



مشروع تعزيز المرونة المؤسسية والإقتصادية في اليمن  
Strengthening Institutional & Economic Resilience in Yemen  
(SIERY)

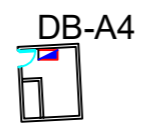
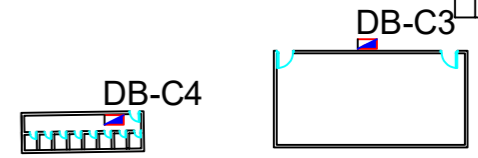
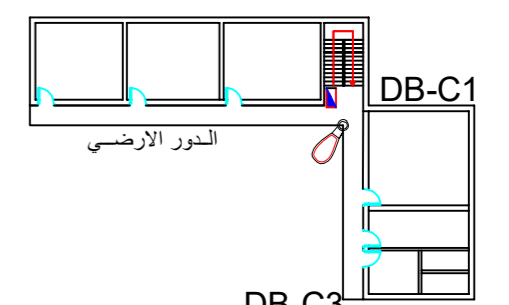
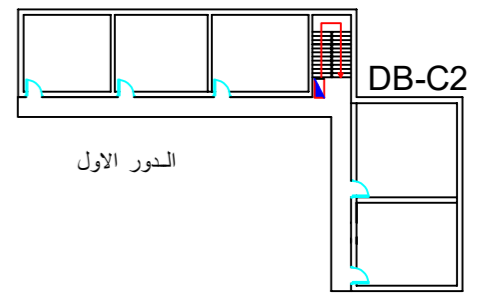
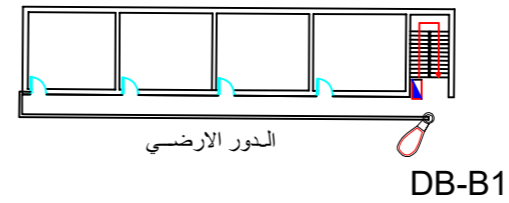
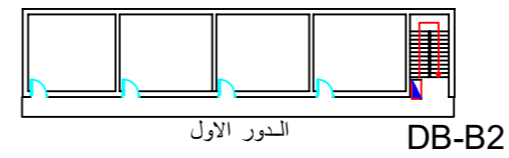
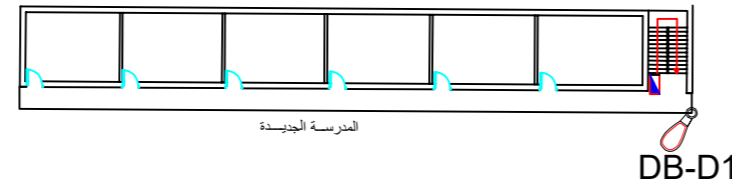
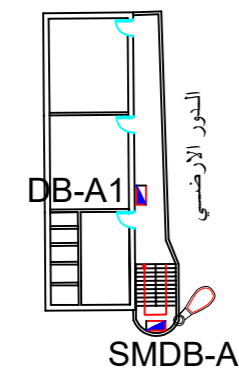
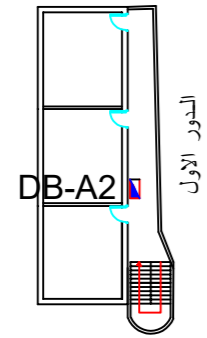
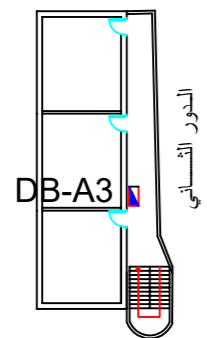
توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

***Supply & Install Solar System for Schools in Aden***

# ELECTRICAL DRAWINGS

## DRAWING LIST:-

NO	DRAWING TITLE
S1 - 01	Floors Layout
S1 - 02	Batteries Room
S1 - 03	PV Distribution
S1 - 04	Lightening&grounding Protection Layout
S1 - 05	Lightening&grounding Protection Details
S1 - 06	New E MDB Single line Diagram
S1 - 07	New A/C Sub Single line Diagram
S1 - 08	Existed MDB Layout
S1 - 09	PV System Single Line Diagram



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

مساقط الأدوار  
Floors Layout

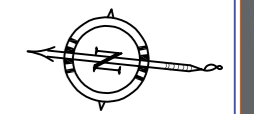
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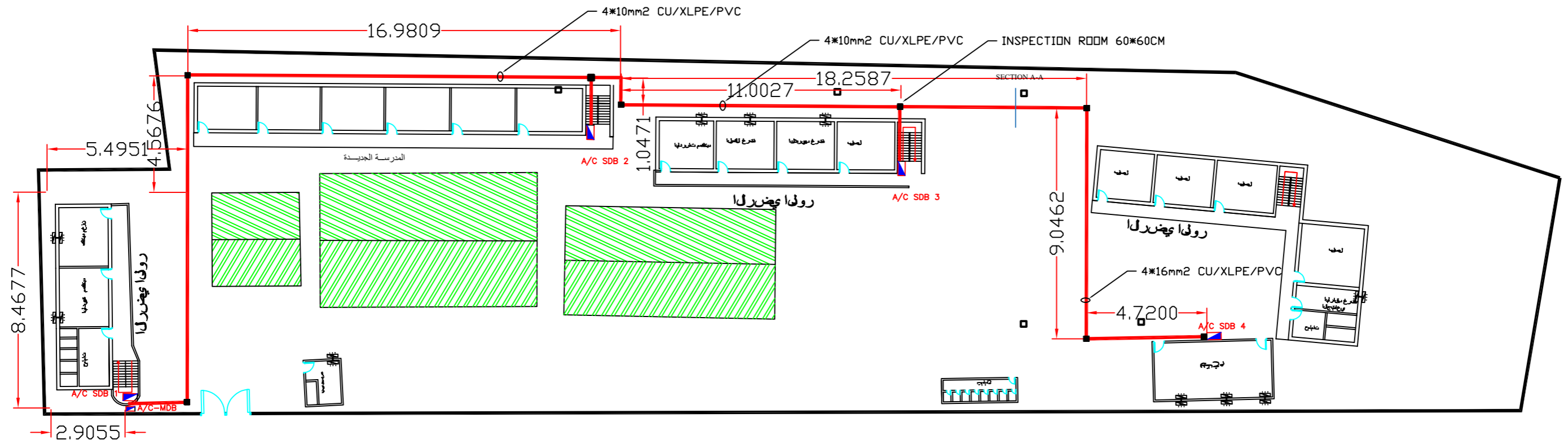
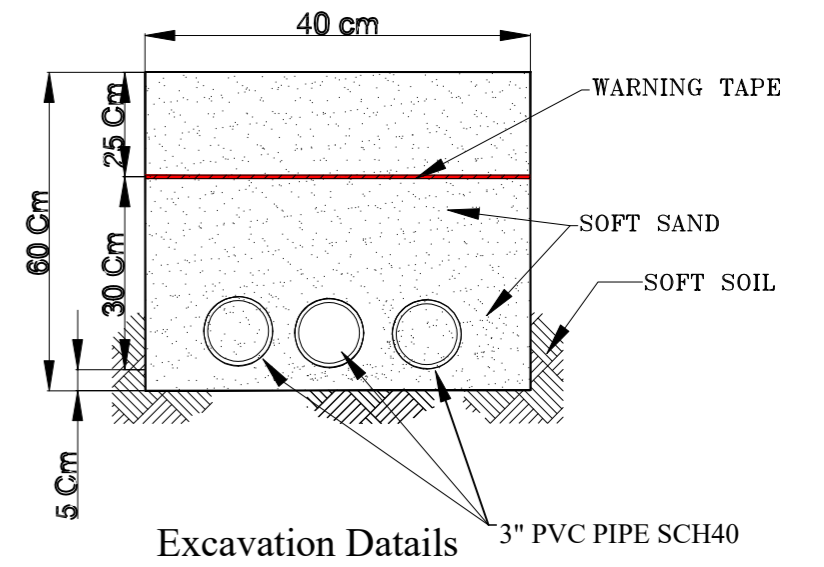
مسقط افقي

S1 - 01

sheet  
اسم اللوحة

Sheet No  
رقم اللوحة





Supply & Install Solar System for  
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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

AC تفاصيل الحفر  
Ac Excavation Details

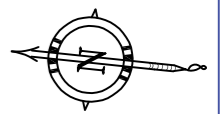
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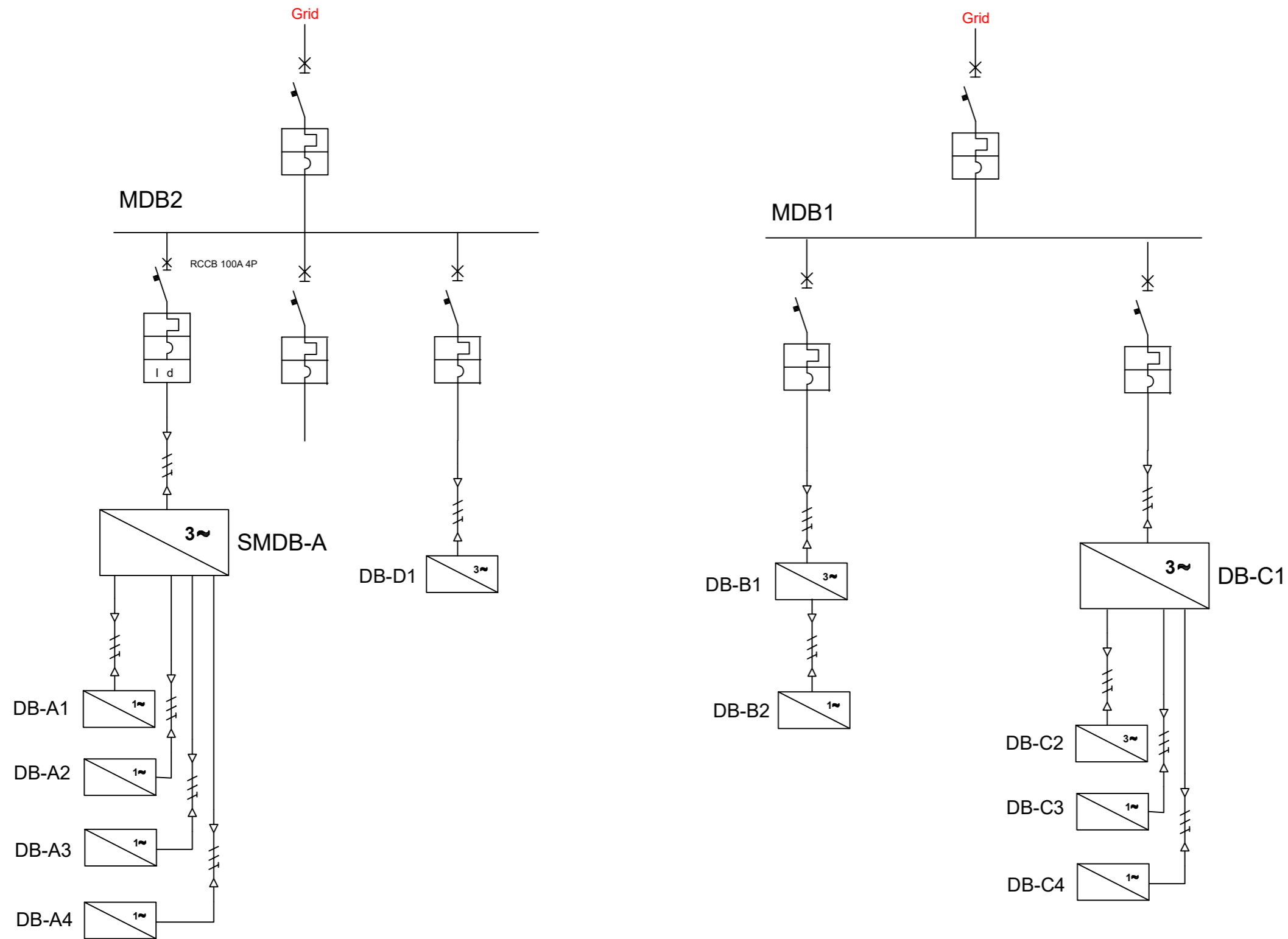
S1 - 01

