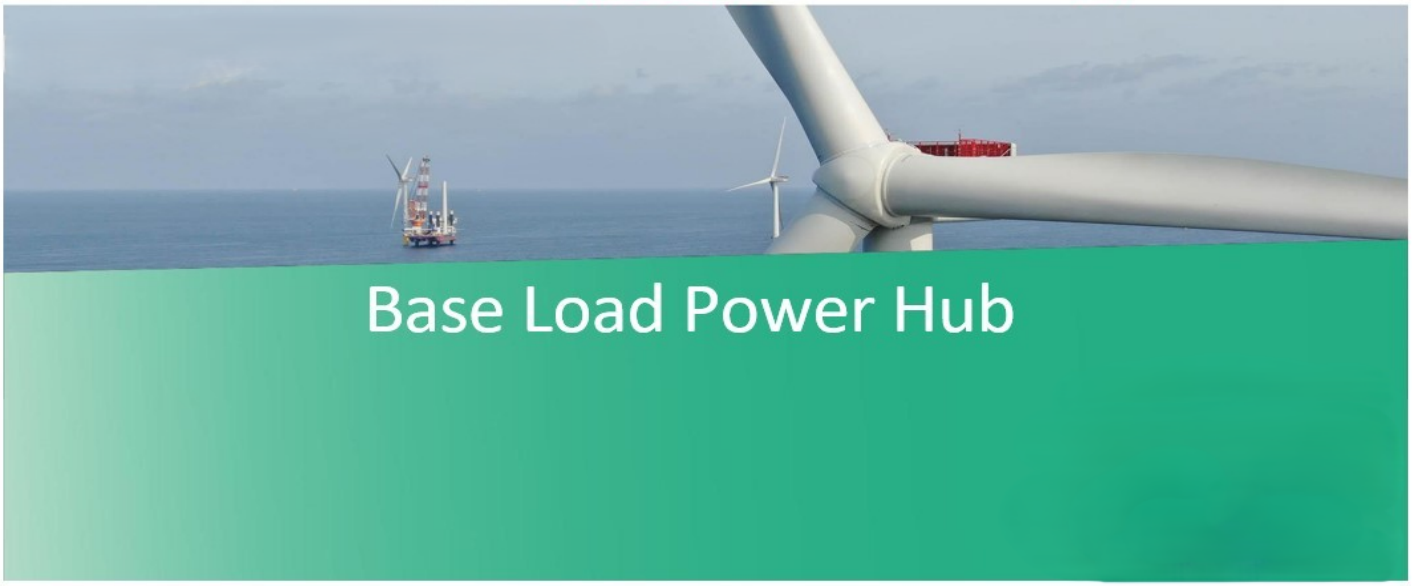
CROSSWIND

ROSETTI MARINO

PROVERLIS

PROJECT **123A90 - HOLLANDSE KUST NOORD WIND PARK**
BLPH Project



MECHANICAL COMPLETION DOSSIER (ONSHORE)

SYSTEM	88 Earthing and Lightning
SUBSYSTEM	88-00 Earthing and Lightning Protection

CROSSWIND	123A90 - HOLLANDSE KUST NOORD WIND PARK BLPH Project MECHANICAL COMPLETION DOSSIER INDEX	ROSETTI MARINO

Sub System N°:	88-00	Tick as appropriate	ONSHORE	O
Description:	Earthing and Lightning Protection		OFFSHORE	NA

1.	***READY FOR COMMISSIONING CERTIFICATE*** *Ready For Commissioning Certificate (RFC)*	O
2.	***CONSOLIDATED PUNCH LISTS*** *Cleared and Residual Items*	O
3.	***SYSTEM/SUB-SYSTEM LIMIT DRAWINGS*** *Mark-up drawings showing the limits of the relevant System/Sub-System*	NA
4.	***MECHANICAL COMPLETION STATUS INDEX – BUILDING DISCIPLINE*** *Building Sub-System Status Index (Print out) and Check/Test sheets*	NA
5.	***MECHANICAL COMPLETION STATUS INDEX – ELECTRICAL DISCIPLINE*** *Electrical Sub-System Status Index (Print out) and Check/Test Sheets* *Hazardous Area Equipment Detailed Inspection*	O
6.	***MECHANICAL COMPLETION STATUS INDEX - INSTRUMENTAL DISCIPLINE*** *Instrumental Sub-System Status Index (Print out) and Check/Test Sheets*	NA
7.	***MECHANICAL COMPLETION STATUS INDEX - MECHANICAL DISCIPLINE*** *Mechanical SubSystem Status Index (Print out) and Check/Test Sheets*	NA
8.	***MECHANICAL COMPLETION STATUS INDEX - TELECOMMUNICATION DISCIPLINE*** *Telecommunication Sub-System Status Index (Print out) and Check/Test Sheets*	NA
9.	***MECHANICAL COMPLETION STATUS INDEX - HVAC DISCIPLINE*** *HVAC Sub-System Status Index (Print out) and Check/Test Sheets*	NA
10.	***MECHANICAL COMPLETION STATUS INDEX - PIPING DISCIPLINE*** *Piping Sub-System Status Index and Check/Test Sheets*	NA
11.	***MECHANICAL COMPLETION INDEX - SAFETY DISCIPLINE*** *Safety Sub-System Status Index (Print out) and Check/Test Sheets*	NA
12.	***FAT / VENDOR REPORTS*** *Fat reports issued by vendors and/or vendor reports*	NA
13.	***MECHANICAL COMPLETION CHANGES / MARK-UPS*** *A copy of the changes initiated during the Mechanical Completion process pertaining to the relevant Sub-System will be incorporated in this section*	NA

Note: Under the generic terminology “Building” are also covered the following disciplines: **Structural, Painting**

Under the generic terminology “Instrumental” is also covered the following discipline: **Fire & Gas**

ROSETTI MARINO	123A90 - HOLLANDSE KUST NOORD WIND PARK BLPH Project	CROSSWIND

Ready For Commissioning (RFC) Certificate

COMPLETE	●	PARTIAL	

Revision:	2		Issued on:	2025-05-08	
System:	88	/	Earthing and Lightning		
SubSystem:	88-00	/	Earthing and Lightning Protection		

1	COMPANY has, at its option and if required, reviewed the mechanical completion associated with the above-named system/sub-system of the SCOPE and observed that such functional sub-system has been brought into readiness for commencement of the associated pre-commissioning and commissioning activities, but for the outstanding punch list items, if any, attached and referred in this Certificate.
2	Issuance of this Certificate shall not release CONTRACTOR from any of his obligations, responsibilities or liabilities under the CONTRACT.
3	Mechanical Completion Status Index attached (per Discipline) Punch List report attached (Outstanding and Cleared)

PUNCH LIST	PENDING POINTS	
Note: All Category "A" Items must be cleared prior to issue a Ready For Commissioning (RFC) Certificate	A 0'	B 5

REMARKS:

	CONTRACTOR Construction Manager	**CONTRACTOR** Commissioning Manager	**COMPANY** Construction Lead (if required)	**COMPANY** Commissioning Lead (if required)
Name	Wolmer Borghi	Anthony Iveson	CPY NOT PRESENT	CPY NOT PRESENT
Date	2025-05-09	2025-05-12	2025-05-12	2025-05-12
Signature	PROVERLIS Digitaly signed by Wolmer Borghi 2025-05-09T06:12:09.647Z	PROVERLIS Digitaly signed by Anthony Iveson 2025-05-12T08:25:28.225Z	PROVERLIS Digitaly signed by CPY NOT PRESEN 2025-05-12T09:22:00.072Z	PROVERLIS Digitaly signed by CPY NOT PRESEN 2025-05-12T09:22:05.610Z

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 88-00 & process: MC

Electrical	88-00 Earthing and Lightning Protection						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
BLPH-EARTHING-LD	Earthing System Lower Deck	ONSHORE	C10002384	CPX26	100	2025-02-24	RFC 1
BLPH-EARTHING-TP	Earthing System Transition Piece Below/Lower Deck	ONSHORE	C10002385	CPX26	100	2025-05-07	RFC 2
BLPH-EARTHING-UD	Earthing System Upper deck	ONSHORE	C10002386	CPX26	100	2025-03-07	RFC 1

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	88	Earthing and Lightning
SUBSYSTEM	88-00	Earthing and Lightning Protection

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004092	B	BLPH-EARTHING-LD C10002384	General point: All earthing connections need to be greased	.		Pschintu 2025-02-24	2025-04-02	Gtangianu 2025-04-02	2025-04-02
C30004107	B	BLPH-EARTHING-LD C10002384	General point: Missing earthing connection on handrail. Activity will be done before sail away	.		Pschintu 2025-02-24			
C30004195	B	BLPH-EARTHING-UD C10002386	General point: All earthing connections need to be greased.	.		Gtangianu 2025-03-06	2025-04-04	Gtangianu 2025-04-04	2025-04-04
C30004196	B	BLPH-EARTHING-UD C10002386	General point: Missing earthing connection on handrail. Activity will be done before sail away	.		Gtangianu 2025-03-06			
C30004197	B	BLPH-EARTHING-UD C10002386	Need RLM on the document 123A90-DDL-EL-DL-20132_sh.01.	.		Gtangianu 2025-03-06			
C30004371	B	BLPH-EARTHING-TP C10002385	Need RLM on the document 123A90-DDL-EL-DL-20134_sh.01.	.		Gtangianu 2025-05-07			
C30004372	B	BLPH-EARTHING-TP C10002385	General point: Missing earthing connection on handrail. Activity will be done before sail away	.		Gtangianu 2025-05-07			

Section 2 CONSOLIDATED PUNCH LISTS

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

PUNCH LIST REPORT

SYSTEM	88	Earthing and Lightning
SUBSYSTEM	88-00	Earthing and Lightning Protection

Electrical

CODE	CAT	ITEM	DEFECT DESCRIPTION	CORRECTIVE ACTION	PERFORMED ACTION	ISSUED	CARRIED	CHECKED	APPROVED
C30004092	B	BLPH-EARTHING-LD C10002384	General point: All earthing connections need to be greased	.		Pschintu 2025-02-24	2025-04-02	Gtangianu 2025-04-02	2025-04-02
C30004107	B	BLPH-EARTHING-LD C10002384	General point: Missing earthing connection on handrail. Activity will be done before sail away	.	Completed	Pschintu 2025-02-24	RDegliEsposti 2025-07-24	RDegliEsposti 2025-07-24	2025-07-24
C30004195	B	BLPH-EARTHING-UD C10002386	General point: All earthing connections need to be greased.	.		Gtangianu 2025-03-06	2025-04-04	Gtangianu 2025-04-04	2025-04-04
C30004196	B	BLPH-EARTHING-UD C10002386	General point: Missing earthing connection on handrail. Activity will be done before sail away	.	Completed	Gtangianu 2025-03-06	RDegliEsposti 2025-08-01	RDegliEsposti 2025-08-01	2025-08-01
C30004197	B	BLPH-EARTHING-UD C10002386	Need RLM on the document 123A90-DDL-EL-DL-20132_sh.01.	.	AS-BUILT ISSUED	Gtangianu 2025-03-06	RDegliEsposti 2025-10-17	RDegliEsposti 2025-10-17	2025-10-17
C30004371	B	BLPH-EARTHING-TP C10002385	Need RLM on the document 123A90-DDL-EL-DL-20134_sh.01.	.	RLMU raised	Gtangianu 2025-05-07	RDegliEsposti 2025-07-10	RDegliEsposti 2025-07-10	2025-07-10
C30004372	B	BLPH-EARTHING-TP C10002385	General point: Missing earthing connection on handrail. Activity will be done before sail away	.	Completed	Gtangianu 2025-05-07	RDegliEsposti 2025-07-24	RDegliEsposti 2025-07-24	2025-07-24

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004107

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002384	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-LD	Earthing System Lower Deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

General point: Missing earthing connection on handrail. Activity will be done before sail away

Name: Paolo Schintu
Date: 2025-02-24
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Completed

Name: Raffaele Degli Esposti
Date: 2025-07-24
Signature:

5 - CLEARANCE CHECK

Done.

Name: Raffaele Degli Esposti
Date: 2025-07-24
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-07-24
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004195

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002386	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-UD	Earthing System Upper deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

General point: All earthing connections need to be greased.

Name: Giovanni Tangianu

Date: 2025-03-06

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2025-03-06
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-04-04

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004196

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002386	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-UD	Earthing System Upper deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

General point: Missing earthing connection on handrail. Activity will be done before sail away

Name: Giovanni Tangianu
Date: 2025-03-06
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2025-03-06
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Completed

Name: Raffaele Degli Esposti
Date: 2025-08-01
Signature:

5 - CLEARANCE CHECK

Done.

Name: Raffaele Degli Esposti
Date: 2025-08-01
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-08-01
Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004197

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002386	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-UD	Earthing System Upper deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

Need RLM on the document 123A90-DDL-EL-DL-20132_sh.01.

Name: Giovanni Tangianu
Date: 2025-03-06
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2025-03-06
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

AS-BUILT ISSUED

Name: Raffaele Degli Esposti
Date: 2025-10-17
Signature:

5 - CLEARANCE CHECK

Done.

Name: Raffaele Degli Esposti
Date: 2025-10-17
Signature:

6- CLEARANCE APPROVAL

Name:
Date: 2025-10-17
Signature:

DRAWING NO. 123A90-DDL-EL-DL-20132

REV. 01

RLMU LIST

REV. 01_B: Sheet 1, 3



PL=01

PL=01 E.B. non installato.
é stato eseguito sparo.
modifica da E13 ad E11E+E11A

PL=01 E.B. not installed.was installed the HILTI (S-BT-ER-M10-HC-120). change from E13 to E11E+E11A

E.B. non instalato
(Eseguito sparo)
---
not installed.was installed the HILTI (S-BT-ER-M10-HC-120).
change from E13 to E11E+E11A

35mmq



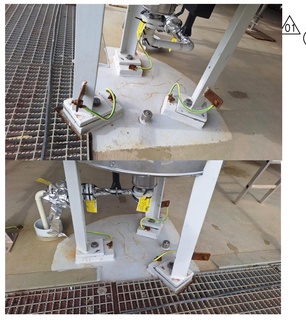
PL=08

PL=08 IL collegamento è diverso da quanto indicato dal documento.
modifica da E13 ad E11E+E11C

PL=08 E.B. not installed.as the typical. change from E13 to E11E+E11C

PL=07 i collegameti sono diversi da quanto evidenzia il documento in campo connessione su' 3 punti.
le connessioni uttilizzate sono E11C+E11E

PL=07 Connected three wires on same point.See typical E11C+ E11E.



PL=07

E.B. non installato

Not installed

PLAN ON TOP DECK
EL+30.310 T.O.S.

PL=02 E.B. non installato.
Scala saldata su struttura.

PL=02 ,E.B Not installed. Ladder welded on structure.



PL=02

PL=09 intallazionè diversa da tipico.
reale installato(E11A+E11E).

PL=09 not installed.as the typical.
change from E13 to E11A+E11E



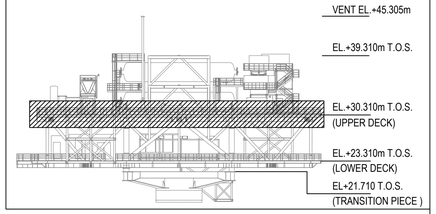
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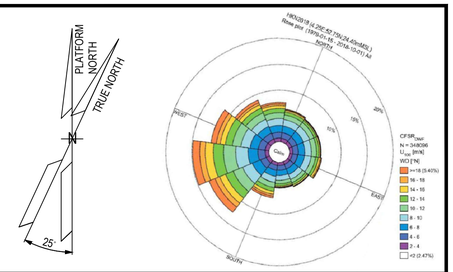
VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. FOR LIGHTNING PROTECTION SYSTEM SURGE PROTECTIVE DEVICES (SPD), REFER TO THE DOCUMENT 123A90-DDL-EL-RE-20154.
6. ALL NON-WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24. 01
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. LADDER MUST BE EARTHED IF NOT WELDED TO THE STRUCTURE. LADDER MUST BE EARTHED TO THE UPPER BEAM OF THE STRUCTURE, COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS AS PER TYPICAL E17D.
9. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D.
10. ALL POLE MOUNTED EQUIPMENTS WILL BE EARTHED AS PER TYPICAL E05.
11. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE
12. EARTHED VESSELS V-25001D/E/F. FOR EARTHING V-25001A/B/C SEE SHEET 2 01

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- AIR TERMINATION ROD FOR LIGHTNING PROTECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR

TYP. / ELE / SIZE	TYPICAL / ELEVATION
E20 / ELE / HEIGHT	AIR TERMINATION ROD NO. / ELEVATION

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20118	LIGHTING & SOCKET LAYOUT - TOP DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
TOP DECK

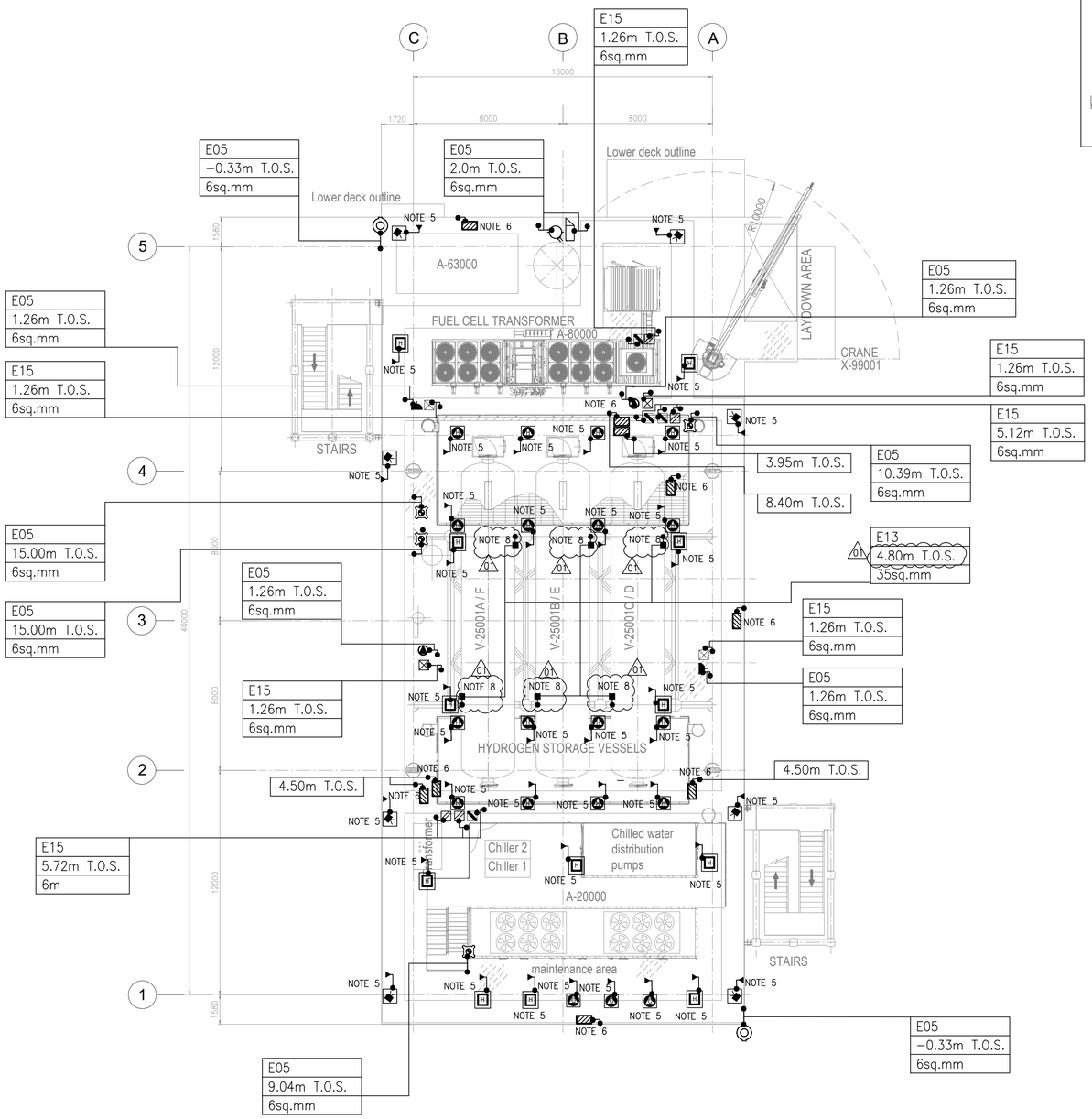
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DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20132	SHEET 001	REV. 01

SHEET 001 OF 002

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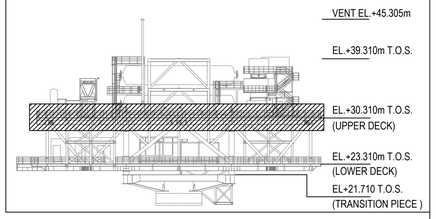
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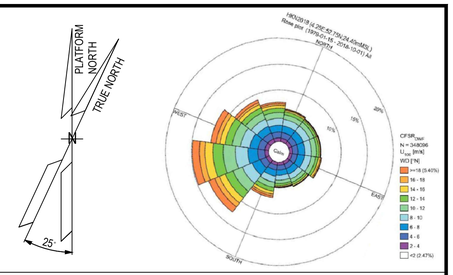
REV. 01



PLAN ON TOP DECK
EL+30.310 T.O.S.

KEY PLAN





NOTES

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2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
6. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E05A.
7. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE
8. EARTHED VESSELS V-25001A/B/C. FOR EARTHING V-25001D/E/F SEE SHEET 1 (01)

LEGEND

- POINT SOURCE HYDROGEN DETECTOR
- ULTRA SONIC HYDROGEN DETECTOR
- POINT SOURCE OXYGEN DETECTOR
- UV−IR FLAME DETECTOR
- INSTRUMENT RACK
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- EMERGENCY & NORMAL LIGHTING JB
- WELDING SOCKET & JB
- SMALL POWER SOCKET & JB
- MAIN YELLOW LANTERNS
- OBSTRUCTION RED LED LIGHTS (MEDIUM INTENSITY)
- PHOTOCELL
- VISIBILITY METER

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20118	LIGHTING & SOCKET LAYOUT - TOP DECK
123A90-DDL-SAF-DL-30027	F & G DETECTORS LAYOUT - LOWER & UPPER DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
TOP DECK

CONTRACT NO./TITLE CW−I−WP4−2023−05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
A1	DRAWING NO. 123A90−DDL−EL−DL−20132	SHEET 002	REV. 01

SHEET 002 OF 002

VALID FOR CONSTRUCTION

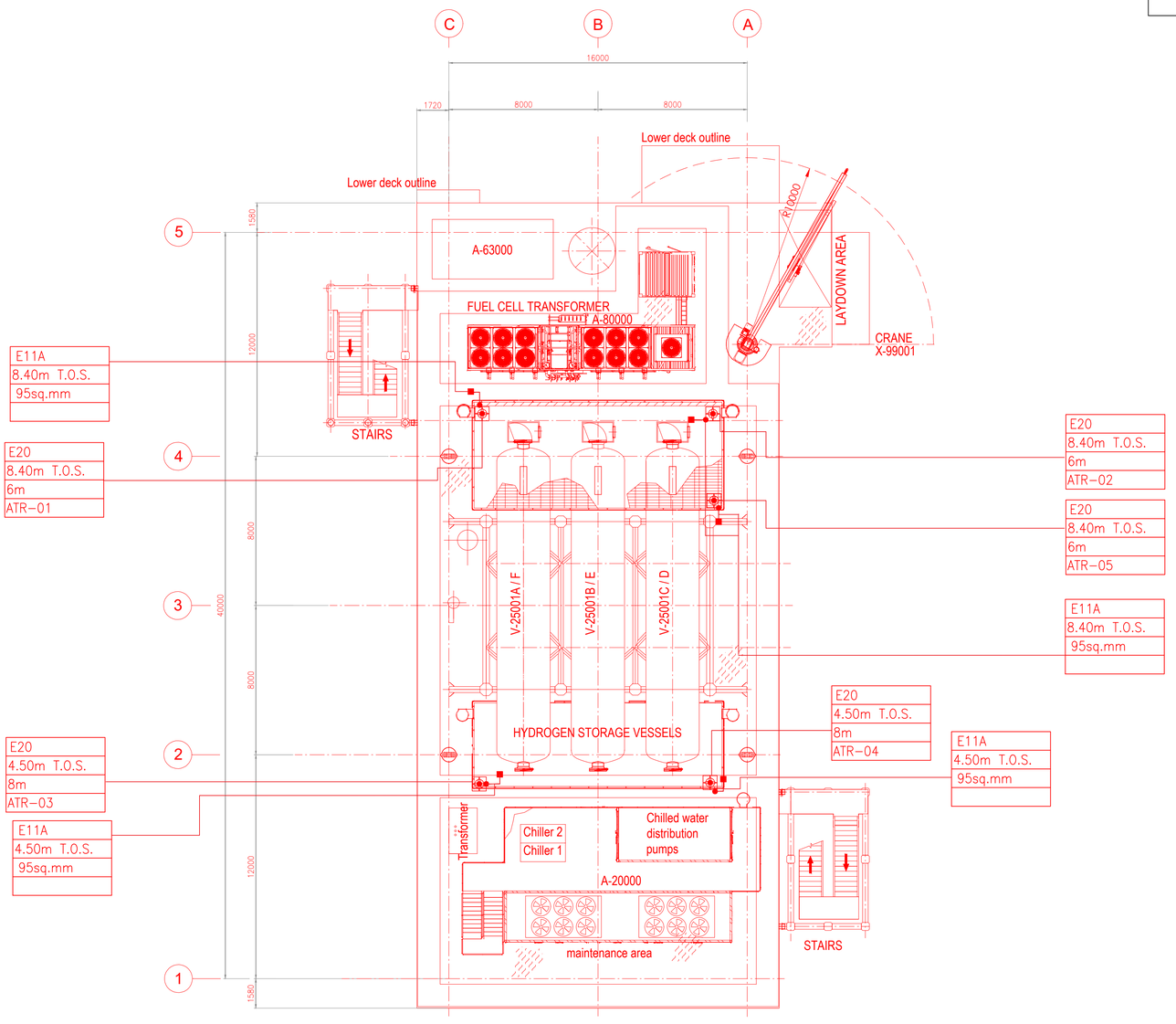
REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

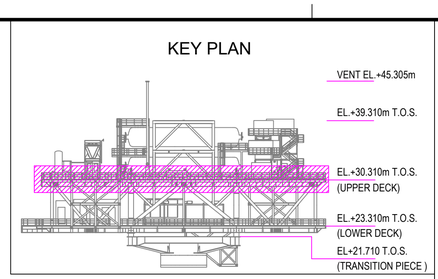
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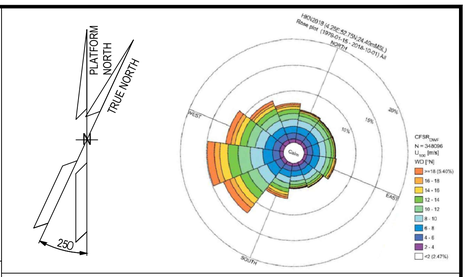
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REV. 01



KEY PLAN





NOTES

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2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
6. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E05A.
7. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE

LEGEND

- AIR TERMINATION ROD FOR LIGHTNING PROTECTION
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER

TYP. — TYPICAL
ELE. — ELEVATION
LENGTH
TAG

TYP. — TYPICAL
ELE — ELEVATION
SIZE

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
TOP DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20132	SHEET 003	REV. 01

File Name : 123A90-DDL-EL-DL-20132

VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004371

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002385	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-TP	Earthing System Transition Piece Below/Lower Deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

Need RLM on the document 123A90-DDL-EL-DL-20134_sh.01.

