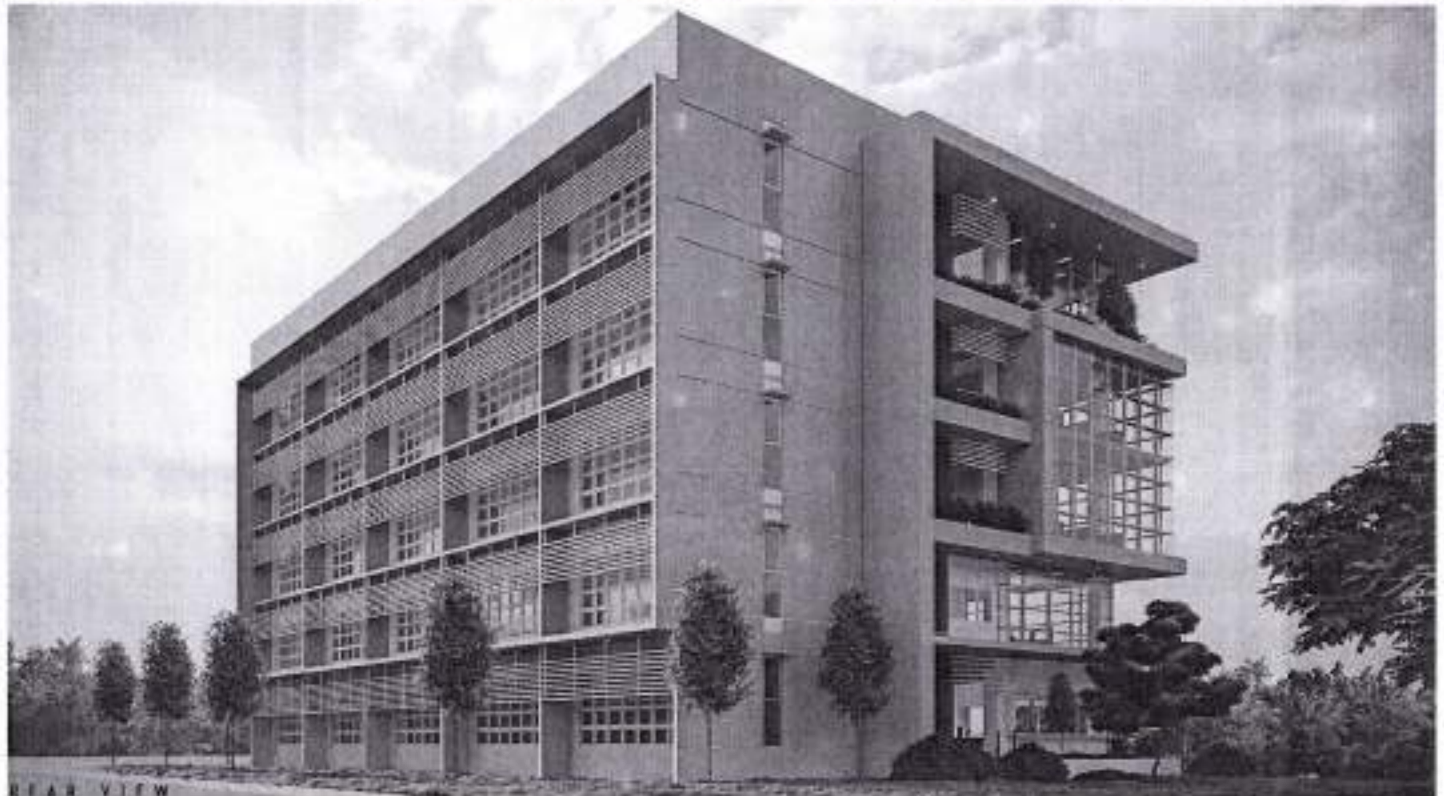


A PERSPECTIVES

SCALE: NOTS

TABLE OF CONTENTS:

ARCHITECTURAL

STRUCTURAL

ELECTRICAL

SANITARY

ELECTRONICS

MECHANICAL

FIRE PRO

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

LINE AND GRADE

GEODETIC

ARCHITECTURAL

CIVIL

STRUCTURAL

ELECTRICAL

MECHANICAL

ELECTRONICS

PLUMBING/SANITARY

FIRE

USTP

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

FERDINAND A. BUMPA
ARCHITECT OF RECORD

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

DATE: 02-19-2025

PLACE: CAGAYAN DE ORO

RECOMMENDING APPROVAL:

ENGR. GRACE C. BABA
DIRECTOR, PPSO

RECOMMENDING APPROVAL:

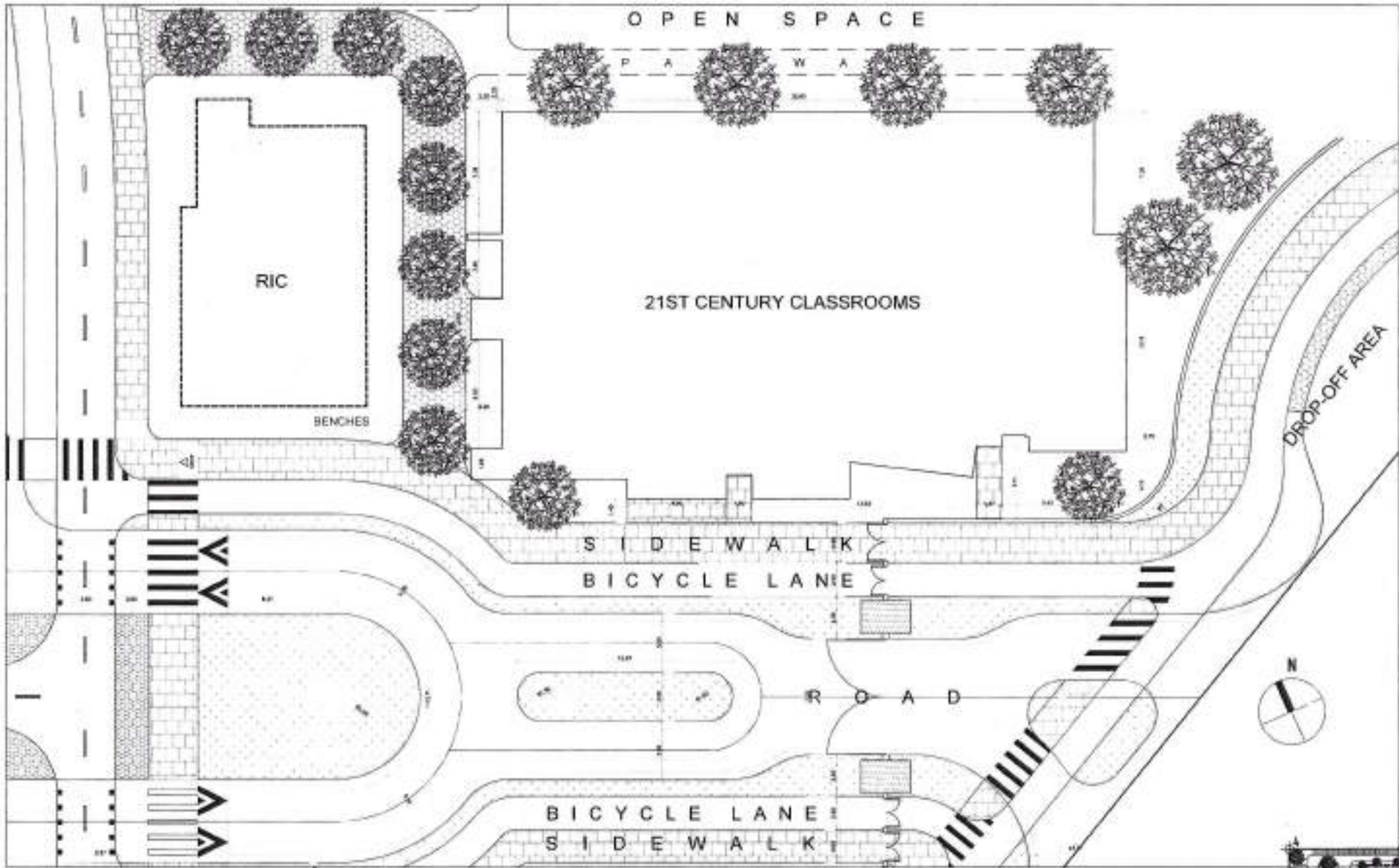
ATTY. ERWIN B. BUCIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:

DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
PERSPECTIVES

A1



SITE DEVELOPMENT PLAN

G 1 1 — SCALE 1:150MTS

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

GENERAL NOTES:

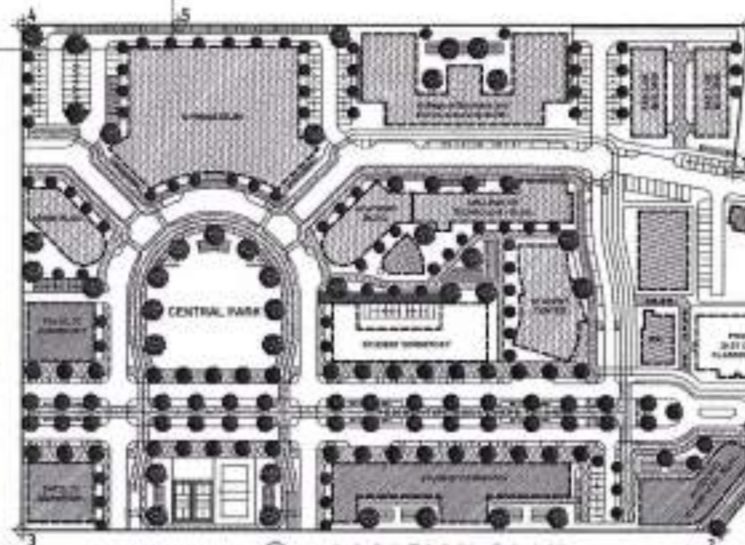
[illegible]

IMPORTANT NOTES:

[illegible]

VICINITY MAP

G 1 2 — SCALE NOTS



LOCATION PLAN

G 1 3 — SCALE 1:1200MTS

TECHNICAL DESCRIPTIONS		
LINE	BEARING	DISTANCE
BOUNDARY		
1 & 2	S 02°48' W	143.74 m
2 & 3	N 88°07' W	366.21 m
3 & 4	S 33°52' E	176.38 m
4 & 5	S 00°15' E	55.15 m
5 & 6	S 00°07' E	200.10 m
6 & 7	S 20°47' W	51.50 m
7 & 1	S 02°44' E	90.00 m

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT
[illegible]

GEODETIC ENGINEER	
PRC NO.	PTR NO.
	DATE
TIN NO.	PLACE

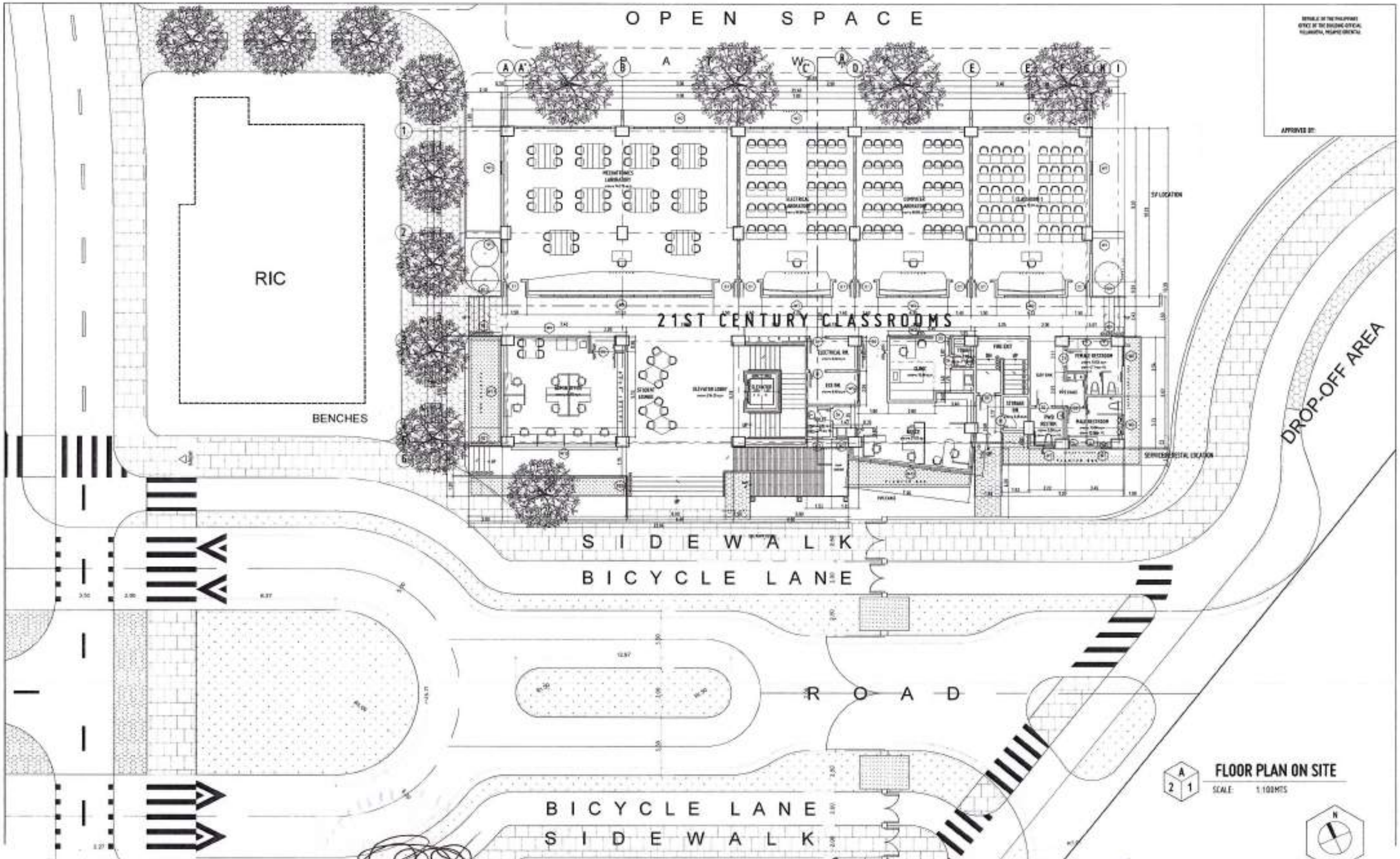
PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II
DIRECTOR, IPFDU	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SITE DEVELOPMENT PLAN
VICINITY MAP
LOCATION PLAN

DRAWN BY:
DATE DRAWN:
REV:

G1



FERDINAND A. [illegible] — ARCHITECT OF RECORD	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	RECOMMENDING APPROVAL: ENGR. GRACE C. BABA	RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO
DATE: 01-10-2025	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	DIRECTOR, IPDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS
	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES		

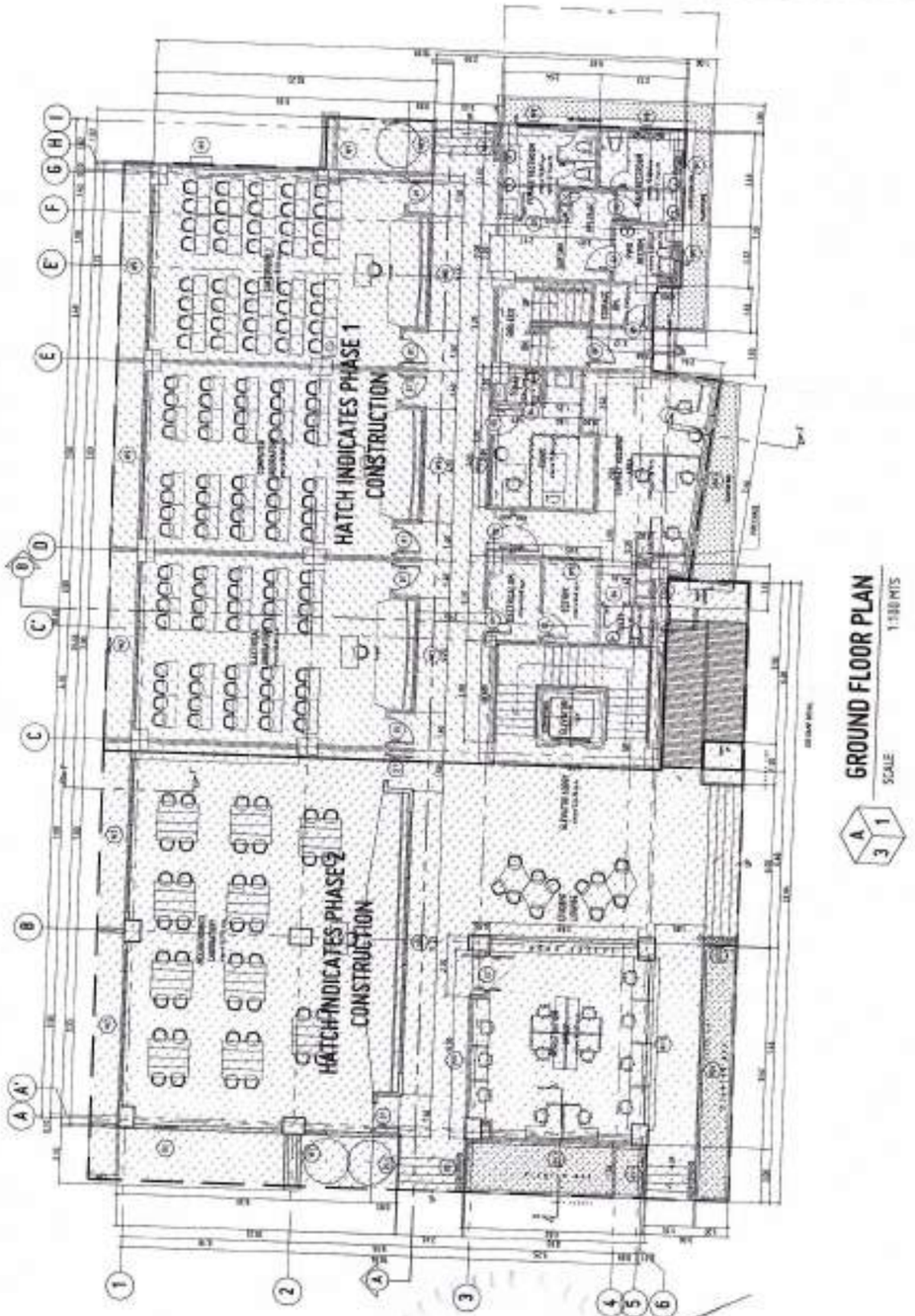
APPROVED BY: DR. AMBROSIO B. CULTURA II — PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SITE DEVELOPMENT PLAN

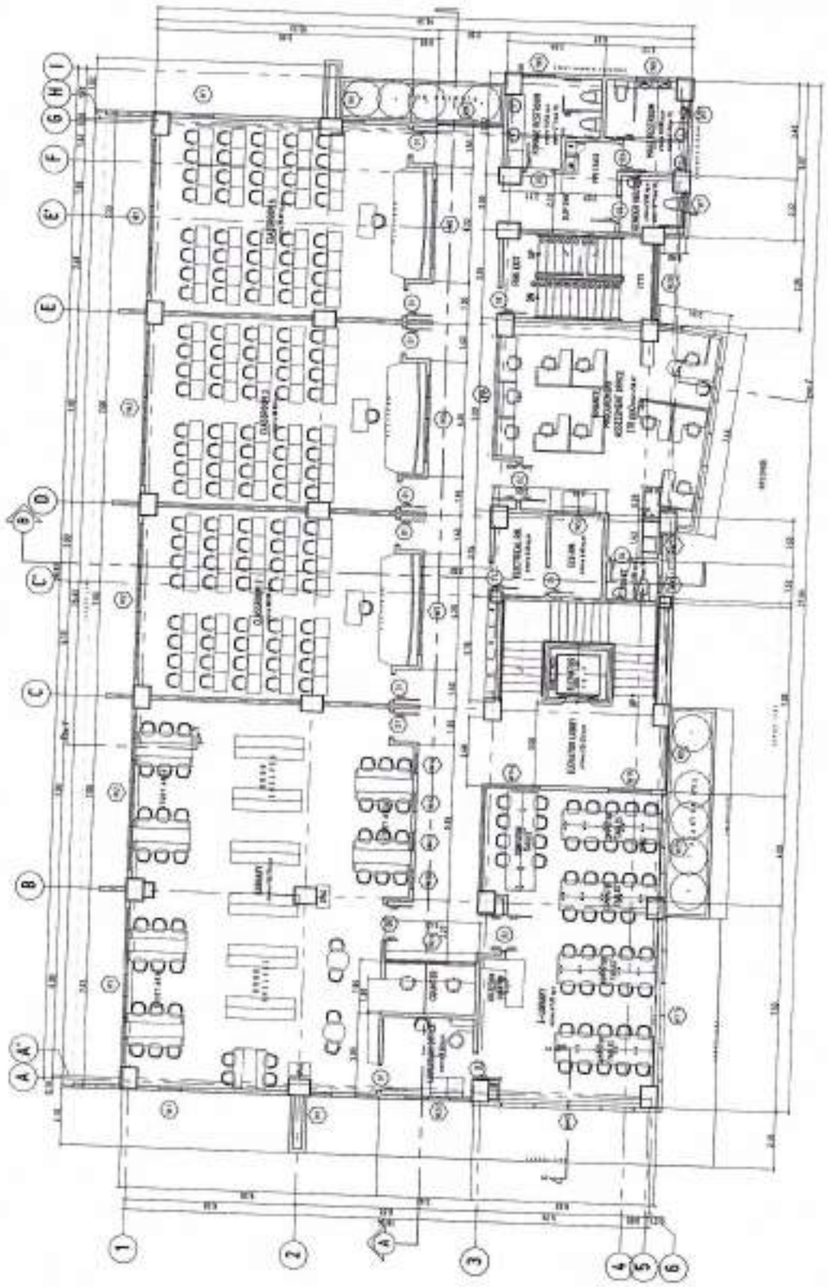
DATE DRAWN: SEPTEMBER 2025

A2

USTP



GROUND FLOOR PLAN
SCALE 1:100 MTS



SECOND FLOOR PLAN
SCALE 1:100 MTS

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
POLANGUITA, MISAMIS ORIENTAL

APPROVED BY:

USTP

CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

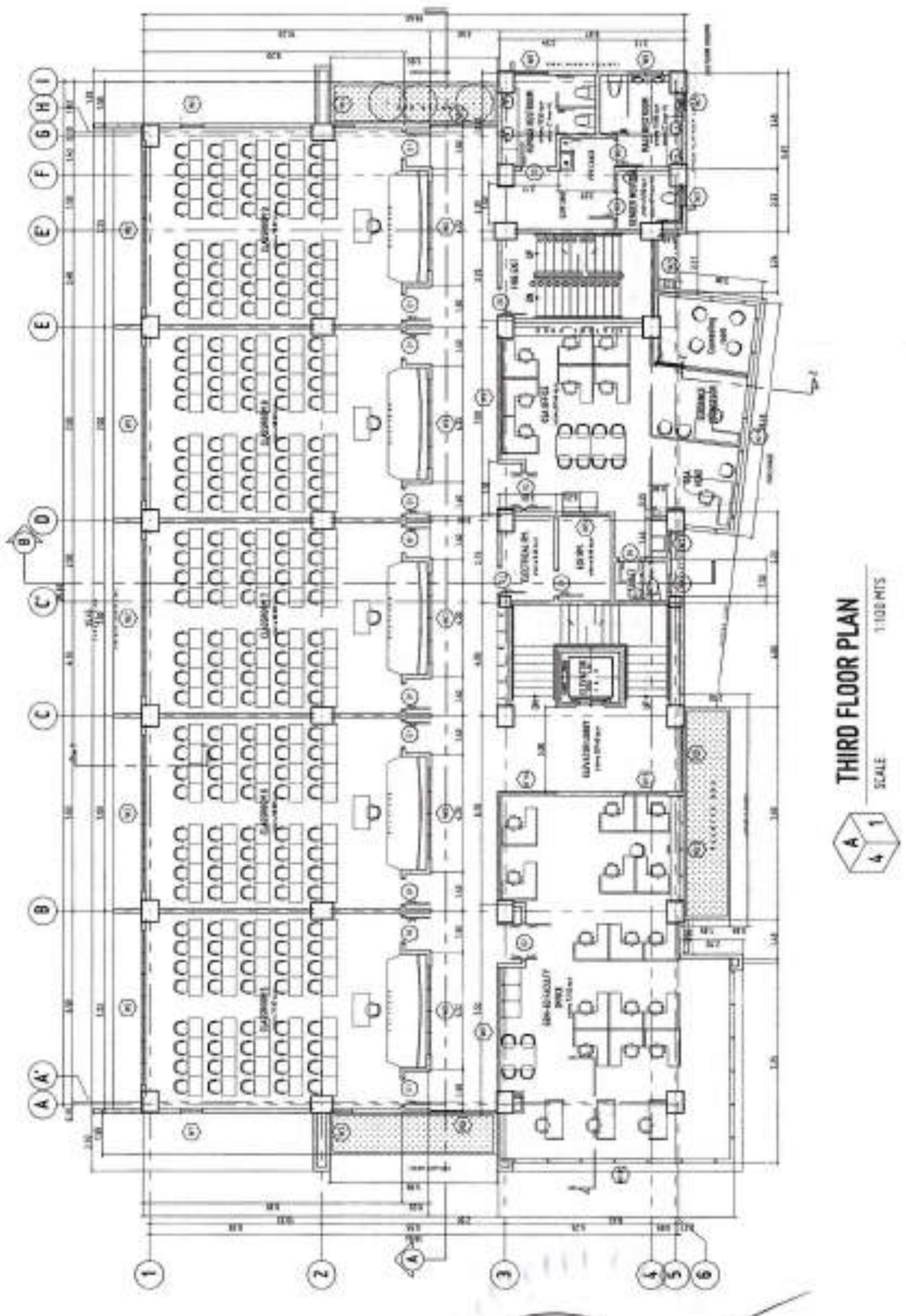
ENGR. GRACE C. BABA

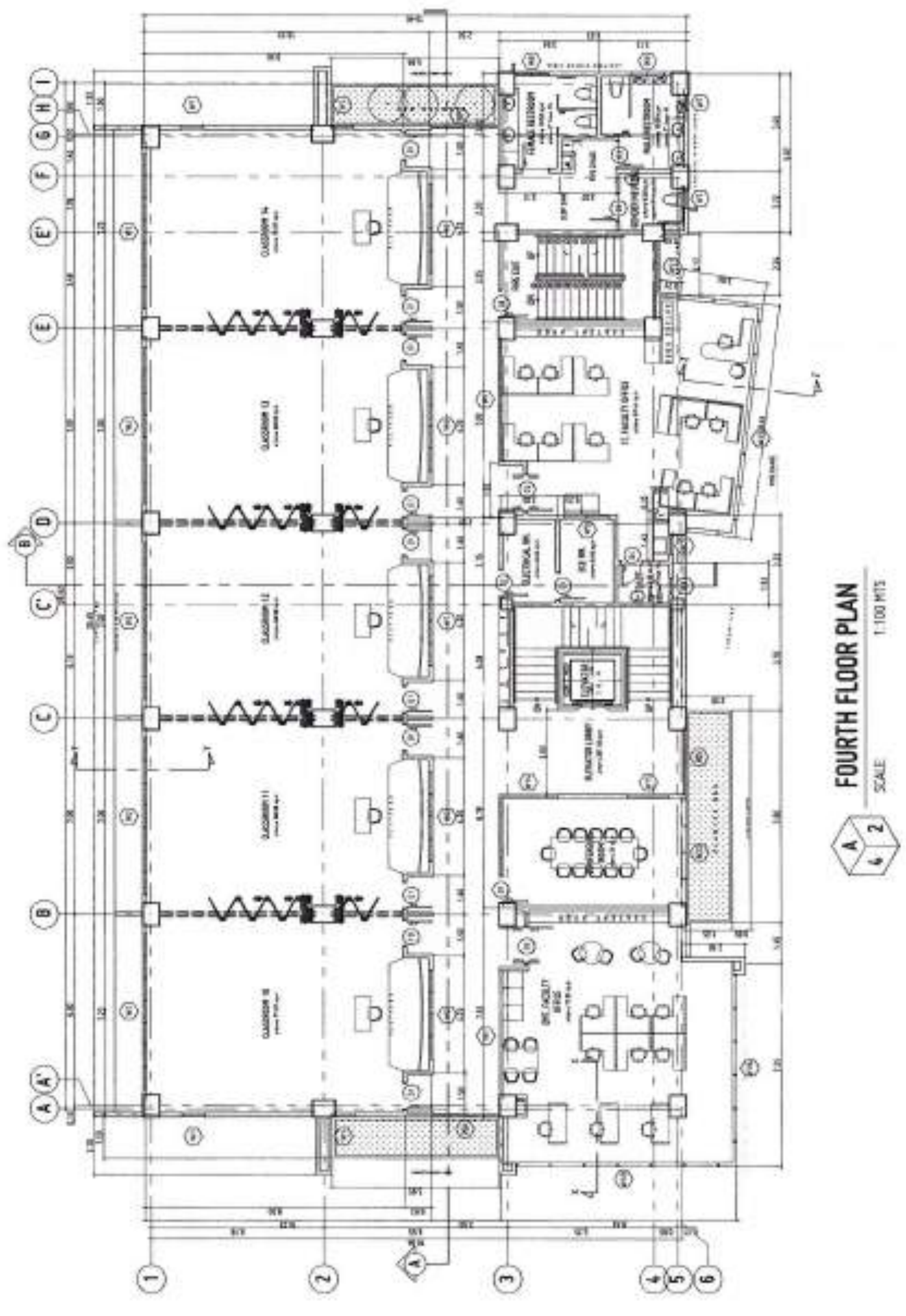
ATTY. ERWIN B. BUCIO

DR. AMBROSIO B. CULTURA II

SHEET CONTENTS:
GROUND FLOOR PLAN
SECOND FLOOR PLAN

A3





APPROVED BY:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

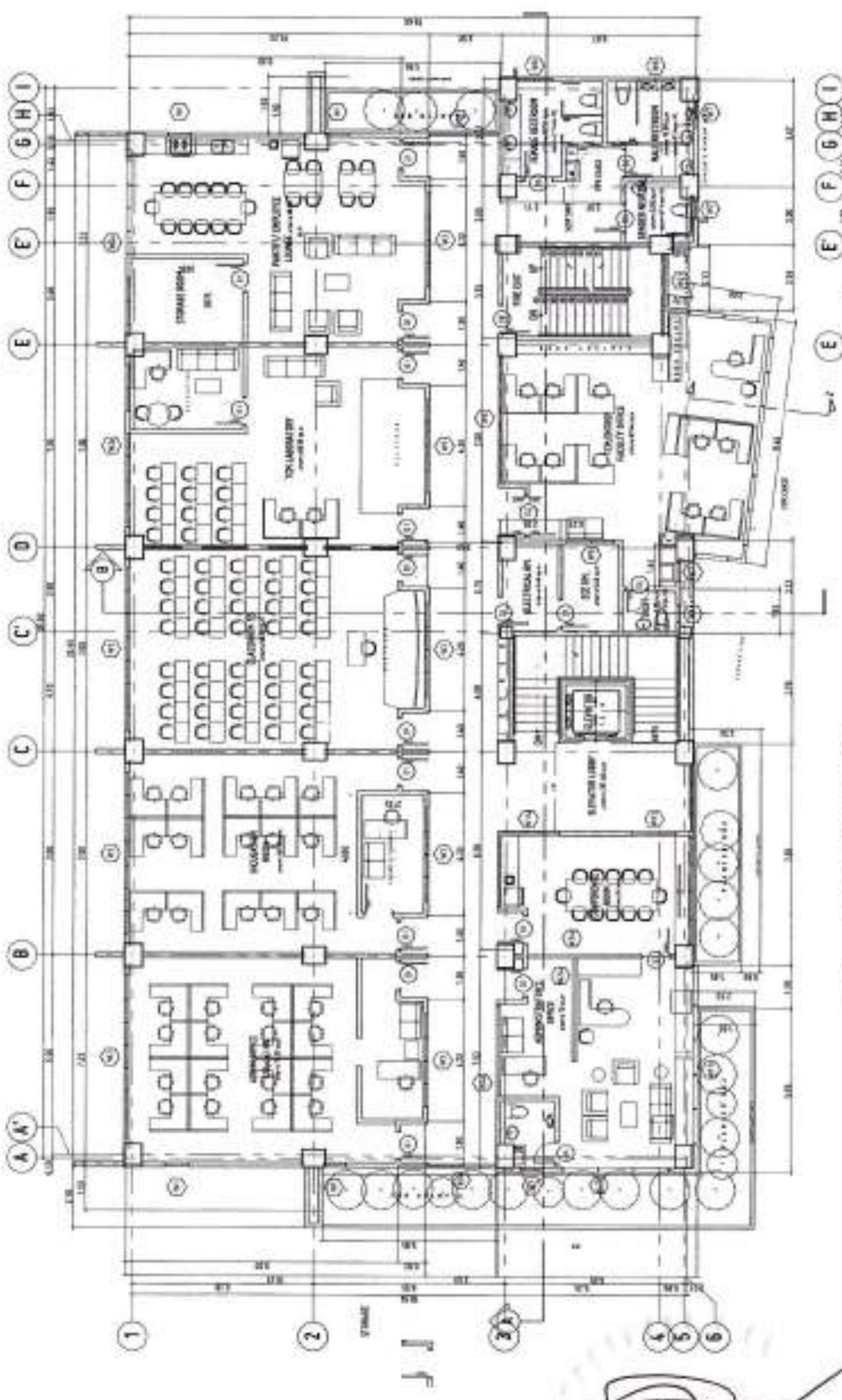
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA

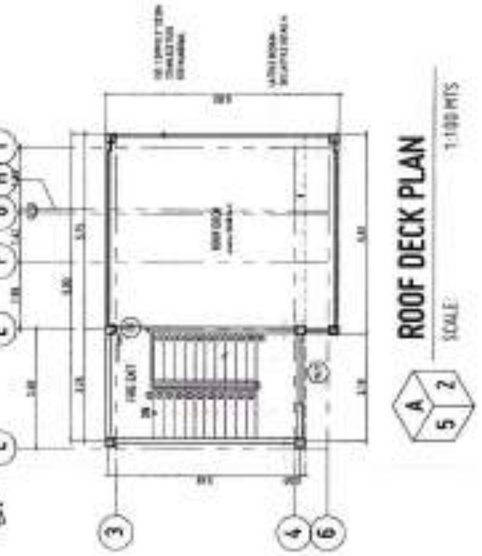
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO

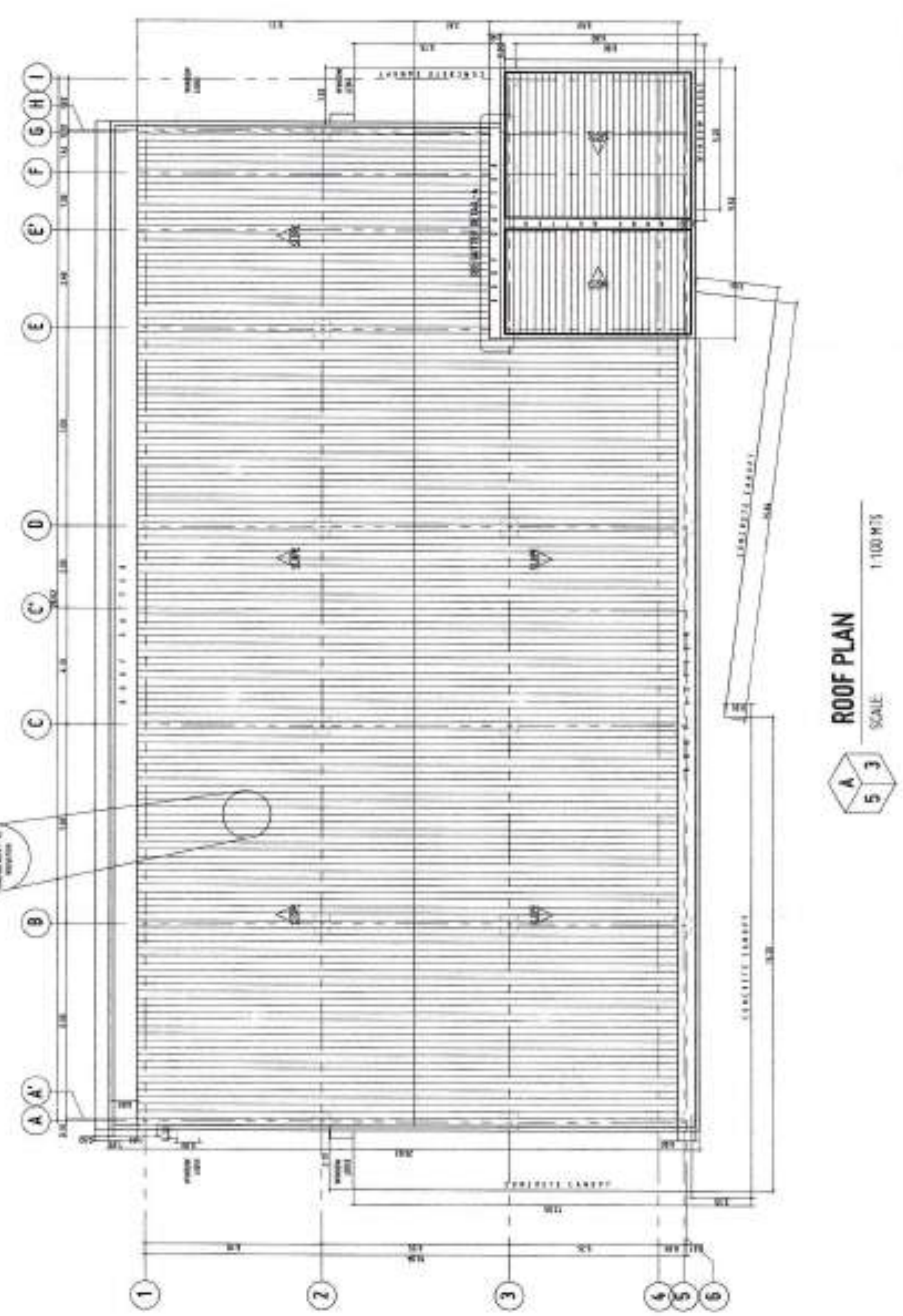
APPROVED BY: DR. AMBROSIO B. CULTURA II

SHEET CONTENTS: THIRD FLOOR PLAN, FOURTH FLOOR PLAN

A4







APPROVED BY:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

FERDINAND A. [illegible]

ARCHITECT OF RECORD

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, PPDO

RECOMMENDING APPROVAL: ATTY. EDWIN B. [illegible]

APPROVED BY: DR. AMBROSIO B. CULTURA II

SHEET CONTENTS: FIFTH FLOOR PLAN, ROOF DECK, ROOF PLAN

USTP

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CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III,
VILLANUEVA CAMPUS

USTP VILLANUEVA CAMPUS, VILLANUEVA, MISAMIS ORIENTAL

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

ENGR. GRACE C. BABA

ATTY. ERWIN B. ORBASO

DR. AMBROCIO A. CULTURA II

LEFT SIDE ELEVATION

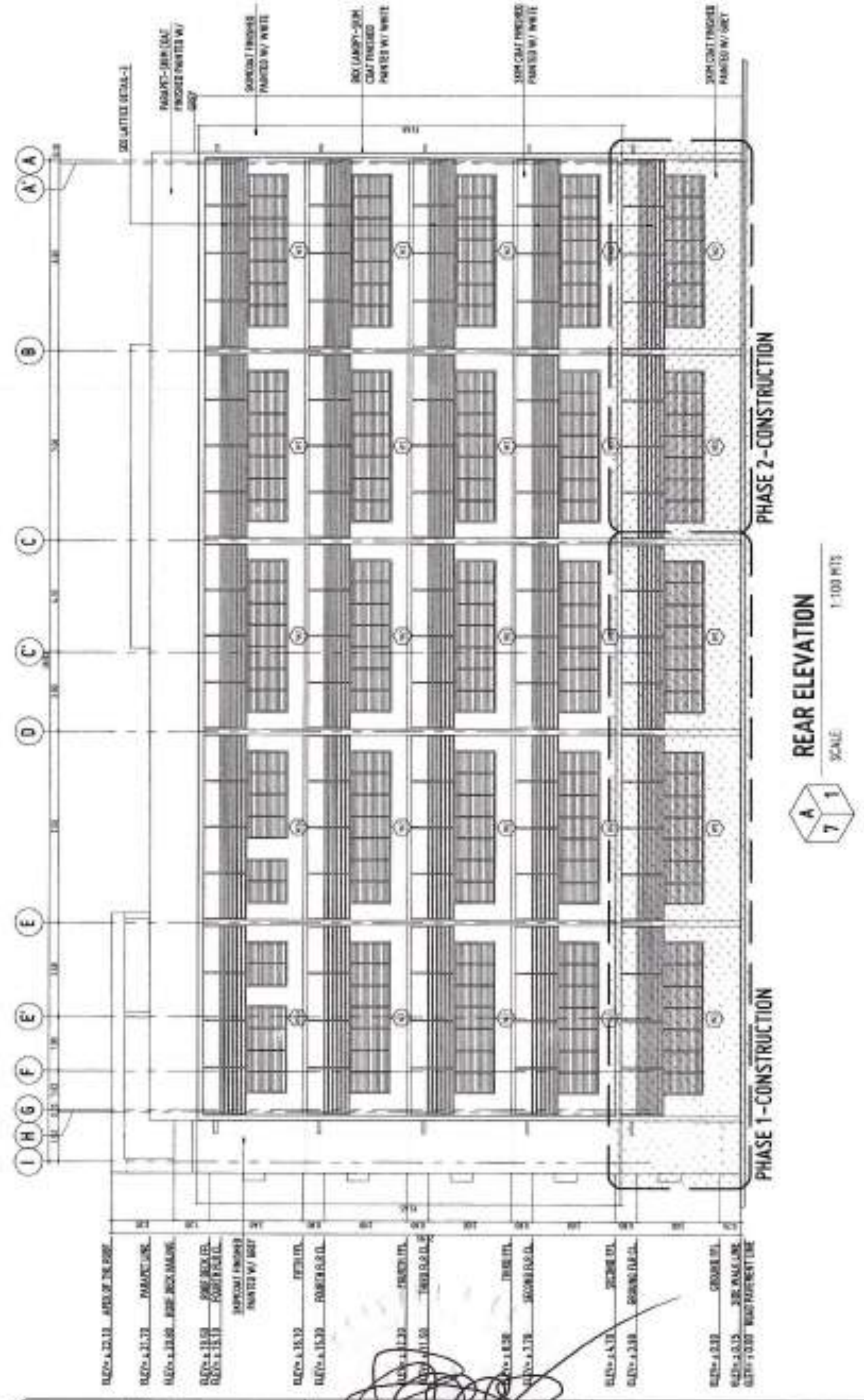
FRONT ELEVATION

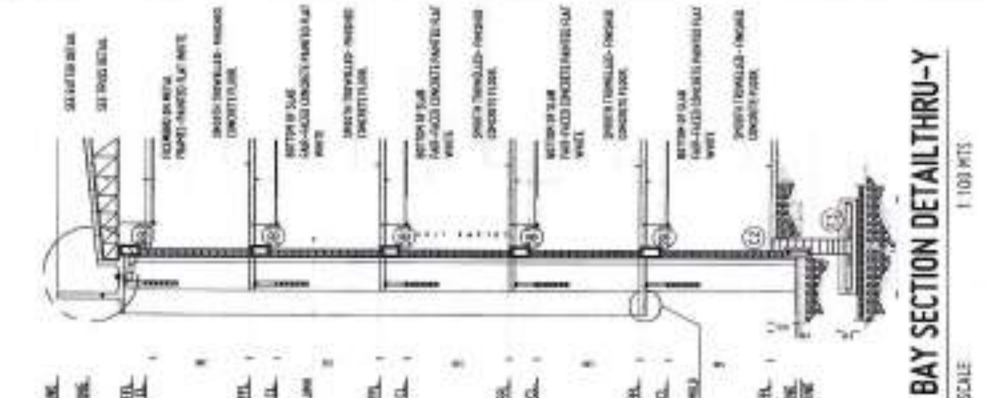
BAY SECTION DETAILTHRU-X

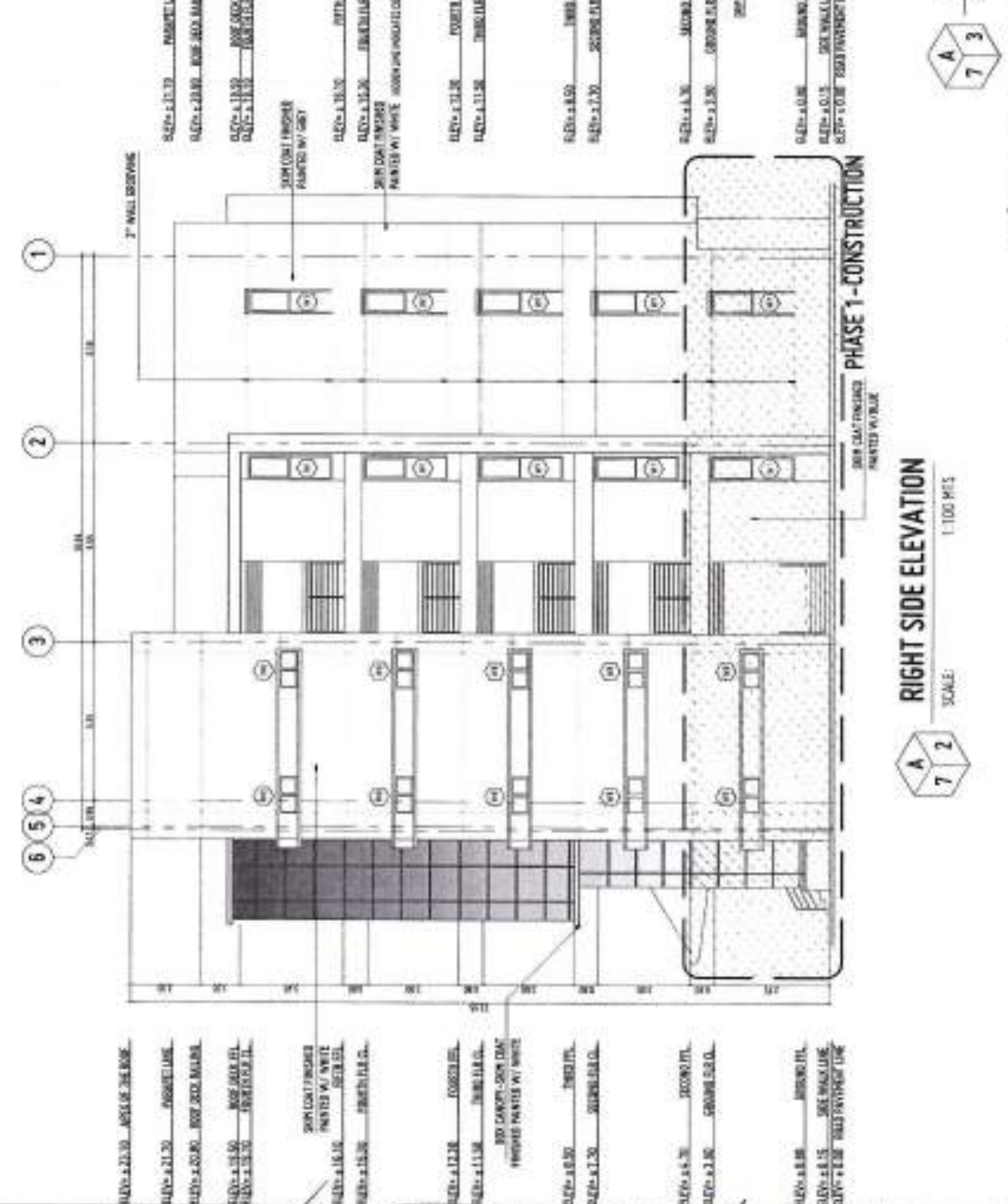
PHASE 2-CONSTRUCTION

PHASE 1-CONSTRUCTION

USTP







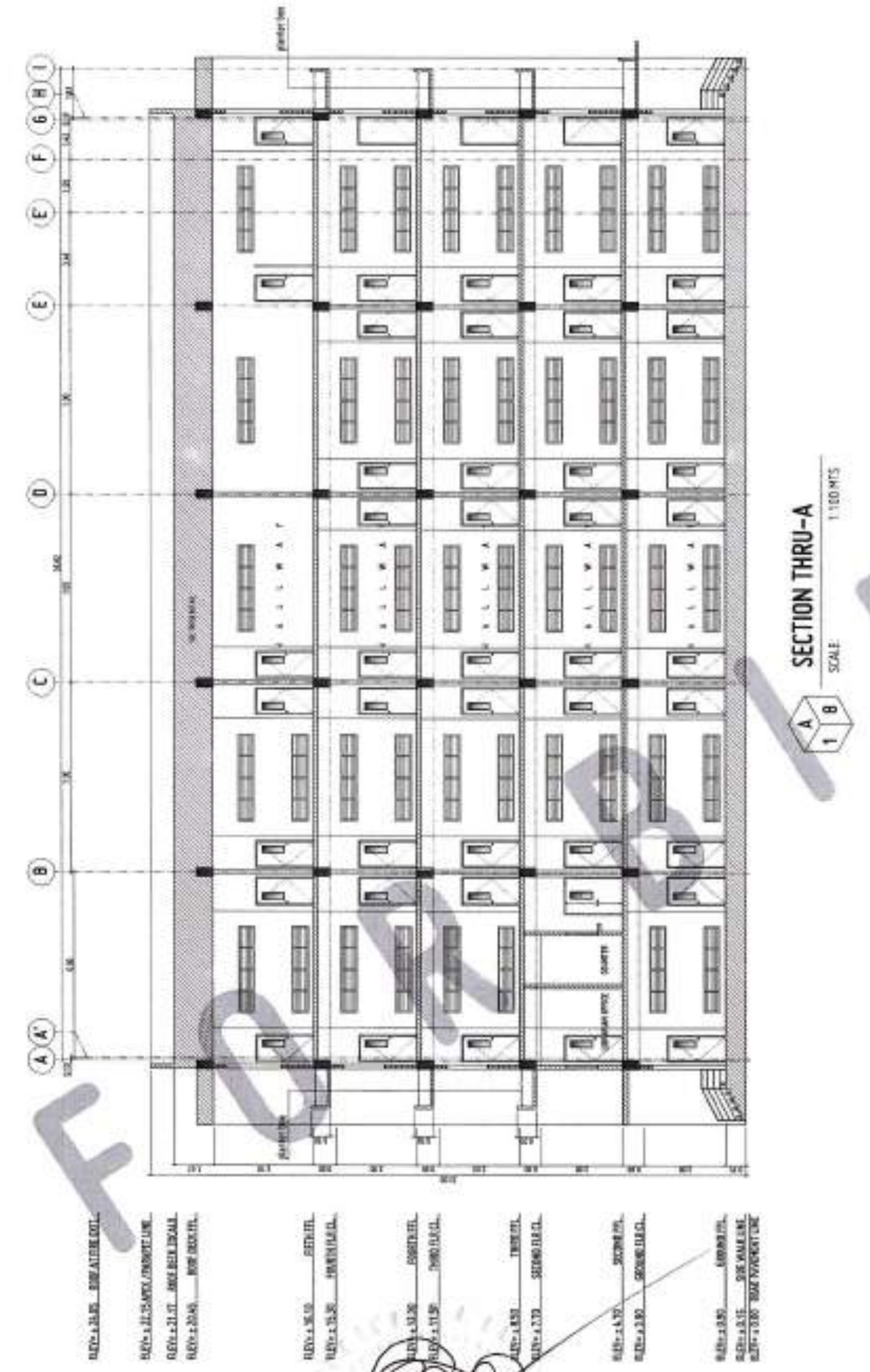
USTP

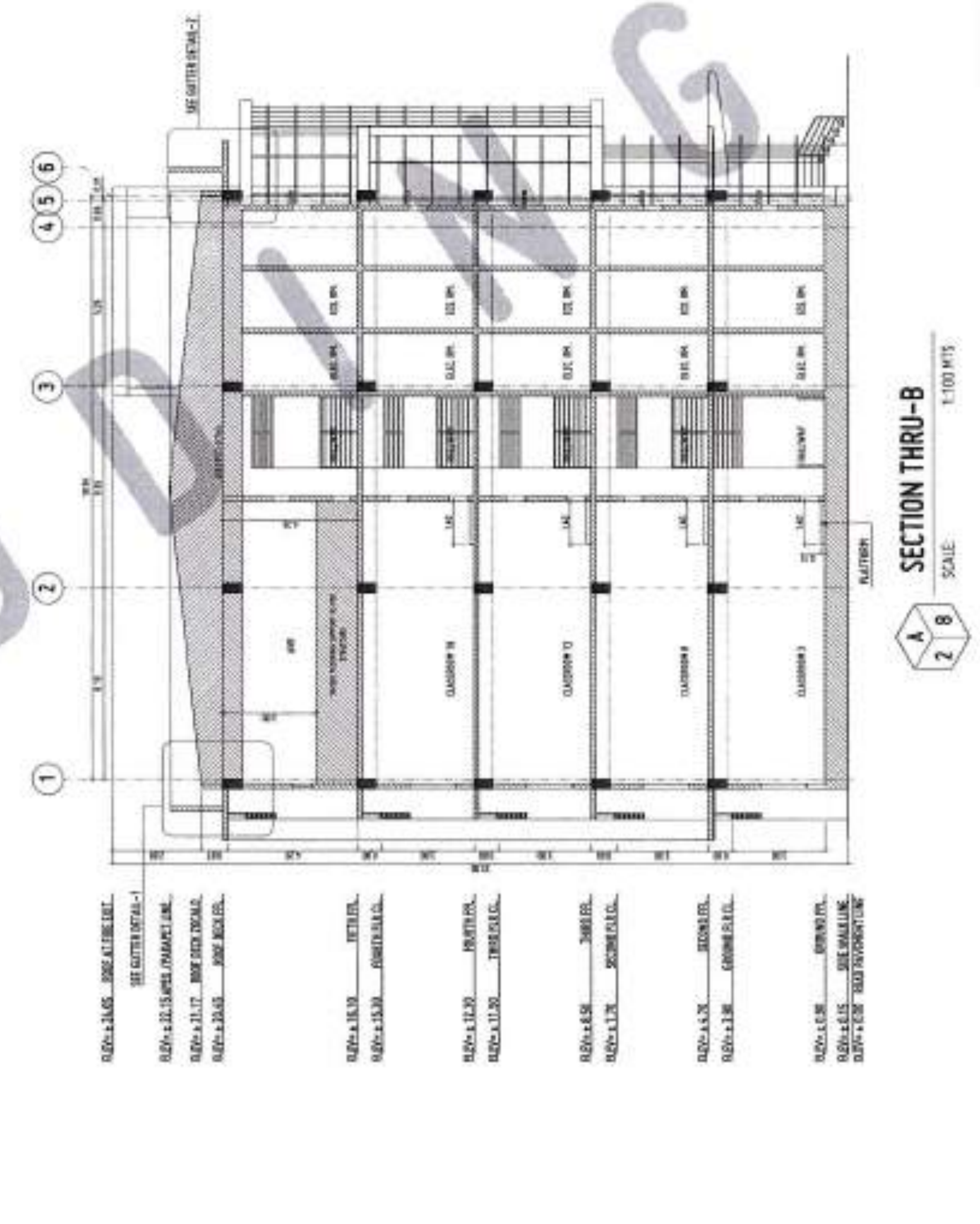
FERDINAND A. DUMPA	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
ARCHITECT OF RECORD	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
PRC NO. 013328 DATE 03-10-2025	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUGIO	DR. AMBROSIO B. CULTURA II	REAR ELEVATION RIGHT SIDE ELEVATION
DIRECTOR, IPFDD	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM	

SEPTEMBER 2025

A7





REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL

FOR BIDDING

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

FERDINAND A. OMPA
ARCHITECT OF RECORD

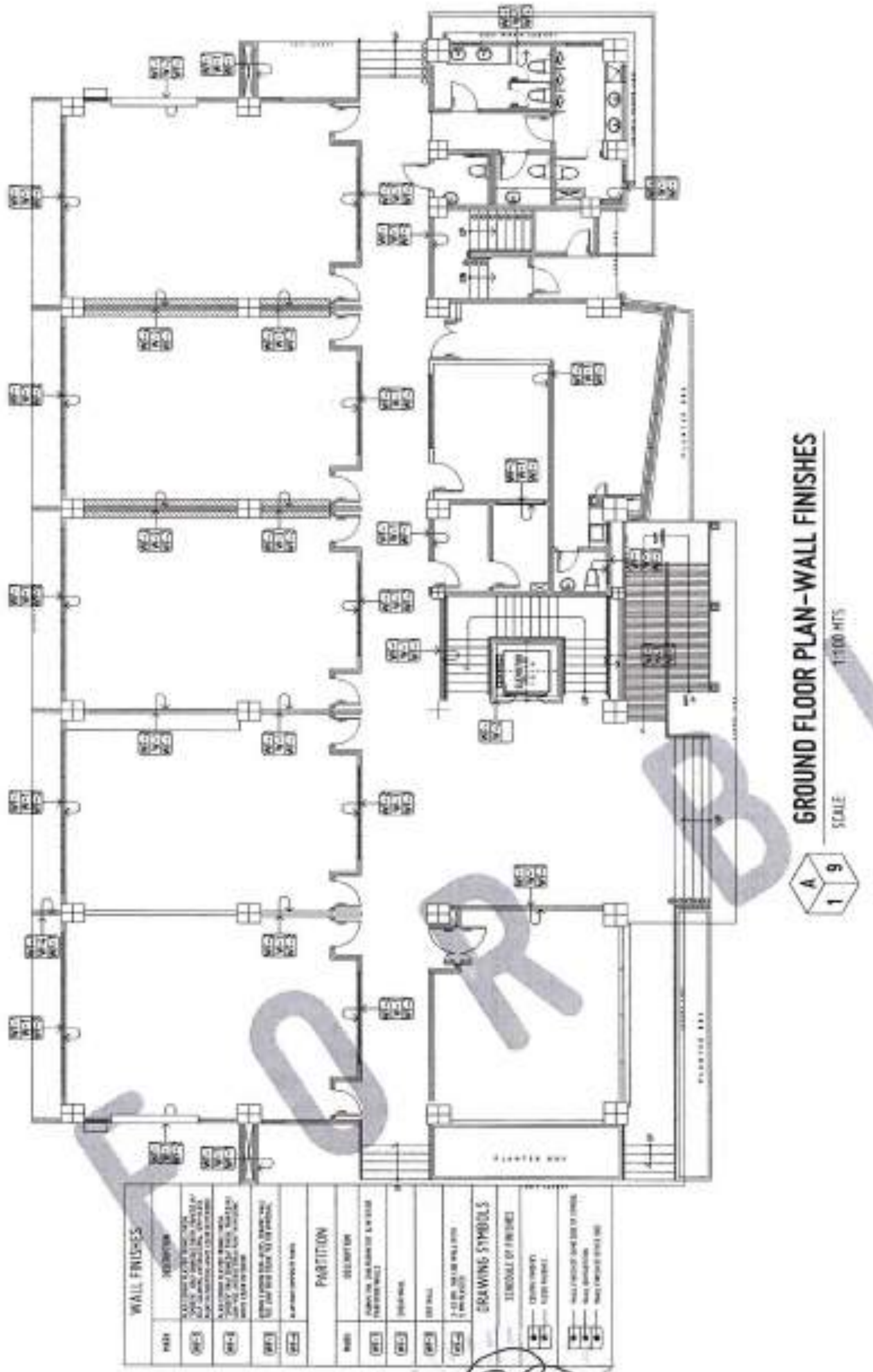
PROJECT	PROPOSED CONSTRUCTION OF SMART ACADEMIC BUILDING PHASE 1, JASAAN CAMPUS
LOCATION	USTP JASAAN CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

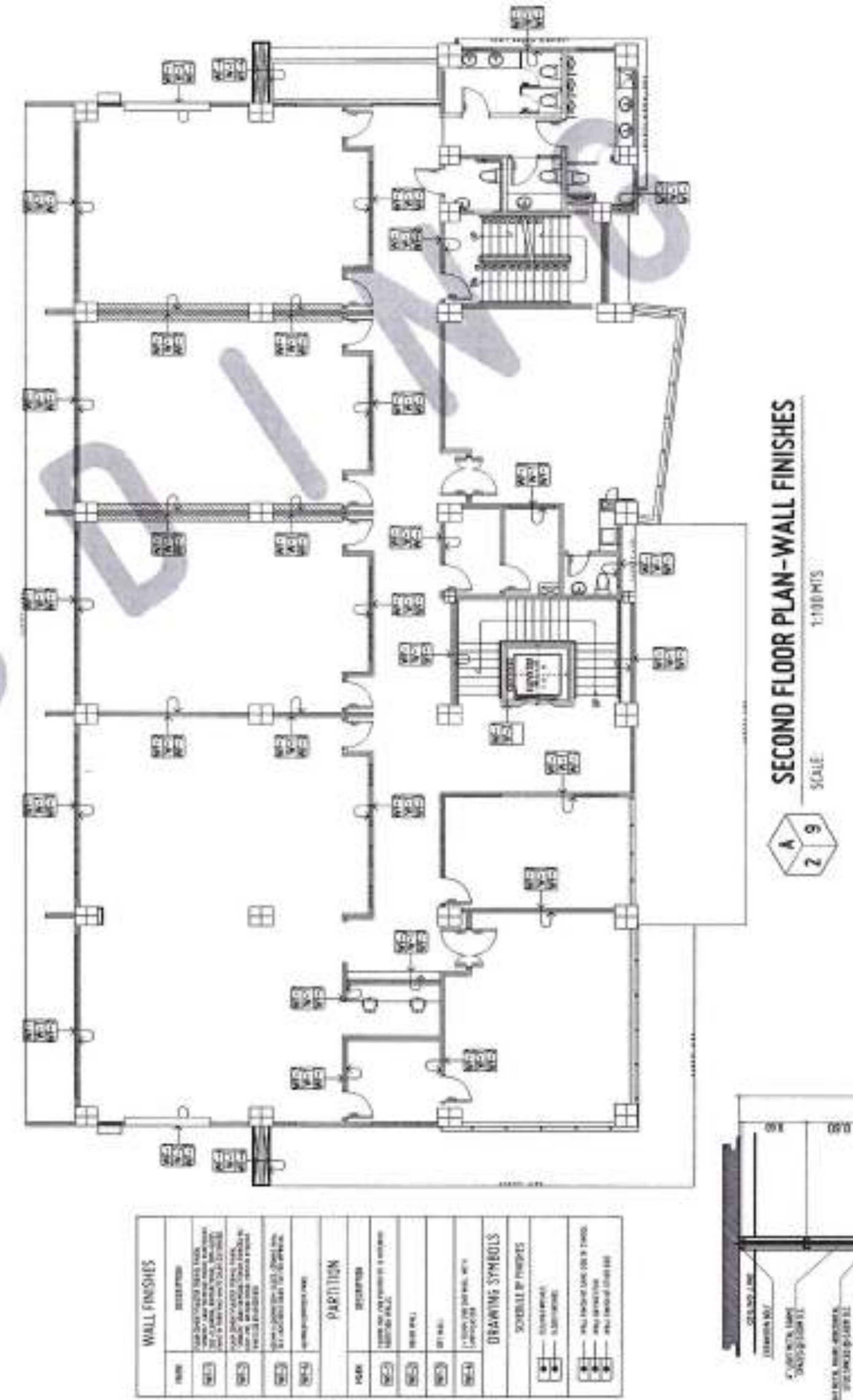
RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II
DIRECTOR, INFRASTRUCTURE PLANNING & FACILITIES DEVELOPMENT OFFICE	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

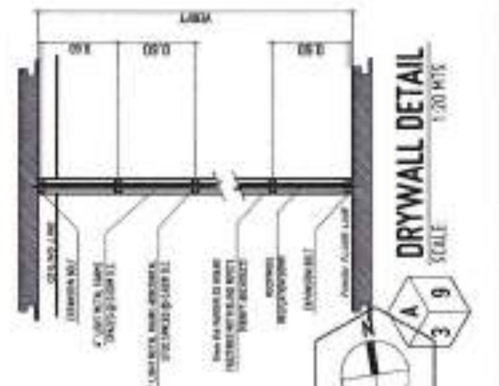
SHEET CONTENTS:
SECTION THRU-A
SECTION THRU-B

DATE DRAWN: 10.01.2025

A8







REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL

FOR BIDDING

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

FERDINAND A. SAMPA
ARCHITECT OF RECORD

PROJECT	PROPOSED CONSTRUCTION OF SMART ACADEMIC BUILDING PHASE 1, JASAAN CAMPUS
LOCATION	USTP JASAAN CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

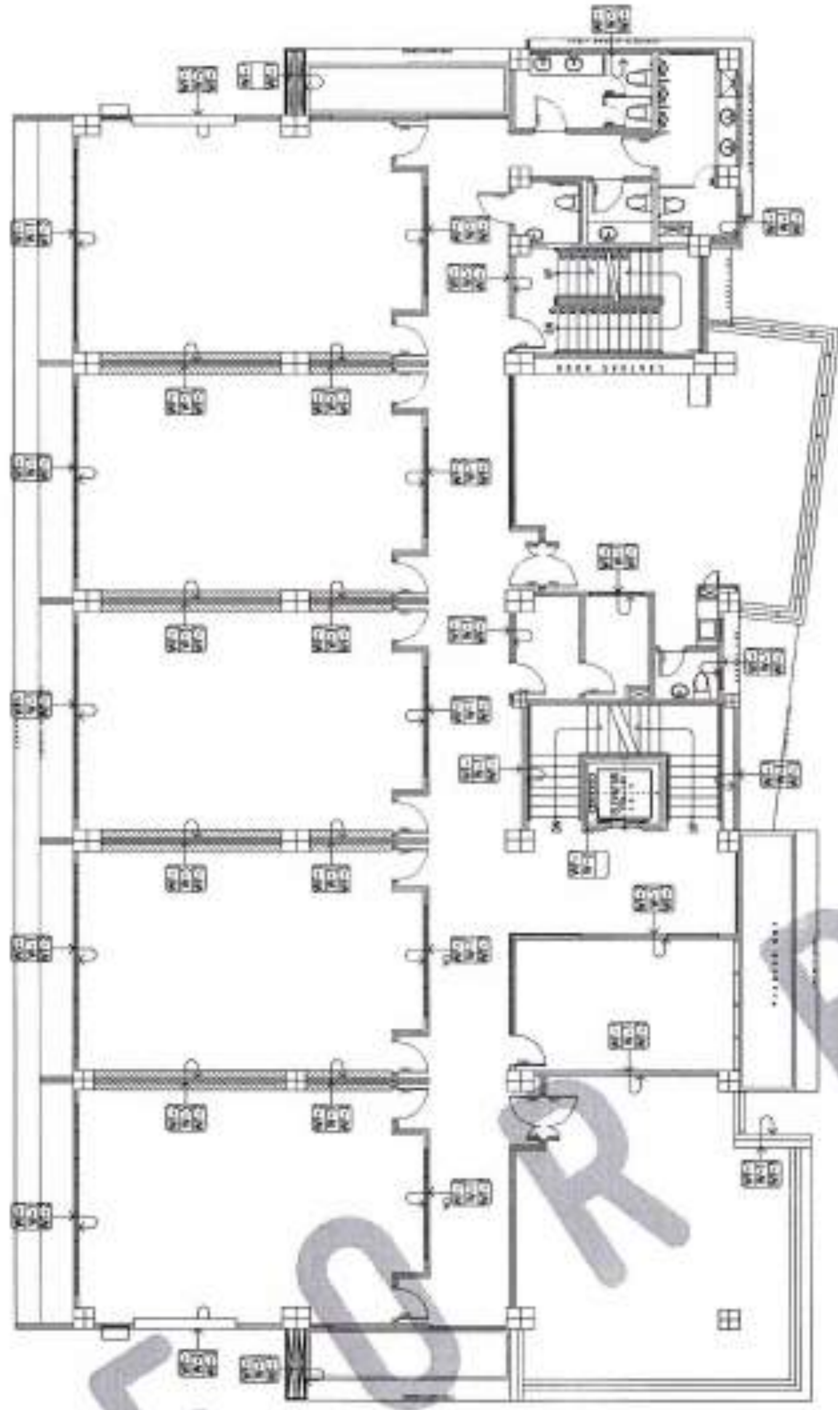
RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIG	DR. AMBROSIO B. CULTURA II
DIRECTOR, INFRASTRUCTURE PLANNING & FACILITIES DEVELOPMENT OFFICE	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
GROUND AND SECOND WALL FINISHES
DRYWALL DETAIL