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Sheet No  
رقم اللوحة



# EXISTED MDB LAYOUT



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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

مخطط لوحة توزيع الحالية

Existed MDB Layout

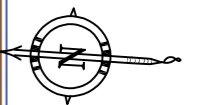
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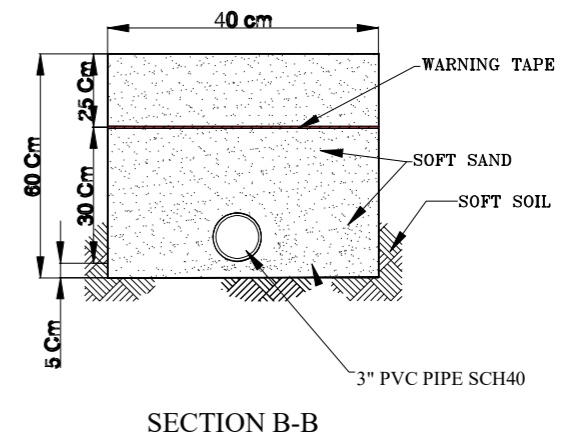
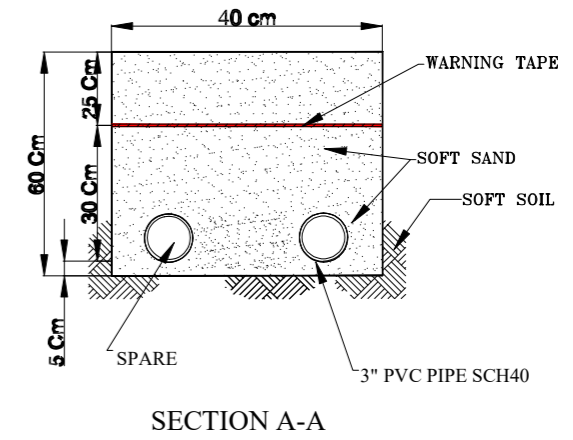
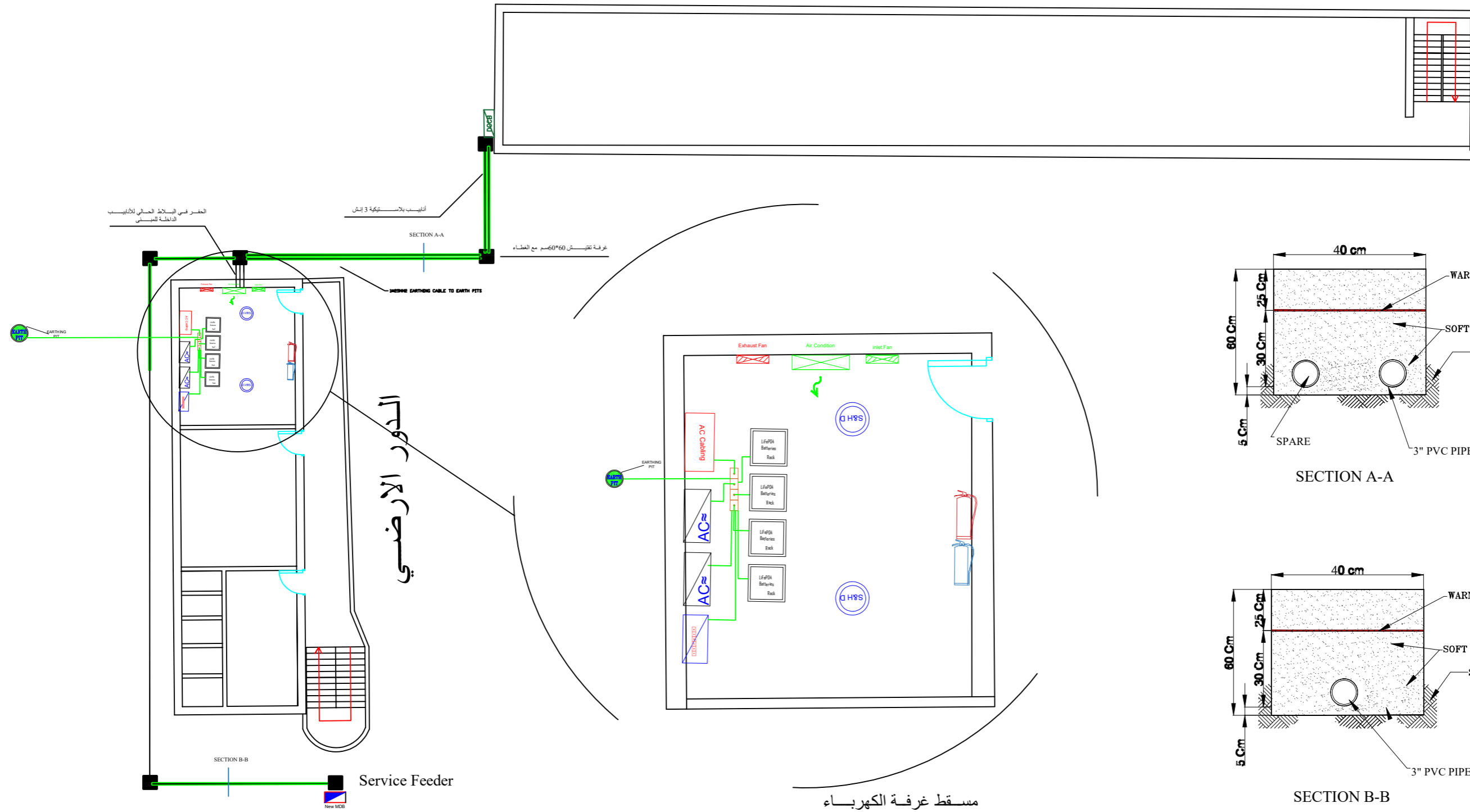
اسم اللوحة

S1 - 08

Sheet No  
رقم اللوحة



SYMBOL	DESCRIPTION
	CONNECTION BOX BETWEEN CHARGE CONTROLLER AND BATTERY RACK
	HYBRID INVERTER
	MPPT BATTERY CHARGER
	BATTERY RACK
	AC COUPLING PANEL
	INLET FAN
	EXHAUST FAN
	SMOKE & HEAT DETECTOR
	FIRE EXTINGUISHER POWDER
	FIRE EXTINGUISHER CO2
	Air Condition



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توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

غرفة البطاريات  
Batteries Room

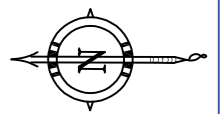
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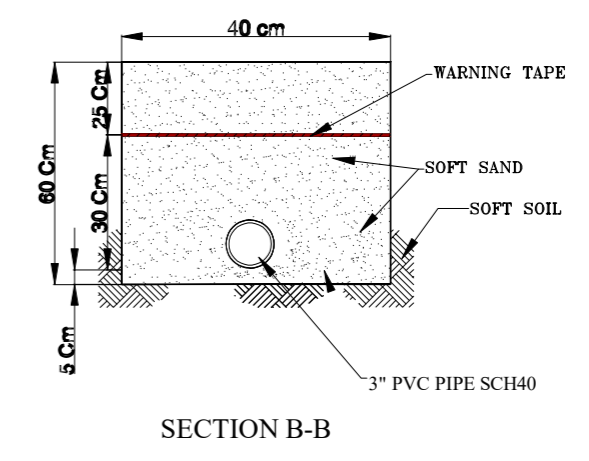
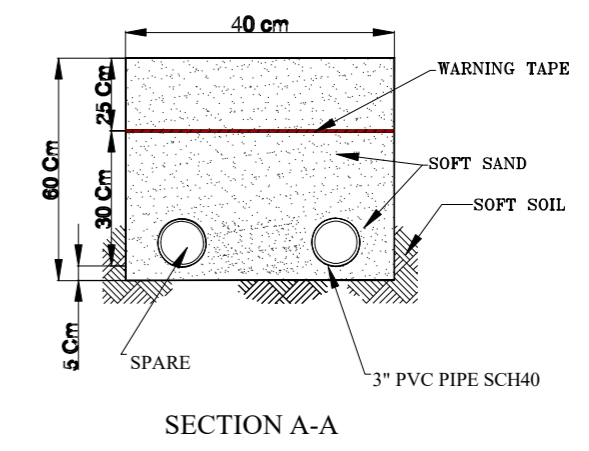
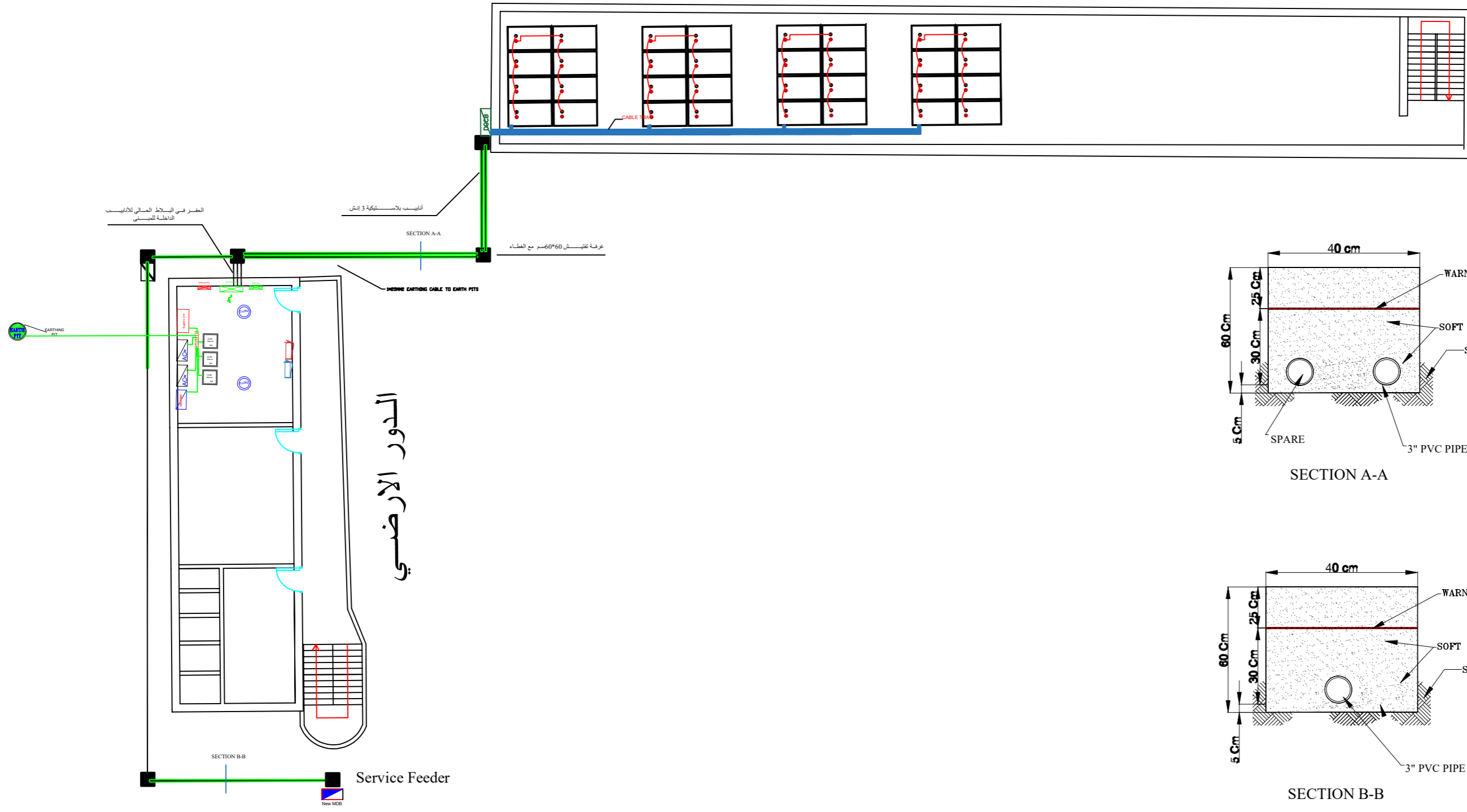
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S1 - 02