Name: Giovanni Tangianu
Date: 2025-05-07
Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2025-05-07
3.5 Action by	ENG Engineering	Signature	

4 - PERFORMED ACTION

RLMU raised

Name: Raffaele Degli Esposti
Date: 2025-07-10
Signature:

5 - CLEARANCE CHECK

Done.

Name: Raffaele Degli Esposti
Date: 2025-07-10
Signature:

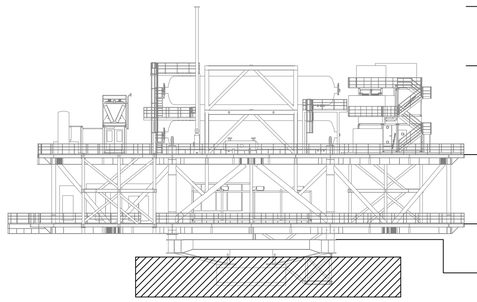
6- CLEARANCE APPROVAL

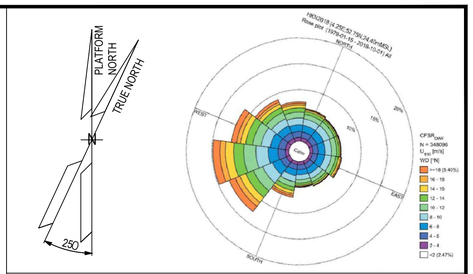
Name:
Date: 2025-07-10
Signature:

DRAWING NO. 123A90-DDL-EL-DL-20134

REV. 01

KEY PLAN





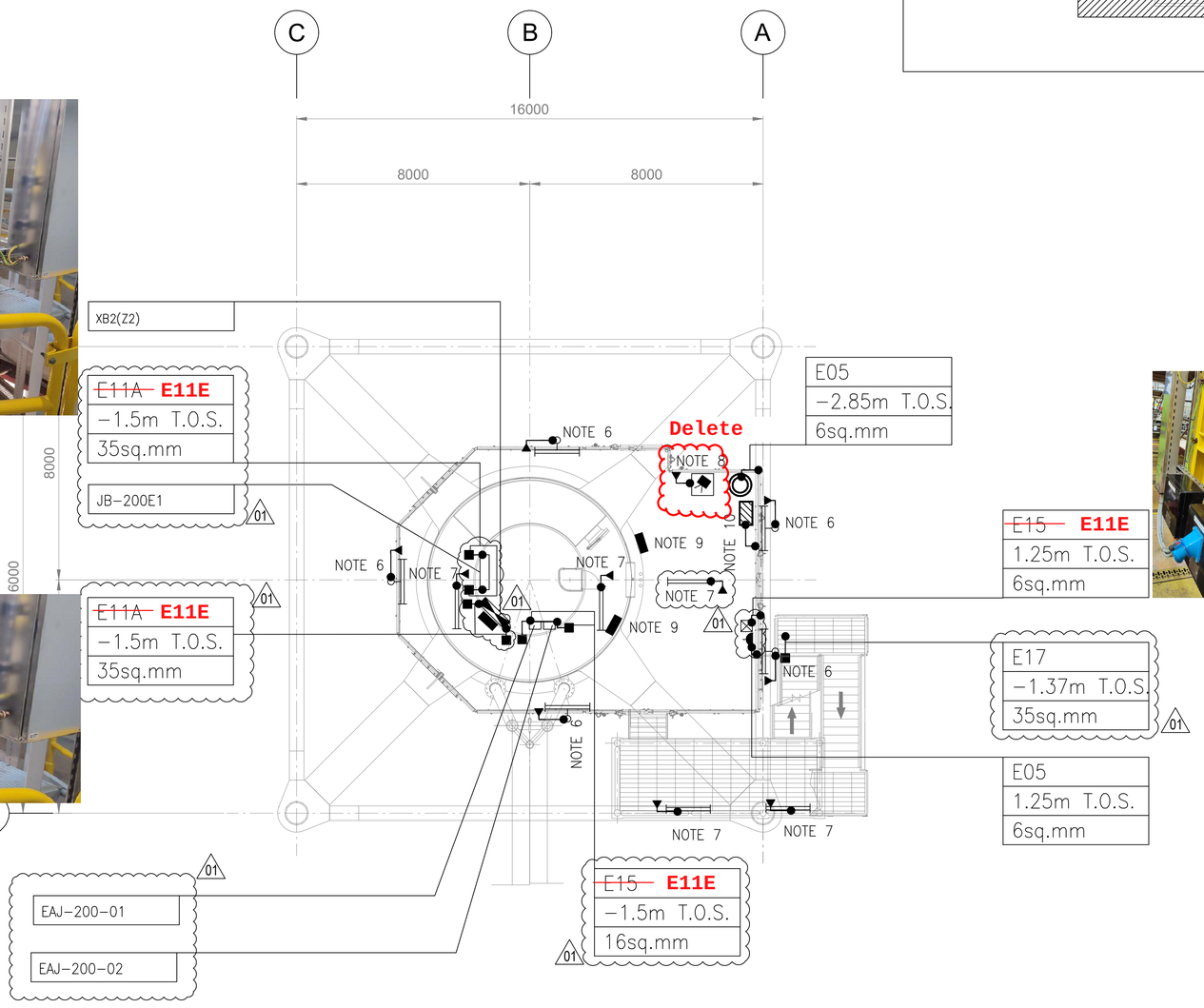
NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. FOR LIGHTNING PROTECTION SYSTEM SURGE PROTECTIVE DEVICES (SPD), REFER TO DOCUMENT 123A90-DDL-EL-RE-20154. 01
6. ALL NON-WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24.
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
9. EARTH BAR WILL BE FIXED TO THE PRIMARY BEAMS OF THE UPPER DECK. COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D / 6.50M T.O.S. / 35 SQ MM.
10. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E15.









PLAN ON TRANSITION PIECE
EL+21.710 T.O.S.

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR
- SMALL POWER SOCKET & JB 01
- INSTRUMENT RACK
- UV-IR FLAME DETECTOR
- STATUS LIGHT

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

REFERENCE DOCUMENTS

123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20102	ELECTRICAL EQUIPMENT LAYOUT - BELOW LOWER DECK
123A90-DDL-EL-DL-20120	LIGHTING & SOCKET LAYOUT - BELOW LOWER DECK
123A90-DDL-SAF-DL-30028	F & G DETECTORS LAYOUT - BELOW LOWER DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	26/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	24/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
BELOW LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:100
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 26/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20134	SHEET 001	REV. 01

File Name : 123A90-DDL-EL-DL-20134

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004372

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002385	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-TP	Earthing System Transition Piece Below/Lower Deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

General point: Missing earthing connection on handrail. Activity will be done before sail away

Name: Giovanni Tangianu

Date: 2025-05-07

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Giovanni Tangianu
3.4 Activity code	MC Mechanical Completion	Date	2025-05-07
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Completed

Name: Raffaele Degli Esposti

Date: 2025-07-24

Signature:

5 - CLEARANCE CHECK

Done.

Name: Raffaele Degli Esposti

Date: 2025-07-24

Signature:

6- CLEARANCE APPROVAL

Name:

Date: 2025-07-24

Signature:

ROSETTI MARINO
CROSSWIND

PUNCH ITEM ENTRY / CLEARANCE FORM

C30004092

PROVERLIS

1 -ELEMENT IDENTIFICATION

1.1 Task	C10002384	1.4 Discipline	Electrical
1.2 Item	BLPH-EARTHING-LD	Earthing System Lower Deck	
1.3 Subsystem	88-00	Earthing and Lightning Protection	

2 - OBSERVATION

General point: All earthing connections need to be greased

Name: Paolo Schintu

Date: 2025-02-24

Signature:

3 - DEFECT ASSESSMENT

.

3.1 Corrective action proposal

3.2 Material required

3.3 Priority	B PL B	Name	Paolo Schintu
3.4 Activity code	MC Mechanical Completion	Date	2025-02-24
3.5 Action by	RM_CONSTR RM	Signature	

4 - PERFORMED ACTION

Name:

Date:

Signature:

5 - CLEARANCE CHECK

Done.

Name: Giovanni Tangianu

Date: 2025-04-02

Signature:

6- CLEARANCE APPROVAL

Name:

Date:

Signature:

Section 3 SYSTEM,SUB-SYSTEM LIMIT DRAWINGS

NOT APPLICABLE

Section 4 MECHANICAL COMPLETION STATUS INDEX - BUILDING DISCIPLINE

NOT APPLICABLE

Section 5 MECHANICAL COMPLETION STATUS INDEX - ELECTRICAL DISCIPLINE

CROSSWIND

ROSETTI MARINO

Project CROSSWIND

STATUS INDEX DETAIL

Filtered on subsystem: 88-00 & process: MC & discipline : E

Electrical	88-00 Earthing and Lightning Protection						
ITEM		TASK					
Code	Description	Location	Code	Form	Progress	Date	Certificate
BLPH-EARTHING-LD	Earthing System Lower Deck	ONSHORE	C10002384	CPX26	100	2025-02-24	RFC 1
BLPH-EARTHING-TP	Earthing System Transition Piece Below/Lower Deck	ONSHORE	C10002385	CPX26	100	2025-05-07	RFC 2
BLPH-EARTHING-UD	Earthing System Upper deck	ONSHORE	C10002386	CPX26	100	2025-03-07	RFC 1

ITEM	Tag	BLPH-EARTHING-LD	: Earthing System Lower Deck			Dwg	123A90-DDL-EL-DL-20133
	S/Sys	88-00	: Earthing and Lightning Protection			Module	LD
TASK	code	C10002384		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX26 Earthing System

1	Check all earth bars installation against drawings.	OK
2	Check earthing cables installation against drawings.	PL
3	Check earthing cables cross section against drawings.	OK
4	Check all connections are tight, clean and coated with an approved anti-corrosive grease (if required).	PL
5	Check earthing networks segregation (IS).	OK
6	Check earth rods correct installation.	NA
7	If required produce Red Line Mark Up for "AS BUILT"	

Test Results

DRAWING N°	Equipment N° (FROM)	Earth dispatcher (TO)	Loop resistance	Associated cable N°
SEE ATTACHED LAYOUT	.	.		.
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TEST CURRENT	200 mA	A	
GLOBAL EARTHING RESISTANCE	0.00	Ohms	OK
EARTHING ROD RESISTANCE	NA	Ohms	NA

Testing & measurement instruments used

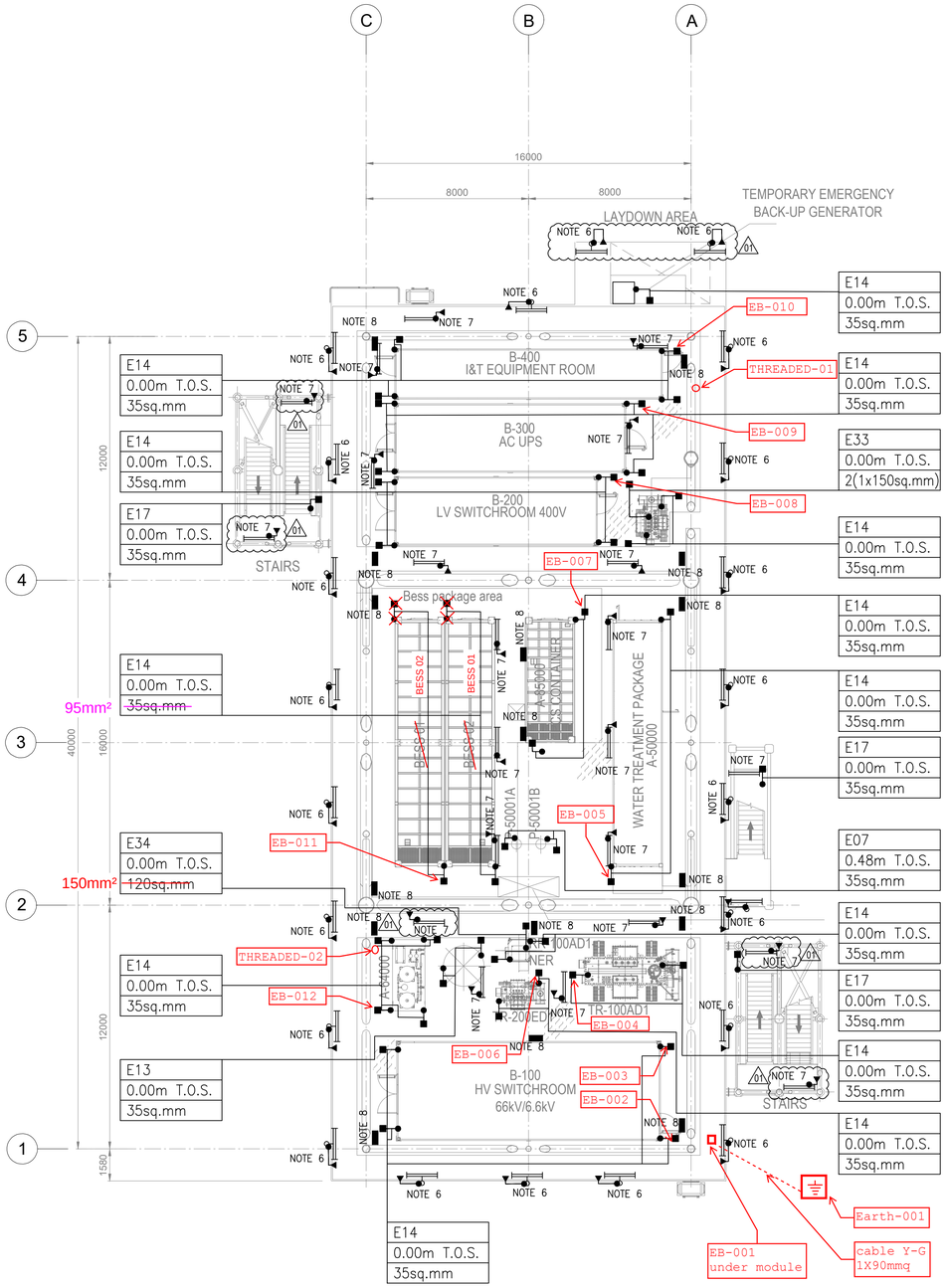
Type	Serial n°	Calibration certificate	Validity
VOLCRAFT 1000V - ET-200	H240103023	N°LAT 042 00768/24	11/10/2025

Comments:

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Michele Tartaglia	Paolo Schintu	
Date	2025-02-19	2025-02-24	
Signature	PROVERLIS Digitaly signed by Michele Tartaglia 2025-02-19T13:44:54.102Z	PROVERLIS Digitaly signed by Paolo Schintu 2025-02-24T14:38:22.318Z	

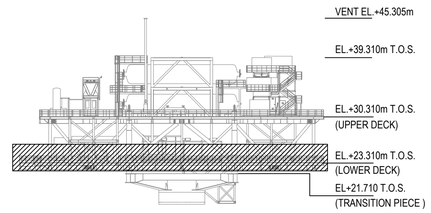
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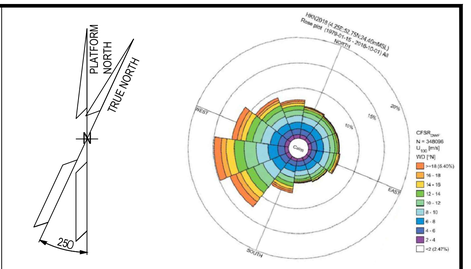
REV. 01



PLAN ON LOWER DECK
EL+23.310 T.O.S.

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
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6. ALL NON-WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24. 01
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. EARTH BAR WILL BE FIXED TO THE PRIMARY BEAMS OF THE UPPER DECK. COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D / 6.00M T.O.S. / 35 SQ MM.
9. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR

N	DRAWING N°	Equipment n° (FROM)	Earth dispatcher (TO)	Loop resistance R (mmΩ)	Associated cable
1	123A90-DDL-EL-DL-20133_sh.01	Earth-001	EB-001	0,00	Cable 1x90mmq Y-G
2	123A90-DDL-EL-DL-20133_sh.01	EB-001	EB-002	0,01	Metal Structure
3	123A90-DDL-EL-DL-20133_sh.01	EB-002	EB-003	0,01	Metal Structure
4	123A90-DDL-EL-DL-20133_sh.01	EB-003	EB-004	0,06	Metal Structure
5	123A90-DDL-EL-DL-20133_sh.01	EB-004	EB-005	0,05	Metal Structure
6	123A90-DDL-EL-DL-20133_sh.01	EB-004	EB-006	0,00	Metal Structure
7	123A90-DDL-EL-DL-20133_sh.01	EB-005	EB-007	0,08	Metal Structure
8	123A90-DDL-EL-DL-20133_sh.01	EB-007	EB-008	0,00	Metal Structure
9	123A90-DDL-EL-DL-20133_sh.01	EB-008	EB-009	0,01	Metal Structure
10	123A90-DDL-EL-DL-20133_sh.01	EB-008	THR-001	0,01	Metal Structure
11	123A90-DDL-EL-DL-20133_sh.01	EB-008	EB-010	0,02	Metal Structure
12	123A90-DDL-EL-DL-20133_sh.01	EB-011	THR-002	0,03	Metal Structure
13	123A90-DDL-EL-DL-20133_sh.01	EB-011	EB-012	0,01	Metal Structure

VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_D	12/12/24	C.Pilato

ROSETTI MARINO SpA

SHEET 001 OF 002

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	25/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	29/05/24	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

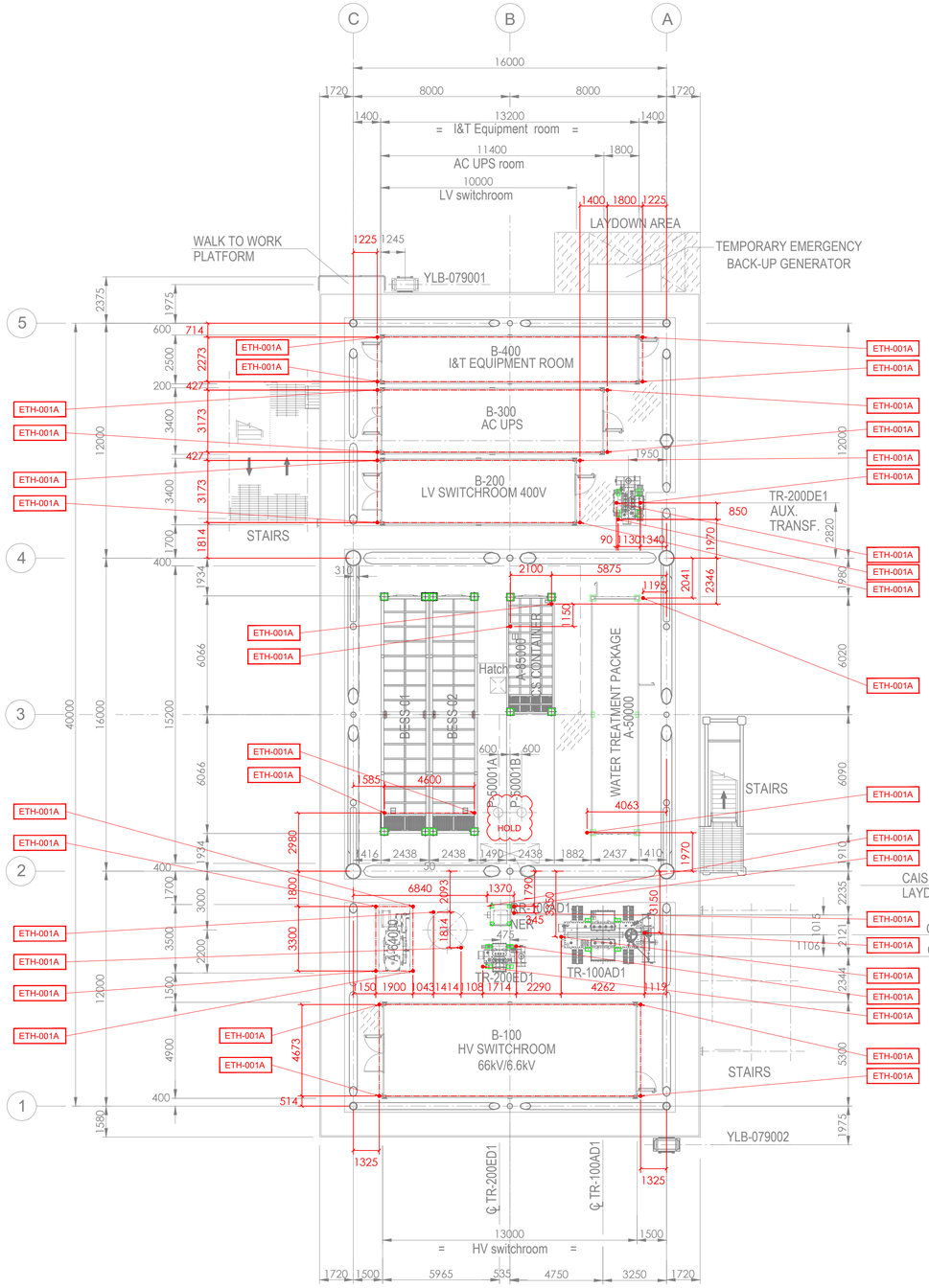
CROSSWIND

ROSETTI MARINO

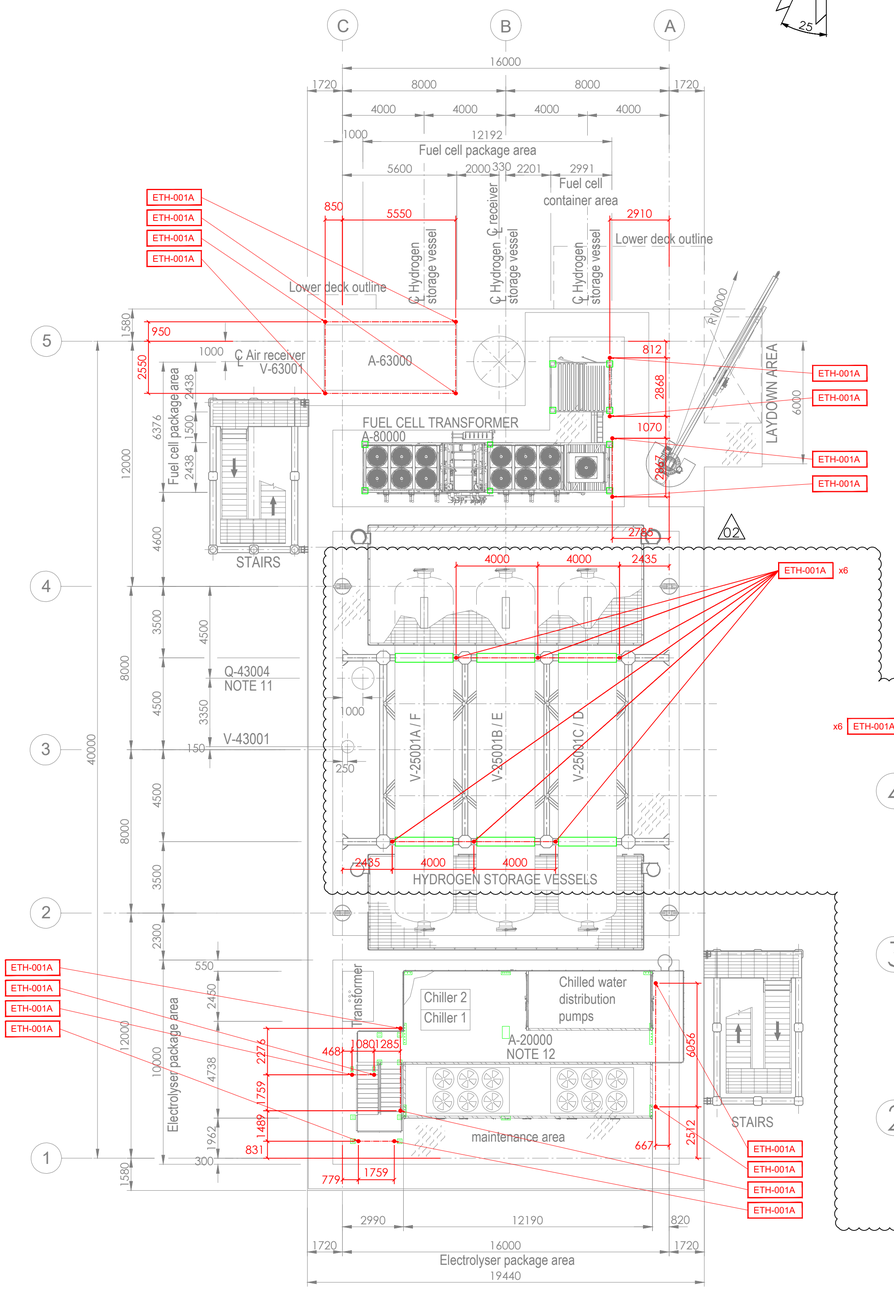
TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
LOWER DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN SPS	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 25/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20133	SHEET 001	REV. 01

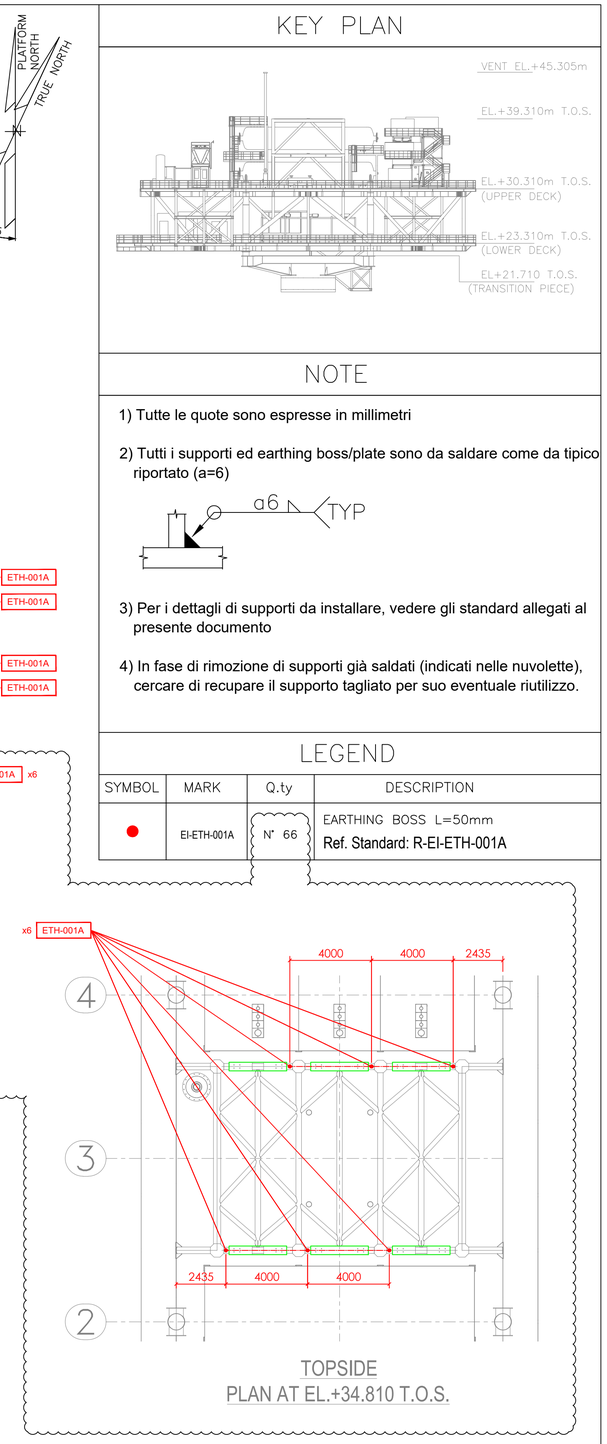
File Name : 123A90-DDL-EL-DL-20133



PLAN ON LOWER DECK
EL+23.310 T.O.S.



