PERSPECTIVE

TABLE CONTENTS

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS
AND HIGHWAYS
OFFICE OF THE
BUILDING OFFICIALS

DISTRICT / CITY / MUNICIPALITY

LAND USE & ZONING

LINE & GRADE

ARCHITECTURAL

STRUCTURAL

SANITARY

ELECTRICAL

MECHANICAL

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS

PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY

PREPARED BY: AR. ULYSSES B. CALUYA, ARCHITECT, OFDM

CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU

CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM

REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS

RECOMMENDING APPROVAL: ATTY. GERALD E. BEN ITEZ, VP FOR ADMINISTRATION

APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT

SHEET CONTENTS: AS SHOWN

DATE: JUNE 2025

SHEET NO: A-01

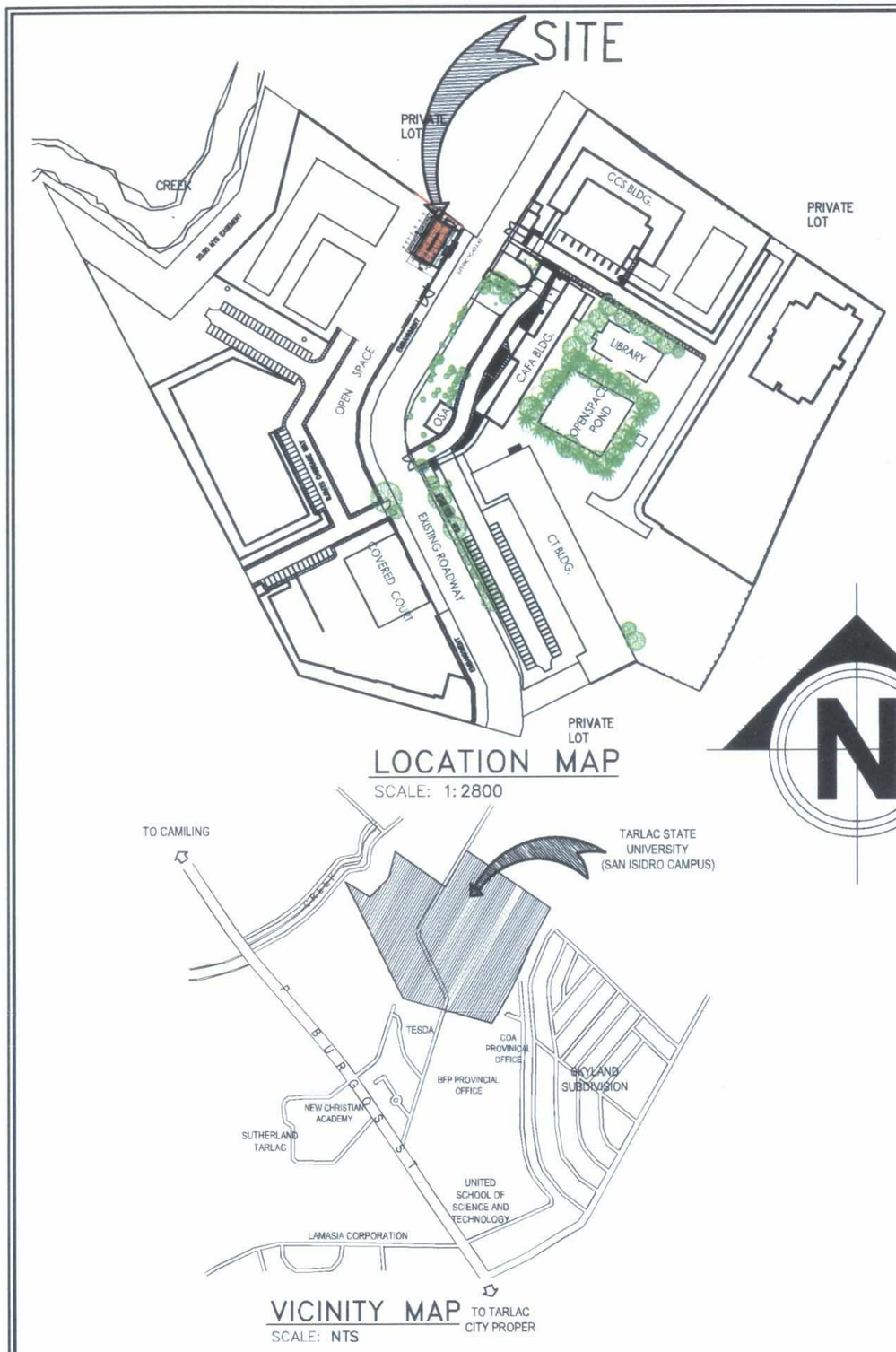
PAGE NO: 01/64

MATERIAL RECOVERY FACILITY (MRF) SAN ISIDRO CAMPUS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ~~ATTY. WILMARK J. RAMOS, DBA~~ ATTY. GHEROLD C. BENITEZ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-02 PAGE NO: 02 /64

P E R S P E C T I V E

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GUIFOLD C. BERNOZ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-03 PAGE NO: 03/64



LOCATION MAP

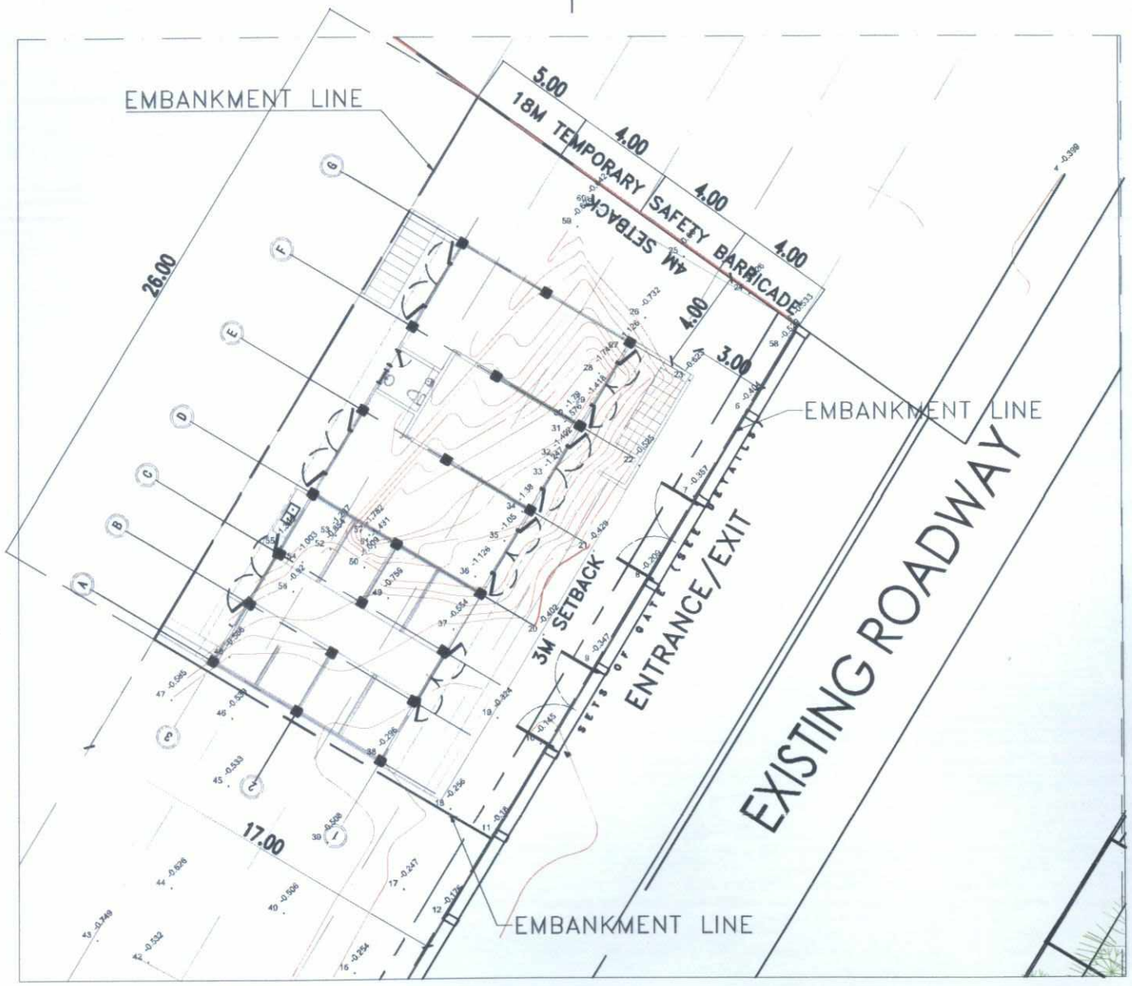
SCALE: 1:2800

VICINITY MAP

SCALE: NTS

NOTE:

*USE PRE-PAINTED GI ROOF SHEET WITH STABLE FRAME FOR BARRICADE DURING CONSTRUCTION; DO NOT USE BLUESACK OR PLYWOOD.



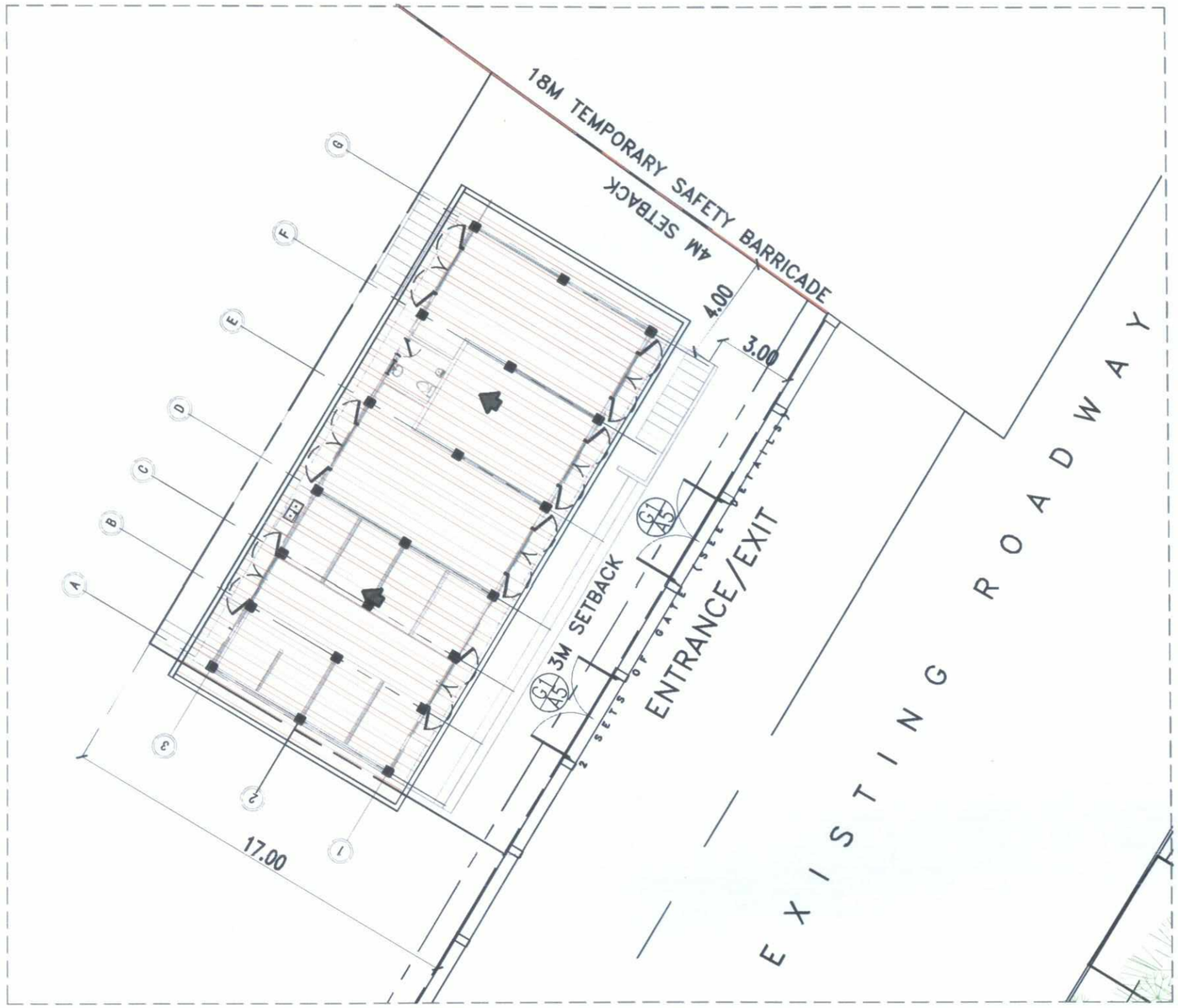
EMBANKMENT PLAN

SCALE: 1:300

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. WILMARK C. RAMOS, BBM VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-04 PAGE NO: 04/64

NOTE:

*USE PRE-PAINTED GI ROOF SHEET WITH STABLE FRAME FOR BARRICADE DURING CONSTRUCTION; DO NOT USE BLUESACK OR PLYWOOD.



SITE DEVELOPMENT PLAN

SCALE: 1: 200 METERS

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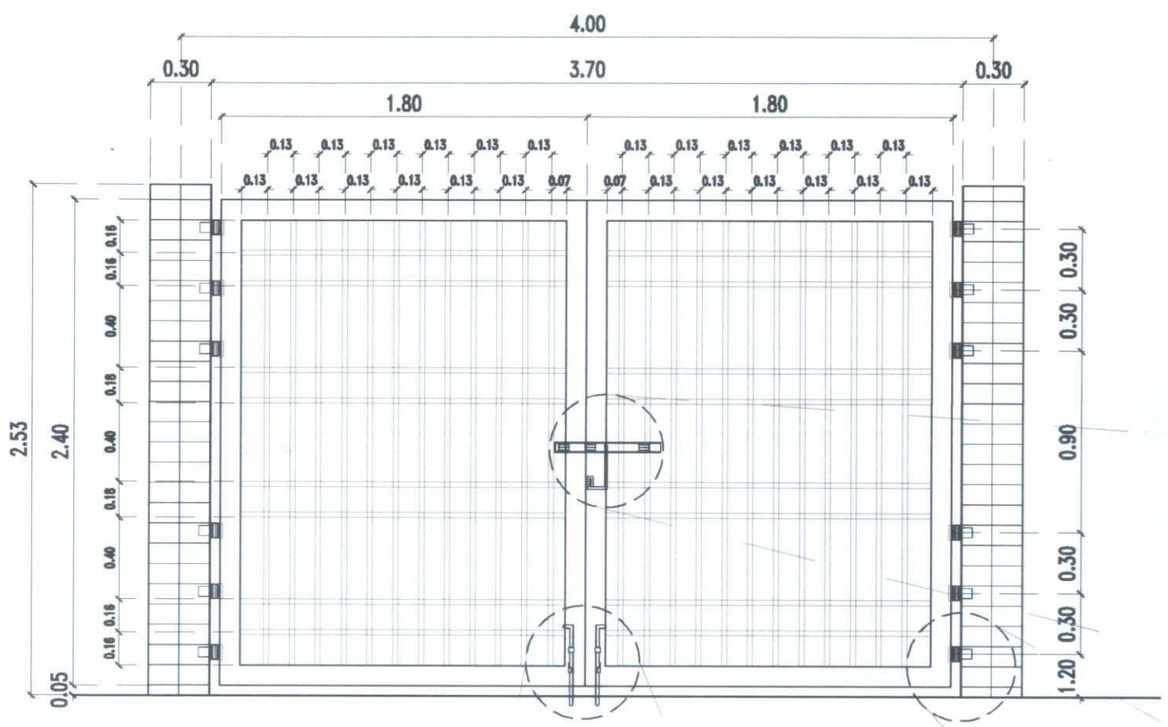
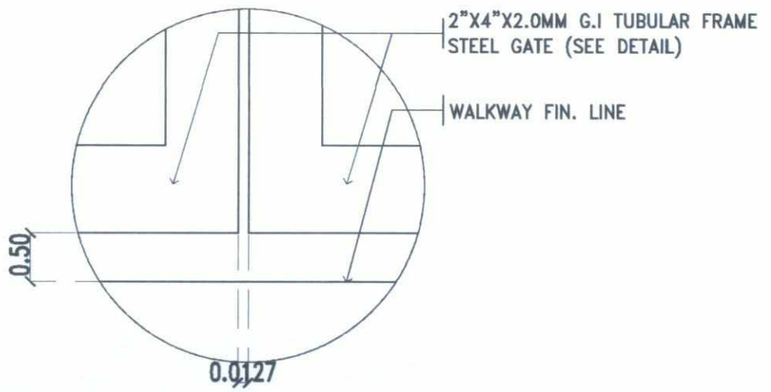
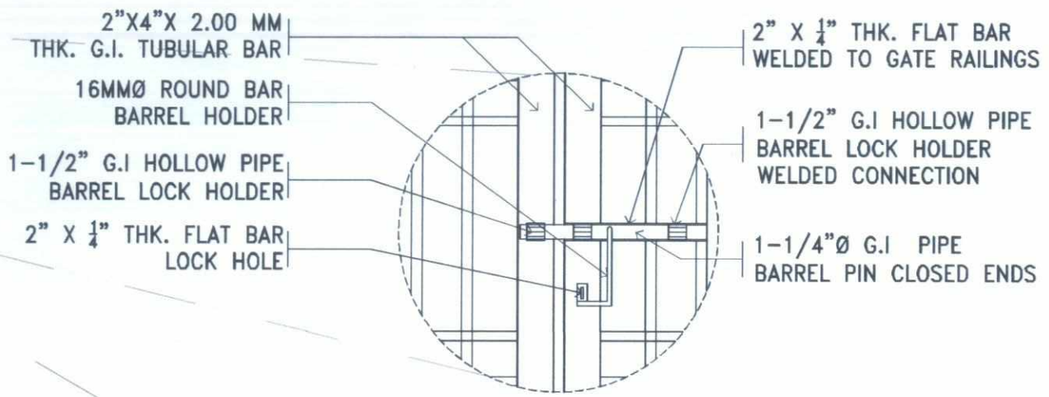
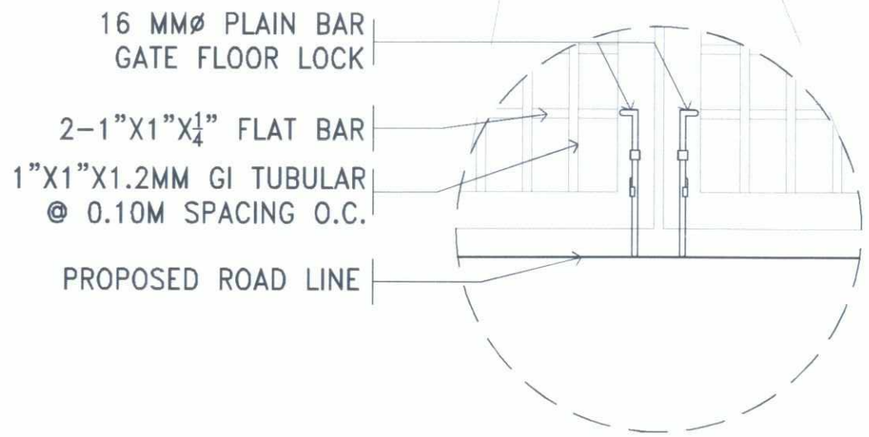


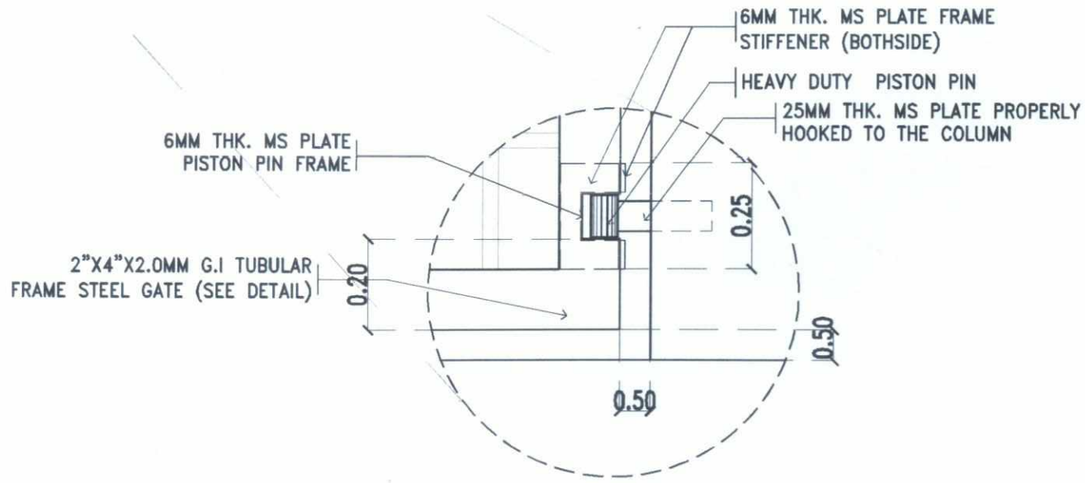
GATE ELEVATION & SPOT DETAILS (G1)

SCALE: 1:30

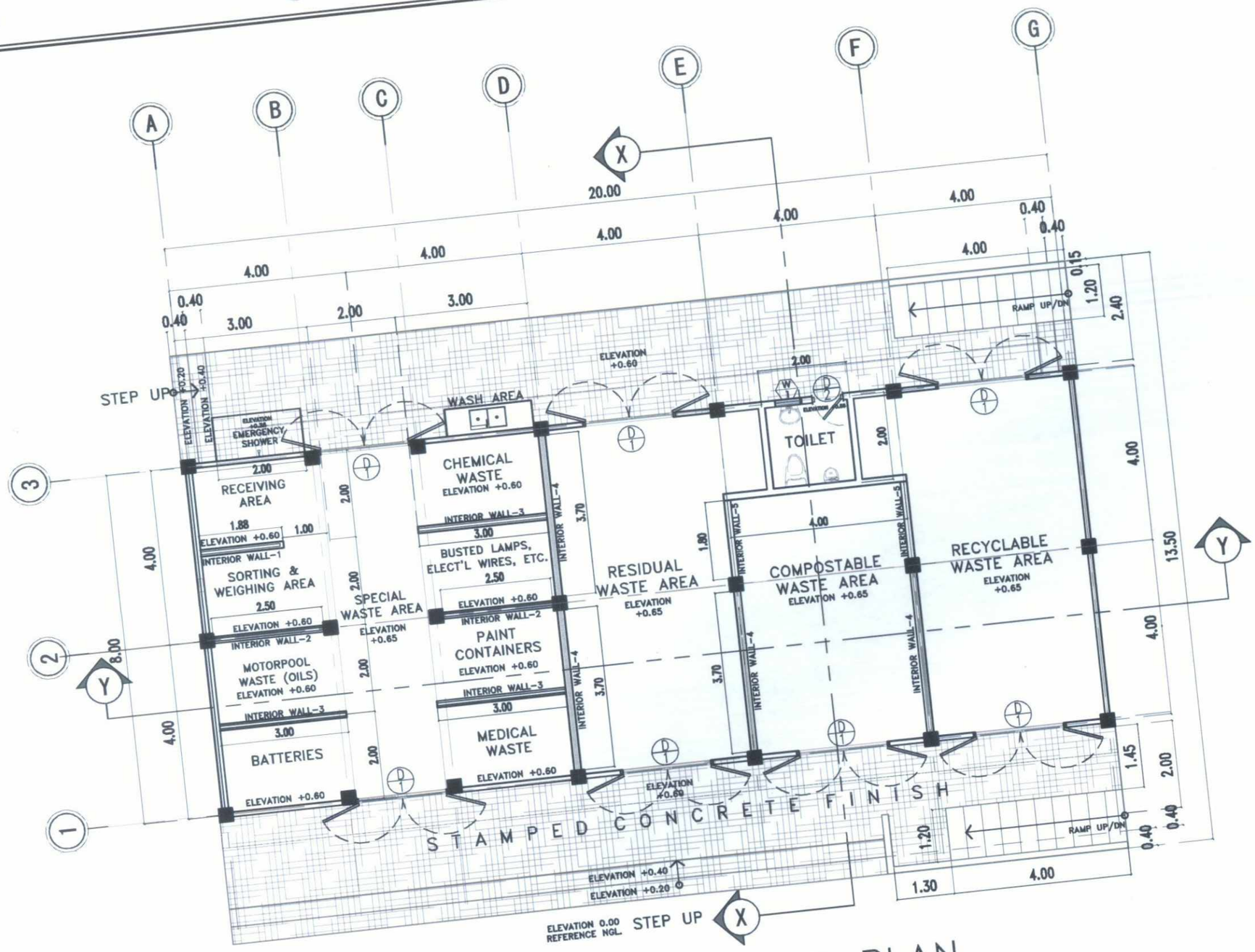








TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL N. HERNANDEZ DIRECTOR, DUHS	RECOMMENDING APPROVAL: ATTY. GREDULG B. EVITE VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-06 PAGE NO: 06/64



PROPOSED FLOOR PLAN

SCALE: 1: 100 METERS

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PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY

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CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM

REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUMS

RECOMMENDING APPROVAL: ATTY. [illegible], VP FOR ADMINISTRATION

APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT

SHEET CONTENTS: AS SHOWN

DATE: JUNE 2025

SHEET NO: A-07

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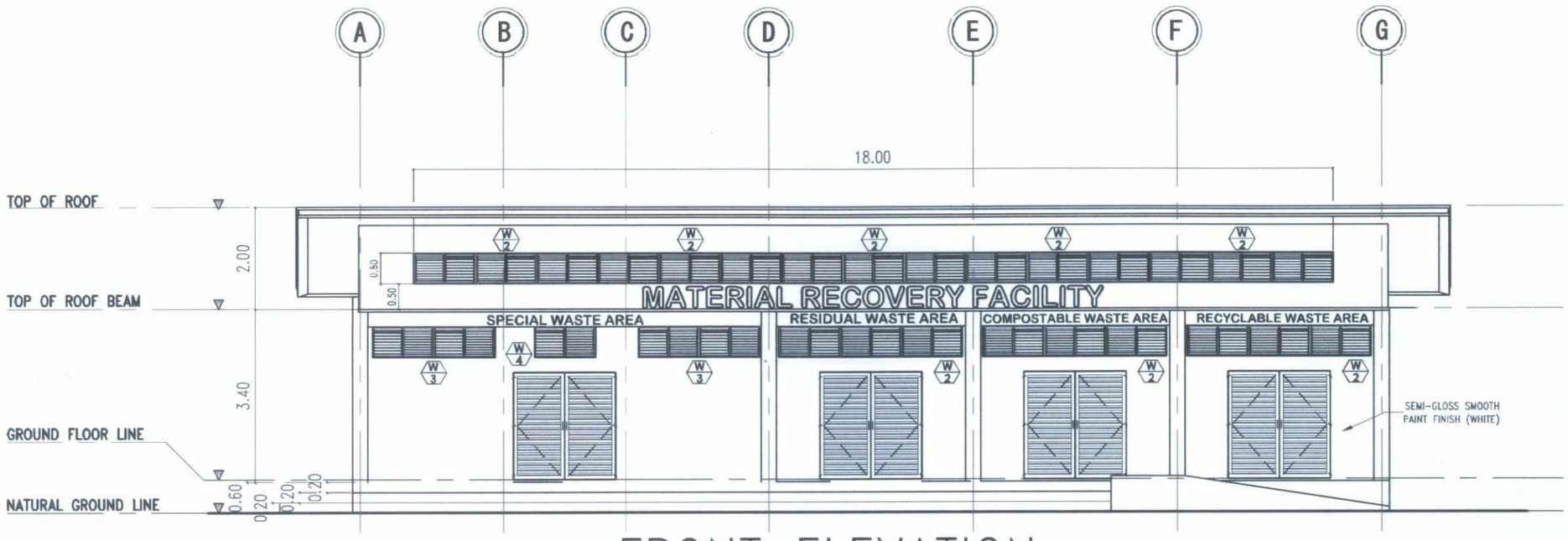
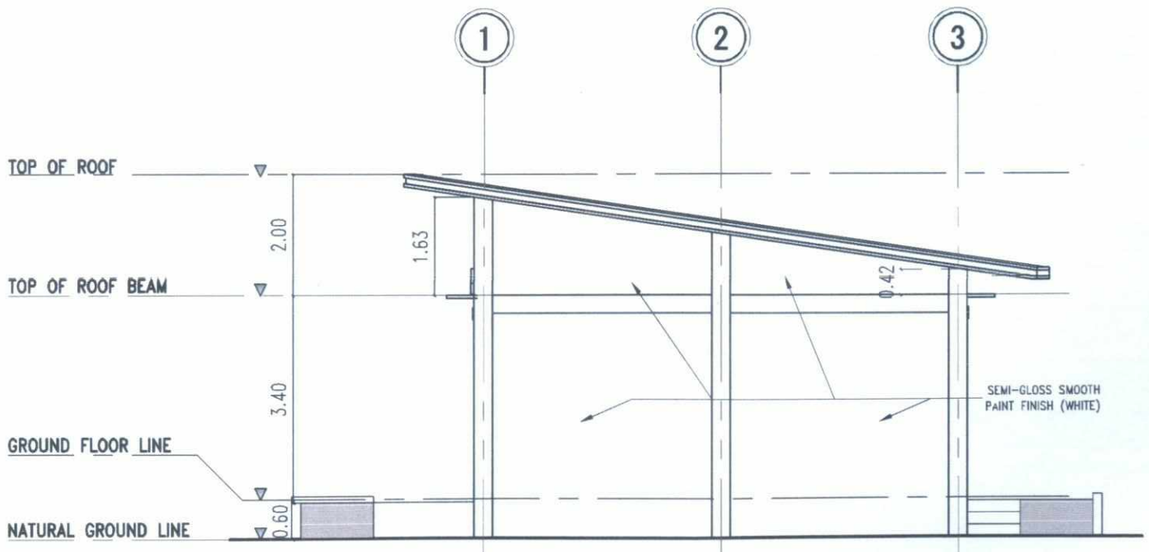


FRONT ELEVATION

SCALE: 1: 100 METERS



RIGHT-SIDE ELEVATION

SCALE: 1: 100 METERS

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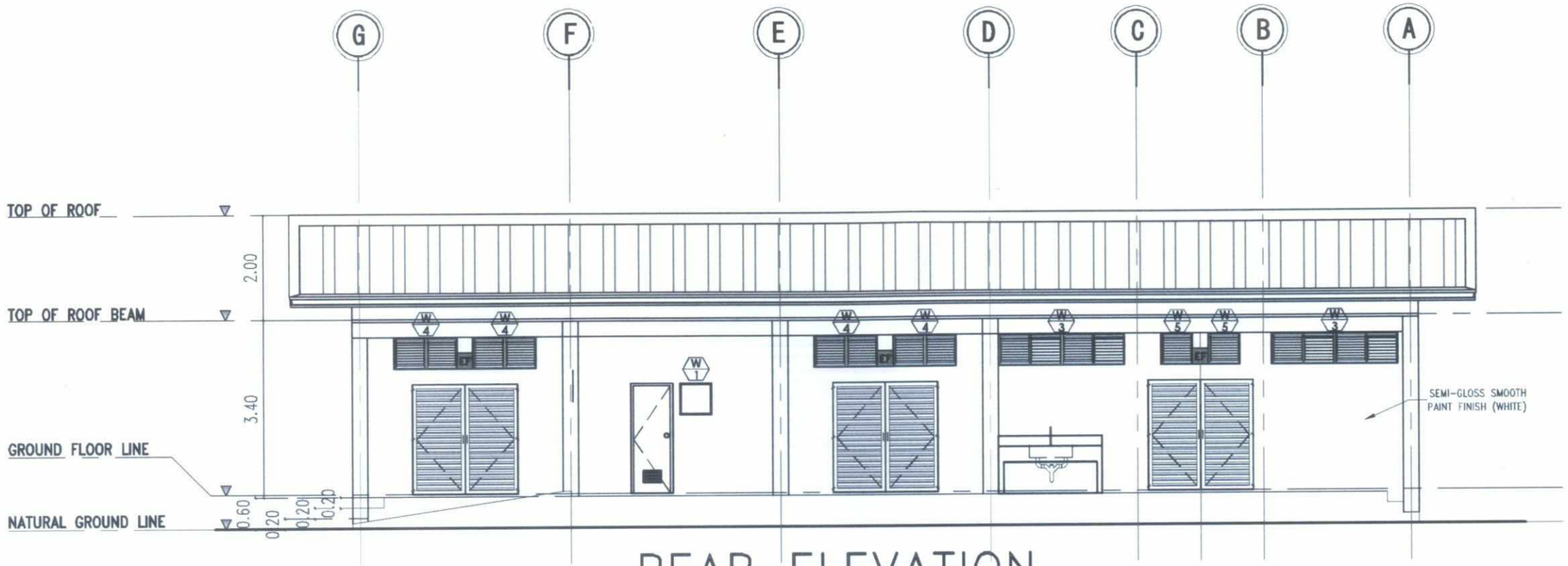
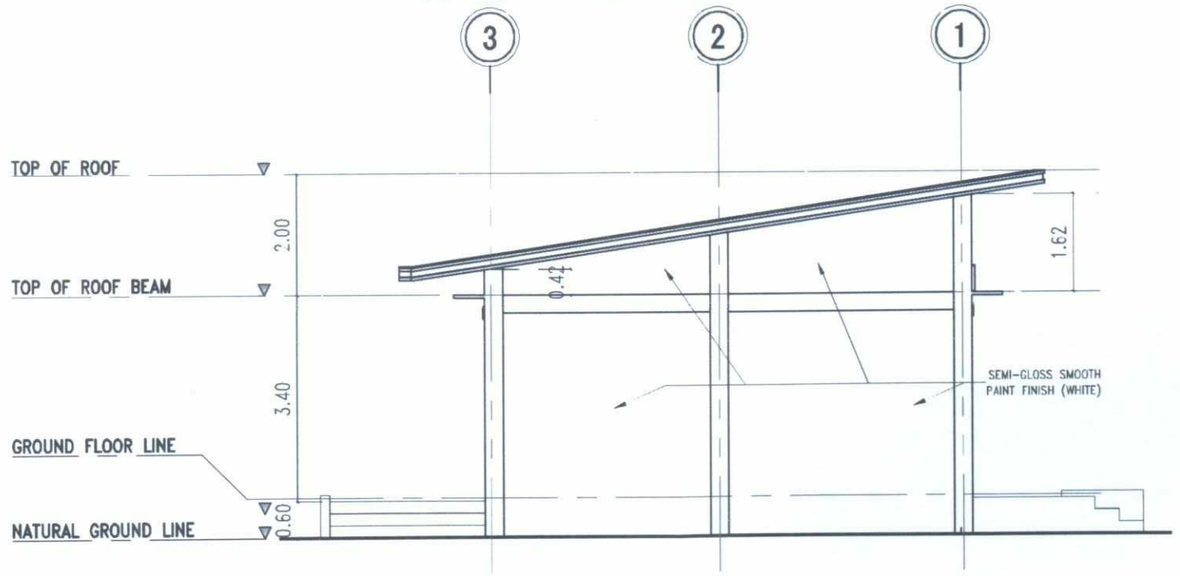


REAR ELEVATION

SCALE: 1: 100 METERS



LEFT-SIDE ELEVATION

SCALE: 1: 100 METERS

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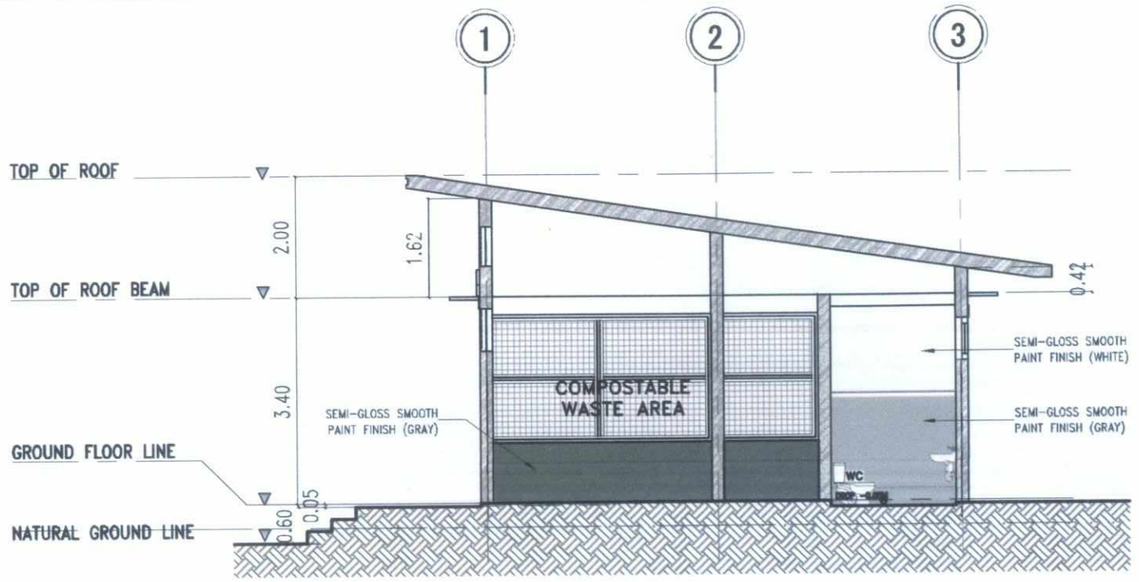
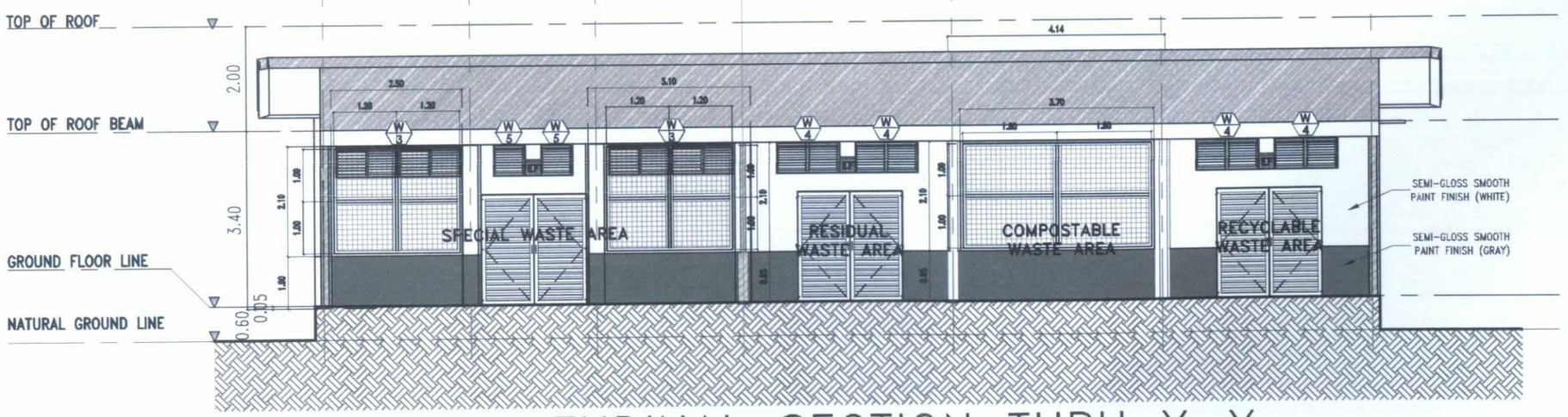


CROSS SECTION THRU X-X

SCALE: 1: 100 METERS

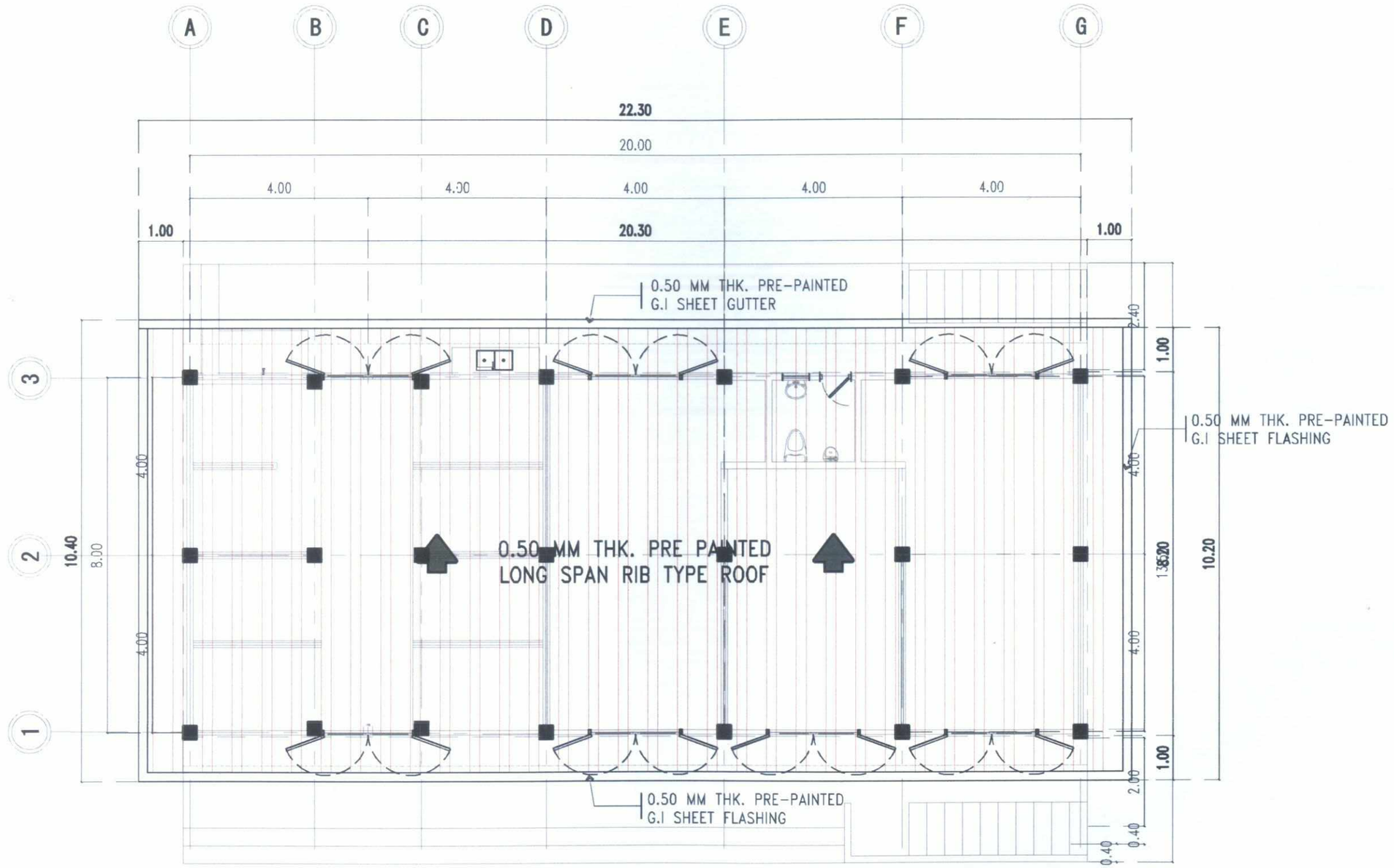


LONGITUDINAL SECTION THRU Y-Y

SCALE: 1: 100 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, SUHS	ATTY. GHEROLD A. BENITEZ, ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	A-10
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 10/64



PROPOSED ROOF PLAN

SCALE: 1: 100 METERS

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Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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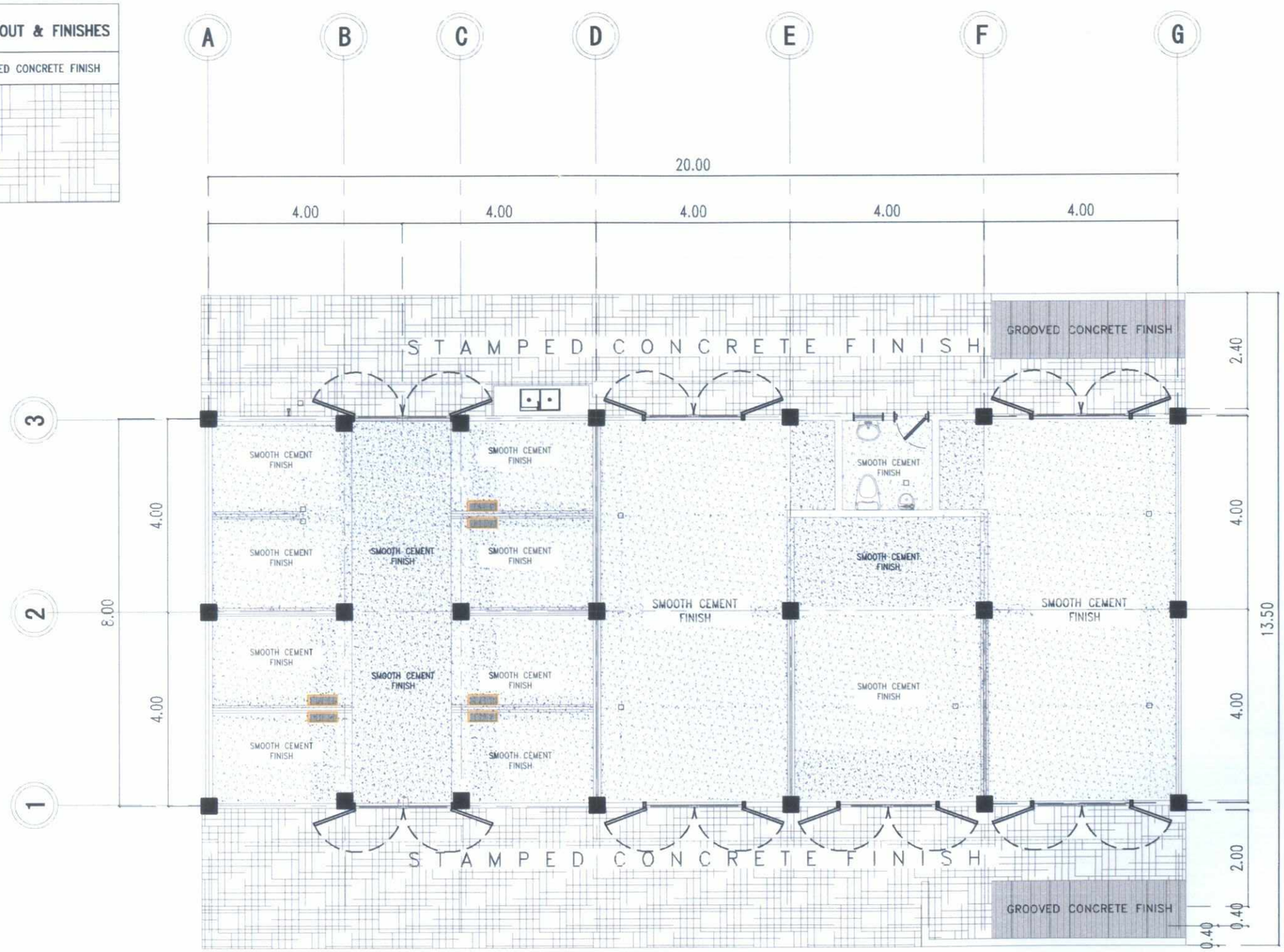
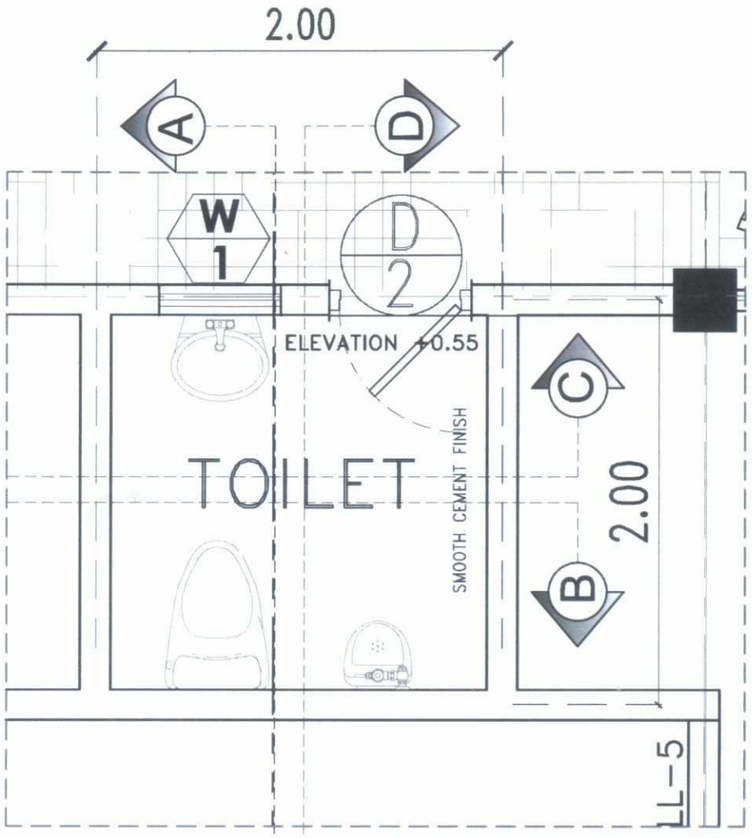
SCHEDULE OF FLOOR TILE LAYOUT & FINISHES	
SMOOTH CEMENT FINISH	STAMPED CONCRETE FINISH



GROUND FLOOR FINISHES

SCALE: 1: 100 METERS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHERALD C. GERONIMO ATTY. WILMAR V. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-12 PAGE NO: 12/64



BLOW-UP MALE TOILET FLOOR PLAN

SCALE: 1: 30 METERS

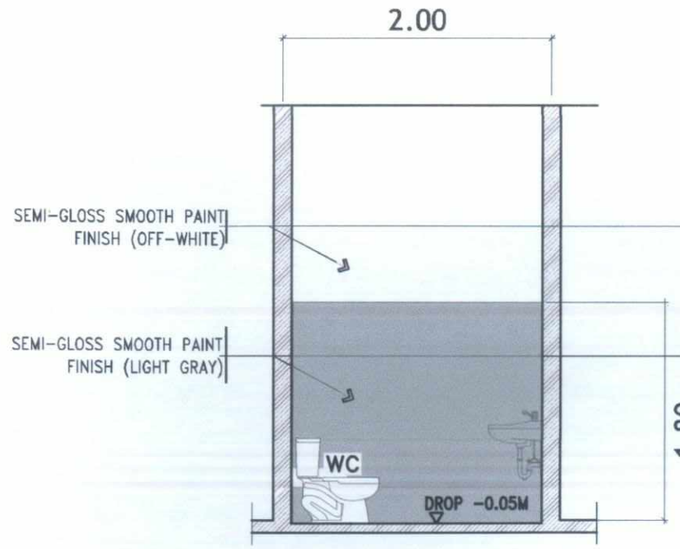
ACRYLIC CLEAR GLASS SIGNAGE

SIGNAGE SPECIFICATION:
PROPORTIONED LETTERING ON 3mm thk. x 150mm x 450mm
CLEAR ACRYLIC GLASS WITH 2pcs. 8mmx17mm ACRYLIC
GLASS FIXING BOLT SCREWS

NOTE: THE FONT STYLE, FONT SIZE, TEXT CONTENT
SHALL BE FOR APPROVAL.

