REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REGIONAL OFFICE NO. XI

DAVAO DEL SUR DISTRICT ENGINEERING OFFICE

DIGOS CITY, DAVAO DEL SUR

C.Y. 2025 PROJECT

DETAILED ENGINEERING DESIGN PLAN FOR

CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR

LOCATION	: STA. CRUZ, DAVAO DEL SUR
STATION LIMIT	: STA. 0+010.00 - 0+110.00
NET LENGTH	: 100.00 Ln.m.

SUBMITTED:

VIRGENIA C. OÑEZ
CHIEF, PLANNING AND DESIGN SECTION
DATE:

RECOMMENDED:

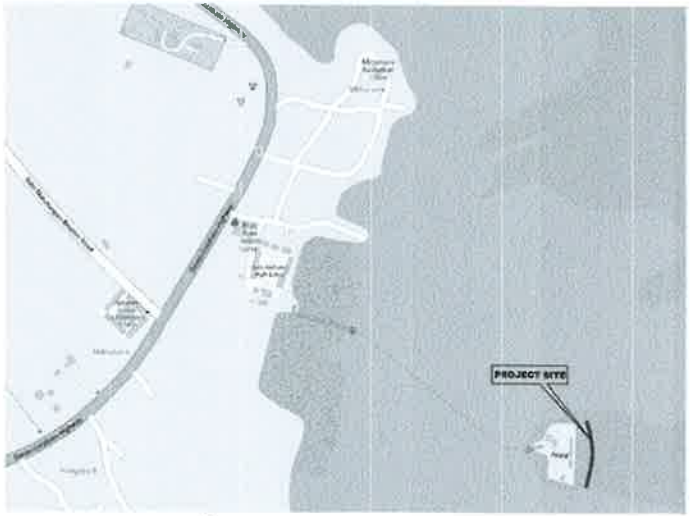
MARIA TERESA R. LUCABERTE
ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED:

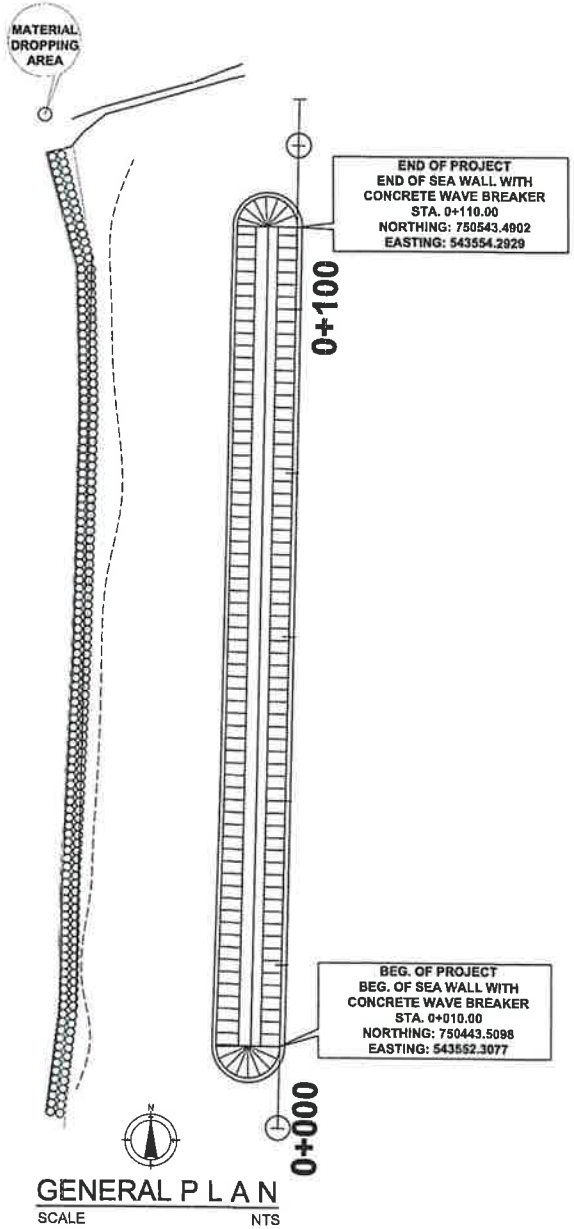
NICOMEDES D. PARILLA, JR.
DISTRICT ENGINEER
DATE:

PROJECT LIMIT

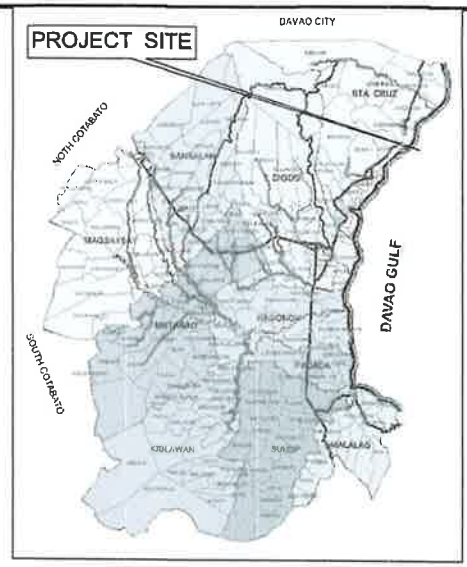
BEG. OF CONC. REVETMENT	STA 0+010.00	100.00 ln. m.
END OF CONC. REVETMENT	STA 0+110.00	
TOTAL LENGTH OF CONC. REVETMENT		100.00 ln. m.



LOCATION PLAN
SCALE NTS



GENERAL PLAN
SCALE NTS



VICINITY MAP

INDEX OF SHEET

SPECIFICATIONS
DPWH STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGES and HIGHWAYS REVISED 2013.

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
DAVAO DEL SUR DISTRICT ENGINEERING OFFICE
DIGOS CITY, DAVAO DEL SUR

PROJECT NAME AND LOCATION:
CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR
SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
PROJECT LIMIT
VICINITY MAP
GENERAL PLAN
LOCATION PLAN
INDEX OF SHEET

DRAFTED: ARVIE LYNS S. DUÑO, ENGINEER II
PREPARED: JAYSON L. ANTONIO, ENGINEER II

REVIEWED: RAMEL J. MARANAN, ENGINEER II, DATE:
SUBMITTED: VIRGENIA C. ORDEZ, CHIEF, PLANNING & DESIGN SECTION, DATE:
RECOMMENDED: MARIA TERESA R. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:
APPROVED: NICOMEDES D. PARILLA, JR., DISTRICT ENGINEER, DATE:

SET NO.:
SHEET NO.: 1 / 13

GENERAL NOTES

SPECIFICATION:

1. ALL WORKS SHALL CONFORM WITH THE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS (DPWH) STANDARD SPECIFICATIONS AND HIGHWAYS, BRIDGES AND AIRPORTS, VOL. II 2013.
2. SETTING OUT:
   THE SETTING OUT AND ELEVATIONS OF THE DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE STARTS OF ANY CONSTRUCTION WORKS.
3. SEGMENT LENGTH:
   THE LENGTH OF ONE SEGMENT IN THE LONGITUDINAL DIRECTION SHOULD BE LESS THAN 50 METERS IN ORDER TO PREVENT THE EXTENSION OF DAMAGE ONCE ONE SECTION COLLAPSES, EDGE OF THE SEGMENT END SHALL BE ADEQUATELY FILLED WITH JOINT MATERIAL (MORTAR) TO CONNECT WITH THE ADJOINING STRUCTURE.

