



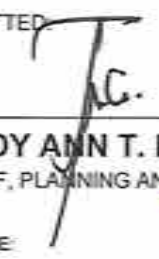
REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE No. XI
GOV. CHAVEZ COR. R. MAGSAYSAY ST. DAVAO CITY

C.Y. 2025 PROJECT
DETAILED ENGINEERING DESIGN PLAN FOR

**PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES.
DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO
ORIENTAL**

SECTION	:	BRGY. BADAS
LOCATION	:	MATI CITY, DAVAO ORIENTAL
STATION LIMITS (AS PER RBIA)	:	K1719+712 TO K1721+400
STATION LIMITS (AS PER PLAN)	:	STA. 1719+811.092 TO STA. 1721+509.552 (W/ EQUATIONS)
NET LENGTH	:	1.696000 KM. / 6.784000 LANE-KM.
ROAD SECTION ID	:	S01448MN

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. GENERAL INFORMATION AND DETAILS

PROJECT LIMITS

ASPHALT OVERLAY (6 - LANES)

BEGINNING OF PROJECT : STA. 1719 + 811.092 (AS PER PLAN)
K1719 + 712 (AS PER RBIA)

END OF PROJECT : STA. 1721 + 509.552 (AS PER PLAN)
K1721 + 400 (AS PER RBIA)

LENGTH = 1,698.460 LN.M

PLUS/MINUS EQUATIONS :

STA. 1719+839.620 BK = (0.380)
STA. 1719+840.000 AH

STA. 1720+019.521 BK = (0.479)
STA. 1720+020.000 AH

STA. 1720+319.694 BK = (0.306)
STA. 1720+320.000 AH

STA. 1720+639.623 BK = (0.377)
STA. 1720+640.000 AH

STA. 1720+759.664 BK = (0.336)
STA. 1720+760.000 AH

STA. 1721+339.418 BK = (0.582)
STA. 1721+340.000 AH

TOTAL EQUATION = (2.460)

NET LENGTH = 1,696.000 LN.M



KEY MAP
SCALE NTS

INDEX OF SHEETS

SHEET CONTENTS	SET NUMBER	OVERALL SHEET NUMBER
A. GENERAL INFORMATION AND DETAILS		
COVER SHEET	A-0	0
ROADWAY DESIGN DETAILS		
PROJECT LIMITS	A-1	1
INDEX OF SHEETS	A-2	2
VICINITY MAP	A-3	3
GENERAL NOTES (ROAD, DRAINAGE, AND STRUCTURES)	A-4 TO A-5	4 TO 5
ABBREVIATIONS	A-6	6
SYMBOLS	A-7	7
SUMMARY OF QUANTITIES	A-8 TO A-9	8 TO 9
TYPICAL ROADWAY CROSS SECTIONS	A-10	10
SAFETY EDGE DROP-OFF ON EXISTING AC	A-11	11
ASPHALT OVERLAY JOINING ROAD WITH PCCP (ALONG THRU - ROAD)	A-12	12
ASPHALT OVERLAY JOINING ROAD WITH PCCP (AT ROAD INTERSECTION)	A-13	13
JOINT DETAILS (FOR REBLOCKING)	A-14	14
REFLECTORIZED PAVEMENT MARKING DETAIL	A-15 TO A-16	15 TO 16
ROAD SIGN POST DETAILS	A-17	17
ROAD SIGN FACE DETAILS	A-18	18
SCHEDULES	A-19	19
DETAIL OF REINFORCED CONCRETE BOX CULVERT QUANTITIES FOR BOX CULVERT AND WINGWALLS BAR SCHEDULE	A-20	20
WINGWALL DETAILS	A-21	21
DRAINAGE SCHEDULE	A-22	22
DRAINAGE SUMMARY	A-23	23
B. TRAFFIC MANAGEMENT DETAILS		
TRAFFIC MANAGEMENT LAYOUT	B-1 TO B-4	24 TO 27
GENERAL NOTES	B-5	28
PROJECT PARAMETER	B-6	29
POSSIBLE RISK FACTORS	B-7	30
TRAFFIC MANAGEMENT PROGRAM SIGNAGE	B-8 TO B-9	31 TO 32
TRAFFIC CONE	B-10	33
FLEXIBLE BOLLARD DETAIL	B-11	34
TRAFFIC SAFETY VEST DETAIL	B-12	35
BARRICADE FLASHER LIGHT	B-13	36
INFORMATIVE BILLBOARD DETAIL	B-14	37
CONSTRUCTION OF SAFETY FENCE	B-15	38
CONCRETE BOLLARD DETAILS	B-16	39
FLASHER LIGHT DETAIL	B-17	40
ROAD SIGN DETAIL	B-18	41
BARRIER BOARD DETAIL	B-19	42
BILLBOARDS DETAIL	B-20	43
C. FACILITIES FOR THE FIELD ENGINEER		
TYPICAL DETAILS OF BAHAY KUBO	C-1	44
D. PIEZOELECTRIC ATC SENSOR AND STREETLIGHT DETAILS		
INSTALLATION DIAGRAM FOR DUAL PIEZOELECTRIC ATC SENSOR, LAYOUT FOR ROADSIDE CABINET INSTALLATION AND SCHEMATIC & WIRING DIAGRAM AND EQUIPMENT INSTALLATION DIAGRAM	D-1	45
GENERAL NOTES AND DESIGN GUIDELINES FOR SOLAR-POWERED ROADWAY LIGHTING ROADWAY LIGHTING STATIONING AND PARAMETERS, AND DRAWING LEGENDS	D-2	46

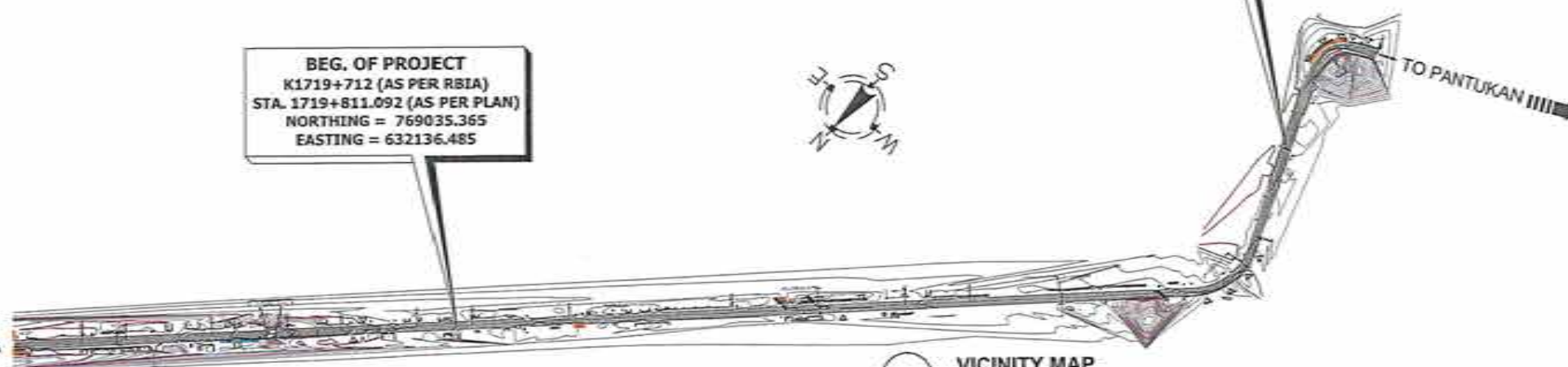
SINGLE ARM POST DETAILS		
SOLAR STREETLIGHT TECHNICAL PARAMETERS		
SCHEDULE OF LOADS	D-3	33
TYPICAL SINGLE LINE DIAGRAM		
FAULT CURRENT & VOLTAGE DROP CALCULATION		
FOUNDATION ELEVATION		
BASE PLATE DETAIL	D-4	34
STIFFENER DETAIL		
PEDESTAL DETAIL		
FOOTING DETAIL		
ROADWAY LIGHTING PLAN, STREETLIGHT STATIONING, AND VICINITY MAP	D-5 TO D-6	35 TO 36
E. PLAN AND PROFILE		
PLAN	D-1 TO D-2	37 TO 38
F. CROSSDRAIN CROSS SECTION		
CROSSDRAIN CROSS SECTION	E-1	39
G. SOIL PROFILE		
SOIL PROFILE	F-1	40



LOCATION PLAN
SCALE NTS

BEG. OF PROJECT
K1719+712 (AS PER RBIA)
STA. 1719+811.092 (AS PER PLAN)
NORTHING = 769035.365
EASTING = 632136.485

END OF PROJECT
K1721+400 (AS PER RBIA)
STA. 1721+509.552 (AS PER PLAN)
NORTHING = 767758.236
EASTING = 631234.005



VICINITY MAP
SCALE 1:5000



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
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HWY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
PROJECT LIMITS
INDEX OF SHEETS
VICINITY MAP
LOCATION PLAN

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER IN CHARGE
DATE

REVIEWED
DENYALDIN A. SEMPIO
ENGINEER IN CHARGE
DATE

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

RECOMMENDING APPROVAL
JOSEITO S. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUBY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO.
A
119
SHEET NO.
1
40

GENERAL NOTES (ROADS, DRAINAGE, AND STRUCTURES)

SPECIFICATIONS

- 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

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

ELEVATIONS AND GRADES

- FINISHED GRADE ELEVATION SHOWN ON PLAN AND PROFILE SHEETS REFERS TO FINISHED PAVEMENT LEVEL AS INDICATED IN THE TYPICAL ROADWAY SECTION.
- EXISTING ELEVATION SHOWN ON THE PLAN AND PROFILE SHEETS REFERS TO THE ELEVATION OF THE ORIGINAL GROUND ALONG THE CENTERLINE OF THE PROJECT ROAD.

GRADING AND OTHER GENERAL REQUIREMENTS

- ALIGNMENT AND GRADES ARE SUBJECT TO ADJUSTMENT TO SUIT ACTUAL FIELD CONDITION.
- DISTANCES AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
- GRADE SHOWN ARE TOP OF FINISHED PAVEMENT.
- ALL WORKS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, REVISED 2013 AND "A POLICY ON GEOMETRIC DESIGN", AASHTO 2011.
- 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).
- 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.
- 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.
- 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.
- 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.
- THE IMPLEMENTING OFFICE SHALL IDENTIFY THE LOCATIONS OF AND PROVIDE ACCESSIBILITY FACILITIES FOR PERSONS WITH DISABILITIES IN ACCORDANCE WITH DO NO. 37, S. 2009.
- QUARRY SITE IS LOCATED AT MAYO RIVER QUARRY. DISPOSAL SITE IS FIVE (5.00) KMS. WITHIN PROJECT LIMIT. ASPHALT BATCHING PLANT IS LOCATED AT CARMEN, DAVAO DEL NORTE.
- DESIGN WAS BASED ON SURVEY DATA SUBMITTED BY THE SURVEY AND INVESTIGATION SECTION OF PLANNING AND DESIGN DIVISION OF THE DPWH-REGIONAL OFFICE XI.

EARTHWORKS

- ALL CONCRETE PAVEMENT, BASE COURSE, SIDEWALKS, CURBS, GUTTERS, ETC., DESIGNATED FOR REMOVAL SHALL BE BROKEN INTO PIECES, THE SIZE OF WHICH SHALL NOT EXCEED 300mm (12in) IN ANY

DIMENSION AND STOCKPILED AT DESIGNATED LOCATIONS ON THE PROJECT OR AS DIRECTED BY THE ENGINEER.

- ALL EXCAVATIONS SHALL BE FINISHED TO REASONABLY SMOOTH AND UNIFORM SURFACES. NO MATERIALS SHALL BE WASTED WITHOUT AUTHORITY OF THE ENGINEER. EXCAVATION OPERATIONS SHALL BE CONDUCTED SO THAT MATERIAL OUTSIDE OF THE LIMIT OF SLOPES WILL NOT BE DISTURBED.
- SPOILS FROM DEMOLISHED/EXCAVATED MATERIALS SHALL NOT BE ALLOWED TO BE STOCKPILED AT THE SHOULDER OR PART OF THE TRAVELED ROADWAY AND SHALL BE REMOVED IMMEDIATELY TO PREVENT OBSTRUCTION. SPOILS REMOVED SHALL BE DISPOSED OFF IN DESIGNATED AREAS APPROVED BY THE ENGINEER.
- APPROACHES AND ROAD CONNECTIONS SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER IN SUCH MANNER AS TO ENSURE PROPER CONNECTIONS TO THE RIDING SURFACES.

SUB-BASE AND BASE COURSE

- FOR SUBBASE MATERIALS, WHERE THE REQUIRED THICKNESS IS 200MM OR LESS, THE MATERIAL SHALL BE SPREAD AND COMPACTED IN ONE (1) LAYER USING A VIBRATORY ROLLER EQUIPMENT. WHERE THE REQUIRED THICKNESS IS MORE THAN 200MM, THE AGGREGATE SUBBASE SHALL BE SPREAD AND COMPACTED IN TWO OR MORE LAYERS OF APPROXIMATELY EQUAL THICKNESS, AND THE MAXIMUM COMPACTED THICKNESS OF ANY LAYER SHALL NOT EXCEED 200MM.

SURFACE COURSE

- APPLICATION OF BITUMINOUS MATERIALS SHALL BE MADE ONLY WHEN THE AGGREGATE IS DRY AND ATMOSPHERIC TEMPERATURE IN THE SHADE IS 15 DEGREES OR ABOVE AND WHEN THE WEATHER IS NOT FOGGY OR RAINY. THE PROPORTION OF BITUMINOUS MATERIAL ON THE BASIS OF TOTAL DRY AGGREGATE SHALL BE FROM 5.0 TO 8.0 MASS PERCENT. THE EXACT PERCENTAGE TO BE USED SHALL BE IN ACCORDANCE WITH THE JOB-MIX FORMULA AND OTHER QUALITY CONTROL REQUIREMENTS.
- ALL JOINTS SHALL BE SUFFICIENTLY SEALED WITH ASPHALT SEALANT PRIOR TO OPENING TO VEHICULAR TRAFFIC.
- THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO CONTROL TRAFFIC OVER NEWLY-LAID BITUMINOUS SURFACE TREATMENT SO THAT THE SURFACE IS NOT DAMAGED IN ANY WAY. TRAFFIC SHALL BE PROHIBITED FROM TRAVELING AT SPEEDS IN EXCESS OF 40KPH UNTIL THE ASPHALTIC MATERIAL HAS SET. NO VEHICLES, INCLUDING THOSE DELIVERING AGGREGATES SHALL BE PERMITTED TO TURN AROUND ON NEWLY-LAID MATERIAL.
- WHEN RAIN APPEARS IMMINENT, ALL PAVING OPERATIONS SHALL STOP.
- EXISTING PAVEMENTS WITH DEFECTS (OTHER THAN SHATTERED SLABS) AND JOINTS SHALL BE SEALED REPAIRED BEFORE OVERLAYING THE ASPHALT.
- CRACKS TO BE FILLED WITH ASPHALT SEALANT SHALL BE APPLIED WITH WASHED SAND. EXCESS SAND SHALL BE BROOMED AFTER 2-4 HOURS.
- IN ASPHALT OVERLAYING AT CURVES, SUPERELEVATION OF THE EXISTING PAVEMENT SHALL BE MAINTAINED OR IMPROVED. APPROPRIATE CROSS SLOPES (NORMAL CROWN) SHALL BE APPLIED TO DRAIN THE PAVEMENT.
- AT TRANSVERSE CONSTRUCTION JOINTS, HOLES OF 260MM DIAMETER AND SPACED AT 300MM SHALL BE DRILLED AT ONE-HALF (1/2) OF THE EXISTING CONCRETE PAVEMENT THICKNESS SO AS TO PERMIT THE LOAD TRANSFER DEVICE (38MM DIAMETER PLAIN DOWEL BARS) TO BE INSERTED AT ONE-HALF (1/2) OF ITS LENGTH. THE DEVICE SHALL BE INSTALLED FIRMLY AT THE HOLES AND SHALL BE HELD IN POSITION PARALLEL TO THE SURFACE OF THE SLAB. THE DOWEL BARS SHALL BE PAINTED WITH RED LEAD AND THE SURFACE OF ONE-HALF (1/2) OF THE LENGTH TO BE INSERTED SHALL BE COATED WITH CONCRETE EPOXY WHILE THE OTHER HALF SHALL BE COATED WITH APPROVED BITUMINOUS MATERIALS.
- IN ORDER THAT THE CONCRETE MAY BE PROPERLY PROTECTED AGAINST THE EFFECTS OF RAIN BEFORE THE CONCRETE IS SUFFICIENTLY HARDENED, THE CONTRACTOR WILL BE REQUIRED TO PROTECT THE EDGES AND SURFACE OF THE UNHARDENED CONCRETE.
- BEFORE OPENING TO TRAFFIC, THE PAVEMENT SHALL BE CLEANED AND JOINT SEALING COMPLETED.
- ANY DAMAGE TO THE PAVEMENT, OCCURRING PRIOR TO FINAL ACCEPTANCE, SHALL BE REPAIRED OR THE PAVEMENT BE REPLACED.
- NO ACCEPTANCE AND FINAL PAYMENT SHALL BE MADE ON COMPLETED PAVEMENT UNLESS CORE TEST FOR THICKNESS DETERMINATION IS CONDUCTED.

- PURSUANT TO DEPARTMENT ORDER NO. 137, SERIES OF 2016, FOR NEWLY CONSTRUCTED CONCRETE AND ASPHALT ROAD PROJECTS, AN IRI VALUE OF NOT MORE THAN 3.00MM/KM IS PRESCRIBED. NON-COMPLIANCE WITH THE SAID DO SHALL BE SUBJECT TO PAY ADJUSTMENTS CORRESPONDING TO THE ACQUIRED IRI VALUE. COMPLIANCE OF THE CONTRACTORS TO THE IRI REQUIREMENT AND STRICT IMPLEMENTATION OF PROPER BASE AND SUBBASE PREPARATION IS EMPHASIZED PRIOR TO CONCRETE POURING, PREPARATORY WORKS IN EXISTING SURFACES/ROADBED PRIOR TO ASPHALT LAYING AND PAVING AND FINISHING FOR CONCRETE PAVEMENT.

REMOVAL OF EXISTING STRUCTURES AND OBSTRUCTIONS

- 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.
- REMOVAL OF EXISTING ASPHALT OVERLAY SHALL BE THROUGH ROTO-MILLING TO SYSTEMATICALLY REMOVE THE SPECIFIED THICKNESS OF EXISTING ASPHALT OVERLAY.
- ROTO-MILLING OR COLD MILLING, SHALL BE CONDUCTED USING A ROTO-MILLING MACHINE OR COLD MILLING ASPHALT PAVEMENT MACHINE WITH ROTATING CUTTING DRUMS WITH TEETH THAT WILL GRIND AND REMOVE THE ASPHALT SURFACE. THE DEPTH OF MILLING SHALL BE CLOSELY MONITORED BY THE PROJECT ENGINEER TO ENSURE COMPLIANCE TO APPROVED PLANS AND SPECIFICATIONS.
- PROPER TRAFFIC CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE MILLING OPERATION TO ENSURE THE SAFETY OF WORKERS AND THE TRAVELLING PUBLIC. TRAFFIC LANES MAY BE TEMPORARILY SHIFTED OR CLOSED AS NECESSARY TO FACILITATE THE MILLING PROCESS AND PROTECT WORKERS FROM VEHICULAR TRAFFIC.
- FOLLOWING THE COMPLETION OF THE MILLING PROCESS, THE MILLED ASPHALT SHALL BE COLLECTED AND TRANSPORTED TO THE CONCERNED DISTRICT ENGINEERING OFFICE FOR STOCKPILING AND FUTURE CYCLING OR DISPOSAL. THE STOCKPILED MILLED ASPHALT SHALL BE COVERED WITH TARPULIN OR ANY EQUIVALENT MATERIAL TO PREVENT EXPOSURE FROM THE ELEMENTS.

REMOVAL OF EXISTING PAVEMENT MARKINGS

- 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.
- PAVEMENT GRINDER OR SCARIFYING MACHINE EQUIPPED WITH CARBIDE-TIPPED OR DIAMOND-TIPPED BLADES OR GRINDING HEADS WITH ADJUSTABLE DEPTH CONTROLS TO AVOID EXCESSIVE REMOVAL OF THE PAVEMENT SURFACE.
- A TEST GRIND SHALL BE PERFORMED ON A SMALL SECTION TO ENSURE THE PROPER DEPTH. GRINDING SHALL COMMENCE AT A LOW SPEED, GRADUALLY INCREASING AS NECESSARY TO REMOVE THE MARKINGS WHILE AVOIDING EXCESSIVE WEAR TO THE PAVEMENT SURFACE.
- CONTINUOUSLY VACUUM OR SWEEP THE WORK AREA TO PREVENT DEBRIS ACCUMULATION. DUST SUPPRESSION MEASURES SHALL BE APPLIED AS NEEDED SUCH AS WATER SPRAYING OR VACUUM ATTACHMENTS, ESPECIALLY IN HIGH-TRAFFIC AREAS.
- IF GRINDING RESULTS IN SURFACE DAMAGE OR GROOVES, APPLY APPROPRIATE SURFACE TREATMENTS SUCH AS MICRO-SURFACING OR OVERLAYS TO RESTORE A SMOOTH DRIVING SURFACE. THE PROJECT ENGINEER SHALL DETERMINE IF ADDITIONAL REPAIRS OR RESURFACING ARE REQUIRED BASED ON THE EXTENT OF GRINDING.

MISCELLANEOUS STRUCTURES

- 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.
- 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.
- THE APPLIED THERMOPLASTIC PAVEMENT MARKINGS SHALL HAVE A MINIMUM OF 2 YEARS OF LONGEVITY/DURABILITY. PAVEMENT MARKINGS SHALL NOT BE APPLIED DURING RAIN OR WET WEATHER OR WHEN THE AIR IS MISTY. PAINT SHALL NOT BE APPLIED UPON DAMP PAVEMENT SURFACES, OR UPON PAVEMENT WHICH HAS ABSORBED HEAT SUFFICIENT TO CAUSE THE PAINT TO BLISTER AND PRODUCE A POROUS FILM OF PAINT.

 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.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1713+712 - K1721+400, DAVAO ORIENTAL	GENERAL NOTES (ROADS, DRAINAGE, AND STRUCTURES)	NEIL ERIC L. TOMALE ENGINEER	DENNIS ALONSO A. SEMPIO ENGINEER, I.C. - SECTION CHIEF	JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSEITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUDY B. CORDON REGIONAL DIRECTOR	A 2/19	2 40

GENERAL NOTES

(ROADS, DRAINAGE, AND STRUCTURES)

4. 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

1. 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.
2. THE CONTRACTOR SHALL AT ALL TIMES DURING THE DURATION OF THE CONTACT 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

1. REVISED DPWH MANUAL ON HIGHWAY SAFETY DESIGN STANDARDS, MAY 2013 EDITION
- 1.1. 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
2. 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
- 2.1. FOR MONITORING, ENFORCEMENT AND IMPLEMENTATION OF CONSTRUCTION SAFETY AND HEALTH - DO 56, s.2005
3. DESIGN REFERENCES
- 3.1. DPWH DESIGN GUIDELINES, CRITERIA, AND STANDARDS (DGCS), VOLUME 4, 2015 EDITION
- 3.2. 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
- 3.3. AASHTO A POLICY ON GEOMETRIC DESIGN STANDARD OF HIGHWAYS AND STREETS, 2018 7TH EDITION
- 3.4. AASHTO GUIDE ON PAVEMENT DESIGN, 1993 EDITION
- 3.5. HIGHWAY SAFETY DESIGN STANDARDS: PART 1 - ROAD SAFETY DESIGN, AND PART 2 - ROAD SIGNS AND PAVEMENT MARKINGS, 2012 EDITION

SURVEY SPECIFICATION

1. ALL PROJECT CONTROL POINTS ARE PROJECTED IN PRS '92 GRID COORDINATE SYSTEM (ZONE 5)
2. SURVEY INSTRUMENT USED, ROVER - CHC (70+) SN1049126, BASE - CHC (70+) SN1049127
3. DATE SURVEYED: MARCH 03 - 07, 2025
4. PROJECT CONTROL POINTS, REFER TO PLAN AND PROFILE.

BENCHMARKS AND DESCRIPTION

BENCHMARKS	NORTHING	EASTING	ELEVATION (METERS)	DESCRIPTION
BM NO. 4	769025.849	632121.950	2.772	NO. 1" CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT AT STA. 1799+825.700 (RP-2 OF T-15), DIST. = 6.5 M, RIGHT SIDE
BM NO. 5	769634.199	631924.791	3.126	ON TOP OF KM POST K1720 AT STA. 1720+103.5, DIST. = 10 M, RIGHT SIDE
BM NO. 6	768593.367	631691.194	2.163	NO. 1" CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EOP AT STA. 1720+440.000 (RP-1 OF P-10), DIST. = 8.8 M, RIGHT SIDE
BM NO. 7	768334.933	631426.261	4.053	NO. 4" COMMON NAIL DRIVEN ON TALISAY TREE AT STA. 1725+809.000, DIST. = 12.7 M, RIGHT SIDE
BM NO. 8	768120.623	631221.603	4.323	ON TOP OF KM POST K1721 AT STA. 1721+106.000, DIST. = 8.8 M, RIGHT SIDE
BM NO. 9	767148.143	631248.896	2.860	ON TOP OF GROUND OF ELECTRIC POST CONCRETE AT STA. 1721+524.000, DIST. = 7.3 M, LEFT SIDE
BM NO. 10	767549.961	631305.791	3.852	NO. 1" CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EOP AT STA. 1721+109.600 (RP-2 OF T-15), DIST. = 6.5 M, LEFT SIDE
BM NO. 11	767507.670	631249.365	3.991	NO. 4" COMMON NAIL DRIVEN ON GEMILNA TREE STA. 1721+191.000, DIST. = 16.2 M, LEFT SIDE

ABBREVIATIONS

ABUTMENT	ABUT	EXTERNAL DISTANCE / EASTING	E	RIGHT OF WAY	ROW
AHEAD STATIONING	AH STA	FINISHED	FIN.	ROAD	RD
AND	&	FINISHED GRADE	FG.	SOUTH	S
AREA	A	FINISHED PAVEMENT LEVEL	FPL	SIDEWALK	SDWK
ASPHALT CONCRETE PAVEMENT	ACP	GENERAL	GEN.	SUBDIVISION OF UNDECREASED PROPERTY	Csd
AT	@	GROUND LEVEL	GL	SQUARE	SQ.
AZIMUTH	AZIM.	HEAD WALL(S)	HW / HWS	SQUARE METER	sq. m. / m2
BACK STATION	BK. STA.	HIGH FLOOD LEVEL	HFL	STANDARD	STD.
BARANGAY	BRGY.	HIGH TIDE LEVEL	HTL	STATION	STA.
BEGINNING OF CIRCULAR CURVE	BCC	HIGH WATER LEVEL	HWL	STRAIGHT	STR.
BEARING	BRG.	HORIZONTAL	HOR.	STREET	ST.
BEGINNING	BEG.	INCHES	IN.	STRUCTURE	STRUCT.
BELOW MEAN SEA LEVEL	BMSL	INTERSECTION ANGLE	I	TANGENT DISTANCE	T
BENCHMARK	BM	INSIDE DIAMETER	ID	TEMPERATURE	TEMP.
BETWEEN	BET.	INTERIOR	INT.	TEMPORARY BENCH MARK	TSM
BORE HOLE	BH	KILOGRAM	KG.	VERTICAL	VERT
BOTH SIDES	BS	KILOMETER	km.	WIDTH	W
BOTH WAYS	BW	KILOMETER PER HOUR	KPH	WITH	W
BOTTOM	BOT.	LEFT	LI.		
BRIDGE	BR.	LENGTH OF CIRCULAR CURVE	LC		
SUBDIVISION OF DECREASED PROPERTY	BSD.	LENGTH OF VERTICAL CURVE	VC		
BY BUREAU OF LANDS SURVEYORS		LONGITUDINAL	LONGIT.		
BUREAU OF LANDS LOCATION MONUMENT	BLLM	MAXIMUM	MAX.		
CENTER	CTR.	MAXIMUM FLOOD LEVEL	MFL		
CENTERLINE	CL	MEAN SEA LEVEL	MSL		
CENTIMETER	cm	METER	m		
CONCRETE HOLLOW BLOCK	CHB	MILLIMETER	mm		
CLEAR	CLR	MINIMUM	MIN.		
COLUMN	COL.	MONUMENT	MON		
CONCRETE	CONC.	NORTHING	N		
CONCRETE HOLLOW BLOCK	CHB	NOT APPLICABLE	NA		
CONCRETE MONUMENT	CONC. MON.	NUMBER	NOL		
CONSTRUCTION	CONST.	ORDINARY WATER LEVEL	OWL		
CORNER	COR.	ORIGINAL GROUND LEVEL	OGL		
COVER	COV.	OUTSIDE DIAMETER	OC.		
CROSS PIPE	CP	PAVEMENT WIDTH	PW		
CUBIC METER	cubic m. / m3	PERCENT	%		
CYLINDRICAL	CYL.	PHILIPPINES	PHIL.		
DEGREE OF CURVE	D	PIECES	PCS.		
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	DPWH	PLUS / MINUS	±		
DETAIL	DET.	PUBLIC LAND SUBDIVISION	PLS		
DIAMETER	DA. / Ø	POINT OF INTERSECTION	PI		
DIAPHRAGM	DAP.	POINT OF CURVATURE	PC		
DISTANCE	DIST.	POINT OF VERTICAL CURVE	PVC		
DRAWING	DRWG.	POINT OF VERTICAL INTERSECTION	PVI		
EAST	E	POINT OF VERTICAL TANGENT	PVT		
ELEVATION	ELEV. / EL.	POINT OF TANGENT	POT		
END OF CIRCULAR CURVE	ECC	PORTLAND CEMENT CONCRETE PAVEMENT	PCCP		
END OF PAVEMENT	EOP	PROJECT	PROJ.		
ENGINEER	ENGR.	PROJECT ROAD	PROJ. RD		
EQUATION	EQ.	PRIVATE SURVEY	P.S.		
EXCAVATION	EXCA.	RADIUS	R		
EXISTING	EXIST. / EXTB.	REFERENCE POINT	RP		
EXPANSION	EXPH.	REINFORCED CONCRETE BOX CULVERT	RCBC		
EXTENSION	EXTN.	REINFORCED CONCRETE PIPE CULVERT	RCPC		
EXTERIOR	EXTR.	RETAINING WALL	RET. WALL		



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

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HWY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
ABBREVIATIONS

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER
DATE

REVIEWED
DENYRACORIN A. SEMPIO
ENGINEER & QC - SECTION CHIEF
DATE

SUBMITTED
JUDY AMY BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL
JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO. 4
SHEET NO. 40