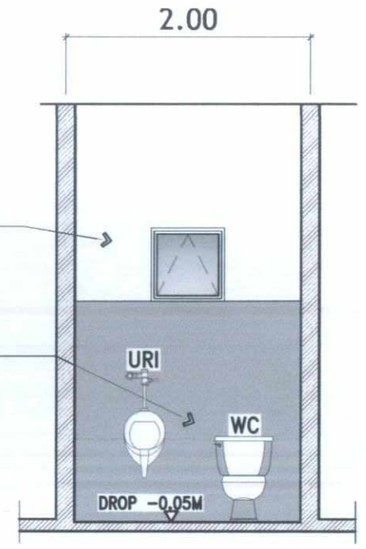
TOILET SIGNAGE DETAIL

SCALE
1:8 MTS



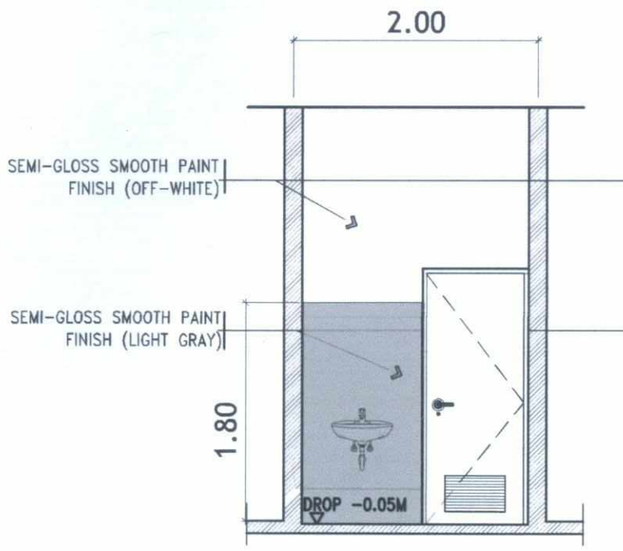
SECTIONAL ELEVATION @ A

SCALE 1:50M



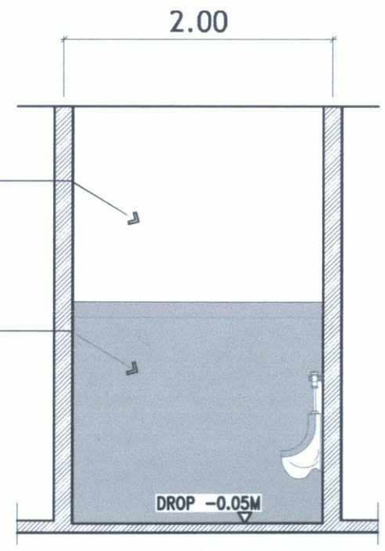
SECTIONAL ELEVATION @ B

SCALE 1:50M



SECTIONAL ELEVATION @ C

SCALE 1:50M



SECTIONAL ELEVATION @ D

SCALE 1:50M

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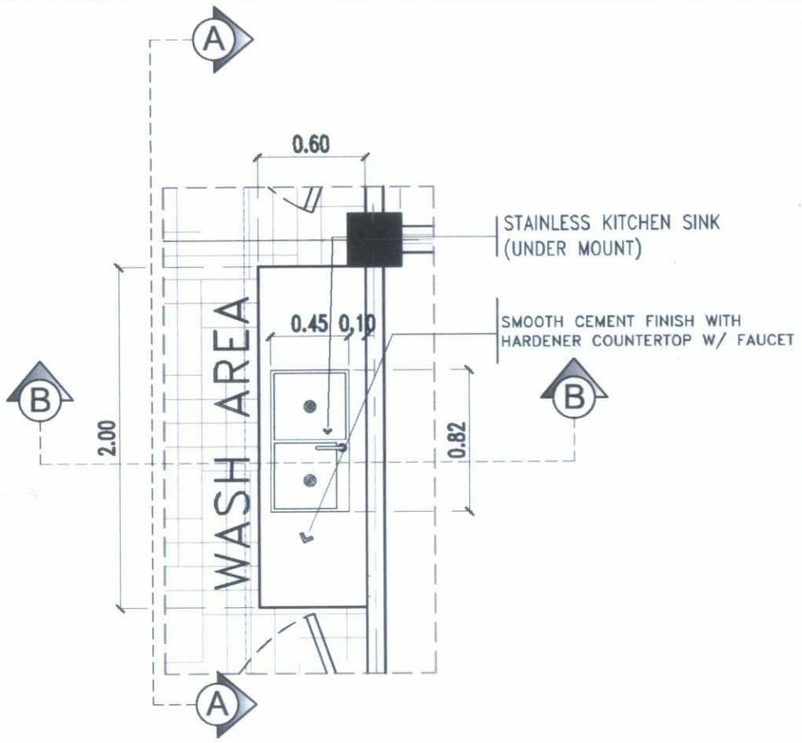
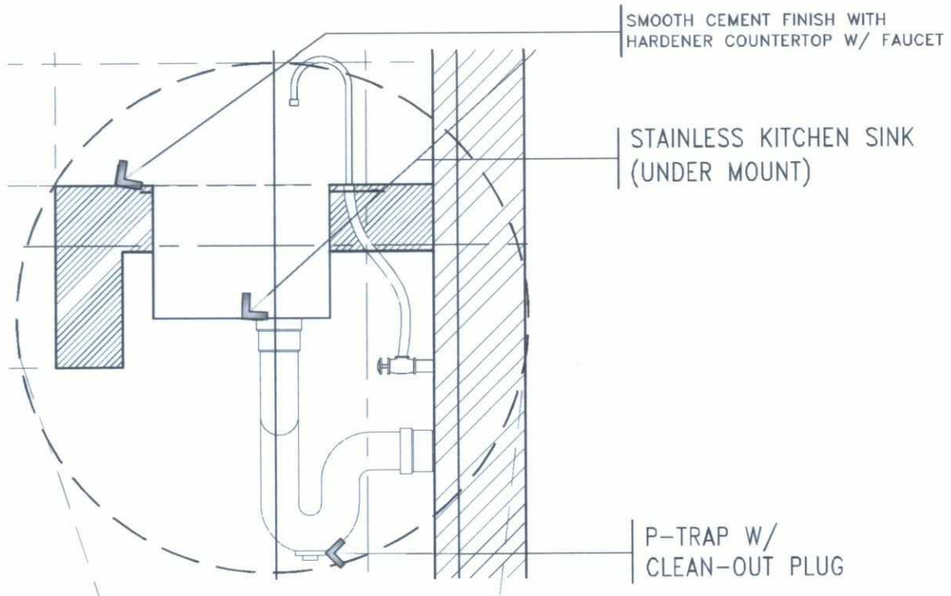


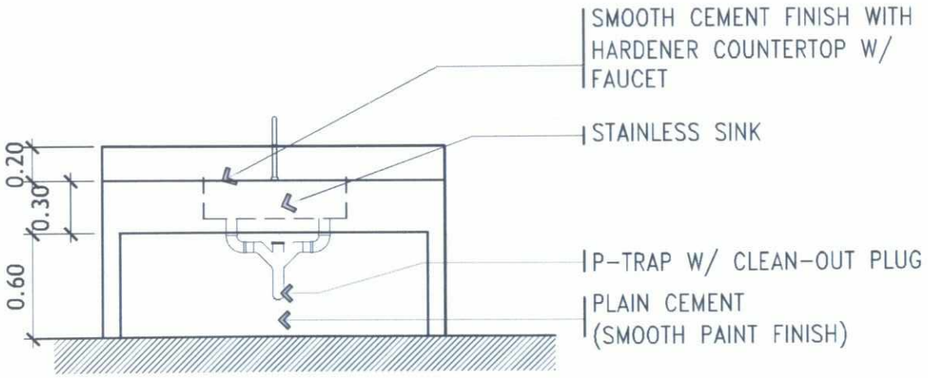
BLOW-UP WASH AREA PLAN

SCALE: 1: 40 METERS



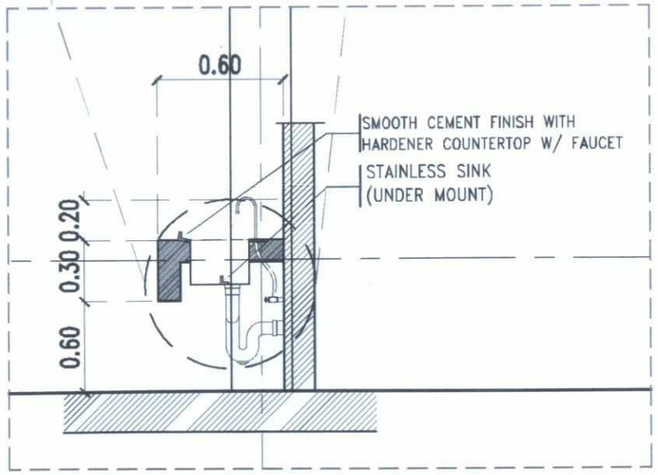
KITCHEN SINK DETAIL

SCALE: 1:15 METERS



SECTIONAL ELEVATION A

SCALE: 1: 35 METERS



SECTIONAL ELEVATION B

SCALE: 1: 30 METERS

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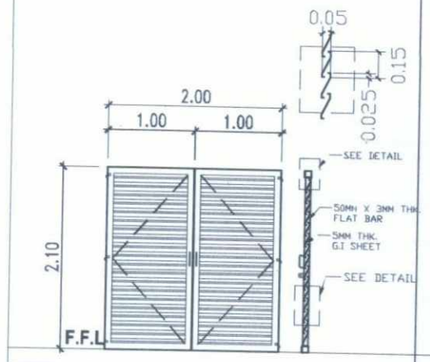
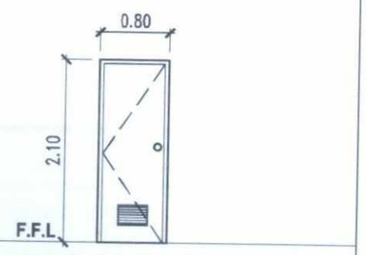


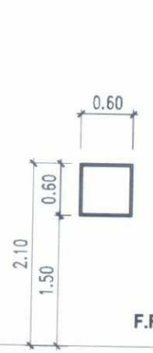
D1		7 SETS
	LOCATION :	HAZARDOUS WASTE AREA, NON- BIODEGRADABLE WASTE AREA, BIODEGRADABLE WASTE AREA & RECYCLABLE WASTE AREA

SINGLE SWING STEEL LOUVER DOOR (SMOOTH PAINT FINISH)
FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR
LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET
ACCESSORIES: 3/4" ø HEAVY DUTY CYLINDRICAL HINGES,12MM ROUND BAR HANDLE WITH HEAVY DUTY PADLOCK



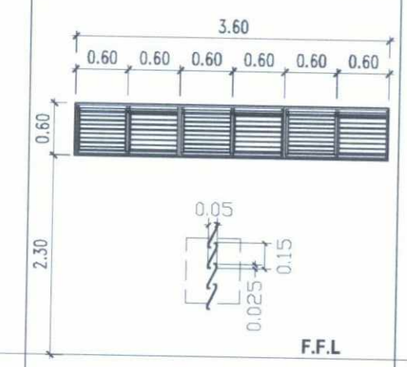
D2		1 SET
	LOCATION :	TOILET

SINGLE SWING STEEL DOOR WITH LOUVERS (SMOOTH PAINT FINISH)
DOOR & JAMB: 0.50mm thk.
W/ SOUND PROOF SEAL STRIP (SELF ADHESIVE RUBBER)
KNOB: HEAVY DUTY DOME TYPE LOCKSET
HINGES: HEAVY DUTY HINGES
OTHERS: COMPLETE ACCESSORIES



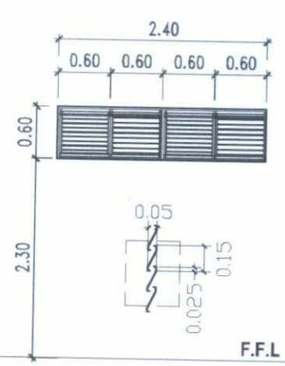
W1	QUANTITY :	01 SET
	LOCATION :	TOILET

DESCRIPTION : WHITE POWDER COATED ALUMINUM AWNING WINDOW WITH 6mm THK. ONE WAY REFLECTIVE GLASS (exterior) WITH COMPLETE ACCESSORIES



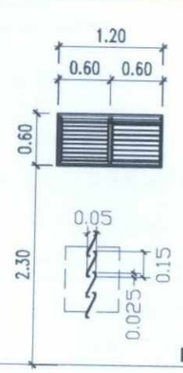
W2	QUANTITY :	08 SETS
	LOCATION :	FACADE AND REAR WALL

DESCRIPTION : STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH)
FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR
LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET



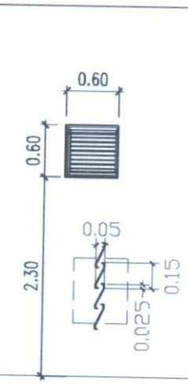
W3	QUANTITY :	04 SETS
	LOCATION :	FACADE AND REAR WALL

DESCRIPTION : STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH)
FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR
LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET



W4	QUANTITY :	05 SETS
	LOCATION :	FACADE AND REAR WALL

DESCRIPTION : STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH)
FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR
LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET



W5	QUANTITY :	02 SETS
	LOCATION :	FACADE AND REAR WALL

DESCRIPTION : STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH)
FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR
LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET

SCHEDULE OF DOORS AND WINDOWS

SCALE: 1: 70 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY

PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:
AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-POU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. GHEROLD C. BENITEZ / ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT

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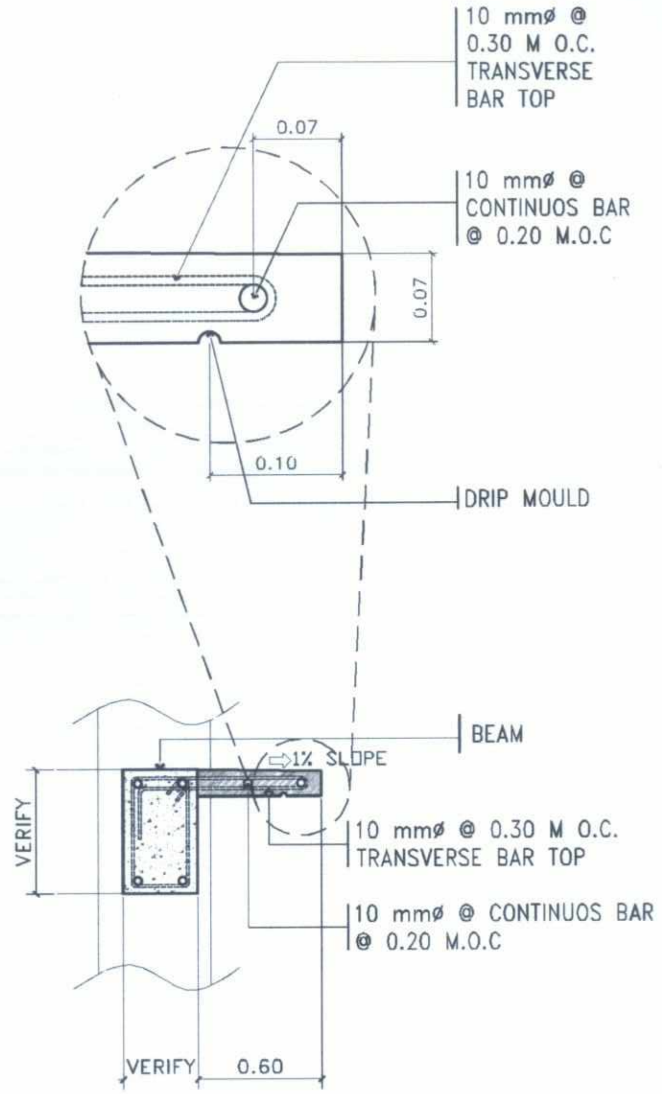
NOTE:
ALL STEEL MEMBERS SHALL BE
EPOXY PRIMER PAINTED.

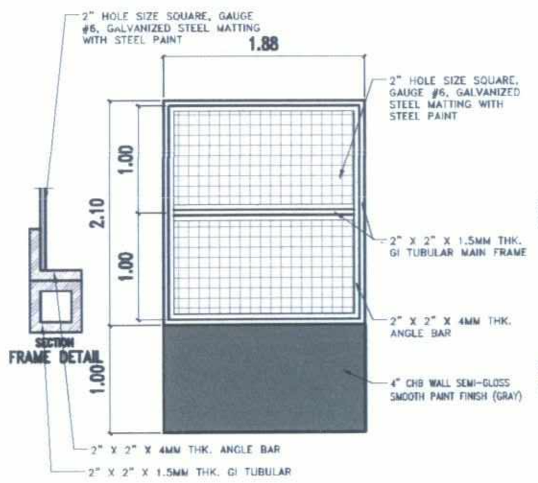
SCHEDULE OF WALL FINISHES

GROUND FLOOR OF FINISHES

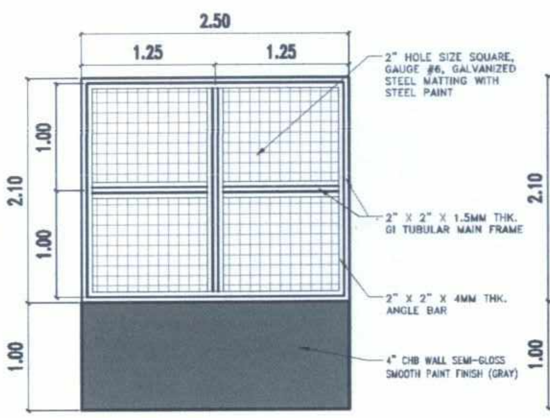
AREA / ROOM	WALL FINISHES (FACING THE FLOOR PLAN)				CEILING FINISHES
	N	S	E	W	FINISH
RECEIVING AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
SORTING & WEIGHING AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
SPECIAL WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
RESIDUAL WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
COMPOSTABLE WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
RECYCLABLE WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
FEMALE TOILET WITH SHOWER	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
MALE TOILET WITH SHOWER	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	



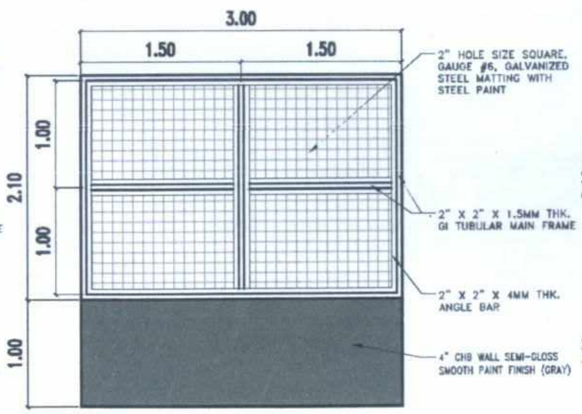
TYPICAL LEDGE SPOT DETAIL
SCALE: NTS



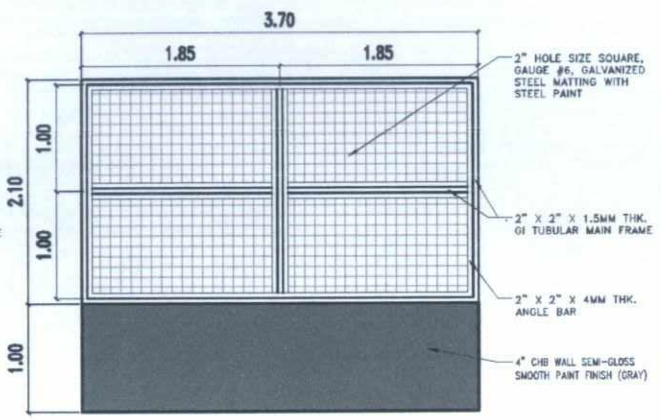
INTERIOR WALL-1
SCALE: 1: 70 METERS



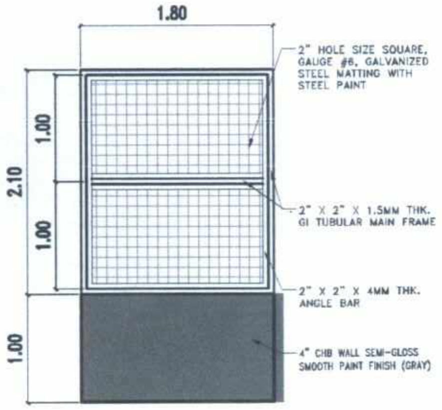
INTERIOR WALL-2
SCALE: 1: 70 METERS



INTERIOR WALL-3
SCALE: 1: 70 METERS



INTERIOR WALL-4
SCALE: 1: 70 METERS



INTERIOR WALL-5
SCALE: 1: 70 METERS

TARLAC STATE UNIVERSITY
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PREPARED BY: AR. ULYSSES B. CALUYA, ARCHITECT, OFDM
CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU
CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM
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RECOMMENDING APPROVAL: ATTY. CHERRD C. BENITEZ / ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION
APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT

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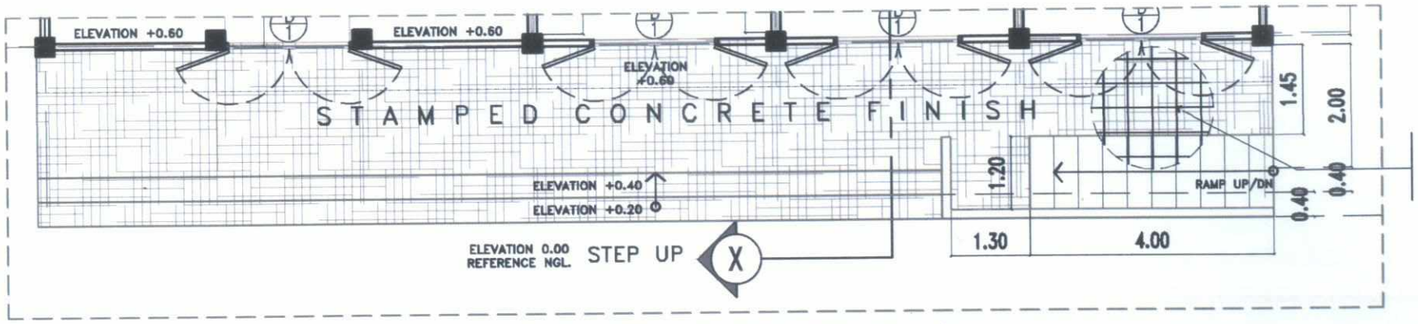
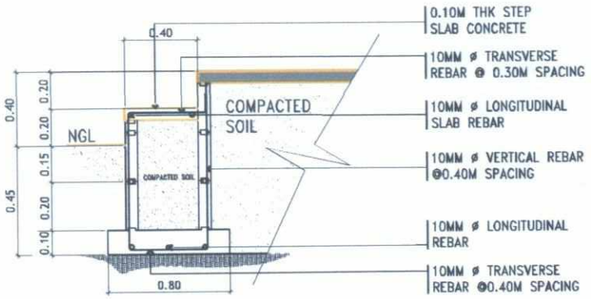


0.10M THK SLAB WITH
10mm ø DEFORMED BAR
SPACED @ 0.40M.O.C.B.W.

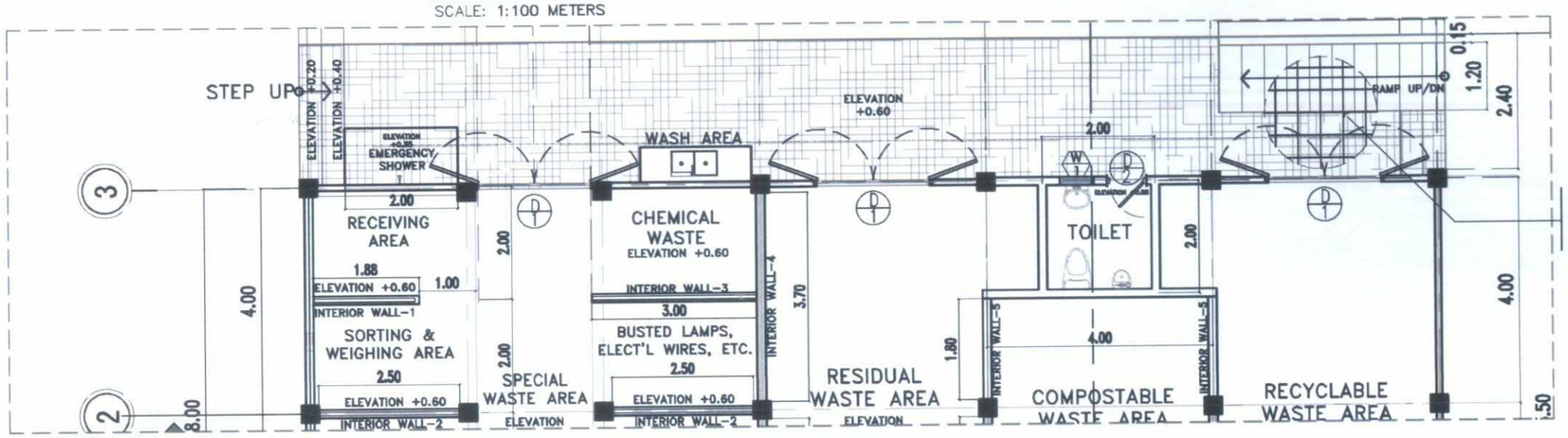
FRONT STEP BLOW-UP PLAN

SCALE: 1:100 METERS



TYPICAL STEP CHB FOOTING DETAILS

SCALE: 1: 25 METERS



0.10M THK SLAB WITH
10mm ø DEFORMED BAR
SPACED @ 0.40M.O.C.B.W.

REAR STEP BLOW-UP PLAN

SCALE: 1:100 METERS

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

LETTER HEAD DETAIL

SCALE: 1:50 METERS

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

TYPICAL ROOM SIGNAGE DETAIL

SCALE: 1:30 METERS

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

TYPICAL ROOM SIGNAGE DETAIL

SCALE: 1:25 METERS

TARLAC STATE UNIVERSITY
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STRUCTURAL - GENERAL NOTES

A. GENERAL

A.1 THESE GENERAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES. NONETHELESS, SPECIFIC NOTES AND DETAILS SHALL PRECEDE OVER GENERAL NOTES AND TYPICAL DETAILS.

A.2 THE STRUCTURAL DRAWINGS SHALL BE UTILIZED IN CONJUNCTION WITH OTHER DESIGN DRAWINGS (ARCHITECTURAL, ELECTRICAL, PLUMBING, MECHANICAL, ETC.). IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE REQUIREMENTS OF THE DRAWINGS INTO THEIR SHOP DRAWINGS AND CONSTRUCTION.

A.3 CONTRACTOR SHALL STUDY THE DRAWINGS AND SPECIFICATIONS, VERIFY ALL DIMENSIONS, AND INSPECT THE FIELD CONDITIONS, REPORTING ANY DISCREPANCIES TO THE ARCHITEC/ENGINEER PRIOR TO PROCEEDING WITH ANY PHASE OF THE WORK.

A.4 THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

A.5 THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES AND NOTIFY ANY CONFLICTS TO THE ARCHITECT/ENGINEER PRIOR TO COMMENCEMENT OF EXCAVATION.

A.6 DEMOLITION OF EXISTING STRUCTURES IF ANY SHALL NOT BE COMMENCED UNTIL PROTECTIVE MEASURES ARE SET IN PLACE; PLANS, METHODS, AND SCHEDULES OF DEMOLITION SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.

A.7 THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT CONNECTIONS ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE.

A.8 THE CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, ELECTRICAL, PLUMBING AND MECHANICAL DRAWINGS FOR REQUIRED OPENINGS. MOREOVER, SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS AND LOCATION OF DEPRESSED FLOOR AREAS.

A.9 DO NOT SCALE ANY DIMENSION FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST FROM THE ARCHITECT/ENGINEER THE NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS.

A.10 SHOP DRAWINGS OF STRUCTURAL ITEMS FOR STEEL AND CONCRETE MEMBERS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO THE FABRICATION AND CONSTRUCTION.

B. REFERENCES

B.1 ALL CONCRETE WORKS SHALL BE DONE IN ACCORDANCE WITH:

- THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)
- DETAILS AND DETAILING OF CONCRETE REINFORCEMENT (ACI 315-99)
- JOINTS IN CONCRETE CONSTRUCTION (ACI 224.3R-95)

B.2 ALL STRUCTURAL STEEL WORKS SHALL DONE IN ACCORDANCE WITH:

- SPECIFICATION FOR STRUCTURAL STEEL BUILDING (ANSI/AISC 360-16)
- STEEL CONSTRUCTION MANUAL, 14TH EDITION

C. CONCRETE

C.1 UNLESS OTHERWISE INDICATED IN PLANS OR NOTED IN THE STRUCTURAL SPECIFICATIONS, THE MINIMUM 28th DAYS COMPRESSIVE CYLINDER STRENGTH OF CONCRETE WITH CORRESPONDING MAXIMUM AGGREGATE SIZE AND SLUMP SHALL BE AS FOLLOWS:

ELEMENT	28th DAY STRENGTH	MAX. AGGREGATE SIZE	SLUMP
FOUNDATION & WALLS	3000 PSI	3/4 in.	4 in.
COLUMNS & PEDESTALS	3000 PSI	3/4 in.	4 in.
BEAMS & GIRDERS	3000 PSI	3/4 in.	4 in.
SUSPENDED SLABS	3000 PSI	3/4 in.	4 in.
SLAB ON GRADE	2500 PSI	1 in.	4 in.
NON-STRUCTURAL ELEMENTS	2500 PSI	3/4 in.	4 in.

C.2 CONCRETE-MIX DESIGNS ALONG WITH TEST DATA SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO CONCRETE POURING.

C.3 PRIOR TO PLACING OF CONCRETE, ALL REINFORCING STEEL BARS, ANCHOR BOLTS, DOWELS, EMBEDDED STRUCTURAL STEELS, PLATES, OR OTHER INSERTS, SHALL BE SECURED IN POSITION AND APPROVED BY THE ENGINEER.

C.4 CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION, REHANDLING OR FLOWING. PLACING SHALL BE DONE PROPERLY WITH BUGGIES, BUCKETS OR WHEEL-BORROWS.

C.5 NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE ENGINEER.

C.6 ALL CONCRETE SHALL BE CURED IMMEDIATELY AFTER FINISHING OPERATIONS BY KEEPING THE CONCRETE ELEMENT MOIST FOR AT LEAST 7 DAYS OR APPLYING LIQUID CURING COMPOUND.

C.7 CONCRETE CYLINDERS SHALL BE FABRICATED PER EACH 40 CU.M. OR FRACTION THEREOF MIXED EACH DAY FOR EACH CLASS CONCRETE PLACED FOR EACH STRUCTURE.

C.8 GROUT UNDER BASE PLATES SHALL BE APPROVED NON-SHRINK WITH STRENGTH AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED.

D. REINFORCING BARS

D.1 REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO ASTM 615 AS FOLLOWS:

DIAMETER	GRADE
10mmØ	GRADE 40 (276 MPa)
12mmØ & ABOVE	GRADE 40 (276 MPa)

D.2 USE GAUGE #16 OR HEAVIER FOR TIE WIRE.

D.3 NO BARS PARTIALLY EMBEDDED IN CONCRETE SHALL BE FIELD BENT, EXCEPT AS SHOWN ON PLANS OR PERMITTED BY THE ENGINEER.

D.4 BARS SHALL NOT BE WELDED UNLESS AUTHORIZED BY THE ENGINEER.

D.5 ALL REINFORCING BARS SHALL BE CLEANED THOROUGHLY OF ALL LOOSE RUST, SOIL OR OTHER MATERIAL PRIOR TO CONCRETE POURING.

D.6 MAINTAIN MINIMUM CONCRETE COVER TO TRAVERSE BARS AS FOLLOWS:

ELEMENT	CONCRETE COVER
BELOW GRADE - FOUNDATIONS & WALLS	75mm
BELOW GRADE - COLUMNS, BEAMS, GIRDERS & PEDESTALS	75mm
ABOVE GRADE - COLUMNS, BEAMS, GIRDERS & PEDESTALS	40mm
ABOVE GRADE - SUSPENDED SLABS AND WALLS	20mm
SLAB ON GRADE	40mm

D.7 ALL LAP SPLICES OF REBARS SHALL CONFORM TO CLASS B TENSION LAP SPLICE AS SHOWN ON THE LAP SPLICE SCHEDULE, UNLESS NOTED OTHERWISE.

D.8 ALL HOOK ENDS SHOWN ON THE DRAWINGS SHALL BE STANDARD HOOKS. ALL STIRRUPS/TIES SHALL HAVE 135° SEISMIC HOOKS, UNLESS NOTED OTHERWISE. CROSS TIES SHALL HAVE STANDARD 90° HOOK ON ONE END AND 135° SEISMIC HOOK ON THE OTHER END.

D.9 CONSECUTIVE CROSS TIES WITH 90° AND 135° HOOK ENDS SHALL BE ALTERNATED.

E. FORMS AND SHORES

E.1 FORMS AND SHORES SHALL BE DESIGNED TO CARRY THE LOADS COMING ONTO OR AGAINST THEM WITHOUT EXCESSIVE DEFLECTION.

E.2 STRIPPING OF FORMS AND SHORES SHALL BE AS FOLLOWS:

FOUNDATION	1 DAY
WALLS & COLUMNS	2 DAYS
BEAMS	14 DAYS
SUSPENDED SLABS EXCEPT WHEN ADDITIONAL LOADS ARE IMPOSED	14 DAYS

F. MASONRY

F.1 ALL MASONRY UNITS SHALL BE APPROVED QUALITY, SOUND, FREE FROM CRACKS AND OTHER IMPERFECTIONS.

F.2 NON-LOAD BEARING CONCRETE HOLLOW BLOCKS SHALL BE USED WITH A MINIMUM COMPRESSIVE STRENGTH OF 500 PSI.

F.3 METHOD OF SAMPLING FOR QUALITY TEST SHALL BE ONE (1) QUALITY TEST FOR EVERY 10,000 UNITS OR FRACTION THEREOF, WITH THREE (3) SPECIMENS FOR COMPRESSION TEST.

F.4 CHB WALLS SHALL BE REINFORCED AS FOLLOWS:

THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
100mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.
125mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.
150mm	10mmØ @ 400mm O.C.	10mmØ @ 400mm O.C.
200mm	10mmØ @ 400mm O.C.	10mmØ @ 400mm O.C.

F.5 ALL MASONRY WORKS SHALL BE LAID TRUE TO LINE, LEVEL, PLUMB AND NEAT IN ACCORDANCE WITH THE PLANS. DAMAGED UNITS SHALL NOT BE USED. UNITS SHALL BE CUT ACCURATELY TO FIT ALL PLUMBING DUCTS, AND OPENING FOR ELECTRICAL WORKS; ALL HOLES SHALL BE NEATLY PATCHED.

F.6 NO CONSTRUCTION SUPPORT SHALL BE ATTACHED TO THE CHB WALL EXCEPT WHERE SPECIFICALLY PERMITTED BY THE ENGINEER.

F.7 UNITS SHALL BE PLACED WHILE THE MORTAR IS SOFT AND PLASTIC, AND SHALL BE USED WITHIN 2.5 HOURS OF INITIAL MIXING. MORTAR THAT HAS STIFFENED SHOULD NOT BE USED. ANY UNIT DISTURBED TO THE EXTENT THAT THE INITIAL BOND IS BROKEN AFTER INITIAL POSITIONING SHALL BE REMOVED AND RE-LAID IN FRESH MORTAR.

F.8 MORTAR FOR CELLS OF CONCRETE HOLLOW BLOCKS SHALL CONSIST OF ONE (1) PART CEMENT TO THREE (3) PARTS SAND BY VOLUME WITH SUFFICIENT WATER. IT SHALL BE A WORKABLE CEMENT-SAND MIXTURE ATTAINING A 28th DAY COMPRESSIVE STRENGTH OF 1500 PSI.

F.9 ALL CELLS OF CHB UNITS SHALL BE FULLY GROUTED.

F.10 WHERE CHB WALLS ADJOIN COLUMNS, BEAMS, AND WALLS, DOWELS WITH THE SAME SIZE AS THE VERTICAL OR HORIZONTAL REINFORCEMENTS SHALL BE PROVIDED.

F.11 MORTAR FOR PLASTERING SHALL BE PROPORTIONED ONE (1) PART CEMENT TO TWO (2) PARTS SAND WITH SUFFICIENT WATER.

G. STRUCTURAL STEEL

G.1 ALL STRUCTURAL STEELS SHALL CONFORM TO ASTM A36 HAVING A MINIMUM YIELD STRENGTH OF 36 KSI, UNLESS NOTED OTHERWISE.

G.2 ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 36.

G.3 HIGH STRENGTH BOLTS SHALL BE USED SHALL CONFORM TO ASTM A325 OR ASTM A490.

G.4 ALL WASHERS SHALL CONFORM TO ASTM F436.

G.5 ALL NUTS SHALL SHALL CONFORM TO ASTM A563.

G.6 USE E70XX OR E71XX, 70 KSI STRENGTH ELECTRODES, UNLESS NOTED OTHERWISE. TEMPORARY WELDS AND ASSEMBLY ATTACHMENTS SHALL BE KEPT TO A MINIMUM

G.7 WELDING SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE WELD PROCEDURE SPECIFICATIONS (WPS).

G.8 WELDING SHALL CONFORM TO BE DONE WITH AMERICAN WELDING SOCIETY (AWS) STANDARDS.

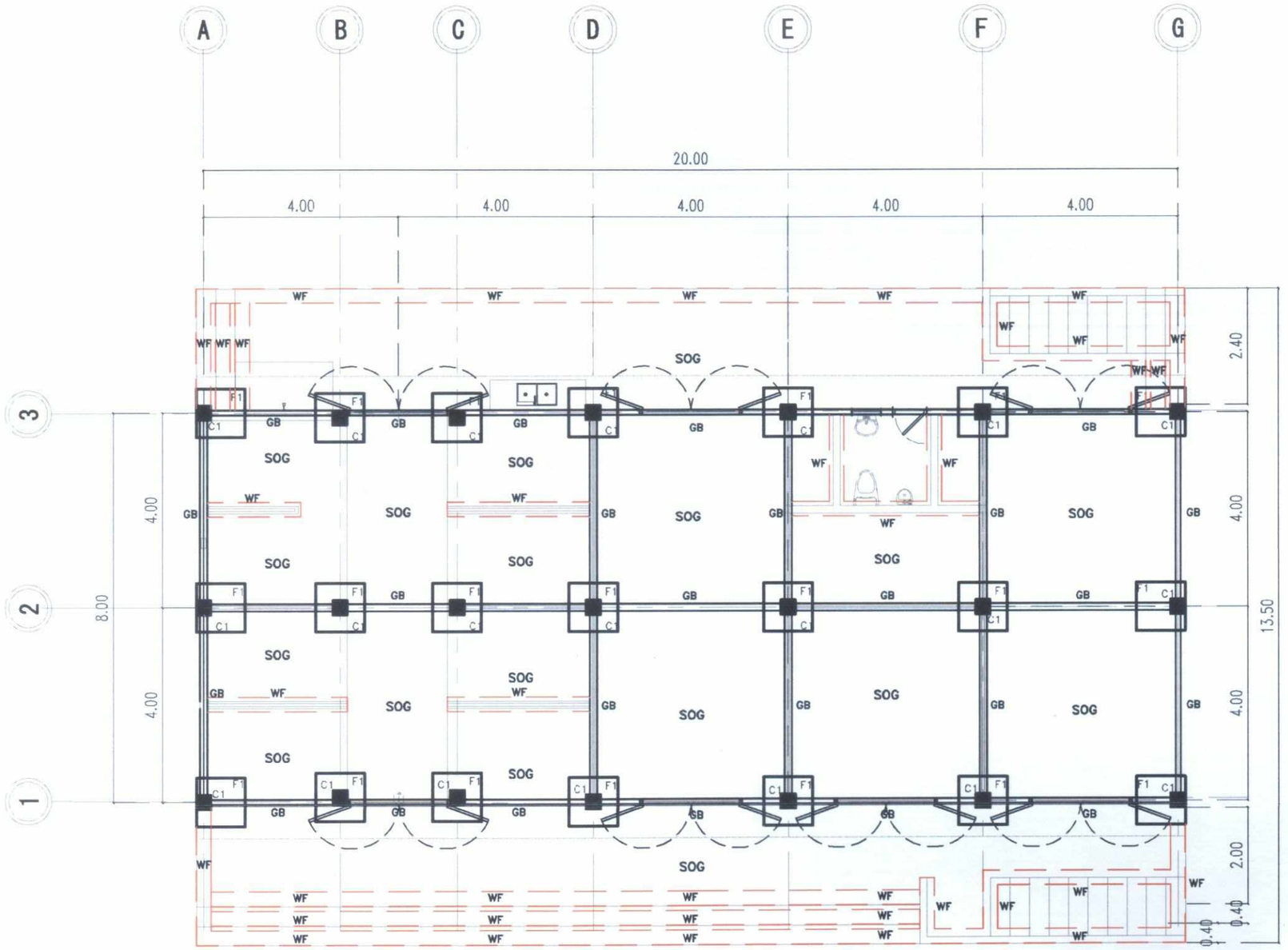
G.9 FABRICATORS SHALL BE QUALIFIED WELDERS WITH AUTHENTIC CERTIFICATES.

G.10 SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MEMBER. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.

G.11 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO THE FABRICATION AND ERECTION.

G.12 STEEL MEMBERS TO BE ENCASE IN CONCRETE SHALL NOT BE PAINTED. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL HAVE AT LEAST TWO COATS OF APPROVED PRIMER PAINT.

G.13 CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SAFETY PROTECTION FOR ERECTION.



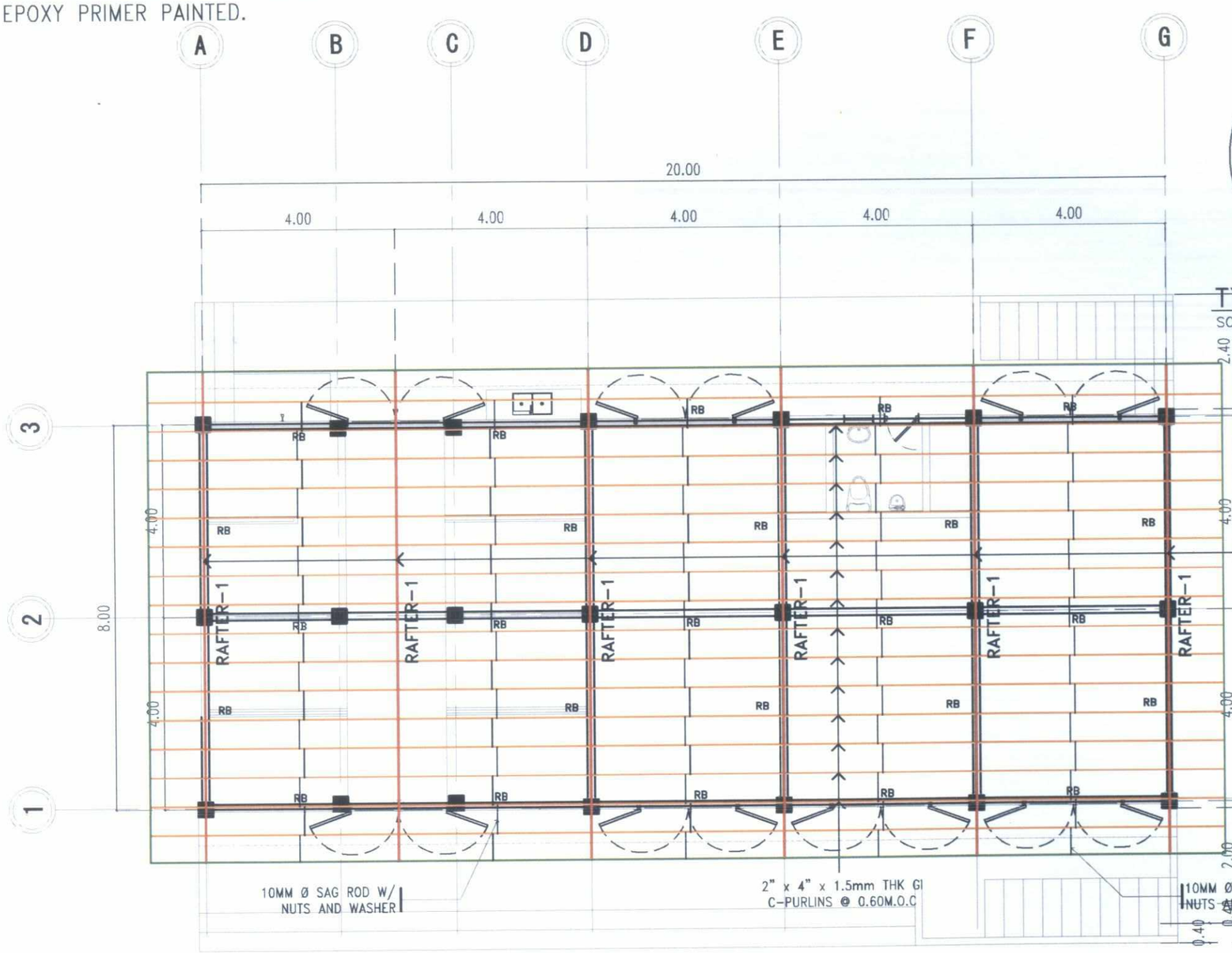
GROUND FLOOR FOUNDATION PLAN

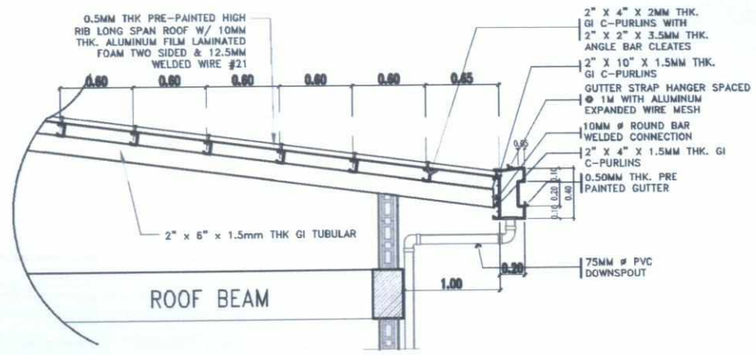
SCALE: 1: 100 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA ARCHITECT, OFDM	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	ATTY. WILMARK B. RAMOS, DBA VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	S-02
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: MAY 2025	PAGE NO: 19/66

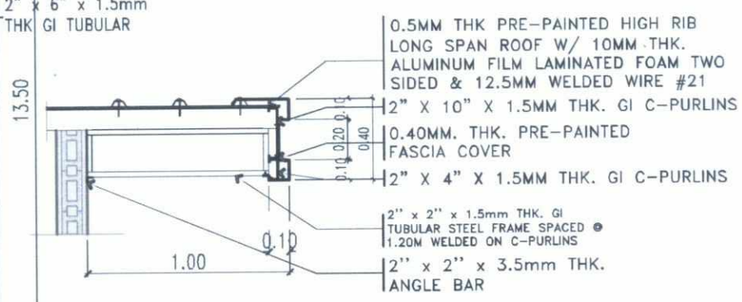
NOTE:
ALL STEEL MEMBERS SHALL BE EPOXY PRIMER PAINTED.





TYPICAL EAVES SECTION DETAILS

SCALE: 1: 50 METERS



TYPICAL END FLUSHING DETAILS

SCALE: 1: 30 METERS

GROUND FLOOR ROOF FRAMING PLAN

SCALE: 1: 100 METERS

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Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-POU	CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, DIRECTOR, OURS	RECOMMENDING APPROVAL: ATTY. GHERALD C. DENITES / ATTY. WILMARK U. RAMOS, DBA, VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: MAY 2025	SHEET NO: S-03 PAGE NO: 20/66

TENSION LAP SPLICE LENGTHS

BAR SIZE	fc' = 3,000 PSI				fc' = 4,000 PSI			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
10mm	490	740	380	570	430	640	330	490
12mm	590	880	460	680	510	770	400	590
16mm	790	1,200	610	910	680	1,100	530	790
20mm	1,000	1,500	760	1,200	850	1,300	660	980
25mm	1,600	2,400	1,200	1,800	1,400	2,100	1,100	1,600
28mm	1,700	2,700	1,300	2,100	1,500	2,300	1,200	1,800
32mm	1,900	3,000	1,500	2,300	1,700	2,600	1,300	2,000
36mm	2,200	3,400	1,700	2,600	1,900	3,000	1,500	2,300

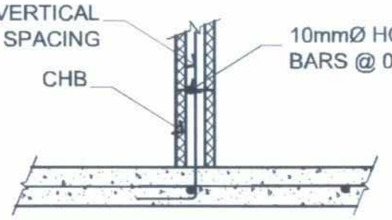
NOTES:

1. TABULATED VALUES ARE CLASS B TENSION LAP SPLICE LENGTHS BASED ON UNCOATED GRADE 40 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318-14, SECTIONS 25.4.2.2 AND 25.5.2.1, RESPECTIVELY. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRAVERSE REINFORCEMENT AND CONCRETE COVER MEETING THE MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN MILLIMETERS.
3. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
4. OTHER BARS ARE THE HORIZONTAL BARS LOCATED WITHIN 12 INCHES DEPTH FROM THE BOTTOM OF SLABS OR FOOTINGS, OR THE VERTICAL BARS OF COLUMN OR WALLS.
5. WHEN CLASS A LAP SPLICES ARE TO BE USED, DIVIDE THE TABULATED VALUES BY 1.3.
6. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER TO CENTER SPACING OF BARS, ARE DEFINED AS:

FOR BEAMS OR COLUMNS:
CASE 1 - COVER AT LEAST $1.0d_b$ AND CENTER TO CENTER SPACING AT LEAST $2d_b$
CASE 2 - COVER LESS THAN $1.0d_b$ OR CENTER TO CENTER SPACING LESS THAN $2d_b$

FOR FOOTINGS OR WALLS:
CASE 1 - COVER AT LEAST $1.0d_b$ AND CENTER TO CENTER SPACING AT LEAST $3d_b$
CASE 2 - COVER LESS THAN $1.0d_b$ OR CENTER TO CENTER SPACING LESS THAN $3d_b$

FOR SLABS (USE CLASS A LAP SPLICES):
CASE 1 - COVER AT LEAST $1.0d_b$ AND CENTER TO CENTER SPACING AT LEAST $3d_b$
CASE 2 - COVER LESS THAN $1.0d_b$ OR CENTER TO CENTER SPACING LESS THAN $3d_b$



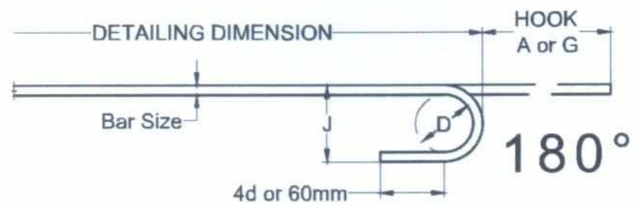
TYPICAL DETAIL OF WALL TO SLAB CONNECTION

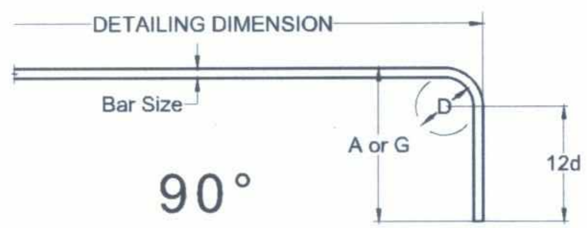
RECOMMENDED END HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D* (mm)	180° HOOK		90° HOOK
		A or G (mm)	J (mm)	A or G (mm)
10mm	60	150	80	150
12mm	80	175	105	200
16mm	100	200	130	250
20mm	135	250	180	375
25mm	155	275	205	425
28mm	240	375	300	475
32mm	275	425	335	550
36mm	305	475	375	625

*FINISHED BEND DIAMETERS INCLUDE "SPRING BACK" EFFECT WHEN BARS STRAIGHTEN OUT SLIGHTLY AFTER BEING BENT AND ARE SLIGHTLY LARGER THAN MINIMUM BEND DIAMETER IN ACI.





DEVELOPMENT LENGTH FOR STANDARD HOOKS IN TENSION

BAR SIZE	fc' = 2,500 PSI	fc' = 3,000 PSI	fc' = 4,000 PSI
10mm	160	150	150
12mm	200	180	160
16mm	260	250	210
20mm	320	300	260
25mm	400	380	320
28mm	450	430	369
32mm	520	480	410
36mm	580	530	460

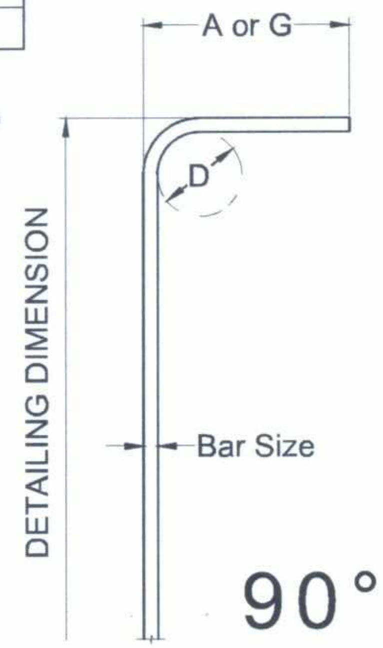
NOTES:
1. TABULATED VALUES ARE BASED ON UNCOATED GRADE 40 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. DEVELOPMENT LENGTHS FOR STANDARD HOOKS IN TENSION ARE BASED ON ACI 318-14, SECTIONS 25.4.3. LENGTHS ARE IN MILLIMETERS.

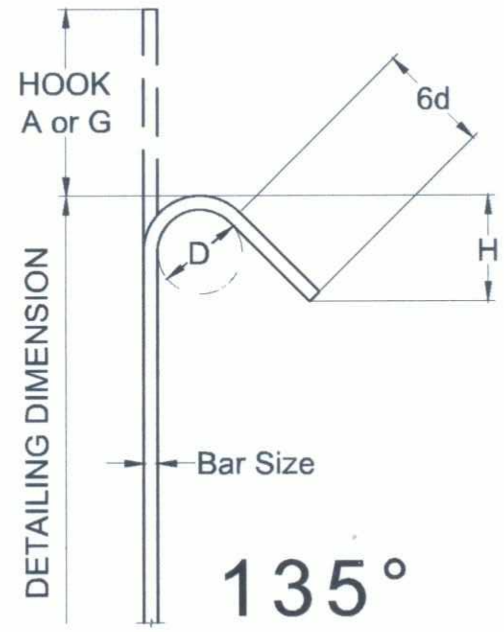
STANDARD STIRRUP/TIE HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D (mm)	135° HOOK		90° HOOK
		A or G (mm)	H* (mm)	A or G (mm)
10mm	40	105	65	105
12mm	50	115	80	115
16mm	65	140	95	155
20mm	120	230	135	355
25mm	155	270	155	410

*H DIMENSION IS APPROXIMATE





SEISMIC STIRRUP/TIE HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D (mm)	135° SEISMIC HOOK	
		A or G (mm)	H* (mm)
10mm	40	110	80
12mm	50	115	80
16mm	65	140	95
20mm	120	230	135
25mm	155	270	155

*H DIMENSION IS APPROXIMATE

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Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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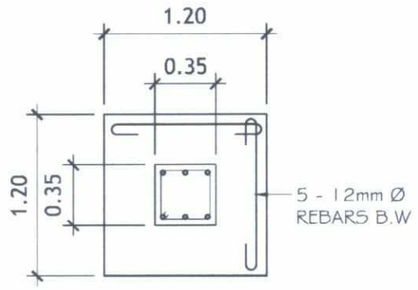
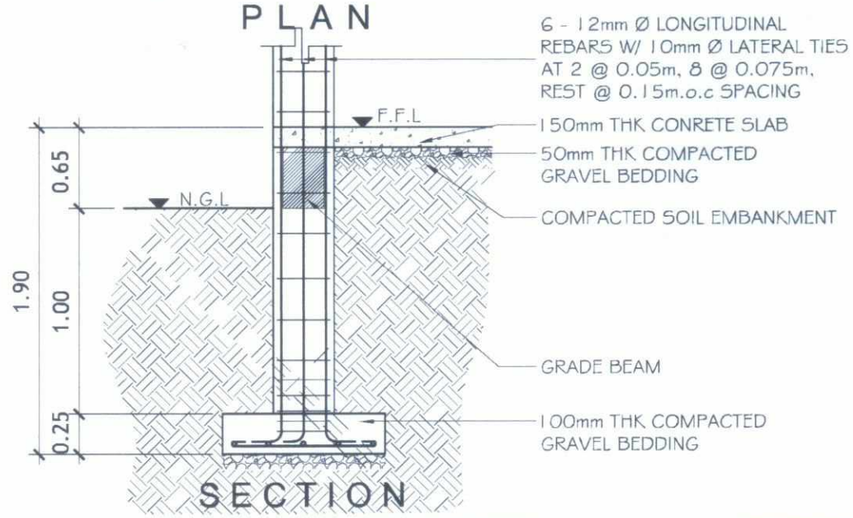
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OCHS	~~ATTY. WILMARK L. RAMOS, DBA~~, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	S-04
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: MAY 2025	PAGE NO: 21/66

SCHEDULE OF SLAB

MARK	THICKNESS	REINFORCEMENT	EXTERIOR SUPPORT		MIDPANEL		INTERIOR SUPPORT	
			TOP BAR	BOTTOM BAR	TOP BAR	BOTTOM BAR	TOP BAR	BOTTOM BAR
SOG	125mm	ALONG LONG SIDE	N/A	10mm @ 400mm	N/A	10mm @ 400mm	N/A	10mm @ 400mm
		ALONG SHORT SIDE	N/A	10mm @ 400mm	N/A	10mm @ 400mm	N/A	10mm @ 400mm



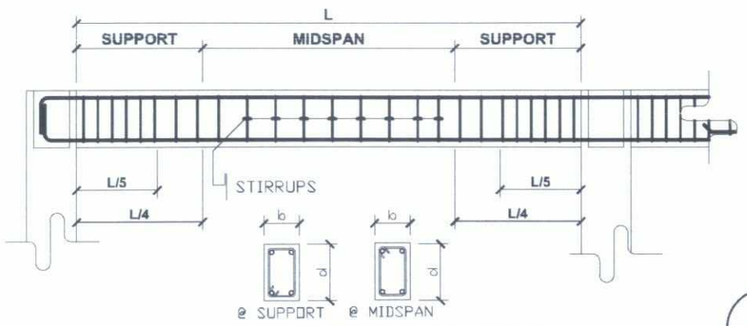
PLAN



SECTION

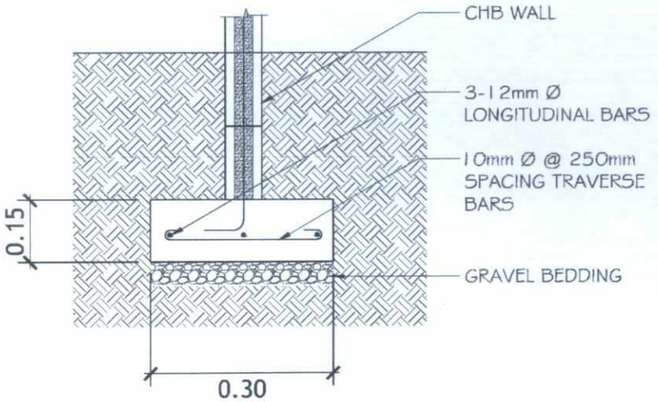
COLUMN & FOOTING DETAIL

SCALE 1:30 MTS.



TYPICAL BEAM DETAIL

SCALE: 1: 50 METERS



WALL FOOTING DETAIL

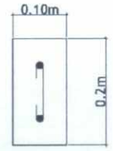
SCALE 1:10 MTS.

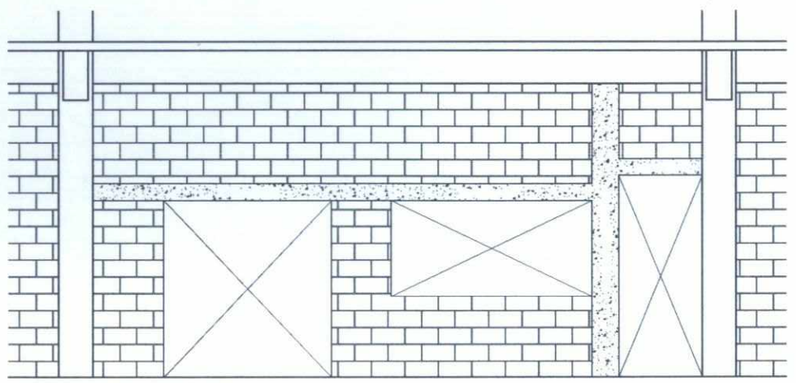
SCHEDULE OF COLUMNS

COLUMN MARK	NO. OF SETS	DIMENSION (MM) a (width)	DIMENSION (MM) b (depth)	FIGURE	LATERAL TIES
C-1	21 SETS	300	300	3-12MM ø D.S.B 3-12MM ø D.S.B	10MM D.S.B , 2 @ 0.05M, 8 @ 0.075M, THE REST 0.15M M.O.C

SCHEDULE OF BEAMS

MARK	CONT'. BARS	EXT SUPPORT		MIDSPAN		INT SUPPORT		STIRRUPS			REMARKS
		SECTION	REINF	SECTION	REINF	SECTION	REINF	DIA	NO.	SPACING	
GB	2-12mm top		2-12mm		2-12mm		2-12mm	10mm	2	50	
									10	100	
	2-12mm bot.		2-12mm		2-12mm		2-12mm		REST	200	
									SPLICE	100	
		250x350		250x350		250x350					
RB	2-12mm top		2-12mm		2-12mm		2-12mm	10mm	2	50	
									10	100	
	2-12mm bot.		2-12mm		2-12mm		2-12mm		REST	200	
									SPLICE	100	
		250x350		250x350		250x350					





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Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

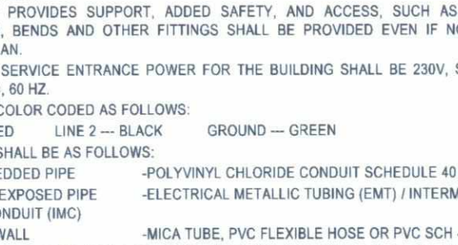
PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRYL FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. GHEROLD C. GEJUTEZ, ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	S-05
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: MAY 2025	PAGE NO: 22/66

GENERAL NOTES & SPECIFICATIONS

1. ALL ELECTRICAL INSTALLATION HEREIN SHALL BE DONE IN ACCORDANCE WITH PROVISIONS OF THE LATEST EDITION OF PHILIPPINE ELECTRICAL CODE WITH THE RULES AND REGULATIONS OF THE NATIONAL AND LOCAL AUTHORITIES CONCERNED IN THE ENFORCEMENT OF ELECTRICAL LAWS AND ORDINANCES AND WITH THE REQUIREMENTS OF THE POWER COMPANY CONCERNED.
2. ALL ELECTRICAL WORKS HEREIN SHALL BE EXECUTED BY EXPERIENCED MEN UNDER THE SUPERVISION OF A DULY LICENSED REGISTERED ELECTRICAL ENGINEER OR PROFESSIONAL ELECTRICAL ENGINEER.
3. MATERIALS THAT PROVIDES SUPPORT, ADDED SAFETY, AND ACCESS, SUCH AS PULL BOXES, JUNCTION BOXES, BENDS AND OTHER FITTINGS SHALL BE PROVIDED EVEN IF NOT EXPLICITLY STATED IN THE PLAN.
4. THE ELECTRICAL SERVICE ENTRANCE POWER FOR THE BUILDING SHALL BE 230V, SINGLE PHASE, 2-WIRE + GROUND, 60 HZ.
5. WIRES SHALL BE COLOR CODED AS FOLLOWS:
6. LINE 1 --- RED LINE 2 --- BLACK GROUND --- GREEN
7. WIRING METHOD SHALL BE AS FOLLOWS:
   a. FOR EMBEDDED PIPE -POLYVINYL CHLORIDE CONDUIT SCHEDULE 40 (PVC SCH 40)
   b. FOR RUN EXPOSED PIPE -ELECTRICAL METALLIC TUBING (EMT) / INTERMEDIATE METAL CONDUIT (IMC)
   c. FOR DRYWALL -MICA TUBE, PVC FLEXIBLE HOSE OR PVC SCH 40
7. ALL MATERIALS TO BE USED SHALL BE BRAND NEW AND APPROVED TYPE FOR THE PARTICULAR LOCATION AND PURPOSE OF USAGE.
8. ALL WIRES SHALL BE COPPER AND THERMOPLASTIC INSULATED TYPE "THHN" UNLESS OTHERWISE INDICATED IN THE PLAN. THE MINIMUM SIZE OF WIRE FOR POWER AND LIGHTING CIRCUIT SHALL BE 3.5mm.
9. ANY DISCREPANCY IN LOCATION AND RATING OF ELECTRICAL EQUIPMENT SHALL BE VERIFIED WITH THE OWNER AND CHANGES SHALL BE MADE ACCORDINGLY.
10. ALL CONVENIENCE OUTLETS AND MOTOR LOADS SHALL BE PROPERLY GROUNDED TO THE DISTRIBUTION PANEL AND SECURELY BONDED TO THE GROUNDING ELECTRODE SYSTEM.

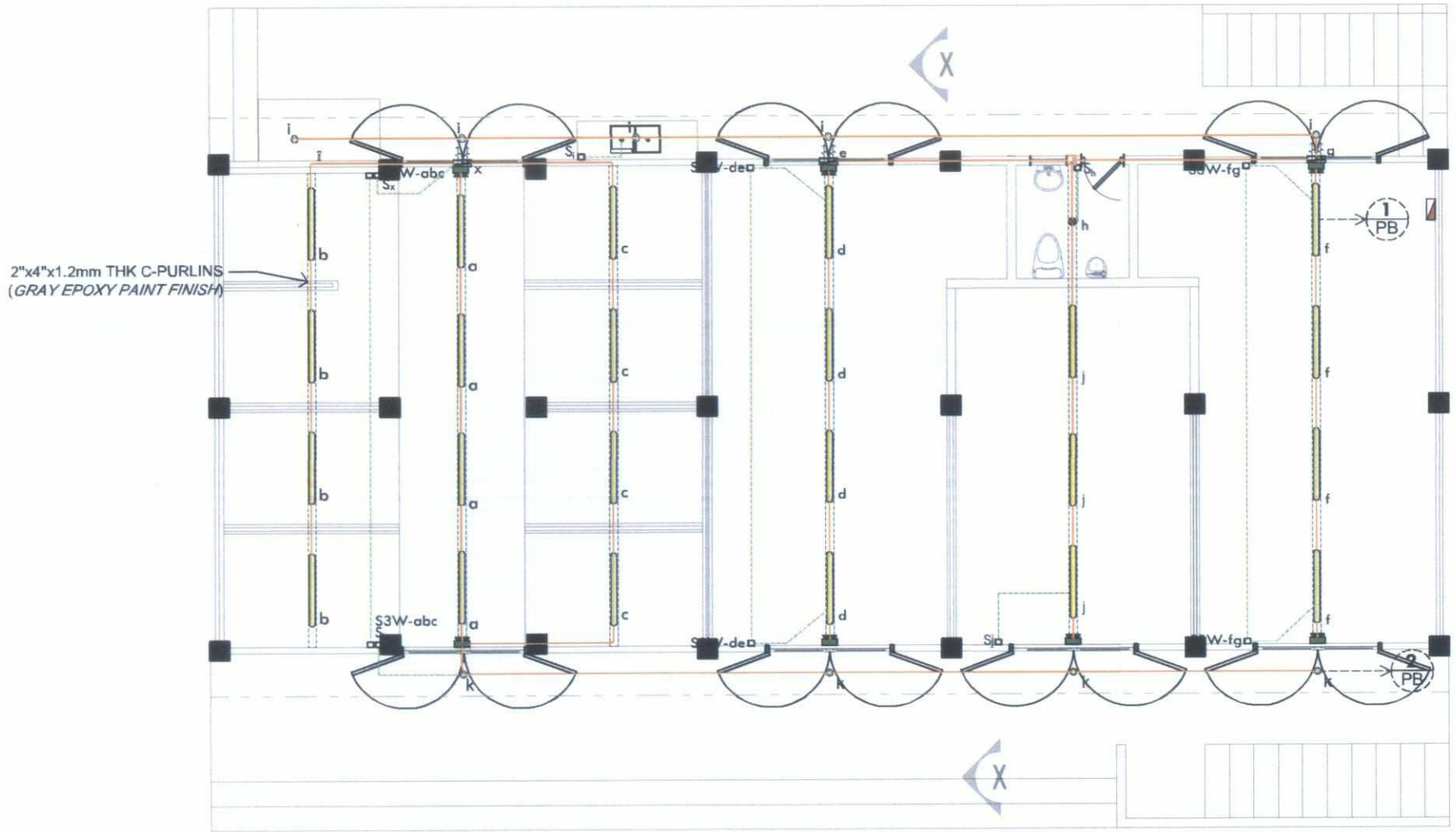
LEGENDS

	1-18W T5 LED TUBE IN A WEATHERPROOF HOUSING (DL)
⊗	20W LED BULB WITH RECEPTACLE
○	12W LED 4" ROUND SURFACE MOUNTED DOWNLIGHT (DL)
	WALL MOUNTED EMERGENCY LIGHT WITH OUTLET
S	ONE-GANG WIDE SERIES 1-WAY SWITCH
S3W-ab	TWO-GANG WIDE SERIES 3-WAY SWITCH
S3W-abc	THREE-GANG WIDE SERIES 3-WAY SWITCH
	40W INDUSTRIAL TYPE WALL MOUNTED EXHAUST FAN WITH LOUVERS
WP	DUPLEX UNIVERSAL CONVENIENCE OUTLET WITH GROUND WITH WEATHERPROOF COVER
	PVC CONDUIT
	PANELBOARD



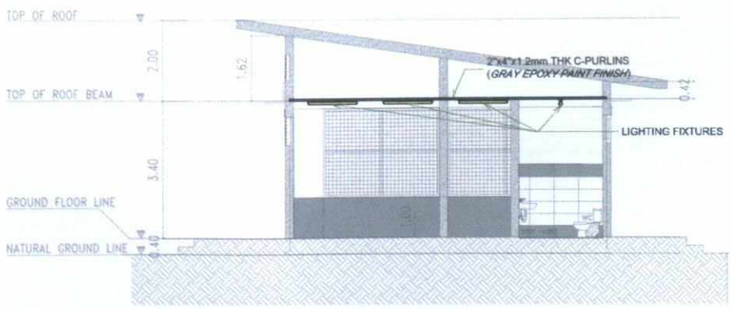
MOUNTING HEIGHT DETAILS

NTS



PROPOSED LIGHTING LAYOUT

SAN ISIDRO CAMPUS SCALE 1 : 100 MTS



CROSS SECTION THRU X-X

SCALE 1 : 150 MTS

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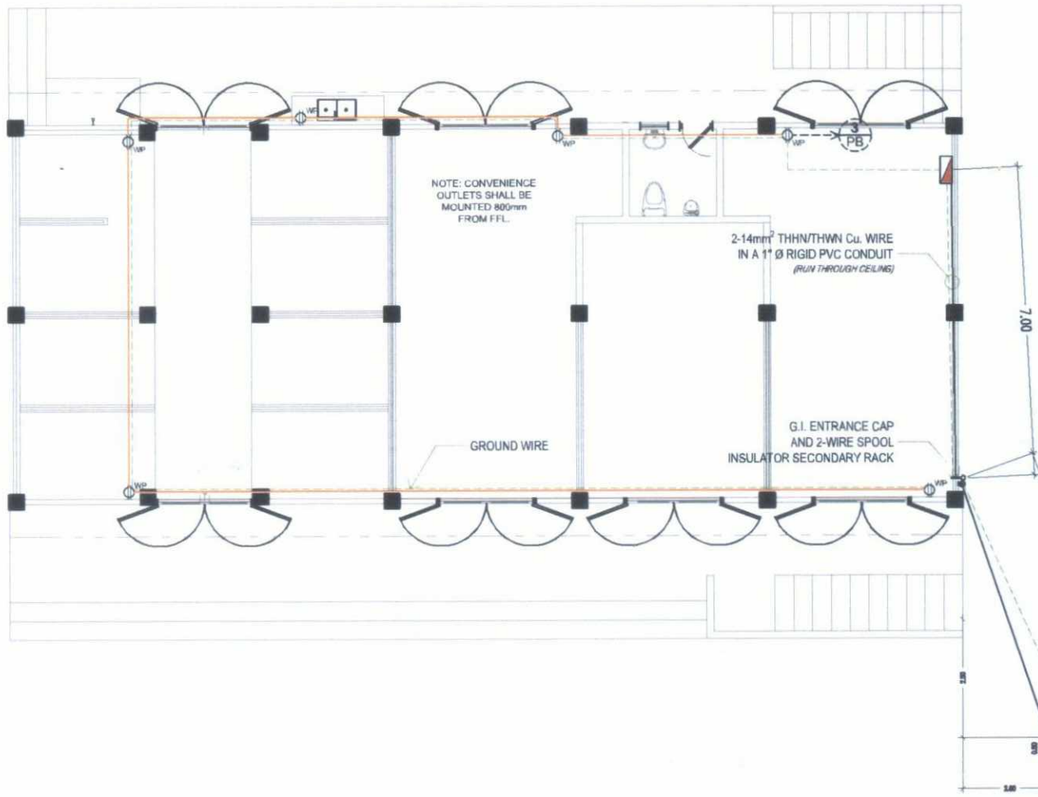
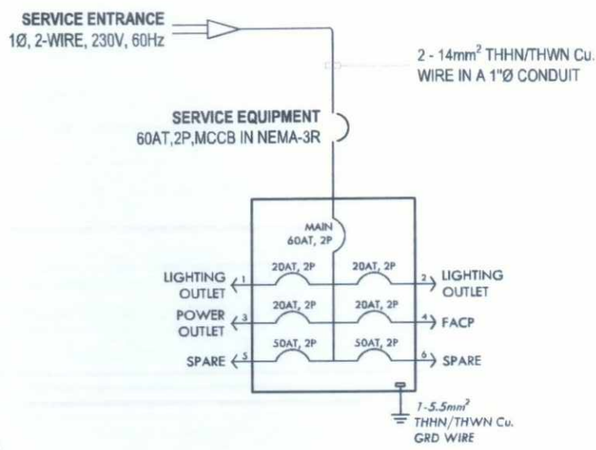
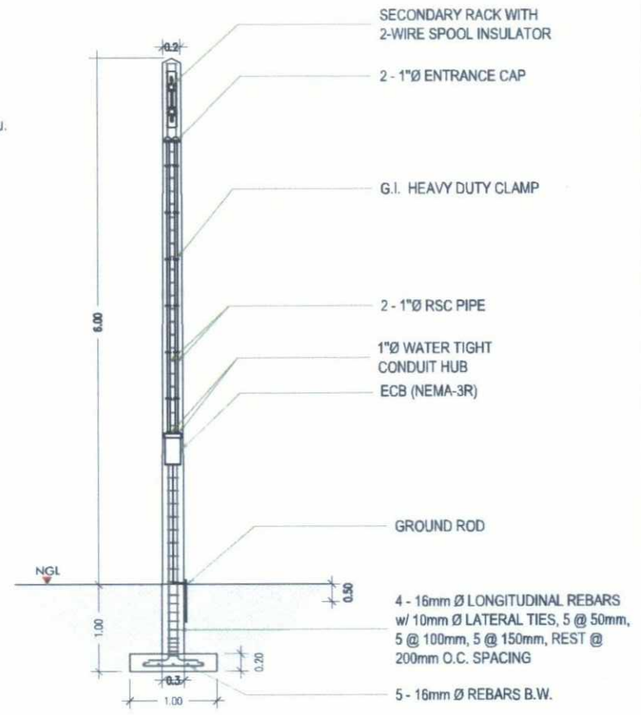
CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF)	ENGR. MARK JOMELLE O. NATIVIDAD ELECTRICAL ENGINEER, OFDM-PDU	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ HEAD, OUHS	ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	E- 01
PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY							DATE:	PAGE NO: 23/64





SINGLE LINE DIAGRAM

NTS



SERVICE ENTRANCE PEDESTAL DETAIL

SCALE 1 : 80 MTS

PROPOSED POWER OUTLET AND MAIN FEEDER LAYOUT

SAN ISIDRO CAMPUS

SCALE 1 : 130 MTS

SAN ISIDRO MRF PANELBOARD											
LOCATION:		SAN ISIDRO			SYSTEM VOLTAGE:			230V, 1-PHASE, 60Hz			
FED FROM:		SERVICE UTILITY			MAIN FEEDER SIZE:			2 - 14mm² THHN/THWN Cu. WIRE IN A 1" ø CONDUIT			
MAIN CIRCUIT BREAKER:		60AT, MCCB, 2P			ENCLOSURE:			NEMA-1 (RECESSED MOUNTED)			
CIRCUIT NUMBER	DESCRIPTION	NO. OF OUTLET	VA	A	CIRCUIT BREAKER			CONDCUTOR (mm²)	GROUND (mm²)	TYPE OF WIRE	CONDUIT
					AT	AF	POLE				
1	LIGHTING OUTLET	20	367	1.60	20	100	2	2 - 3.5	--	THHN/THWN	3/4" ø PVC
2	LIGHTING OUTLET	18	310	1.35	20	100	2	2 - 3.5	--	THHN/THWN	3/4" ø PVC
3	POWER OUTLET	6	1080	4.70	20	100	2	2 - 3.5	1 - 3.5	THHN/THWN	1/2" ø PVC
4	FACP	1	500	2.17	20	100	2	2 - 3.5	1 - 3.5	THHN/THWN	1/2" ø PVC
5	SPARE	1	3910	17.00	50	100	2	--	--	--	--
6	SPARE	1	3910	17.00	50	100	2	--	--	--	--

TOTAL CONNECTED LOAD (VA):	10077	TOTAL LOAD CURRENT (A):	48.06
DEMAND FACTOR:	80%	TOTAL DEMAND LOAD CURRENT (A):	38.45

NOTE: CIRCUIT NO. 5 & 6 ARE PROVISION FOR ROTARY SCREEN/SIFTER AND ROTARY CONVEYOR.

SCHEDULE OF LOADS

VOLTAGE DROP CALCULATION:

SERVICE DROP > PB

2 - 14mm² THHN/THWN Cu. / 20M

EFF Z AT 0.85 PF: 0.44 / I_{LOAD} = 38.45A

VD = (2)(20)(38.45)(0.44/305)

VD = 2.22V ~ **0.96%**

PB > FARTHEST MOTOR LOAD

2 - 14mm² THHN/THWN Cu. / 15M

EFF Z AT 0.85 PF: 0.44 / I_{LOAD} = 17A

VD = (2)(15)(17)(0.44/305)

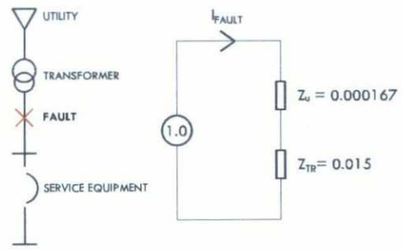
VD = 0.735V ~ **0.323%**

TOTAL %VD OF THE SYSTEM

%VD = 0.96+0.323

%VD = **1.283%**

SHORT CIRCUIT CALCULATION:



ASSUME 300MVA$_{SC}$
@ 1 - 50KVA TRANSFORMER,
1Ø , 230V, 60Hz, %Z = 1.5

Z_U = 50/300,000 = 0.000167 pu

Z_{TR} = 1.5/100 = 0.015 pu

Z_{TOTAL} = 0.000167+0.015 = **0.01516 pu**

FAULT

$I_{SC} = 1/Z_{TOTAL} \times (KVA_B / 230)$

$I_{SC} = 1/0.01516 \times (50x10^3 / 230)$

I_{SC} = 14,339A

~SAY 15 KAIC

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF)	ENGR. MARK JOMELLE O. NATIVIDAD ELECTRICAL ENGINEER, OFDM-PDU	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ HEAD, OUHS	ATTY. WILMARK B. RAMOS, DBA VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	E-02
PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY							DATE:	PAGE NO: 24/64

FDAS GENERAL NOTES

1. ALL FIRE DETECTION AND ALARM SYSTEM INSTALLATION WORKS HEREIN SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, THE APPLICABLE PROVISIONS OF THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) FIRE CODE, AND THE RULES AND REGULATIONS OF THE LOCAL FIRE BUREAU.

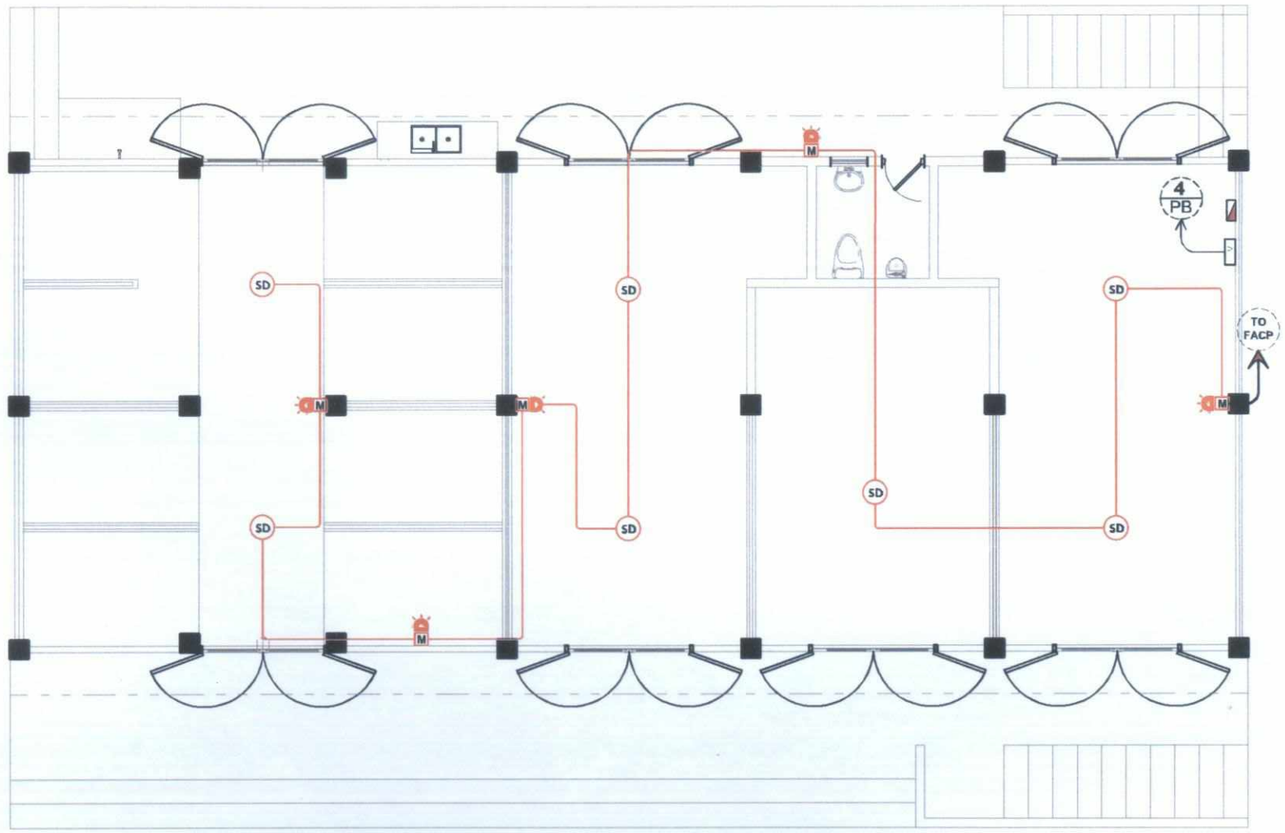
2. THE FIRE DETECTION AND ALARM SYSTEM SHALL BE DESIGNED AND CONSTRUCTED SO THAT THERE ARE APPROPRIATE PROVISIONS FOR THE EARLY WARNING OF FIRE, AND APPROPRIATE MEANS OF ESCAPE IN CASE OF FIRE FROM THE BUILDING TO A PLACE OF SAFETY OUTSIDE THE BUILDING CAPABLE OF BEING SAFELY AND EFFECTIVELY USED AT ALL MATERIAL TIMES.

3. MOUNTING HEIGHTS OF FIRE DETECTION DEVICES ARE THE FOLLOWING:
   - DETECTORS (CEILING MOUNTED), VARIES
   - SOUNDERS 2.20 METERS
   - MANUAL CALL POINT 1.20 METERS
   - CONTROL PANEL 1.50 METERS

4. ALL MATERIALS TO BE USED ARE NEW AND WILL BE INSTALLED IN APPLICATION FOR WHICH THEY ARE INTENDED.

LEGENDS

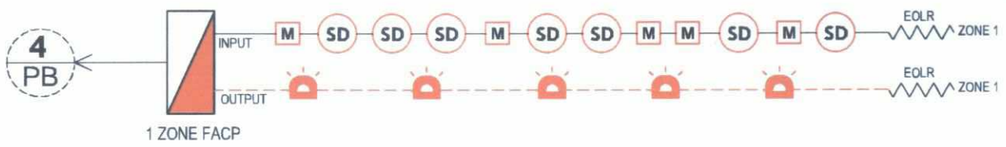
SD	SMOKE DETECTOR
M	MANUAL CALL POINT
	STROBE WITH SOUNDER
EOLR	END OF THE LINE RESISTOR
FACP	FIRE ALARM CONTROL PANEL



PROPOSED CONVENTIONAL FDAS LAYOUT

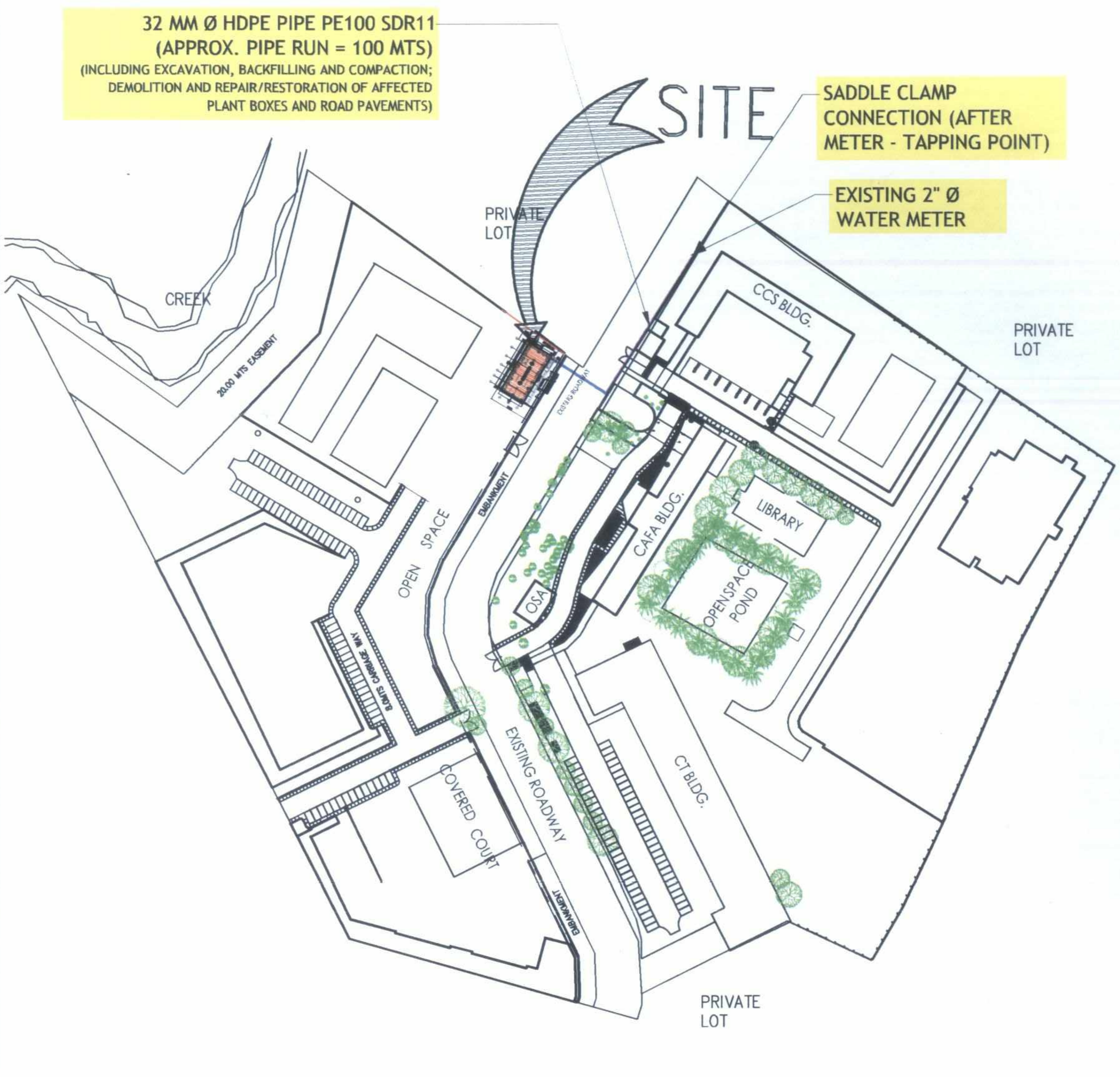
SAN ISIDRO CAMPUS

SCALE 1 : 100 MTS



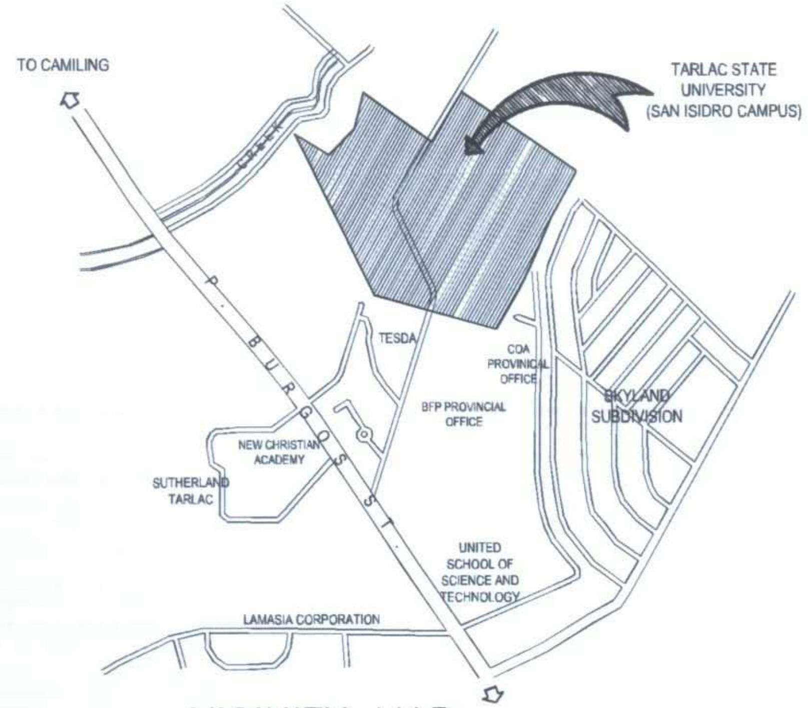
FDAS SINGLE LINE DIAGRAM

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: ENGR. MARK JOMELLE O. NATIVIDAD, ELECTRICAL ENGINEER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, HEAD, DURS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ; ~~ATTY. WILMARK S. RAMOS, DBA~~, VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT	SHEET CONTENTS: AS SHOWN DATE:	SHEET NO: E-03 PAGE NO: 25/64



LOCATION MAP AND MAIN WATER CONNECTION PLAN

SCALE: NTS



VICINITY MAP

SCALE: NTS

SITE DEVELOPMENT PLAN

SCALE: 1: 350 METERS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OURS	RECOMMENDING APPROVAL: ATTY. GHERLOUD ~~ATTY. WILMARK J. RAMOS, DBA~~ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-01 PAGE NO: 26/64

LEGENDS

SP	SOIL PIPE	FD	FLOOR DRAIN
WP	WASTE PIPE	RD	ROOF DRAIN
VP	VENT PIPE	URI	URINAL
SS	SOIL STACK	WC	WATER CLOSET
VS	VENT STACK	LAV	LAVATORY
VTW	VENT THRU WALL	GV	GATE VALVE
SVTR	STACK VENT THRU ROOF	CV	CHECK VALVE
FCO	FLOOR CLEANOUT	KS	KITCHEN SINK

	4" Ø PVC S1000 SOIL/WASTE PIPES
	3" Ø PVC S1000 WASTE/ STORM DRAIN PIPES
	2" Ø PVC S1000 WASTE PIPES
	2" Ø PVC S1000 VENT PIPES
	32 MM Ø PPR PIPE PN20
	25 MM Ø PPR PIPE PN20
	20 MM Ø PPR PIPE PN20

GENERAL NOTES:

1. GRADE OF HORIZONTAL PIPING
RUN ALL HORIZONTAL PIPINGS IN PERFECT ALIGNMENT AT A UNIFORM GRADE OF NOT LESS THAN (2%) TWO PERCENT.

2. CHANGE OF DIRECTION
ALL CHANGES IN DIRECTION SHALL BE MADE BY THE APPROPRIATE USE OF 45° WYE, LONG SWEEP, QUARTER BEND, SIXTH, EIGHT, SIXTEENTH BEND WHEN THE CHANGE OF FLOW IS FROM HORIZONTAL TO VERTICAL, A SINGLE 1/8 BEND COMBINATION MAYBE USED ON WASTE LINE.

3. PROHIBITED FITTINGS
NO DOUBLE TEE BRANCHES SHALL BE USED ON SOIL & WASTE LINES. DRILLING & TAPPING OF HOUSE DRAIN, WASTE PIPES OR USE OF SADDLE HUB AND BENDS ARE PROHIBITED.

4. SLEEVES
PROVIDE PIPE SLEEVES AT WALL, COLUMN & SLAB ONE SIZE BIGGER THAN THE ACTUAL SIZE OF PIPE PASSING THRU WALLS OR UNDER SLAB TO PROTECT PIPES FROM BREAKAGE.

5. PIPE CLEANOUTS
CLEANOUTS ARE REQUIRED UNDER THE FOLLOWING CONDITIONS:

A) EVERY CHANGE IN HORIZONTAL DIRECTION EXCEEDING TWENTY – TWO AND ONE – HALF DEGREES.

B) ONE AND HALF METERS INSIDE THE PROPERTY LINE BEFORE THE HOUSE DRAINAGE CONNECTION.

C) EVERY FIFTEEN METERS (15.00) IN HORIZONTAL RUN OF PIPES.

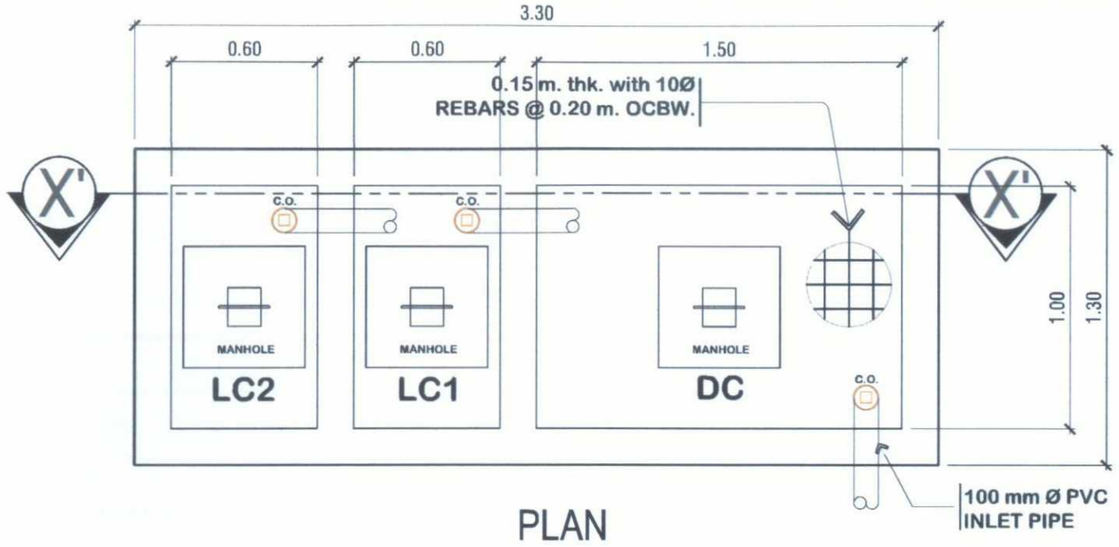
D) AT THE END OF ANY HORIZONTAL PIPES.

6. DEAD ENDS AVOIDED:
IN THE INSTALLATIONS OF PLUMBING SYSTEM, DEAD–END SHALL BE AVOIDED.

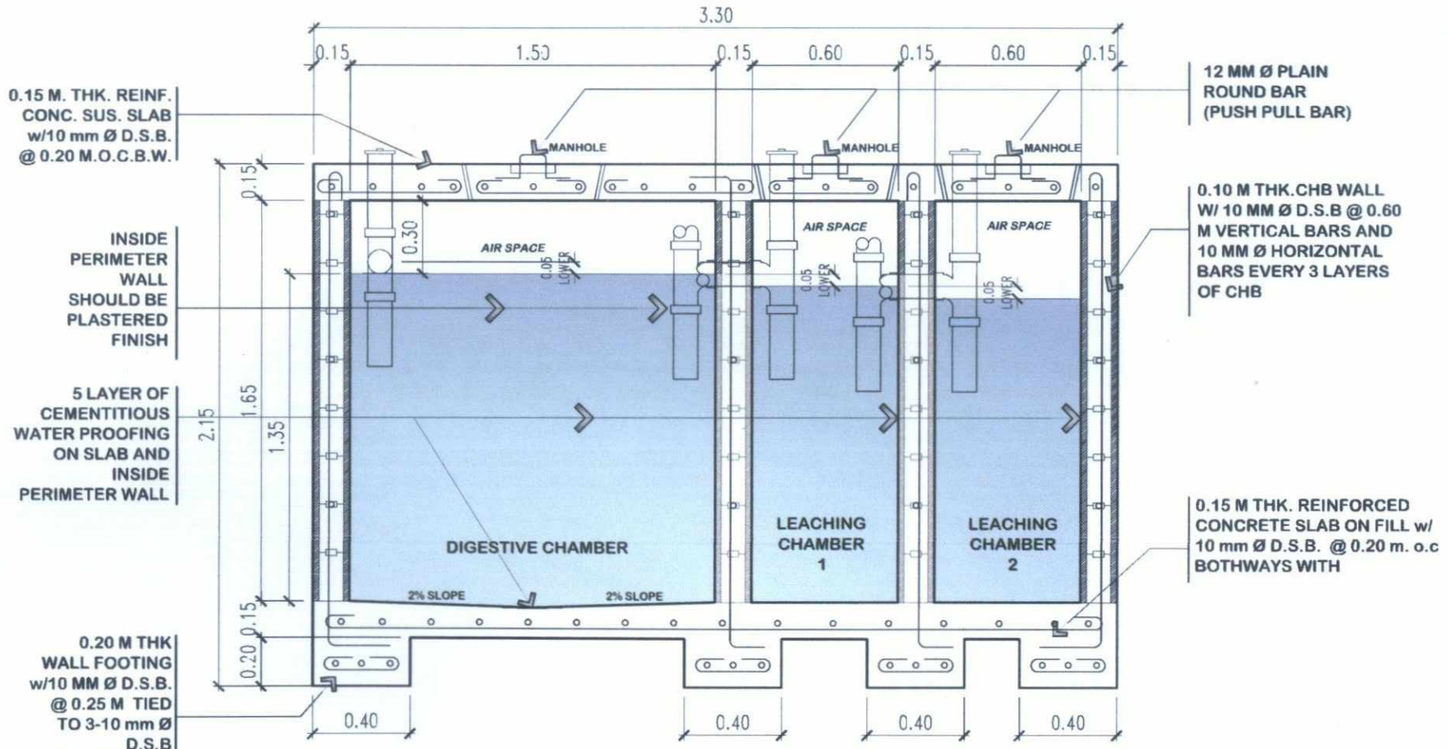
7. ALL PLUMBING WORKS SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE NATIONAL BUILDING CODE, REQUIREMENTS OF THE PLUMBING INSPECTION OFFICE AND PERTINENT PROVISION OF THE NATIONAL BUILDING CODE.

THE CONTRACTOR SHALL BE VERIFY ALL THE EXISTING UTILITIES AT SITE AND COORDINATES THE WORKS WITH WATER LINE SERVICE CONNECTION POINT.

ALL PIPES SIZES ARE IN MILLIMETERS AND ALL DIMENSION ARE IN METERS UNLESS OTHERWISE SPECIFIED.



PLAN



SECTION X'-X'

SEPTIC TANK DETAILS

SCALE: 1:25

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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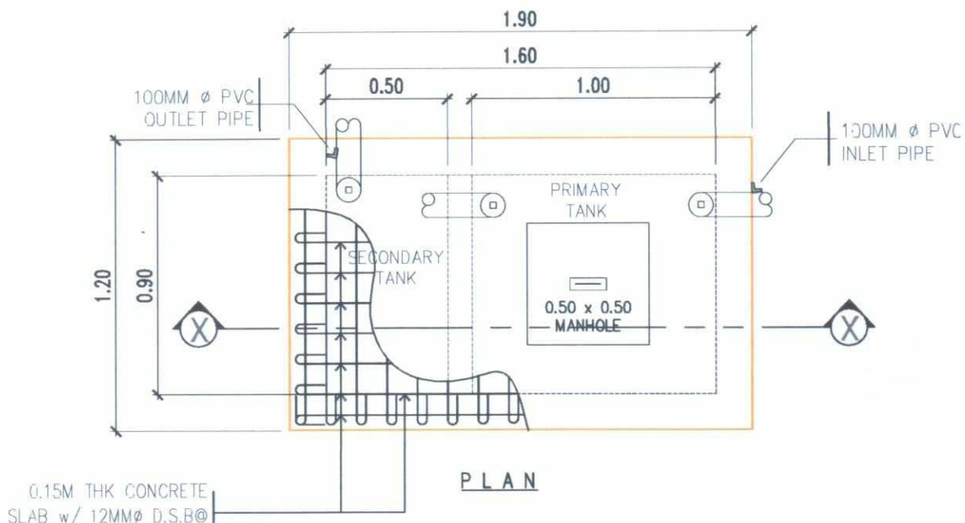
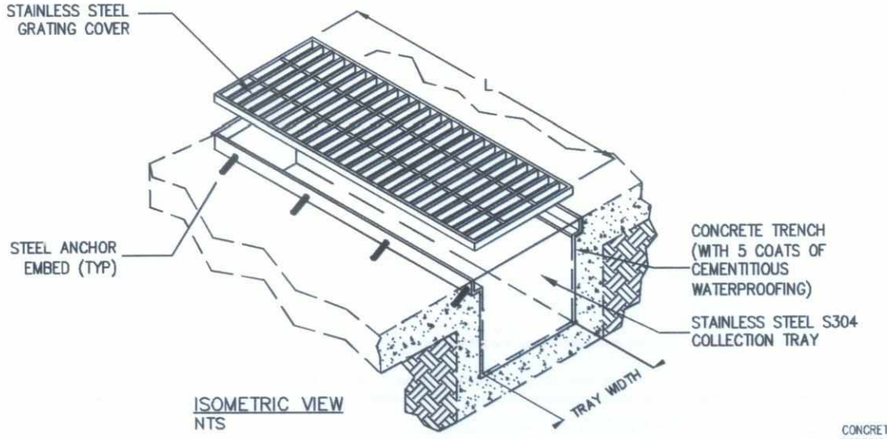
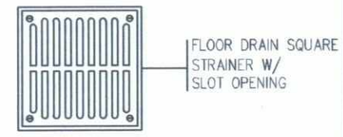


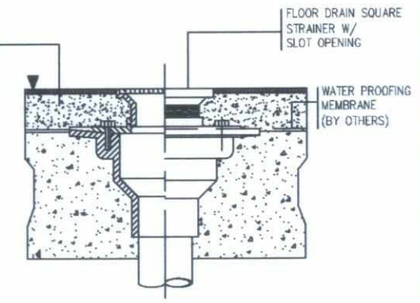
PLAN



ISOMETRIC VIEW
NTS



PLAN



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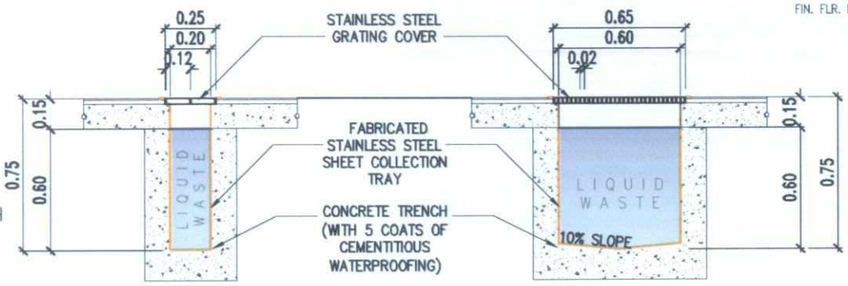
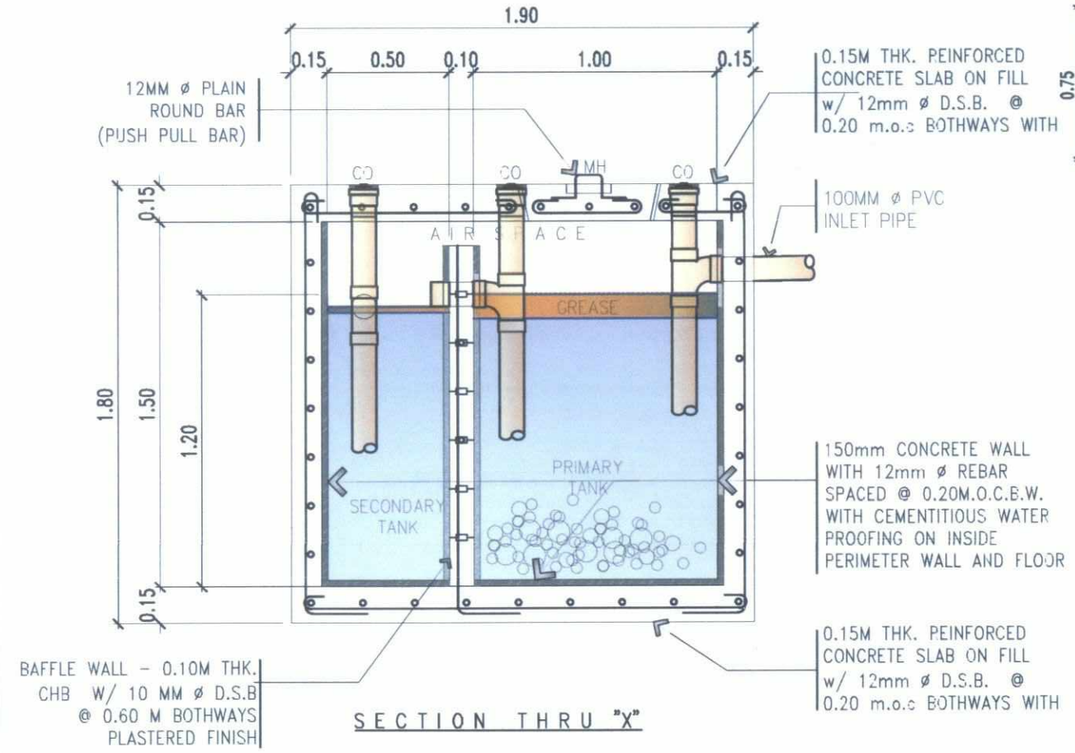


COLLECTION TRAY DETAIL

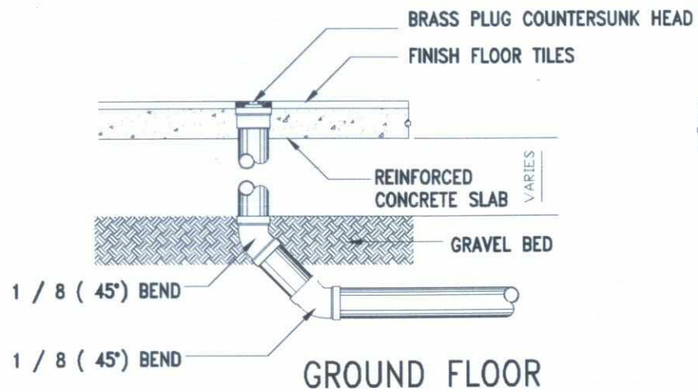
SCALE: 1:25

FLOOR DRAIN DETAIL

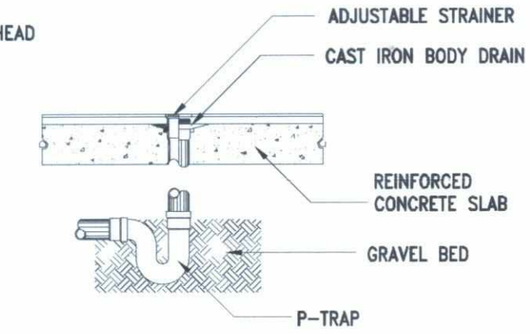
SCALE: NTS



SECTION THRU "X"



GROUND FLOOR



GROUND FLOOR

LIQUID WASTE INTERCEPTOR DETAILS

SCALE: 1:25

FLOOR CLEAN-OUT DETAIL

SCALE: NTS

FLOOR DRAIN DETAIL

SCALE: NTS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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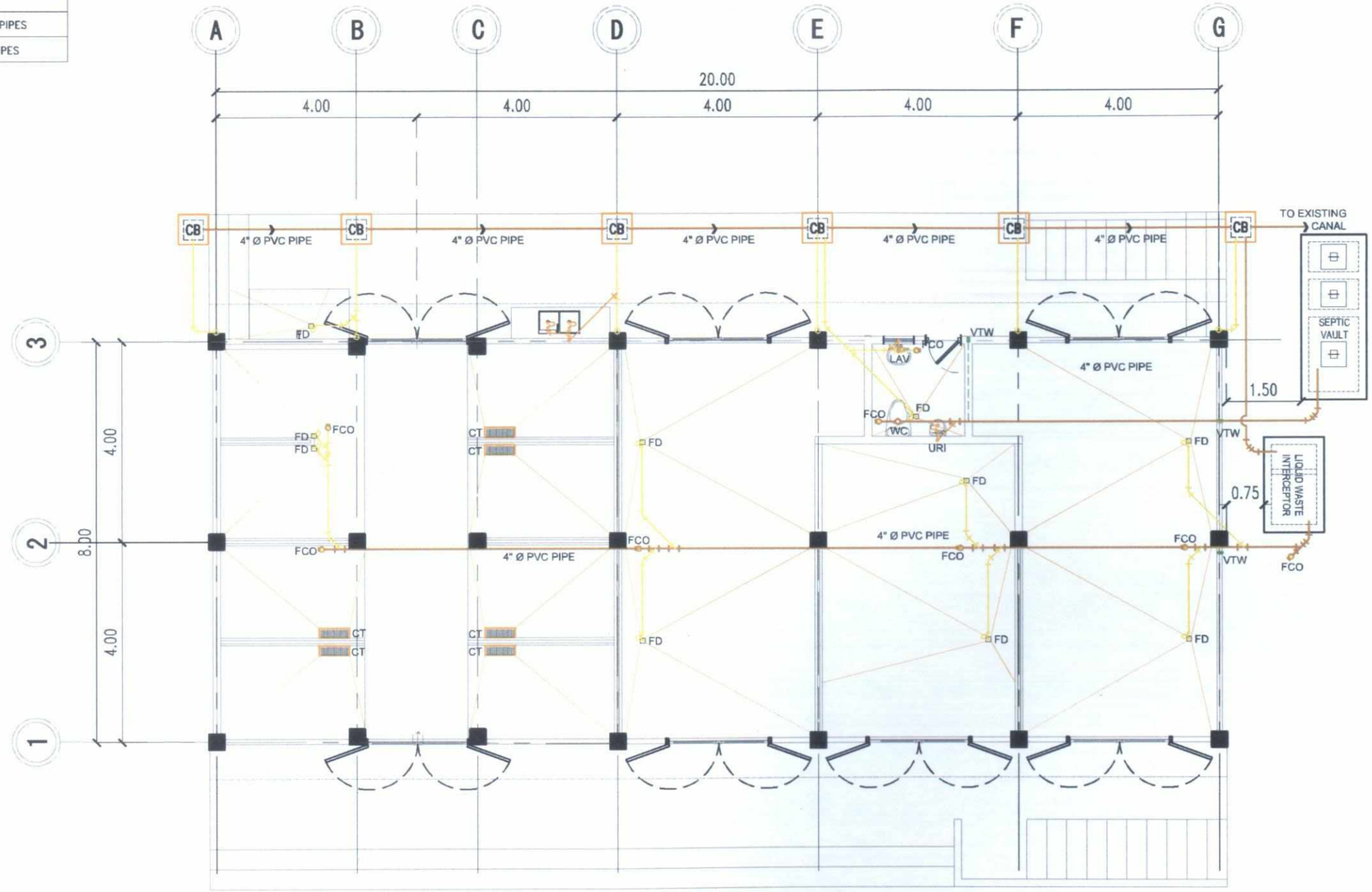
LEGEND	
———	4" Ø PVC S1000 SOIL/WASTE PIPES
———	3" Ø PVC S1000 WASTE/STORM DRAIN PIPES
———	2" Ø PVC S1000 WASTE PIPES
———	2" Ø PVC S1000 VENT PIPES



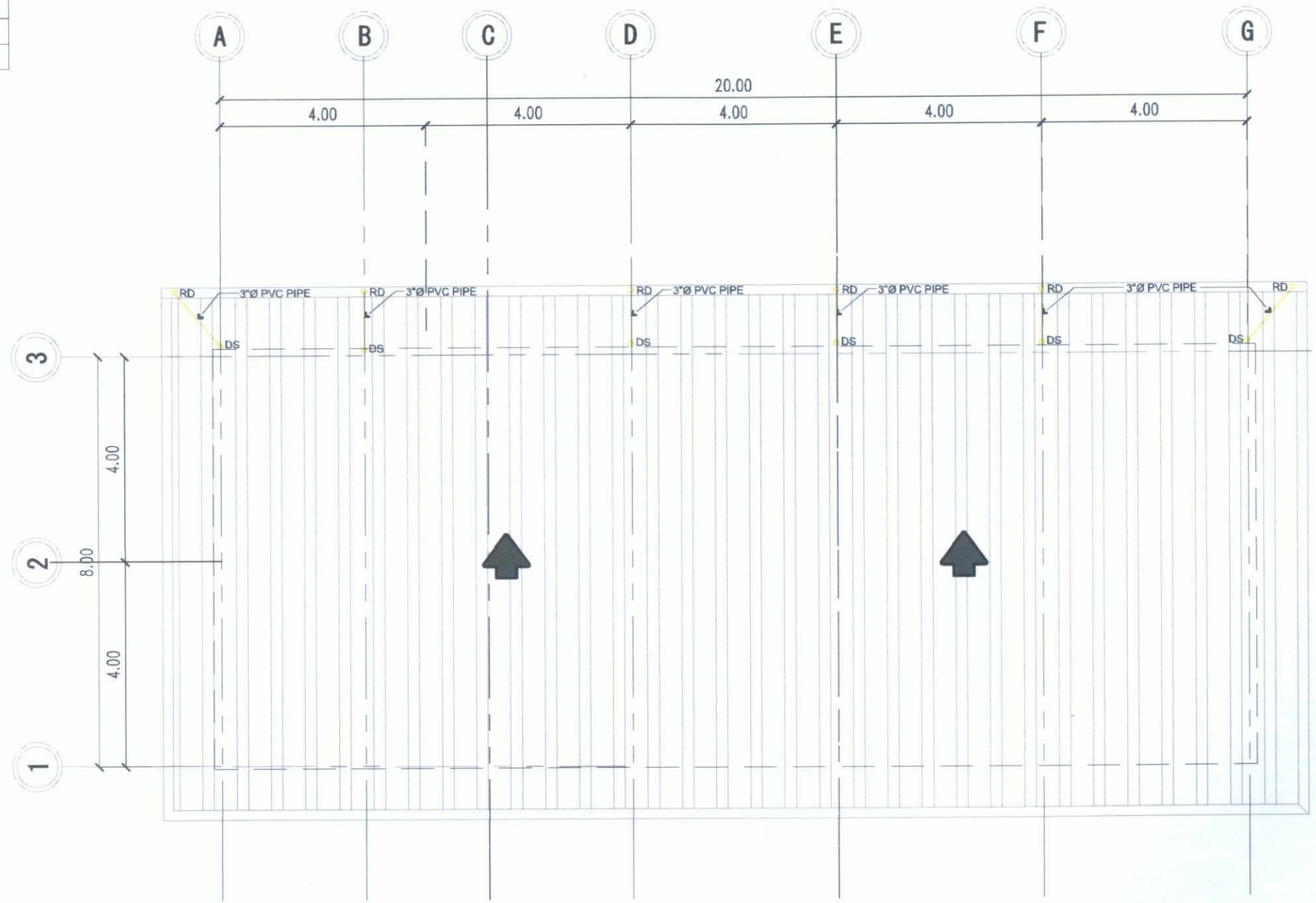
GROUND FLOOR

SANITARY LAYOUT

SCALE: 1:100

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD G. BENITEZ ~~ATTY. WILMARK G. RAMOS, DBA~~ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-04 PAGE NO: 29/64

LEGEND	
	4" Ø PVC S1000 SOIL/WASTE PIPES
	3" Ø PVC S1000 WASTE/STORM DRAIN PIPES
	2" Ø PVC S1000 WASTE PIPES
	2" Ø PVC S1000 VENT PIPES



ROOF LEVEL

STORM DRAIN LAYOUT

SCALE: 1:100

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Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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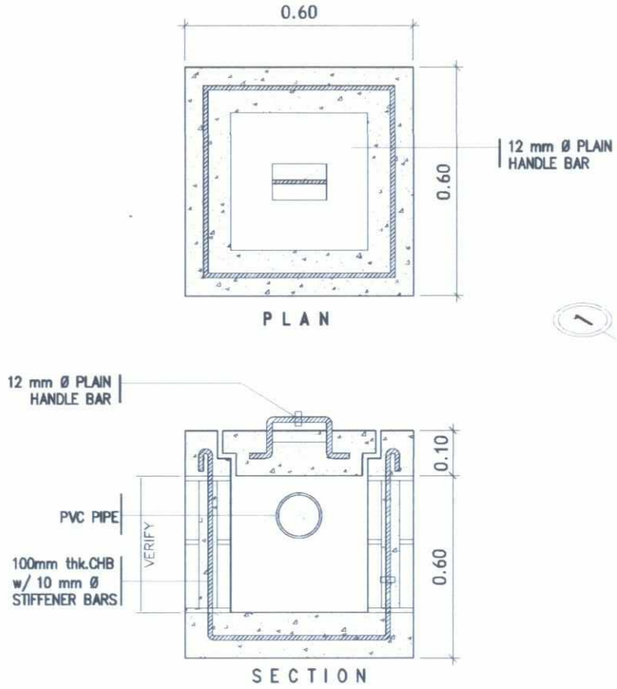
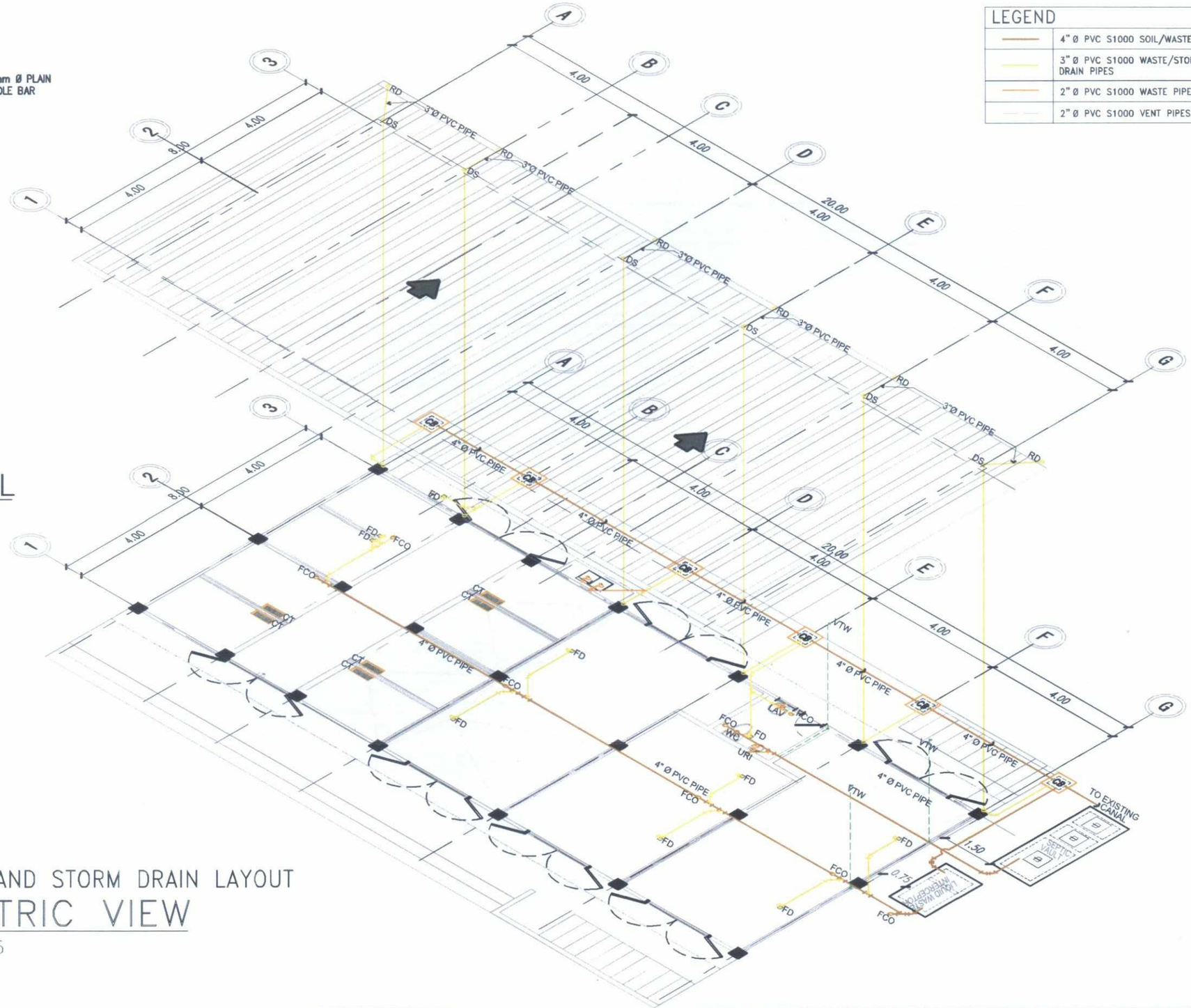
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 30/64



CATCH BASIN DETAIL

SCALE: NTS



SANITARY AND STORM DRAIN LAYOUT
ISOMETRIC VIEW

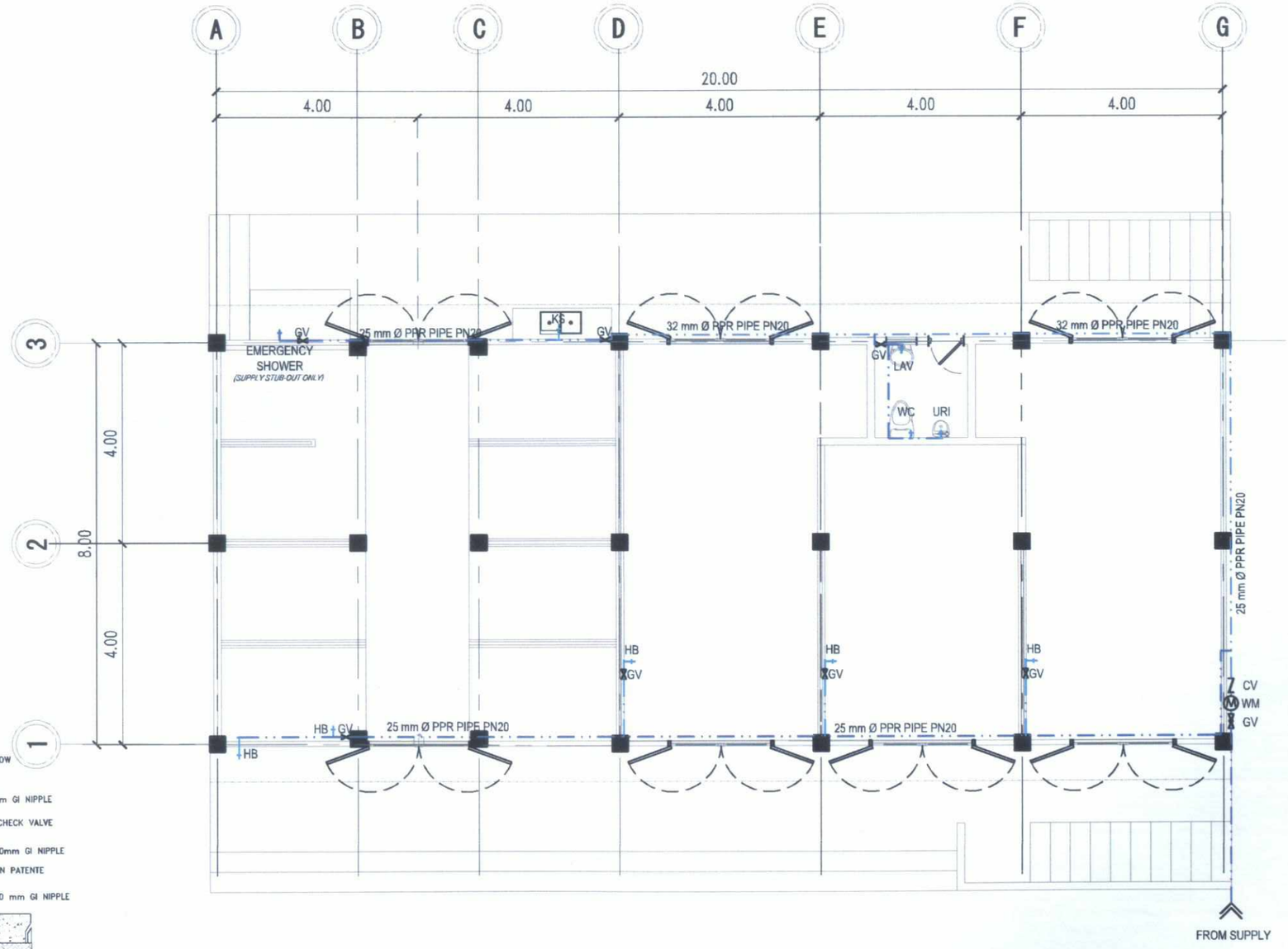
SCALE: 1:75

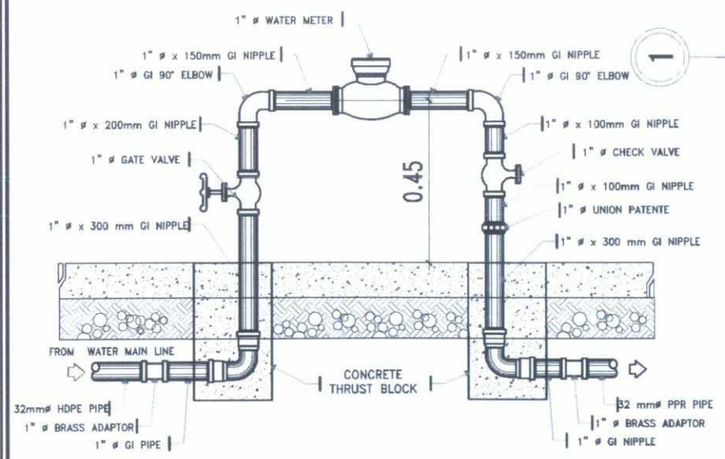
TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ ~~ATTY. WILMARK J. RAMOS, DBA~~ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-06 PAGE NO: 31/64

LEGEND	
— · · —	32MM Ø PPR PIPE PN20
— · · —	25MM Ø PPR PIPE PN20
— · · —	20MM Ø PPR PIPE PN20

NOTE:

- ALL FIXTURE SUPPLY PIPES SHALL BE 20MM Ø PPR PIPE PN20 EXCEPT FOR EMERGENCY SHOWERS, WHICH SHALL BE 25MM Ø PPR PIPE PN20.
- PROVIDE 300MM HIGH 20MM Ø PPR PIPE PN20 AIR CHAMBER WITH END CAP FOR EVERY LAVATORY, KITCHEN SINK, AND HOSE BIBBS.





BUILDING SUB-METER DETAIL

SCALE: NTS

WATER SUPPLY LAYOUT

SCALE: 1:100

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Romulo Boulevard, Tarlac City, Philippines 2300

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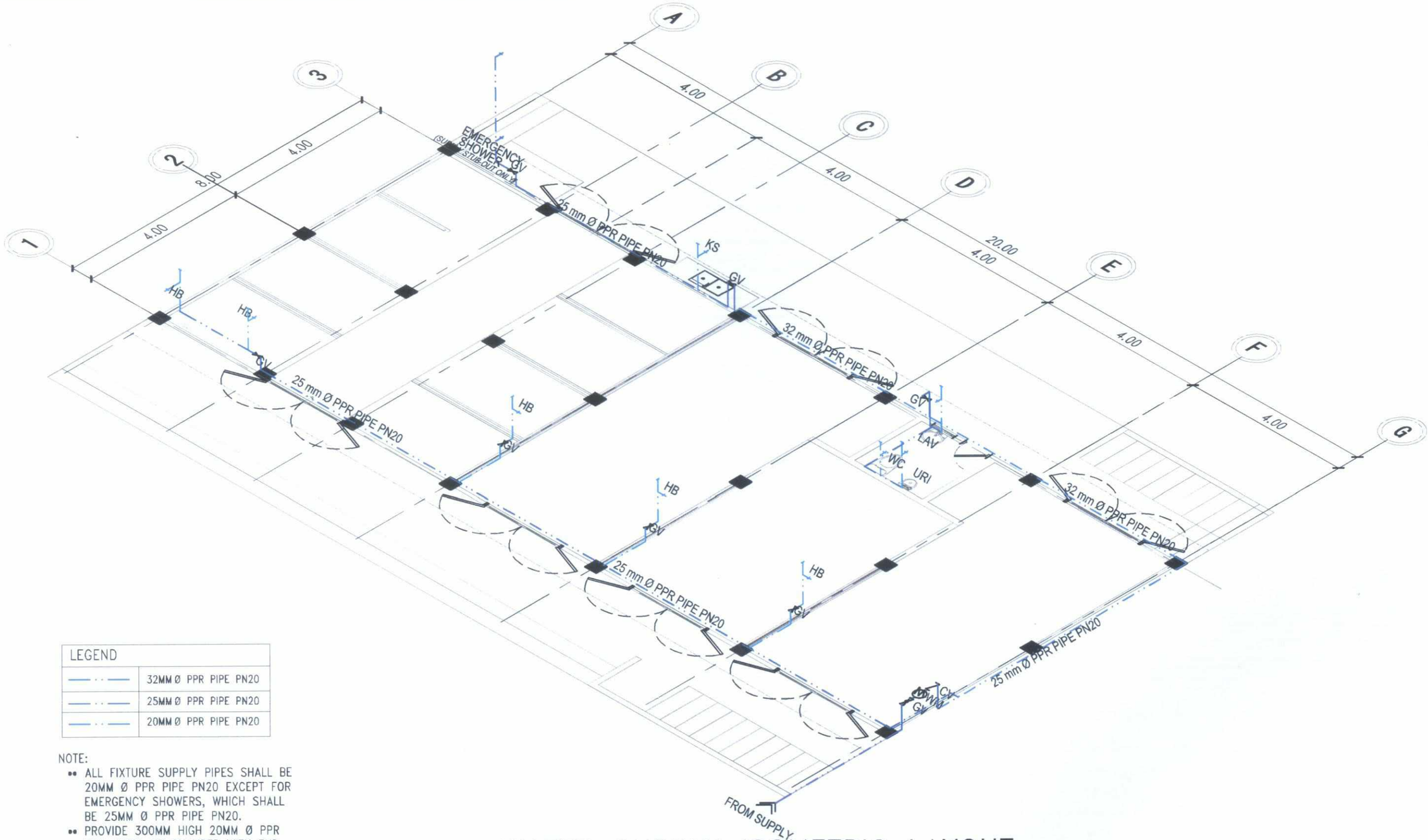
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 32/64



LEGEND	
— · · —	32MM Ø PPR PIPE PN20
— · · —	25MM Ø PPR PIPE PN20
— · · —	20MM Ø PPR PIPE PN20

NOTE:

- ALL FIXTURE SUPPLY PIPES SHALL BE 20MM Ø PPR PIPE PN20 EXCEPT FOR EMERGENCY SHOWERS, WHICH SHALL BE 25MM Ø PPR PIPE PN20.
- PROVIDE 300MM HIGH 20MM Ø PPR PIPE PN20 AIR CHAMBER WITH END CAP FOR EVERY LAVATORY, KITCHEN SINK, AND HOSE BIBBS.

WATER SUPPLY ISOMETRIC LAYOUT

SCALE: 1:75

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Facilities Development and Management Office
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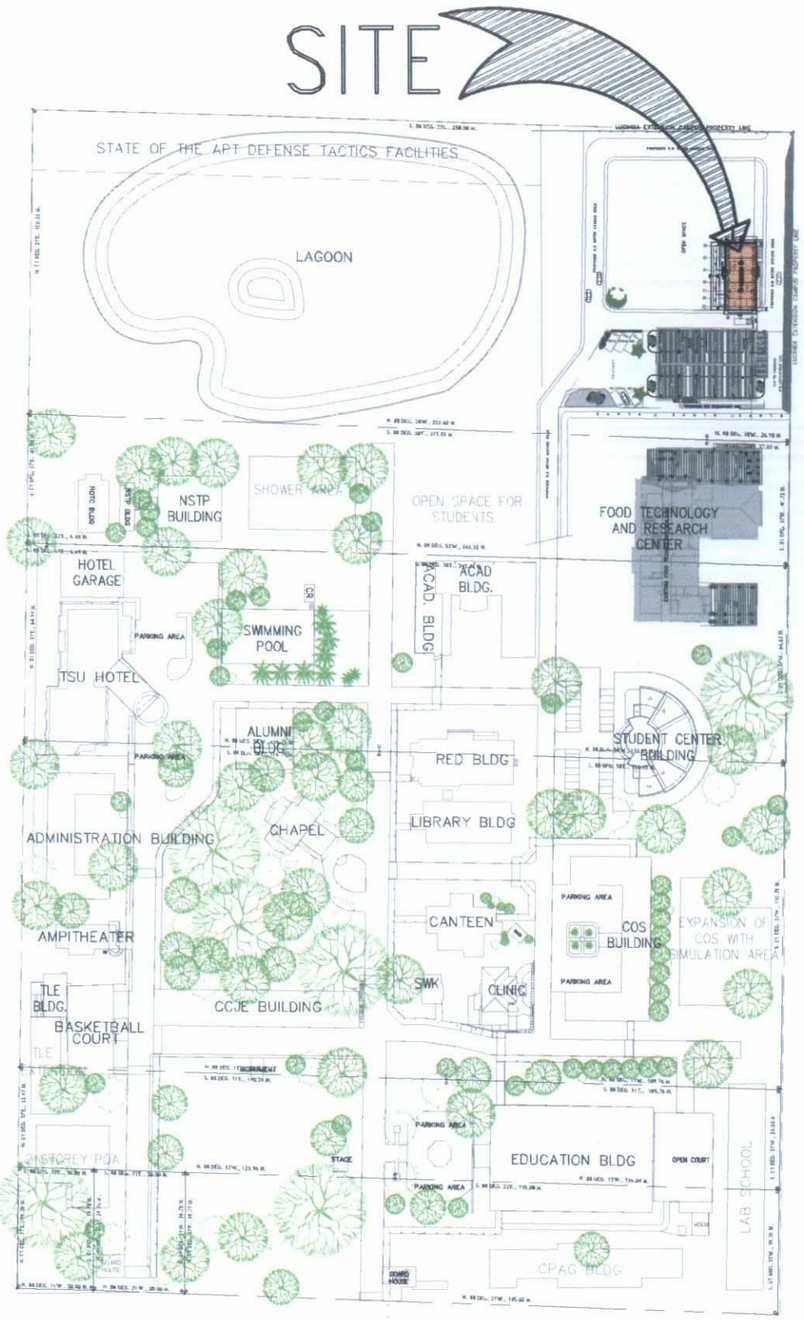
PROJECT LOCATION: SAN ISIDRO EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 33/64

MATERIAL RECOVERY FACILITY (MRF) LUCINDA CAMPUS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-POU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. WILMAR J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-01 PAGE NO: 34/64

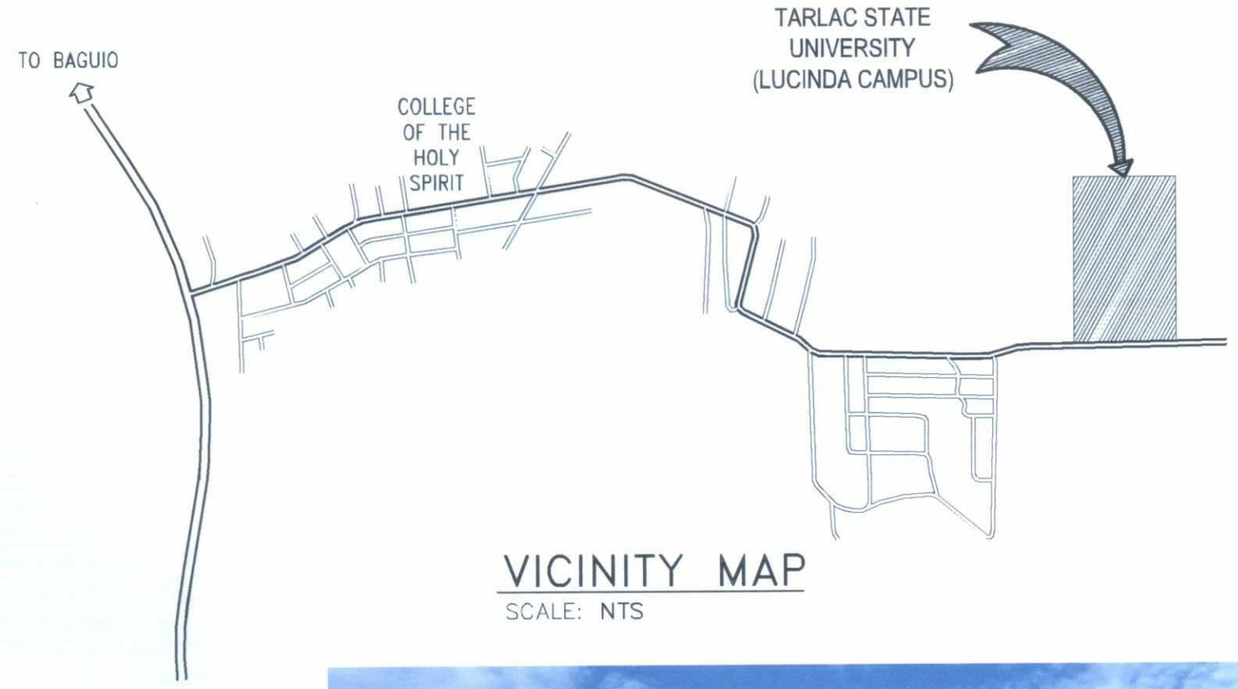
P E R S P E C T I V E

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROULD C. BENITEZ ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-02 PAGE NO: 35/64



LOCATION MAP

SCALE: 1:2000



VICINITY MAP

SCALE: NTS

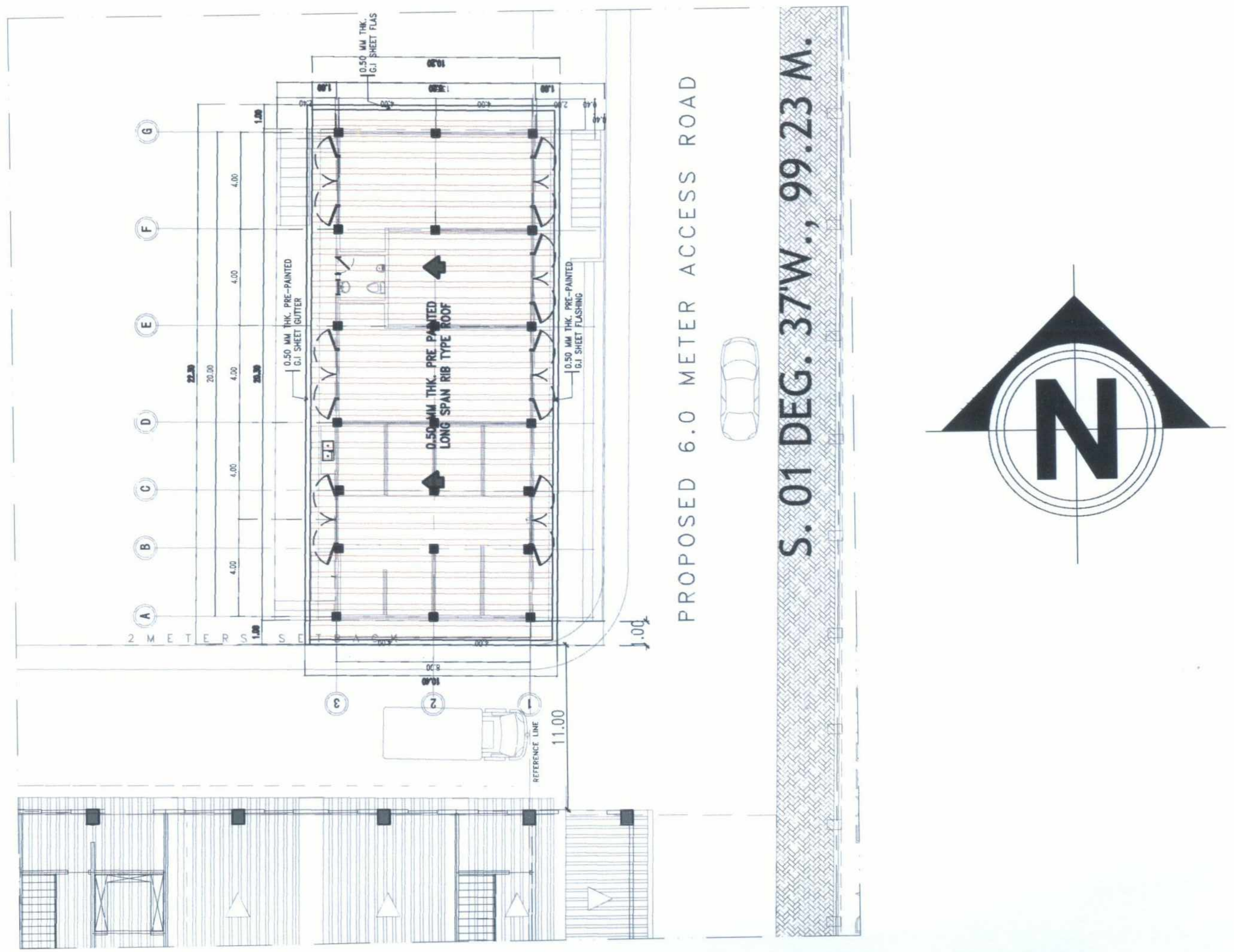
EXISTING CONDITION OF SITE

SCALE: NTS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-POU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ ATTY. WILMARK B. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-03 PAGE NO: 36/64

NOTE:
*DEMOLISH THE EXISTING 22M X 4M X 3M HEIGHT MRF BUILDING

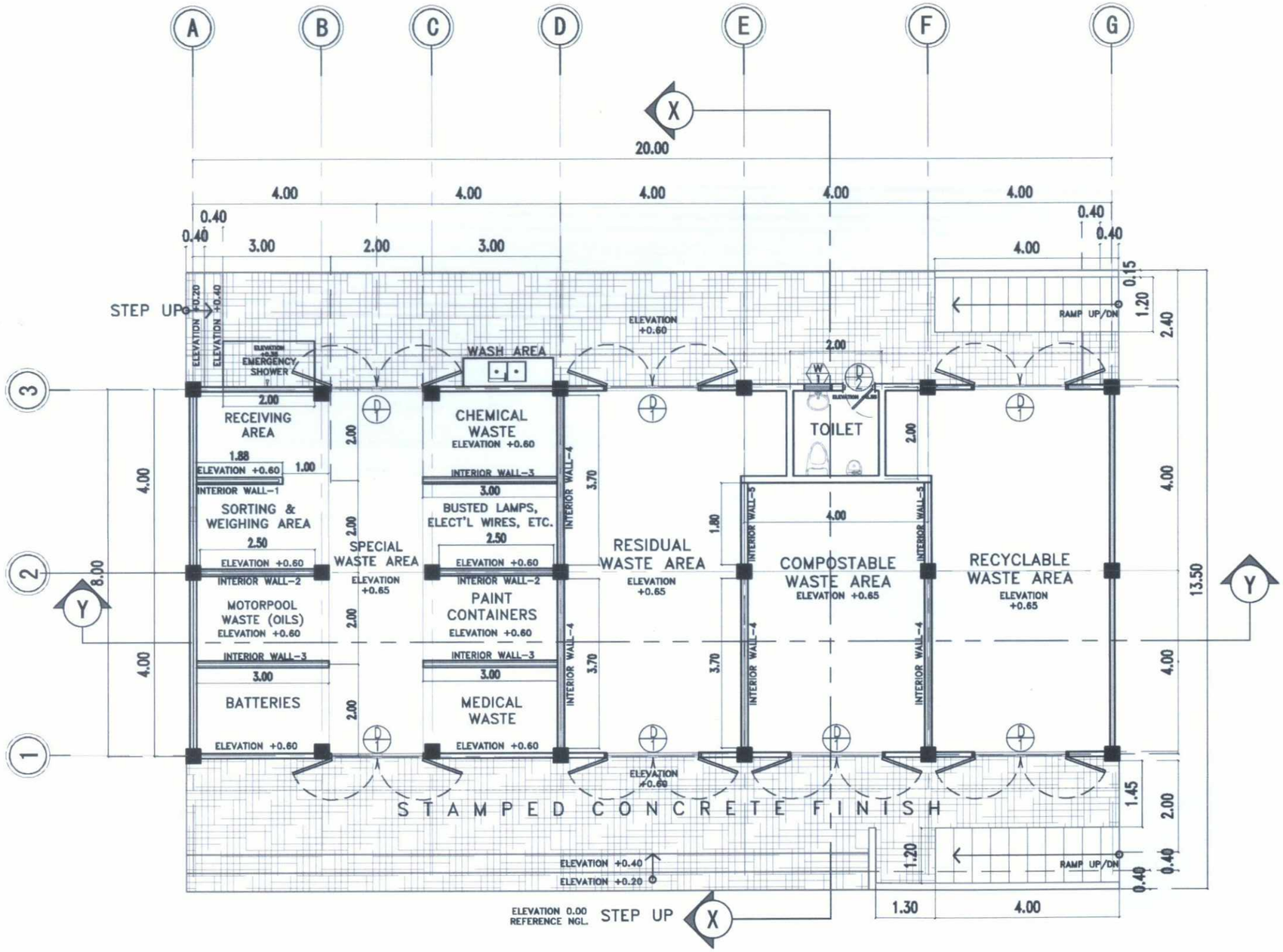
*USE PRE-PAINTED GI ROOF SHEET WITH STABLE FRAME FOR BARRICADE DURING CONSTRUCTION; DO NOT USE BLUESACK OR PLYWOOD.



SITE DEVELOPMENT PLAN

SCALE: 1: 150 METERS

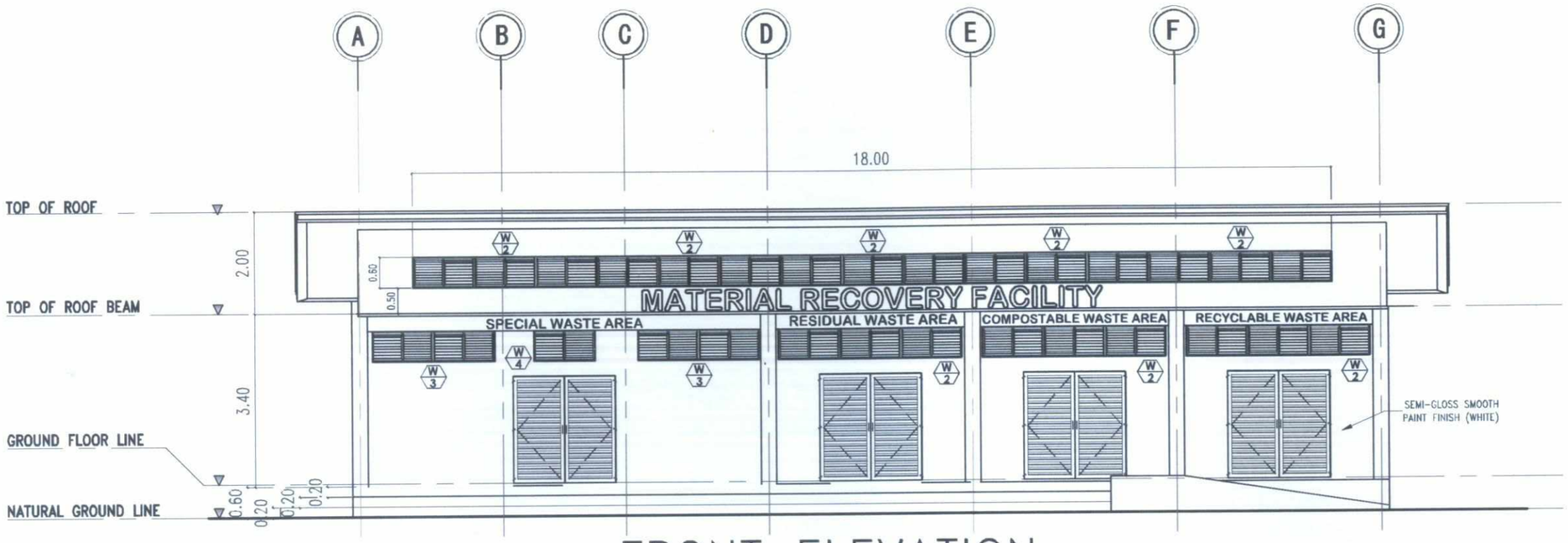
TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-POU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-04 PAGE NO: 37/64



PROPOSED FLOOR PLAN

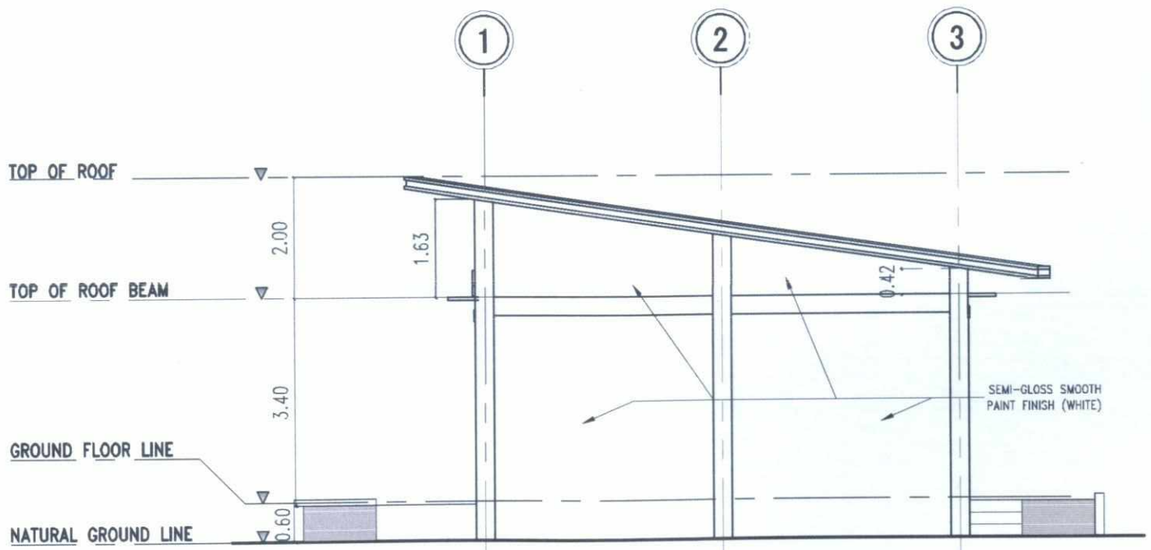
SCALE: 1: 100 METERS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, DRMS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ ~~ATTY. WILMARK J. RAMOS, DBA~~ VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: A-05 PAGE NO: 38/64



FRONT ELEVATION

SCALE: 1: 100 METERS



RIGHT-SIDE ELEVATION

SCALE: 1: 100 METERS

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Romulo Boulevard, Tarlac City, Philippines 2300

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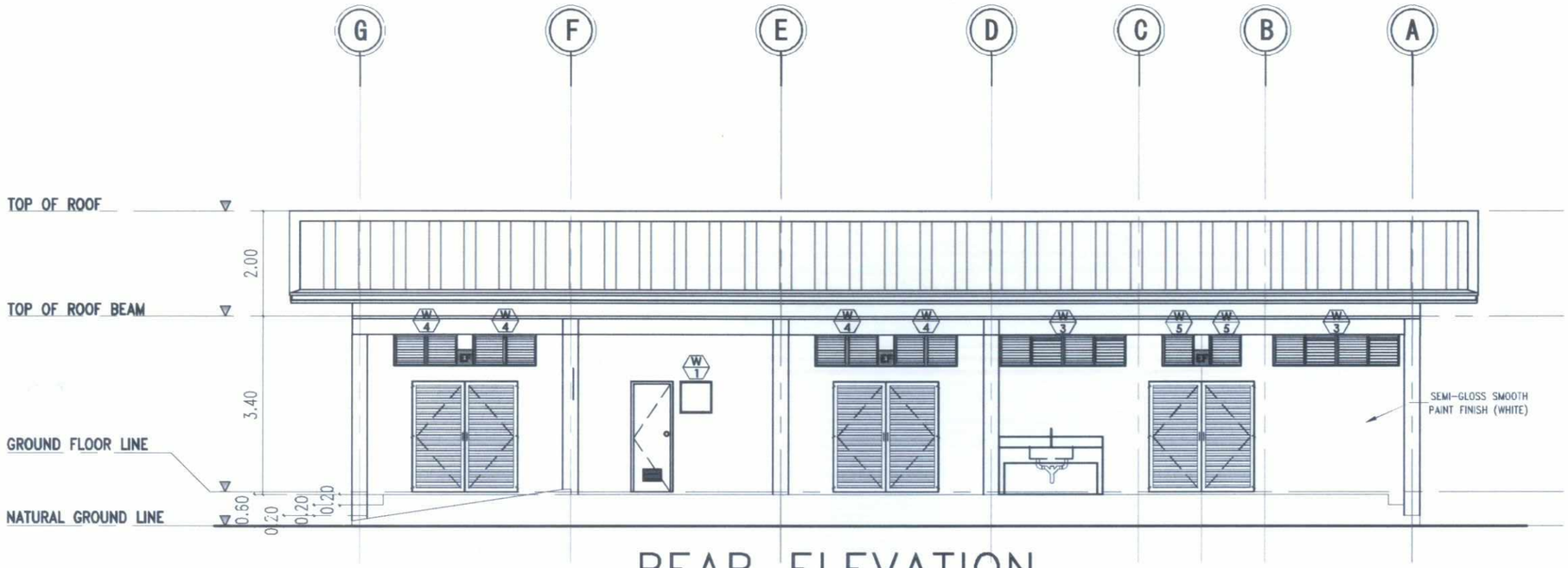
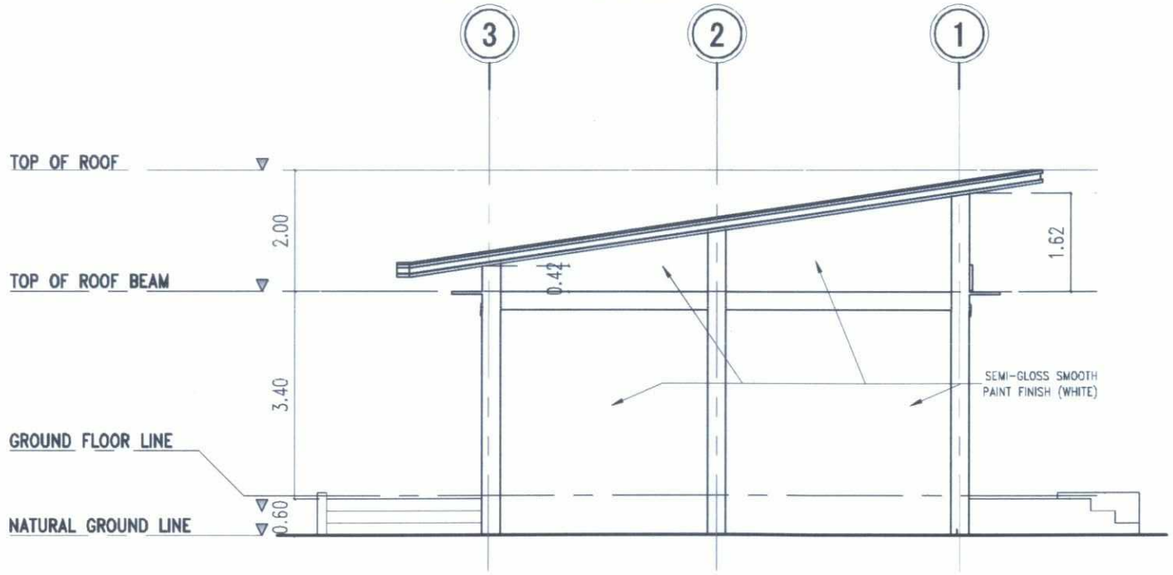


REAR ELEVATION

SCALE: 1: 100 METERS



LEFT-SIDE ELEVATION

SCALE: 1: 100 METERS

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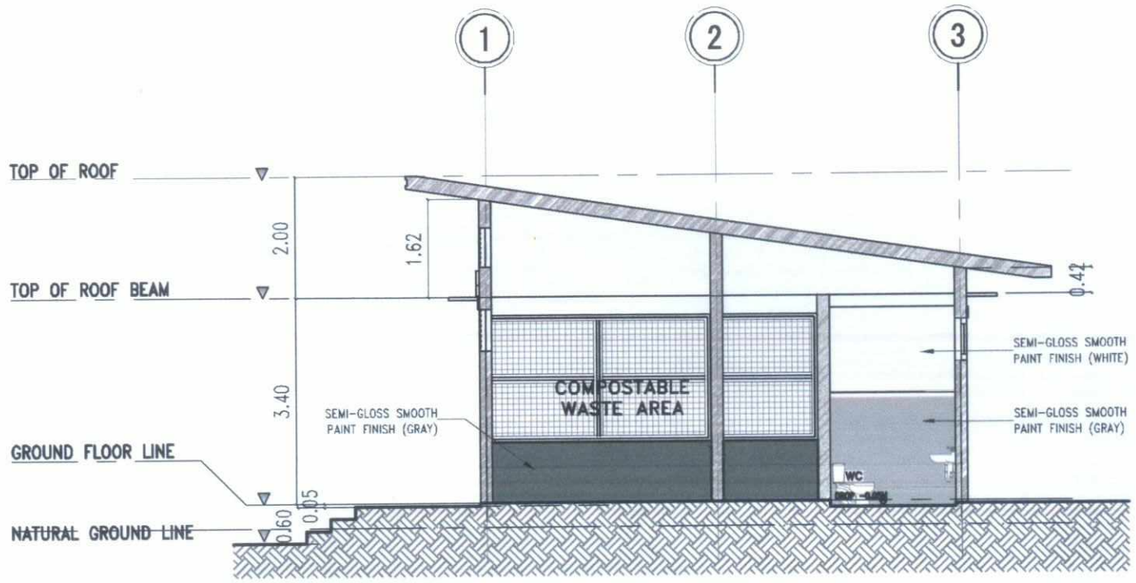
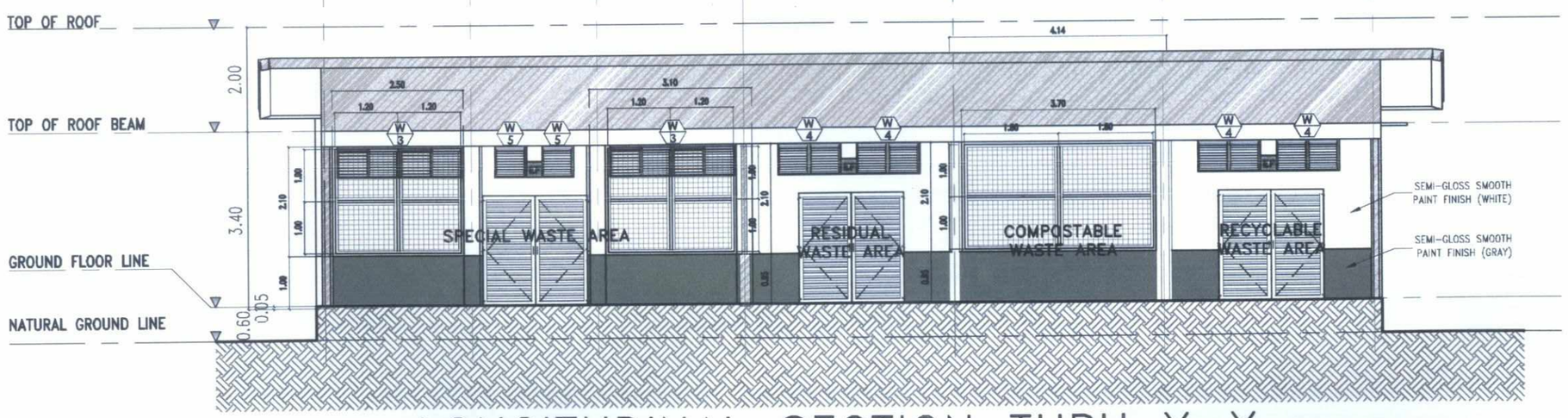


CROSS SECTION THRU X–X

SCALE: 1: 100 METERS



LONGITUDINAL SECTION THRU Y–Y

SCALE: 1: 100 METERS

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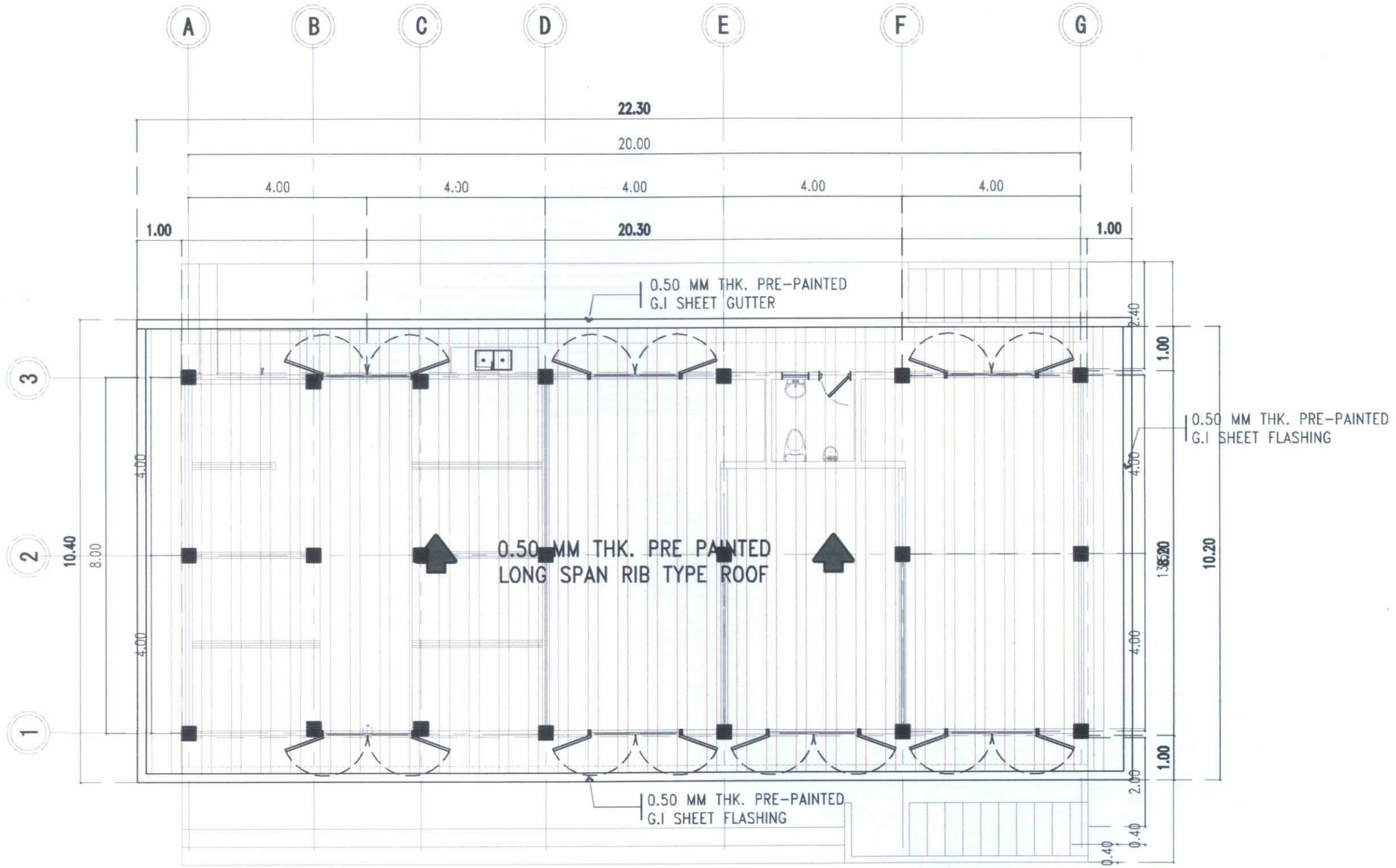

PROPOSED ROOF PLAN

SCALE: 1: 100 METERS

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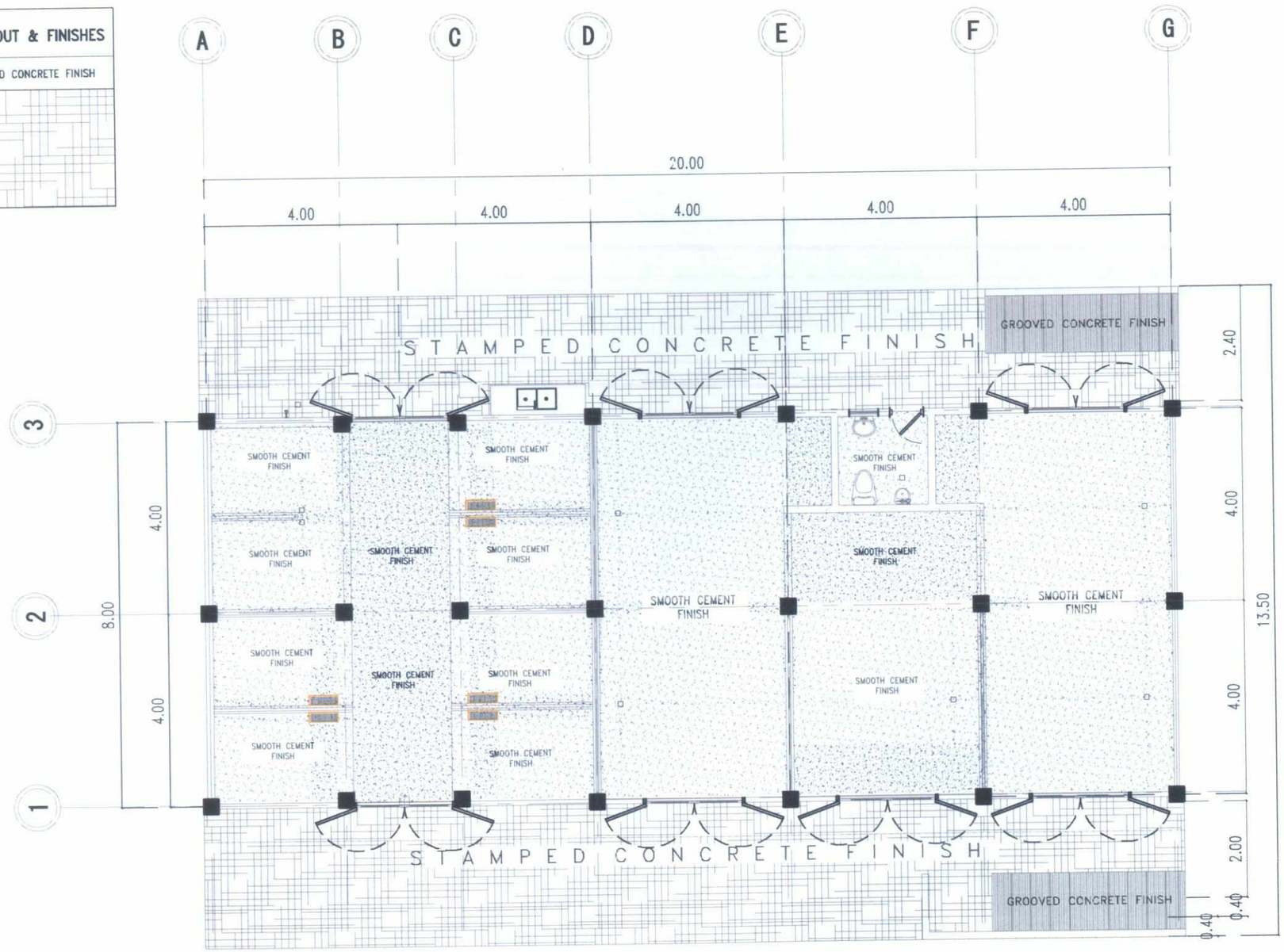
SCHEDULE OF FLOOR TILE LAYOUT & FINISHES	
SMOOTH CEMENT FINISH	STAMPED CONCRETE FINISH



GROUND FLOOR FINISHES

SCALE: 1: 100 METERS

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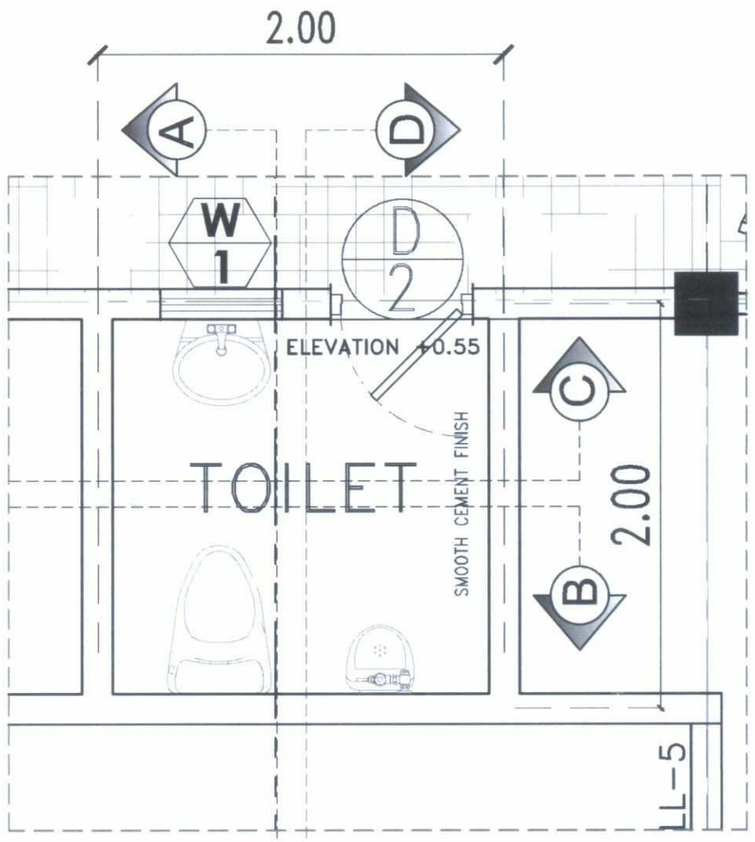
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 43/64



BLOW-UP MALE TOILET FLOOR PLAN

SCALE: 1: 30 METERS

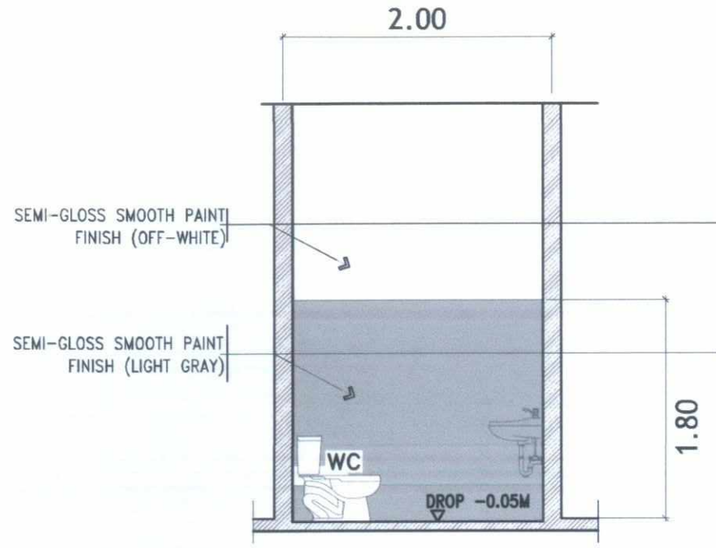
ACRYLIC CLEAR GLASS SIGNAGE

SIGNAGE SPECIFICATION:
PROPORTIONED LETTERING ON 3mm thk. x 150mm x 450mm
CLEAR ACRYLIC GLASS WITH 2pcs. 8mmx17mm ACRYLIC
GLASS FIXING BOLT SCREWS

NOTE: THE FONT STYLE, FONT SIZE, TEXT CONTENT
SHALL BE FOR APPROVAL.