DESIGN CRITERIA:

1. STRUCTURAL CONCRETE:
   - MATERIAL = ASTM C300
   - COMPRESSIVE STRENGTH , f'c = 3,000 PSI OR 20.7 MPA
   - REINFORCED CONCRETE UNIT WEIGHT = 24.0 KN/m³
2. REINFORCING STEEL:
   - MATERIAL = ASTM GRADE 40
   - YIELD STRENGTH, fy = 40 KSI OR 275 MPA
3. STEEL SHEET PILE:
   - MATERIAL = ASTM GRADE 50
   - YIELD STRENGTH, fy = 50 KSI OR 344 MPA
4. SOIL:
   SOIL PROPERTIES SHALL REFER TO THE GEOTECHNICAL INVESTIGATION FOR SUBSURFACE SOIL EXPLORATION REPORT.
5. HYDRAULIC DESIGN DATA:
   DRAINAGE AREA, D.A. = 31.929km²
   ACTUAL DISCHARGE, Q_{ACTUAL} = 249.50m³/s

   RETURN PERIOD = 50 years
   DESIGN DISCHARGE, Q_{DESIGN} = 241.70m³/s
   DESIGN VELOCITY, V = 2.64m/s - 3.26m/s

   RETURN PERIOD = 100 years
   DESIGN DISCHARGE, Q_{DESIGN} = 265.70m³/s
   DESIGN VELOCITY, V = 2.76m/s - 3.36m/s
6. HEIGHT OF REVETMENT:
   THE HEIGHT OF REVETMENT IS DETERMINED FROM THE DESIGN FLOOD LEVEL ELEVATION PLUS AN ADDITIONAL FREEBOARD ALLOWANCE DEPENDING ON THE DESIGN DISCHARGE AS SHOWN IN THE FOLLOWING TABLE:

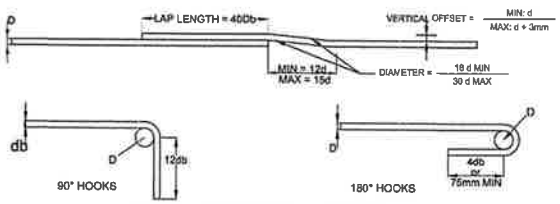
DESIGN FLOOD DISCHARGE Q (m³/s)	FREEBOARD (m)
LESS THAN 200	0.60
200 LESS THAN 500	0.80
500 AND LESS THAN 2,000	1.00
2,000 AND LESS THAN 5,000	1.20
5,000 AND LESS THAN 10,000	1.50
10,000 AND OVER	2.00

OTHER GENERAL REQUIREMENTS

1. ALIGNMENT AND GRADES ARE SUBJECT TO ADJUSTMENTS TO SUIT FIELD CONDITIONS.
2. DISTANCES AND ELEVATIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
3. ALL WORKS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, REVISED 2013 AND A POLICY ON GEOMETRIC DESIGN", AASHTO 2001.
4. 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 REGARD 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.
5. THE AS-STAKED PLAN SHALL BE PREPARED BY THE CONTRACTOR BASED ON THE PRE-CONSTRUCTION SURVEY JOINTLY CONDUCTED BY THE CONTRACTOR AND IMPLEMENTING OFFICE (CONSTRUCTION AND PLANNING AND DESIGN SECTION).
6. ALL SURVEY, STAKING, RECORDING OF DATA, AND CALCULATIONS NECESSARY TO CONSTRUCT THE PROJECT FROM THE INITIAL LAYOUT TO FINAL COMPLETION SHALL BE PERFORMED. WORK SHALL BE STARTED AFTER STAKING FOR THE AFFECTED WORK IS ACCEPTED.BEFORE THE START OF ACTUAL CONSTRUCTION, THE AS-STAKED PLAN SHOULD BE SUBMITTED TO THE DISTRICT OFFICE IN ORDER THAT IMMEDIATE STEPS MAY BE TAKEN TO CORRECT OR ADJUST WHATEVER APPRECIABLE DEVIATION THERE MAY BE FROM THE ORIGINAL PLAN.
7. THE IMPLEMENTING OFFICE SHALL IDENTIFY THE LOCATIONS OF AND PROVIDE ACCESSIBILITY FACILITIES FOR PERSONS WITH DISABILITIES IN ACCORDANCE WITH DO NO. 37, S. 2008.
8. QUARRY SITE IS LOCATED AT BRGY. CORONON, STA. CRUZ, DAVAO DEL SUR FOR BOULDERS. DISPOSAL SITE IS LOCATED 20.00 KM. WITHIN THE PROJECT LIMIT.
9. DESIGN WAS BASED ON SURVEY DATA SUBMITTED BY THE SURVEY AND INVESTIGATION UNIT OF PLANNING AND DESIGN SECTION OF THE DPWH-DEO DAVAO DEL SUR.

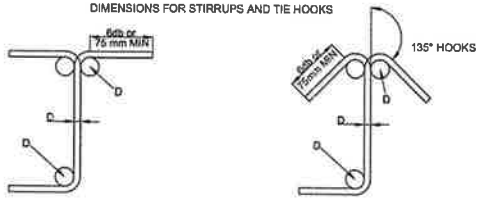
MISCELLANEOUS STRUCTURE

1. CRANKS, SPLICES, HOOKS AND BENDS :



PIN DIAMETER: D=6db FOR Ø10mm THRU Ø25mm
D=8db FOR Ø28mm, Ø32 AND Ø36mm

DIMENSIONS FOR STIRRUPS AND TIE HOOKS



PIN DIAMETER: D=6db FOR Ø10mm THRU Ø25mm
D=8db FOR Ø28mm, Ø32 AND Ø36mm

EARTHWORK

1. 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.

STEEL SHEET PILES

1. ALL SHEET PILES TO BE USED SHOULD BE HOT ROLLED STEEL SHEET PILES WITH MINIMUM THICKNESS OF 9.00mm, EFFECTIVE WIDTH OF 770mm, EFFECTIVE HEIGHT OF 344.00mm & UNIT WEIGHT OF 76.20kg/m.
2. STEEL SHEET PILES SHOULD BE OF THE TYPE, WEIGHT AND SECTION MODULUS INDICATED ON THE PLANS OR SPECIAL PROVISIONS AND SHALL CONFORM TO THE REQUIREMENT OF ITEM 400.

DRAINAGE AND SLOPE PROTECTION STRUCTURES

1. EXACT LOCATION, GRADIENTS, LENGTHS, TOP AND INVERT ELEVATIONS OF ALL DRAINAGE AND SLOPE PROTECTION STRUCTURES THAT ARE REQUIRED SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. EXTENSIONS AND OTHER IMPROVEMENTS OF EXISTING DRAINAGE STRUCTURES ARE SUBJECT TO CHANGE AND SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER IN-CHARGE.
3. DURING CONSTRUCTION, ANY EXISTING PIPES FOUND DAMAGED OR DEFECTIVE SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE ENGINEER. THE REMOVAL OF EXISTING STRUCTURES SHALL BE PAID FOR UNDER ITEM 101(4) - REMOVAL OF EXISTING PIPE CULVERT.
4. ANY MISCELLANEOUS REMOVAL NOT SHOWN ON THE PLANS INCLUDING REMOVAL OF HEADWALLS AND WINGWALLS OF EXISTING DRAINAGE STRUCTURES THAT ARE TO BE EXTENDED OR IMPROVED AND DISPOSAL OF RESULTING MATERIALS SHALL BE CONSIDERED SUBSIDIARY WORK PERTAINING TO OTHER CONTRACT ITEMS. THE COST OF PERFORMANCE THEREOF SHALL BE CONSIDERED TO BE INCLUDED IN THE UNIT PRICE BID FOR THOSE ITEMS.

MISCELLANEOUS

1. IMPROVEMENTS AND OTHER SIMILAR STRUCTURES THAT WILL BE EFFECTED DURING THE IMPLEMENTATION OF THIS PROJECT SHALL BE PAID FOR UNDER THE ROAD RIGHT-OF-WAY IMPROVEMENT.

