



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariflor Subd., Brgy. Del Remedio, San Pablo City, Region IV-A

C.Y. 2025 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR

**CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND - MOTOR VEHICLE USER'S CHARGE (MVUC) AS PER R.A.11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG**

**CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(-930) - K0090+153**

LOCATION : NAGCARLAN, LAGUNA

START : 14.166984, 121.338965; END: 14.133741, 121.415459

REVIEWED & SUBMITTED:

APPROVED:

MA. SHIRLEY M. SAMIANO

CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER

DATE:

CARLOS C. MUERE

ASSISTANT DISTRICT ENGINEER
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER

DATE:

1
A 2 INDEX OF DRAWINGS

A. GENERAL

- | | |
|---|---|
| G | 1 |
| 1 | 5 |

 + COVER SHEET
- | | |
|---|---|
| G | 2 |
| 2 | 5 |

 + INDEX OF DRAWINGS
- | | |
|---|---|
| G | 3 |
| 3 | 5 |

 + LAYOUT PLAN
+ VICINITY
+ KEY MAP
- | | |
|---|---|
| G | 4 |
| 4 | 5 |

 + GENERAL CONSTRUCTION NOTES
- | | |
|---|---|
| G | 5 |
| 5 | 5 |

 + LEGEND / SYMBOLS & ABBREVIATIONS

B. DRAINAGE AND STREET LIGHTS

- | | |
|---|---|
| R | 6 |
| 1 | 9 |

 + SUMMARY OF QUANTITIES
- | | |
|---|---|
| R | 7 |
| 2 | 9 |

 + TRAFFIC MANAGEMENT
- | | |
|---|---|
| R | 8 |
| 3 | 9 |

 + TRAFFIC MANAGEMENT
+ FOUNDATION ELEVATION
+ BASE PLATE DETAIL FOR 8M POLE
+ PEDESTAL DETAIL
+ STIFFENER DETAIL
+ DESIGN CRITERIA
- | | |
|---|---|
| R | 9 |
| 4 | 9 |

 + TYPICAL ELEVATION
+ SECTION OF MAST ARM
+ LED LUMINAIRE DETAILS
+ STIFFENER DETAIL
- | | |
|---|----|
| R | 10 |
| 5 | 9 |

 + MANHOLE PLAN
+ MANHOLE COVER REINFORCEMENT
+ MANHOLE SECTION "A"
+ MANHOLE SECTION "B"
+ DETAIL OF OPEN CANAL
- | | |
|---|----|
| R | 11 |
| 6 | 9 |

C. STRAIGHT LINE DIAGRAM

- | | |
|---|----|
| R | 12 |
| 7 | 9 |

 + STRAIGHT LINE DIAGRAM
STA. 78+000.00 - STA. 79+800.00
- | | |
|---|----|
| B | 13 |
| 8 | 9 |

 + STRAIGHT LINE DIAGRAM
STA. 79+800.00 - STA. 80+400.00
STA. 85+000.00 - STA. 86+200.00
- | | |
|---|----|
| B | 14 |
| 9 | 9 |

 + STRAIGHT LINE DIAGRAM
STA. 87+000.00 - STA. 88+800.00

C. PROJECT BILLBOARD

- | | |
|---|----|
| B | 15 |
| 1 | 2 |

 + DETAIL OF DPWH STANDARD
PROJECT BILLBOARD
- | | |
|---|----|
| B | 16 |
| 2 | 2 |

 + DETAIL OF COA'S STANDARD
PROJECT BILLBOARD



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PROJECT NAME & LOCATION:

CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC)
AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(-930) - K0090+153

SHEET CONTENT:

+ INDEX OF DRAWINGS

DRAFTED:

BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:

PREPARED:

GELANSON P. MALABUYO
ENGINEER II

DATE:

REVIEWED:

NEIL JOHN U. CONOCONO
ENGINEER II

DATE:

SUBMITTED:

MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
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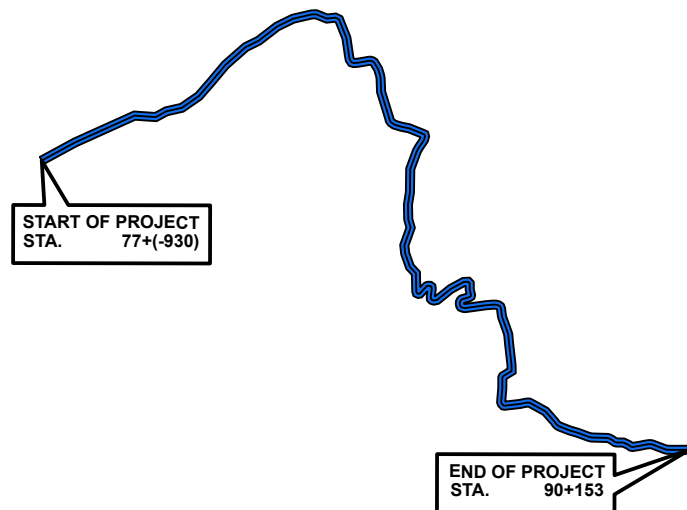
DATE:

SET NO.

G
2
5

SHEET NO.

2
16



1
A 3
LAYOUT PLAN
SCALE: 1 : 100 M.


CALAUAN - NAGCARLAN SECTION	STATION	LENGTH	TOTAL NUMBER OF STREET LIGHTS
BEGINNING OF PROJECT (SECTION 1)	STA. 78+000.00 - STA. 79+000.00	997.00	78
(SECTION 2)	STA. 79+ 000.00 - STA. 80+026.00	1,026.00	82
(SECTION 3)	STA. 85+000.00 - STA. 86+950.00	950.00	76
(SECTION 4)	STA. 87+000.00 - STA. 88+000.00	1,000.00	80
END OF PROJECT (SECTION 5)	STA. 88+000.00 - STA. 88+700.00	677.00	56
TOTAL LENGTH	=	4,650.00 L.M.	372 pcs.



2
A 3
VICINITY MAP
SCALE: NOT TO



3
A 3
LOCATION MAP
SCALE: NOT TO

 Republic of the Philippines DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS LAGUNA 3 rd DISTRICT ENGINEERING OFFICE Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A	PROJECT NAME & LOCATION: CONVERGENCE AND SPECIAL SUPPORT PROGRAM SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC) AS PER R.A. 11239 INSTALLATION OF SOLAR STREET LIGHTS ALONG CALAUAN - NAGCARLAN BDY. RD. - K0077+(-930) - K0090+153	SHEET CONTENT: + LAYOUT PLAN + VICINITY MAP + KEY MAP	DRAFTED: BERNARDO K. ESEO ENG'G ASSISTANT	REVIEWED:	SUBMITTED:	APPROVED:	SET NO.	SHEET NO.
			DATE: GELANSON P. MALABUYO ENGINEER II	NEIL JOHN U. CONOCONO ENGINEER II	MA. SHIRLEY M. SAMIANO CHIEF, PLANNING & DESIGN SECTION CONCURRENT CAPACITY AS OFFICER-IN-CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER	CARLOS C. MUERE OFFICER-IN-CHARGE OFFICE OF THE DISTRICT ENGINEER	G 3 5	3 3 16



GENERAL CONSTRUCTION NOTES

1.0 SPECIFICATIONS:

1.1 ALL WORKS SHALL COMPLY WITH THE "DPWH STANDARD SPECIFICATIONS, 2013 EDITION, VOLUME II - HIGHWAYS, BRIDGES AND AIRPORTS", SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS TO THIS PROJECT.

2.0 DIMENSIONS

2.1 ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2.2 DIMENSIONS ON DRAINAGE, TYPICAL ROAD SECTION AND STANDARD DRAWINGS ARE IN MILLIMETERS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

3.0 STATIONINGS AND RADIUS OF HORIZONTAL CURVE

3.1 THE STATIONINGS OF HORIZONTAL ALIGNMENT OF THE PROJECT ROADS ARE RELATIVE TO THE CENTERLINE SHOWN ON THE PLANS.
3.2 STATIONINGS OF CIM, MH, AND OTHERS STRUCTURES ARE RECKONED AT THE STATIONINGS OF THE CENTERLINE SHOWN ON THE PLANS.
3.3 THE RADIUS OF THE HORIZONTAL CURVE SHOWN ON THE PLAN WERE BASED ON THE ACTUAL LAID-OUT ROADWAY CENTERLINE.

4.0 HORIZONTAL CONTROLS

THE AZIMUTH USED IN THIS PROJECT WAS RECKONED FROM THE CENTERLINE OF STRAIGHT TANGENT OF EXISTING CONCRETE PAVEMENT ALONG MASPANG HIGHWAY, THE AZIMUTH OF SUCCEEDING TANGENT WERE DETERMINED BY ADDING AND/OR SUBTRACTING MEASURED DEFLECTION ANGLE. CALCULATED AZIMUTH = 276°21'30".

5.0 VERTICAL CONTROLS :

THE DATUM USED IN THIS PROJECT WAS ASSUMED. IT WAS REFERRED FROM KM POST 70 ASSUMED ELEVATION = 101.22 M.

6.0 ELEVATIONS AND GRADES :

6.1 FINISHED GRADE ELEVATIONS ARE RELATIVE TO CENTERLINE OF EACH ROAD.
6.2 THE ELEVATIONS SHOWN ON THE ORIGINAL GROUND ON THE PLAN AND PROFILE ARE RELATIVE TO CENTERLINE OF THE ROAD.

7.0 ROAD CONNECTIONS AND PRIVATE ENTRANCES :

7.1 APPROACHES AND CONNECTIONS SHALL BE CONSTRUCTED BY THE CONTRACTOR AS SHOWN ON THE PLAN OR AS DIRECTED BY THE ENGINEER IIN SUCH MANNER AS TO ENSURE SMOOTH CONNECTION AND RIDING QUALITY.
7.2 NO OPENING FOR DRIVEWAYS OR PRIVATE ENTRANCES SHALL BE ALLOWED ESPECIALLY ALONG CRITICAL SECTIONS EXCEPT WITH PRIOR APPROVAL OF THE PROPER AUTHORITIES.

8.0 DRAINAGE STRUCTURES :

8.1 LOCATIONS OF EXISTING DRAINAGE STRUCTURES REFLECTED IN THE PLAN WAS BASED ON THE TOP SURVEY
8.2 EXACT LOCATIONS, GRADIANTS OUTFALLS AND TOP AND INVERT ELEVATION OF DRAINAGE STRUCTURES SHALL BE CHECKED AND VERIFIED IN THE FIELD, DURING CONSTRUCTION BY THE ENGINEER. FIELD ADJUSTMENT MAY BE MADE BY THE ENGINEER TO SUIT ACTUAL FIELD CONDITIONS.
8.3 EXTENSIONS AND OTHER IMPROVEMENTS OF EXISTING DRAINAGE STRUCRURES ARE SUBJECT TO CHANGE AND SHALL BE VERIFIED IN THE FIELD BY THE ENGINEER.

8.4 PRIOR TO INSTALLATION OF RCPC AND OTHER DRAINAGE STRUCTURES. ALL MATERIALS MUST BE TESTED AND CONFORMING WITH THE TECHNICAL SPECIFICATION.

8.5 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ANY MATERIALS INSTALLED AND FOUND TO BE DEFICIENT IN WORKMANSHIP AND QUALITY OF WORK.

8.6 RCPC DIAMETERS ARE IN MILIMETERS UNLESS OTHERWISE SPECIFIED.

8.7 INLETS AND OUTLETS IF NEW AND EXISTING CULVERTS TO BE UTILIZED SHOULD BE CHANNELIZED AND CLEARED OF DEBRIS IN ORDER TO HAVE A SMOOTH FLOW OF WATER.

9.0 REMOVAL OF EXISTING STRUCTURES AND RELOCATION OF EXISTING UTILITIES:

9.1 REMOVAL OF EXISTING BUILDING, HOUSES, AND FENCES, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, THEY WILL BE PAID ACCORDING TO THE CONTRACT.

9.2 PORTIONS OF EXISTING UTILITIES, SUCH AS WATER LINES, TELEPHONE TRUCK LINES, ELECTRIC LINES ETC. THAT MAY OBSTRUCT THE CONSTRUCTION OF THE PROJECT SHALL BE RELOCATED BY THE ENTITIES OR OWNER'S CONCERNED. EXTREME PRECAUTION SHALL BE EXERCISED BY THE CONTRACTOR SO AS NOT TO DAMAGE THE EXISTING UTILITIES DURING CONSTRUCTION. ANY DAMAGE THEREOF SHALL BE ON THE ACCOUNT OF THE CONTRACTOR.

10.0 ROAD SIGNS:

10.1 ROAD SIGNS SHALL CONFORM WITH THE LATEST MANUAL ONM PHILIPPINES ROAD SIGNS (REVISED EDITION) OF THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, TRAFFIC ENGINEERING ANDS MANAGEMENT PROJECTS.

11.0 GENDER AND DEVELOPMENT

11.1 THE DESIGN SHALL CONFORMS WITH THE REPUBLIC ACT 7192
11.2 THE DESIGN SHALL CONFORMS WITH THE REPUBLIC ACT 9710

12.0 ACCESSIBILITY LAW

12.1 STRICT COMPLIANCE WITH THE BATAS PAMBANSA 344 AND ITS IMPLEMENTING RULES AND REGULATION SHALL BE IMPOSED THE IMPLEMENTING OFFICE IDENTIFY LOCATIONS OF AND PROVIDE ACCESSIBILITY FACILITIES FOR PERSONS WITH DISABILITY IN ACCORDANCE WITH D.O. 37 SERIES OF 2007.

13.0 DESIGN DATA / REFERENCE

13.1 THE DESIGN DATA ADOPTED IN THIS PROJECT WAS MAINLY ESTABLISHED WITH REFERENCE TO AASHTO'S. A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS DESIGN GUIDELINES, CRITERIA AND STANDARDS (DGCS) DPWH.
13.2 GUIDELINES FOR ROAD DRAINAGE, DPWH.

14.0 STANDARD DRAWINGS:

14.1 THE NECESSARY DRAWINGS CONTAINED IN THE DPWH STANDARD DRAWINGS FOR ROADS AND BRIDGES SHALL UTILIZED FOR THIS PROJECT, UNLESS OTHERWISE A MORE DETAILED DRAWING IS SPECIFIED AND/OR PROVIDED AND APPROVED.



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SHEET CONTENT:
+ GENERAL CONSTRUCTION NOTES

DRAFTED:
BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:
PREPARED:
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ENGINEER II
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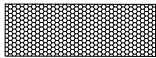
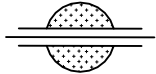


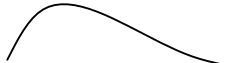


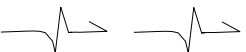

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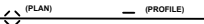









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4 16

1
A 5
LEGEND:

	GROUTED RIPRAP EXISTING
	STONE MASONRY
	CUT AND FILL SECTION
	TREES
	POINT OF INTERSECTION
	ORIGINAL GROUND
	KILOMETER POST
	NORTH SIGN
	FLOW
	PIPE CULVERT EXISTING

	BOX CULVERT EXISTING
	BOX CULVERT NEW
	PROJECT ROAD
	EXISTING BRIDGE
	RIVER / CREEK
	REFERENCE POINT
	STATION
	LENGTH OF VERTICAL CURVE
	GOOD / NEW PCCP
	PARAPET WALL PLAN
	EXISTING PCCP

2
A 5
ABBREVIATIONS:

ACP	ASPHALT CONCRETE PAVEMENT	Max	MAXIMUM
AZIM	AZIMUTH	MH	MANHOLE
BLDG	BUILDING	mm	MILLIMETER
BM	BENCH MARK	Mo	MIDDLE ORDINATE
BOQ	BILL OF QUANTITIES	MUN	MUNICIPAL
BR	BRIDGE	NB	NORTH BOUND
BRDY	BOUNDARY	O.C	ON CENTER
BRGY	BARANGAY	OIE	OUTLET INVERT ELEVATION
BVCE	BEGIN OF VERTICAL ELEV.	PC	POINT OF CURVATURE
BVCS	BEGIN OF VERTICAL CURVE STATION	PCCP	PORTLAND CONCRETE CEMENT PAVEMENT
BW	BOTHWAYS	PI	POINT OF INTERSECTION
CIM	CURB INLET MANHOLE	PT	POINT OF TANGENCY
CL	CENTERLINE	PVI	POINT OF VERTICAL INTERSECTION
cm	CENTIMETER	PVC	POINT OF VERTICAL CURVE
CS	CURB TO SPIRAL	PVT	POINT OF VERTICAL TANGENCY
CU	CULVERT	R	RADIUS
D	DEGREE OF CURVE	RC	REINFORCE CONCRETE
DIST.	DISTANCE	RCBC	REINFORCE CONCRETE BOX CULVERT
DLI-01	DRAINAGE MANHOLE MEMBER	RCPC	REINFORCE CONCRETE PIPE CULVERT
DPWH	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	RD	ROAD
E	EXTERNAL DISTANCE/EASTING	RROW	ROAD RIGHT-OF-WAY
e	SUPERELEVATION	RT	RIGHT
EB	EAST BOUND	S	NORMAL CROSSFALL
ELEV.	ELEVATION	SB	SOUTH BOUND
EXTG.	EXISTING	SHLDR	SHOULDER
g	GRADIENT	STA	STATION
HOR	HORIZONTAL	STD	STANDARD
I	INTERSECTION ANGLE	SW	SOUTHWEST
IIE	INLET INVVERT ELEVATION	T	TANGENT
INT'L	INTERNATIONAL	TBM	TEMPORARY BENCH MARK
KMS	KILOMETER	VC	VERTICAL CURVE
L	LEFT OR LENGTH	VERT,V	VERTICAL
Lc	LENGHT OF HORIZONTAL CURVE	W	WIDENING
Lm	LINEAR METER	WB	WEST BOUND
LT	LEFT	WW	WING WALL
LVC	LENGTH OF VERTICAL CURVE	Ø	DAIMETER
M	METER	NC	NORMAL CROWN



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+ LEGEND
+ ABBREVIATIONS

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ENG'G ASSISTANT
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SET NO.
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5 5

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5 16



SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
PART A	FACILITIES FOR THE ENGINEER			
A.1.4 (1)	Provision of Progress Photographs	6.00	month	
PART B	OTHER GENERAL REQUIREMENTS			
B.5	Project Billboard / Signboard	4.00	each	
B.7 (2)	Occupational Safety and Health Program	1.00	l.s.	
B.8 (2)	Traffic Management	1.00	l.s.	
B.9	Mobilization / Demobilization	1.00	l.s.	
PART C	EARTHWORKS			
101 (1)	Removal of Structures and Obstruction	1.00	l.s.	
103 (1) a	Structure Excavation (Common Soil)	858.00	cu.m.	
103 (3)	Foundation Fill	53.00	cu.m.	
104 (1) a	Embankment from Roadway Excavation (Common Soil)	482.00	cu.m.	
PART G	DRAINAGE AND SLOPE PROTECTION STRUCTURES			
404 (1) a	Reinforcing Steel (Grade 40)	15,142.00	kg	
405 (1) a3	Structural Concrete (20.68Mpa, Class A, 28 days)	376.00	cu.m.	
404 (1) b	Reinforcing Steel (Grade 60)	14,197.00	kg	
PART H	MISCELLANEOUS STRUCTURES			
624 (11)	Roadway Lighting	1.00	l.s.	



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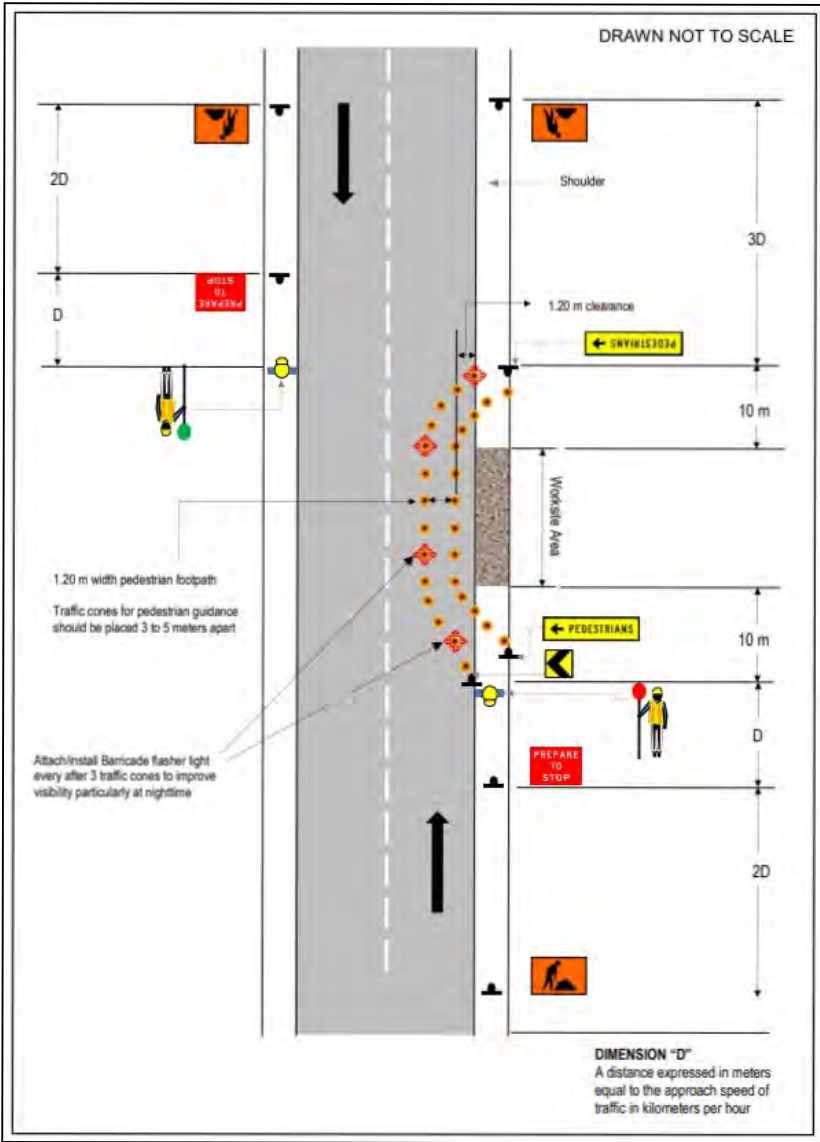
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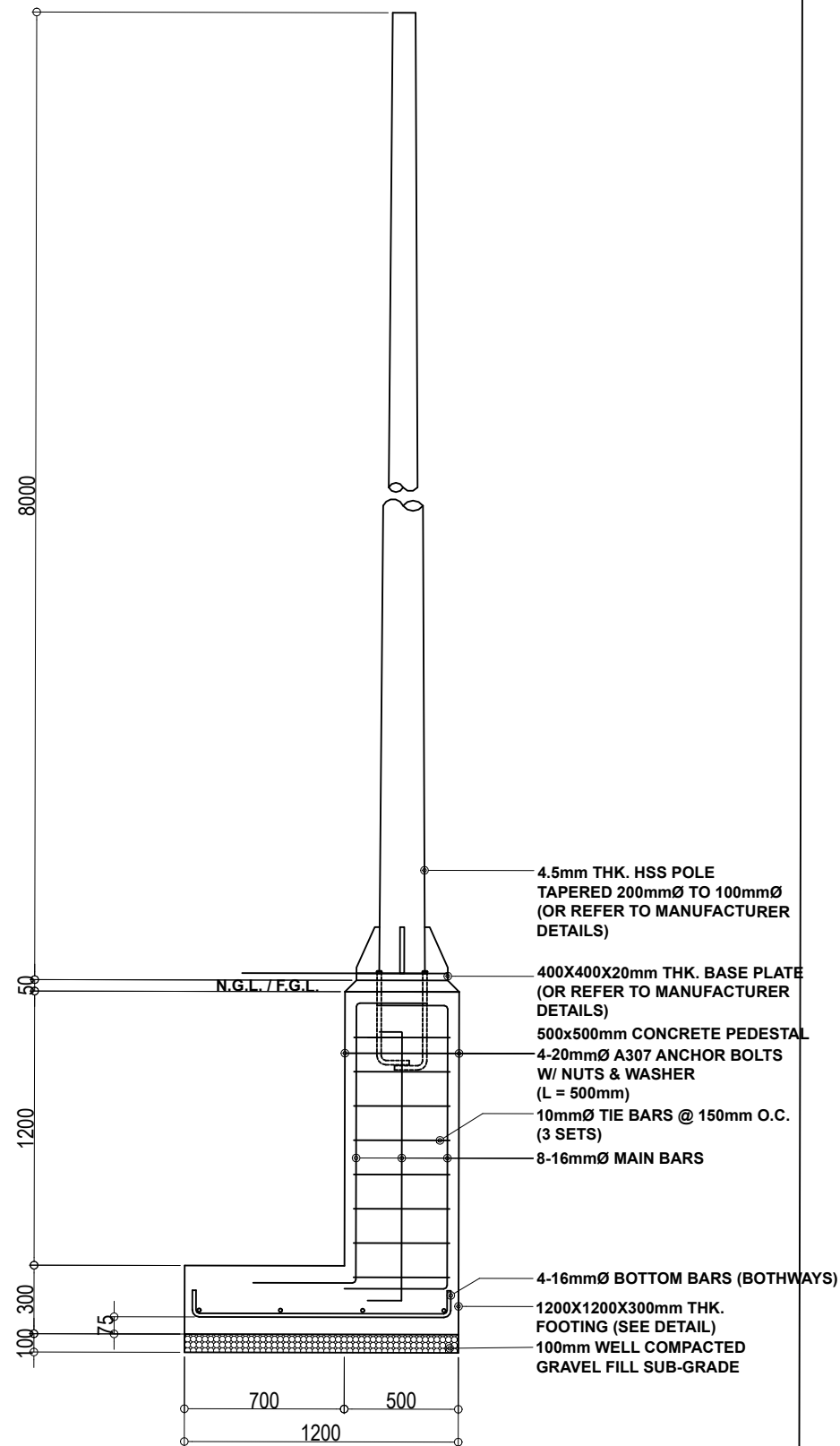


**PART LANE CLOSURE DUE TO WORKS ON SIDEWALK
- 2 LANE 2 WAY ROAD LOW SPEED, SHORT TERM**

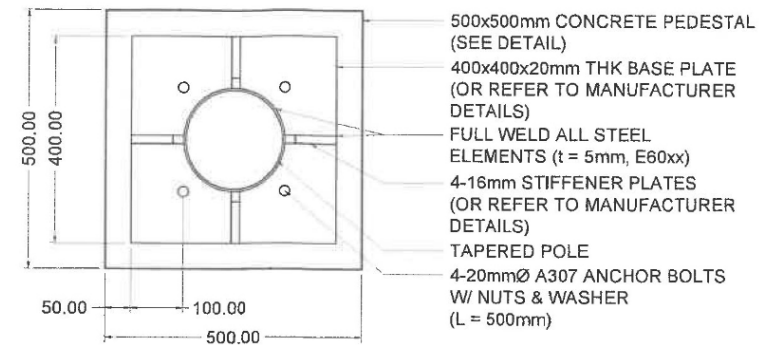
 <p>Republic of the Philippines DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS LAGUNA 3rd DISTRICT ENGINEERING OFFICE Marilou Subd. Brgy. Del Remedio, San Pablo City, Region IV-A</p>	PROJECT NAME & LOCATION:	SHEET CONTENT:	DRAFTED:	REVIEWED:	SUBMITTED:	APPROVED:	SET NO.	SHEET NO.
	<p>CONVERGENCE AND SPECIAL SUPPORT PROGRAM SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC) AS PER R.A.11239</p> <p>INSTALLATION OF SOLAR STREET LIGHTS ALONG CALAUAN - NAGCARLAN BDRY. RD. - K0077-(+930) - K0090+153</p>	+ TRAFFIC MANAGEMENT	<p><u>BERNARDO K. ESEO</u> ENG'G ASSISTANT</p> <p>DATE:</p>	<p><u>NEIL JOHN U. CONOCONO</u> ENGINEER II</p> <p>DATE:</p>	<p><u>MA. SHIRLEY M. SAMIANO</u> CHIEF, PLANNING & DESIGN SECTION CONCURRENT CAPACITY AS OFFICER-IN-CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER</p> <p>DATE:</p>	<p><u>CARLOS C. MUERE</u> OFFICER-IN-CHARGE OFFICE OF THE DISTRICT ENGINEER</p> <p>DATE:</p>	<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">R</div> </div>	<div style="border: 1px solid black; border-radius: 50%; width: 40px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;"> <div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">7</div> </div>
			<p>PREPARED:</p> <p><u>GELANSON P. MALABUYO</u> ENGINEER II</p> <p>DATE:</p>					



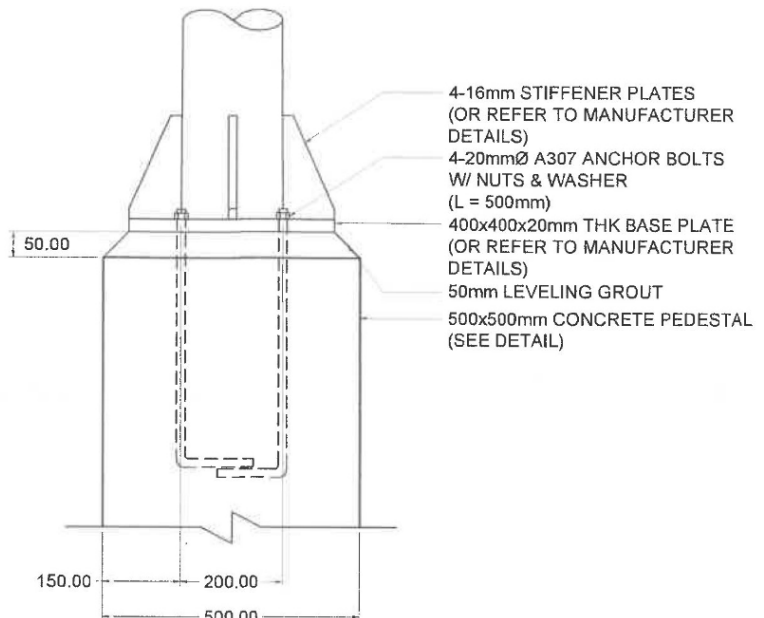
 <p>Republic of the Philippines DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS LAGUNA 3rd DISTRICT ENGINEERING OFFICE Marilior Subd. Brgy. Del Remedio, San Pablo City, Region IV-A</p>	PROJECT NAME & LOCATION:	SHEET CONTENT:	DRAFTED:	REVIEWED:	SUBMITTED:	APPROVED:	SET NO.	SHEET NO.
	<p>CONVERGENCE AND SPECIAL SUPPORT PROGRAM SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC) AS PER R.A.11239 INSTALLATION OF SOLAR STREET LIGHTS ALONG CALAUAN - NAGCARLAN BDRY. RD. - K0077+(-830) - K0090+153</p>	+ TRAFFIC MANAGEMENT	<p><u>BERNARDO K. ESEO</u> ENG'G ASSISTANT</p> <p>DATE:</p> <p>PREPARED:</p> <p><u>GELANSON P. MALABUYO</u> ENGINEER II</p> <p>DATE:</p>	<p><u>NEIL JOHN U. CONOCONO</u> ENGINEER II</p> <p>DATE:</p>	<p><u>MA. SHIRLEY M. SAMIANO</u> CHIEF, PLANNING & DESIGN SECTION CONCURRENT CAPACITY AS OFFICER-IN-CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER</p> <p>DATE:</p>	<p><u>CARLOS C. MUERE</u> OFFICER-IN-CHARGE OFFICE OF THE DISTRICT ENGINEER</p> <p>DATE:</p>	<p>R</p> <p>3 9</p>	<p>8</p> <p>8 16</p>



1 FOUNDATION ELEVATION
SCALE: 1 : 20 M.

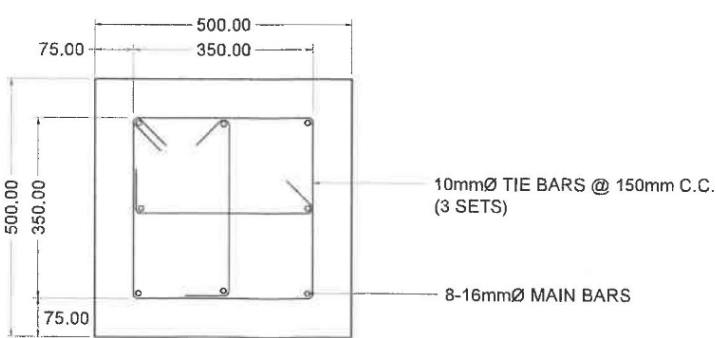


TOP VIEW



FRONT VIEW

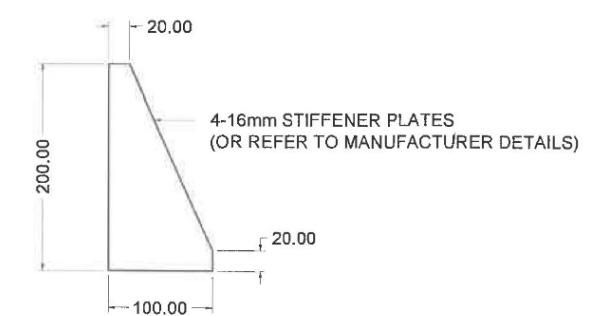
2 BASE PLATE DETAIL FOR 8M POLE
SCALE: 1:10 MTS.



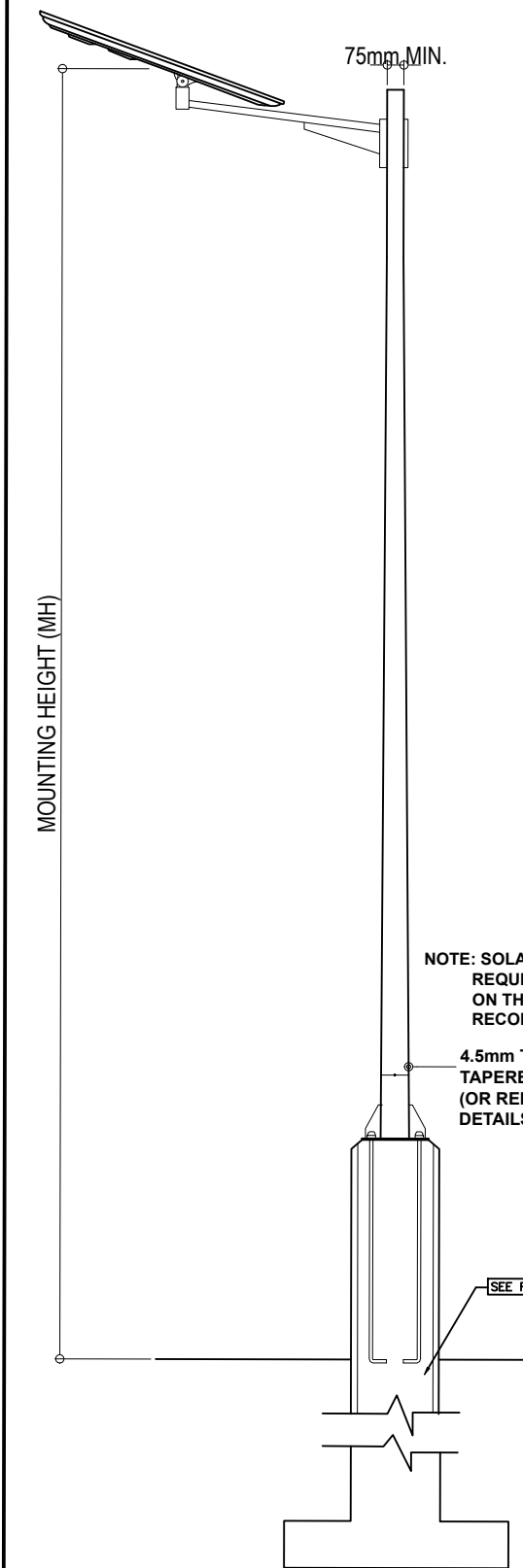
3 PEDESTAL DETAIL
SCALE: 1:10 MTS.

DESIGN CRITERIA

- A. REFERENCES**
- NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP), 7TH EDITION (2015)
 - AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 360
 - AMERICAN CONCRETE INSTITUTE (ACI) 318
 - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) 360
- B. DESIGN LOADS**
- DEAD LOAD
 - CONCRETE: 24 kN/m³
 - STEEL: 77 kN/m³
 - SOIL: 18 kN/m³
 - POLE ATTACHMENTS: 50 kg
 - WIND LOAD
 - WIND SPEED: 250 kph
 - EXPOSURE CATEGORY: D
 - DIRECTIONALITY FACTOR: 0.85
 - OCCUPANCY CATEGORY: V (MISCELLANEOUS STRUCTURES)
- C. MATERIALS**
- NORMAL WEIGHT CONCRETE: $f'_c = 28 \text{ MPa (4000 psi)}$
 - REINFORCING STEEL
 - 12MMØ AND BELOW: $F_y = 276 \text{ MPa (Grade 40)}$
 - 16MMØ AND ABOVE: $F_y = 414 \text{ MPa (Grade 60)}$
 - STRUCTURAL STEEL
 - STEEL POLE: $F_y = 240 \text{ MPa (A53 GRADE B)}$
 - BASE PLATE & STIFFENER: $F_u = 415 \text{ MPa}$
 $F_y = 276 \text{ MPa (A36)}$
 $F_u = 400 \text{ MPa}$
 - STRUCTURAL BOLTS AND FASTENERS: $F_u = 310 \text{ MPa (A307)}$
 $F_{nv} = 165 \text{ MPa}$
E60xx ELECTRODE
 - WELDS
- D. DESIGN APPROACH**
- LOAD AND RESISTANCE FACTORED DESIGN (LRFD) IS USED TO DESIGN THE STEEL ELEMENTS.
 - ULTIMATE STRENGTH DESIGN (USD) IS USED TO DESIGN THE CONCRETE ELEMENTS.
 - WORKING STRESS DESIGN (WSD) IS USED TO PARTIALLY DESIGN THE FOUNDATION.
 - LOAD COMBINATIONS CORRESPONDING TO THE DESIGN PHILOSOPHIES MENTIONED ABOVE ARE UTILIZED WHICH ARE BASED ON THE NSCP 2015.
- E. NOTES ON DESIGN LOADS**
- IF THE ASSUMED DESIGN LOADS IS NOT APPLICABLE FOR THE REQUIRED DESIGN, THE DESIGN SHALL BE REVISED ACCORDINGLY.
- F. NOTES ON FOUNDATION**
- THE FOUNDATION IS DESIGNED FOR AN ASSUMED ALLOWABLE SOIL BEARING CAPACITY (SBC) OF 96 kPa (2000 psf). IF THE LOCATION IS KNOWN OR FOUND OUT TO HAVE AN SBC OF LESS THAN THE ASSUMED, THE FOOTING DESIGN SHALL BE REVISED ACCORDINGLY.
 - NO FOOTING SHALL REST ON FILL. PROVIDE 100mm THICK PROPERLY WELL COMPACTED GRAVEL BED BEFORE CASTING
- G. NOTES ON ASSEMBLY**
- MANUFACTURER MAY SUPPLY A PRE-ASSEMBLED STEEL POST WITH ACCESSORIES (MAST ARM, STIFFENERS, AND/OR BASE PLATE) PROVIDED THAT ITS DESIGN IS SUFFICIENT FOR THE DESIGN LOADS AND MATERIAL STRENGTHS PROVIDED IN THE ITEMS ABOVE.
 - DESIGN CALCULATIONS/SPECIFICATIONS OF THE PRE-ASSEMBLED STEEL POST MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR INSTALLATION.



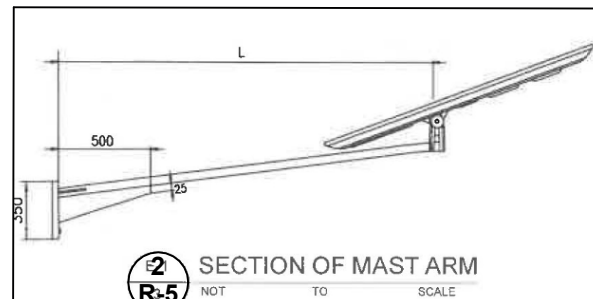
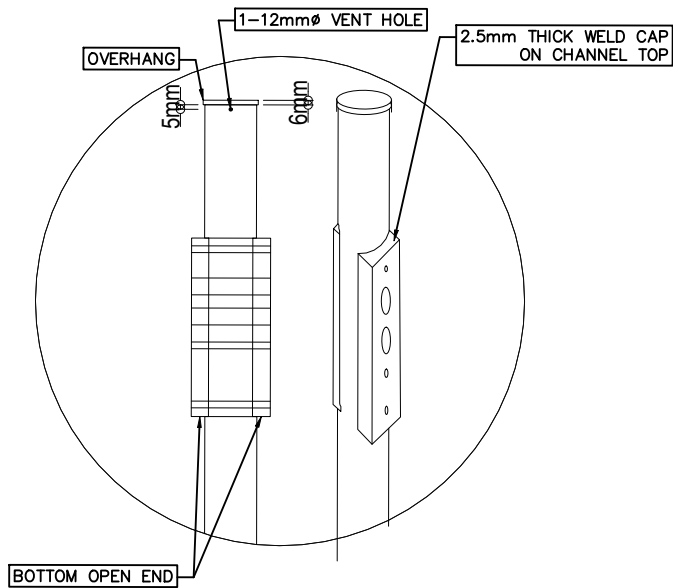
4 STIFFENER DETAIL
SCALE: 1:5MTS.



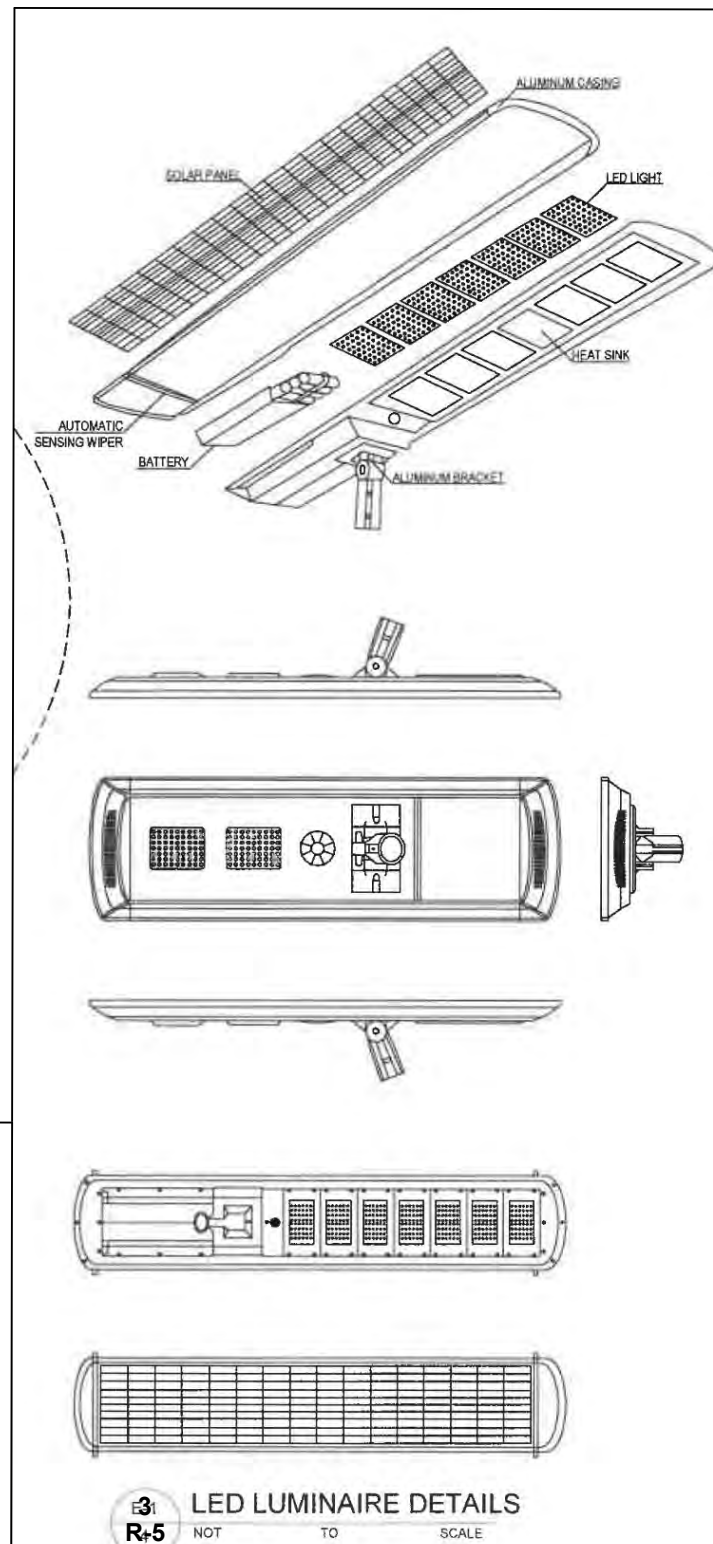
1
R-5
NOT TO SCALE :
TYPICAL ELEVATION

NOTE: SOLAR-POWERED STREETLIGHT REQUIREMENTS SHALL BE BASED ON THE MANUFACTURER'S RECOMMENDATION.

4.5mm THK. HSS POLE
TAPERED 200mmØ TO 100mmØ
(OR REFER TO MANUFACTURER
DETAILS)



1. INCLUDE ADDITIONAL DETAIL FOR DESIRED LAMP POST TO BE USED AND REFER AND VERIFY TO MERALCO STANDARDS
2. REFER TO DPWH ELECTRICAL TECHNICAL SPECS FOR LAMP POST WATTAGE RATING, MOUNTING HEIGHT, AND SPACING EQUIVALENT.



INTEGRATED SOLAR STREETLIGHT TECHNICAL PARAMETERS

SOLAR PHOTOVOLTAIC PANEL	OPERATING VOLTAGE AND POWER	12V – 36V
		60 – 310 W (SHOULD BE GREATER THAN 90% AFTER 10 YEARS AND LESS THAN 80% AFTER 25 YEARS)
	LIFETIME	>25 YEARS
	MATERIAL	MONOCRYSTALLINE/POLYCRYSTALLINE SILICON
	WEIGHT	<25 KG
BATTERY	ALLOWABLE AMBIENT TEMPERATURE RANGE	-40°C TO +60°C
	INPUT VOLTAGE	12.8V
	TYPE	LITHIUM-ION OR LEAD-ACID TYPE ELECTROLYTE PLATE LEAD ACID WITH LOW ANTIMONY LEAD ALLOY PLATES AND CERAMIC VENT PLUGS
	LIFETIME	6 – 8 YEARS
	CHARGING AND DISCHARGING CYCLES	2000
CHARGE CONTROLLER	CHARGING TIME	7 HOURS
	WORKING TIME UNDER RAINY DAYS	10 DAYS
	INTELLIGENT CONTROL FOR CIRCUIT PROTECTION	
LIGHT-EMITTING DIODE (LED) LAMP	FEATURE	TIMING, DIMMING, AND SENSOR
	LIGHT OUTPUT	50W TO 300 W
	SYSTEM FLUX	6000 – 30,000 LM
	COLOR TEMPERATURE	2,500K – 3,500K (WARM WHITE) 3,000K – 4,500K (COOL WHITE) 5,500K – 6,500K (DAYLIGHT)
	OPTICAL COVER / LENS TYPE	UV STABILIZED POLYCARBONATE COVER
	DRIVER	DIMMABLE AND DESIGNED TO OPERATE MAINTENANCE FREE FOR 50,000 HOURS WITH A COMPATIBILITY TO WIRELESS LIGHTING CONTROL PROTOCOLS.
	LIFETIME	>50,000 HOURS
	PHOTO CONTROLLER	INDIVIDUAL OR GROUP
ALLOWABLE AMBIENT TEMPERATURE	HOUSING	HIGH PRESSURE DIE-CAST ALUMINUM WITH HEAT MANAGEMENT SYSTEM AND RUST RESISTANT
	RANGE	-40°C TO +60°C
	RANGE FOR CHARGING	0°C TO +45°C
CHARGE TIME	RANGE FOR DISCHARGING	-20°C TO +35°C
	7 HOURS UNDER DIRECT AND STRONG SUNLIGHT	
IP RATING		IP 65
WARRANTY PERIOD		6 YEARS MINIMUM

INITIAL LUMEN OF HIGH PRESSURE LAMPS		
TYPES OF LAMPS	WATTAGE	INITIAL LUMEN
HIGH PRESSURE SODIUM (HPS)	100	9500
	150	16000
	250	26000
	450	50000



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

PROJECT NAME & LOCATION:

CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC)
AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(+930) - K0090+153

SHEET CONTENT:

+ TYPICAL ELEVATION
+ SECTION OF MAST ARM
+ LED LUMINAIRE DETAILS
+ STIFFENER DETAIL

DRAFTED:

BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:

PREPARED:

GELANSON P. MALABUYO
ENGINEER II

DATE:

REVIEWED:

NEIL JOHN U. CONOCONO
ENGINEER II

DATE:

SUBMITTED:

MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER

DATE:

APPROVED:

CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER

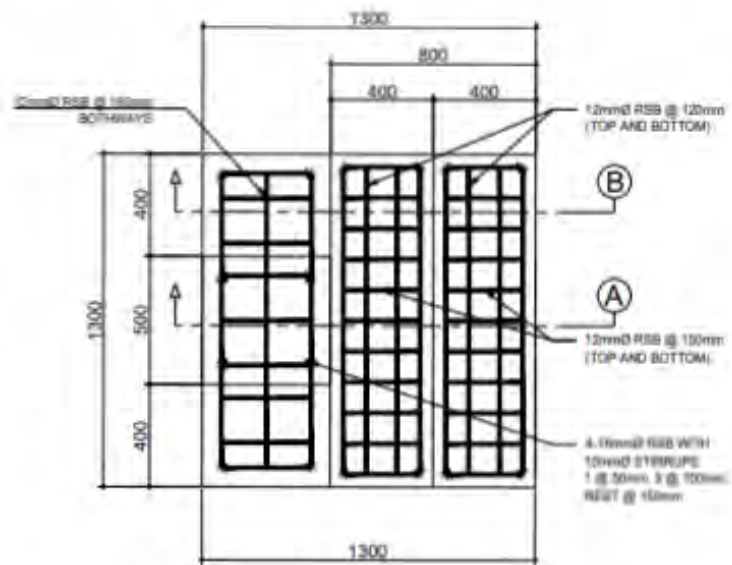
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SET NO.

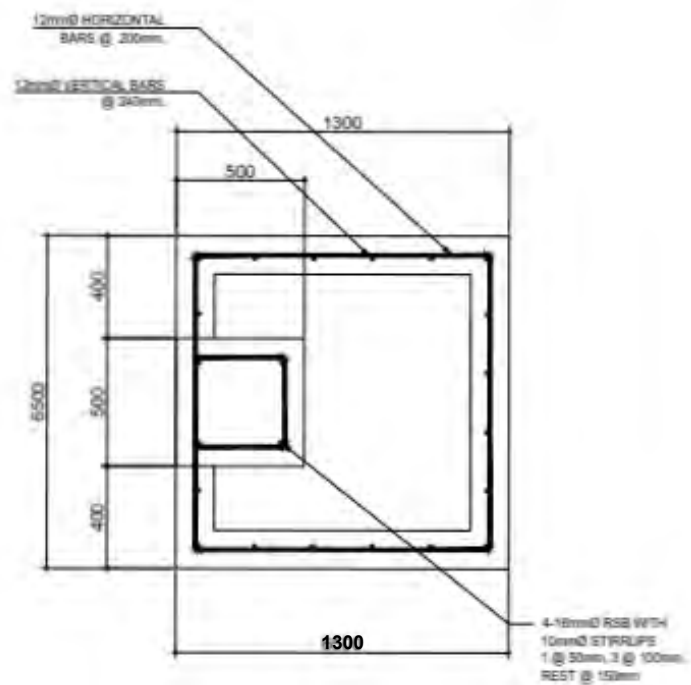
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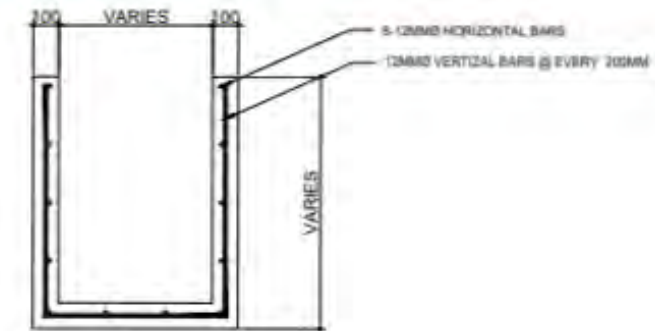
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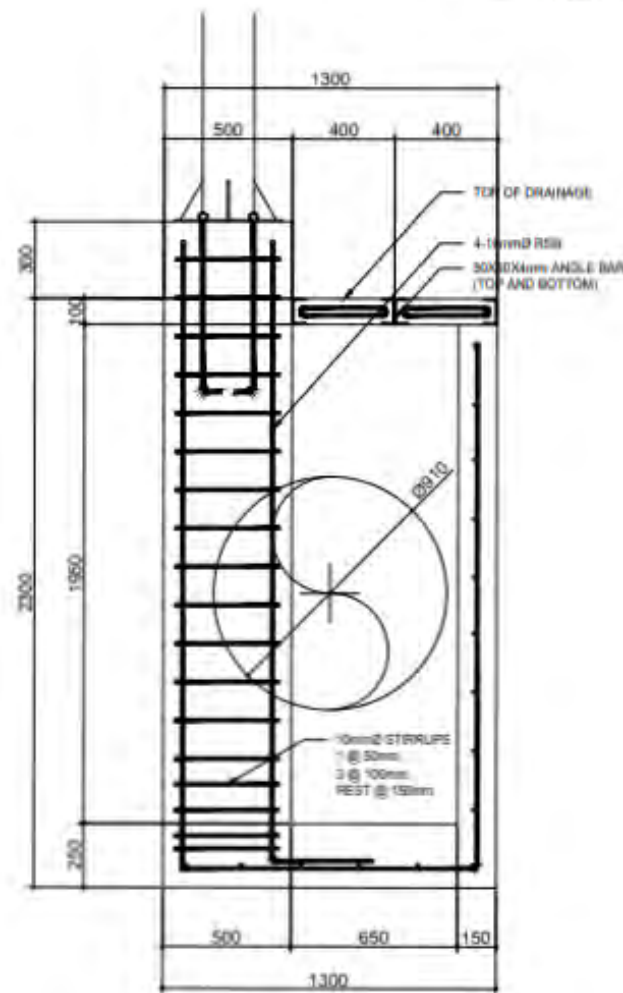
2 MANHOLE COVER REINFORCEMENT
SCALE: 1:20M



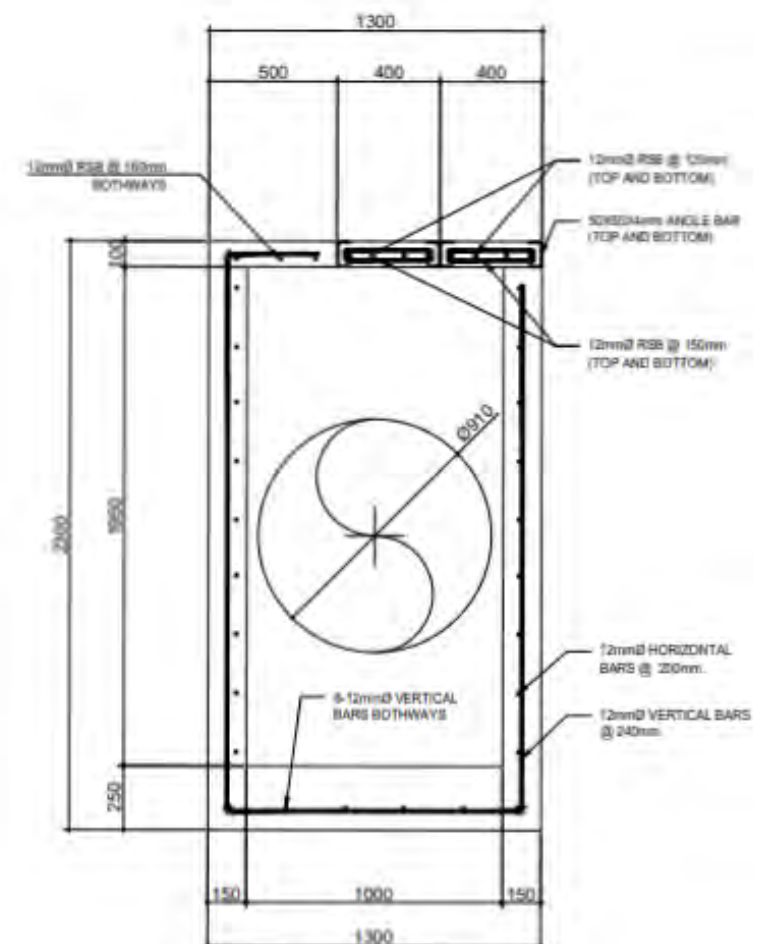
1 MANHOLE PLAN
SCALE: 1:20M



5 DETAIL OF OPEN CANAL
SCALE: 1:20M



3 SECTION WITH PEDESTAL MANHOLE SECTION "A"
SCALE: 1:20M



4 MANHOLE SECTION "B"
SCALE: 1:20M



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3RD DISTRICT ENGINEERING OFFICE
Marikina Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

PROJECT NAME & LOCATION:

CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC)
AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(930) - K0090+153

SHEET CONTENT:

+ MANHOLE PLAN
+ MANHOLE COVER REINFORCEMENT
+ MANHOLE SECTION "A"
+ MANHOLE SECTION "B"
+ DETAIL OF OPEN CANAL

DRAFTED:

BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:

PREPARED:

GELANSON P. MALABUYO
ENGINEER II

DATE:

REVIEWED:

NEIL JOHN U. CONOCONO
ENGINEER II

DATE:

SUBMITTED:

MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER

DATE:

APPROVED:

CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER

DATE:

SET NO.

R
6 9

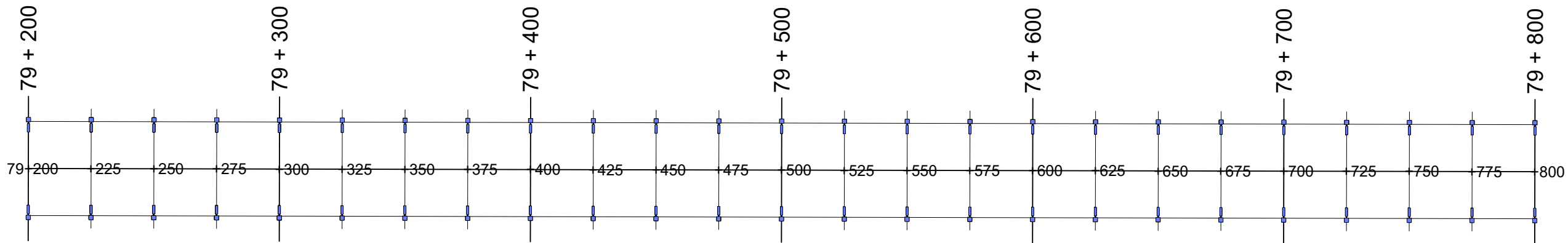
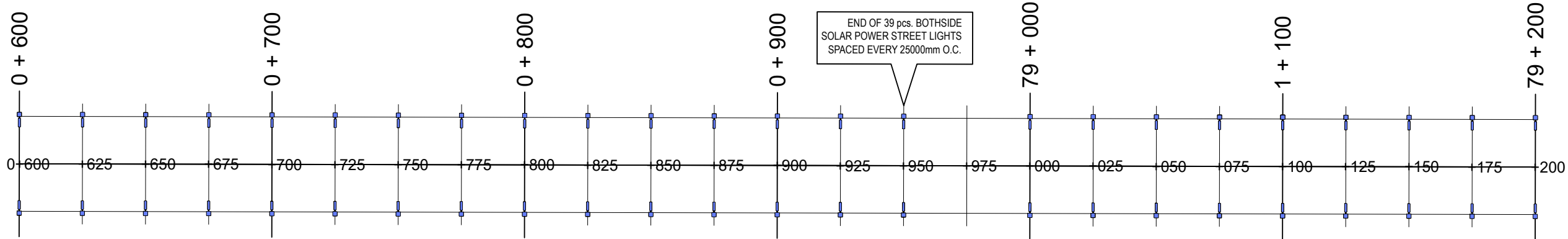
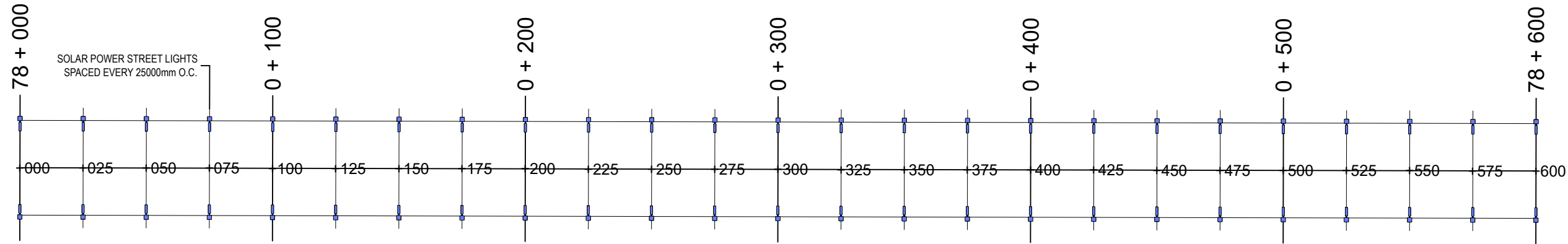
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


1
A 7

STRAIGHT LINE DIAGRAM

SCALE :
HOR. 1 : 1250 M.
VERT. 1 : 300 M.



LEGEND :

- REBLOCKING
- WIDENING
- SOLAR STREET LIGHTS



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

PROJECT NAME & LOCATION:

CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC)
AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDY. RD. -
K0077+(-930) - K0090+153

SHEET CONTENT:

+ STRAIGHT LINE DIAGRAM
STA. 78+000.00 - STA. 79+800.00

DRAFTED:

BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:

PREPARED:

GELANSON P. MALABUYO
ENGINEER II

DATE:

REVIEWED:

NEIL JOHN U. CONOCONO
ENGINEER II

DATE:

SUBMITTED:

MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER

DATE:

APPROVED:

CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER

DATE:

SET NO.

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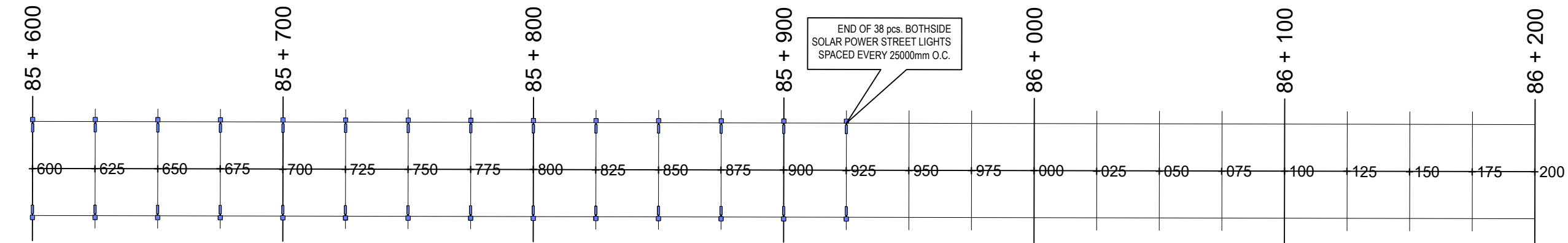
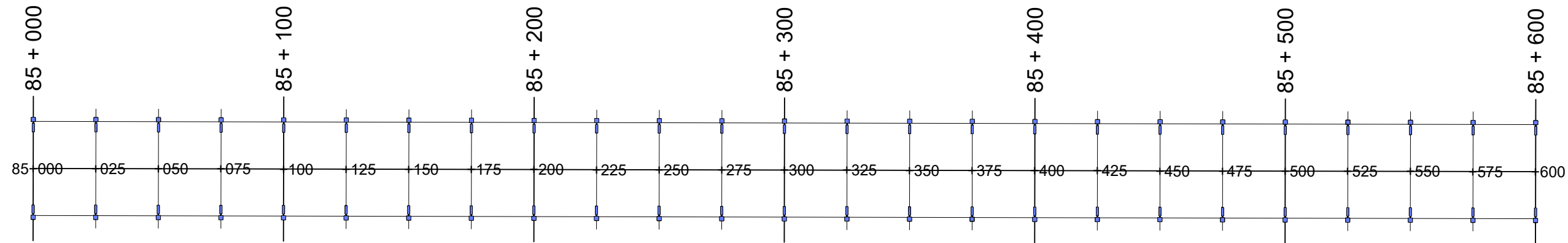
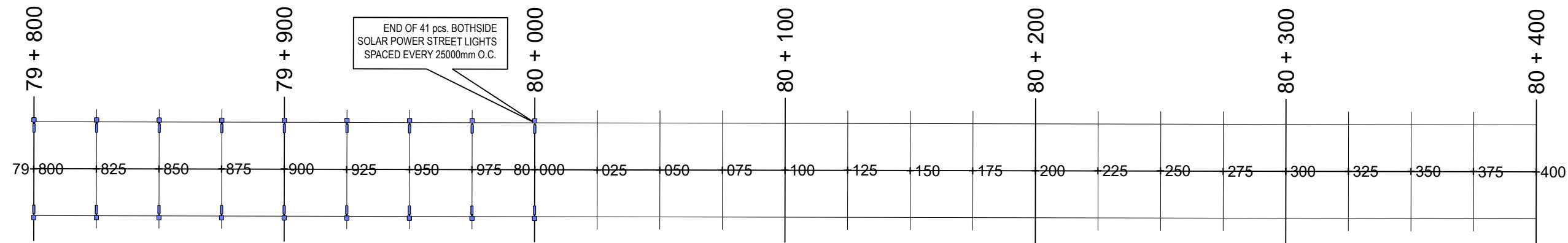
SHEET NO.

12
12 16

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A 7

STRAIGHT LINE DIAGRAM

SCALE :
HOR. 1 : 700 M.
VERT. 1 : 300 M.



LEGEND :

- REBLOCKING**
- WIDENING**
- SOLAR STREET LIGHTS**



Republic of the Philippines
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LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

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CONVERGENCE AND SPECIAL SUPPORT PROGRAM
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AS PER R.A.11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDY. RD. -
K0077+(-930) - K0090+153

SHEET CONTENT:

+ STRAIGHT LINE DIAGRAM
STA. 79+800.00 - STA. 80+400.00
STA. 85+000.00 - STA. 86+200.00

DRAFTED:

BERNARDO K. ESEO
ENG'G ASSISTANT

DATE:

PREPARED:

GELANSON P. MALABUYO
ENGINEER II

DATE:

REVIEWED:

NEIL JOHN U. CONOCONO
ENGINEER II

DATE:

SUBMITTED:

MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER

DATE:

APPROVED:

CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER

DATE:

SET NO.

R
8 9

SHEET NO.

13
13 16

1

A

7

STRAIGHT LINE DIAGRAM

SCALE :

HOR.

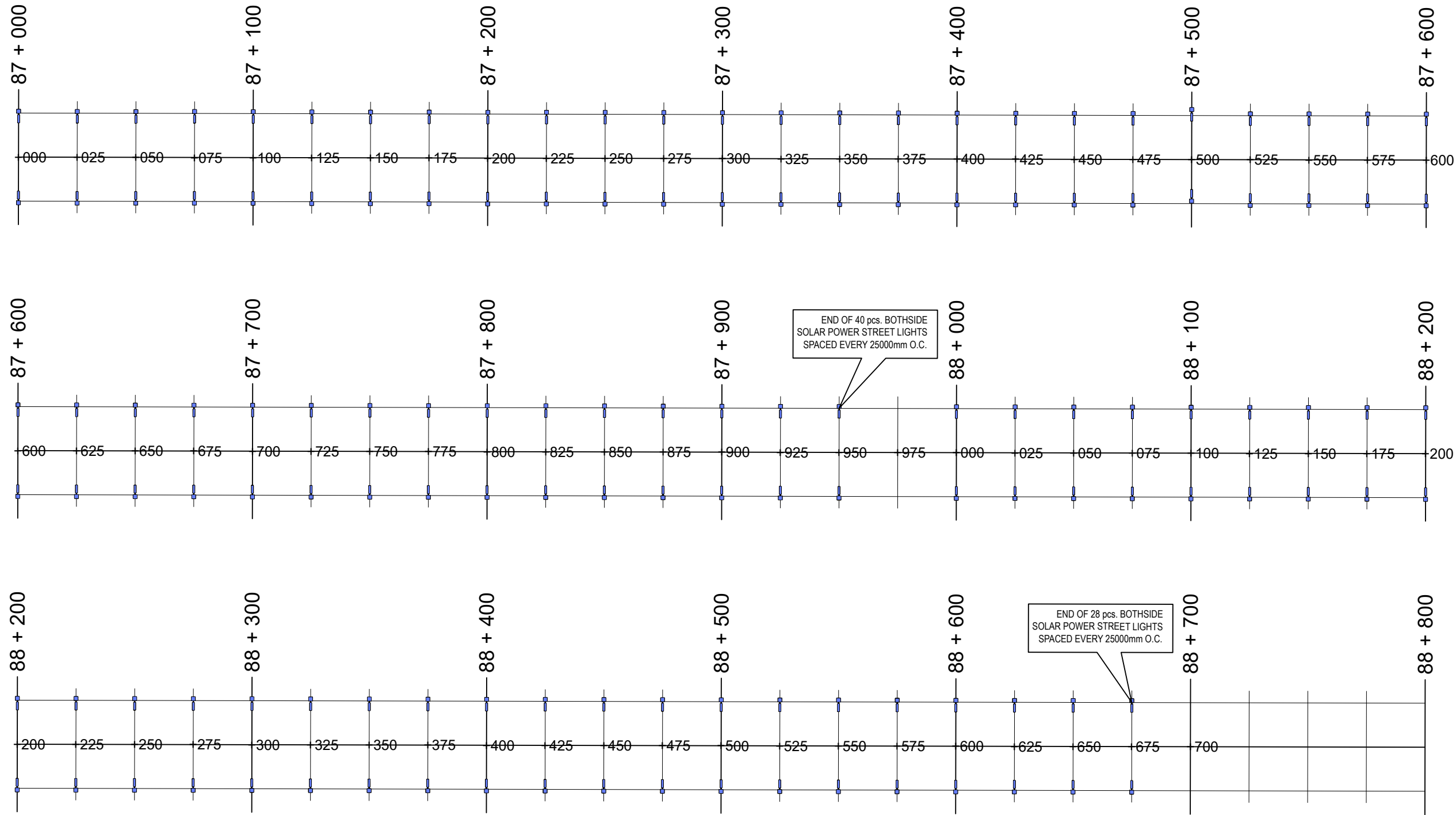
1 : 700

M.


VERT.

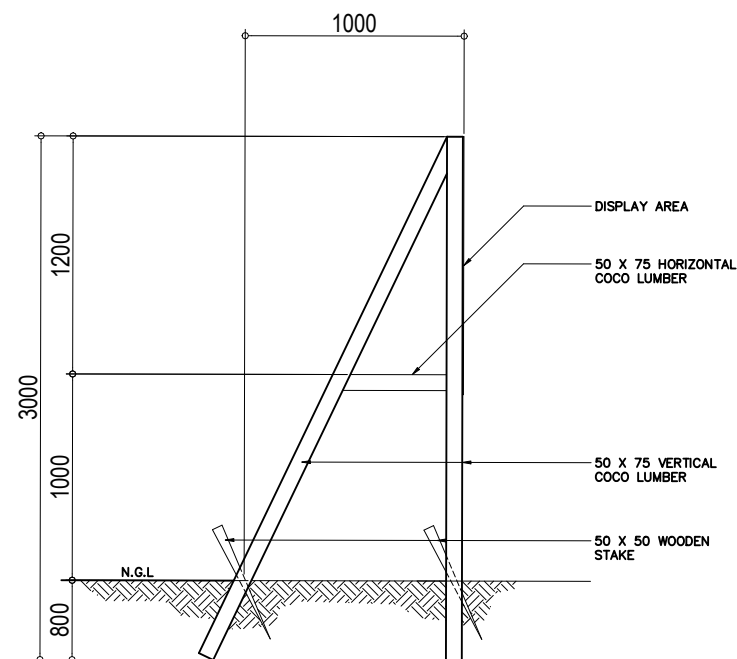
1 : 300

M.

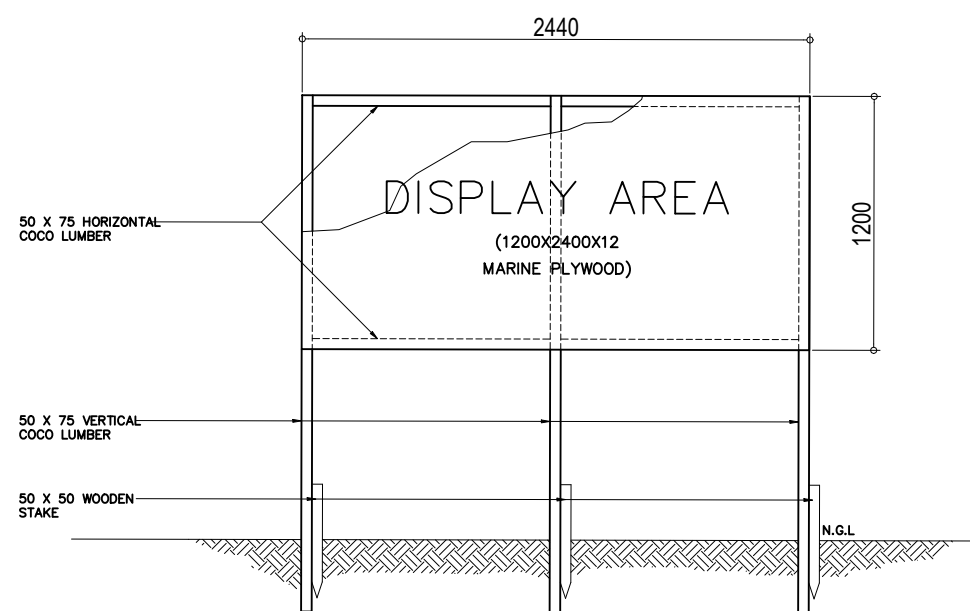


- LEGEND :
- REBLOCKING
 - WIDENING
 - SOLAR STREET LIGHTS

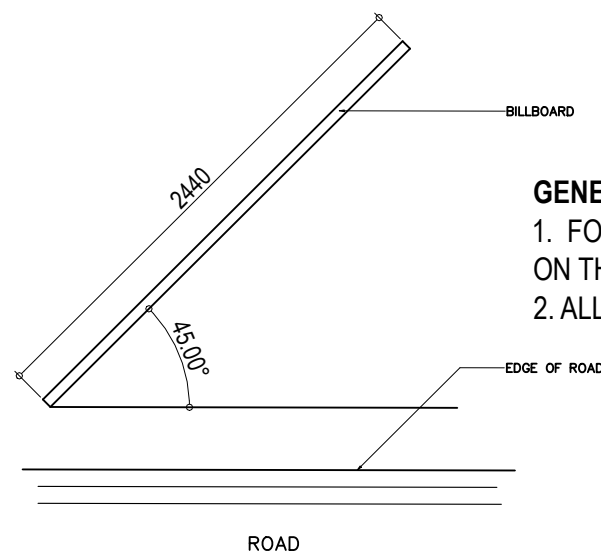
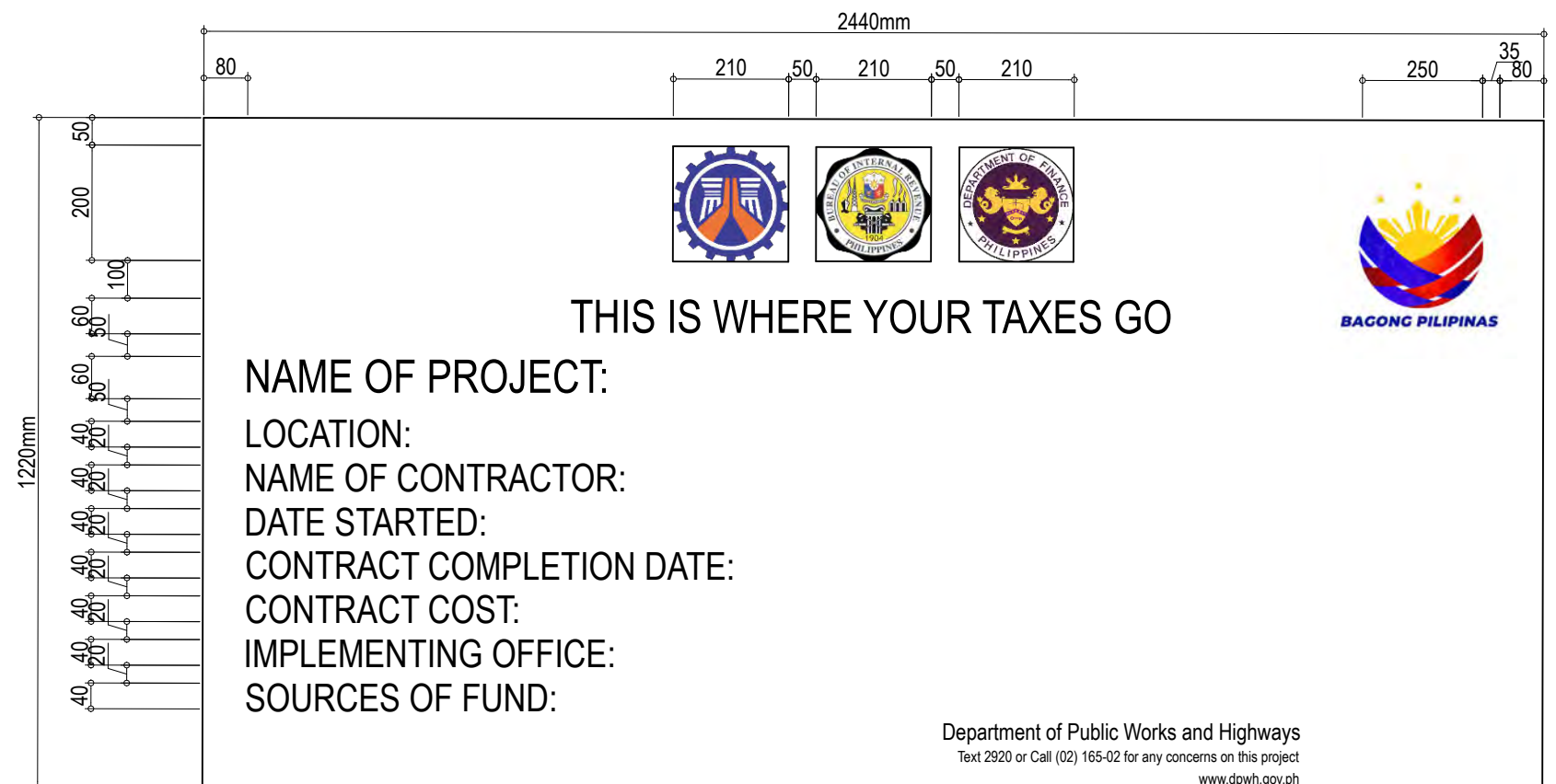
 <div>Republic of the Philippines DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS LAGUNA 3rd DISTRICT ENGINEERING OFFICE Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A</div>	PROJECT NAME & LOCATION: CONVERGENCE AND SPECIAL SUPPORT PROGRAM SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC) AS PER R.A. 11239 INSTALLATION OF SOLAR STREET LIGHTS ALONG CALAUAN - NAGCARLAN BDY. RD. - K0077+(+930) - K0090+153	SHEET CONTENT: + STRAIGHT LINE DIAGRAM STA. 87+000.00 - STA. 88+800.00	DRAFTED: BERNARDO K. ESEO ENG'G ASSISTANT	REVIEWED:	SUBMITTED:	APPROVED:	SET NO.	SHEET NO.
			DATE:	NEIL JOHN U. CONOCONO ENGINEER II	MA. SHIRLEY M. SAMIANO CHIEF, PLANNING & DESIGN SECTION CONCURRENT CAPACITY AS OFFICER-IN-CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER	CARLOS C. MUERE OFFICER-IN-CHARGE OFFICE OF THE DISTRICT ENGINEER	<div>R</div> <div>9 9</div>	<div>14</div> <div>14 16</div>
			PREPARED: GELANSON P. MALABUYO ENGINEER II	DATE:	DATE:	DATE:		



TYPICAL FRAME ELEVATION



FRONT ELEVATION



ORIENTATION

GENERAL NOTES:

1. FONT STYLE SHALL ARIAL, WHILE THE DIMENSION AND LETTER SIZES AS INDICATED ON THE DESIGN LAYOUT SHALL BE ON WHITE BACKGROUND.
2. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

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CONVERGENCE AND SPECIAL SUPPORT PROGRAM
SPECIAL ROAD FUND-MOTOR VEHICLE USER'S CHARGE (MVUC)
AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(930) - K0090+153

SHEET CONTENT:
+ DETAIL OF DPWH STANDARD PROJECT
BILLBOARD

DRAFTED:
BERNARDO K. ESEO
ENG'G ASSISTANT
DATE:
PREPARED:
GELANSON P. MALABUYO
ENGINEER II
DATE:

REVIEWED:
NEIL JOHN U. CONOCONO
ENGINEER II
DATE:

SUBMITTED:
MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED:
CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER
DATE:

SET NO.

R
10/13

SHEET NO.

15
15/16

1
B-2
COA'S STANDARD PROJECT BILLBOARD
DRAWN NOT TO SCALE

Republic of the Philippines
COMMISSION ON AUDIT
Office of the Audit Team Leader
DPWH 3RD DISTRICT ENGINEERING OFFICE
San Pablo City, Laguna

Project : _____ Cost: _____

Location : _____ Fund Source/S: _____

Implementing Agency/ies : _____

Development Partner/s : _____

Contractor/ Supplier : _____

Brief Description of Project : _____

Project Detail :

PROJECT DATE			PROJECT STATUS				REMARKS
DURATION	STARTED	TARGET DATE OF COMPLETION	PERCENTAGE OF COMPLETION	AS OF DATE	DATE COMPLETED	DATE COMPLETED	

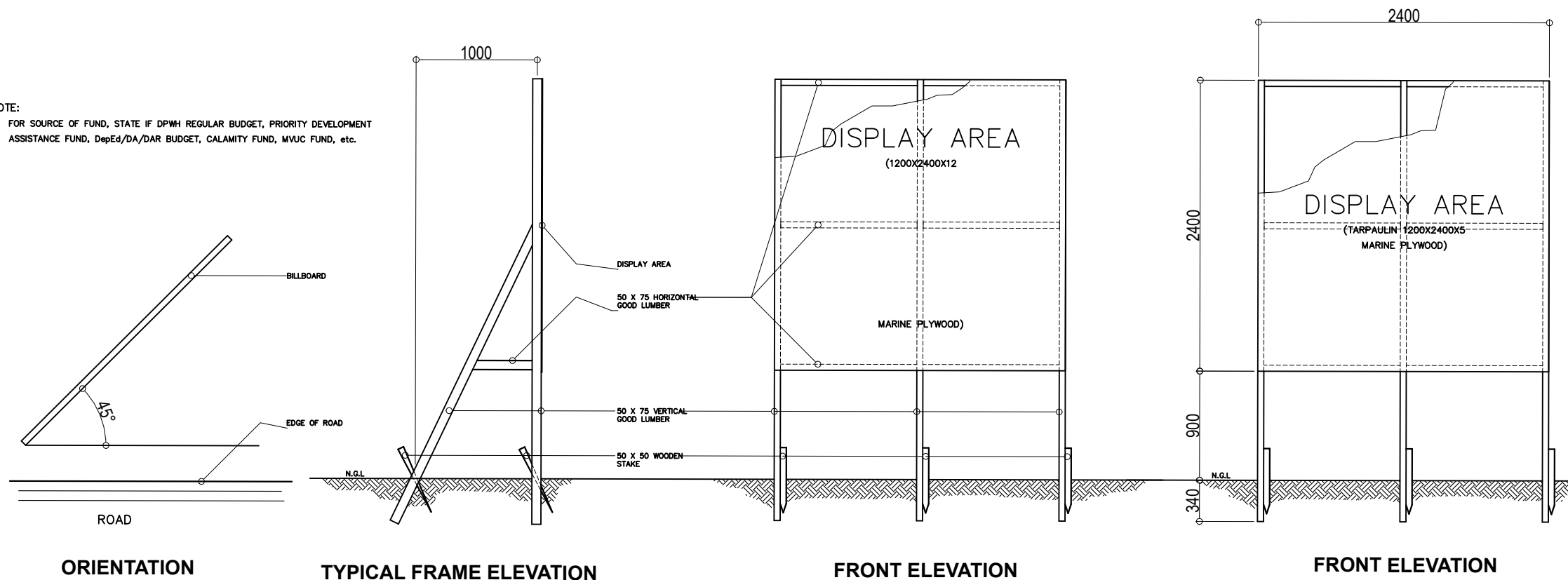
For particulars or complains about this project, Contact the Regional office or Cluster which has audit jurisdiction on this project.

COA Regional Office no./ Cluster: _____

Address: _____

Contact no.: _____ or Text COA Citizen's Desk at 0915-539-1957

NOTE:
FOR SOURCE OF FUND, STATE IF DPWH REGULAR BUDGET, PRIORITY DEVELOPMENT ASSISTANCE FUND, DepEd/DA/DAR BUDGET, CALAMITY FUND, MVUC FUND, etc.



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
LAGUNA 3rd DISTRICT ENGINEERING OFFICE
Mariktor Subd. Brgy. Del Remedio, San Pablo City, Region IV-A

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AS PER R.A. 11239
INSTALLATION OF SOLAR STREET LIGHTS ALONG
CALAUAN - NAGCARLAN BDRY. RD. -
K0077+(-930) - K0090+153

SHEET CONTENT:
+ DETAIL OF COA'S STANDARD PROJECT
BILLBOARD

DRAFTED:
BERNARDO K. ESEO
ENG'G ASSISTANT
DATE: _____
PREPARED:
GELANSON P. MALABUYO
ENGINEER II
DATE: _____

REVIEWED:
NEIL JOHN U. CONOCONO
ENGINEER II
DATE: _____

SUBMITTED:
MA. SHIRLEY M. SAMIANO
CHIEF, PLANNING & DESIGN SECTION
CONCURRENT CAPACITY AS OFFICER-IN-CHARGE
OFFICE OF THE ASSISTANT DISTRICT ENGINEER
DATE: _____

APPROVED:
CARLOS C. MUERE
OFFICER-IN-CHARGE
OFFICE OF THE DISTRICT ENGINEER
DATE: _____

SET NO.

R
11/13

SHEET NO.

16
16/16