PLAN ON UPPER DECK
EL+30.310 T.O.S.



TOPSIDE
PLAN AT EL.+34.810 T.O.S.

KEY PLAN

NOTE

1) Tutte le quote sono espresse in millimetri

2) Tutti i supporti ed earthing boss/plate sono da saldare come da tipico riportato (a=6)

3) Per i dettagli di supporti da installare, vedere gli standard allegati al presente documento

4) In fase di rimozione di supporti già saldati (indicati nelle nuvolette), cercare di recupare il supporto tagliato per suo eventuale riutilizzo.

LEGEND

SYMBOL	MARK	Q.ty	DESCRIPTION
●	EI-ETH-001A	N° 66	EARTHING BOSS L=50mm Ref. Standard: R-EI-ETH-001A

ROSETTI MARINO

CROSSWIND

Project:
123A90 – BLPH CROSSWIND

Title:
E&I SUPPORTS
WELDED EARTHING BOSS

Doc. n.	Sheet	Scale	U.M.
123A90-FDL-FEI-DL-00002	1/1	–	mm

REV.	DATE	DESCRIPTION	ISSUED	APPROVED
02	16/10/24	ISSUED FOR CONSTRUCTION	Randi	Randi
01	09/08/24	ISSUED FOR CONSTRUCTION	Randi	Randi
00	30/07/24	ISSUED FOR CONSTRUCTION	Randi	Randi

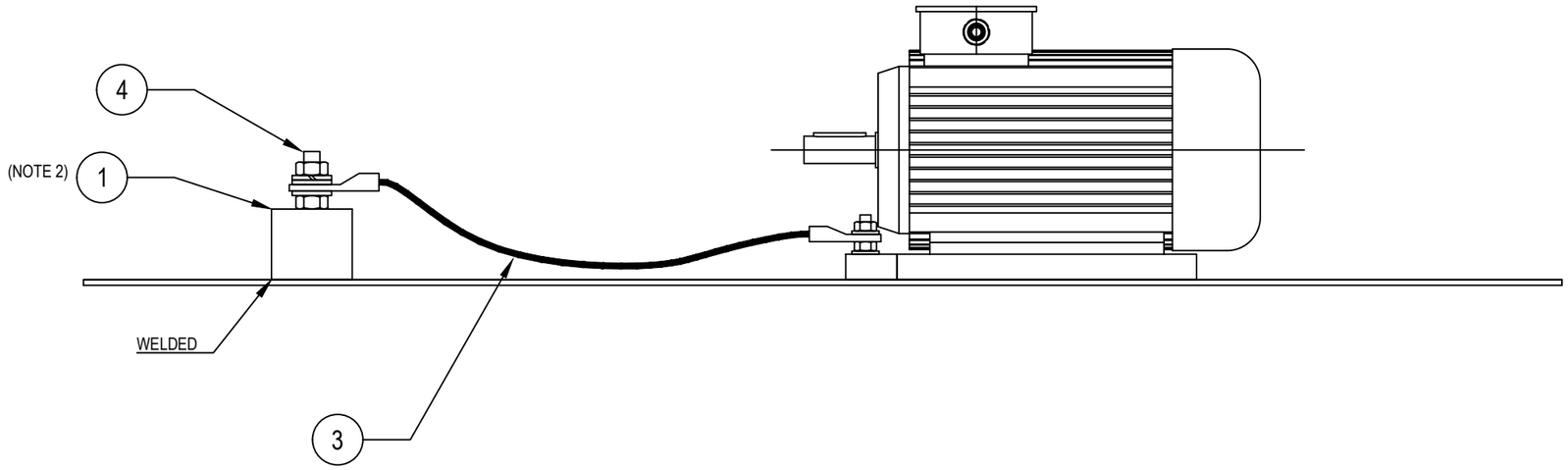
Print size: A1

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E07

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

MOTORS



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL E11A
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING ELECTRICAL MOTOR

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 123A90–DDL–EL–DD–20090

SHEET 005

REV. 02

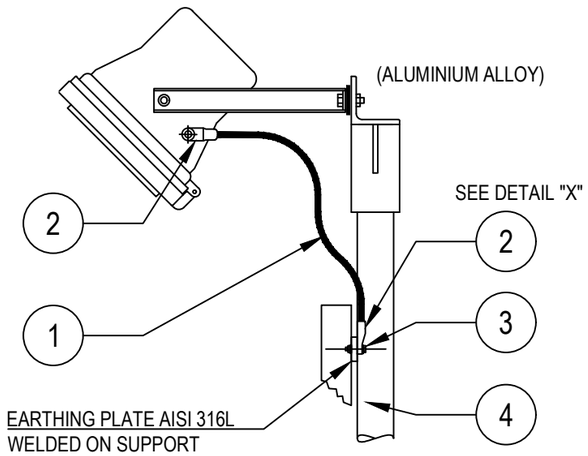
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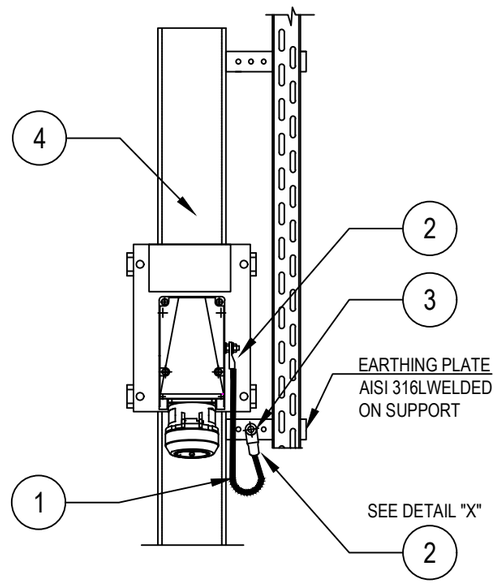
E05

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	Y/G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$6mm^2$	2	
3	HEXAG. BOLTS, PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M8X30	1	

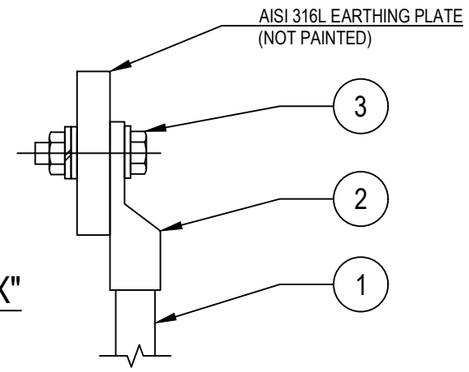
LIGHTING FIXTURE/GENERAL ITEM ON POLE



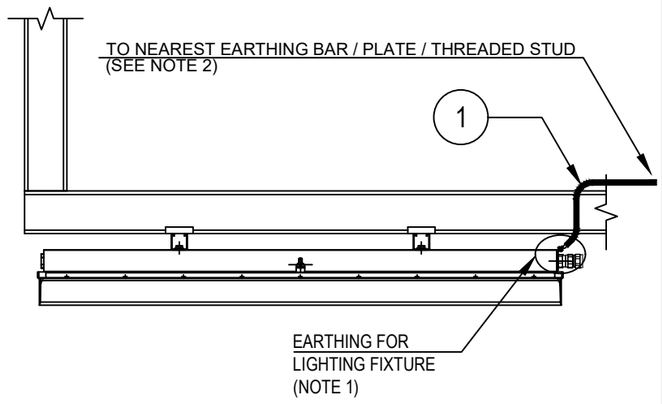
POWER SOCKET OUTLET



DETAIL "X"



LIGHTING FIXTURES



Refer also to TYP. "E32" (SEE SHEET 23)

TYPICAL VALID ALSO FOR NAVAID LIGHTS

NOTES:

1) ALL LIGHTING FIXTURES AND RELEVANT ARMOUR OF THE CABLE, ARE CONNECTED TO EARTH CONNECTION THROUGH THE EARTHING TAG OF THE CABLE GLAND

2) FOR EARTHING POINT USE ONE OF THE FOLLOWING METHODS:
TYP. E03A-D sh. 004 (EARTHING BAR ON STRUCT. UNISTRUT AND CABLE TRAY)
TYP. E11C sh. 003 (EARTHING PLATE)
TYP. E11D sh. 003 (THREADED STUD ON EXTERNAL STRUCTURE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL EQUIPMENTS

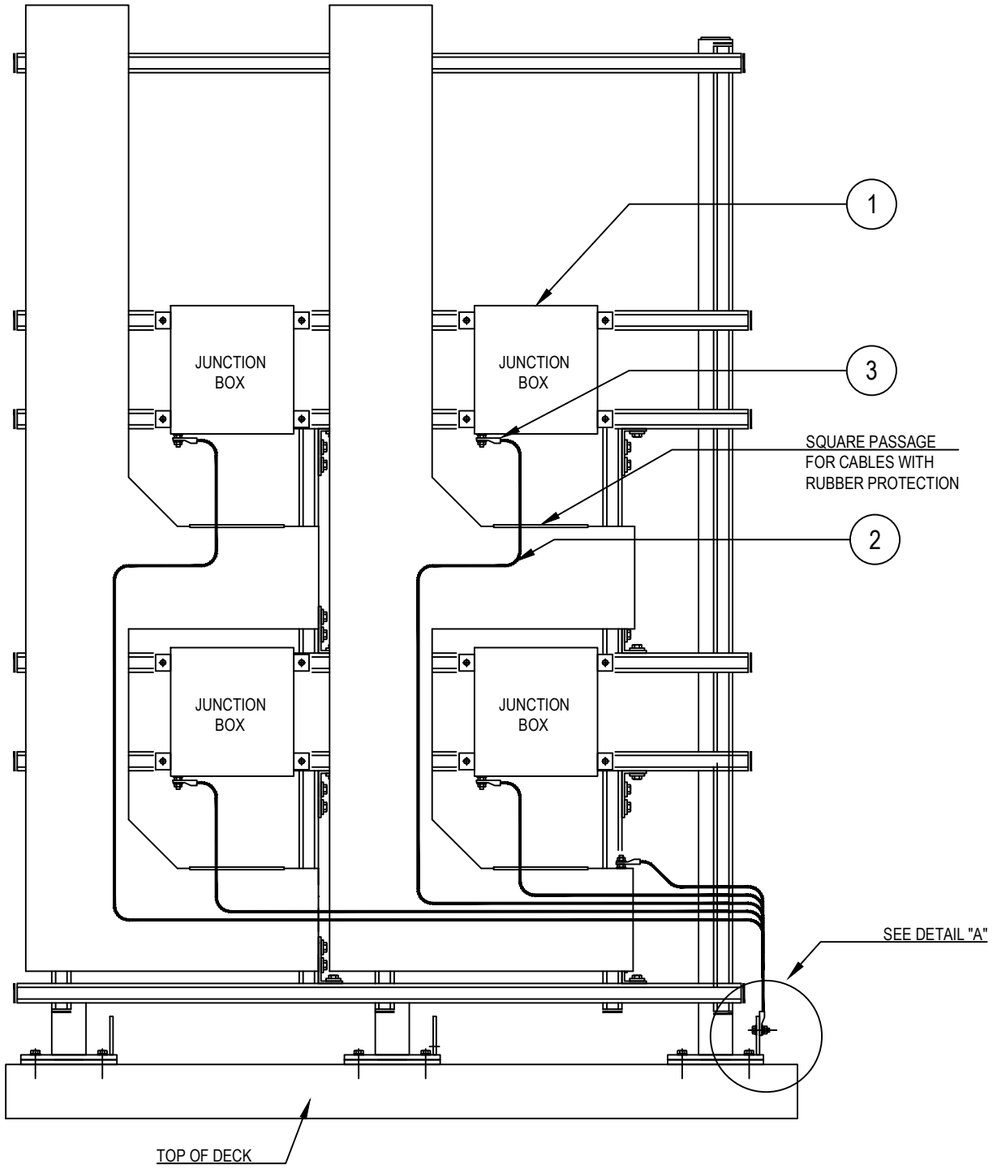
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

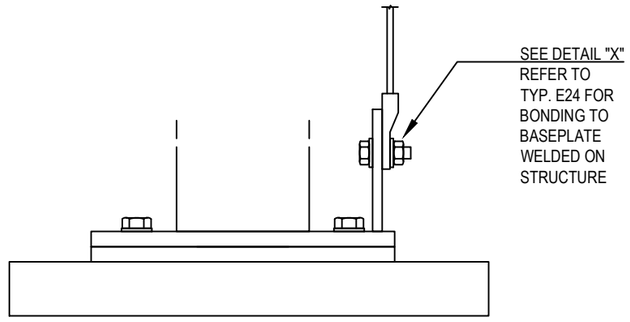
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E15

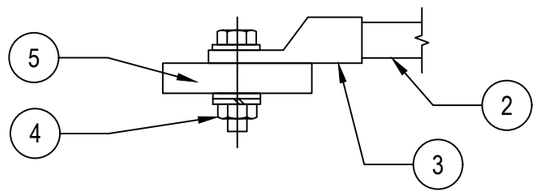


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	JUNCTION BOX (Ex)	GRP			
2	Y / G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	AISI 316L	$6mm^2$		~~NOTE 1~~
4	HEXAD BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
5	EARTHING PLATE	AISI 316L			NOTE 2

DETAIL "A"



DETAIL "X"



NOTES:

~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~

2) EARTHING PLATE WELDED ON BASE PLATE OF THE COLUM SUPPORT. SEE TYPICAL DETAIL E24

2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL AND INSTRUMENTALE JB MOUNTED ON RACK SUPPORT

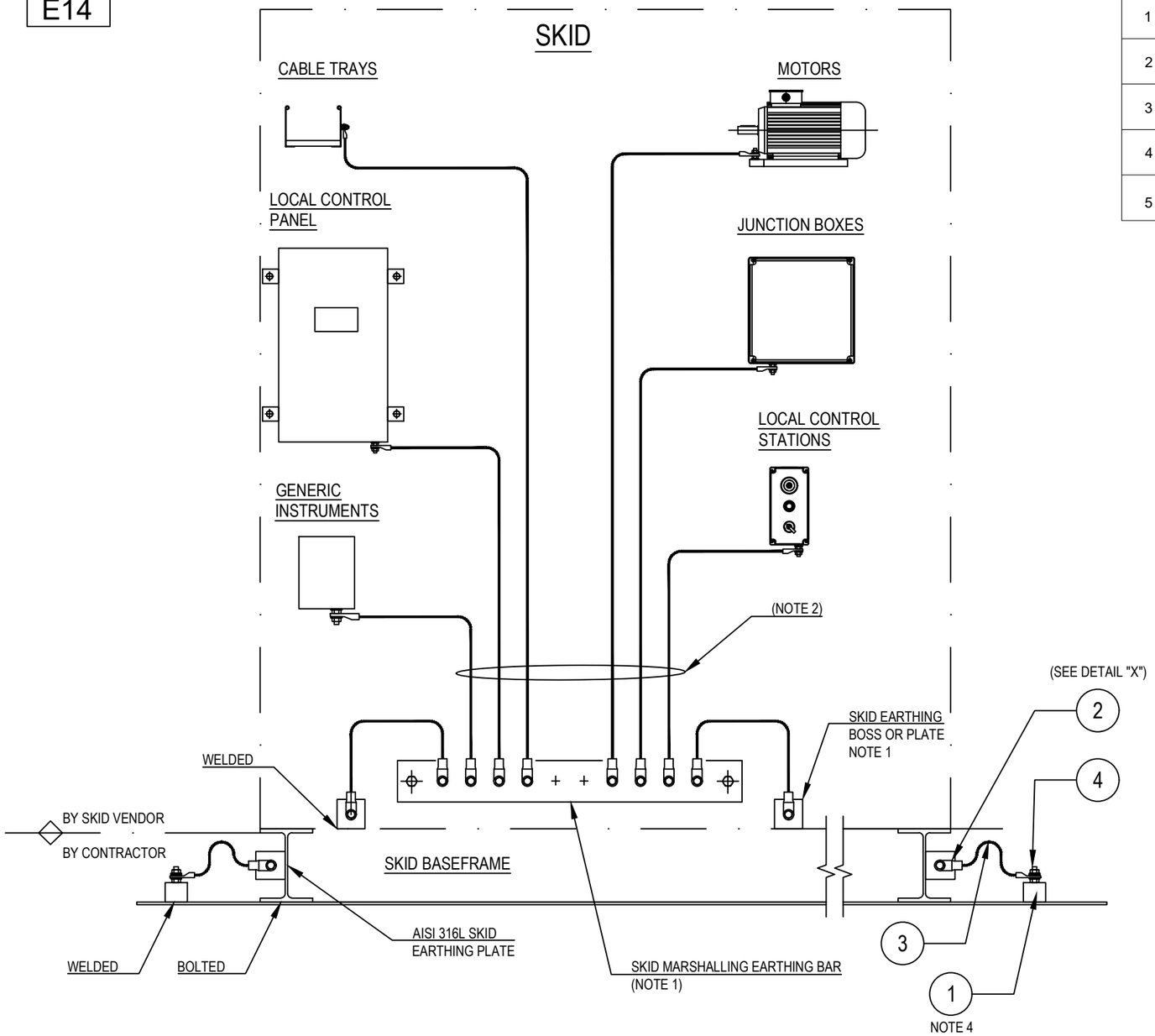
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 007 | REV. 02

F.to UNI A3: 420mmx297mm

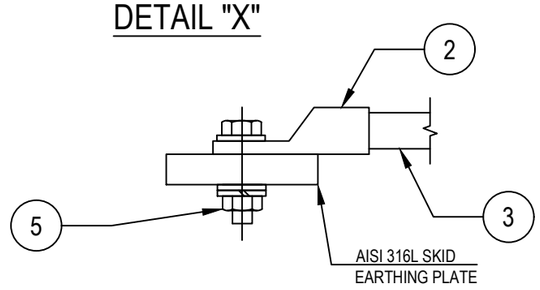
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E14



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 5
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		NOTE 3
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		NOTE 3
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



NOTES:
1) EARTHING BAR/BOSS/PLATE SUPPLIED BY SKID MANUFACTURER
2) ALL EQUIPMENTS AND CABLE TRAYS WILL BE EARTHING ON SKID EARTHING BAR BY SKID MANUFACTURER
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY~~
4) FOR EARTHING BOSS TYPICAL DETAIL E11A
5) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR SKID BASEFRAME

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

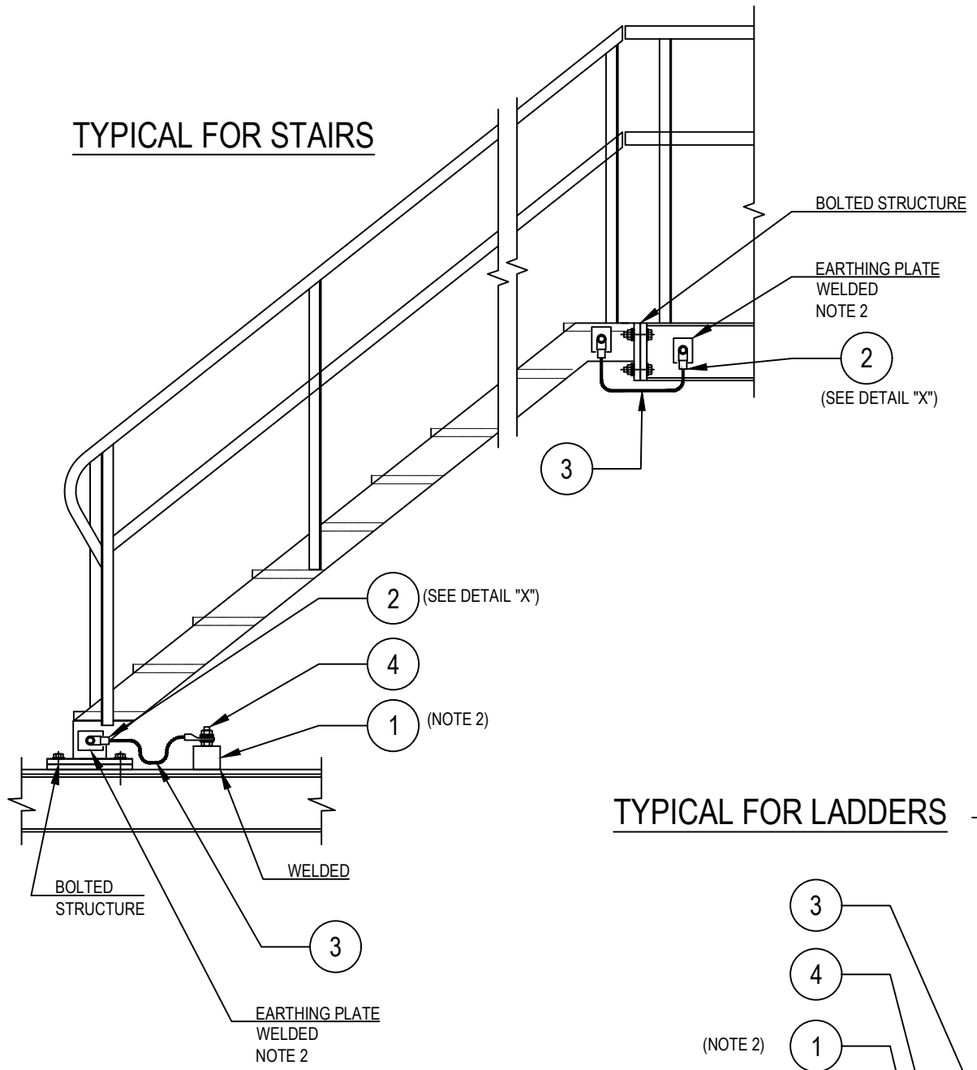
A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 014 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

