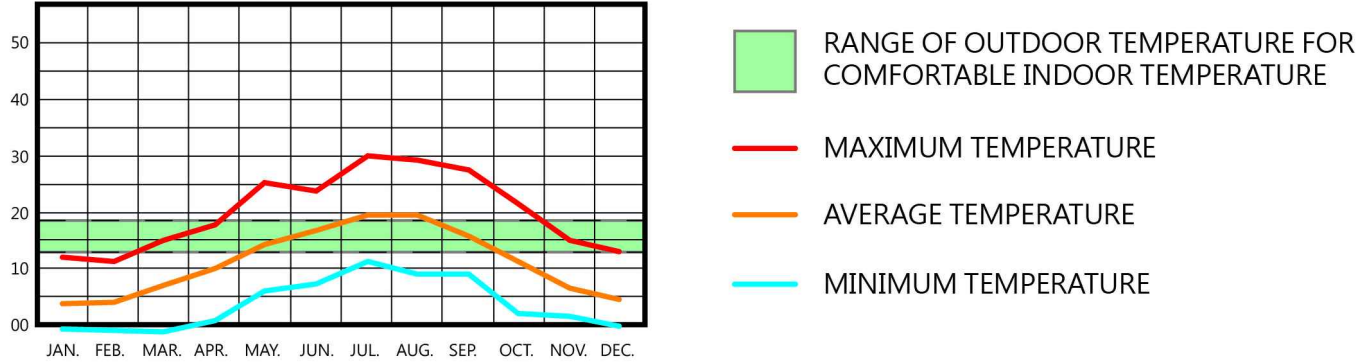
Mark	Date	Description
DN	2013/04/01	SD Submission
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
TAIPEI WIND ROSE ANALYSIS	
DWG. No.	PAGE
BA-003	93

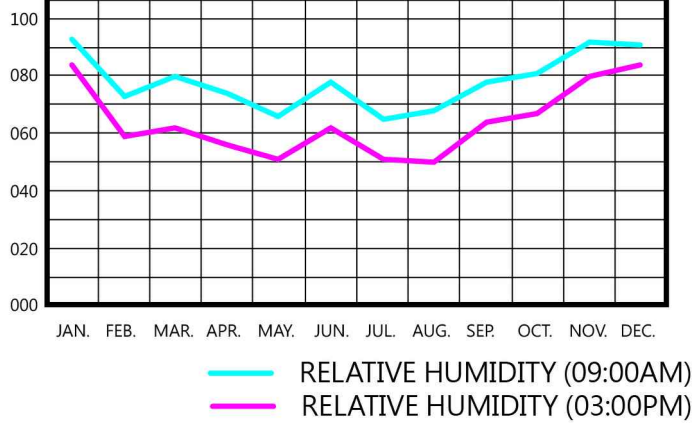
TEMPERATURE (°C)

LOCATION: PARIS_ ORLY, FRA



HUMIDITY (%)

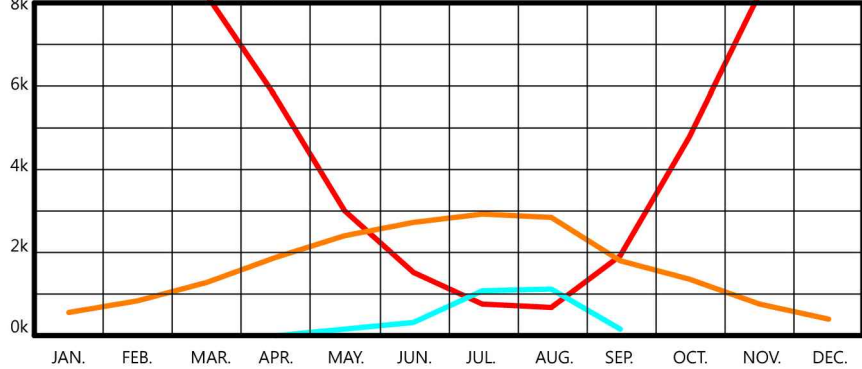
LOCATION: PARIS_ ORLY, FRA



DEGREE HOURS

(HEATING, COOLING AND SOLAR)

LOCATION: PARIS_ ORLY, FRA



DEGREE-HOURS

ANNUAL

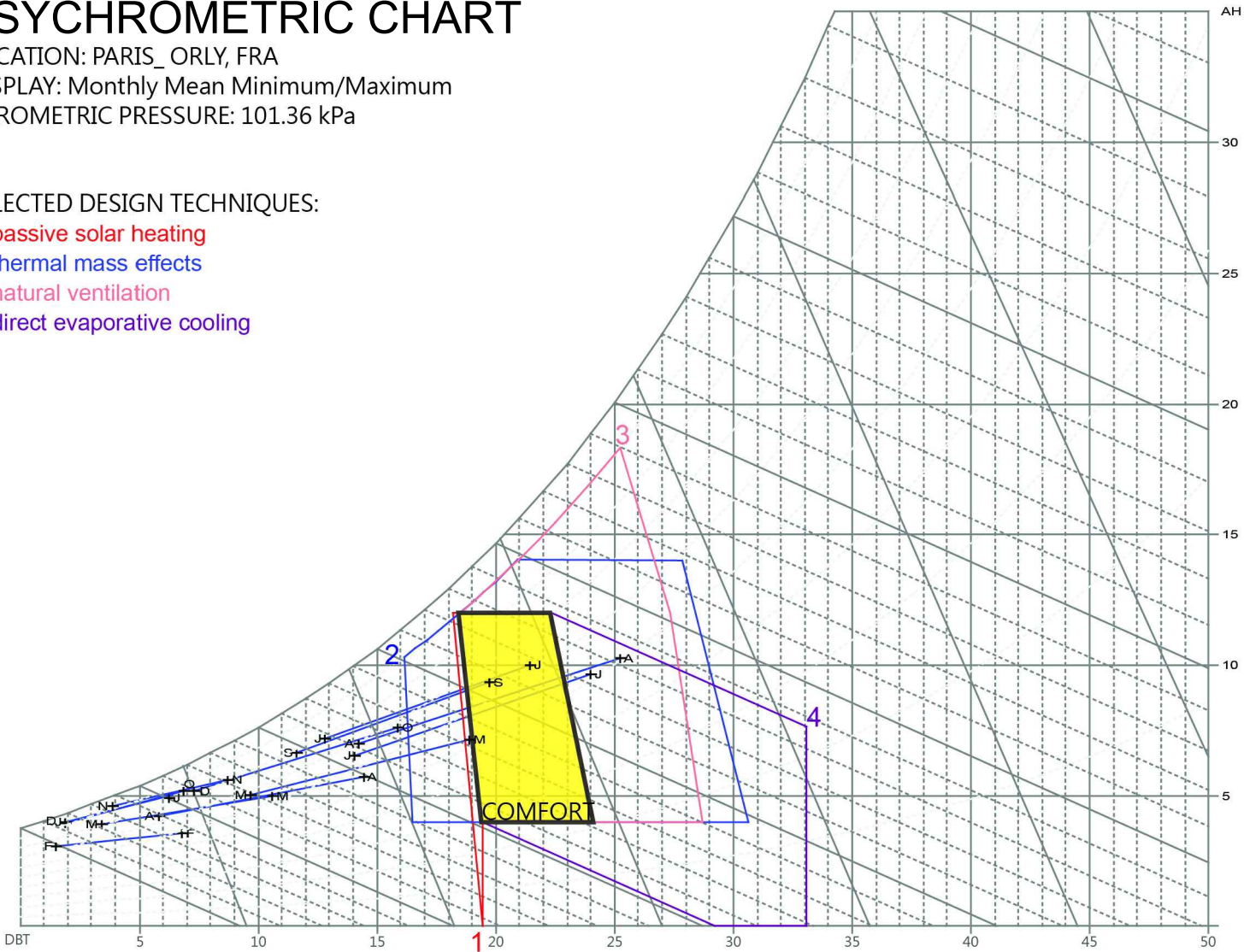
— HEATING DEGREE-HOURS	64193
— SOLAR EXCESS DEGREE-HOURS	19993
— COOLING DEGREE-HOURS	2929

PSYCHROMETRIC CHART

LOCATION: PARIS_ ORLY, FRA
DISPLAY: Monthly Mean Minimum/Maximum
BAROMETRIC PRESSURE: 101.36 kPa

SELECTED DESIGN TECHNIQUES:

1. passive solar heating
2. thermal mass effects
3. natural ventilation
4. direct evaporative cooling



Project:



Institution:



NCTU Architecture
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Consultants:

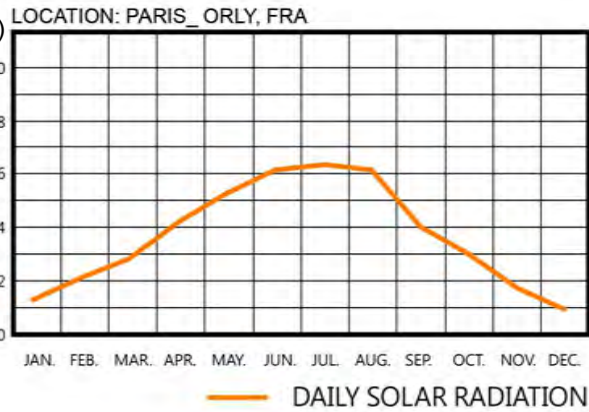
Note:

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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

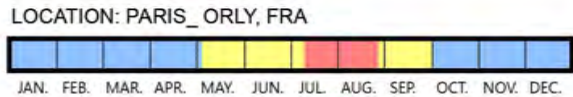
Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
VERSAILLES CLIMATE ANALYSIS	
DWG. No.	PAGE
BA-004	94

RADIATION (W/m)

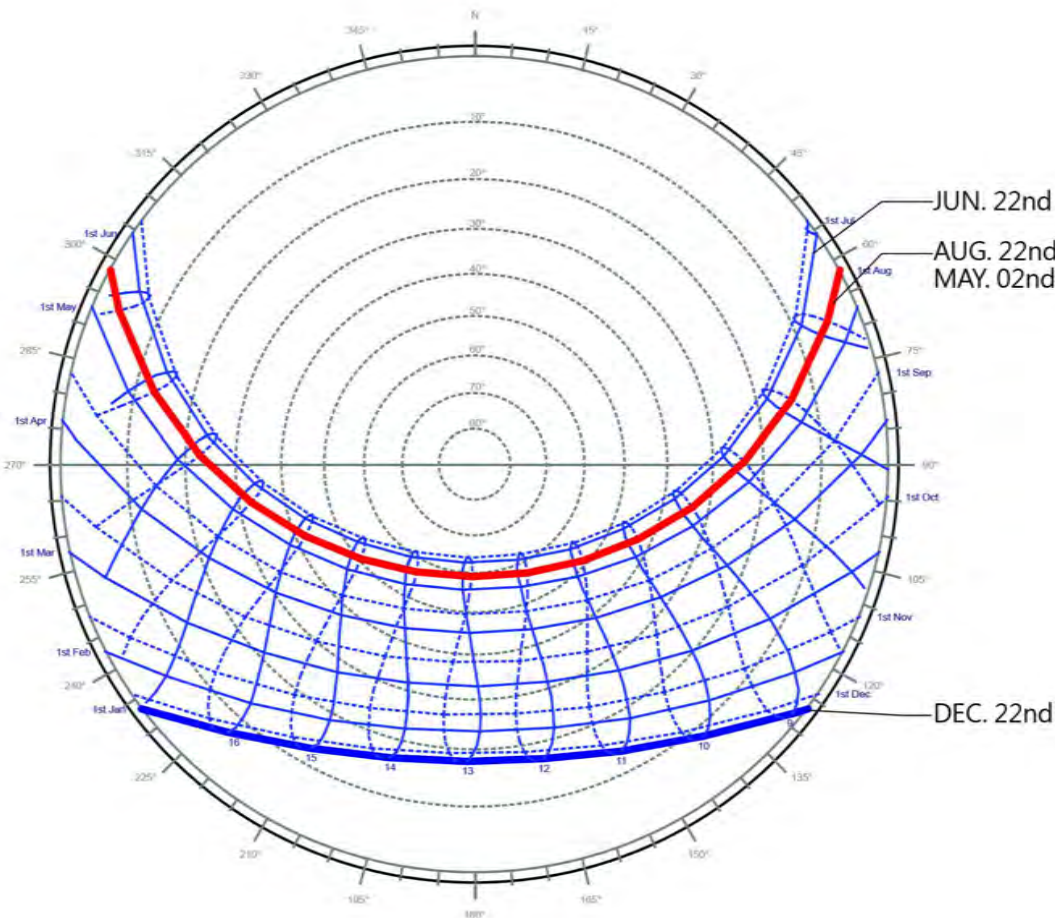


BASIC CLIMATIC CONDITION



- OVERHEATED PERIOD
- UNDERHEATED PERIOD
- COMFORTABLE PERIOD

SOLAR PATH DIAGRAM



Project:



Institution:



NCTU Architecture
國立交通大學建築研究所

Team Name: NCTU/UNICODE
Address: 1001 Ta-Hsueh Road
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Consultants:

Note:

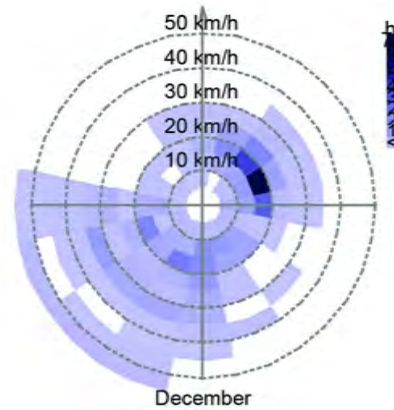
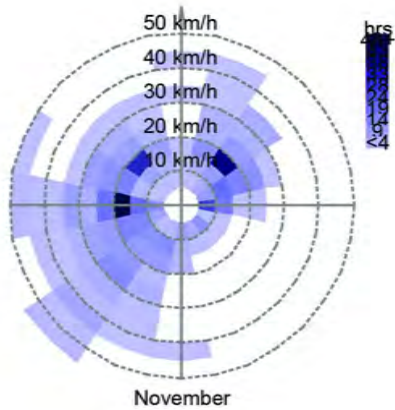
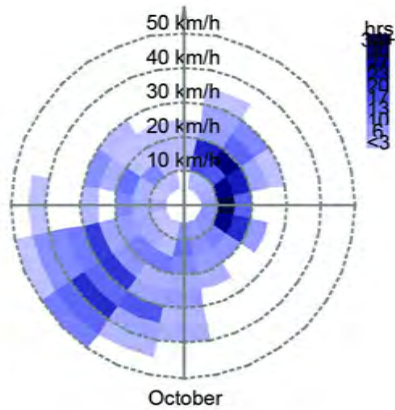
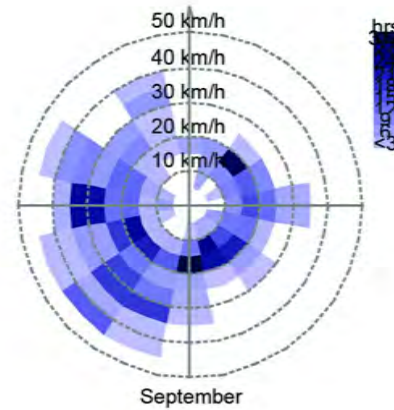
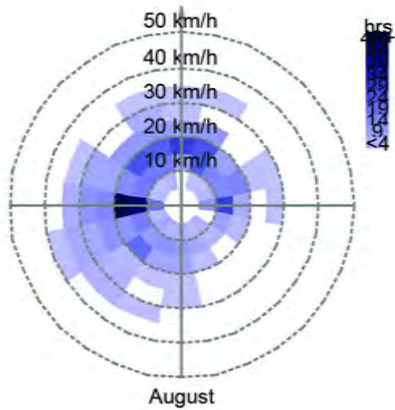
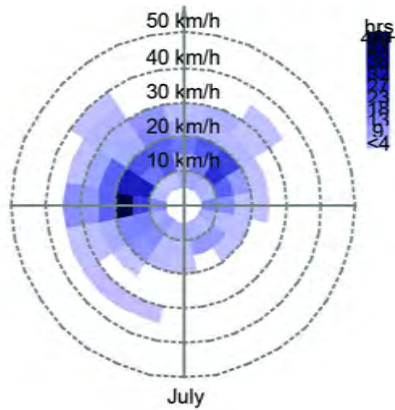
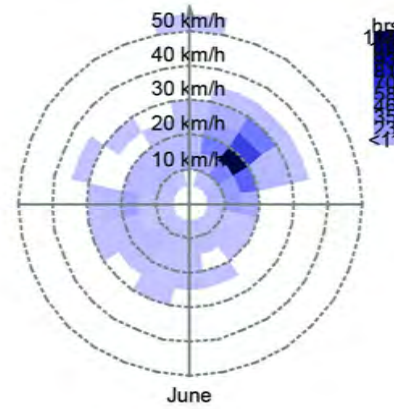
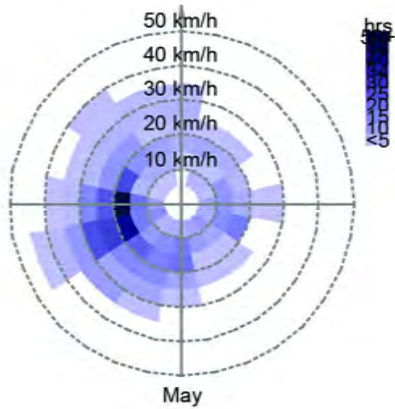
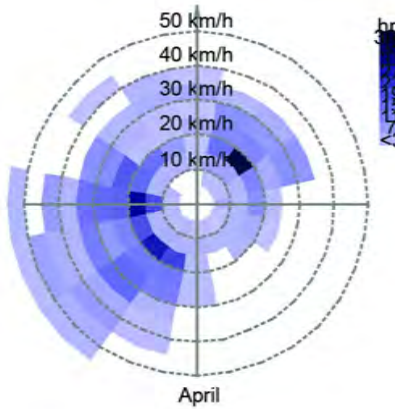
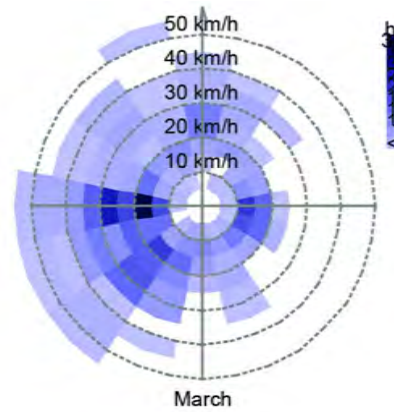
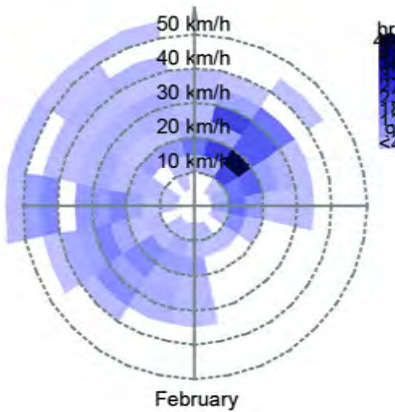
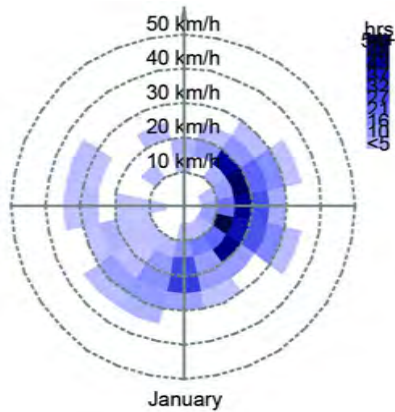
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DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
VERSAILLES SHADING ANALYSIS	
DWG. No.	PAGE
BA-005	95

PREVALING WINDS

Wind Frequency (Hrs)
Location: PARIS_ORLY, FRA
Date: 1st January - 31st December
Time: 00:00 - 24:00



Project:



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國立交通大學建築研究所

Team Name: NCTU/UNICODE
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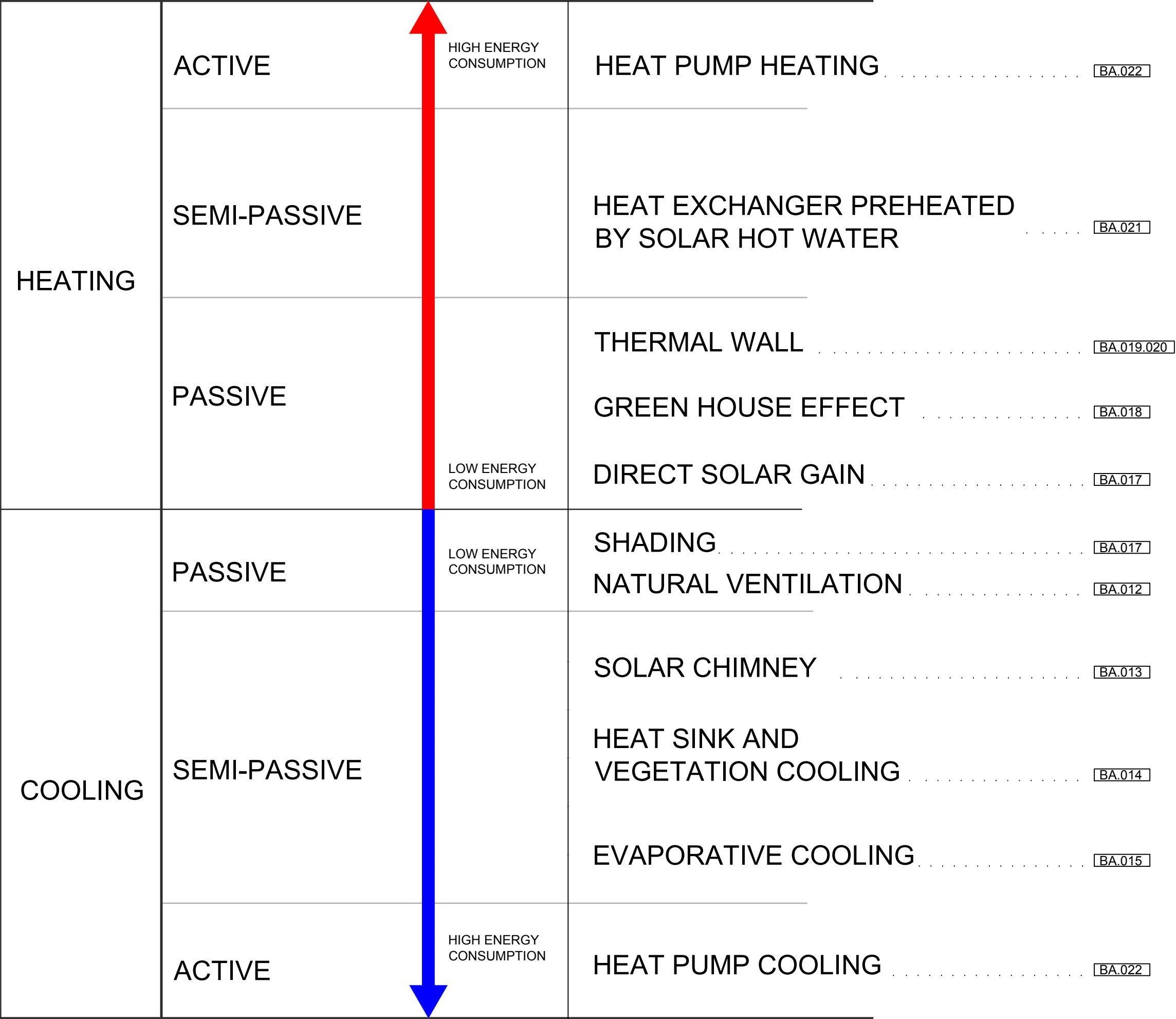
Consultants:

Note:

Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
Scale	-
Unit	-

DWG. Title	
VERSAILLES WIND ROSE ANALYSIS	
DWG. No.	PAGE
BA-006	96



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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

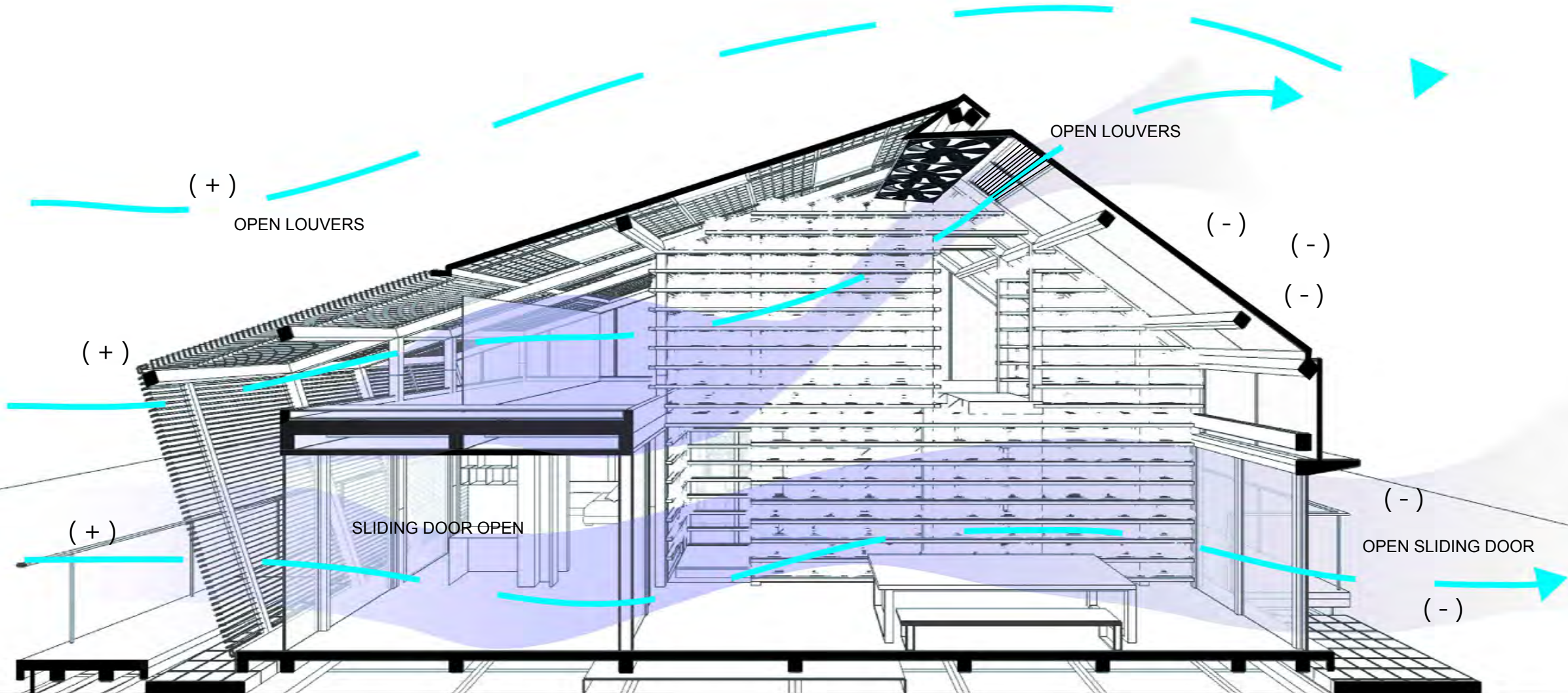
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Unit	-

DWG. Title	
BIOCLIMATIC STRATEGIES	
DWG. No.	PAGE
BA-011	97

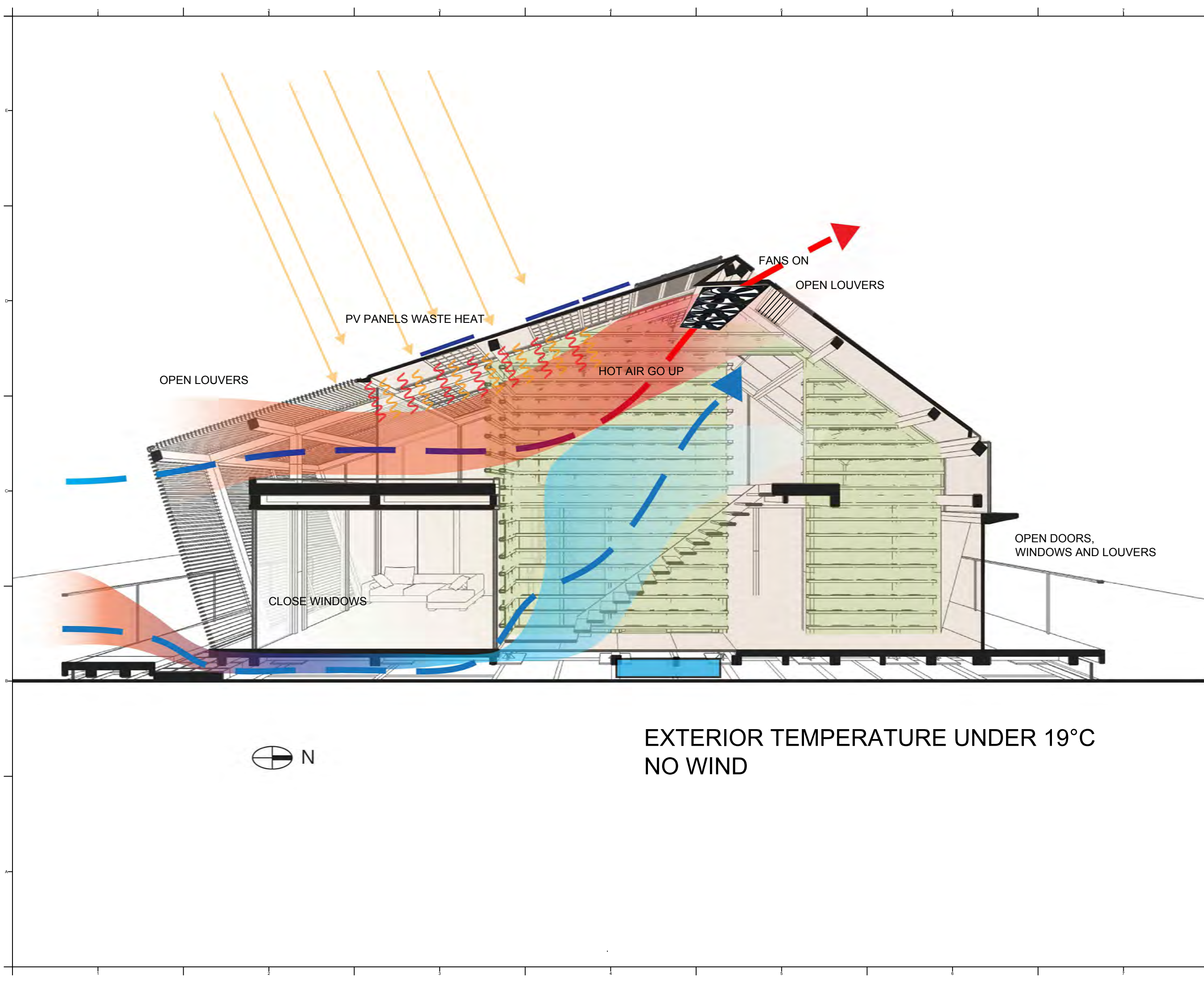


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	LY
Scale	-
Unit	-



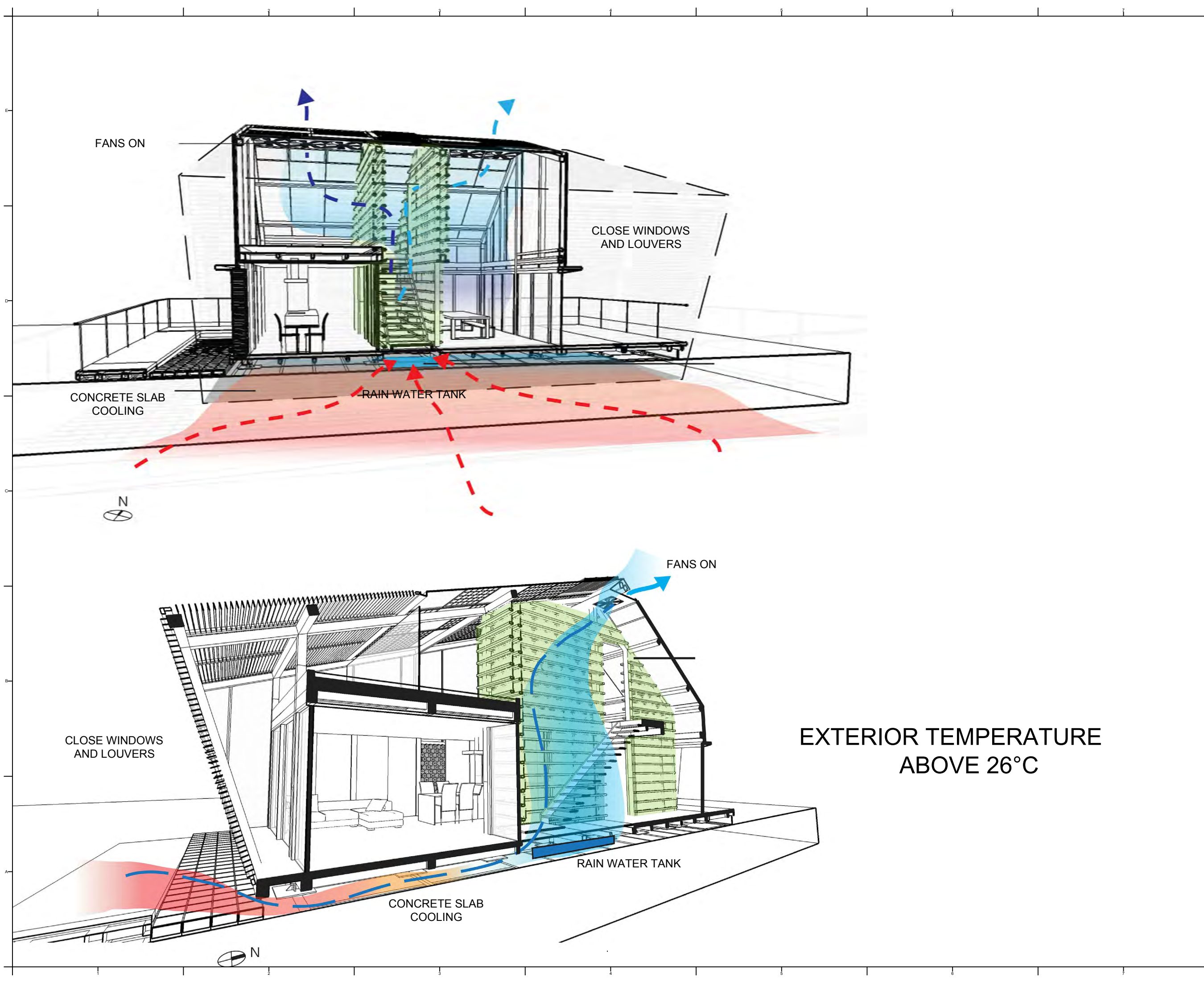
OUT DOOR TEMPERATURE UNDER 19°C
WITH WIND



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	LY
Scale	-
Unit	-

DWG. Title	
SOLAR CHIMNEY	
DWG. No.	PAGE
BA-013	99

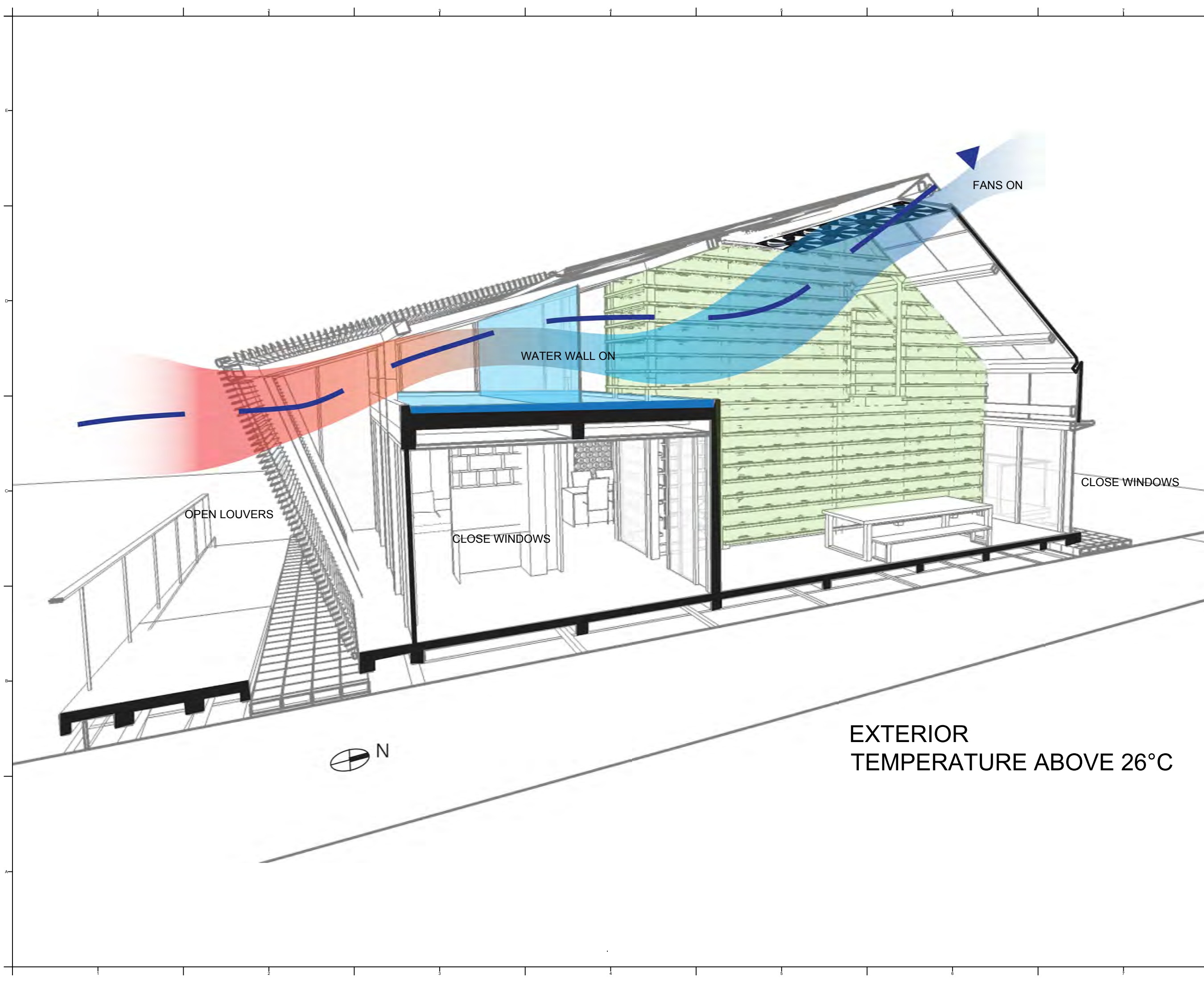


EXTERIOR TEMPERATURE
ABOVE 26°C

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	LY
Scale	-
Unit	-

DWG. Title	
HEAT SINK / VEGETATION COOLING	
DWG. No.	PAGE
BA-014	100



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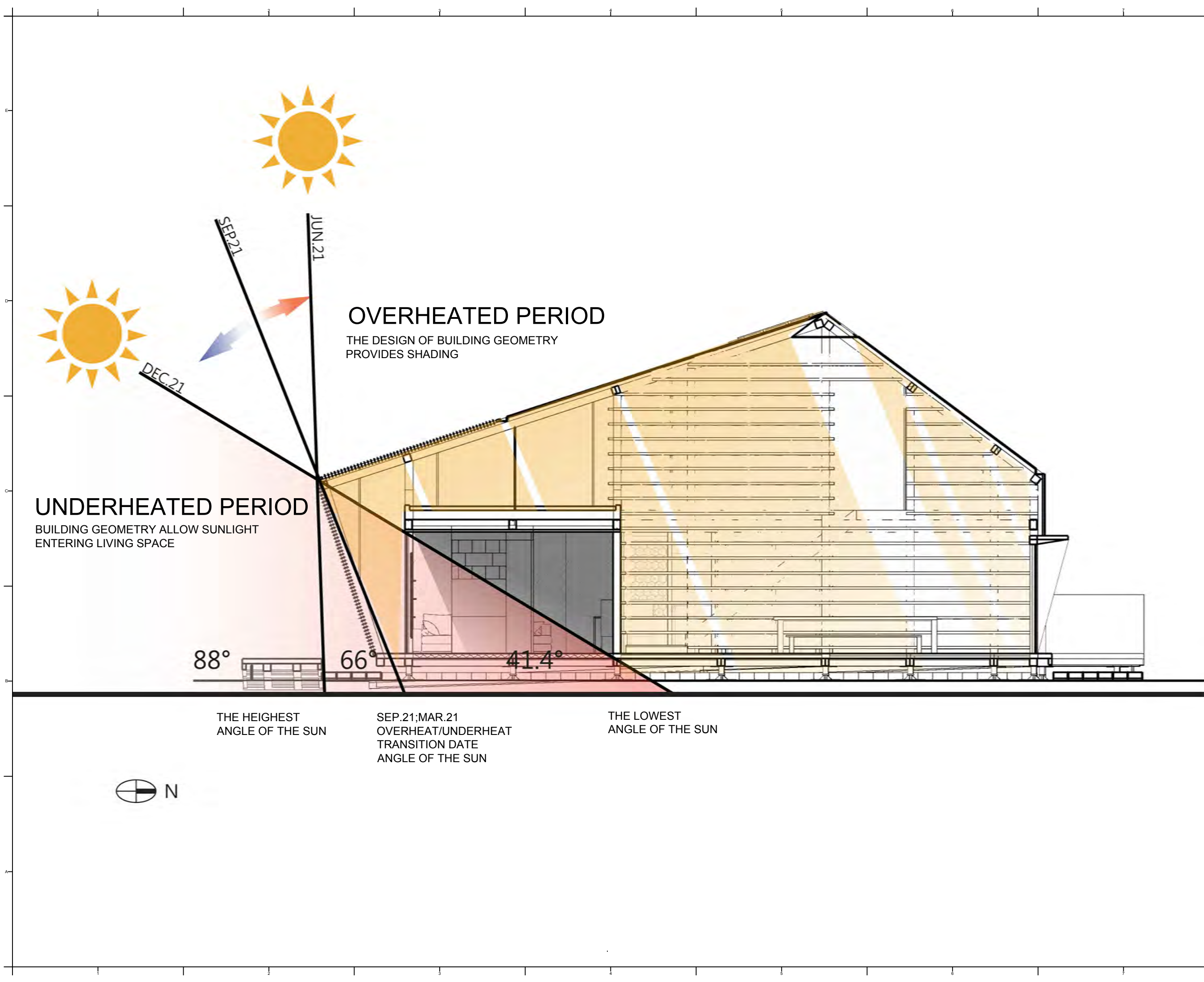
Consultants:

Note:

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DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	LY
Scale	-
Unit	-

DWG. Title	
EVAPORATIVE COOLING	
DWG. No.	PAGE
BA-015	101

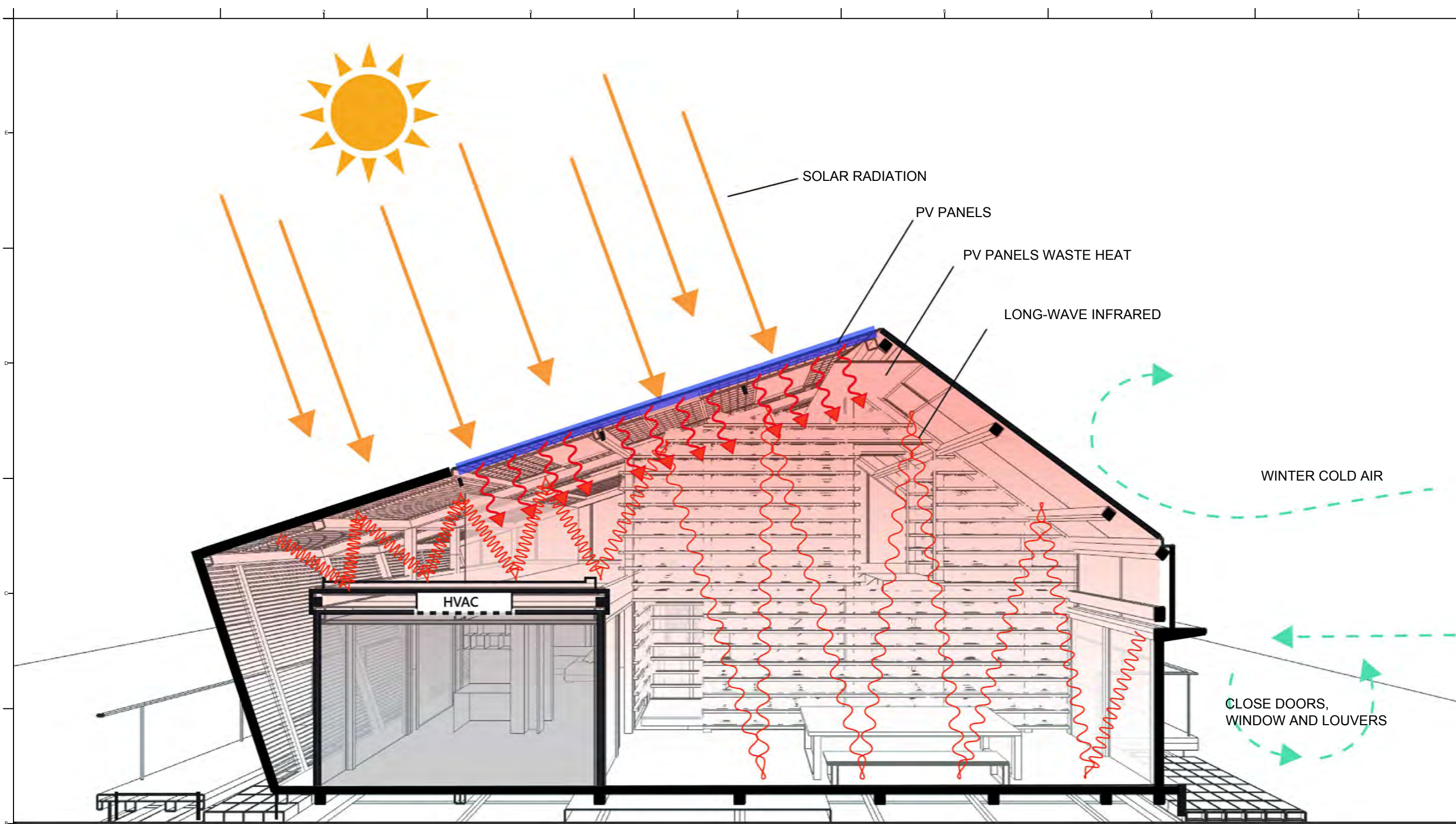


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Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	LY
Scale	-
Unit	-

DWG. Title	
DIRECT SOLAR GAIN	
DWG. No.	PAGE
BA-016	102

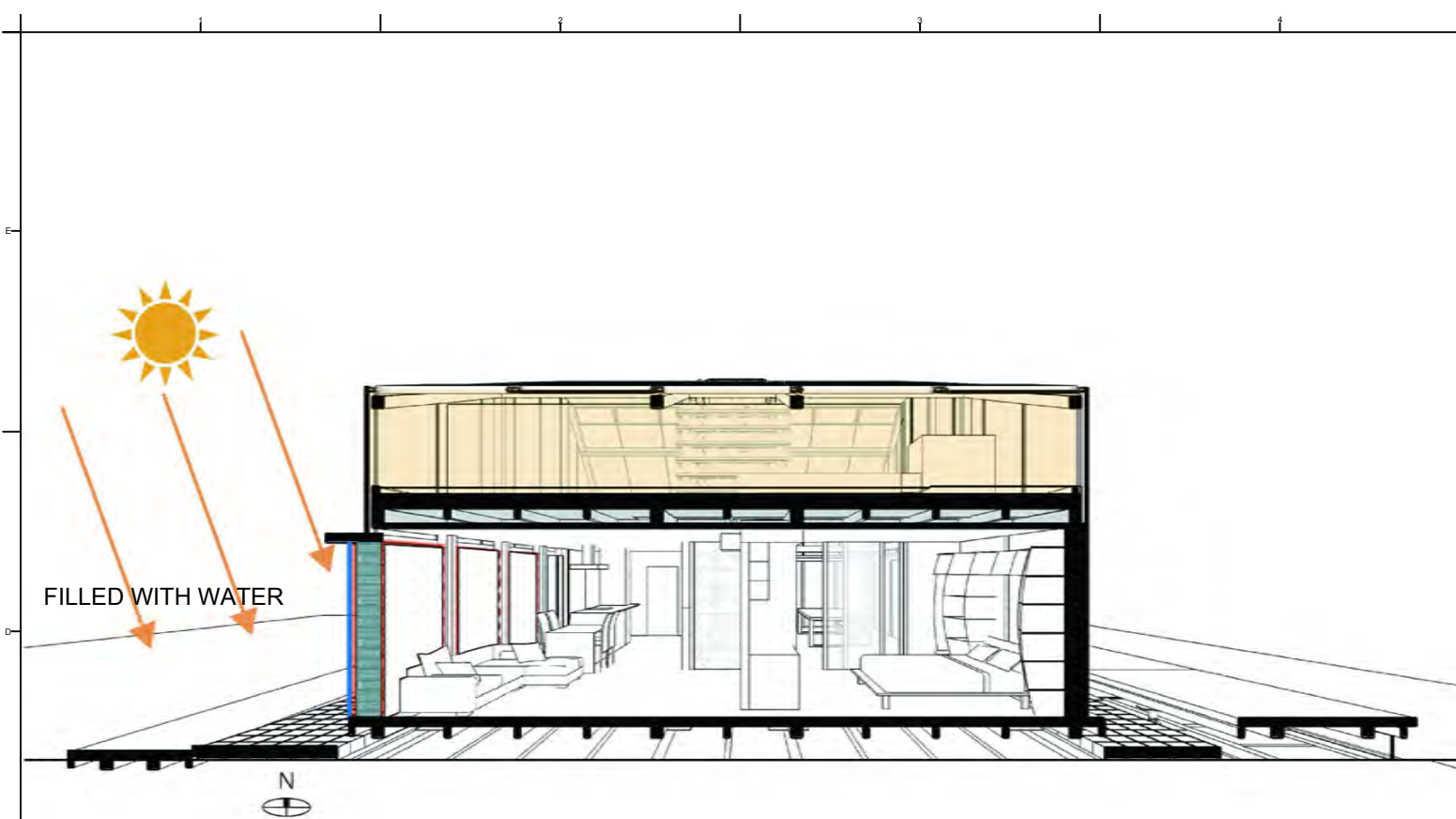


OUTDOOR TEMPERATURE
BELOW 26°C

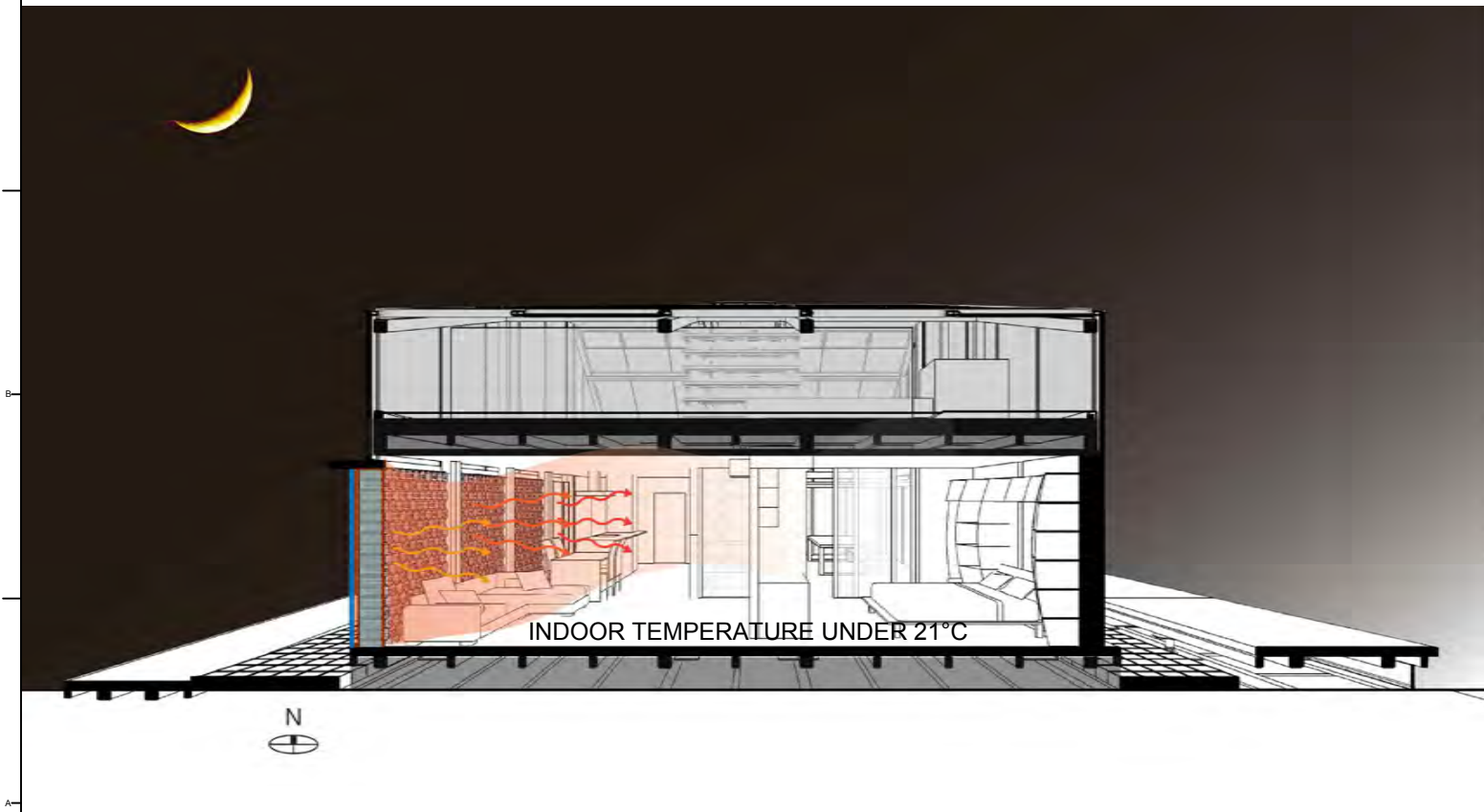
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Unit	-

DWG. Title	
GREEN HOUSE EFFECT	
DWG. No.	PAGE
BA-017	103



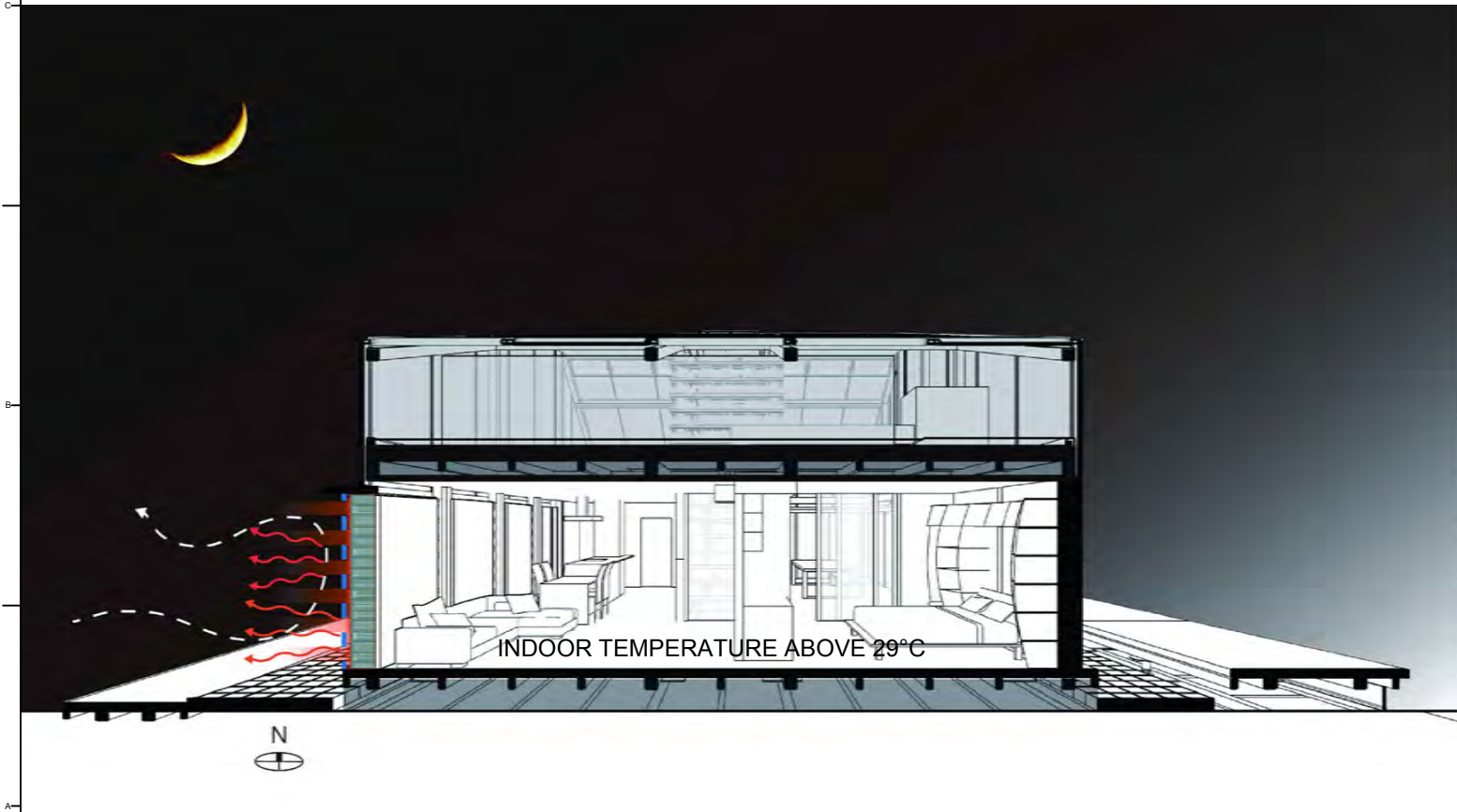
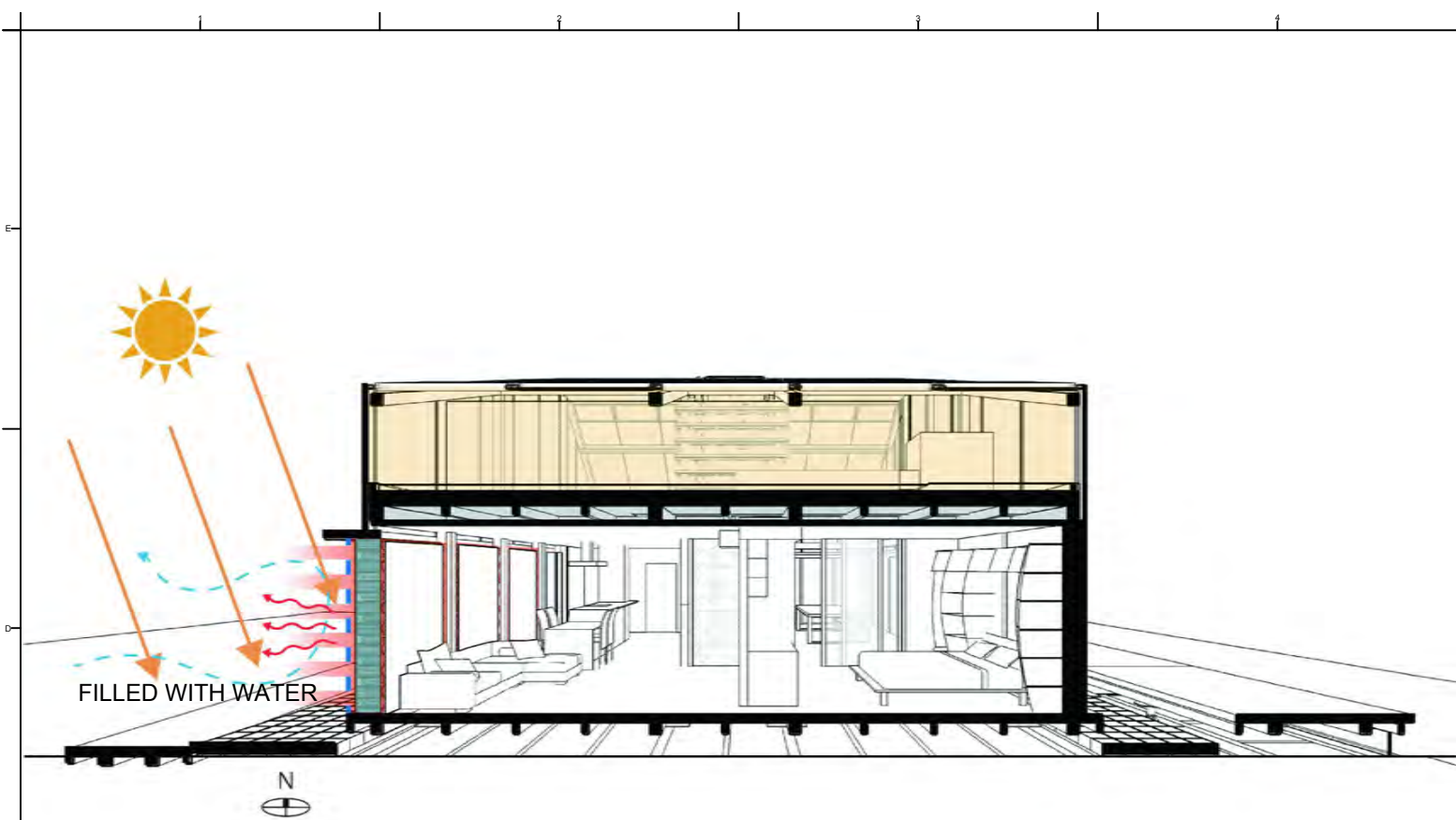
A 30cm water thermal wall is built on the west side of the house. Each bottle contains 6 liters of water. The bottles are piled to 2 meter height-wise and 3 meter length-wise. The bottles are held together and fixated to a transparent acrylic sheet on their exterior side.
The water in the thermal wall absorbs solar radiation during the day and releases heat to interior space at night.



Mark	Date	Description
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
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Scale	-
Unit	-

DWG. Title	
THERMAL WALL IN PARIS	
DWG. No.	PAGE
BA-018	104



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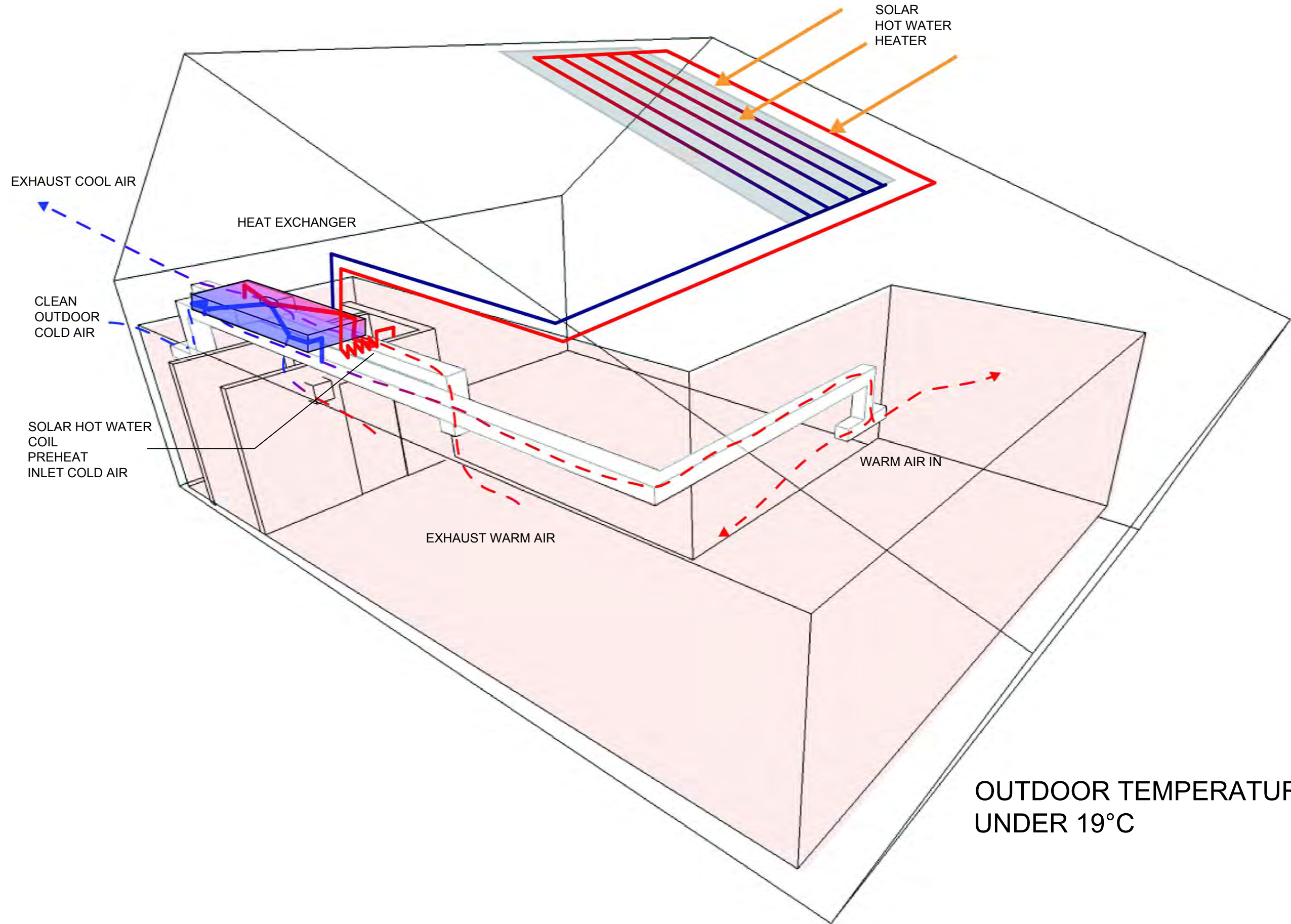
Consultants:

Note:

Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	TW
Checked by	LY
Scale	-
Unit	-

DWG. Title	
THERMAL WALL IN TAIPEI	
DWG. No.	PAGE
BA-019	105

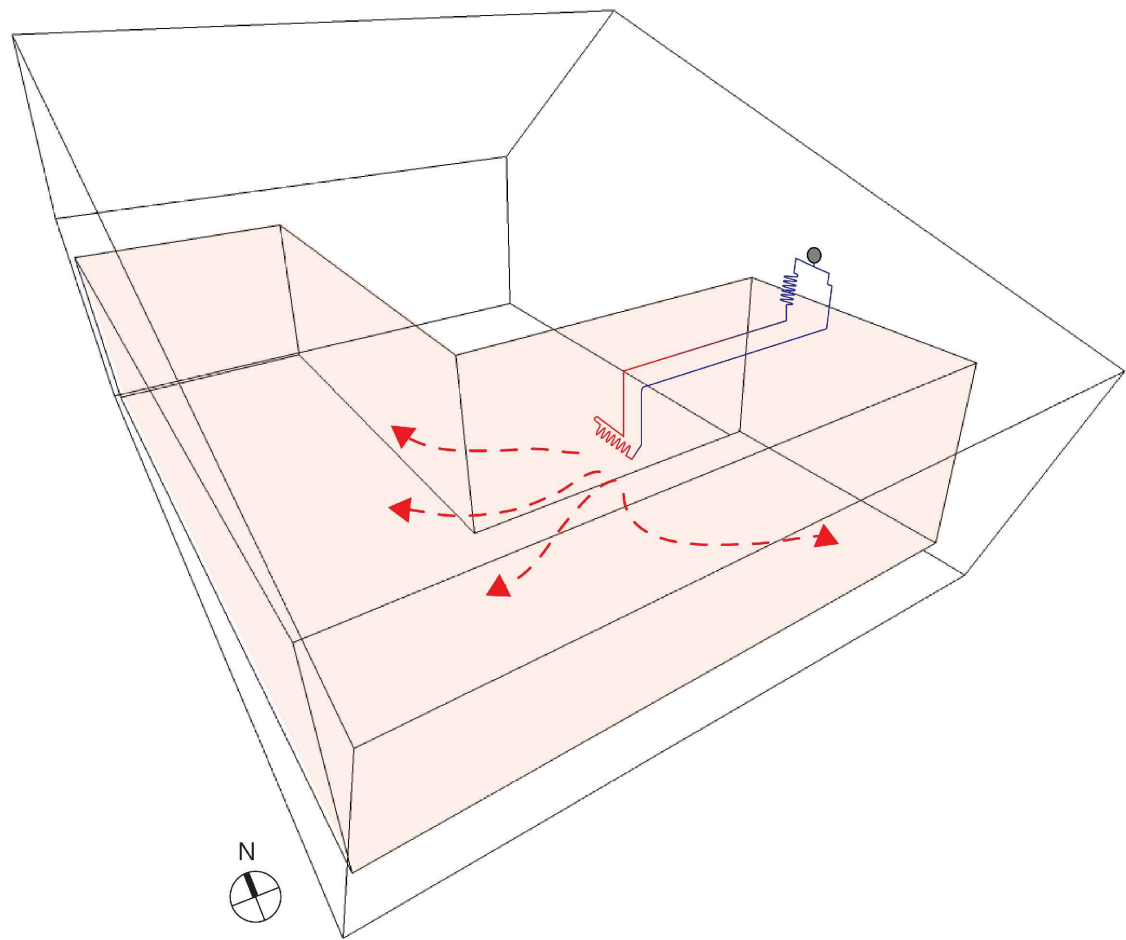


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DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

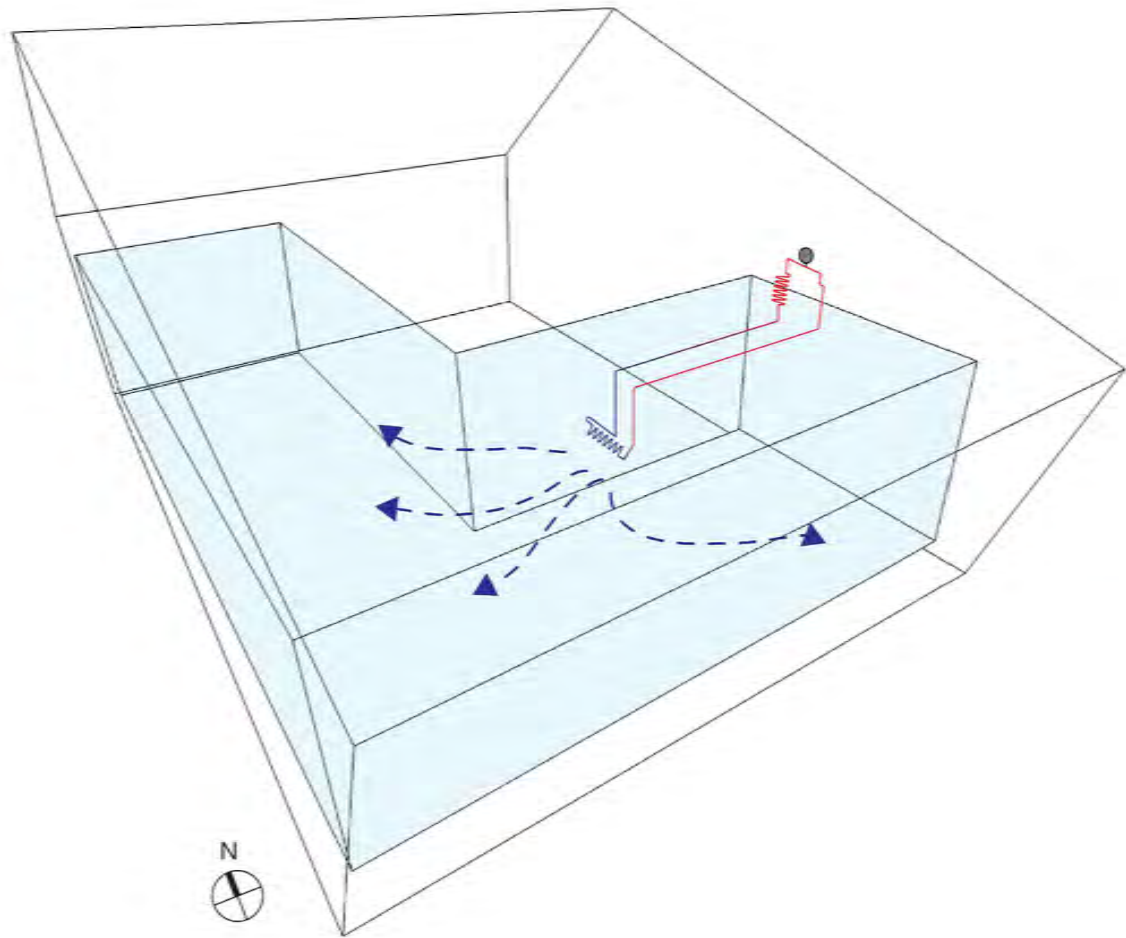
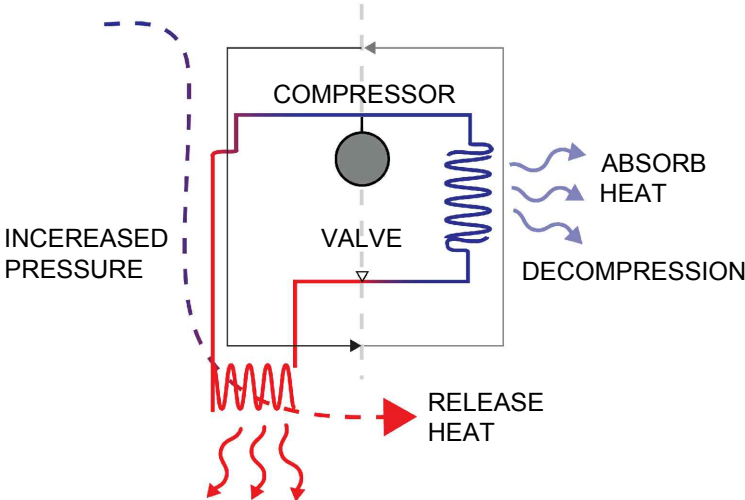
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Unit	-

DWG. Title
HEAT EXCHANGER PREHEATED BY SOLAR HOT WATER

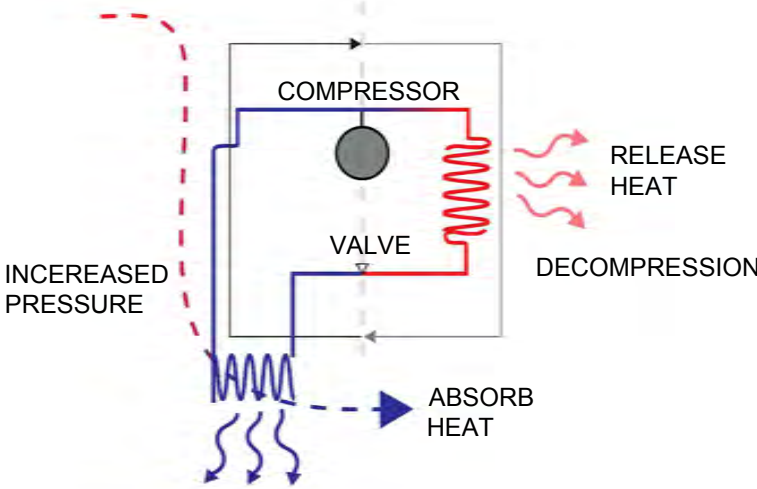
DWG. No.	PAGE
BA-020	106



HEAT PUMP HEATING



HEAT PUMP COOLING



Project:



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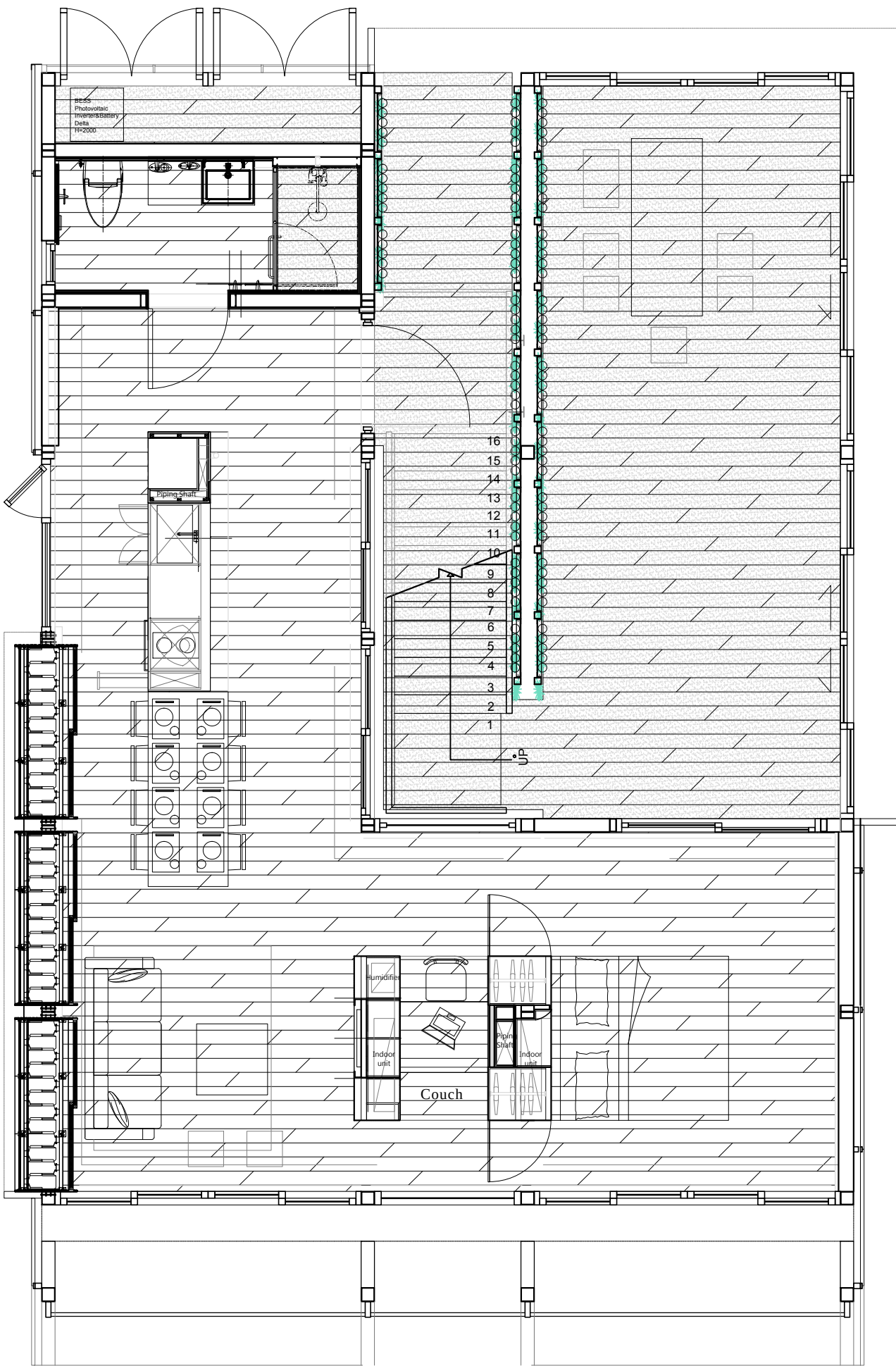
Consultants:

Note:

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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale	-
Unit	-

DWG. Title	
HEAT PUMP	
DWG. No.	PAGE
BA-021	107



0 1 2 5 METER

LEGEND			
HATCH TYP	FLOOR TYPE	AREA	LOCATION
	KD: K3057H	51.54m²	LIVING ROOM
	KD: K3023F	3.83m²	BATHROOM
	Wood Plastic Composites	55.7m²	TERRACE / MECH. RM. SHOWER RM.



Project:



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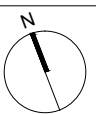
NCTU Architectural
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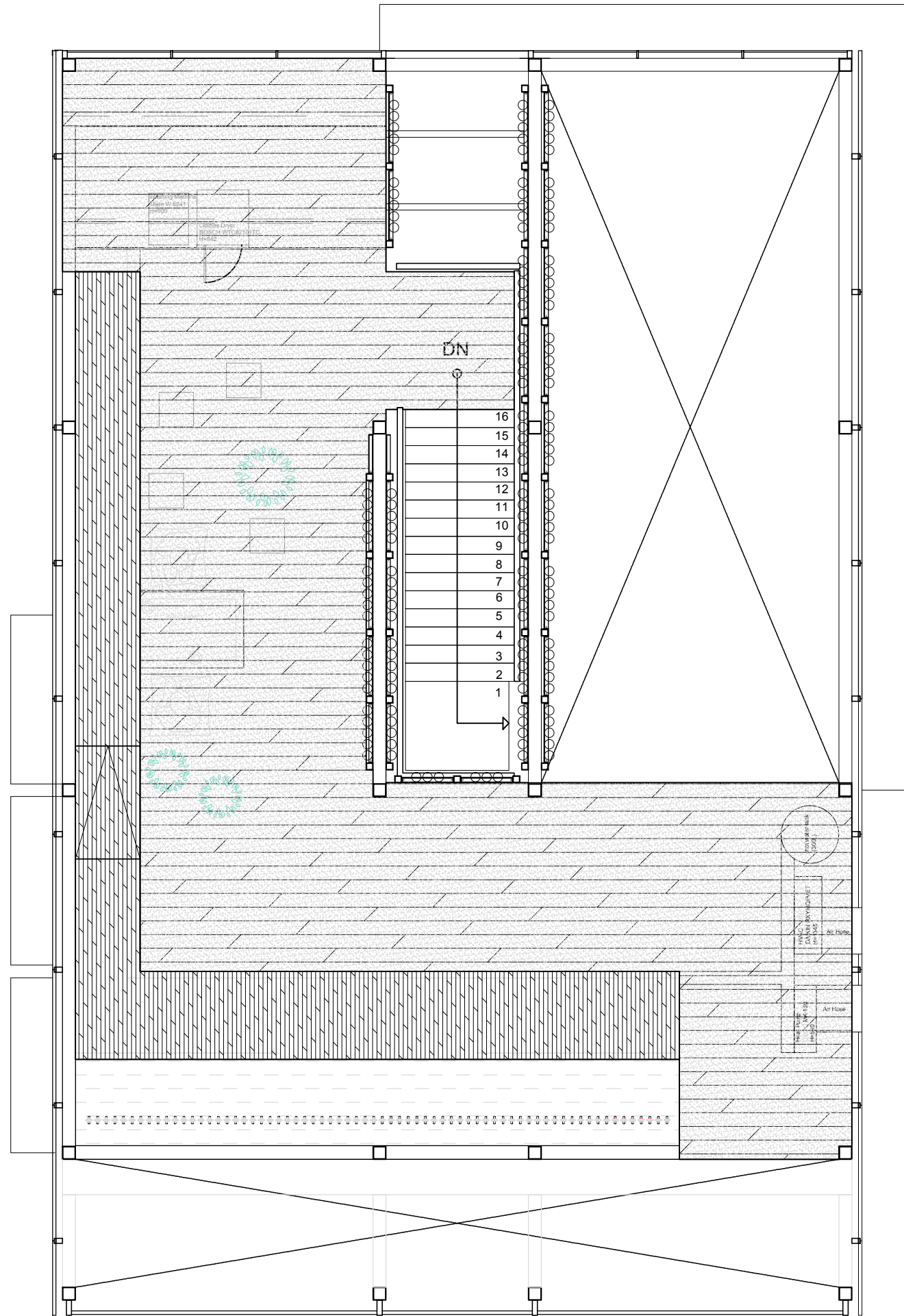
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Unit r

DWG. Title	
GROUND LEVEL FLOOR	
DWG. No.	PAGE
IN-001	10



LEGEND

HATCH TYP	FLOOR TYPE	AREA
	Wood Plastic Composites	49.82m²
	Solid Wood	13.21m²
	Stainless Steel	7m²



Project:



Institution:



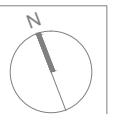
NCTU Architectural
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ST	2013/11/01	DD Submission
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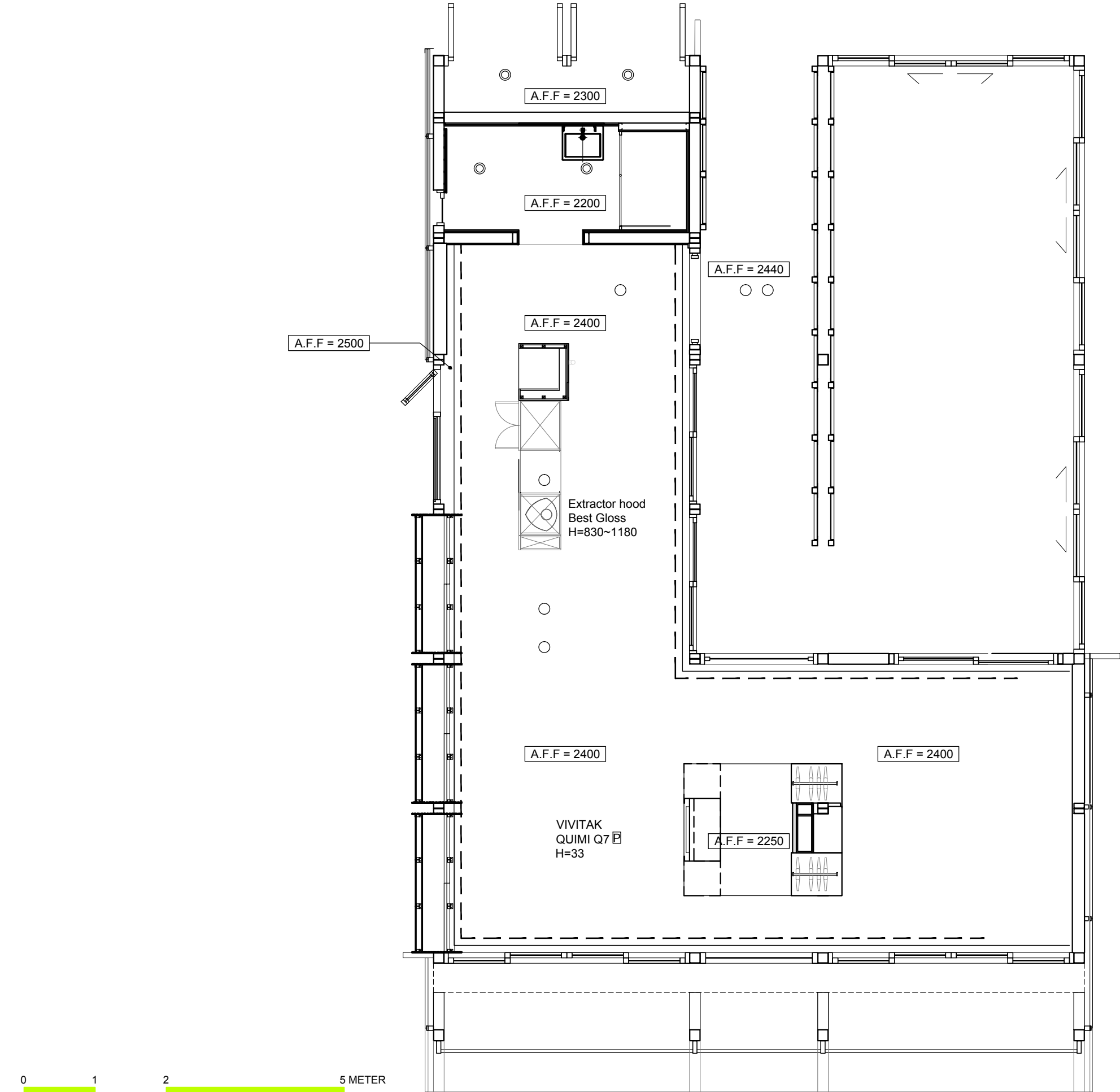
DWG. Title

MEZZANINE LEVEL
FLOOR

DWG. No. PAGI

IN-002

10



LEGEND	
HATCH TYP	TYPE
	DOWN LIGHT
	WATERPROOFED DOWN LIGHT
	LED STRIP LIGHT

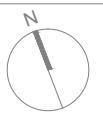


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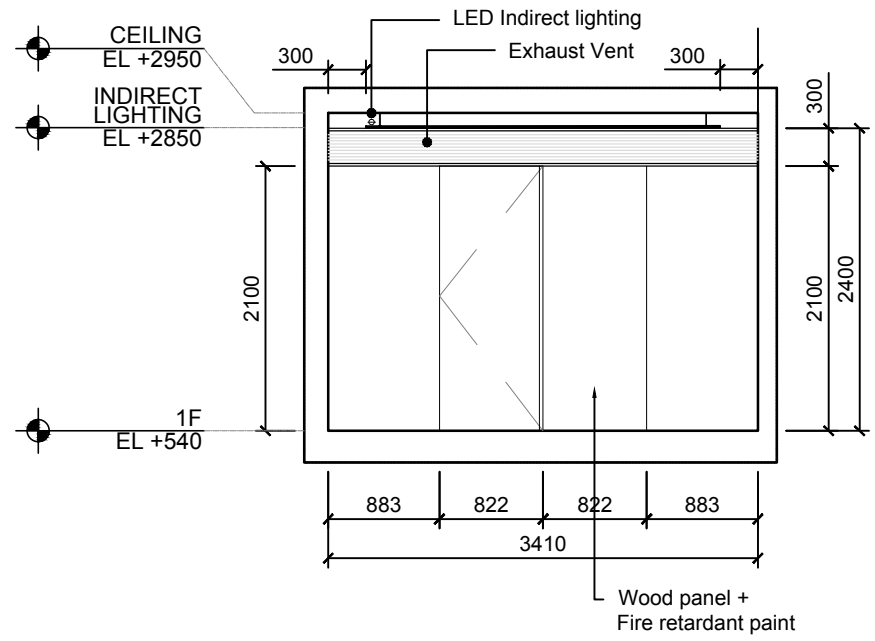
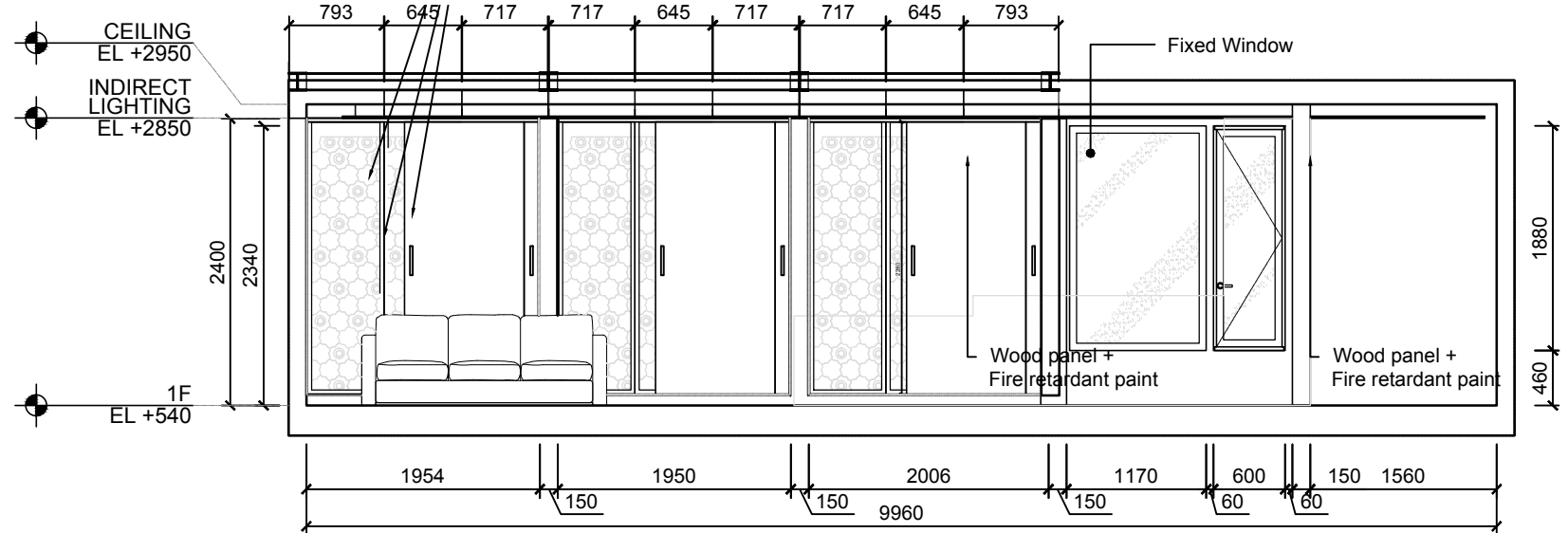
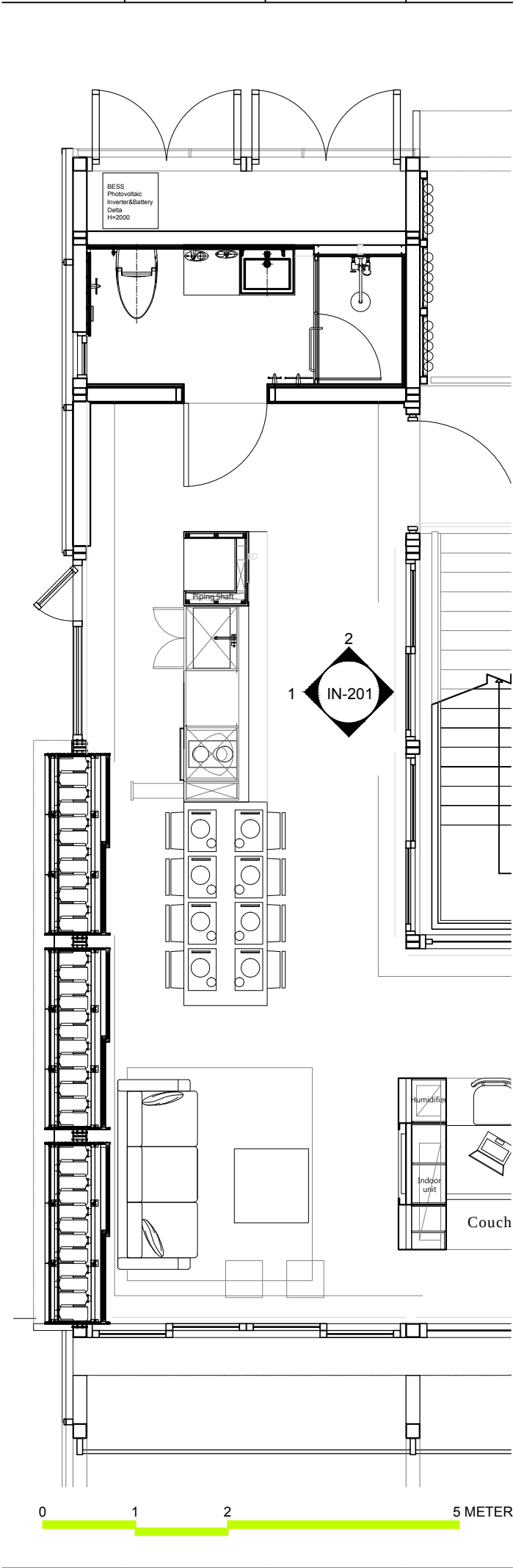
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ST	2013/11/01	DD Submission
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DWG. Title	
REFLECTED CEILING	
DWG. No.	PAGE
IN-101	11



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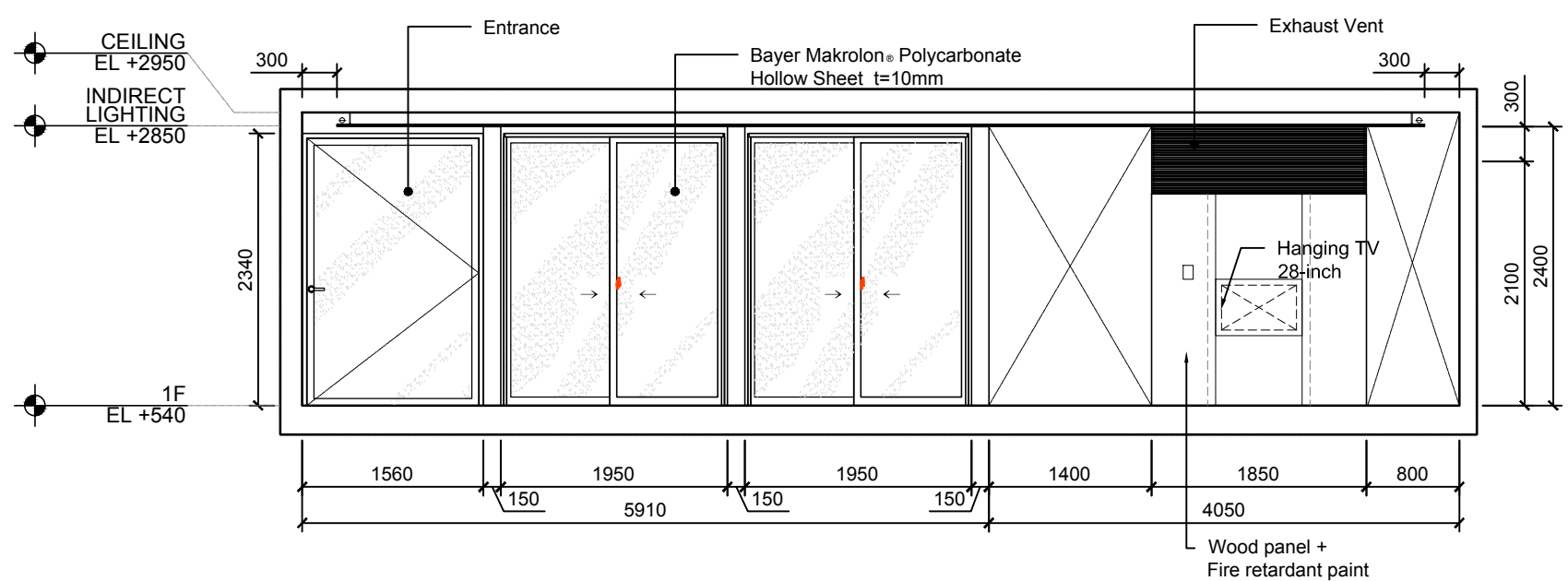
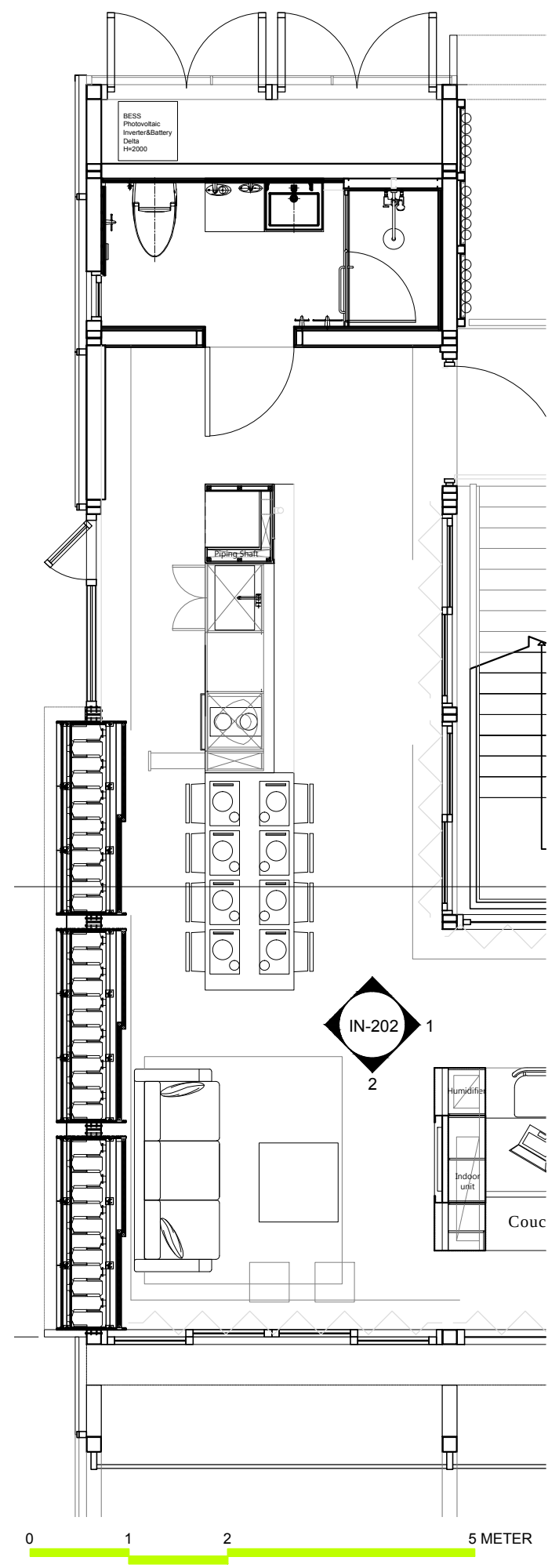
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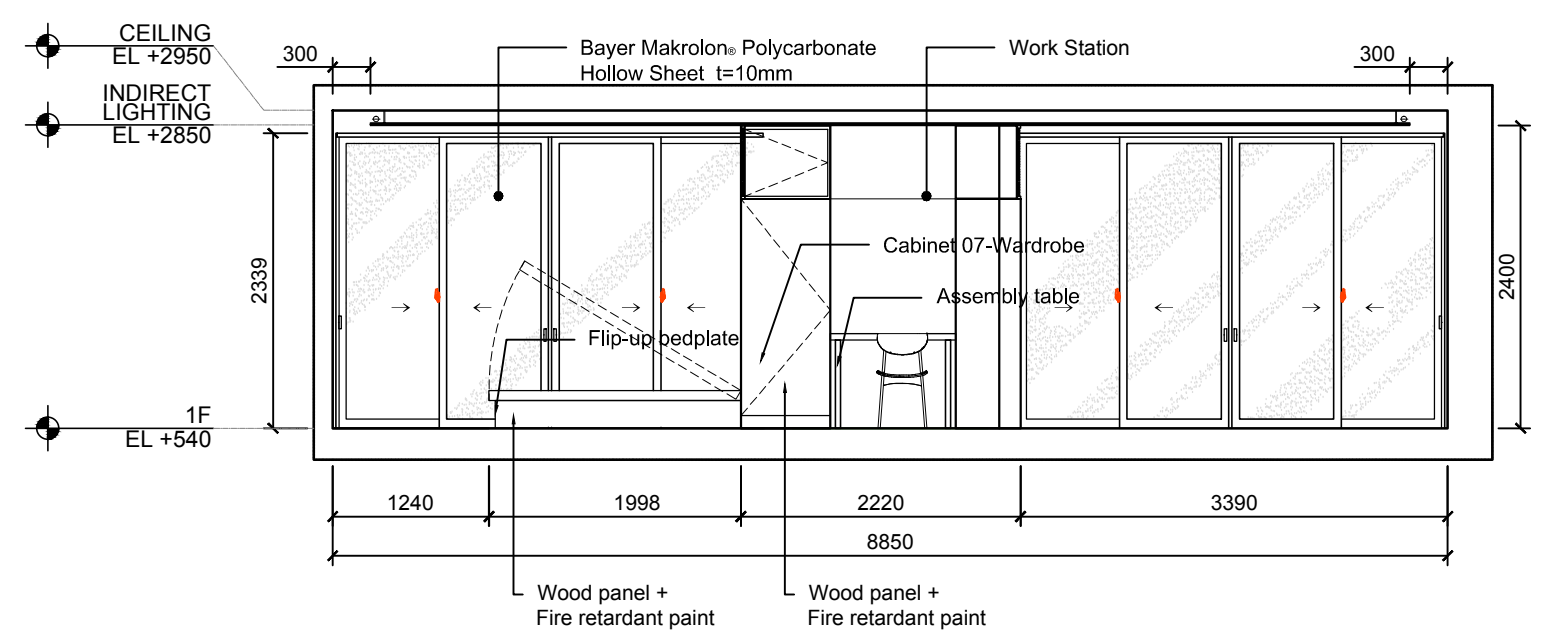
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DWG. Title
INTERIOR ELEVATIONS

DWG. No. IN-201 **PAGE** 11



1



2



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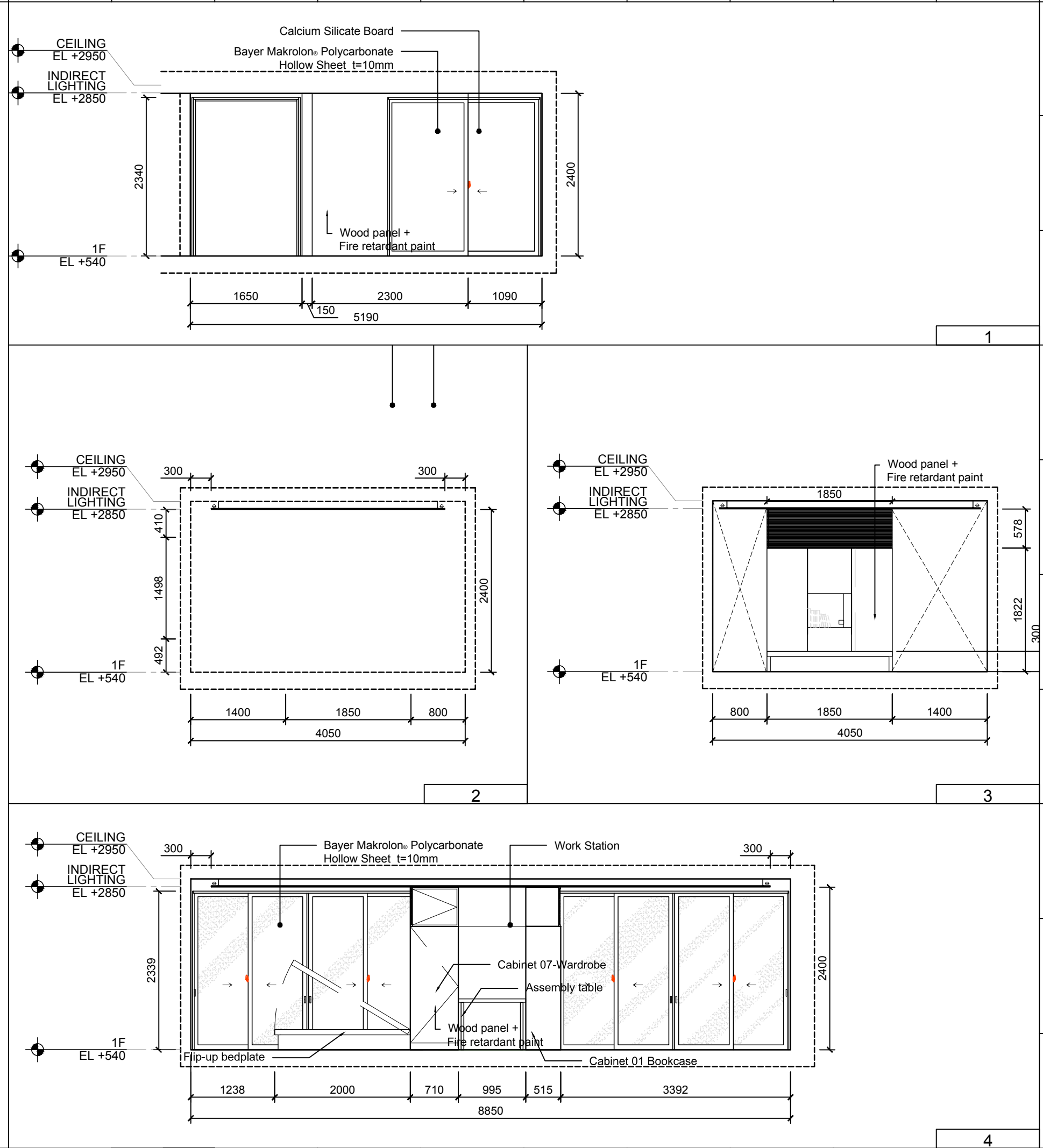
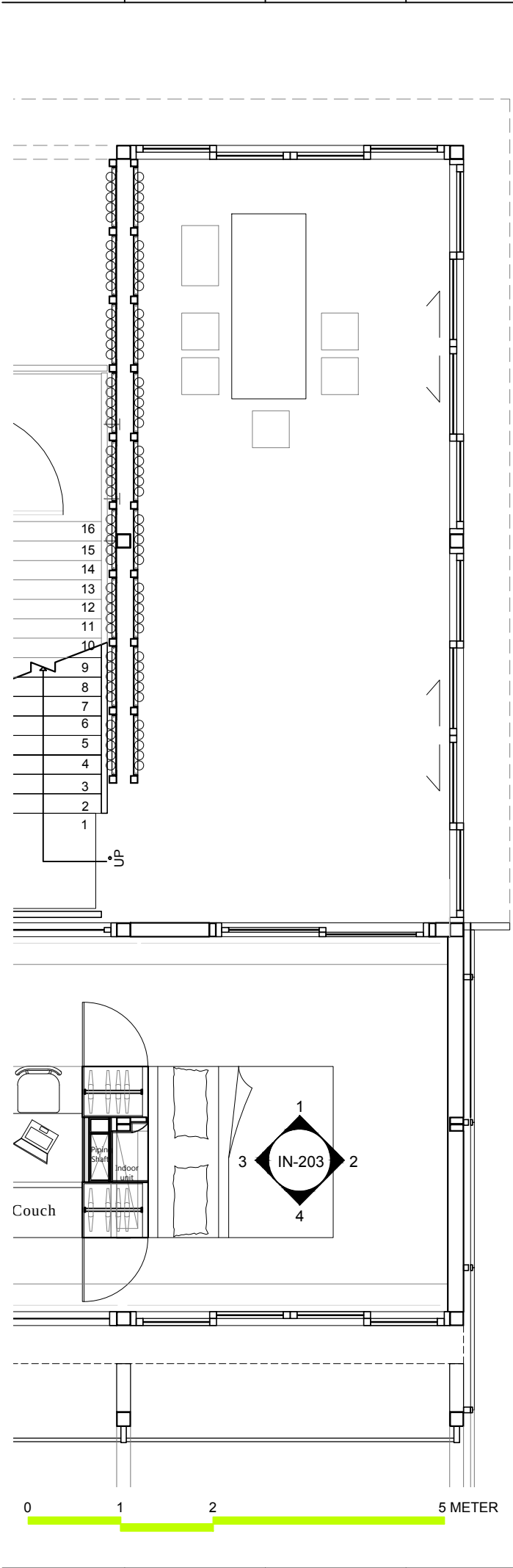
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Note:

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DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

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DWG. Title
INTERIOR ELEVATIONS:
DWG. No. IN-202 **PAGE** 11



Solar Decathlon Europe

ORCHID HOUSE

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Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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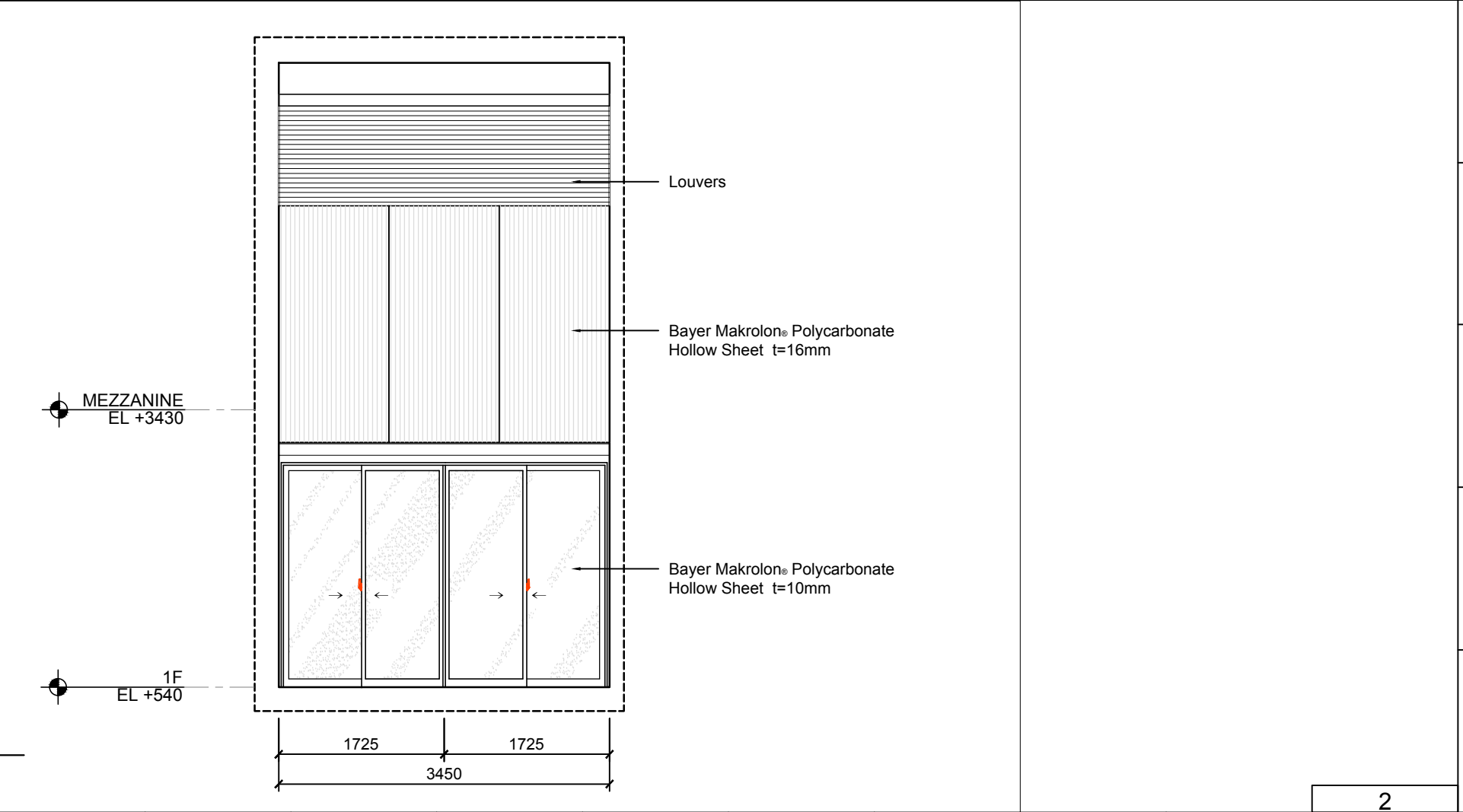
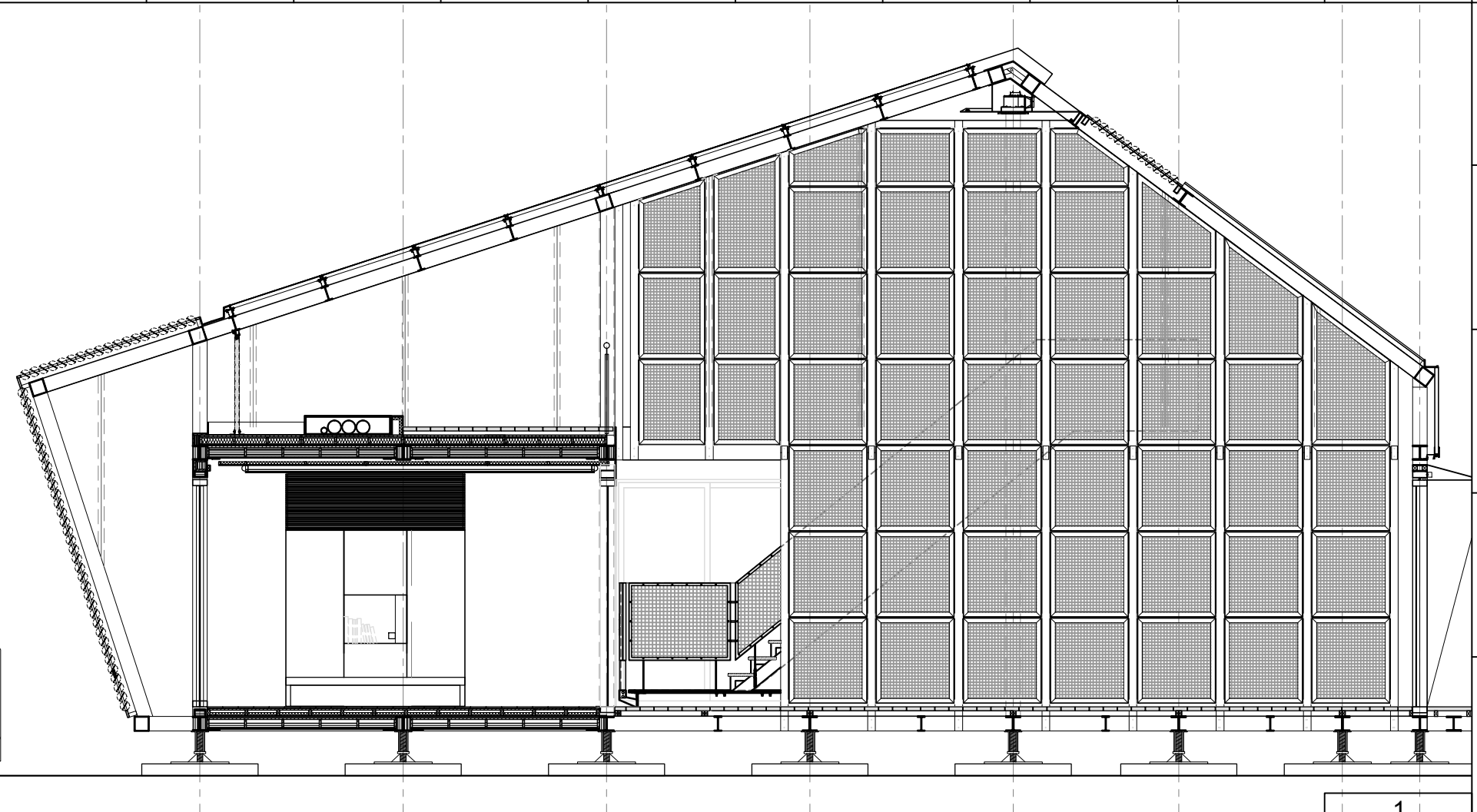
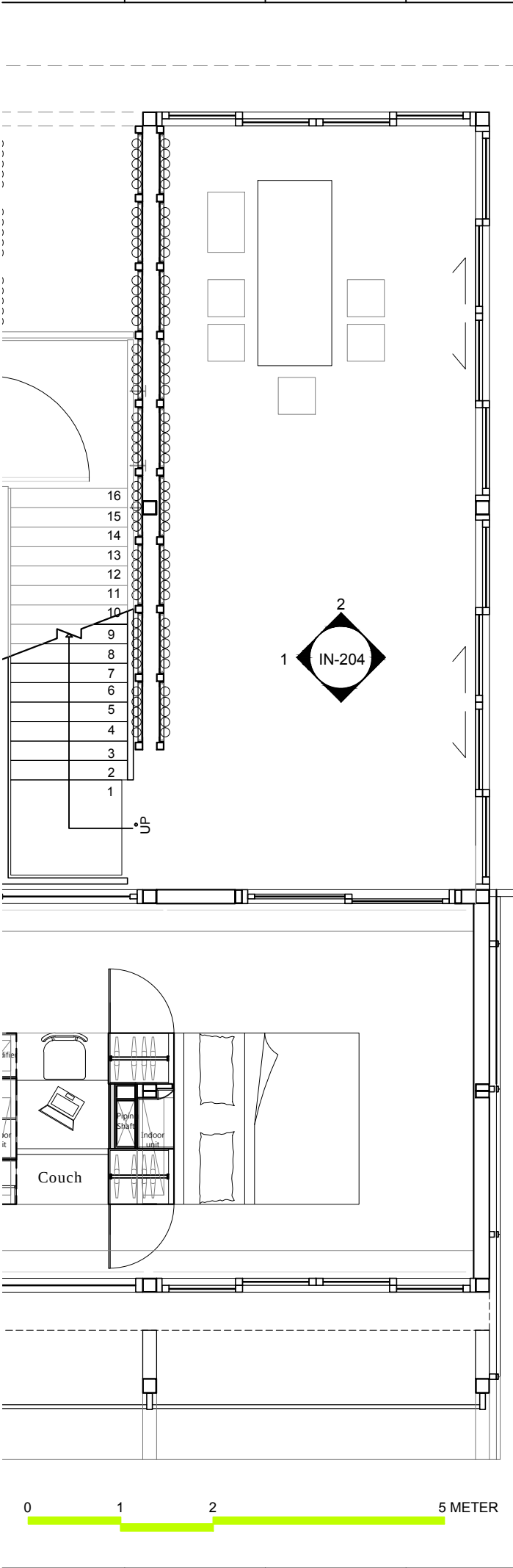
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Unit

DWG. Title

INTERIOR ELEVATIONS :

DWG. No.	PAGE
IN-203	11



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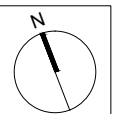
Address: 1001 Ta-Hsueh Rd
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Note:



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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DWG. Title

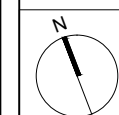
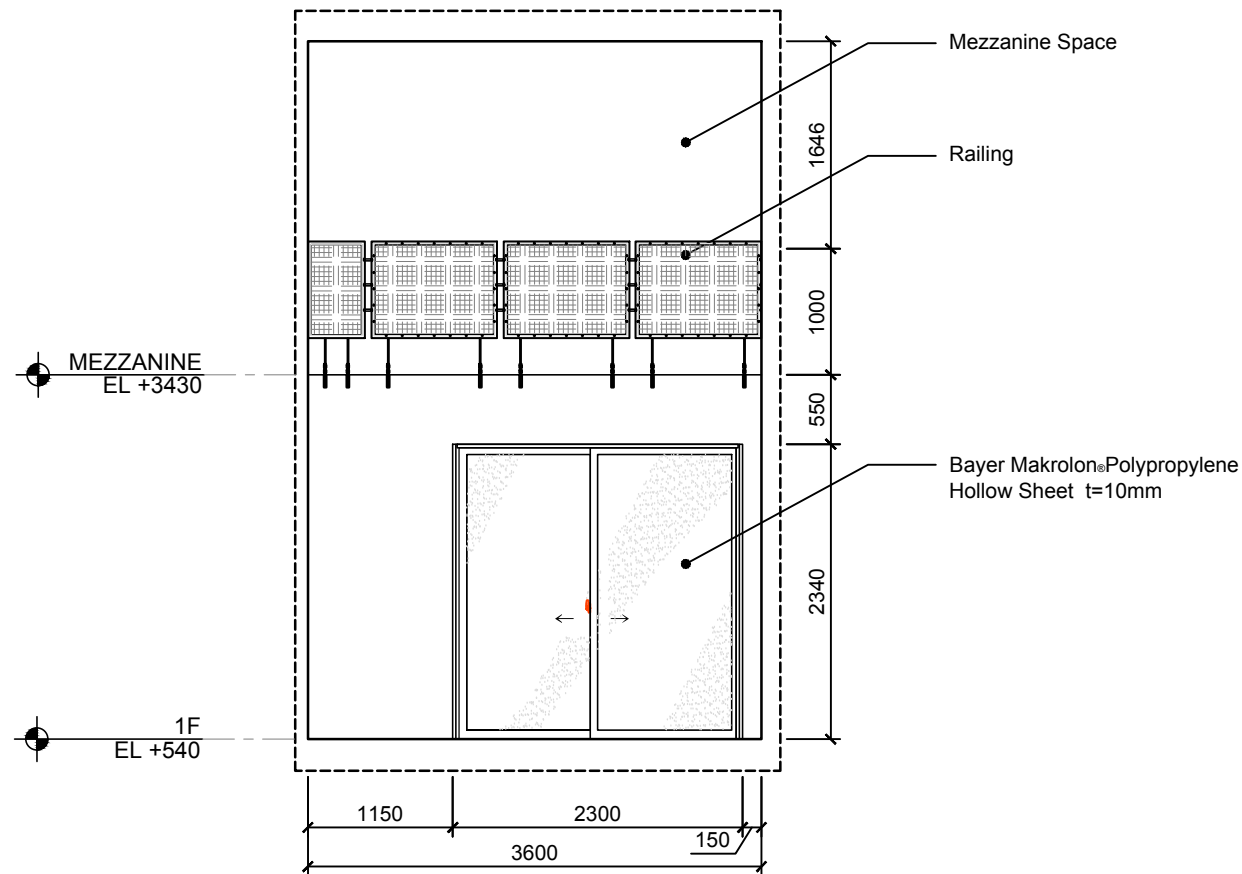
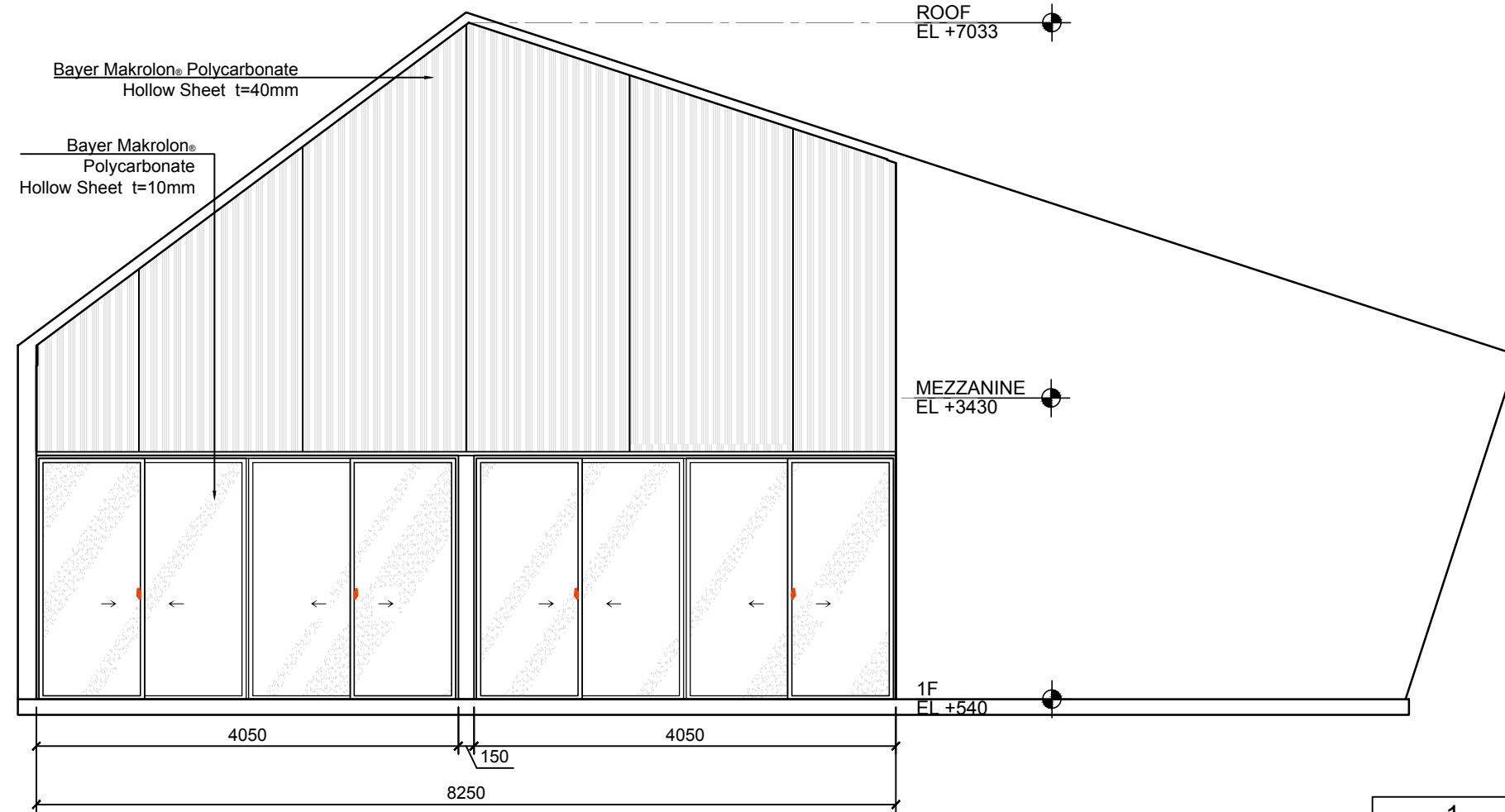
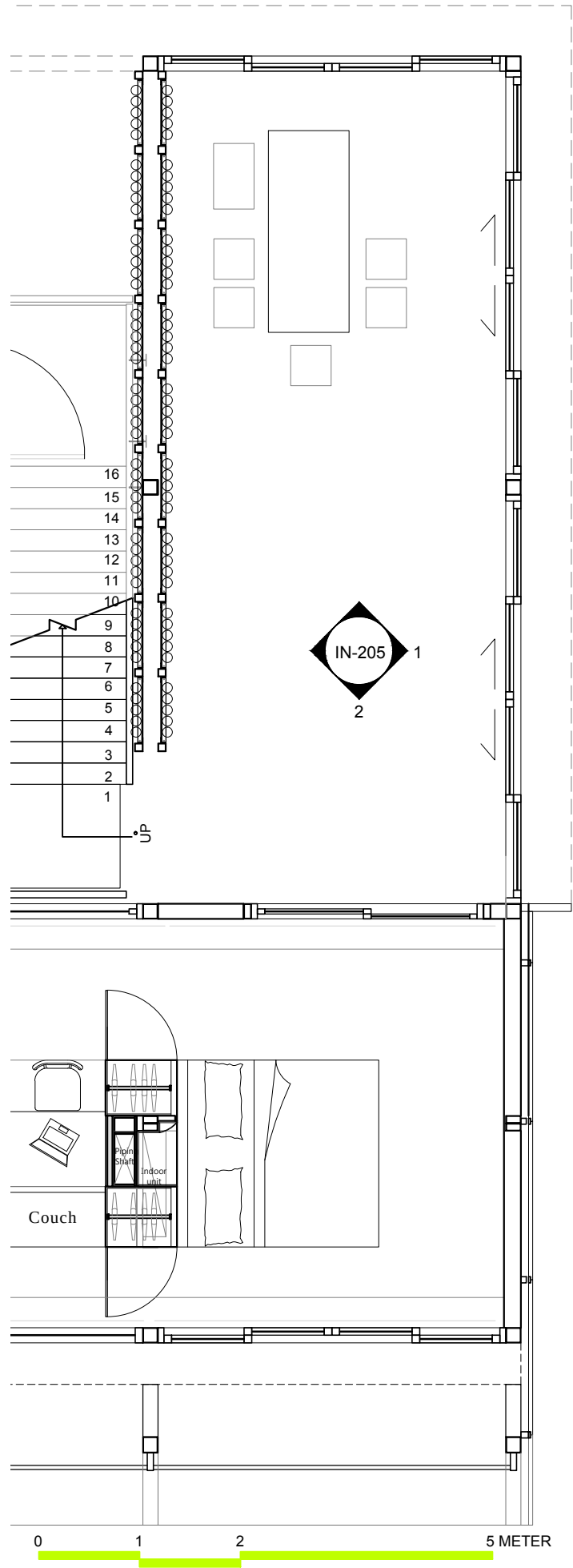
INTERIOR ELEVATIONS

DWG. No.

IN-204

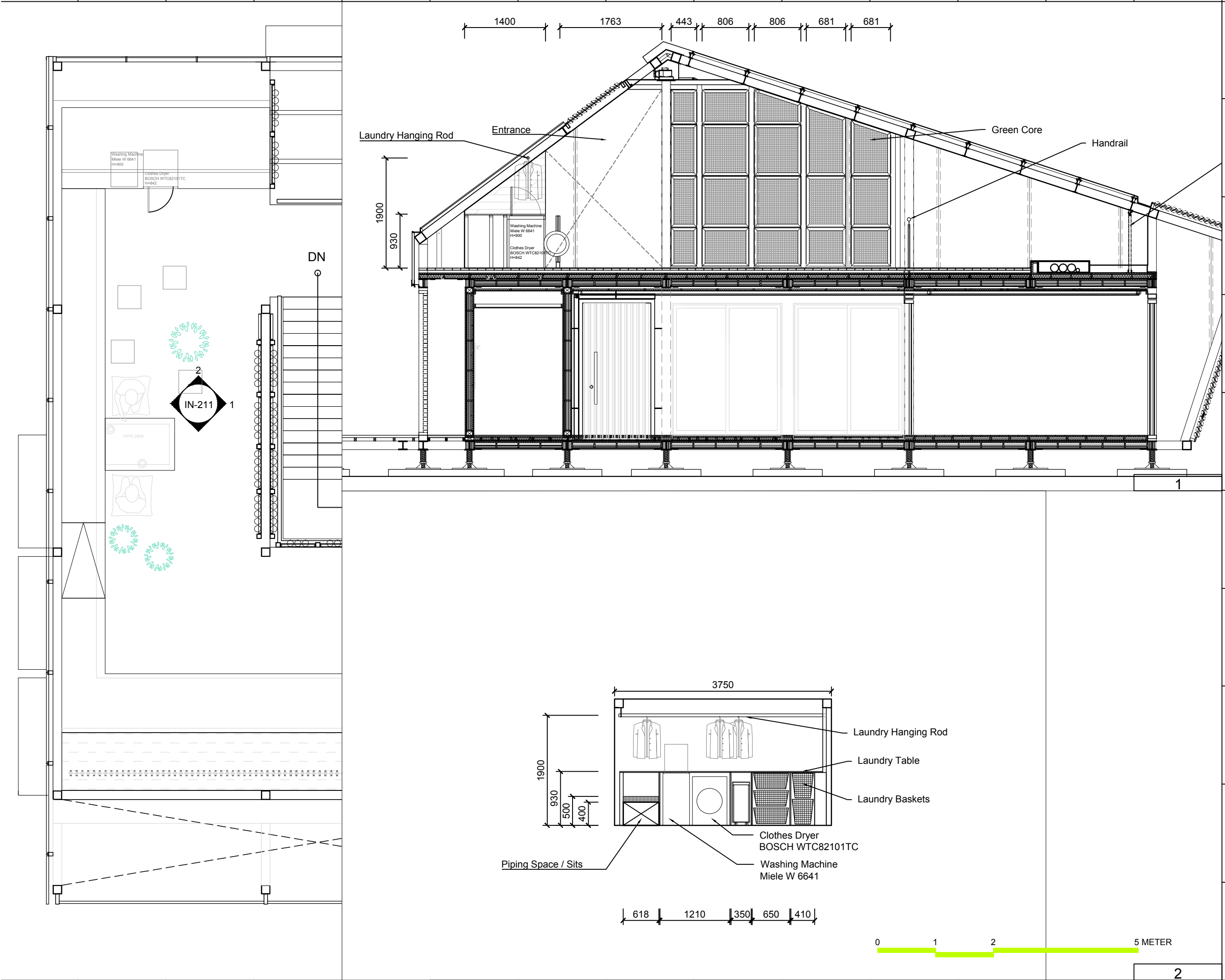
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11



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DN	2013/07/01	DD Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	
Scale	1:
Unit	mm





Solar Decathlon Europe

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ORCHID HOUSE

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DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by

Checked by

Scale

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Unit

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DWG. Title

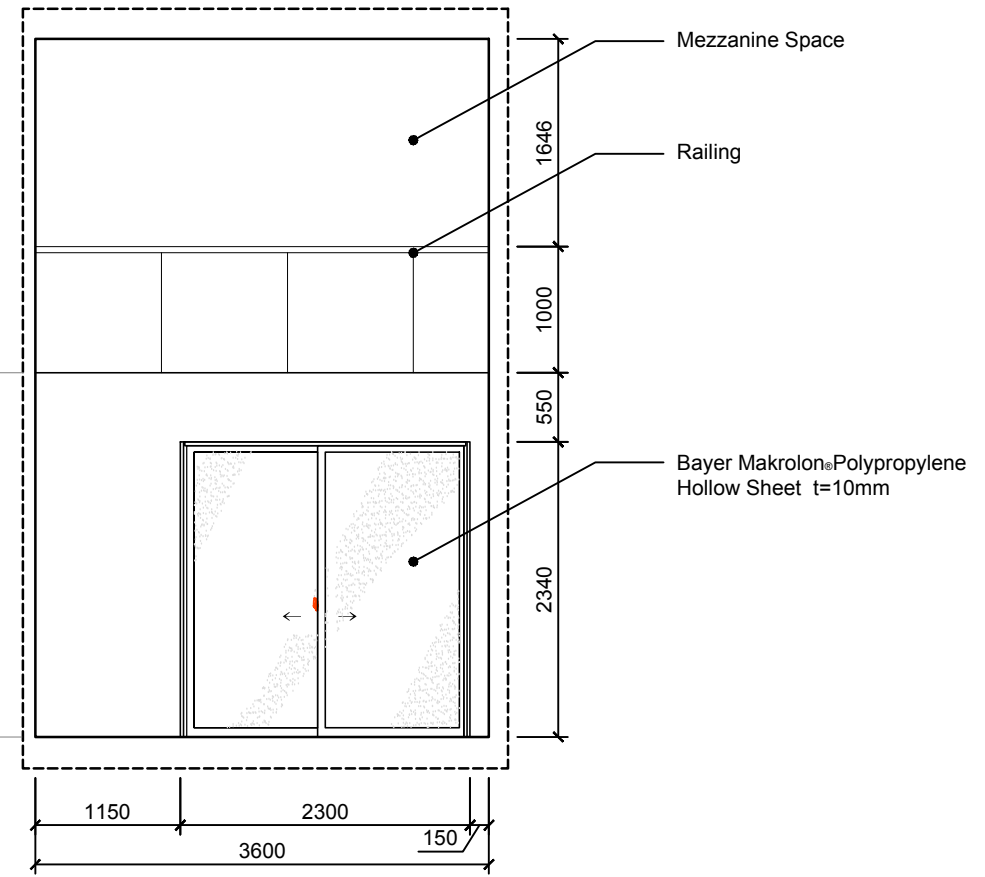
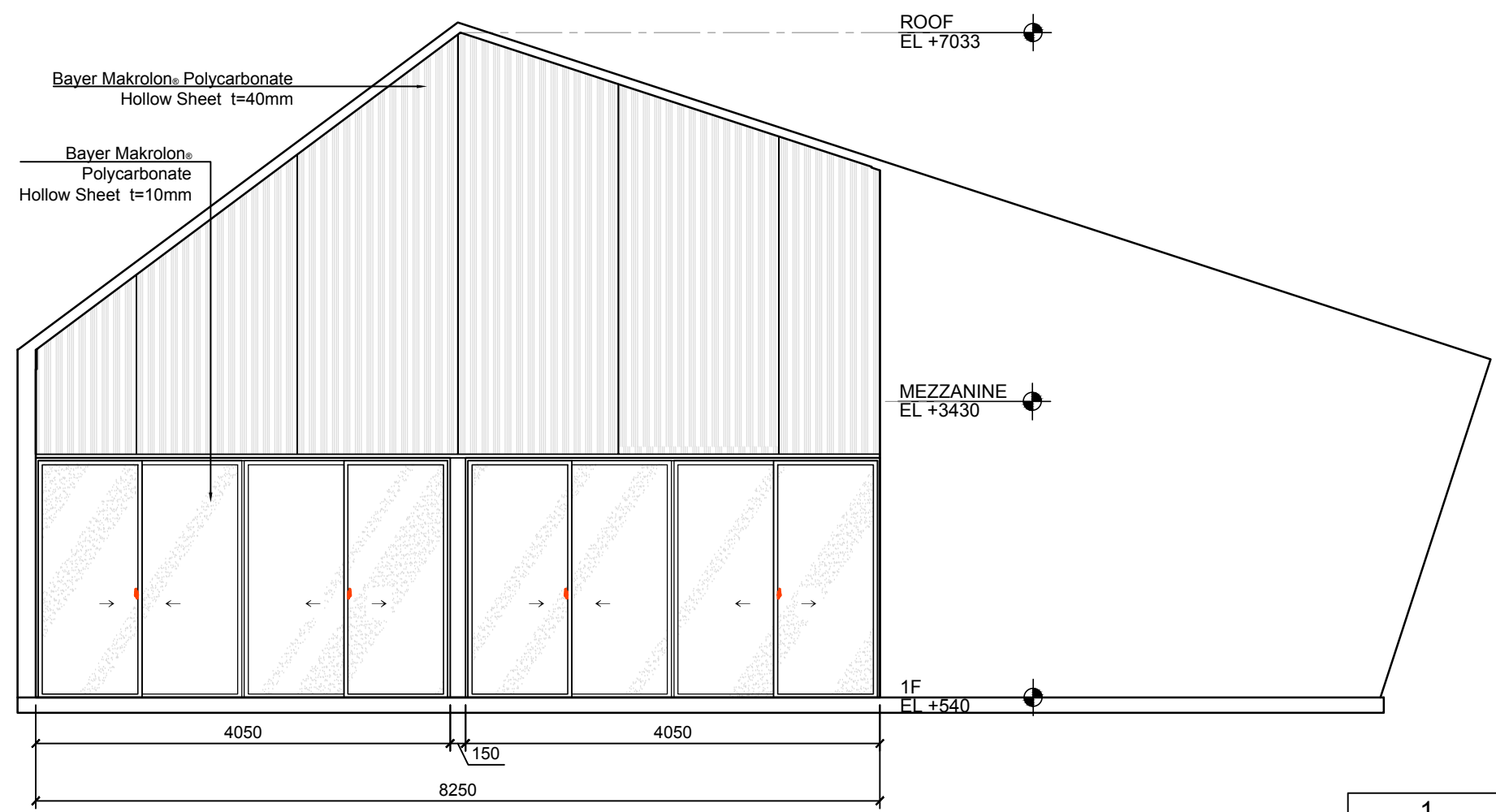
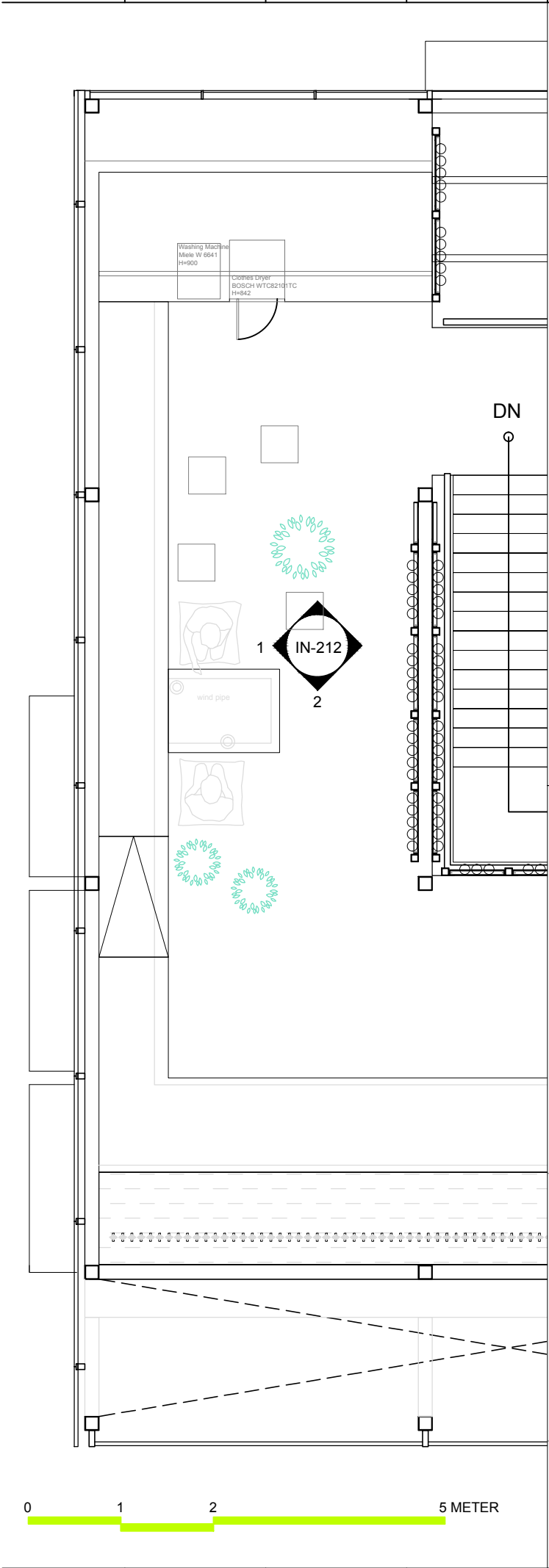
INTERIOR ELEVATIONS (

DWG. No.

IN-211

PAGE

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Contact: www.sde



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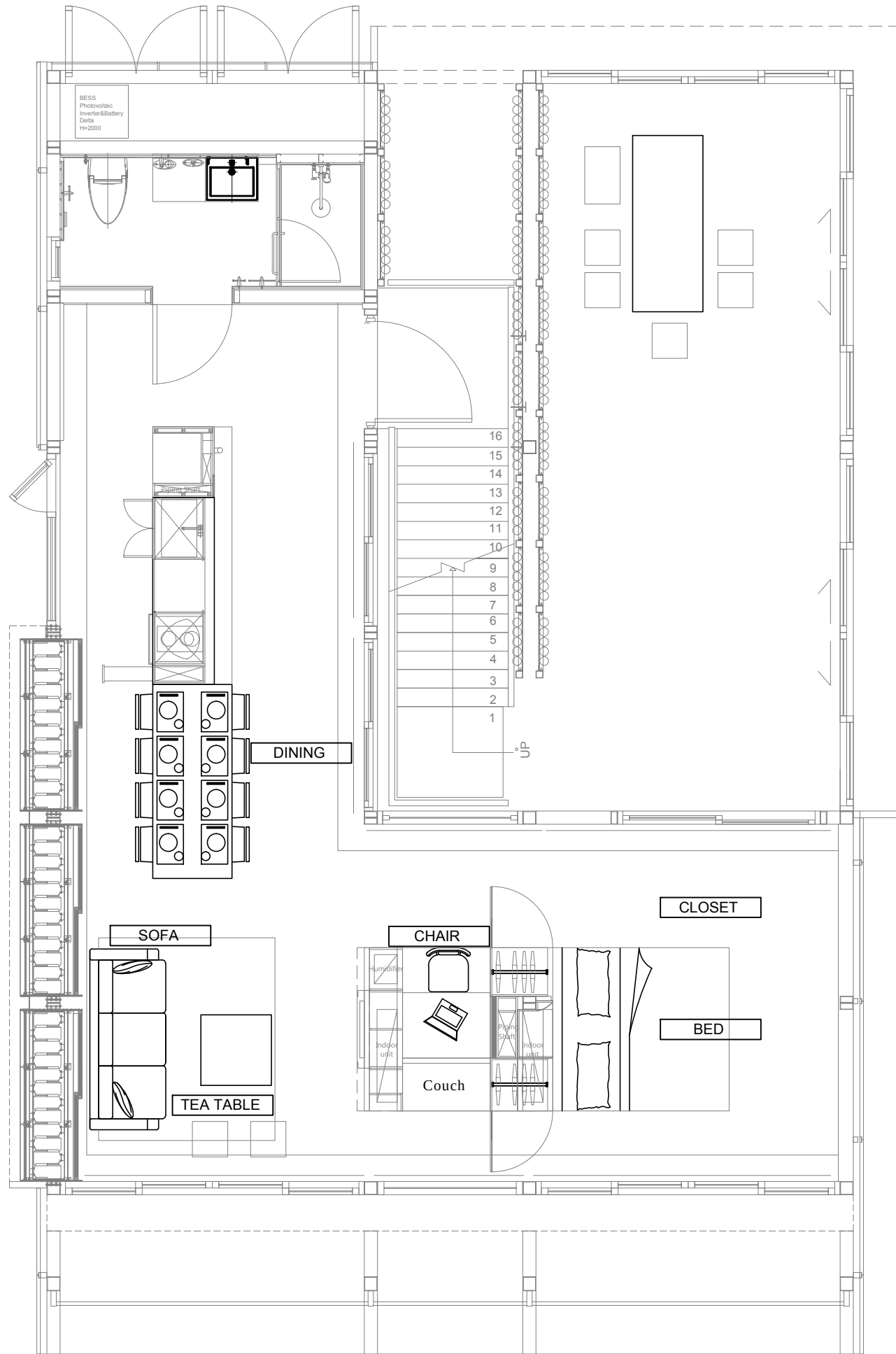
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by
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Scale 1:
Unit m

DWG. Title
INTERIOR ELEVATIONS

DWG. No. IN-212 **PAGE** 11



FURNITURE LIST		
TYPE	IMAGE	SIZE(L*W*H) mm
DINING CHAIR		430*420*760 (seat height:430)
SOFA		2050*860*760 (seat height:380)
TEA TABLE		1050*580*380
BED		1910*2040*950
WORK CHAIR		580*610*720 (seat height:410)
CLOSET	SEE DWG. IN-413	



Project:



Institution:



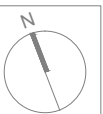
NCTU Architectural
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Hsinchu City 300
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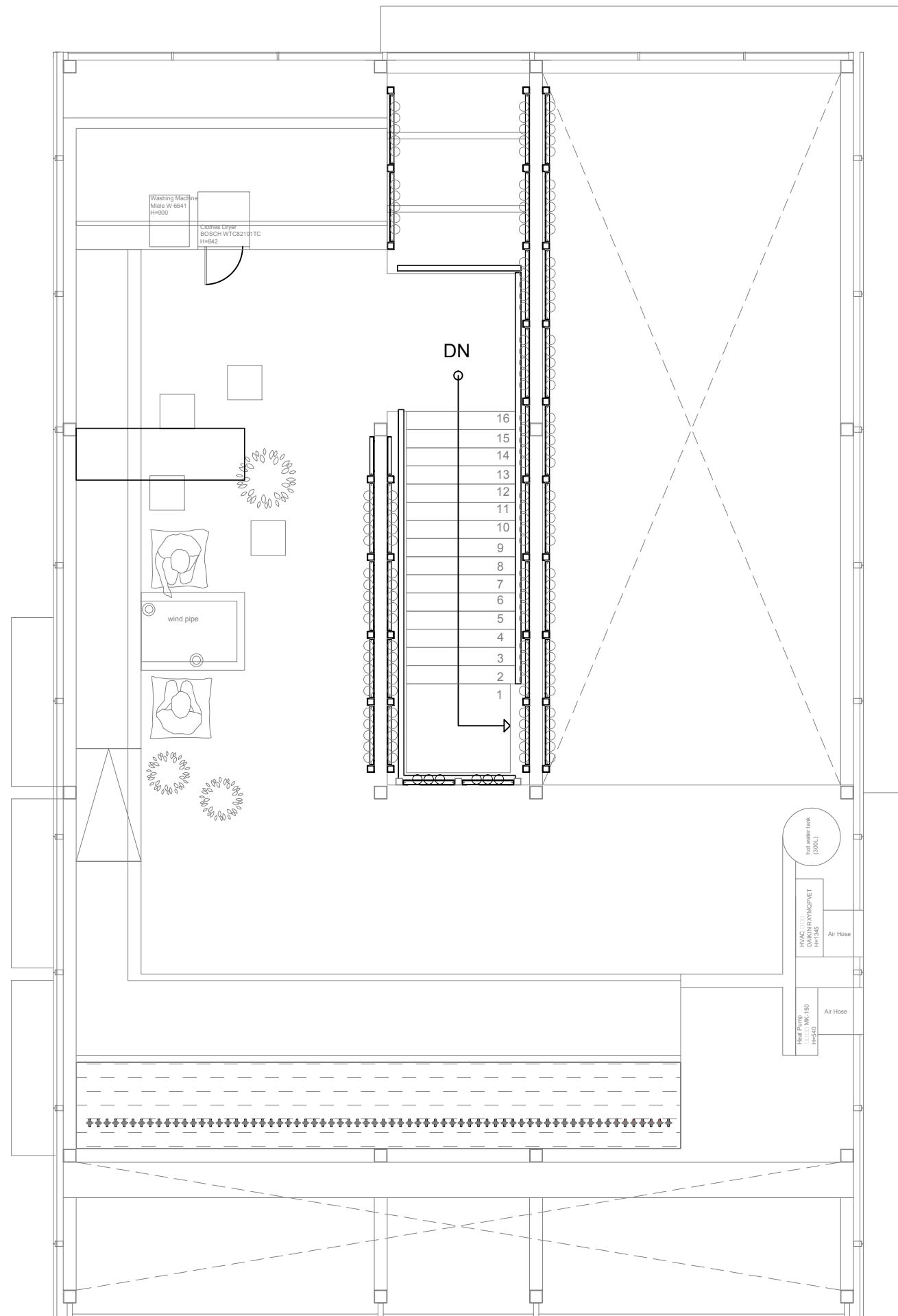


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	1
Scale	1:
Unit	r

DWG. Title
**GROUND FLOOR
FURNISHINGS**

DWG. No. **IN-301** PAGE **11**



0 1 2 5 METER



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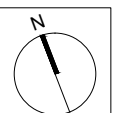
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ST	2014/03/03	CD Submission

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Checked by

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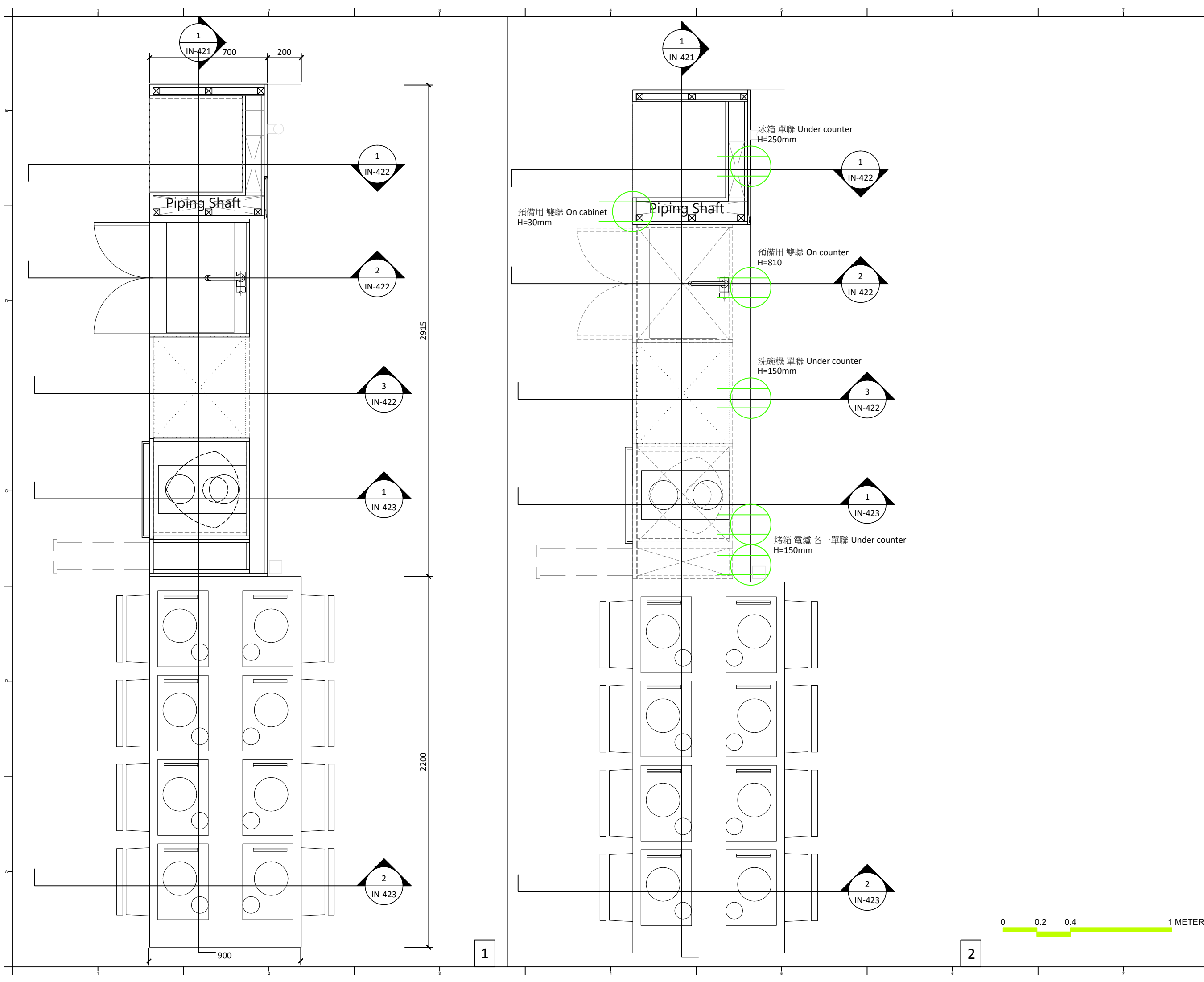
DWG. Title

MEZZANINE FLOOR
FURNISHINGS

DWG. No. PAGI

IN-302

11



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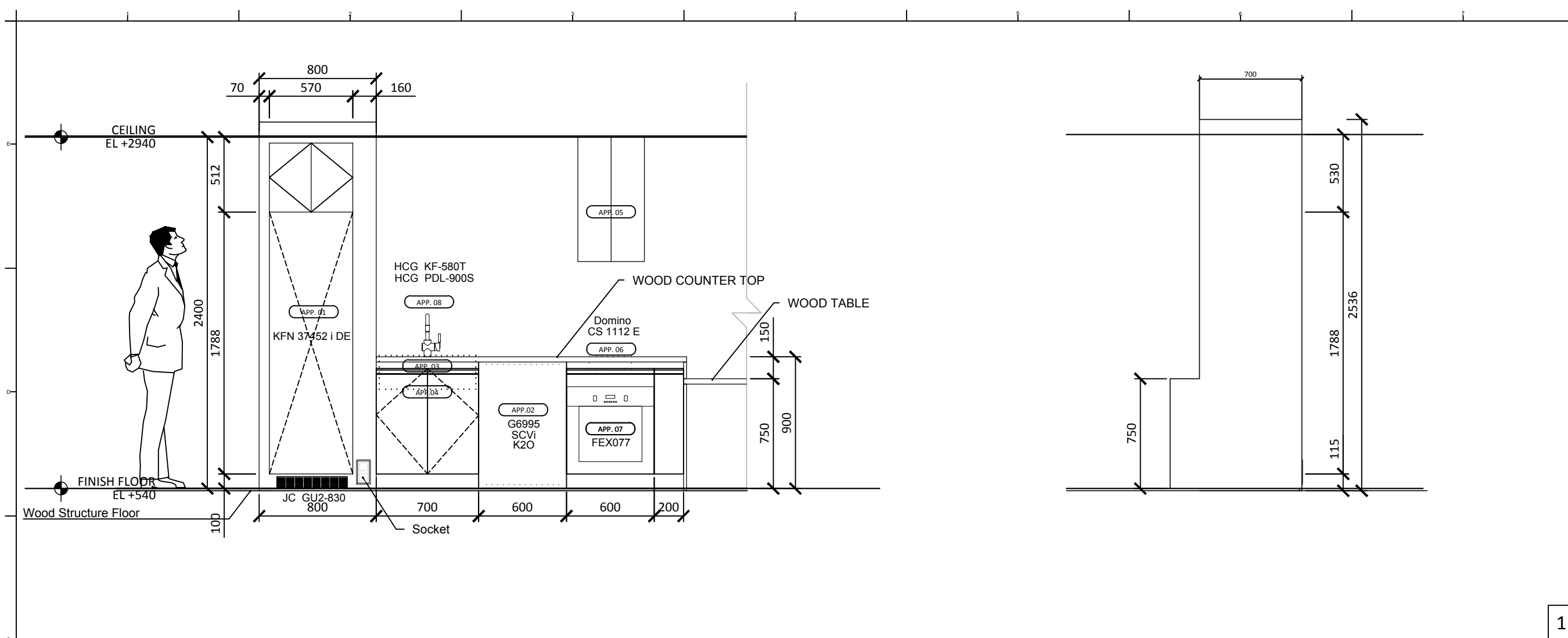
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	-
Scale	1:20
Unit	mm

DWG. Title	
KITCHEN PLAN 2	
DWG. No.	PAGE
IN-402	121



Project:

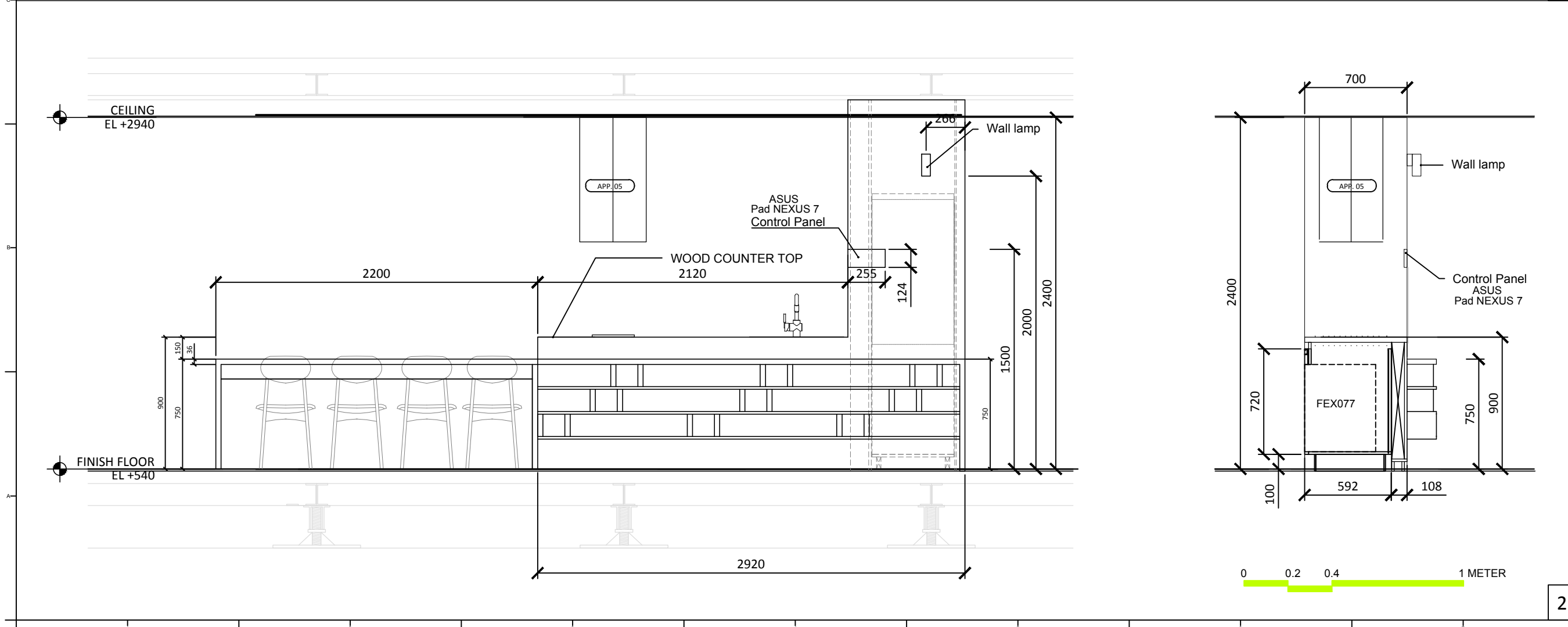
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1



Note:

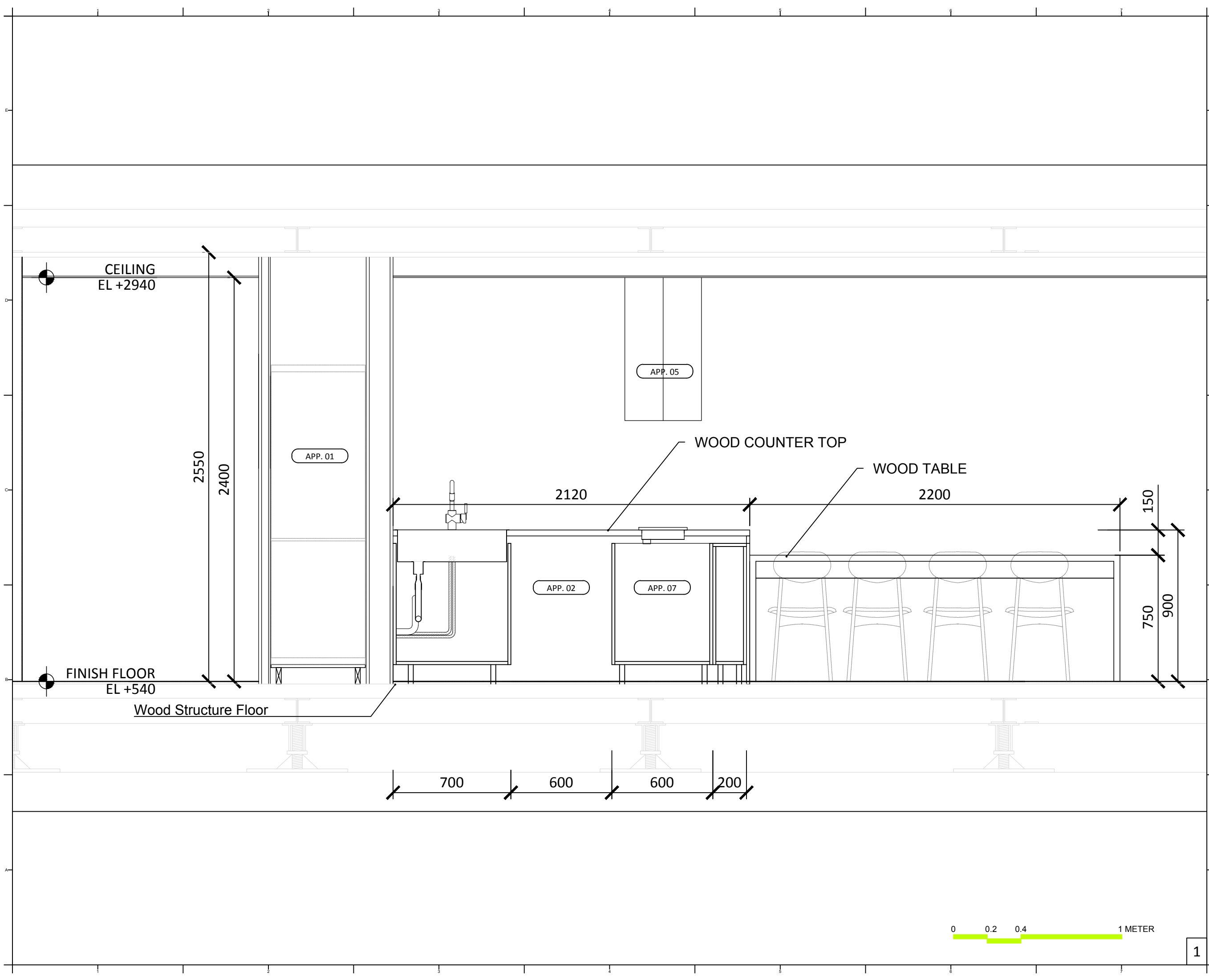
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by: -
Scale: 1:30
Unit: mm

DWG. Title: KITCHEN ELEVATIONS

DWG. No.: IN-411
PAGE: 122

2



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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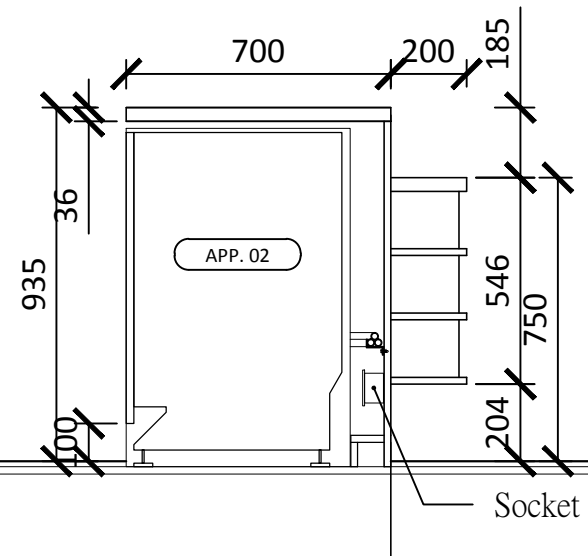
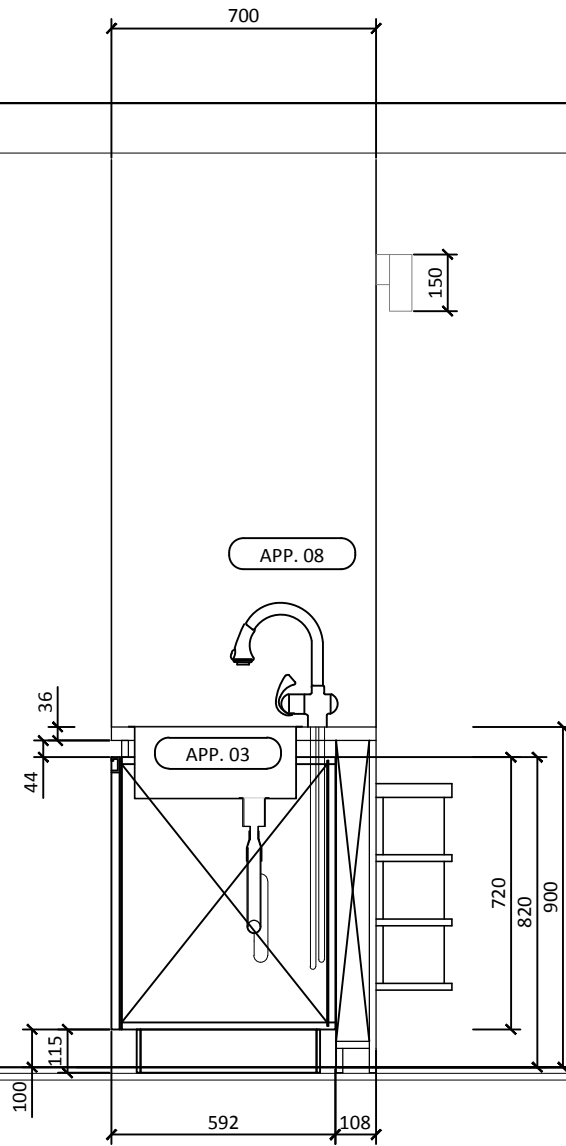
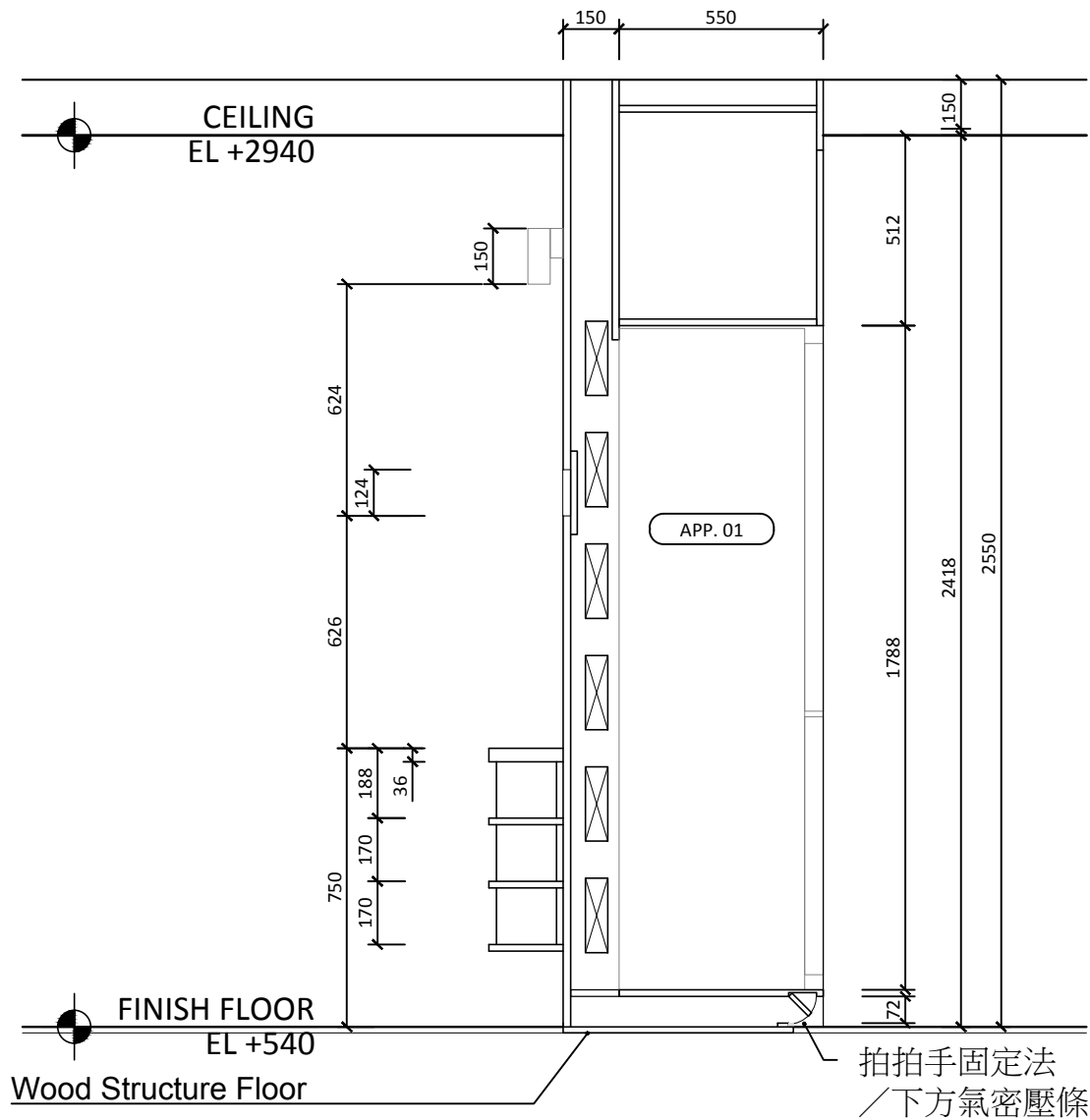
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KITCHEN SECTION 1	
DWG. No.	PAGE
IN-421	123

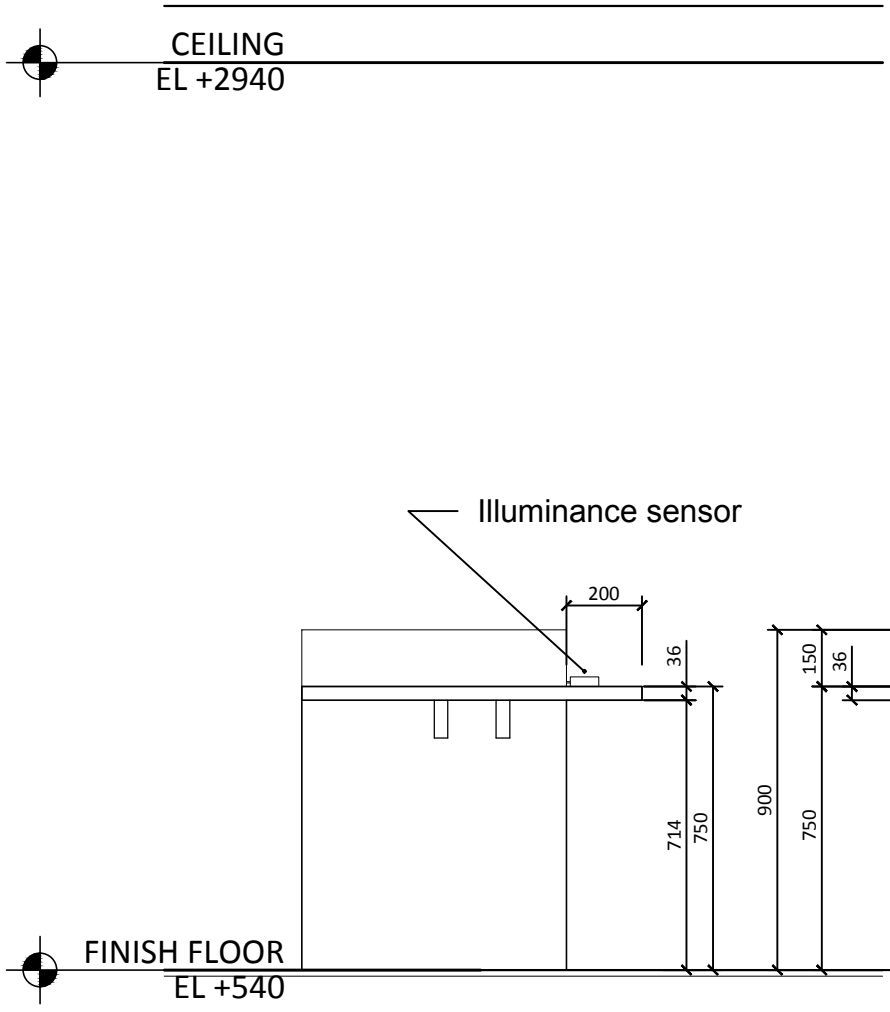
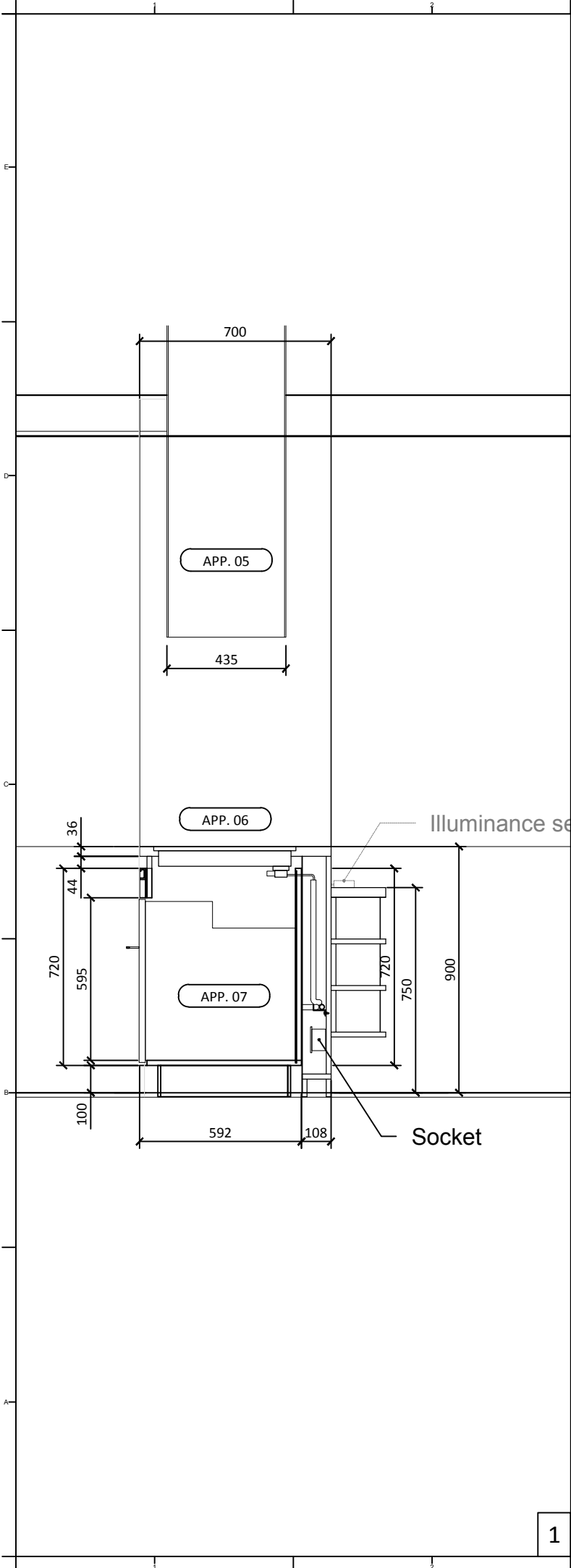


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	CF
Checked by	-
Scale	1:20
Unit	mm

DWG. Title	
KITCHEN SECTION 2	
DWG. No.	PAGE
IN-422	124





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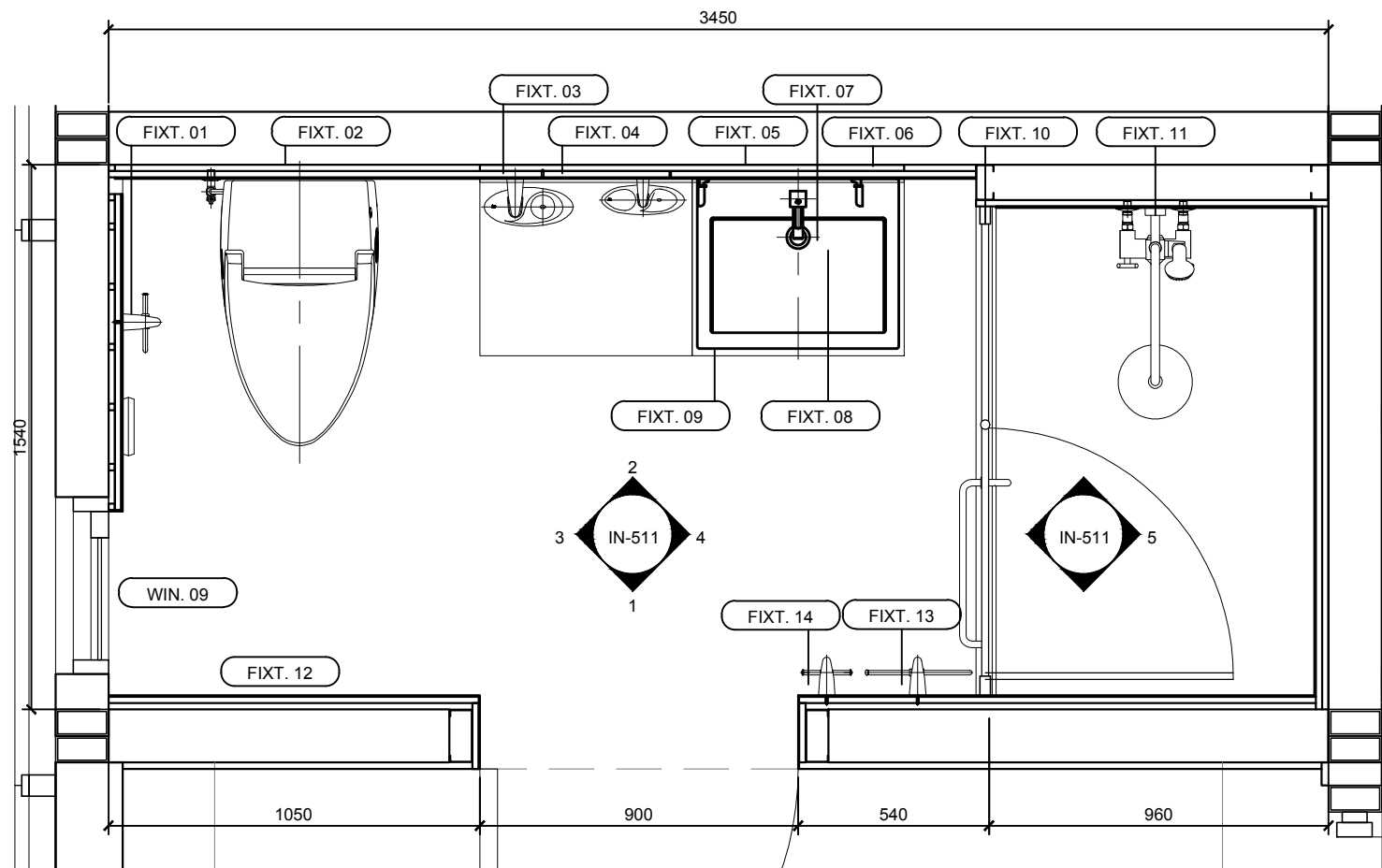
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ST	2014/03/03	CD Submission

Drawn by	CF
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Scale	1:20
Unit	mm

DWG. Title
KITCHEN SECTION 3

DWG. No.	PAGE
IN-423	125



FIXED FURNITURE LIST					
FIXT. No	TYPE	BRAND	LOCATION	SIZE (W*D*H)	TYPE
FIXT. 01	TOILET PAPER HOLDER	HCG	BATHROOM	170x10x135	BA208
FIXT. 02	INTELLIGENT TOLJET	HCG	BATHROOM	800x460x625	C3016
FIXT. 03	CABINET	HCG	BATHROOM	1500x500x700	LCP400-4115NP
FIXT. 04	MIRROR	HCG	BATHROOM	1200x800x80	BA2826
FIXT. 05	TUMBLER HOLDER	HCG	BATHROOM	245x130x105	BA202
FIXT. 06	SOAP DISH	HCG	BATHROOM	300x140x105	BA207
FIXT. 07	TEMPERATURE CONTROL FAUCET	HCG	BATHROOM	235x60x180	LF3167PT(AW)
FIXT. 08	DRAINAGE TAKEOVER	HCG	BATHROOM		LF725L-B1
FIXT. 09	SINK	HCG	BATHROOM	480x570x155	L400SAdb-4115N
FIXT. 10	ACCESSIBLE SHOWER DOOR	HCG	BATHROOM	1541x50x2200	SK2W1619
FIXT. 11	SMART SHOWER COLUM	HCG	BATHROOM	500x190x1400	ST8786
FIXT. 12	SHOWER WALL	HCG	BATHROOM	897x1797x4	STANDARD 4142
FIXT. 13	DOUBLE TOWEL RACK	HCG	BATHROOM	300x110x160	BA203
FIXT. 14	CLOTH HOOK	HCG	BATHROOM	145x110x105	BA206

FIXT. 01	FIXT. 02	FIXT. 03	FIXT. 04	FIXT. 05	FIXT. 06
FIXT. 07	FIXT. 08	FIXT. 09	FIXT. 10	FIXT. 11	FIXT. 12
FIXT. 13	FIXT. 14				



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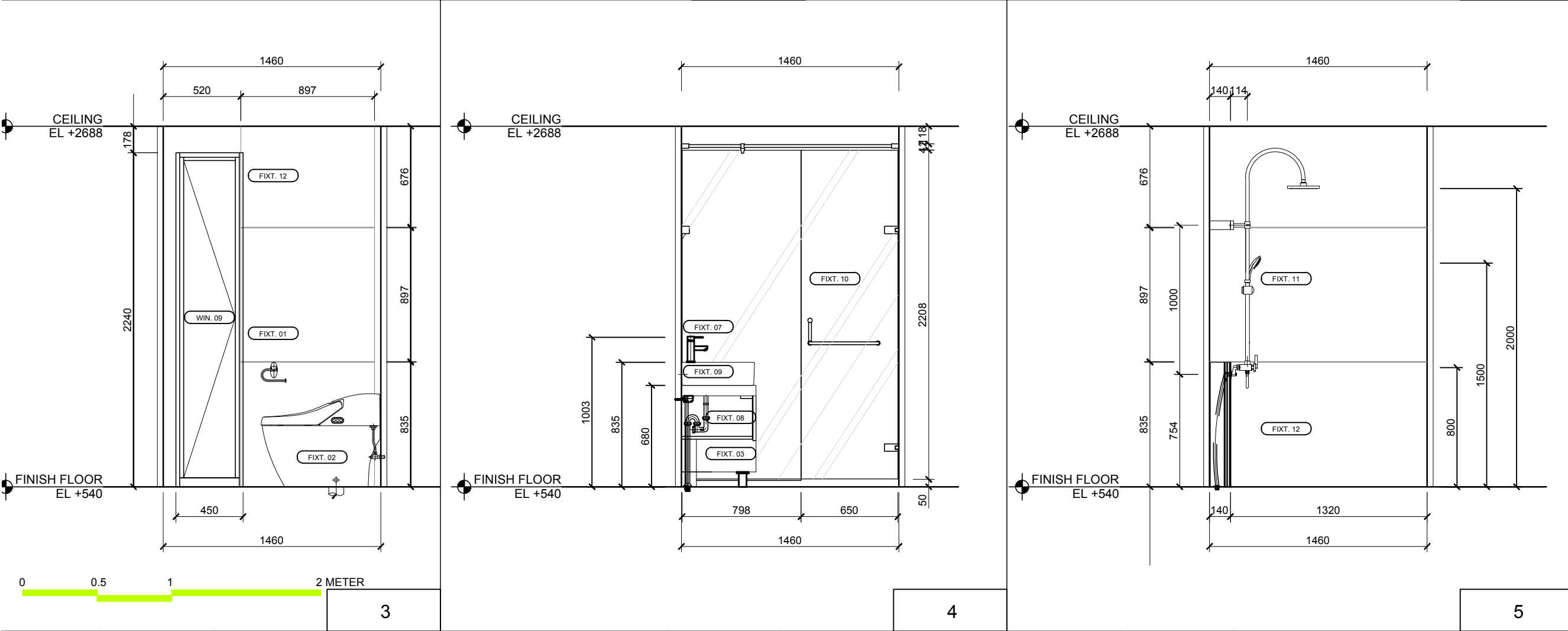
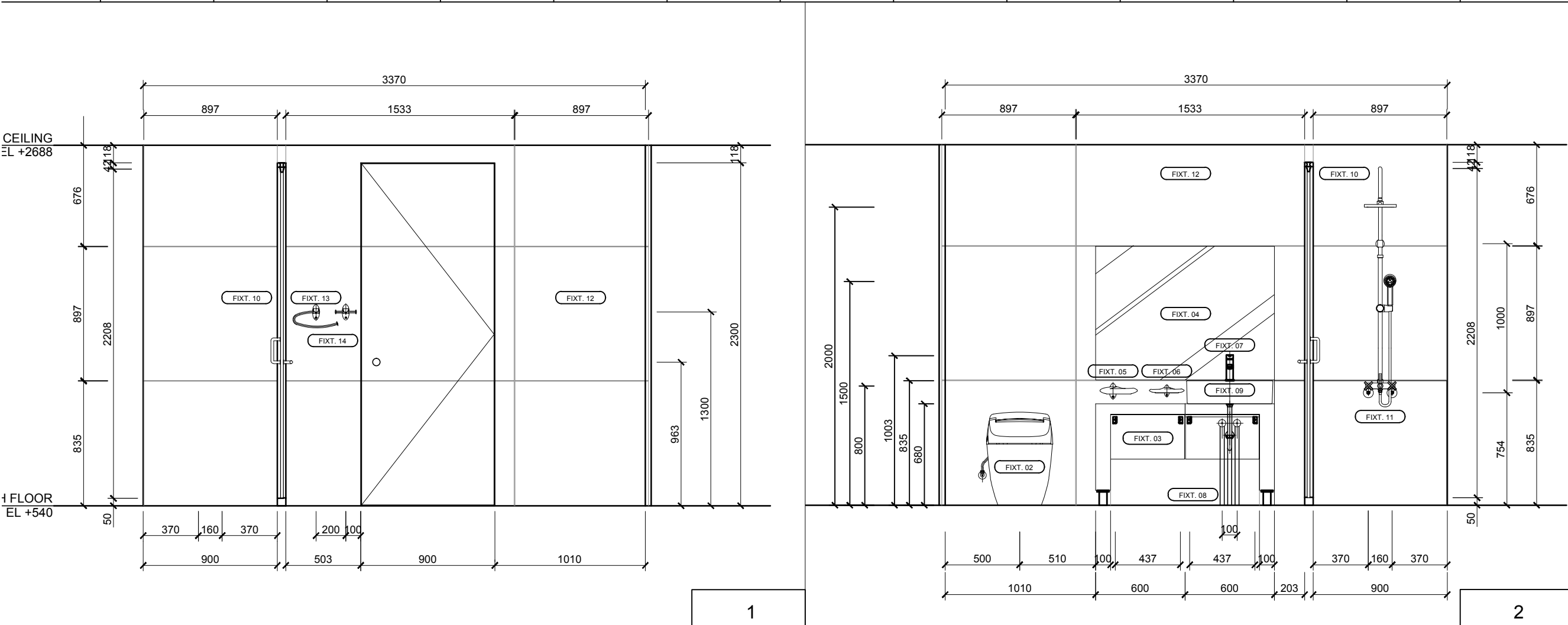
Team Name: NCTU/UNICOI
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DN	2013/04/01	SD Submission
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale 1:
Unit r





**Solar
Decathlon
Europe**

Project:



**ORCHID
HOUSE**

Institution:



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National Chiao Tung University

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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale _____ 1: _____

Unit _____ r _____

DWG. Title

BATHROOM ELEVATION:

DWG. No. **IN-511** PAGE **12**



Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	TW
Checked by	DN
Scale	-
Unit	-

DWG. Title INTERIOR RENDERING ENTRANCE	
DWG. No. IN-601	PAGE 128



Mark	Date	Description
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	TW
Checked by	DN
Scale	-
Unit	-

DWG. Title INTERIOR RENDERING LIVING ROOM	
DWG. No. IN-602	PAGE 129



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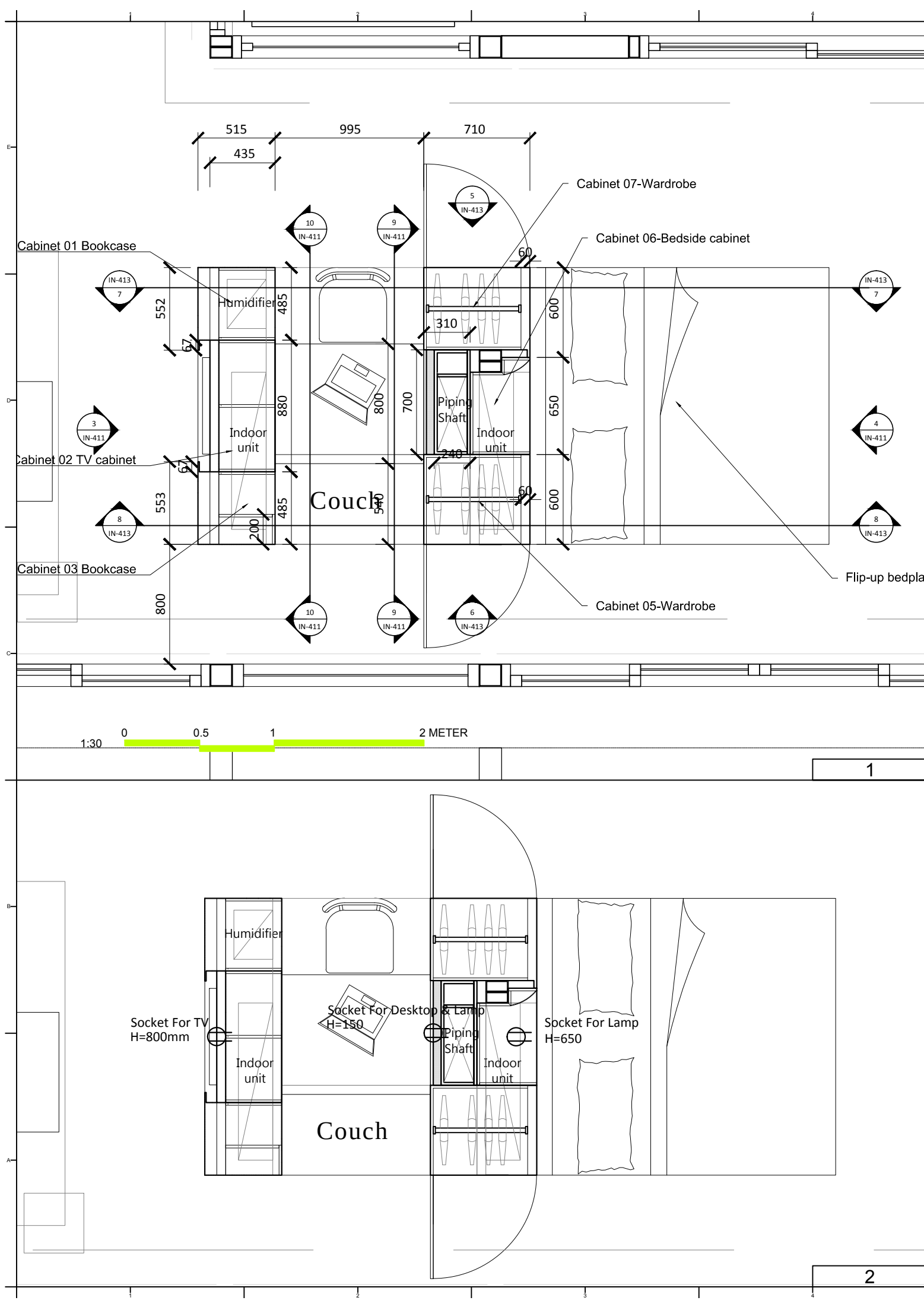
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INTERIOR RENDERING 2ND FLOOR	
DWG. No.	PAGE
IN-603	130



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	TW
Checked by	DN
Scale	-
Unit	-

DWG. Title INTERIOR RENDERING VIEW FROM TERRACE	
DWG. No. IN-604	PAGE 131



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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	JL
Checked by	DN
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Unit	mm

DWG. Title	
WORKSTATION PLAN	
DWG. No.	PAGE
IN-701	132

Project:



Institution:



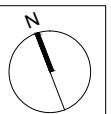
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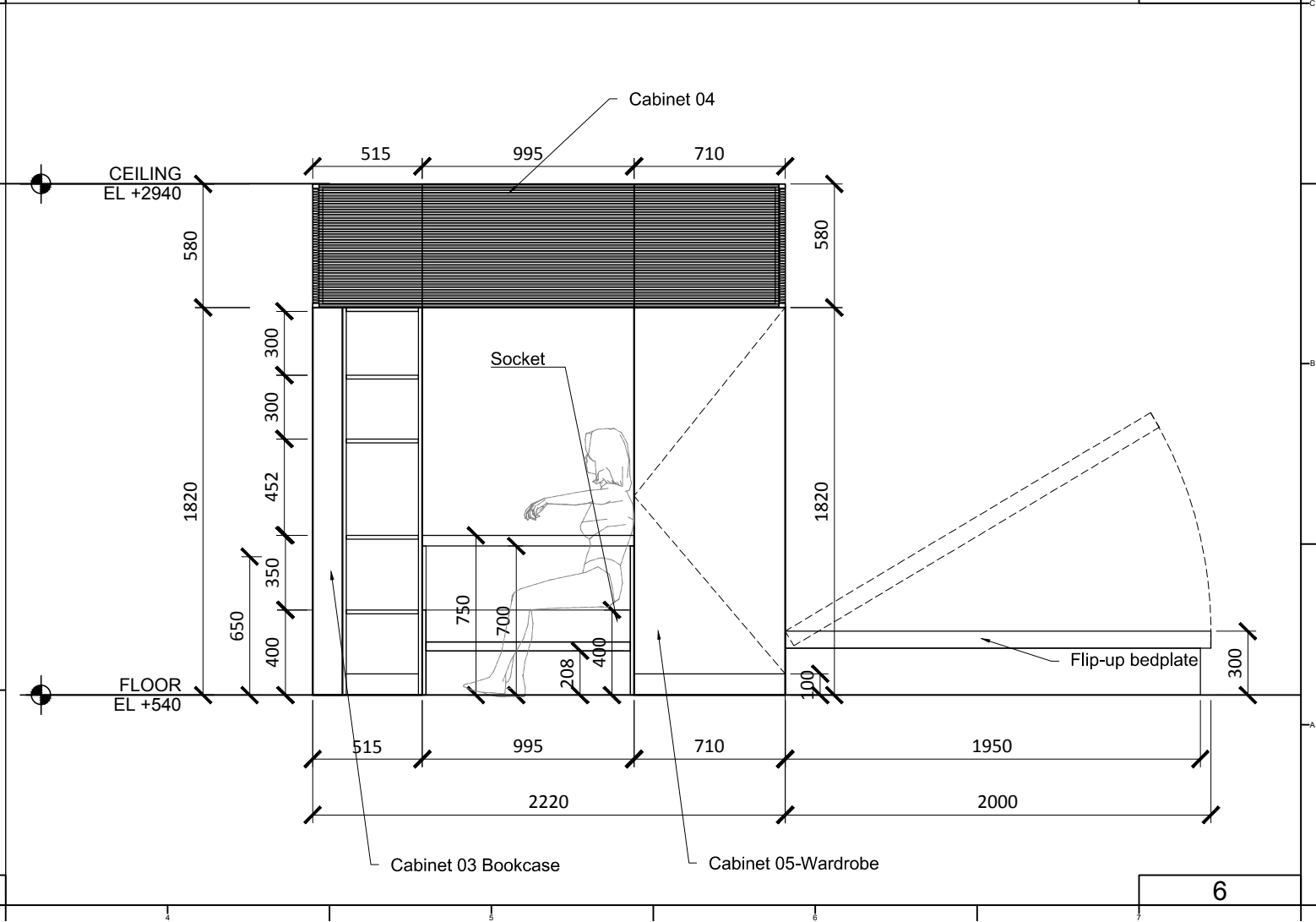
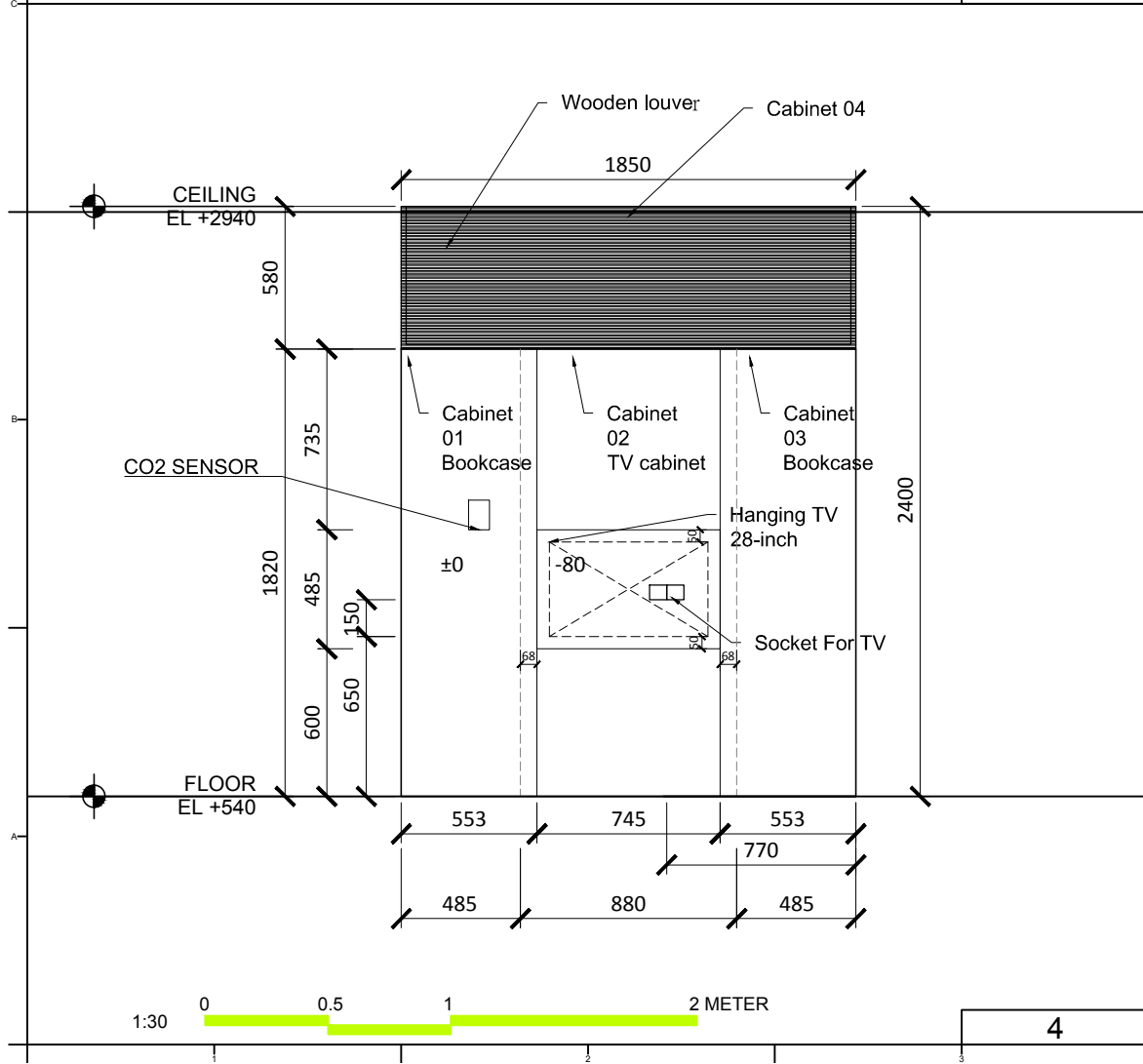
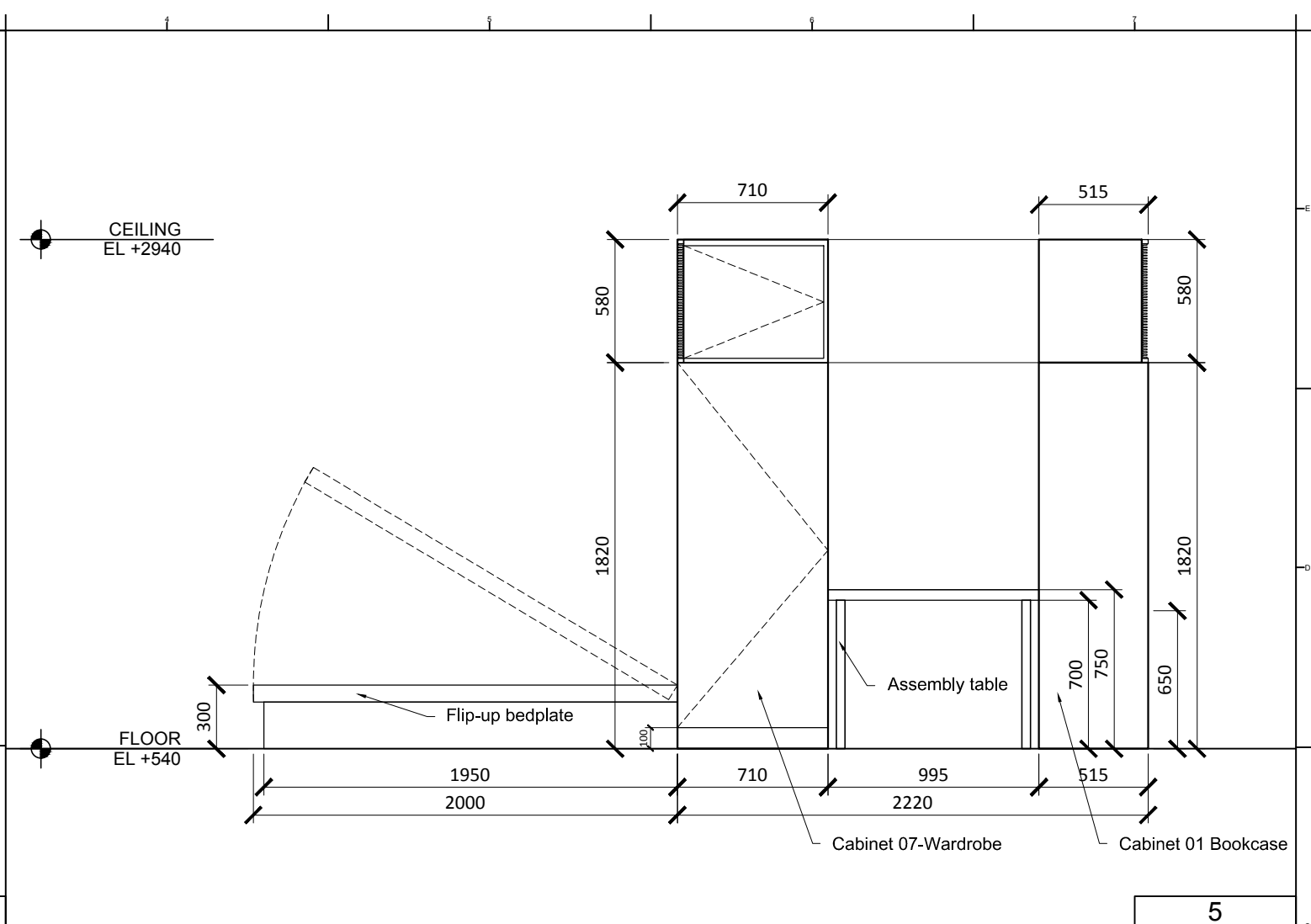
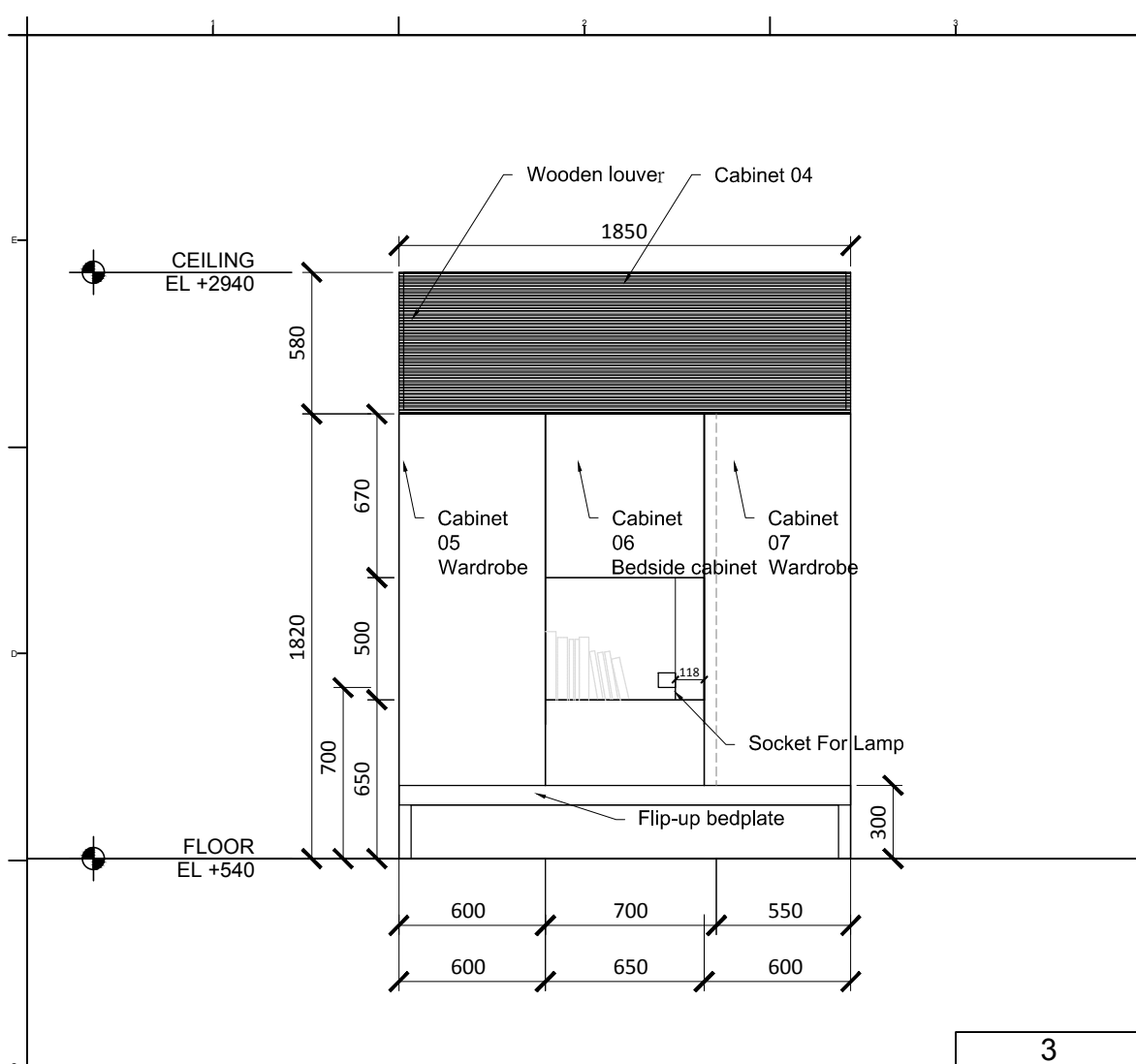
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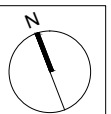


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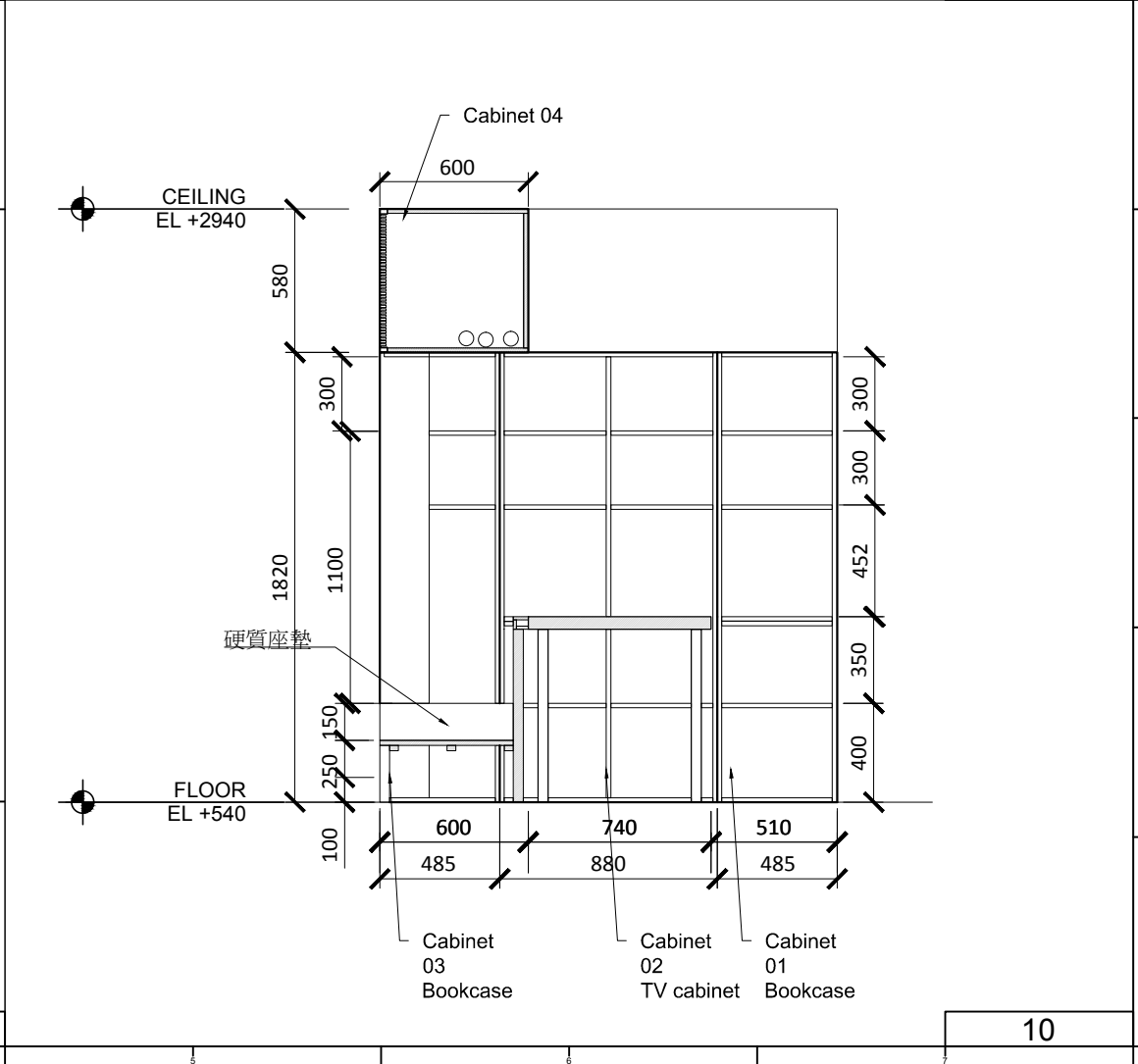
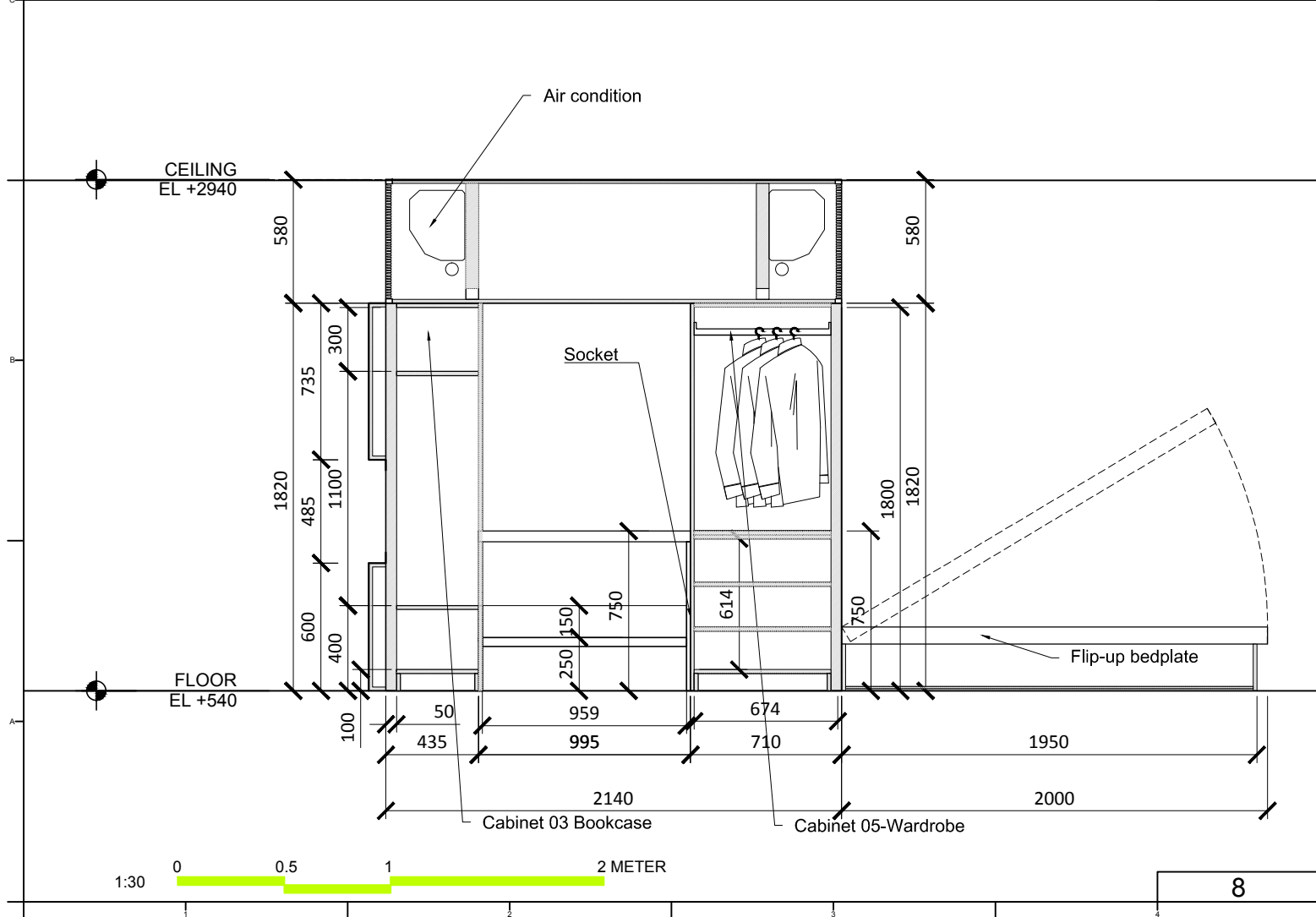
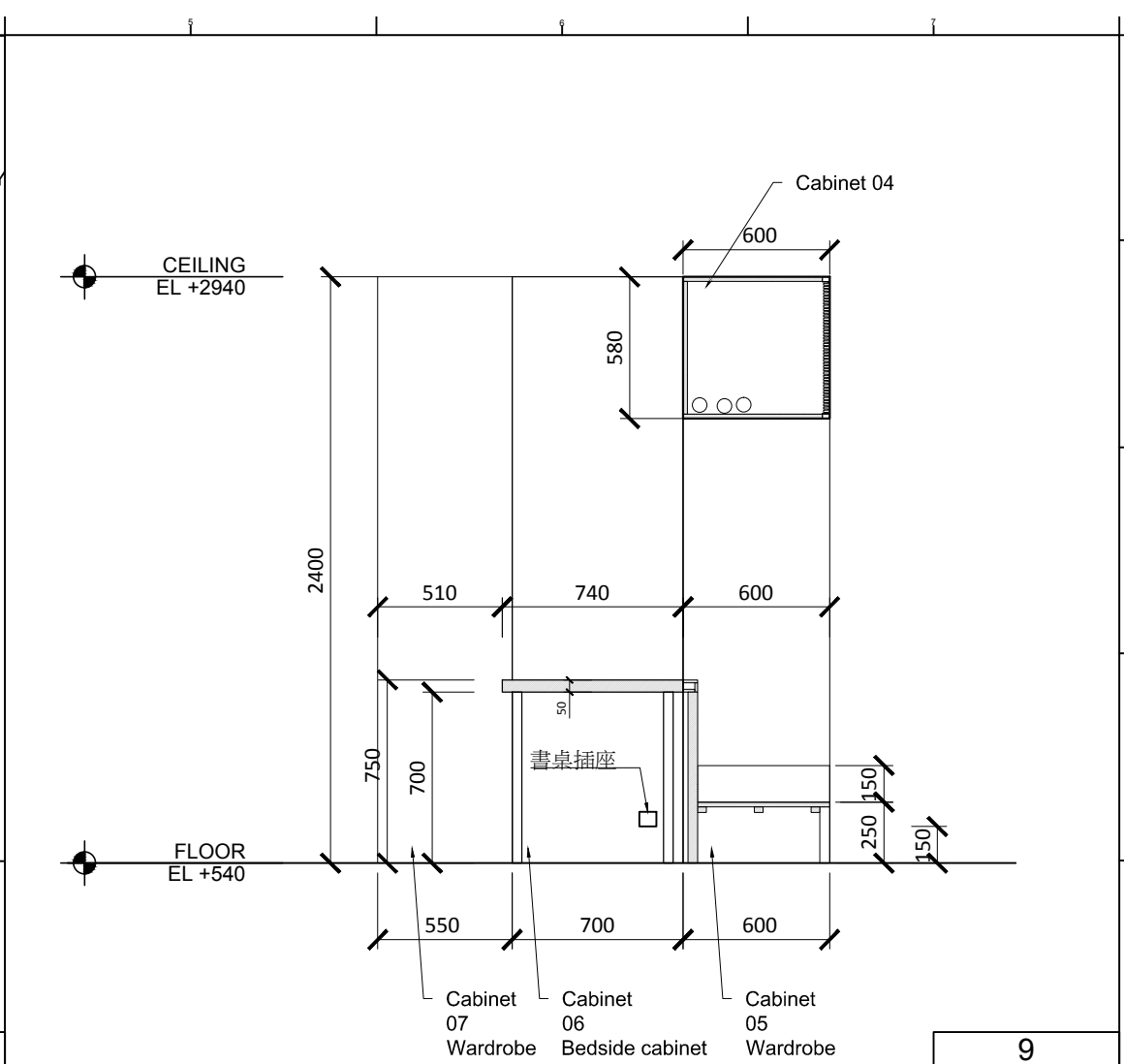
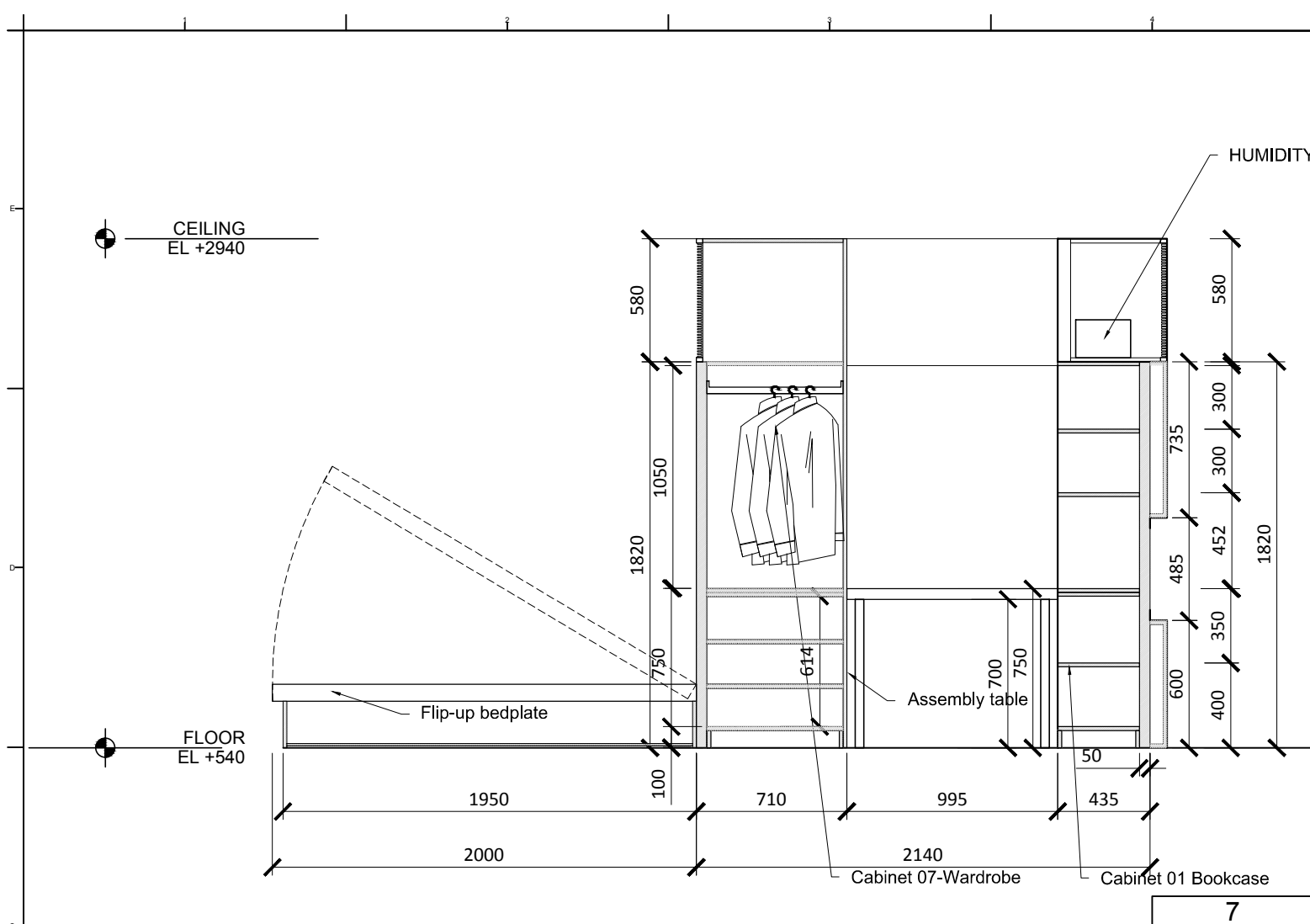
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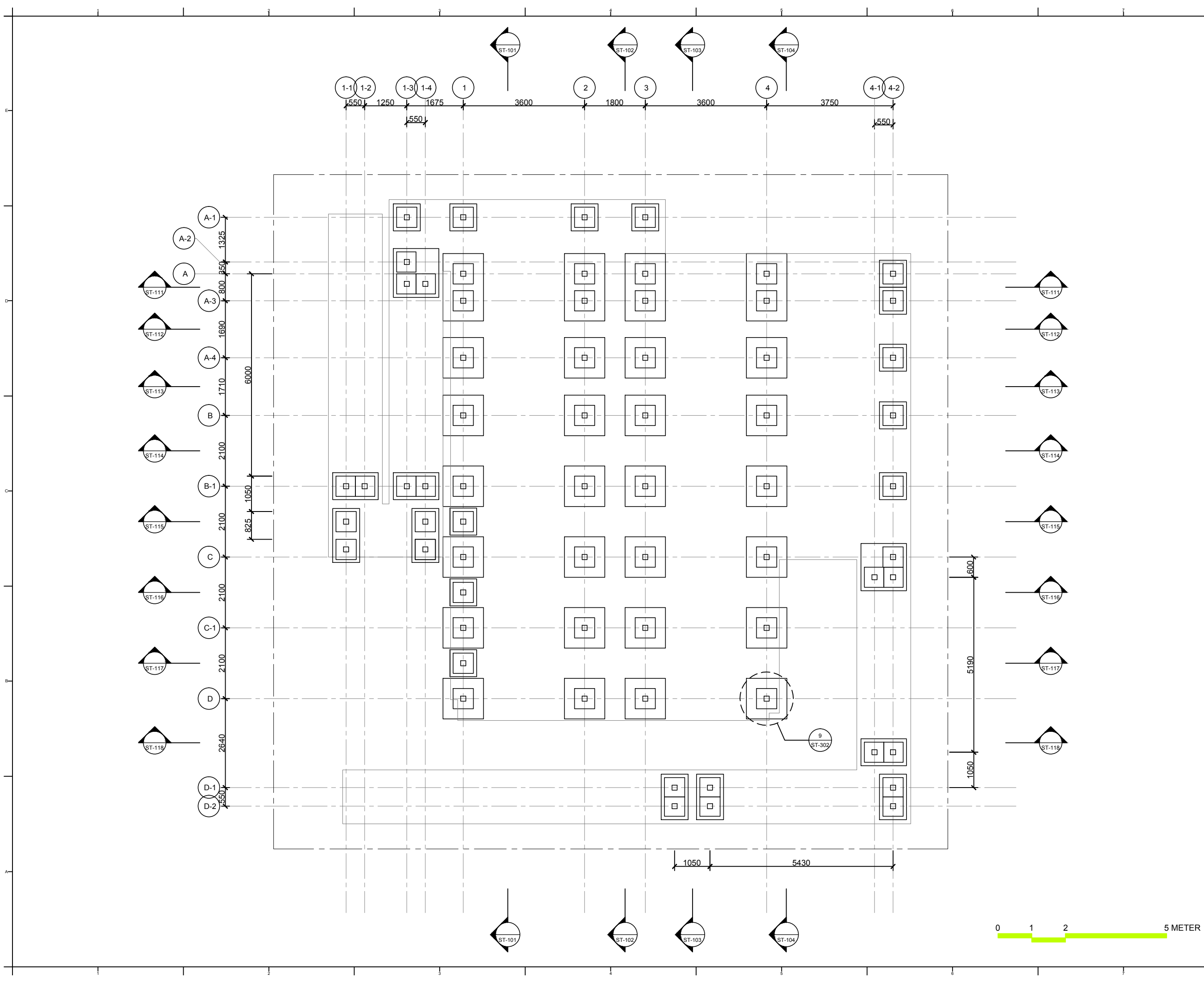
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WORKSTATION ELEVATION	
DWG. No.	PAGE
IN-711	133





Mark	Date	Description
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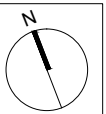
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Note:



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by ST

Checked by DN

Scale 1:100

Unit mm

DWG. Title

FOUNDATION PLAN AND
DETAILS

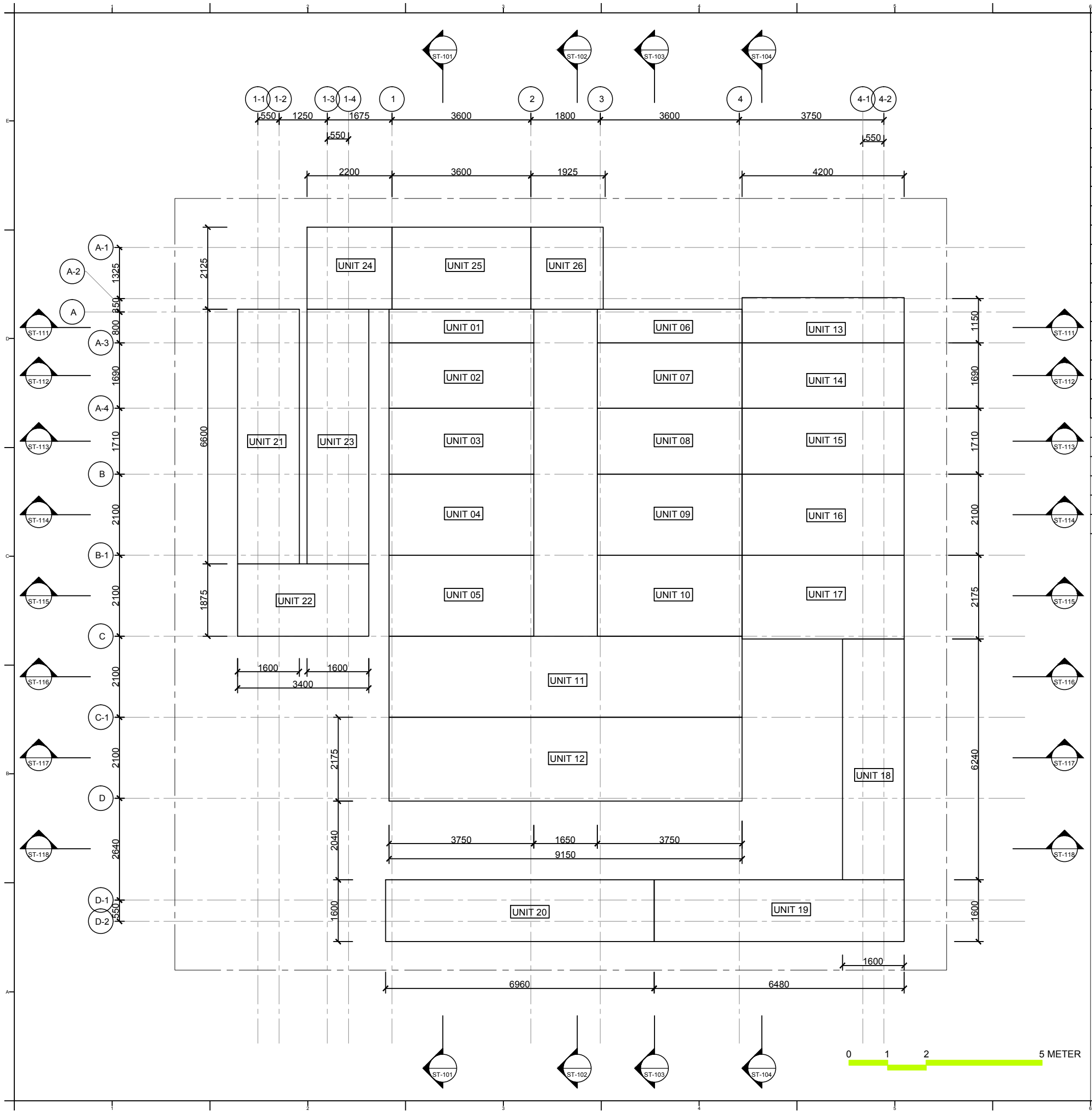
DWG. No.

