Republic of the Philippines

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REGION - X

BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
OFFICE OF THE DISTRICT ENGINEER
DICKLUM, MANOLO FORTICH, BUKIDNON

CY 2025 PROJECT

DETAILED ENGINEERING DESIGN PLAN FOR

CONSTRUCTION OF MULTI-PURPOSE BUILDING

(BARANGAY HALL)

BARANGAY 5 TALAKAG BUKIDNON

SUBMITTED:

RYAN CAESAR B. FERNANDEZ
OIC - PLANNING AND DESIGN SECTION CHIEF

DATE:

RECOMMENDED:

ISMAEL R. ALAJID
OIC-ASSISTANT DISTRICT ENGINEER

DATE

APPROVED:

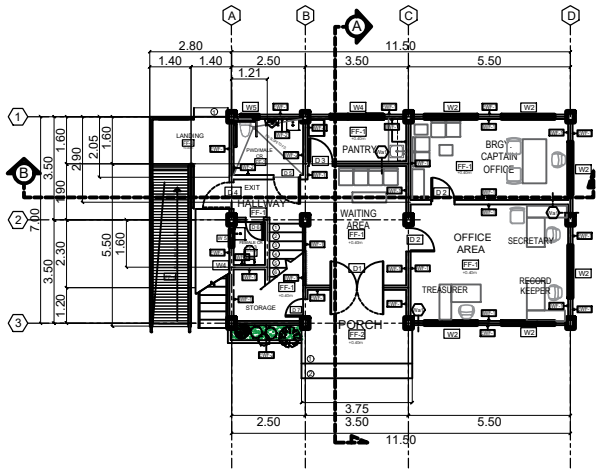
RONALDO C. PAHANG, AEr.
DISTRICT ENGINEER

DATE

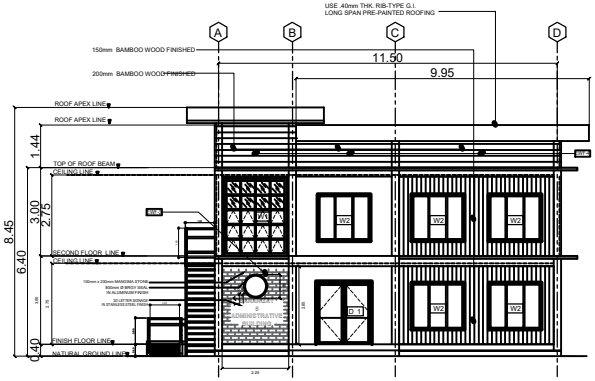
FLOOR AREA:
GROUND FLOOR = 87.06 SQ.M. SECOND FLOOR = 80.50 SQ.M. TOTAL FLOOR AREA = 167.56 SQ.M.

SCHEDULE OF WALL FINISHES :	
MARK	**WALL DESCRIPTION**
EWF - 1	100mm THICK CHB WALL SMOOTH PLASTERED AND PAINTED WALL FINISHED (COLOR WHITE)
EWF - 2	100mm THICK CHB WALL SMOOTH PLASTERED AND PAINTED WALL FINISHED (COLOR GRAY)
EWF - 3	100mm x 200mm MANGIMA STONE
IWF - 1	100mm THICK THICK CHB WALL SMOOTH PLASTERED AND PAINTED WALL FINISHED (COLOR GRAY)
IWF - 2	.20m X 0.40m GLAZED GRANITE WALL TILES OFF WHITE FINISHED TYPICAL ON ALL WALL TOILETS

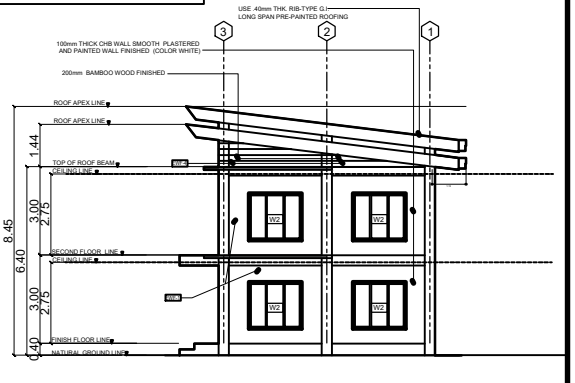
SCHEDULE OF FLOOR FINISHES:	
FF-1	GLAZED 600mm X 600mm FLOOR TILES
FF-2	UNGLAZED 600mm X 600mm FLOOR TILES
FF-3	UNGLAZED 400mm X 400mm FLOOR TILES
FF-4	NON-SKID CEMENT FLOOR ROUGH FINISH W/ GROOVE LINE



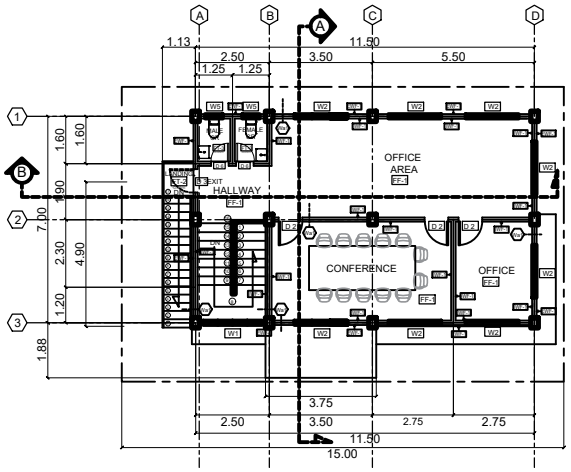
1 A 8 **GROUND FLOOR PLAN**
SCALE: 1:100 MTRS.



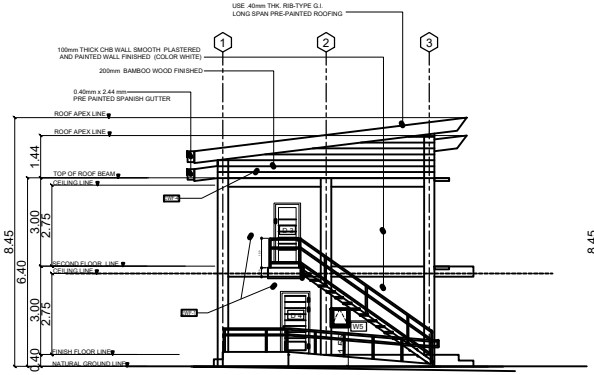
3 A 8 **FRONT ELEVATION**
SCALE: 1:100 MTRS.



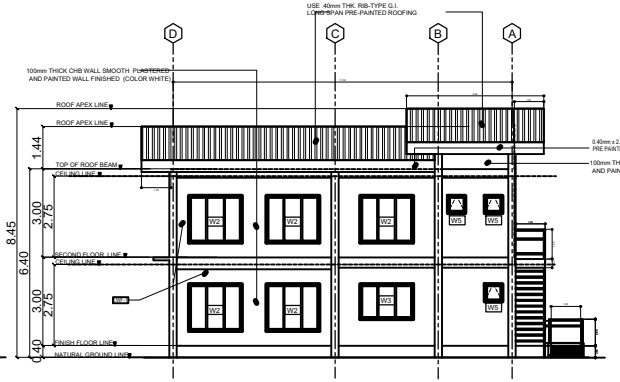
5 A 8 **RIGHT-SIDE ELEVATION**
SCALE: 1:100 MTRS.



2 A 8 **SECOND FLOOR PLAN**
SCALE: 1:100 MTRS.



4 A 8 **LEFT-SIDE ELEVATION**
SCALE: 1:100 MTRS.



6 A 8 **REAR ELEVATION**
SCALE: 1:100 MTRS.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
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PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
GROUND FLOOR PLAN
SECOND FLOOR PLAN
ELEVATIONS
FLOOR FINISHES
WALL FINISHES

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
PREPARED :
JOVEL K.PANGAN
ARCHITECT II

REVIEWED :
MCKENLY B. HONG
ENGINEER II
DATE:

SUBMITTED :
RYAN CAESAR B. FERNANDEZ
ENGINEER II
OIC- PLANNING AND DESIGN SECTION CHIEF
DATE:

RECOMMENDED :
ISMAEL R. ALAJID
OIC-ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED :
RONALDO C.PAHANG, AEr.
DISTRICT ENGINEER
DATE:

SET NO. A 8 15
SHT. NO. 10 46

PDS-BUK3RD: 2025

NOTE:

ALL TILE EDGES SHOULD TERMINATE W/ TILE TRIM.

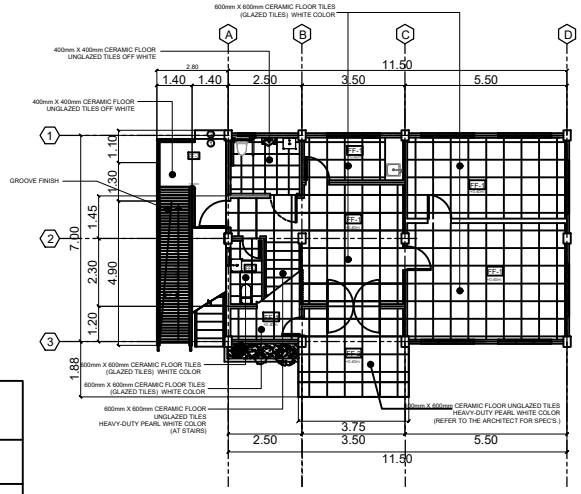
START ALL TILE LAY-OUT AT CENTERLINE (CL) OR START LINE (SL). FINAL LAYOUT SHALL BE VERIFIED BY THE DESIGNER BASED ON ACTUAL MEASUREMENT AT SITE BEFORE INSTALLATION/IMPLEMENTATION.

VERIFY WITH THE END-USER THE FINAL TILE COLOR PRIOR TO INSTALLATION/IMPLEMENTATION.

SCHEDULE OF FLOOR FINISHES:	
FF-1	GLAZED 600mm X 600mm FLOOR TILES
FF-2	UNGLAZED 600mm X 600mm FLOOR TILES
FF-3	UNGLAZED 400mm X 400mm FLOOR TILES
FF-4	NON-SKID CEMENT FLOOR ROUGH FINISH W/ GROOVE LINE

SCHEDULE OF FINISHES

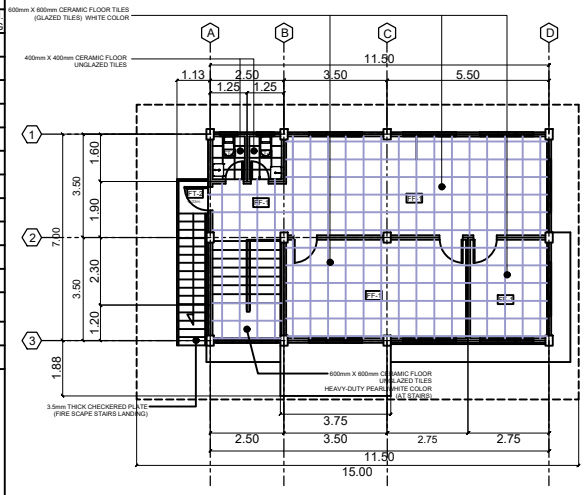
NO.	DESIGNATIONS	FLOOR FINISH	WALL FINISH	CEILING	ROOFING
MAIN BUILDING					
GROUND FLOOR LEVEL					
1	RAMP	GROOVE FINISH	SEMI-GLOSS PAINT FINISH	-	-
2	RAMP LANDING	400mm X 400mm CERAMIC FLOOR UNGLAZED TILES OFF WHITE	-	-	-
3	PLANT BOX	-	SEMI-GLOSS PAINT FINISH	-	-
4	PORCH	600MM X 600MM NON-SKID CERAMIC FLOOR TILE	SEMI-GLOSS PAINT FINISH	4.5MM FIBER CEMENT BOARD ON LIGHT METAL FRAMING SYSTEM, FLAT FINISH	0.40mm THK. RIB-TYPE G.I. LONG SPAN PRE-PAINTED ROOFING
5	STEPS (OUTDOOR)		-		-
6	STEPS (FIRE EXIT STAIRS)	2mm THICK CHECKERED PLATE			-
7	WAITING AREA	600MM X 600MM GLOSS CERAMIC FLOOR TILE	SEMI-GLOSS PAINT FINISH		-
8	MAIN STAIR				-
9	OFFICE AREA				-
10	BRGY. CAPTAIN OFFICE				-
11	PANTRY				-
12	STORAGE				-
13	HALLWAY				-
14	PWD/MALE CR	400mm X 400mm CERAMIC FLOOR UNGLAZED TILES OFF WHITE	200mm X 400mm CERAMIC WALL GLAZED TILES OFF WHITE		-
15	FEMALE CR				-
SECOND FLOOR LEVEL					
16	FIRE EXIT LANDING	600mm X 600mm CERAMIC FLOOR UNGLAZED TILES OFF WHITE		-	-
17	STEPS (FIRE EXIT STAIRS)	2mm THICK CHECKERED PLATE			-
18	MAIN STAIR	600MM X 600MM, GLOSS CERAMIC FLOOR TILE	SEMI-GLOSS PAINT FINISH	4.5MM FIBER CEMENT BOARD ON LIGHT METAL FRAMING SYSTEM, FLAT FINISH	0.40mm THK. RIB-TYPE G.I. LONG SPAN PRE-PAINTED ROOFING
19	OFFICE AREA				
20	HALLWAY				
21	CONFERENCE	600MM X 600MM, GLOSS CERAMIC FLOOR TILE			
22	MALE CR	400mm X 400mm CERAMIC FLOOR UNGLAZED TILES OFF WHITE	200mm X 400mm CERAMIC WALL GLAZED TILES OFF WHITE		
23	FEMALE CR				



GROUND FLOOR

1 / A 9 FLOOR FINISHES

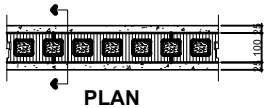
SCALE: 1:100 MTRS.



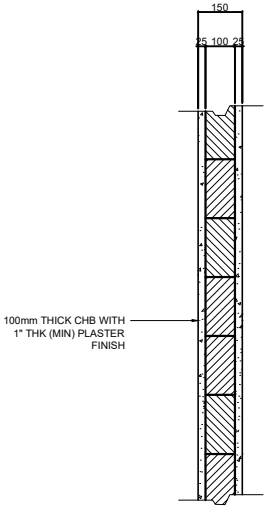
SECOND FLOOR

2 / A 9 FLOOR FINISHES

SCALE: 1:100 MTRS.



PLAN



SECTION

Wa1

3 / A 9 PARTITION WALL DETAIL

SCALE: 1:100 MTRS.

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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
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PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
SCHEDULE OF FINISHES
PARTITION DETAIL
FLOOR FINISHES

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
PREPARED :
JOVEL K.PANGAN
ARCHITECT II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 9 15	11 46

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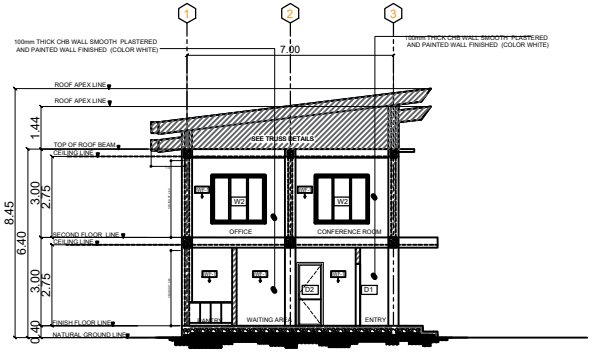
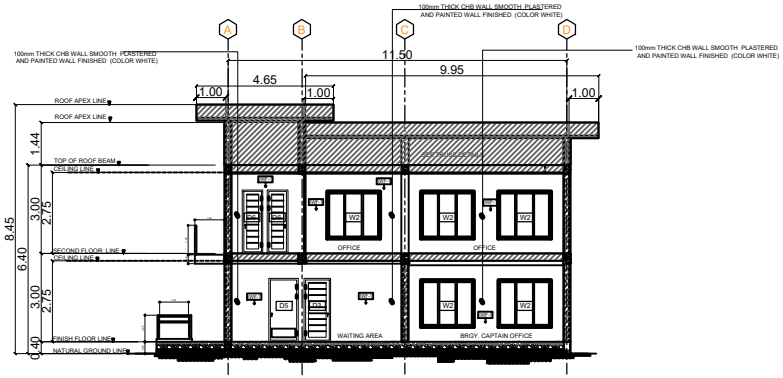


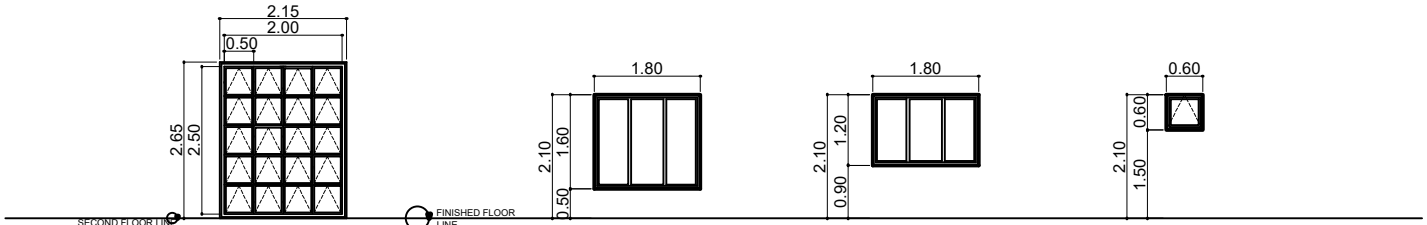
1 A 10 **CROSS SECTION THRU(A-A)**

SCALE: 1:100 MTRS.



2 A 10 **LONGITUDINAL SECTION THRU (B-B)**

SCALE: 1:100 MTRS.



W 1

AWNING WINDOW - 1 SET

6mm THICK TINTED GLASS
AWNING WINDOW ON ANALOK
FRAMING POWDER COATED

W 2

SLIDING GLASS WINDOW - 14 SETS

6mm THICK TINTED GLASS
SLIDING WINDOW ON ANALOK
FRAMING POWDER COATED

W 4

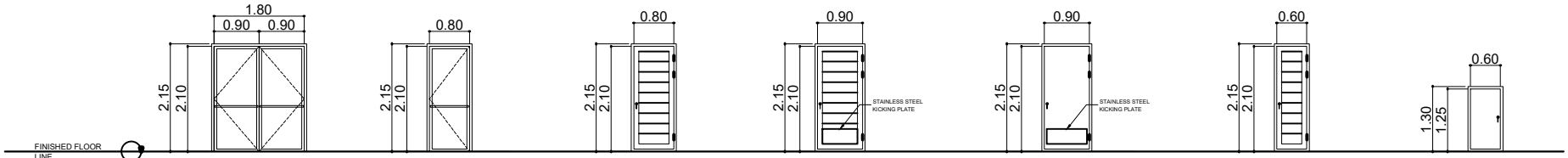
SLIDING GLASS WINDOW - 1 SET

6mm THICK TINTED GLASS
SLIDING WINDOW ON ANALOK
FRAMING POWDER COATED

W 5

SLIDING GLASS WINDOW - 4SET

6mm THICK TINTED GLASS
SLIDING WINDOW ON ANALOK
FRAMING POWDER COATED



D 1

MAIN DOOR- 1 SET

6mm THICK TINTED GLASS
DOUBLE SWING DOOR ON ANALOK
FRAMING POWDER COATED

D 2

OFFICE- 5 SETS

6mm THICK TINTED GLASS
SWING DOOR ON ANALOK FRAMING
POWDER COATED

D 3

PANTRY/EXIT DOOR - 2 SETS

SOLID WOOD PANEL SWING DOOR ON
50mm x 100mmDOOR JAMB
(COATED WITH PAINT)

D 4

EXIT DOOR(GF) - 1 SET

SOLID WOOD PANEL SWING DOOR ON
50mm x 100mmDOOR JAMB
(COATED WITH PAINT)

D 5

PWD/MALE CR - 1 SET

HOLLOW CORE FLUSH TYPE
SOLID WOOD PANEL SWING DOOR ON
50mm x 100mmDOOR JAMB
(COATED WITH PAINT)

D 6

MALE/FEMALE CR - 3 SETS

SOLID WOOD PANEL SWING DOOR ON
50mm x 100mmDOOR JAMB
(COATED WITH PAINT)

D 7

STORAGE - 1 SET

FLUSH DOOR ON
50mm x 100mm
DOOR JAMB(COATED WITH PAINT)

3 A 10 **SCHEDULE OF DOORS AND WINDOWS**

SCALE: 1:50 MTRS.

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PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
CROSS SECTION
LONGITUDINAL SECTION
SCHEDULE OF DOORS & WINDOWS

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
PREPARED :
JOVEL K.PANGAN
ARCHITECT II

REVIEWED :
MCKENLY B. HONG
ENGINEER II
DATE:

SUBMITTED :
RYAN CAESAR B. FERNANDEZ
ENGINEER II
OIC- PLANNING AND DESIGN SECTION CHIEF
DATE:

RECOMMENDED :
ISMAEL R. ALAJID
OIC-ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED :
RONALDO C.PAHANG, AEr.
DISTRICT ENGINEER
DATE:

SET NO. A 10/15
SHT. NO. 12/46

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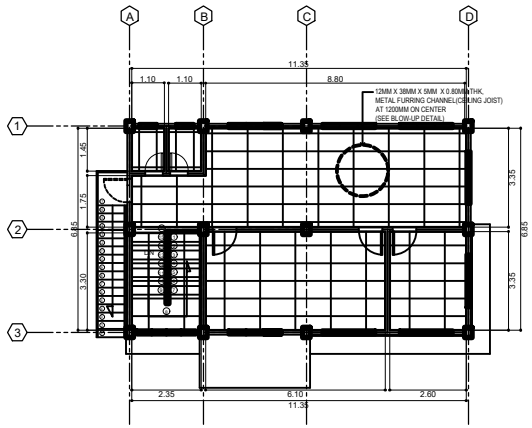
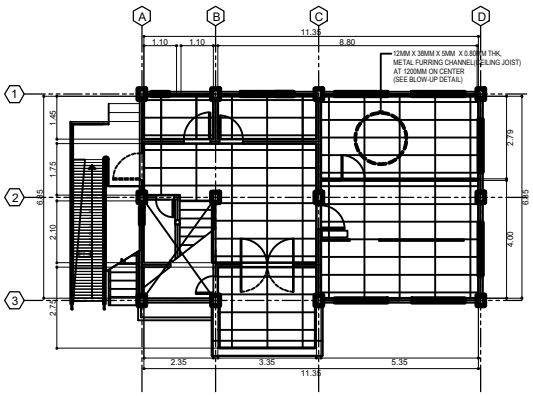


SECOND FLOOR

REFLECTED CEILING PLAN

2 / A 11

SCALE: 1:100 MTRS.

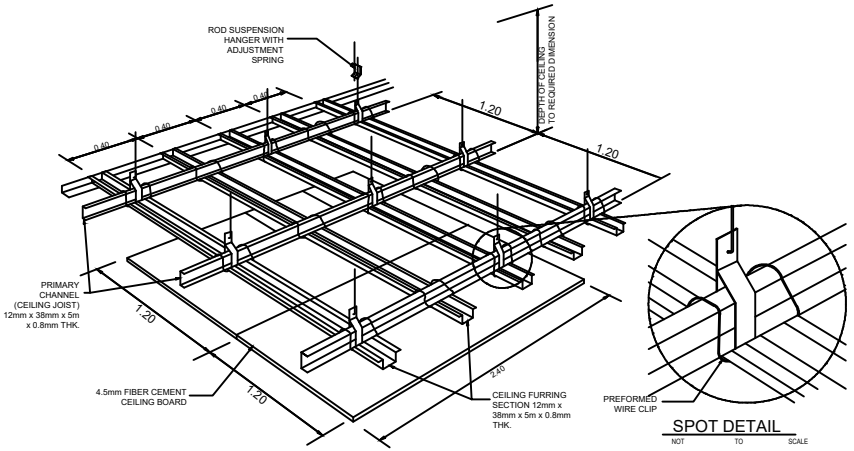


GROUND FLOOR

REFLECTED CEILING PLAN

2 / A 11

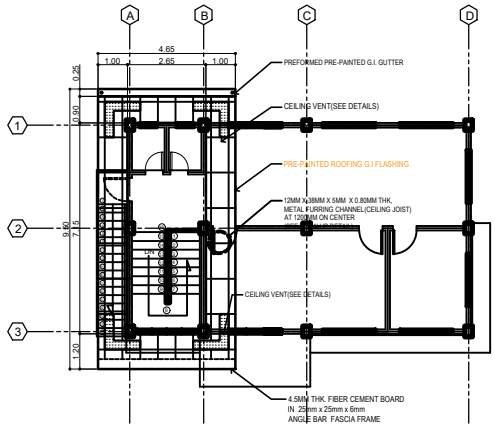
SCALE: 1:100 MTRS.



PERPECTIVE(CEILING)

2 / A 11

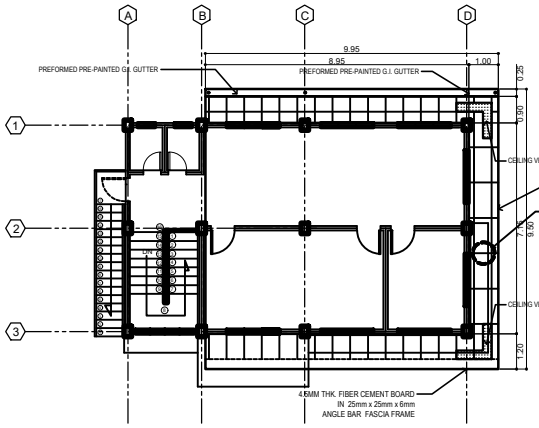
SCALE: NTS



UPPER ROOF CEILING EAVES

REFLECTED CEILING PLAN

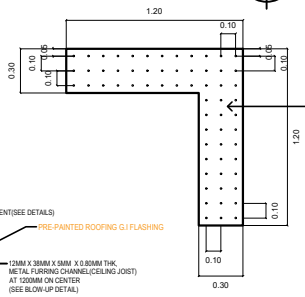
SCALE: 1:100 MTRS.



LOWER ROOF CEILING EAVES

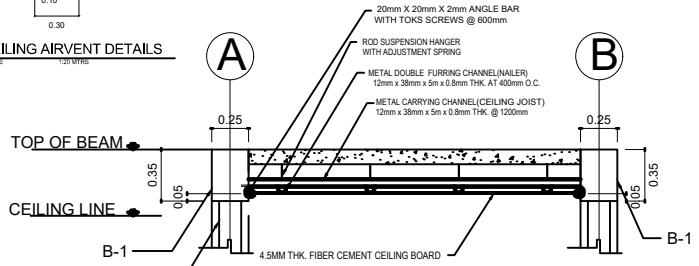
REFLECTED CEILING PLAN

SCALE: 1:100 MTRS.



CEILING AIRVENT DETAILS

SCALE 1:20 MTRS



CEILING DETAIL(SECTION)

2 / A 11

REPUBLIC OF THE PHILIPPINES
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REGIONAL OFFICE X
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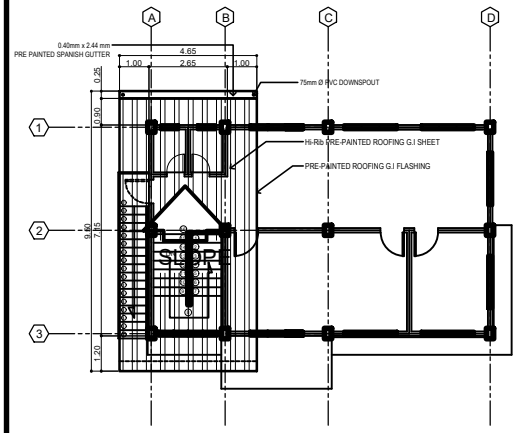
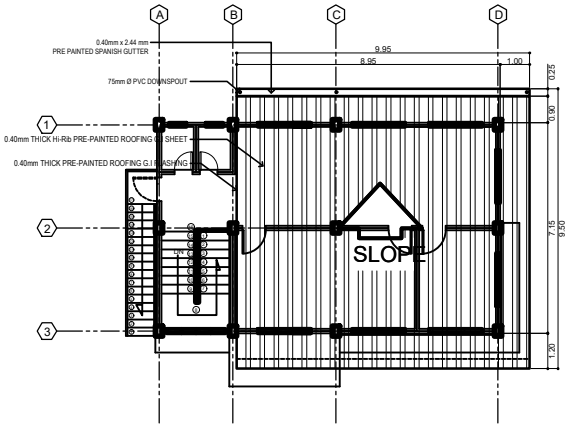
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	REFLECTED CEILING PLANS CEILING DETAILS SECTION PERSPECTIVE(CEILING DETAILS)	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K PANGAN ARCHITECT II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 11 / 15	13 46

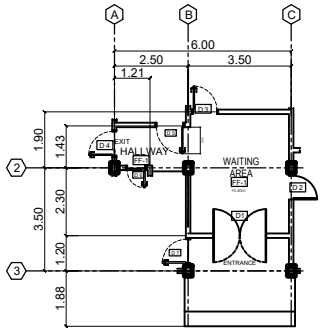
PDS-BUK3RD: 2025



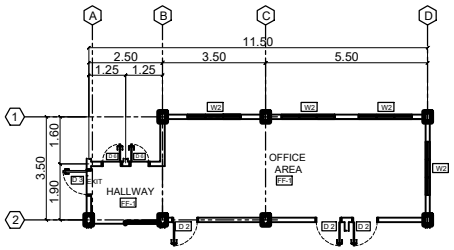
UPPER ROOF
ROOF PLAN
SCALE: 1:100 MTRS.



LOWER ROOF
ROOF PLAN
SCALE: 1:100 MTRS.