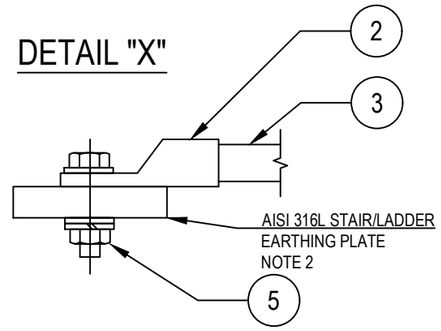
E17

TYPICAL FOR STAIRS

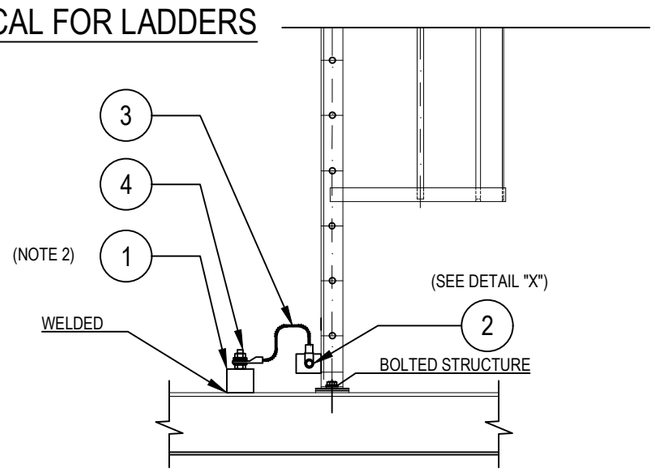


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



TYPICAL FOR LADDERS



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL E11A/C/D/E.
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR STAIRS AND LADDERS BOLTED ON STRUCTURE

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

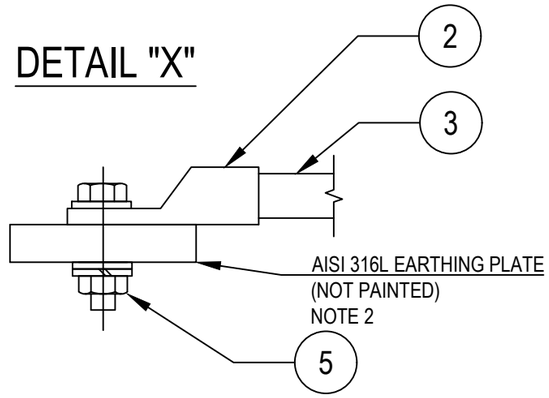
A3	DRAWING NO.	SHEET	REV.
	123A90–DDL–EL–DD–20090	015	02

F.to UNI A3: 420mmx297mm

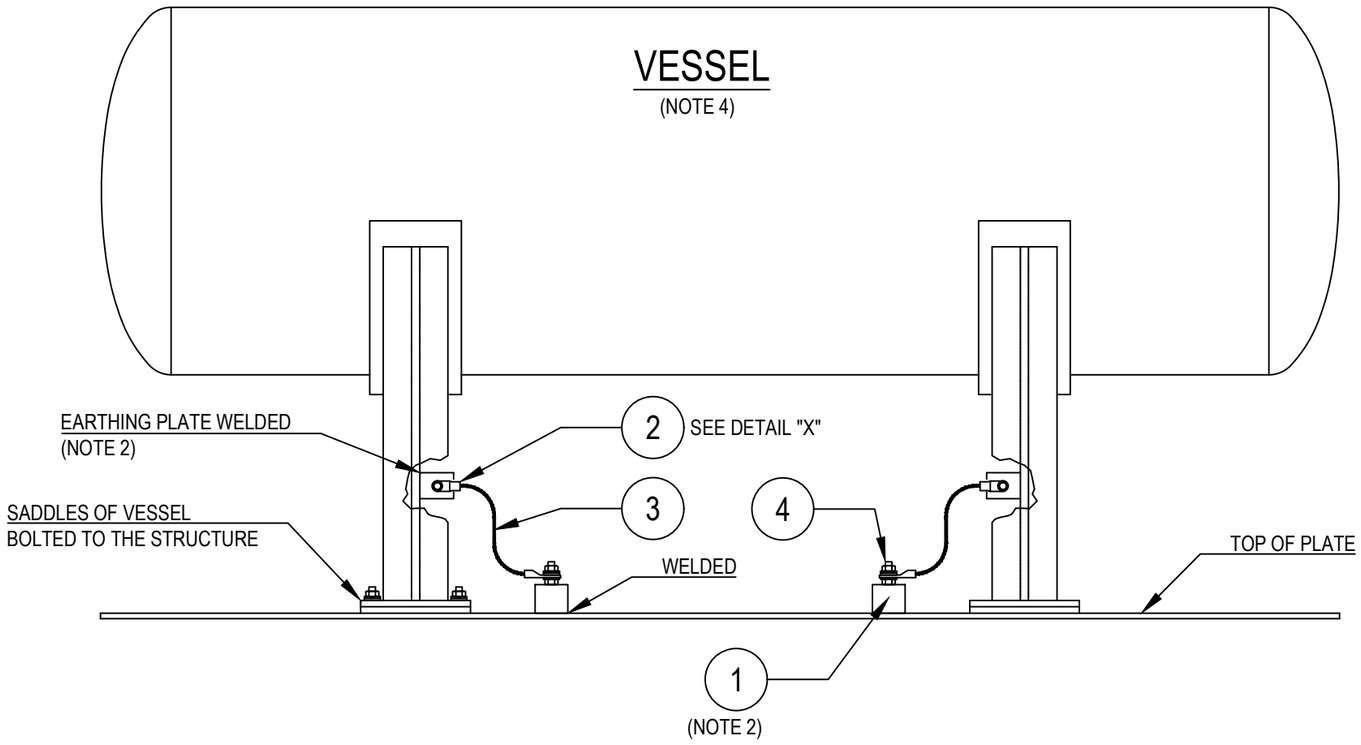
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E13

DETAIL "X"



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50	2	NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2	4	~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50	2	
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30	2	



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL DETAIL E11A
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR VESSEL WITH LEGS BOLTED ON STRUCTURE

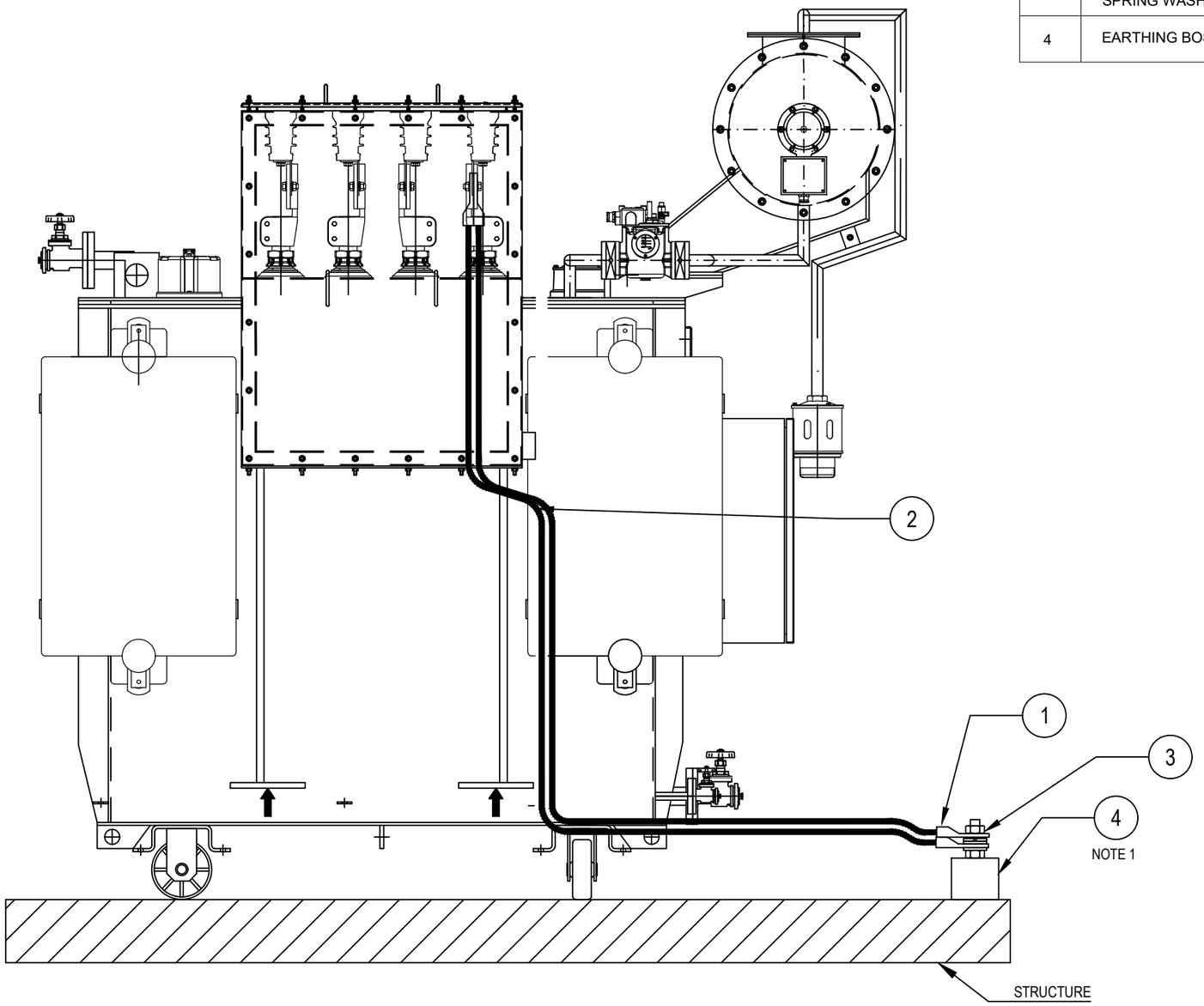
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3	DRAWING NO.	SHEET	REV.
	123A90–DDL–EL–DD–20090	016	02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E33



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER		1	
2	Y/G INSULATING COPPER CONDUCTOR	COPPER	2(1x150mm^2)	AS R	
3	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30	1	
4	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 2

NOTES:
1) FOR EARTHING BOSS TYPICAL DETAIL E11A
2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
NEUTRAL EARTHING

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 024 | REV. 02

CROSSWIND

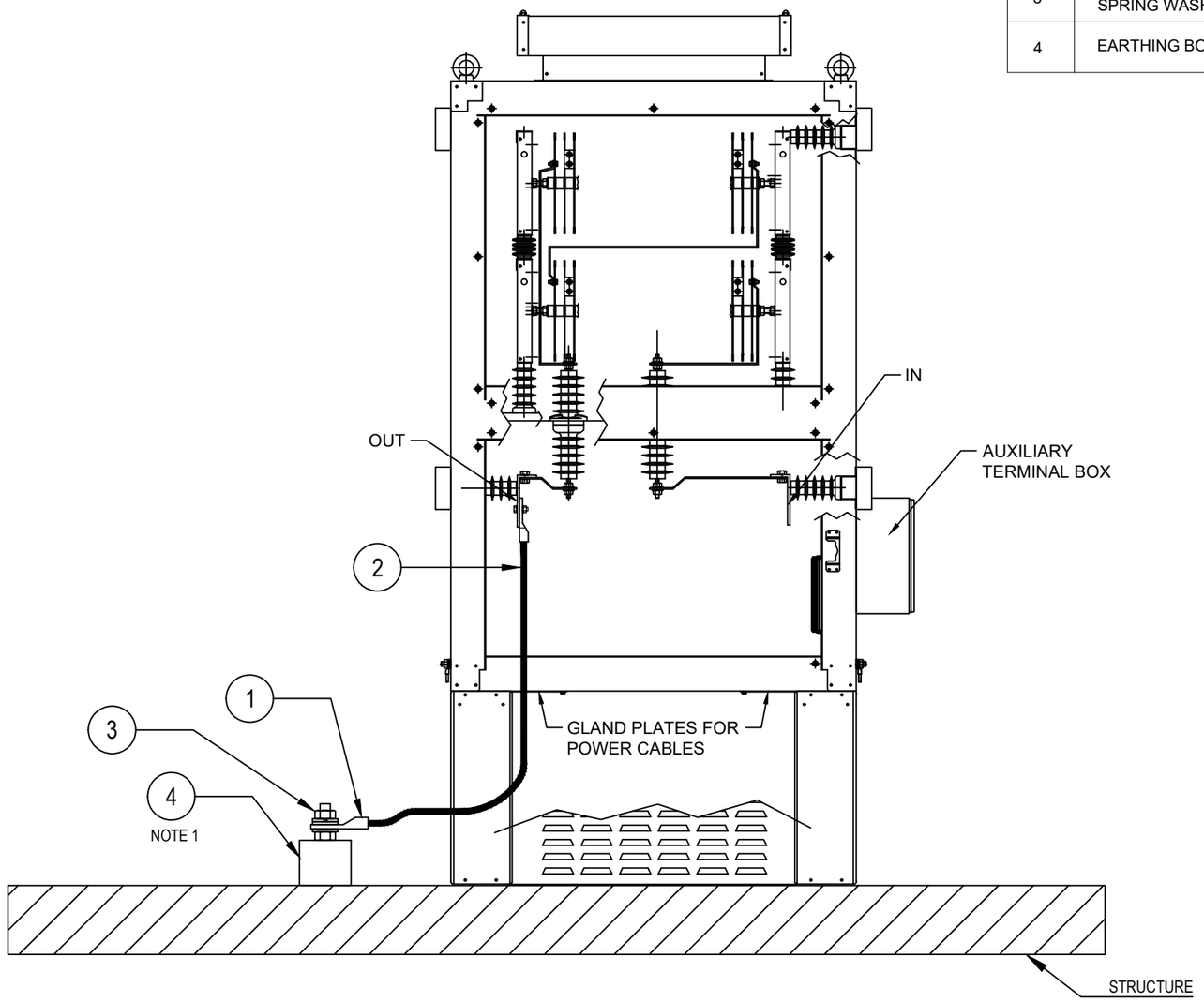
ROSETTI MARINO

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E34

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER		1	
2	Y/G INSULATING COPPER CONDUCTOR	COPPER	150mm² ~~120mm²~~	AS R	
3	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30	1	
4	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 2



NOTES:
1) FOR EARTHING BOSS TYPICAL DETAIL E11A
2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
NER EARTHING

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

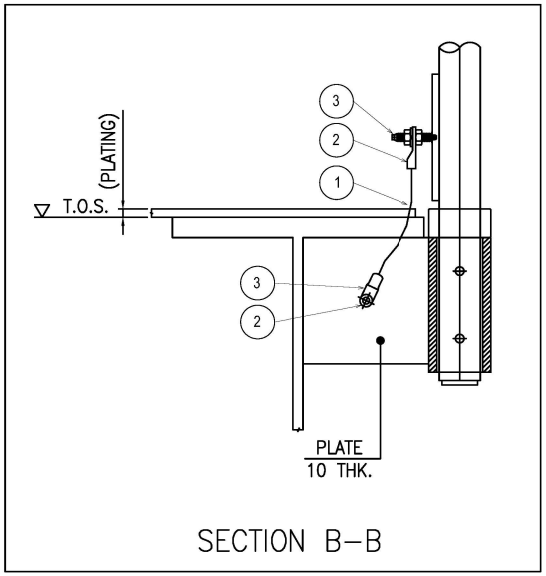
A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 025 | REV. 02

F.to UNI A3: 420mmx297mm

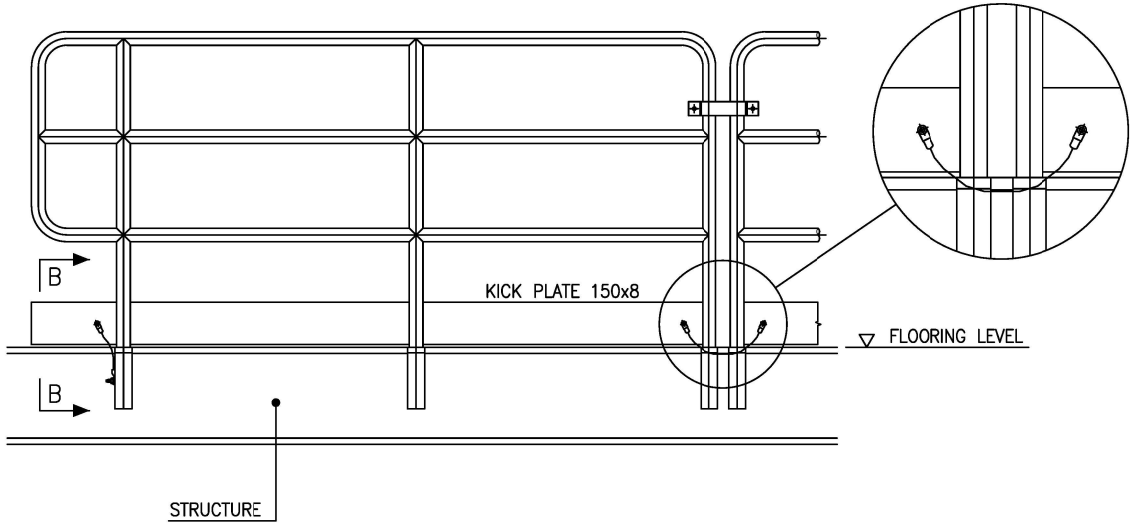
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E16

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	Y/G INSULATION COPPER CONDUCTOR	COPPER	16mm²		
2	COMPRESSION TYPE LUG FOR INSULATION COPPER	TINNED COPPER	16mm²		NOTE 3
3	HILTI S-BT-ER				



SECTION B–B



NOTES:
1. SEE SHEET 3 FOR EARTH POIN ASSEMBLY
~~2. CABLE LUG CRIMPING METHOD SHALL SE HEXAGONAL COMPRESSION DIES ONLY~~
3. CABLE LUG SHALL BE SUITABLE FOR M10 STUD SIZE
4. EQUIPOTENTIAL BONDING GROUPS WILL BE DEFINED DURING ASSEMBLY PHASE

VALID FOR CONSTRUCTION
FDL DWG: 123A90-FDL-EL-DD-20090
REV.: 2_I | DATE: 07/11/24 | SIGNATURE: G.Randi
ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR FIELD REMOVABLE TYPE HANDRAIL

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 021 | REV. 02

CROSSWIND

ROSETTI MARINO

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

ITEM	Tag	BLPH-EARTHING-TP	: Earthing System Transition Piece Below/Lower Deck			Dwg	123A90-DDL-EL-DL-20134
	S/Sys	88-00	: Earthing and Lightning Protection			Module	TP
TASK	code	C10002385		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX26 Earthing System

1	Check all earth bars installation against drawings.	OK
2	Check earthing cables installation against drawings.	PL
3	Check earthing cables cross section against drawings.	OK
4	Check all connections are tight, clean and coated with an approved anti-corrosive grease (if required).	OK
5	Check earthing networks segregation (IS).	OK
6	Check earth rods correct installation.	NA
7	If required produce Red Line Mark Up for "AS BUILT"	●

Test Results

DRAWING N°	Equipment N° (FROM)	Earth dispatcher (TO)	Loop resistance	Associated cable N°
SEE ATTACHED LAYOUT				

TEST CURRENT	200mA	A	
GLOBAL EARTHING RESISTANCE	0,01	Ohms	OK
EARTHING ROD RESISTANCE	NA	Ohms	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
VOLCRAFT 1000V - ET-200	H240103023	N°LAT 042 00768/24	11/10/2025

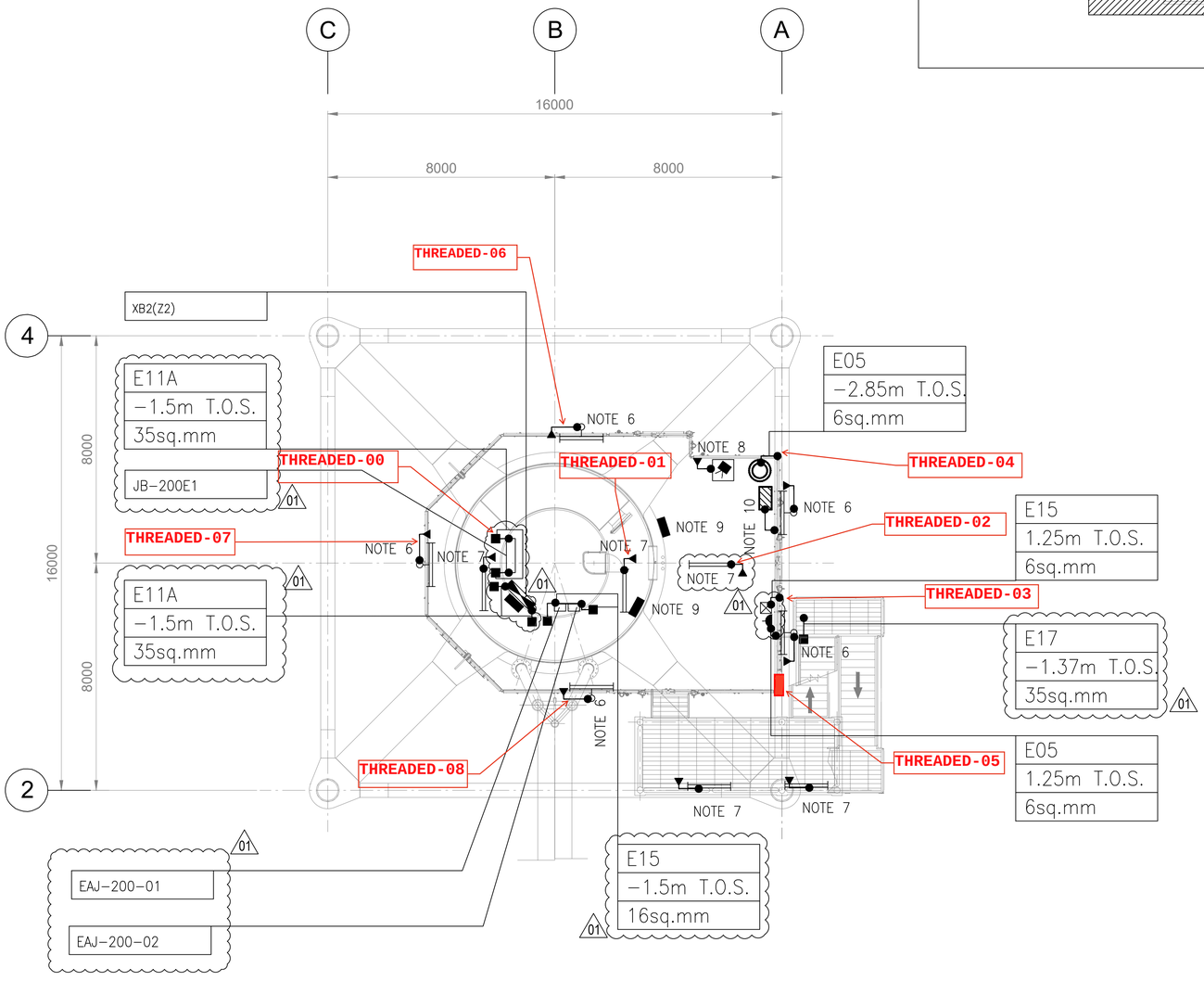
Comments:

	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	VIP	RM(ROSETTI MARINO)	
Name	Madhankumar Arunagiri	Giovanni Tangianu	
Date	2025-04-18	2025-05-07	
Signature	PROVERLIS Digitaly signed by Madhankumar Arunagiri 2025-04-18T06:43:39.284Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2025-05-07T14:38:20.852Z	

DRAWING NO. 123A90-DDL-EL-DL-20134

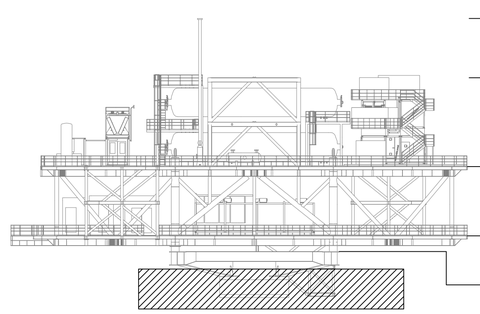
REV. 01

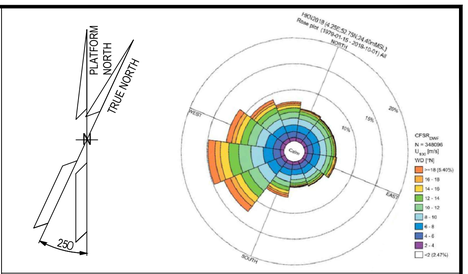
N	N2	N3	N4	N5	N6
1	123A90-DDL-EL-DL-20134_sh.01	THR-00	THR-01	0,003Ω	Metal structure
2	123A90-DDL-EL-DL-20134_sh.01	THR-01	THR-02	0,001Ω	Metal structure
3	123A90-DDL-EL-DL-20134_sh.01	THR-02	THR-03	0,009Ω	Metal structure
4	123A90-DDL-EL-DL-20134_sh.01	THR-03	THR-04	0,001Ω	Metal structure
5	123A90-DDL-EL-DL-20134_sh.01	THR-04	THR-05	0,002Ω	Metal structure
6	123A90-DDL-EL-DL-20134_sh.01	THR-04	THR-06	0,002Ω	Metal structure
7	123A90-DDL-EL-DL-20134_sh.01	THR-06	THR-07	0,001Ω	Metal structure
8	123A90-DDL-EL-DL-20134_sh.01	THR-07	THR-08	0,002Ω	Metal structure



PLAN ON TRANSITION PIECE
EL+21.710 T.O.S.

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. FOR LIGHTNING PROTECTION SYSTEM SURGE PROTECTIVE DEVICES (SPD), REFER TO DOCUMENT 123A90−DDL−EL−RE−20154. 01
6. ALL NON−WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24.
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
9. EARTH BAR WILL BE FIXED TO THE PRIMARY BEAMS OF THE UPPER DECK. COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D / 6.50M T.O.S. / 35 SQ. MM.
10. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E15.