A9

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL

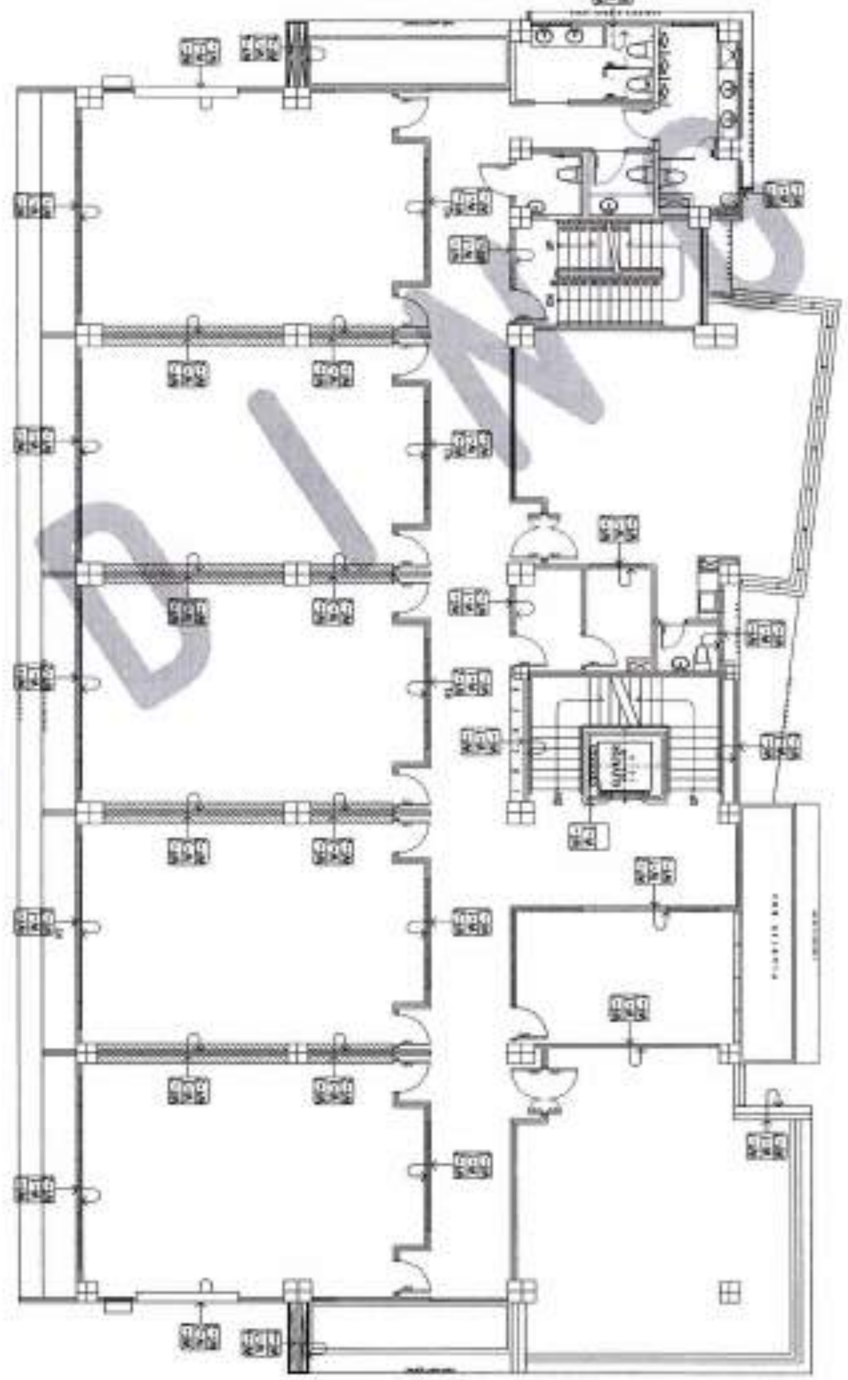
FOR BIDDING



THIRD FLOOR PLAN-WALL FINISHES

SCALE 1:100 MTS

A 1 10



FOURTH FLOOR PLAN-WALL FINISHES

SCALE 1:100 MTS

A 2 10

WALL FINISHES

PARTITION

DRAWING SYMBOLS

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT
WEBSITE: www.ustp.edu.ph

FERDINAND A. DUNGA
ARCHITECT IN-CHARGE

DATE 02-18-2025
PLACE CAGAYAN DE ORO

PROJECT: PROPOSED CONSTRUCTION OF SMART ACADEMIC BUILDING PHASE 1, JASAAN CAMPUS

LOCATION: USTP JASAAN CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, INFRASTRUCTURE PLANNING & FACILITIES DEVELOPMENT OFFICE

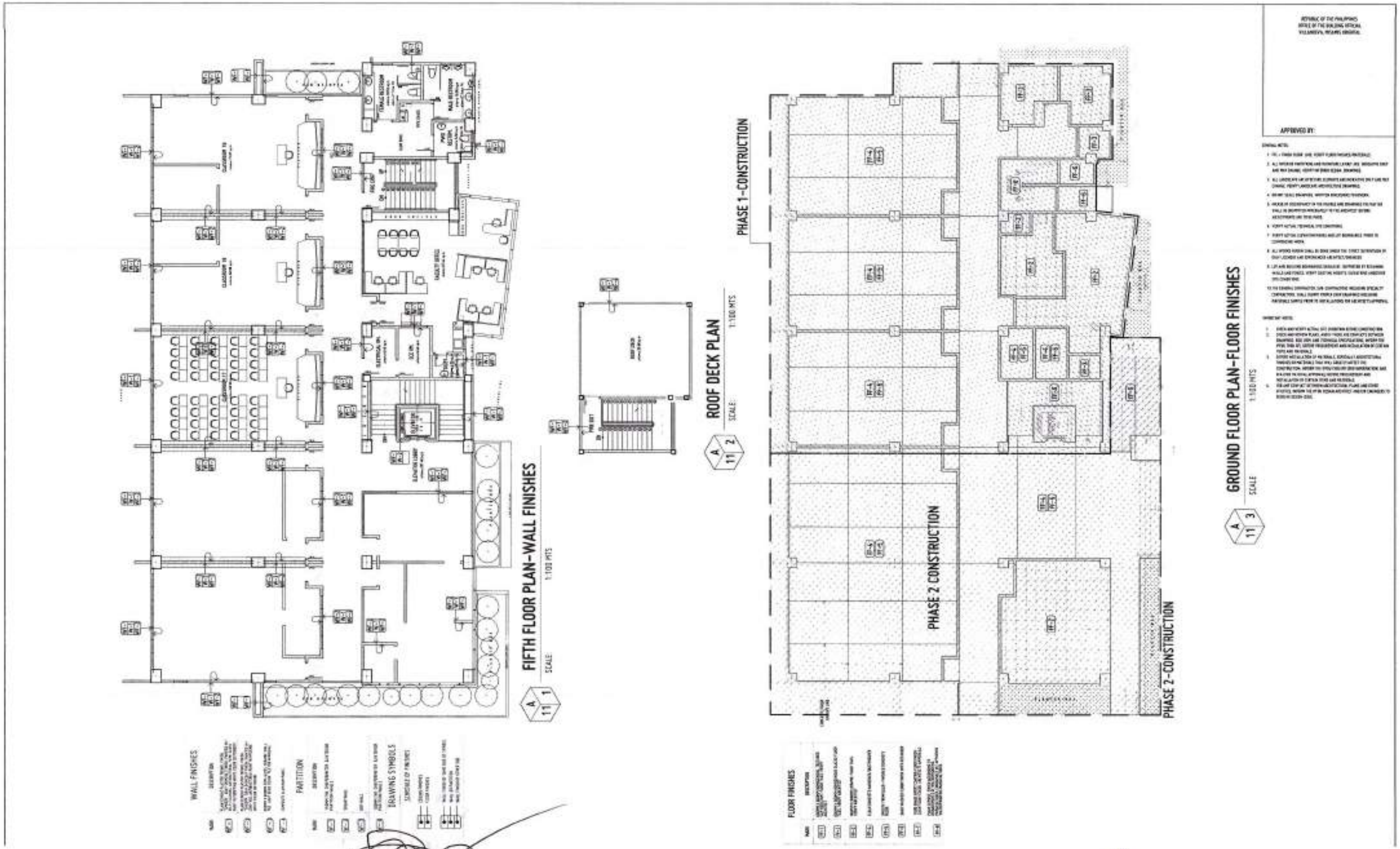
RECOMMENDING APPROVAL:
ATTY. ERWIN E. BUCIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
THIRD AND FOURTH WALL FINISHES

DRAWN BY:
DATE DRAWN: 18.01.2025

A10



USTP

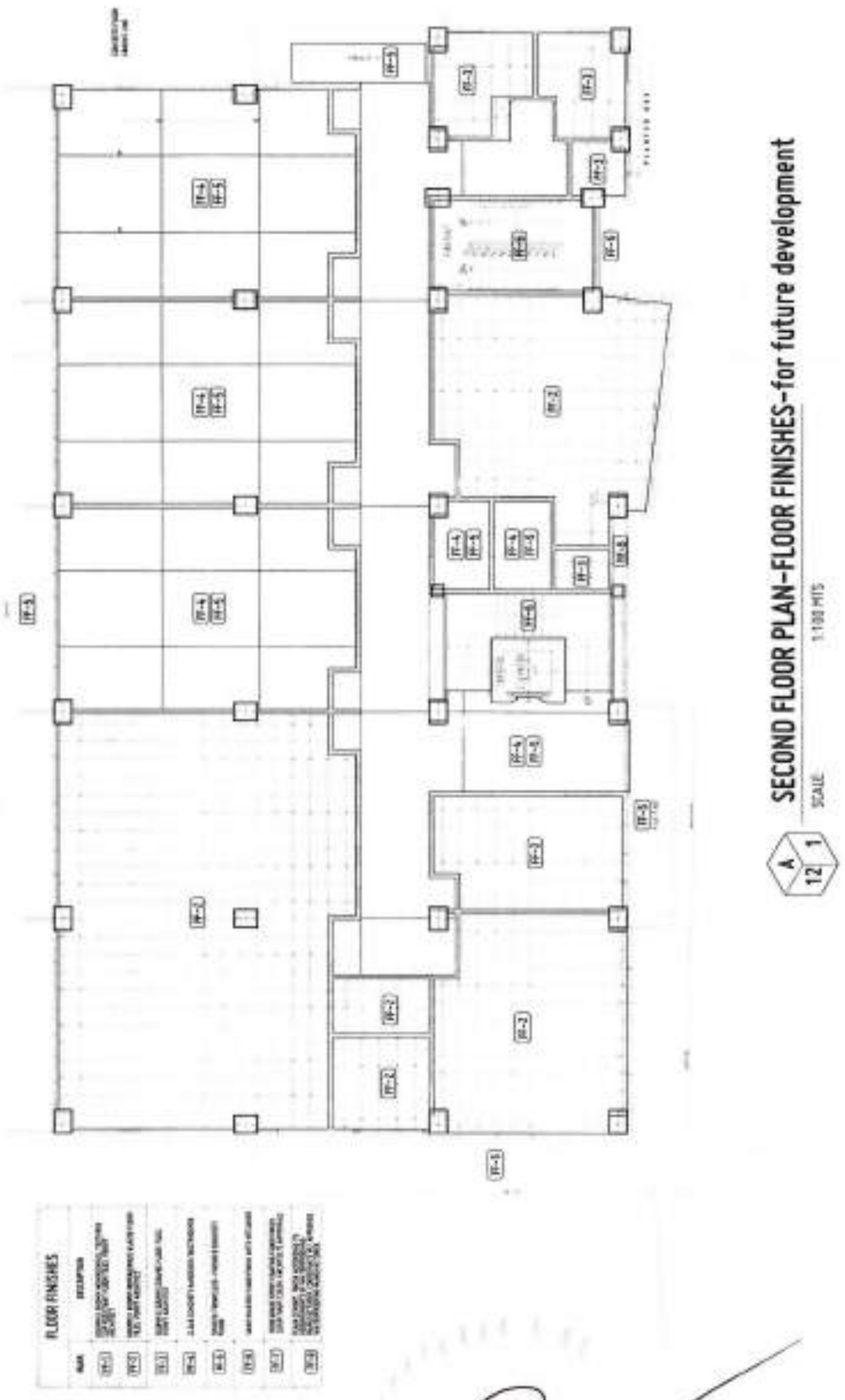
FERDINAND A. [illegible]	PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
ARCHITECT OF RECORD	LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
DATE: 02-18-2025	OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

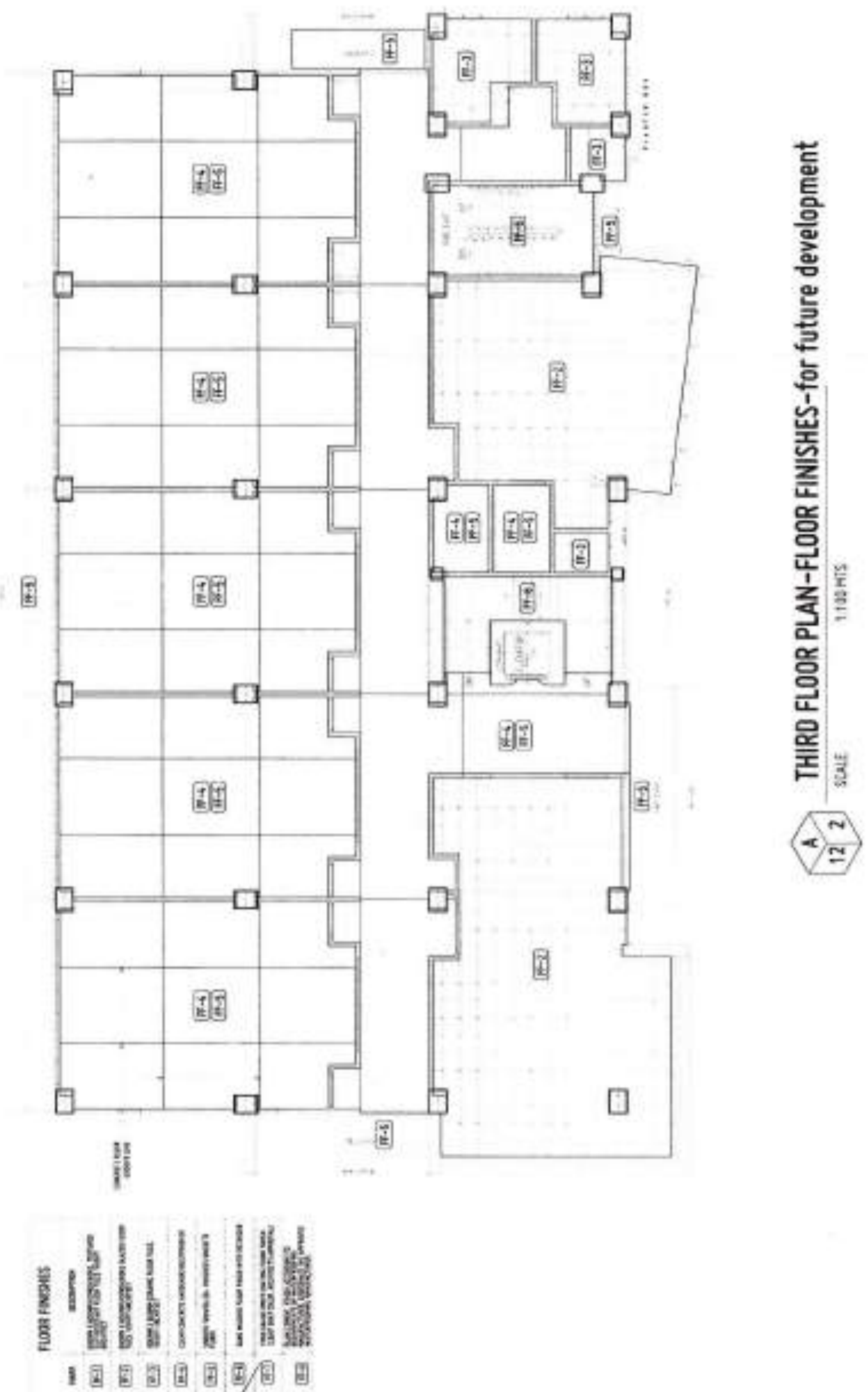
RECOMMENDING APPROVAL	RECOMMENDING APPROVAL	APPROVED BY
ENGR. GRACE C. BABA	ATTY. ERWIN [illegible]	DR. AMBROSIO B. CULTURA II
DIRECTOR, OPDD		PRESIDENT, USTP SYSTEM

SHEET CONTENTS: FIFTH AND ROOF DECK WALL FINISHES, GROUND FLOOR FINISHES

DATE DRAWN: SEPTEMBER 2025

A11





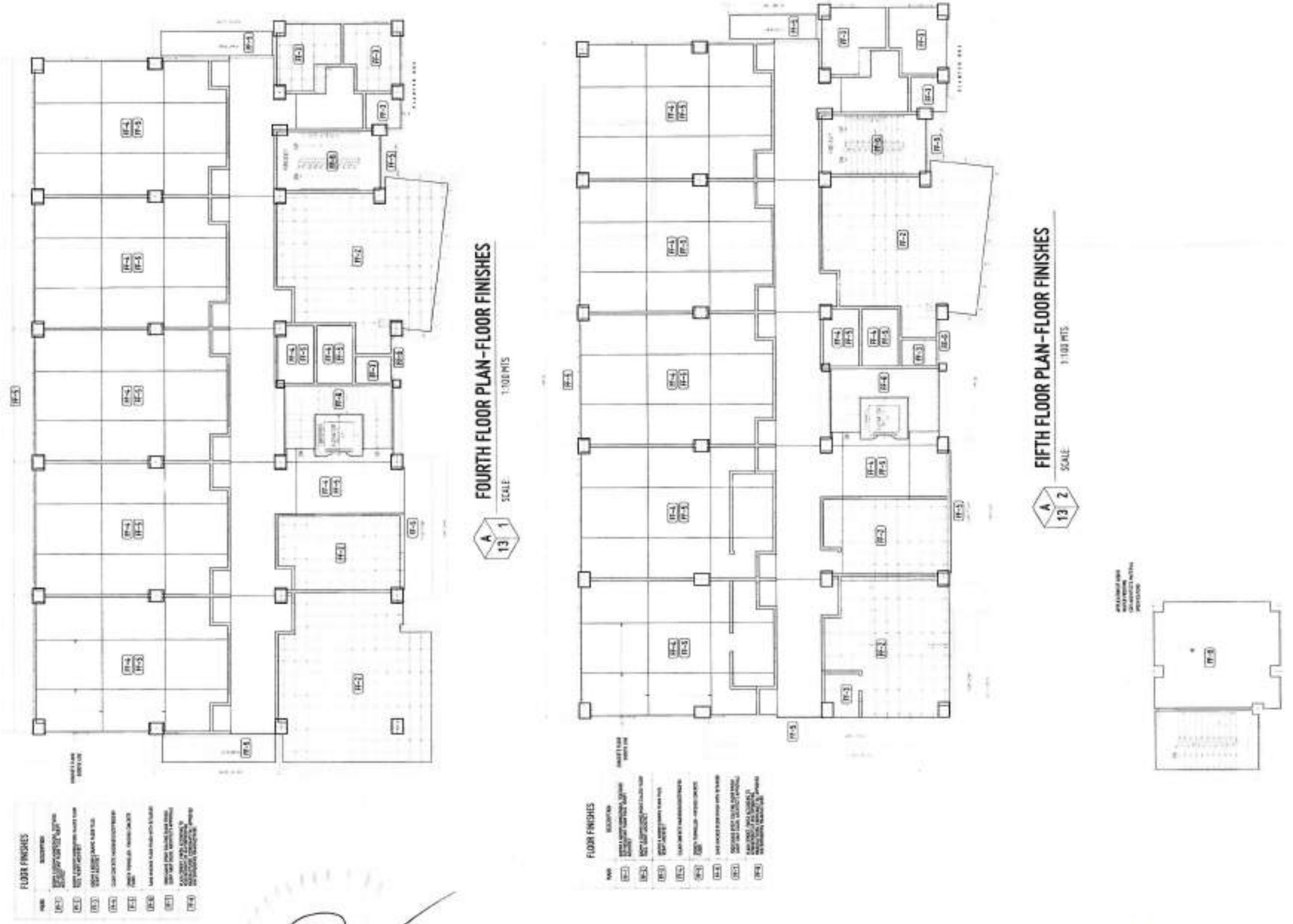
APPROVED BY:

	FERDINAND A. [illegible]
	ARCHITECT OF RECORD
PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II	SECOND AND THIRD FLOOR FINISHES
DIRECTOR, [illegible]	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM	

SEPTEMBER 2025

A12



PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

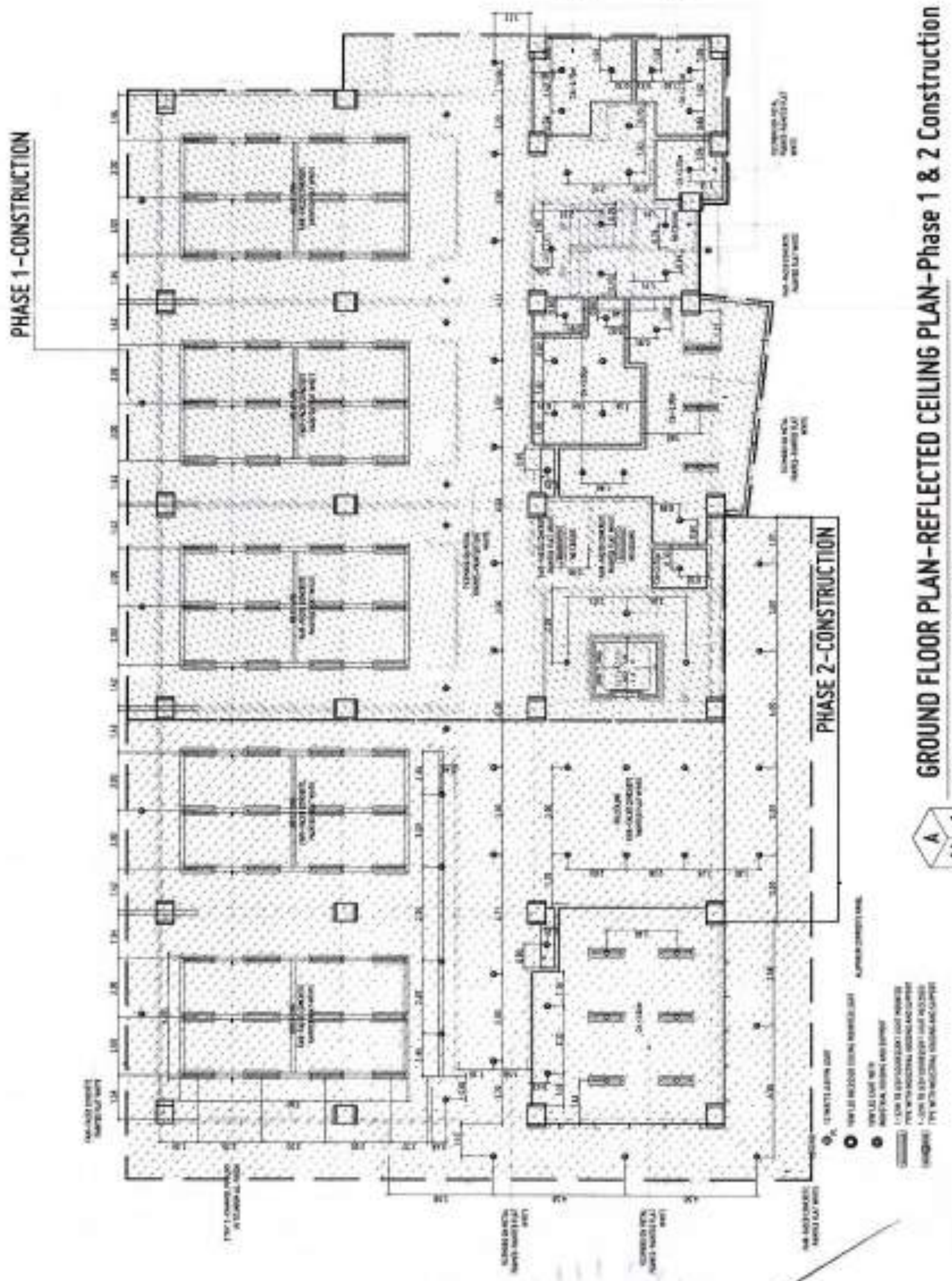
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, PPDO

RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: FOURTH, FIFTH AND ROOF DECK FLOOR FINISHES

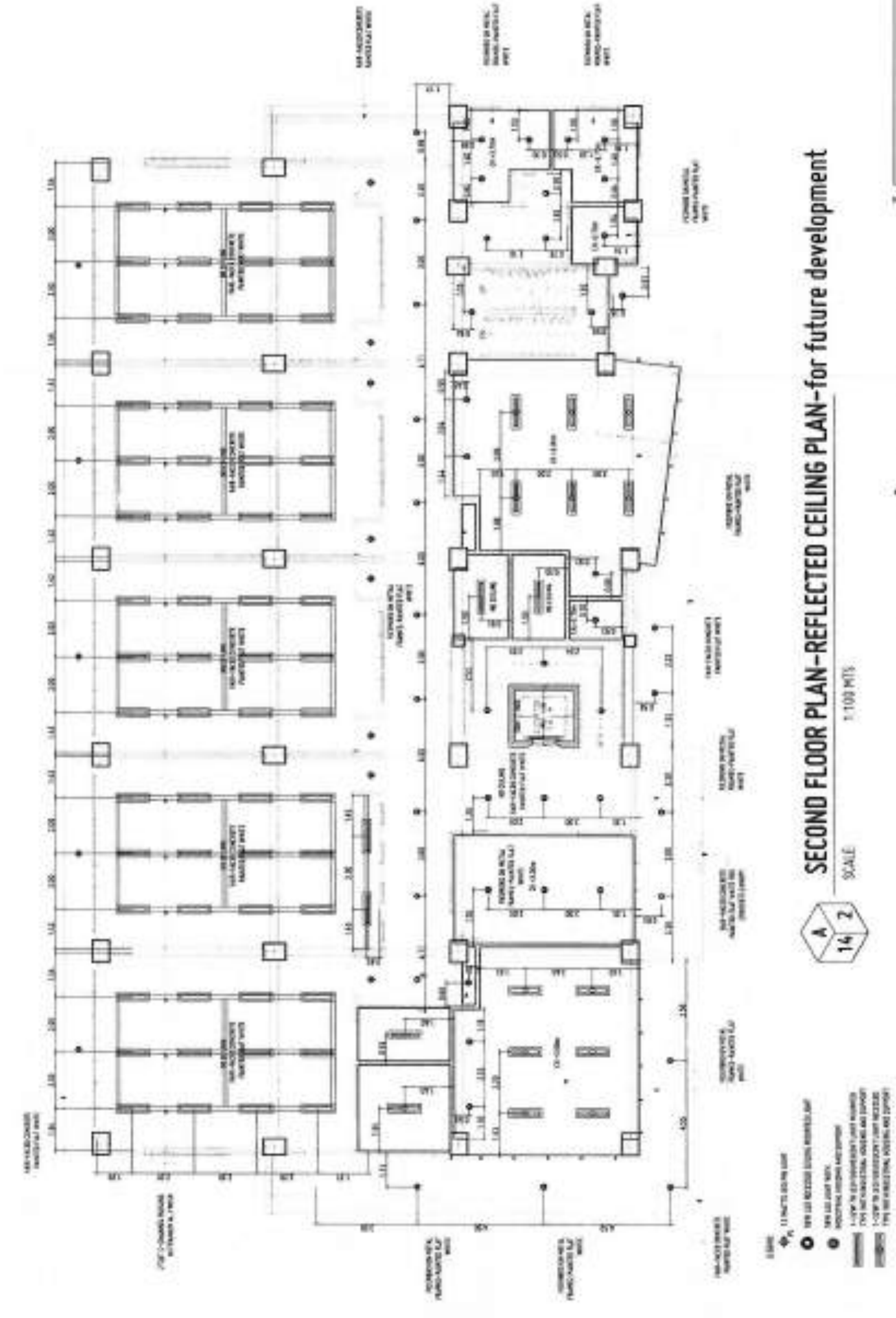
A13



GROUND FLOOR PLAN-REFLECTED CEILING PLAN-Phase 1 & 2 Construction

SCALE: 1:100 MTS

A 14 1



SECOND FLOOR PLAN-REFLECTED CEILING PLAN-for future development

SCALE: 1:100 MTS

A 14 2

APPROVED BY:

FERDINAND A. [illegible]	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	
ARCHITECT	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	
	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES	

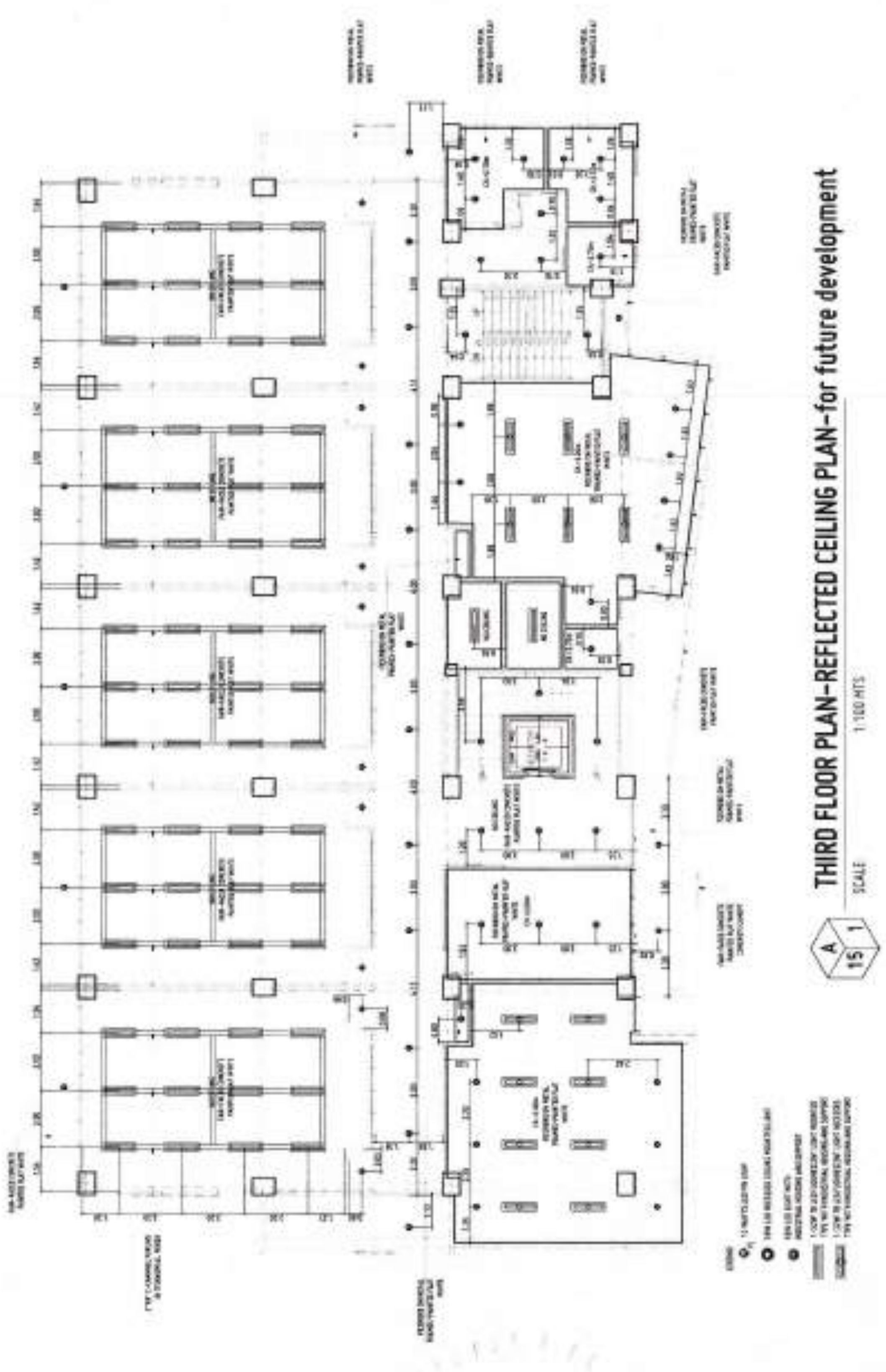
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OPDD

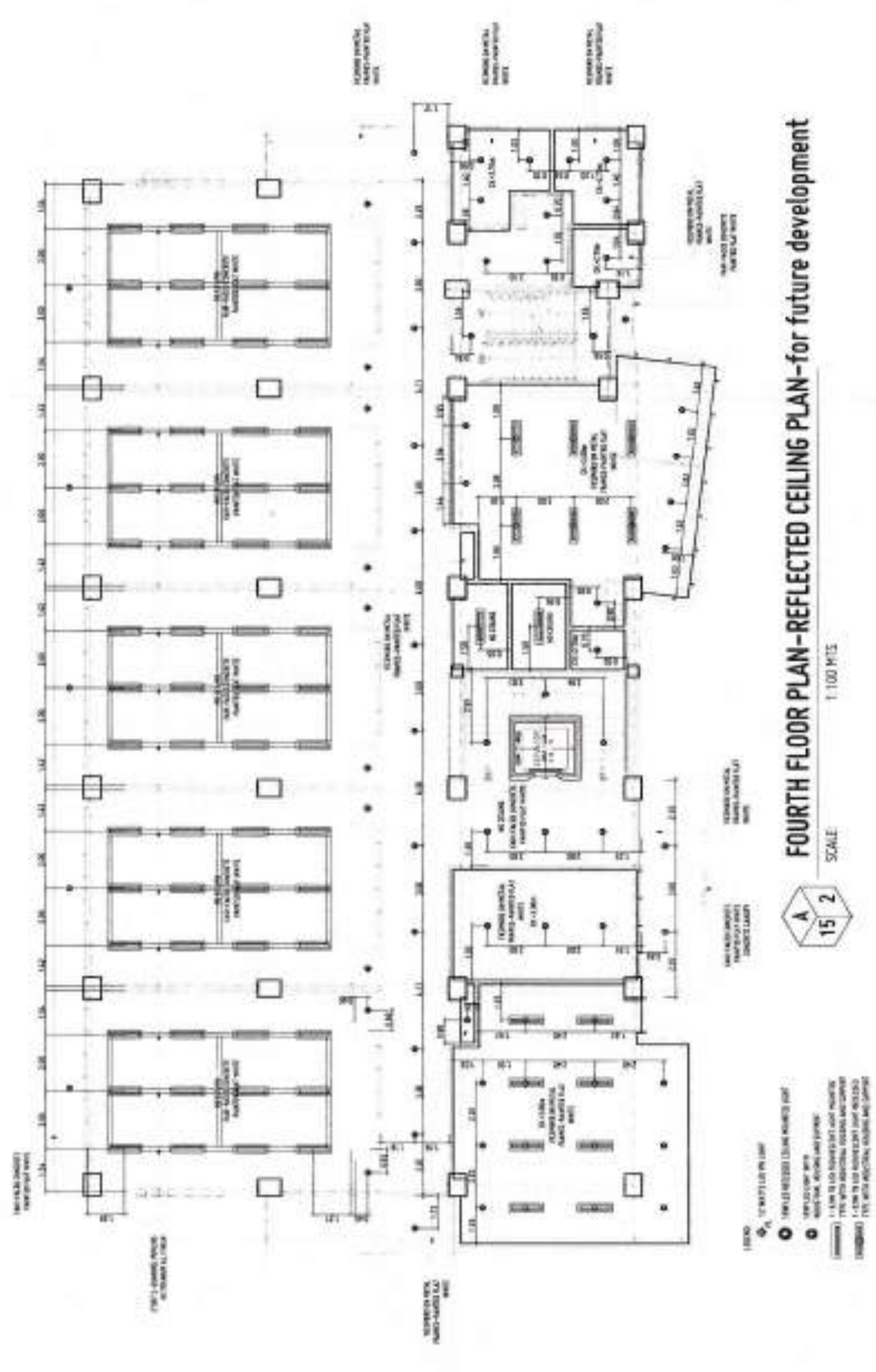
RECOMMENDING APPROVAL: ATTY. ERWIN [illegible]

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: GROUND AND SECOND RCP

A14





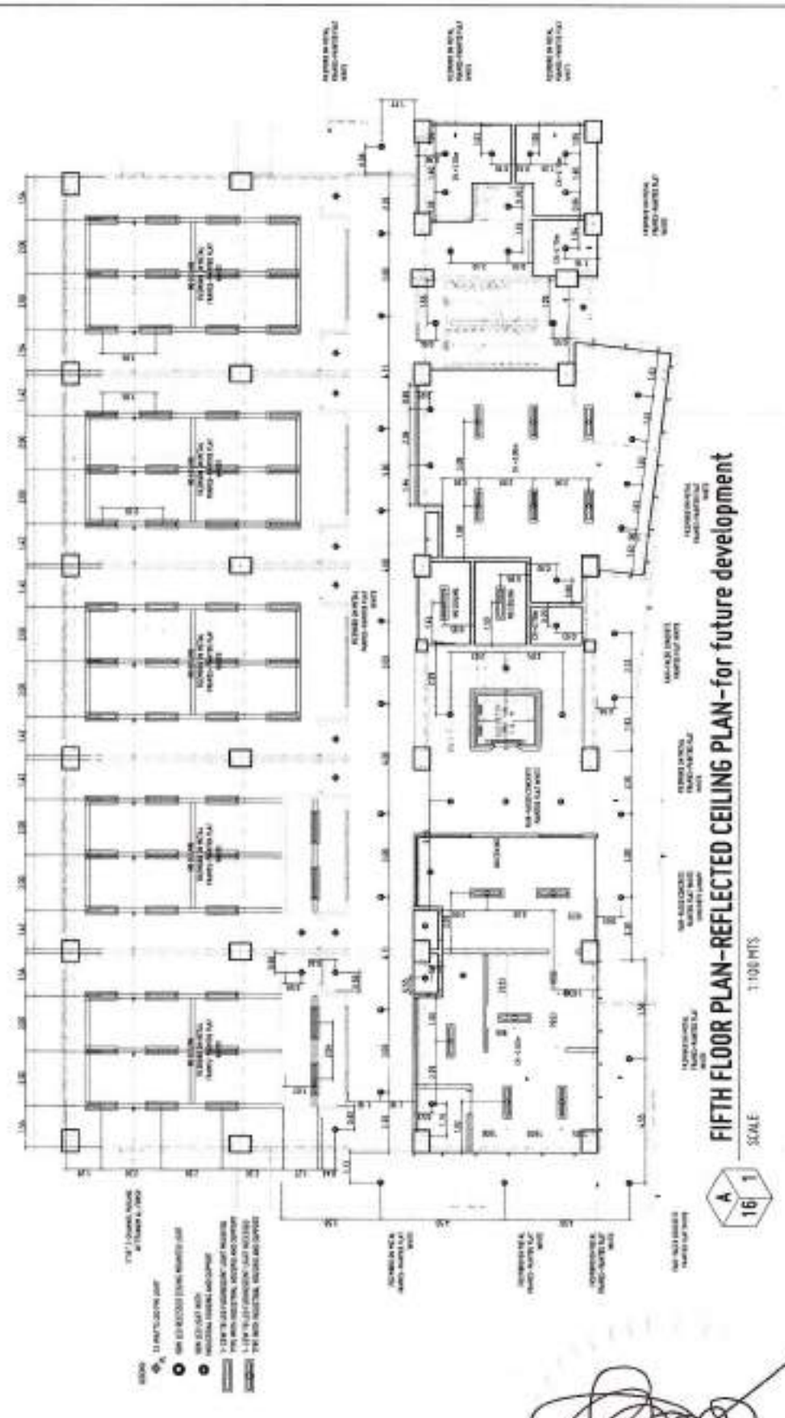
APPROVED BY:

FERDINAND A. DUMPA ARCHITECT OF RECORD	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	
	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	
10-19-2025	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES	

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:
ENGR. GRACE C. BABA DIRECTOR, IPPDO	ATTY. ERWIN D. BUCIO VP FOR ADMINISTRATION & LEGAL AFFAIRS	DR. AMBROSIO B. CULTURA II PRESIDENT, USTP SYSTEM	THIRD AND FOURTH RCP

DATE DRAWN: SEPTEMBER 2025

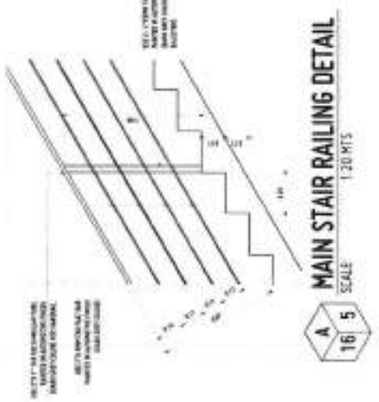
A15



FIFTH FLOOR PLAN-REFLECTED CEILING PLAN for future development

SCALE 1:100 MTS

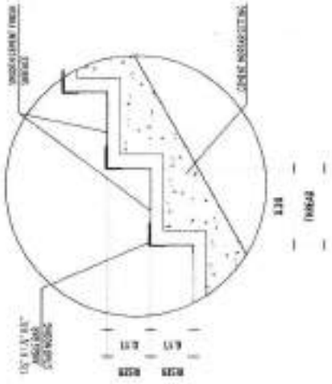
A 16 1



MAIN STAIR RAILING DETAIL

SCALE 1:20 MTS

A 16 5



ROOF DECK PLAN

SCALE 1:100 MTS

A 16 2

TYPICAL STAIR NOSING DETAIL

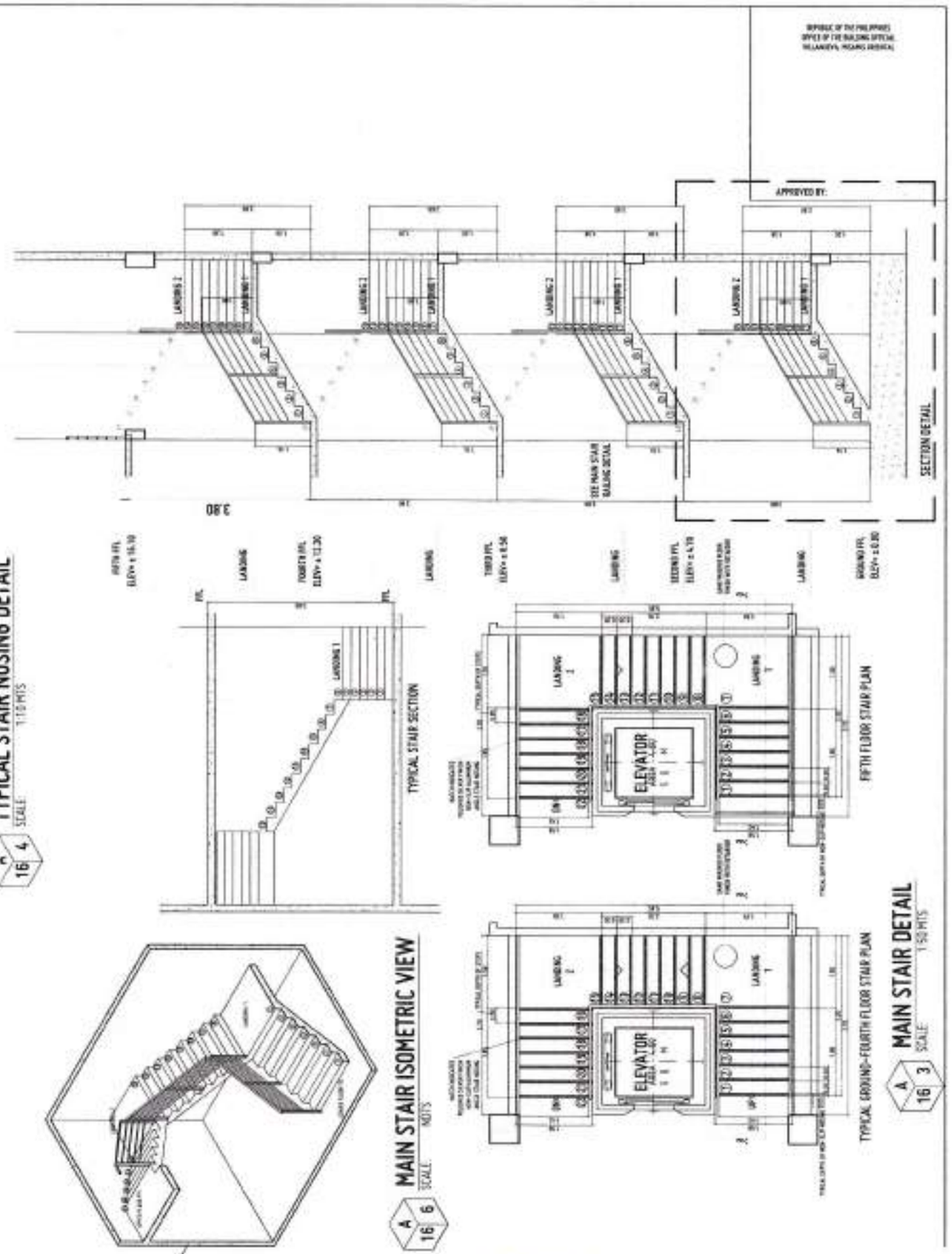
SCALE 1:10 MTS

A 16 4

MAIN STAIR ISOMETRIC VIEW

NOTS

A 16 6



SECTION DETAIL

MAIN STAIR DETAIL

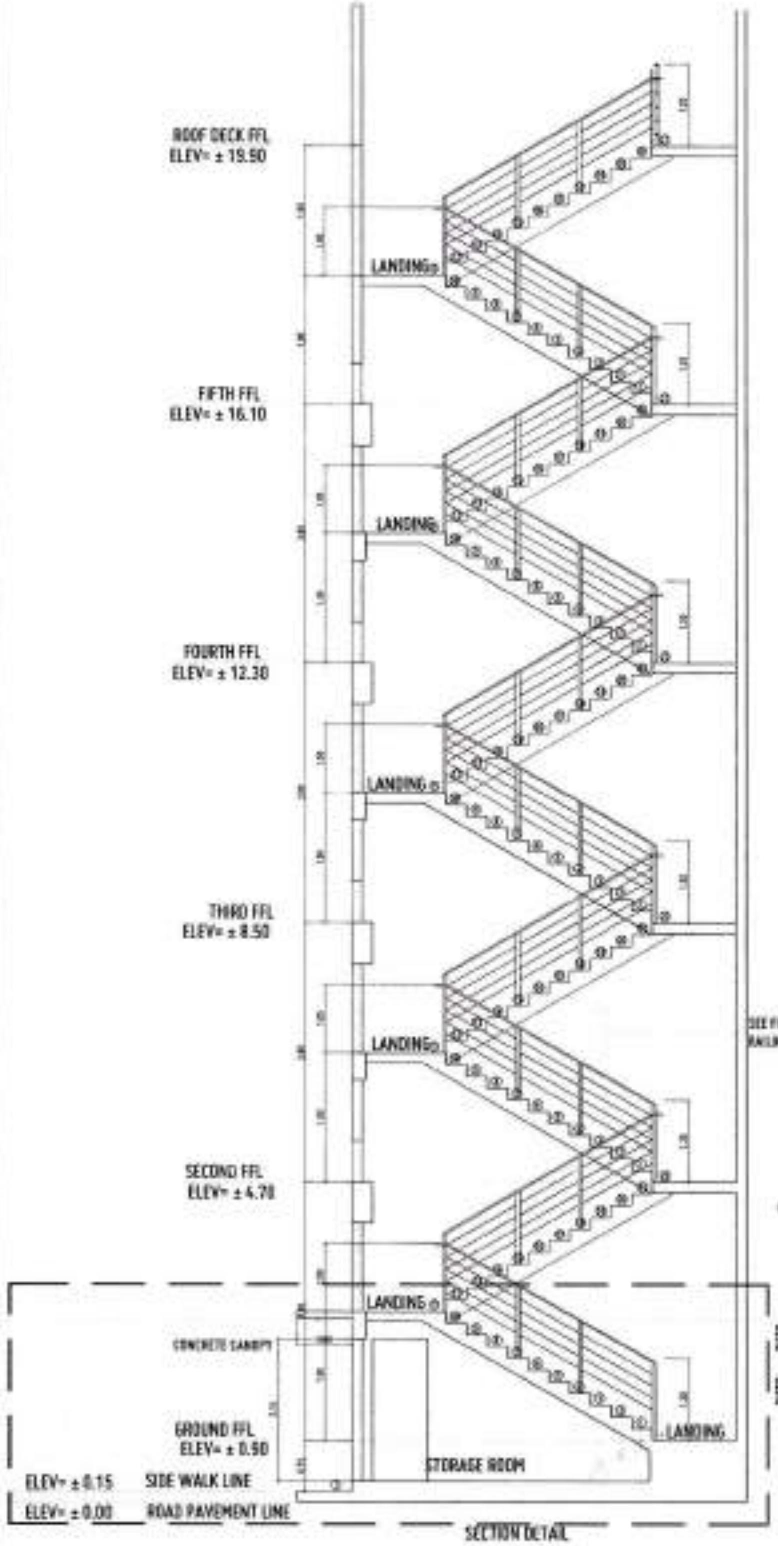
SCALE 1:50 MTS

A 16 3

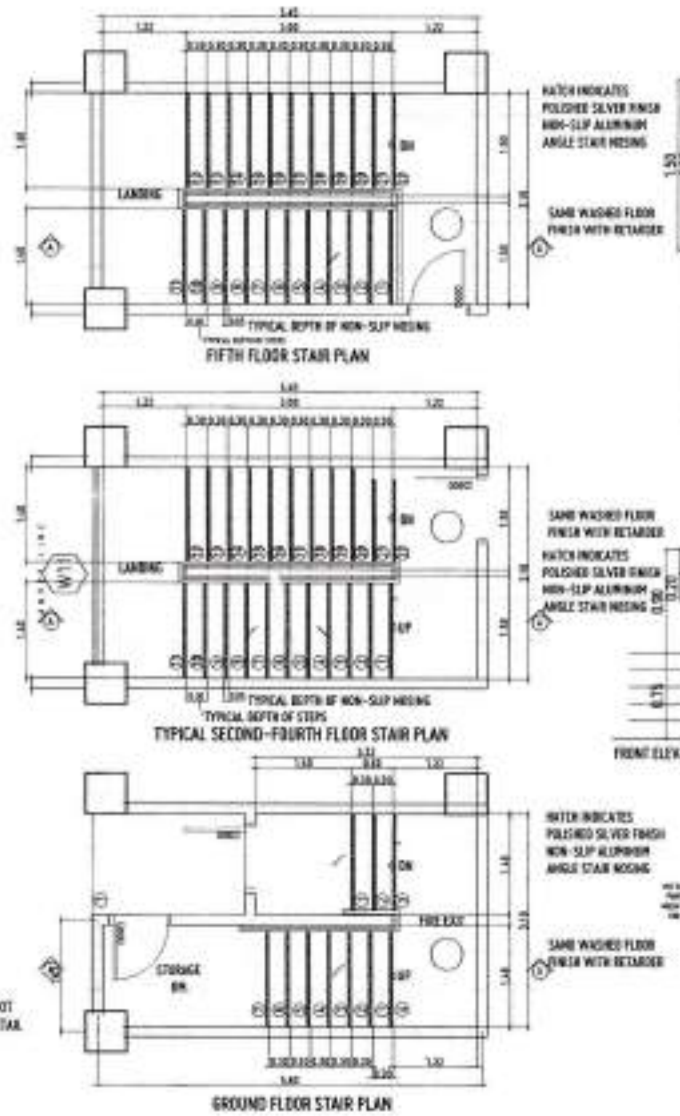
USTP

CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	
USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	LOCATION
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES	OWNER
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA	
RECOMMENDING APPROVAL: ATTY. ERWIN B. BULO	
APPROVED BY: DR. AMBROSIO B. CULTURA II	
SHEET CONTENTS: FIFTH AND ROOF DECK RCP, MAIN STAIR DETAIL, TYPICAL STAIR NOSING DETAIL, MAIN STAIR RAILING DETAIL	
SEPTEMBER 2025	

A16



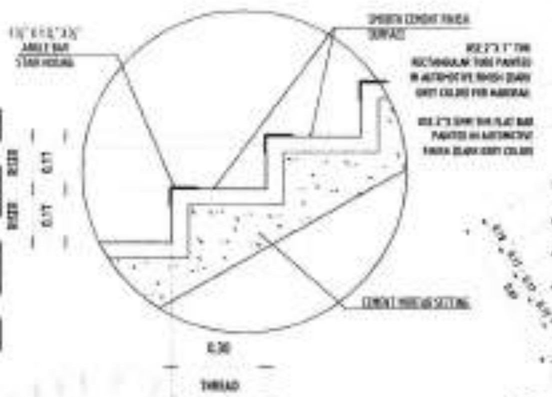
A 17 1 FIRE EXIT STAIR SECTION DETAIL
SCALE: 1:50 MTS



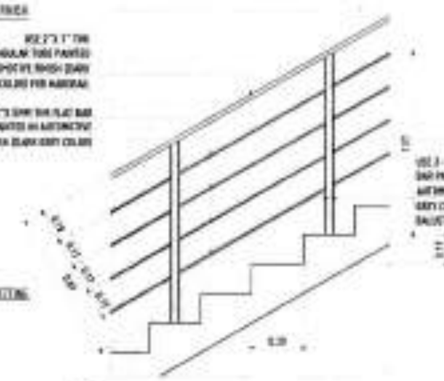
FIFTH FLOOR STAIR PLAN

TYPICAL SECOND–FOURTH FLOOR STAIR PLAN

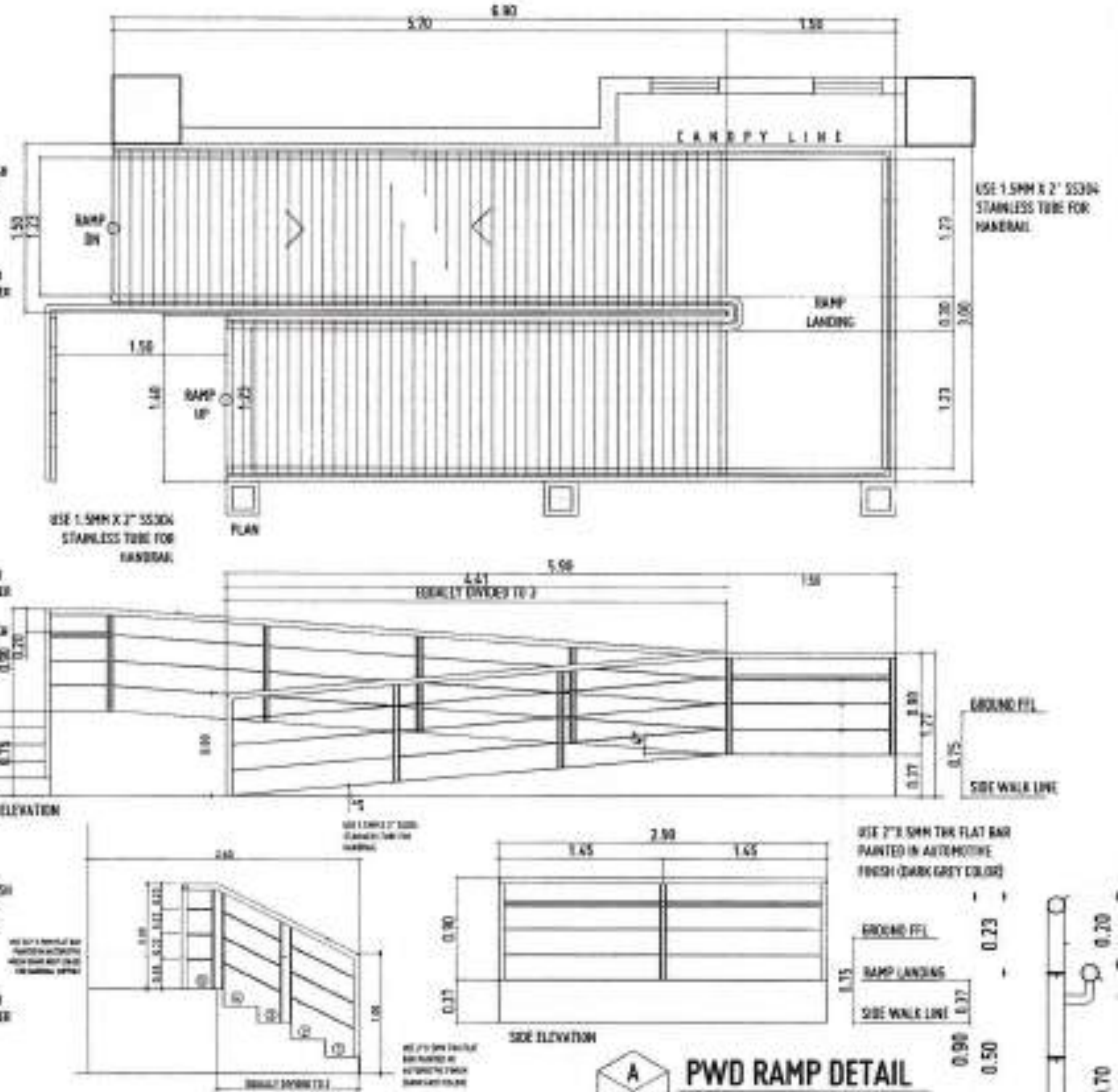
GROUND FLOOR STAIR PLAN



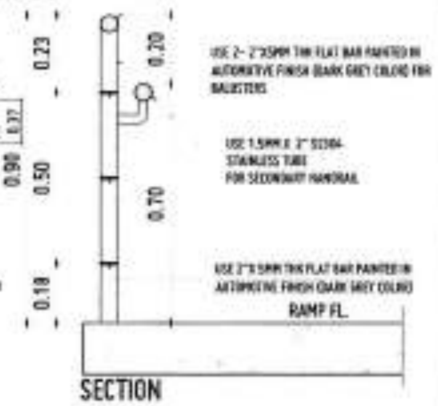
A 17 2 TYPICAL STAIR NOSING DETAIL
SCALE: 1:10 MTS



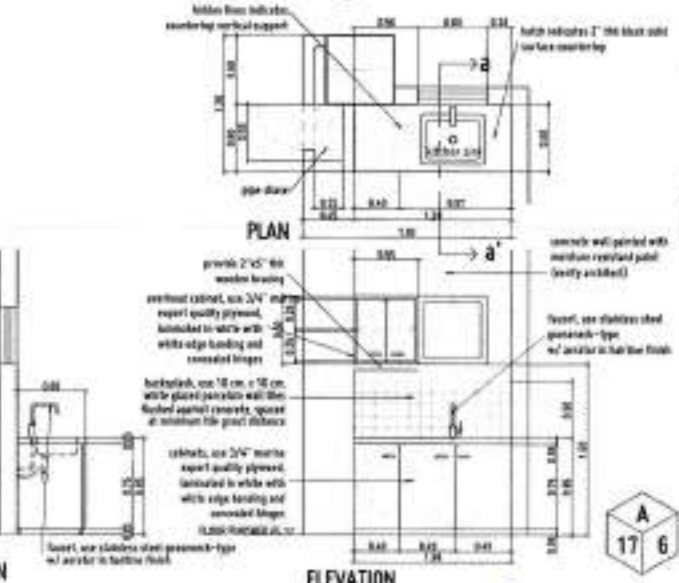
A 17 3 FIRE EXIT RAILING DETAIL
SCALE: 1:20 MTS



A 17 4 PWD RAMP DETAIL
SCALE: 1:30 MTS



A 17 5 PWD RAMP RAILING DETAIL
SCALE: 1:20 MTS



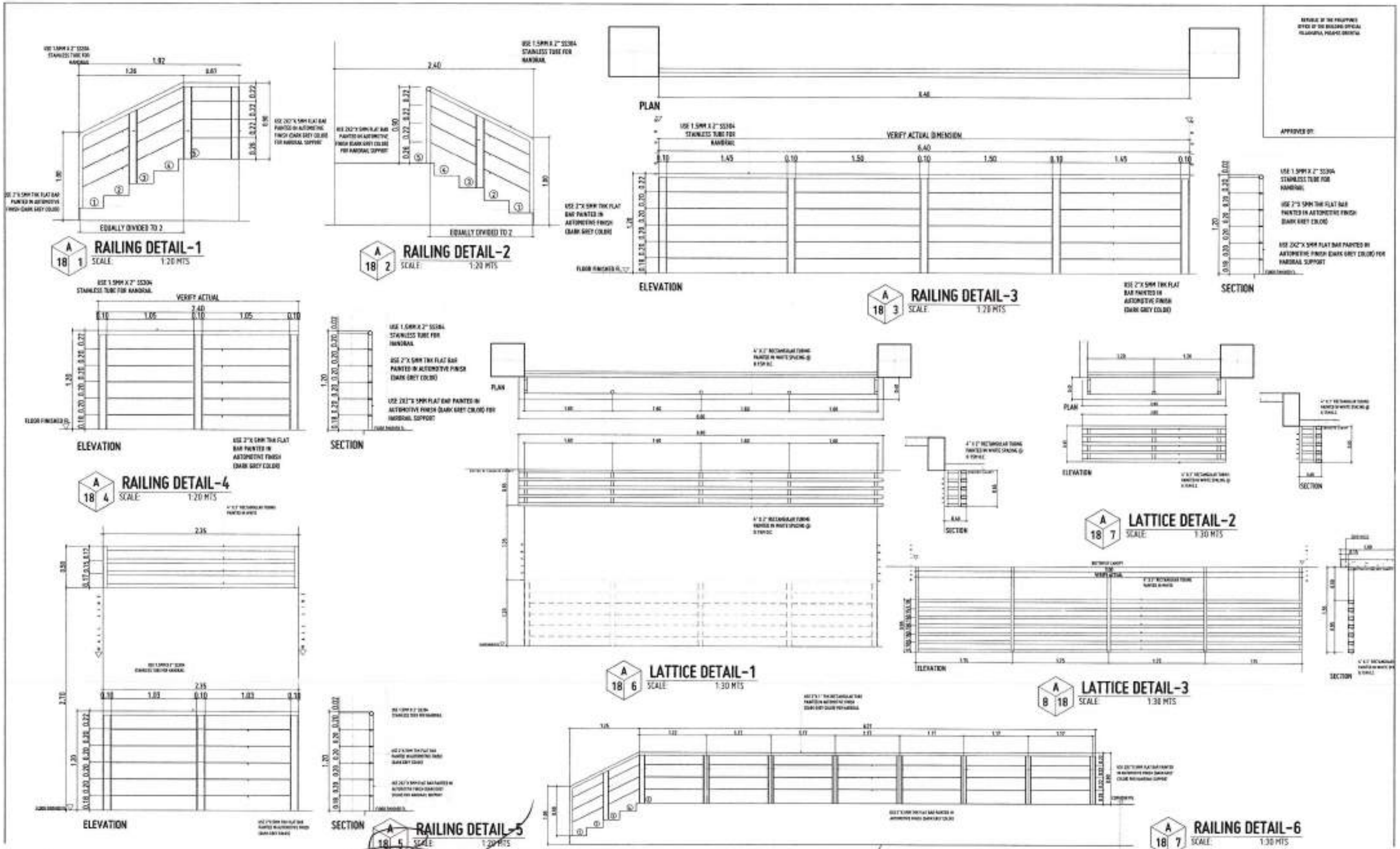
A 17 6 OFFICE SINK DETAIL
SCALE: 1:30 MTS

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS		
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL		
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES		
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA	RECOMMENDING APPROVAL: ATTY. ERWIN B. DUCID	APPROVED BY: DR. AMBROSIO B. CULTURA II	SHEET CONTENTS: FIRE EXIT STAIR SECTION DETAIL, TYPICAL STAIR NOSING DETAIL, FIRE EXIT RAILING DETAIL, PWD RAMP DETAIL, PWD RAMP RAILING DETAIL, OFFICE SINK DETAIL

FERDINAND [illegible]
ARCHITECT OF RECORD

DATE DRAWN: SEPTEMBER 2025

A17



PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

FERDINAND A. DUMPA
ARCHITECT OF RECORD

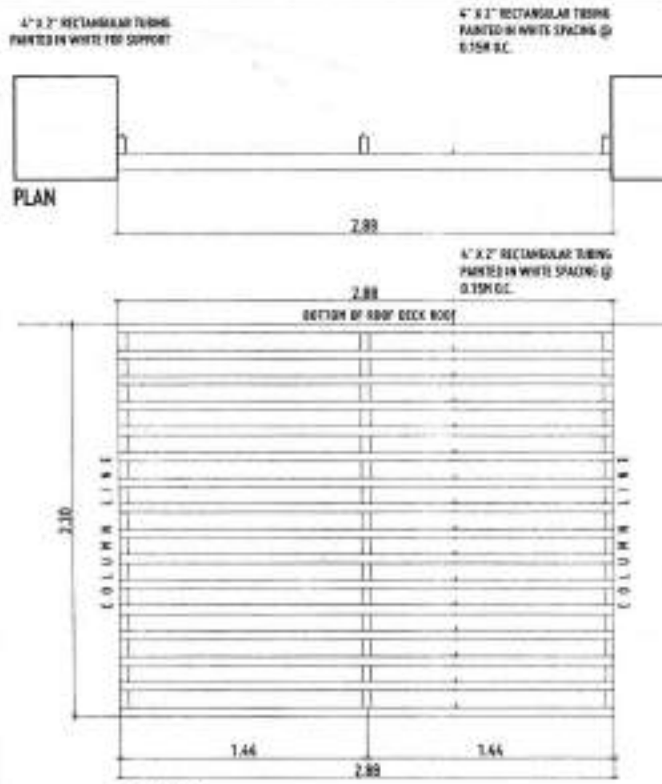
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO

RECOMMENDING APPROVAL: ATTY. ERWIN B. BULO

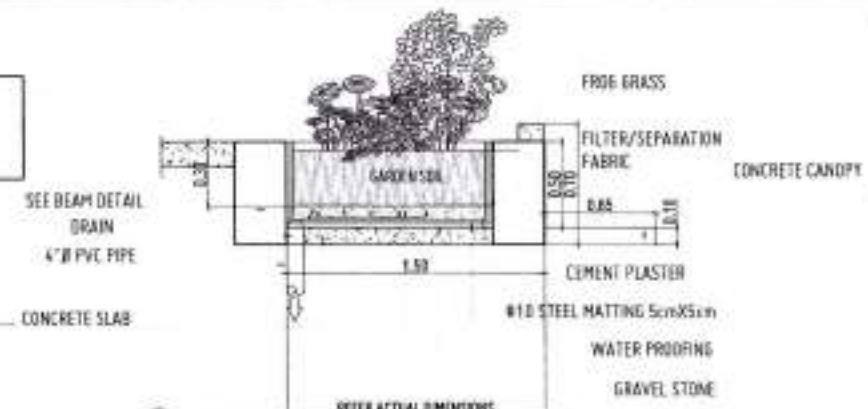
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: RAILING AND LATTICE DETAILS

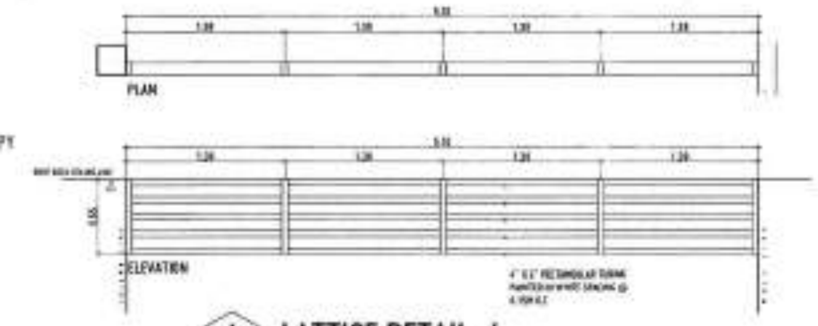
A18



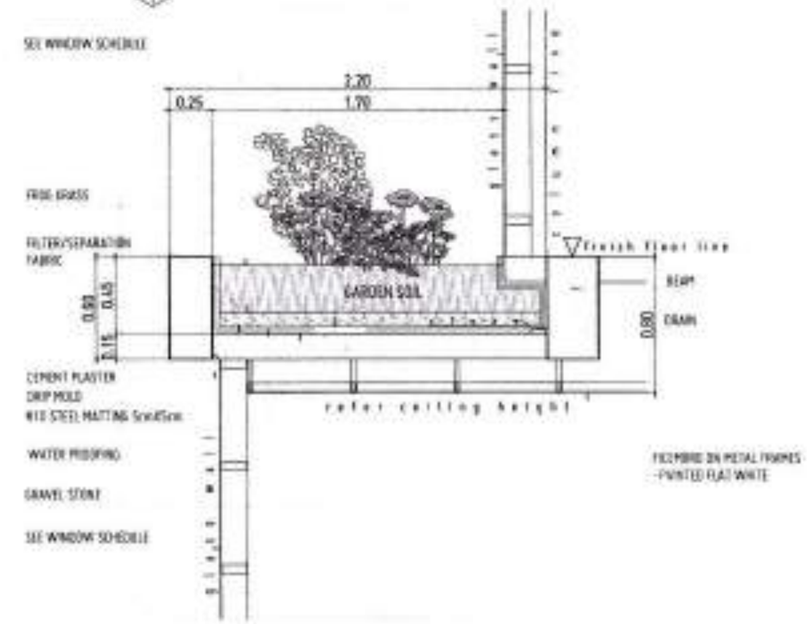
VENT GRILLE DETAIL
A 19 1
SCALE 1:20 MTS



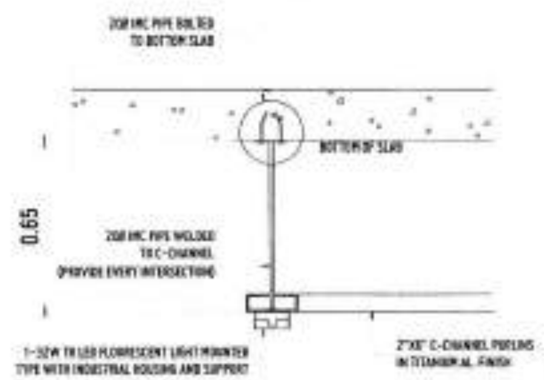
TYPICAL PLANTER BOX DETAIL
A 19 3
SCALE 1:20 MTS



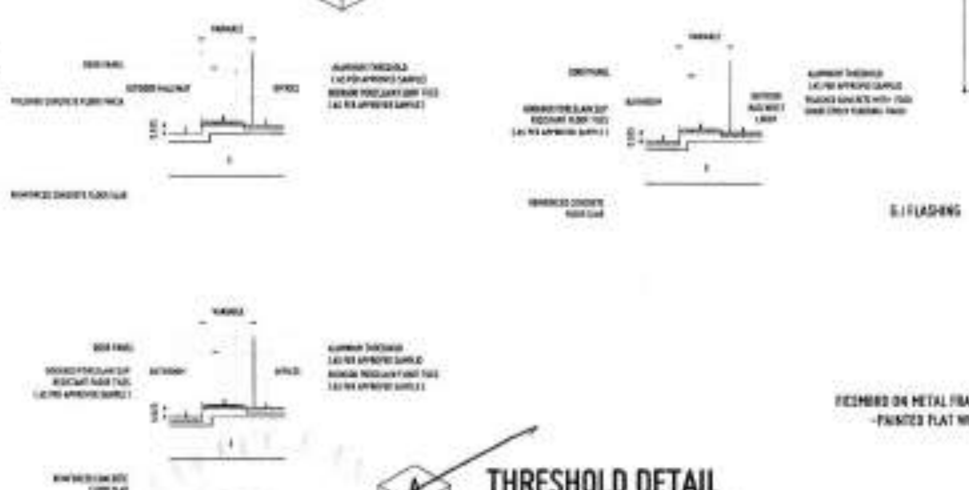
LATTICE DETAIL-4
A 19 6
SCALE 1:30 MTS



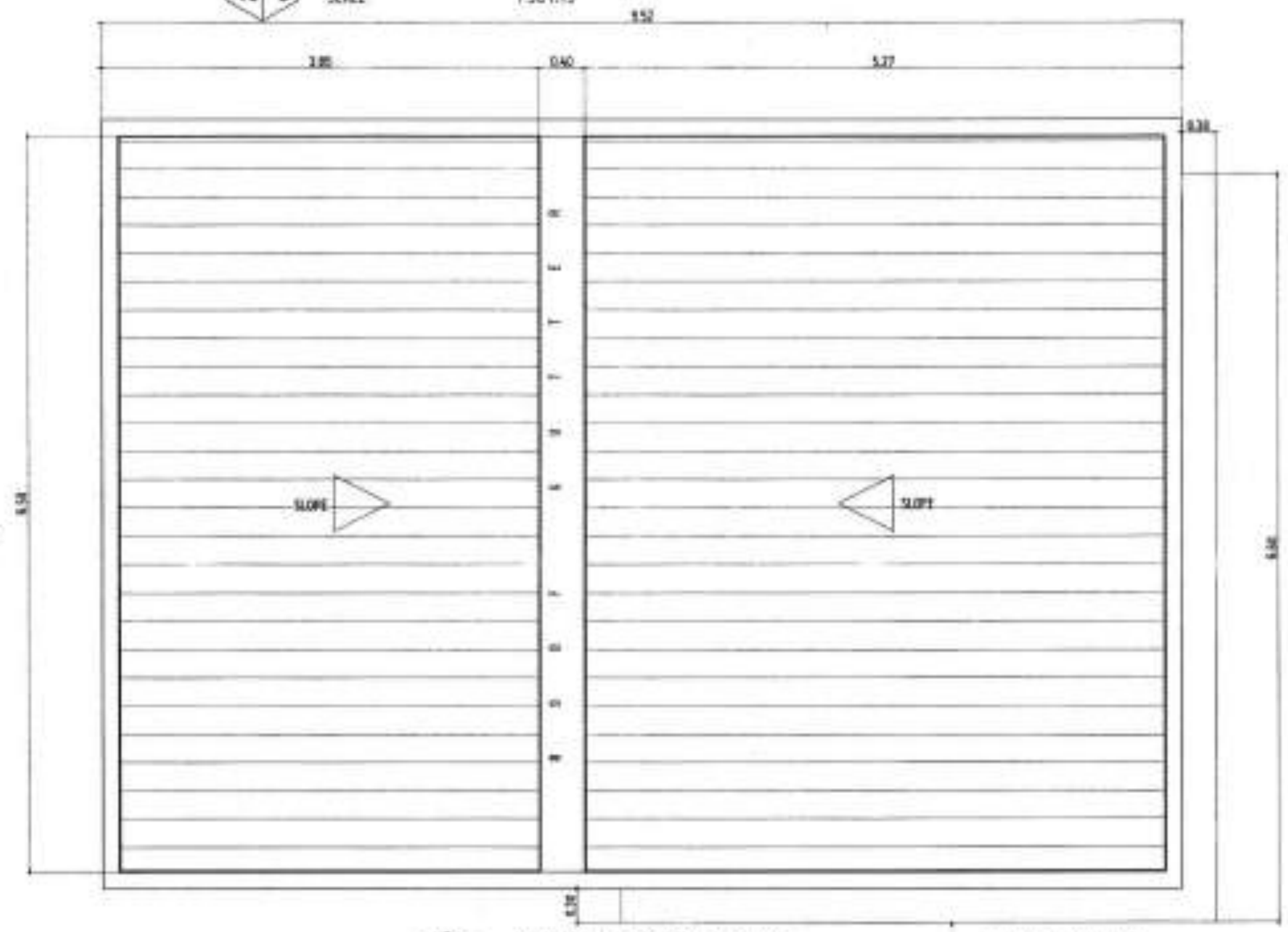
PLANTER BOX DETAIL-2
A 19 4
SCALE 1:20 MTS



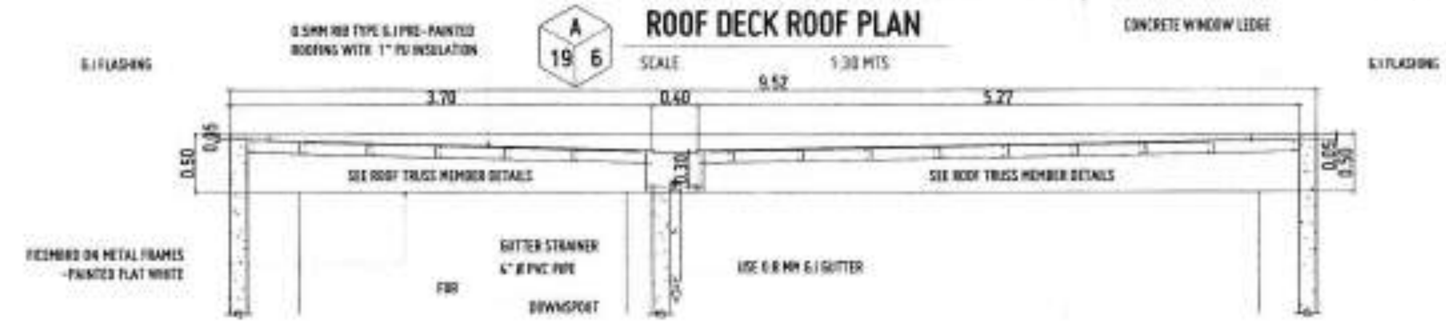
DROP LIGHT DETAIL
A 19 2
SCALE 1:10 MTS



THRESHOLD DETAIL
A 19 5
SCALE 1:10 MTS



ROOF DECK ROOF PLAN
A 19 6
SCALE 1:30 MTS



ROOF DECK ROOF SECTION DETAIL
A 19 7
SCALE 1:30 MTS

USTP

FERDINAND [illegible]
ARCHITECT OF RECORD

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

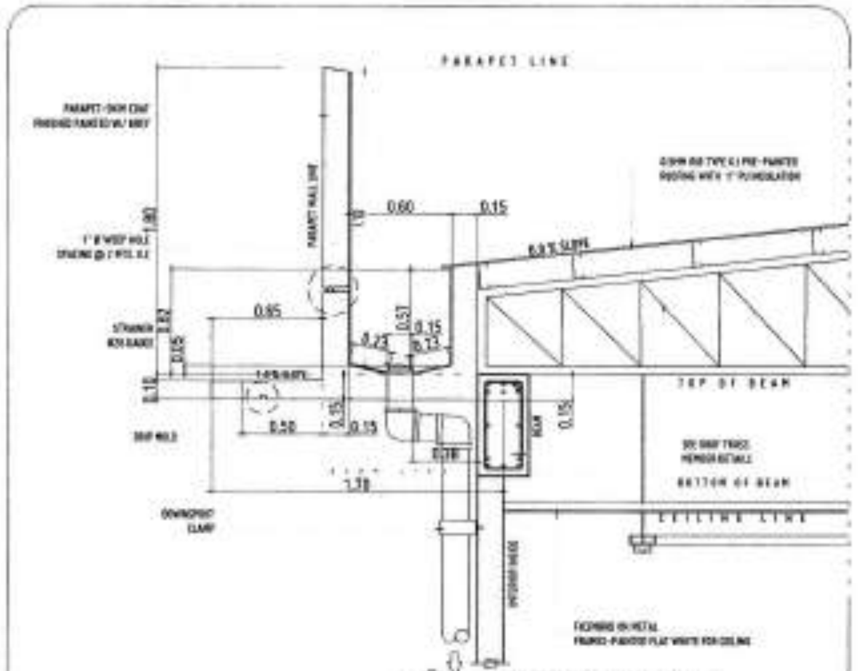
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA

RECOMMENDING APPROVAL: ATTY. ERWIN D. BUCIO

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

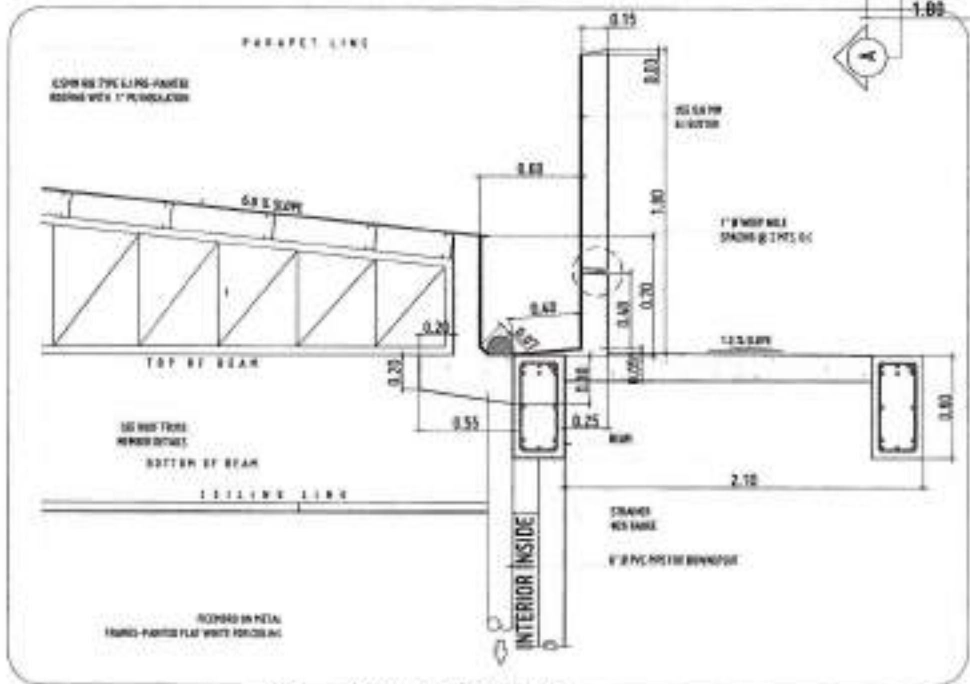
SHEET CONTENTS:
VENT GRILLE DETAIL
DROP LIGHT DETAIL
TYPICAL PLANTER BOX DETAIL
PLANTER BOX DETAIL-2
THRESHOLD DETAIL
ROOF DECK ROOF PLAN
ROOF DECK ROOF SECTION DETAIL

A19



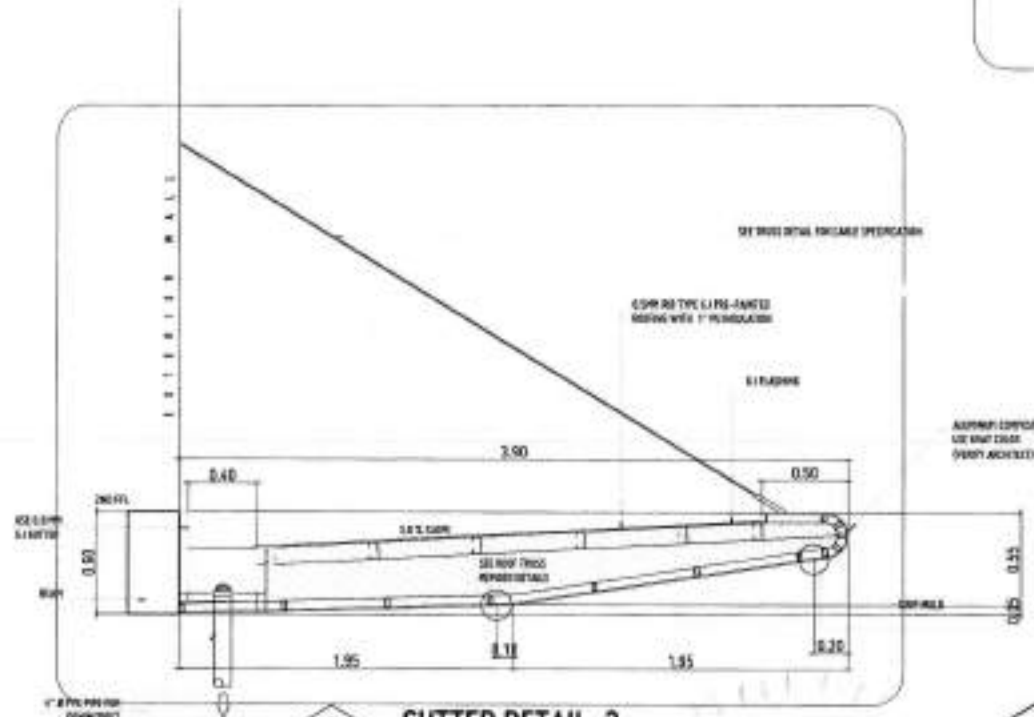
GUTTER DETAIL-1

A 20 1 SCALE: 1:20 MTS



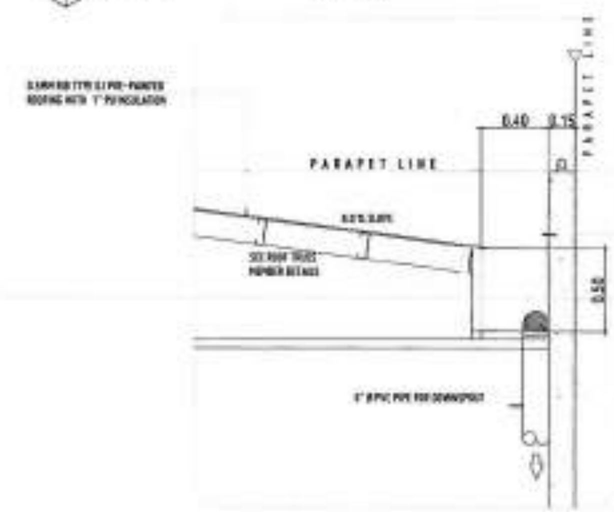
GUTTER DETAIL-2

A 20 2 SCALE: 1:20 MTS



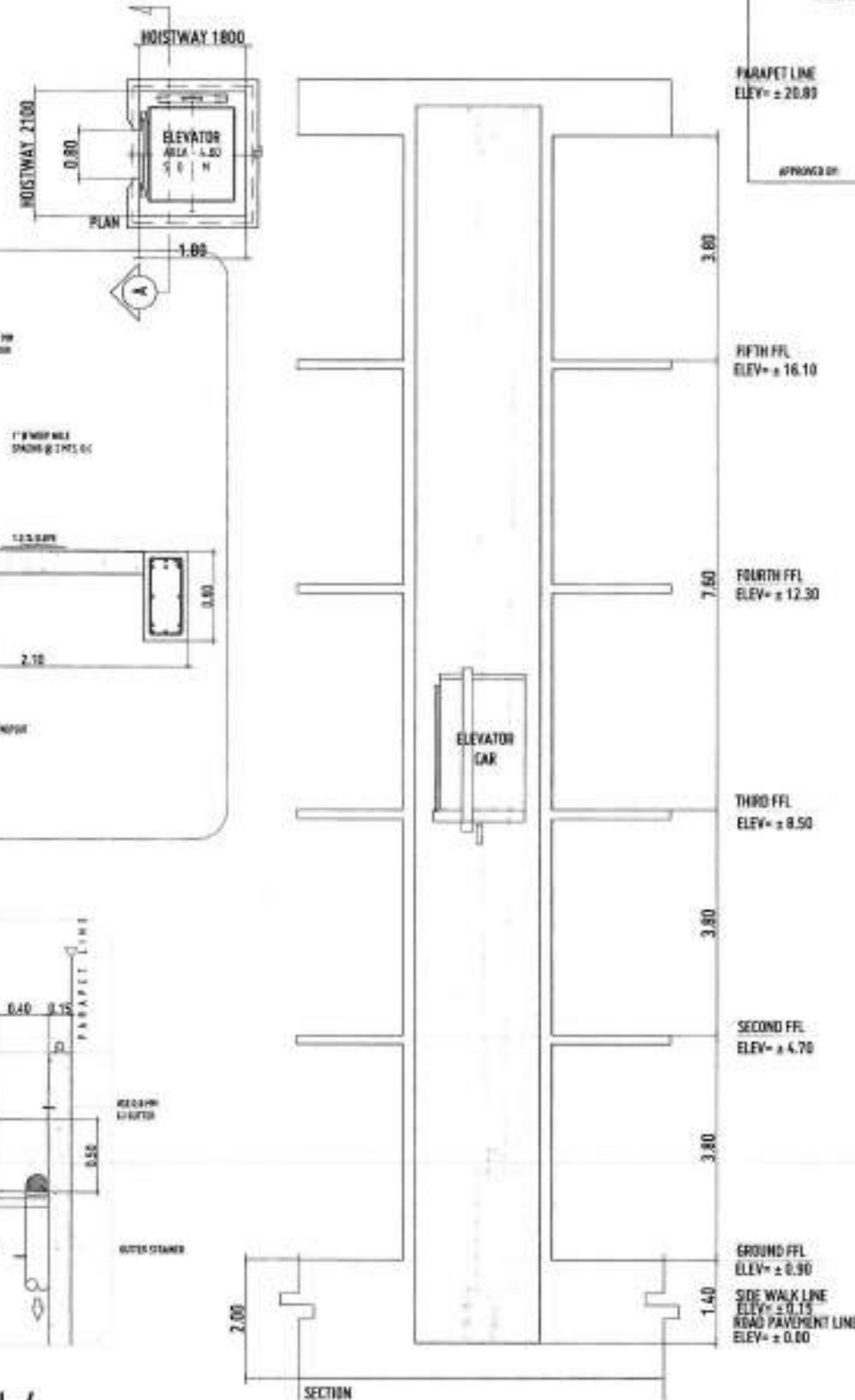
GUTTER DETAIL-3

A 20 3 SCALE: 1:20 MTS



GUTTER DETAIL-4

A 20 4 SCALE: 1:20 MTS



ELEVATOR DETAIL

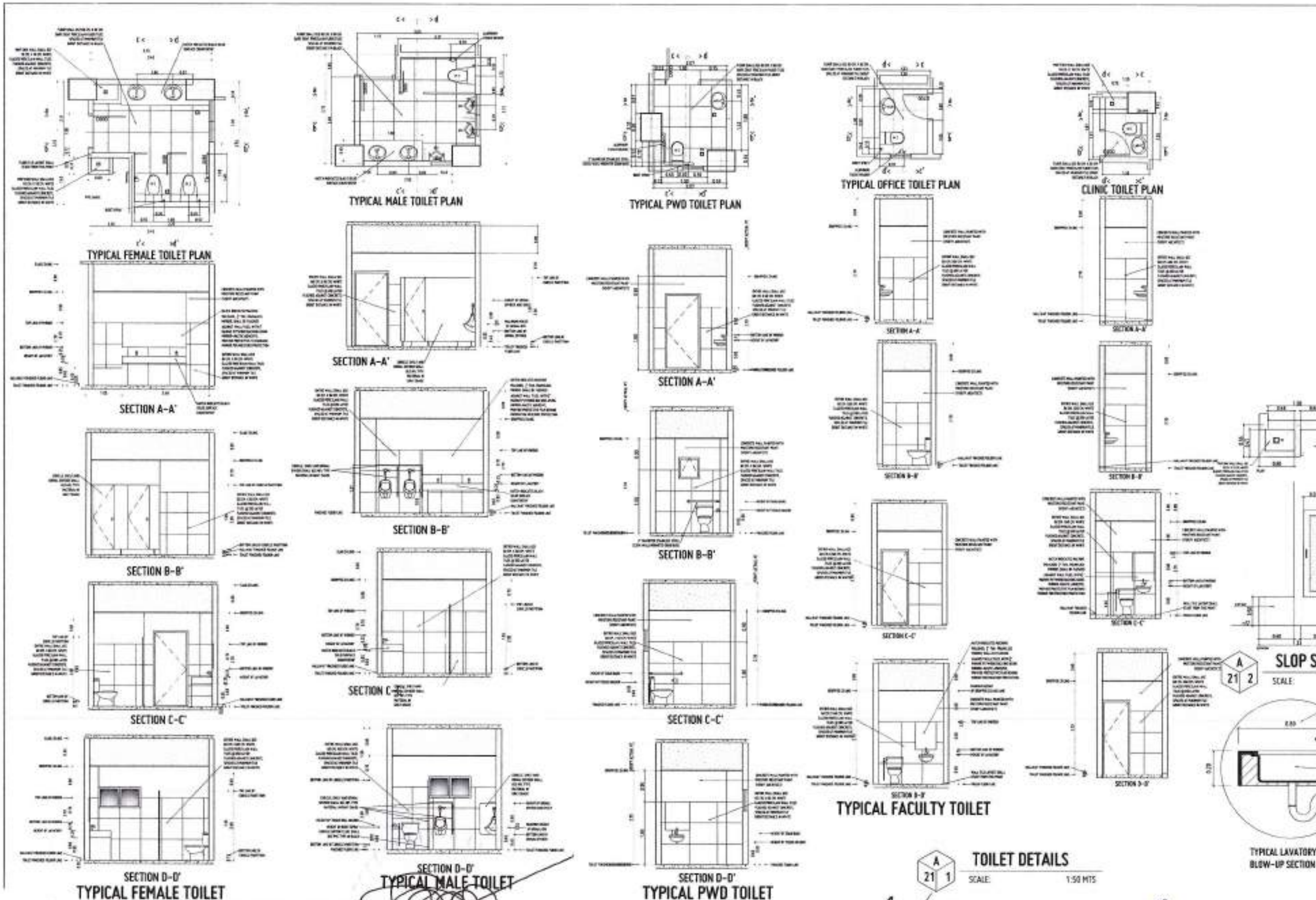
A 20 5 SCALE: 1:50 MTS

APPROVED BY:

USTP

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	RECOMMENDING APPROVAL: ENGR. GRACE C. BABA	APPROVED BY: DR. AMBROSIO B. CULTURA II
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	RECOMMENDING APPROVAL: ATTY. ERWIN B. BOCTO	SHEET CONTENTS: GUTTER AND ELEVATOR DETAILS
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES		

A20



APPROVED BY:

USTP

FERDINAND L. [illegible]
ARCHITECT OF RECORD

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

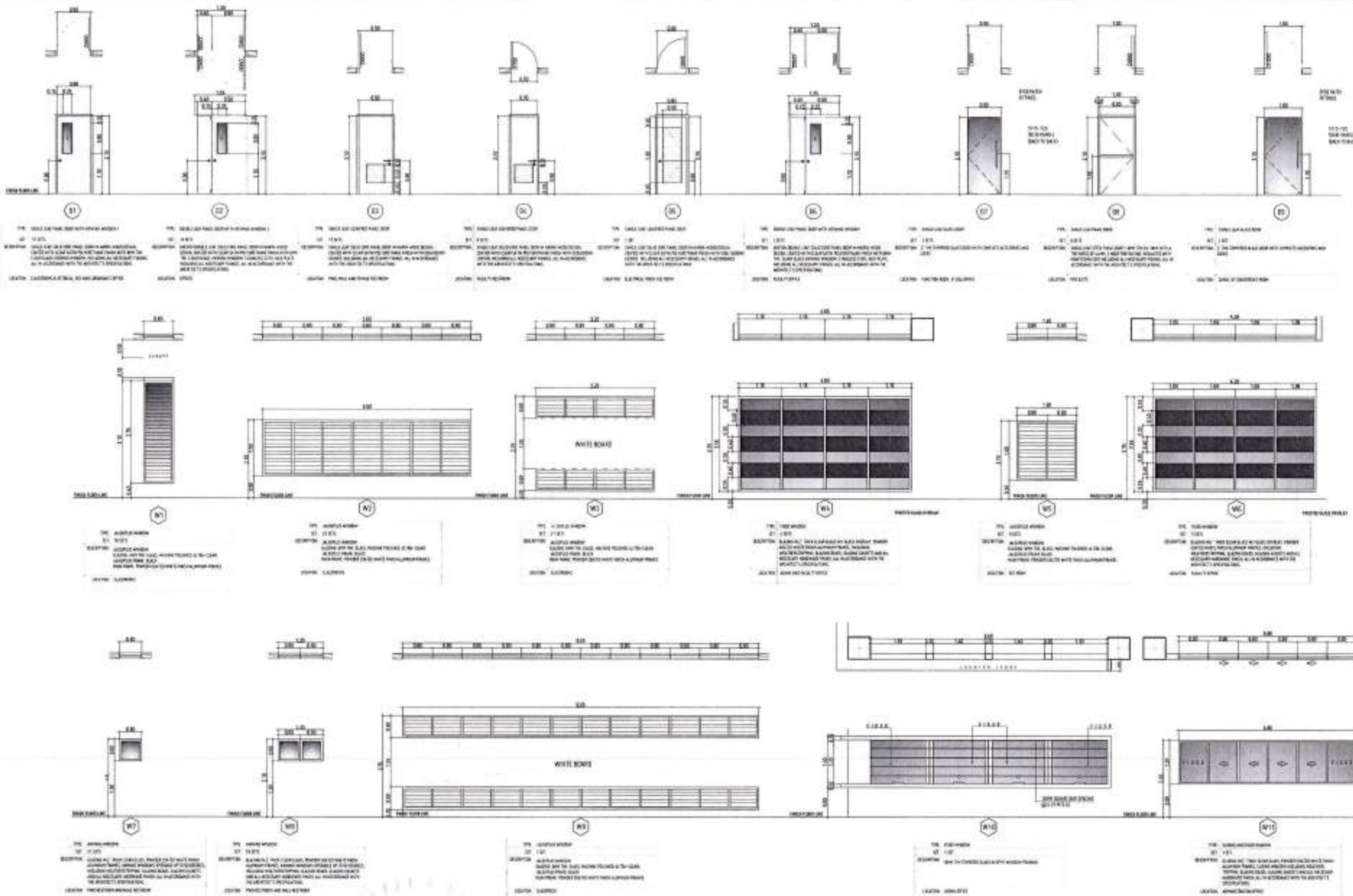
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA

RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO

APPROVED BY: DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS: TOILET DETAILS

A21



APPROVED BY:

SCHEDULE OF DOORS AND WINDOWS

A 22 1

SCALE: 1:50 MTS

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES	

FERDINAND [illegible]
ARCHITECT OF RECORD

DATE: 10-15-2025

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, VPDO

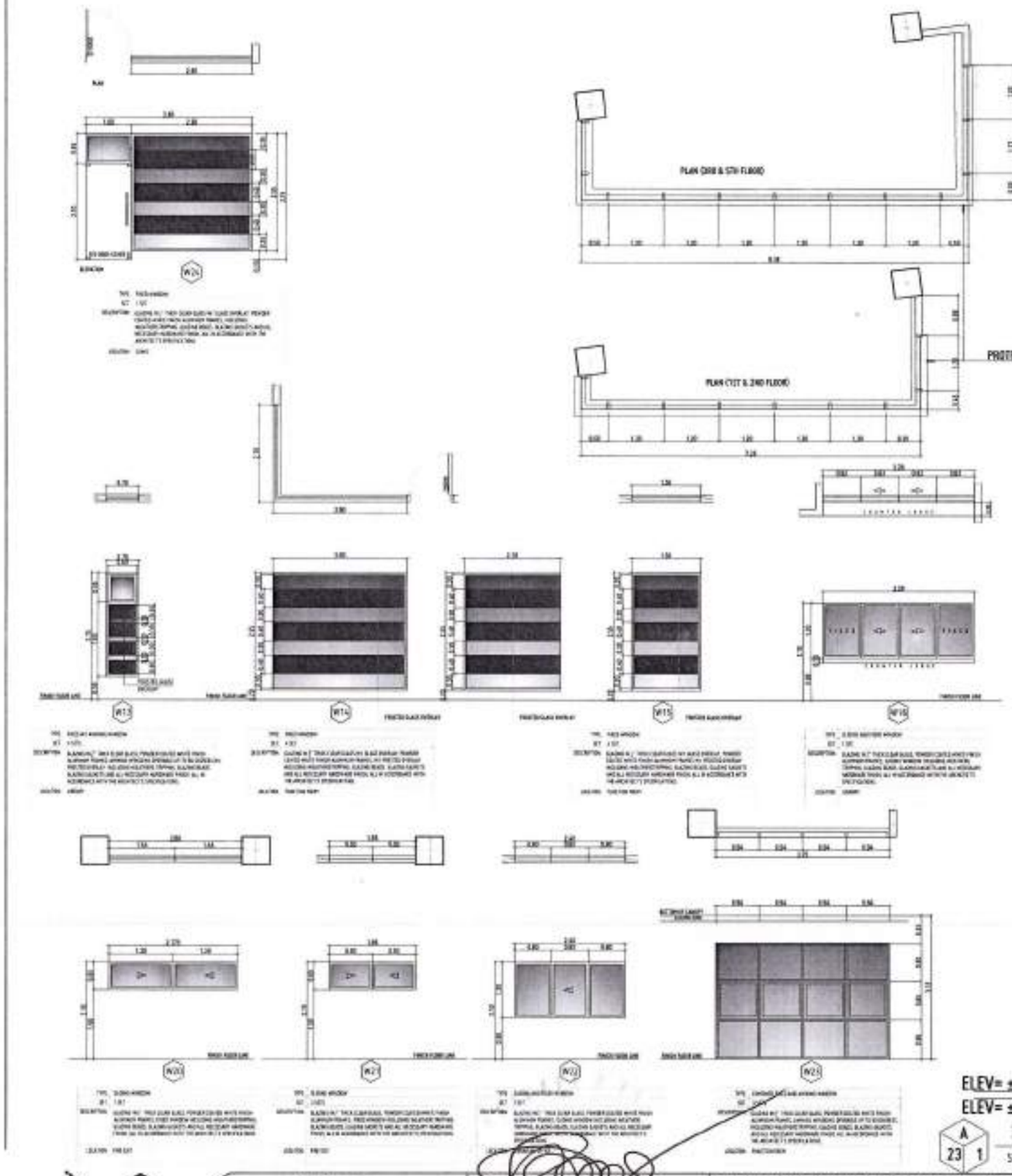
RECOMMENDING APPROVAL:
ATTY. ERWIN B. BUCIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

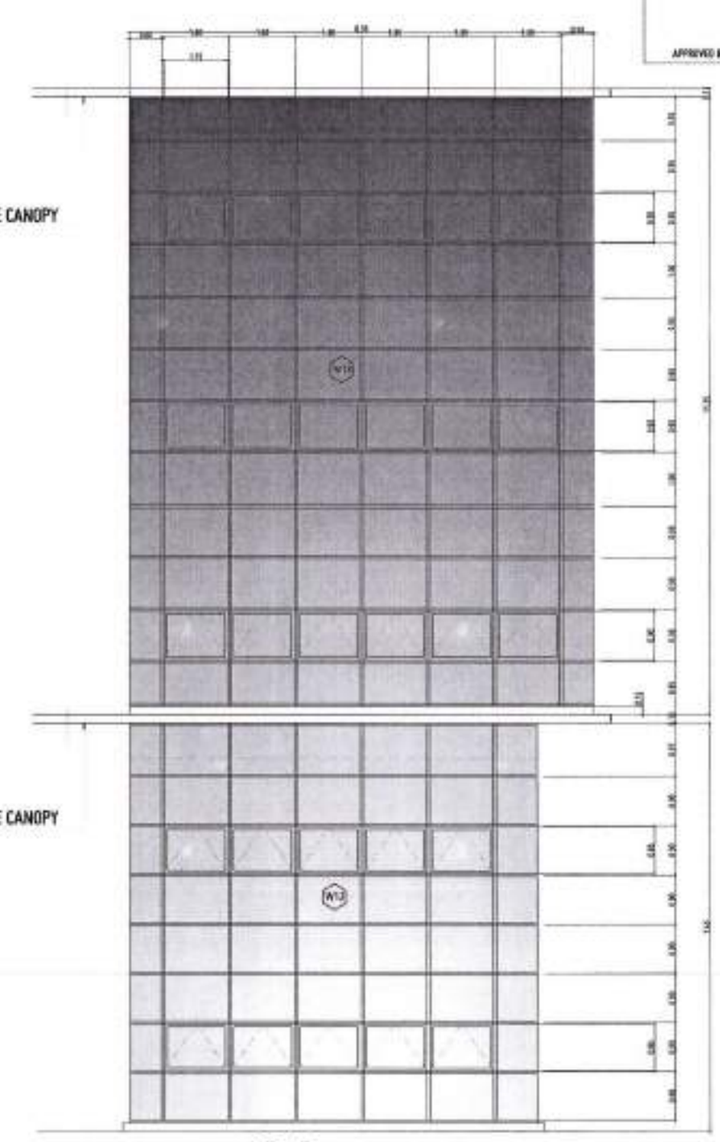
APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SCHEDULE OF DOORS AND WINDOWS

A22

USTP





A 23 1

SCHEDULE OF WINDOWS

SCALE: 1:50 MTS

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

USTP

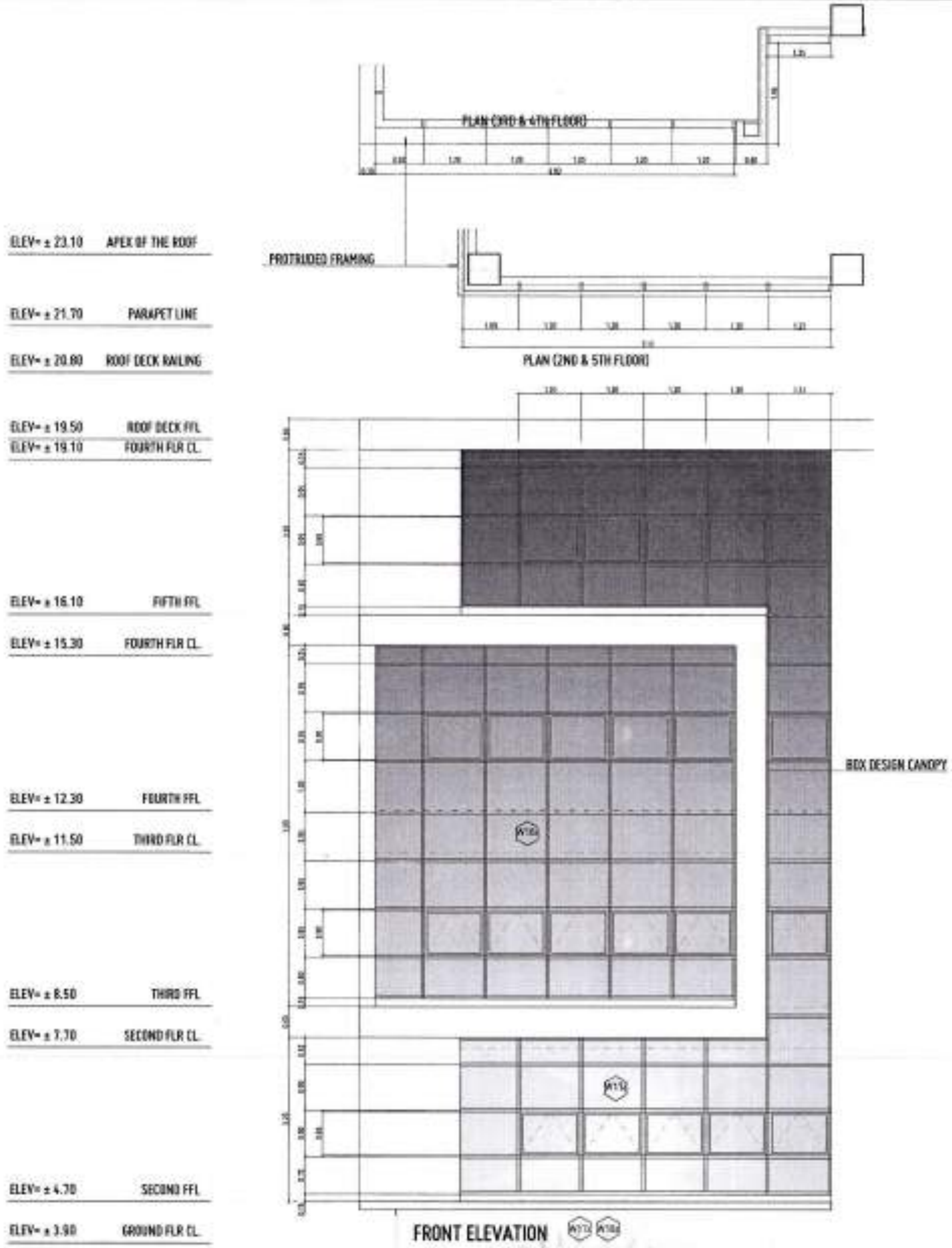
REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

ARCHITECT OF RECORD

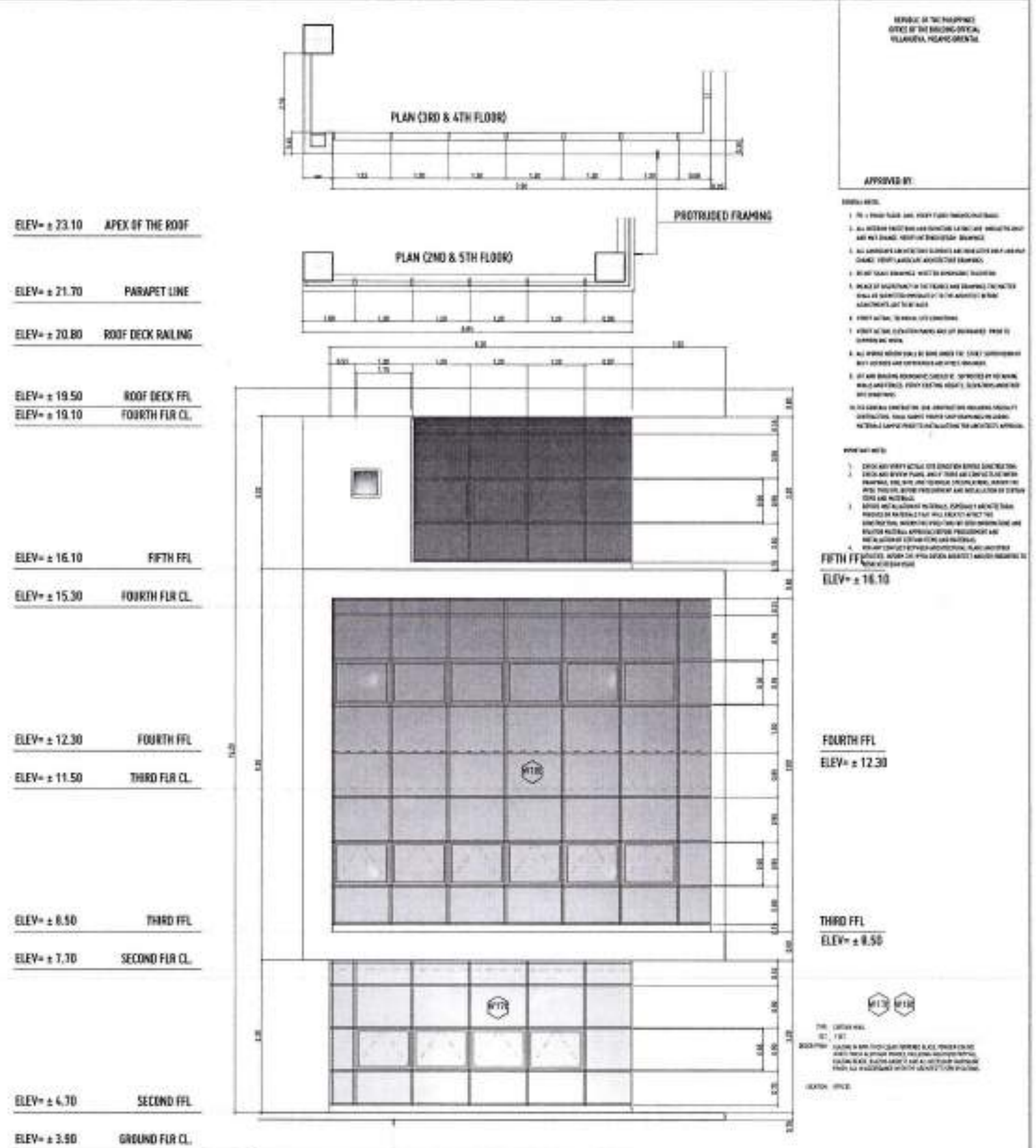
PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:	DRAWING NO.
ENGR. GRACE C. BABA	ATTY. ERWIN B. BOCIO	DR. AMBROSIO B. CULTURA II	SCHEDULE OF WINDOWS	A23
DIRECTOR, OPDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM		

DATE DRAWN: SEPTEMBER 2025


PLAN (3RD & 4TH FLOOR)
PROTRUDED FRAMING
PLAN (2ND & 5TH FLOOR)
ELEV= ± 23.10 APEX OF THE ROOF
ELEV= ± 21.70 PARAPET LINE
ELEV= ± 20.80 ROOF DECK RAILING
ELEV= ± 19.50 ROOF DECK FFL
ELEV= ± 19.10 FOURTH FLR CL.
ELEV= ± 16.10 FIFTH FFL
ELEV= ± 15.30 FOURTH FLR CL.
BOX DESIGN CANOPY
ELEV= ± 12.30 FOURTH FFL
ELEV= ± 11.50 THIRD FLR CL.
ELEV= ± 8.50 THIRD FFL
ELEV= ± 7.70 SECOND FLR CL.
ELEV= ± 4.70 SECOND FFL
ELEV= ± 3.90 GROUND FLR CL.
CONCRETE CANOPY

FRONT ELEVATION


PLAN (3RD & 4TH FLOOR)
PROTRUDED FRAMING
PLAN (2ND & 5TH FLOOR)
ELEV= ± 23.10 APEX OF THE ROOF
ELEV= ± 21.70 PARAPET LINE
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ELEV= ± 19.50 ROOF DECK FFL
ELEV= ± 19.10 FOURTH FLR CL.
ELEV= ± 16.10 FIFTH FFL
ELEV= ± 15.30 FOURTH FLR CL.
ELEV= ± 12.30 FOURTH FFL
ELEV= ± 11.50 THIRD FLR CL.
ELEV= ± 8.50 THIRD FFL
ELEV= ± 7.70 SECOND FLR CL.
ELEV= ± 4.70 SECOND FFL
ELEV= ± 3.90 GROUND FLR CL.
FIFTH FFL
ELEV= ± 16.10
FOURTH FFL
ELEV= ± 12.30
THIRD FFL
ELEV= ± 8.50
CONCRETE CANOPY

A 24 1

SCHEDULE OF WINDOWS

SCALE: 1:50 MTS

APPROVED BY:

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

FERDINAND A. [illegible] — ARCHITECT OF RECORD — DATE: 02-19-2025

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. [illegible]	DR. AMBROSIO B. CULTURA II
DIRECTOR, IPFDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SCHEDULE OF WINDOWS

DRAWN BY: ARL. JGAP
DATE DRAWN: SEPTEMBER 2025

USTP

A24

WALL

PLAN

SECTION C-C'

FRONT ELEVATION
PIPE-CHASE

SIDE ELEVATION
PIPE-CHASE

SECTION A-A'

SECTION B-B'

SECTION D-D'

FRONT ELEVATION
PIPE-CHASE THRU GF-4F

TYPE SIDE ELEVATION
PIPE-CHASE THRU GF-4F

TOILET DETAIL @ ADMINISTRATOR'S OFFICE

A 25 2

SCALE: 1:50 MTS

SCHEDULE OF WINDOWS

A 25 1

SCALE: 1:50 MTS

USTP

CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

ENGR. GRACE C. BABA

ATTY. ERWIN B. BUDIO

DR. AMBROSIO V. CULTURA II

SCHEDULE OF WINDOWS
RETAIL - ADMINISTRATOR'S TOILET

A25

GENERAL NOTES

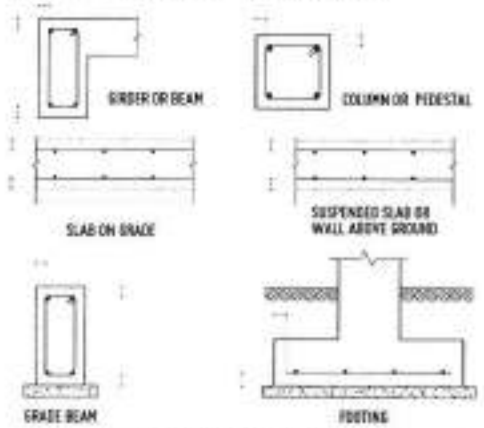
1. GENERAL

2. DESIGN CRITERIA

3. CONCRETE

4. CONCRETE CONSTRUCTION

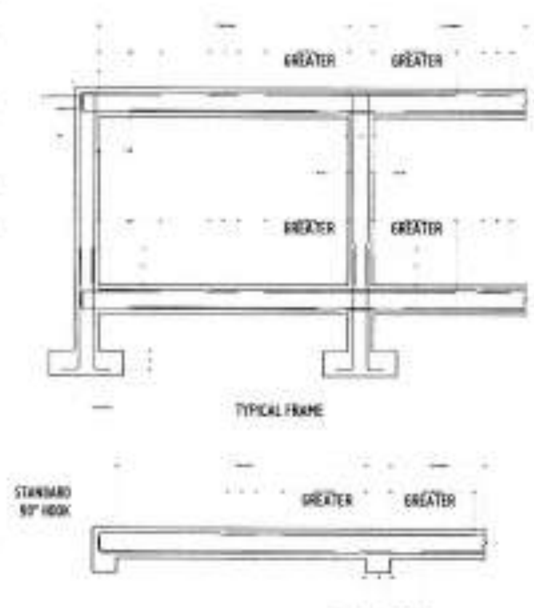
STIRRUPS AND TIES		
BARS (MM)	MINIMUM BEND DIAMETER	EXTENSION
	D2 (MM)	L3 (MM)
Ø8	30	50
Ø10	40	60
Ø12	50	70
Ø14	55	85
Ø16	65	95



CAST-IN-PLACE CONCRETE		
CLEAR COVER	EXPOSED TO WEATHER OR EARTH	NOT EXPOSED TO WEATHER OR EARTH
A	50	25
B	50	40
C	75	50

PRECAST CONCRETE			
CLEAR COVER	EXPOSED TO EARTH	EXPOSED TO WEATHER	NOT EXPOSED TO WEATHER OR EARTH
WALL PANELS	75	30	20
OTHERS	75	50	30

MAIN REINFORCEMENT			
BARS (MM)	MINIMUM BEND DIAMETER	EXTENSION	
	D1 (MM)	L1 (MM)	L2 (MM)
Ø8	50	60	95
Ø10	60	60	125
Ø12	70	60	145
Ø14	85	60	170
Ø16	95	65	190
Ø18	110	70	215
Ø20	120	80	240
Ø22	130	90	265
Ø25	150	100	300
Ø28	[illegible]	110	335



BARS (MM)	MIN. DEVELOPMENT LENGTH			MIN. LAP LENGTH	
	IN TENSION		IN COM-PRESSION	IN TENSION	IN COM-PRESSION
	S1 (MM)	S2 (MM)	S3 (MM)	S4 (MM)	S5 (MM)
Ø8	420	325	200	420	300
Ø10	525	405	210	525	300
Ø12	630	485	250	630	355
Ø14	735	565	295	735	410
Ø16	840	645	335	840	470
Ø18	945	725	380	945	530
Ø20	1050	805	420	1050	590
Ø22	1440	1110	460	1440	650
Ø25	1640	1260	525	1640	735
Ø28	1833	1410	590	1833	825
Ø30	1965	1510	630	1965	880
Ø32	2095	1615	670	2095	940

NOTES:

5. MASONRY

6. STEEL

7. NOTES FOR DRAWING NOMENCLATURES

BAR DIAMETER — BAR MARK — LAYER OR LOCATION — QUANTITY — SPACING OF BARS

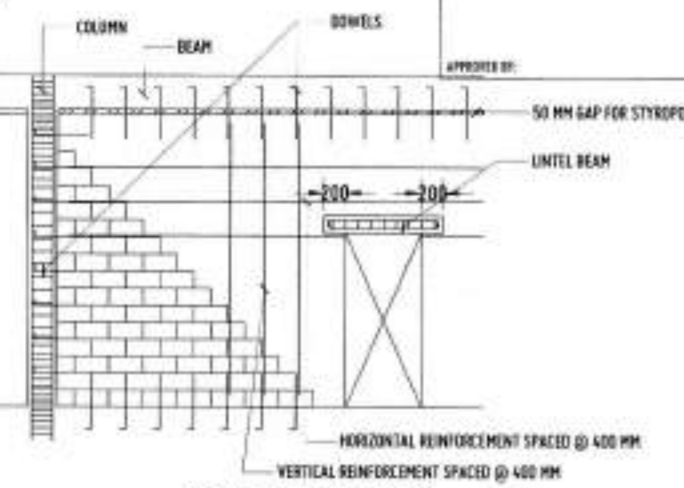
8. ABBREVIATIONS

ACI - AMERICAN CONCRETE INSTITUTE

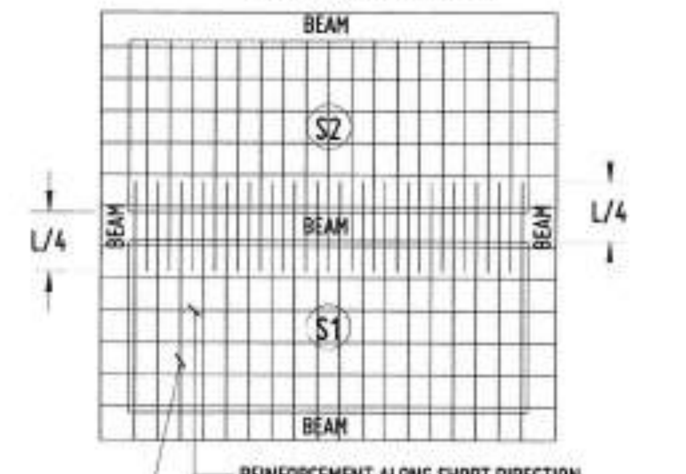
9. WATER PROOFING

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



TYPICAL CHB WALL ELEVATION



TYPICAL SUSPENDED SLAB PLAN

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

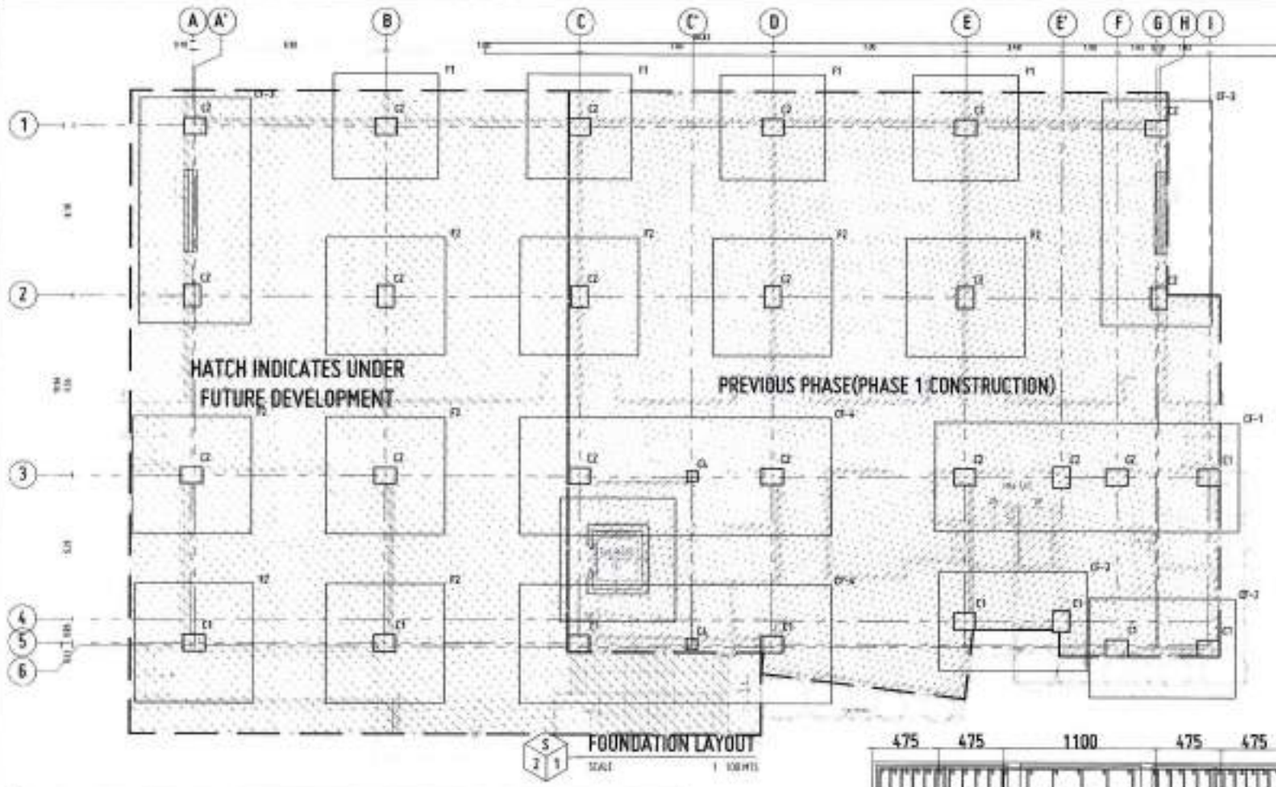
ERNESTO CH. QUIJOTE
CIVIL/STRUCTURAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

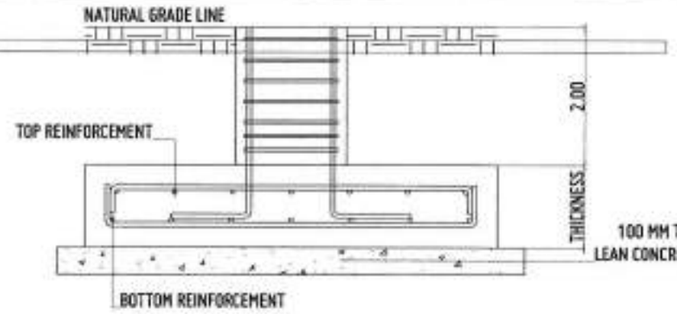
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDU
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUGO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

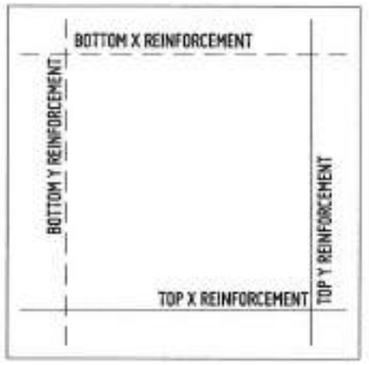
SHEET CONTENTS: GENERAL NOTES

S1



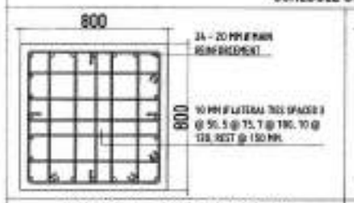
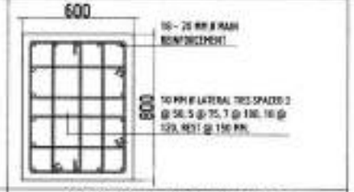
S 2 1 FOUNDATION LAYOUT
SCALE 1 : 100 MTS

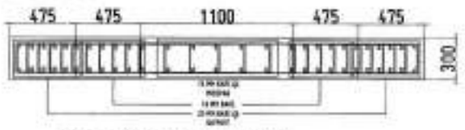




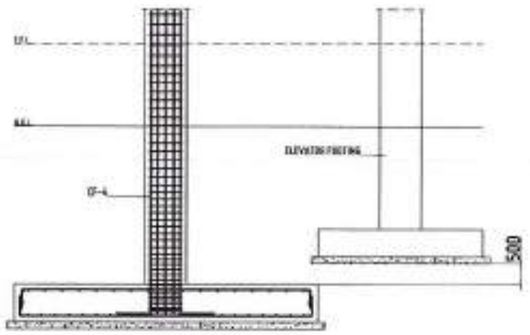
SCHEDULE OF FOUNDATION								
DESIGNATION	DIMENSION		THICKNESS	BAR Ø	MAIN REINFORCEMENT			
	LENGTH	WIDTH			BOT X	BOT Y	TOP X	TOP Y
F1	3800	3800	500	20 MM	22	22	20	20
F2	4300	4300	650	20 MM	25	25	22	22
CF-1	11000	4000	600	20 MM	57	42	75	29
CF-2	5300	3600	600	20 MM	55	38	37	26
CF-3	8200	4000	600	20 MM	44	24	84	35
CF-4	11300	4300	600	20 MM	40	25	37	22

S 2 8 SCHEDULE OF FOUNDATION AND FOUNDATION (TYPICAL) DETAILS
SCALE 1 : 100 MTS

SCHEDULE OF COLUMN	
 C1 (FOOTING – 3RD FLOOR LEVEL)	 C2 (FOOTING – 3RD FLOOR LEVEL)
 C3 (3RD FLOOR LEVEL – ROOF DECK LEVEL)	 C5 (ROOF DECK – ROOF BEAM)



S 2 6 SHEAR WALL DETAILS
SCALE 1 : 100 MTS



S 2 7 FOOTING ELEV. DETAILS
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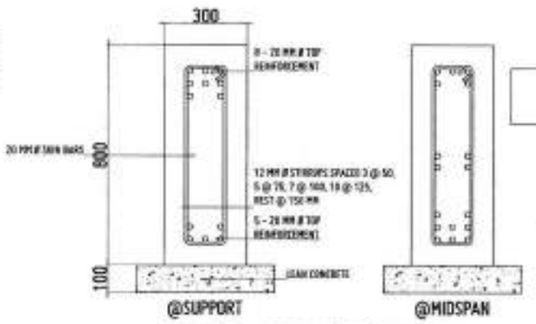
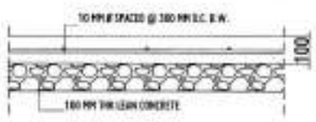
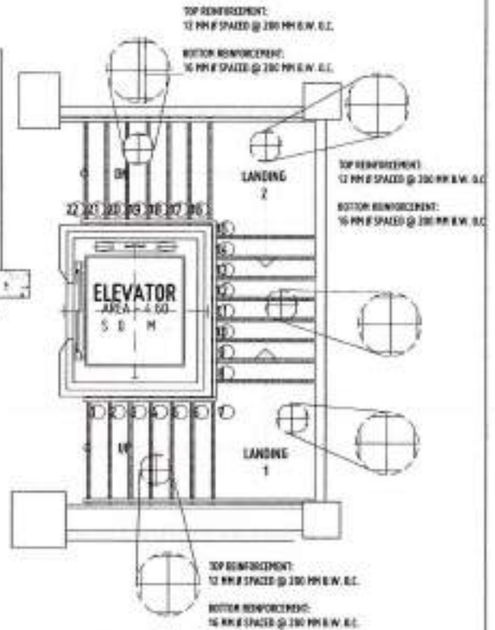


S 2 9 TIE BEAM (TB) DETAILS
SCALE 1 : 100 MTS



S 2 10 SLAB ON GRADE DETAILS
SCALE 1 : 100 MTS



S 2 11 MAIN STAIRS DETAILS
SCALE 1 : 100 MTS

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INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