LEGENDS AND SYMBOLS

DRAWING SYMBOLS			TOPOGRAPHIC FEATURES, INFRASTRUCTURE AND UTILITIES			TOPOGRAPHIC FEATURES, INFRASTRUCTURE AND UTILITIES			DRAWING SYMBOLS		
SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION
	CL	ROADWAY CENTERLINE			MAJOR CONTOUR			TREES		BH	BORE HOLE
		NORTH ARROW			MINOR CONTOUR			COCONUT			CROSS SECTION MONUMENT
		ELEVATION CALLOUT			EDGE OF ROAD (EXISTING)			BANANA PLANTATION		BM	BENCH MARK
		WATER LEVEL			EDGE OF ROAD (PROPOSED)			SCHOOL		IBM	INTERMEDIATE BENCH MARK
		WATER FLOW			ASPHALT CONCRETE PAVEMENT			CHURCH		PSM	PERMANENT BENCH MARK
		POINT OF INTERSECTION		POCP	PORTLAND CEMENT CONCRETE PAVEMENT			AMAN HOUSE		TP	TEST PIT
		MATCH LINE			CHISGROVE CONCRETE/ EARTH CANAL			CONCRETE HOUSE		GPS	GLOBAL POSITIONING SYSTEM
		GRID COORDINATES			NATIONAL HIGHWAY			WOODEN STORE			TRAVERSE POINT
	AZIM	AZIMUTH			EXISTING CANAL (PLAN)			CONVERSION OF CONCRETE AND WOODEN HOUSE			TRAVERSE STATION AND LINE
		PLAN AND PROFILE CALLOUT			EXISTING CANAL (PROFILE)			STORE			
		RPC INVERSE ELEVATION PROFILE CALLOUT		BR	BRIDGE		SB	SIGN BOARD			
		DIRECTION			CROSS DRAIN		SP	STEEL POST			
		MAIN DRAWING TITLE			LATERAL PIPE		SEP	STEEL ELECTRIC POST			
		SECONDARY DRAWING TITLE			RCSC		CP	CONCRETE POST			
		CROSS SECTION SYMBOL (COMPLEX)			MANHOLE		CEP	CONCRETE ELECTRIC POST			
		CROSS SECTION SYMBOL (COMPLEX)			GUARDRAIL		WEP	WOODEN ELECTRIC POST			
		DETAIL CALLOUT			OBS WALL FENCE		LP	LAMP POST			
					WOOD OR BARBED WIRE FENCE						
					CYCLONE FENCE						
					CONCRETE SLOPE PROTECTION						
					GROUTED RIPRAP SLOPE PROTECTION						
					RIVER / CREEK						



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:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HS-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
LEGENDS AND SYMBOLS

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER
DATE: _____

REVIEWED:
DENYALDIN A. SEMPIO
ENGINEER, OIC - SECTION CHIEF
DATE: _____

SUBMITTED:
JUAN W. T. BERNARDINO
CHIEF PLANNING AND DESIGN DIVISION
DATE: _____

RECOMMENDING APPROVAL:
JOSELYN B. CASALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

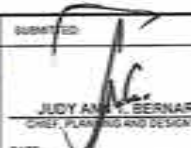
APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SET NO. 5
SHEET NO. 40

SUMMARY OF QUANTITIES

ITEM No.	DESCRIPTION OF WORK	UNIT	QUANTITY	REMARKS
PART A. FACILITIES FOR ENGINEER				
A.1.1(3)	CONSTRUCTION OF FIELD OFFICE FOR THE ENGINEER	LS	1.00	BAHAY KUBO
A.1.1(16)	OPERATION AND MAINTENANCE OF FIELD OFFICE FOR THE ENGINEER	MONTH	6.00	
PART B. OTHER GENERAL REQUIREMENT				
B.4(1)	CONSTRUCTION SURVEY AND STAKING	KM	1.70	
B.5	PROJECT BILLBOARD / SIGNBOARD (2-CPWM)	EACH	2.00	
B.5	PROJECT BILLBOARD / SIGNBOARD (2-DENR EMB)	EACH	2.00	
B.5	PROJECT BILLBOARD / SIGNBOARD (2-COA)	EACH	2.00	
B.7(2)	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	LS	1.00	
B.8(1)	TRAFFIC MANAGEMENT	MONTH	6.00	USE APPROPRIATE TRAFFIC SCHEME LAYOUT PER D.O. 13 s. 2018
B.9	MOBILIZATION / DEMOBILIZATION	LS	1.00	
PART C. EARTHWORKS				
101(3)b5	REMOVAL OF ACTUAL STRUCTURES/OBSTRUCTION, 0.28M THICK RCCP (UNREINFORCED)	SQ.M	527.63	FOR REBLOCKING, TO BE VERIFIED ON-SITE WITH THE DISCRETION OF PROJECT ENGINEER
101(4)a3	REMOVAL OF ACTUAL STRUCTURES/OBSTRUCTION, 910MM DIA., RCPC	UN.M	36.00	HEADWALL AND RCPC
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	CU.M	326.65	VOLUME TO BE BACKFILLED = 169.07 CU.M.; FOR STREETLIGHT FOUNDATION, RCPC AND CONCRETE LINED CANAL
103(3)	FOUNDATION FILL	CU.M	268.17	FOR STREETLIGHT FOUNDATION, RCPC AND CONCRETE LINED CANAL
103(5)a	PIPE CULVERTS AND DRAIN EXCAVATION (COMMON SOIL)	CU.M	16.00	FOR RCPC
105(1)a	SUBGRADE PREPARATION (COMMON MATERIAL)	SQ.M	126.63	FOR REBLOCKING, TO BE VERIFIED ON-SITE WITH THE DISCRETION OF PROJECT ENGINEER
PART D. SUBBASE AND BASE COURSE				
200(1)	AGGREGATE SUBBASE COURSE	CU.M	12.66	FOR REBLOCKING, LEVELING COURSE TO BE VERIFIED IN ACTUAL WITH THE DISCRETION OF PROJECT ENGINEER
PART E. SURFACE COURSE				
300(1)	GRAVEL SURFACE COURSE	CU.M	542.72	LEVELING COURSE FOR SHOULDER
302(2)	EMULSIFIED ASPHALT	SQ.M	45,289.00	
310(1)b	BITUMINOUS CONCRETE SURFACE WEARING COURSE (HOT LAID), 40MM	SQ.M	22,644.00	
310(2)b	BITUMINOUS CONCRETE SURFACE BINDER COURSE (HOT LAID), 40MM	SQ.M	22,644.00	
311(1)e1	PORTLAND CEMENT CONCRETE PAVEMENT (UNREINFORCED), 0.28M THICK, 14 DAYS	SQ.M	126.63	FOR REBLOCKING TO BE VERIFIED IN ACTUAL WITH THE DISCRETION OF PROJECT ENGINEER
PART F. DRAINAGE CONSTRUCTION				
404(1)a	REINFORCING STEEL - GRADE 40	KG	11,409.00	FOR RCBC AND STREETLIGHT FOOTING FOUNDATION
404(1)b	REINFORCING STEEL - GRADE 60	KG	623.17	FOR STREETLIGHT FOOTING FOUNDATION
405(1)a3	STRUCTURAL CONCRETE, 20.68MPa, CLASS A, 28 DAYS	CU.M	168.00	FOR RCBC
405(1)a2	STRUCTURAL CONCRETE, 27.58MPa, CLASS A, 14 DAYS	CU.M	16.26	FOR STREETLIGHT FOOTING FOUNDATION
411(2)	PAINT	SQ.M	75.04	REFLECTORIZED WHITE PAINT = 36.82 SQ.M. REFLECTORIZED BLACK PAINT = 36.82 SQ.M. REFLECTORIZED YELLOW PAINT = 1.41 SQ.M.
PART H. MISCELLANEOUS STRUCTURES				
605(1)a2	WARNING SIGNS, 750MMx750MM, WB-1C, PEDESTRIAN AND SCHOOL SIGNS / PEDESTRIAN CROSSING AHEAD	EACH	4.00	

NOTE: QUANTITIES ARE SUBJECT TO INCREASE/DECREASE DEPENDING ON THE ACTUAL FIELD CONDITIONS.

	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 PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SHEET CONTENTS: SUMMARY OF QUANTITIES	DRAFTED AND PREPARED:  NEIL ERIC B. TOMALE ENGINEER - B DATE:	REVIEWED:  DENVER ACCINA / SEMPJO ENGINEER - E, OIC - SECTION CHIEF DATE:	SUBMITTED:  JUDY ANN BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE:	RECOMMENDING APPROVAL:  JOSEITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	APPROVED:  JUBY B. CORDON REGIONAL DIRECTOR DATE:	SET NO. A	SHEET NO. 6 40
	C:\USERS\PUBLIC\2025 INFRA\PREVENTIVE MAINTENANCE\DIOSDADO MACAPAGAL NATIONAL HIGHWAY\LUJ EDIT (9-3-25)04 - 05 - VICINITY-SUMMARY.DWG									

SUMMARY OF QUANTITIES

ITEM No.	DESCRIPTION OF WORK	UNIT	QUANTITY	REMARKS
605(2)g3 ✓	REGULATORY SIGNS, 750MM, RS-8C, MISCELLANEOUS SIGNS PEDESTRIAN CROSSING ✓	EACH ✓	4.00 ✓	
605(2)g3 ✓	REGULATORY SIGNS, 750MM, RS-8C, MISCELLANEOUS SIGNS SCHOOL CHILDREN CROSSING ✓	EACH ✓	2.00 ✓	
605(2)g1 ✓	REGULATORY SIGNS, 450MM, RS-10A, MISCELLANEOUS SIGNS BIKE LANE SIGNS ✓	EACH ✓	16.00 ✓	FOR BIKE LANE; SPACED AT 200M INTERVALS
612(1) ✓	REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS WHITE ✓	SQ.M ✓	1,248.44 ✓	FOR ROADWAY CENTERLINE, LANE LINES, EDGE LINES, PEDESTRIAN LANES, AND OTHER PAVEMENT MARKINGS
612(2) ✓	REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS YELLOW ✓	SQ.M ✓	41.86 ✓	FOR ROADWAY CENTERLINE
612(3) ✓	REMOVAL OF EXISTING REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS ✓	SQ.M ✓	813.12 ✓	
613(1) ✓	CONCRETE JOINT SEALANT (HOT-POURED ELASTIC TYPE) ✓	KG ✓	249.06 ✓	FOR CONCRETE JOINTS
624(11) ✓	ROADWAY LIGHTING ✓	LS ✓	1.00 ✓	22 UNITS OF SINGLE ARM 250W HYBRID (AC-DC) LED STREETLIGHTS, 9M-POLE
627(2)g2 ✓	SUPPLY AND INSTALL AUTOMATIC TRAFFIC COUNTER/CLASSIFIER (ATC), 4 LANES, ATC WITHOUT SOLAR ✓	LS ✓	1.00 ✓	



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:

PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1715+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:

SUMMARY OF QUANTITIES

DRAFTED AND PREPARED:

NEIL ERIC L. TOMALE
ENGINEER 1-B

DATE:

REVIEWED:

GENIVIR ALORN A. SEMPIO
ENGINEER, DEC - SECTION CHIEF

DATE:

SUBMITTED:

JUDY ANN T. BERNARDINO
CHIEF PLANNING AND DESIGN DIVISION

DATE:

RECOMMENDING OFFICIAL:

JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR

DATE:

APPROVED:

JUSY B. CORDON
REGIONAL DIRECTOR

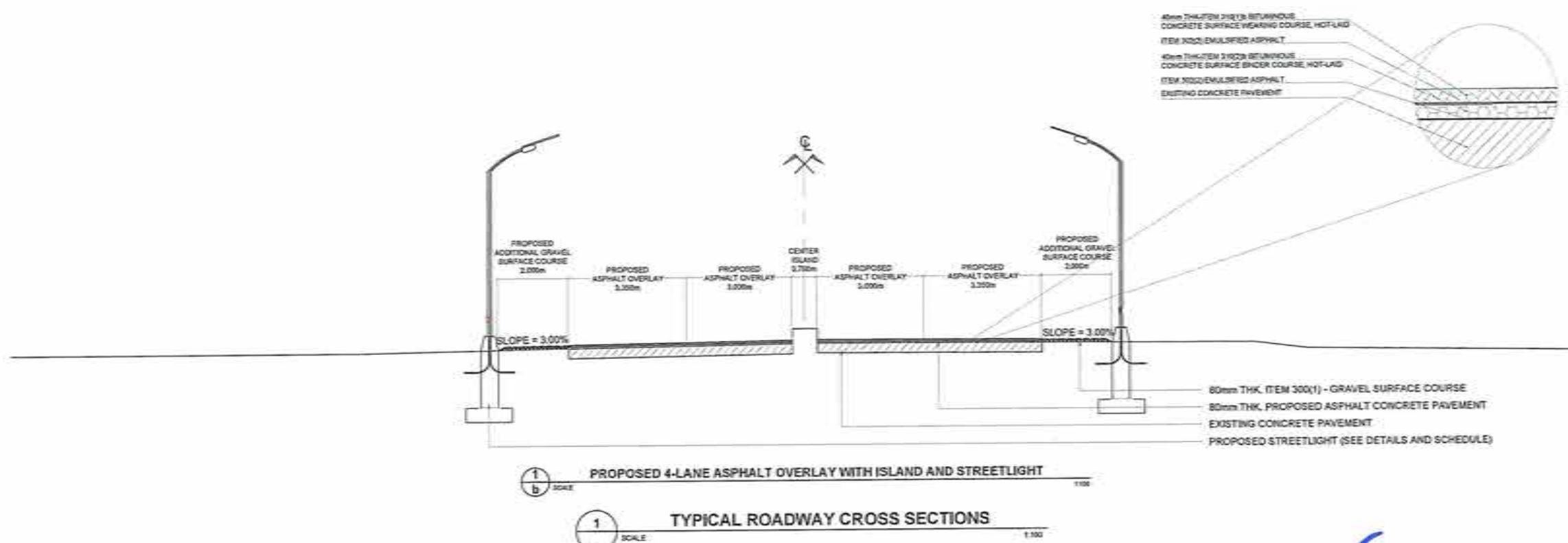
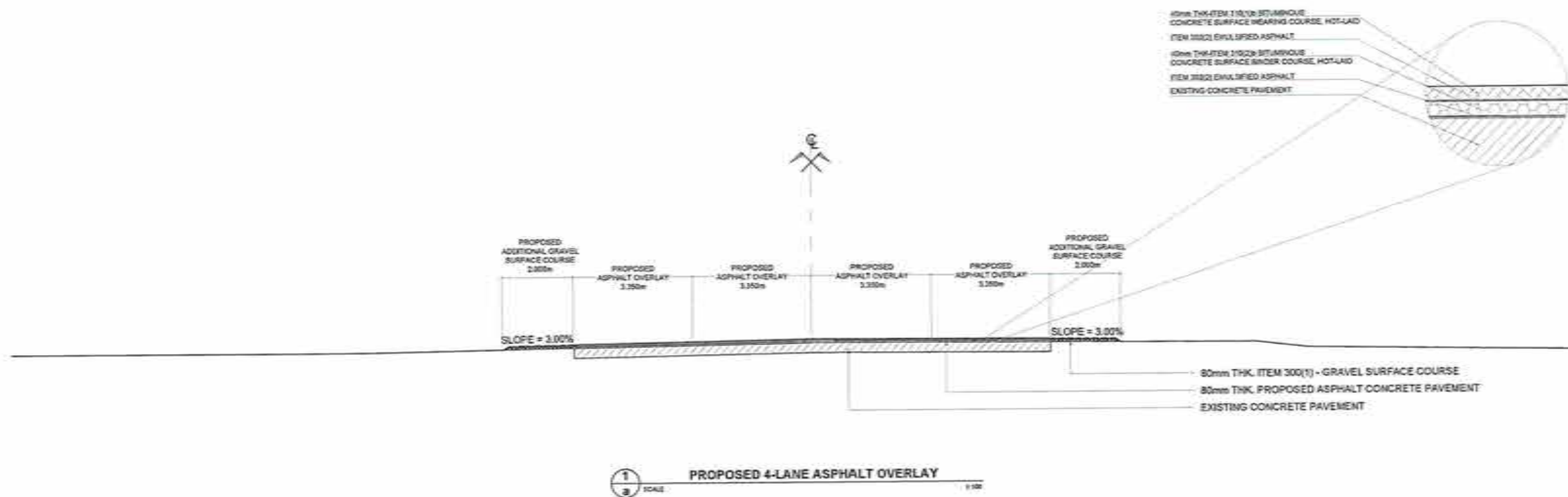
DATE:

SET NO.

A
7/19

SHEET NO.

7
40



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:
PREVENTIVE MAINTENANCE OF ROAD, ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
TYPICAL ROADWAY CROSS SECTIONS

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER I
DATE: _____

REVIEWED:
DENVER ACCORIN A. SEMPJO
ENGINEER II, CEC - SECTION CHIEF
DATE: _____

SUBMITTED:
JUDY B. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: _____

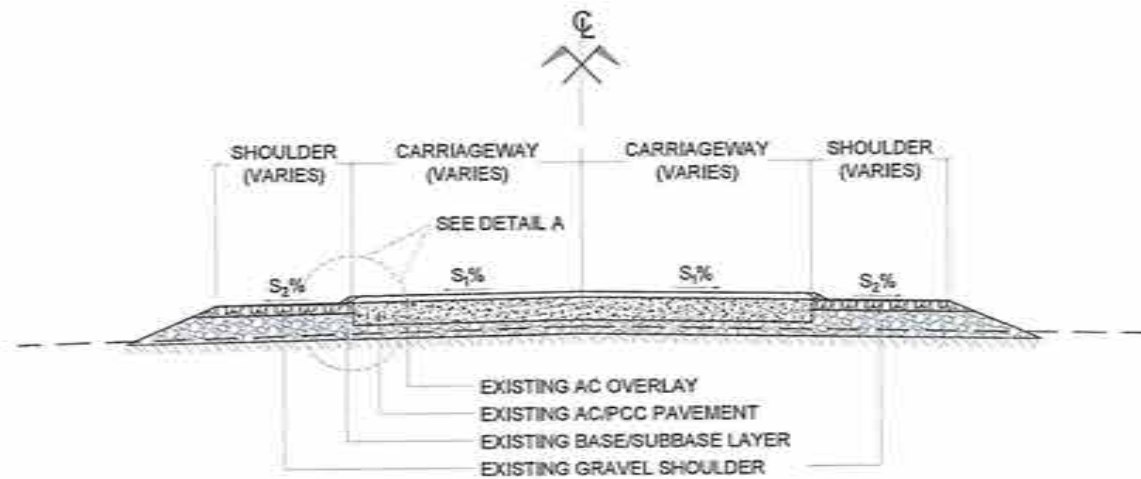
RECOMMENDING APPROVAL:
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: _____

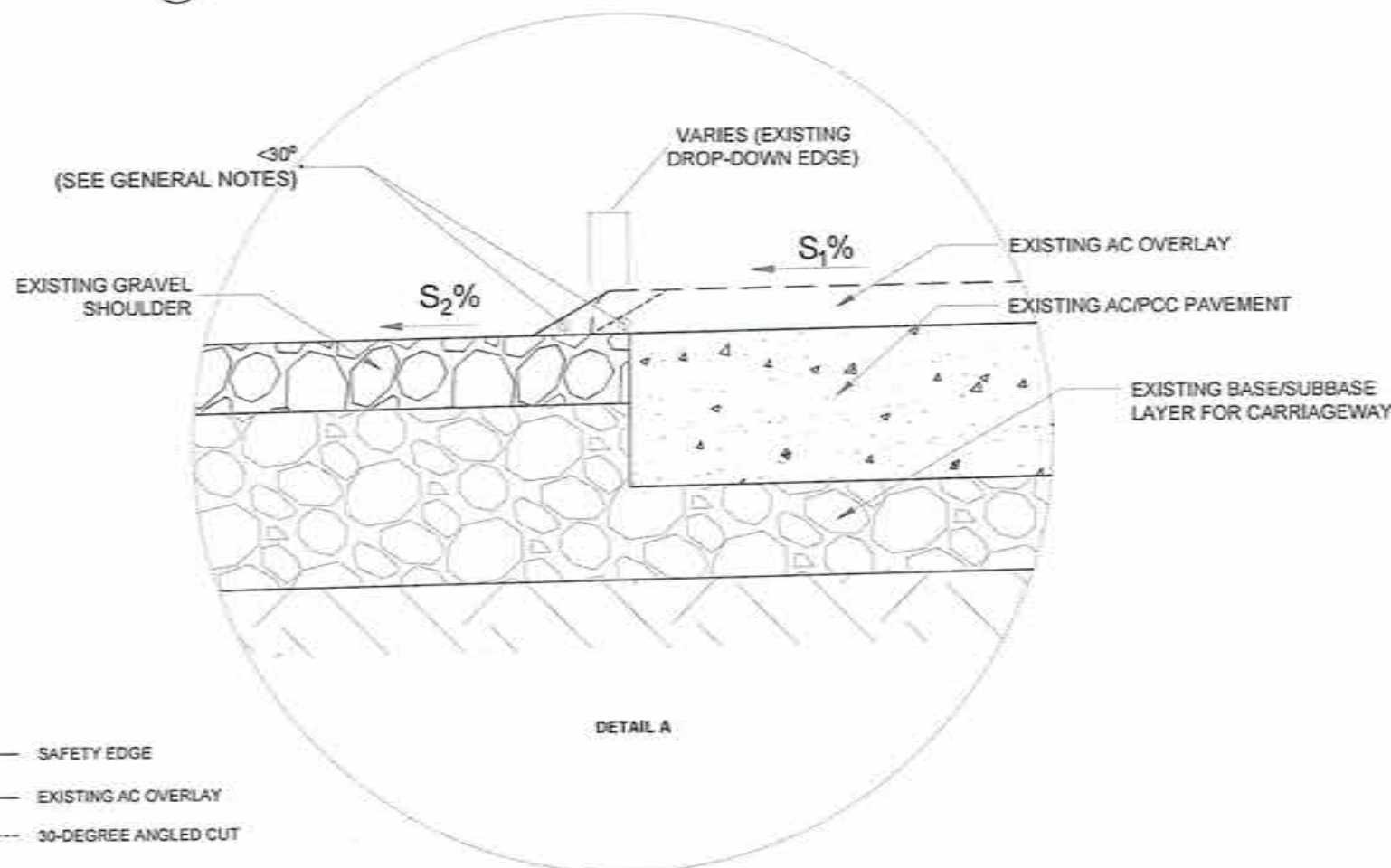
SET NO. SHEET NO.
A 8
8 40

GENERAL NOTES

1. ALL WORK AFFECTED BY THE IMPLEMENTATION OF THE SAFETY EDGE DROP-OFF MUST BE ADJUSTED AS NECESSARY AND IN COMPLIANCE WITH THE DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES, AND AIRPORTS, 2013, OR THE LATEST APPLICABLE ISSUANCES.
2. SAFETY EDGE TREATMENT SHOULD BE DESIGNED TO CREATE A 30-DEGREE ANGLED SHAPE RELATIVE TO THE EDGE OF THE PAVEMENT, EXTENDING UP TO THE UNPAVED SHOULDER.
3. THE MATERIALS SHOULD PROVIDE DURABILITY AND STABILITY TO WITHSTAND TRAFFIC LOADS AND ENVIRONMENTAL CONDITIONS. IF THE GRAVEL SHOULDER IS FOUND TO BE ERODIBLE, THE PROJECT ENGINEER SHOULD TAKE CORRECTIVE MEASURES SUCH AS COMPACTING THE GRAVEL OR REPLACING IT WITH SUITABLE MATERIALS.
4. USE APPROPRIATE EQUIPMENT FOR SHAPING AND COMPACTING THE SAFETY EDGE. THE CONTRACTOR MAY USE A SHOEWEDGE MAKER OR ANY SIMILAR EQUIPMENT THAT PRODUCES THE SAME COMPACTION RESULTS. SHORT SECTIONS OF HANDWORK WILL BE ALLOWED WHEN NECESSARY FOR TRANSITIONS/ TURNOUTS.
5. THE DESIGNER SHALL VERIFY THE SUITABILITY OF SAFETY EDGE TREATMENT AT INTERSECTIONS, TRANSITION ZONES, TURNOUTS, DRIVEWAYS/ RAMPS, PEDESTRIAN CROSSINGS, AND AREAS WITH MULTIPLE OVERLAYS, AMONG OTHER CRITICAL AREAS. THE DESIGN APPROACH FOR THE ABOVE SCENARIOS SHOULD BE ADJUSTED BY THE DESIGNER ON A CASE-BY-CASE BASIS.
6. TO CONSTRUCT A SAFETY EDGE ALONG EXISTING OVERLAY WITH AN INAPPROPRIATE DEGREE DROP-OFF EDGE, THE FOLLOWING STEPS SHOULD BE FOLLOWED:
 - CONDUCT A DETAILED ASSESSMENT OF THE EXISTING ASPHALT OVERLAY TO IDENTIFY SURFACE IRREGULARITIES, DAMAGE LAYERS, AND ANY AREAS REQUIRING MILLING.
 - MILL THE EXISTING OVERLAY ALONG THE EDGE TO CREATE A 30-DEGREE TAPERED SLOPE. THIS ANGLE MAY BE ADJUSTED BASED IN PAVEMENT CONDITIONS, SUCH AS SURFACE IRREGULARITIES AND DAMAGE LAYERS.
 - SELECT MILLING EQUIPMENT AND TECHNIQUES CAPABLE OF ACHIEVING THE DESIRED SLOPE ANGLE AND TRANSITION LENGTH.
 - AFTER MILLING, PREPARE THE MILLED SURFACE BY ADDRESSING ANY SURFACE IRREGULARITIES OR DEBRIS. ENSURE THAT THE MILLED EDGE IS SMOOTH AND FREE FROM DEFECTS THAT COULD AFFECT THE CONSTRUCTION OF THE SAFETY EDGE TREATMENT.
 - CONSTRUCT THE SAFETY EDGE TREATMENT AFTER MILLING ACCORDING TO GUIDELINES TO ACHIEVE THE DESIRED SLOPE, PROVIDING A GRADUAL TRANSITION FROM THE ROADWAY SURFACE. ENSURE THAT THE SAFETY EDGE THICKNESS AND PROFILE MEET DESIGN STANDARDS AND FACILITATE A SMOOTH TRANSITION FOR VEHICLES.



1 SAFETY EDGE DROP-OFF ON EXISTING AC OVERLAY WITH GRAVEL SHOULDERS



LEGEND:

- SAFETY EDGE
- EXISTING AC OVERLAY
- 30-DEGREE ANGLED CUT



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
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
SAFETY EDGE DROP-OFF ON EXISTING AC
OVERLAY WITH GRAVEL SHOULDER

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER
DATE

REVIEWED
DENVER ALDRIN A. SEMPIO
ENGINEER & OIC - SECTION CHIEF
DATE

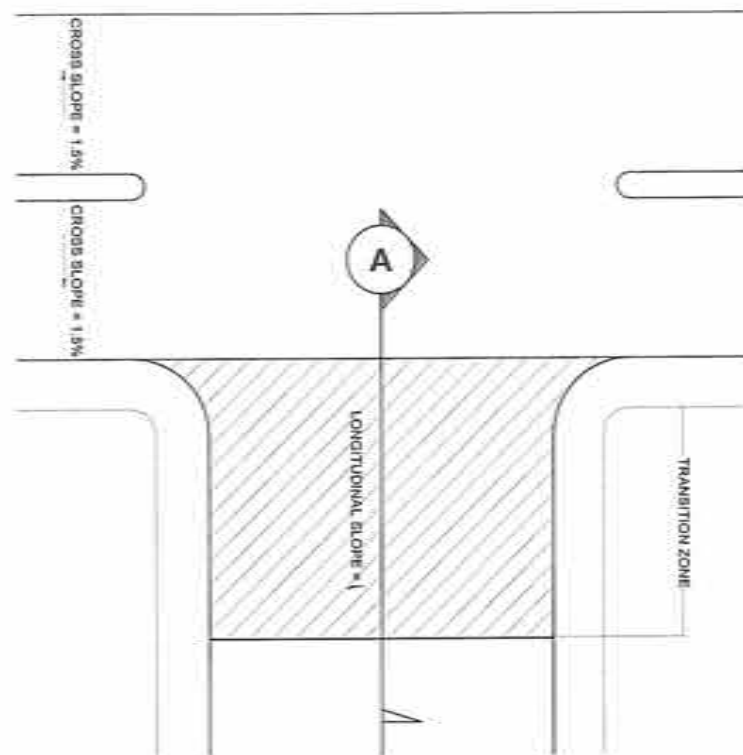
SUBMITTED
JUDY B. CORDON
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDED APPROVAL
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO.
A
9/19
SHEET NO.
9
40

JOINING ROAD WITH PCCP (AT ROAD INTERSECTION)



- NOTE:
1. THE MILLING OF EXISTING SLAB SHOULD END AT THE NEXT WEAKENED PLANE JOINT
 2. THE ALGEBRAIC DIFFERENCE OF GRADIENT AT JOINING ROAD SHOULD NOT EXCEED 0.50%. OTHERWISE APPROPRIATE VERTICAL PARABOLIC CURVE SHALL BE PROVIDED IF THE ALGEBRAIC DIFFERENCE OF GRADIENT IS MORE THAN 0.50%.

FIGURE 1: SCHEMATIC PLAN

1st STEP: MILLING OF EXISTING SLAB

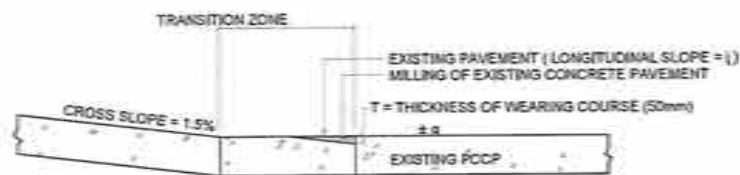


FIGURE 1a: TRANSITION PROFILE, EXISTING

2nd STEP: LAYING OF REMAINING ASPHALT COURSES

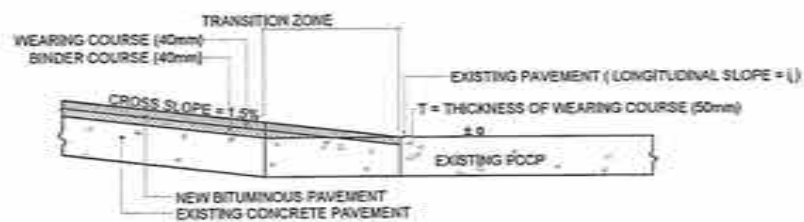


FIGURE 1b: TRANSITION PROFILE, AC OVERLAY

JOINING ROAD WITH PCCP (ALONG THRU - ROAD)



- NOTE:
1. THE MILLING OF EXISTING SLAB SHOULD END AT THE NEXT WEAKENED PLANE JOINT
 2. THE ALGEBRAIC DIFFERENCE OF GRADIENT AT JOINING ROAD SHOULD NOT EXCEED 0.50%. OTHERWISE APPROPRIATE VERTICAL PARABOLIC CURVE SHALL BE PROVIDED IF THE ALGEBRAIC DIFFERENCE OF GRADIENT IS MORE THAN 0.50%.