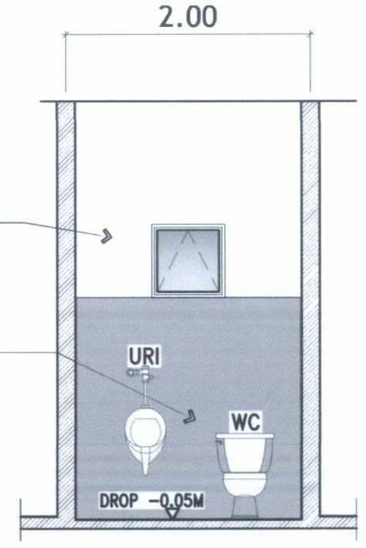
TOILET SIGNAGE DETAIL

SCALE
1:8 MTS



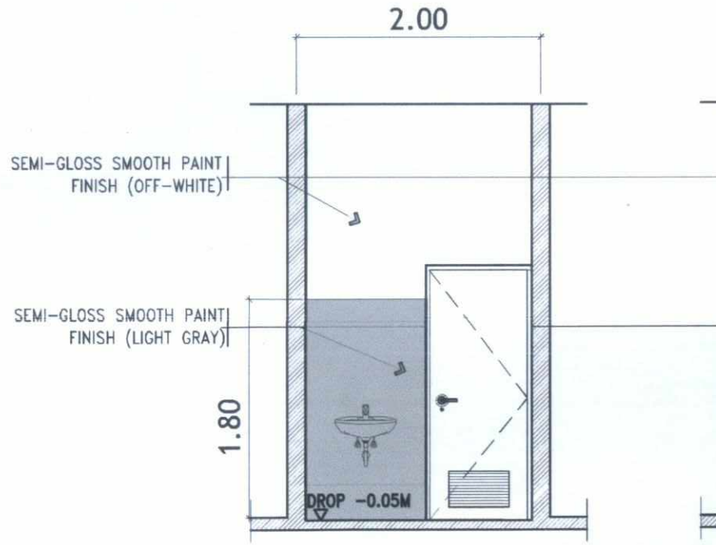
SECTIONAL ELEVATION @ A

SCALE 1:50M



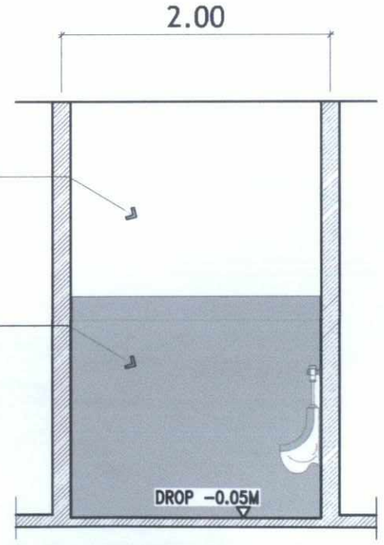
SECTIONAL ELEVATION @ B

SCALE 1:50M



SECTIONAL ELEVATION @ C

SCALE 1:50M



SECTIONAL ELEVATION @ D

SCALE 1:50M

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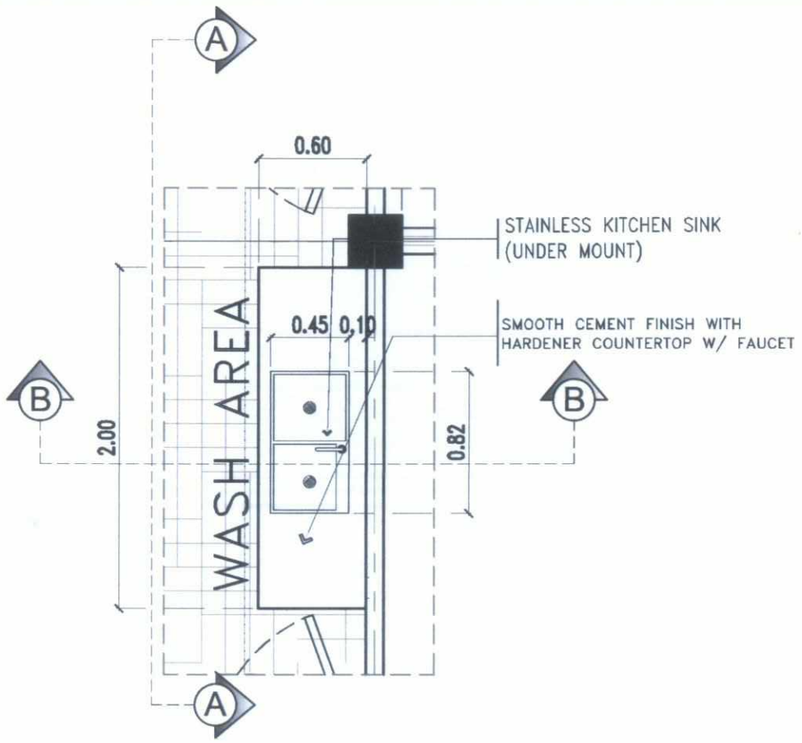
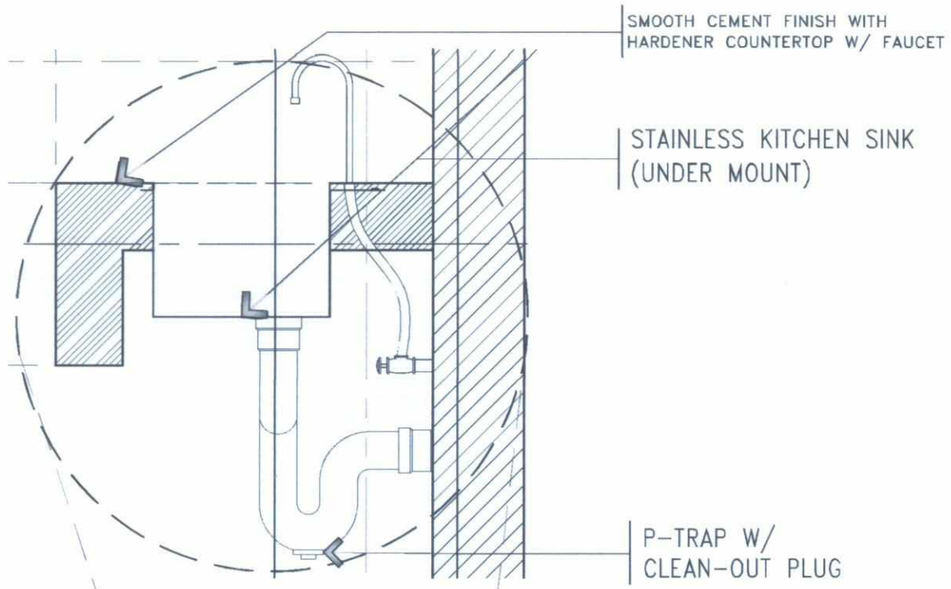
PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. GHEROLD C. BENITEZ / ATTY. WILMARK L. TAMOS, DBA, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	A-11
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 44/64



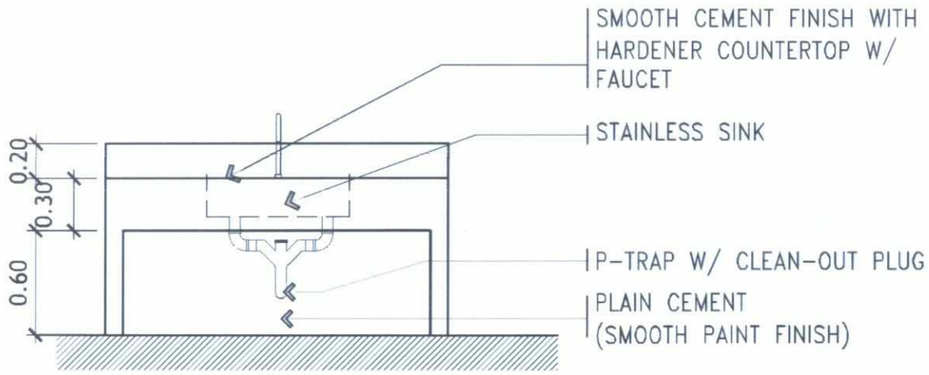
BLOW-UP WASH AREA PLAN

SCALE: 1: 40 METERS



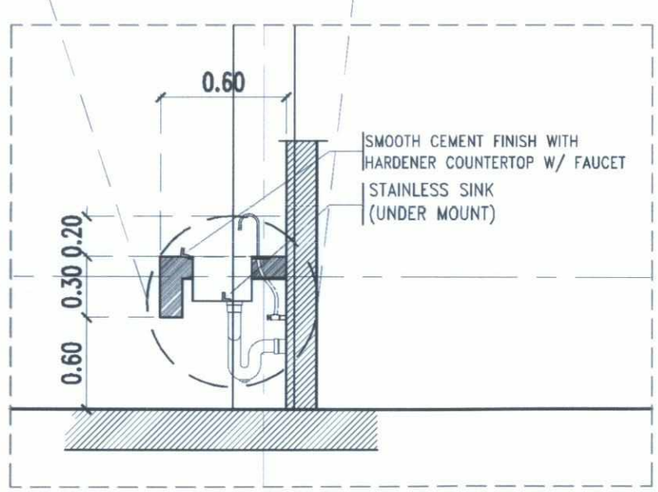
KITCHEN SINK DETAIL

SCALE: 1:15 METERS



SECTIONAL ELEVATION A

SCALE: 1: 35 METERS



SECTIONAL ELEVATION B

SCALE: 1: 30 METERS

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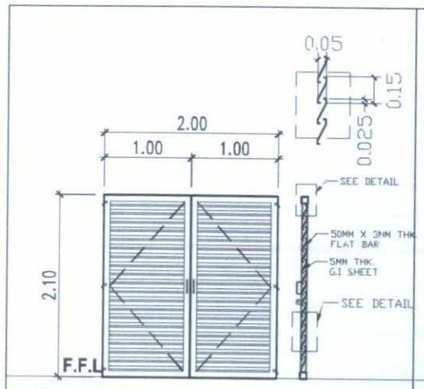
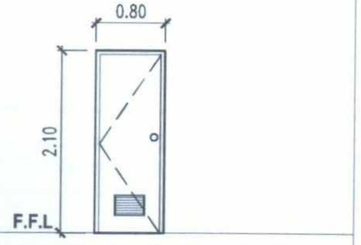
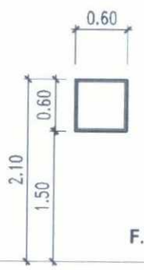


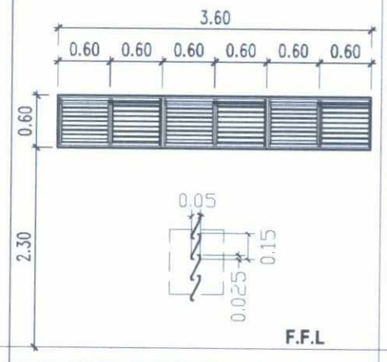
D1		
		7 SETS
	LOCATION :	HAZARDOUS WASTE AREA, NON- BIODEGRADABLE WASTE AREA, BIODEGRADABLE WASTE AREA & RECYCLABLE WASTE AREA
	SINGLE SWING STEEL LOUVER DOOR (SMOOTH PAINT FINISH) FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET ACCESSORIES: 3/4" ø HEAVY DUTY CYLINDRICAL HINGES,12MM ROUND BAR HANDLE WITH HEAVY DUTY PADLOCK	



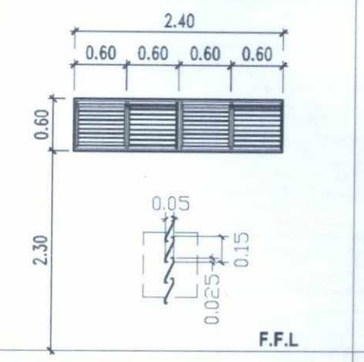
D2		
		1 SET
	LOCATION :	TOILET
	SINGLE SWING STEEL DOOR WITH LOUVERS (SMOOTH PAINT FINISH) DOOR & JAMB: 0.50mm thk. W/ SOUND PROOF SEAL STRIP (SELF ADHESIVE RUBBER) KNOB: HEAVY DUTY DOME TYPE LOCKSET HINGES: HEAVY DUTY HINGES OTHERS: COMPLETE ACCESSORIES	



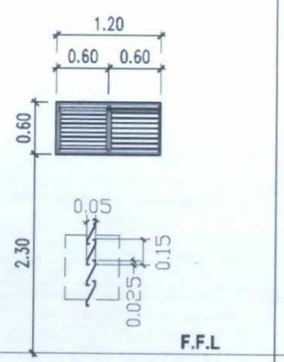
W1		
	QUANTITY :	01 SET
	LOCATION :	TOILET
DESCRIPTION :	WHITE POWDER COATED ALUMINUM AWNING WINDOW WITH 6mm THK. ONE WAY REFLECTIVE GLASS (exterior) WITH COMPLETE ACCESSORIES	



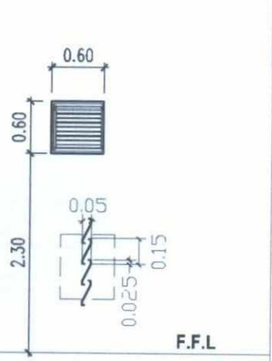
W2		
	QUANTITY :	08 SETS
	LOCATION :	FACADE AND REAR WALL
DESCRIPTION :	STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH) FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET	



W3		
	QUANTITY :	04 SETS
	LOCATION :	FACADE AND REAR WALL
DESCRIPTION :	STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH) FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET	



W4		
	QUANTITY :	05 SETS
	LOCATION :	FACADE AND REAR WALL
DESCRIPTION :	STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH) FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET	



W5		
	QUANTITY :	02 SETS
	LOCATION :	FACADE AND REAR WALL
DESCRIPTION :	STEEL LOUVER FIX WINDOW (SMOOTH PAINT FINISH) FRAMING: 2" X 3" X 1.5mm THK. GI TUBULAR LOUVERS: 0.5mm THK. PRE-PAINTED G.I SHEET	

SCHEDULE OF DOORS AND WINDOWS

SCALE: 1: 70 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

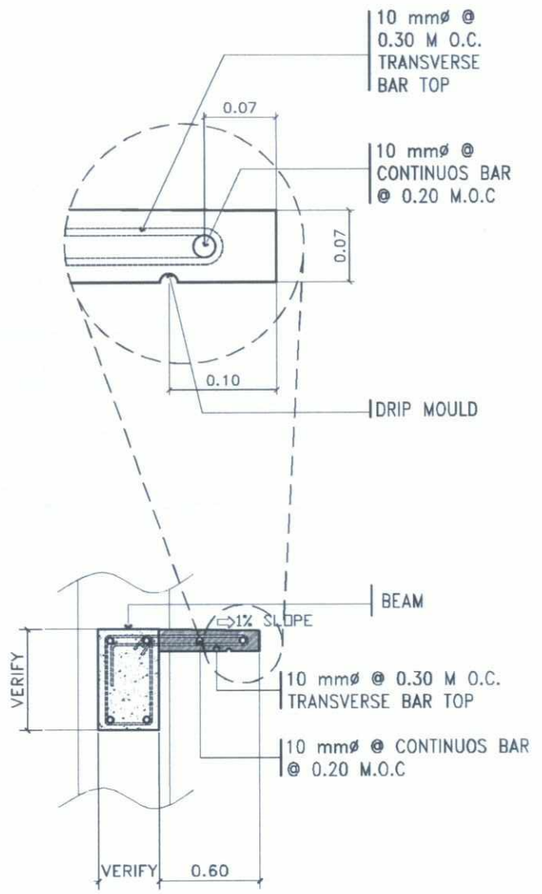
PROJECT TITLE:	CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS
PROJECT LOCATION:	LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY
PREPARED BY:	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM
CHECKED BY:	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU
CERTIFIED BY:	AR. ARLEN M. GUIEB, DIRECTOR, OFDM
REQUESTING OFFICE:	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUMS
RECOMMENDING APPROVAL:	ATTY. GHEROLD C. BENITEZ, VP FOR ADMINISTRATION
APPROVED:	DR. ARNOLD E. VELASCO, PRESIDENT
SHEET CONTENTS:	AS SHOWN
DATE:	JUNE 2025
SHEET NO:	A-13
PAGE NO:	46/64

NOTE:
ALL STEEL MEMBERS SHALL BE
EPOXY PRIMER PAINTED.

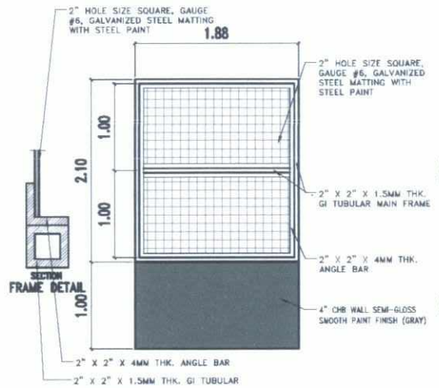
SCHEDULE OF WALL FINISHES

GROUND FLOOR OF FINISHES

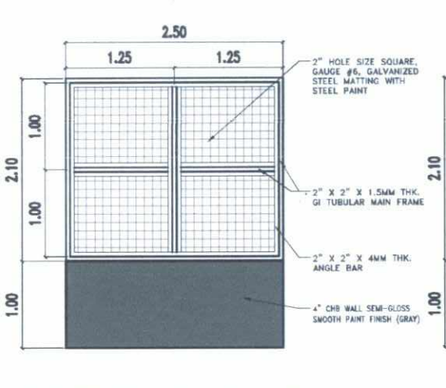
AREA / ROOM	WALL FINISHES (FACING THE FLOOR PLAN)				CEILING FINISHES
	N	S	E	W	FINISH
RECEIVING AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
SORTING & WEIGHING AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
SPECIAL WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
RESIDUAL WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
COMPOSTABLE WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
RECYCLABLE WASTE AREA	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
FEMALE TOILET WITH SHOWER	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	
MALE TOILET WITH SHOWER	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	SEMI-GLOSS SMOOTH PAINT FINISH (WHITE & GRAY)	



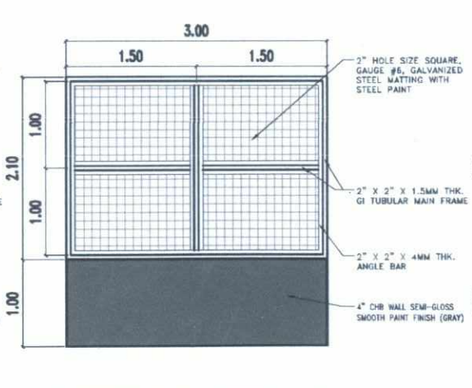
TYPICAL LEDGE SPOT DETAIL
SCALE: NTS



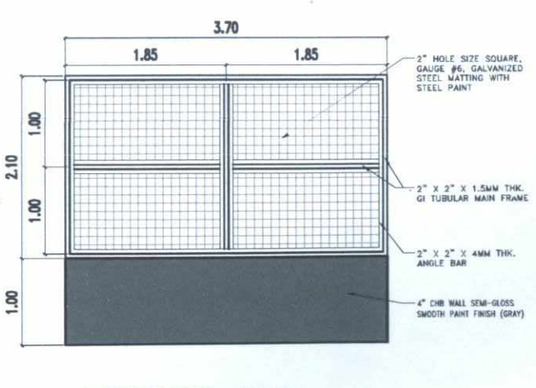
INTERIOR WALL-1
SCALE: 1: 70 METERS



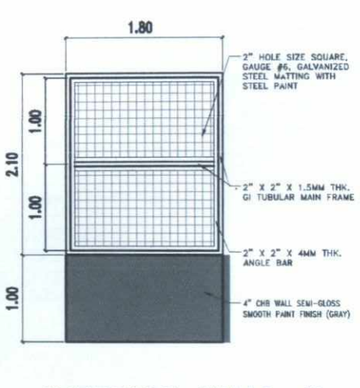
INTERIOR WALL-2
SCALE: 1: 70 METERS



INTERIOR WALL-3
SCALE: 1: 70 METERS



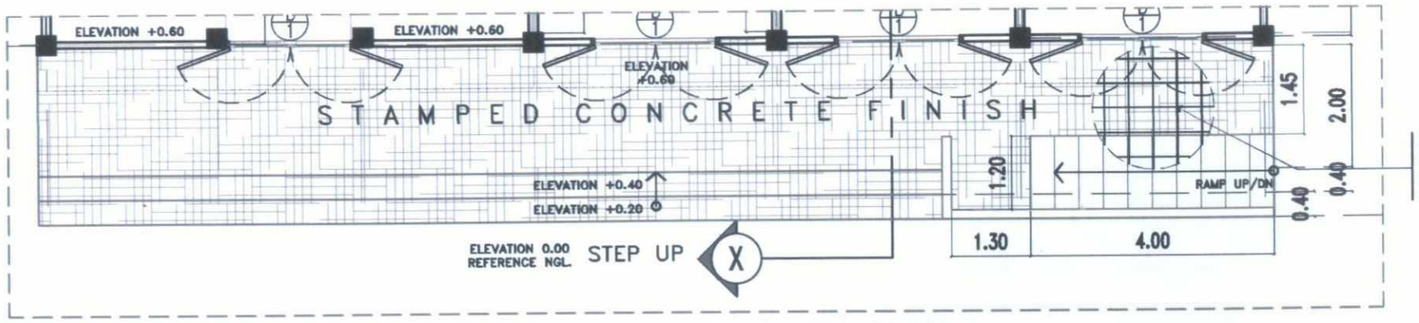
INTERIOR WALL-4
SCALE: 1: 70 METERS



INTERIOR WALL-5
SCALE: 1: 70 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

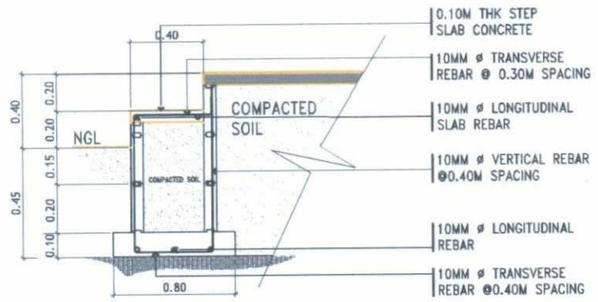
PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. GHEROLD C. BENITEZ, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	A-14
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 47/64



0.10M THK SLAB WITH
10mm ø DEFORMED BAR
SPACED @ 0.40M.O.C.B.W.

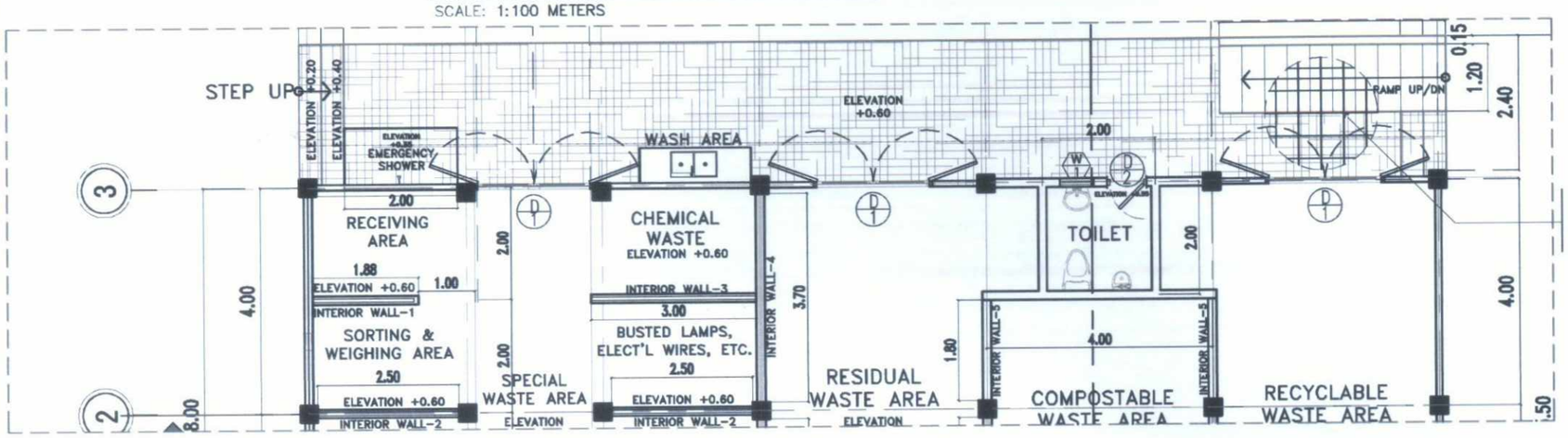
FRONT STEP BLOW-UP PLAN

SCALE: 1:100 METERS



TYPICAL STEP CHB FOOTING DETAILS

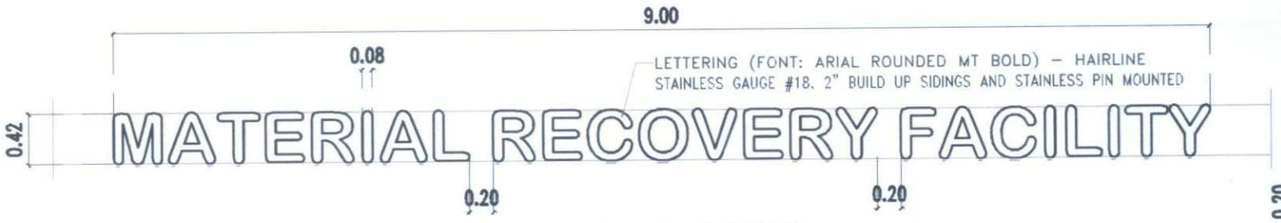
SCALE: 1: 25 METERS



0.10M THK SLAB WITH
10mm ø DEFORMED BAR
SPACED @ 0.40M.O.C.B.W.

REAR STEP BLOW-UP PLAN

SCALE: 1:100 METERS



LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

LETTER HEAD DETAIL

SCALE: 1:50 METERS

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

TYPICAL ROOM SIGNAGE DETAIL

SCALE: 1:30 METERS

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

LETTERING (FONT: ARIAL ROUNDED MT BOLD) – HAIRLINE STAINLESS GAUGE #18, 2" BUILD UP SIDINGS AND STAINLESS PIN MOUNTED

TYPICAL ROOM SIGNAGE DETAIL

SCALE: 1:25 METERS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

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CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. GHEROLD C. BENITEZ, VP FOR ADMINISTRATION; ATTY. WILMARK J. RAMOS, DBA	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	A-15
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 48/64

STRUCTURAL - GENERAL NOTES

A. GENERAL

A.1 THESE GENERAL NOTES ARE NOT INTENDED TO REPLACE SPECIFICATIONS. SEE SPECIFICATIONS FOR REQUIREMENTS IN ADDITION TO GENERAL NOTES. NONETHELESS, SPECIFIC NOTES AND DETAILS SHALL PRECEDE OVER GENERAL NOTES AND TYPICAL DETAILS.

A.2 THE STRUCTURAL DRAWINGS SHALL BE UTILIZED IN CONJUNCTION WITH OTHER DESIGN DRAWINGS (ARCHITECTURAL, ELECTRICAL, PLUMBING, MECHANICAL, ETC.). IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE THE REQUIREMENTS OF THE DRAWINGS INTO THEIR SHOP DRAWINGS AND CONSTRUCTION.

A.3 CONTRACTOR SHALL STUDY THE DRAWINGS AND SPECIFICATIONS, VERIFY ALL DIMENSIONS, AND INSPECT THE FIELD CONDITIONS, REPORTING ANY DISCREPANCIES TO THE ARCHITEC/ENGINEER PRIOR TO PROCEEDING WITH ANY PHASE OF THE WORK.

A.4 THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR ALL SAFETY PRECAUTIONS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES REQUIRED TO PERFORM THE WORK.

A.5 THE CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES AND NOTIFY ANY CONFLICTS TO THE ARCHITECT/ENGINEER PRIOR TO COMMENCEMENT OF EXCAVATION.

A.6 DEMOLITION OF EXISTING STRUCTURES IF ANY SHALL NOT BE COMMENCED UNTIL PROTECTIVE MEASURES ARE SET IN PLACE; PLANS, METHODS, AND SCHEDULES OF DEMOLITION SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER.

A.7 THE STRUCTURE HAS BEEN DESIGNED TO RESIST DESIGN LOADS ONLY AS A COMPLETED STRUCTURE. APPLICATIONS OF CONSTRUCTION LOADS TO THE PARTIALLY COMPLETED STRUCTURE SHALL BE CONSIDERED BY THE CONTRACTOR AND SO INCLUDED IN THE DESIGN OF SHORING, BRACING, FORMWORK, AND ANY OTHER SUPPORTING ELEMENTS PROVIDED FOR CONSTRUCTION OF THE STRUCTURE. DURING ERECTION AND UNTIL ALL PERMANENT CONNECTIONS ARE MADE, THE CONTRACTOR MUST PROVIDE TEMPORARY BRACING FOR THE STRUCTURE.

A.8 THE CONTRACTOR SHALL EXAMINE THE ARCHITECTURAL, ELECTRICAL, PLUMBING AND MECHANICAL DRAWINGS FOR REQUIRED OPENINGS. MOREOVER, SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS AND LOCATION OF DEPRESSED FLOOR AREAS.

A.9 DO NOT SCALE ANY DIMENSION FROM DRAWINGS. THE CONTRACTOR SHALL REQUEST FROM THE ARCHITECT/ENGINEER THE NECESSARY DIMENSIONS NOT SHOWN ON THE DRAWINGS.

A.10 SHOP DRAWINGS OF STRUCTURAL ITEMS FOR STEEL AND CONCRETE MEMBERS SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR APPROVAL PRIOR TO THE FABRICATION AND CONSTRUCTION.

B. REFERENCES

B.1 ALL CONCRETE WORKS SHALL BE DONE IN ACCORDANCE WITH:

- THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14)
- DETAILS AND DETAILING OF CONCRETE REINFORCEMENT (ACI 315-99)
- JOINTS IN CONCRETE CONSTRUCTION (ACI 224.3R-95)

B.2 ALL STRUCTURAL STEEL WORKS SHALL DONE IN ACCORDANCE WITH:

- SPECIFICATION FOR STRUCTURAL STEEL BUILDING (ANSI/AISC 360-16)
- STEEL CONSTRUCTION MANUAL, 14TH EDITION

C. CONCRETE

C.1 UNLESS OTHERWISE INDICATED IN PLANS OR NOTED IN THE STRUCTURAL SPECIFICATIONS, THE MINIMUM 28th DAYS COMPRESSIVE CYLINDER STRENGTH OF CONCRETE WITH CORRESPONDING MAXIMUM AGGREGATE SIZE AND SLUMP SHALL BE AS FOLLOWS:

ELEMENT	28th DAY STRENGTH	MAX. AGGREGATE SIZE	SLUMP
FOUNDATION & WALLS	3000 PSI	3/4 in.	4 in.
COLUMNS & PEDESTALS	3000 PSI	3/4 in.	4 in.
BEAMS & GIRDERS	3000 PSI	3/4 in.	4 in.
SUSPENDED SLABS	3000 PSI	3/4 in.	4 in.
SLAB ON GRADE	2500 PSI	1 in.	4 in.
NON-STRUCTURAL ELEMENTS	2500 PSI	3/4 in.	4 in.

C.2 CONCRETE-MIX DESIGNS ALONG WITH TEST DATA SHALL BE SUBMITTED BY THE CONTRACTOR PRIOR TO CONCRETE POURING.

C.3 PRIOR TO PLACING OF CONCRETE, ALL REINFORCING STEEL BARS, ANCHOR BOLTS, DOWELS, EMBEDDED STRUCTURAL STEELS, PLATES, OR OTHER INSERTS, SHALL BE SECURED IN POSITION AND APPROVED BY THE ENGINEER.

C.4 CONCRETE SHALL BE DEPOSITED IN ITS FINAL POSITION WITHOUT SEGREGATION, REHANDLING OR FLOWING. PLACING SHALL BE DONE PROPERLY WITH BUGGIES, BUCKETS OR WHEEL-BORROWS.

C.5 NO DEPOSITING OF CONCRETE SHALL BE ALLOWED WITHOUT THE USE OF VIBRATORS UNLESS AUTHORIZED BY THE ENGINEER.

C.6 ALL CONCRETE SHALL BE CURED IMMEDIATELY AFTER FINISHING OPERATIONS BY KEEPING THE CONCRETE ELEMENT MOIST FOR AT LEAST 7 DAYS OR APPLYING LIQUID CURING COMPOUND.

C.7 CONCRETE CYLINDERS SHALL BE FABRICATED PER EACH 40 CU.M. OR FRACTION THEREOF MIXED EACH DAY FOR EACH CLASS CONCRETE PLACED FOR EACH STRUCTURE.

C.8 GROUT UNDER BASE PLATES SHALL BE APPROVED NON-SHRINK WITH STRENGTH AT LEAST EQUAL TO THE MATERIAL ON WHICH IT IS PLACED.

D. REINFORCING BARS

D.1 REINFORCING BARS SHALL BE DEFORMED BARS CONFORMING TO ASTM 615 AS FOLLOWS:

DIAMETER	GRADE
10mmØ	GRADE 40 (276 MPa)
12mmØ & ABOVE	GRADE 40 (276 MPa)

D.2 USE GAUGE #16 OR HEAVIER FOR TIE WIRE.

D.3 NO BARS PARTIALLY EMBEDDED IN CONCRETE SHALL BE FIELD BENT, EXCEPT AS SHOWN ON PLANS OR PERMITTED BY THE ENGINEER.

D.4 BARS SHALL NOT BE WELDED UNLESS AUTHORIZED BY THE ENGINEER.

D.5 ALL REINFORCING BARS SHALL BE CLEANED THOROUGHLY OF ALL LOOSE RUST, SOIL OR OTHER MATERIAL PRIOR TO CONCRETE POURING.

D.6 MAINTAIN MINIMUM CONCRETE COVER TO TRAVERSE BARS AS FOLLOWS:

ELEMENT	CONCRETE COVER
BELOW GRADE - FOUNDATIONS & WALLS	75mm
BELOW GRADE - COLUMNS, BEAMS, GIRDERS & PEDESTALS	75mm
ABOVE GRADE - COLUMNS, BEAMS, GIRDERS & PEDESTALS	40mm
ABOVE GRADE - SUSPENDED SLABS AND WALLS	20mm
SLAB ON GRADE	40mm

D.7 ALL LAP SPLICES OF REBARS SHALL CONFORM TO CLASS B TENSION LAP SPLICE AS SHOWN ON THE LAP SPLICE SCHEDULE, UNLESS NOTED OTHERWISE.

D.8 ALL HOOK ENDS SHOWN ON THE DRAWINGS SHALL BE STANDARD HOOKS. ALL STIRRUPS/TIES SHALL HAVE 135° SEISMIC HOOKS, UNLESS NOTED OTHERWISE. CROSS TIES SHALL HAVE STANDARD 90° HOOK ON ONE END AND 135° SEISMIC HOOK ON THE OTHER END.

D.9 CONSECUTIVE CROSS TIES WITH 90° AND 135° HOOK ENDS SHALL BE ALTERNATED.

E. FORMS AND SHORES

E.1 FORMS AND SHORES SHALL BE DESIGNED TO CARRY THE LOADS COMING ONTO OR AGAINST THEM WITHOUT EXCESSIVE DEFLECTION.

E.2 STRIPPING OF FORMS AND SHORES SHALL BE AS FOLLOWS:

FOUNDATION	1 DAY
WALLS & COLUMNS	2 DAYS
BEAMS	14 DAYS
SUSPENDED SLABS EXCEPT WHEN ADDITIONAL LOADS ARE IMPOSED	14 DAYS

F. MASONRY

F.1 ALL MASONRY UNITS SHALL BE APPROVED QUALITY, SOUND, FREE FROM CRACKS AND OTHER IMPERFECTIONS.

F.2 NON-LOAD BEARING CONCRETE HOLLOW BLOCKS SHALL BE USED WITH A MINIMUM COMPRESSIVE STRENGTH OF 500 PSI.

F.3 METHOD OF SAMPLING FOR QUALITY TEST SHALL BE ONE (1) QUALITY TEST FOR EVERY 10,000 UNITS OR FRACTION THEREOF, WITH THREE (3) SPECIMENS FOR COMPRESSION TEST.

F.4 CHB WALLS SHALL BE REINFORCED AS FOLLOWS:

THICKNESS	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT
100mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.
125mm	10mmØ @ 600mm O.C.	10mmØ @ 600mm O.C.
150mm	10mmØ @ 400mm O.C.	10mmØ @ 400mm O.C.
200mm	10mmØ @ 400mm O.C.	10mmØ @ 400mm O.C.

F.5 ALL MASONRY WORKS SHALL BE LAID TRUE TO LINE, LEVEL, PLUMB AND NEAT IN ACCORDANCE WITH THE PLANS. DAMAGED UNITS SHALL NOT BE USED. UNITS SHALL BE CUT ACCURATELY TO FIT ALL PLUMBING DUCTS, AND OPENING FOR ELECTRICAL WORKS; ALL HOLES SHALL BE NEATLY PATCHED.

F.6 NO CONSTRUCTION SUPPORT SHALL BE ATTACHED TO THE CHB WALL EXCEPT WHERE SPECIFICALLY PERMITTED BY THE ENGINEER.

F.7 UNITS SHALL BE PLACED WHILE THE MORTAR IS SOFT AND PLASTIC, AND SHALL BE USED WITHIN 2.5 HOURS OF INITIAL MIXING. MORTAR THAT HAS STIFFENED SHOULD NOT BE USED. ANY UNIT DISTURBED TO THE EXTENT THAT THE INITIAL BOND IS BROKEN AFTER INITIAL POSITIONING SHALL BE REMOVED AND RE-LAID IN FRESH MORTAR.

F.8 MORTAR FOR CELLS OF CONCRETE HOLLOW BLOCKS SHALL CONSIST OF ONE (1) PART CEMENT TO THREE (3) PARTS SAND BY VOLUME WITH SUFFICIENT WATER. IT SHALL BE A WORKABLE CEMENT-SAND MIXTURE ATTAINING A 28th DAY COMPRESSIVE STRENGTH OF 1500 PSI.

F.9 ALL CELLS OF CHB UNITS SHALL BE FULLY GROUTED.

F.10 WHERE CHB WALLS ADJOIN COLUMNS, BEAMS, AND WALLS, DOWELS WITH THE SAME SIZE AS THE VERTICAL OR HORIZONTAL REINFORCEMENTS SHALL BE PROVIDED.

F.11 MORTAR FOR PLASTERING SHALL BE PROPORTIONED ONE (1) PART CEMENT TO TWO (2) PARTS SAND WITH SUFFICIENT WATER.

G. STRUCTURAL STEEL

G.1 ALL STRUCTURAL STEELS SHALL CONFORM TO ASTM A36 HAVING A MINIMUM YIELD STRENGTH OF 36 KSI, UNLESS NOTED OTHERWISE.

G.2 ANCHOR BOLTS SHALL CONFORM TO ASTM F1554, GRADE 36.

G.3 HIGH STRENGTH BOLTS SHALL BE USED SHALL CONFORM TO ASTM A325 OR ASTM A490.

G.4 ALL WASHERS SHALL CONFORM TO ASTM F436.

G.5 ALL NUTS SHALL SHALL CONFORM TO ASTM A563.

G.6 USE E70XX OR E71XX, 70 KSI STRENGTH ELECTRODES, UNLESS NOTED OTHERWISE. TEMPORARY WELDS AND ASSEMBLY ATTACHMENTS SHALL BE KEPT TO A MINIMUM

G.7 WELDING SHALL BE DONE IN ACCORDANCE WITH APPROPRIATE WELD PROCEDURE SPECIFICATIONS (WPS).

G.8 WELDING SHALL CONFORM TO BE DONE WITH AMERICAN WELDING SOCIETY (AWS) STANDARDS.

G.9 FABRICATORS SHALL BE QUALIFIED WELDERS WITH AUTHENTIC CERTIFICATES.

G.10 SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MEMBER. ANY MEMBER HAVING A SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.

G.11 THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO THE FABRICATION AND ERECTION.

G.12 STEEL MEMBERS TO BE ENCASE IN CONCRETE SHALL NOT BE PAINTED. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL HAVE AT LEAST TWO COATS OF APPROVED PRIMER PAINT.

G.13 CONTRACTOR SHALL PROVIDE TEMPORARY BRACING AND SAFETY PROTECTION FOR ERECTION.

TARLAC STATE UNIVERSITY
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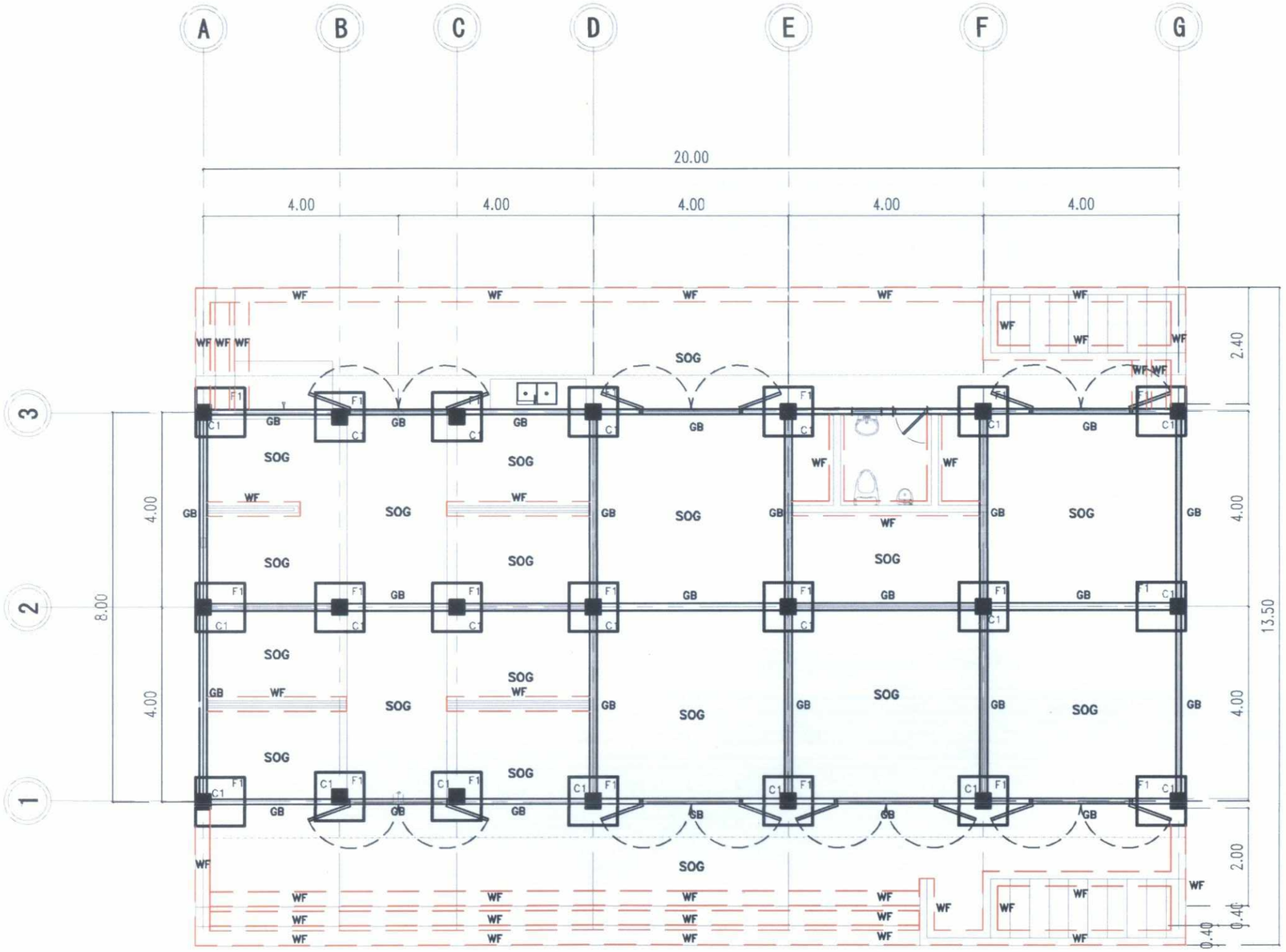
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: MAY 2025	PAGE NO: 49/66



GROUND FLOOR FOUNDATION PLAN

SCALE: 1: 100 METERS

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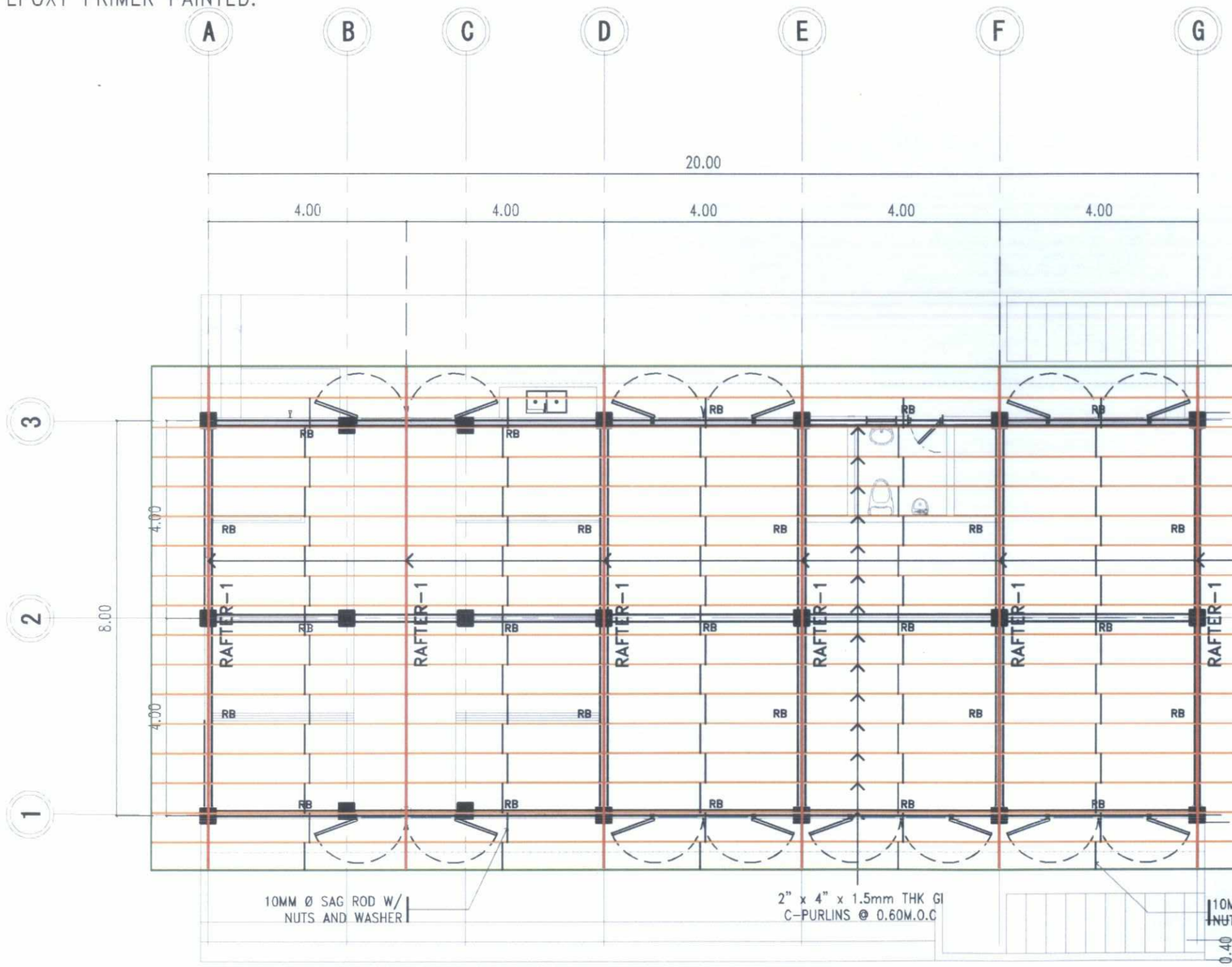
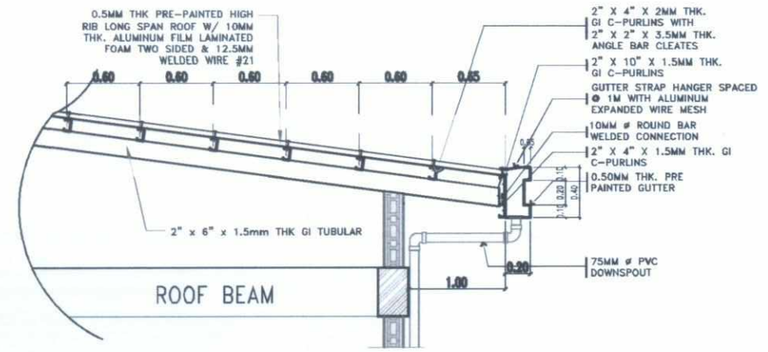
NOTE:
ALL STEEL MEMBERS SHALL BE
EPOXY PRIMER PAINTED.