OTHERS

1. BEFORE FINAL ACCEPTANCE, ALL GROUND OCCUPIED BY THE CONTRACTOR SHALL BE CLEANED OF ALL RUBBISH, EXCESS MATERIALS, TEMPORARY STRUCTURES AND EQUIPMENT AND ALL PARTS OF THE WORK SHALL BE LEFT IN A NEAT AND PRESENTABLE CONDITION.
2. ANY DEFECTIVE WORK WHETHER THE RESULT OF POOR WORKMANSHIP, USE OF DEFECTIVE MATERIALS, DAMAGE THROUGH CARELESSNESS, OR OF ANY OTHER CAUSE, FOUND PRIOR TO ACCEPTANCE, SHALL BE REMOVED IMMEDIATELY AND REPLACED BY WORK AND MATERIALS WHICH SHALL CONFORM TO THE SPECIFICATIONS.

SURVEY SPECIFICATION

1. ALL PROJECT CONTROL POINTS ARE PROJECTED IN PRS '92 GRID COORDINATES SYSTEM (ZONE 5)
2. SURVEY INSTRUMENTAL USED, GNSS-RTK - CHC NAV I50 3223123, GNSS-RTK - CHC NAV I50 3223102, GNSS-RTK - CHC NAV I50 3443733
3. DATE SURVEYED: OCTOBER 09, 2024
4. PROJECT CONTROL NUMBER, REFER TO PLAN AND PROFILE

REFERENCE

1. DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, DESIGN GUIDELINES, CRITERIA AND STANDARDS: VOLUME 3 - WATER ENGINEERING PROJECTS, 2015.
2. DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, STANDARD SPECIFICATIONS FOR HIGHWAYS, BRIDGE AND AIRPORTS, 2013 - VOLUME II
3. DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS, STANDARD SPECIFICATIONS FOR PUBLIC WORKS STRUCTURES (BUILDINGS, PORTS AND HARBORS, FLOOD CONTROL AND DRAINAGE STRUCTURES AND WATER SUPPLY SYSTEMS), 2019 - VOLUME III
4. LABOR CODE OF THE PHILIPPINES AND ITS IMPLEMENTING RULES AND REGULATIONS DOLE DO NO. 13,s.1998, OCCUPATIONAL SAFETY AND HEALTH STANDARDS AND ITS PROCEDURAL GUIDELINES
   - FOR MONITORING, ENFORCEMENT AND IMPLEMENTATION OF CONSTRUCTION SAFETY AND HEALTH
   - DO 56, s.2005

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI DAVAO DEL SUR DISTRICT ENGINEERING OFFICE DIGOS CITY, DAVAO DEL SUR	PROJECT NAME AND LOCATION: **CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR** SANTA CRUZ, DAVAO DEL SUR	SHEET CONTENTS: **GENERAL NOTES**	DRAFTED: **ARVIE LYN D. DUÑO** ENGINEER II PREPARED: **JAYSON L. ANTONIO** ENGINEER II	REVIEWED: **RAMEL J. MARANAN** ENGINEER II DATE:	SUBMITTED: **VIRGENIA C. ONEZ** CHIEF, PLANNING & DESIGN SECTION DATE:	RECOMMENDED: **MARIA TERESA R. LUCABERTE** ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: **NICOMEDES D. PARILLA, JR.** DISTRICT ENGINEER DATE:	SET NO.:	SHEET NO.: 2 / 13

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY			REMARKS
			AS PER PLAN	AS PER POW	BALANCE	
PART B	OTHER GENERAL REQUIREMENTS					
8.5 (1)	Project Billboard / Signboard	each	3.00	3.00	-	2.0 Units - DPWH Billboard, 1.0 Unit-COA-Billboard
8.7 (1)	Occupational Safety and Health	Lump Sum	1.00	1.00	-	
8.9 (1)	Mobilization/Demobilization	Lump Sum	1.00	1.00	-	
Part D	REINFORCED CONCRETE					
900 (1) c	Structural Concrete, 3000 psi, Class A , 28 days	cu.m.	190.26	190.26	-	Use Crushed Gravel
902 (1) a1	Reinforcing Steel (Deformed), Grade 40	kgs	13,863.87	13,863.87	-	See Plan and Back Up Computation
Part G	DRAINAGE AND SLOPE PROTECTION STRUCTURES					
508(1)	Hand-Laid Rock Embankment	cu.m.	984.00	984.00	-	Class A
Part L	FLOOD AND RIVER CONTROL AND DRAINAGE					
Part L-A	EARTHWORK					
1702 (1) a	Structure Excavation, Common Soil	cu.m.	164.49	164.49	-	See Plan and Back Up Computation
Part L-B	BANK AND SLOPE PROTECTION WORKS					
1712 (1)	Concrete Slope Protection	cu.m.	198.94	198.94	-	Use Crushed Gravel
1717 (2) a1	Sheet Piles Steel, Slope Protection	m	350.00	350.00	-	Hot Rolled Z-Type Steel Sheet Pile, L=2.40m

ABBREVIATIONS :

AZI.	AZIMUTH
BEG.	BEGINNING
BM	BENCH MARK
CONC.	CONCRETE
DIST.	DISTANCE
E	EXTERNAL DISTANCE
ELEV.	ELEVATION
I	INTERSECTION ANGLE
Lc	LENGTH OF CURVE
m	METER
PC	POINT OF CURVE
PI	POINT OF INTERSECTION
PT	POINT OF TANGENCY
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
RP#	REFERENCE POINT - #
STA.	STATION
T	TANGENT LINE
TYP	TYPICAL

LEGEND :

DESCRIPTION	PLAN	PROFILE
CONTOUR		
NORTH SIGN		
SEA SHORE		

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SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
SUMMARY OF QUANTITIES
ABBREVIATIONS

DRAFTED: ARVIE LYNS. DUÑO, ENGINEER II
PREPARED: JAYSON C. ANTONIO, ENGINEER II

REVIEWED: RAMEL J. MARANAN, ENGINEER II, DATE:

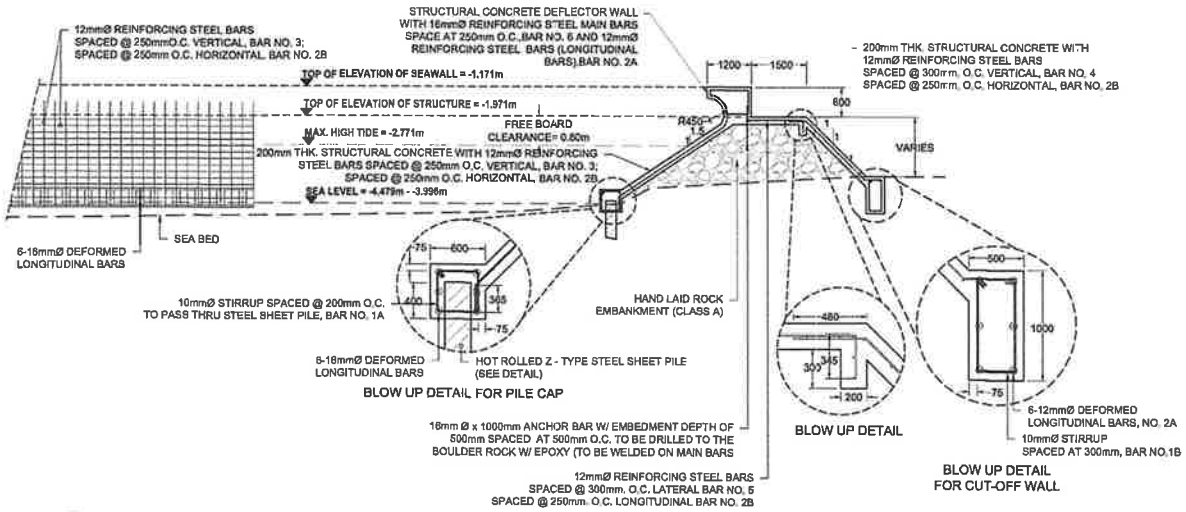
SUBMITTED: VIRGINIA C. ONEZ, CHIEF, PLANNING & DESIGN SECTION, DATE:

RECOMMENDED: MARIA TERESA R. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:

APPROVED: NICOMEDES G. PARILLA, JR., DISTRICT ENGINEER, DATE:

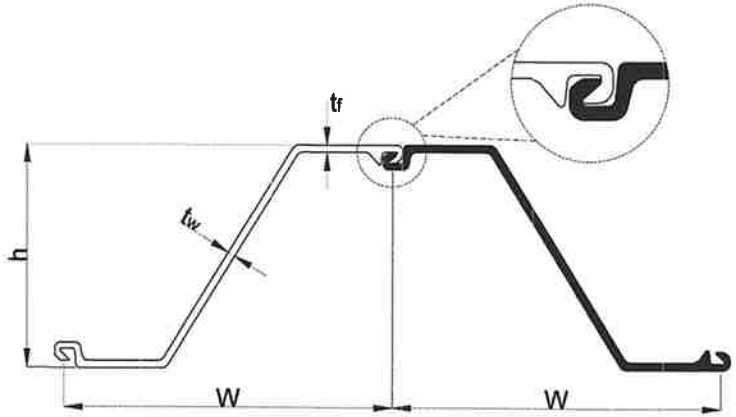
SET NO.: - - -

SHEET NO.: 3 / 13



TYPICAL DETAIL OF SEA WALL WITH CONCRETE WAVE BREAKER, H=2.00m

SCALE 1:100MTS



COMBINED PILE PROPERTIES									
SECTION	W (mm)	h (mm)	t_w (mm)	t_f (mm)	Sectional Area cm^2/m	Weight kg/m	Weight kg/m^2	Combined Moment of Inertia cm^4/m	Section Modulus cm^3/m
MHZ13-1	770	344	9.0	9.1	126.5	76.2	99.0	22433	1304

STEEL SHEET PILE (SSP) SCHEDULE				
STATION FROM	STATION TO	LENGTH OF STEEL SHEET PILE (SSP)	SECTION MODULUS OF STEEL SHEET PILE (SSP)	REMARKS
STA. 0+010.00	STA. 0+110.00	2.40m	1304 cm^3/m	HOT ROLLED Z-TYPE STEEL SHEET PILE

DETAILED SECTION OF HOT ROLLED Z-TYPE STEEL SHEET PILES, L= 2.40m

DRAWN NOT TO SCALE

NOTES:

STRUCTURAL CONCRETE:
CLASS "A" CONCRETE SHALL BE USED WITH A MINIMUM COMPRESSIVE STRENGTH OF 20.70 MPa (3000 psi).

REINFORCING STEEL BAR:
ALL REINFORCING BARS SHALL HAVE A MINIMUM GRADE OF 40 (fy = 276 MPa).

STEEL SHEET PILE:
ALLOWABLE STRESS FOR STEEL SHEET PILE SHALL BE 1800 kg/cm². THE CENTER OF LIFTING HOLE SHALL BE LOCATED AT DISTANCE OF 150mm FROM END OF EACH PILE, DIAMETER OF LIFTING HOLES SHALL BE 32mm.

BOULDER FILL:
ONE-MAN BOULDERS 30-40 cm. IN DIA. SHALL BE USED FOR THE BOULDER FILL WITH THE BIGGER BOULDERS NEAR THE TOE OF THE FILL. ALL VOIDS BETWEEN BOULDERS SHALL BE FILLED WITH SAND AND GRAVEL SUFFICIENTLY WATERED TO SECURE COMPACTION.

WEEPHOLES:
WEEPHOLES SHALL BE PLACED AT THE LOWEST POINT WHERE FREE OUTLETS CAN BE OBTAINED AND SHALL BE SPACED NOT MORE THAN (2) TWO METERS CENTER TO CENTER.

DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE SPECIFIED.

HYDRAULIC DESIGN DATA:

DRAINAGE AREA, D.A. = km^2

ACTUAL DISCHARGE, Q_{ACTUAL} = m^3/s

RETURN PERIOD = 50 years

DESIGN DISCHARGE, Q_{DESIGN} = m^3/s

DESIGN VELOCITY, V = m/s - m/s

RETURN PERIOD = 100 years

DESIGN DISCHARGE, Q_{DESIGN} = m^3/s

DESIGN VELOCITY, V = m/s - m/s

DESIGN FLOOD DISCHARGE Q (m^3/s)	FREEBOARD (m)
LESS THAN 200	0.60
200 LESS THAN 500	0.80
500 AND LESS THAN 2,000	1.00
2,000 AND LESS THAN 5,000	1.20
5,000 AND LESS THAN 10,000	1.50
10,000 AND OVER	2.00

BAR BENDING DIAGRAM

BAR NO.	SHAPE	BAR NO.	SHAPE
①	A, B	④	
		⑤	
②	A, B, C	⑥	
③		⑦	

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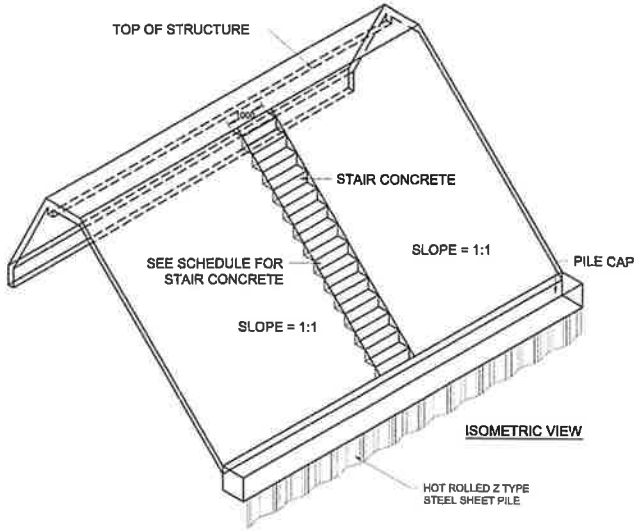
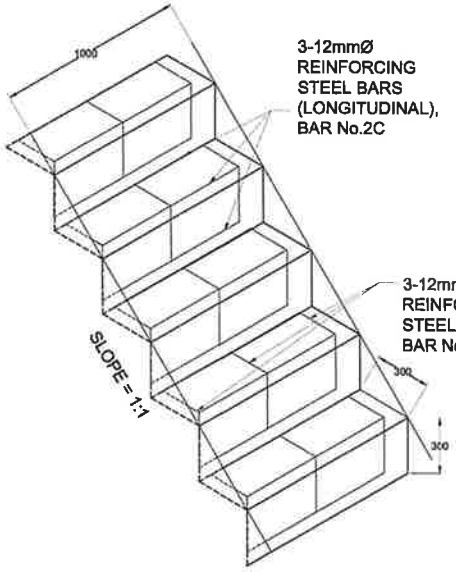
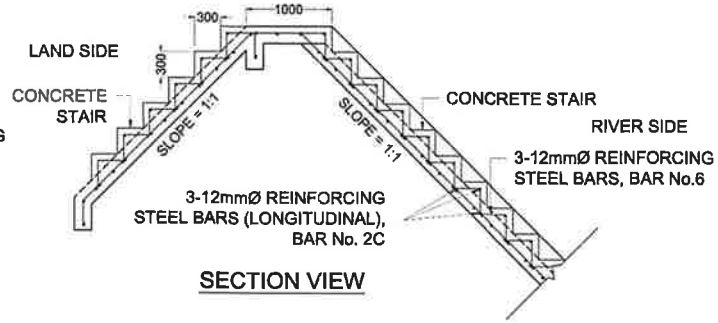