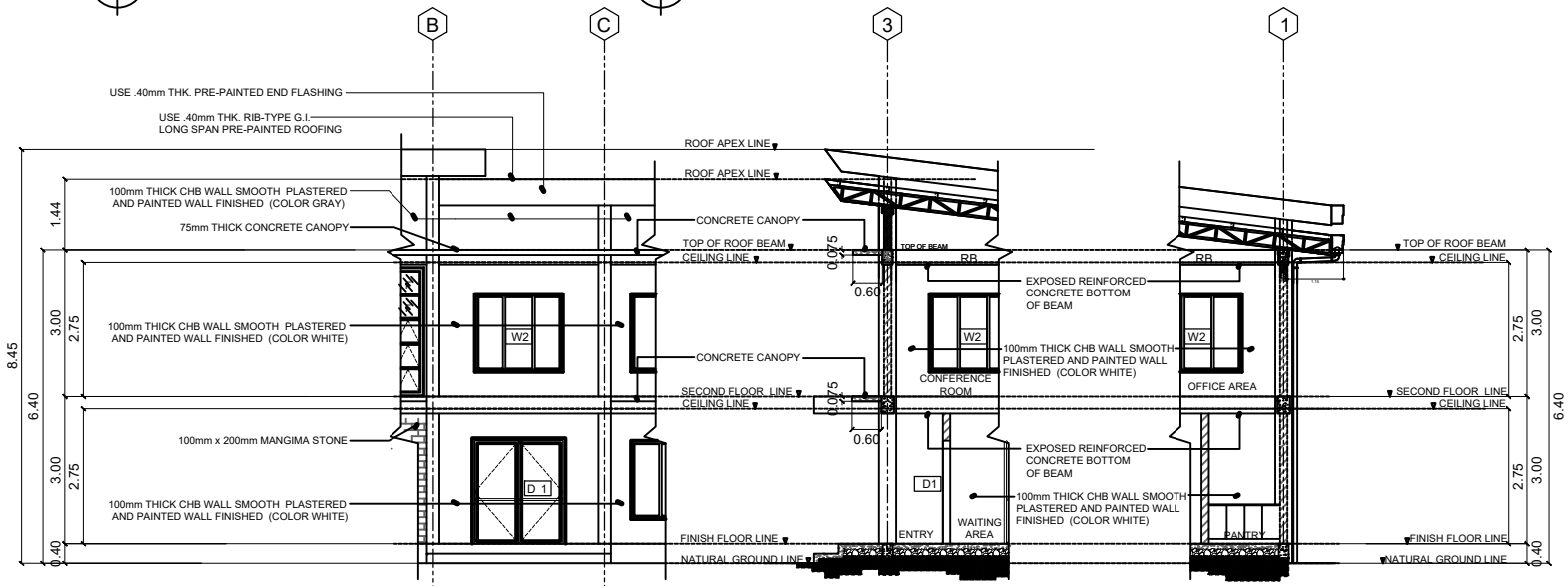


GROUND FLOOR



SECOND FLOOR PLAN

ENTRANCE AND HALLWAYS
SCALE: 1:100 MTRS.



DETAIL BAY ELEVATION
@ FRONT, ALONG GRID-3 BETWEEN GRIDS B-C
SCALE: 1:60 MTRS.

DETAIL BAY SECTION
@ FRONT, BETWEEN GRIDS B-C, ALONG GRID C
SCALE: 1:60 MTRS.

DETAIL BAY SECTION
@ REAR, BETWEEN GRIDS B-C, ALONG GRID C
SCALE: 1:60 MTRS.

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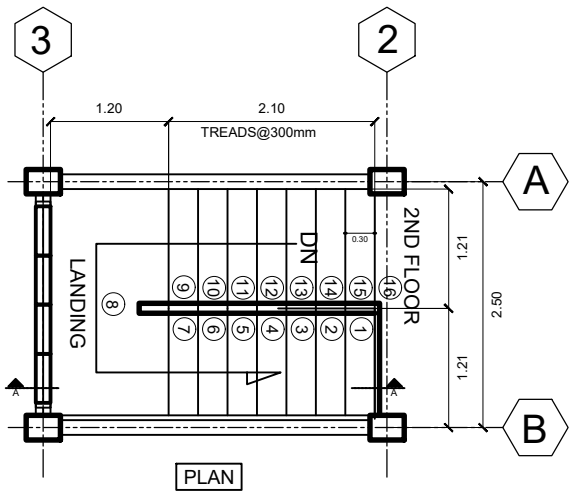
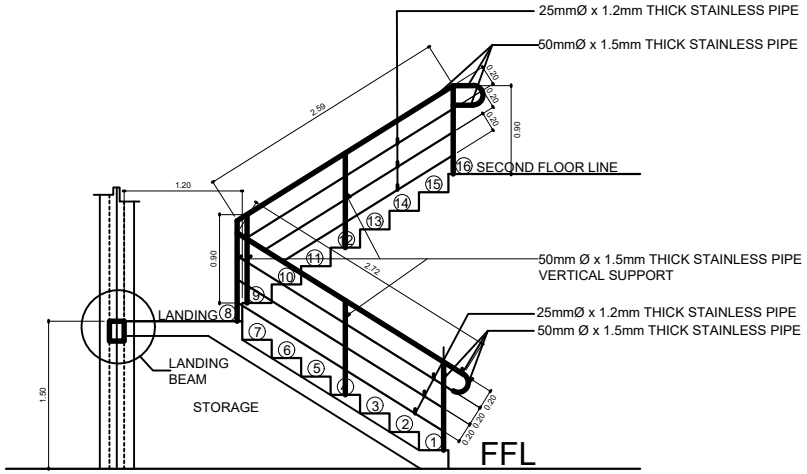
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	ROOF PLANS TYPICAL BAY SECTIONS ENTRANCE AND HALLWAY DETAIL	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K.PANGAN ARCHITECT II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 12|15	14 46

PDS-BUK3RD: 2025

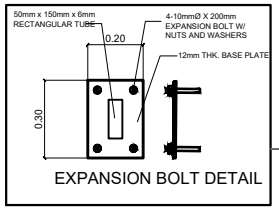


PLAN

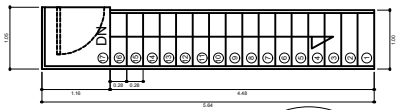


ELEVATION "A-A"

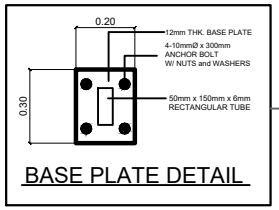
STAIR DETAIL
SCALE: 1:30 M



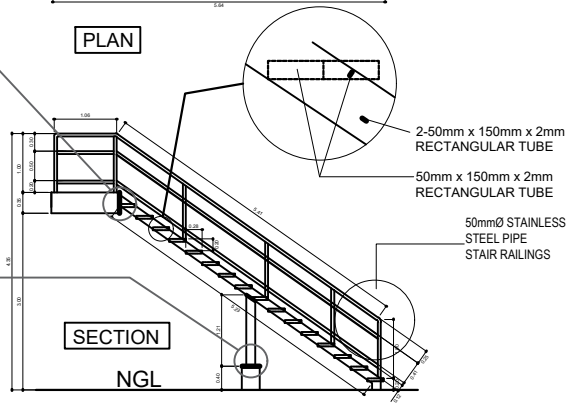
EXPANSION BOLT DETAIL



PLAN

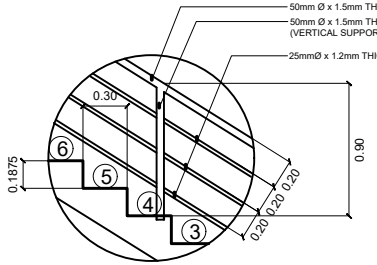


BASE PLATE DETAIL



SECTION

FIRE ESCAPE STAIRS DETAILS
SCALE: 1:30 MTRS.



STAIR RISER BLOW-UP DETAILS
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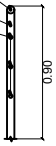

HANDRAIL BLOW-UP DETAIL
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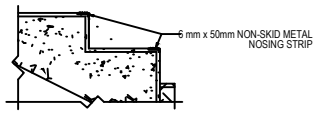

SPOT / BLOW-UP DETAIL OF STAIR NOSING
SCALE 1 : 10M.

REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE X BUKIDNON 3RD DISTRICT ENGINEERING OFFICE DICKLUM, MANOLO FORTICH, BUKIDNON	PROJECT AND LOCATION : **CONSTRUCTION OF MULTI-PURPOSE BUILDING** (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SHEET CONTENTS : STAIR DETAIL FIRE ESCAPE DETAIL	DRAFTED : RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K PANGAN ARCHITECT II	REVIEWED : MCKENLY B. HONG ENGINEER II DATE:	SUBMITTED : RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	RECOMMENDED : ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	APPROVED : RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	SET NO. A 13|15	SHT. NO. 15 46

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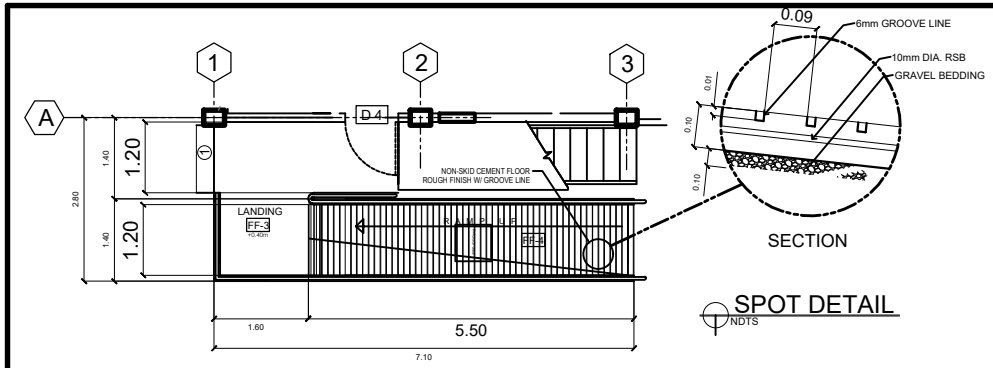
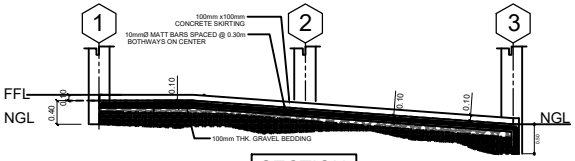
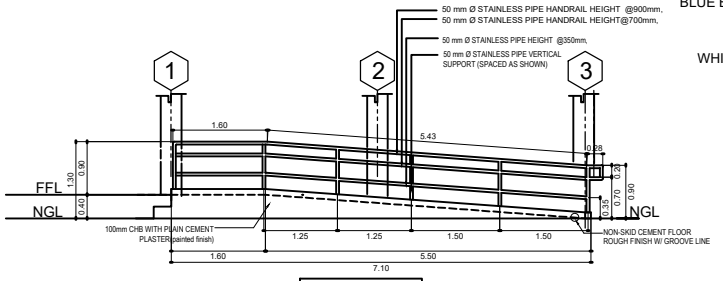


SPOT DETAIL
NDTS

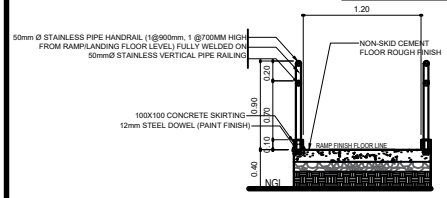
PLAN



SECTION

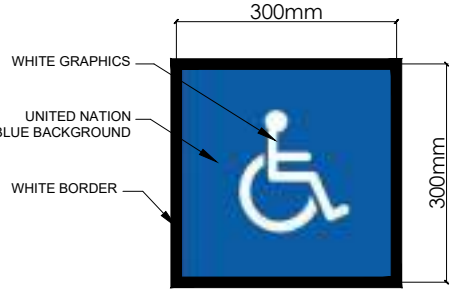


ELEVATION

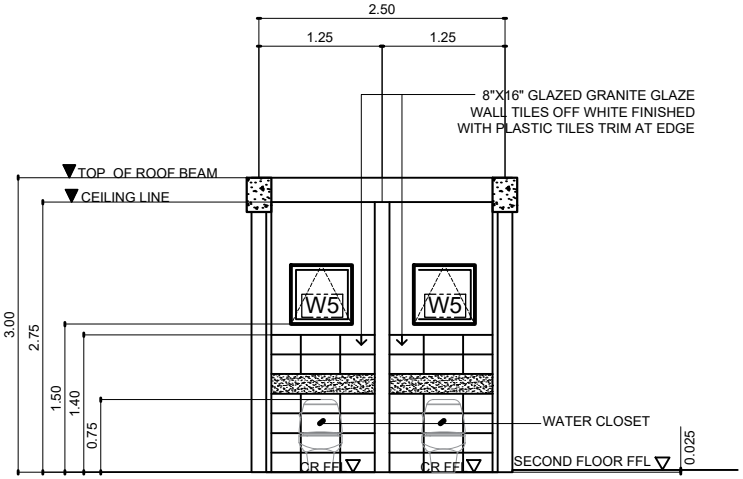


SECTION

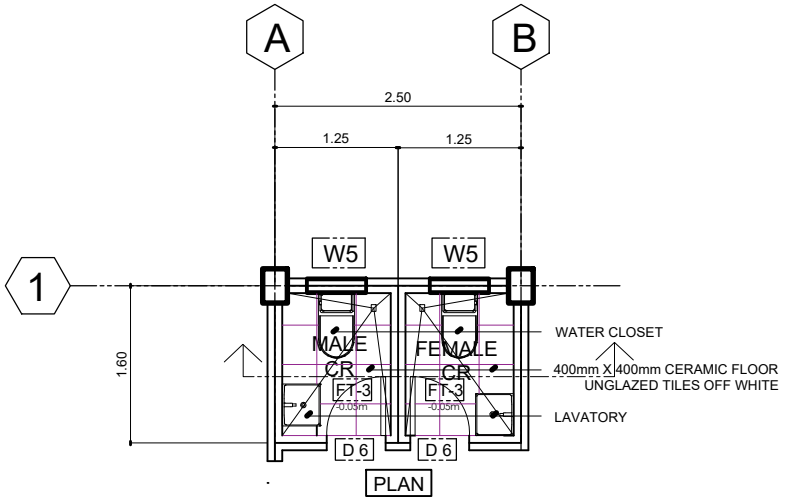
RAMP DETAILS
SCALE: 1:50 MTRS.



PWD LOGO
SCALE: NDTS



SECTION



PLAN

TOILET DETAILS
SCALE: 1:35 MTRS.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

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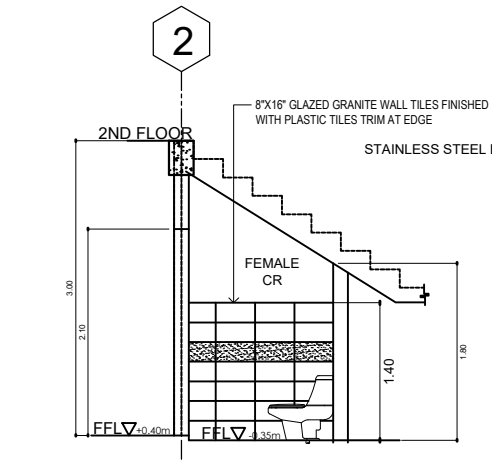
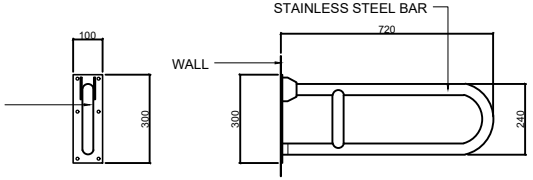
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	RAMP DETAILS TOILET DETAIL	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K.PANGAN ARCHITECT II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 14|15	16 46

PDS-BUK3RD: 2025



SECTION

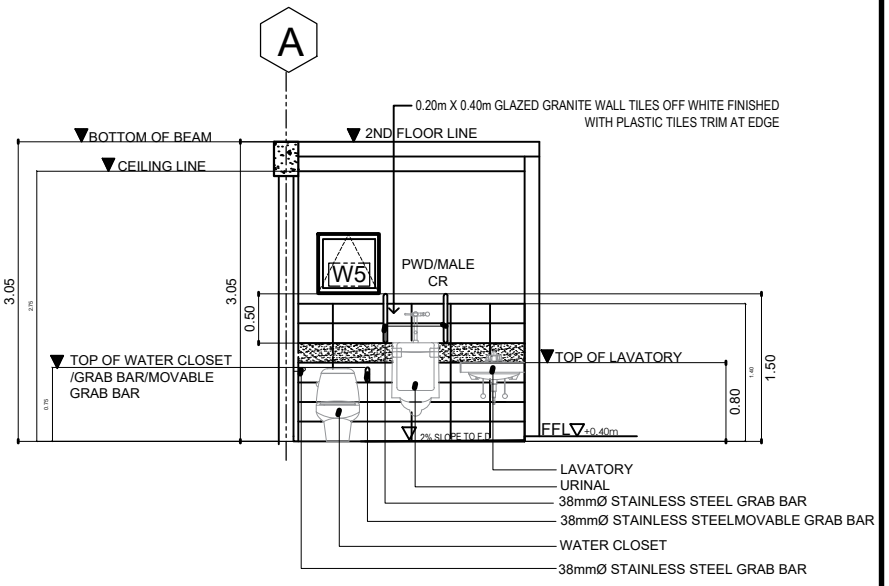


FRONT VIEW **SIDE VIEW**

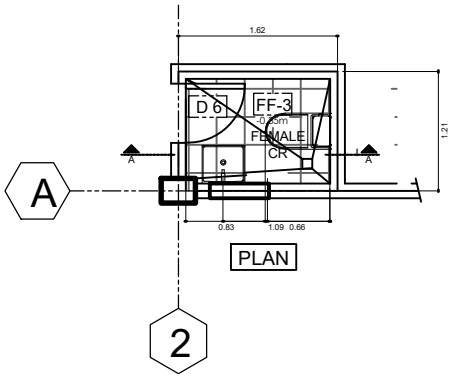
STAINLESS STEEL MOVABLE GRAB BAR DETAIL

3 / A-21

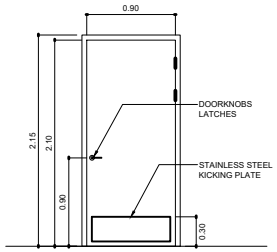
SCALE 1:10 **M.**



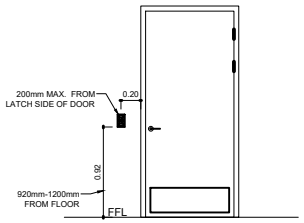
SECTION



PLAN

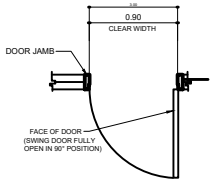


ELEVATION



SWITHCES FOR PWD

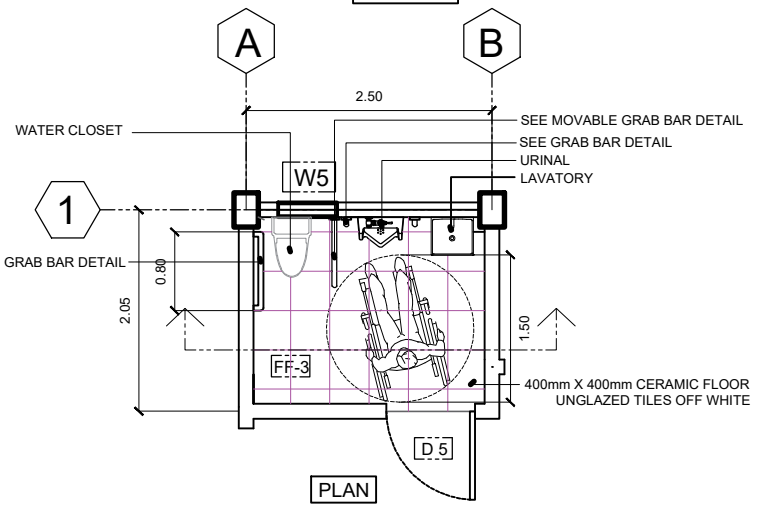
SCALE: 1:20 MTRS.



PLAN

TOILET DETAILS

SCALE: 1:30 MTRS.



PLAN

DOOR DETAIL(PWD)

SCALE: 1:30 MTRS.

TOILET DETAILS(MALE/PWD)

SCALE: 1:30 MTRS.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
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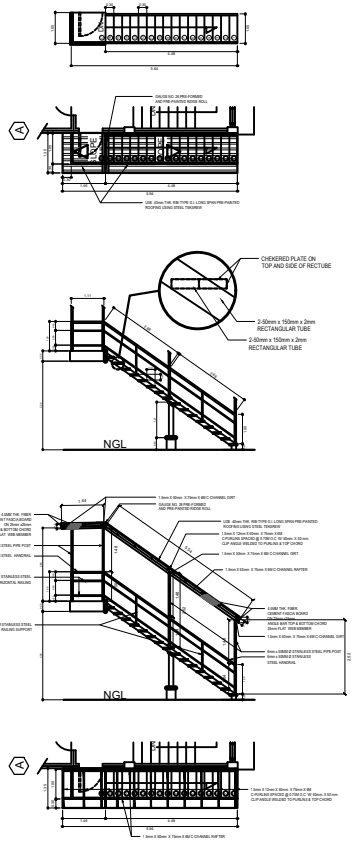
DICKLUM, MANOLO FORTICH, BUKIDNON

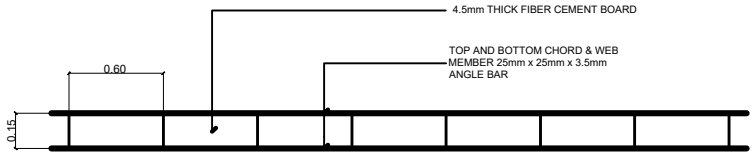
PROJECT AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	TOILET DETAIL SECTIONS AND DETAILS	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K PANGAN ARCHITECT II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 15|15	17 / 46

PDS-BUK3RD: 2025



FIRE EXIT DETAIL

SCALE: 1:100 MTRS.



FASCIA FRAME DETAIL

SCALE: 1:25 MTRS.

REPUBLIC OF THE PHILIPPINES
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CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	FIRE EXIT DETAIL FASCIA FRAME DETAIL	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : JOVEL K PANGAN ARCHITECT II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	A 15 15	17 46

PDS-BUK3RD: 2025

STRUCTURAL

GENERAL NOTES:

1.0 GENERAL

1.1 REFERENCE TO OTHER DRAWINGS
- SEE ARCHITECTURAL DRAWINGS AND OTHER RELEVANT DRAWINGS FOR FLOOR FINISHES, OPENINGS IN WALLS AND SLABS, INTERIOR PARTITIONS, LOCATION OF CHB WALLS, ETC.

1.2 DIMENSIONS
- DIMENSIONS SHOWN ARE IN MILLIMETERS UNLESS OTHERWISE NOTED IN THE INTERPRETATION OF THESE DRAWINGS. INDICATED DIMENSIONS SHALL GOVERN AND DISTANCES OR SIZE SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.

1.3 DISCREPANCIES
- THE CONTRACTOR SHALL COMPARE THE STRUCTURAL DRAWINGS TO THE ARCHITECTURAL DRAWINGS IN REFERENCE TO THE LAYOUT. DIMENSIONS AND ELEVATIONS SHALL BE CONSULTED TO THE DESIGN ENGINEER IN CASE OF DISCREPANCIES IN THE ISSUED DRAWINGS.

1.4 CONSTRUCTION DRAWINGS

- ALL DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALE SHOWN ON PLANS, SECTION OR DETAILS. NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS.

- TYPICAL DETAILS AND GENERAL NOTES ON STRUCTURAL PLANS APPLY TO ALL PARTS OF THE JOB UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURES. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION UNLESS SO STATED. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PROTECT THE PERSONS DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER AND/OR THE ENGINEER OF ANY CONDITION WHICH IN HIS OPINION MIGHT DISTRESS THE STRUCTURE.

1.5 OTHERS

- CONSTRUCTION MATERIALS SHALL NOT BE STORED ON POURED FLOORS. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE SUB-CONTRACTORS ARE INFORMED AND DO NOT VIOLATE THE IMPORTANT REQUIREMENT.

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE TEMPORARY ERECTION BRACINGS AND SHORINGS FOR ALL THE STRUCTURAL MEMBERS AS REQUIRED FOR STABILITY DURING ALL PHASES OF THE CONSTRUCTION.

2.0 STANDARDS AND REFERENCES

THE FOLLOWING SHALL GOVERN THE DESIGN, FABRICATION AND CONSTRUCTION OF THE PROJECT.

2.1 AMERICAN CONCRETE INSTITUTE (ACI PUBLICATION)
ACI 318-99 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
ACI SP-17 DESIGN HANDBOOK, VOL. 1, SECOND EDITION
ACI SP-17A DESIGN HANDBOOK, VOL. 2
ACI 315 MANUAL OF STANDARD PRACTICE FOR DETAILS AND DETAILING OF CONCRETE REINFORCEMENT.

2.2 AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) PUBLICATION: MANUAL OF STEEL CONSTRUCTION, 9TH EDITION, "ALLOWABLE STRESS DESIGN" (ASD).

2.3 AMERICAN IRON AND STEEL INSTITUTE (AISC) PUBLICATION:
COLD FORMED STEEL DESIGN MANUAL, 1983 EDITION.

2.4 AMERICAN WELDING SOCIETY PUBLICATION D.1.1 - 2000

2.5 AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)

2.6 **NATIONAL STRUCTURAL CODE OF THE PHILIPPINES 2015, (NSCP 2015) VOLUME 1**

2.7 ASSOCIATION OF STRUCTURAL ENGINEERS OF THE PHILIPPINES (ASEP) HANDBOOK OF STRUCTURAL STEEL SHAPES AND SECTIONS, 2004

2.8 UNIFORM BUILDING CODE (UBC) VOL. 2 1997 EDITION

2.9 DPWH DESIGN GUIDELINES, CRITERIA AND STANDARDS (DGCS) VOLUME 6 – BUILDING DESIGN

2.10 **DPWH STANDARD SPECIFICATIONS FOR PUBLIC WORKS STRUCTURES (BUILDINGS, PORTS AND HARBORS, FLOOD CONTROL AND DRAINAGE STRUCTURES AND WATER SUPPLY SYSTEMS), VOLUME III, 2019 EDITION**

3.0 BASIC DESIGN LOADS

3.1 DEAD LOAD

CONCRETE	23.544 KN/m³
100 MM THK CHB	2.44 KN/m per meter height
150 MM THK CHB	3.30 KN/m per meter height
100 MM THK Concrete	2.35 KPa
FLOOR FINISH	1.10 KPa
CEILING	0.15 KPa
MEP	0.10 KPa
INTERIOR PARTITION	1.00 KPa
METAL DECK	0.14 KPa

3.2 LIVELOADS

OFFICE (OTHER)	**2.4 KPa**
ROOF	**0.6 KPa**

3.3 WINDLOAD

WIND VELOCITY, V	280 KPH
BUILDING CATEGORY	CATEGORY IV - STANDARD OCCUPANCY STRUCTURES
EXPOSURE CATEGORY	EXPOSURE B
ENCLOSURE CLASSIFICATION	ENCLOSED BUILDING

3.4 EARTHQUAKE LOAD

DESIGN BASE SHEAR, V	189.51 KN
IMPORTANCE FACTOR, I	1.0
SEISMIC ZONE FACTOR, Z	0.40
SEISMIC RESPONSE MODIFICATION FACTOR, R	8.5
NEAR SOURCE FACTOR, Nv	1.0
NEAR SOURCE TYPE, Na	1.0
SEISMIC RESPONSE COEFFICIENT, Ca	0.44 N_a
SEISMIC RESPONSE COEFFICIENT, Cv	0.64 N_v
SOIL TYPE PROFILE	S
DAMPING (FOR RESPONSE SPECTRUM)	0.05

3.5 LOAD COMBINATIONS

CONSIDERING THAT EARTHQUAKE LOAD, E, IS AS SPECIFIED UNDER SECTION 208.6.1 WHICH IS EQUAL TO:
$E = \rho E_h + E_v$, $(E = 1.0E_h + 0.22D)$

ULTIMATE LOAD COMBINATION AS PER SECTION 203.3 OF THE NSCP 2015 7th EDITION

1.4 DEAD LOAD	(203-1)
1.2 DEAD LOAD + 1.6 LIVE LOAD	(203-2)
1.2 DEAD LOAD + 1.0 WIND LOAD + 1.0 LIVE LOAD	(203-4)
1.42 DEAD LOAD + 1.0 EARTHQUAKE LOAD + 1.0 LIVE LOAD	(203-5)

SERVICE LOAD COMBINATION AS PER SECTION 203.3 OF THE NSCP 2015 7th EDITION

DEAD LOAD + LIVE LOAD	(203-9)
DEAD LOAD + LIVE LOAD + 0.6 WIND LOAD	(203-17)
DEAD LOAD + LIVE LOAD + 0.714 EARTHQUAKE LOAD	(203-18)

4.0 MATERIALS

4.1. CONCRETE

4.1.1 COMPRESSIVE STRENGTH

FOOTING SLAB AND WALL, f'c = 20.7 MPa (3000 psi)
COLUMN AND BEAMS, f'c = 20.7 MPa (3000 psi)

4.1.2 ALL CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH ACI 318-89.

4.1.3 MINIMUM CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:
- FOOTINGS = 75mm (CAST AGAINST EARTH)
- BEAMS AND COLUMNS = 40mm (TO STIRRUPS AND TIES)
- SLABS AND WALLS = 20mm (CAST AGAINST FORMS)

4.1.4 BEFORE CONCRETE IS POURED, CHECK WITH ALL TRADES TO ENSURE PROPER PLACEMENT OF ALL OPENINGS, SLEEVES, CURB, CONDUITS, ETC., RELATING TO THE WORKS.

4.1.5 WHEN CONCRETE WILL BE EXPOSED TO EXTERNAL SOURCES OF CHLORIDES IN SERVICES, SUCH AS DEICING SALTS, BRACKISH WATER, SEAWATER OR SPRAY FROM THESE SOURCES, CONCRETE MUST BE PROPORTIONED TO SATISFY THE SPECIAL EXPOSURE REQUIREMENTS OF ACI 318-95.

4.1.6 ALL CONCRETE MUST BE KEPT MOIST FOR A MINIMUM OF 7 CONSECUTIVE DAYS IMMEDIATELY AFTER POURING BY THE USE OF WET BURLAP.

4.2. REINFORCING BARS

4.2.1 UNLESS OTHERWISE SPECIFIED ON PLANS, ALL REINFORCING BARS SHALL BE DEFORMED WITH A MINIMUM YIELD STRENGTH OF Fy = 414 MPa FOR Ø16mm AND HIGHER, AND Fy = 278 MPa FOR Ø10mm AND Ø12mm.

4.2.2 ALL REINFORCING BARS SHALL BE CLEAN OF RUST, GREASE OR OTHER DELETERIOUS MATERIALS WHICH TEND TO IMPAIR BOND.

4.2.3 ALL REINFORCING BARS SHALL BE ACCURATELY AND SECURELY PLACED BEFORE POURING CONCRETE OR APPLYING MORTAR OR GROUT.

4.2.4 LAPPED SPLICES SHALL BE STAGGERED WHERE POSSIBLE.

4.2.5 SPLICING OF THE REINFORCEMENTS SHALL BE IN ACCORDANCE WITH ACI 318.

4.2.6 UNLESS SHOWN OTHERWISE ON PLNS, SPLICES SHALL BE AS FOLLOWS:
COLUMNS: SPLICES WHEN PERMITTED SHAL BE MADE WITHIN THE CENTER HALF OF THE COLUMN HEIGHT. LAP SPLICE SHALL NOT BE LESS THAN 40 BAR DIAMETERS. THE USE OF APPROVED MECHANICAL DEVICES MAY BE PERMITTED PROVIDED THAT NO MORE THAN 33% OF MAIN BARS SHALL BE SPLICED WITHIN THE LAP LENGTH.