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR
- SMALL POWER SOCKET & JB 01
- INSTRUMENT RACK
- UV−IR FLAME DETECTOR
- STATUS LIGHT

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

REFERENCE DOCUMENTS

123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20102	ELECTRICAL EQUIPMENT LAYOUT - BELOW LOWER DECK
123A90-DDL-EL-DL-20120	LIGHTING & SOCKET LAYOUT - BELOW LOWER DECK
123A90-DDL-SAF-DL-30028	F & G DETECTORS LAYOUT - BELOW LOWER DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	26/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	24/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DL-20134**

REV.:	DATE:	SIGNATURE:
1_A	08/08/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND | ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
BELOW LOWER DECK

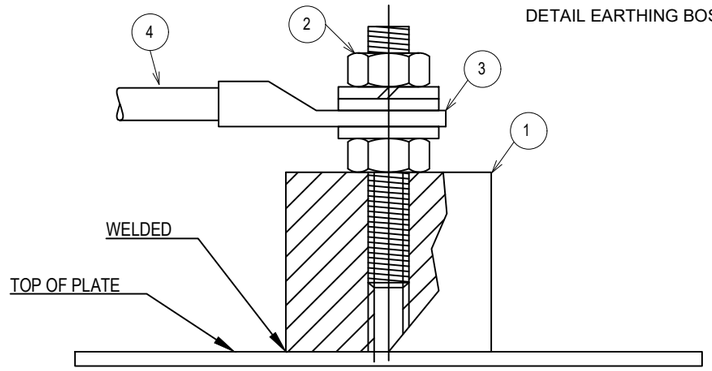
CONTRACT NO./TITLE CW−I−WP4−2023−05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:100
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 26/07/24
A1	DRAWING NO. 123A90−DDL−EL−DL−20134	SHEET 001	REV. 01

File Name : 123A90−DDL−EL−DL−20134

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50 50X150	1	NOTE 2
2	STUD BOLT WITH PLANE WASHER, GROWER AND NUT	AISI 316L	M10X50		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER			~~NOTE 3~~
4	Y/G INSULATING COPPER CONDUCTOR				NOTE 1 NOTE 5
5	EARTHING PLATE	AISI 316L (NOT PAINTED)	50X50X5		NOTE 4
6	HEXAGONAL BOLT WITH PLANE WASHERS, GROWER AND NUT.	AISI 316L	M10X30		
7	THREADED STUD COMPLETE WITH GROWER AND NUTS	AISI 316L	M10X28		NOTE 6 NOTE 7

E11A

DETAIL EARTHING BOSS 50x50

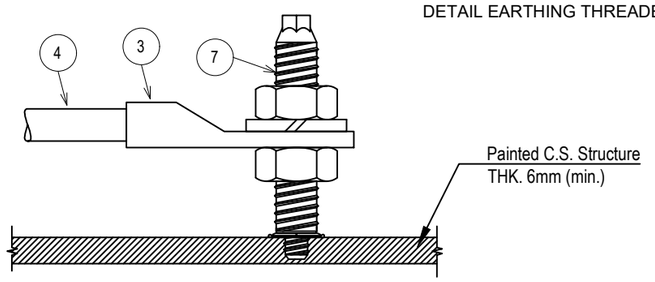


E11D

SEE NOTE 6

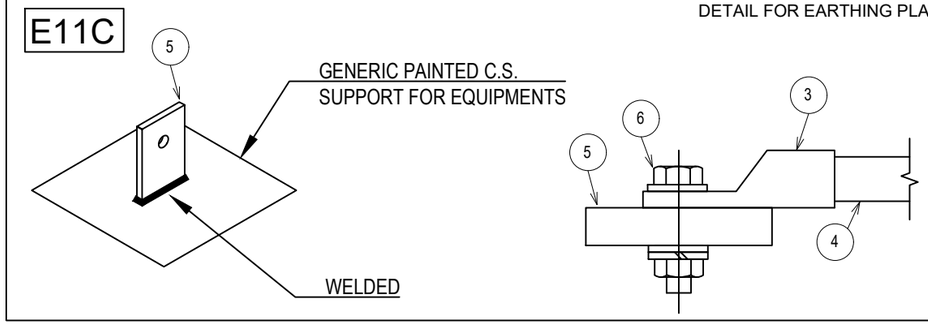
FOR CABLE
MAX 10mm²

DETAIL EARTHING THREADED STUD



E11C

DETAIL FOR EARTHING PLATE

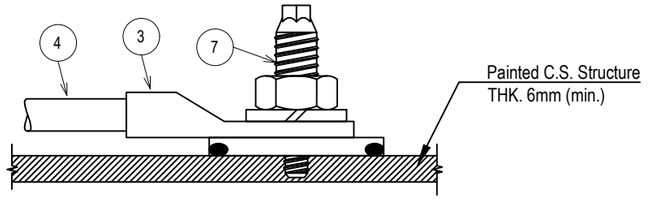


E11E

SEE NOTE 7

FOR CABLE
MAX 35mm²

DETAIL EARTHING THREADED STUD



NOTES:

1) ONLY ONE PROTECTIVE CONDUCTOR TERMINATION LUG SHALL BE CONNECTED TO A DEDICATED EARTHING BOSS, EARTH PLATE OR EARTH STUD.
2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE).
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
4) EARTHING PLATE SHALL BE DEDICATED TO CABLE TRAY AND PIPE SUPPORTS, JUNCTION BOX, LOCAL CONTROL STATION AND SMALL EQUIPMENT SUPPORTS, LIGHTING POLES, RECEPTACLE SUPPORTS AND REMOVABLE HANDRAILS, ONLY.
5) FOR SIZE OF THE EARTHING CABLE SEE EARTHING LAYOUT DRAWINGS OF RESPECTIVE AREAS
6) HILTI S-BT-ER M10/15 SN6 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 10mm².
7) HILTI S-BT-ER M10 HC 120 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 35mm².

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
SINGLE EARTHING CONNECTION

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 123A90–DDL–EL–DD–20090

SHEET 003

REV. 02

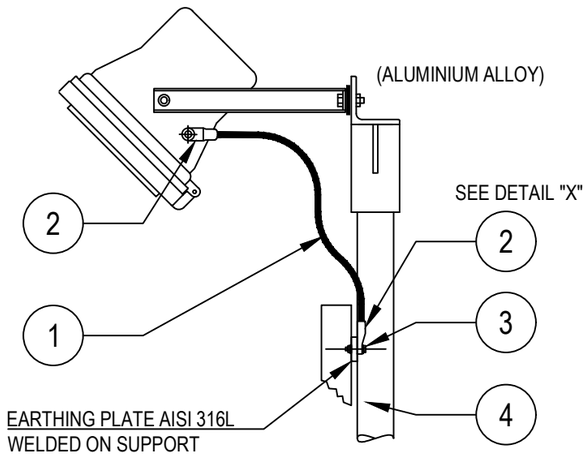
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

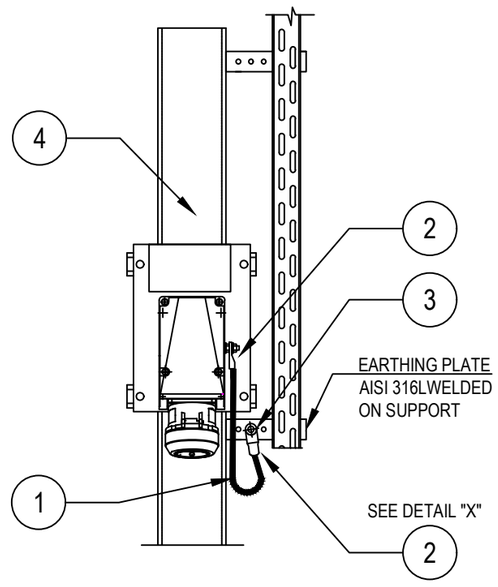
E05

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	Y/G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$6mm^2$	2	
3	HEXAG. BOLTS, PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M8X30	1	

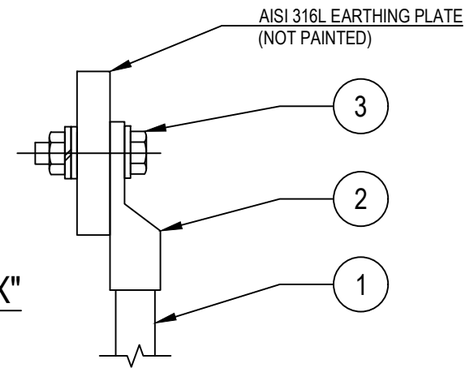
LIGHTING FIXTURE/GENERAL ITEM ON POLE



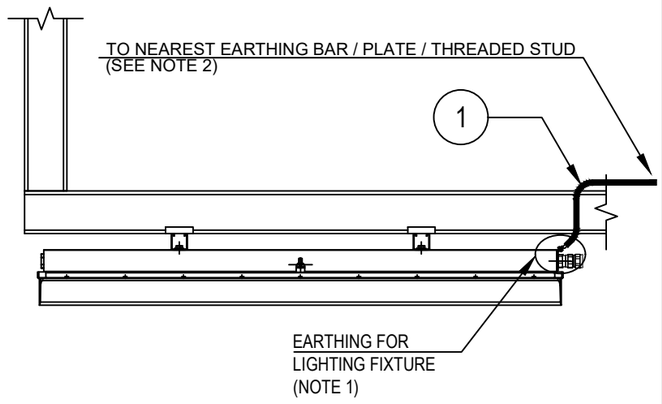
POWER SOCKET OUTLET



DETAIL "X"



LIGHTING FIXTURES



Refer also to TYP. "E32" (SEE SHEET 23)

TYPICAL VALID ALSO FOR NAVAID LIGHTS

NOTES:

1) ALL LIGHTING FIXTURES AND RELEVANT ARMOUR OF THE CABLE, ARE CONNECTED TO EARTH CONNECTION THROUGH THE EARTHING TAG OF THE CABLE GLAND

2) FOR EARTHING POINT USE ONE OF THE FOLLOWING METHODS:
TYP. E03A-D sh. 004 (EARTHING BAR ON STRUCT. UNISTRUT AND CABLE TRAY)
TYP. E11C sh. 003 (EARTHING PLATE)
TYP. E11D sh. 003 (THREADED STUD ON EXTERNAL STRUCTURE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL EQUIPMENTS

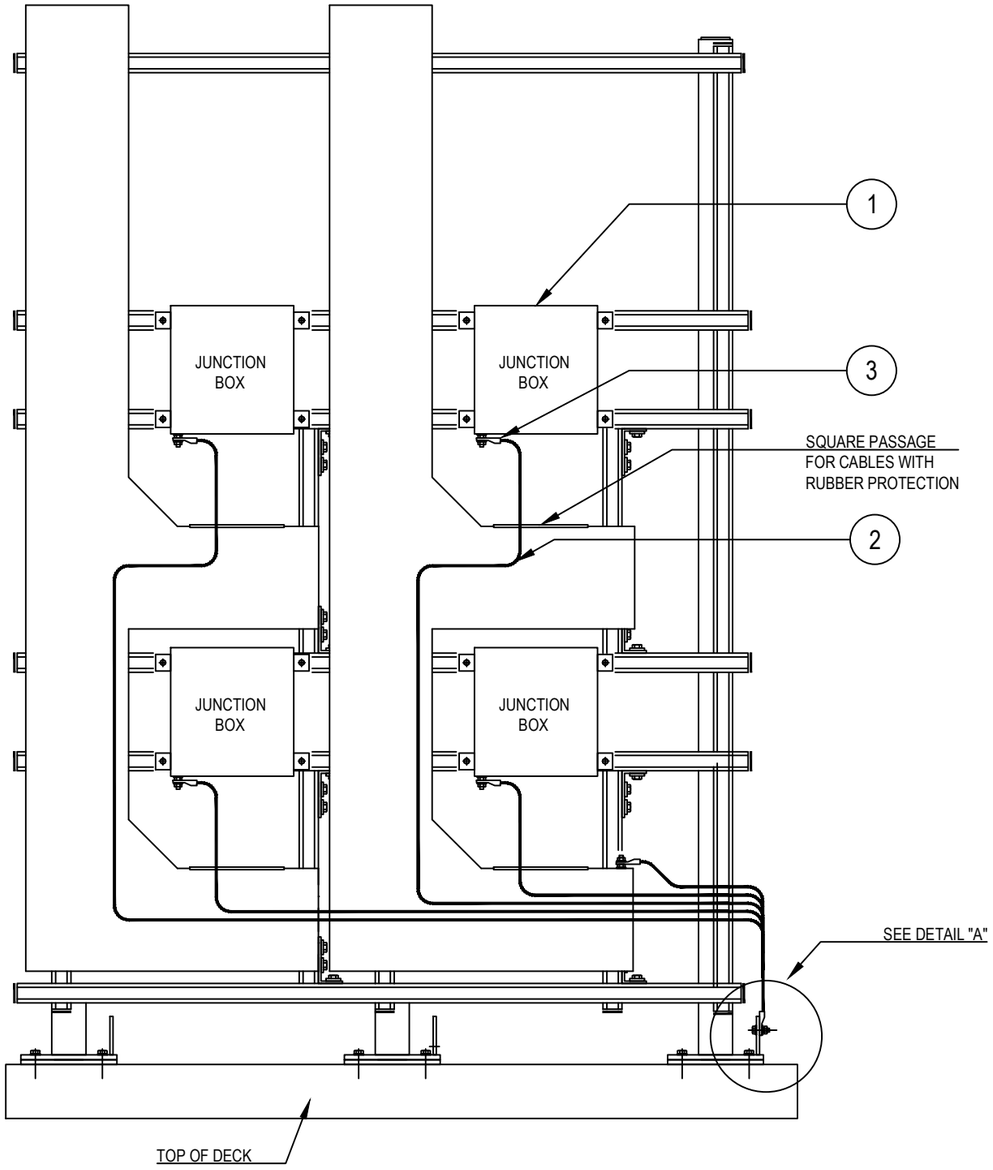
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

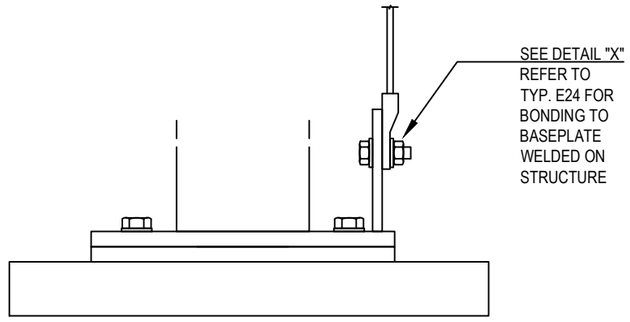
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E15

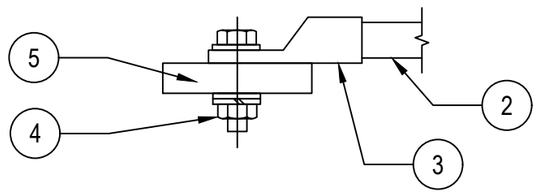


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	JUNCTION BOX (Ex)	GRP			
2	Y / G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	AISI 316L	$6mm^2$		~~NOTE 1~~
4	HEXAD BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
5	EARTHING PLATE	AISI 316L			NOTE 2

DETAIL "A"



DETAIL "X"



NOTES:

~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~

2) EARTHING PLATE WELDED ON BASE PLATE OF THE COLUM SUPPORT. SEE TYPICAL DETAIL E24

2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL AND INSTRUMENTALE JB MOUNTED ON RACK SUPPORT

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

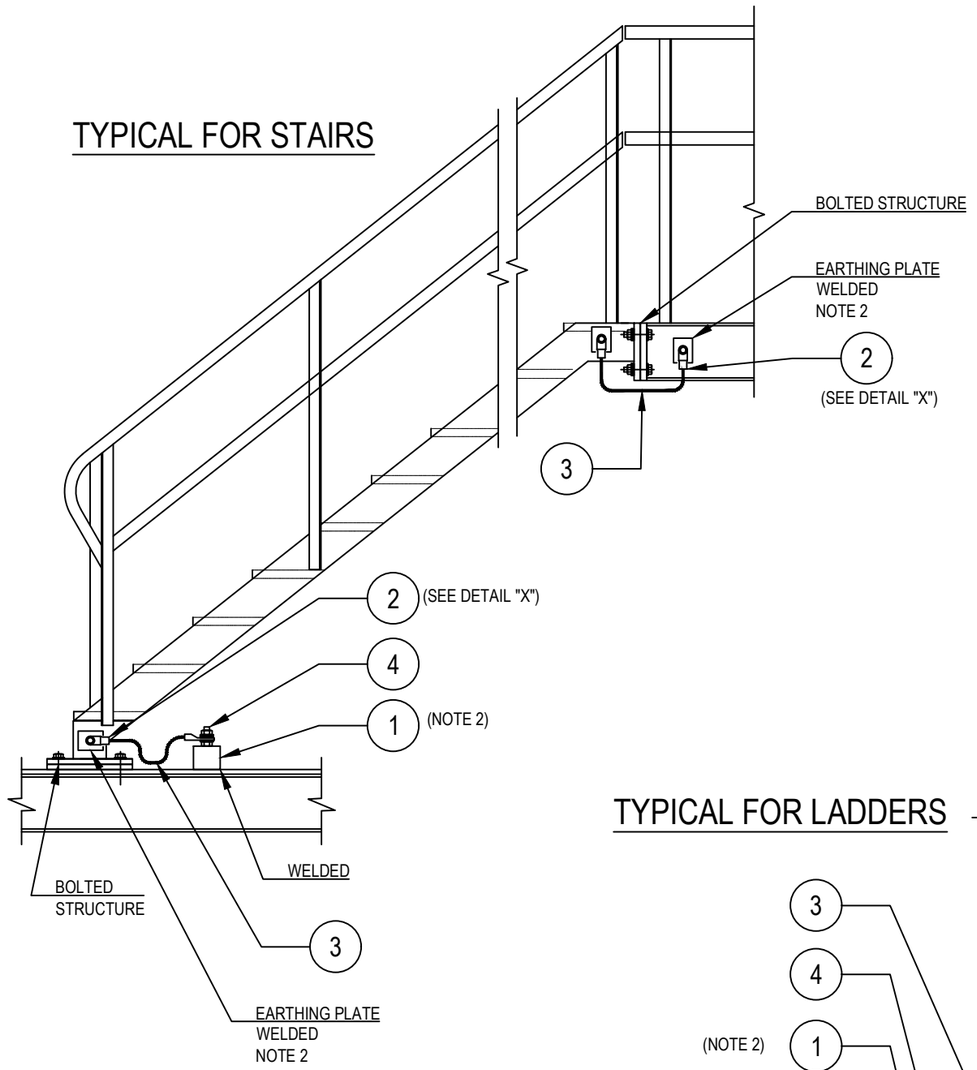
A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 007 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

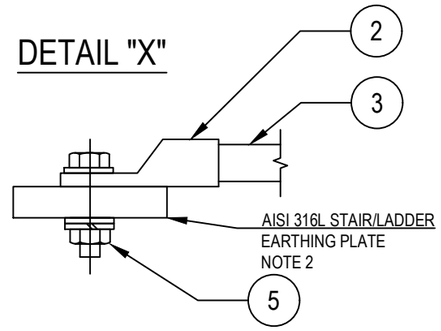
E17

TYPICAL FOR STAIRS

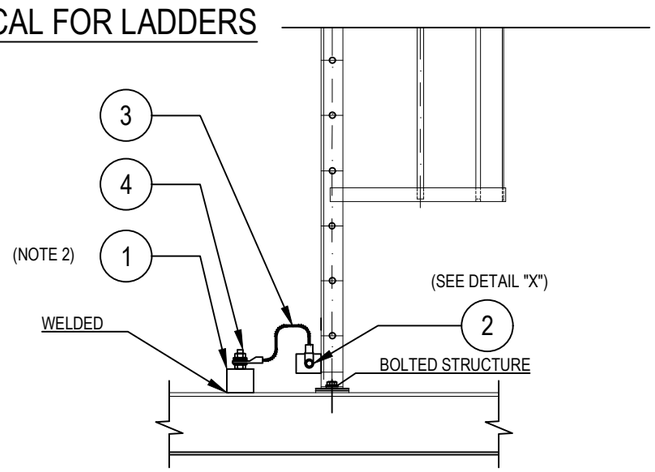


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



TYPICAL FOR LADDERS



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL E11A/C/D/E.
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR STAIRS AND LADDERS BOLTED ON STRUCTURE

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3	DRAWING NO.	SHEET	REV.
	123A90–DDL–EL–DD–20090	015	02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

ITEM	Tag	BLPH-EARTHING-UD	: Earthing System Upper deck			Dwg	123A90-DDL-EL-DL-20132
	S/Sys	88-00	: Earthing and Lightning Protection			Module	UD
TASK	code	C10002386		Location	Onshore Activities	User	Rosetti Marino Quality Control
FORM	Process	MC	Activity CCK	Discipline	Electrical	Form	CPX26
							Earthing System

1	Check all earth bars installation against drawings.	OK
2	Check earthing cables installation against drawings.	PL
3	Check earthing cables cross section against drawings.	OK
4	Check all connections are tight, clean and coated with an approved anti-corrosive grease (if required).	PL
5	Check earthing networks segregation (IS).	OK
6	Check earth rods correct installation.	NA
7	If required produce Red Line Mark Up for "AS BUILT"	

Test Results

DRAWING N°	Equipment N° (FROM)	Earth dispatcher (TO)	Loop resistance	Associated cable N°
SEE ATTACHED LAYOUT				

TEST CURRENT	200mA	A	
GLOBAL EARTHING RESISTANCE	0,01	Ohms	OK
EARTHING ROD RESISTANCE	NA	Ohms	NA

Testing & measurement instruments used

Type	Serial n°	Calibration certificate	Validity
VOLCRAFT 1000V - ET-200	H240103023	N°LAT 042 00768/24	11/10/2025

Comments:

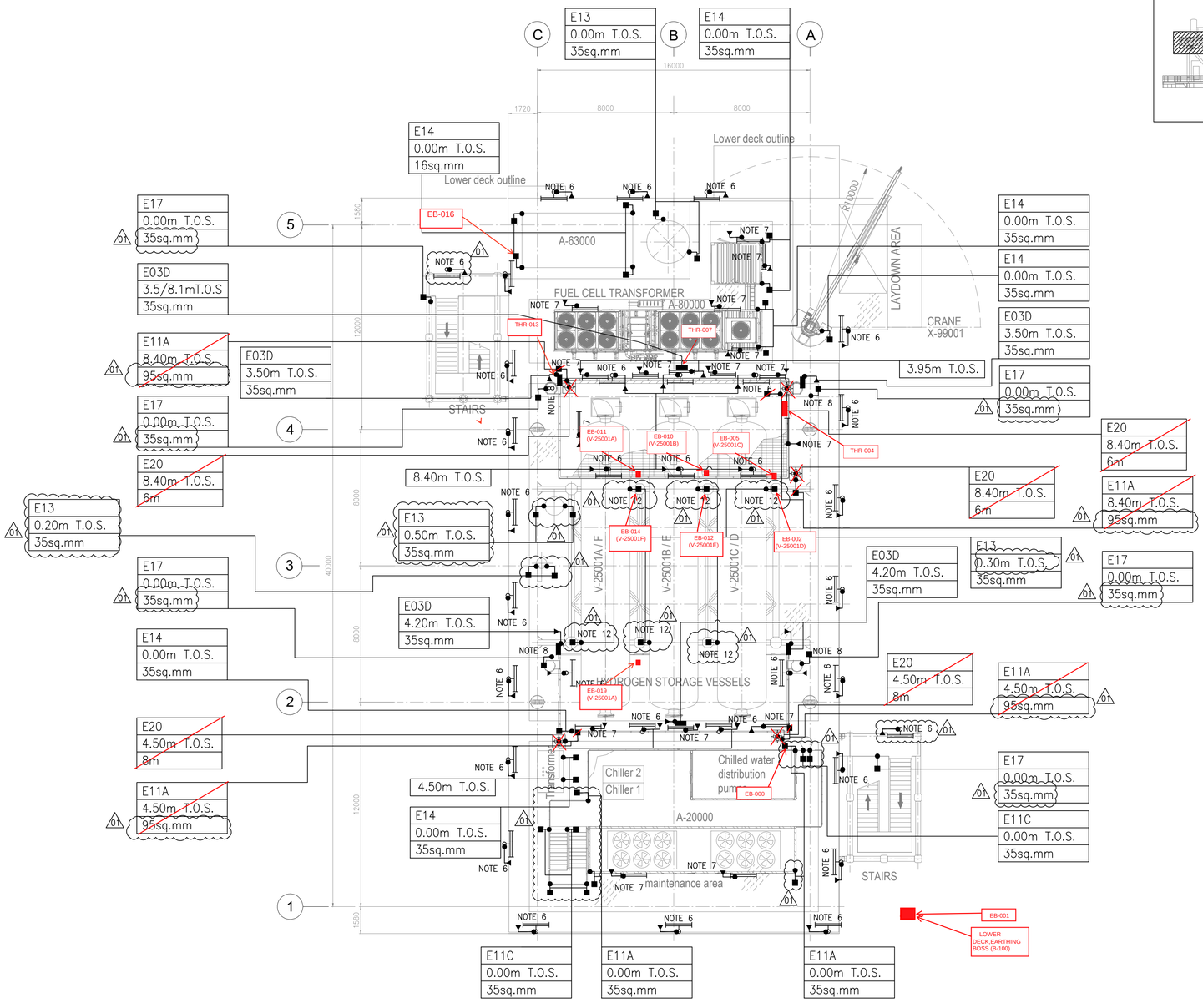
	Performed by	● WITNESS ☐ REVIEW	☐ WITNESS ☐ REVIEW
Company	ICS IMPIANTI	RM(ROSETTI MARINO)	
Name	Michele Tartaglia	Giovanni Tangianu	
Date	2025-02-19	2025-03-07	
Signature	PROVERLIS Digitaly signed by Michele Tartaglia 2025-02-19T13:45:18.124Z	PROVERLIS Digitaly signed by Giovanni Tangianu 2025-03-07T12:24:01.973Z	

DRAWING NO. 123A90-DDL-EL-DL-20132

REV. 01

RLMU LIST

REV. 01_B: Sheet 1, 3



PLAN ON TOP DECK
EL+30.310 T.O.S.