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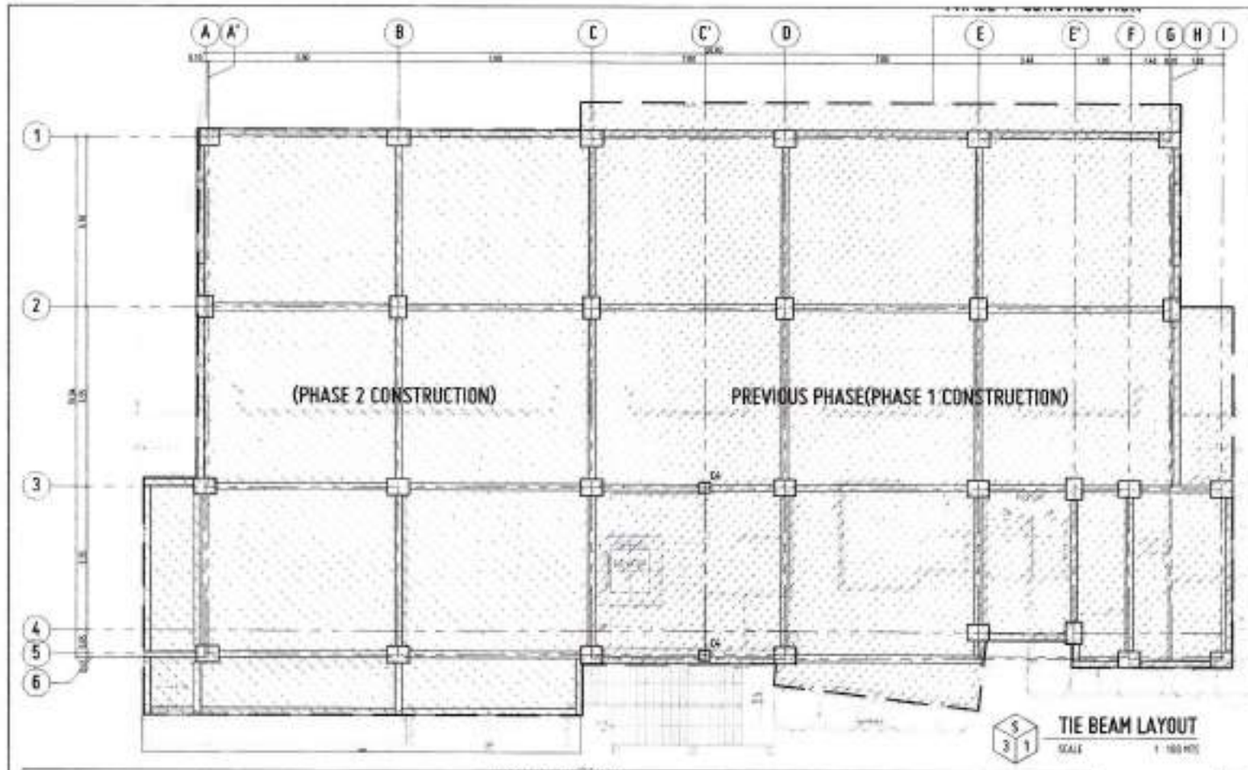
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
FOUNDATION LAYOUT
SCHEDULE OF FOUNDATION AND FOUNDATION (TYPICAL) DETAILS
TIE BEAM (TB) DETAILS
SLAB ON GRADE DETAILS
MAIN STAIRS DETAILS

DRAWN BY:
DATE DRAWN:
DATE ISSUED:
UNIT:

S2



TIE BEAM LAYOUT

SCALE 1:100 MTS

SCHEDULE OF BEAMS

LEVEL	DETAIL
	2B1: 250 × 600 — 6 - 20 MM Ø TOP REINFORCEMENT; 2 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 4 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	2B2: 300 × 600 — 8 - 20 MM Ø TOP REINFORCEMENT; 2 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 5 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	2B3: 300 × 700 — 5 - 20 MM Ø TOP REINFORCEMENT; 4 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 4 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	2B4: 300 × 800 — 8 - 20 MM Ø TOP REINFORCEMENT; 4 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 4 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN

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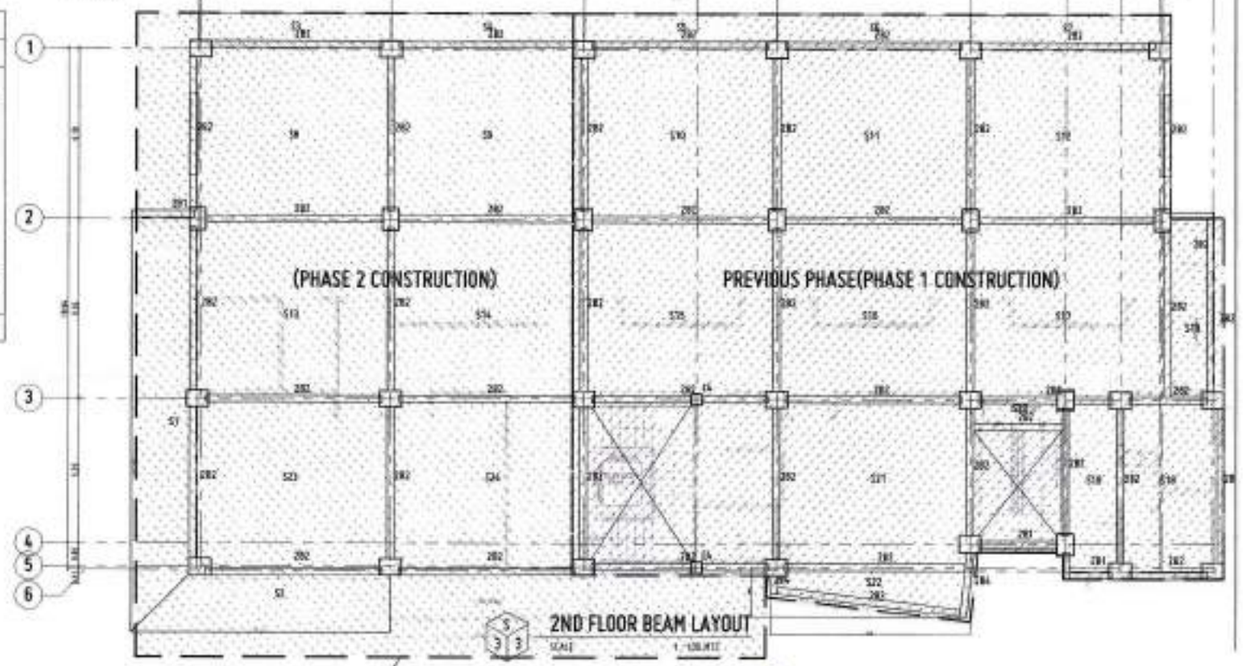
SCHEDULE OF BEAMS

LEVEL	DETAIL
	3B1: 200 × 400 — 5 - 20 MM Ø TOP REINFORCEMENT; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 3 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	3B2: 250 × 600 — 6 - 20 MM Ø TOP REINFORCEMENT; 2 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 5 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	3B3: 300 × 600 — 11 - 20 MM Ø TOP REINFORCEMENT; 2 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 6 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	3B4: 300 × 700 — 8 - 20 MM Ø TOP REINFORCEMENT; 4 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 1 @ 100, 10 @ 125, REST @ 150 MM; 5 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN
	3B5: 300 × 800 — 11 - 20 MM Ø TOP REINFORCEMENT; 4 - 20 MM Ø TORSION BARS; 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM; 8 - 20 MM Ø TOP REINFORCEMENT — @SUPPORT / @MIDSPAN

SUSPENDED SLAB DETAILS

SCALE 1:100 MTS



2ND FLOOR BEAM LAYOUT

SCALE 1:100 MTS

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ERNESTO C. OLIVETE
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OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

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RECOMMENDING APPROVAL: ATTY. ERWIN B. [illegible], VP FOR ADMINISTRATION & LEGAL AFFAIRS

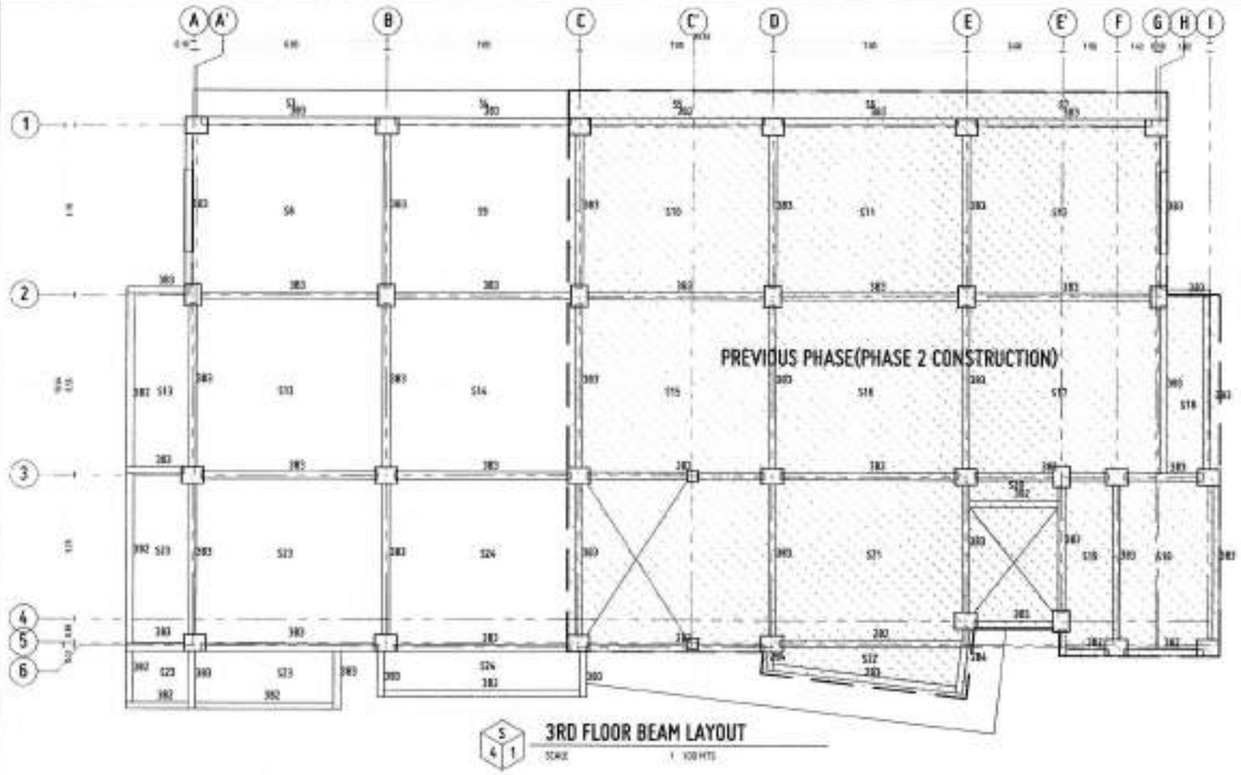
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: TIE BEAM LAYOUT; SUSPENDED SLAB DETAILS; 2ND FLOOR BEAM LAYOUT

DRAWING NO.: S3

DATE DRAWN:

REV:



3RD FLOOR BEAM LAYOUT

SCHEDULE OF BEAMS

LEVEL	DETAIL	
	250 × 600	300 × 600
	5 - 20 MM Ø TOP REINFORCEMENT 2 - 20 MM Ø TORSION BARS 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM 4 - 20 MM Ø TOP REINFORCEMENT	6 - 20 MM Ø TOP REINFORCEMENT 2 - 20 MM Ø TORSION BARS 12 MM Ø STIRRUPS SPACED 3 @ 50, 5 @ 75, 7 @ 100, 10 @ 125, REST @ 150 MM 5 - 20 MM Ø TOP REINFORCEMENT
	@SUPPORT / @MIDSPAN	@SUPPORT / @MIDSPAN
	RB1	RB2

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VILLANUEVA, MISAMIS ORIENTAL

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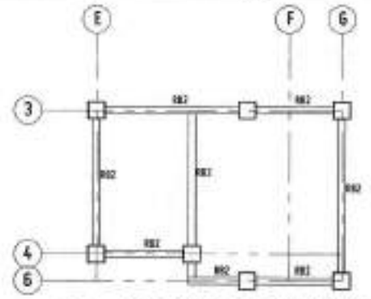
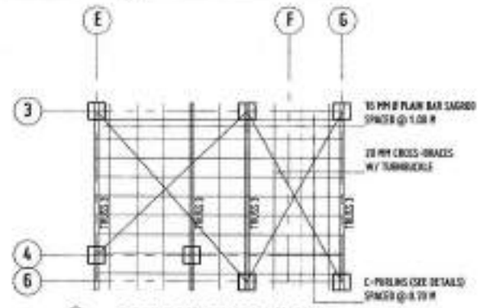
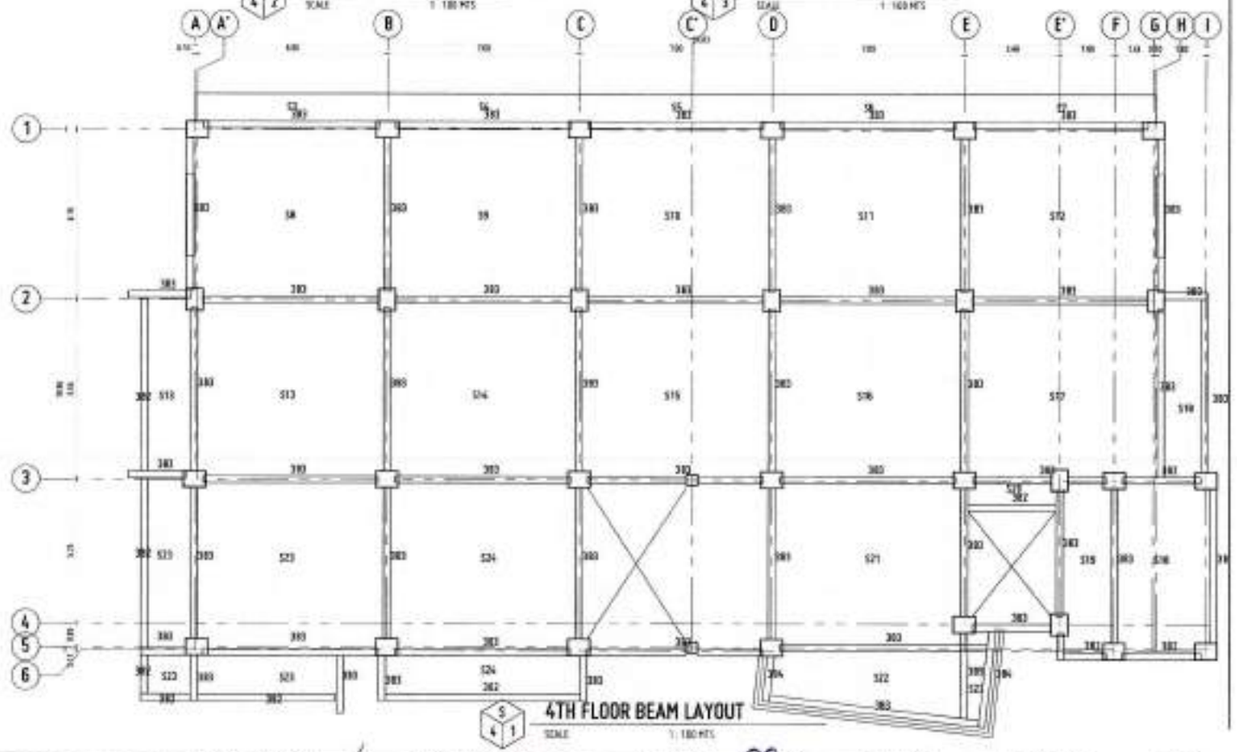


ROOF DECK ROOF BEAM LAYOUT



ROOF DECK TRUSS LAYOUT



4TH FLOOR BEAM LAYOUT

SCHEDULE OF SLABS

LEVEL	MARK	THICKNESS	REBARS SPACING ALONG SHORT DIRECTION		REBARS SPACING ALONG LONG DIRECTION		REMARKS
			TOP REINF.	BOT REINF.	TOP REINF.	BOT REINF.	
	S1	150	12 MM Ø @ 350	10 MM Ø @ 100	12 MM Ø @ 350	10 MM Ø @ 75	CANTL
	S2	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 75	10 MM Ø @ 250	CANTL
	S3	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 300	10 MM Ø @ 250	CANTL
	S4	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 300	10 MM Ø @ 250	CANTL
	S5	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 300	10 MM Ø @ 250	CANTL
	S6	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 300	10 MM Ø @ 250	CANTL
	S7	150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 300	10 MM Ø @ 250	CANTL
	S8	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 300	TWO-WAY
	S9	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 300	TWO-WAY
	S10	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 300	TWO-WAY
	S11	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 300	TWO-WAY
	S12	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 300	TWO-WAY
	S13	150	10 MM Ø @ 200	12 MM Ø @ 200	10 MM Ø @ 200	12 MM Ø @ 200	TWO-WAY
	S14	150	10 MM Ø @ 200	12 MM Ø @ 250	10 MM Ø @ 200	12 MM Ø @ 200	TWO-WAY
	S15	150	10 MM Ø @ 250	12 MM Ø @ 200	10 MM Ø @ 200	12 MM Ø @ 200	TWO-WAY
	S16	150	10 MM Ø @ 300	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 150	TWO-WAY
	S17	150	10 MM Ø @ 300	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 150	TWO-WAY
	S18	150	10 MM Ø @ 300	12 MM Ø @ 300	10 MM Ø @ 250	12 MM Ø @ 250	TWO-WAY
	S19	150	10 MM Ø @ 300	12 MM Ø @ 300	10 MM Ø @ 250	12 MM Ø @ 250	TWO-WAY
	S20	150	10 MM Ø @ 200	12 MM Ø @ 250	10 MM Ø @ 250	12 MM Ø @ 50	TWO-WAY
	S21	150	10 MM Ø @ 250	12 MM Ø @ 150	10 MM Ø @ 150	12 MM Ø @ 50	TWO-WAY
	S22	150	10 MM Ø @ 150	12 MM Ø @ 150	10 MM Ø @ 250	12 MM Ø @ 250	TWO-WAY
	S23	150	10 MM Ø @ 300	12 MM Ø @ 200	10 MM Ø @ 250	12 MM Ø @ 200	TWO-WAY
	S24	150	10 MM Ø @ 300	12 MM Ø @ 125	10 MM Ø @ 250	12 MM Ø @ 200	TWO-WAY

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ERNESTO CR. DUNGCIL
CIVIL/STRUCTURAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
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RECOMMENDING APPROVAL: ATTY. ERWIN B. BACIP, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: 3RD AND 4TH FLOOR BEAM LAYOUT; ROOF DECK TRUSS LAYOUT

S4

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VILLANUEVA, MISAMIS ORIENTAL

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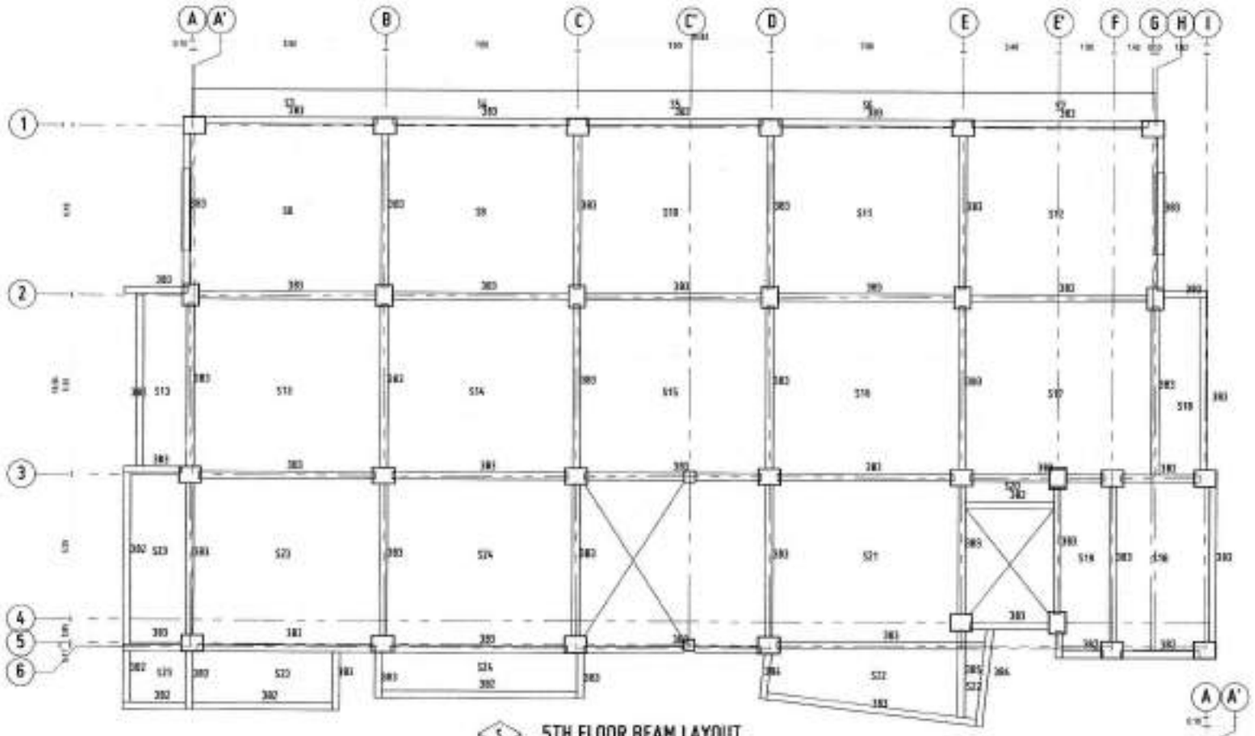
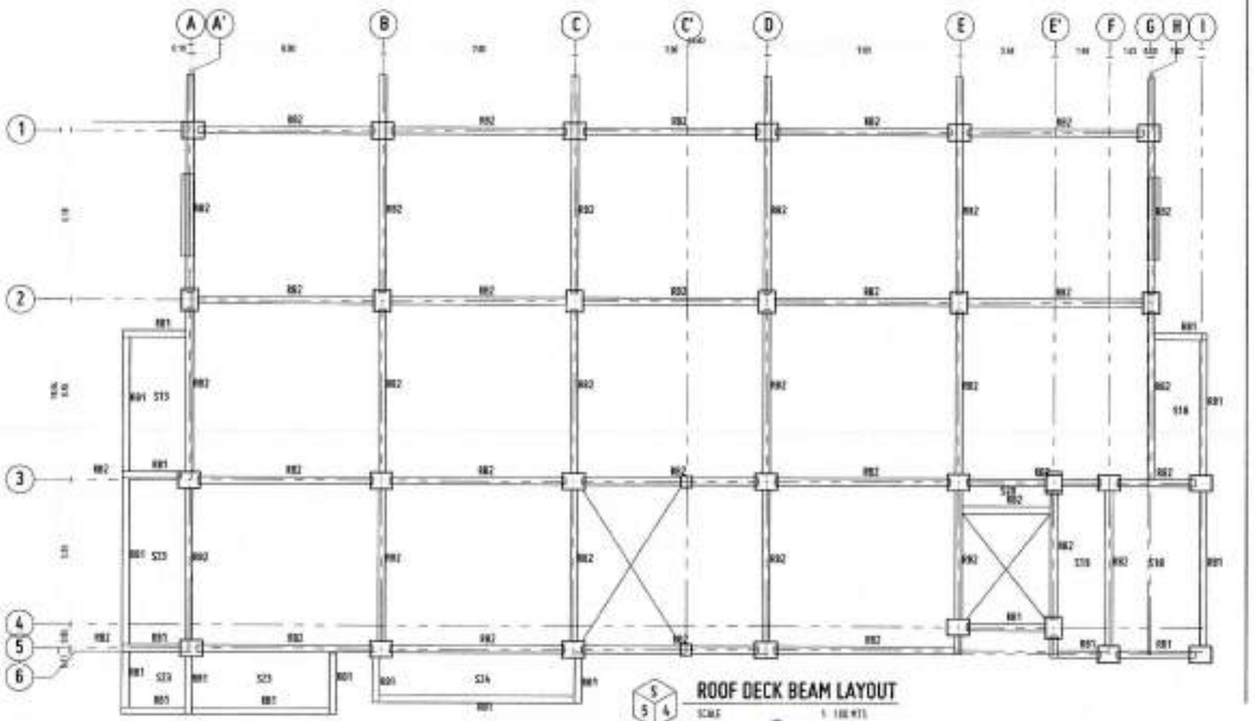


5/5-1 5TH FLOOR BEAM LAYOUT
SCALE 1 : 100 MTS



5/5-4 ROOF DECK BEAM LAYOUT
SCALE 1 : 100 MTS

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ERNESTO CH. DUQUOTE
CIVIL/STRUCTURAL ENGINEER
REG NO. | BOARD | PTR NO. | ISSUED
DATE
TIN | PLACE

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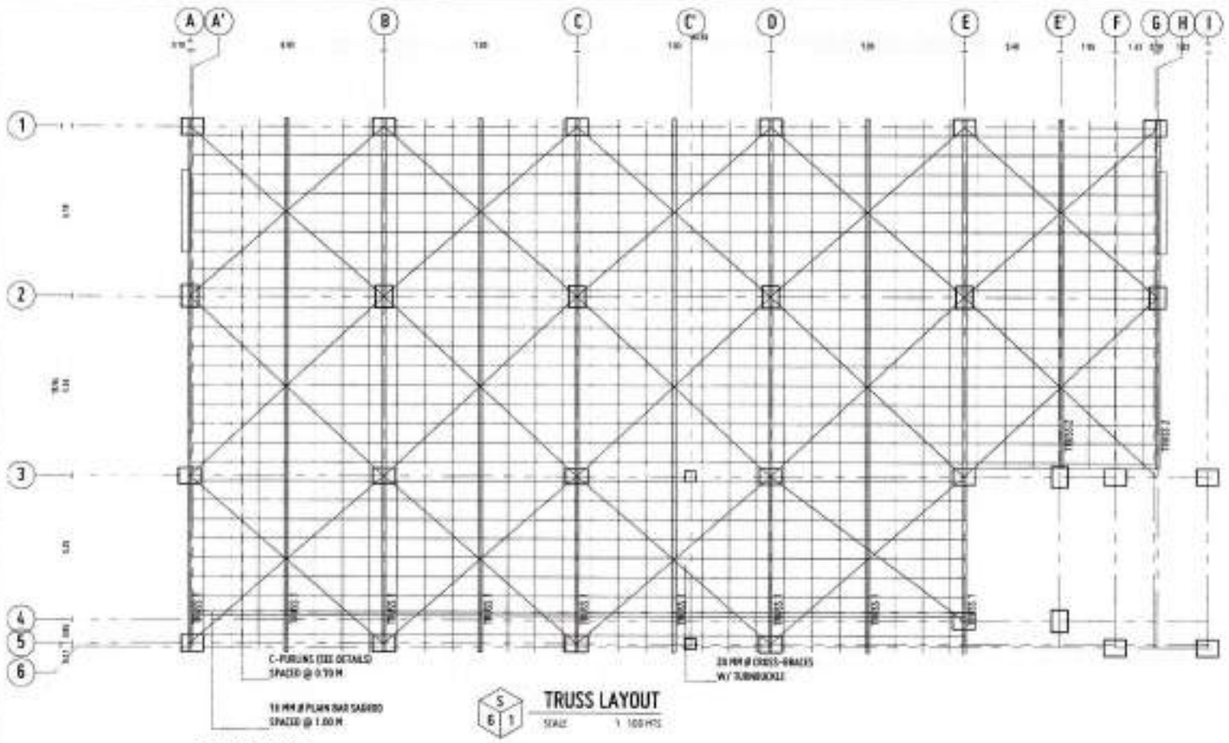
ATTY. ERWIN B. BACIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA III
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
5TH FLOOR BEAM LAYOUT
ROOF DECK BEAM LAYOUT

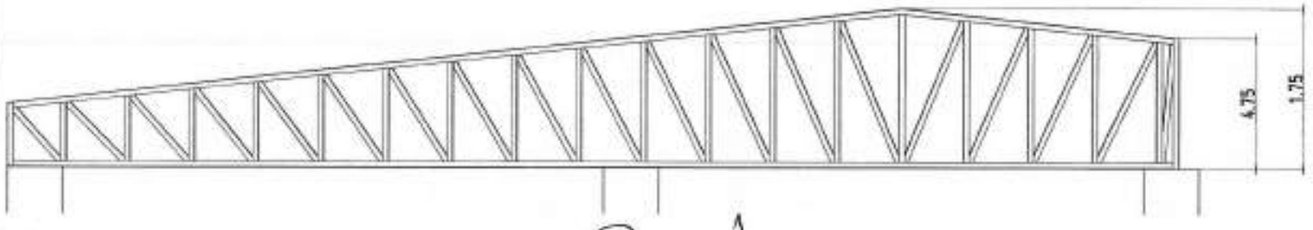
DRAWN BY:
DATE DRAWN:
REV:

S5



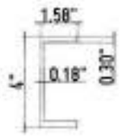
S 6 1 **TRUSS LAYOUT**
SCALE 1 : 100 MTS

S 6 2 **TRUSS 1 DETAILS**
SCALE 1 : 100 MTS

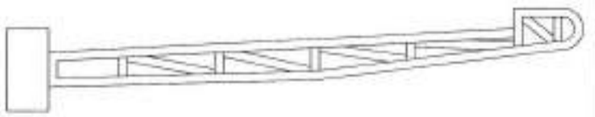


S 6 3 **TRUSS 2 DETAILS**
SCALE 1 : 100 MTS

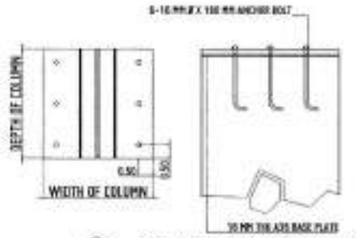
S 6 4 **TRUSS 3 DETAILS**
SCALE 1 : 100 MTS



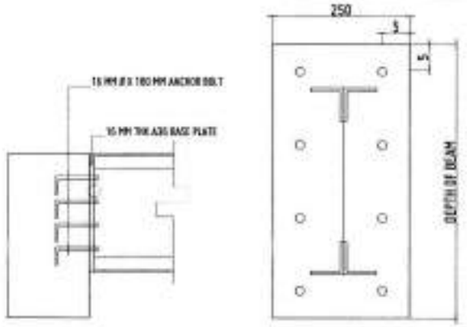
S 6 5 **C-PURLIN DETAILS**
SCALE 1 : 100 MTS



S 6 6 **TRUSS 4 DETAILS**
SCALE 1 : 100 MTS



S 6 7 **COLUMN TO TRUSS CONNECTION**
SCALE 1 : 100 MTS



S 6 8 **BEAM TO TRUSS CONNECTION**
SCALE 1 : 100 MTS

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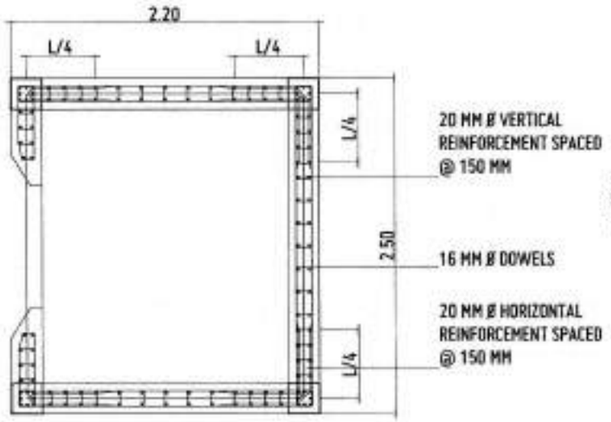
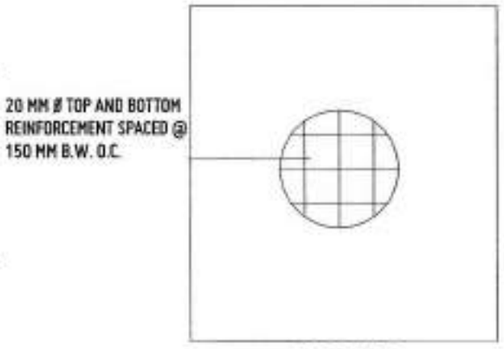
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
TRUSS LAYOUT
TRUSS 1 DETAILS
TRUSS 2 DETAILS
TRUSS 3 DETAILS
C-PURLIN DETAILS
TRUSS 4 DETAILS
COLUMN TO TRUSS CONNECTION
BEAM TO TRUSS CONNECTION

DRAWN BY:
DATE DRAWN:
REF:

S6





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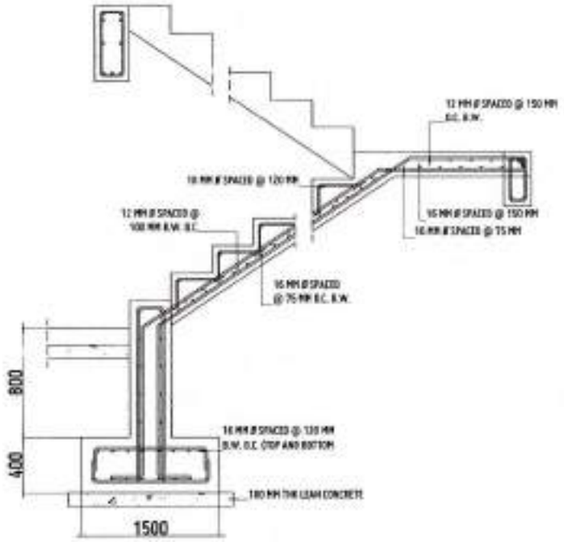
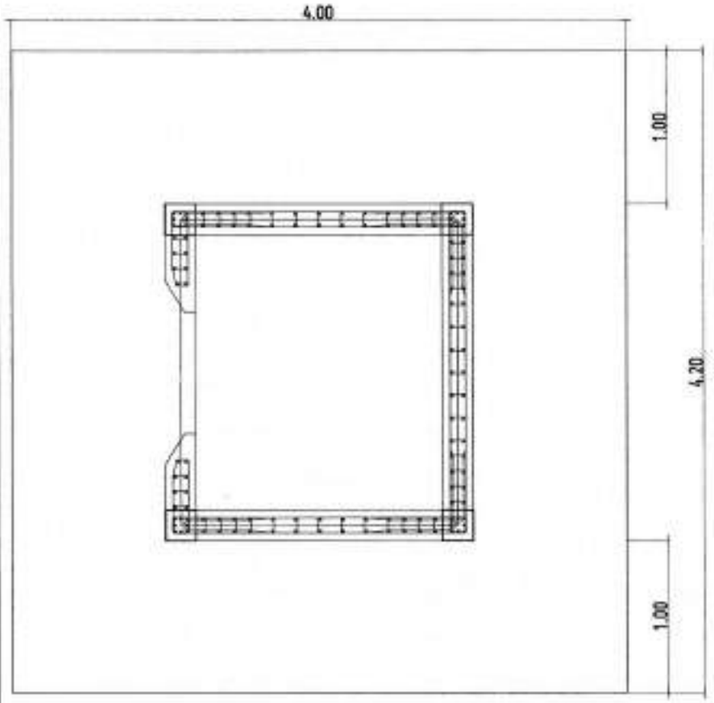
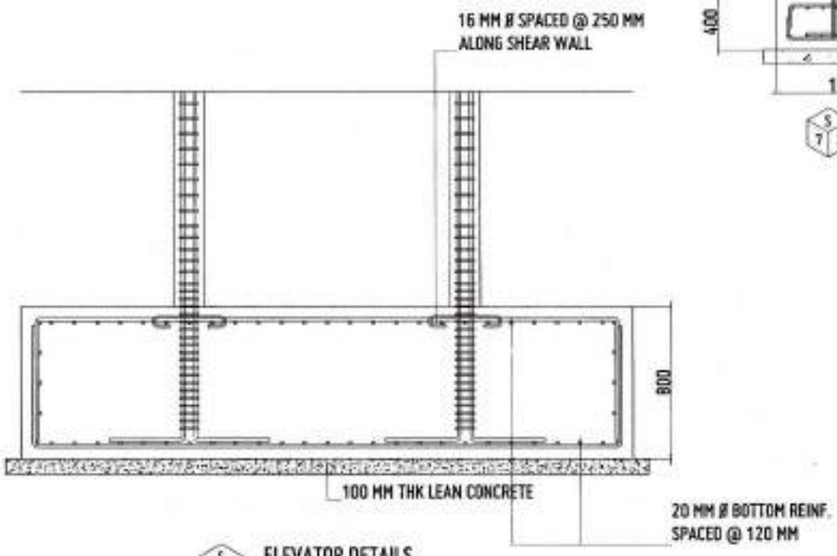


FIRE EXIT STAIRCASE DETAILS





ELEVATOR DETAILS

LINTEL AND STIFFENER BEAM DETAILS

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

ERNESTO CH. QUIJOTE
CIVIL/STRUCTURAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. TOSIO, MAJOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: ELEVATOR DETAILS; FIRE EXIT STAIRCASE DETAILS

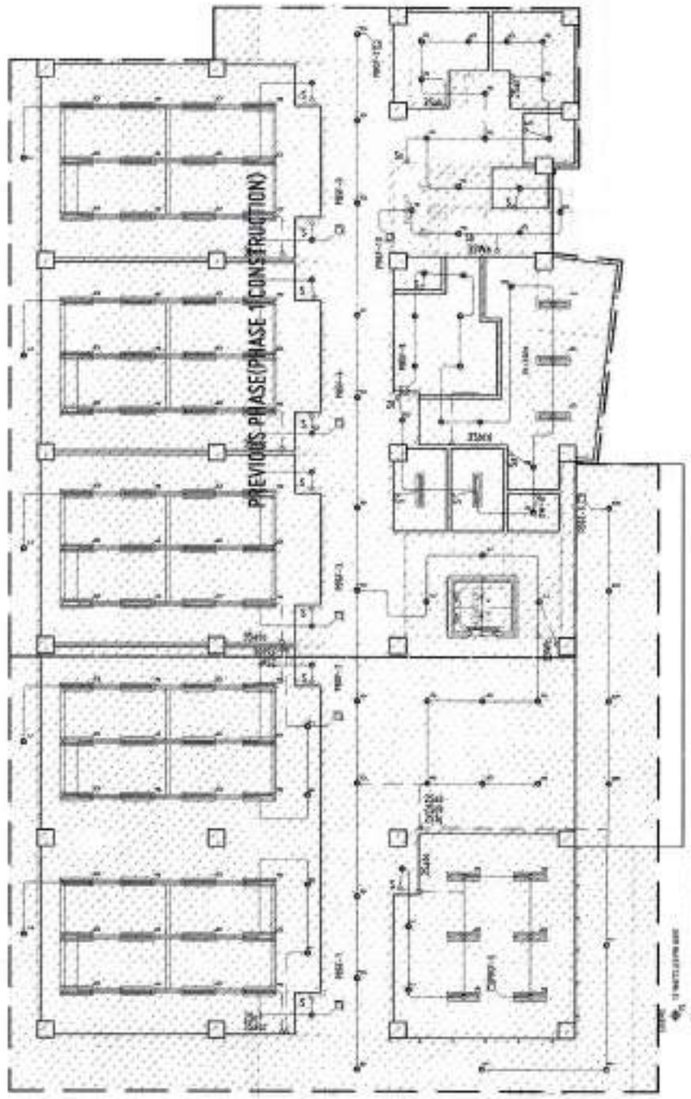
S7

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

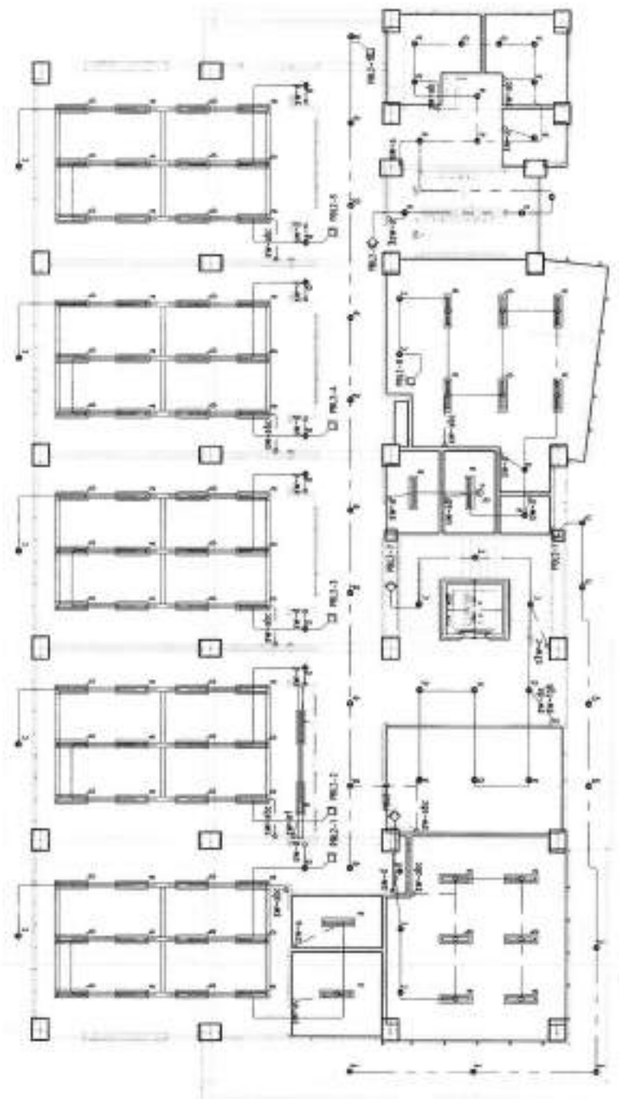
REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



GROUND FLOOR PLAN(LIGHTING AND SWITCHING LAYOUT)- PHASE 1& 2 CONSTRUCTION

SCALE 1:100 MTS



SECOND FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)

SCALE 1:100 MTS

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OFPDC

RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, DIRECTOR FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: GROUND FLOOR PLAN(LIGHTING AND SWITCHING LAYOUT) / SECOND FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)

DRAWN BY:
DATE DRAWN:
SHEET NO.

E1

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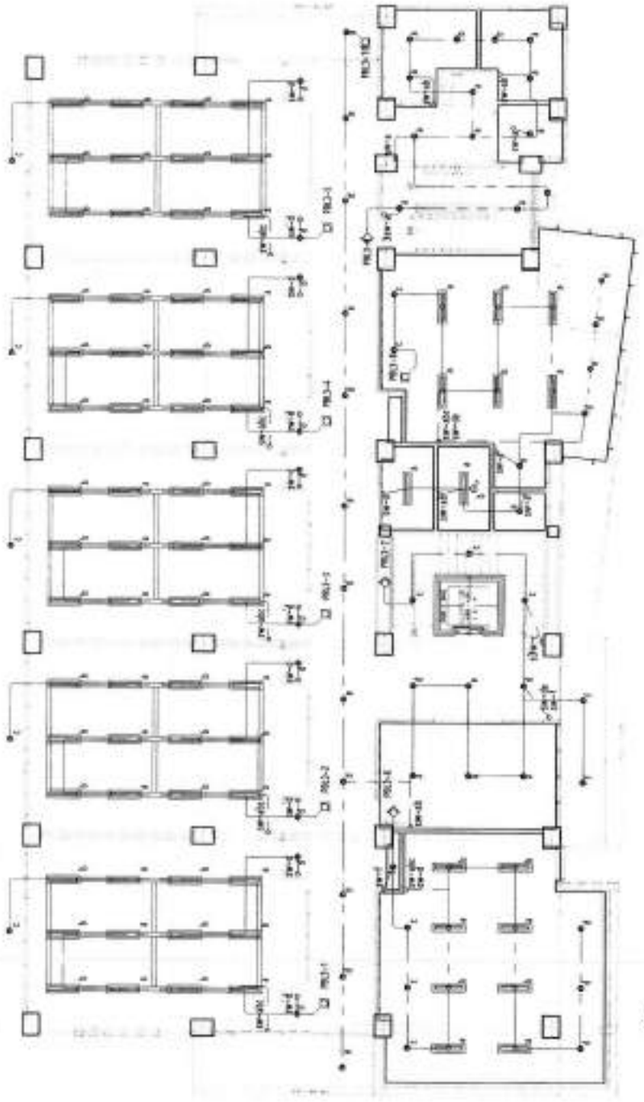
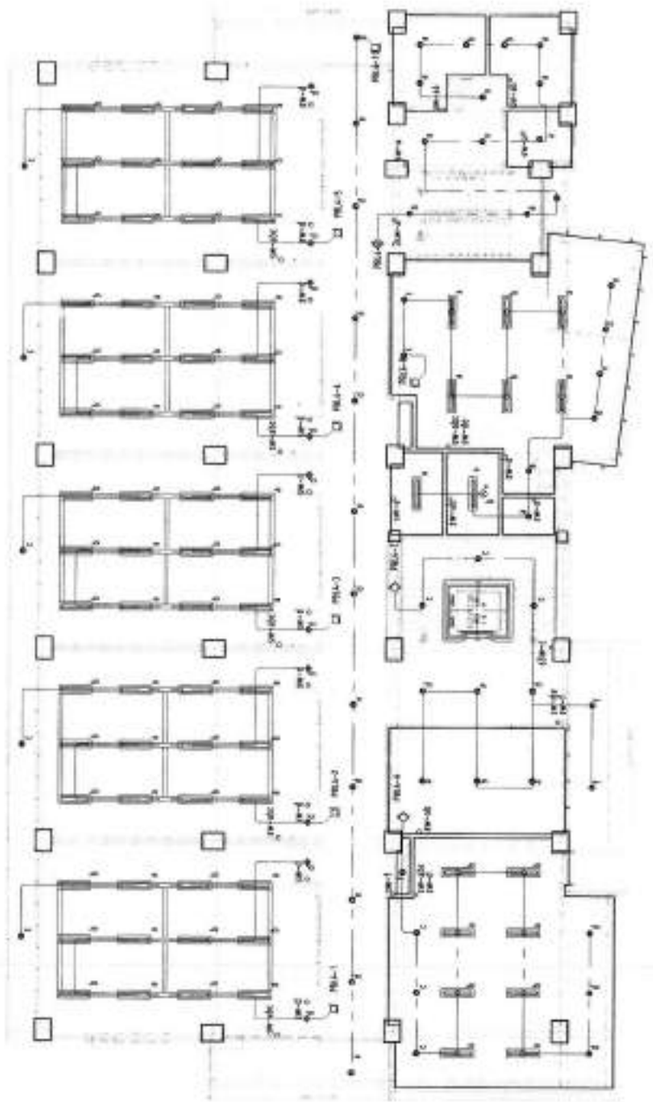
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



THIRD FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)

SCALE 1:100 MTS



FOURTH FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)

SCALE 1:100 MTS

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OPDD

RECOMMENDING APPROVAL: ATTY. ERWIN B. BUTIC, VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: THIRD FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT); FOURTH FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)

DRAWING NO.: E2

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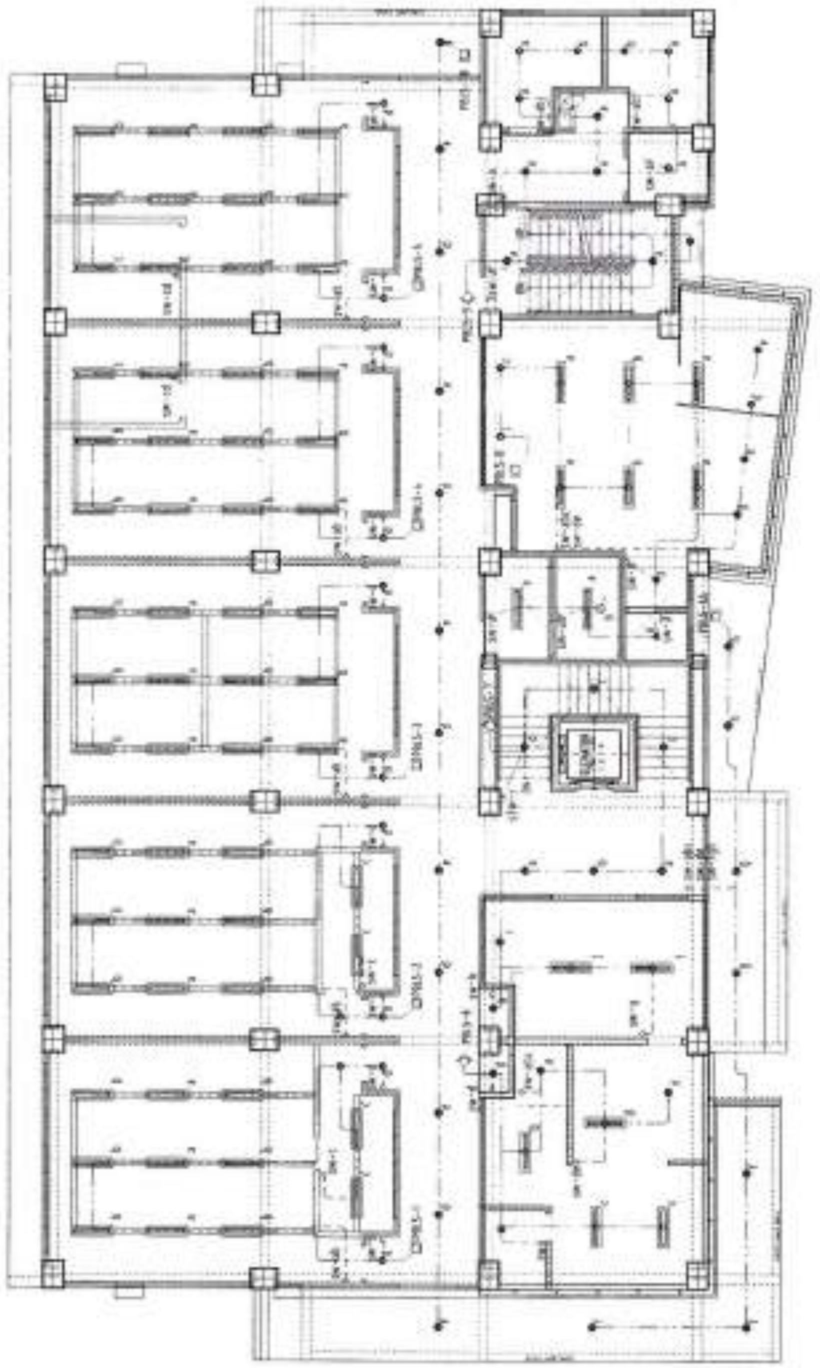
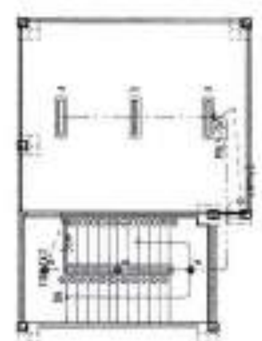
VILLANUEVA, MISAMIS ORIENTAL

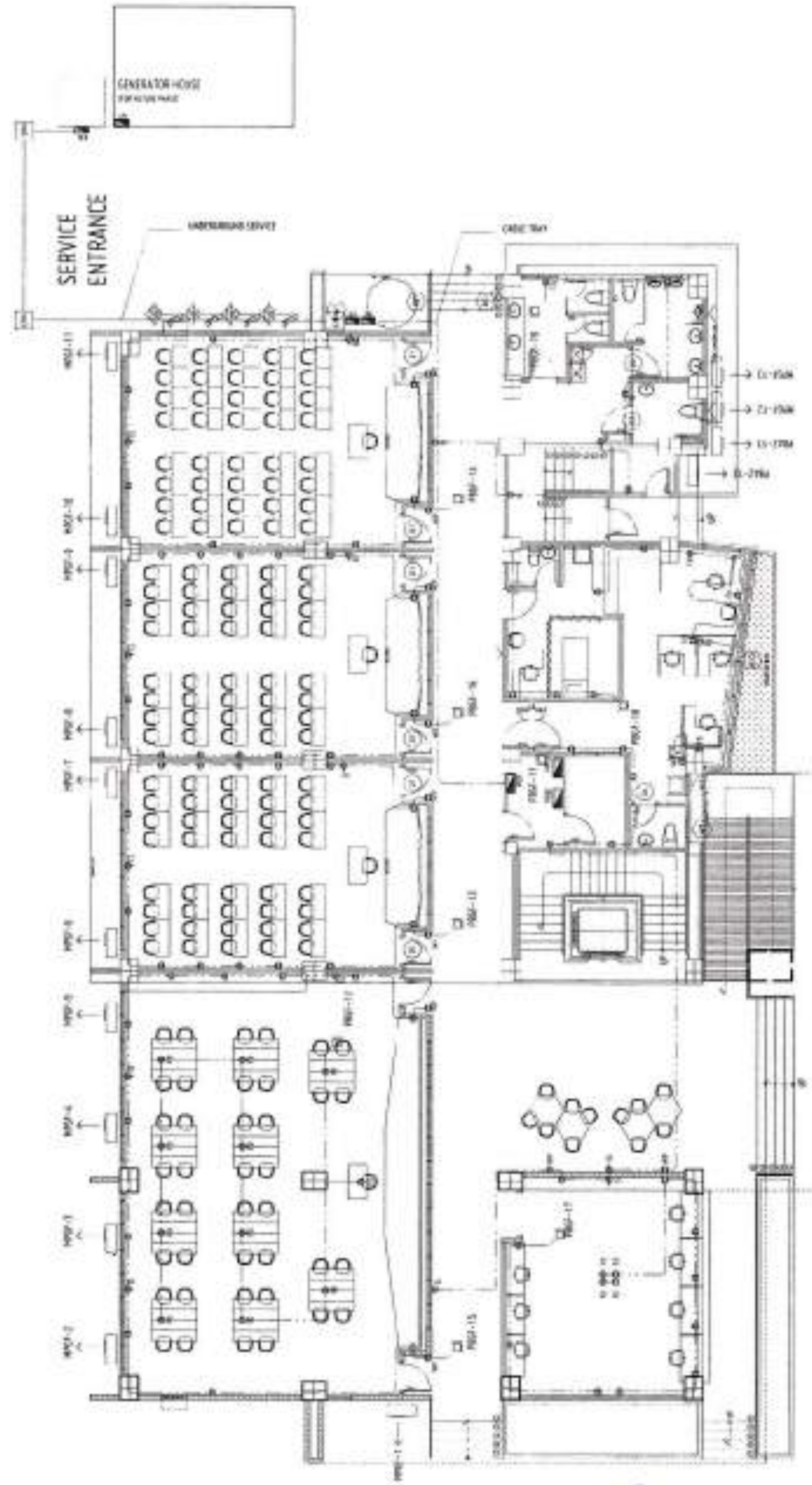
APPROVED BY:



FIFTH FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)
SCALE 1:100 MTS
E 3 1



ROOF DECK PLAN
SCALE 1:100 MTS
E 3 2



GROUND FLOOR PLAN (POWER LAYOUT) -PHASE 3 CONSTRUCTION
SCALE 1:100 MTS
E 3 3

USTP

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER			
PRC NO.	PTR NO.		
	DATE:		
TIN NO.	PLACE:		

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II
DIRECTOR, IPFDD		PRESIDENT, USTP SYSTEM

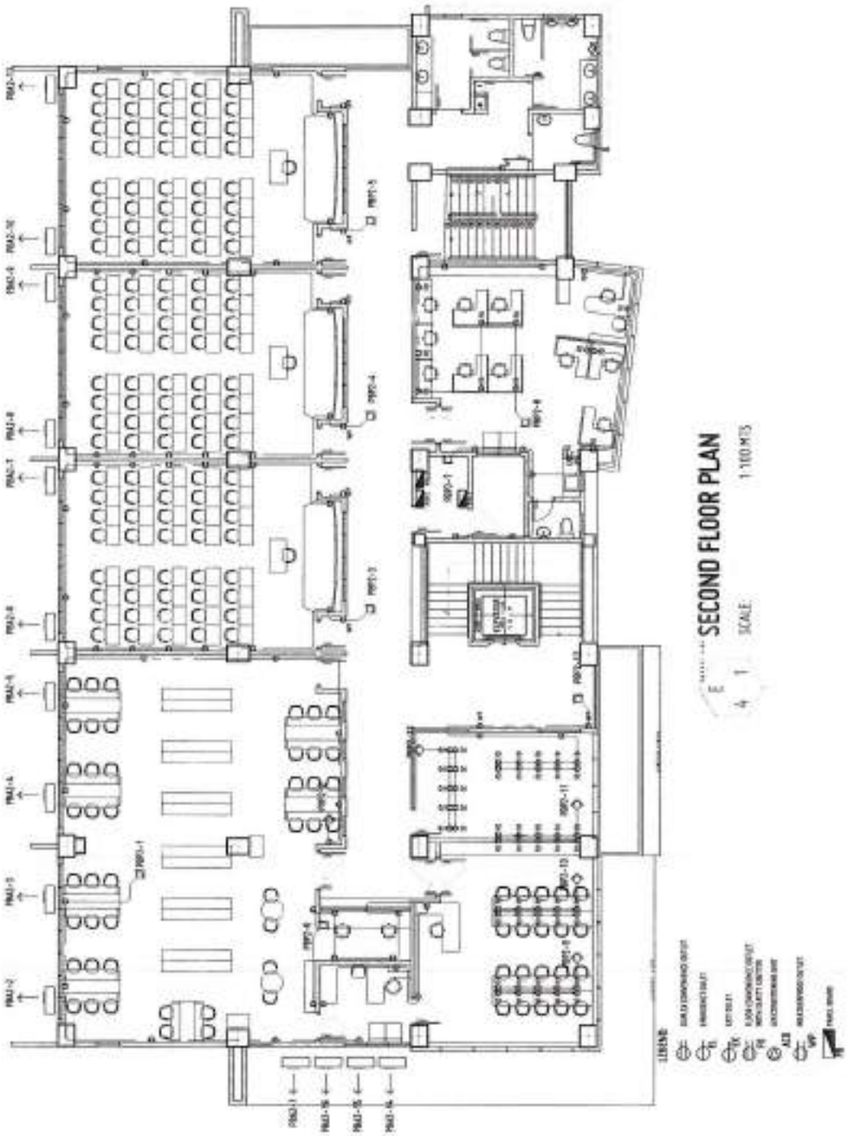
SHEET CONTENTS:
FIFTH FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)
ROOF DECK PLAN
GROUND FLOOR PLAN (POWER LAYOUT) -PHASE 3 CONSTRUCTION

DRAWN BY:
DATE DRAWN:

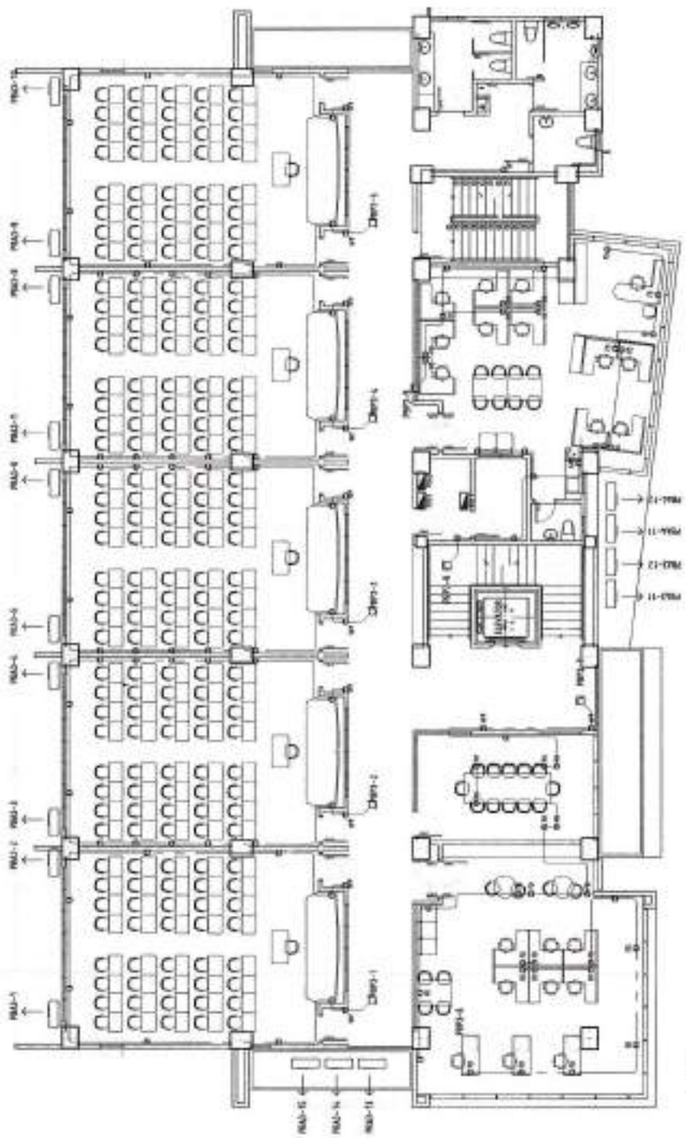
E3

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



SECOND FLOOR PLAN 1:100 MTS



THIRD FLOOR PLAN 1:100 MTS

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.: PTR NO.:
DATE:
TIN NO.: PLACE:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, IPFDO

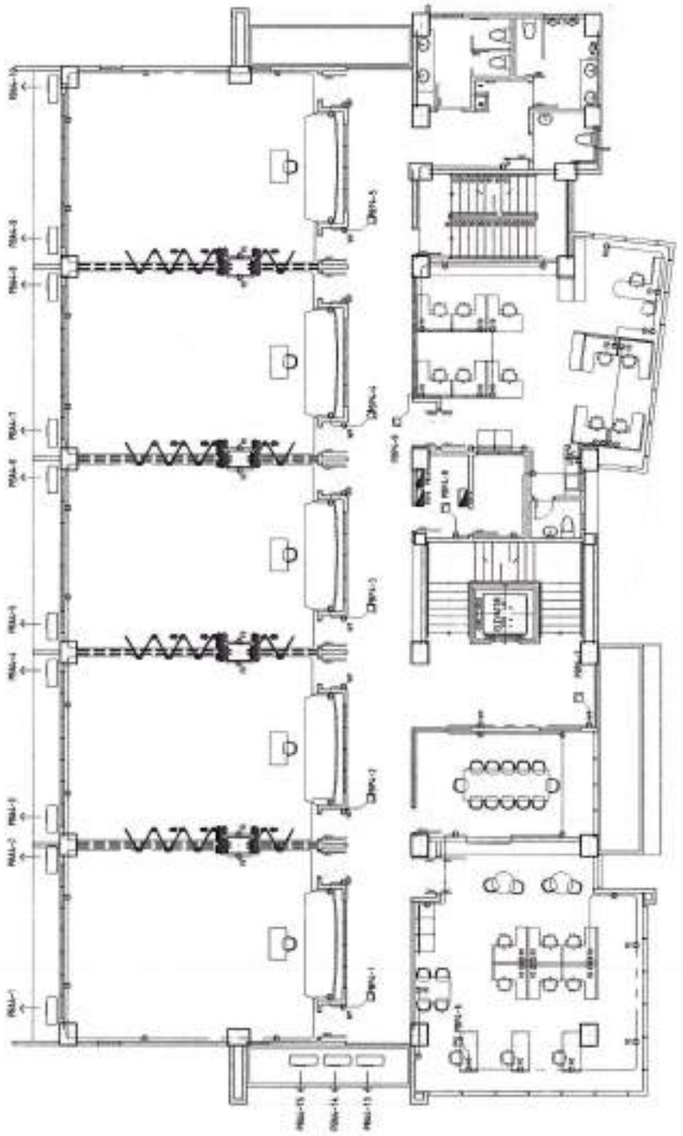
RECOMMENDING APPROVAL:
ATTY. ERWIN B. [illegible]
[illegible] ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SECOND FLOOR PLAN (POWER LAYOUT)
THIRD FLOOR PLAN (POWER LAYOUT)

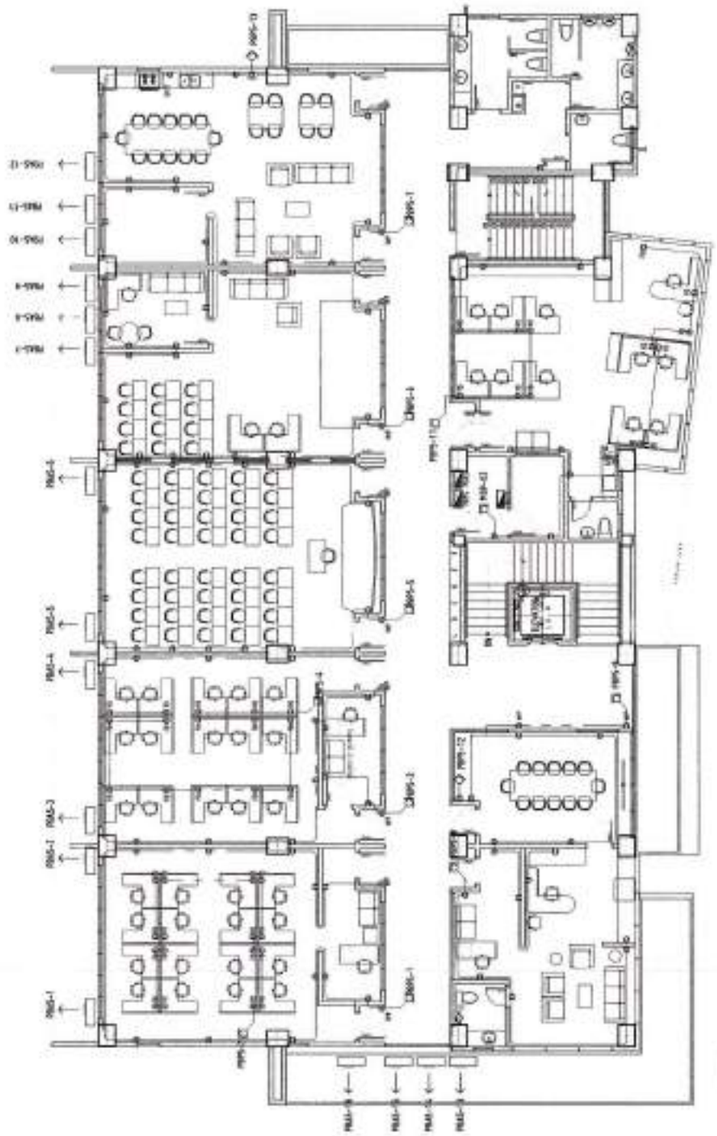
DRAWN BY:
SUBMITTED:
DATE:

E4



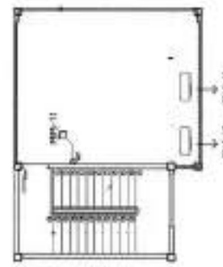
FOURTH FLOOR PLAN (POWER LAYOUT)

SCALE 1:100 MTS



FIFTH FLOOR PLAN (POWER LAYOUT)

SCALE 1:100 MTS



ROOF DECK PLAN

SCALE 1:100 MTS

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

PRC NO. | PTR NO.
DATE
TIN NO. | PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPDO

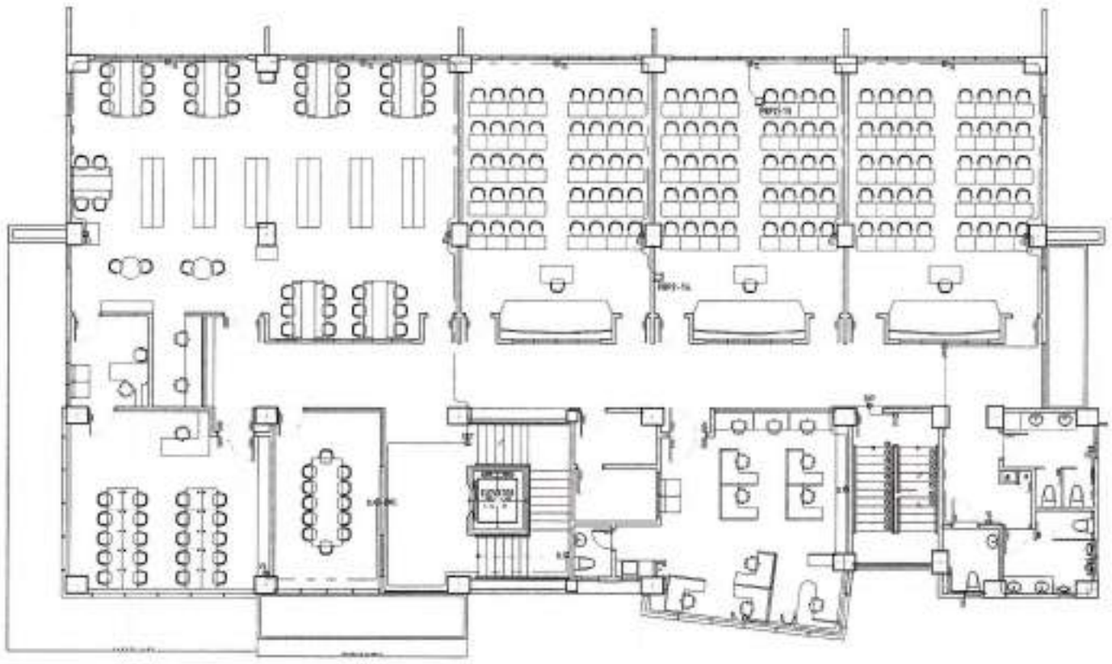
RECOMMENDING APPROVAL: ATTY. ERWIN B. RUGAS, VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: FOURTH FLOOR PLAN (POWER LAYOUT); FIFTH FLOOR PLAN (POWER LAYOUT)