BEAMS: TOP AND BOTTOM BARS SHALL NOT BE SPLICED WITHIN THE COLUMN OR WITHIN A DISTANCE OF TWICE THE MEMBER DEPTH FROM THE FACE OF THE COLUMN. AT LEAST TWO EXTRA STIRRUPS SHALL BE PROVIDED AT ALL SPLICES. THE SPLICE LENGTH SHALL NOT BE LESS THAN 40 x DIAMETER.

CMU WALLS: VERTICAL BARS SHALL BE SPLICED AT THE TOP OF WALL FOOTING AND AT THE BOTTOM OF RC LINTEL BEAMS OR MAIN BEAMS. SPLICE LENGTH SHALL BE MINIMUM OF 600mm.

4.2.7 ALL BEAMS TERMINATING AT THE COLUMN SHALL HAVE TOP AND BOTTOM BARS EXTENDING TO THE FAR FACE OF THE COLUMN, TERMINATING IN A STANDARD 90% HOOK LENGTH OF ANCHORAGE SHALL NOT BE LESS THAN 600mm.

4.2.8 SHOP DRAWINGS FOR BENDING AND CUTTING OF REINFORCEMENT BARS SHALL BE SUBMITTED FOR APPROVAL OF THE ENGINEER PRIOR TO FABRICATION.

4.2.9 SPLICE LENGTH OF REINFORCING BARS SHALL BE AS SHOWN IN THE TABLE.

4.3 STRUCTURAL STEEL / BOLTS / WELDS & WELDMENTS, BASE PLATE, GUSSET PLATE, SAG ROD AND CROSS TIES

4.3.1 ALL STRUCTURAL STEEL SHALL HAVE A MINIMUM YIELD STRENGTH Fy = 248 MPa (36 ksi) AND SHALL CONFORM TO ASTM A36 SPECIFICATIONS

4.3.2 NO STEEL SHALL BE FABRICATED OR ERECTED UNTIL SHOP DRAWINGS HAVE BEEN APPROVED BY THE STRUCTURAL ENGINEER AND SHALL CONFORM IN ACCORDANCE WITH THE AISC SPECIFICATIONS (9TH EDITION) AND CODE OF STANDARD PRACTICE AS AMENDED TO DATE.

4.3.3 ALL COLD FORMED STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF Fy = 248 MPa (36 ksi).

4.3.4 ALL SHOP AND FIELD WELDING SHALL BE IN ACCORDANCE WITH AWS D.1.1 - 2000 AND PERFORMED BY QUALIFIED WELDERS.

4.3.5 UNLESS INDICATED OTHERWISE, WELDING ELECTRODES SHALL BE E70XX. MINIMUM THICKNESS OF WELD SHALL BE 4mm.

4.4 CONCRETE MASONRY UNITS

4.4.1 CMU USED IN THIS WORK SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT 28 DAYS, 2.4 MPa (350 psi) FOR NON-LOAD BEARING CMU WHILE 3.5 MPa (500 psi) FOR LOAD BEARING CMU.

4.4.2 ALL CELLS SHALL BE SOLIDLY FILLED WITH GROUT. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 17.20 MPa (2500 psi) AT 28 DAYS.

4.4.3 ALL WALLS SHALL BE CONSTRUCTED IN CONVENTIONAL RUNNING BOND.

4.4.4 OPENING FOR DOORS, WINDOWS AND OTHER GAPS ON CMU WALLS SHALL BE PROVIDED WITH REINFORCED CONCRETE LINTEL BEAM AT EVERY 10 LAYERS OF CHB.

4.4.5 IF WORK IS STOPPED ONE (1) HOUR OR LONGER, PROVIDE CONSTRUCTION JOINTS BY STOPPING THE GROUT 50mm BELOW THE TOP OF THE BLOCK.

4.4.6 UNLESS INDICATED OTHERWISE, CMU REINFORCEMENT SHALL BE 10mmØ HOR. BARS AT 600mm AND 10mmØ VERT. BARS AT 400mm.

4.4.7 GROUT MASONRY IN 2.4M MAXIMUM LIFTS, REINFORCING SHALL BE SECURED AGAINST DISPLACEMENT PRIOR TO GROUTING BY WIRE POSITIONERS AT INTERVALS NOT EXCEEDING 200 BAR DIAMETERS NOR 3M.

5.0 CONSTRUCTION JOINTS

5.1. CONSTRUCTION JOINT BOT INDICATED ON PLANS SHALL BE MADE SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.

5.2. UNLESS SHOWN OTHERWISE, SLAB ON GRADE SHALL HAVE CONTROL JOINTS AT 6m MAXIMUM ON CENTER.

6.0 GRANULAR BASE

6.1. THE GRANULAR BASE MATERIALS SHALL CONFORM TO AASHTO M147 GRADING A.

6.2. GRANULAR BASE SHALL BE PLACED IN THE POSITIONS OF THE REQUIRED THICKNESS AS SHOWN ON THE DRAWINGS.

6.3. WHEN THE REQUIRED THICKNESS IS MORE THAN 150mm, THE BASE MATERIAL SHALL BE SPREAD AND COMPACTED INTO TWO OR MORE LAYERS OF APPROXIMATELY EQUAL THICKNESS AND THE MAXIMUM COMPACTED THICKNESS OF ANY ONE LAYER SHALL NOT EXCEED 150mm.

6.4. COMPACTED DRY DENSITY OF EACH LAYER SHALL NOT BE LESS THAN 100% OF THE MAXIMUM DRY DENSITY DETERMINED ACCORDING TO ASTM D 1557.

7.0 FOUNDATIONS

7.1. FOOTINGS WERE DESIGNED USING AN ACTUAL ALLOWABLE SOIL BEARING CAPACITY OF 123.75 KPa (2585 PSF) AND A SUBGRADE MODULUS OF 4950 AT DEPTHS INDICATED IN THE DRAWING. SOIL INVESTIGATION SHALL BE CARRIED PRIOR TO CONSTRUCTION AND THE STRUCTURAL ENGINEER SHALL BE FURNISHED A COPY OF THE SOIL'S REPORT.

7.2. FILL / BACKFILL SHALL BE PLACED IN 200mm LAYERS AND EACH LAYERS SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY (ASTM D1557) BEFORE SUBSEQUENT LAYERS ARE LAID.

7.3. WHERE SOFT AND/OR LOOSE MATERIALS ARE ENCOUNTERED AT DEPTH OF FOOTING EMBEDMENT INDICATED, EXCAVATE TO FIRM LAYER AND REPLACE MATERIAL UNDERNEATH THE FOOTING. COMPACT SELECTED BACKFILL TO 95% OF MAXIMUM DRY DENSITY (ASTM D1557).

7.4. ALL FOOTINGS SHALL REST ON 50mm THICK COMPACTED BASE COURSE.

BEAMS					COLUMNS			FLOOR SLAB	
BAR SIZE	SINGLE & TWO (2) BAR BUNDLE		THREE (3) BAR BUNDLE		BAR SIZE	VERTICAL REINFORCEMENT		BAR SIZE	SINGLE & TWO (2) BAR BUNDLE
	BOTTOM BARS	TOP BARS	BOTTOM BARS	TOP BARS		SINGLE & TWO (2) BAR BUNDLE	THREE (3) BAR BUNDLE		
16 mm Ø	600 mm	750 mm	800 mm	925 mm	20 mm Ø	1000 mm		10 mm Ø	400 mm
20 mm Ø	750 mm	950 mm	900 mm	1200 mm	25 mm Ø	1500 mm		12 mm Ø	500 mm
25 mm Ø	925 mm	1200 mm	1100 mm	1450 mm					

NOTE : Ld = DEVELOPMENT LENGTH OF RE-BARS ABOVE VALUES SHALL BE THE MINIMUM SPLICE OR DEVELOPMENT LENGTH. ADDITIONAL MODIFICATION FACTORS OF ACI CHAPTER 12) SHALL BE USED WHEREVER APPLICABLE. 36mm Ø BARS FOR BEAMS SHALL NOT BE BUNDLED.

REMOVAL OF FORMS AND SHORING		
STRUCTURAL ELEMENTS	CLEAR SPAN BET. SUPPORTS	MINIMUM TIME PERIOD DAYS
WALLS, COLUMNS, BEAMS, GIRDER SIDES & SLAB ON GRADE	-	1
JOIST, BEAMS, & GIRDER SOFFIT	UNDER 3.00 m	7
	3.00 m TO 6.00 m	14
	OVER 6.00 m	21
ONE-WAY FLOOR SLABS	UNDER 3.00 m	4
	3.00 m TO 6.00 m	7
	OVER 6.00 m	10

CAMBER REQUIREMENT	
ELEMENT	MINIMUM CAMBER
REINFORCED CONCRETE BEAMS	6 mm FOR EVERY 4.50 m SPAN
CANTILEVER REINFORCED CONCRETE BEAMS	18 mm FOR EVERY 3.00 m SPAN
REINFORCED CONCRETE SLAB	3 mm FOR EVERY 3.00 m SHORTER SPAN

SPLICING REQUIREMENTS OF REINFORCING BARS
"Ls" OR "Ld"

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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
GENERAL NOTES

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DATE:	DATE:	DATE:	DATE:

SET NO.	SHT. NO.
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PDS-BUK3RD: 2025

CONSTRUCTION NOTES:

GENERAL NOTES:

A. IN THE INTERPRETATION OF THESE DRAWINGS. INDICATED DIMENSIONS SHALL GOVERN AND DISTANCES OR SIZES SHALL NOT BE SCALED FOR CONSTRUCTION PURPOSES.
B. REINFORCING BARS FOR CONCRETE EXPOSED TO WEATHER SHALL BE PROTECTED WITH AT LEAST 75MM CLEAR DISTANCE AND IN NO CASE LESS 40MM CONCRETE. THESE CONDITIONS MAY BE WAIVED WHEN ADEQUATE WATERPROOFING IS PROVIDED.
C. REINFORCING BARS SHALL BE DEFORMED CONFORMING TO ASTM A615 BILLET STEEL AS FOLLOWS:
16MMØ BARS AND LARGER SHALL BE HIGH GRADE WITH MINIMUM Fy = 414 MPA (60,000PSI)
12MMØ BARS AND SMALLER SHALL BE INTERMEDIATE GRADE WITH Fy = 278 MPA (40,000PSI)
IF BENDING AND WELDING ARE IMPORTANT, DEFORMED BAR SHALL CONFORM TO ASTM A706 LOW ALLOY GRADE 414 STEEL BAR.
D. ALL CONCRETE WORKS SHALL BE DONE IN ACCORDANCE ACI-318-95 BUILDING CODE FOR REINFORCED CONCRETE AND ALL STRUCTURAL STEEL WORKS SHALL BE DONE IN ACCORDANCE WITH THE AISC SPECIFICATIONS AS IT DOES NOT CONFLICT WITH THE NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP-C101-1) REQUIREMENTS.
E. SLAB ON FILL MUST NOT BE PLACED UNLESS FILL HAS BEEN PROPERLY COMPACTED. ALL SLAB ON FILL SHALL BE PROVIDED WITH 100MM THICK WELL COMPACTED CLEAN COARSE SAND BED EXCEPT IN DRIVEWAYS WHERE IT SHALL BE 150MM. BACK FILL OF ALL EXCAVATED AREAS AND THE PREPARATION OF SUB-BASE SHALL BE WELL COMPACTED AT LEAST 95% OF THE STANDARD PROCTOR DENSITY BEFORE WELL COMPACTED CLEAN COARSE SAND ARE LAID.
F. THE CONTRACTOR SHALL COORDINATE WITH THE AR, ME, SE, AND EE PLAN AS TO THE EXACT SIZES AND LOCATION OF THE HOLES THRU FLOOR SLABS AND WALLS.

NOTES ON CONCRETE MIXES & PLACING:

A. UNLESS OTHERWISE INDICATED IN PLANS OR NOTED IN THE STRUCTURAL SPECIFICATIONS, THE MINIMUM 28 DAYS COMPRESSIVE CYLINDER STRENGTH OF CONCRETE SHALL BE AS FOLLOWS:

1. FOR BEAMS	20.7 MPA (3,000 PSI)
2. FOR COLUMNS	20.7 MPA (3,000 PSI)
3. FOR SUSPENDED SLAB	20.7 MPA (3,000 PSI)
4. FOR SLAB ON GRADE	20.7 MPA (3,000 PSI)

B. CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION, REHANDLING OR FLOWING. PLACING SHALL BE DONE PROPERLY WITH BUGGIES, BUCKETS OR WHEEL-BORROWS. NO CHUTES SHALL EXCEED SIX (6) METERS AGGREGATE LENGTH.
C. NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE DESIGNER IN WRITING.

NOTES ON CONCRETE SLABS:

A. ALL REINFORCEMENTS SHALL BE PROVIDED WITH 20MM CLEAR CONCRETE COVER EXCEPT FOR SLAB ON GRADE WHERE REINFORCEMENT SHOULD BE PLACED AT THE CENTER OF THE SLAB THICKNESS.
B. UNLESS OTHERWISE DETAILED IN CONTINUOUS SLABS HAVING SAME REINFORCEMENTS RUNNING IN ONE DIRECTION, REINFORCING BARS SHALL BE BENT UP OR EXTENDED AS SHOWN IN FIGURE 1.
C. FOR TWO-WAY SLABS, BARS ALONG THE SHORTER SPAN SHALL BE PLACED BELOW THE LONGER SPAN BARS AT CENTER AND ABOVE THE LONGER SPAN BARS AT THE SUPPORTS. THE SPACING OF BARS AT THE COLUMN STRIP SHALL BE 1.5 TIMES THE SPACING IN THE MIDDLE STRIP, BUT IN ANY CASE GREATER THAN 2.5 THE SLAB THICKNESS OR 450MM.
D. TEMPERATURE BARS OF SUSPENDED SLABS SHALL BE PLACED ABOVE THE MAIN REINFORCEMENT AT MIDSPAN AND SHALL BE BELOW THE MAIN REINFORCEMENT AT THE SUPPORTS.
E. UNLESS OTHERWISE NOTED, ALL BENDS SHALL BE REINFORCED WITH 10MMØ AT 0.25 MOC EW AT CENTER OF SLAB. SLAB CONSTRUCTION JOINTS SHALL NOT BE MORE THAN 3.0M.
F. WHENEVER REQUIRED, DROP SLAB SHALL BE ADDITIONALLY REINFORCED AS SHOWN IN FIGURE 2.
G. EXTRA REINFORCEMENTS SHALL BE PROVIDED AT CORNER SLAB AS SHOWN IN FIGURE 3.
H. UNLESS NOTED IN THE PLAN, ALL OPENINGS SHALL BE REINFORCED ALL AROUND BY 2-16MMØ BAR AT THE TOP AND BOTTOM OF THE SLAB.

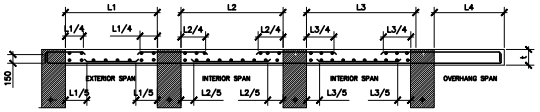


FIG. 1. TYPICAL DETAIL OF SLAB

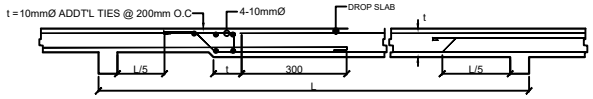
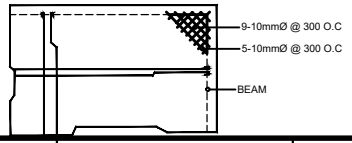


TABLE 1. SCHEDULE OF TEMPERATURE BARS	
THICKNESS	MINIMUM TEMPERATURE BARS
100mm	10mmØ @ 300mm O.C.
125mm	10mmØ @ 300mm O.C.
150mm	10mmØ @ 300mm O.C.



NOTES ON REINFORCED CONCRETE BEAMS & GIRDERS

A. UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS, CAMBER ALL BEAMS AND GIRDERS AT LEAST 6MM FOR EVERY 4.6M OF EXCEPT CANTILEVERS FOR WHICH CAMBERS SHALL BE NOTED IN THE PLANS OR AS ORDERED BY THE DESIGNER BUT IN THAN 20MM FOR EVERY 3M OF SPAN.
B. TYPICAL BAR BENDING AND CUTTING DETAILS FOR INTERMEDIATE BEAMS AND GIRDERS ARE SHOWN IN FIGURE 4 AND RESPECTIVELY. MAIN REINFORCED BARS SHALL HAVE A STANDARD HOOK OF 90 DEGREE BEND PLUS 12 TIMES THE OF THE BAR EXTENSION AT ITS FREE END.
C. IF BEAM REINFORCEMENT ENDS IN A WALL, THE CLEAR DISTANCE FROM THE BAR TO THE FARTHEST FACE OF THE WALL NOT BE LESS THAN 50MM. MINIMUM EMBEDMENT LENGTH SHALL BE AS SHOWN IN TABLE 2.
D. IF THERE ARE TWO OR MORE LAYERS OF REINFORCING BARS, USE SEPARATORS OF SIZE EQUAL TO THE BAR DIAMETER BUT LESS THAN 25MM SPACED AT 900MM ON CENTERS. IN NO CASE SHALL BE LESS THAN TWO SEPARATORS BETWEEN LAYERS
E. WHEN BEAM CROSSES A GIRDER, REST BEAM BARS ON TOP OF THE GIRDER BARS. REINFORCING BARS SHALL BE ABOUT THE CENTERLINE WHENEVER POSSIBLE, UPPER BARS SHALL BE PLACED DIRECTLY ABOVE THOSE BARS IN THE
F. NO SPLICE SHALL BE PERMITTED ON BEAMS WHERE CRITICAL BENDING OCCURS. LENGTH OF LAP SPLICE WHERE PERMITTED BE AS SHOWN IN TABLE 2. WELD SPLICE SHALL BE DEVELOP IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH BAR. NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE ALLOWED TO SPLICE THEREIN. A TYPICAL WELDED SPLICE DETAIL IS SHOWN IN FIGURE 7.
G. FOR ALL BEAMS, ALWAYS FIT THE REINFORCEMENTS IN ONE LAYER WHENEVER POSSIBLE. WHENEVER BEAM IS SUPPORTING COLUMN, BOTTOM BAR AT MID SPAN OF THE BEAM SHALL CONTINUE UP TO THE SUPPORTS.
H. FOR GIRDERS, HOOPS SHALL BE USED WITHIN THE DISTANCE TWICE OF THE GIRDER DEPTH. BEYOND IT, STIRRUPS WITH SEISMIC HOOKS MAY BE USED. WITHIN THE SPLICED LENGTH, 10MMØ HOOPS SHALL BE PROVIDED AT 0.10MCC.
I. INDIVIDUAL BARS WITHIN A BUNDLE SHALL TERMINATE AT DIFFERENT POINTS WITH AT LEAST 40 TIMES THE BAR DIAMETER
J. LONGITUDINAL REINFORCING BARS SHALL BE PLACED SYMMETRICALLY ABOUT THE VERTICAL CENTER LINE OF THE BEAM OR GIRDER SECTION WHERE POSSIBLE WITH UPPER BARS PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

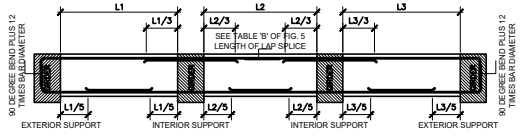


FIG. 4. TYPICAL DETAIL OF INTERMEDIATE BEAM

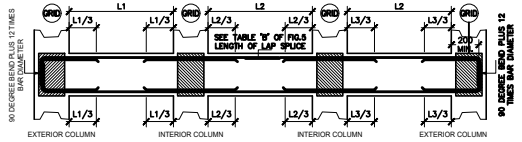


FIG. 5. TYPICAL DETAIL OF GIRDER

TABLE 2. DEVELOPMENT LENGTH

BAR SIZE ASTM A615	BAR IN TENSION												BAR IN COMPRESSION					
	FOR Fy = 275 MPA						FOR Fy = 414 MPA						FOR Fy = 275 MPA			FOR Fy = 414 MPA		
	f'c = 21 MPA		f'c = 28 MPA		f'c = 35 MPA		f'c = 41 MPA		f'c = 21 MPA		f'c = 28 MPA		f'c = 35 MPA		f'c = 41 MPA	f'c = 21 MPA	f'c = 28 MPA	f'c = 35 MPA	f'c = 41 MPA	f'c = 21 MPA	f'c = 28 MPA	f'c = 35 MPA	f'c = 41 MPA
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2							
10mmØ	300	450	250	375	250	350	175	300	450	650	400	575	350	500	300	425	200	200	200	200	250	200	200	200
12mmØ	350	550	300	450	300	400	250	375	550	800	475	700	425	625	400	550	200	200	200	200	300	250	250	225
16mmØ	475	750	425	600	375	550	300	500	750	1050	650	925	575	825	500	700	250	250	250	200	350	350	300	275
20mmØ	600	900	525	750	475	700	350	600	900	1300	800	1150	700	1025	625	900	300	300	250	225	450	400	350	350
25mmØ	900	1375	800	1200	700	1050	550	800	1375	2050	1200	1800	1050	1600	875	1300	400	350	300	300	550	500	450	425
28mmØ	1025	1550	900	1325	800	1200	600	900	1550	2300	1325	2000	1200	1800	1000	1500	450	400	350	325	650	550	500	475
32mmØ	1175	1750	1000	1525	900	1350	700	1025	1750	2625	1525	2275	1350	2050	1125	1650	500	450	400	375	750	650	550	525

NOTES
1. FOR REINFORCING BARS IN TENSION WITH STANDARD HOOK AT ITS END, DEVELOPMENT LENGTH MAY BE DIVIDED BY 2.50.
2. CASE 1 IS FOR BARS WITH CLEAR SPACING NOT LESS THAN THE BAR DIAMETER OR EITHER LESS THAN 25MM OTHERWISE, CASE 2 SHALL BE USED.

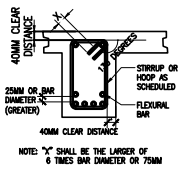


FIG. 6. TYPICAL SECTION OF BEAM

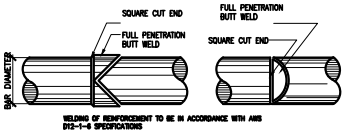


FIG. 7. TYPICAL WELD SPLICE DETAIL

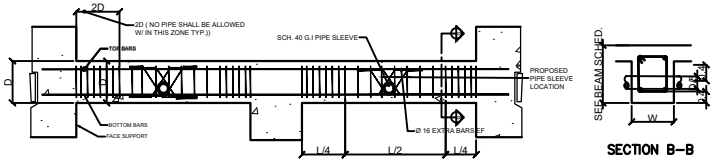


FIG. 8 PIPE SLEEVE THRU BEAM DETAIL

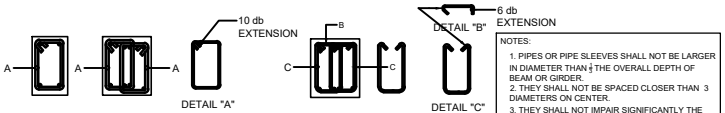


FIG. 9 SINGLE AND TWO – PIECE HOOPS

NOTES:
1. PIPES OR PIPE SLEEVES SHALL NOT BE LARGER IN DIAMETER THAN 1/3 THE OVERALL DEPTH OF BEAM OR GIRDER.
2. THEY SHALL NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER.
3. THEY SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF CONSTRUCTION.
4. SUBMIT TO STRUCTURAL ENGINEER FOR APPROVAL THE LOCATION OF EMBEDDED PIPE OR PIPE SLEEVE PRIOR TO INSTALLATION.

NOTES ON REINFORCED CONCRETE COLUMN:

A. BEAM-COLUMN JOINTS SHALL BE PROVIDED BY A HOOP AT 0.1MOC. THE NUMBER OF SETS FOR SUCH HOOPS SHALL BE THE SAME IN THE CONFINED REGION AS SCHEDULED.
B. WHERE COLUMN CHANGES IN SIZE, VERTICAL REINFORCEMENT SHALL BE OFFSET AT A SLOPE OF NOT MORE THAN 1:6 AND EXTRA 10MMØ HOOPS AT 0.10MOC SHALL BE PROVIDED THROUGHOUT THE OFFSET REGION.
C. SPLICE SHALL BE ALLOWED ONLY WITHIN THE CENTER HALF OF THE CLEAR COLUMN HEIGHT. SPLICE LENGTH SHALL BE PROVIDED WITH A HOOP SPACED AT 0.10MOC. SPLICE LENGTH SHALL BE CONSIDERED AS TENSION SPLICE AS PRESENTED IN TABLE 2.
D. COLUMN TIES AND SPIRAL SHALL BE PROVIDED WITH MINIMUM CLEAR CONCRETE COVER OF 40MM. VERTICAL BARS SHALL HAVE A CLEAR DISTANCE OF 1.5 TIMES BAR DIAMETER OR 40MM WHICHEVER IS LARGER.
E. CONFINED REGION SHALL BE EQUAL TO THE LARGER OF THE FOLLOWING:
1.0 450MM
2.0 BIGGER COLUMN DIMENSION
3.0 (CLEAR COLUMN HEIGHT)/16
F. UNLESS OTHERWISE DETAILED, TYPICAL BAR DETAILS FOR TIED COLUMNS ARE AS SHOWN IN FIGURE 11 AND 12.

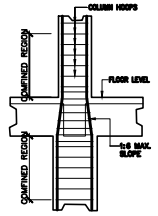


FIG. 10. BEAM–COLUMN JOINT

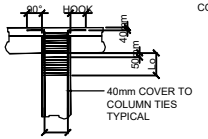


FIG. 11. REIF. OF TIED COLUMN AT TOP

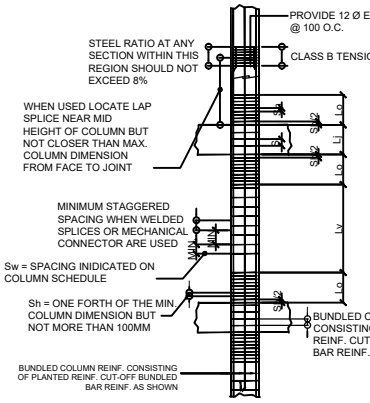


FIG. 12. TYPICAL TIED COLUMN

NOTES ON STRUCTURAL STEEL:

A. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL UNLESS OTHERWISE SHOWN OR NOTED.
B. ALL STRUCTURAL STEEL INCLUDING THAT OF GUSSET PLATES SHALL BE ASTM A36 STEEL WITH YIELD STRENGTH OF Fy = 248 MPA
C. ALL BOLTS AND THREADED FASTENERS SHALL BE ASTM A325.
D. ALL WELDS SHALL BE E70XX ELECTRODE AND SHALL DEVELOP AT LEAST 100% OF THE STRENGTH OF THE CONNECTED MEMBERS.
E. THE CONTRACTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER THE SHOP/FABRICATION DRAWINGS FOR APPROVAL BEFORE ANY WORKS SHALL COMMENCE.
F. ALL DOUBLE ANGLE STRUCTURAL MEMBERS MUST BE PROVIDED WITH FILLER PLATES AT 0.30MOC MAXIMUM SPACING.
G. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL HAVE AT LEAST TWO COATS OF RED LEAD OR ZINC CHROMATE PRIMER PAINT.
H. ALL TRUSSES, BEAMS, AND GIRDERS, MUST BE PROVIDED WITH A CAMBER AT THE RATE OF 3MM FOR EVERY 3.0M OF CLEAR SPAN IN ARABIC NUMERALS.

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NOTES ON CHB WALLS:

A. ALL CHB WALLS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 450 PSI AND SHALL BE REINFORCED AS PRESENTED IN TABLE 3.
B. MINIMUM LAP LENGTH OF SPLICE SHALL BE 250MM.
C. PROVIDE RIGHT ANGLED REINFORCEMENT AT CORNERS, 900MM LONG.
D. PROVIDE BEAMS BLOCKS AT EVERY 10TH LAYER OF CHB AND A POST AT EVERY 3.0M. SEE FIGURES 13, 14 AND 15.
E. WHERE CHB WALLS ADJOIN COLUMNS, RC BEAMS, AND RC WALLS, DOWELS WITH THE SAME SIZE AS THE VERTICAL OR HORIZONTAL REINFORCEMENTS SHALL BE PROVIDED.