ST-001

PAGE

135

0 1 2 5 METER



UNIT No.	Size (L x W x D)
UNIT 01	3750 x 875 x 150
UNIT 02	3750 x 1690 x 150
UNIT 03	3750 x 1710 x 150
UNIT 04	3750 x 2100 x 150
UNIT 05	3750 x 2100 x 150
UNIT 06	3750 x 875 x 150
UNIT 07	3750 x 1690 x150
UNIT 08	3750 x 1710 x 150
UNIT 09	3750 x 2100 x 150
UNIT 10	3750 x 2100 x 150
UNIT 11	9150 x 2100 x 150
UNIT 12	9150 x 2175 x 150
UNIT 13	4200 x 1150 x 150
UNIT 14	4200 x 1690 x 150
UNIT 15	4200 x 1710 x 150
UNIT 16	4200 x 2100 x 150
UNIT 17	4200 x 2175 x 150
UNIT 18	6240 x 1600 x 150
UNIT 19	6480 x 1600 x 150
UNIT 20	6960 x 1600 x 150
UNIT 21	6600 x 1600 x 150
UNIT 22	3400 x 1875 x 150
UNIT 23	6600 x 1600 x 150
UNIT 24	2200 x 2125 x 150
UNIT 25	3600 x 2125 x 150
UNIT 26	2125 x 1925 x 150



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by DN

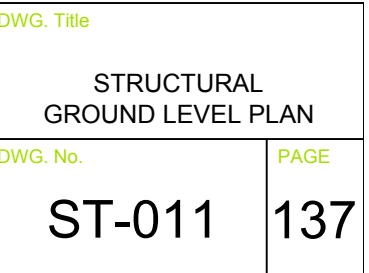
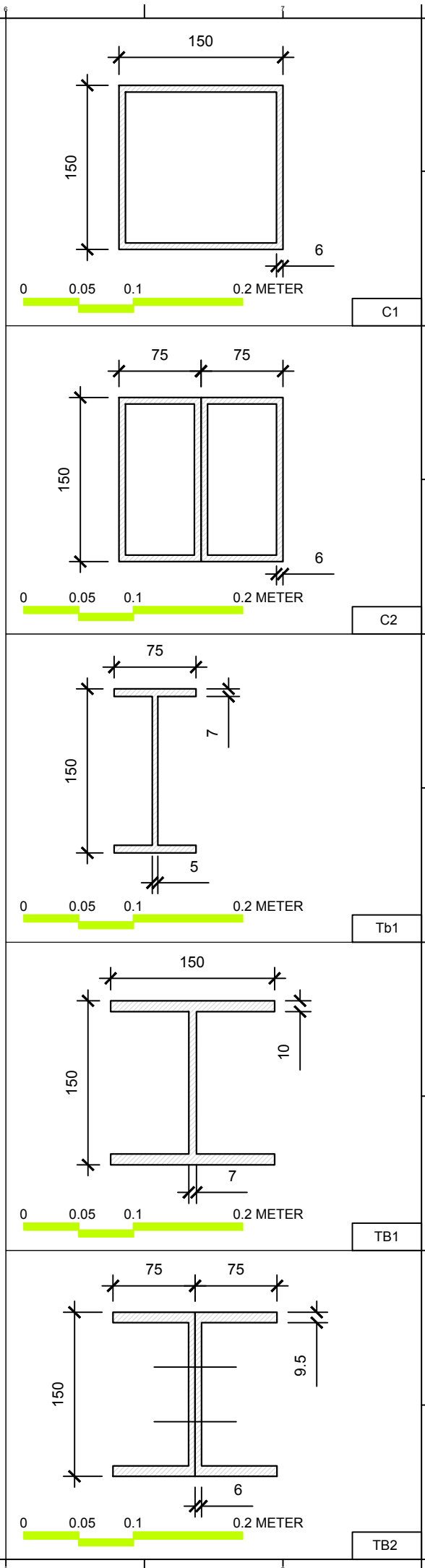
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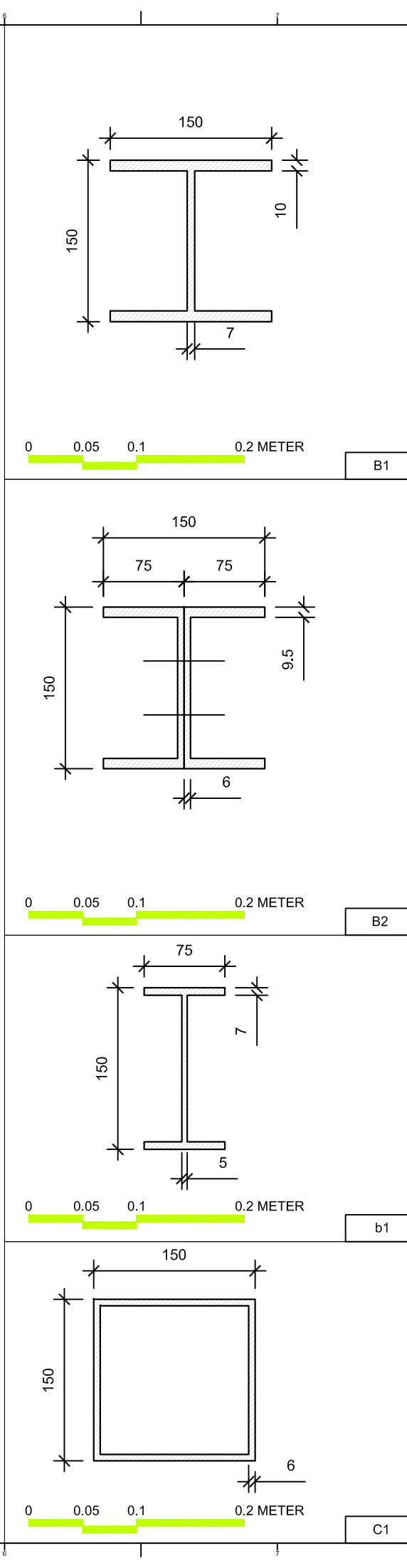
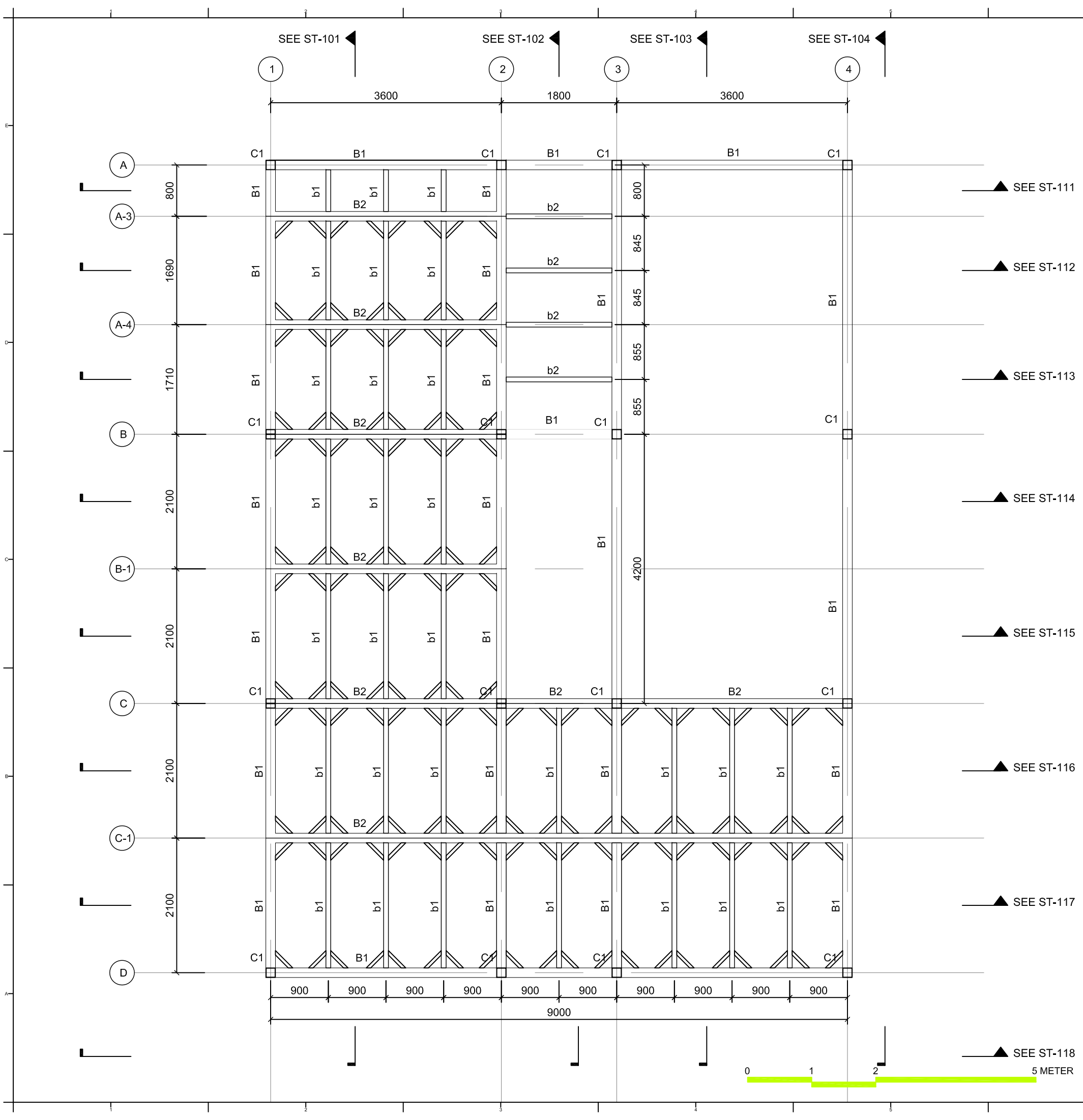
Unit mm

DWG. Title

STRUCTURAL FLOOR UNITS

DWG. No.	PAGE
ST-002	136







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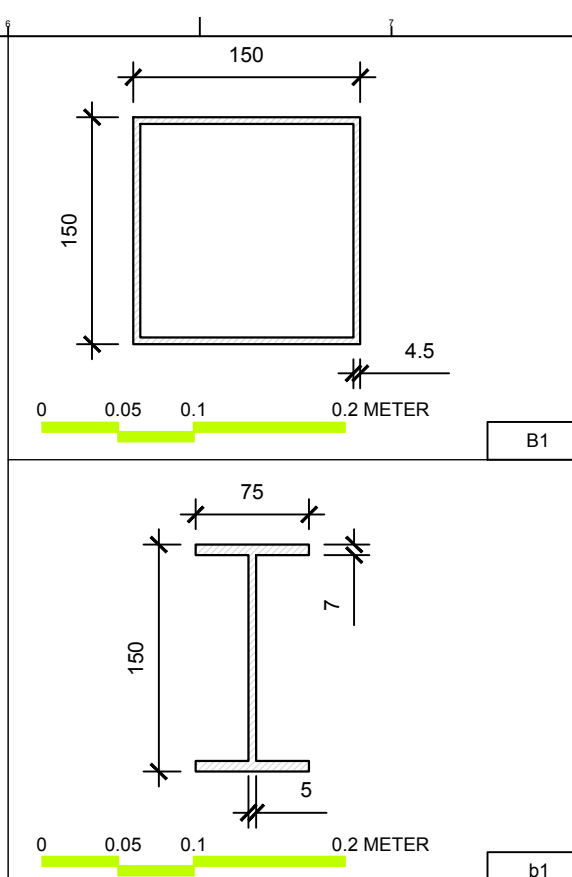
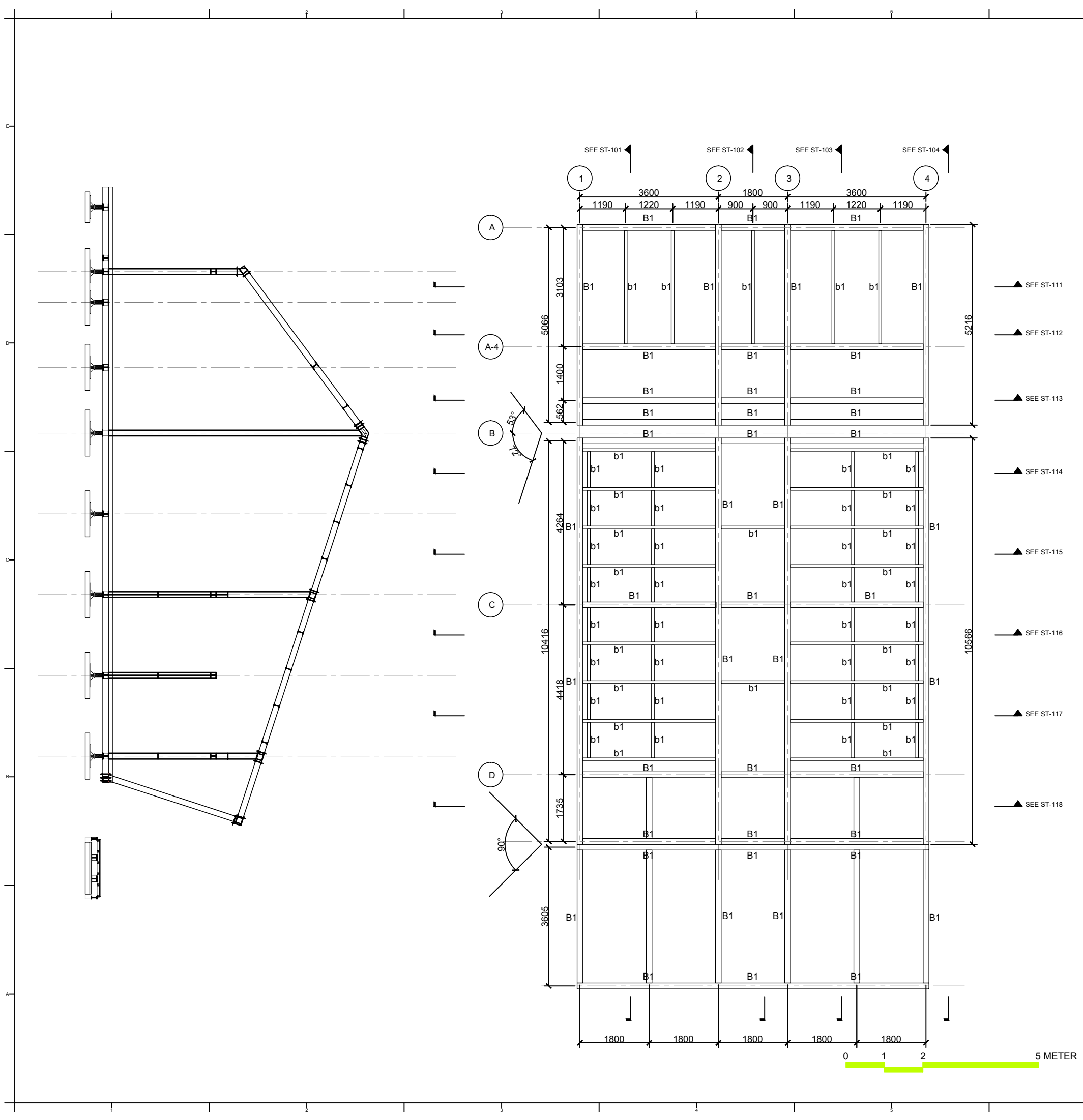


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DN	2013/07/01	DDc Submission
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ST	2014/03/03	CD Submission

Drawn by	ST
Checked by	DN
Scale	1:60
Unit	mm

DWG. Title	
STRUCTURAL MEZZANINE LEVEL PLAN	
DWG. No.	PAGE
ST-012	138





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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	ST
Checked by	DN
Scale	1:100
Unit	mm

DWG. Title	
STRUCTURAL ROOF PLAN	
DWG. No.	PAGE
ST-021	139

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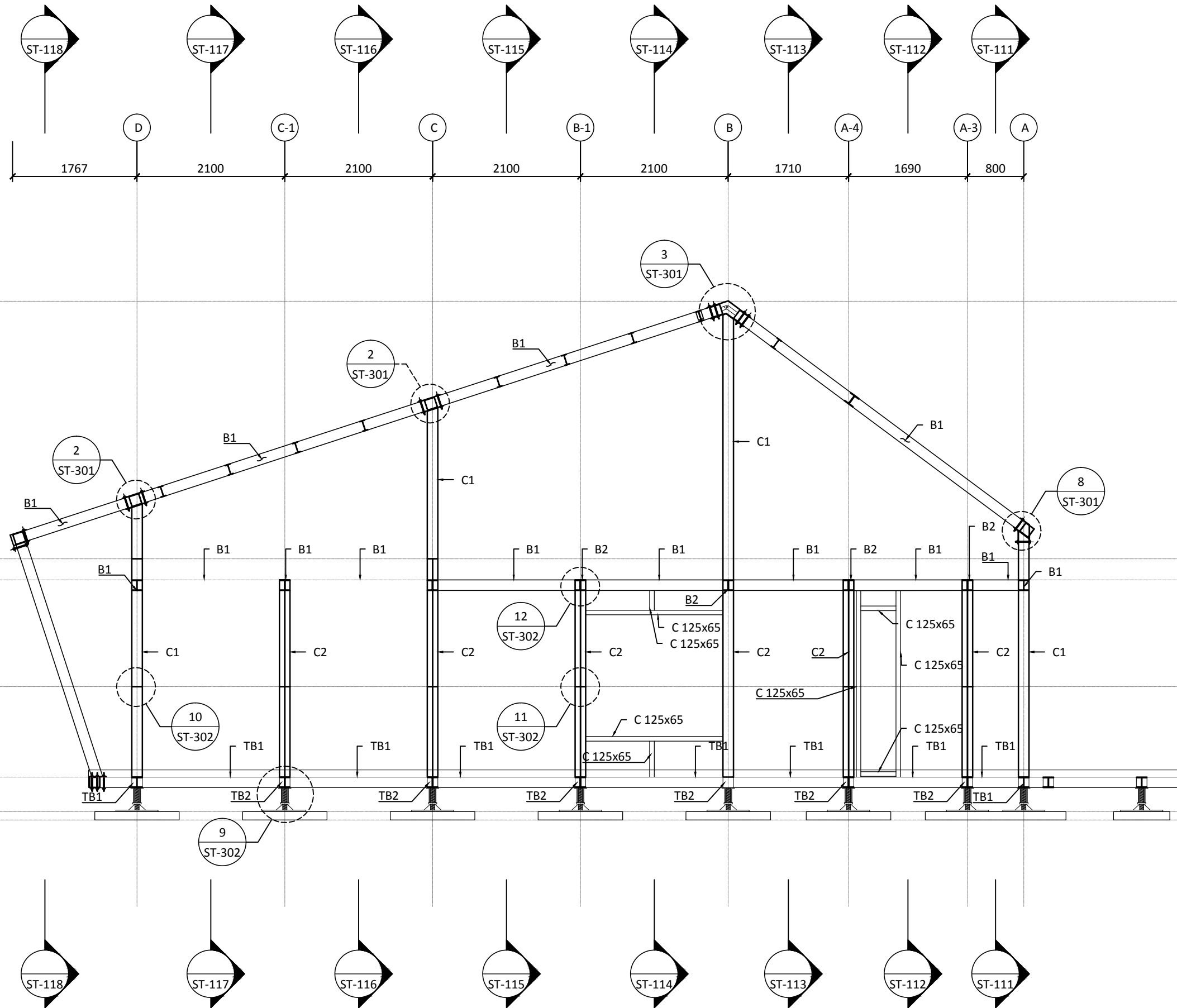
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ST	2014/03/03	CD Submission

Drawn by	ST
Checked by	DN
Scale	1:60
Unit	mm

DWG. Title
**STRUCTURAL
LONGITUDINAL SECTIONS
FRAME 1**

DWG. No.	PAGE
ST-101	140



0 1 2 5 METER

Project:



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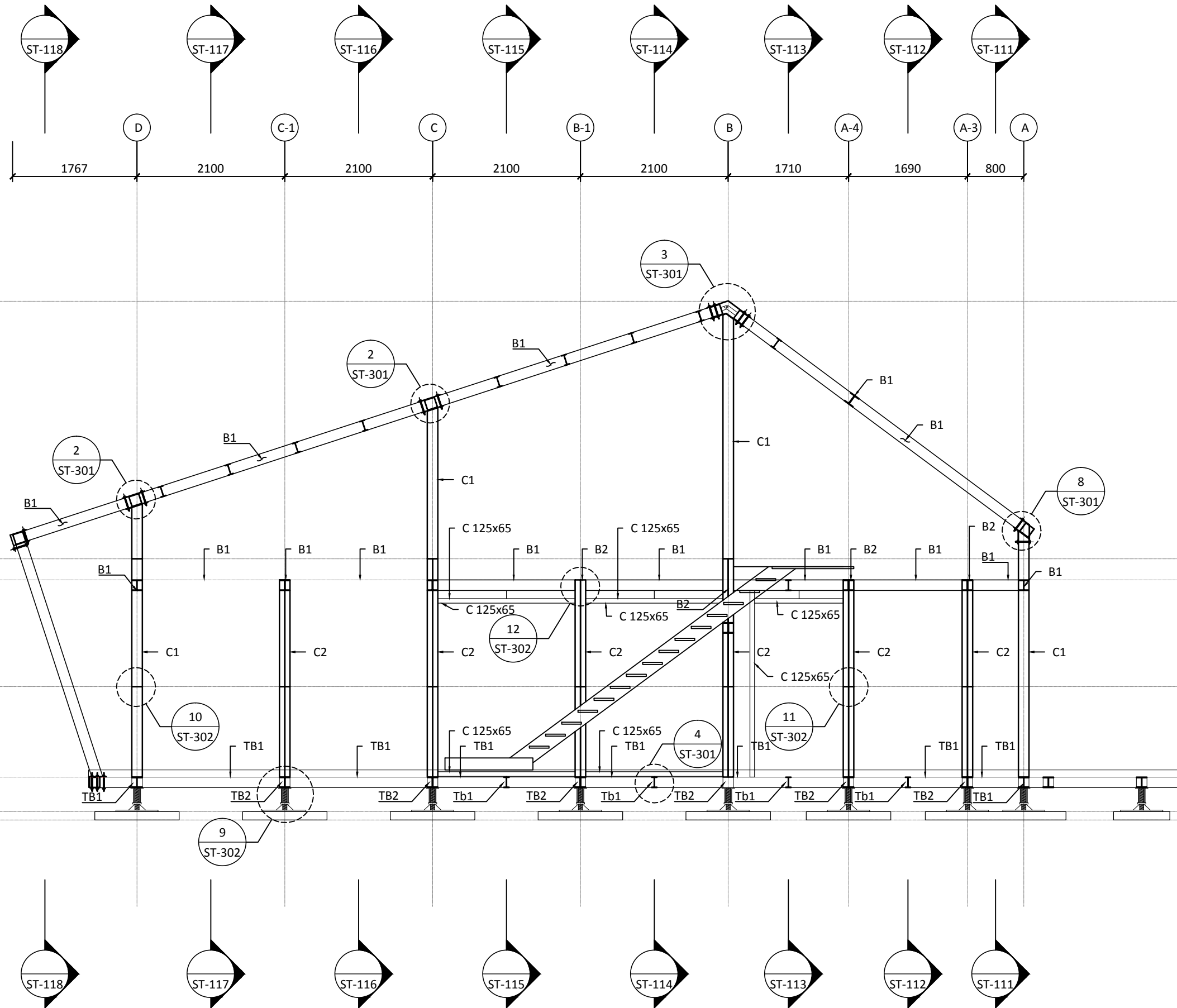
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale	1:60
Unit	mm

DWG. Title
**STRUCTURAL
LONGITUDINAL SECTIONS
FRAME 2**

DWG. No.	PAGE
ST-102	141



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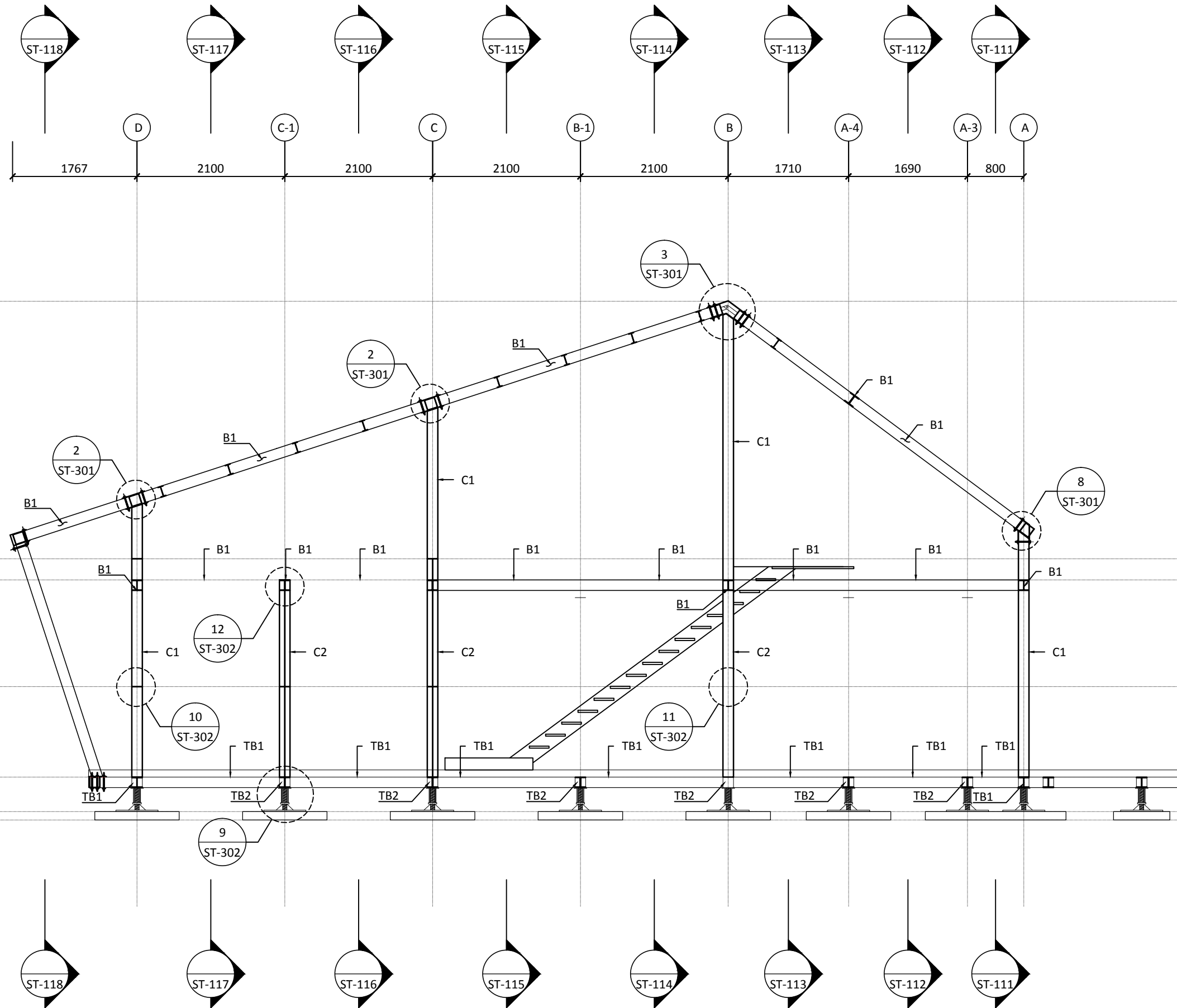
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Scale	1:60
Unit	mm

DWG. Title
**STRUCTURAL
LONGITUDINAL SECTIONS
FRAME 3**

DWG. No.	PAGE
ST-103	142



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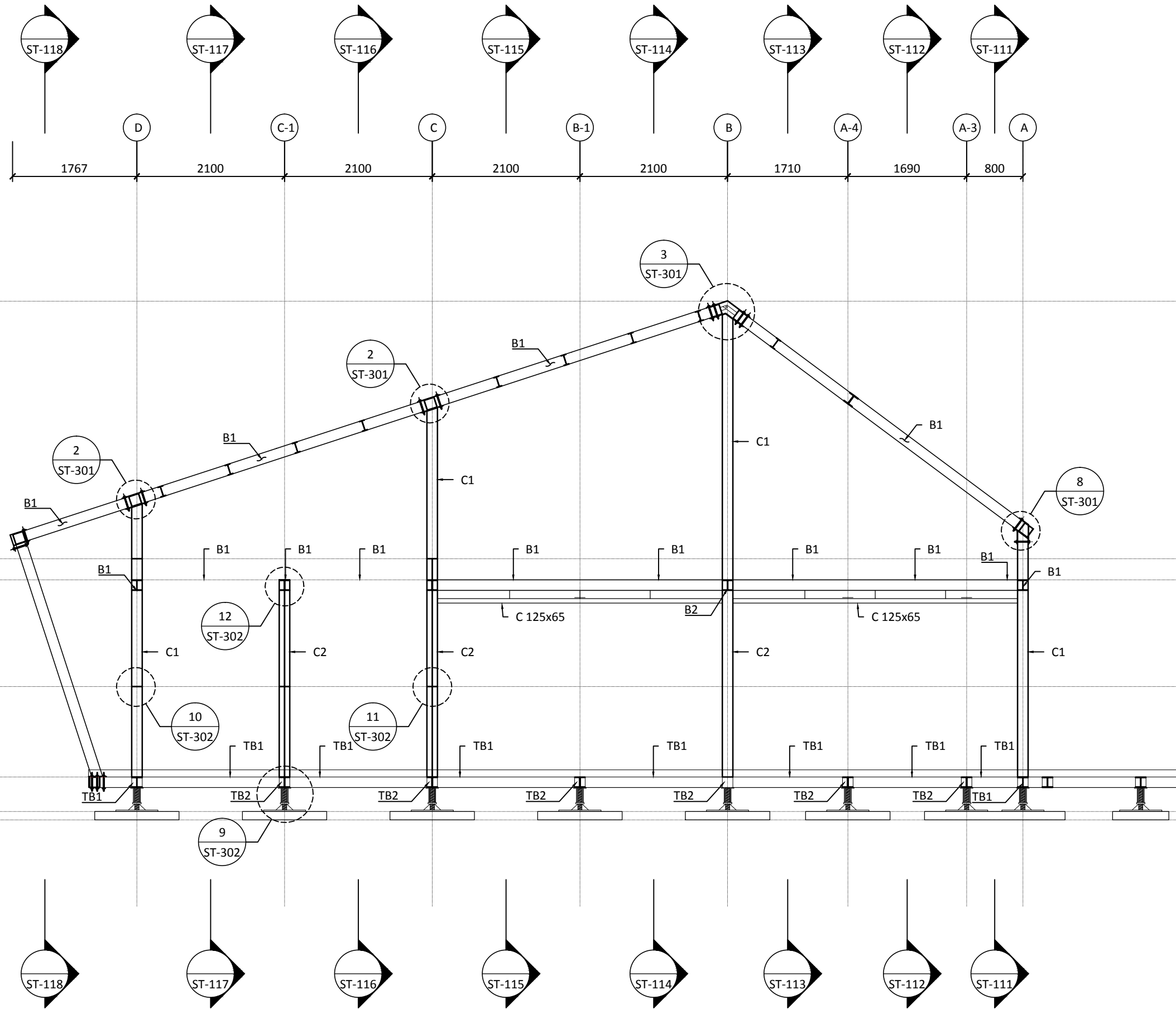
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DWG. Title
**STRUCTURAL
LONGITUDINAL SECTIONS
FRAME 4**

DWG. No.	PAGE
ST-104	143



0 1 2 5 METER

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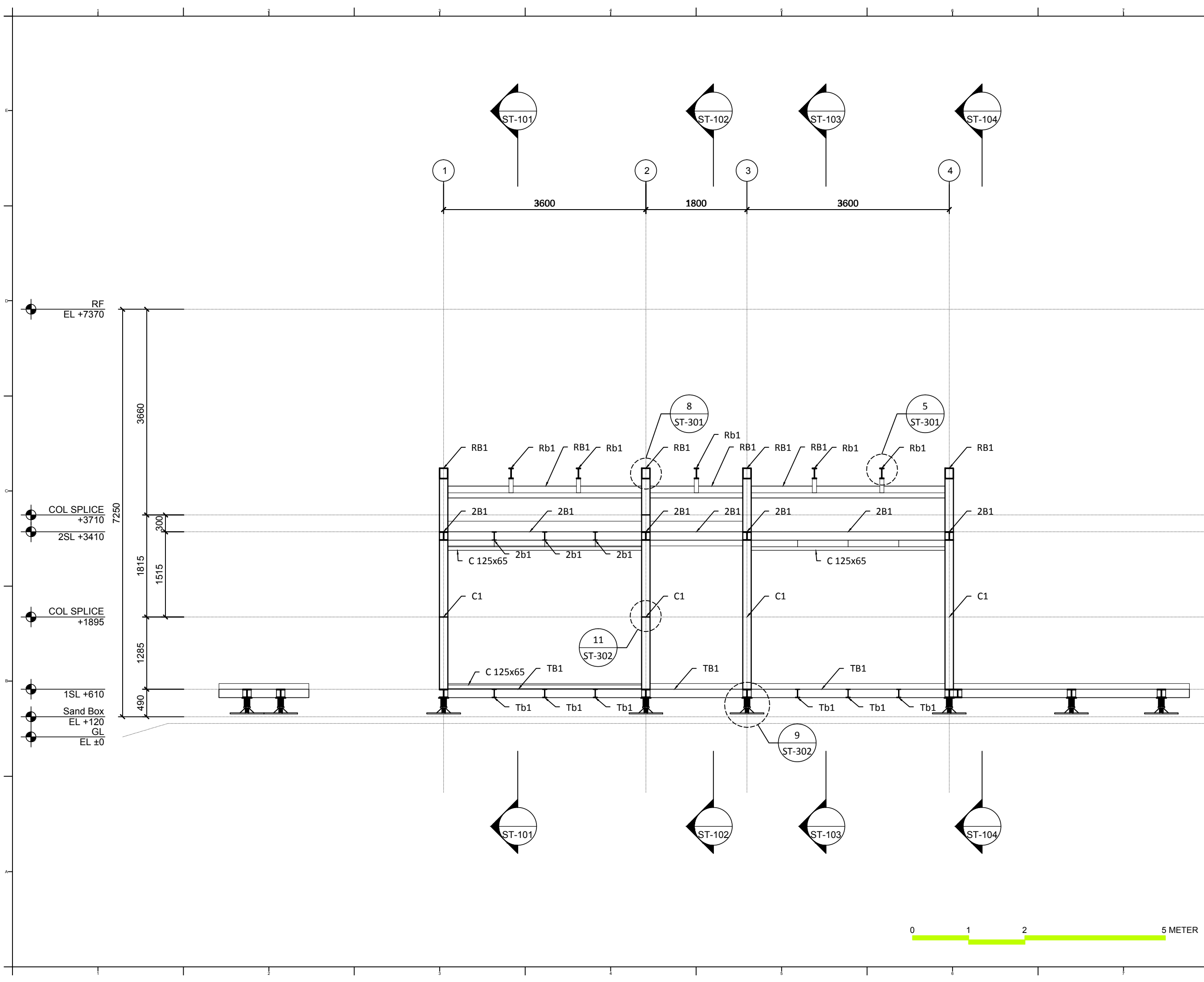
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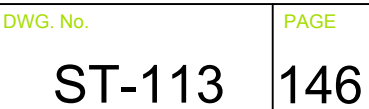
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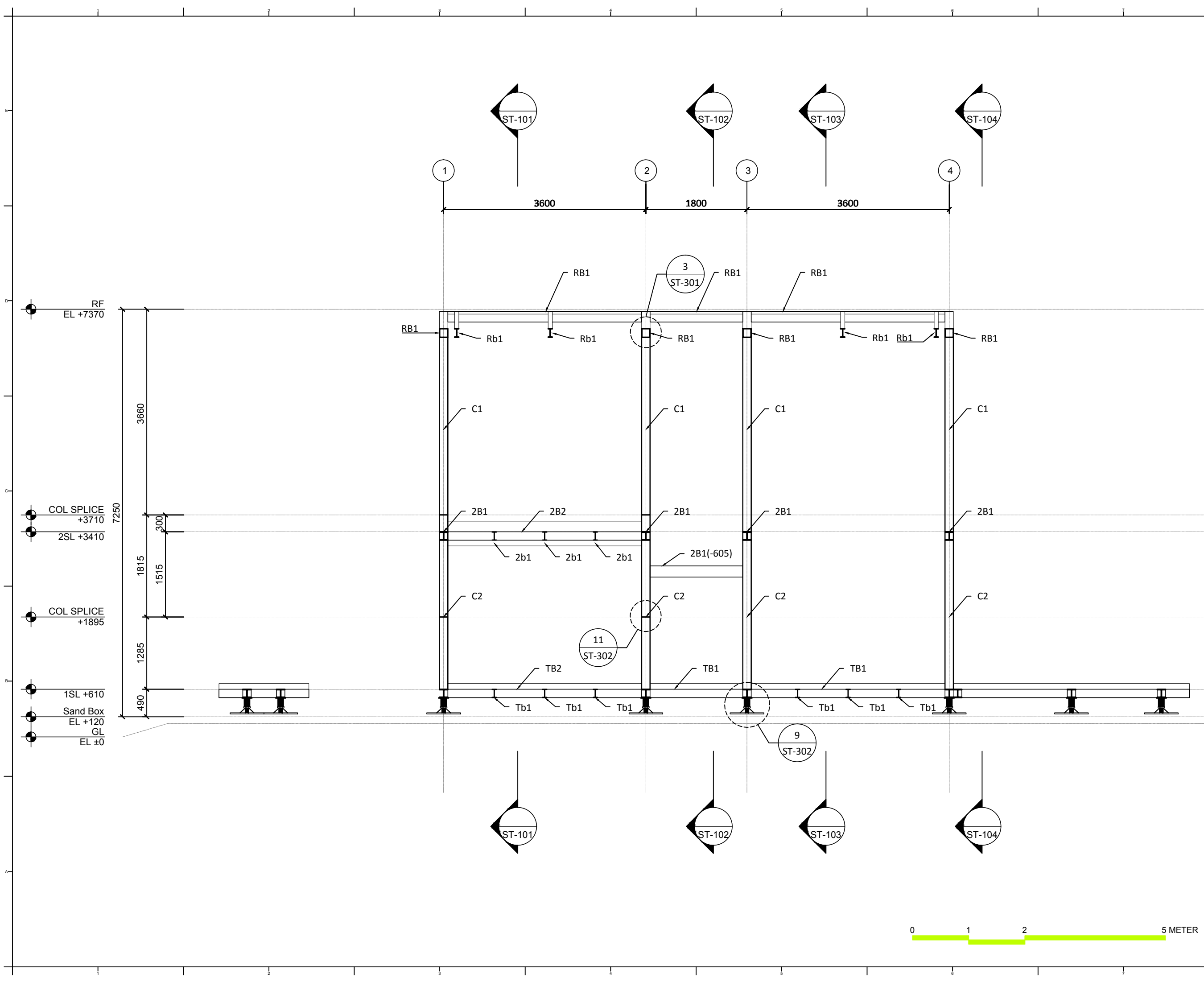
DWG. Title
**STRUCTURAL
TRANSVERSAL SECTIONS
FRAME A**

DWG. No.	PAGE
ST-111	144









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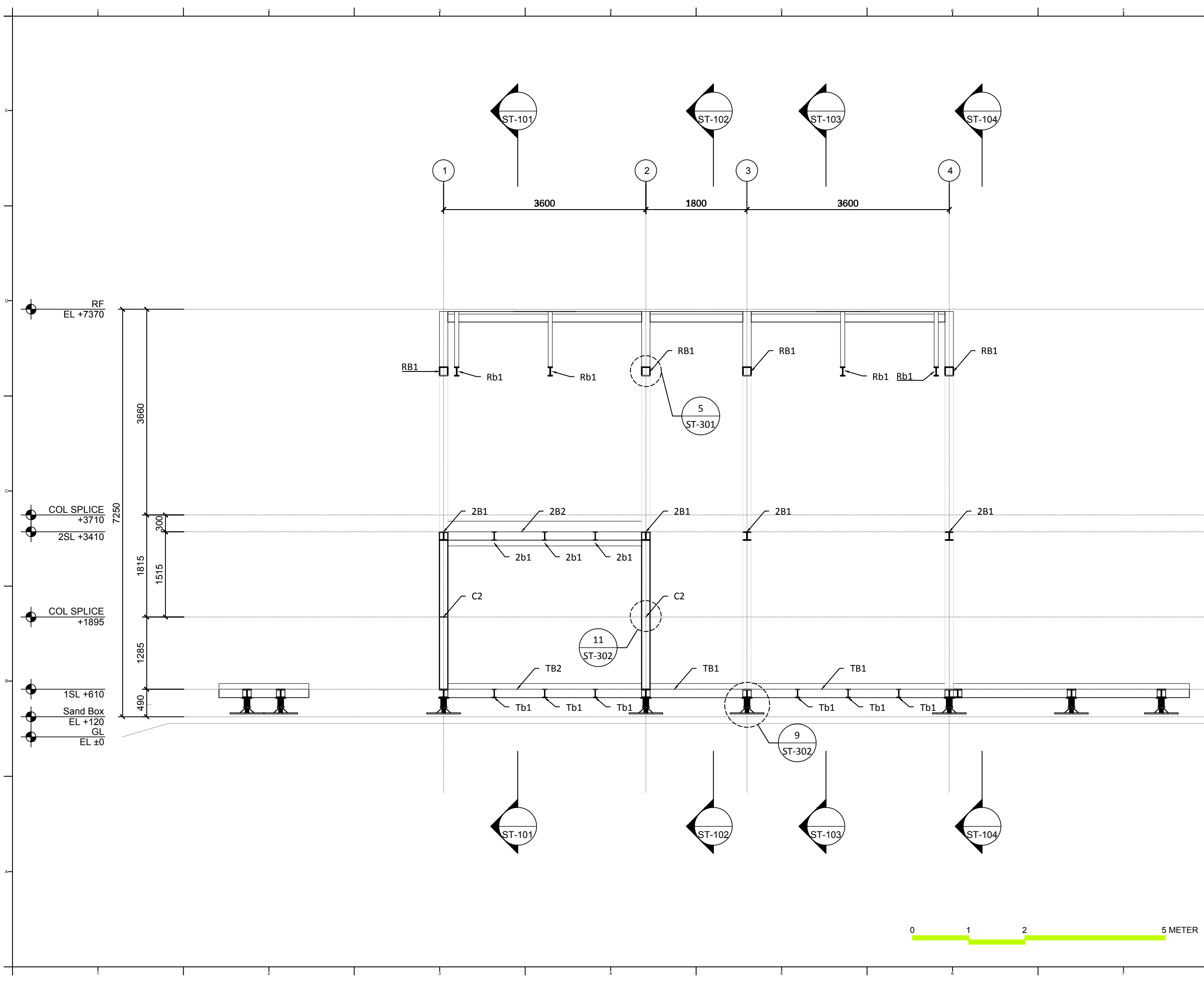
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Scale	1:60
Unit	mm

DWG. Title
**STRUCTURAL
TRANSVERSAL SECTIONS
FRAME B**

DWG. No.	PAGE
ST-114	147



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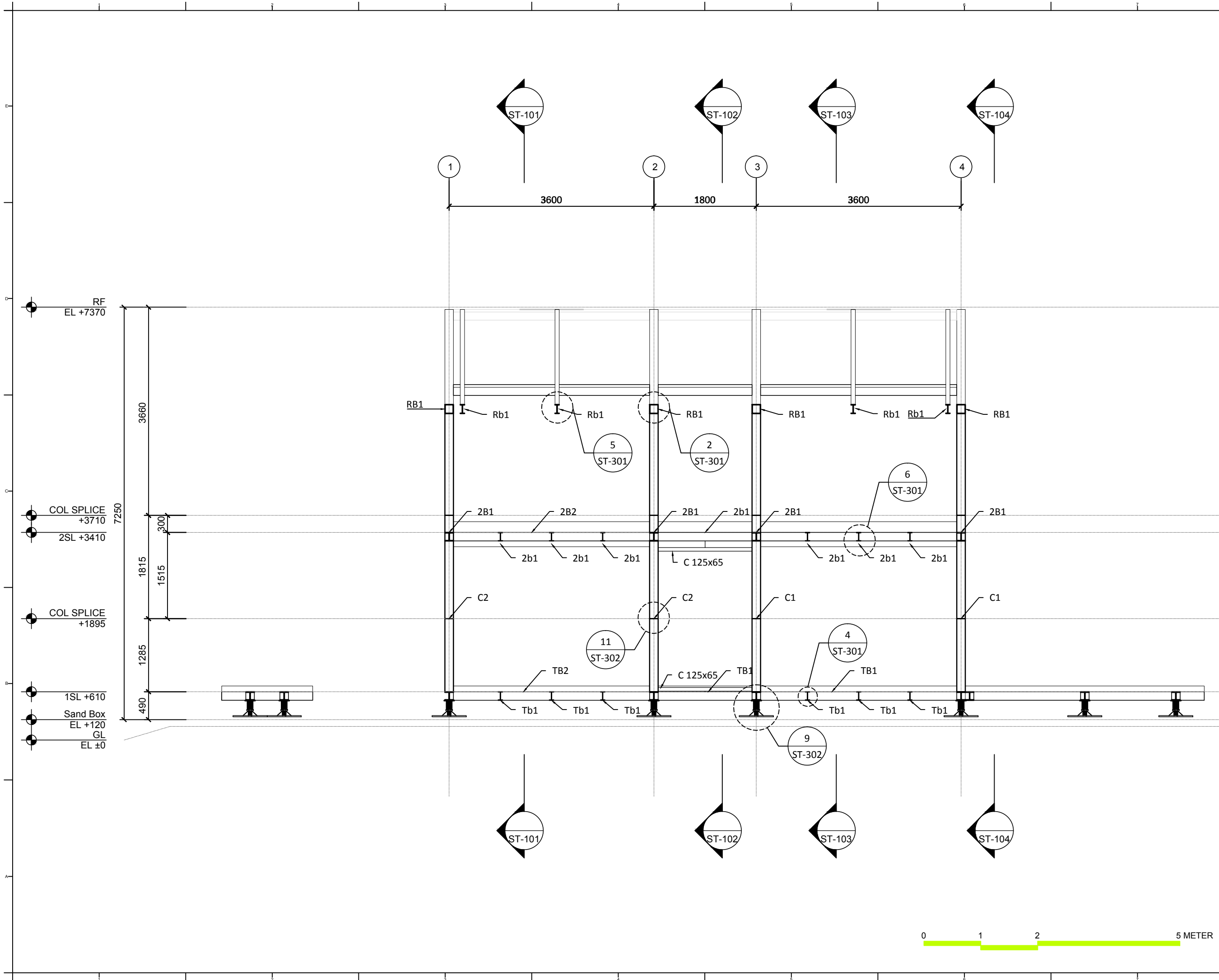
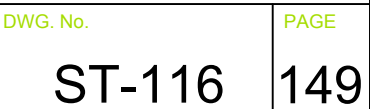
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DWG. Title

STRUCTURAL
TRANSVERSAL SECTIONS
FRAME B-1

DWG. No.	PAGE
ST-115	148





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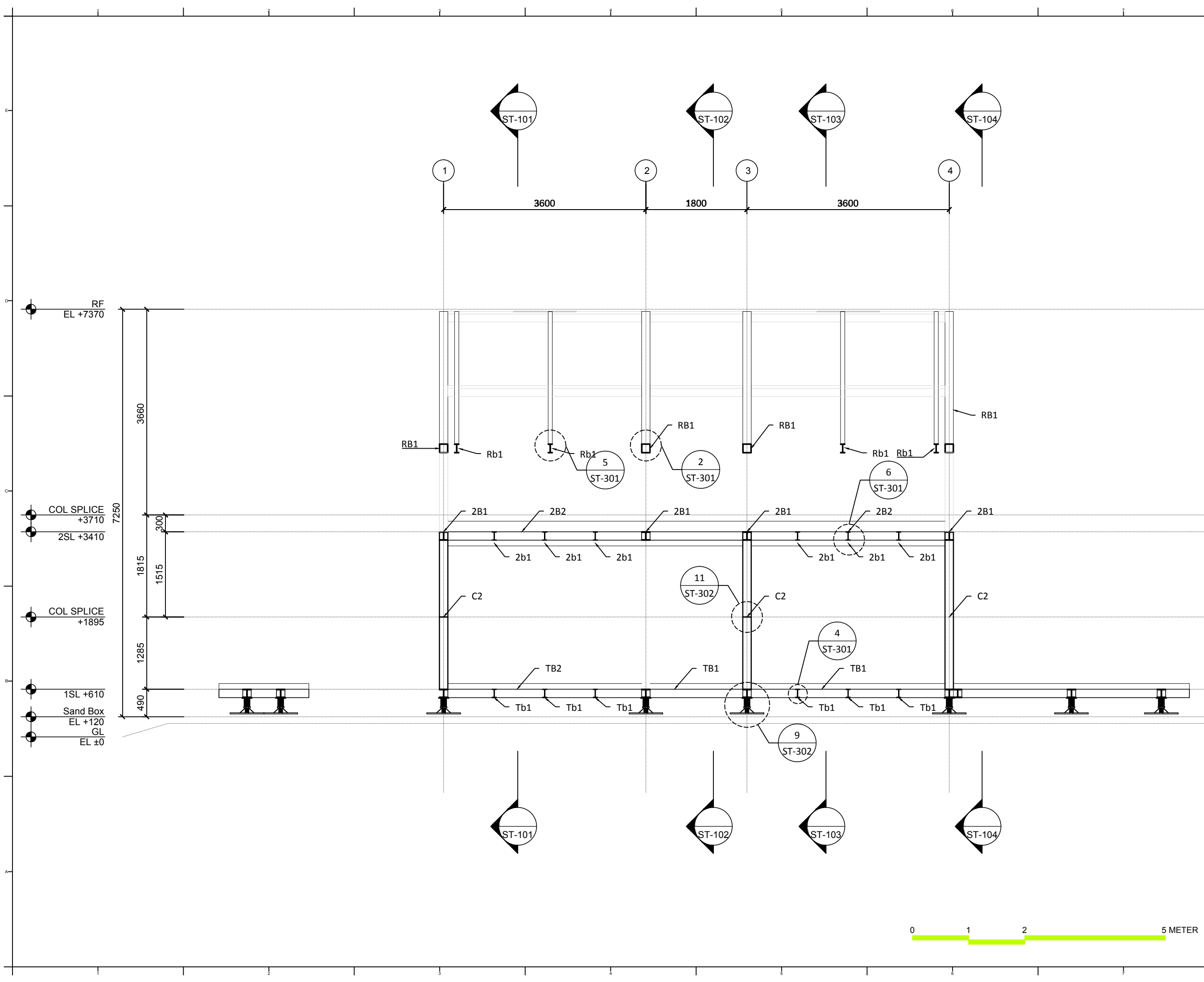
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Scale	1:60
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DWG. Title
**STRUCTURAL
TRANSVERSAL SECTIONS
FRAME C-1**

DWG. No.	PAGE
ST-117	150



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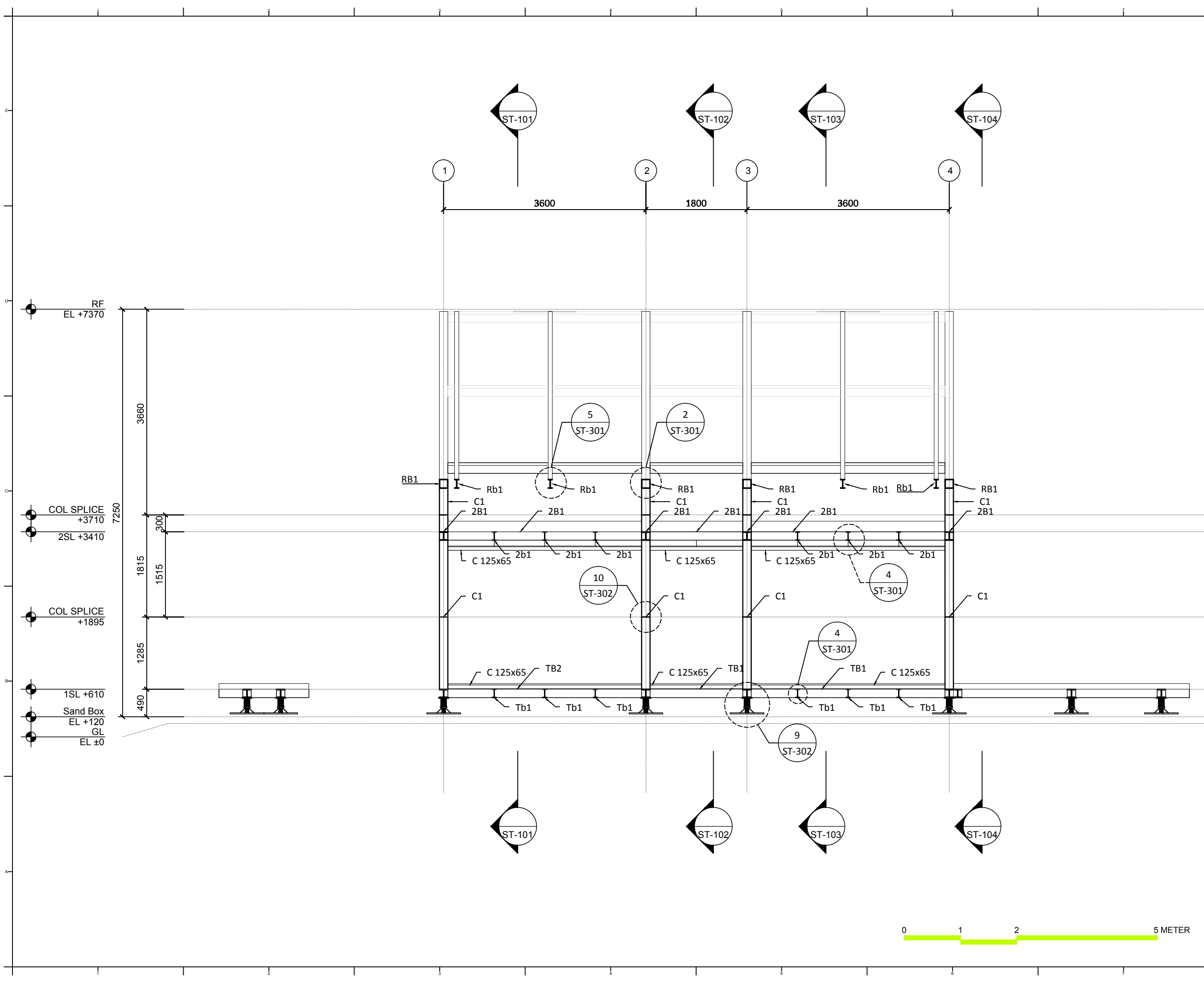
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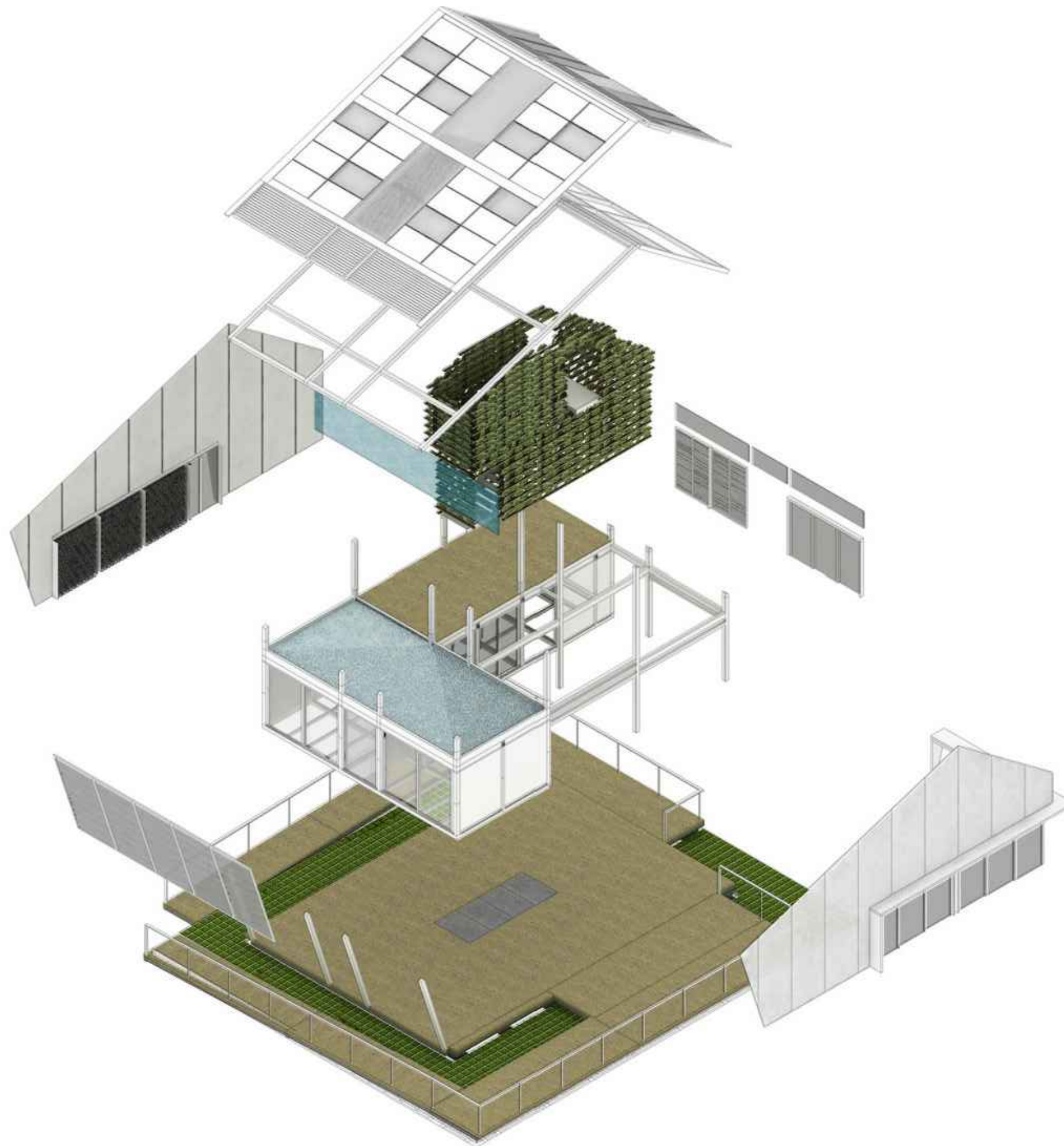
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Scale	1:60
Unit	mm

DWG. Title
**STRUCTURAL
TRANSVERSAL SECTIONS
FRAME D**

DWG. No.	PAGE
ST-118	151





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STRUCTURAL BLOW UPS	
DWG. No.	PAGE
ST-201	152



Note:

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ST	2014/03/03	CD Submission

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DWG. Title

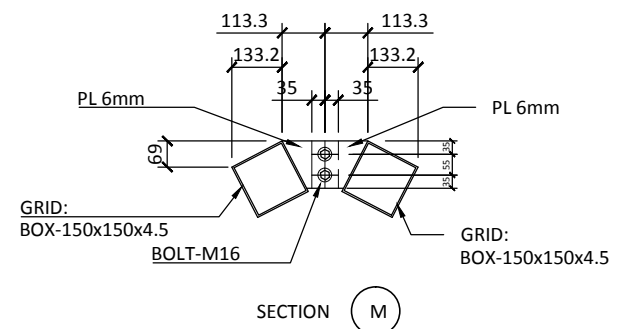
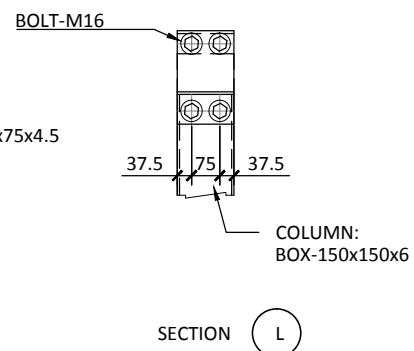
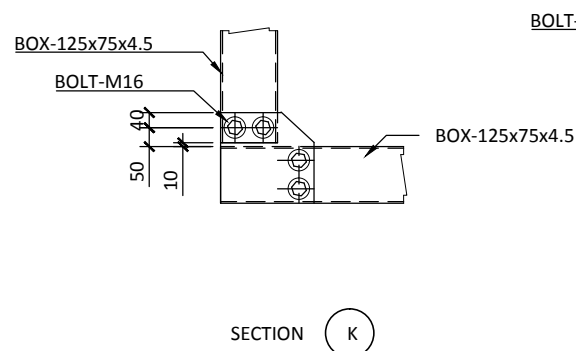
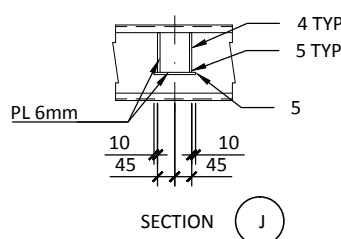
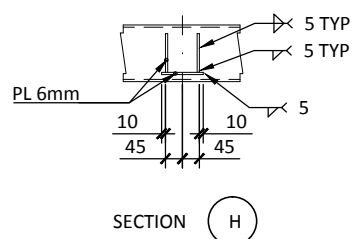
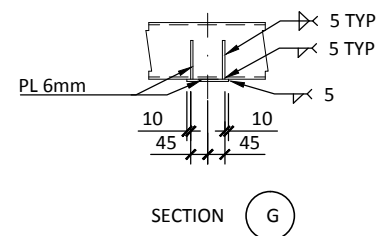
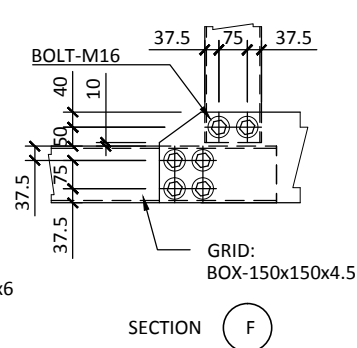
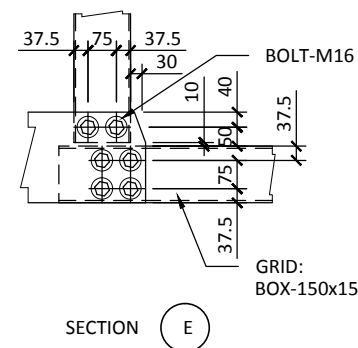
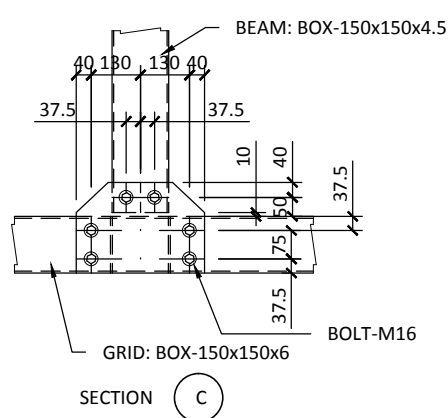
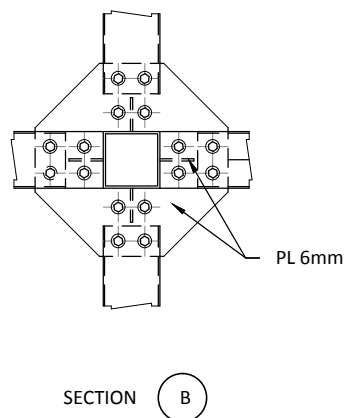
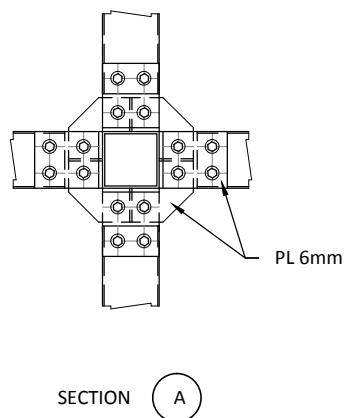
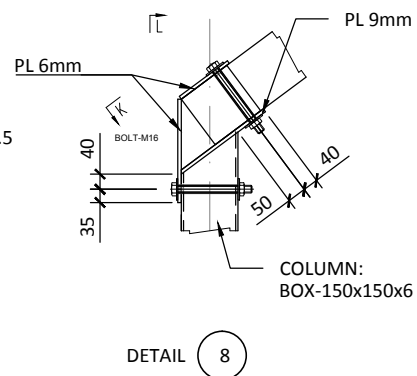
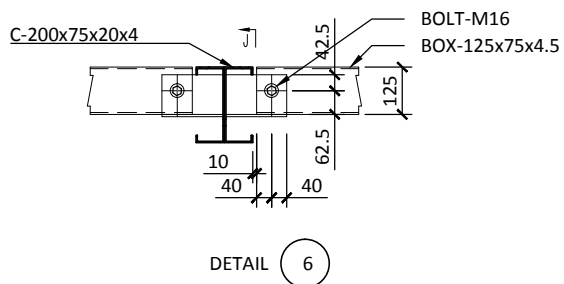
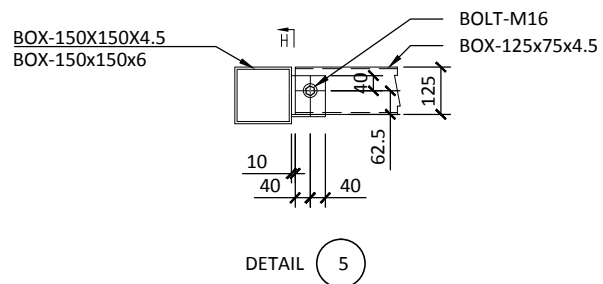
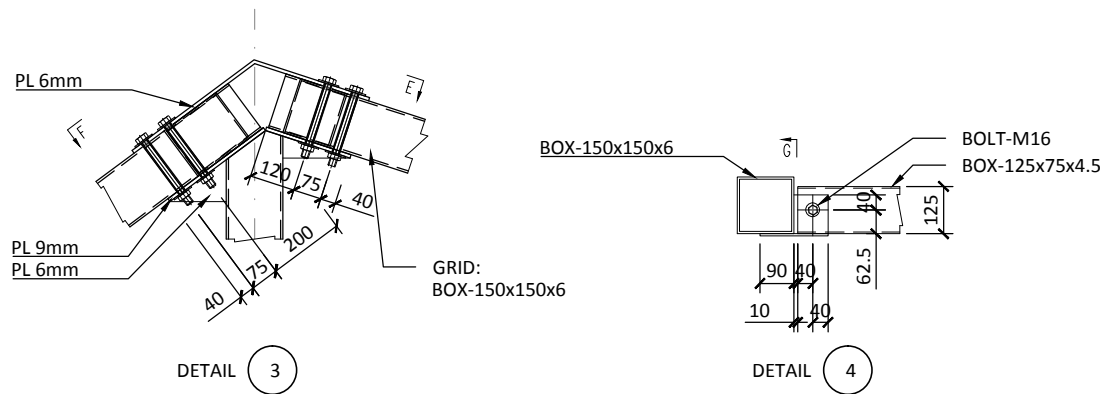
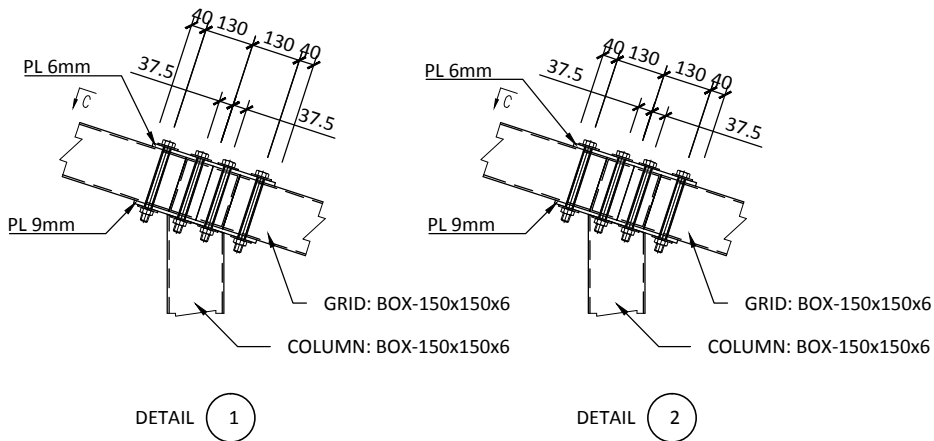
STRUCTURAL DETAILS

DWG. No.

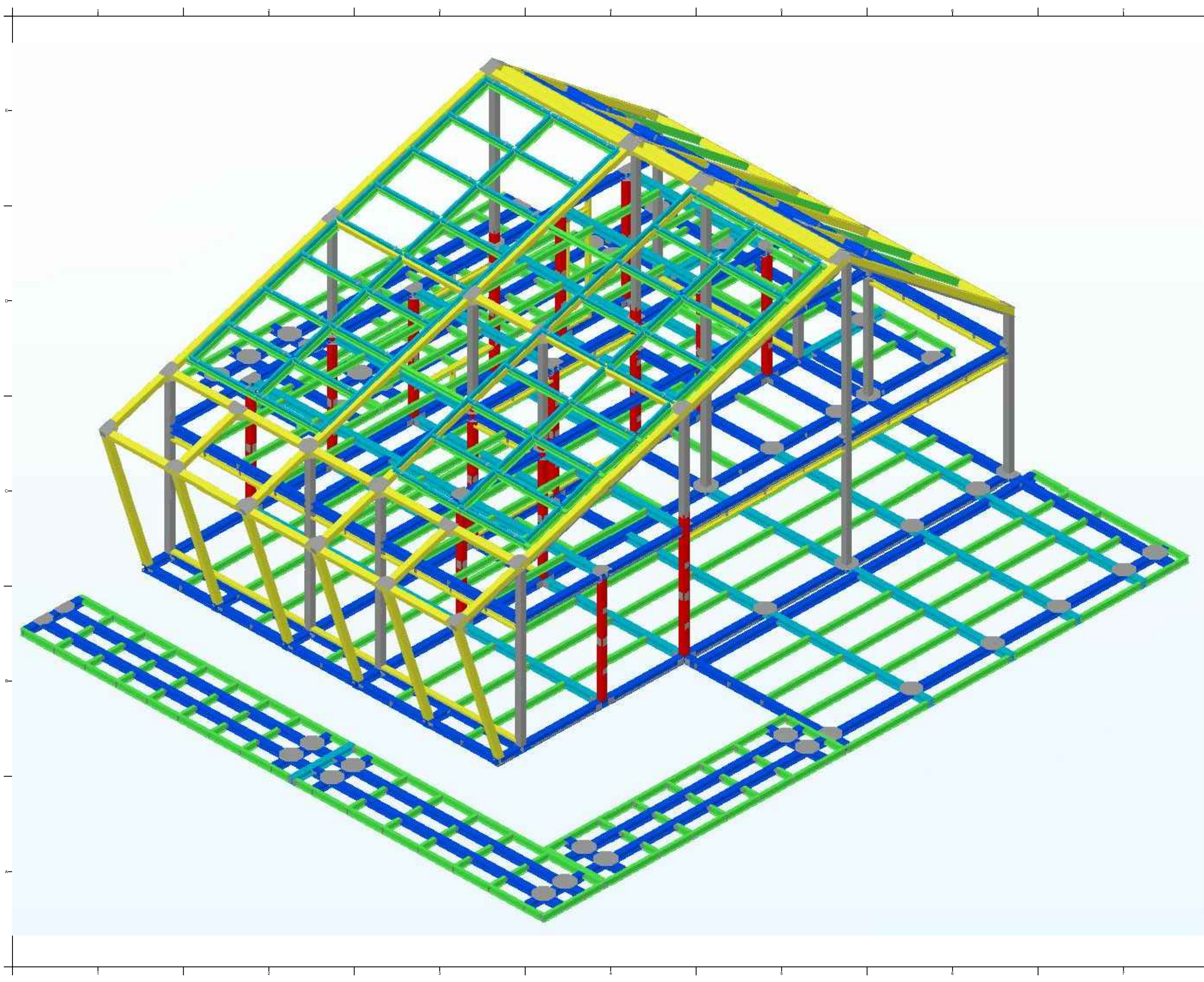
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ST-301

153







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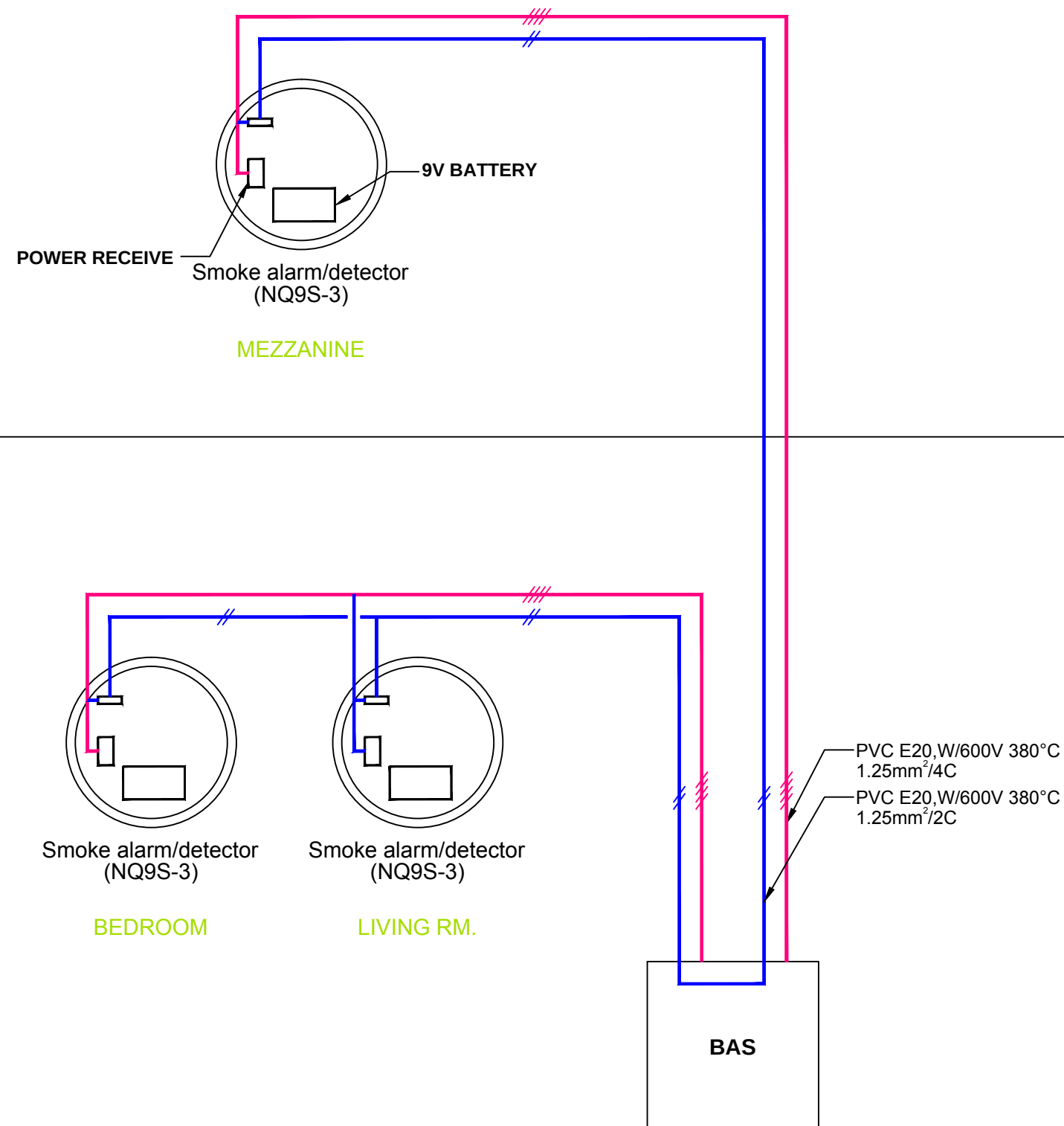


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Unit	N/A

DWG. Title	
STRUCTURAL AXON	
DWG. No.	PAGE
ST-401	155



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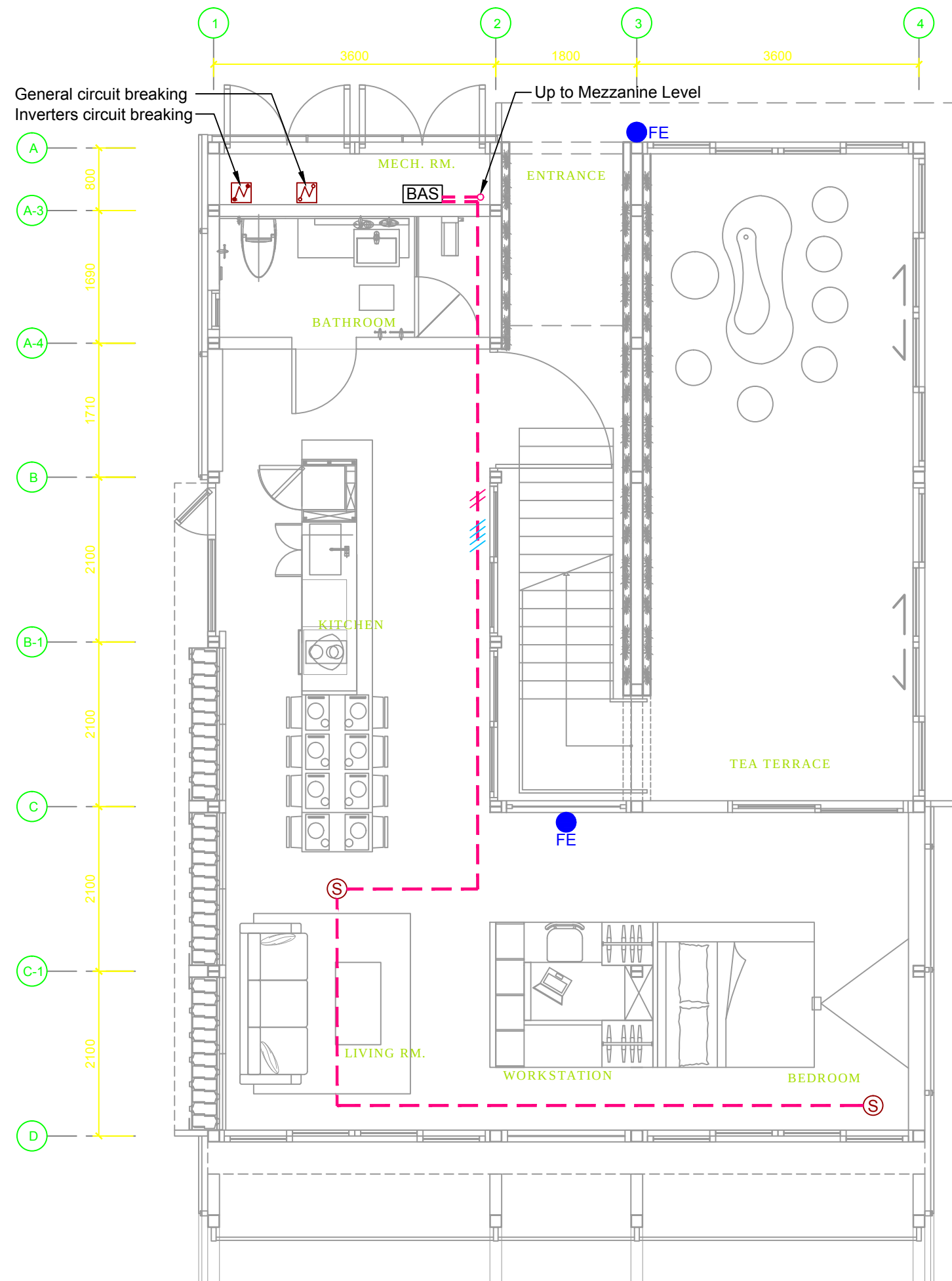
DWG. Title

**FIRE PROTECTION
DETAIL**

DWG. No. PAGE

FP-001

156



--- PVC E20,W/600V 380°C
1.25mm²/4C,1.25mm²/2C

Smoke Alarm/Detector
NQ9S-3 :
-DC 9V Battery
-Alarm Contacts
-Interlock with all detectors
when alarm of any detector
-AC 220V

Fire Extinguisher
ABC-EN3-4K :
21A/113B/C efficiency

Power cut ON/OFF
General circuit
breaking

Power cut ON/OFF
Inverters circuit
breaking



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Scale 1:60

Unit mm

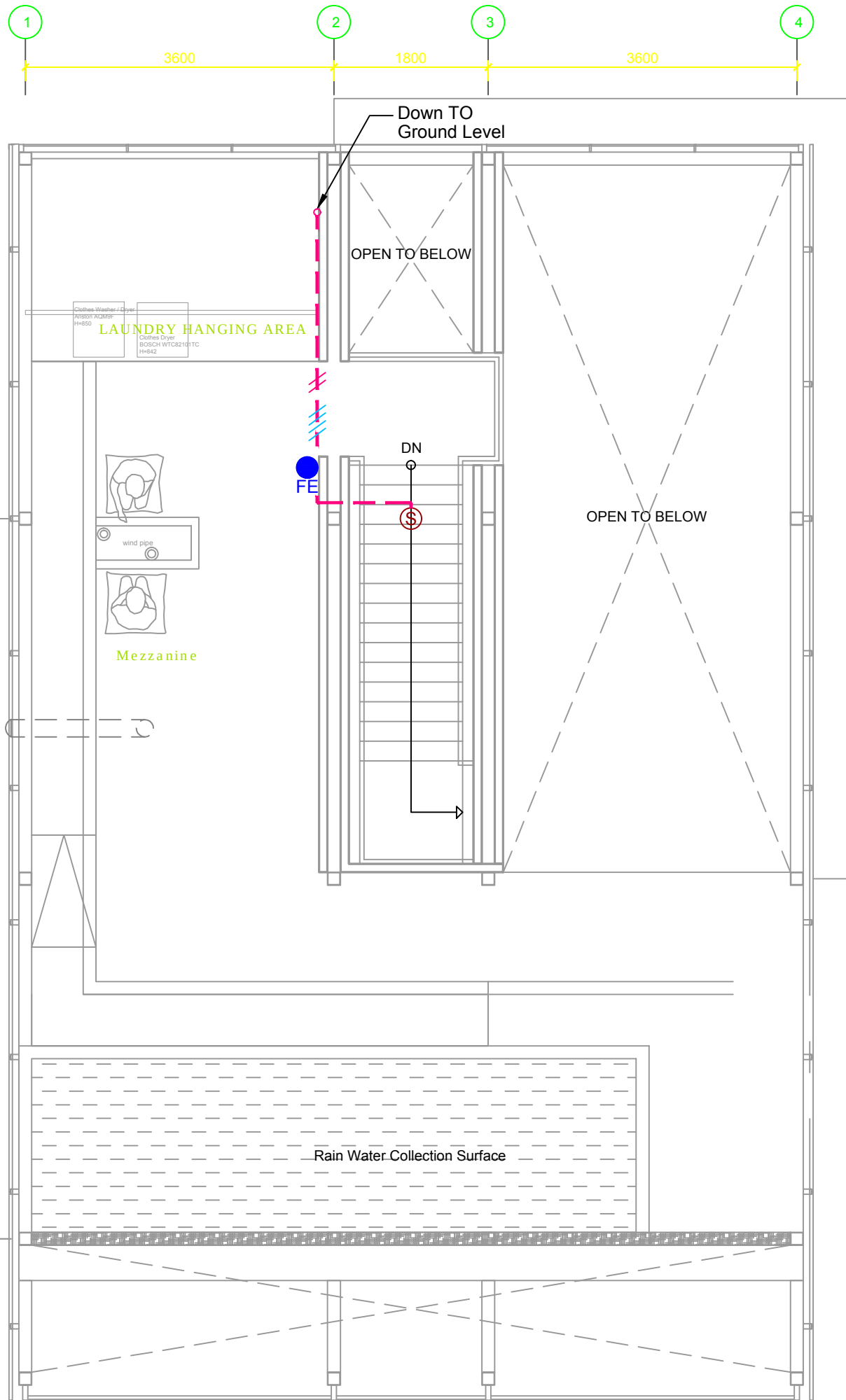
DWG. Title

**FIRE PROTECTION
GROUND LEVEL**

DWG. No. PAGE

FP-002

157



-  PVC E20, W/600V 380°C 1.25mm²/4C, 1.25mm²/2C
-  **Smoke Alarm/Detector**
NQ9S-3 :
-DC 9V Battery
-Alarm Contacts
-Interlock with all detectors when alarm of any detector
-AC 220V
-  **Fire Extinguisher**
ABC-EN3-4K :
21A/113B/C efficiency



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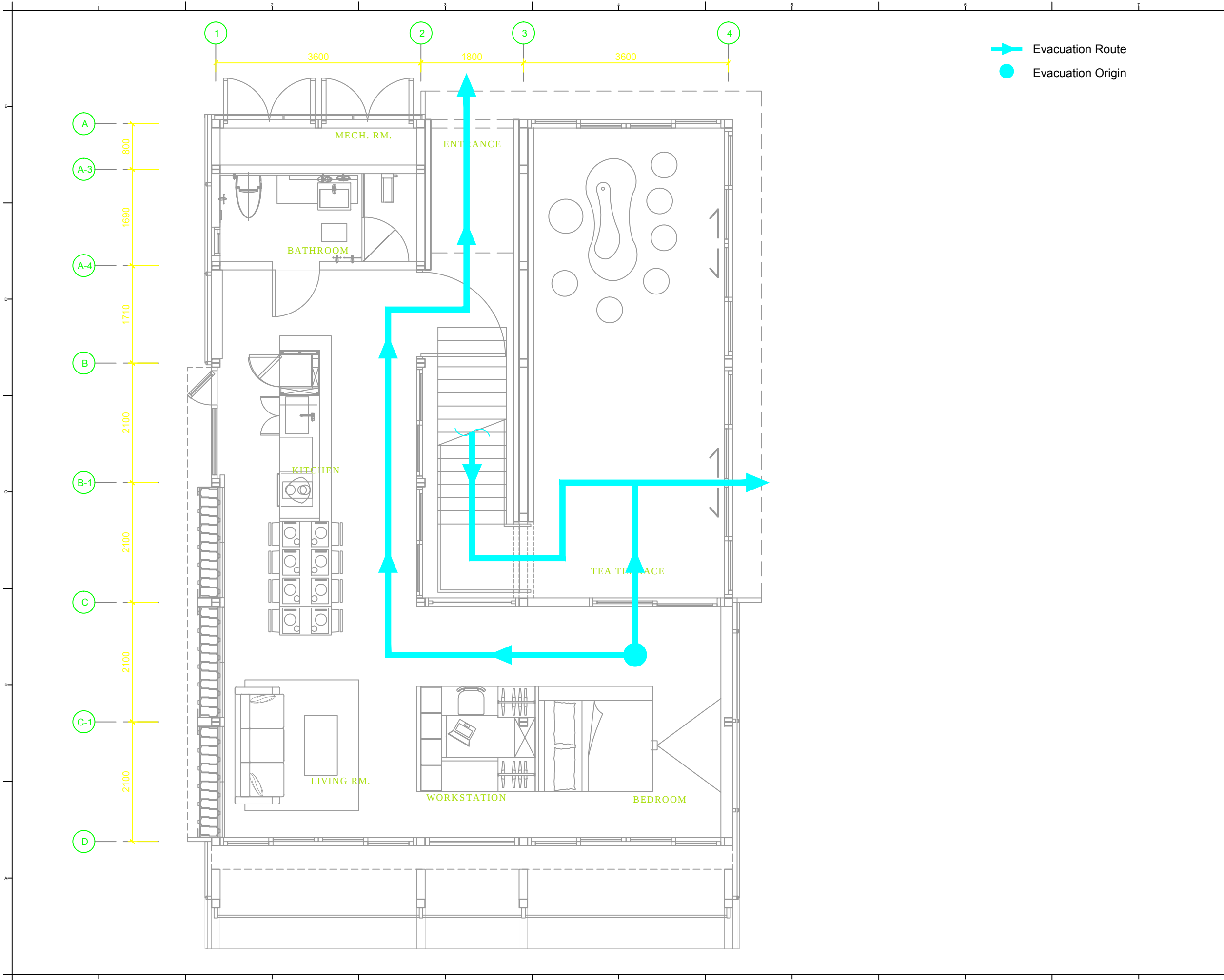


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Drawn by	HU
Checked by	CHESTER
Scale	1:60
Unit	mm

DWG. Title	
FIRE PROTECTION MEZZANINE LEVEL	
DWG. No.	PAGE
FP-003	158



Evacuation Route
Evacuation Origin



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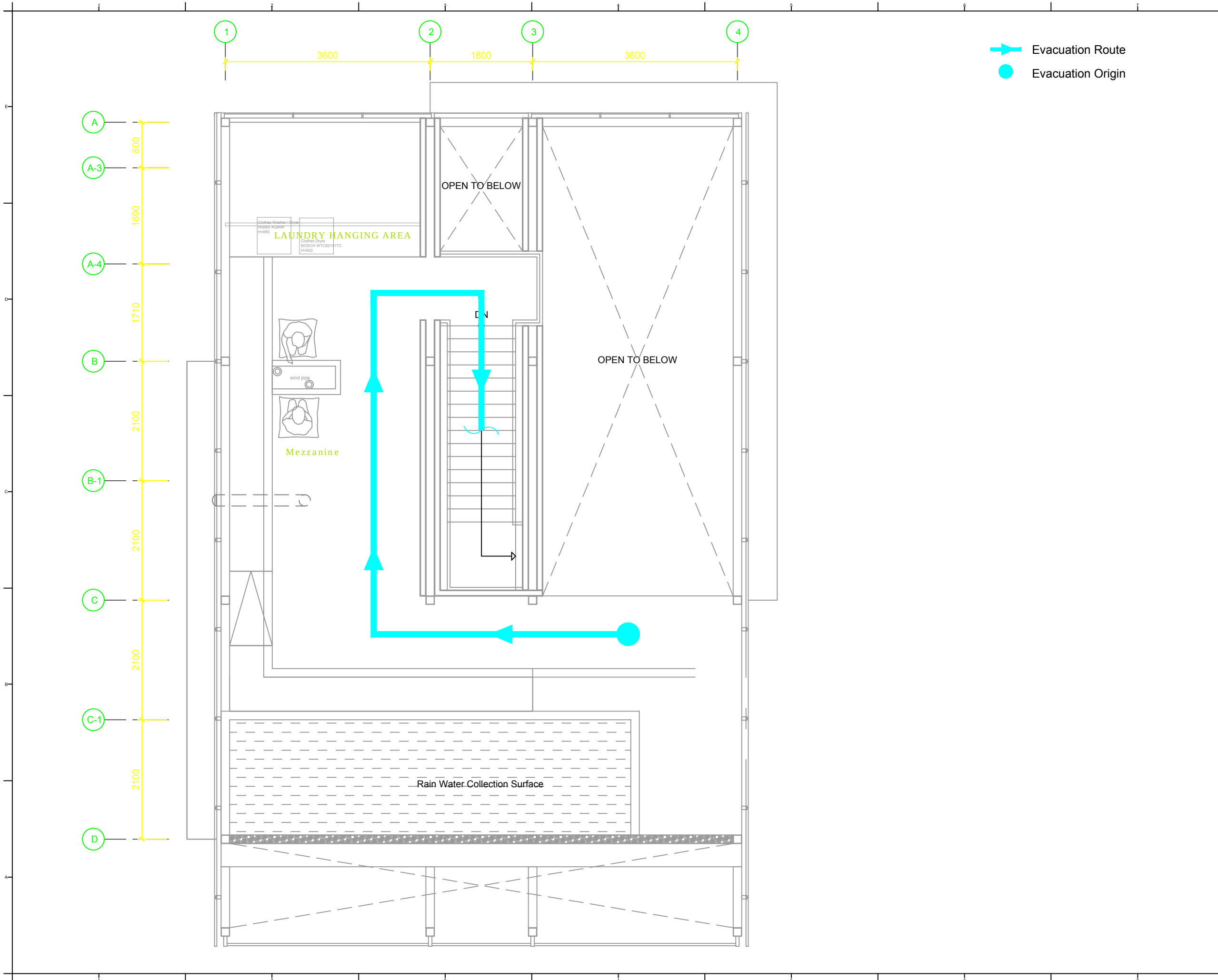


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Unit	mm

DWG. Title FIRE PROTECTION EVACUATION PATH GROUND LEVEL	
DWG. No. FP-004	PAGE 159





**Solar
Decathlon
Europe**

Project:



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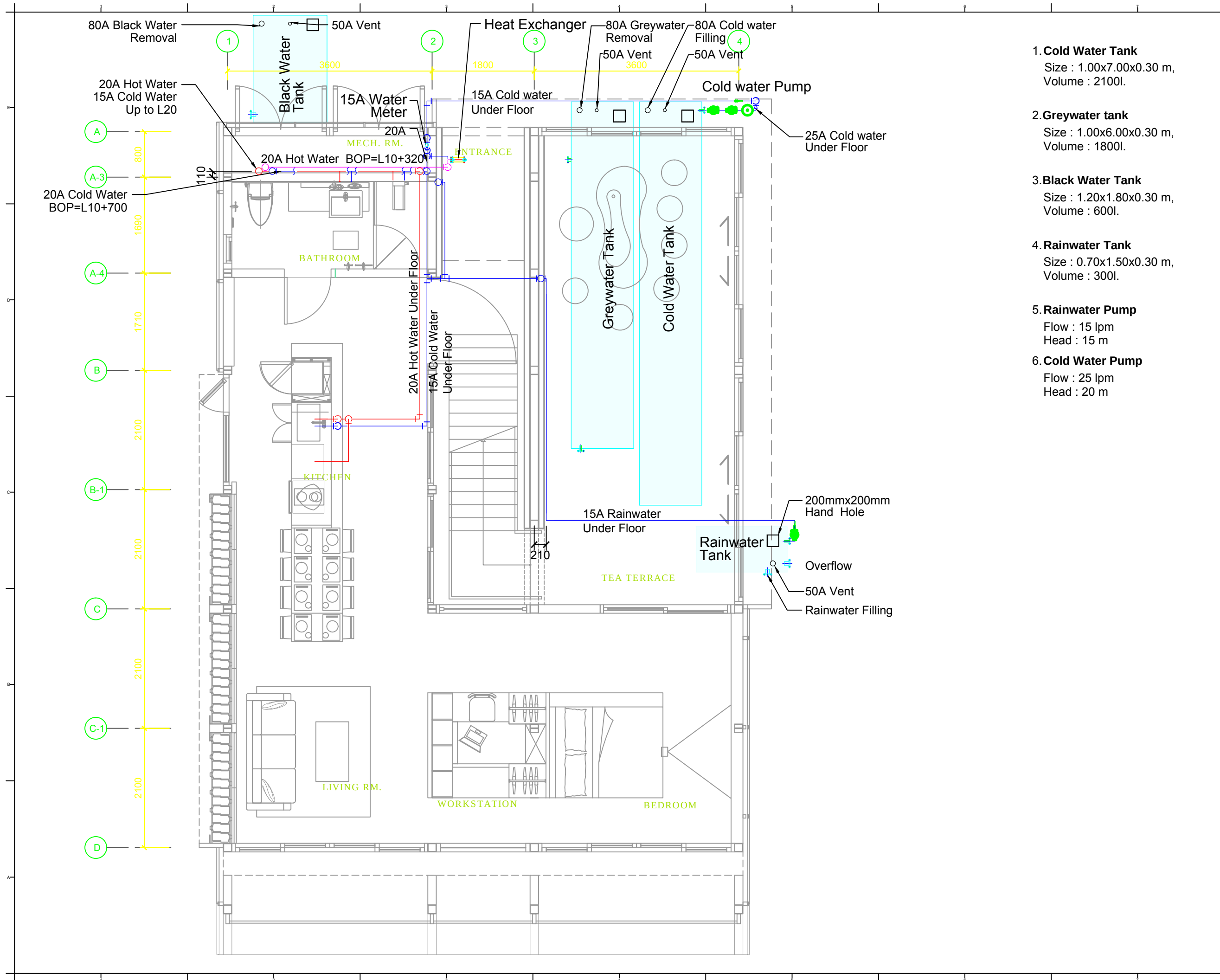
Unit mm

DWG. Title

**FIRE PROTECTION
EVACUATION PATH
MEZZANINE LEVEL**

DWG. No. **FP-005**

PAGE **160**



- 1. Cold Water Tank
Size : 1.00x7.00x0.30 m,
Volume : 2100l.
- 2. Greywater tank
Size : 1.00x6.00x0.30 m,
Volume : 1800l.
- 3. Black Water Tank
Size : 1.20x1.80x0.30 m,
Volume : 600l.
- 4. Rainwater Tank
Size : 0.70x1.50x0.30 m,
Volume : 300l.
- 5. Rainwater Pump
Flow : 15 lpm
Head : 15 m
- 6. Cold Water Pump
Flow : 25 lpm
Head : 20 m



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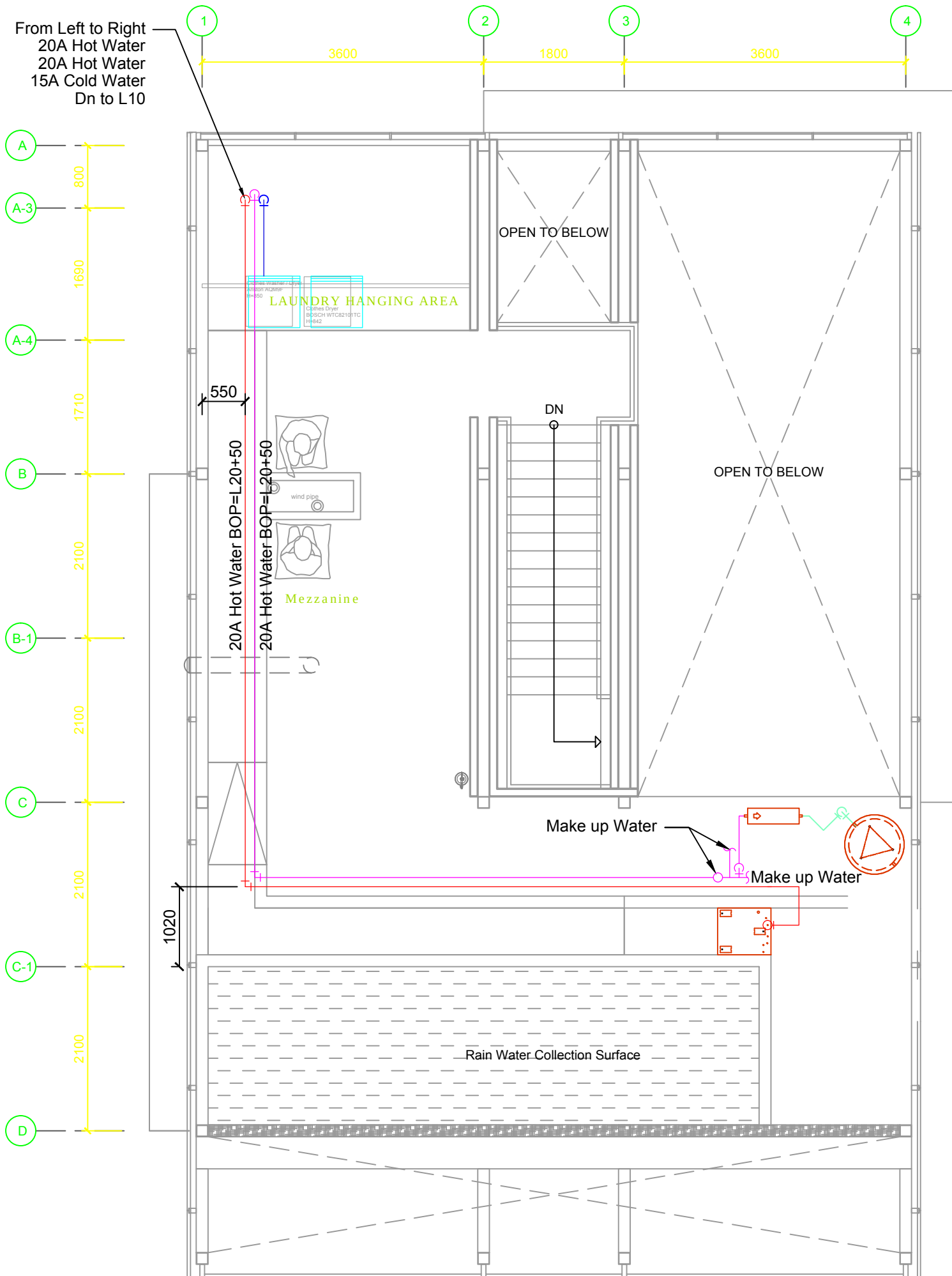
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Unit mm

DWG. Title
**PLUMBING SUPPLY AND
REMOVAL
GROUND LEVEL PLAN**

DWG. No. **PL-001**

PAGE **161**



- 1. Cold Water Tank**
Size : 1.00x7.00x0.30 m,
Volume : 2100l.
- 2. Greywater tank**
Size : 1.00x6.00x0.30 m,
Volume : 1800l.
- 3. Black Water Tank**
Size : 1.20x1.80x0.30 m,
Volume : 600l.
- 4. Rainwater Tank**
Size : 0.70x1.50x0.30 m,
Volume : 300l.
- 5. Rainwater Pump**
Flow : 15 lpm
Head : 15 m
- 6. Cold Water Pump**
Flow : 25 lpm
Head : 20 m



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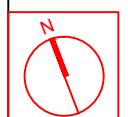
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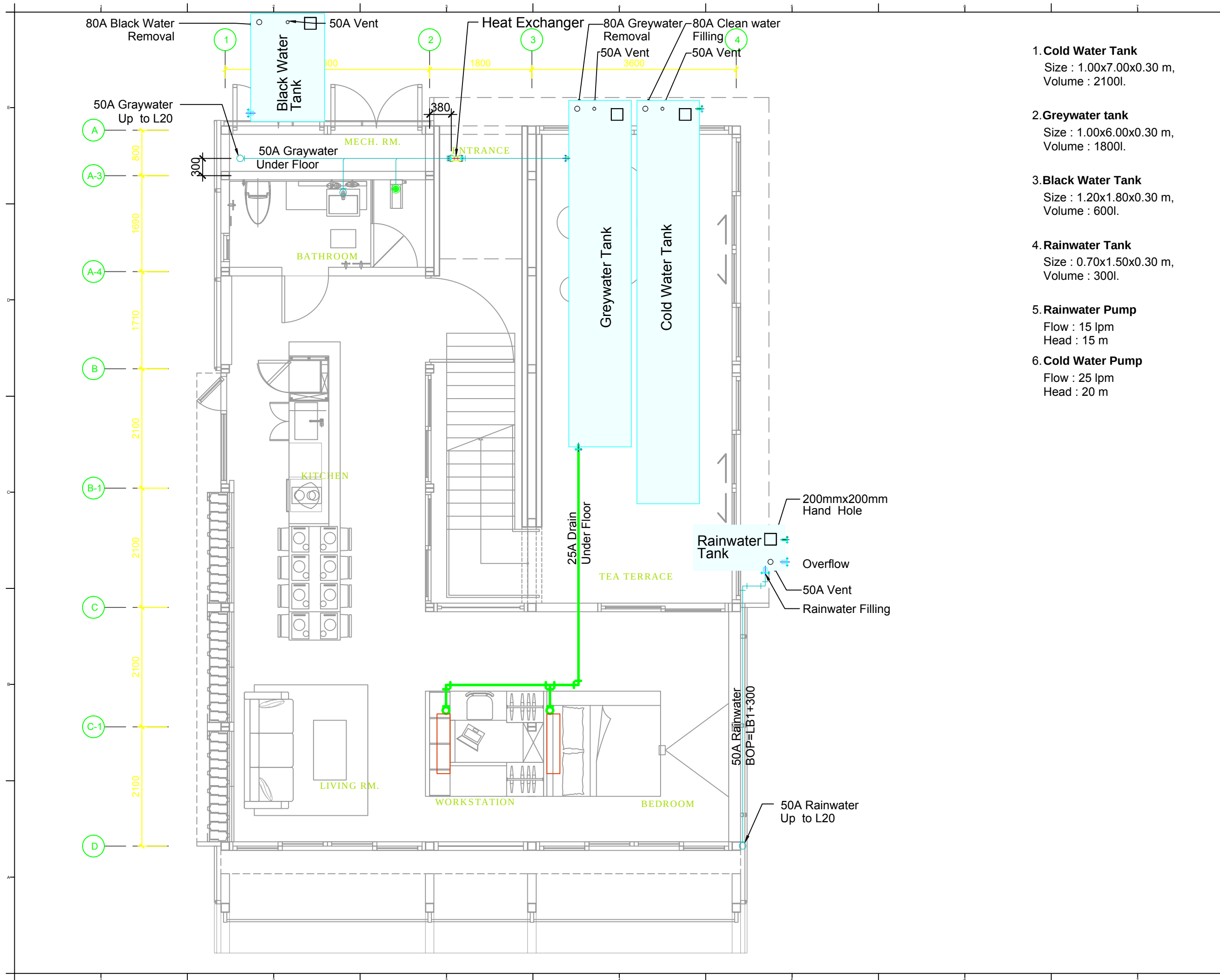
Unit mm

DWG. Title
**PLUMBING SUPPLY AND
REMOVAL
MEZZANINE LEVEL PLAN**

DWG. No. PAGE

PL-002

162



1. Cold Water Tank
Size : 1.00x7.00x0.30 m,
Volume : 2100l.
2. Greywater tank
Size : 1.00x6.00x0.30 m,
Volume : 1800l.
3. Black Water Tank
Size : 1.20x1.80x0.30 m,
Volume : 600l.
4. Rainwater Tank
Size : 0.70x1.50x0.30 m,
Volume : 300l.
5. Rainwater Pump
Flow : 15 lpm
Head : 15 m
6. Cold Water Pump
Flow : 25 lpm
Head : 20 m



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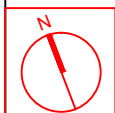
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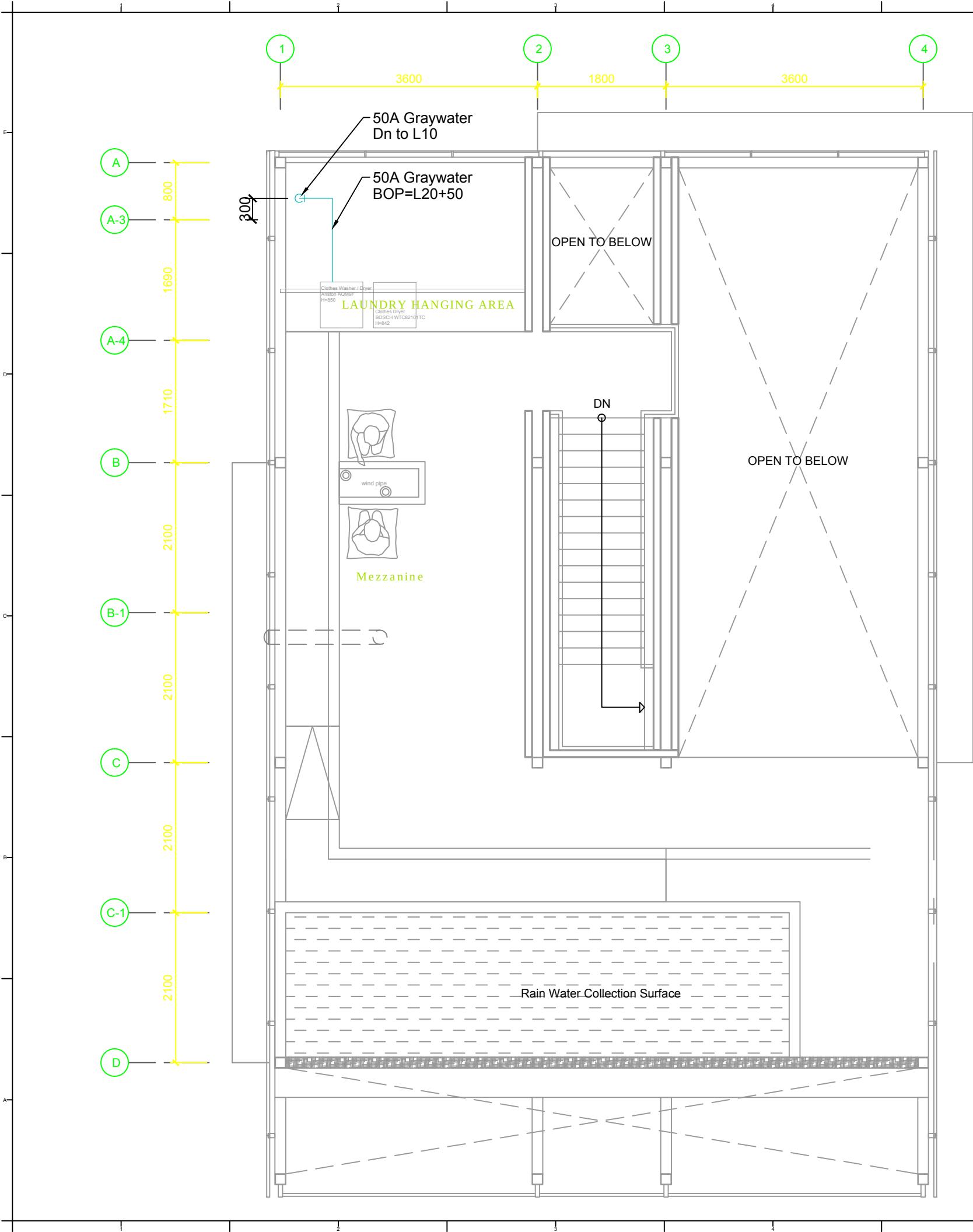
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Unit	mm

DWG. Title GRAY WATER GROUND LEVEL	
DWG. No. PL-011	PAGE 163



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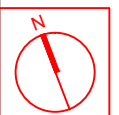
Contact: www.sde.tw



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ST	2014/03/03	CD Submission

Drawn by MH

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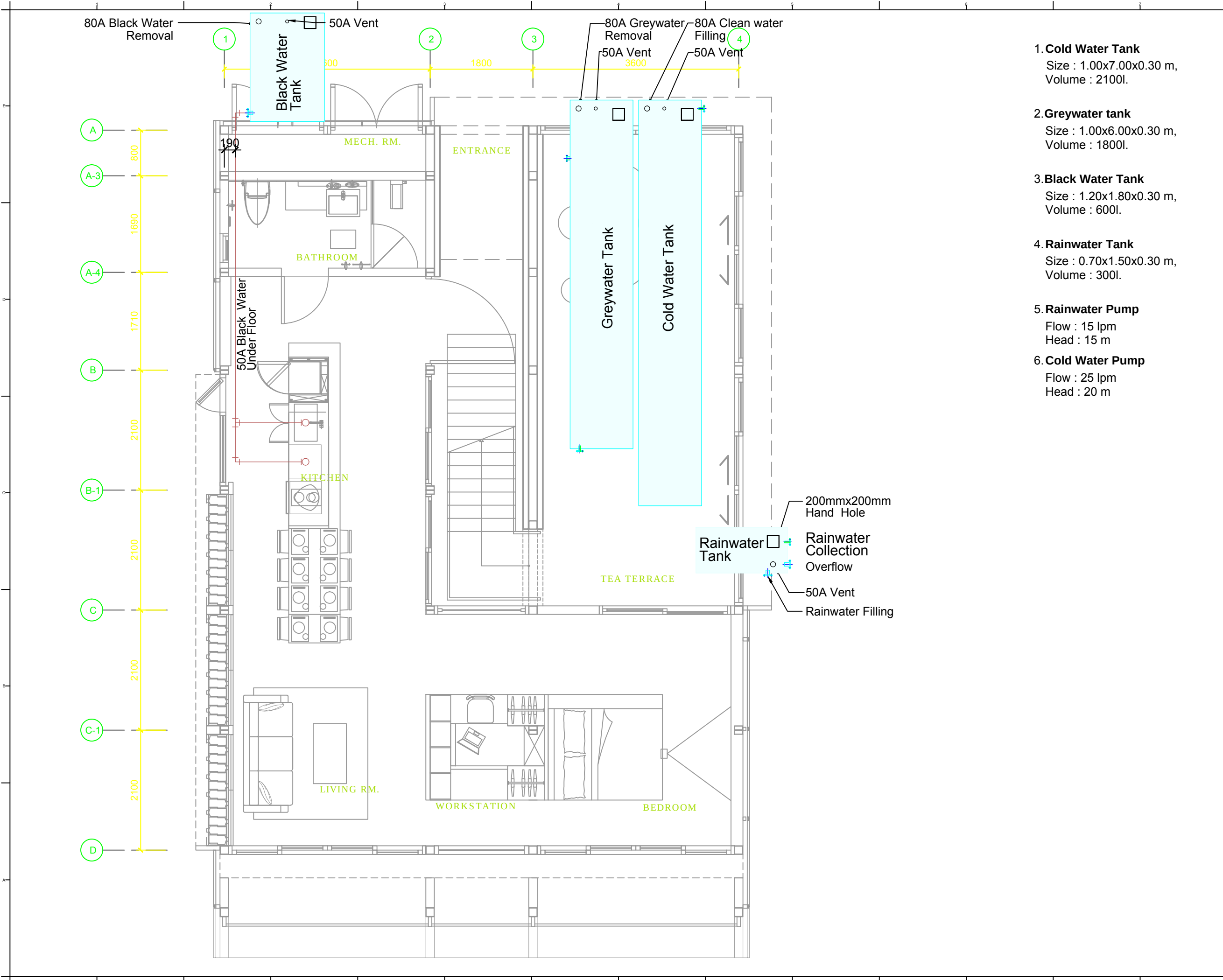
Unit mm

DWG. Title
**GRAY WATER
MEZZANINE LEVEL**

DWG. No. PAGE

PL-012

164



- 1. Cold Water Tank
Size : 1.00x7.00x0.30 m,
Volume : 2100l.
- 2. Greywater tank
Size : 1.00x6.00x0.30 m,
Volume : 1800l.
- 3. Black Water Tank
Size : 1.20x1.80x0.30 m,
Volume : 600l.
- 4. Rainwater Tank
Size : 0.70x1.50x0.30 m,
Volume : 300l.
- 5. Rainwater Pump
Flow : 15 lpm
Head : 15 m
- 6. Cold Water Pump
Flow : 25 lpm
Head : 20 m

Project:

Institution:

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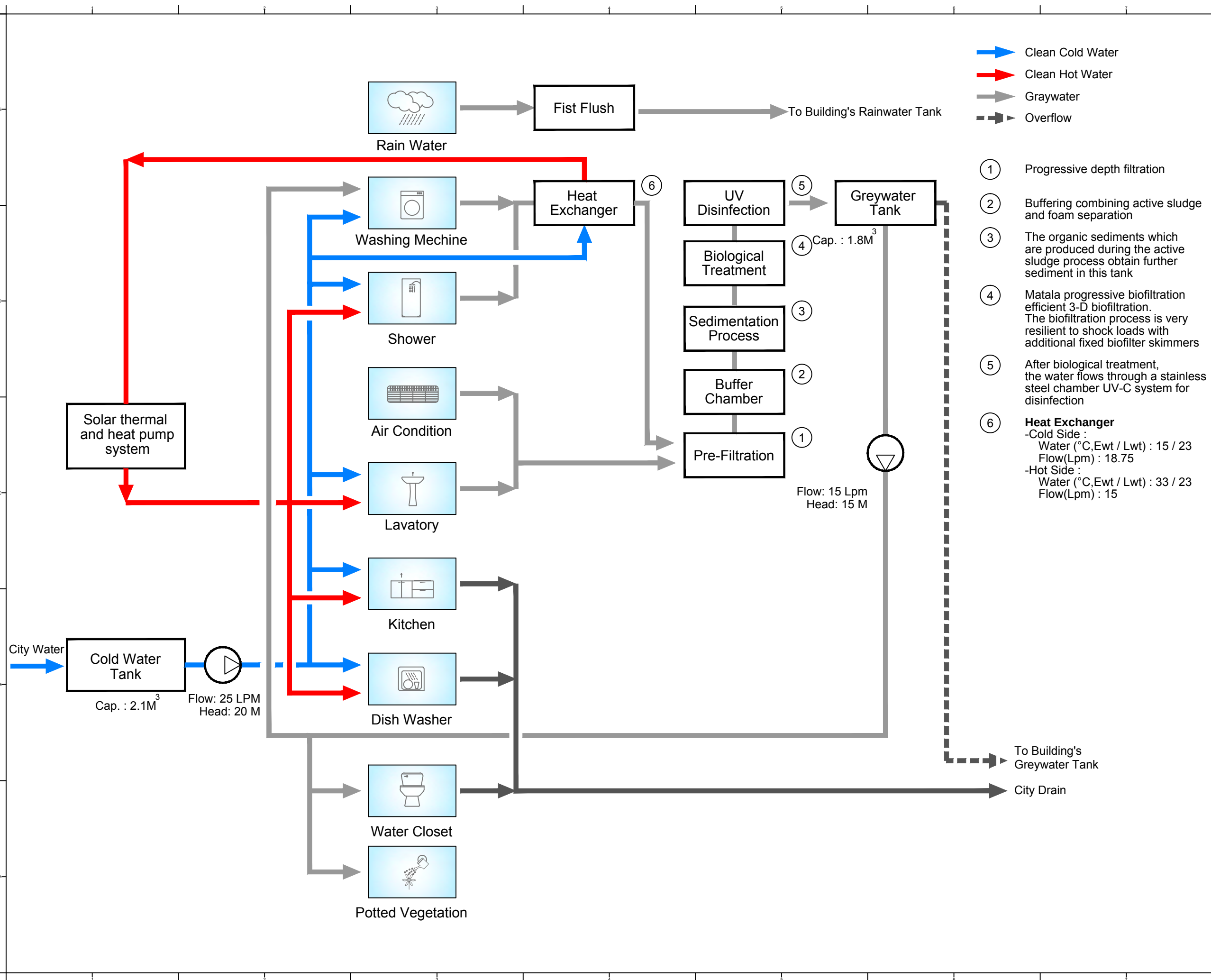
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ST	2014/03/03	CD Submission

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Scale	1:60
Unit	mm

DWG. Title	
DRAIN / WASTE / VENT	
DWG. No.	PAGE
PL-021	165



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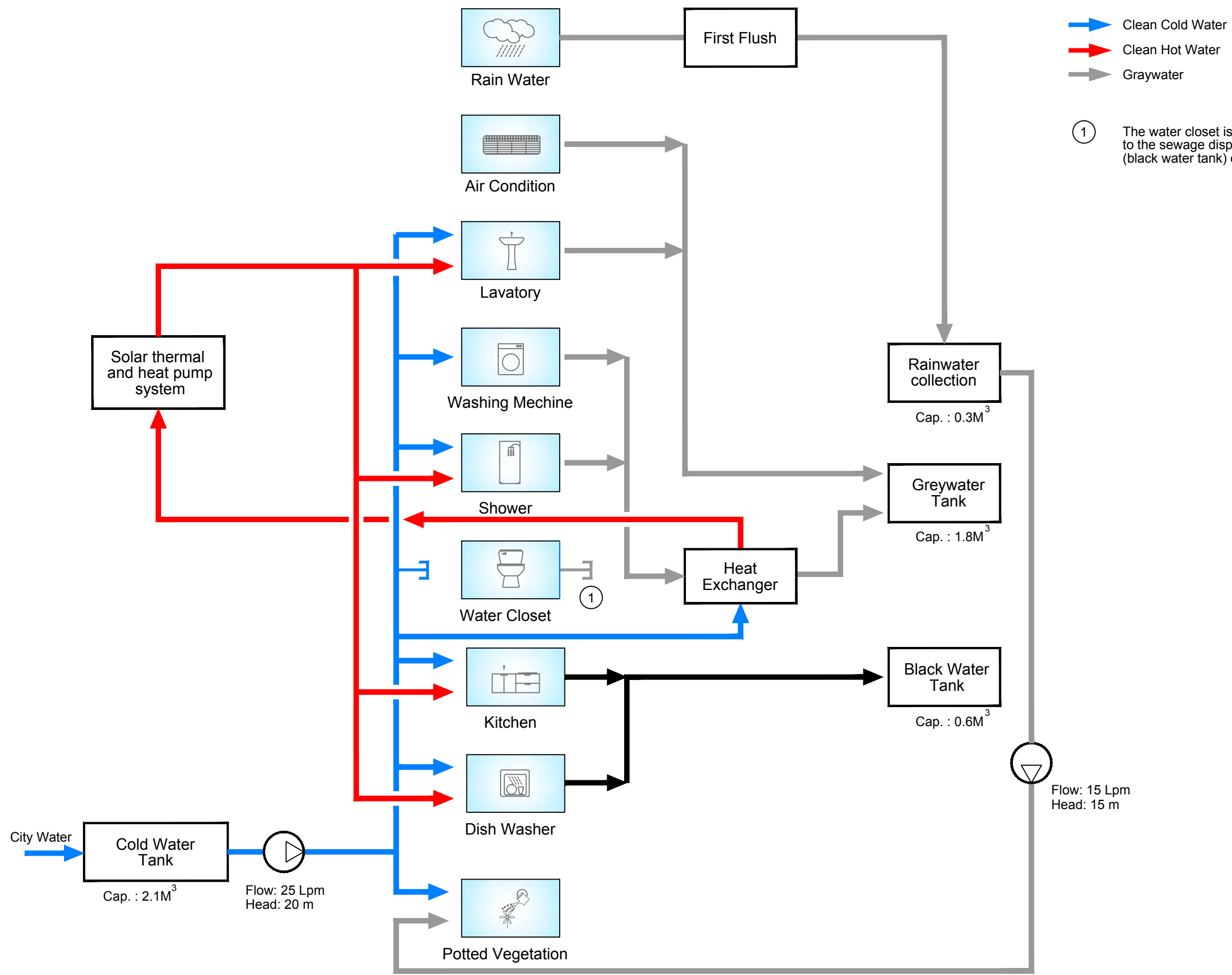
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by: MH
Checked by: -
Scale: -
Unit: -

DWG. Title: SCHEMATIC DIAGRAM IN TAIWAN

DWG. No. PL-101	PAGE 166
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United Integrated Services

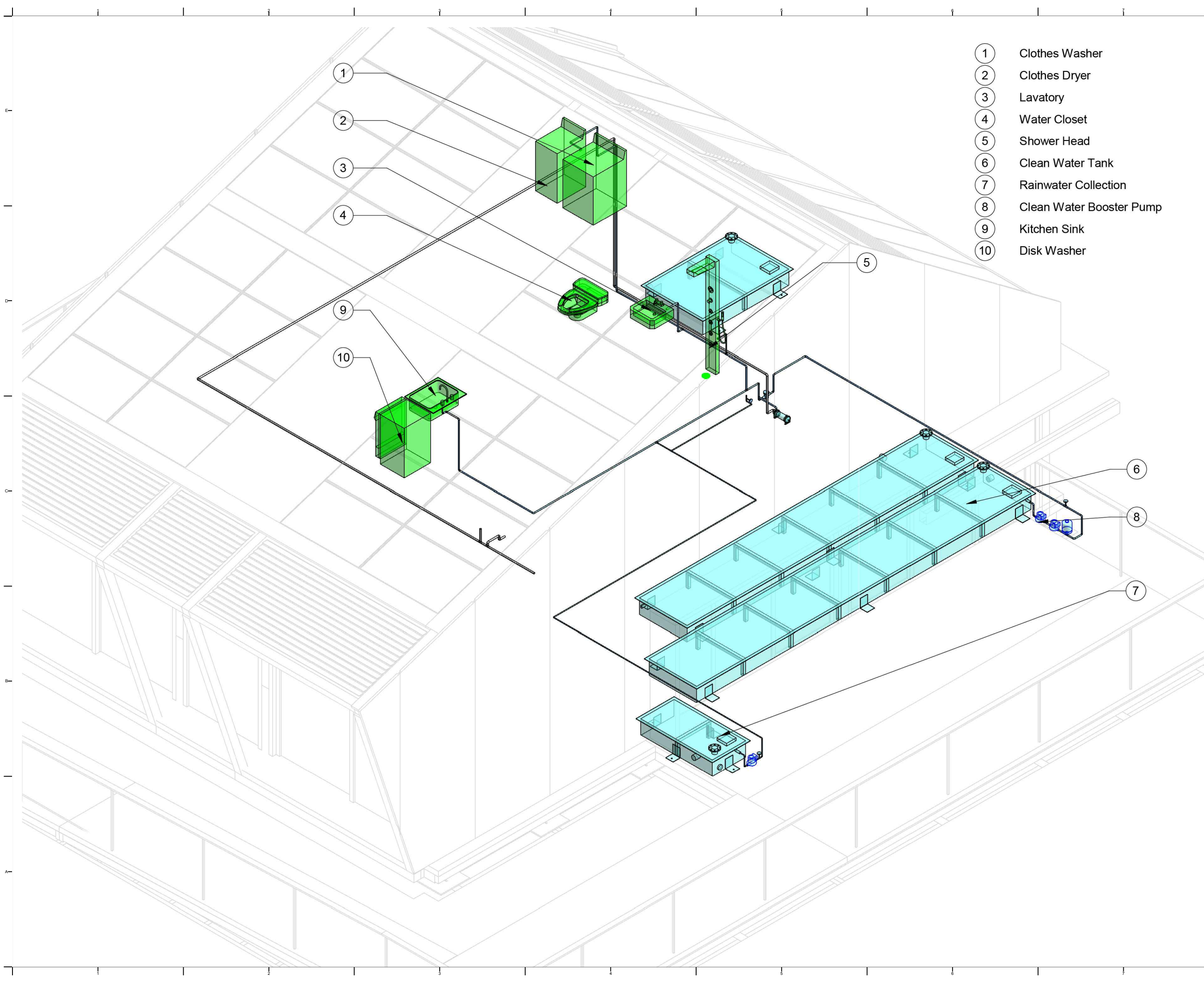
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Drawn by MH
Checked by -
Scale -
Unit -

DWG. Title
 SCHEMATIC DIAGRAM
 IN COMPETITION

DWG. No. PL-102 **PAGE** 167



- 1 Clothes Washer
- 2 Clothes Dryer
- 3 Lavatory
- 4 Water Closet
- 5 Shower Head
- 6 Clean Water Tank
- 7 Rainwater Collection
- 8 Clean Water Booster Pump
- 9 Kitchen Sink
- 10 Disk Washer



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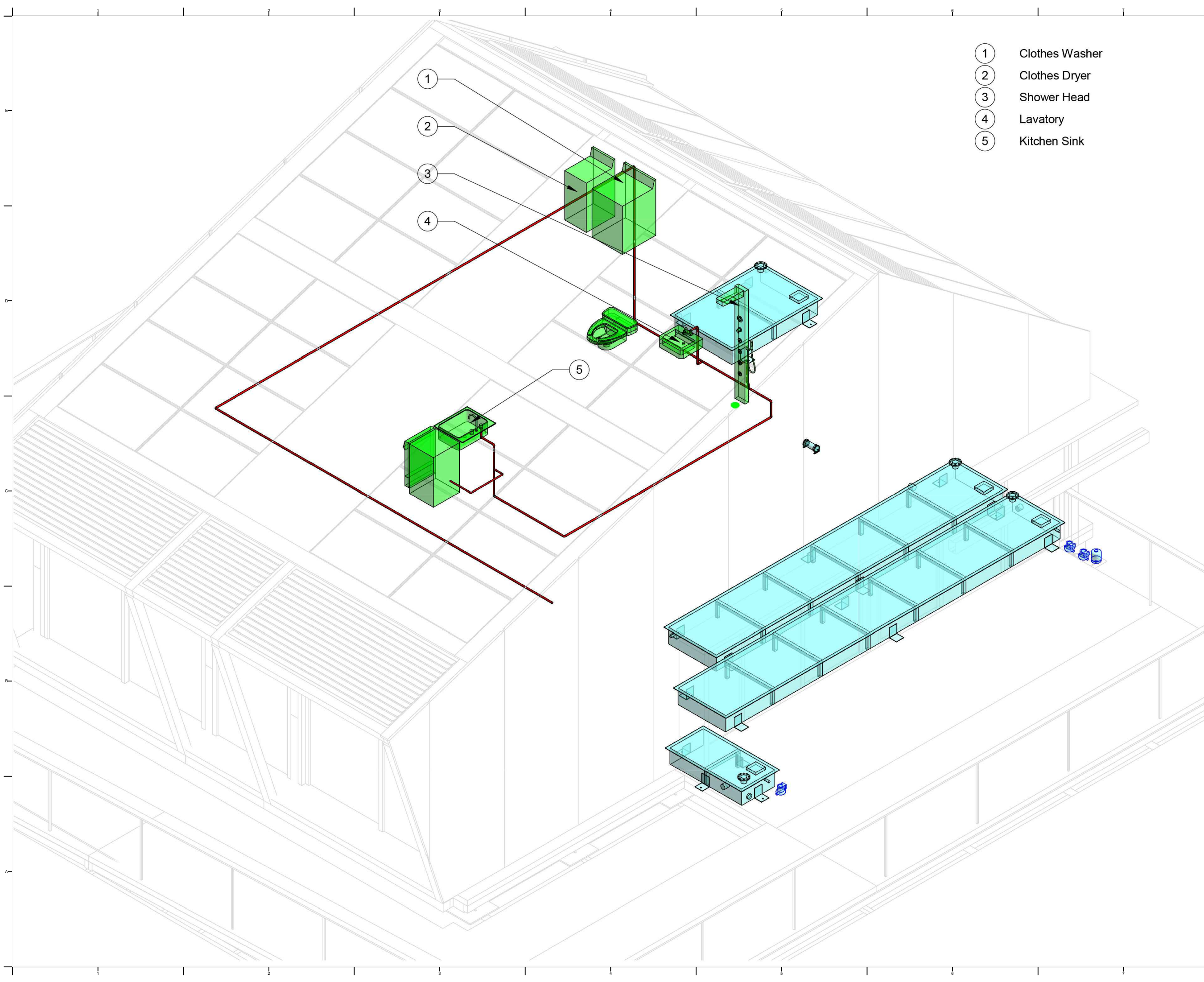
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Scale	-
Unit	-

DWG. Title
**SUPPLY AND REMOVAL
CLEAN WATER ISOMETRIC**

DWG. No.	PAGE
PL-201	168



- 1 Clothes Washer
- 2 Clothes Dryer
- 3 Shower Head
- 4 Lavatory
- 5 Kitchen Sink



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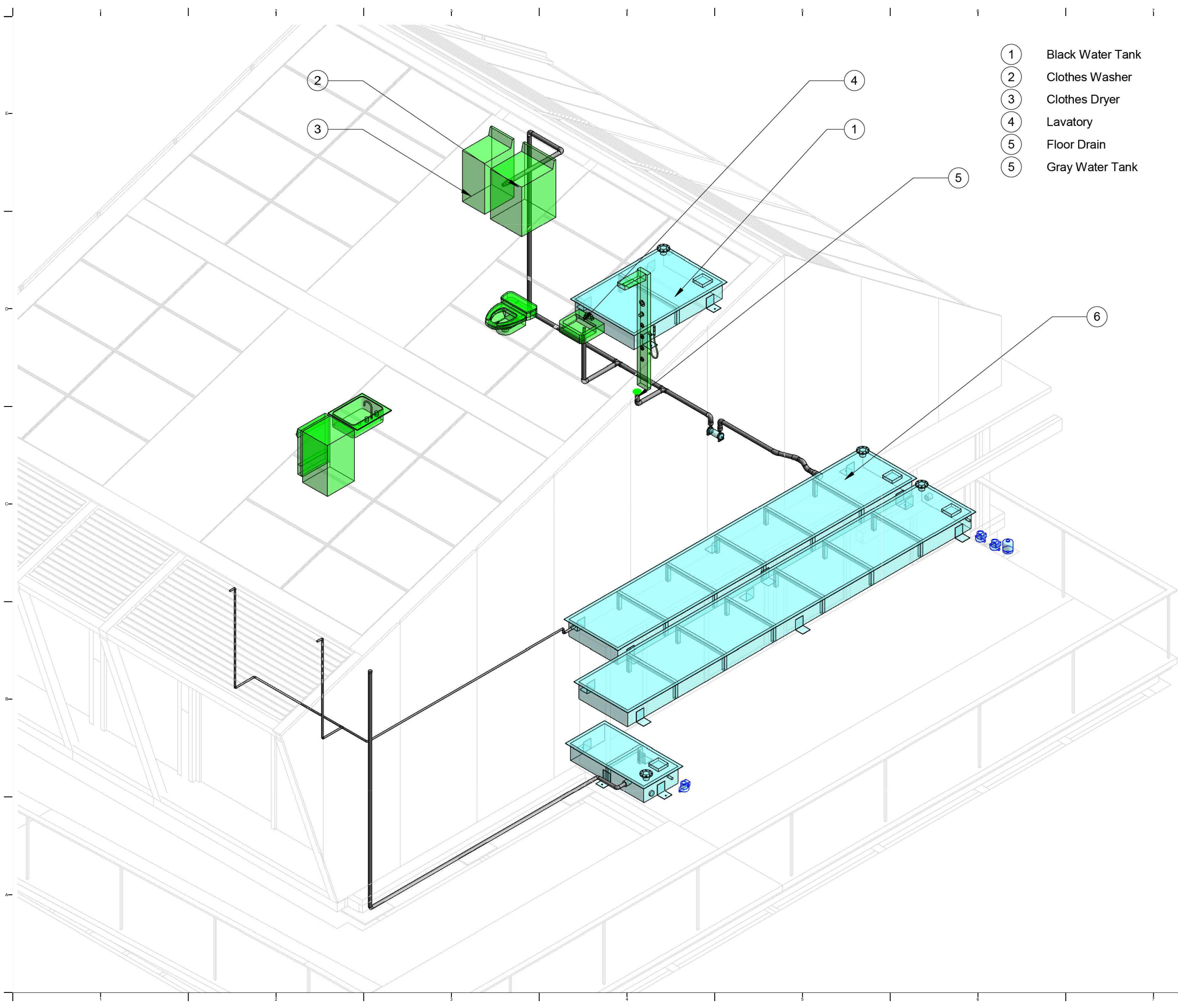


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	-
Scale	-
Unit	mm

DWG. Title	
SUPPLY AND REMOVAL HOT WATER ISOMETRIC	
DWG. No.	PAGE
PL-202	169



- 1 Black Water Tank
- 2 Clothes Washer
- 3 Clothes Dryer
- 4 Lavatory
- 5 Floor Drain
- 6 Gray Water Tank



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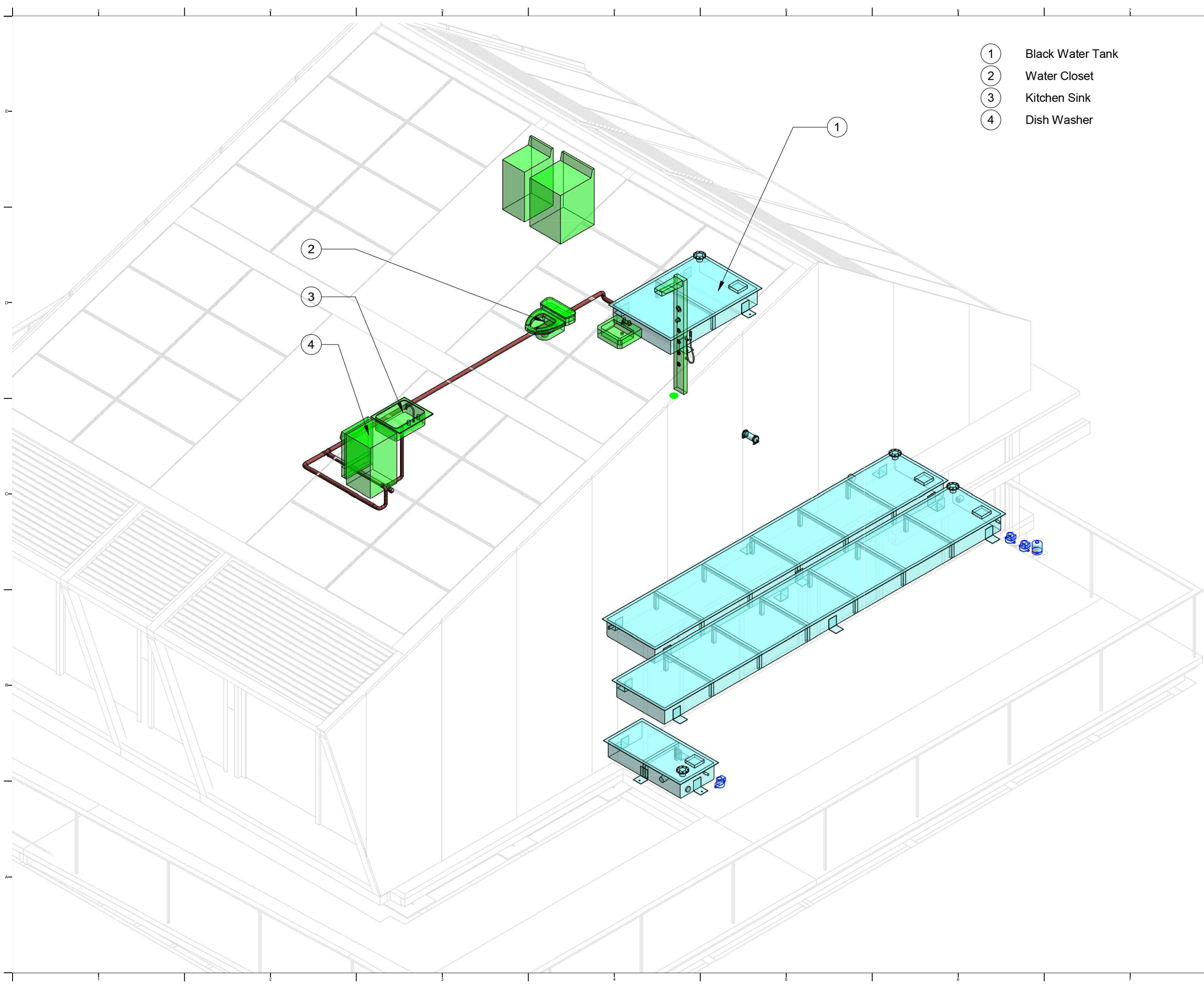


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ST	2014/03/03	CD Submission

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Scale	-
Unit	-

DWG. Title	
GRAY WATER ISOMETRIC	
DWG. No.	PAGE
PL-211	170



- 1 Black Water Tank
- 2 Water Closet
- 3 Kitchen Sink
- 4 Dish Washer



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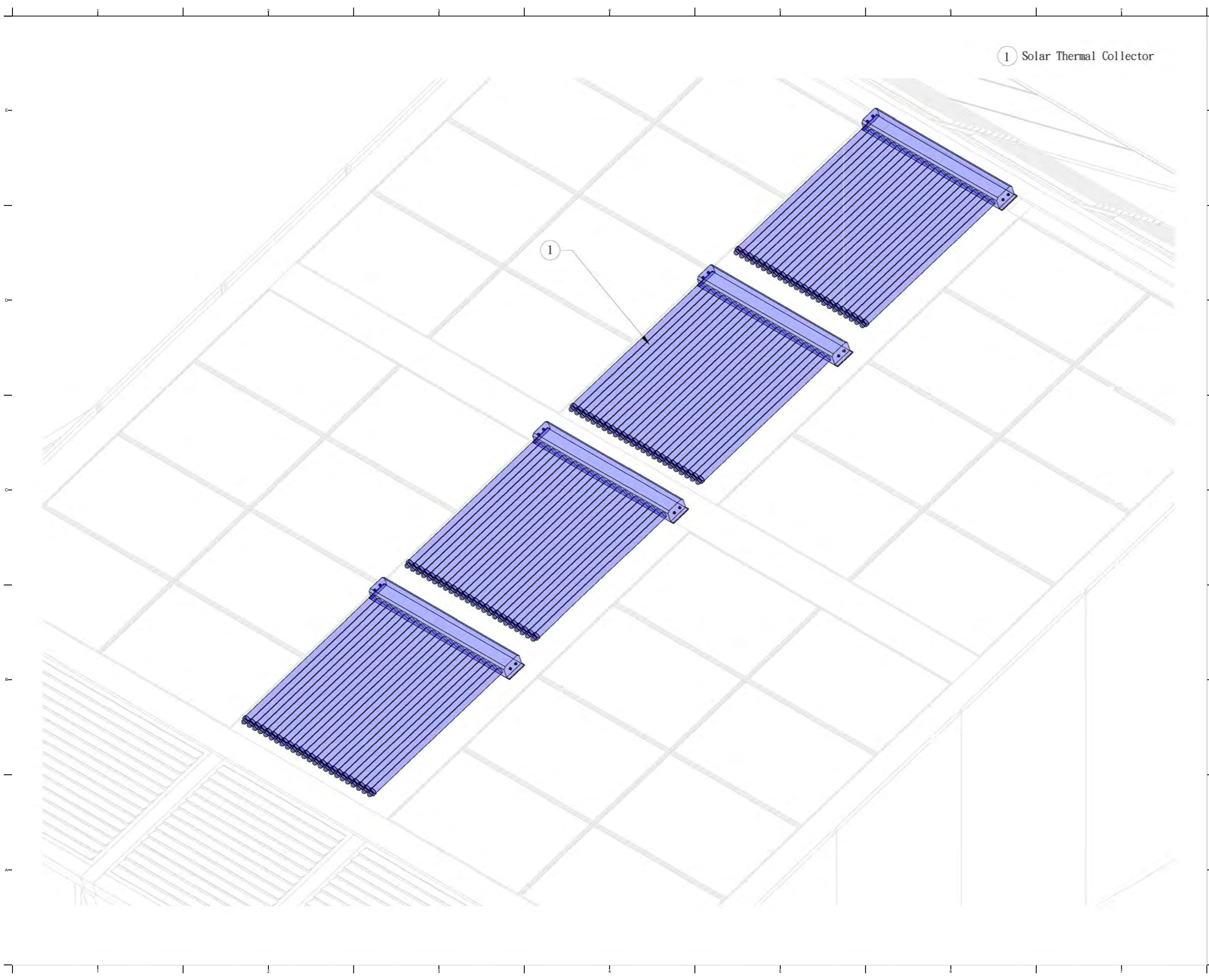


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ST	2014/03/03	CD Submission

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Scale	-
Unit	-

DWG. Title	
DRAIN/WASTE/VENT ISOMETRIC	
DWG. No.	PAGE
PL-221	171



1 Solar Thermal Collector



Project:



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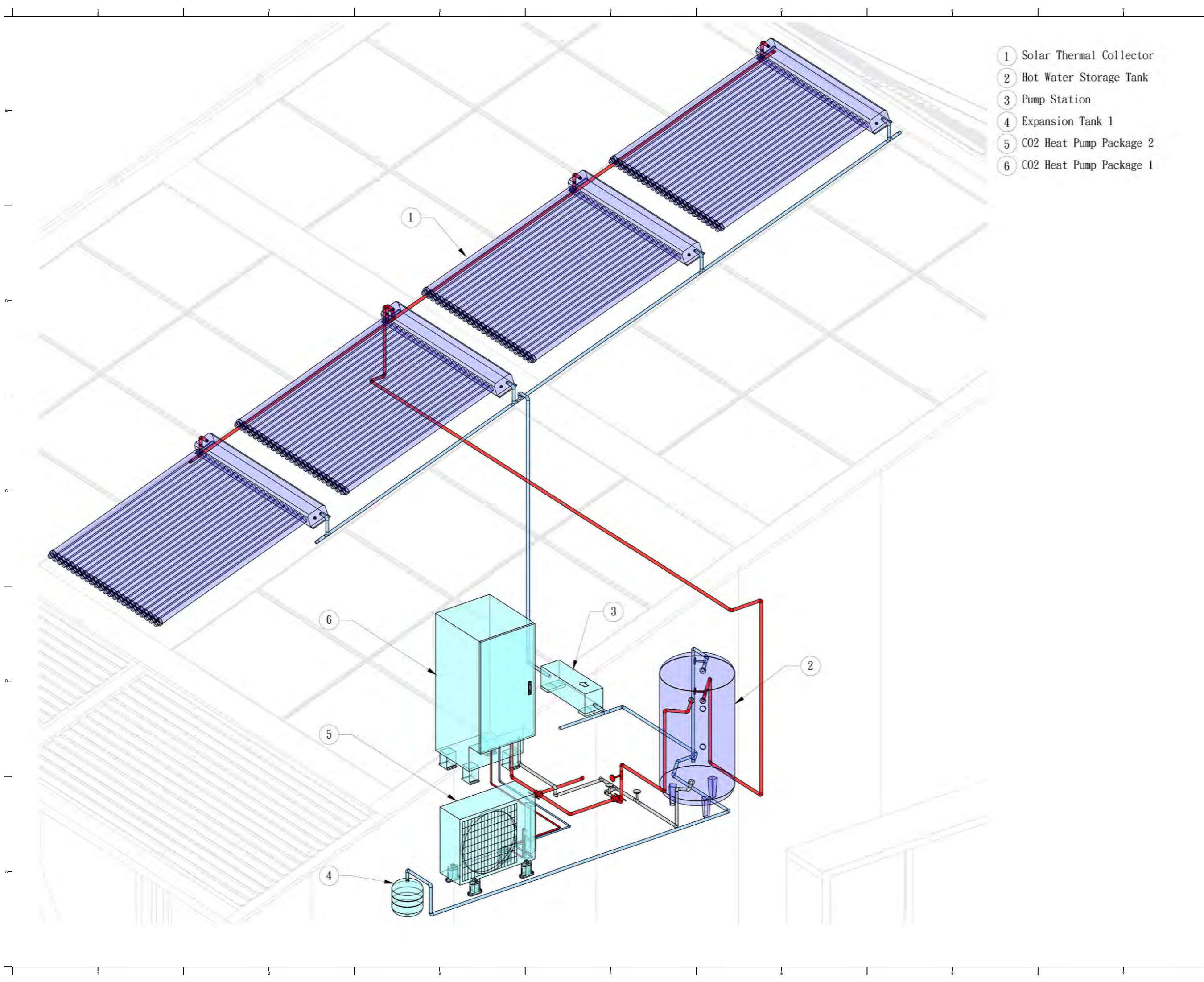


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Checked by	CHUNG
Scale	-
Unit	-

DWG. Title	
SOLAR WATER PLAN	
DWG. No.	PAGE
SW-001	172



- 1 Solar Thermal Collector
- 2 Hot Water Storage Tank
- 3 Pump Station
- 4 Expansion Tank 1
- 5 CO2 Heat Pump Package 2
- 6 CO2 Heat Pump Package 1



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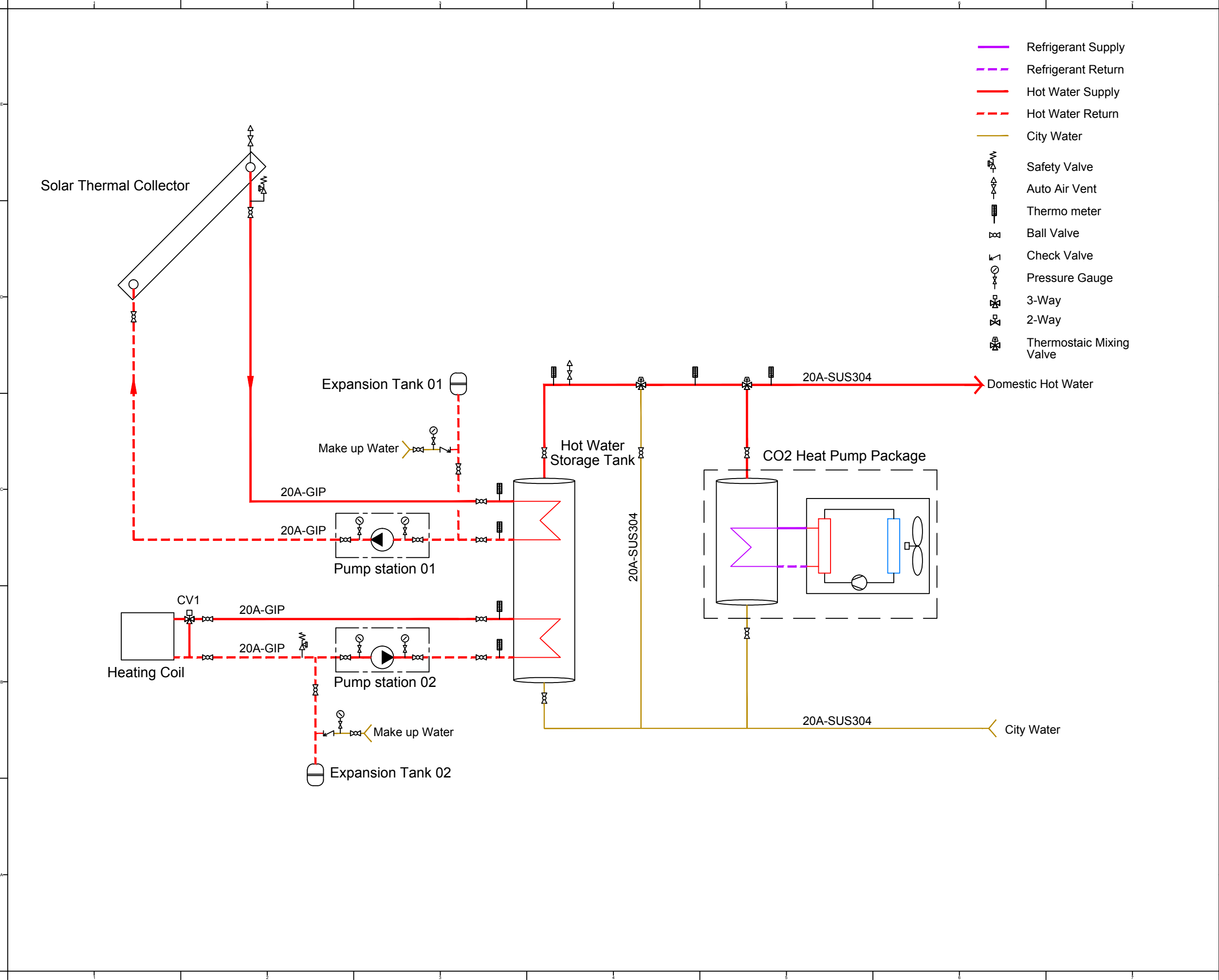


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Checked by	CHUNG
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Unit	-

DWG. Title	
SOLAR WATER ISOMETRIC	
DWG. No.	PAGE
SW-101	173





Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



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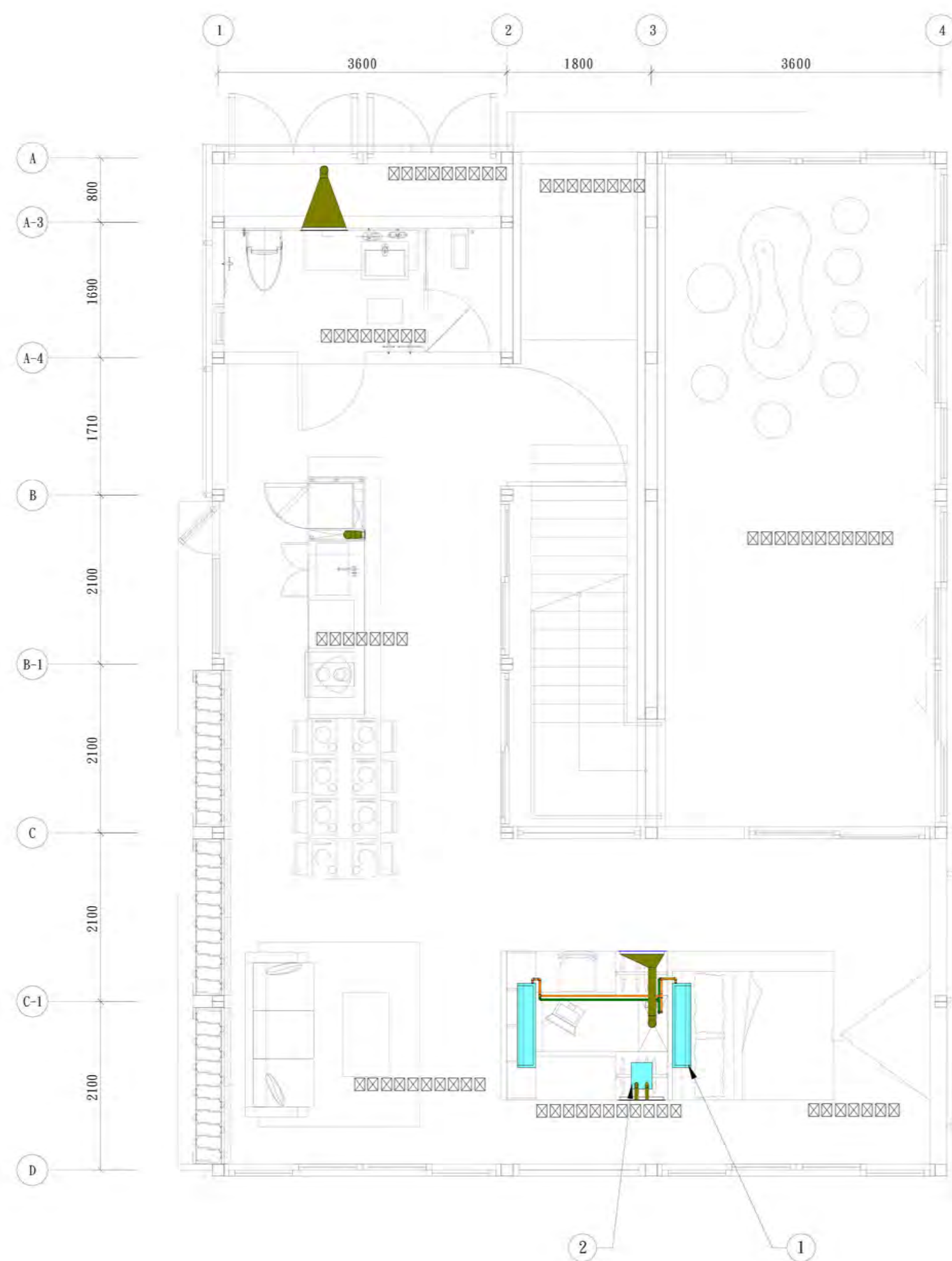
Unit -

DWG. Title

SOLAR WATER SCHEMATIC

DWG. No. **SW-201**

PAGE **174**



- Refrigerant Supply
- Refrigerant Return
- Duct

- 1 Indoor Unit of Heat Pump
- 2 Ultrasonic Humidifier



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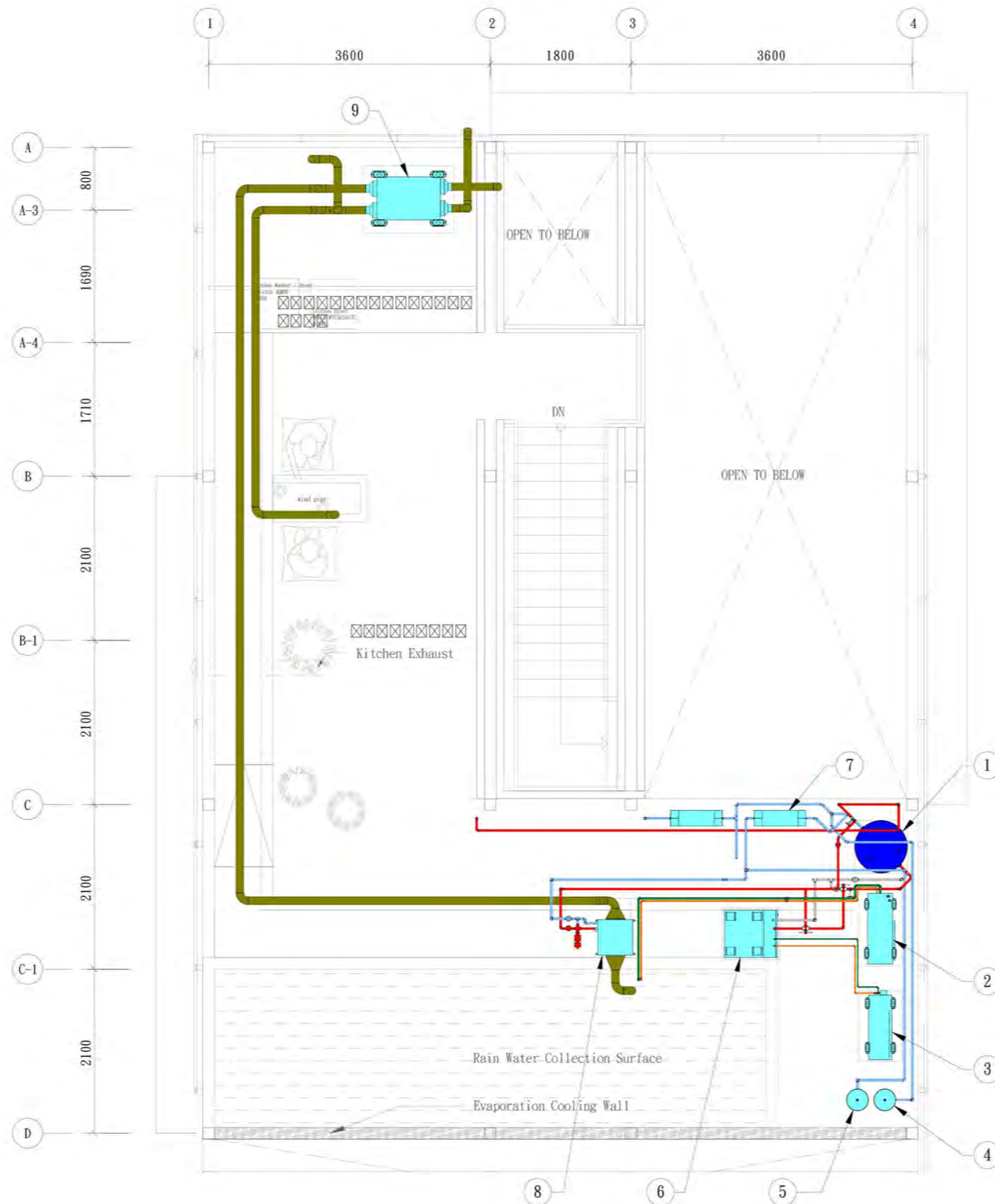


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Drawn by	BB
Checked by	CHUNG
Scale	1:60
Unit	mm

DWG. Title	
HVAC DISTRIBUTION PLAN GROUND LEVEL	
DWG. No.	PAGE
ME-001	175



- Refrigerant Supply
- Refrigerant Return
- Hot Water Supply
- Hot Water Return
- City Water
- Duct

- ① Hot Water Storage Tank
- ② Heat Pump
- ③ CO2 Heat Pump Package 1
- ④ Expansion Tank 1
- ⑤ Expansion Tank 2
- ⑥ CO2 Heat Pump Package 2
- ⑦ Pump Station
- ⑧ Heating Coil
- ⑨ Heat Reclaim Ventilator



Project:



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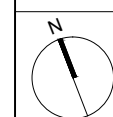
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Unit mm

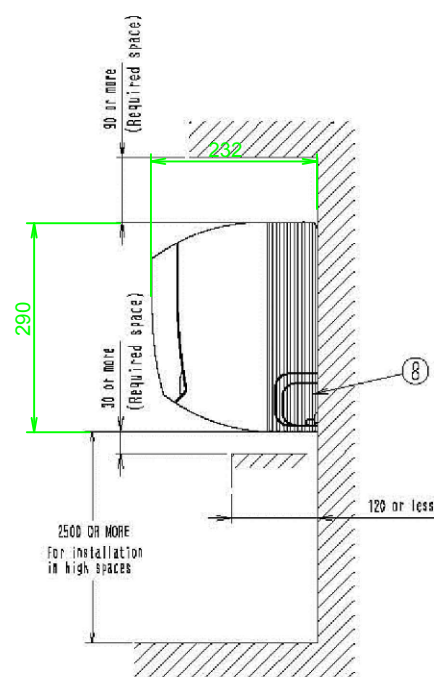
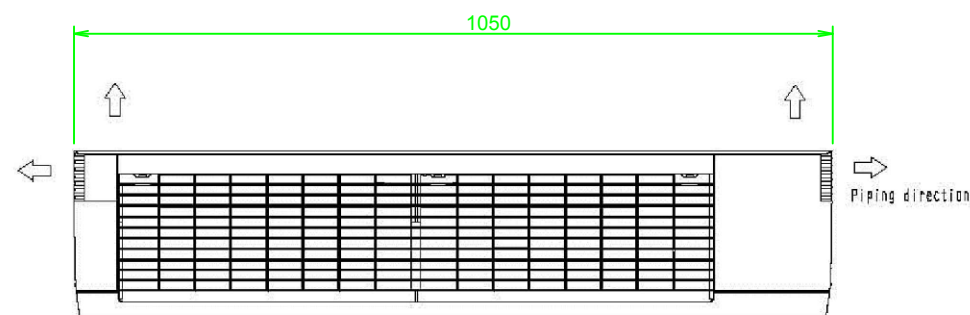
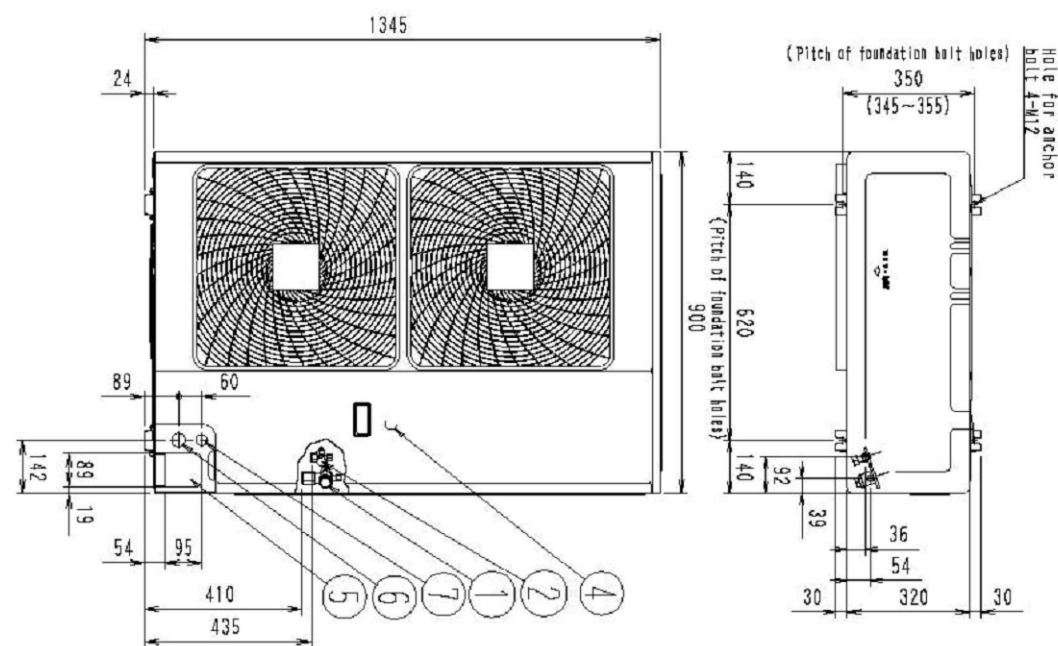
DWG. Title

HVAC DISTRIBUTION PLAN
MEZZANINE LEVEL

DWG. No. PAGE

ME-002 176

Outdoor Unit of Cooling/Heating Heat Pump



Name	Outdoor Unit of Cooling/Heating Heat Pump		
Service	HVAC Cooling and Heating		
Type	Heat Pump		
Cooling Capacity	11.2 KW		
Heating Capacity	12.5 KW		
COP	Cooling = 3.8 Heating = 3.82		
EER	Cooling = 4.4 Heating = 4.4		
Electrical Power Supply	230 V		
Frequency	50 HZ		
Power Consumption	KW Cooling = 2.95 Heating = 3.27		
Refrigerant	R-410A		

Test condition for outdoor unit:

- Cooling Condition : Indoor Temperature 27°C DB / 19°C WB
Outdoor Temperature 35°C DB
- Heating Condition : Indoor Temperature 20°C DB
Outdoor Temperature 7°C DB / 6°C WB

Name	Indoor Unit of Heat Pump
Service	Room Heating and Cooling
Type	Wall Mounted
Quantity	2
Cooling Capacity	4.5 KW
Heating Capacity	5 KW
Fan Flow(High/Low)	12 / 9 m ³ /min
Air Filter	Washable Resin Net



Project:



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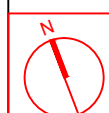
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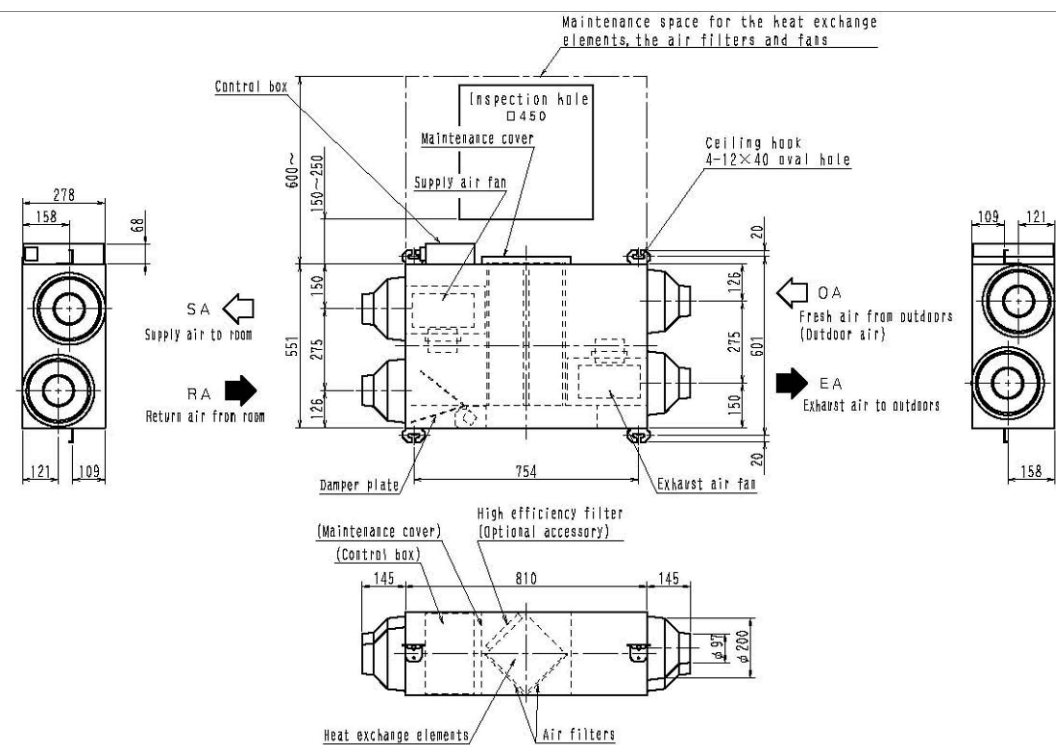


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Drawn by	CHUNG
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Scale	-
Unit	mm

DWG. Title	
HVAC EQUIPMENTS 1	
DWG. No.	PAGE
ME-011	177

Heat Reclaim Ventilator



Name	Heat Reclaim Ventilator
Service	Room Active Ventilation
Temperature Exchange Efficiency	79%
Enthalpy Exchange Efficiency	
Cooling	66%
Heating	72%
Fan Air Flow Rate	150 m ³ /h
Electrical Power Supply	230 V
Frequency	50 HZ
Power Consumption	30 W × 2

Test condition for exchange efficiency:

Condition	Indoor		Outdoor	
	°Cdb	rh%	°Cdb	rh%
Cooling	27	50	35	60
Heating	20	40	7	70



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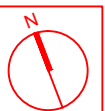
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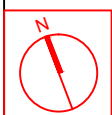
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Scale	-
Unit	mm

DWG. Title	
HVAC EQUIPMENTS 2	
DWG. No.	PAGE
ME-012	178



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Checked by -

Scale -

Unit -

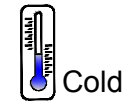
DWG. Title

HEATING

DWG. No. PAGE

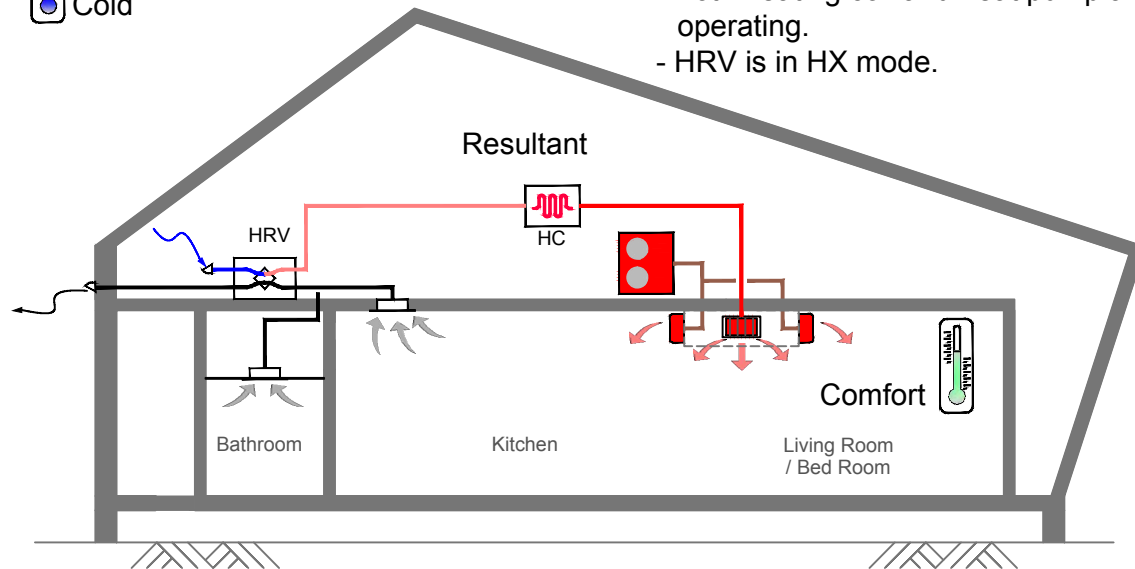
ME-021 179

Winter - Night

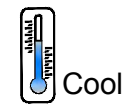


Cold

- In cold-stream winter night.
- Space heating is required.
- Both heating coil and heat pump are operating.
- HRV is in HX mode.

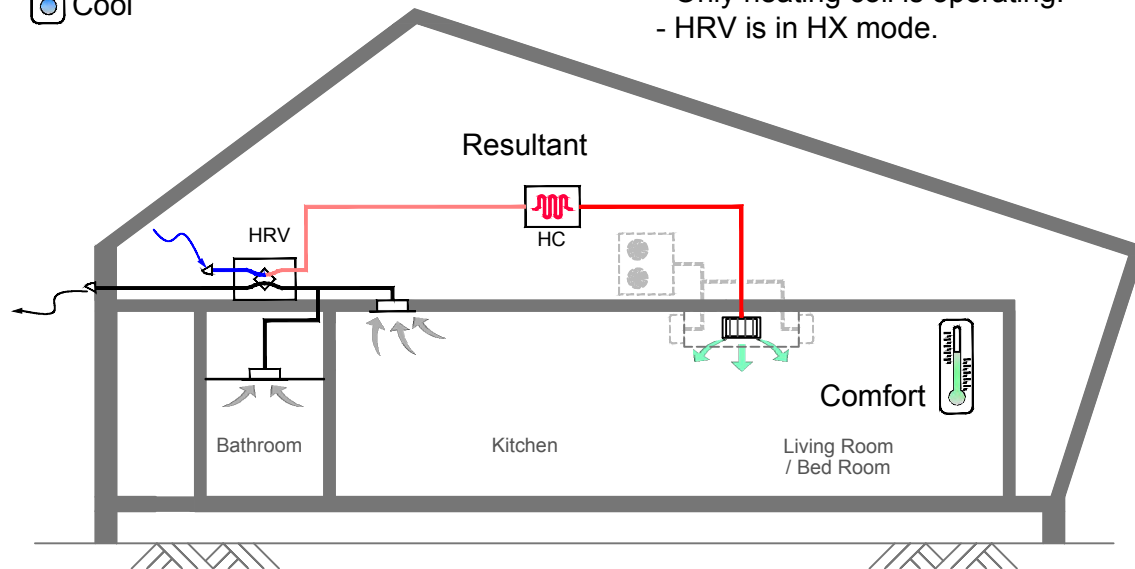


Winter

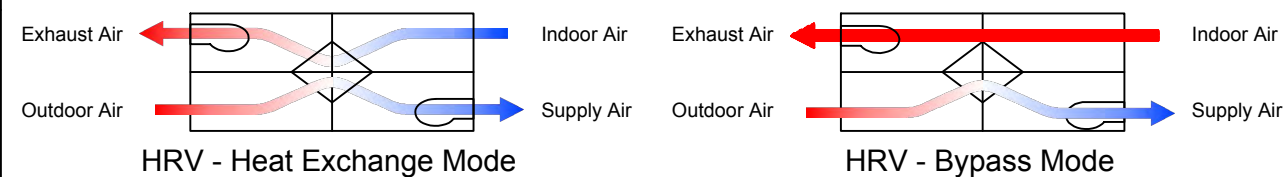


Cool

- Winter of freezing temperature.
- Space heating is required.
- Only heating coil is operating.
- HRV is in HX mode.



Legend:

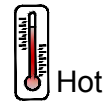


- Hot Air
- Warm Air
- Cool Air
- Cold Air

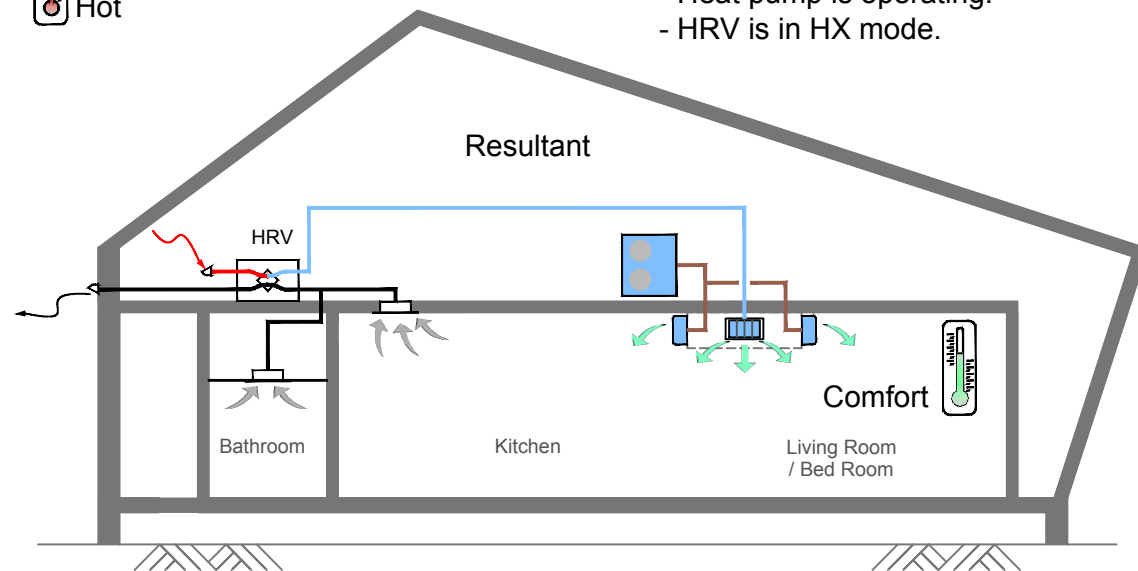
- Exhaust Air
- Refrigerant Pipe



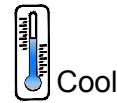
Summer - Day



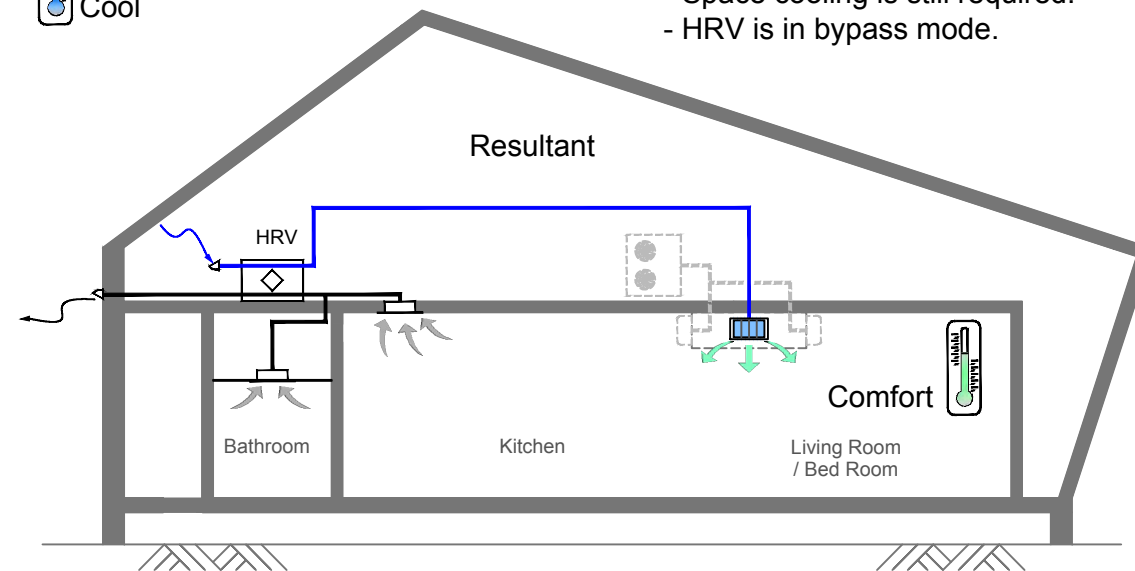
- Typical of summer day.
- Space cooling is required.
- Heat pump is operating.
- HRV is in HX mode.



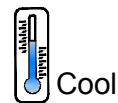
Spring - Night



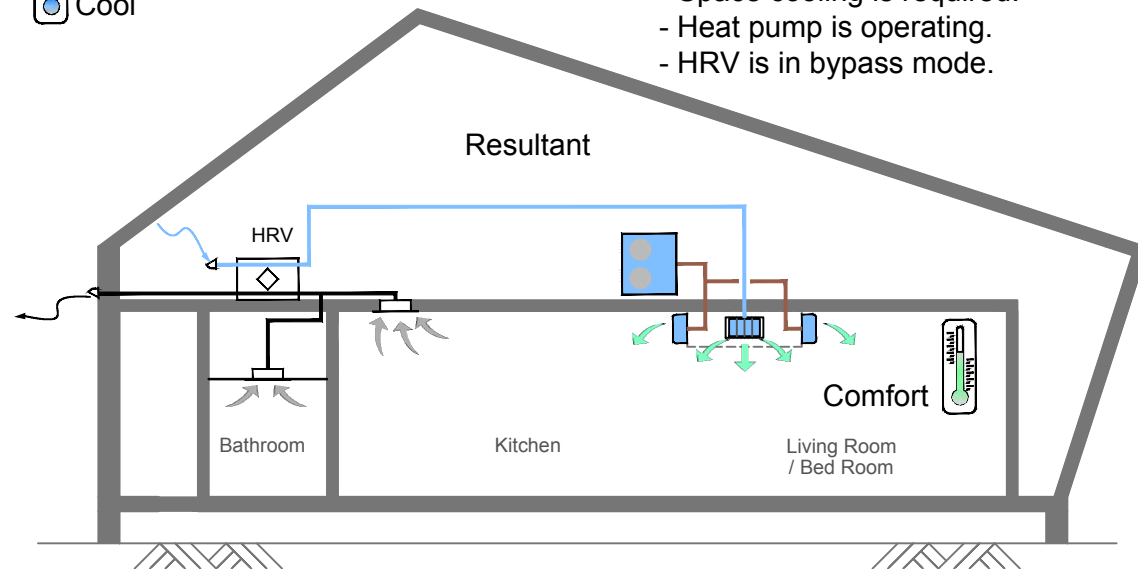
- Outdoor temperature is much less than room temperature.
- Space cooling is still required.
- HRV is in bypass mode.



Summer - Early Morning



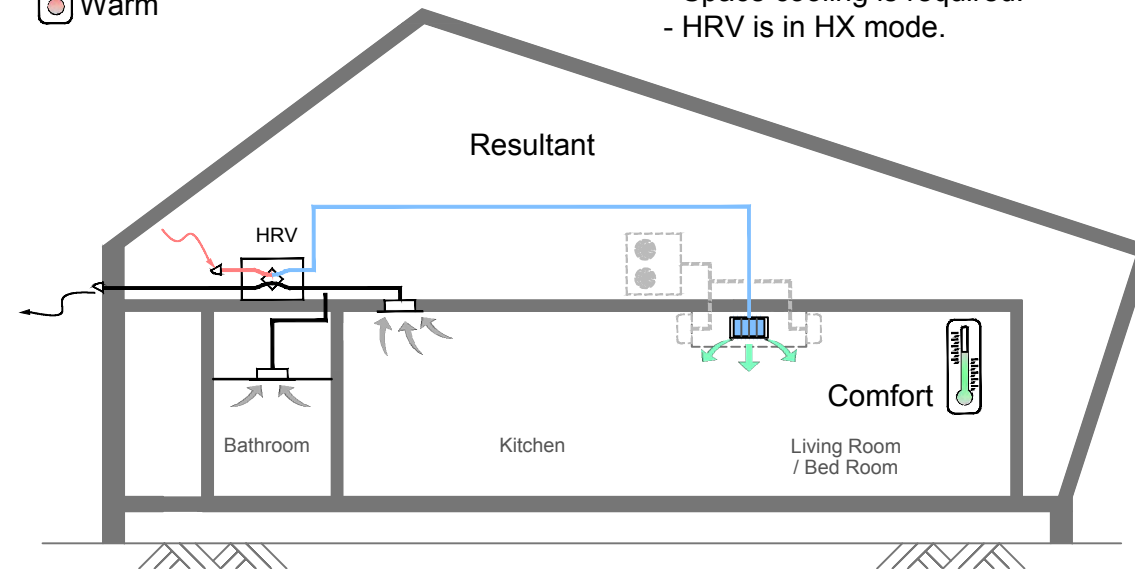
- Outdoor temperature is less than room temperature.
- Space cooling is required.
- Heat pump is operating.
- HRV is in bypass mode.



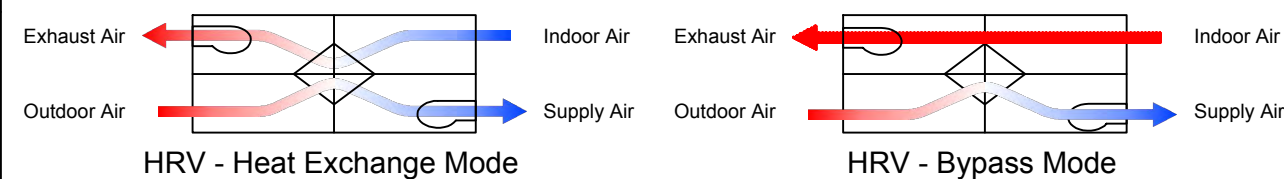
Spring - Day



- Outdoor temperature is higher than room temperature.
- Space cooling is required.
- HRV is in HX mode.



Legend:



- Hot Air
- Warm Air
- Cool Air
- Cold Air

- Exhaust Air
- Refrigerant Pipe



Project:



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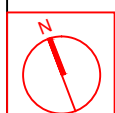
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Scale -

Unit -

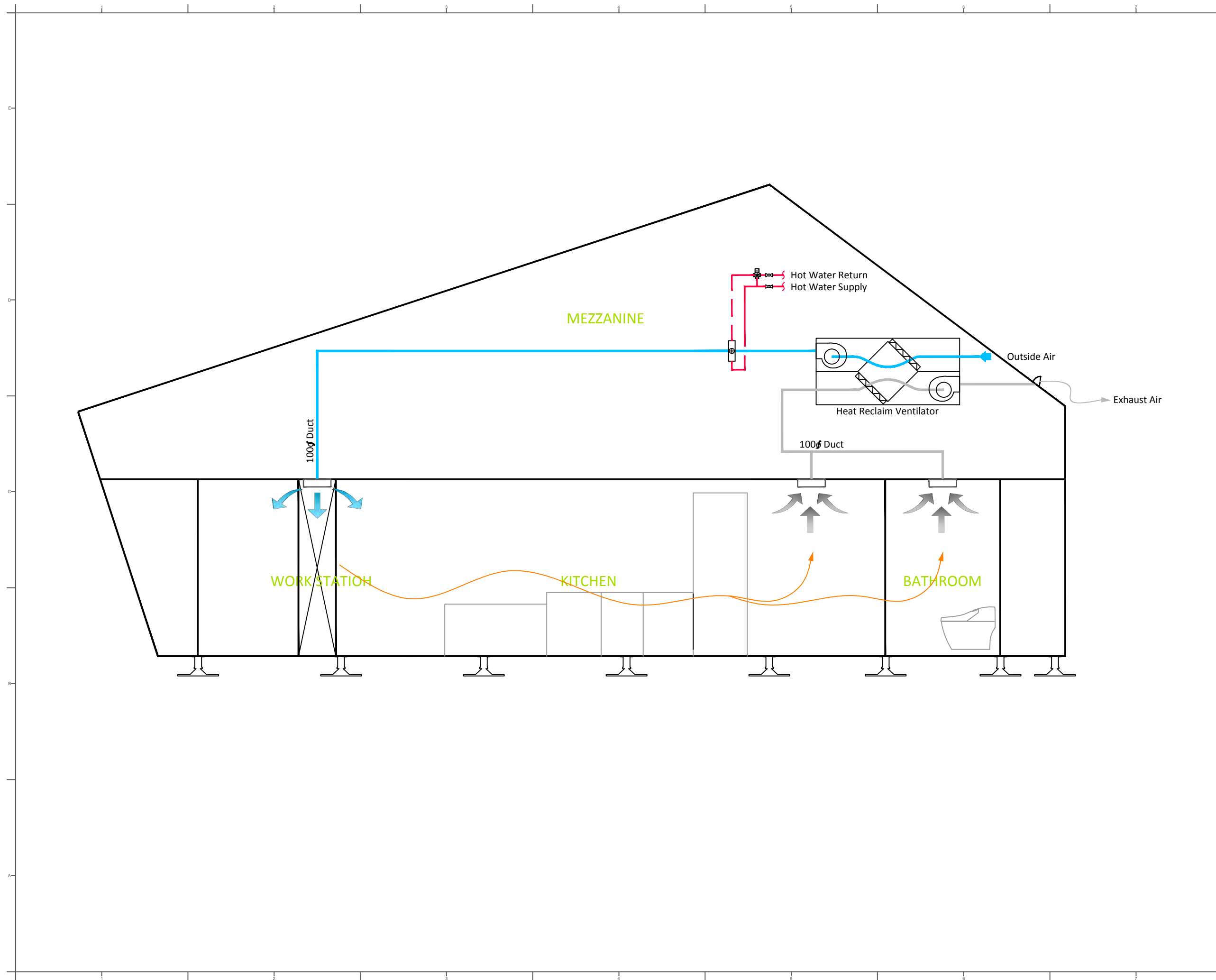
DWG. Title

COOLING

DWG. No. PAGE

ME-031

180





Solar Decathlon Europe

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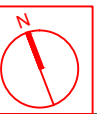


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Note:



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ST	2014/03/03	CD Submission

Drawn by CHUNG

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Scale -

Unit -

DWG. Title

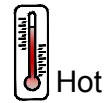
VENTILATION 1

DWG. No. ME-041

PAGE 181

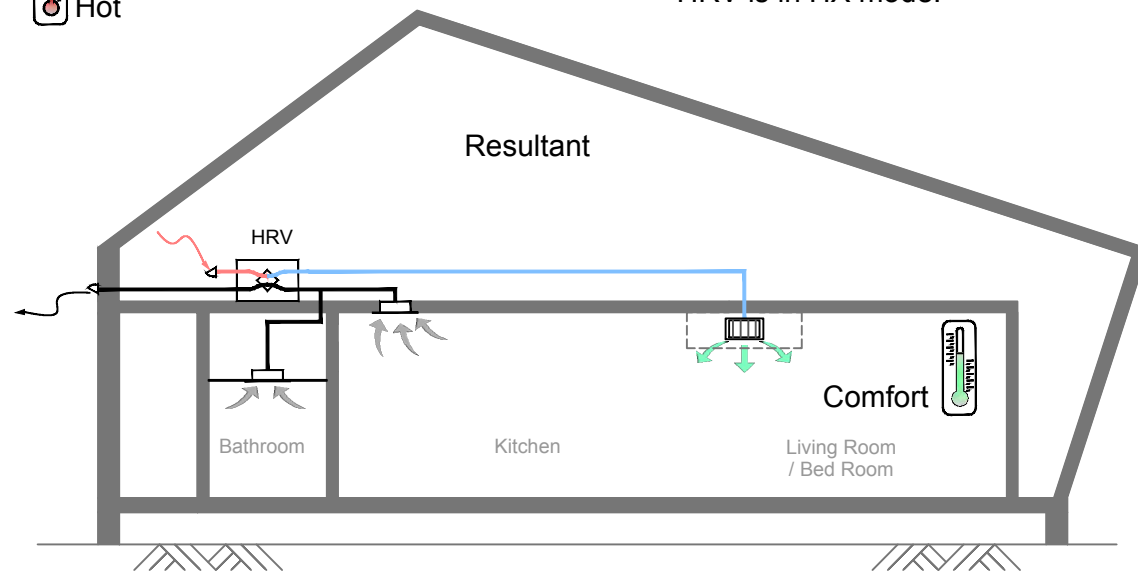


Summer - Day



Hot

- Outdoor temperature is much higher than room temperature.
- HRV is in HX mode.

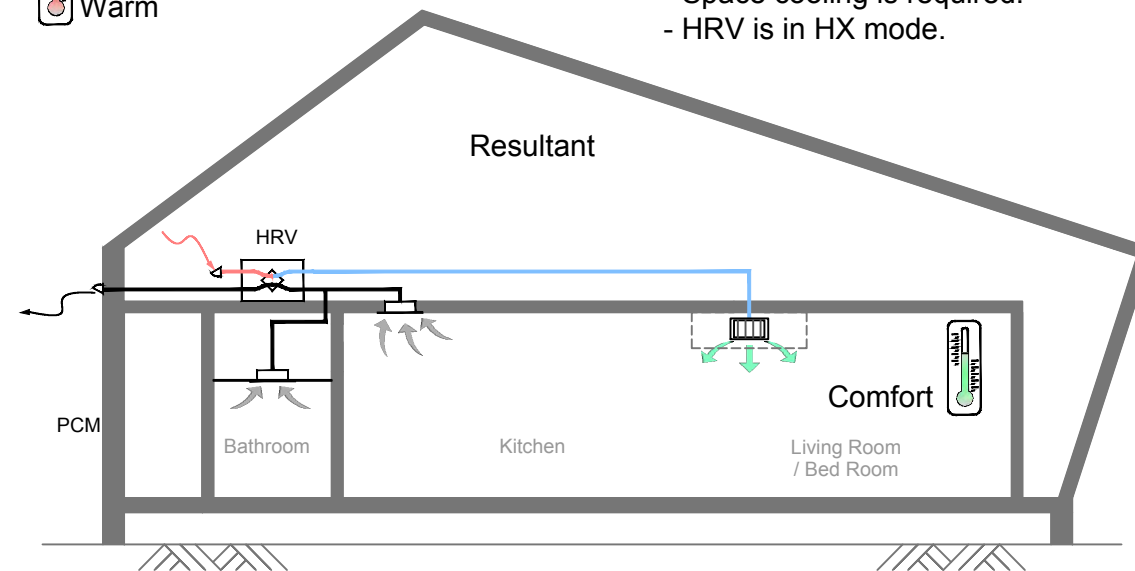


Spring - Day

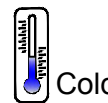


Warm

- Outdoor temperature is higher than room temperature.
- Space cooling is required.
- HRV is in HX mode.

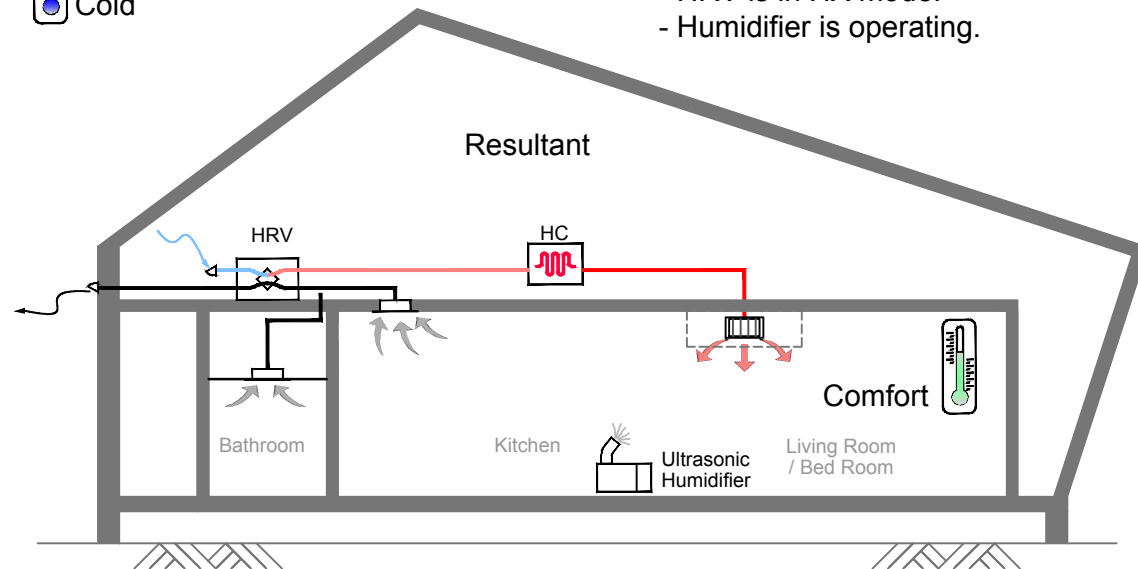


Winter - Night

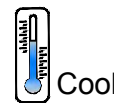


Cold

- Outdoor temperature is much less than room temperature.
- HRV is in HX mode.
- Humidifier is operating.

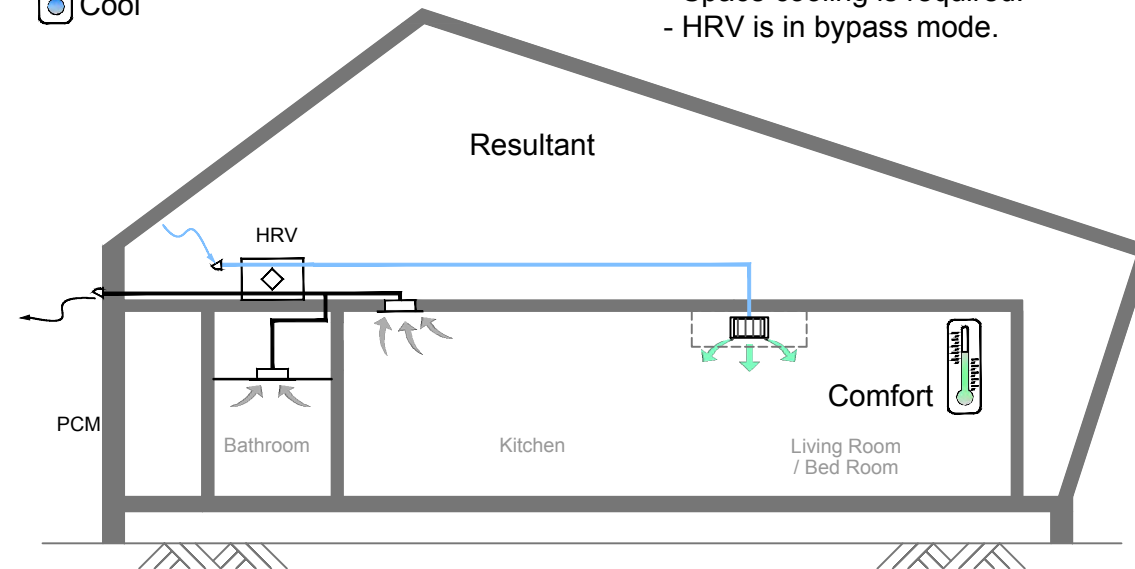


Spring - Night

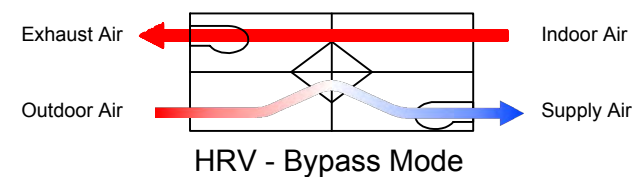
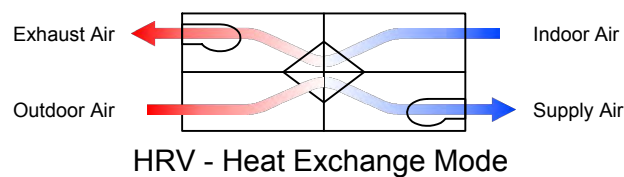


Cool

- Outdoor temperature is less than room temperature.
- Space cooling is required.
- HRV is in bypass mode.



Legend:



Hot Air
Warm Air
Cool Air

Cold Air
Exhaust Air



Project:



Institution:



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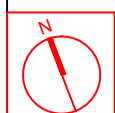
Contact:



Consultants:



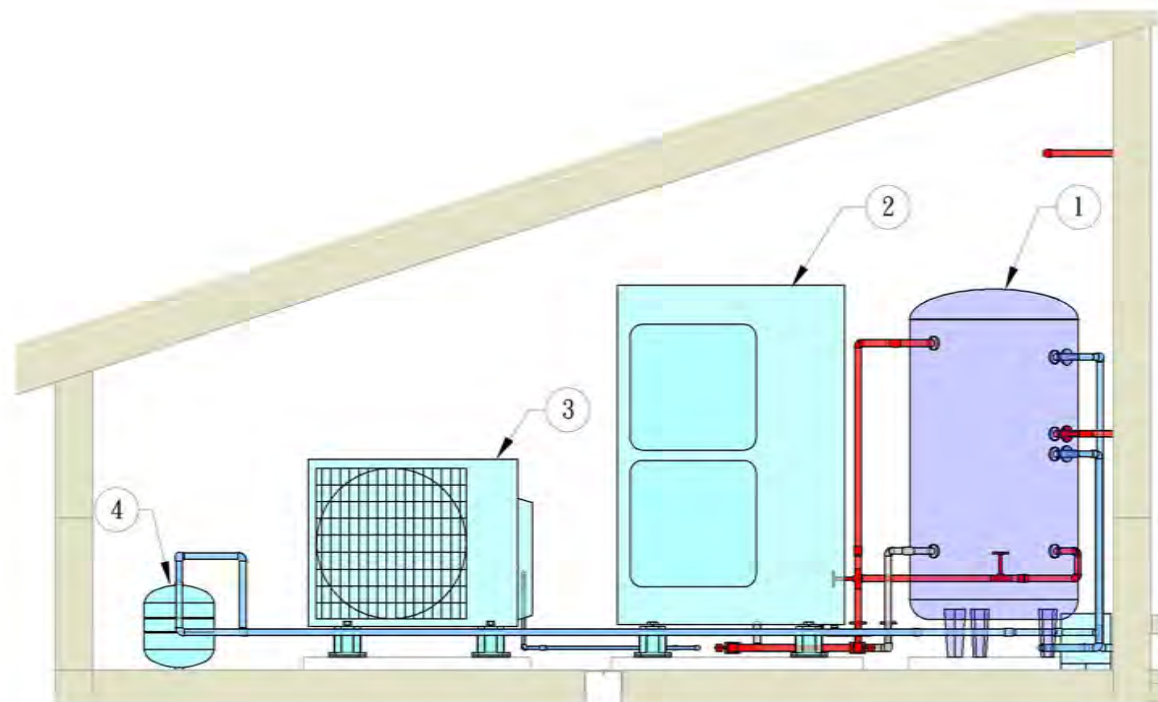
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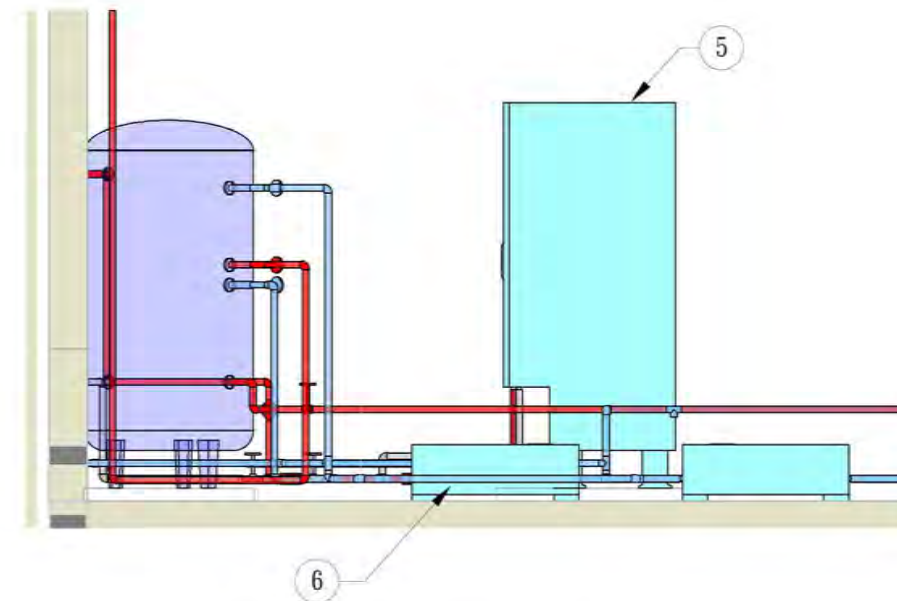
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ST	2014/03/03	CD Submission

Drawn by	CHUNG
Checked by	-
Scale	-
Unit	-

DWG. Title	VENTILATION 2
DWG. No.	ME-042
PAGE	182



Mechanical Room Elevation(East)



Mechanical Room Elevation(North)

- ① Hot Water Storage Tank
- ② Heat Pump
- ③ CO2 Heat Pump Package1
- ④ Expansion Tank 1
- ⑤ CO2 Heat Pump Package 2
- ⑥ Pump Station



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Checked by CHUNG

Scale -

Unit -

DWG. Title

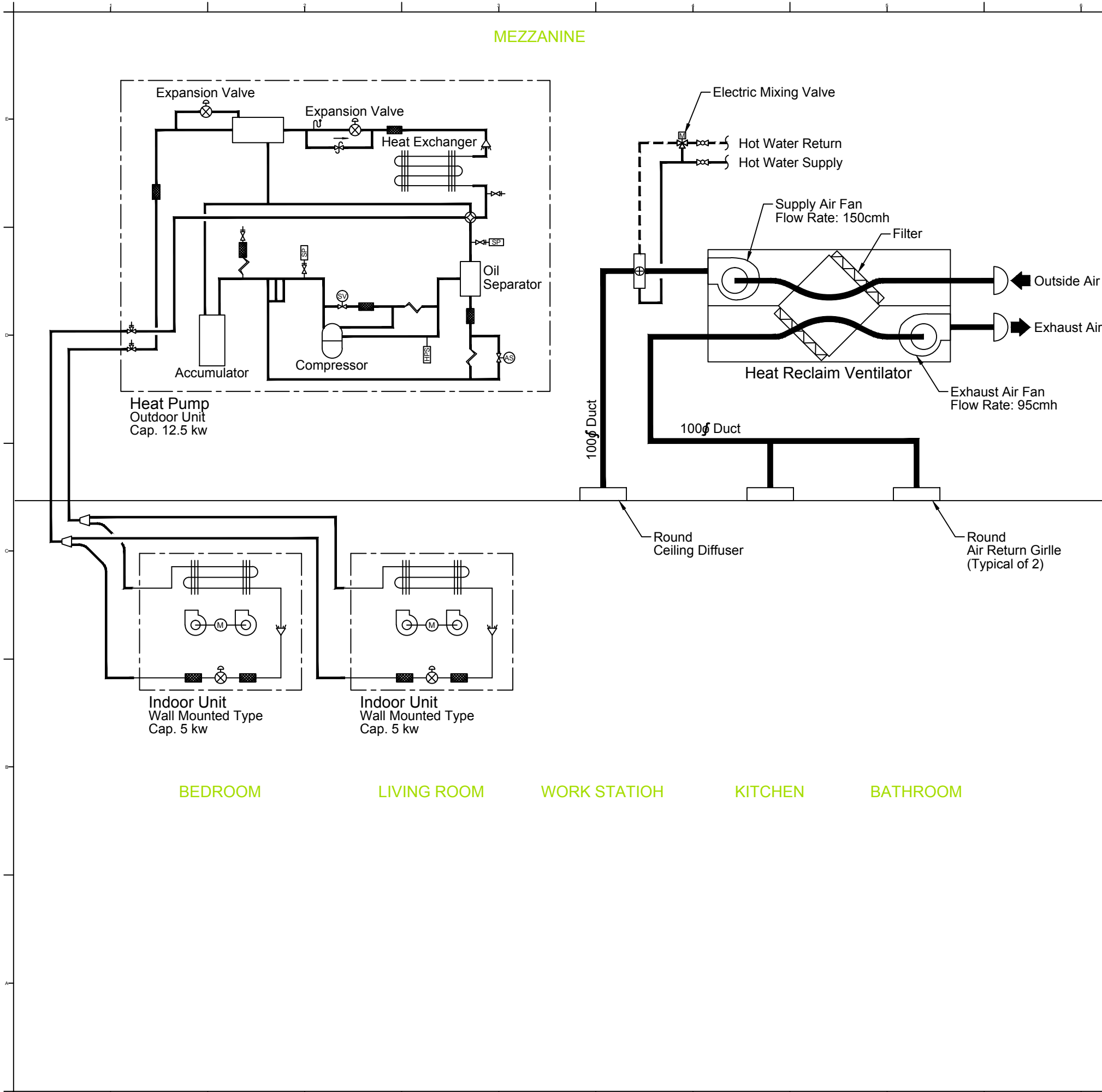
MECHANICAL ROOM
ELEVATIONS

DWG. No.

ME-101

PAGE

183



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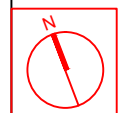
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Note:

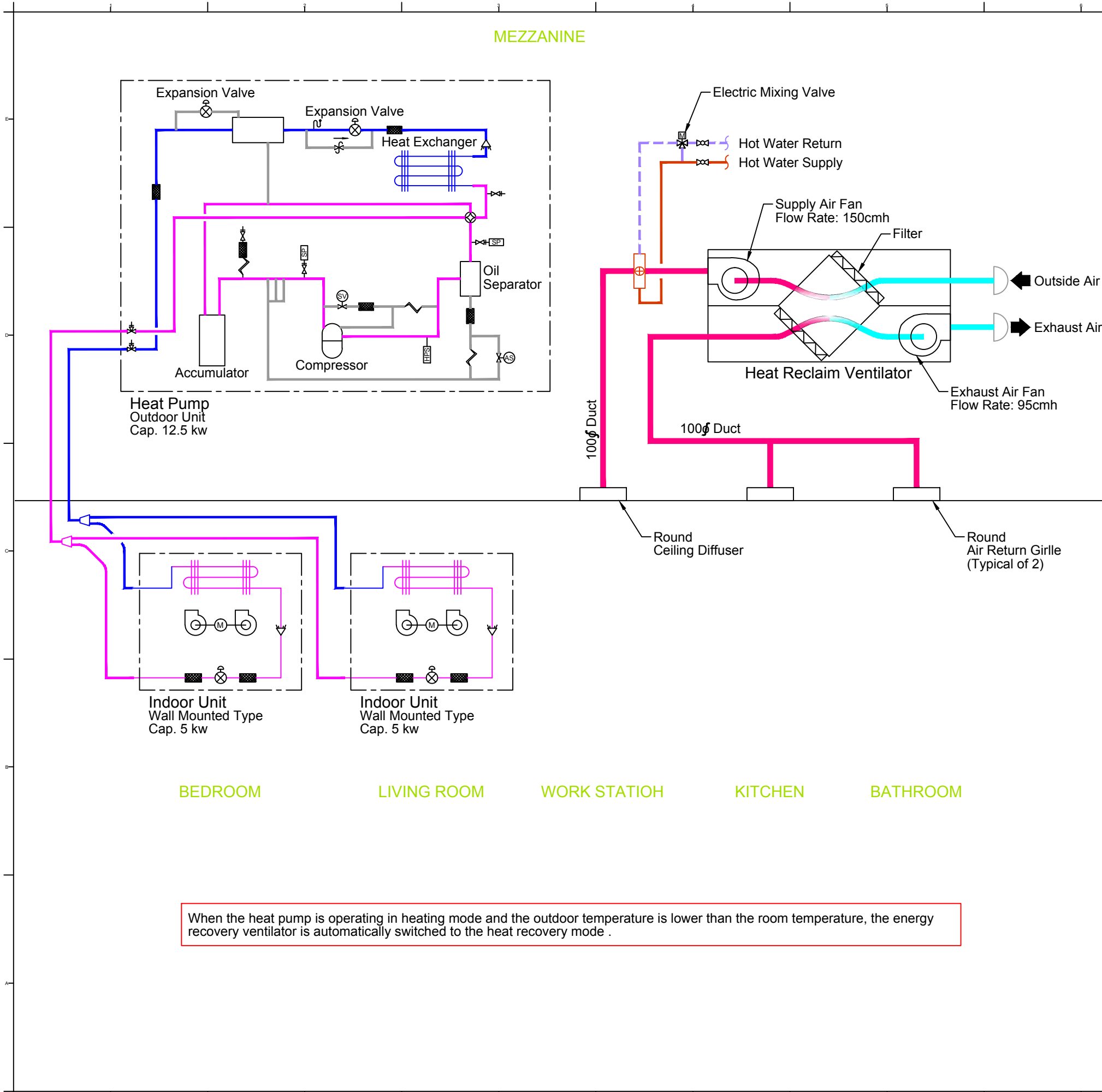


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	LUI
Checked by	-
Scale	-
Unit	-

DWG. Title
HVAC SYSTEM SCHEMATIC
DRAWINGS

DWG. No. **ME-201** PAGE **184**



- Gas Pipe
- Liquid Pipe
- Cold Air
- Warm Air
- Hot Water Supply
- Hot Water Return

Project:

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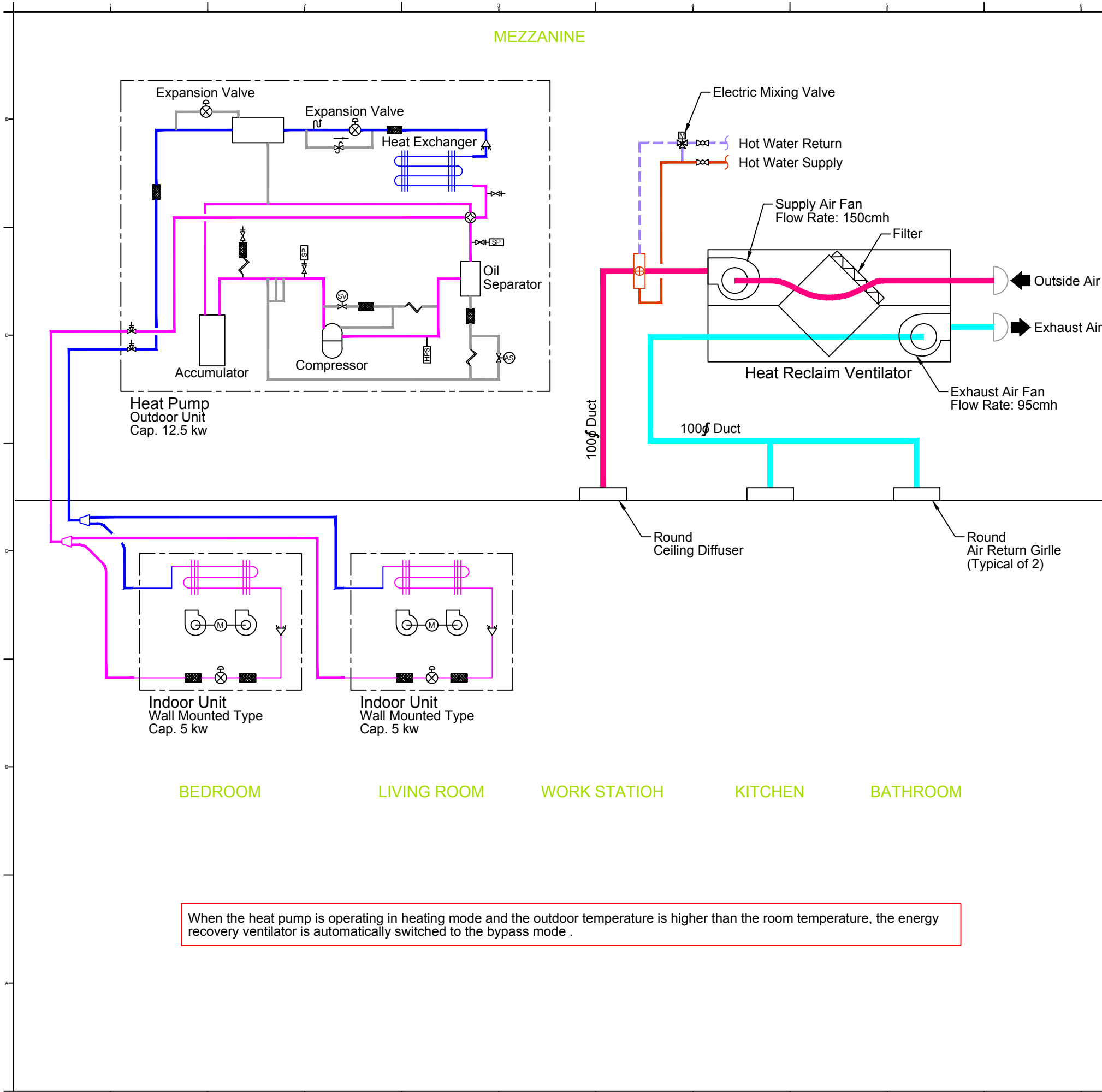
Scale -

Unit -

DWG. Title
HEATING MODE
SCHEMATIC DRAWINGS
1

DWG. No. ME-211

PAGE 185



- Gas Pipe
- Liquid Pipe
- Cold Air
- Warm Air
- Hot Water Supply
- Hot Water Return



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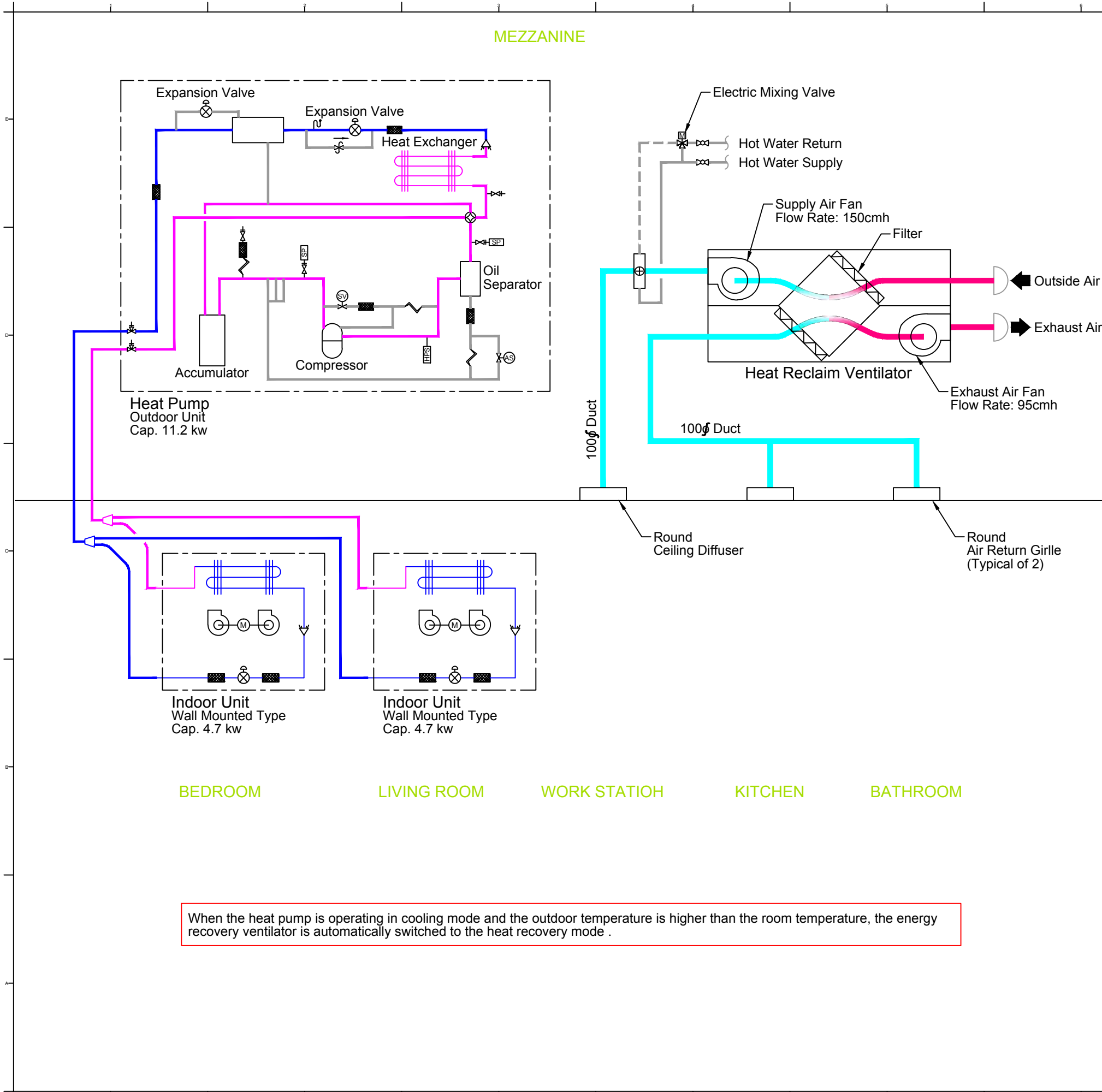
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Scale -

Unit -

DWG. Title
HEATING MODE
SCHEMATIC DRAWINGS
2

DWG. No.	PAGE
ME-212	186



Gas Pipe
Liquid Pipe



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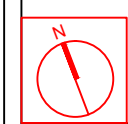
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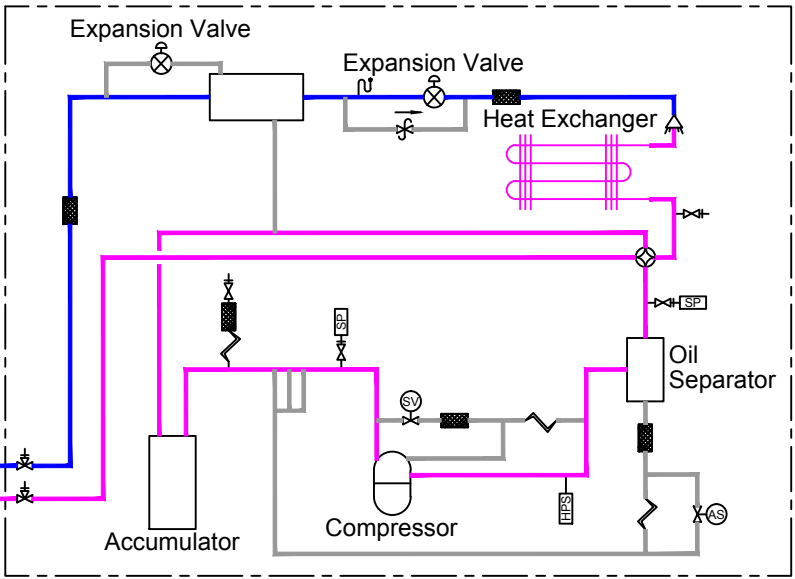
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	-
Scale	-
Unit	-

DWG. Title COOLING MODE SCHEMATIC DRAWINGS 1	
DWG. No. ME-221	PAGE 187

MEZZANINE

Gas Pipe
Liquid Pipe



Heat Pump
Outdoor Unit
Cap. 11.2 kw

Electric Mixing Valve

Hot Water Return
Hot Water Supply

Supply Air Fan
Flow Rate: 150cmh

Filter

Heat Reclaim Ventilator

Outside Air

Exhaust Air

Exhaust Air Fan
Flow Rate: 95cmh

100ϕ Duct

Round
Ceiling Diffuser

Round
Air Return Girle
(Typical of 2)

Indoor Unit
Wall Mounted Type
Cap. 4.7 kw

Indoor Unit
Wall Mounted Type
Cap. 4.7 kw

BEDROOM

LIVING ROOM

WORK STATION

KITCHEN

BATHROOM

When the heat pump is operating in cooling mode and the outdoor temperature is lower than the room temperature, the energy recovery ventilator is automatically switched to the bypass mode .



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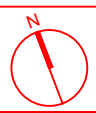
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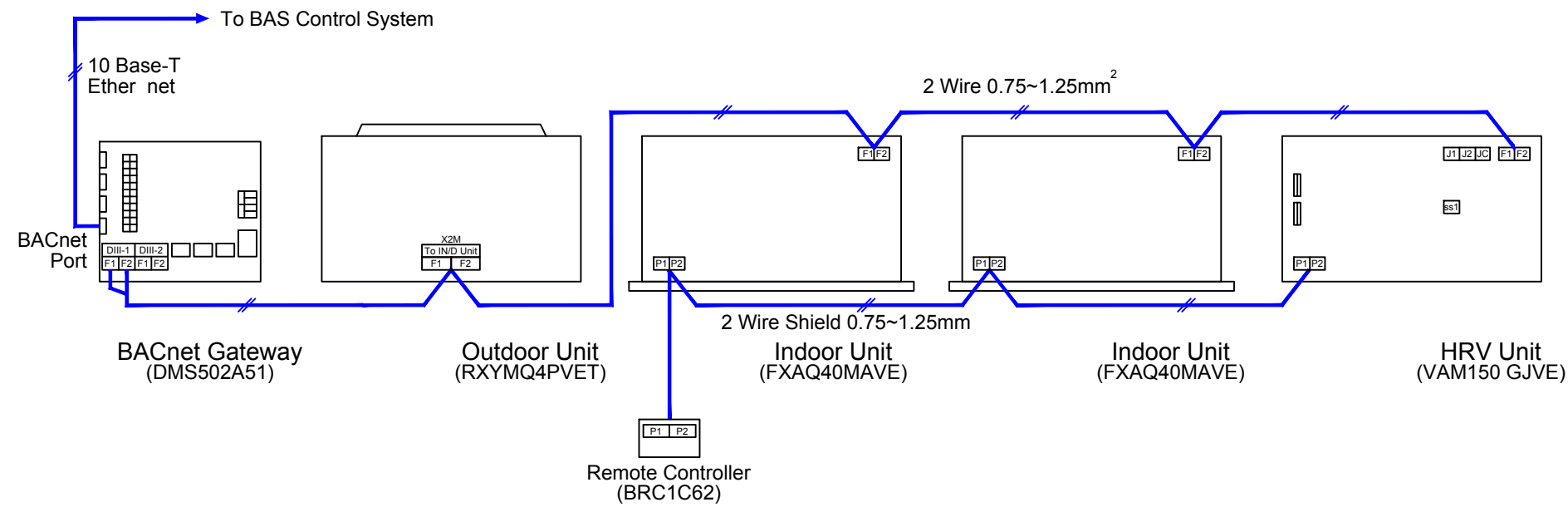
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ST	2014/03/03	CD Submission

Drawn by	LUI
Checked by	-
Scale	-
Unit	-

DWG. Title
COOLING MODE
SCHEMATIC DRAWINGS
2

DWG. No. ME-222
PAGE 188

Control Wiring Diagram

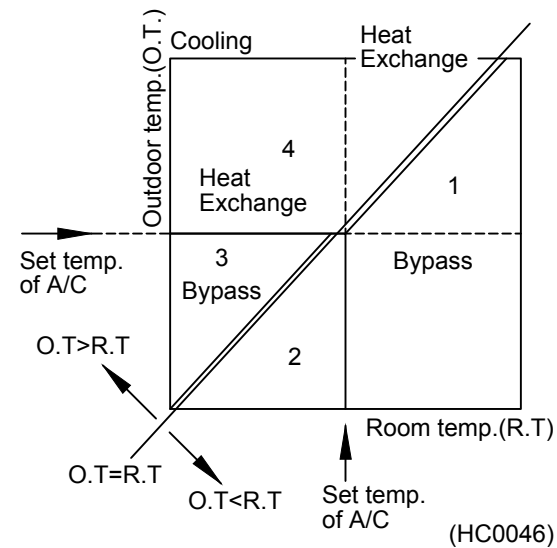


Remote Controller Function :

- 1 Cooling
- 2 Heating
- 3 Automatic Heating / Cooling Changeover
- 4 Program Dry Mode
- 5 Fan Mode
- 6 Program Timer
- 7 Program The Start/Stop Time

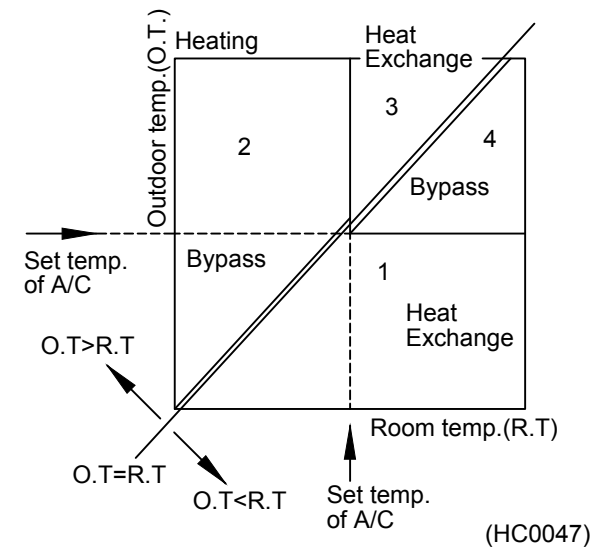
Operation Mode Of HRV Unit

1. In case of cooling operation



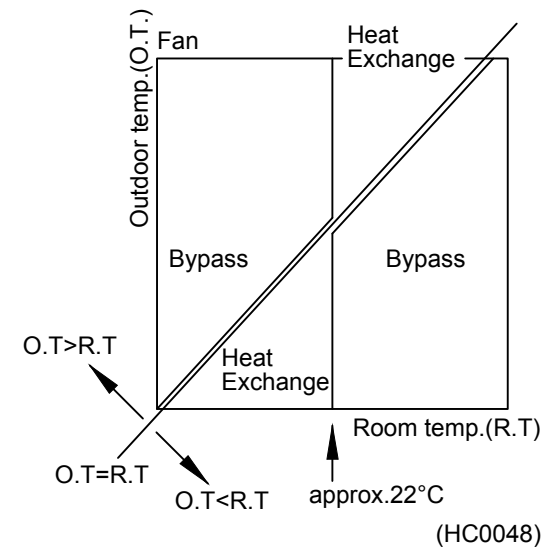
- Zone 1 : Free cooling (cooling by outdoor air) in bypass mode.
- Zone 2 : Room temperature to be achieved set temperature by heat exchange mode.
- Zone 3 : Room temperature to be achieved set temperature in bypass mode.
- Zone 4 : Fresh air supply is cooled down by indoor air in heat exchange mode (energy saving).
* The air cannot be supplied at the same temperature as the outdoor air because it is partly heat-exchanged.

2. In case of heating operation



- Zone 1 : Fresh air supply is heated up by indoor air in heat exchange mode (energy saving).
- Zone 2 : Free heating (heating by outdoor air) in bypass mode.
- Zone 3 : Room temperature to be achieved set temperature by heat exchange.
- Zone 4 : Room temperature to be achieved set temperature in bypass mode.
* The air cannot be supplied at the same temperature as the outdoor air because it is partly heat-exchanged.

3. In case of fan operation only



Ventilation mode is individually determined by the original formula of HRV with the temperature sensors.



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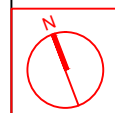
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Scale	-
Unit	-

DWG. Title
CONTROLS 1

DWG. No. ME-231
PAGE 189

Remote Controller Function :

- 1 Cooling
- 2 Heating
- 3 Automatic Heating / Cooling Changeover
- 4 Program Dry Mode
- 5 Fan Mode
- 6 Program Timer
- 7 Program The Start/Stop Time



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Scale -

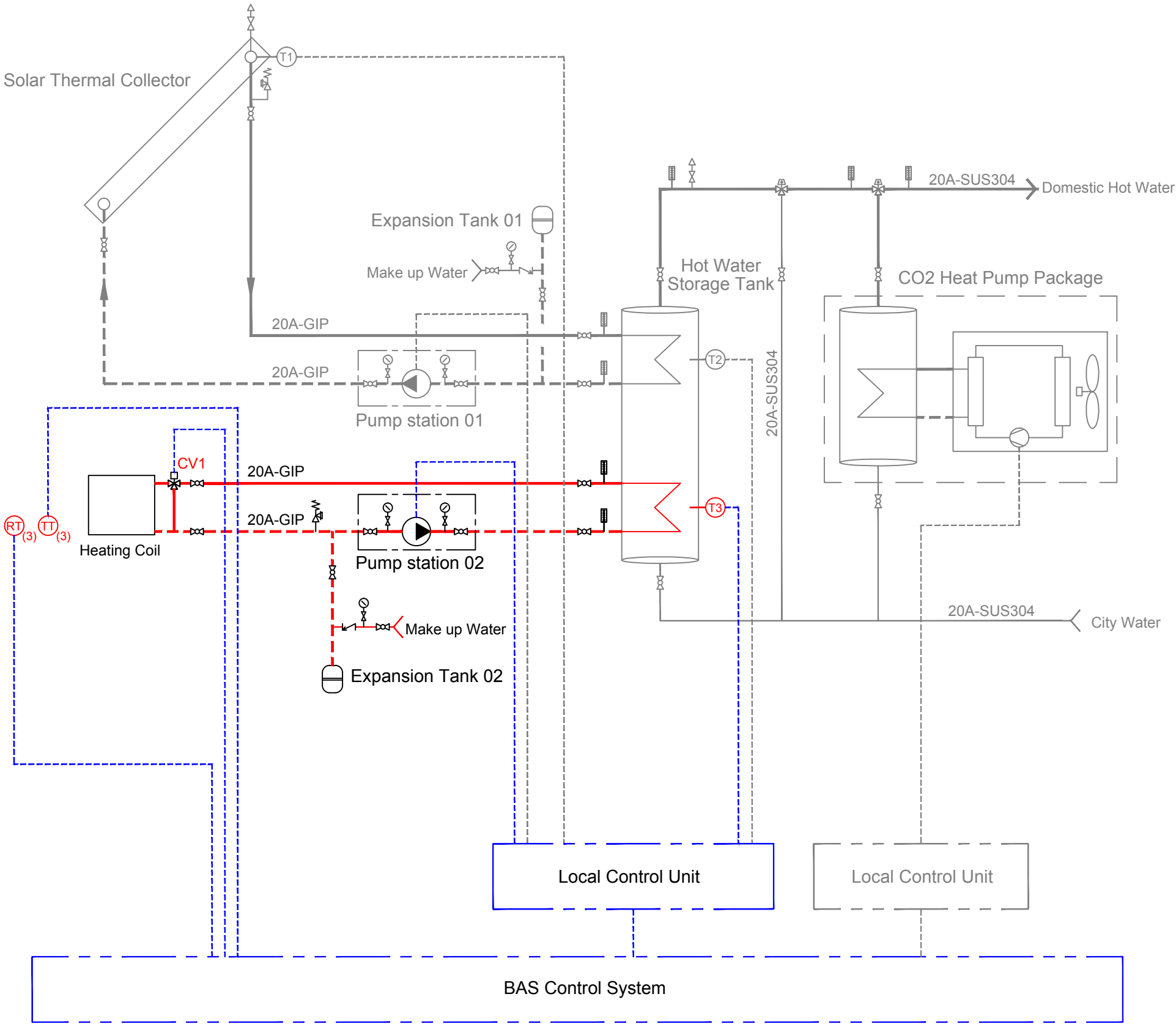
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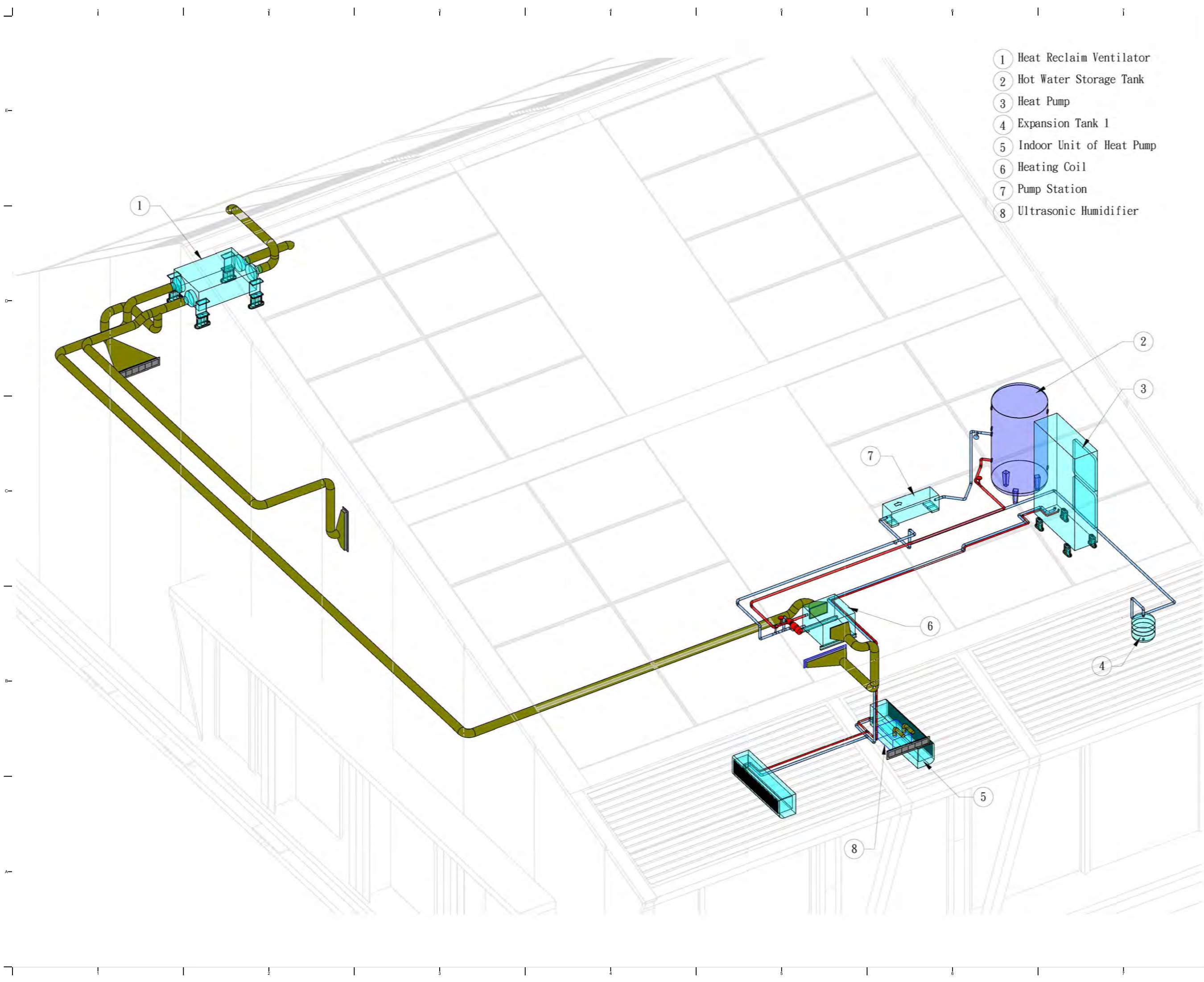
DWG. Title

CONTROLS 2

DWG. No. PAGE

ME-232 190





- ① Heat Reclaim Ventilator
- ② Hot Water Storage Tank
- ③ Heat Pump
- ④ Expansion Tank 1
- ⑤ Indoor Unit of Heat Pump
- ⑥ Heating Coil
- ⑦ Pump Station
- ⑧ Ultrasonic Humidifier



Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



國立交通大學
National Chiao Tung University

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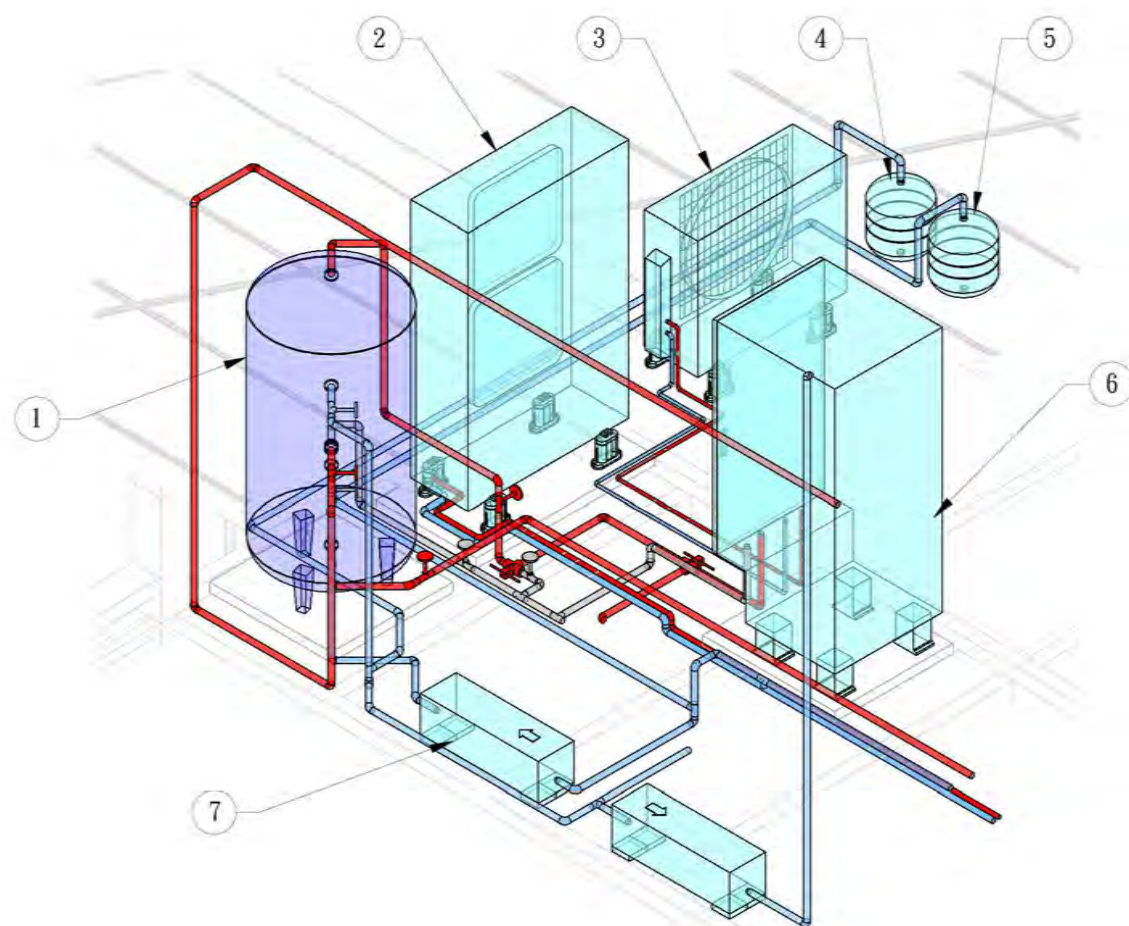
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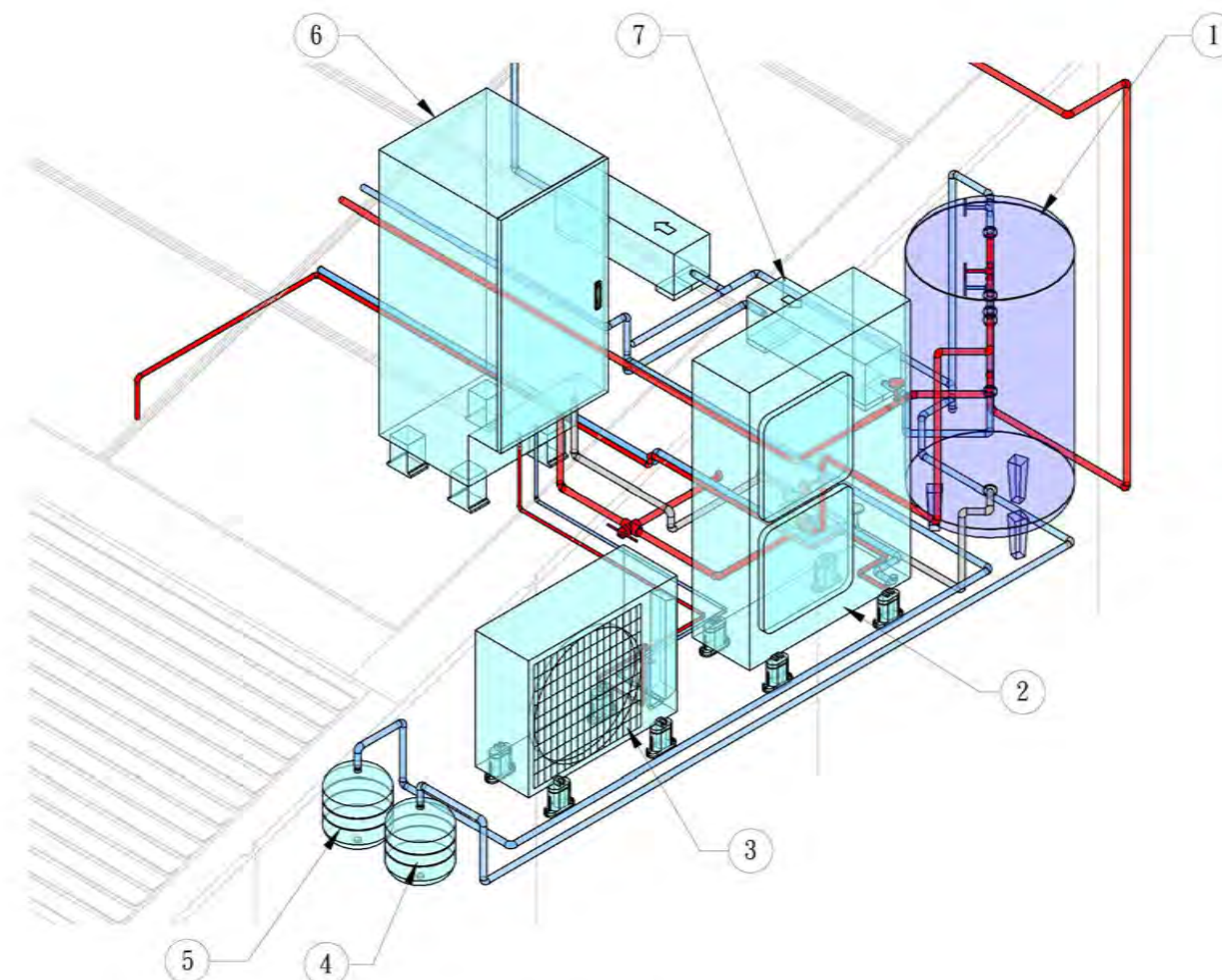
DWG. Title

ISOMETRIC DISTRIBUTION
1

DWG. No.	PAGE
ME-301	191



Mechanical Room Elevation(East North)



Mechanical Room Elevation(West South)

- ① Hot Water Storage Tank
- ② Heat Pump
- ③ CO2 Heat Pump Package1
- ④ Expansion Tank 1
- ⑤ Expansion Tank 2
- ⑥ CO2 Heat Pump Package 2
- ⑦ Pump Station



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ST	2014/03/03	CD Submission

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Checked by CHUNG

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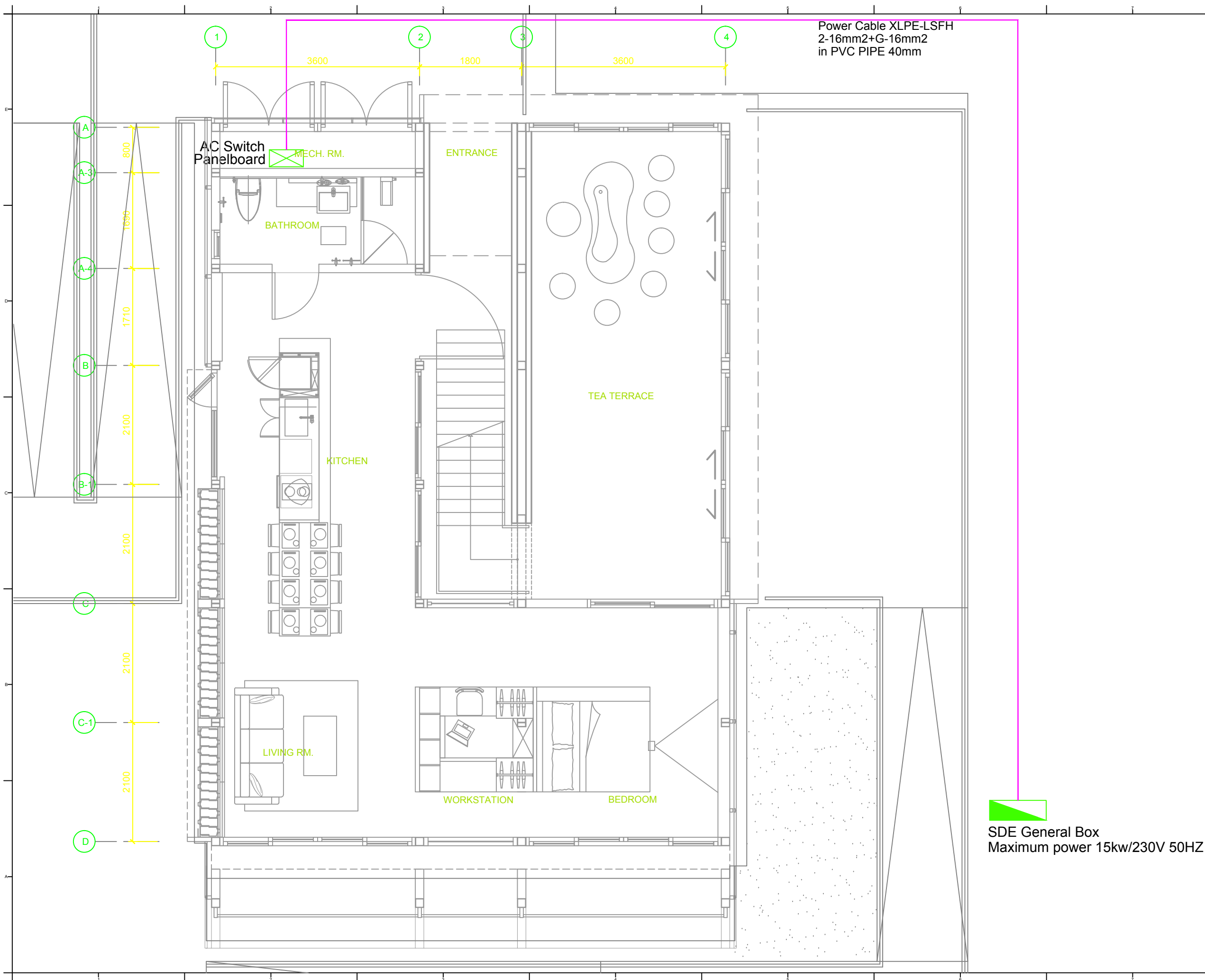
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DWG. Title

ISOMETRIC DISTRIBUTION
2

DWG. No. PAGE

ME-302 192



Project:



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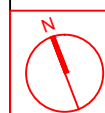
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Drawn by RAYS

Checked by -

Scale 1:60

Unit mm

DWG. Title

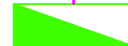
GRID INTERCONNECTION

DWG. No. PAGE

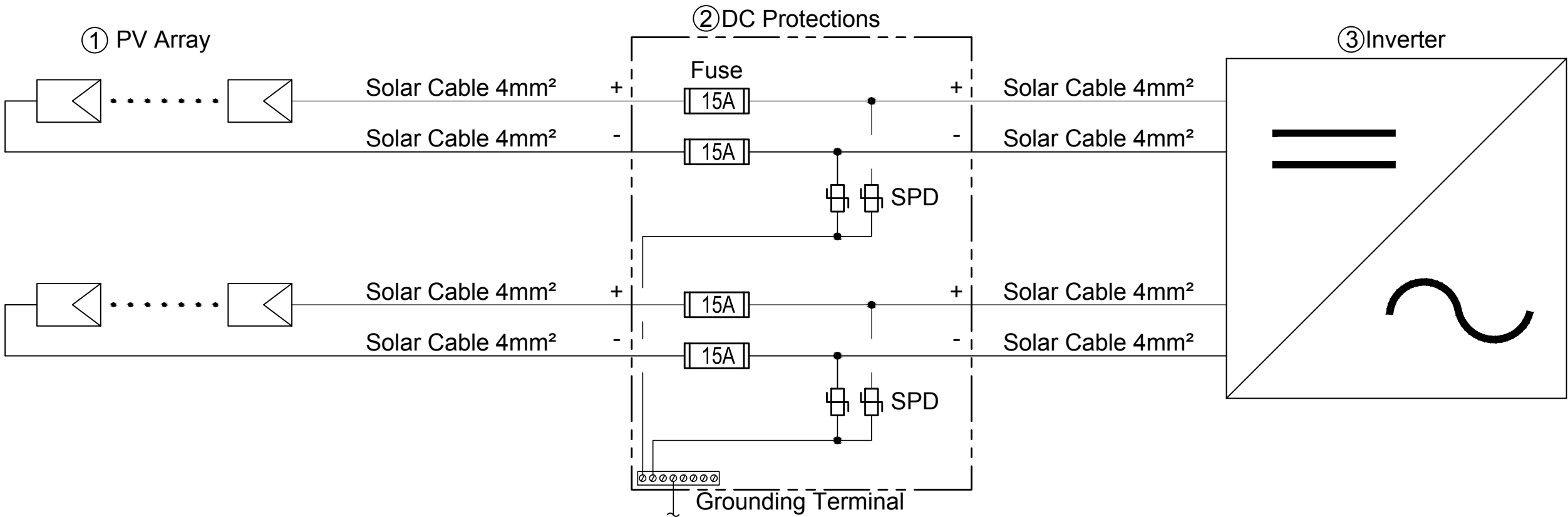
EL-001

193

Power Cable XLPE-LSFH
2-16mm²+G-16mm²
in PVC PIPE 40mm

 SDE General Box
Maximum power 15kw/230V 50HZ

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	PV Module	DelSolar	D6P250B3A	24	
②	Box	HI BOX		1	
	Fuse	Littelfuse	LPSC+KLKD	4	
	Surge Protection Device	Shihlin	BHP30	4	
③	Inverter	Delta	Solivia 5.0	1	



Photovoltaic Module :
DelSolar D6P250B3A
Max. DC power = 250Wp
Voc = 37.37 V
Vmp = 30.95 V
Isc = 8.63 A
Temp. Coeff. of Voc = -0.131 V/°C
Temp. Coeff. of Isc = 0.0043 A/°C
Temp. Coeff. of Vmp = -0.142 V/°C
Module Efficiency = 15.3 %

Inverter :
Delta Solivia 5.0
Max. input power = 6,000Wp
Input Voltage range = 125 ~ 600V
Full power MPP range = 150 ~ 480V
Max. current = 36.6A
DC connector = 2 pairs
Nominal apparent power = 5,000VA
Voltage range = 184~264Vac
AC output frequency = 50 Hz
Max. current = 27.2 Aac
Max. efficiency = 96.1%
EU efficiency = 94.6%

Voltage Calculations :
Voc @ coldest expected operating Temp.:
Low ambient Temp. = 0°C
Voc(0°C)=Voc(STC)-25°C*(ΔVoc/°C)=37.37-25*(-0.131) = 40.65V
Max. modules of string:
nmax=Vdc(input max)/Voc(0°C)=600/40.65=14.76 ≤ 14pcs
Vmp @ highest expected operating Temp.:
High ambient Temp. = 75°C
Vmp(75°C)=Vmp(STC)+(75°C-25°C)*(ΔVmp/°C)=30.95+50*(-0.142) = 23.85V
Min. modules of string:
nmin=Vmp(min)/Vmp(75°C)=150/23.85=6.29 ≥ 7pcs
Selection modules of string = 12 pcs

Voc(0°C)_string = Modules*Voc(0°C) = 12*40.65V = 487.8V < 600V
Vmp(75°C)_string = Modules*(75°C) = 12*23.85V = 286.2V > 150V

String in parallel :
Max. DC power of Charge Controller / Selection modules of string / Module Max. DC power
= 6,000W / 12pcs / 250W
= 2parallel

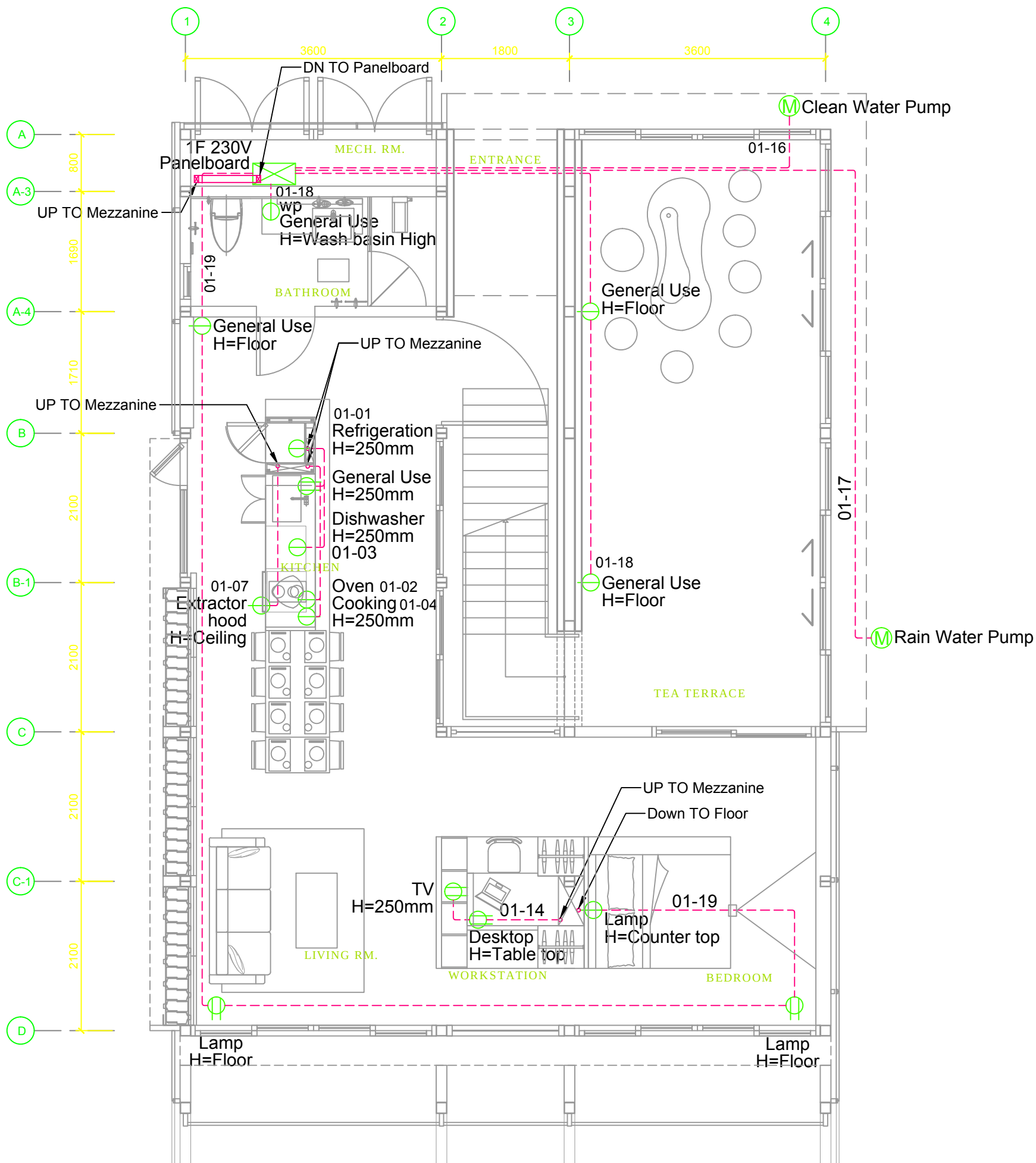


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ST	2014/03/03	CD Submission

Drawn by	GK
Checked by	DN
Scale	-
Unit	-

DWG. Title	
DC WIRING DIAGRAM	
DWG. No.	PAGE
EL-201	194



Symbol & Legend

- Single Socket outlet with child protection, 16A 2P+E, 250V
- Duplex Socket outlet with child protection, 16A 2P+E, 250V
- Single Socket outlet with water-proof cover, IP54, 16A 2P+E, 250V
- Pump or Motor 2P+E, 230V
- 230V Electrical Panelboard
- Branch Circuit (concealed in Ceiling or Wall)
- Branch Circuit (Exposed on Wall)
- WIREWAY 100mmW x 58mmH

LOOP NUMBER

01-03 — CIRCUIT NUMBER
 — PANEL NUMBER

PANEL NUMBER

01-- 1F 230V Panelboard
 02-- 2F 230V Panelboard

Project:

Institution:

Team Name: NCTU/UNICODE

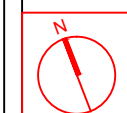
Address: 1001 Ta-Hsueh Road
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Drawn by RAYS

Checked by -

Scale 1:60

Unit mm

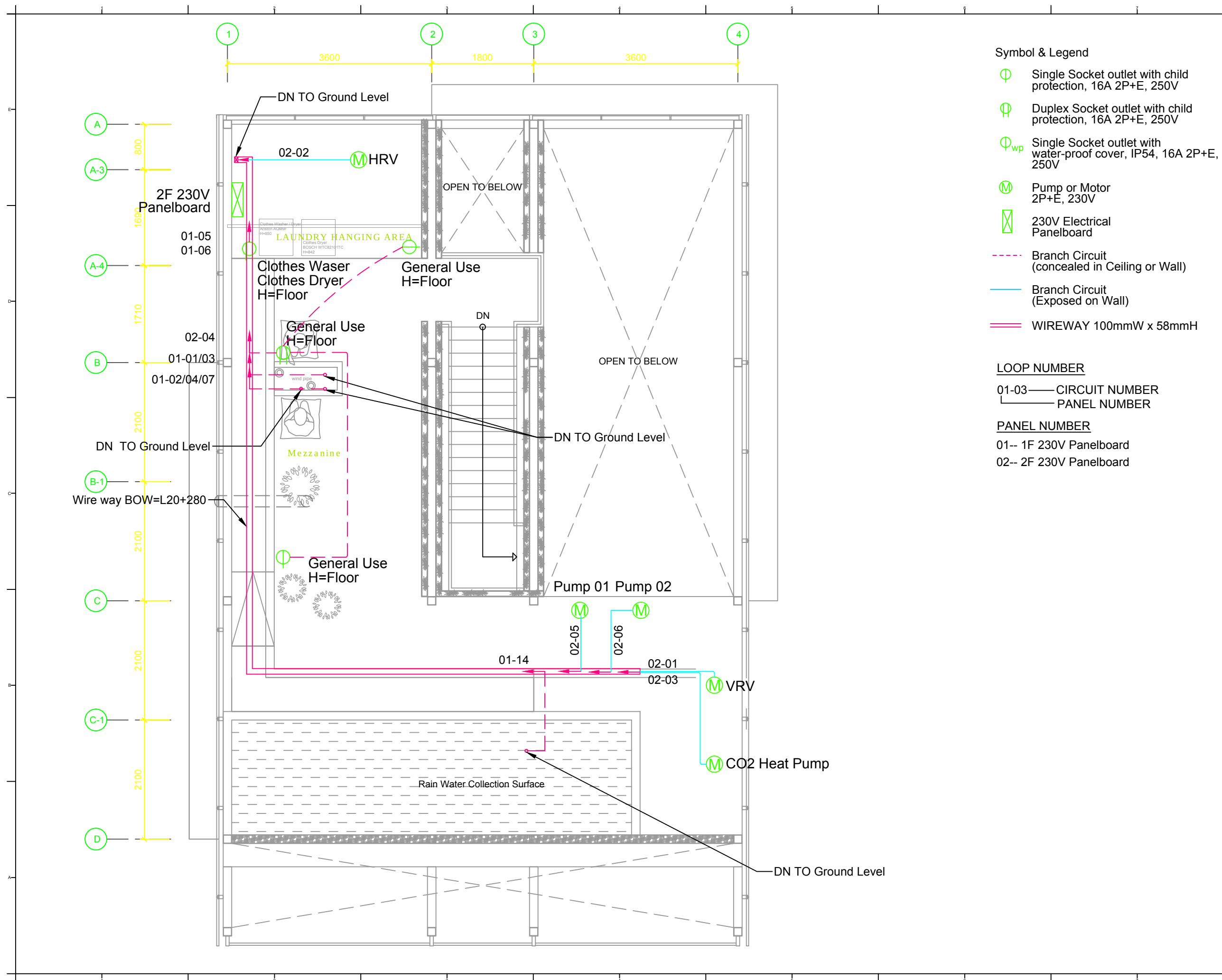
DWG. Title

POWER PLAN
 GROUND LEVEL

DWG. No. PAGE

EL-301

195



Symbol & Legend

- Single Socket outlet with child protection, 16A 2P+E, 250V
- Duplex Socket outlet with child protection, 16A 2P+E, 250V
- Single Socket outlet with water-proof cover, IP54, 16A 2P+E, 250V
- Pump or Motor 2P+E, 230V
- 230V Electrical Panelboard
- Branch Circuit (concealed in Ceiling or Wall)
- Branch Circuit (Exposed on Wall)
- WIREWAY 100mmW x 58mmH

LOOP NUMBER

- 01-03 — CIRCUIT NUMBER
- PANEL NUMBER

PANEL NUMBER

- 01-- 1F 230V Panelboard
- 02-- 2F 230V Panelboard



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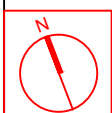
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Scale 1:60

Unit mm

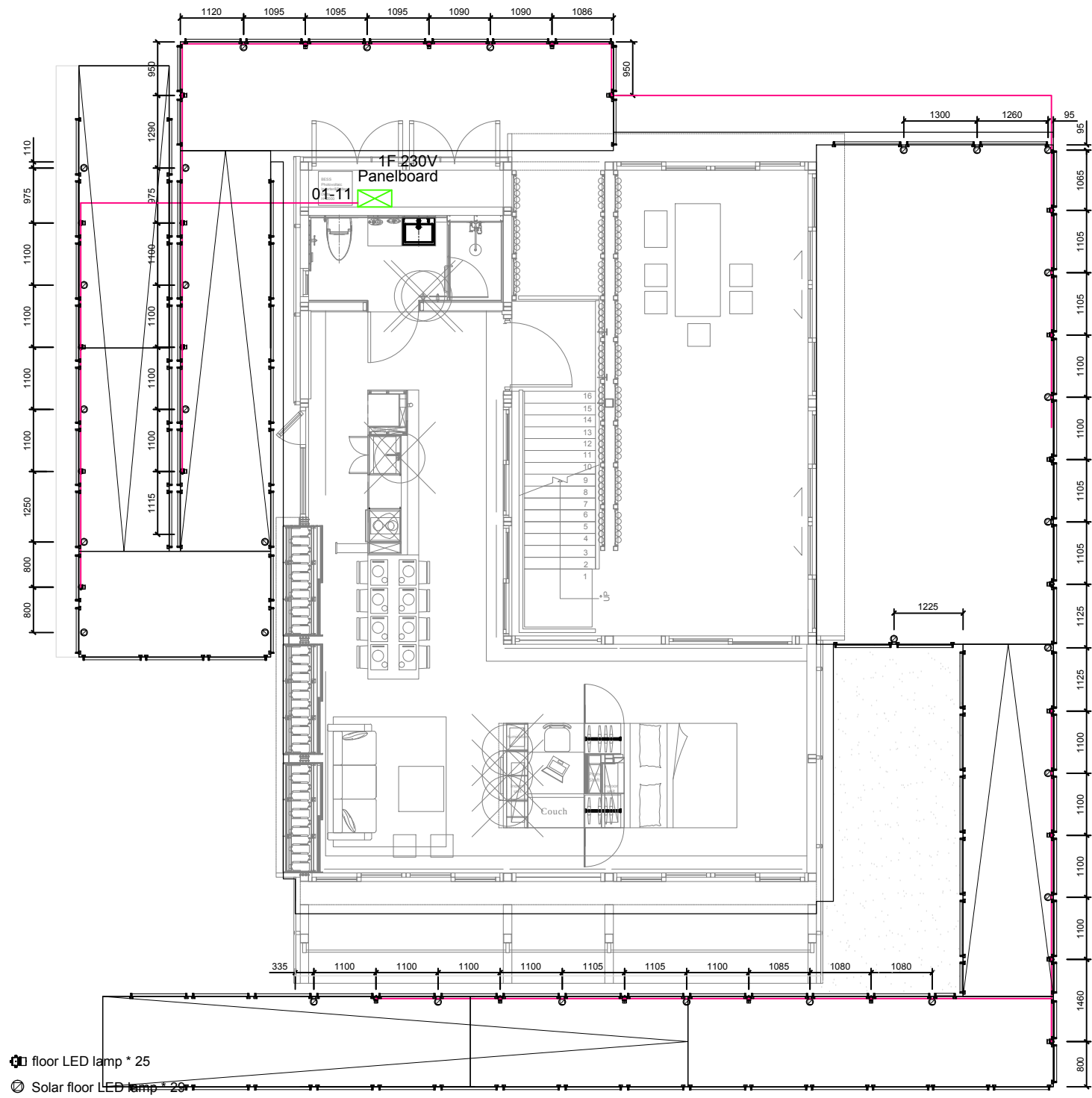
DWG. Title

POWER PLAN
MEZZANINE LEVEL

DWG. No. PAGE

EL-302

196



⊙ floor LED lamp * 25
⊙ Solar floor LED lamp * 25

- SYMBOL & LEGEND
- ⊙ Taiwan Solar, Solar Underground Light
Ni-MH battery 3.6V, 0.3W
 - ⊙ Floor LED lamp
 - ⊠ 230V Electrical Panelboard
 - Branch Circuit (concealed in Ceiling or Wall)
 - Branch Circuit (Exposed on Wall)
- LOOP NUMBER
- 01-03 — CIRCUIT NUMBER
— PANEL NUMBER
- PANEL NUMBER
- 01-- 1F 230V Panelboard
02-- 2F 230V Panelboard



Project:



Institution:



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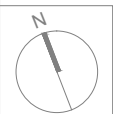
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Scale	1:100
Unit	mm

DWG. Title	
LIGHTING PLAN SITE	
DWG. No.	PAGE
EL-401	197

Project:



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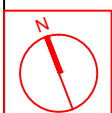
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Note:



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ST	2014/03/03	CD Submission

Drawn by RAYS

Checked by -

Scale 1:60

Unit mm

DWG. Title

LIGHTING PLAN
GROUND LEVEL

DWG. No. PAGE

EL-402

198

SYMBOL & LEGEND

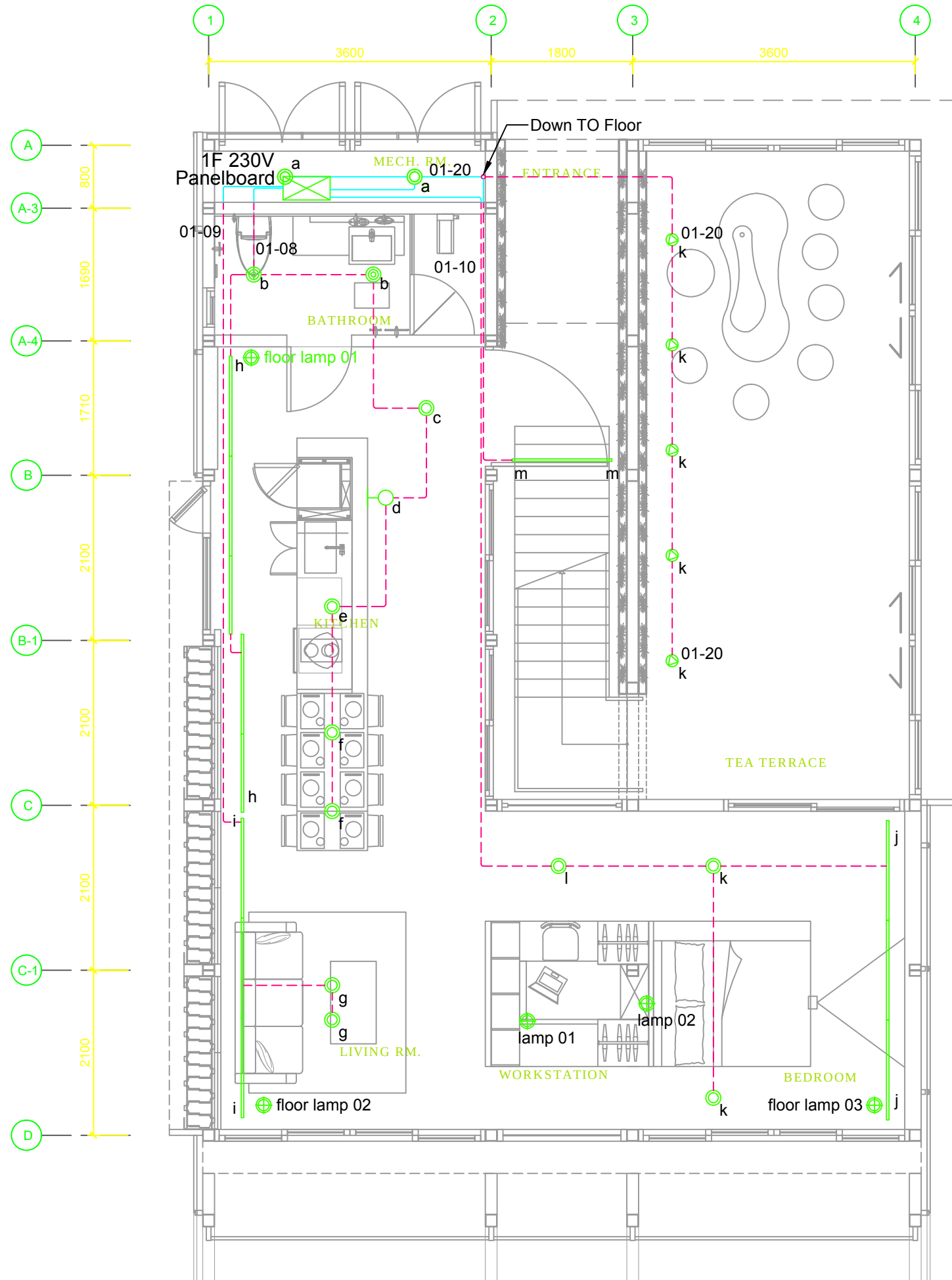
- Tons LSP-3106 / 7.2W / Warm White AC 100~240V, Wall mounted / 4000k
- Tons T8 LED / 1270mm 20W/4000k AC 100~240V, Wall mounted
- Tons T8 LED / 995mm 20W/4000k AC 100~240V, Wall mounted
- Tons KA-112R / 3.6W Warm White AC 100~240V, Wall mounted / 4000k
- Tons DA-504AD / 1.2W / Warm White AC 100~240V, Recess mounted / 4000k
- Tons DG-913C / 12.6W / Warm White AC 100~240V, Recess mounted / 4000k
- Tons ODL-005 / 1.2W / Warm White AC 100~240V, Recess mounted / 4000k
- Delta A60 / DF 10W AC 100~240V / E27 / 4000k
- Sa Lighting Switch, single-cut
- S3a Lighting Switch, double-cut
- 230V Electrical Panelboard
- Branch Circuit (concealed in Ceiling or Wall)
- Branch Circuit (Exposed on Wall)

LOOP NUMBER

01-03 — CIRCUIT NUMBER
— PANEL NUMBER

PANEL NUMBER

01-- 1F 230V Panelboard
02-- 2F 230V Panelboard



Project:



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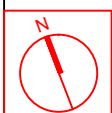
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Consultants:



Note:



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Unit	mm

DWG. Title	
LIGHTING PLAN MEZZANINE LEVEL	
DWG. No.	PAGE
EL-403	199

SYMBOL & LEGEND

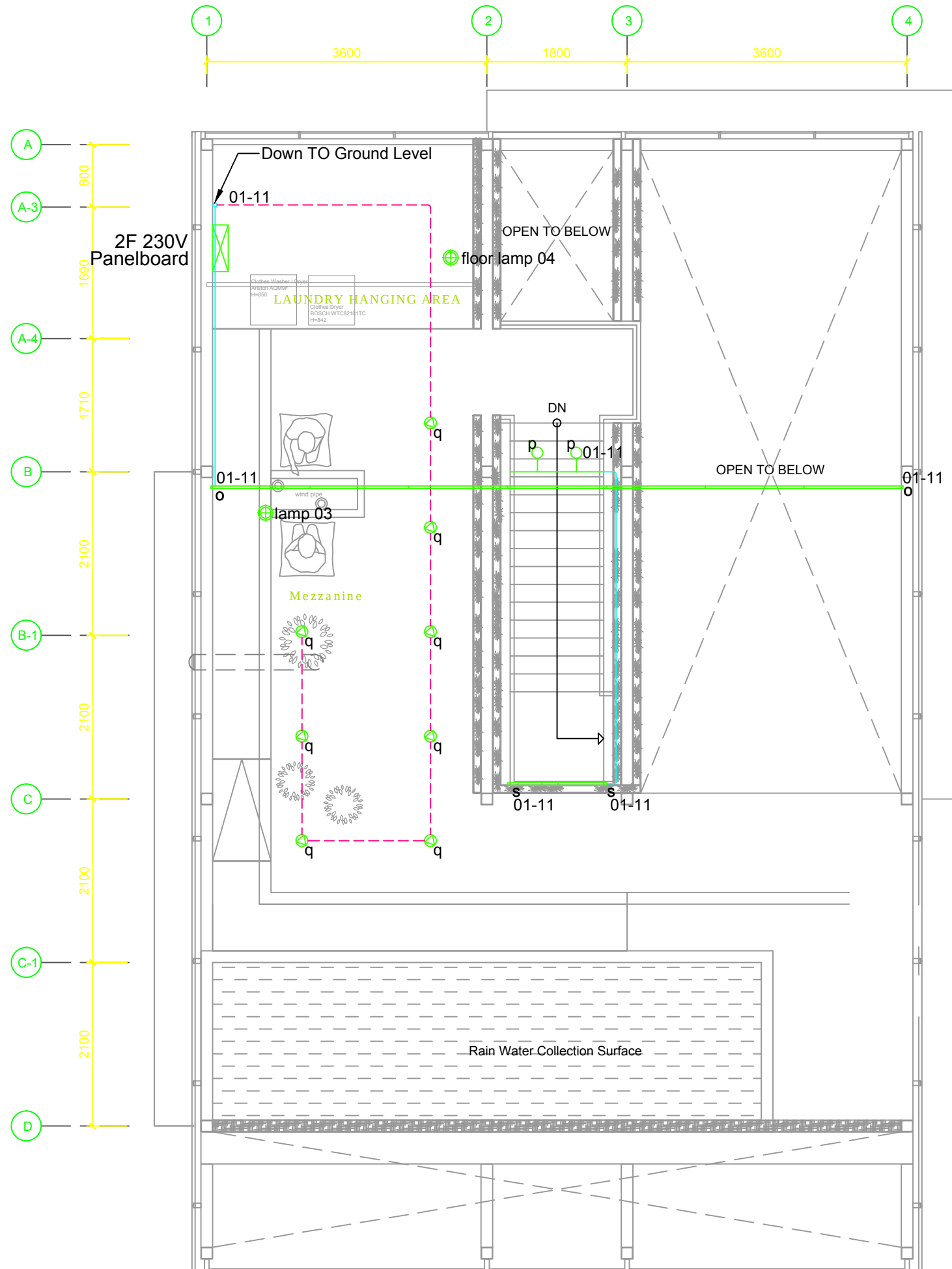
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- Tons KA-112R / 3.6W Warm White AC 100~240V, Wall mounted / 4000k
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- Tons DG-913C / 12.6W / Warm White AC 100~240V, Recess mounted / 4000k
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- Sa Lighting Switch, single-cut
- S3a Lighting Switch, double-cut
- 230V Electrical Panelboard
- Branch Circuit (concealed in Ceiling or Wall)
- Branch Circuit (Exposed on Wall)

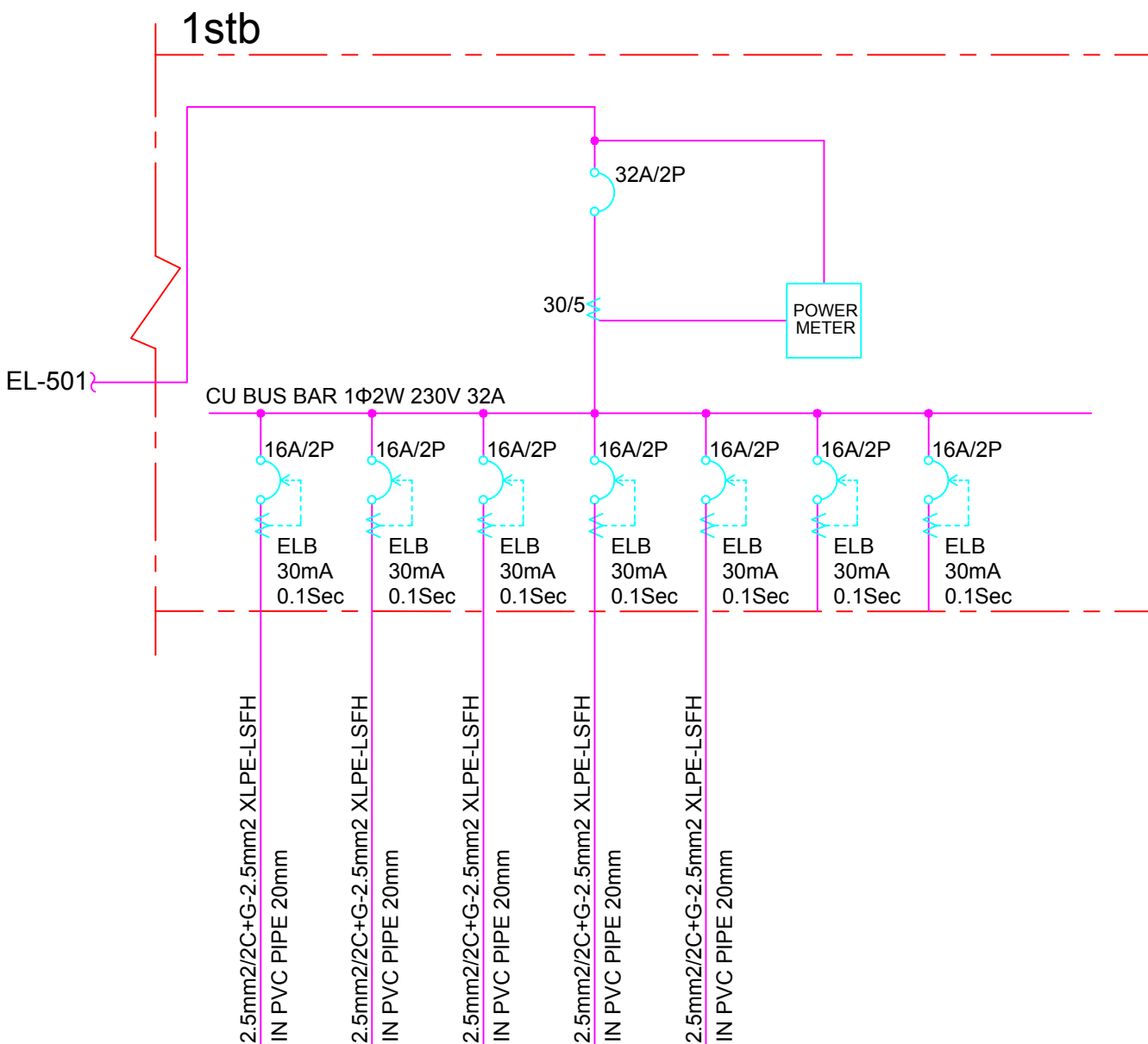
LOOP NUMBER

01-03 — CIRCUIT NUMBER
— PANEL NUMBER

PANEL NUMBER

01-- 1F 230V Panelboard
02-- 2F 230V Panelboard





CIRCUIT NO.	16	17	18	19	20	21	22
DESCRIPTION	Clean Water Pump	Rain Water Pump	BathRoom & Tea Terrace Receptacle	Floor Receptacle (General Use)	Tea Terrace & Mech. RM Lighting	SPARE	SPARE
LOAD(W)	540W	270W	-	-	8.4W	-	-
CURRENT (A)	-	-	-	-	-	-	-
VOLTAGE (V)	230V	230V	230V	230V	230V	230V	230V

- ELECTRICAL SYMBOLS
- LOW VOLTAGE MOLDED CASE CIRCUIT BREAKER
 - LOW VOLTAGE MOLDED CASE CIRCUIT BREAKER WITH GROUND FAULT CIRCUIT INTERRUPTER (GFCI)
 - GROUNDING
 - CURRENT TRANSFORMER
 - TRANSFORMER
 - LOW VOLTAGE FUSE
 - LSFH CABLE 0.6/1KV LOW SMOKE FREE OF HALOGEN CABLE
 - Surge Protection Device



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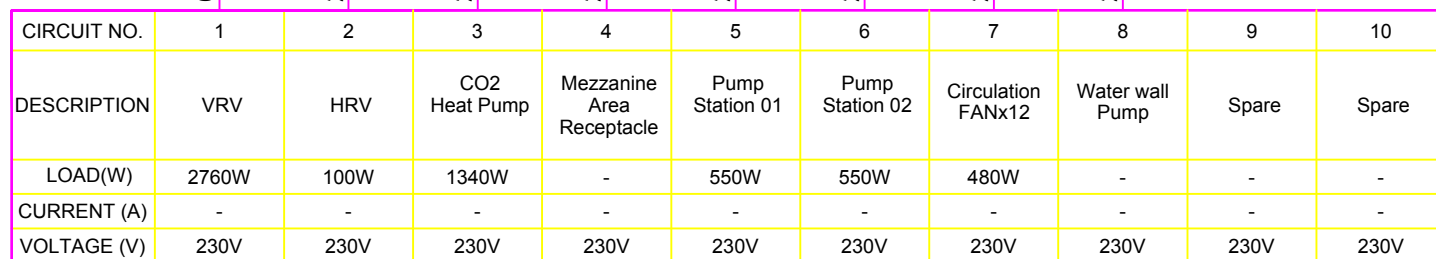
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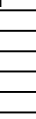


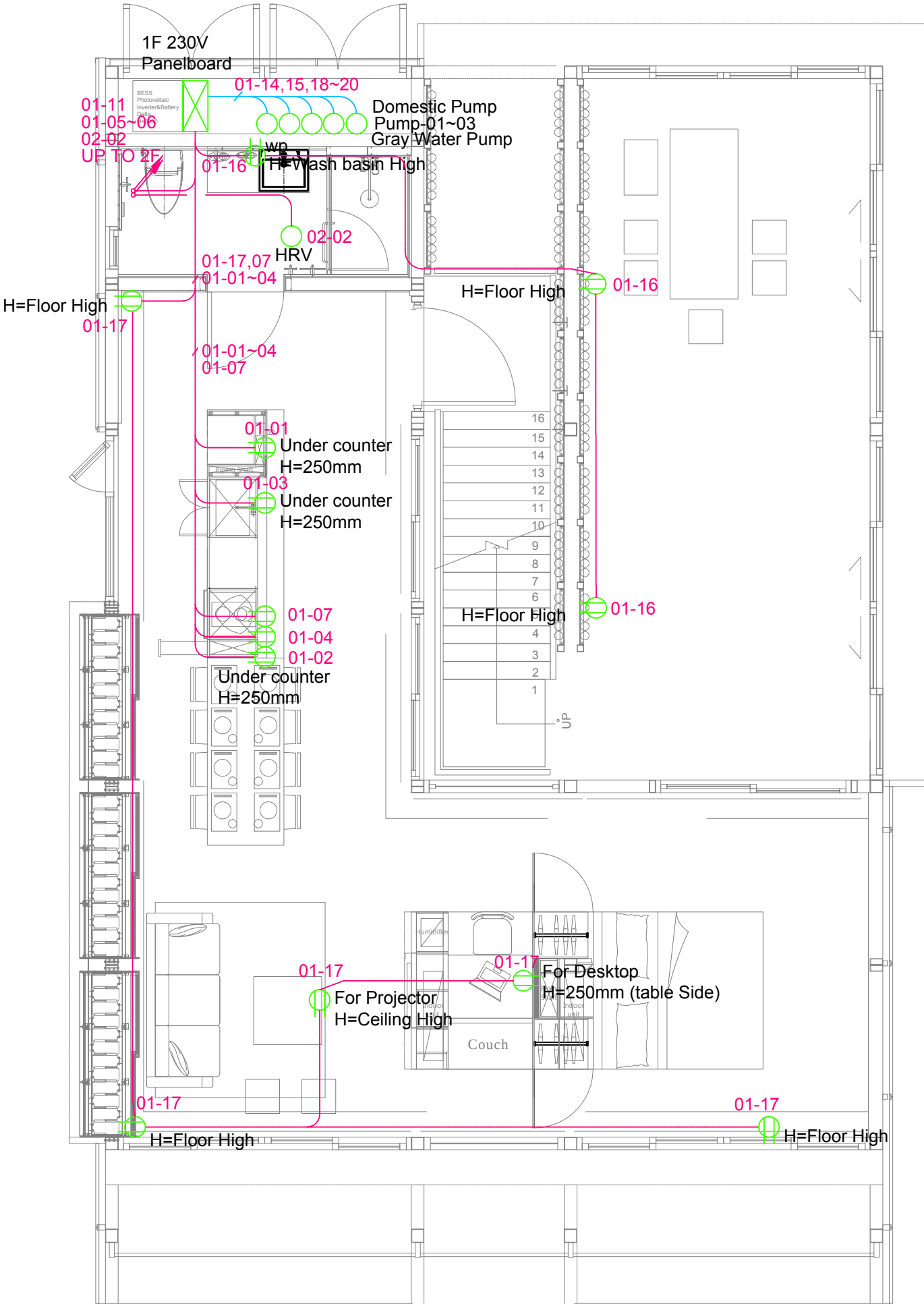
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ST	2014/03/03	CD Submission

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Scale	-
Unit	-

DWG. Title	
ONE-LINE DIAGRAM 2	
DWG. No.	PAGE
EL-502	201

 Surge Protection Device

 Solar Decathlon Europe		
Project:  ORCHID HOUSE		
Institution:  國立交通大學 <i>National Chiao Tung University</i>		
NCTU Architecture 國立交通大學建築研究所		
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Consultants:  UIS United Integrated Services		
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Mark	Date	Description
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ST	2014/03/03	CD Submission
Drawn by _____ RAYS		
Checked by _____ -		
Scale _____ -		
Unit _____ -		
DWG. Title ONE-LINE DIAGRAM 3		
DWG. No. EL-503	PAGE 202	



SYMBOL & LEGEND	
	Socket outlet with child protection, 16A 2P+E, 250V
	Socket outlet with water-proof cover, IP54, 16A 2P+E, 250V
	Pump or Motor 2P+E, 220V
	230V Electrical Panelboard
	Branch Circuit (concealed in Ceiling or Wall)
	Branch Circuit (Exposed on Wall)
NOTE	
<u>LOOP NUMBER</u> 01-03 — CIRCUIT NUMBER — PANEL NUMBER <u>PANEL NUMBER</u> 01-- 1F 230V Panelboard 02-- 2F 230V Panelboard	



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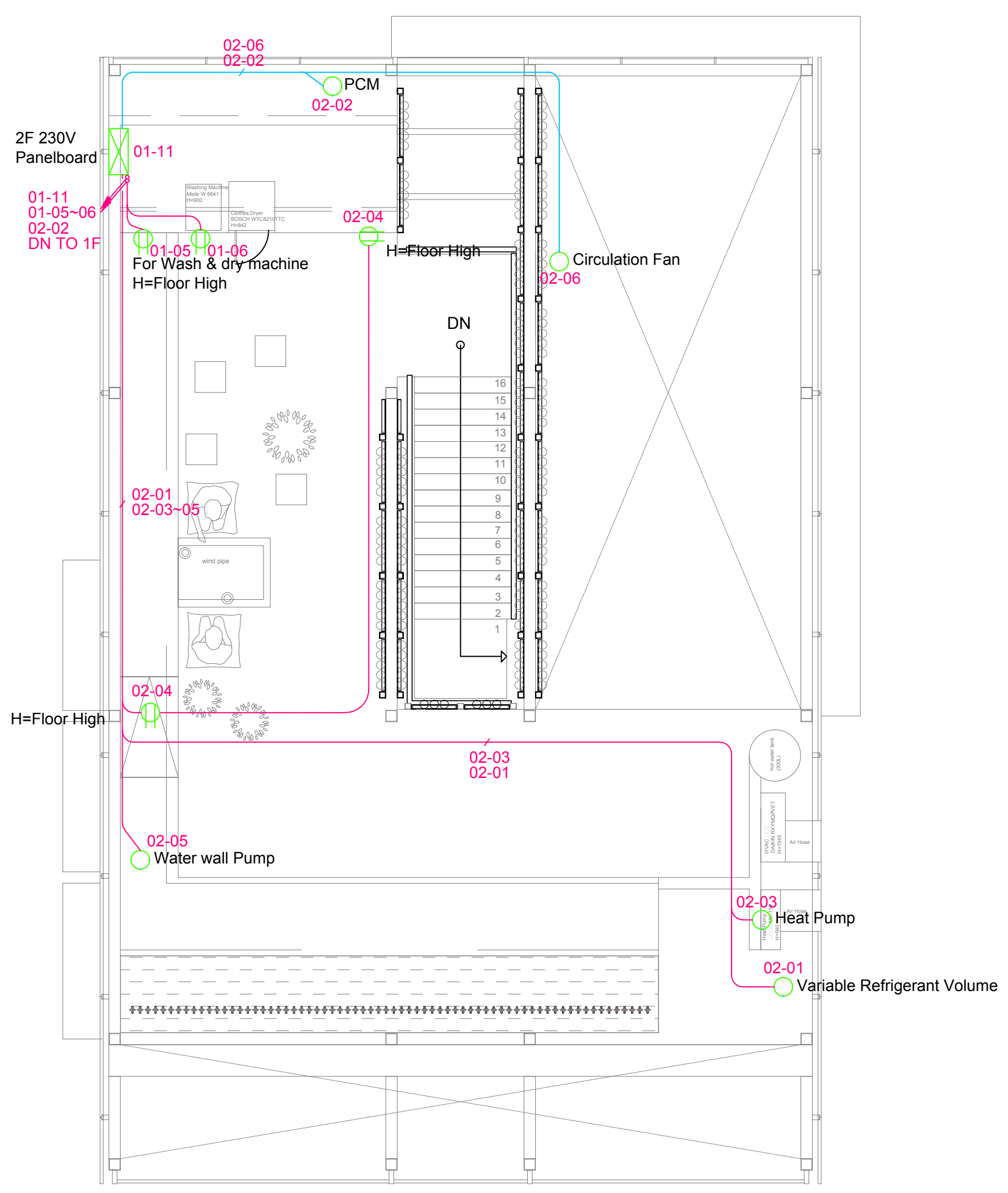
Team Name: NCTU/UNICODE
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Note:		
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ST	2014/03/03	CD Submission

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Checked by	-
Scale	1:60
Unit	mm

DWG. Title	
AC CIRCUIT LAYOUT GROUND LEVEL	
DWG. No.	PAGE
EL-601	203



SYMBOL & LEGEND	
	Socket outlet with child protection, 16A 2P+E, 250V
	Socket outlet with water-proof cover, IP54, 16A 2P+E, 250V
	Pump or Motor 2P+E, 220V
	230V Electrical Panelboard
	Branch Circuit (concealed in Ceiling or Wall)
	Branch Circuit (Exposed on Wall)
NOTE	
<u>LOOP NUMBER</u> 01-03 — CIRCUIT NUMBER — PANEL NUMBER <u>PANEL NUMBER</u> 01-- 1F 230V Panelboard 02-- 2F 230V Panelboard	



Project:

Institution:

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Consultants:

United Integrated Services

Note:

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Drawn by RAYS

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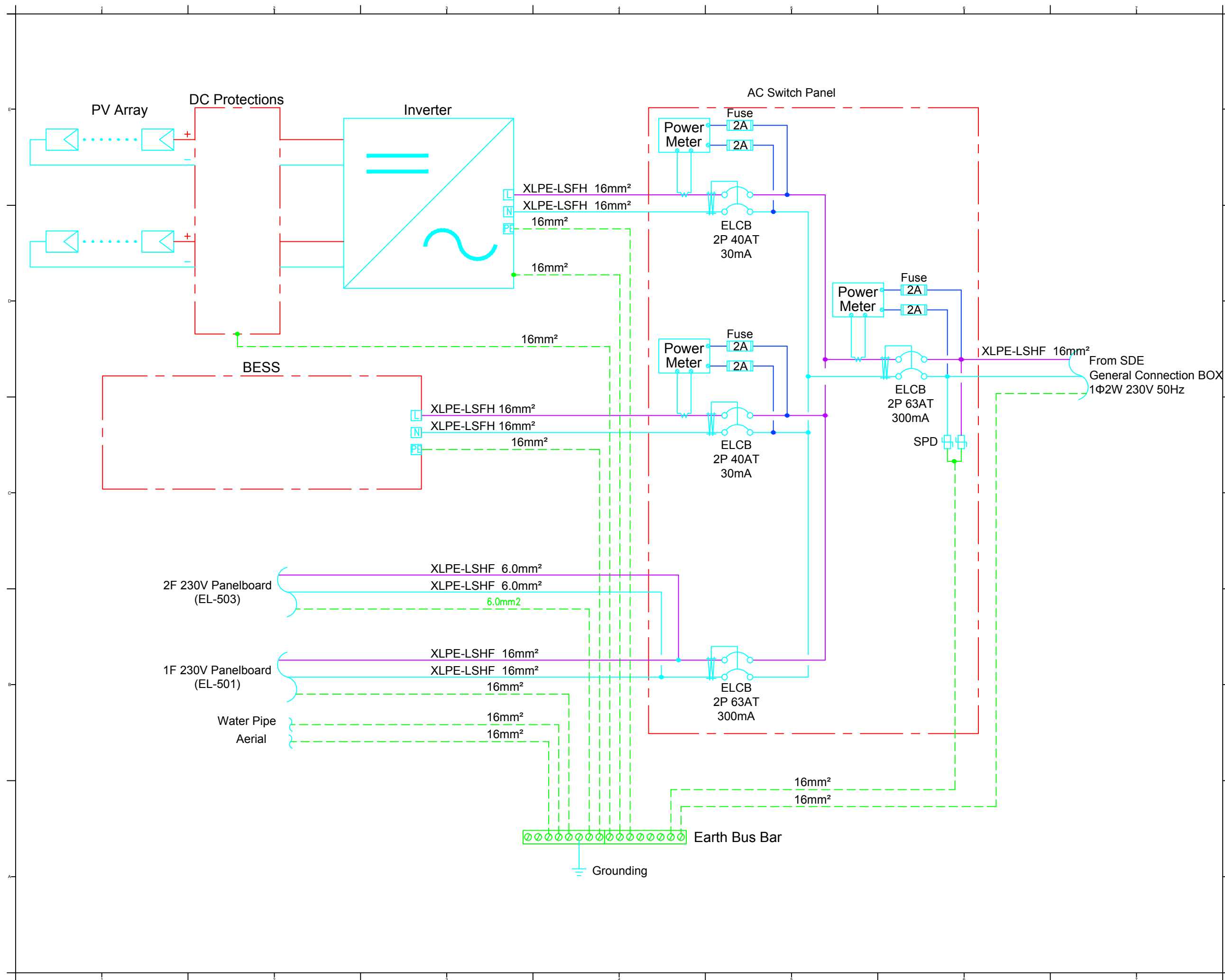
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Unit mm

DWG. Title
AC CIRCUIT LAYOUT
MEZZANINE LEVEL

DWG. No. EL-602

PAGE 204



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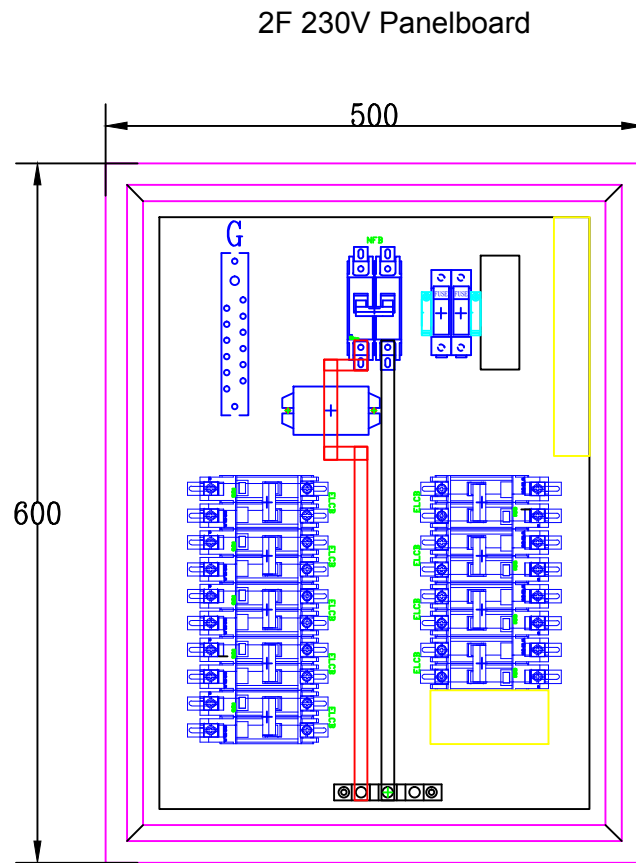
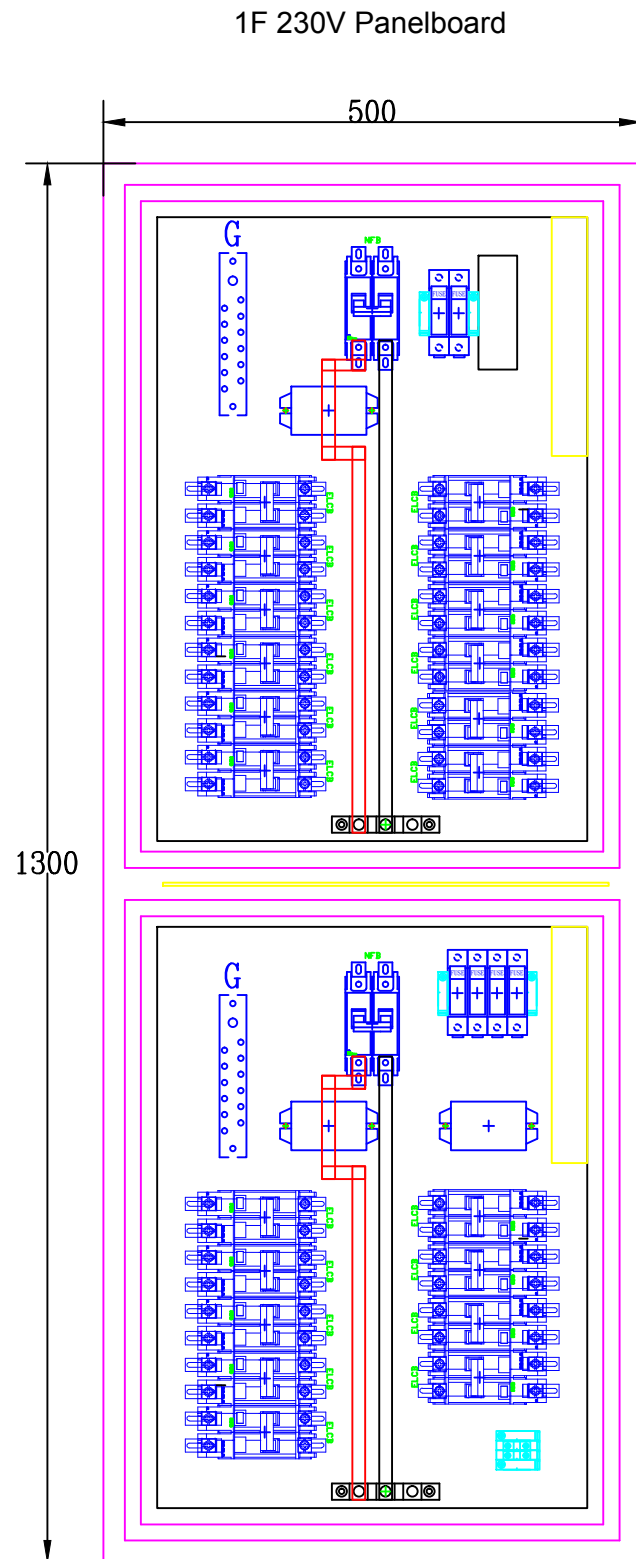


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ST	2014/03/03	CD Submission

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Checked by	-
Scale	-
Unit	-

DWG. Title	
GROUNDING SYSTEM	
DWG. No.	PAGE
EL-603	205



Project:



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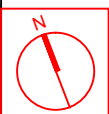
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Scale -

Unit mm

DWG. Title

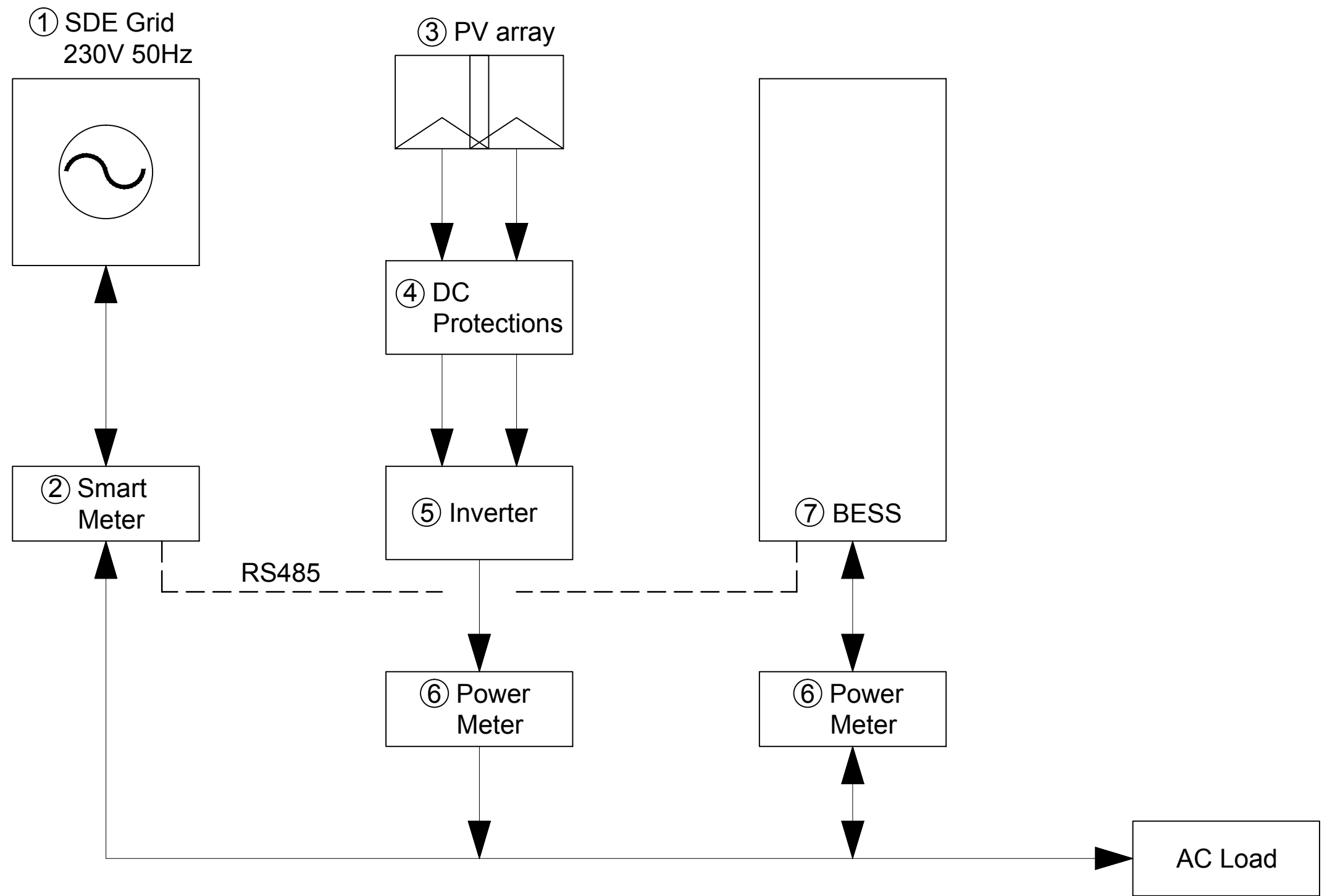
AC CIRCUIT LAYOUT

DWG. No. PAGE

EL-604

206

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	SDE Grid			1	Organizer Supplied Meter
②	Smart Meter	Schneider	PM3200	1	
③	PV array	DelSolar	D6P250B3A	24	
④	DC Protections	HI BOX		1	
⑤	Inverter	Delta	Solivia 5.0	1	
⑥	Power Meter	Schneider	PM3200	2	
⑦	BESS	Delta		1	Battery Energy Storage System

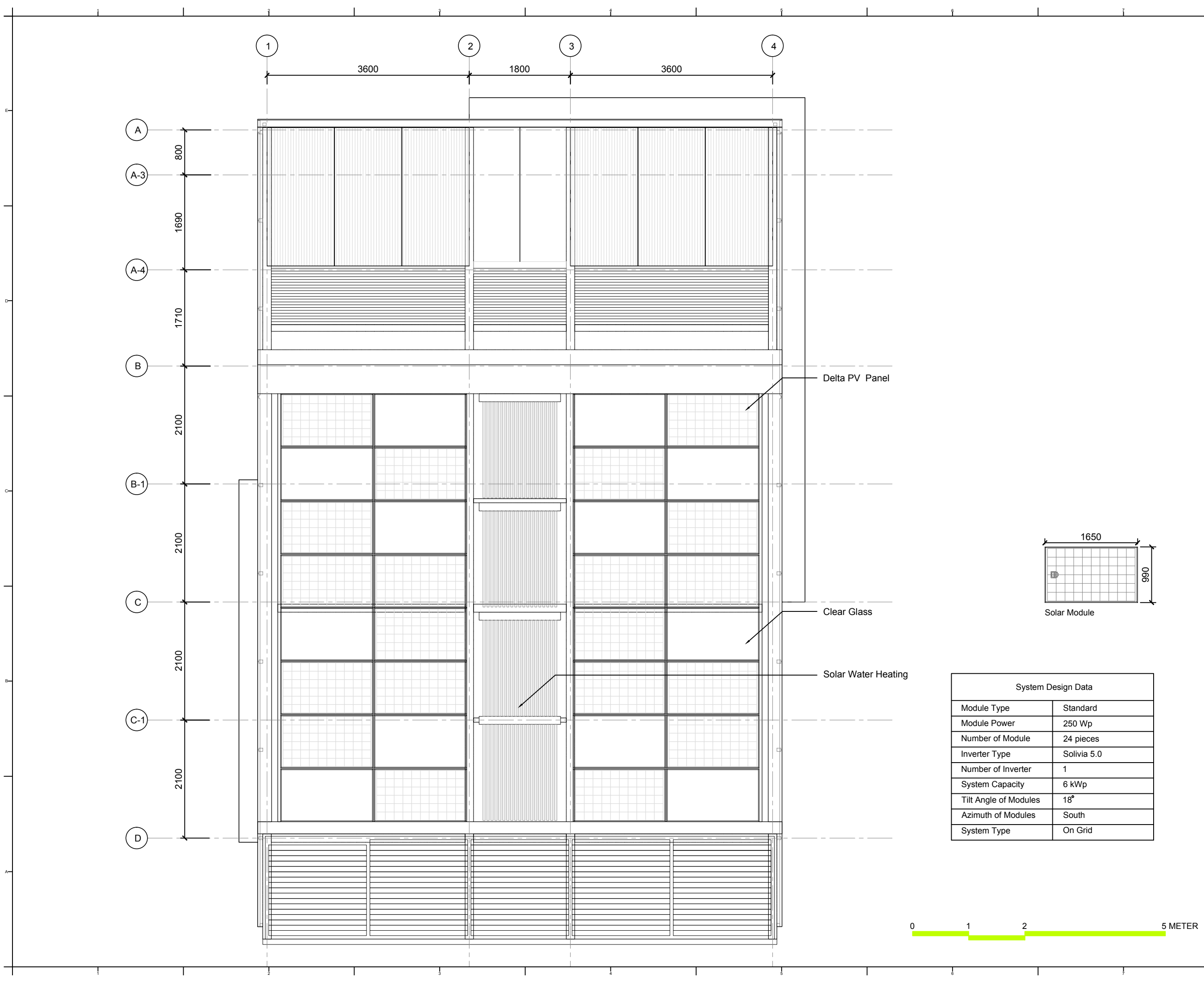


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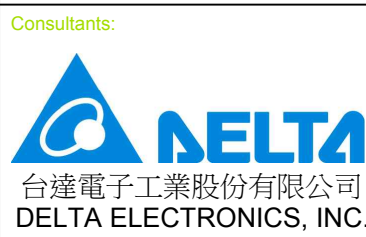
DWG. Title	PHOTOVOLTAIC SYSTEM: GENERAL 1
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DWG. No.	PAGE
PV-001	207



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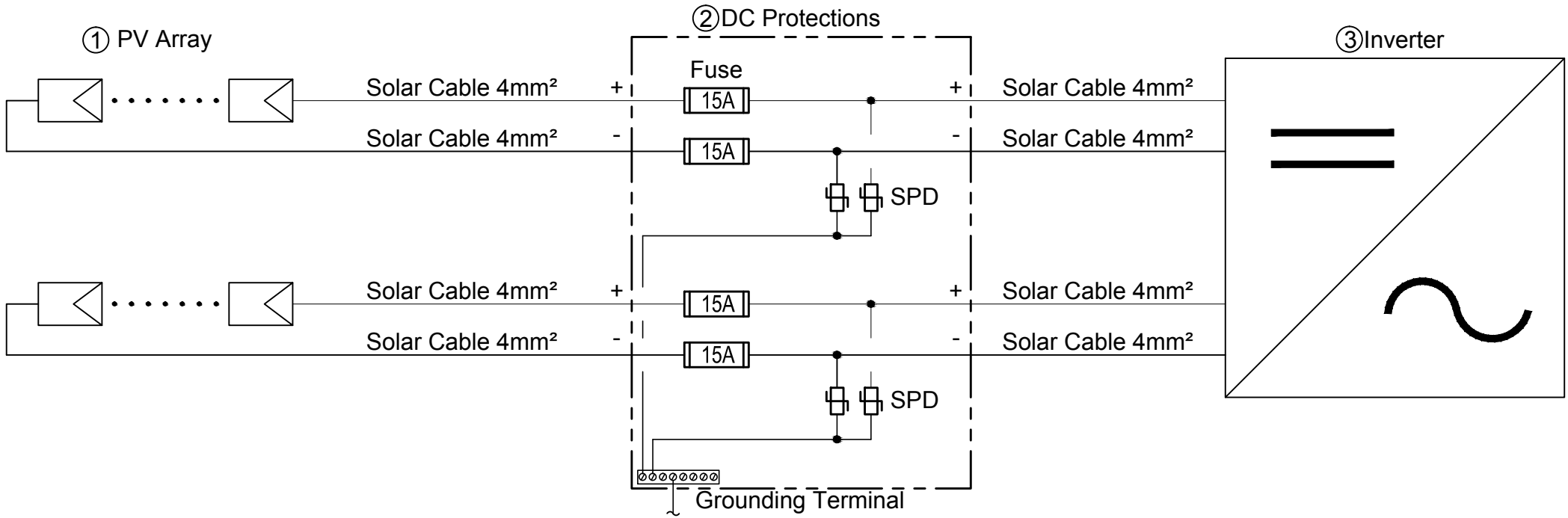
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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Scale	1:60
Unit	mm

DWG. Title	
PHOTOVOLTAIC SYSTEM: GENERAL 2	
DWG. No.	PAGE
PV-002	208

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	PV Module	DelSolar	D6P250B3A	24	
②	Box	HI BOX		1	
	Fuse	Littelfuse	LPSC+KLKD	4	
	Surge Protection Device	Shihlin	BHP30	4	
③	Inverter	Delta	Solivia 5.0	1	



Photovoltaic Module :
DelSolar D6P250B3A
Max. DC power = 250Wp
Voc = 37.37 V
Vmp = 30.95 V
Isc = 8.63 A
Temp. Coeff. of Voc = -0.131 V/°C
Temp. Coeff. of Isc = 0.0043 A/°C
Temp. Coeff. of Vmp = -0.142 V/°C
Module Efficiency = 15.3 %

Inverter :
Delta Solivia 5.0
Max. input power = 6,000Wp
Input Voltage range = 125 ~ 600V
Full power MPP range = 150 ~ 480V
Max. current = 36.6A
DC connector = 2 pairs
Nominal apparent power = 5,000VA
Voltage range = 184~264Vac
AC output frequency = 50 Hz
Max. current = 27.2 Aac
Max. efficiency = 96.1%
EU efficiency = 94.6%

Voltage Calculations :
Voc @ coldest expected operating Temp.:
Low ambient Temp. = 0°C
Voc(0°C)=Voc(STC)-25°C*(ΔVoc/°C)=37.37-25*(-0.131) = 40.65V
Max. modules of string:
nmax=Vdc(input max)/Voc(0°C)=600/40.65=14.76 ≤ 14pcs
Vmp @ highest expected operating Temp.:
High ambient Temp. = 75°C
Vmp(75°C)=Vmp(STC)+(75°C-25°C)*(ΔVmp/°C)=30.95+50*(-0.142) = 23.85V
Min. modules of string:
nmin=Vmp(min)/Vmp(75°C)=150/23.85=6.29 ≥ 7pcs
Selection modules of string = 12 pcs

$$Voc(0^{\circ}C)_{string} = Modules * Voc(0^{\circ}C) = 12 * 40.65V = 487.8V < 600V$$

$$Vmp(75^{\circ}C)_{string} = Modules * (75^{\circ}C) = 12 * 23.85V = 286.2V > 150V$$

String in parallel :
Max. DC power of Charge Controller / Selection modules of string / Module Max. DC power
= 6,000W / 12pcs / 250W
= 2parallel

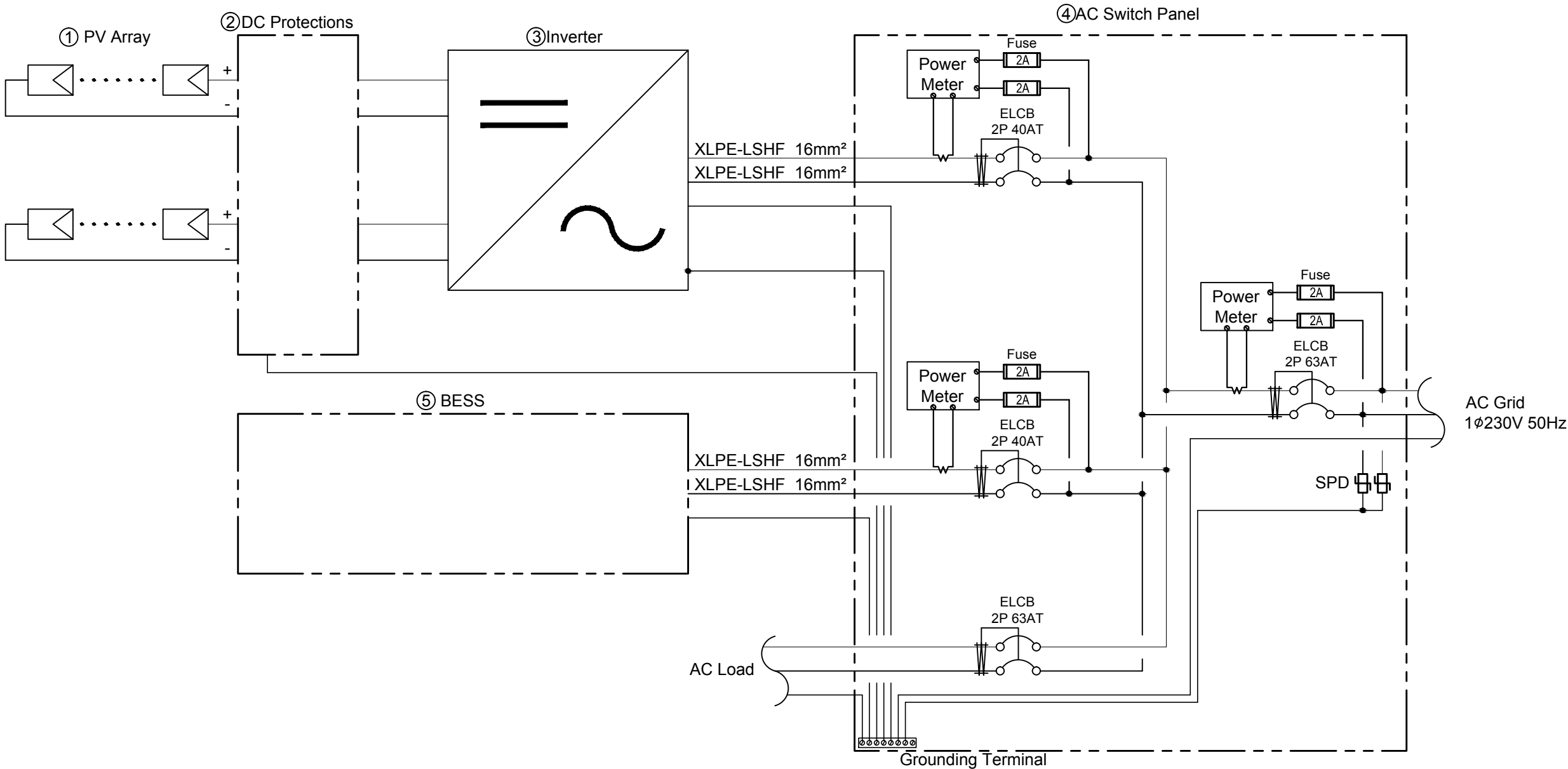
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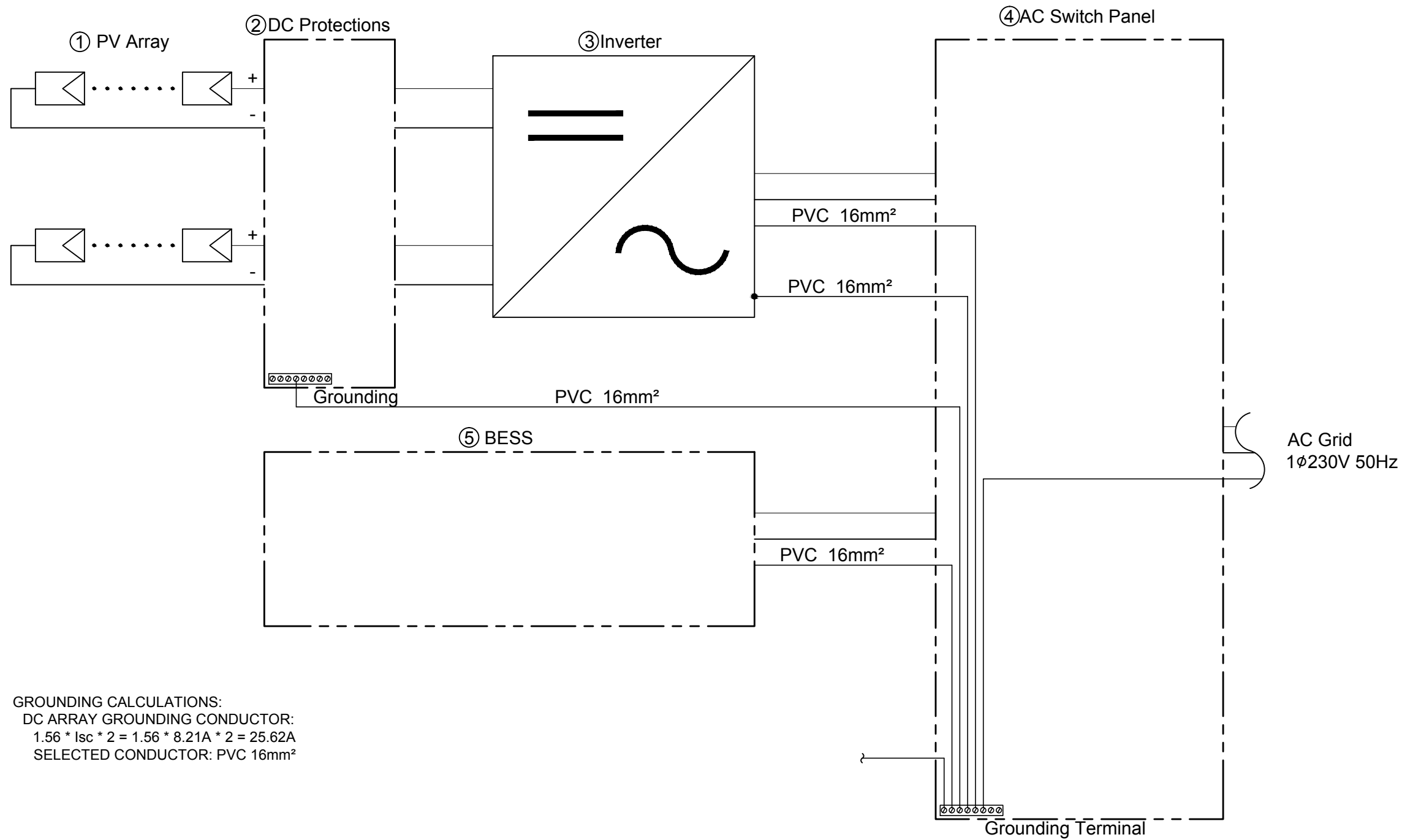
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Unit	N/A

DWG. Title PHOTOVOLTAIC SYSTEM: DC CIRCUITS	
DWG. No. PV-011	PAGE 209

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	PV Module	DelSolar	D6P250B3A	24	
②	DC Protections	HI BOX		1	
③	Inverter	Delta	Solivia 5.0	1	
④	Box	HI BOX		1	
	Power Meter	Schneider	PM3200	3	
	ELCB	Shihlin		4	
	Surge Protection Device	Shihlin		2	
⑤	BESS	Delta		1	Battery Energy Storage System



Tag	Components	Manufacturer	Model	Q'ty	Notes
①	PV Module	DeiSolar	D6P250B3A	24	
②	DC Protections	HI BOX		1	
③	Inverter	Delta	Solivia 5.0	1	
④	AC Switch Panel	HI BOX		1	
⑤	BESS	Delta		1	Battery Energy Storage System



GROUNDING CALCULATIONS:
DC ARRAY GROUNDING CONDUCTOR:
 $1.56 * I_{sc} * 2 = 1.56 * 8.21A * 2 = 25.62A$
SELECTED CONDUCTOR: PVC 16mm²



**Solar
Decathlon
Europe**

Project:



**ORCHID
HOUSE**

Institution:



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Consultants:



DELTA

台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

Note:

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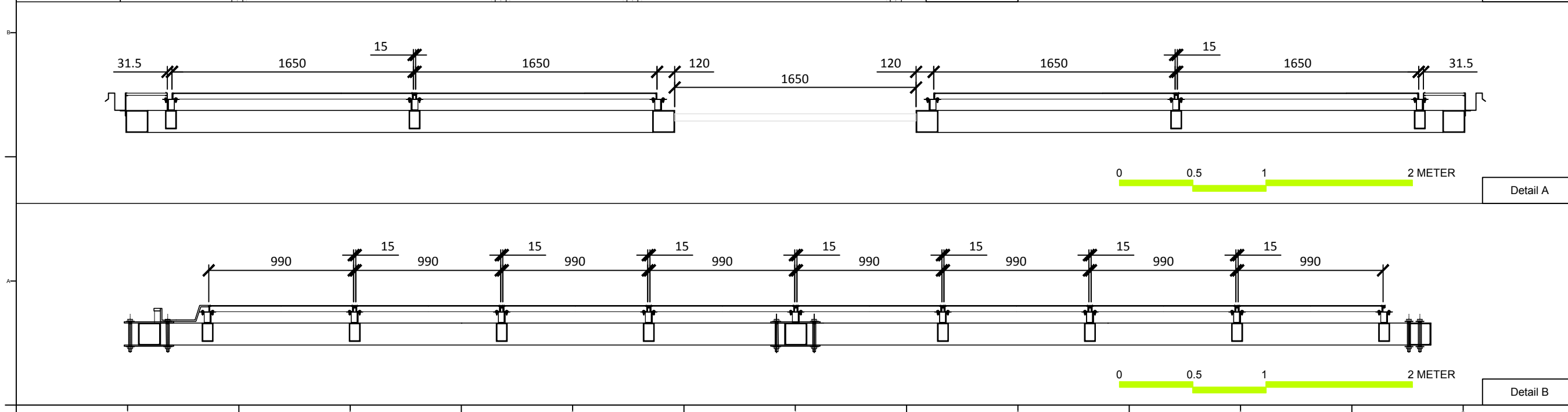
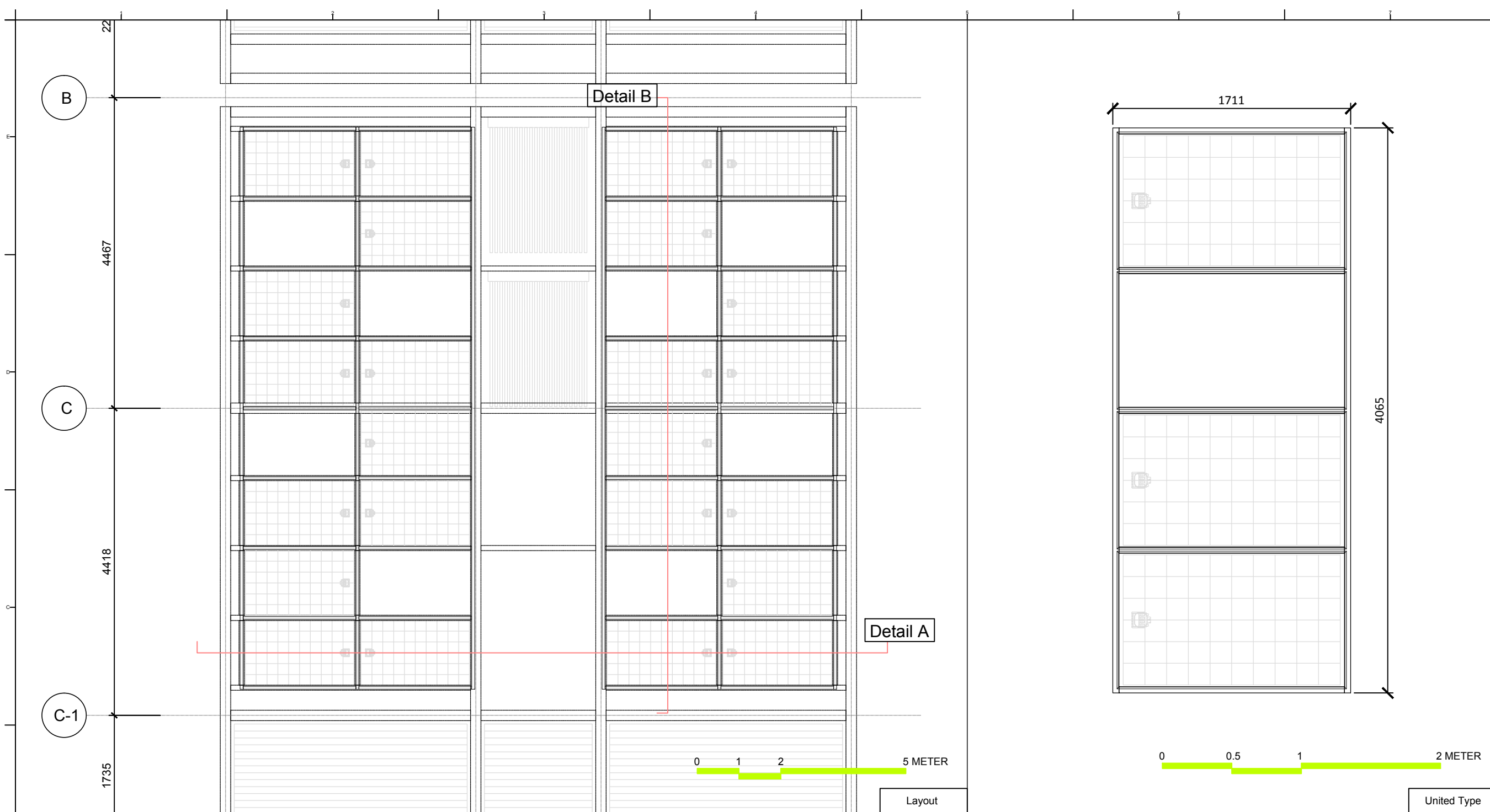
**PHOTOVOLTAIC SYSTEM:
GROUNDING SYSTEM**

DWG. No.

PV-031

PAGE

211





Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



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DELTA
台達電子工業股份有限公司
DELTA ELECTRONICS, INC.

Note:

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ST	2014/03/03	CD Submission

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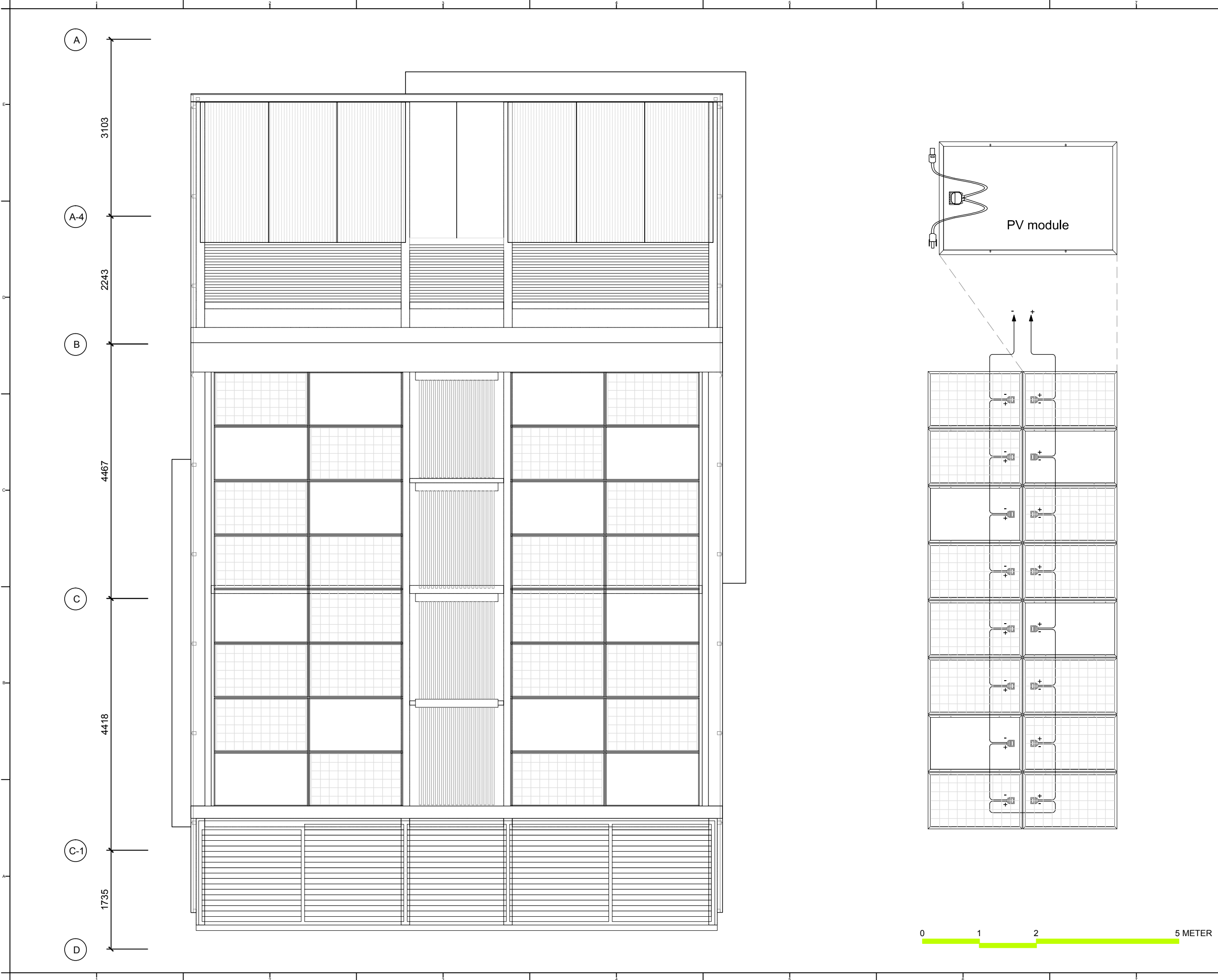
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DWG. Title: PHOTOVOLTAIC SYSTEM: MODULE LAYOUT

DWG. No. PV-041

PAGE 212



Project:



Institution:



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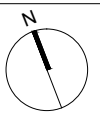
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Contact: www.sde.tw



Consultants:



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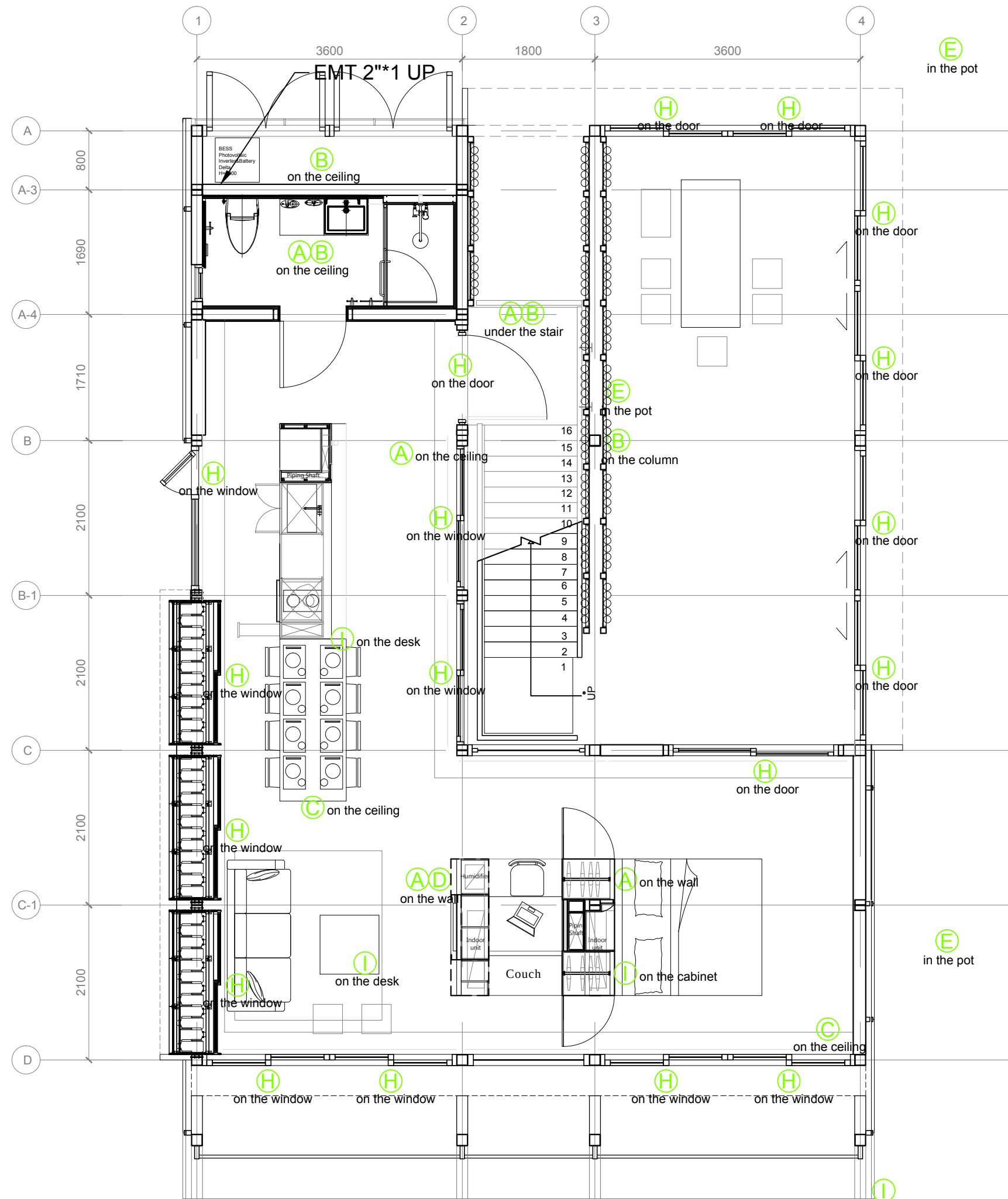
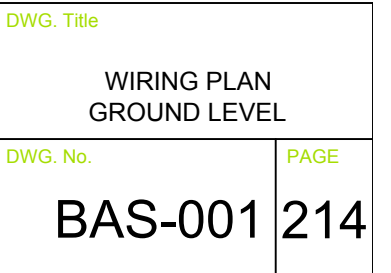


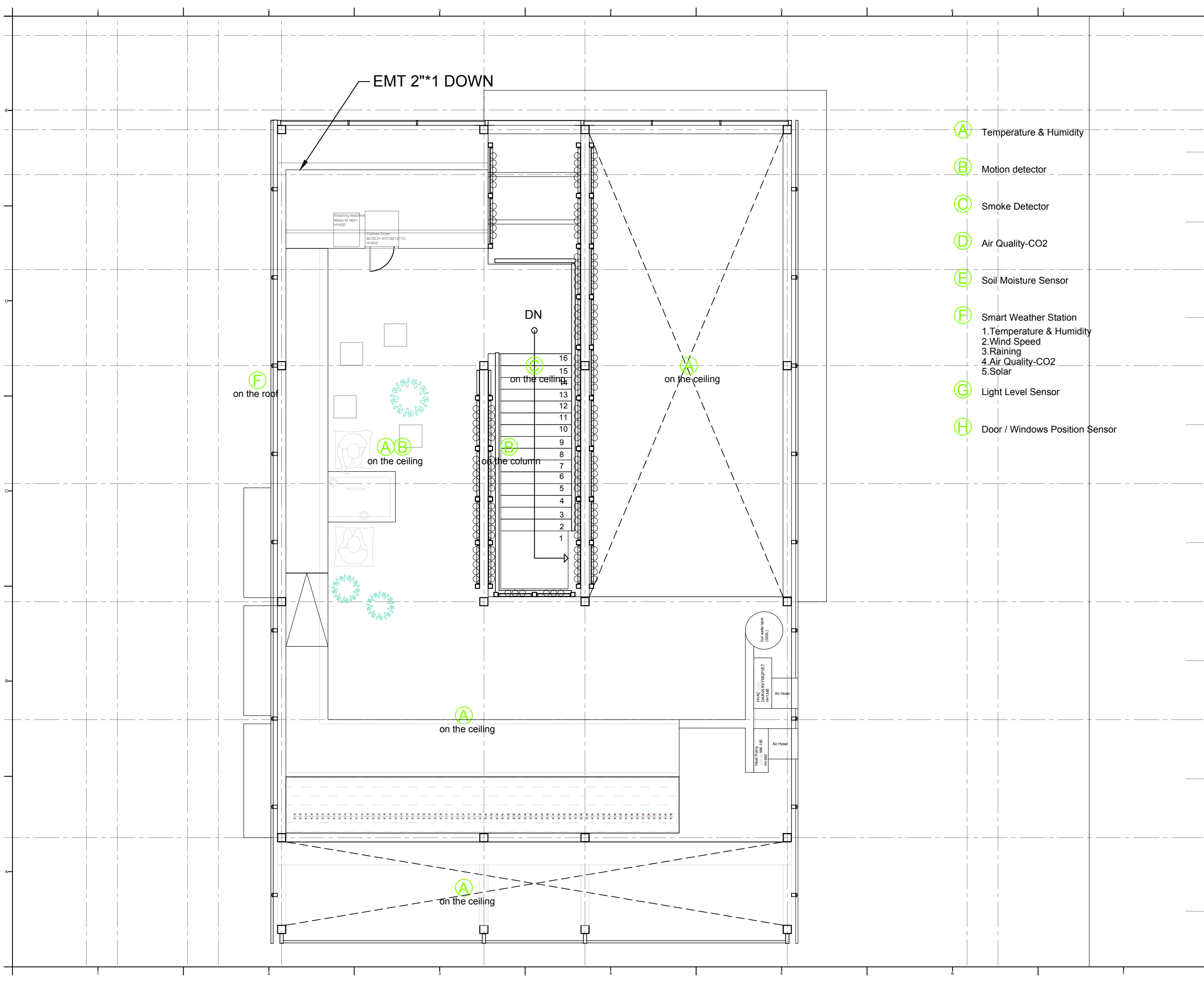
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Scale	1:60
Unit	mm

DWG. Title
**PHOTOVOLTAIC SYSTEM:
MODULE STRING LAYOUT**

DWG. No.	PAGE
PV-042	213





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Note:

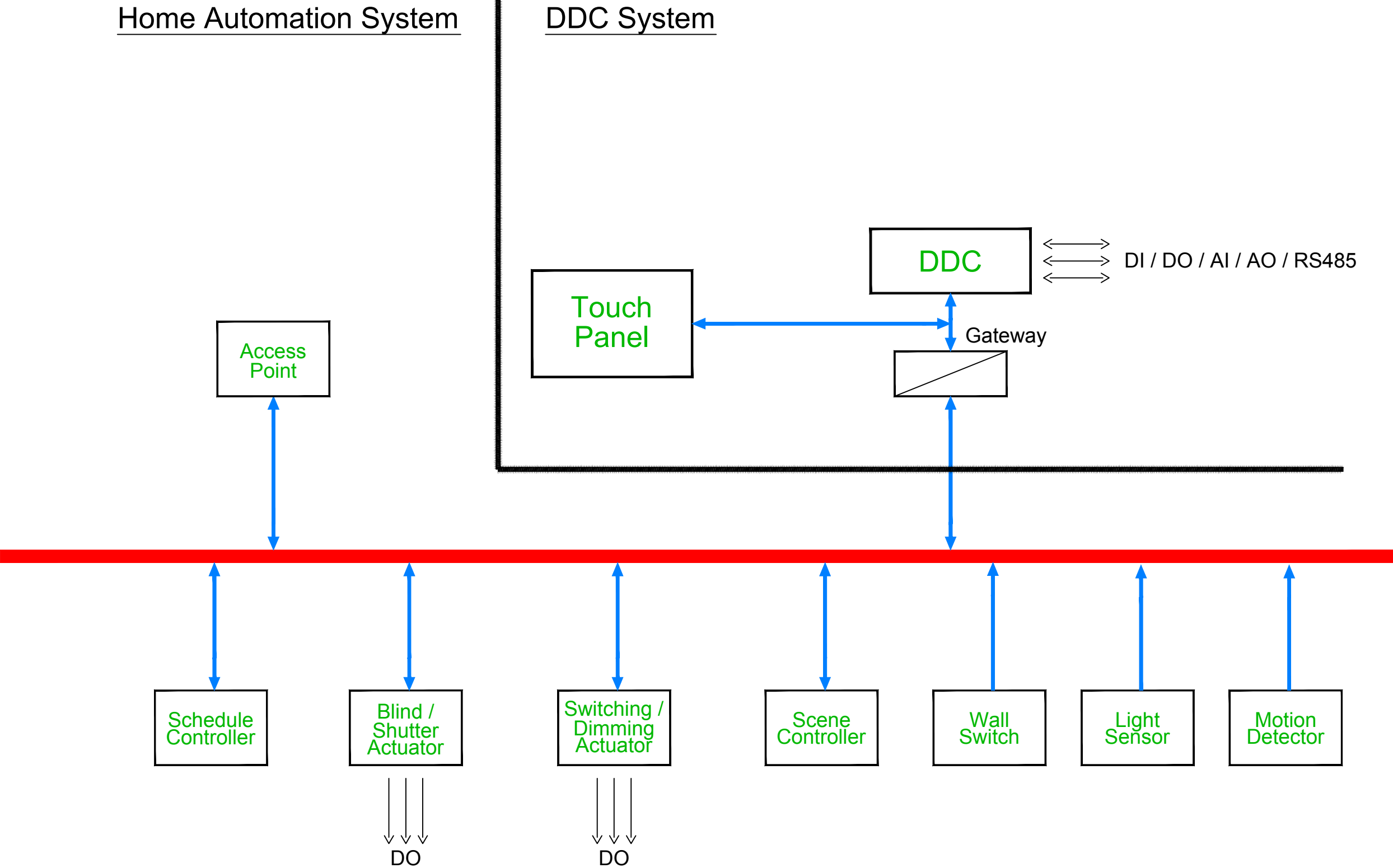
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	Aaron Chen
Checked by	Steven Yu
Scale	1:60
Unit	mm

DWG. Title	
WIRING PLAN MEZZANINE LEVEL	
DWG. No.	PAGE
BAS-002	215

Home Automation System

DDC System



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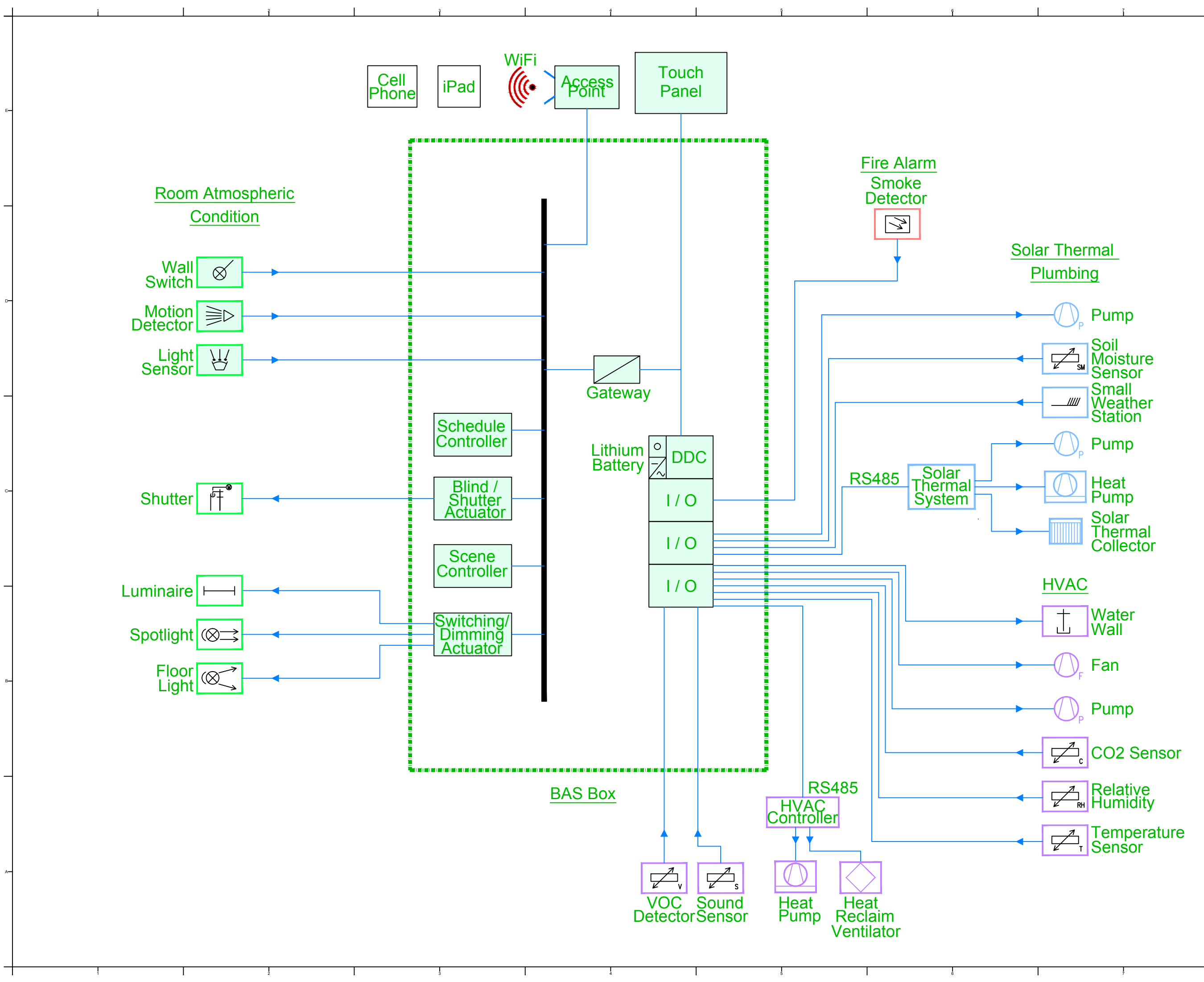


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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	Aaron Chen
Checked by	Steven Yu
Scale	-
Unit	-

DWG. Title	
SCHEMATIC DIAGRAM 1	
DWG. No.	PAGE
BAS-101	216





Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



國立交通大學
National Chiao Tung University

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Consultants:



uis
United Integrated Services

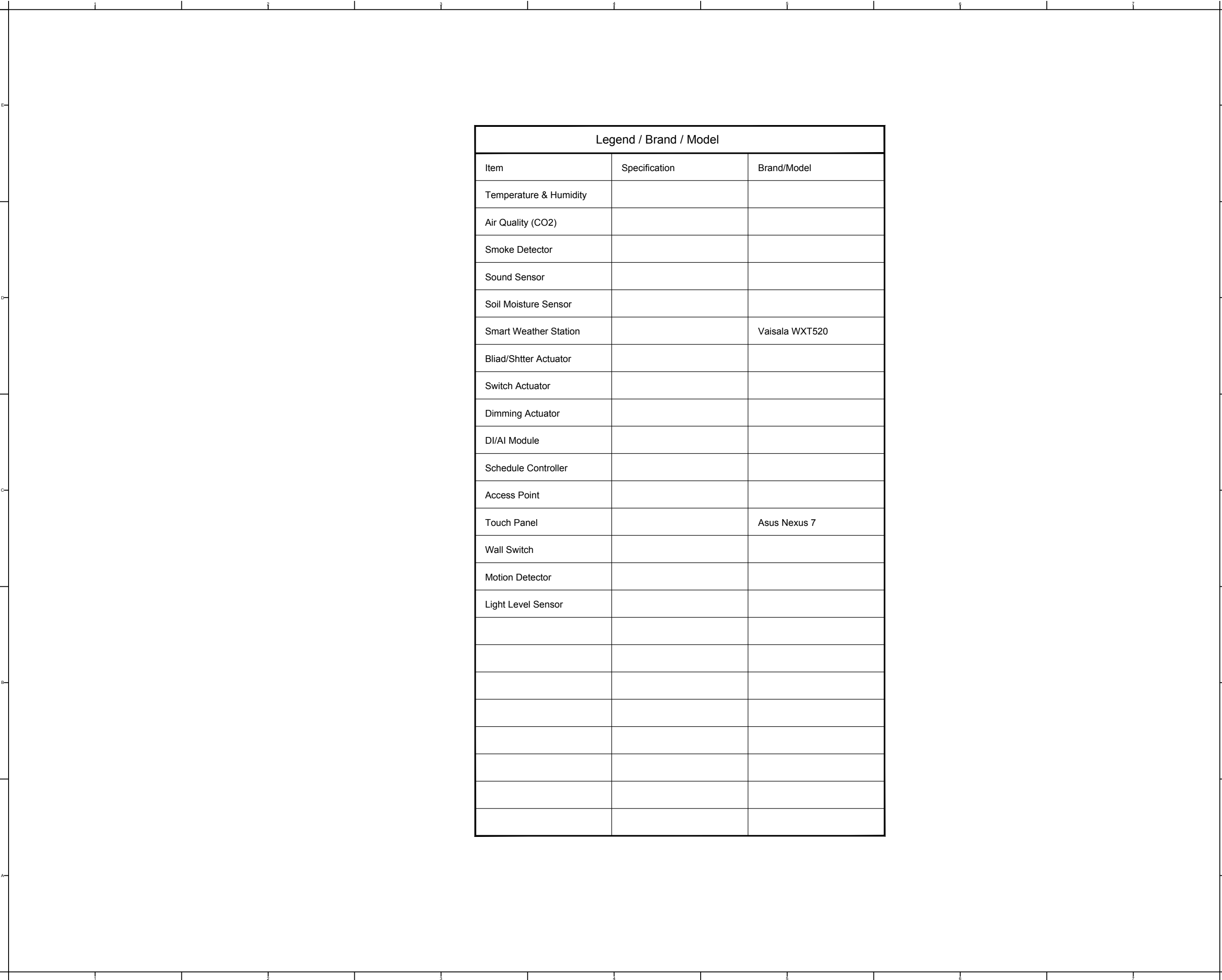
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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by: Aaron Chen
Checked by: Steven Yu
Scale: -
Unit: -

DWG. Title: SCHEMATIC DIAGRAM 2

DWG. No. BAS-102	PAGE 217
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Legend / Brand / Model		
Item	Specification	Brand/Model
Temperature & Humidity		
Air Quality (CO2)		
Smoke Detector		
Sound Sensor		
Soil Moisture Sensor		
Smart Weather Station		Vaisala WXT520
Bliad/Shtter Actuator		
Switch Actuator		
Dimming Actuator		
DI/AI Module		
Schedule Controller		
Access Point		
Touch Panel		Asus Nexus 7
Wall Switch		
Motion Detector		
Light Level Sensor		



Project:



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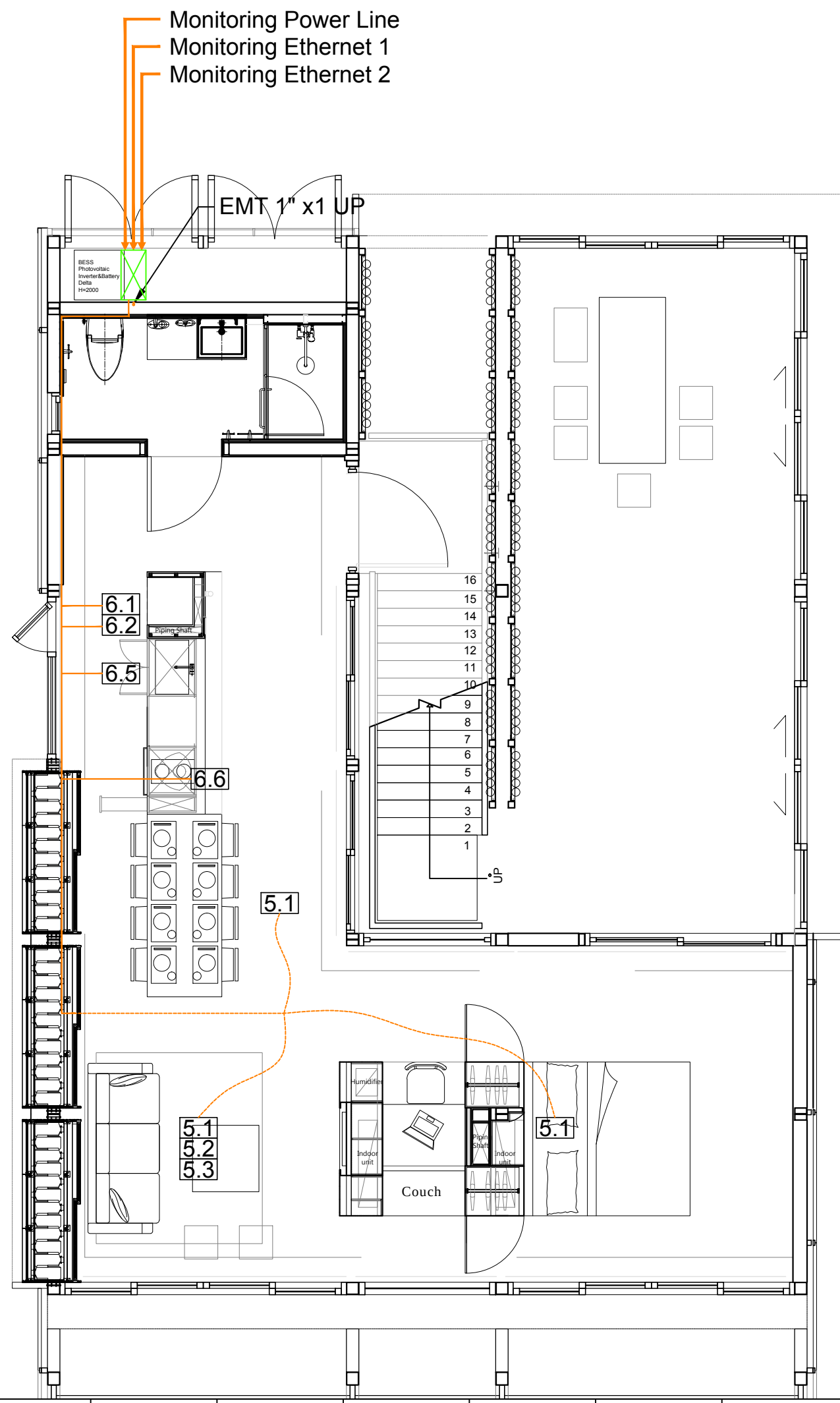


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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	AC
Checked by	SY
Scale	-
Unit	-

DWG. Title	
EQUIPMENT	
DWG. No.	PAGE
BAS-201	218



Task/Monitoring

- | | |
|-----|---|
| 5.1 | Temperature Sensor. Living Room (L=21m) |
| 5.1 | Temperature Sensor. Bedroom (L=28m) |
| 5.1 | Temperature Sensor. Kitchen (L=16m) |
| 5.2 | Humidity Sensor. Living (L=21m) |
| 5.3 | Air Quality Sensor. Living (L=21m) |
| 6.1 | Temperature Sensor. Refrigeration (L=11m) |
| 6.2 | Temperature Sensor. Freezing (L=11m) |
| 6.5 | Temperature Sensor. Dish Washer (L=12m) |
| 6.6 | Temperature Sensor. Oven (L=13m) |



Monitoring panel

Temporal Tripod Location

- 5.1 Bedroom Tripod Line. = 11 Meters.
5.1 Kitchen Tripod Line. = 7 Meters.
5.1 5.2 5.3 Living Room Tripod Line. = 8 Meters.



Project:



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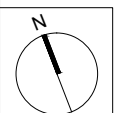
Team Name:	NCTU/UNICODE
Address:	1001 Ta-Hsueh Road Hsinchu City 30010 Taiwan
Contact:	www.sde.tw



Consultants:



Note:



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DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by Aaron Chen

Checked by	Steven Yu
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Scale	1:60
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Unit	mm
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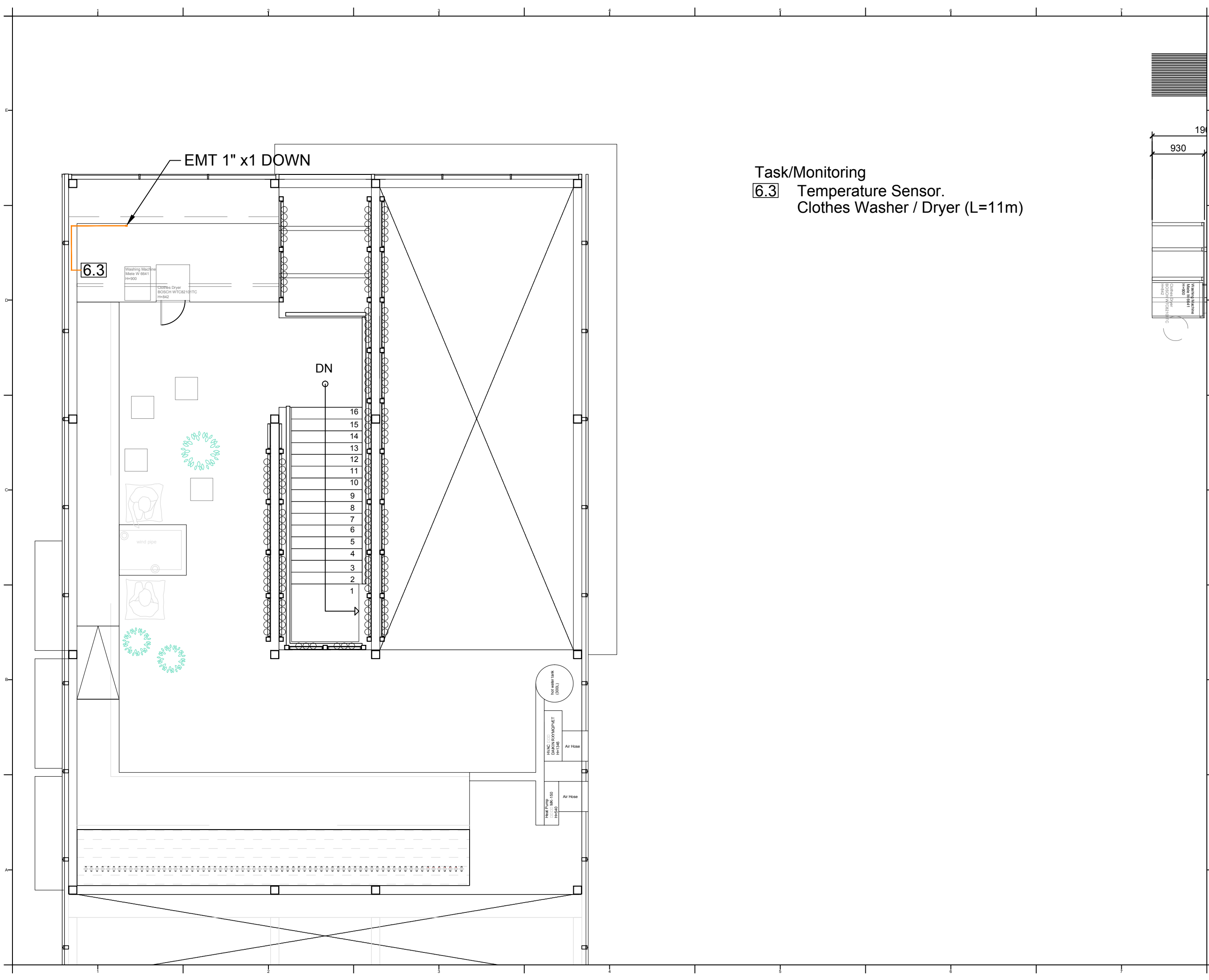
DWG. Title

GENERAL MONITORING GROUND LEVEL

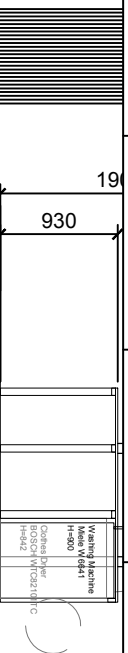
DWG. No.	PAGE
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ID-001

219



Task/Monitoring
6.3 Temperature Sensor.
Clothes Washer / Dryer (L=11m)





Project:



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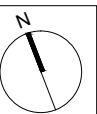


Consultants:



Note:

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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

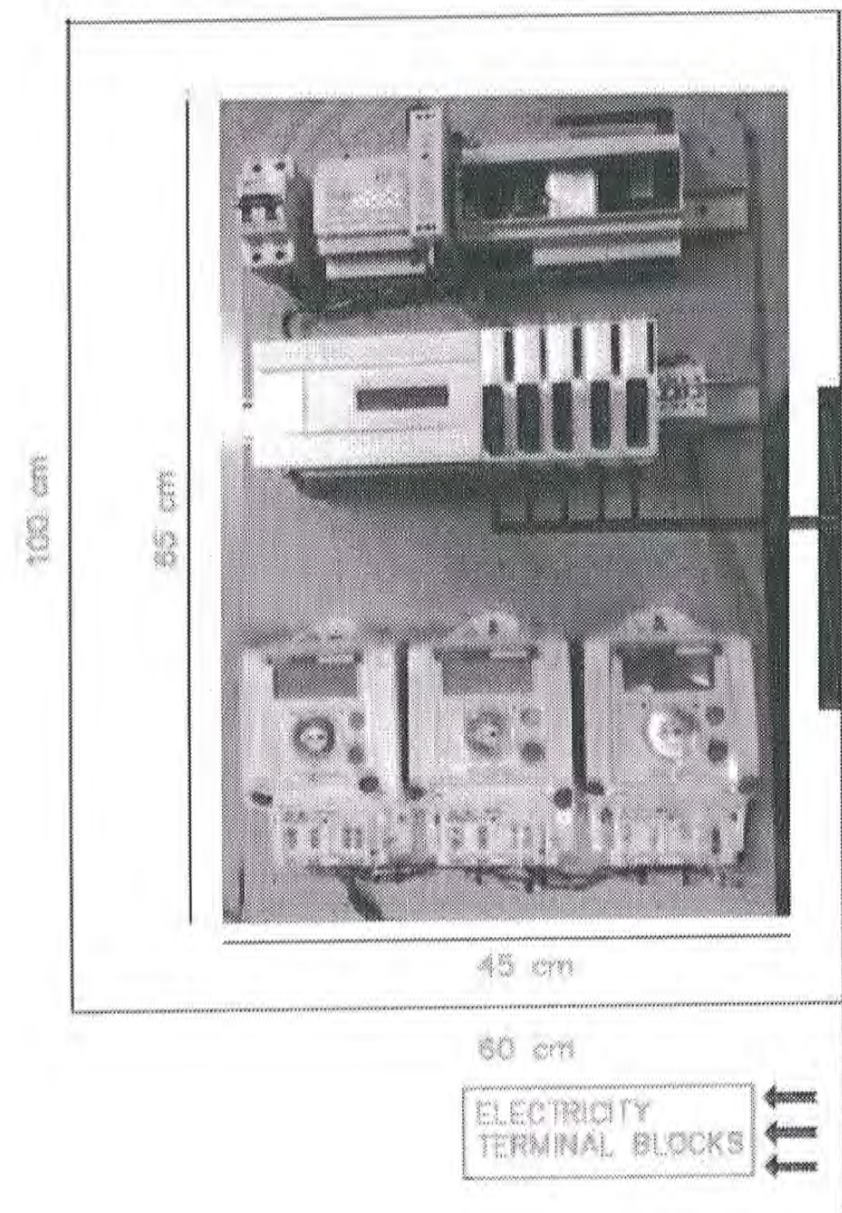
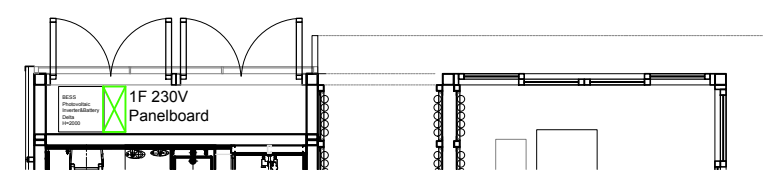
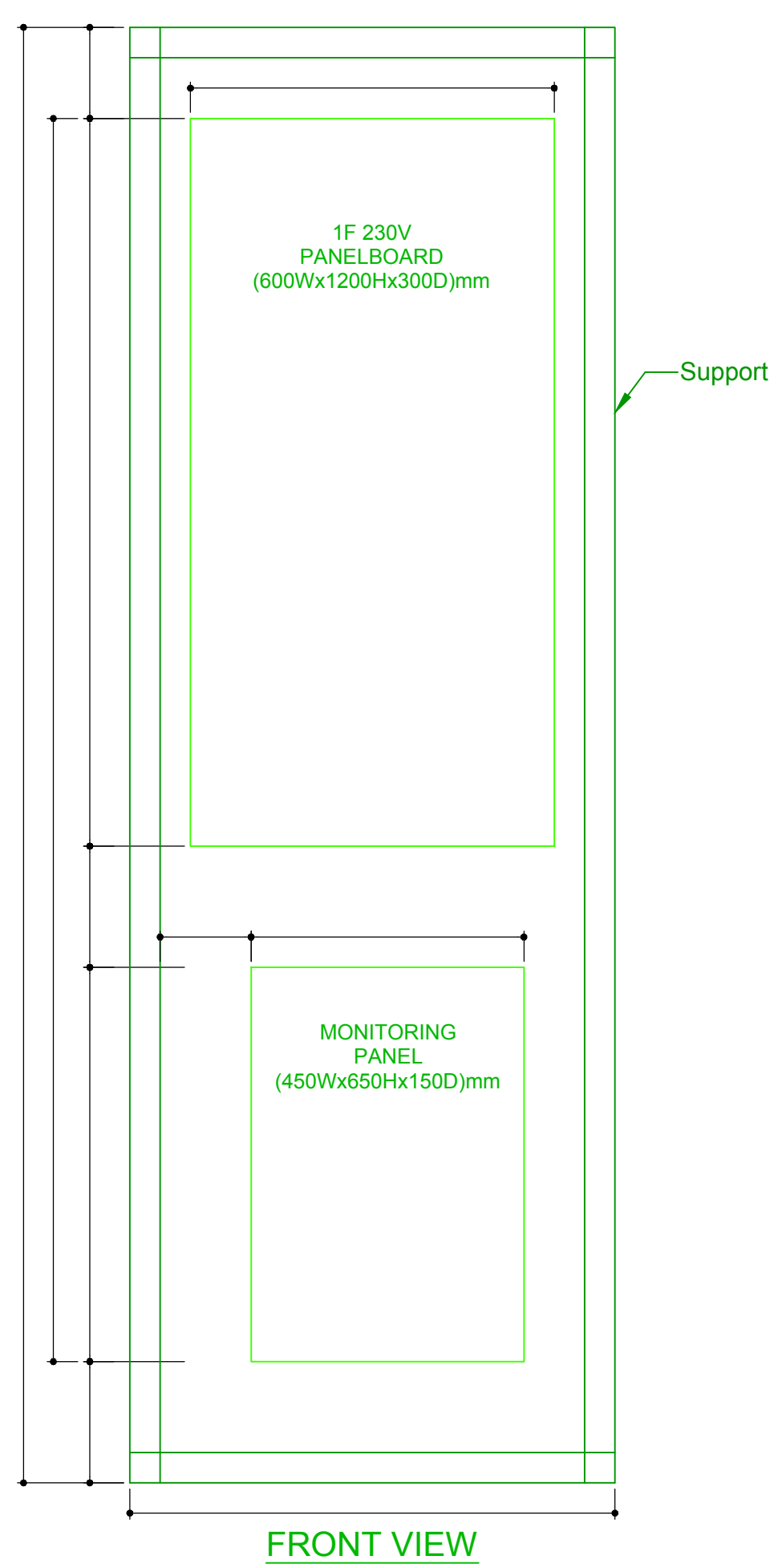


Drawn by	Aaron Chen
Checked by	Steven Yu
Scale	1:60
Unit	mm

DWG. Title

GENERAL MONITORING
MEZZANINE LEVEL

DWG. No.	PAGE
ID-002	220



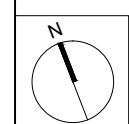
Monitoring Panel
Dimensions : 65x45x15 cm

Free Space Left For The
Monitoring Panel "
100x60x25 cm

- 5.1 Living Room
- 5.2 Living Room
- 5.3 Living Room
- 5.1 Bed Room
- 5.1 Kitchen Room
- 6.1
- 6.2
- 6.3
- 6.5
- 6.6

Sensor Entrance

Monitoring Power Line
Monitoring Ethernet 1
Monitoring Ethernet 2



Mark	Date	Description
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ST	2014/03/03	CD Submission

Drawn by AC

Checked by SY

Scale -

Unit

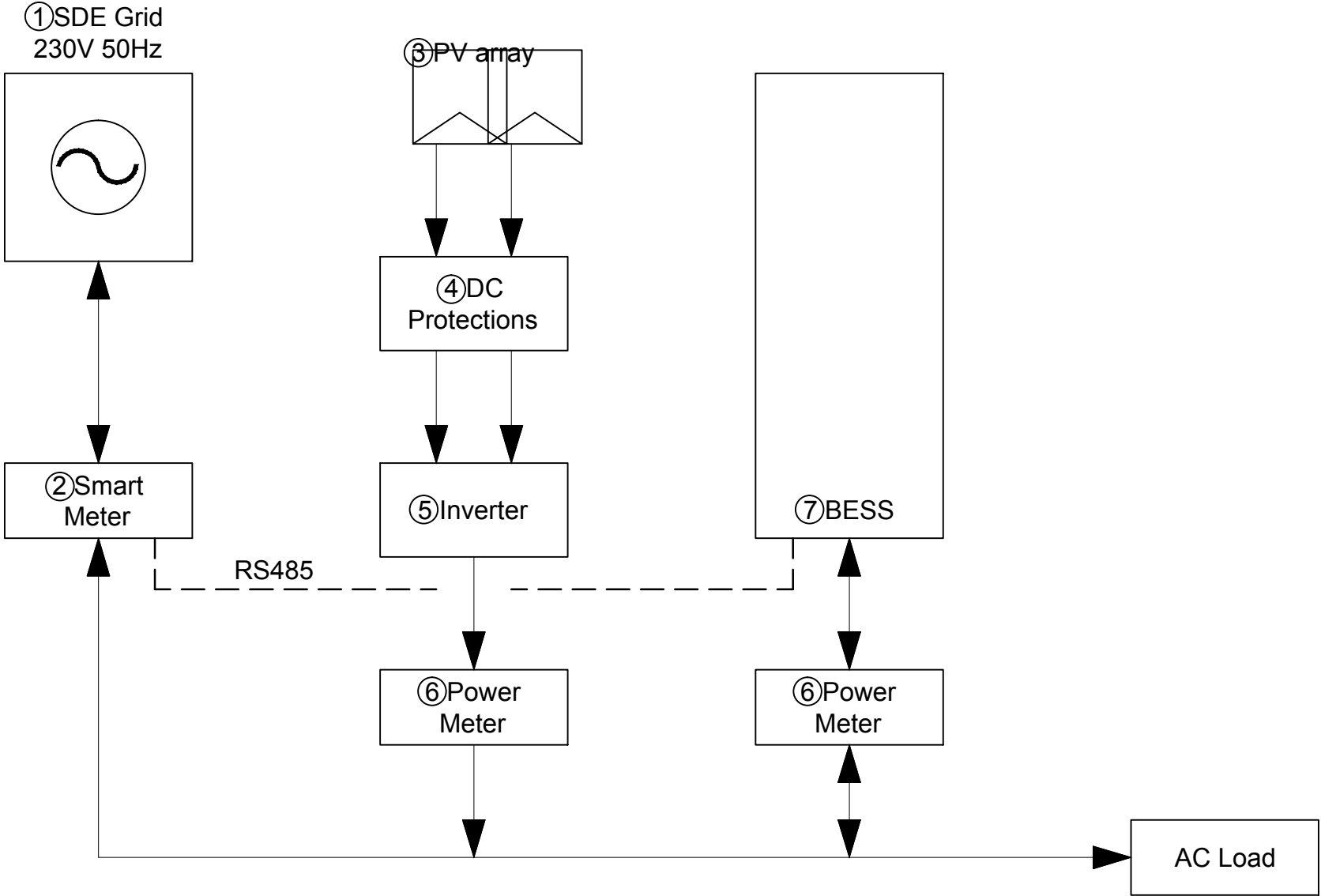
DWG. Title

MONITORING PANEL
ROOM

DWG. No. PAGE

ID-011 221

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	SDE Grid			1	Organizer Supplied Meter
②	Smart Meter	Schneider	PM3200	1	
③	PV array	DeSolar	D6P250B3A	24	
④	DC Protections	HI BOX		1	
⑤	Inverter	Delta	Solivia 5.0	1	
⑥	Power Meter	Schneider	PM3200	2	
⑦	BESS	Delta		1	Battery Energy Storage System



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ST	2014/03/03	CD Submission

Drawn by	GK
Checked by	DN
Scale	-
Unit	-

DWG. Title	
ELECTRICITY METERS TOPOLOGY	
DWG. No.	PAGE
ID-021	222



Mark	Date	Description
DN	2013/04/01	SD Submission
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ST	2014/03/03	CD Submission

Drawn by GK

Checked by DN

Scale -

Unit -

DWG. Title

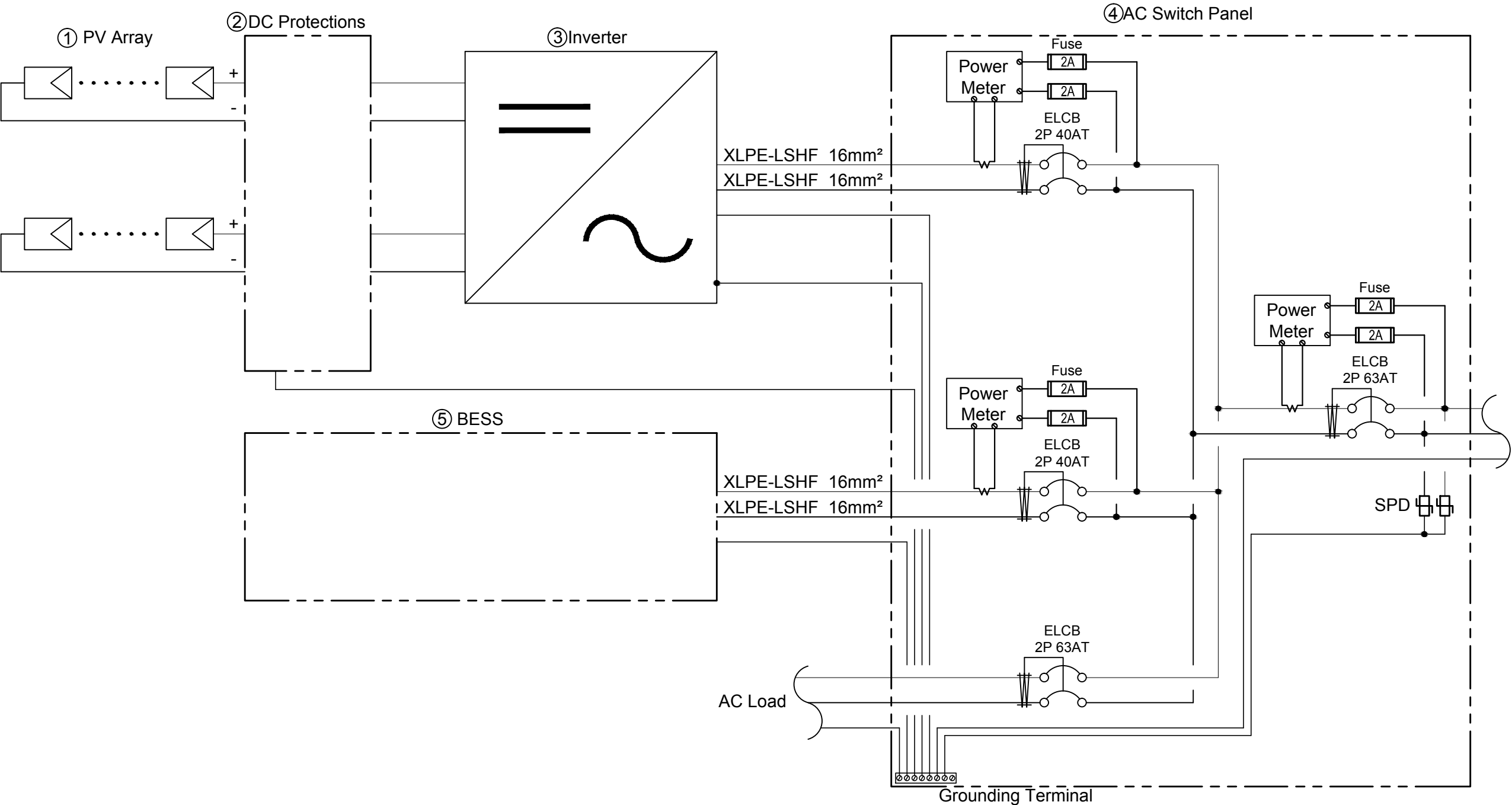
ELECTRICITY METERS
CONNECTION

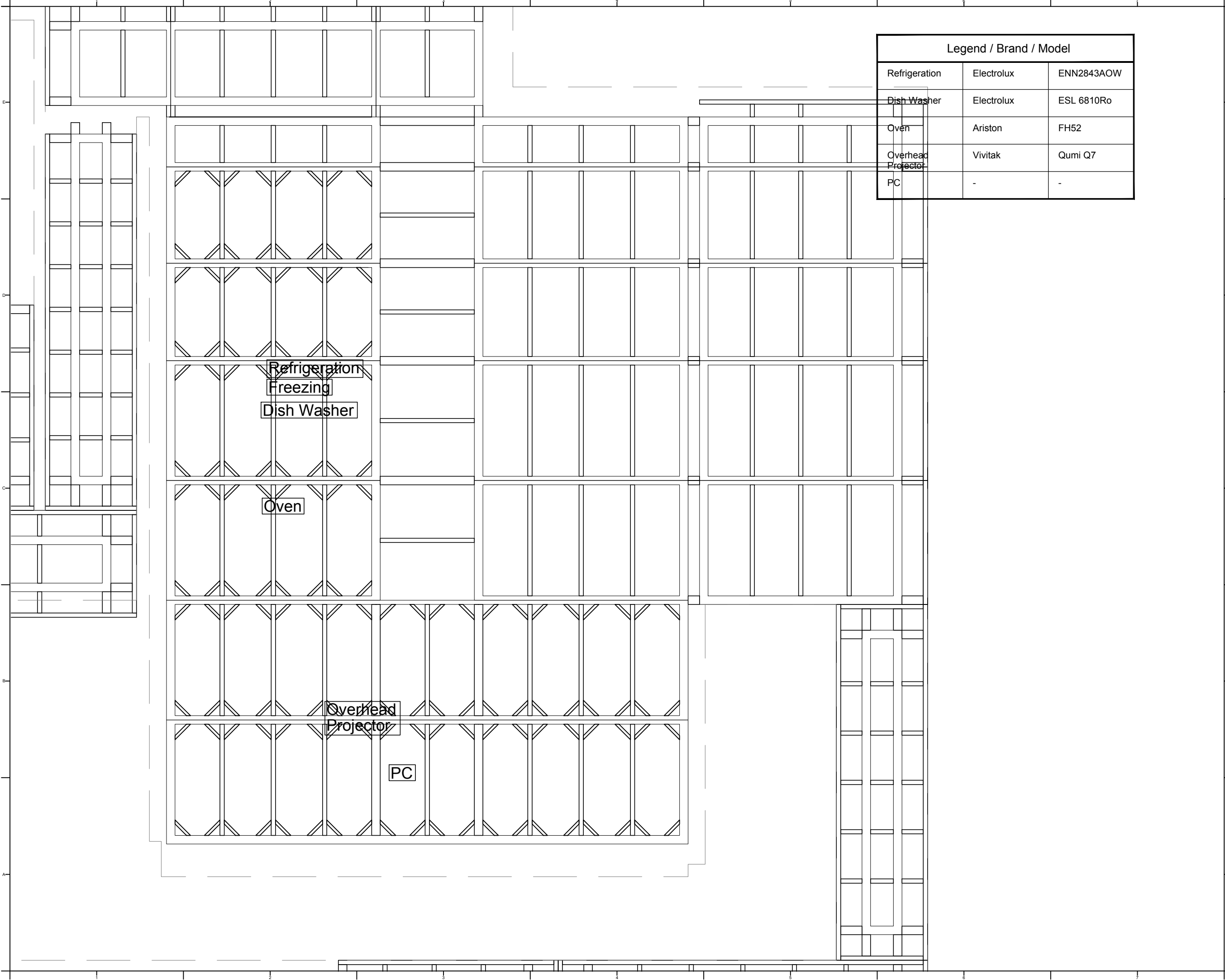
DWG. No. ID-031

PAGE

223

Tag	Components	Manufacturer	Model	Q'ty	Notes
①	PV Module	DelSolar	D6P250B3A	24	
②	DC Protections	HI BOX		1	
③	Inverter	Delta	Solivia 5.0	1	
④	Box	HI BOX		1	
	Power Meter	Schneider	PM3200	3	
	ELCB	Shihlin		4	
	Surge Protection Device	Shihlin		2	
⑤	BESS	Delta		1	Battery Energy Storage System





Legend / Brand / Model		
Refrigeration	Electrolux	ENN2843AOW
Dish Washer	Electrolux	ESL 6810Ro
Oven	Ariston	FH52
Overhead Projector	Vivitak	Qumi Q7
PC	-	-



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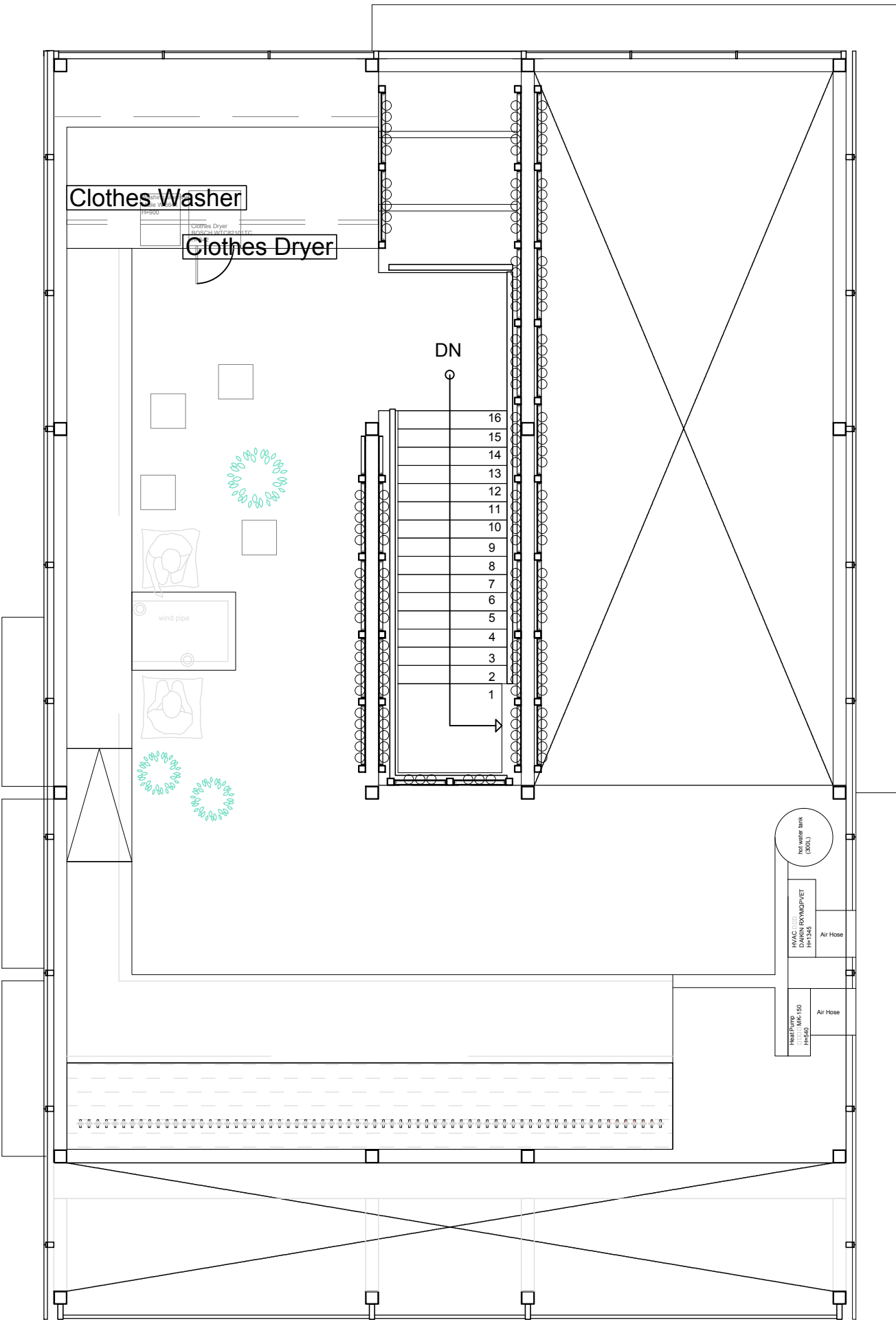


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ST	2014/03/03	CD Submission

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Checked by	SY
Scale	-
Unit	-

DWG. Title	
HOUSE APPLIANCES GROUND LEVEL	
DWG. No.	PAGE
ID-041	224



Legend / Brand / Model		
Clothes Washer	Ariston	AQM9F
Clothes Dryer	BOSCH	WTC82101TC



Project:



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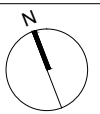
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Note:



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by	SY
Scale	1:60
Unit	mm

DWG. Title	
HOUSE APPLIANCES MEZZANINE LEVEL	
DWG. No.	PAGE
ID-042	225



Shipping, Freight, Demand, Process Timetable				
Date	Local	Project target	Demand Help	Self assist
Calculated time	Taiwan	Apply to customs	Declaration process guidance	Customs detail, customs declaration
Calculated time	Taiwan	Component packaging and protection	Packaging and protective materials to provide advice	Packaging and Protection
Calculated time	Taiwan	Component transport (Trailers Trucks *13)	Huashan→Container port	
Calculated time	Taiwan	Component Loading(Container*12)	Loading location and Equipment evaluation	Component classification and Equipment evaluation
Calculated time	Ship	Taiwan→France	Transport	The number of containers and the declaration content
Shipping Before 6/10	France	Immigration Customs	Declaration process guidance	Customs detail, the number of containers and the declaration
Before 6/10	France	Component Discharge (Container*12)(Trailers Trucks *13)	Component Discharge	Component Discharge
Before 6/10	France	Component transport (Trailers Trucks *13)	France transport (Trailers Trucks *13)	Trucks size
6/10~6/25 ----- 7/9~7/13	France	Pre Construction Temporary base (H-5M,400m ² Warehouse) Heavy equipment rental	Warehouse (Near Versailles) Lodging Near Warehouse Forklift ,Bridge Crane or small crane ,Scaffolding, air Compressors	Warehouse size
6/16~6/25	France	Transport sequence	Transport	Transport sequence in 10 Days
7/15~7/22	France	Disassembly Warehouse (H-5M,400m ² Warehouse)	Forklift, Bridge crane or small crane ,Scaffolding, air Compressors	
7/19~7/22	France	Component packaging and protection	Packaging and protective materials to provide advice	Packaging and Protection



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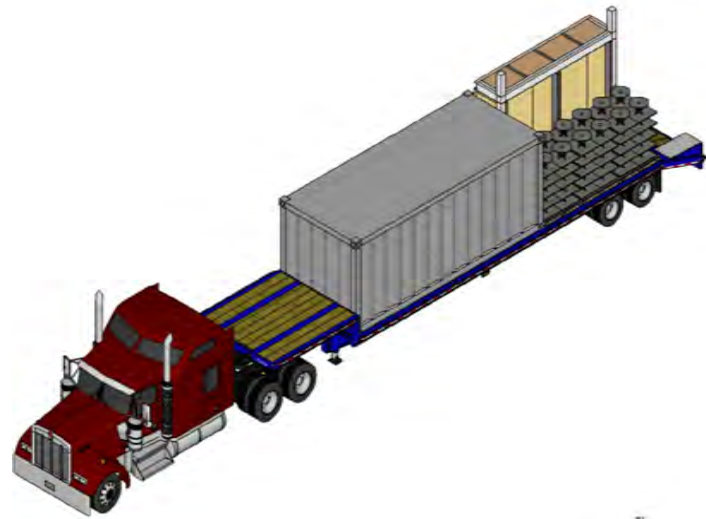
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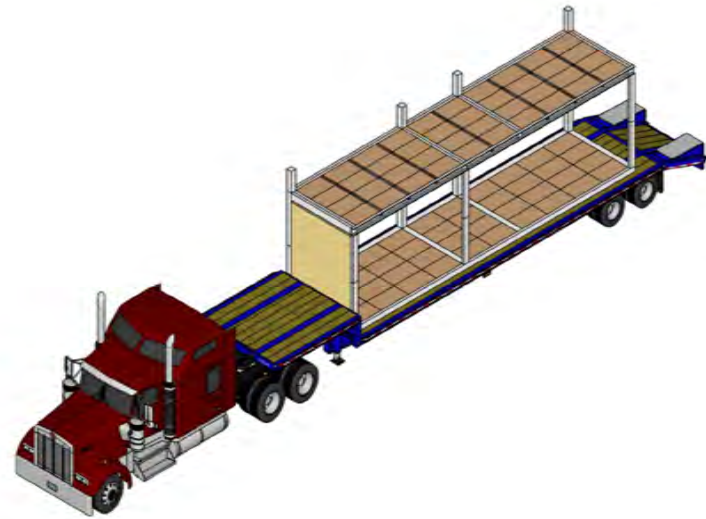
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Checked by	DN
Scale	-
Unit	-

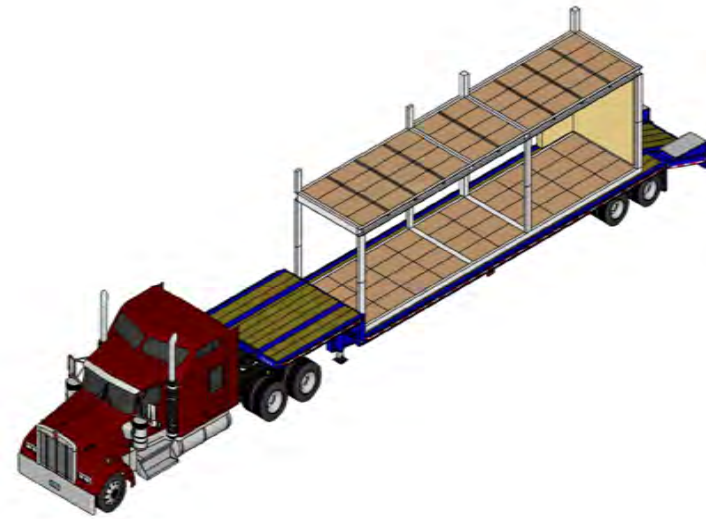
DWG. Title	
TRUCKS SHIPMENT 1	
DWG. No.	PAGE
SO-001	226



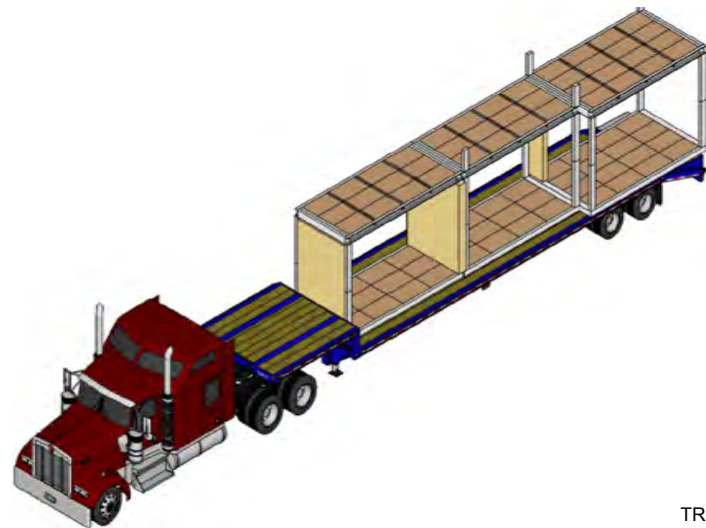
TRUCK-1 FLATBED
DAY 1 8:00



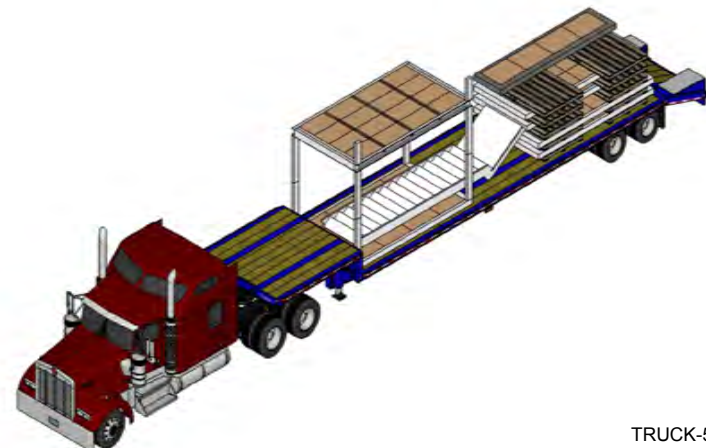
TRUCK-2 LOW LOADER
DAY 1 13:00



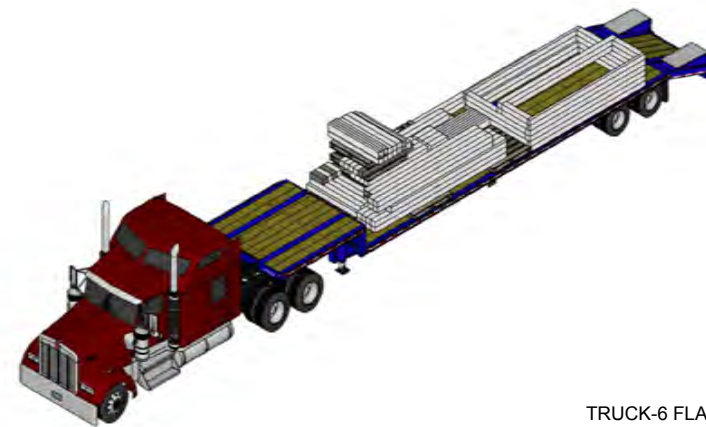
TRUCK-3 LOW LAODER
DAY 1 15:00



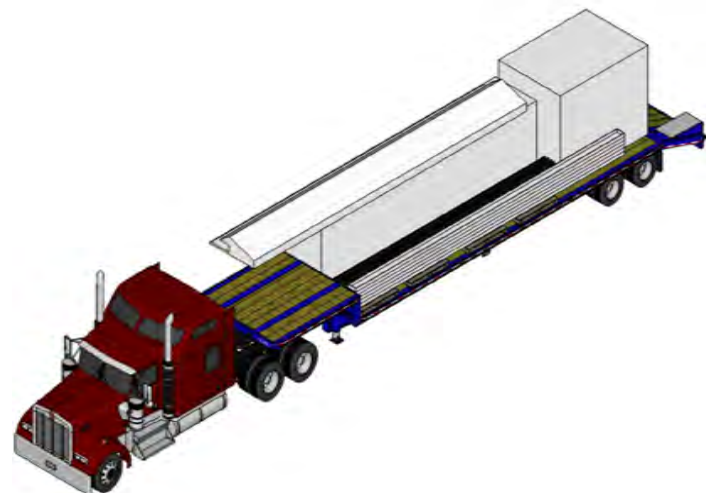
TRUCK-4 LOW LOADER
DAY 19:00



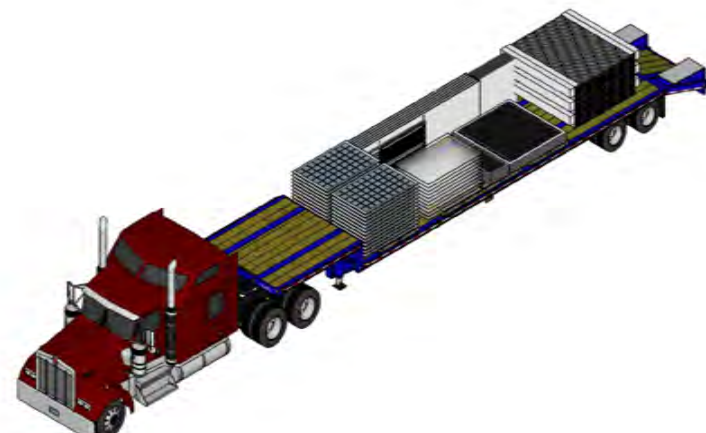
TRUCK-5 LOW LOADER
DAY 2 7:00



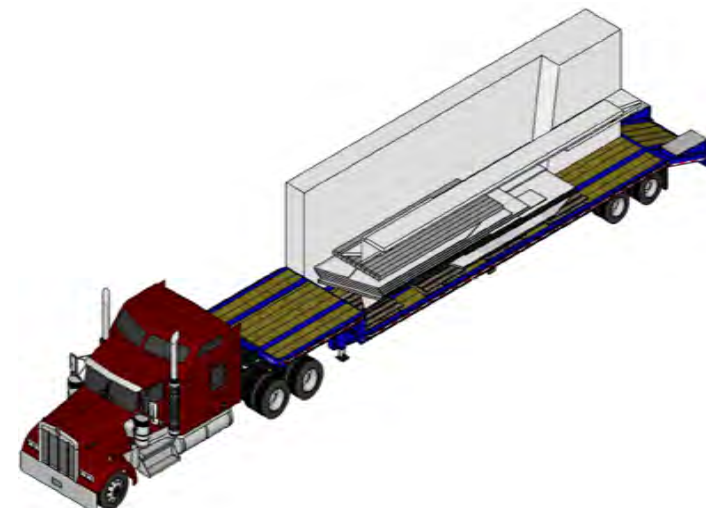
TRUCK-6 FLATBAD
DAY 2 16:00



TRUCK-7 FLATBED
DAY 2 19:00



TRUCK-8 FLATBED
DAY 3 7:00



TRUCK-9 FLATBED
DAY 4 7:00



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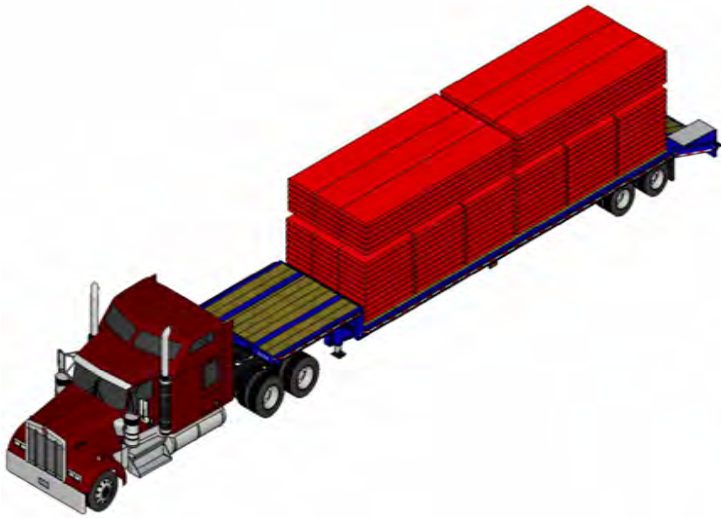
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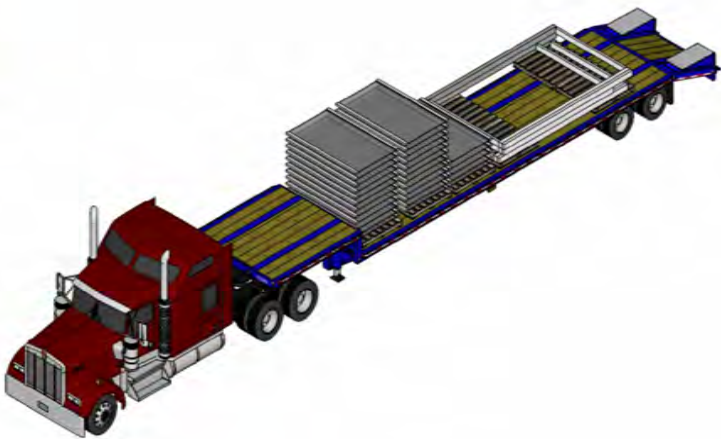
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Unit	-

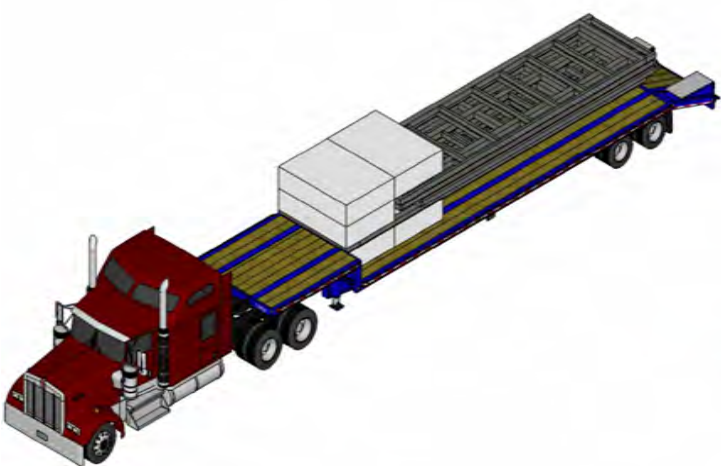
DWG. Title	
TRUCKS SHIPMENT 2	
DWG. No.	PAGE
SO-002	227



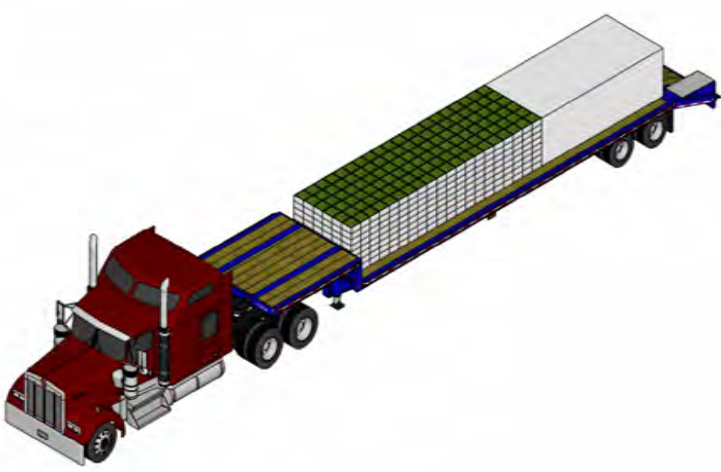
TRUCK-10 FLATBED
DAY 5 7:00



TRUCK-11 FLATBED
DAY 6 7:00



TRUCK-12 FLATBED
DAY 6 15:00



TRUCK--13 FLATBED
DAY 7 7:00

List of elements to ship to France										
Truck	Kind	Designation	QTY	Dimensions (cm)			Weight (kg)	Total Load Weight(kg)	Arrival Time	
				L	W	H				
1	flat	Tool	1	-	-	-	-		6/16-8:00	
		Foundation	61	-	-	-	-			
		Construction Safety Box	1	302	243	259	-			
		Unit-2	1	375	87	355	926			
2	Low	Unit-13	1	915	210	351	5100	5100	6/16-13:00	
3	Low	Unit-12	1	915	210	351	5100	5100	6/16-15:00	
4	Low	Unit-6	1	360	210	351	4975	4975	6/16-19:00	
		Unit-5	1	375	210	351				
		Unit-4	1	375	210	351				
5	LOW	Unit-3	1	375	210	351			6/17-7:00	
		Unit-7~11	1	Unassembled						-
		stair	1	-	-	-	-			
6	Flat	Main frame Structure	-	-	-	-	-		6/17-16:00	
7	Flat	wall	-	-	-	-	-		6/17-19:00	
8	Flat	First Floor	52	90	52	40	-		6/18-7:00	
	Flat	Second Floor	40	90	52	40	-			
9	Flat	Unit-Roof	9	900	210	15	2700		6/19-7:00	
10	Flat	Ceiling panels	--	-	-	-	-		6/20-7:00	
11	Flat	planter	-	-	-	-	-		6/21-7:00	
12	Flat	Furniture	-	-	-	-	-		6/21-15:00	
	Flat	Machines and tools	-	-	-	-	-			
13	Flat	Out door deck	1	620	160	15	723		6/22-7:00	
			1	637	160	15	729			
			1	835	200	15	988			
			1	775	210	15	926			
			1	775	210	15	926			
			1	747	210	15	909			
			1	625	160	15	723			
			1	625	160	15	723			
			1	6250	1600	15	723			

Project:

Institution:

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Drawn by MS

Checked by DN

Scale -

Unit -

DWG. Title

TRUCKS SHIPMENT 3

DWG. No.	PAGE
SO-003	228





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National Chiao Tung University

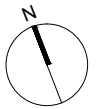
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Note:



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ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

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Checked by DN

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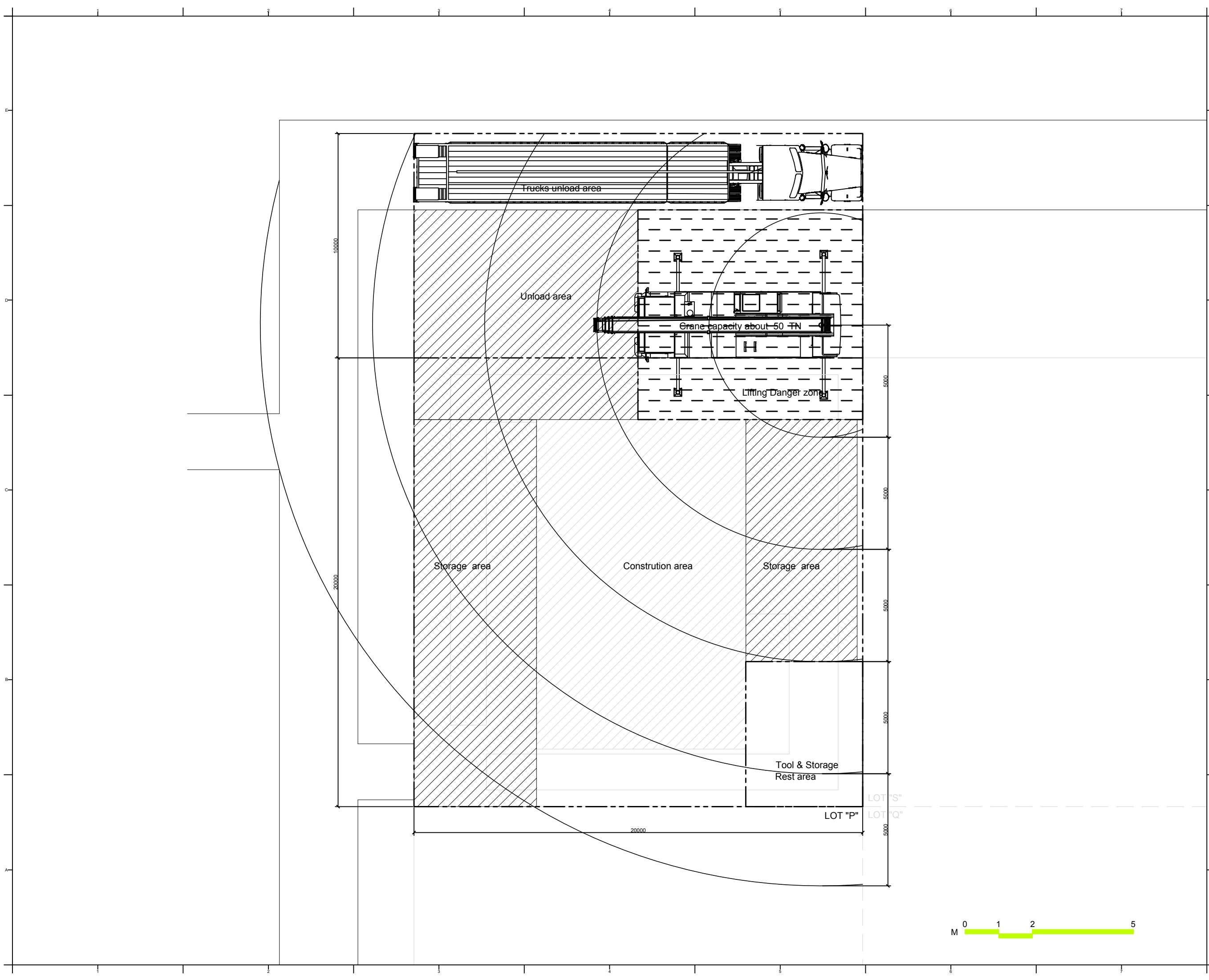
Unit mm

DWG. Title

SOLAR VILLAGE PLAN

DWG. No. SO-101

PAGE 229



Project:



Institution:



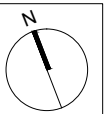
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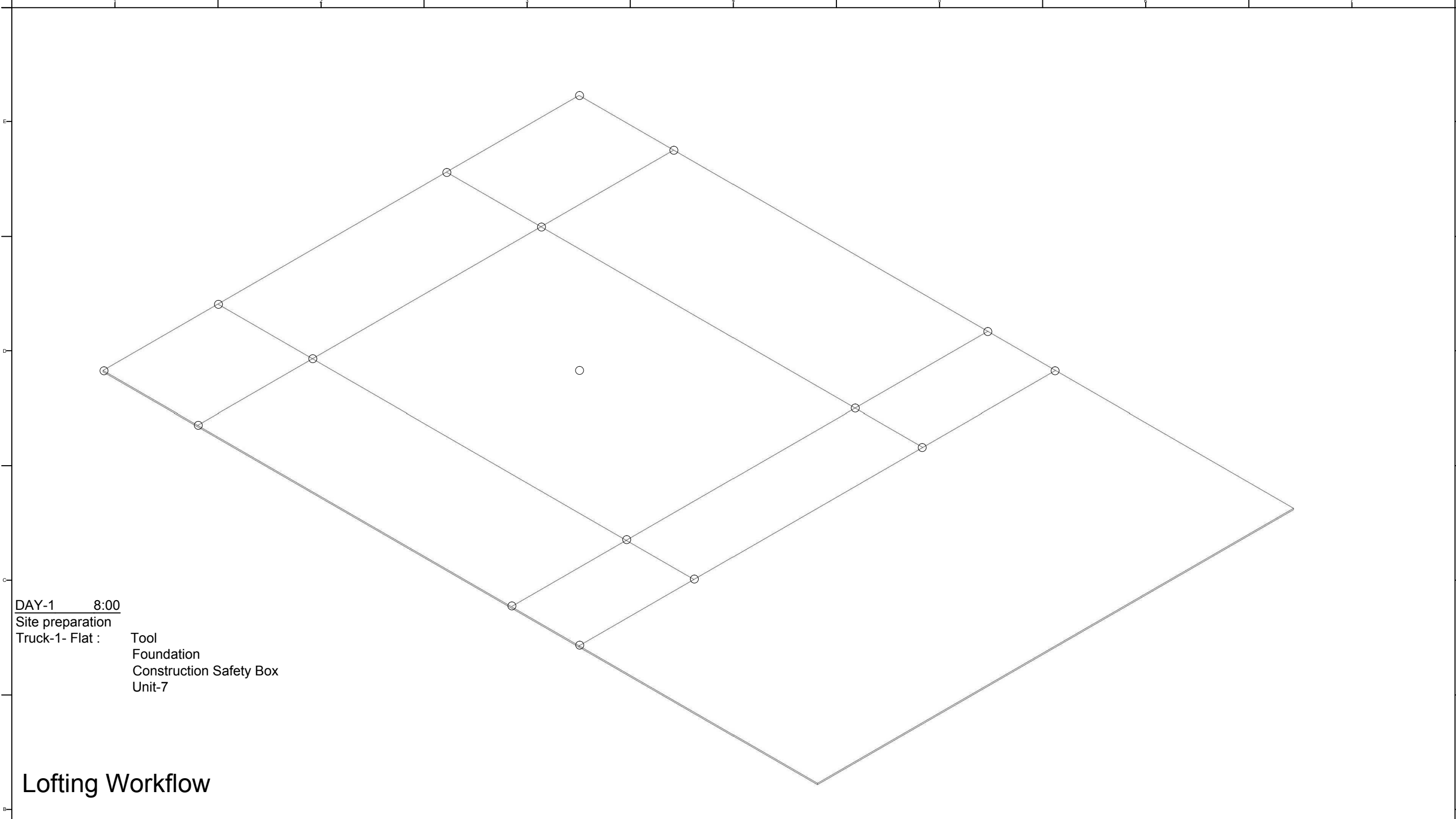


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DWG. Title	
LOT PLAN	
DWG. No.	PAGE
SO-102	230





DAY-1 8:00
Site preparation
Truck-1- Flat : Tool
Foundation
Construction Safety Box
Unit-7

Lofting Workflow

Step	1	2	3	4	5	6
Work Phase	Datum Point	Four Point Range	Mid Point	Ground Level	Spacing	Point Positioning
Description	Follow official Point	Laser Positioning Distance ,Vertical and Horizontal	Four Point Laser Cross Mid Point	Find Point of Lowest and Highest	Use Laser and Rope Positioning Construction Area	Use Sand Box to Positioning Construction Area
Worker	1	4	4	4	4	4
Note						



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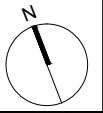
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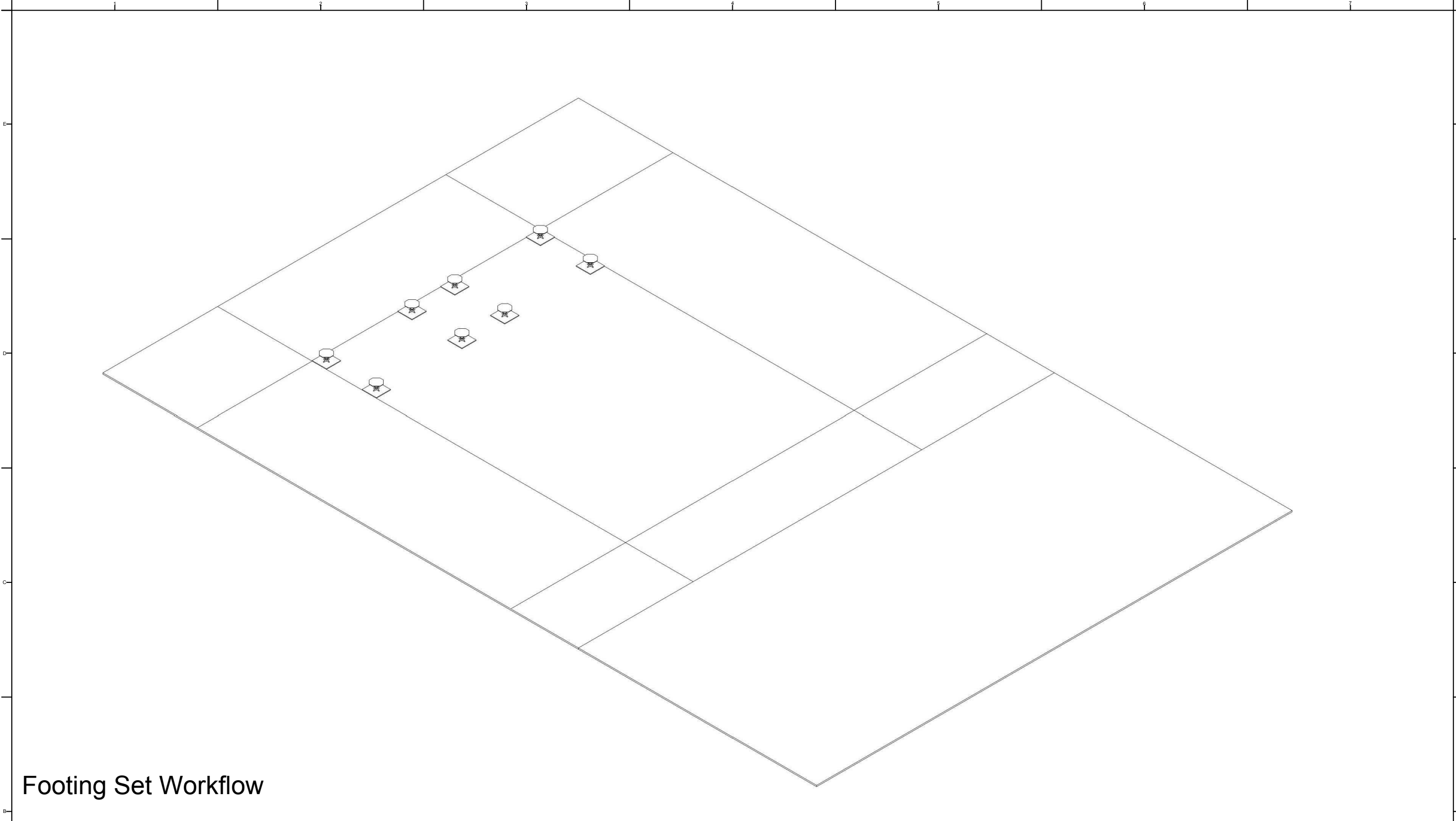
Phase 1

DWG. No.

SO-201

PAGE

231



Footing Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set	"Pre-Joint Set"			
Description	Set Sand Box Loading sand	Set Footing Use Laser Position	Half Joint Pre Set on Unit			
Worker	6	8	-			
Note						



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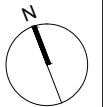
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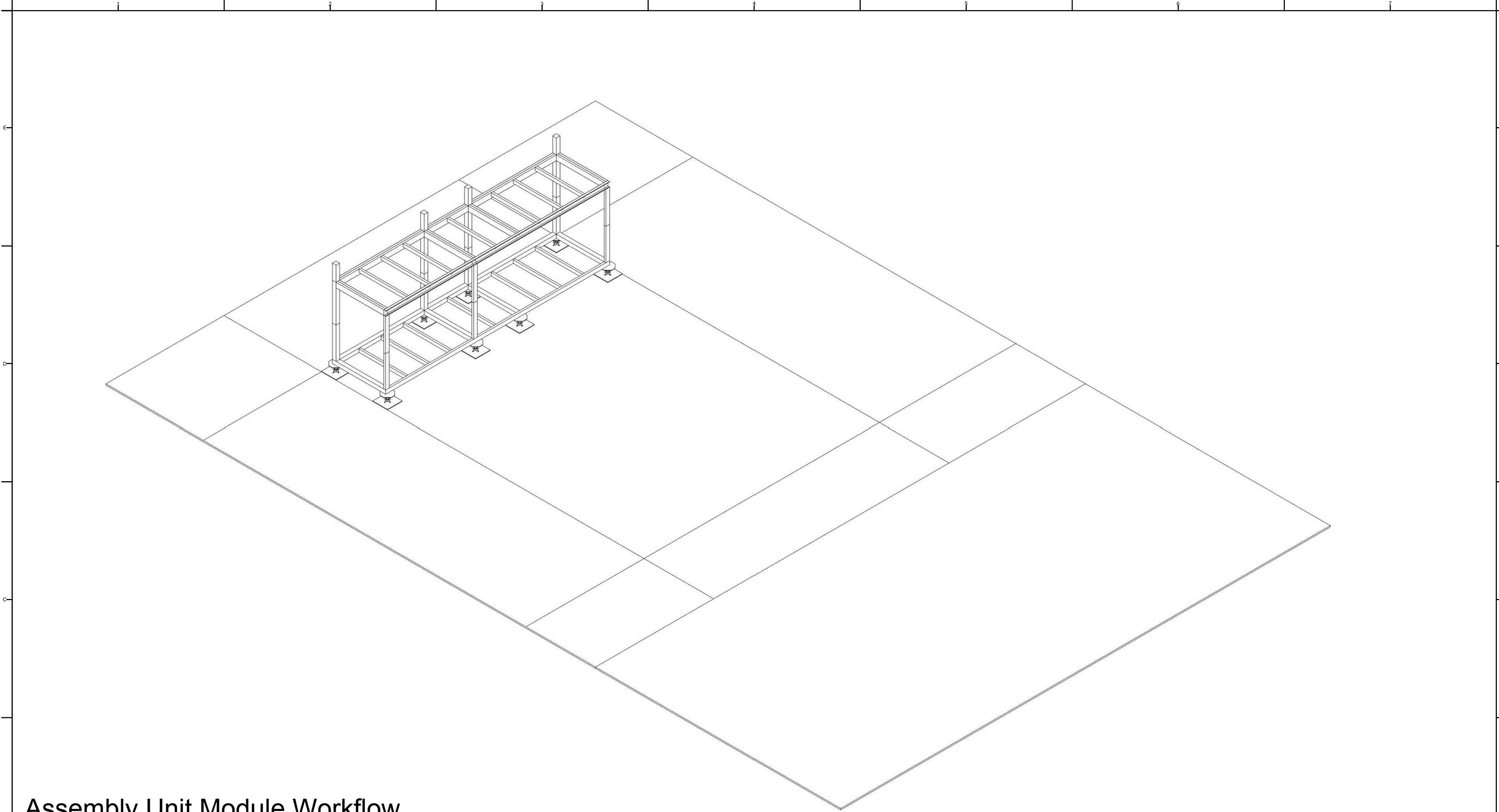


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Scale -
Unit -

DWG. Title
Phase 2

DWG. No. SO-202PAGE 232



Assembly Unit Module Workflow

Step	1	2	3	4	5	6
Work Phase	Lifting Unit	Unit Position	Unit Fixed			
Description	Rope guide	Laser Position	M-16 Bolt			
Worker	10	4	10			
Note						



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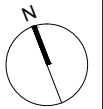
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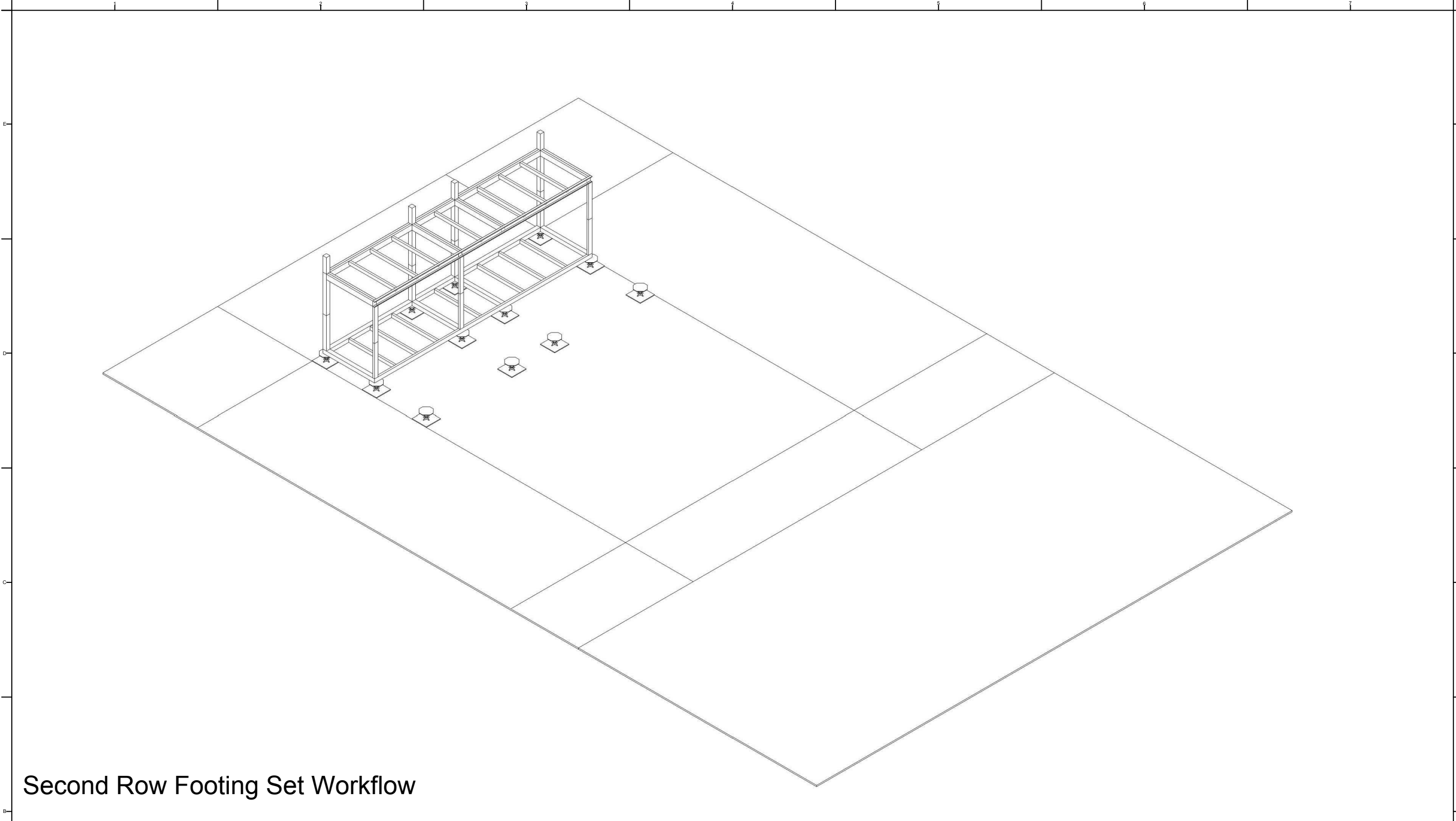


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Unit -

DWG. Title
Phase 3

DWG. No. SO-203PAGE 233



Second Row Footing Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set	"Pre-Joint Set"			
Description	Set Sand Box Loading sand	Set Footing Use Laser Position	Half Joint Pre Set on Unit			
Worker	6	8	-			
Note						



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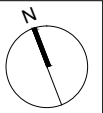
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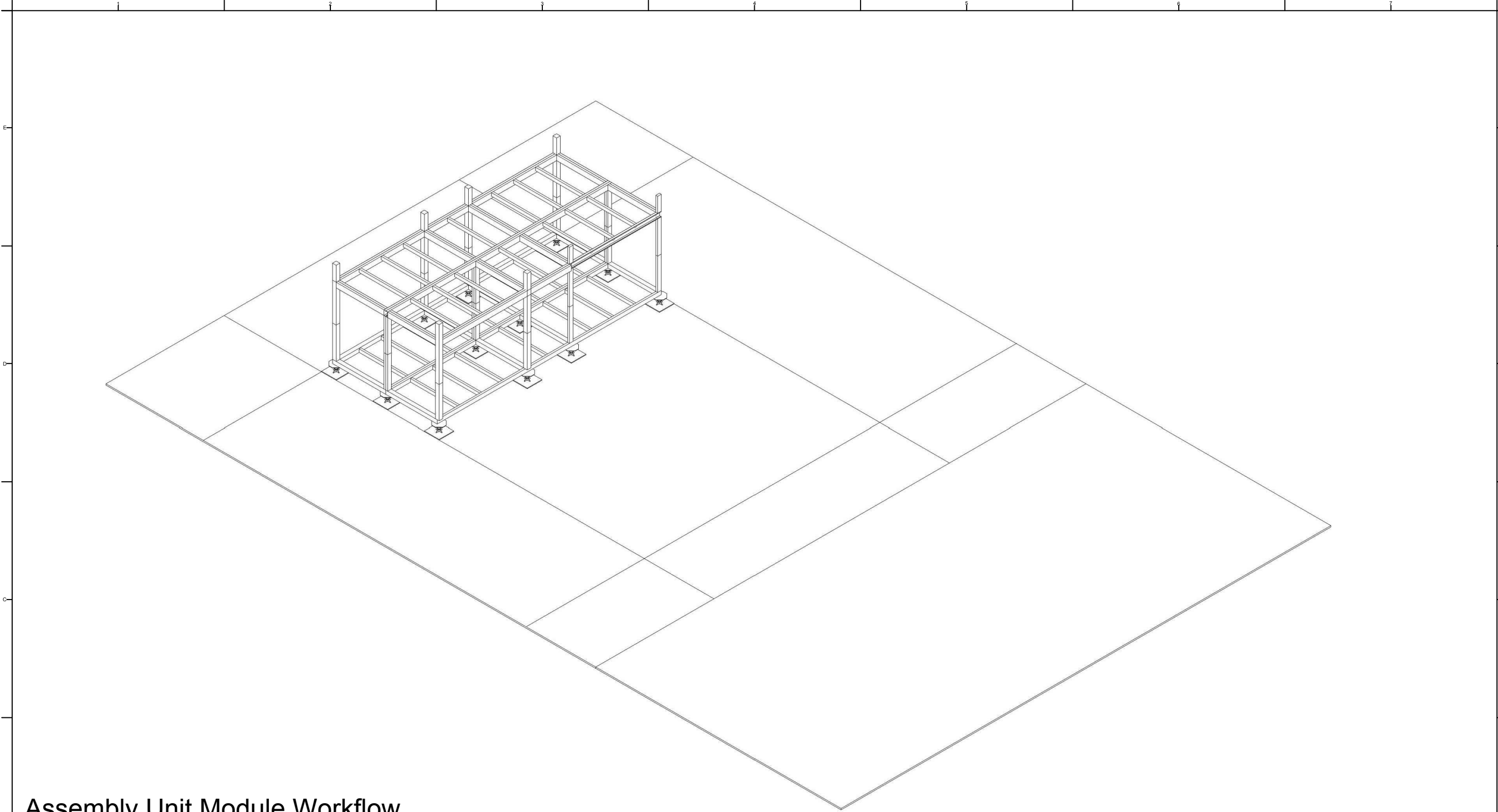


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Scale -
Unit -

DWG. Title
Phase 4

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SO-204	234



Assembly Unit Module Workflow

Step	1	2	3	4	5	6
Work Phase	Lifting Unit	Unit Position	Unit Fixed	Unit Regulate		
Description	Rope guide	Laser Position	M-16 Bolt	Laser Position		
Worker	10	4	10	2		
Note						



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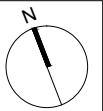
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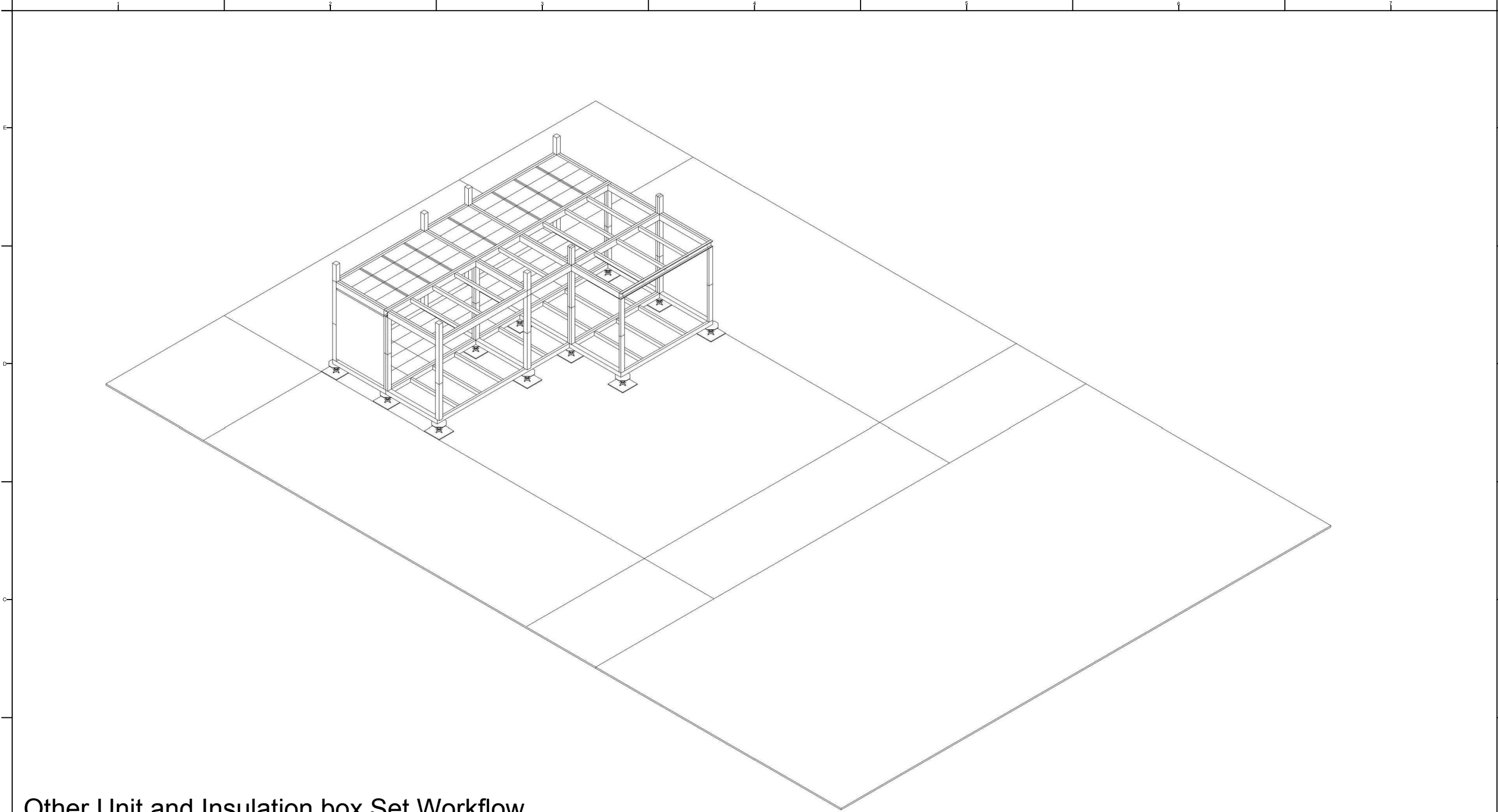


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Scale -
Unit -

DWG. Title
Phase 5

DWG. No. SO-205
PAGE 235



Other Unit and Insulation box Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set	"Pre-Joint Set"	Insulation box	Insulation Wall box	
Description	Set Sand Box Loading sand	Set Footing Use Laser Position	Half Joint Pre Set on Unit	Put it in and Seal it	Set ,Seal and Fix it	
Worker	6	8	-	6	6	
Note						



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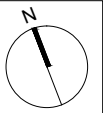
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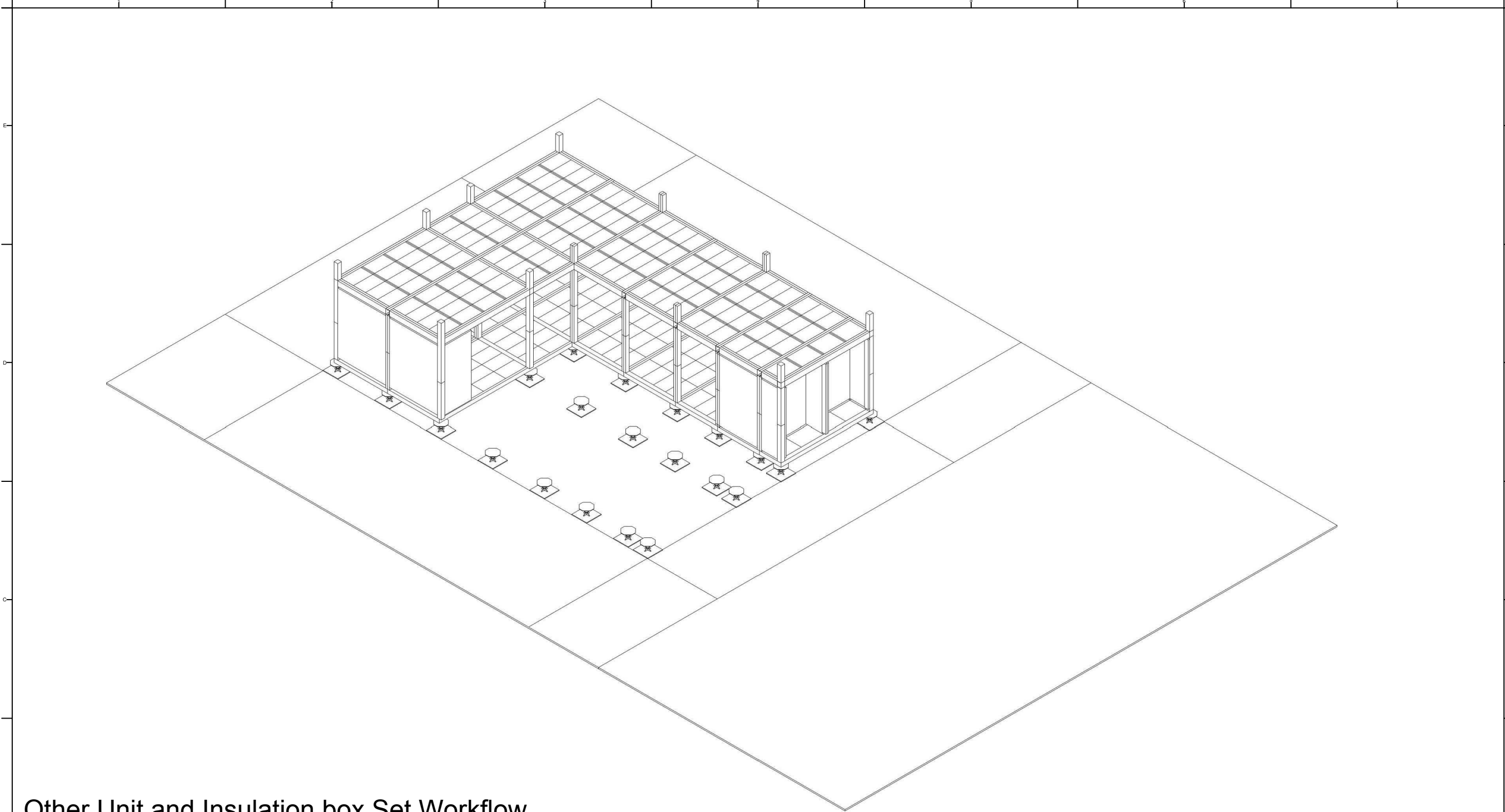


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Unit -

DWG. Title
Phase 6

DWG. No. SO-206PAGE236



Other Unit and Insulation box Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set				
Description	Set Sand Box Loading sand	Set Footing Use Laser Position				
Worker	6	8				
Note						



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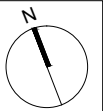
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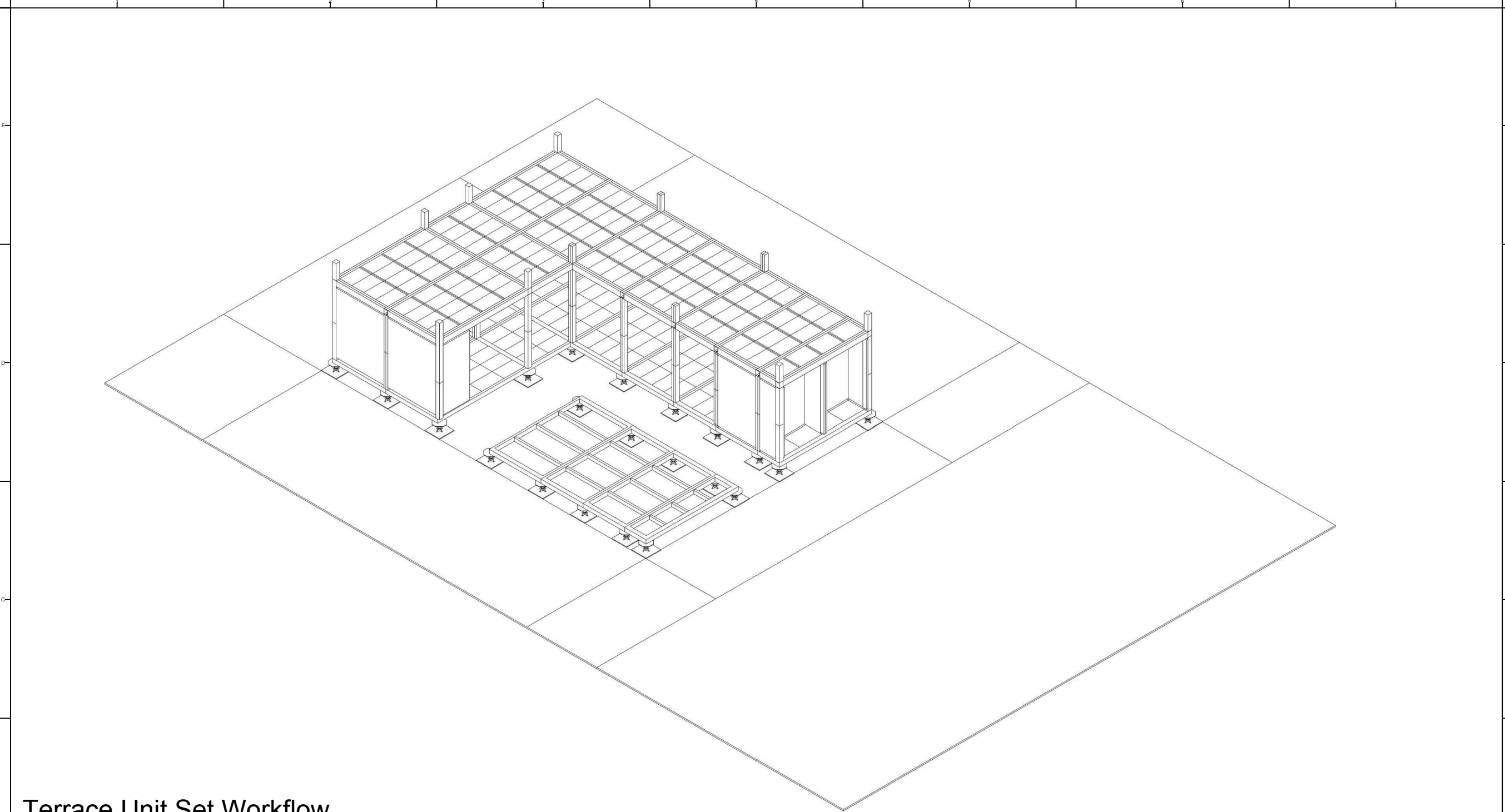


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Unit -

DWG. Title
Phase 7

DWG. No. SO-207PAGE 237



Terrace Unit Set Workflow

Step	1	2	3	4	5	6
Work Phase	Unit Frame Set	Unit Fixed				
Description	Lifting Unit Lifting guide	M-16 Bolt				
Worker	6	8				
Note						



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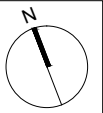
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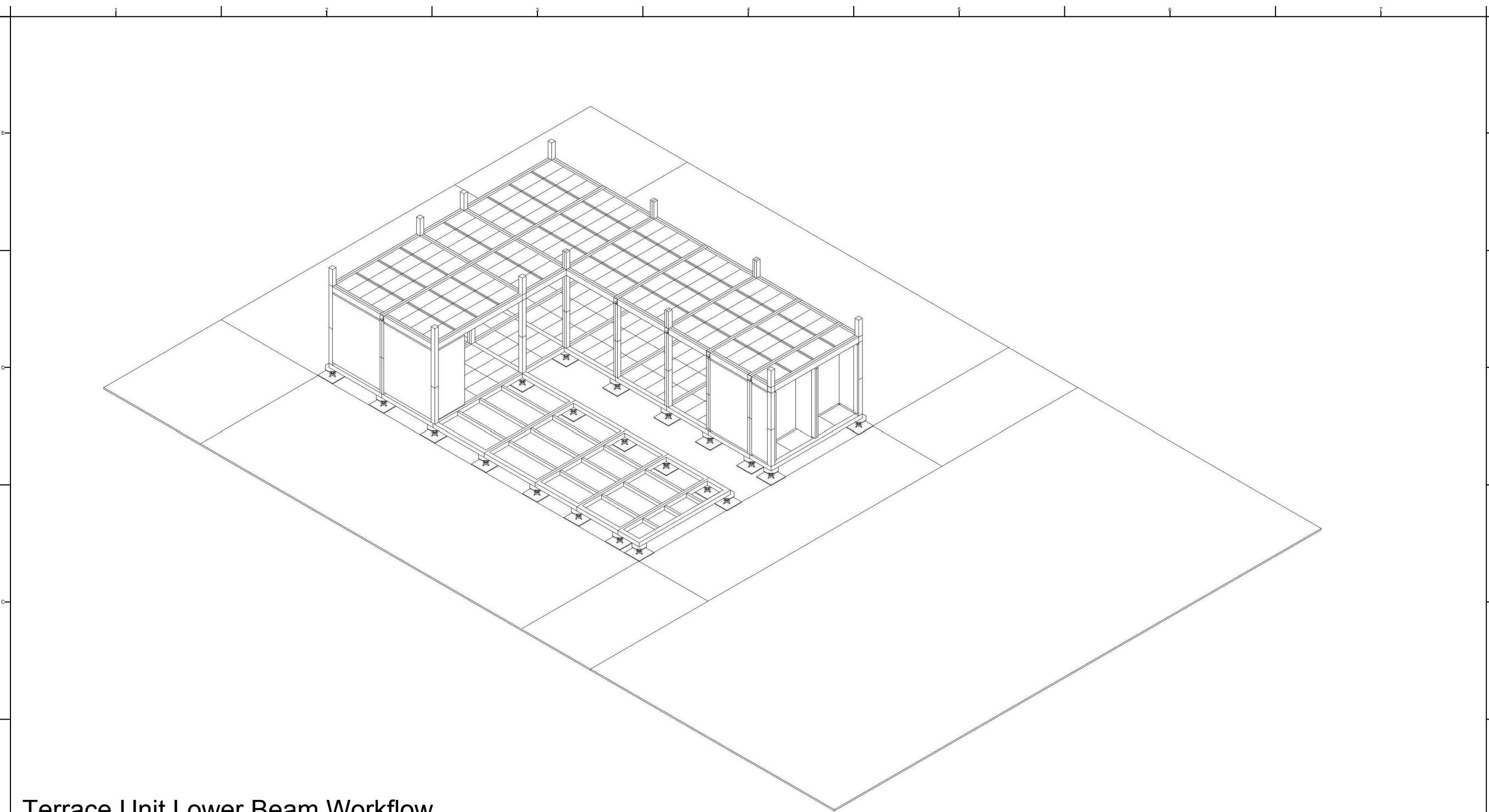


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Unit -

DWG. Title
Phase 8

DWG. No. SO-208
PAGE 238



Terrace Unit Lower Beam Workflow

Step	1	2	3	4	5	6
Work Phase	Unit Beam Set	Unit Fixed				
Description	Lifting Unit Lifting guide	M-16 Bolt				
Worker	6	4				
Note						



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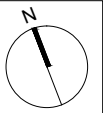
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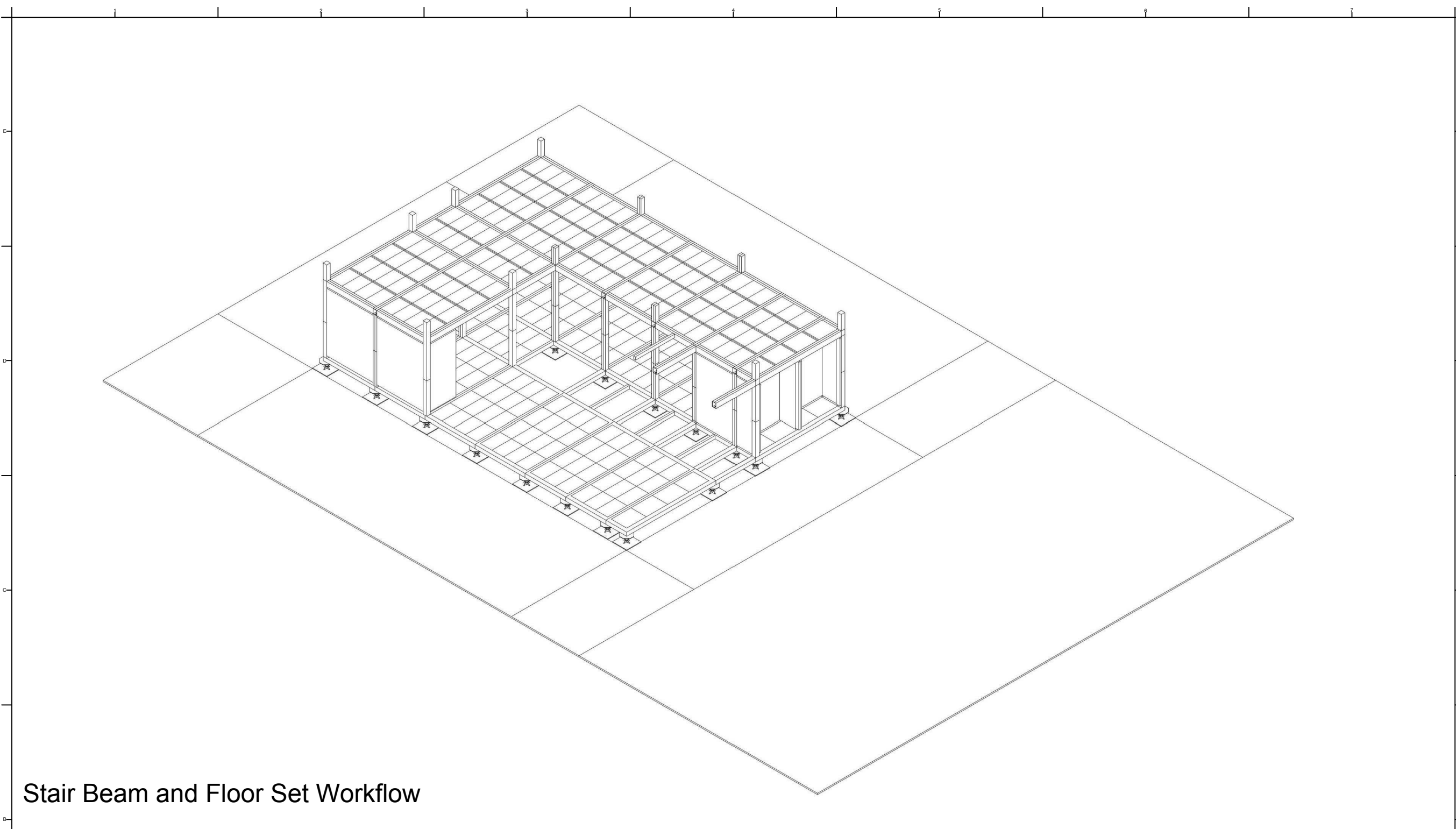
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DWG. Title

Phase 9

DWG. No. SO-209

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Stair Beam and Floor Set Workflow

Step	1	2	3	4	5	6
Work Phase	Beam Set	Unit Fixed	Floor Laying			
Description	Lifting Unit Lifting guide	M-16 Bolt	Temporary floor Fixed			
Worker	6	4	6			
Note						



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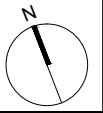
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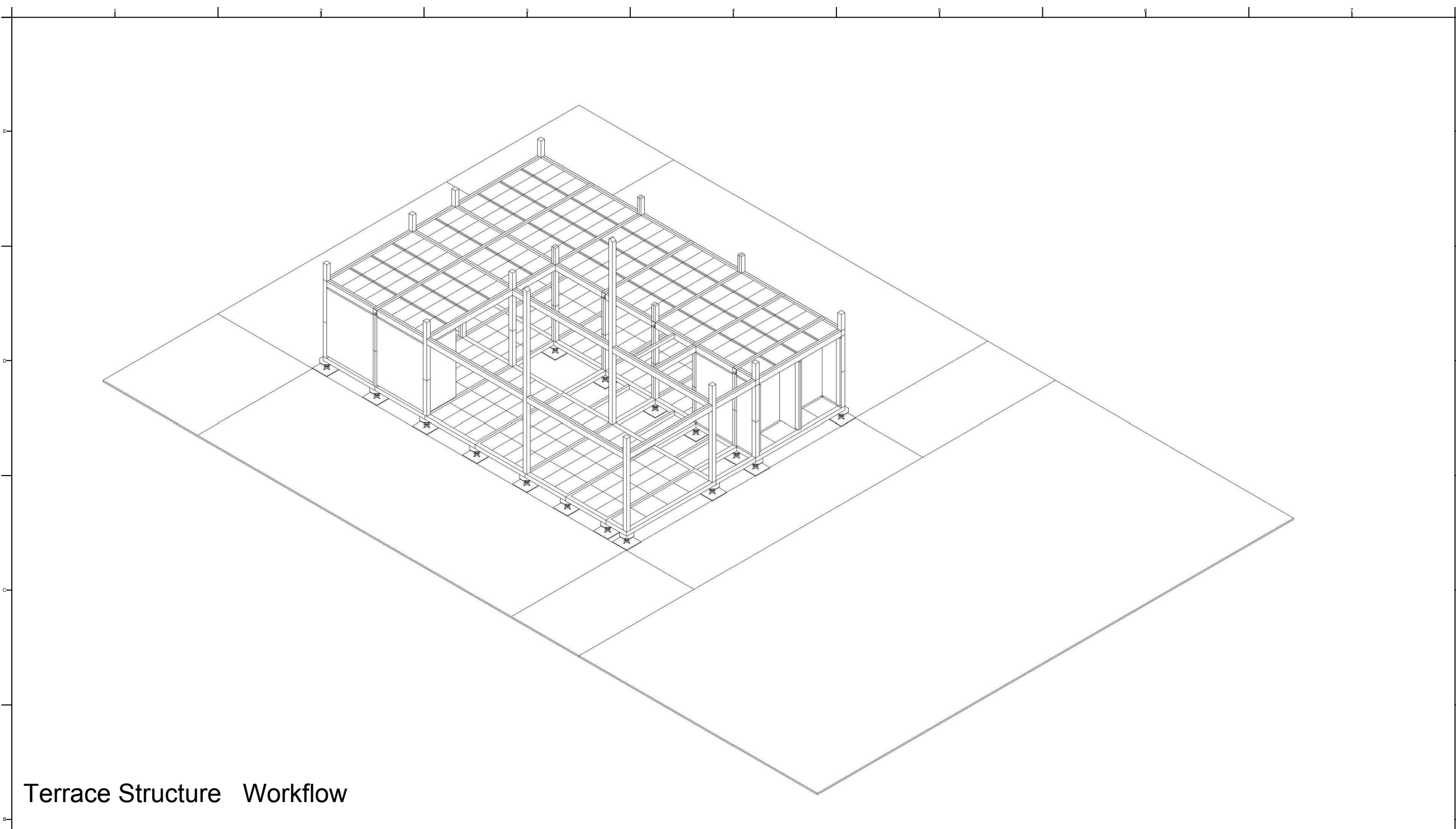


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Unit -

DWG. Title
Phase 10

DWG. No. SO-210PAGE 240



Terrace Structure Workflow

Step	1	2	3	4	5	6
Work Phase	Column Set	Column Fixed	Beam Set	Beam Fixed		
Description	Lifting Column Lifting guide	M-16 Bolt	Lifting Beam Lifting guide	M-16 Bolt		
Worker	6	4	6	6		
Note						



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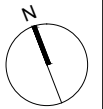
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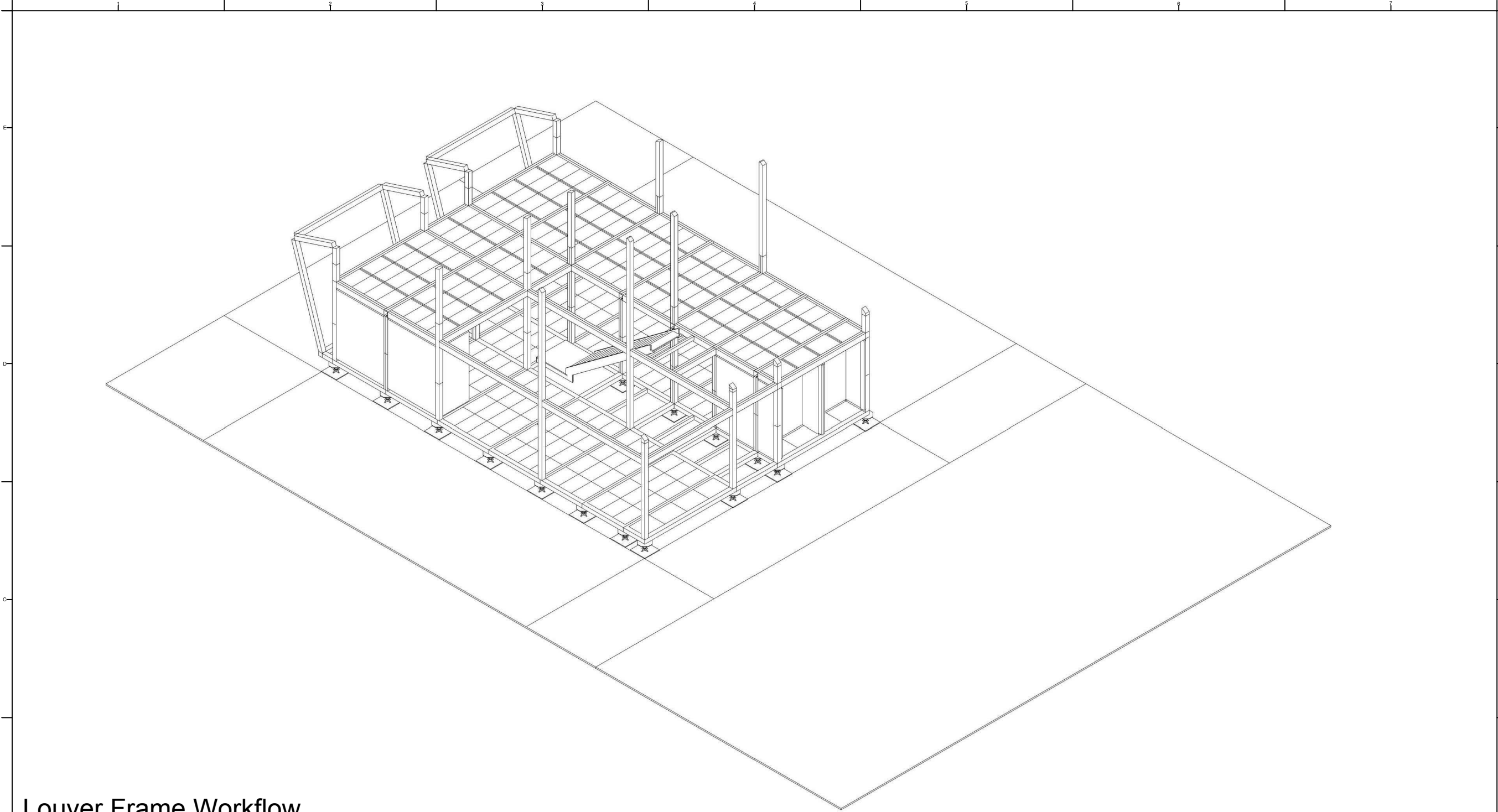


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Unit -

DWG. Title
Phase 11

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Louver Frame Workflow

Step	1	2	3	4	5	6
Work Phase	Louver Frame	Frame Fixed	2F Column Lifting	Column Fixed		
Description	Lifting Frame	M-16 Bolt	Lifting Column	M-16 Bolt		
Worker	6	4	6	6		
Note						



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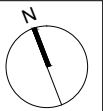
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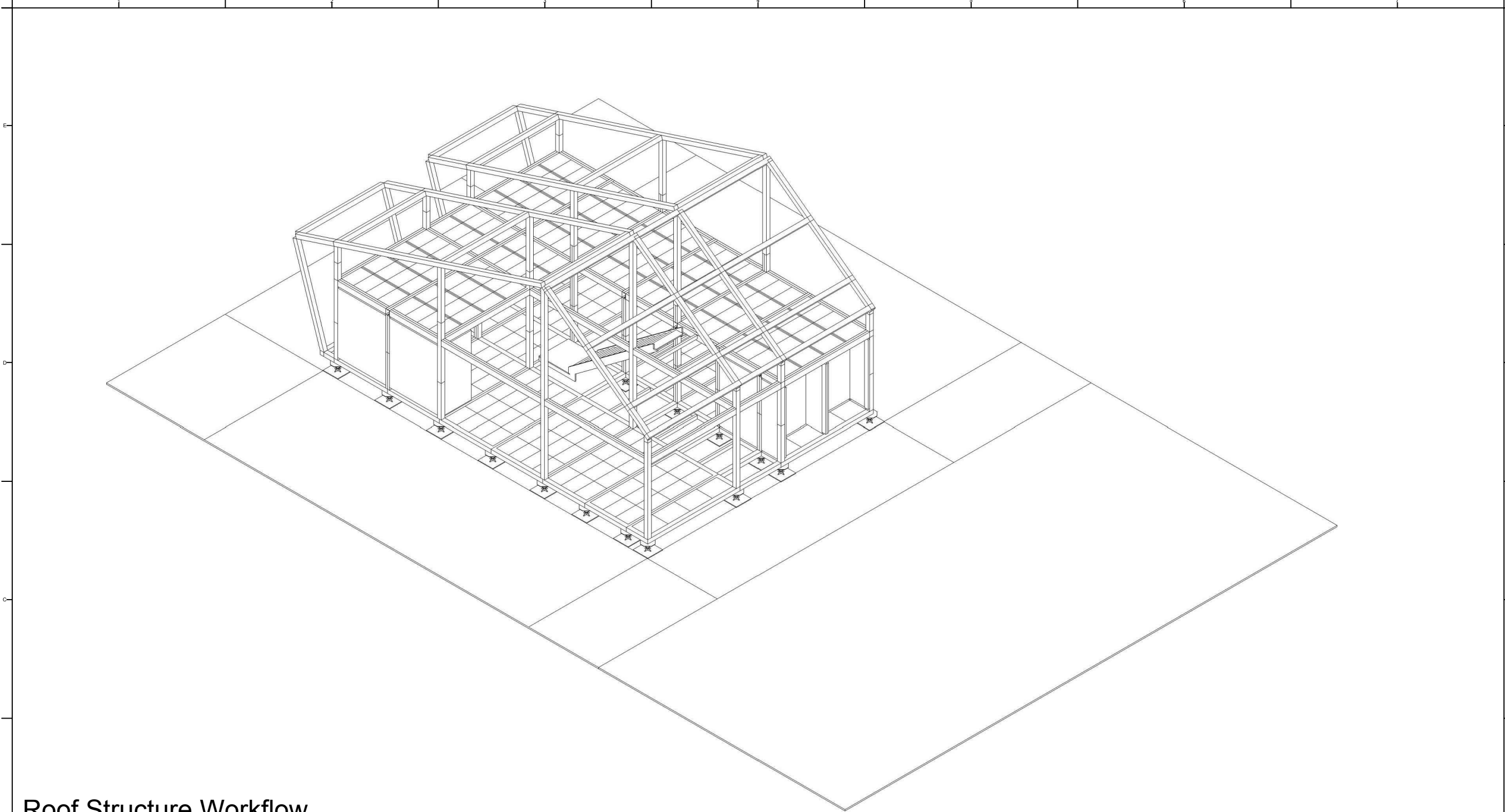


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DWG. Title
Phase 12

DWG. No. SO-212
PAGE 242



Roof Structure Workflow

Step	1	2	3	4	5	6
Work Phase	2F Column Lifting	Column Fixed	Long Beam	Beam Fixed	Short Beam	Beam Fixed
Description	Lifting Column	M-16 Bolt	Lifting Beam	M-16 Bolt	Lifting Beam	M-16 Bolt
Worker	6	4	6	6	6	6
Note						



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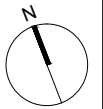
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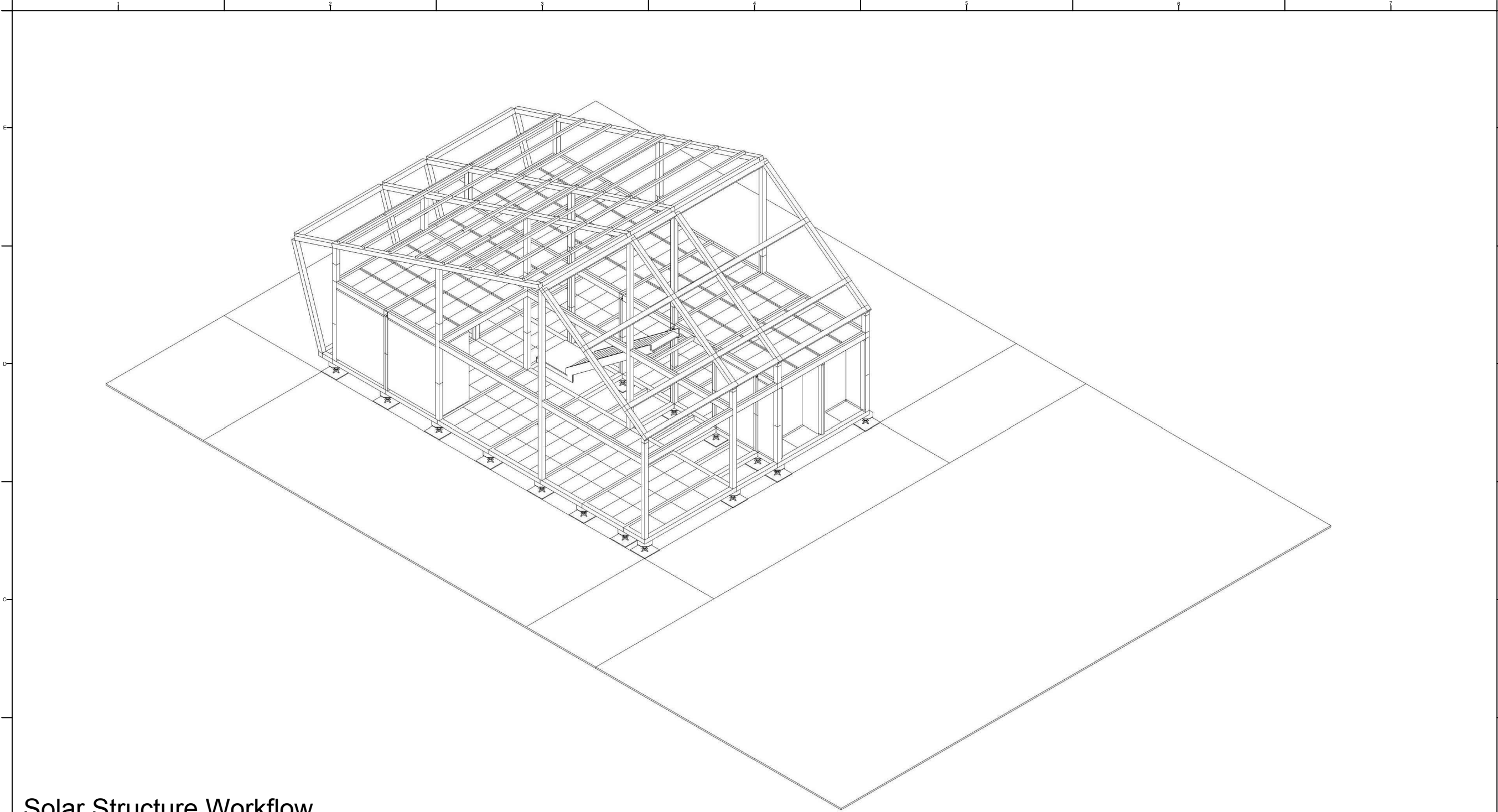


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DWG. Title
Phase 13

DWG. No. SO-213PAGE 243



Solar Structure Workflow

Step	1	2	3	4	5	6
Work Phase	Solar Frame	Solar Frame Fix				
Description	Lifting Frame	M-16 Bolt				
Worker	6	4				
Note						



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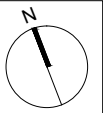
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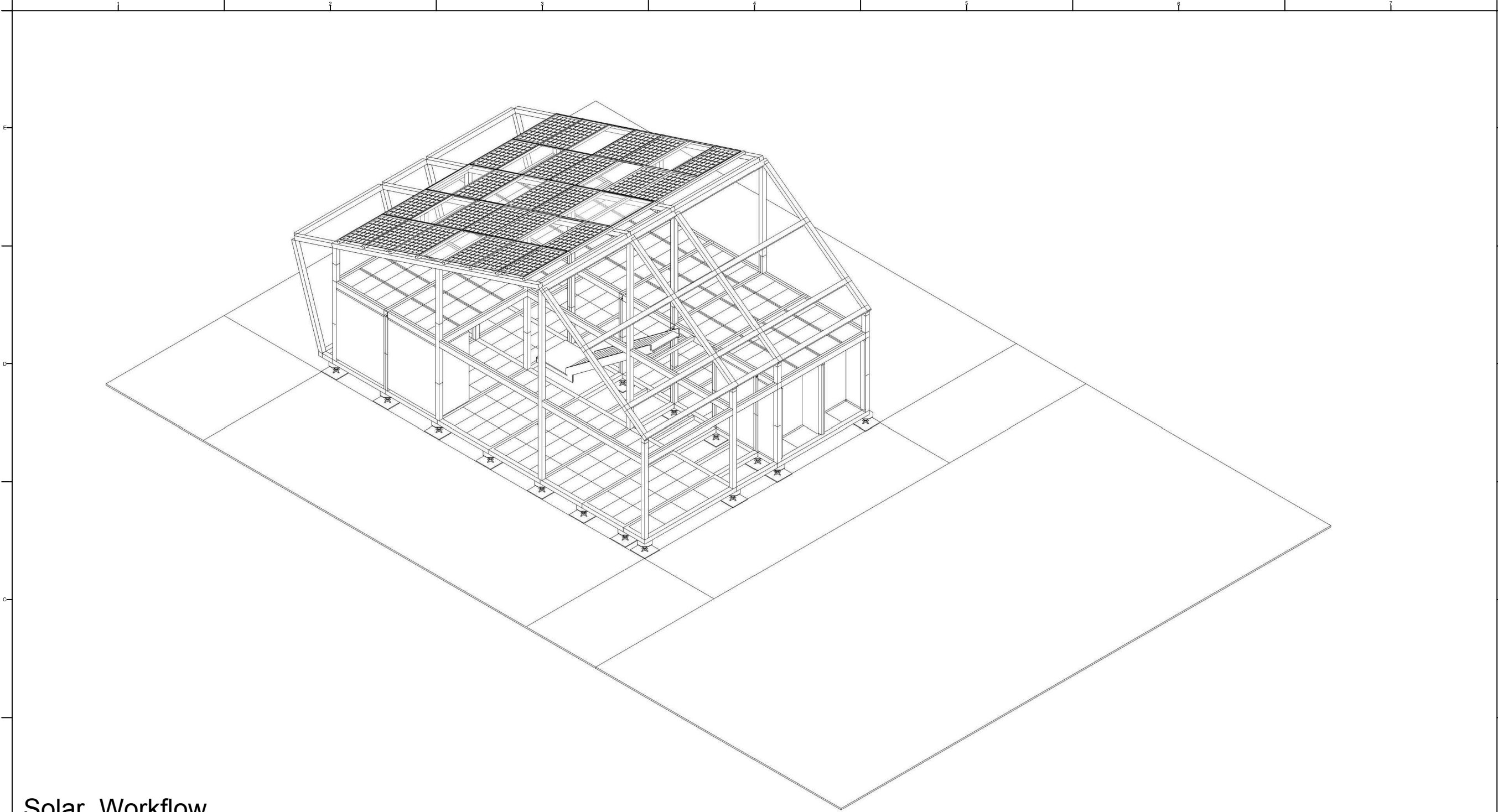
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DWG. Title

Phase 14

DWG. No. SO-214

PAGE 244



Solar Workflow

Step	1	2	3	4	5	6
Work Phase	Solar Panel	Panel Fix				
Description	Lifting Panel	M-16 Bolt				
Worker	6	4				
Note						



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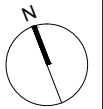
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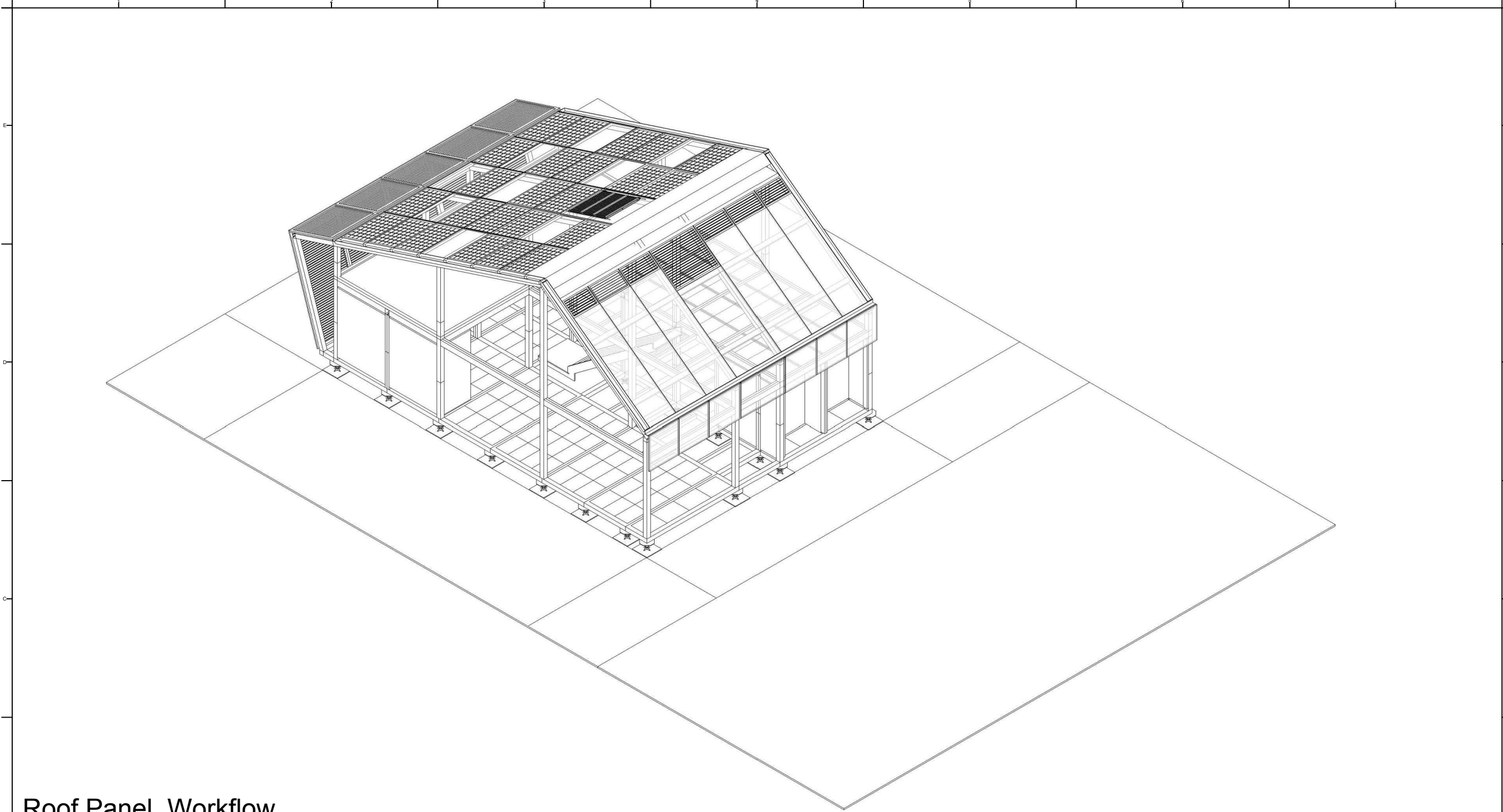


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DWG. Title
Phase 15

DWG. No. SO-215
PAGE 245



Roof Panel Workflow

Step	1	2	3	4	5	6
Work Phase	Roof Panel	Panel Fix	Louver Panel	Panel Fix	Heat Water Panel	Panel Fix
Description	Lifting Panel	M-16 Bolt	Lifting Panel	M-16 Bolt	Lifting Panel	M-16 Bolt
Worker	6	4				
Note						



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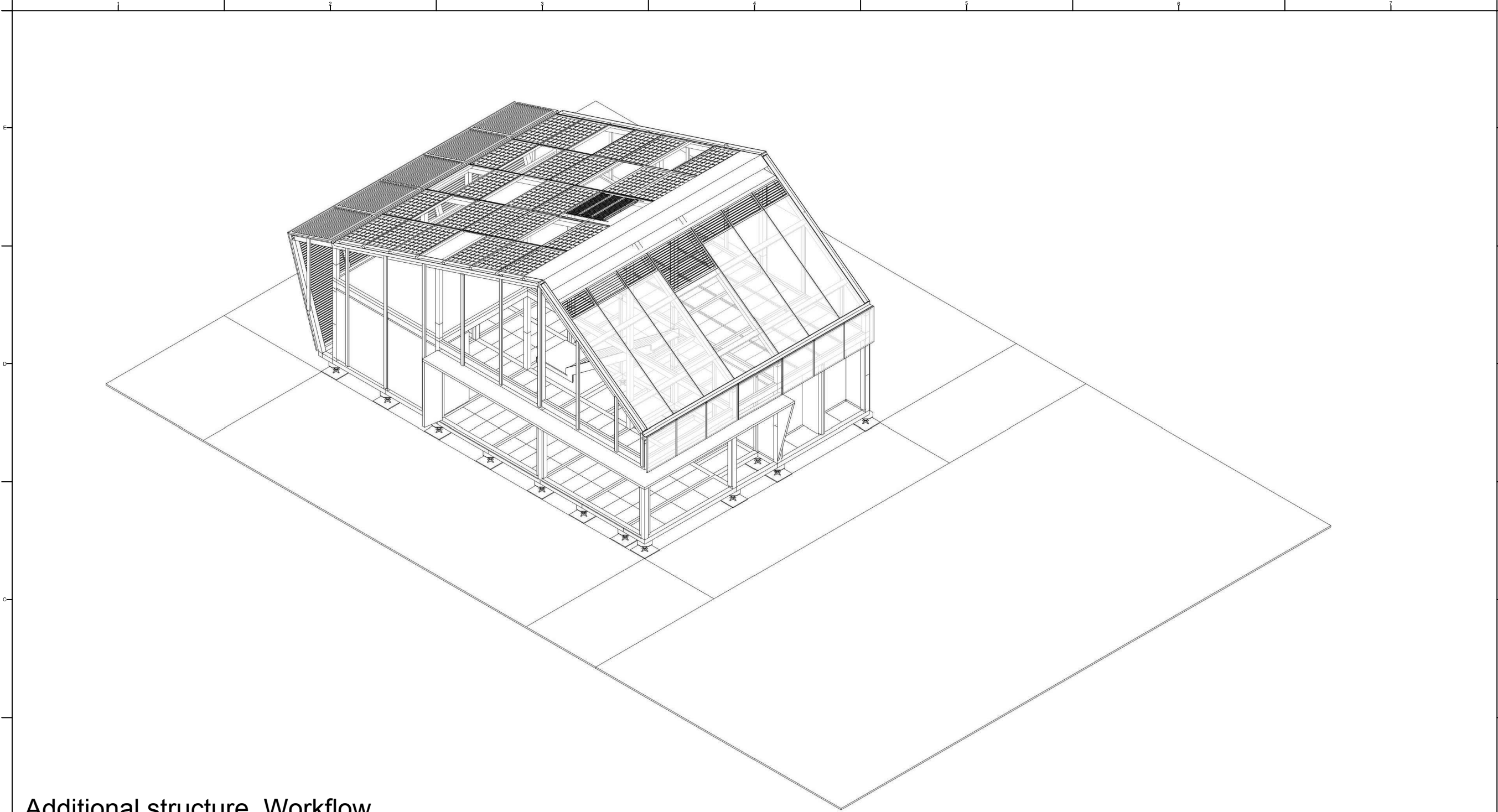
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Additional structure Workflow

Step	1	2	3	4	5	6
Work Phase	Window Structure	Structure Fix	Bayer Structure	Structure Fix	Water Cover	Water Cover
Description	Lifting Structure	M-16 Bolt	Lifting Structure	M-16 Bolt	Lifting Structure	M-16 Bolt
Worker	6	4	6	4	6	4
Note						



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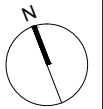
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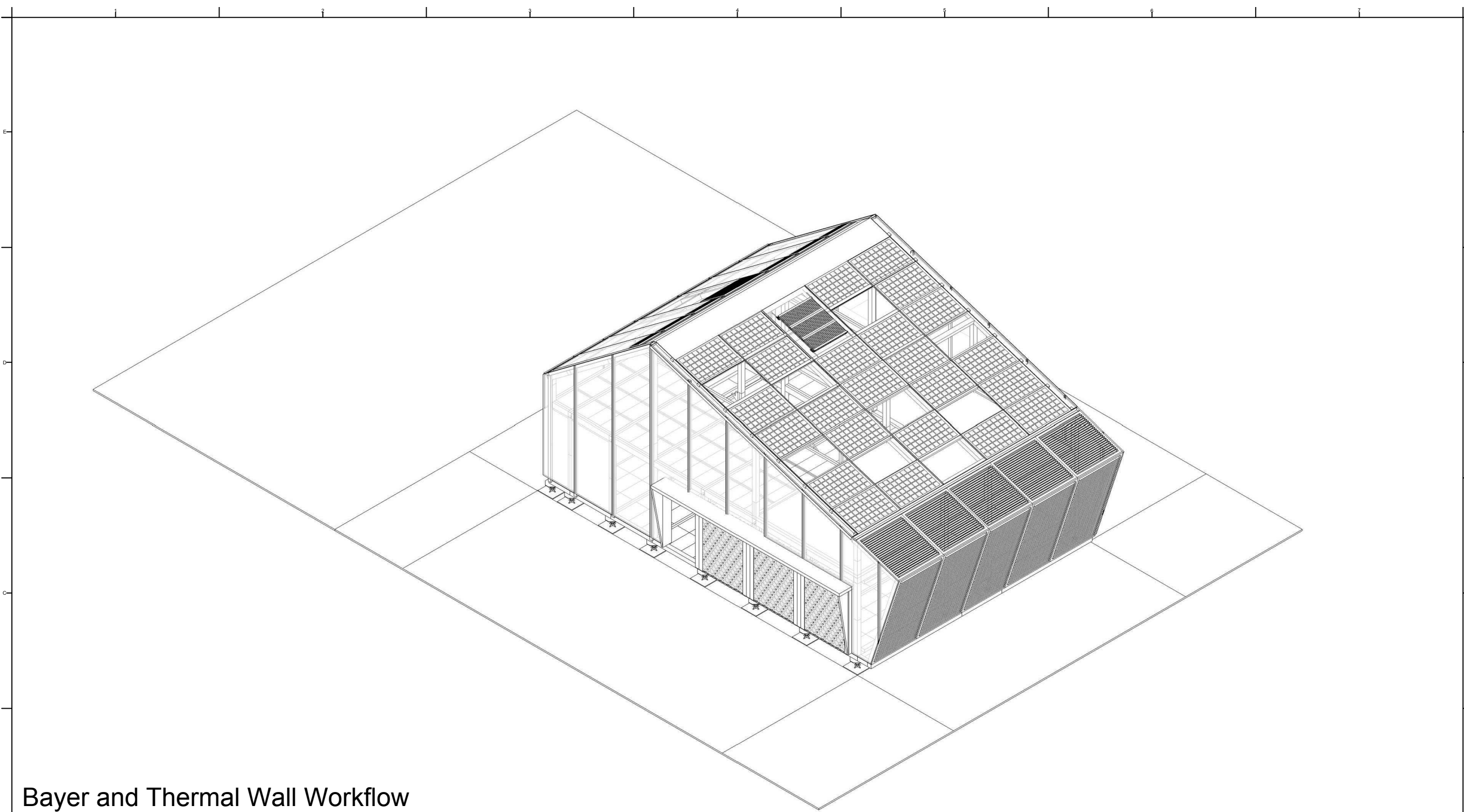
DWG. Title

Phase 17

DWG. No.

PAGE

SO-217247



Bayer and Thermal Wall Workflow

Step	1	2	3	4	5	6
Work Phase	Bayer Wall	Panel Fix	Thermal Wall	Frame Fix	Polli Brick	Structure Fix
Description	Lifting Panel	Joining board	Lifting Frame	M-16 Bolt	Array Polli Brick	M-16 Bolt
Worker	6	4	6	4	6	4
Note						



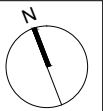
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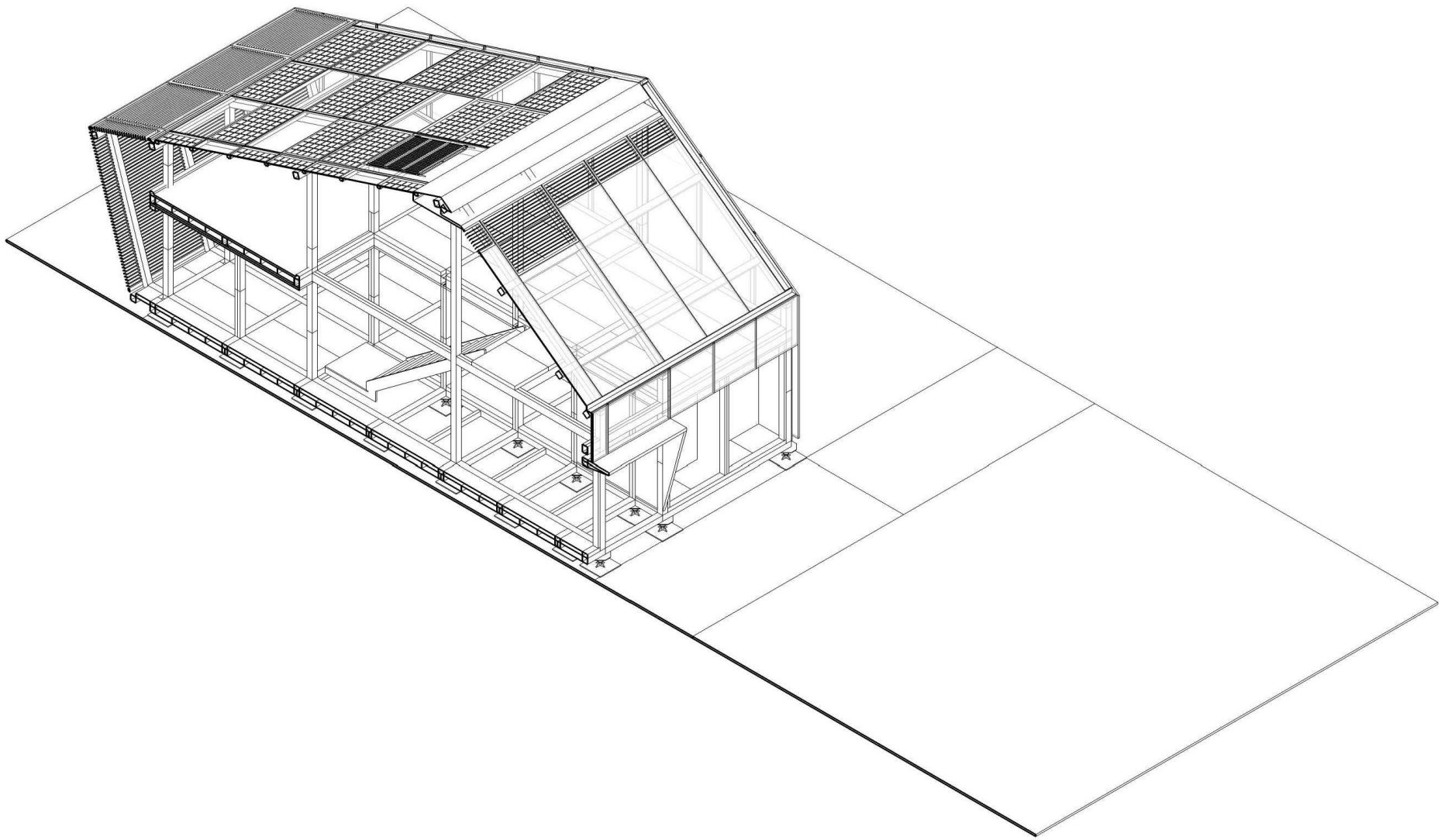
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DN	2013/04/01	SD Submission
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Drawn by MS
Checked by DN
Scale -
Unit -

DWG. Title
Phase 18

DWG. No. SO-218PAGE 248



Finish Floor , Ceiling , Wall Finish Workflow

Step	1	2	3	4	5	6
Work Phase	Finish Floor	Ceiling	Wall Finish	Water Tray		
Description	Detail-1	Detail-2	Detail-3	-		
Worker	6	4	6	4		
Note						



Project:

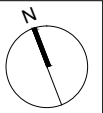
Institution:

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Consultants:

Note:

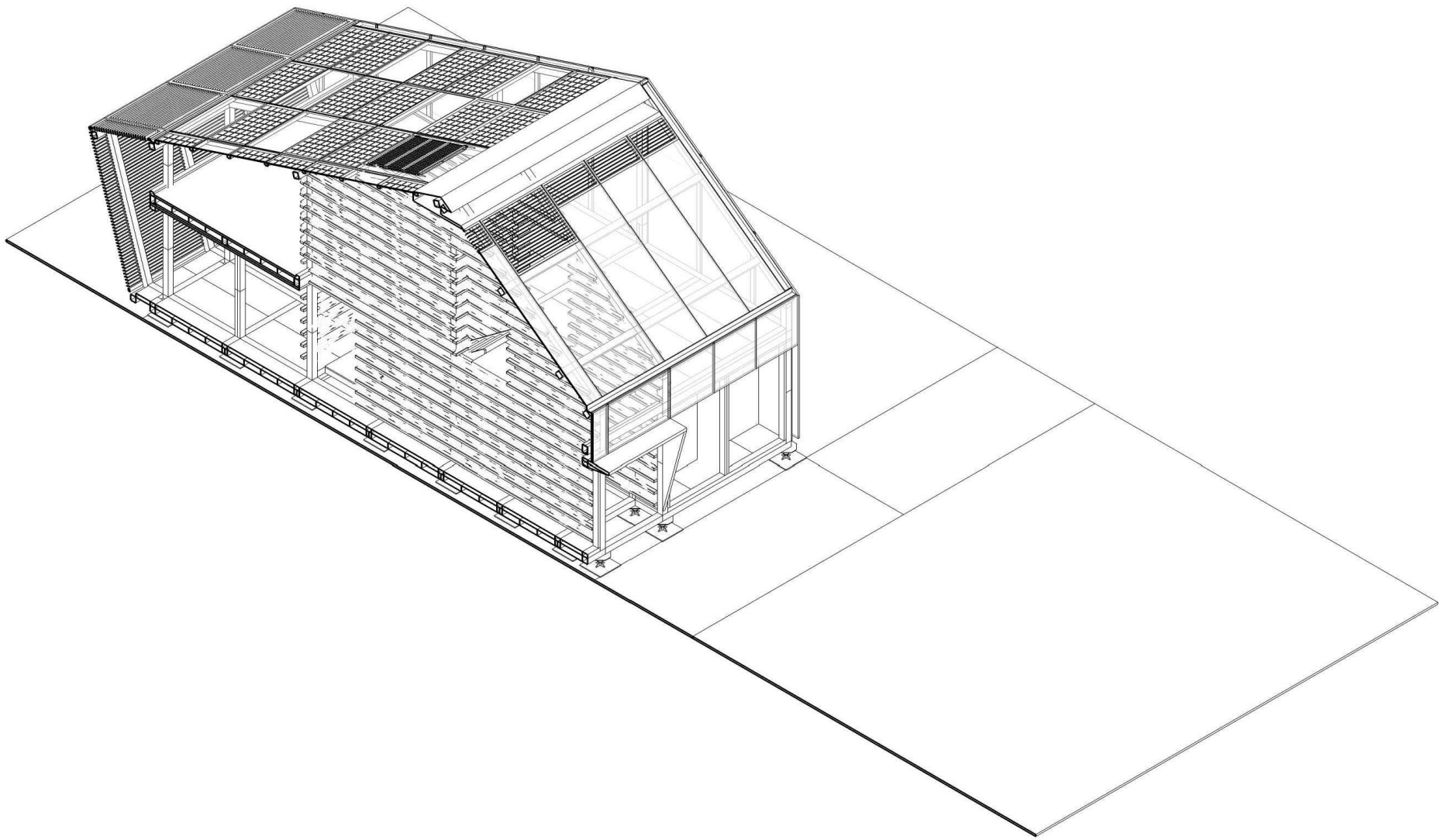


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Scale -
Unit -

DWG. Title
Phase 19

DWG. No. SO-219PAGE249



Green Core , MEP System Workflow

Step	1	2	3	4	5	6
Work Phase	Green Core	Green Core Wood	MEP System			
Description	Structure Frame	Wood Plan	MEP System			
Worker	6	4	6			
Note						



Project:

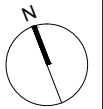
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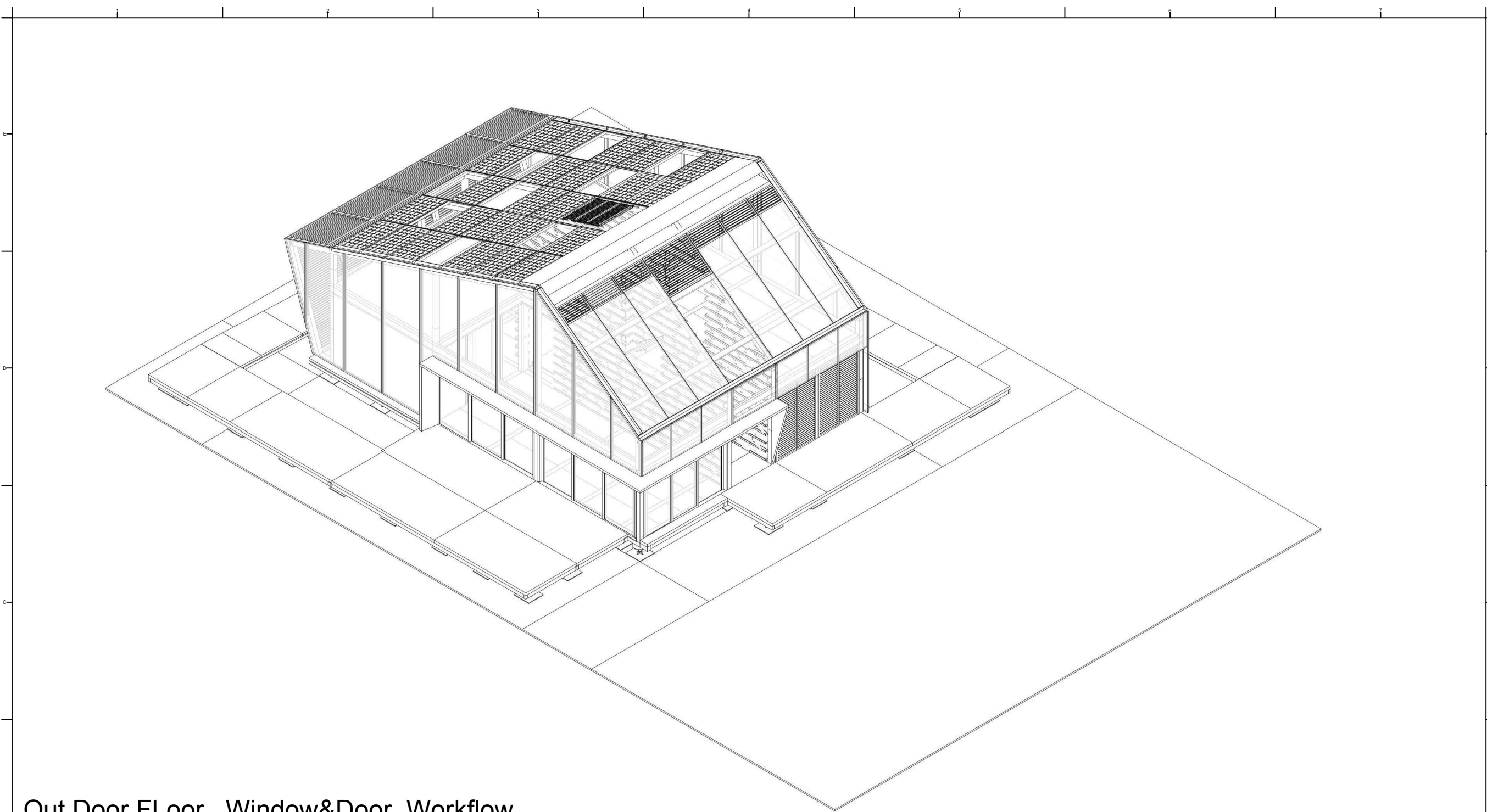


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Scale -
Unit -

DWG. Title
Phase 20

DWG. No. SO-220PAGE250



Out Door FLoor , Window&Door Workflow

Step	1	2	3	4	5	6
Work Phase	Out Door Floor	Floor Unit	Floor Fix	Window Install	Door Install	
Description	Floor Assembly	Floor Unit Lifting	Bolt Bolt	Install	Fixed	
Worker	6	4	6	4	4	
Note						



Project:

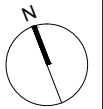
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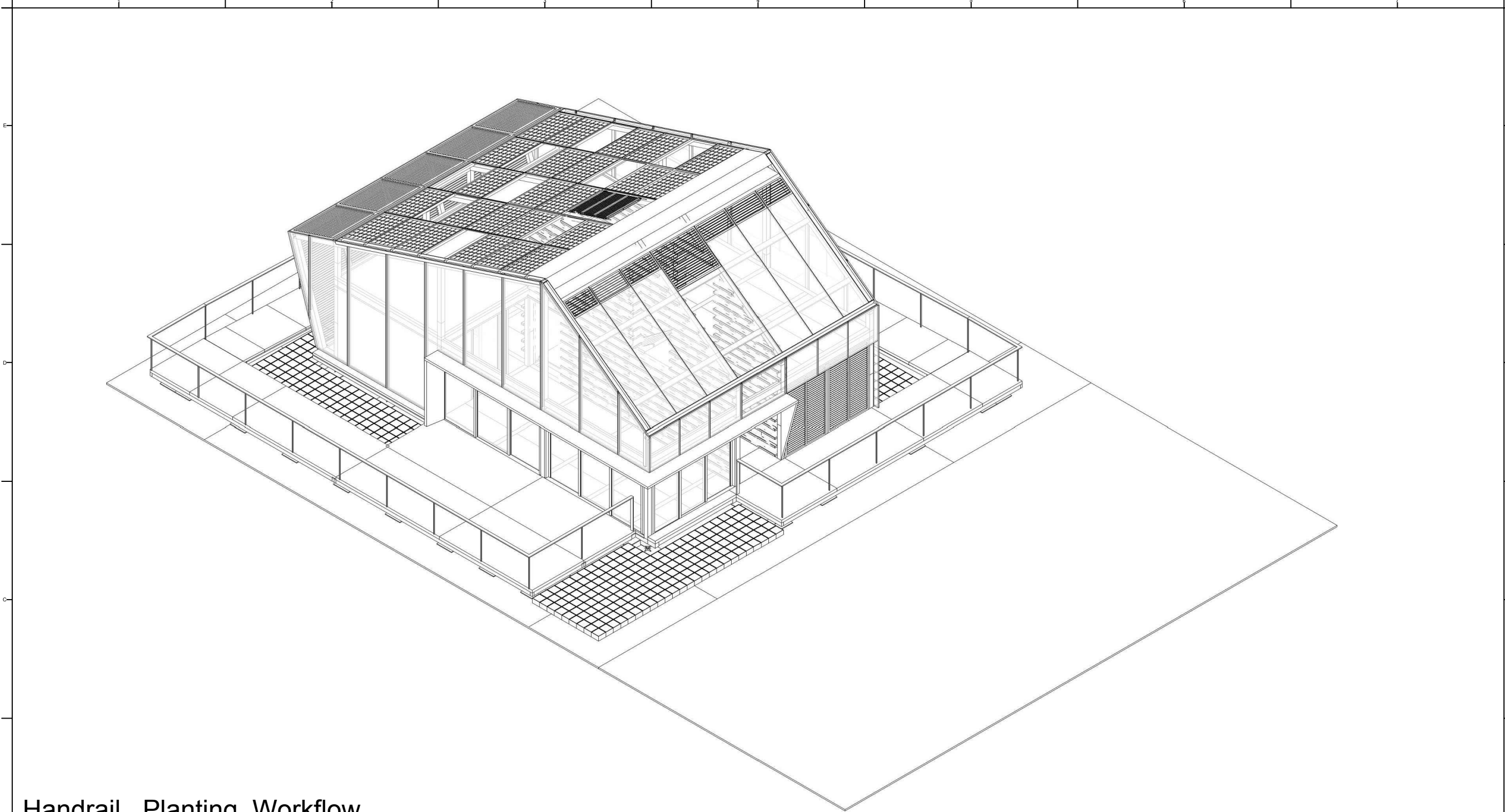


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Unit -

DWG. Title
Phase 21

DWG. No. SO-221
PAGE 251



Handrail , Planting Workflow

Step	1	2	3	4	5	6
Work Phase	Handrail Lifting	Handrail Fix	Planting Pots	Planting Install		
Description	Handrail Lifting	Bolt	Assembly Pots	Install Planting		
Worker	6	4	6	4		
Note						



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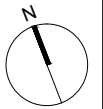
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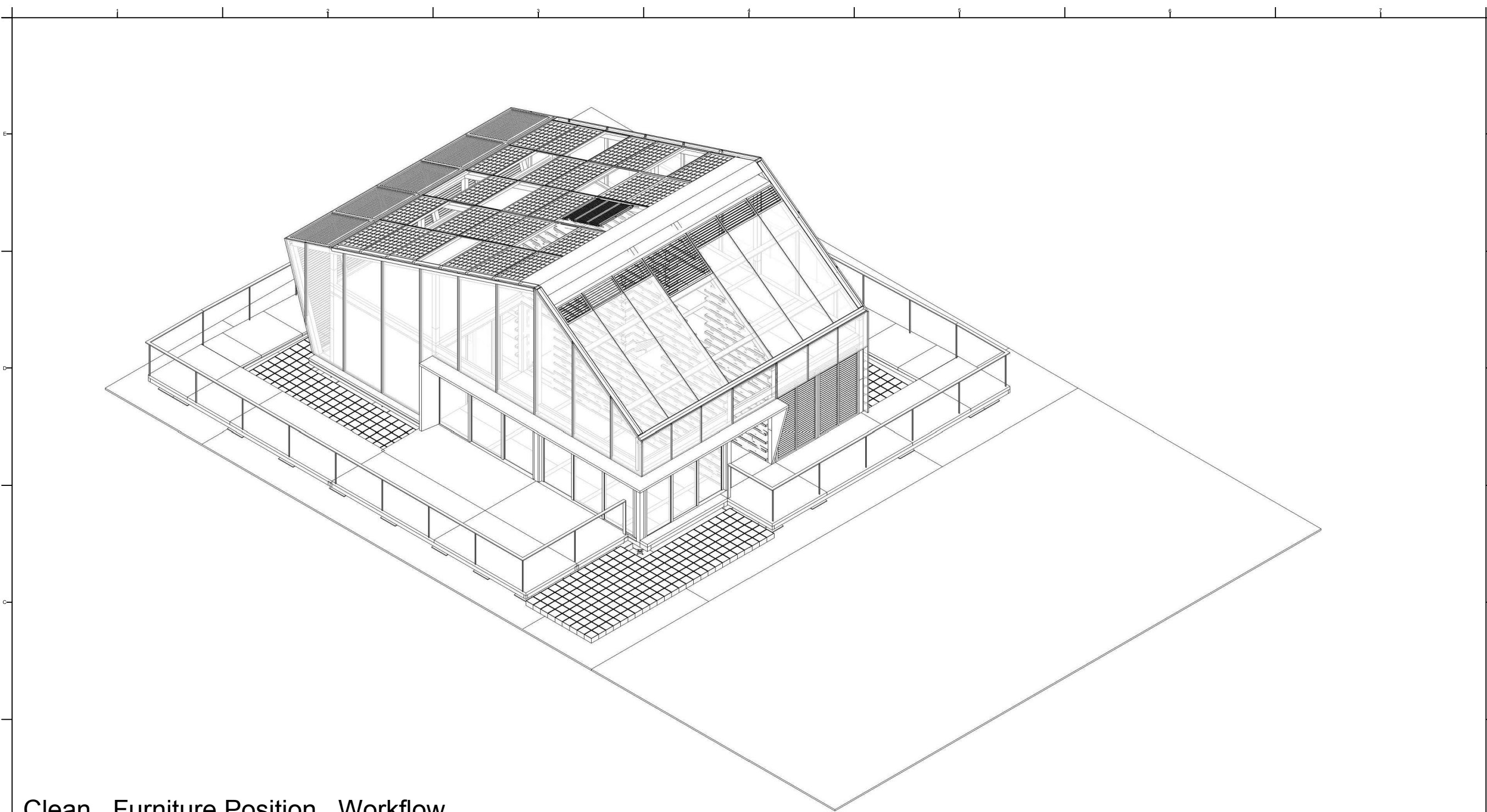


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ST	2014/03/03	CD Submission

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Checked by DN
Scale -
Unit -

DWG. Title
Phase 22

DWG. No. SO-222PAGE252



Clean , Furniture Position Workflow

Step	1	2	3	4	5	6
Work Phase	Furniture Position	Clean				
Description	Furniture Position	House Clean Site Clean				
Worker	6	4				
Note						



Project:



Institution:



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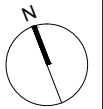
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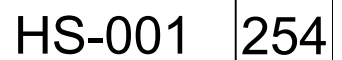
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Unit -

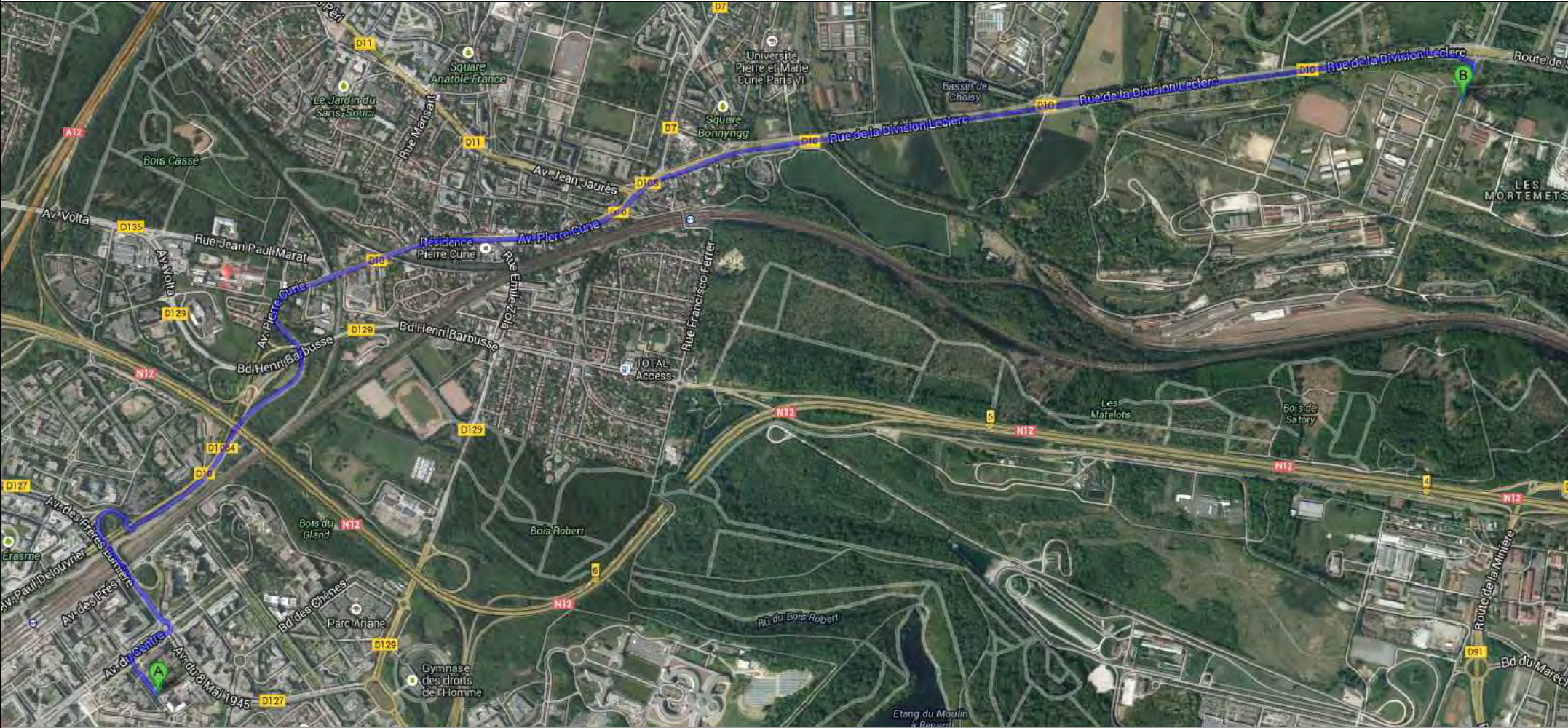
DWG. Title
Phase 23

DWG. No. SO-223PAGE
253

The site plan for the 'AGORA' development shows a large rectangular area with a grid of building footprints and parking spaces. The buildings are labeled A through T, with some labeled as 'TRUCK' or 'DATA CENTER'. The plan includes a 'VILLAGE' area on the right and a 'TRUCK' area at the bottom. A green dashed line indicates a truck waiting area. The plan also shows a 'TRUCK' area at the bottom.



ROUTE TO THE NEAREST POLICE OFFICE



A: La Cite du Soleil

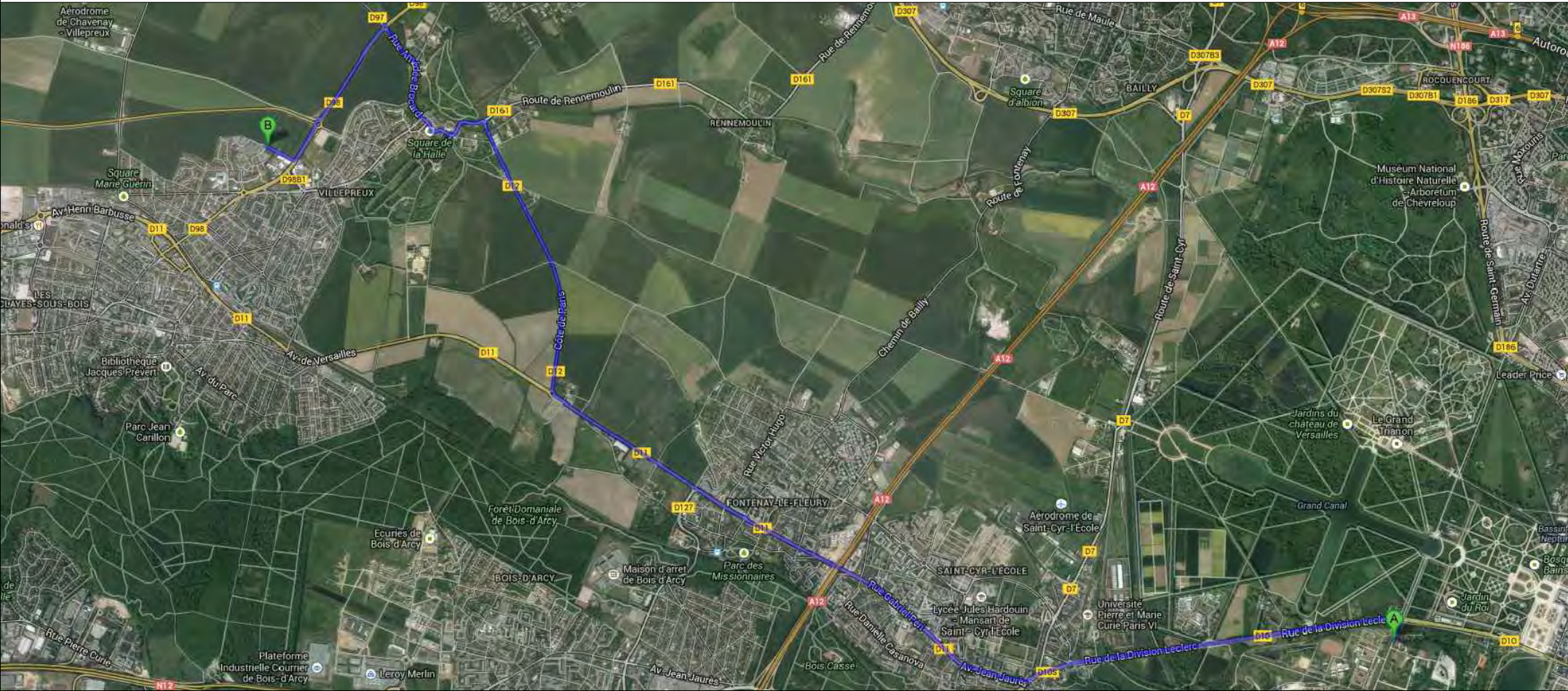
- Head northeast on Allée des Matelotstoward D10
- Turn left onto D10
- Slight right onto Av. de la Division Leclerc/D10
- At the roundabout, take the 1st exit onto the Av. des Frères Lumière/D127 ramp
- Keep left at the fork, follow signs for D127/Guyancourt/Quartier saint quentin
- Turn left onto Av. des Frères Lumière/D127
- Turn right onto Rue de la Division Leclerc

Distance: 5.8km , 9 mins

B: Commissariat de Police

Address: 1 Rue de la Division Leclerc
8280 Guyancourt, France

ROUTE TO THE FIRE STATION



A: La Cite du Soleil

- Head northeast on Allée des Matelotstoward D10
- Turn left onto D10
- Slight right onto Av. de la Division Leclerc/D10
- Turn right onto Av. Jean Jaurès/D11
Continue to follow D11
- At the roundabout, take the 2nd exit ontoRue Jules Massenet/D98
- Turn left onto D98

Distance: 11.3km , 18 mins

B: Sapeurs Pompiers des Yvelines

Address: Avenue de Pépinière
78450 Villepreux, France



Project:



Institution:



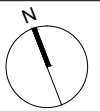
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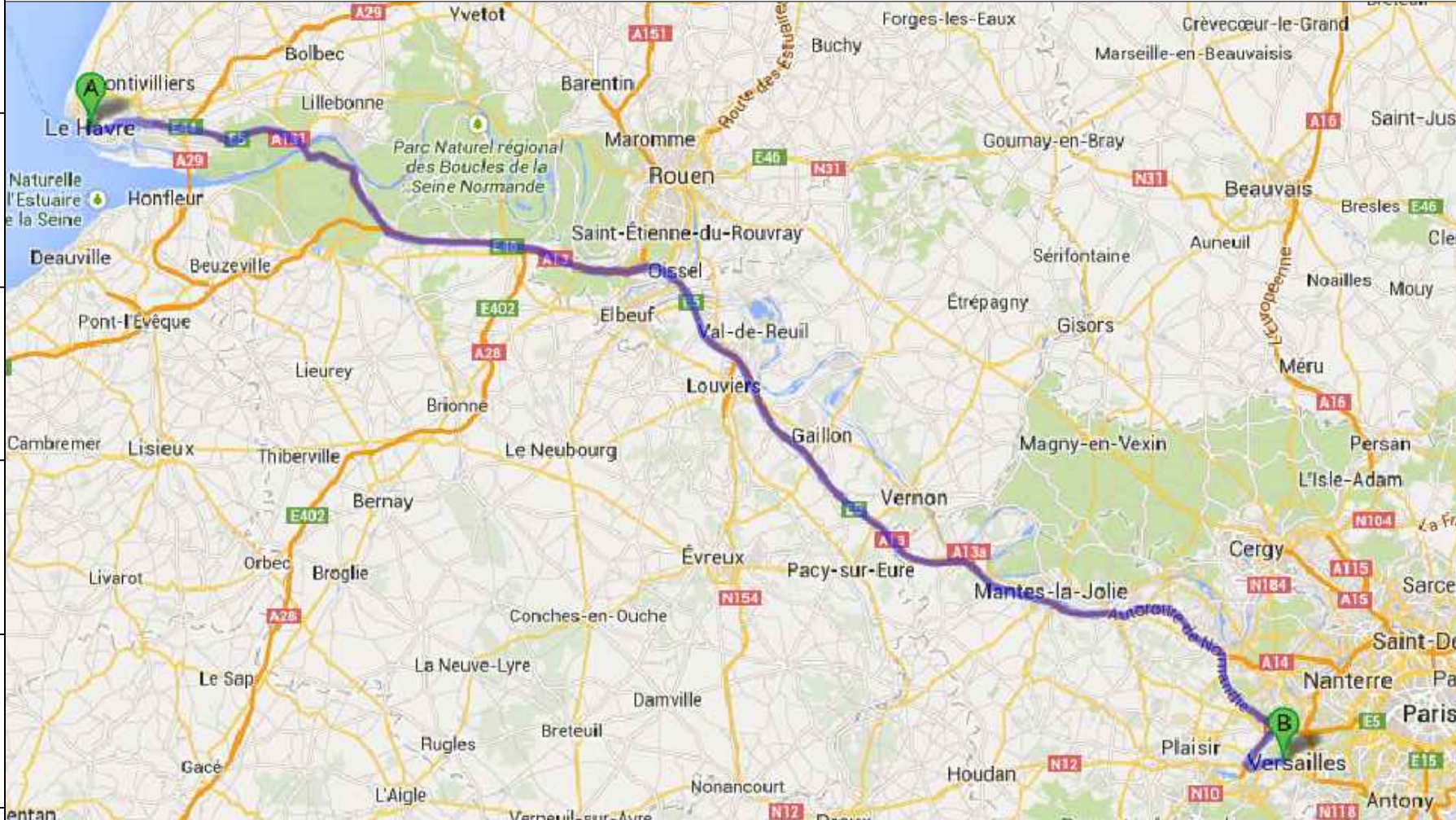


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ST	2014/03/03	CD Submission

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Checked by	DN
Scale	
Unit	-

DWG. Title HEALTH AND SAFETY IN THE LOT AND SURROUNDINGS 2	
DWG. No. HS-002	PAGE 255

TRUCKS ROUTE FROM "Le Havre" TO "La Cite du Soleil"



A: LE HAVRE

- Head west on Av. du Général Leclerc toward Pl. de l'Hôtel de ville
- Take the 1st left onto Pl. de l'Hôtel de ville
- Turn right onto Bd de Strasbourg
- Continue onto Cours Lafayette
- Continue onto Quai Colbert
- Slight left onto D6015
- Keep left to stay on D6015
- Continue onto N282
- Continue onto A131
- At the roundabout, take the 3rd exit onto N182
- Slight left onto E5
- Continue onto A131/E5
- Merge onto A13/E5
- Take the exit onto A12 toward Saint-Quentin-en-Yvelines
- Take the exit toward Évry/Lyon/Dreux/Saint-Quentin-en-Yvelines/Bois-D'Arcy/Versailles-Satory

- Keep right at the fork, follow signs for Saint-Cyr-l'École
- Turn left onto D129
- Slight right onto Av. Volta/D129
Continue to follow D129
- At the roundabout, take the 3rd exit onto Rue Emile Zola
- Turn right onto Av. Pierre Curie/D10
- Slight right to stay on Av. Pierre Curie/D10
- Turn right onto Allée des Matelots

Distance: 191 km, 1 hour 56mins

B:La Cite du Soleil



Project:



Institution:



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National Chiao Tung University

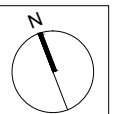
NTU Architecture
 國立交通大學建築研究所

Team Name:	NCTU/UNICODE
Address:	1001 Ta-Hsueh Road Hsinchu City 30010 Taiwan
Contact:	www.sde.tw



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ST	2014/03/03	CD Submission

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Scale

Unit	-
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DWG. Title

HEALTH AND SAFETY
DURING THE OUTSIDE
LOGISTIC

DWG. No.	PAGE
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HS-101	256
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PROBLEM	RISKS	ADOPTED MEASURES
Dangers caused by weather	Heavy rain due to slippery floors	Drive slowly
Traffic problem during shipping	Traffic jam due to spent more time	To do another preparation during waiting for trucks
Road contruction	Road blocked	Plan B (other route)
Complex traffic system	Get lost	Arrange the route clearly before departure

SITE VIEW



Project:



Institution:



NCTU Architecture
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Consultants:

Note:

PROBLEM	RISKS	ADOPTED MEASURES
Dangers caused by weather	Ground subsidence Getting stuck of heavy equipment Getting stuck of heavy components	Provision of lifting devices Support plates for heavy vehicles' legs
Dangers due to the great number of people on shipping to the site	Unclear arrangement danger of injury increases	No access for unauthorized persons Access only in coordination with construction/shift supervisor High visibility vest in compliance with the color scheme required by site operations for every person entering construction site
Too many access possibilities to the lot	Unclear arrangement danger of unauthorized access	Security officers for control Site fence Clearly marked pedestrian access to construction site
Too small distances from lot and trees/ plants	Obstruction of vehicle' movements Obstructions due to small distances between construction grounds Obstruction of vehicle' movements	No changes possible - steady crane - site fence - unloading/loading materials in the storage area inside the lot - unauthorized and external persons who invade the lot
Ground limitations	Obstruction / limitations through on-site security installations	Securing existing escape routes No dangerous works close to this area

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ST	2014/03/03	CD Submission

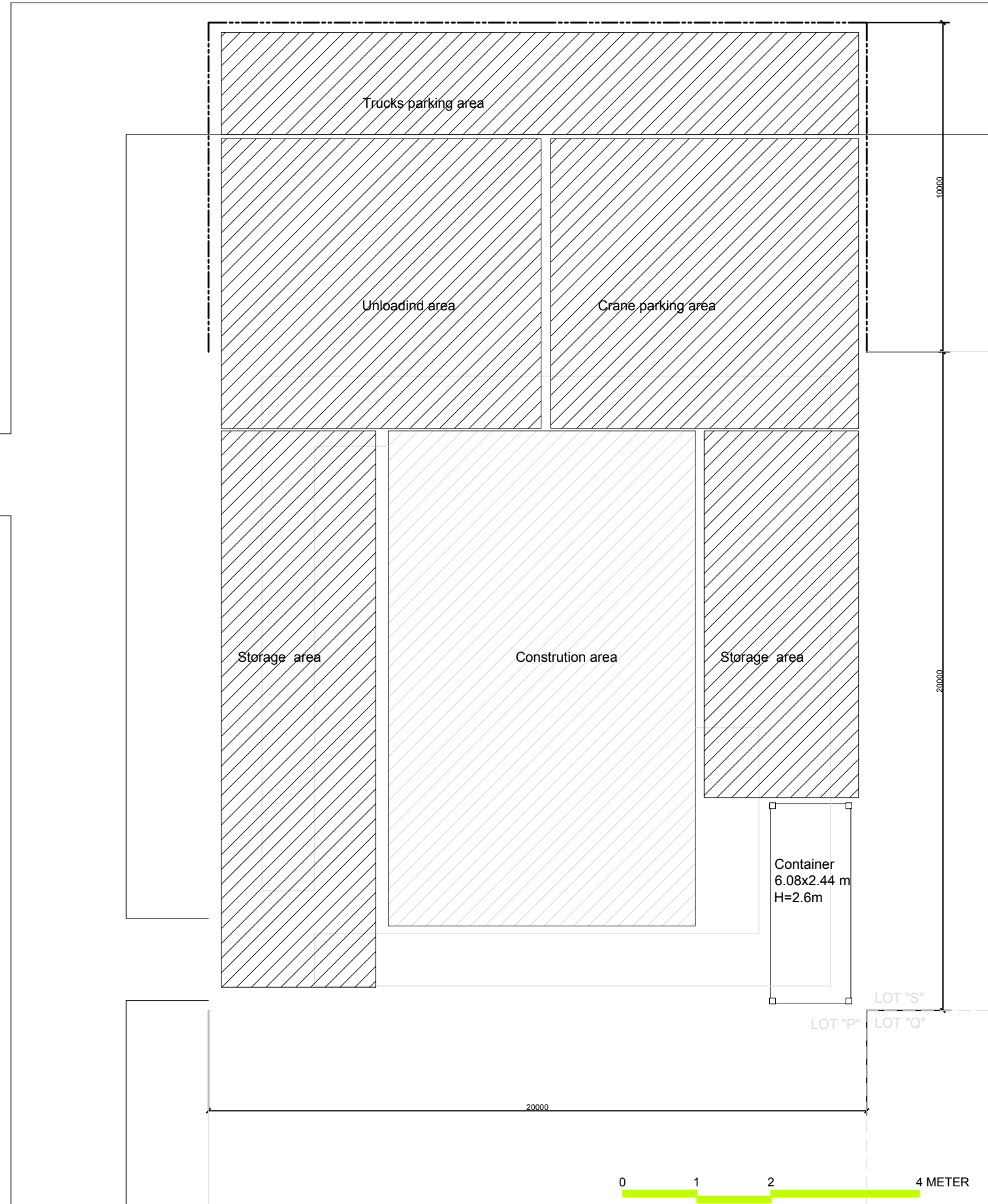
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Scale	
Unit	-

DWG. Title
**HEALTH AND SAFETY
DURING THE INSIDE
LOGISTIC**

DWG. No. **HS-201** PAGE **257**

THE SAFETY PLAN AND COORDINATION PHASE

Plan of site



PROBLEM	RISKS	ADOPTED MEASURES
Too small property lines	Collision with other people Collision with parts stored Discomfort to the maneuvers	Marking dangerous parts stored High visibility vests Guiding gear during maneuvers with two pedestrians Designing a delivery zone
Dangers due to the great number of people in the site	Increased dangers of injury muddle	High visibility vest Denial of access to other people
Trucks passway	Pass by operation area	Arrange signpostings
Heavy rain or rain of long-term	Degradation of the land Electric shock due to humidity	Use anti-slide mats on slipping surfaces Regularly remove water from the floor with scrapers Replacement of defective cables Waterproof plugs Protective clothes
Ground limitations	Obstruction / limitations through on-site security installations	Securing existing escape routes No dangerous works close to this area
Traffic and parking of the crane or a truck	Shock, collisions with pedestrians, existing equipment or vehicle Falling objects transported	Respect the rules of the road Parking places reserved for this purpose Lash with appropriate means and in sufficient number



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Checked by	DN
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Unit	mm

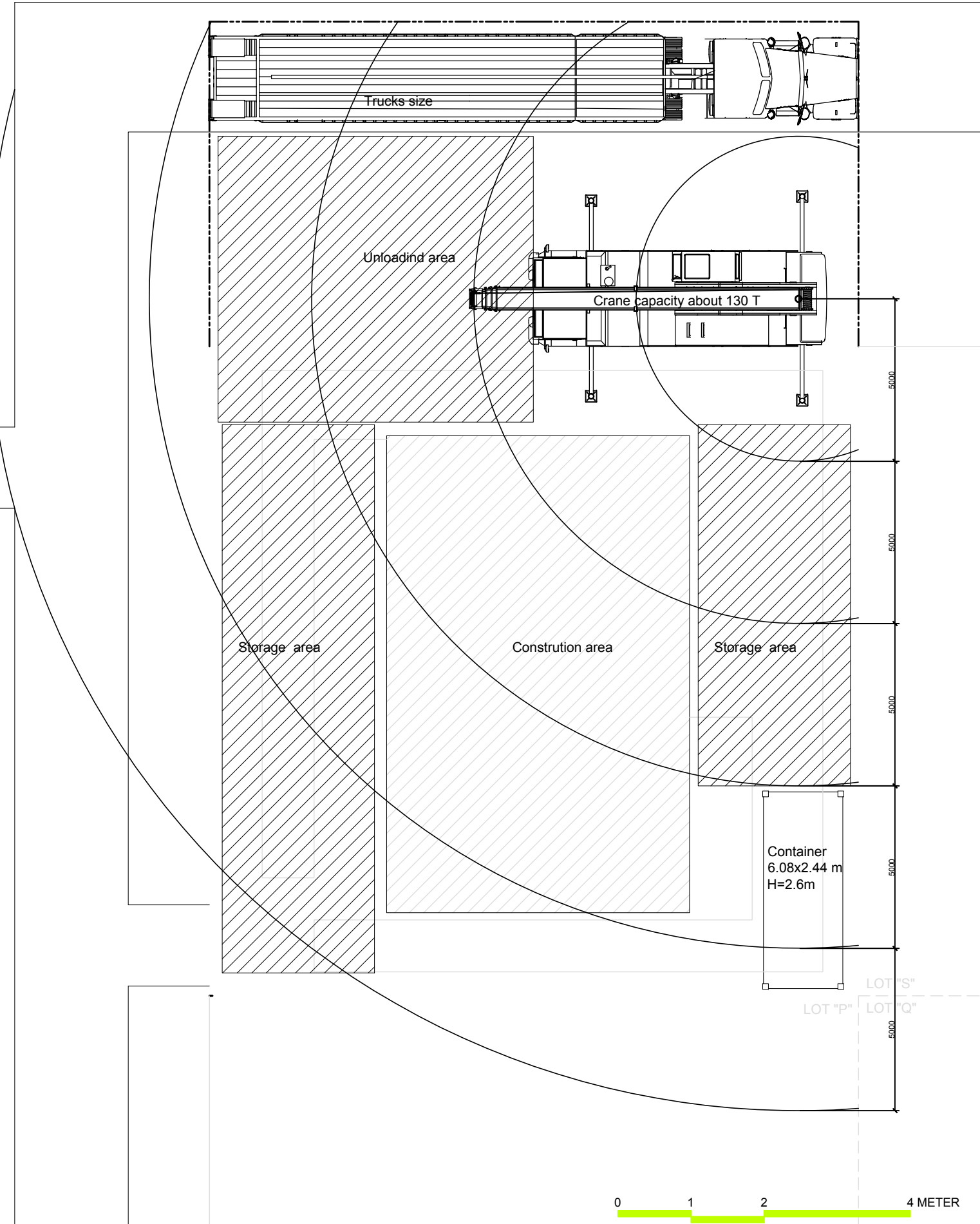
DWG. Title

HEALTH AND SAFETY
DURING LOAD / UNLOAD

DWG. No.	PAGE
HS-301	258

THE SAFETY PLAN AND COORDINATION PHASE

Plan of site



PROBLEM	RISKS	ADOPTED MEASURES
Implementation of the crane	Slam person	Markup Preparation of the operation by releasing space Use a rope to guide package
	Reversal of the crane	Information on resistance of the ground and underground structures
Lifting work	Fall of objects because of manipulation Fall of objects because they come loose Fall of person at a different level Fall of person at the same level	Construction safety for on-site workers Information on resistance of the ground and underground structures
	Clash of the crane or load by person or vehicle	Mark the area of evolution of the crane and load
Reversal of the crane	Reversal of the crane	Reprogram the electronic control for load after removal of the crane counterweight and verification of the program before any operation Electronic control for load active during removal operation
	Clean the lot	Remove the markings of the construction Remove the any waste in appropriate containers

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Checked by DN

Scale 1:150

Unit mm

DWG. Title
HEALTH AND SAFETY PLAN

DWG. No. HS-401	PAGE 259
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Fall because of barriers



Fall of objects



Forklift way



Warning



Loading area



Don't stand under forklift



Authorized personnel only



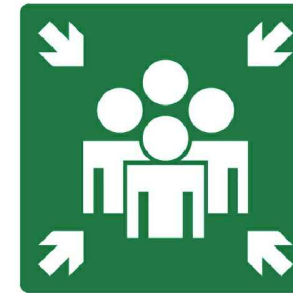
Don't made fire



Don't run on worksite



Don't pass under load



First aid kit



Point of ressemblment



Fire extinguisher

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LC

Checked by

DN

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Unit

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DWG. Title

**HEALTH AND SAFETY
SIGNPOSTING**

DWG. No.