FIGURE 2: SCHEMATIC PLAN

1st STEP: MILLING OF EXISTING SLAB

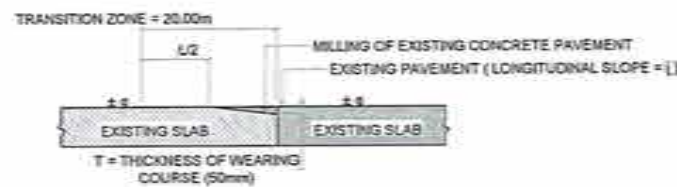


FIGURE 2a: TRANSITION PROFILE, EXISTING

2nd STEP: LAYING OF REMAINING ASPHALT COURSES

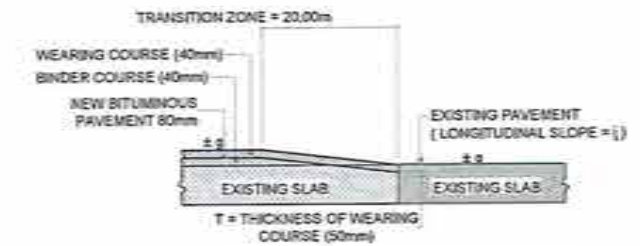


FIGURE 2b: TRANSITION PROFILE, AC OVERLAY



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

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
ASPHALT OVERLAY JOINING ROAD WITH PCCP (AT ROAD INTERSECTION)
ASPHALT OVERLAY JOINING ROAD WITH PCCP (ALONG THRU - ROAD)

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER I
DATE: 10/19/2019

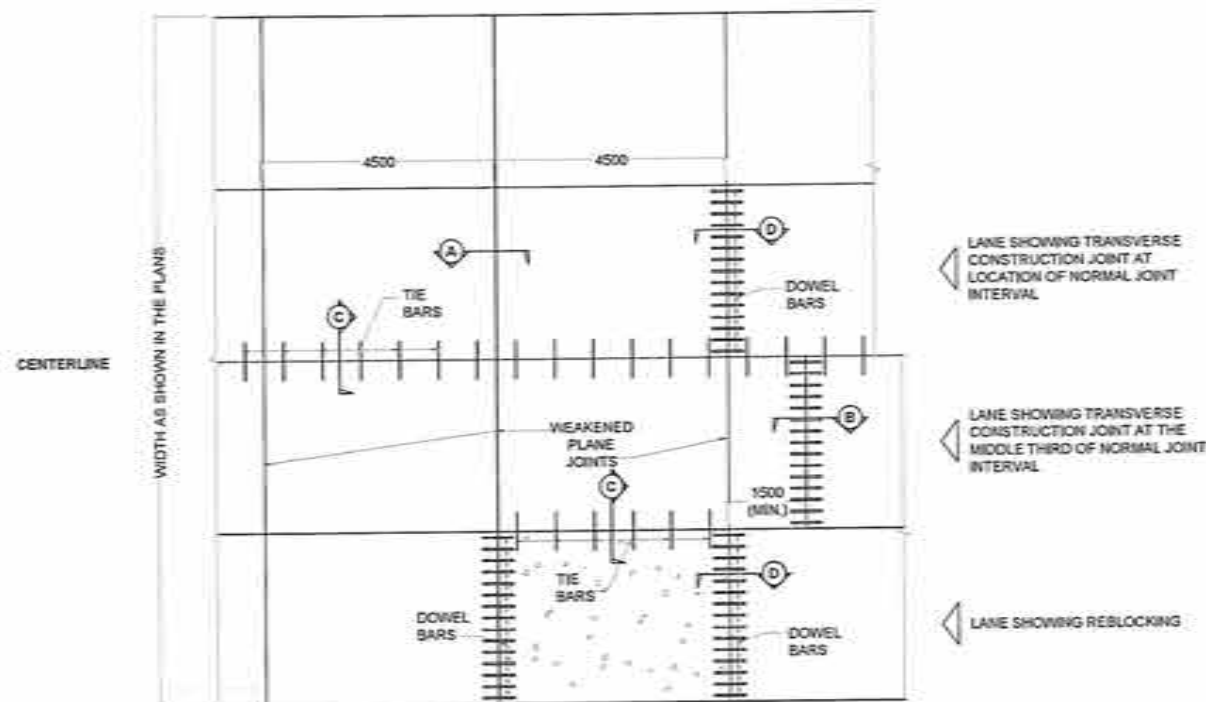
REVIEWED:
DENVER ALDRIN A. SEMPJO
ENGINEER'S C/C - SECTION CHIEF
DATE: 10/19/2019

SUBMITTED:
JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 10/19/2019

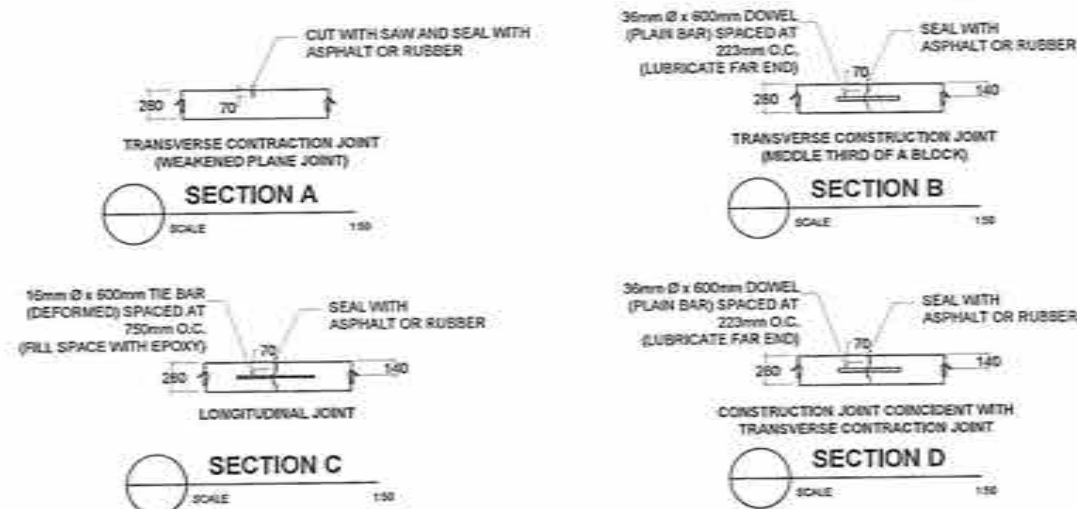
RECOMMENDING APPROVAL:
JOSELYN B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 10/19/2019

APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: 10/19/2019

SET NO. 10
SHEET NO. 40



TYPICAL PLAN OF PAVEMENT (FOR REBLOCKING)
SCALE 1/12



MINIMUM STANDARDS (PER P.D. 40 S. 2018)			SUBSTITUTE	
SLAB THICKNESS (mm)	DOWEL SIZE (mm)	SPACING (mm)	DOWEL SIZE (mm)	SPACING (mm)
280	36	300	32	250
290	36	295	28	190
300	36	274	25	150
310	36	255	32	230
320	36	238	28	170
330	36	223	25	140
340	36	209	32	210
			28	160
			25	130
			32	200
			28	150
			25	120
			32	190
			28	140
			25	110
			32	180
			28	130
			25	110
			32	170
			28	130
			25	100

NOTE:
IF IN CASE THE REQUIRED DIAMETER OF 36mm IS NOT COMMERCIALY AVAILABLE, SMALLER DOWEL BARS

DESIGN CONDITIONS	
DESIGN PERIOD	YEARS
ACTUAL LOADING	(INCLUDING OVERLOADED TRUCKS)
DESIGN ESAL	ONE DIRECTION
CONCRETE STRENGTH	PSI @ 28 DAYS

DESIGN CBR = MEAN CBR - $\frac{1}{2} S$
 where: $S = 1.48 \sqrt{\frac{1}{n} \sum (x_i - \bar{x})^2}$
 MEAN CBR = $\frac{\sum CBR_i}{n}$
 Resilient Modulus of Subgrade: $M_R = CBR \times 1500$
 CBR =
 M_R =

PAVEMENT DESIGN PARAMETERS	
DESIGN LIFE	YEARS
TGR	ASSUMED TRAFFIC GROWTH
R	
Z_R	
S_o	OVERALL STANDARD DEVIATION
W_{90}	x 10^3 (18 KIP ESAL)
PT	
ΔPSI	PRESENT SERVICEABILITY INDEX
S_c	PSI
Cd	
J	
E_c	x 10^3 psi
k	psi

TABLE FOR SPACING OF TIE BARS (L=600mm)		
SLAB THICKNESS (mm)	SPACING, S _t (mm)	
	12mm Ø	16mm Ø
230	800	750
240	800	750
250	800	750
260	500	750
270	500	750
280	500	750
290	500	750
300	500	750
310	400	750
320	400	750
330	400	750
340	400	750

BASED ON AASHTO GUIDE FOR THE DESIGN OF PAVEMENT STRUCTURES 1993

TABLE FOR SPACING OF PLAIN DOWEL (L=600mm)		
SLAB THICKNESS (mm)	DIAMETER, D (mm)	SPACING, S _t (mm)
280	36	300
290	36	295
300	36	274
310	36	255
320	36	238
330	36	223
340	36	209

NOTE:
DIAMETER AND SPACING OF PLAIN DOWEL BARS MAY BE MODIFIED AS LONG AS THE EQUIVALENT STEEL AREA IS SUSTAINED.

- NOTE:
- MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE "DPWH STANDARD SPECIFICATION FOR HIGHWAYS, BRIDGE AND AIRPORTS 2013".
 - CONSTRUCTION (CONTACT) JOINTS ARE FORMED WHEN CONCRETE ON ONE SIDE OF THE JOINT IS POURED AHEAD AND ALLOWED TO SET BEFORE POURING ON THE OTHER SIDE. NO CONSTRUCTION JOINT SHALL BE PLACED WITHIN 1.50m FROM THE WEAKENED PLANE JOINT.
 - AT CONSTRUCTION JOINTS (LONGITUDINAL OR TRANSVERSE) CARE SHOULD BE TAKEN THAT NO CONCRETE FROM THE LAST SLAB PLACED OVERHANGS ANY PORTION OF THE FIRST SLAB.
 - TIE BARS SHOULD BE DEFORMED STEEL BARS, ALL DOWEL BARS SHALL BE SMOOTH AROUND STEEL BAR FREE FROM RUST AND OTHER DEFECTS (REFER TO CLAUSE 3.1, 3.12 THE STANDARD SPECIFICATION FOR ROADS AND BRIDGES 1995).
 - TYPE OF WEAKENED PLANE JOINT TO BE USED SHALL BE SPECIFIED IN THE PLANS AND ONLY ONE TYPE SHALL BE USED FOR THE WHOLE PROJECT.
 - MATERIAL FOR THE METAL SIDE FORM SHALL BE BRAND NEW SHEET METAL GAUGE NO. 18 OF BLACK IRON FREE FROM RUST AND LINKS.
 - AT LEAST SIX (6) SUCCESSIVE DOWELLED BUTT JOINTS AT NORMAL JOINT SPACING SHALL BE PROVIDED BEFORE OR AFTER AN EXPANSION JOINT.
 - THE GROOVE OR CRACK ABOVE JOINTS (LONGITUDINAL OR TRANSVERSE) SHALL BE SEALED WITH 30-50 PENETRATION ASPHALT SEAL OR COLD APPLIED LIQUID RUBBER COMPOUND AFTER THE CONCRETE HARDENS AND BEFORE OPENING THE PAVEMENT TO THE TRAFFIC. PENETRATION ASPHALT SEAL ON CONCRETE PAVEMENT JOINT SHALL BE POURED IN SUCH MANNER THAT SPILLING WILL BE ELIMINATED / PREVENTED. THUS, PROVIDING A SMOOTH LEVELING / RIDING SURFACE.



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

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
JOINT DETAILS (FOR REBLOCKING)

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER
DATE:

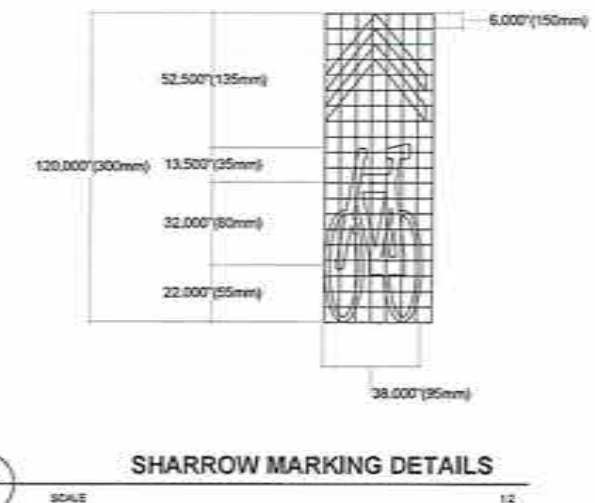
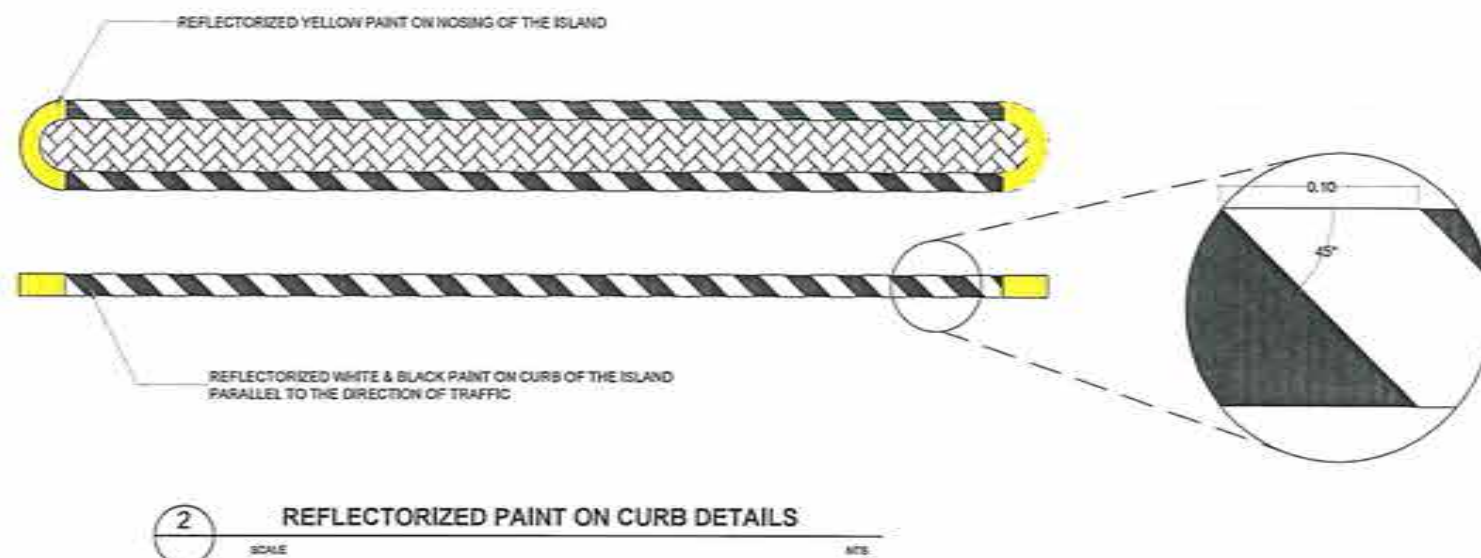
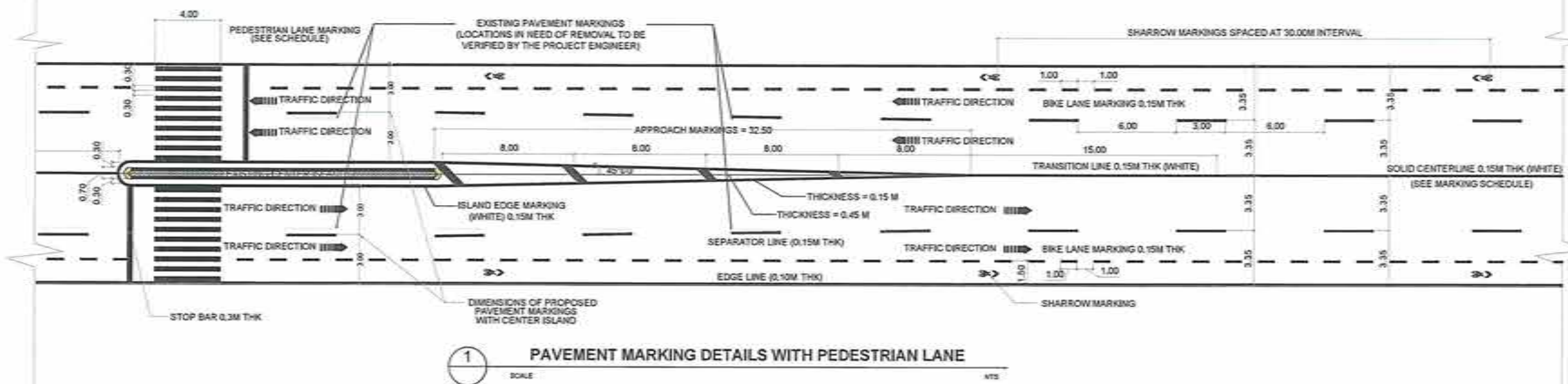
REVIEWED
DENVER ALDWIN A. SEMPITO
ENGINEER, O.C. - SECTION CHIEF
DATE:

SUBMITTED
JUDY B. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE:

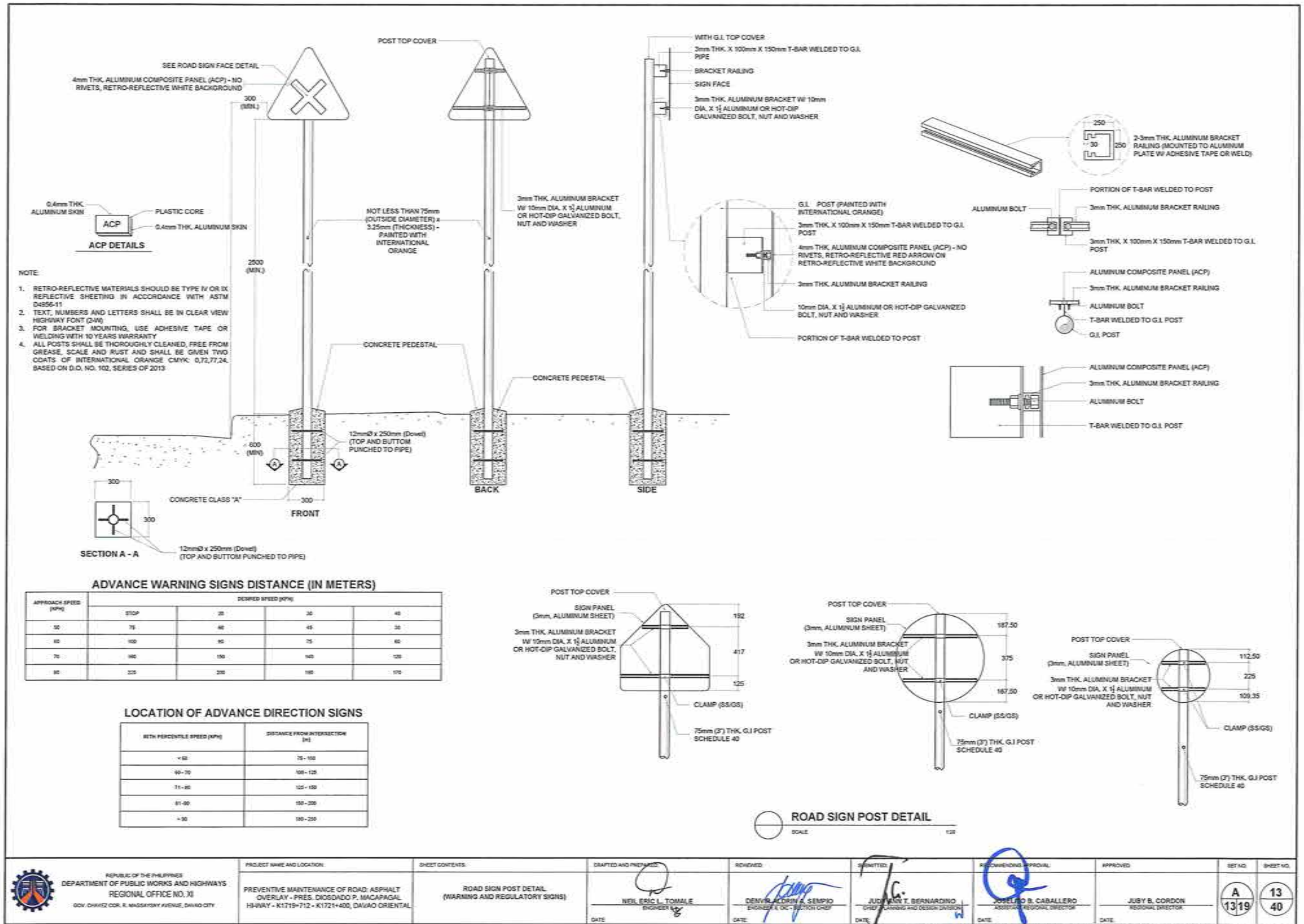
RECOMMENDED APPROVAL
JOSEPH B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE:

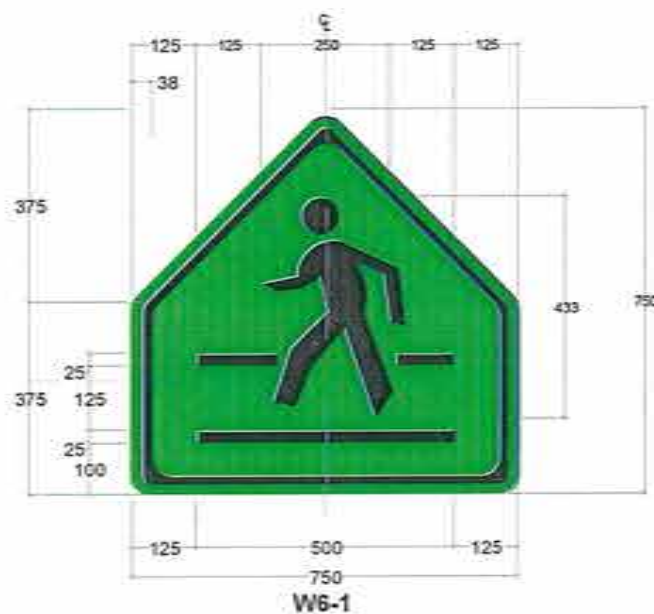
APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE:

SHEET NO.
A
11/19
11
40



 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 PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HIGHWAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SHEET CONTENTS TYPICAL PAVEMENT MARKINGS REFLECTORIZED PAINT ON CURB DETAILS SHARROW MARKING DETAILS	DRAFTED AND PREPARED NEIL ERIC L. TOMALE ENGINEER II DATE: _____	REVIEWED DENVER ALDORA A. SEMPIO ENGINEER I, CK - SECTION CHIEF DATE: _____	SUBMITTED JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE: _____	RECOMMENDING APPROVAL JOSEPH B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE: _____	APPROVED JUBY B. CORDON REGIONAL DIRECTOR DATE: _____	SET NO. A 12/19 SHEET NO. 12 40
--	--	---	---	--	---	--	--	--





WARNING SIGN (W6-1C)
SCALE 1:10

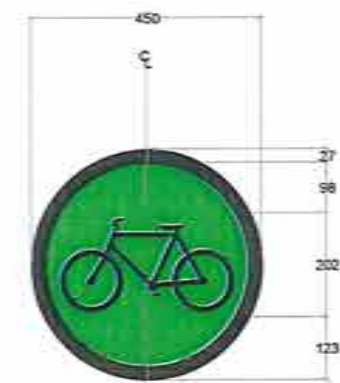


BLACK SYMBOLS AND BORDER ON RETRO-REFLECTIVE FLUORESCENT YELLOW-GREEN BACKGROUND

REGULATORY SIGN (R6-8C)
SCALE 1:10



REGULATORY SIGN (R6-9C)
SCALE 1:10



BLACK SYMBOLS, LEGEND, AND BORDER ON REFLECTORIZED FLUORESCENT YELLOW-GREEN BACKGROUND

REGULATORY SIGN (R6-10A)
SCALE 1:10

ROAD SIGN FACE DETAIL
SCALE 1:10



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:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:
ROAD SIGN FACE DETAIL
(WARNING SIGNS & REGULATORY SIGNS)

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER I
DATE

REVIEWED:
DENYALD R. SEMPIO
ENGINEER II, DEC - SECTION CHIEF
DATE

SUBMITTED:
JUDY A. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL:
JOSEITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO.
A
14/19

SHEET NO.
14
40

SCHEDULE FOR REMOVAL OF MARKINGS						
STATION	LENGTH	WIDTH	NO. OF STRIPS	AREA	REMARKS	
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	0.15	1.00	254.40	CENTERLINE/ISLAND	
Sta. 1719+811.092 - Sta. 1721+509.552	3.00	0.15	376.00	169.20	EDGE LINE	
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	0.30	2.00	339.20	LANE SEPARATOR	
Sta. 1719+406.868 - Sta. 1719+439.368	32.50	0.15	2.00	9.75	EDGE LINE	
Sta. 1719+406.868 - Sta. 1719+439.368	32.50	0.15	2.00	9.75	APPROACH MARKING (0.15M THK)	
Sta. 1719+497.670 - Sta. 1719+530.170	32.50	0.15	2.00	9.75	APPROACH MARKING (0.15M THK)	
Sta. 1720+510.000	4.00	0.30	23.00	27.60	PEDESTRIAN LANE	
Sta. 1720+510.000	6.70	0.30	2.00	4.02	STOP BAR	

SCALE NTS

SCHEDULE FOR REMOVAL OF PCCP, 280mm THK						
STATION	STATION EQUATION	LENGTH	WIDTH	AREA	REMARKS	
Sta. 1720+140.000		9.000	13.40	482.40	ALL 4 LANES	
Sta. 1721+223.225 - Sta. 1721+236.725		13.500	3.35	45.23	INNER LANE, L/S	

SCALE NTS

SCHEDULE FOR PCCP, 280mm THK						
STATION	STATION EQUATION	LENGTH	WIDTH	AREA	REMARKS	
Sta. 1720+140.000		6.00	13.40	80.40	SUBTRACTING THE AREA THAT THE BOX CULVERT WILL COVER SINCE IT WILL BE LAID ON TOP	
Sta. 1721+223.225 - Sta. 1721+236.725		13.50	3.35	45.23	INNER LANE, L/S	

SCALE NTS

SCHEDULE FOR GRAVEL SURFACE COURSE, 80mm THK								
STATION	STATION EQUATION	LENGTH	WIDTH	THICKNESS	VOLUME	SIDE		
Sta. 1719+811.092 - Sta. 1721+509.552	Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	2.00	0.08	271.36	RIGHT		
-	Sta. 1720+019.521 - Sta. 1720+030.000							
-	Sta. 1720+319.694 - Sta. 1720+320.000							
-	Sta. 1720+639.623 - Sta. 1720+640.000							
-	Sta. 1720+759.664 - Sta. 1720+760.000							
-	Sta. 1721+339.418 - Sta. 1721+340.000							
Sta. 1719+811.092 - Sta. 1721+509.552	Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	2.00	0.08	271.36	LEFT		
-	Sta. 1720+019.521 - Sta. 1720+030.000							
-	Sta. 1720+319.694 - Sta. 1720+320.000							
-	Sta. 1720+639.623 - Sta. 1720+640.000							
-	Sta. 1720+759.664 - Sta. 1720+760.000							
-	Sta. 1721+339.418 - Sta. 1721+340.000							

SCALE NTS

BIKE LANE ROAD SIGN SCHEDULE				
STATION	LENGTH	RS-30A	SIDE	REMARKS
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	8.00	R/S	Spaced at 200m intervals
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	8.00	L/S	Spaced at 200m intervals

SCALE NTS

ROAD SIGN SCHEDULE					
STATION	NO. OF PIECE/S	SIDE	NO. OF PIECE/S	SIDE	NO. OF PIECE/S
Sta. 1719+811.092 - Sta. 1721+509.552	1.00	R/S	2.00	R/S	
Sta. 1719+811.092 - Sta. 1721+509.552	1.00	L/S			
Sta. 1719+811.092 - Sta. 1721+509.552	1.00	R/S			
Sta. 1719+811.092 - Sta. 1721+509.552	1.00	R/S			
Sta. 1719+811.092 - Sta. 1721+509.552	1.00	L/S			

SCALE NTS

SCHEDULE FOR STREETLIGHT EARTHWORKS				
No. of Streetlights	Posting Area (sq.m)	Workable Area (sq.m)	Structure Excavation (cu.m)	Gravel Bedding (cu.m)
22.00	1.44	2.89	82.65	3.158

SCALE NTS

BAR BENDING DIAGRAM	MARK		SIZE (mmØ)	QTY PER PEDESTAL	TOTAL NUMBER OF PEDESTAL	DIMENSIONS (mm)						CUT LENGTH				UNIT WEIGHT (kg/m)	TOTAL WT. (ADJUSTED)	CONCRETE VOLUME (m³)
						a	b	c	d	e (HOOK)	f (HOOK)	g	LENGTH PER BAR (m)	LAP LENGTH	TOTAL LENGTH BAR (m)			
	FOOTING	1.00 SET	12	14	22	1,050.00	140.00	140.00				1.33	-	1.33	409.64	0.89	363.76	16.26
	COLUMN	1.00 SET	12	4		1,600.00	220.00	220.00				2.04	-	2.04	179.52	0.89	159.41	
	STIRRUPS 1	1.00 SET	12	13		250.00	250.00	250.00	250.00	130.00	130.00	1.26		1.26	360.36	0.89	320.00	

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	SHEET CONTENTS	DRAWN AND PREPARED	REVIEWED	SUBMITTED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HWYWAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SCHEDULES	NEIL ERIC L. TOMALE ENGINEER B	DENVER A. CRIVIL A. SEMPIO ENGINEER I, OIC - SECTION CHIEF	JUDY ANN P. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSELO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUSY B. CORDON REGIONAL DIRECTOR	A 15/19	15 40

PAVEMENT MARKINGS SCHEDULE											
STATION LIMITS	STATION EQUATIONS		LENGTH (EDGE LINE) SINGLE SOLID WHITE 0.10M THK	LENGTH (CENTER LINE) SINGLE SOLID YELLOW 0.15M THK	LENGTH (CENTER LINE) DOUBLE SOLID YELLOW 0.15M THK	LENGTH (CENTER LINE) SINGLE SOLID WHITE 0.15M THK	LENGTH (ISLAND EDGE LINE) WHITE 0.15M THK (1 EDGELINE PER SIDE)	NO. OF LANES (FOR LANE LINES)	TOTAL LANE LINES (MULTIPLIE D WITH NO. OF LANES LINES) BROKEN WHITE	AREA SQ.M. (WHITE)	AREA SQ.M. (YELLOW)
	BACK	AHEAD									
Sta. 1719+811.092 - Sta. 1720+439.368	Sta. 1719+839.620	Sta. 1719+840.000	627.111			627.111	-	2.00	140.00	282.49	-
	Sta. 1720+019.521	Sta. 1720+020.000									
	Sta. 1720+319.694	Sta. 1720+320.000									
Sta. 1720+439.368 - Sta. 1720+497.670			58.302			-	58.30	2.00	12.00	34.88	-
Sta. 1720+497.670 - Sta. 1720+520.500			22.830			22.830		2.00	4.00	9.79	-
Sta. 1720+520.500 - Sta. 1720+579.446			58.945			-	58.95	2.00	12.00	35.20	-
Sta. 1720+579.446 - Sta. 1721+175.737	Sta. 1720+639.623	Sta. 1720+640.000	595.578			595.578	-	2.00	132.00	267.85	-
	Sta. 1720+759.664	Sta. 1720+760.000									
Sta. 1721+175.737 - Sta. 1721+315.853	Sta. 1721+339.418	Sta. 1721+340.000	139.534		139.53			2.00	30.00	41.41	41.86
Sta. 1721+315.853 - Sta. 1721+509.552			193.699			193.699		2.00	42.00	86.69	-



PAVEMENT MARKING SCHEDULE

SCALE

NTS

PEDESTRIAN SCHEDULE				
STATION LIMITS	WIDTH OF STRIPS	LENGTH OF STRIPS	NO. OF STRIPS	AREA
Sta. 1719+920.000	0.30	4.00	23.00	27.60
Sta. 1719+510.000	0.30	4.00	23.00	27.60
Sta. 1720+000.000	0.30	4.00	23.00	27.60