TABLE 3. SCHEDULE OF CHB REINFORCEMENTS

BLOCK THICKNESS	HORIZONTAL REINFORCEMENTS	VERTICAL REINFORCEMENTS
100mm	10mm Ø 600mm O.C	10mm Ø 600mm O.C
125mm	10mm Ø 600mm O.C	10mm Ø 600mm O.C
150mm	10mm Ø 400mm O.C	10mm Ø 400mm O.C
200mm	10mm Ø 400mm O.C	10mm Ø 400mm O.C

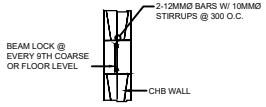


FIG. 13 DETAIL OF BEAM BLOCK

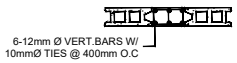


FIG. 14 DETAIL OF WALL POST/STIFFENER COLUMN

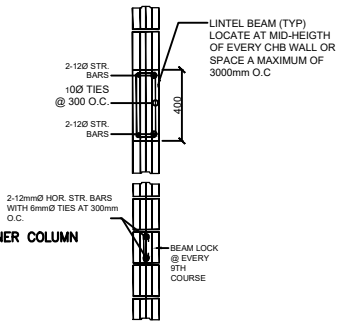


FIG. 15 DET. OF BLOCK & LINTEL BEAM

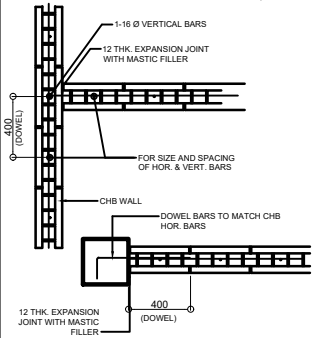


FIG. 16 INTERSECTING R.C. COLUMN OR WALL

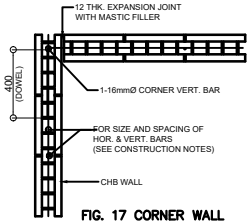


FIG. 17 CORNER WALL

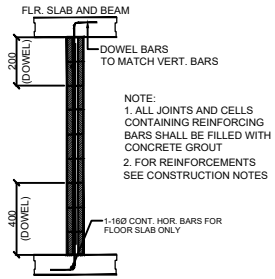


FIG. 18 TYPICAL SECTION OF MASONRY PARTITION REINFORCEMENTS

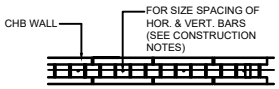


FIG. 19 OPENNING OR END

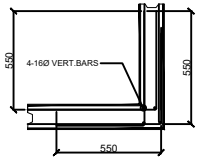
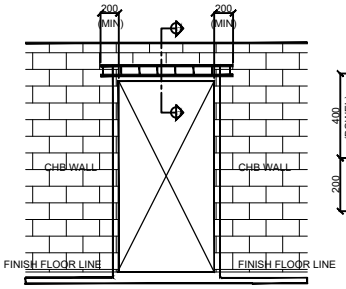
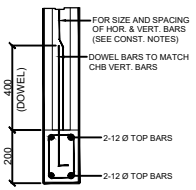


FIG. 20 TYPICAL CONNECTION DETAIL OF R.C. WALL AT CORNERS



ELEVATION

FIG. 21 TYPICAL DETAIL OF LINTEL BEAM AT CHB WALL OPENING



SECTION C - C

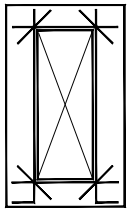


FIG. 22 TYPICAL EXTERIOR OF DOOR OPENING

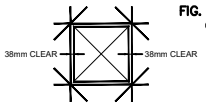


FIG. 23 TYPICAL EXTERIOR OF WINDOW OPENING

NOTES ON CONCRETE WALLS:

A. ALL WALLS SHALL BE REINFORCED ACCORDING TO THE FOLLOWING SCHEDULE OF WALL REINFORCEMENT UNLESS OTHERWISE INDICATED IN THE PLANS. (REFER TO TABLE - 4)
B. REINFORCING BARS SHALL HAVE 25mm MINIMUM CLEAR DISTANCE FROM WALL FACE EXCEPT FOR WALLS DEPOSITED AGAINST THE GROUND WHERE A MINIMUM OF 63mm SHALL BE PROVIDED AND FOR EXPOSED FACES OF FORMED WALLS WHERE THE MINIMUM SHALL BE 50mm, CLEAR FOR BARS LARGER THAN 16mm, AND 38mm FOR 16mm BARS OR SMALLER.
C. CARRY VERTICAL BARS AT LEAST 600mm ABOVE FLOOR LEVEL TO PROVIDE FOR SPLICES WHEN NECESSARY. STOP AT 50mm BELOW TOP OF THE SLAB OR SOLID BAND WHERE THE WALLS END. HORIZONTAL AND VERTICAL BARS SHALL BE SPLICED BY LAPPING A DISTANCE EQUAL TO 40 DIAMETER AND WIRED SECURELY WITH NO. 15 G.I. WIRE PROVIDED THAT SPLICES IN ADJACENT BARS ARE STAGGERED AT LEAST 1520mm ON CENTER. (See FIGURE 24)
D. UNLESS OTHERWISE NOTED IN THE PLANS,ALL OPENINGS IN WALLS 250mm OR THICKER SHALL BE REINFORCED AROUND WITH 2-20mm BARS, FOR 225mm -, 200mm -, 175mm-, 150mm THICK WALLS, USE 2-16mm BARS. FOR 125mm THICK WALLS, USE 2-12mm BARS. (See FIGURE 24)
E. ALL WALL OPENING SHALL HAVE VERTICAL REINFORCEMENT BENT TO A U-FORM LIKE STIRRUPS AND SPACED ACCORDING TO THE SCHEDULE UNLESS OTHERWISE NOTED. (REFER TO SECTION 1 ON FIGURE 24)
F. ALL CONCRETE WORKS SHALL BE REINFORCED WITH BARS OF AREA AT LEAST EQUAL TO THAT SPECIFIED IN ACI 318-89 BUILDING CODE.

TABLE - 4

WALL THICKNESS (mm)	REINFORCEMENT		REMARKS	VERTICAL SECTION
	HORIZONTAL	VERTICAL		
100	10mm at 250 o.c.	10mm at 300 o.c.		
125	10mm at 200 o.c.	10mm at 250 o.c.	DITTO	
150	12mm at 288 o.c.	12mm at 250 o.c.	DITTO	
175	20mm at 250 o.c.e.f.	12mm at 250 o.c.e.f.	DITTO	
200	10mm at 200 o.c.e.f.	10mm at 250 o.c.e.f.	DITTO	
225	12mm at 200 o.c.e.f.	12mm at 228 o.c.e.f.	DITTO	
250	12mm at 250 o.c.e.f.	12mm at 300 o.c.e.f.	DITTO	
275	12mm at 228 o.c.e.f.	12mm at 250 o.c.e.f.	DITTO	
300	12mm at 200 o.c.e.f.	12mm at 250 o.c.e.f.	DITTO	
350	12mm at 180 o.c.e.f.	12mm at 200 o.c.e.f.	DITTO	
400	16mm at 330 o.c.e.f.	16mm at 395 o.c.e.f.	DITTO	

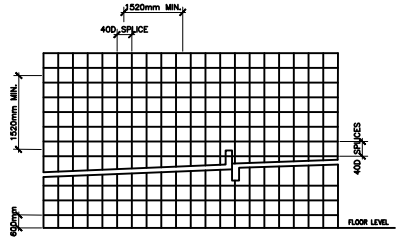
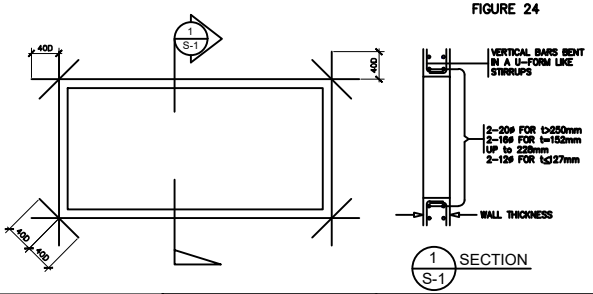


FIGURE 24



NOTES ON REINFORCING STEEL BARS:

A. ALL REINFORCING STEEL BARS SHALL BE NEW BILLET, HOT ROLLED, WELDABLE, DEFORMED BARS CONFORMING TO THE SPECIFICATIONS OF PNS 49: 1986 (ASTM 615), AND ASTM A706 (GR. 60, WELDABLE) WHOSE GRADE IS SHOWN ON TABLE 5.

TABLE-5

GRADE	BAR DIAMETER
GRADE 414 (FY= 60 ksi)	16, 20, 25, 28, 32 MMØ
GRADE 276 (FY= 40 ksi)	10, 12 MMØ
GRADE 230 (FY= 33 ksi)	SMALLER THAN 10MMØ

B. THE SUPPLEMENTARY REQUIREMENTS OF WELDABLE DEFORMED REINFORCING BARS SHALL BE AS FOLLOWS:

B.1 THE MAXIMUM YIELD STRENGTH OF WELDABLE BARS = 540 MPa
B.2 THE TENSILE STRENGTH SHALL NOT BE LESS THAN 1.25 TIMES THE ACTUAL YIELD STRENGTH.

C. ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED AND SPACED IN FORMS, SECURED IN THE REQUIRED LOCATION IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE BUILDING CODE AND THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI - 315.

D. ALL REINFORCING BARS SHALL BE CLEANED THOROUGHLY OF ALL LOOSE RUST, SOIL OR OTHER MATERIAL IMMEDIATELY PRIOR TO PLACING CONCRETE.

E. THE REQUIRED LENGTH OF LAP FOR TENSION SPLICES IS BASED ON THE DEVELOPMENT LENGTH, Ld, SHOWN IN THE TABLE 2 FOR RC BEAMS AND GIRDERS, ON THE FOLLOWING CLASSIFICATIONS :

TENSION SPLICE CLASSIFICATION	SPLICE LENGTH
CLASS A	1.0 Ld
CLASS B	1.3 Ld

F. A FULL WELDED SPLICES SHALL HAVE BARS BUTTED AND WELDED TO DEVELOP IN TENSION AT LEAST 125 PERCENT OF THE SPECIFIED YIELD STRENGTH fy, OF THE BAR. (SEE FIGURE 7)

G. ALL WELDING OF REINFORCEMENT SHALL CONFORM TO THE PROVISIONS OF THE STRUCTURAL WELDING CODE - REINFORCING STEEL, AWS D1.4

H. A FULL MECHANICAL CONNECTION (REBAR SPLICER) SHALL DEVELOP IN TENSION OR COMPRESSION, AS REQUIRED, 125 PERCENT OF THE SPECIFIED YIELD STRENGTH fy, OF THE BAR. IF USED, SUBMIT SAMPLE FOR APPROVAL OF THE STRUCTURAL ENGINEER.

I. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS:
1) CONCRETE CAST AGAINST EARTH - 75 mm
2) CONCRETE EXPOSED TO EARTH OR WEATHER
20 mm TO 36 mm BARS - 50 mm
16 mm BARS AND SMALLER - 40 mm
3) CONCRETE NOT EXPOSED TO EARTH OR WEATHER
SLABS, WALL, JOINTS - 20 mm
BEAMS AND COLUMNS - 40 mm

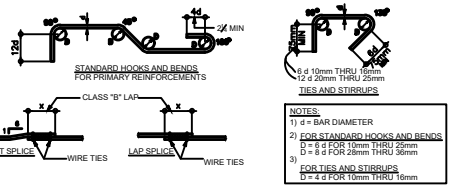


FIGURE 21 TYPE OF CONCRETE REINFORCING

NOTES ON FOUNDATIONS:

A. FOOTINGS WERE DESIGNED USING AN ACTUAL ALLOWABLE SOIL BEARING CAPACITY OF 123.75 KPa (2585 psf) AND A SUBGRADE MODULUS OF 4950 AT DEPTHS INDICATED IN THE DRAWING. SOIL INVESTIGATION SHALL BE CARRIED PRIOR TO CONSTRUCTION AND THE STRUCTURAL ENGINEER SHALL BE FURNISHED A COPY OF THE SOIL'S REPORT.
B. NO FOOTING SHALL REST ON FILL. FOOTING FOR CHB WALLS AND OTHER MINOR STRUCTURES SHALL BE EMBEDDED AT LEAST 800mm FROM THE NATURAL GRADE LEVEL.
C. PROVIDE TEMPORARY REMOVAL OF WATER FROM ANY SOURCE DURING CONSTRUCTION. DEWATERING SHALL BE CAREFULLY AND PROPERLY PERFORMED TO AVOID DISTURBING THE FOUNDATIONS AND SLAB BEARING SURFACES.
D. CONTRACTOR SHALL DESIGN, INSTALL AND MONITOR EXCAVATIONS RETENTION SYSTEMS, AS REQUIRED PROTECTION OF ADJACENT PROPERTIES AND PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO MINIMIZE SETTLEMENT AND PREVENT DAMAGE TO ADJACENT EXISTING OR NEW CONSTRUCTION.
E. PREPARE CONDITIONS OF CONCRETE SUPPLY AND PLACEMENT TO THE COMPLETE FOUNDATION FOR THE FULL THICKNESS AS A CONTINUOUS MONOLITHIC CASTING.
F. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL GROUND FLOOR SLAB HAVE BEEN PLACED AND THE CONCRETE HAS ATTAINED THE REQUIRED STRENGTH.

REPUBLIC OF THE PHILIPPINES
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REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
CONSTRUCTION NOTES

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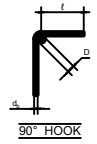
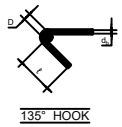
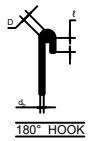


HOOK LENGTH FOR 90° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144



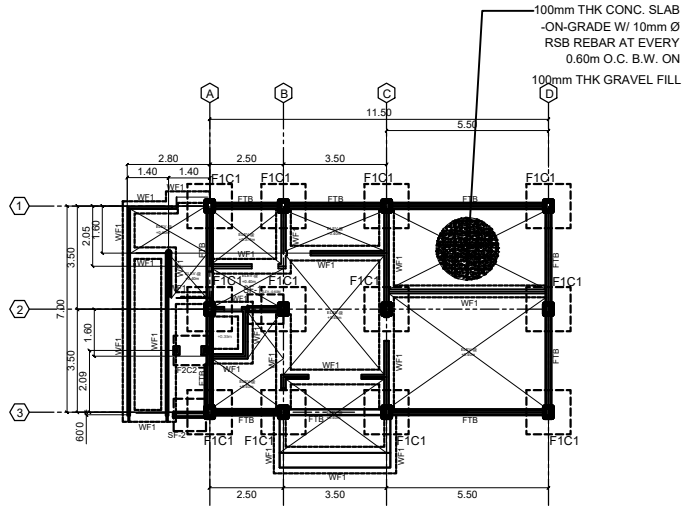
HOOK LENGTH FOR 135° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144



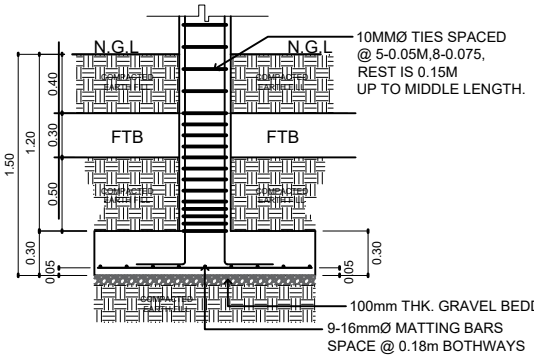
HOOK LENGTH FOR 180° BEND	
d_b (mm)	ℓ (mm)
10	95
12	108
16	144

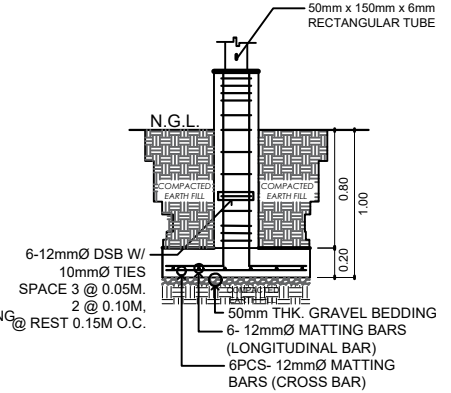
SCHEDULE OF FOOTING

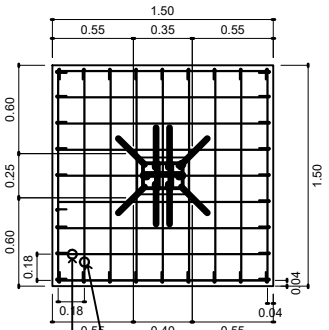
FOOTING MARK	FOOTING DIMENSIONS (MM)					REINFORCEMENT		REMARKS
	LENGTH (L)	WIDTH (W)	DEPTH (D)	THICKNESS (T)	REBARS SPACING (BOTHWAYS)	BAR-X	BAR-Y	
F1	1500	1500	1200	300	180 B.W.	9-16MMØ	9-16MMØ	ISOLATED FOOTING
F2	1150	1000	800	200	180 B.W.	6-16MMØ	7-16MMØ	ISOLATED FOOTING
SF-1	1100	1000	600	250	200 B.W	6-16MMØ	7-16MMØ	ISOLATED FOOTING
SF-2	1100	1000	250	250	200 B.W			ISOLATED FOOTING



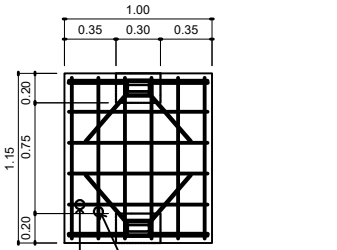
FOOTING
FOUNDATION PLAN
1 / S 4
SCALE: 1:100 MTRS.







FOOTING (F1C1)
SCALE: 1:20 MTRS.



FOOTING ON GRADE(F2C2)
SCALE: 1:20 MTRS.

2 / S 4 FOOTING DETAIL
SCALE: 1:100 MTRS.

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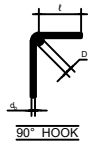
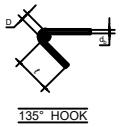
DISTRICT ENGINEER
DATE:

SET NO. S 4 / 9
SHT. NO. 21 / 46

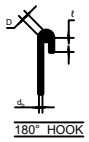
PDS-BUK3RD: 2025



HOOK LENGTH FOR 90° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144



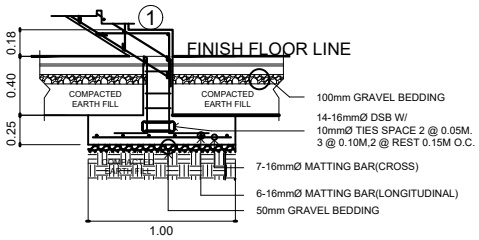
HOOK LENGTH FOR 135° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144



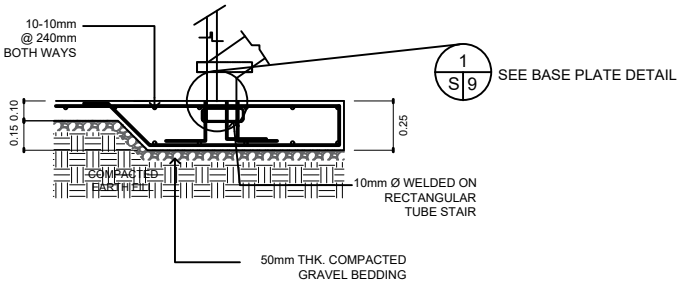
HOOK LENGTH FOR 180° BEND	
d_b (mm)	ℓ (mm)
10	95
12	108
16	144

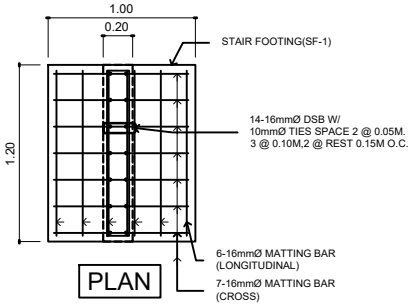
SCHEDULE OF COLUMN

LEVEL	C1	C2
ROOF BEAM LEVEL TO ROOF TRUSS LEVEL LOC: GRID 1,2,3	 MAIN BARS 6-16MMØ TIE BARS 10MMØ	
2ND FLR. LEVEL TO ROOF BEAM LEVEL	 MAIN BARS 6-16MMØ TIE BARS 10MMØ	
GROUND FLR. LEVEL TO 2ND FLR. LEVEL	 MAIN BARS 10-16MMØ TIE BARS 10MMØ	
FOUNDATION LEVEL TO GROUND FLR. LEVEL	 MAIN BARS 10-16MMØ TIE BARS 10MMØ	 MAIN BARS 4-16MMØ TIE BARS 10MMØ



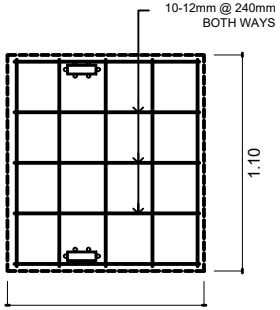
SECTION





PLAN

STAIR FOOTING 1 (SF-1)
SCALE: 1:20 MTRS.



STAIR FOOTING 2 (SF-2)
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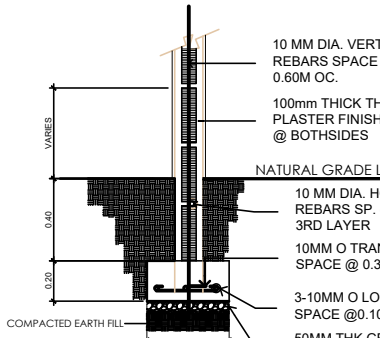
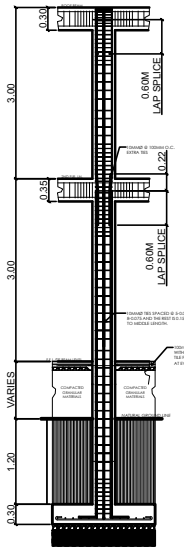


2 S 5 WALL FOOTING (WF1)
SCALE: NTS



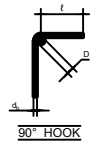
3 S 5 FOOTING SECTION (FIC1)
SCALE: NDTS

FOOTING DETAIL

1 S 5

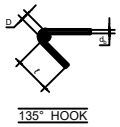
REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE X BUKIDNON 3RD DISTRICT ENGINEERING OFFICE DICKLUM, MANOLO FORTICH, BUKIDNON	PROJECT AND LOCATION : **CONSTRUCTION OF MULTI-PURPOSE BUILDING** (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SHEET CONTENTS : HOOK LENGTH DETAIL FOOTING DETAILS WALL FOOTING DETAILS COLUMN SCHEDULE ELEVATION OF COLUMN	DRAFTED : RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : RUBEN A. ABA-A JR. ENGINEER II	REVIEWED : MCKENLY B. HONG ENGINEER II DATE:	SUBMITTED : RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	RECOMMENDED : ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	APPROVED : RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	SET NO. S 5 9	SHT. NO. 22 46

PDS-BUK3RD: 2025



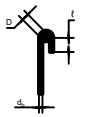
HOOK LENGTH FOR 90° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144

90° HOOK



HOOK LENGTH FOR 135° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144

135° HOOK

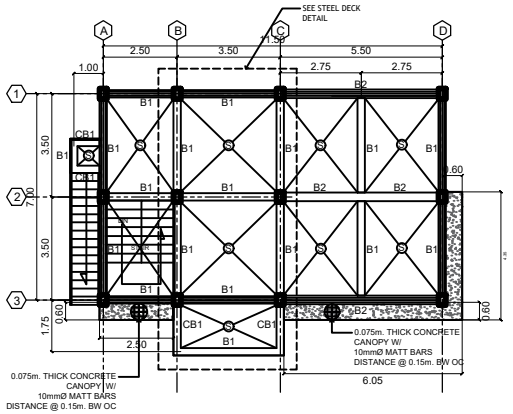


HOOK LENGTH FOR 180° BEND	
d_b (mm)	ℓ (mm)
10	95
12	108
16	144

180° HOOK

BEAM SCHEDULE

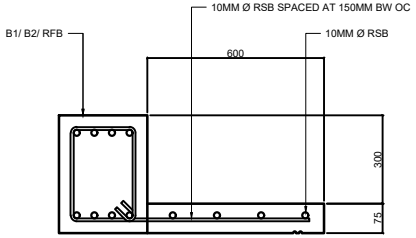
FLOOR LEVEL	BEAM MARK	BEAM DIMENSIONS IN/MM		STEEL REINFORCEMENTS								STIRRUPS 10MMØ (UNLESS NOTED OTHERWISE)
				REBAR (MMØ)	LEFT		MIDSPAN		RIGTH		16MMØ WEB BAR	
		B	H		TOP	BOTTOM	TOP	BOTTOM	TOP	BOTTOM		
2ND FLOOR LEVEL	B1	250	350	16	4	3	3	4	4	3		5@50, 10@100, REST@175
2ND FLOOR LEVEL	B2	300	400	16	5	4	4	5	5	4		5@50, 10@100, REST@200
CANTILEVER BEAM	CB-1	250	350	16	5	3	5	3	5	3		5@50, 10@100, REST@175
ROOF LEVEL	RB	200	300	16	2	2	2	2	2	2		3@50, 10@100, REST@150
STAIR LANDING BEAM	SLB-1	150	200	16	2	2	2	2	2	2		3@50, 10@100, REST@150
FOOTING TIE BEAM	FTB	200	300	16	4	2	2	4	4	2		5@50, 4@100,3@150, REST@200



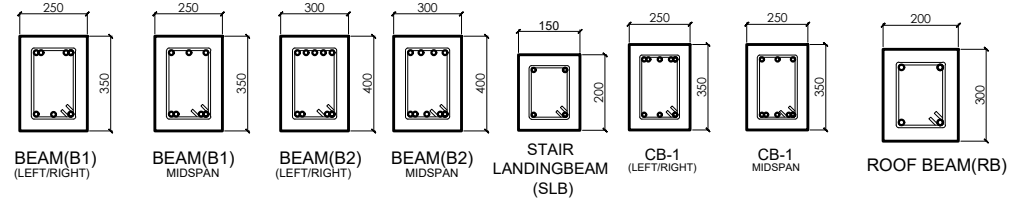
TYPICAL FLOOR BEAM/STEEL DECK/CONCRETE CANOPY

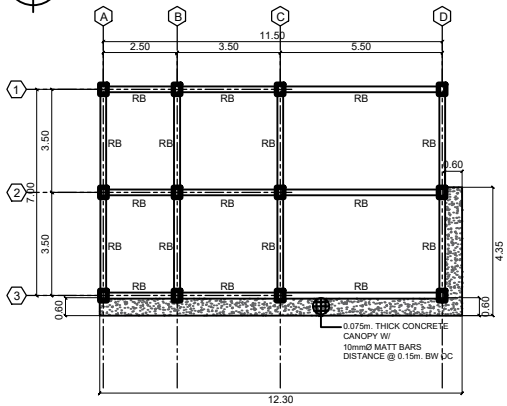
1 / S6 SECOND FLOOR FRAMING PLAN

SCALE: 1:100 MTRS.



3 / S6 CONCRETE CANOPY DETAIL

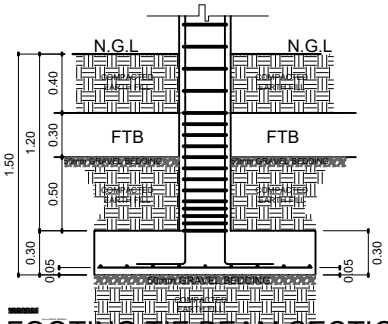




TYPICAL ROOF BEAM/ CONCRETE CANOPY

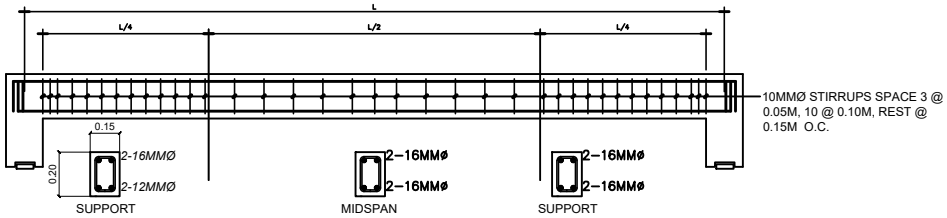
2 / S6 ROOF BEAM PLAN

SCALE: 1:100 MTRS.



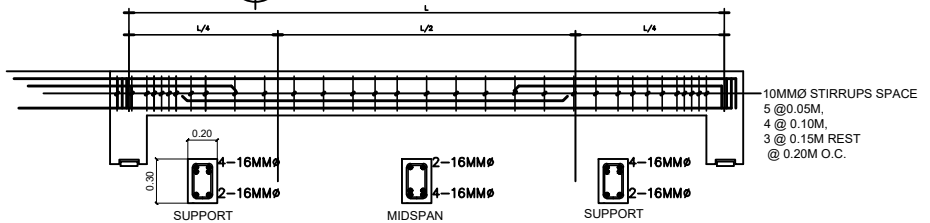
4 / S6 FOOTING TIE BEAM SECTION

SCALE: 1:20 MTRS.



5 / S6 LANDING BEAM(LB) DETAIL

SCALE: NTS



FOOTING TIE BEAM

6 / S6 FOOTING TIE BEAM(FTB) DETAIL

SCALE: 1:20 MTRS.

REPUBLIC OF THE PHILIPPINES
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REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
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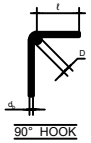
PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
HOOK LENGTH DETAIL
SECOND FLOOR FRAMING PLAN
ROOF BEAM PLAN
FOOTING TIE BEAM DETAIL
BEAM SCHEDULE
CONCRETE CANOPY DETAIL
LANDING BEAM(LB) DETAIL

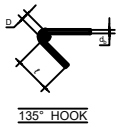
DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
PREPARED :
RUBEN A. ABA-A JR.
ENGINEER II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	S 6 / 9	23 46

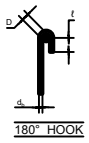
PDS-BUK3RD- 2025



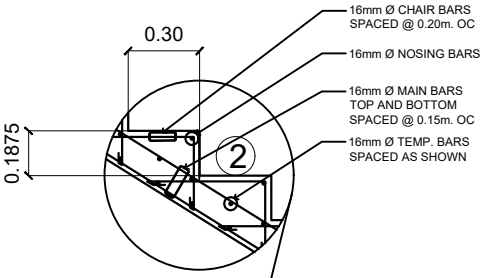
HOOK LENGTH FOR 90° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144



HOOK LENGTH FOR 135° BEND	
d_b (mm)	ℓ (mm)
10	105
12	111
16	144

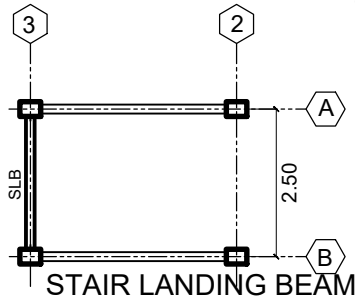


HOOK LENGTH FOR 180° BEND	
d_b (mm)	ℓ (mm)
10	95
12	108
16	144



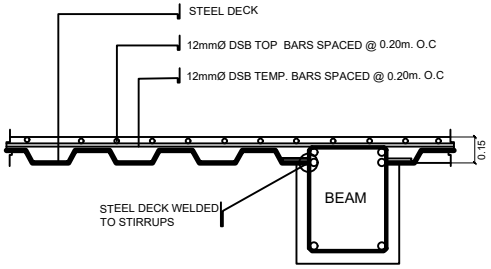
SPOT DETAIL

SCALE: 1:10 MTRS.

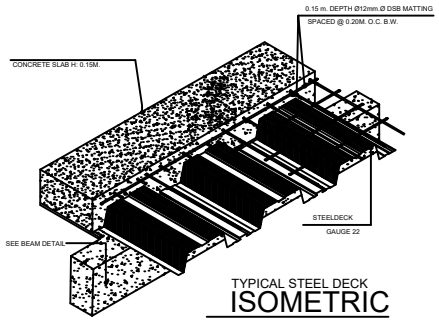


STAIR LANDING BEAM PLAN

SCALE: 1:50 MTRS.



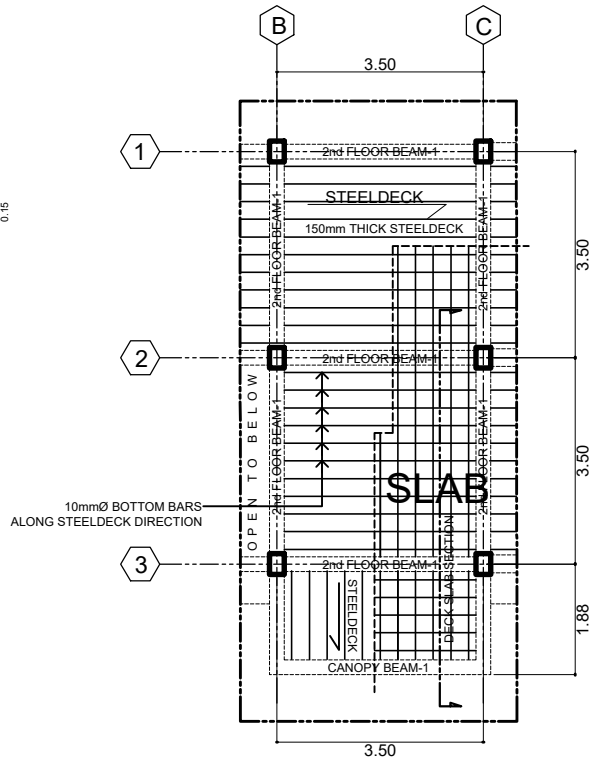
SECTION



TYPICAL STEEL DECK

ISOMETRIC

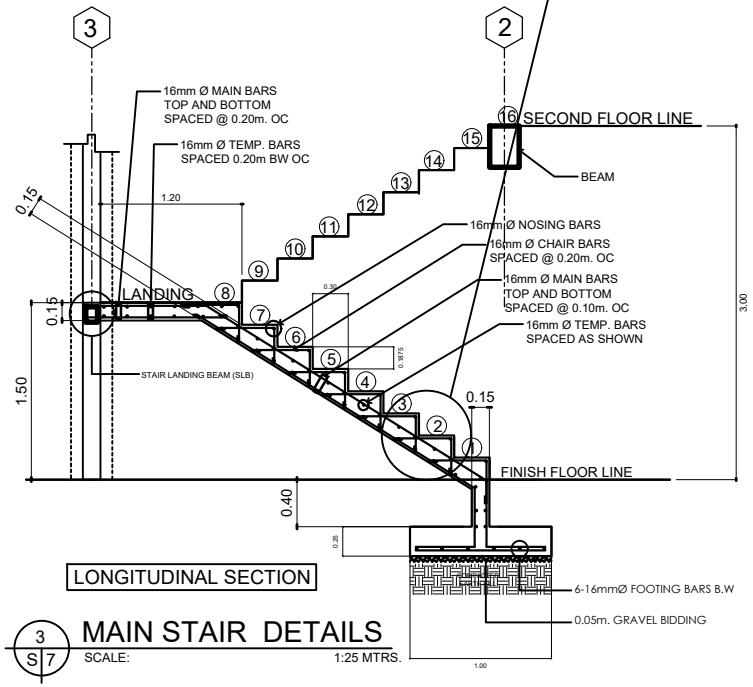
SCALE: NTS



TYPICAL STEEL DECK

STEEL DECK FRAMING PLAN

SCALE: 1:50MTRS.



LONGITUDINAL SECTION

MAIN STAIR DETAILS

SCALE: 1:25 MTRS.

SLAB DETAIL

1 / S 7 NDS

REPUBLIC OF THE PHILIPPINES
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PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
HOOK LENGTH DETAIL
SLAB DETAIL
STEEL DECK FRAMING PLAN
MAIN STAIR DETAILS

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
PREPARED :
RUBEN A. ABA-A JR.
ENGINEER II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
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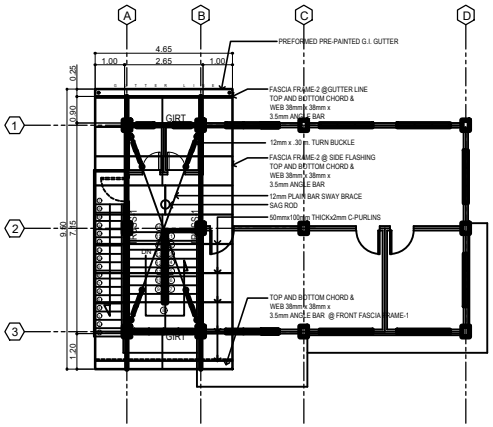
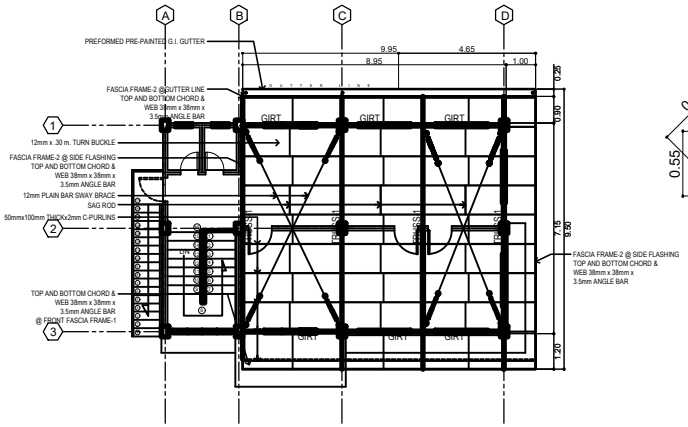
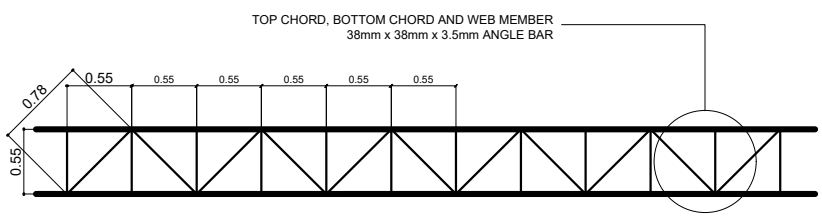


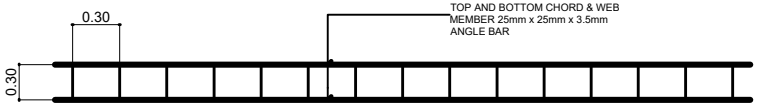
UPPER ROOF
1 S 8 ROOF FRAMING PLAN
SCALE: 1:100 MTRS.



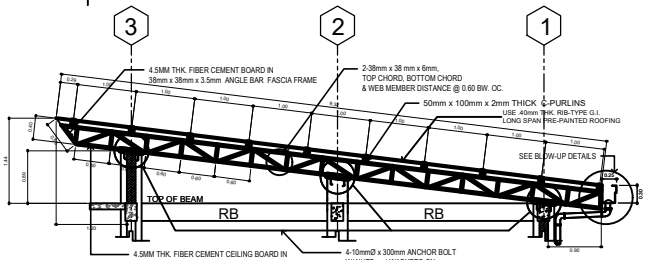
LOWER ROOF
4 S 8 ROOF FRAMING PLAN
SCALE: 1:100 MTRS.



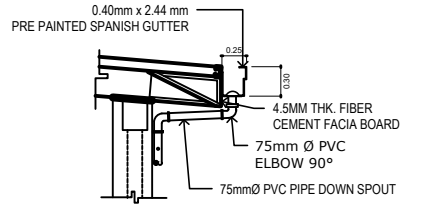
UPPER AND LOWER ROOF
6 S 8 FASCIA FRAME-1 DETAIL
SCALE: 1:25 MTRS.



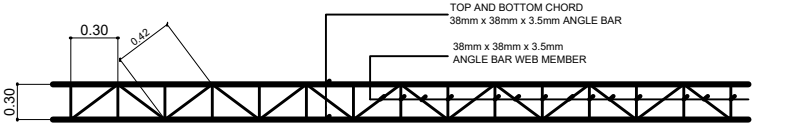
UPPER AND LOWER ROOF
7 S 8 FASCIA FRAME-2 DETAIL
SCALE: 1:25 MTRS.



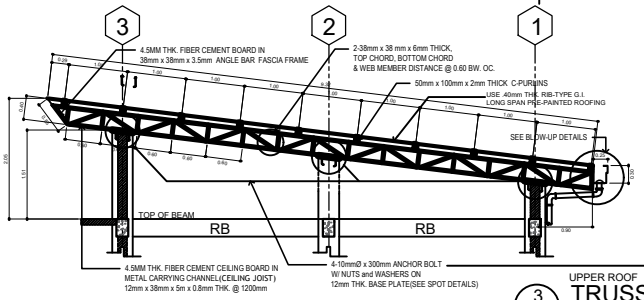
LOWER ROOF
2 S 8 TRUSS-2 DETAIL
SCALE: 1:50 MTRS.



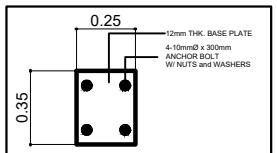
UPPER AND LOWER ROOF
5 S 8 ROOF GUTTER DETAIL
SCALE: 1:30 MTRS.



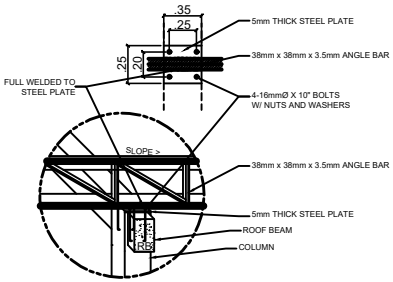
UPPER AND LOWER ROOF
8 S 8 GIRT DETAIL
SCALE: 1:25 MTRS.



UPPER ROOF
3 S 8 TRUSS-1 DETAIL
SCALE: 1:50 MTRS.



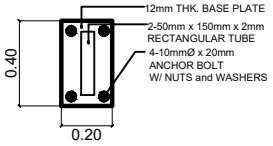
BASE PLATE DETAIL



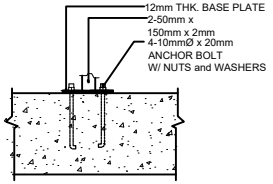
STEEL TRUSS TO COLUMN CONNECTION DETAIL
9 S 8
SCALE: NDS.

REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE X BUKIDNON 3RD DISTRICT ENGINEERING OFFICE DICKLUM, MANOLO FORTICH, BUKIDNON	PROJECT AND LOCATION : **CONSTRUCTION OF MULTI-PURPOSE BUILDING** (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SHEET CONTENTS : TRUSS DETAIL STEEL TRUSS TO COLUMN CONNECTION DETAIL ROOF GUTTER DETAIL GIRT DETAIL CONNECTION OF G.I SHEET ROOFING TO PURLINS ROOF FRAMING PLAN	DRAFTED : RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : RUBEN A. ABA-A JR. ENGINEER II	REVIEWED : MCKENLY B. HONG ENGINEER II DATE:	SUBMITTED : RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	RECOMMENDED : ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	APPROVED : RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	SET NO. S 8 9	SHT. NO. 25 46

PDS-BUK3RD- 2025

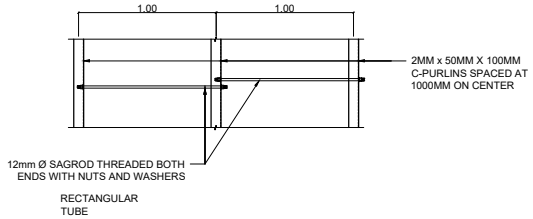


PLAN

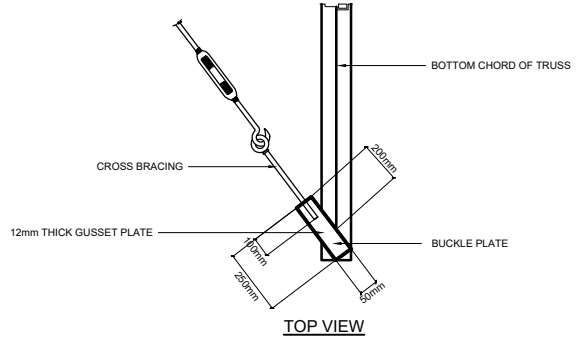


SECTION

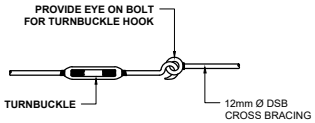
1 S 9 BASE PLATE DETAIL
SCALE: 1:5M.



3 S 9 SAGROD DETAIL (TOP VIEW)
SCALE: 1:5M.

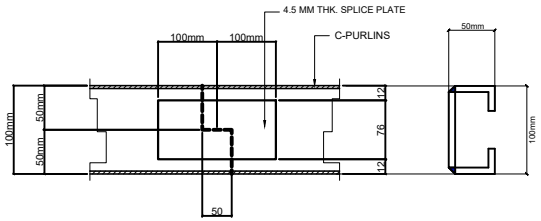


TOP VIEW

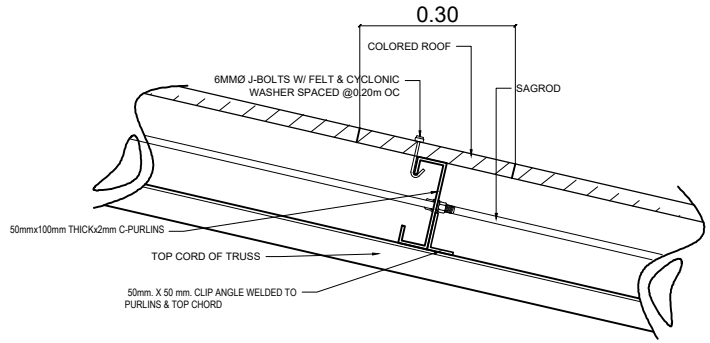


DETAIL

4 S 9 CROSS BRACING W/ TURN BUCKLE DETAIL
SCALE: 1:5M.



2 S 9 PURLIN SECTION W/ SPLICING
SCALE: 1:5M.



5 S 9 ROOFING TO PURLIN CONNECTION DETAIL
SCALE: 1:5M.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
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BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :	SHEET CONTENTS :	DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	ROOFING TO PURLIN CONNECTION DETAIL PURLIN SECTION W/ SPLICING BASE PLATE DETAIL SAGROD DETAIL (TOP VIEW) CROSS BRACING W/ TURN BUCKLE DETAIL	RONALD D. NACASABOG ENGINEERING ASSISTANT PREPARED : RUBEN A. ABA-A JR. ENGINEER II	MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	S 9 9	26 46

PDS-BUK3RD: 2025

PLUMBING

PLUMBING SPECIFICATIONS:

1. ALL PLUMBING WORKS INCLUDED HEREIN SHALL CONFORMED TO THE LATEST EDITION OF 'THE PHILIPPINE PLUMBING CODE". "NATIONAL BUILDING CODE", AND THE RULES AND REGULATIONS OF THE LOCAL AUTHORITY.
2. ALL SLOPE FOR ALL HORIZONTAL WASTE LINE SHALL MOUNTAIN 2% MINIMUM UNLESS OTHERWISE SPECIFIED.
3. ALL SEWER PIPELINES EMBEDDED ON GROUND AND BELOW CONCRETE SLAB HAD BEEN PROVIDED WITH SAND BEDDING MATERIALS.
4. ALL SOIL PIPE & WASTE PIPE LINES SHALL BE PVC PIPE AND SHALL BE PROPERLY JOINTED WITH PVC SOLVENT CEMENT
5. WASTE PIPE LINES SHALL BE A MINIMUM OF 100MMØ PVC PIPE (S -1000) FOR MAIN PIPE , WATER CLOSET AND FLOOR DRAIN; 50MMØ PVC PIPE (S-1000) FOR MAIN VENT AND BRANCH VENT, 75MMØ (S -1000)FOR SINK DRAIN
6. VENT THRU ROOF SHALL BE 0.30M FROM ANY OPENNING
7. ALL FLOOR DRAIN & SINK SHALL BE WITH ITS RESPECTIVE P-TRAPS
8. CHANGES IN DIRECTION:
   HORIZONTAL DRAINAGE LINES TO VERTICAL STACK
   - 45 OR 60 WYE BRANCHES
   - COMBINATION OF WYE AND 1/8 BEND BRANCHES
   - SANITARY TEE

   HORIZONTAL DRAINAGE LINES TO ANOTHER HORIZONTAL DRAINAGE LINES
   - 45 WYE BRANCHES
   - COMBINATION WYE AND 1/8 BEND BRANCHES

   VERTICAL DRAINAGE LINES CONNECTING TO HORIZONTAL DRAINAGE LINE
   - 45 BRANCHES

9. ROOF DRAIN
- RAINWATER PIPING SHALL NOT BE USED AS SOIL, WASTE & VENT PIPES
- ROOF DRAINS SHALL BE EQUIPPED WITH STRAINERS EXTENDING NOT LESS THAN 102MM ABOVE THE SURFACE OF THE ROOF IMMEDIATELY ADJACENT TO THE DRAIN

WASTE - SOIL PIPE LINE
- SOIL PIPE LINE - 100mm THICK Ø PVC PIPE SERIES - 1000
- WASTE PIPE LINE (FLOOR DRAIN) - 100mm THICK Ø PVC PIPE SERIES - 1000
- WASTE PIPE LINE (LAVATORY) - 50mm Ø PVC PIPE SERIES - 1000
- MAIN VENT PIPE - 50mm Ø PVC PIPE SERIES - 1000
- DOWNSPOUT OR ROOF LEADER - 75mm Ø PVC PIPE SERIES - 1000

WATER SUPPY LINE
- SUPPLY LINE - 1" Ø PE PIPE SDR
- DISTRIBUTION PIPE - $\frac{1}{2}$" Ø PE PIPE SDR

LEGEND:

———	SOIL PIPE LINE
———	WASTE PIPE LINE
- - - - - -	WATER SUPPLY PIPE LINE
⋈	GATE VALVE
F	FAUCET
W.C.	WATER CLOSET
FD	FLOOR DRAIN
LAV.	LAVATORY
C.O.	CLEAN OUT
VTR	VENT TRU ROOF
CB	CATCH BASIN
ST	SEPTIC TANK
BS	BIDET SPRAY

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

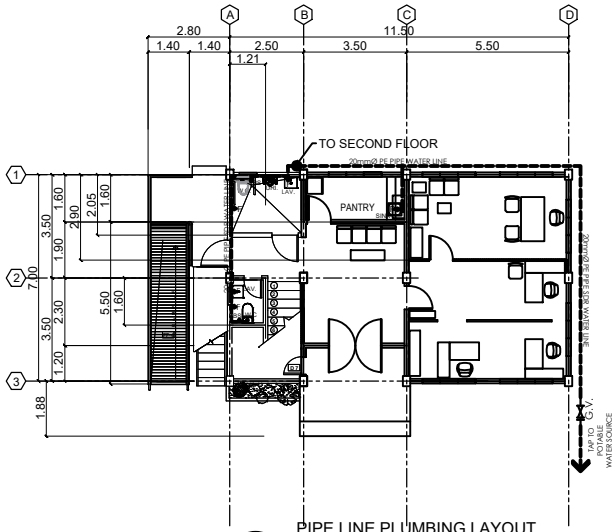
PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
-SITE DEVELOPMENT PLAN
-LEGENDS AND SPECIFICATIONS

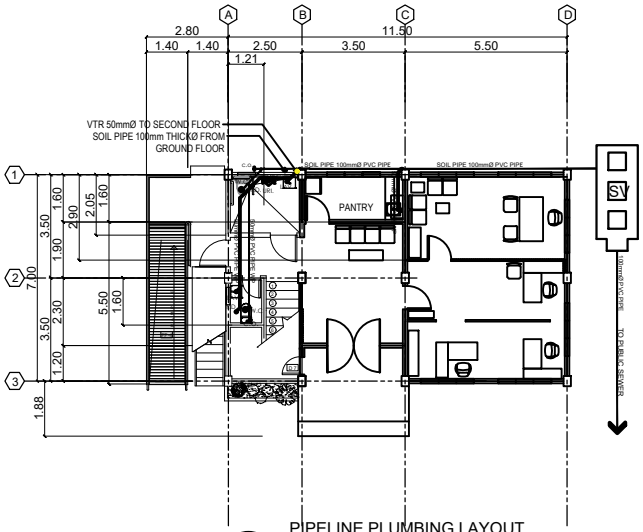
DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
DESIGNED :
RACIEL JOYCE DELA L. CRUZ
Engineer II / Master Plumber

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	P 1 | 6	27 46

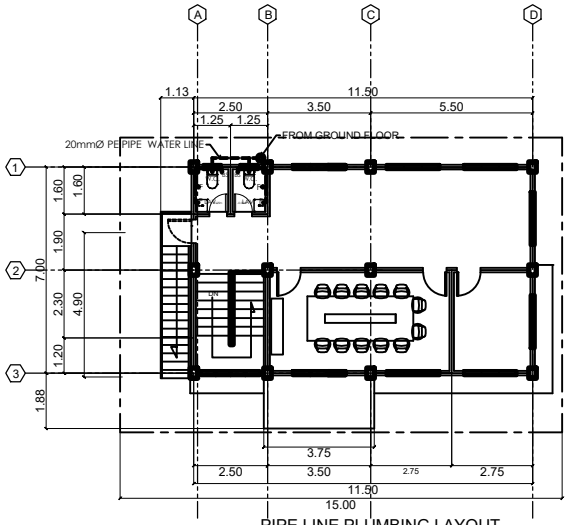
PDS-BUK3RD: 2025



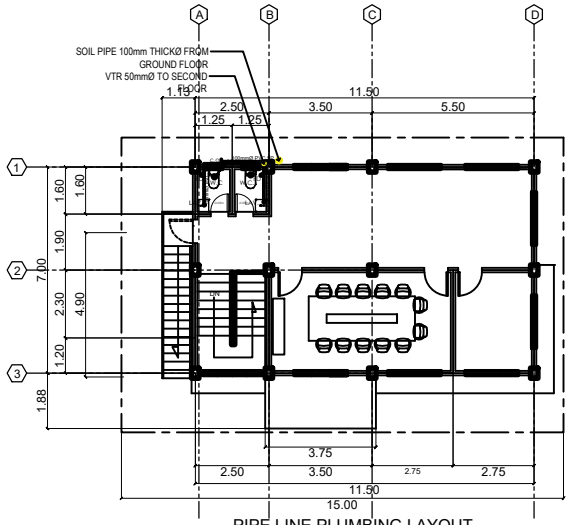
PIPE LINE PLUMBING LAYOUT
GROUND FLOOR WATER LINE
SCALE: 1:100 MTRS.



PIPELINE PLUMBING LAYOUT
GROUND FLOOR SANITARY LINE
SCALE: 1:100 MTRS.



PIPE LINE PLUMBING LAYOUT
SECOND FLOOR WATER LINE
SCALE: 1:100 MTRS.



PIPE LINE PLUMBING LAYOUT
SECOND FLOOR SANITARY LINE
SCALE: 1:100 MTRS.

PLUMBING SPECIFICATIONS:

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- DOWNSPOUT OR ROOF LEADER - 75mm Ø PVC PIPE SERIES - 1000

WATER SUPPY LINE
- SUPPLY LINE - 1" Ø PE PIPE SDR
- DISTRIBUTION PIPE - ¾" Ø PE PIPE SDR

LEGEND:

———	SOIL PIPE LINE
———	WASTE PIPE LINE
- - - - -	WATER SUPPLY PIPE LINE
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F	FAUCET
W.C.	WATER CLOSET
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LAV.	FLOOR DRAIN
C.O.	CLEAN OUT
VTR	VENT TRU ROOF
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ST	SEPTIC TANK

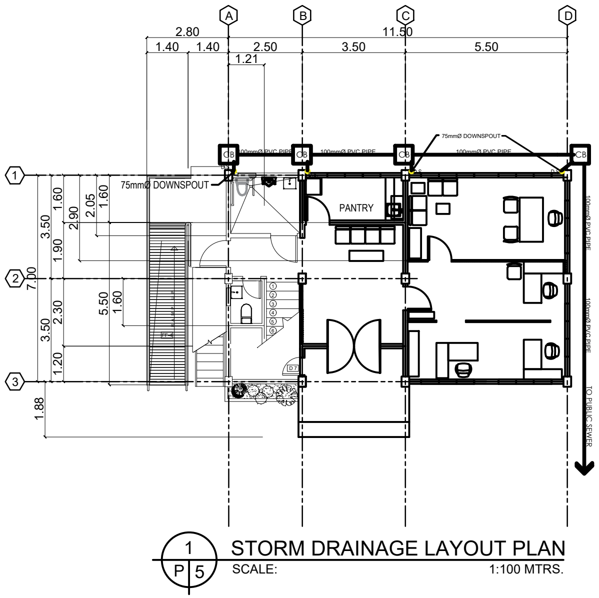
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

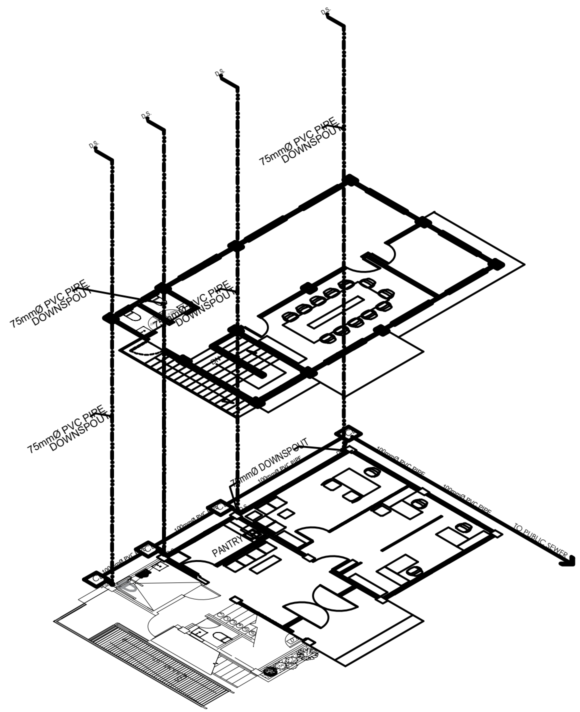
SHEET CONTENTS :
PIPE LINE PLUMBING LAYOUT -SECOND FLOOR SANITARY LINE
PIPELINE PLUMBING LAYOUT -GROUND FLOOR SANITARY LINE
PIPE LINE PLUMBING LAYOUT -SECOND FLOOR WATER LINE
PIPE LINE PLUMBING LAYOUT -GROUND FLOOR WATER LINE
-LEGEND
-PLUMBING SPECIFICATIONS

DRAFTED :	REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
RONALD D. NACASABOG ENGINEERING ASSISTANT	MCKENLY B. HONG ENGINEER II	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER	P 2 | 6	28 46
DESIGNED : RACIEL JOYCE DELA L. CRUZ PHILIPPINE MASTER PLUMBER	DATE:	DATE:	DATE:	DATE:		

PDS-BUK3RD- 2025



1 / P 5 STORM DRAINAGE LAYOUT PLAN
SCALE: 1:100 MTRS.



STORM DRAINAGE LAYOUT PLAN
2 / P 5 ISOMETRIC VIEW
SCALE: 1:100 MTRS.

PLUMBING SPECIFICATIONS:

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   - RAINWATER PIPING SHALL NOT BE USED AS SOIL, WASTE & VENT PIPES
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WATER SUPPLY LINE
- SUPPLY LINE - 1" Ø PE PIPE SDR
- DISTRIBUTION PIPE - ½" Ø PE PIPE SDR

LEGEND:

(line)	SOIL PIPE LINE
(line)	WASTE PIPE LINE
(line)	WATER SUPPLY PIPE LINE
(symbol)	GATE VALVE
F	FAUCET
W.C.	WATER CLOSET
FD	FLOOR DRAIN
LAV.	FLOOR DRAIN
C.O.	CLEAN OUT
VTR	VENT TRU ROOF
CB	CATCH BASIN
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REGIONAL OFFICE X
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DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION:
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

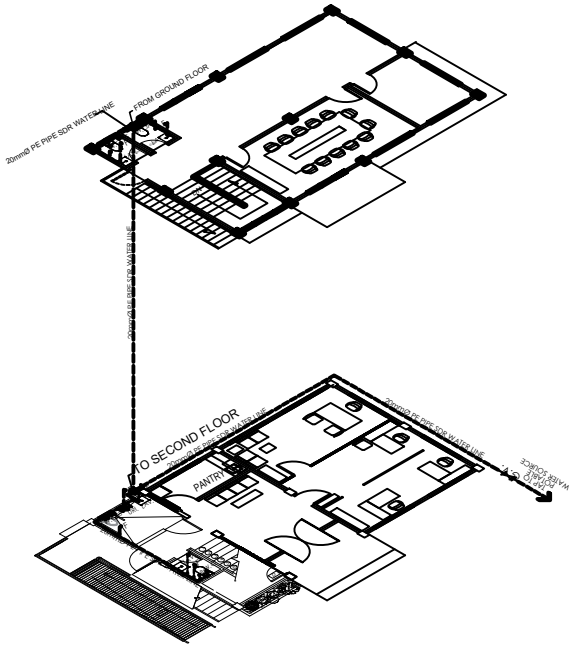
SHEET CONTENTS:
-STORM DRAINAGE LAY-OUT PLAN
STORM DRAINAGE LAY-OUT PLAN
-ISOMETRIC VIEW
-LEGEND
-PLUMBING SPECIFICATIONS

DRAFTED: RONALD D. NACASABOG, ENGINEERING ASSISTANT
DESIGNED: RACIEL JOYCE DELA L. CRUZ, ENGINEER II/ MASTER PLUMBER

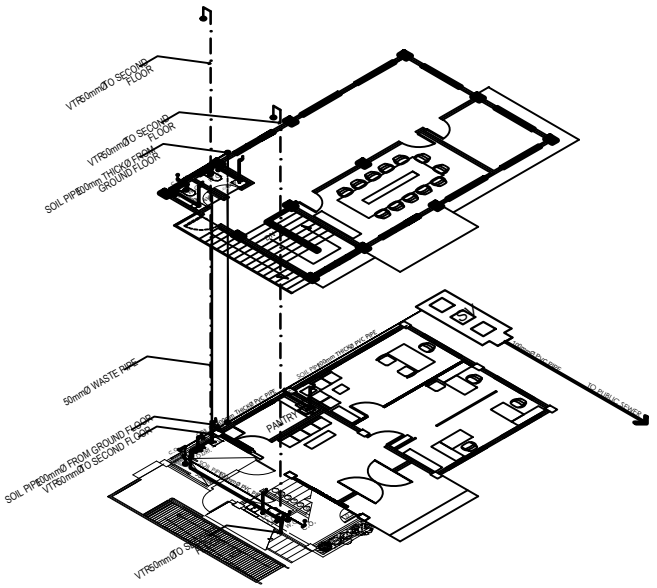
REVIEWED: MCKENLY B. HONG, ENGINEER II — DATE:
SUBMITTED: RYAN CAESAR B. FERNANDEZ, ENGINEER II, OIC- PLANNING AND DESIGN SECTION CHIEF — DATE:
RECOMMENDED: ISMAEL R. ALAJID, OIC-ASSISTANT DISTRICT ENGINEER — DATE:
APPROVED: RONALDO C.PAHANG, AEr., DISTRICT ENGINEER — DATE:

SET NO.: P 3 6
SHT. NO.: 29 / 46

PDS-BUK3RD: 2025



WATER LINE LAYOUT PLUMBING PLAN
1 / P 6
ISOMETRIC VIEW
SCALE: 1:100 MTRS.