DRAWN BY:
CHECKED BY:
DATE:

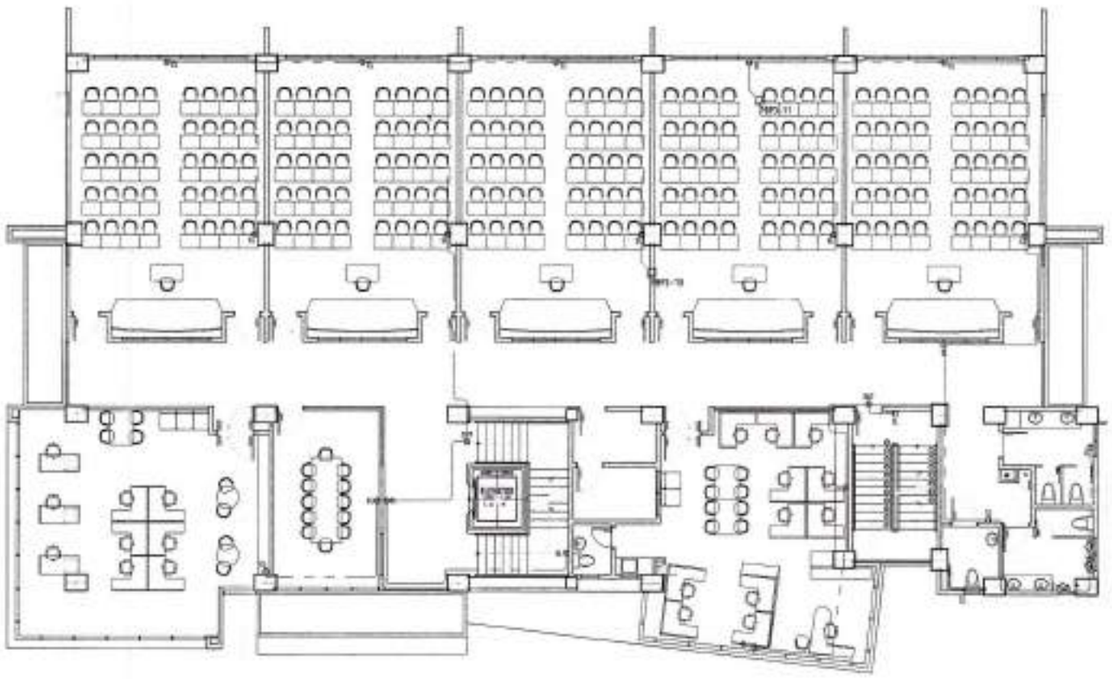
E5



E 6 1

SECOND FLOOR PLAN - EMERGENCY LIGHT LAYOUT

SCALE: 1:100 MTS



E 6 2

THIRD FLOOR PLAN - EMERGENCY LIGHT LAYOUT

SCALE: 1:100 MTS

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO PROJECT CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.
VALID UNTIL
DATE
PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III,
VILLANUEVA CAMPUS
LOCATION: LGU VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, IPFDU

RECOMMENDING APPROVAL:
ATTY. EDWIN C. BUTIC
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROCIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SECOND & THIRD FLOOR EMERGENCY LIGHTING LAYOUT

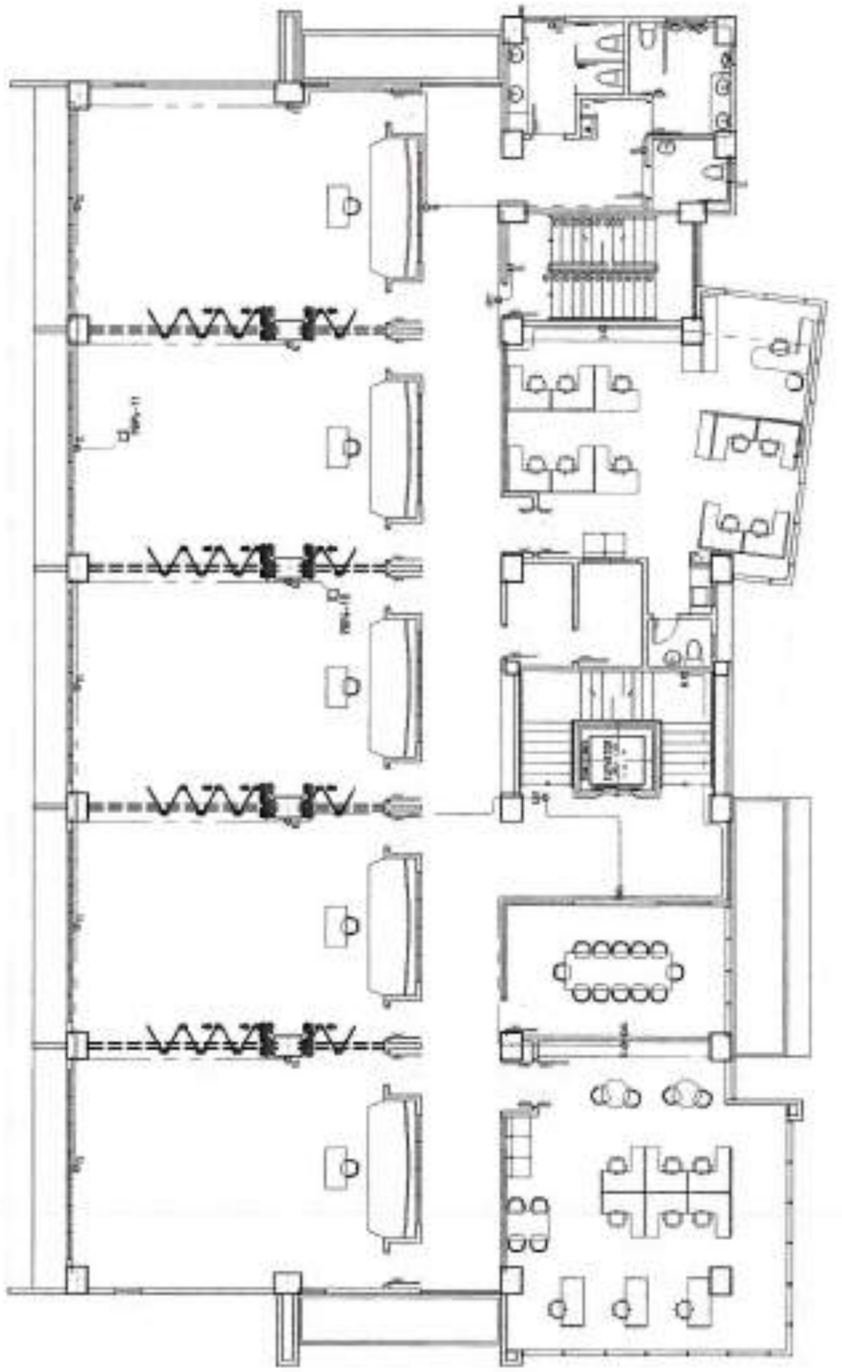
SHEET NO.: E6

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

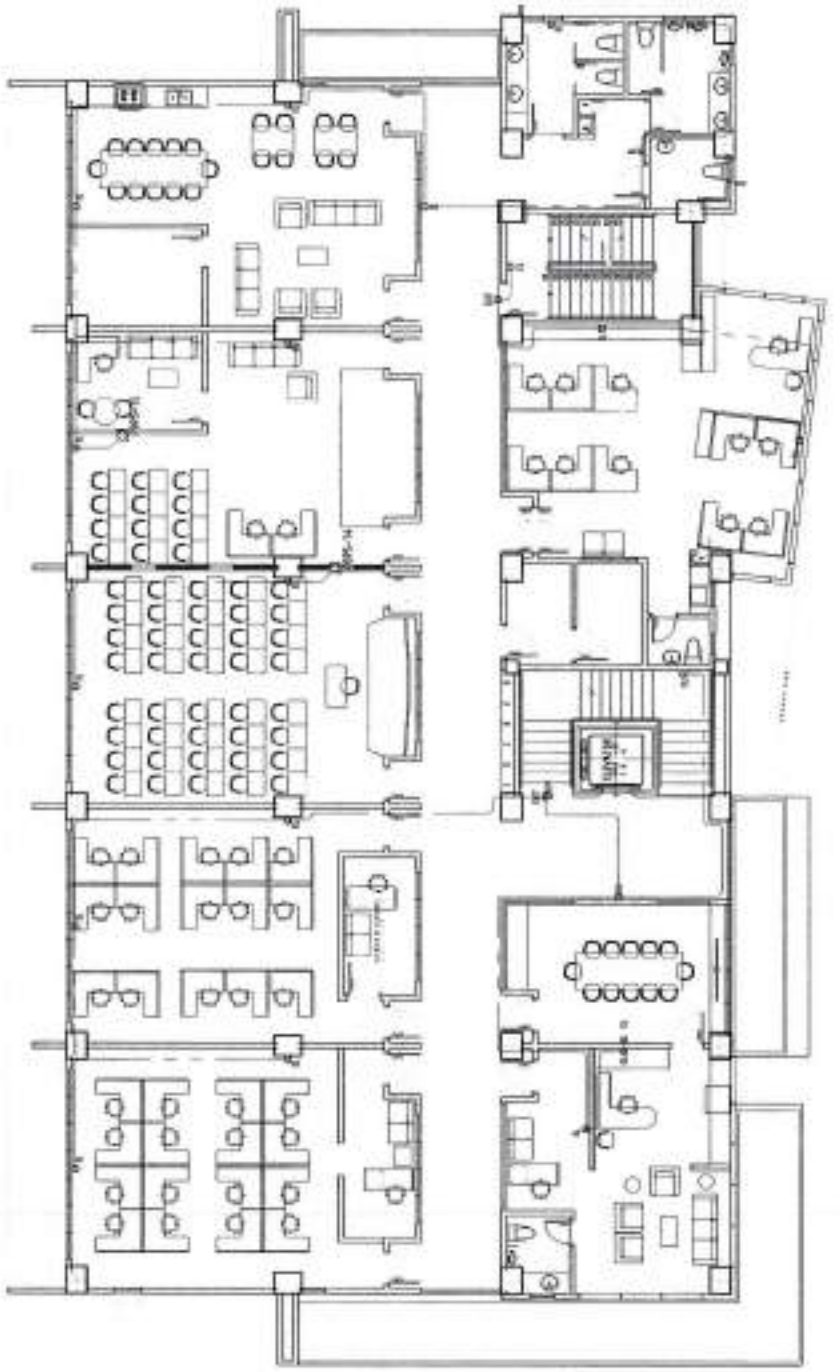
APPROVED BY:



FOURTH FLOOR PLAN - EMERGENCY LIGHT LAYOUT

SCALE 1:100 MTS

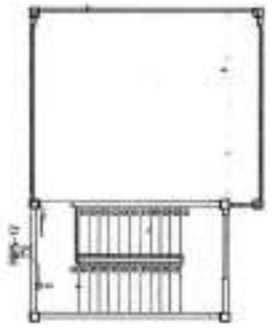
E 6 2



FIFTH FLOOR PLAN - EMERGENCY LIGHT LAYOUT

SCALE 1:100 MTS

E 6 2



ROOF DECK PLAN

SCALE 1:100 MTS

A 5 2

REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER		
PRC NO.:	PTR NO.:	
	DATE:	
TIN NO.:	PLACE:	

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:	DRAWN BY:
ENGR. GRACE C. BABA	ATTY. ERWIN E. BUCIO	DR. AMBROSIO B. CULTURA II	FOURTH & FIFTH FLOOR EMERGENCY LIGHTING LAYOUT	DATE DRAWN:
DIRECTOR, IPFDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM		PNT:

E7

GENERAL NOTES:

1. ALL WORKS SHALL COMPLY WITH THE PROVISIONS OF THE LATEST EDITION OF THE PHILIPPINE ELECTRICAL CODE, THE RULES & REGULATIONS OF THE NATIONAL AND LOCAL AUTHORITY CONCERNED IN THE ENFORCEMENT OF ELECTRICAL LAWS AND ORDINANCES AND THE REGULATIONS OF THE UTILITY COMPANY CONCERNED
2. POWER SERVICE TO THE BUILDING SHALL BE 230 VOLTS 3 PHASE 3 WIRE & GROUND
3. SMALLEST CONDUCTOR FOR POWER AND LIGHTING SHALL BE 3.5mm2 THHN AND SMALLEST RACEWAY SHALL BE 15mm DIA. TRADE SIZE. CONDUCTOR SHALL BE TYPE THHN EXCEPT AS OTHERWISE REQUIRED BY THE DRAWING AND INSULATED FOR 600 VOLTS.
4. GROUNDING WIRE SHALL BE PROVIDED TO ALL EQUIPMENTS, OUTLETS AND LIGHTING CIRCUITS AND ALL NON-CURRENT CARRYING METAL PARTS.
5. MATERIALS AND EQUIPMENT TO BE USED SHALL BE NEW AND OF APPROVED TYPE FOR BOTH LOCATION AND PURPOSE INTENDED. SUBMIT SAMPLES OF MATERIALS TO THE ARCHITECT/ DESIGN ENGINEER FOR APPROVAL PRIOR TO INSTALLATION
6. NO BRANCH CKT. SHALL HAVE A LOAD OF MORE THAN 80% OF ITS RATING.
7. EMERGENCY LIGHTING SHALL BE PROVIDED WITH A DEDICATED CIRCUIT.
8. CIRCUIT BREAKERS SHALL BE BOLT ON TYPE. USE ONLY ONE BRAND ALL THROUGHOUT.
9. MOUNTING HEIGHT SHALL BE AS FOLLOWS:
   a. LIGHT CONTROL SWITCH - 1.52 ABOVE FINISHED FLOOR
   b. CONVENIENCE OUTLET - 0.30 ABOVE FINISHED FLOOR
   c. SPECIAL PURPOSE OUTLET - 0.30 ABOVE FINISHED FLOOR OR AS REQUIRED BY THE ARCHITECT
   d. PANEL BOARDS, FIRE ALARM-PANEL: 80 FROM TOP OF PANEL TO FINISHED FLOOR
10. ALL WORKS SHALL BE COORDINATED WITH THE ARCHITECT AND OTHER TRADE DISCIPLINE PRIOR TO INSTALLATION
11. CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS SIGNED AND SEALED BY PROFESSIONAL ELECTRICAL ENGINEER.
12. CONTRACTOR TO PERFORM ALL TEST NECESSARY BUT NOT LIMITED TO THE FOLLOWING:
   a. CABLE INSULATION INTEGRITY TEST
   b. PHASE SEQUENCE TEST
   c. LOAD TEST
   d. COMPLETE TEST FOR TRANSFORMER
13. ALL WIRES SHALL BE COLOR CODED AS FOLLOWS:
   PHASE - A - BLACK GROUND - GREEN
   PHASE - B - RED PHASE - C - BLUE
14. NO CHANGE OR MODIFICATION SHALL BE MADE ON THESE PLANS WITHOUT THE ENGINEER'S/OWNER'S WRITTEN COMMENT.
15. ALL MOTORS AND AIR-CONDITIONING UNITS MUST HAVE INDIVIDUAL ENCLOSED THERMAL MAGNETIC CIRCUIT BREAKER
16. ENCLOSURE TYPE FOR PANEL BOARDS SHALL BE NEMA 3R FOR INDOORS AND NEMA 4X FOR OUTDOORS.
17. ALL CONVENIENCE OUTLETS SHALL BE TAMPER-RESISTANT CTRRD. GFCI CONVENIENCE OUTLETS SHALL BE USED IN WET LOCATIONS.
18. EMERGENCY LIGHTING AND FIRE EXIT SIGNAGE OUTLETS LOCATED ON COLUMNS SHALL BE CEILING-MOUNTED

IMPORTANT NOTES

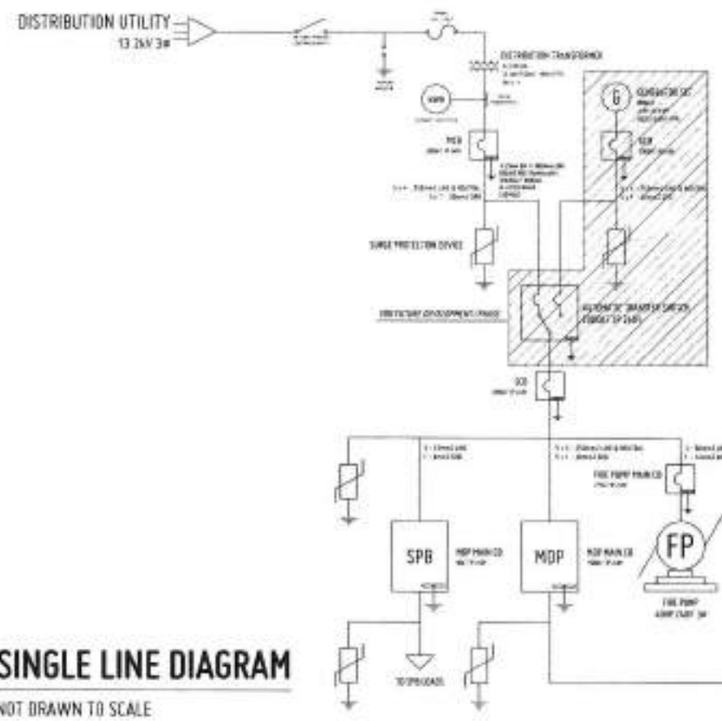
1. STRUCTURAL DESIGN/DETAILS OF PEDESTAL, DUCTBANK AND GENERATOR PADS SHALL BE COORDINATED WITH STRUCTURAL ENGINEER PRIOR TO IMPLEMENTATION
2. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH POWER UTILITY COMPANY FOR TOTAL LOAD REQUIREMENTS OF THE PROJECT TO ASSURE AVAILABILITY OF 3-PHASE OR 1-PHASE TO BE SUPPLIED BY THE UTILITY COMPANY. THIS SHALL BE DONE PRIOR TO FABRICATION OR PURCHASE OF PANELBOARD & INSTALLATION OF SERVICE & FEEDERS.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF SERVICE PEDESTAL WITH EXISTING UTILITY POLE AT SITE & WITH ELECTRIC UTILITY COMPANY PRIOR TO IMPLEMENTATION. IN GENERAL, LOCATE PEDESTAL ON THE SIDE NEAR THE EXISTING POLE.
4. 4) 3.0M FOR PEDESTRIAN AREAS
   +3.7M FOR DRIVEWAYS SUBJECT TO CAR TRAFFIC
   +5.5M FOR DRIVEWAYS/STREET SUBJECT TO TRUCK TRAFFIC

	12 WATTS LED PIN LIGHT		DUPLEX TAMPER RESISTANT RECEPTACLE CTRD UNIVERSAL CONVENIENCE FLOOR OUTLET
	18W LED RECESSED CEILING MOUNTED LIGHT		EMERGENCY LIGHT
	18W LED LIGHT WITH INDUSTRIAL HOUSING AND SUPPORT		FIRE EXIT OUTLET
	1-32W T8 LED FLUORESCENT LIGHT MOUNTED TYPE WITH INDUSTRIAL HOUSING AND SUPPORT		AIR-COOLED CONDENSING UNIT (ACCU)
	1-32W T8 LED FLUORESCENT LIGHT RECESSED TYPE WITH INDUSTRIAL HOUSING AND SUPPORT		EXHAUST FAN
	SINGLE UNIVERSAL CONVENIENCE OUTLET		CIRCUIT NUMBERING
	DUPLEX TAMPER RESISTANT RECEPTACLE CTRD UNIVERSAL CONVENIENCE OUTLET		PANEL BOARD
	DUPLEX TAMPER RESISTANT RECEPTACLE CTRD UNIVERSAL CONVENIENCE OUTLET WITH WEATHERPROOF COVER		SERVICE PEDESTAL
	DUPLEX GROUND FAULT CIRCUIT INTERRUPTER (GFCI) UNIVERSAL CONVENIENCE OUTLET		ENCLOSED CIRCUIT BREAKER

E 8 1

ELECTRICAL LEGEND AND SYMBOLS

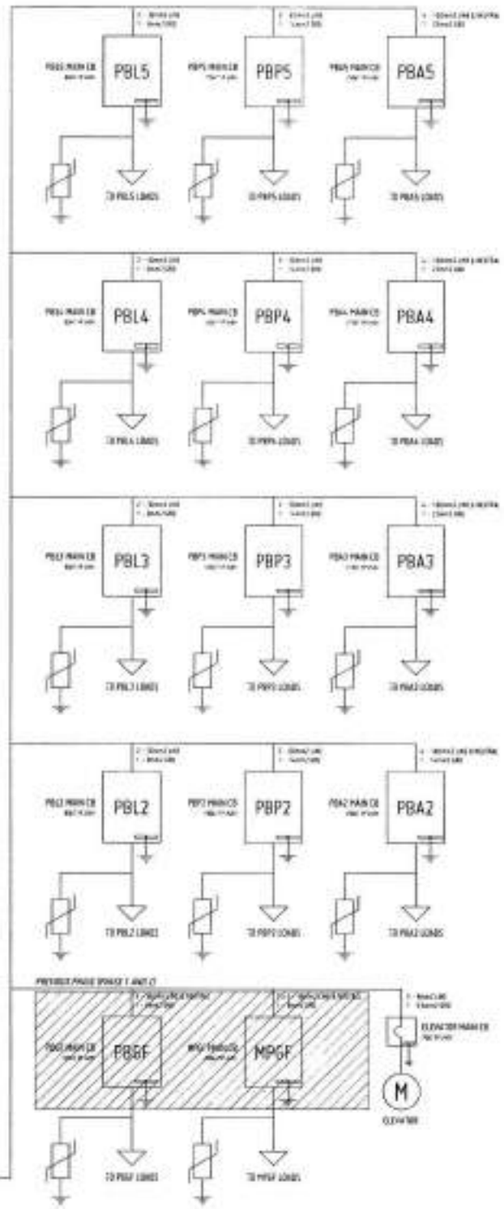
NOT DRAWN TO SCALE



E 8 2

SINGLE LINE DIAGRAM

NOT DRAWN TO SCALE



REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

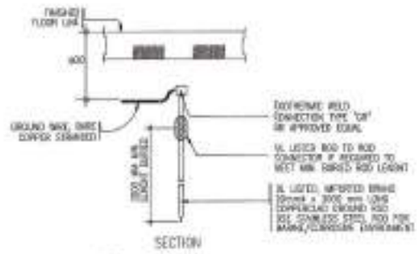
PROFESSIONAL ELECTRICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

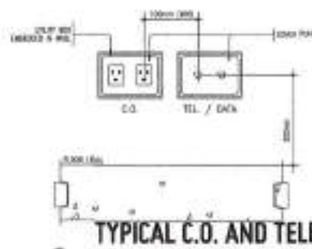
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPDU
RECOMMENDING APPROVAL: ATTY. ERWIN B. SUCTO, VP FOR ADMINISTRATION & FISCAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: ELECTRICAL LEGENDS AND SYMBOLS; SINGLE LINE DIAGRAM
DRAWN BY:
DATE DRAWN:
INIT.

E8



E 9 1 **TYPICAL GROUND ROD DETAIL**
NOTS



E 9 2 **TYPICAL C.O. AND TELEPHONE, DATA OUTLETS MOUNTING DETAILS**
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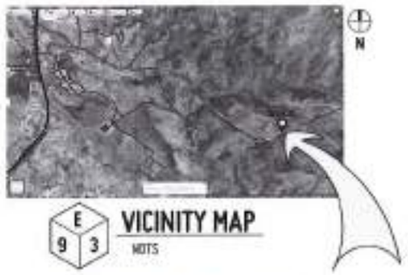
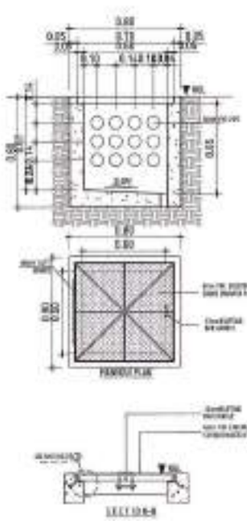
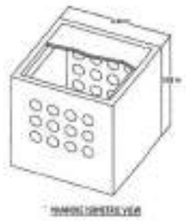
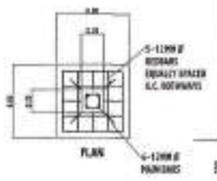
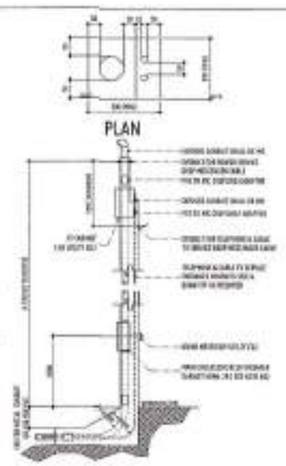


E 9 3 **VICINITY MAP**
NOTS

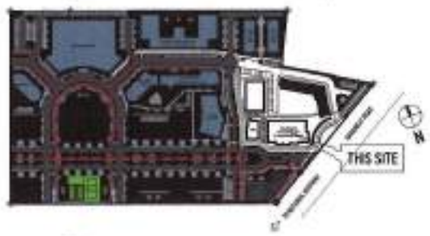




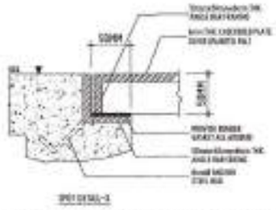




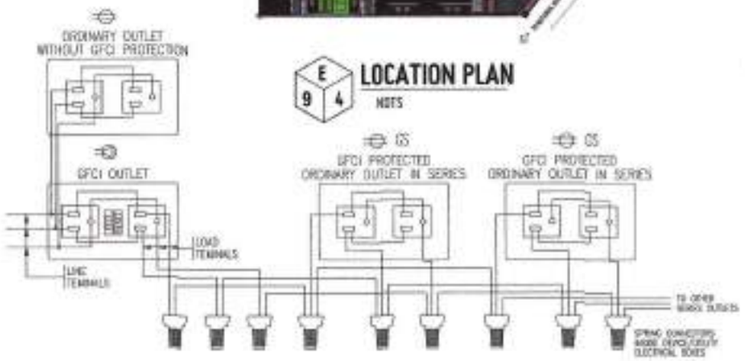
E 9 8 **SERVICE PEDESTAL DETAIL**
NOTS



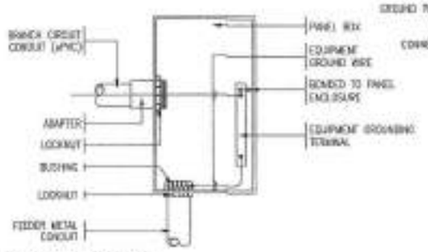
E 9 4 **LOCATION PLAN**
NOTS



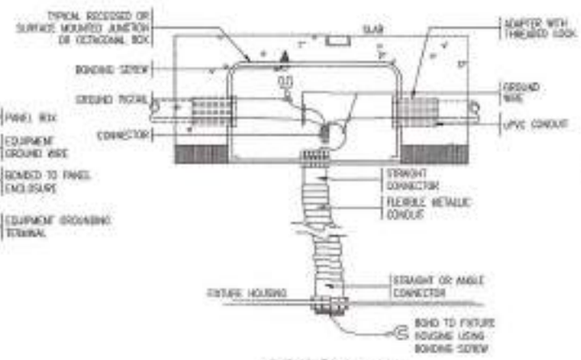
E 9 7 **ELECTRICAL MANHOLE DETAIL**
SCALE 1:20 MTS



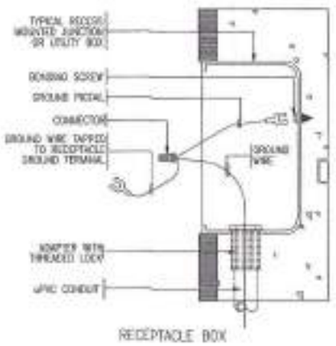
E 9 5 **CONV. OUTLET IN SERIES WITH GCFI OUTLET WIRING CONNECTION DETAIL**
NOTS



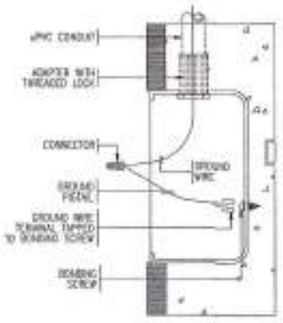
PANELBOARD



LIGHTING FIXTURE BOX



RECEPTACLE BOX



SWITCH BOX

E 8 6 **TYPICAL GROUNDING CONNECTION DETAILS**

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PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.:
PTR NO.:
DATE:
TIN NO.:
PLACE:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OPDD
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCLO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
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DATE DRAWN:
REV.:

E9

DESIGN ANALYSIS						
LOAD TYPE	VA PER LOAD	VOLTAGE	FLC PER PHASE (w/ DF)			
			AB	BC	CA	3Ø
LIGHTING OUTLET	72180.00	230	124.24	5.57	121.25	0.00
CONVENIENCE OUTLET	127560.00	230	214.49	224.30	21.29	0.00
AIRCON	313656.00	230	489.50	399.00	475.00	0.00
MOTOR (NON-CONTINUOUS)	11673.11	230	0.00	0.00	0.00	29.30
MOTOR (CONTINUOUS)	13703.58	230	0.00	0.00	0.00	34.40
LARGEST MOTOR	41429.44	230	0.00	0.00	0.00	104.00
SPARE	55500.00	230	62.61	52.17	46.96	13.56
TOTAL CONNECTED VA	635702.14	230	890.84	681.03	664.50	181.26

DEMAND FACTOR CALCULATION	
DEMAND FACTOR = TOTAL DEMAND VA/TOTAL CONNECTED VA	
TOTAL DEMAND VA	588422.14
OVERALL DEMAND FACTOR	92.56%

LINE CURRENT CALCULATION
IL= LARGEST TOTAL PHASE CURRENT + TOTAL 3Ø CURRENT
IL=890.839130434783(1.732) + 181.258499849382
1724.19187376243 A

DEMAND FACTORS PER PB		TOTAL VA	DEMAND VA
MCB/SCB	0.93	635702.136	588422.14
SPB	1.00	18376.70	18376.70
MDP	0.92	572896.00	526216.00
PBGF	0.72	43440.00	31152.00
PBL2	0.80	16980.00	13584.00
PBL3	0.80	17380.00	13904.00
PBL4	0.80	17380.00	13904.00
PBL5	0.80	17380.00	13904.00
PBP2	0.82	33240.00	27420.00
PBP3	0.83	27120.00	22488.00
PBP4	0.84	22260.00	18600.00
PBP5	0.84	36060.00	30204.00
MPGF	1.00	51185.00	51185.00
PBA2	1.00	64755	64755.00
PBA3	1.00	72575	72575.00
PBA4	1.00	72575	72575.00
PBA5	1.00	67566	67566.00

PERCENT LOADING		
PB ID	% MOTOR LOAD	% STATIC LOAD
PBGF	0.00%	100.00%
PBL2	0.00%	100.00%
PBL3	0.00%	100.00%
PBL4	0.00%	100.00%
PBL5	0.00%	100.00%
PBP2	0.00%	100.00%
PBP3	0.00%	100.00%
PBP4	0.00%	100.00%
PBP5	8.32%	91.68%
MPGF	94.14%	5.86%
PBA2	95.37%	4.63%
PBA3	95.87%	4.13%
PBA4	95.87%	4.13%
PBA5	95.56%	4.44%
SPB	83.67%	16.33%

TRANSFORMER SIZING	
TOTAL LINE CURRENT	CALCULATION
1724.191874	TRANSFORMER SIZE
	S= (1.732 x V x I) x 125%
	S = (1.732 x 230 x 1724.19) x 125%
	S = 858.56134354 kVA
THEREFORE USE 3 x 333 kVA 1P 13.2kV/240V POLE MOUNTED DISTRIBUTION TRANSFORMER	

GENERATOR SIZING	
	CALCULATION
kW LOAD	P = (1.732 x V x I x PF)/1000
	P = (1.732 x 230 x 1724.19 x 0.80)/1000
	P = 549.479259856kW
RESERVE CAPACITY	P = 549.48 x 0.25
	P =137.37kW
GENERATOR SIZE	P = 549.48 + 137.37
	P = 686.85kW
THEREFORE USE 800kVA 3P 240V 60HZ 0.8PF SILENT-TYPE DIESEL GENERATOR SET	

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VILLANUEVA, MISAMIS ORIENTAL

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DESIGN ANALYSIS, TRANSFORMER AND GENERATOR SIZING

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SCALE NOTS

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO. PTR NO.
DATE
TIN NO. PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
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RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCAO, IP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: DESIGN ANALYSIS TRANSFORMER AND GENERATOR SIZING
DRAWN BY:
DATE DRAWN:
CHECKED BY:

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REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

MAIN CIRCUIT BREAKER/SECONDARY CIRCUIT BREAKER - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/OF) AB	BC	CA	3P	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
MCB/SCB	C1	MDP - Main Distribution Panel									230	572896	572896	890.84	681.03	664.50	32.63	60	3	1800	(5) 4 - 250mm² XLPE Copper Wire	(5) 80mm ø Conduit - RSC	(5) 30 - 8 mm² THHN Copper Wire
	C2	SPB - Secondary Panel Board									230	18277	18277	0.00	0.00	0.00	45.13	60	3	80	3 - 22 mm² XLPE Copper Wire	32 mm ø Conduit - RSC	1 - 8 mm² THHN Copper Wire
	C3	Fire Pump				40					230	41420	41420				104.00	60	3	275	3 - 60 mm² THHN Copper Wire	50 mm ø Conduit - RSC	1 - 14 mm² THHN Copper Wire
	C4	SPARE									230	3000	3000				6.02						
TOTAL			0	0	0	0	0	0	0	0			835702	890.84	681.03	664.50	188.78						

Calculation:	For Service Conductor	For Service Protection	
	IL = (890.84 x 1.732) + 25% (104) = 188.78 1757.17 A	IL = (890.84 x 1.732) + 150% (104) = 188.78 1887.77 A	THEREFORE USE 2000 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 5 SETS OF 4 - 250 mm² XLPE COPPER, 1 - 30 mm² GROUND @ 80 mm ø Conduit - RSC

Load Type	VA	FLC AB	BC	CA	3P
LO	72180.00	134.24	5.57	121.25	0.00
CO	127560.00	214.45	224.30	21.25	0.00
ACU	313656.00	489.50	399.00	475.38	0.00
MOTOR (NC)	11673.11	0.00	0.00	0.00	29.30
MOTOR (C)	13783.58	0.00	0.00	0.00	34.60
LARGEST MOTOR	41429.44	0.00	0.00	0.00	104.00
SPARE	55580.00	62.61	52.17	46.96	13.56
TOTAL	835702.14	890.84	681.03	664.50	181.36

MAIN DISTRIBUTION PANEL - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/OF) AB	BC	CA	3P	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
MDP	C1	PBGF										230	43440	43440	53.98	64.17	57.96	-	60	3	125	4 - 38 mm² THHN Copper Wire	50 mm ø Conduit - PVC	1 - 8 mm² THHN Copper Wire
	C2	PBL2										230	10880	10880	50.05	-	-	-	60	2	80	2 - 30 mm² THHN Copper Wire	40 mm ø Conduit - PVC	1 - 8 mm² THHN Copper Wire
	C3	PBL3										230	17380	17380	80.45	-	-	-	60	2	80	2 - 30 mm² THHN Copper Wire	40 mm ø Conduit - PVC	1 - 8 mm² THHN Copper Wire
	C4	PBL4										230	17380	17380	-	-	80.45	-	60	2	80	2 - 30 mm² THHN Copper Wire	40 mm ø Conduit - PVC	1 - 8 mm² THHN Copper Wire
	C5	PBL5										230	17380	17380	-	-	80.45	-	60	2	80	2 - 30 mm² THHN Copper Wire	40 mm ø Conduit - PVC	1 - 8 mm² THHN Copper Wire
	C6	PBF2										230	33240	33240	-	179.22	-	-	60	2	150	2 - 60 mm² THHN Copper Wire	50 mm ø Conduit - PVC	1 - 14 mm² THHN Copper Wire
	C7	PBF3										230	27120	27120	-	97.77	-	-	60	2	125	2 - 50 mm² THHN Copper Wire	50 mm ø Conduit - PVC	1 - 14 mm² THHN Copper Wire
	C8	PBF4										230	22280	22280	80.87	-	-	-	60	2	125	2 - 50 mm² THHN Copper Wire	50 mm ø Conduit - PVC	1 - 14 mm² THHN Copper Wire
	C9	PBF5										230	30080	30068	131.33	-	-	-	60	2	175	2 - 80 mm² THHN Copper Wire	50 mm ø Conduit - PVC	1 - 14 mm² THHN Copper Wire
	C10	MPCF										230	51185	51185	87.31	85.50	11.72	-	60	3	200	(2) 4 - 38 mm² THHN Copper Wire	(2) 50 mm ø Conduit - PVC	(2) 1 - 8 mm² THHN Copper Wire
	C11	PBA2										230	64755	64755	94.80	93.93	181.09	-	60	3	250	4 - 100 mm² THHN Copper Wire	75 mm ø Conduit - PVC	1 - 22 mm² THHN Copper Wire
	C12	PBA3										230	72575	72575	119.00	84.37	189.72	-	60	3	275	4 - 100 mm² THHN Copper Wire	75 mm ø Conduit - PVC	1 - 22 mm² THHN Copper Wire
	C13	PBA4										230	72575	72575	119.00	84.37	189.72	-	60	3	275	4 - 100 mm² THHN Copper Wire	75 mm ø Conduit - PVC	1 - 22 mm² THHN Copper Wire
	C14	PBA5										230	67566	67566	91.61	106.00	95.08	-	60	3	250	4 - 100 mm² THHN Copper Wire	75 mm ø Conduit - PVC	1 - 22 mm² THHN Copper Wire
	C15	Elevator										230	10000	10000	-	-	-	25.10	60	3	70	3 - 8 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C16	SPARE										230	1500	1500	-	-	-	3.77						
	C17	SPARE										230	1500	1500	-	-	-	3.77						
TOTAL			0	0	0	0	0	0	0	0	0			572896	890.84	681.03	664.50	32.63						

Calculation:	For Service Conductor	For Service Protection	
	IL = (890.84 + 25% (283) x 1.732 + 32.63 1587.74 A	IL = (890.84 + 150% (283) x 1.732 + 32.63 1848.36 A	THEREFORE USE 1800 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 5 SETS OF 4 - 250 mm² XLPE COPPER, 1 - 30 mm² GROUND @ 80 mm ø Conduit - RSC

Load Type	VA	FLC AB	BC	CA	3P
LO	72180.00	134.24	5.57	121.25	0.00
CO	127560.00	214.45	224.30	21.25	0.00
ACU	313656.00	489.50	399.00	475.00	0.00
MOTOR (NC)	10000.00	0.00	0.00	0.00	25.10
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	49500.00	67.61	52.17	48.56	0.00
TOTAL	572896.00	890.84	681.03	664.50	25.10

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SCHEDULE OF LOADS

SCALE: NOTS

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SHEET CONTENTS: SCHEDULE OF LOADS
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DATE DRAWN:
CHK:

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SECONDARY PANEL BOARD – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{4W}	S_{5W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/OP) AB	BC	CA	3P	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
SPB	C1	Plumbing Transfer Pump – Main				4						230	4840	4840				12.61	50	3	30	3 – 5.5 mm² THWN Copper Wire	25 mm ø Conduit – RSC	1 – 5.5 mm² THWN Copper Wire
	C2	Plumbing Transfer Pump – Backup				4						230	1673	1673				4.36	50	3	30	3 – 5.5 mm² THWN Copper Wire	25 mm ø Conduit – RSC	1 – 5.5 mm² THWN Copper Wire
	C3	Jockey Pump				1.5						230	8184	8184				21.33	50	3	60	3 – 8.0 mm² THWN Copper Wire	25 mm ø Conduit – RSC	1 – 5.5 mm² THWN Copper Wire
	C4	SPARE										230	1500	1500				3.77	50	2				
	C5	SPARE										230	1500	1500				3.77	50	2				
TOTAL			0	0	0	12.5	0	0	0	0	0			18277	0.00	0.00	0.00	48.13						

Calculation:	For Service Conductor IL = (1 x 1.732) = 25% (22) = 48.13 51.63 A	For Service Protection IL = (0 x 1.732) + 150% (22) = 48.13 78.13 A	THEREFORE USE 80 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 3 – 22 mm² THWN COPPER, 1 – 8 mm² GROUND @ 32 mm ø Conduit – RSC

Load Type	VA	PLC AB	BC	CA	3P
LB	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00
ACU	0.00	0.00	0.00	0.00	0.00
MOTOR (HC)	1673.11	0.00	0.00	0.00	4.36
MOTOR (C)	13703.56	0.00	0.00	0.00	34.40
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3600.00	0.00	0.00	0.00	7.55
TOTAL	18276.78	0.00	0.00	0.00	48.13

PANEL BOARD GF – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{4W}	S_{5W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/BF) AB	BC	CA	3P	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
LPB1	C1	Lighting Outlet	16				1	2	1			230	100	1600	5.57	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C2	Lighting Outlet	16				1	2	1			230	100	1600	5.57	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C3	Lighting Outlet	15				2		1			230	100	1500	–	–	5.22	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C4	Lighting Outlet	15				2		1			230	100	1500	–	–	5.22	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C5	Lighting Outlet	9				1		1			230	100	900	–	3.13	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C6	Lighting Outlet	7					2				230	100	700	–	2.43	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C7	Lighting Outlet	21					2		1		230	100	2100	7.30	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C8	Lighting Outlet and Exhaust Fan	11	2			5	1	1			230	100	2600	2.13	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C9	Lighting Outlet	15				2		1			230	100	1500	–	–	5.22	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C10	Lighting Outlet	16				4	2		1		230	100	1600	–	–	5.57	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C11	Convenience Outlet and Emergency Light	11									230	100	1100	–	6.09	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C12	Convenience Outlet	11									230	100	1100	–	6.09	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C13	Convenience Outlet and Emergency Light	18									230	100	3248	11.27	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C14	Convenience Outlet and Emergency Light	12									230	100	2700	7.51	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C15	Convenience Outlet and Emergency Light	16									230	100	2880	–	–	10.02	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C16	Convenience Outlet and Emergency Light	18									230	100	3248	–	–	11.27	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C17	Convenience Outlet	12									230	100	2160	–	7.51	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C18	Convenience Outlet	11									230	100	1980	–	6.88	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C19	Convenience Outlet and Emergency Light	7									230	100	1260	4.38	–	–	–	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C20	SPARE										230	1500	1500	5.22	–	–	–	60	2	30			
	C21	SPARE										230	1500	1500	–	–	5.22	–	60	2	30			
	C22	SPARE										230	1500	1500	–	–	5.22	–	60	2	30			
	C23	SPARE										230	1500	1500	–	5.22	–	–	60	2	30			
	C24	SPARE										230	1500	1500	–	5.22	–	–	60	2	30			
TOTAL			253	2	0	0	18	11	7	2	0			43440	53.98	44.17	52.94							

Calculation:	For Service Conductor IL = 53.98 x 1.732 x 125% 116.87	For Service Protection: IL = 53.98 x 1.732 x 125% 116.87	THEREFORE USE 125 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 4 – 38 mm² THHN COPPER, 1 – 8 mm² GROUND @ 50 mm ø Conduit – PVC

Load Type	VA	PLC AB	BC	CA	3P
LB	15850.00	25.68	5.57	21.22	0.00
CO	20800.00	23.17	28.17	21.25	0.00
ACU	0.00	0.00	0.00	0.00	0.00
MOTOR (HC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	7500.00	5.22	10.45	10.43	0.00
TOTAL	43440.00	53.98	44.17	52.94	0.00

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OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO. | PTR NO.
DATE
TIN NO. | PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPDD
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SCHEDULE OF LOADS
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OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

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PANEL BOARD LIGHTING 3F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	OP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET CKU RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/V0)	SIZE OF BREAKERS F	P	T	SIZE OF NONFERRUS CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PB3	C1	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C2	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C3	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C4	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C5	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C6	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C7	Lighting Outlet	11				1	2		1		230	100	1100	3.83	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C8	Lighting Outlet and Exhaust fan	16	1			2	2	1			230	100	1700	8.18	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C9	Lighting Outlet	13				2	2		1		230	100	1300	4.61	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C10	Lighting Outlet	12					1				230	100	1200	4.17	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C11	SPARE										230	1500	1500	5.22	50	2	15			
	C12	SPARE										230	1500	1500	5.22	50	2	15			
TOTAL			142	1	0	0	18	7	7	2	0			17380	80.45						

Calculation:	For Service Conductor IL = 80.45 x 125% 75.57	For Service Protection IL = 80.45 x 125% 75.57	THEREFORE USE 80 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 30 mm² THHN COPPER, 1 – 8 mm² GROUND @ 40 mm ø Conduit – PVC

Load Type	KA	KC
LO	14388.00	58.83
CO	0.00	0.00
ACO	0.00	0.00
MOTOR (HC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.42
TOTAL	17380.00	80.45

PANEL BOARD LIGHTING 4F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	OP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET CKU RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/V0)	SIZE OF BREAKERS F	P	T	SIZE OF NONFERRUS CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PB4	C1	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C2	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C3	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C4	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C5	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C6	Lighting Outlet	15				2		1			230	100	1500	5.22	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C7	Lighting Outlet	11				1	2		1		230	100	1100	3.83	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C8	Lighting Outlet and Exhaust fan	16	1			2	2	1			230	100	1700	8.18	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C9	Lighting Outlet	13				2	2		1		230	100	1300	4.61	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C10	Lighting Outlet	12					1				230	100	1200	4.17	50	2	15	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C11	SPARE										230	1500	1500	5.22	50	2	15			
	C12	SPARE										230	1500	1500	5.22	50	2	15			
TOTAL			142	1	0	0	18	7	7	2	0			17380	80.45						

Calculation:	For Service Conductor IL = 80.45 x 125% 75.57	For Service Protection IL = 80.45 x 125% 75.57	THEREFORE USE 80 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 30 mm² THHN COPPER, 1 – 8 mm² GROUND @ 40 mm ø Conduit – PVC

Load Type	KA	KC
LO	14388.00	58.83
CO	0.00	0.00
ACO	0.00	0.00
MOTOR (HC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.42
TOTAL	17380.00	80.45

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. SUCRO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SCHEDULE OF LOADS

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VILLANUEVA, MISAMIS ORIENTAL

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PANEL BOARD LIGHTING 5F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.E.	C.E.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{spr}	S_{spr}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/VOLT)	SIZE OF BREAKERS F	P	T	SIZE OF WIRE PER CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PBLS	C1	Lighting Outlet	14				1	1				230	100	1400	6.87	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C2	Lighting Outlet	14				1	1				230	100	1400	6.87	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C3	Lighting Outlet	14				1	1				230	100	1400	6.87	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C4	Lighting Outlet	14				1	1				230	100	1400	6.87	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C5	Lighting Outlet	14				1	1				230	100	1400	6.87	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C6	Lighting Outlet	8				1	1	1			230	100	900	3.78	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C7	Lighting Outlet	10				1	1	1	1		230	100	1300	5.48	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C8	Lighting Outlet	16	1			2	2	1			230	100	1700	6.73	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C9	Lighting Outlet	16				2	2		1		230	100	1300	6.61	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C10	Lighting Outlet	12					1				230	100	1200	4.77	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C11	Lighting Outlet	7						1			230	100	700	3.43	60	2	15	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C12	SPARE										230	1500	1500	6.52	60	2	15			
	C13	SPARE										230	1500	1500	6.52	60	2	15			
TOTAL			142	1	0	0	20	14	4	2	0			17300	68.45						

Calculation:	For Service Conductor I = 68.45 x 126% 75.57	For Service Protection I = 68.45 x 125% 75.57	THEREFORE USE 80 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 30 mm² THHN COPPER, 1 – 8 mm² GROUND @ 40 mm ø Conduit – PVC

Load Type	VA	FLC
LE	14980.00	90.02
CO	0.00	0.00
ACU	0.00	0.00
MOTOR (WC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.43
TOTAL	17980.00	68.45

PANEL BOARD POWER 2F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.E.	C.E.	OTHER LOADS	HP Rating	SWITCHES S_1	S_2	S_3	S_{spr}	S_{spr}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/VOLT)	SIZE OF BREAKERS F	P	T	SIZE OF WIRE PER CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PBLE	C1	Convenience Outlet		5								230	180	900	3.13	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C2	Convenience Outlet		7								230	180	1260	4.38	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C3	Convenience Outlet		10								230	180	2880	10.02	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C4	Convenience Outlet		16								230	180	2880	10.02	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C5	Convenience Outlet		16								230	180	2880	10.02	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C6	Convenience Outlet		18								230	180	3240	11.27	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C7	Convenience Outlet		11								230	180	1980	8.60	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C8	Convenience Outlet		18								230	180	1800	6.26	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C9	Convenience Outlet		18								230	180	1800	6.26	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C10	Convenience Outlet		18								230	180	1800	6.26	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C11	Convenience Outlet		18								230	180	1800	6.26	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C12	Convenience Outlet		14								230	180	2520	8.77	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C13	Convenience Outlet		18								230	180	1800	6.26	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C14	Convenience Outlet – Emergency		11								230	180	1980	8.61	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C15	Convenience Outlet – Emergency		12								230	180	2160	9.39	60	2	30	2 – 3.5 mm² THHN Copper Wire	20 mm ø Conduit – PVC	1 – 3.5 mm² THHN Copper Wire
	C16	SPARE										230	1500	1500	6.52	60	2	30			
	C17	SPARE										230	1500	1500	6.52	60	2	30			
TOTAL			0	150	0	0	0	0	0	0	0			33240	119.22						

Calculation:	For Service Conductor I = 119.22 x 126% 148.03	For Service Protection I = 119.22 x 125% 148.00	THEREFORE USE 150 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 60 mm² THHN COPPER, 1 – 14 mm² GROUND @ 50 mm ø Conduit – PVC

Load Type	VA	FLC
LE	0.00	0.00
CO	30240.00	108.78
ACU	0.00	0.00
MOTOR (WC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.43
TOTAL	33240.00	119.22

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.: PTR NO.:
DATE: DATE:
TAX NO.: PAID:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. SOCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

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REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

PANEL BOARD POWER 3F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/3F)	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PNP3	C1	Convenience Outlet		10								230	180	1800	8.26	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C2	Convenience Outlet		16								230	180	2880	16.02	75	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C3	Convenience Outlet		16								230	180	2880	16.02	60	2	25	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C4	Convenience Outlet		16								230	180	2880	16.02	60	2	25	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C5	Convenience Outlet		10								230	180	1800	8.26	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C6	Convenience Outlet		12								230	180	2160	7.51	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C7	Convenience Outlet		9								230	180	1620	5.63	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C8	Convenience Outlet		13								230	180	2340	8.14	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C9	Convenience Outlet		10								230	180	1800	6.26	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C10	Convenience Outlet – Emergency		10								230	180	1800	7.83	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C11	Convenience Outlet – Emergency		12								230	180	2160	9.39	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C12	SPARE										230	1500	1500	5.22	60	2	20			
	C13	SPARE										230	1500	1500	5.22	60	2	20			
TOTAL			0	134	0	0	0	0	0	0	0			27120	97.77						

Calculation:	For Service Conductor IL = 97.77 x 125% 122.22	For Service Protection IL = 97.77 x 125% 122.22	THEREFORE USE 125 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 50 mm^2 THHN COPPER, 1 – 14 mm^2 GROUND @ 50 mm ø Conduit – PVC

Load Type	VA	PIC
LO	0.00	0.00
CO	24120.00	87.34
ACU	0.00	0.00
MOTOR (NC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.43
TOTAL	27120.00	97.77

PANEL BOARD POWER 4F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/3F)	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PNP4	C1	Convenience Outlet		6								230	180	1620	5.63	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C2	Convenience Outlet		6								230	180	1440	5.01	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C3	Convenience Outlet		6								230	180	1440	5.01	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C4	Convenience Outlet		6								230	180	1440	5.01	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C5	Convenience Outlet		9								230	180	1620	5.63	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C6	Convenience Outlet		13								230	180	2160	7.51	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C7	Convenience Outlet		9								230	180	1620	5.63	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C8	Convenience Outlet		13								230	180	2340	8.14	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C9	Convenience Outlet		9								230	180	1620	5.63	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C10	Convenience Outlet – Emergency		10								230	180	1800	7.83	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C11	Convenience Outlet – Emergency		12								230	180	2160	9.39	60	2	20	2 - 3.5 mm^2 THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm^2 THHN Copper Wire
	C12	SPARE										230	1500	1500	5.22	60	2	20			
	C13	SPARE										230	1500	1500	5.22	60	2	20			
TOTAL			0	107	0	0	0	0	0	0	0			22380	80.87						

Calculation:	For Service Conductor IL = 80.87 x 125% 101.09	For Service Protection IL = 80.87 x 125% 101.09	THEREFORE USE 125 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 50 mm^2 THHN COPPER, 1 – 14 mm^2 GROUND @ 50 mm ø Conduit – PVC

Load Type	VA	PIC
LO	0.00	0.00
CO	19380.00	70.43
ACU	0.00	0.00
MOTOR (NC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	10.43
TOTAL	22380.00	80.87

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
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PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.: PTR NO.:
DATE:
TIN NO.: PLACE:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, IPFDU

RECOMMENDING APPROVAL:
ATTY. ERWIN B. BUCIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SCHEDULE OF LOADS

DRAWN BY:
DATE DRAWN:
PMT:

E15

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

PANEL BOARD POWER SF - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET/LOAD RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/V)	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PPP1	C1	Convenience Outlet		13								230	180	2340	8.14	60	2	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C2	Convenience Outlet		11								230	180	1980	10.92	60	2	25	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C3	Convenience Outlet		14								230	180	2520	8.71	60	2	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C4	Convenience Outlet		15								230	180	2700	9.39	60	2	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C5	Convenience Outlet		10								230	180	1800	10.92	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C6	Convenience Outlet		18								230	180	3240	11.21	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C7	Convenience Outlet		11								230	180	1980	10.01	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C8	Convenience Outlet		5								230	180	900	3.91	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C9	Convenience Outlet		11								230	180	1980	8.61	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C10	Convenience Outlet		13								230	180	2340	8.14	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C11	Convenience Outlet		8								230	180	1520	5.65	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C12	Refrigerator 1			1							230	1500	1500	6.52	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C13	Refrigerator 2			1							230	1500	1500	6.52	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C14	Convenience Outlet - Emergency		5								230	180	1520	7.06	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C15	Convenience Outlet - Emergency		12								230	180	2160	9.39	60	1	20	2 - 3.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 3.5 mm² THHN Copper Wire
	C16	SPARE										230	1500	1500	5.22	60	1	20			
	C17	SPARE										230	1500	1500	5.22	60	1	20			
TOTAL			0	167	2	0	0	0	0	0	0			30060	131.31						

Calculation:	For Service Conductor IL = 131.31 x 125% 164.15	For Service Protection IL = 131.31 x 125% 164.15	THEREFORE USE 175 AMPERE CIRCUIT BREAKER, 1 PHASE, 230V USE 2 – 80 mm² THHN COPPER, 1 – 14 mm² GROUND @ 50 mm ø Conduit – PVC

Load Type	VA	FLC
LT	0.00	0.00
CO	28080.00	120.91
ACU	0.00	0.00
MOTOR (HC)	0.00	0.00
MOTOR (C)	0.00	0.00
LARGEST MOTOR	0.00	0.00
SPARE	3000.00	13.04
TOTAL	30060.00	131.32

MOTOR PANEL GF - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3W}	S_{4W}	VOLTAGE RATING	OUTLET/LOAD RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/V) AB	BC	CA	3P	SIZE OF BREAKERS F	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
MPGF	C1	ACCU-1-01				6						230	6660	6660	28.90				60	2	70	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C2	ACCU-1-02				3						230	3910	3910		17.00			60	2	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C3	ACCU-1-02				3						230	3910	3910			17.00		60	2	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C4	ACCU-1-02				3						230	3910	3910	17.00				60	2	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C5	ACCU-1-02				3						230	3910	3910		17.00			60	2	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C6	ACCU-1-03				4						230	5175	5175			22.50		60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C7	ACCU-1-03				4						230	5175	5175	22.50				60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C8	ACCU-1-04				4						230	5175	5175		22.50			60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C9	ACCU-1-04				4						230	5175	5175			22.50		60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C10	ACCU-1-05				4						230	5175	5175	22.50				60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C11	ACCU-1-05				4						230	5175	5175		22.50			60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C12	ACCU-1-06				1.5						230	3200	3200			10.00		60	2	25	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C13	ACCU-1-07				3						230	3910	3910	17.00				60	2	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C14	Plumbing Transfer Pump - Main				4						230	4609.664	4609.664				12.40	60	3	30	3 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C15	Plumbing Transfer Pump - Backup				1						230	1573.112	1573.112				4.30	60	3	20	3 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C16	Jockey Pump				7.5						230	8763.92	8763.92				22.00	60	3	40	3 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C17	SPARE										230	1500	1500		5.22			60	2	20			
	C18	SPARE										230	1500	1500			5.22		60	2	20			
TOTAL			0	0	0	58	0	0	0	0	0			77916.696	107.00	96.22	77.22	38.80						

Calculation:	For Service Conductor IL = (107 + 25% (30)) x 1.732 + 38.8 235.65 A	For Service Protection IL = (107 + 150% (30)) x 1.732 + 38.8 290.08 A	THEREFORE USE 300 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 3 – 150 mm² THHN COPPER, 1 – 22 mm² GROUND @ 75 mm ø Conduit – PVC

Load Type	VA	FLC AB	BC	CA	3P
LT	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00
ACU	76048.00	107.00	78.00	72.00	0.00
MOTOR (HC)	7573.11	0.00	0.00	0.00	4.30
MOTOR (C)	13703.58	0.00	0.00	0.00	34.40
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	0.00	5.22	5.22	0.00
TOTAL	77116.70	107.00	96.22	77.22	38.80

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PROFESSIONAL ELECTRICAL ENGINEER
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PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
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APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SCHEDULE OF LOADS

DRAWN BY:
DATE DRAWN:
FILE:

E16

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

MOTOR PANEL GF - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3w}	S_{4w}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/OF) AB	BC	CA	3P	SIZE OF BREAKERS T	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
MPGF	C1	ACCU-1-01				3						230	3910	3910	17.00				60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C2	ACCU-1-01				3						230	3910	3910	17.00				60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C3	ACCU-1-02				3						230	3910	3910			17.00		60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C4	ACCU-1-02				3						230	3910	3910			17.00		60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C5	ACCU-1-02				3						230	3910	3910		17.00			60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C6	ACCU-1-03				3						230	3910	3910		17.00			60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C7	ACCU-1-03				3						230	3910	3910	17.00				60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C8	ACCU-1-04				3						230	3910	3910	17.00				60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C9	ACCU-1-04				3						230	3910	3910			17.00		60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C10	ACCU-1-05				3						230	3910	3910			17.00		60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C11	ACCU-1-05				3						230	3910	3910		17.00			60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C12	ACCU-1-06				2.5						230	3335	3335		14.50			60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C13	ACCU-1-07				1						230	1840	1840	8.00				60	2	32	2 - 5.5 mm² THHN Copper Wire	32 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C14	SPARE										230	1500	1500	5.22				60	2	32			
	C15	SPARE										230	1500	1500			5.22		60	2	32			
TOTAL			0	0	0	36.5	0	0	0	0	0			51185	81.22	65.50	73.22	0.00						

Calculation:	For Service Conductor	For Service Protection	
	IL = (81.22 + 25% (17)) x 1.732 = 0 140.03 A	IL = (81.22 + 150% (17)) x 1.732 = 0 184.84 A	THEREFORE USE 200 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 2 SETS OF 4 - 38 mm² THHN COPPER, 1 - 8 mm² GROUND @ 50 mm ø Conduit - PVC

Load Type	VA	FLC AB	BC	CA	3P
LO	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00
ACU	48185.00	76.00	65.50	68.00	0.00
MOTOR (NC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	5.22	0.00	5.22	0.00
TOTAL	51185.00	81.22	65.50	73.22	0.00

PANEL BOARD ACU 2F - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES S_1	S_2	S_3	S_{3w}	S_{4w}	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (W/OF) AB	BC	CA	3P	SIZE OF BREAKERS T	P	T	SIZE OF HOMERUN CKT WIRE (sq. mm)	CONDUIT	GROUNDING
PDA2	C1	ACCU-2-01			1	1						230	1840	1840	8.00				60	2	20	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C2	ACCU-2-02			1	2.5						230	3335	3335	14.50				60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C3	ACCU-2-02			1	2.5						230	3335	3335			14.50		60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C4	ACCU-2-02			1	2.5						230	3335	3335			14.50		60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C5	ACCU-2-02			1	2.5						230	3335	3335		14.50			60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C6	ACCU-2-03			1	4						230	5175	5175		22.50			60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C7	ACCU-2-03			1	4						230	5175	5175	22.50				60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C8	ACCU-2-04			1	4						230	5175	5175	22.50				60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C9	ACCU-2-04			1	4						230	5175	5175			22.50		60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C10	ACCU-2-05			1	4						230	5175	5175			22.50		60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C11	ACCU-2-05			1	4						230	5175	5175		22.50			60	2	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C12	ACCU-2-06			1	2						230	2760	2760		12.00			60	2	30	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C13	ACCU-2-06			1	2						230	2760	2760	12.00				60	2	30	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C14	ACCU-2-07			1	2.5						230	3335	3335	14.50				60	2	30	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C15	ACCU-2-08			1	2.5						230	3335	3335			14.50		60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C16	ACCU-2-08			1	2.5						230	3335	3335			14.50		60	2	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C17	SPARE										230	1500	1500		5.22			60	2	20			
	C18	SPARE										230	1500	1500		5.22			60	2	20			
TOTAL			0	0	16	48.5	0	0	0	0	0			64755	94.00	81.93	103.00	0.00						

Calculation:	For Service Conductor	For Service Protection	
	IL = (103 + 25% (22.50)) x 1.732 = 0 188.14 A	IL = (103 + 150% (22.50)) x 1.732 = 0 236.84 A	THEREFORE USE 250 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 4 - 100 mm² THHN COPPER, 1 - 22 mm² GROUND @ 75 mm ø Conduit - PVC

Load Type	VA	FLC AB	BC	CA	3P
LO	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00
ACU	61755.00	94.00	71.50	103.00	0.00
MOTOR (NC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	0.00	10.43	0.00	0.00
TOTAL	64755.00	94.00	81.93	103.00	0.00

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT
CLARO M. RECTO AVENUE, LAPASAN, CAGAYAN DE ORO CITY 9000
TELEPHONE # (088)22 72-40-45 / (088) 856-1738 / 856-1739 | TELEFAX (088) 856-4696
WEBSITE: www.ustp.edu.ph

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO.: | PTR NO.:
DATE:
TIN NO.: | PLACE:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, IPFDO

RECOMMENDING APPROVAL:
ATTY. ERWIN B. BUEIO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
SCHEDULE OF LOADS

DRAWN BY:
DATE DRAWN:
PMT:

E17

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:

PANEL BOARD ACD 3F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES					VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/BF)				SIZE OF BREAKERS			SIZE OF NONFERROUS CKT		
							S_1	S_2	S_3	S_{PH}	S_{GR}				AB	BC	CA	3P	F	P	T	WIRE (sq. mm)	CONDUIT	GROUNDING
PBA3	C1	ACCU-3-01			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C2	ACCU-3-01			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C3	ACCU-3-02			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C4	ACCU-3-02			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C5	ACCU-3-03			1	4						230	5175	5175		22.50			60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C6	ACCU-3-03			1	4						230	5175	5175		22.50			60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C7	ACCU-3-04			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C8	ACCU-3-04			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C9	ACCU-3-05			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C10	ACCU-3-05			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C11	ACCU-3-06			1	3						230	3810	3810		17.00			50	3	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C12	ACCU-3-06			1	3						230	3810	3810		17.00			50	3	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C13	ACCU-3-07			1	2.5						230	3315	3315	14.50				40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C14	ACCU-3-08			1	2.5						230	3315	3315	14.50				40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C15	ACCU-3-08			1	2.5						230	3315	3315			14.50		40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C16	SPARE										230	1500	1500			5.22		60	3	30			
	C17	SPARE										230	1500	1500		5.22			60	3	30			
TOTAL			0	0	15	53.5	0	0	0	0	0			72575	119.00	84.22	109.72	0.00						

Calculation:	For Service Conductor I = (119 + 25% (22.50) + 1.732 + 0 215.66 A	For Service Protection IL = (119 + 100% (22.50) x 1.732 + 0 284.97 A	THEREFORE USE 275 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 4 – 100 mm² THHN COPPER, 1 – 22 mm² GROUND @ 75 mm ø Conduit – PVC

Load Type	VA	FLC			
		AB	BC	CA	3P
LD	0.00	0.00	0.00	0.00	0.00
CR	0.00	0.00	0.00	0.00	0.00
ACU	60575.00	119.00	79.00	104.50	0.00
MOTOR (NC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	0.00	5.22	5.22	0.00
TOTAL	72575.00	119.00	84.22	109.72	0.00