PEDETRIAN MARKING SCHEDULE

SCALE

NTS

STOP BAR SCHEDULE				
STATION LIMITS	WIDTH OF STRIPS	LENGTH OF STRIPS	NO. OF STRIPS	AREA
Sta. 1719+920.000	0.30	6.70	2.00	4.02
Sta. 1719+510.000	0.30	6.70	2.00	4.02
Sta. 1720+000.000	0.30	6.70	2.00	4.02



STOP BAR SCHEDULE

SCALE

NTS

APPROACH TO MEDIAN ISLAND MARKING SCHEDULE				
STATION LIMITS	TOTAL LENGTH OF DIAGONAL STRIPS (0.45M THK)	AREA	TOTAL LENGTH OF TRANSITION LINES (0.15M THK)	AREA
Sta. 1719+406.868 - Sta. 1719+439.368	5.056	2.275	80.02	12.00
Sta. 1719+497.670 - Sta. 1719+530.170	5.056	2.275	80.02	12.00



APPROACH TO MEDIAN ISLAND MARKING SCHEDULE

SCALE

NTS

REFLECTORIZED WHITE & BLACK PAINT ON CURB SCHEDULE					
STATION LIMITS	TOTAL LENGTH	WIDTH OF CURB	HEIGHT OF CURB (EXPOSED)	TOTAL EXPOSED (WIDTH + HEIGHT)	AREA
Sta. 1720+439.368 - Sta. 1720+497.670	114.40	0.15	0.17	0.32	36.610
Sta. 1720+520.500 - Sta. 1720+579.446	115.69	0.15	0.17	0.32	37.022



REFLECTORIZED WHITE & BLACK PAINT ON CURB SCHEDULE

SCALE

NTS

BIKE LANE MARKINGS SCHEDULE						
STATION	LANE MARKING			SHARROW PAVEMENT MARKING		
	LENGTH	NO. OF STRIPS	AREA (L=1M, W=0.15M)	NO. OF MARKINGS	AREA (A=0.915SQ.M.)	SIDE
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	848.00	127.20	57.00	52.16	R/S
Sta. 1719+811.092 - Sta. 1721+509.552	1,696.00	848.00	127.20	57.00	52.16	L/S



BIKE LANE MARKING SCHEDULE

SCALE

NTS

REFLECTORIZED YELLOW PAINT ON CURB NOSING SCHEDULE					
STATION	TOTAL LENGTH	WIDTH OF CURB	HEIGHT OF CURB (EXPOSED)	TOTAL EXPOSED (WIDTH + HEIGHT)	AREA
Sta. 1720+439.368	1.10	0.15	0.17	0.32	0.352
Sta. 1720+497.670	1.10	0.15	0.17	0.32	0.352
Sta. 1720+520.500	1.10	0.15	0.17	0.32	0.352
Sta. 1720+579.446	1.10	0.15	0.17	0.32	0.352



REFLECTORIZED WHITE & BLACK PAINT ON CURB SCHEDULE

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:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:
SCHEDULES

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER
DATE

REVIEWED:
DENNIS ALDRIN A. SEMPIO
ENGINEER IN CHARGE - SECTION CHIEF
DATE

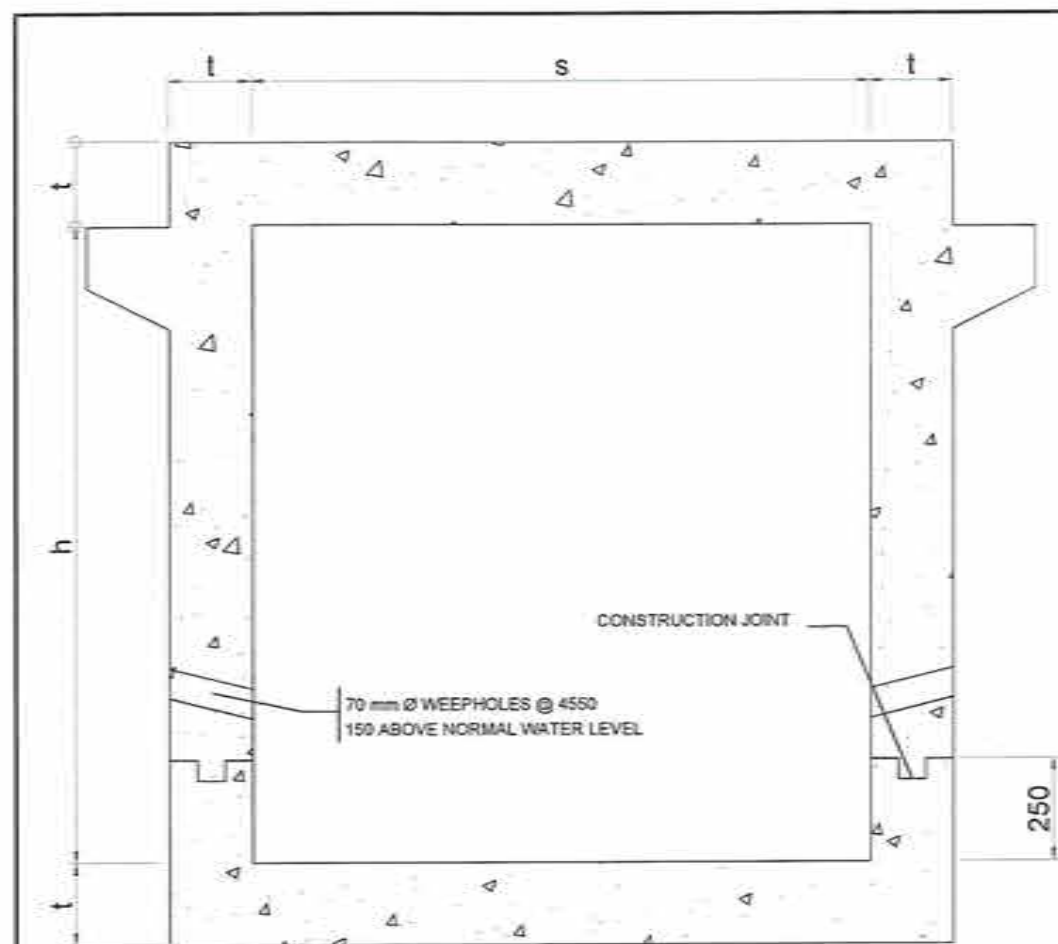
SUBMITTED:
JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL:
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

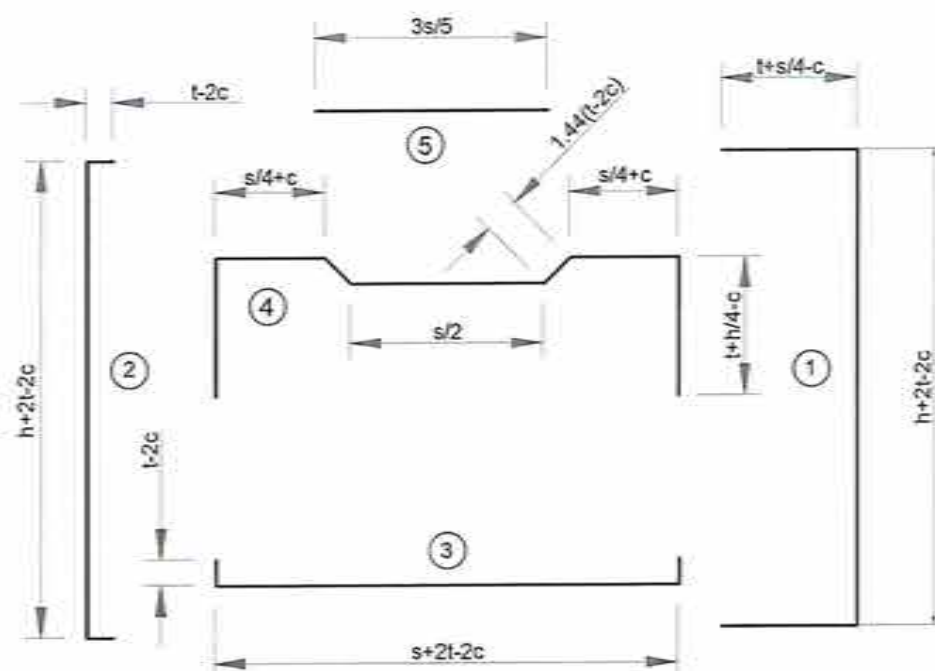
APPROVED:
JUBY S. CORDON
REGIONAL DIRECTOR
DATE

SHEET NO.
A
16/19

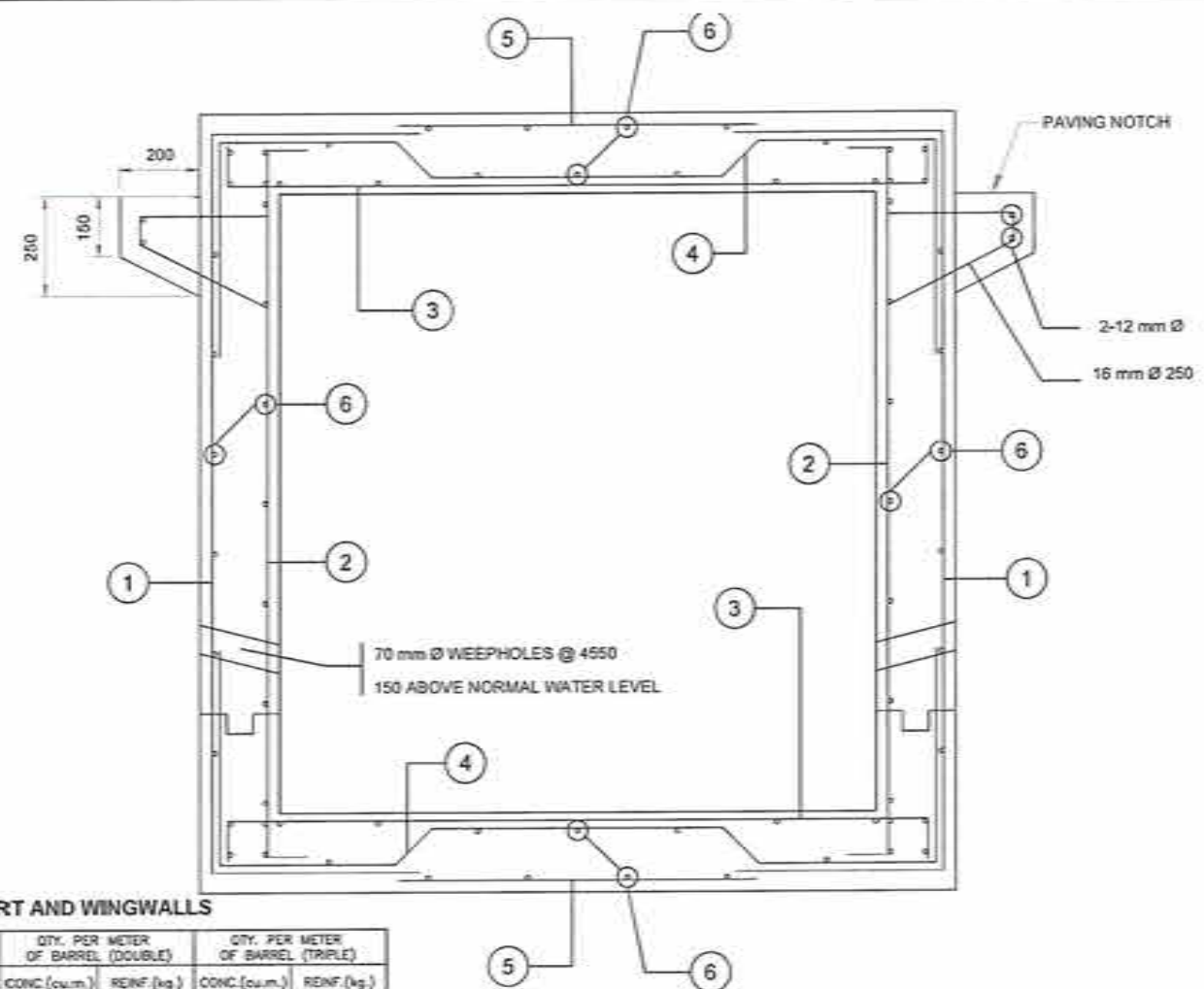
SHEET NO.
16
40



1 SECTION OF SINGLE BARREL RCBC
SCALE 1:12.5



3 BAR BENDING DIAGRAM
SCALE 1:20



2 SECTION OF SHOWING REINFORCEMENT
SCALE 1:12.5

QUANTITIES FOR BOX CULVERT AND WINGWALLS

SPAN s	HEIGHT h	QTY. PER METER OF BARREL (SINGLE)		QTY. PER METER OF BARREL (DOUBLE)		QTY. PER METER OF BARREL (TRIPLE)	
		CONC. (cu.m.)	REINF. (kg.)	CONC. (cu.m.)	REINF. (kg.)	CONC. (cu.m.)	REINF. (kg.)
2400	1800	2.04	272.00	5.04	427.00	7.20	614.00
	2100	2.17	286.00	5.31	442.00	7.56	633.00
	2400	2.31	317.00	5.58	463.00	7.92	659.00
	2750	2.46	358.00	5.80	480.00	8.34	680.00
3000	2100	3.17	313.00	6.03	631.00	8.64	896.00
	2400	3.34	329.00	6.30	654.00	9.00	925.00
	2750	3.53	397.00	6.62	708.00	9.42	1000.00
	3000	3.67	418.50	6.84	726.00	9.72	1022.00

BAR SCHEDULE

CLEAR		SINGLE BARREL BOX CULVERT												DOUBLE AND TRIPLE BARREL BOX CULVERT																			
		1	BAR 1		BAR 2		BAR 3		BAR 4		BAR 5		BAR 6		1	BAR 1		BAR 2		BAR 3		BAR 4		BAR 5		BAR 6		BAR 7		BAR 8		BAR 9	
SPAN s	HEIGHT h	mm	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	mm	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING	ø	SPACING
2400	1800	220	15	220	15	280	15	220	15	220	12	240	12	250	300	15	300	15	280	15	300	15	300	15	300	20	120	12	300	12	200	12	250
	2100	220	15	220	15	260	15	220	15	220	12	240	12	250	300	15	300	15	280	15	300	15	300	15	300	20	120	12	300	12	200	12	250
	2400	220	15	220	15	200	15	220	15	220	12	240	12	250	300	15	300	15	280	15	300	15	300	15	300	20	120	12	300	12	200	12	250
	2750	220	15	200	15	180	15	200	15	200	12	240	12	250	300	20	300	15	280	15	300	15	300	15	300	20	120	12	300	12	200	12	250
3000	2100	280	15	260	15	260	15	260	15	260	12	200	12	250	300	20	300	15	280	20	300	20	300	20	300	25	170	12	300	12	200	12	250
	2400	280	15	260	15	260	15	260	15	260	12	200	12	250	300	20	300	15	280	20	300	20	300	20	300	25	170	12	300	12	200	12	250
	2750	280	15	200	15	240	15	220	15	200	12	200	12	250	300	20	300	15	200	20	300	20	300	20	300	25	170	15	300	12	200	12	250
	3000	280	15	200	15	220	15	220	15	200	12	200	12	250	300	20	300	15	200	20	300	20	300	20	300	25	170	15	300	12	200	12	250



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
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
H-WAY - K1719+T12 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
DETAIL OF REINFORCED CONCRETE BOX CULVERT
QUANTITIES FOR BOX CULVERT AND WINGWALLS
BAR SCHEDULE

DRAFTED AND PREPARED
JAMICA A. MANING
ENGINEER II
DATE: 8

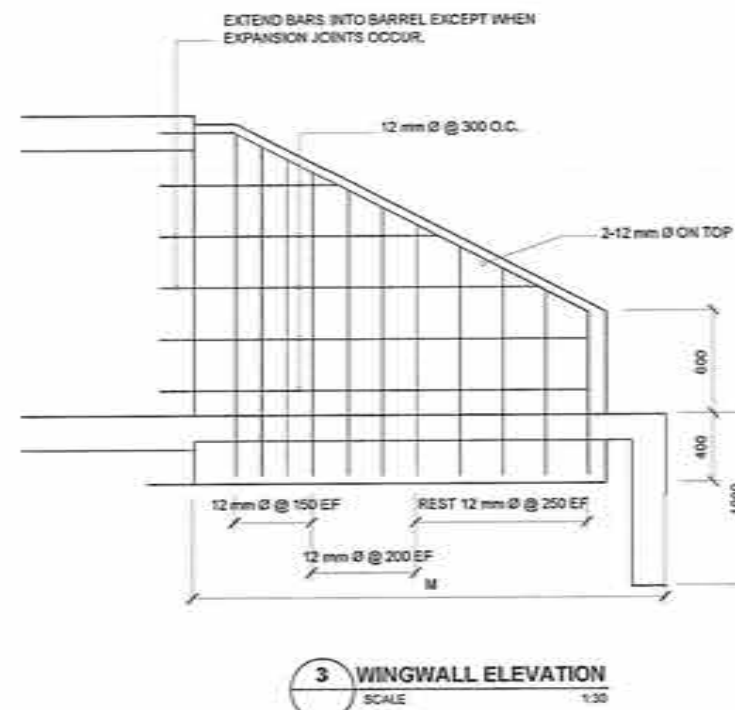
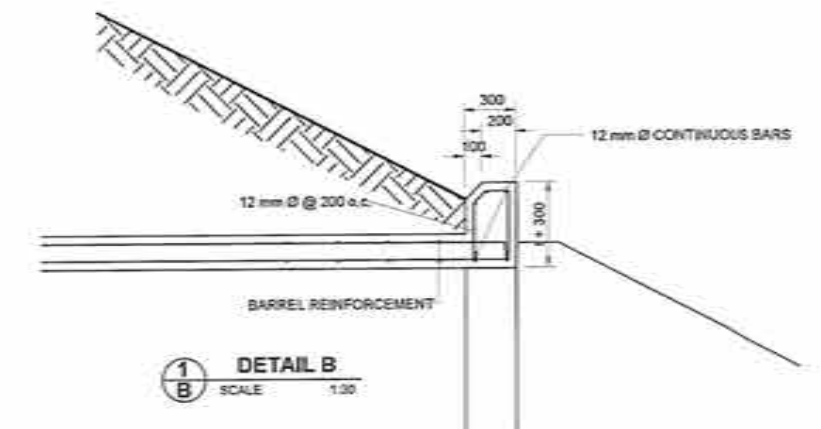
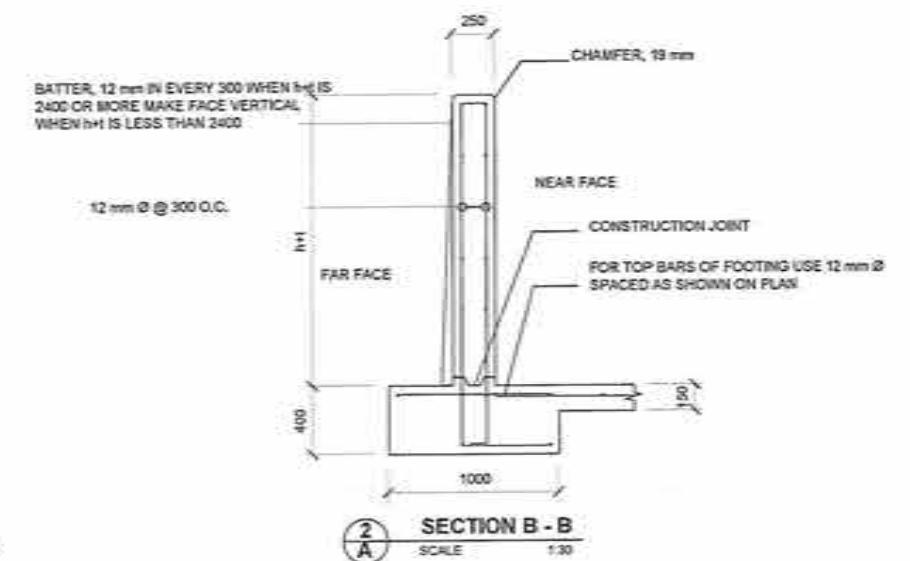
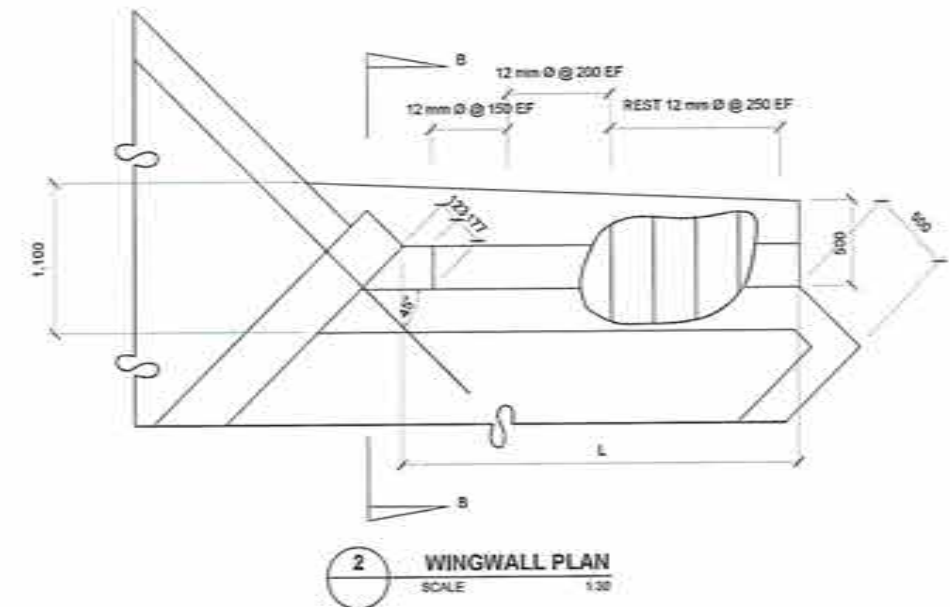
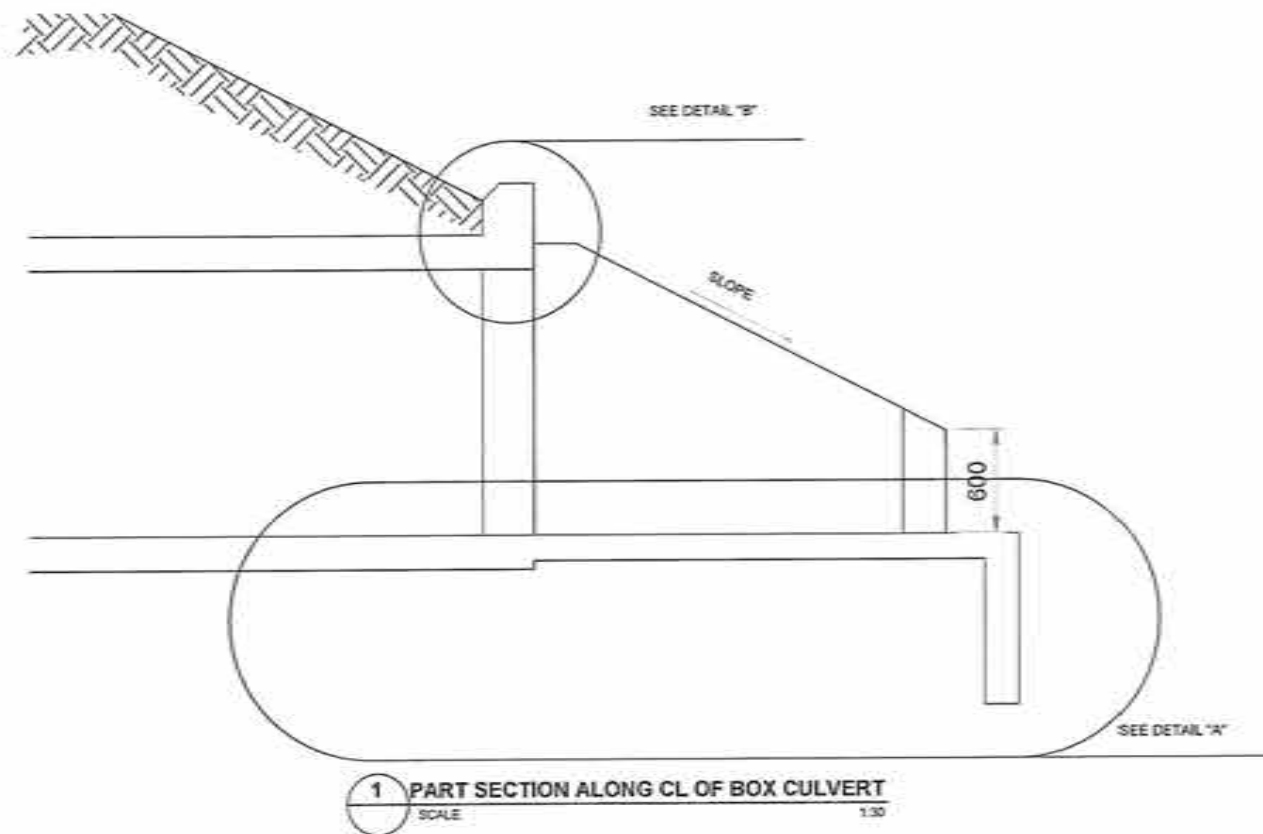
REVIEWED
JOSEPH R. SOTTO
ENGINEER IN CHARGE
DATE: 8

SUBMITTED
JUDY ANN P. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 17

RECOMMENDING APPROVAL
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 17

APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: 17

SET NO.
A
17/19
SHEET NO.
17
40



CONCRETE:
ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS (fc=3000 PSI) ALL EXPOSED CORNERS TO CHAMFERED 0.015 m. NO CONSTRUCTION JOINTS ARE TO BE MADE EXCEPT WHERE SHOWN WHEN BOTTOM SLAB IS SUBJECT TO ABRASION, ADD 0.025 m. TO BOTTOM SLAB TO INCREASE COVERAGE IN STEEL.

STEEL REINFORCEMENT:
ALL REINFORCING STEEL TO BE INTERMEDIATE GRADE (GRADE 40), ASTM A 615 WITH DEFORMATION CONFORMING TO ASTM A-305-43 (fy=40000 PSI).

GENERAL:
IN STATING CULVERT SIZE, GIVE WIDTH BY HEIGHT (WIDTH FIRST) PLACE 12 mm EXPANSION JOINTS WITH PRE-MOLDED FILLER IN WALLS AND TOP SLAB OF BOX CULVERT AT 12200 mm INTERVALS WHEN HEIGHT OF FILL, H=0, THE TOP OF SURFACE OF THE UPPER SLAB SHALL FOLLOW THE CROWN OF FINISHED ROADWAY.



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

PROJECT NAME AND LOCATION:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HS-WAY - K1719+712 - K1721+800, DAVAO ORIENTAL

SHEET CONTENTS:
WINGWALL DETAILS

DRAFTED AND PREPARED:
JAMAICA A. MANSING
ENGINEER I
DATE: 8

REVIEWED:
ALAIN JOHN R. SOTTO
ENGINEER II, SECTION CHIEF
DATE: 8

SUBMITTED:
JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 8

RECOMMENDING APPROVAL:
JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 8

APPROVED:
JUDY B. CORDON
REGIONAL DIRECTOR
DATE: 8

SHEET NO.:
A
18/19
SHEET NO.:
18
40

D R A I N A G E S C H E D U L E											
STATION	DESCRIPTION	101(4)a3	103(1)a	103(3)	103(6)a	404(1)a	405(1)a3	REMARKS	DESIGN PARAMETERS		
		ln.m.	cu.m.	cu.m.	cu.m.	kgs.	cu.m.		Q(cu.m./s.)	A(ha.)	v(m/s)
1720+140.00	STA. 1720+140.000 REMOVE EXISTING 2 - 910MMØ RCCP X 18.00 LNM AND INSTALL 1-BARREL (3.00) x (3.00) x (20.00) RCBC. PROVIDE WINGWALL ON BOTH SIDE. INLET I.E. = -1.439, CL I.E. = -1.539, OUTLET I.E. = -1.639, SLOPE = 1.00%	36.00	244.00	264.15	15.00	11,089.00	168.00	BOX CULVERT	84.853	56.250	9.428
TOTAL		36.00	244.00	264.15	15.00	11089.00	168.00				
SAY,		36.00	244.00	265.00	15.00	11089.00	168.00				

SUMMARY OF QUANTITIES				
ITEM #	DESCRIPTION	UNIT	QUANTITY	REMARKS
101(4)a3	REMOVAL OF ACTUAL STRUCTURES /OBSTRUCTION, 910mmØ	ln.m.	36.00	HEADWALL AND RCPC
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	cu.m.	244.00	FOR RCPC AND CONCRETE LINED CANAL
103(3)	FOUNDATION FILL	cu.m.	265.00	FOR RCPC AND CONCRETE LINED CANAL
103(6)a	PIPE CULVERTS AND DRAIN EXCAVATION (COMMON SOIL)	cu.m.	15.00	FOR RCPC
404(1)a	REINFORCING STEEL, GRADE 40	kgs.	11,089.00	FOR RCBC
405(1)a3	STRUCTURAL CONCRETE, CLASS "A"	cu.m.	168.00	FOR FOR RCBC

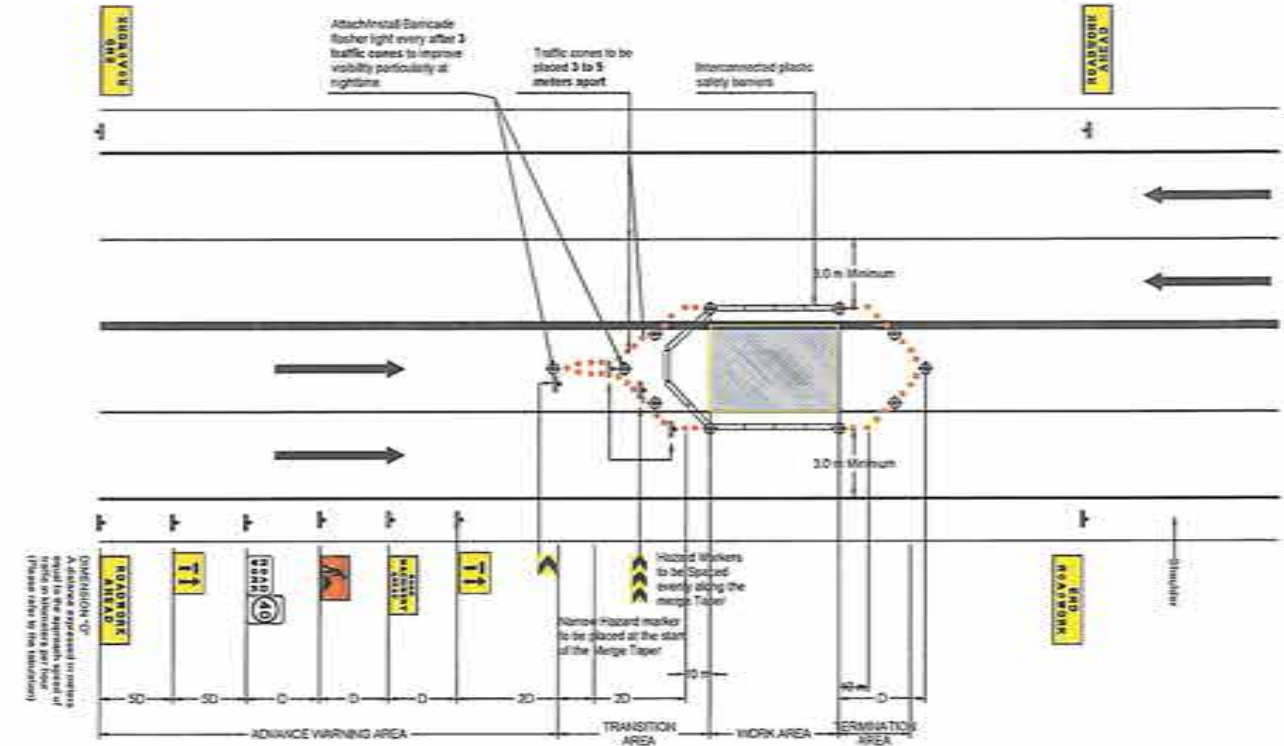
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI SOX, CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	DRAINAGE SCHEDULE DRAINAGE SUMMARY	JAMICA A. MANIBING ENGINEER II	ALAIN JOHNS SOTTO ENGINEER II SECTION CHIEF	JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSE LITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUBY B. CORDON REGIONAL DIRECTOR	A 19/19	19 40

C:\USERS\PUBLIC\2025\INFRA\PREVENTIVE MAINTENANCE\DIOSDADO MACAPAGAL NATIONAL HIGHWAY\DRAINAGE\PREVENTIVE MAINTENANCE OF ROAD-PRES DIOSDADO\PRES DIOSDADO TYP WITH BOX CULVERT.DWG

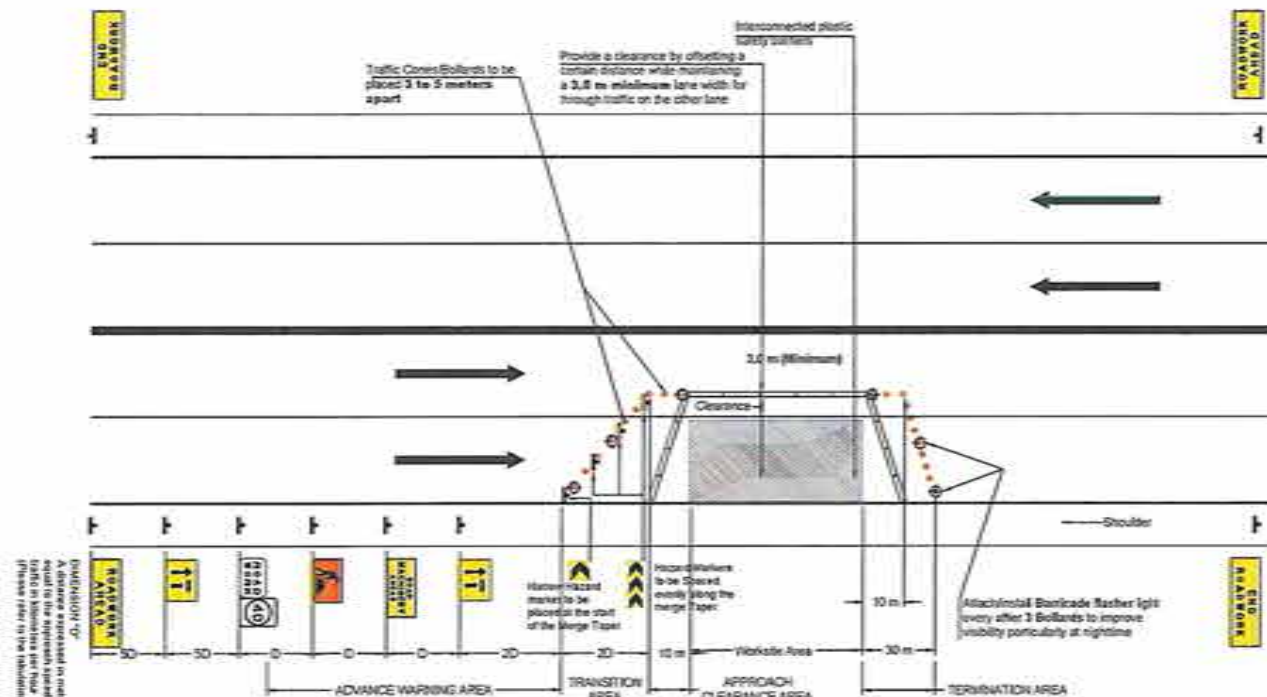
B. TRAFFIC MANAGEMENT DETAILS

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 1: LAYING OF ASPHALT: INNERLANE (WITHOUT ISLAND)		ROADWORK AHEAD (T1-5)	2
		LANE STATUS (T3-4-5)	2
		ROAD WORK (R4-2)	1
		SPEED RESTRICTION (R4-1)	1
		WORK AHEAD (SYMBOLIC) (T1-6)	1
		ROADWORK MACHINERY AHEAD (T1-3)	1
		TEMPORARY HAZARD MARKER (T3-5)	1
		TEMPORARY HAZARD MARKER (T3-6)	3
		END ROADWORK (T3-16)	2
		TRAFFIC CONES	26
		BARRICADE FLASHER LIGHT	10
		PLASTIC SAFETY BARRIER (200 meters - Working Area Considered)	84

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.



SCHEME 1: LAYING OF ASPHALT: INNERLANE (WITHOUT ISLAND)



SCHEME 2: LAYING OF ASPHALT: OUTERMOST (WITHOUT ISLAND)

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 2: LAYING OF ASPHALT: OUTERMOST (WITHOUT ISLAND)		ROADWORK AHEAD (T1-5)	2
		LANE STATUS (T3-4-5)	2
		ROAD WORK (R4-2)	1
		SPEED RESTRICTION (R4-1)	1
		WORK AHEAD (SYMBOLIC) (T1-6)	1
		ROADWORK MACHINERY AHEAD (T1-3)	1
		TEMPORARY HAZARD MARKER (T3-5)	1
		TEMPORARY HAZARD MARKER (T3-6)	3
		END ROADWORK (T3-16)	2
		TRAFFIC CONES	17
		BARRICADE FLASHER LIGHT	10
		PLASTIC SAFETY BARRIER (200 meters - Working Area Considered)	48

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.

TRAFFIC MANAGEMENT LAYOUT



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

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1715+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
TRAFFIC MANAGEMENT LAYOUT

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER II
DATE

REVIEWED
DENYAL ALDRIN A. SEMPIO
ENGINEER I, OIC - SECTION CHIEF
DATE

SUBMITTED
JUDY B. BERNARDO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

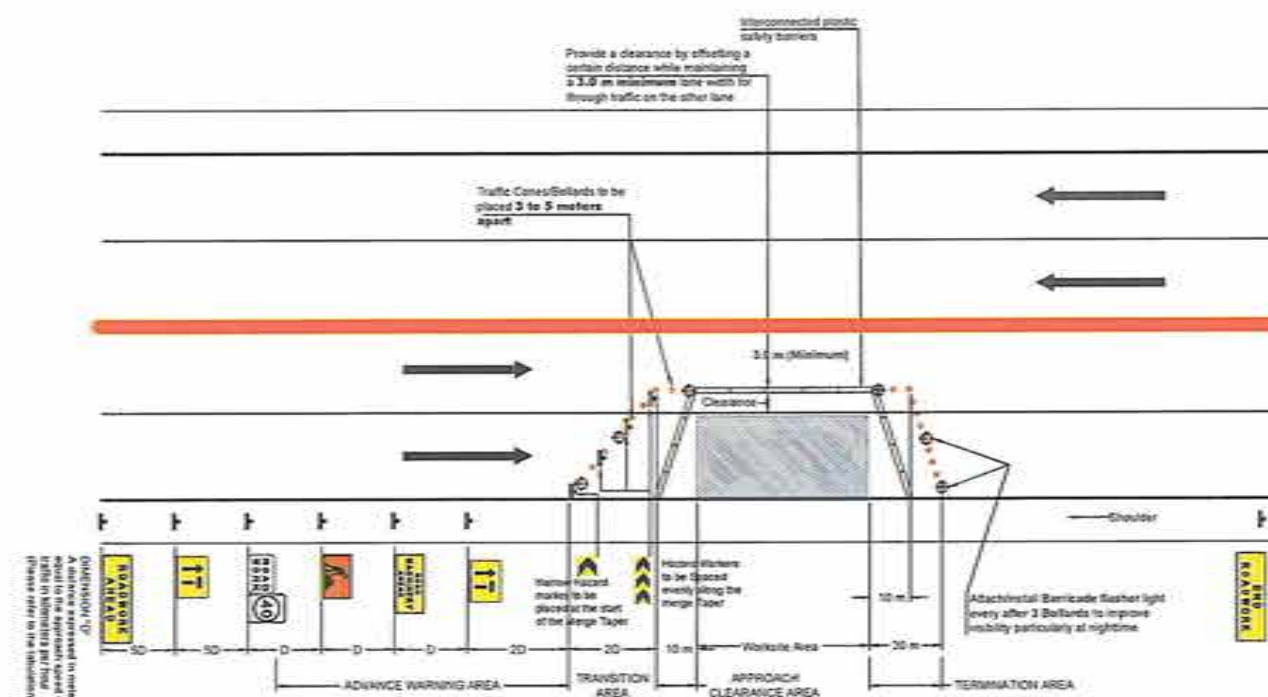
RECOMMENDING OFFICIAL
JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUDY B. CORDON
REGIONAL DIRECTOR
DATE

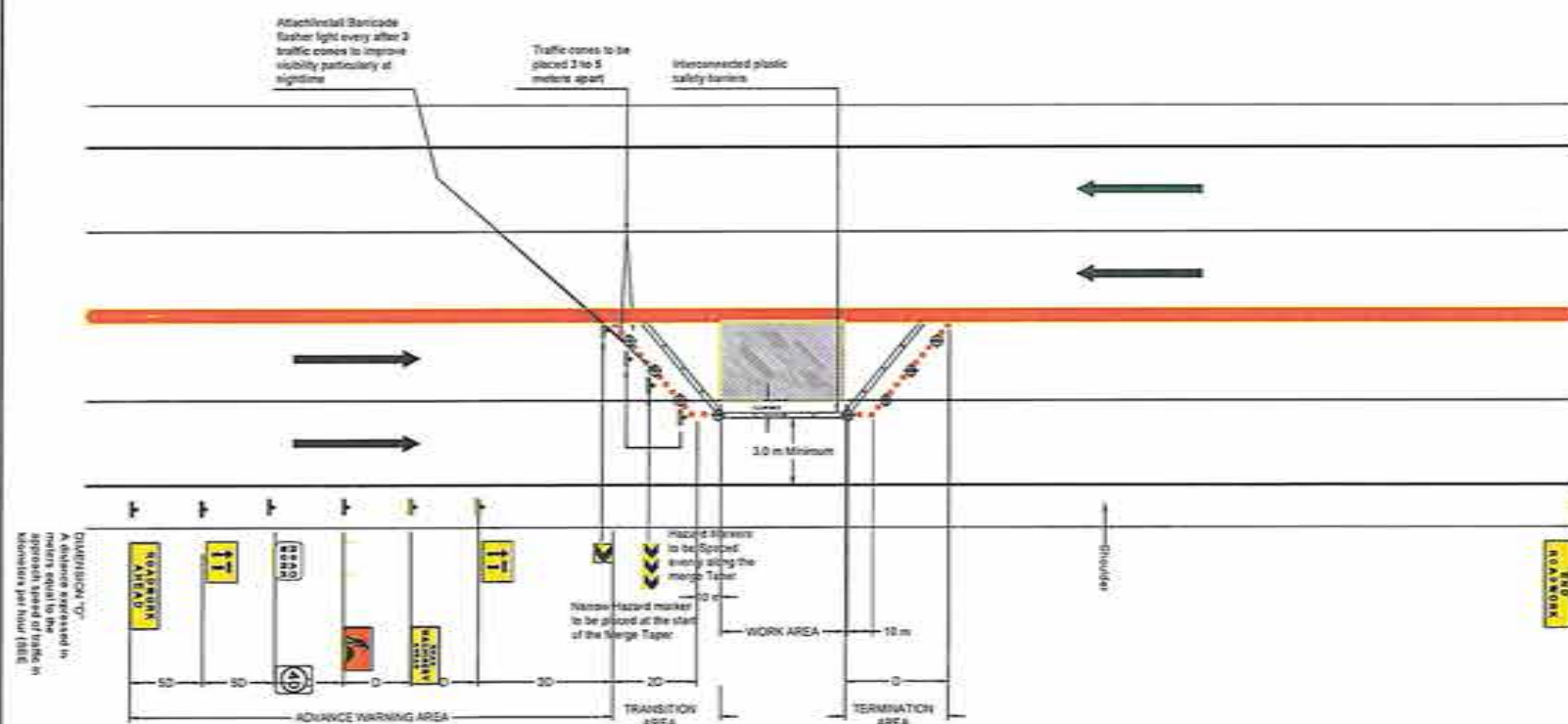
SHEET NO.
B
110
SHEET NO.
20
40

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 3: LAYING OF ASPHALT: OUTERMOST (WITH ISLAND)		ROADWORK AHEAD (71-1)	1
		LANE STATUS (72-6-1)	2
		ROAD WORK (6A-2)	1
		SPEED RESTRICTION (6A-1)	1
		WORKERS AHEAD (71-2)	1
		ROADWORK MACHINERY AHEAD (71-3)	1
		TEMPORARY HAZARD MARKER (73-5)	1
		TEMPORARY HAZARD MARKER (73-4)	3
		END ROADWORK (72-10)	1
		TRAFFIC CONES	17
		BARRICADE FLASHER LIGHT	10
		PLASTIC SAFETY BARRIER (200 meters - Working Area Considered)	44

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.



SCHEME 3: LAYING OF ASPHALT: OUTERMOST (WITH ISLAND)



SCHEME 4: LAYING OF ASPHALT: INNERMOST (WITH ISLAND)

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 4: LAYING OF ASPHALT: INNERMOST (WITH ISLAND)		ROADWORK AHEAD (71-1)	1
		LANE STATUS (72-6-1)	2
		ROAD WORK (6A-2)	1
		SPEED RESTRICTION (6A-1)	1
		WORKERS AHEAD (71-2)	1
		ROADWORK MACHINERY AHEAD (71-3)	1
		TEMPORARY HAZARD MARKER (73-5)	1
		TEMPORARY HAZARD MARKER (73-4)	3
		END ROADWORK (72-10)	1
		TRAFFIC CONES	17
		BARRICADE FLASHER LIGHT	10
		PLASTIC SAFETY BARRIER (200 meters - Working Area Considered)	44

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.

TRAFFIC MANAGEMENT LAYOUT



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:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HIGHWAY - K1719+T12 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:
TRAFFIC MANAGEMENT LAYOUT

DRAFTED AND PREPARED:
NEIL ERIC L. TOMALE
ENGINEER II
DATE: 8

REVIEWED:
DENYR ALDRIN A. SEMPIO
ENGINEER II, O.C. - SECTION CHIEF
DATE: 10

SUBMITTED:
JUDY V. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE: 10

RECOMMENDING APPROVAL:
JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: 10

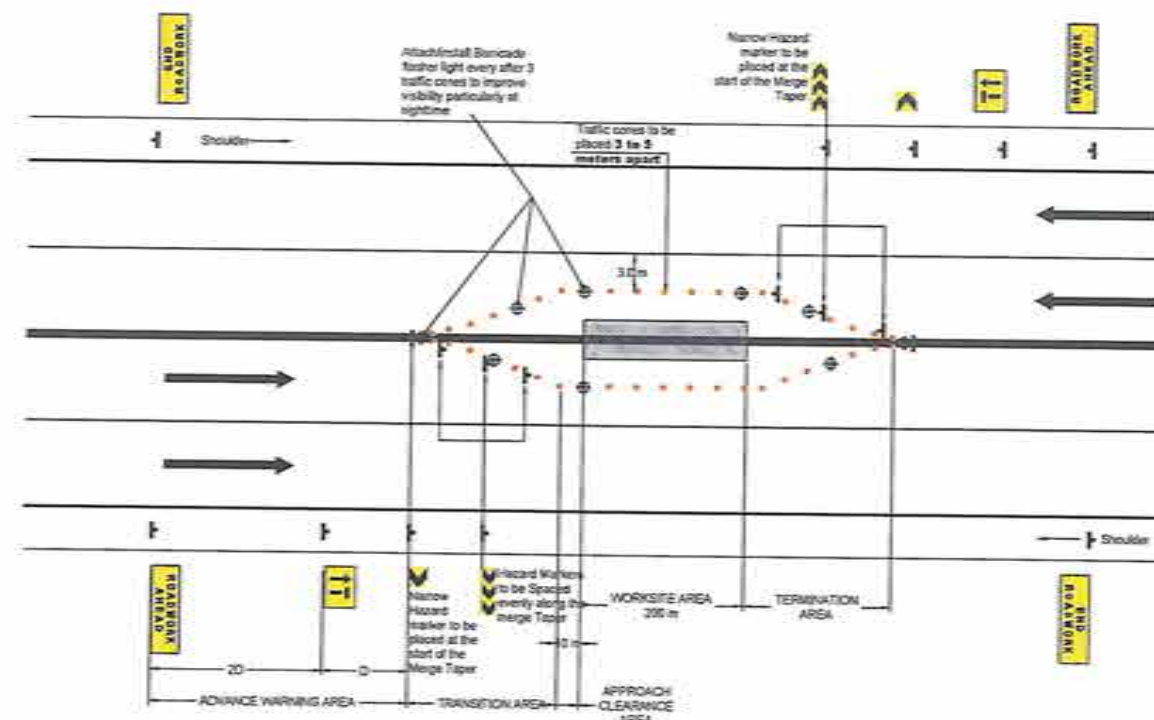
APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE: 10

SET NO.
B
2/10

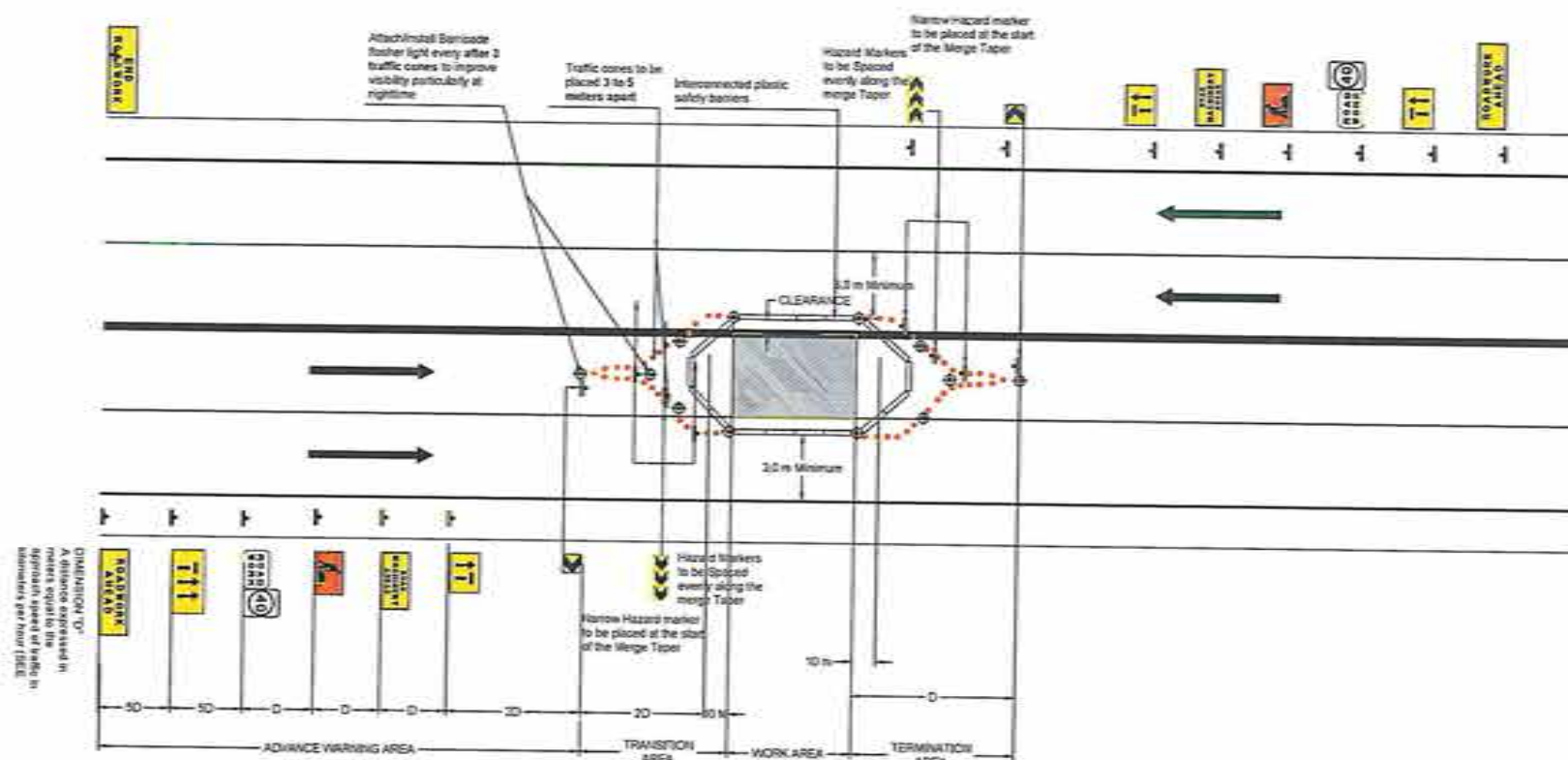
SHEET NO.
21
40

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 5: APPLICATION OF REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS	ROADWORK AHEAD (71-5)	ROADWORK AHEAD (71-5)	2
	LANE STATUS (71-4)	LANE STATUS (71-4)	2
	TEMPORARY HAZARD MARKER (73-5)	TEMPORARY HAZARD MARKER (73-5)	2
	TEMPORARY HAZARD MARKER (73-4)	TEMPORARY HAZARD MARKER (73-4)	8
	END ROADWORK (71-6)	END ROADWORK (71-6)	2
	TRAFFIC CONES	TRAFFIC CONES	128

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.



SCHEME 5: APPLICATION OF REFLECTORIZED THERMOPLASTIC PAVEMENT MARKINGS



SCHEME 6: REMOVAL OF DAMAGED PCCP AND REBLOCKING

NOTE: THE CONTRACTOR SHALL PREPARE A SEPARATE TRAFFIC OPERATIONAL PLAN (TOP) WHICH SHALL BE IMPLEMENTED DURING THE ENTIRE CONSTRUCTION DURATION.

TRAFFIC MANAGEMENT STAGES		DESCRIPTION	QUANTITY
SCHEME 6: REMOVAL OF DAMAGED PCCP AND REBLOCKING	ROADWORK AHEAD (71-5)	ROADWORK AHEAD (71-5)	2
	LANE STATUS (71-4)	LANE STATUS (71-4)	4
	ROAD WORK (84-3)	ROAD WORK (84-3)	2
	SPEED RESTRICTION (84-1)	SPEED RESTRICTION (84-1)	2
	WORK AHEAD (71-6)	WORK AHEAD (71-6)	2
	ROADWORK AHEAD (71-5)	ROADWORK AHEAD (71-5)	2
	TEMPORARY HAZARD MARKER (73-5)	TEMPORARY HAZARD MARKER (73-5)	2
	TEMPORARY HAZARD MARKER (73-4)	TEMPORARY HAZARD MARKER (73-4)	8
	END ROADWORK (71-6)	END ROADWORK (71-6)	2
	TRAFFIC CONES	TRAFFIC CONES	30
	BARRICADE FLASHLIGHT	BARRICADE FLASHLIGHT	13
	PLASTIC SAFETY BARRIER (200 meters - Working Area Demarcated)	PLASTIC SAFETY BARRIER (200 meters - Working Area Demarcated)	88

TRAFFIC MANAGEMENT LAYOUT
SCALE: 1:100

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GCY, CHAVEZ COR. R. MAGSAYSAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDATION APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	TRAFFIC MANAGEMENT LAYOUT	NEIL ERIC L. TOMALE ENGINEER I	DENYOR ALDRIN A. SEMPIO ENGINEER, I/C - SECTION CHIEF	JUDY A. T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSEPHITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUBY B. CORDON REGIONAL DIRECTOR	B 3 10	22 40

TRANSITION AREA			
SPEED OF TRAFFIC (KPH)	LENGTH OF DIVERGELATERAL 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

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 DIVERGELATERAL 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	

TRAFFIC MANAGEMENT STAGES	DESCRIPTION	QUANTITY
TOTAL QUANTITIES		
	ROADWORK AHEAD (71-1)	2
	LANE STATUS (72-1)	4
	ROAD WORK (74-2)	2
	SPEED RESTRICTION (74-3)	2
	ROADWORK AHEAD (SYMBOLIC) (71-1)	2
	ROADWORK AHEAD (SYMBOLIC) (71-1)	2
	TEMPORARY ROADWORK BARRIER (73-1)	2
	TEMPORARY ROADWORK BARRIER (73-1)	4
	END ROADWORK (73-1B)	2
	TRAFFIC CONES	108
	BARCODE FLASHER LIGHT	10
	PLASTIC SAFETY BARRIER (200 meters - Working Area Considered)	88

SCALE TOTAL QUANTITIES MTS

PROJECT PARAMETERS	COMMENTS
1. ROAD LAYOUT	THE ENTIRE OVERLAYING OF ASPHALT PROJECT WILL COMMENCE AT DAVAO-COTABATO ROAD. THE UPCOMING 2025 PROJECT MIGHT DISRUPT ADJACENT WORK AREAS CLOSE TO DAANG MAHARLIKA IN BRGY. COGON.
2. ROAD GEOMETRY	THE PROJECT INVOLVES OVERLAYING OF ASPHALT, SEALING OF JOINTS AND CRACKS, REBLOCKING OF EXISTING DAMAGED CONCRETE PAVEMENT, APPLICATION OF REFLECTORIZED PAVEMENT MARKING AND INSTALLATION OF ROAD SIGNS.
3. SIGHT DISTANCE	THERE IS AN ADEQUATE AND CLEAR SIGHT DISTANCE SINCE THE PROPOSED PROJECT IS IN FLAT TERRAIN.
4. VULNERABLE ROAD USER FACILITIES	THERE ARE DESIGNATED CROSSWALKS IN THE AREA DESIGNED FOR PEDESTRIANS.
5. PAVEMENT CONDITION	THE CURRENT DAMAGED CONCRETE WILL BE REPLACED WITH A NEW ONE UPON COMPLETION OF THE PROJECT.
6. EXISTING SIGNS	WHILE THERE ARE ALREADY ROAD SIGNS IN PLACE, THE PROJECT AIMS TO ENHANCE SAFETY FOR BOTH PEDESTRIANS AND DRIVERS BY ADDING ADDITIONAL SIGNAGE.
7. LIGHTING FACILITIES	EXISTING STREETLIGHTS WERE OBSERVED IN SOME SECTIONS ALONG DAVAO-COTABATO ROAD (MEDIAN ISLAND).
8. ABUTTING ACCESSES	RESIDENTIAL AND COMMERCIAL DRIVEWAYS.
9. ADJOINING ROAD NETWORKS	THERE ARE ROADS ADJOINING THE PROJECT.
10. OTHER POSSIBLE CONSTRAINTS	NONE

SCALE PROJECT PARAMETERS MTS

POSSIBLE RISK FACTORS AT THE WORKSITE	
01	HIGH-SPEED TRAFFIC THROUGH THE WORKSITE WAS OBSERVED.
02	WORKERS ARE CLOSE TO PASSING TRAFFIC.
03	WORK VEHICLES ENTERING AND LEAVING THE WORKSITE.
04	A HIGH VOLUME OF VEHICLES WAS NOTED SINCE THE ALIGNMENT IS NEAR RESIDENTIAL AND COMMERCIAL AREAS.
05	A HIGH NUMBER OF PEDESTRIANS MOVING THROUGH THE WORKSITE WAS NOTED.

SCALE POSSIBLE RISK FACTOR AT THE WORKSITE MTS

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:

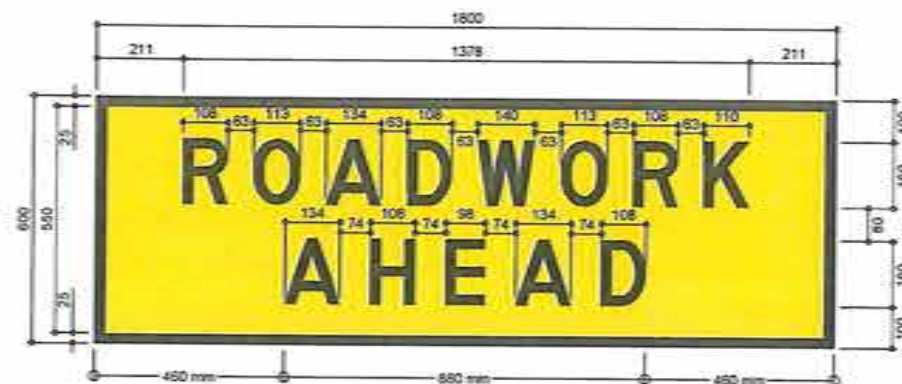
1. ROADWORK AHEAD - THE FIRST ADVANCE WARNING SIGN SEEN BY DRIVERS, SHOULD BE LOCATED AT MINIMUM DISTANCE 20 METERS (D IS THE APPROACHED SPEED OF TRAFFIC) BEFORE THE START OF THE WORKS, OR IF THERE IS A TRANSITION AREA, THE START OF THE TAPER.
2. OTHER SIGN IN ADVANCE WARNING AREA SHOULD BE SPACE 20 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 OREST.
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 2018 - 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

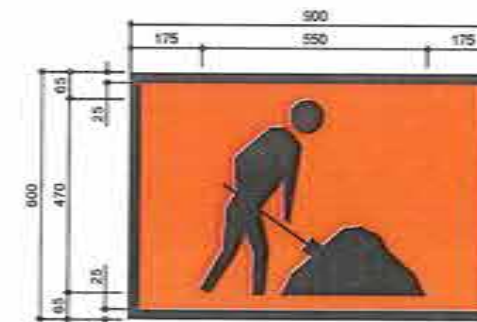
SCALE GENERAL NOTES MTS

 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: PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SHEET CONTENTS: TRAFFIC MANAGEMENT LAYOUT	DRAFTED AND PREPARED:  NEIL ERIC L. TOMALE ENGINEER	REVIEWED:  DENZIN A. SEMPIO ENGINEER & QC - SECTION CHIEF	SUBMITTED:  JUDY B. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	RECOMMENDED APPROVAL:  JOSEITO S. CABALLERO ASSISTANT REGIONAL DIRECTOR	APPROVED:  JUDY B. CORDOV REGIONAL DIRECTOR	SET NO. B 4/10	SHEET NO. 23 40
	DATE: _____ DATE: _____ DATE: _____ DATE: _____								



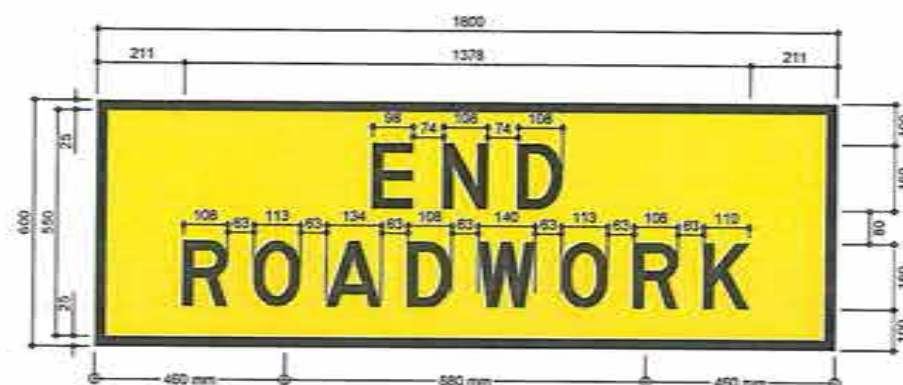
ROADWORK AHEAD DETAILS

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



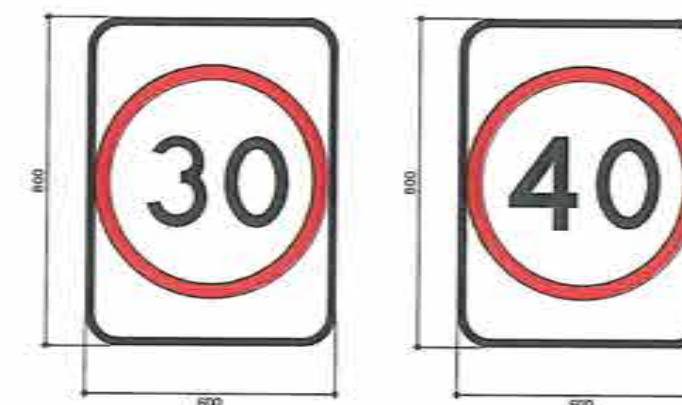
WORKMEN AHEAD (SYMBOLIC) DETAILS

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



SPEED RESTRICTION DETAILS

NOTE: THE SPEED LIMIT WILL BE DETERMINED BY THE PROJECT ENGINEER

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



ROAD WORK DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
R4-3	600 X 400 (SIZE B)	LINE 1 - BLACK 100 EM LINE 2 - BLACK 100 EM	WHITE REFLECTORIZED	REGULATORY SIGNS



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

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
TRAFFIC MANAGEMENT PROGRAM SIGNAGE

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER
DATE

REVIEWED
DENYR ALDRIN A. SEMPYO
ENGINEER & OIC - SECTION CHIEF
DATE

SUBMITTED
JUDY ANNE T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL
JOSEITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

APPROVED
JUBY B. CORDON
REGIONAL DIRECTOR
DATE

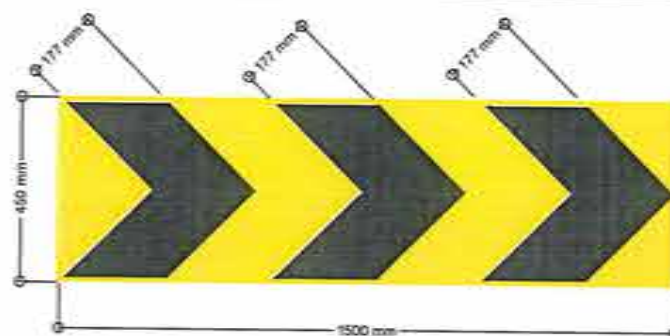
SET NO.
B
5/10

SHEET NO.
24
40



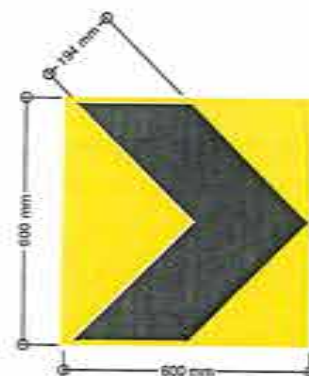
LANE STATUS DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T2-4-1	1200 X 900	BLACK 600 HIGH	YELLOW REFLECTORIZED	SIGNS FOR LANE & ROAD CLOSURES



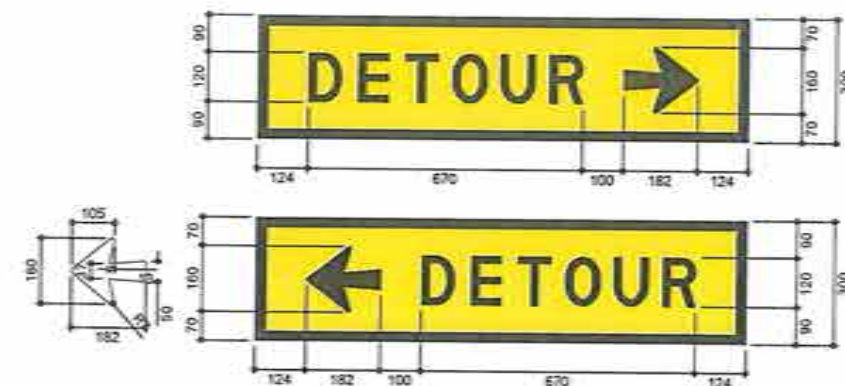
TEMPORARY HAZARD MARKER DETAILS

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



SPEED RESTRICTION DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
TS-5	600 X 600 TYPE B-1	BLACK 154 WIDE AT 45°	YELLOW REFLECTORIZED	TEMPORARY HAZARD MARKER



DETOUR (LEFT OR RIGHT) DETAILS

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



END SPEED RESTRICTION DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
R4-12	600 X 800 (SIZE B)	SYMBOL - 600 DIA. BLACK	WHITE REFLECTORIZED	REGULATORY SIGNS



PREPARED TO STOP DETAILS

SIGN NO.	SIZE (mm)	LETTERS/SYMBOLS	BACKGROUND	TYPE OF SIGNS
T1-18	500 X 600	LINE 1 - WHITE 120 DM LINE 2 - WHITE 120 DM LINE 3 - WHITE 120 DM REFLECTORIZED	RED REFLECTORIZED	REGULATORY SIGNS



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

PROJECT NAME AND LOCATION:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+800, DAVAO ORIENTAL

SHEET CONTENTS:
TRAFFIC MANAGEMENT PROGRAM SIGNAGE

DRAFTED AND PREPARED
NEIL ERIC L. TOMALE
ENGINEER
DATE:

REVIEWED
DENYALDIN A. SEMPIO
ENGINEER, OIC - SECTION CHIEF
DATE:

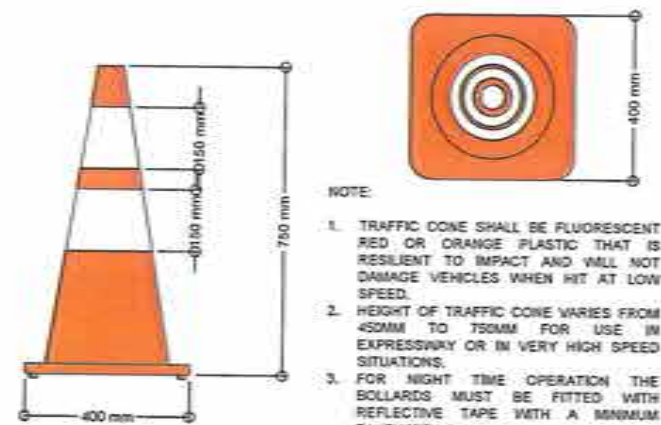
DESIGNED
JUDYAN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE:

RECOMMENDING APPROVAL
JOSEITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE:

APPROVED
JUBY B. CORDON
REGIONAL DIRECTOR
DATE:

SHEET NO.
B
6/10

SHEET NO.
25
40

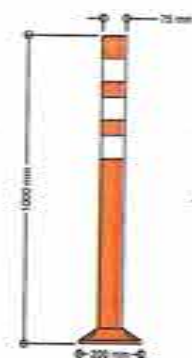


NOTE:

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 THROUGH 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:

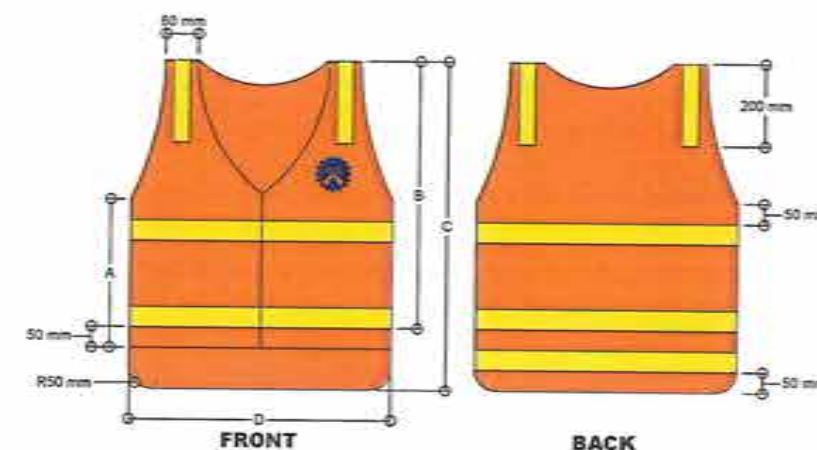
1. BOLLARDS SHALL BE FLUORESCENT RED OR ORANGE PLASTIC THAT IS RESILIENT TO IMPACT AND WILL NOT DAMAGE VEHICLES WHEN HIT AT LOW SPEED.
2. HEIGHT OF BOLLARDS MUST BE UP TO 1 METER.
3. FOR NIGHT TIME OPERATION THE BOLLARDS MUST BE FITTED WITH REFLECTIVE TAPE WITH A MINIMUM BANDWIDTH OF 250MM.
4. SPACING @ 5.00 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 THROUGH 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 50mm 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. B. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

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

DRAFTED AND PREPARED
NIEL ERIC L. TOMALE
ENGINEER I
DATE

REVIEWED
DENNIS ALONSO A. SEMPIO
ENGINEER, CK - SECTION CHIEF
DATE

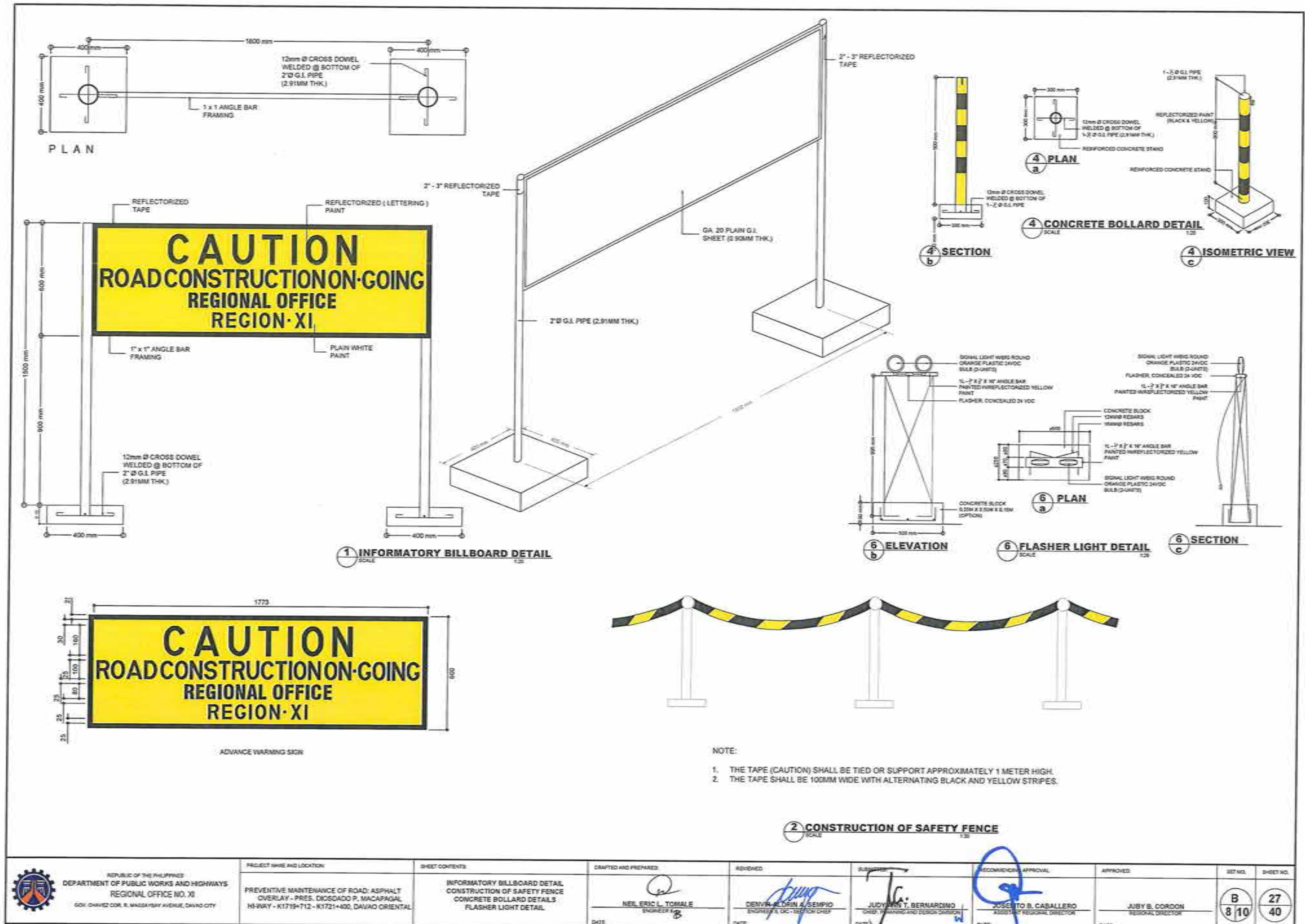
SUBMITTED
JUDY ANN CABERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL
JOSE LITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

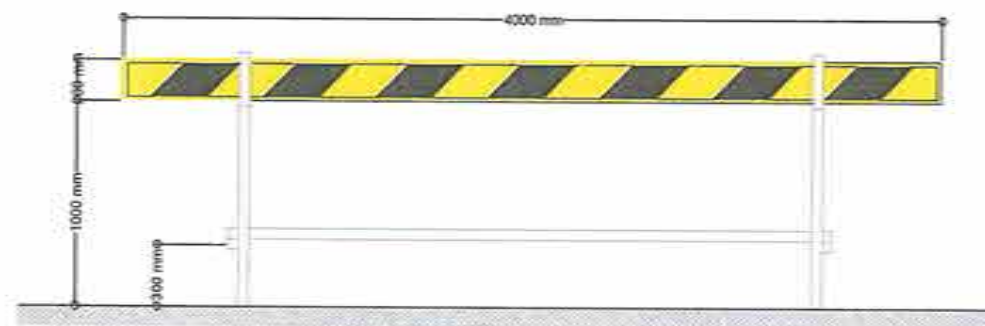
APPROVED
JUBY S. CORDON
REGIONAL DIRECTOR
DATE

SET NO.
B
7 10

SHEET NO.
26
40



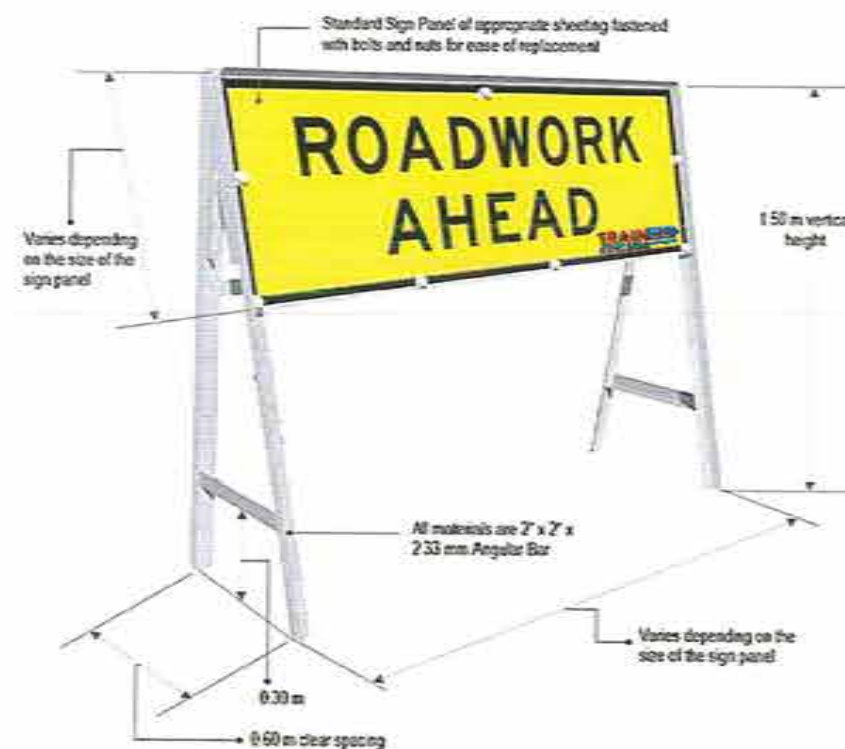
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GGK, ORIENT COR. B, MASSANAY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SHEET CONTENTS INFORMATORY BILLBOARD DETAIL CONSTRUCTION OF SAFETY FENCE CONCRETE BOLLARD DETAILS FLASHER LIGHT DETAIL	DRAFTED AND PREPARED NEIL ERIC L. TOMALE ENGINEER DATE	REVIEWED DEMUR A. SEMPINO ENGINEER & D.C. - SECTION CHIEF DATE	SUBMITTED JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE	RECOMMENDING APPROVAL JOSEITO S. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE	APPROVED JUDY B. CORDON REGIONAL DIRECTOR DATE	SHEET NO. B 8/10 SHEET NO. 27 40
---	--	--	---	---	--	--	---	--



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



2 ROAD SIGN DETAILS



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:
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:
ROAD SIGN DETAIL
BARRIER BOARD DETAIL

DRAFTED AND PREPARED:
WEILERIC L. TOMALE
ENGINEER
DATE

REVIEWED:
DENVER ALDRIN A. SEMPIO
ENGINEER & D.C. - SECTION CHIEF
DATE

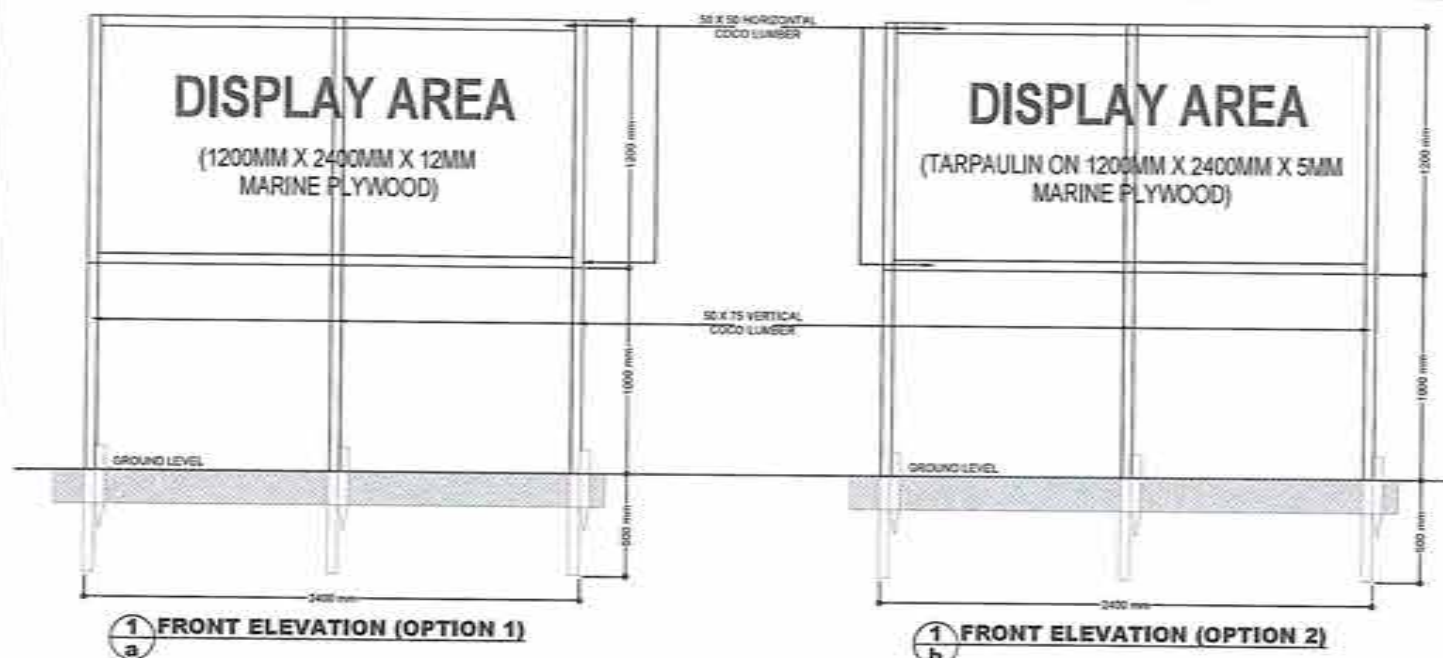
SUBMITTED:
JUDY A. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION
DATE

RECOMMENDING APPROVAL:
JOSEITO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE

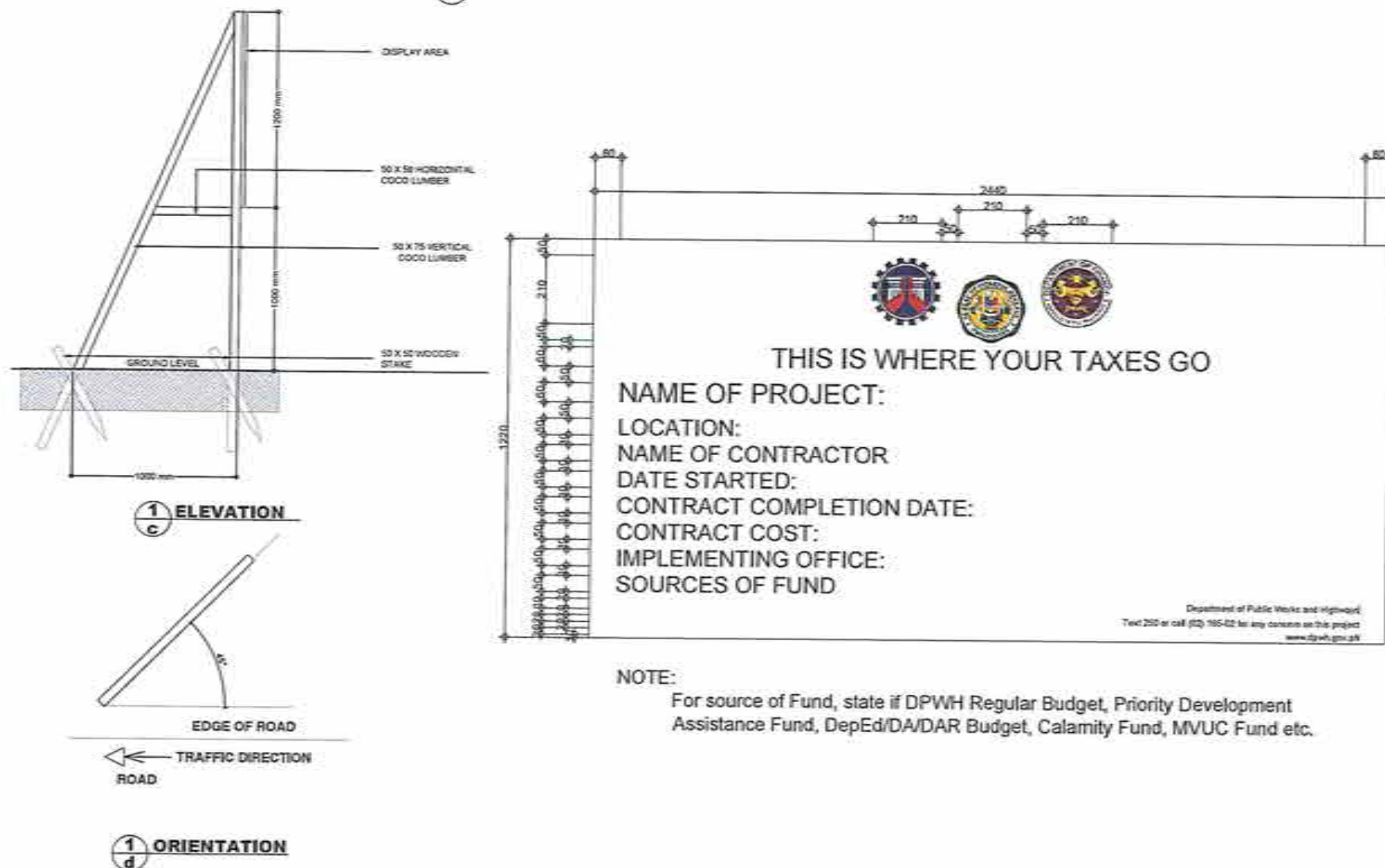
APPROVED:
JUBY B. CORDON
REGIONAL DIRECTOR
DATE

SET NO.
B
9/10

SHEET NO.
28
40



1 BILLBOARD DETAILS
SCALE 1:40



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 Source/s: _____

Implementing Agencies: _____
Development Partner/s: _____
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:

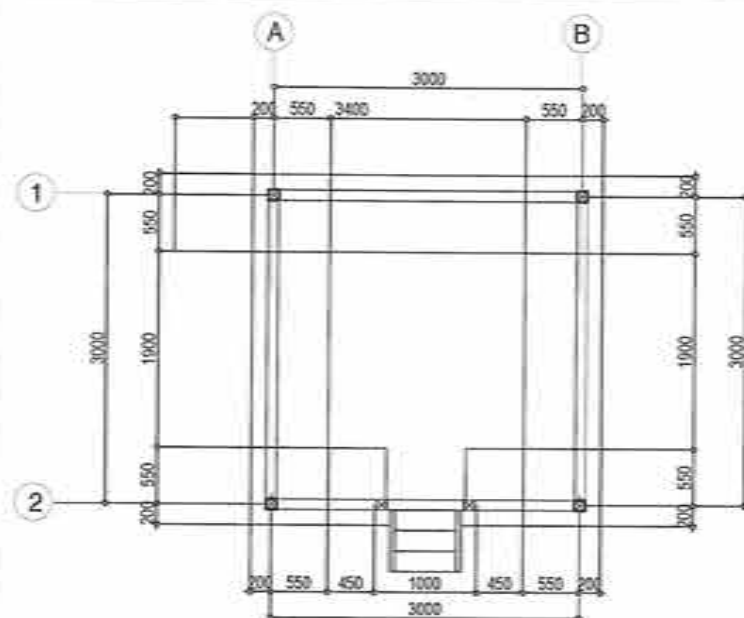
COA Regional Office No./Cluster : XI
Address : Buhangin, Davao City
Contact No. : (082) 241-2941 or Text COA Citizens Desk (0915-5391-957)

NOTES FOR COA BILLBOARD:

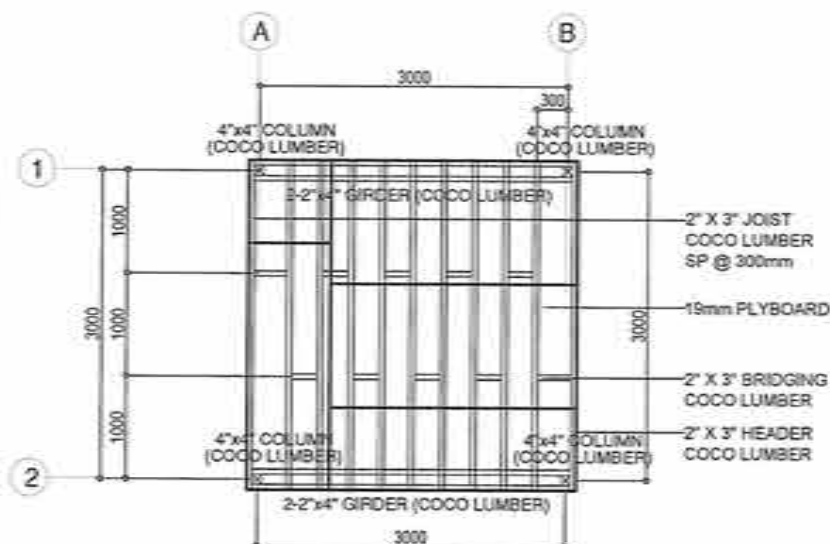
- TARPAULIN, WHITE, 8FT x 8 FT
- RESOLUTION: 70DPI
- FONT: HELVETICA
- FONT SIZE : MAIN INFORMATION - 3"
- : SUB-INFORMATION - 1"
- FONT COLOR: BLACK

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:	SHEET CONTENTS:	DRAFTED AND PREPARED:	REVIEWED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	BILLBOARDS DETAIL	NEIL ERIC L. TOMALE ENGINEER III	DENVER ALONZO A. SEMPIO CHIEF, PLANNING AND DESIGN DIVISION	JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION	JOSE LITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR	JUDY B. CORDON REGIONAL DIRECTOR	B 10/10	29 40