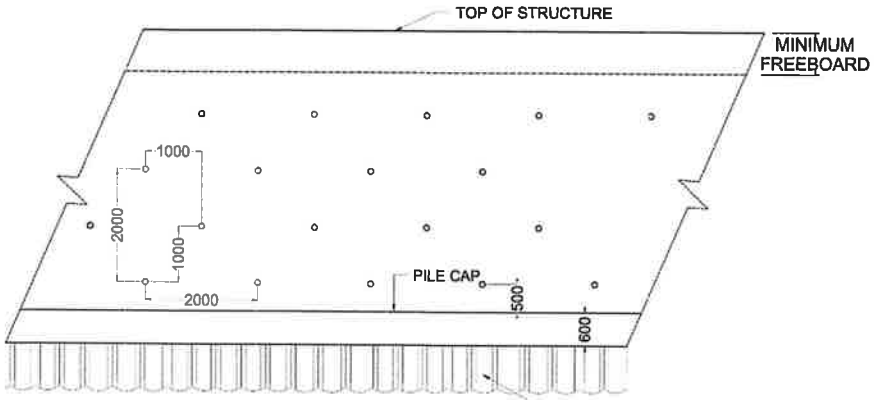


CONCRETE STAIRS DETAIL
DRAWN NOT TO SCALE

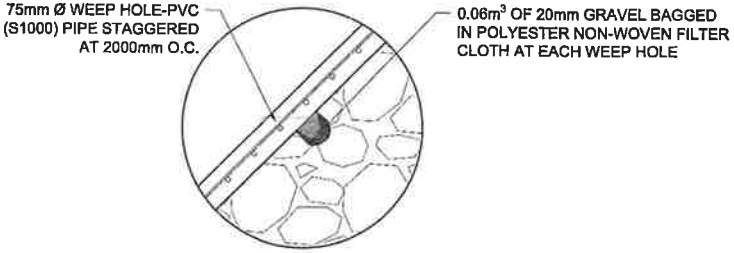


SECTION VIEW

SCHEDULE OF STAIRS
PROVIDE STAIRS AT STA. 0 +020
PROVIDE STAIRS AT STA. 0 +100



WEEPHOLES ELEVATION VIEW
DRAWN NOT TO SCALE



WEEP HOLE DETAILS
DRAWN NOT TO SCALE

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BANTA CRUZ, DAVAO DEL SUR

SHEET CONTENTS:
CONCRETE STAIRS DETAIL
WEEPHOLES DETAILS
WEEPHOLES ELEVATION VIEW

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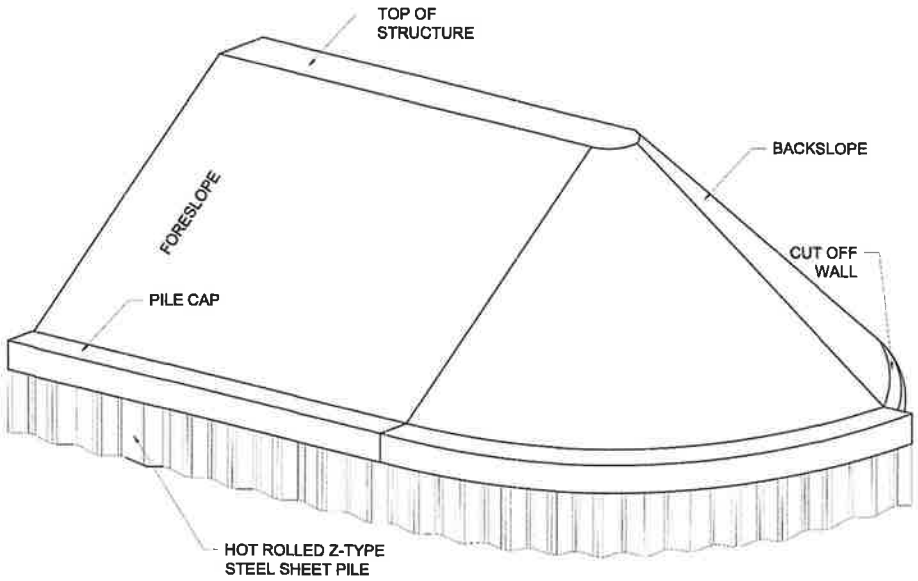
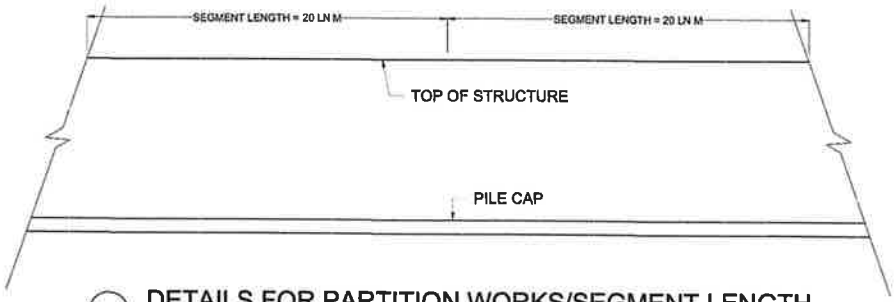
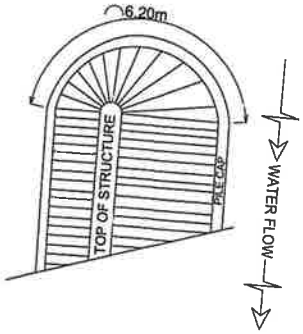
RECOMMENDED: MARIA TERESA R. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:
APPROVED: NICOMEDES D. HARADA, JR., DISTRICT ENGINEER, DATE:
SET NO.:
SHEET NO.: 8 / 13



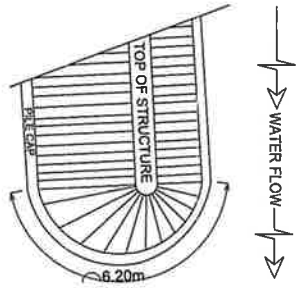
END PROTECTION / CLOSURE ISOMETRIC VIEW
DRAWN NOT TO SCALE



DETAILS FOR PARTITION WORKS/SEGMENT LENGTH
DRAWN NOT TO SCALE



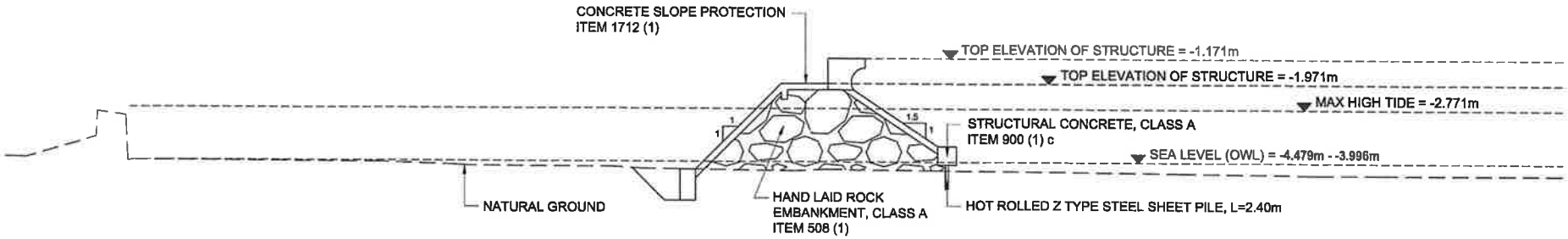
AT STA. 0+110.00



AT STA. 0+010.00

END PROTECTION / CLOSURE DETAILS
DRAWN NOT TO SCALE

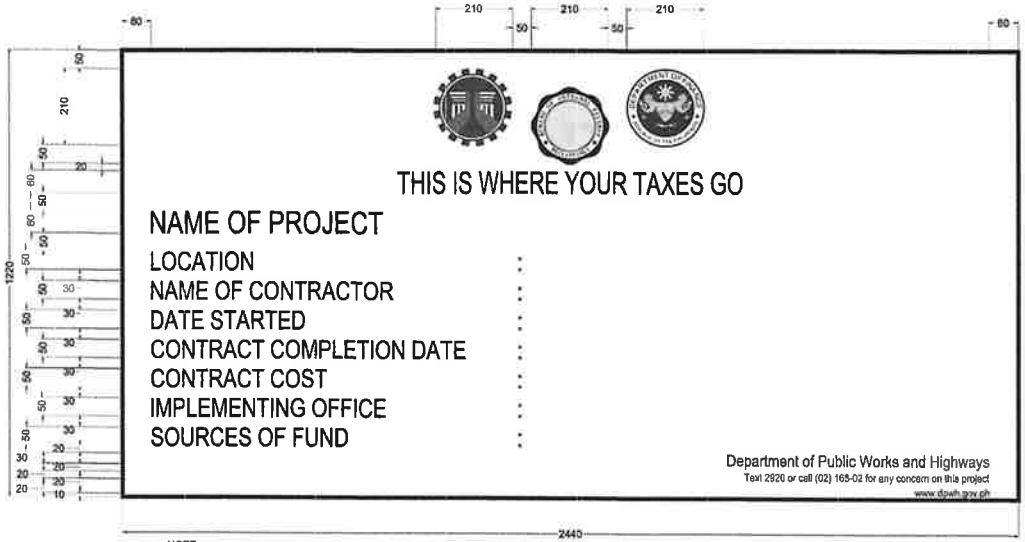
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI DAVAO DEL SUR DISTRICT ENGINEERING OFFICE DIGOS CITY, DAVAO DEL SUR	PROJECT NAME AND LOCATION: CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR SANTA CRUZ DAVAO DEL SUR	SHEET CONTENTS: DETAILS FOR PARTITION WORKS/SEGMENT LENGTH END PROTECTION/CLOSURE ISOMETRIC VIEW END PROTECTION/CLOSURE DETAILS	DRAFTED: ARVIE LYNS. DUÑO ENGINEER II PREPARED: JAYSON U. ANTONIO ENGINEER II	REVIEWED: RAMEL J. MARANAN ENGINEER II DATE:	SUBMITTED: VIRGENIA C. OÑEZ CHIEF, PLANNING & DESIGN SECTION DATE:	RECOMMENDED: MARIA TERESA P. LUCABERTE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: NICOMEDES O. PARILLA, JR. DISTRICT ENGINEER DATE:	BST NO.: - - -	SHEET NO.: 6 13



TYPICAL CROSS SECTION OF SEA WALL WITH CONCRETE WAVE BREAKER H=2.00m (WITH BACKSLOPE HEIGHT LESS THAN 3m)

SCALE 1:100

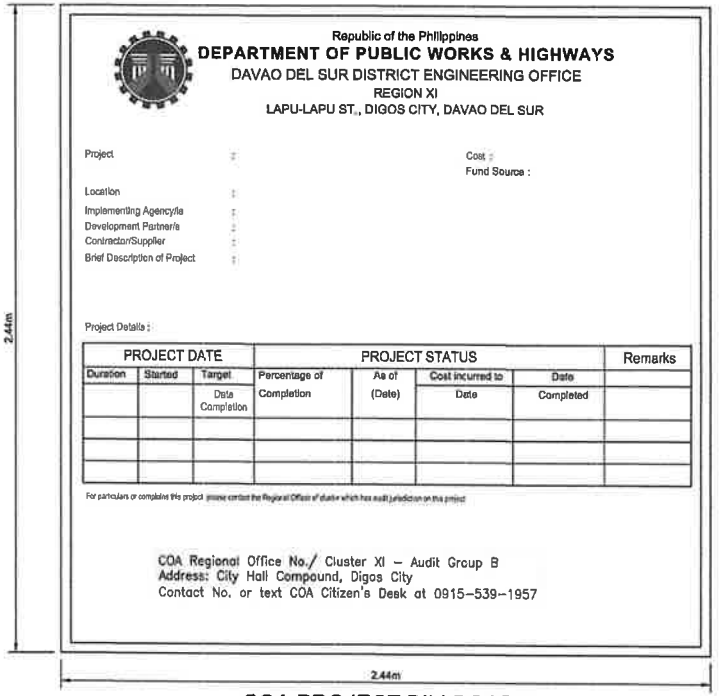
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI DAVAO DEL SUR DISTRICT ENGINEERING OFFICE DIGOS CITY, DAVAO DEL SUR	PROJECT NAME AND LOCATION: CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR SANTA CRUZ DAVAO DEL SUR	SHEET CONTENTS: TYPICAL CROSS SECTION	DRAFTED: ARVIE LYN S. DUÑO ENGINEER II PREPARED: JAYSON T. ANTONIO ENGINEER II	REVIEWED: RAMEL J. NARANAN ENGINEER II DATE:	SUBMITTED: VIRGENIA C. OÑEZ CHIEF, PLANNING & DESIGN SECTION DATE:	RECOMMENDED: MARIA TERESA R. LUCABERTE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: NICOMEDES D. PARILLA, JR. DISTRICT ENGINEER DATE:	SET NO.:	SHEET NO.: 7 13



NOTE:
The new billboard design layout and dimension shall be installed on a standard billboard measuring 1220 mm x 2440 mm (4ft. x 8ft.) using 12 mm ($\frac{1}{2}$ inch) marine plywood or tarpaulin posted on 5mm ($\frac{3}{16}$ inch) marine plywood.

DPWH STANDARD PROJECT BILLBOARD

SCALE NTS.