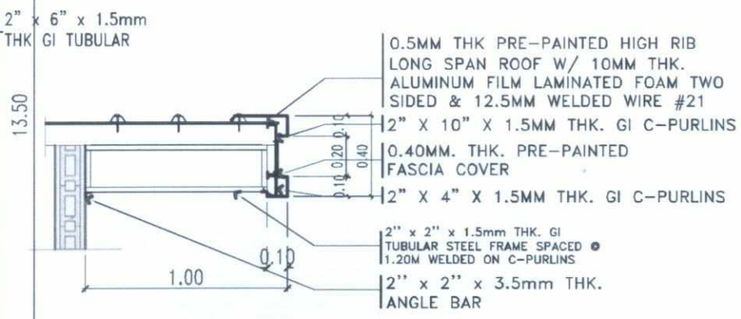
GROUND FLOOR ROOF FRAMING PLAN

SCALE: 1: 100 METERS



TYPICAL EAVES SECTION DETAILS

SCALE: 1: 50 METERS



TYPICAL END FLUSHING DETAILS

SCALE: 1: 30 METERS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUMS	RECOMMENDING APPROVAL: ATTY. GHEROLD S. BENITEZ ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: MAY 2025	SHEET NO: S-03 PAGE NO: 51/66

TENSION LAP SPLICE LENGTHS

BAR SIZE	fc' = 3,000 PSI				fc' = 4,000 PSI			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
10mm	490	740	380	570	430	640	330	490
12mm	590	880	460	680	510	770	400	590
16mm	790	1,200	610	910	680	1,100	530	790
20mm	1,000	1,500	760	1,200	850	1,300	660	980
25mm	1,600	2,400	1,200	1,800	1,400	2,100	1,100	1,600
28mm	1,700	2,700	1,300	2,100	1,500	2,300	1,200	1,800
32mm	1,900	3,000	1,500	2,300	1,700	2,600	1,300	2,000
36mm	2,200	3,400	1,700	2,600	1,900	3,000	1,500	2,300

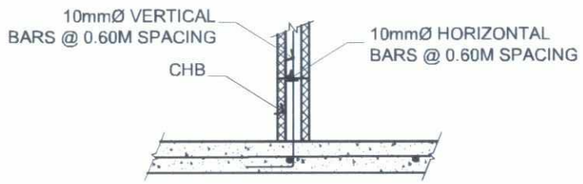
NOTES:

1. TABULATED VALUES ARE CLASS B TENSION LAP SPLICE LENGTHS BASED ON UNCOATED GRADE 40 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE BASED ON ACI 318-14, SECTIONS 25.4.2.2 AND 25.5.2.1, RESPECTIVELY. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRAVERSE REINFORCEMENT AND CONCRETE COVER MEETING THE MINIMUM CODE REQUIREMENTS. LENGTHS ARE IN MILLIMETERS.
3. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
4. OTHER BARS ARE THE HORIZONTAL BARS LOCATED WITHIN 12 INCHES DEPTH FROM THE BOTTOM OF SLABS OR FOOTINGS, OR THE VERTICAL BARS OF COLUMN OR WALLS.
5. WHEN CLASS A LAP SPLICES ARE TO BE USED, DIVIDE THE TABULATED VALUES BY 1.3.
6. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER TO CENTER SPACING OF BARS, ARE DEFINED AS:

FOR BEAMS OR COLUMNS:
CASE 1 - COVER AT LEAST 1.0d_b AND CENTER TO CENTER SPACING AT LEAST 2d_b
CASE 2 - COVER LESS THAN 1.0d_b OR CENTER TO CENTER SPACING LESS THAN 2d_b

FOR FOOTINGS OR WALLS:
CASE 1 - COVER AT LEAST 1.0d_b AND CENTER TO CENTER SPACING AT LEAST 3d_b
CASE 2 - COVER LESS THAN 1.0d_b OR CENTER TO CENTER SPACING LESS THAN 3d_b

FOR SLABS (USE CLASS A LAP SPLICES):
CASE 1 - COVER AT LEAST 1.0d_b AND CENTER TO CENTER SPACING AT LEAST 3d_b
CASE 2 - COVER LESS THAN 1.0d_b OR CENTER TO CENTER SPACING LESS THAN 3d_b



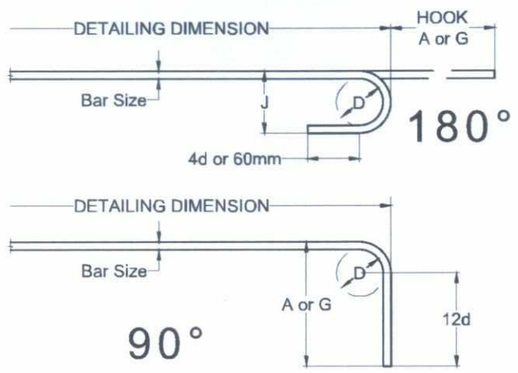
TYPICAL DETAIL OF WALL TO SLAB CONNECTION

RECOMMENDED END HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D* (mm)	180° HOOK		90° HOOK
		A or G (mm)	J (mm)	A or G (mm)
10mm	60	150	80	150
12mm	80	175	105	200
16mm	100	200	130	250
20mm	135	250	180	375
25mm	155	275	205	425
28mm	240	375	300	475
32mm	275	425	335	550
36mm	305	475	375	625

*FINISHED BEND DIAMETERS INCLUDE "SPRING BACK" EFFECT WHEN BARS STRAIGHTEN OUT SLIGHTLY AFTER BEING BENT AND ARE SLIGHTLY LARGER THAN MINIMUM BEND DIAMETER IN ACI.



DEVELOPMENT LENGTH FOR STANDARD HOOKS IN TENSION

BAR SIZE	fc' = 2,500 PSI	fc' = 3,000 PSI	fc' = 4,000 PSI
10mm	160	150	150
12mm	200	180	160
16mm	260	250	210
20mm	320	300	260
25mm	400	380	320
28mm	450	430	369
32mm	520	480	410
36mm	580	530	460

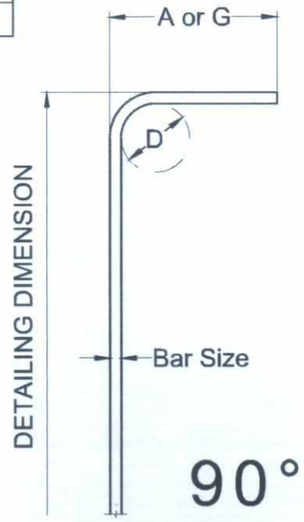
NOTES:
1. TABULATED VALUES ARE BASED ON UNCOATED GRADE 40 REINFORCING BARS AND NORMAL-WEIGHT CONCRETE.
2. DEVELOPMENT LENGTHS FOR STANDARD HOOKS IN TENSION ARE BASED ON ACI 318-14, SECTIONS 25.4.3. LENGTHS ARE IN MILLIMETERS.

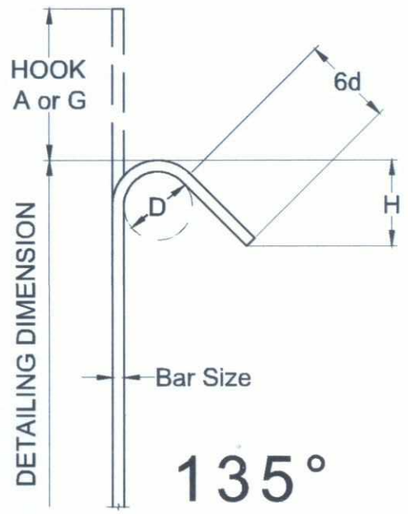
STANDARD STIRRUP/TIE HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D (mm)	135° HOOK		90° HOOK
		A or G (mm)	H* (mm)	A or G (mm)
10mm	40	105	65	105
12mm	50	115	80	115
16mm	65	140	95	155
20mm	120	230	135	355
25mm	155	270	155	410

*H DIMENSION IS APPROXIMATE





SEISMIC STIRRUP/TIE HOOKS

ALL GRADES: D = FINISHED BEND DIAMETER

BAR SIZE	D (mm)	135° SEISMIC HOOK	
		A or G (mm)	H* (mm)
10mm	40	110	80
12mm	50	115	80
16mm	65	140	95
20mm	120	230	135
25mm	155	270	155

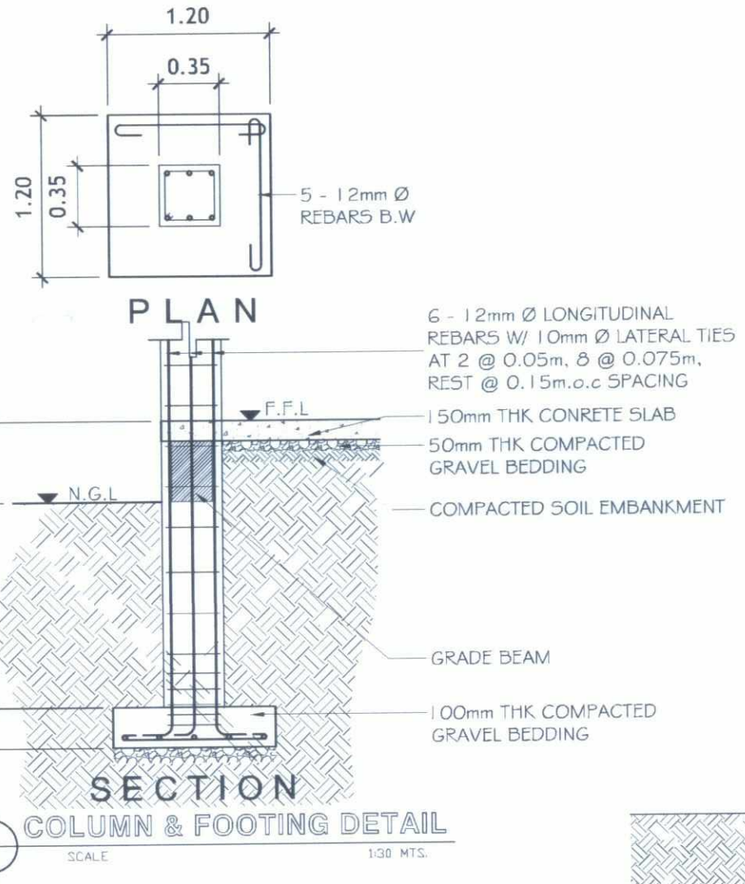
*H DIMENSION IS APPROXIMATE

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS	AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	AR. ARLEN M. GUIEB, DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	ATTY. HAROLD C. BALITAO, ATTY. WILMARK T. RAMOS, DBA, VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO, PRESIDENT	AS SHOWN	S-04
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: MAY 2025	PAGE NO: 52/66

SCHEDULE OF SLAB

MARK	THICKNESS	REINFORCEMENT	EXTERIOR SUPPORT		MIDPANEL		INTERIOR SUPPORT	
			TOP BAR	BOTTOM BAR	TOP BAR	BOTTOM BAR	TOP BAR	BOTTOM BAR
SOG	125mm	ALONG LONG SIDE	N/A	10mm @ 400mm	N/A	10mm @ 400mm	N/A	10mm @ 400mm
		ALONG SHORT SIDE	N/A	10mm @ 400mm	N/A	10mm @ 400mm	N/A	10mm @ 400mm



COLUMN & FOOTING DETAIL

SCALE 1:30 MTS.

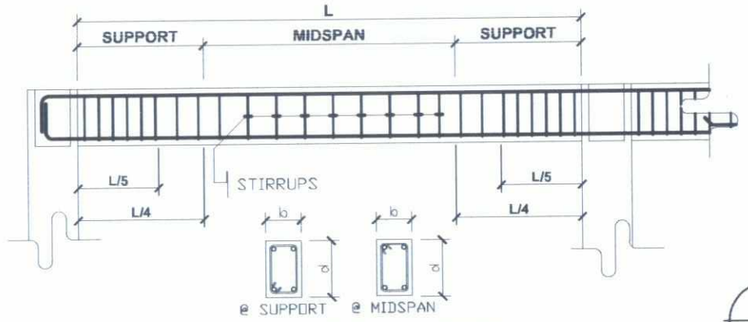
SCHEDULE OF COLUMNS

COLUMNS

COLUMN MARK	NO. OF SETS	DIMENSION (MM) a (width)	DIMENSION (MM) b (depth)	FIGURE	LATERAL TIES
C-1	21 SETS	300	300	3-12MM ø D.S.B 3-12MM ø D.S.B	10MM D.S.B , 2 @ 0.05M, 8 @ 0.075M, THE REST 0.15M M.O.C

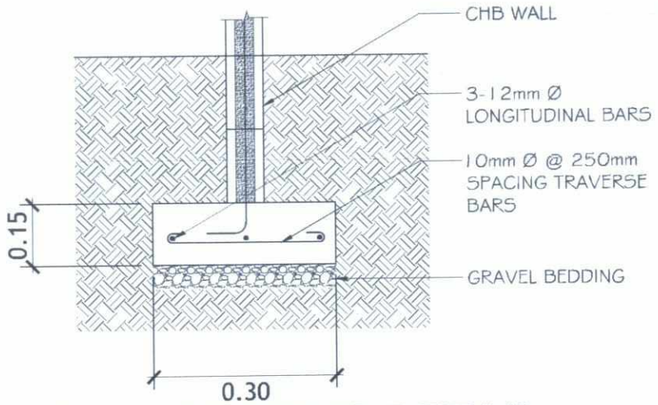
SCHEDULE OF BEAMS

MARK	CONT'. BARS	EXT SUPPORT SECTION	EXT SUPPORT REINF	MIDSPAN SECTION	MIDSPAN REINF	INT SUPPORT SECTION	INT SUPPORT REINF	STIRRUPS DIA	STIRRUPS NO.	STIRRUPS SPACING	REMARKS
GB	2-12mm top		2-12mm		2-12mm		2-12mm	10mm	2	50	
									10	100	
	2-12mm bot.		2-12mm		2-12mm		2-12mm		REST	200	
		250x350		250x350		250x350			SPLICE	100	
RB	2-12mm top		2-12mm		2-12mm		2-12mm	10mm	2	50	
									10	100	
	2-12mm bot.		2-12mm		2-12mm		2-12mm		REST	200	
		250x350		250x350		250x350			SPLICE	100	



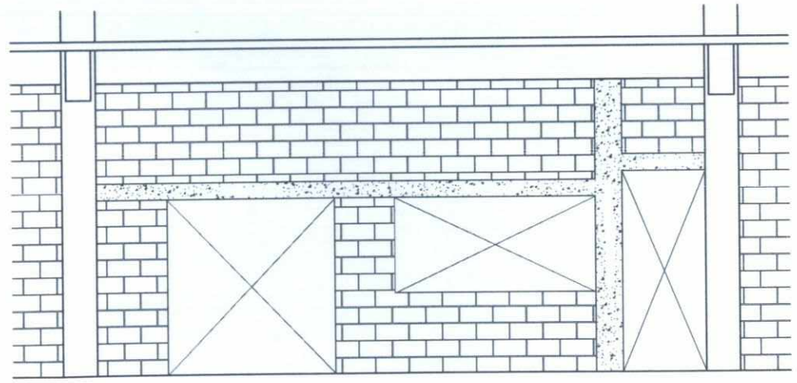
TYPICAL BEAM DETAIL

SCALE: 1: 50 METERS



WALL FOOTING DETAIL

SCALE 1:10 MTS.



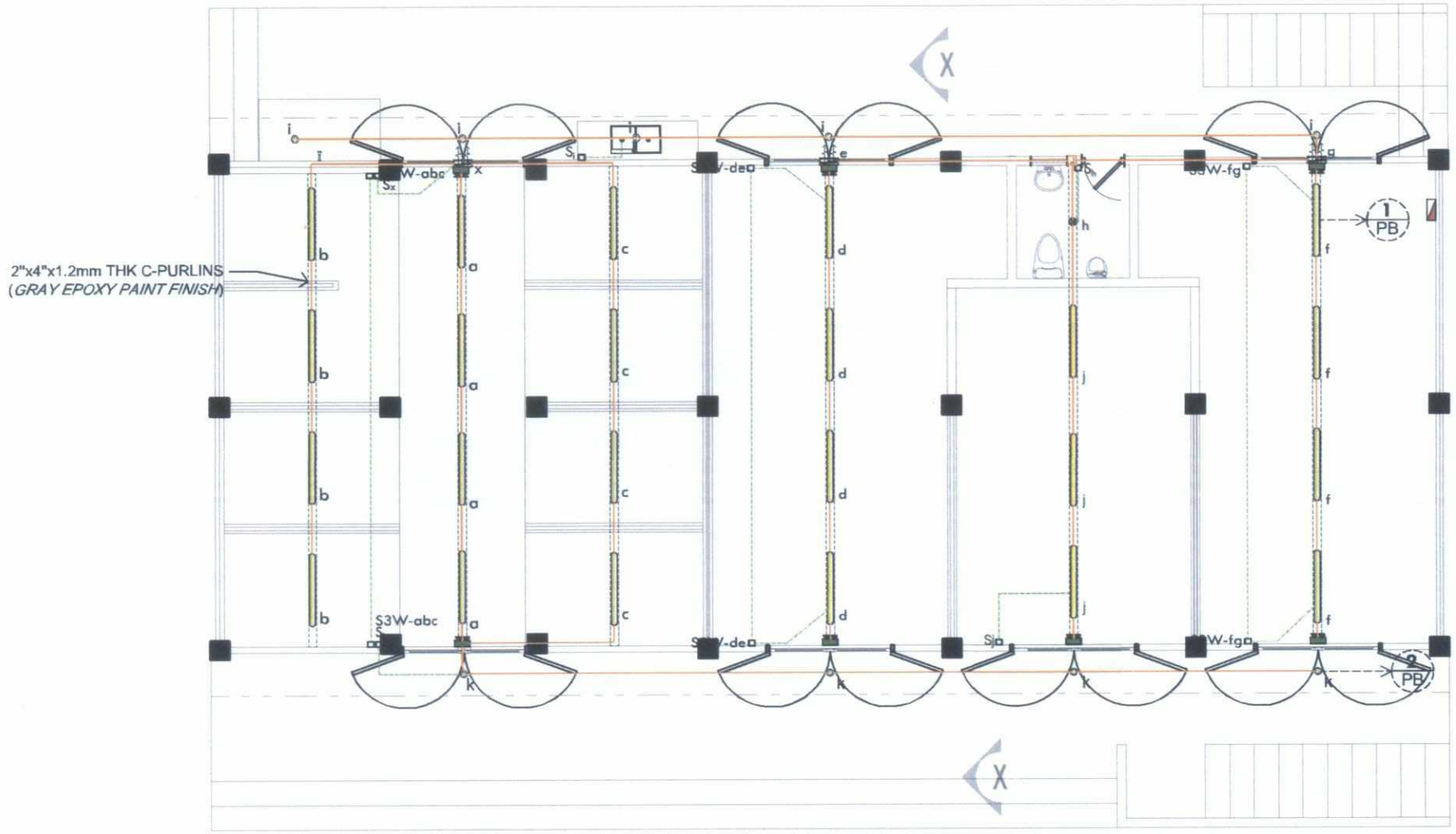
TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. ULYSSES B. CALUYA, ARCHITECT, OFDM	CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	CERTIFIED BY: AR. CARLEN M. GUIEB, DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GERALD C. RAMOS, ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: MAY 2025	SHEET NO: S-05 PAGE NO: 53/66

GENERAL NOTES & SPECIFICATIONS

1. ALL ELECTRICAL INSTALLATION HEREIN SHALL BE DONE IN ACCORDANCE WITH PROVISIONS OF THE LATEST EDITION OF PHILIPPINE ELECTRICAL CODE WITH THE RULES AND REGULATIONS OF THE NATIONAL AND LOCAL AUTHORITIES CONCERNED IN THE ENFORCEMENT OF ELECTRICAL LAWS AND ORDINANCES AND WITH THE REQUIREMENTS OF THE POWER COMPANY CONCERNED.
2. ALL ELECTRICAL WORKS HEREIN SHALL BE EXECUTED BY EXPERIENCED MEN UNDER THE SUPERVISION OF A DULY LICENSED REGISTERED ELECTRICAL ENGINEER OR PROFESSIONAL ELECTRICAL ENGINEER.
3. MATERIALS THAT PROVIDES SUPPORT, ADDED SAFETY, AND ACCESS, SUCH AS PULL BOXES, JUNCTION BOXES, BENDS AND OTHER FITTINGS SHALL BE PROVIDED EVEN IF NOT EXPLICITLY STATED IN THE PLAN.
4. THE ELECTRICAL SERVICE ENTRANCE POWER FOR THE BUILDING SHALL BE 230V, SINGLE PHASE, 2-WIRE + GROUND, 60 HZ.
5. WIRES SHALL BE COLOR CODED AS FOLLOWS:
6. LINE 1 --- RED LINE 2 --- BLACK GROUND --- GREEN
7. WIRING METHOD SHALL BE AS FOLLOWS:
   a. FOR EMBEDDED PIPE -POLYVINYL CHLORIDE CONDUIT SCHEDULE 40 (PVC SCH 40)
   b. FOR RUN EXPOSED PIPE -ELECTRICAL METALLIC TUBING (EMT) / INTERMEDIATE METAL CONDUIT (IMC)
   c. FOR DRYWALL -MICA TUBE, PVC FLEXIBLE HOSE OR PVC SCH 40
7. ALL MATERIALS TO BE USED SHALL BE BRAND NEW AND APPROVED TYPE FOR THE PARTICULAR LOCATION AND PURPOSE OF USAGE.
8. ALL WIRES SHALL BE COPPER AND THERMOPLASTIC INSULATED TYPE "THHN" UNLESS OTHERWISE INDICATED IN THE PLAN. THE MINIMUM SIZE OF WIRE FOR POWER AND LIGHTING CIRCUIT SHALL BE 3.5mm.
9. ANY DISCREPANCY IN LOCATION AND RATING OF ELECTRICAL EQUIPMENT SHALL BE VERIFIED WITH THE OWNER AND CHANGES SHALL BE MADE ACCORDINGLY.
10. ALL CONVENIENCE OUTLETS AND MOTOR LOADS SHALL BE PROPERLY GROUNDED TO THE DISTRIBUTION PANEL AND SECURELY BONDED TO THE GROUNDING ELECTRODE SYSTEM.

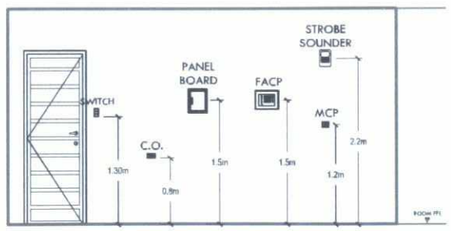
LEGENDS

	1-18W T5 LED TUBE IN A WEATHERPROOF HOUSING (DL)
⊗	20W LED BULB WITH RECEPTACLE
○	12W LED 4" ROUND SURFACE MOUNTED DOWNLIGHT (DL)
	WALL MOUNTED EMERGENCY LIGHT WITH OUTLET
S_a	ONE-GANG WIDE SERIES 1-WAY SWITCH
S3W-ab	TWO-GANG WIDE SERIES 3-WAY SWITCH
S3W-abc	THREE-GANG WIDE SERIES 3-WAY SWITCH
	40W INDUSTRIAL TYPE WALL MOUNTED EXHAUST FAN WITH LOUVERS
WP	DUPLEX UNIVERSAL CONVENIENCE OUTLET WITH GROUND WITH WEATHERPROOF COVER
	PVC CONDUIT
	PANELBOARD



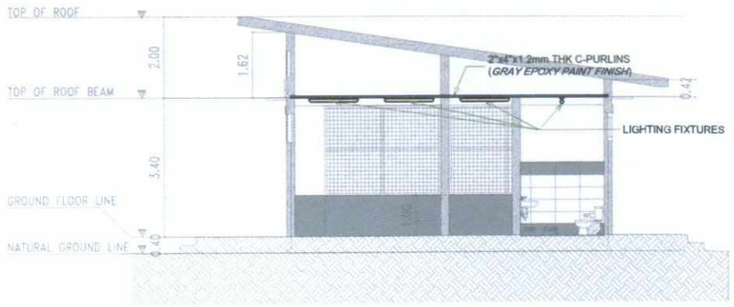
PROPOSED LIGHTING LAYOUT

LUCINDA CAMPUS SCALE 1 : 100 MTS



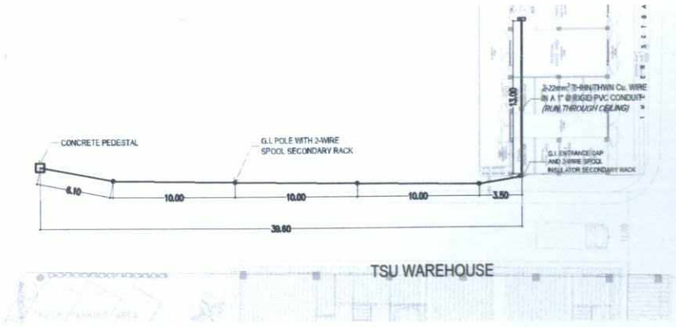
MOUNTING HEIGHT DETAILS

NTS



CROSS SECTION THRU X-X

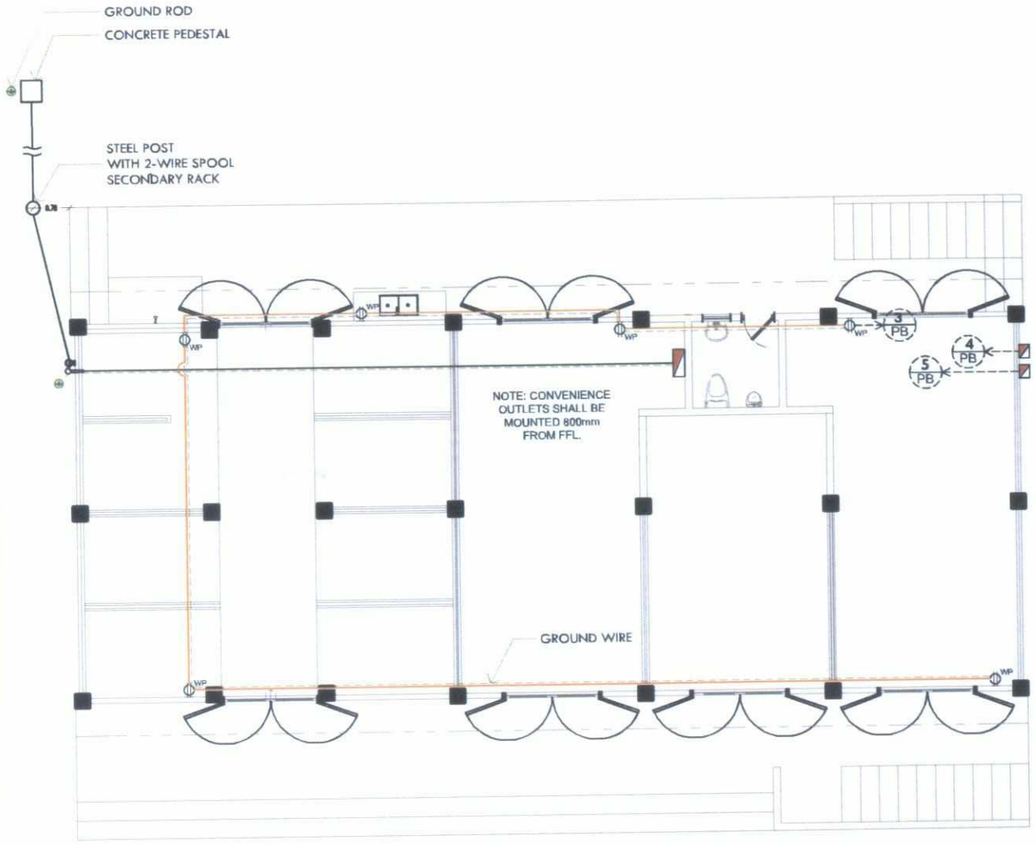
SCALE 1 : 150 MTS



SERVICE ENTRANCE LAYOUT

NTS

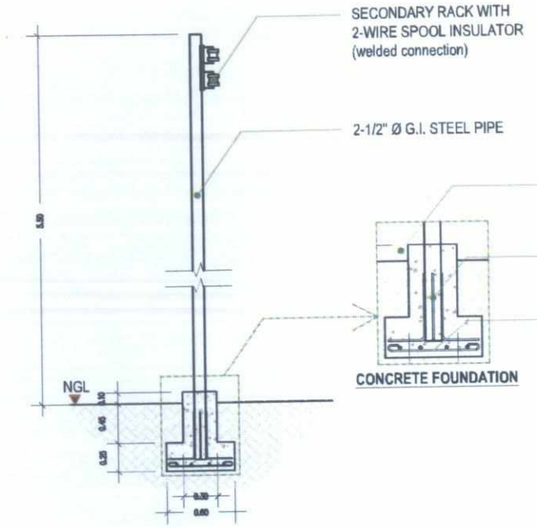
TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: ENGR. MARK JOMELLE O. NATIVIDAD ELECTRICAL ENGINEER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ HEAD, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE:	SHEET NO: E-01 PAGE NO: 54/64



PROPOSED POWER OUTLET AND MAIN FEEDER LAYOUT

LUCINDA CAMPUS

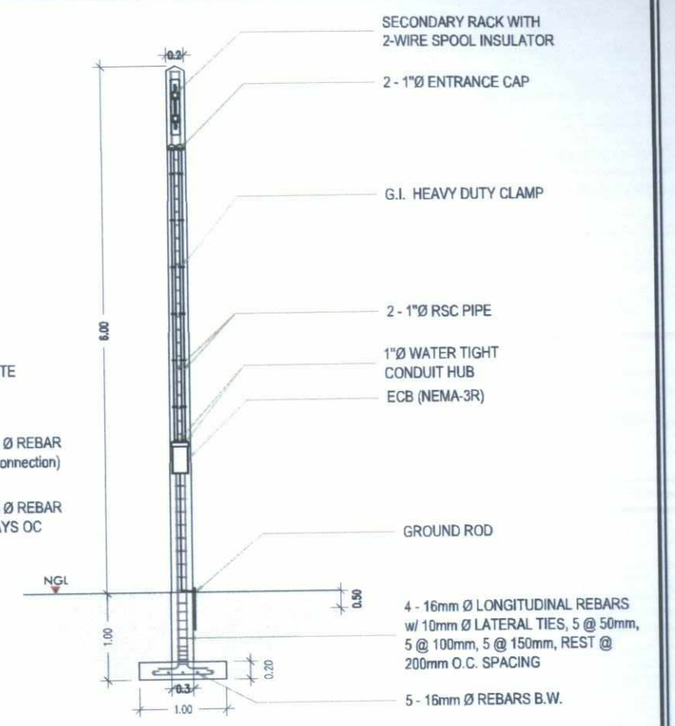
SCALE 1 : 130 MTS



ELECTRIC POLE

NTS

CONCRETE FOUNDATION



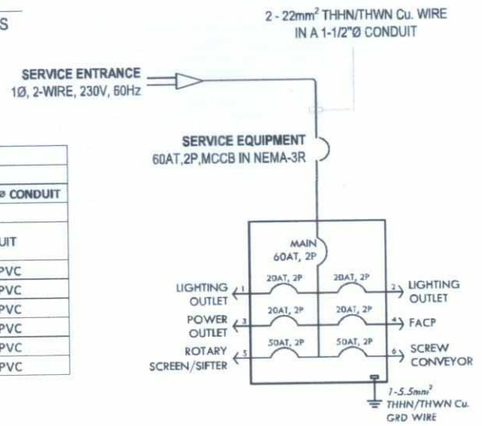
SERVICE ENTRANCE PEDESTAL DETAIL

SCALE 1 : 80 MTS

LUCINDA MRF PANELBOARD										
LOCATION:	LUCINDA CAMPUS				SYSTEM VOLTAGE:		230V, 1-PHASE, 60Hz			
FED FROM:	SERVICE UTILITY				MAIN FEEDER SIZE:		2 - 22mm2 THHN/THWN Cu. WIRE IN A 1-1/2" ø CONDUIT			
MAIN CIRCUIT BREAKER:	60AT, MCCB, 2P				ENCLOSURE:		NEMA-1 (RECESSED MOUNTED)			
CIRCUIT NUMBER	DESCRIPTION	NO. OF OUTLET	VA	A	CIRCUIT BREAKER AT	CIRCUIT BREAKER AF	CIRCUIT BREAKER POLE	CONDCUTOR (mm^2)	GROUND (mm^2)	TYPE OF WIRE	CONDUIT
1	LIGHTING OUTLET	20	367	1.60	20	100	2	2 - 3.5	--	THHN/THWN	3/4" ø PVC
2	LIGHTING OUTLET	18	310	1.35	20	100	2	2 - 3.5	--	THHN/THWN	3/4" ø PVC
3	POWER OUTLET	6	1080	4.70	20	100	2	2 - 3.5	1 - 3.5	THHN/THWN	1/2" ø PVC
4	FACP	1	500	2.17	20	100	2	2 - 3.5	1 - 3.5	THHN/THWN	1/2" ø PVC
5	ROTARY SCREEN/SIFTER (3HP)	1	3910	17.0	50	100	2	2 - 14	1 - 5.5	THHN/THWN	3/4" ø PVC
6	SCREW CONVEYOR (3HP)	1	3910	17.0	50	100	2	2 - 14	1 - 5.5	THHN/THWN	3/4" ø PVC

TOTAL CONNECTED LOAD (VA):	10077	TOTAL LOAD CURRENT (A):	48.06
DEMAND FACTOR:	80%	TOTAL DEMAND LOAD CURRENT (A):	38.45

SCHEDULE OF LOADS



SINGLE LINE DIAGRAM

NTS

VOLTAGE DROP CALCULATION:

SERVICE DROP > PB
2 - 22mm² THHN/THWN Cu. / 60M
EFF Z AT 0.85 PF: 0.29 / I_{LOAD} = 38.45A

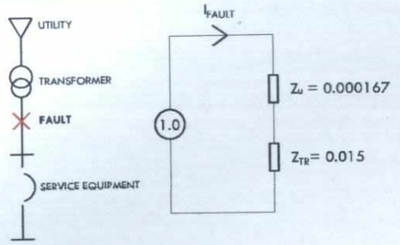
VD = (2)(60)(38.45)(0.29/305)
VD = 4.38V ~ **1.90%**

PB > FARTHEST MOTOR LOAD
2 - 14mm² THHN/THWN Cu. / 15M
EFF Z AT 0.85 PF: 0.44 / I_{LOAD} = 17.0A

VD = (2)(15)(17.0)(0.44/305)
VD = 0.735V ~ **0.325%**

TOTAL %VD OF THE SYSTEM
%VD = 1.90+0.325
%VD = **2.225%**

SHORT CIRCUIT CALCULATION:



ASSUME 300MVA$_{SC}$
@ 1 - 50KVA TRANSFORMER, 1Ø , 230V, 60Hz, %Z = 1.5

Z_U = 50/300,000 = 0.000167 pu
Z_{TR} = 1.5/100 = 0.015 pu
Z_{TOTAL} = 0.000167+0.015 = **0.01516 pu**

@FAULT
$I_{SC} = 1/Z_{TOTAL} \times (KVA_B / 230)$
$I_{SC} = 1/0.01516 \times (50x10^3 / 230)$
I_{SC} = 14,339A ~*SAY* ***15 KAIC***

TARLAC STATE UNIVERSITY
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PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF)	ENGR. MARK JOMELLE O. NATIVIDAD ELECTRICAL ENGINEER, OFDM-PDU	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ HEAD, OUHS	ATTY. GHEROLD C. BENITEZ ~~ATTY. WILMARK J. RAMOS, DBA~~ VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	E-02
PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY							DATE:	PAGE NO: 55/64

FDAS GENERAL NOTES

1. ALL FIRE DETECTION AND ALARM SYSTEM INSTALLATION WORKS HEREIN SHALL BE DONE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, THE APPLICABLE PROVISIONS OF THE LATEST EDITION OF THE NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) FIRE CODE, AND THE RULES AND REGULATIONS OF THE LOCAL FIRE BUREAU.

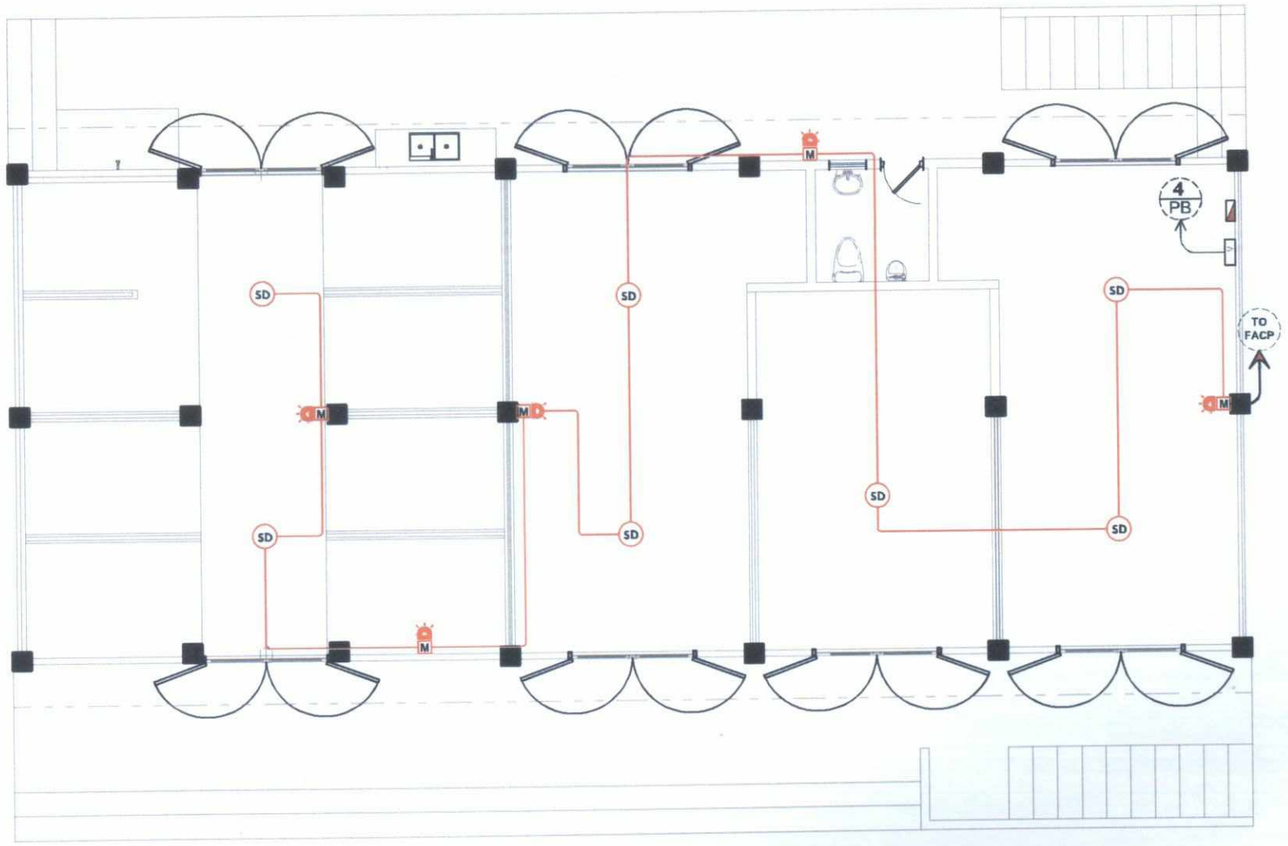
2. THE FIRE DETECTION AND ALARM SYSTEM SHALL BE DESIGNED AND CONSTRUCTED SO THAT THERE ARE APPROPRIATE PROVISIONS FOR THE EARLY WARNING OF FIRE, AND APPROPRIATE MEANS OF ESCAPE IN CASE OF FIRE FROM THE BUILDING TO A PLACE OF SAFETY OUTSIDE THE BUILDING CAPABLE OF BEING SAFELY AND EFFECTIVELY USED AT ALL MATERIAL TIMES.

3. MOUNTING HEIGHTS OF FIRE DETECTION DEVICES ARE THE FOLLOWING:
   - DETECTORS (CEILING MOUNTED), VARIES
   - SOUNDERS 2.20 METERS
   - MANUAL CALL POINT 1.20 METERS
   - CONTROL PANEL 1.50 METERS

4. ALL MATERIALS TO BE USED ARE NEW AND WILL BE INSTALLED IN APPLICATION FOR WHICH THEY ARE INTENDED.

LEGENDS

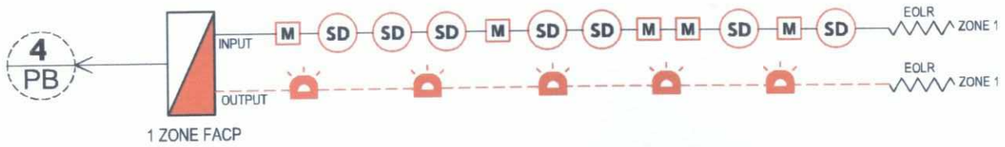
SD	SMOKE DETECTOR
M	MANUAL CALL POINT
	ALARM BELL
EOLR	END OF THE LINE RESISTOR
FACP	FIRE ALARM CONTROL PANEL



PROPOSED CONVENTIONAL FDAS LAYOUT

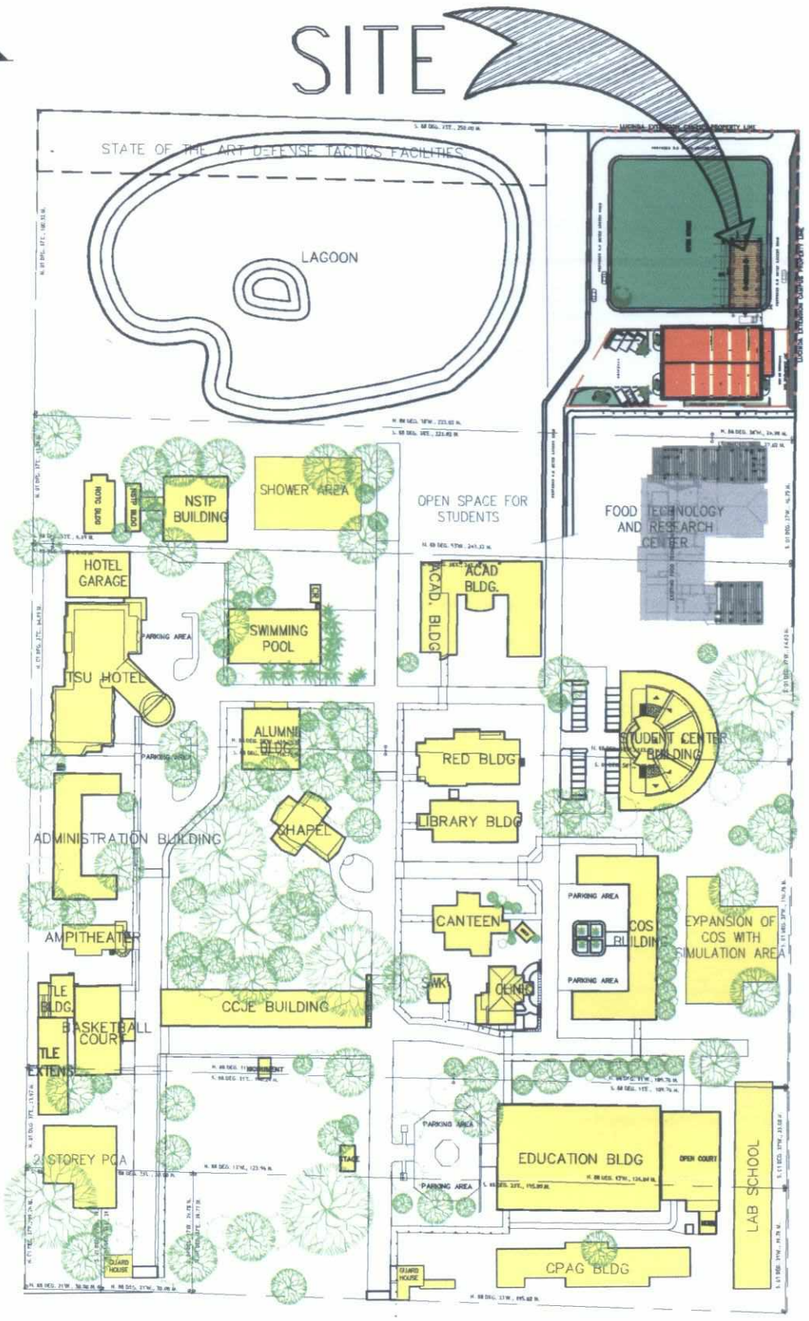
LUCINDA CAMPUS

SCALE 1 : 100 MTS



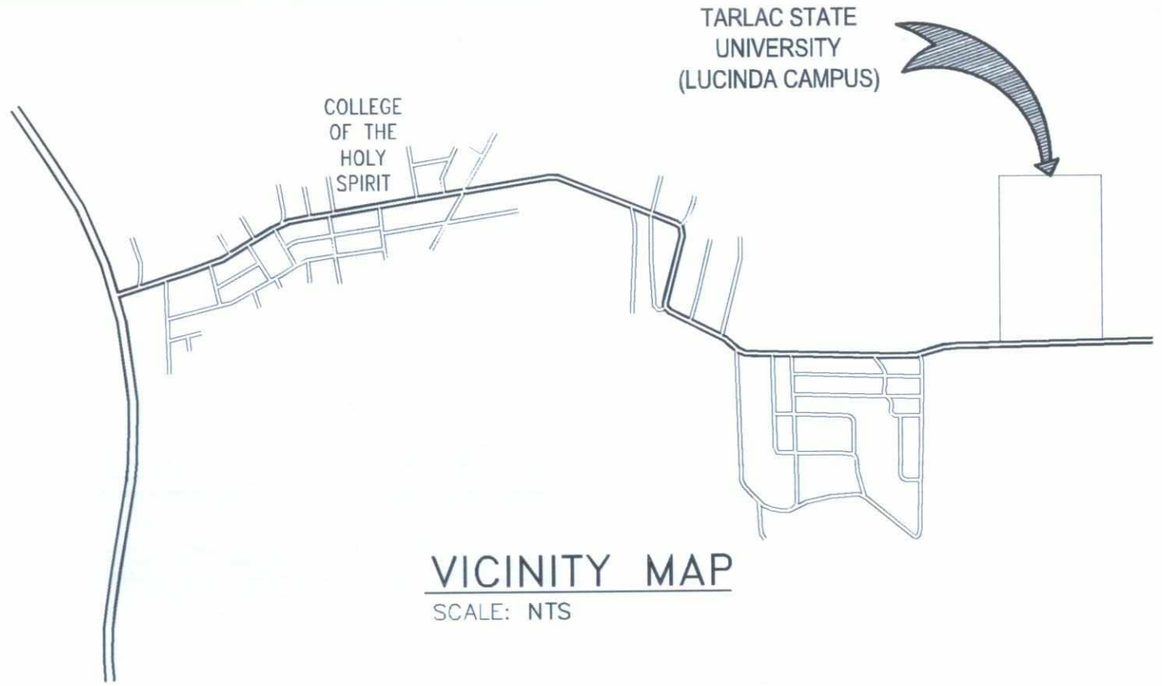
FDAS SINGLE LINE DIAGRAM

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) PROJECT LOCATION: SAN ISIDRO & LUCINDA CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: ENGR. MARK JOMELLE O. NATIVIDAD, ELECTRICAL ENGINEER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, HEAD, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ, ATTY. WILMARK J. RAMOS, DBA, VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT	SHEET CONTENTS: AS SHOWN DATE:	SHEET NO: E-03 PAGE NO: 56/64



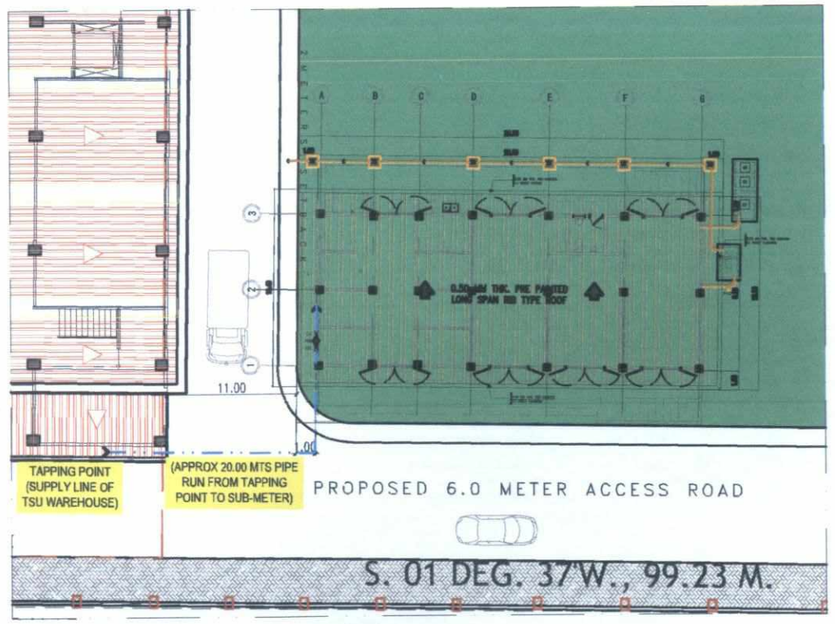
LOCATION MAP

SCALE: 1:2000



VICINITY MAP

SCALE: NTS



SITE DEVELOPMENT PLAN

SCALE: 1: 250 METERS

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OBHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. ALEJANDRO ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-01 PAGE NO: 57/64

LEGENDS

SP	SOIL PIPE	FD	FLOOR DRAIN
WP	WASTE PIPE	RD	ROOF DRAIN
VP	VENT PIPE	URI	URINAL
SS	SOIL STACK	WC	WATER CLOSET
VS	VENT STACK	LAV	LAVATORY
VTW	VENT THRU WALL	GV	GATE VALVE
SVTR	STACK VENT THRU ROOF	CV	CHECK VALVE
FCO	FLOOR CLEANOUT	KS	KITCHEN SINK

	4" Ø PVC S1000 SOIL/WASTE PIPES
	3" Ø PVC S1000 WASTE/ STORM DRAIN PIPES
	2" Ø PVC S1000 WASTE PIPES
	2" Ø PVC S1000 VENT PIPES
	32 MM Ø PPR PIPE PN20
	25 MM Ø PPR PIPE PN20
	20 MM Ø PPR PIPE PN20

GENERAL NOTES:

1. GRADE OF HORIZONTAL PIPING
RUN ALL HORIZONTAL PIPINGS IN PERFECT ALIGNMENT AT A UNIFORM GRADE OF NOT LESS THAN (2%) TWO PERCENT.

2. CHANGE OF DIRECTION
ALL CHANGES IN DIRECTION SHALL BE MADE BY THE APPROPRIATE USE OF 45° WYE, LONG SWEEP, QUARTER BEND, SIXTH, EIGHT, SIXTEENTH BEND WHEN THE CHANGE OF FLOW IS FROM HORIZONTAL TO VERTICAL, A SINGLE 1/8 BEND COMBINATION MAYBE USED ON WASTE LINE.

3. PROHIBITED FITTINGS
NO DOUBLE TEE BRANCHES SHALL BE USED ON SOIL & WASTE LINES. DRILLING & TAPPING OF HOUSE DRAIN, WASTE PIPES OR USE OF SADDLE HUB AND BENDS ARE PROHIBITED.

4. SLEEVES
PROVIDE PIPE SLEEVES AT WALL, COLUMN & SLAB ONE SIZE BIGGER THAN THE ACTUAL SIZE OF PIPE PASSING THRU WALLS OR UNDER SLAB TO PROTECT PIPES FROM BREAKAGE.

5. PIPE CLEANOUTS
CLEANOUTS ARE REQUIRED UNDER THE FOLLOWING CONDITIONS:

A) EVERY CHANGE IN HORIZONTAL DIRECTION EXCEEDING TWENTY – TWO AND ONE – HALF DEGREES.

B) ONE AND HALF METERS INSIDE THE PROPERTY LINE BEFORE THE HOUSE DRAINAGE CONNECTION.

C) EVERY FIFTEEN METERS (15.00) IN HORIZONTAL RUN OF PIPES.

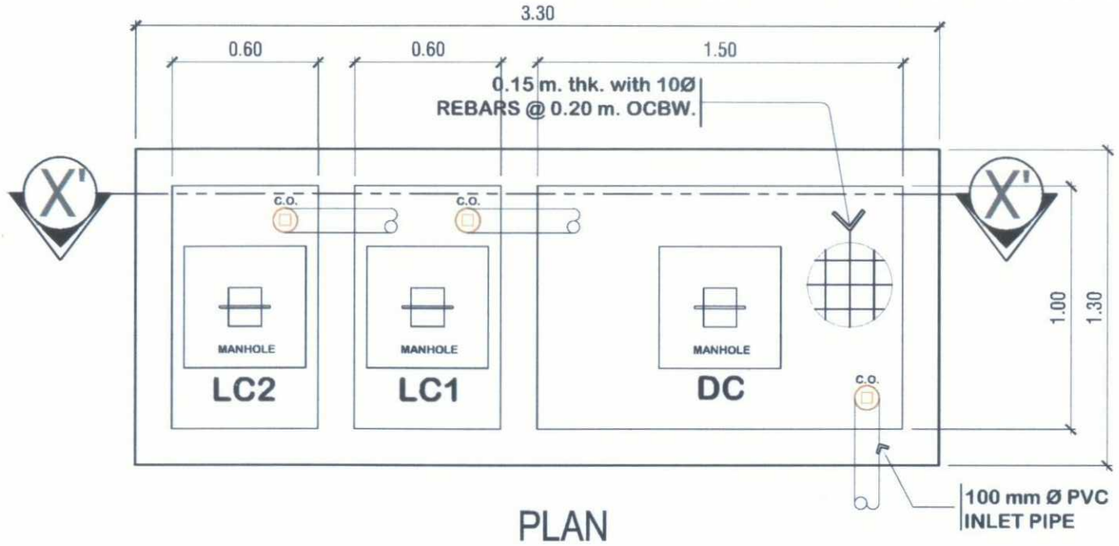
D) AT THE END OF ANY HORIZONTAL PIPES.

6. DEAD ENDS AVOIDED:
IN THE INSTALLATIONS OF PLUMBING SYSTEM, DEAD–END SHALL BE AVOIDED.

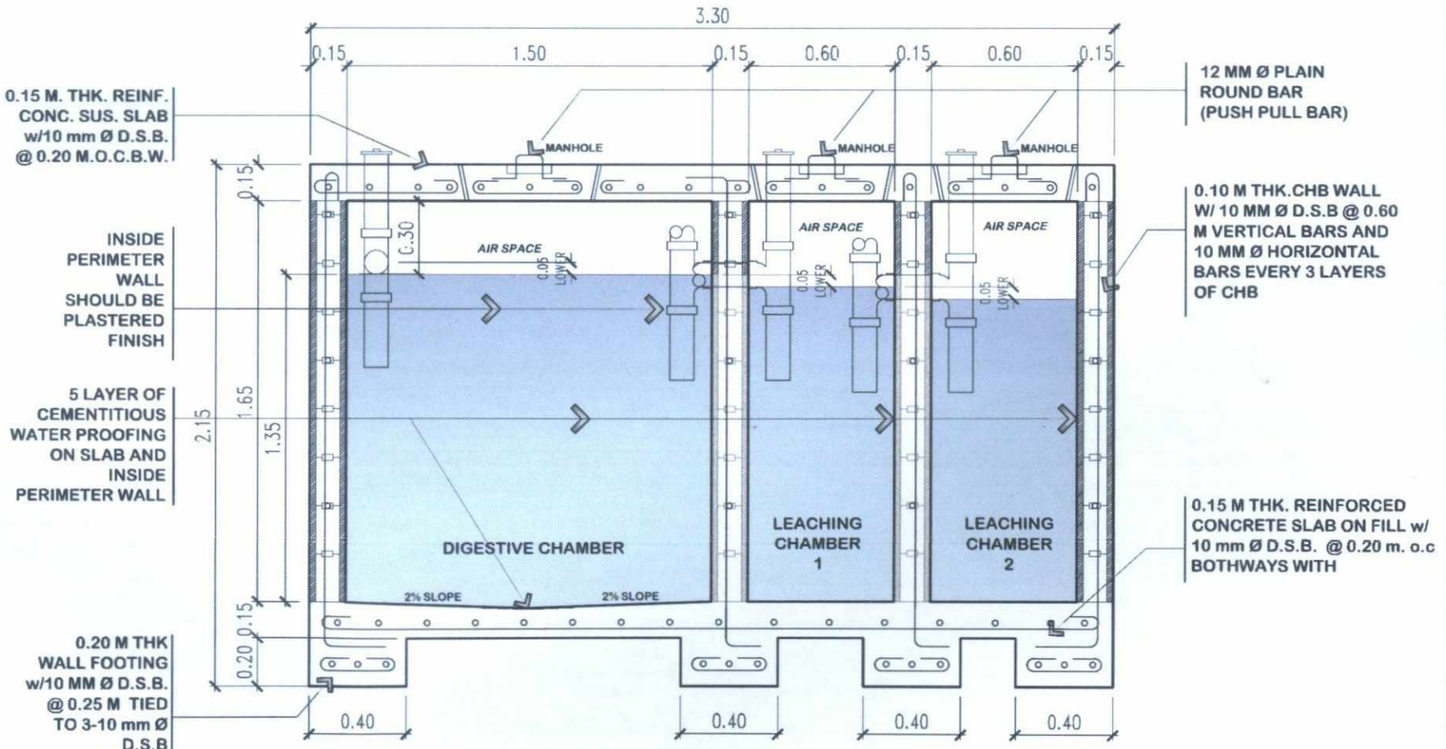
7. ALL PLUMBING WORKS SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE NATIONAL BUILDING CODE, REQUIREMENTS OF THE PLUMBING INSPECTION OFFICE AND PERTINENT PROVISION OF THE NATIONAL BUILDING CODE.

THE CONTRACTOR SHALL BE VERIFY ALL THE EXISTING UTILITIES AT SITE AND COORDINATES THE WORKS WITH WATER LINE SERVICE CONNECTION POINT.

ALL PIPES SIZES ARE IN MILLIMETERS AND ALL DIMENSION ARE IN METERS UNLESS OTHERWISE SPECIFIED.



PLAN



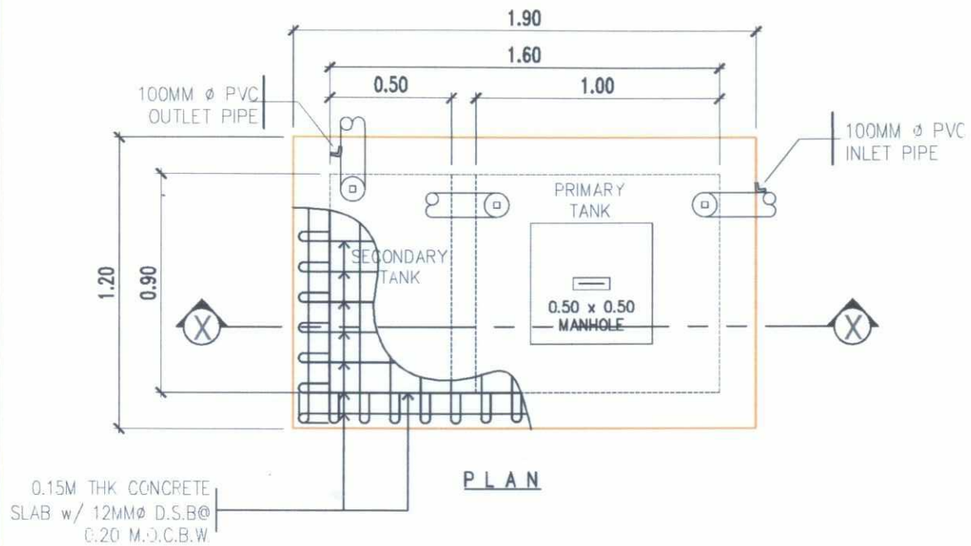
SECTION X'-X'

SEPTIC TANK DETAILS

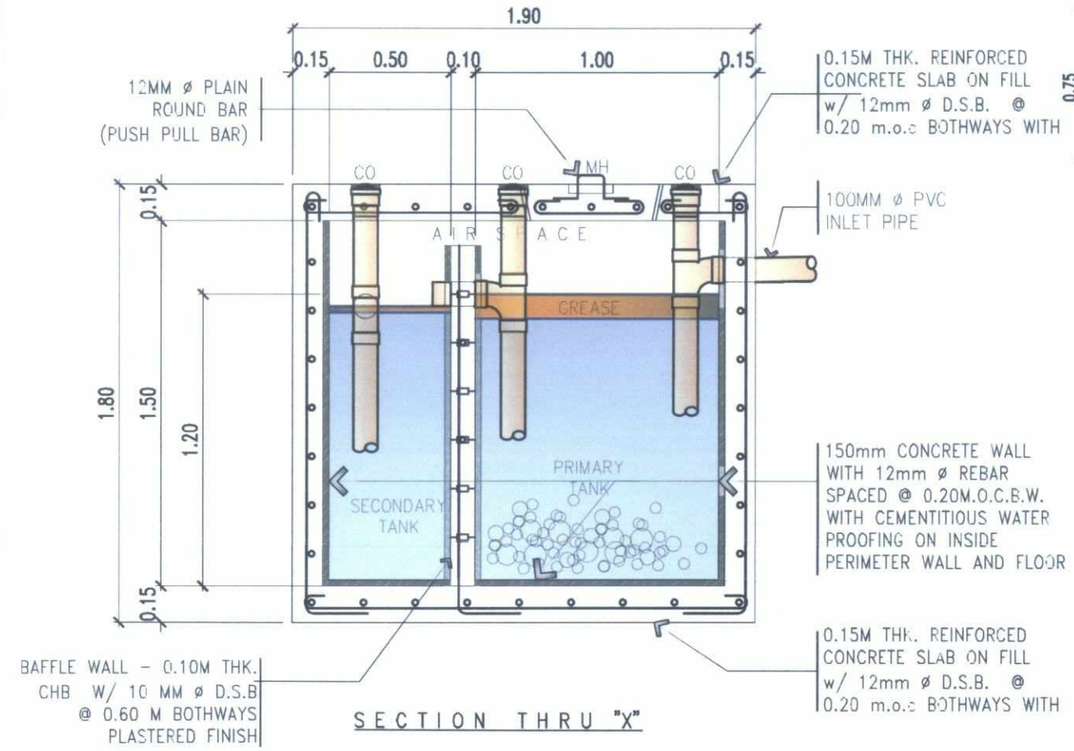
SCALE: 1:25

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP, ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES, HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB, DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ, DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. SHEROLD C. BENITEZ, ATTY. WILMARK A. RAMOS, DBA, VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO, PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-02 PAGE NO: 58/64



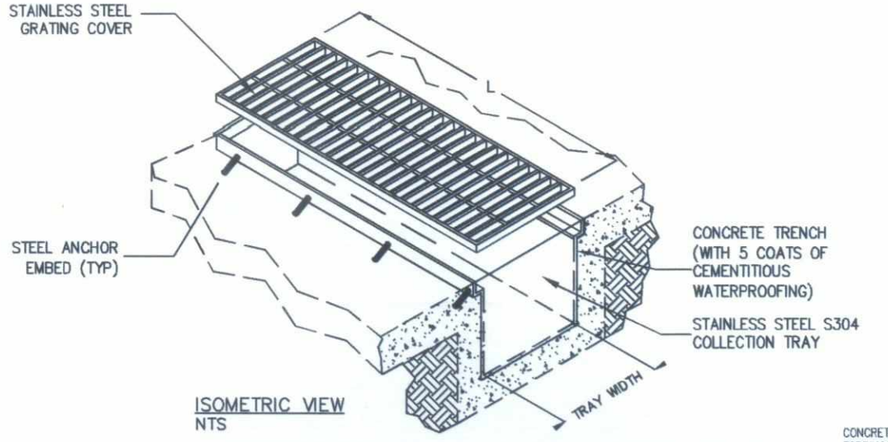
PLAN



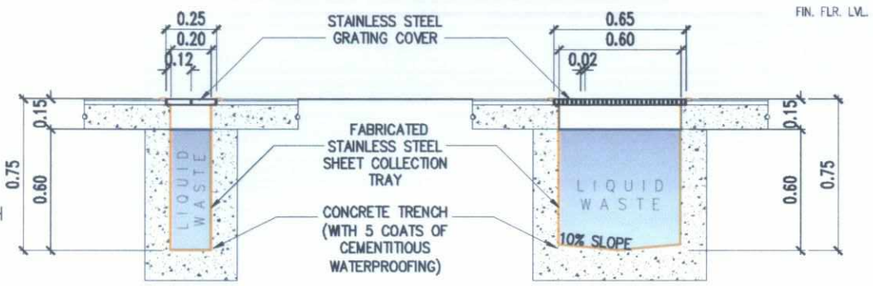
SECTION THRU "X"

LIQUID WASTE INTERCEPTOR DETAILS

SCALE: 1:25

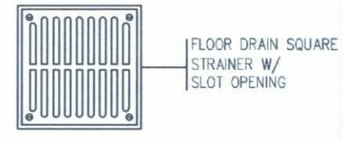


ISOMETRIC VIEW
NTS

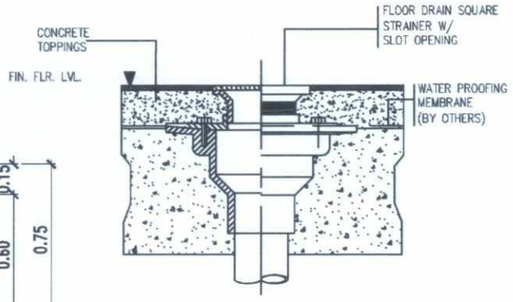


COLLECTION TRAY DETAIL

SCALE: 1:25



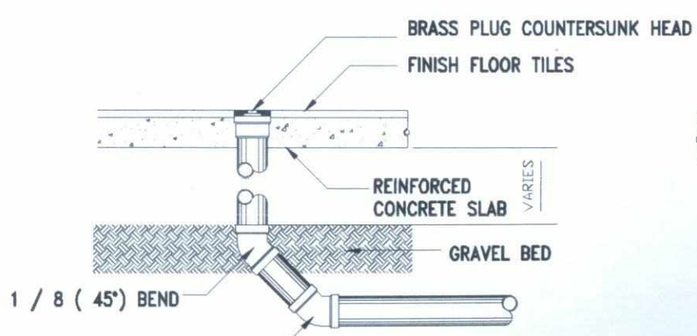
PLAN



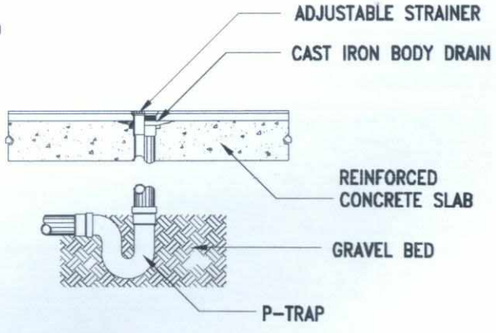
SECTION

FLOOR DRAIN DETAIL

SCALE: NTS



GROUND FLOOR



GROUND FLOOR

FLOOR CLEAN-OUT DETAIL

SCALE: NTS

FLOOR DRAIN DETAIL

SCALE: NTS

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
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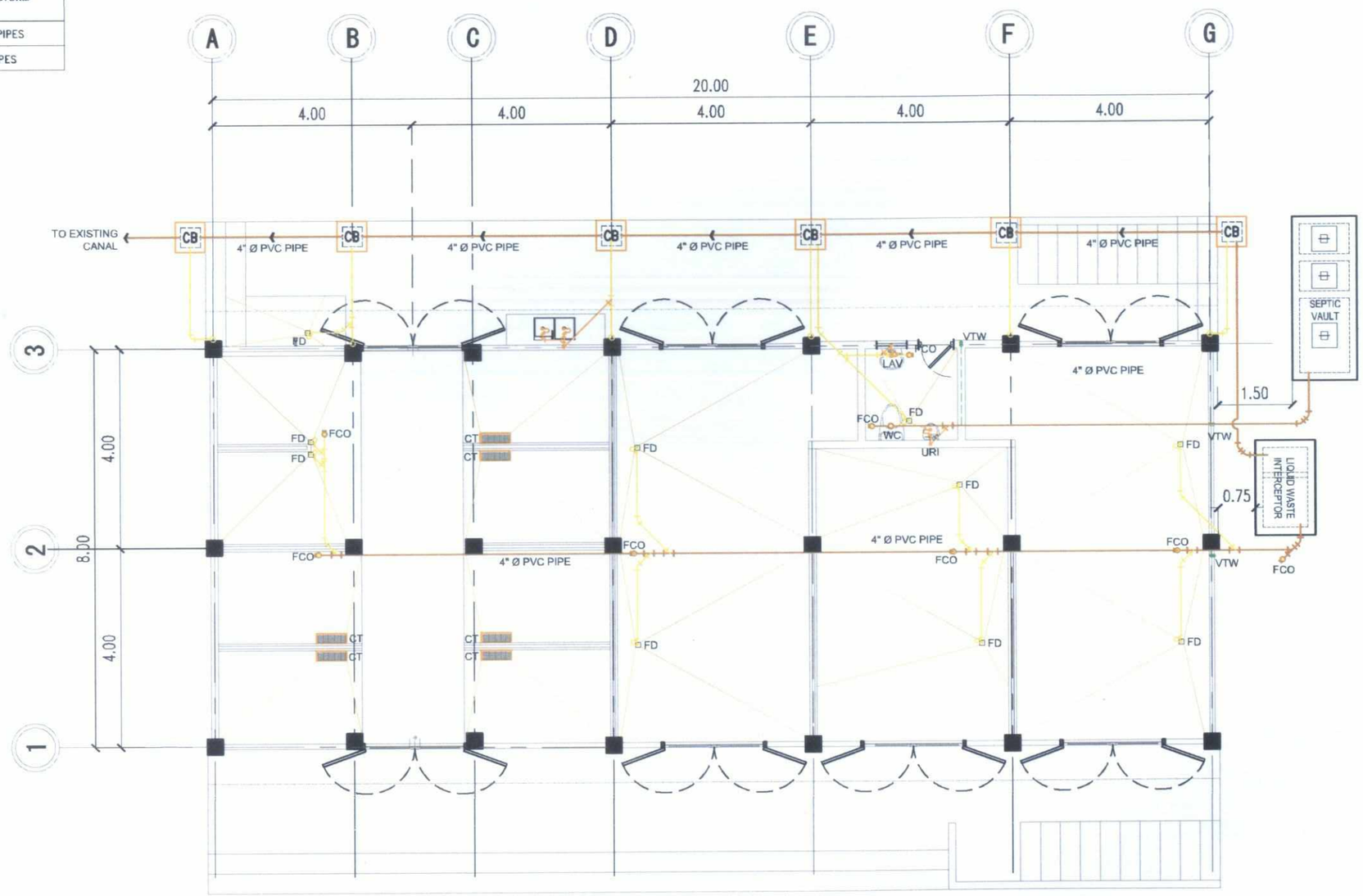
LEGEND	
	4" Ø PVC S1000 SOIL/WASTE PIPES
	3" Ø PVC S1000 WASTE/STORM DRAIN PIPES
	2" Ø PVC S1000 WASTE PIPES
	2" Ø PVC S1000 VENT PIPES

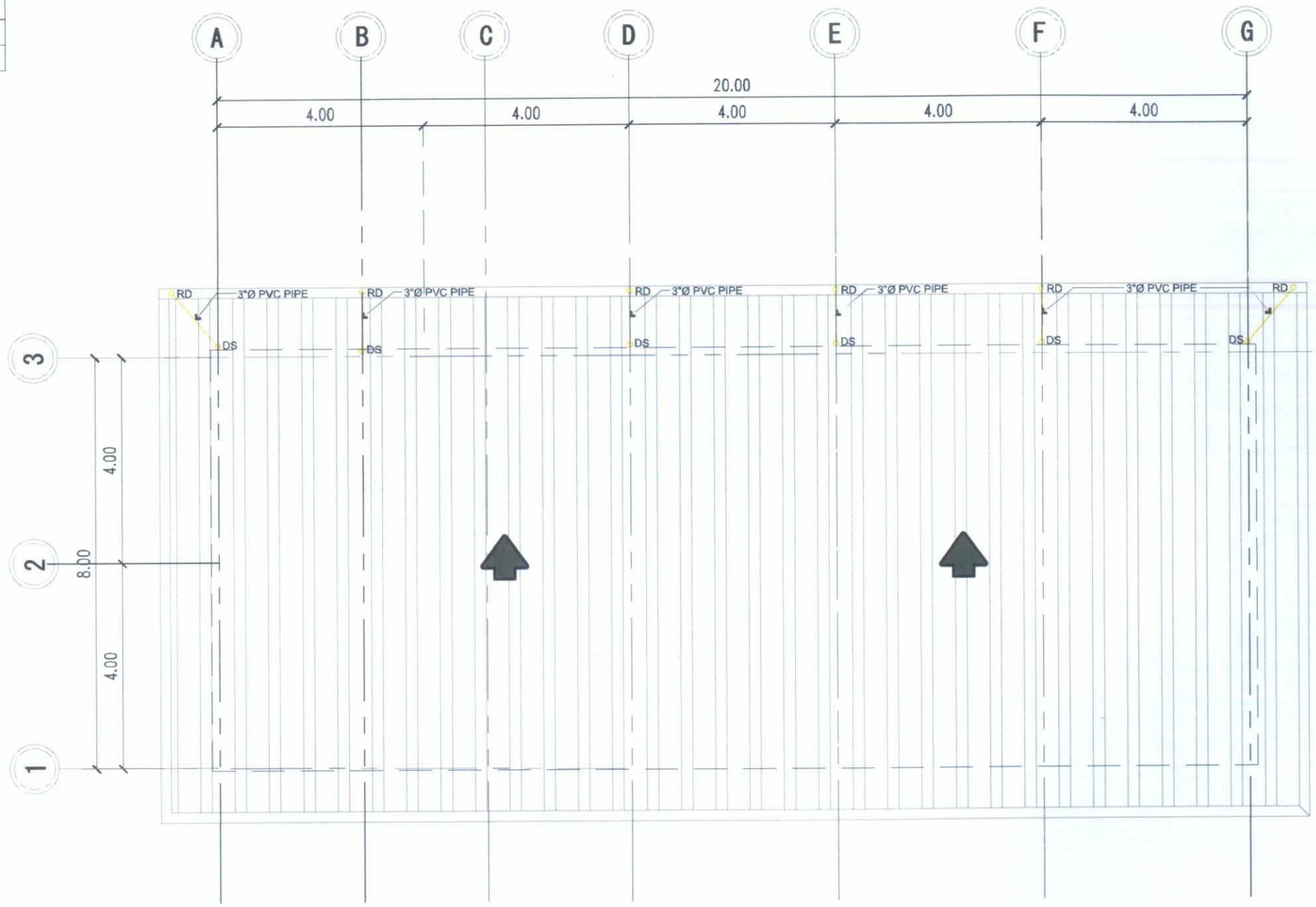


GROUND FLOOR
SANITARY LAYOUT
SCALE: 1:100

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS	AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	ATTY. GHEROLD C. BENITEZ ATTY. WILMARK F. RAMOS, DBA VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	P-04
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 60/64

LEGEND	
———	4" Ø PVC S1000 SOIL/WASTE PIPES
———	3" Ø PVC S1000 WASTE/STORM DRAIN PIPES
———	2" Ø PVC S1000 WASTE PIPES
- - -	2" Ø PVC S1000 VENT PIPES



ROOF LEVEL

STORM DRAIN LAYOUT

SCALE: 1:100

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Facilities Development and Management Office
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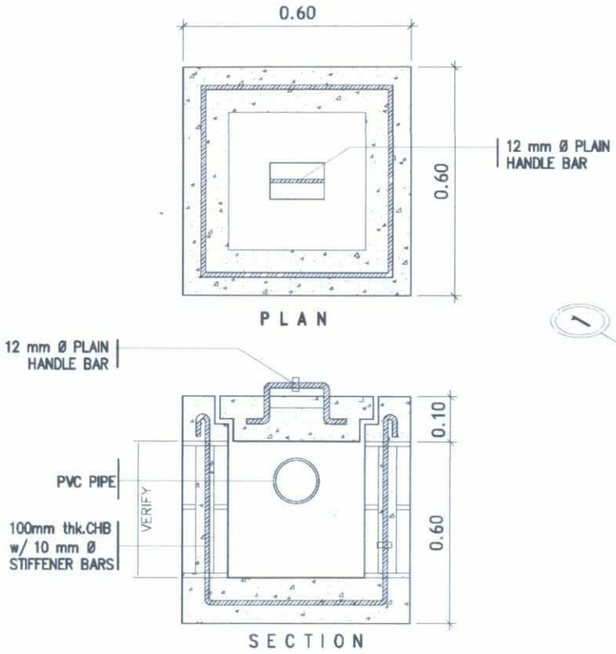
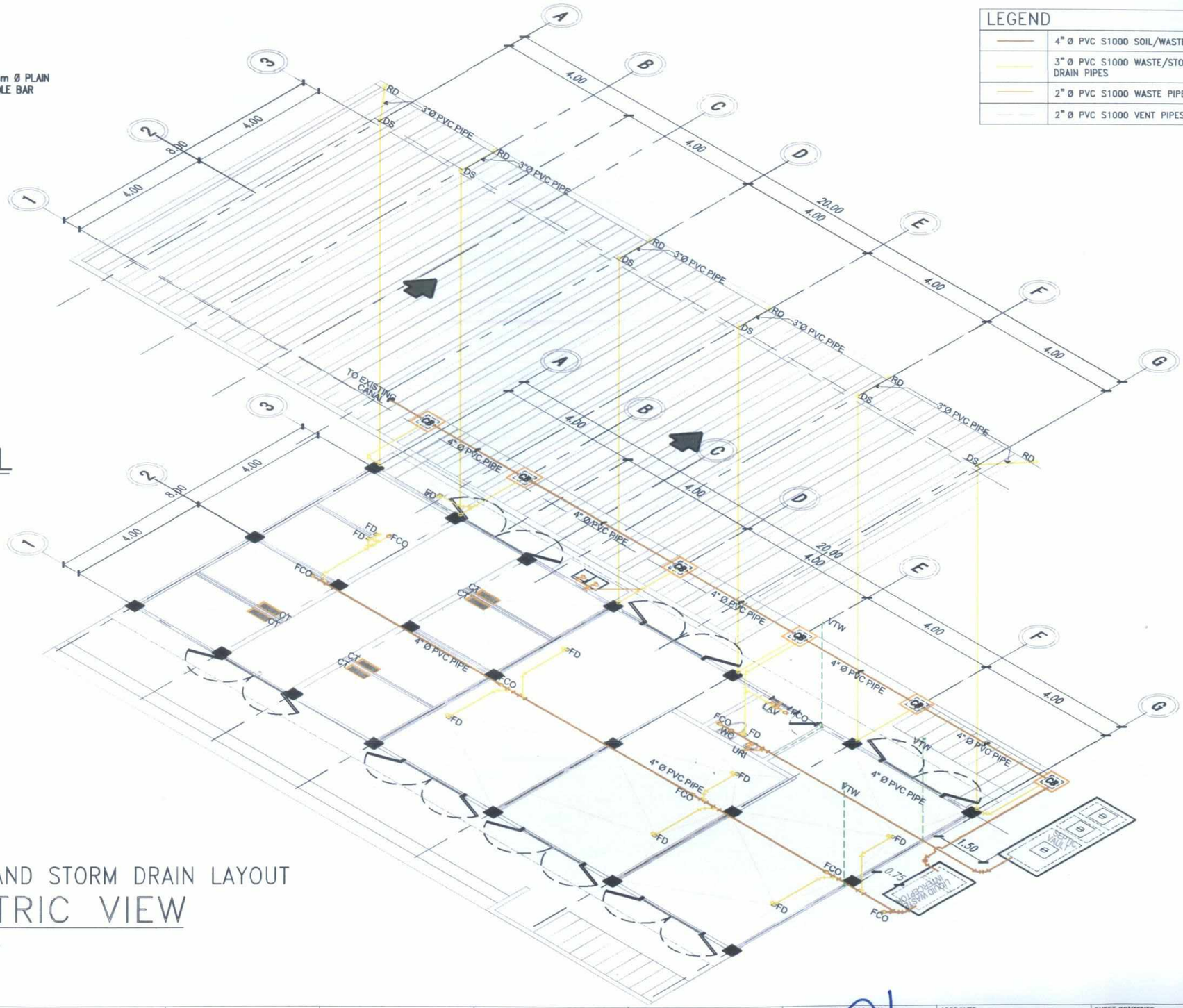
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 61/64



CATCH BASIN DETAIL

SCALE: NTS

LEGEND	
	4" Ø PVC S1000 SOIL/WASTE PIPES
	3" Ø PVC S1000 WASTE/STORM DRAIN PIPES
	2" Ø PVC S1000 WASTE PIPES
	2" Ø PVC S1000 VENT PIPES



SANITARY AND STORM DRAIN LAYOUT
ISOMETRIC VIEW

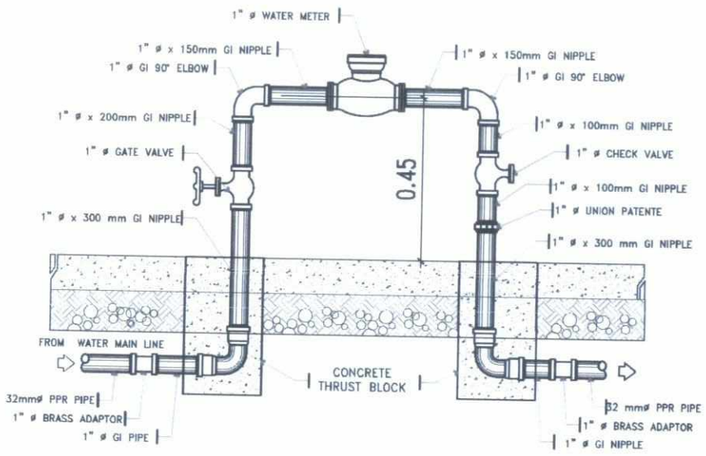
SCALE: 1:75

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO R. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. CHEROLD C. BENITEZ ATTY. WILMARK L. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-06 PAGE NO: 62/64

LEGEND	
— · · —	32MM Ø PPR PIPE PN20
— · · —	25MM Ø PPR PIPE PN20
— · · —	20MM Ø PPR PIPE PN20

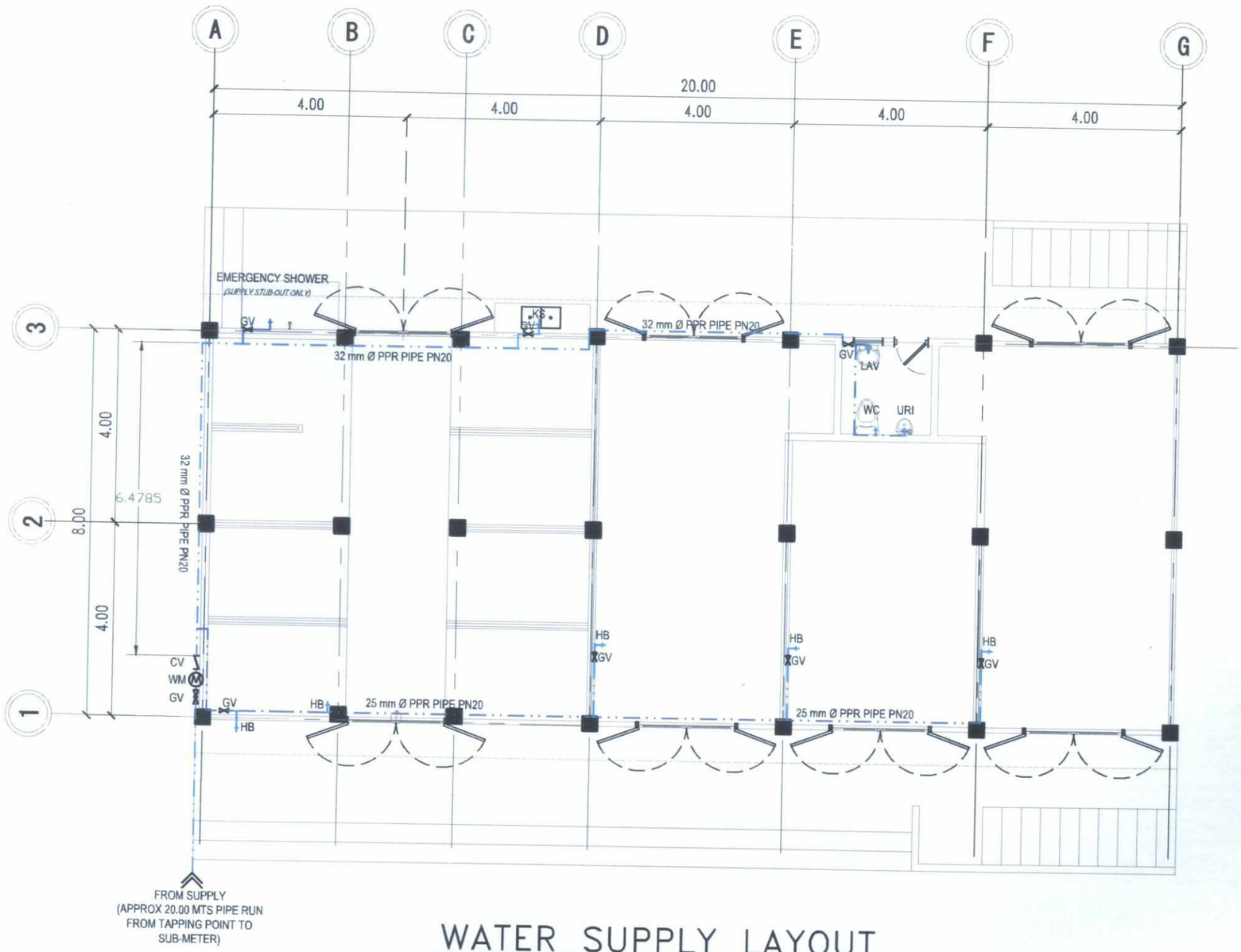
NOTE: .

- •• ALL FIXTURE SUPPLY PIPES SHALL BE 20MM Ø PPR PIPE PN20 EXCEPT FOR EMERGENCY SHOWERS, WHICH SHALL BE 25MM Ø PPR PIPE PN20.
- •• PROVIDE 300MM HIGH 20MM Ø PPR PIPE PN20 AIR CHAMBER WITH END CAP FOR EVERY LAVATORY, KITCHEN SINK, AND HOSE BIBBS.



BUILDING SUB-METER DETAIL

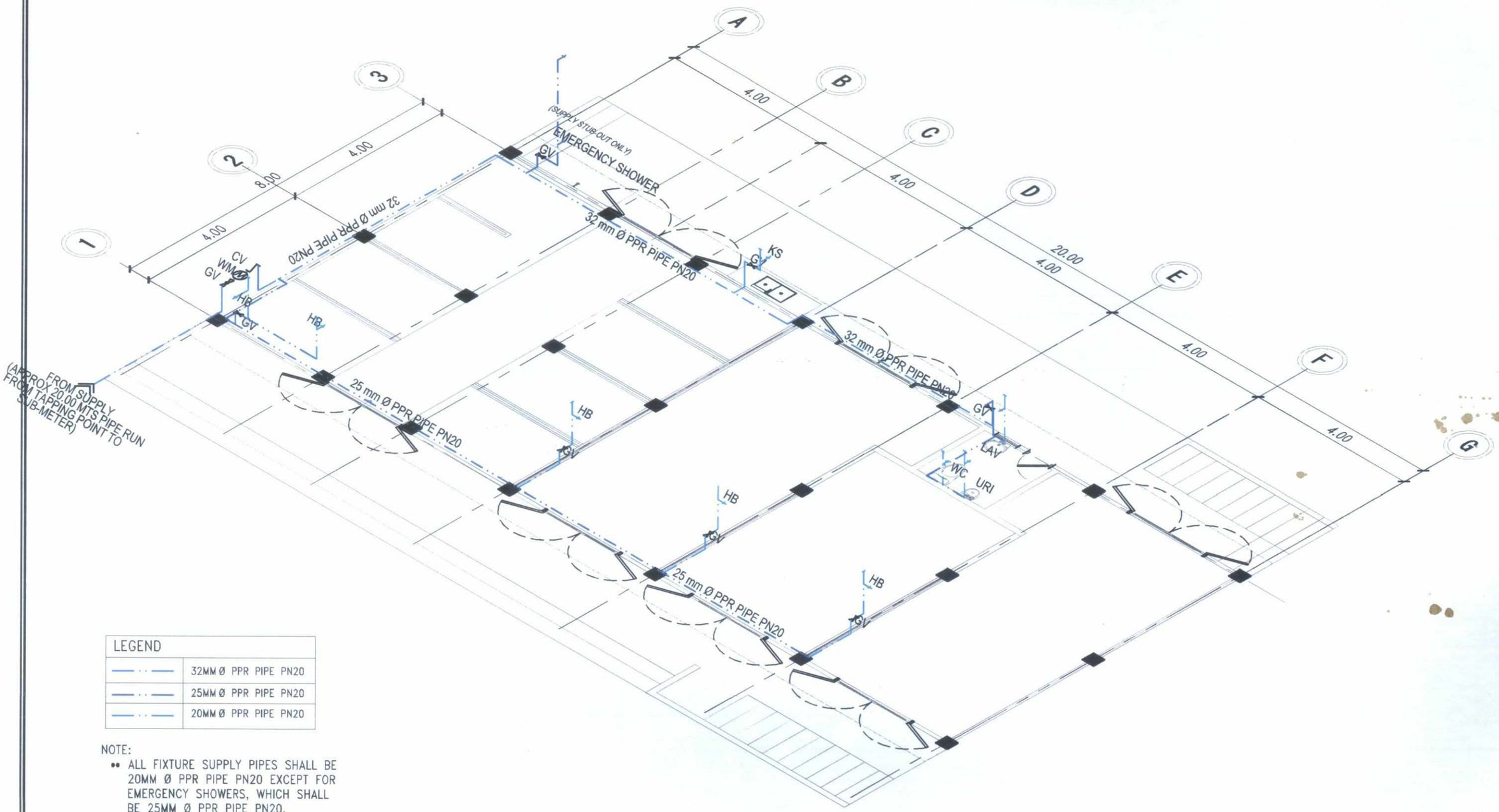
SCALE: NTS



WATER SUPPLY LAYOUT

SCALE: 1:100

TARLAC STATE UNIVERSITY Facilities Development and Management Office Romulo Boulevard, Tarlac City, Philippines 2300	PROJECT TITLE: CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY	PREPARED BY: AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	CHECKED BY: AR. CHERRY L. FABIANES HEAD, OFDM-PDU	CERTIFIED BY: AR. ARLEN M. GUIEB DIRECTOR, OFDM	REQUESTING OFFICE: DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	RECOMMENDING APPROVAL: ATTY. GHEROLD C. BENITEZ ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	APPROVED: DR. ARNOLD E. VELASCO PRESIDENT	SHEET CONTENTS: AS SHOWN DATE: JUNE 2025	SHEET NO: P-07 PAGE NO: 63/64



LEGEND	
— · · —	32MM Ø PPR PIPE PN20
— · · —	25MM Ø PPR PIPE PN20
— · · —	20MM Ø PPR PIPE PN20

NOTE:

- ALL FIXTURE SUPPLY PIPES SHALL BE 20MM Ø PPR PIPE PN20 EXCEPT FOR EMERGENCY SHOWERS, WHICH SHALL BE 25MM Ø PPR PIPE PN20.
- PROVIDE 300MM HIGH 20MM Ø PPR PIPE PN20 AIR CHAMBER WITH END CAP FOR EVERY LAVATORY, KITCHEN SINK, AND HOSE BIBBS.

WATER SUPPLY ISOMETRIC LAYOUT

SCALE: 1:75

TARLAC STATE UNIVERSITY
Facilities Development and Management Office
Romulo Boulevard, Tarlac City, Philippines 2300

PROJECT TITLE:	PREPARED BY:	CHECKED BY:	CERTIFIED BY:	REQUESTING OFFICE:	RECOMMENDING APPROVAL:	APPROVED:	SHEET CONTENTS:	SHEET NO:
CONSTRUCTION OF MATERIAL RECOVERY FACILITY (MRF) AT LUCINDA AND SAN ISIDRO CAMPUS	AR. PAULO A. DOCTOR, RMP ARCHITECT/MASTER PLUMBER, OFDM-PDU	AR. CHERRY L. FABIANES HEAD, OFDM-PDU	AR. ARLEN M. GUIEB DIRECTOR, OFDM	DR. ROMMEL M. HERNANDEZ DIRECTOR, OUHS	ATTY. GHERDLD C. BENITEZ ATTY. WILMARK J. RAMOS, DBA VP FOR ADMINISTRATION	DR. ARNOLD E. VELASCO PRESIDENT	AS SHOWN	P-08
PROJECT LOCATION: LUCINDA EXTENSION CAMPUS, TARLAC STATE UNIVERSITY							DATE: JUNE 2025	PAGE NO: 64/64