PANEL BOARD ACD 4F – SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	SWITCHES					VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	CIRCUIT LOAD CURRENT (VA/BF)				SIZE OF BREAKERS			SIZE OF NONFERROUS CKT		
							S_1	S_2	S_3	S_{PH}	S_{GR}				AB	BC	CA	3P	F	P	T	WIRE (sq. mm)	CONDUIT	GROUNDING
PBA4	C1	ACCU-4-01			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C2	ACCU-4-01			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C3	ACCU-4-02			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C4	ACCU-4-02			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C5	ACCU-4-03			1	4						230	5175	5175		22.50			60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C6	ACCU-4-03			1	4						230	5175	5175		22.50			60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C7	ACCU-4-04			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C8	ACCU-4-04			1	4						230	5175	5175	22.50				60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C9	ACCU-4-05			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C10	ACCU-4-05			1	4						230	5175	5175			22.50		60	3	60	2 - 8.0 mm² THHN Copper Wire	25 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C11	ACCU-4-06			1	3						230	3810	3810		17.00			50	3	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C12	ACCU-4-06			1	3						230	3810	3810		17.00			50	3	50	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C13	ACCU-4-07			1	2.5						230	3315	3315	14.50				40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C14	ACCU-4-08			1	2.5						230	3315	3315	14.50				40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C15	ACCU-4-08			1	2.5						230	3315	3315			14.50		40	3	40	2 - 5.5 mm² THHN Copper Wire	20 mm ø Conduit - PVC	1 - 5.5 mm² THHN Copper Wire
	C16	SPARE										230	1500	1500			5.22		60	3	30			
	C17	SPARE										230	1500	1500		5.22			60	3	30			
TOTAL			0	0	15	53.5	0	0	0	0	0			72575	119.00	84.22	109.72	0.00						

Calculation:	For Service Conductor I = (119 + 25% (22.50) + 1.732 + 0 215.66 A	For Service Protection IL = (119 + 100% (22.50) x 1.732 + 0 284.97 A	THEREFORE USE 275 AMPERE CIRCUIT BREAKER, 3 PHASE, 230V USE 4 – 100 mm² THHN COPPER, 1 – 22 mm² GROUND @ 75 mm ø Conduit – PVC

Load Type	VA	FLC			
		AB	BC	CA	3P
LD	0.00	0.00	0.00	0.00	0.00
CR	0.00	0.00	0.00	0.00	0.00
ACU	60575.00	119.00	79.00	104.50	0.00
MOTOR (NC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	0.00	5.22	5.22	0.00
TOTAL	72575.00	119.00	84.22	109.72	0.00

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO. | PTR NO.
DATE
TIN NO. | PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCTO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP-SYSTEM

SHEET CONTENTS: SCHEDULE OF LOADS
DRAWN BY:
DATE DRAWN:
SHT:

E18

PANEL BOARD ACU 5F - SCHEDULE OF LOADS

PANEL NO.	CKT NO.	LOAD DESCRIPTION	L.O.	C.O.	OTHER LOADS	HP RATING	VOLTAGE RATING	OUTLET (VA) RATING	VA PER CIRCUIT	AB	BC	CA	3P	BREAKER E	BREAKER P	BREAKER T	WIRE (sq. mm)	CONDUIT	GROUNDING
PBA5	C1	ACCU-5-01			1	3	230	3910	3910	17.00				60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C2	ACCU-5-01			1	3	230	3910	3910	17.00				60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C3	ACCU-5-02			1	3	230	3910	3910			17.00		60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C4	ACCU-5-02			1	3	230	3910	3910			17.00		60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C5	ACCU-5-03			1	6	230	5175	5175		22.50			60	2	40	2-8.0mm² THHN Copper Wire	25 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C6	ACCU-5-03			1	6	230	5175	5175		22.50			60	2	40	2-8.0mm² THHN Copper Wire	25 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C7	ACCU-5-04			1	3	230	3910	3910	17.00				60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C8	ACCU-5-08			1	1	230	1840	1840	8.00				60	2	20	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C9	ACCU-5-06			1	3	230	3910	3910			17.00		60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C10	ACCU-5-05			1	3	230	3910	3910			17.00		60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C11	ACCU-5-06			1	1	230	1840	1840		8.00			60	2	20	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C12	ACCU-5-05			1	3	230	3910	3910		17.00			60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C13	ACCU-5-11			1	2.5	230	3335	3335	14.50				60	2	40	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C14	ACCU-5-12			1	1	230	1840	1840	8.00				60	2	20	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C15	ACCU-5-11			1	3	230	3910	3910			17.00		60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C16	ACCU-5-10			1	1.5	230	2400	2400			10.90		60	2	25	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C17	ACCU-5-16			1	3	230	3927	3927		17.00			60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C18	ACCU-5-18			1	3	230	3864	3864		17.00			60	2	50	2-5.5mm² THHN Copper Wire	20 mm ø Conduit - PVC	1-5.5 mm² THHN Copper Wire
	C19	SPARE					230	1500	1500	6.52				60	2	30			
	C20	SPARE					230	1500	1500	6.52				60	2	30			
TOTAL			0	0	19	48			67586	91.93	86.00	86.00							

Calculation:	For Service Conductor	For Service Protection	THEREFORE USE 250AMPERE CIRCUIT BREAKER, 3 PHASE, 230V
	[illegible]	[illegible]	USE 6 - 100 mm² THHN COPPER, 1 - 22 mm² GROUND @ 75 mm ø Conduit - PVC

Load Type	VA	FLC AB	FLC BC	FLC CA	FLC 3P
LO	0.00	0.00	0.00	0.00	0.00
CO	0.00	0.00	0.00	0.00	0.00
ACU	64086.00	81.50	86.00	86.00	0.00
MOTOR (NC)	0.00	0.00	0.00	0.00	0.00
MOTOR (C)	0.00	0.00	0.00	0.00	0.00
LARGEST MOTOR	0.00	0.00	0.00	0.00	0.00
SPARE	3000.00	10.43	0.00	0.00	0.00
TOTAL	67586.00	91.93	86.00	86.00	0.00

TRANSFORMER TO MCB

LENGTH	5	m
FLC	1724.19	A
SETS	5	
PHASE	3	
FACTOR	1.732	
CABLE	250mm2	
RESISTANCE	0.029	Ω
REACTANCE	0.048	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	0.549085547	V

MCB TO ATS

LENGTH	5	m
FLC	1724.19	A
SETS	5	
PHASE	3	
FACTOR	1.732	
CABLE	250mm2	
RESISTANCE	0.029	Ω
REACTANCE	0.048	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	0.549085547	V

ATS TO SCB

LENGTH	22	m
FLC	1724.19	A
SETS	5	
PHASE	3	
FACTOR	1.732	
CABLE	250mm2	
RESISTANCE	0.029	Ω
REACTANCE	0.048	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	2.41[illegible]	V

SCB TO MDP

LENGTH	23	m
FLC	1575.57	A
SETS	5	
PHASE	3	
FACTOR	1.732	
CABLE	250mm2	
RESISTANCE	0.027	Ω
REACTANCE	0.039	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	1.55124384	V

MDP TO PBA5

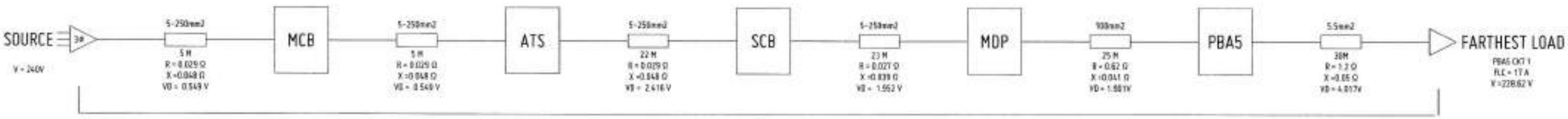
LENGTH	25	m
FLC	[illegible]	A
SETS	1	
PHASE	3	
FACTOR	1.732	
CABLE	100mm2	
RESISTANCE	0.062	Ω
REACTANCE	0.041	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	1.90[illegible]	V

PBA5 TO FARTHEST MOTOR LOAD (CKT 1)

LENGTH	30	m
FLC	17.00	A
SETS	1	
PHASE	1	
FACTOR	2	
CABLE	5.5mm2	
RESISTANCE	1.2	Ω
REACTANCE	0.05	Ω
COMPUTATION	[illegible]	
VOLTAGE DROP	4.01[illegible]	V

VOLTAGE DROP ANALYSIS

TOTAL VOLTAGE DROP FROM SERVICE TO FARTHEST LOAD	0.55 + 0.55 + 2.42 + 1.55 + 1.9 + 4.02	11.38 V	PERCENT VOLTAGE DROP
VOLTAGE DROP COMPUTATION USING NOMINAL VOLTAGE (240V)	240 - 11.38 V	228.62V	4.74%



11.38 V OR 4.74%

E 19 1

VOLTAGE DROP ANALYSIS

NOT DRAWN TO SCALE

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL	RECOMMENDING APPROVAL	APPROVED BY	SHEET CONTENTS
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II	SCHEDULE OF LOADS, VOLTAGE DROP ANALYSIS
DIRECTOR, IPFDU	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM	

USING POINT TO POINT METHOD

Transformer Full Load Current ($I_{F.L.A}$)

For 3Ø Transformer:
$I_{F.L.A} = (kVA \times 1000) / (E_{L-L} \times \sqrt{3})$

For 1Ø Transformer:
$I_{F.L.A} = (kVA \times 1000) / E_{L-N}$

1. For 3Ø System:
$f = (1.732 \times L \times I_{SC}) / (C \times n \times E_{L-L})$
2. For Line-to-Line:
$f = (2 \times L \times I_{SC}) / (C \times n \times E_{L-L})$
3. For Line-to-Neutral: $f = (2 \times L \times I_{SC}) / (C \times n \times E_{L-N})$

Multiplier = $100 / (\%Z_{transformer})$
$M = 1 / (1 + f)$
$I_{SC\,symm\,sec} = I_{SC} \times M$
$I_{SC\,Motor\,Contribution} = I_{SC} \times 4$

FAULT LOCATION 1		
XMER SECONDARY SIDE		
TRANSFORMER FLC	2400.280983	A
MULTIPLIER	23.14814815	
3P FAULT CURRENT	55631.73585	A
	55.63173585	kA
TOTAL 3P FAULT CURRENT	62244.465875	A
	62.24446875	kA

FAULT LOCATION 2		
MCB		
CONDUCTOR	250mm2	
NO. OF SETS	5	
LENGTH	5	m
C VALUE	22185	
"f" FACTOR	0.058372435	
MULTIPLIER	0.945955088	
3P FAULT CURRENT	52513.86018	A
	52.51386018	kA
TOTAL 3P FAULT CURRENT	59126.58258	A
	59.12658258	kA

FAULT LOCATION 3		
ATS		
CONDUCTOR	250mm2	
NO. OF SETS	5	
LENGTH	5	m
C VALUE	22185	
"f" FACTOR	0.059372435	
MULTIPLIER	0.943855088	
3P FAULT CURRENT	49518.72549	A
	49.51872549	kA
TOTAL 3P FAULT CURRENT	56183.45829	A
	56.18345829	kA

FAULT LOCATION 4		
SCB		
CONDUCTOR	250mm2	
NO. OF SETS	5	
LENGTH	12	m
C VALUE	22185	
"f" FACTOR	0.261298715	
MULTIPLIER	0.792871316	
3P FAULT CURRENT	39303.20636	A
	39.30320636	kA
TOTAL 3P FAULT CURRENT	45915.93916	A
	45.91593916	kA

FAULT LOCATION 5		
MDP		
CONDUCTOR	250mm2	
NO. OF SETS	5	
LENGTH	23	m
C VALUE	26706	
"f" FACTOR	0.226878499	
MULTIPLIER	0.815076656	
3P FAULT CURRENT	37035.12601	A
	37.03512601	kA
TOTAL 3P FAULT CURRENT	38643.85881	A
	38.64385881	kA

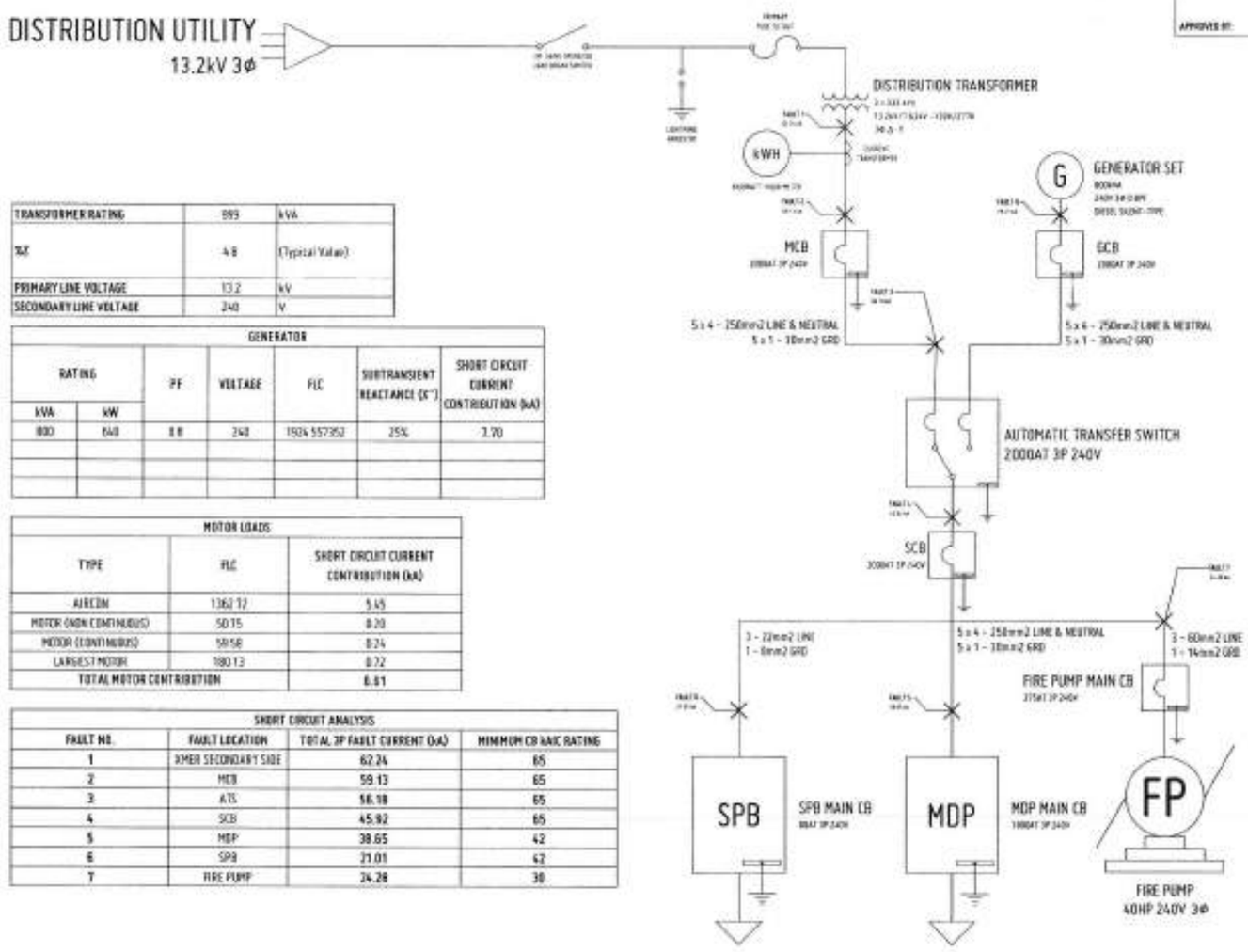
FAULT LOCATION 6		
SPB		
CONDUCTOR	22mm2	
NO. OF SETS	1	
LENGTH	5	m
C VALUE	3866	
"f" FACTOR	1.733898056	
MULTIPLIER	0.366247233	
3P FAULT CURRENT	14396.69051	A
	14.39669051	kA
TOTAL 3P FAULT CURRENT	21007.42337	A
	21.00742337	kA
FAULT LOCATION 7		
FIRE PUMP		
CONDUCTOR	60mm2	
NO. OF SETS	1	
LENGTH	10	m
C VALUE	10755	
"f" FACTOR	1.224711741	
MULTIPLIER	0.449496437	
3P FAULT CURRENT	17865.0512	A
	17.8650512	kA
TOTAL 3P FAULT CURRENT	24279.384	A
	24.279384	kA

TRANSFORMER RATING	999	kVA
%Z	4.8	(Typical Value)
PRIMARY LINE VOLTAGE	13.2	kV
SECONDARY LINE VELTAGE	240	V

GENERATOR						
RATING		PF	VOLTAGE	FLC	SUBTRANSIENT REACTANCE (X")	SHORT CIRCUIT CURRENT CONTRIBUTION (kA)
kVA	kW					
800	640	0.8	240	1924.557352	25%	3.70

MOTOR LOADS		
TYPE	FLC	SHORT CIRCUIT CURRENT CONTRIBUTION (kA)
AIRCON	1362.72	5.45
MOTOR (NON CONTINUOUS)	50.75	0.20
MOTOR (CONTINUOUS)	59.58	0.24
LARGEST MOTOR	180.13	0.72
TOTAL MOTOR CONTRIBUTION		6.61

SHORT CIRCUIT ANALYSIS			
FAULT NO.	FAULT LOCATION	TOTAL 3P FAULT CURRENT (kA)	MINIMUM CB kAIC RATING
1	XMER SECONDARY SIDE	62.24	65
2	MCB	59.13	65
3	ATS	56.18	65
4	SCB	45.92	65
5	MDP	38.65	42
6	SPB	21.01	42
7	FIRE PUMP	24.28	30



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SHORT CIRCUIT ANALYSIS

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RECOMMENDING APPROVAL: ATTY. ERWIN D. BUESO, VP FOR ADMINISTRATION & FISCAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SHORT CIRCUIT ANALYSIS
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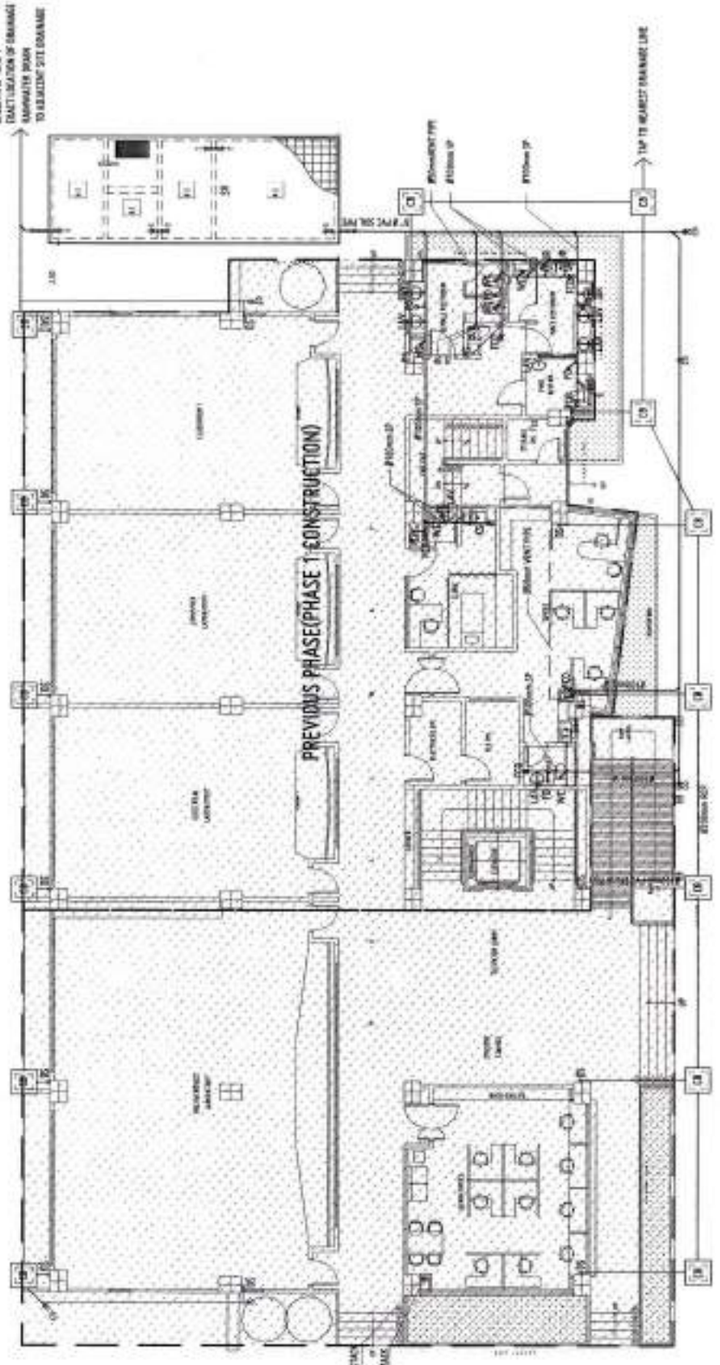
DATE DRAWN:
REV.:

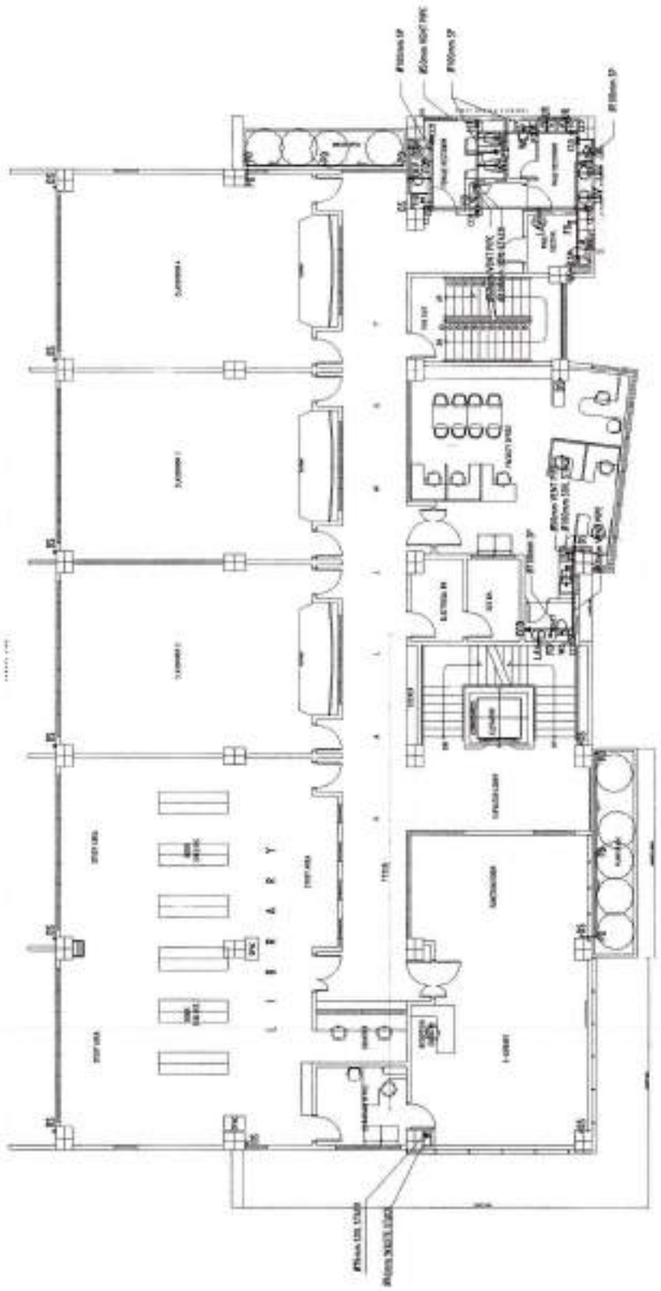
E20



GROUND FLOOR-PLUMBING LAYOUT-PHASE 2 CONSTRUCTION

SCALE 1:100 MTS

P 1 1



SECOND FLOOR-PLUMBING LAYOUT

SCALE 1:100 MTS

P 1 2

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DIRECTOR, IPFDD

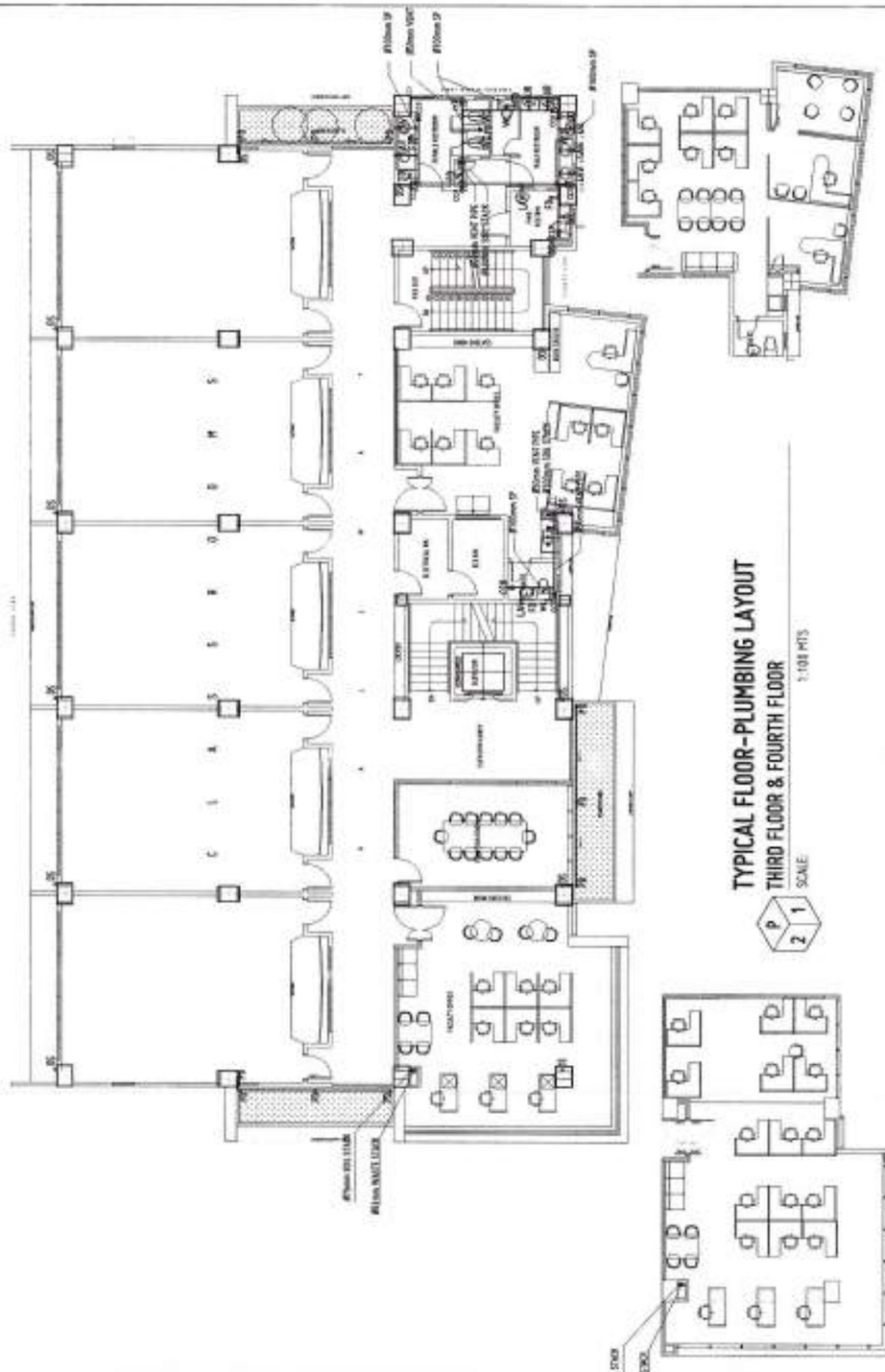
RECOMMENDING APPROVAL:
ATTY. ERWIN B. BACID
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

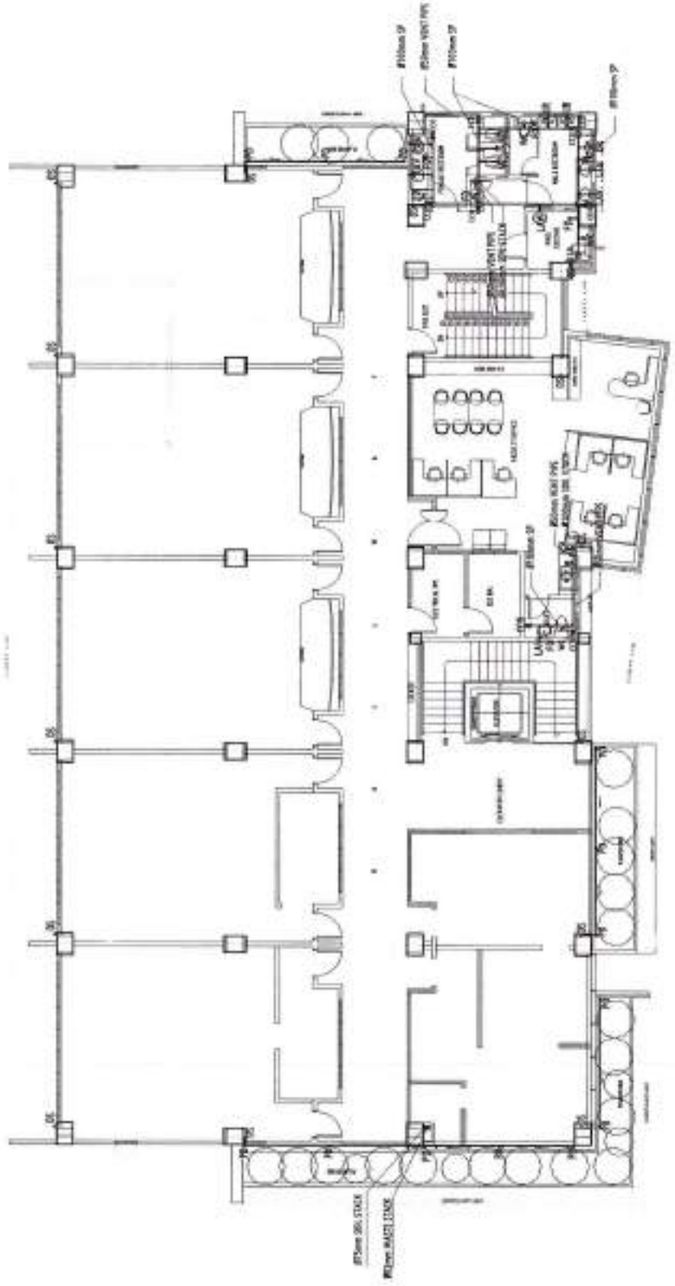
SHEET CONTENTS:
PLUMBING WASTE LINE LAYOUT: GROUND FLOOR
PLUMBING WASTE LINE LAYOUT: SECOND FLOOR

DRAWING NO.:
DATE DRAWN:
REV:

P1



TYPICAL FLOOR-PLUMBING LAYOUT
THIRD FLOOR & FOURTH FLOOR
SCALE 1:100 MTS



FIFTH FLOOR-PLUMBING LAYOUT
SCALE 1:100 MTS

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PRC NO.: | PTR NO.:
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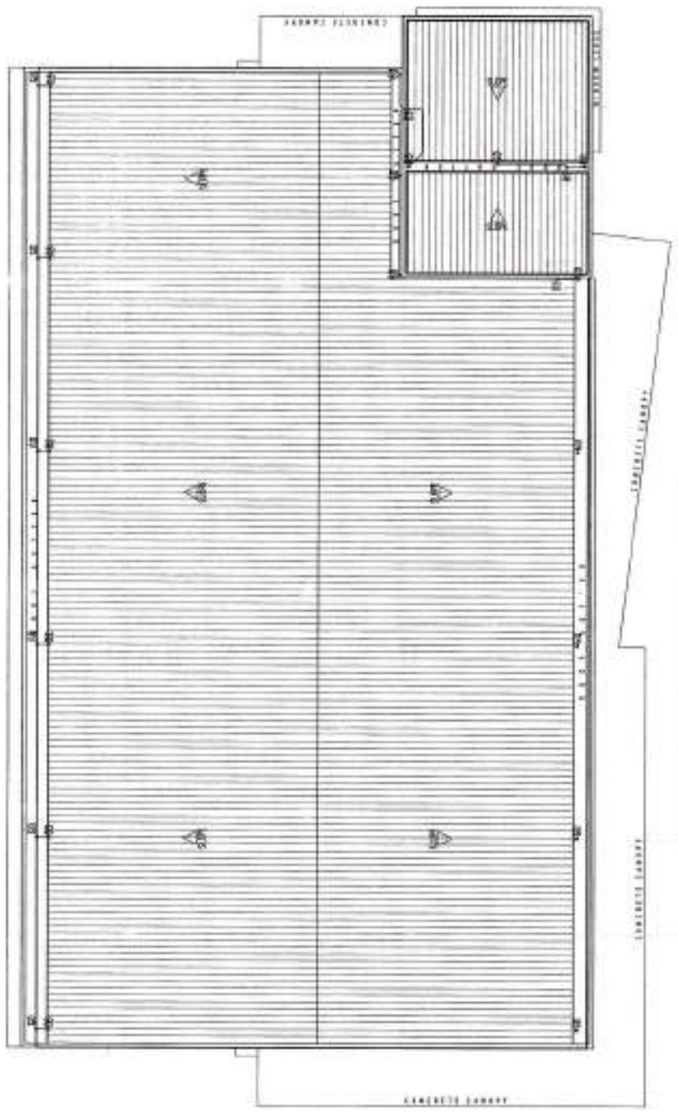
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
PLUMBING WASTE LINE LAYOUT: TYPICAL PLAN - THIRD FLOOR & FOURTH FLOOR
PLUMBING WASTE LINE LAYOUT: FIFTH FLOOR

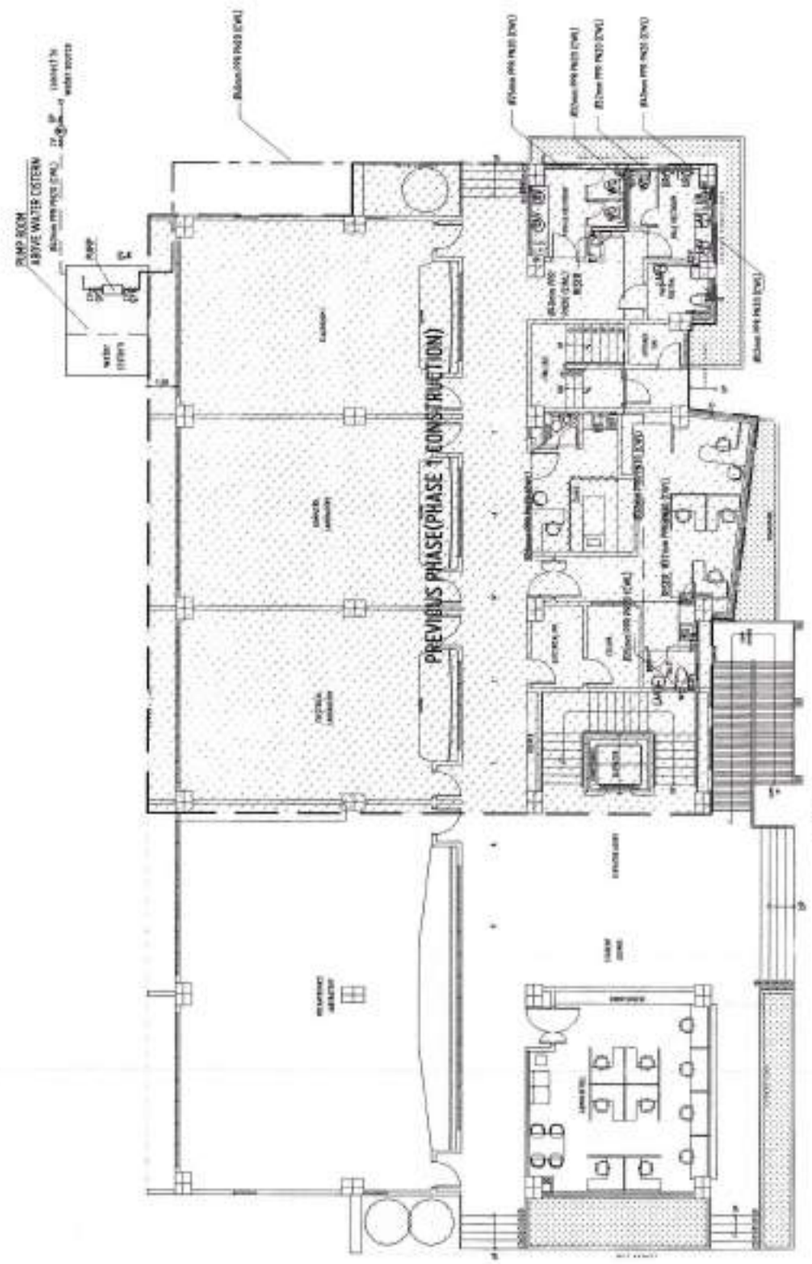
DRAWN BY:
DATE DRAWN:
INFO:

P2



ROOF PLAN
SCALE: 1:100 MTS
P 3 1

ROOF DECK PLAN
SCALE: 1:100 MTS
A 3 2



GROUND FLOOR-WATER LINE LAYOUT
SCALE: 1:100 MTS
P 3 3

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REC NO.: PTR NO.:
DATE:
TIN NO.: PLACE:

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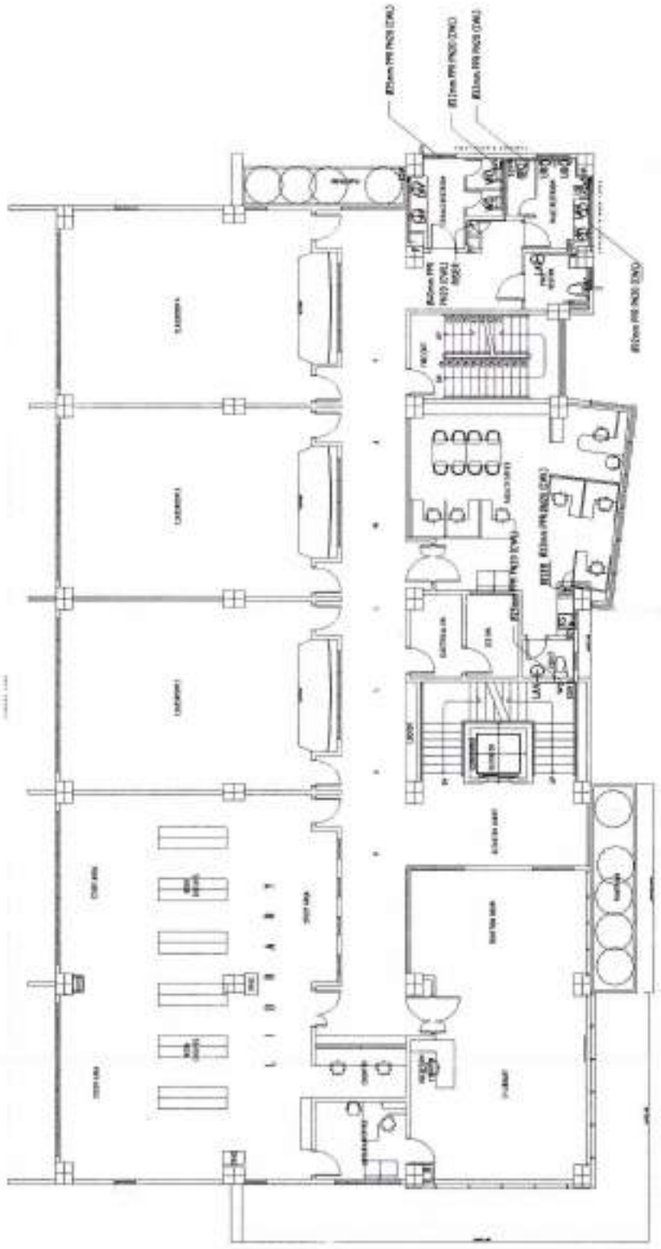
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
PLUMBING WASTE LINE LAYOUT: ROOF
WATER LINE LAYOUT: GROUND FLOOR

REMARKS:
DATE DRAWN:
INCH:

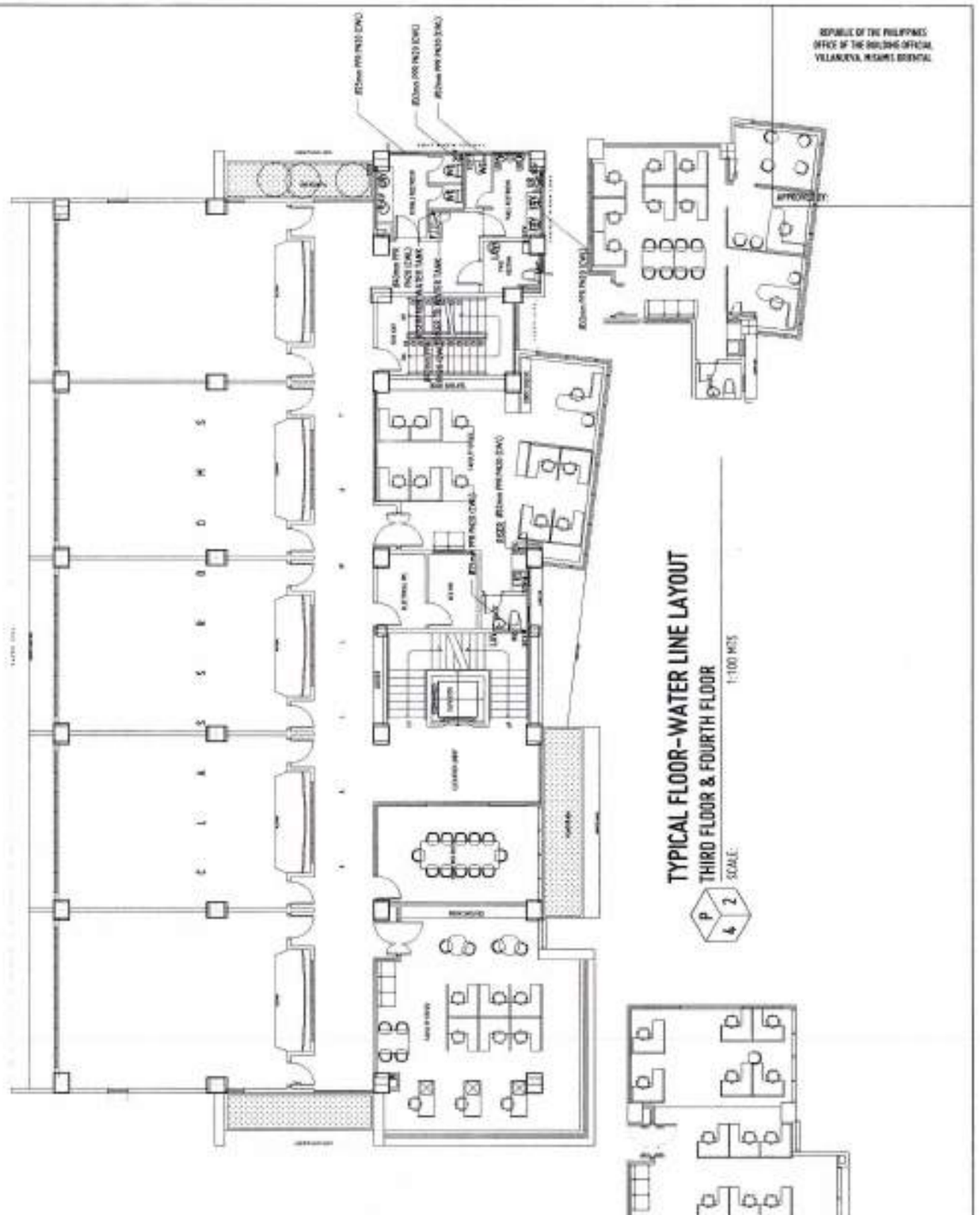
P3



SECOND FLOOR–WATER LINE LAYOUT

1:100 MTS

SCALE



TYPICAL FLOOR–WATER LINE LAYOUT

THIRD FLOOR & FOURTH FLOOR

1:100 MTS

SCALE

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DIRECTOR, IYPDO

RECOMMENDING APPROVAL:
ATTY. ERWIN B. BUENO
VICE ADMINISTRATION & LITIGATION

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
WATER LINE LAYOUT:
SECOND FLOOR
WATER LINE LAYOUT:
TYPICAL PLAN - THIRD FLOOR & FOURTH FLOOR

DRAWN BY:
SHEET NUMBER:
REV.

P4

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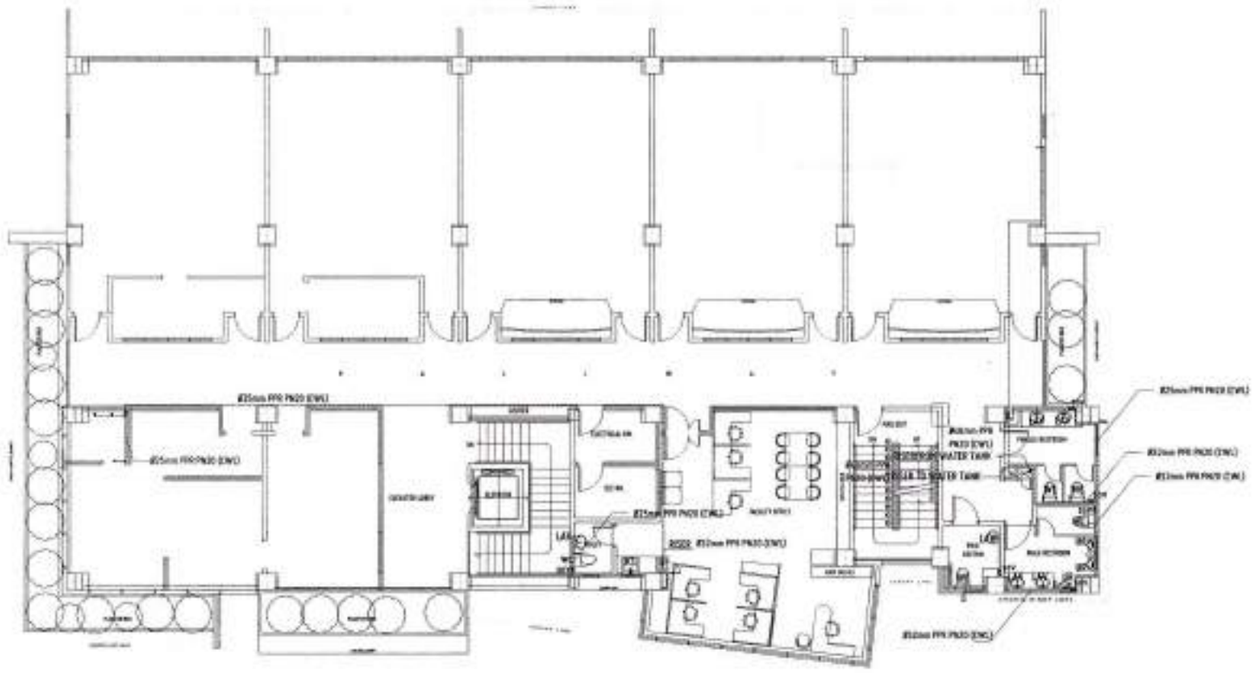
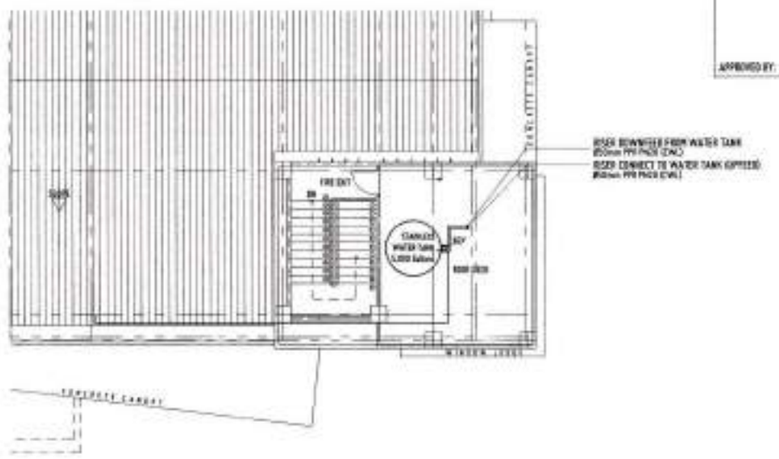
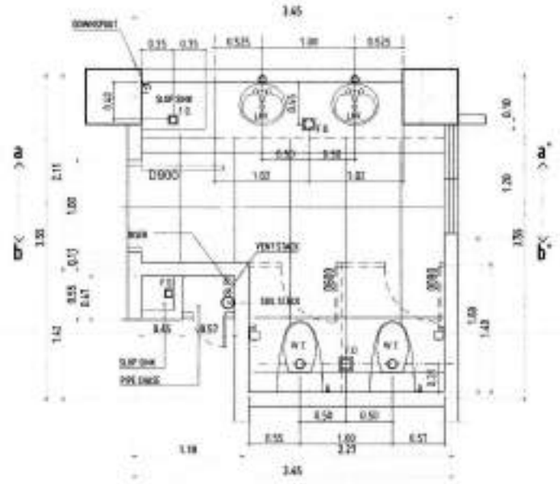


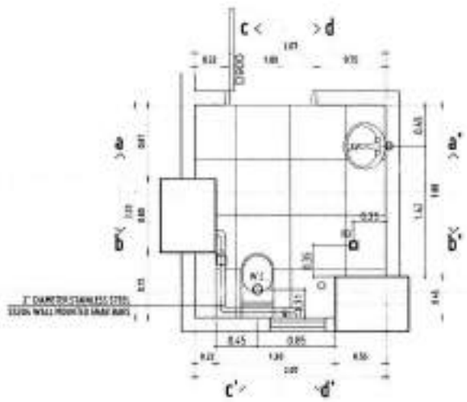
P 5 1 **FIFTH FLOOR-WATER LINE LAYOUT**
SCALE: 1:100 MTS



P 5 1 **ROOF DECK-WATER LINE LAYOUT**
SCALE: 1:100 MTS

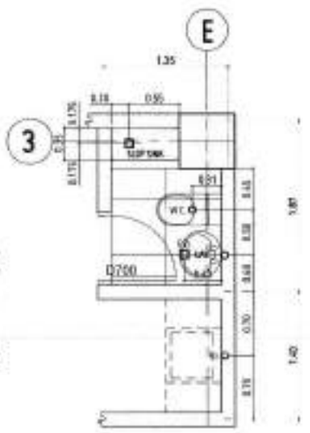


P 5 2 **STUB-OUT PLAN**
FEMALE RESTROOM
SCALE: 1:30 MTS

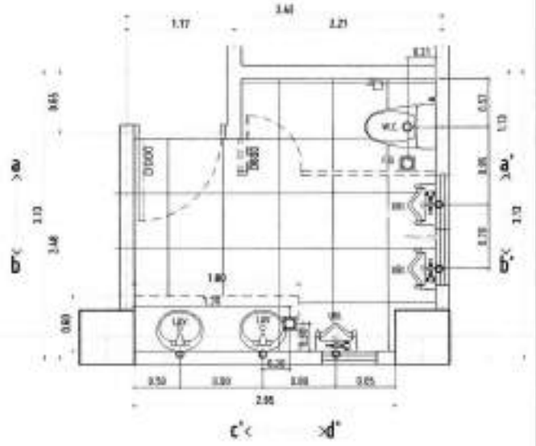


P 5 3 **STUB-OUT PLAN**
PWD RESTROOM
SCALE: 1:30 MTS

P 5 4 **STUB-OUT PLAN**
STAFF/FACULTY RESTROOM
SCALE: 1:30 MTS



P 5 5 **STUB-OUT PLAN**
CLINIC RESTROOM
SCALE: 1:30 MTS



P 5 6 **STUB-OUT PLAN**
MALE RESTROOM
SCALE: 1:30 MTS

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MASTER PLUMBER

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DIRECTOR, IPFDO

RECOMMENDING APPROVAL:
ATTY. ERWIN B. BESIN
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
WATER LINE LAYOUT
- FIFTH FLOOR
- ROOF DECK
STUB-OUT PLANS
- FEMALE RESTROOM
- MALE RESTROOM
- PWD RESTROOM
- STAFF/FACULTY RESTROOM
- CLINIC RESTROOM

Worked BY:
DATE DRAWN:
FILE:

P5

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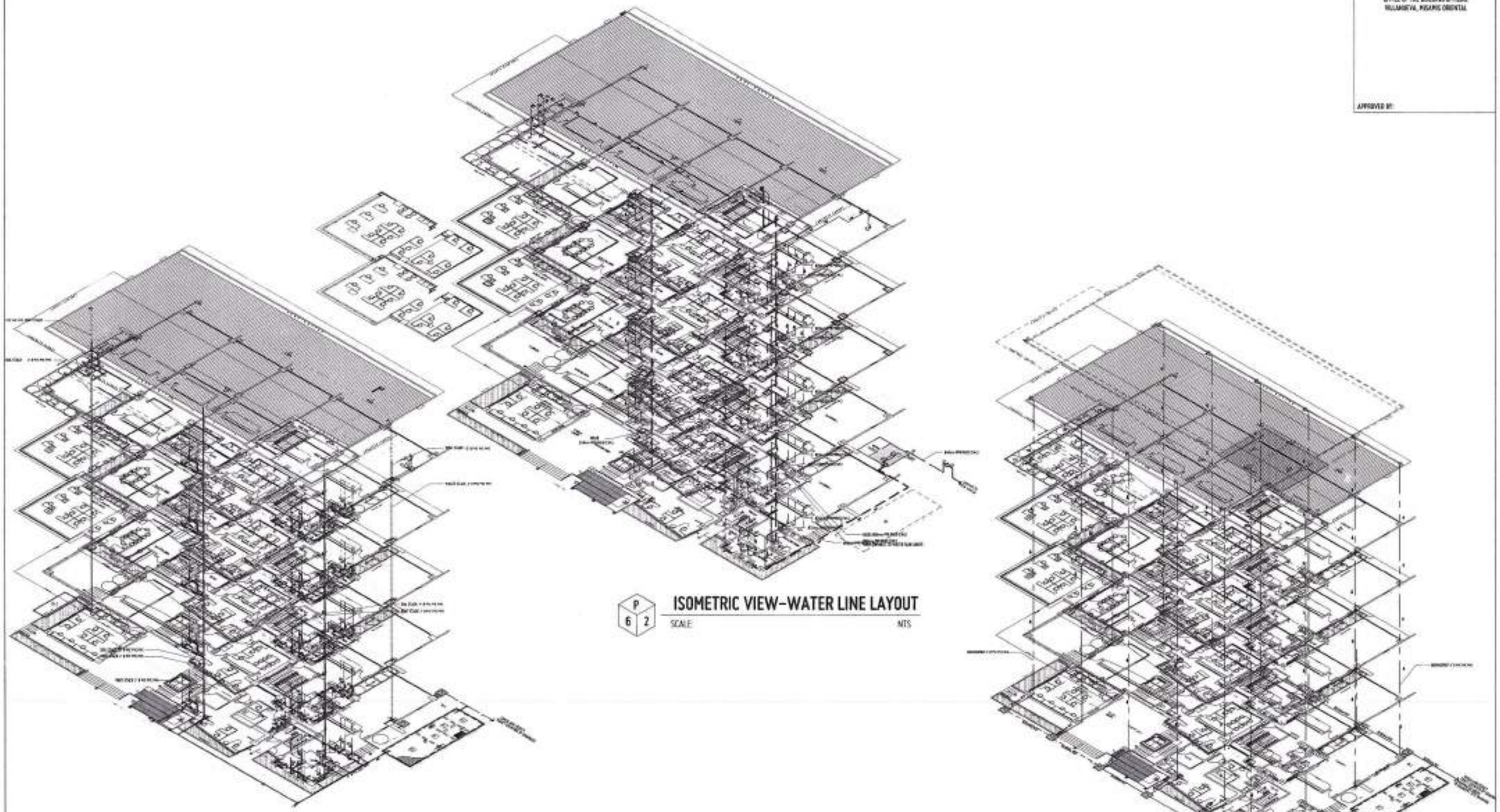

P 6 2 — ISOMETRIC VIEW-WATER LINE LAYOUT
SCALE: NTS

P 6 1 — ISOMETRIC VIEW-SOIL & WASTE PIPING LAYOUT
SCALE: NTS

P 6 3 — ISOMETRIC VIEW-STORM DRAIN LAYOUT
SCALE: NTS

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DATE
Signature | Date

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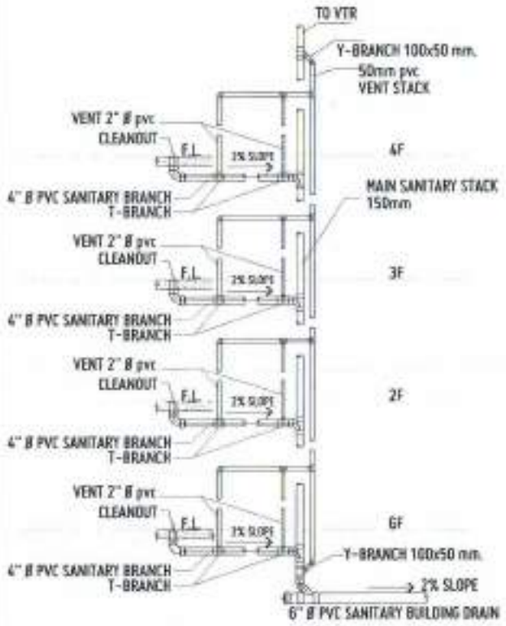
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
ISOMETRIC VIEW
PLUMBING WASTE WATER LAYOUT
WATER LINE LAYOUT

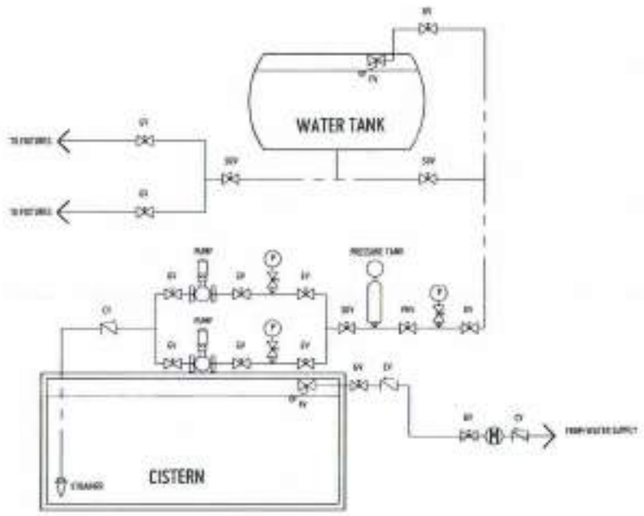
DRAWN BY:
DATE DRAWN:
REV.

P6



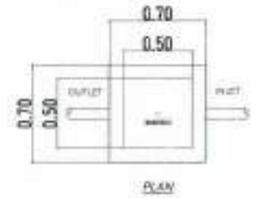
P 7 1 **PLUMBING WASTE DIAGRAM**

SCALE NTS



P 7 2 **WATER SUPPLY SINGLE LINE DIAGRAM**

NOTS



P 7 3 **GREASE TRAP DETAIL**

SCALE 1:20 MTS

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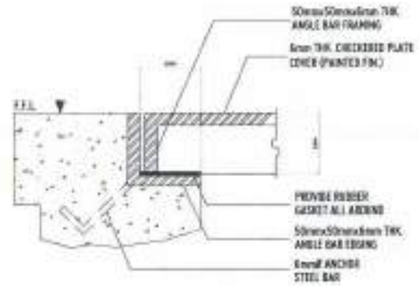
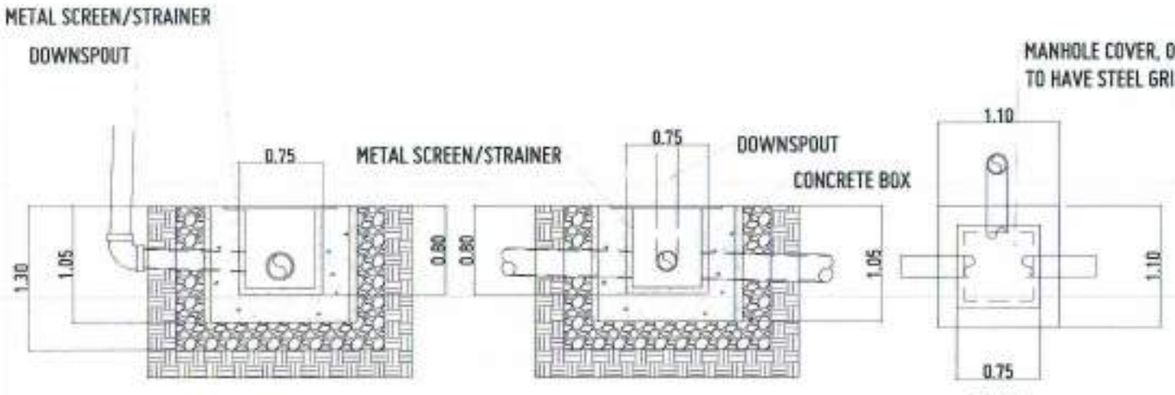
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



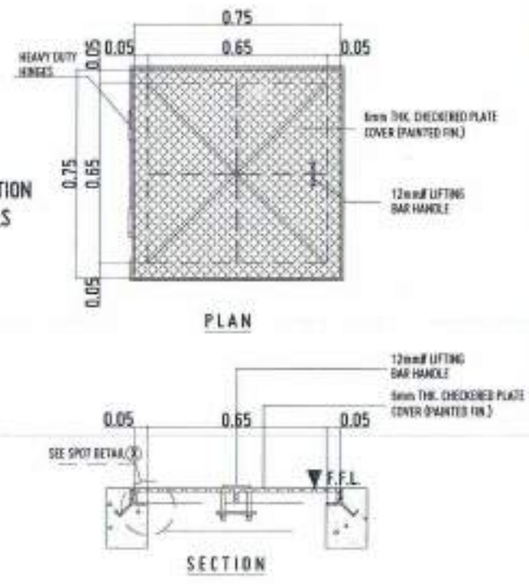
P 7 4 **SPOT DETAIL "X"**

SCALE NTS



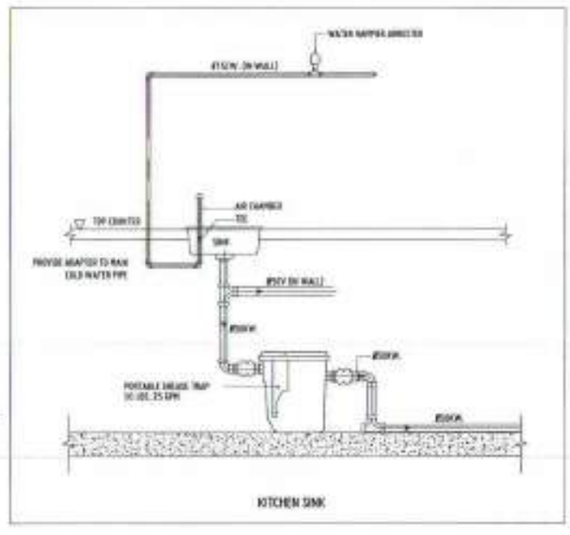
P 7 6 **CATCH BASIN DETAIL**

SCALE 1:25 MTS



P 7 5 **METAL MANHOLE COVER DETAIL**

SCALE 1:10 MTS



P 7 5 **PORTABLE GREASE TRAP CONNECTION**

SCALE 1:10 MTS

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

MASTER PLUMBER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPDSD
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
- PLUMBING WASTE DIAGRAM
- WATER SUPPLY SINGLE LINE DIAGRAM
- MET ALIC MANHOLE COVER DETAIL
- SPOT DETAIL "X"
- SAITER BASIN DETAILS
- GREASE TRAP DETAILS
- PORTABLE GREASE TRAP CONNECTION

DRAWN BY:
DATE DRAWN:
SCALE:
DATE:

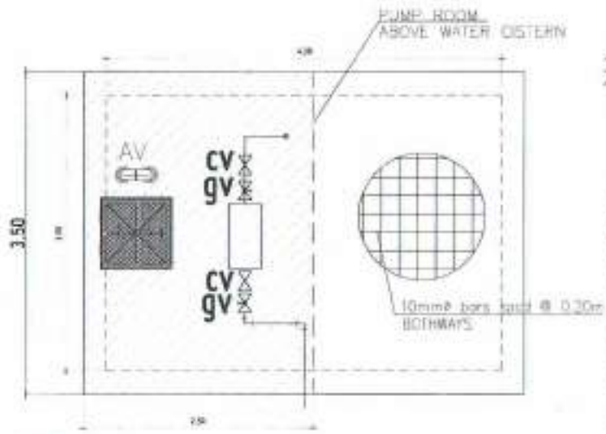
P7

GENERAL NOTES & SPECIFICATIONS:

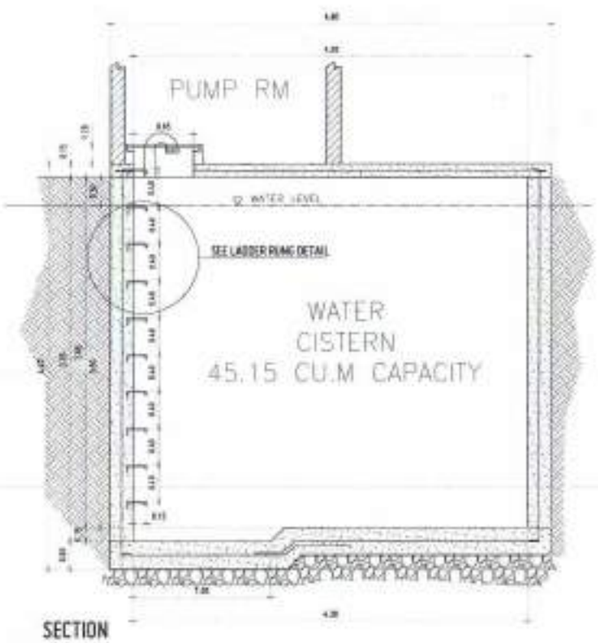
1. ALL PLUMBING WORKS SHOULD BE UNDER THE DIRECT SUPERVISION OF A LICENSED MASTER PLUMBER.
2. ALL PLUMBING INSTALLATION SHOULD BE GOVERNED BY THE NATIONAL PLUMBING CODE OF THE PHILIPPINES AND EXISTING CITY OR LOCAL ORDINANCES.
3. NO SEPTIC VAULT SHALL BE INSTALLED WITHIN OR INSIDE THE BUILDING.
4. TANK MUST BE BUILT WATER TIGHT OF CONCRETE, STONE OR C.H.B..
5. BOTH COMPARMENTS ARE PROVIDED WITH MANHOLE AND TIGHT COVER FOR CLEANING AND REPAIRS.
6. INLET AND OUTLET ARE SUBMERGED AND ARRANGED IN SUCH AWAY THAT NIETHER SLUDGE NOR SCUM BE UNDULY DISTURBED. BOTTOM OF THE TANK SHOULD HAVE A SLOPE OF 1:10 TOWARDS THE MANHOLE IN THE CENTER TO FACILITATE CLEANING.
7. NOT LESS THAN 0.20M. OF AIRSPACE SHOULD BE LEFT BETWEEN THE TOP OF THE SEWAGE AND THE UNDER PART OF THE TANK.

P 8 1 **VICINITY MAP** SCALE: NTS

P 8 2 **LOCATION PLAN** SCALE: 1:1500 MTS

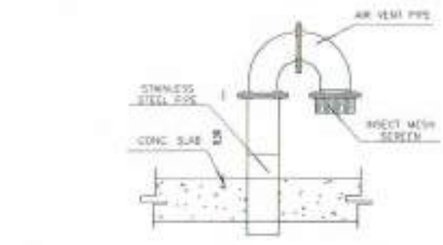


PLAN



SECTION

P 8 3 **WATER CISTERN DETAIL** SCALE: 1:30 MTS



P 8 4 **AIR VENT PIPE DETAIL** SCALE: 1:10 MTS

P 8 5 **LADDER RUNG DETAIL** SCALE: 1:10 MTS

Plumbing Symbol

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VS	Vent Stack
SS	Soil Stack
WS	Waste Stack
ST	Septic Vault
FD	Floor Drain
GD	Gutter Drain
RD	Roof Drain
BD	Back Drain
LAV	Lavatory
UR	Urinal
KS	Kitchen Sink
CO	Ceiling Cleanout
FCO	Floor Cleanout
CO	Cleanout

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

MASTER PLUMBER

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:
ENGR. GRACE C. BABA
DIRECTOR, OPDD

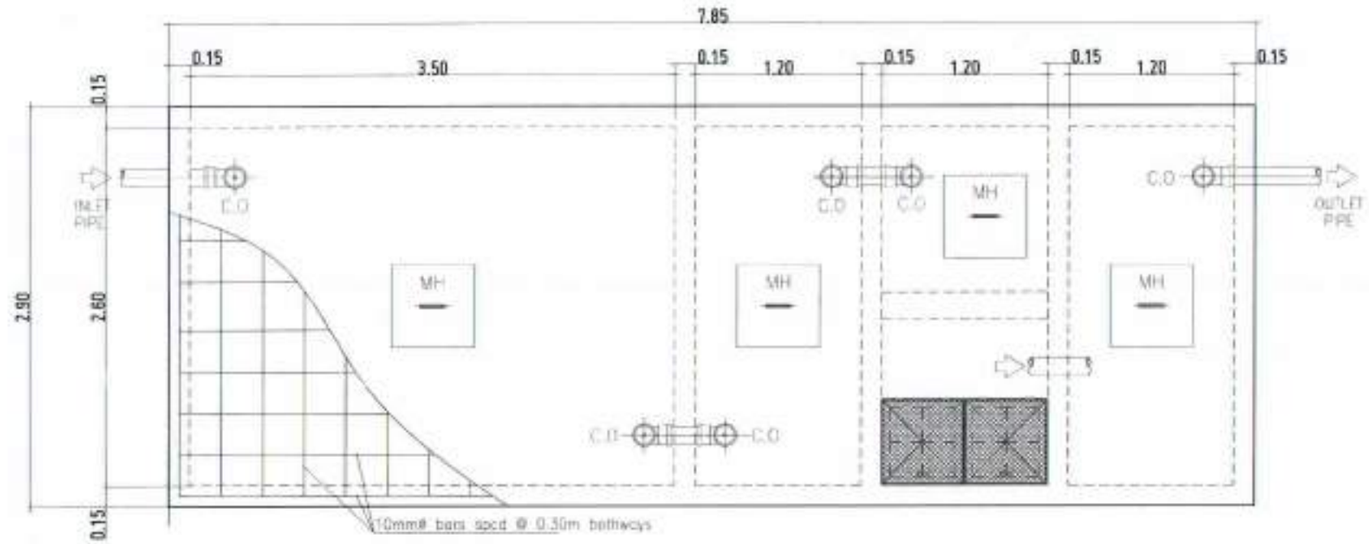
RECOMMENDING APPROVAL:
ATTY. ERWIN B. BULO
VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY:
DR. AMBROSIO B. CULTURA II
PRESIDENT, USTP SYSTEM

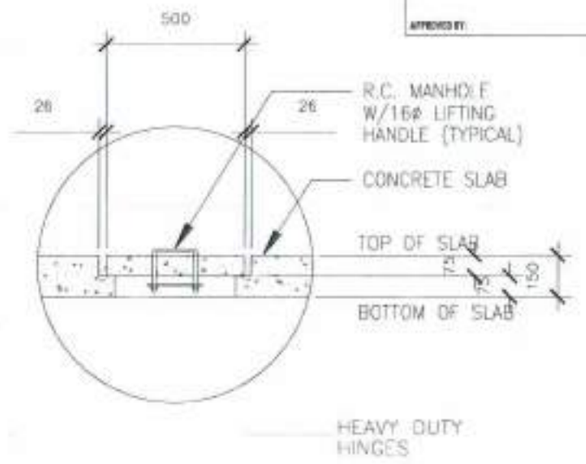
SHEET CONTENTS:
VICINITY MAP
LOCATION PLAN
WATER CISTERN DETAILS
AIRVENT DETAILS
LADDER RUNG DETAILS

DRAWN BY:
SUBMITTED:
DATE:

P8

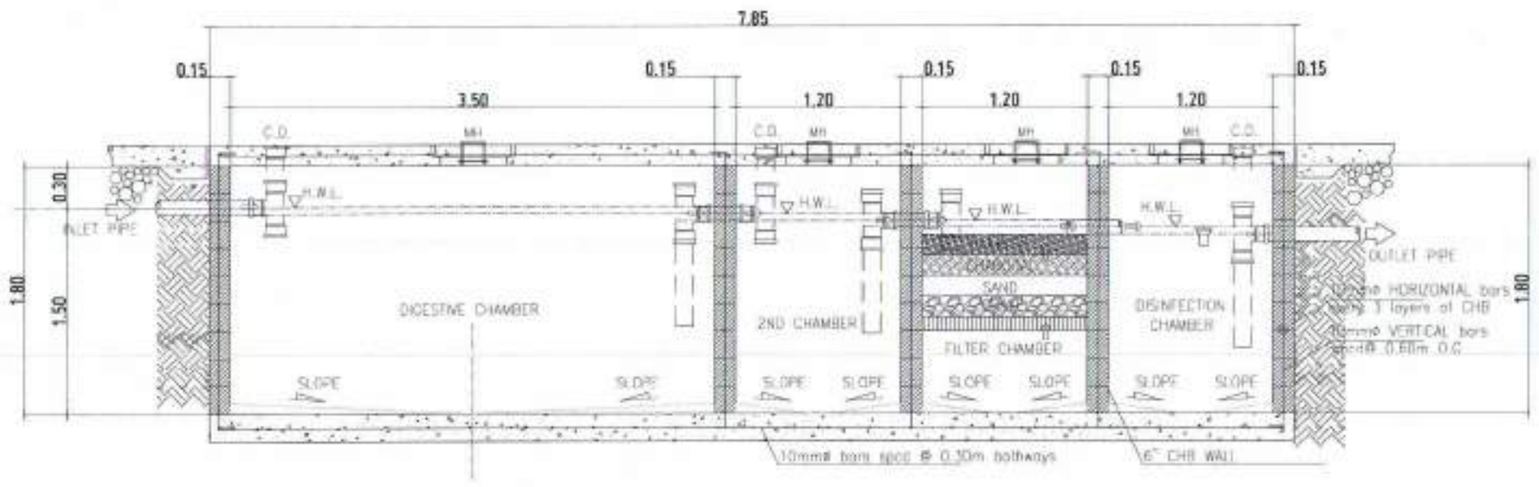


PLAN

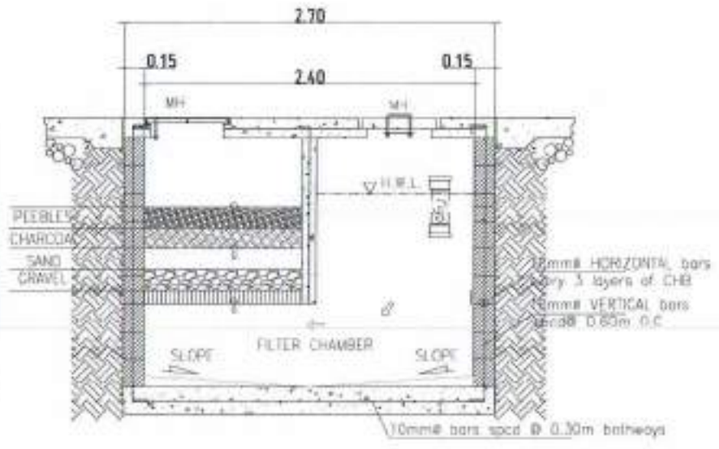


P 9 2 **BLOW-UP DETAIL MANHOLE**

SCALE: 1:10 MTS



LONGITUDINAL SECTION



CROSS SECTION

P 9 1 **SEPTIC VAULT DETAIL**

SCALE: 1:20 MTS

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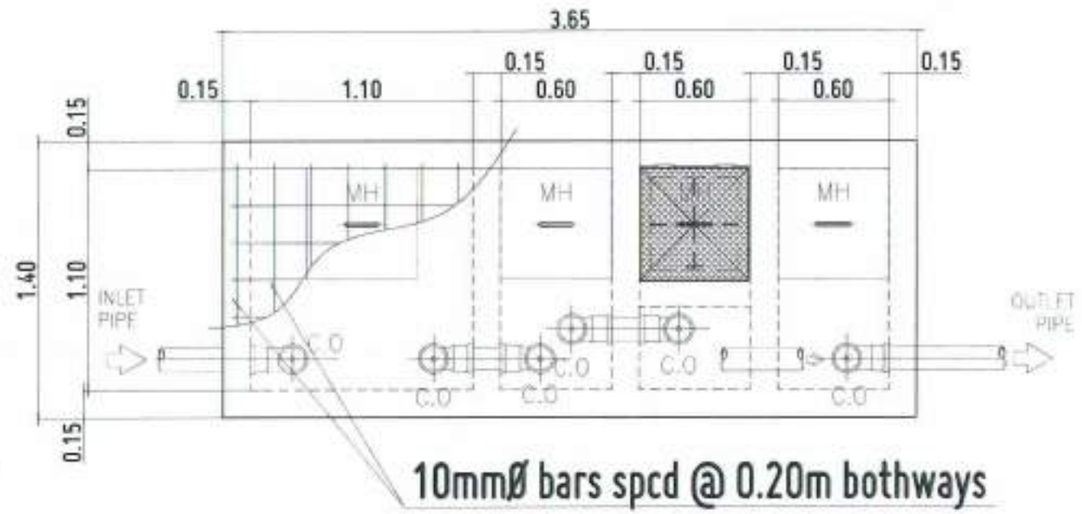
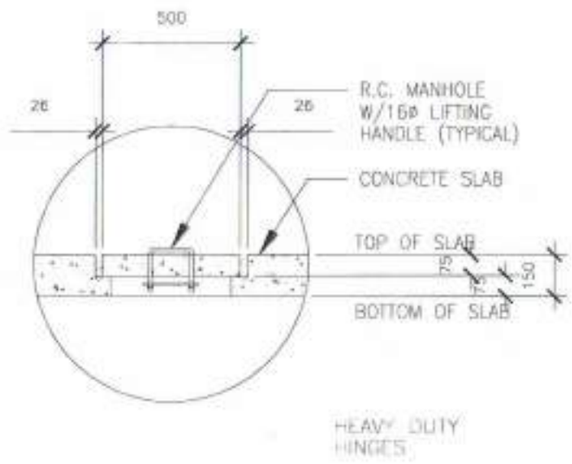
RECOMMENDING APPROVAL: ATTY. ERWIN B. DICID, AVP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SEPTIC VAULT DETAILS; FLOOR PLAN; LONGITUDINAL SECTION OF SVU; CROSS SECTION OF SVU; MANHOLE BLOW-UP DETAIL

DRAWN BY:
DATE DRAWN:
SVU:

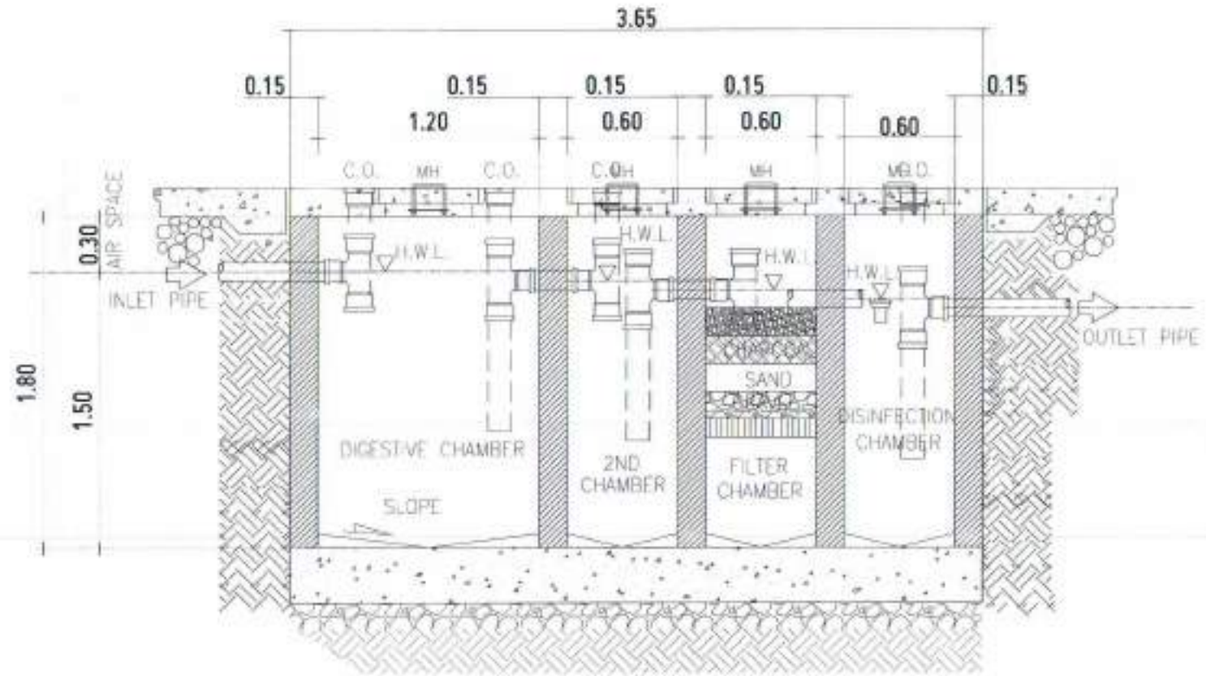
P9



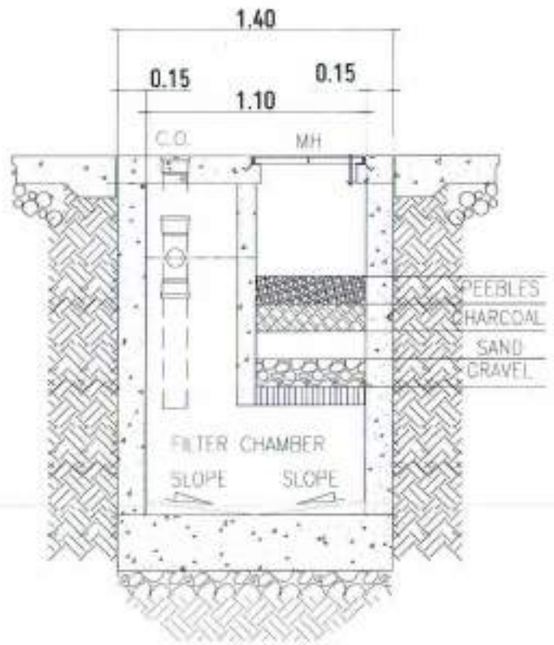


P 9 2 **BLOW-UP DETAIL MANHOLE**

SCALE 1:10 MTS



LONGITUDINAL SECTION



CROSS SECTION

P 10 1 **SEPTIC VAULT - 2 DETAIL**

SCALE 1:20 MTS

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RECOMMENDING APPROVAL: ATTY. ERWIN B. [illegible], VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: SEPTIC VAULT-2 DETAILS; FLOOR PLAN; LONGITUDINAL SECTION DETAIL; CROSS SECTION DETAIL; MANHOLE BLOW-UP DETAIL

P10

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VILLANUEVA, MISAMIS ORIENTAL

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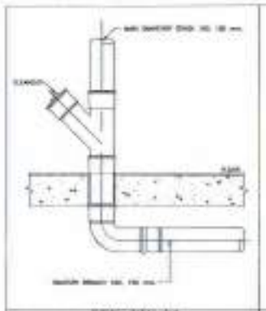
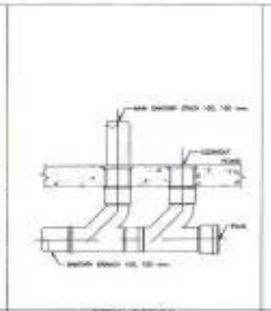


TYPICAL CLEAN OUT
FOR MAIN SANITARY STACK TYPE 1



TYPICAL CLEANOUT
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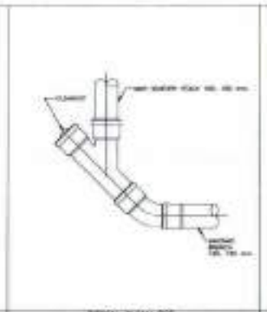
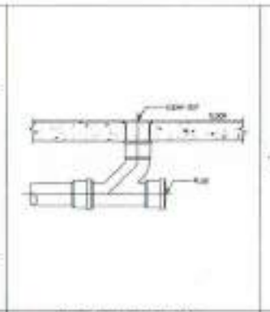
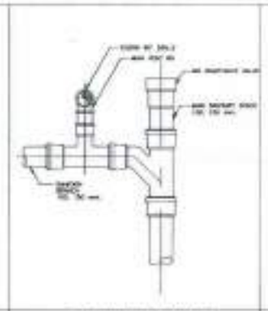


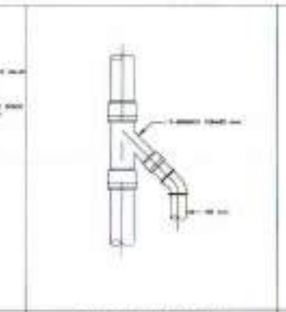
TYPICAL CLEAN OUT
FOR MAIN SANITARY STACK TYPE 3



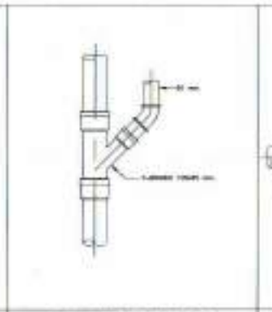
TYPICAL CLEAN OUT ON FLOOR



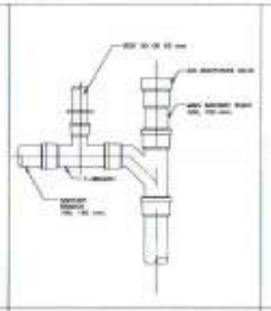
TYPICAL MAIN SANITARY STACK



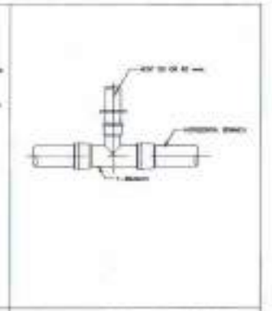
TYPICAL VENT FOR STACK TYPE 1



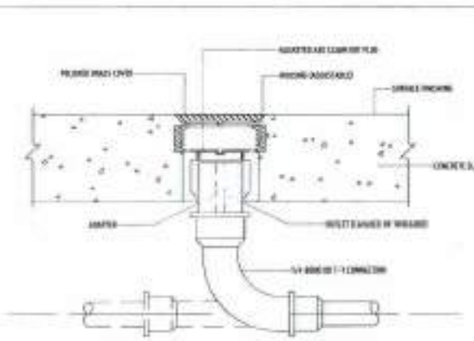
TYPICAL VENT FOR STACK TYPE 2



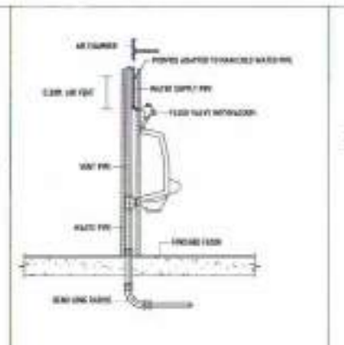
TYPICAL VENT FOR MAIN HORIZONTAL



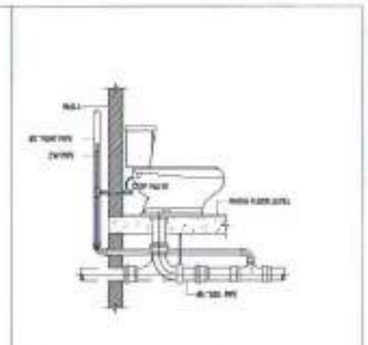
TYPICAL VENT FOR MAIN BRANCH TYPE 1



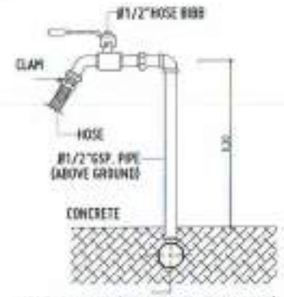
FLOOR CLEANOUT



WALL HUNG URINAL (FLUSH VALVE TYPE)

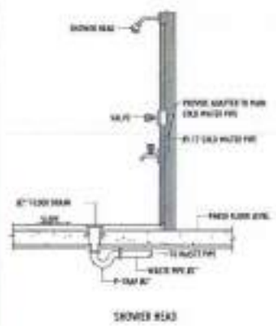


WATER CLOSET WITH FLUSH TANK (WT)



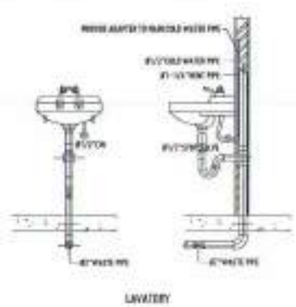
HDPE PN-10 PIPE (UNDER GROUND/UNDER SLAB)

HOSE BIBB

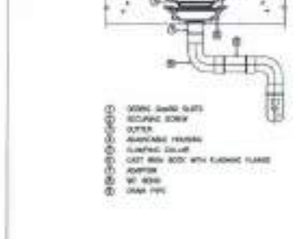


SHOWER HEAD

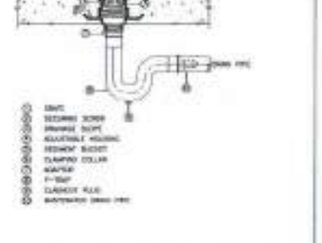
WALL HUNG URINAL (FLUSH VALVE TYPE)



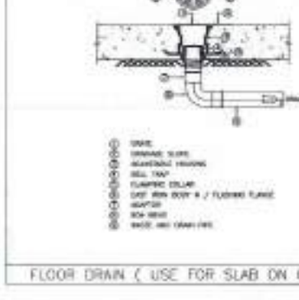
LAVATORY



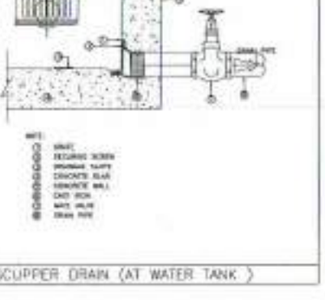
ROOF DRAIN



FLOOR DRAIN (USE FOR SLAB ABOVE CEILING)



FLOOR DRAIN (USE FOR SLAB ON GROUND)



SCUPPER DRAIN (AT WATER TANK)

P 10 1

TOILET INSTALLATIONS & CONNECTION DETAILS

SCALE NTS

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MASTER PLUMBER

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LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

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RECOMMENDING APPROVAL: ATTY. ERWIN C. BUDOY, DIRECTOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: TOILET INSTALLATIONS & CONNECTION DETAILS
DRAWN BY:
DATE DRAWN:
SHEET NO.

P11

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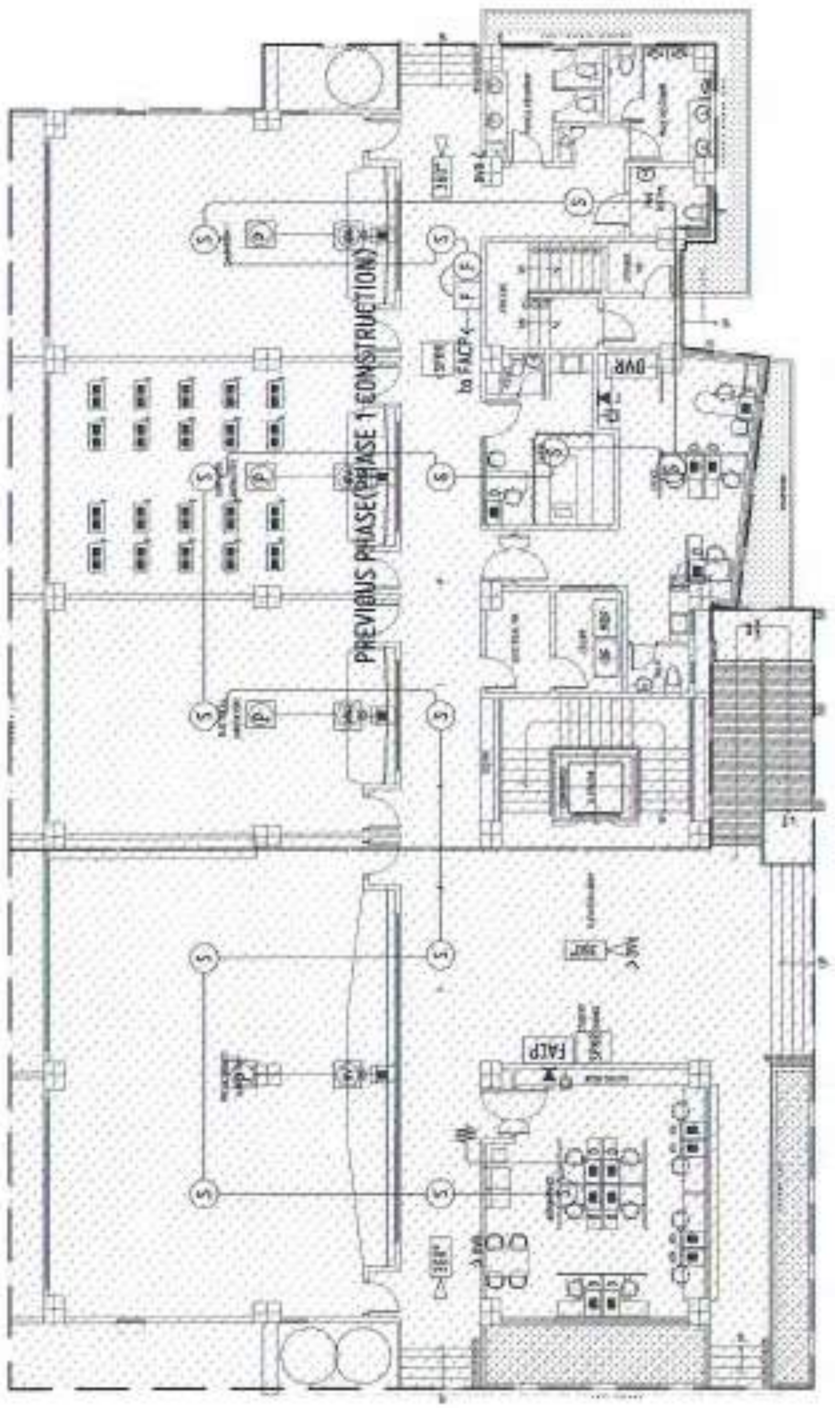
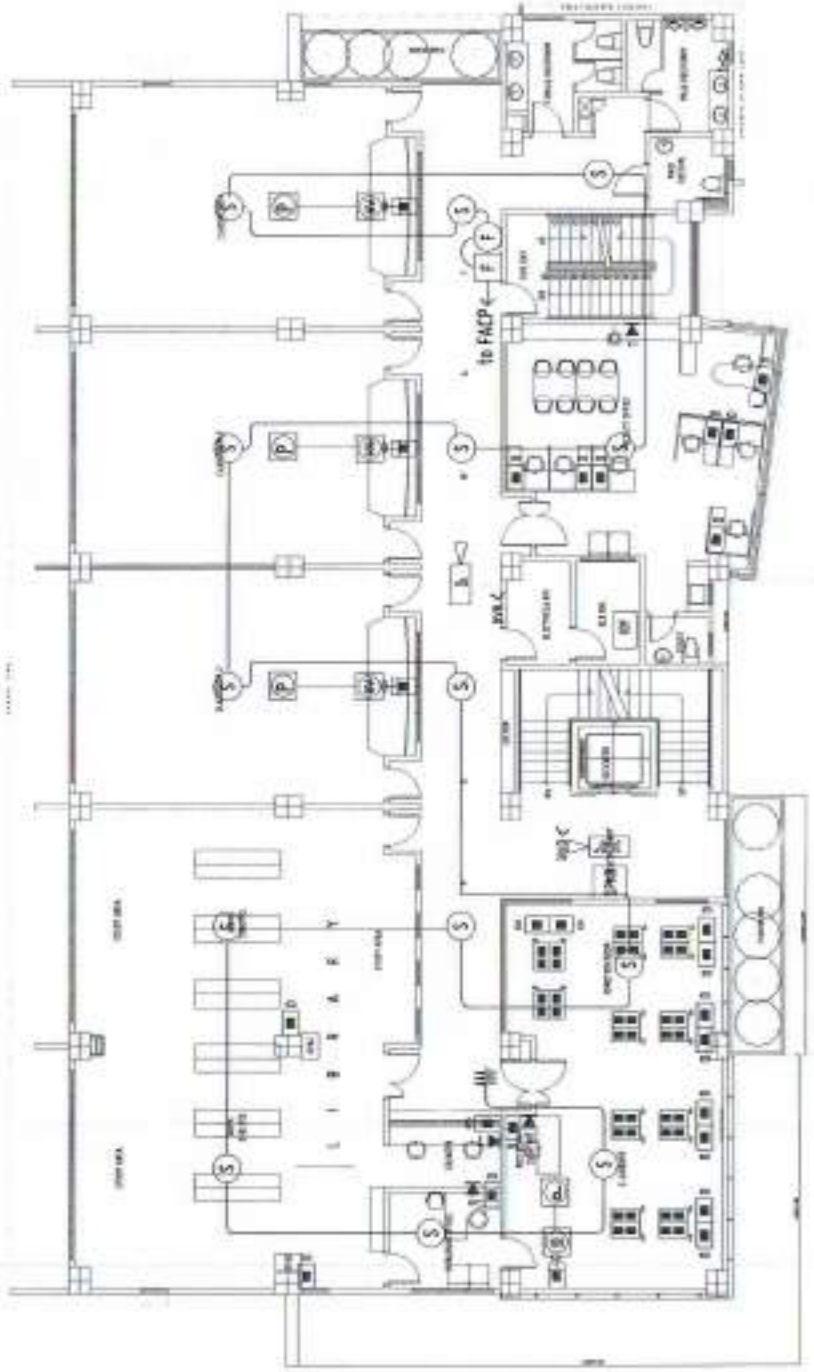
APPROVED BY:



ECE 1 1 GROUND FLOOR - ECE LAYOUT PLAN
SCALE 1:100 MTS



ECE 1 2 SECOND FLOOR - ECE LAYOUT PLAN
SCALE 1:100 MTS

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT
CLARO M. RECTO AVENUE, LAPASAN, CAGAYAN DE ORO CITY 9000
WEBSITE: www.ustp.edu.ph

PROFESSIONAL ELECTRONICS ENGINEER		PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
PRC NO.:	PTR NO.:	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
	DATE:	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
TIN NO.:	PLACE:		

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. [illegible]	DR. AMBROSIO B. CULTURA II
DIRECTOR, IPFDU	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
GROUND FLOOR - ECE LAYOUT PLAN
SECOND FLOOR - ECE LAYOUT PLAN

DRAWN BY:
DATE DRAWN:

AUX1

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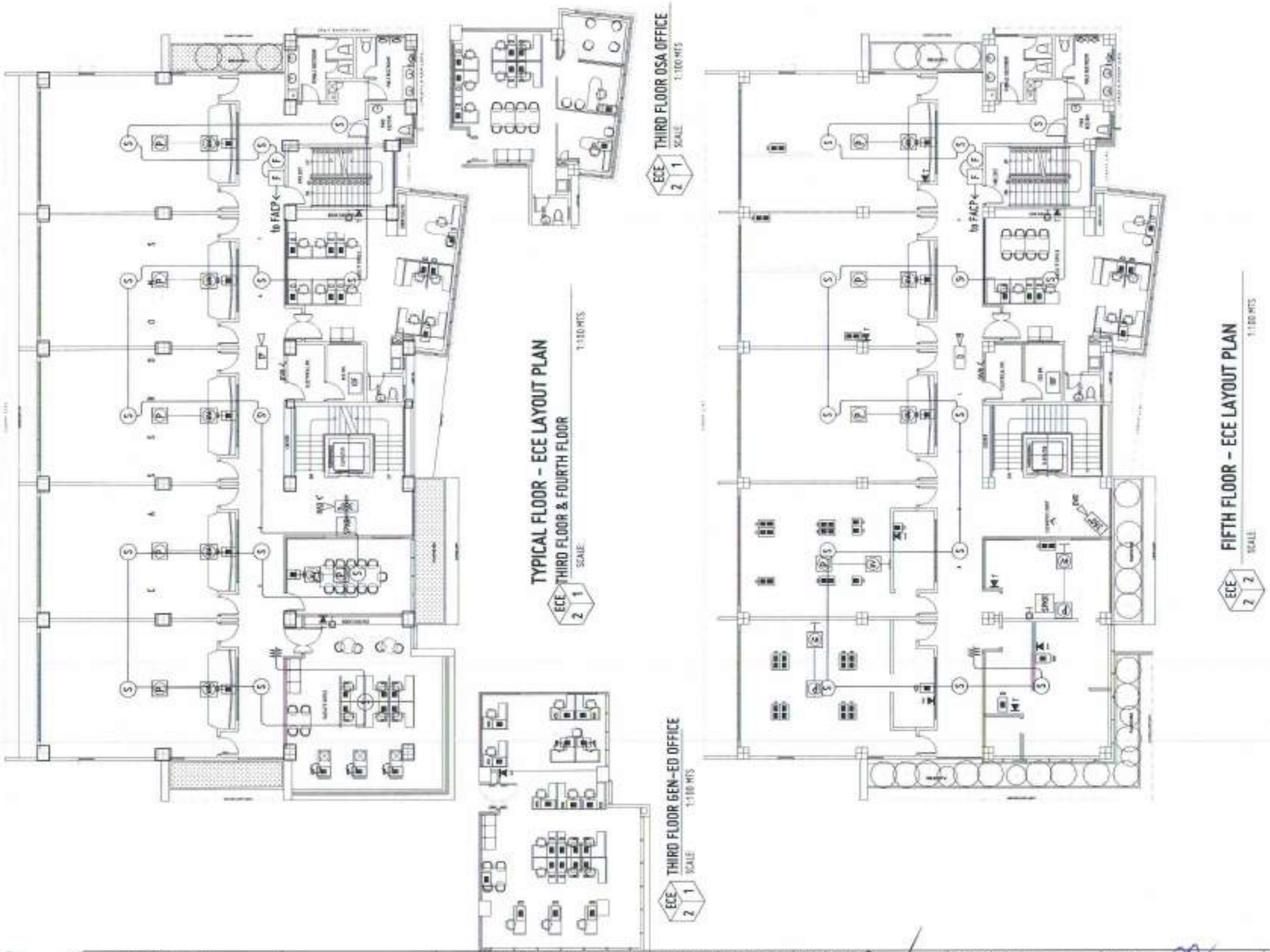
OFFICE OF THE BUILDING OFFICIAL

APPROVED BY:



LEGEND:

- SINGLE TELEPHONE WALL OUTLET, RJ11
- SINGLE TELEPHONE FLOOR MOUNTED OUTLET
- SINGLE UNIVERSAL DATA WALL OUTLET, RJ45
- DUPLEX UNIVERSAL DATA WALL OUTLET, RJ45
- IDF — INTERMEDIATE DISTRIBUTION FRAME
- MDF — MAIN DISTRIBUTION FRAME
- WALL CABLE TV OUTLET, PROVIDE 1- RG6/U COAXIAL CABLE
- CTB — CABLE TV BOX
- TCB — TELEPHONE AND CABLE TV BOX
- PROVISION FOR HDMI/VGA CASING FOR OVERHEAD PROJECTOR, VERIFY EXACT LOCATION WITH ARCHITECT
- HDMI & DA WALL OUTLET IN SINGLE PLATE INTERCONNECT WITH THE OVERHEAD PROJECTOR HDMI/VGA WIRING PROVISION OF T.V APPLIANCES HDMI/ VGA CABLE VIA ... LAYOUT.
- SMOKE DETECTOR - CEILING MOUNTED
- SMOKE DETECTOR - WALL MOUNTED
- HEAT DETECTOR, CEILING MOUNTED
- FIRE ALARM STROBE AND HORN, UL LISTED BRAND
- FIRE ALARM MANUAL PULL STATION, UL LISTED BRAND
- END OF LINE RESISTOR

USTP

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UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT
CLARO M. RECTO AVENUE, LAPASAN, CAGAYAN DE ORO CITY 9000
TELEPHONE NO. (088) 272-88-65 / (088) 856-1738 / 856-1739 | TELE FAX (088) 856-4696
WEBSITE: www.ustp.edu.ph

PROFESSIONAL ELECTRONICS ENGINEER	
PRC NO.:	PTR NO.:
	DATE:
TIN NO.:	PLACE:

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

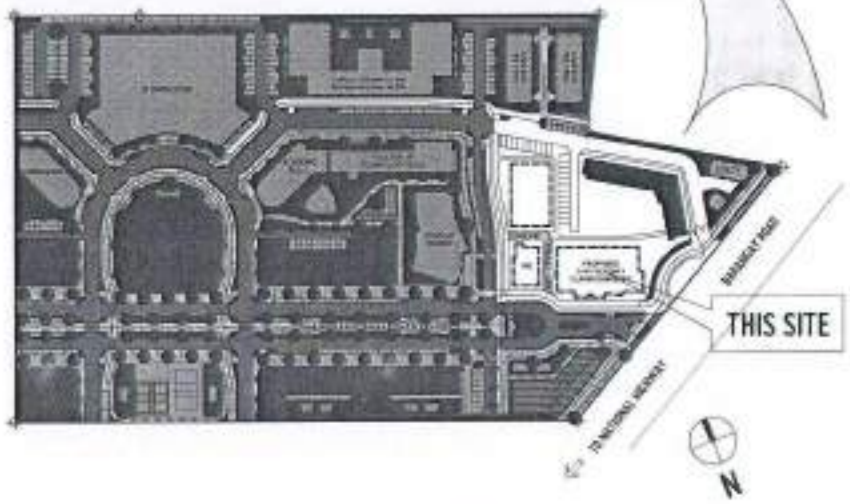
RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:	DRAWN BY:
ENGR. GRACE C. BABA	ATTY. EDWIN B. BUCIO	DR. AMBROSIO B. CULTURA II	TYPICAL FLOOR - ECE LAYOUT PLAN THIRD FLOOR & FOURTH FLOOR FIFTH FLOOR - ECE LAYOUT PLAN	DATE DRAWN:
DIRECTOR, IPFDU	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM		PMT:

AUX2

VICINITY MAP

ECE 3 1

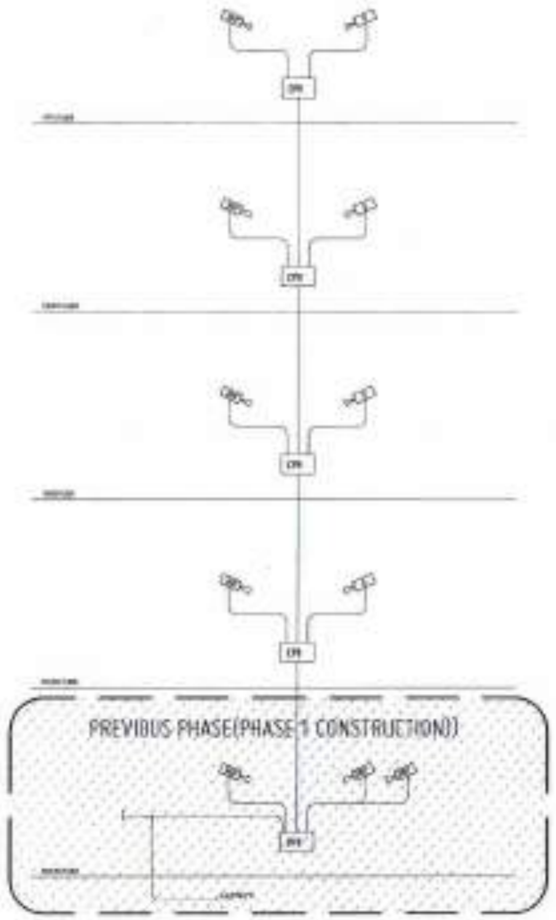
SCALE NTS



LOCATION PLAN

ECE 3 2

SCALE 1:1500 MTS



CCTV SYSTEM RISER DIAGRAM

ECE 3 3

NOT DRAWN TO SCALE

LEGEND:

- SINGLE TELEPHONE WALL OUTLET, RJ11
- SINGLE TELEPHONE FLOOR MOUNTED OUTLET
- SINGLE UNIVERSAL DATA WALL OUTLET, RJ45
- DUPLEX UNIVERSAL DATA WALL OUTLET, RJ45
- IDF — INTERMEDIATE DISTRIBUTION FRAME
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- WALL CABLE TV OUTLET, PROVIDE 1 - RG6/U COAXIAL CABLE
- CTB — CABLE TV BOX
- TCB — TELEPHONE AND CABLE TV BOX
- PROVISION FOR HDMI/VGA CABLING FOR OVERHEAD PROJECTOR, VERIFY EXACT LOCATION WITH ARCHITECT
- HDMI & VGA WALL OUTLET IN SINGLE PLATE INTERCONNECT WITH THE OVERHEAD PROJECTOR HDMI/VGA WIRING PROVISION OR T.V APPLIANCES HDMI/ VGA CABLE VIA COMMON PVC REFER TO LAYOUT.
- SMOKE DETECTOR - CEILING MOUNTED
- SMOKE DETECTOR - WALL MOUNTED
- HEAT DETECTOR, CEILING MOUNTED
- FIRE ALARM STROBE AND HORN, UL LISTED BRAND
- FIRE ALARM MANUAL PULL STATION, UL LISTED BRAND
- END OF LINE RESISTOR

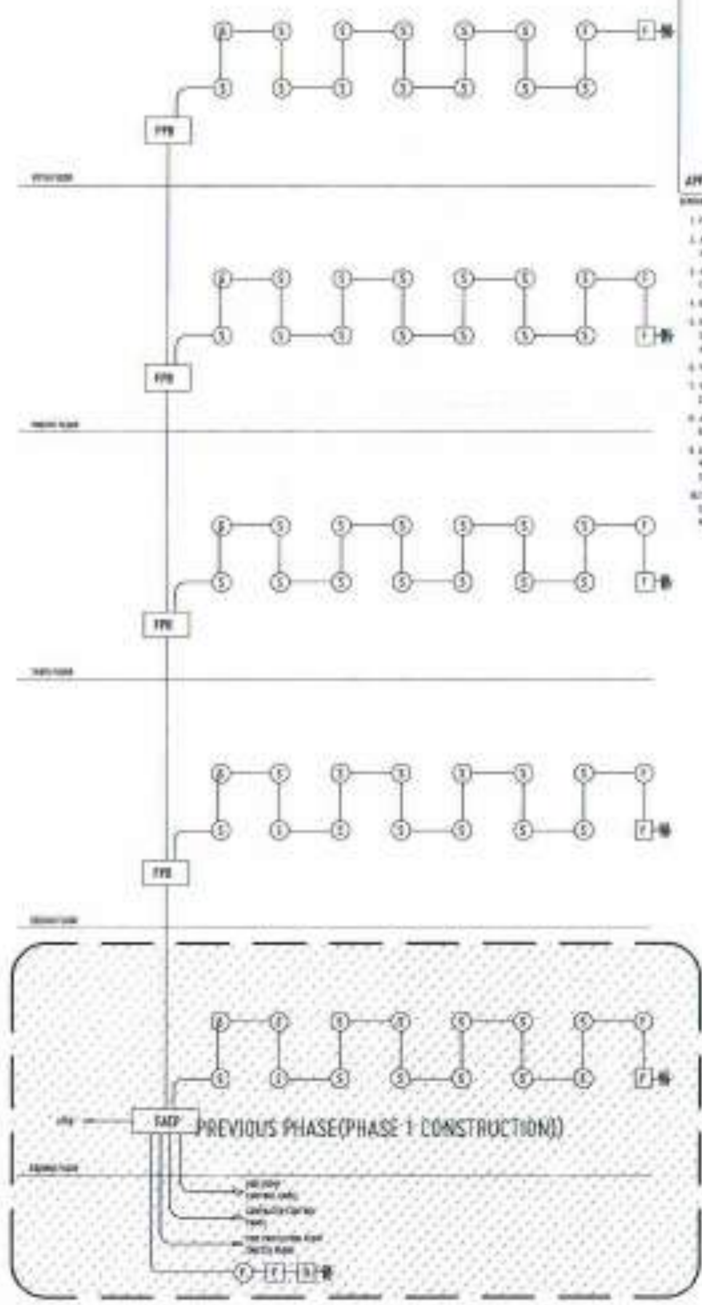
NOTES:

1. SYMBOL

- CLOSED CIRCUIT TELEVISION, DOME TYPE. PROVIDE SIGNAL CABLE & POWER CABLE FOR EACH CAMERA, WIRING IS SUBJECT TO MANUFACTURER'S STANDARD.
- CLOSED CIRCUIT TELEVISION, REVOLVING 360°
- CPB — CCTV WIRING PULLBOX WITH POWER SUPPLY
- DVR — DIGITAL VIDEO RECORDER

2. MINIMUM CONDUIT SHALL BE 20MM (3/4") ϕ. USE IMC FOR ALL EXPOSED CONDUIT OR INSIDE DRYWALL AND PVC FOR ALL CONCRETE EMBEDDED CONDUIT.
3. VERIFY EXACT NUMBER OF CCTV CAMERA WITH LAYOUT.
4. VERIFY AND/OR COORDINATE WITH OWNER/USER THE EXACT LOCATION OF DVR PRIOR TO LAYOUT OF CONDUIT.
5. BOND ALL CPB, CABLE TRAY USING 5.5MM² GROUND WIRE AND BOND TO [illegible]
6. CCTV SYSTEM AND WIRING SCHEDULE.

C	CONDUIT SIZE, MM² (INCH)	
	METAL	uPVC
1	20	25 (3/4)
2	20	25 (3/4)
4	25	32 (1)
8	32	40 (1- 1/4)
10	40	50 (1- 1/2)
15	50	63 (2)



FIRE ALARM SYSTEM RISER DIAGRAM

ECE 3 4

NOT DRAWN TO SCALE

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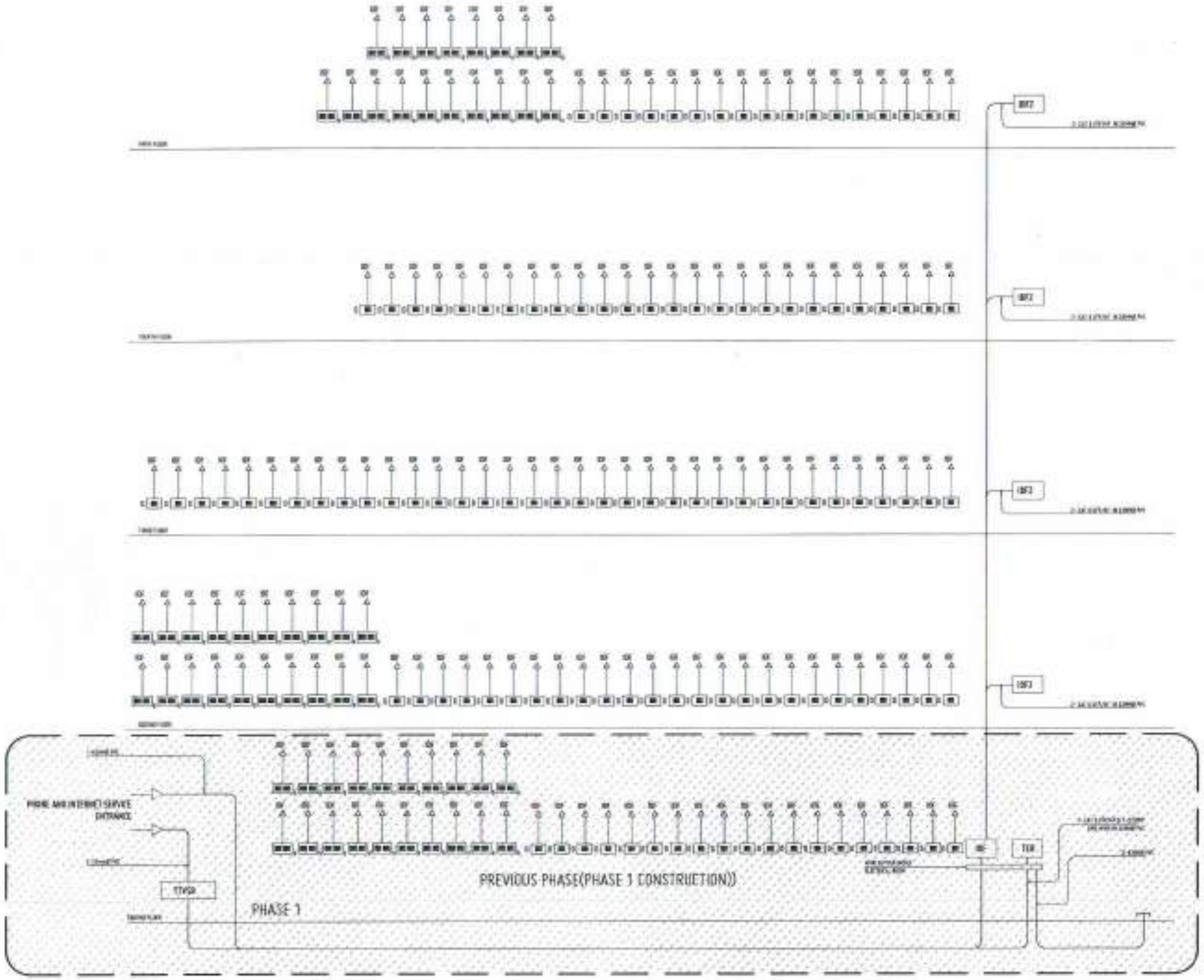
OFFICE OF THE BUILDING OFFICIAL

APPROVED BY:

REPUBLIC OF THE PHILIPPINES UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES CAGAYAN DE ORO CAMPUS INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT	PROFESSIONAL ELECTRONICS ENGINEER	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
	PRC NO.: / PTR NO.: / DATE: / TIN NO.: / PLACE:	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
		OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS:
ENGR. GRACE C. BABA DIRECTOR, IPFDO	ATTY. ERWIN B. [illegible] VP FOR ADMINISTRATION & LEGAL AFFAIRS	DR. AMBROSIO B. CULTURA II PRESIDENT, USTP SYSTEM	VICINITY MAP LOCATION PLAN CCTV SYSTEM RISER DIAGRAM FIRE ALARM SYSTEM RISER DIAGRAM

AUX3



TELEPHONE AND INTERNET RISER DIAGRAM

ECE 4 | 1

D R A W N   N O T   T O   S C A L E

GENERAL NOTE:

1. ALL ELECTRONIC WORKS HERE IN SHALL BE DONE ACCORDANCE WITH THE PROVISION OF THE LATEST EDITION OF THE PHILIPPINE ELECTRONICS CODE, THE RULES AND REGULATIONS OF THE LOCAL ENFORCING AUTHORITIES AND THE REQUIREMENTS OF THE UTILITY TELEPHONE COMPANY.
2. ALL ELECTRONIC WORKS HERE IN INCLUDED SHALL BE EXECUTED BY THE PERSONNEL WITH ELECTRICAL EXPERIENCE UNDER THE DIRECT SUPERVISION OF A FULL TIME LICENSED ELECTRONICS ENGINEER, WORKS SHALL BE NEATLY PLACED, SECURELY FASTENED AND PROPERLY FINISHED.
3. THE CONTRACTOR SHALL VERIFY AND ORIENT THE ACTUAL LOCATION OF THE TAPPING POINT FR CONNECTION TO COMMUNICATION SUPPLY.
4. ALL MATERIALS SHALL BE BRAND NEW AND SHALL CONFORM WITH THE PROVISIONS OF THE UNDER WRITERS LABORATORIES INC., IN EVERY CASE WHERE SUCH A STANDARD HAS BEEN ESTABLISHED.
5. ALL CONDUITS MUST BE PROTECTED AGAINST DAMAGES BY THE ENTRANCE OF THE WATER AND FOREIGN MATTERS DURING CONSTRUCTION.ALL ENDS OF CONDUITS SHALL BE PLUGGED TO EXCLUDE MOISTURE AND DUST IMMEDIATELY AFTER THE CONDUITS ARE PLACED.
6. UNLESS OTHERWISE SPECIFIED, ALL ELECTRONICS WIRING INSTALLATION SHALL BE USED IMC THE MINIMUM SIZE OF CONDUIT SHALL BE 15MM.
7. ALL RACEWAYS, WALL, AND FLOOR PENETRATION SHALL BE PROVIDED WITH FIRE BARRIER OF THE APPROVED TYPE.
8. ALL OUTLET BOXES SHALL BE GALVANIZED GAGE NO. 18 DEEP TYPE WITH THE FACTORY KNOCKOUTS. PULLBOXES SHALL BE USED WHEN APPLICABLE FOR EASY PULLING OF WIRES AND SHALL BE IN ACCORDANCE WITH THE PHILIPPINE ELECTRICAL CODE REQUIREMENT. PREFERRED BRAND FOR JUNCTION, PULLBOXES OR UTILITY SQUARE BOXES SHALL BE PEMACO,AMCO,TOPO OR APPROVED EQUAL.
9. MOUNTING HEIGHTS OF DEVICES SHALL BE: (SUBJECT TO ARCHITECTS APPROVAL PRIOR TO INSTALLATION)
10. ALL SPEAKER WIRING SHALL BE 2-0.75 SQ.MM SHIELDED SPEAKER WIRE.
11. NETWORK CABLWES/ CONDUIT SHALL HAVE A MINIMUM DISTANCE OF 0.3M FROM POWER CONDUIT WHEN LAID PARALLEL AND MUST RUN PERPENDICULAR TO THE STEEL CONDUIT WHEN CUTTING ACROSS A POWER LINE.
12. THE PLANS AS DRAWN ARE BASED UPON THE ARCHITECTURAL PLANS AND THE DETAILS ARE SHOWN CONDITION AS ACCURATELY AS IT IS 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 LOCATIONS OF OUTLETS, APPARATUS AND APPLIANCES SHOWN ON THE PLANS ARE APPROXIMATE. THE CONTRACTORS SHALL BE HELD RESPONSIBLE FOR THEIR PROPER LOCATION IN ORDER TO MAKE THEM FIT WITH THE ARCHITECTURAL DETAILS AND INSTRUCTIONS FROM THE ENGINEER'S REPRESENTATIVE AT THE SITE.

NOTES:

1. FIRE ALARM SYSTEM SHALL BE CONVENTIONAL TYPE.
2. MINIMUM CONDUIT SIZE SHALL BE 20MM (1/2"Ø) USE IMC FOR ALL EXPOSED CONDUIT OR INSIDE DRY WALL AND PVC IF CONCRETE EMBEDDED.
3. ALL RISER CONDUIT SHALL BE IMC. PROVIDE 50MM (2"Ø) SPARE IMC RISER CONDUIT.
4. FDAS WIRING AND CONDUIT SCHEDULE:

CONDUIT SIZE MM (INCH)		NUMBER OF TF WIRES (C.I. CABLE TYPE)		CONDUIT SIZE MM (INCH)		NUMBER OF TF WIRES (C.I. CABLE TYPE)	
METAL	uPVC	#18	#16	METAL	uPVC	#18	#16
20	25(3/4)	25	18	80	75(2-1/2)	234	172
25	32(1)	41	30	80	90(3)	383	286
32	40(1-1/4)	72	52	80	100(3-1/2)	486	357
40	50(1-1/2)	99	72	100	110(4)	627	480
50	63(2)	164	120				

5. SYMBOLS

- A = #18/2 AWG. CIRCUIT INTEGRITY (CI) CABLE TYPE, UL LISTED BRAND
- FACP — FIRE ALARM CONTROL PANEL, UL LISTED BRAND
- SMOKE DETECTOR– CEILING MOUNTED
- SMOKE DETECTOR– WALL MOUNTED
- HEAT DETECTOR, CEILING MOUNTED
- FIRE ALARM STROBE AND HORN, UL LISTED BRAND
- FIRE ALARM MANUAL PULL STATION, UL LISTED BRAND
- END OF LINE RESISTOR
- FPB — FIRE ALARM SYSTEM WIRING PULL BOX

6. PROVIDE SUPERVISORY WIRES TO THE FOLLOWING:
   - A. ELEVATOR/S
   - B. FIRE PROTECTION FLOW SWITCH CONTROL PANEL OR INDIVIDUAL FLOW SWITCH(VERIFY LOCATION)
   - C. STAIR PRESSURIZATION BLOWER/S OR FAN/S(VERIFY EXACT LOCATION)
   - D. SMOKE VENTILATION SYSTEM AND/OR SMOKE CONTROL SYSTEM.
   - E. FIRE PUMP CONTROL PANEL
7. PROVIDE WIRING FROM FACP TO GENERATOR CONTROL PANEL TO MONITOR THE FOLLOWING CONDITIONS:
   - A. GENERATOR RUNNING
   - B. GENERATOR FAULT
   - C. GENERATOR SWITCH IN NON-AUTOMATIC POSITION/MODE
8. FINAL WIRING SHALL BE AS PER MANUFACTURER'S STANDARDS.