SANITARY LINE AND VENT LAYOUT PLUMBING PLAN
2 / P 6
ISOMETRIC VIEW
SCALE: 1:100 MTRS.

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WATER SUPPY LINE
- SUPPLY LINE - 1" Ø PE PIPE SDR
- DISTRIBUTION PIPE - ¾" Ø PE PIPE SDR

LEGEND:

———	SOIL PIPE LINE
———	WASTE PIPE LINE
- - - - -	WATER SUPPLY PIPE LINE
⋈	GATE VALVE
F	FAUCET
W.C.	WATER CLOSET
FD	FLOOR DRAIN
LAV.	FLOOR DRAIN
C.O.	CLEAN OUT
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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

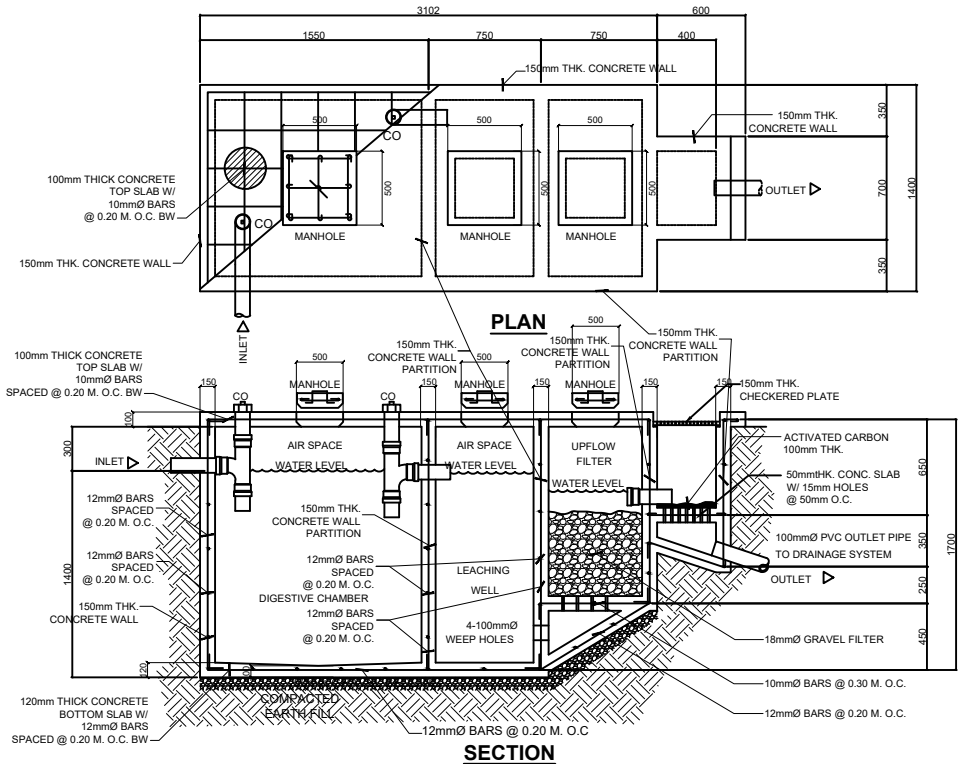
PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
-ISOMETRIC VIEW
-ISOMETRIC VIEW
-LEGEND
-PLUMBING SPECIFICATIONS

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
DESIGNED :
RACIEL JOYCE DELA L. CRUZ
Engineer I / Master Plumber

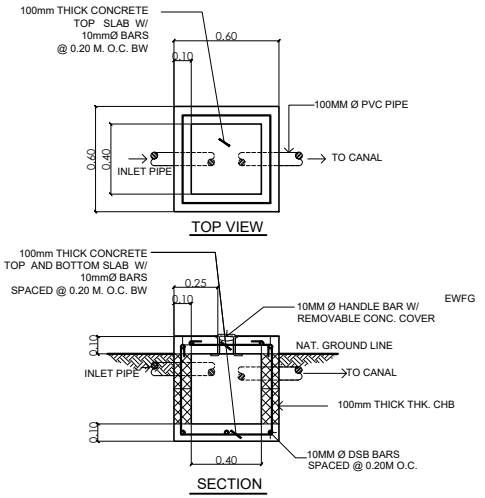
REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	P 4 6	30 46

PDS-BUK3RD: 2025



1 P 2 SEPTIC VAULT DETAIL

SCALE: 1:100 MTRS.



2 P 2 CATCH BASIN DETAILS

SCALE: 1:25 MTS.

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WATER SUPPY LINE
- SUPPLY LINE - 1" Ø PE PIPE SDR
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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
-SEPTIC VAULT DETAIL
-CATCH BASIN DETAILS
-PLUMBING SPECIFICATIONS

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
DESIGNED :
RACIEL JOYCE DELA L. CRUZ
Engineer I / Master Plumber

REVIEWED :
MCKENLY B. HONG
ENGINEER II
DATE:

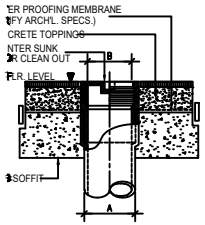
SUBMITTED :
RYAN CAESAR B. FERNANDEZ
ENGINEER II
OIC- PLANNING AND DESIGN SECTION CHIEF
DATE:

RECOMMENDED :
ISMAEL R. ALAJID
OIC-ASSISTANT DISTRICT ENGINEER
DATE:

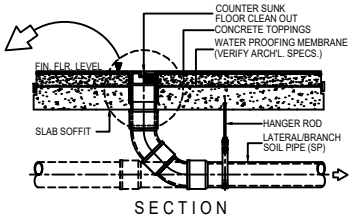
APPROVED :
RONALDO C.PAHANG, AEr.
DISTRICT ENGINEER
DATE:

SET NO. P 5 6
SHT. NO. 31 46

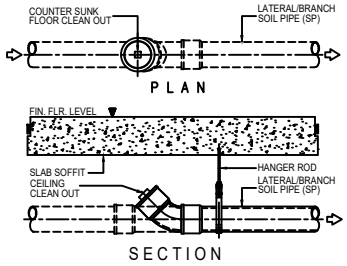
PDS-BUK3RD: 2025



SPOT DETAIL



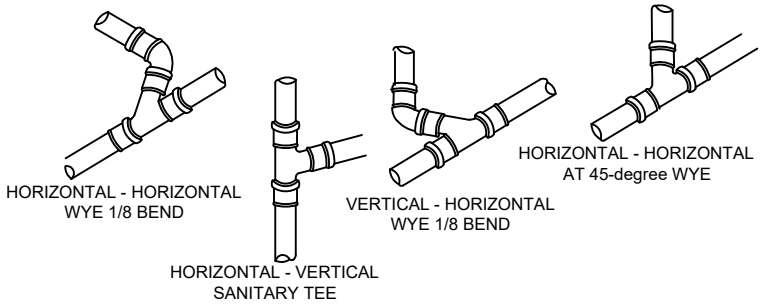
SECTION



SECTION

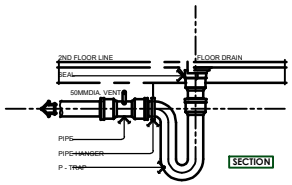
PIPE SI 'A'
50
75
100

1 P 3 DETAIL OF CLEAN OUT
SCALE: 1:8MTS.



TYPICAL

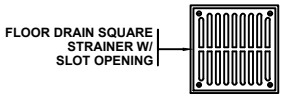
2 P 3 PIPE CONNECTIONS
SCALE: NDTS



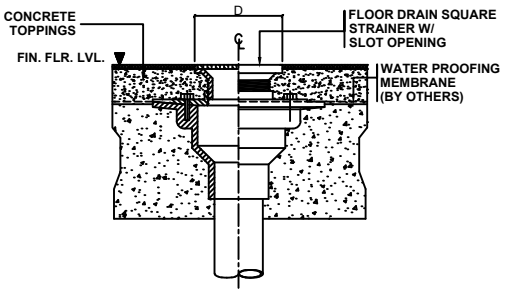
3 P 3 P-TRAP DETAIL(TYPICAL)
SCALE: NDTS

SCHEDULE OF DIMENSIONS

PIPE SIZE IN 'A'	DIMENSIONS IN MM.	
	D	F
50	100X100	225.42
75	125X125	225.42
100	150X150	225.42
150	200X200	282.57



PLAN



SECTION

4 P 3 FLOOR DRAIN DETAIL
SCALE: 1:8MTS.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
-PIPE CONNECTIONS
-P-TRAP DETAIL(TYPICAL)
-FLOOR DRAIN DETAIL
-DETAIL OF CLEAN OUT

DRAFTED :
RONALD D. NACASABOG
ENGINEERING ASSISTANT
DESIGNED :
RACIEL JOYCE DELA L. CRUZ
Engineer I / Master Plumber

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG	RYAN CAESAR B. FERNANDEZ	ISMAEL R. ALAJID	RONALDO C.PAHANG, AEr.	P 6 6	32 46
ENGINEER II	ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF	OIC-ASSISTANT DISTRICT ENGINEER	DISTRICT ENGINEER		
DATE:	DATE:	DATE:	DATE:		

PDS-BUK3RD: 2025

ELECTRICAL

GENERAL NOTES

1. ALL ELECTRICAL WORKS HEREIN SHALL BE DONE IN ACCORDANCE W/ THE PROVISION OF THE LATEST EDITION OF THE PHILIPPINE ELECTRICAL CODE, REQUIREMENTS OF THE LOCAL POWER COMPANIES, RULES AND REGULATIONS OF THE LOCAL ENFORCING AUTHORITIES.

2. ALL ELECTRICAL WORKS HEREIN INCLUDED SHALL BE EXECUTED BY A PERSONNEL W/ ELECTRICAL EXPERIENCE UNDER THE DIRECT SUPERVISION OF A FULL TIME LICENSED ELECTRICAL ENGINEER. WORKS SHALL BE NEATLY PLACED, SECURELY FASTENED AND PROPERLY FINISHED.

3. THE TYPE OF POWER SERVICE SHALL BE 220 VAC, SINGLE PHASE, 60Hz, 2-WIRE PLUS GROUND.

4. THE CONTRACTOR SHALL VERIFY AND ORIENT THE ACTUAL LOCATION OF SERVICE ENTRANCE FOR CONNECTION TO POWER SUPPLY AND COMMUNICATION.

5. ALL MATERIALS SHALL BE BRAND NEW AND SHALL CONFORM W/ THE PROVISIONS UNDER WRITERS LABORATORIES INC., IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED.

6. UNLESS OTHERWISE SPECIFIED, ALL ELECTRICAL WIRING INSTALLATION FOR LIGHTING AND POWER SHALL USE PVC, FOR AUXILIARY SYSTEM USE PVC. THE MINIMUM CONDUIT SIZE SHALL BE 20mmØ.

7. ALL WIRE SHALL BE COPPER AND THERMOPLASTIC INSULATED TYPE "THHN". THE MINIMUM SIZE FOR LIGHTING AND POWER SHALL BE 3.5 sq.mm. AND MANUFACTURED BY PHILFLEX.

8. COLOR CODING OF WIRES AND CABLES SHALL BE AS FOLLOWS; PHASES- BLACK, GROUND- GREEN.

9. PROVIDE ADEQUATE AND EFFECTIVE GROUNDING SYSTEM TO ALL LIGHTING AND POWER CIRCUIT AS PER PHILIPPINE ELECTRICAL CODE REQUIREMENT.

10. CONVINIENCE OUTLET FOR GENERAL USE SHALL BE DUPLEX 20AT, 230 VOLTS, GROUNDING TYPE, LIGHT SWITCHES SHALL BE 15AT, 230 VOLTS.

11. ALL OUTLET BOXES SHALL BE GALVANIZE GAUGE NO. 16, DEEP TYPE W/ FACTORY KNOCKOUTS.

12. FIRE ALARM DEVICES SHALL COMPLY WITH THE NFPA PROVISIONS AND SHALL BEAR THE "UL" STANDARD MARK.

13. ALL ELECTRICAL PANEL BOARD AND CIRCUIT BREAKERS SHALL BE "SQUARE D", BOLT-ON TYPE.

14. ALL ELECTRICAL CIRCUITS SHALL BE WIRED ACCORDING TO THE PANEL BOARD LOAD SCHEDULE.

15. ALL MOUNTING HEIGHTS OF DEVICES SHALL BE AS FOLLOWS:
(SUBJECTS TO ARCHITECT'S APPROVAL PRIOR TO INSTALLATION)

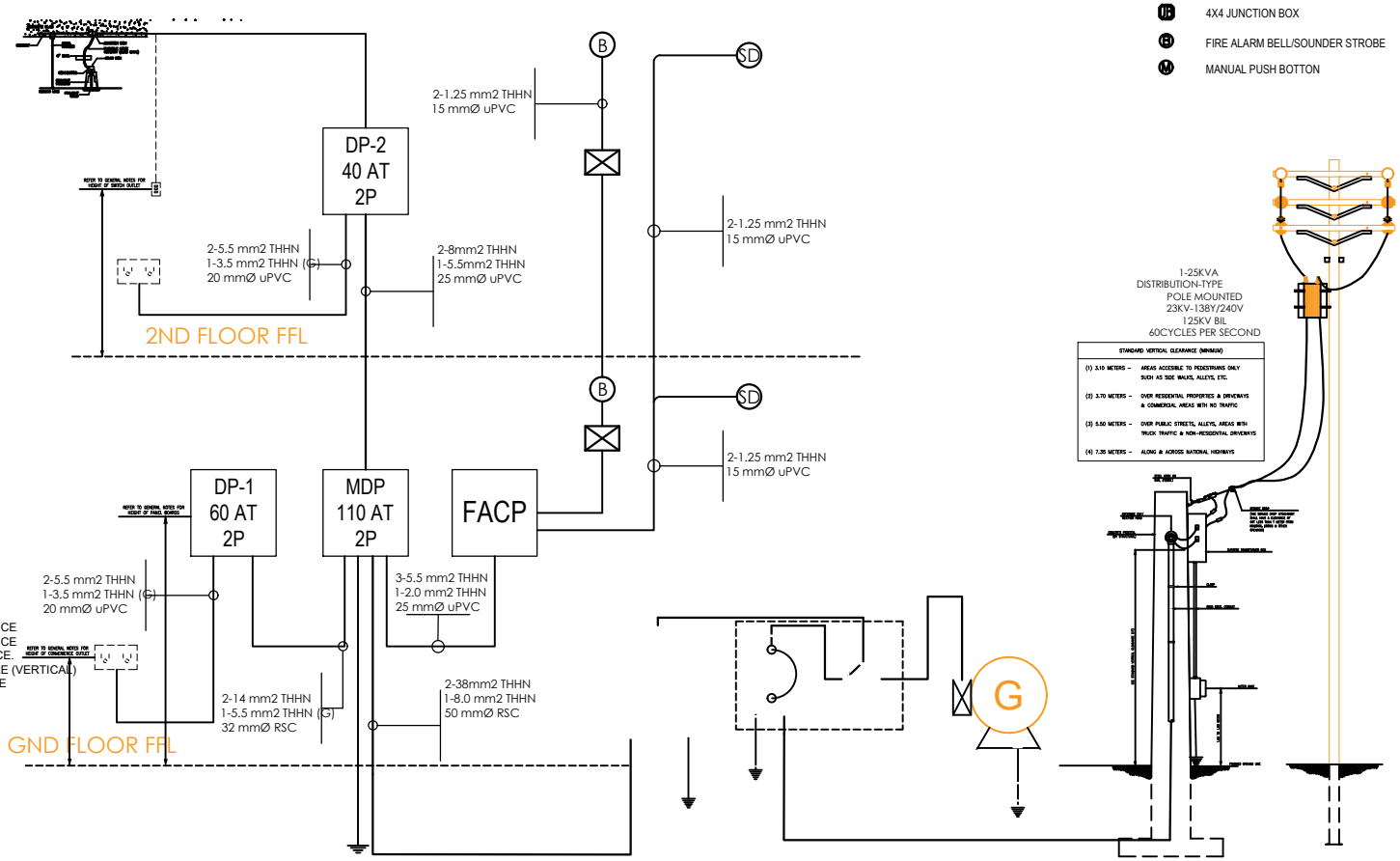
A. PANEL BOARD	- 1.40 M CENTER OF THE FINISHED FLOOR
B. SWITCH	- 1.40 M ABOVE FINISHED FLOOR TO CENTER OF THE DEVICE
C. CONVINIENCE OUTLET	- 0.30 M ABOVE FINISHED FLOOR TO CENTER OF THE DEVICE
D. INTERCOM OUTLETS.	- 1.40 M FROM FINISHED FLOOR TO CENTER OF THE DEVICE.
E. CONTROL CABINETS	- 1500 MM ABOVE FINISHED FLOOR TO TOP OF ENCLOSURE (VERTICAL)
F. MANUAL STATION	- 1400 MM ABOVE FINISHED FLOOR TO CENTER OF DEVICE
G. BELL	- 200 MM BELOW BEAM OR FINISHED CEILING
H. EMERGENCY LIGHT	- 300 MM BELOW BEAM OR FINISHED CEILING
I. EXIT LIGHT	- 150 MM ABOVE DOOR JAMB

16. THE PLANS AS DRAWN ARE BASED UPON THE ARCHITECTURAL PLANS AND DETAILS AND SHOWN CONDITION AS ACCURATELY AS POSSIBLE TO INDICATE THEM IN SCALE. THE PLANS ARE DIAGRAMMATICAL AND DOES NOT NECESSARILY SHOW ALL FITTINGS NECESSARY TO FIT TO THE BUILDING CONDITIONS. THE LOCATION OF OUTLETS, APPARATUS AND APPLIANCES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR THEIR PROPER LOCATION IN ORDER TO MAKE THEM FIT W/ THE ARCHITECTURAL DETAILS AND INSTRUCTIONS FROM THE ENGINEER'S REPRESENTATIVE AT THE SITE.

17. COVER ALL JUNCTION BOXES (STRICTLY NO EXPOSED WIRE).

LEGEND:

- 14 WATTS LED BULB W/ 6" DIA. PORCELAIN HOLDER
- 14W LED DAYLIGHT 100mm THICK DIA. W/ OUTDOOR LIGHTING FIXTURE
- 2 X 16 WATTS LED TUBE DAYLIGHT W/ REFLECTOR HOUSING BOX TYPE.
- S — SINGLE POLE SWITCH
- S_2 — DOUBLE SWITCH, 2 SINGLE POLE SWITCHES ON ONE-GANG PLATE
- S_3 — THREE SINGLE POLE SWITCHES ON ONE-GANG SWITCH PLATE
- S_{3W} — THREE WAY SWITCH
- RACEWAY CONDUIT CONCEALED IN CEILING
- RACEWAY CONDUIT CONCEALED UNDER FLOOR
- PANELBOARD, MARKED AS DP & LPP
- CKT. BREAKER, RATINGS AS INDICATED
- DUPLEX CONVENIENCE OUTLET, 3-PRONG OR GROUNDING TYPE 15AMPS, 240 VOLT
- EL — EMERGENCY LAMP, SIMPLEX CONVENIENCE OUTLET, GROUNDING TYPE IS 15AMPS, 240 V
- CEILING MOUNTED EXHAUST FAN
- EO — EMERGENCY LIGHT OUTLET
- CALL POINT/MANUAL PULL STATION
- SD CON — CONVENTIONAL SMOKE DETECTOR
- HD CON — CONVENTIONAL HEAT DETECTOR
- SPEAKER
- JB — 4X4 JUNCTION BOX
- FB — FIRE ALARM BELL/SOUNDER STROBE
- M — MANUAL PUSH BOTTON



POWER RISER DIAGRAM

SCALE NTS.

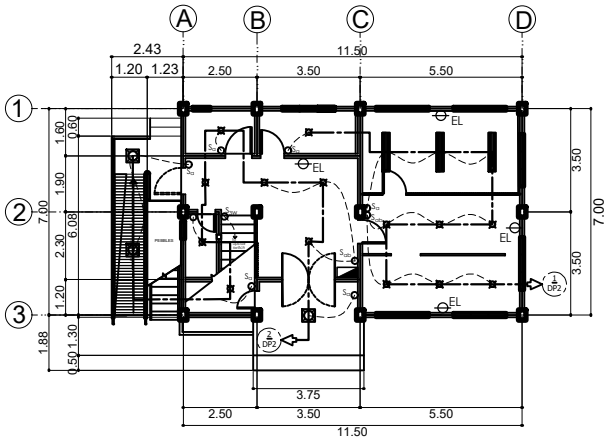
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :	SHEET CONTENTS :
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	GENERAL NOTES LEGEND AND SYMBOLS POWER RISER DIAGRAM

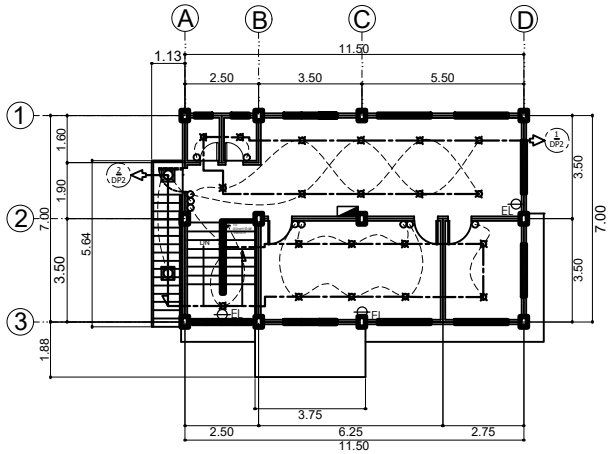
ROMY S. BANTOLIO
ENGINEER II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	E 1 7	24 34

PDS-BUK3RD: 2025



GROUND FLOOR LIGHTING PLAN



SECOND FLOOR LIGHTING PLAN

LEGEND:

- 14 WATTS LED BULB W/ 6" DIA. PORCELAIN HOLDER
- 2 X 16 WATTS LED TUBE DAYLIGHT W/ REFLECTOR HOUSING BOX TYPE.
- 14W LED DAYLIGHT 100mm THICK DIA. W/ OUTDOOR LIGHTING FIXTURE
- S_a SINGLE POLE SWITCH
- S_{ab} DOUBLE SWITCH, 2 SINGLE POLE SWITCHES ON ONE-GANG PLATE
- S_{abc} THREE SINGLE POLE SWITCHES ON ONE-GANG SWITCH PLATE
- S_{3w} THREE WAY SWITCH
- RACEWAY CONDUIT CONCEALED IN CEILING
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- PANELBOARD, MARKED AS DP & LPP
- CKT. BREAKER, RATINGS AS INDICATED
- DUPLEX CONVENIENCE OUTLET, 3-PRONG OR GROUNDING TYPE 15AMPS, 240 VOLT
- EL EMERGENCY LAMP, SIMPLEX CONVENIENCE OUTLET, GROUNDING TYPE IS 15AMPS, 240 V
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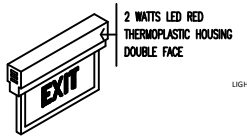
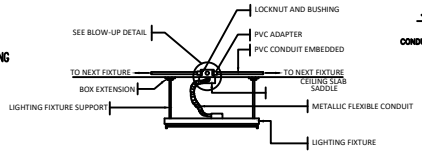
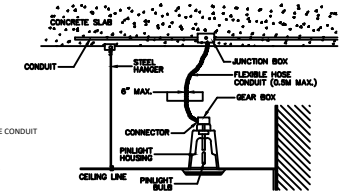
- EO EMERGENCY LIGHT OUTLET



EXIT LIGHT DETAIL

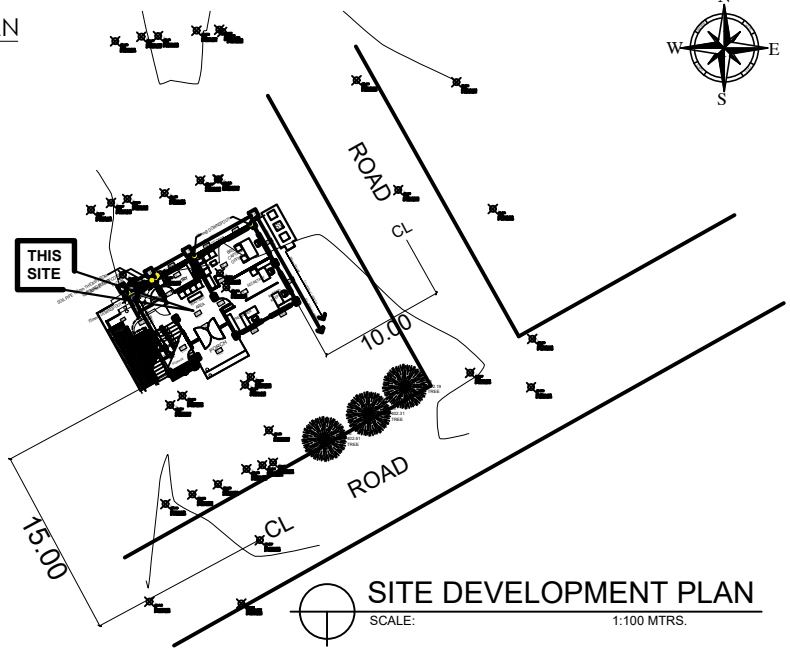


INSTALLATION DRAWING FOR LIGHTING FIXTURE IN DROP CEILING



PINLIGHT SUPPORTS & HANGER DETAIL

ASSORTED DETAILED DRAWINGS



SITE DEVELOPMENT PLAN

SCALE: 1:100 MTRS.

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REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :	SHEET CONTENTS :
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SITE DEVELOPMENT PLAN GROUND FLOOR LIGHTING LAYOUT SECOND FLOOR LIGHTING LAYOUT ASSORTED DETAILED DRAWINGS ELECTRICAL LEGEND & SYMBOLS

ROMY S. BANTOLIO
ENGINEER II

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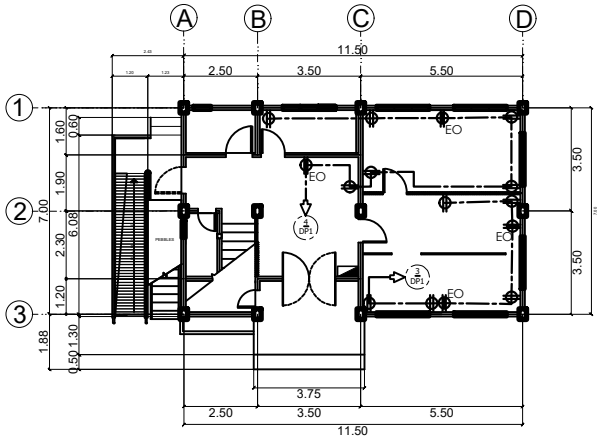
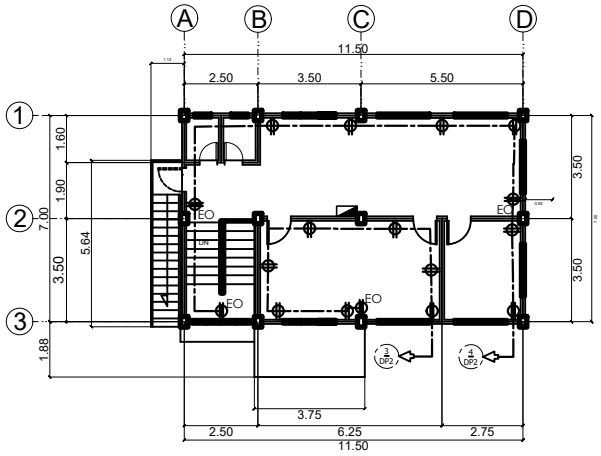
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	E 2 7	25 34

PDS-BUK3RD: 2025



GROUND FLOOR GROUNDING PLAN



SECOND FLOOR POWER GROUNDING PLAN

LEGEND:

- 14 WATTS LED BULB W/ 6" DIA. PORCELAIN HOLDER
- 2 X 16 WATTS LED TUBE DAYLIGHT W/ REFLECTOR HOUSING BOX TYPE.
- 14W LED DAYLIGHT 100mm THICK DIA. W/ OUTDOOR LIGHTING FIXTURE
- S_a SINGLE POLE SWITCH
- S_{ab} DOUBLE SWITCH, 2 SINGLE POLE SWITCHES ON ONE-GANG PLATE
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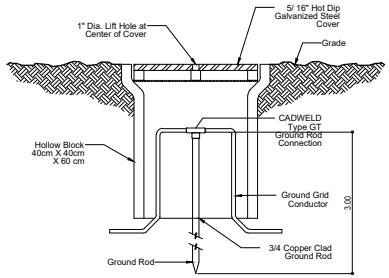
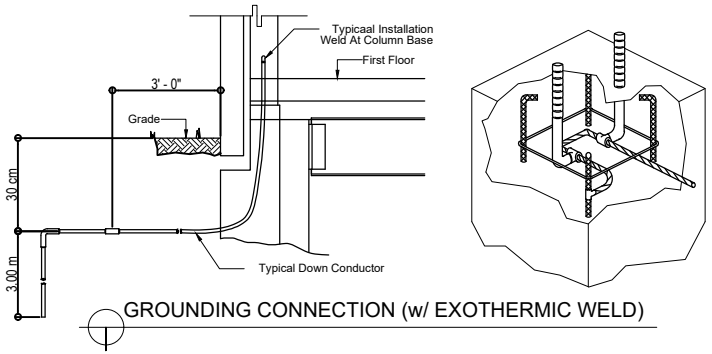
- PANELBOARD, MARKED AS DP & LPP
- CKT. BREAKER, RATINGS AS INDICATED
- DUPLEX CONVENIENCE OUTLET, 3-PRONG OR GROUNDING TYPE 15AMPS, 240 VOLT
- EL EMERGENCY LAMP, SIMPLEX CONVENIENCE OUTLET, GROUNDING TYPE IS 15AMPS, 240 V
- CEILING MOUNTED EXHAUST FAN
- EO EMERGENCY LIGHT OUTLET



CADWELD DETAIL



GROUNDING CONNECTION (w/ EXOTHERMIC WELD)

LEGEND:	
	40cm x 40cm x 60m w/ COVER HAND HOLE w/ 3/4 x 3m COPPER CLAD
	COPPER CLAD GROUND ROD W/ EXOTHERMIC WELD

SPECIFICATION:

1. THE GROUND RING SHOULD BE IN DIRECT CONTACT WITH THE EARTH AT A DEPTH BELOW THE EARTH SURFACE OF AT LEAST 1.0m.
2. INSPECTION PIT WILL BE 40cm x 40cm x 60cm w/ COVER.
3. MINIMUM OF 100mm² ... WILL BE USED FOR THE GROUND WIRE THAT WILL TOUCH THE EARTH SURFACE.
4. MINIMUM 3/4 OF AN INCH FOR THE COPPER CLAD GROUND ROD.
5. USE CADWELD FOR ALL EXOTHERMIC CONNECTION.
6. MAXIMUM OF 5Ω (OHM) FOR THE VALUE OF EACH GROUND ROD LOCATION BEFORE AND AFTER BONDING OF THE GROUND RING.

