

- NOTES:**
- GREEN COLOR INSTALLATION: SEPARATION BETWEEN ROWS OF 7,12 m
 - BLUE COLOR INSTALLATION: SEPARATION BETWEEN ROWS OF 6,82 m
- KEYED NOTES:**
- 1 NONE

MAIN FEATURES

Nominal Power:	64 MWac
Peak Power:	80.51328 MWdc
Installations:	32 of 2,00 MWac
Module technology:	HANWHA SOLARONE (Polycrystalline)
Inverter:	SIEMENS PVS 2000 ZA

ELECTRICAL CONFIGURATION:

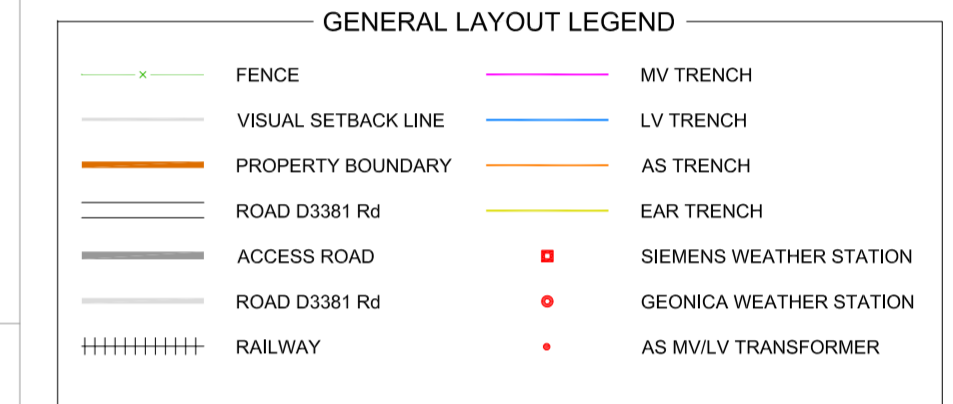
Modules per string:	18 modules
Peak Power Module:	290 W
Max. Voltage System:	1.000 V
Strings per Installation (2,00 MWac):	482 strings
Peak Power per Installation (2,00 MWac):	2,51604 MWdc
Total quantity of strings:	15.424 strings
Peak Power per 64 MWac:	80.51328 MWdc

PV MODULE

Manufacturer:	Hanwha Solarone
Model:	SF260 Poly | x-tra
Peak Power (Pmax):	290 Wp
Quantity:	277.632 modules

PV INVERTER-TRANSFORMER

Manufacturer:	SIEMENS
Model:	SINVERT SOLAR PVS 2000 ZA
Nominal Power:	2 MWac
Quantity:	32



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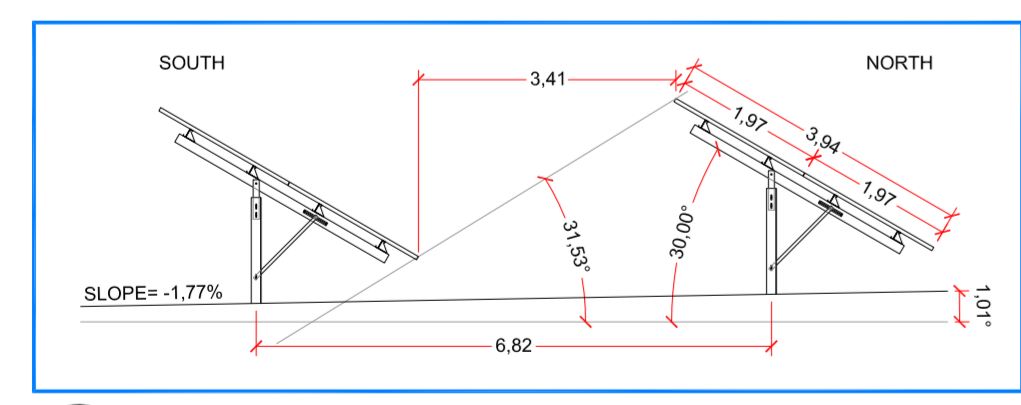
Projection Information

Projection	Gauss Conform, Lo23'E
Datum	Hartebeeshoek'94
Reference Ellipsoid	WGS84
Geoidal Model	SA Geoid 2010

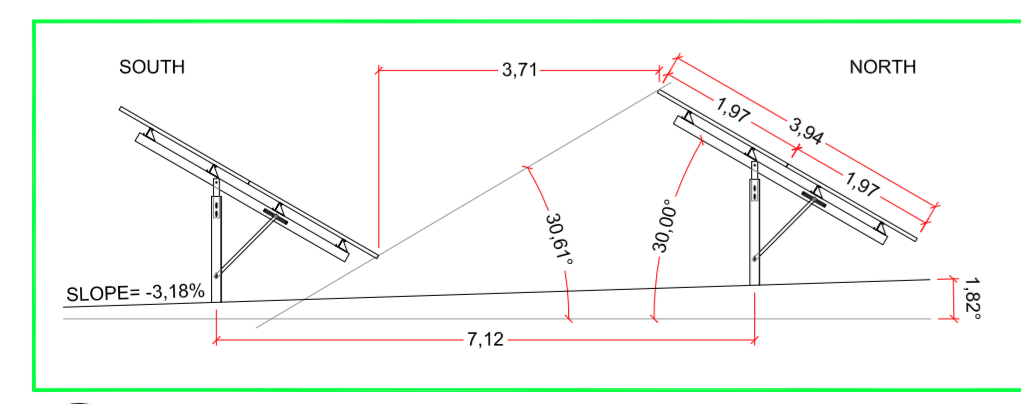
SETTING POINTS

POINT	COORDINATES X	COORDINATES Y
P1	-34.280,73	3.132.947,54
P2	-34.284,72	3.132.981,64
P3	-34.309,13	3.133.012,28
P4	-34.344,29	3.133.052,44
P5	-34.380,95	3.133.089,51
P6	-34.569,69	3.133.265,09
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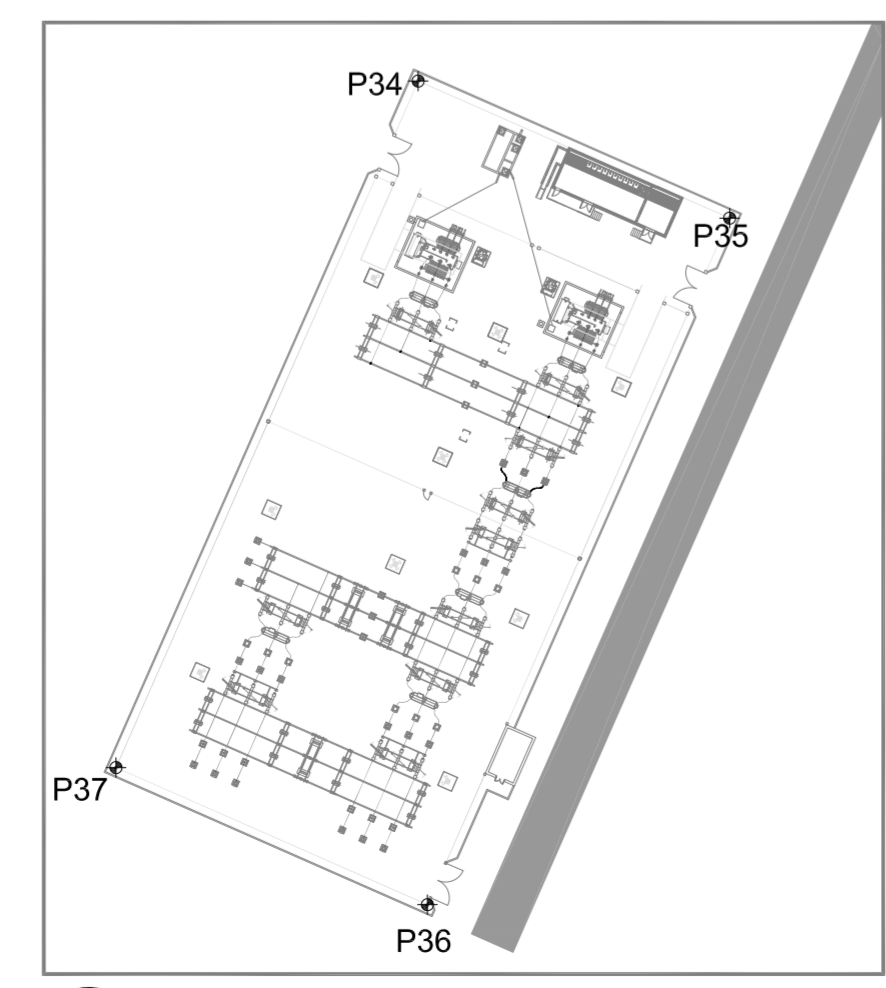
A GENERAL LAYOUT
Scale 1/5.000



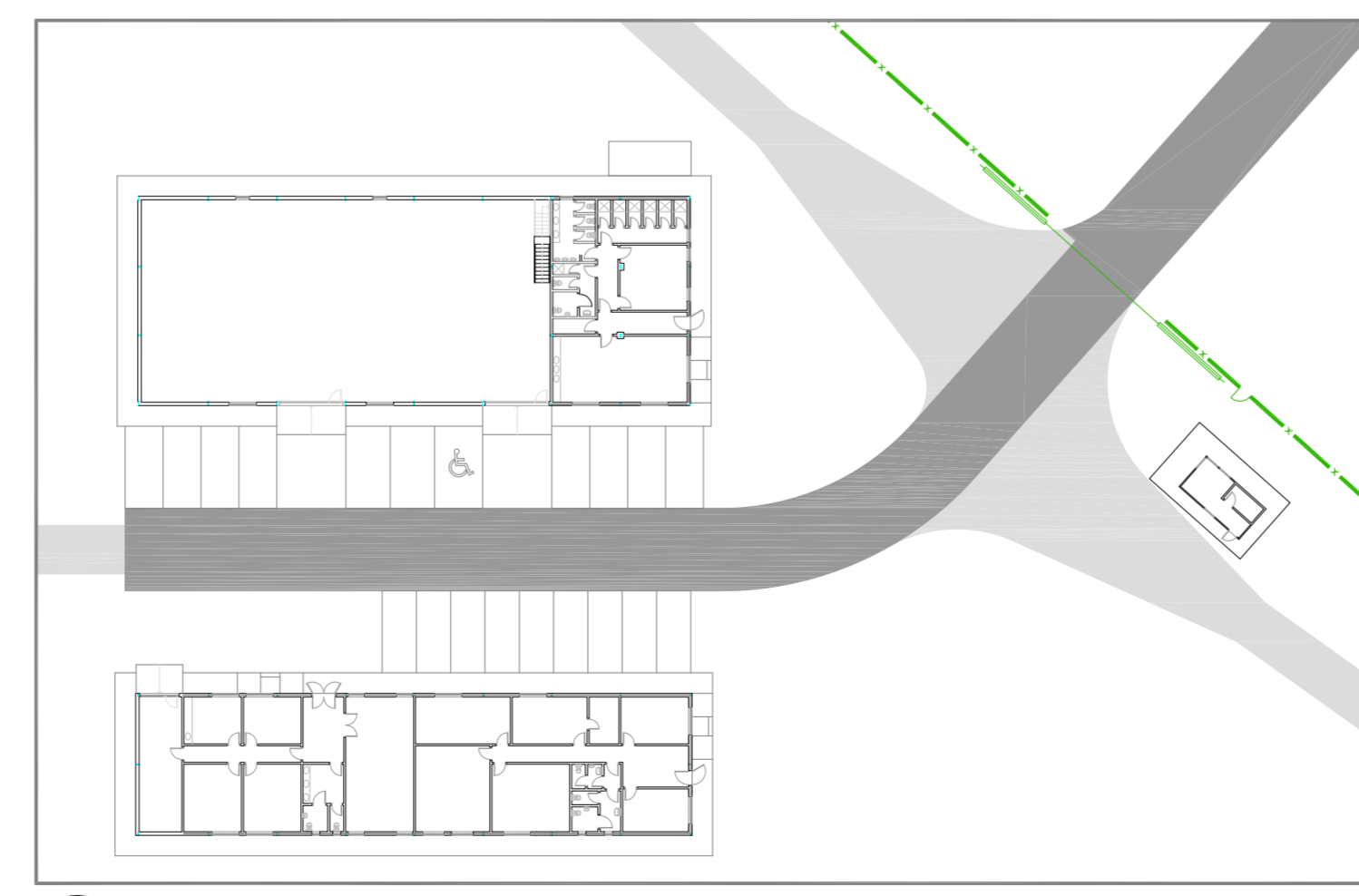
B SHADOWS DIAGRAM
Scale 1/100



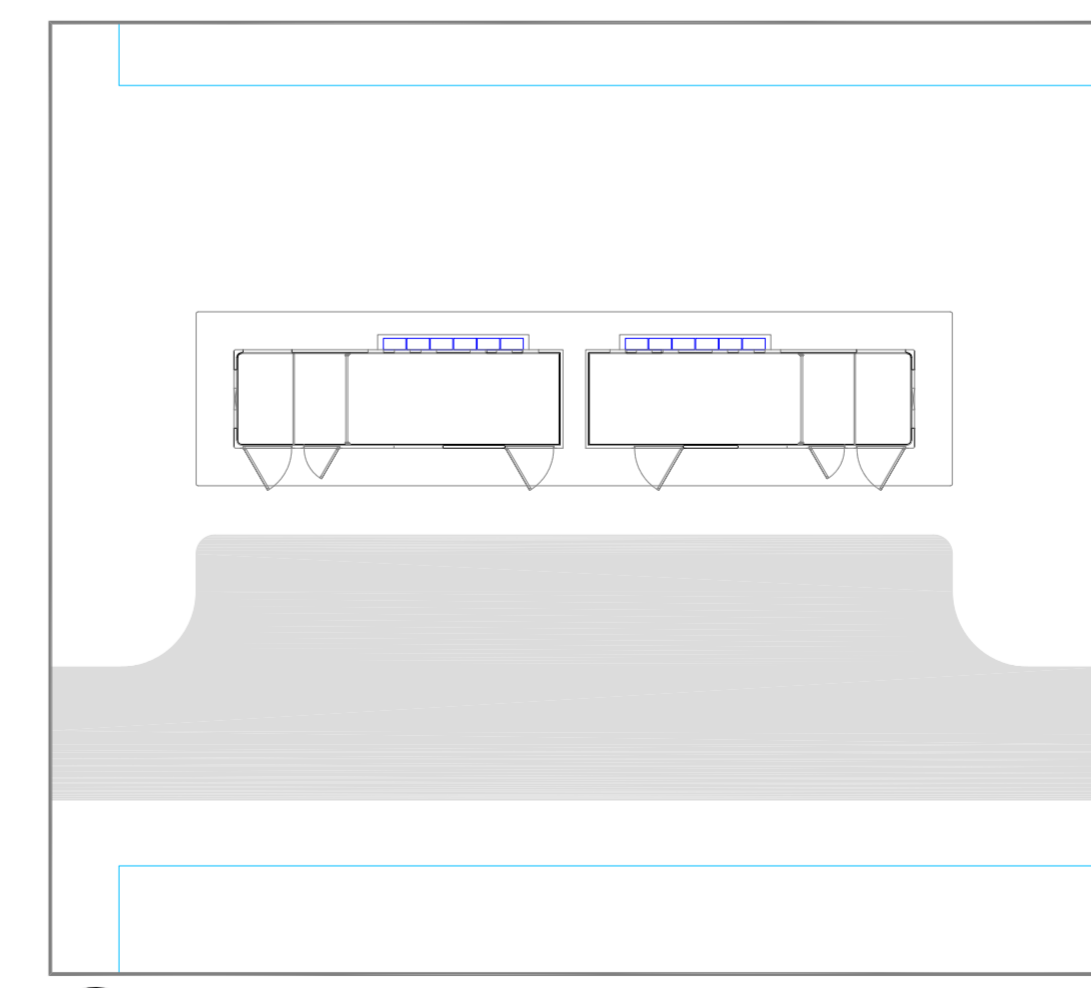
C SHADOWS DIAGRAM
Scale 1/100



D 22/132 kV LESEDI SUBSTATION
Scale 1/11.000



E OWNER AND O&M BUILDINGS
Scale 1/500



F INVERTER TRANSFORMER BUILDING
Scale 1/200

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 - APPROVAL
 - QUOTATION PURCHASING
 - CONSTRUCTION
 - AS BUILT

REV.	DESCRIPTION	DATE	BY
D1	FIRST EMISSION	MAR-2014	IN

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
 Corner House, Wessels Road and
 10th Avenue
 Rivonia Sandton
 JOHANNESBURG (SOUTH AFRICA)
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 www.ingenia-solar.com

CLIENT:

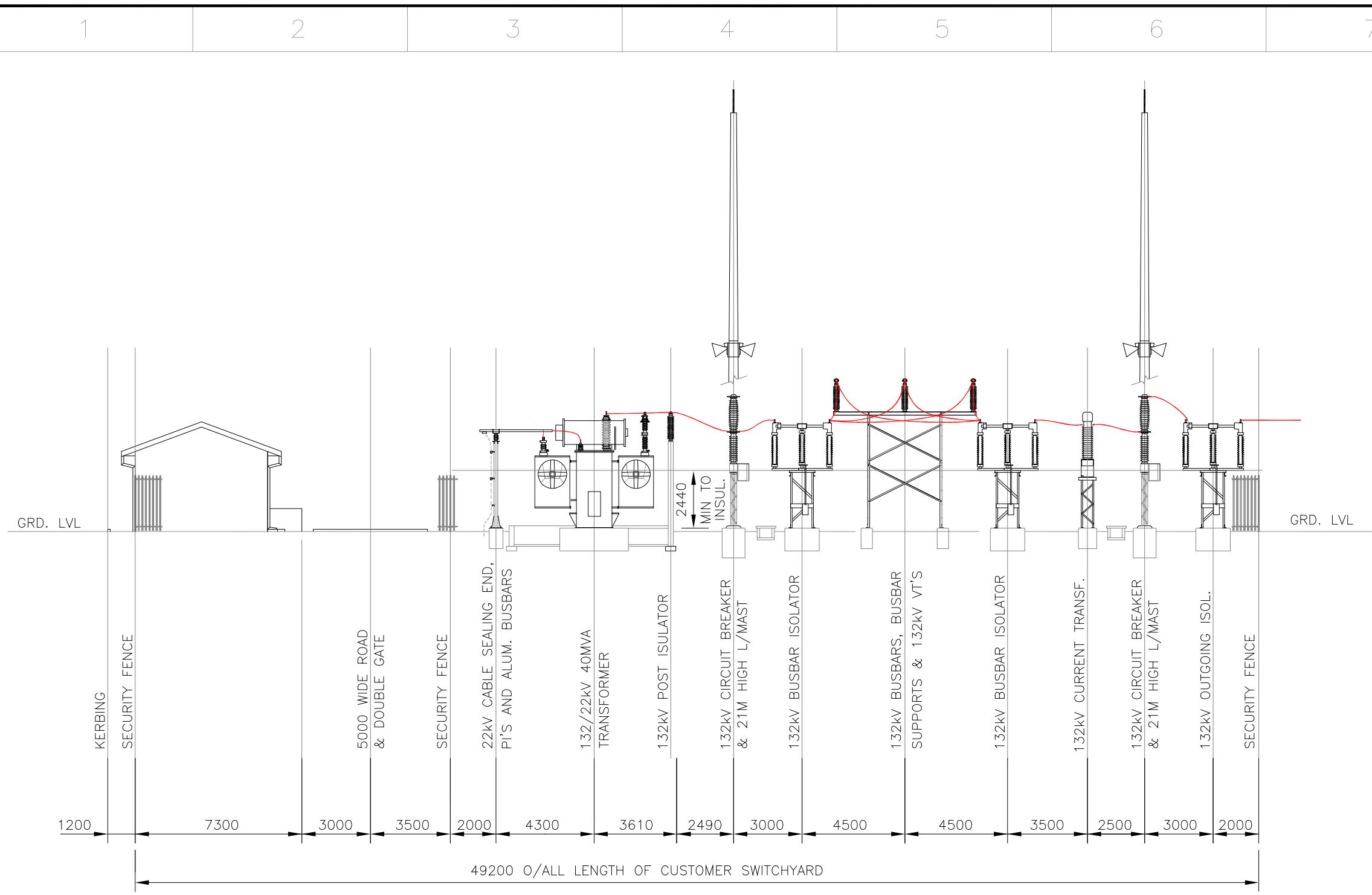
PROJECT:

**64 MWac Lesedi Solar Park
South Africa**

SHEET TITLE

GENERAL LAYOUT

REFERENCE: I12-031-ING	PAPER SIZE: 900 x 594 mm.	
DRAWING N° HP1-CGC-GE-LAY-0003-D1		



OPERATING CLEARANCES IN ACCORDANCE WITH BS : 1961

SYSTEM VOLTAGE	22kV	132kV
MINIMUM CLEARANCE TO EARTH	mm 279	1270
MINIMUM CLEARANCE IN AIR BETWEEN PHASES	mm 330	1473
CLEARANCE TO THE NEAREST UNSCREENED LIVE CONDUCTOR IN AIR (SECTION CLEARANCE)	mm 2740	3500
CLEARANCE TO THE NEAREST PART NOT AT EARTH POTENTIAL OF AN ISOLATOR SUPPORTING A LIVE CONDUCTOR (GROUND CLEARANCE)	mm 2440	2440

NOTES :-

- ADDITIONAL CLEARANCE OF 3% PER 305m IS PROVIDED FOR ALTITUDE IN EXCESS OF 1000m.
- THESE CLEARANCES ARE NOT APPLICABLE TO APPARATUS SUBJECT TO IMPULSE VOLTAGE TESTS.
- CLEARANCES MUST BE MAINTAINED UNDER CONDITIONS OF MAXIMUM SAG AND SWING DUE TO WIND.
- ALL SPECIFIED CLEARANCES ARE TO BE CHECKED DURING ERECTION OF APPARATUS.

EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	SUPPLIER	TYPE	QTY
A	40MVA 132/22kV POWER TRANSFORMER	-	OIL FILLED	2
B	132kV BUSBAR ISOLATOR	ACTOM	DSB 1600A	3
C	132kV OUTGOING ISOLATOR	ACTOM	DSB 1600A	1
D	132kV CIRCUIT BREAKER	ACTOM AREVA	-	3
E	132kV VOLTAGE TRANSFORMER	ACTOM	OIL FILLED	3
F	132kV CURRENT TRANSFORMER	ACTOM	OIL FILLED	3
G	132kV SURGE ARRESTER	ACTOM	-	6
H	132kV POST INSULATOR	-	-	18
J	22kV NEUTRAL EARTH COMPENSATOR/RESISTOR	-	OIL FILLED	2
K	22kV SURGE ARRESTER	ACTOM	-	6
L	22kV POST INSULATOR	-	-	12
M	21M HIGH LIGHTING/LIGHTNING MAST	-	STEEL	4
N	ALUMINIUM BUSBARS (10 x 12M + 6 x 3M)	-	100# AL. TUBE	120M
O	CENTIPEDA CONDUCTOR	-	26# AL. COND.	120M
P	BULL CONDUCTOR	-	38# AL. COND.	200M
Q	400W SODIUM VAPOUR LAMPS	-	-	12

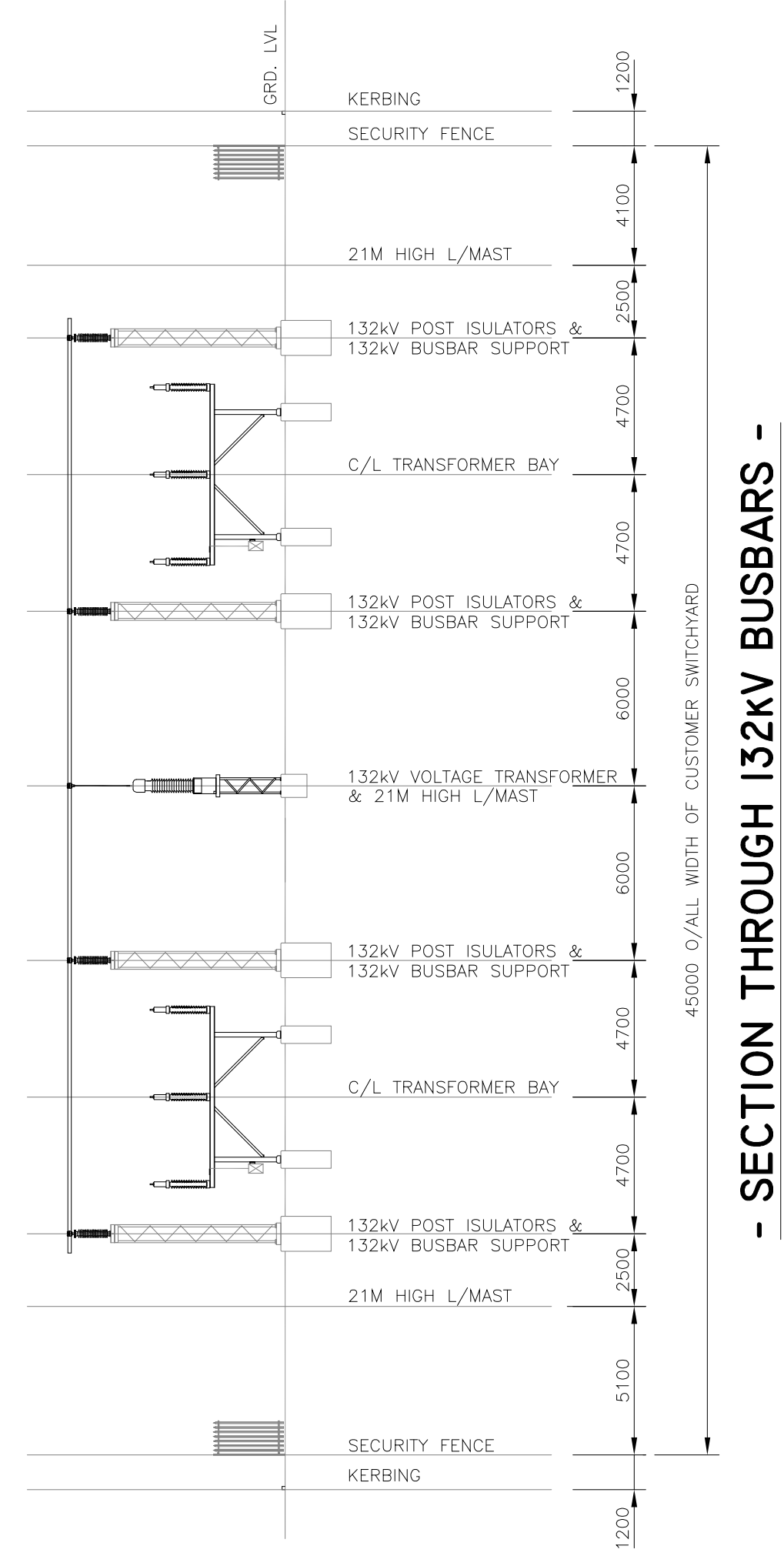
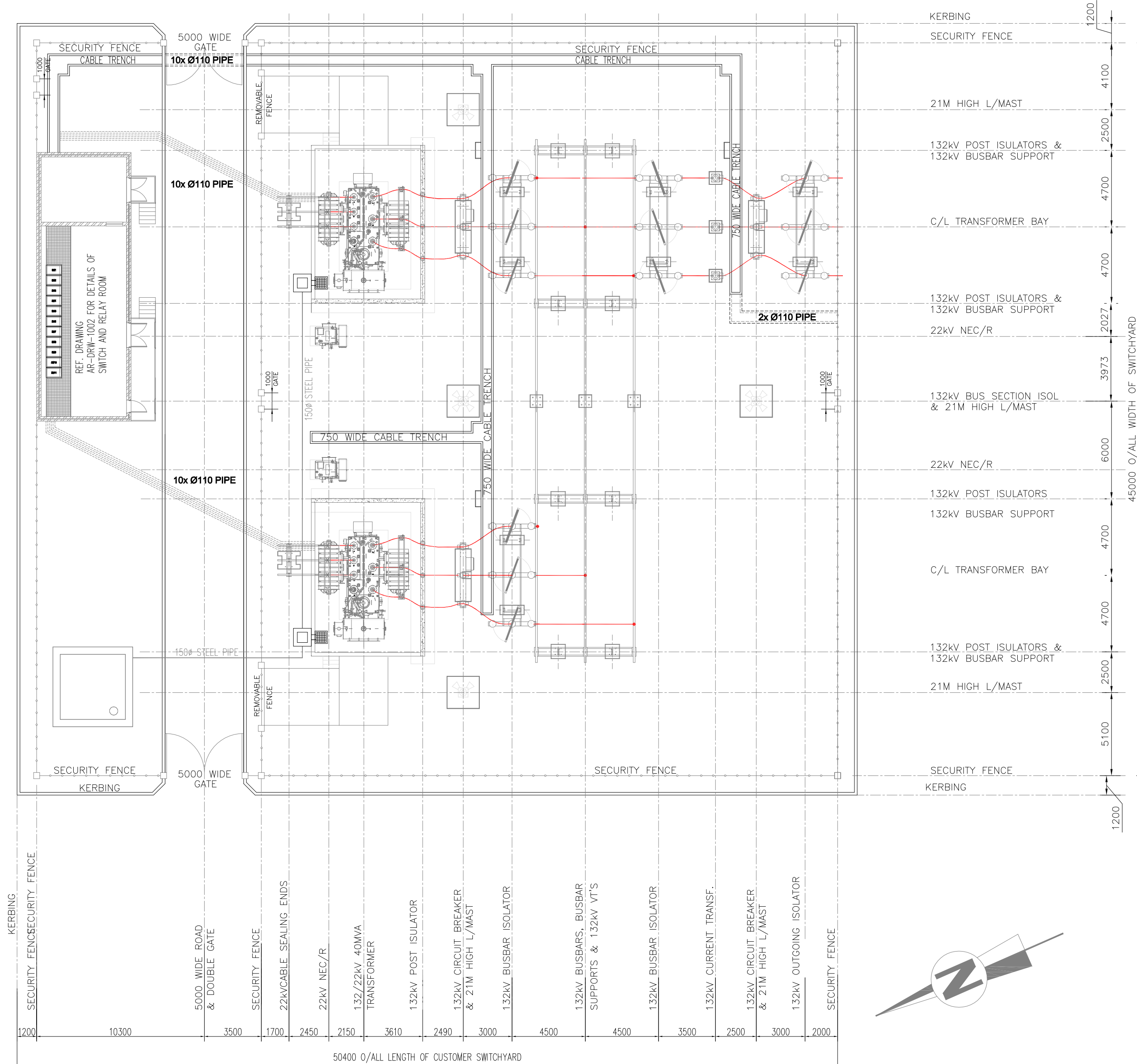
EQUIPMENT SUPPORT SCHEDULE

REF.	DESCRIPTION	SUPPLIER	DWG No.	QTY
1	132kV ISOLATOR SUPPORT	-	HP1-CGC-ST-DRW-1002	4
2	132kV CIRCUIT BREAKER SUPPORT	-	HP1-CGC-ST-DRW-1005	3 SETS
3	132kV VOLTAGE TRANSFORMER SUPPORT	-	HP1-CGC-ST-DRW-1004	3
4	132kV CURRENT TRANSFORMER SUPPORT	-	HP1-CGC-ST-DRW-1003	3
5	132kV BUSBAR SUPPORT	-	HP1-CGC-ST-DRW-1001	4
6	132kV POST INSULATOR BRACKET	-	-	6
7	22kV CABLE SEALING END SUPPORT	-	-	2

FOUNDATION SCHEDULE

REF.	DESCRIPTION	DWG No.	QTY
A	132kV BUSBAR ISOLATOR SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-02	3
B	132kV OUTGOING ISOLATOR SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-03	1
C	132kV CIRCUIT BREAKER SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-04	3
D	132kV CURRENT TRANSFORMER SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-05	3
E	132kV VOLTAGE TRANSFORMER SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-06	3
F	132/22kV POWER TRANSFORMER PLINTH	HP1-CGC-CV-DRW-1002-01	2
G	132kV BUSBAR SUPPORT PLINTH	HP1-CGC-CV-DRW-1004-07	4
H	21M HIGH LIGHTING/LIGHTNING MAST PLINTH	HP1-CGC-CV-DRW-1004-08	4
J	750 WIDE MULTICORE CABLE TRENCH	HP1-CGC-CV-DRW-1005	110M
K	SWITCHGEAR ROOM/ CONTROL ROOM BUILDING	HP1-CGC-AR-DRW-1001	1
L	22kV NEC/NER/AUX. TRANSFORMER PLINTH	HP1-CGC-CV-DRW-1002	2
M	22kV CABLE SEALING END PLINTH	HP1-CGC-CV-DRW-1004-09	2

- SECTION THROUGH TRANSFORMER BAY -



Scale: 1:200

NOTES:
1. NONE

KEYED NOTES:
1. NONE

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- CONSTRUCTION
- AS BUILT

REV.	DESCRIPTION	DATE	BY
D2	END OF TRENCHES	MAY-2014	IN
D1	FIRST EMISSION	MAR-2014	IN

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
Corner House Westsels Road and 100 Avenue
Rivonia Sandton
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Phone: (+27) 11 234 4666
Fax: (+27) 11 234 4460
johannesburg@ingenia-se.com
www.ingenia-se.com

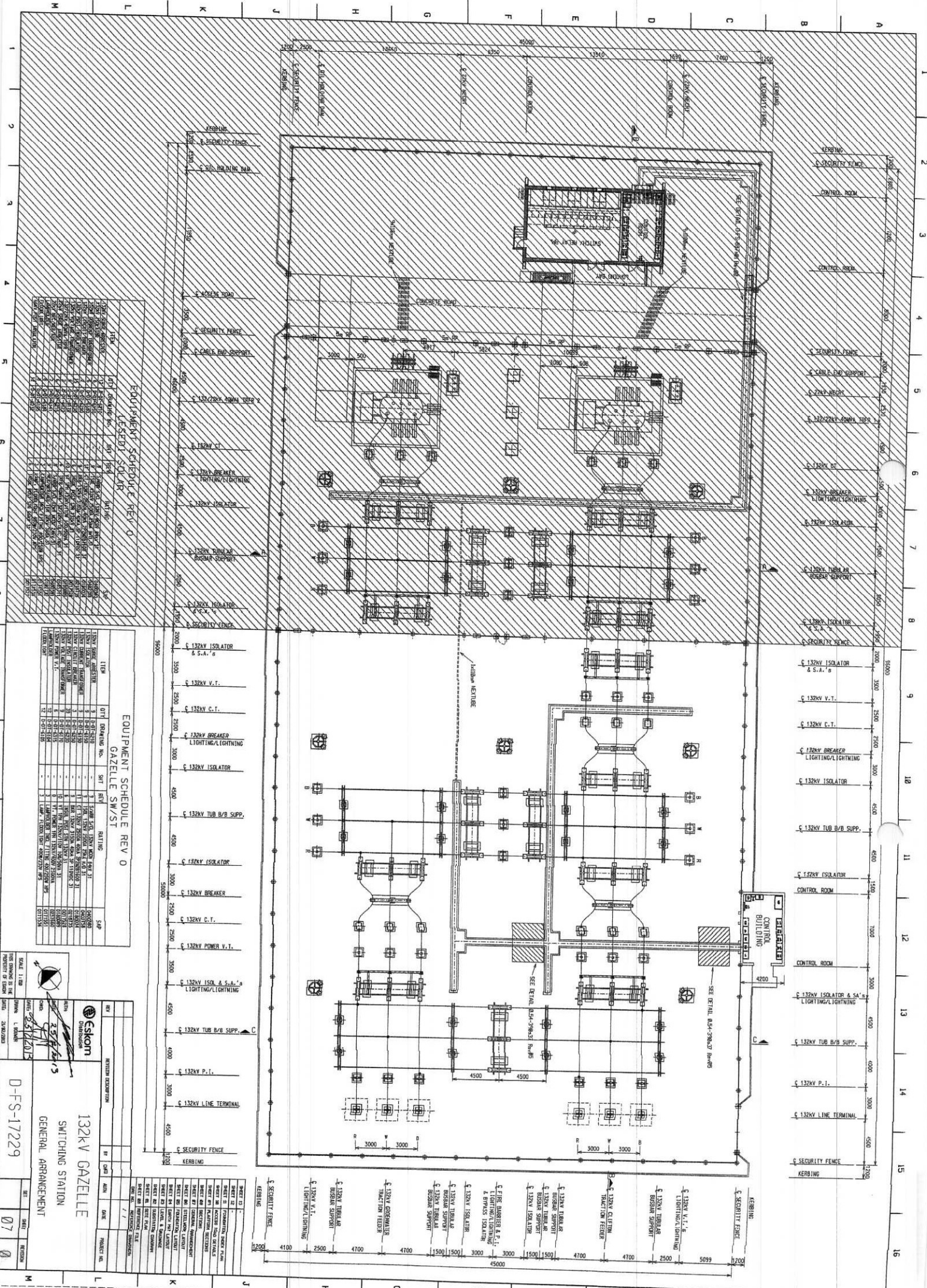
CLIENT:

PROJECT:
64 MWac Lesedi Solar Park South Africa

SHEET TITLE
SUBSTATION LAYOUT GENERAL ARRANGEMENT AND SECTIONS

REFERENCE: 112-031-ING PAPER SIZE: A1: 840 x 594 mm.

DRAWING N° HP1-CGC-EL-DRW-1001-D2



EQUIPMENT SCHEDULE REV 0
LESEDI SOLAR

ITEM	QTY	BRANDING NO.	UNIT	REMARKS
1	1	...	...	...
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
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32	1
33	1
34	1
35	1
36	1
37	1
38	1
39	1
40	1
41	1
42	1
43	1
44	1
45	1
46	1
47	1
48	1
49	1
50	1

EQUIPMENT SCHEDULE REV 0
GAZELLE SW/ST

ITEM	QTY	BRANDING NO.	UNIT	REMARKS
1	1	...	...	...
2	1	...	...	...
3	1	...	...	...
4	1	...	...	...
5	1	...	...	...
6	1	...	...	...
7	1	...	...	...
8	1	...	...	...
9	1	...	...	...
10	1	...	...	...
11	1	...	...	...
12	1	...	...	...
13	1	...	...	...
14	1	...	...	...
15	1	...	...	...
16	1	...	...	...
17	1	...	...	...
18	1	...	...	...
19	1	...	...	...
20	1	...	...	...
21	1	...	...	...
22	1	...	...	...
23	1	...	...	...
24	1	...	...	...
25	1	...	...	...
26	1	...	...	...
27	1	...	...	...
28	1	...	...	...
29	1	...	...	...
30	1	...	...	...
31	1	...	...	...
32	1	...	...	...
33	1	...	...	...
34	1	...	...	...
35	1	...	...	...
36	1	...	...	...
37	1	...	...	...
38	1	...	...	...
39	1	...	...	...
40	1	...	...	...
41	1	...	...	...
42	1	...	...	...
43	1	...	...	...
44	1	...	...	...
45	1	...	...	...
46	1	...	...	...
47	1	...	...	...
48	1	...	...	...
49	1	...	...	...
50	1	...	...	...

132KV GAZELLE SWITCHING STATION GENERAL ARRANGEMENT

SCALE: 1:100

DATE: 20/07/2015

DESIGNER: L. BOGERS

CHECKED: 20/07/2015

PROJECT NO: D-FS-17229

REVISION: 07

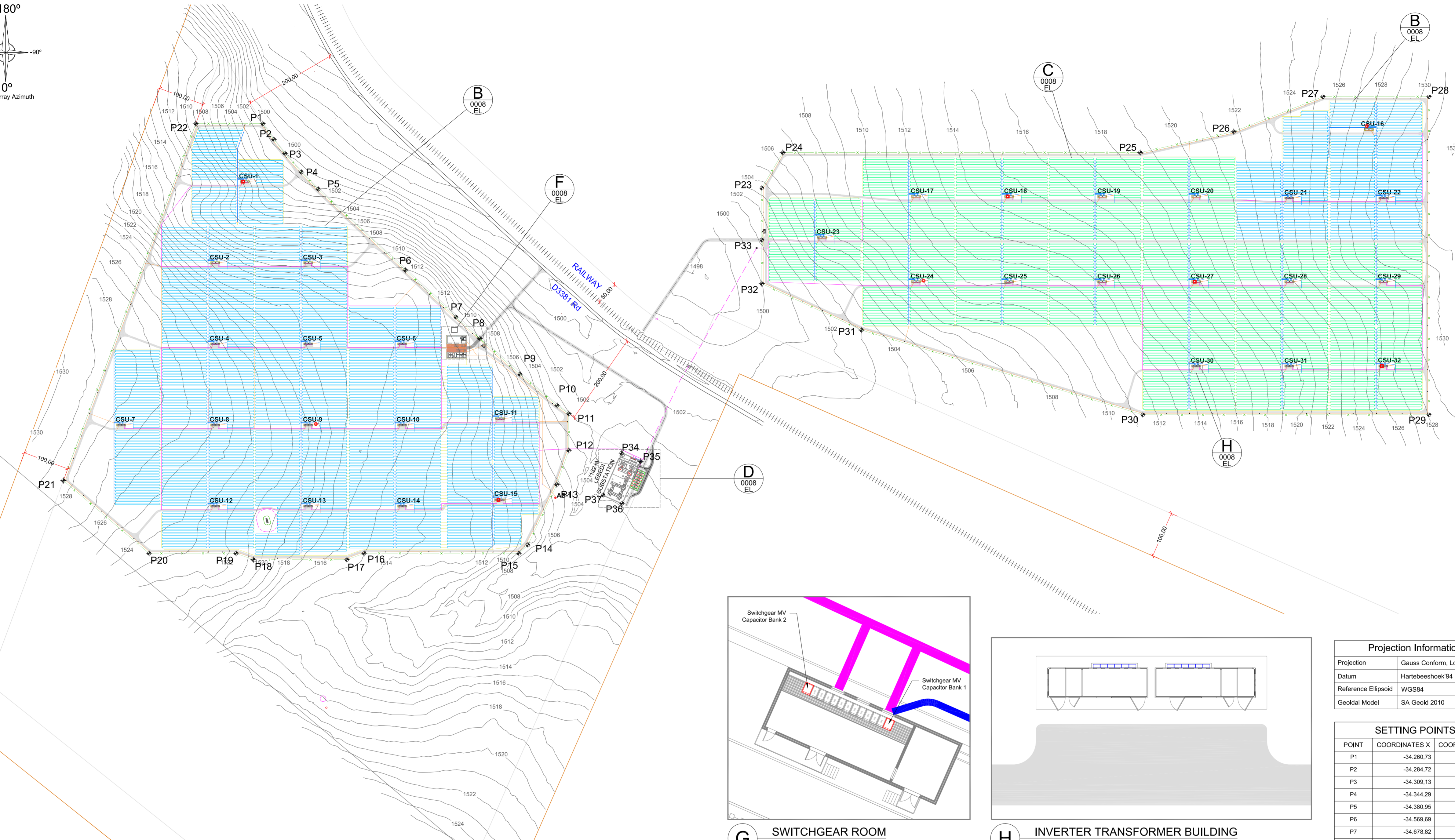
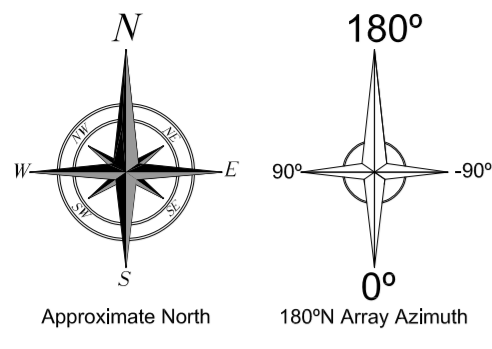
DATE: 20/07/2015

PROJECT NO: D-FS-17229

REVISION: 07

DATE: 20/07/2015

SHEET NO.	TOTAL SHEETS	DATE	REVISION
01	01	20/07/2015	01



- NOTES:**
- GREEN COLOR INSTALLATION: SEPARATION BETWEEN ROWS OF 7,12 m
 - BLUE COLOR INSTALLATION: SEPARATION BETWEEN ROWS OF 6,82 m
- KEYED NOTES:**
- [1] NONE

MAIN FEATURES

Nominal Power:	64 MWac
Peak Power:	80.51328 MWdc
Installations:	32 of 2,10 MWac
Module technology:	HANWHA SOLARONE (Polycrystalline)
Inverter:	SIEMENS PVS 2000 ZA

ELECTRICAL CONFIGURATION:

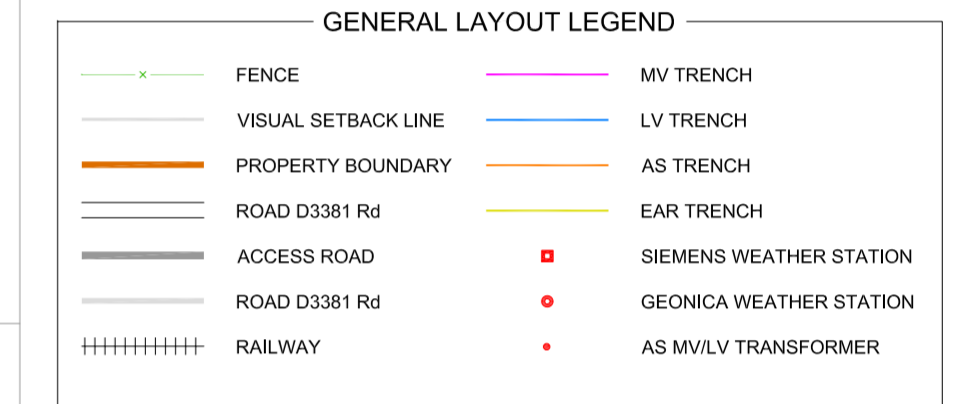
Modules per string:	18 modules
Peak Power Module:	290 W
Max. Voltage System:	1.000 V
Strings per Installation (2,10 MWac):	482 strings
Peak Power per Installation (2,10 MWac):	2,51604 MWdc
Total quantity of strings:	15.424 strings
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PV MODULE

Manufacturer:	Hanwha Solarone
Model:	SF260 Poly x-tra
Peak Power (Pmax):	290 Wp
Quantity:	277.632 modules

PV INVERTER-TRANSFORMER

Manufacturer:	SIEMENS
Model:	SINVERT SOLAR PVS 2000 ZA
Nominal Power:	2 MWac
Quantity:	32



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ISSUED FOR

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<input checked="" type="checkbox"/>	APPROVAL
<input type="checkbox"/>	QUOTATION PURCHASING
<input type="checkbox"/>	CONSTRUCTION
<input type="checkbox"/>	AS BUILT

A2	CAPACITOR BANKS LOCATION	JUN-2014	IN
A1	FIRST EMISSION	JUN-2014	IN

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
 Corner House Wessels Road and
 10th Avenue
 Rivonia Sandton
 JOHANNESBURG (SOUTH AFRICA)
 Phone (+27) 11 234 5828
 Fax (+27) 11 234 4460
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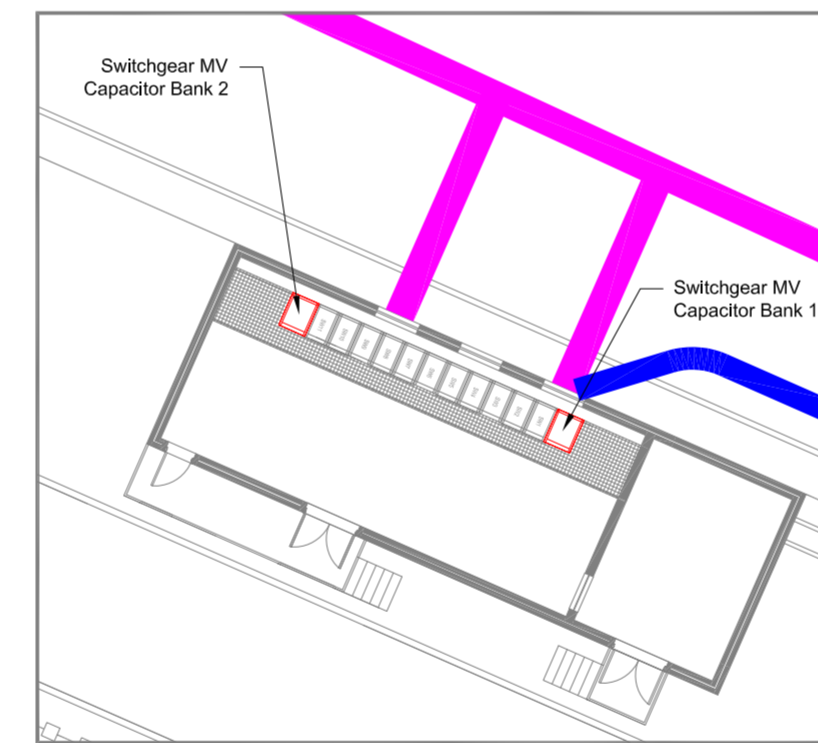
64 MWac Lesedi Solar Park
 South Africa

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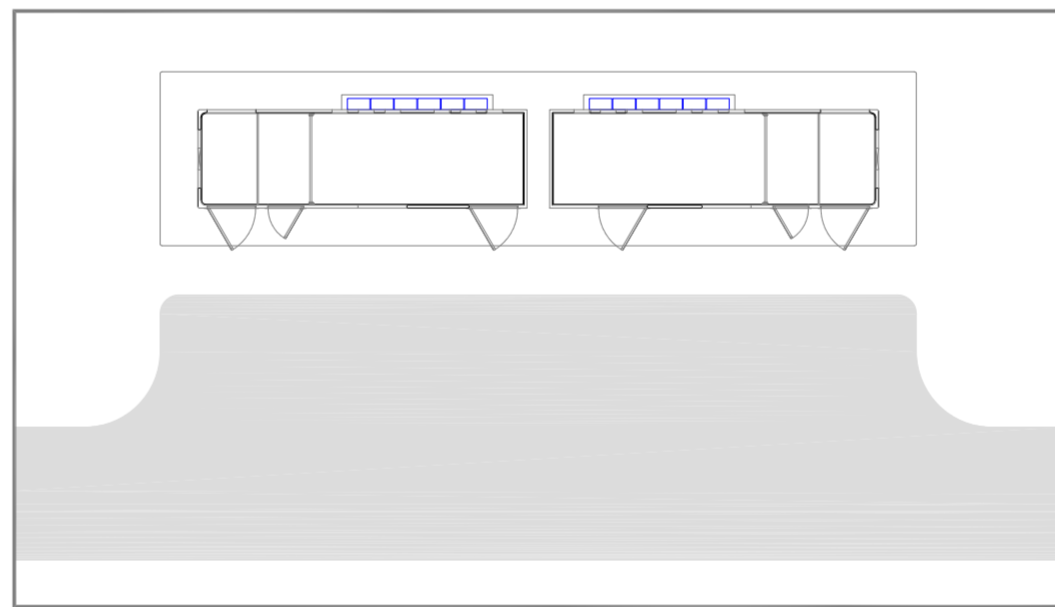
CAPACITOR BANKS
 GENERAL LAYOUT

REFERENCE:	PAPER SIZE:	
I12-031-ING	900 x 594 mm.	