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRONICS ENGINEER

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDU

RECOMMENDING APPROVAL: ATTY. ERWIN B. [illegible], VP FOR ADMINISTRATION & LEGAL AFFAIRS

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

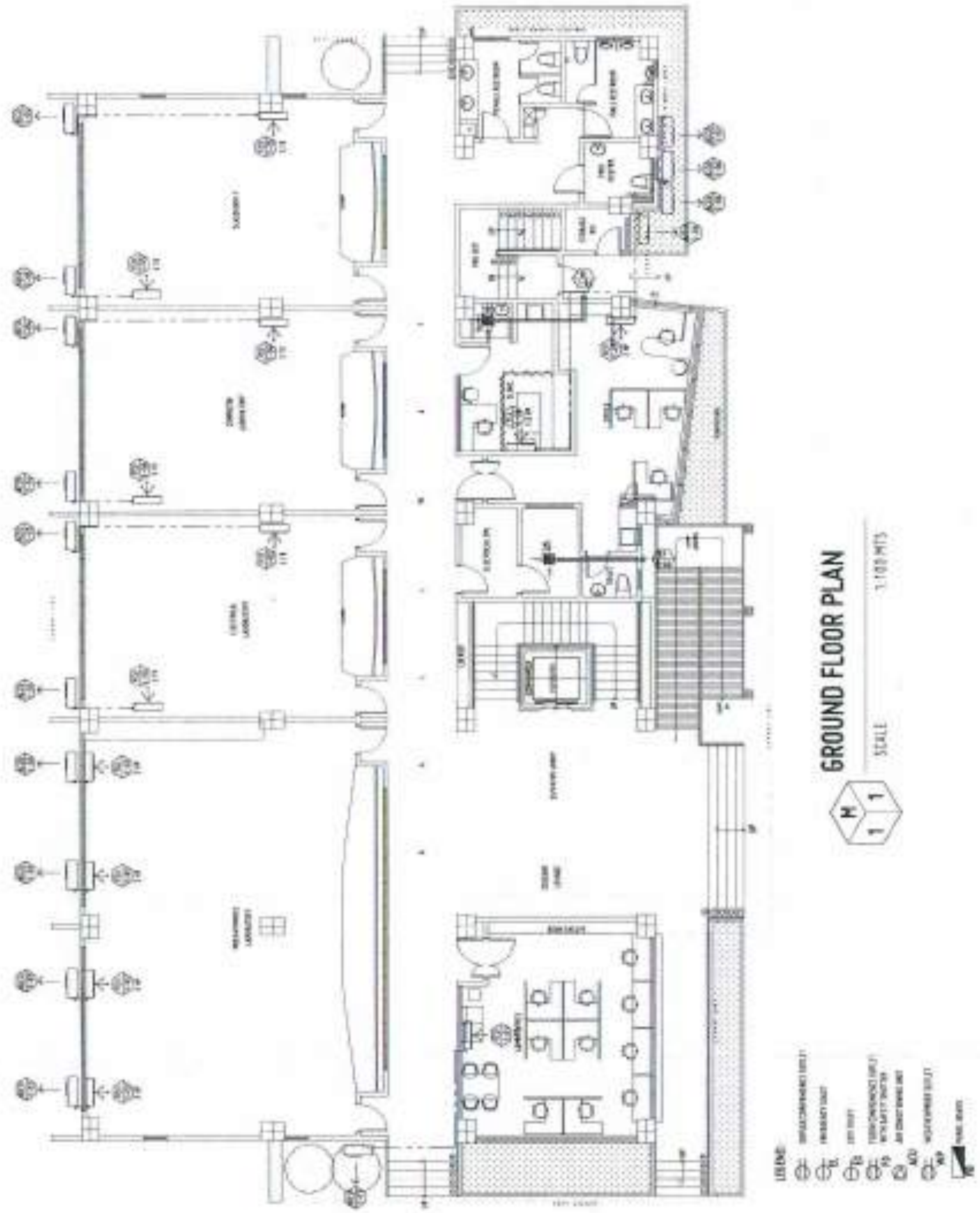
SHEET CONTENTS: TELEPHONE AND INTERNET RISER DIAGRAM

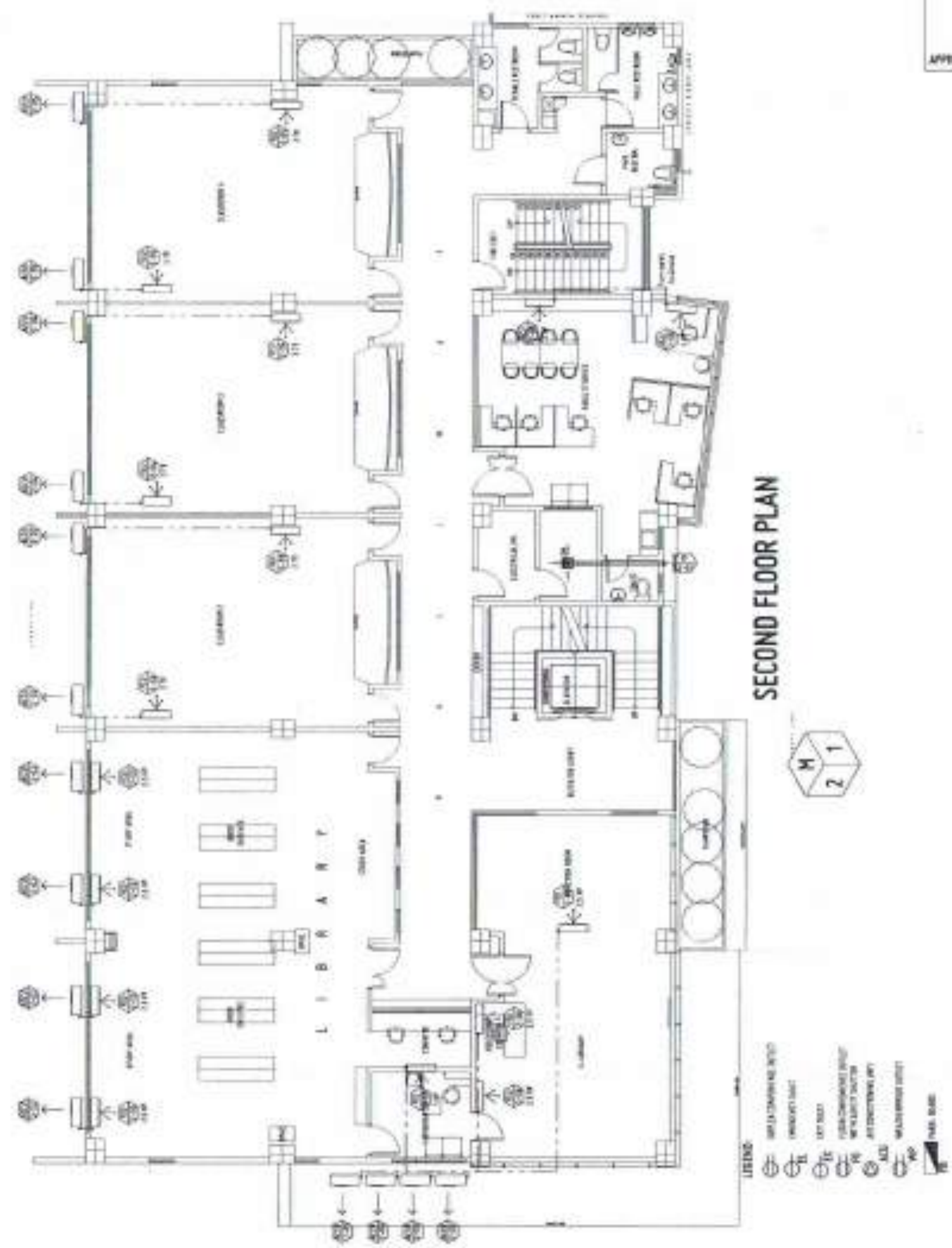
DRAWN BY:
DATE DRAWN:

AUX4

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:





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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER	
PRC NO.:	PTR NO.:
	DATE:
TIN NO.:	PLACE:

PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BOCIO	DR. AMBROSIO B. CULTURA II
DIRECTOR, IPFDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM

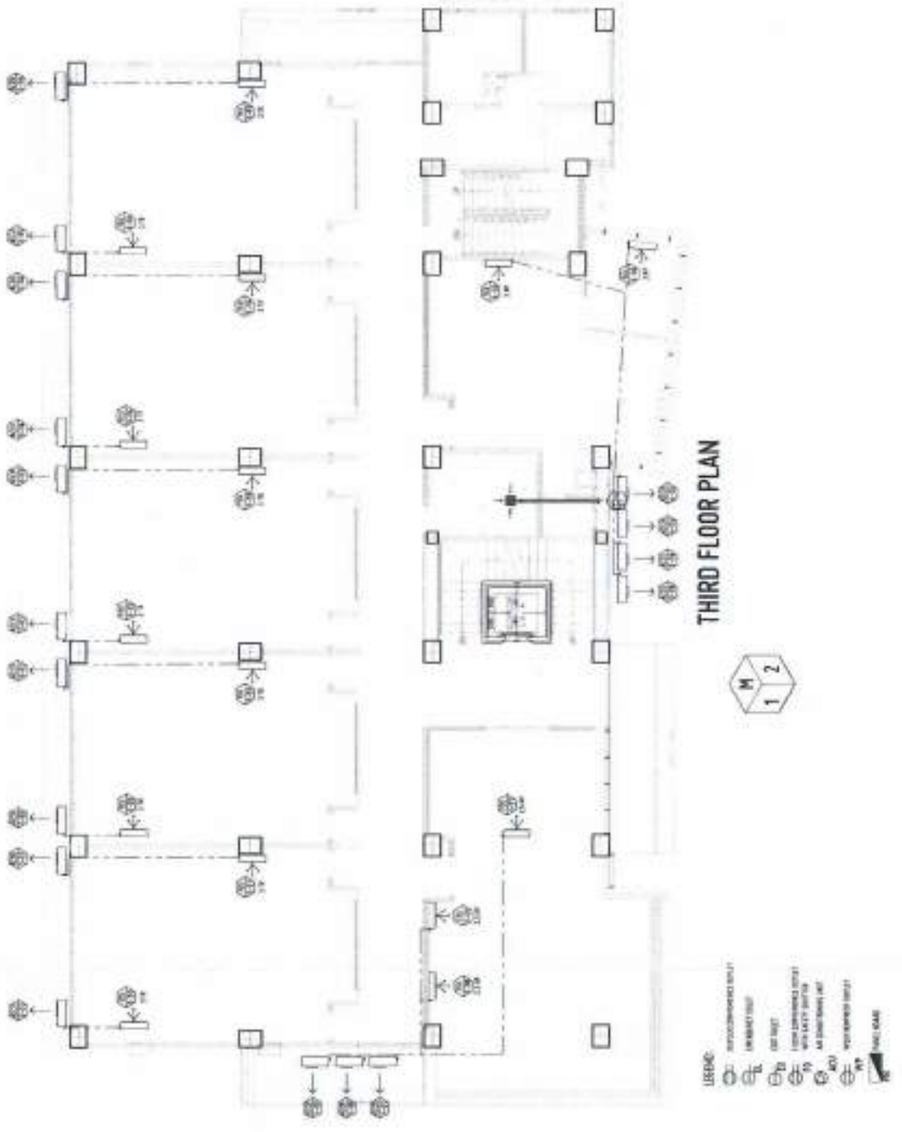
SHEET CONTENTS:
FIFTH FLOOR PLAN (LIGHTING AND SWITCHING LAYOUT)
ROOF DECK PLAN
GROUND FLOOR PLAN (POWER LAYOUT)

DRAWN BY:
DATE DRAWN:
FN:

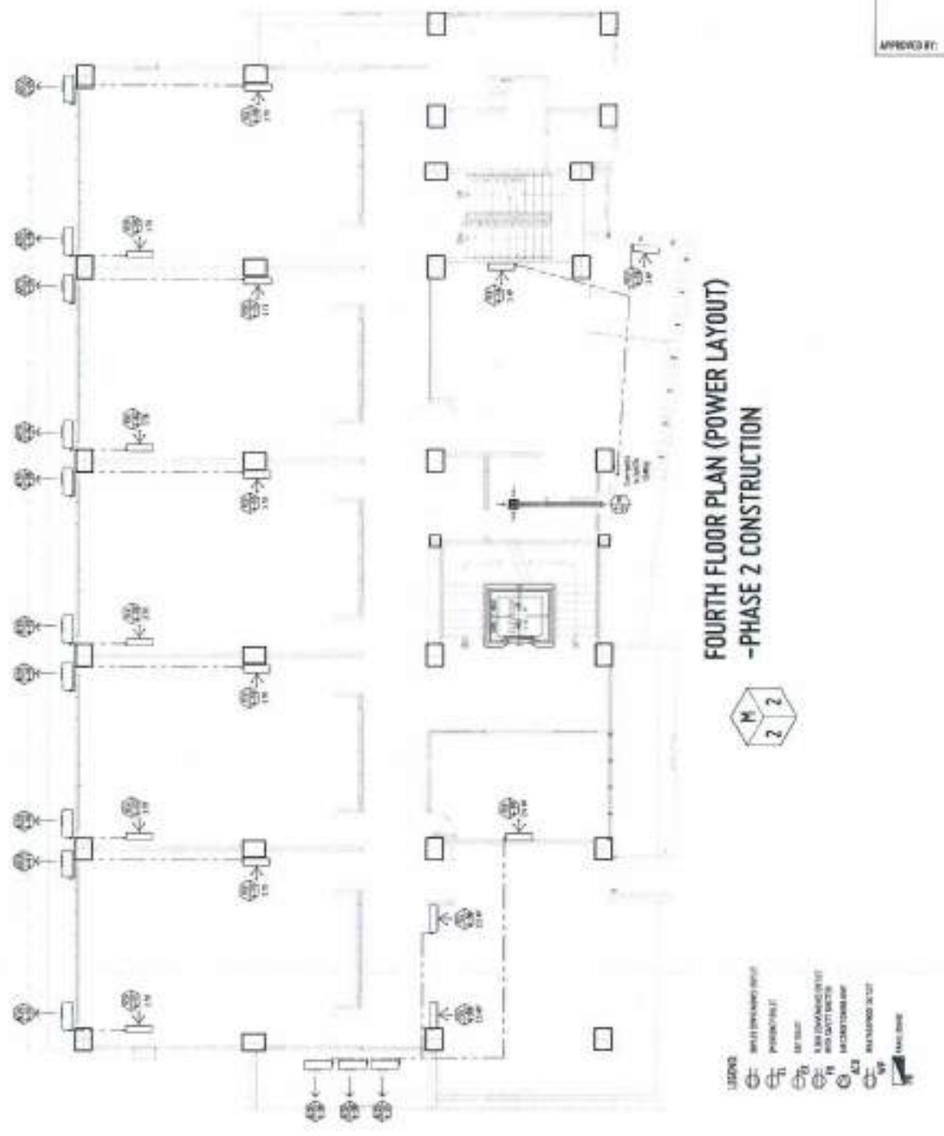
M1

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

APPROVED BY:



THIRD FLOOR PLAN



FOURTH FLOOR PLAN (POWER LAYOUT)
-PHASE 2 CONSTRUCTION

USTP

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER
PRC NO. | PTR NO.
DATE:
TAXPAYER... | PLACE:

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OPDD
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUENO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS: FOURTH FLOOR PLAN (POWER LAYOUT); THIRD FLOOR PLAN (POWER LAYOUT)
DRAWN BY:
DATE DRAWN:
CHK:

M2

MARK NO.		QTY	TYPE	LOCATION	CAPACITY	UNIT HP/TR	SUPPLY FAN			OPERATING TEMPERATURE				COMPRESSOR DATA				REFRIGERANT DATA
							AIR FLOW	MOTOR	E.B.T	EVAPORATING		CONDENSING		MOTOR INPUT (kW)	V	PH	Hz	
OUTDOOR	INDOOR						L/S	WATTS	deg C	deg C	deg F	deg C	deg F					
ACCU 1-01	FCU 1-01	1	Ceiling Mounted	Admin Office	1.5	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	4.55	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-02	FCU 1-02	4	Wall Mounted	Mechatronics Laboratory	3	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	24.71	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-03	FCU 1-03	2	Ceiling Mounted	Electrical Laboratory	5.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-04	FCU 1-04	2	Ceiling Mounted	Computer Laboratory	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-05	FCU 1-05	2	Ceiling Mounted	Classroom 1	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-06	FCU 1-06	1	Wall Mounted	Clinic	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	1.76	230	1	60	R410 OR APPROVED EQUAL
ACCU 1-07	FCU 1-07	1	Ceiling Mounted	Office 1	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-01	FCU 2-01	1	Wall Mounted	Librarian Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-02	FCU 2-02	4	Ceiling Mounted	Library	2.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	11.84	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-03	FCU 2-03	2	Ceiling Mounted	Classroom [illegible]	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-04	FCU 2-04	2	Ceiling Mounted	Classroom [illegible]	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-05	FCU 2-05	2	Ceiling Mounted	Classroom [illegible]	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-06	FCU 2-06	1	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	4.20	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-07	FCU 2-07	1	Wall Mounted	Function Room	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 2-08	FCU 2-08	2	Ceiling Mounted	E-Library	2.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-01	FCU 3-01	2	Ceiling Mounted	Classroom 6 & 11	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-02	FCU 3-02	2	Ceiling Mounted	Classroom 7 & 12	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	8.14	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-03	FCU 3-03	2	Ceiling Mounted	Classroom 8 & 13	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	8.14	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-04	FCU 3-04	2	Ceiling Mounted	Classroom 9 & 14	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-05	FCU 3-05	2	Ceiling Mounted	Classroom 10 & 15	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-06	FCU 3-06	2	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-07	FCU 3-07	1	Wall Mounted	Function Room	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 3-08	FCU 3-08	2	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-01	FCU 4-01	2	Ceiling Mounted	Classroom 6 & 11	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-02	FCU 4-02	2	Ceiling Mounted	Classroom 7 & 12	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-03	FCU 4-03	2	Ceiling Mounted	Classroom 8 & 13	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-04	FCU 4-04	2	Ceiling Mounted	Classroom 9 & 14	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-05	FCU 4-05	2	Ceiling Mounted	Classroom 10 & 15	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-06	FCU 4-06	1	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-07	FCU 4-07	1	Wall Mounted	Function Room	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 4-08	FCU 4-08	2	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-01	FCU 5-01	2	Wall Mounted	Classroom 16	2.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-02	FCU 5-02	2	Wall Mounted	Classroom 17	2.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-03	FCU 5-03	2	Ceiling Mounted	Classroom 18	3.0	TR	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-04	FCU 5-04	2	Wall Mounted	Classroom 19	2.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-05	FCU 5-05	2	Wall Mounted	Classroom 20	2.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-06	FCU 5-06	1	Wall Mounted	Office 1	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-07	FCU 5-07	1	Wall Mounted	Office 2	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-08	FCU 5-08	1	Wall Mounted	Office 3	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-09	FCU 5-09	1	Wall Mounted	Office [illegible]	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-10	FCU 5-10	2	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-11	FCU 5-11	1	Wall Mounted	[illegible]	1.5	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL
ACCU 5-12	FCU 5-12	2	Wall Mounted	Faculty Office	1.0	Hp	VARIABLE	VARIABLE	37	4.44	40	48.8	120	[illegible]	230	1	60	R410 OR APPROVED EQUAL

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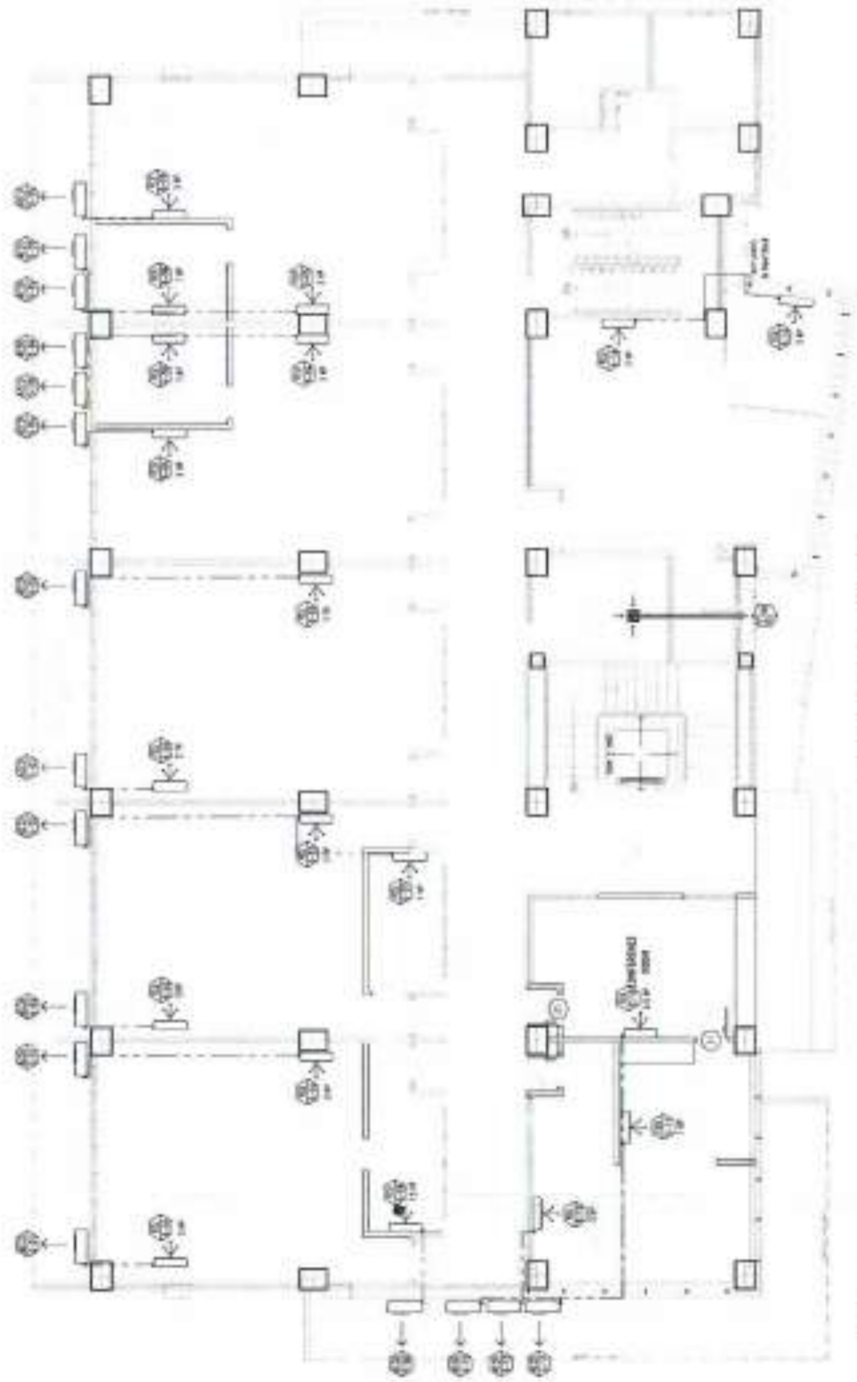
APPROVED BY:



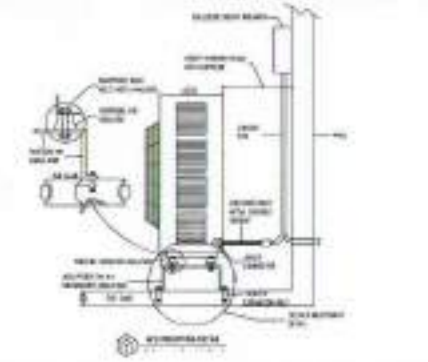
FIFTH FLOOR PLAN

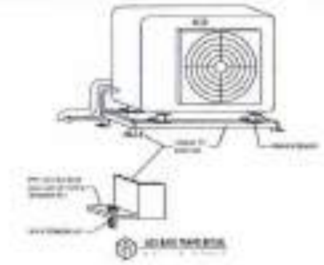
M 1 3

LEGEND:

ROOF DECK PLAN (POWER LAYOUT)
-for future development
SCALE 1:100 MTS

M 2 3





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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL ELECTRICAL ENGINEER

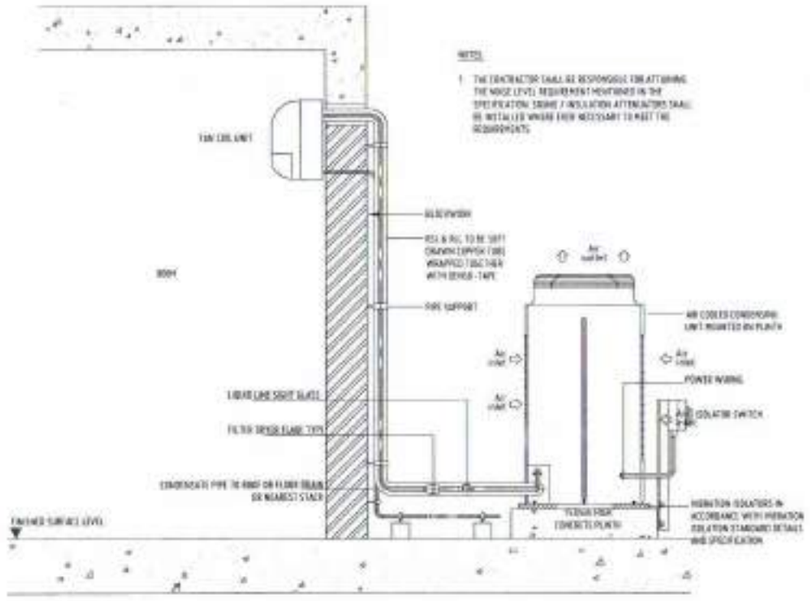
PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. BOCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

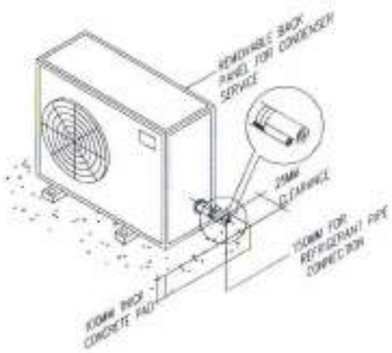
SHEET CONTENTS:
FOURTH FLOOR PLAN (POWER LAYOUT)
FIFTH FLOOR PLAN (POWER LAYOUT)

DRAWN BY:
DATE DRAWN:

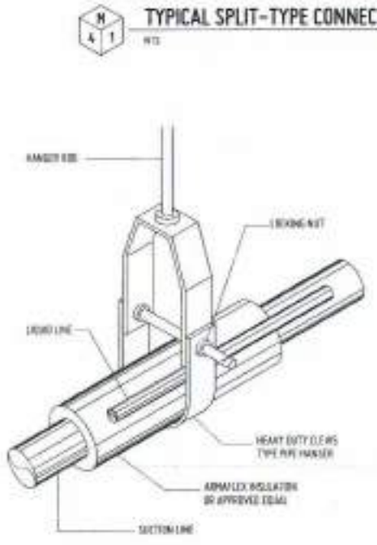
M3



M 4 1 **TYPICAL SPLIT-TYPE CONNECTION DETAIL**
NTS

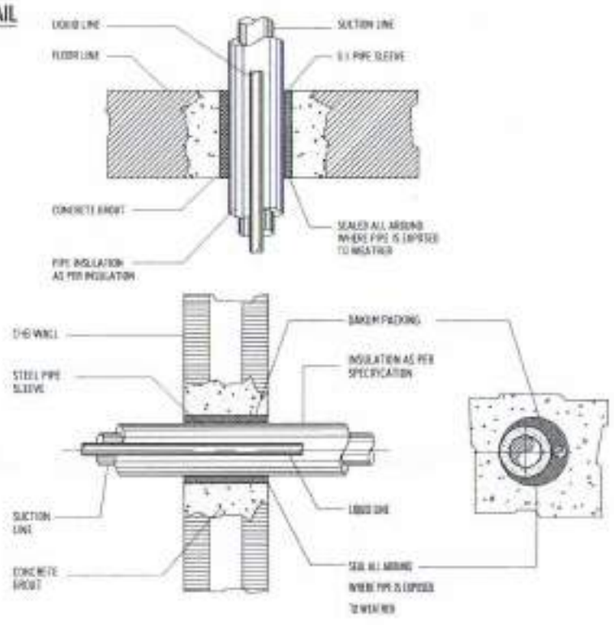


M 4 2 **ACCU MOUNTING DETAIL**
NTS

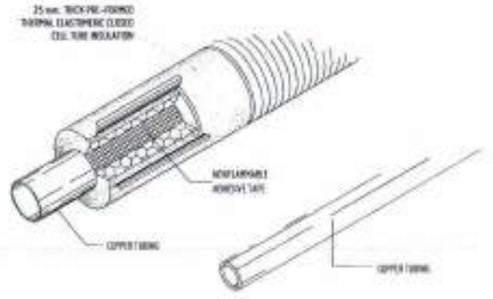


ISOMETRIC

M 4 3 **REFRIGERANT PIPE HANGER DETAIL**
NTS



M 4 4 **REFRIGERANT PIPE THRU WALL DETAIL**
NTS



NOTE:
1. CONDENSATE DRAIN PIPE INSULATION SHALL BE OF SIMILAR MATERIAL BUT 19 mm. THICK.
2. PROVIDE ALUMINUM CLADDING FOR OUTDOOR REFRIGERANT PIPING.

M 4 5 **REFRIGERANT PIPE INSULATION DETAIL**
NTS

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GENERAL NOTES :

1. ALL MECHANICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE PHILIPPINES NATIONAL BUILDING CODE, PSME CODE, PEXAVE ASHRAE, SMACNA, FIRE CODE OF THE PHILIPPINES AND OTHER REGULATION OF THE LOCAL COMMUNITY.

2. THE TOTAL SCOPE OF WORKS SHALL INCLUDE ALL WORKS DESCRIBED IN THE PLANS LISTED IN THE TECHNICAL SPECIFICATIONS FOR MECHANICAL WORKS.

3. THE WORKS SHALL BE EXECUTED IN CLOSED COORDINATION WITH ALL OTHER TRADES.

4. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, EQUIPMENT CATALOG, SAMPLES OF ALL THE MATERIAL TO BE USED BEFORE EXECUTION OF THE WORKS.

5. THE CONTRACTOR OR SUPPLIER SHALL INSTALL ALL MATERIAL AND EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.

6. ALL PIPE AND DUCT PENETRATION SHALL BE CAULKED WITH FIRE SEALANT.

7. ALL EQUIPMENT REST ON SLAB AND CEILING SHALL BE PROVIDED WITH VIBRATION ISOLATOR TO PREVENT VIBRATION AND NOISE TRANSMISSION.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONCRETE PAD AND SUPPORT OF ALL MECHANICAL EQUIPMENT.

9. THE CONTRACTOR SHALL ARRANGED THE PIPING, DUCTING AND EQUIPMENT TO HAVE EASY ACCESS FOR REMOVING, CLEANING AND SERVICING WITHOUT DISMANTLING THE SYSTEM.

10. ALL POWER WIRING UP TO SPLICE BOX SHALL BE THE ELECTRICAL CONTRACTOR FROM SPLICE BOX TO THE EQUIPMENT BY MECHANICAL CONTRACTOR.

11. PROVIDE AND INSTALL CONTROLS AND CONTROL WIRINGS FOR ALL AIR-CONDITIONING EQUIPMENT.

12. PROVIDE THERMOSTAT TO ALL INDOOR UNITS.

13. PROVIDE SEPARATE CONDENSER DRAIN RISER.

14. PIPE ALL EQUIPMENT DRAIN TO THE NEAREST FLOOR DRAIN PROVIDED BY PLUMBING CONTRACTOR.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BALANCING, TESTING AND COMMISSIONING OF THE WHOLE AIR CONDITIONING, VENTILATION SYSTEM AND SUBMIT WRITTEN DATA PRIOR TO TURN OVER.

16. WORKMANSHIP : THE WORK THROUGHOUT SHALL BE EXECUTED IN THE BEST & MOST THOROUGH MANNER KNOWN TO TRADE & TO THE SATISFACTION OF THE ARCHITECT AND THE ENGINEER.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING ALL GOVERNMENT/LOCAL CONSTRUCTION AND OPERATION PERMITS AND PAY ALL THE REQUIRED FEES.

18. ALL ACCU ON GROUND FLOOR SHALL BE PAD MOUNTED.

NOTES ON PIPING INSTALLATION:

1. REFRIGERANT PIPES SHALL BE INTERNALLY CLEANED BY SWABBING WITH CLEAN COTTON CLOTH TO REMOVE ALL DUST, BURRS, AND OTHER MISCELLANEOUS DIRT.

2. WHILE SOLDERING JOINTS, A SWEEP OF INERT NITROGEN GAS SHOULD BE PASSED THROUGH PIPES TO PREVENT OXIDATION DEPOSITS INSIDE.

3. FITTINGS
   A. USE STANDARD LONG RADIUS COPPER ELBOWS, REDUCERS, ETC. DO NOT USE FIELD-FORMED ELBOWS, REDUCERS, ETC.
   B. JOINTS BETWEEN PIPES SHOULD BE THROUGH STANDARD COPPER COUPLING FORMED FITTING MADE BY SWAGING OR ENLARGING ONE PIPE END TO BE ABLE TO RECEIVE THE OTHER PIPE SECTION WOULD NOT BE ALLOWED.
   C. JOINTS TO SCREWED ACCESSORIES SUCH AS EXPANSION VALVES, FILTER DRIER, ETC. SHALL BE MADE WITH STANDARD FLARED FITTINGS.

4. THE COMPLETED PIPING INSTALLATION SHOULD BE LEAK TESTED BY SUBJECTING THE SAME (BOTH LIQUID AND SUCTION LINE) TO A PRESSURE OF 3100 Pa USING DRY NITROGEN GAS. THIS PRESSURE SHOULD BE LEFT FOR 24 HOURS AND IF THERE IS NO NOTICEABLE REDUCTION IN PRESSURE WITHIN THE PERIOD, THE NITROGEN CHARGE SHALL BE RELIEVED DOWN TO 1400Pa TO SERVE AS HOLDING CHARGE WHILE WAITING FOR THE EQUIPMENT CONNECTION. IF THERE IS NOTICEABLE REDUCTION IN THE TEST PRESSURE, LEAK SHOULD BE LOCATED AND REPAIRED.

5. PROPERLY TESTED PIPING SHOULD BE SECURELY CAPPED AT BOTH ENDS AND WITH HOLDING CHARGE AS STATED IN ITEM 4 ABOVE WHILE WAITING FOR FINAL CONNECTION TO EQUIPMENT. INSULATE SUCTION PIPING ONLY AFTER PROPER LEAK TESTING.

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PROFESSIONAL ELECTRICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA — DIRECTOR, IPFDO
RECOMMENDING APPROVAL: ATTY. ERWIN B. ALCIB — VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II — PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
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DATE DRAWN:
PAGE:

M4

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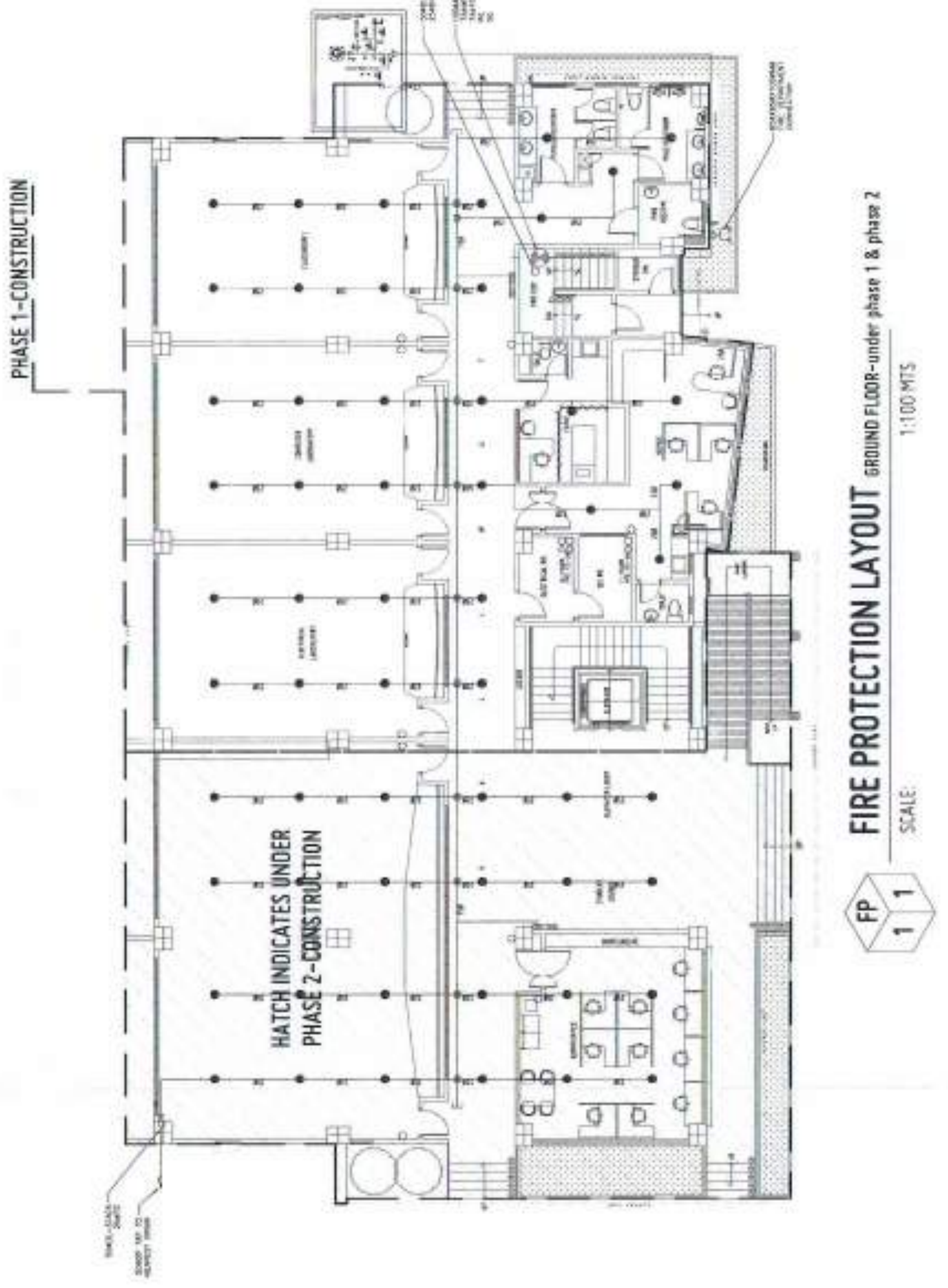
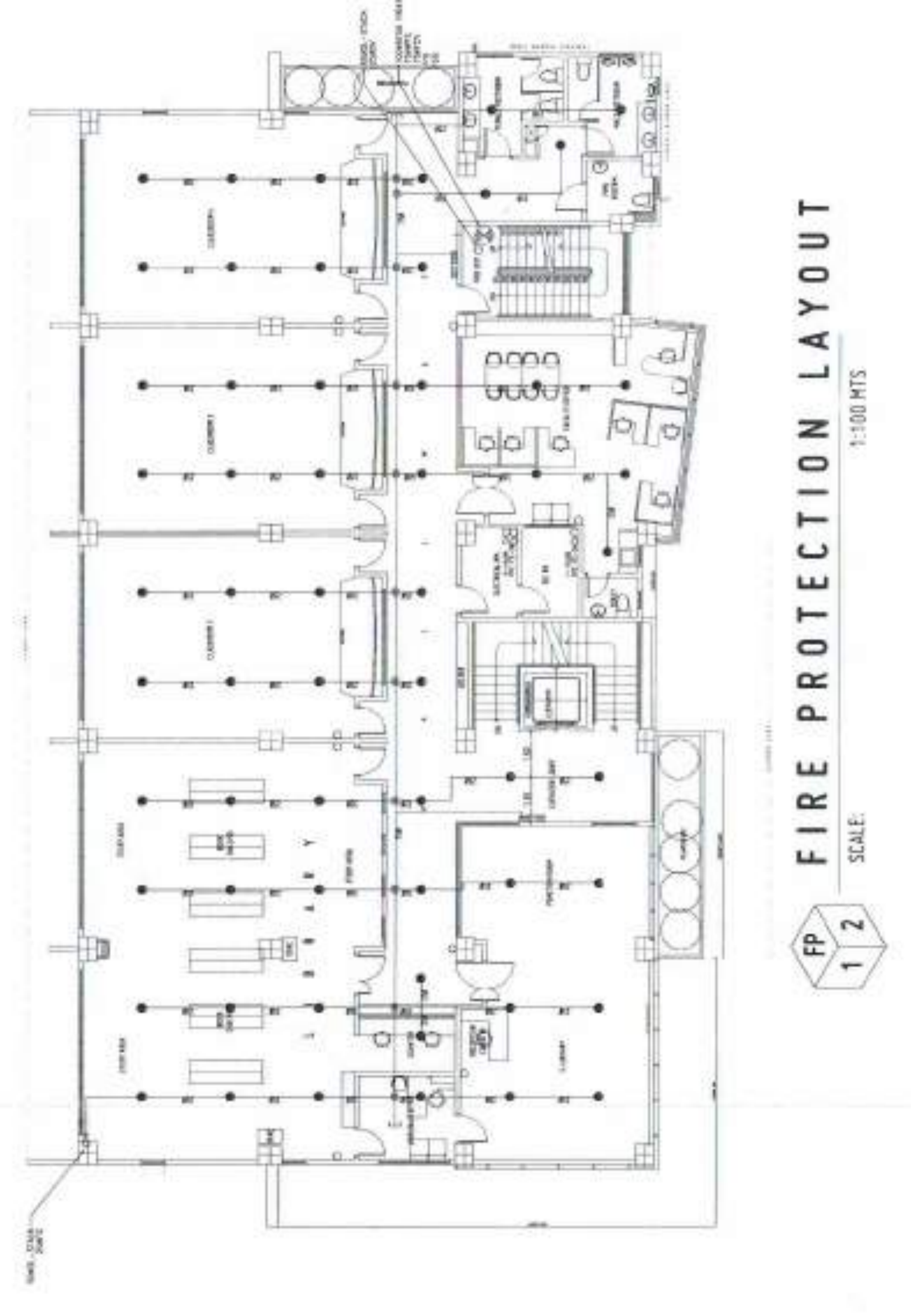




GENERAL NOTES :

MATERIAL SPECIFICATIONS :

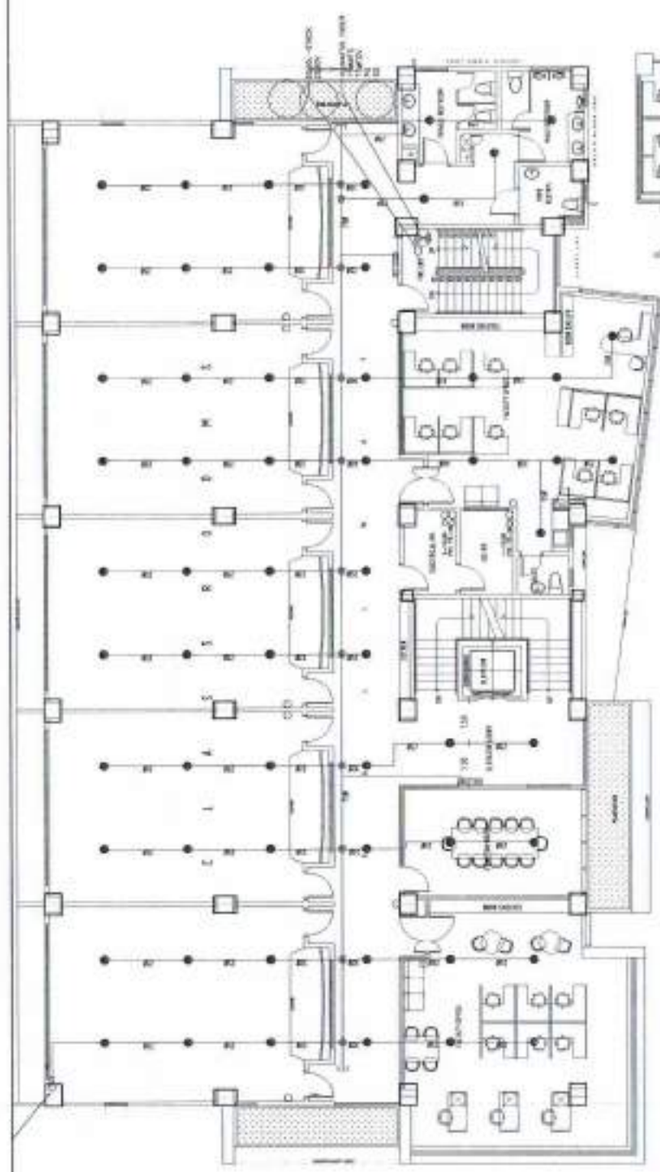
LEGEND :

ABBREVIATION:

REPUBLIC OF THE PHILIPPINES UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES CAGAYAN DE ORO CAMPUS INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT	PROFESSIONAL MECHANICAL ENGINEER	PROJECT	CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS	
	PRC NO.: / PTR NO.: / DATE:	LOCATION	USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL	
	TIN NO.: / PLACE:	OWNER	UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES	

RECOMMENDING APPROVAL:	RECOMMENDING APPROVAL:	APPROVED BY:	SHEET CONTENTS	DRAWN BY:
ENGR. GRACE C. BABA	ATTY. ERWIN B. BUCIO	DR. AMBROSIO B. CULTURA II	GROUND FLOOR	DATE DRAWN:
DIRECTOR, IPFDO	VP FOR ADMINISTRATION & LEGAL AFFAIRS	PRESIDENT, USTP SYSTEM		FMC:

FP1

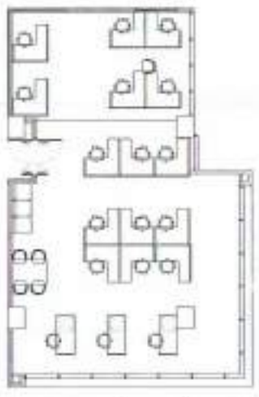


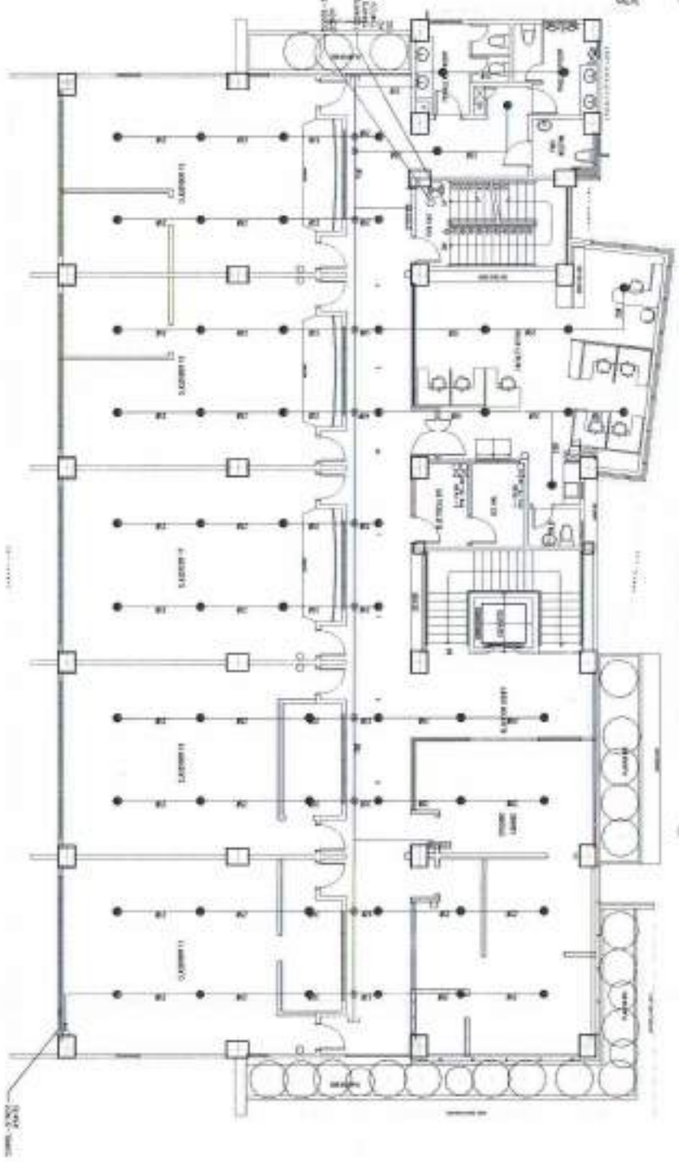
FIRE PROTECTION LAYOUT

TYPICAL FLOOR - THIRD & FOURTH FLOOR

SCALE: 1:100 MTS

FP 2 1



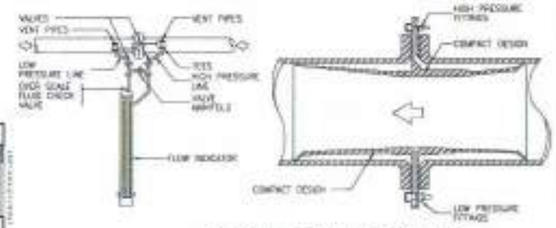


FIRE PROTECTION LAYOUT

FIFTH FLOOR

SCALE: 1:100 MTS

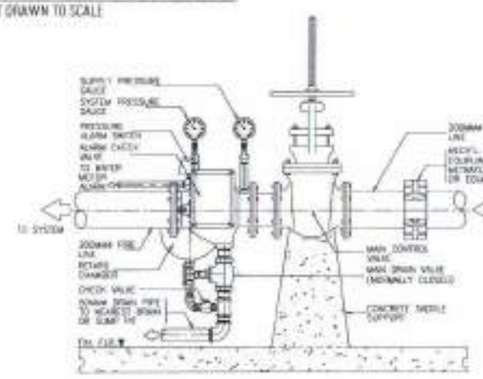
FP 2 2



FLOW MEASURING DEVICE DETAIL

NOT DRAWN TO SCALE

FP 2 4

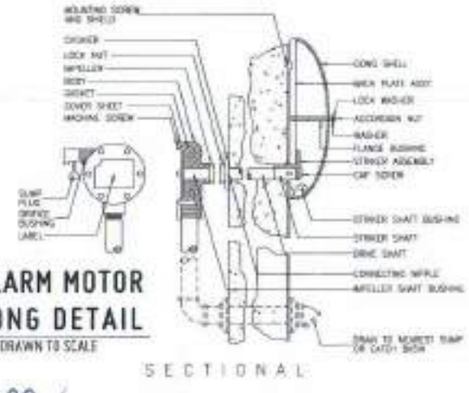


ALARM CHECK VALVE ASSEMBLY (WET TYPE)

NOT DRAWN TO SCALE

FP 2 3

ELEVATION



SECTIONAL

ALARM MOTOR GONG DETAIL

NOT DRAWN TO SCALE

FP 2 4

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CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL MECHANICAL ENGINEER

PRC NO. | PTR NO. | DATE | TIN NO. | PAID

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS

LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL

OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDO

RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, DEAN/DIRECTOR, STUDENT LEGAL AFFAIRS

APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

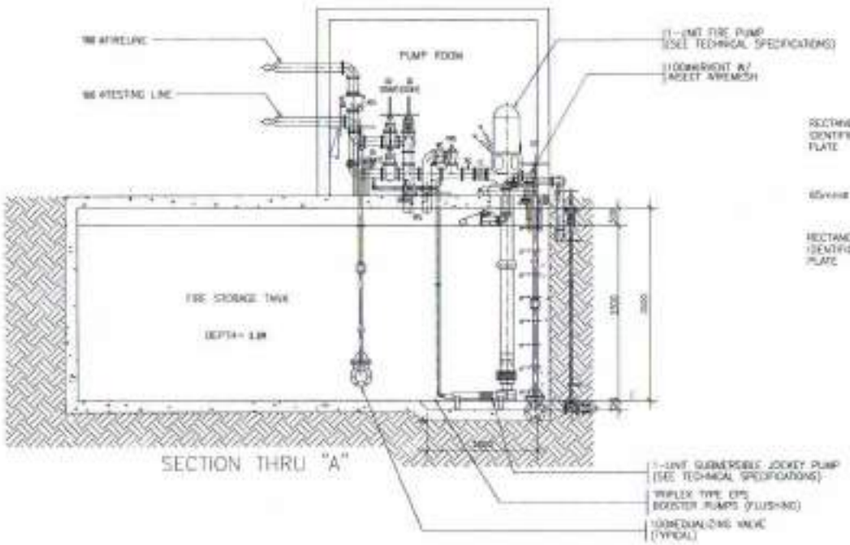
SHEET CONTENTS: SECOND FLOOR

DRAWN BY:

DATE DRAWN:

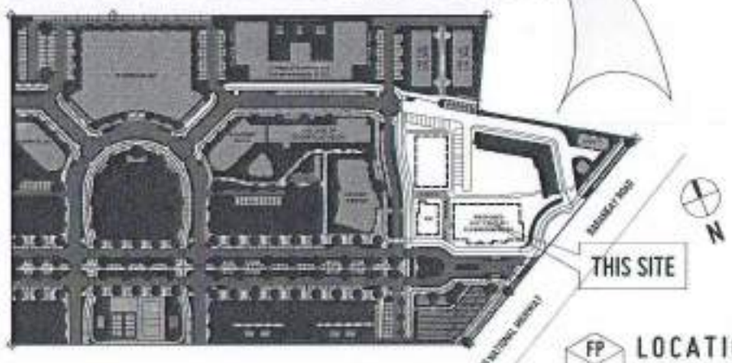
INC:

FP2

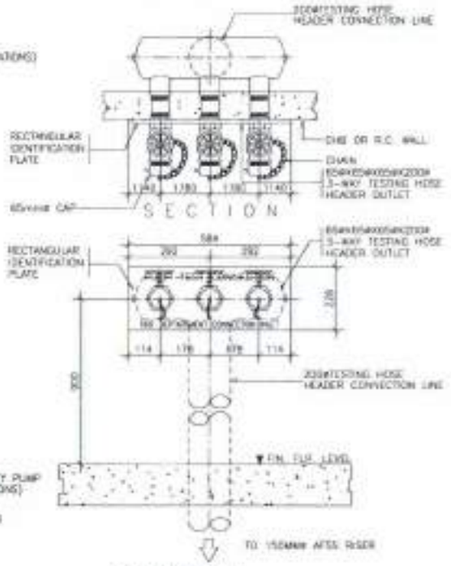


FP 3 1 **FIRE STORAGE TANK DETAIL**
SCALE 1:50 MTS

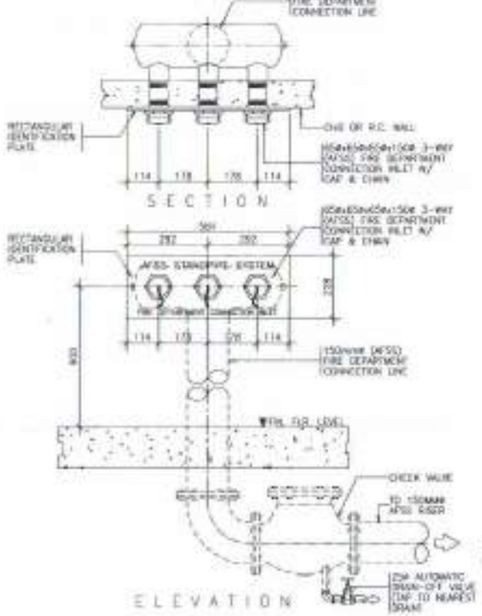
FP 3 2 **VICINITY MAP**
SCALE: NTS



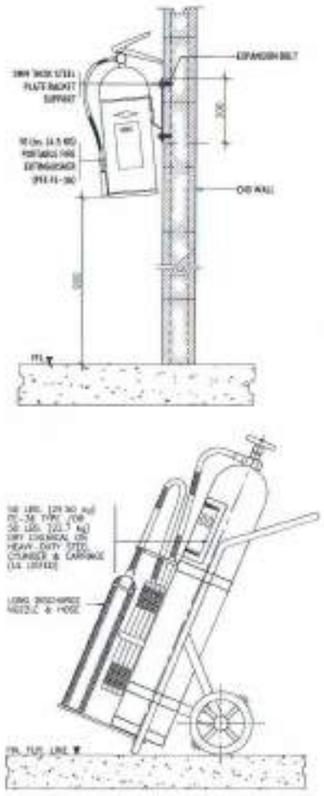
FP 3 3 **LOCATION PLAN**
SCALE 1:1500 MTS



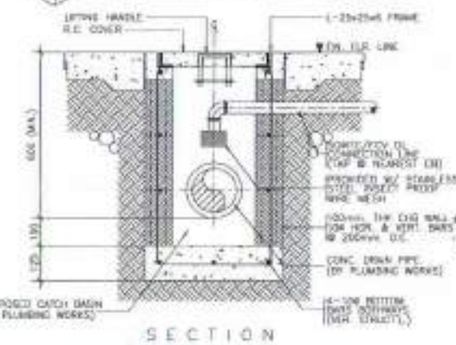
FP 3 4 **PUMP TEST CONNECTION DETAIL**
SCALE: 1:10 MTS



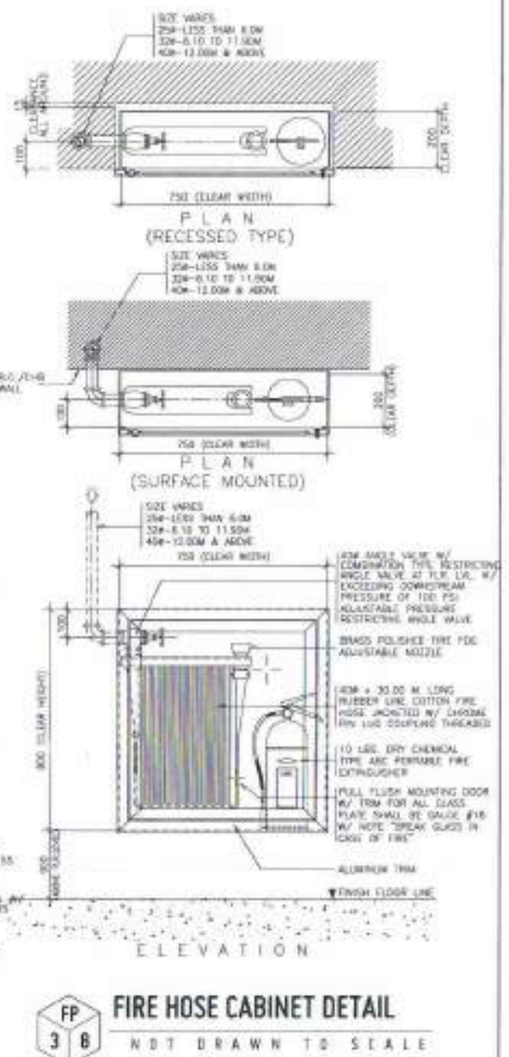
FP 3 5 **AFSS FIRE DEPT. INLET DETAIL**
SCALE: 1:10 MTS



FP 3 6 **10 lbs. (45kgs) PFE FE-36 PORTABLE FIRE EXTINGUISHER**
NOT DRAWN TO SCALE



FP 3 7 **FTV/ITC DL CONNECTION TO CATCH BASIN**
SCALE: 1:10 MTS



FP 3 8 **FIRE HOSE CABINET DETAIL**
NOT DRAWN TO SCALE

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PROFESSIONAL MECHANICAL ENGINEER

PRC NO. | PTR NO. | DATE | PLACE

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, OFPDD
RECOMMENDING APPROVAL: ATTY. ERWIN D. BUEJO, VICE ADMINISTRATOR FOR LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:
DATE DRAWN:
INC:

FP3

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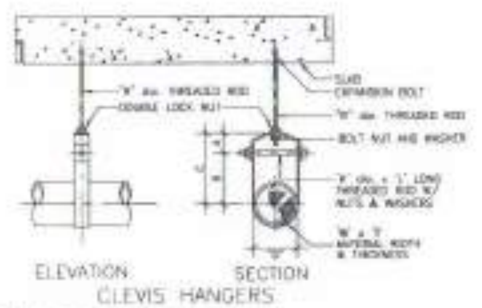
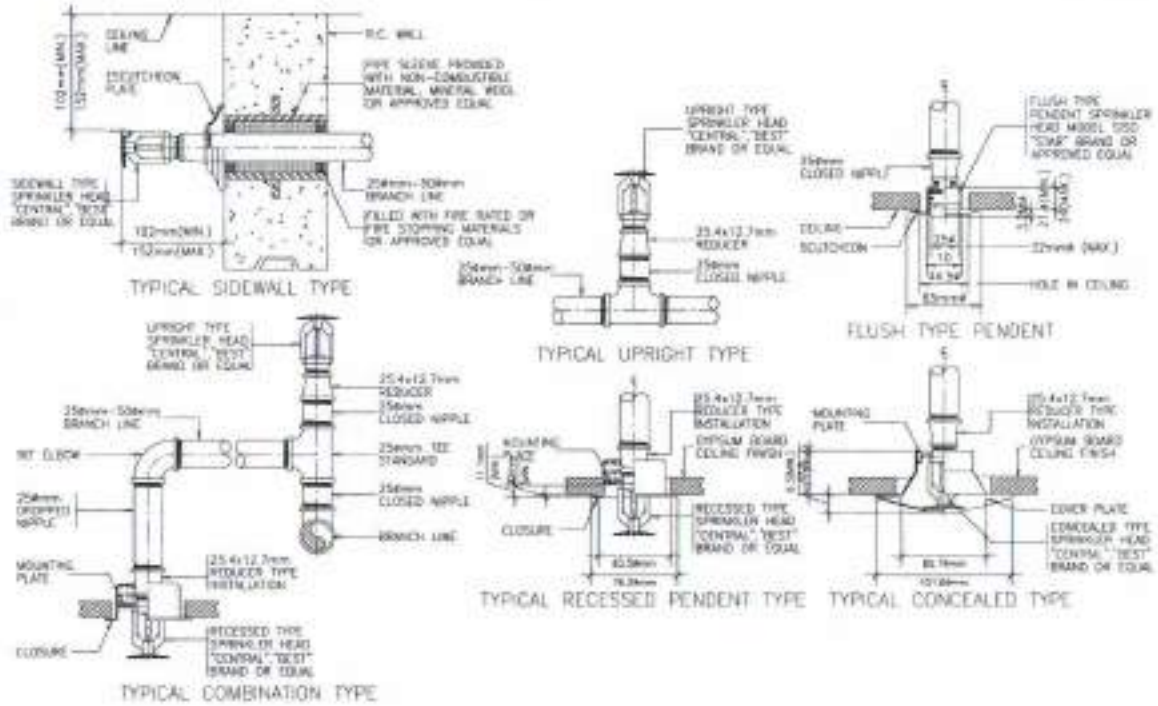


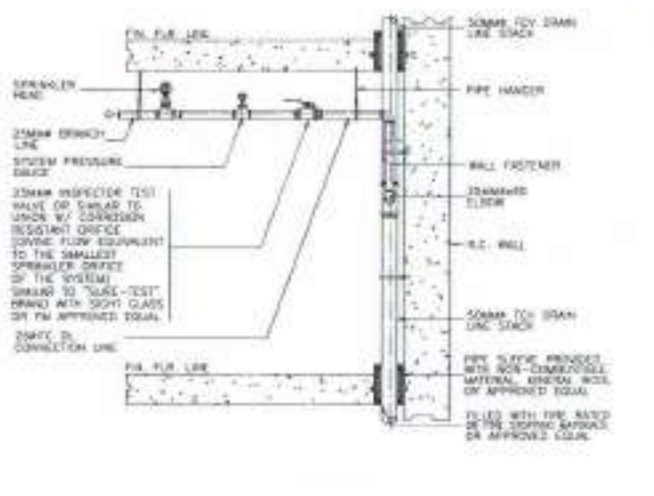
TABLE OF DIMENSIONS IN MM

PIPE SIZE "D" (MM)	ROD DIA. "R" (MM)	B	C	A MAX.	W x T	R x L
50	9.65	111.12	143	60.30	25 x 3	M10 x 85
75	12.7	100.0	168.1	30.23	40 x 6	M12 x 115
100	15.9	133.35	40	33.27	40 x 6	M12 x 130
150	19.1	178.12	267	50.80	40 x 8	M16 x 180

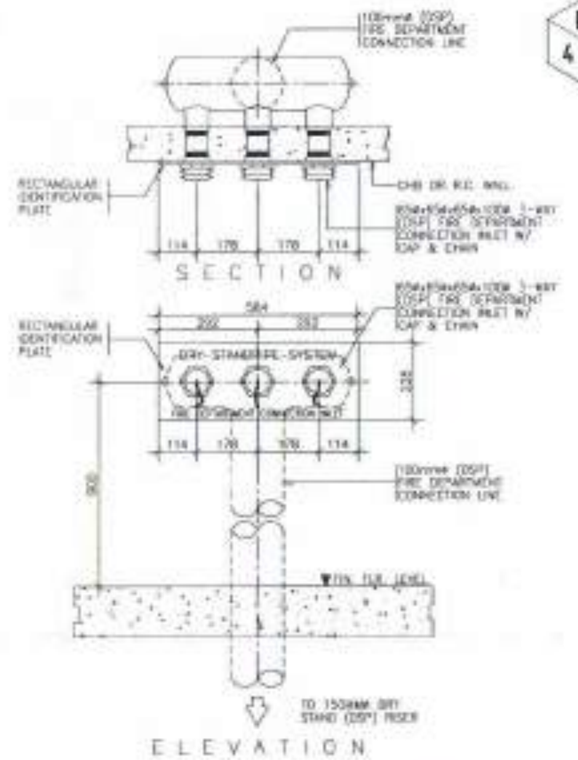
FP 4 1 **PIPE HANGER DETAIL**
NOT DRAWN TO SCALE



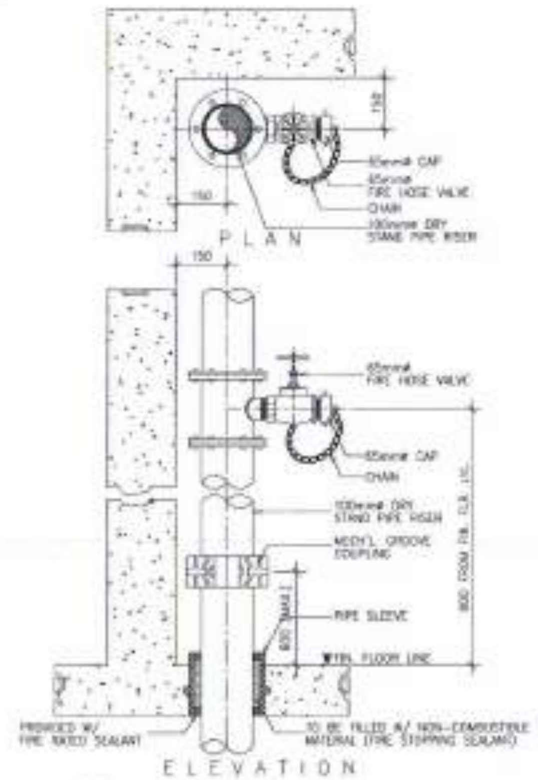
FP 4 2 **SPRINKLER HEADS DETAIL**
SCALE: 1:3 MTS



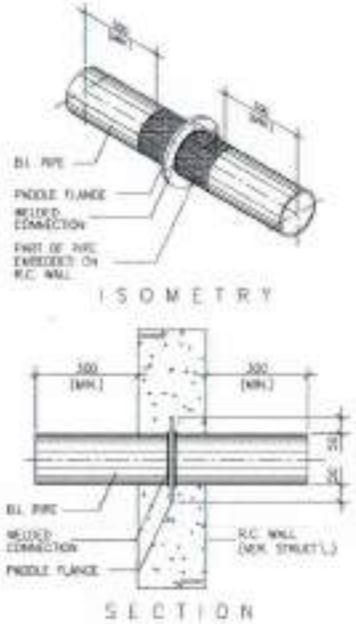
FP 4 6 **INSPECTOR TEST CONNECTION DETAIL**
NOT DRAWN TO SCALE



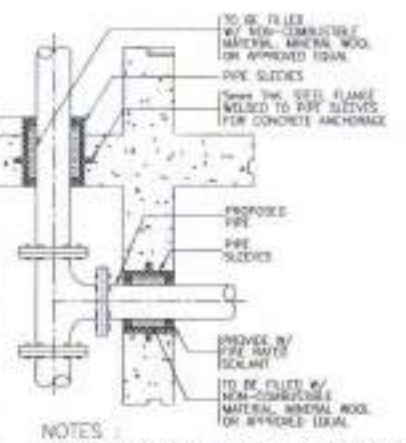
FP 4 3 **DPSS FIRE DEPT. INLET DETAIL**
SCALE: 1:10 MTS



FP 4 4 **FIRE HOSE VALVE DETAIL**
SCALE: 1:10 MTS



FP 4 5 **PADLE FLANGE DETAIL**
SCALE: 1:10 MTS



SCHEDULE OF PIPE SLEEVES

SIZE OF BRANCHLINES	SIZE OF PIPE SLEEVES
25MM⌀	50MM⌀
32MM⌀	50MM⌀
40MM⌀	55MM⌀
50MM⌀	75MM⌀
65MM⌀	100MM⌀
75MM⌀	100MM⌀
100MM⌀	150MM⌀
150MM⌀	220MM⌀
200MM⌀	300MM⌀

NOTES:
SLEEVES SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOORS, PLATFORMS AND FOUNDATIONS.
1. THE CLEARANCE BETWEEN THE PIPE SLEEVES SHALL BE FILLED W/NON-COMBUSTIBLE FLEXIBLE MATERIAL SUCH AS MINERAL WOOL, FIBERGLASS OR EQUIVALENT.
2. MINIMUM CLEARANCE BETWEEN PIPE AND SLEEVES SHALL NOT BE LESS THAN 25MM FOR PIPE 25MM THROUGH 75MM & 40MM FOR PIPE SIZE 100MM AND LARGER FLOOR SLEEVES SHALL BE EXTENDED AT LEAST 75MM ABOVE THE TOP OF THE WEARING SURFACE.

FP 4 7 **PIPE SLEEVE DETAIL**
NOT DRAWN TO SCALE

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REPUBLIC OF THE PHILIPPINES
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES
CAGAYAN DE ORO CAMPUS
INFRASTRUCTURE PLANNING AND FACILITY DEVELOPMENT UNIT

PROFESSIONAL MECHANICAL ENGINEER

PROJECT: CONSTRUCTION OF 21ST CENTURY CLASSROOM BUILDINGS PHASE III, VILLANUEVA CAMPUS
LOCATION: USTP VILLANUEVA CAMPUS, MISAMIS ORIENTAL
OWNER: UNIVERSITY OF SCIENCE AND TECHNOLOGY OF SOUTHERN PHILIPPINES

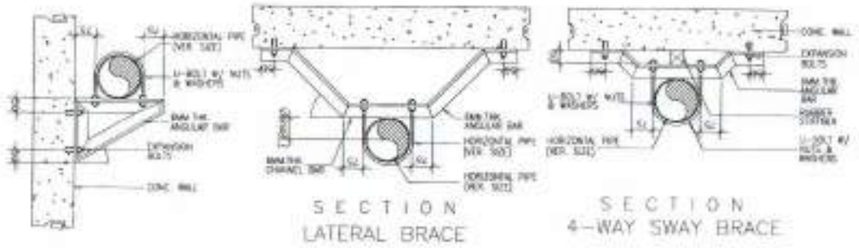
RECOMMENDING APPROVAL: ENGR. GRACE C. BABA, DIRECTOR, IPFDD
RECOMMENDING APPROVAL: ATTY. ERWIN B. BUCIO, VP FOR ADMINISTRATION & LEGAL AFFAIRS
APPROVED BY: DR. AMBROSIO B. CULTURA II, PRESIDENT, USTP SYSTEM

SHEET CONTENTS:

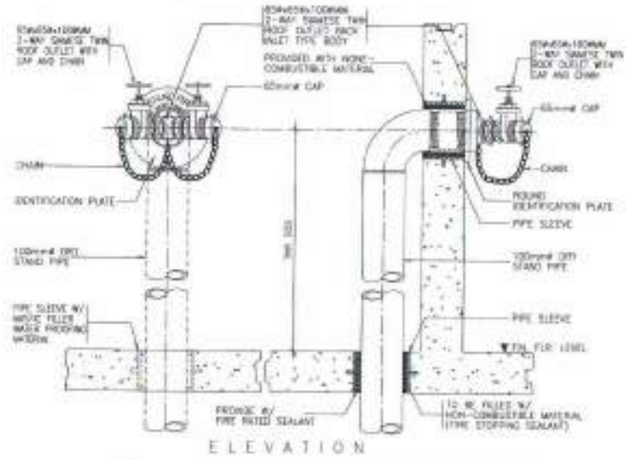
FP4

REPUBLIC OF THE PHILIPPINES
OFFICE OF THE BUILDING OFFICIAL
VILLANUEVA, MISAMIS ORIENTAL

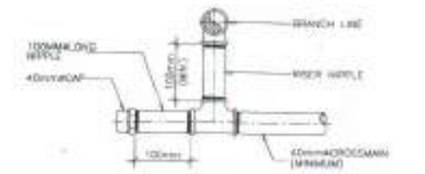
APPROVED BY:



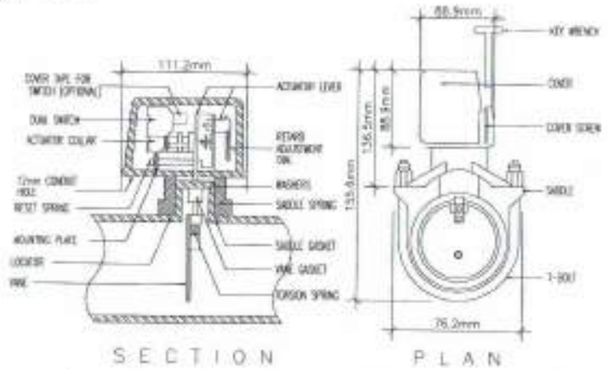
FP 5 1 **SWAY BRACING DETAIL**
SCALE: 1:10 MTS



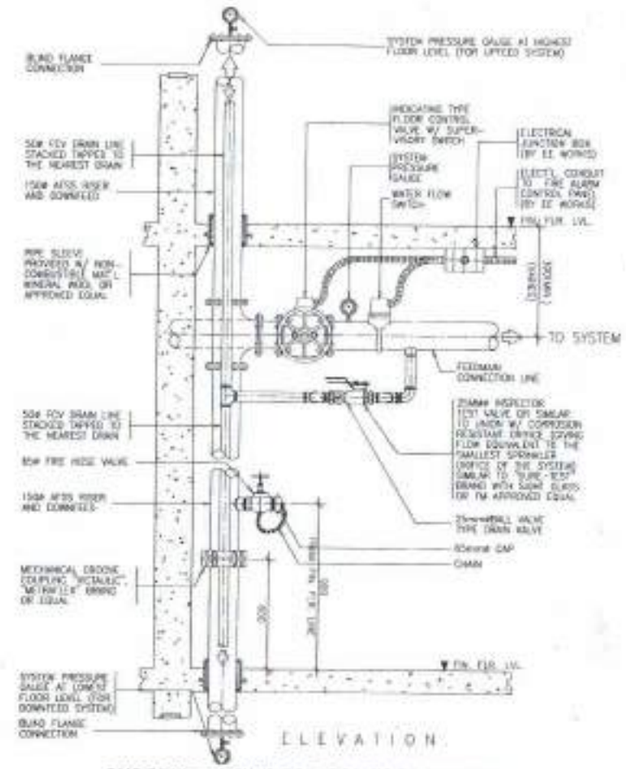
FP 5 2 **SIAMESE TWIN ROOF OUTLET DETAIL**
SCALE: 1:10 MTS



FP 5 4 **FLUSHING CONNECTION DETAIL**
SCALE: 1:5 MTS



FP 5 3 **WATER FLOW SWITCH DETAIL**
SCALE: 1:10 MTS



FP 5 5 **SUPERVISORY FLOOR CONTROL VALVE ASSEMBLY & VALVE HOSE DETAIL**
SCALE: 1:10 MTS

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SHEET CONTENTS:
DRAWING NO.: FP5
DATE DRAWN:
DATE: