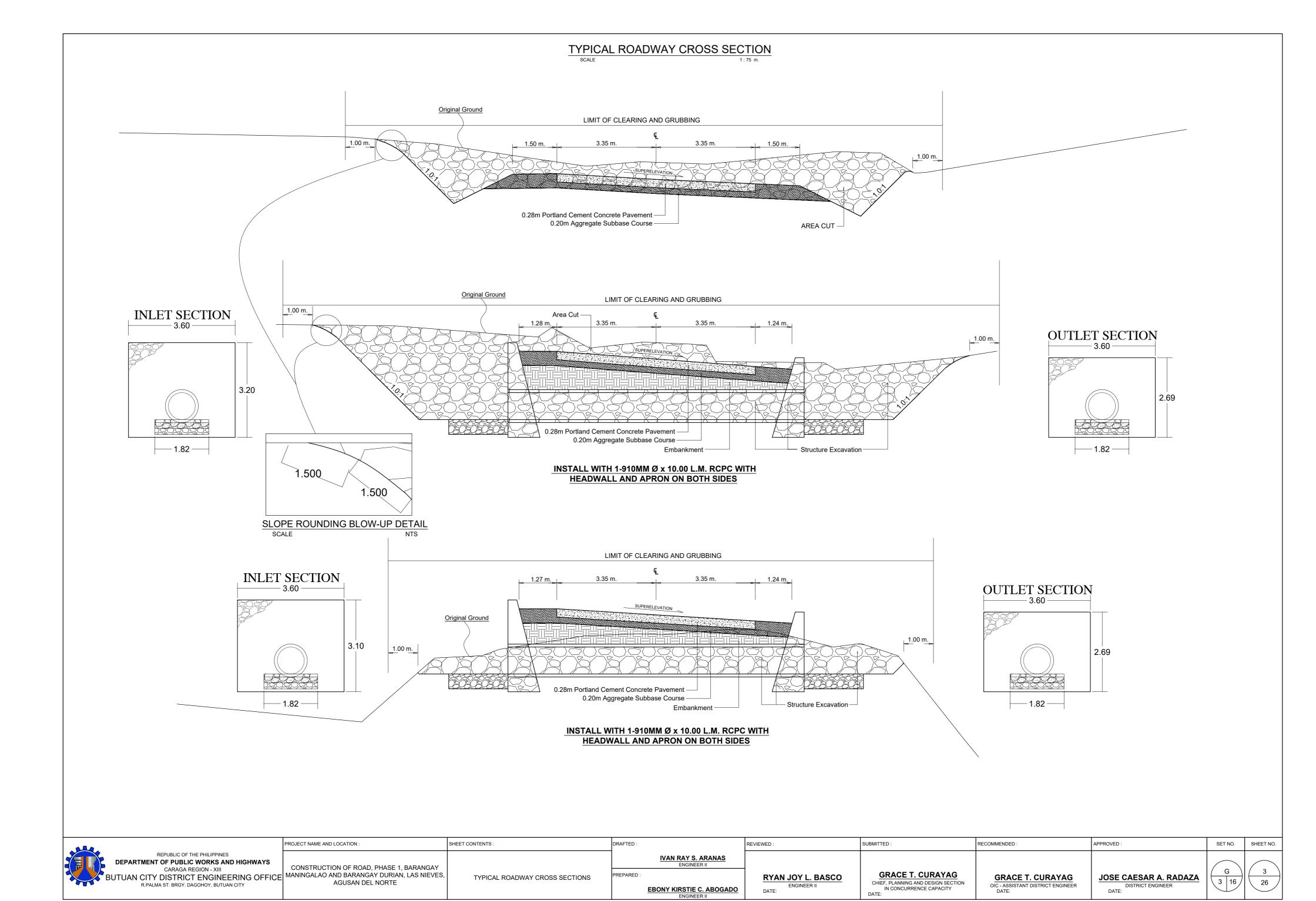
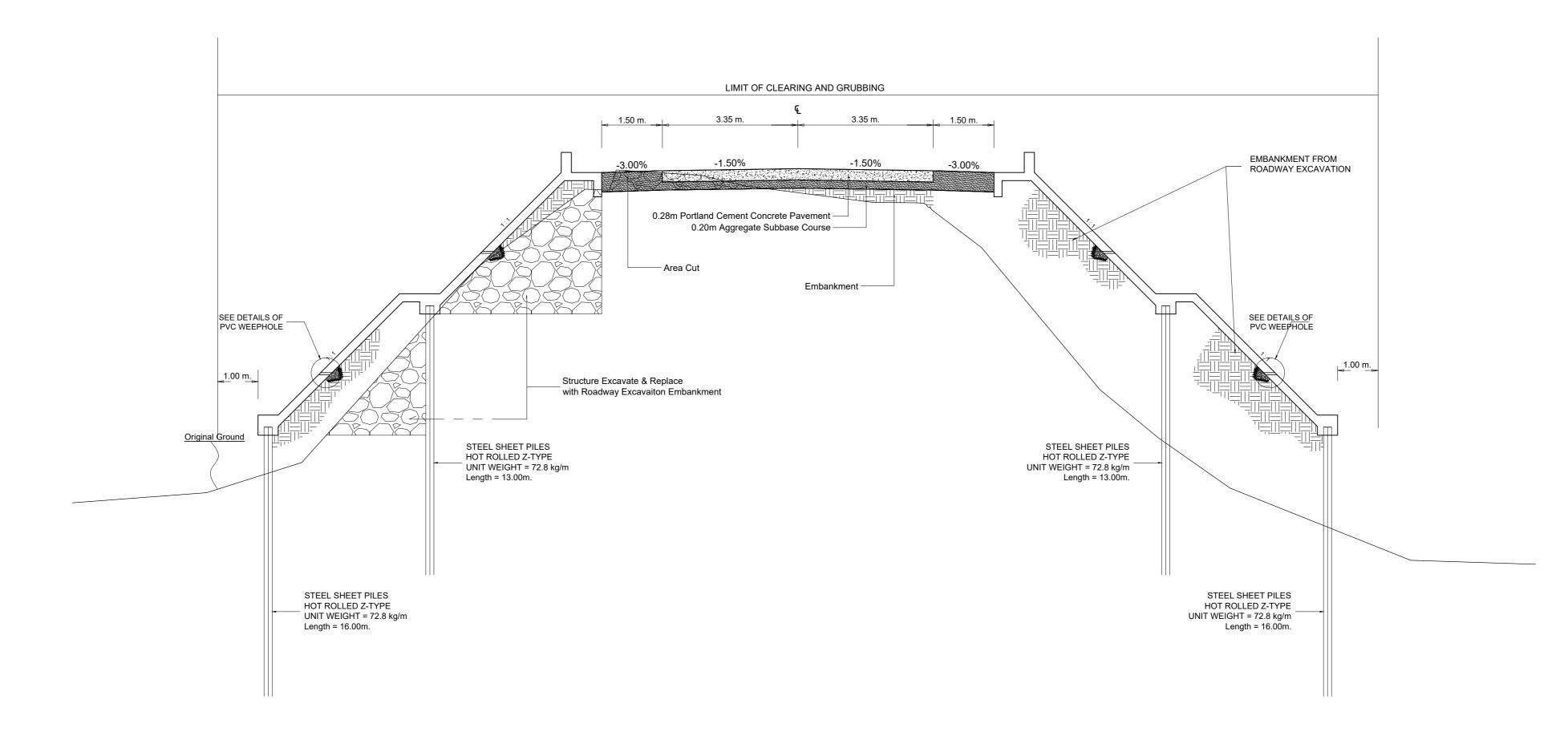
INDEX OF SHEET REPUBLIC OF THE PHILIPPINES - TITLE PAGE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS LOCATION PLAN AND VICINITY MAP - TYPICAL ROADWAY CROSS SECTION - TYPICAL ROADWAY CROSS SECTION CARAGA REGION - XIII - TYPICAL ROADWAY CROSS SECTION G 5 TYPICAL SLOPE PROTECTION SECTION. HOT ROLLED Z-TYPE BUTUAN CITY DISTRICT ENGINEERING OFFICE TYPICAL SECTION, HOT ROLLED Z-TYPE SHEET PILE PROPERTIES, BAR BENDING DIAGRAM, COPING DETAIL, PARAPET REINFORCING DETAIL, WEEPHOLE DETAIL, AND SUMMARY OF QUANTITIES R. PALMA ST., BRGY. DAGOHOY, BUTUAN CITY - GRADING QUANTITIES, PAVING QUANTITIES, DRAINAGE SCHEDULE - TYPICAL PLAN OF A TWO LANE PAVEMENT DETAILS OF JOINTS IN RIGID PAVEMENT DETAIL OF BAR SPACING ALONG CURVES DETAIL OF SIDE FORMS DETAIL OF EXPANSION JOINT (DOWELLED) AT **CERTAIN INTERSECTIONS & STRUCTURES** C.Y. 2025 PROJECT - GENERAL NOTES VICINITY MAP DRAWN NOT TO SCALE ABBREVIATIONS AND SYMBOLS DETAILED ENGINEERING DESIGN PLAN FOR G 11 DESIGN SYMBOL - LEGEND CONSTRUCTION OF ROAD, PHASE 1, BARANGAY MANINGALAO HORIZONTAL AND VERTICAL CURVE G 13 AND BARANGAY DURIAN, LAS NIEVES, AGUSAN DEL NORTE - RCPC INSTALLATION METHOD LOCATION: BARANGAY MANINGALAO, LAS NIEVES, AGUSAN DEL NORTE G 15 STANDARD ROAD PAVEMENT MARKINGS STATION LIMIT: 0 + 000.00 - 0 + 722.33 SS 1 - TRAFFIC MANAGEMENT PLAN NET LENGTH: 1.44 LANE KM. (CW1 - CONSTRUCTION OF CONCRETE ROAD) - SIGNAGE AND BARRICADE INSTALLATION SS 2,3 **PROCEDURE** NET AREA: 2,910.19 SQ.M. (CW2 - CONSTRUCTION OF ROAD SLOPE PROTECTION) - REQUIRED PPE TABULATION - PROJECT BILLBOARD - STRAIGHT LINE DIAGRAM SLD - TOPOGRAPHIC PLAN & PROFILE 25-26 - DETAILED CROSS SECTIONS STA. 0 + 700.00 - STA. 0 + 722.33 (CW2) **BEGINNING OF PROJECT** INSTALL ROAD SLOPE PROTECTION (REINFORCED Sta. 0 + 000.00 CONCRETE) ON LEFT SIDE ONLY 964282.0183 N, 562058.3959 E SCALE: 1: 1400 M 0+400. STATION 0 + 660.00 END OF PCCP (CW1) INSTALL 1-910MM x 10.00 L.M. RCPC WITH HEADWALL AND Sta. 0 + 720.00 APRON ON BOTH SIDES 963807.4290 N, 561537.6852 E BEGINNING OF PCCP (CW1) END OF PROJECT INSTALL 1-910MM x 10.00 L.M. RCPC WITH HEADWALL AND Sta. 0 + 722.33 Sta. 0 + 000.00 APRON ON BOTH SIDES 963806.7271 N, 561535.4634 E 964282.0183 N, 562058.3959 E STA. 0 + 320.00 - STA. 0 + 340.00 (CW2) INSTALL ROAD SLOPE PROTECTION (REINFORCED Project Control No. CONCRETE) ON BOTH SIDES AGN-111 LAT - 8°43'18.13067" / N - 964409.012 LONG - 125°34'17.9299" / E - 562903.064 PROJECT NAME AND LOCATION REVIEWED SHEET NO. REPUBLIC OF THE PHILIPPINES IVAN RAY S. ARANAS **DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS** CONSTRUCTION OF ROAD, PHASE 1, BARANGAY CARAGA REGION - XIII MANINGALAO AND BARANGAY DURIAN, LAS NIEVES, **GRACE T. CURAYAG** BUTUAN CITY DISTRICT ENGINEERING OFFICE RYAN JOY L. BASCO **GRACE T. CURAYAG** JOSE CAESAR A. RADAZA VICINITY MAP CHIEF, PLANNING AND DESIGN SECTION IN CONCURRENCE CAPACITY AGUSAN DEL NORTE EBONY KIRSTIE C. ABOGADO

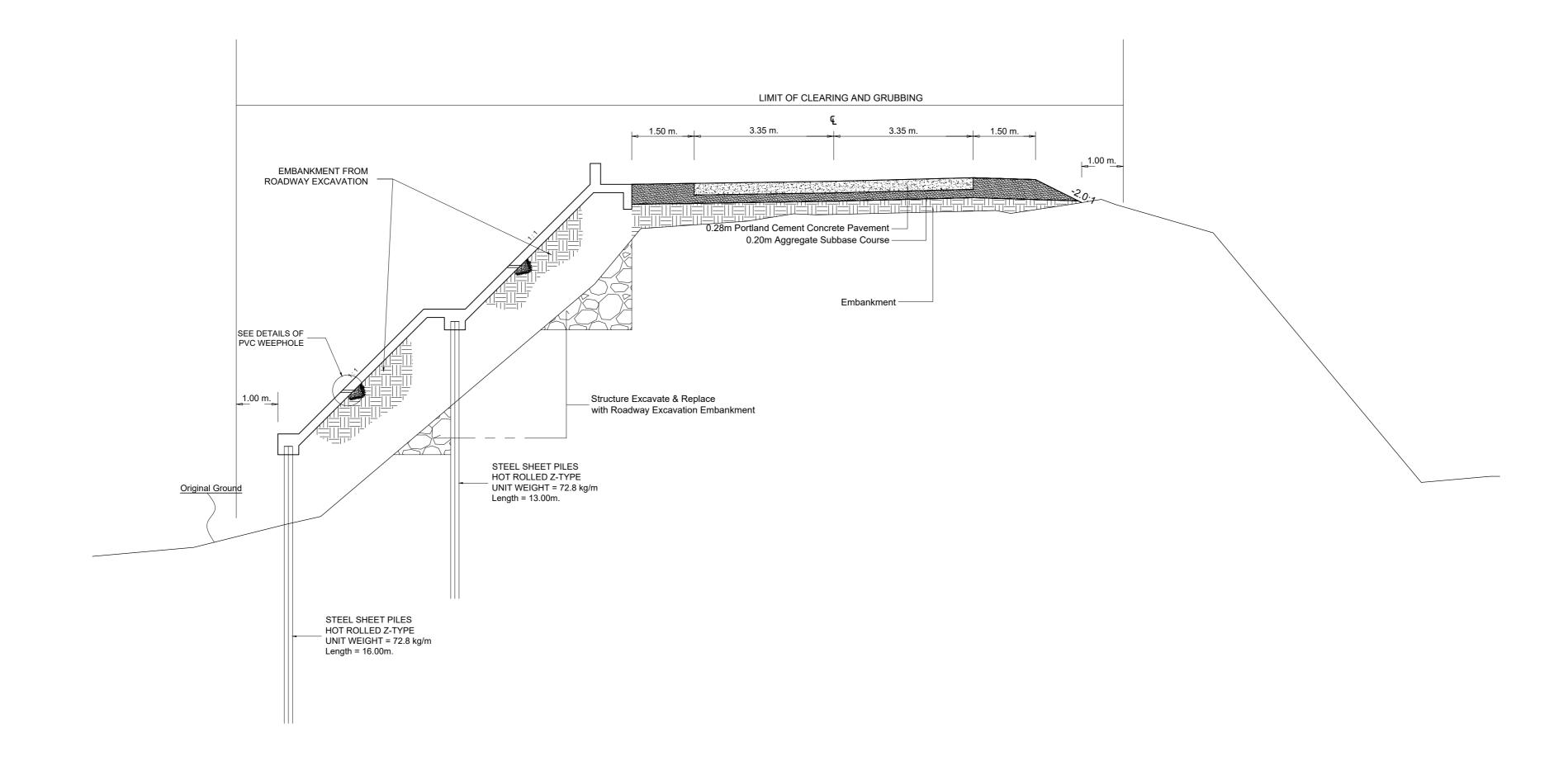


TYPICAL ROADWAY CROSS SECTION



,	. مقو	PROJECT NAME AND LOCATION :	SHEET CONTENTS:	DRAFTED :	REVIEWED :	SUBMITTED:	RECOMMENDED :	APPROVED :	SET NO.	SHEET NO.
	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS CARAGA REGION - XIII BUTUAN CITY DISTRICT ENGINEERING OFFICE R.PALMA ST. BRGY. DAGOHOY, BUTUAN CITY	CONSTRUCTION OF ROAD, PHASE 1, BARANGAY MANINGALAO AND BARANGAY DURIAN, LAS NIEVES, AGUSAN DEL NORTE	TYPICAL ROADWAY CROSS SECTIONS	IVAN RAY S. ARANAS ENGINEER II PREPARED: EBONY KIRSTIE C. ABOGADO	RYAN JOY L. BASCO ENGINEER II DATE:	GRACE T. CURAYAG CHIEF, PLANNING AND DESIGN SECTION IN CONCURRENCE CAPACITY	GRACE T. CURAYAG OIC - ASSISTANT DISTRICT ENGINEER DATE:	JOSE CAESAR A. RADAZA DISTRICT ENGINEER DATE:	G 4 16	4 26

TYPICAL ROADWAY CROSS SECTION



		PRO
	REPUBLIC OF THE PHILIPPINES	
	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS	
	CARAGA REGION - XIII	С
	BUTUAN CITY DISTRICT ENGINEERING OFFICE	MA
	R.PALMA ST. BRGY. DAGOHOY, BUTUAN CITY	
- 1		ı

	PROJECT NAME AND LOCATION :	SHEET CONTENTS:
Œ	CONSTRUCTION OF ROAD, PHASE 1, BARANGAY MANINGALAO AND BARANGAY DURIAN, LAS NIEVES, AGUSAN DEL NORTE	TYPICAL ROADW

	DRAFTED :	
		IVAN RAY S. ARANAS
		ENGINEER II
DWAY CROSS SECTIONS	PREPARED:	
		EBONY KIRSTIE C. ABOG

RYAN JOY L. BASCO	GRACE T. CURAYAG
ENGINEER II DATE:	CHIEF, PLANNING AND DESIGN SECTION IN CONCURRENCE CAPACITY DATE:

SUBMITTED:

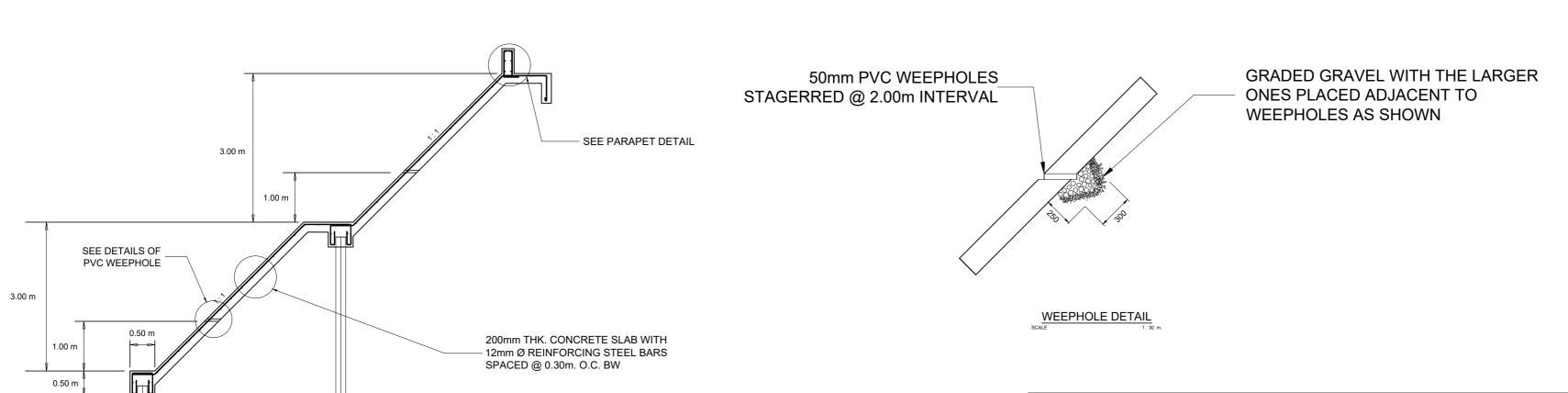
REVIEWED:

RECOMMENDED :

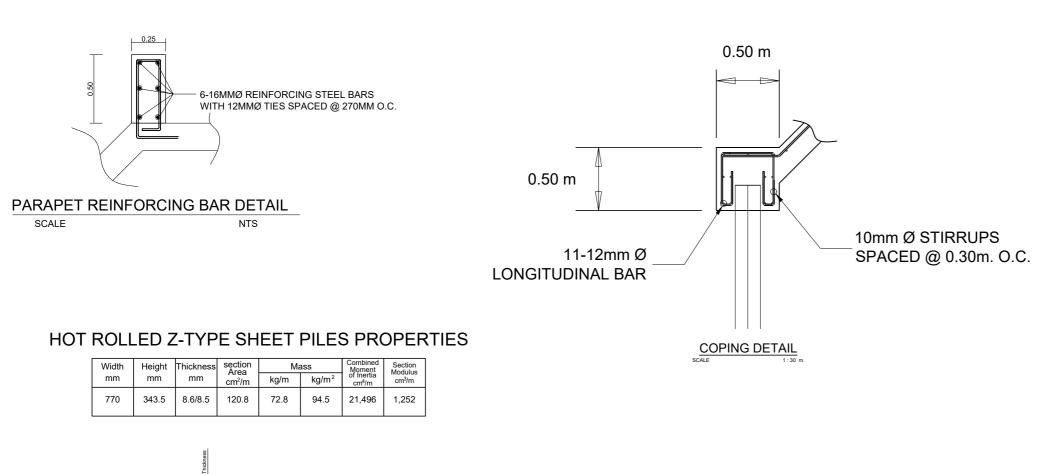
1005 045048 4 848474
JOSE CAESAR A. RADAZA DISTRICT ENGINEER
DATE:

SET NO. SHEET NO.

APPROVED :



TYPICAL SLOPE PROTECTION SECTION SCALE 1:70 m.



NEUTRAL AXIS	_
Width	BAR BENDING DIAGRAM - SLOPE PROTECTION 1 2 3 4
HOT ROLLED Z-TYPE TYPICAL SECTION SCALE NTS	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

	SUMMAR	Y OF QU	ANTITIES	S
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	REMARKS
CW1				
Part A	FACILITIES FOR THE ENGINEER			
A.1.1(8)	PROVISION OF FIELD OFFICE FOR THE ENGINEERS (RENTAL BASIS)	MO.	6.60	
Part B	OTHER GENERAL REQUIREMENTS			
B.5	PROJECT BILLBOARD	EA.	3.00	PLACED AT BEGINNING & END OF PROJECT
B.7(1)	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	MO.	6.60	D.O. 13 SERIES OF 2018
B.8 (1)	ROAD WORKS SAFETY AND TRAFFIC MANAGEMENT	MO.	6.60	PROVIDE STANDARD WARNING SIGNS AND BARRICADES
B.9	MOBILIZATION/DEMOBILIZATION	L.S.	1.00	
Part C	EARTHWORKS			
100(1)	CLEARING AND GRUBBING (WITH STRIPPING)	HA.	1.51	
102(2)	SURPLUS COMMON EXCAVATION	CU.M.	7,243.25	
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	CU.M.	154.23	
104(1)a	EMBANKMENT FROM ROADWAY EXCAVATION	CU.M.	1,862.64	
105(1)a	SUBGRADE PREPARATION, COMMON MATERIAL	SQ.M.	6,588.75	
Part D	SUBBASE AND BASE COURSE			
200(1)	AGGREGATE SUBBASE COURSE	CU.M.	713.25	THICKNESS = 0.20 M.
Part E	SURFACE COURSE			
311(1)e1	PCC PAVEMENT (PLAIN)-CONVENTIONAL METHOD, 280MM THK.	SQ.M.	4,824.00	
Part G	DRAINAGE AND SLOPE PROTECTION STRUCTURES			
500(1)a3	PIPE CULVERTS, 910MM DIA. (36")	L.M.	20.00	
506(1)	STONE MASONRY	CU.M.	33.21	

SUMMARY OF QUANTITIES								
ITEM NO.	DESCRIPTION	UNIT	QUANTITY	REMARKS				
CW2								
Part C	EARTHWORKS							
103(1)a	STRUCTURE EXCAVATION (COMMON SOIL)	CU.M.	340.44					
Part G	DRAINAGE AND SLOPE PROTECTION STRUCTURES							
400(6)	STRUCTURAL STEEL SHEET PILES, FURNISHED	M.	2,349.00					
400(12)	STRUCTURAL STEEL SHEET PILES, DRIVEN	M.	1,969.16					
404(1)a	REINFORCING STEEL BAR, GRADE 40	KG.	3,484.05					
404(1)b	REINFORCING STEEL BAR, GRADE 60	KG.	419.98					
405	STRUCTURAL CONCRETE CLASS A	CU.M.	151.03					

RECOMMENDED :

	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS CARAGA REGION - XIII
	CARAGA REGION - XIII BUTUAN CITY DISTRICT ENGINEERING OFFICE R.PALMA ST. BRGY. DAGOHOY, BUTUAN CITY

PROJECT NAME AND LOCATION:

CONSTRUCTION OF ROAD, PHASE 1, BARANGAY
MANINGALAO AND BARANGAY DURIAN, LAS NIEVES,
AGUSAN DEL NORTE

SHEET CONTENTS:

TYPICAL SLOPE PROTECTION SECTION
HOT ROLLED Z-TYPE TYPICAL SECTION
HOT ROLLED Z-TYPE SHEET PILE PROPERTIES
BAR BENDING DIAGRAM
COPING DETAIL
PARAPET REINFORCING DETAIL
WEEPHOLE DETAIL
SUMMARY OF QUANTITIES

DRAFTED:

IVAN RAY S. ARANAS
ENGINEER II

PREPARED:

EBONY KIRSTIE C. ABOGADO
ENGINEER II

RYAN JOY L. BASCO
ENGINEER II
DATE:

GRACE T. CUI
CHIEF, PLANNING AND DE
IN CONCURRENCE O
DATE:

SUBMITTED:

REVIEWED:

GRACE T. CURAYAG

CHIEF, PLANNING AND DESIGN SECTION
IN CONCURRENCE CAPACITY

DATE:

GRACE T

OIC - ASSISTANT
DATE:

GRACE T. CURAYAG

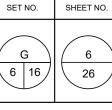
OIC - ASSISTANT DISTRICT ENGINEER
DATE:

JOSE CAESAR A. RADAZA

DISTRICT ENGINEER

DATE:

APPROVED :



IUMBE	R STEEL SH	EET PILE		FOR	20.00	meters (eac	h side/ban	k)				
	USE Z-TYPE			72.8	KG/m							
		FURNISHED (lef	t side)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
			,		PCS		meters		meters		24606.4	KGS
								000.00		TOTAL	24,606.40	-
		DRIVEN (left side	e)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
			-,		PCS		meters		meters		20,622.06	KGS
					PCS		meters		meters		24,606.40	
								54.73	meters	TOTAL	45,228.46	KGS
								54.73	meters			
NUMBE	R STEEL SH	EET PILE		FOR	20.00	meters (eac	h side/ban	k)				
	USE Z-TYP				KG/m							
		FURNISHED (lef	t side)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
		,	,	26	PCS	16	meters	416.00	meters		30,284.80	KGS
										TOTAL	30,284.80	KGS
		DRIVEN (left side	e)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
				26	PCS	13.65	meters	354.90	meters		25,836.72	KGS
				26	PCS	16	meters	416.00	meters		30,284.80	
								61.10	meters	TOTAL	56,121.52	KGS
								61.10	meters			

Sta. 32	.0.00 - Sta. 3	40.00										
NUMBE	R STEEL SHE	EET PILE		FOR	20.00	meters (eac	h side/bai	nk)				
	USE Z-TYPI	USE Z-TYPE		72.8	KG/m							
		FURNISHED (right s		NUM, OF PCS		LENGTH		TOTAL LENG	TOTAL LENGTH		TOTAL KGS	
				26	PCS	13	meters	338.00	meters		24606.4	KGS
										TOTAL	24,606.40	KGS
		DRIVEN (right sig	de)	NUM. O	FPCS	LENGTH		TOTAL LENG	TH .		TOTAL KGS	
					PCS	10.415	meters	270.79	meters		19,713.51	KGS
				26	PCS	13	meters	338.00	meters		24,606.40	
								67.21	meters	TOTAL	44,319.91	KGS
								67.21	meters			
NUMBE	R STEEL SHE	EET PILE		FOR	20.00	meters (eac	h side/baı	nk)				
	USE Z-TYPI	E		72.8	KG/m							
		FURNISHED (rigi	ht side)	NUM. O	F PCS	LENGTH		TOTAL LENG	iTH		TOTAL KGS	
				26	PCS	16	meters	416.00	meters		30284.8	KGS
										TOTAL	30,284.80	KGS
		DRIVEN (right sid	de)	NUM. O	FPCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
				26	PCS	13.305	meters	345.93	meters		25,183.70	KGS
				26	PCS	16	meters	416.00	meters		30,284.80	
								70.07	meters	TOTAL	55,468.50	KGS
								70.07	meters			

Sta. 70	00.00 - Sta. 722.33										
NUMBER STEEL SHEET PILE			FOR	22.33	meters (eac	h side/bank	()				
	USE Z-TYPE		72.8	KG/m							
	FLIDNICLIED	(loft side)	NUM. OF	DCC	LENGTH		TOTAL LENG	T1.1		TOTAL KGS	
	FURNISHED	(lell Side)		PCS						27445.6	KOC
			29	PUS	13	meters	377.00	meters			
									TOTAL	27,445.60	KGS
	DRIVEN (left	side)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
	annual and A Lots		29	PCS	10.826667	meters	313.97	meters		22,857.26	KGS
			29	PCS	13	meters	377.00	meters		27,445.60	
							63.03	meters	TOTAL	50,302.86	KGS
							63.03	meters			
NUMBE	ER STEEL SHEET PILE		FOR	22.33	meters (eac	h side/bank	()				
	USE Z-TYPE		72.8	KG/m							
	FURNISHED	(left side)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
			29	PCS	16	meters	464.00	meters		33779.2	KGS
									TOTAL	33,779.20	KGS
	DRIVEN (left	side)	NUM. OF	PCS	LENGTH		TOTAL LENG	TH		TOTAL KGS	
			29	PCS	13.803333	meters	400.30	meters		29,141.60	KGS
			29	PCS	16	meters	464.00	meters		33,779.20	
							63.70	meters	TOTAL	62,920.80	KGS
							63.70	meters			

ES	TIMATE	ED QI	JANT	TITIE	S

							SECTION	N 1 (Both	Sides)	L=	20.00	M					
R	- Y		ш			D E	SCRIP	TIOI	N		Ж	BAR		TOTAL	UNIT	TOTAL	VOLUME OF CONCRETE
MEMBER	BAR	BAR	TYPE	BAR ZE	а	b	С	d	е	f	SPLICE	LENGTH	QUANTITY	LENGTH	WEIGHT	WEIGHT	VOLUME OF CONCINETE
	_ ≥			BA SIZE	m	m	m	m	m	m	S	m		m	kg/m	KGS	CU.M.
SLOPE	1a			12	0.400	0.800	3.900	0.800			0.000	5.900	67	395.30	0.888	351.03	
	1b			12	20.000						1.000	21.000	24	504.00	0.888	447.55	
EE	1a			12	0.800	3.900	0.300				0.000	5.000	67	335.00	0.888	297.48	
CONCRETE	1b		floor	12	20.000						1.000	21.000	14	294.00	0.888	261.07	
8																	96.92
COPIN	CS1			12	20.000						1.000	21.000	11	231.00	0.888	205.13	30.32
8	CS2			10	0.150	0.300	0.300	0.300	0.150		0.000	1.200	67	80.40	0.616	49.53	
Ē	1a			12	0.200	0.400	0.150	0.400			0.000	1.150	75	86.25	0.888	76.59	
PARAPET	1b			16	20.000						1.000	21.000	6	126.00	1.579	198.95	
P _A																	
															TOTAL	3,774.66	96.92
	SECTION 2 (Left Side) L =								L=	22.33	М						
BER	요 关	м H	ш,	œ.		DE		•			S	BAR		TOTAL	UNIT	TOTAL	VOLUME OF CONCRETE

																IOIAL	3,774.00	30.32
	SECTION 2 (Left Side) L=									t Side)	L=	22.33	M					
E S	~ ×		ш	~			DE	SCRIP	TIOI	V		Э.	BAR		TOTAL	UNIT	TOTAL	VOLUME OF CONCRETE
MEMBER	BAR	BAR	TYPE	BAR	щ	а	b	С	d	е	f	SPLICE	LENGTH	QUANTITY	LENGTH	WEIGHT	WEIGHT	VOLUME OF CONTONETE
					SIZE	m	m	m	m	m	m	Ø	m		m	kg/m	KGS	CU.M.
SLOPE	1a			1	2	0.400	0.800	3.900	0.800			0.000	5.900	67	395.30	0.888	351.03	
	1b			1	2	22.330						1.000	23.330	24	559.92	0.888	497.21	
ETE	1a			1	2	0.800	3.900	0.300				0.000	5.000	67	335.00	0.888	297.48	
CONCRETE	1b			1	2	22.330						1.000	23.330	14	326.62	0.888	290.04	
																		54.11
COPIN	CS1			1	2	22.330						1.000	23.330	11	256.63	0.888	227.89	01.11
8	CS2			1	0	0.150	0.300	0.300	0.300	0.150		0.000	1.200	75	90.00	0.616	55.44	
ET	1a			1	2	0.200	0.400	0.150	0.400			0.000	1.150	75	86.25	0.888	76.59	
PARAPET	1b			1	6	22.330						1.000	23.330	6	139.98	1.579	221.03	
PA																		
																TOTAL	2,016.70	54.11
															GI	RAND TOTAL	5,791.36	151.03
											R	SB Grade 40	3,484.05					
															R	SB Grade 60	419.98	

	PAVEMENT DESI	GN PARAMETERS	
	ITEM		DESIGN REQUIREMENT
1	Performance Period		20 years
2	Design Traffic		
3	Design Reliability	: R	85%
4	Standard Normal Deviate	: ZR	-1.037
5	Standard Deviation	: So	0.35
6	Initial Terminal Serviceability Level	: Po	4.50
7	Terminal Serviceability Level	: Pt	2.50
8	Design Serviceability Loss	: △ PSI	2.00
9	PCCP Modulus of Rupture	: S'c	751 psi
10	PCCP Modulus of Elasticity	: Ec	3.60E+06 psi
11	Subgrade Design CBR		
12	Effective Roadbed Resilient Modulus	: MR	
13	Subbase Elastic Modulus	: ESB	15,000 psi
14	Subbase Thickness	: DSB	
15	Effective Modulus of Subgrade Reaction	: K (pci)	
16	Drainage Coeffecient	: Cd	1.00
17	Load Transfer Coeffecient	: J	3.80
18	Loss of Support	: Ls	1.00 for Granular Subbase

STEEL	SHEET PILE CONCRETE SLAB								
		AREA (S	Q.M.)	LENGTH (M.)			NO. OF UNIT		
	VOLUME	2.423	X	62.33 =	151.02559	CU.M.	1	151.02559	CU.M.
							SUB-TOTAL	151.02559	CU.M.
							TOTAL	151.02559	CU.M.

PAVING QUANTITIES

ITEM 311(1)e1 - PORTLAND CEMENT CONCRETE PAVEMENT, 0.28m THK.

CONCRETING

Sta. 0 + 000.00 - Sta. 0 + 720.00

Length = 720.000 m Width = 6.700 m Area = $\frac{720.00 \times 6.70 \text{m}}{4,824.000 \text{ m}^2}$

Total Area =4,824.000 m²

GRADING QUANTITIES											
STATION	LENGTH	EXCAVATION (cu.m.)	EMBANKMENT (cu.m.)	ITEM 102(2) SURPLUS COMMON EXCAVATION (CU.M.)	ITEM 104(1)a EMBANKMENT FROM EXCAVATION (CU.M.)	ITEM 200 AGGREGATE SUBBASE COURSE (CU.M.)	REMARKS				
Sta. 0 + 000.00 - Sta. 0 + 720.00	720.000	9,571.550	1,862.640	7,243.250	1,862.640	713.250	ROAD CONCRETING				
TOTAL	720.000	9,571.550	1,862.640	7,243.250	1,862.640	713.250					

	DRAINAGE SCHEDULE											
STATION	DESCRIPTION	ITEM 103(1)a STRUCTURE EXCAVATION (CU.M.)	ITEM 500(1)a3 PIPE CULVERTS, 910MM Ø (36" Ø) (L.M.)	ITEM 506(1) STONE MASONRY (CU.M.)								
0 + 050.00	INSTALL 1-910MM x 10.00 L.M. RCPC WITH HEADWALL AND APRON ON BOTH SIDES	109.57	10.00	16.72								
0 + 660.00	INSTALL 1-910MM x 10.00 L.M. RCPC WITH HEADWALL AND APRON ON BOTH SIDES	44.66	10.00	16.49								
TOTAL		154.23	20.00	33.21								



PROJECT NAME AND LOCATION :

GRADING QUANTITIES
PAVING QUANTITIES
DRAINAGE SCHEDULE
ESTIMATED QUANTITIES
DRAINAGE SCHEDULE

SHEET CONTENTS :

DRAFTED: IVAN RAY S. ARANAS ENGINEER II PREPARED: EBONY KIRSTIE C. ABOGADO ENGINEER II

RYAN JOY L. BASCO

SUBMITTED:

REVIEWED:

GRACE T. CURAYAG CHIEF, PLANNING AND DESIGN SECTION IN CONCURRENCE CAPACITY DATE:

RECOMMENDED :

JOSE CAESAR A. RADAZA **GRACE T. CURAYAG**

APPROVED:

