



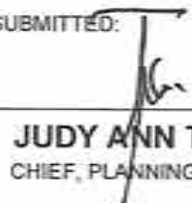
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REGIONAL OFFICE No. XI
GOV. CHAVEZ COR. R. MAGSAYSAY ST. DAVAO CITY

C.Y. 2025 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR
**INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR**

SECTION	:	BRGY. ALMENDRAS, BRGY. DON SERGIO OSMEÑA, SR., BRGY. TULOGAN, BRGY. LOWER KATIPUNAN, BRGY. KATIPUNAN, BRGY. UPPER MALINAO, BRGY. SAN GUILLERMO, BRGY. NEW SIBONGA, BRGY. MOLOPOLO, BRGY. BAGUMBAYAN, BRGY. KAUSWAGAN, BRGY. LA SUERTE, BRGY. BURI
LOCATION	:	PADADA, MATANAO, KIBLAWAN, DAVAO DEL SUR
CW 1 (ROADWAY LIGHTING)	:	780 UNITS
STATION LIMITS (SECTION 1)	:	000+000.000 - 008+900.000
STATION LIMITS (SECTION 2)	:	009+300.000 - 019+900.000
NET LENGTH	:	19,500.000 LN.M.
ROAD SECTION ID	:	-

SUBMITTED:


JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION

DATE:

RECOMMENDED:


JOSELITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR

DATE:

APPROVED:


JUBY B. CORDON
REGIONAL DIRECTOR

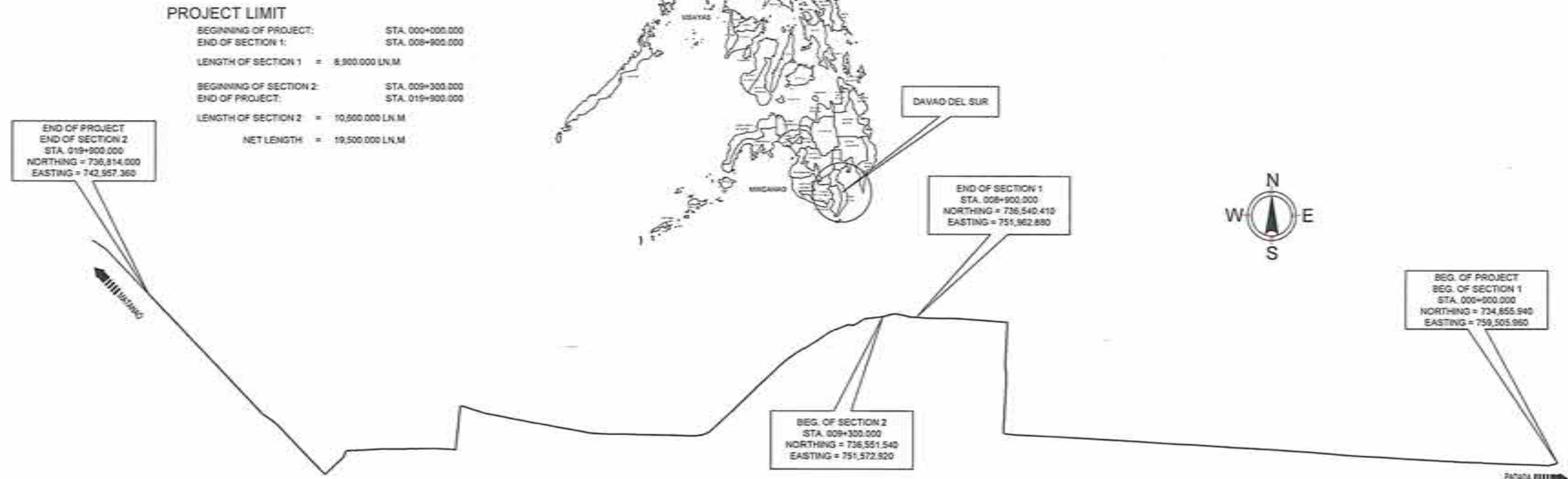
DATE:

A. TYPICAL DETAILS

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2 VICINITY MAP
SCALE NTS



1 LOCATION PLAN
SCALE NTS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. B. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAFTED AND PREPARED	REVIEWED	SUBMITTED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBULAWAN-MATANAO RD, DAVAO DEL SUR	PROJECT LIMIT, LOCATION MAP, VICINITY MAP, LOCATION PLAN, INDEX OF SHEETS	JAMES LEE T. ARRIETA ENGINEER II	DENVER ALERNA/SEMPID ENGINEER	JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSEFINO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUBY B. CORDON REGIONAL DIRECTOR	A 01/21	01 29

19-1802518-18 INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBULAWAN-MATANAO RD, DAVAO DEL SUR TYPICAL DESIGN

GENERAL NOTES

SPECIFICATIONS

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

DIMENSIONS

2. DISTANCES BETWEEN THE HORIZONTAL CONTROL POINTS INCLUDING REFERENCE POINTS ARE MEASURED AND EXPRESSED IN METERS.
3. UNLESS OTHERWISE SPECIFIED, DIMENSIONS OF PIPES, BOX CULVERTS, BRIDGES AND OTHER STRUCTURES ARE MEASURED AND EXPRESSED IN MILLIMETERS.
4. ALL OTHER DIMENSIONS ARE EXPRESSED IN METERS.

GRADING AND OTHER GENERAL REQUIREMENTS

5. ALIGNMENT AND GRADES ARE SUBJECT TO ADJUSTMENT TO SUIT ACTUAL FIELD CONDITION.
6. DISTANCES AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
7. ALL WORKS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, REVISED 2013 AND "A POLICY ON GEOMETRIC DESIGN", AASHTO 2011.
8. WHERE NO DETOURS ARE AVAILABLE, TRAFFIC SHALL BE HANDLED IN ACCORDANCE TO PROVISIONS OF CLAUSE 75 OF THE DPWH STANDARD SPECIFICATIONS, VOLUME 1, REQUIREMENTS AND CONDITIONS OF CONTRACT (2013).
9. THE APPARENT SILENCE OF SPECIFICATIONS, PLANS, SPECIAL PROVISIONS AND SUPPLEMENTARY SPECIFICATIONS, AS TO ANY DETAIL OR THE APPARENT OMISSION FROM THEM OF DETAILED DESCRIPTION CONCERNING ANY POINT SHALL BE REGARDED AS MEANING THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIAL AND WORKMANSHIP OF FIRST CLASS QUALITY ARE TO BE USED.
10. ROADS CLOSED TO TRAFFIC SHALL BE PROTECTED BY EFFECTIVE BARRICADES, AND OBSTRUCTIONS SHALL BE ILLUMINATED AT NIGHT, SUITABLE WARNING SIGNS, ILLUMINATED AT NIGHT BY LANTERNS OR FLARES, SHALL BE PROVIDED, ALL LIGHTS FOR THIS PURPOSE SHALL BE KEPT BURNING FROM SUNSET TO SUNRISE.
11. THE CONTRACTOR WILL BE REQUIRED TO ERECT WARNING SIGNS OUTSIDE OF, AND 150M FROM, EACH END OF THE PROJECT, AND 150M IN ADVANCE AT ANY PLACE ON THE PROJECT WHERE OPERATIONS INTERFERE WITH THE USE OF THE ROAD BY TRAFFIC, AND AT ALL INTERMEDIATE POINTS WHERE THE NEW WORK CROSSES OR COINCIDES WITH AN EXISTING ROAD.
12. BEFORE THE START OF ACTUAL CONSTRUCTION, THE AS-STAKED PLAN SHOULD BE SUBMITTED TO THE REGIONAL OFFICE IN ORDER THAT IMMEDIATE STEPS MAY BE TAKEN TO CORRECT OR ADJUST WHATEVER APPRECIABLE DEVIATION THERE MAY BE FROM THE ORIGINAL PLAN.
13. THE IMPLEMENTING OFFICE SHALL IDENTIFY THE LOCATIONS OF AND PROVIDE ACCESSIBILITY FACILITIES FOR PERSONS WITH DISABILITIES IN ACCORDANCE WITH DO NO. 37, S. 2009.
14. QUARRY SITE IS LOCATED AT BAYABAS MOUNTAIN QUARRY. DISPOSAL SITE IS FIVE (5) KMS. WITHIN PROJECT LIMIT.

REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

15. NO PAYMENT SHALL BE MADE FOR REMOVAL OF OTHER MISCELLANEOUS STRUCTURES THAT MAY BE REQUIRED AS SUBSIDIARY WORK PERTAINING TO OTHER CONTRACT ITEMS EXCEPT FOR SPECIFIC ITEMS EXPRESSLY IDENTIFIED FOR PAYMENT.
16. IMPROVEMENTS AND OTHER SIMILAR STRUCTURES THAT WILL BE AFFECTED DURING THE IMPLEMENTATION OF THIS PROJECT SHALL BE PAID FOR UNDER THE ROAD RIGHT-OF-WAY IMPROVEMENT.

NOTES ON STRUCTURAL CONCRETE AND REINFORCING STEEL

17. LOAD AND RESISTANCE FACTORED DESIGN (LRFD) IS USED TO DESIGN THE STEEL ELEMENTS.
18. ULTIMATE STRENGTH DESIGN (USD) IS USED TO DESIGN THE CONCRETE ELEMENTS.
19. WORKING STRESS DESIGN (WSD) IS USED TO PARTIALLY DESIGN THE FOUNDATION.
20. LOAD COMBINATIONS CORRESPONDING TO THE DESIGN PHILOSOPHIES MENTIONED ABOVE ARE UTILIZED WHICH ARE BASED ON THE NSCP 2015.
21. FOR DETAILED NOTES AND DESIGN PARAMETERS ON STRUCTURAL CONCRETE AND REINFORCING STEEL, REFER TO SHEET 10 UNDER DESIGN CRITERIA.

MISCELLANEOUS STRUCTURES

22. OBSTRUCTIONS WITHIN THE ROADWAY, IF NOT ILLUMINATED, SHALL BE MARKED WITH REFLECTORIZED HAZARD MARKERS (REFER TO SECTION 7 OF THE HIGHWAY SAFETY DESIGN STANDARDS PART 2 MAY 2012 EDITION). FOR ADDITIONAL EMPHASIS, IT IS ADVISABLE TO MARK OBSTRUCTIONS WITH NO LESS THAN FIVE ALTERNATING REFLECTORIZED BLACK AND WHITE STRIPES.
23. THE APPLICATION OF PAINT FOR PAVEMENT MARKINGS SHALL BE PREFERABLY CARRIED OUT BY A MACHINE SPECIALLY MADE FOR THIS PURPOSE BUT WHERE BRUSHES ARE USED, ONLY ROUND OR OVAL BRUSHES NOT EXCEEDING 100mm IN WIDTH WILL BE PERMITTED. THE PAINT SHALL BE SO APPLIED AS TO PRODUCE A UNIFORM, EVEN COATING IN CLOSE CONTACT WITH THE SURFACE BEING PAINTED.
24. THE APPLIED THERMOPLASTIC PAVEMENT MARKINGS SHALL HAVE A MINIMUM OF 2 YEARS OF LONGEVITY/DURABILITY.
25. MATERIALS WHICH ARE DEFECTIVE OR HAVE BEEN APPLIED IN AN UNSATISFACTORY MANNER OR TO INCORRECT DIMENSIONS OR IN A WRONG LOCATION SHALL BE REMOVED. THE ROAD PAVEMENT SHALL BE MADE GOOD AND MATERIALS REPLACED, RECONSTRUCTED AND/OR PROPERLY LOCATED, ALL AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.

FACILITIES FOR THE ENGINEER

25. THE CONTRACTOR SHALL CONSTRUCT FIELD OFFICES, LABORATORIES AND LIVING QUARTERS, INCLUDING ALL THE NECESSARY AIR CONDITIONING, ELECTRICITY, WATER, DRAINAGE AND SECURITY SERVICES FOR THE USE OF THE ENGINEER AND HIS STAFF FOR 24 HOURS A DAY OR PROVIDE THE SAME ON RENTAL BASIS UNTIL END OF CONTRACT. ON COMPLETION OF CONTRACT, THE FACILITIES INCLUDING UTILITIES SHALL REVERT TO THE GOVERNMENT UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
27. THE CONTRACTOR SHALL, AT ALL TIMES DURING THE DURATION OF THE CONTRACT PROVIDE FOR THE USE OF ENGINEER ALL EQUIPMENT, INSTRUMENTS AND APPARATUS, ALL INFORMATION AND RECORDS AND QUALIFIED CHAIRMEN AND LABORERS REQUIRED BY THE ENGINEER FOR INSPECTING AND MEASURING THE WORKS. SUCH EQUIPMENT, INSTRUMENTS AND APPARATUS SHALL INCLUDE THOSE LISTED IN THE SPECIAL PROVISIONS.

REFERENCES

28. REVISED DPWH MANUAL IN HIGHWAY SAFETY DESIGN STANDARDS, MAY 2013 EDITION
- FOR ROAD SAFETY PLANNING AND DESIGN ACTIVITIES AS WELL AS ROAD SAFETY MAINTENANCE ACTIVITIES SUCH AS THE PROPER WAY OF INSTALLING/APPLYING ROAD SIGNS, ROAD SAFETY DEVICES AND PAVEMENT MARKINGS - DO 41, s.2012
29. LABOR CODE OF THE PHILIPPINES AND ITS IMPLEMENTING RULES AND REGULATIONS DOLE DO NO. 13, s. 1998, OCCUPATIONAL SAFETY AND HEALTH STANDARDS AND ITS PROCEDURAL GUIDELINES
- FOR MONITORING, ENFORCEMENT AND IMPLEMENTATION OF CONSTRUCTION SAFETY AND HEALTH - DO 56, s. 2005

30. DESIGN REFERENCES

- DPWH DESIGN GUIDELINES, CRITERIA, AND STANDARDS (DGCS), VOLUME 4, 2015 EDITION
- GUIDELINES FOR THE PREPARATION OF COST ESTIMATES FOR TRAFFIC MANAGEMENT AND SAFETY & HEALTH REQUIREMENTS FOR THE CONSTRUCTION AND MAINTENANCE OF ROADS, BRIDGES AND SAFETY & HEALTH REQUIREMENTS FOR SCHOOL BUILDINGS, 2018
- AASHTO A POLICY ON GEOMETRIC DESIGN STANDARD OF HIGHWAYS AND STREETS, 2011 6TH EDITION
- AASHTO GUIDE ON PAVEMENT DESIGN, 1993 EDITION
- HIGHWAY SAFETY DESIGN STANDARDS: PART 1 - ROAD SAFETY DESIGN, AND PART 2 - ROAD SIGNS AND PAVEMENT MARKINGS, 2012 EDITION
- 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

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. 10 GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAG RD, DAVAO DEL SUR	GENERAL NOTES	 JAMES LEE T. ARIETA ENGINEER II DATE:	 DENNIS ALDRIN S. SEMPIO ENGINEER II DATE:	 JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE:	 JOSEFINO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	 JUBY B. CORDON REGIONAL DIRECTOR DATE:	A 02 21	02 29

ABBREVIATIONS

ABUTMENT	ABUT	FINISHED PAVEMENT LEVEL	FPL	PAVEMENT WIDTH	PW
AHEAD STATIONING	AH STA	GENERAL	GEN	PERCENT	%
AND	&	GROUND LEVEL	GL	PHILIPPINES	PHIL
AREA	A	HEAD WALL(S)	HW / HWS	PIECES	PCS
ASPHALT CONCRETE PAVEMENT	ACP	HIGH FLOOD LEVEL	HFL	PLUS / MINUS	±
AT	@	HIGH TIDE LEVEL	HTL	PUBLIC LAND SUBDIVISION	PLS
AZIMUTH	AZIM	HIGH WATER LEVEL	HWL	POINT OF INTERSECTION	PI
BACK STATION	BK STA	HORIZONTAL	HOR	POINT OF CURVATURE	PC
BARANGAY	BRGY.	INCHES	IN	POINT OF VERTICAL CURVE	PVC
BEGINNING OF CIRCULAR CURVE	BCC	INTERSECTION ANGLE	I	POINT OF VERTICAL INTERSECTION	PVI
BEARING	BRG.	INSIDE DIAMETER	ID	POINT OF VERTICAL TANGENT	PVT
BEGINNING	BEG.	INTERIOR	INT.	POINT OF TANGENT	POT
BELOW MEAN SEA LEVEL	BMSL	KILOGRAM	KG.	PORTLAND CEMENT CONCRETE PAVEMENT	PCCP
BENCHMARK	BM	KILOMETER	km	PROJECT	PROJ
BETWEEN	BET.	KILOMETER PER HOUR	KPH	PROJECT ROAD	PROJ. RD
BORE HOLE	BH	LEFT	LI	PRIVATE SURVEY	P.S.
BOTH SIDES	BS	LENGTH OF CIRCULAR CURVE	LC	RADIUS	R
BOTH WAYS	BW	LENGTH OF VERTICAL CURVE	VC	REFERENCE POINT	RP
BOTTOM	BOT.	LONGITUDINAL	LONGIT.	REINFORCED CONCRETE BOX CULVERT	RCBC
BRIDGE	BR.	MAXIMUM	MAX.	REINFORCED CONCRETE PIPE CULVERT	RCPC
SUBDIVISION OF DECREASED PROPERTY	BSQ.	MAXIMUM FLOOD LEVEL	MFL	RETAINING WALL	RET. WALL
BY BUREAU OF LANDS SURVEYORS	BLM	MEAN SEA LEVEL	MSL	RIGHT OF WAY	ROW
BUREAU OF LANDS LOCATION MONUMENT	BLM	METER	m	ROAD	RD
CENTER	CTR.	MILLIMETER	mm	SOUTH	S
CENTERLINE	CL	MINIMUM	MIN.	SIDEWALK	SDWK
CENTIMETER	cm	MONUMENT	MON	SUBDIVISION OF UNDECREASED PROPERTY	Sub
CONCRETE HOLLOW BLOCK	CHB	NORTHING	N	SQUARE	SQ
CLEAR	CLR	NOT APPLICABLE	NA	SQUARE METER	sq. m. / m2
COLUMN	COL	NUMBER	NO.	STANDARD	STD.
CONCRETE	CONC.	ORDINARY WATER LEVEL	OWL	STATION	STA
CONCRETE HOLLOW BLOCK	CHB	ORIGINAL GROUND LEVEL	OGL	STRAIGHT	STR.
CONCRETE MONUMENT	CONC. MON.	OUTSIDE DIAMETER	OC	STREET	ST.
CONSTRUCTION	CONST.	PAVEMENT WIDTH	PW	STRUCTURE	STRUCT.
CORNER	COR.			TANGENT DISTANCE	T
COVER	COV.			TEMPERATURE	TEMP.
CROSS PIPE	CP			TEMPORARY BENCH MARK	TBM
CUBIC METER	cu. m. / m3			VERTICAL	VERT
CYLINDRICAL	CYL.			WIDTH	w
DEGREE OF CURVE	D			WITH	wt
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	DPWH				
DETAIL	DET.				
DIAMETER	DIA. / Ø				
DIAPHRAGM	DIAP.				
DISTANCE	DIST.				
DRAWING	DRWG.				
EAST	E				
ELEVATION	ELEV. / EL.				
END OF CIRCULAR CURVE	ECC				
END OF PAVEMENT	EOP				
ENGINEER	ENGR.				
EQUATION	EQ.				
EXCAVATION	EXCA.				
EXISTING	EXIST. / EXTG.				
EXPANSION	EXPN.				
EXTENSION	EXTN.				
EXTERIOR	EXTR.				
EXTERNAL DISTANCE / EASTING	E				
FINISHED	FIN.				
FINISHED GRADE	FG.				



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. B. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
ABBREVIATIONS

DRAFTED AND PREPARED:

JAMES LEE T. ARIETA
ENGINEER II
DATE:

REVIEWED:

DENYS MARTIN A. SEMPIO
ENGINEER II
DATE:

SUBMITTED:

JUVY B. CORDON
DIRECTOR PLANNING AND DESIGN DIVISION
DATE:

RECOMMENDING APPROVAL:

JOSE LITO A. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE:

APPROVED:

JUVY B. CORDON
REGIONAL DIRECTOR
DATE:

SET NO. A
03/21
SHEET NO. 03
29

LEGENDS AND SYMBOLS

DRAWING SYMBOLS		
SYMBOL	ABBREVIATION	DESCRIPTION
	C	ROADWAY CENTERLINE
		NORTH SIGNS
	ELEV	ELEVATION CALLOUT
		WATER LEVEL
	FLOW	WATER FLOW
	P.I.	POINT OF INTERSECTION
	STA. 0+000	MATCH LINE
		GRID COORDINATES
	AZIM	AZIMUTH
		PLAN AND PROFILE CALLOUT
		RCPC INVERSE ELEVATION PROFILE CALLOUT
		DIRECTION
		MAIN DRAWING TITLE
		SECONDARY DRAWING TITLE
		CROSS SECTION SYMBOL (COMPLEX)
		CROSS SECTION SYMBOL (COMPLEX)
		DETAIL CALLOUT
	BH	BORE HOLE
		CROSS SECTION MONUMENT
	BM	BENCHMARK
	IBM	INTERMEDIATE BENCHMARK
	PEM	PERMANENT BENCHMARK
	TP	TEST PIT
	GPS	GLOBAL POSITIONING SYSTEM
		TRAVERSE POINT
	T-NO.	TRAVERSE STATION AND LINE

TOPOGRAPHIC FEATURES, INFRASTRUCTURE AND UTILITIES		
SYMBOL	ABBREVIATION	DESCRIPTION
		MAJOR CONTOUR
		MINOR CONTOUR
		EDGE OF ROAD (EXISTING)
		EDGE OF ROAD (PROPOSED)
		ASPHALT CONCRETE PAVEMENT
	PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
		CHB/GROUTED CONCRETE/ EARTH CANAL
		NATIONAL HIGHWAY
		EXISTING CANAL (PLAN)
		EXISTING CANAL (PROFILE)
	BR.	BRIDGE
		CROSS-DRAIN
		LATERAL PIPE
		RCSC
		MANHOLE
		GUARDRAIL
		CHB WALL FENCE
		WOOD OR BARBED WIRE FENCE
		CYCLONE FENCE
		CONCRETE SLOPE PROTECTION
		GROUTED RIPRAP SLOPE PROTECTION
		RIVER / CREEK

TOPOGRAPHIC FEATURES, INFRASTRUCTURE AND UTILITIES		
SYMBOL	ABBREVIATION	DESCRIPTION
		TREES
		COCONUT
		BANANA PLANTATION
	SC	SCHOOL
		CHURCH
	AH	AMAKAN HOUSE
	CH	CONCRETE HOUSE
	WS	WOODEN STORE
	MX	COMBINATION OF CONCRETE AND WOODEN HOUSE
	S	STORE
	SB	SIGN BOARD
	SP	STEEL POST
	SEP	STEEL ELECTRIC POST
	CP	CONCRETE POST
	CEP	CONCRETE ELECTRIC POST
	WEP	WOODEN ELECTRIC POST
	LP	LAMP POST



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REGIONAL OFFICE NO. XI
DOX CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
LEGENDS AND SYMBOLS

DRAFTED AND PREPARED:
JAMES LEE T. ARIETA
ENGINEER II
DATE: _____

REVIEWED:
DEWY L. SEMPIO
ENGINEER II
DATE: _____

SUBMITTED:
JUDY ANN T. BERNARDINO
CHIEF PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL:
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

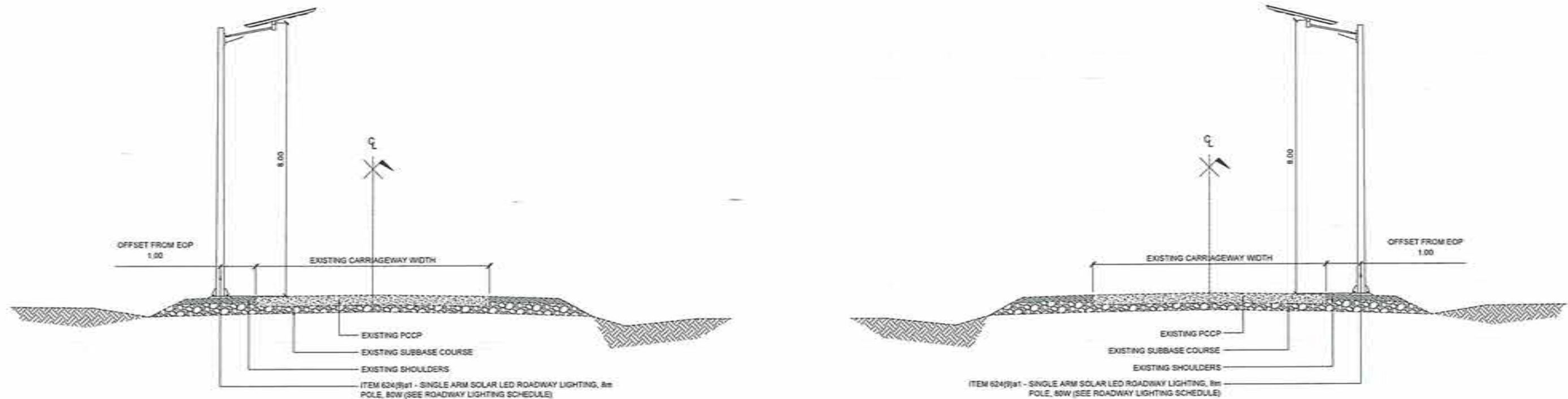
APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SET NO. SHEET NO.
A 04
04 21 29

SUMMARY OF QUANTITIES

ITEM No.	DESCRIPTION OF WORK	UNIT	QUANTITY	REMARKS
PART A. FACILITIES FOR THE ENGINEER				
A.1.1(3)	CONSTRUCTION OF FIELD OFFICE FOR THE ENGINEER	LS	1.00	
A.1.1(16)	OPERATION AND MAINTENANCE OF FIELD OFFICE FOR THE ENGINEER	MONTH	6.00	
PART B. OTHER GENERAL REQUIREMENTS				
B.4(1)	CONSTRUCTION SURVEY AND STAKING	KM	19.50	
B.5	PROJECT BILLBOARD / SIGNBOARD (2 DPWH)	EACH	2.00	
B.5	PROJECT BILLBOARD / SIGNBOARD (2 DENR-EMB)	EACH	2.00	
B.5	PROJECT BILLBOARD / SIGNBOARD (2 DOA)	EACH	2.00	
B.7(2)	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	LS	1.00	
B.8(1)	TRAFFIC MANAGEMENT	MONTH	8.00	
B.9	MOBILIZATION & DEMOBILIZATION	LS	1.00	
PART F. MEDIAN BARRIER ISLAND CONSTRUCTION				
404(1)a	REINFORCING STEEL, GRADE 40	KG	32,288.26	
404(1)b	REINFORCING STEEL, GRADE 60	KG	74,855.82	
405(1)b2	STRUCTURAL CONCRETE, 27.5MPA, CLASS A, 14 DAYS	CUM	1,204.91	
PART H. MISCELLANEOUS STRUCTURES				
605(1)a1	WARNING SIGNS, 600mm X 600mm, W6-1B, PEDESTRIAN AND SCHOOL SIGNS PEDESTRIAN CROSSING AHEAD	EACH	20.00	
605(2)a2	REGULATORY SIGNS, 600mm, R6-8B, MISCELLANEOUS SIGNS PEDESTRIAN CROSSING	EACH	10.00	
612(1)	REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS WHITE	SQ M	154.10	
624(9)a1	SINGLE ARM SOLAR LED ROADWAY LIGHTING, 8m POLE, 80W (SEE ROADWAY LIGHTING SCHEDULE)	EACH	780.00	

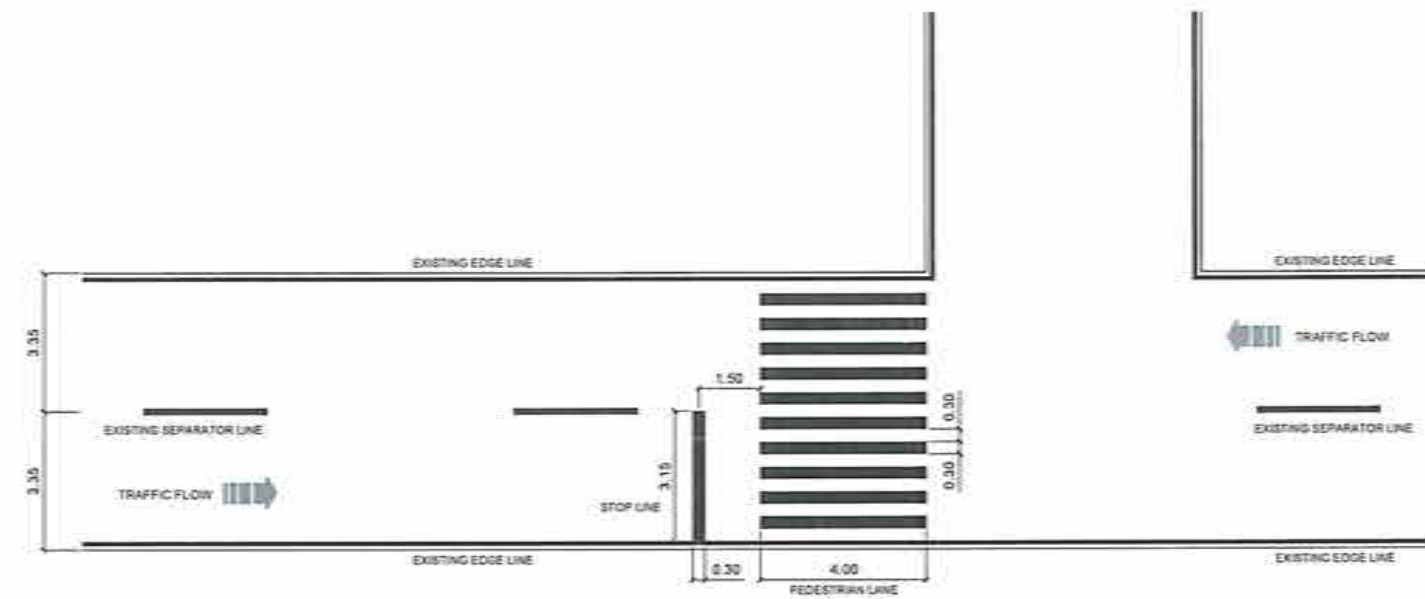
NOTE: ALL QUANTITIES ARE SUBJECT TO INCREASE/DECREASE DEPENDING ON ACTUAL SITE CONDITIONS



1 TYPICAL CROSS SECTION (2-LANES)
SCALE NTS

	PROJECT NAME AND LOCATION INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBULAWAN-MATANAO RD, DAVAO DEL SUR	SHEET CONTENTS SUMMARY OF QUANTITIES TYPICAL CROSS SECTIONS	DRAFTED AND PREPARED JAMES LEE T. ARIZA ENGINEER II	REVIEWED DENNIS ALDRIN A. SEMPIO ENGINEER	SUBMITTED JUDYAN T. BERNARDO CHIEF PLANNING AND DESIGN DIVISION	RECOMMENDING APPROVAL JOSEPH B. CABALLERO ASSISTANT REGIONAL DIRECTOR	APPROVED JUBY B. CORDON REGIONAL DIRECTOR	SET NO. A	SHEET NO. 05
	GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY			DATE:	DATE:	DATE:	DATE:	DATE:	05 21

104-18(2)25(1) - INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBULAWAN-MATANAO RD, DAVAO DEL SUR TYPICAL CROSS SECTION



1 REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS DETAIL (PEDESTRIAN CROSSING AT INTERSECTIONS)
SCALE NTS

WHITE PAVEMENT MARKINGS SCHEDULE

STATION	LENGTH	PEDESTRIAN (0.30M x 4.0M)	STOP LINES (W = 0.3 M)	REMARKS
STOP LINES				
STA. 000 + 045.189	6.70		2.01	R/S
STA. 000 + 154.815	6.70		2.01	R/S
STA. 000 + 288.150	6.70		2.01	R/S
STA. 000 + 386.518	6.70		2.01	R/S
STA. 000 + 592.038	6.70		2.01	R/S
STA. 000 + 635.528	6.70		2.01	L/S
STA. 000 + 676.809	6.70		2.01	R/S
STA. 000 + 873.389	6.70		2.01	R/S
STA. 000 + 983.116	6.70		2.01	L/S
STA. 001 + 723.474	6.70		2.01	R/S
		TOTAL	20.10	
PEDESTRIAN LANE				
STA. 000 + 048.669	6.70	13.400		
STA. 000 + 158.315	6.70	13.400		
STA. 000 + 289.650	6.70	13.400		
STA. 000 + 390.016	6.70	13.400		
STA. 000 + 565.538	6.70	13.400		
STA. 000 + 632.028	6.70	13.400		
STA. 000 + 680.309	6.70	13.400		
STA. 000 + 678.689	6.70	13.400		
STA. 000 + 979.616	6.70	13.400		
STA. 001 + 728.974	6.70	13.400		
	TOTAL	134.000		



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION

INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS

REFLECTORIZED THERMOPLASTIC PAVEMENT
MARKINGS DETAIL AND SCHEDULE

DRAFTED AND PREPARED

JAMES LEE T. ARIETA
ENGINEER I

DATE

REVIEWED

DENVER L. SEMPIO
ENGINEER

DATE

SUBMITTED

JUDY ANN T. BERNARDINO
CHIEF PLANNING AND DESIGN DIVISION

DATE

RECOMMENDING APPROVAL

JOSE LITO B. CASALLERO
ASSISTANT REGIONAL DIRECTOR

DATE

APPROVED

JUSY B. CORDON
REGIONAL DIRECTOR

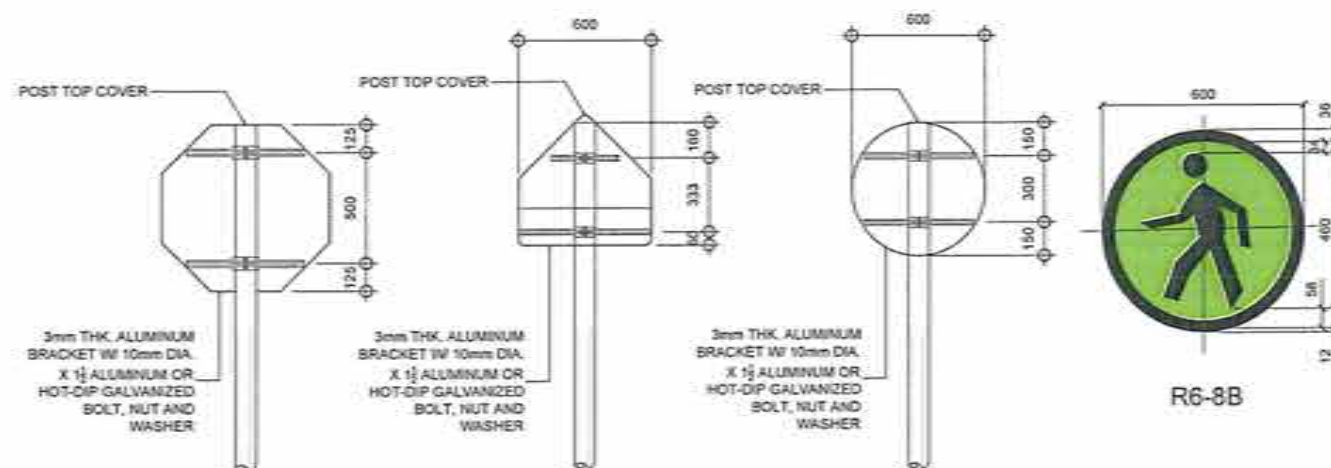
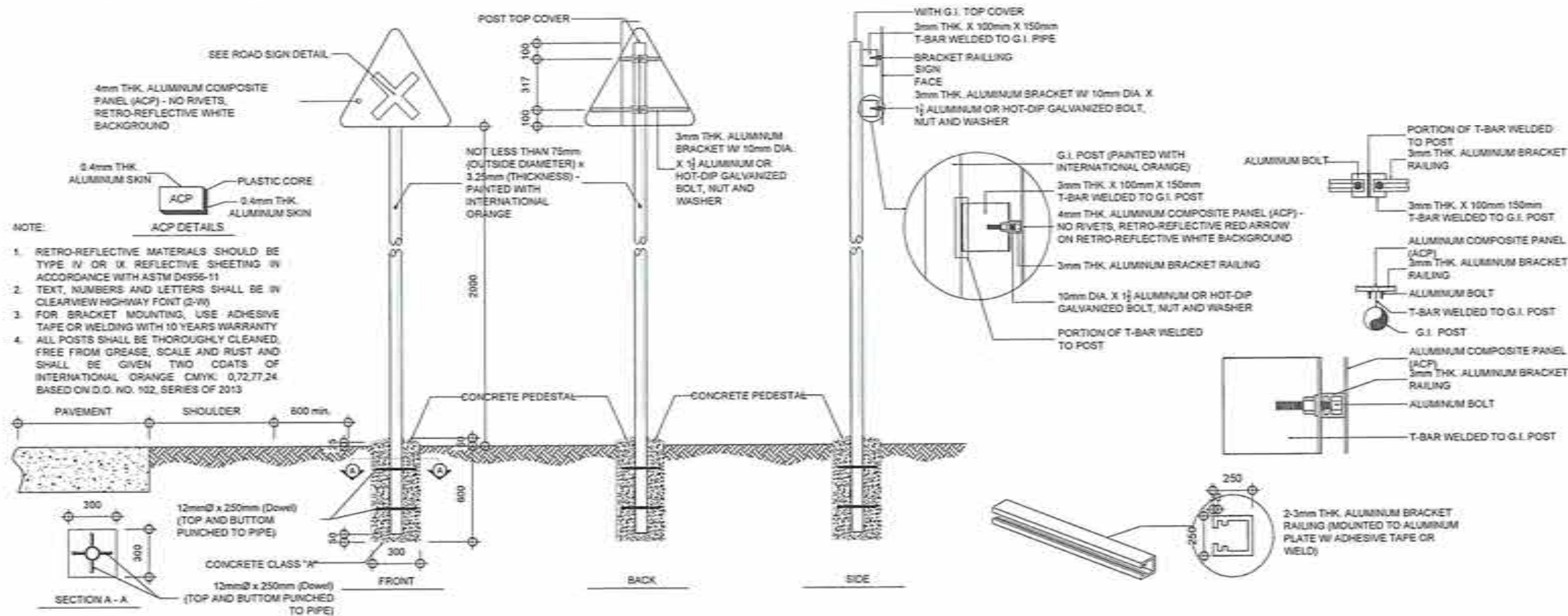
DATE

SET NO.

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06/21

SHEET NO.

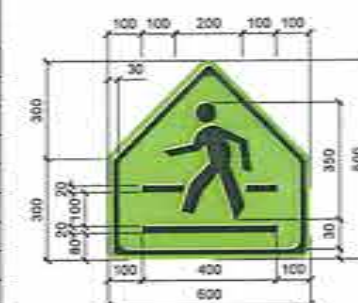
06
29



R6-8B SCHEDULE

STATION	SIDE	NO. OF PCS.
STA. 000 + 045.169	RIGHT	1.00
STA. 000 + 134.815	RIGHT	1.00
STA. 000 + 286.150	RIGHT	1.00
STA. 000 + 386.516	RIGHT	1.00
STA. 000 + 562.038	RIGHT	1.00
STA. 000 + 676.809	RIGHT	1.00
STA. 000 + 873.389	RIGHT	1.00
STA. 001 + 725.474	RIGHT	1.00
STA. 000 + 935.528	LEFT	1.00
STA. 000 + 983.116	LEFT	1.00
TOTAL		10.00

BLACK SYMBOL, LEGEND AND BORDER, REFLECTORIZED FLUORESCENT YELLOW GREEN BACKGROUND



W6-1B

W6-1B SCHEDULE

STATION	SIDE	NO. OF PCS.
STA. 000 + 000.000	RIGHT	1.00
STA. 000 + 079.815	RIGHT	1.00
STA. 000 + 211.150	RIGHT	1.00
STA. 000 + 311.516	RIGHT	1.00
STA. 000 + 487.038	RIGHT	1.00
STA. 000 + 560.528	RIGHT	1.00
STA. 000 + 601.809	RIGHT	1.00
STA. 000 + 798.389	RIGHT	1.00
STA. 000 + 908.116	RIGHT	1.00
STA. 001 + 648.474	RIGHT	1.00
STA. 000 + 120.169	LEFT	1.00
STA. 000 + 229.815	LEFT	1.00
STA. 000 + 361.150	LEFT	1.00
STA. 000 + 451.516	LEFT	1.00
STA. 000 + 634.038	LEFT	1.00
STA. 000 + 710.528	LEFT	1.00
STA. 000 + 751.809	LEFT	1.00
STA. 000 + 948.389	LEFT	1.00
STA. 001 + 058.116	LEFT	1.00
STA. 001 + 798.474	LEFT	1.00
TOTAL		20.00

BLACK SYMBOL, LEGEND AND BORDER, REFLECTORIZED FLUORESCENT YELLOW GREEN BACKGROUND

1 TYPICAL DETAIL FOR ROAD SIGN POST, DETAIL, AND SCHEDULE
SCALE NTS



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XII
GOV. CHAVEZ COR. B. RIGORISAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION
INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS
ROAD SIGN POST DETAIL AND SCHEDULE

DRAFTED AND PREPARED
JAMES LEE T. ARIETA
ENGINEER I
DATE

REVIEWED
DENNIS LORIN A. SEMPIO
ENGINEER II
DATE

DESIGNED
JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL
JOSE LINO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUBY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO. A
07 21
SHEET NO. 07 29

GENERAL NOTES

- ALL ELECTRICAL WORKS SHALL BE DONE IN ACCORDANCE WITH THE PROVISIONS OF THE LATEST EDITION OF THE PHILIPPINE ELECTRICAL CODE PART I AND II, THE LAWS AND ORDINANCES OF THE LOCAL CODE ENFORCING AUTHORITIES AND THE REQUIREMENTS OF THE LOCAL POWER COMPANY.
- THE ELECTRICAL WORK SHALL BE DONE UNDER THE DIRECT AND IMMEDIATE SUPERVISION OF A DULY REGISTERED ELECTRICAL ENGINEER.
- PERFORMANCE OF THE ROAD LIGHT SUCH AS ILLUMINANCE LEVEL SHALL COMPLY WITH THE REQUIREMENTS OF THE SPECIFICATION.
- THE ELECTRICAL CONTRACTOR SHALL SECURE ALL PERMITS AND PAY ALL FEES REQUIRED FOR THE WORK AND FURNISH THE OWNER THROUGH THE ENGINEER'S FINAL CERTIFICATE OF ELECTRICAL INSPECTION AND APPROVAL FROM PROPER GOVERNMENT AUTHORITIES FOR COMPLETE WORK.
- THE ELECTRICAL MATERIALS TO BE USED AND EQUIPMENT TO BE INSTALLED SHALL BE BRAND NEW AND SHALL BE OF THE APPROVED TYPES FOR THE PARTICULAR LOCATION AND PURPOSE INTENDED.
- ALL ROAD LIGHTS AND WARNING LIGHTS SHALL BE POWERED FROM SOLAR PHOTOVOLTAIC (PV) SYSTEM WITH STORAGE BATTERY.
- ALL BOXES SHALL BE OF STEEL AND ZINC CHROMIATED PROTECTED.
- ALL UNDERGROUND CONDUIT PIPES AND CONDUIT RUN EMBEDDED IN CONCRETE SHALL BE UNPLASTICIZED POLYVINYL CHLORIDE CONDUIT (UPVC).
- UNDERGROUND CONDUIT RUNS SHALL BE BURIED AT A MINIMUM OF 600mm BELOW GROUND LEVEL. CONDUIT RUN CROSSING STREET SHALL BE ENCASED IN CONCRETE WITH STEEL BAR REINFORCED, 2500psi CONCRETE WITH MINIMUM 75mm (3 INCHES) COVER ALL AROUND.
- UNPROTECTED CONDUIT RISERS AND EXPOSED CONDUIT RUNS SHALL BE INTERMEDIATE METAL CONDUITS (IMC).
- ALL STREET LUMINAIRE ASSEMBLY INCLUDES LED LUMINAIRE, PV POWER SUPPLY EQUIPMENT, CONTROL AND BATTERY PANEL, AND FOUNDATION SHALL WITHSTAND UP TO 34KPH PER HOUR GUSTING WINDS WITHOUT PERMANENT DEFORMATION.
- ALL SPARE PIPES INCLUDING PULL BOXES EMBEDDED IN THE STRUCTURE WALL SHOWN ON THE STRUCTURE DRAWINGS WILL BE USED AS CONDUIT. IN CASE THAT THE ROAD LIGHT IS POWERED FROM ELECTRIC UTILITY COMPANY (EC) IN FUTURE OR EMERGENCY, THE SPARE PIPES, PULL WIRE AND PULL BOXES SHALL BE INSTALLED BY THE ELECTRICAL WORKS.
- FOR EXISTING CABLE RUNS WHICH WILL BE REPLACED BEFORE REMOVING THE CABLE SHALL BE TESTED IF FREE FROM GROUND AND CAN STILL BE RE-USED. IF FOUND GROUND, THESE CABLES SHALL BE REMOVED AND TURN-OVER TO THE CLIENT.

DESIGN GUIDELINES FOR ROADWAY LIGHTING

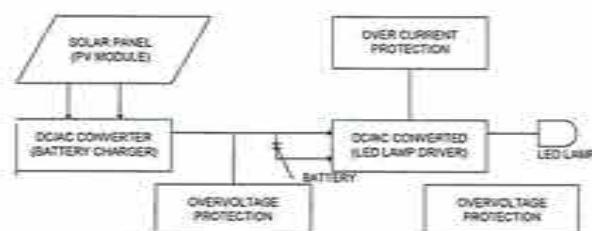
SECTION 1 OBJECTIVE

THESE GUIDELINES SET OUT FACTORS THAT NEED TO BE TAKEN INTO ACCOUNT IN DESIGNING ROADWAY LIGHTING SOLAR-POWERED SYSTEMS USED TO ILLUMINATE ROADWAYS SUCH AS PRIMARY, SECONDARY, AND TERTIARY ROADS AS WELL AS ROADS THAT IS MODIFIED, EXTENDED, EXPANDED, OR ADDED TO EXISTING ROADWAY INSTALLATIONS.

SECTION 2 MINIMUM TECHNICAL REQUIREMENTS

SECTION 2.1 ELECTRICAL SYSTEM (SOLAR-POWERED)

- THE ILLUMINATION SHALL BE UNIFORM WITHOUT DARK BANDS OR ABRUPT VARIATIONS, AND SHOULD BE SOOTHING TO THE EYE. THE LIGHT OUTPUT FROM THE WHITE LIGHT-EMITTING DIODE (LED) LIGHT SOURCE SHOULD BE ALMOST CONSTANT AND HIGHER LIGHT OUTPUT WILL BE PREFERRED. THE ACCEPTABLE LEVELS OF LUMINANCE SHALL BE ACHIEVED UNDER NORMAL OPERATIONS.
- COLOR TEMPERATURE FOR LED CAN VARY BETWEEN "WARM WHITE" AND "WARM YELLOW" THE USED OF LEDS WHICH EMITS ULTRAVIOLET LIGHT SHALL NOT BE PERMITTED.
- THE LAMPS SHALL BE HOUSED IN AN ASSEMBLY SUITABLE FOR OUTDOOR USE AND SHALL BE RATED AS IP 65 RATED PER IEC WITH A REFLECTOR ON ITS BACK. THE LED HOUSING SHALL BE MADE OF CORROSION-RESISTANT PRESSURE DIE-CAST ALUMINUM WITH A POWDER COATED FINISH OF A NEUTRAL COLOR HAVING A SUFFICIENT AREA FOR HEAT DISSIPATION AND HEAT RESISTANT TOUGHENED CLEAR GLASS / HIGH-QUALITY POLYCARBONATE FITTED WITH PRESSURIZED DIE-CAST ALUMINUM FRAME WITH SCREWS. THE TEMPERATURE OF THE HEAT SINK SHOULD NOT INCREASE MORE THAN 30°C ABOVE AMBIENT TEMPERATURE EVEN AFTER 48 HOURS OF CONTINUOUS OPERATION. THE DUTY CYCLE OF THE LED SHOULD COMPLY WITH THE DUSK TO DAWN OPERATION OF THE LAMPS WHILE THE BATTERY OPERATES AT ANY VOLTAGE BETWEEN THE LOAD DISCONNECT AND CHARGE REGULATION SET POINT. LEDS SHALL BE PROCURED FROM A MANUFACTURER WHO HAS TEST REPORTS FROM IESNA LM80-08 AND TM-21-11 QUALIFIED FOR RELEVANT LED PRODUCT TESTING, PARTICULARLY FOR ROADWAY LIGHTING.
- THE ELECTRIC CABLE SHALL BE TWIN CORE PVC INSULATED WATER AND UV RESISTANT COPPER CABLE OF 1.5 MM DIAMETER MINIMUM SIZE.
- THE CHARGE CONTROLLER SHALL HAVE AN AUTOMATIC DUSK UNTIL DAWN CIRCUIT BASED ON A SOLAR PHOTOVOLTAIC MODULE AS A SENSOR FOR SWITCHING ON/OFF THE STREET LIGHT WITHOUT MANUAL INTERVENTION AND AS SPECIFIED OPERATION PROFILE DURING PROJECT ANALYSIS. ALL THIS CONTROL SHOULD KEEP THE SYSTEM OPERATING AT PEAK PERFORMANCE SHALL INCREASE THE SYSTEMS LIFESPAN AND SHOULD OPERATE AS ILLUSTRATED IN THE FIGURE BELOW.



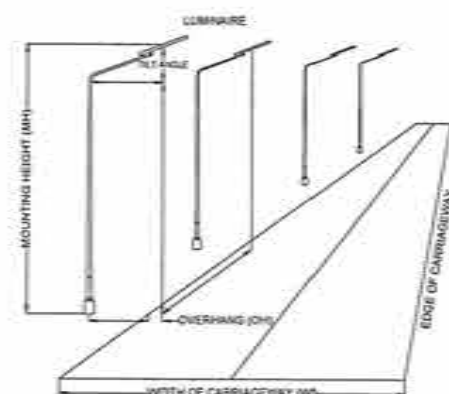
- THE PHOTOELECTRIC CONTROL'S OPERATING CONDITION SHALL TURN ON AT A NOMINAL LIGHT LEVEL SETTING OF 10.75 LUX WHICH IS WITHIN THE LIMITS OF 5.30 LUX TO 21.52 LUX AT RATED VOLTAGE OF 24VOLTS, 60HERTZ. THE RATIO OF THE TURN-OFF TO THE TURN-ON LIGHT LEVEL SHALL BE DESIGNED WITH A FAIL-ON FAILURE MODE AND SHALL BE INSTALLED AT EACH LIGHTING POST FOR INDIVIDUAL LAMP CONTROL. THE EYE OF THE CELL SHOULD BE ORIENTED TO FACE NORTH, CONTROL CONDUCTOR AND THE NECESSARY CONNECTION SHALL BE MADE FOR COMPLETE SATISFACTORY OPERATION OF THE STREET LUMINAIRE.
- THE BATTERY SHALL BE LITHIUM ION OR DEEP CYCLE, LEAD-ACID TYPE ELECTROLYTE PLATE LEAD-ACID WITH LOW ANTIMONY LEAD ALLOY PLATES, AND CERAMIC VENT PLUGS AND SHALL BE CATEGORIZED BY LOW MAINTENANCE REQUIREMENTS, LONG SERVICE LIFE, AND EXCELLENT CAPACITY PERFORMANCE EVEN IN HIGH-TEMPERATURE.
- THE SOLAR PHOTO VOLTAGE MODULE MUST BE MADE OF CRYSTALLINE HIGH POWER/EFFICIENCY CELLS AND SHALL BE USED AND MUST BE WARRANTED FOR OUTPUT WATTAGE, WHICH MUST BE GREATER THAN 90% AFTER 10 YEARS AND LESS THAN 80% AFTER 25 YEARS. THE PROJECT WILL ONLY USE INDIGENOUS MODULES FROM REPUTABLE BRANDS. THE TERMINAL BOX ON THE MODULE MUST BE DESIGNED FOR LONG-TERM OUTDOOR OPERATION IN HARSH ENVIRONMENTS, WITH AN OPENING FOR REPLACING THE CABLE IF NECESSARY. HENCE, PROTECTIVE DEVICES AGAINST SURGES AT THE PV MODULE SHALL BE PROVIDED.
- THE GROUNDING SYSTEM SHALL HAVE LOW RESISTANCE AND LOW IMPEDANCE ATTRIBUTE TO PROTECT SOLAR STREET LIGHTS FROM EXTENSIVE LIGHTING DAMAGE. AFTER ESTABLISHING THE STABLE GROUNDING SYSTEM, A SURGE PROTECTION DEVICE (SPD) SYSTEM SHOULD BE INSTALLED.
- AUTOMATIC SELF-CLEANING MECHANISM SHALL HAVE A BRUSH WITH THICK AND SOFT BRISTLES IDEAL FOR CLEANING HEAVY DUST PARTICLES WITH FLAT FITTING ON THE SOLAR PANEL SHALL BE DESIGNED FOR AREAS WHERE SEA SPRAY, DUST AND DIRT THAT MAY COVER THE PANEL. PREVENTING THE BATTERY FROM BEING FULLY CHARGED. THE BRUSH SHOULD BE AUTOMATED TO ALLOW THOROUGH CLEANING EVERY FOUR HOURS AND SHALL ROUTINELY RETURN TO ITS INITIAL POSITION TO PREVENT FROM BEING JAMMED WHEN ENCOUNTERING LARGE OBSTACLES THAT MAY CAUSE MOTOR DAMAGE. THE CASING SHALL BE MADE OF ALUMINUM ALLOY FOR INCREASED DURABILITY.
- THE MOTION SENSOR FEATURE SHALL HAVE DIFFERENT POWER CONTROL, DEPENDING ON THE PERIOD WITHIN AN 8-METER RADIUS AND SHALL SET AND LOWER BRIGHTNESS IN A REDUCED PEDESTRIAN AFTER MIDNIGHT TO SAVE ENERGY AND IMPROVE PRACTICALITY.

SECTION 2.2 STRUCTURAL SYSTEM

- THE POLE SHALL BE CONSTRUCTED OF ROUND TAPERED HOT-DIP GALVANIZED STEEL GI PIPE OF 3 MM MINIMUM THICKNESS, A MINIMUM LOWER AND UPPER DIAMETER OF 200 MM AND 75 MM DIAMETER AND ITS SURFACE MUST BE PAINTED WITH REFLECTORIZED WHITE ENAMEL COATING. THE POLE SHOULD HAVE THE PROVISIONS TO HOLD THE WEATHERPROOF LAMP HOUSING INDIVIDUALLY PER CASE. THE BATTERY BOX AT AN APPROPRIATE HEIGHT, AND THE SOLAR PHOTOVOLTAIC PANEL, THAT SHALL BE MOUNTED ON TOP OF THE POLE. STANDARD LIGHT POLES TO BE UTILIZED WITH SOLAR SHOULD HAVE LARGER BASES AND MORE SUBSTANTIAL FOUNDATIONS DUE TO THE WEIGHT OF THE SOLAR POWER ASSEMBLY AND SHOULD HAVE AN EFFECTIVE PROJECTED AREA (EPA) CAPACITY THAT COULD WITHSTAND SEVERAL WIND VELOCITIES UP TO 340 KPH IN ACCORDANCE WITH AASHTO L15-6. AS STANDARD POLES ARE TOO WEAK TO HANDLE THE WEIGHT OF THE SYSTEM AND CAN QUICKLY FAIL. POLES SHOULD BE MANUFACTURED EXCLUSIVELY FOR THE PROJECT WITH APPROPRIATE HEIGHT AS IT INFLUENCES THE INTENSITY, UNIFORMITY, AND AREA OF ILLUMINATION.
- SOLAR FIXTURE BRACKET SHOULD DIRECT THE PV SOLAR FACING SOUTH (OR TOWARDS THE EQUATOR) AND SHOULD ALLOW THE FIXTURE INSTALLATION TO FACE THE CORRECT DIRECTION IF IT IS ATTACHED TO THE PANEL. SHALL BE DESIGNED TO MEET THE STRENGTH REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP) AND SHOULD BE PROVIDED WITH A MOUNTING PLATE AND STIFFENER TO INCREASE ITS LOAD-BEARING CAPACITY. HARDWARE SUCH AS HINGES, LATCHES, SPRINGS, NUTS, SCREWS, WASHERS, PINS, AMONG OTHERS, SHALL BE MADE OF MATERIALS COMPATIBLE TO THE HOUSING MATERIAL AND SHALL BE INHERENTLY CORROSION PROOF OR HAVE BEEN PROTECTED BY FINISHES APPROVED FOR CORROSION RESISTANCE. HOWEVER, THOSE EXPOSED TO THE ELEMENTS SHALL BE MADE OF HIGH-GRADES STAINLESS STEEL.
- STREET LIGHTING POST CONCRETE FOOTING SHALL BE CLASS A AND SHALL CONFORM WITH SUBSECTION 405.2 MATERIAL REQUIREMENTS OF ITEM 405.2 STRUCTURAL CONCRETE. ALL ELECTRICAL LIGHTING POST FOOTINGS WITH DIMENSIONS INDICATED IN THE PLANS SHALL BE REINFORCED CONCRETE AND SHALL CONFORM WITH THE REQUIREMENTS FOR CONCRETE STRUCTURES OF THIS SPECIFICATION. EXCAVATION AND BACK FILL FOR FOUNDATION INCLUDING DISPOSAL OF SURPLUS MATERIALS SHALL BE PROVIDED. EXCAVATED HOLES FOR CONCRETE FOOTINGS SHALL BE NEAT OR PROPERLY FORMED AND FREE FROM LOOSE MATERIALS WHEN THE CONCRETE IS PLACED. CONCRETE FOUNDATION SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL STRUCTURAL CODE OF THE PHILIPPINES (NSCP) TO RESIST WIND VELOCITY AND VIBRATIONS INHERENT IN THE AREA WHERE THE POLES WILL BE CONSTRUCTED AND LOCATED TO PROVIDE ADEQUATE SUPPORT FOR THE LUMINAIRE AND POLE STRUCTURE.

SECTION 3.2 MOUNTING HEIGHT, SPACING, MAST ARM, AND OVERHANG

THE STREET LIGHTING GEOMETRY IS SHOWN BELOW TO FURTHER ILLUSTRATE THE FOLLOWING DESIGN PARAMETERS:



MOUNTING HEIGHT

THE MOUNTING HEIGHT SHALL BE THE PERPENDICULAR DISTANCE FROM THE CENTER OF THE LAMP TO THE GROUND SURFACE. IN GENERAL, THE MINIMUM MOUNTING HEIGHT SHALL BE GENERALLY 8 METERS AND A LUMINAIRE THAT DOES NOT OVERHANG THE ROADWAY SHALL HAVE A MINIMUM MAST ARM LENGTH OF 1.5 METERS. PROVIDED THAT THE INSTALLED LUMINAIRE USED WOULD NOT RESULT INTO DISABILITY GLARE TO THE MOTORIST AND THE POLE IS INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF PHILIPPINE ELECTRICAL CODE (PEC) 2, TABLE 2, ROADWAY LIGHTING STATIONING AND PARAMETERS SHOULD BE CONSIDERED AS IT SPECIFIES THE SUITABLE MOUNTING HEIGHT FOR THE ENTIRETY OF ROADWAY LIGHTING.

SPACING

SPACING SHALL BE DEFINED AS THE HORIZONTAL DISTANCE BETWEEN SUCCESSIVE LUMINAIRES IN AN INSTALLATION. TO PRESERVE LONGITUDINAL UNIFORMITY, THE SPACE-HEIGHT RATIO SHOULD BE GREATER THAN 1. MINIMUM AND MAXIMUM ALLOWABLE SPACING SHALL BE FOLLOWING THE VALUES ESTABLISHED IN TABLE 2, ROADWAY LIGHTING STATIONING AND PARAMETERS.

POLE SPACING IS ALSO SPECIFIED DEPENDING ON THE ILLUMINATION LEVEL OF THE AREA, INTERSECTIONS AND OTHER MERGING SECTION OF THE ROADWAY SHOULD HAVE A HIGHER LEVEL OF ILLUMINATION.

OVERHANG

THE HORIZONTAL DISTANCE BETWEEN THE CENTER OF A LUMINAIRE MOUNTED ON A BRACKET AND THE ADJACENT EDGE OF A CARRIAGEWAY IS DEFINED AS OVERHANG. TO AVOID REDUCED-VISIBILITY OF CURBS AND OBSTACLES, THE OVERHANG SHOULD NOT EXCEED ONE-FOURTH OF THE MOUNTING HEIGHT.

POLE ARM

THE USE OF AN ARM BRINGS THE LIGHT SOURCE CLOSER TO THE TRAVELED PATH WHILE ALLOWING THE POLE TO BE PLACED FURTHER AWAY FROM THE EDGE OF THE PATHS EDGE. DEPENDING ON THE APPLICATION, POLE ARMS CAN BE SINGLE AND/OR DOUBLE DUTY OR MAST ARMS AND LOCATED AT THE UPPER MOST PART OF THE POLE.

THE POLE ARM'S ANGLE OF TILT SHALL BE KEPT FROM 15° TO 20°, OTHERWISE STRONG LIGHT SHALL AFFECT THE DRIVER'S EYES BY CAUSING DISCOMFORT GLARE. THE TILT GETS LARGER AS THE UNIFORMITY RATIO INCREASE.

SETBACK

THE SETBACK IS THE HORIZONTAL DISTANCE BETWEEN THE FACE OF A LIGHT POLE AND THE EDGE OF THE TRAVELED WAY. THE MINIMUM ALLOWED VALUE IS SET AT 0.40 TO 1.5 METERS SINCE EXTREMELY SHORT SETBACK GRAZES THE SURFACE AND ENHANCES ITS TEXTURE AND LONG SETBACKS CAUSE SHADOWS AT LOW LEVELS.

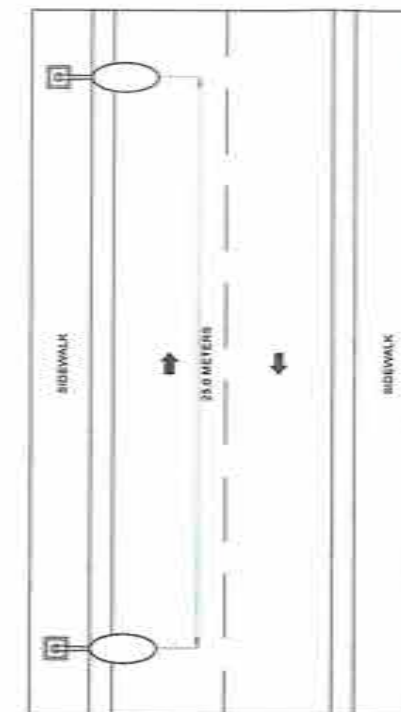
THE TABLE BELOW SHALL BE CONSIDERED IN DESIGNING THE LUMINAIRE SETBACK BASED ON VEHICULAR SPEED ON A PARTICULAR ROADWAY AND EQUIVALENT.

TABLE 1. DESIGNATED ALLOWABLE SETBACK VALUES WITH A ROADWAY DESIGNED SPEED EQUIVALENT.

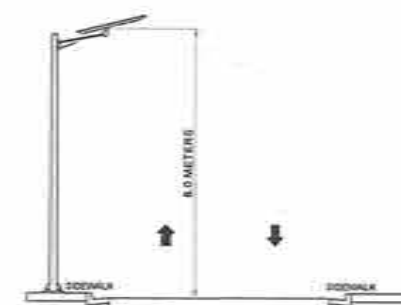
DESIGN SPEED FOR THE ROADWAY (KPH)	POLE SETBACK (M)
80	1.0

OUTREACH

THE OUTREACH OR HORIZONTAL DISTANCE BETWEEN THE LUMINAIRE'S CENTER AND THE COLUMN'S CENTER IS TYPICALLY ESTABLISHED IN ACCORDANCE WITH THE ARCHITECTURAL AESTHETIC CONDITIONS.



LIGHTING LAYOUT



TYPICAL CROSS SECTION

SINGLE STREET LIGHTING ARRANGEMENT
(NOT TO SCALE)

TABLE 2. ROADWAY LIGHTING STATIONING AND PARAMETERS

ROAD CLASSIFICATION	LIGHTING ARRANGEMENT	ROAD WIDTH (meters)	POLE PLACING (meters)	MOUNTING HEIGHT (meters)	LED LAMP WATTAGE (Watt)	MAST ARM LENGTH (meters)
SECONDARY	SINGLE	6.7	25	8	80	1.5

NOTES: TOTAL NUMBER OF SOLAR STREET LIGHTS = 780 PCS

MARK	DESCRIPTIONS
	SOLAR STREET LIGHTS SINGLE (SECTION)
	SOLAR STREET LIGHTS SINGLE (PLAN)

DRAWING LEGENDS
(NOT TO SCALE)



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION
INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-KATANA RD, DAVAO DEL SUR

SHEET CONTENTS
GENERAL NOTES AND DESIGN GUIDELINES FOR SOLAR-POWERED ROADWAY LIGHTING, ROADWAY LIGHTING STATIONING AND PARAMETERS, AND DRAWING LEGENDS

PREPARED AND DRAWN BY
GABRIEL G. CASUYA
DATE: 08/21/2023
REVIEWED BY
JOHN PAUL S. GONZALEZ
DATE: 08/21/2023

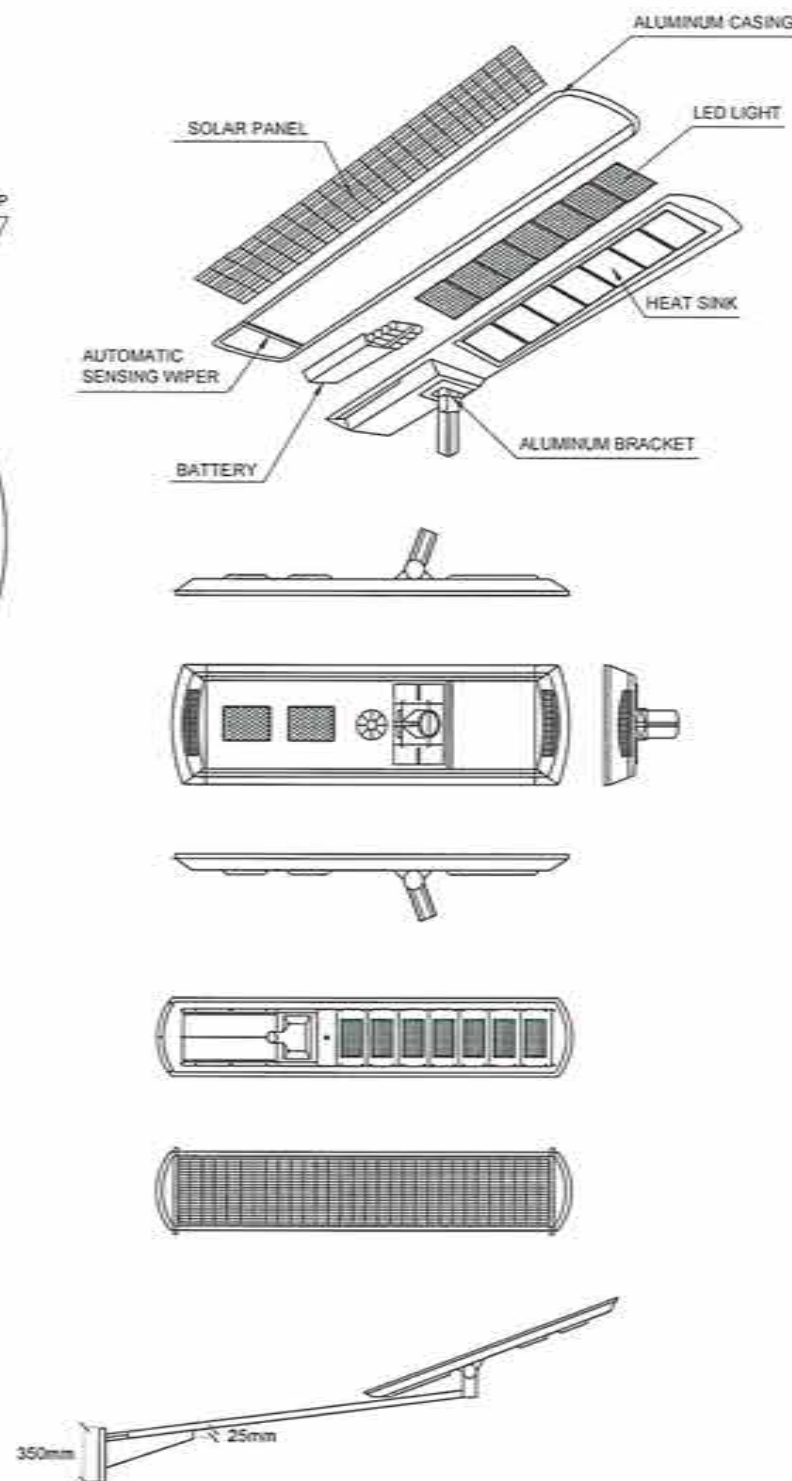
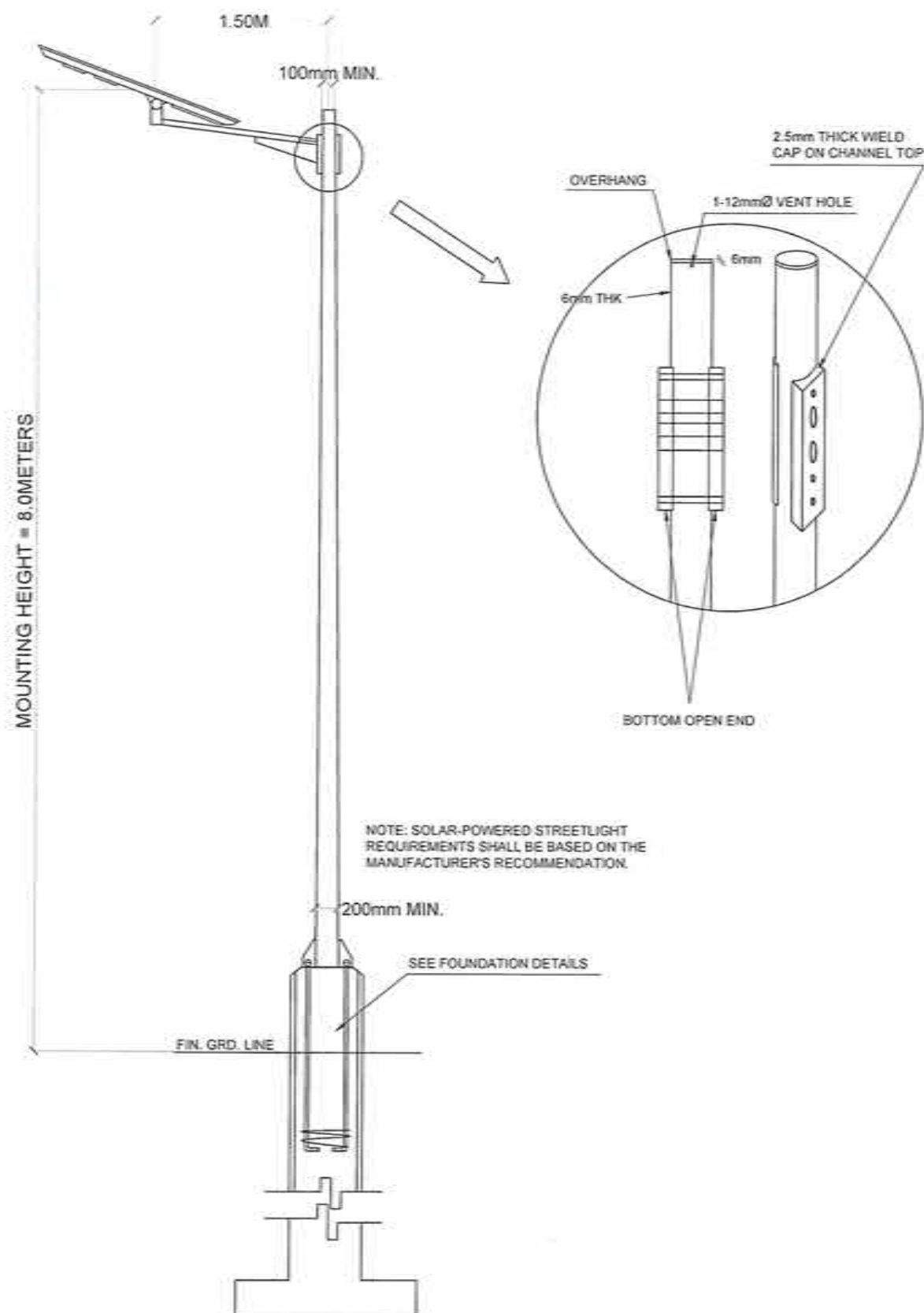
CHECKED BY
ALVIN A. GONZALEZ
ENGINEER II, SECTOR OFFICE
DATE: 08/21/2023

SUBMITTED BY
JUDY B. CORDON
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 08/21/2023

RECOMMENDING APPROVAL BY
JOSEPH B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 08/21/2023

APPROVED BY
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: 08/21/2023

SHEET NO. 08
SHEET NO. 29



- NOTE:
1. INCLUDE ADDITIONAL DETAILS FOR DESIRED LAMP POST TO BE USED AND REFER AND VERIFY TO LOCAL ELECTRIC POWER DISTRIBUTION COMPANY 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	18 VOLTS
		120 WATTS (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° TO +50°C
	INPUT VOLTAGE	12.8 V
	TYPE	LITHIUM-ION OR LEAD-ACID TYPE ELECTROLYTE PLATE LEAD-ACID WITH LOW ANTIMONY LEAD ALLOY PLATES AND CERAMIC VENT PLUGS
	LIFETIME	5 YEARS
	CHARGING AND DISCHARGING CYCLES	2000
LIGHT-EMITTING DIODE (LED) LAMP	CHARGING TIME	7 HOURS
	WORKING TIME UNDER RAINY DAYS	10 DAYS
	LIGHT OUTPUT	80 WATTS
	SYSTEM FLUX	10 000 LM
	COLOR TEMPERATURE	2500K (WARM WHITE)
	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 +50°C
	RANGE FOR CHARGING	0°C TO +45°C
CHARGE TIME	RANGE FOR DISCHARGING	-30°C TO +35°C
	7 HOURS UNDER DIRECT AND STRONG SUNLIGHT	
IP RATING	IP 65	
WARRANTY PERIOD	6 YEARS MINIMUM	



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION
INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS
SINGLE ARM POST DETAILS
SECTION OF MAST ARM
LED LUMINAIRE DETAILS & INTEGRATED SOLAR STREETLIGHT TECHNICAL PARAMETERS

PREPARED AND DRAFTED
GABRIEL D. BABUYA
DATE: 09/21/2023
REVIEWED
JOHN PHILIP S. OSORIO
DATE: 09/21/2023

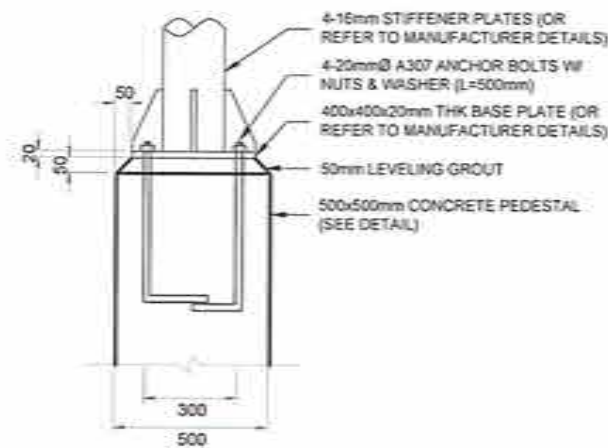
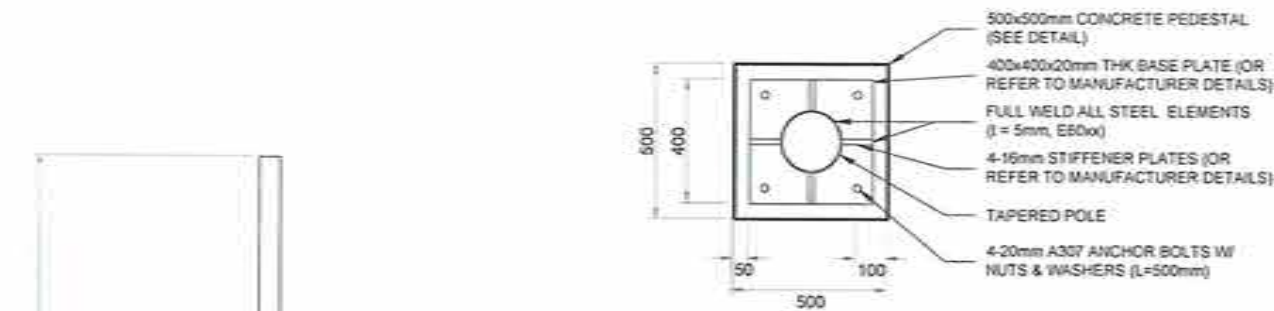
CHECKED
ALVIN A. GINGA
ENGINEER II, SECTION CHIEF
DATE: 09/21/2023

SUBMITTED
JUDY B. T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 09/21/2023

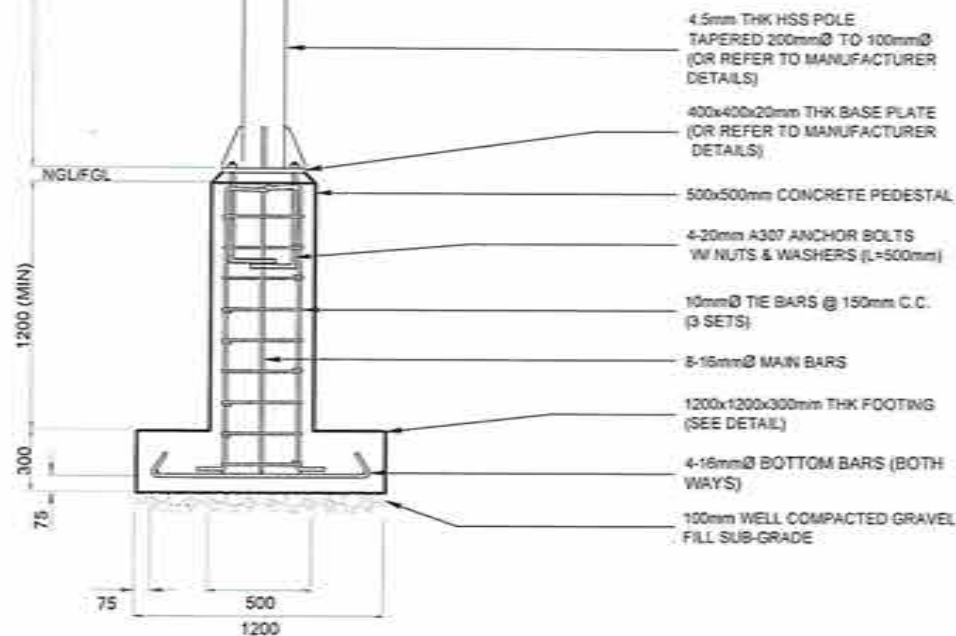
RECOMMENDING APPROVAL
JOSEITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 09/21/2023

APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: 09/21/2023

SHEET NO.
A
09/21/2023



BASE PLATE DETAIL
NOT TO SCALE

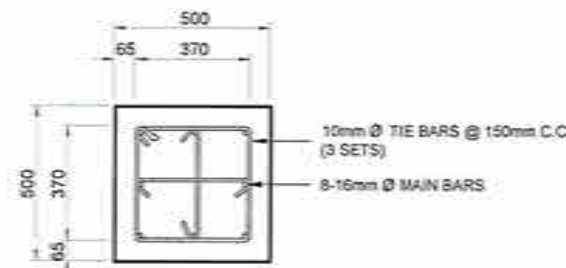


FOUNDATION ELEVATION
NOT TO SCALE

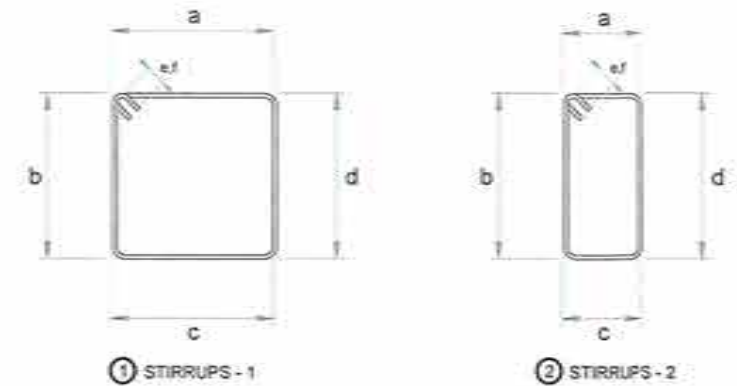
DESIGN CRITERIA

- 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/m²
 - STEEL: 77 kN/m²
 - SOIL: 18 kN/m²
 - 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
 - 12mm Ø AND BELOW: $F_y = 275 \text{ MPa (GRADE 40)}$
 - 16mm Ø AND ABOVE: $F_y = 414 \text{ MPa (GRADE 60)}$
 - STRUCTURAL STEEL
 - STEEL POLE: $F_y = 240 \text{ MPa (A53 GRADE B)}$
 $F_u = 415 \text{ MPa}$
 - BASE PLATE & STIFFENER: $F_y = 275 \text{ MPa (A36)}$
 $F_u = 400 \text{ MPa}$
 - STRUCTURAL BOLTS AND FASTENER: $F_u = 310 \text{ MPa (A307)}$
 $F_w = 155 \text{ MPa}$
E80xx ELECTRODE
 - WELDS: E80xx ELECTRODE
- 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 86 kPa (2000 psi). 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.