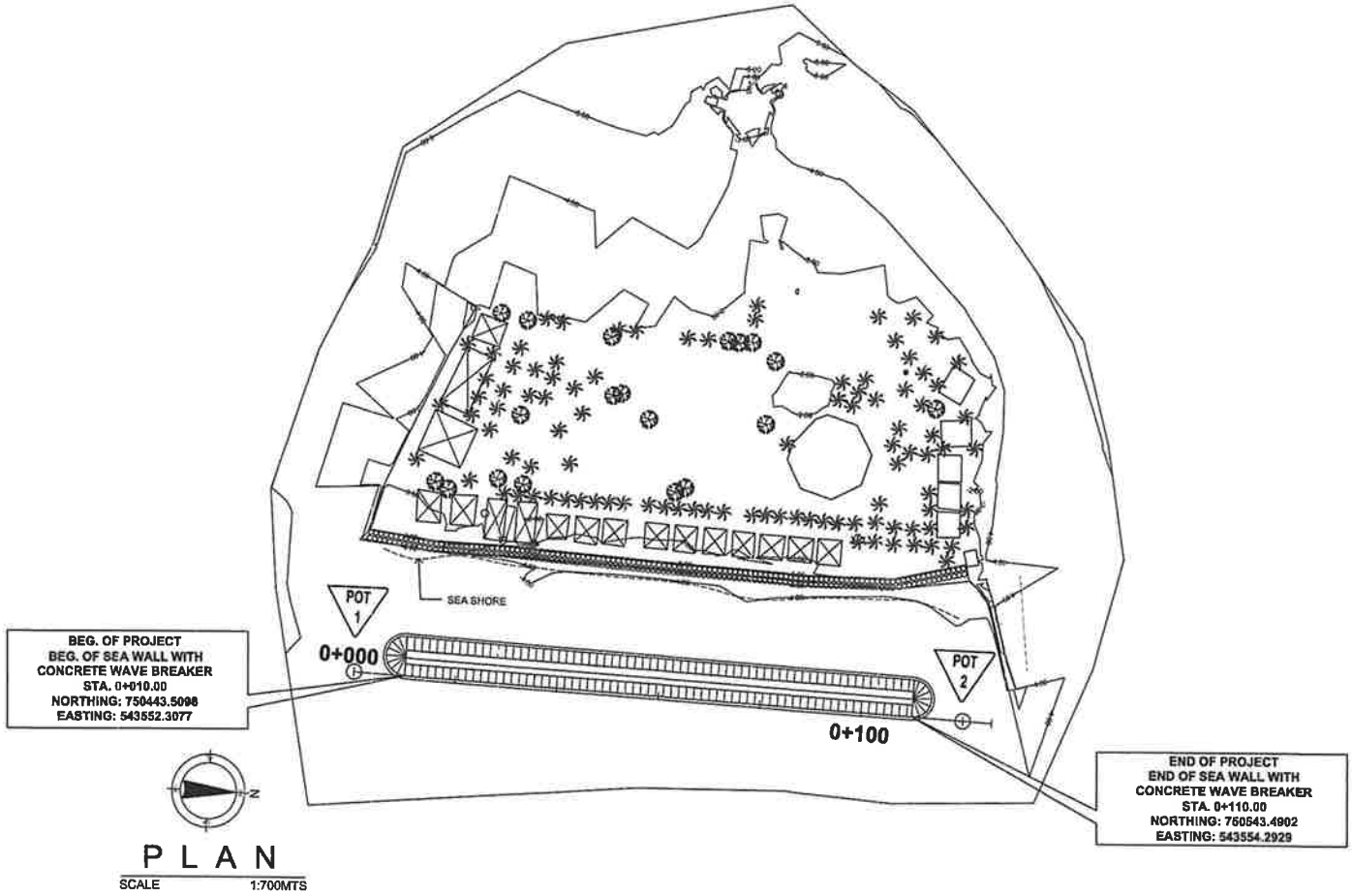


COA PROJECT BILLBOARD

SCALE NTS.

TABULATION OF BILLBOARDS	
A.	DPWH BILLBOARD = 2.0 UNIT
B.	COA BILLBOARD = 1.0 UNIT

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS REGIONAL OFFICE NO. XI DAVAO DEL SUR DISTRICT ENGINEERING OFFICE DIGOS CITY, DAVAO DEL SUR	PROJECT NAME AND LOCATION: CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR SANTA CRUZ DAVAO DEL SUR	SHEET CONTENTS: DPWH STANDARD PROJECT BILLBOARD COA PROJECT BILLBOARD	DRAFTED: ARVIE LYN S. DUÑO ENGINEER II PREPARED: JAYSON L. ANTONIO ENGINEER II	REVIEWED: RAMEL J. MARANAN ENGINEER III DATE:	SUBMITTED: VIRGINIA C. OÑEZ CHIEF, PLANNING & DESIGN SECTION DATE:	RECOMMENDED: MARIA TERESA R. LUCASBERTE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: NICOMEDES D. PARILLA, JR. DISTRICT ENGINEER DATE:	SET NO.:	SHEET NO.: 8 of 13



PLAN

SCALE 1:700MTS

ELEMENTS OF CURVE (RIGHT SIDE FACING UPSTREAM)											
PI No.	PI STATION	NORTHING	EASTING	I	Dc	R	Lc	T	E	Pc	Pt
POT - 1	0+000.000	750433.5120	543552.1092	P	A	R	A	B	O	L	I	C
POT - 2	0+120.000	750553.4884	543554.4914	P	A	R	A	B	O	L	I	C

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
DAVAO DEL SUR DISTRICT ENGINEERING OFFICE
DIGOS CITY, DAVAO DEL SUR

PROJECT NAME AND LOCATION:
CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR
SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
PLAN
STA. 0+010.00 - STA. 0+110.00

DRAFTED:
ARVIE LYNB. DUÑO
ENGINEER II

PREPARED:
JAYSON L. ANTONIO
ENGINEER II

REVIEWED:
RAMEL J. MARANAN
ENGINEER II
DATE:

SUBMITTED:
VIRGINIA C. OÑEZ
CHIEF, PLANNING & DESIGN SECTION
DATE:

RECOMMENDED:
MARIA TERESA D. LUCABERTE
ASSISTANT DISTRICT ENGINEER
DATE:

APPROVED:
NICOMEDES G. PARILLA JR.
DISTRICT ENGINEER
DATE:

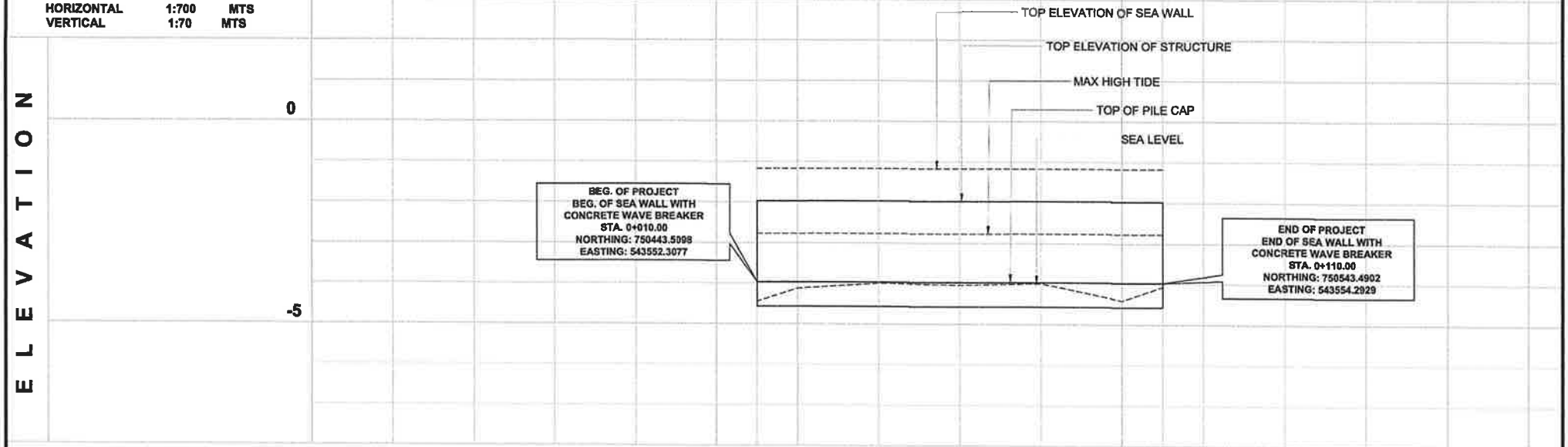
SET NO.:

SHEET NO.: 9 / 13

PROFILE

SCALE

HORIZONTAL 1:700 MTS
VERTICAL 1:70 MTS



STATION	0 + 000			0 + 100			0 + 200
TOP OF ELEVATION OF SEA WALL	-1.171	-2.171	-2.171	-2.171	-2.171	-2.171	-2.171
TOP OF ELEVATION STRUCTURE	-1.971	-1.971	-1.971	-1.971	-1.971	-1.971	-1.971
MAX HIGH TIDE	-2.771	-2.771	-2.771	-2.771	-2.771	-2.771	-2.771
TOP OF PILE CAP	-3.971	-3.971	-3.971	-3.971	-3.971	-3.971	-3.971
SEA LEVEL	-4.479	-4.127	-3.998	-4.036	-3.996	-4.408	-4.068

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
DAVAO DEL SUR DISTRICT ENGINEERING OFFICE
DIGOS CITY, DAVAO DEL SUR