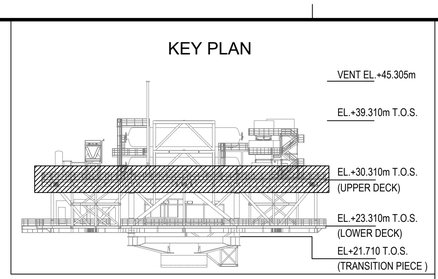
N	N2	N3	N4	N5	N6
1	123A90-DDL-EL-DL-20132_sh.01	EB-001-lower deck	EB-000	0,001Ω	Metal structure
2	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-002	0,001Ω	Metal structure
3	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-003-(ATR-04)	0,001Ω	Metal structure
4	123A90-DDL-EL-DL-20132_sh.01	EB-002	THR-004	0,004Ω	Metal structure
5	123A90-DDL-EL-DL-20132_sh.01	THR-004	EB-005	0,005Ω	Metal structure
6	123A90-DDL-EL-DL-20132_sh.01	EB-005	EB-006-(ATR-02)	0,003Ω	Metal structure
7	123A90-DDL-EL-DL-20132_sh.01	EB-006-(ATR-06)	THR-007	0,003Ω	Metal structure
8	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-008-(ATR-01)	0,001Ω	Metal structure
9	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-009-(ATR-05)	0,001Ω	Metal structure
10	123A90-DDL-EL-DL-20132_sh.01	EB-009-(ATR-05)	EB-010	0,004Ω	Metal structure
11	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-011	0,003Ω	Metal structure
12	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-012	0,007Ω	Metal structure
13	123A90-DDL-EL-DL-20132_sh.01	EB-012	THR-013	0,001Ω	Metal structure
14	123A90-DDL-EL-DL-20132_sh.01	THR-013	EB-014	0,002Ω	Metal structure
15	123A90-DDL-EL-DL-20132_sh.01	EB-014	THR-015	0,002Ω	Metal structure
16	123A90-DDL-EL-DL-20132_sh.01	THR-015	EB-016	0,002Ω	Metal structure 002
17	123A90-DDL-EL-DL-20132_sh.01	THR-015	THR-017	0,002Ω	Metal structure
18	123A90-DDL-EL-DL-20132_sh.01	THR-017	EB-018-(ATR-03)	0,003Ω	Metal structure
19	123A90-DDL-EL-DL-20132_sh.01	EB-018-(ATR-03)	EB-019	0,001Ω	Metal structure

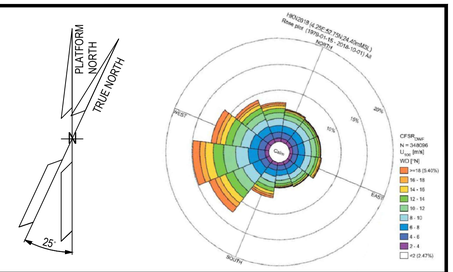
VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. FOR LIGHTNING PROTECTION SYSTEM SURGE PROTECTIVE DEVICES (SPD), REFER TO THE DOCUMENT 123A90-DDL-EL-RE-20154.
6. ALL NON-WELDED POLES WILL BE EARTHED AS PER TYPICAL E05 AND E24. 01
7. ALL LINEAR LIGHTING FIXTURE WILL BE EARTHED AS PER TYPICAL E32.
8. LADDER MUST BE EARTHED IF NOT WELDED TO THE STRUCTURE. LADDER MUST BE EARTHED TO THE UPPER BEAM OF THE STRUCTURE, COMPLETE EARTHING INCLUDING WITH 2 THREADED STUDS AS PER TYPICAL E17D.
9. ALL EARTH BAR WILL BE EARTHED AS PER TYPICAL E03D.
10. ALL POLE MOUNTED EQUIPMENTS WILL BE EARTHED AS PER TYPICAL E05.
11. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE
12. EARTHED VESSELS V-25001D/E/F. FOR EARTHING V-25001A/B/C SEE SHEET 2 01

LEGEND

- LIGHTING FIXTURE POLE MOUNTED
- LINEAR LIGHTING FIXTURE
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- AIR TERMINATION ROD FOR LIGHTNING PROTECTION
- Exx EARTHING TYPICAL CODE
- EARTHING BAR

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

E20	AIR TERMINATION ROD NO.
ELE	ELEVATION
HEIGHT	

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20118	LIGHTING & SOCKET LAYOUT - TOP DECK

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

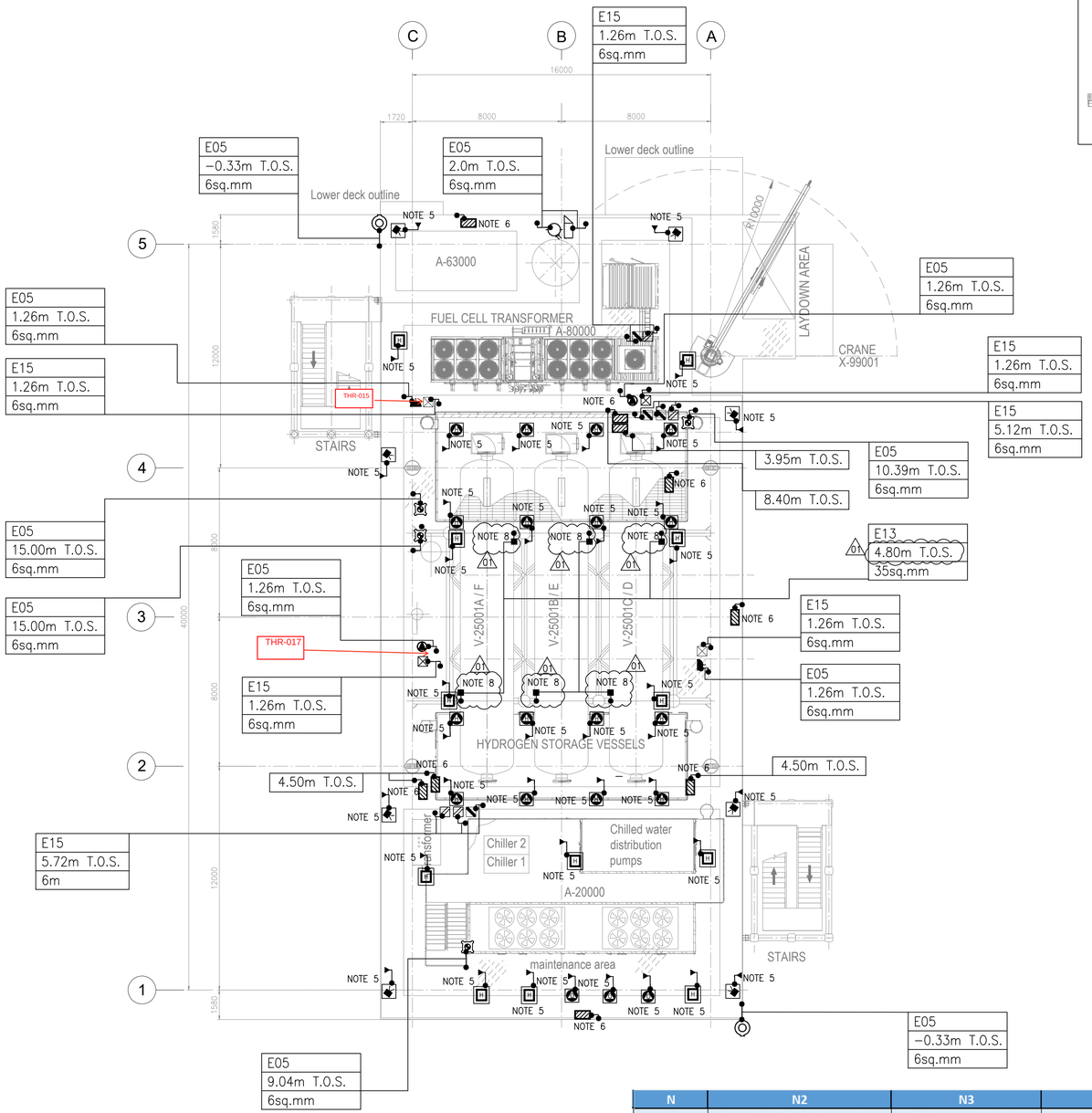
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EARTHING & LIGHTNING LAYOUT
TOP DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
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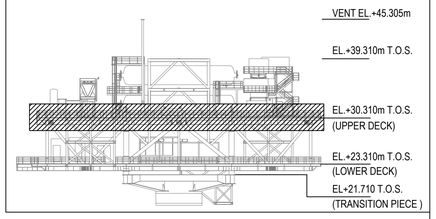
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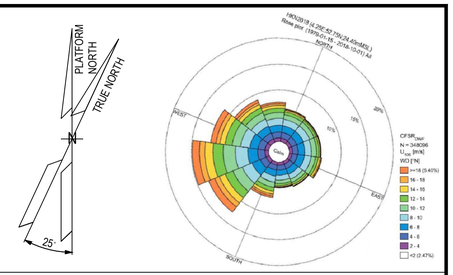
REV. 01



PLAN ON TOP DECK
EL+30.310 T.O.S.

KEY PLAN





NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
6. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E05A.
7. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE
8. EARTHED VESSELS V-25001A/B/C. FOR EARTHING V-25001D/E/F SEE SHEET 1 (01)

LEGEND

- POINT SOURCE HYDROGEN DETECTOR
- ULTRA SONIC HYDROGEN DETECTOR
- POINT SOURCE OXYGEN DETECTOR
- UV−IR FLAME DETECTOR
- INSTRUMENT RACK
- COMPRESSION TYPE LUG TINNED COPPER
- THREADED STUD FOR EARTHING CONNECTION
- EMERGENCY & NORMAL LIGHTING JB
- WELDING SOCKET & JB
- SMALL POWER SOCKET & JB
- MAIN YELLOW LANTERNS
- OBSTRUCTION RED LED LIGHTS (MEDIUM INTENSITY)
- PHOTOCELL
- VISIBILITY METER

TYP.	TYPICAL
ELE	ELEVATION
SIZE	

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT
123A90-DDL-EL-DL-20118	LIGHTING & SOCKET LAYOUT - TOP DECK
123A90-DDL-SAF-DL-30027	F & G DETECTORS LAYOUT - LOWER & UPPER DECK

N	N2	N3	N4	N5	N6
1	123A90-DDL-EL-DL-20132_sh.01	EB-001-lower deck	EB-000	0,001Ω	Metal structure
2	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-002	0,001Ω	Metal structure
3	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-003-(ATR-04)	0,001Ω	Metal structure
4	123A90-DDL-EL-DL-20132_sh.01	EB-002	THR-004	0,004Ω	Metal structure
5	123A90-DDL-EL-DL-20132_sh.01	THR-004	EB-005	0,005Ω	Metal structure
6	123A90-DDL-EL-DL-20132_sh.01	EB-005	EB-006-(ATR-02)	0,003Ω	Metal structure
7	123A90-DDL-EL-DL-20132_sh.01	EB-006-(ATR-06)	THR-007	0,003Ω	Metal structure
8	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-008-(ATR-01)	0,001Ω	Metal structure
9	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-009-(ATR-05)	0,001Ω	Metal structure
10	123A90-DDL-EL-DL-20132_sh.01	EB-009-(ATR-05)	EB-010	0,004Ω	Metal structure
11	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-011	0,003Ω	Metal structure
12	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-012	0,007Ω	Metal structure
13	123A90-DDL-EL-DL-20132_sh.01	EB-012	THR-013	0,001Ω	Metal structure
14	123A90-DDL-EL-DL-20132_sh.01	THR-013	EB-014	0,002Ω	Metal structure
15	123A90-DDL-EL-DL-20132_sh.01	EB-014	THR-015	0,002Ω	Metal structure
16	123A90-DDL-EL-DL-20132_sh.01	THR-015	EB-016	0,002Ω	Metal structure
17	123A90-DDL-EL-DL-20132_sh.01	THR-015	THR-017	0,002Ω	Metal structure
18	123A90-DDL-EL-DL-20132_sh.01	THR-017	EB-018-(ATR-03)	0,003Ω	Metal structure
19	123A90-DDL-EL-DL-20132_sh.01	EB-018-(ATR-03)	EB-019	0,001Ω	Metal structure

VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
TOP DECK

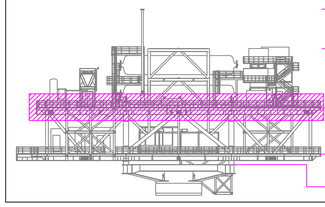
CONTRACT NO./TITLE CW−I−WP4−2023−05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
A1	DRAWING NO. 123A90−DDL−EL−DL−20132	SHEET 002	REV. 01

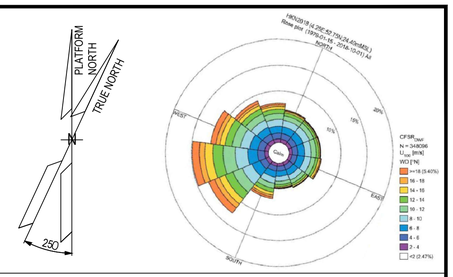
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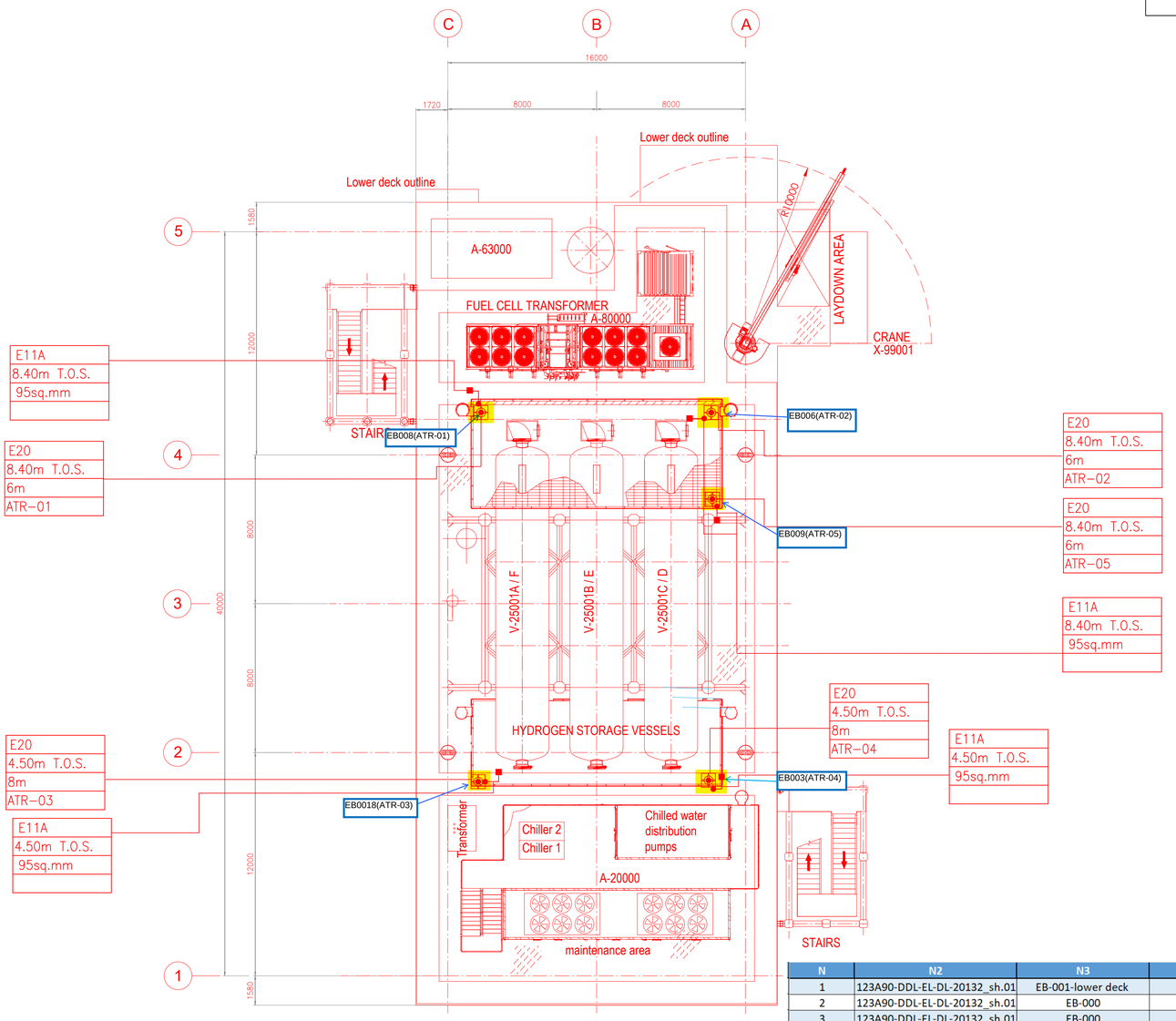
DRAWING NO. 123A90-DDL-EL-DL-20132

REV. 01

KEY PLAN







N	N2	N3	N4	N5	N6
1	123A90-DDL-EL-DL-20132_sh.01	EB-001-lower deck	EB-000	0,001Ω	Metal structure
2	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-002	0,001Ω	Metal structure
3	123A90-DDL-EL-DL-20132_sh.01	EB-000	EB-003-(ATR-04)	0,001Ω	Metal structure
4	123A90-DDL-EL-DL-20132_sh.01	EB-002	THR-004	0,004Ω	Metal structure
5	123A90-DDL-EL-DL-20132_sh.01	THR-004	EB-005	0,005Ω	Metal structure
6	123A90-DDL-EL-DL-20132_sh.01	EB-005	EB-006-(ATR-02)	0,003Ω	Metal structure
7	123A90-DDL-EL-DL-20132_sh.01	EB-006-(ATR-06)	THR-007	0,003Ω	Metal structure
8	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-008-(ATR-01)	0,001Ω	Metal structure
9	123A90-DDL-EL-DL-20132_sh.01	THR-007	EB-009-(ATR-05)	0,001Ω	Metal structure
10	123A90-DDL-EL-DL-20132_sh.01	EB-009-(ATR-05)	EB-010	0,004Ω	Metal structure
11	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-011	0,003Ω	Metal structure
12	123A90-DDL-EL-DL-20132_sh.01	EB-010	EB-012	0,007Ω	Metal structure
13	123A90-DDL-EL-DL-20132_sh.01	EB-012	THR-013	0,001Ω	Metal structure
14	123A90-DDL-EL-DL-20132_sh.01	THR-013	EB-014	0,002Ω	Metal structure
15	123A90-DDL-EL-DL-20132_sh.01	EB-014	THR-015	0,002Ω	Metal structure
16	123A90-DDL-EL-DL-20132_sh.01	THR-015	EB-016	0,002Ω	Metal structure
17	123A90-DDL-EL-DL-20132_sh.01	THR-015	THR-017	0,002Ω	Metal structure
18	123A90-DDL-EL-DL-20132_sh.01	THR-017	EB-018-(ATR-03)	0,003Ω	Metal structure
19	123A90-DDL-EL-DL-20132_sh.01	EB-018-(ATR-03)	EB-019	0,001Ω	Metal structure

NOTES

1. ALL DIMENSIONS AND ELEVATIONS ARE GIVEN IN mm UNLESS OTHERWISE NOTED.
2. ELEVATIONS REFER TO T.O.S.
3. THIS DOCUMENT IS ONLY VALID FOR EARTHING LAYOUT.
4. ALL ELECTRICAL EQUIPMENT NOT DIRECTLY WELDED TO SKID FRAME SHALL BE BONDED TO STEEL TO THE STRUCTURE OF SKID BASEFRAME.
5. ALL POLE MOUNTED INSTRUMENT DETECTORS WILL BE EARTHED AS PER TYPICAL E05 AND E24.
6. ALL INSTRUMENT RACK WILL BE EARTHED AS PER TYPICAL E05A.
7. EQUIPOTENTIAL BONDING GROUPING FOR BOLTED HANDRAILS ARE PROVIDED EVERY 3M FOR THE ENTIRE PERIMETER AS TYPICAL E16 AND WILL BE DEFINED DURING ASSEMBLY PHASE

LEGEND

- AIR TERMINATION ROD FOR LIGHTNING PROTECTION
- EARTHING BOSS AISI316L
- COMPRESSION TYPE LUG TINNED COPPER

TYP. — TYPICAL
ELE. — ELEVATION
LENGTH
TAG

TYP. — TYPICAL
ELE — ELEVATION
SIZE

REFERENCE DOCUMENTS

123A90-DDL-PP-DL-70070	PLOT PLAN - LOWER & UPPER DECK
123A90-DDL-EL-DL-20100	ELECTRICAL EQUIPMENT LAYOUT - TOP DECK
123A90-DDL-EL-DD-20090	ELECTRICAL TYPICAL INSTALLATION DETAILS - EARTHING SYSTEM
123A90-DDL-EL-RE-20154	LIGHTNING PROTECTION SYSTEM CALCULATION REPORT

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
01	31/07/24	SAM	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	27/05/24	NLK	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

VALID FOR CONSTRUCTION

REV.:	DATE:	SIGNATURE:
1_B	08/11/24	V.Ramponi

ROSETTI MARINO SpA

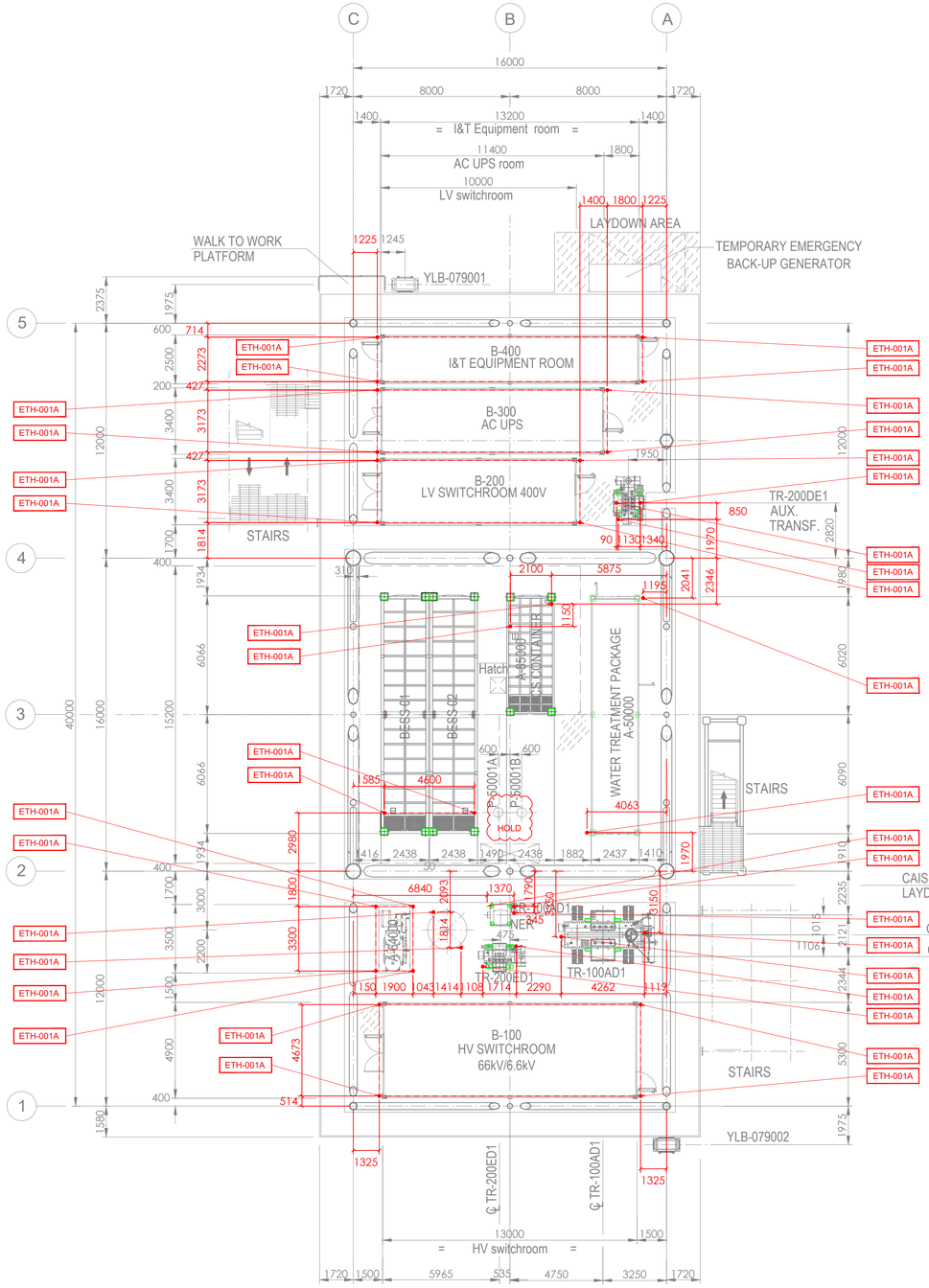
CROSSWIND

ROSETTI MARINO

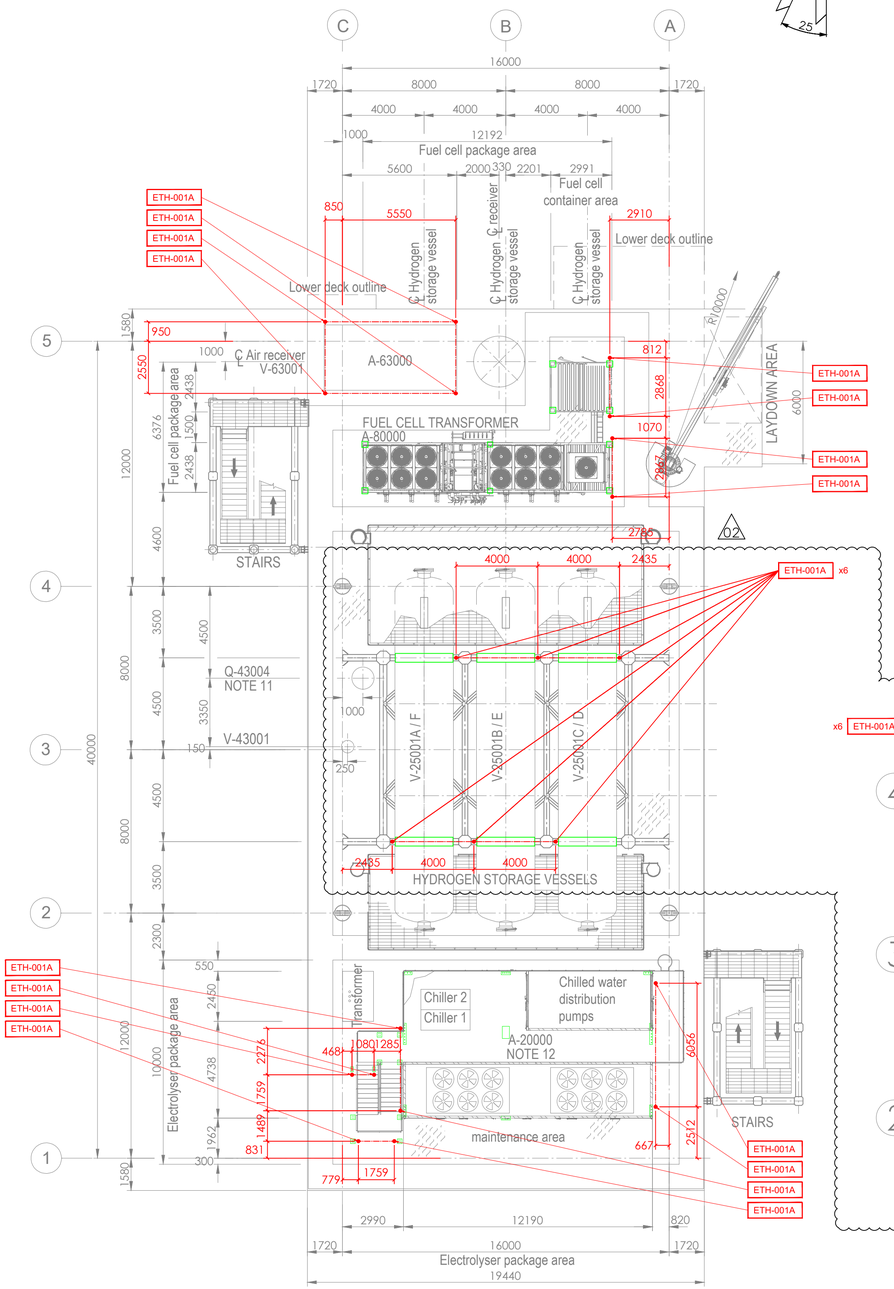
TITLE : BASE LOAD POWER HUB (BLPH)
EARTHING & LIGHTNING LAYOUT
TOP DECK

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK			SCALE 1:150
DRAWN NLK	CHECKED FMA/AMA	APPROVED FPA/DLO	DATE 31/07/24
A1	DRAWING NO. 123A90-DDL-EL-DL-20132	SHEET 003	REV. 01

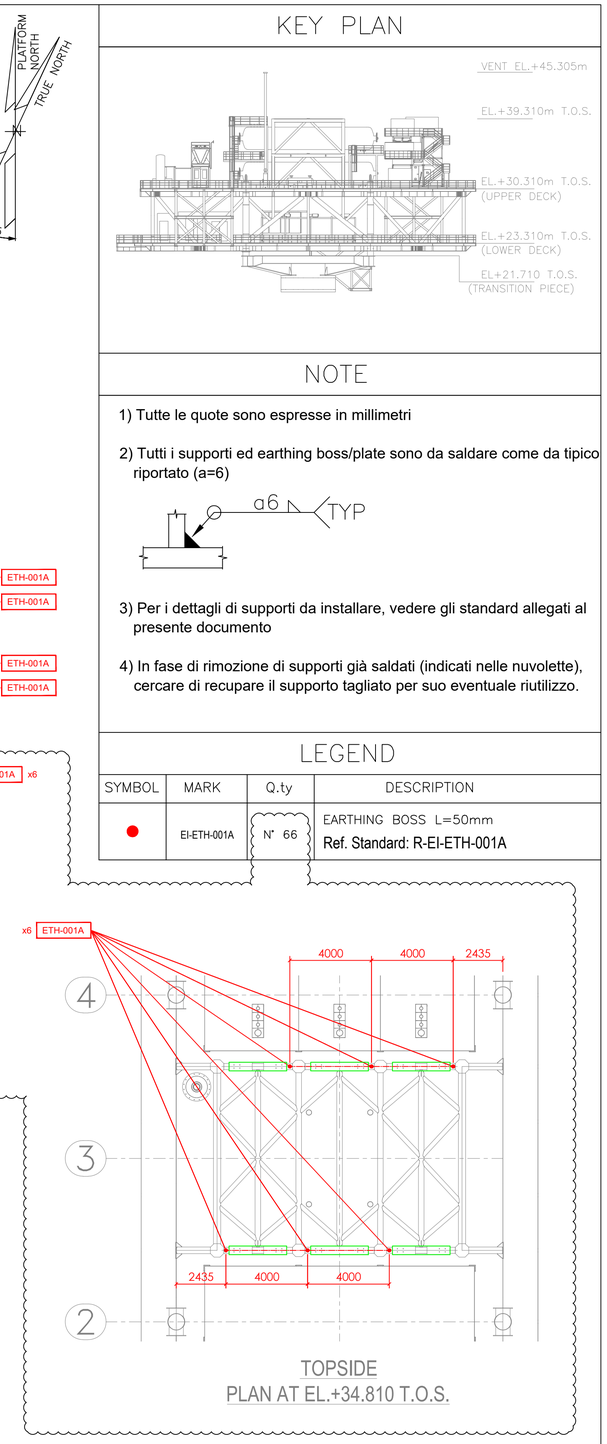
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PLAN ON LOWER DECK
EL+23.310 T.O.S.



PLAN ON UPPER DECK
EL+30.310 T.O.S.



TOPSIDE
PLAN AT EL.+34.810 T.O.S.

KEY PLAN

NOTE

1) Tutte le quote sono espresse in millimetri

2) Tutti i supporti ed earthing boss/plate sono da saldare come da tipico riportato (a=6)

3) Per i dettagli di supporti da installare, vedere gli standard allegati al presente documento

4) In fase di rimozione di supporti già saldati (indicati nelle nuvolette), cercare di recupare il supporto tagliato per suo eventuale riutilizzo.

LEGEND

SYMBOL	MARK	Q.ty	DESCRIPTION
●	EI-ETH-001A	N° 66	EARTHING BOSS L=50mm Ref. Standard: R-EI-ETH-001A

ROSETTI MARINO

CROSSWIND

Project:
123A90 – BLPH CROSSWIND

Title:
E&I SUPPORTS
WELDED EARTHING BOSS

Doc. n.	Sheet	Scale	U.M.
123A90-FDL-FEI-DL-00002	1/1	–	mm

REV.	DATE	DESCRIPTION	ISSUED	APPROVED
02	16/10/24	ISSUED FOR CONSTRUCTION	Randi	Randi
01	09/08/24	ISSUED FOR CONSTRUCTION	Randi	Randi
00	30/07/24	ISSUED FOR CONSTRUCTION	Randi	Randi

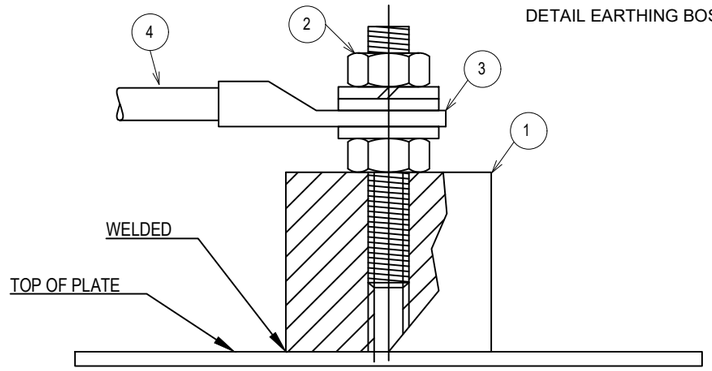
Print size: A1

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POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50 50X150	1	NOTE 2
2	STUD BOLT WITH PLANE WASHER, GROWER AND NUT	AISI 316L	M10X50		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER			~~NOTE 3~~
4	Y/G INSULATING COPPER CONDUCTOR				NOTE 1 NOTE 5
5	EARTHING PLATE	AISI 316L (NOT PAINTED)	50X50X5		NOTE 4
6	HEXAGONAL BOLT WITH PLANE WASHERS, GROWER AND NUT.	AISI 316L	M10X30		
7	THREADED STUD COMPLETE WITH GROWER AND NUTS	AISI 316L	M10X28		NOTE 6 NOTE 7

E11A

DETAIL EARTHING BOSS 50x50

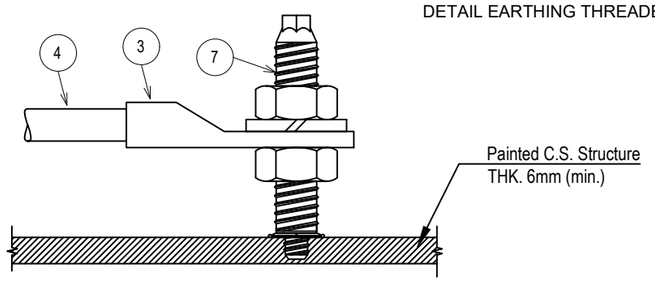


E11D

SEE NOTE 6

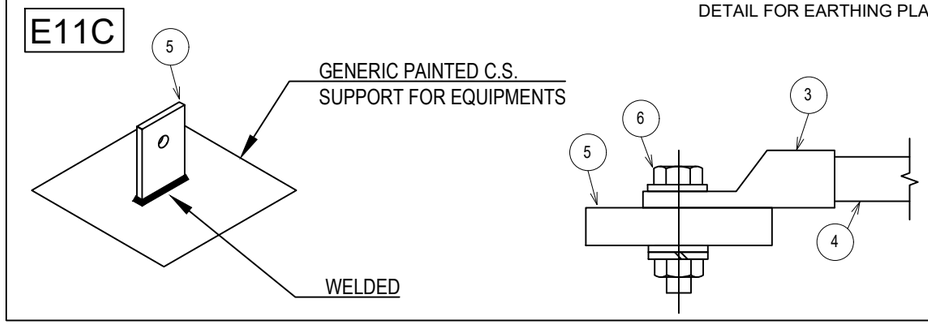
FOR CABLE
MAX 10mm²

DETAIL EARTHING THREADED STUD



E11C

DETAIL FOR EARTHING PLATE

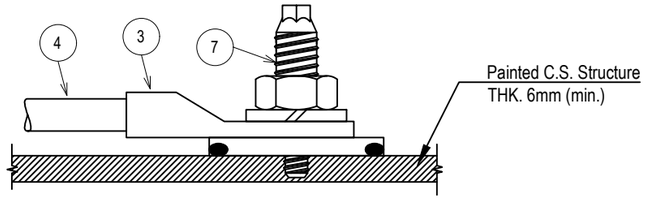


E11E

SEE NOTE 7

FOR CABLE
MAX 35mm²

DETAIL EARTHING THREADED STUD



NOTES:

1) ONLY ONE PROTECTIVE CONDUCTOR TERMINATION LUG SHALL BE CONNECTED TO A DEDICATED EARTHING BOSS, EARTH PLATE OR EARTH STUD.
2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE).
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
4) EARTHING PLATE SHALL BE DEDICATED TO CABLE TRAY AND PIPE SUPPORTS, JUNCTION BOX, LOCAL CONTROL STATION AND SMALL EQUIPMENT SUPPORTS, LIGHTING POLES, RECEPTACLE SUPPORTS AND REMOVABLE HANDRAILS, ONLY.
5) FOR SIZE OF THE EARTHING CABLE SEE EARTHING LAYOUT DRAWINGS OF RESPECTIVE AREAS
6) HILTI S-BT-ER M10/15 SN6 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 10mm².
7) HILTI S-BT-ER M10 HC 120 CERTIFIED FOR EARTHING SYSTEM. RECOMMENDED MAX CONDUCTOR SIZE 35mm².

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
SINGLE EARTHING CONNECTION

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK

SCALE : NTS

A3

DRAWING NO. 123A90–DDL–EL–DD–20090

SHEET 003

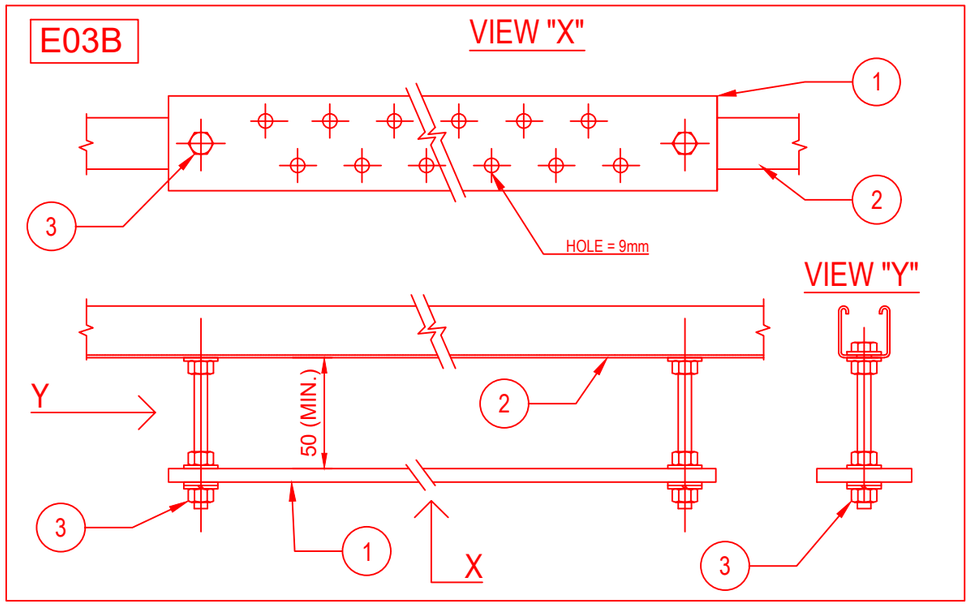
REV. 02

F.to UNI A3: 420mmx297mm

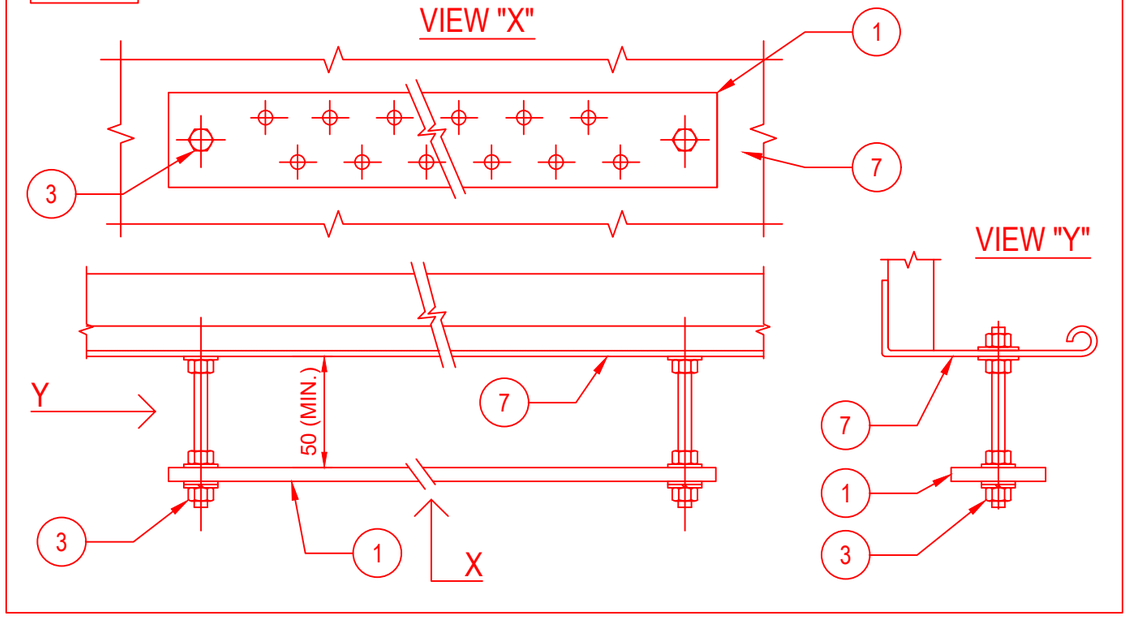
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TYPICAL DETAIL VALID FOR EXTERNAL USE ONLY

E03B

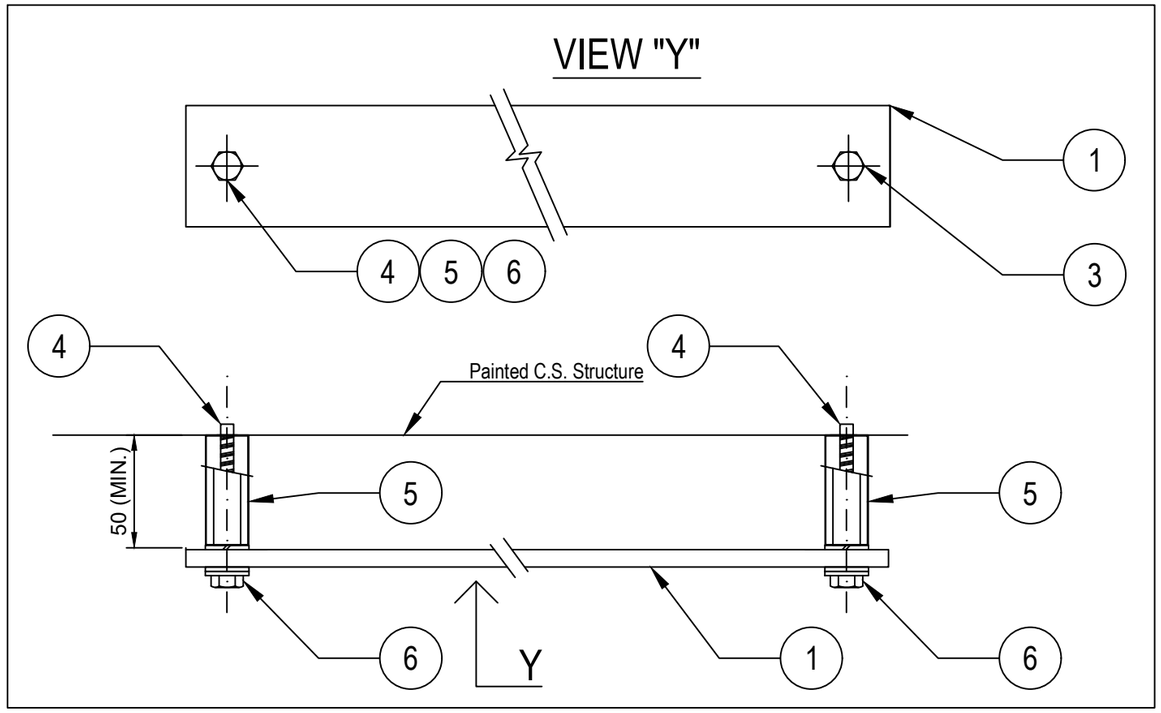


E03C



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BAR	TINNED COPPER	285X50X5	1	
2	SINGLE U-CHANNEL PERFORATED ON N.3 SIDE	AISI 316L		2	
3	HEXAG. BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M10X30	2	
4	THREADED STUD	AISI 316L	M10X28	2	NOTE 1
5	FEMALE / MALE COUPLING	AISI 316L	M10X50	2	NOTE 2
6	PLANE WASHER, GROWER AND NUT	AISI 316L	M10	2	
7	CABLE LADDER	AISI 316L			

E03D



NOTES:

1) THREADED STUD mod. HILTI S-BT-ER M10/15 SN6 CERTIFIED FOR EARTHING SYSTEM.
2) STANDOFF ADAPTER mod. HILTI M10-HC120 50.
3) FOR TYPICALS E03B AND E03C (EARTHING BAR FIXED TO U-CHANNEL OR CABLE TRAY/LADDER) THE EARTHING BAR SHALL BE CONNECTED TO EARTHING POINT IN N.1 POINT WITH 35sqmm Y/G CABLE

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS-EARTHING SYSTEM
EARTHING BAR INSTALLED ON WELDED PROFILE OR THREADED STUD

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 004 | REV. 02

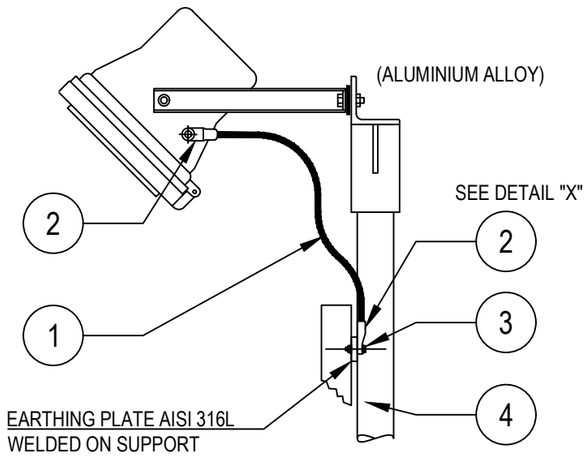
F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02 RLMU.DWG

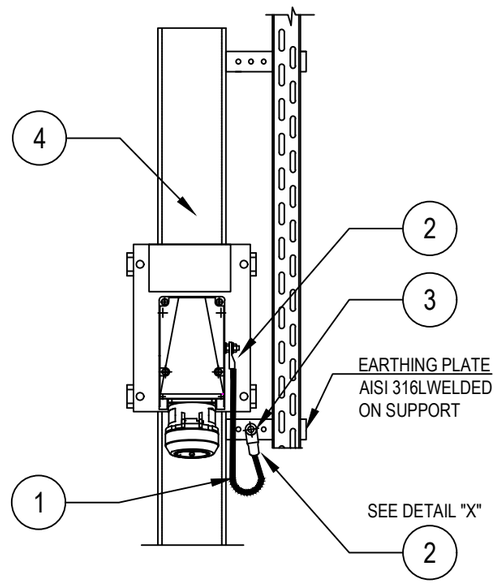
E05

POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	Y/G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	$6mm^2$	2	
3	HEXAG. BOLTS, PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M8X30	1	

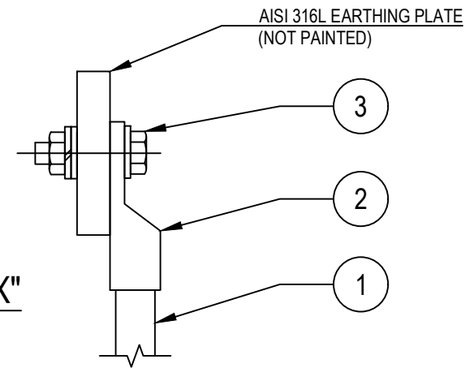
LIGHTING FIXTURE/GENERAL ITEM ON POLE



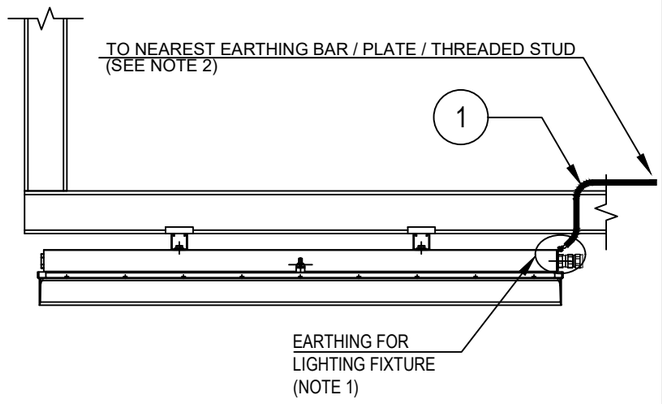
POWER SOCKET OUTLET



DETAIL "X"



LIGHTING FIXTURES



Refer also to TYP. "E32" (SEE SHEET 23)

TYPICAL VALID ALSO FOR NAVAID LIGHTS

NOTES:

1) ALL LIGHTING FIXTURES AND RELEVANT ARMOUR OF THE CABLE, ARE CONNECTED TO EARTH CONNECTION THROUGH THE EARTHING TAG OF THE CABLE GLAND

2) FOR EARTHING POINT USE ONE OF THE FOLLOWING METHODS:
TYP. E03A-D sh. 004 (EARTHING BAR ON STRUCT. UNISTRUT AND CABLE TRAY)
TYP. E11C sh. 003 (EARTHING PLATE)
TYP. E11D sh. 003 (THREADED STUD ON EXTERNAL STRUCTURE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL EQUIPMENTS

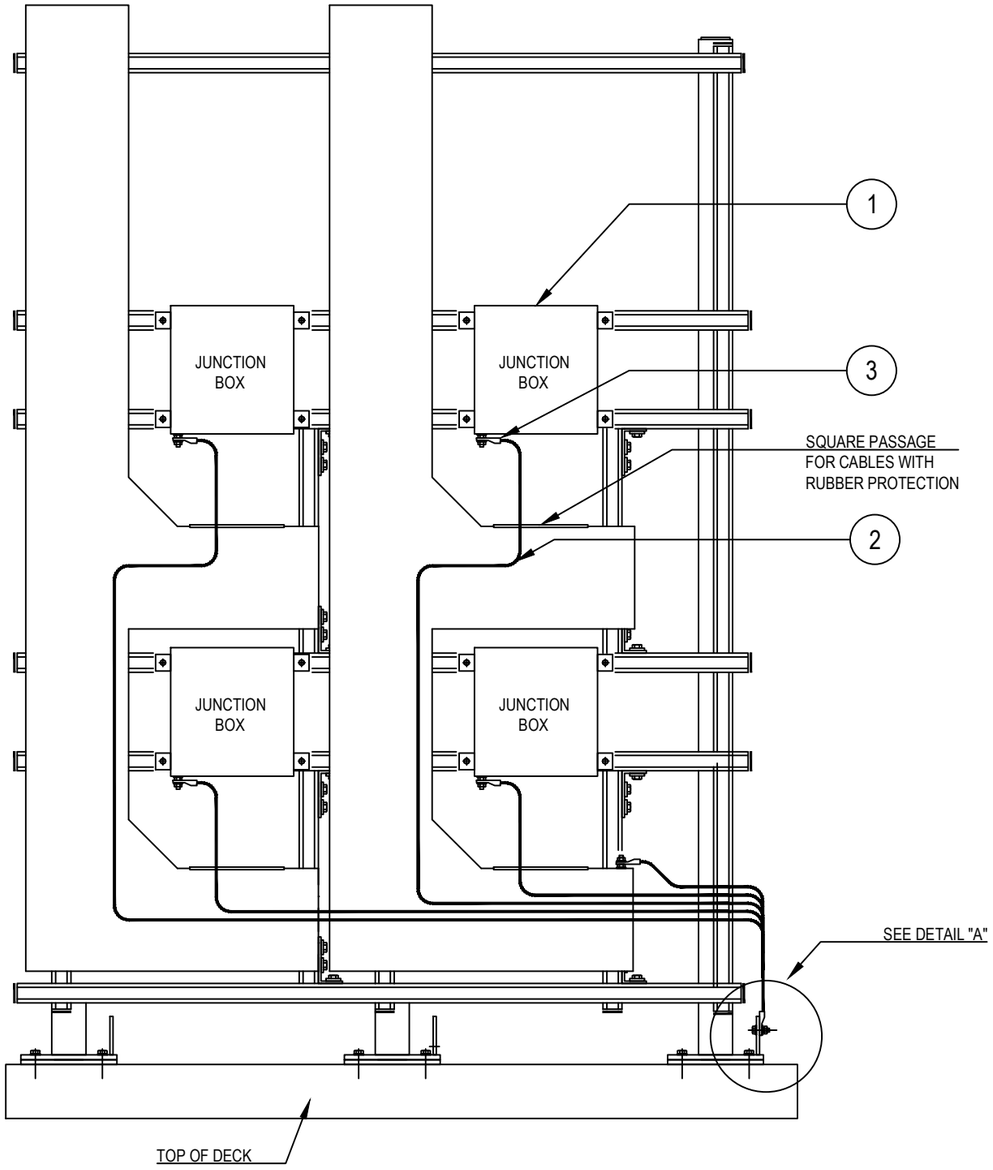
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 006 | REV. 02

F.to UNI A3: 420mmx297mm

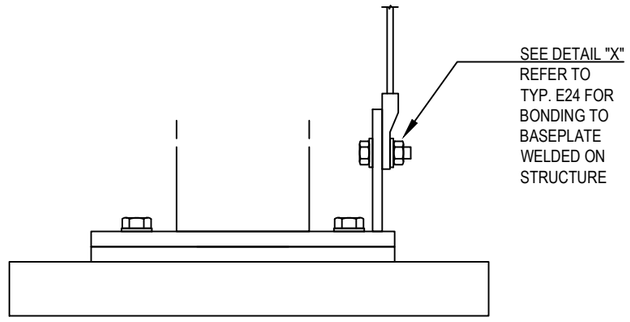
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E15

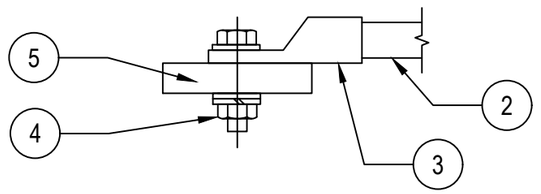


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	JUNCTION BOX (Ex)	GRP			
2	Y / G INSULATING COPPER CONDUCTOR	COPPER	$6mm^2$		
3	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	AISI 316L	$6mm^2$		~~NOTE 1~~
4	HEXAD BOLTS, PLANE WASHERS, GROWER SPRING WASHER AND NUT	AISI 316L	M8X30		
5	EARTHING PLATE	AISI 316L			NOTE 2

DETAIL "A"



DETAIL "X"



NOTES:

~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~

2) EARTHING PLATE WELDED ON BASE PLATE OF THE COLUM SUPPORT. SEE TYPICAL DETAIL E24

2) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR ELECTRICAL AND INSTRUMENTALE JB MOUNTED ON RACK SUPPORT

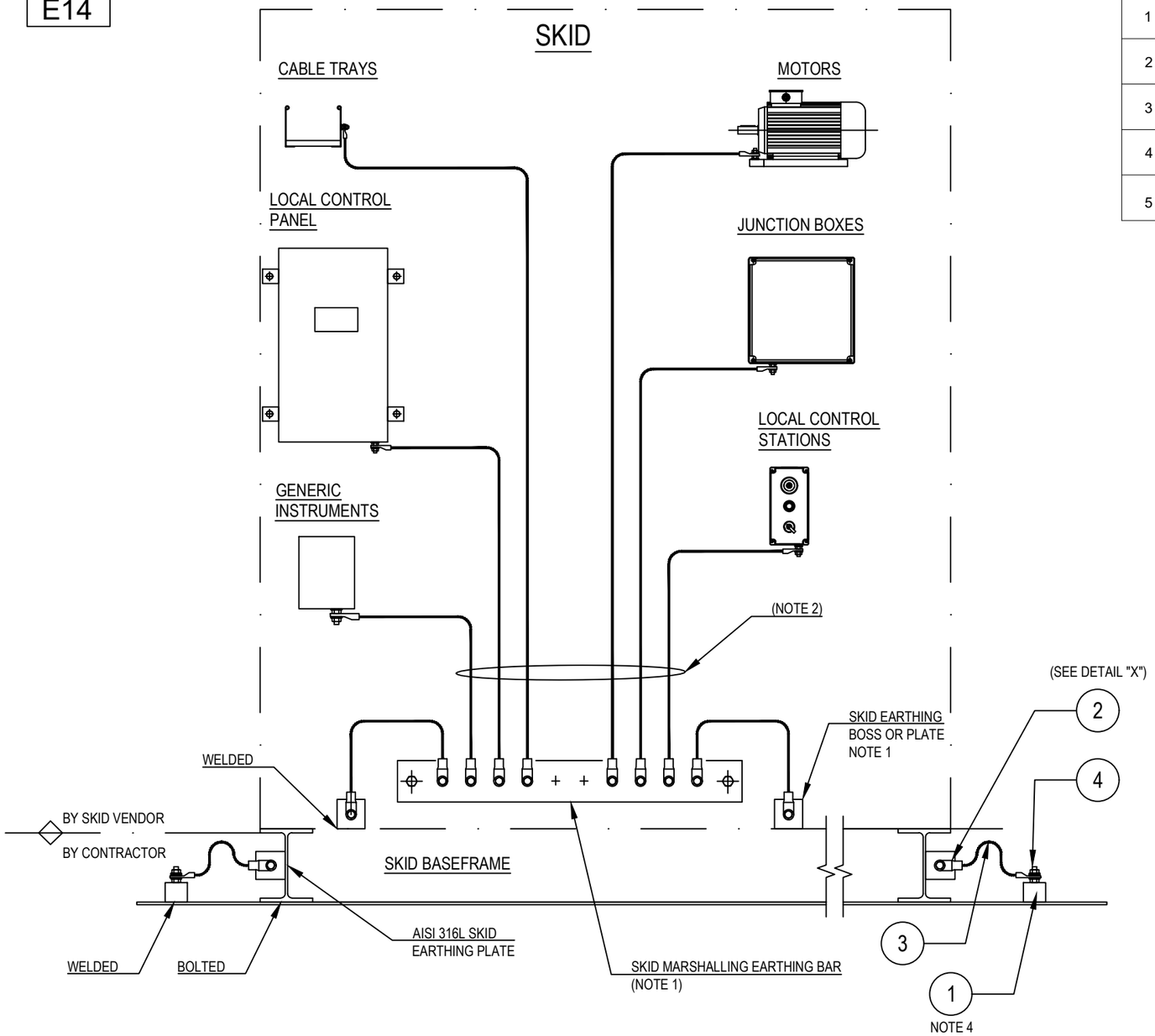
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 007 | REV. 02

F.to UNI A3: 420mmx297mm

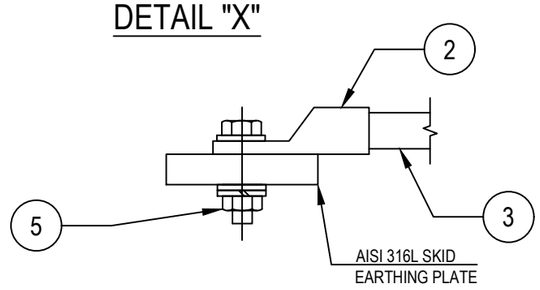
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E14



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 5
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		NOTE 3
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		NOTE 3
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



NOTES:
1) EARTHING BAR/BOSS/PLATE SUPPLIED BY SKID MANUFACTURER
2) ALL EQUIPMENTS AND CABLE TRAYS WILL BE EARTHING ON SKID EARTHING BAR BY SKID MANUFACTURER
3) ~~CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY~~
4) FOR EARTHING BOSS TYPICAL DETAIL E11A
5) EXTERNAL EARTHING CONNECTION ONLY SHALL BE PROTECTED AGAINST CORROSION USING OXIDE RESISTANT COMPOUND (E.G. COPPER GREASE)

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR SKID BASEFRAME

CONTRACT NO./TITLE CW-I-WP4-2023-05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

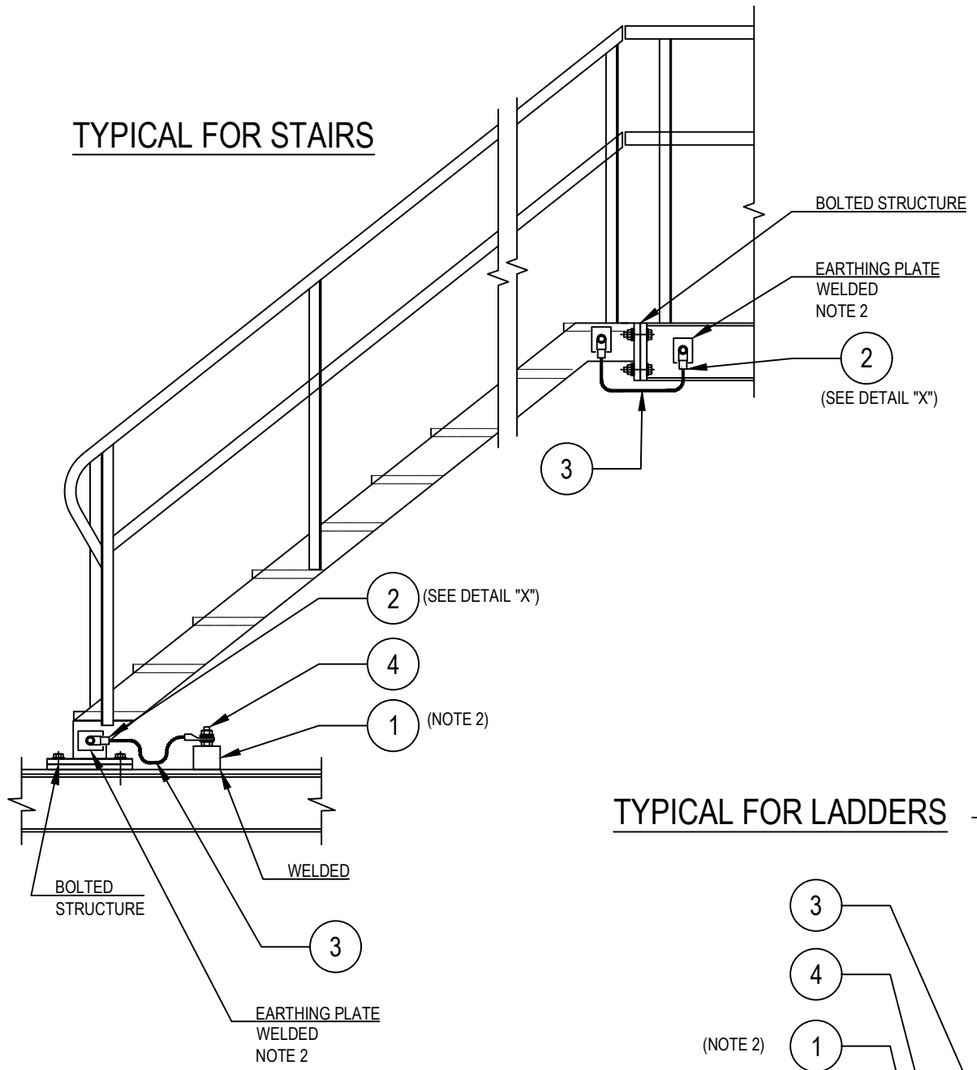
A3 | DRAWING NO. 123A90-DDL-EL-DD-20090 | SHEET 014 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

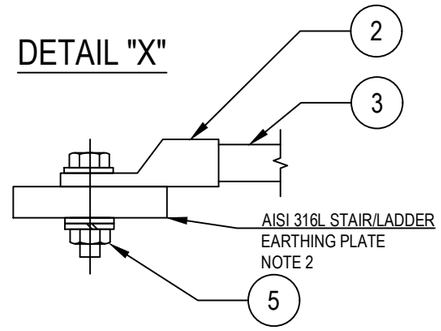
E17

TYPICAL FOR STAIRS

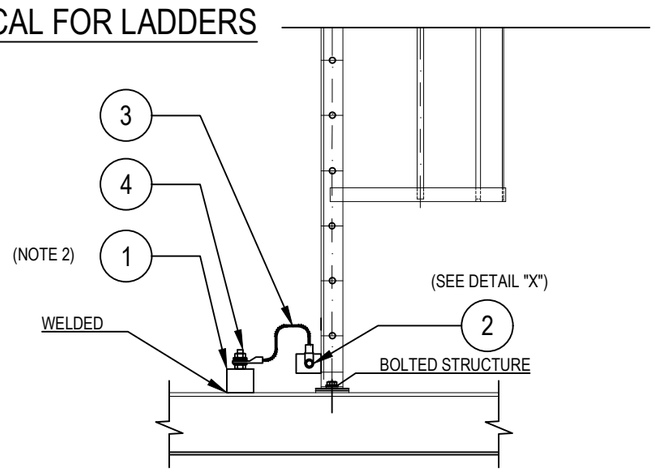


POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50		NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2		~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50		
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30		

DETAIL "X"



TYPICAL FOR LADDERS



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL E11A/C/D/E.
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR STAIRS AND LADDERS BOLTED ON STRUCTURE

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

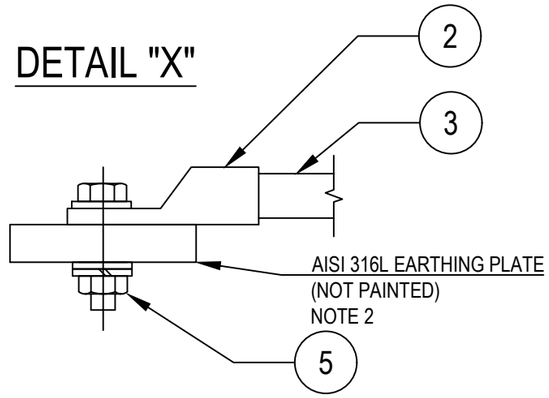
A3	DRAWING NO.	SHEET	REV.
	123A90–DDL–EL–DD–20090	015	02

F.to UNI A3: 420mmx297mm

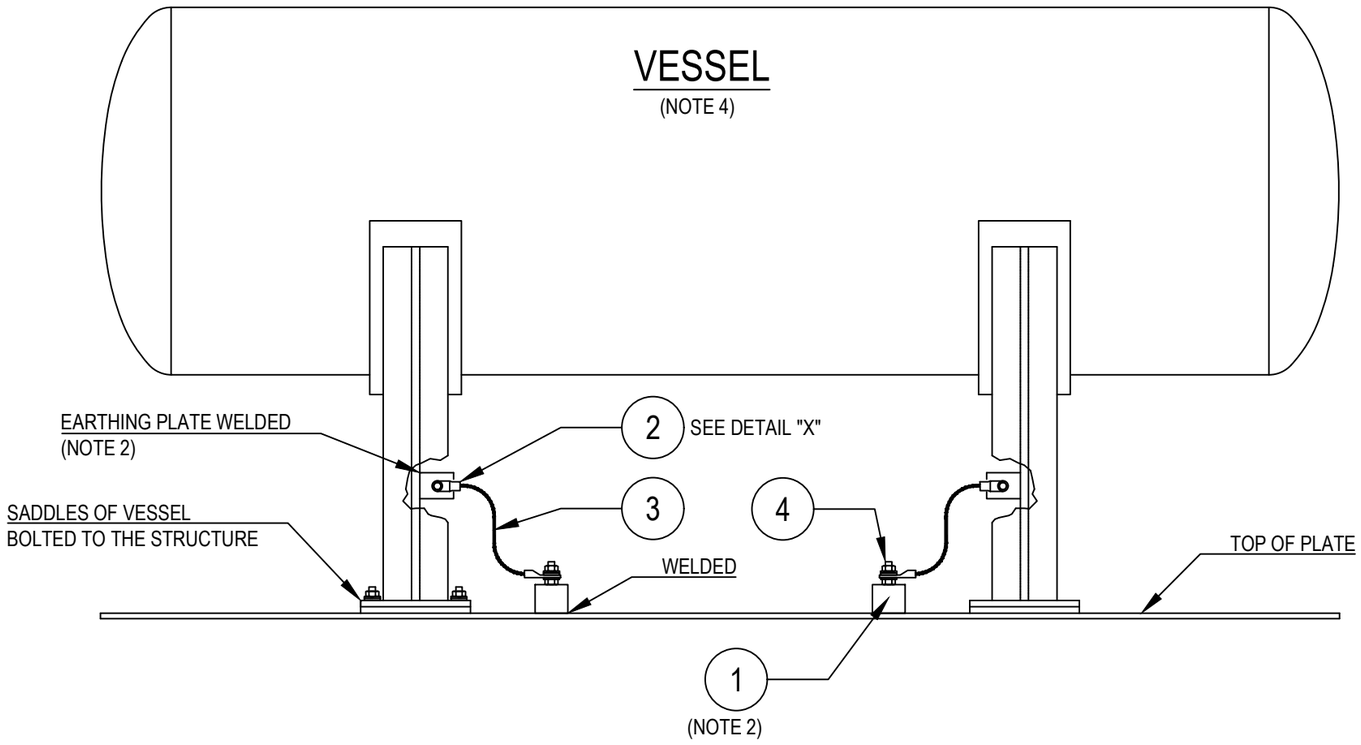
File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E13

DETAIL "X"



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	EARTHING BOSS WITH THREADED HOLE M10	AISI 316L	50X50	2	NOTE 3
2	COMPRESSION TYPE LUG FOR INSULATION COPPER CONDUCTOR	TINNED COPPER	35mm^2	4	~~NOTE 1~~
3	Y/G INSULATING COPPER CONDUCTOR	COPPER	35mm^2		~~NOTE 1~~
4	STUD BOLT WITH PLANE WASHER, SPRING WASHER AND NUT	AISI 316L	M10X50	2	
5	HEXAG. BOLT COMPLETE WITH PLANE WASHERS, SPRING WASHER AND NUT	AISI 316L	M10X30	2	



NOTES:
~~1) CABLE LUG CRIMPING METHOD SHALL BE HEXAGONAL COMPRESSION DIES ONLY.~~
2) FOR EARTHING BOSS/PLATE DETAIL SEE TYPICAL DETAIL E11A
3) EARTHING BOSS SHALL BE PROTECTED AGAINST CORROSION USING AN OXIDE RESISTANT COMPOUND

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

CROSSWIND

ROSETTI MARINO

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR VESSEL WITH LEGS BOLTED ON STRUCTURE

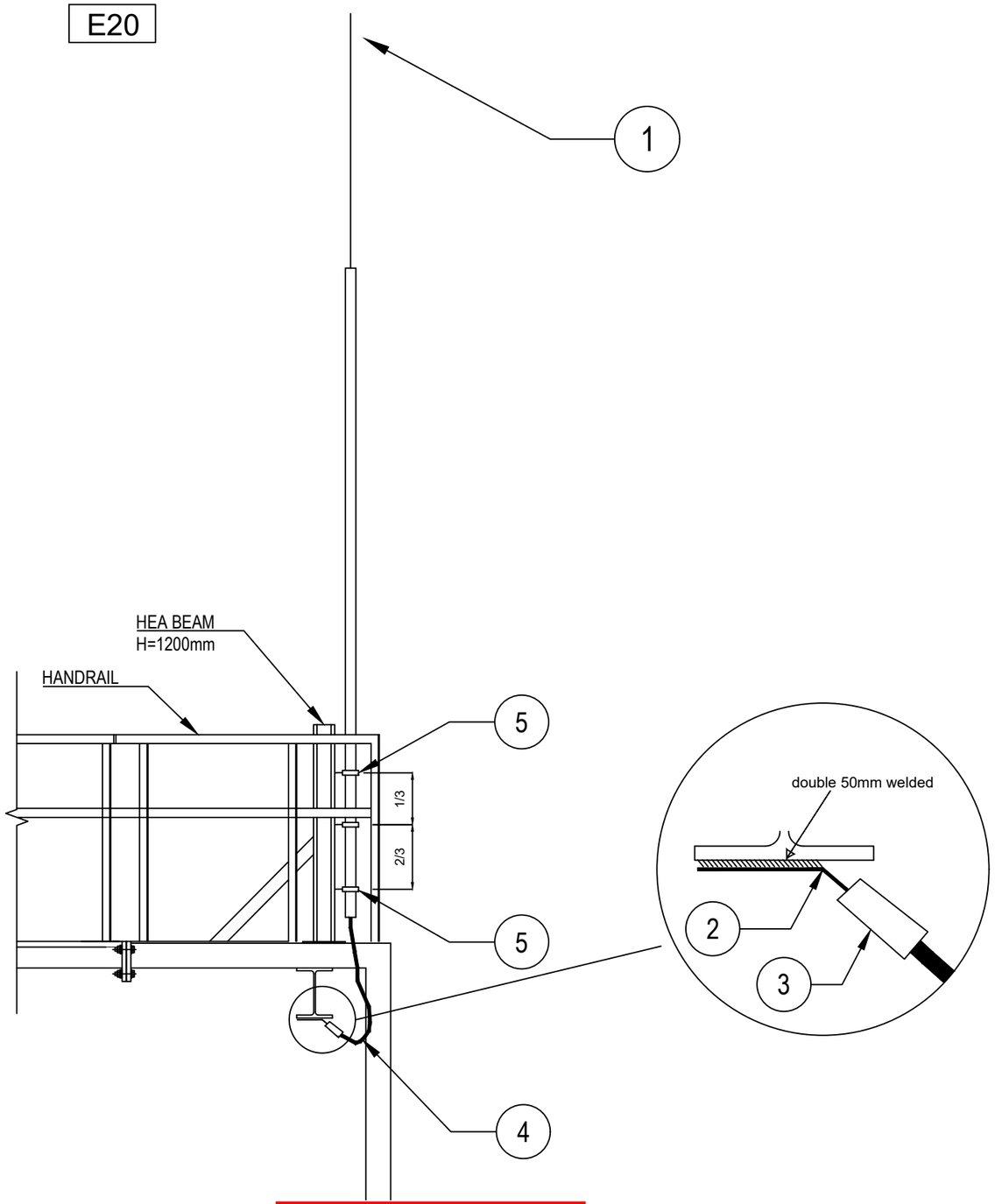
CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3	DRAWING NO.	SHEET	REV.
	123A90–DDL–EL–DD–20090	016	02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

E20



POS.	DESCRIPTION	MATERIAL	SIZE	Q.TY	NOTE
1	AIR TERMINAL LIGHTNING	AISI316L	6m	3	
			8m	2	
2	THREADED ROD	HDG	M12 L=200mm		
3	CRIMP JOINT SLEEVE	ALDREY			
4	INSULATING CONDUCTOR (VENDOR SUPPLY)	ALDREY	$70mm^2$	1m	
5	LIGHTING AIR ROD BRACKET	AISI316L	by vendor	3	

VALID FOR CONSTRUCTION
FDL DWG: **123A90-FDL-EL-DD-20090**

REV.:	DATE:	SIGNATURE:
2_I	07/11/24	G.Randi

ROSETTI MARINO SpA

CROSSWIND

ROSETTI MARINO

REV.	DATE	DRN	CHKD	APPD	DESCRIPTION
02	26/08/24	GRA	AMA	DLO	ACCEPTED FOR CONSTRUCTION (AFC)
01	10/06/24	SPS	FMA/AMA	FPA/DLO	ACCEPTED FOR CONSTRUCTION (AFC)
00	21/11/23	SPS	FMA/AMA	FPA/DLO	ISSUE FOR REVIEW (IFR)

TITLE : BASE LOAD POWER HUB (BLPH)
ELECTRICAL TYPICAL INSTALLATION DETAILS–EARTHING SYSTEM
EARTHING FOR AIR TERMINAL LIGHTNING

CONTRACT NO./TITLE CW–I–WP4–2023–05/HOLLANDSE KUST NOORD WIND PARK | SCALE : NTS

A3 | DRAWING NO. 123A90–DDL–EL–DD–20090 | SHEET 019 | REV. 02

F.to UNI A3: 420mmx297mm

File Name : 123A90-DDL-EL-DD-20090 REV.02.DWG

Section 6 MECHANICAL COMPLETION STATUS INDEX - INSTRUMENTAL DISCIPLINE

NOT APPLICABLE

Section 7 MECHANICAL COMPLETION STATUS INDEX - MECHANICAL DISCIPLINE

NOT APPLICABLE

Section 8 MECHANICAL COMPLETION STATUS INDEX - TELECOMMUNICATION DISCIPLINE

NOT APPLICABLE

Section 9 MECHANICAL COMPLETION STATUS INDEX - HVAC DISCIPLINE

NOT APPLICABLE

Section 10 MECHANICAL COMPLETION STATUS INDEX - PIPING DISCIPLINE

NOT APPLICABLE

Section 11 MECHANICAL COMPLETION INDEX - SAFETY DISCIPLINE

NOT APPLICABLE

Section 12 FAT / VENDOR REPORTS

NOT APPLICABLE

Section 13 MECHANICAL COMPLETION CHANGES / MARK-UPS

NOT APPLICABLE