DRAWING N° HP1-CGC-EL-DRW-0008-A2



G SWITCHGEAR ROOM
 Scale 1/200



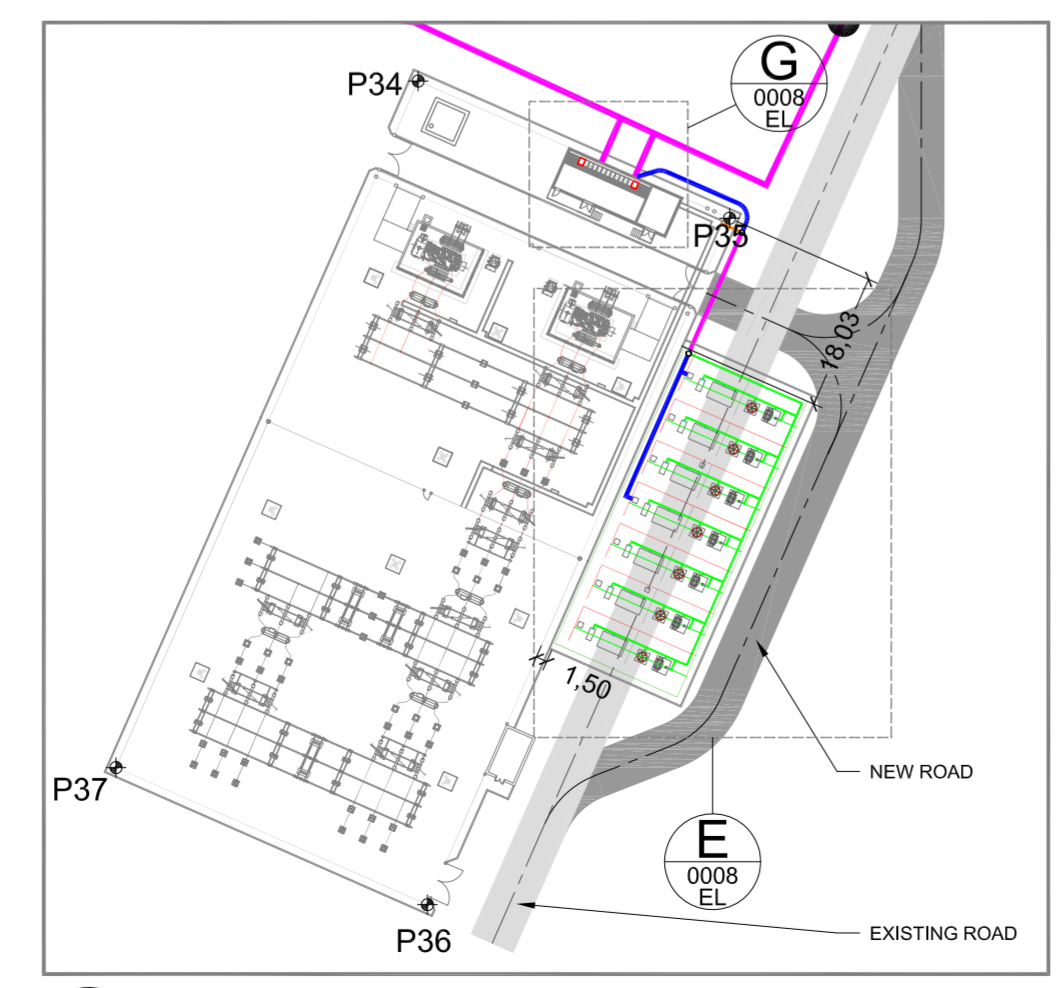
H INVERTER TRANSFORMER BUILDING
 Scale 1/200

Projection Information

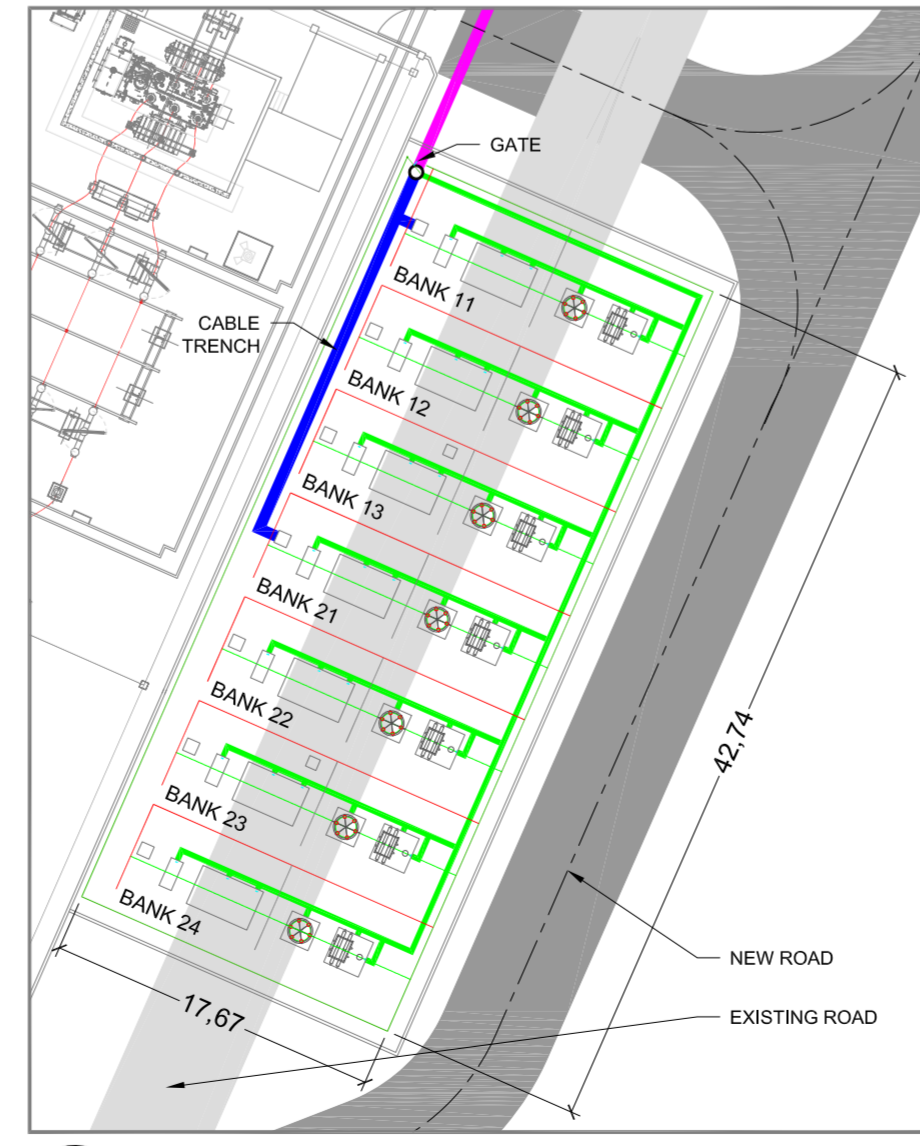
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SETTING POINTS

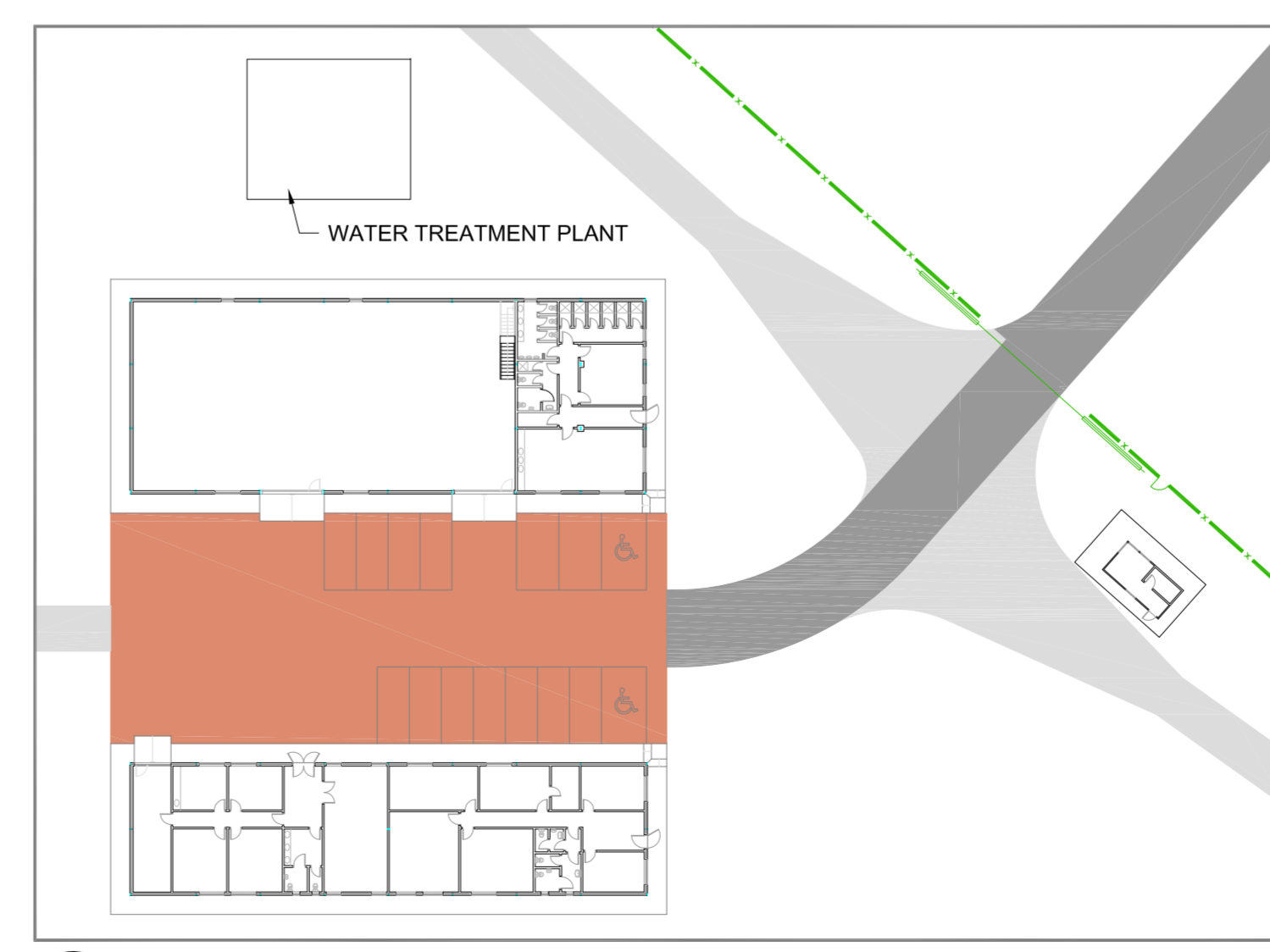
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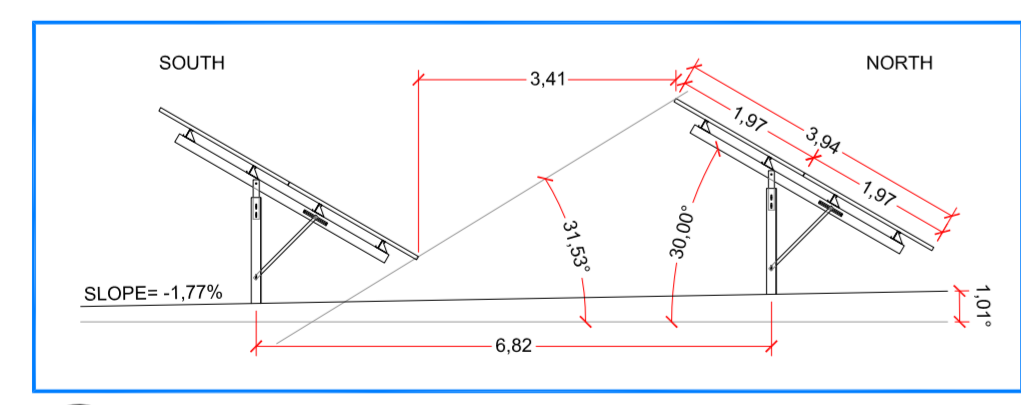


E CAPACITOR BANKS
 Scale 1/400

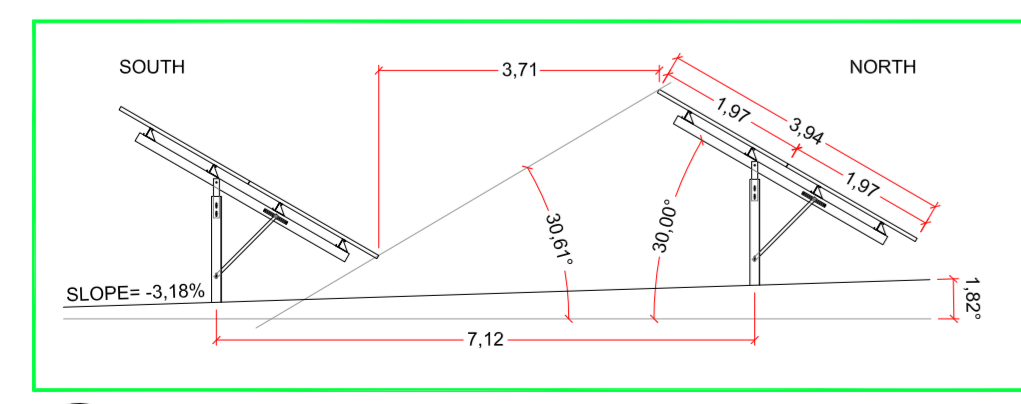


F OWNER AND O&M BUILDINGS
 Scale 1/500

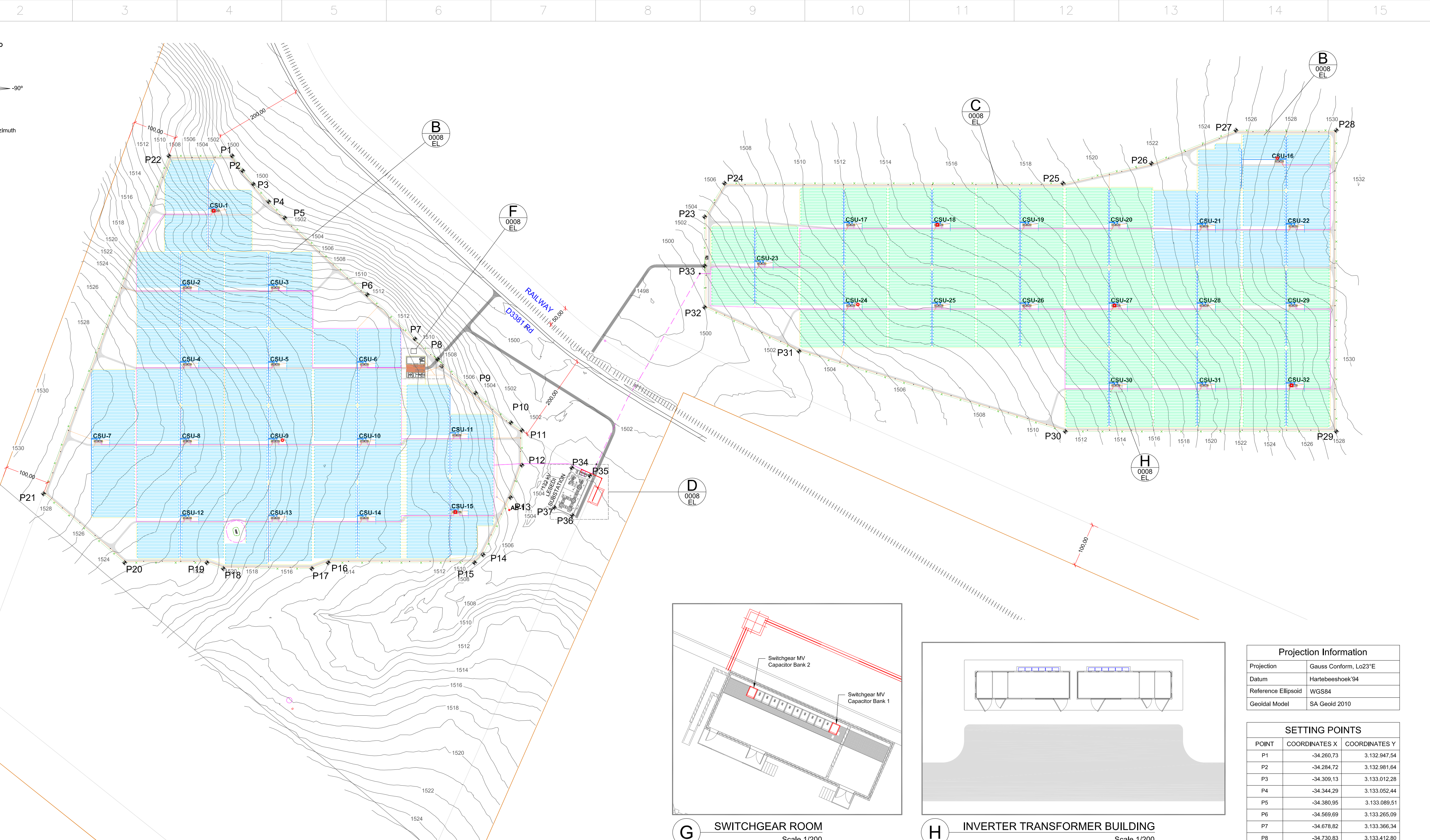
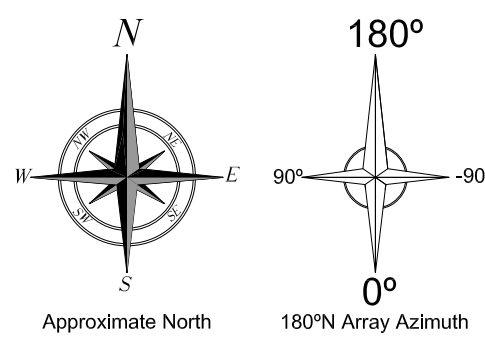
A GENERAL LAYOUT
 Scale 1/5.000



B SHADOWS DIAGRAM
 Scale 1/100



C SHADOWS DIAGRAM
 Scale 1/100



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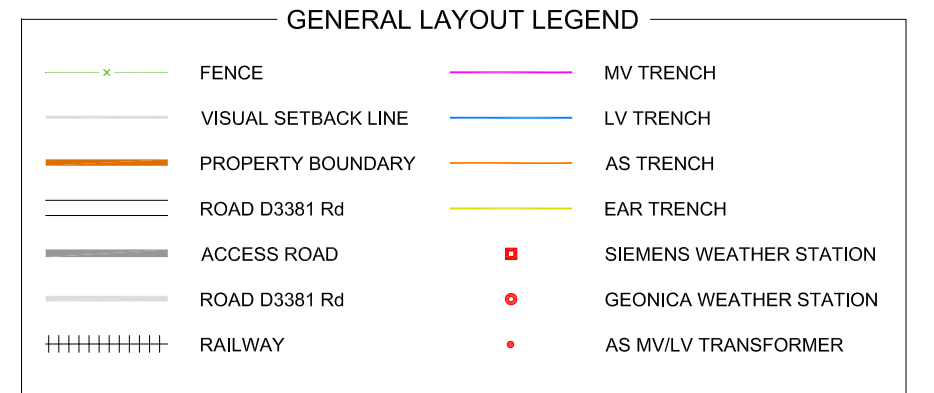
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Quantity:	32



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- INFORMATION ONLY
 - APPROVAL
 - QUOTATION PURCHASING
 - CONSTRUCTION
 - AS BUILT

A1	FIRST EMISSION	JUN-2014	IN
REV.	DESCRIPTION	DATE	BY

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
Corner House Wessels Road and
10th Avenue
Rivonia Sandton
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Phone (+27) 11 234 5828
Fax (+27) 11 234 4480
johannesburg@ingenia-se.com
www.ingenia-se.com

CLIENT:

PROJECT:

64 MWac Lesedi Solar Park
South Africa

SHEET TITLE

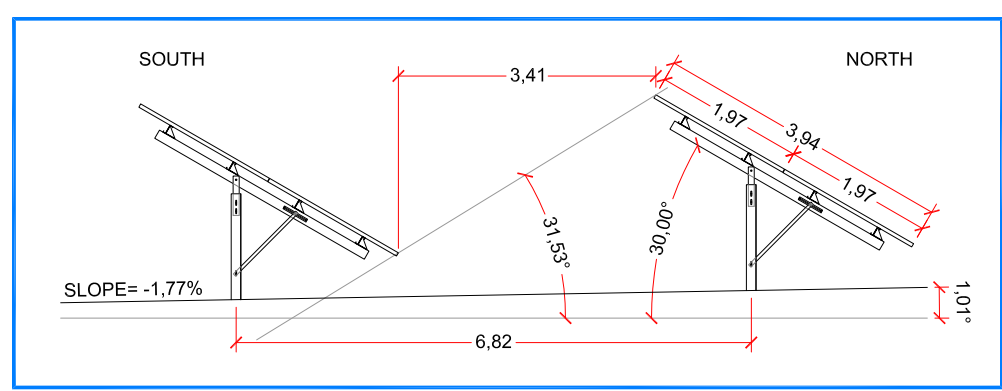
CAPACITOR BANKS
GENERAL LAYOUT

REFERENCE: I12-031-ING

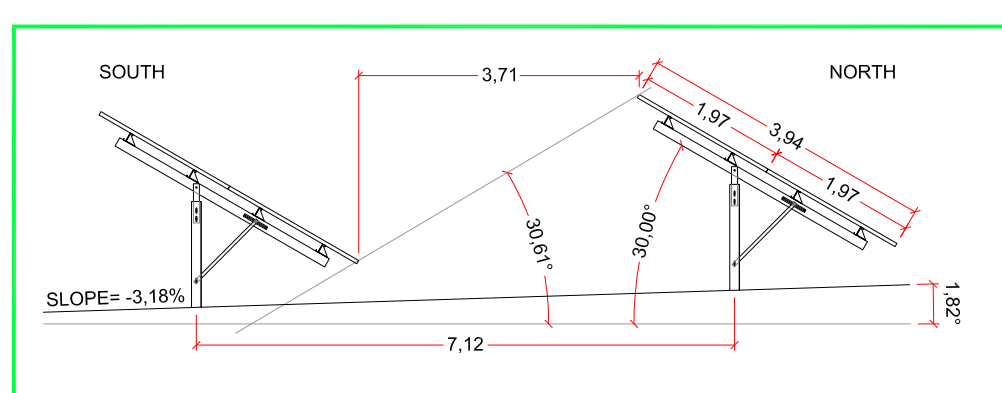
PAPER SIZE: 900 x 594 mm.