DESIGN CRITERIA
NOT TO SCALE

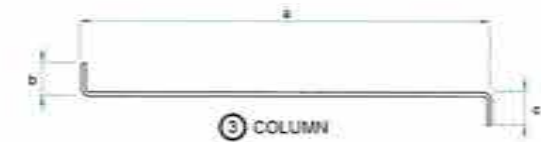


PEDESTAL DETAIL
NOT TO SCALE



STIRRUPS - 1

STIRRUPS - 2



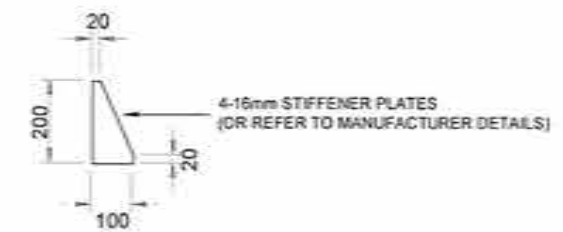
COLUMN



FOOTING

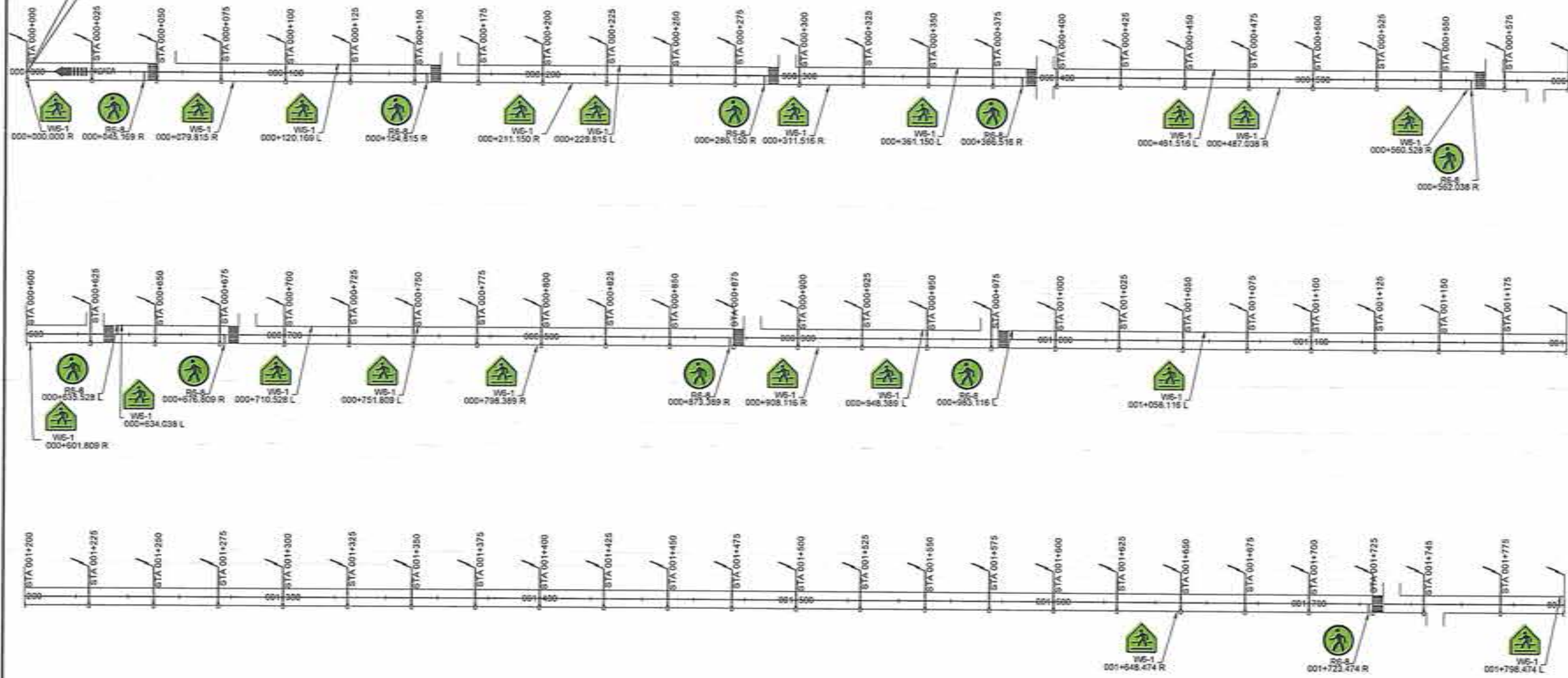
REINFORCEMENT						
BAR DIMENSIONS (mm)						
	a	b	c	d	e	f
1	550	550	550	550	60	60
2	210	550	210	550	60	60
3	2000	200	200			
4	1300	140	140			

BAR BENDING DIAGRAM
NOT TO SCALE



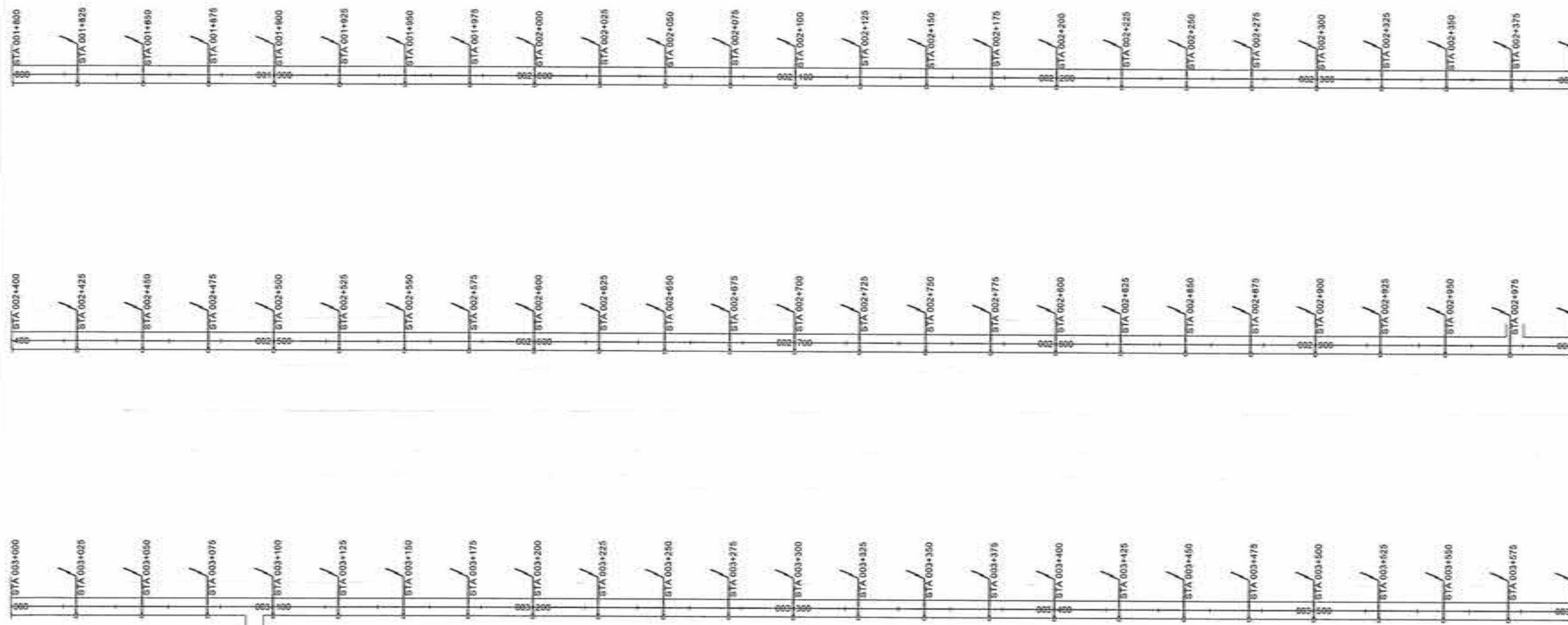
STIFFENER DETAIL
NOT TO SCALE

BEG. OF PROJECT
BEG. OF SECTION 1
STA. 000+000.000
NORTHING = 734,855.940
EASTING = 759,505.960



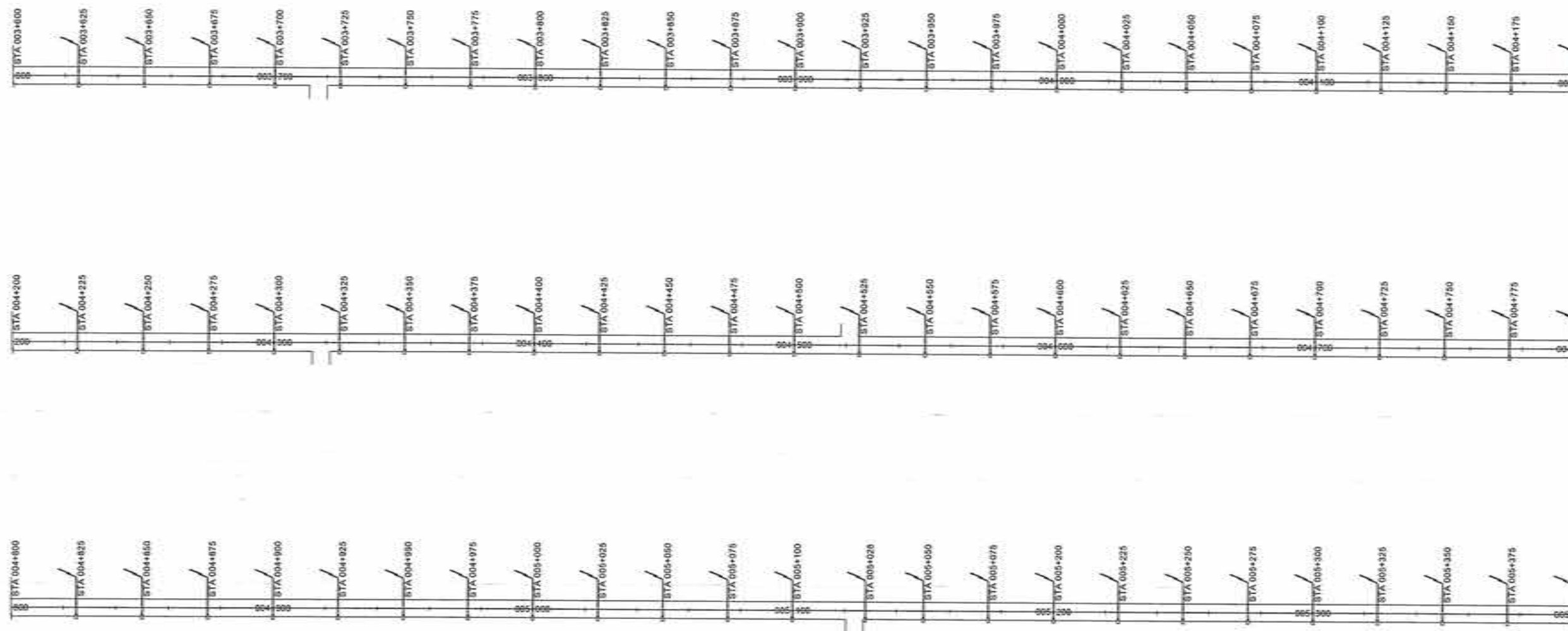
LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
1		STA. 000+000.000
2		STA. 000+025.000
3		STA. 000+050.000
4		STA. 000+075.000
5		STA. 000+100.000
6		STA. 000+125.000
7		STA. 000+150.000
8		STA. 000+175.000
9		STA. 000+200.000
10		STA. 000+225.000
11		STA. 000+250.000
12		STA. 000+275.000
13		STA. 000+300.000
14		STA. 000+325.000
15		STA. 000+350.000
16		STA. 000+375.000
17		STA. 000+400.000
18		STA. 000+425.000
19		STA. 000+450.000
20		STA. 000+475.000
21		STA. 000+500.000
22		STA. 000+525.000
23		STA. 000+550.000
24		STA. 000+575.000
25		STA. 000+600.000
26		STA. 000+625.000
27		STA. 000+650.000
28		STA. 000+675.000
29		STA. 000+700.000
30		STA. 000+725.000
31		STA. 000+750.000
32		STA. 000+775.000
33		STA. 000+800.000
34		STA. 000+825.000
35		STA. 000+850.000
36		STA. 000+875.000
37		STA. 000+900.000
38		STA. 000+925.000
39		STA. 000+950.000
40		STA. 000+975.000
41		STA. 001+000.000
42		STA. 001+025.000
43		STA. 001+050.000
44		STA. 001+075.000
45		STA. 001+100.000
46		STA. 001+125.000
47		STA. 001+150.000
48		STA. 001+175.000
49		STA. 001+200.000
50		STA. 001+225.000
51		STA. 001+250.000
52		STA. 001+275.000
53		STA. 001+300.000
54		STA. 001+325.000
55		STA. 001+350.000
56		STA. 001+375.000
57		STA. 001+400.000
58		STA. 001+425.000
59		STA. 001+450.000
60		STA. 001+475.000
61		STA. 001+500.000
62		STA. 001+525.000
63		STA. 001+550.000
64		STA. 001+575.000
65		STA. 001+600.000
66		STA. 001+625.000
67		STA. 001+650.000
68		STA. 001+675.000
69		STA. 001+700.000
70		STA. 001+725.000
71		STA. 001+750.000
72		STA. 001+775.000
73		STA. 001+800.000

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI 505 CHAVEZ COR. E. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDATION APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAQ RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	JAMES LEE T. ARIETA ENGINEER II DATE:	DENNIS ALDRIN A. SEMPIO ENGINEER II DATE:	JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE:	JOSEPH B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	JUBY B. CORDON REGIONAL DIRECTOR DATE:	A 11 21	11 29

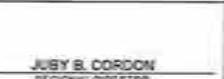


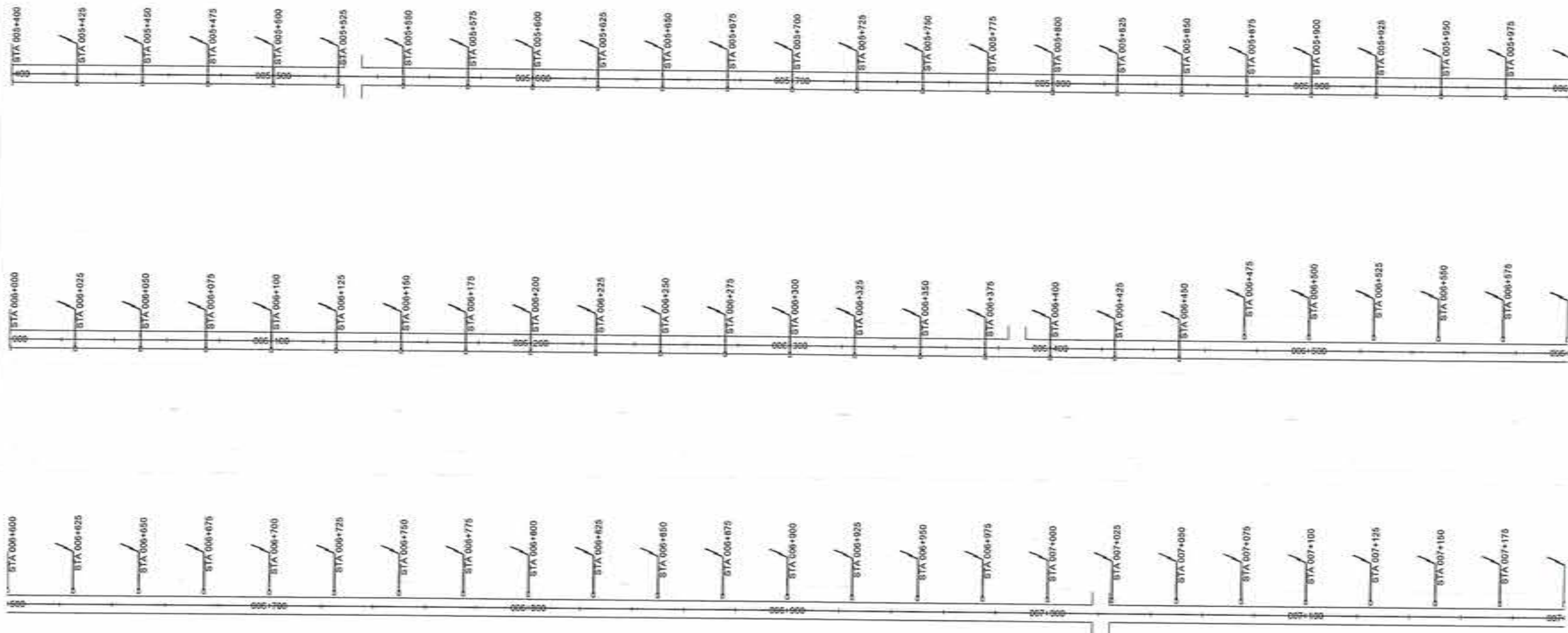
LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
73		STA. 001+800.000
74		STA. 001+825.000
75		STA. 001+850.000
76		STA. 001+875.000
77		STA. 001+900.000
78		STA. 001+925.000
79		STA. 001+950.000
80		STA. 001+975.000
81		STA. 002+000.000
82		STA. 002+025.000
83		STA. 002+050.000
84		STA. 002+075.000
85		STA. 002+100.000
86		STA. 002+125.000
87		STA. 002+150.000
88		STA. 002+175.000
89		STA. 002+200.000
90		STA. 002+225.000
91		STA. 002+250.000
92		STA. 002+275.000
93		STA. 002+300.000
94		STA. 002+325.000
95		STA. 002+350.000
96		STA. 002+375.000
97		STA. 002+400.000
98		STA. 002+425.000
99		STA. 002+450.000
100		STA. 002+475.000
101		STA. 002+500.000
102		STA. 002+525.000
103		STA. 002+550.000
104		STA. 002+575.000
105		STA. 002+600.000
106		STA. 002+625.000
107		STA. 002+650.000
108		STA. 002+675.000
109		STA. 002+700.000
110		STA. 002+725.000
111		STA. 002+750.000
112		STA. 002+775.000
113		STA. 002+800.000
114		STA. 002+825.000
115		STA. 002+850.000
116		STA. 002+875.000
117		STA. 002+900.000
118		STA. 002+925.000
119		STA. 002+950.000
120		STA. 002+975.000
121		STA. 003+000.000
122		STA. 003+025.000
123		STA. 003+050.000
124		STA. 003+075.000
125		STA. 003+100.000
126		STA. 003+125.000
127		STA. 003+150.000
128		STA. 003+175.000
129		STA. 003+200.000
130		STA. 003+225.000
131		STA. 003+250.000
132		STA. 003+275.000
133		STA. 003+300.000
134		STA. 003+325.000
135		STA. 003+350.000
136		STA. 003+375.000
137		STA. 003+400.000
138		STA. 003+425.000
139		STA. 003+450.000
140		STA. 003+475.000
141		STA. 003+500.000
142		STA. 003+525.000
143		STA. 003+550.000
144		STA. 003+575.000
145		STA. 003+600.000

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ CDR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	JAMES LEE T. ARIETA ENGINEER II	DENNIS ALONSO A. SEMPIO ENGINEER II	JUDY T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSEFINO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUBY B. CORDON REGIONAL DIRECTOR	A 12/21	12 29



LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
145		STA. 003+600.000
146		STA. 003+625.000
147		STA. 003+650.000
148		STA. 003+675.000
149		STA. 003+700.000
150		STA. 003+725.000
151		STA. 003+750.000
152		STA. 003+775.000
153		STA. 003+800.000
154		STA. 003+825.000
155		STA. 003+850.000
156		STA. 003+875.000
157		STA. 003+900.000
158		STA. 003+925.000
159		STA. 003+950.000
160		STA. 003+975.000
161		STA. 004+000.000
162		STA. 004+025.000
163		STA. 004+050.000
164		STA. 004+075.000
165		STA. 004+100.000
166		STA. 004+125.000
167		STA. 004+150.000
168		STA. 004+175.000
169		STA. 004+200.000
170		STA. 004+225.000
171		STA. 004+250.000
172		STA. 004+275.000
173		STA. 004+300.000
174		STA. 004+325.000
175		STA. 004+350.000
176		STA. 004+375.000
177		STA. 004+400.000
178		STA. 004+425.000
179		STA. 004+450.000
180		STA. 004+475.000
181		STA. 004+500.000
182		STA. 004+525.000
183		STA. 004+550.000
184		STA. 004+575.000
185		STA. 004+600.000
186		STA. 004+625.000
187		STA. 004+650.000
188		STA. 004+675.000
189		STA. 004+700.000
190		STA. 004+725.000
191		STA. 004+750.000
192		STA. 004+775.000
193		STA. 004+800.000
194		STA. 004+825.000
195		STA. 004+850.000
196		STA. 004+875.000
197		STA. 004+900.000
198		STA. 004+925.000
199		STA. 004+950.000
200		STA. 004+975.000
201		STA. 005+000.000
202		STA. 005+025.000
203		STA. 005+050.000
204		STA. 005+075.000
205		STA. 005+100.000
206		STA. 005+125.000
207		STA. 005+150.000
208		STA. 005+175.000
209		STA. 005+200.000
210		STA. 005+225.000
211		STA. 005+250.000
212		STA. 005+275.000
213		STA. 005+300.000
214		STA. 005+325.000
215		STA. 005+350.000
216		STA. 005+375.000
217		STA. 005+400.000

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAFTED AND PREPARED	REVIEWED	CHECKED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	 JAMES LEE T. ARIETA ENGINEER II	 DENZEL A. SEMPIO ENGINEER II	 JUDYANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	 JOSE M. CABALLERO ASSISTANT REGIONAL DIRECTOR	 JUBY B. CORDON REGIONAL DIRECTOR	A	13 29
IN-18022018: INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR FROM ELECTRICAL UG CHECKED, ST102018 STRAIGHT LINE DIAGRAM PADADA-KIBLAWAN-MATANAO SCHEME 2, 011025 DWG									



LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
217		STA. 005+400.000
218		STA. 005+425.000
219		STA. 005+450.000
220		STA. 005+475.000
221		STA. 005+500.000
222		STA. 005+525.000
223		STA. 005+550.000
224		STA. 005+575.000
225		STA. 005+600.000
226		STA. 005+625.000
227		STA. 005+650.000
228		STA. 005+675.000
229		STA. 005+700.000
230		STA. 005+725.000
231		STA. 005+750.000
232		STA. 005+775.000
233		STA. 005+800.000
234		STA. 005+825.000
235		STA. 005+850.000
236		STA. 005+875.000
237		STA. 005+900.000
238		STA. 005+925.000
239		STA. 005+950.000
240		STA. 005+975.000
241		STA. 006+000.000
242		STA. 006+025.000
243		STA. 006+050.000
244		STA. 006+075.000
245		STA. 006+100.000
246		STA. 006+125.000
247		STA. 006+150.000
248		STA. 006+175.000
249		STA. 006+200.000
250		STA. 006+225.000
251		STA. 006+250.000
252		STA. 006+275.000
253		STA. 006+300.000
254		STA. 006+325.000
255		STA. 006+350.000
256		STA. 006+375.000
257		STA. 006+400.000
258		STA. 006+425.000
259		STA. 006+450.000
260		STA. 006+475.000
261		STA. 006+500.000
262		STA. 006+525.000
263		STA. 006+550.000
264		STA. 006+575.000
265		STA. 006+600.000
266		STA. 006+625.000
267		STA. 006+650.000
268		STA. 006+675.000
269		STA. 006+700.000
270		STA. 006+725.000
271		STA. 006+750.000
272		STA. 006+775.000
273		STA. 006+800.000
274		STA. 006+825.000
275		STA. 006+850.000
276		STA. 006+875.000
277		STA. 006+900.000
278		STA. 006+925.000
279		STA. 006+950.000
280		STA. 006+975.000
281		STA. 007+000.000
282		STA. 007+025.000
283		STA. 007+050.000
284		STA. 007+075.000
285		STA. 007+100.000
286		STA. 007+125.000
287		STA. 007+150.000
288		STA. 007+175.000
289		STA. 007+200.000



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. BRIGASAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
STRAIGHT LINE DIAGRAM

DRAFTED AND PREPARED:

JAMES LEE T. ARIETA
ENGINEER I
DATE: _____

REVIEWED:

DENNIS L. ARIN
ENGINEER II
DATE: _____

SUPERVISOR:

JOVY T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL:

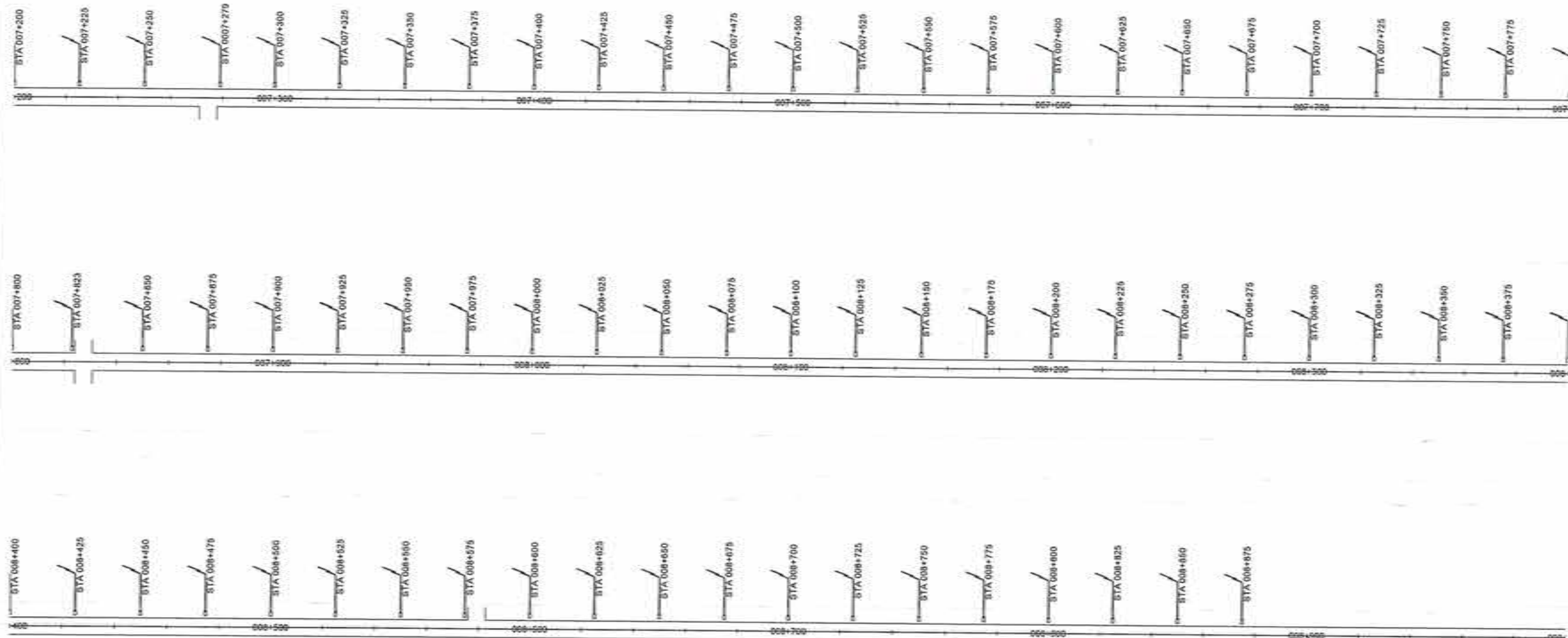
JOSEMAR S. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

APPROVED:

JUBY B. CORDOVA
REGIONAL DIRECTOR
DATE: _____

SET NO.:
A
14/21

SHEET NO.:
14
29



END OF SECTION 1
STA. 008+800.000
NORTHING = 736,540.410
EASTING = 751,962.860

LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
289	STA. 007+200.000	
290	STA. 007+225.000	
291	STA. 007+250.000	
292	STA. 007+275.000	
293	STA. 007+300.000	
294	STA. 007+325.000	
295	STA. 007+350.000	
296	STA. 007+375.000	
297	STA. 007+400.000	
298	STA. 007+425.000	
299	STA. 007+450.000	
300	STA. 007+475.000	
301	STA. 007+500.000	
302	STA. 007+525.000	
303	STA. 007+550.000	
304	STA. 007+575.000	
305	STA. 007+600.000	
306	STA. 007+625.000	
307	STA. 007+650.000	
308	STA. 007+675.000	
309	STA. 007+700.000	
310	STA. 007+725.000	
311	STA. 007+750.000	
312	STA. 007+775.000	
313	STA. 007+800.000	
314	STA. 007+825.000	
315	STA. 007+850.000	
316	STA. 007+875.000	
317	STA. 007+900.000	
318	STA. 007+925.000	
319	STA. 007+950.000	
320	STA. 007+975.000	
321	STA. 008+000.000	
322	STA. 008+025.000	
323	STA. 008+050.000	
324	STA. 008+075.000	
325	STA. 008+100.000	
326	STA. 008+125.000	
327	STA. 008+150.000	
328	STA. 008+175.000	
329	STA. 008+200.000	
330	STA. 008+225.000	
331	STA. 008+250.000	
332	STA. 008+275.000	
333	STA. 008+300.000	
334	STA. 008+325.000	
335	STA. 008+350.000	
336	STA. 008+375.000	
337	STA. 008+400.000	
338	STA. 008+425.000	
339	STA. 008+450.000	
340	STA. 008+475.000	
341	STA. 008+500.000	
342	STA. 008+525.000	
343	STA. 008+550.000	
344	STA. 008+575.000	
345	STA. 008+600.000	
346	STA. 008+625.000	
347	STA. 008+650.000	
348	STA. 008+675.000	
349	STA. 008+700.000	
350	STA. 008+725.000	
351	STA. 008+750.000	
352	STA. 008+775.000	
353	STA. 008+800.000	
354	STA. 008+825.000	
355	STA. 008+850.000	
356	STA. 008+875.000	



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CORNELIO R. BURGOS AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAHAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
STRAIGHT LINE DIAGRAM

DRAFTED AND PREPARED:
[Signature]
JAMES LEE T. ARIETA
ENGINEER I
DATE: _____

REVIEWED:
[Signature]
DENNIS L. SEMPINO
ENGINEER II
DATE: _____

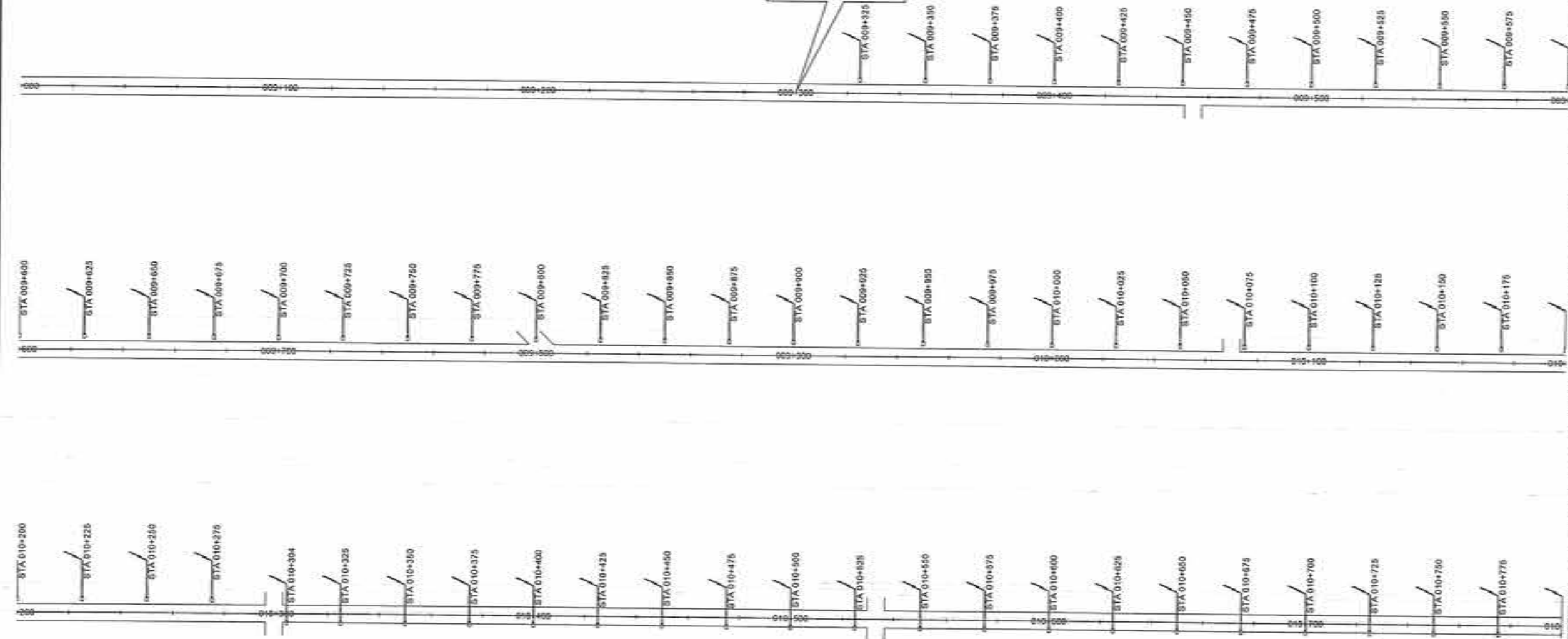
SUBMITTED:
[Signature]
JUDY ANN BERNARDO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL:
[Signature]
JOSE LITO S. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

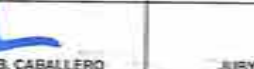
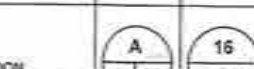
APPROVED:
[Signature]
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: _____

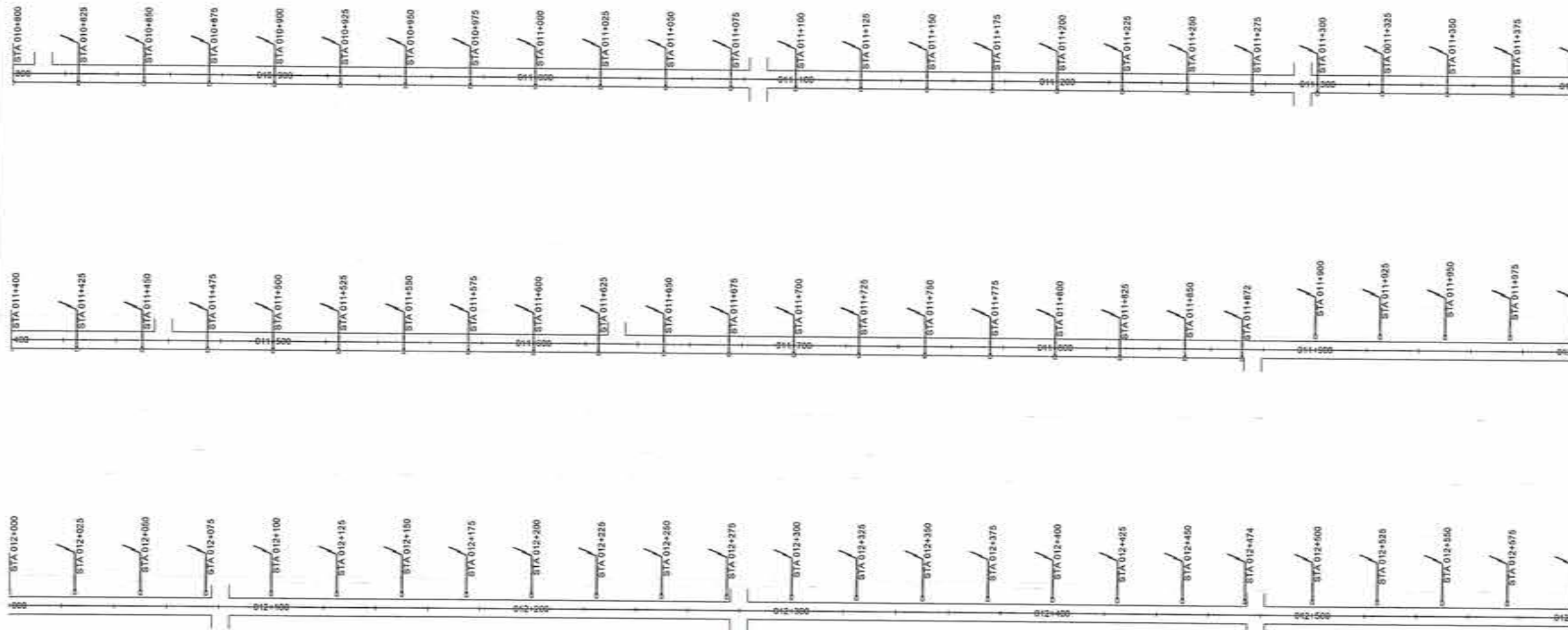
SET NO. SHEET NO.
A 15
15 21 29

SEG. OF SECTION 2
STA. 009+300.000
NORTHING = 736,551.540
EASTING = 751,572.520



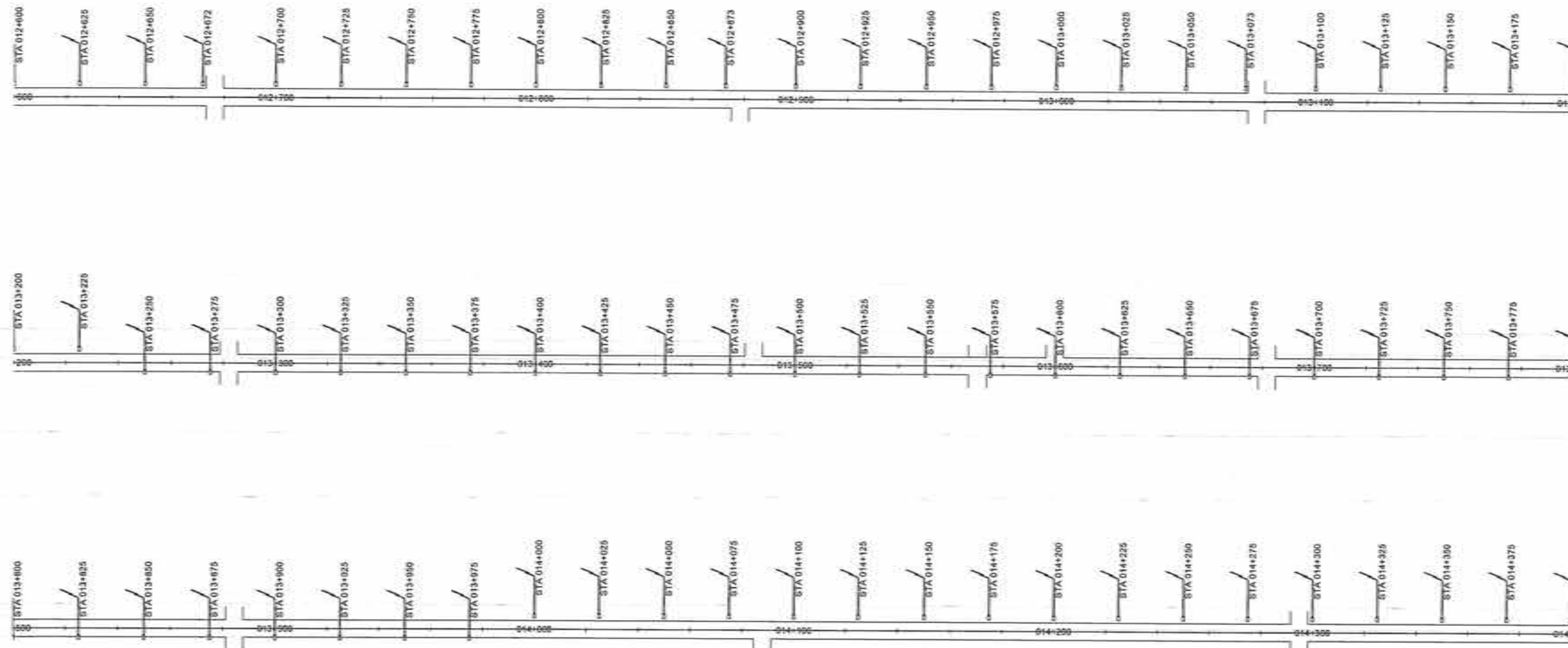
LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
357	STA. 009+325.000	
358	STA. 009+350.000	
359	STA. 009+375.000	
360	STA. 009+400.000	
361	STA. 009+425.000	
362	STA. 009+450.000	
363	STA. 009+475.000	
364	STA. 009+500.000	
365	STA. 009+525.000	
366	STA. 009+550.000	
367	STA. 009+575.000	
368	STA. 009+600.000	
369	STA. 009+625.000	
370	STA. 009+650.000	
371	STA. 009+675.000	
372	STA. 009+700.000	
373	STA. 009+725.000	
374	STA. 009+750.000	
375	STA. 009+775.000	
376	STA. 009+800.000	
377	STA. 009+825.000	
378	STA. 009+850.000	
379	STA. 009+875.000	
380	STA. 009+900.000	
381	STA. 009+925.000	
382	STA. 009+950.000	
383	STA. 009+975.000	
384	STA. 010+000.000	
385	STA. 010+025.000	
386	STA. 010+050.000	
387	STA. 010+075.000	
388	STA. 010+100.000	
389	STA. 010+125.000	
390	STA. 010+150.000	
391	STA. 010+175.000	
392	STA. 010+200.000	
393	STA. 010+225.000	
394	STA. 010+250.000	
395	STA. 010+275.000	
396	STA. 010+300.000	
397	STA. 010+325.000	
398	STA. 010+350.000	
399	STA. 010+375.000	
400	STA. 010+400.000	
401	STA. 010+425.000	
402	STA. 010+450.000	
403	STA. 010+475.000	
404	STA. 010+500.000	
405	STA. 010+525.000	
406	STA. 010+550.000	
407	STA. 010+575.000	
408	STA. 010+600.000	
409	STA. 010+625.000	
410	STA. 010+650.000	
411	STA. 010+675.000	
412	STA. 010+700.000	
413	STA. 010+725.000	
414	STA. 010+750.000	
415	STA. 010+775.000	
416	STA. 010+800.000	

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MACSAYSA AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	SHEET CONTENTS STRAIGHT LINE DIAGRAM	DRAFTED AND PREPARED  JAMES LEE T. ARIETA ENGINEER II DATE	REVIEWED  DENZIL L. SEMPIO ENGINEER I DATE	SUBMITTED  JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDING APPROVAL  NOELITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE	APPROVED  JUDY B. CORDONA REGIONAL DIRECTOR DATE	SET NO. A	SHEET NO. 16
									16



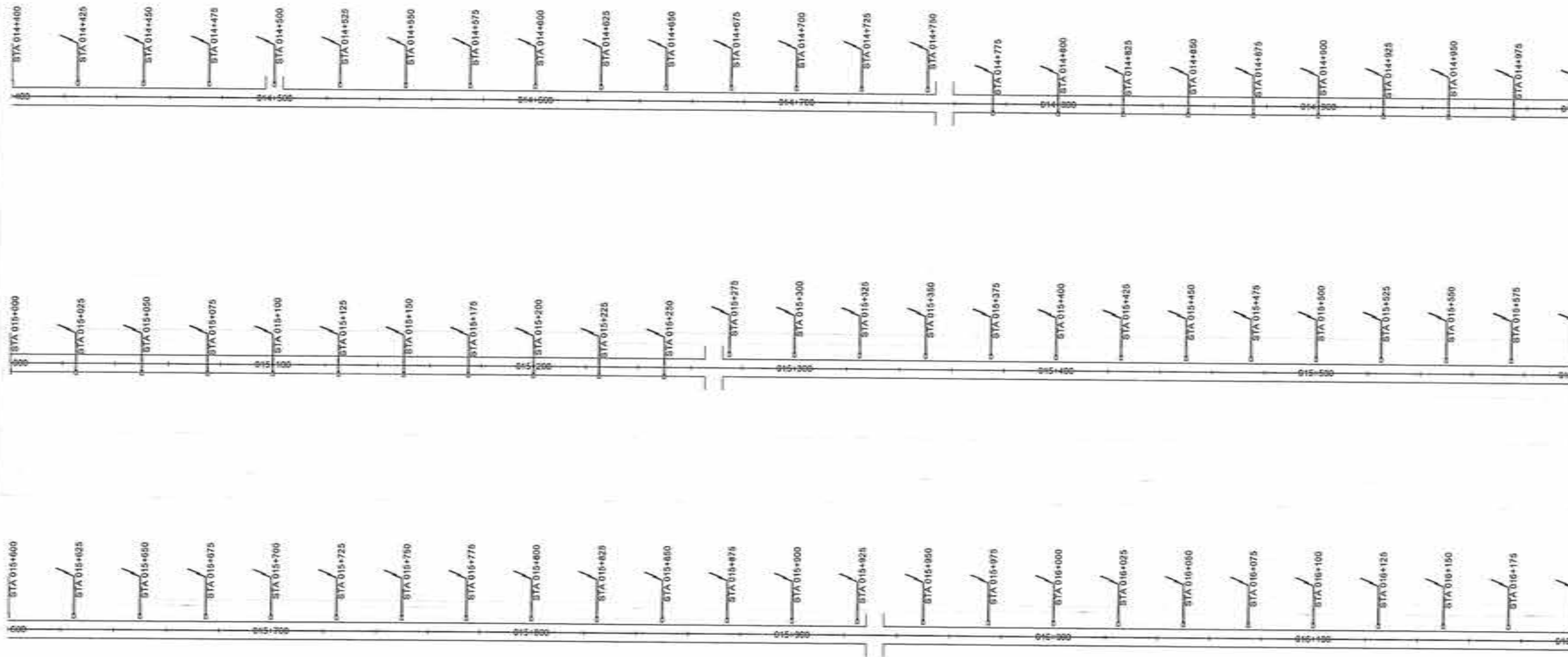
LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
417		STA. 010+825.000
418		STA. 010+850.000
419		STA. 010+875.000
420		STA. 010+900.000
421		STA. 010+925.000
422		STA. 010+950.000
423		STA. 010+975.000
424		STA. 011+000.000
425		STA. 011+025.000
426		STA. 011+050.000
427		STA. 011+075.000
428		STA. 011+100.000
429		STA. 011+125.000
430		STA. 011+150.000
431		STA. 011+175.000
432		STA. 011+200.000
433		STA. 011+225.000
434		STA. 011+250.000
435		STA. 011+275.000
436		STA. 011+300.000
437		STA. 011+325.000
438		STA. 011+350.000
439		STA. 011+375.000
440		STA. 011+400.000
441		STA. 011+425.000
442		STA. 011+450.000
443		STA. 011+475.000
444		STA. 011+500.000
445		STA. 011+525.000
446		STA. 011+550.000
447		STA. 011+575.000
448		STA. 011+600.000
449		STA. 011+625.000
450		STA. 011+650.000
451		STA. 011+675.000
452		STA. 011+700.000
453		STA. 011+725.000
454		STA. 011+750.000
455		STA. 011+775.000
456		STA. 011+800.000
457		STA. 011+825.000
458		STA. 011+850.000
459		STA. 011+875.000
460		STA. 011+900.000
461		STA. 011+925.000
462		STA. 011+950.000
463		STA. 011+975.000
464		STA. 012+000.000
465		STA. 012+025.000
466		STA. 012+050.000
467		STA. 012+075.000
468		STA. 012+100.000
469		STA. 012+125.000
470		STA. 012+150.000
471		STA. 012+175.000
472		STA. 012+200.000
473		STA. 012+225.000
474		STA. 012+250.000
475		STA. 012+275.000
476		STA. 012+300.000
477		STA. 012+325.000
478		STA. 012+350.000
479		STA. 012+375.000
480		STA. 012+400.000
481		STA. 012+425.000
482		STA. 012+450.000
483		STA. 012+475.000
484		STA. 012+500.000
485		STA. 012+525.000
486		STA. 012+550.000
487		STA. 012+575.000
488		STA. 012+600.000

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	 JAMES E. T. ARIETA ENGINEER I	 DENYS L. SEMPIO ENGINEER I	 JUDY A. T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	 JOSE LUIS B. CABALLERO ASSISTANT REGIONAL DIRECTOR	 JUDY B. CORDON REGIONAL DIRECTOR		

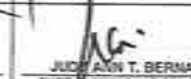


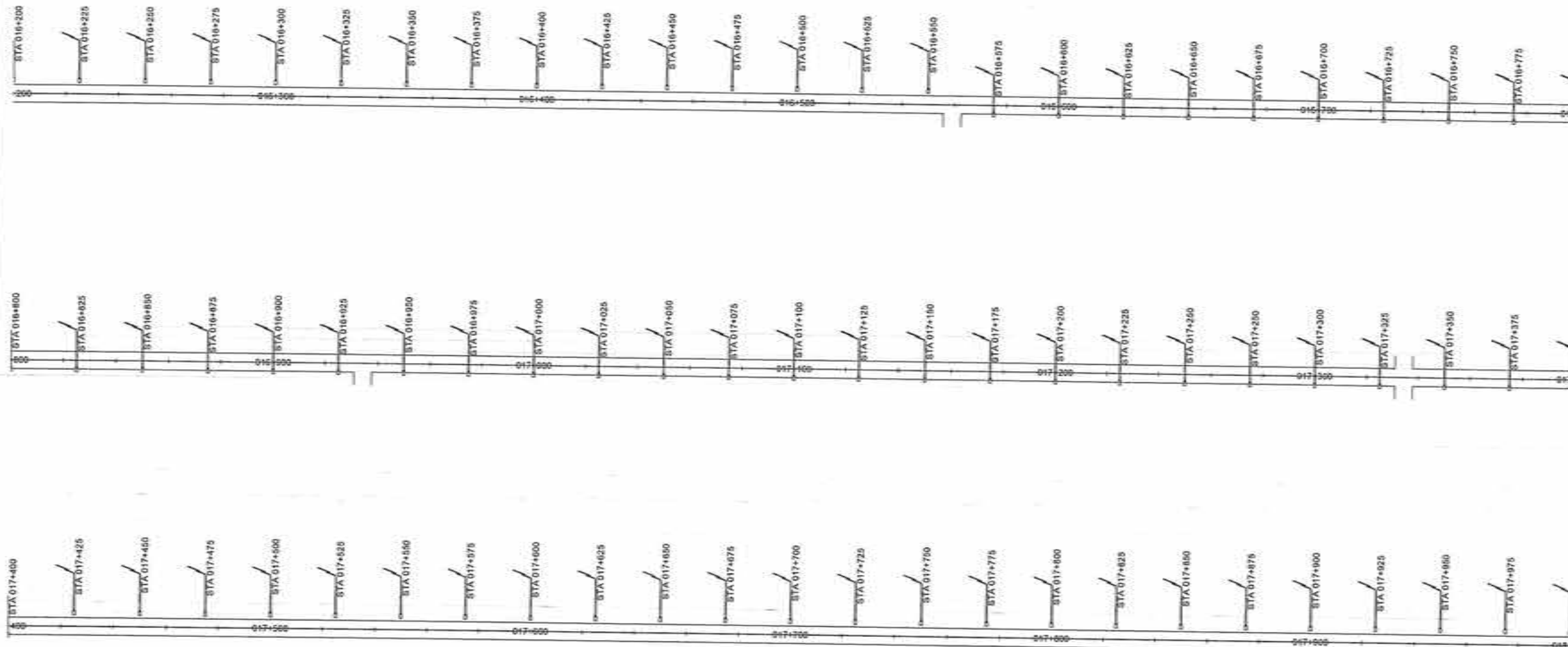
LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
488	STA. 012+500.000	
489	STA. 012+625.000	
490	STA. 012+650.000	
491	STA. 012+672.000	
492	STA. 012+700.000	
493	STA. 012+725.000	
494	STA. 012+750.000	
495	STA. 012+775.000	
496	STA. 012+800.000	
497	STA. 012+825.000	
498	STA. 012+850.000	
499	STA. 012+875.000	
500	STA. 012+900.000	
501	STA. 012+925.000	
502	STA. 012+950.000	
503	STA. 012+975.000	
504	STA. 013+000.000	
505	STA. 013+025.000	
506	STA. 013+050.000	
507	STA. 013+075.000	
508	STA. 013+100.000	
509	STA. 013+125.000	
510	STA. 013+150.000	
511	STA. 013+175.000	
512	STA. 013+200.000	
513	STA. 013+225.000	
514		STA. 013+250.000
515		STA. 013+275.000
516		STA. 013+300.000
517		STA. 013+325.000
518		STA. 013+350.000
519		STA. 013+375.000
520		STA. 013+400.000
521		STA. 013+425.000
522		STA. 013+450.000
523		STA. 013+475.000
524		STA. 013+500.000
525		STA. 013+525.000
526		STA. 013+550.000
527		STA. 013+575.000
528		STA. 013+600.000
529		STA. 013+625.000
530		STA. 013+650.000
531		STA. 013+675.000
532		STA. 013+700.000
533		STA. 013+725.000
534		STA. 013+750.000
535		STA. 013+775.000
536		STA. 013+800.000
537		STA. 013+825.000
538		STA. 013+850.000
539		STA. 013+875.000
540		STA. 013+900.000
541		STA. 013+925.000
542		STA. 013+950.000
543		STA. 013+975.000
544		STA. 014+000.000
545	STA. 014+025.000	
546	STA. 014+050.000	
547	STA. 014+075.000	
548	STA. 014+100.000	
549	STA. 014+125.000	
550	STA. 014+150.000	
551	STA. 014+175.000	
552	STA. 014+200.000	
553	STA. 014+225.000	
554	STA. 014+250.000	
555	STA. 014+275.000	
556	STA. 014+300.000	
557	STA. 014+325.000	
558	STA. 014+350.000	
559	STA. 014+375.000	
560	STA. 014+400.000	

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAFTED AND PREPARED	REVIEWED	DESIGNED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAHAN-MATANAO RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	 JAMES LEE T. ARIETA ENGINEER I DATE:	 DENNIS M. SEMPIO ENGINEER DATE:	 JUDY ANN T. BERNARDINO CHIEF PLANNING AND DESIGN DIVISION DATE:	 JOSE LITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	 JUBY B. CORDON REGIONAL DIRECTOR DATE:	A 18	18 21



LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
560	STA. 014+400.000	
561	STA. 014+425.000	
562	STA. 014+450.000	
563	STA. 014+475.000	
564	STA. 014+500.000	
565	STA. 014+525.000	
566	STA. 014+550.000	
567	STA. 014+575.000	
568	STA. 014+600.000	
569	STA. 014+625.000	
570	STA. 014+650.000	
571	STA. 014+675.000	
572	STA. 014+700.000	
573	STA. 014+725.000	
574	STA. 014+750.000	
575		STA. 014+775.000
576		STA. 014+800.000
577		STA. 014+825.000
578		STA. 014+850.000
579		STA. 014+875.000
580		STA. 014+900.000
581		STA. 014+925.000
582		STA. 014+950.000
583		STA. 014+975.000
584		STA. 015+000.000
585		STA. 015+025.000
586		STA. 015+050.000
587		STA. 015+075.000
588		STA. 015+100.000
589		STA. 015+125.000
590		STA. 015+150.000
591		STA. 015+175.000
592		STA. 015+200.000
593		STA. 015+225.000
594		STA. 015+250.000
595	STA. 015+275.000	
596	STA. 015+300.000	
597	STA. 015+325.000	
598	STA. 015+350.000	
599	STA. 015+375.000	
600	STA. 015+400.000	
601	STA. 015+425.000	
602	STA. 015+450.000	
603	STA. 015+475.000	
604	STA. 015+500.000	
605	STA. 015+525.000	
606	STA. 015+550.000	
607	STA. 015+575.000	
608	STA. 015+600.000	
609	STA. 015+625.000	
610	STA. 015+650.000	
611	STA. 015+675.000	
612	STA. 015+700.000	
613	STA. 015+725.000	
614	STA. 015+750.000	
615	STA. 015+775.000	
616	STA. 015+800.000	
617	STA. 015+825.000	
618	STA. 015+850.000	
619	STA. 015+875.000	
620	STA. 015+900.000	
621	STA. 015+925.000	
622	STA. 015+950.000	
623	STA. 015+975.000	
624	STA. 016+000.000	
625	STA. 016+025.000	
626	STA. 016+050.000	
627	STA. 016+075.000	
628	STA. 016+100.000	
629	STA. 016+125.000	
630	STA. 016+150.000	
631	STA. 016+175.000	
632	STA. 016+200.000	

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	DESIGNED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	STRAIGHT LINE DIAGRAM	 JAMES LEE T. ARIETA ENGINEER II DATE:	 DENVIS ALARCON SEMPIO ENGINEER I DATE:	 JUDY ANN T. BERNARDINO CHIEF PLANNING AND DESIGN DIVISION DATE:	 JOSE LUIS B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	 JUBY B. CORDON REGIONAL DIRECTOR DATE:	A 19	21 29



LIGHTING ARRANGEMENT		
NO	LEFT	RIGHT
632	STA. 016+200.000	
633	STA. 016+225.000	
634	STA. 016+250.000	
635	STA. 016+275.000	
636	STA. 016+300.000	
637	STA. 016+325.000	
638	STA. 016+350.000	
639	STA. 016+375.000	
640	STA. 016+400.000	
641	STA. 016+425.000	
642	STA. 016+450.000	
643	STA. 016+475.000	
644	STA. 016+500.000	
645	STA. 016+525.000	
646	STA. 016+550.000	
647		STA. 016+575.000
648		STA. 016+600.000
649		STA. 016+625.000
650		STA. 016+650.000
651		STA. 016+675.000
652		STA. 016+700.000
653		STA. 016+725.000
654		STA. 016+750.000
655		STA. 016+775.000
656		STA. 016+800.000
657		STA. 016+825.000
658		STA. 016+850.000
659		STA. 016+875.000
660		STA. 016+900.000
661		STA. 016+925.000
662		STA. 016+950.000
663		STA. 016+975.000
664		STA. 017+000.000
665		STA. 017+025.000
666		STA. 017+050.000
667		STA. 017+075.000
668		STA. 017+100.000
669		STA. 017+125.000
670		STA. 017+150.000
671		STA. 017+175.000
672		STA. 017+200.000
673		STA. 017+225.000
674		STA. 017+250.000
675		STA. 017+275.000
676		STA. 017+300.000
677		STA. 017+325.000
678		STA. 017+350.000
679		STA. 017+375.000
680		STA. 017+400.000
681	STA. 017+425.000	
682	STA. 017+450.000	
683	STA. 017+475.000	
684	STA. 017+500.000	
685	STA. 017+525.000	
686	STA. 017+550.000	
687	STA. 017+575.000	
688	STA. 017+600.000	
689	STA. 017+625.000	
690	STA. 017+650.000	
691	STA. 017+675.000	
692	STA. 017+700.000	
693	STA. 017+725.000	
694	STA. 017+750.000	
695	STA. 017+775.000	
696	STA. 017+800.000	
697	STA. 017+825.000	
698	STA. 017+850.000	
699	STA. 017+875.000	
700	STA. 017+900.000	
701	STA. 017+925.000	
702	STA. 017+950.000	
703	STA. 017+975.000	
704	STA. 018+000.000	



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAQ RD, DAVAO DEL SUR.

SHEET CONTENTS:
STRAIGHT LINE DIAGRAM

DRAFTED AND PREPARED:

JAMES LEE T. ARIETA
ENGINEER II
DATE: _____

REVIEWED:

DENYSA L. SEMPIO
ENGINEER
DATE: _____

SUBMITTED:

JHON T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL:

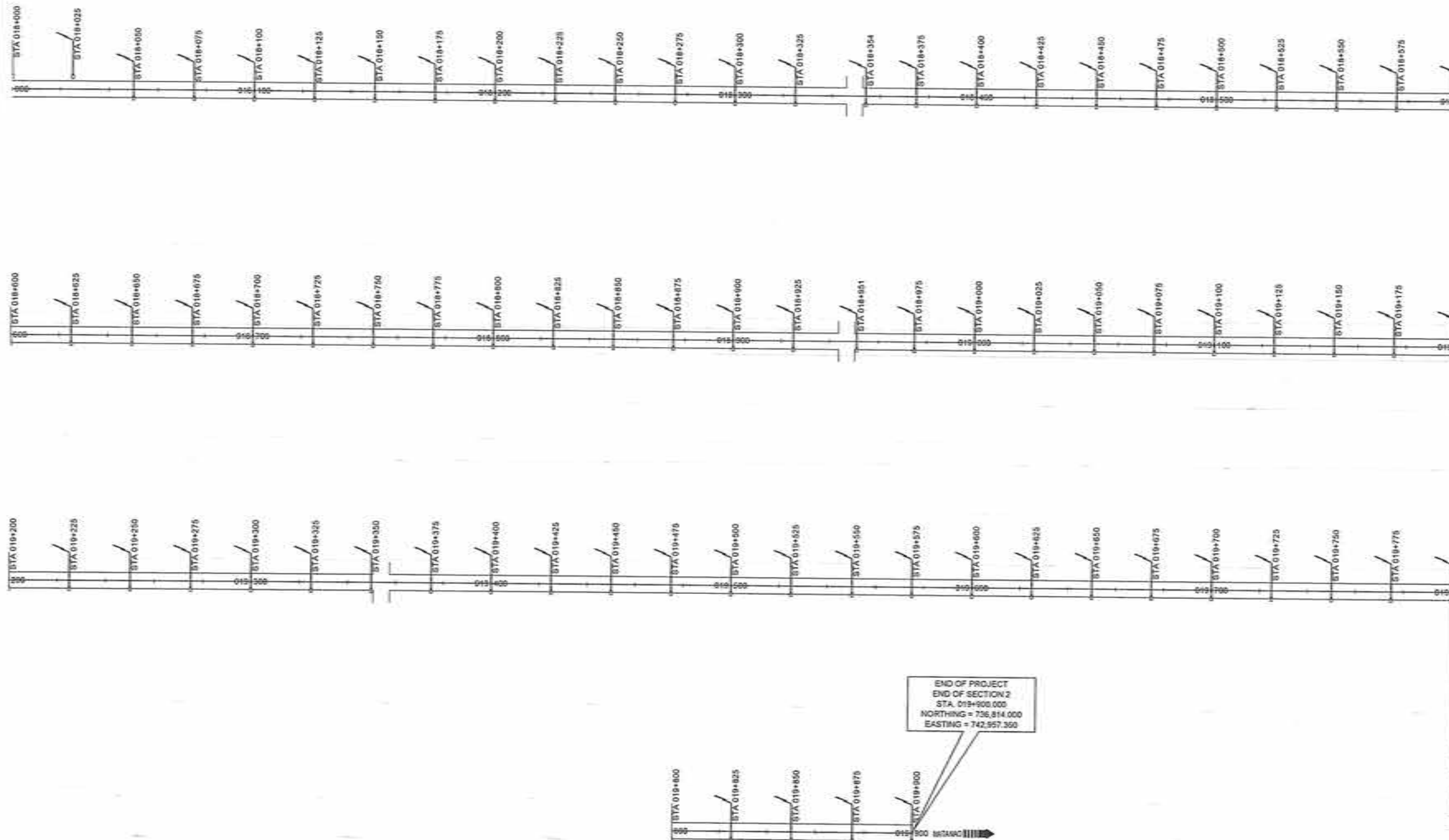
JOSE P. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

APPROVED:

JUBY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SET NO.
A
20 21

SHEET NO.
20
29



LIGHTING ARRANGEMENT		
NO.	LEFT	RIGHT
704	STA. 018+000.000	
705	STA. 018+025.000	
706		STA. 018+050.000
707		STA. 018+075.000
708		STA. 018+100.000
709		STA. 018+125.000
710		STA. 018+150.000
711		STA. 018+175.000
712		STA. 018+200.000
713		STA. 018+225.000
714		STA. 018+250.000
715		STA. 018+275.000
716		STA. 018+300.000
717		STA. 018+325.000
718		STA. 018+350.000
719		STA. 018+375.000
720		STA. 018+400.000
721		STA. 018+425.000
722		STA. 018+450.000
723		STA. 018+475.000
724		STA. 018+500.000
725		STA. 018+525.000
726		STA. 018+550.000
727		STA. 018+575.000
728		STA. 018+600.000
729		STA. 018+625.000
730		STA. 018+650.000
731		STA. 018+675.000
732		STA. 018+700.000
733		STA. 018+725.000
734		STA. 018+750.000
735		STA. 018+775.000
736		STA. 018+800.000
737		STA. 018+825.000
738		STA. 018+850.000
739		STA. 018+875.000
740		STA. 018+900.000
741		STA. 018+925.000
742		STA. 018+950.000
743		STA. 018+975.000
744		STA. 019+000.000
745		STA. 019+025.000
746		STA. 019+050.000
747		STA. 019+075.000
748		STA. 019+100.000
749		STA. 019+125.000
750		STA. 019+150.000
751		STA. 019+175.000
752		STA. 019+200.000
753		STA. 019+225.000
754		STA. 019+250.000
755		STA. 019+275.000
756		STA. 019+300.000
757		STA. 019+325.000
758		STA. 019+350.000
759		STA. 019+375.000
760		STA. 019+400.000
761		STA. 019+425.000
762		STA. 019+450.000
763		STA. 019+475.000
764		STA. 019+500.000
765		STA. 019+525.000
766		STA. 019+550.000
767		STA. 019+575.000
768		STA. 019+600.000
769		STA. 019+625.000
770		STA. 019+650.000
771		STA. 019+675.000
772		STA. 019+700.000
773		STA. 019+725.000
774		STA. 019+750.000
775		STA. 019+775.000
776		STA. 019+800.000
777		STA. 019+825.000
778		STA. 019+850.000
779		STA. 019+875.000
780		STA. 019+900.000



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
STRAIGHT LINE DIAGRAM

DRAFTED AND PREPARED:
JAMES LEE T. ARIETA
ENGINEER I
DATE:

REVIEWED:
DENNIS ALDRIN A. SENIPIO
ENGINEER II
DATE:

SUBMITTED:
JUDY ANN T. BERNARDINO
CHIEF, TRAINING AND DESIGN DIVISION
DATE:

RECOMMENDING APPROVAL:
JOSELUITO C. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE:

APPROVED:
JUDY B. CORDON
REGIONAL DIRECTOR
DATE:

SHEET NO.
A
21/21

SHEET NO.
21
29

B. TRAFFIC MANAGEMENT DETAILS

USE OF TRAFFIC CONTROLLERS (FLAGMEN)

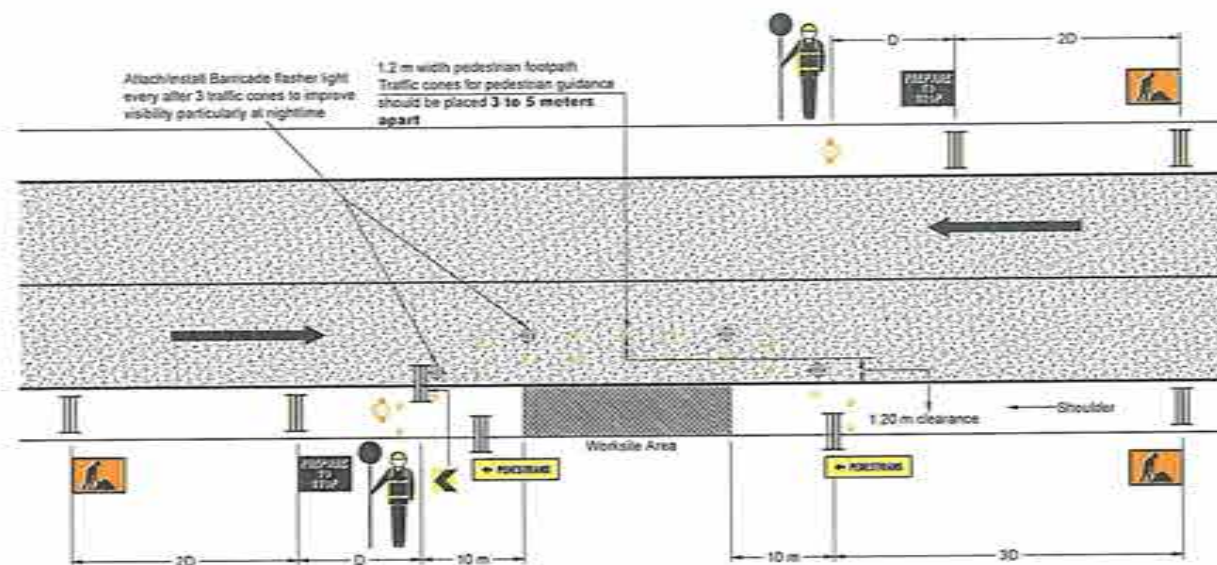
1. THE TRAFFIC CONTROLLER USES A PORTABLE STOP/SLOW HAND HELD SIGN OR RED AND GREEN STOP/GO FLAG TO CONTROL THE TRAFFIC.
2. WHEN CONTROLLING TRAFFIC, A TRAFFIC CONTROLLER SHOULD ENSURE THAT A SYMBOLIC WORKMAN SIGN AND PREPARE TO STOP SIGN AND ADDITIONAL SIGNS AND DEVICES REQUIRED FOR THE OVERALL WORKSITE TRAFFIC MANAGEMENT SCHEME, ARE IN PLACE TO PROVIDE ADVANCE WARNING AND INFORMATION TO ROAD USERS.
3. THE TRAFFIC CONTROLLER SHOULD STAND APPROXIMATELY 30 METERS IN ADVANCE OF WORK AREA.
4. THE TRAFFIC CONTROLLER SHOULD BE VISIBLE TO THE APPROACHING ROAD USER AND STAND ON THE CURB SIDE OR SHOULDER CLEAR OF THE TRAVELLED PATH TO VIEW BOTH THE WORKSITE AND ONCOMING TRAFFIC.
5. TRAFFIC CONTROLLER WILL NEED TO USE TWO-WAY RADIOS TO ENSURE ADEQUATE COMMUNICATION OVER LONG DISTANCE OR WHERE THERE IS LIMITED VISIBILITY.

NOTE:

1. ROADWORK AHEAD - THE FIRST ADVANCE WARNING SIGN SEEN BY DRIVERS, SHOULD BE LOCATED AT MINIMUM DISTANCE "20" METERS (D IS THE APPROACHED SPEED OF TRAFFIC) BEFORE THE START OF THE WORKS, OR IF THERE IS A TRANSITION AREA, THE START OF THE TAPER.
2. OTHER SIGN IN ADVANCE WARNING AREA SHOULD BE SPACE "D" METERS APART.
3. LONGITUDINAL BUFFER SPACE SHOULD BE 20 TO 30 METERS LONG BUT CAN BE EXTENDED IF THE WORK AREA IS HIDDEN FROM APPROACHING ROAD USER, e.g. BY A CURVE OR CREST.
4. LATERAL BUFFER SPACE SHOULD BE A MINIMUM OF 1.2 METERS IN SLOW SPEED AREAS, OR IN HIGH SPEED AND HIGH VOLUME AREAS, A LARGE ADJACENT CLEARANCE IN DESIRABLE WITH SAFETY BARRIERS ADJACENT TO THE WORK AREA.
5. LOCATION OF TRAFFIC CONTROLLER SHOULD BE 30 METERS IN ADVANCE OF WORK AREA, WITH GOOD SITE DISTANCE OF ONCOMING TRAFFIC, WITH AN ESCAPE PATH IN AN EMERGENCY, WHERE THE OTHER TRAFFIC CONTROLLER IS VISIBLE, AND CAN BE SEEN BY THE ROAD USER.

REFERENCES:

- D.O. NO.13, SERIES 2015 - GUIDELINE FOR THE PREPARATION OF COST ESTIMATES FOR THE TRAFFIC MANAGEMENT AND SAFETY AND HEALTH REQUIREMENTS FOR THE CONSTRUCTION AND MAINTENANCE OF ROADS, BRIDGES AND SAFETY AND HEALTH.
- ROAD SAFETY MANUAL 2004
- PART 2: ROAD SAFETY AND PAVEMENT DESIGN MANUAL 2012



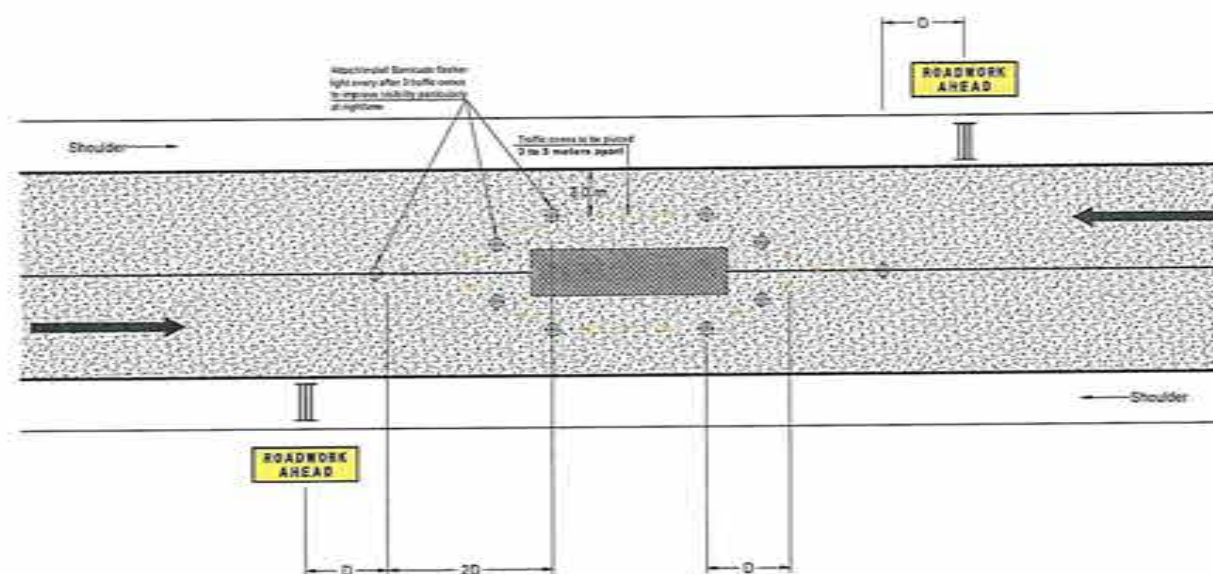
SCHEME 1
CONSTRUCTION OF DRAINAGE STRUCTURES, GRAVEL/PAVED SHOULDER, STREETLIGHTS, OR SIDEWALK WITH CURB AND GUTTER

APPROACH CLEARANCE AREA	
SPEED OF TRAFFIC (KPH)	BUFFER LENGTH (m)
≤ 40	0
50	0
60	20-30
70	20-30
80	20-30
90	20-30
100	20-30
110	20-30

ADVANCE WARNING AREA	
SPEED OF TRAFFIC (KPH)	SIGNAGE SPACING ("D" VALUE) (m)
≤ 40	0-5
50	15
60	45
70	70
80	80
90	90
100	100
110	110

TERMINATION AREA			
SPEED OF TRAFFIC (KPH)	LENGTH OF DIVERGENCE/LATERAL SHIFT TAPER (m)	LENGTH OF MERGE TAPER (m)	LENGTH OF STRAIGHT SECTION BETWEEN MULTILANE CLOSURES (m)
≤ 40	40	80	1/2 OF LEAD TAPER LENGTH
50	50	100	
60	60	120	
70	70	140	
80	80	160	
90	90	180	
100	100	200	
110	110	220	

	COMMENTS
1. ROAD LAYOUT	
2. ROAD GEOMETRY	
3. SIGHT DISTANCE	
4. VULNERABLE ROAD USER FACILITIES	
5. PAVEMENT CONDITION	
6. EXISTING SIGNS	
7. LIGHTING FACILITIES	
8. ABUTTING ACCESSES	
9. ADJOINING ROAD NETWORKS	
10. OTHER POSSIBLE CONSTRAINTS	

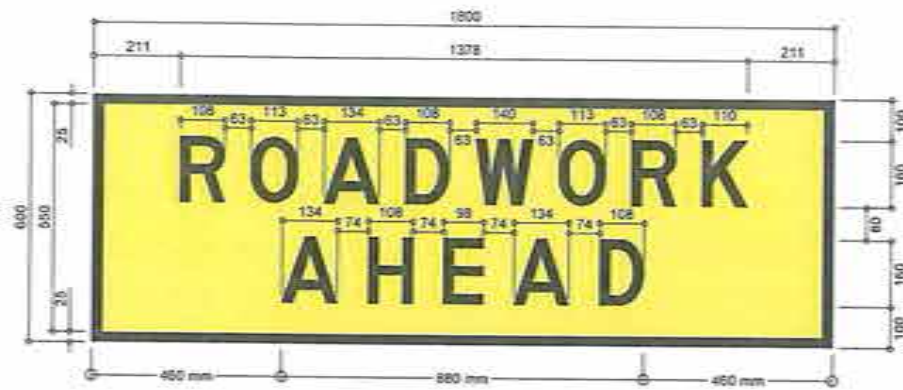


SCHEME 4
PREPARING FOR THERMOPLASTIC PAVEMENT MARKINGS

TRANSITION AREA			
SPEED OF TRAFFIC (KPH)	LENGTH OF DIVERGENCE/LATERAL SHIFT TAPER (m)	LENGTH OF MERGE TAPER (m)	LENGTH OF STRAIGHT SECTION BETWEEN MULTILANE CLOSURES (m)
≤ 40	40	80	80
50	50	100	75
60	60	120	90
70	70	140	105
80	80	160	120
90	90	180	135
100	100	200	150
110	110	220	165

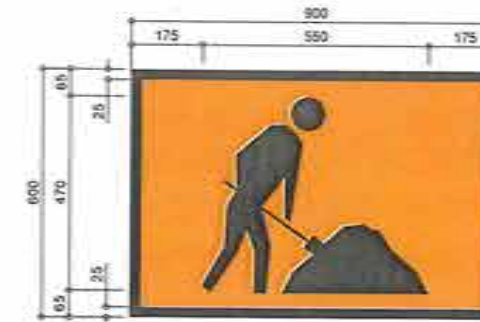
1 TRAFFIC MANAGEMENT LAYOUT

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI COR. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION	SHEET CONTENTS	DRAWN AND PREPARED	REVIEWED	SUBMITTED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR	TRAFFIC MANAGEMENT LAYOUT	 JAMES LEE T. ARIETA ENGINEER II DATE: _____	 DENVER LORIN A. SEMPIO ENGINEER I DATE: _____	 JUDY ANN T. BERNARDINO CHIEF PLANNING AND DESIGN DIVISION DATE: _____	 JOSEcito B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE: _____	 JUDY B. CORDON REGIONAL DIRECTOR DATE: _____	A 01/07	22 29



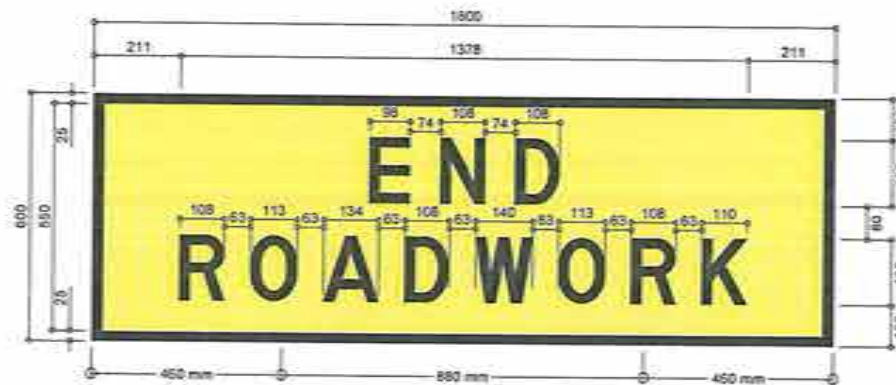
ROADWORK AHEAD DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-1	1800 X 600	LINE 1 - BLACK 200 DM LINE 2 - BLACK 160 DM	YELLOW REFLECTORIZED	ADVANCE WARNING SIGNS



WORKMEN AHEAD (SYMBOLIC) DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-5	900 X 600	BLACK	RED/ORANGE - FLUORESCENT FOR DAY USE - REFLECTORIZED FOR NIGHT	ADVANCE WARNING SIGNS



END ROADWORK DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T2-16	1800 X 600	LINE 1 - BLACK 200 DM LINE 2 - BLACK 160 DM	YELLOW REFLECTORIZED	ADVANCE WARNING SIGNS



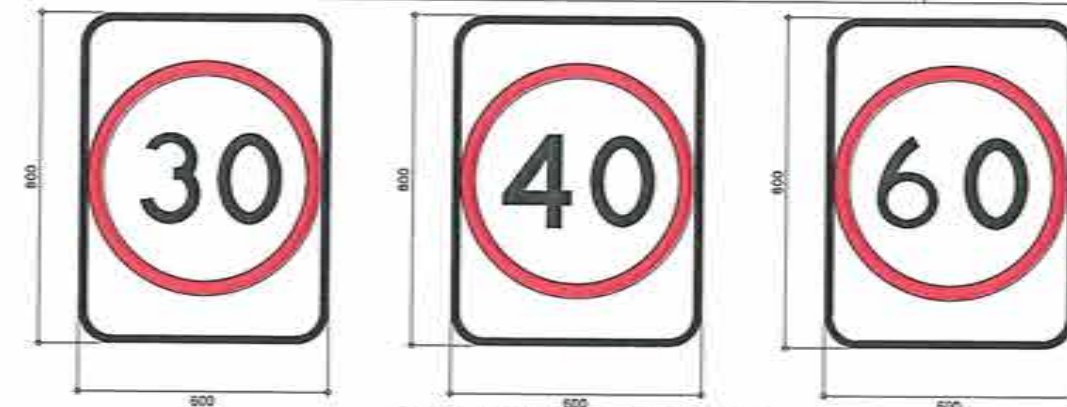
PREPARED TO STOP DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-18	900 X 600	LINE 1 - WHITE 120 DM LINE 2 - WHITE 120 DM LINE 3 - WHITE 120 DM REFLECTORIZED	RED REFLECTORIZED	REGULATORY SIGNS



ROAD MACHINERY AHEAD DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-3	1200 X 600	LINE 1 - BLACK 100 EM LINE 2 - BLACK 120 EM LINE 3 - BLACK 100 EM	YELLOW REFLECTORIZED	ADVANCE WARNING SIGNS



SPEED RESTRICTION DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
R4-1	600 X 800 (SIZE B)	BLACK 240 DN CIRCLE - 600 DIA. RED	WHITE REFLECTORIZED RED CIRCLE - REFLECTORIZED	REGULATORY SIGNS



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS
TRAFFIC MANAGEMENT PROGRAM SIGNAGE

DRAFTED AND PREPARED
JAMES LEE T. ARIETA
ENGINEER I
DATE: _____

REVIEWED
DENNIS S. SEMPIO
ENGINEER I
DATE: _____

DESIGNED
JUDY B. CORDON
CHIEF PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL
JOSEPH B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

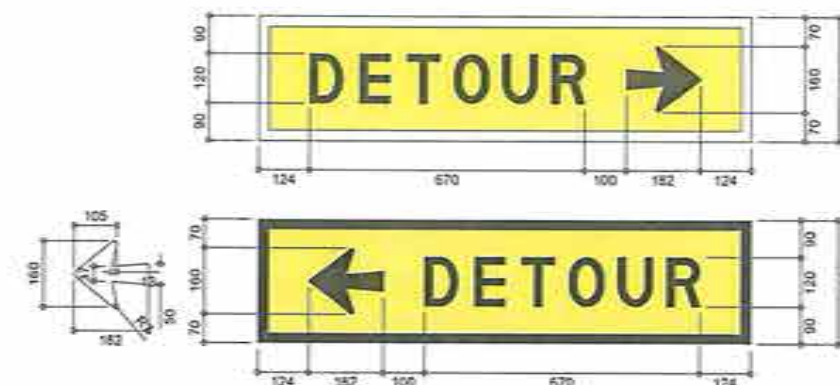
APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SET NO. 23
SHEET NO. 29



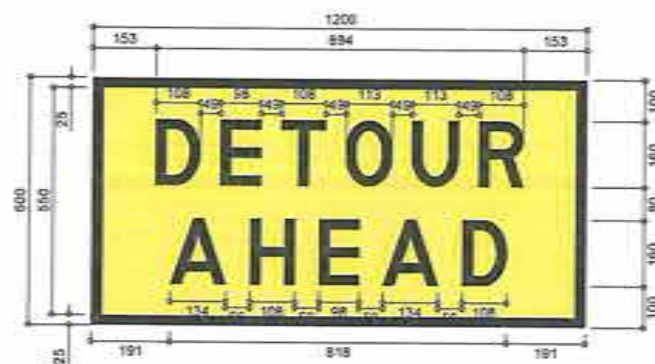
END SPEED RESTRICTION DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
R4-12	600 X 600 (SIZE G)	SYMBOL - 600 DIA. BLACK	WHITE REFLECTORIZED	REGULATORY SIGNS



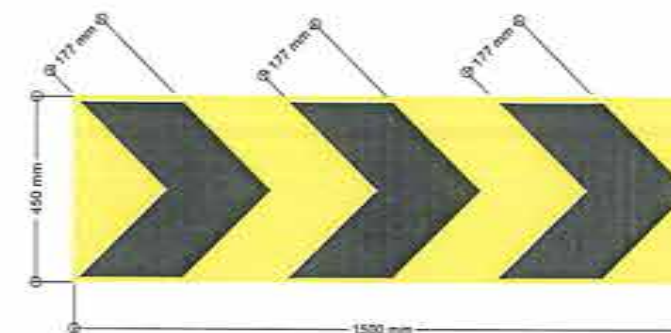
DETOUR (LEFT OR RIGHT) DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T5-1	1200 X 300	BLACK 120 EN	YELLOW REFLECTORIZED	DETOUR SIGNS



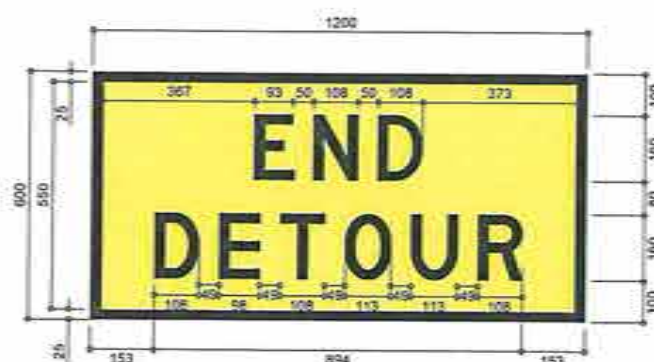
DETOUR AHEAD DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-6	1200 X 600	LINE 1 - BLACK 160 EN LINE 2 - BLACK 160 EN	YELLOW REFLECTORIZED	DETOUR SIGNS



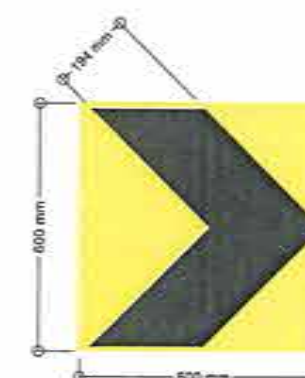
TEMPORARY HAZARD MARKER DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
TS-4	1500 X 450 TYPE B-1	BLACK 177 WIDE AT 45°	YELLOW REFLECTORIZED	TEMPORARY HAZARD MARKER



END DETOUR DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T2-23	1200 X 600	LINE 1 - BLACK 160 CM LINE 2 - BLACK 160 CM	YELLOW REFLECTORIZED	DETOUR SIGNS



TEMPORARY HAZARD MARKER DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
TS-5	600 X 600 TYPE B-1	BLACK 194 WIDE AT 45°	YELLOW REFLECTORIZED	TEMPORARY HAZARD MARKER



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GGK, CHURUS COR. B. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION

INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS

TRAFFIC MANAGEMENT PROGRAM SIGNAGE

DRAFTED AND PREPARED:

JAMES LEE T. ARIETA
ENGINEER II

DATE:

REVIEWED:

DENNIS S. SEMPIO
ENGINEER III

DATE:

SUBMITTED:

JUDY B. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION

DATE:

RECOMMENDING APPROVAL:

JOSELYN B. CABALLERO
ASSISTANT REGIONAL DIRECTOR

DATE:

APPROVED:

JUDY B. CORDON
REGIONAL DIRECTOR

DATE:

SET NO.

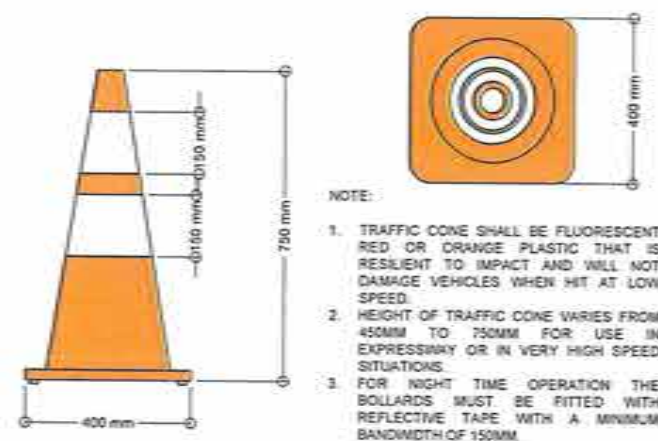
A
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DATE:

SHEET NO.

24
29

DATE:

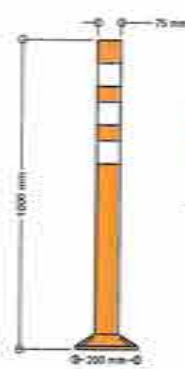


NOTE:

1. TRAFFIC CONE SHALL BE FLUORESCENT RED OR ORANGE PLASTIC THAT IS RESILIENT TO IMPACT AND WILL NOT DAMAGE VEHICLES WHEN HIT AT LOW SPEED.
2. HEIGHT OF TRAFFIC CONE VARIES FROM 450MM TO 750MM FOR USE IN EXPRESSWAY OR IN VERY HIGH SPEED SITUATIONS.
3. FOR NIGHT TIME OPERATION THE BOLLARDS MUST BE FITTED WITH REFLECTIVE TAPE WITH A MINIMUM BANDWIDTH OF 150MM.

SPACING	CONDITION
5 - 10 METERS	ON TAPER
	WHEN USED AROUND SMALL WORK SITES (MAY BE REDUCED TO 3m TO GUIDE PEDESTRIANS OR TO PREVENT TRAFFIC TAKING A WRONG TURN THOUGH A GAP IN THE LINE OF BOLLARDS)
10 - 20 METERS	WHEN USED AS LONGITUDINAL SEPARATION BETWEEN OPPOSING TRAFFIC FLOWS
	WHEN USED AS LONGITUDINAL SEPARATION OF TRAFFIC FROM THE WORKSITE OR CLOSED LANE (MAY BE INCREASED TO 50m WHERE THE LENGTH OF BOLLARDS EXCEEDS 1KM)

1 TRAFFIC CONE
SCALE NTS



2 SECTION
SCALE NTS



2 ISOMETRIC VIEW
SCALE NTS

SPECIFICATION	
REFLECTIVE:	ROAD SAFETY POLE
COLOR:	ORANGE
MATERIAL:	PU MATERIAL, ELASTIC, FLEXIBLE
REFLECTIVE FILM:	CRYSTAL LATTICE

NOTE:

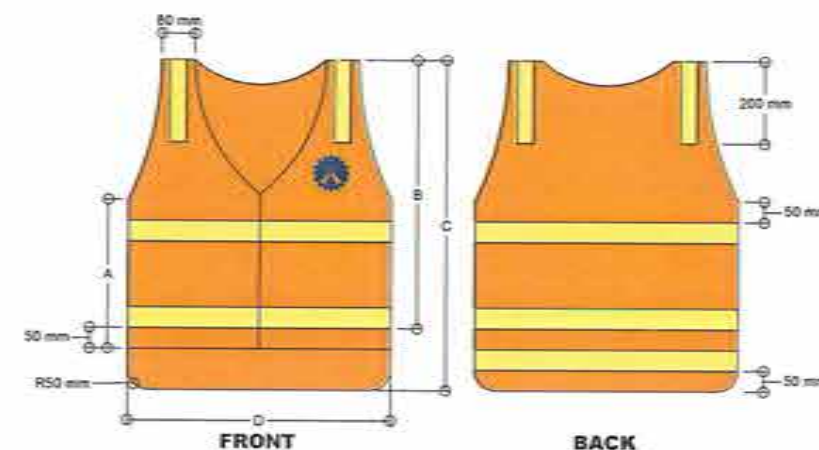
1. BOLLARDS SHALL BE FLUORESCENT RED OR ORANGE PLASTIC THAT IS RESILIENT TO IMPACT AND WILL NOT DAMAGE VEHICLES WHEN HIT AT LOW SPEED.
2. HEIGHT OF BOLLARDS MUST BE UP TO 1 METER.
3. FOR NIGHT TIME OPERATION THE BOLLARDS MUST BE FITTED WITH REFLECTIVE TAPE WITH A MINIMUM BANDWIDTH OF 250MM.
4. SPACING @ 0.60 M. O.C.

SPACING	CONDITION
5 - 10 METERS	ON TAPER
	WHEN USED AROUND SMALL WORK SITES (MAY BE REDUCED TO 3m TO GUIDE PEDESTRIANS OR TO PREVENT TRAFFIC TAKING A WRONG TURN THOUGH A GAP IN THE LINE OF BOLLARDS)
10 - 20 METERS	WHEN USED AS LONGITUDINAL SEPARATION BETWEEN OPPOSING TRAFFIC FLOWS
	WHEN USED AS LONGITUDINAL SEPARATION OF TRAFFIC FROM THE WORKSITE OR CLOSED LANE (MAY BE INCREASED TO 50m WHERE THE LENGTH OF BOLLARDS EXCEEDS 1KM)

2 FLEXIBLE BOLLARD DETAIL
SCALE NTS

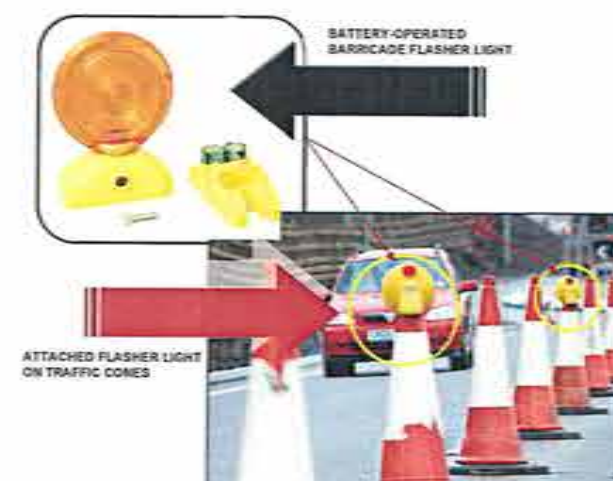
NOTE:

1. ALL PERSONNEL WORKING ON OR ADJACENT TO A ROADWORK SITE SHALL WEAR APPROPRIATE ROAD SAFETY MATERIALS SUCH AS HIGH VISIBILITY VEST (MADE FROM FLUORESCENT RED/ORANGE MATERIAL), HARD HAT AND SAFETY SHOES.
2. THE VEST SHALL BE WORN OVER NORMAL CLOTHING AND PROPERLY FASTENED SO THAT THE ENTIRE AVAILABLE AREA OF HIGH VISIBILITY MATERIAL CAN BE SEEN IN ANY DIRECTION. TO MAXIMIZE EFFECTIVENESS THE VEST SHOULD BE KEPT CLEAN AND IN GOOD CONDITION.
3. THE TRAFFIC SAFETY VEST SHALL BE MADE FROM FLUORESCENT RED OR ORANGE MATERIAL. THE VEST SHALL ALSO HAVE TWO (2) STRIPS OF YELLOW RETRO-REFLECTIVE MATERIAL AT THE FRONT AND THREE (3) STRIPS AT THE BACK. REFLECTIVE MATERIALS SHALL BE 50mm WIDE. DPWH LOGO SHALL BE 80mm DIAMETER. THE SAFETY VEST SHOULD HAVE A SECURE FASTENING PREFERABLY A ZIP.
4. THE JACKET MAY BE WORN OVER WET WEATHER CLOTHING. ALTERNATIVELY, WET WEATHER HIGH VISIBILITY CLOTHING SHALL BE MADE FROM WATER PROOF MATERIAL MATCHING THOSE PROPERTIES ABOVE FOR COLOR AND RETRO REFLECTIVITY.



SIZE	A (mm)	B (mm)	C (mm)	D (mm)
MEDIUM	280	600	750	580
LARGE	295	625	775	610
EXTRA LARGE	310	650	800	640

3 TRAFFIC SAFETY VEST DETAILS
SCALE NTS



4 BARRICADE FLASHER LIGHT
SCALE NTS



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
TRAFFIC CONE
FLEXIBLE BOLLARD DETAIL
TRAFFIC SAFETY VEST DETAIL
BARRICADE FLASHER LIGHT

DRAFTED AND PREPARED:
JAMES LEE T. ARIETA
ENGINEER I
DATE:

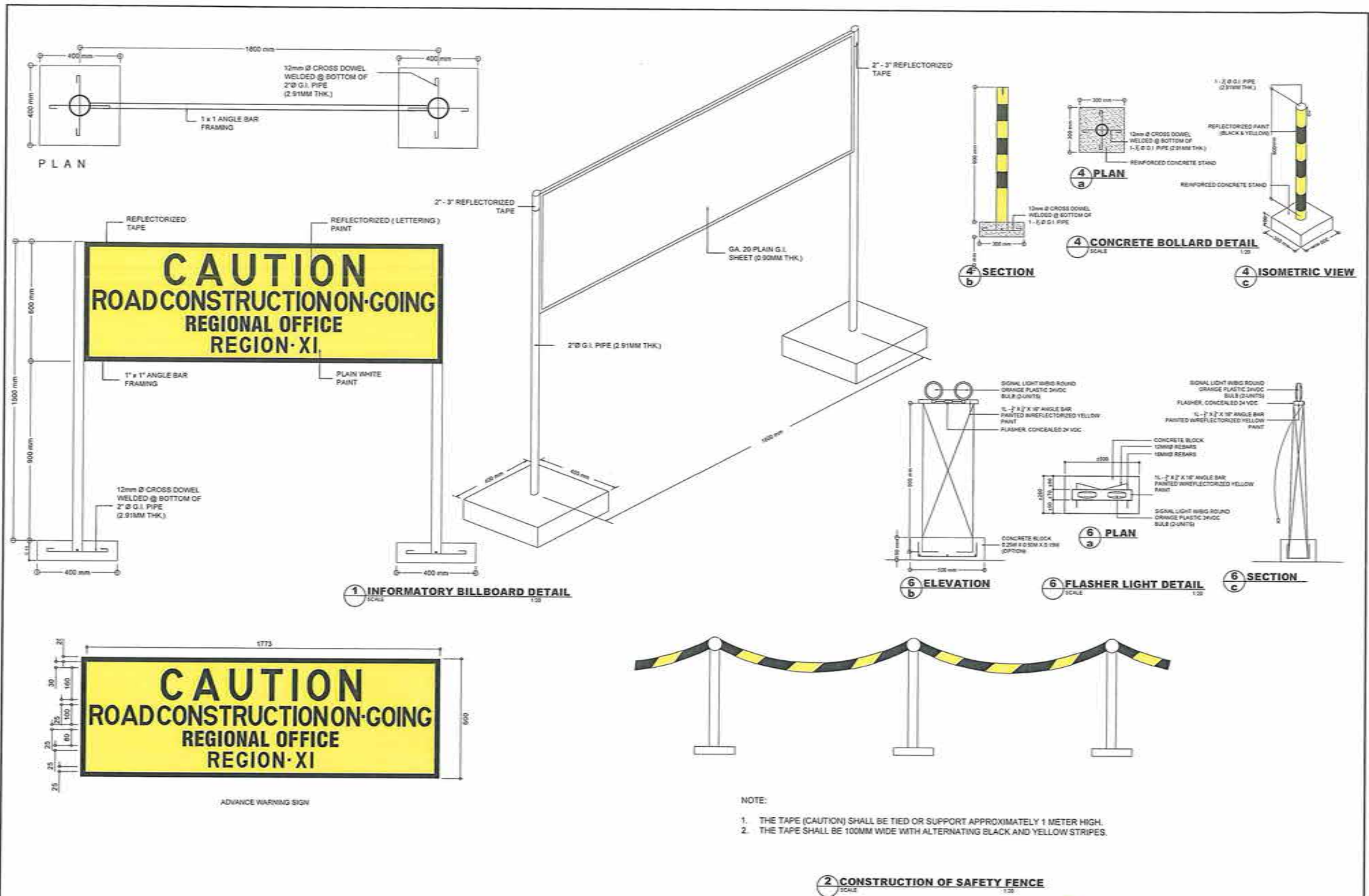
REVIEWED:
DENNIS L. SEMPIO
ENGINEER
DATE:

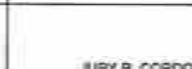
SUBMITTED:
JUDY B. CORDON
CHIEF, TRAINING AND DESIGN DIVISION
DATE:

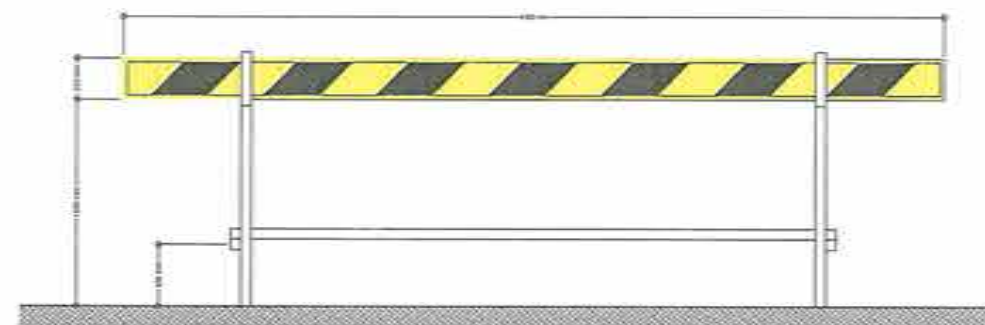
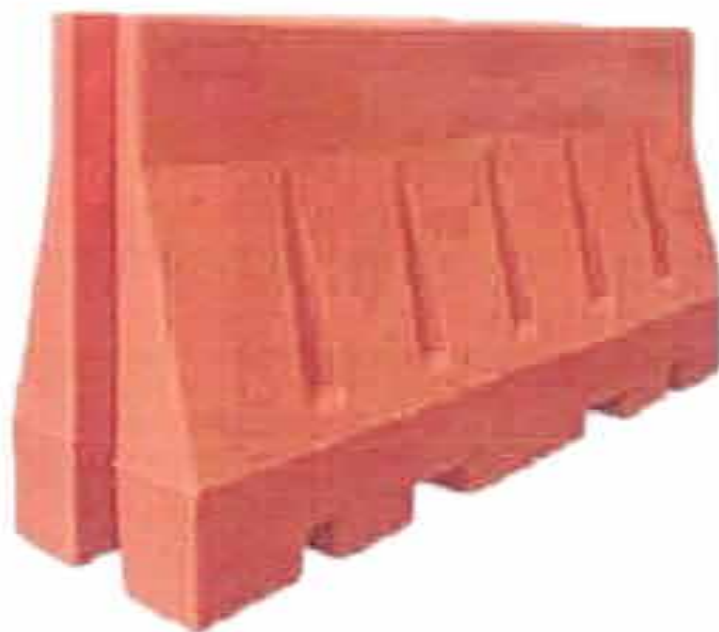
RECOMMENDING APPROVAL:
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE:

APPROVED:
JUDY B. CORDON
REGIONAL DIRECTOR
DATE:

SET NO. A
SHEET NO. 25
04 07 29



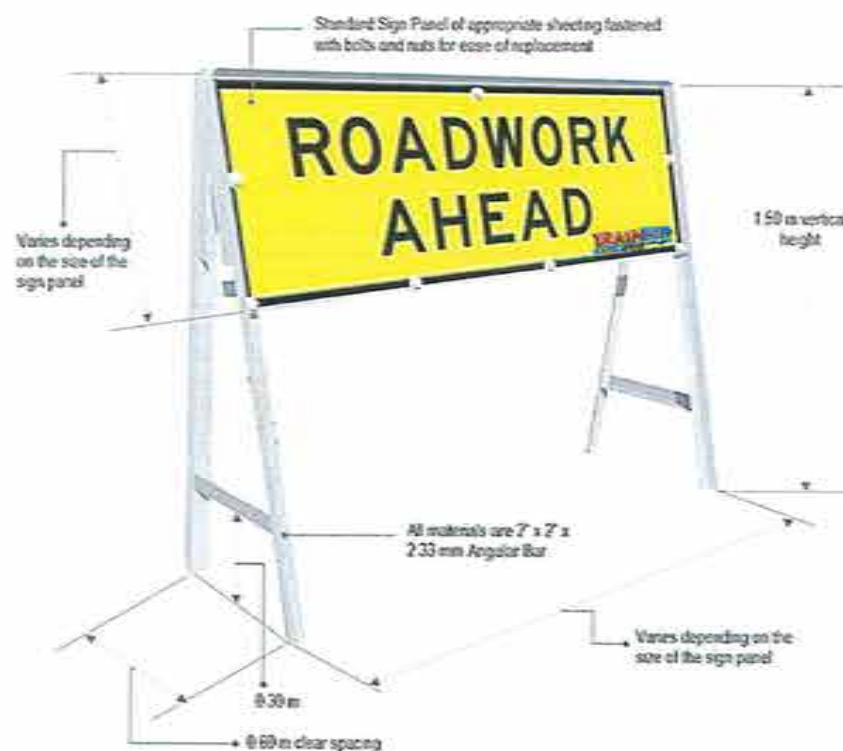
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KISLAWAN-MATANAO RD, DAVAO DEL SUR	SHEET CONTENTS INFORMATORY BILLBOARD DETAIL CONSTRUCTION OF SAFETY FENCE CONCRETE BOLLARD DETAILS FLASHER LIGHT DETAIL	DRAFTED AND PREPARED  JAMES LEE T. ARIETA ENGINEER I	REVIEWED  DENZEL A. SEMPIO ENGINEER II	SUBMITTED  JUAN T. BERNARDINO CHIEF PLANNING AND DESIGN DIVISION	RECOMMENDING APPROVAL  JOSE L. CABALLERO ASSISTANT REGIONAL DIRECTOR	APPROVED  JUDY B. CORDON REGIONAL DIRECTOR	SET NO. 26 SHEET NO. 29
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NOTE:

1. BOARD DIMENSIONS: (4M X 0.15M X 0.20M) WITH DIAGONAL BLACK AND REFLECTIVE YELLOW STRIPES PREFERABLY TERMINATING IN YELLOW AT EACH END.
2. MOUNTING HEIGHT: APPROXIMATELY 1 METER USING TRESTLES (SHOULD BE ERECTED PERPENDICULAR TO THE DIRECTION OF TRAFFIC FLOW).
3. BARRIER BOARD SHALL NOT BE USED FOR DELINEATION PURPOSES OR INSTALLED PARALLEL TO VEHICULAR TRAFFIC UNLESS THERE IS AN OFFSET OF AT LEAST FOUR (4) METERS FROM THE TRAVELLED PATH.

1 BARRIER BOARD DETAIL
SCALE: 1/10



2 ROAD SIGN DETAILS
SCALE: 1/10



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
COR. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
INSTALLATION OF STREETLIGHTS WITH ROAD
SAFETY FACILITIES ALONG
PADADA-KIBLAWAN-MATANAO RD, DAVAO DEL SUR

SHEET CONTENTS:
ROAD SIGN DETAIL
BARRIER BOARD DETAIL

DRAFTED AND PREPARED:
James Lee T. Arieta
JAMES LEE T. ARIETA
ENGINEER II
DATE: _____

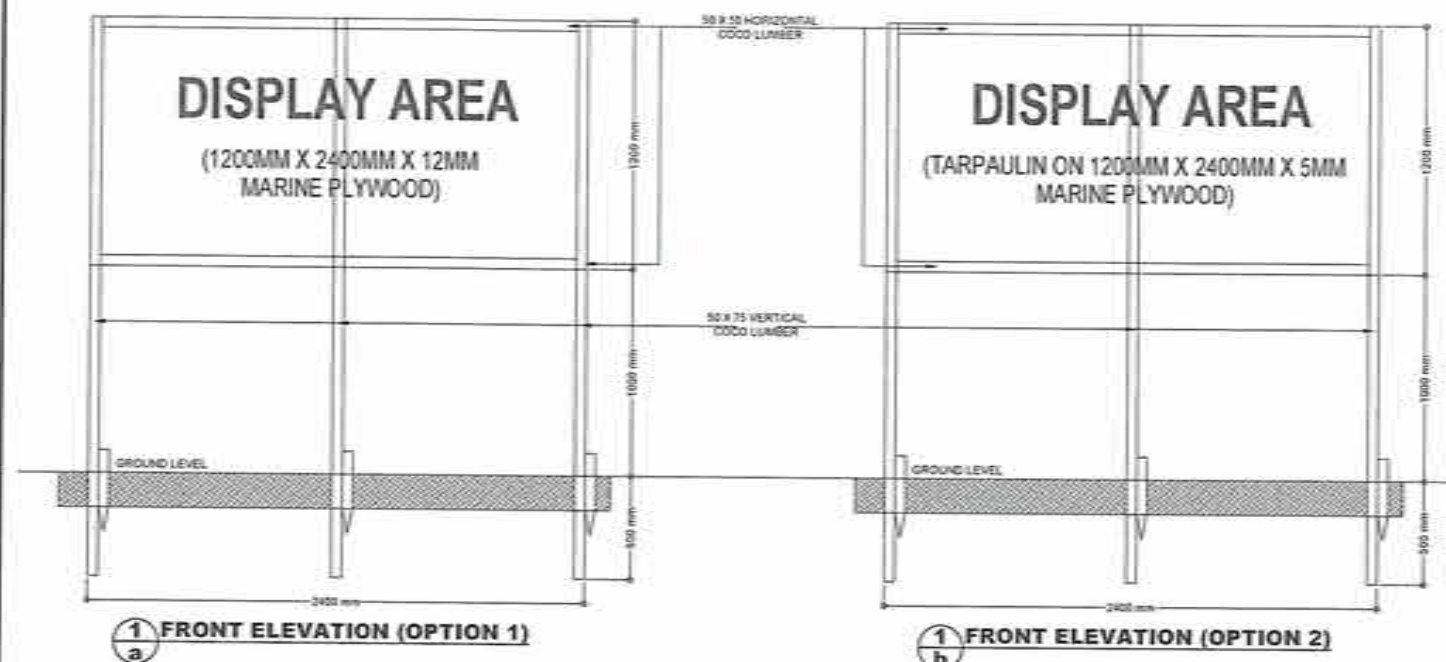
REVIEWED:
Denys Almorin Sempio
DENYS ALMORIN SEMPIO
ENGINEER I
DATE: _____

SUBMITTED:
Judy Ann T. Bernadino
JUDY ANN T. BERNARDINO
CHIEF, TRAINING AND DESIGN DIVISION
DATE: _____

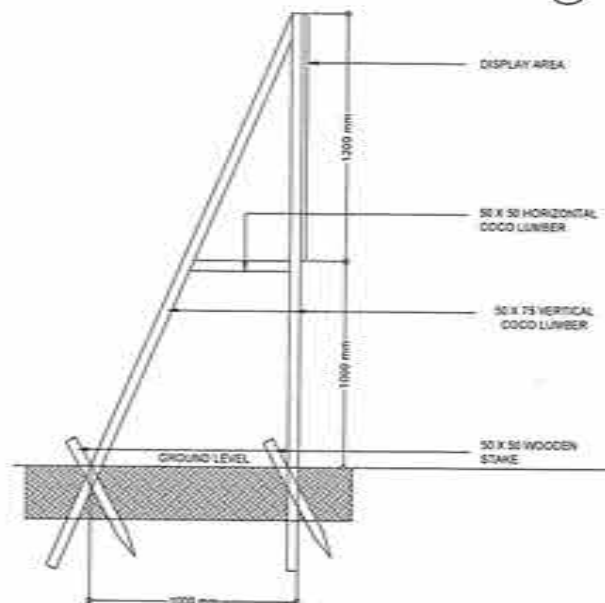
RECOMMENDING APPROVAL:
Jose Luis B. Caballero
JOSE LUIS B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

APPROVED:
Juby B. Cordon
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SET NO.	SHEET NO.
A	27
06/07	29



1 BILLBOARD DETAILS



THIS IS WHERE YOUR TAXES GO

NAME OF PROJECT: _____

LOCATION: _____

NAME OF CONTRACTOR: _____

DATE STARTED: _____

CONTRACT COMPLETION DATE: _____

CONTRACT COST: _____

IMPLEMENTING OFFICE: _____

SOURCES OF FUND: _____

Department of Public Works and Highways
Text: 250 or call (02) 185-52 for any concern on this project
www.dpwh.gov.ph

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 Environment and Natural Resources

NOTICE TO THE PUBLIC

This (PROJECT NAME) of the Department of Public Works and Highways XI has been issued an ECC/CNC (Control Number) by Environmental Management Bureau of the Department of Environment and Natural Resources, Region XI, on (Date Issued).

Warning: Do not remove or damage this billboard as installed pursuant to the ECC/CNC issued under Presidential Decree No. 1586.

Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
Regional Office No. XI
Gov. Chavez Cor. R. Magsaysay Avenue, Davao City

Project: _____ Cost: _____
Location: _____ Fund Sources: _____

Implementing Agencies: _____
Development Partners: _____
Contractor/Supplier: _____
Brief Description of Project: _____

Project Details:

Duration	Project Date		Project Status				Remarks
	Started	Target Date of Completion	Percentage of Completion	As of (Date)	Cost Incurred to Date	Date Completed	

For Particular of complaints about this project, please contact the Regional Office or Cluster which has audit jurisdiction on this project.

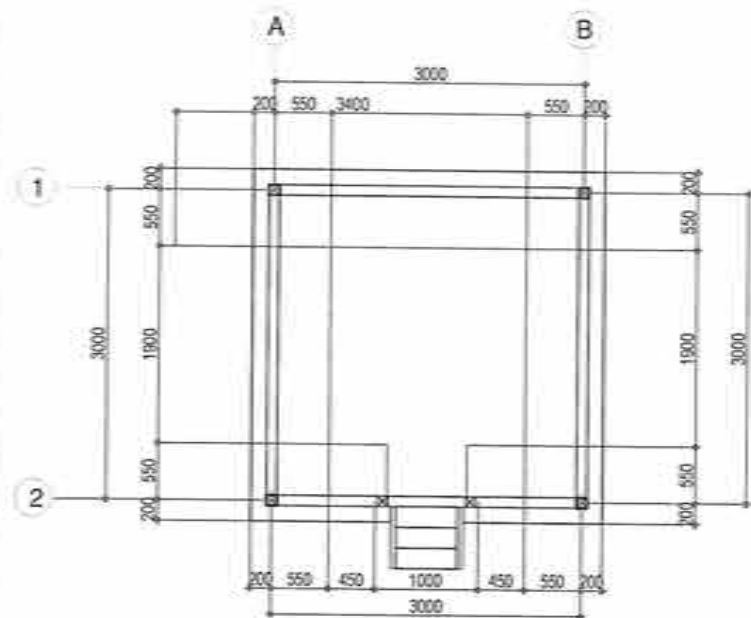
COA Regional Office No./Cluster: XI
Address: Buhangin, Davao City
Contact No.: (082) 241-2941 or Text COA Citizens Desk (0915-5391-957)

NOTES FOR COA BILLBOARD:

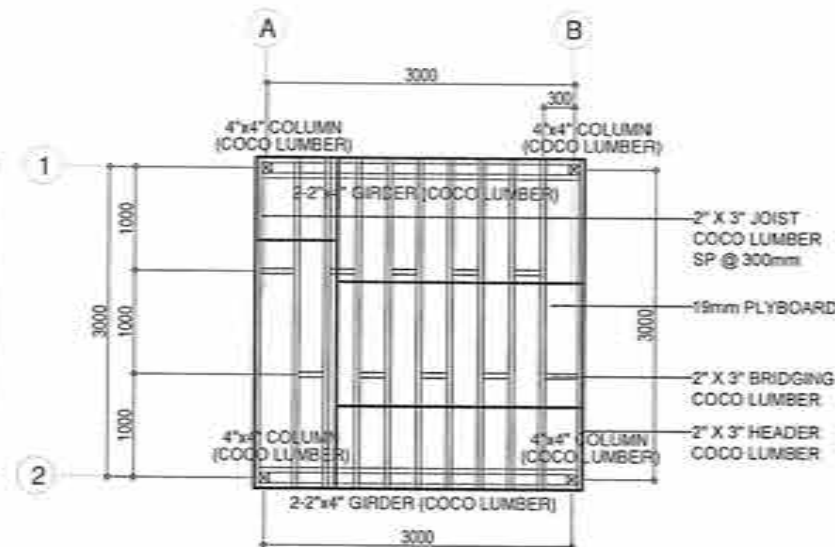
- TARPAULIN, WHITE, 8FT x 8 FT
- RESOLUTION: 700DPI
- FONT: HELVETICA
- FONT SIZE: MAIN INFORMATION - 3"
- SUB-INFORMATION - 1"
- FONT COLOR: BLACK

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION: INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KISLAYAN-MATANAO RD, DAVAO DEL SUR	SHEET CONTENTS: BILLBOARDS DETAIL	DRAFTED AND PREPARED: JAMES LEE T. ARIETA ENGINEER II	REVIEWED: DENNIS R. SEMPIO ENGINEER II	DESIGNED: JUDY B. CORDON CHIEF, PLANNING AND DESIGN DIVISION	RECOMMENDING APPROVAL: JOSELO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	APPROVED: JUDY B. CORDON REGIONAL DIRECTOR	SET NO. A	SHEET NO. 28
	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:	DATE:

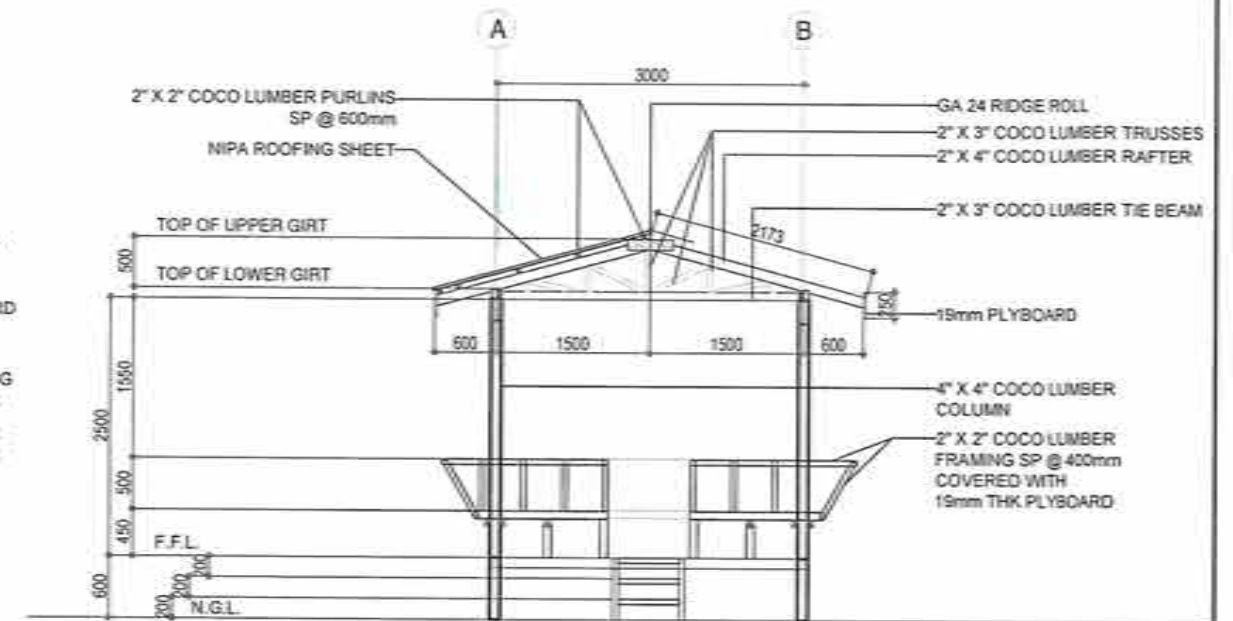
C. FIELD OFFICE FOR THE ENGINEER



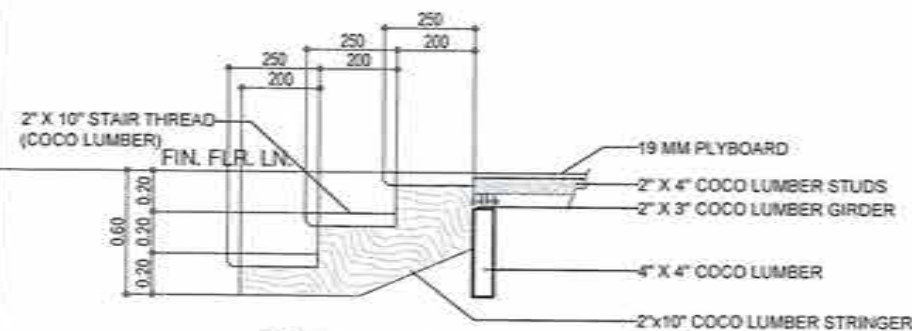
1 FLOOR PLAN



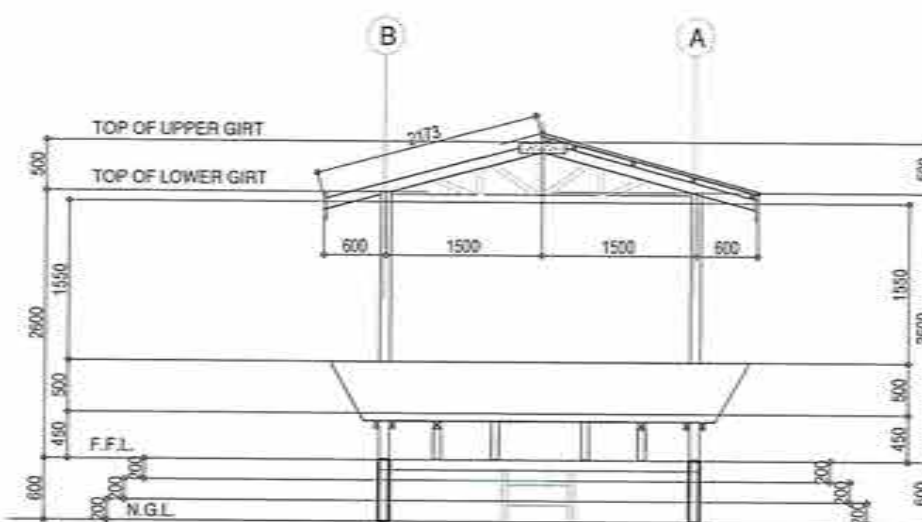
2 FLOOR FRAMING



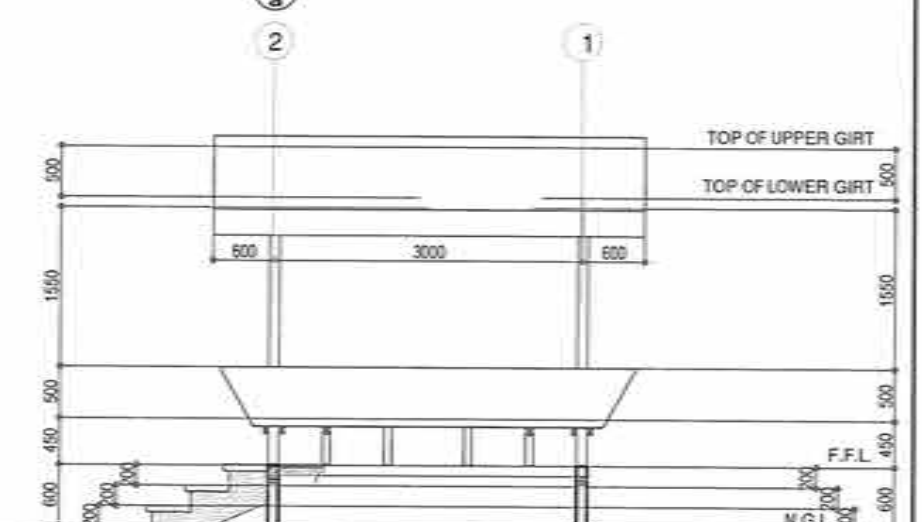
3 SECTION



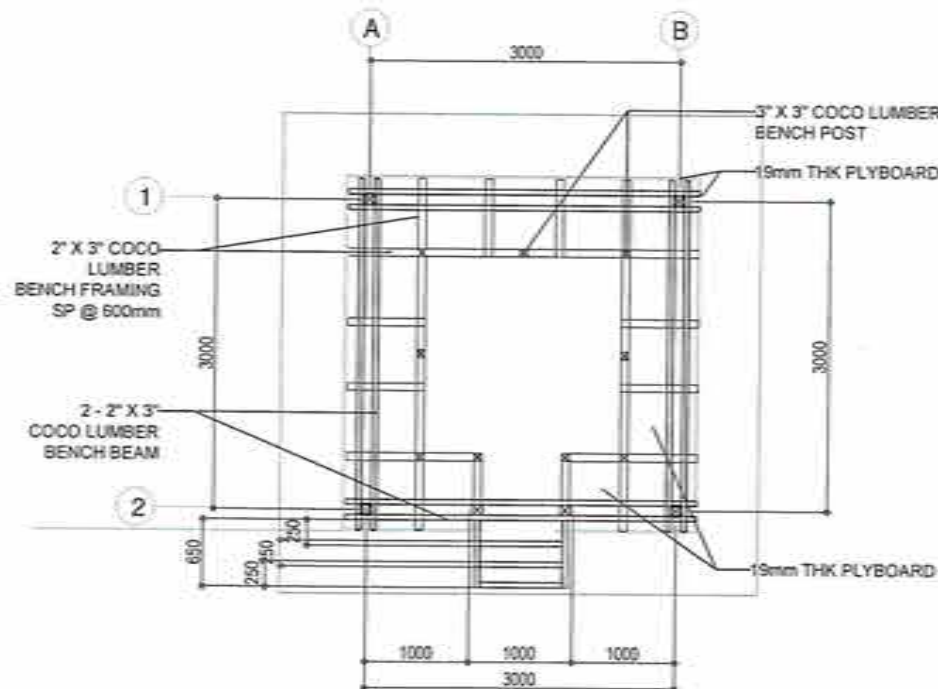
4 STAIR DETAIL



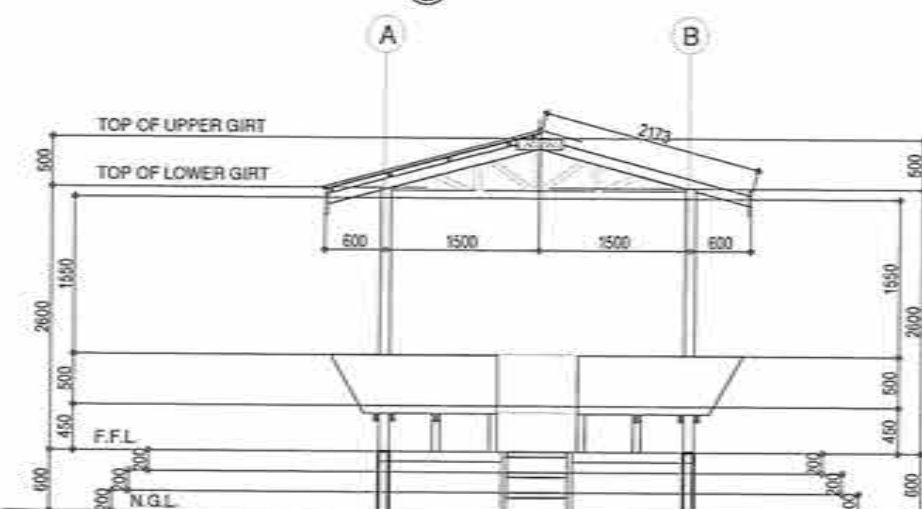
6 REAR ELEVATION



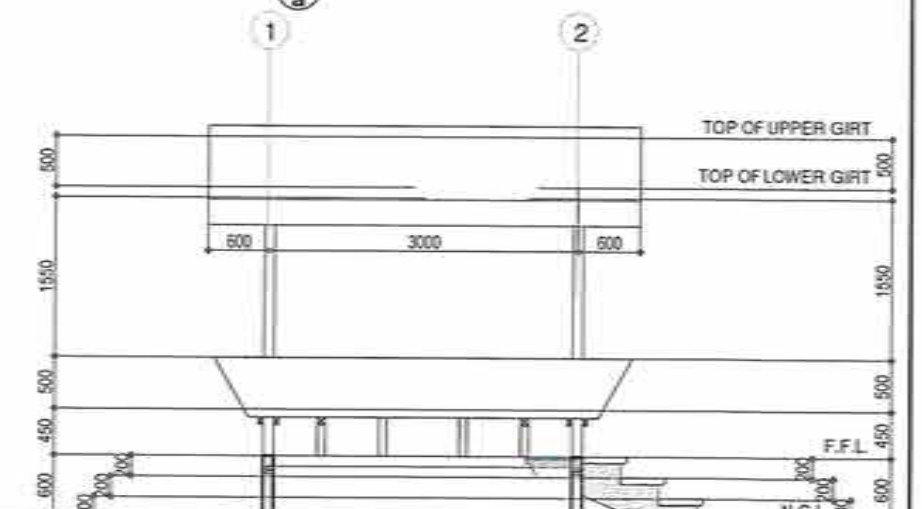
7 RIGHT SIDE ELEVATION



5 BENCH FRAMING



8 FRONT ELEVATION



9 LEFT SIDE ELEVATION

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. NAGDAYAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION INSTALLATION OF STREETLIGHTS WITH ROAD SAFETY FACILITIES ALONG PADADA-KIBLAWAN-MATANAO RD., DAVAO DEL SUR	SHEET CONTENTS CAMPHOUSE TYPICAL DETAILS (BAHAY KUBO)	DRAFTED AND PREPARED FERDINAND M. RAÑOSA ARCHITECT DATE: _____	REVIEWED ALGIN A. GINGARAN ENGINEER IN CHARGE DATE: _____	SUBMITTED JUDY B. CORDON CHIEF, PLANNING AND DESIGN DIVISION DATE: _____	RECOMMENDING APPROVAL JOSELO R. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE: _____	APPROVED JUDY B. CORDON REGIONAL DIRECTOR DATE: _____	SHEET NO. C 0101 SHEET NO. 29 29
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