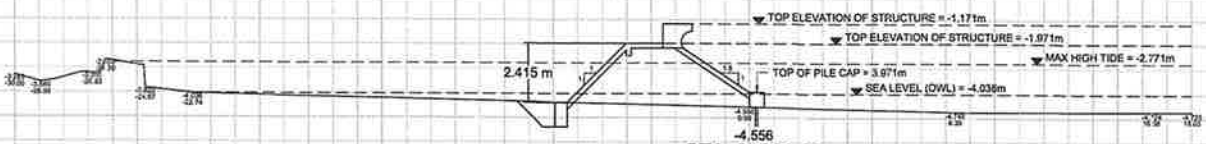
PROJECT NAME AND LOCATION:
CONSTRUCTION OF SEA WALL AT THE PASSIO ISLET AQUA ECO-PARK RESORT, BRGY. SATO, STA. CRUZ, DAVAO DEL SUR
SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
PROFILE
STA. 0+010.00 - STA. 0+110.00

DRAFTED: ARVIE LYN S. DUÑO, ENGINEER II
PREPARED: JAYSON P. ANTONIO, ENGINEER II

REVIEWED: RAMEL J. MARANAN, ENGINEER II, DATE:
SUBMITTED: VIRGENIA C. ORIEZ, CHIEF, PLANNING & DESIGN SECTION, DATE:
RECOMMENDED: MARIA TERESA R. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:
APPROVED: NICOMEDES D. PARILLA, JR., DISTRICT ENGINEER, DATE:

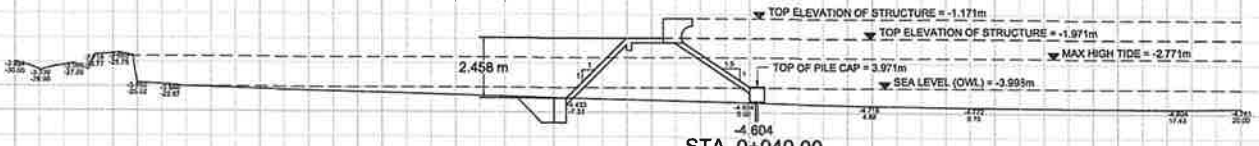
SET NO.:
SHEET NO.: 10 / 13



ELEV. -5.000m

STA. 0+060.00

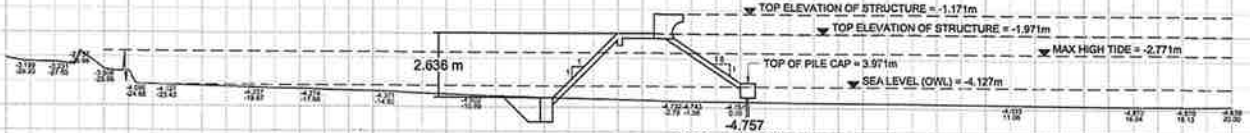
ITEM 508 (1) = 8.862 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.586 m²
ITEM 1712(1) = 1.735 m²



ELEV. -5.000m

STA. 0+040.00

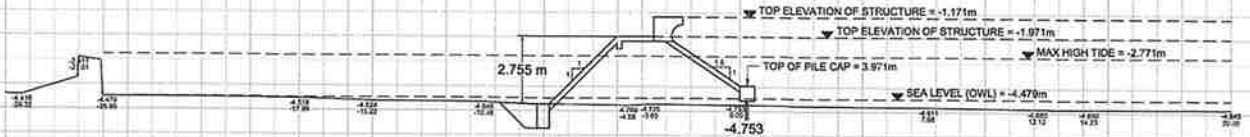
ITEM 508 (1) = 10.207 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.592 m²
ITEM 1712(1) = 1.748 m²



ELEV. -5.000m

STA. 0+020.00

ITEM 508 (1) = 10.573 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.592 m²
ITEM 1712(1) = 1.798 m²



ELEV. -5.000m

STA. 0+010.00

BEG. OF PROJECT
BEG. OF SEA WALL WITH
CONCRETE WAVE BREAKER

ITEM 508 (1) = 10.495 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.175 m²
ITEM 1712(1) = 1.832 m²

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
DAVAO DEL SUR DISTRICT ENGINEERING OFFICE
DIGOS CITY, DAVAO DEL SUR

PROJECT NAME AND LOCATION:
CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR
SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
CROSS SECTION
STA. 0+010.00 - STA. 0+060.00

DRAFTED: ARVIE LYNS. DUÑO, ENGINEER II
PREPARED: JAYSON L. ANTONIO, ENGINEER II

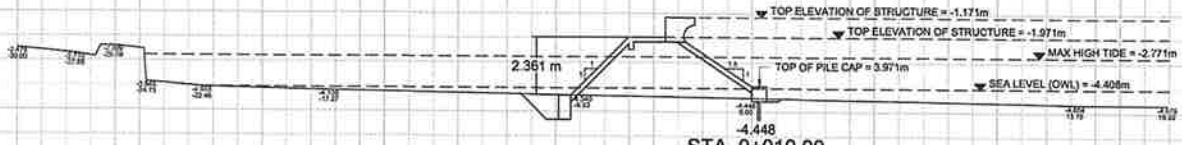
REVIEWED: RAMEL J. MARANAN, ENGINEER II, DATE:
SUBMITTED: VIRGENIA C. OÑEZ, CHIEF, PLANNING & DESIGN SECTION, DATE:
RECOMMENDED: MARIA TERESA R. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:
APPROVED: NICOMEDES D. PARILLA JR., DISTRICT ENGINEER, DATE:

SET NO.:
SHEET NO.: 11 / 13

ELEV. -5.000m

ITEM 508 (1) = 8.269 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.100 m²
ITEM 1712(1) = 1.696 m²

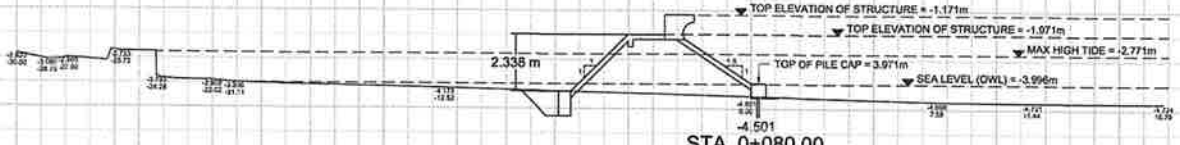
STA. 0+110.00
END OF PROJECT
END OF SEA WALL WITH CONCRETE WAVE BREAKER



ELEV. -5.000m

ITEM 508 (1) = 8.275 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.707 m²
ITEM 1712(1) = 1.720 m²

STA. 0+010.00



ELEV. -5.000m

ITEM 508 (1) = 8.388 m²
ITEM 900(1)c = 1.796 m²
ITEM 1702(1)a = 1.651 m²
ITEM 1712(1) 1.714 m²

STA. 0+080.00

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL OFFICE NO. XI
DAVAO DEL SUR DISTRICT ENGINEERING OFFICE
DIGOS CITY, DAVAO DEL SUR

PROJECT NAME AND LOCATION:
CONSTRUCTION OF SEA WALL AT THE PASSIG ISLET AQUA ECO-PARK RESORT, BRGY. BATO, STA. CRUZ, DAVAO DEL SUR
SANTA CRUZ DAVAO DEL SUR

SHEET CONTENTS:
CROSS SECTION
STA. 0+080.00 - STA. 0+110.00

DRAFTED: ARVIE LYNS. DUÑO, ENGINEER II
PREPARED: JAYSON L. ANTONIO, ENGINEER II
REVIEWED: RAMEL J. MARANAN, ENGINEER II, DATE:
SUBMITTED: VIRGENIA C. OÑEZ, CHIEF, PLANNING & DESIGN SECTION, DATE:
RECOMMENDED: MARIA TERESA N. LUCABERTE, ASSISTANT DISTRICT ENGINEER, DATE:
APPROVED: NICOMEDES D. PARILLA, JR., DISTRICT ENGINEER, DATE:

SHT NO.: -
SHEET NO.: 12 / 13