DRAWING N° HP1-CGCG-EL-DRW-0008-A1

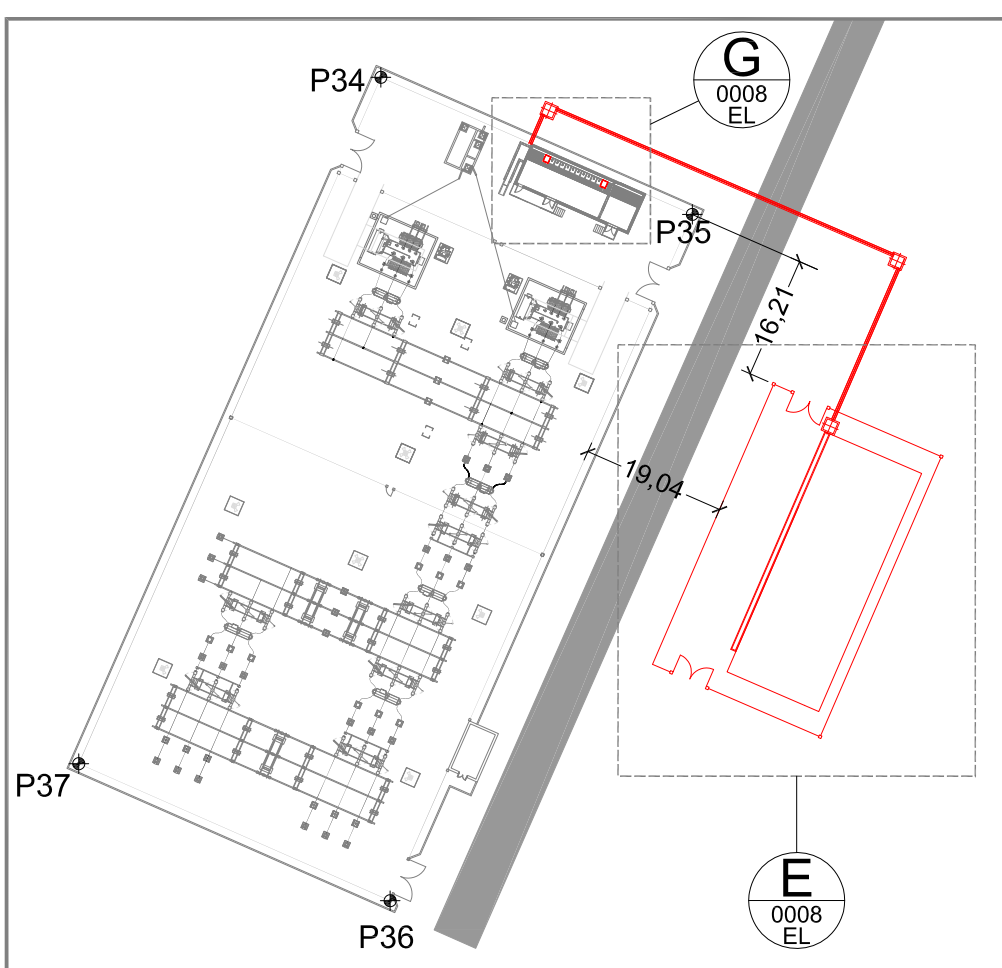
A GENERAL LAYOUT
Scale 1/5.000



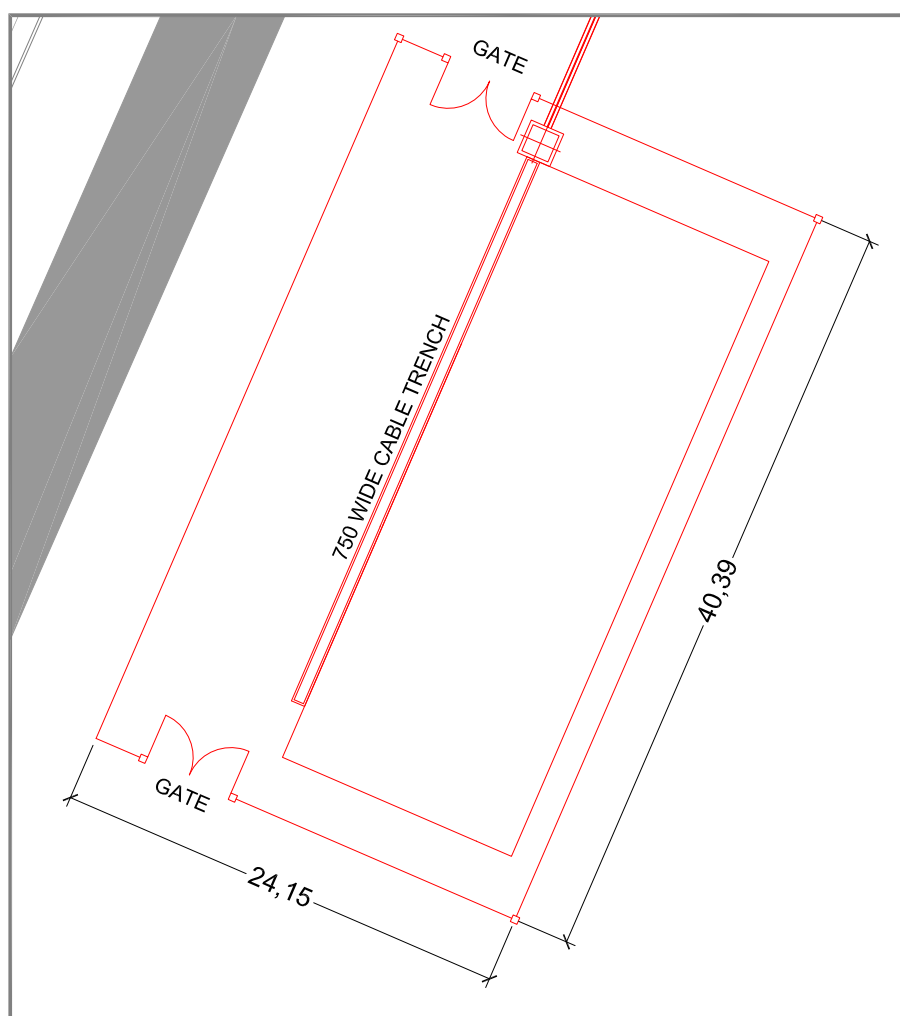
B SHADOWS DIAGRAM
Scale 1/1000



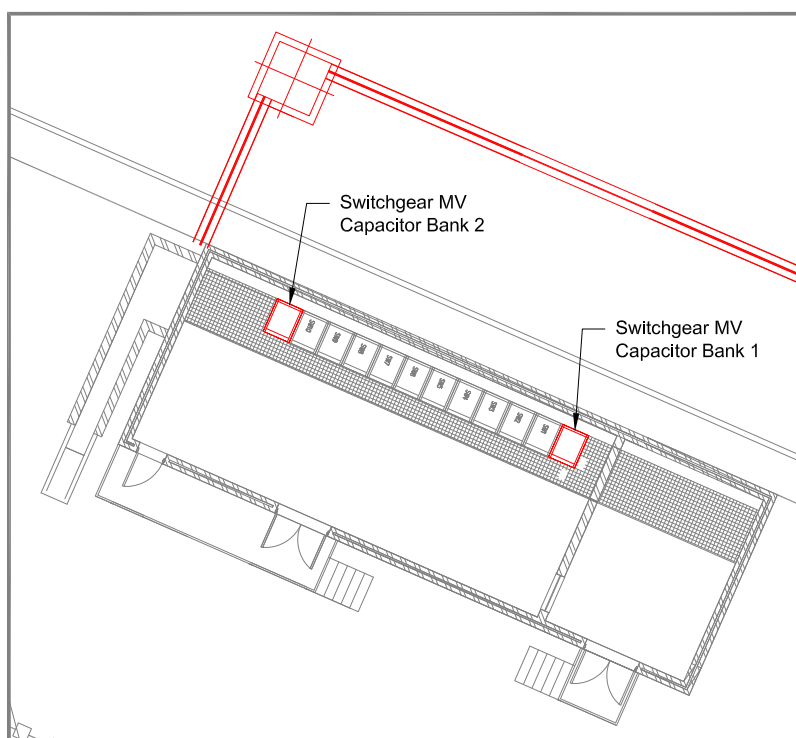
C SHADOWS DIAGRAM
Scale 1/1000



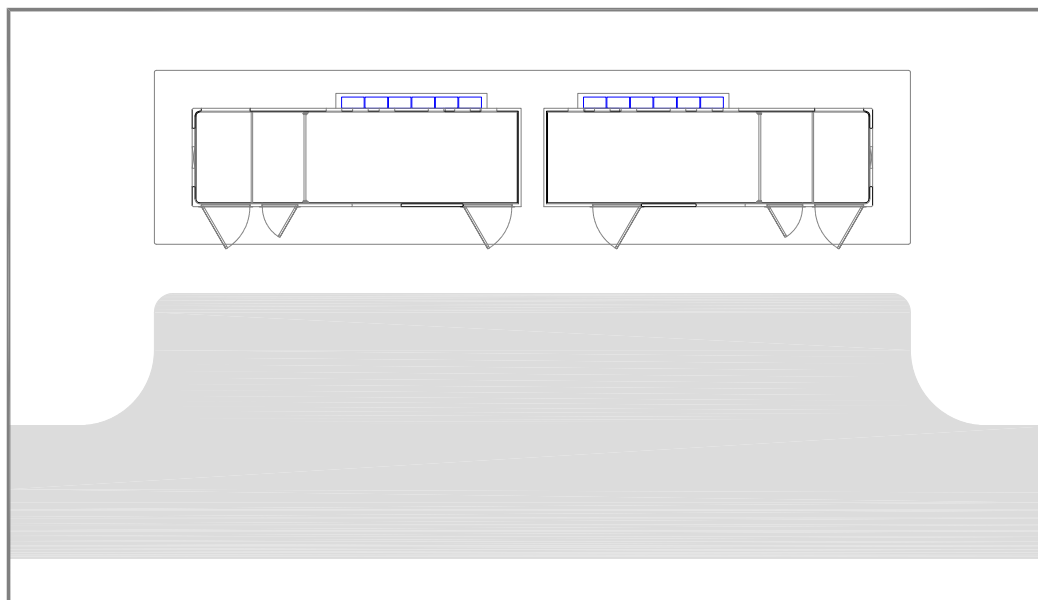
D 22/132 kV LESEDI SUBSTATION
Scale 1/1.000



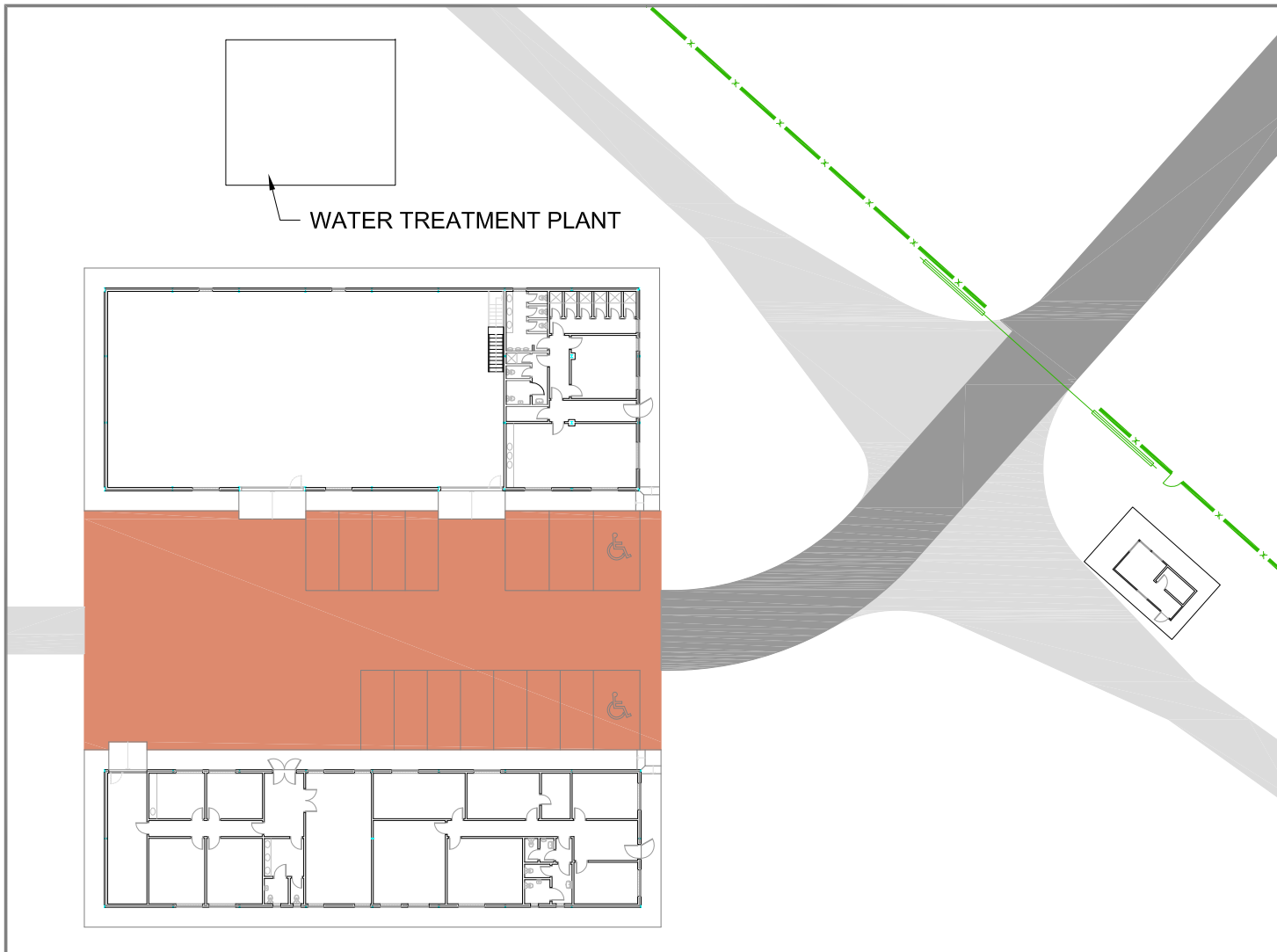
E CAPACITOR BANKS
Scale 1/400



G SWITCHGEAR ROOM
Scale 1/200



H INVERTER TRANSFORMER BUILDING
Scale 1/200



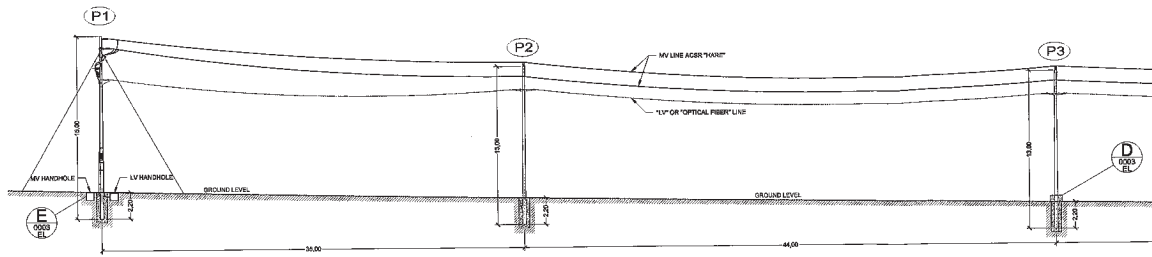
F OWNER AND O&M BUILDINGS
Scale 1/500

Projection Information

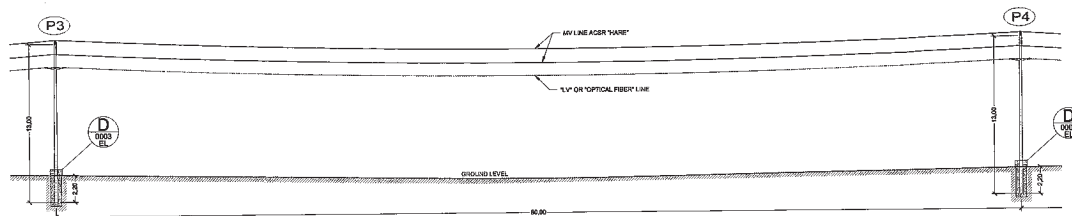
Projection:	Gauss Conform. Lo23°E
Datum:	Hartebeeshoek'94
Reference Ellipsoid:	WGS84
Geoidal Model:	SA Geoid 2010

SETTING POINTS

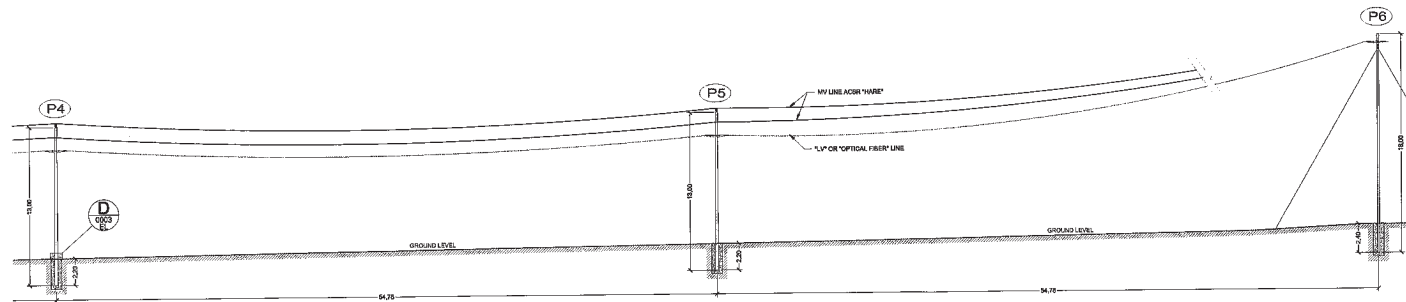
POINT	COORDINATES X	COORDINATES Y
P1	-34.260,73	3.132.947,54
P2	-34.284,72	3.132.981,64
P3	-34.309,13	3.133.012,28
P4	-34.344,29	3.133.052,44
P5	-34.380,95	3.133.089,51
P6	-34.569,69	3.133.285,09
P7	-34.678,82	3.133.366,34
P8	-34.730,83	3.133.412,80
P9	-34.817,37	3.133.490,11
P10	-34.898,18	3.133.557,87
P11	-34.923,36	3.133.575,58
P12	-34.923,36	3.133.655,14
P13	-34.897,50	3.133.729,09
P14	-34.834,76	3.133.860,21
P15	-34.815,14	3.133.878,16
P16	-34.480,29	3.133.878,16
P17	-34.442,82	3.133.891,80
P18	-34.240,40	3.133.891,80
P19	-34.202,92	3.133.878,16
P20	-34.014,68	3.133.878,16
P21	-33.629,01	3.133.720,46
P22	-34.115,72	3.132.947,54
P23	-35.341,33	3.133.086,99
P24	-35.386,68	3.133.010,21
P25	-36.160,61	3.133.010,21
P26	-36.363,10	3.132.964,74
P27	-36.556,49	3.132.889,14
P28	-36.786,11	3.132.889,14
P29	-36.786,11	3.133.578,01
P30	-36.166,37	3.133.578,01
P31	-35.557,34	3.133.394,68
P32	-35.341,33	3.133.294,02
P33	-35.341,33	3.133.199,25
P34	-35.037,57	3.133.661,03
P35	-35.078,75	3.133.679,16
P36	-35.038,79	3.133.769,96
P37	-34.997,60	3.133.751,83



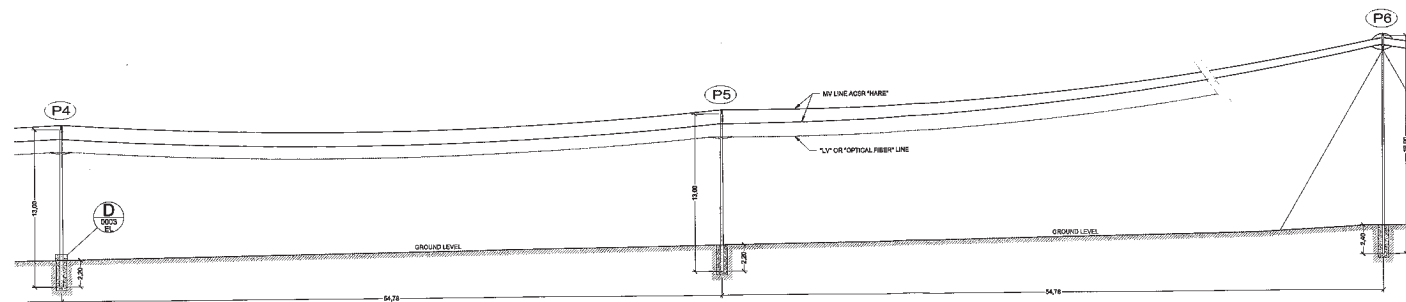
A PROFILE ON 22KV OVERHEAD LINE (SPANS P1-P2-P3)
Scale 1/200



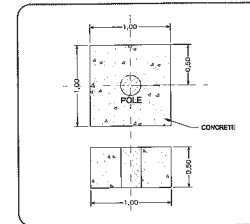
B PROFILE ON 22KV OVERHEAD LINE (SPANS P3-P4)
Scale 1/200



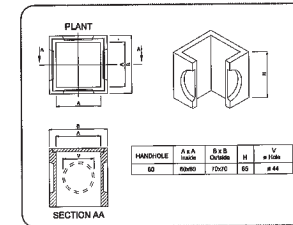
C PROFILE ON 22KV OVERHEAD LINE (SPANS P4-P5-P6)
Scale 1/200



D PROFILE ON 22KV OVERHEAD LINE (SPANS P4-P5-P6,H.G.E)
Scale 1/200



D FOUNDATION POST DETAIL
Scale 1/30



E HANDHOLE DETAIL

NOTES

1. NONE

KEYED NOTES

Concrete foundation will be used in poles in wet area.