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PROJECT AND LOCATION :	SHEET CONTENTS :
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	GROUND FLOOR POWER LAYOUT SECOND FLOOR POWER LAYOUT GROUNDING DETAILED DRAWINGS ELECTRICAL LEGEND & SYMBOLS

ROMY S. BANTOLIO
ENGINEER II

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PDS-BUK3RD: 2025

SCHEDULE OF LOADS

GROUND DISTRIBUTION PANEL: DP1 FLUSH MOUNTED, ENCLOSURE: NEMA-1 W/ GROUND TERMINAL								
CKT. NO.	LOAD DESCRIPTION	VA LOAD	V	AT	AF	POLE	kAIC	WIRE AND CONDUIT SIZE
1	LIGHTING OUTLETS	1,000	230	15	50	2	10	2-3.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
2	LIGHTING OUTLETS	1,000	230	15	50	2	10	2-3.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
3	CONVENIENCE OUTLET	1260	230	20	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
4	CONVENIENCE OUTLET	1440	230	20	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
5	ACU SPLIT-TYPE 1HP	1,500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
6	ACU SPLIT-TYPE 1HP	1,500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
7	ACU TWO SPLIT-TYPE 1HP	1,500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
8	SPARE	3,000	230	30	50	2	10	STUB-OUT ONLY

COMPUTATIONS: FOR DP1

PB:

TOTAL LIGHTING LOAD	= 2,000WATTS
TOTAL CONVENIENCE LOAD	= 2,700 WATTS
TOTAL	= 4,700 WATTS

APPLYING DEMAND FACTOR:

1ST 3,000W @ 100% DF	= 3,000 WATTS
REMAINING @ 35% DF (1,700 x 0.35)	= 595 WATTS
TOTAL (L AND CO LOAD)	= 3,595 WATTS

OTHER LOAD:

SPARE @ 80% DF (3000 X 0.8)	= 2400 WATTS
ACU-1.0 @ 80% DF (4,500 X 0.80)	= 3,600 WATTS
TOTAL	= 6,000 WATTS

TOTAL LOAD =9,595 WATTS

$$IT = \frac{9.595WATTS}{230\ V} = 41.71AMP$$

THEREFORE USE:

SIZE OF CIRCUIT BREAKER:
60 AT CIRCUIT BREAKER 220V, 60Hz

SIZE OF FEEDER CABLE:
2-14.0mm^2 THHN COPPER WIRE ON 32mmØ RSC.
1-5.5mm^2 THHN COPPER WIRE GROUND

SECOND DISTRIBUTION PANEL: DP2 FLUSH MOUNTED, ENCLOSURE: NEMA-1 W/ GROUND TERMINAL								
CKT. NO.	LOAD DESCRIPTION	VA LOAD	V	AT	AF	POLE	kAIC	WIRE AND CONDUIT SIZE
1	LIGHTING OUTLETS	1,100	230	15	50	2	10	2-3.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
2	LIGHTING OUTLETS	1,200	230	15	50	2	10	2-3.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
3	CONVENIENCE OUTLET	1,440	230	20	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
4	CONVENIENCE OUTLET	1,620	230	20	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
5	ACU SPLIT-TYPE 1.5HP	1,800	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
6	ACU SPLIT-TYPE 0.5HP	500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
7	SPARE	1,500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.

COMPUTATIONS: FOR DP2

PB:

TOTAL LIGHTING LOAD	= 2,300WATTS
TOTAL CONVENIENCE LOAD	= 3,060 WATTS
TOTAL	= 5,360WATTS

APPLYING DEMAND FACTOR:

1ST 3,000W @ 100% DF	= 3,000 WATTS
REMAINING @ 35% DF (2,360 x 0.35)	= 826 WATTS
TOTAL	= 3,826 WATTS

OTHER LOAD:

SPARE @ 80% DF (1,500 X 0.80)	= 1,200 WATTS
ACU-1.0 @ 80% DF (2,300 X 0.80)	= 1,840 WATTS
	3,040 WATTS

TOTAL LOAD =6,866 WATTS

$$IT = \frac{6.866WATTS}{230\ V} = 29.85AMP$$

THEREFORE USE:

SIZE OF CIRCUIT BREAKER:
40 AT CIRCUIT BREAKER 220V, 60Hz

SIZE OF FEEDER CABLE:
2-8.0mm^2 THHN COPPER WIRE ON 32mmØ RSC.
1-5.5mm^2 THHN COPPER WIRE GROUND

MAIN DISTRIBUTION PANEL: MDP FLUSH MOUNTED, ENCLOSURE: NEMA-1 W/ GROUND TERMINAL								
CKT. NO.	LOAD DESCRIPTION	VA LOAD	V	AT	AF	POLE	kAIC	WIRE AND CONDUIT SIZE
1	DP1	9,595	230	60	50	2	10	2-14mm² THHN + 1-5.5mm² TW (G) IN 32mmØ PVC.
2	DP2	6,866	230	40	50	2	10	2-8mm² THHN + 1-5.5mm² TW (G) IN 25mmØ PVC.
3	FACP	2,500	230	30	50	2	10	2-5.5mm² THHN + 1-2.0mm² TW (G) IN 20mmØ PVC.
	TOTAL CONNECTED LOAD	18,961						

COMPUTATIONS: FOR MDP

$$IT = \frac{18961WATTS}{230\ V} = 82.43AMP$$

THEREFORE USE:

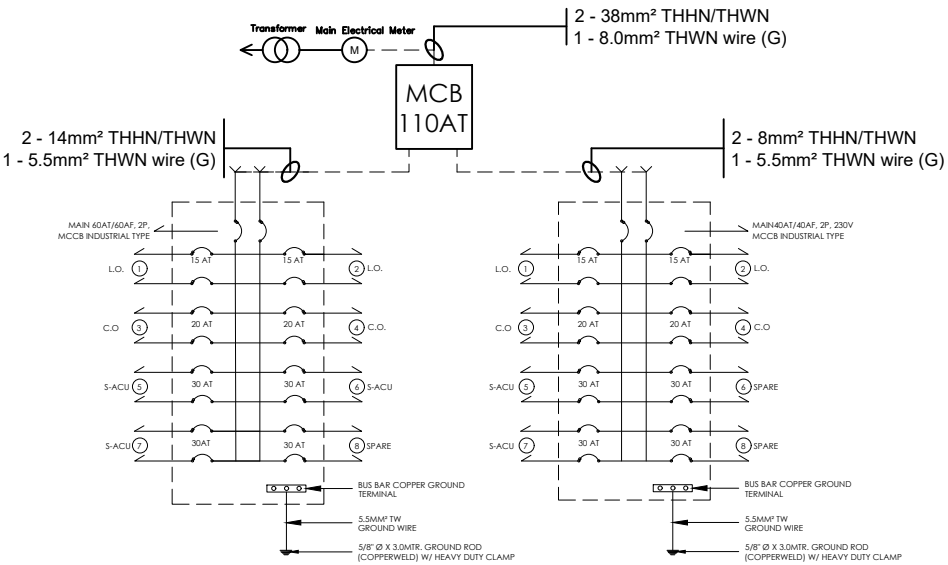
SIZE MIAN CIRCUIT BREAKER:
110 AT CIRCUIT BREAKER 220V, 60Hz

SIZE OF MAIN FEEDER CABLE:
2-38mm^2 THHN COPPER WIRE (AWG #2) ON 50mmØ RSC.
1-5.5mm^2 THHN COPPER WIRE GROUND

SIZE OF AUTOMATIC TRANSFER SWITCH (ATS):
USE: ENCLOSED MANUAL TRANSFER SWITCH, CIRCUIT BREAKER TYPE, 250AT 2 POLE-DOUBLE THROW 230V. 60 Hz IN NEMA-3R

RECOMMENDED SIZE OF TRANSFORMER:
CONNECTED LOAD = 230 X 82.43= 18.958mkVA
CAPACITY @ 1.2 DIV. FACTOR =18.958 kVA (1.2)
=22.75kVA

USE: 1 - 37.5 kVA Oil Immersed Distribution Type-Pole Mounted, 23kV-138Y/240V, 60 cycles per second, Single Phase



SINGLE LINE DIAGRAM

N D S

REPUBLIC OF THE PHILIPPINES **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** REGIONAL OFFICE X BUKIDNON 3RD DISTRICT ENGINEERING OFFICE DICKLUM, MANOLO FORTICH, BUKIDNON	PROJECT AND LOCATION : **CONSTRUCTION OF MULTI-PURPOSE BUILDING** (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SHEET CONTENTS : ELECTRICAL SCHEDULE OF LOADS SINGLE LINE DIAGRAM	ROMY S. BANTOLIO ENGINEER II	REVIEWED : MCKENLY B. HONG ENGINEER II DATE:	SUBMITTED : RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	RECOMMENDED : ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	APPROVED : RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	SET NO. E 4 | 7	SHT. NO. 27 34

PDS-BUK3RD: 2025

ELECTRICAL ANALYSIS

VOLTAGE DROP CALCULATION:

@ V.D #1 (SE TO MDP):

LOAD CURRENT = 87.4A
PHASE = 1-PHASE
VOLTAGE = 230V
WIRE SIZE = 1-38 mm² COPPER WIRE
DISTANCE = 20m (RSC PIPE)
WIRE IMPEDANCE = 0.01282+j0.00202Ω
POWER FACTOR = 0.80
θ = 36.87°

V.D = I x (Rcosθ + Xsinθ)
= 87.4A x [(0.01282 x 0.80) + (0.00202 x 0.60)]
= 1.002V

NEW VOLTAGE = 230V - 1.002V = 228.998V

VD% = [1 - (228.998V/230V)] x 100 = 0.435%

@ V.D #2 (MDP TO DP2):

LOAD CURRENT = 47.2A
PHASE = 1-PHASE
VOLTAGE = 228.998V
WIRE SIZE = 1-8mm² COPPER WIRE
DISTANCE = 7m (µPVC PIPE)
WIRE IMPEDANCE = 0.0156+j0.000833 Ω
POWER FACTOR = 0.80
θ = 36.87°

V.D = I x (Rcosθ + Xsinθ)
= 47.2A x [(0.0156 x 0.80) + (0.000833 x 0.60)]
= 0.612V

NEW VOLTAGE = 228.998V - 0.612V = 228.386V

VD% = [1 - (228.386V/228.998)] x 100 = 0.267%

SUMMARY:
% VOLTAGE DROP FROM TRANSFORMER - LPP - BRANCH CKT. # 2
TOTAL V_{DROP} = 1.002 + 0.612 = 1.614V
TOTAL V_{DROP} PERCENT = (1.614/230) x 100% = 0.7017%

OVER CURRENT PROTECTION

Article 2.10 .2.2 (A)(1)(a) Overcurrent Protection PEC 1 2017 page 43

LIGHTING & POWER PANEL, MAIN CB:
I = (18961/ 230) = 82.43A
= 82.43 x 125% Full Continuous Load
= 103.03 A

THEREFORE, PEC MINIMUM REQUIREMENT
CIRCUIT BREAKER , USE NOT LESS THAN 110AT/110AF, 2POLE,10KAIC INDUSTRIAL TYPE MCCB

LIGHTING & POWER PANEL, DP2 CIRCUIT # 2, LIGHTING:

I = 1200/ 230 = 5.21 A
= 5.21 x 1.5
= 7.815 A

THEREFORE, PEC REQUIREMENT MINIMUM
CIRCUIT BREAKER , USE 15AT,50AF,2POLE,10KAIC MCCB

LIGHTING & POWER PANEL, DP2 CIRCUIT # 4,CONVENIENCE OUTLET:

I = (1620/ 230) = 7.04 A
= 7.04 x 150% Full Continuous Load
= 10.56 A

THEREFORE, PEC REQUIREMENT
CIRCUIT BREAKER, USE 20AT/20AF, 2POLE,10KAIC MCCB

LIGHTING & POWER PANEL, AIR CONDITIONING UNIT: (FOR PROVISION)

I = 1800/ 230 = 7.82 A
= 7.82 x 1.5
= 11.73 A

THEREFORE, PEC REQUIREMENT MINIMUM
CIRCUIT BREAKER, USE 30AT/50AF,2POLE,10KAIC MCCB

CABLE SIZE AMPACITY

Article 2.10 .2.2 (A)(1)(a) Overcurrent Protection PEC 1 2017 page 43

MAIN LINE:

I = (18961/ 230) = 82.43 A
= 82.43 x 125% Full Continuous Load
103.03
THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 38MM² THHN/THWN STRANDED WIRE

FEEDER 1:

I = (9595/ 230) = 41.71 A
= 41.71 x 125% Full Continuous Load
= 52.13 A

THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 14MM² THHN/THWN STRANDED WIRE

FEEDER 2:

I = (6866/ 230) = 29.85 A
= 29.85 x 125% Full Continuous Load
= 37.31 A

THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 8MM² THHN/THWN STRANDED WIRE

DP2 CIRCUIT # 2, LIGHTING:

I = 1200/ 230 = 5.21 A
= 5.21 x 1.25
= 6.51 A

THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 3.5MM² THHN/THWN STRANDED WIRE

DP2 CIRCUIT # 4,CONVENIENCE OUTLET:

I = 1620/ 230 = 7.04 A
= 7.04 x 1.25
= 8.8 A

THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 5.5MM² THHN/THWN STRANDED WIRE

AIR CONDITIONING UNIT: (FOR PROVISION)

I = 1800/ 230 = 7.82 A
= 7.82 x 1.25
= 9.775 A

THEREFORE, AS PER PEC MINIMUM REQUIREMENT
USE NOT LESS THAN 5.5MM² THHN/THWN STRANDED WIRE

FOR GROUND WIRE:

Article 2.50. Table 2.50.6.13 Minimum Size Equipment Grounding Conductors for Grounding Raceway and Equipment

FOR CONDUIT SIZING:

Article 3.0 Table 3.0.1.1© Metric Designator and Trade Size

SHORT CIRCUIT CALCULATION:

@ FAULT #1:

TRANSFORMER SIZE= 37.5 kVA
PHASE = SINGLE-PHASE
VOLTAGE = 230V
FULL LOAD CURRENT = 37,500 V.A / (230V)
= 163.04A

TRANSFORMER MULTIPLIER = [(100) / (0.9 x %Z)]
= [(100) / (0.9 x 2.0)] = 55.55

I s.c = 163.04 x 55.55 =9,056.87A
I s.c MOTOR CONTRIBUTION =(total motor load / 220) x 4
$=(\frac{6800}{230})$A x 4 = 118.26A

I s.c Total = 118.26A + 9,056.87 = 9,175.13A
USE: 10 kAIC CIRCUIT BREAKER (MINIMUM)

@ FAULT #2:

I s.c MOTOR CONTRIBUTION = 118.26A
WIRE SIZE = 38mm² COPPER WIRE (10.00m DISTANCE)
WIRE CONSTANT = 7,293 (STEEL CONDUIT)

LET THROUGH SHORT CIRCUIT CURRENT = MULTIPLIER x F.L.A
= 9,056.87A

$f = \frac{2 \times \text{LENGTH} \times \text{LSCC}}{C \times n \times E} = \frac{2 \times (10.00\text{m} \times 3.281) \times 9{,}056.87\text{A}}{7{,}293 \times 2 \times 230\text{V}}$

$f = 0.1771 \qquad M = \frac{1}{1+f} = 0.8495$

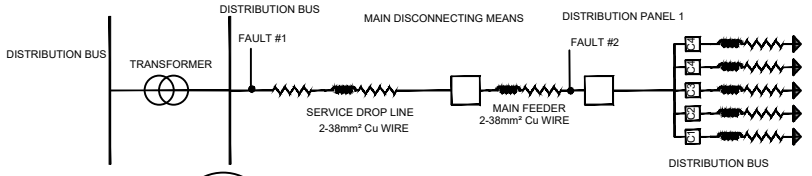
FAULT CURRENT = [M x LSCC] + (I s.c MOTOR CONTRIBUTION)
= [0.8495x 9,056.87A] + (118.26A)
= 7,812.07 AMPERES
USE: 10 kAIC CIRCUIT BREAKER (MINIMUM)

SUMMARY OF RESULTS:

Iscc @ FAULT #1 = 9,175.13 AMPERES
Iscc @ FAULT #2 = 7,812.07 AMPERES

Iscc(1) PROTECTION = 10 kAIC MCCB (MINIMUM)
Iscc(2) PROTECTION = 10 kAIC CB (MINIMUM)

SINCE FAULT CURRENT IS HIGHEST AT UPSTREAM, SIZE ALL DOWNSTREAM PROTECTION kAIC RATING TO BE SMALLER OR SAME TO MAIN PROTECTION



E FAULT SINGLE LINE DIAGRAM

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
ELECTRICAL ANALYSIS

ROMY S. BANTOLIO
ENGINEER II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	E 5 | 7	28 34

PDS-BUK3RD: 2025

ILLUMINATION LEVEL

LED LUMENS CHART	
LED LAMP WATTAGE	EQUIVALENT LUMENS
15	1400
32	2600

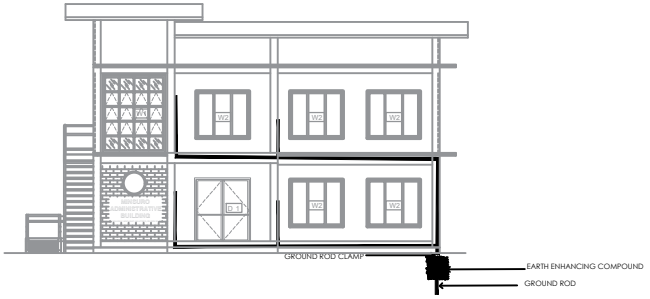
GROUND FLOOR						
	AREA DESCRIPTION	ROOM AREA m^2	NUMBER OF LAMPS 15W	NUMBER OF LAMPS 32W	LIGHTING LUMENS EQUIVALENT	ILLUMINATION LEVEL (LUX)
1	PORCH	8.2	1	0	1400	170.73
2	WAITING AREA	18.61	4	0	5600	300.91
3	TREASURER'S OFFICE	10.6	3	0	4200	396.22
4	SECRETARY OFFICE	10.6	3	0	4200	396.22
5	BRGY. CAPTAIN OFFICE	14.84	0	3	7800	525.60
6	PANTRY	4.62	1	0	1400	303.03
7	STORAGE	2.64	1	0	1400	530.30
8	PWD COMFORT ROOM	3.22	1	0	1400	434.78
9	RAMP	9.98	2	0	2800	280.56
9	TOILET	2.3	1	0	1400	608.69

SECOND FLOOR						
	AREA DESCRIPTION	ROOM AREA m^2	NUMBER OF LAMPS 15W	NUMBER OF LAMPS 32W	LIGHTING LUMENS EQUIVALENT	ILLUMINATION LEVEL (LUX)
1	OFFICE 1	34.45	9	0	12600	365.74
2	CONFERENCE ROOM	22.50	6	0	8400	373.33
3	OFFICE 2	6.76	2	0	2800	414.20
4	COMFORT ROOM	4	2	0	2800	700
5	STAIRWAY	8.05	2	0	2800	347.82
7	FIRE EXIT	6.37	2	0	2800	439.56

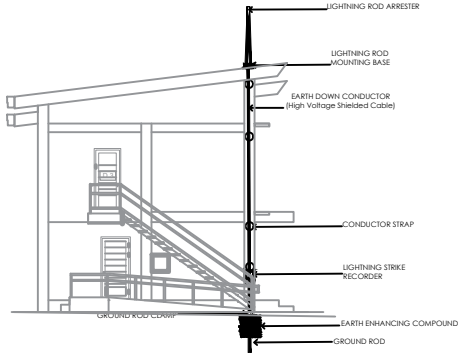
COMPUTATION FORMULA:

LIGHTING LUMENS = NUMBER OF LAMPS x EQUIVALENT LUMENS PER LAMP

$$\text{ILLUMINATION LEVEL} = \frac{\text{LIGHTING LUMENS}}{\text{ROOM AREA}}$$



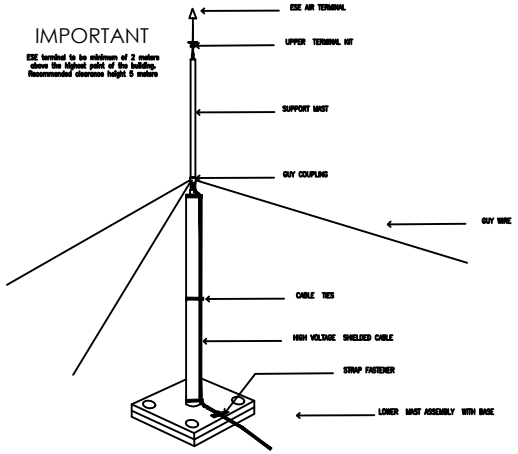
GROUNDING PROTECTION SYSTEM



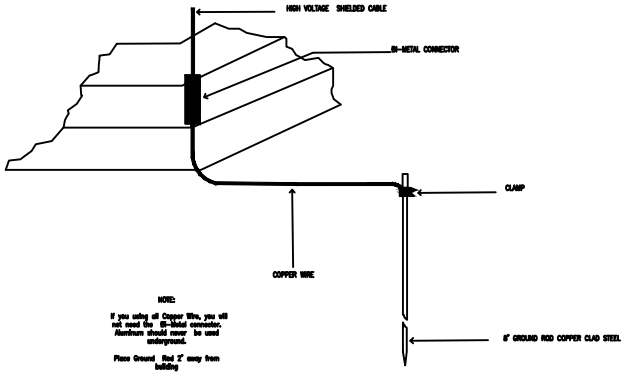
LIGHTNING PROTECTION SYSTEM

IMPORTANT

ESE terminal to be minimum of 2 meters above the highest point of the building. Recommended clearance height 5 meters



LIGHTNING ARRESTER DETAILS



LIGHTNING PROTECTION GROUNDING DETAILS

REPUBLIC OF THE PHILIPPINES
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REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
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PROJECT AND LOCATION :
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(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
LIGHTNING PROTECTION SYSTEM PLAN AND LAY-OUT
LIGHTNING ARRESTER DETAILS

ROMY S. BANTOLIO
ENGINEER II

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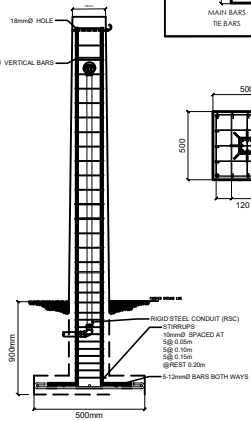
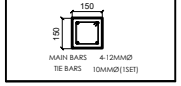
PDS-BUK3RD: 2025

STANDARD VERTICAL CLEARANCE (MINIMUM)	
(1) 3.10 METERS –	AREAS ACCESSIBLE TO PEDESTRIANS ONLY SUCH AS SIDE WALKS, ALLEYS, ETC.
(2) 3.70 METERS –	OVER RESIDENTIAL PROPERTIES & DRIVEWAYS & COMMERCIAL AREAS WITH NO TRAFFIC
(3) 5.50 METERS –	OVER PUBLIC STREETS, ALLEYS, AREAS WITH TRUCK TRAFFIC & NON-RESIDENTIAL DRIVEWAYS
(4) 7.35 METERS –	ALONG & ACROSS NATIONAL HIGHWAYS

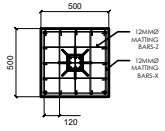


SCHEDULE OF COLUMN



SCHEDULE OF FOOTING

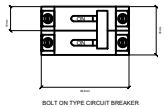
FOOTING MARK	FOOTING DIMENSIONS (MM)				REINFORCEMENT		REMARKS
	LENGTH (L)	WIDTH (W)	DEPTH (D)	THICKNESS (T)	BAR-X	BAR-Z	
F1	500	500	900	250	3-12MMØ	3-12MMØ	ISOLATED FOOTING

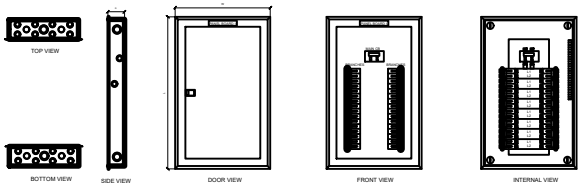


FOUNDATION DETAIL
SCALE: N.T.S

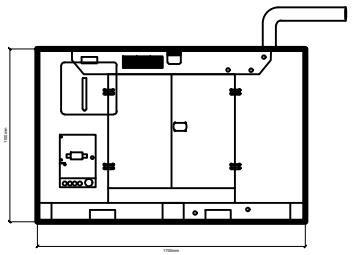
SERVICE POLE STRUCTURAL DETAIL
N D S

SCHEDULE OF PANEL BOARD BOLT ON TYPE				
BREAKER/ BRANCHES	DIMENSIONS (cm)			
	HOLE	L	W	D
2	4	32	36	10
4	6	37	36	10
6	8	42	36	10
8	10	47	36	10
10	12	52	36	10
12	14	57	39	13
14	16	62	39	13
16	18	67	39	13
18	20	72	39	13
20	22	77	39	13

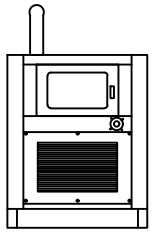




PANEL BOARD DETAILED DRAWINGS
N D S



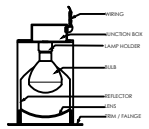
GENERATOR SET SIDE VIEW



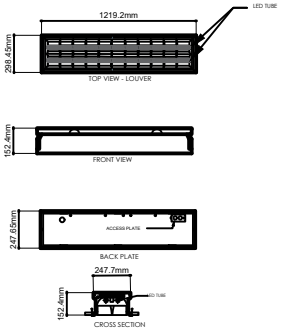
GENERATOR SET FRONT VIEW

GENERATOR SET DETAILED DRAWINGS
N D S

LIGHTING SCHEDULE				
SYMBOLS	TYPE OF LAMP	WATTAGE	TYPE OF LIGHTING	INSTALLATION/MOUNTING
	LED BULB 6" DIAMETER W/ DOWNLIGHT REFLECTOR	18 WATTS	PIN LIGHT	SURFACED CEILING MOUNTED
	LED BULB 6" DIAMETER W/ DOWNLIGHT REFLECTOR	14 WATTS	PIN LIGHT	SURFACED CEILING MOUNTED
	2 x 16 WATTS LED TUBE DAYLIGHT WITH HOUSING REFLECTOR	36 WATTS	LOUVER TYPE	SURFACED CEILING MOUNTED
NOTE: ALL LED LIGHTING FIXTURES SHALL BE EQUIPPED WITH HIGH POWER FACTOR PRE-HEAT, WITH ALL NECESSARY COMPLETE ACCESSORIES, WIRED AND READY FOR USE.				



BULB WITH REFLECTOR OUTDOOR LIGHTING



LOUVER DETAILS

LAMP DETAILED DRAWINGS
N D S

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :	SHEET CONTENTS :
CONSTRUCTION OF MULTI-PURPOSE BUILDING (BARANGAY HALL) BARANGAY 5 TALAKAG BUKIDNON	SERVICE POLE STRUCTURAL DETAIL FOUNDATION DETAIL PANEL BOARD DETAILED DRAWINGS GENERATOR SET DETAILED DRAWING LAMP DETAILED DRAWING

ROMY S. BANTOLIO
ENGINEER II

REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG **ENGINEER II** DATE:	RYAN CAESAR B. FERNANDEZ **OIC- PLANNING AND DESIGN SECTION CHIEF** DATE:	ROMULO F. ANDRES, ASEAN Engr. **OIC-ASSISTANT DISTRICT ENGINEER** DATE:	RONALDO C.PAHANG, AEr. **DISTRICT ENGINEER** DATE:	E 7 | 7	30 34

PDS-BUK3RD- 2025

ELECTRONICS

GENERAL NOTES

1. ALL ELECTRONICS WORKS HEREIN SHALL BE DONE IN ACCORDANCE WITH THE NATIONAL BUILDING CODE AND ORDINANCES OF THE LOCAL CODE ENFORCING AUTHORITIES WITH THE REQUIREMENTS OF THE LOCAL EXCHANGE CARRIER (LEC) OR SERVICE PROVIDER AND SHALL COMPLY WITH THE IMPLEMENTING RULES AND REGULATION OF REPUBLIC ACT 9292 (I.R.R. 9292) REFERRED TO AS THE ELECTRONICS ENGINEERING LAW OF 2004.
2. ALL VOICE, DATA, VIDEO AND OTHER ELECTRONICS RELATED CABLES SHALL BE WITHIN OR CONCEALED IN A CONDUIT, WIRE WAY, PATHWAY, RISER WAY, AND OTHER CABLE DELIVERY SYSTEM.
3. ALL CONDUIT SLEEVES, FLOOR PIPE CHASE AND WALL SLOT PENETRATION SHALL BE PROPERLY SEALED-OFF WITH THE FIRESTOP MATERIAL TO MAINTAIN FIRE RESISTIVE RATING OF THE OPENING.
4. THE CONTRACTOR/INSTALLER SHOULD REFER TO ARCHITECTURAL OR INTERIOR DESIGN DRAWINGS FOR THE EXACT LOCATION AND MOUNTING HEIGHT OF ALL VISIBLE WIRING DEVICES, EQUIPMENT AND FIXTURES.
5. THE INSTALLATION OF EACH SYSTEM COMPONENT, ASSOCIATED EQUIPMENT AND WIRING SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION AND INSTRUCTION.
6. ALL WIRES/CABLES SHALL BE SIAMESE TYPE OR OTHERWISE STATED.
7. ALL LOCATIONS OF EQUIPMENT AND CABLE ROUTES SHOWN ON THE DRAWING ARE INDICATIVE ONLY.
8. THE CONTRACTOR/CERTIFIED INSTALLER SHALL OBSERVE PROPER INSTALLATION PRACTICES AND ADHERE TO CABLE MANUFACTURER'S REQUIREMENT FOR BENDING RADIUS, PULLING TENSION,CABLE SACK, CABLE FILL. ETC.
9. THE ELECTRONICS CONTRACTOR SHALL PROVIDE SHOP DRAWING IN ANY CHANGES IN THE DESIGN SUCH AS MOUNTING HEIGHT OR LOCATION OF THE DEVICE/EQUIPMENT FOR THE APPROVAL OF ARCHITECT OR ENGINEER.
10. ANY DISCREPANCIES BETWEEN PLANS AND SPECIFICATIONS, CONFLICT WITH OTHER TRADE OR SITE CONDITION SHALL BE REFERRED TO ENGINEER AND/OR ARCHITECT.