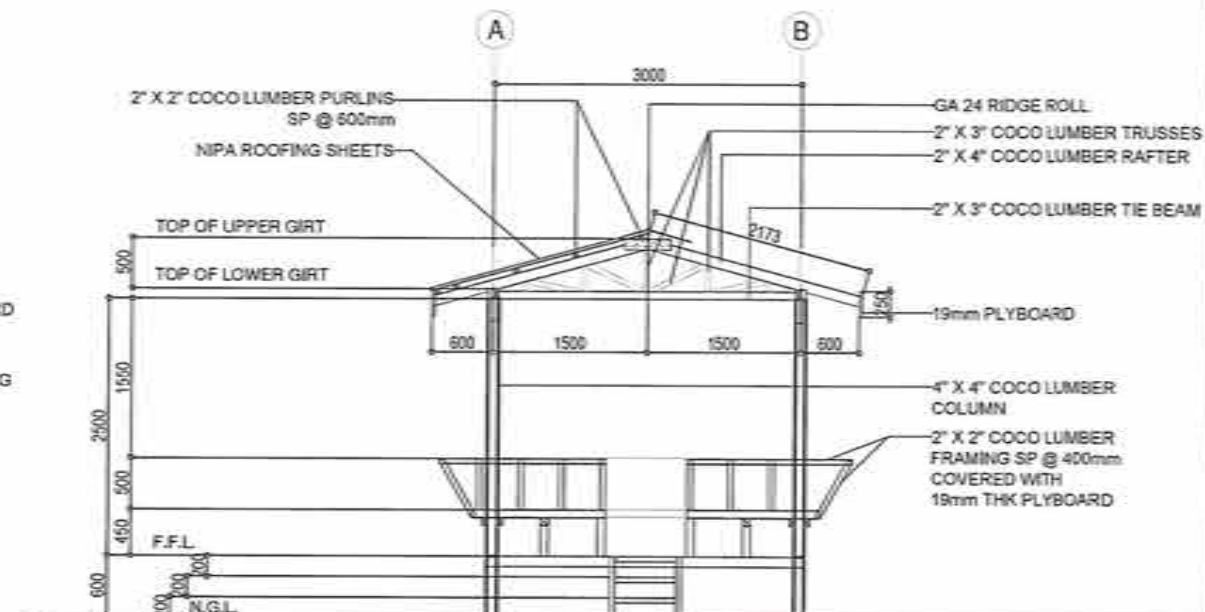
C. FACILITIES FOR THE FIELD ENGINEER



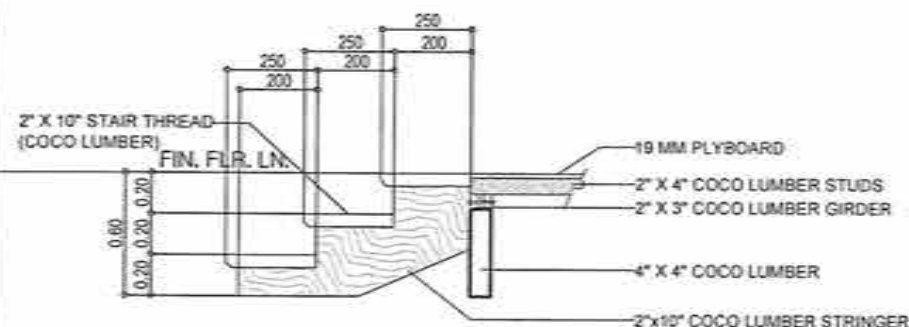
1 FLOOR PLAN



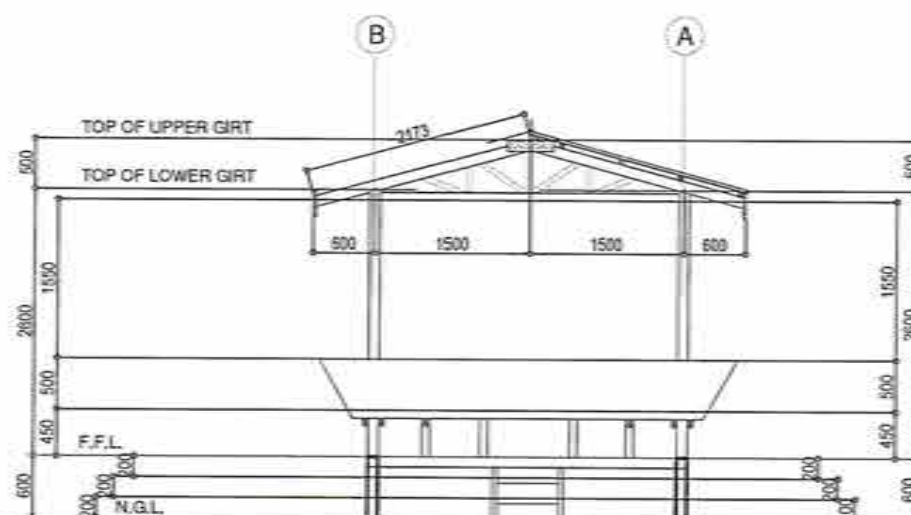
2 FLOOR FRAMING



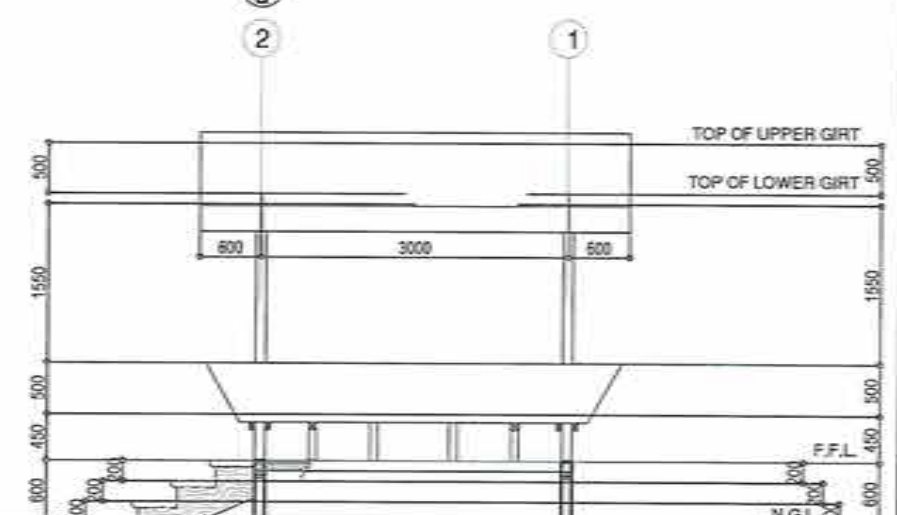
3 SECTION



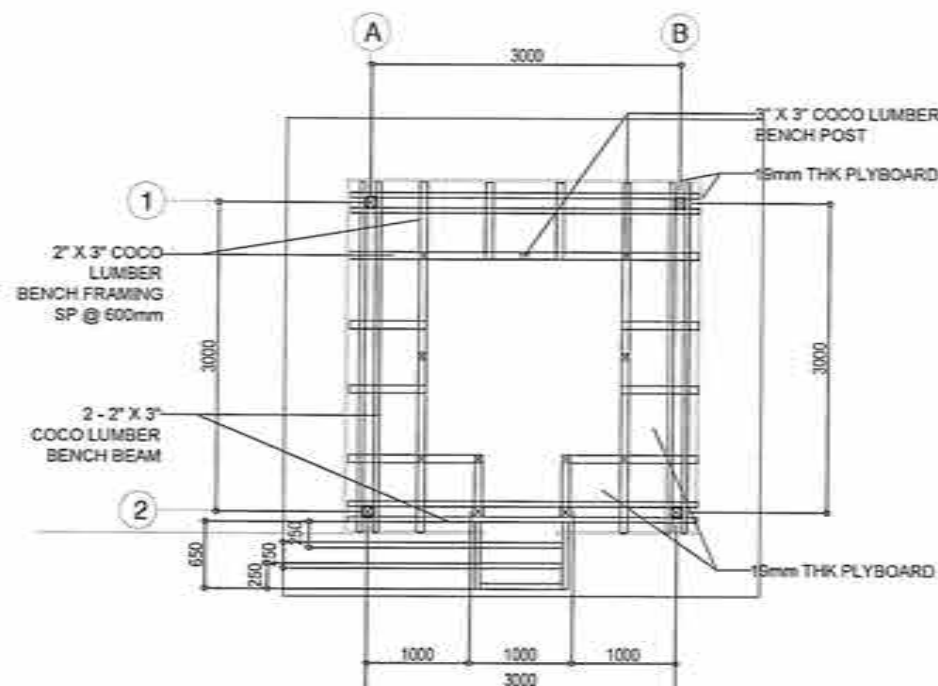
4 STAIR DETAIL



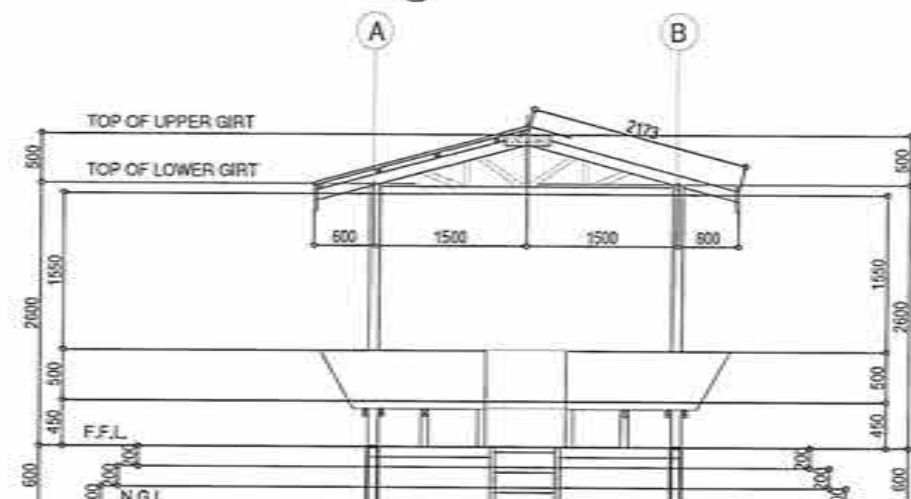
6 REAR ELEVATION



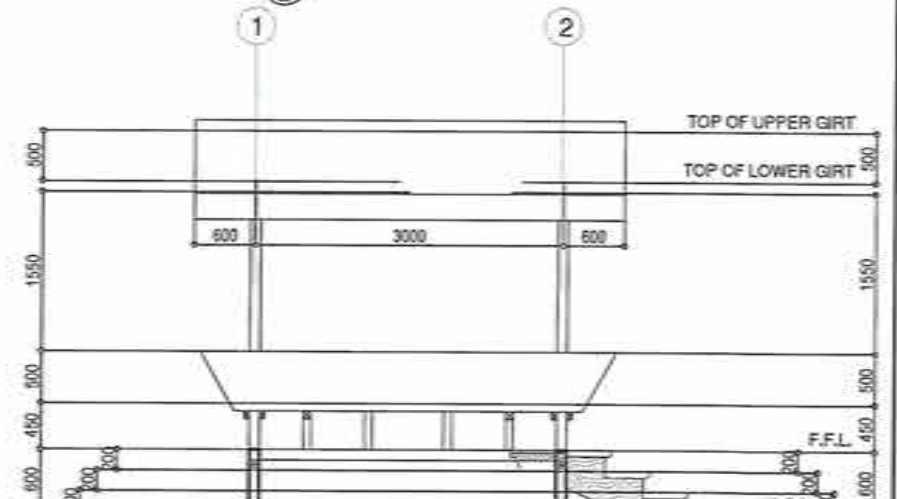
7 RIGHT SIDE ELEVATION



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. MAGSAYSAY AVENUE, DAVAO CITY

PROJECT NAME AND LOCATION
PREVENTIVE MAINTENANCE OF ROAD: ASPHALT
OVERLAY - PRES. DIOSDADO P. MACAPAGAL
HWY - K1719+712 - K1721+400, DAVAO ORIENTAL

SHEET CONTENTS
TYPICAL DETAILS OF BAHAY KUBO

DRAFTED AND PREPARED
BERNARD M. RAÑOSA
ARCHITECT

REVIEWED
ALGIN A. GINGSTAN
ENGINEER

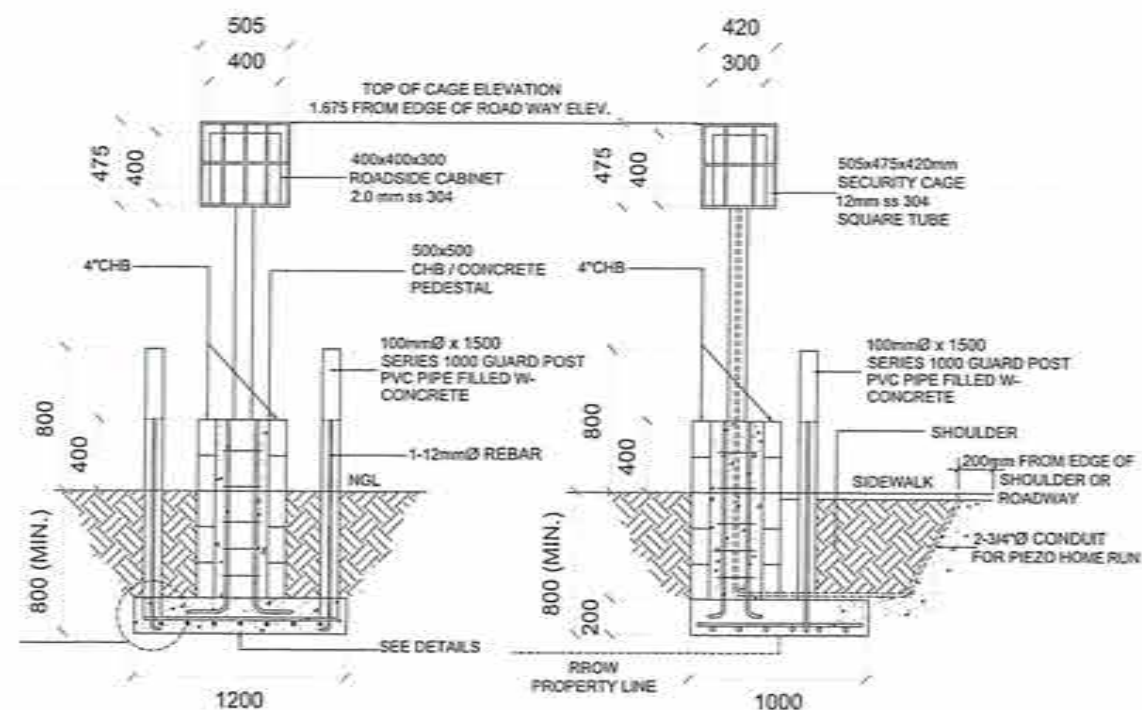
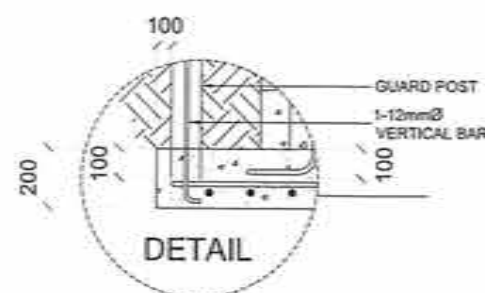
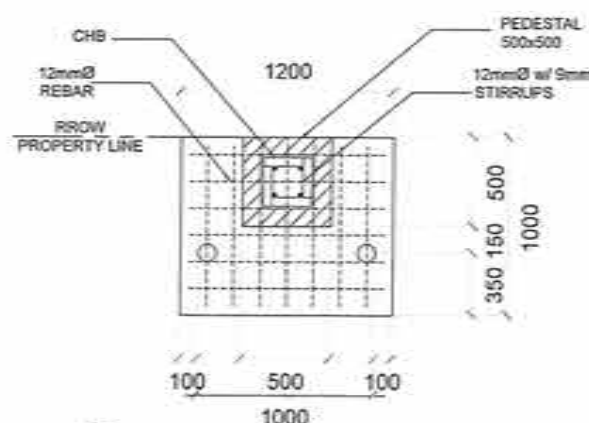
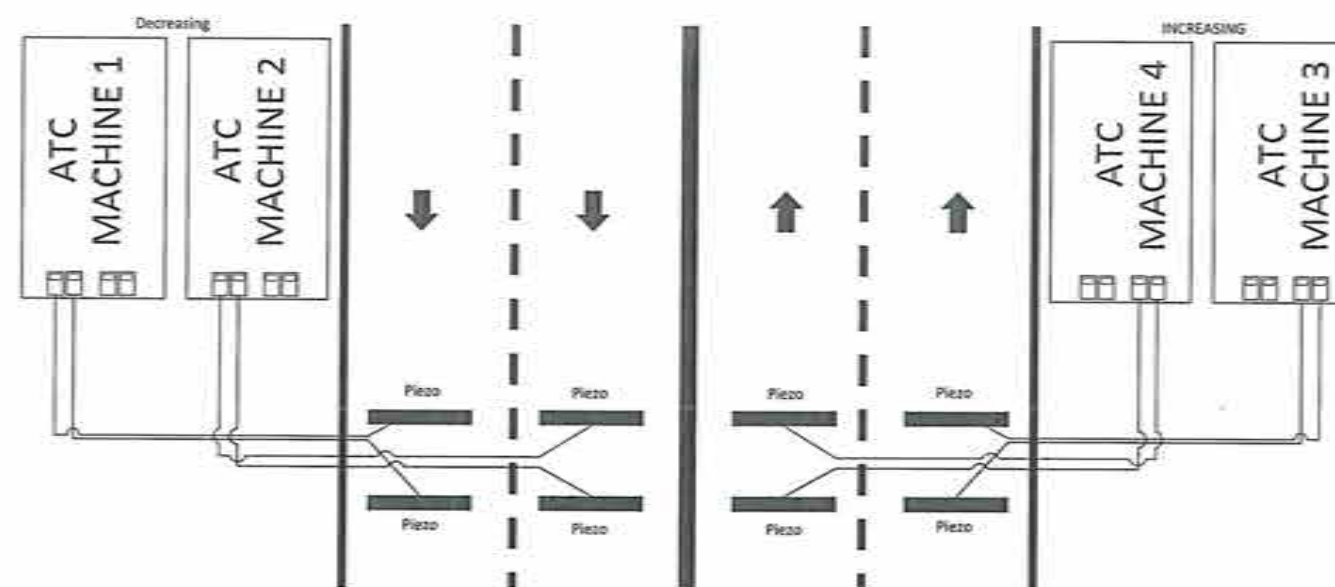
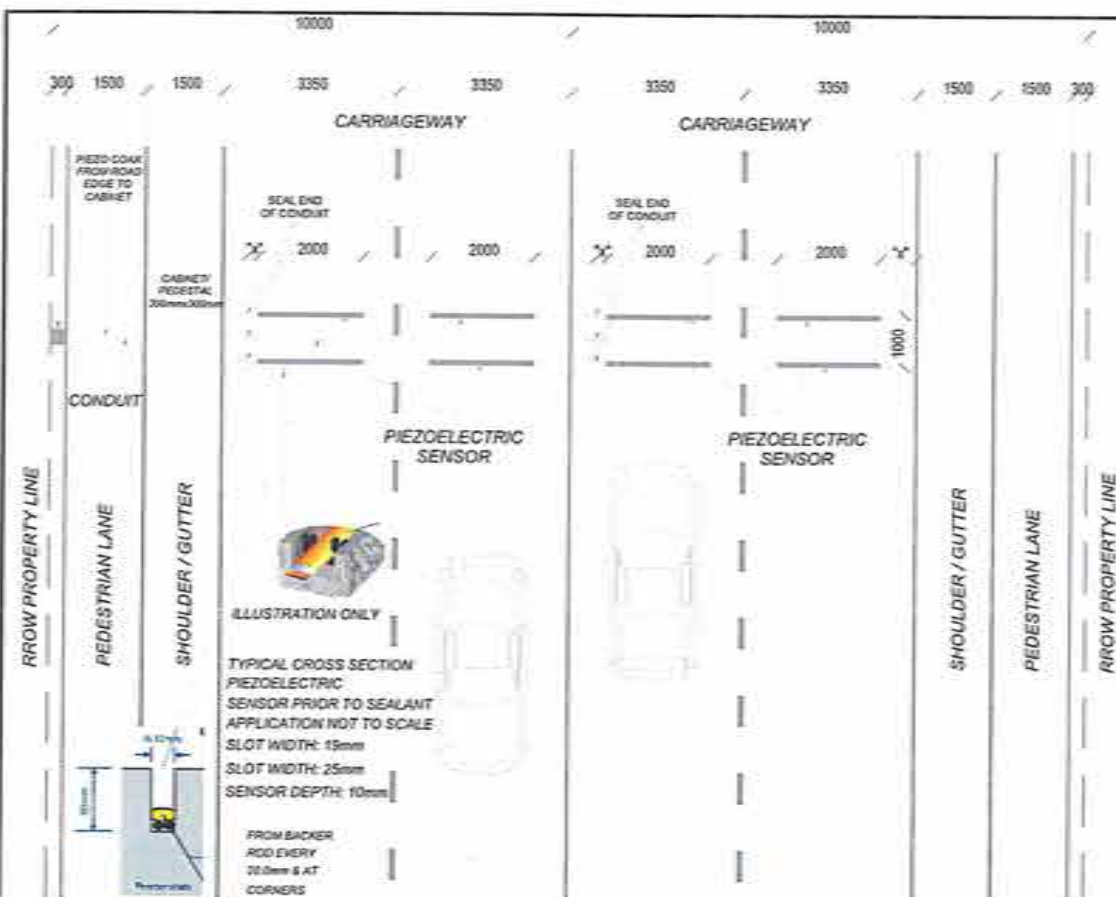
SUBMITTED
JUDY B. CORDOW
CHIEF, PLANNING AND DESIGN DIVISION

RECOMMENDED
JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR

APPROVED
JUDY B. CORDOW
REGIONAL DIRECTOR

SHEET NO.
C
11
SHEET NO.
30
40

D. PIEZOELECTRIC ATC SENSOR AND STREETLIGHT DETAILS



LAYOUT FOR ROADSIDE CABINET INSTALLATION
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:

PREVENTIVE MAINTENANCE OF ROAD:
ASPHALT OVERLAY - PRES. DIOSDADO P.
MACAPAGAL HI-WAY - K1719+712 -
K1721+400, DAVAO ORIENTAL

SHEET CONTENTS:

INSTALLATION DIAGRAM FOR DUAL
PIEZOELECTRIC ATC SENSOR, LAYOUT FOR
ROADSIDE CABINET INSTALLATION AND
SCHEMATIC & WIRING DIAGRAM AND
EQUIPMENT INSTALLATION DIAGRAM

PREPARED AND DRAFTED:

GABRIEL A. BABUYA
ENGINEER

DATE:

CHECKED:

JOHN PHILIP S. ORIGENES
ENGINEER

DATE:

SUBMITTED:

JUDY ANN T. BERNARDINO
CHIEF, PLANNING AND DESIGN DIVISION

DATE:

RECOMMENDING APPROVAL:

JOSELO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR

DATE:

APPROVED:

JURY B. CORDON
REGIONAL DIRECTOR

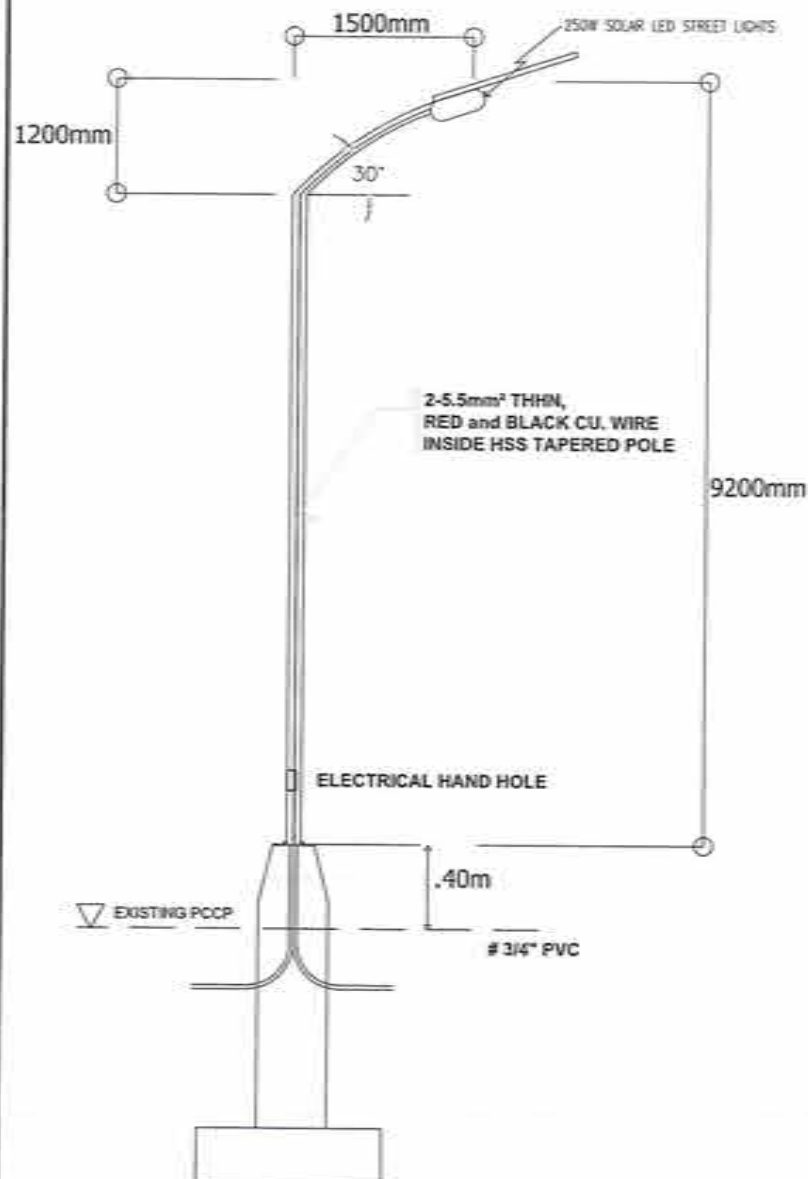
DATE:

SET NO.

D
16

SHEET NO.

31
40



SINGLE ARM POST DETAIL
NOT TO SCALE

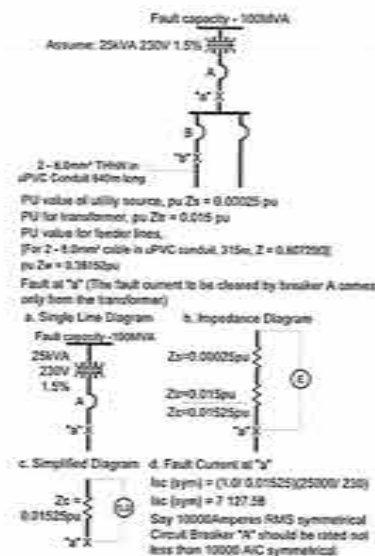
250W HYBRID (AC/DC) LED STREET LIGHTS DESCRIPTION

LED Module: 250 Bridge Lux USA 3030 5 Modules
Solar Panel: 150W/18V/ High Efficiency Monocrystalline Silicon (Lifetime 25 Years)
Battery: LiFePO4 (12.8V 60 AH)
Power Input: DC Priority
Secondary Input: 220 AC
Lumens: 180LM/W
Life Time: 100,000 hrs.
Color Temperature : 6000K - 6500K
Working Mode: Auto ON/OFF
Charging Time : 6 by sun
Discharge Time : 10-12 hours per night 2-3 rainy days back-up
Certificates : CE, ROHS
Warranty : 6 yrs. (as per Guidelines & Standard Design Drawings for Solar - Powered Roadway)

Post
Pole Height : 9M Hot Dipped Galvanized (HDG)
Single Arm
Type : Tapered Pole
Bottom Dia.: 200mm
Top Dia. : 100mm
Arm Length : 1.5m
Thickness : 3mm wall thickness
Base Plate : 300 x 300x 25mm
Anchor Bolts: 20mm x 900mm with nuts and washers
Powder Coating: Silver Grey
Product Size: 1470 x 420 x 50mm
Weight: 18.6 kg

SOLAR STREETLIGHT TECHNICAL PARAMETERS

NOT TO SCALE



FAULT CURRENT & VOLTAGE DROP CALCULATION

NOT TO SCALE

PANEL NO.: PB1						LOCATION : DIOSDADO P. MACAPAGAL NATIONAL HI-WAY						
SERVICE : 2P, 230V, 60HZ, 2-WIRES W/ GROUND						INTERRUPTING CAPACITY : 10KAIC						
SOURCE : SERVICE ENTRANCE (UTILITY CORPORATION)												
CKT.	LOAD DESCRIPTION	QTY.	POWER	VOLT	AMPS	POLE	PROTECTION			CONDUCTORS		CONDUIT
							TRIP	FRAME	NAIC			
1	250WATTS LED LAMP	05	1 250	230	5.43	2	30	50	10	2-8.0mm² THHN CU. WIRE + 1-5.5mm² THHN (GROUND) CU. WIRE (GREEN)		25mmØ uPVC PIPE
2	250WATTS LED LAMP	06	1 500	230	6.52	2	30	50	10	2-8.0mm² THHN CU. WIRE + 1-5.5mm² THHN (GROUND) CU. WIRE (GREEN)		25mmØ uPVC PIPE
TOTAL CONNECTED LOAD			2 750									

COMPUTATION:

$I_L = 2750 / 230 @ 100\% D.F. = 11.96 \text{ AMPS}$
USE: 2 - 8.0mm² THW Cu. WIRE + 1-5.5mm² THW (G)
Cu. WIRE IN 20mmØ RMC PIPE
USE: 1 - 40AT 100AF, MCCB 2P 240V 60Hz 10KAIC

PANEL NO.: PB2						LOCATION: DIOSDADO P. MACAPAGAL NATIONAL HI-WAY						
SERVICE: 2P, 230V, 60HZ, 2-WIRES W/ GROUND						INTERRUPTING CAPACITY: 10KAIC						
SOURCE: SERVICE ENTRANCE (UTILITY CORPORATION)												
CKT.	LOAD DESCRIPTION	QTY.	POWER	VOLT	AMPS	POLE	PROTECTION			CONDUCTORS		CONDUIT
							TRIP	FRAME	NAIC			
1	250WATTS LED LAMP	05	1 250	230	5.43	2	30	50	10	2-8.0mm² THHN CU. WIRE + 1-5.5mm² THHN (GROUND) CU. WIRE (GREEN)		25mmØ uPVC PIPE
2	250WATTS LED LAMP	06	1 500	230	6.52	2	30	50	10	2-8.0mm² THHN CU. WIRE + 1-5.5mm² THHN (GROUND) CU. WIRE (GREEN)		25mmØ uPVC PIPE
TOTAL CONNECTED LOAD			2 750									

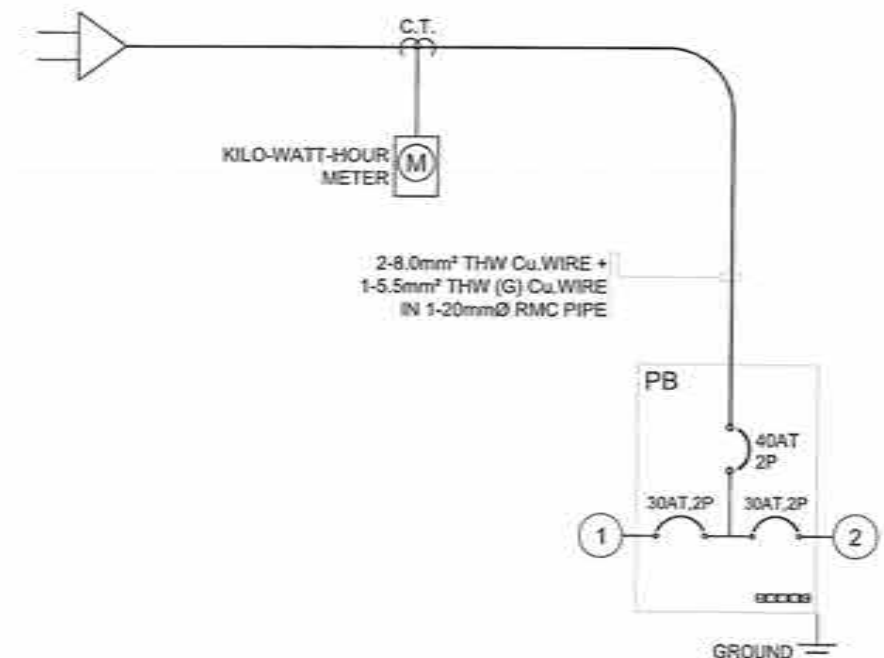
COMPUTATION:

$I_L = 2750 / 230 @ 100\% D.F. = 11.96 \text{ AMPS}$
USE: 2 - 8.0mm² THW Cu. WIRE + 1-5.5mm² THW (G)
Cu. WIRE IN 20mmØ RMC PIPE
USE: 1 - 40AT 100AF, MCCB 2P 240V 60Hz 10KAIC

SCHEDULE OF LOADS

NOT TO SCALE

POWER SOURCE, SINGLE
PHASE, 230VAC, 60Hz,
2-WIRES + GROUND



TYPICAL SINGLE LINE DIAGRAM

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

PREVENTIVE MAINTENANCE OF ROAD:
ASPHALT OVERLAY - PRES. DIOSDADO P.
MACAPAGAL HI-WAY - K1713+712 - K1721+400,
DAYAO ORIENTAL

SHEET CONTENTS:

SINGLE ARM POST DETAILS
SOLAR STREETLIGHT
TECHNICAL PARAMETERS
SCHEDULE OF LOADS
TYPICAL SINGLE LINE DIAGRAM
FAULT CURRENT & VOLTAGE
DROP CALCULATION

PREPARED AND DRAFTED:

JOHN PHILIP S. GONZALEZ
ENGINEER I
DATE: _____

CHECKED:

ALGIN A. GINGATAN
ENGINEER II
DATE: _____

SUBMITTED:

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

RECOMMENDING APPROVAL:

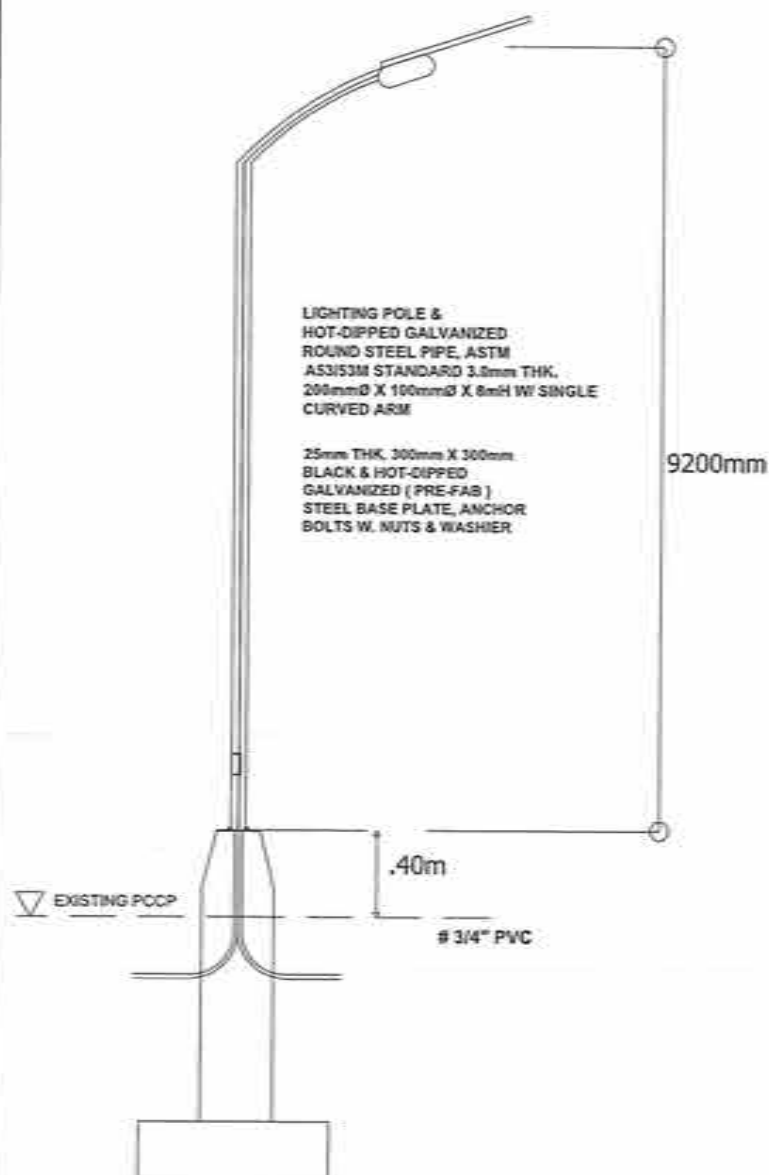
ROBERTO B. CABALLERO
ASSISTANT REGIONAL DIRECTOR
DATE: _____

APPROVED:

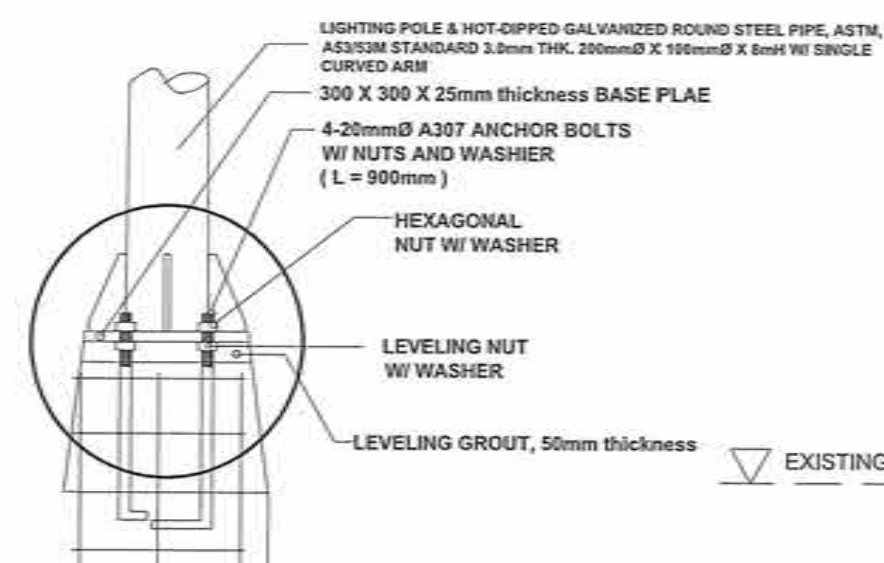
JUSY B. CORDON
REGIONAL DIRECTOR
DATE: _____

SHEET NO.