HS-402

PAGE

260

! PPE MUST BE WORN ON THIS SITE



Mark	Date	Description
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ST	2014/03/03	CD Submission

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Scale -

Unit -

DWG. Title
HEALTH AND SAFETY
PPE

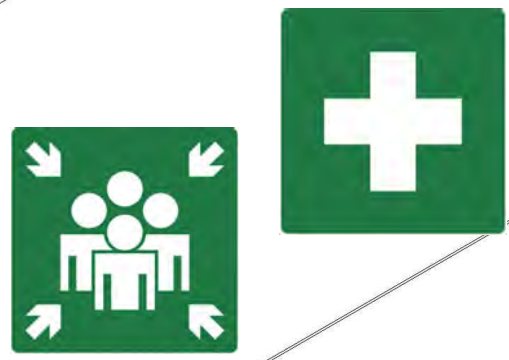
DWG. No. PAGE

HS-403 261



Where the worker are:
On the ground

ALL SAFETY RULES MUST BE FOLLOWED



DAY-1 8:00
Site preparation
Truck-1- Flat : Tool
 Foundation
 Construction Safety Box
 Unit-7

Lofting Workflow

Step	1	2	3	4	5	6
Work Phase	Datum Point	Four Point Range	Mid Point	Ground Level	Spacing	Point Positioning
Description	Follow official Point	Laser Positioning Distance ,Vertical and Horizontal	Four Point Laser Cross Mid Point	Find Point of Lowest and Highest	Use Laser and Rope Positioning Construction Area	Use Sand Box to Positioning Construction Area
Worker	1	4	4	4	4	4

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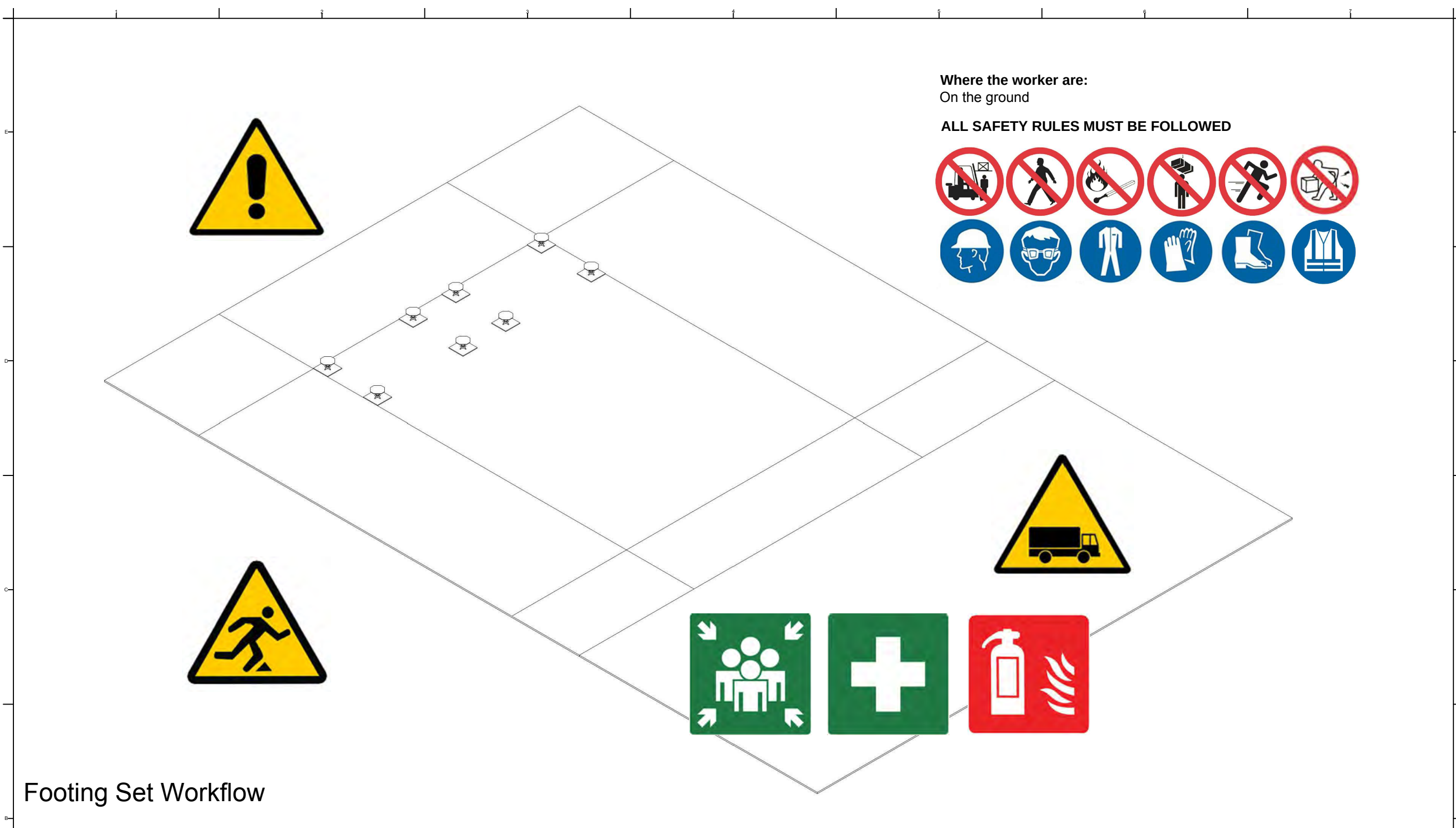
Scale -

Unit -

DWG. Title

HEALTH AND SAFETY DURING PHASE 1

DWG. No.	PAGE
HS-404	262



Where the worker are:
On the ground

ALL SAFETY RULES MUST BE FOLLOWED

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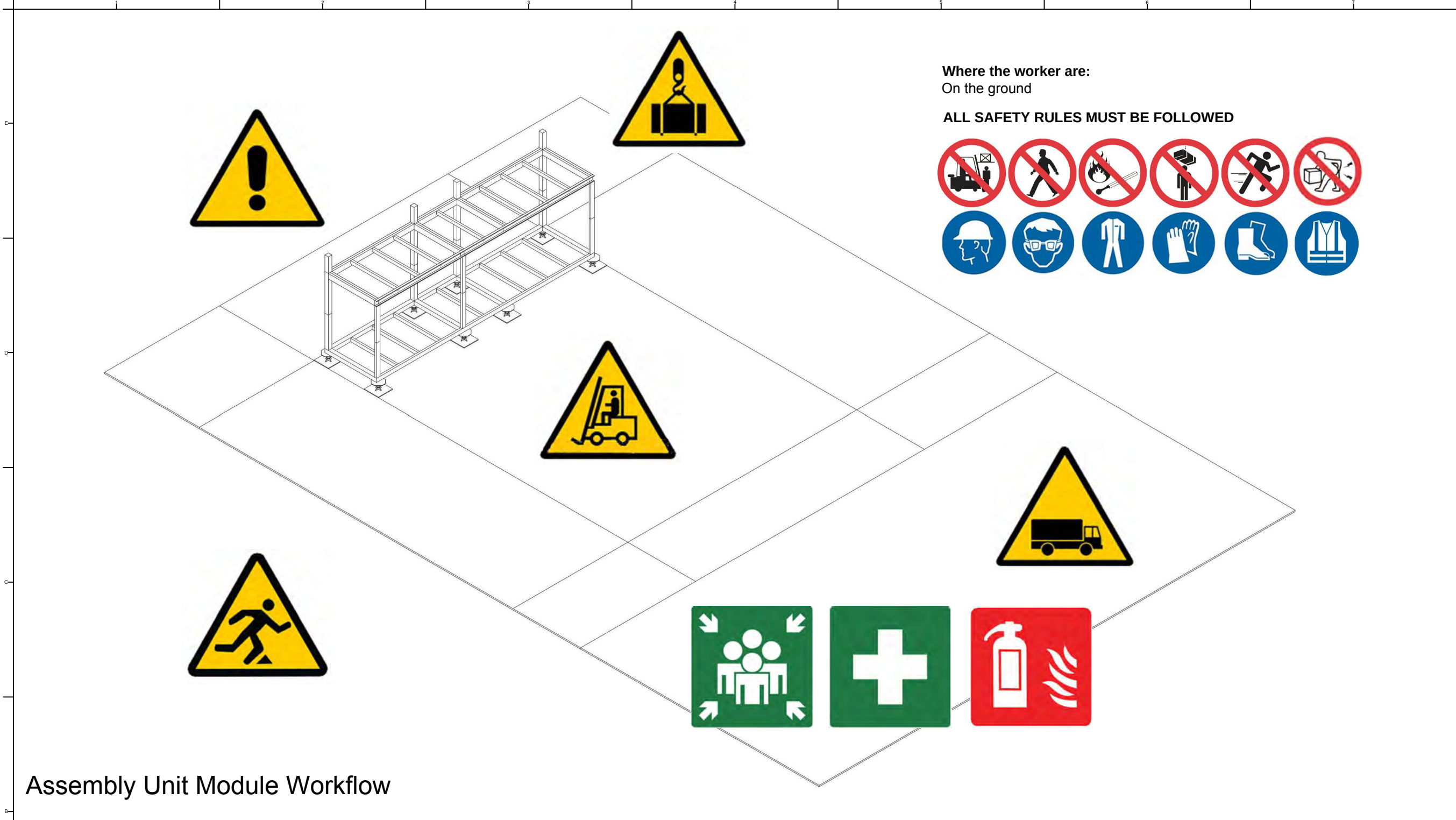
Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 2

DWG. No. HS-405

PAGE 263



Assembly Unit Module Workflow

Step	1	2	3	4	5	6
Work Phase	Lifting Unit	Unit Position	Unit Fixed			
Description	Rope guide	Laser Position	M-16 Bolt			
Worker	10	4	10			
Note						



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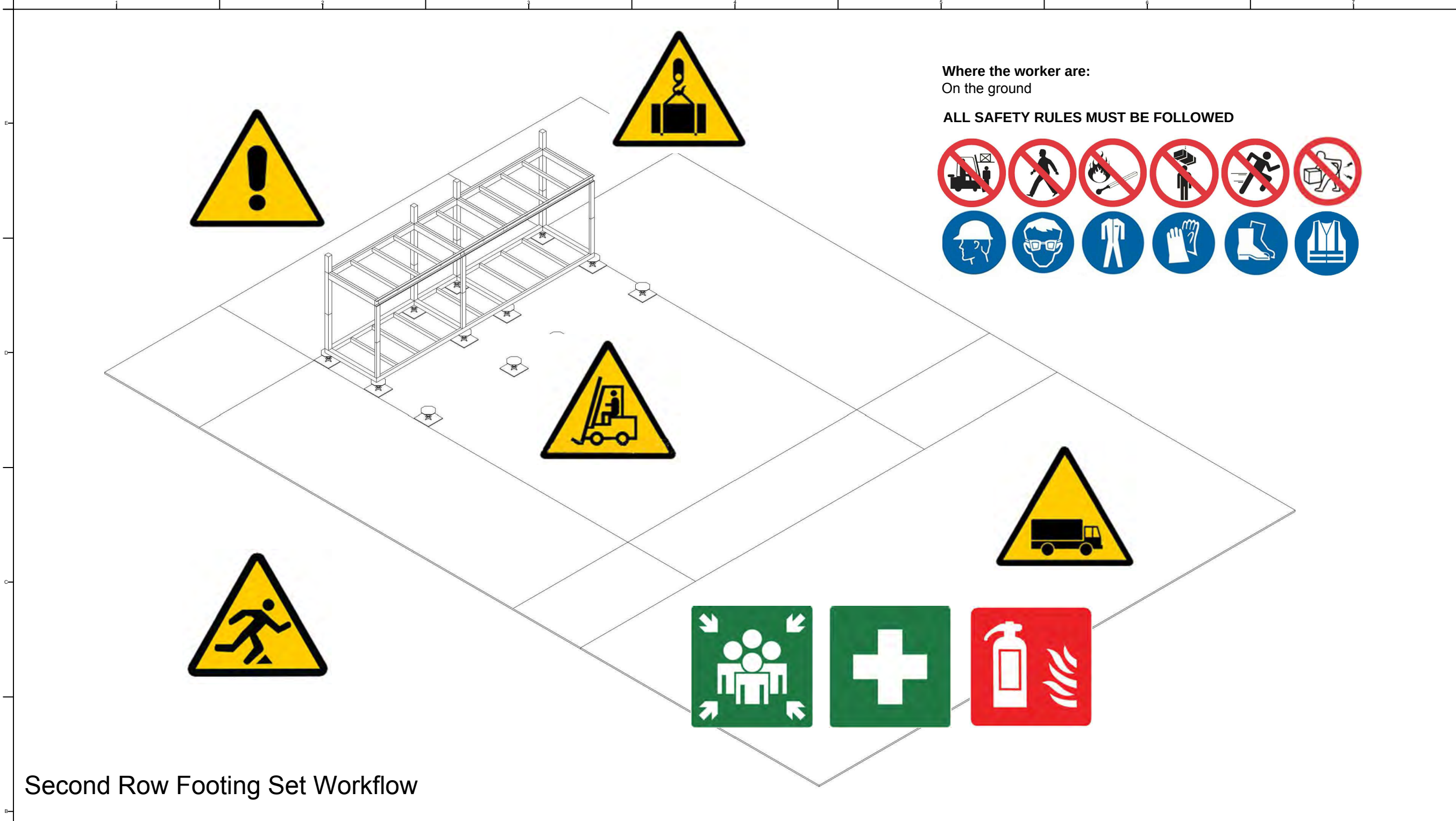
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Scale -
Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 3

DWG. No. HS-406
PAGE 264



Second Row Footing Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set	"Pre-Joint Set"			
Description	Set Sand Box Loading sand	Set Footing Use Laser Position	Half Joint Pre Set on Unit			
Worker	6	8	-			
Note						

or the 7 basic structural modules are installed on site, the roof supporting



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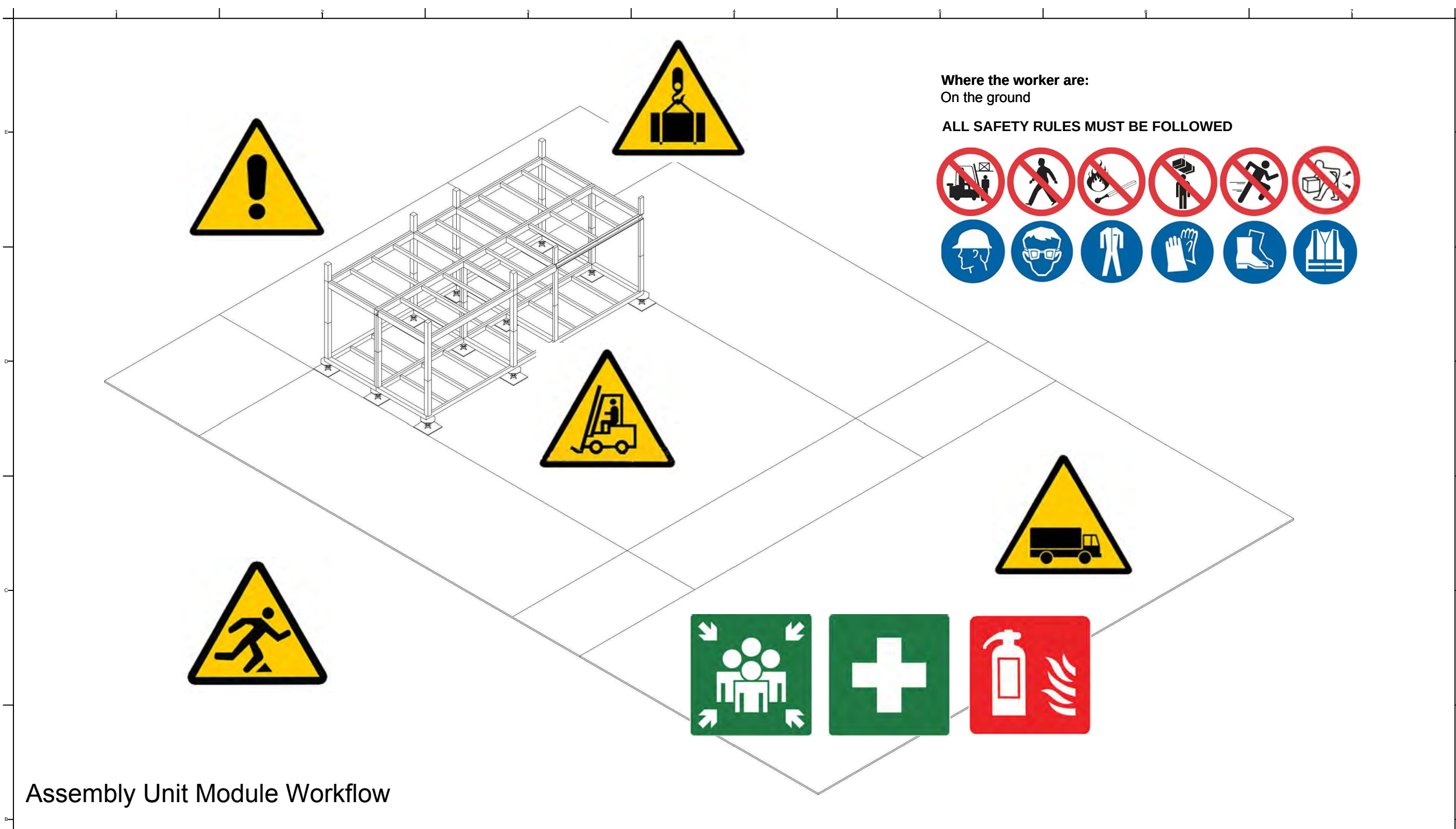
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Checked by DN
Scale -
Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 4

DWG. No. HS-407	PAGE 265
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Assembly Unit Module Workflow

Step	1	2	3	4	5	6
Work Phase	Lifting Unit	Unit Position	Unit Fixed	Unit Regulate		
Description	Rope guide	Laser Position	M-16 Bolt	Laser Position		
Worker	10	4	10	2		
Note						



Project:



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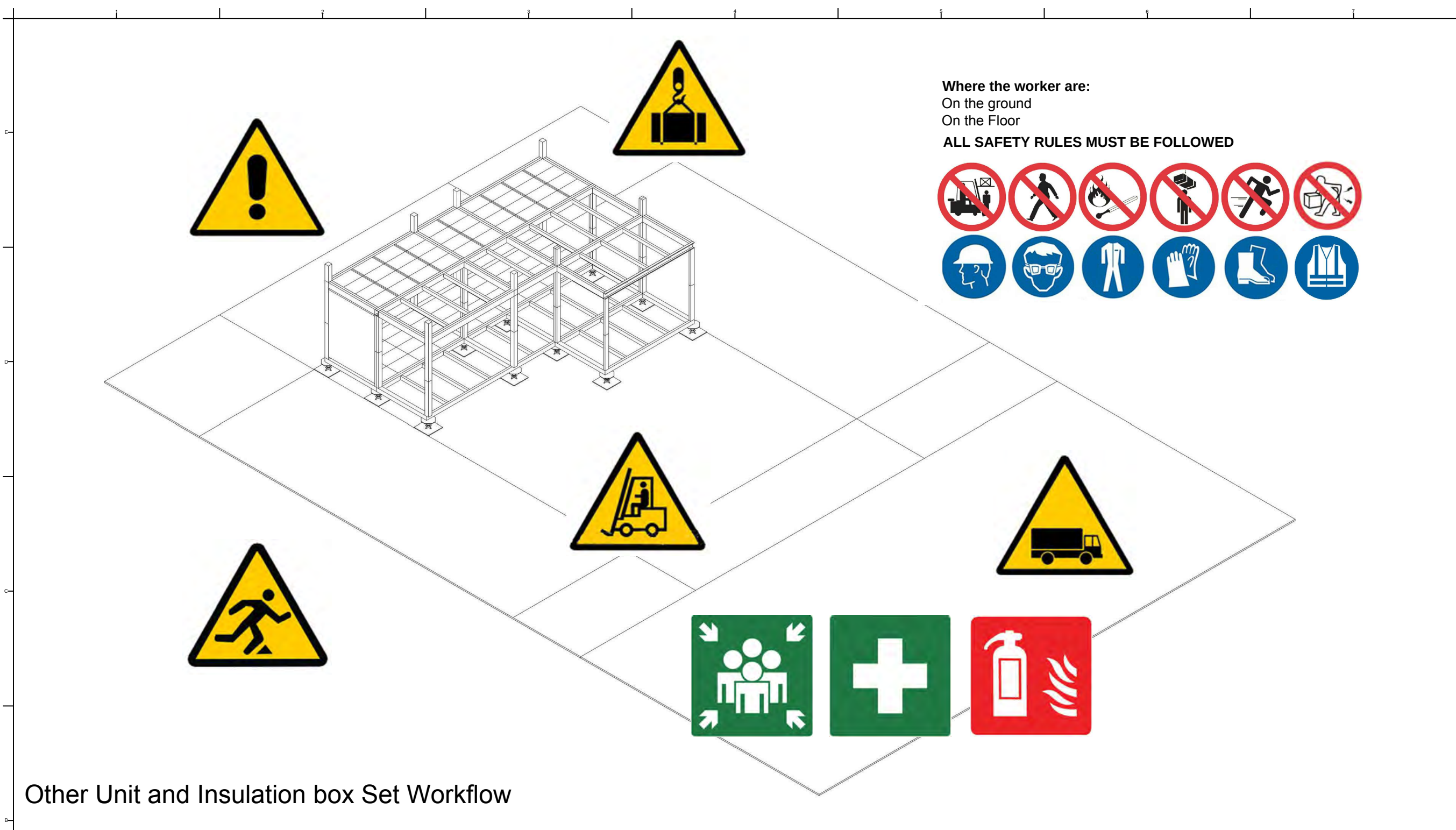
Scale -

Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 5

DWG. No.	PAGE
HS-408	266



Other Unit and Insulation box Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set	"Pre-Joint Set"	Insulation box	Insulation Wall box	
Description	Set Sand Box Loading sand	Set Footing Use Laser Position	Half Joint Pre Set on Unit	Put it in and Seal it	Set ,Seal and Fix it	
Worker	6	8	-	6	6	
Note						

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Institution:

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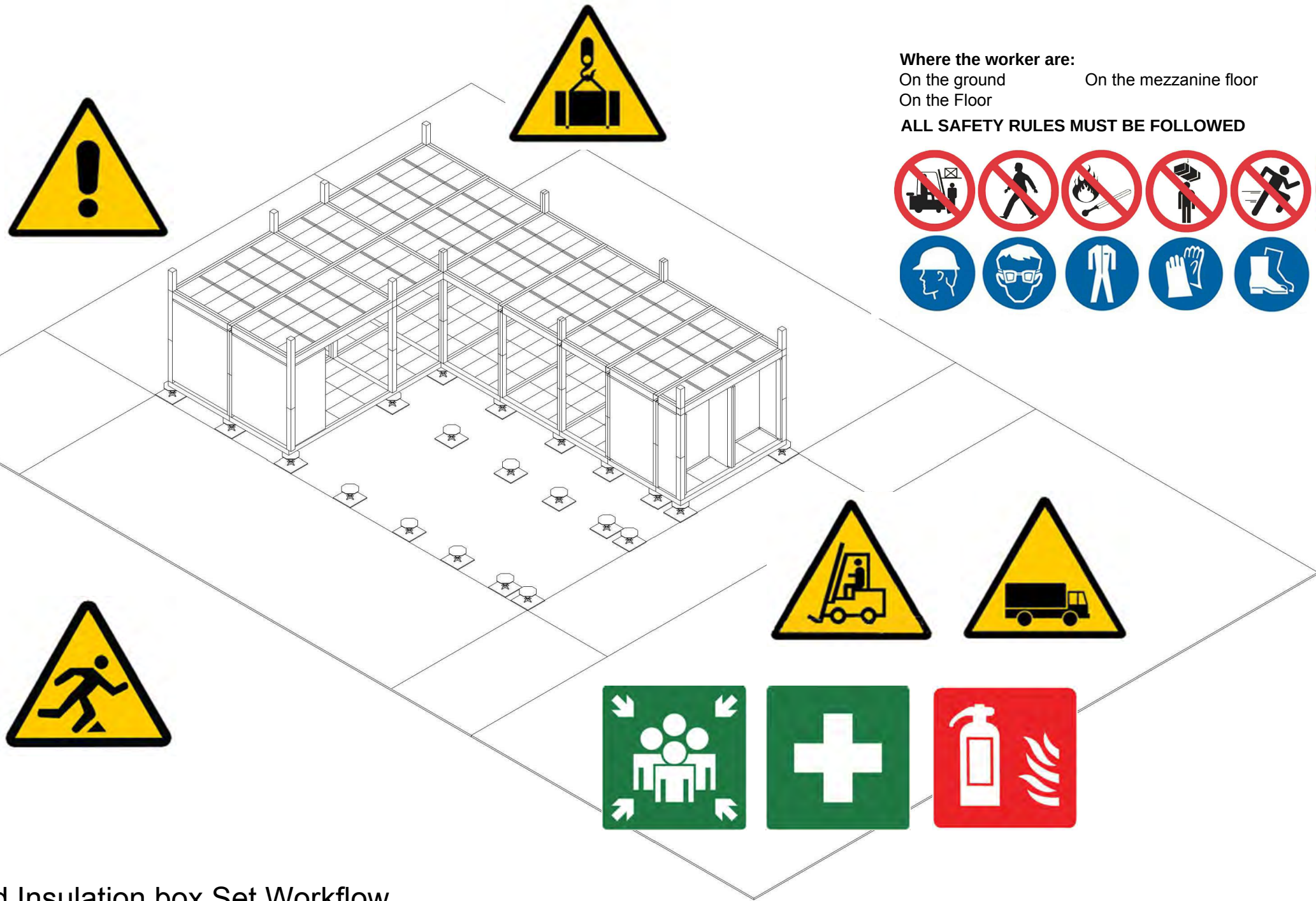
Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 6

DWG. No. HS-409

PAGE 267



Where the worker are:
On the ground On the mezzanine floor
On the Floor

ALL SAFETY RULES MUST BE FOLLOWED

Other Unit and Insulation box Set Workflow

Step	1	2	3	4	5	6
Work Phase	Sand Box Position	Footing Base Set				
Description	Set Sand Box Loading sand	Set Footing Use Laser Position				
Worker	6	8				
Note						

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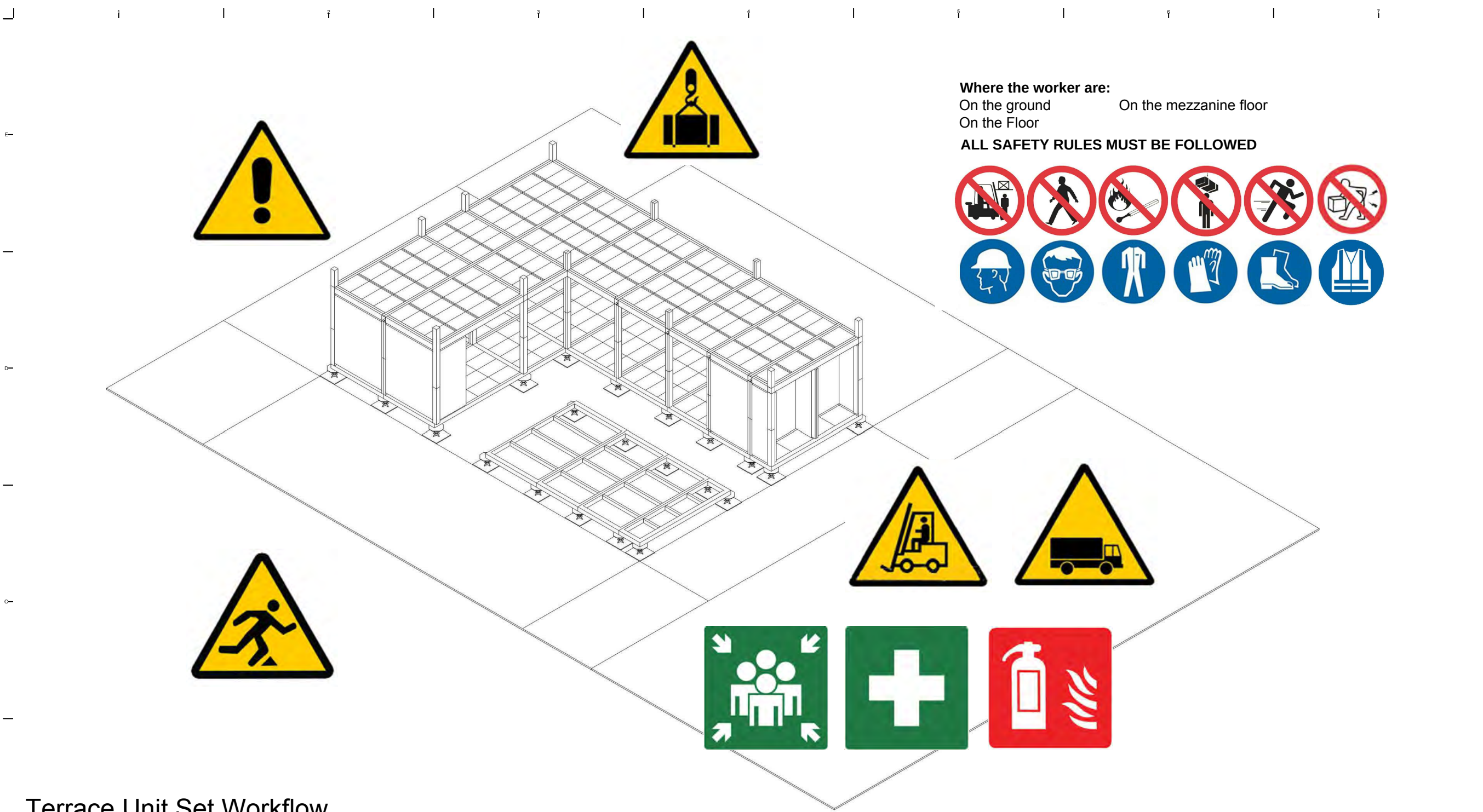
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ST	2014/03/03	CD Submission

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Scale -
Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 7

DWG. No. HS-410
PAGE 268



Terrace Unit Set Workflow

Step	1	2	3	4	5	6
Work Phase	Unit Frame Set	Unit Fixed				
Description	Lifting Unit Lifting guide	M-16 Bolt				
Worker	6	8				
Note						

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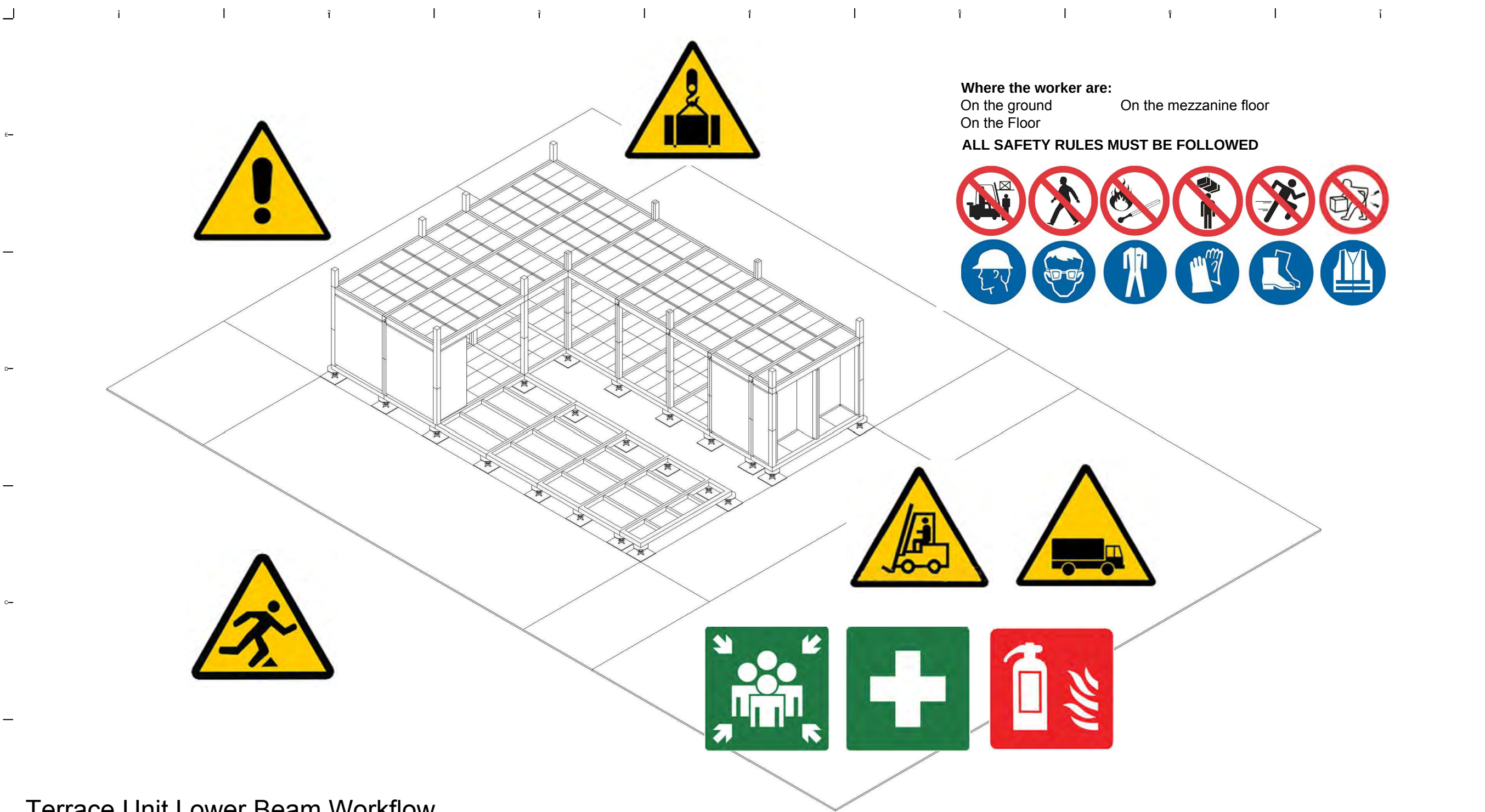
Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 8

DWG. No. HS-411

PAGE 269



Terrace Unit Lower Beam Workflow

Step	1	2	3	4	5	6
Work Phase	Unit Beam Set	Unit Fixed				
Description	Lifting Unit Lifting guide	M-16 Bolt				
Worker	6	4				
Note						



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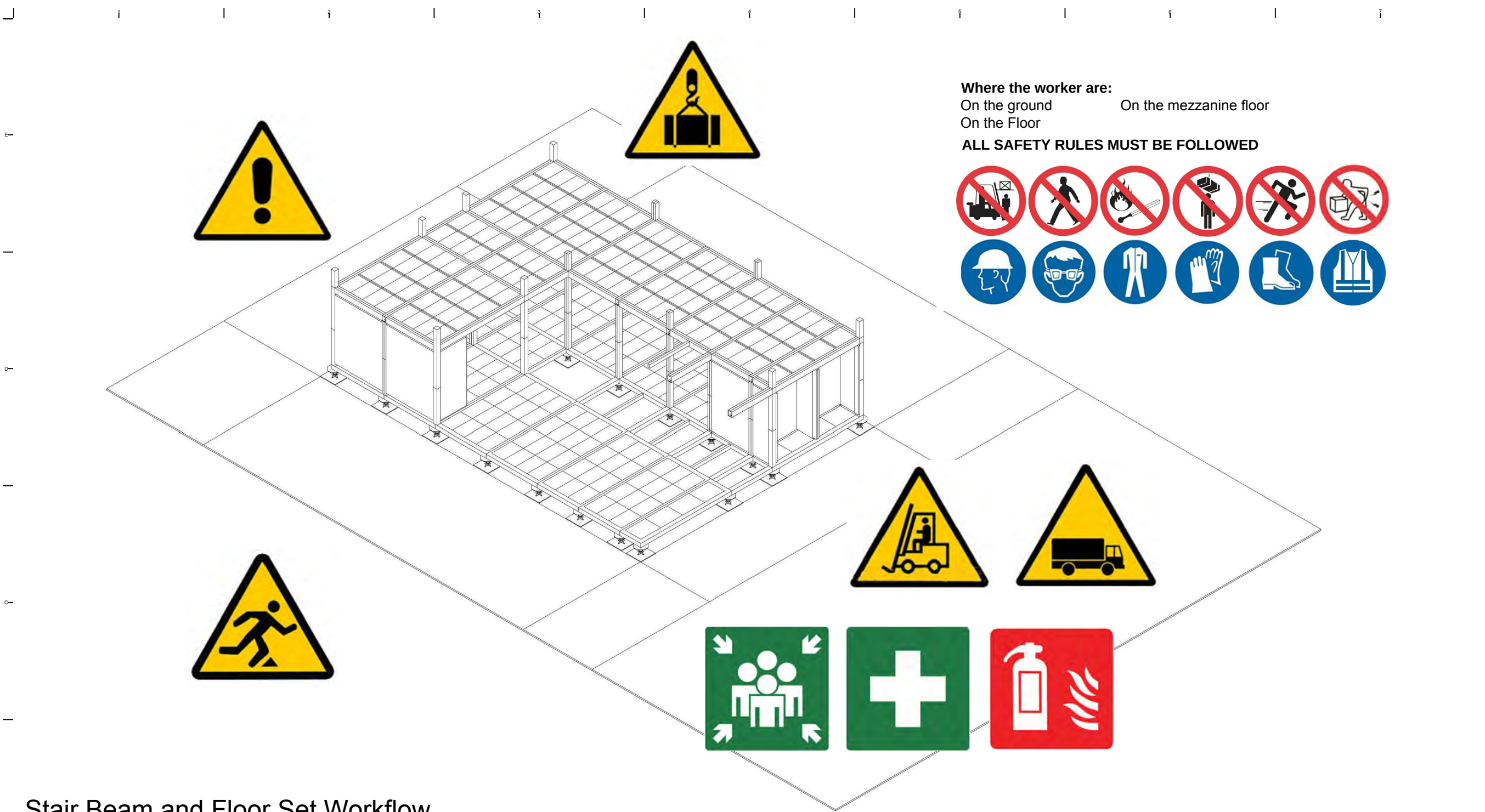
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Scale -
Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 9

DWG. No. HS-412
PAGE 270



Stair Beam and Floor Set Workflow

Step	1	2	3	4	5	6
Work Phase	Beam Set	Unit Fixed	Floor Laying			
Description	Lifting Unit Lifting guide	M-16 Bolt	Temporary floor Fixed			
Worker	6	4	6			
Note						



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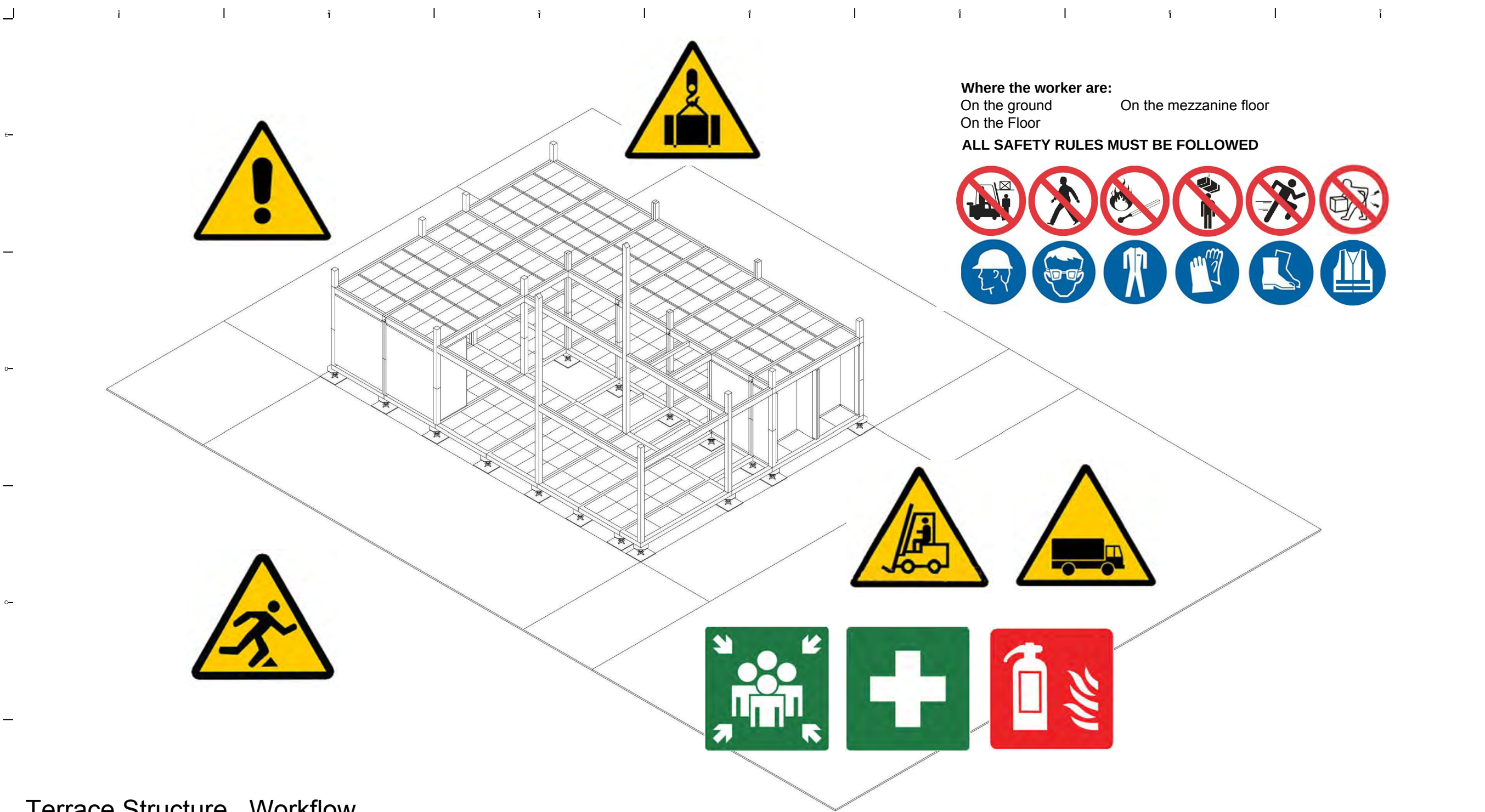
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Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 10

DWG. No. HS-413
PAGE 271



Terrace Structure Workflow

Step	1	2	3	4	5	6
Work Phase	Column Set	Column Fixed	Beam Set	Beam Fixed		
Description	Lifting Column Lifting guide	M-16 Bolt	Lifting Beam Lifting guide	M-16 Bolt		
Worker	6	4	6	6		
Note						



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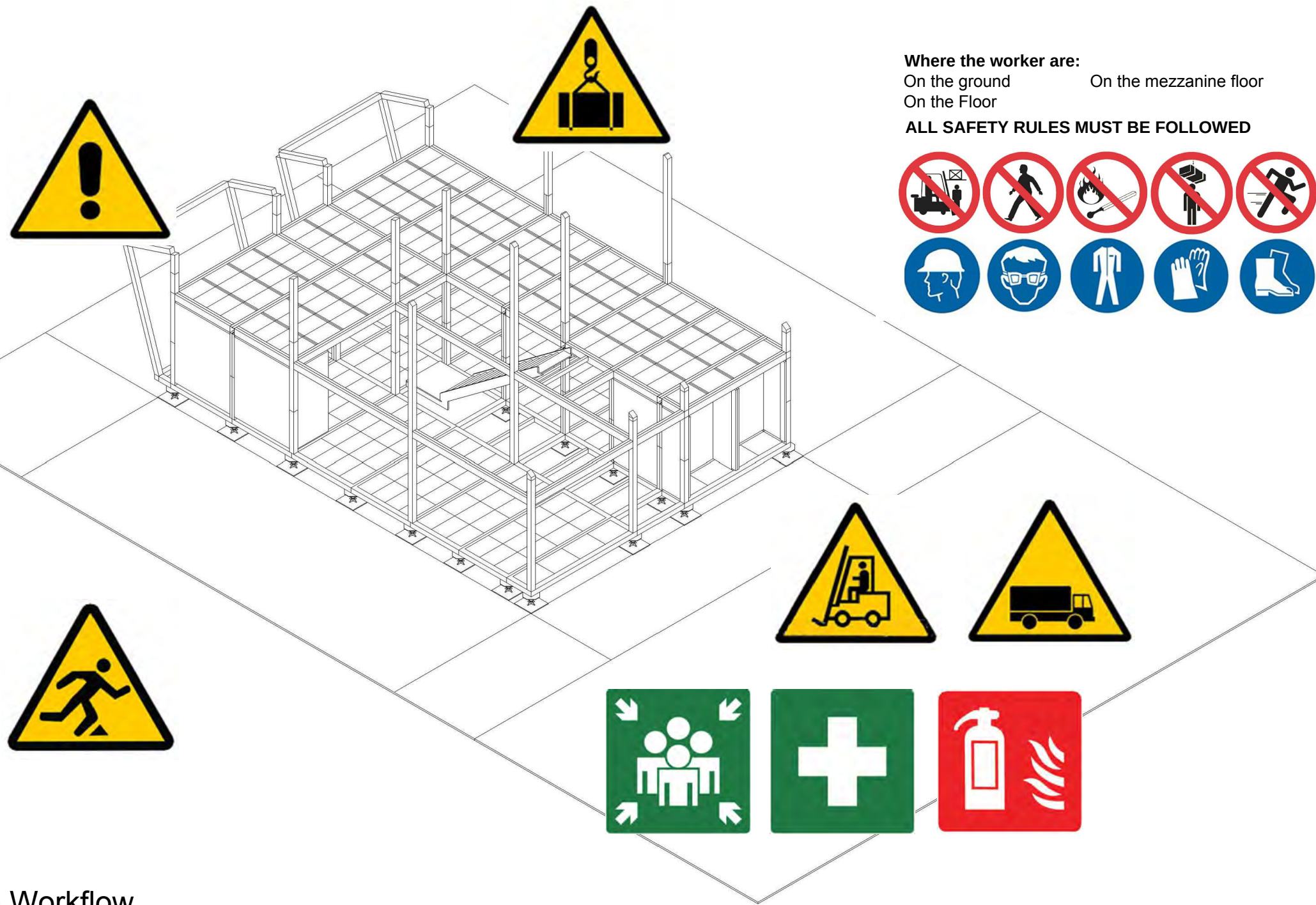
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Scale -
Unit -

DWG. Title
HEALTH AND SAFETY
DURING PHASE 11

DWG. No. HS-414
PAGE 272



Louver Frame Workflow

Step	1	2	3	4	5	6
Work Phase	Column Set	Column Fixed	Beam Set	Beam Fixed		
Description	Lifting Column Lifting guide	M-16 Bolt	Lifting Beam Lifting guide	M-16 Bolt		
Worker	6	4	6	6		
Note						



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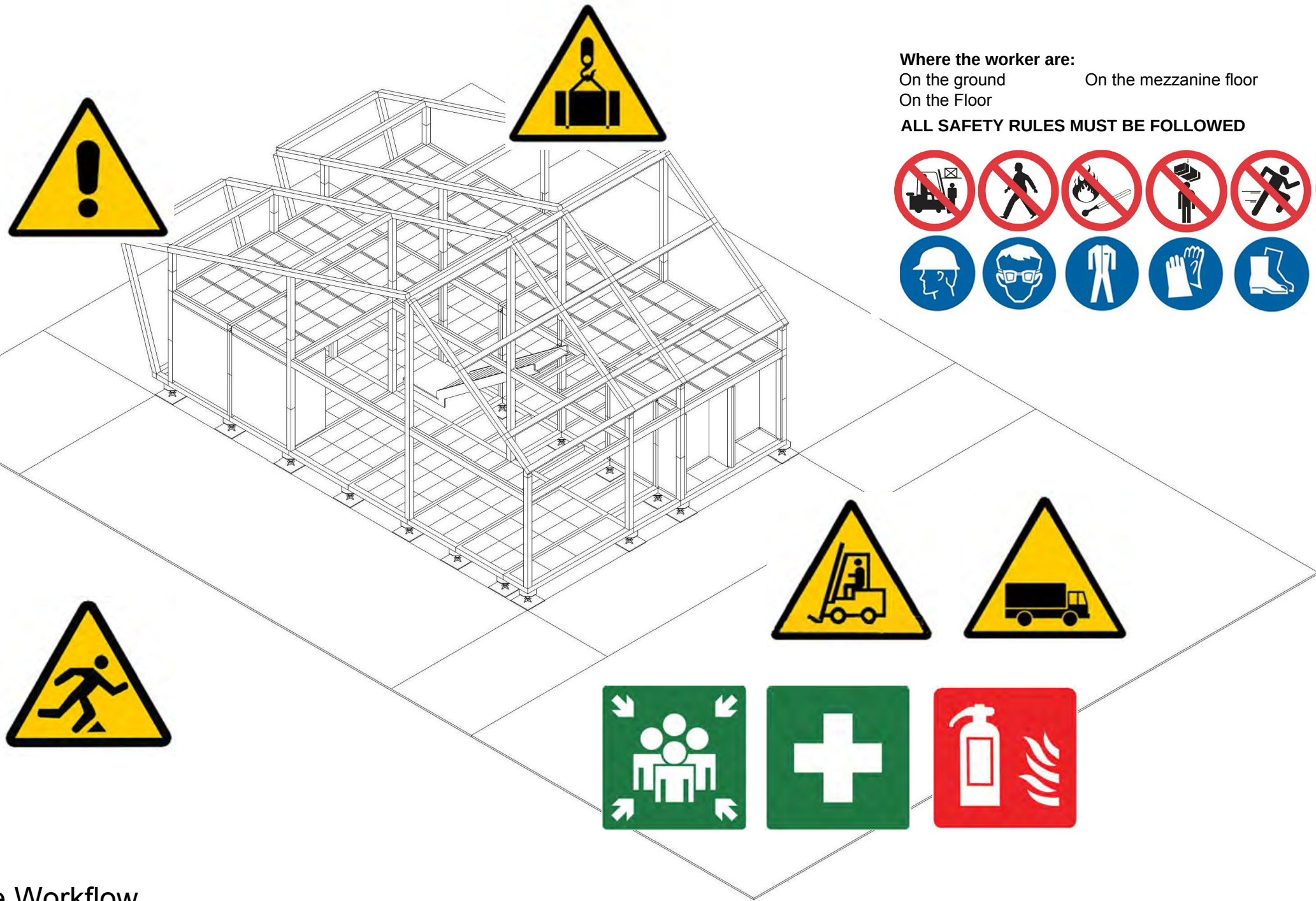
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Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 12

DWG. No.	PAGE
HS-415	273



Roof Structure Workflow

Step	1	2	3	4	5	6
Work Phase	2F Column Lifting	Column Fixed	Long Beam	Beam Fixed	Short Beam	Beam Fixed
Description	Lifting Column	M-16 Bolt	Lifting Beam	M-16 Bolt	Lifting Beam	M-16 Bolt
Worker	6	4	6	6	6	6
Note						



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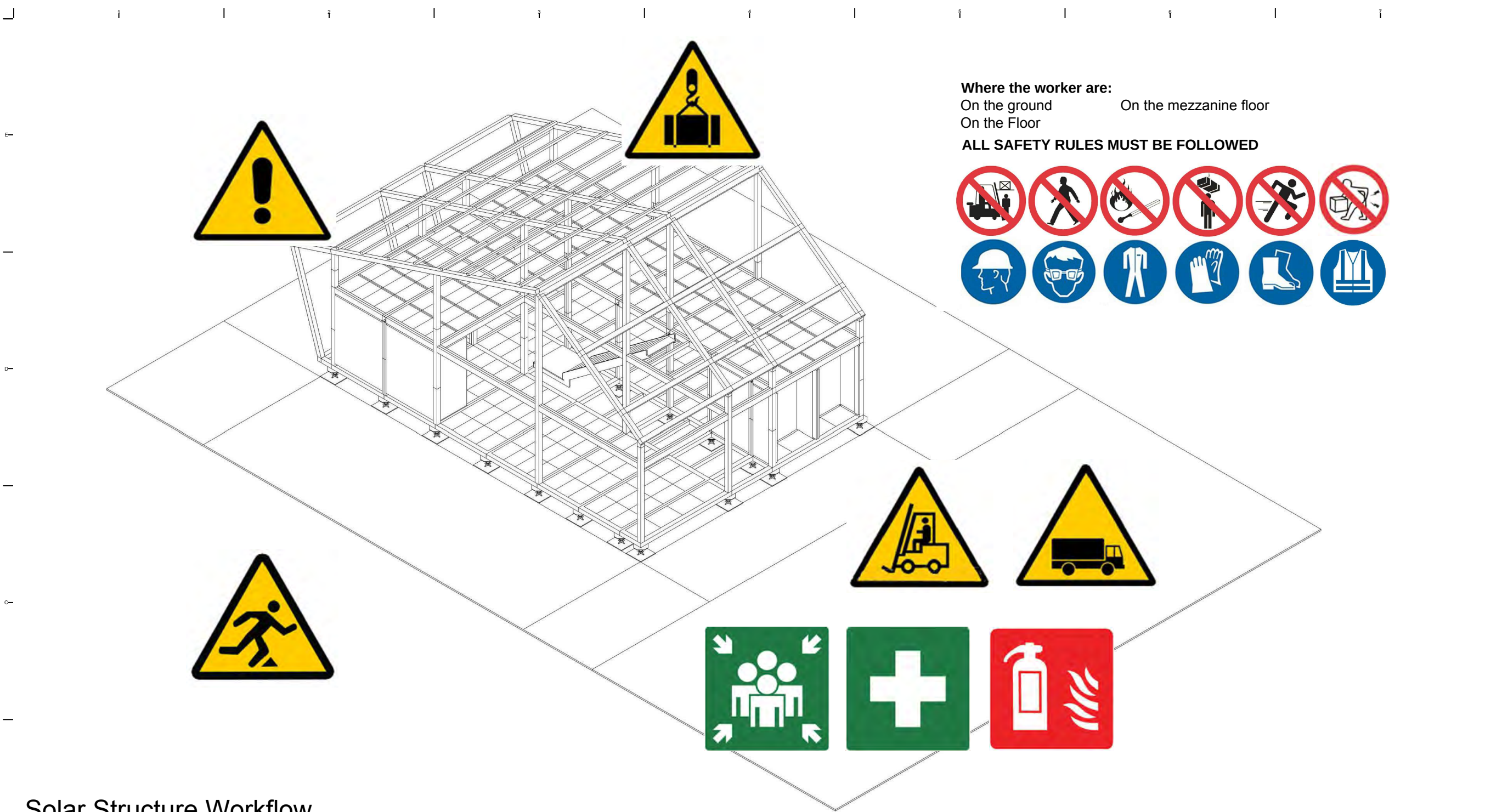
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Scale -
Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 13

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Solar Structure Workflow

Step	1	2	3	4	5	6
Work Phase	Solar Frame	Solar Frame Fix				
Description	Lifting Frame	M-16 Bolt				
Worker	6	4				
Note						

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DWG. Title

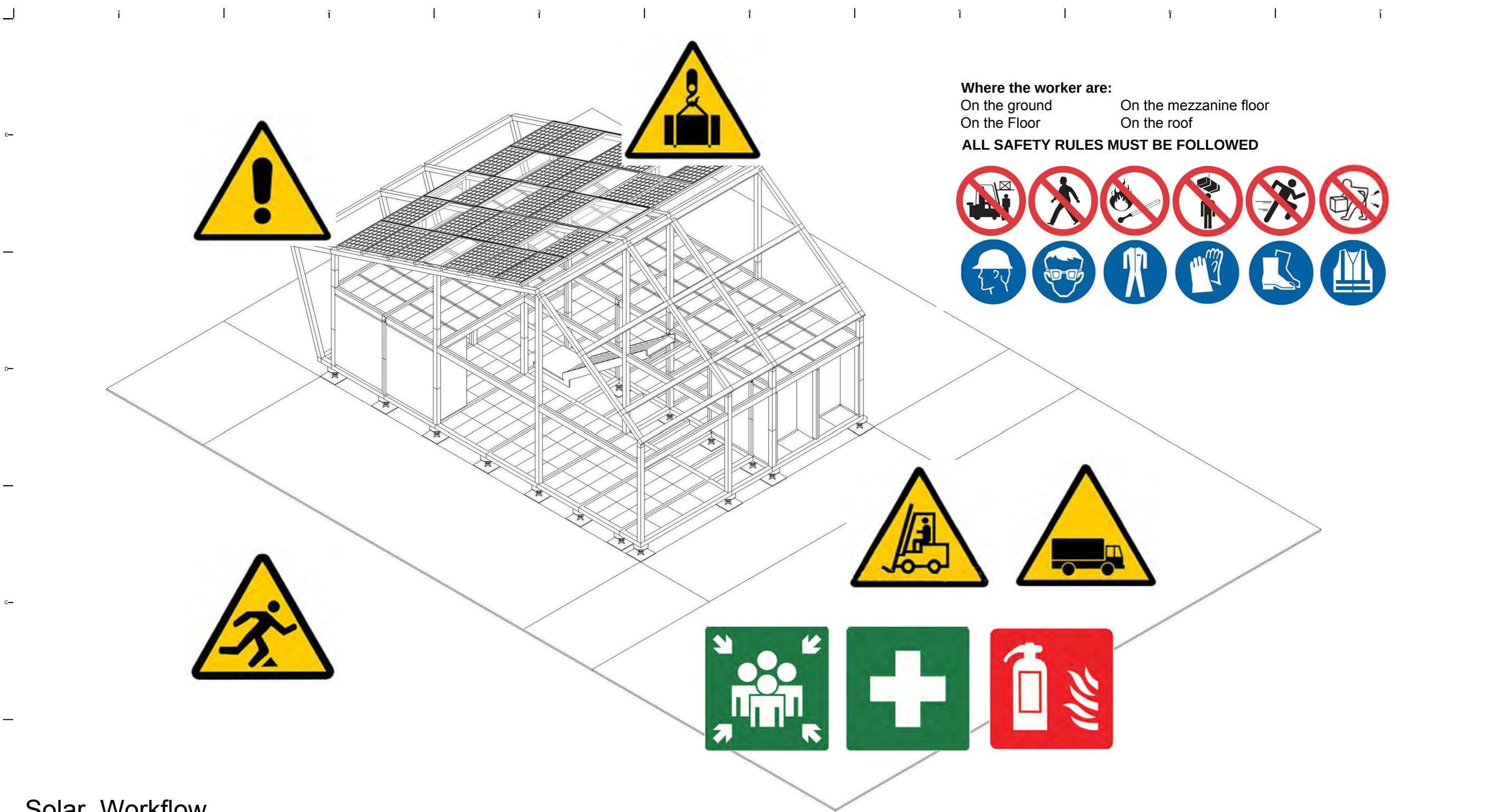
HEALTH AND SAFETY
DURING PHASE 14

DWG. No.

HS-417

PAGE

275



Solar Workflow

Step	1	2	3	4	5	6
Work Phase	Solar Panel	Panel Fix				
Description	Lifting Panel	M-16 Bolt				
Worker	6	4				
Note						

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DWG. Title

HEALTH AND SAFETY
DURING PHASE 15

DWG. No.

HS-418

PAGE

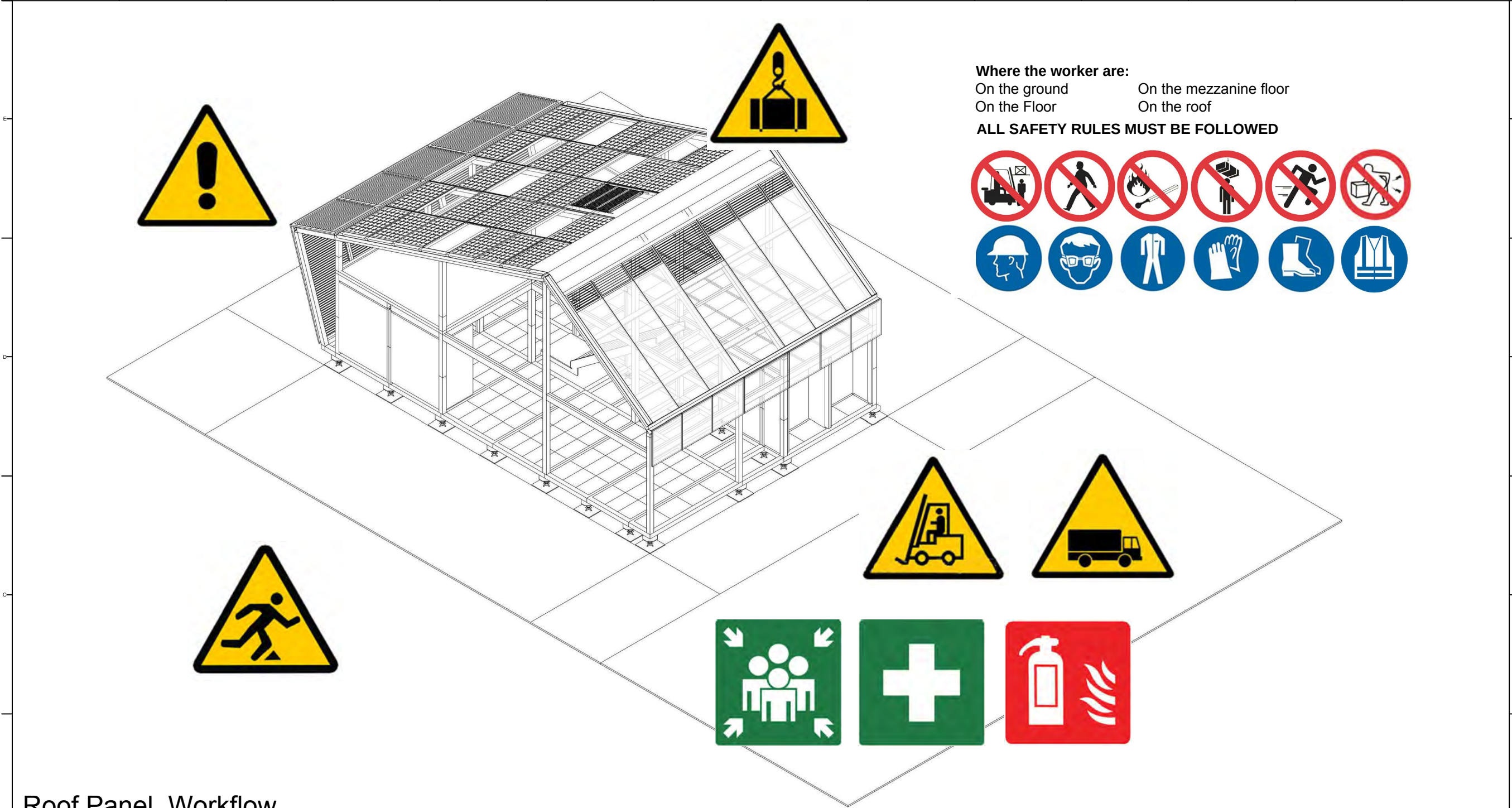
276



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DWG. Title	
HEALTH AND SAFETY DURING PHASE 16	
DWG. No.	PAGE
HS-419	277



Roof Panel Workflow

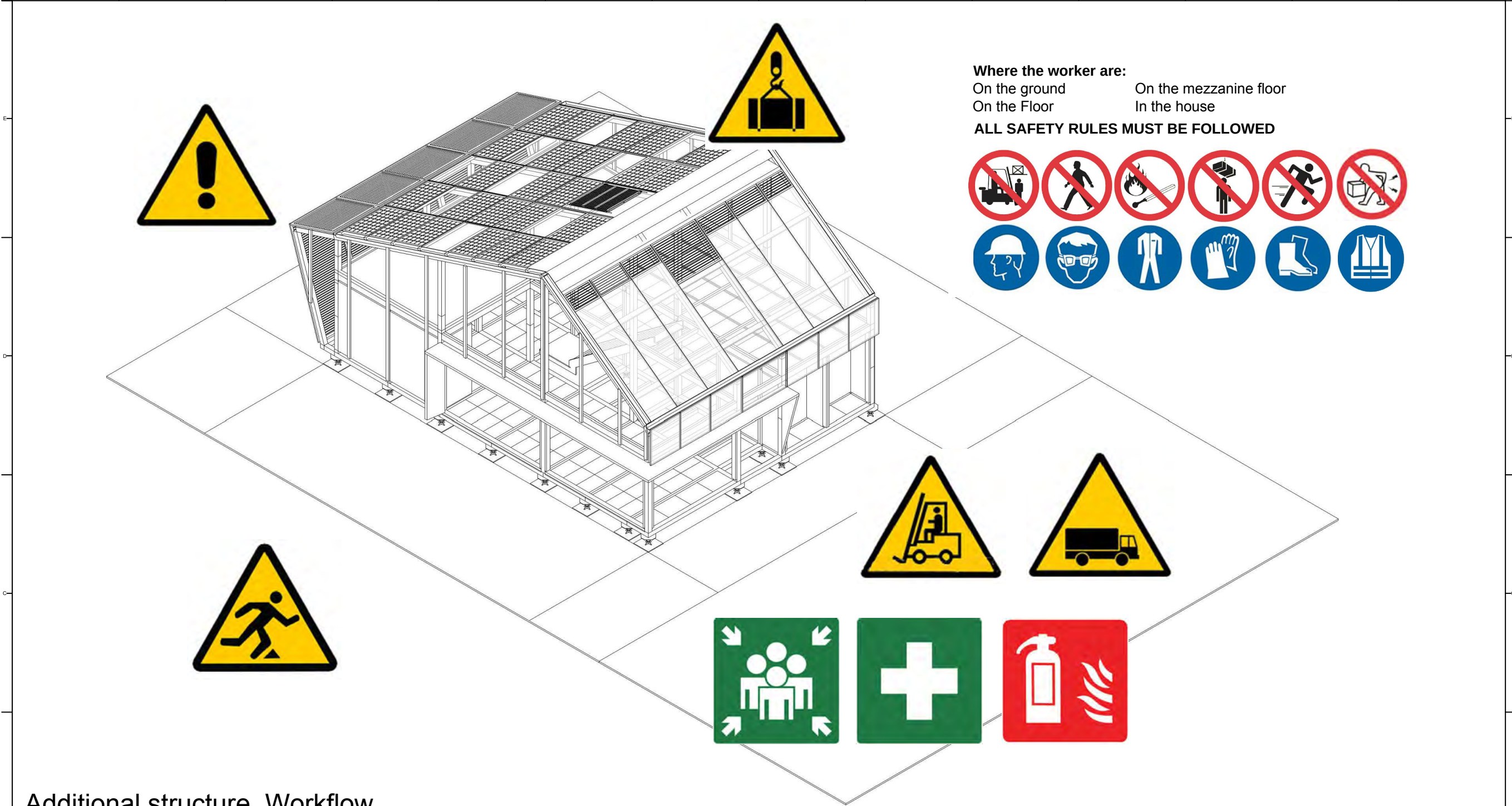
Step	1	2	3	4	5	6
Work Phase	Roof Panel	Panel Fix	Louver Panel	Panel Fix	Heat Water Panel	Panel Fix
Description	Lifting Panel	M-16 Bolt	Lifting Panel	M-16 Bolt	Lifting Panel	M-16 Bolt
Worker	6	4				
Note						



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ST	2014/03/03	CD Submission

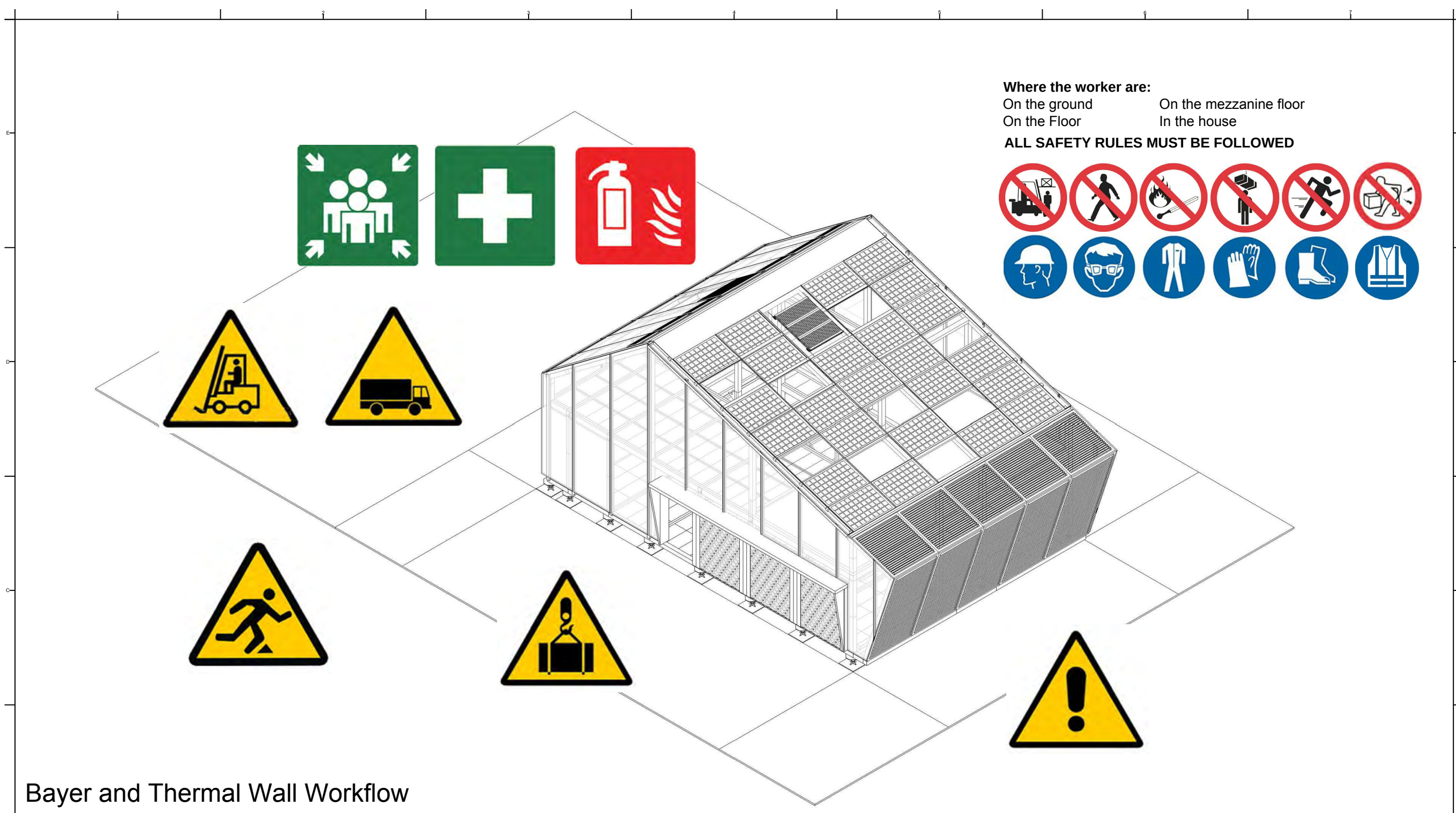
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Unit	-

DWG. Title	
HEALTH AND SAFETY DURING PHASE 17	
DWG. No.	PAGE
HS-420	278



Additional structure Workflow

Step	1	2	3	4	5	6
Work Phase	Window Structure	Structure Fix	Bayer Structure	Structure Fix	Water Cover	Water Cover
Description	Lifting Structure	M-16 Bolt	Lifting Structure	M-16 Bolt	Lifting Structure	M-16 Bolt
Worker	6	4	6	4	6	4
Note						



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Unit -

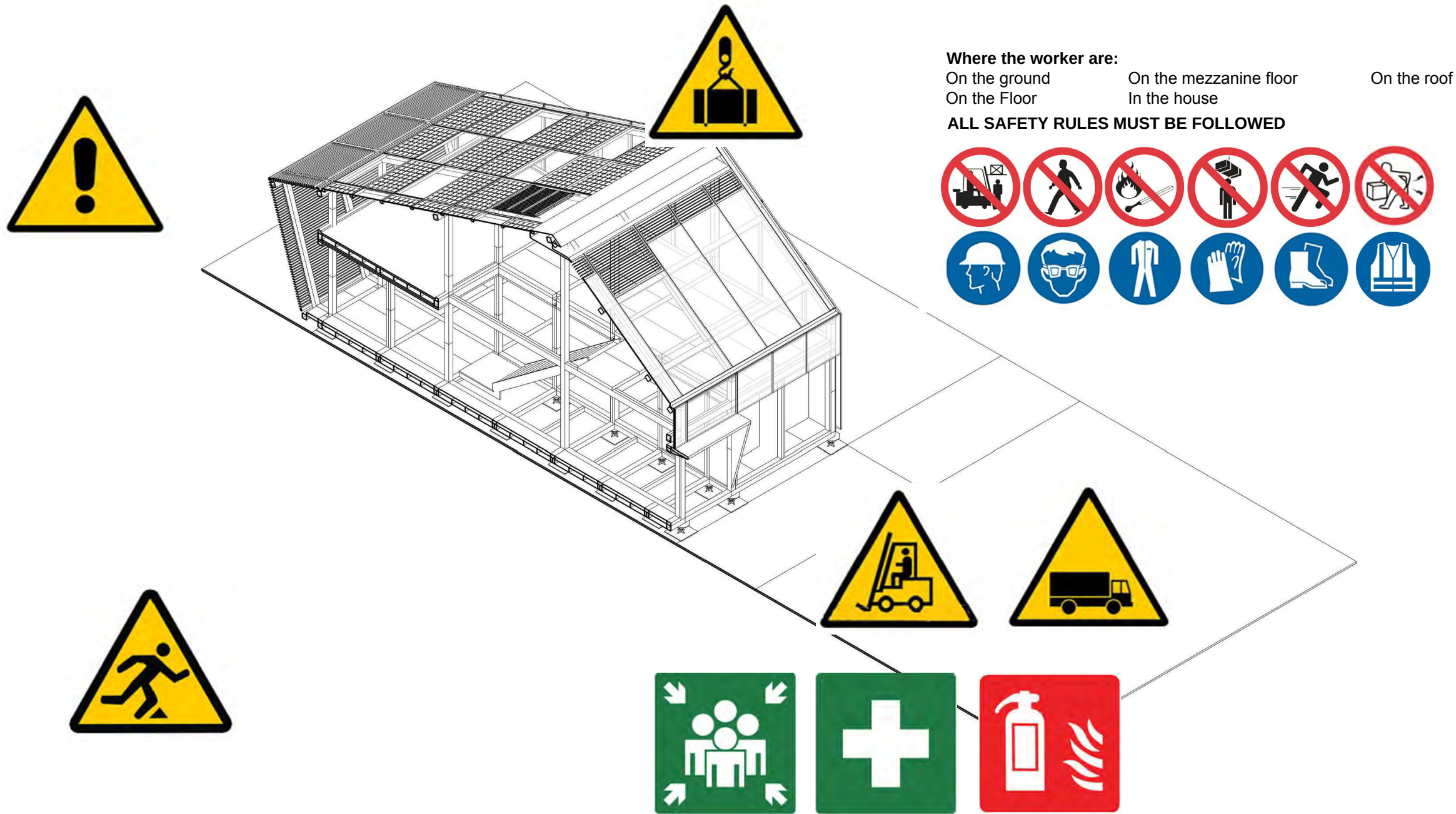
DWG. Title

HEALTH AND SAFETY
DURING PHASE 18

DWG. No.	PAGE
HS-421	279

Bayer and Thermal Wall Workflow

Step	1	2	3	4	5	6
Work Phase	Bayer Wall	Panel Fix	Thermal Wall	Frame Fix	Polli Brick	Structure Fix
Description	Lifting Panel	Joining board	Lifting Frame	M-16 Bolt	Array Polli Brick	M-16 Bolt
Worker	6	4	6	4	6	4
Note						



Finish Floor , Ceiling , Wall Finish Workflow

Step	1	2	3	4	5	6
Work Phase	Finish Floor	Ceiling	Wall Finish	Water Tray		
Description	Detail-1	Detail-2	Detail-3	-		
Worker	6	4	6	4		
Note						

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Unit

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DWG. Title

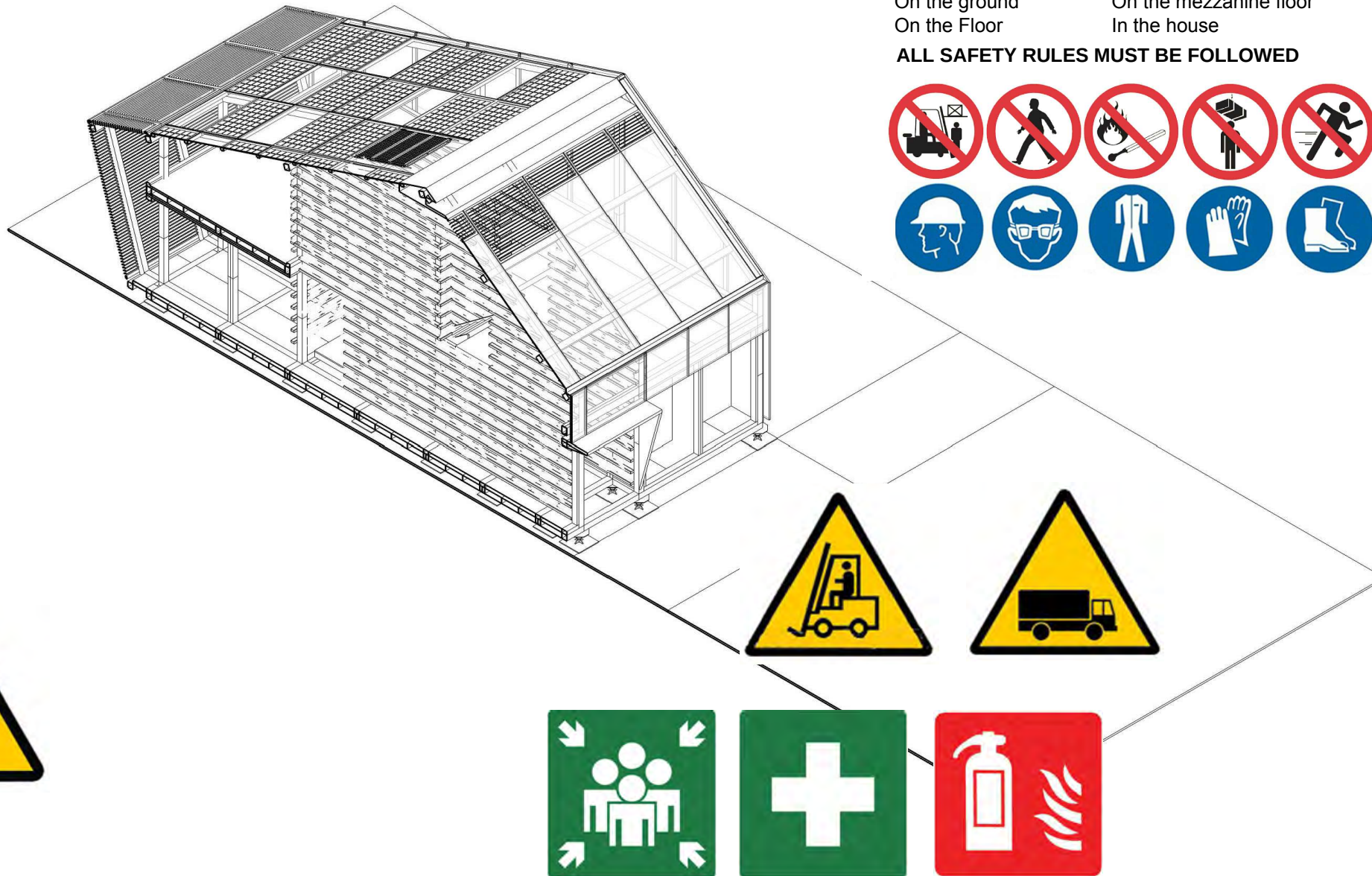
HEALTH AND SAFETY
DURING PHASE 19

DWG. No.

HS-422

PAGE

280



Where the worker are:

On the ground

On the mezzanine floor

On the Floor

In the house

ALL SAFETY RULES MUST BE FOLLOWED



Project:



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Unit -

DWG. Title

HEALTH AND SAFETY
DURING PHASE 20

DWG. No.

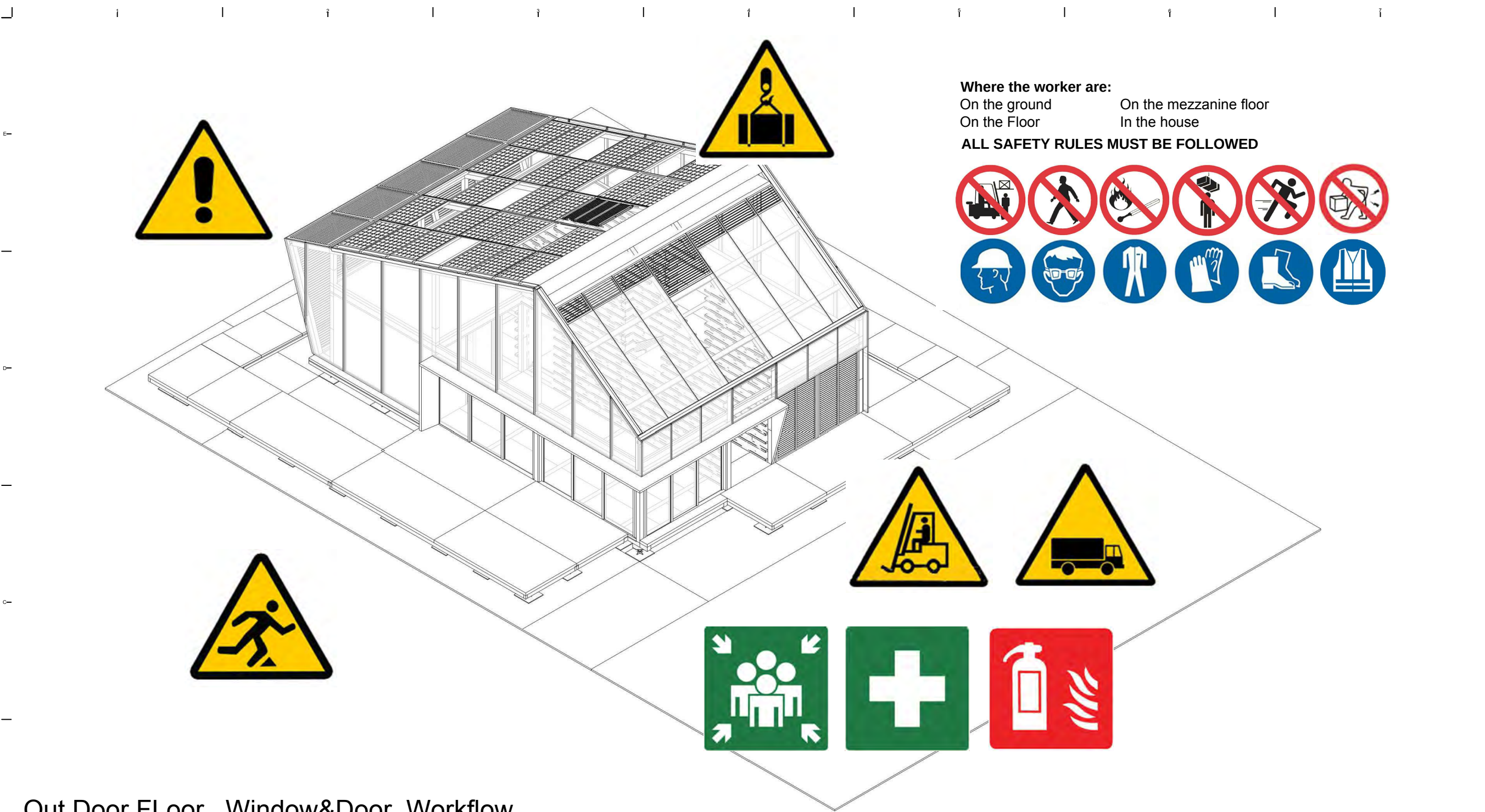
HS-423

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281

Green Core , MEP System Workflow

Step	1	2	3	4	5	6
Work Phase	Green Core	Green Core Wood	MEP System			
Description	Structure Frame	Wood Plan	MEP System			
Worker	6	4	6			
Note						



Out Door Floor , Window&Door Workflow

Step	1	2	3	4	5	6
Work Phase	Out Door Floor	Floor Unit	Floor Fix	Window Install	Door Install	
Description	Floor Assembly	Floor Unit Lifting	Bolt Bolt	Install	Fixed	
Worker	6	4	6	4	4	
Note						



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DWG. Title

HEALTH AND SAFETY
DURING PHASE 21

DWG. No.	PAGE
HS-424	282

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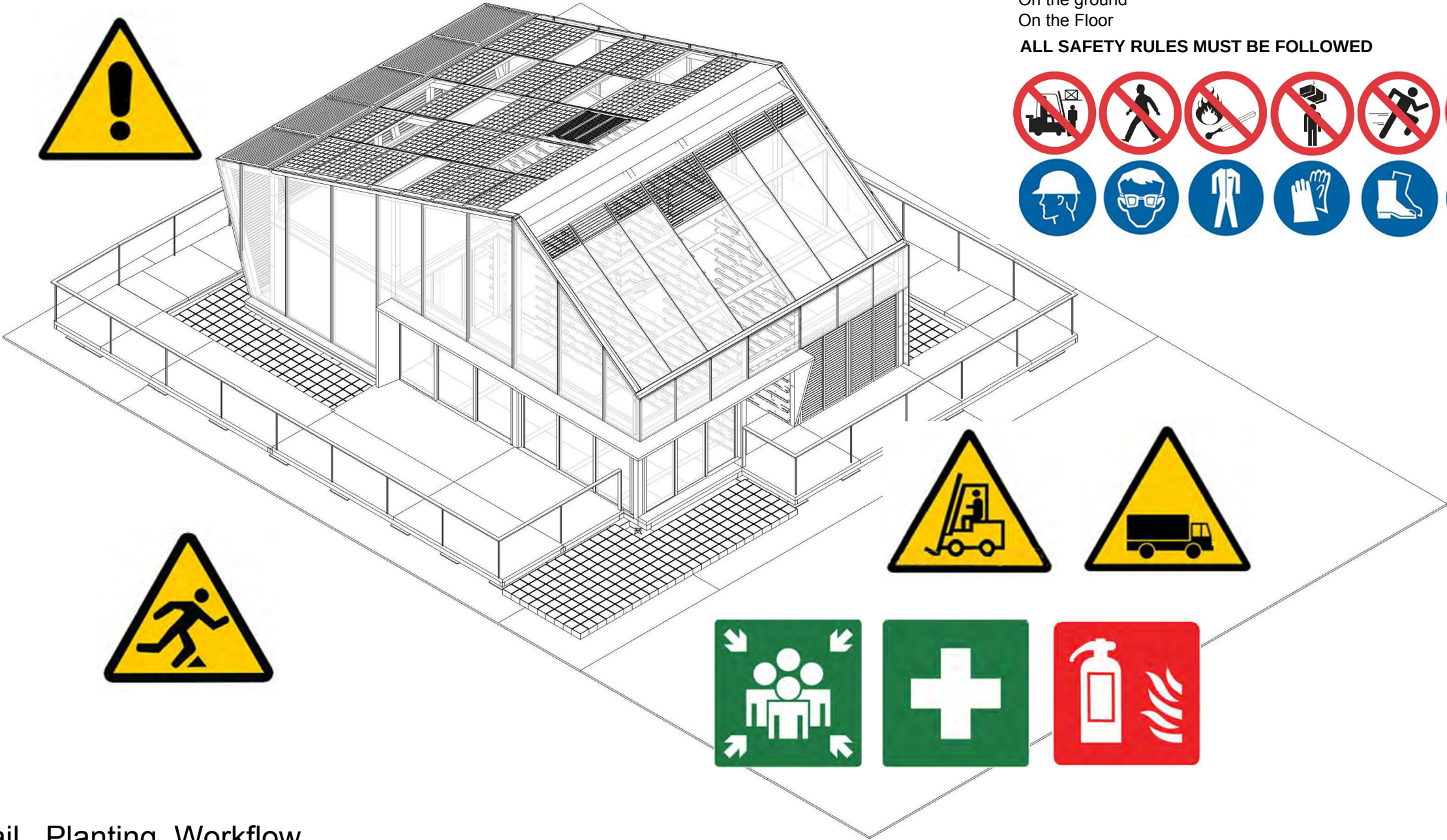
DWG. Title	
HEALTH AND SAFETY DURING PHASE 22	
DWG. No.	PAGE
HS-425	283

Where the worker are:
On the ground
On the Floor

ALL SAFETY RULES MUST BE FOLLOWED

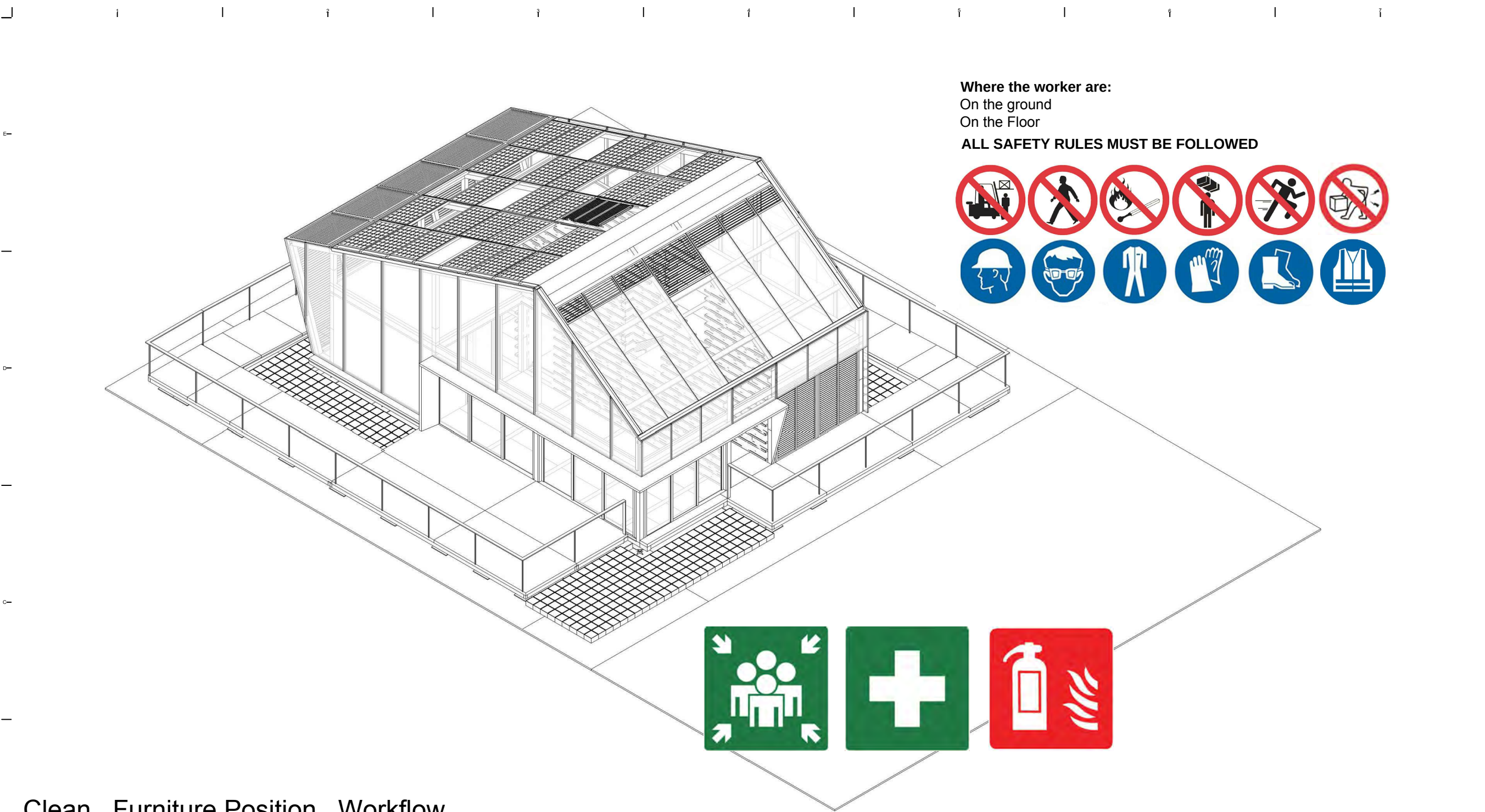






Handrail , Planting Workflow

Step	1	2	3	4	5	6
Work Phase	Handrail Lifting	Handrail Fix	Planting Pots	Planting Install		
Description	Handrail Lifting	Bolt	Assembly Pots	Install Planting		
Worker	6	4	6	4		
Note						



Clean , Furniture Position Workflow

Step	1	2	3	4	5	6
Work Phase	Furniture Position	Clean				
Description	Furniture Position	House Clean Site Clean				
Worker	6	4				
Note						

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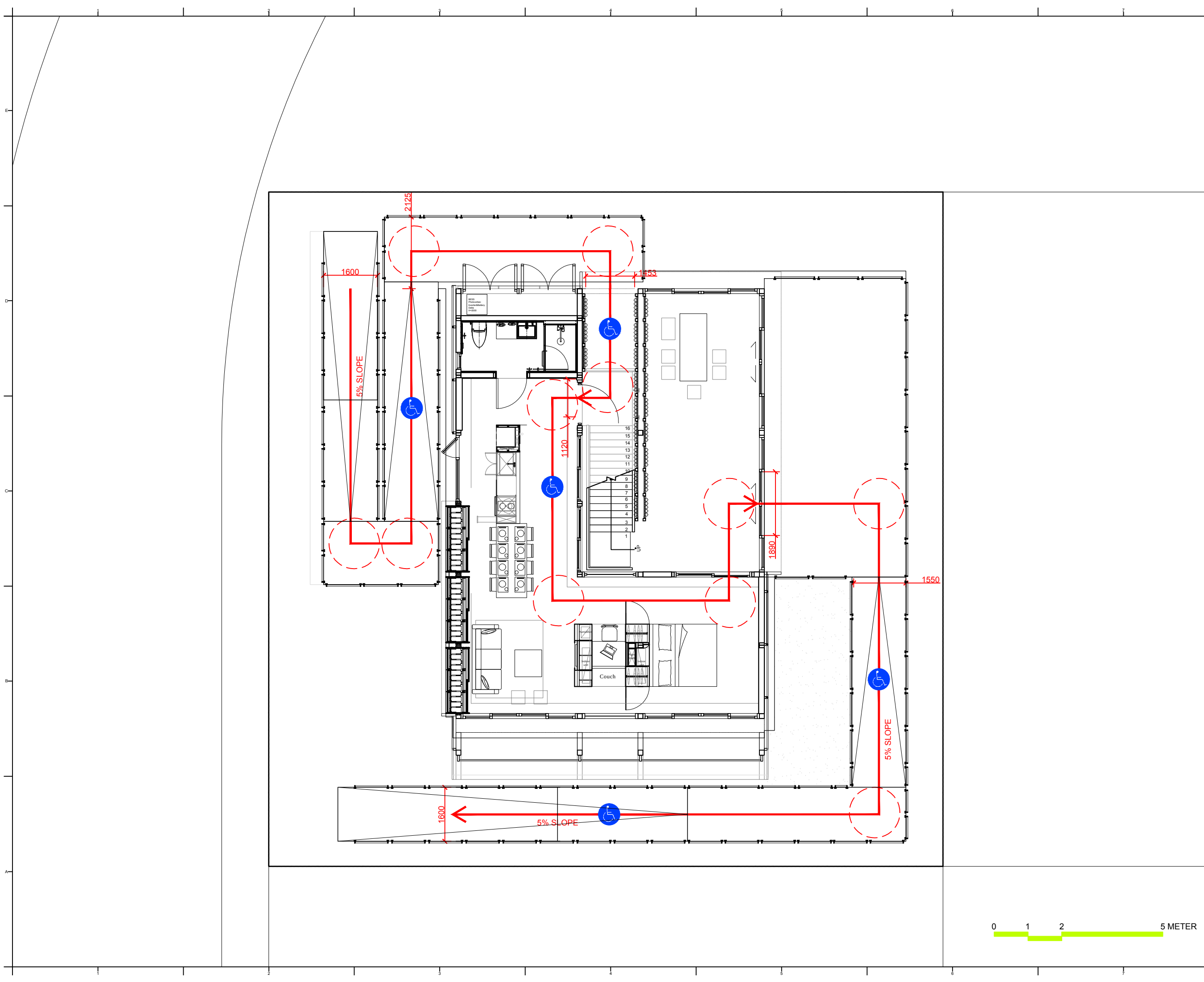
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DWG. Title

HEALTH AND SAFETY
DURING PHASE 23

DWG. No. HS-426

PAGE 284



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Institution:



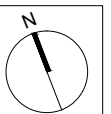
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Scale	1:100
Unit	mm

DWG. Title	
SITE ACCESSIBILITY PLAN	
DWG. No.	PAGE
PT-001	285

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ST	2014/03/03	CD Submission

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Unit	mm

DWG. Title	
SITE ACCESSIBILITY ELEVATION	
DWG. No.	PAGE
PT-002	286

RF Beam
EL +7370

Mezzanine
EL +3600

2F Beam
EL +3410

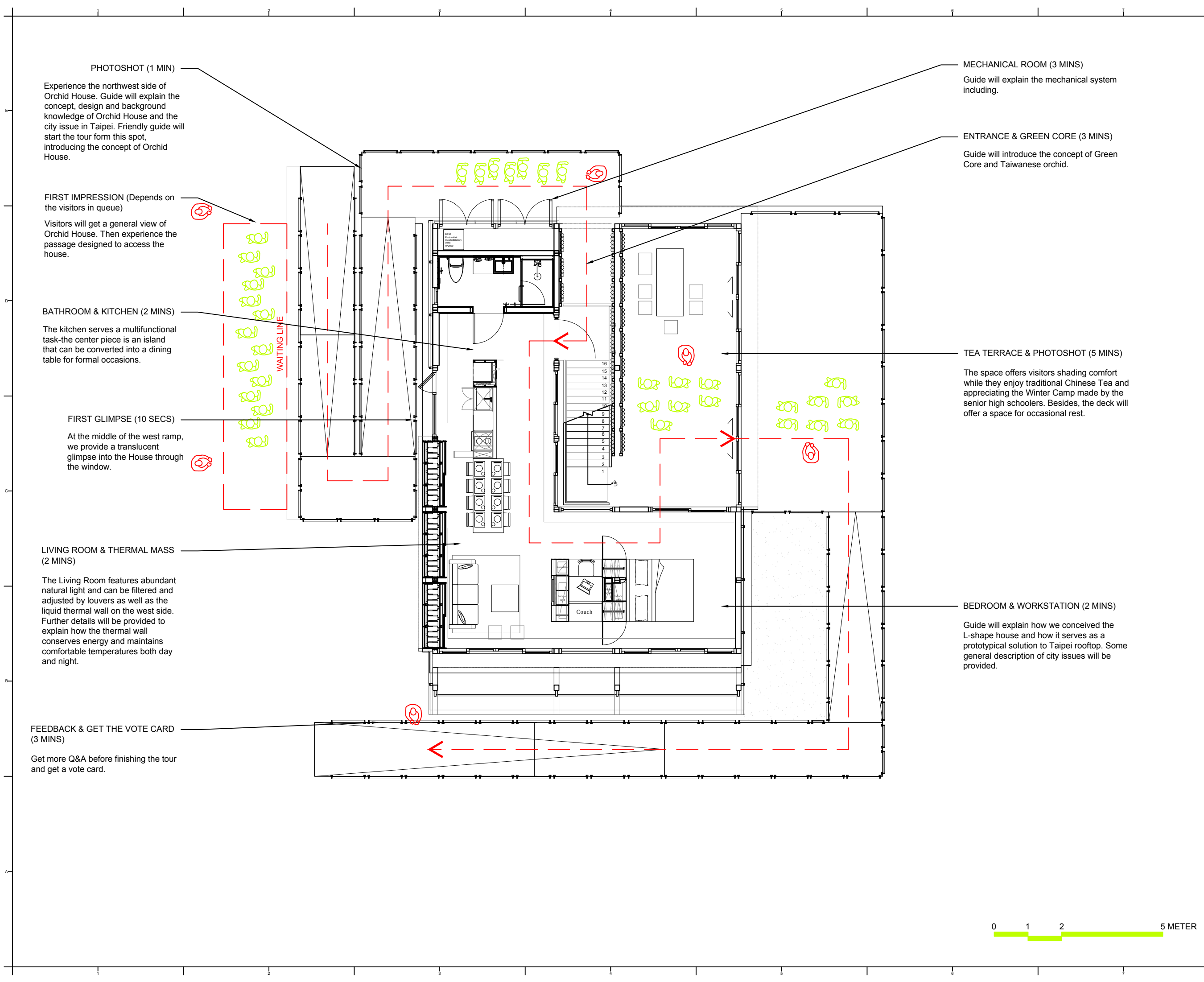
1F
EL +710
1F Beam
EL +610
Sand Box
EL +120
GL
EL ±0

2125
ENTRANCE

6600
5% RAMP

1875
LANDING

0 1 2 5 METER





Solar Decathlon Europe

Project:



ORCHID HOUSE

Institution:



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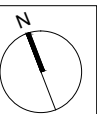
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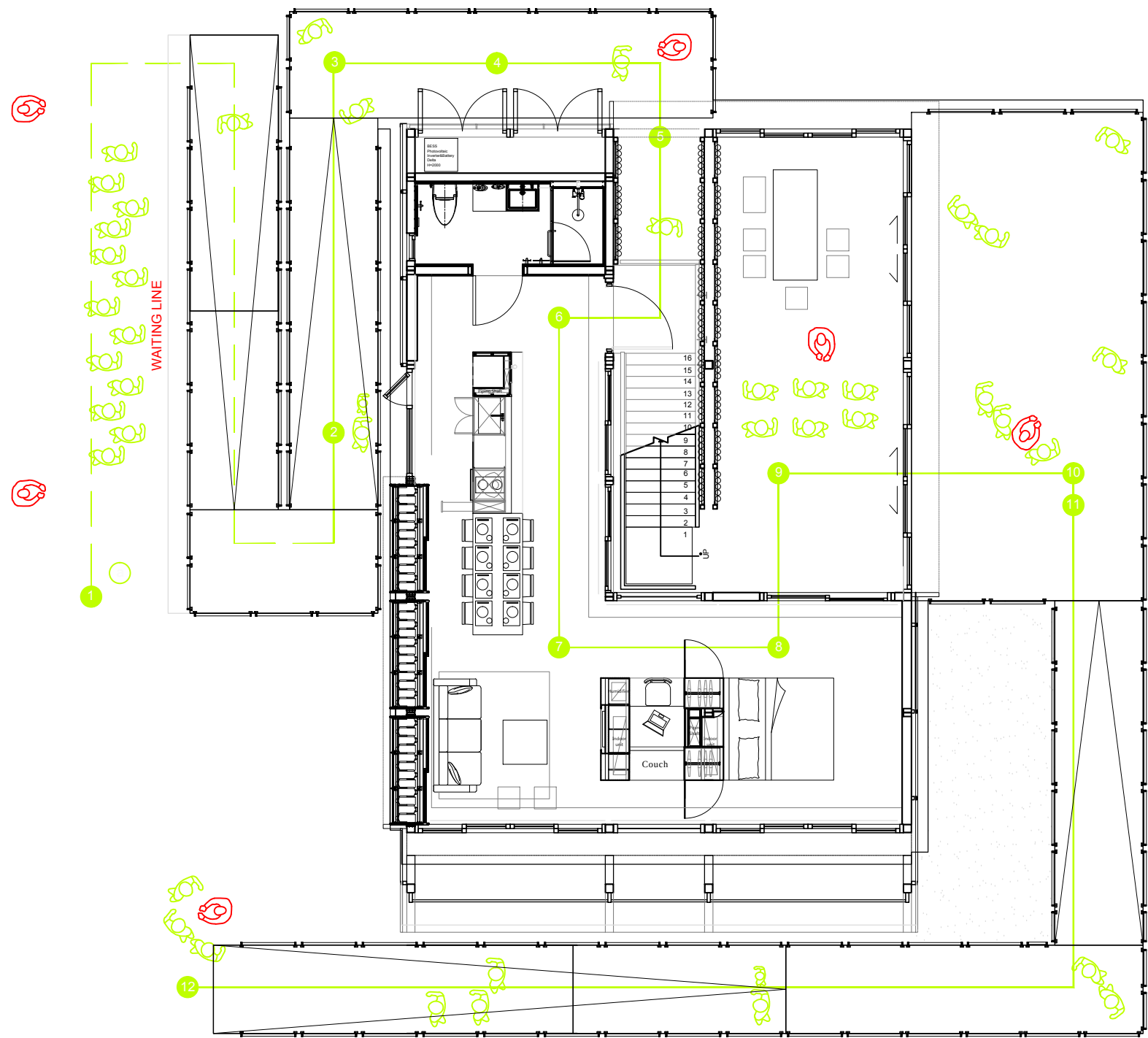
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Unit	mm

DWG. Title

HOUSE TOUR PLAN

DWG. No.	PAGE
PT-101	287





- VISITOR
- TEAM UNICODE MEMBER
- 1 FIRST IMPRESSION (depends on the visitors in queue)
- 2 FIRST GLIMPSE (10 secs)
- 3 PHOTOSHOT 1 (1 min)
- 4 MECHANICAL ROOM (3 mins)
- 5 ENTRANCE & GREEN CORE (3 mins)
- 6 BATHROOM & KITCHEN (2 mins)
- 7 LIVING ROOM & THERMAL MASS (2mins)
- 8 BEDROOM & WORKSTATION (2 mins)
- 9 TEA TERRACE (5 mins)
- 10 PHOTOSHOT 2 (2 mins)
- 11 PHOTOSHOT 3 (2 mins)
- 12 FEEDBACK & GET THE VOTE CARD (3 mins)

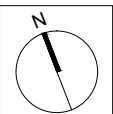


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Note:



Mark	Date	Description
DN	2013/04/01	SD Submission
DN	2013/07/01	DDc Submission
ST	2013/11/01	DD Submission
ST	2014/03/03	CD Submission

Drawn by	YW
Checked by	DN
Scale	1:100
Unit	MM

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