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ISSUED FOR	INFORMATION ONLY	APPROVAL	QUOTATION PURCHASING	CONSTRUCTION	A9 BUILT
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REV.	DESCRIPTION	DATE	BY
A3	POLES MOVED AND TENSORS ADDED	SEP-2015	IN
A2	FOUNDATION POST AND HANDHOLE DETAIL ADDED	JUL-2013	IN
A1	PRELIMINARY DESIGN	JUL-2013	IN

EPC CONTRACTOR:



ENGINEERING:

CLIENT:



PROJECT:

64 MWac Lesedi Solar Park
South Africa

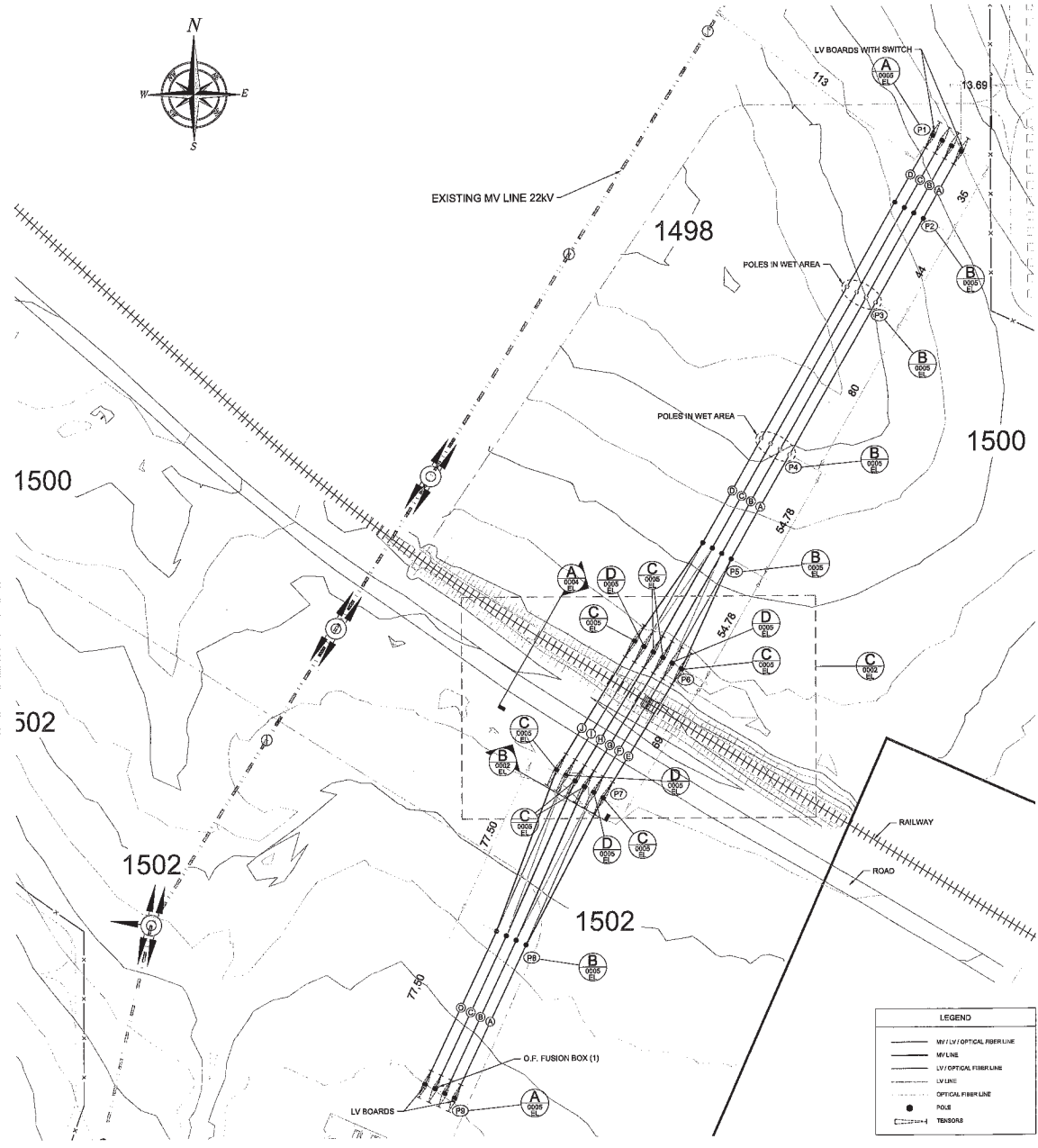
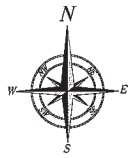
SHEET TITLE

OVERHEAD LINES
PROFILES (1)

REFERENCE: I12-031-ING PAPER SIZE: A1: 840 x 594 mm.

DRAWING N°

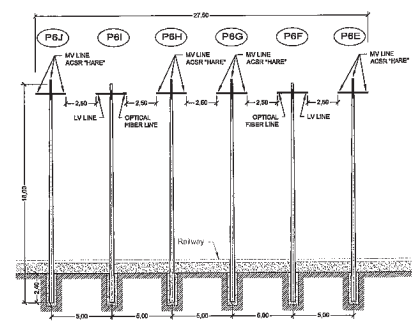
HP1-CGC-EL-DRW-0003-A3



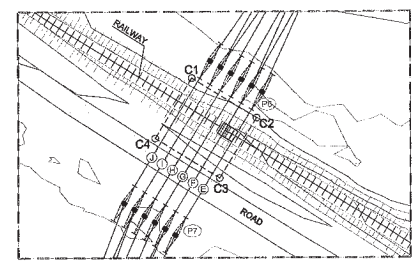
A PLAN VIEW ON 22KV OVERHEAD LINE
Scale 1/1,000

LEGEND

- MV/LV/OPTICAL FIBER LINE
- MV/LINE
- LV/OPTICAL FIBER LINE
- LV LINE
- OPTICAL FIBER LINE
- POLES
- TENSORS



B AFFECTED RAILWAY LENGTH



C SETTING POINTS RAILWAY CROSSING
Scale 1/1,000

SETTING POINTS RAILWAY CROSSING

POINTS	Point X	Point Y
C1	-36.162,99	3.133.417,37
C2	-36.166,09	3.133.417,38
C3	-36.163,68	3.133.418,40
C4	-35.154,05	3.133.418,86

SETTING POINTS (POLES)

POLE_COORD	Point X	Point Y
P-1A	-35.327,84	3.133.221,61
P-1B	-35.322,30	3.133.219,93
P-1C	-35.316,86	3.133.218,26
P-1D	-35.314,63	3.133.217,38
P-2A	-35.305,19	3.133.217,58
P-2B	-35.305,61	3.133.248,12
P-2C	-35.307,47	3.133.248,31
P-2D	-35.297,19	3.133.244,73
P-3A	-35.296,18	3.133.230,79
P-3B	-35.283,84	3.133.217,47
P-3C	-35.276,80	3.133.214,82
P-3D	-35.275,16	3.133.218,31
P-4A	-35.246,48	3.133.203,24
P-4B	-35.244,12	3.133.209,87
P-4C	-35.239,78	3.133.204,37
P-4D	-35.235,44	3.133.201,80
P-5A	-35.221,29	3.133.192,81
P-5B	-35.216,91	3.133.194,20
P-5C	-35.213,27	3.133.191,21
P-5D	-35.206,23	3.133.189,67
P-6A	-35.198,30	3.133.187,88
P-6F	-35.194,04	3.133.184,41
P-6G	-35.189,82	3.133.181,86
P-6H	-35.185,47	3.133.180,27
P-6I	-35.181,17	3.133.182,73
P-6J	-35.176,86	3.133.184,13
P-7A	-35.162,28	3.133.176,88
P-7F	-35.157,99	3.133.173,24
P-7G	-35.153,73	3.133.171,81
P-7H	-35.149,46	3.133.169,87
P-7I	-35.144,20	3.133.168,13
P-7J	-35.140,94	3.133.162,73
P-8A	-35.128,78	3.133.160,23
P-8B	-35.122,23	3.133.160,88
P-8C	-35.117,73	3.133.178,75
P-8D	-35.113,24	3.133.179,62
P-8E	-35.108,80	3.133.162,73
P-8F	-35.104,33	3.133.160,88
P-8C	-35.094,81	3.133.164,78
P-8D	-35.089,29	3.133.164,81

OVERHEAD LINES

	MV/LINE	LV LINE	OPTICAL FIBER LINE
A	ACB1 TAPER 3 PHASE (L, N, E)	L1 20x450x4,0x10m	
B	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)
C	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)
D	ACB1 TAPER 3 PHASE (L, N, E)	L6 20x450x4,0x10m	
E	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)
F	ACB1 TAPER 3 PHASE (L, N, E)	L2 20x450x4,0x10m	
G	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)
H	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)
I	ACB1 TAPER 3 PHASE (L, N, E)	L4 20x450x4,0x10m	
J	ACB1 TAPER 3 PHASE (L, N, E)		LOW COUNT ADRIAL CABLE (FIBRE COUNT)

NOTES
1. NONE

REFERENCES
1. NONE

Projection Information

Projection	Gauss Conformal, L2021'S
Datum	WGS84
Reference Ellipsoid	WGS84
Geoidal Model	SA Geoid 2011

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 - CONSTRUCTION
 - AS BUILT

D1

REV	DESCRIPTION	DATE	BY

EPC CONTRACTOR:

ENGINEERING:

CLIENT:

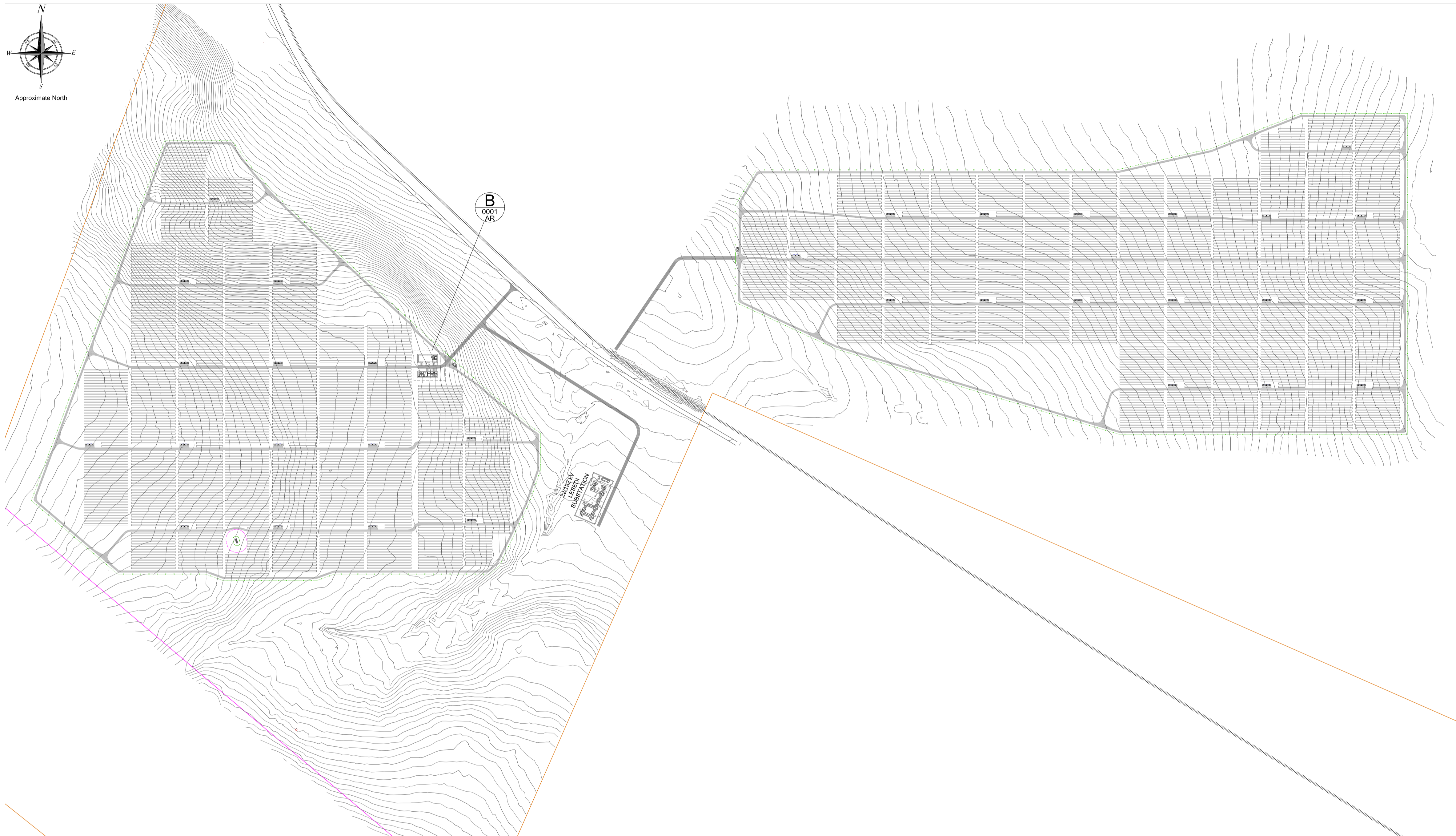
PROJECT:
64 MWac Lesedi Solar Park
South Africa

SHEET TITLE:
PLAN VIEW OF OVERHEAD LINES

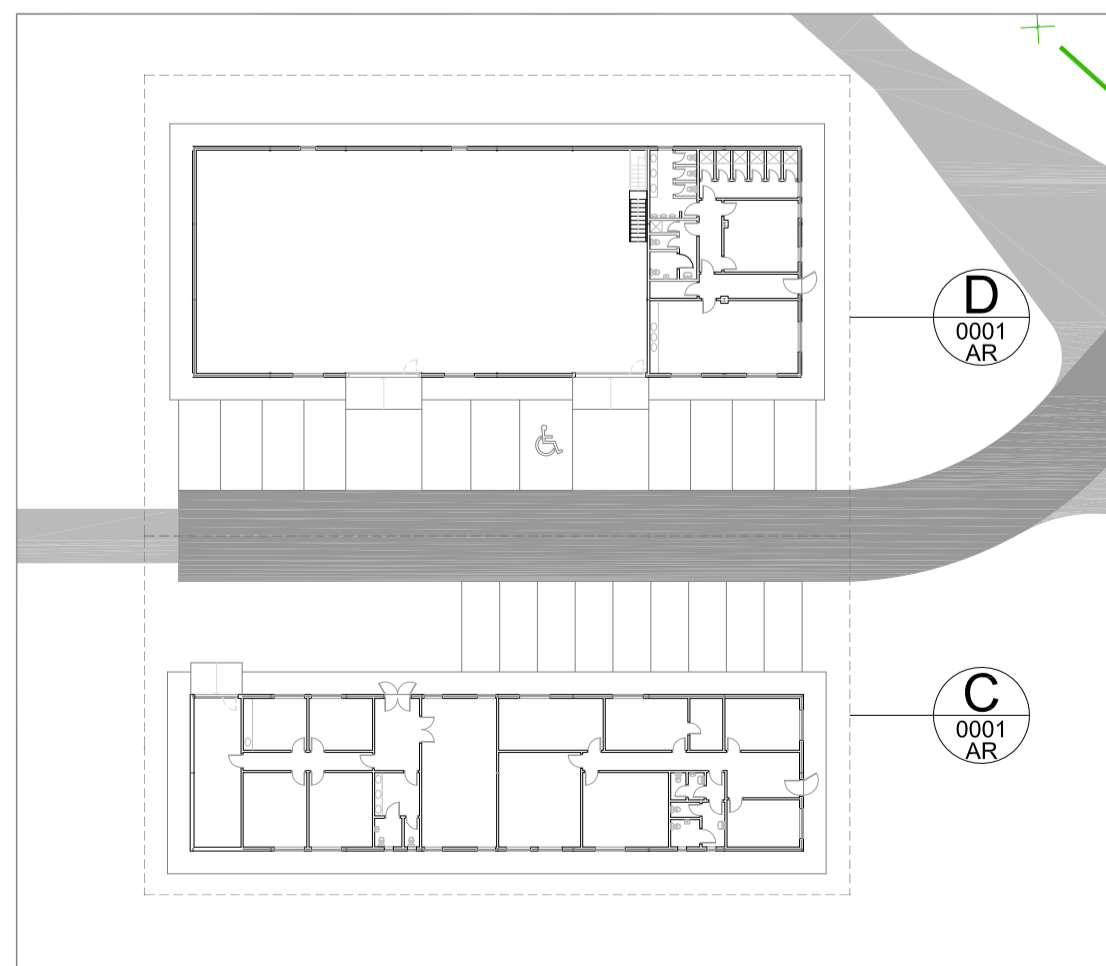
REFERENCE: 112-031-ING

PAPER SIZE: A1: 840 x 594 mm.

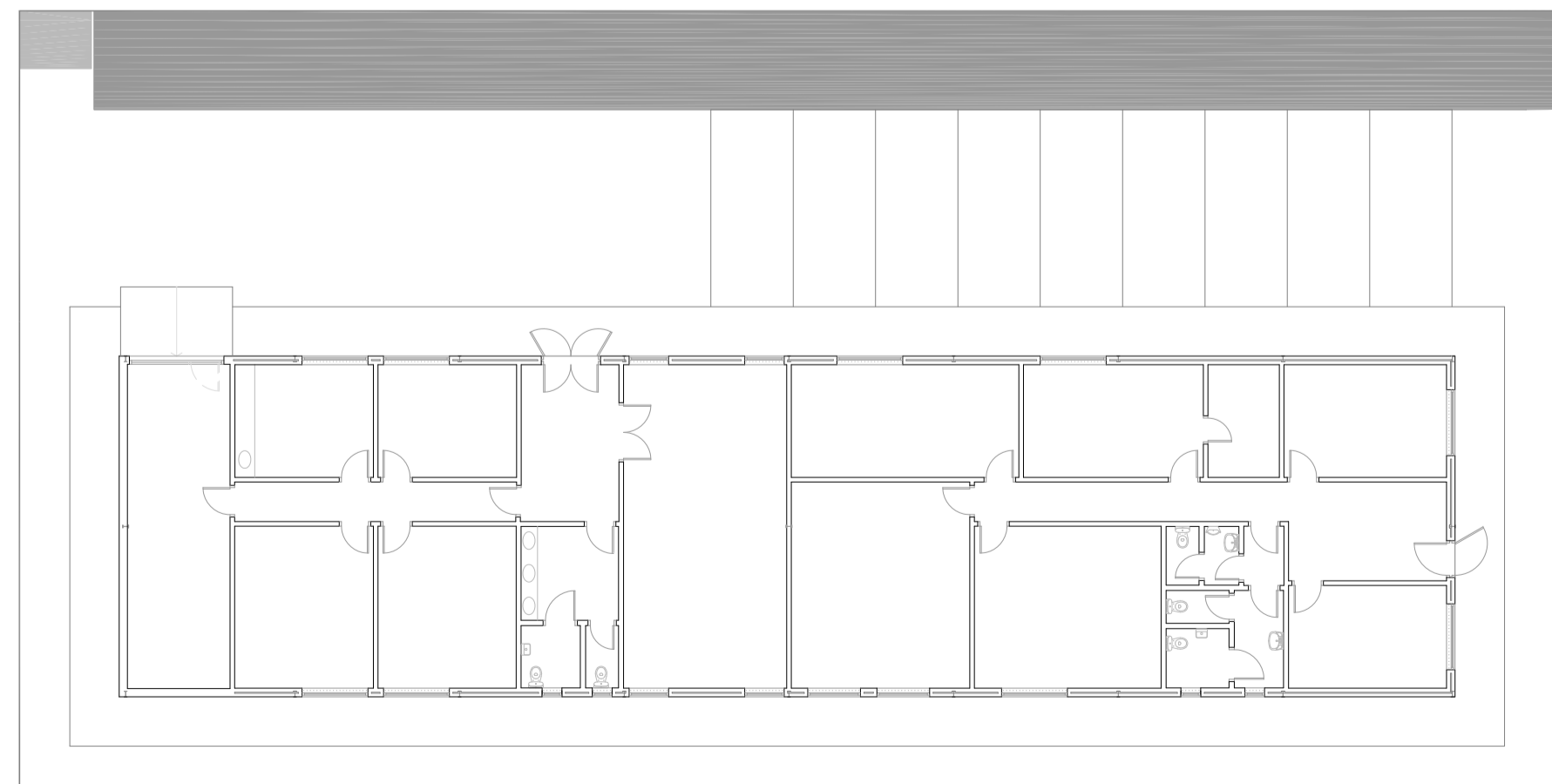
DRAWING N°: HP1-CGG-EL-DRW-0002-D1



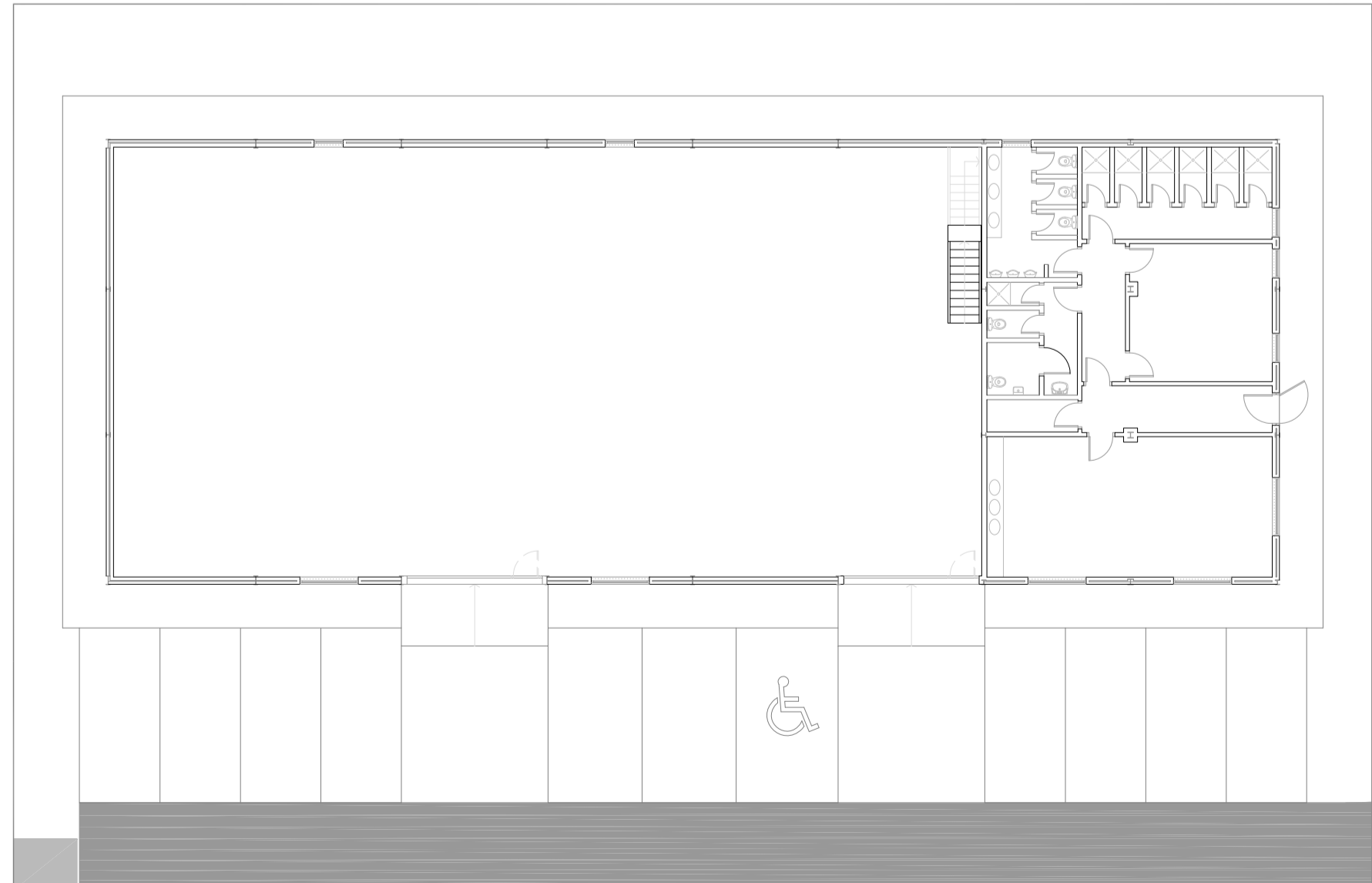
A GENERAL LAYOUT
Scale 1/5,000



B BUILDINGS
Scale 1/500



C O&M-OWNER BUILDING
Scale 1/200



D WAREHOUSE BUILDING
Scale 1/200

NOTES:
1. NONE

KEYED NOTES:
1. NONE

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REV.	DESCRIPTION	DATE	BY
D1	FIRST EMISSION	MAR-2014	IN

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
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johannesburg@ingenia-se.com
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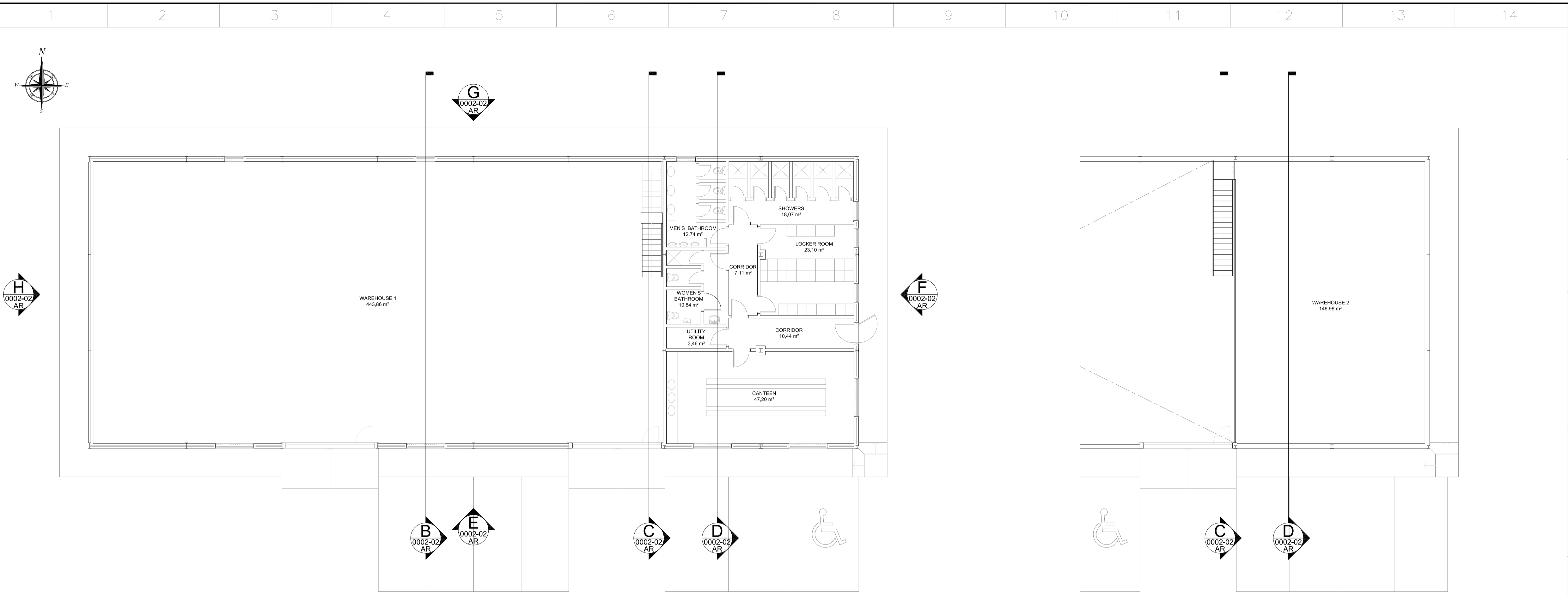
CLIENT:

PROJECT:
**64 MWac Lesedi Solar Park
South Africa**

SHEET TITLE
BUILDINGS LOCATION

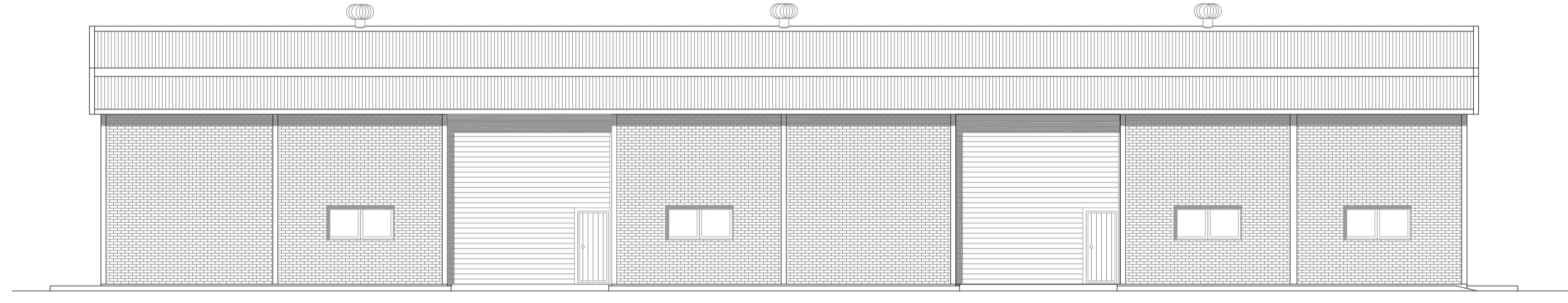
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DRAWING N° HP1-CGC-AR-DRW-0001-D1

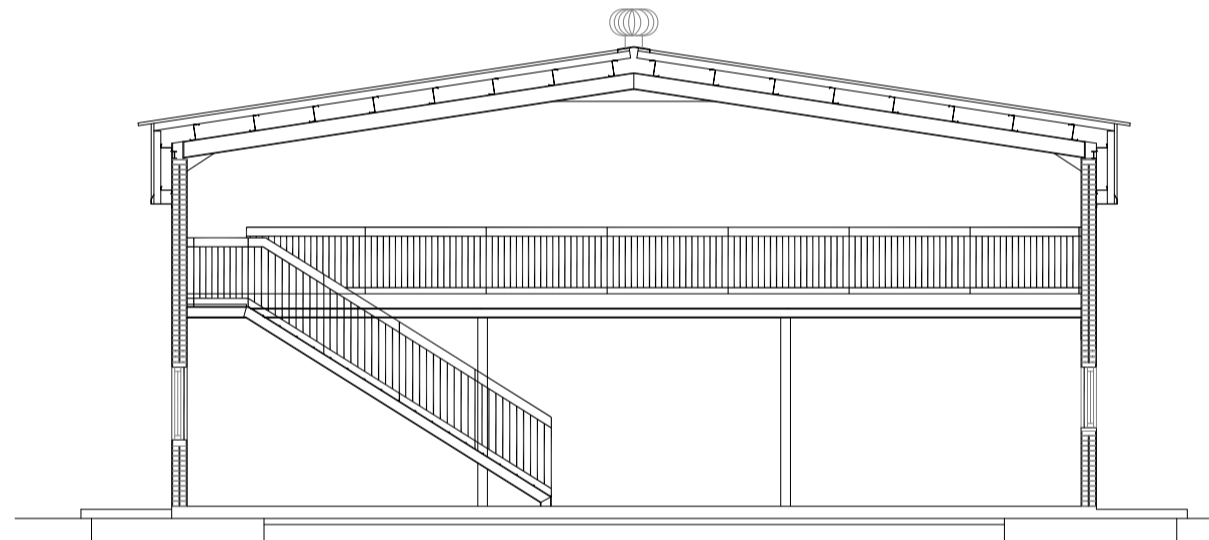


A FLOOR PLAN
Scale 1/125

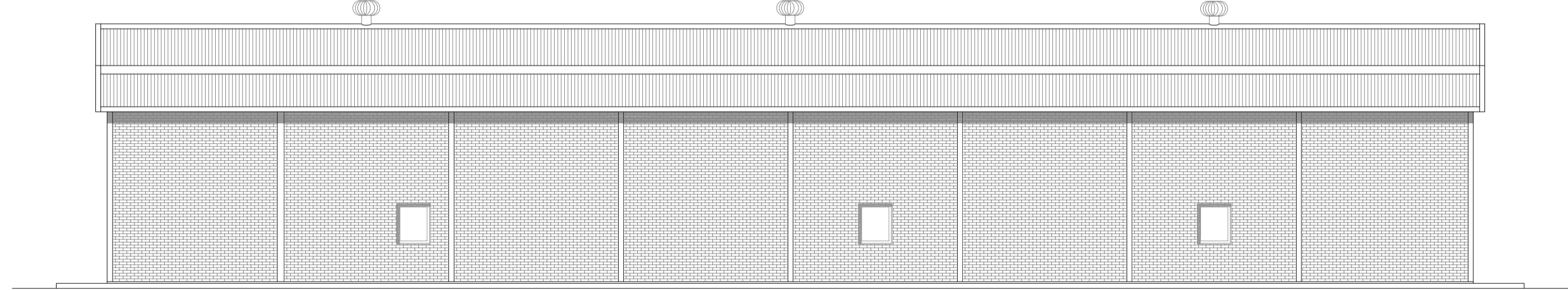
A SECOND FLOOR WAREHOUSE
Scale 1/125



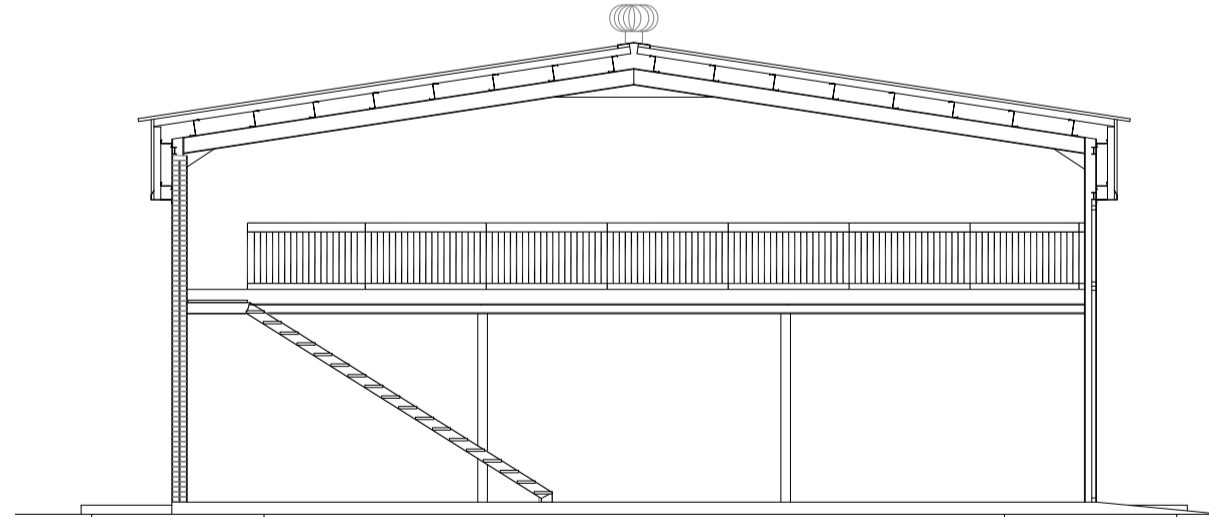
E SOUTH ELEVATION
Scale 1/125



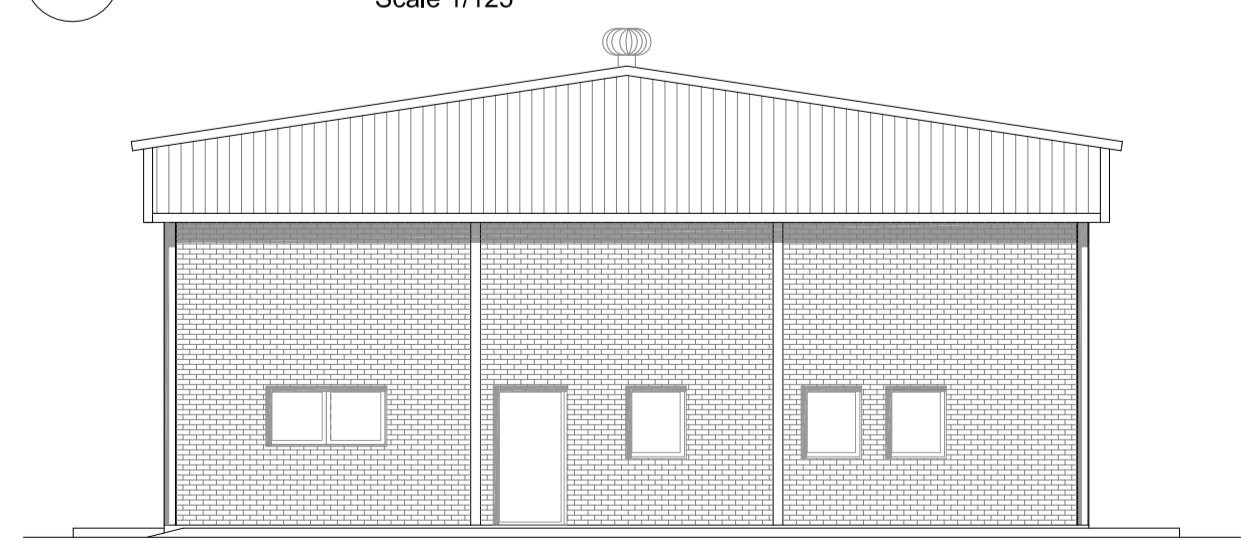
B SECTION
Scale 1/100



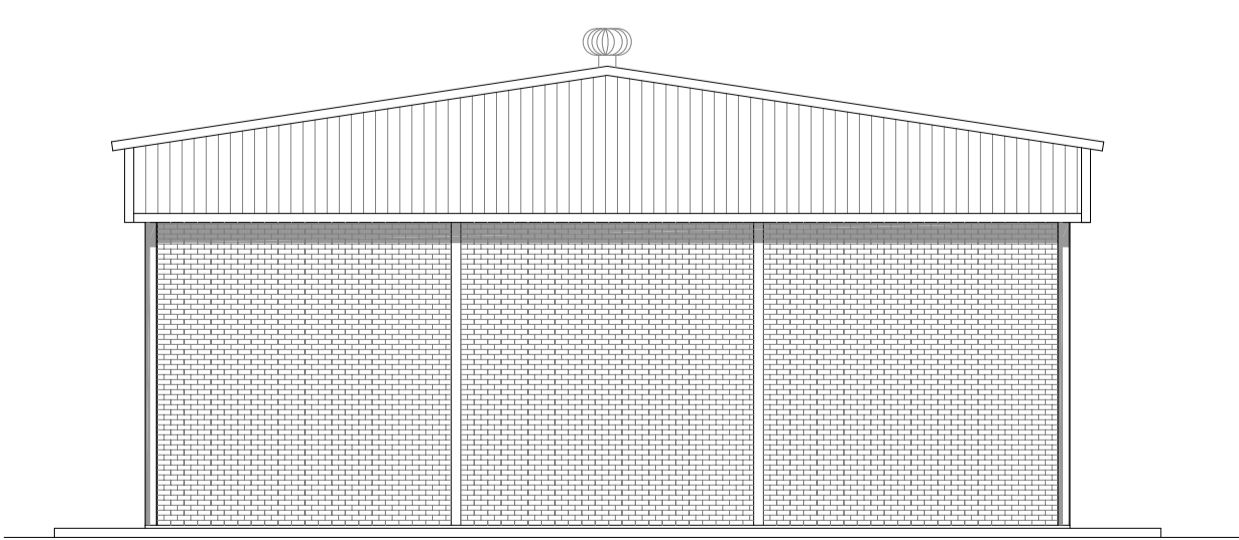
G NORTH ELEVATION
Scale 1/125



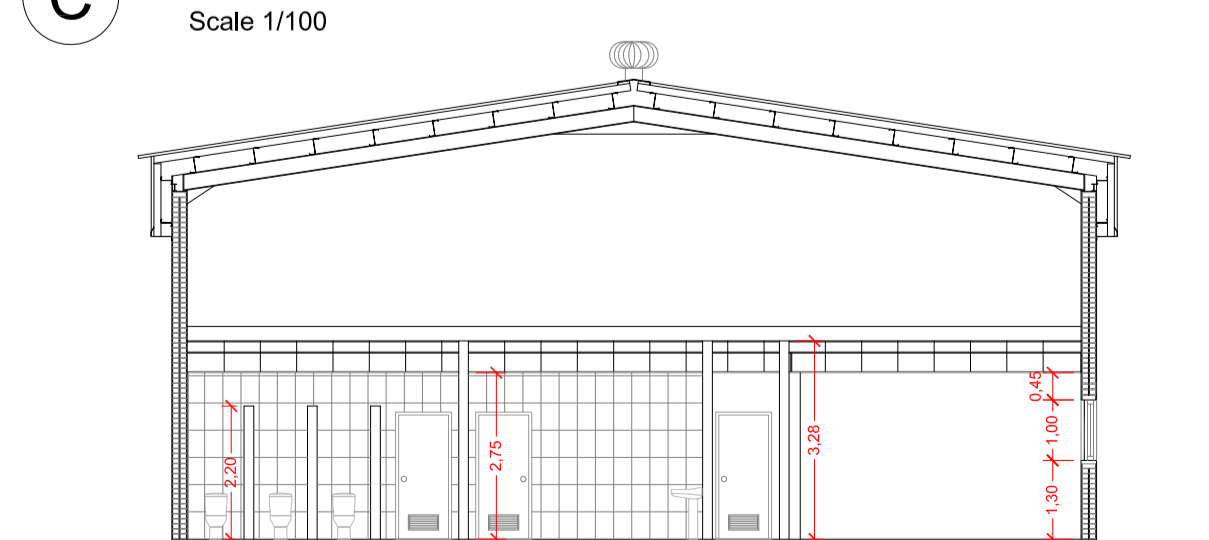
C SECTION
Scale 1/100



F WEST ELEVATION
Scale 1/125



G EAST ELEVATION
Scale 1/125



D SECTION
Scale 1/100

NOTES:
1. NONE

KEYED NOTES:
1. NONE

SURFACES (m ²)		
BUILDING	USABLE SPACE	TOTAL FLOOR AREA
O&M	184.87	209.18
OWNER	176.30	208.72
TOTAL	361.17	417.90

SURFACES (m ²)		
BUILDING	USABLE SPACE	TOTAL FLOOR AREA
WAREHOUSE	725.80	771.26
TOTAL	1,086.97	1,189.16

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REV.	DESCRIPTION	DATE	BY
D2	OWNER BUILDING AREA	MAY-2014	IN
D1	FIRST EMISSION	MAR-2014	IN

EPC CONTRACTOR:

ENGINEERING:

INGENIA SOLAR ENERGY
Corner House Westsets Road and
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Fax: (+27) 11 234 4460
johannesburg@ingenia-se.com
www.ingenia-se.com

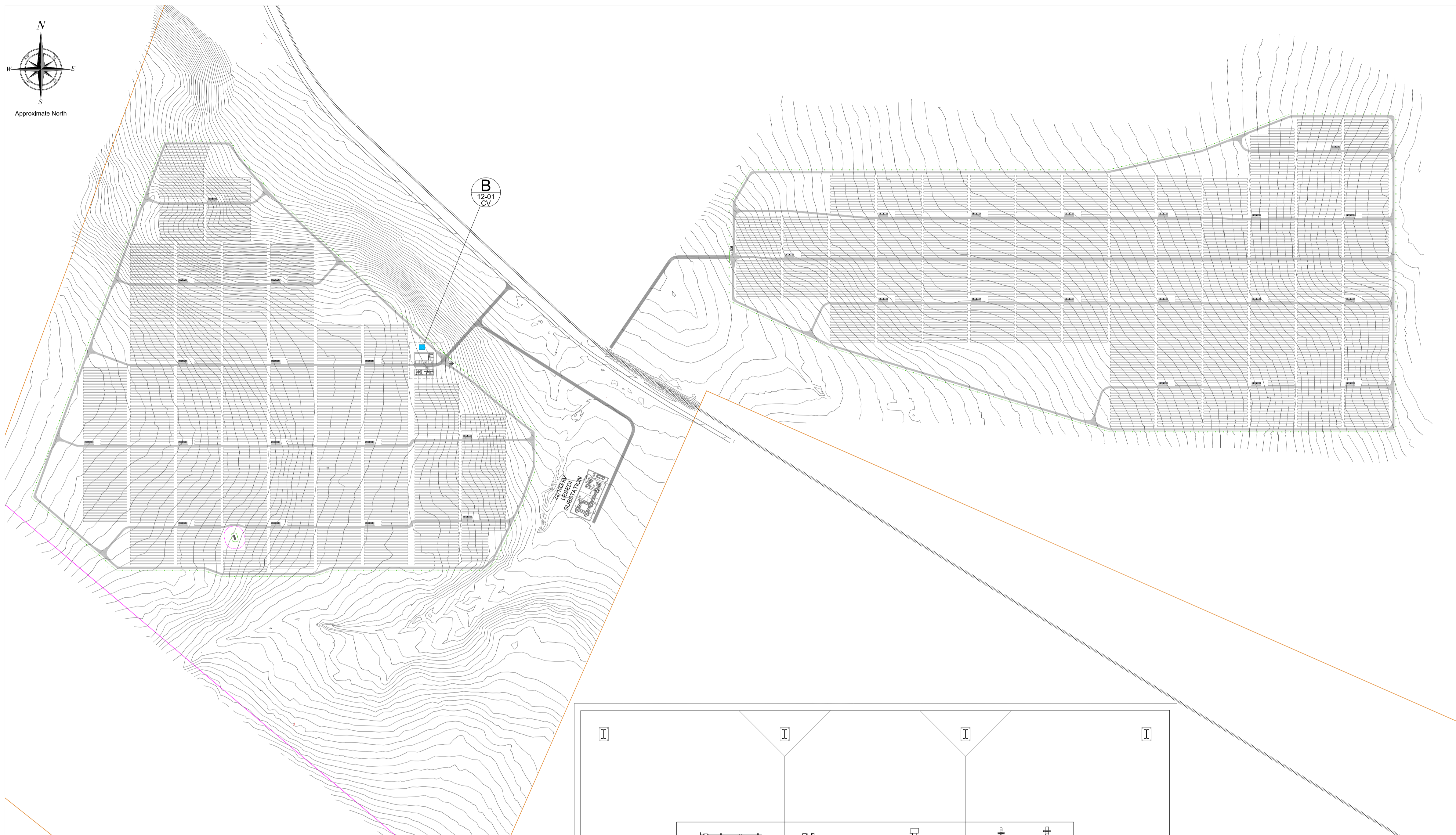
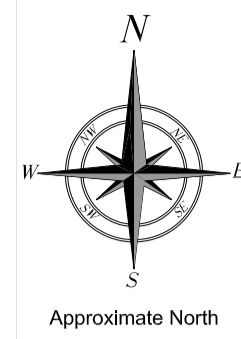
CLIENT:

PROJECT:
**64 MWac Lesedi Solar Park
South Africa**

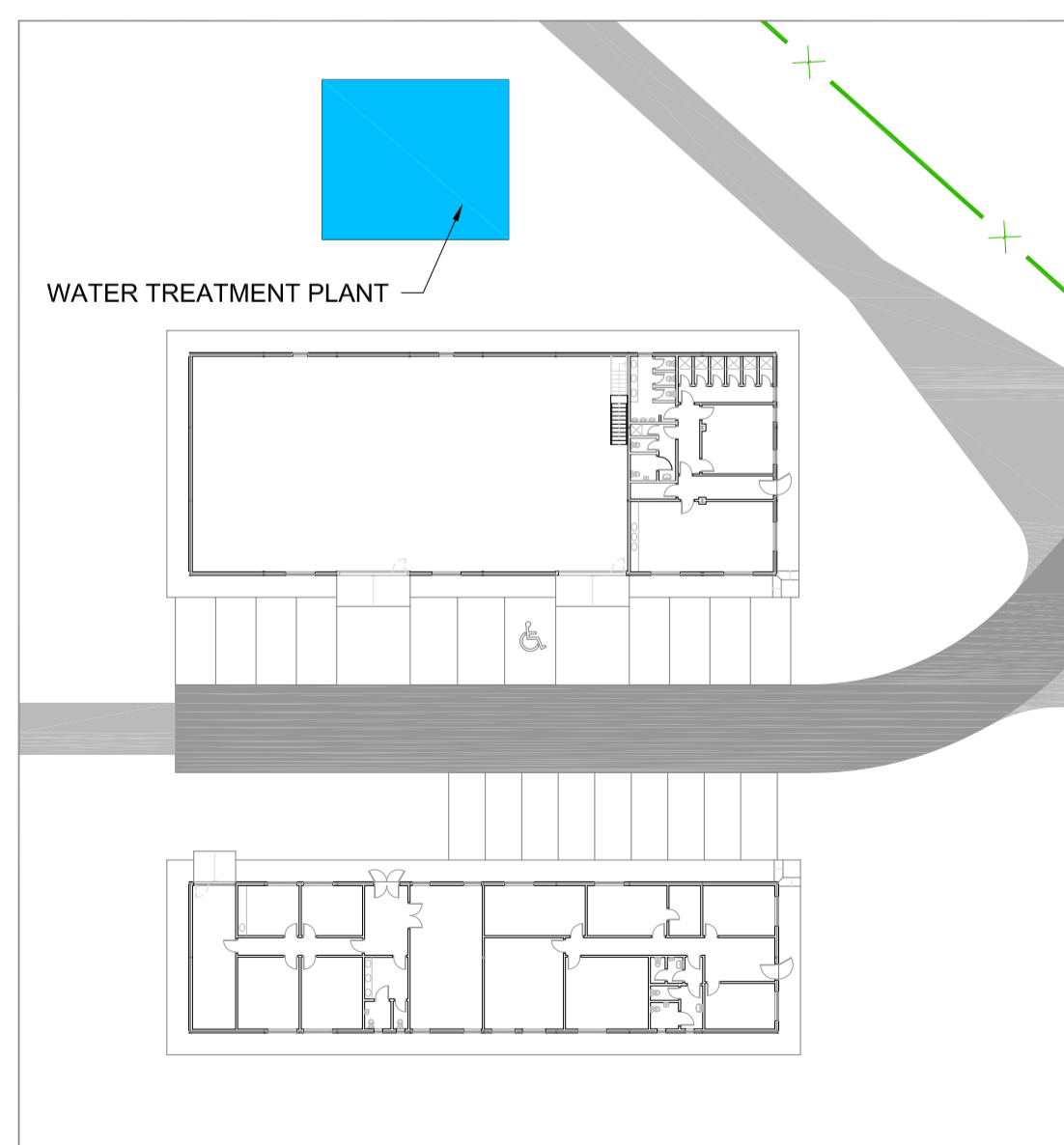
SHEET TITLE
**WAREHOUSE BUILDING, FLOOR PLAN,
ELEVATIONS AND SECTIONS**

REFERENCE: I12-031-ING	PAPER SIZE: A1: 840 x 594 mm.	
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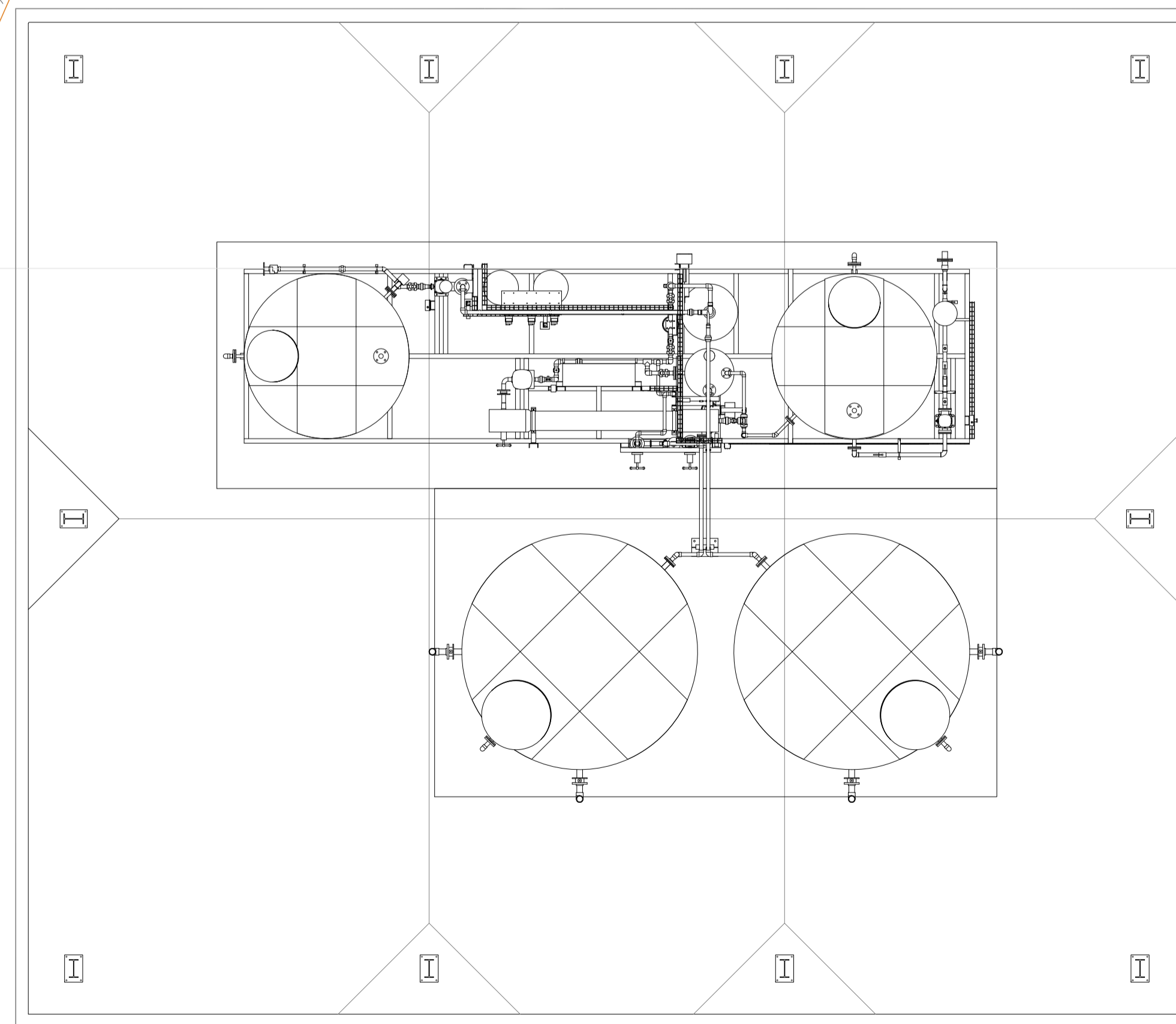
DRAWING N°
HP1-CGC-AR-DRW-0002-02-D2



A GENERAL LAYOUT
Scale 1/5,000



B WATER TREATMENT PLANT LOCATION
Scale 1/500



C WATER TREATMENT PLANT
Scale 1/50

NOTES:

1. NONE

KEYED NOTES:

1. NONE

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REV.	DESCRIPTION	DATE	BY
D1	FIRST EMISSION	MAR-2014	IN

EPC CONTRACTOR:



ENGINEERING: **INGENIA SOLAR ENERGY**
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Rivonia Sandton
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johannesburg@ingenia-se.com
www.ingenia-se.com

CLIENT:



PROJECT:

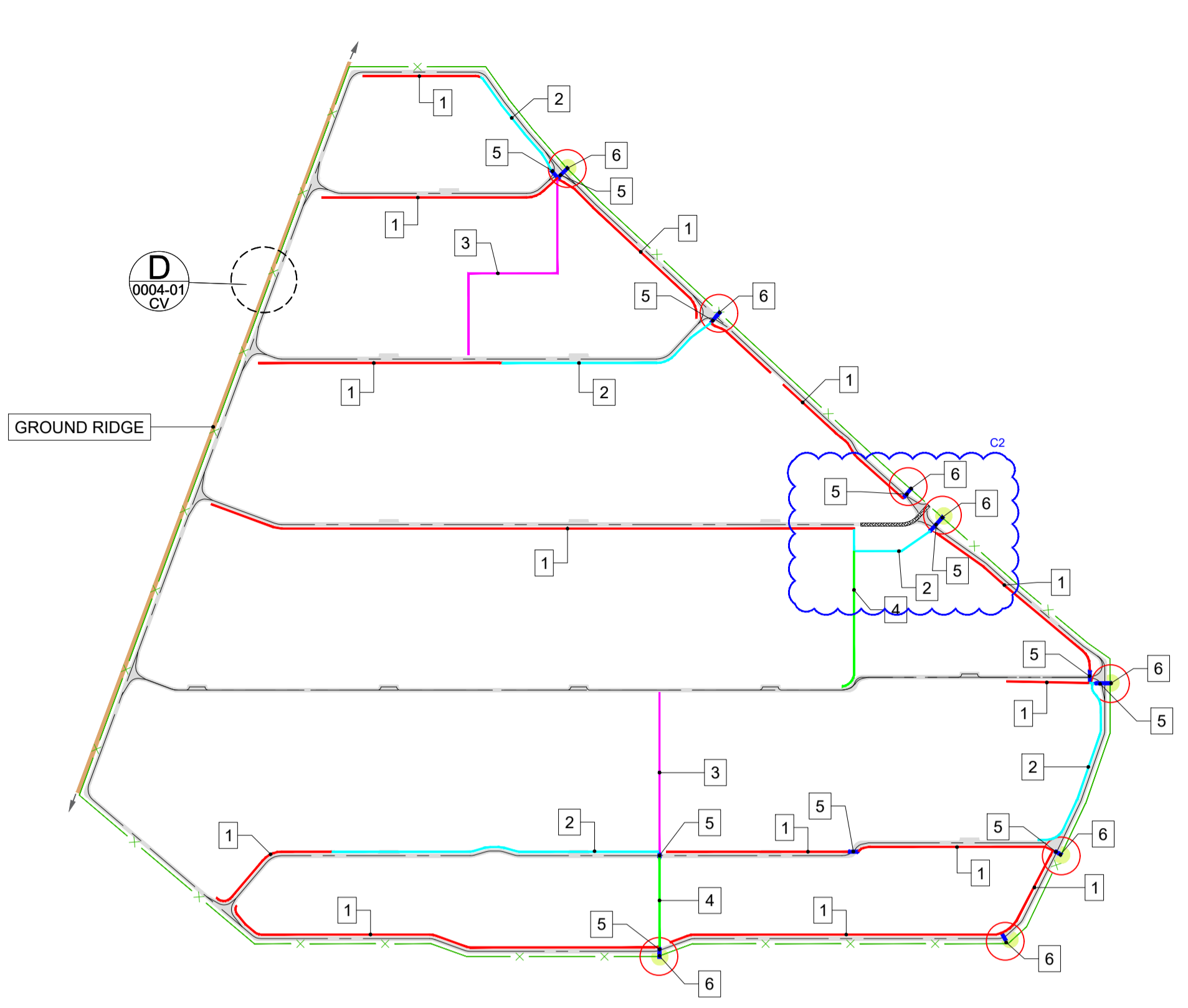
**64 MWac Lesedi Solar Park
South Africa**

SHEET TITLE

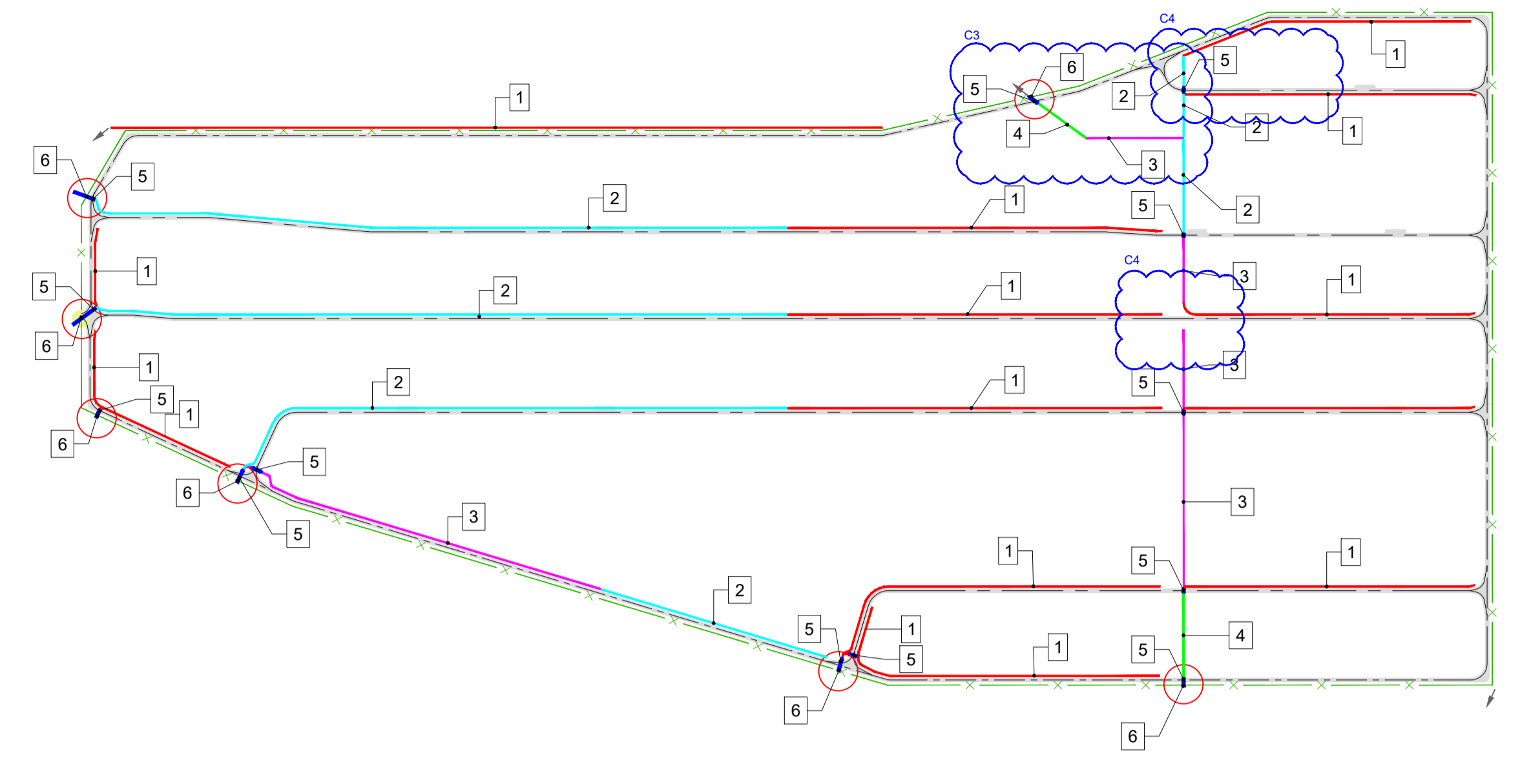
WATER TREATMENT PLANT LOCATION

REFERENCE: 112-031-ING PAPER SIZE: A1: 840 x 594 mm.

DRAWING N° HP1-CGC-CV-DRW-0012-01-D1

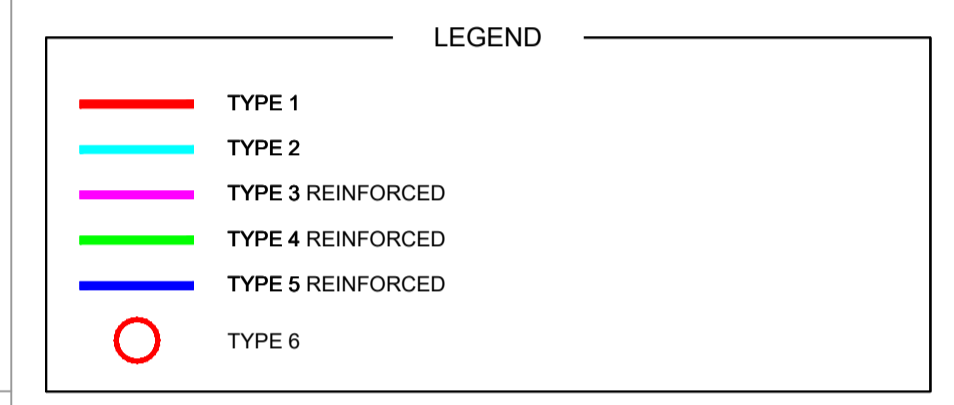


A GENERAL LAYOUT. DRAINAGES (WEST SITE)
Escala 1/5.000



B GENERAL LAYOUT. DRAINAGES (EAST SITE)
Escala 1/5.000

NOTE:
● PENDING OF THE TOPOGRAPHY TO THE DEFINE FINAL SOLUTION
DITCHES MINIMUM SLOPE 0.5%



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ISSUED FOR

- INFORMATION ONLY
- APPROVAL
- QUOTATION PURCHASING
- CONSTRUCTION
- AS BUILT

REV.	DESCRIPTION	DATE	DRWN	CHKD
C4	FOURTH DESIGN	FEB-2018	DLL	JA
C3	THIRD DESIGN	JAN-2018	FPM	JA
C2	SECONDARY DESIGN	JAN-2018	FPM	JA
C1	PRELIMINARY DESIGN	JAN-2018	FPM	JA

EPC CONTRACTOR:

ENGINEERING:

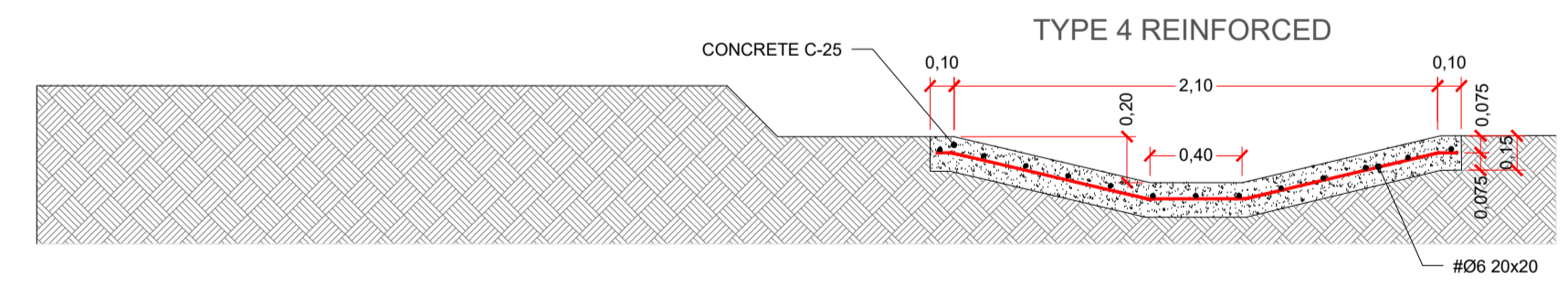
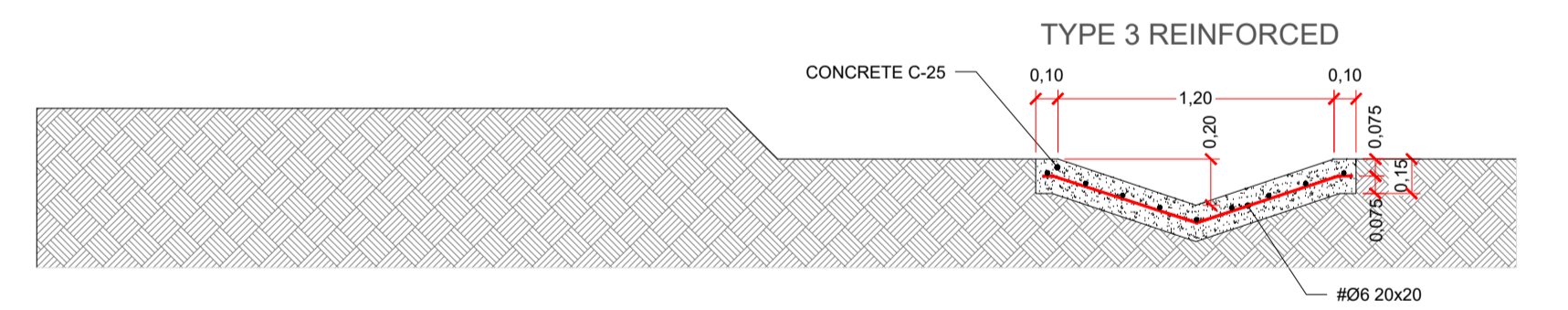
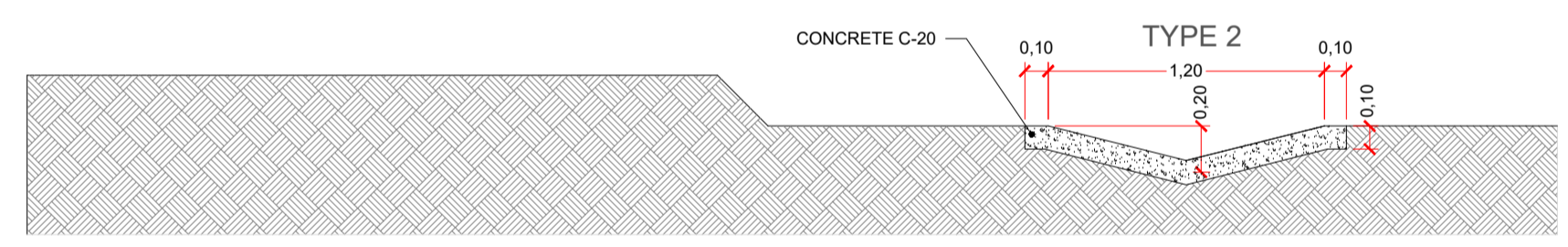
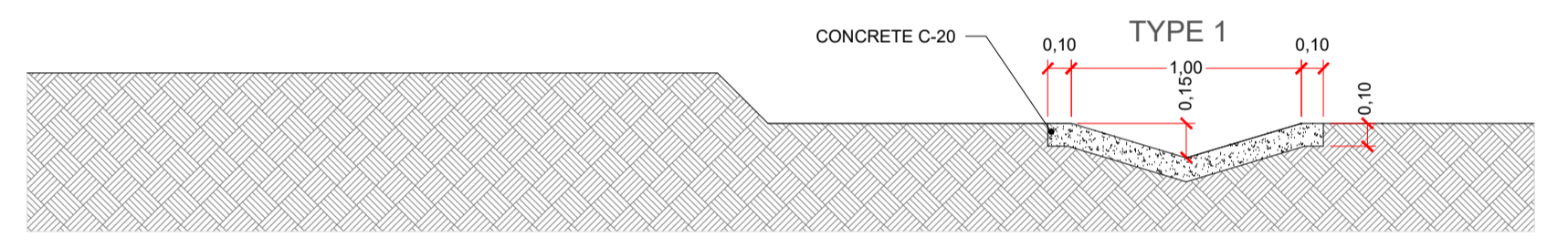
CLIENT:

PROJECT:
64 MWac Lesedi Solar Park South Africa

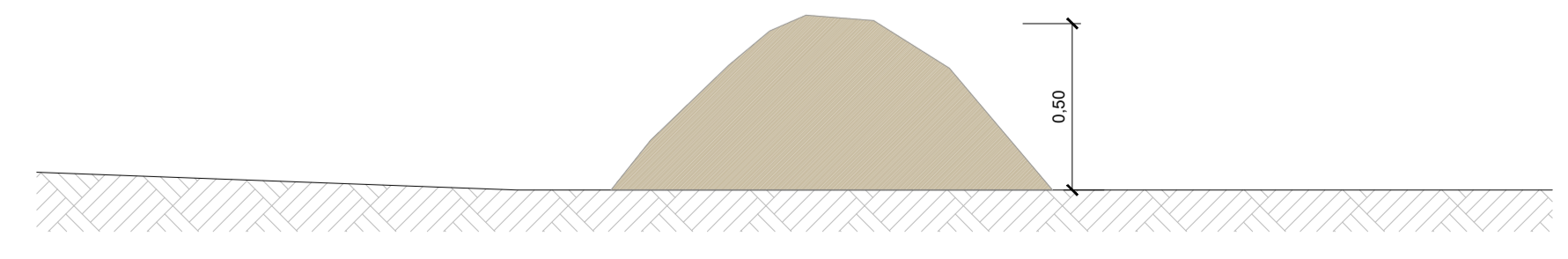
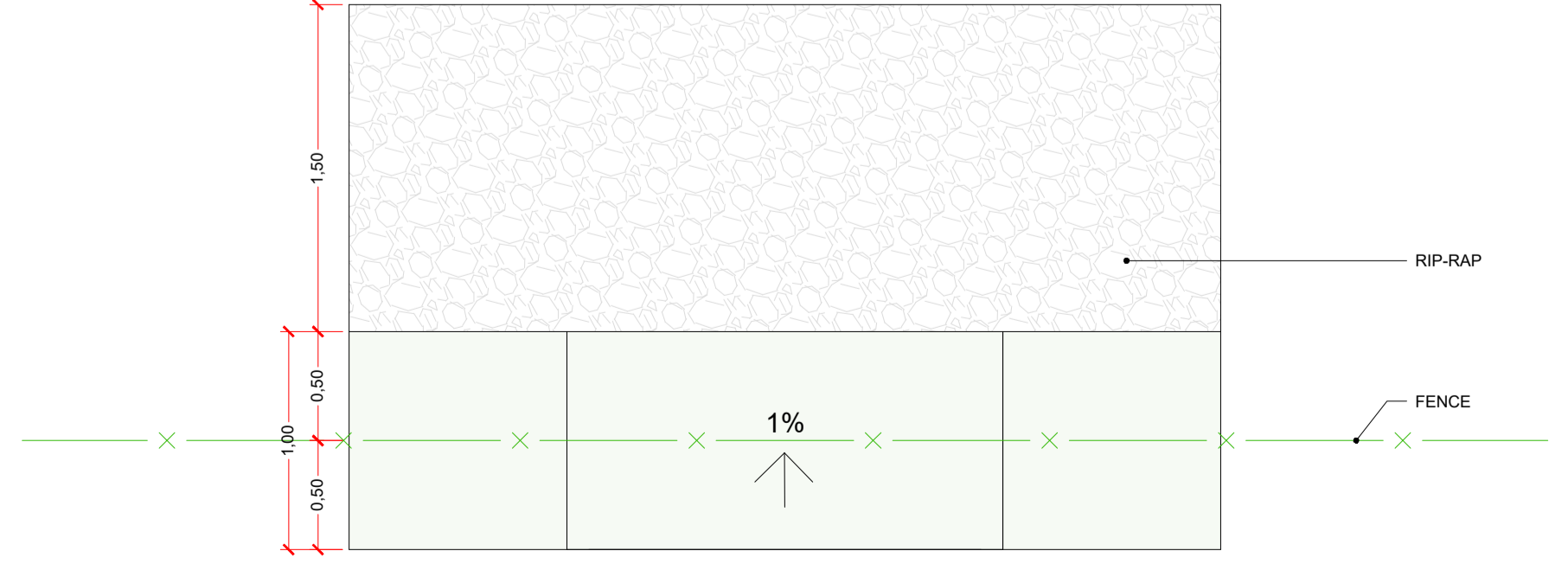
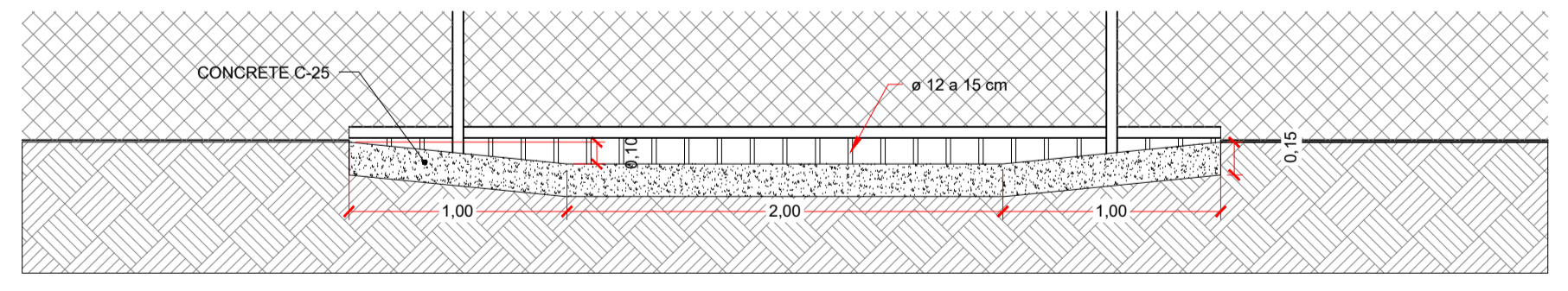
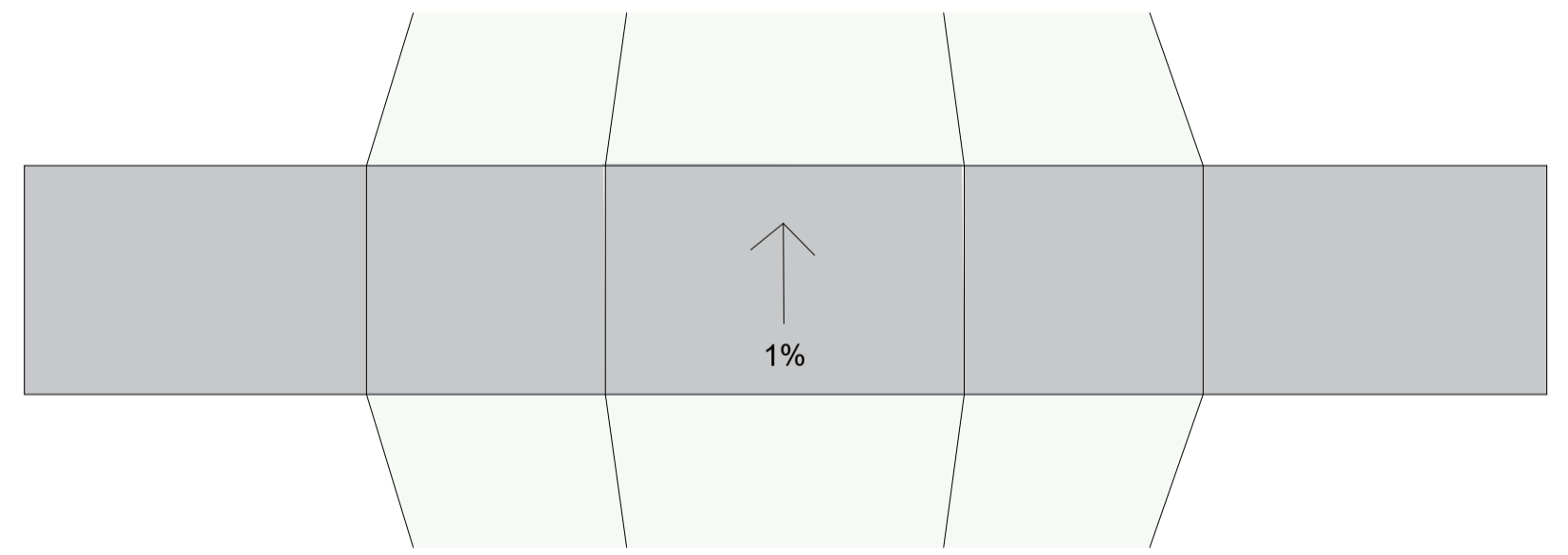
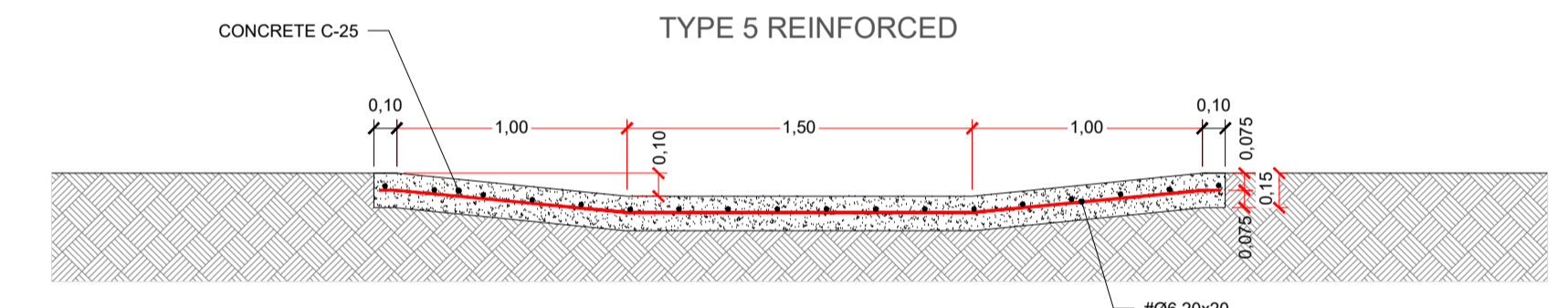
SHEET TITLE
RAINWATER DRAINAGE SYSTEM

REFERENCE: 117-0022-ING PAPER SIZE: A1: 840 x 594 mm.

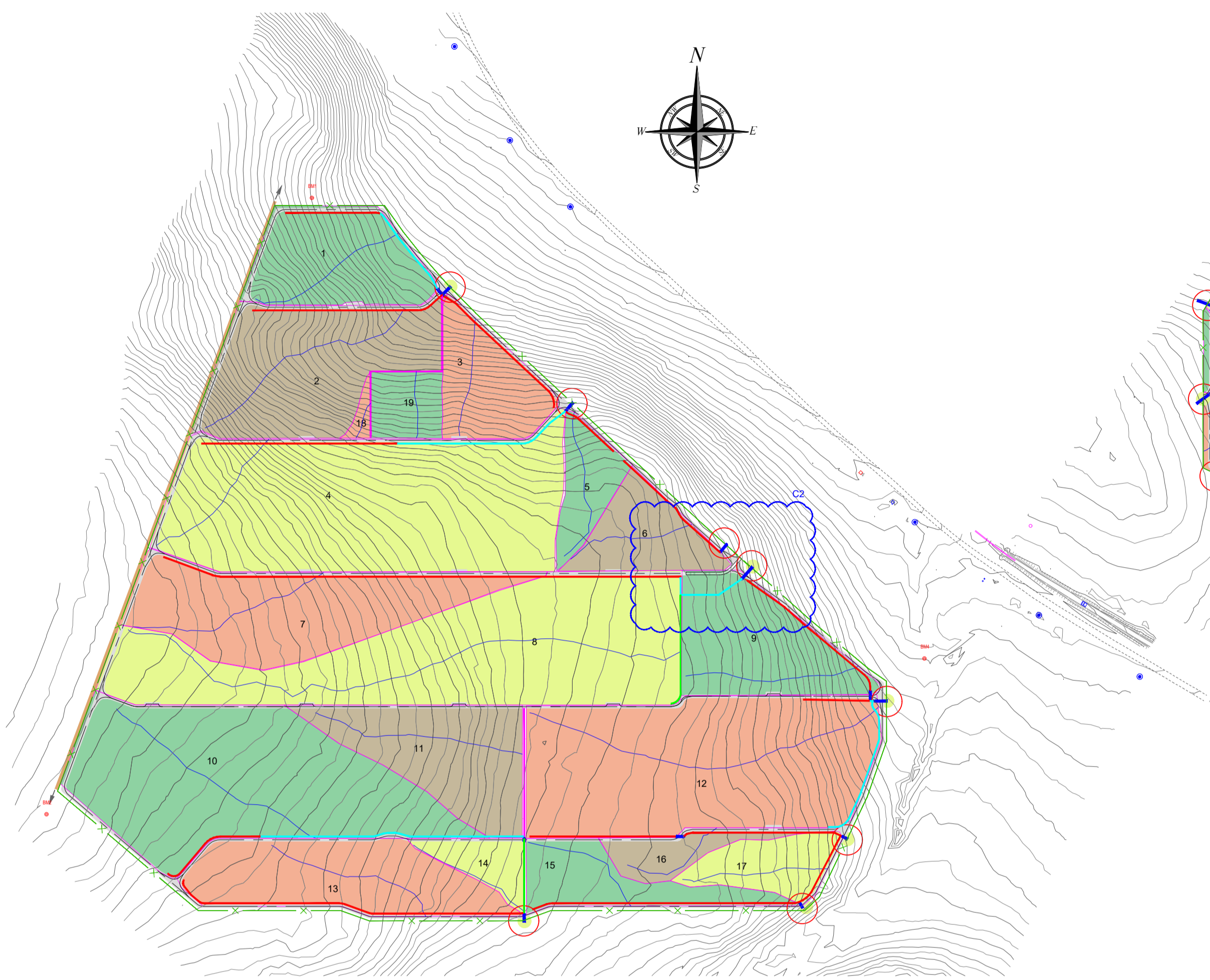
DRAWING N° HP-CGC-CV-DRW-0004-01-C4



C DRAINAGE TYPES DETAIL
Escala 1/30



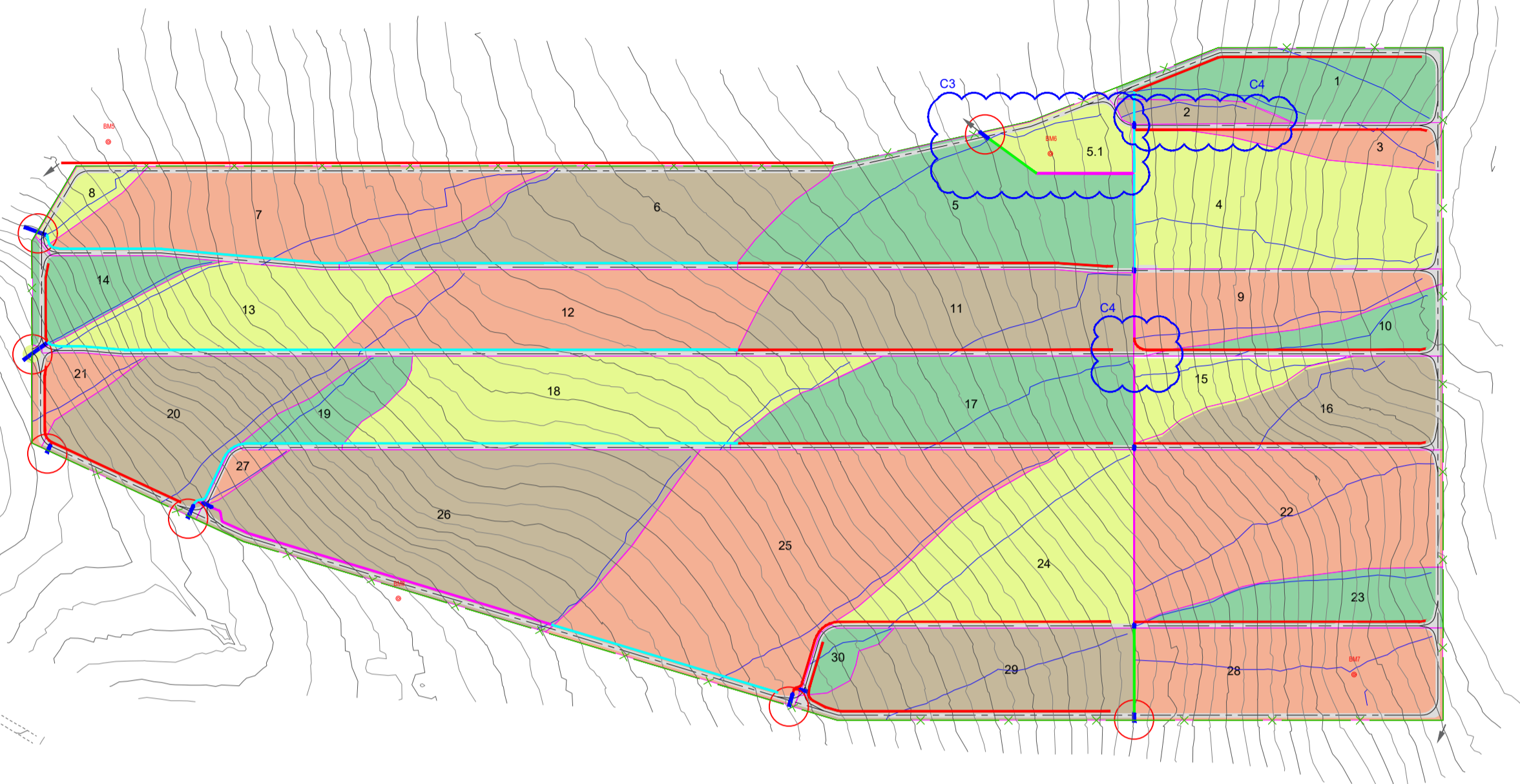
D GROUND RIDGE DETAIL
Escala 1/20



A GENERAL LAYOUT. DRAINAGES (WEST SITE)
Escala 1/5.000

1	2.66 ha.
2	4.35 ha.
3	1.85 ha.
4	9.08 ha.
5	1.06 ha.
6	1.57 ha.
7	4.52 ha.
8	8.69 ha.
9	2.92 ha.
10	7.53 ha.
11	3.09 ha.
12	7.92 ha.
13	3.45 ha.
14	0.75 ha.
15	1.65 ha.
16	0.93 ha.
17	1.26 ha.
18	0.15 ha.
19	0.83 ha.

C SURFACES BASINS. (WEST SITE)



B GENERAL LAYOUT. DRAINAGES (EAST SITE)
Escala 1/5.000

1	1.95 ha.	16	2.09 ha.
2	0.36 ha.	17	3.33 ha.
3	0.84 ha.	18	4.02 ha.
4	3.85 ha.	19	0.81 ha.
5	4.09 ha.	20	2.77 ha.
5.1	0.79 ha.	21	0.54 ha.
6	3.54 ha.	22	4.35 ha.
7	3.68 ha.	23	1.40 ha.
8	0.39 ha.	24	3.63 ha.
9	1.87 ha.	25	6.90 ha.
10	0.94 ha.	26	6.02 ha.
11	3.39 ha.	27	0.20 ha.
12	3.46 ha.	28	2.98 ha.
13	2.45 ha.	29	2.78 ha.
14	0.95 ha.	30	0.34 ha.
15	0.94 ha.		

D SURFACES BASINS. (EAST SITE)

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ISSUED FOR	<input type="checkbox"/> INFORMATION ONLY
	<input type="checkbox"/> APPROVAL
<input type="checkbox"/> QUOTATION PURCHASING	
<input checked="" type="checkbox"/> CONSTRUCTION	
<input type="checkbox"/> AS BUILT	

REV.	DESCRIPTION	DATE	DRWN	CHKD
C4	FOURTH DESIGN	FEB-2018	DLL	JA
C3	THIRD DESIGN	FEB-2018	FPM	JA
C2	SECONDARY DESIGN	JAN-2018	FPM	JA
C1	PRELIMINARY DESIGN	JAN-2018	FJL	JA

EPC CONTRACTOR:

ENGINEERING:

CLIENT:

PROJECT:
64 MWac Lesedi Solar Park South Africa

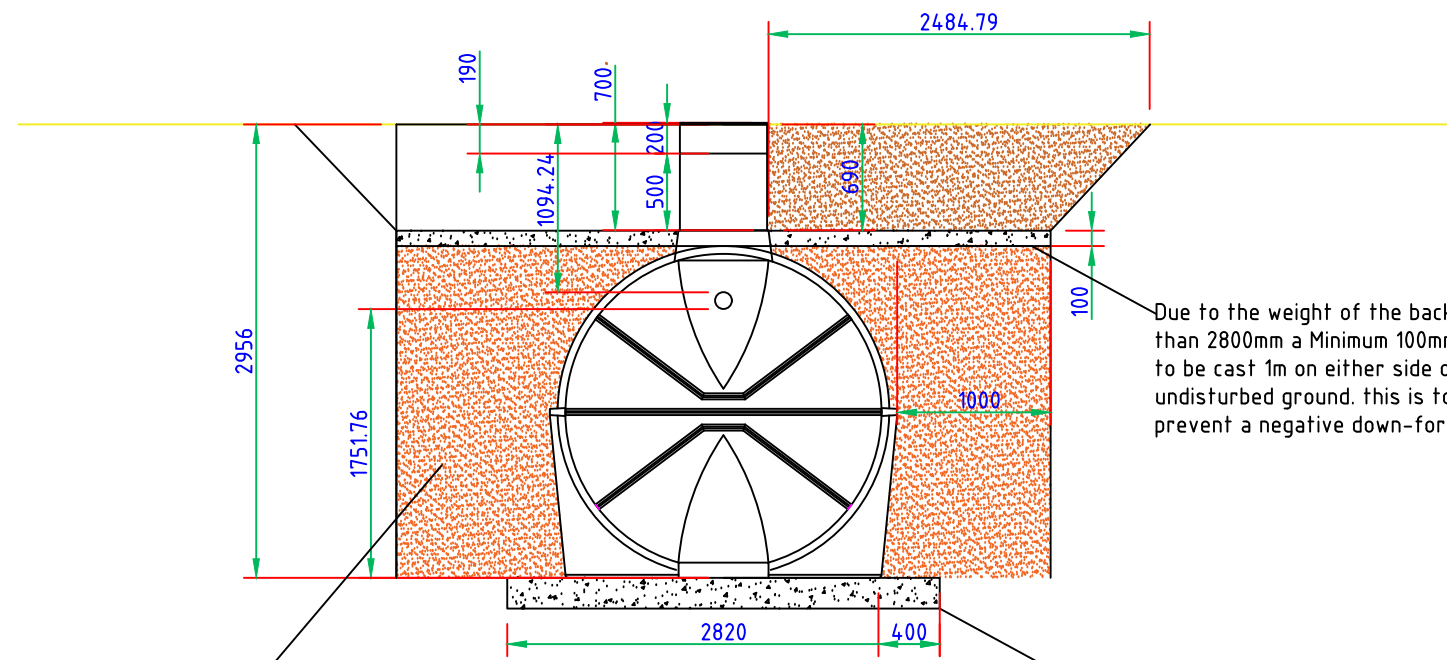
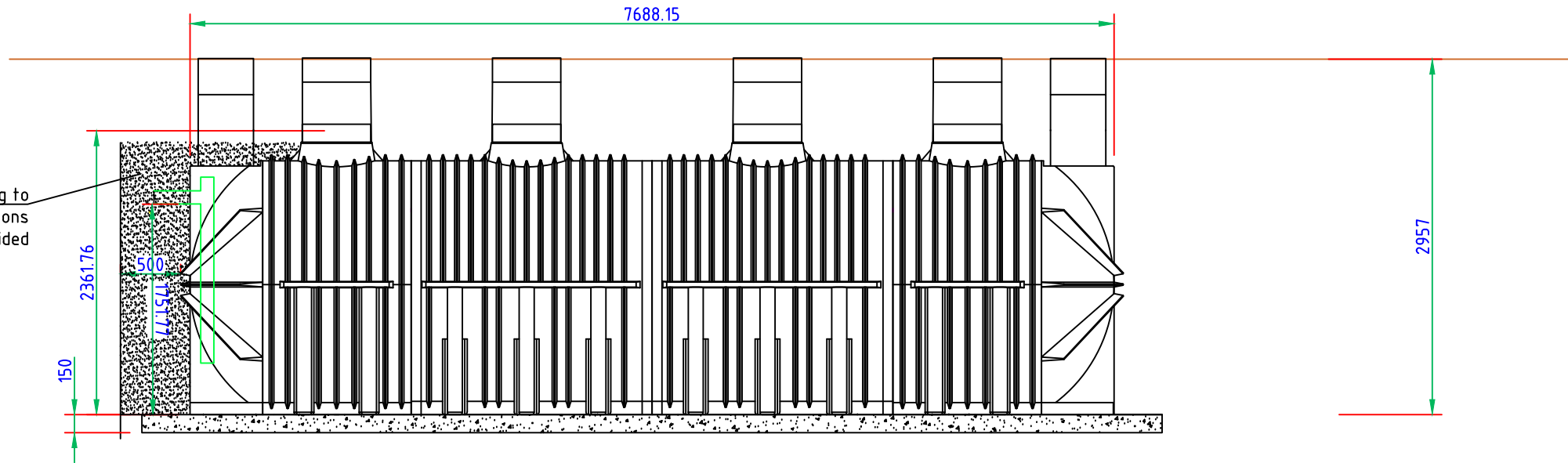
SHEET TITLE
RAINWATER DRAINAGE SYSTEM

REFERENCE: 117-0022-ING	PAPER SIZE: A1: 840 x 594 mm.	
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DRAWING N°
HP-CGC-CV-DRW-0004-04-C4

4x 560 x 500mm lid extensions
 6x 460x300mm lid extensions
 4x560x200mm lid extensions

Backfill according to installation instructions provided

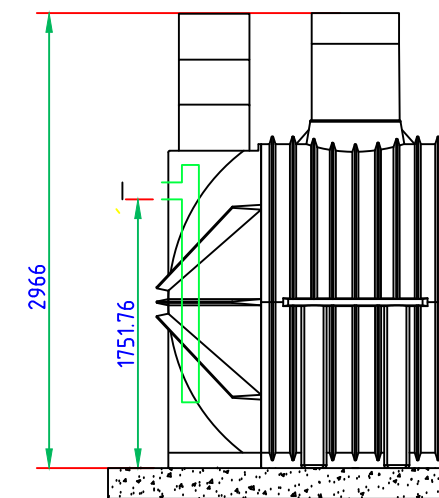


Due to the weight of the backfill material, tanks installed deeper than 2800mm a Minimum 100mm thick re-inforced concrete slab to be cast 1m on either side of the tank preferably on undisturbed ground. this is to bare the weight of the backfill and prevent a negative down-force on the tanks.

Minimum 150mm thick re-inforced concrete slab to be cast 400m on either side of the tank.

Backfill material to conform to with either, an inert granular material, soilcrete mix of 5% cement to 95% inert granular material (RIVERSAND MIX ACCEPTABLE) or cement slurry. The layers of the backfill should not exceed 250mm and should be compacted to 90% Mod, AASHO. It is particularly important to note that excavated material consisting of rock, peat or clay is NOT USED as backfill material.

The afore-mentioned installation instructions constitute good Civil Engineering practice. They are however subordinate to the Engineer's on-site requirements for a successful installation. The Engineer's decision on every project is therefore FINAL.




Calcamite Modular tank Installation Guideline for excavated depths exceeding 2800mm.

NOTE: This is intended to be a guideline only, Refer to site Engineer for final instruction.

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	Calcamite	Sanitary Services Pty Ltd
DESCRIPTION : Modular Installation Guide for depths exceeding 2800mm		
Drawn By: Brandon Havenga	DWG No: CAL/MOD IN//01	
DATE : 16 / 05 / 2017		REV-1