33
40



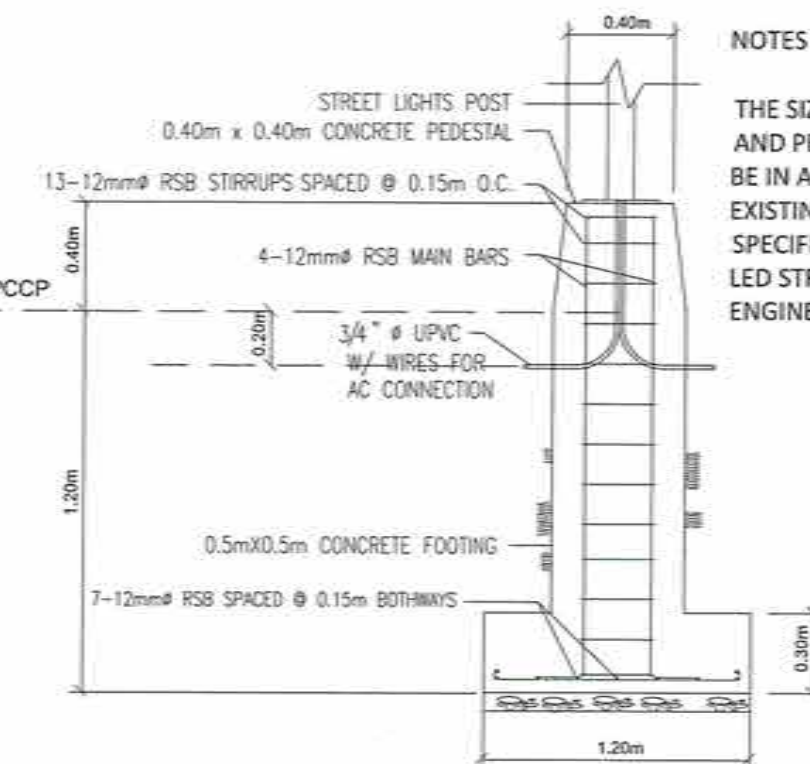
FOUNDATION ELEVATION
NOT TO SCALE



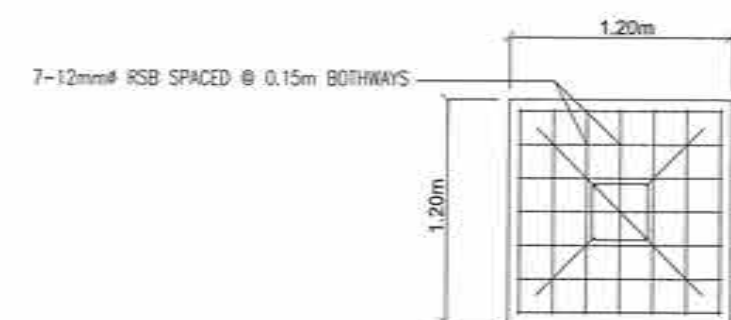
BASE PLATE DETAIL
NOT TO SCALE



STIFFENER DETAIL
NOT TO SCALE



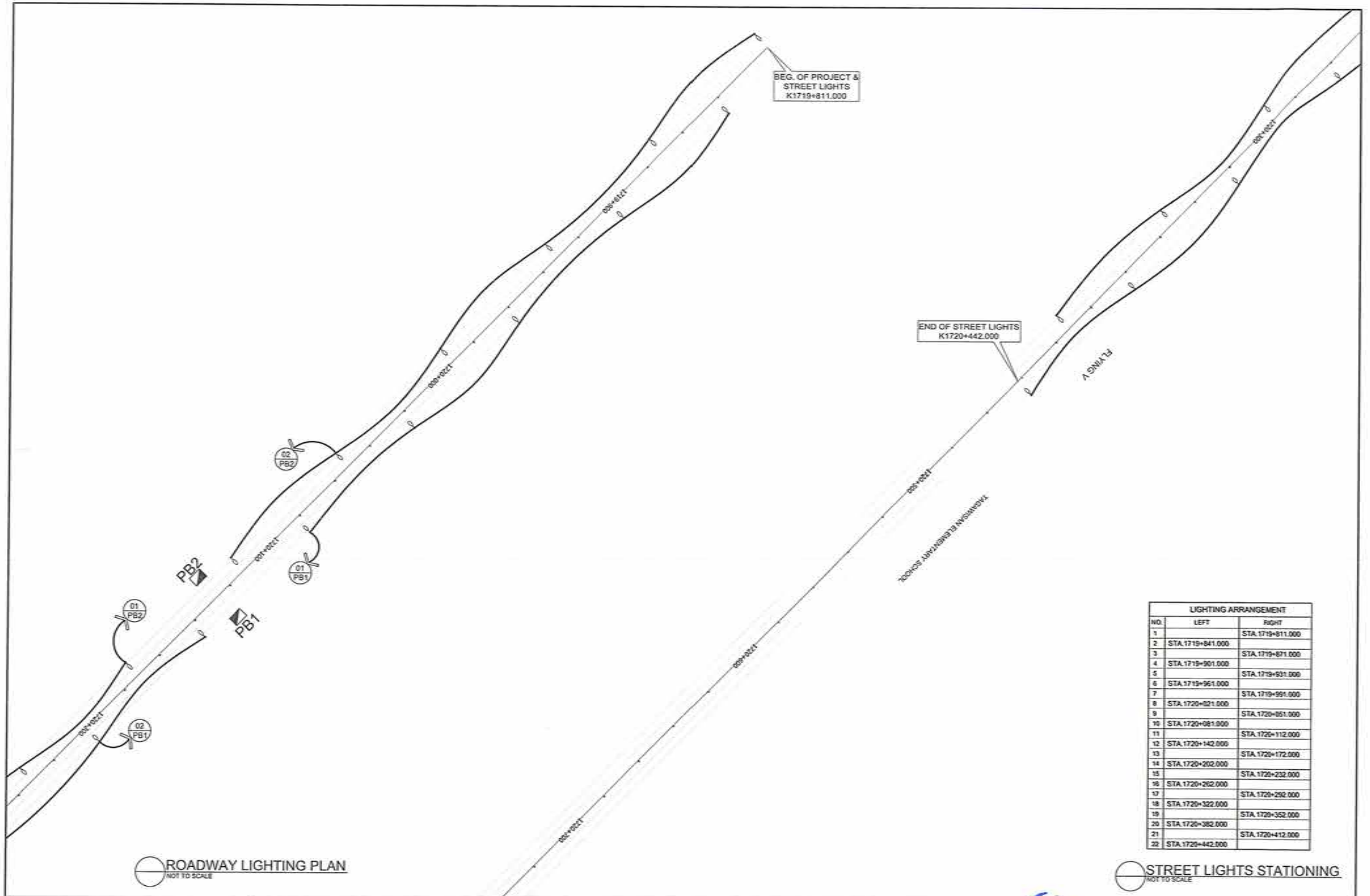
PEDESTAL DETAIL
NOT TO SCALE



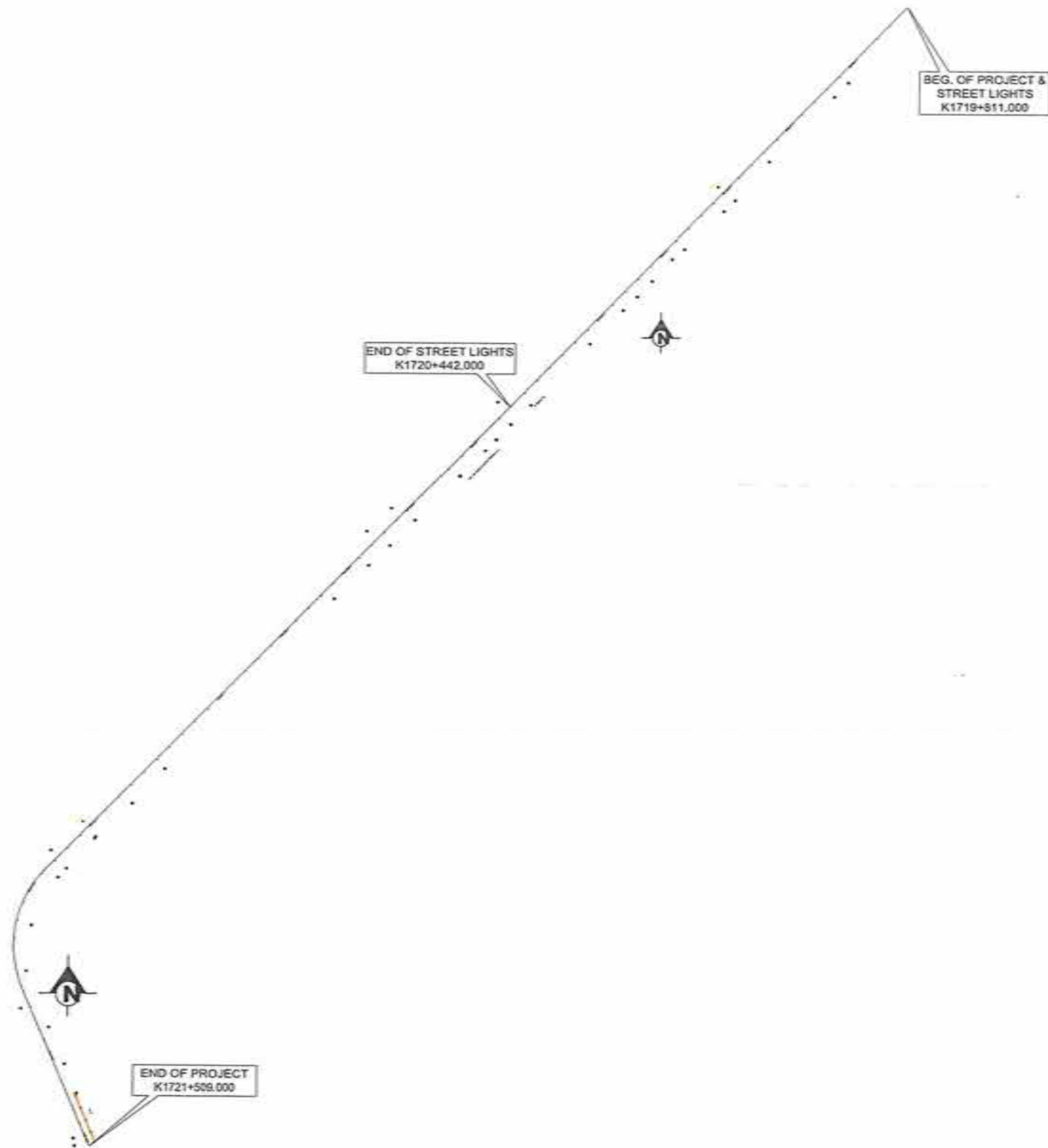
FOOTING DETAIL
NOT TO SCALE

NOTES :

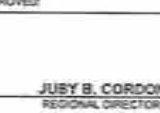
THE SIZE/DIMENSION OF THE POST AND PEDESTAL AND PEDESTAL MUST BE IN ACCORDANCE WITH THE EXISTING FIELD CONDITION & THE SPECIFIC REQUIREMENT OF THE SOLAR LED STREET LIGHT AS CERTIFIED BY THE ENGINEER



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:	PREPARED AND DRAFTED:	CHECKED:	SUBMITTED:	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HWY - K1719+712 - K1721+400, DAVAO ORIENTAL	ROADWAY LIGHTING PLAN AND STREET LIGHT STATIONING	JOHN PHILIP G. JENSEN ENGINEER I DATE:	ALVIN A. GINGAYAN ENGINEER I DATE:	JUDY M. T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE:	JOSELO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE:	JUBY B. CORDON REGIONAL DIRECTOR DATE:	D 5 6	35 40



VICINITY MAP
NOT TO SCALE

 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI GOV. CHAVEZ COR. R. MASSAYSAI AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION: PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	SHEET CONTENTS: VICINITY MAP	PREPARED AND DRAFTED:  JOHN PHILIP S. ORMENES ENGINEER II DATE: _____	CHECKED:  ALGIN A. GINCAYAN ENGINEER III DATE: _____	SUBMITTED:  JUDY ANN T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE: _____	RECOMMENDED APPROVAL:  JOAQUIN B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE: _____	APPROVED:  JUBY B. CORDON REGIONAL DIRECTOR DATE: _____	SET NO. D 6 / 6	SHEET NO. 36 40
--	--	---	---	--	--	---	---	--------------------------------	--------------------------------

E. PLAN

LEGEND:

- WM WOODEN / ANAHAW HOUSE
- WS WAITING SHED
- CH CONCRETE HOUSE
- S STORE
- CONCRETE SLAB
- ASPHALT OVERLAY
- CONCRETE FENCE
- ASPHALT OVERLAY FOR CY 2025

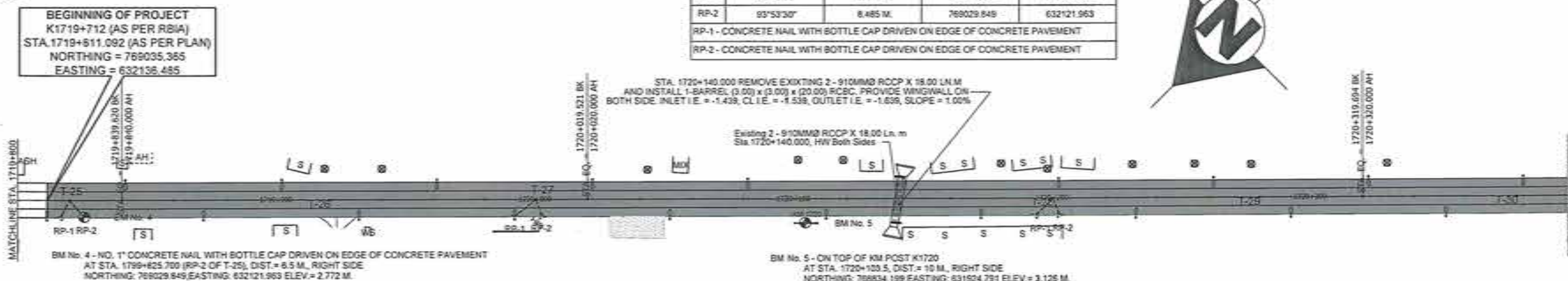
TRAVERSE LINE		
PI#	AZIMUTH	DISTANCE
T-24 TO T-25	44°49'57"	59.697 M.
T-25 TO T-26	44°36'22"	99.897 M.
T-26 TO T-27	44°39'48"	79.696 M.
T-27 TO T-28	44°37'41"	199.519 M.
T-28 TO T-29	44°54'54"	80.109 M.
T-29 TO T-30	44°35'23"	99.768 M.
T-30 TO PI-70	44°16'15"	77.163 M.

STATION COORDINATES			
POINT	STATION	NORTHING	EASTING
T-25	1719+819.682	769029.273	632130.429
T-26	1719+919.969	768956.151	632060.278
T-27	1719+999.655	768901.466	632004.256
T-28	1720+199.653	768759.473	631864.094
T-29	1720+279.763	768702.415	631807.863
T-30	1720+379.837	768631.365	631737.823

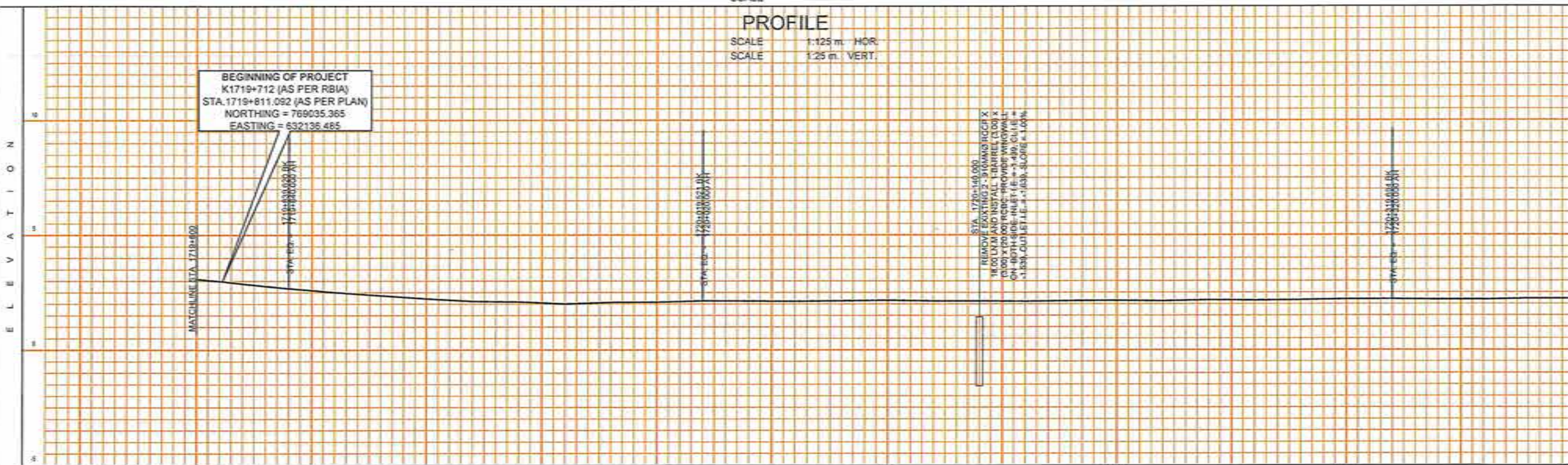
REFERENCE POINT OF T-27			
RP-1	AZIMUTH	DISTANCE	NORTHING
RP-1	186°13'10"	10.519 M.	768911.925
RP-2	115°1'42"	6.884 M.	768904.380
RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			

REFERENCE POINT OF T-25			
RP-1	AZIMUTH	DISTANCE	NORTHING
RP-1	163°2'11"	7.365 M.	769036.318
RP-2	93°53'30"	8.485 M.	769029.849
RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			

REFERENCE POINT OF T-28			
RP-1	AZIMUTH	DISTANCE	NORTHING
RP-1	179°29'52"	9.141 M.	768768.613
RP-2	112°49'25"	6.945 M.	768762.167
RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT			



PROFILE
SCALE 1:125 m. HOR.
SCALE 1:25 m. VERT.



STATION	1719+800	1719+900	1719+950	1720+000	1720+050	1720+100	1720+150	1720+200	1720+250	1720+300	1720+350	1720+400
FINISHED GRADE ELEVATION	FOLLOW EXISTING ROAD ELEVATION											
GROUND ELEVATION	1.190	1.101	1.007	0.907	0.797	0.537	0.394	0.250	0.143	0.115	0.037	0.097
WIDENING DIAGRAM	FOLLOW EXISTING ROAD ELEVATION											
SUPER ELEVATION DIAGRAM	FOLLOW EXISTING SUPERELEVATION											

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	SURVEYED	PREPARED	APPROVED	RECOMMENDING APPROVAL	APPROVED	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1719+712 - K1721+400, DAVAO ORIENTAL	PLAN AND PROFILE	REVIEWED: DANIEL M. CARRERA ENGINEER IN CHARGE REVIEWED: DENNIS ALLAN A. SEMPINO ENGINEER IN CHARGE	APPROVED: NEIL ERIC L. TOMALE ENGINEER APPROVED: JUAN MAN T. BERNARDINO CHIEF PLANNING AND DESIGN DIVISION	APPROVED: JOSELO B. CABALLERO ASSISTANT REGIONAL DIRECTOR APPROVED: JUBY B. CORDON REGIONAL DIRECTOR	DATE: 01/24/2025 DATE: 01/24/2025	DATE: 01/24/2025 DATE: 01/24/2025	E 1/2 37 40	

LEGEND:

- WM WOODEN / ANAHAW HOUSE
- MS WAITING SHED
- CH CONCRETE HOUSE
- S STORE
- CONCRETE SLAB
- ASPHALT OVERLAY
- CONCRETE FENCE
- ASPHALT OVERLAY FOR CY 2025

TRAVERSE LINE		
PI#	AZIMUTH	DISTANCE
T-30 TO PI-70	44°16'15"	77.163 M.
PI-70 TO PI-71	44°32'25"	24.514 M.
PI-71 TO PI-72	45°08'43"	42.040 M.
PI-72 TO PI-73	43°50'22"	34.962 M.
PI-73 TO PI-74	44°52'35"	61.404 M.
PI-74 TO T-31	44°30'02"	38.380 M.
T-31 TO T-32	44°32'12"	159.653 M.
T-32 TO T-33	44°38'21"	79.762 M.

TRAVERSE LINE		
PI#	AZIMUTH	DISTANCE
T-33 TO T-34	44°38'02"	219.931 M.
T-34 TO PI-75	44°35'34"	74.949 M.
PI-75 TO PI-76	25°00'12"	40.971 M.
PI-76 TO PI-77	05°54'43"	36.950 M.
PI-77 TO PI-78	348°52'04"	34.174 M.
PI-78 TO T-35	336°09'10"	153.990 M.
T-35 TO T-36	336°06'53"	120.163 M.
T-36 TO PI-79	336°45'49"	95.768 M.

ELEMENTS OF CURVE

PI-No	PI STATION	NORTHING	EASTING	I	D	R	T	E	Lc	Pc	Pl	e	w	V (kph)
PI-70	1720+456.999	768576.113	631683.960	00°16'10"	01°08'45"	1000.000	2.350	0.000	4.701	1720+454.649	1720+459.350			
PI-71	1720+481.913	768558.355	631666.485	00°36'18"	00°45'50"	1500.000	7.919	0.021	15.858	1720+473.994	1720+488.832			
PI-72	1720+523.953	768526.704	631636.683	01°18'20"	02°17'31"	500.000	5.697	0.032	11.394	1720+518.256	1720+529.650			
PI-73	1720+558.915	768503.486	631612.467	01°02'12"	01°08'45"	1000.000	9.047	0.041	18.084	1720+548.867	1720+567.962			
PI-74	1720+620.318	768459.974	631569.142	00°22'33"	00°34'23"	2000.000	6.556	0.011	13.117	1720+613.760	1720+628.878			
PI-75	1721+194.727	768051.436	631186.369	19°35'23"	19°25'03"	110.000	18.990	1.627	37.608	1721+175.737	1721+213.348			
PI-76	1721+235.326	768014.308	631149.052	19°05'29"	19°25'03"	110.000	18.498	1.544	36.653	1721+216.829	1721+253.481			
PI-77	1721+271.934	767977.554	631145.246	17°02'39"	12°43'57"	90.000	13.488	1.005	26.773	1721+258.448	1721+265.221			
PI-78	1721+305.908	767944.023	631151.844	12°42'54"	12°43'57"	90.000	10.027	0.557	19.973	1721+295.861	1721+315.853			

REFERENCE POINT OF PI-70

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	202°44'45"	18.709 M.	768593.367	631681.194
RP-2	185°15'43"	10.810 M.	768586.877	631684.951

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

REFERENCE POINT OF PI-74

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	175°0'4"	8.505 M.	768468.448	631568.415
RP-2	107°34'32"	7.289 M.	768462.175	631562.193

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

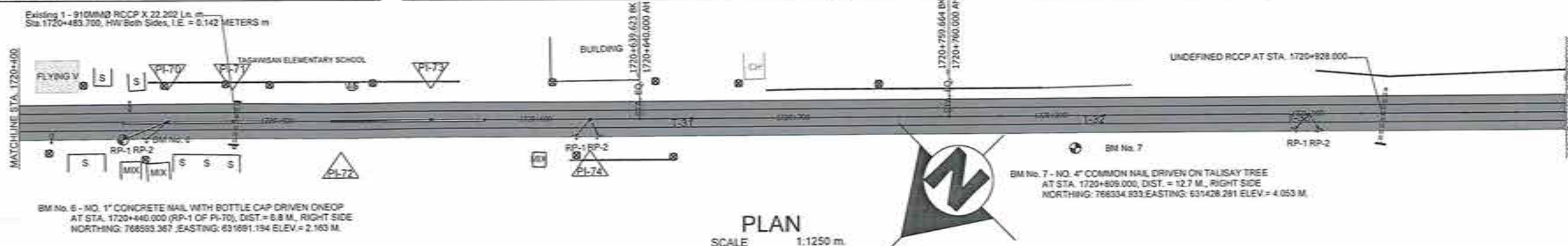
REFERENCE POINT OF T-33

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	177°26'32"	7.881 M.	768269.189	631373.155
RP-2	103°5'19"	7.086 M.	768262.921	631368.805

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

STATION COORDINATES

POINT	STATION	NORTHING	EASTING
T-31	1720+680.075	768431.868	631541.539
T-32	1720+820.064	768318.085	631429.565
T-33	1720+899.846	768261.316	631373.507
T-34	1721+118.777	768104.611	631218.988
T-35	1721+459.798	767803.729	631213.859
T-36	1721+579.660	767693.858	631262.514



REFERENCE POINT OF PI-77

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	165°2'34"	18.186 M.	767995.124	631140.552
RP-2	145°58'52"	9.596 M.	767985.510	631139.876

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

END OF PROJECT
K1721+400 (AS PER RBIA)
STA. 1721+509.552 (AS PER PLAN)
NORTHING = 767758.236
EASTING = 631234.005

REFERENCE POINT OF T-34

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	188°29'31"	11.208 M.	768115.896	631220.543
RP-2	134°32'57"	6.551 M.	768108.407	631214.320

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

REFERENCE POINT OF T-35

	AZIMUTH	DISTANCE	NORTHING	EASTING
RP-1	201°16'23"	9.163 M.	767812.268	631217.184
RP-2	267°50'13"	7.011 M.	767803.994	631220.865

RP-1 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT
RP-2 - CONCRETE NAIL WITH BOTTLE CAP DRIVEN ON EDGE OF CONCRETE PAVEMENT

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI COR. CHAVEZ COR. R. BRIGSKY AVENUE, DAVAO CITY	PROJECT NAME AND LOCATION	SHEET CONTENTS	SURVEYED	PREPARED	SUBMITTED	RECOMMENDATION APPROVAL	APPROVED	SET NO.	SHEET NO.
	PREVENTIVE MAINTENANCE OF ROAD: ASPHALT OVERLAY - PRES. DIOSDADO P. MACAPAGAL HI-WAY - K1718+712 - K1721+400, DAVAO ORIENTAL	PLAN	REVIEWED: DANILLO P. CARRASCA ENGINEER IN CHARGE REVIEWED: DENNIS ALDRIN A. SEMPIO ENGINEER IN CHARGE DATE: _____	REVIEWED: NEIL ERIC L. TOMALE ENGINEER IN CHARGE REVIEWED: DENNIS ALDRIN A. SEMPIO ENGINEER IN CHARGE DATE: _____	REVIEWED: JUDY MARY T. BERNARDINO CHIEF, PLANNING AND DESIGN DIVISION DATE: _____	REVIEWED: JOSE LITO B. CABALLERO ASSISTANT REGIONAL DIRECTOR DATE: _____	REVIEWED: JUBY B. CORDON REGIONAL DIRECTOR DATE: _____	E 1 2	38 40

C:\USERS\PUBLIC\G25\INFRA\PREVENTIVE MAINTENANCE DIOSDADO MACAPAGAL NATIONAL HIGHWAY\PLU\EDT\5-2-25\PLAN AND PROFILE (FINAL) DWG

F. CROSSDRAIN CROSS SECTIONS

G. SOIL PROFILE
