

LIST OF DRAWINGS

A1000 LIST OF DRAWINGS (LOD)
A1203 TOT SHEETS DETAILS
A3101 STONE & CONCRETE REHABILITATION DETAILS 1/3
A3102 STONE & CONCRETE REHABILITATION DETAILS 2/3
A3103 STONE & CONCRETE REHABILITATION DETAILS 3/3

GM01 MECHANICAL LEGEND
GM02 MECHANICAL GENERAL NOTES
GM03 MISCELLANEOUS MECHANICAL DETAILS (1/3)
GM04 MISCELLANEOUS MECHANICAL DETAILS (2/3)
GM05 MISCELLANEOUS MECHANICAL DETAILS (3/3)

GE01 ELECTRICAL GENERAL NOTES
GE02 MISCELLANEOUS ELECTRICAL DETAILS (1/3)
GE03 MISCELLANEOUS ELECTRICAL DETAILS (2/3)
GE04 MISCELLANEOUS ELECTRICAL DETAILS (3/3)



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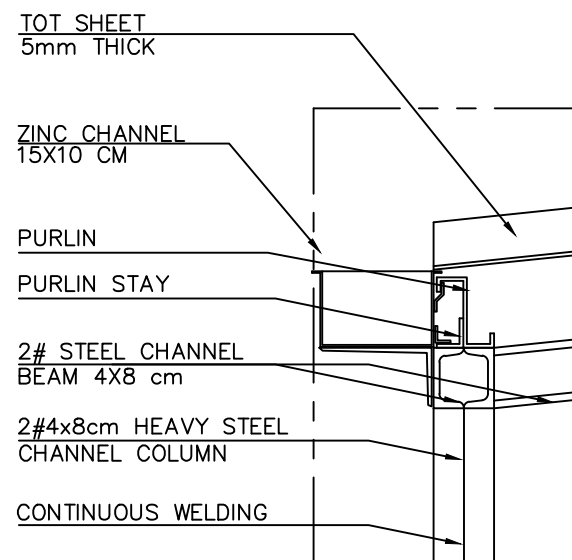
Rehabilitation of UNESCO Office Premises in Beirut
(Contract No. 4500398541)

BIR HASAN
ANNEX-IX (PHASE 2)

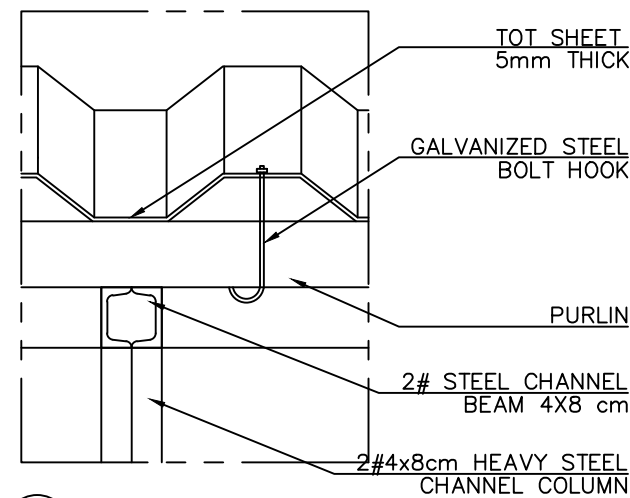
Designed RA
Approved AC
Drawn AZ
Checked AS

Scale
Date
September 2019

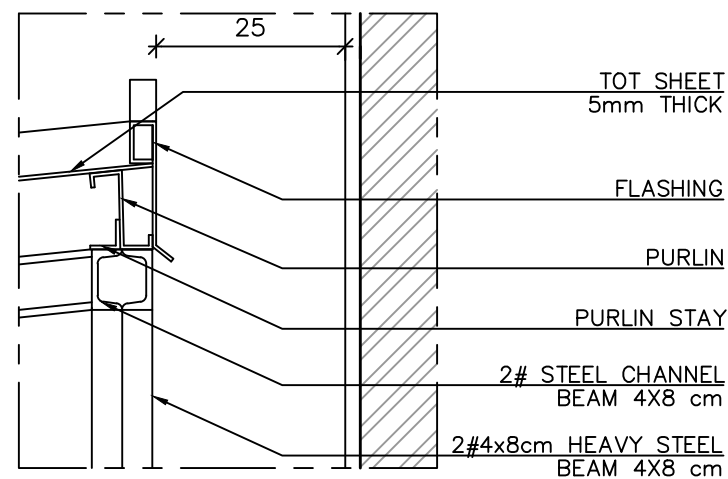
Project Number: TL1203
Sheet Title: GENERAL DETAILS:
List of Drawings
Sheet No.: A1000 Revision No.: 00
General Location : Bir Hasan



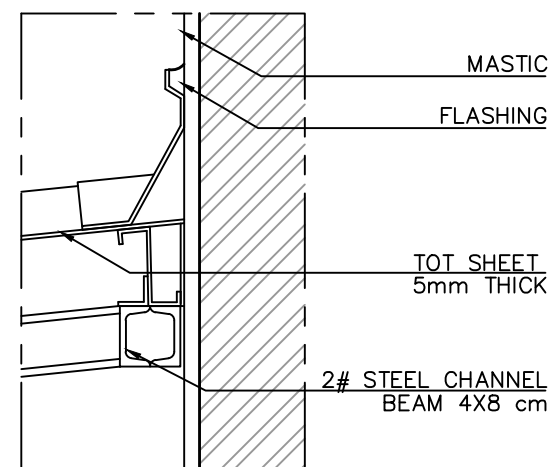
1e TOT SHEET DETAIL AT THE CHANNEL SIDE
SCALE 1/10



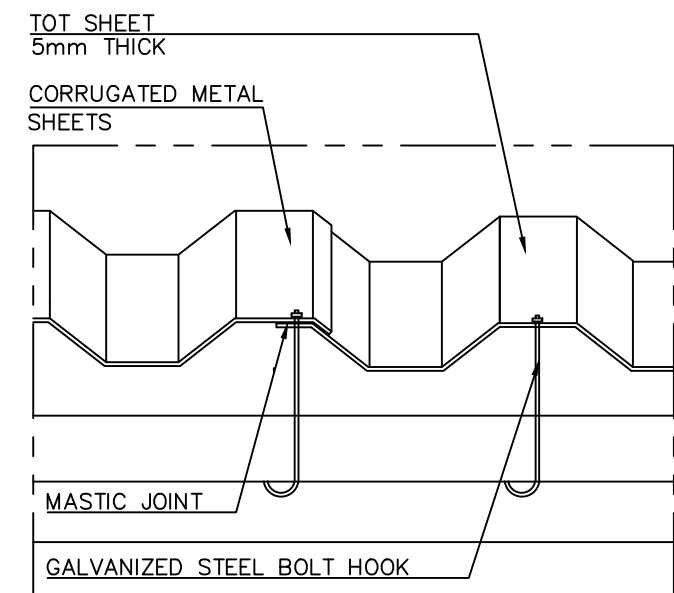
1d TOT SHEET DETAILED SECTION
SCALE 1/10



1c TOT SHEET DETAIL AT THE WALL SIDE
SCALE 1/10



1b TOT SHEET DETAIL FOR EXISTING BEAMS AT THE WALL SIDE
SCALE 1/10



1a TOT SHEETS CONNECTION DETAIL
SCALE 1/10

TOT SHEET DETAILS

1



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Rehabilitation of UNESCO Office Premises in Beirut

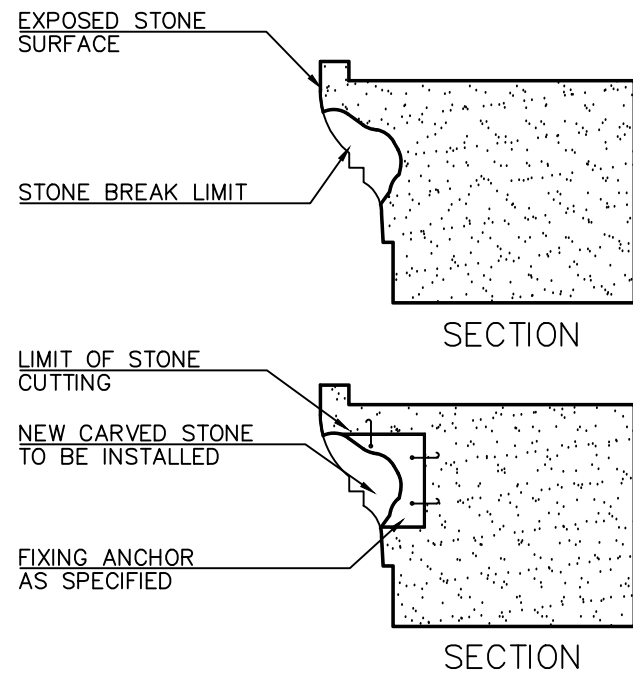
(Contract No. 4500398541)

BIR HASAN

ANNEX-IX (PHASE 2)

Designed RA	Drawn AZ
Approved AC	Checked AS
Scale	Date September 2019

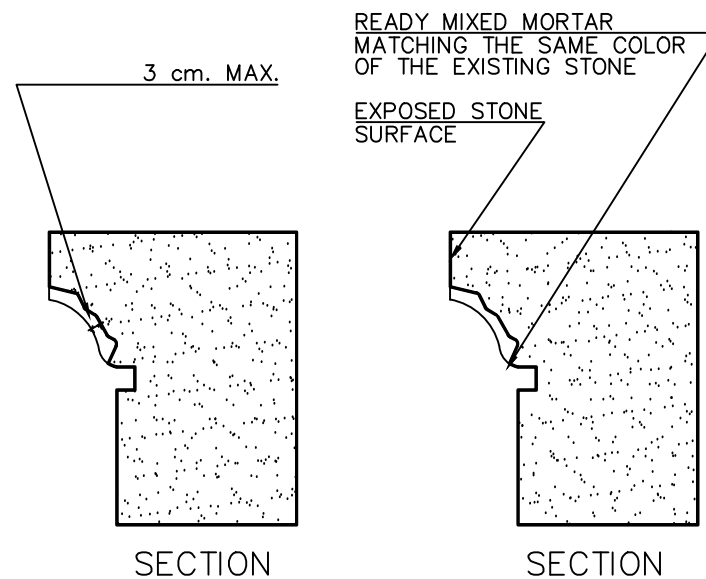
Project Number: TL1203	
Sheet Title: GENERAL DETAILS: TOT SHEET DETAILS	
Sheet No.: A1203	Revision No.: 00
General Location : Bir Hasan	



FOR DAMAGES NOT EXCEEDING 10cm
IN DEPTH. (FLAT STONE)

TYPICAL STONE REPAIR TYPE 8

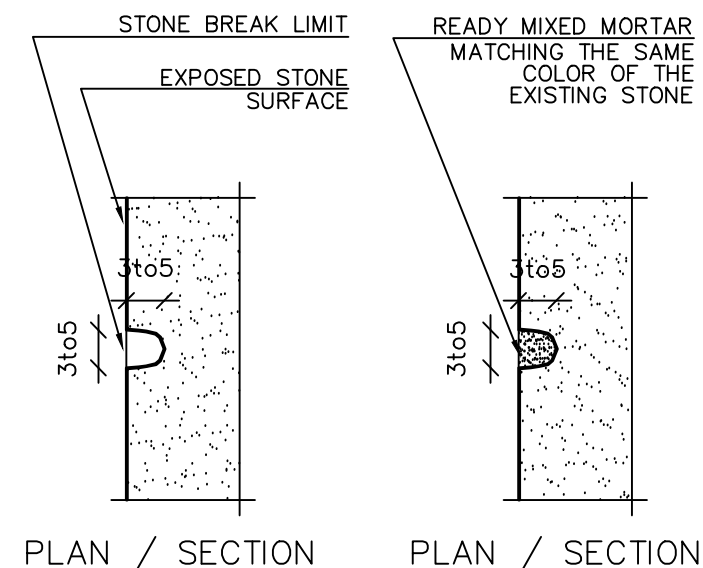
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FOR DAMAGES NOT EXCEEDING 5cm
IN DEPTH. (FLAT STONE)

TYPICAL STONE REPAIR TYPE 7

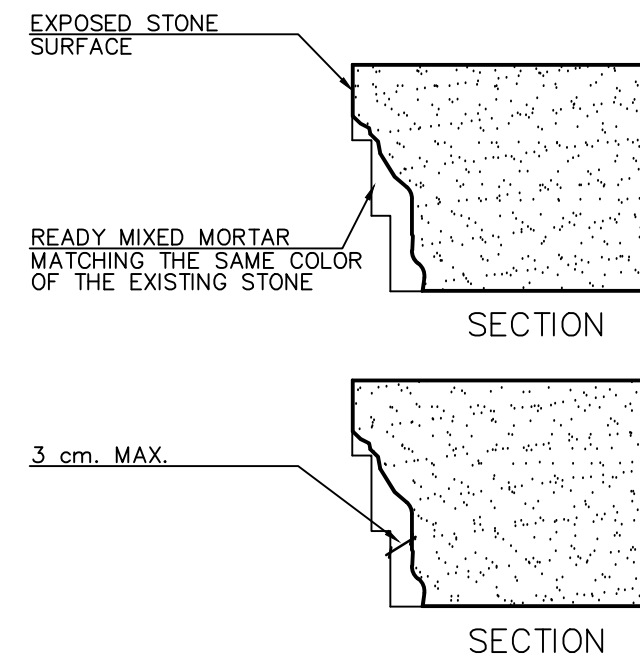
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FOR DAMAGES NOT EXCEEDING 5cm
IN DEPTH. (FLAT STONE)

TYPICAL STONE REPAIR TYPE 6

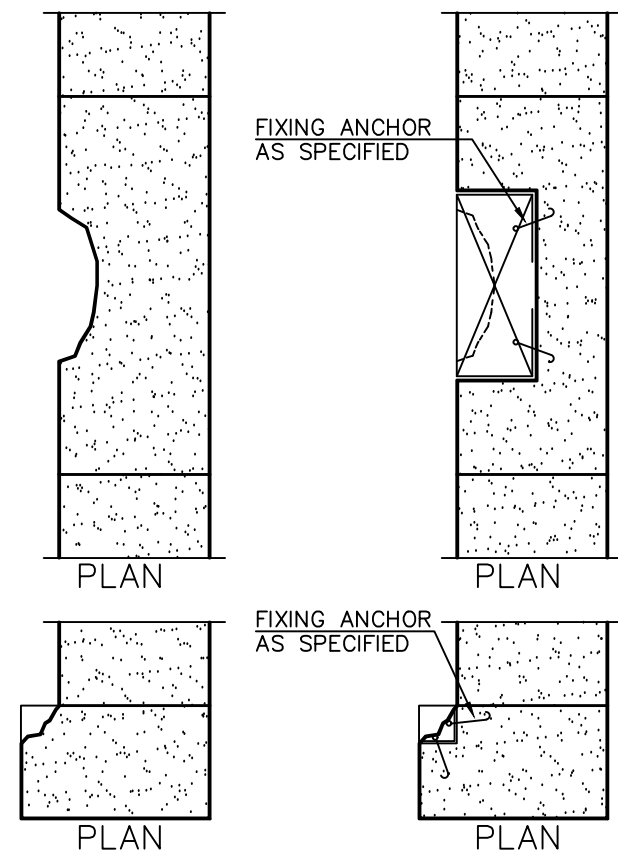
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FOR DAMAGES NOT EXCEEDING 5cm
IN DEPTH.

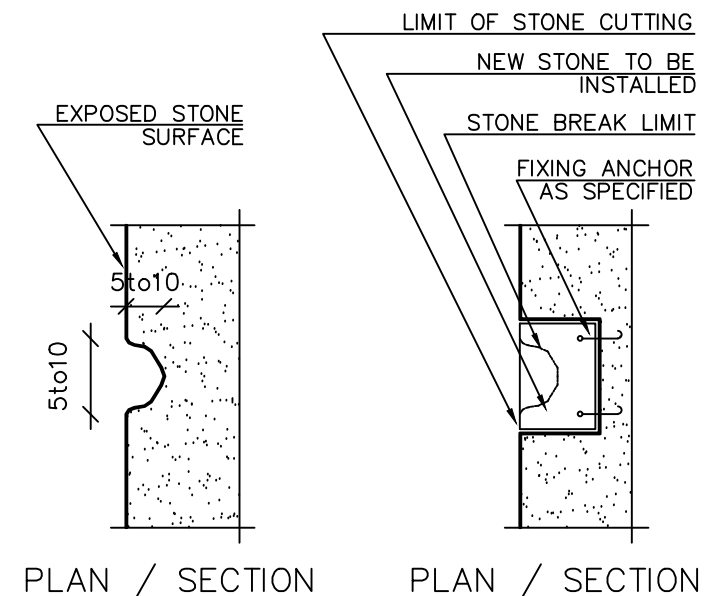
TYPICAL STONE REPAIR TYPE 5

5



TYPICAL STONE REPAIR TYPE 4

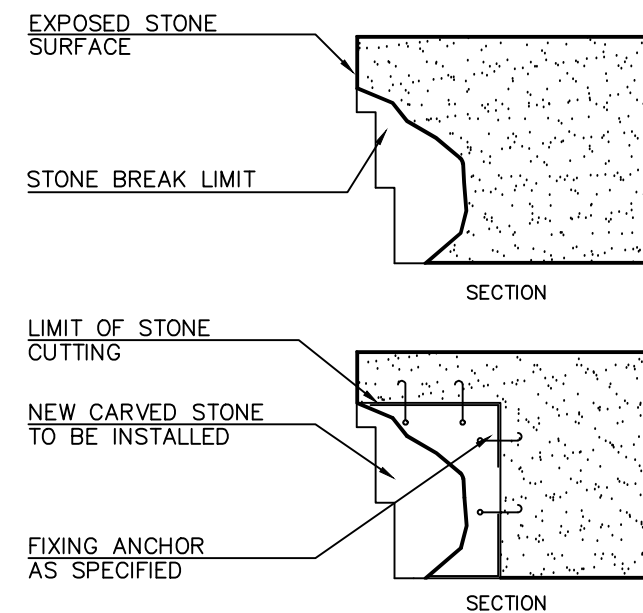
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FOR DAMAGES NOT EXCEEDING 10cm
IN DEPTH. (FLAT STONE)

TYPICAL STONE REPAIR TYPE 3

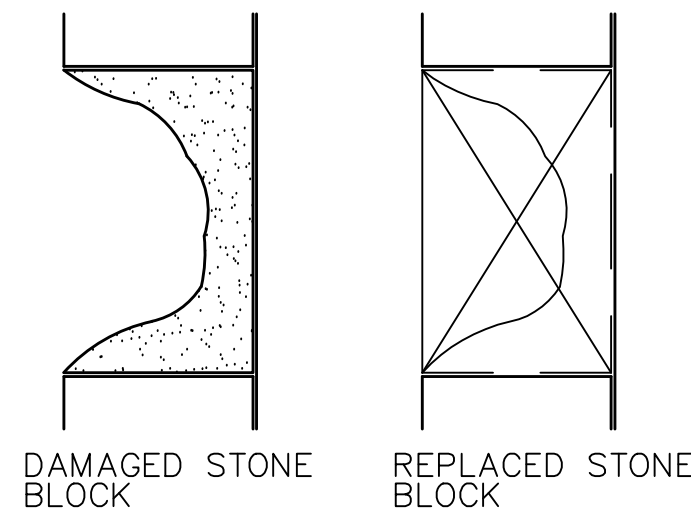
3



FOR DAMAGES NOT EXCEEDING 10cm
IN DEPTH.

TYPICAL STONE REPAIR TYPE 2

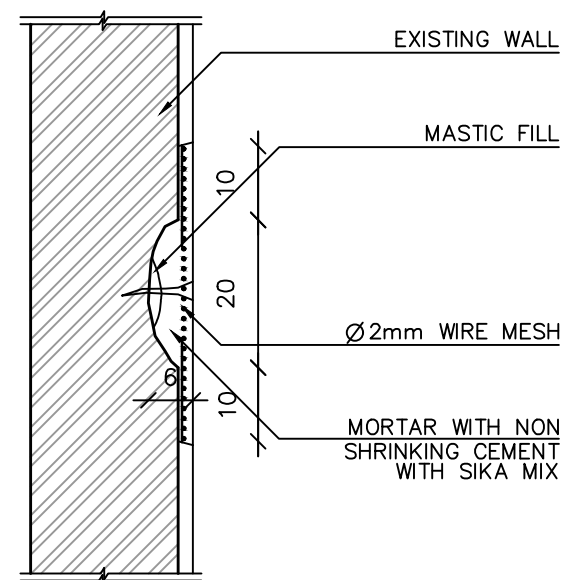
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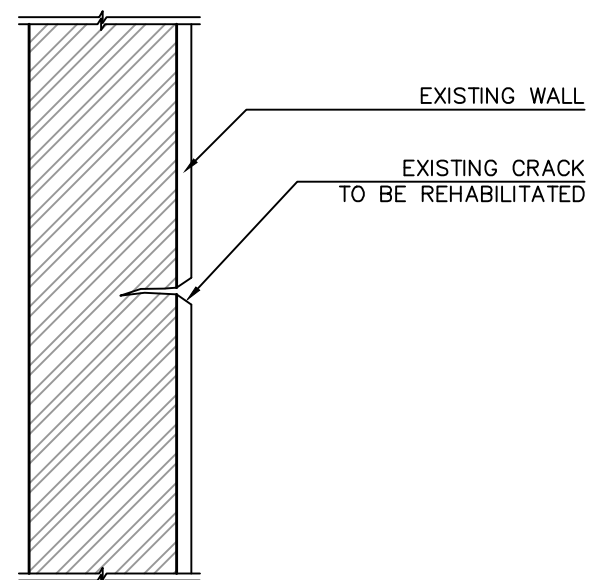
FOR DAMAGES NOT EXCEEDING 10cm
IN DEPTH.

TYPICAL STONE REPAIR TYPE 1

1



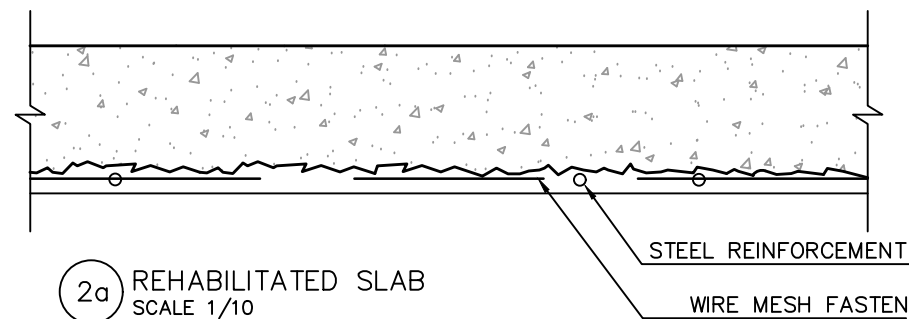
3b REHABILITATED WALL
SCALE 1/10



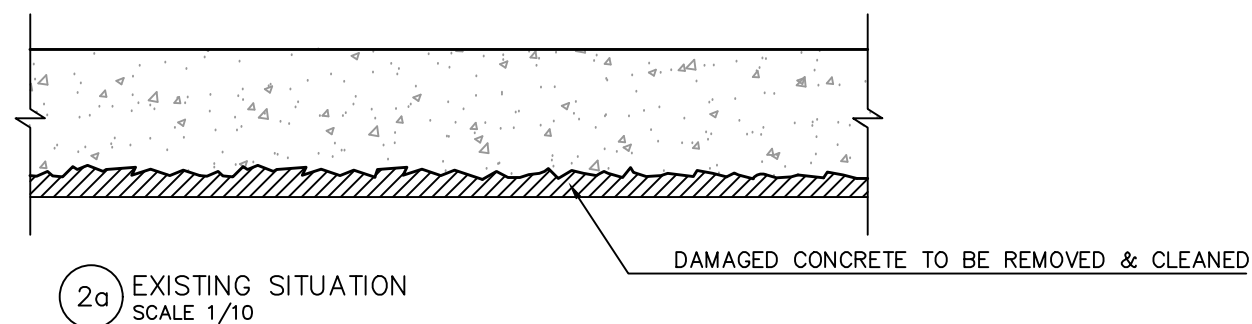
3a EXISTING SITUATION
SCALE 1/10

PLASTER CRACKS REHABILITATION

3

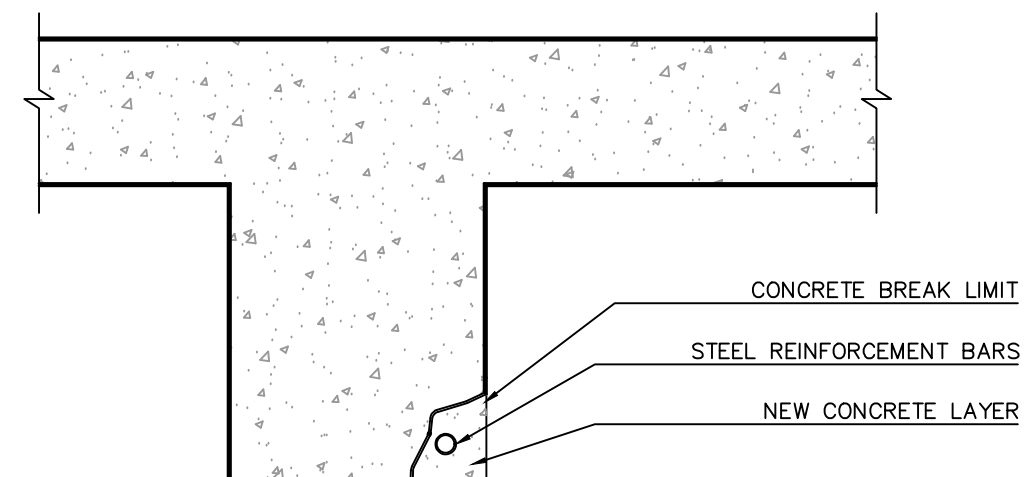


- REMOVE WEAK CONCRETE BY HAMMERING GENTLY THE SURFACE OF THE SLAB.
- REMOVE RUST ON STEEL REINFORCEMENT BY A METALIC BRUSH.
- APPLY AN EPOXY PAINT ON STEEL BARS.
- APPLY NON SHRINKAGE CEMENT PLASTER 3 LAYERS.



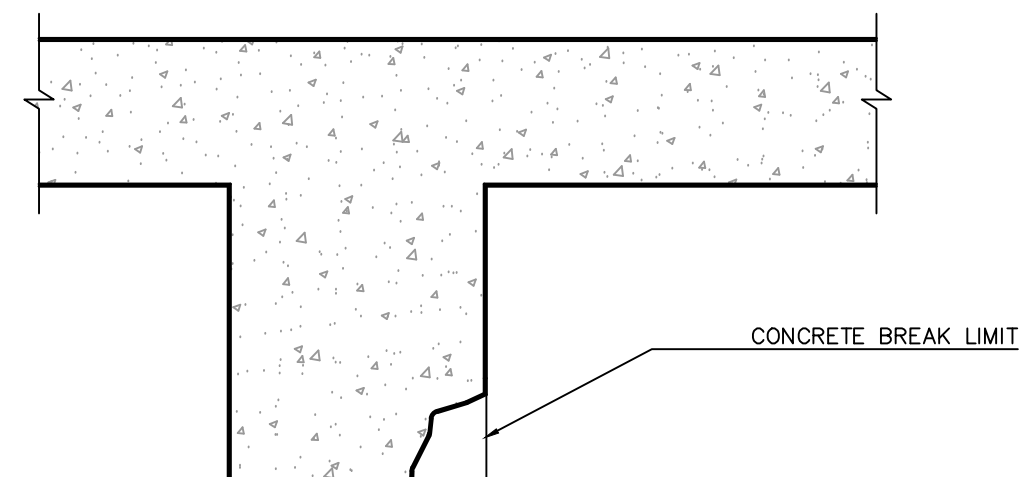
DAMAGED SLAB FROM BELOW REHABILITATION

2



1b REHABILITATED DROP BEAM
SCALE 1/10

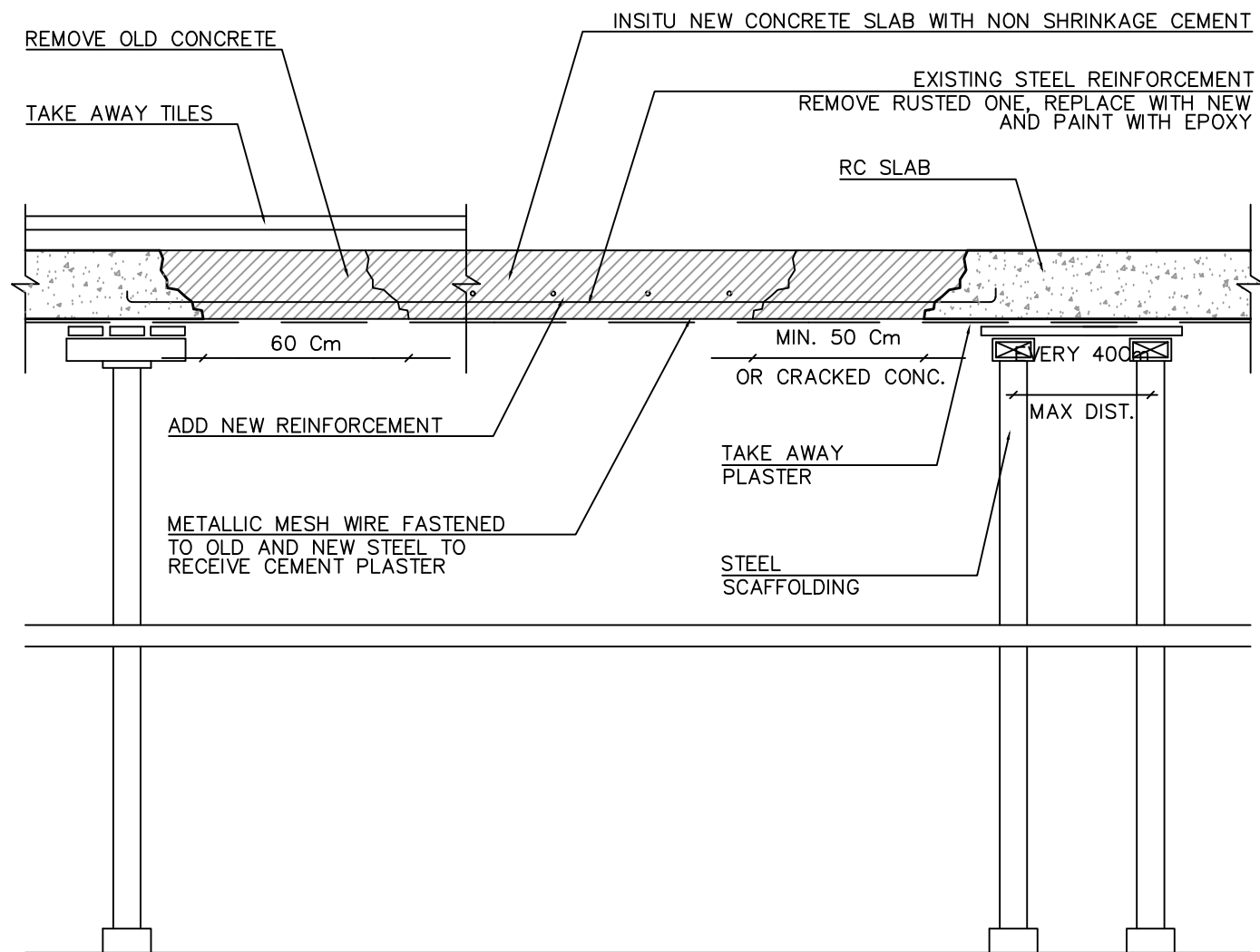
- CLEAN THE STEEL REINFORCEMENT BARS AND REMOVE RUST.
- PAINT THE RODS WITH EPOXY.
- ADD METALLIC WIRE 2mm AROUND REINFORCEMENT RODS TO HOLD THE NEW CONCRETE.
- APPLY NEW LAYER OF CONCRETE WITH NON SHRINKAGE CEMENT.



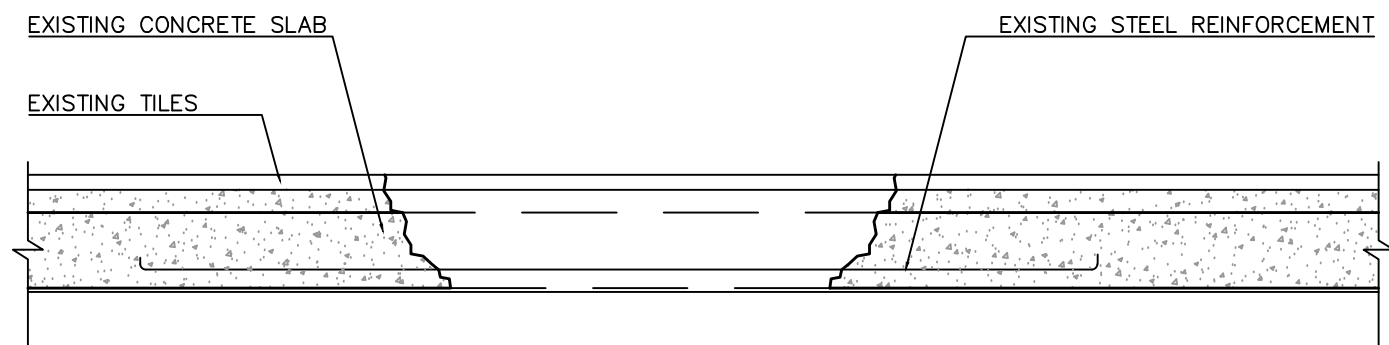
1a EXISTING SITUATION
SCALE 1/10

DAMAGED DROP BEAM REHABILITATION

1



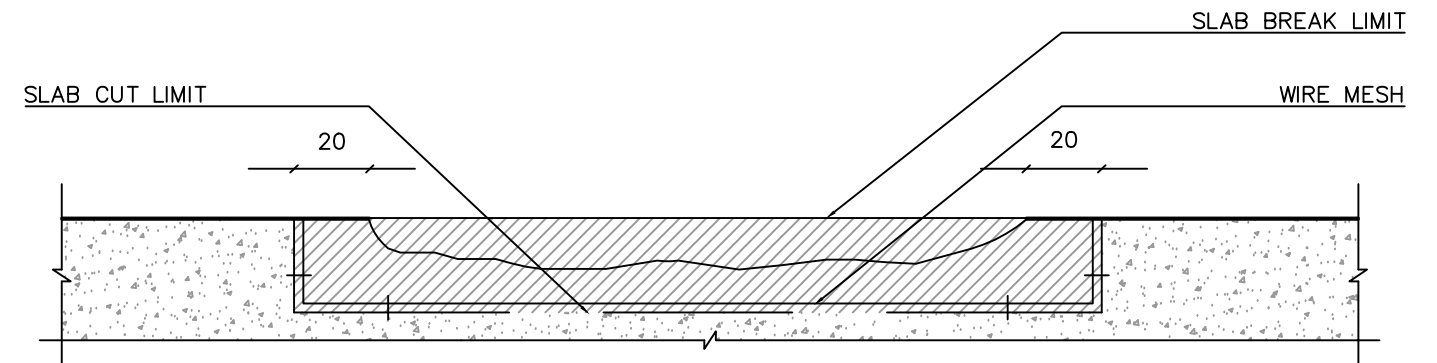
2b REHABILITATED CONCRETE SLAB (TO BE PARTIALLY REMOVED)
SCALE 1/20



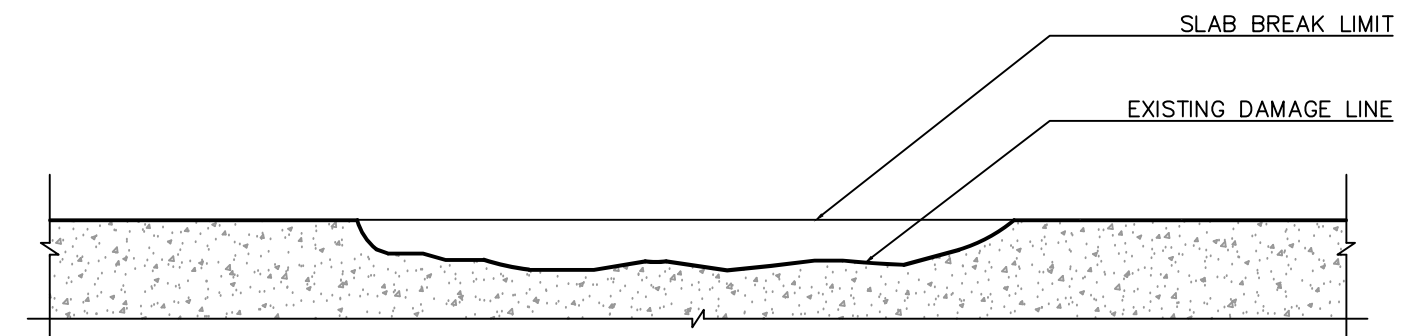
2a EXISTING DAMAGED CONCRETE SLAB
SCALE 1/20

REHABILITATION OF CONCRETE SLAB

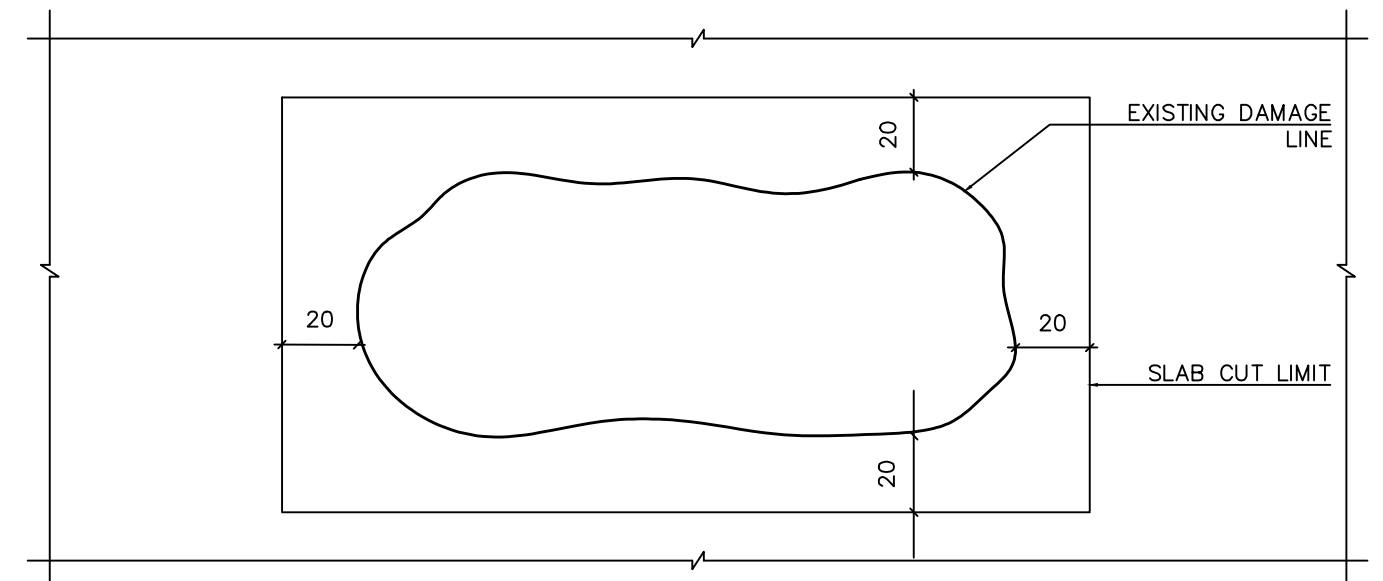
2



1c SECTION OF REHABILITATED SLAB ON GRADE
SCALE 1/20



1b SECTION OF EXISTING SLAB ON GRADE
SCALE 1/20



1a PLAN
SCALE 1/20

REHABILITATION OF SLAB ON GRADE

1

AC		AIR CONDITIONING	KW	KILOWATT	WL	WALL
BFS		BELOW FLOOR SLAB	LL	LOW LEVEL		WALL SHALL NOT CONTINUE ABOVE F.C.
BTU/H		BRITISH THERMAL UNITS PER HOUR	LP	LOW PRESSURE		THERMOMETER
CC		COOLING COIL	LPS	LITERS PER SECOND		DUCT WITH ACOUSTIC INTERNAL LINING
CL		CEILING LEVEL	LPM	LITERS PER MINUTE		
CLB		CEILING LEVEL BELOW	MBH	1000 x BTU/H		
CP		CONTROL PANEL	MFDR	MOTORIZED FIRE DAMPER		THERMOSTAT
C/U		CONDENSING UNIT	MVD	MOTORIZED VOLUME DAMPER		CONTACTOR
DB		DRY BULB TEMPERATURE	MSD	MOTORIZED SMOKE DAMPER		STATIC PRESSURE DIFFERENTIAL SENSOR
DL		DOOR LOUVER	SIU	SPLIT INDOOR UNIT		FLOW DETECTOR
DLSD		DUMMY LINEAR SLOT DIFFUSER	SOU	SPLIT OUTDOOR UNIT		MAIN CIRCUIT BREAKER
DN		DOWN	NRD	NON RETURN DAMPER		BRANCH CIRCUIT BREAKER
EA		EXHAUST AIR	NTS	NOT TO SCALE		WINTER TEMPERATURE CONTROLLER
EAD		EXHAUST AIR DUCT UP/DN	PF	PRESSURIZATION FAN		TEMPERATURE SENSOR
EAL		EXHAUST AIR LOUVER	RA	RETURN AIR		STARTER
EAL		EXHAUST AIR PLENUM	RAD	RETURN AIR DUCT UP/DN		STATIC PRESSURE CONTROLLER
EAT		ENTERING AIR TEMPERATURE	RAF	RETURN AIR FAN		SUMMER TEMPERATURE CONTROLLER
E/B		EVAPORATOR BLOWER UNIT	RCD	RETURN CEILING DIFFUSER		ON/OFF PUSH BUTTON
ECD		EXHAUST CEILING DIFFUSER	RCS	REMOTE CONTROL STATION		CONTROL TRANSFORMER
EG		EXHAUST GRILLE	RG	RETURN GRILLE		PILOT LIGHTS
EHE		ELECTRIC HEATING ELEMENT	RL	REFRIGERANT LIQUID LINE		TEMPERATURE CONTROLLER
ELSD		EXHAUST LINEAR SLOT DIFFUSER	RLSD	RETURN LINEAR SLOT DIFFUSER		PRESSURE REDUCING STATION
ER		EXHAUST REGISTER	RM	ROOM		LPG GAZ DETECTOR
EXF		EXHAUST FAN	RS	REFRIGERANT SUCTION LINE		
FA		FRESH AIR	RTU	ROOF TOP UNIT		
FAB		FROM ABOVE	SA	SUPPLY AIR		
FAF		FRESH AIR FAN	SAD	SUPPLY AIR DUCT UP/DN		
FAL		FRESH AIR LOUVER	SAT	SOUND ATTENUATOR		
FB		FROM BELOW	SD	SPLITTER DAMPER		
FAD		FRESH AIR DUCT UP/DN	SCD	SUPPLY CEILING DIFFUSER		
FAF		FRESH AIR FAN	SG	SUPPLY GRILLE		
FAG		FRESH AIR GRILLE	SLBD	SUPPLY LINEAR BAR DIFFUSER		
FAL		FRESH AIR LOUVER	SLSD	SUPPLY LINEAR SLOT DIFFUSER		
FAO		FRESH AIR OPENING	SMFDR	SMOKE MOTORIZED FIRE DAMPER		
FAR		FRESH AIR REGISTER	SP	STATIC PRESSURE		
FC		FALSE CEILING	SR	SUPPLY REGISTER		
FDR		FIRE DAMPER	TA	TO ABOVE		
HC		HEATING COIL	TB	TO BELOW		
HL		HIGH LEVEL	TD	TRANSFER DUCT		
HP		HIGH PRESSURE	TG	TRANSFER GRILLE		
HUM		HUMIDIFIER	TLSD	TRANSFER LINEAR SLOT DIFFUSER		
HR UNIT		HEAT RECOVERY UNIT	TYP	TYPICAL		
m3/hr		CUBIC METER PER HOUR	UG	UNDER GROUND		
IL		INVERT LEVEL	VD	MANUAL VOLUME DAMPER		
IV		ISOLATING VALVE	WB	WET BULB		
IWL		IN WALL				



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Rehabilitation of UNESCO Office Premises in Beirut

(Contract No. 4500398541)

BIR HASAN

ANNEX-IX (PHASE 2)

Designed

RA

Approved

AC

Drawn

AZ

Checked

AS

Scale

NTS

Date

September 2019

Project Number:

TL1203

Sheet Title:

MECHANICAL LEGEND

Sheet No.:

GM01

Revision No.: 00

General Location : Bir Hasan

AIR CONDITIONING GENERAL NOTES

- 1- THESE DRAWINGS SHALL BE USED FOR HEATING, COOLING & VENTILATION PURPOSES ONLY , DO NOT SCALE FROM THESE DRAWINGS.
- 2- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS OF DIFFERENT TRADES FOR COORDINATION PURPOSES.
- 3- THE CONTRACTOR SHALL SUBMIT FOR APPROVAL THREE SETS OF SHOP DRAWINGS SHOWING OPENINGS & SLEEVES IN CONCRETE WALLS & SLABS BEFORE WORK CAN BEGIN. HE SHALL ALSO PREPARE ANOTHER THREE SETS OF SHOP DRAWINGS FOR APPROVAL SHOWING THE SYSTEM EXACTLY IN PLACE.
- 4- ALL EQUIPMENT SHOULD BE APPROVED BEFORE PURCHASE ORDER HAS BEEN PLACED.
- 5- ALL A/C PIPES & DUCTS RUN AT CEILING LEVEL UNLESS INDICATED OTHERWISE.
- 6- THE FALSE CEILING VOID IS CONSIDERED AS RETURN AIR PLENUM UNLESS INDICATED OTHERWISE.
- 7- FOR LOCATION OF FLOOR DRAIN WHERE A/C CONDENSATE DRAIN IS DISCHARGED REFER TO THE CORRESPONDING DRAINAGE LAYOUT DWG.
- 8- ALL VALVES HAVE THE SAME SIZE AS THE PIPE SERVED UNLESS INDICATED OTHERWISE.
- 9- ALL FIRE DAMPERS SHALL HAVE ACCESS PANEL.
- 10-SOUND ATTENUATORS SHALL BE AT LEAST 1.2m LENGTH AND SHALL BE COMPOSED OF 10 cm PERFORATED SHEET METAL SPLITTERS FILLED WITH ABSORPTION MATERIAL WHICH ARE SEPARATED BY 10 cm SPACE FOR AIR PASSAGE.
- 11- ALL PIPES CROSSING CONCRETE EXPANSION JOINTS SHALL HAVE PIPE EXPANSION JOINTS.
- 12- ALL DUCTS CROSSING CONCRETE EXPANSION JOINTS SHALL HAVE DUCT EXPANSION JOINTS.
- 13- ALL SLEEVES SHOULD BE CHECKED BEFORE POURING CONCRETE.
- 14- THE CONTRACTOR SHALL PROVIDE MAINTENANCE ACCESS PANELS TO ALL AC UNITS, VALVES, BTU METERS, VOLUME & FIRE DAMPERS AND WHEREVER NEEDED. LOCATION OF PANELS SHALL BE COORDINATED WITH THE INTERIOR DESIGNER.
- 15-LOAD CALCULATIONS WERE BASED ON:
GLAZING U VALUE=3.2 W/M2 K
GLAZING SHADING COEFFICIENT=0.88
- FOR GLASS TYPE LOCATIONS REFER TO ARCHITECTURAL DRAWINGS. IF DURING CONSTRUCTION OTHER TYPES OF GLASS WERE UTILIZED, THE CONTRACTOR SHALL DO THE NECESSARY LOAD ADJUSTMENTS ACCORDINGLY.
- 16-1” ACOUSTIC INTERNAL LINING SHALL BE PROVIDED ON THE FIRST METER LENGTH OF THE SUPPLY DUCT OF EACH AC INDOOR UNIT. ALSO RETURN AIR PLENUM OF EACH AC UNIT SHALL HAVE 1” ACOUSTIC INTERNAL LINING.

GENERAL MECHANICAL WORKS TO BE DONE

1. REPLACE EXISTING HVAC UNITS WITH VRF SYSTEM
2. PROVIDE VENTILATION FOR BASEMENT STORAGE AREAS

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(Contract No. 4500398541)

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ANNEX-IX (PHASE 2)

Designed RA	Drawn AZ
Approved AC	Checked AS
Scale NTS	Date September 2019

Project Number: TL1203	
Sheet Title: MECHANICAL GENERAL NOTES	
Sheet No.: GM02	Revision No.: 00
General Location : Bir Hasan	

RECTANGULAR GALV. STEEL DUCT CONSTRUCTION
AND TRANSVERSE JOINT REINFORCEMENT FOR
MEDIUM PRESSURE COMMERCIAL SYSTEMS (a)
(+2 — +4 INCHES OF WATER)
(+500 Pa —1000 Pa)

GAUGE MIN. THICKNESS mm. WT.Kg/m ²	16	18	20	22	24
UP THRU 10	1.46	1.18	0.91	0.75	0.60
11-12	12.96	10.52	8.08	6.86	5.64
13-14		(b)			
15-16			A-3.0	A-2.5	A-1.5
17-18			A-3.0	A-1.5	A-1.5
19-20			B-3.0	B-2.5	A-1.5
21-22	C-3.0	C-3.0	C-2.5	B-1.5	B-1.5
23-24	D-3.0	D-3.0	C-1.5	C-1.5	C-1.2
25-26	D-3.0	D-3.0	C-1.5	C-1.5	C-1.2
27-28	E-3.0	E-2.5	D-1.5	D-1.5	D-1.2
29-30	E-3.0	E-2.5	D-1.5	D-1.5	D-1.2
31-36	F-1.5	F-1.5	F-1.0	F-1.0	E-0.75
37-42	G-1.5	G-1.5	F-1.0	F-1.0	E-0.6
43-48	H-1.5	H-1.2	G-0.75	F-0.6	
49-54	I-1.5	H-1.0	H-0.75	G-0.6	
55-60	J-1.0	I-1.0	I-0.75	H-0.6	H-0.5
61-72	K-1.0	J-0.75	J-0.6	I-0.5	
73-84	L-0.75	K-0.6	K-0.6	K-0.5	
85-96	H-0.75	H-0.75			
OVER 96					

ONLY FOR ±3 INCHES (±750Pa)	WELDED FLANGE	STANDING SEAM	FLANGED	RIVET OR WELD GASKET	COMPANION ANGLES
MINIMUM RIGIDITY CLASS					
EI +	H(mm)xT	H(mm)xT	H(mm)xT ¹⁰	HxT ¹⁰ (mm)	
A 0.5	13x22 ga	25x24 ga	25x24 ga	25x3	
B 1.0	20x22 ga	25x24 ga	25x24 ga	25x3	
C 2.5	20x18 ga	25x24 ga	25x24 ga	25x3	
D 5.0	25x18 ga	25x20 ga	25x22 ga	25x3	
E 10	30x18 ga	40x24 ga	40x24 ga	25x3	
F 15	40x20 ga	40x20 ga	40x22 ga	30x3	
G 25	40x16 ga	40x18 ga	40x18 ga	30x3	
H 50			50x18 ga	40x4	
I 75			50x16 ga	40x5	
J 100				40x6	
K 150				50x5	
L 200				50x6	

(a) FOR A GIVEN DUCT THICKNESS, NUMBERS INDICATE MAX. SPACING(m) BETWEEN DUCT REINFORCEMENT. LETTERS INDICATE TYPE OF DUCT REINFORCEMENT. TRANSVERSE JOINT SPACING IS UNRESTRICTIVE. USE THE SAME METAL DUCT THICKNESS ON ALL DUCT SIDES

(b) REINFORCEMENT NOT REQUIRED IN BLANK SPACES.
* THE STATIC PRESSURE RATING OF FAN AT SPECIFIC POINTS IS NOT NECESSARILY THE ACTUAL S.P. IN EACH DUCT SECTION MUST BE OBTAINED BY COMPUTATION.

REMARK: THE MEDIUM PRESSURE SYSTEM IS APPLICABLE FOR ALL DUCTS UPSTREAM THE VAV. (i.e. SUPPLY AIR DUCTS BETWEEN THE AHU'S SERVING THE VAV'S AND THE VAV'S.)

RECTANGULAR GALV. STEEL DUCT CONSTRUCTION
AND TRANSVERSE JOINT REINFORCEMENT FOR
LOW PRESSURE COMMERCIAL SYSTEMS (a)
(-2 — +2 INCHES OF WATER)
(-500 Pa —+500 Pa)

GAUGE MIN. THICKNESS mm. WT.Kg/m ²	16	18	20	22	24	26
UP THRU 10	1.46	1.18	0.91	0.75	0.60	0.47
11-12	12.96	10.52	8.08	6.86	5.64	4.42
13-14			(c)			
15-16				A-2.5	A-1.5	
17-18				A-3.0	A-2.5	A-1.5
19-20				A-3.0	A-2.5	A-1.5
21-22				A-3.0	A-2.5	A-1.5
23-24				B-3.0	B-2.5	A-1.5
25-26				B-3.0	B-2.5	A-1.5
27-28	C-3.0	C-3.0	C-2.5	C-1.5	C-1.5	B-1.5
29-30	D-3.0	D-3.0	D-2.5	C-1.5	C-1.5	B-1.2
31-36	E-3.0	E-2.5	D-1.5	D-1.5	D-1.2	
37-42	E-2.5	E-1.5	E-1.5	E-1.5	E-1.2	
43-48	G-2.5	F-1.5	F-1.5	E-1.2	E-1.0	
49-54	G-1.5	G-1.5	F-1.2	F-1.0	F-1.0	
55-60	H-1.5	H-1.5	G-1.2	G-1.0	G-0.75	
61-72	I-1.5	H-1.2	H-1.0	H-1.0		
73-84	J-1.2	J-1.2	I-1.0			
85-96	K-1.2	K-0.75	J-0.75			
OVER 96						

MINIMUM RIGIDITY CLASS	STANDING DRIVE SLIP	STANDING S	STANDING SEAM	RIVET OR WELD GASKET	COMPANION ANGLES
EI +	H(mm)xT	W,H(mm)xT(mm)	H(mm)xT ¹⁰	HxT ¹⁰ (mm)	
A 0.15	30 x 26 ga	-25 x 26 ga	13 x 24 ga	25 x 3	
B 0.30	30 x 26 ga	-25 x 26 ga	20 x 24 ga	25 x 3	
C 0.75	30 x 22 ga	-25 x 26 ga	25 x 24 ga	25 x 3	
D 1.5	NOT GIVEN	-25 x 24 ga	25 x 20 ga	25 x 3	
E 3.0		5 x 30 x 20 ga	40 x 24 ga	25 x 3	
F 4.5		5 x 45 x 22 ga	40 x 20 ga	30 x 3	
G 7.0		5 x 45 x 18 ga	40 x 18 ga	30 x 3	
H 14		-NOT GIVEN	NOT GIVEN	40 x 4	
I 22				40 x 5	
J 30				40 x 6	
K				50 x 5	

(a) FOR A GIVEN DUCT THICKNESS, NUMBERS INDICATE MAX. SPACING(m) BETWEEN DUCT REINFORCEMENT. LETTERS INDICATE TYPE OF DUCT REINFORCEMENT. TRANSVERSE JOINT SPACING IS UNRESTRICTIVE. USE THE SAME METAL DUCT THICKNESS ON ALL DUCT SIDES

(b) QUANTITIES ARE BASED ON FIGURES ABOVE SHOWN LINE.

(c) REINFORCEMENT NOT REQUIRED IN BLANK SPACES.
* THE STATIC PRESSURE RATING OF FAN AT SPECIFIC POINTS IS NOT NECESSARILY THE ACTUAL S.P. IN EACH DUCT SECTION MUST BE OBTAINED BY COMPUTATION.

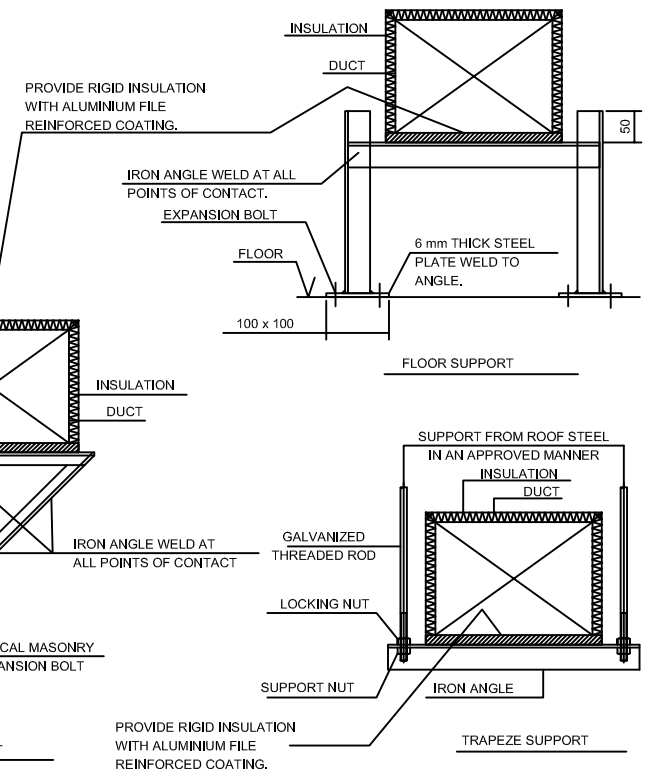
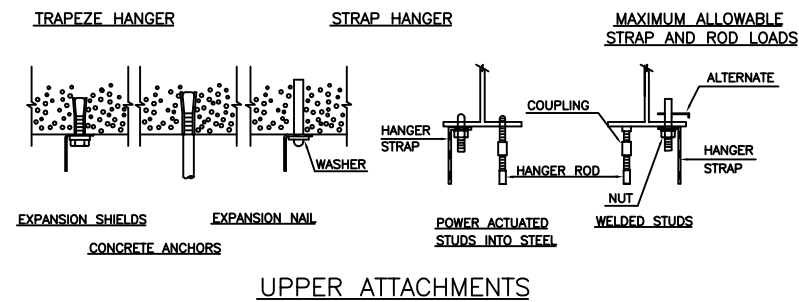
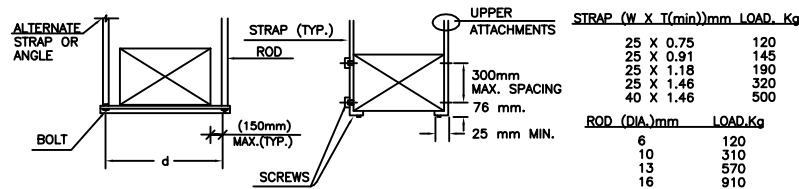
* NOMINAL EI EQUALS NUMBER LISTED TIMES 10⁹
E MODULUS OF ELASTICITY 2.0x10⁵ N/mm²
I MOMENT OF INERTIA mm⁴
a) DUCT REINFORCEMENT MAY HAVE TO BE INCREASED IN ORDER TO MATCH DUCT THICKNESS
b) T-DIMENSION FOR ANGLES IS NOMINAL

MIN. SIZES OF RECTANGULAR DUCT HANGERS — COMMERCIAL SYSTEMS

HALF OF DUCT PERIMETER (P/2)in.	GALV. STRAPS W X T.(mm)				ROD DIAMETER.(mm)			
	MAXIMUM HANGER SPACING (m)							
	3.00	2.40	1.50	1.20	3.00	2.40	1.50	1.20
UP THROUGH 72	25 x 0.75	25 x 0.75	25 x 0.75	25 x 0.75	6	6	6	6
96	25 x 1.18	25 x 0.91	25 x 0.75	25 x 0.75	10	6	6	6
120	25 x 1.46	25 x 1.18	25 x 0.75	25 x 0.75	10	10	6	6
168	40 x 1.46	25 x 1.46	25 x 1.18	25 x 1.18	13	10	10	10
192	—	40 x 1.46	25 x 1.46	25 x 1.46	13	13	10	10
OVER 192	—	—	—	—	SPECIAL ANALYSIS REQUIRED ^b			

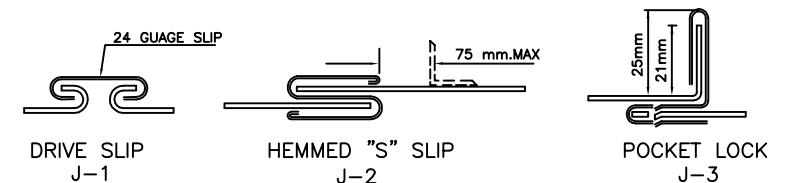
a: TABLE BASED ON SQUARE DUCTS, 1.46 mm THICK, AND ALLOWS FOR DUCT WL. NORMAL REINFORCEMENTS AND TRAPEZE WEIGHTS, END FOR INSULATION WT. NO. EXTERNAL LOADS.
b: SEE AISI MANUAL FOR HANGER DESIGN CRITERIA.

ALLOWABLE LOADS FOR TRAPEZE ANGLES (Kg)								
ANGLE SIZE (mm)								
	1.46	3	4	5	6	5	6	6
WIDTH OF HANGER (d) IN mm	25	25	40	40	40	50	50	70
UP THROUGH 750	30	70	80	160	230	295	425	560
1050	15	50	65	145	220	270	410	540
1200	—	35	50	130	205	260	395	525
1500	—	—	—	85	160	220	355	480
1650	—	—	—	45	120	180	320	445
1800	—	—	—	—	85	145	280	410
2000	—	—	—	—	35	95	230	360
2100	—	—	—	—	—	35	170	300
2400	—	—	—	—	—	—	145	480
2750	—	—	—	—	—	—	—	275

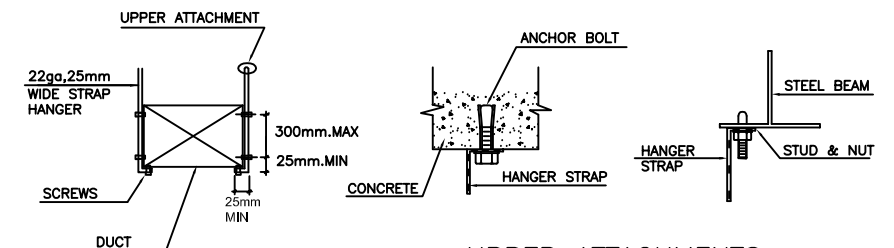


DUCTWORK SUPPORT DETAIL

SCALE N.T.S.



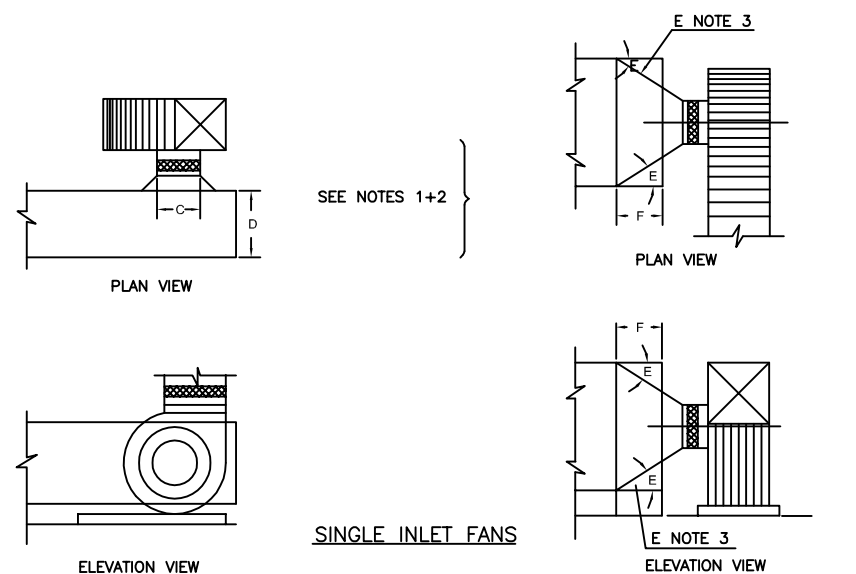
TRANSVERSE JOINT CONSTRUCTION



UPPER ATTACHMENTS

STRAP HANGER DETAIL

a-MAXIMUM LOAD 130 Kg PER HANGER
b-MAXIMUM SPACING 3m

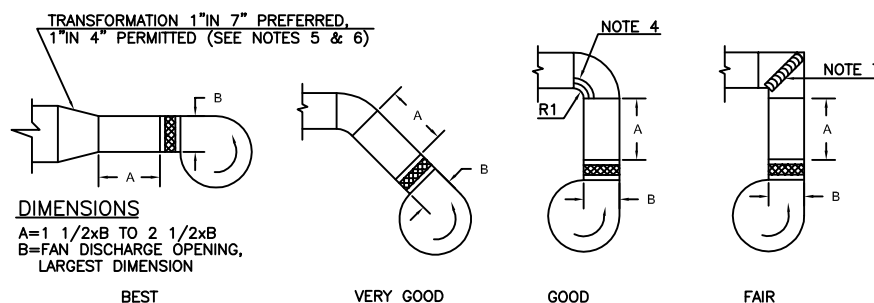


DIMENSIONS

C= DIAMETER OF FAN INLET
D= 1 1/4xC

E- 45° MAXIMUM 30° PREFERRED
F- 36" MINIMUM FOR ACCESS DOOR

INLET CONNECTIONS

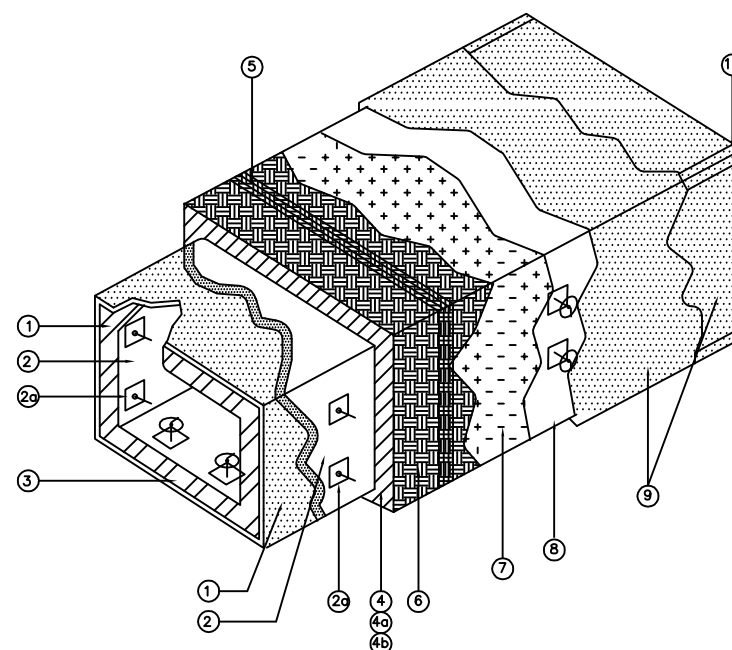


DISCHARGE CONNECTIONS

NOTES:
1- FAN SHOULD BE CENTERED IN CASING TO PROVIDE GOOD FLOW CONDITIONS
2- ALL EQUIPMENT SHOULD BE CENTERED FOR BEST PERFORMANCE
3- ANGLE "E" IS USED TO DETERMINE "F" DISTANCE BETWEEN EQUIPMENT AND FAN

4- R1=6"MINIMUM
5- SLOPE OF 1"IN 4"PERMITTED FOR ≤ 2000 FPM
6- SLOPE OF 1"IN 7"RECOMMENDED
7- WITH VANED SQUARE ELBOW,USE TAKE OFF IN OPPOSITE DIRECTION TO FAN ROTATION FOR BEST RESULTS.

SINGLE FAN INLET AND DISCHARGE CONNECTIONS

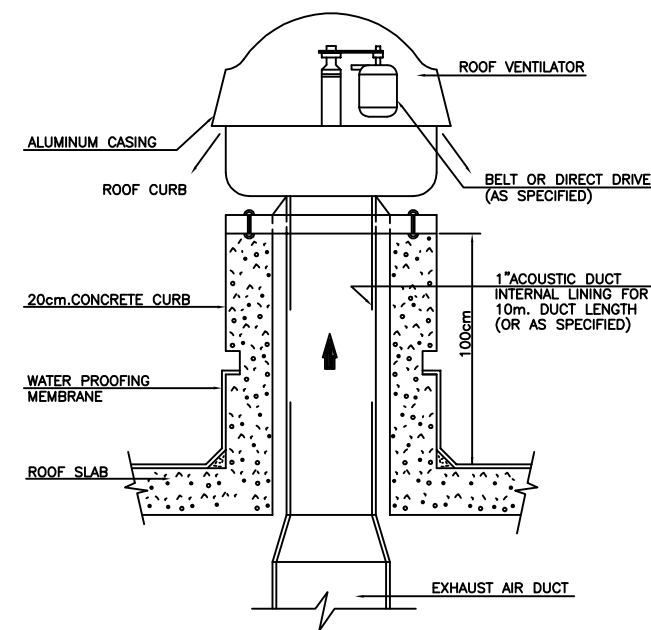
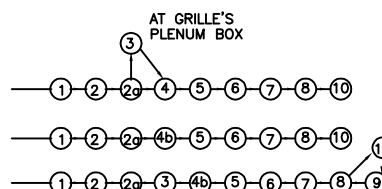


INSULATION AND LAGGING DETAIL

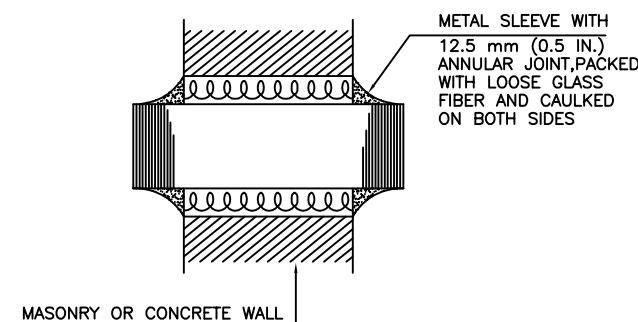
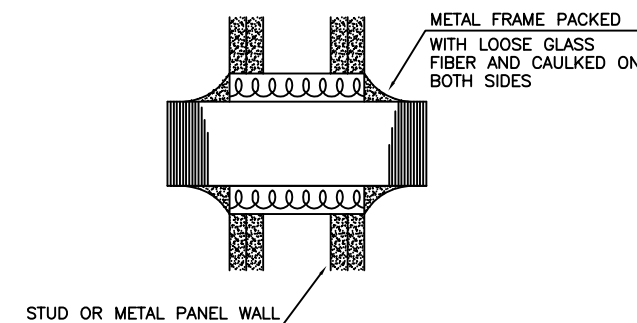
ITEM	DESCRIPTION
①	G.S.S. DUCTING
②	INSULATION / LINER ADHESIVE
2a	SELF ADHESIVE PIN / HANGER
③	ACCOUSTIC LINER
④	F.G. FLEX. BLANKET
4a	F.G. FLEX. BLANKET
4b	F.G. RIGID BOARD
⑤	ALUMINIUM FOIL SELF ADHESIVE TAPE
⑥	VAPOUR BARRIER FIRST COAT
⑦	CANVAS CLOTH
⑧	SAME AS ITEM ⑥ BUT SECOND COAT
⑨	ALUMINIUM CLADDING
⑩	50X50X0.6 mm G.I. ANGLE

APPLICATION

- A. INDOOR A/C S & R DUCT IN COND SPACES
- B. A/C DUCT S & R DUCTS IN SHAFTS & NON COND. SPACES
- C. ROOF EXPOSED S & R DUCTS

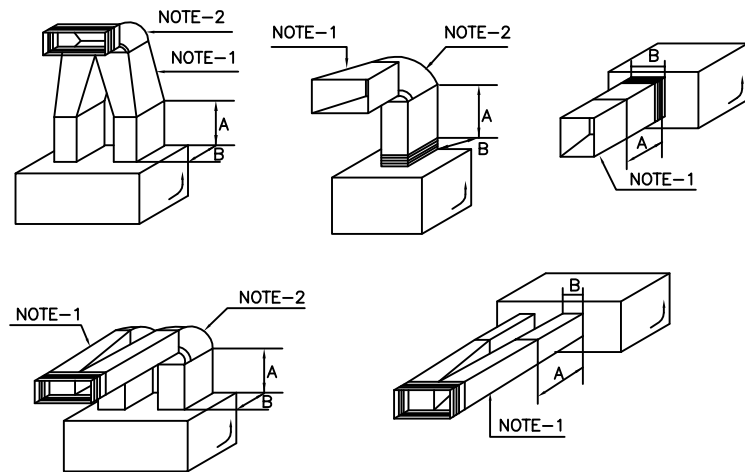


ROOF VENTILATOR SECTION



TYPICAL DUCT WALL PENETRATION

NOT TO SCALE



DIMENSIONS

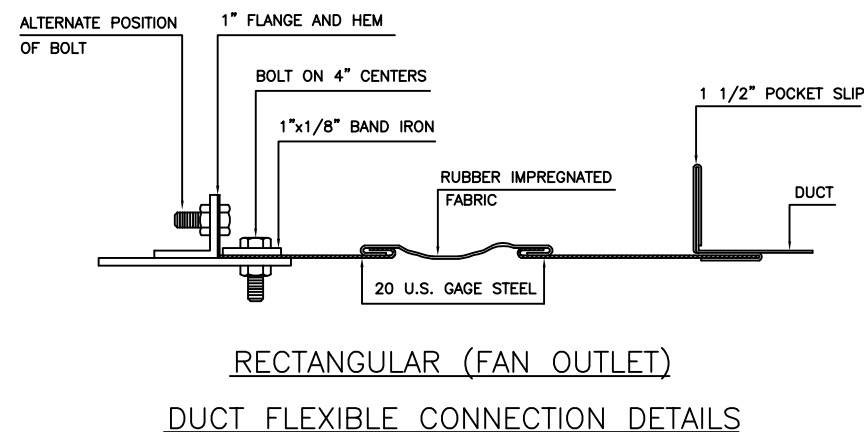
A = 1 1/2 x B TO 2 1/2 x B

B = LONGEST DIMENSION OF OUTLET OPENING

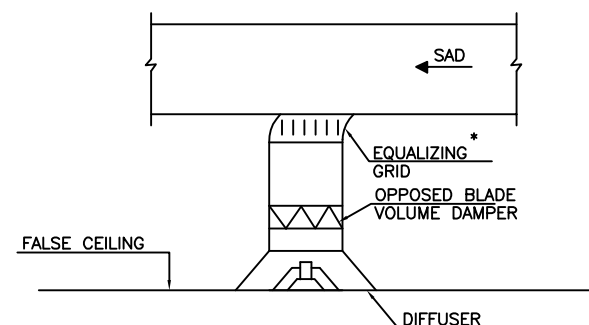
NOTES

- 1- TRANSFORMATIONS TO SUPPLY DUCT HAVE MAXIMUM SLOPE OF 1"IN7"
- 2- SQUARE ELBOWS WITH DOUBLE THICKNESS VANES MAY BE SUBSTITUTED
- 3- DO NOT INSTALL DUCTS SO THAT AIR FLOW IS COUNTER TO FAN ROTATION
TURN FAN SECTION IF NECESSARY.

FAN UNIT DISCHARGE CONNECTIONS



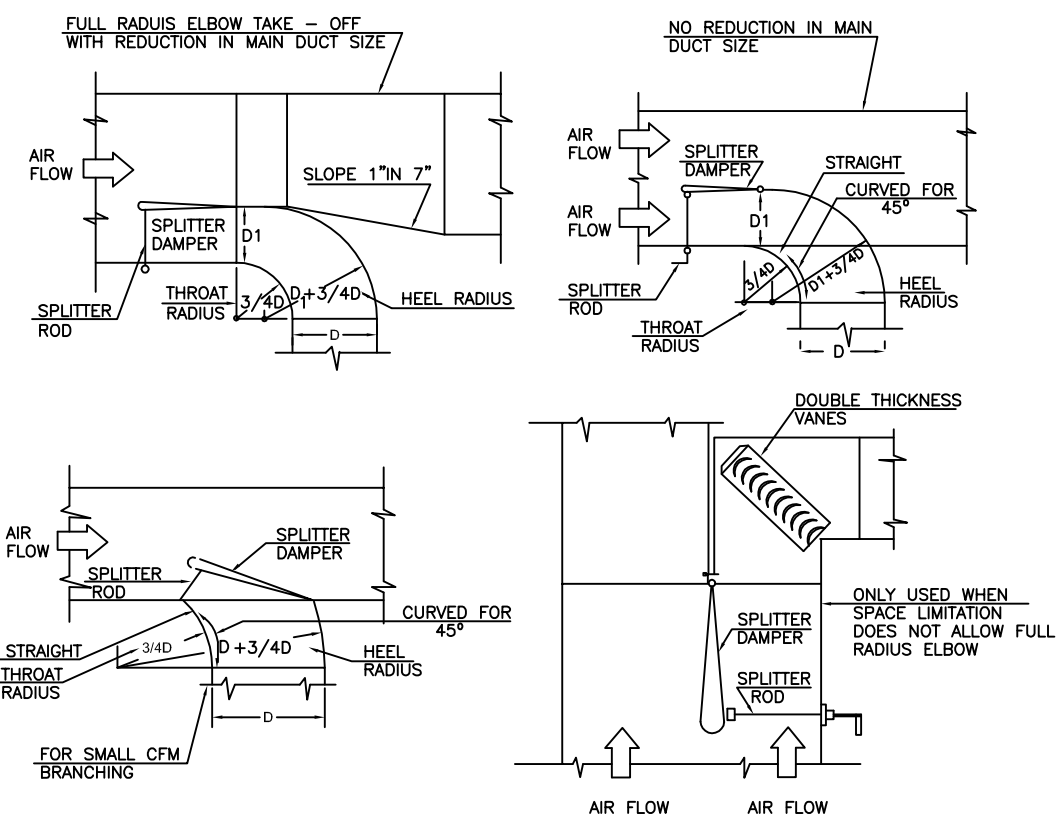
RECTANGULAR (FAN OUTLET)
DUCT FLEXIBLE CONNECTION DETAILS



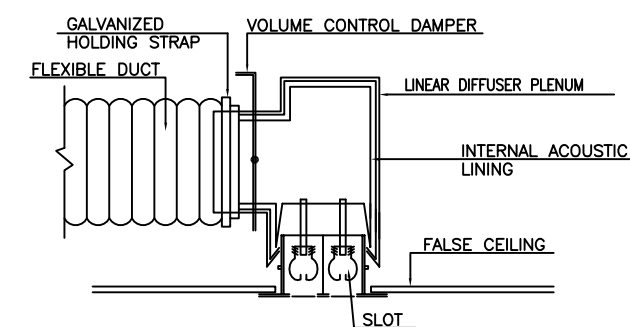
TYPICAL CEILING DIFFUSER
MOUNTING DETAILS

* NOTE TO ENG'R

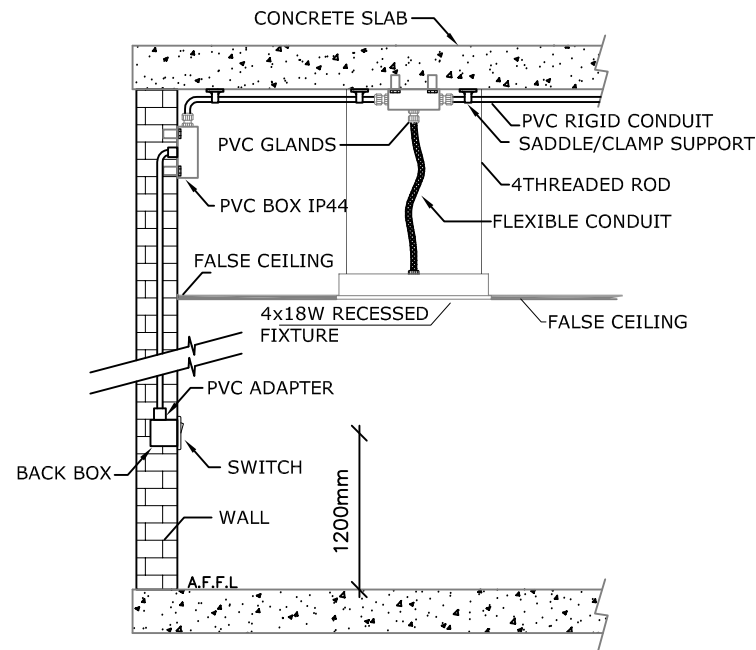
- AT A POOR APPROACH FROM MAIN DUCT TO DIFFUSER AN EQUALIZING GRID SHALL BE INSTALLED TO MINIMIZE NOISE LEVEL AT DIFFUSER
- IN CRITICAL LOW NOISE LEVEL PROJECTS POOR APPROACH AND CONSEQUENTLY EQUALIZING GRID SHOULD BE AVOIDED.



TYPICAL DUCTING
TAKE-OFFS

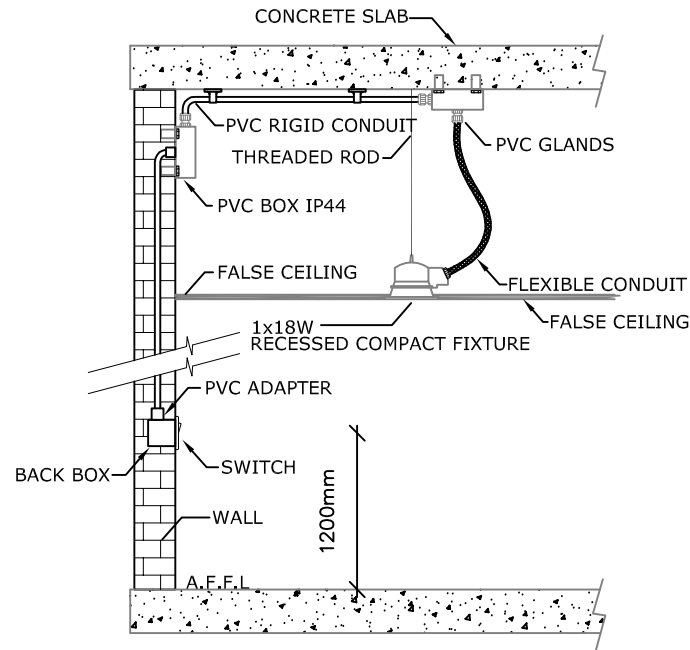


SECTION THRU LINEAR DIFFUSER
NOT TO SCALE
APPLICABLE ALSO FOR LINEAR BAR DIFFUSER



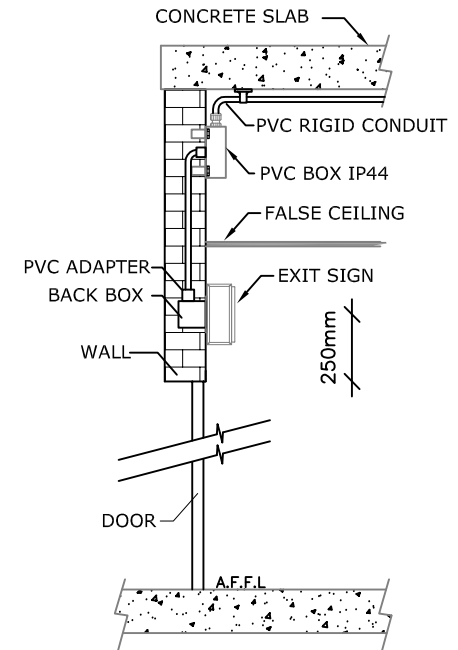
4x18W RECESSED FIXTURE INSTALLATION DETAIL

6



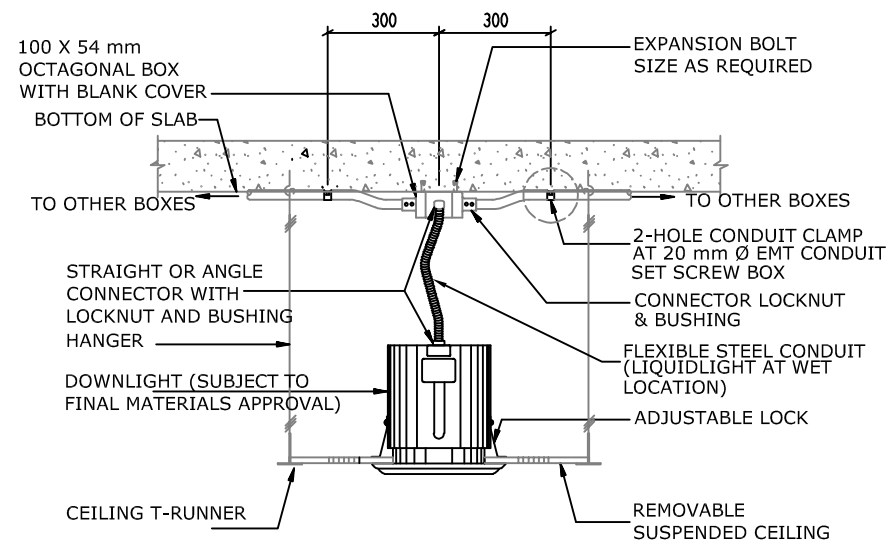
1x18W RECESSED FIXTURE INSTALLATION DETAIL

5



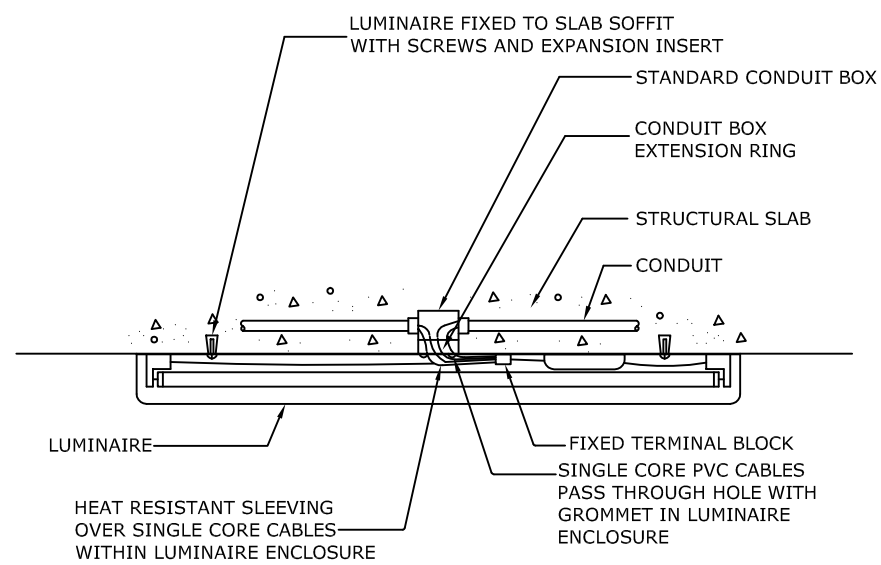
EXIT SIGN INSTALLATION DETAIL

4



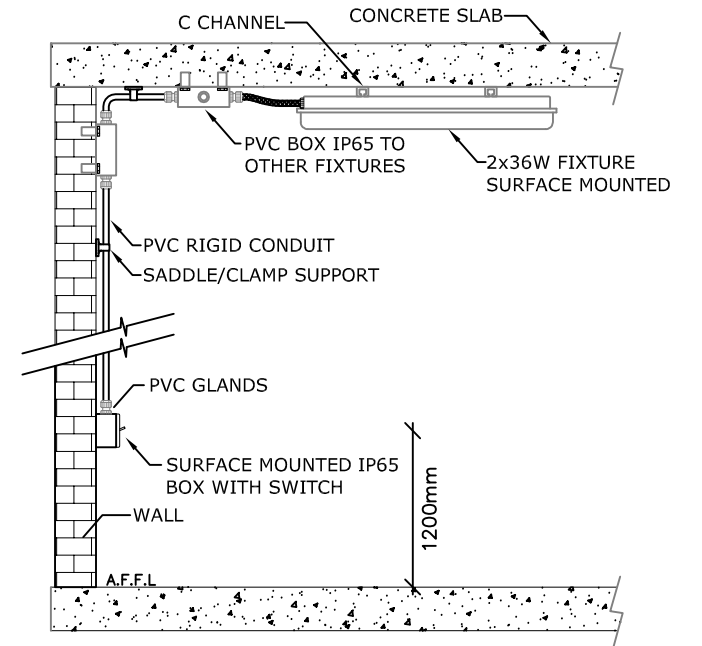
RECESSED DOWNLIGHT FIXTURE MOUNTING

3



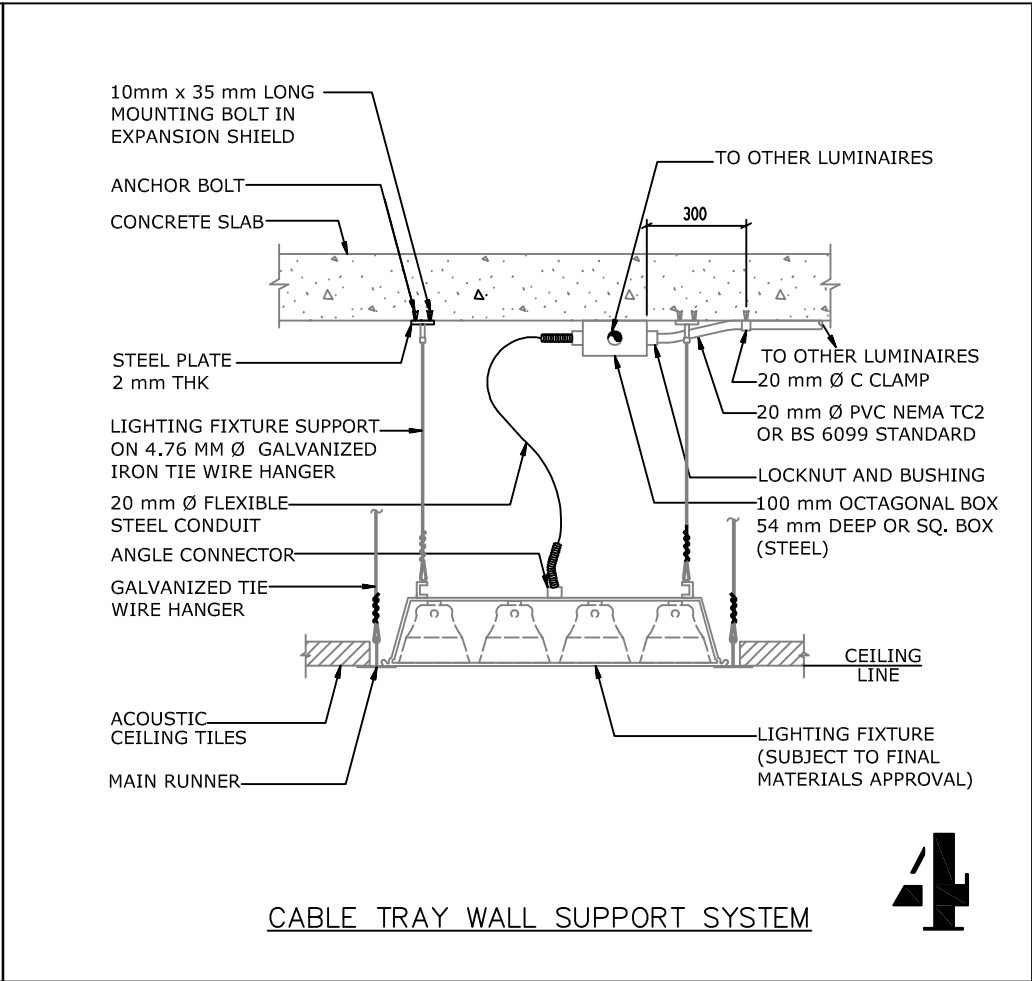
SURFACE MOUNTED LUMINAIRE

2



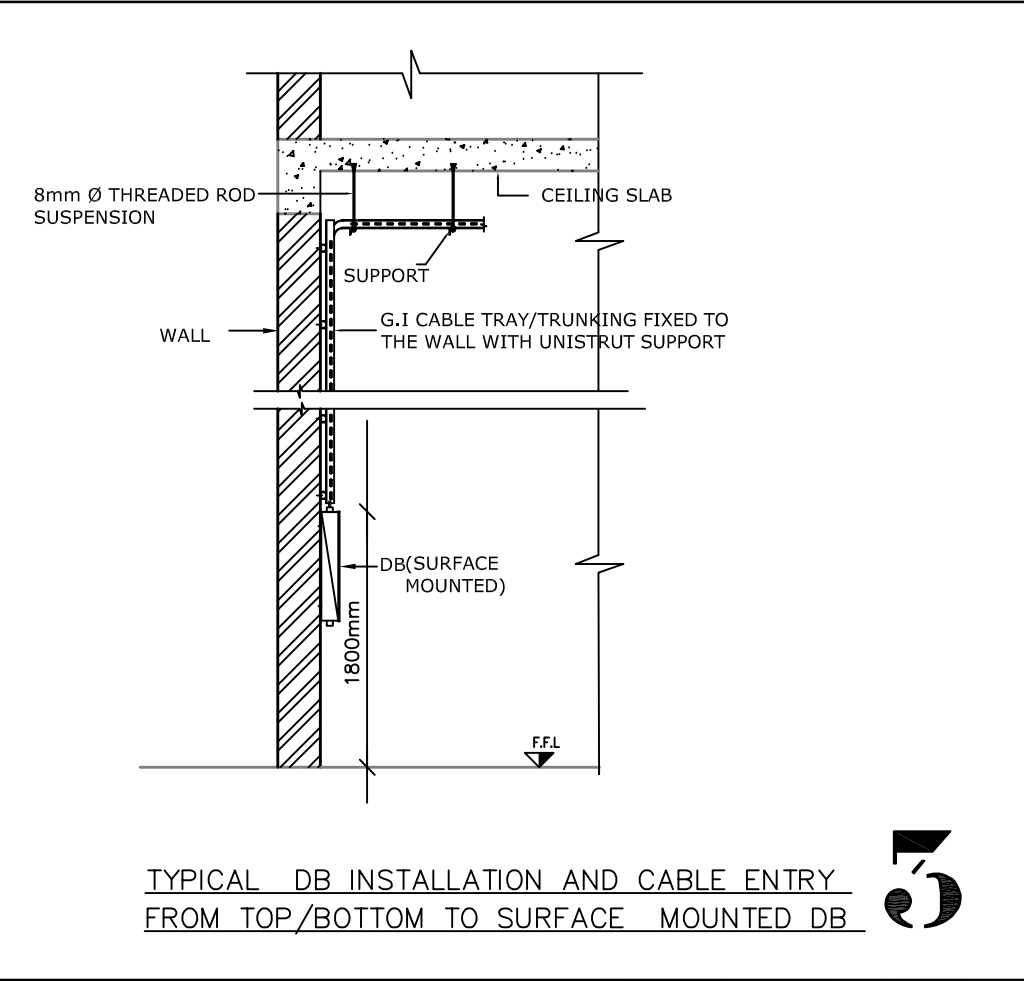
2x36W SURFACE MOUNTED FIXTURE INSTALLATION DETAIL

1



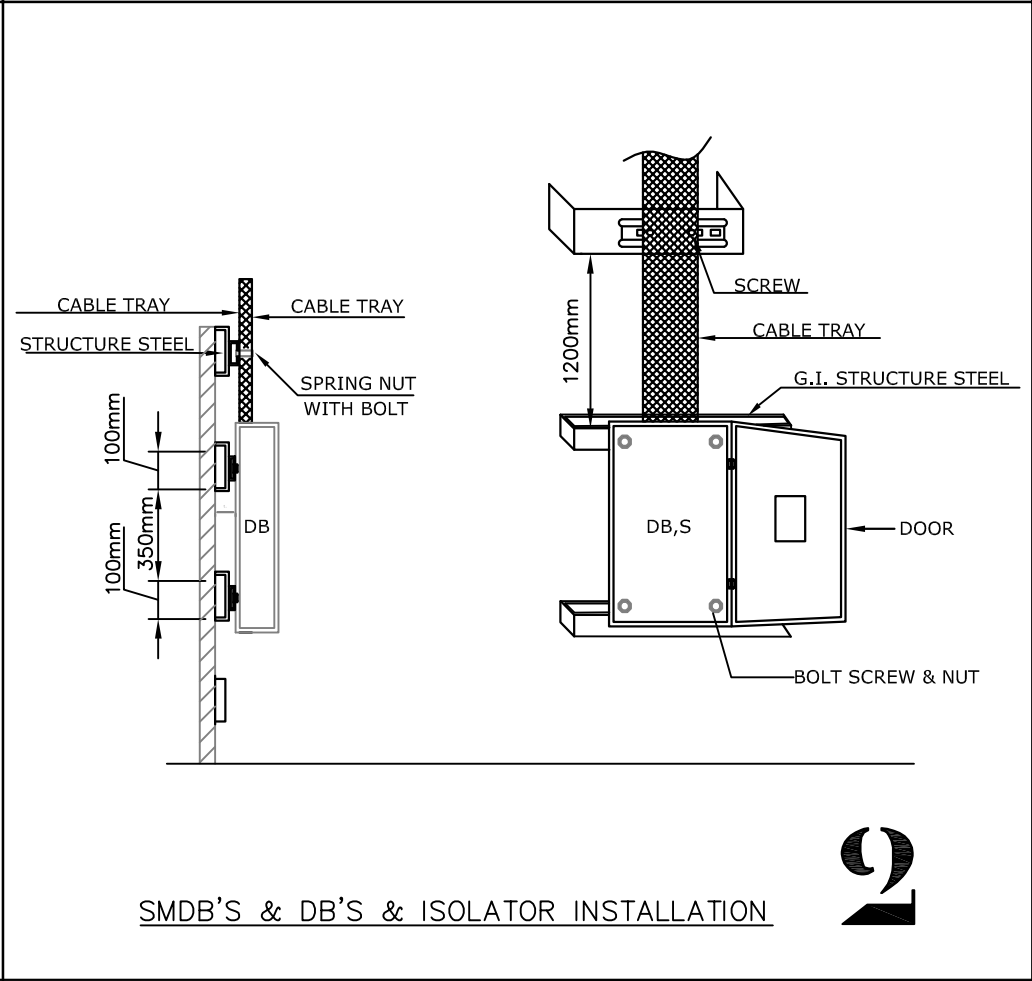
CABLE TRAY WALL SUPPORT SYSTEM

4



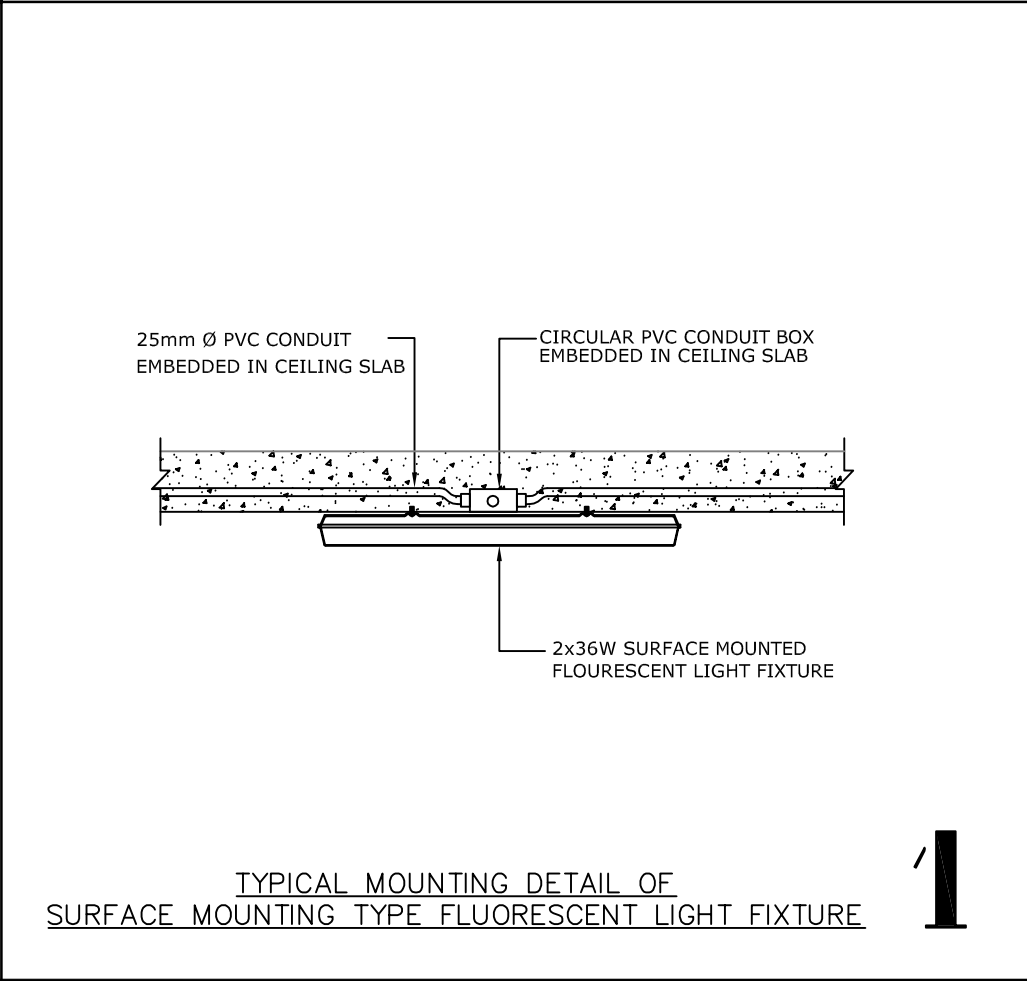
TYPICAL DB INSTALLATION AND CABLE ENTRY FROM TOP/BOTTOM TO SURFACE MOUNTED DB

3



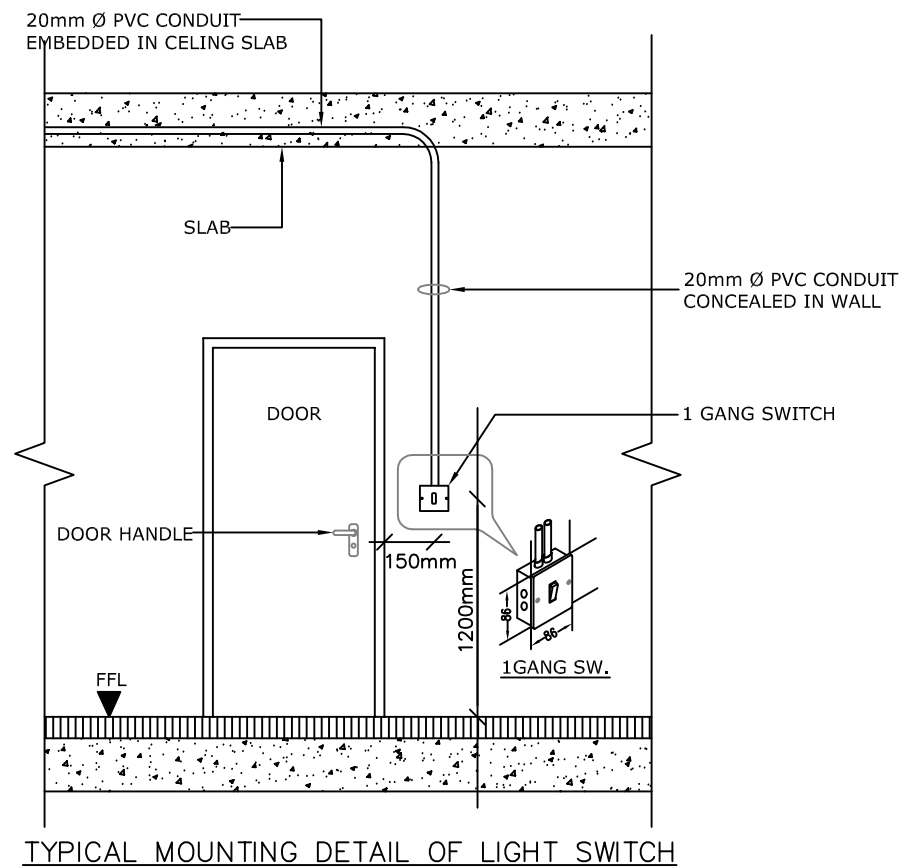
SMDB'S & DB'S & ISOLATOR INSTALLATION

2

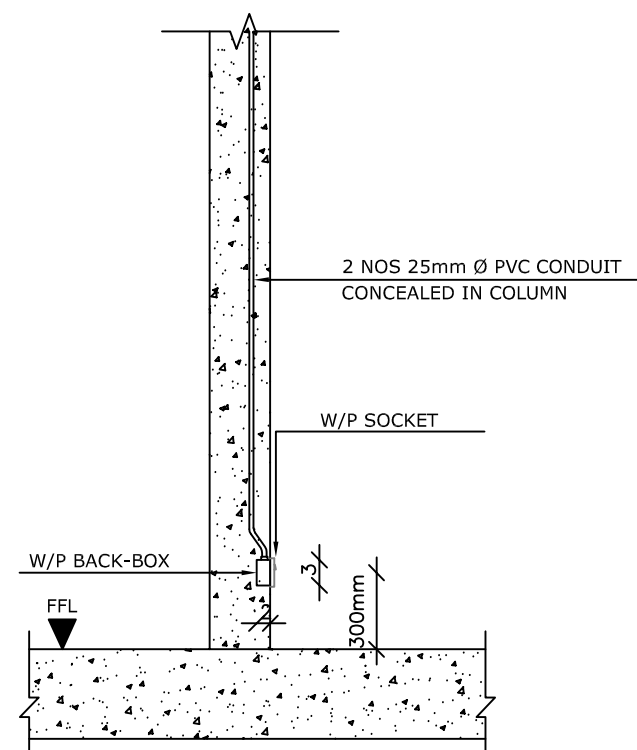


TYPICAL MOUNTING DETAIL OF SURFACE MOUNTING TYPE FLUORESCENT LIGHT FIXTURE

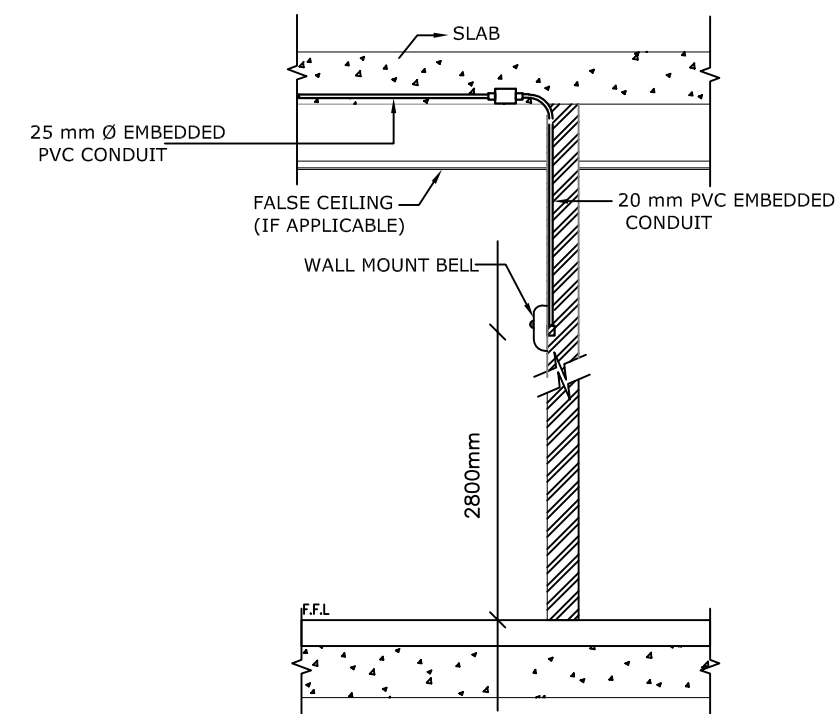
1



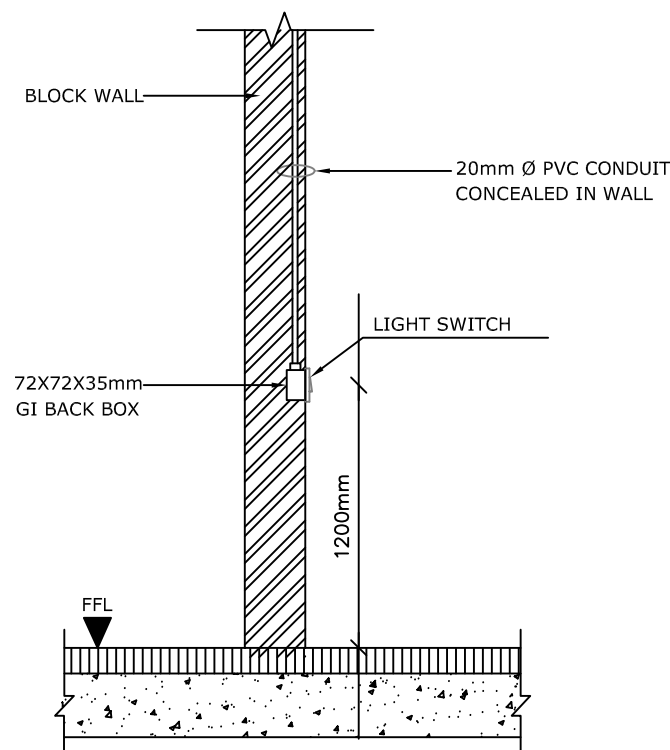
TYPICAL MOUNTING DETAIL OF LIGHT SWITCH



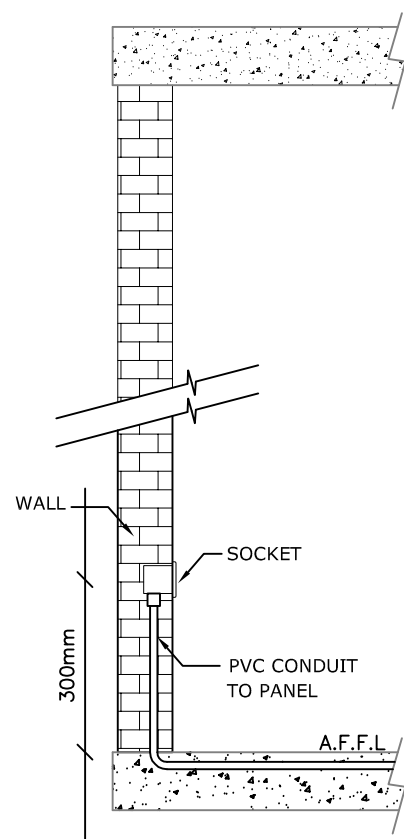
TYPICAL MOUNTING DETAIL OF WEATHER PROOF SOCKET FULLY RECESSED



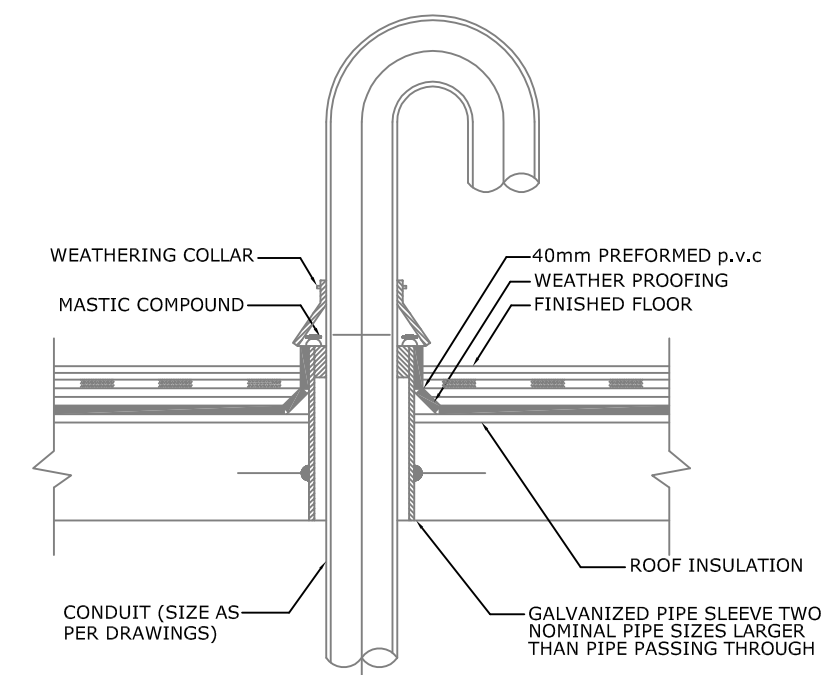
BELL INSTALLATION DETAIL



WALL SECTION



SOCKET INSTALLATION DETAIL



DETAIL OF CONDUITS THROUGH ROOF INSTALLATION