ABBREVIATIONS:

SYMBOLS	DESCRIPTION
CON	CONVENTIONAL
SD	SMOKE DETECTOR
EMT	ELECTRICAL METALLIC TUBING
TF	THERMOPLASTIC FIXTURE
FDAS	FIRE DETECTION AND ALARM SYSTEM
FACP	FIRE ALARM CONTROL PANEL
NAC	NOTIFICATION APPLIANCE CIRCUIT
EoL	END OF LINE
S/S	SUPERVISORY SWITCH

LEGEND:

- -CALL POINT/MANUAL PULL STATION
- -CONVENTIONAL SMOKE DETECTOR
- -CONVENTIONAL HEAT DETECTOR
- -SPEAKER
- -4X4 JUNCTION BOX
- -FIRE ALARM BELL/SOUNDER STROBE
- -MANUAL PUSH BOTTON

REPUBLIC OF THE PHILIPPINES
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BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
GENERAL NOTES
LOCATION MAP
SITE DEVELOPMENT PLAN
ELECTRONICS LEGEND & SYMBOLS
ABBREVIATIONS

DRAFTED :
ROMY S. BANTOLIO
ENGINEER II

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ENGINEER II
DATE:

SUBMITTED :
RYAN CAESAR B. FERNANDEZ
ENGINEER II
OIC- PLANNING AND DESIGN SECTION CHIEF
DATE:

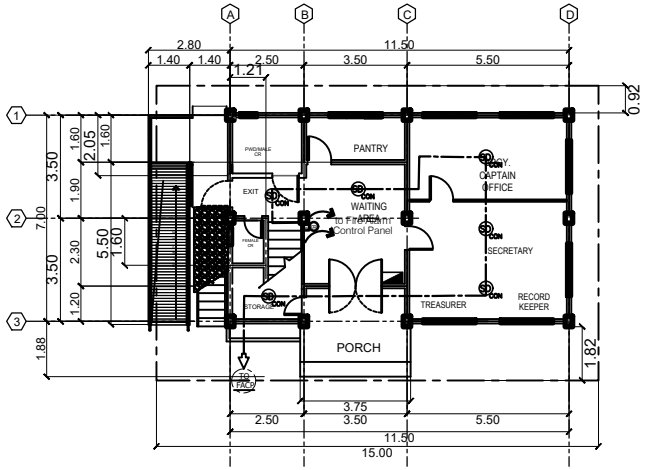
RECOMMENDED :
ISMAEL R. ALAJID
OIC-ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED :
RONALDO C.PAHANG, AEr.
DISTRICT ENGINEER
DATE:

SET NO. Ece 1 2

SHT. NO. 41 46

PDS-BUK3RD- 2025



GROUND FLOOR FIRE ALARM SYSTEM PLAN

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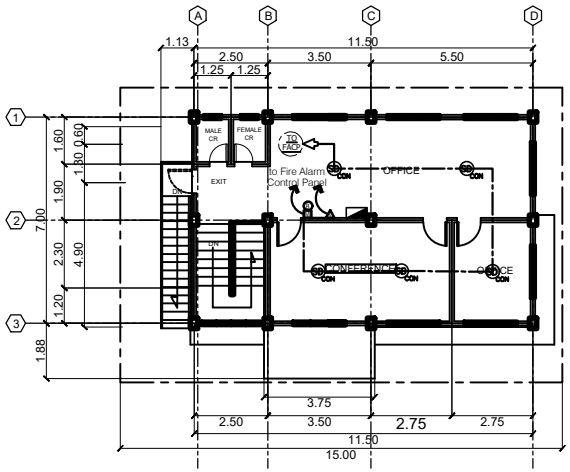
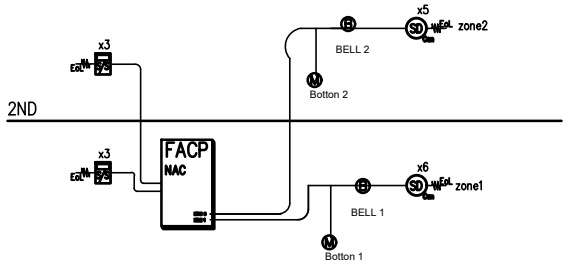


SECOND FLOOR FIRE ALARM SYSTEM PLAN

N D S

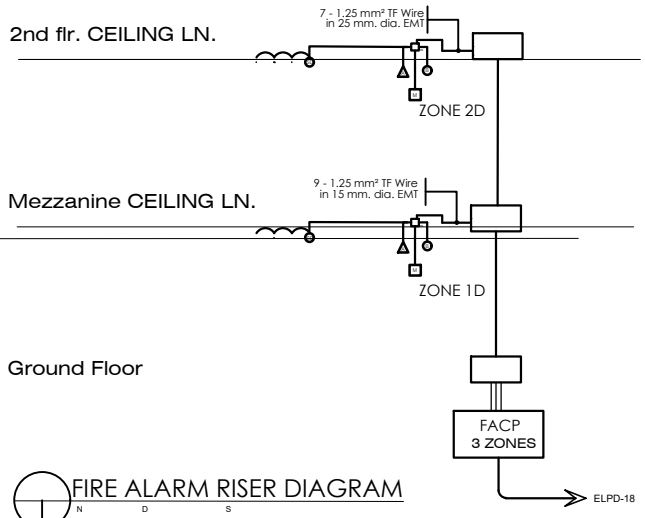
LEGEND:

- -CALL POINT/MANUAL PULL STATION
- -CONVENTIONAL SMOKE DETECTOR
- -CONVENTIONAL HEAT DETECTOR
- -SPEAKER
- -4X4 JUNCTION BOX
- -FIRE ALARM BELL/SOUNDER STROBE
- -MANUAL PUSH BOTTON



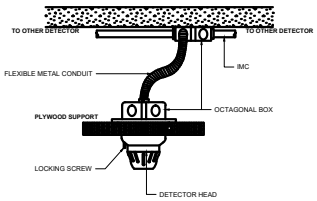
FDAS SYSTEM LAY-OUT

N D S

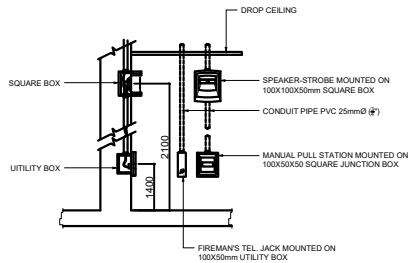


FIRE ALARM RISER DIAGRAM

N D S



SMOKE DETECTOR DETAILS



MOUNTED DETAILS OF MANUAL DETECTION & HORN STROBE

FIRE ALARM ASSORTED DETAILS

N D S

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DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE X
BUKIDNON 3RD DISTRICT ENGINEERING OFFICE
DICKLUM, MANOLO FORTICH, BUKIDNON

PROJECT AND LOCATION :
CONSTRUCTION OF MULTI-PURPOSE BUILDING
(BARANGAY HALL)
BARANGAY 5 TALAKAG BUKIDNON

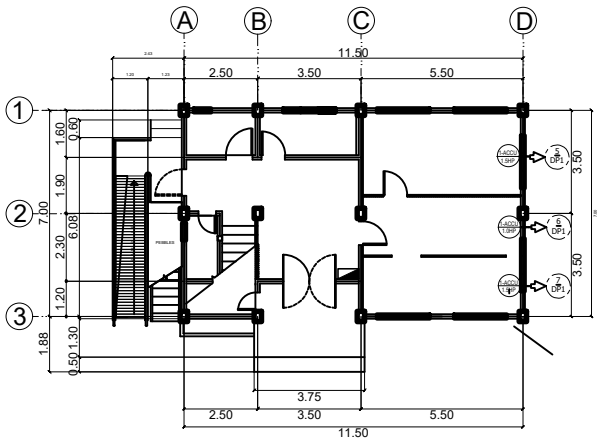
SHEET CONTENTS :
GROUND FLOOR FIRE ALARM SYSTEM PLAN
SECOND FLOOR FIRE ALARM SYSTEM PLAN
FDAS SYSTEM LAY-OUT PLAN
FIRE ALARM RISER DIAGRAM
FIRE ALARM ASSORTED DETAILS
ELECTRONICS LEGEND & SYMBOLS

ROMY S. BANTOLIO
ENGINEER II

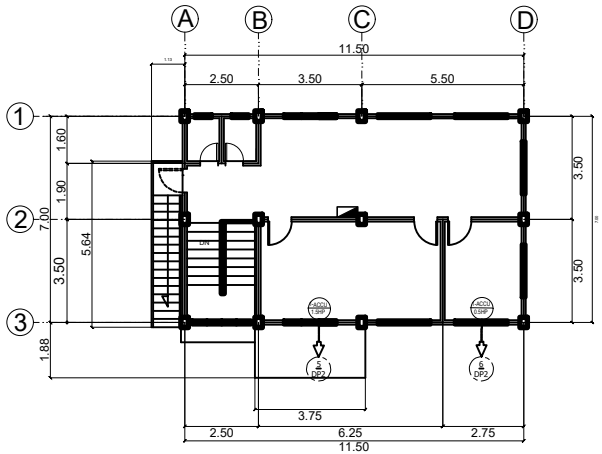
REVIEWED :	SUBMITTED :	RECOMMENDED :	APPROVED :	SET NO.	SHT. NO.
MCKENLY B. HONG ENGINEER II DATE:	RYAN CAESAR B. FERNANDEZ ENGINEER II OIC- PLANNING AND DESIGN SECTION CHIEF DATE:	ISMAEL R. ALAJID OIC-ASSISTANT DISTRICT ENGINEER DATE:	RONALDO C.PAHANG, AEr. DISTRICT ENGINEER DATE:	Ece 2 2	42 46

PDS-BUK3RD: 2025

MECHANICAL



GROUND FLOOR AIR-CONDITION LAY-OUT



SECOND FLOOR AIR-CONDITION LAY-OUT

LEGEND:

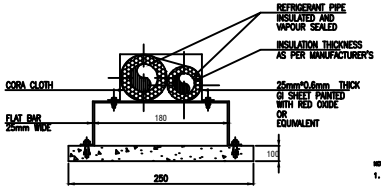
- LINE SWITCH CONNECTION
- LINE CIRCUIT CONNECTION
- PANELBOARD, MARKED AS DP & LPP
- CKT. BREAKER, RATINGS AS INDICATED
- DUPLEX CONVENIENCE OUTLET, 3–PRONG OR GROUNDING TYPE 15AMPS, 240 VOLT
- RANGE OUTLET
- ACU AIR–CONDITIONING UNIT CABINET TYPE
- FE FIRE EXTINGUISHER

ABBREVIATIONS:

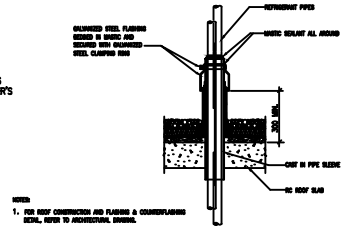
FCU	FAN COIL UNIT
EF	EXHAUST FAN
ACCU	AIR COOLED CONDENSING UNIT
ACU	AIR CONDITION UNIT

GENERAL NOTES

1. ALL EQUIPMENT SHALL BE INSTALLED IN APPROPRIATE LOCATION AS SHOWN IN THE DRAWING.
2. ALL EQUIPMENT SHALL BE MOUNTED ON OR SUPPORTED WITH VIBRATION ISOLATOR OR ASSEMBLIES AS SPECIFIED ON THE DRAWINGS.
3. INSTALLATION OF ALL WORKS SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER. IMPROPERLY SETWORK OR FINISH AS DETERMINED BY THE ARCHITECT SHALL BE REMOVED AND REPLACED AT NO EXTRA COST.
4. ALL MATERIALS TO BE USED SHALL BE BRAND NEW AND CLEAN.
5. DERIVATIONS AND REVISIONS FROM PLANS SHALL BE REFERRED TO THE ARCHITECT/ENGINEER FOR REVIEW AND APPROVAL.
6. ALL NECESSARY GOVERNMENT PERMIT SHALL BE SCANNED AND PAID FOR BY THE CONTRACTOR.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
8. ALL MECHANICAL WORKS SHALL BE IN ACCORDANCE WITH THE LATEST MECHANICAL ENGINEERING CODE.
9. MECHANICAL CONTRACTOR SHALL OBSERVED ALWAYS SAFETY AND ORDERLINESS.
10. MECHANICAL CONTRACTOR SHALL VERIFY SITE PRIOR TO ACTUAL INSTALLATION.
11. ALL POWER WIRING SHALL BE BY ELECTRICAL CONTRACTOR.
12. ALL AIRCONDITIONING UNITS SHALL BE PROVIDED WITH FILTER DRIERS.
13. REFRIGERANT PIPING SHALL BE "M" TYPE SOFT DRAIN AND SEAMLESS COPPER PIPE.
14. REFRIGERANT PIPING INSULATION SHALL BE AEROFLEX OR ANY APPROVED EQUAL AT 1/2 "THICK BELOW 3 TR AND 3/4" THICK ABOVE 3TR COMPLETE WITH POLYETHYLENE TAPE.
15. DRAIN LINE SHALL BE PVC ESLON BLUE TYPE SCH 40 AT," Ø COMPLETE WITH 1/2" THICK RUBBER INSULATION WITH POLYETHYLENE TAPE.



INSTALLATION OF REFRIGERANT EXPOSED PIPES



REFRIGERANT PIPES THRU REINFORCED CONCRETE

INSTALLATION AND CONNECTION DETAIL

SCALE NTS:

AIRCONDITIONING AND VENTILATION

1. FOR DESIGN AC SYSTEM AND SELECTION OF FAN COIL UNIT, CONSIDER DESIGN PARAMETER GUIDE TEMPERATURE DIFFERENCE (delta T) = 12 DEGREES FLOW: 1TR = 2 GPM.
2. PIPING MUST BE TESTED BEFORE TAPPING TO FCU AND ACCU, AND SHOULD BE WITNESSED BY MECHANICAL ENGINEER.
3. ALL DRAIN LINE MUST BE TAPPED TO CONDENSATE DRAIN LINE PROVISION.
4. ALL PIPING ACCESSORIES MUST BE COMPLETELY INSTALLED
   THERMOMETER
   PRESSURE GAGE
   BALANCING VALVE (USE TA BRAND)
   MOTORIZED VALVE (USE BELIMO BRAND)
   WYE STAINER
   RELIEF VALVE OF AIR VENT
   GATE/ ISOLATION VALVE
5. FOR CHILLED WATER PIPING MUST BE BI PIPE SCH. 40 WRAPPED WITH 25MM. THK POLYURETHANE INSULATION WRAPPED IN POLYETHYLENE TAPE.
6. CONDESATE DRAIN CAN BE G.I. PIPE OR PVC PIPE WITH 25MM THK RUBBER INSULATION WRAPPED WITH POLYETHYLENE.
7. PROVIDE MAN HOLE FOR SERVICING AND MAINTENANCE OF FAN COIL UNITS.

LOCATION MAP

SCALE: 1:100 MTRS.

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SHEET CONTENTS :
LOCATION MAP
GROUND FLOOR AIR-CONDITION LAYOUT
SECOND FLOOR AIR-CONDITION LAYOUT
ELECTRICAL LEGEND & SYMBOLS
AIR-CONDITION CALCULATION
GENERAL NOTES

DRAFTED :
ROMY S. BANTOLIO
ENGINEER II

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PDS-BUK3RD: 2025

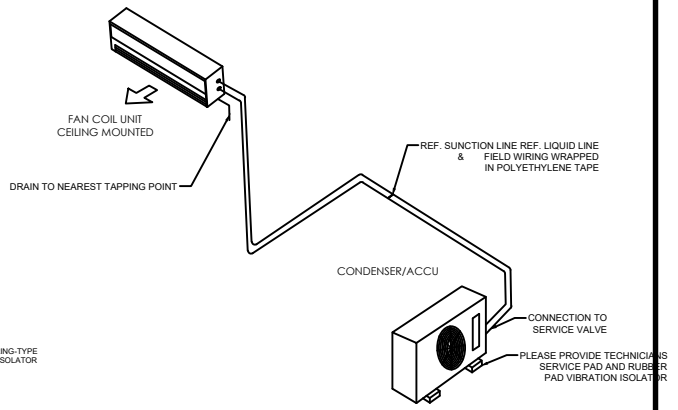
SCHEDULE OF EQUIPMENT:

SPLIT TYPE AIR CONDITIONING UNIT:

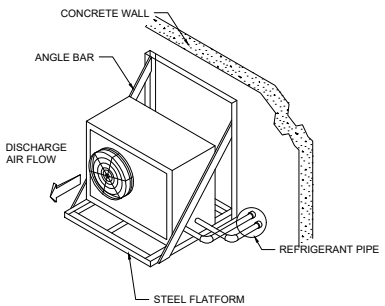
UNIT DESIGNATION		SERVICE	COOLING CAPACITY (HP)	FAN COIL UNIT				REFRIGERANT (mm)		DRAIN PIPE Ø mm	WEIGHT kg. (APPROX.)		AIR COOLED CONDENSING UNIT									REMARKS
INDOOR	OUTDOOR			QTY.	SUPPLY AIR (CFM)	FCU TYPE	UNIT DIMENSION (HxWxD)	SUNCTION Ø	LIQUID Ø		INDOOR	OUTDOOR	QTY.	UNIT DIMENSION (HxWxD)	COOLING CAPACITY (KJ/HR)	POWER CONSUMPTION (APPROX.) W.	REFRIGERANT (mm) SUNCTION Ø	REFRIGERANT (mm) LIQUID Ø	ELECTRICAL VOLTS	ELECTRICAL PHASE	ELECTRICAL HERTZ	
FCU	ACCU	AS SHOWN	0.5	1	989	WALL MOUNTED	285 x 770 x 223	12.7	6.4	16.0	9.0	27.0	1	500 x 675 x 284	6,100	498	12.7	6.4	230	1	60	SPLIT TYPE AIR CONDITION UNIT, COMPLETE WITH CONTROLS AND OTHER ACCESSORIES.
FCU	ACCU	AS SHOWN	1.0	2	989	WALL MOUNTED	300 x 920 x 240	12.7	6.4	16.0	13.0	27.0	2	550 x 675 x 284	11,300	1,170	12.7	6.4	230	1	60	SPLIT TYPE AIR CONDITION UNIT, COMPLETE WITH CONTROLS AND OTHER ACCESSORIES.
FCU	ACCU	AS SHOWN	1.5	2	989	WALL MOUNTED	300 x 920 x 240	12.7	6.4	16.0	13.0	27.0	2	550 x 675 x 284	14,000	1,170	12.7	6.4	230	1	60	SPLIT TYPE AIR CONDITION UNIT, COMPLETE WITH CONTROLS AND OTHER ACCESSORIES.

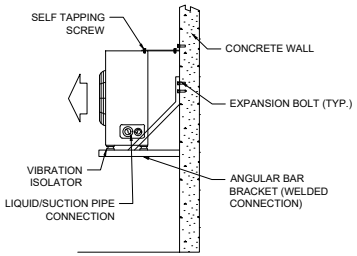
FCU SCHEDULE:

QUANTITY	UNIT DESIGNATION	AREA SERVED	COOLING TYPE	TYPE	MOUNTING	REFRIGERANT	ELECTRICAL DATA		
							VOLTS	PHASE	HERTZ
1	FCU- 1	MULTI-OFFICE AREA	1.0HP	SPLIT-TYPE	WALL	HCFC-410A	230	1	60
1	FCU- 1	MULTI-OFFICE AREA	1.5HP	SPLIT-TYPE	WALL	HCFC-410A	230	1	60
1	FCU- 1	BRGY. CAPTIANS ROOM	1.5HP	SPLIT-TYPE	WALL	HCFC-410A	230	1	60
1	FCU- 1	CONFERENCE ROOM	1.5HP	SPLIT-TYPE	WALL	HCFC-410A	230	1	60
1	FCU- 1	OFFICE	0.5HP	SPLIT-TYPE	WALL	HCFC-410A	230	1	60

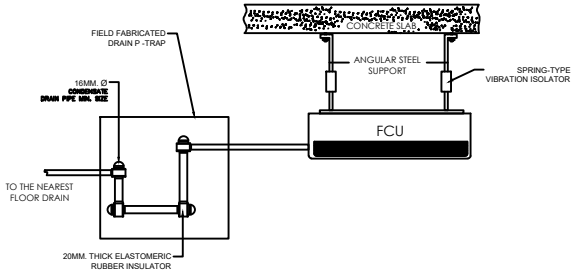


FCU ISOMETRIC LAYOUT
SCALE NTS:





ACCU MOUNTING BRACKET ALONG WALL DETAIL
SCALE NTS:



FCU DRAIN CONNECTION DETAIL
SCALE NTS:

COOLING LOAD CALCULATION

GROUND FLOOR:

DP1 (5):

ROOM SIZE=14.84 sq.m
REQUIRED COOLING CAPACITY:
=(Room size x 500) x (110%)
+ additional occupant + lighting
=(14.84 x 500) x (1.10) + (96 x3.6)
= 8,507.6 kJ/h

RECOMMENDED MODEL: 1.5 HP

GROUND FLOOR:

DP1 (6):

OOM SIZE=10.6 sq.m
REQUIRED COOLING CAPACITY:
=(Room size x 500) x (110%)
+additional occupant + lighting
=(10.6 x 500) x (1.10) + 45 x3.6)
=5992 kJ/h

RECOMMENDED MODEL: 1.0 HP

GROUND FLOOR:

DP1 (7):

ROOM SIZE=10.6 sq.m
REQUIRED COOLING CAPACITY:
=(Room size x 500) x (110%)
+ additional occupant + lighting
=(10.6 x 500) x (1.10) + (45x3.6)
= 5992 kJ/h

RECOMMENDED MODEL: 1.0 HP

SECOND FLOOR:

DP2 (5):

ROOM SIZE= 22.5 sq.m
REQUIRED COOLING CAPACITY:
=(Room size x 500) x (110%)
+ additional occupant + lighting
=(22.5 x 500) x (1.10) + (84 x3.6)
= 12,677.4 kJ/h

RECOMMENDED MODEL: 1.5 HP

SECOND FLOOR:

DP2 (6):

ROOM SIZE= 8.415 sq.m
REQUIRED COOLING CAPACITY:
=(Room size x 500) x (110%)
+ additional occupant + lighting
=(8.415 x 500) x (1.10) + (30 x3.6)
= 4,736.25 kJ/h

RECOMMENDED MODEL: 0.5 HP

LEGEND:

- LINE SWITCH CONNECTION
- LINE CIRCUIT CONNECTION
- PANELBOARD, MARKED AS DP & LPP
- CKT. BREAKER, RATINGS AS INDICATED
- DUPLEX CONVENIENCE OUTLET, 3–PRONG OR GROUNDING TYPE 15AMPS, 240 VOLT
- RANGE OUTLET
- ACU — AIR–CONDITIONING UNIT CABINET TYPE
- FE — FIRE EXTINGUISHER

ABBREVIATIONS:

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BARANGAY 5 TALAKAG BUKIDNON

SHEET CONTENTS :
SCHEDULE OF EQUIPMENT
FCU ISOMETRIC LAYOUT
ACCU MOUNTING BRACKET ALONG WALL DETAIL
FCU DRAIN CONNECTION DETAIL
COOLING LOAD CALCULATION
LEGEND
ABBREVIATIONS

ROMY S. BANTOLIO
ENGINEER II

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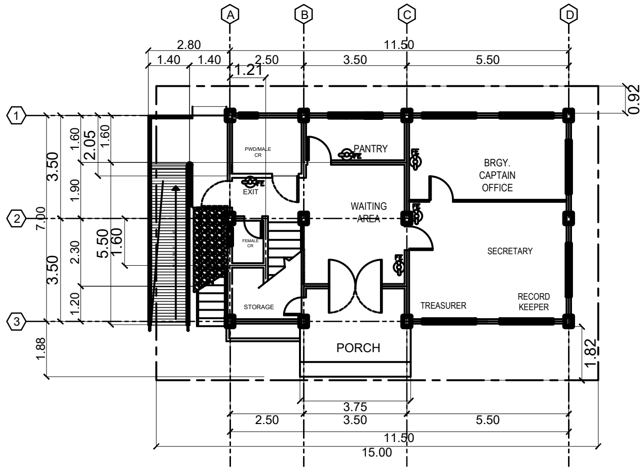
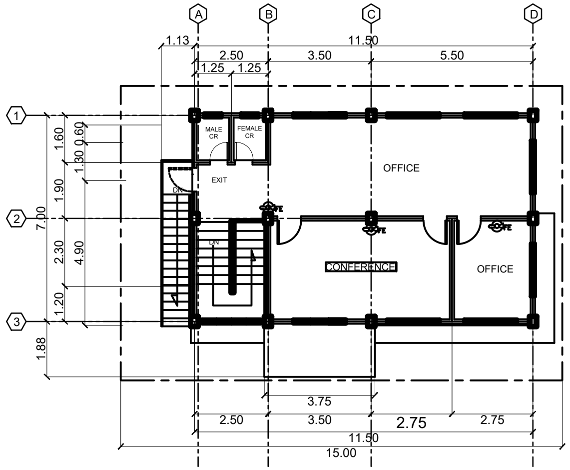
ENGINEER II	OIC- PLANNING AND DESIGN SECTION CHIEF	OIC-ASSISTANT DISTRICT ENGINEER	DISTRICT ENGINEER		
DATE:	DATE:	DATE:	DATE:		

PDS-BUK3RD- 2025



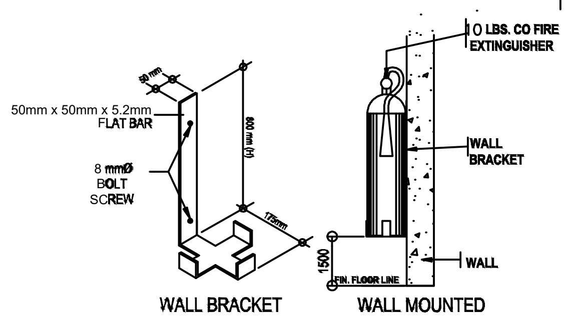
GROUND FLOOR FIRE PROTECTION PLAN

SCALE 1:100 M.



SECOND FLOOR FIRE PROTECTION PLAN

SCALE 1:100 M.



FIRE EXTINGUISHER DETAIL

SCALE NTS

SCHEDULE OF EQUIPMENT

FIRE EXTINGUISHER

DESIGNATION	QUANTITY	WEIGHT		TYPE (LOCATION)	DISCHARGE RANGE	DIAMETER	MAXIMUM VOLUME OF PROTECTION	EXTINGUISHING AGENT	REMARKS
		GROSS	AGENT						
FE	18	14.5lbs.	10LBS	WALL MOUNTED	6.00 m	15.2 cm.	51 m³	HCFC 123	ENVIRONMENT FRIENDLY, BRAND NEW AND READY FOR SERVICE

LEGEND:

- LINE SWITCH CONNECTION
- LINE CIRCUIT CONNECTION
- PANELBOARD, MARKED AS DP & LPP
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GROUND FLOOR FIRE PROTECTION PLAN
SECOND FLOOR FIRE PROTECTION PLAN
SCHEDULE OF EQUIPMENT
FIRE EXTINGUISHER DETAIL
LEGENDS AND SYMBOL
ABBREVIATIONS

ROMY S. BANTOLIO
ENGINEER II

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ENGINEER II
DATE:

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SHT. NO. 45 / 46

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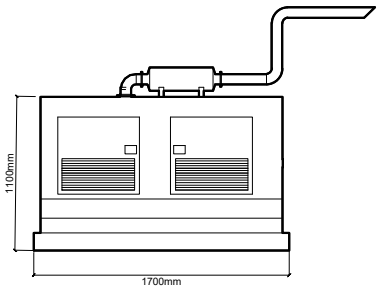
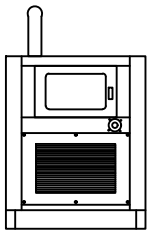


GENERATOR SET SIDE VIEW



GENERATOR SET FRONT VIEW

STANDBY POWER - 50kVA 230 V 3Ø

APPLICABLE FOR SUPPLYING POWER TO VARYING
CONTINUOUS ELECTRICAL POWER (AT VARIABLE LOAD)
IN THE EVENT OF A UTILITY POWER FAILURE.

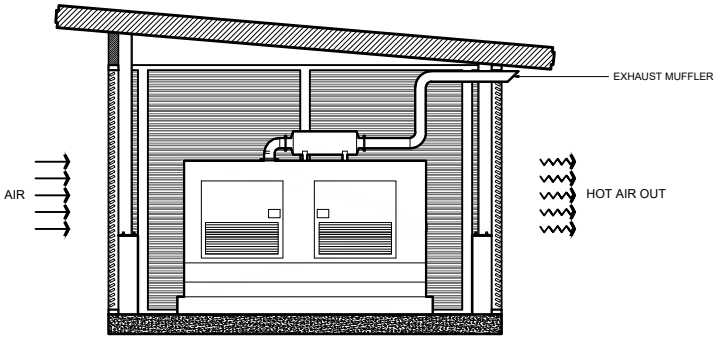
NOTE:

1. PLEASE EXTEND MUFFLER DISCHARGE OUTSIDE GENSET ROOM
2. COORDINATE WITH GENSET SUPPLIER/MANUFACTURER DURING INSTALLATION, TESTING & COMMISSIONING.
3. PROVIDE 1 UNIT OF 20 LBS. FIRE EXTINGUISHER NEAR DOOR/ACCESS AREA

SCHEDULE OF EQUIPMENT

QTY	DUTY	ENGINED SPECIFICATION		GENERATOR SET				REMARKS
		FUEL TYPE	FUEL CONSUMPTION, L/HR	USE	VOLTS	PHASE	HERTZ	
1	STAND-BY POWER UNIT	DIESEL	100% LOAD	50kVA	230 V	3Ø	3Ø	WEATHER PROOF/ SOUND PROOF SILENT TYPE

GENERATOR SET DETAILED DRAWINGS
N D S



SECTION DETAIL

GENERATOR SET VENTILATION PLAN
N D S

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GENERATOR SET DETAILED DRAWINGS
GENERATOR SET VENTILATION PLAN

ROMY S. BANTOLIO
ENGINEER II

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