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Supply & Install Solar System for Schools in Aden  
 توريد وتركيب منظومات طاقة شمسية  
 لمدارس في عدن

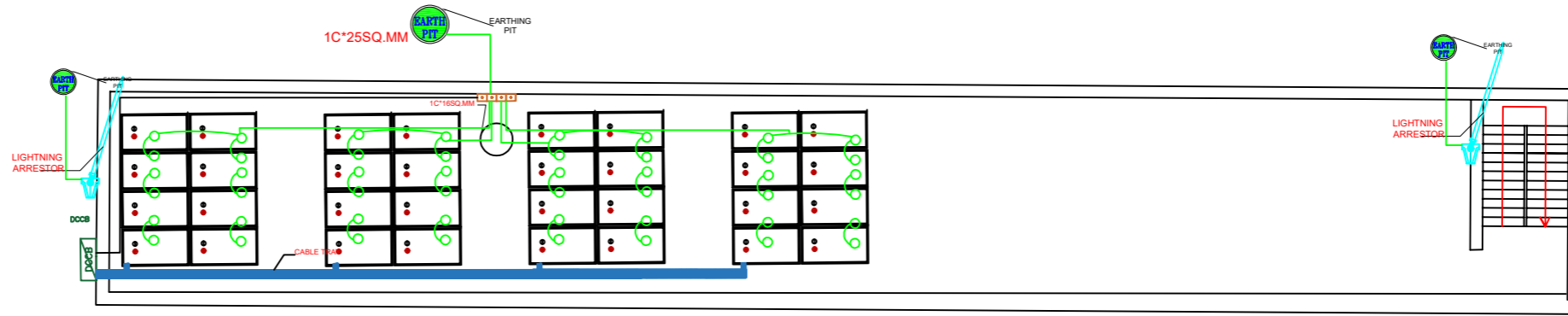
توزيع الالواح الشمسية  
 PV DISTRIBUTION

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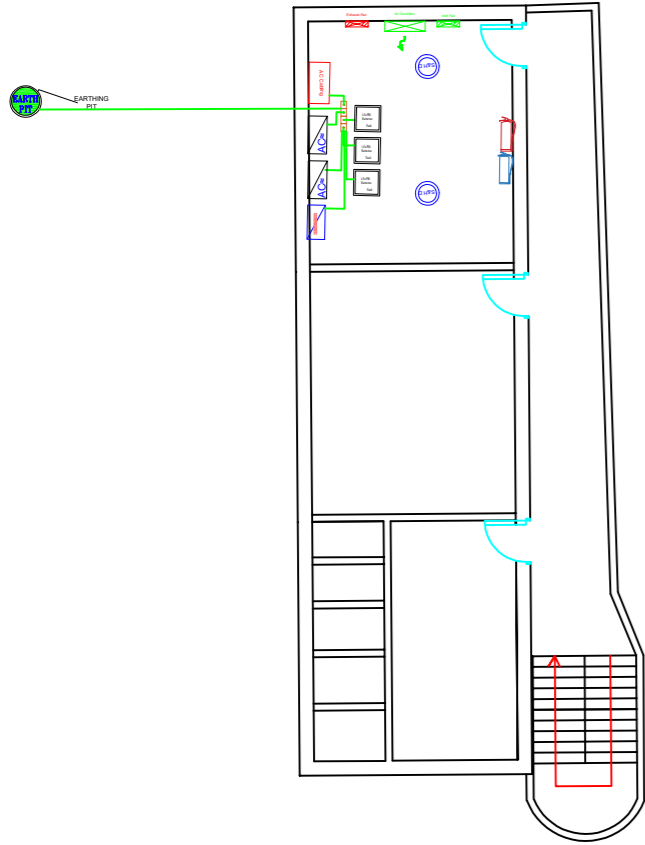
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Sheet No رقم اللوحة

S1 - 03



الدور الارضي



مدرسة عبدالله خليفة للبنات  
 نظام الحماية من الصواعق  
 والتأريض  
 Lightning & grounding  
 Protection Layout

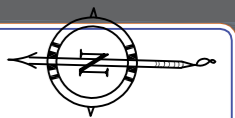
Supply & Install Solar System for  
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توريد وتركيب منظومات طاقة شمسية  
 لمدارس في عدن

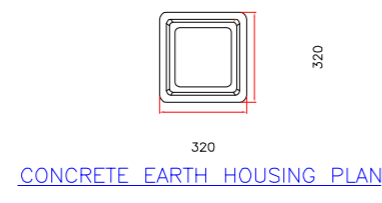
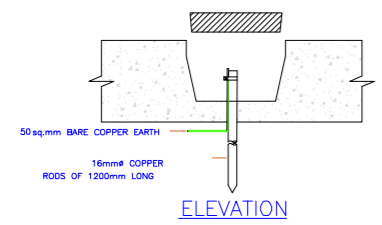
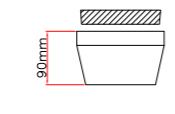
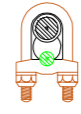
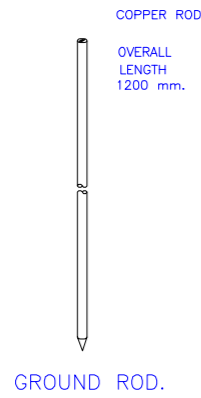
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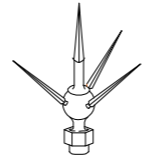






EARTHING PIT DETAILS

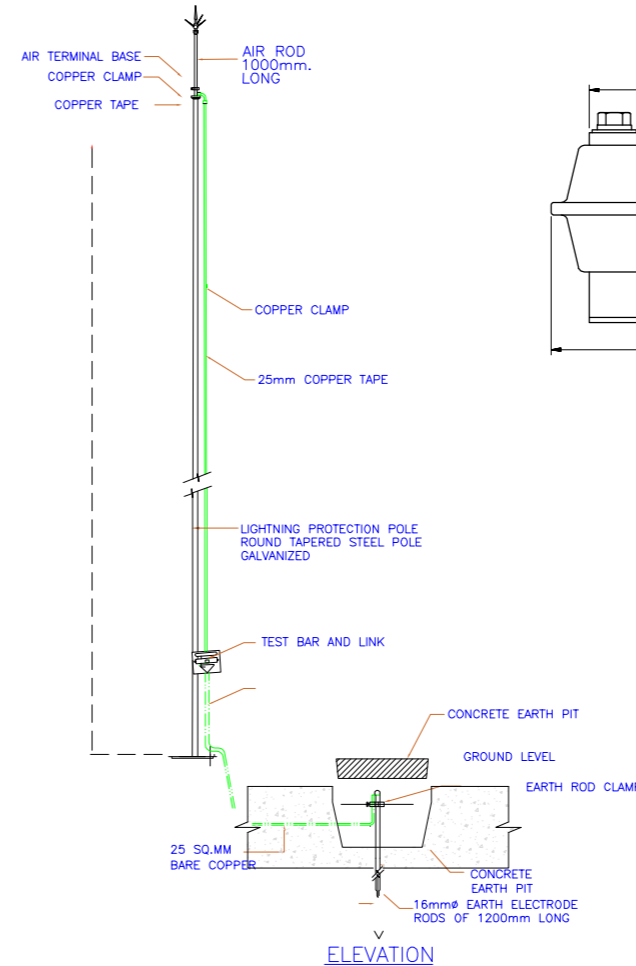
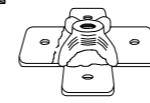
AIR TERMINAL TIP



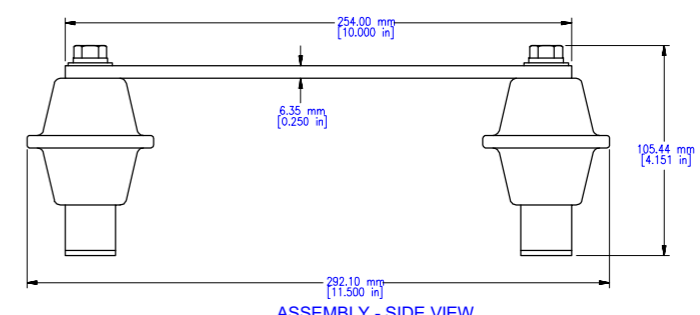
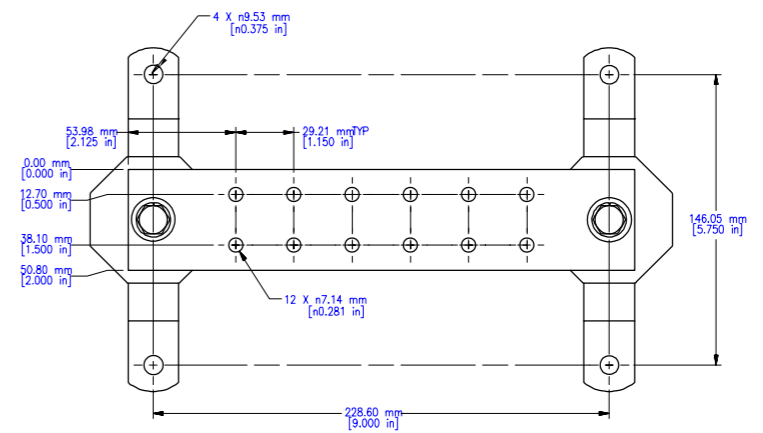
AIR TERMINAL



AIR TERMINAL SADDLE



LIGHTNING PROTECTION SYSTEM



EARTHING BUSBAR



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توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

تفاصيل نظام الحماية من الصواعق والتأريض  
Lightning & grounding Protection Details

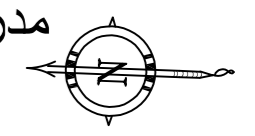
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Sheet Name

sheet اسم اللوحة

S1 - 05

Sheet No رقم اللوحة



# Utility grid



SYMBOL	DESCRIPTION
	AUTOMATIC TRANSFER SWITCH
	SURGE ARRESTER
	CIRCUIT BREAKER (MCCB/MCB)
	CIRCUIT BREAKER (RCB)
	AC FUSE



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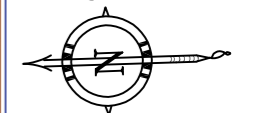
توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

مخطط لوحة التوزيع الجديد

NEW EMDB SINGLE  
LINE DIAGRAM

عبدالله خليفة للبنات

مدرسة

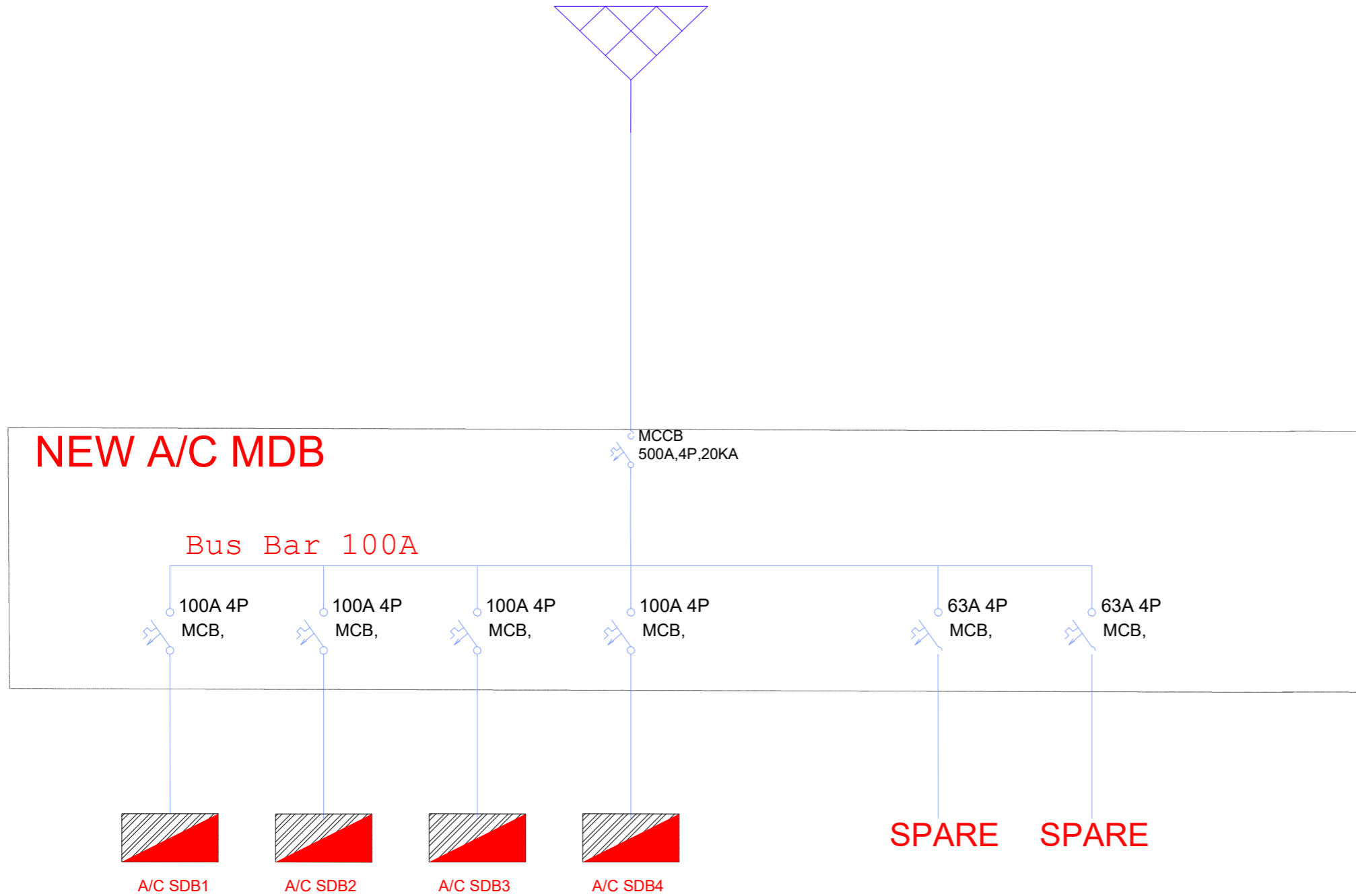


sheet  
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رقم اللوحة

S1 - 06

# Utility grid



SYMBOL	DESCRIPTION
	AUTOMATIC TRANSFER SWITCH
	SURGE ARRESTER
	CIRCUIT BREAKER (MCCB/MCB)
	CIRCUIT BREAKER (RCB)
	AC FUSE



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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

التوزيع A/C مخطط لوحة

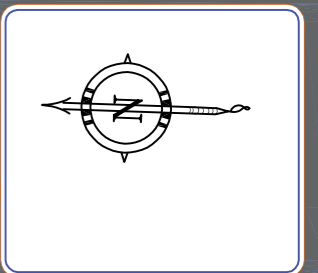
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




**NEW A/C MDB  
SINGLE LINE  
DIAGRAM**

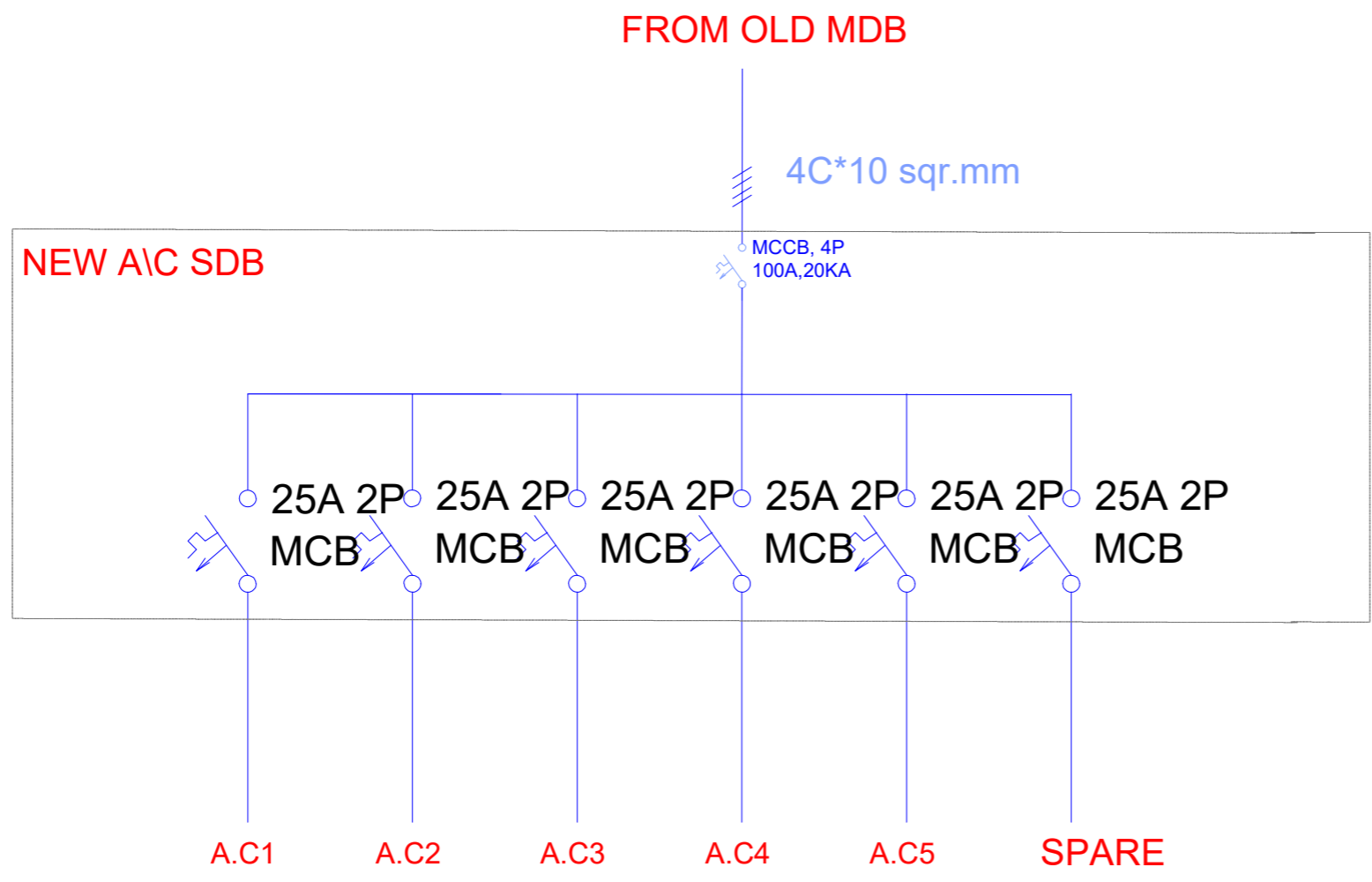



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SYMBOL	DESCRIPTION
	MANUAL TRANSFER SWITCH
	SURGE ARRESTER
	CIRCUIT BREAKER (MCCB/MCB)
	CIRCUIT BREAKER (RCB)
	AC FUSE



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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

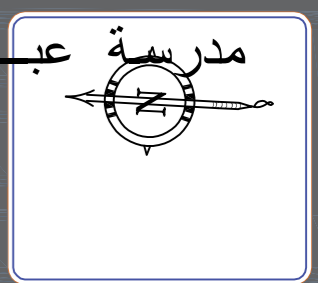
مخطط لوحة توزيع المكيفات  
الجديده الفرعية  
**NEW A/C SUB SINGLE  
LINE DIAGRAM**

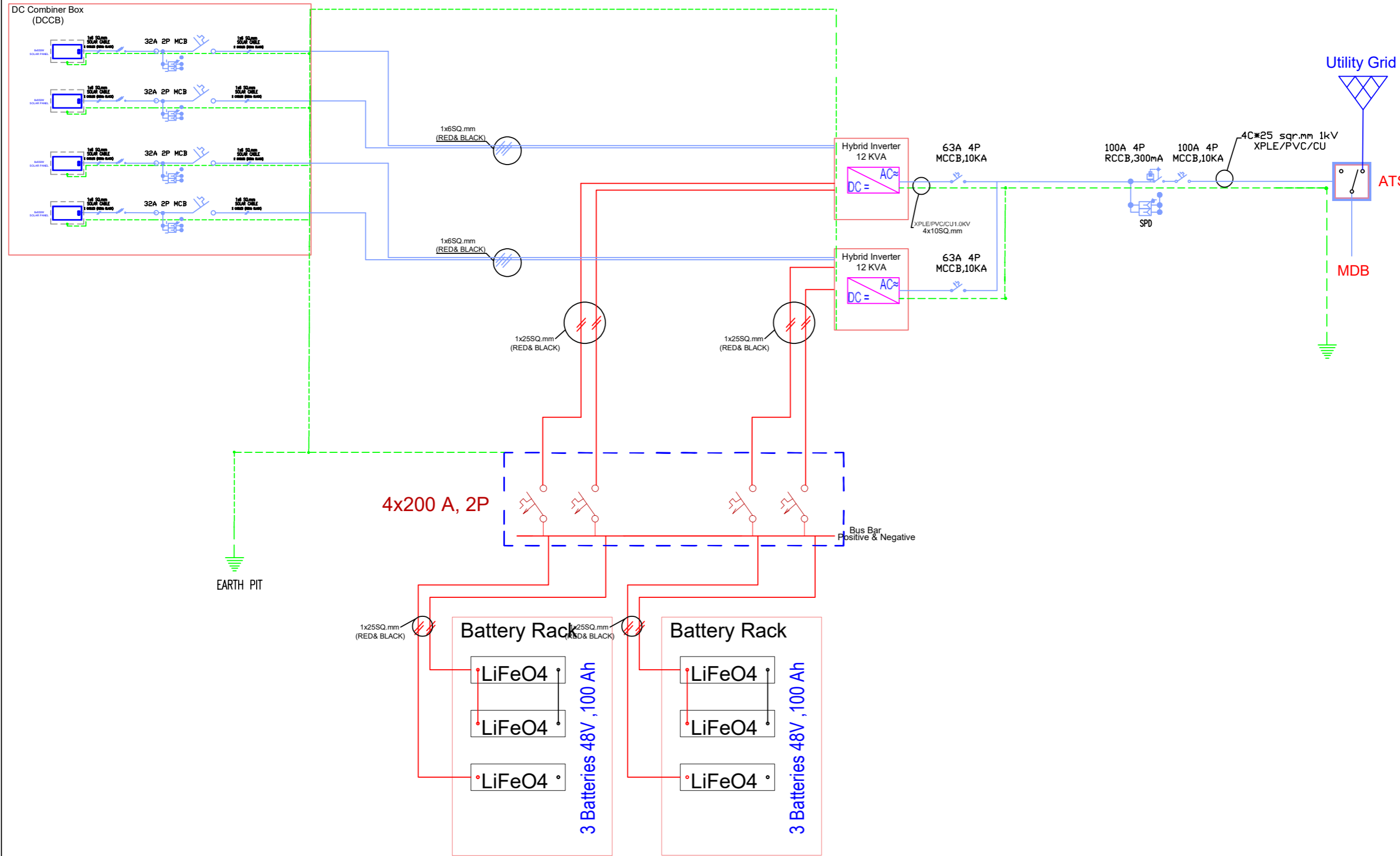
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sheet  
اسم اللوحة

S1 - 07

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SYMBOL	DESCRIPTION
	PHOTOVOLTAIC MODULE
	HYBRID INVERTER
	ATUO TRANSFER SWICH
	SURGE ARRESTER
	CIRCUIT BREAKER (MCB)
	CIRCUIT BREAKER (MCCB)
	CIRCUIT BREAKER (RCCB)
	DC FUSE



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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

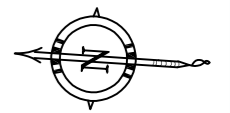
مخطط النظام الشمسي  
PV Sysetm Single Line  
Diagram

مدرسة عبدالله خليفة للبنات

S1 - 09

sheet  
اسم اللوحة

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# STRUCTURE DRAWINGS

## DRAWING LIST:-

NO	DRAWING TITLE
S2 - 01	Main Notes
S2 - 02	8 PANELS 3D SCHEME.
S2 - 03	MOUNTING STRUCTURE SIDE VIEW.
S2 - 04	COLUMN BASE PLATE
S2 - 05	BEAMS PLAN DETAILS.
S2 - 06	CONCRETE, CONNECTION AND BASE PLATES DETAILS A.
S2 - 07	CONCRETE, CONNECTION AND BASE PLATES DETAILS B.

## GENERAL

G .1THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL , ELECTRICAL ,MECHANICAL ,OTHER CONTRACT DRAWINGS ,SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT . ANY DISCREPANCY SHALL BE REFERRED TO THE SUPERINTENDENT FOR DECISION BEFORE PROCEEDING WITH THE WORK .

G .2DIMENSIONS ARE AS SHOWN . DIMENSIONS SHALL NOT BE OBTAINED BY SCALING THE STRUCTURAL DRAWINGS.

G .3SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR.

G .4DURING CONSTRUCTION THE STRUCTURE WILL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED .TEMPORARY BRACING SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED.

G .5ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATED CODES AND THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES.

G .6THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED

FOR THE FOLLOWING LOAD

- MINIMUM LIVE LOADS.
- WIND LOAD 0.777KN/m.2
- SELF WEIGHT.

G .7 REFER TO STRUCTURAL DRAWINGS FOR THE DIFFERENT CONSTRUCTION MATERIALS TO BE USED IN THE PROJECT.

## STRUCTURE

S .1ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND FOLLOWING CODES

- AISC.13-
- ACI 318M .2014-
- ASCE 7-16.
- ASTM.

S2 .ALL MEMBERS OF GALVANIZED STEEL QUALITY - :THE A36FY 36MATERIAL WAS SELECTED FOR ALL COLUMNS ,BEAMS , PURLINS AND BRACING AND SECTIONS . MINIMUM YEILD STRENGTH (FY 240=MPA).

S3 .ESTABLISH ANY HOLES OR CUTTING WORK SHOULD BE BY USING POWER ELECTRICAL EQUIPMENT.

S .4 COATING PROTECTION SHALL BE

OF GALVANIZATION OF 60MICROMETER OR EQUIVALENT ,RECOMMENDED ALTERNATIVE 40MICRO ZINC GALVANIZATION WITH PRIMER ACRYLIC BINDER PAINT COATS OF 70MICROMETER AND ONE TOP COAT OF ACRYLIC BINDER PAINT OF 50MICROMETER WITH TOTAL 120MICROMETER BINDER OR EQUIVALENT AS PER ISO.12944

S5 .CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO THE APPROVAL OF THE ENGINEER .IF ANY.

S6 ALL BOLTS ARE A 325OR A 490HIGH STRENGTH BOLTS AS ASTM.

## CONCRETE

C .1ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE SPECIFICATION AND AMERICAN CONCRETE CODE ACI318-M( 2014-REINFORCED CONCRETE STRUCTURES).

C2 .CONCRETE QUALITY (CONCRETE WITH EPOXY GROUT - ):MINIMUM CONCRETE CUBE STRENGTH (F'C 30=MPA )AFTER 28 DAYS

C .3CONCRETE WITH EPOXY GROUT MUST BE MIXED BY AN ELECTRIC DRILL.

C4 .CONCRETE BASES ARE SPRAYED FOR AT LEAST 5DAYS THREE TIMES A DAY



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توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

الملاحظات الرئيسية

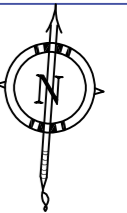
MAIN NOTES.

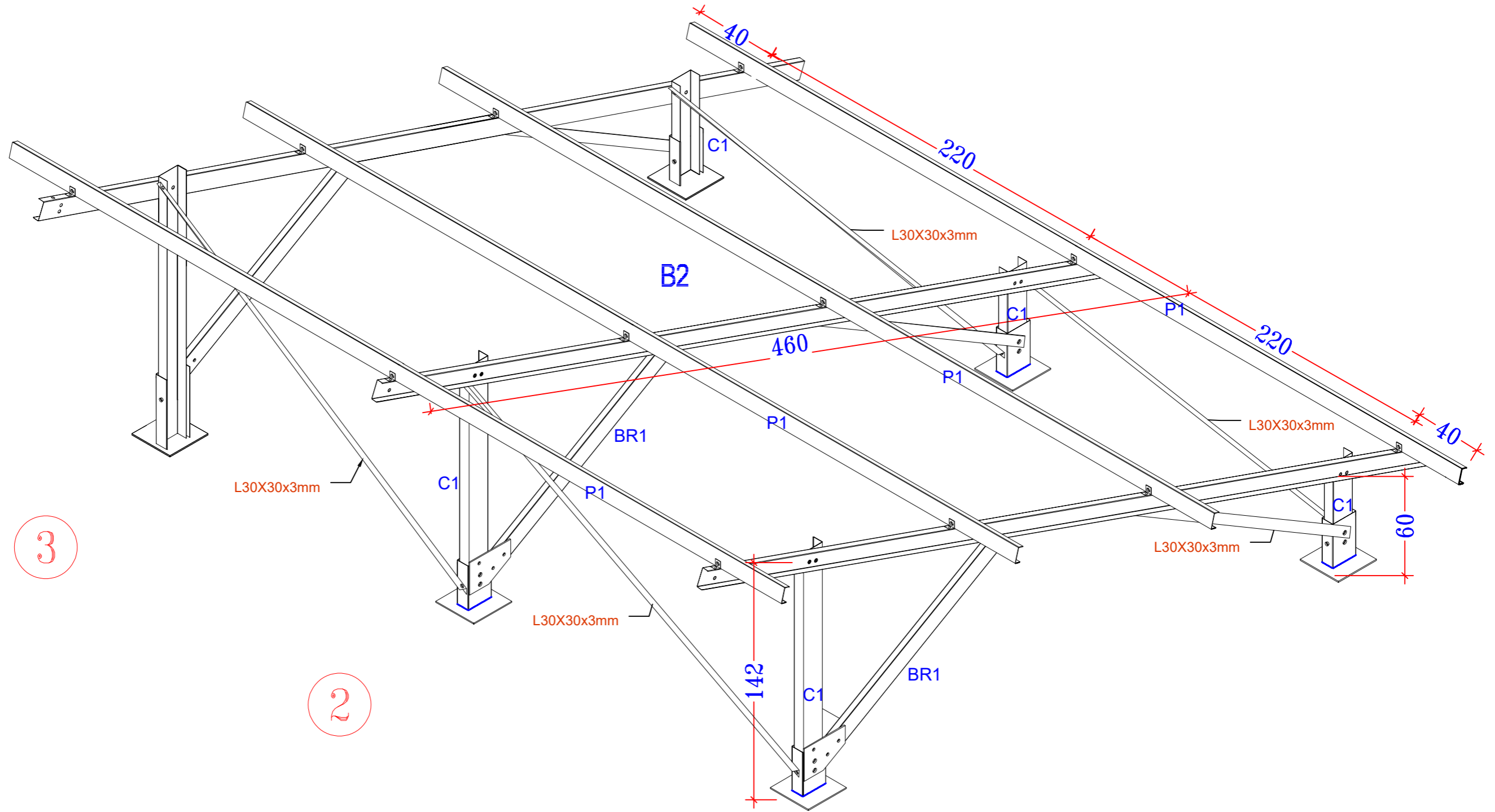
مدرسة عبدالله خليفة للبنات

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S2 - 01

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رقم اللوحة





# 8PVs FRAME 3D

GALVANIZED STEEL SECTIONS DETAILS.

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM					REMARKS
		A	B	C	t	Ø	
C1, B1	C1, B1	75	35	0	2.8-3	-	
	P1	75	35	0	2.8-3	-	
	BR1	75	35	0	2.8-3	-	



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

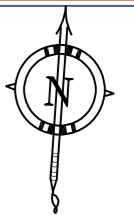
مسقط ثلاثي الابعاد  
8PANELS 3D SCHEME

مدرسة عبدالله خليفة للبنات

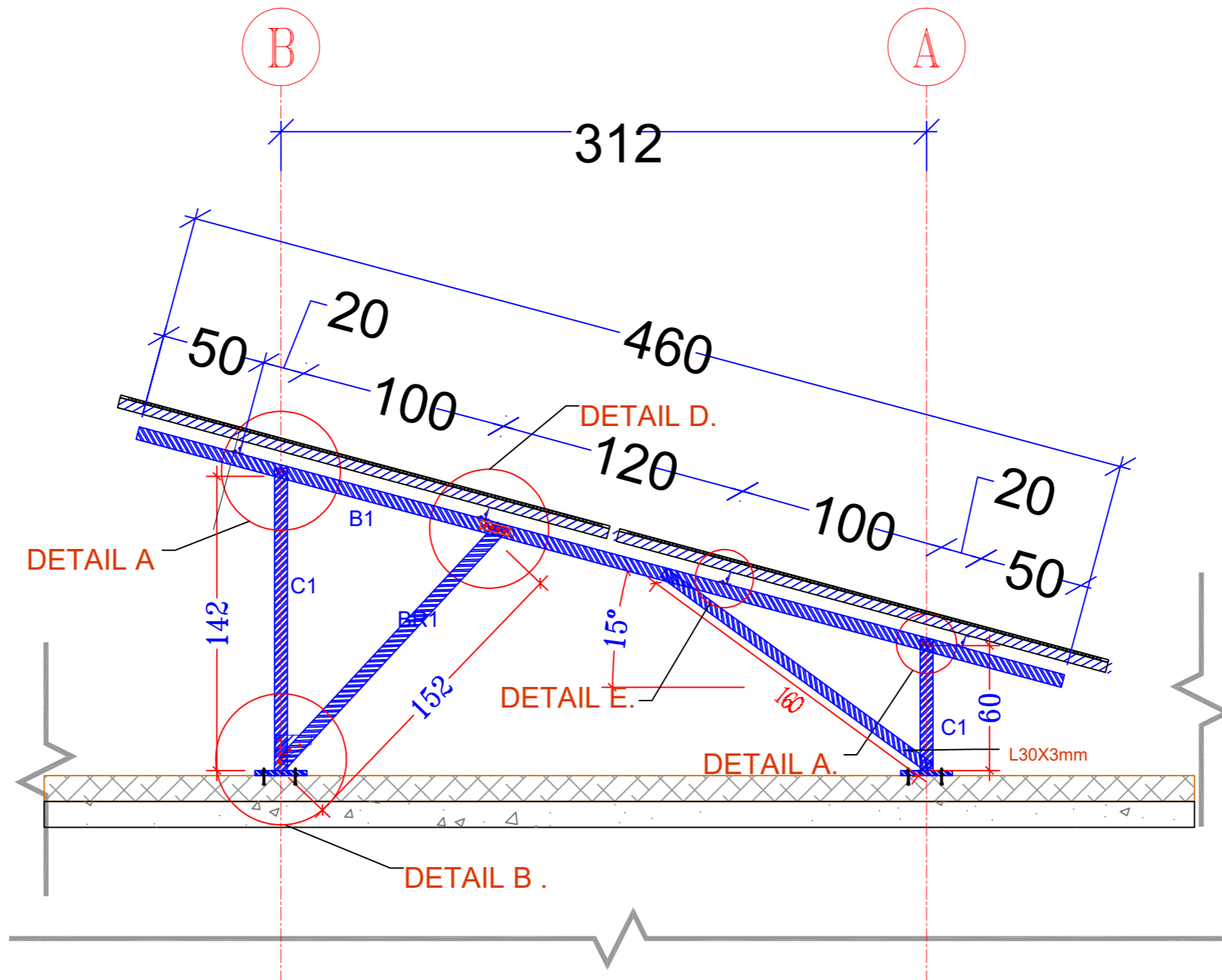
S2 - 02

sheet  
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Sheet No  
رقم اللوحة







# FRAME ELEVATION DETAILS

GALVANIZED STEEL SECTIONS DETAILS.

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM					REMARKS
		A	B	C	t	Ø	
	C1, B1	75	35	0	2.8-3	-	
	P1	75	35	0	2.8-3	-	
	BR1	75	35	0	2.8-3	-	



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

مسقط جانبي  
MOUNTING  
STRUCTURE SIDE  
VIEW

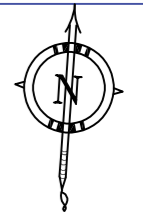
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Sheet No

اسم اللوحة

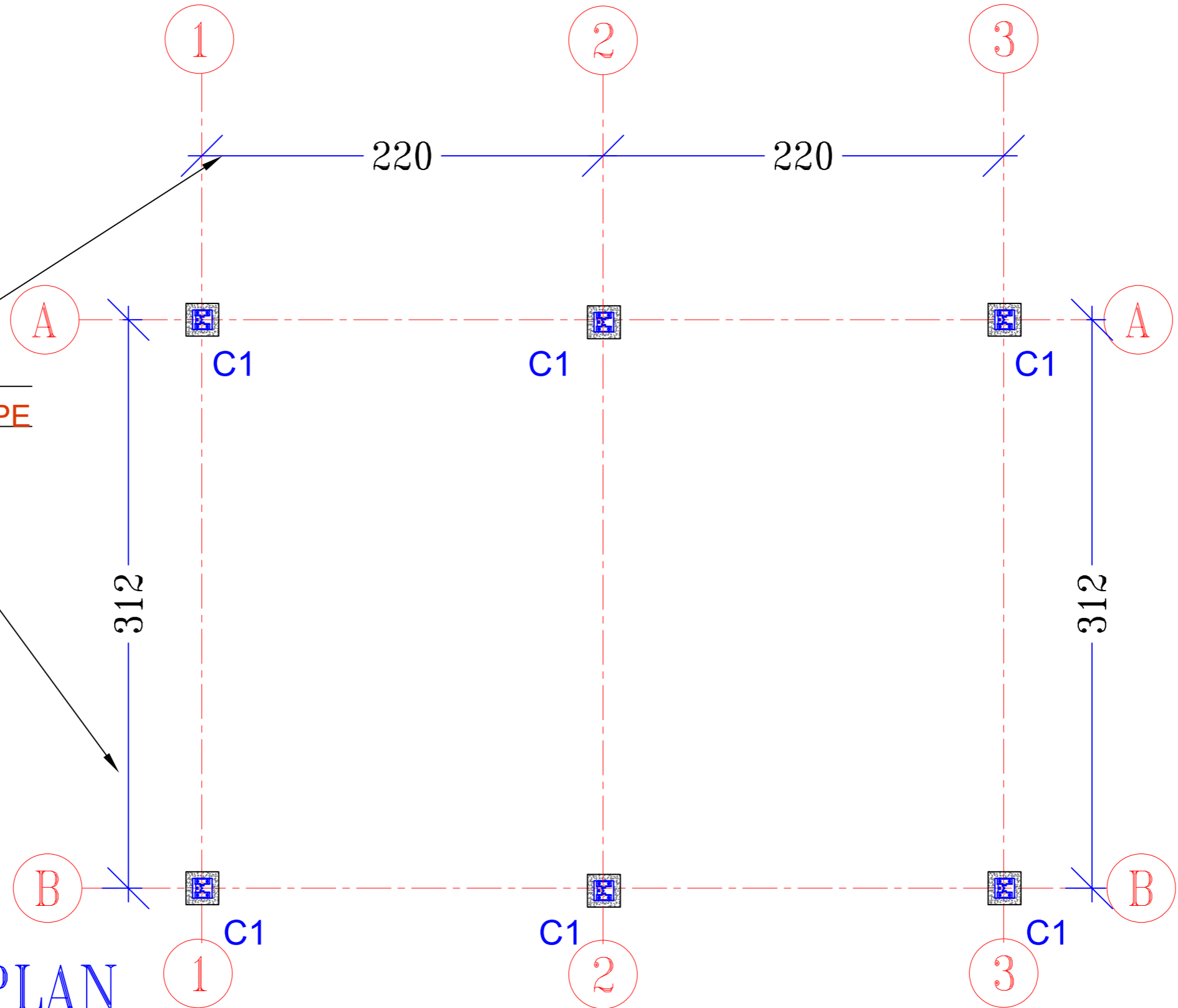
S2 - 03

رقم اللوحة



DIMENSION ON SLOPE

# COLUMN PLAN



GALVANIZED STEEL SECTIONS DETAILS.

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM					REMARKS
		A	B	C	t	Ø	
	C1, B1	75	35	0	2.8-3	-	
	P1	75	35	0	2.8-3	-	
	BR1	75	35	0	2.8-3	-	



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

تفاصيل الاعمدة

## COLUMN BASE PLATE

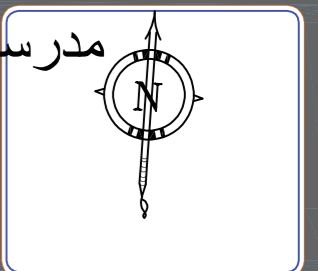
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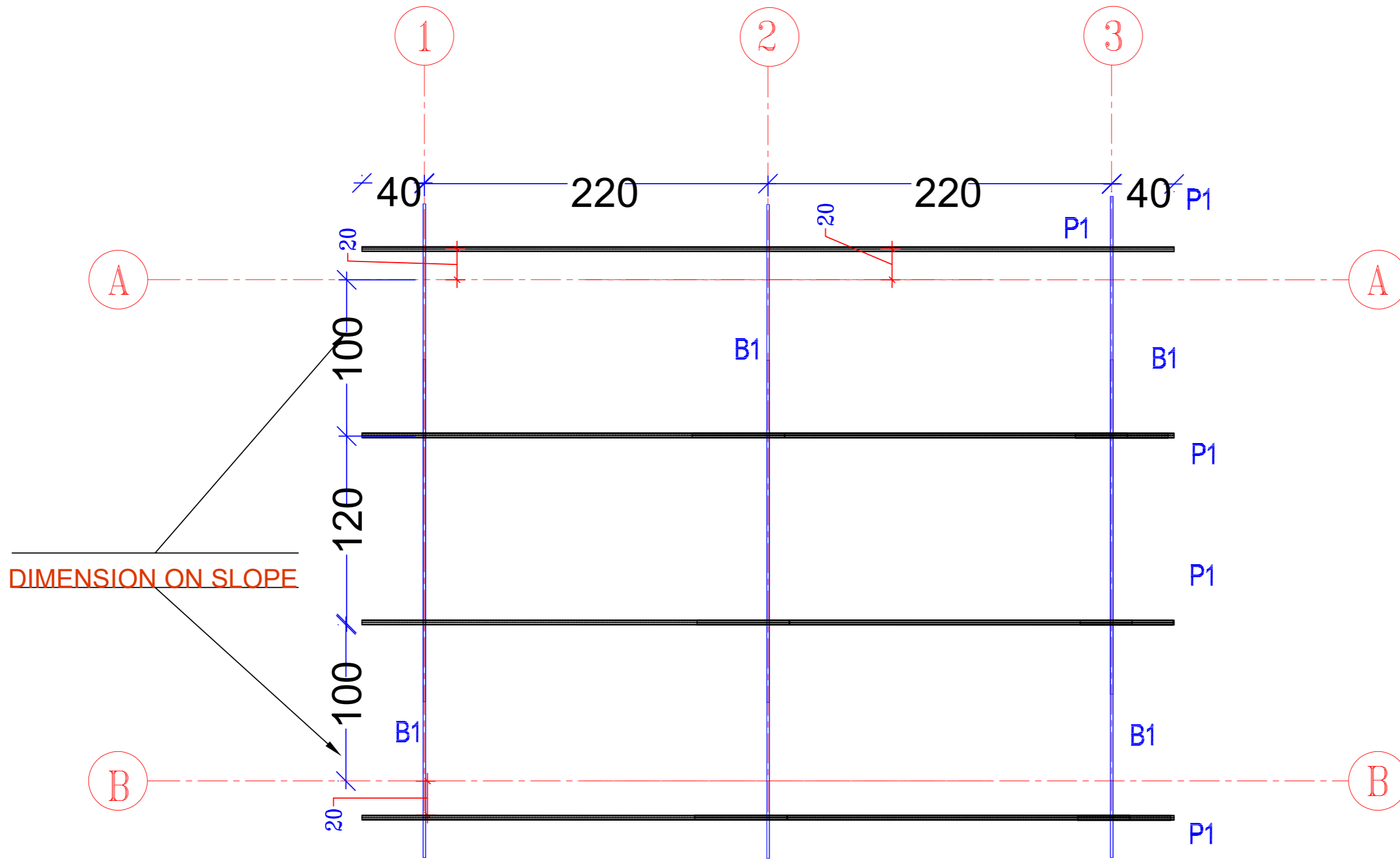
sheet  
اسم اللوحة

S2 - 04

Sheet No  
رقم اللوحة

Sheet No  
رقم اللوحة





# FRAME PLAN

GALVANIZED STEEL SECTIONS DETAILS.

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM					REMARKS
		A	B	C	t	Ø	
	C1, B1	75	35	0	2.8-3	-	
	P1	75	35	0	2.8-3	-	
	BR1	75	35	0	2.8-3	-	



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

تفاصيل القواعد السقفية

## BEAMS PLAN DETAILS.

مدرسة عبدالله خليفة للبنات

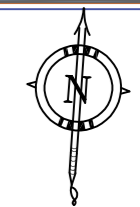
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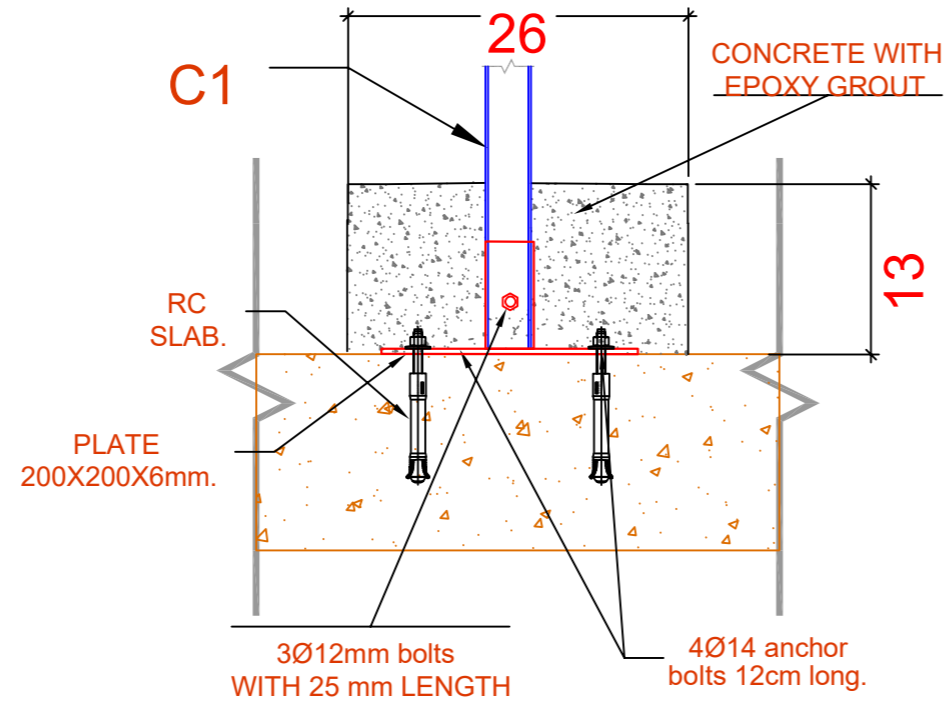
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S2 - 05

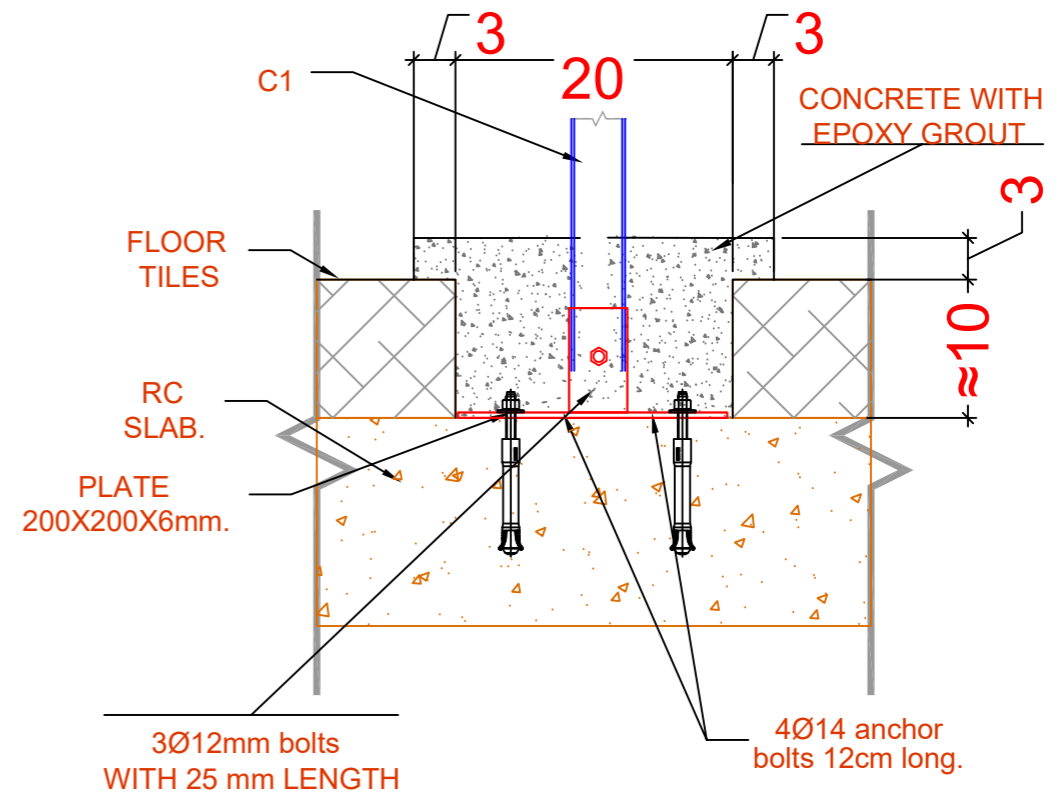
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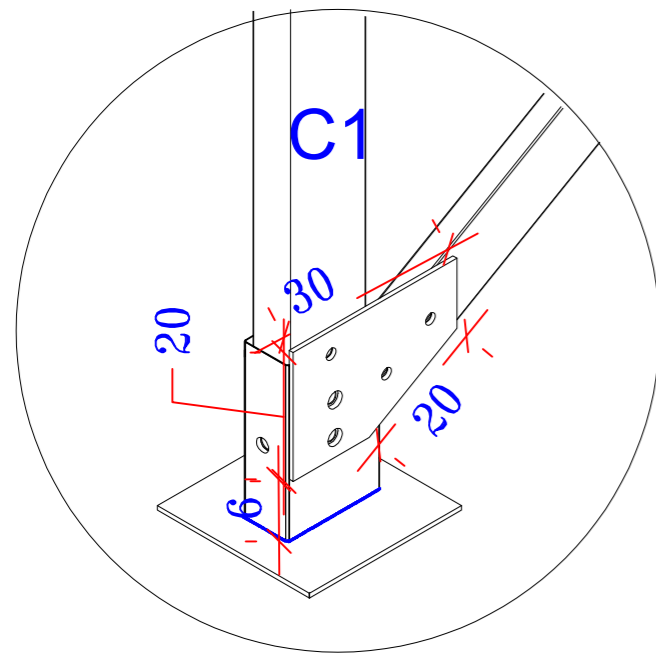




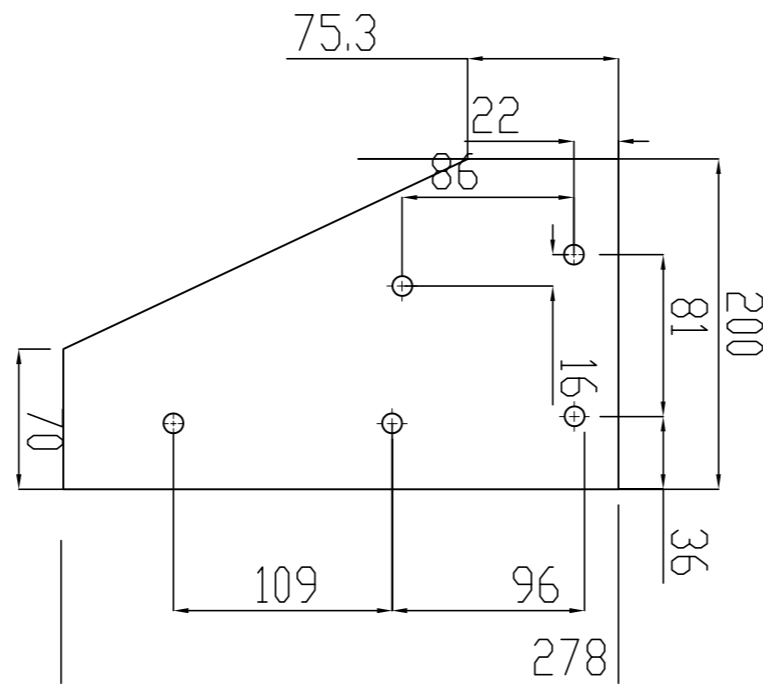
**SLAB WITHOUT TILES**



**SLAB WITH TILES**



**DETAIL B.**



**NOTES**

Roof pull out test should be carried out prior installation anchors pull out test should not be less than 7kN

*GALVANIZED STEEL SECTIONS DETAILS.*

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM					REMARKS
		A	B	C	t	Ø	
C	C1, B1	75	35	0	2.8-3	-	
	P1	75	35	0	2.8-3	-	
	BR1	75	35	0	2.8-3	-	



Supply & Install Solar System for Schools in Aden

توريد وتركيب منظومات طاقة شمسية لمدارس في عدن

تفاصيل القاعدة  
CONCRETE ,CONNECTION AND BASE  
PLATES DETAILS A.

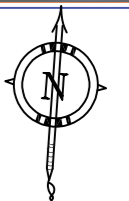
مدرسة عبدالله خايفة للبنات

sheet  
اسم اللوحة

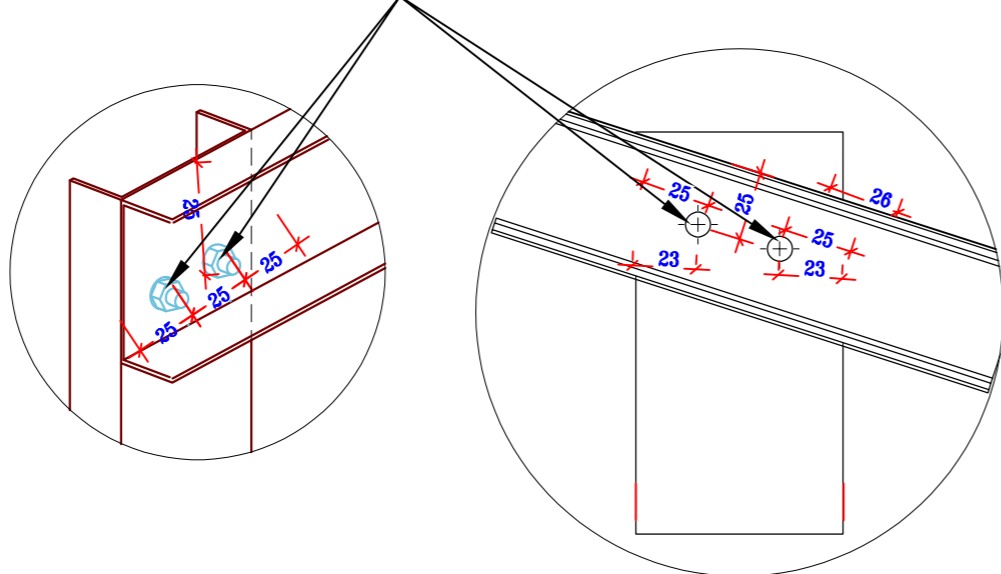
S2 - 06

Sheet No  
رقم اللوحة

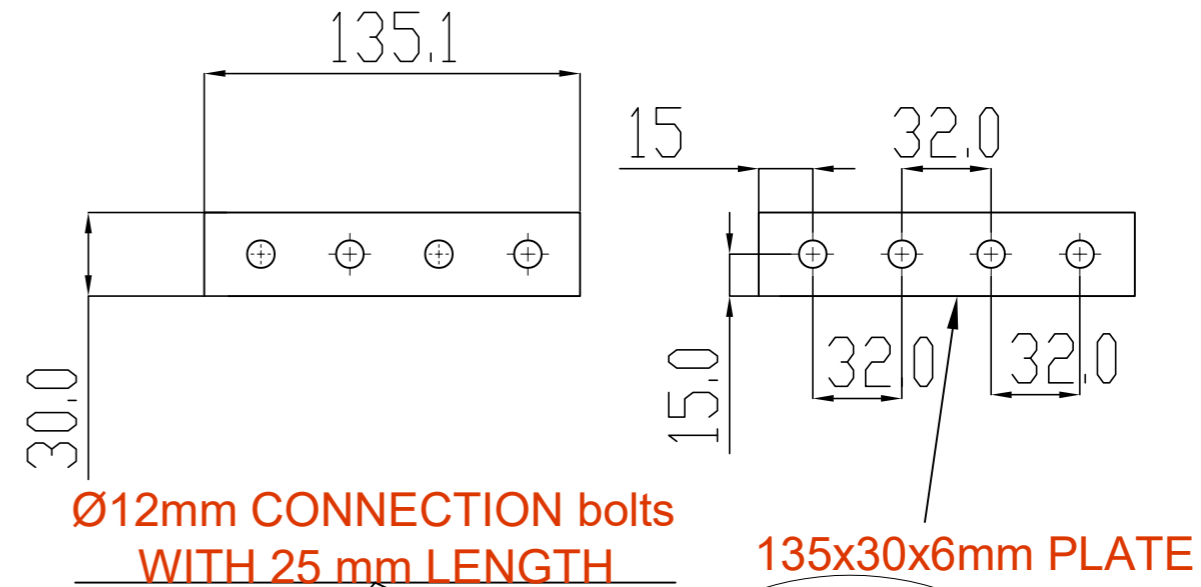
Sheet No  
رقم اللوحة



Ø12mm CONNECTION bolts  
WITH 25 mm LENGTH



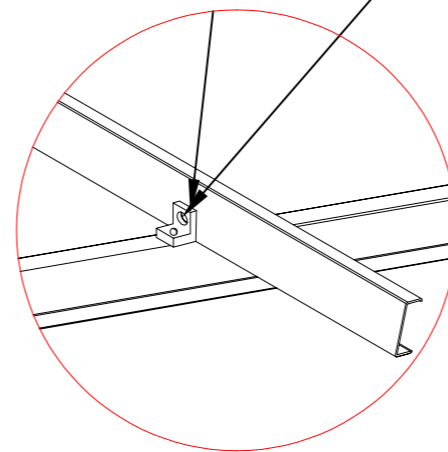
**DETAIL A.**



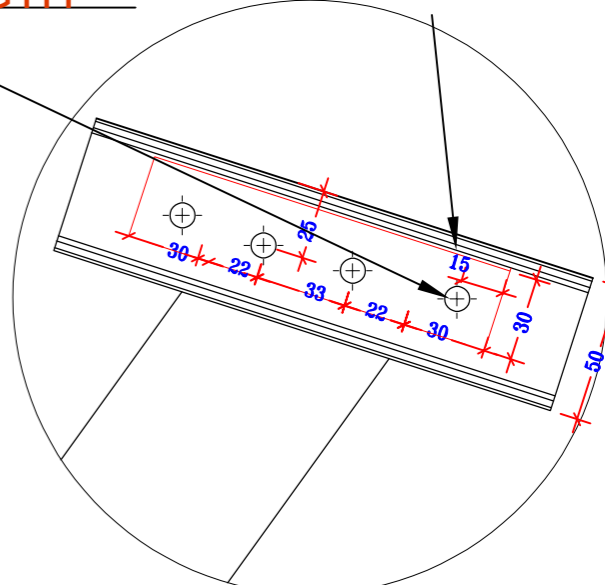
Ø12mm CONNECTION bolts  
WITH 25 mm LENGTH

135x30x6mm PLATE

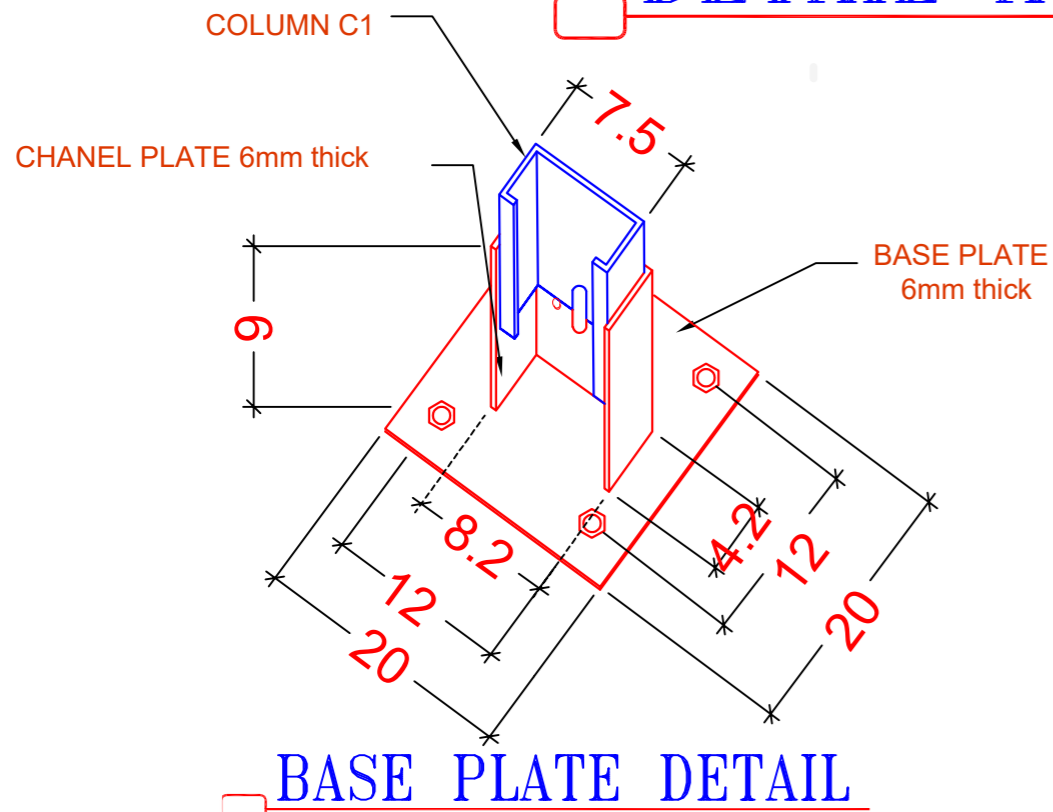
25x25x6mm LPLATE



**DETAIL E**



**DETAIL D**



**BASE PLATE DETAIL**

GALVANIZED STEEL SECTIONS DETAILS.

SECTION SHAPE	NO	MEMBER DIMENSIONS IN MM				REMARKS
		A	B	C	t	
C1, B1	75	35	0	2.8~3	-	
	P1	75	35	0	2.8~3	-
	BR1	75	35	0	2.8~3	-



Supply & Install Solar System for  
Schools in Aden

توريد وتركيب منظومات طاقة شمسية  
لمدارس في عدن

تفاصيل القاعدة  
CONCRETE ,CONNECTION AND BASE  
PLATES DETAILS B.

مدرسة عبدالله خليفة للبنات

sheet  
اسم اللوحة

S2 - 07

Sheet No  
رقم اللوحة

