

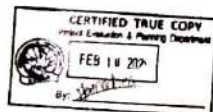


REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL DIRECTOR
REGION IV-B, MIMAROPA
EDSA, DILIMAN, QUEZON CITY

**SEWERAGE AND WASTE WATER FACILITY
AND BOARDWALK
PUERTO GALERA, ORIENTAL MINDORO**

SCOPE OF WORK:

1. CONSTRUCTION OF BOARDWALK AND SEWAGE TREATMENT PLANT PHASE 2 AT SABANG BEACH
2. CONSTRUCTION OF BOARDWALK AND SEWAGE TREATMENT PLANT AT WHITE BEACH



Office of the Regional Director
Office of the Building Official

LAND USE & ZONING

LINE AND GRADE

ARCHITECTURAL

CIVIL/STRUCTURAL

ELECTRICAL

MECHANICAL

SANITARY

PLUMBING

ELECTRONICS

GEODETIC ENGINEER

INTERIOR DESIGNER

NOTES:

1. VERIFY ACTUAL ELEVATION MARKS AND LOT BOUNDARIES PRIOR TO COMMENCING WORKS.
2. VERIFY ACTUAL BEARINGS, DISTANCES AND TECHNICAL SITE CONDITIONS.
3. ALL WORKS TO BE DONE HEREIN SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS. ANY DEVIATIONS OR CHANGES IN THE PLAN AND/OR SPECIFICATIONS SHALL BE SUBJECT TO HTE APPROVAL OF PEPO DESIGNER.

CONFIRMED:

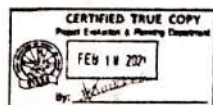
ROCKY D. ILAGAN
MUNICIPAL WATER

	PREPARED BY: MONTREXIST T. TAMAYO ENGINEER II	RECOMMENDING APPROVAL: TOKAN & TANGOS DIRECTOR OF THE ASSISTANT DIRECTOR	APPROVED BY: WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION: SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO		TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 100 A 7th FLOOR TOWER 1, DOUBLE DRAGON PLAZA, DOUBLE PRISON MEDIUM RISE BUILDING, 1000 CORRAL GUARDIAN, AREA 1, UNIT 101, 102		PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RADY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION		REVIEWED BY: AMELITA S. CAGANDA MANAGER PROJECT EVALUATION AND PLANNING DEPARTMENT	RECOMMENDING APPROVAL: NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED: POCHOLO J. D. PARAGAS CHIEF OPERATING OFFICER	P.A. No.	SHEET NO. A 1 24
	THIS DRAWING IS A PROPERTY OF THE TIEZA AND SHALL BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT THE WRITTEN PERMISSION OF TIEZA.													

RWB-14-13

**BOARDWALK AND SEWAGE TREATMENT PLANT PHASE 2
SABANG BEACH, PUERTO GALERA**

INDEX OF DRAWINGS		
SHEET CONTENTS	SET No.	SHEET No.
COVER PAGE		01
INDEX OF DRAWINGS, SUMMARY OF QUANTITIES		02
KEY MAP, VICINITY MAP, LOCATION MAP		03
SITE DEVELOPMENT PLAN OF SABANG		04
SECTION OF BOARDWALK		05
GENERAL NOTES		06
PLAN AND PROFILE		07 - 09
CROSS SECTIONS		10 - 24

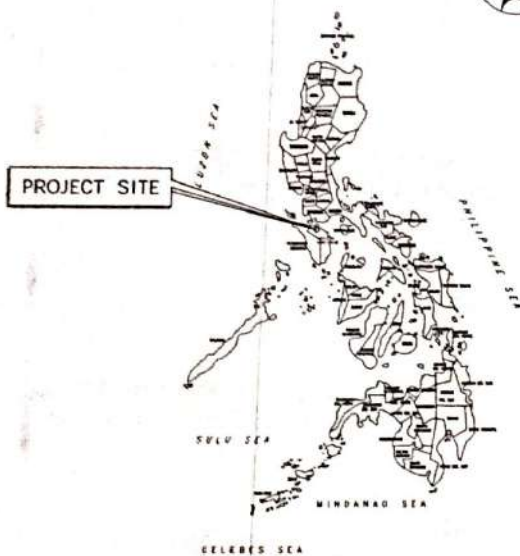


ITEM NO.	DESCRIPTION	UNIT	QUANTITY
PART A FACILITIES FOR THE ENGINEER			
A.1.1 (6)	PROVISION OF COMBINED FIELD OFFICE, LABORATORY AND LIVING QUARTERS BUILDING FOR THE ENGINEER (RENTAL BASIS)	MONTH	10.70
A.1.1 (11)	PROVISION OF FURNITURES/FIXTURES, EQUIPMENT & APPLIANCES FOR THE FIELD OFFICE FOR THE ENGINEER	LS	1.00
A.1.1 (14)	PROVISION OF LABORATORY TESTING EQUIPMENT, APPARATUS AND PUBLICATIONS FOR THE ENGINEER	LS	1.00
A.1.1 (15)	OPERATION & MAINTENANCE OF TEMPORARY FIELD OFFICE, LABORATORY AND LIVING QUARTERS BUILDING FOR THE ENGINEER	MONTH	10.70
A.1.2 (4)	PROVISION OF 4X2 PICK UP TYPE SERVICE VEHICLE FOR THE ENGINEER ON BARE RENTAL BASIS	MONTH	10.70
A.1.2 (6)	OPERATION AND MAINTENANCE OF 4X2 PICK UP TYPE SERVICE VEHICLE FOR THE ENGINEER	MONTH	10.70
A.1.3 (3)	PROVISION OF SURVEY PERSONNEL FOR THE ASSISTANCE TO THE ENGINEER	MONTH	10.70
A.1.4 (1)	PROVISION OF PROGRESS PHOTOGRAPHS	MONTH	10.70
PART B OTHER GENERAL REQUIREMENTS			
B.2	MEDICAL ROOM AND FIRST AID FACILITIES	LS	1.00
B.5	PROJECT BILLBOARD / SIGNBOARD	EACH	2.00
B.7	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	MONTH	10.70
B.9	MOBILIZATION / DEMOBILIZATION	LS	1.00
B.15(1)	ACCESS ROAD		
PART C EARTHWORKS			
103-1	STRUCTURE EXCAVATION	CU.M.	
104-1	EMBANKMENT	CU.M.	28,893.85
PART G DRAINAGE AND SLOPE PROTECTION STRUCTURES			
511-1	GABIONS	CU.M.	30,760.00
511-2	MATTRESS	CU.M.	6,440.00
511-3	FILTER CLOTH	SQ.M.	32,710.00

NOTE: QUANTITIES AND DESIGN MAY VARY AS PER SUBSOIL INVESTIGATION RESULT

	PREPARED BY MONTREXIS T. PAMAYO	RECOMMENDING APPROVAL YOLANDA D. YANCO	APPROVED BY WILFREDO S. MALLARI	PROJECT TITLE & LOCATION SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO		PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL NESTOR M. COMALANTA	APPROVED PODOLLO J. D. PARAGAS	PLA NO.	SHEET NO.
	ENGINEER	OFFICE OF THE ASSISTANT COMMISSIONER	REGIONAL DIRECTOR	LOCATION: PUERTO GALERA, ORIENTAL MINDORO		CHECKED BY RADY E. ADAME	REVIEWED BY AMELITA S. CAJANDA	MADE BY MADE BY	ASSISTANT CHIEF OF OFFICE MADE BY	CHIEF OF OFFICE MADE BY	A 2

RMB-19-13



SABANG AREA



KEY MAP
SCALE NTS

CERTIFIED TRUE COPY
Project Evaluation & Planning Department
FEB 14 2014
By: [Signature]

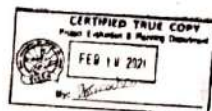
	PREPARED BY MONTREXIS T. TAMAYO ENGINEER II	RECOMMENDING APPROVAL YOLANDA G. JANGCO OFFICE OF THE ASSISTANT DIRECTOR	APPROVED BY WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 8th FLOOR TOWER 1, DOUBLE DRAGON PLAZA, DOUBLE DRAGON WEDEN PAVILION, RENE CORRAL, LATELON SAN AGA, PANGLOSS, ILO	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RODY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY: AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED POCHOLO J. D. PARAGAS CHIEF OPERATING OFFICER	R.A. 545 SHEET NO. A 3 24 RWB-14-13
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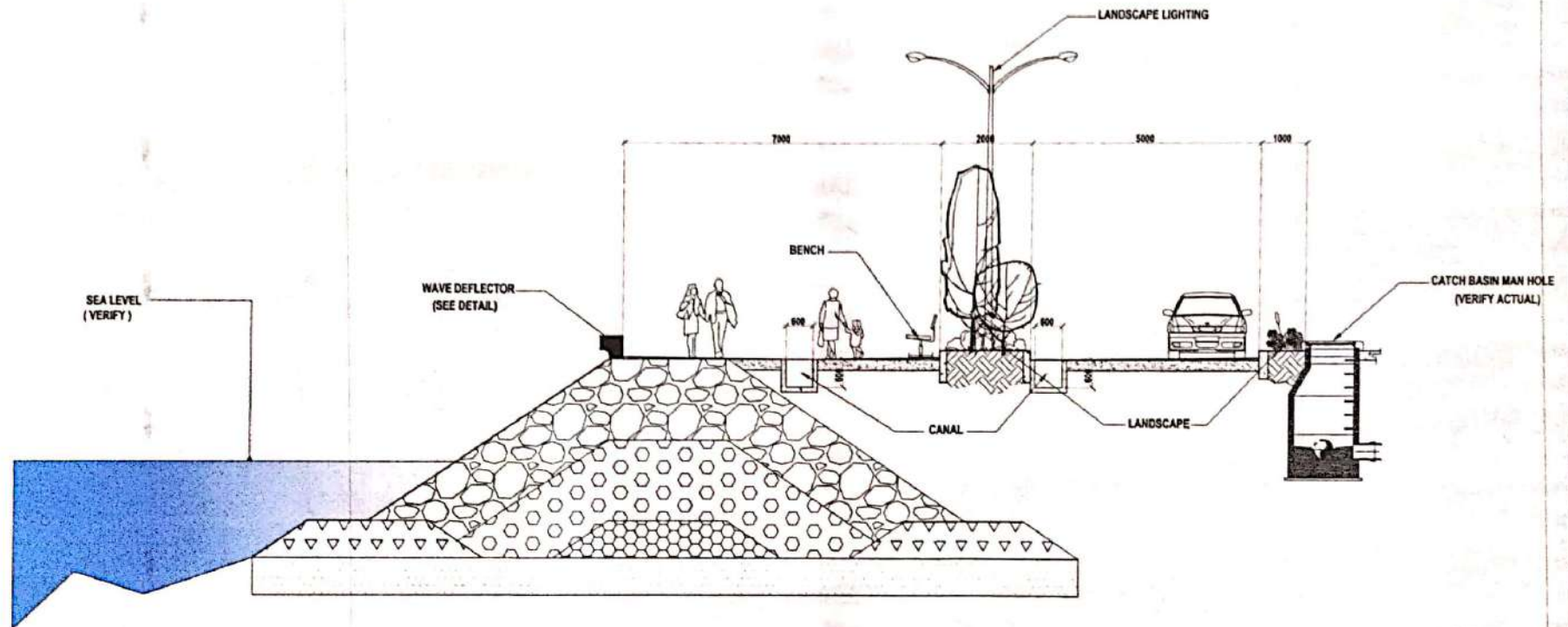
SITE DEVELOPMENT PLAN

SCALE

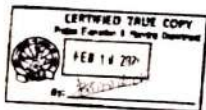
NTS



	PREPARED BY MONTREXIST TAMAYO ENGINEER 1	RECOMMENDING APPROVAL YOLANDA N. PANGCO OFFICER OF THE ASSISTANT DIRECTOR	APPROVED BY WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 3RD & 4TH FLOORS, TOWER 1, DOUBLE DRAGON PLAZA, CORNER ORION MESSIAH PARK BUILDING, AVENUE CORNER COSA ESTEROS BAY PARK, PORT CITY 108	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RADY E. ADAMS REVIEWED BY: AMELITA S. CAONGA CARTOGRAPHER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER FOR ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED ROCHLO D. PARAGAS CHIEF OPERATING OFFICER	P.A. 545	SHEET NO. A 4 24
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SECTION DETAIL OF BOARDWALK
SCALE NTS



	PREPARED BY MONTREXIS T. TAMAYO ENGINEER I	RECOMMENDING APPROVAL YOLANDA S. TANGCO OFFICE OF THE ASSISTANT DIRECTOR	APPROVED BY WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 5th & 7th FLOORS TOWER 1 DOUBLE DRAGON PLAZA, 230 BLE DRAGON WALK PASIWA WALKER AVENUE CORNER GSA EXTENSION SAT AREA PASIWA CITY 5301	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RAY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY: AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTOR	APPROVED POCHOLO J. D. PARAGAS CHIEF OPERATING OFFICER	R.A. 545 SHEET NO. A 5 24 RWB-11-13
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Material Requirements

1. Stones

Stones for riprap shall consist of rock as nearly as rectangular in section as is practical, except that riprap of Class A may consist of round natural stones. The stones shall be sound, tough, durable, dense, resistant to the action of air and water, and suitable in all respects for the purpose intended.

Stones for riprap shall be one of the following classes as shown on the Plans or determined by the Engineer.

- Class A - Stones ranging from a minimum of 15kg to a maximum of 25kg with at least 50 percent of the stones weighing more than 20kg
- Class B - Stones ranging from minimum of 30kg to a maximum of 70kg with at least 50 percent of the stones weighing more than 50kg
- Class C - Stones ranging from minimum of 60kg to a maximum of 100kg with at least 50 percent of the stones weighing more than 80kg
- Class D - Stones ranging from minimum of 100kg to a maximum of 200kg with at least 50 percent of the stones weighing more than 150kg

Sound pieces of broken concrete obtained from the removal of bridges, culverts and other structures may be substituted for stone with the approval of the Engineer.

2. Filter Materials

When required, the riprap shall be placed on a filter layer to prevent fine embankment materials to be washed out through the voids of the face stones. The grading of the filter material shall be as specified on the Plans, or in the Special Provisions. If not so specified, it will be required that D15 of the filter is at least 4 times the size D85 for the embankment material, where D15 percent and 85 percent, respectively, passing (by mass) in a grain size analysis.

Construction Requirements

1. Excavation

The bed for riprap shall be excavated to the required depths and properly compacted, trimmed and shaped.

The riprap shall be founded in a toe trench dug below the depth of scour as shown on the Plans or as ordered by the Engineer. The toe trench shall be filled with stone of the same class as that specified for the riprap, unless otherwise specified.

2. Placing

Stones placed below the water line shall be distributed so that the minimum thickness of the riprap is not less than that specified.

Stones above the water line shall be placed by hand or individually by machines. They shall be laid with close, broken joints and shall be firmly bedded into the slope and against the adjoining stones. Each stone shall be laid with its longest axis perpendicular to the slope in close contact with each adjacent stone. The riprap shall be thoroughly rammed into place as construction progresses and the finished surface shall present an even, tight surface. Interstices between stones shall be filled with small broken fragments firmly rammed into place.

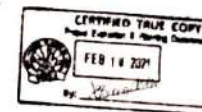
Unless otherwise provided, riprap shall have the following minimum thickness, measured perpendicular to the slope:

- Class A - 300 mm
- Class B - 500 mm
- Class C - 600 mm
- Class D - 800 mm

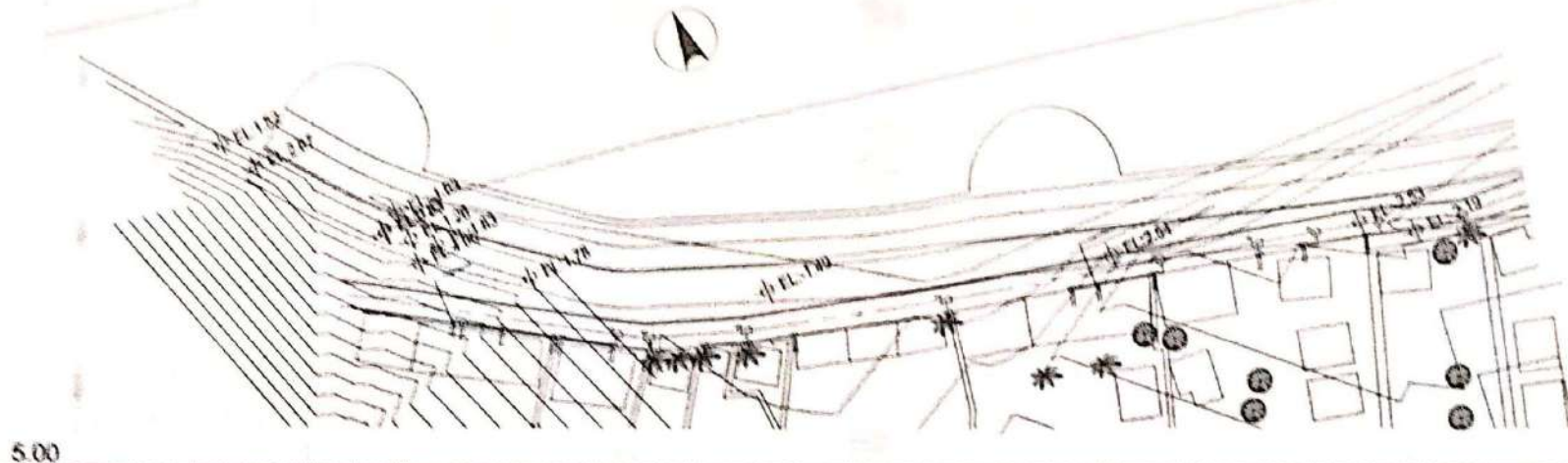
The surface of riprap shall not vary from the theoretical surface by more than 100 mm at any point.

3. Weepholes

All walls and abutments shall be provided with weepholes. Unless otherwise shown on the Plans or directed by the Engineer, the weepholes shall be placed horizontally at the lowest points where free outlets for water can be obtained and shall be spaced at not more than 2 m center to center in a staggered manner. The length of the weepholes shall not be less than the thickness of the walls of the abutment and shall be at least 50 mm diameter PVC or other pipe materials accepted by the Engineer. Weepholes must be provided with filter bags as specified in special provision or as directed by the Engineer.



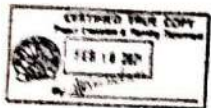
	PREPARED BY: MONTREXIS T. TAMAYO ENGINEER	RECOMMENDING APPROVAL: ROLANDA L. TANGCO OFFICE OF THE ASSISTANT DIRECTOR	APPROVED BY: WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION: SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO		TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 8th & 9th FLOORS TORRE I, DOUBLE DRAGON PLAZA, CORNER 55th AVENUE, SM MALL, PUERTO GALERA CITY, ORIENTAL MINDORO		PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RAY E. ADAME PROJECT PLANNING & DESIGN DIVISION		REVIEWED BY: AMELITA S. CASANDA MANAGER PROJECT EVALUATION PLANNING DIVISION	RECOMMENDING APPROVAL: NESTOR M. DOMALANTA ASST. CHIEF OPERATIONS OFFICER ADAPTATION, CONSTRUCTION & MAINTENANCE DIVISION	APPROVED: RODOLFO D. PARAGAS CHIEF OPERATIONS OFFICER	R.A. 545	SHEET NO. A 6 24



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0+000

0+200

2.85	2.75	2.75	2.74	2.72	2.75	2.68	2.68	2.64	2.62	2.62	2.60	2.58	2.56	2.54
-5.98	-1.47	-0.21	-1.15	-0.72	-1.89	-2.58	-2.64	-2.62	-2.64	-2.64	-2.87	-2.22	-1.95	-1.88



PREPARED BY
SANTOS R. T. TAMAYO
ENGINEER

RECOMMENDING APPROVAL
VINCE A. L. RANGKAY
OFFICE OF THE ASSISTANT CHIEF OF POLICE

APPROVED BY
WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT IDENTIFICATION
SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK
LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
100 & 101 FLOORS TOWER 1, DOUBLE DOCKMAN PLACE,
JABALIBOAN MINDORO FREE ZONE, MINDORO
CORPORATE ESTATE BUILDING NO. 100, 101, 102

PROJECT EVALUATION AND PLANNING DEPARTMENT
CHECKED BY
RALPH E. ADAME
OFFICER IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

REVIEWED BY
AMELITA S. CAGINDA
MANAGER
PROJECT EVALUATION & PLANNING DIVISION

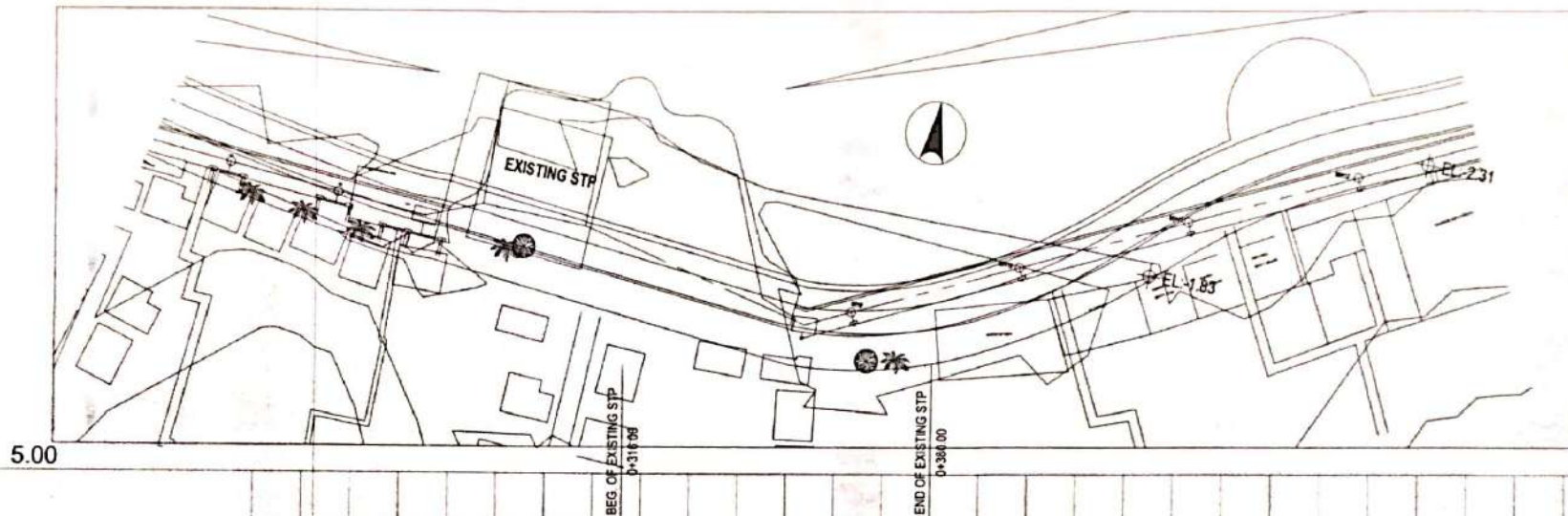
RECOMMENDING APPROVAL
NESTOR M. DOMALANTA
ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES DIVISION

APPROVED BY
PODOLLO J. O. PARAGAS
CHIEF OPERATING OFFICER

P.A. NO.

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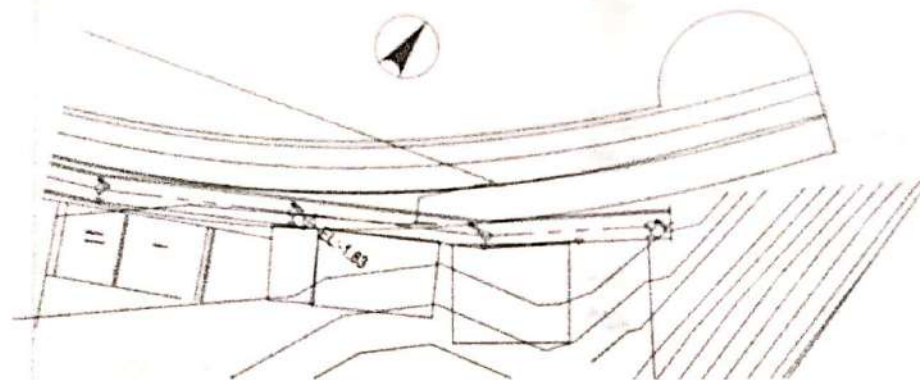
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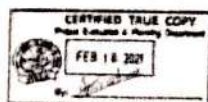
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FOLLOW EXISTING WIDENING			
FOLLOW EXISTING SUPERELEVATION			

	PREPARED BY MONTREXIS T. TAMAYO ENGINEER II	RECOMMENDING APPROVAL ROLAND L. ANSCO OFFICE OF THE ASSISTANT DIRECTOR	APPROVED BY WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA - ORIENTAL MINDORO		PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER	APPROVED POCHOLO J. D. PARAGAS CHIEF OPERATING OFFICER	R.A. 545	SHEET NO. S 8 24
	CHECKED BY RADY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	THIS DRAWING IS A PROPERTY OF TIEZA AND CANNOT BE REPRODUCED WITHOUT THEIR PERMISSION								



5.00

00.00



-5.00

ELEVATION

STATION
FINISHED GRADE
ELEVATION

EXISTING
ROAD ELEVATION

FOLLOW EXISTING
WIDENING

FOLLOW EXISTING
SUPERELEVATION

0+600

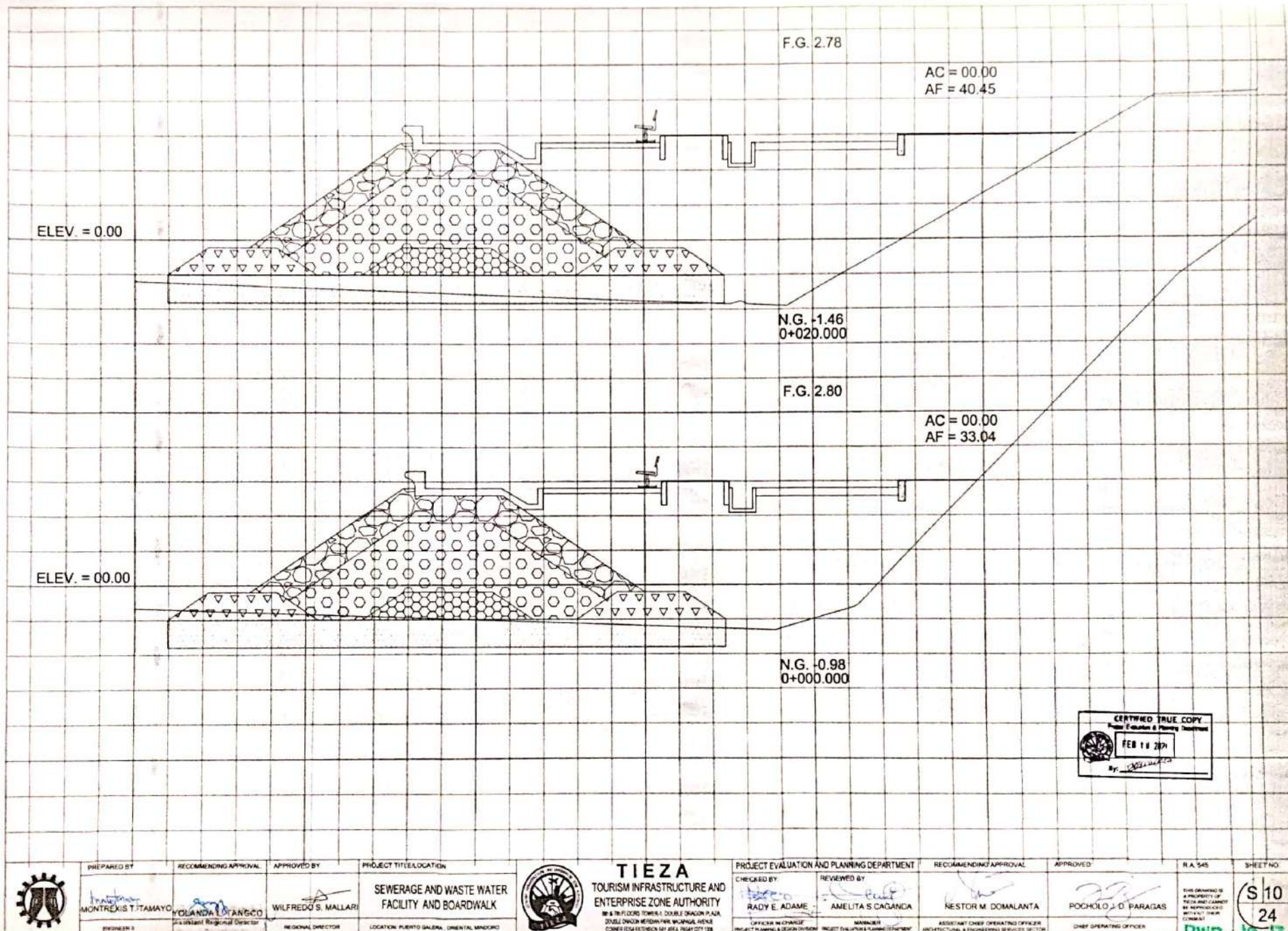
	APPROVED BY	RECOMMENDED APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION		PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDATION APPROVAL	APPROVED	R.A. NO.	SHEET NO.
	 ENGINEER	 RECOMMENDER	 APPROVER	 APPROVER		 APPROVER	 APPROVER	 APPROVER	 APPROVER	 APPROVER	 APPROVER

SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK

TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
50 A. TOLEDO TORRES LOCAL GOVERNMENT
STABLE STREET, MANILA, PHILIPPINES
TEL: (02) 5261-1000 FAX: (02) 5261-1001

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DATE: 10-12



F.G. 2.74

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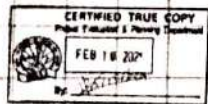
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F.G. 2.76

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ELEV. = 00.00

N.G. -0.21
0+040.000



PREPARED BY
MONTECRISTO TAMAYO
ENGINEER

RECOMMENDING APPROVAL
YOLANDA C. TANGCO
Assistant Regional Director

APPROVED BY
WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT TITLE/LOCATION
SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK
LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
10 & 10 FLOORS TOWER, DOUBLE BRANDED PLAZA
DOUBLE BRANDED WHARF PARK MALLAPUE, BANGAL
CENEDRASA EXTENSION BAY AREA, FREE CITY ZONE

PROJECT EVALUATION AND PLANNING DEPARTMENT
CHECKED BY
RADY E. ADAME
OFFICER IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

REVIEWED BY
AMELITA S. CAGANDA
MANAGER
PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL
NESTOR M. DOMALANTA
ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES SECTION

APPROVED
POCHOLO J. D. PARAGAS
CHIEF OPERATING OFFICER

R.A. SAs

SHEET NO.

S11
24

THIS DRAWING IS
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TIEZA AND CANNOT
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WITHOUT THE
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ELEV. = 00.00

F.G. 2.70

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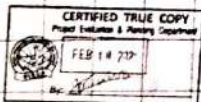
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F.G. 2.72

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AF = 39.70

ELEV. = 00.00

N.G. -0.72
0+080.000



PREPARED BY
MONTRESOR TITAMAYO
ENGINEER

RECOMMENDING APPROVAL
YOUNG KIM C. SANGCO
ASSISTANT REGIONAL DIRECTOR

APPROVED BY
WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT TITLE & LOCATION
SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK
LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
88 & 79 FLOORS TOWER 1 DOUBLE DRAGON PLAZA
DOUBLE DRAGON MEDIANEWA FREE MACAPAGAL ROAD
CORNELIOSA EXTENSION SAN ANTON, PANGLOSS CITY

CHECKED BY
RADY E. ADAME
OFFICER IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

REVIEWED BY
AMELITA S. CAGANDA
MANAGER
PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL
NESTOR M. DOMALANTA
ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES SECTOR

APPROVED
ROCHARD J. D. PARAGAS
CHIEF OPERATING OFFICER

IT & IAS
SHEET NO.
S 12
24

RWB-19-13

ELEV. = 00.00

F.G. 2.66

AC = 00.00
AF = 54.78

N.G. -2.64
0+140.000

F.G. 2.68

AC = 00.00
AF = 52.65

ELEV. = 00.00

N.G. -2.58
0+120.000



PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
MONTREYES T. JAMAYO ENGINEER II	YOLANDA L. YANIGCO Assistant Regional Director	WILFREDO S. MALLARI REGIONAL DIRECTOR	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
88 & 79 FLOORS CORNER 1 DOUBLE BRACKEN PLAZA
SOLAR PLAZA WISDOM PARK INDUSTRIAL AVENUE
CORRAL DELA UYATAN, METRO AREA, PASIG CITY 1908

PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED	R.A. No.	SHEET NO.
CHECKED BY RADY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CAGANCA SUPERVISOR PROJECT EVALUATION & PLANNING DEPARTMENT	NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	ROCHOLIZ J. D. PARAGAS CHIEF OPERATING OFFICER		S13 24 RWE-19-13

F.G. 2.62

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AF = 51.89

ELEV. = 00.00

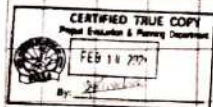
N.G. -2.64
0+180.000

F.G. 2.64

AC = 00.00
AF = 49.21

ELEV. = 00.00

N.G. -2.62
0+160.000



PREPARED BY
MONTREXIS T. JAMAYO
ENGINEER II

RECOMMENDING APPROVAL
YOLANDA L. TANGCO
Assistant Regional Director

APPROVED BY
WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT TITLE/LOCATION
SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK
LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
8th & 9th FLOORS TOWER 1, DOUBLE DRAGON PLAZA,
CORNER DRAGON MERCHANTS WALKWAY AVENUE,
CORNER EDZA EXTENSION, BAY AREA, PASAY CITY 1206

PROJECT EVALUATION AND PLANNING DEPARTMENT
CHECKED BY
RADY E. ADAME
OFFICER IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

REVIEWED BY
AMELITA S. CAGANDA
MANAGER
PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL
NESTOR M. DOMALANTA
ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES SECTOR

APPROVED
ROCHOLFO D. PARAGAS
CHIEF OPERATING OFFICER
R.A. 545
SHEET NO.
S 14
24

THIS DRAWING IS
A PROPERTY OF
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BE REPRODUCED
WITHOUT THEIR
CONSENT

F.G. 2.58

AC = 00.00
AF = 56.10

ELEV = 00.00

N.G. +2.22
0+220.000

F.G. 2.60

AC = 00.00
AF = 59.65

ELEV = 00.00

N.G. +2.67
0+200.000



DESIGNED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
MONTRECKES T. SAMAYO	ROLANDA E. JAMICO Assistant Regional Director	WILFREDO S. MALLARI Regional Director	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK
APPROVED BY			LOCATION: PUERTO GALERA - ORIENTAL, MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
804 B. DEL PUERTO VENTURA, CANTON JACARIL PAZ
CANTON JACARIL PAZ, PROVINCIA GUAYAS, ECUADOR
CORREO ELECTRONICO: TIEZA@TIEZA.ORG

PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED
CHECKED BY	REVIEWED BY		
RAUL E. ADAME	AMELITA S. CAGANCA	NESTOR M. DOMALANTA	POKHOLE J. G. PARAJAS
PROJECT PLANNING & DESIGN DIVISION	PROJECT EVALUATION & PLANNING DIVISION	PROJECT EVALUATION & PLANNING DIVISION	PROJECT EVALUATION & PLANNING DIVISION

N.A. SIG.	SHEET NO.
	S 15 24

F.G. 2.54

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AF = 51.07

ELEV. = 00.00

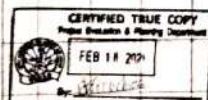
N.G.	-1.88
0+260.000	

F.G.	2.56
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AC = 00.00
AF = 52.79

ELEV. = 00.00

N.G. -1.95	0+240.000
------------	-----------



PREPARED BY
MONTECRISTO TAMAYO
ENGINEER

RECOMMENDING APPROVAL


YOLANDE L. TANCO
Assistant Regional Director

APPROVED BY
WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT TITLE/LOCATION	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK
LOCATION: PUERTO GALENA, ORIENTAL MINDORO	



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
60 & 7th FLOORS TOWER 1 DOUBLE DRAGON PLAZA,
DOUBLE DRAGON MESSING PARK MACAPAGAL AVENUE
CUPANG EDZA EXTENSION DAVAO AREA PAGAS CITY 900

PROJECT EVALUATION AND PLANNING DEPARTMENT	
CHECKED BY  RADY E. ADAME	REVIEWED BY  AMELITA S. CAGANDA
OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT

REVIEWED BY
AMELITA S. CAGAND

RECOMMENDING APPROVAL



NESTOR M. DOMALANTA

ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES, INC.

APPROVED:
22
POCHOLO J D PARAGAS
CHIEF OPERATING OFFICER

NA 545

Two identical
polymer
films and
one
solution
sample

1000

SHEET NO.

(S 16
24
13-12

F.G. 2.38

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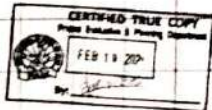
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0+420.000

F.G. 2.40

AC = 00.00
AF = 53.19

ELEV. = 00.00

N.G. +2.17
0+400.000



PREPARED BY

MONTREXIS T. TAMAYO

ENGINEER

RECOMMENDING APPROVAL

YOLANDA B. TANGCO

ASSISTANT PROJECT DIRECTOR

APPROVED BY

WILFREDO S. MALLARI

REGIONAL DIRECTOR

PROJECT TITLE/LOCATION

SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK

LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA

TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY

88 & 75 FLORES TORRES - DOUBLE BRACKEN PLAZA
30002 SAKON METROPOLE INCORPORATED
30002 SAKON METROPOLE INCORPORATED

PROJECT EVALUATION AND PLANNING DEPARTMENT

CHECKED BY

RADY E. ADAME

OFFICE IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

DESIGNED BY

AMELITA S. CAGANEA

MANAGER
PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL

NESTOR M. DOMALANTA

ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES SECTION

APPROVED

RODOLFO A. PARAGAS

CHIEF OPERATING OFFICER

P.L.A. 545

SHEET NO.

S 18

24

F.G. 2.34

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AF = 48.58

ELEV. = 00.00

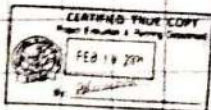
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0+460.000

F.G. 2.36

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AF = 54.70

ELEV. = 00.00

N.G. -2.35
0+440.000



PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
WILFREDO S. MALLARI	YOLANDA E. TANGCO	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK
MANAGING ENGINEER	MANAGING ENGINEER	REGIONAL DIRECTOR	LOCATION: PUERTO GALERA, ORIENTAL MINDORO



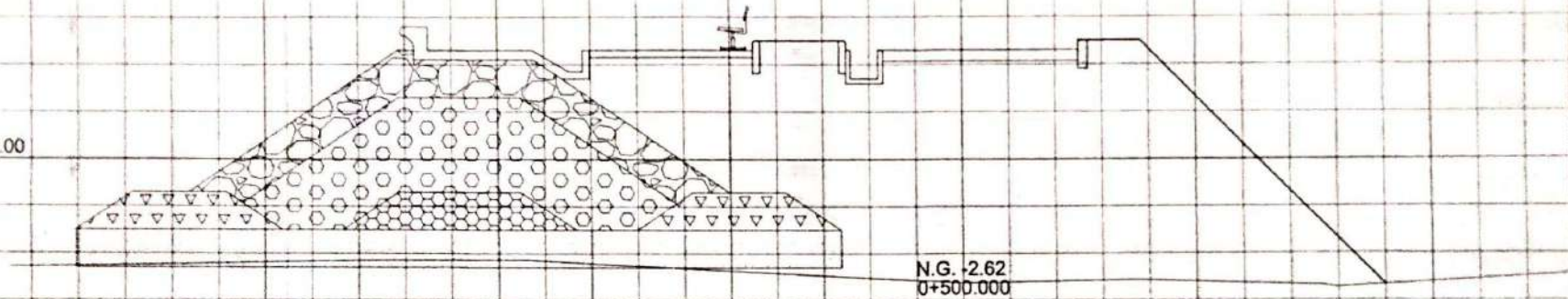
TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
100 E. INFILTRATION TOWER 1, 10000 DAVAO RANSA,
DAVAO CITY, DAVAO REGION (DAR) 8000
CORPORATE OFFICE: 10000 DAVAO RANSA, DAVAO CITY, DAVAO REGION (DAR) 8000

PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED	R.A. TAG	SHEET NO.
CHECKED BY RACY E. ADAME	REVIEWED BY AMELITA S. CAGANDA	NESTOR M. DOMALANTA	POCHOLO B. D. PARAGAS		S19 24
OFFICIAL RECOMMENDATION PROJECT PLANNING & DESIGN DIVISION	MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	ASSISTANT CHIEF OPERATING OFFICER ADMINISTRATION & ENGINEERING SERVICES SECTION	CHIEF OPERATING OFFICER		

F.G. 2.30

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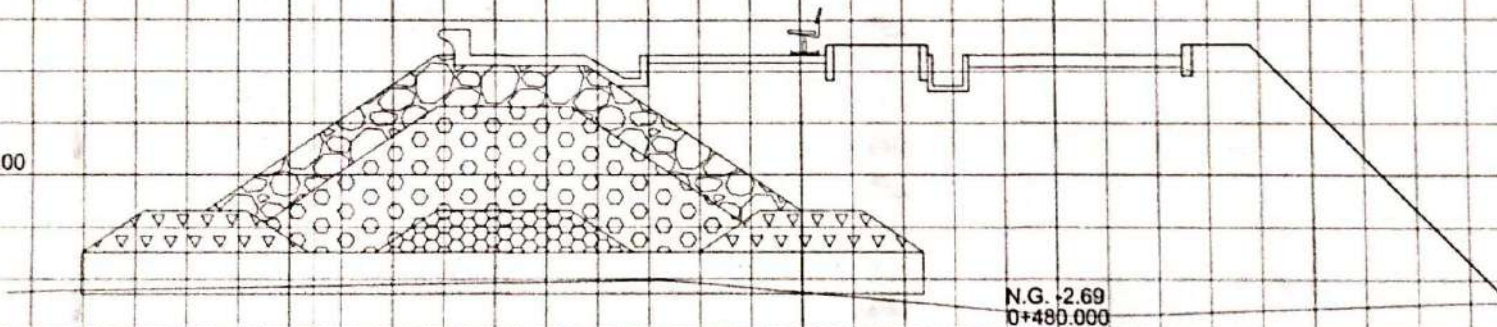
ELEV. = 00.00



F.G. 2.32

AC = 00.00
AF = 56.77

ELEV. = 00.00



PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
MONTREXIS T. TAMAYO ENGINEER	MOLANAL, TANGCO PLANNING & DESIGN DIVISION REGIONAL DIRECTOR	WILFREDO S. MALLARI REGIONAL DIRECTOR	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
88 & 89 ALDORE TOWER 1, DOUBLE ORCHARD PLAZA,
3000 ALABANG MEDIANEWA, BULACAN, RIZAL
CORRELATION OF TOWN AND AREA PLANS (2017-2021)

PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED
CHECKED BY RACY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DIVISION	NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATIONS OFFICER ARCHITECTURAL & ENGINEERING SERVICES DIVISION	RODOLFO J. P. PARAGAS CHIEF OPERATIONS OFFICER

R.A.S.	SHEETING
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RWB-19-B

ELEV. = 00.00

FG 2.26

AC = 00.00
AF = 56.07

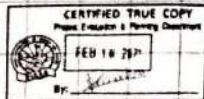
N.G. -3.00
0+540.000

F.G. 2.28

AC = 00.00
AF = 57.56

ELEV. = 00.00

N.G. -2.81
0+520.000



PREPARED BY

MONTEFLEX T. JAMAYO
ENGINEER

RECOMMENDING APPROVAL

YOLANDA L. TANGCO
Assistant Regional Director

APPROVED BY

WILFREDO S. MALLARI
REGIONAL DIRECTOR

PROJECT TITLE/LOCATION

SEWERAGE AND WASTE WATER
FACILITY AND BOARDWALK

LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
8th & 7th FLOORS TOWER 1, DOUBLE DRAGON PLAZA,
DOUBLE DRAGON MERRILL PARK NAUTICAL RESORT,
CORNER C53 EXTENSION SAT AREA, PASAY CITY, 1206

PROJECT EVALUATION AND PLANNING DEPARTMENT

CHECKED BY
RADY E. ADAME

OFFICER IN CHARGE
PROJECT PLANNING & DESIGN DIVISION

REVIEWED BY
AMELITA S. CAGANDA

MANAGER
PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL

NESTOR M. DOMALANTA

ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL & ENGINEERING SERVICES SECTION

APPROVED

POCHOLO J. D. PARAGAS

CHIEF OPERATING OFFICER

R.A. 545

SHEET NO.

S 21
24

THIS DRAWING IS
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BE RETURNED
WITHIN THREE
MONTHS

RWB-19-13

F.G. 2.22

AC = 00.00
AF = 52.74

ELEV. = 00.00

N.G. -2.60
0+580.000

F.G. 2.24

AC = 00.00
AF = 52.27

ELEV. = 00.00

N.G. -2.74
0+560.000



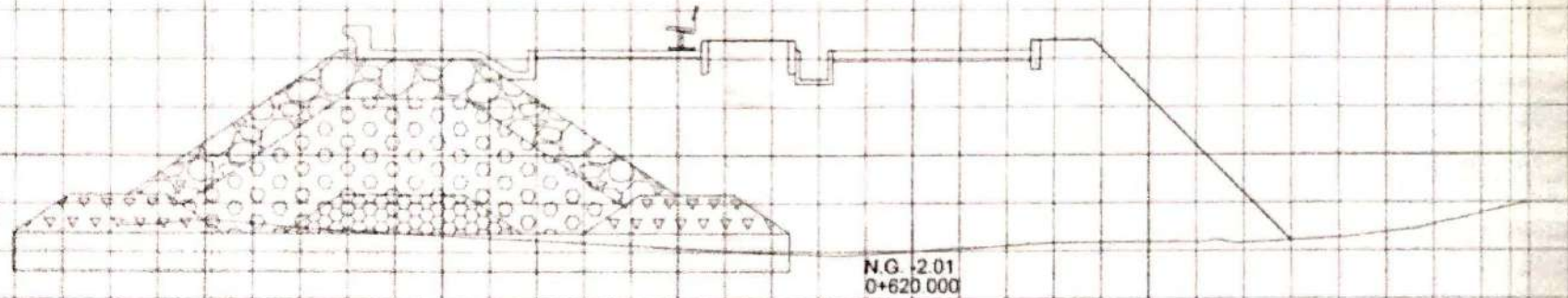
	DESIGNED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION		PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED	R.A.S. SHEET NO. S 22 24
	MONTECRISTO TABAYAO ENGINEER	POLANDIA E. SANISCO ASSISTANT CHIEF OPERATING OFFICER	INFREDO S. MALLARI REGIONAL DIRECTOR	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK IN 4TH FLOOR TOWER 1, DOUBLE ORION PLAZA 2202L DRAGON WEDDING PARK INCORPORAL, AVALA CORRAL CIMA, OTTODON BY AREA, PANGLOSS 271-128		CHECKED BY RACY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CAGANCA MANAGER PROJECT PLANNING & DESIGN DIVISION	NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	RODOLFO J. D. PARAGAS CHIEF OPERATING OFFICER	

RMB-19-13

FG 2.18

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AF = 47.62

ELEV. = 00.00

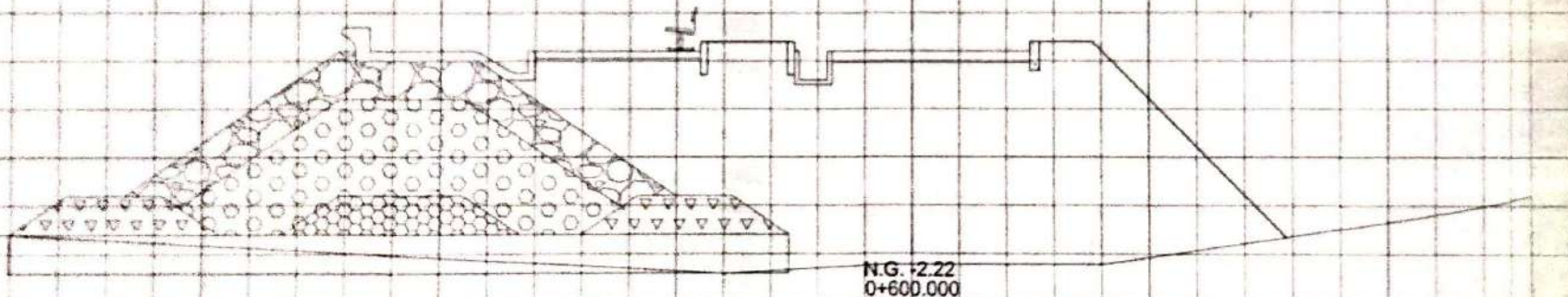


N.G. +2.01
0+620.000

FG 2.20

AC = 00.00
AF = 50.06

ELEV. = 00.00



N.G. +2.22
0+600.000



PREPARED BY

MONTESILAS E. TABAYAN
ENGINEER

RECOMMENDING AGENCY

TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY
ENGINEER

APPROVED BY

WILFREDO S. MALLARI
MANAGING DIRECTOR

PROJECT TITLE/LOCATION

SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK
LOCATION: PLANT/CONCRETE, CANTALAN, BANGALAY



TIEZA

TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY
NO. 18 FLORES TORRES - DOUBLE BRIDGE ROAD
CANTALAN, BANGALAY, CANTALAN, BANGALAY

PROJECT EVALUATION AND PLANNING DEPARTMENT

CHECKED BY
RADIO E. ADAME
ENGINEER

REVIEWED BY
ANGELITA S. CACANGA
MANAGER

RECOMMENDING AGENCY

NESTOR M. DOMALANTA
MANAGING DIRECTOR

APPROVED

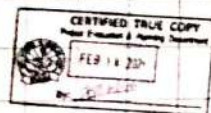
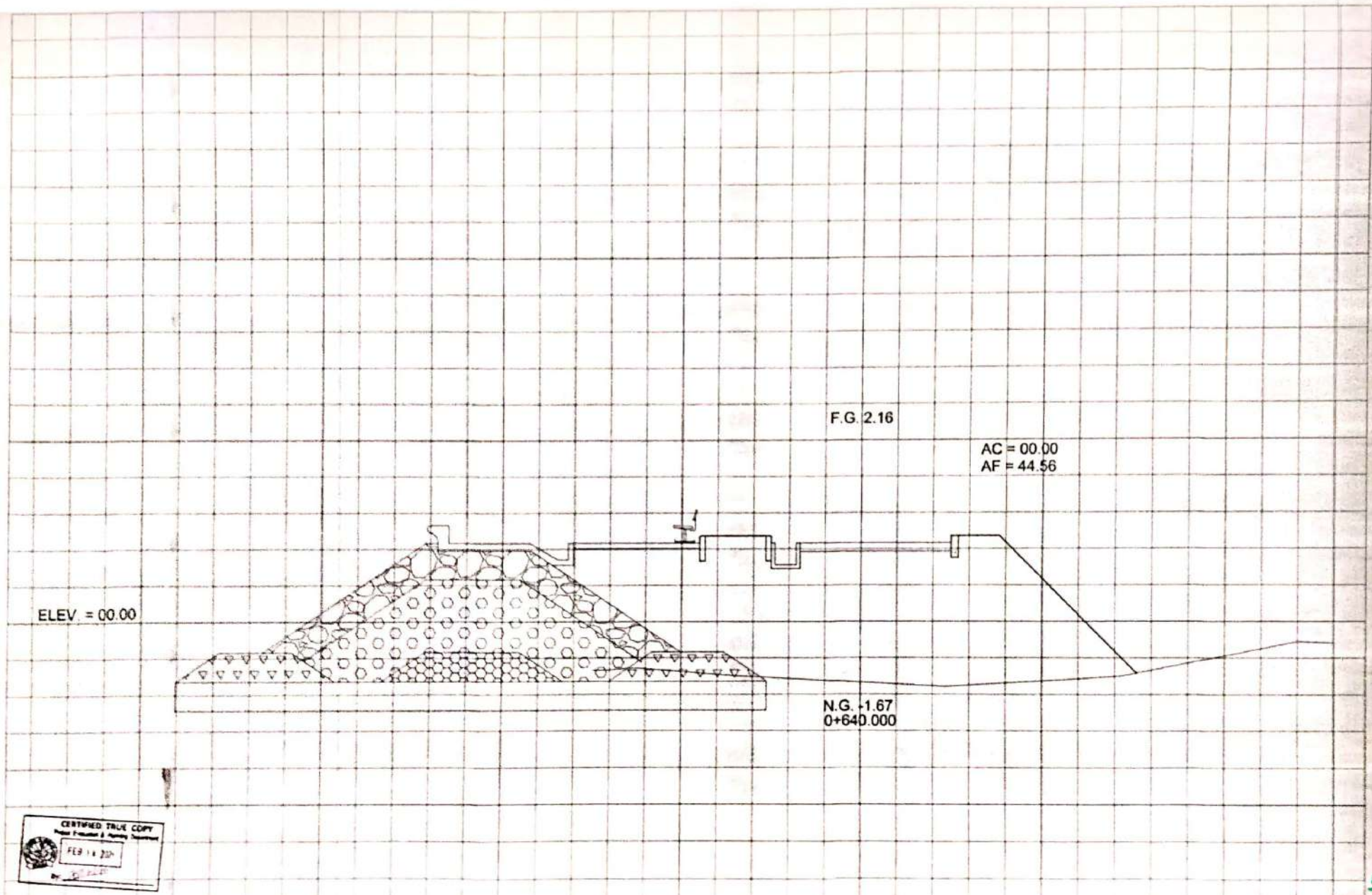
RICARDO J. B. PARAGAS
CHIEF ENGINEERING OFFICER

N/A

DATE

SHEET NO.

S 23
24



PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
MONTECRISTO SAMAYO	YVES AMBROSIO	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK
ENGINEER	ENGINEER	REGIONAL DIRECTOR	LOCATION: PUERTO GALERA, ORIENTAL LUSOGUAY



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
80 & 70 FLOORS TOWER 1, DOUBLE DRAGON PLAZA
DOUBLE DRAGON MANSION FOR MARQUESS PALACE
CONDOMINIO ESTEROS DE SAN PABLO CITY 130

PROJECT EVALUATION AND PLANNING DEPARTMENT	
CHECKED BY	REVIEWED BY
RAJEE E. ADAME	AMELITA S. CAGANDA
ENGINEER IN CHARGE	MANAGER
PROJECT PLANNING & DESIGN OFFICE	PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL
NESTOR M. DOMALANTA
ASSISTANT CHIEF OPERATING OFFICER
INFRASTRUCTURE & OPERATIONS DIVISION

APPROVED
PODOLLO & D. PARAGAS
CHIEF OPERATING OFFICER

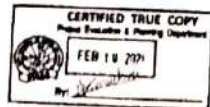
R.A. NO.	SHEET NO.
	S 24
	24

RWB-19-13



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
REGIONAL DIRECTOR
REGION IV-B, MIMAROPA
EDSA, DILIMAN, QUEZON CITY

**BOARDWALK AND SEWAGE TREATMENT PLANT
WHITE BEACH, PUERTO GALERA**

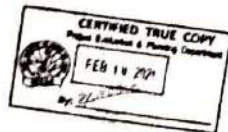


	PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED	R.A. NO.	SHEET NO.
	MONTRESIT TAMAYO PLANNING & DESIGN DIVISION	YOLANDA P. TANGCO SARANGANI REGIONAL OFFICE	WILFREDO S. MALLARI REGIONAL DIRECTOR	SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 400 16 FLORES TOWER 1, DOUBLE ORANGE PLAZA 2500 TRINIDAD AVENUE, PAMPANGA, PANGLOSS CORPORATION, COLUMBIAN AVENUE, PANGLOSS CITY, ILO	CHECKED BY RADY E. ADAME PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CADANUA PLANNING & DESIGN DIVISION	NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATIONS OFFICER SARANGANI REGIONAL OFFICE	RODOLFO J. D. PARAGAS CHIEF OPERATIONS OFFICER	

RWB-19-13

BOARDWALK AND SEWAGE TREATMENT PLANT WHITE BEACH, PUERTO GALERA

INDEX OF DRAWINGS		
	SHEET CONTENT	PAGE
GENERAL	TITLE SHEET	1
	INDEX OF SHEETS AND SUMMARY OF QUANTITIES	2
	SITE DEVELOPMENT PLAN OF WHITE BEACH	3
	PLANT LAYOUT	4
STRUCTURE	EQUALIZATION, SEPTIC, S.B.R. S.D. VIEW SECTION	5
	BLOWER ROOM LAYOUT	6
	SCHEMATIC FLOW DIAGRAM	7
	LIFT STATION PLAN AND DETAILS	8
	LST - 2A DETAILS	9
	LST - 3A DETAILS	10
	LST - 1B DETAILS	11
	FOUNDATION PLAN AND GENERAL NOTES	12
	TYPICAL COLUMN DETAILS	13
	DECK FRAMING PLAN AND RC WALL DETAILS	14
	TYPICAL BEAM DETAILS	15
	TYPICAL SLAB DETAILS	16
	TYPICAL BOARDWALK SECTION	17
	TYPICAL BOX CULVERT SECTION	18
	STANDARD RCBC WINGWALL DETAIL	19
	TYPICAL BOX CULVERT SECTION	20
	TEMPORARY FACILITIES 1 UNIT FOR SABANG 1 UNIT FOR WHITE BEACH	1



ITEM NO.	DESCRIPTION	UNIT	QTY
PART A FACILITIES FOR THE ENGINEER			
A 1.1 (8)	PROVISION OF COMBINED FIELD OFFICE, LABORATORY AND LIVING QUARTERS BUILDING FOR THE ENGINEER (RENTAL BASIS)	MONTH	
A 1.1 (11)	PROVISION OF FURNITURE/FIXTURES, EQUIPMENT & APPLIANCES FOR THE FIELD OFFICE FOR THE ENGINEER	LS	1.00
A 1.1 (14)	PROVISION OF LABORATORY TESTERS EQUIPMENT, APPARATUS AND PUBLICATIONS FOR THE ENGINEER	LS	1.00
A 1.1 (15)	OPERATION & MAINTENANCE OF TEMPORARY FIELD OFFICE, LABORATORY AND LIVING QUARTERS BUILDING FOR THE ENGINEER	MONTH	
A 1.2 (4)	PROVISION OF 4X4 PICK UP TYPE SERVICE VEHICLE FOR THE ENGINEER ON BARE RENTAL BASIS	MONTH	
A 1.2 (6)	OPERATION AND MAINTENANCE OF 4X2 PICK UP TYPE SERVICE VEHICLE FOR THE ENGINEER	MONTH	
A 1.3 (3)	PROVISION OF SURVEY PERSONNEL FOR THE ASSISTANCE TO THE ENGINEER	MONTH	
A 1.4 (1)	PROVISION OF PRESSURE PHOTOGRAPHS	MONTH	
PART B OTHER GENERAL REQUIREMENTS			
B 2	MEDICAL ROOM AND FIRST AID FACILITIES	LS	1.00
B 3	PERMITS AND CLEARANCES	LS	1.00
B 5	PROJECT BILLBOARD / SIGNBOARD	EACH	2.00
B 7	OCCUPATIONAL SAFETY AND HEALTH PROGRAM	MONTH	
B 9	MUNICIPALITY DEMONSTRATION	LS	1.00
B 12	REMOVAL AND RELOCATION OF UTILITIES	LS	1.00
PART C CIVIL, MECHANICAL, ELECTRICAL AND SANITARY PLUMBING WORKS			
PART A EARTHWORKS			
900(2)	CLEANING AND GRUBBING	LS	1.00
903(18)	STRUCTURE EXCAVATION	CU M	514.97
904(18)	EMBANKMENT FROM STRUCTURE EXCAVATION	CU M	476.18
905(2)	FOUNDATION FILL	CU M	105.99
907(1)	SITE DEVELOPMENT	LS	1.00
PART B PLAN AND REINFORCED CONCRETE WORK			
900(1)	PROTECTIVE MORTAR (USING PCM #9 LITHUM)	SG M	2,798.84
900(1)(1)	STRUCTURAL CONCRETE - CLASS "A" - 28 DAYS	CU M	541.03
900(1)(2)	STRUCTURAL CONCRETE (FOOTINGS AND SLAB ON FILL) - CLASS "A" - 28 DAYS	CU M	893.47
900(1)(5)	STRUCTURAL CONCRETE (SUSPENDED SLAB) - CLASS "A" - 28 DAYS	CU M	101.16
901(1)	LEAN CONCRETE	CU M	25.79
902(1)(1)	REINFORCING STEEL (DEFORMED), GRADE 40	KG	150,364.90
903(2)	FORMS AND FALSEWORKS	SG M	1,804.12
EXISTING BUILDINGS			
PART C FINISHING AND OTHER CIVIL WORKS (For Building of SBR Treatment Facilities Only)			
1001(9)	GRAVEL LIME WORKS	LS	1.00
1002(24)	COLD WATER LINES	LS	1.00
1003(17)	CARPENTRY AND JOHERRY WORKS	LS	1.00
1005(1)(2)	CMB LOAD BEARERS (INCLUDING REINFORCING STEEL) - 150mm THK	SG M	1,223.54
PART D ELECTRICAL (For Building of SBR Treatment Facilities Only)			
1100(10)	CORNER, BOXES AND FITTINGS	LS	1.00
1101(23)	WIRE AND WIRING DEVICES	LS	1.00
1102(1)	PANELBOARD WITH MAIN AND BRANCH BREAKERS	LS	1.00
1103(1)	LIGHTING FIXTURES AND LAMPS	LS	1.00
PART E MECHANICAL (For Chemical Laboratory Office & Machine Room of SBR Treatment Only)			
1200(13)	AIR CONDITIONING (PACKAGE/SPLIT TYPE)	LS	1.00
1200(1)	FIRE ALARM SYSTEM	LS	1.00
PART F WATER SUPPLY			
1602(5)	POLYETHYLENE (PE) PLASTIC PIPE	LS	1.00
1603(1)	VALVE	LS	1.00
DIVISION FLOOD CONTROL AND WATER SUPPLY			
PART F-C DRAINAGE WORKS			
1720(1)(4)	MANHOLES 1070mm DIAMETER CONCRETE	EACH	11.00
1720(5)	METAL FRAME AND COVERS	PAIR	7.00
1724(1)	SUBMERSIBLE AXIAL AND MIXED FLOW PUMP ABOVE 1.0 m/s CAP	SET	11.00
1724(5)	DISCHARGE COLUMN PIPE SET WITH FLANGES AND BOLTS AND NUTS	SET	4.00
1724(7)	BUTTERFLY VALVE	SAF	1.00
1726(1)	MOTOR CONTROL CENTER	LS	1.00
1726(2)	GENERATOR SET	SET	1.00

	PREPARED BY: MARICELYN S. TAYAG	RECOMMENDING APPROVAL: MARICELYN S. TAYAG	APPROVED BY: MARICELYN S. TAYAG	PROJECT IDENTIFICATION: SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK		PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL:	APPROVED:	DATE:	SHEET NO:

RWB-17-13

LEGEND

- WHITE BEACH BOARDWALK
- NEW PIPE LINE
- NEW PIPE LINE FOR RESIDENTS
- CATCH BASIN
- SECTION OF 4 LST STATION NEAR BOARDWALK
- BORDER LINE (PPS S/S)

1 SEWAGE PIPING ROUTE
SCALE: 1:2000

1 LST-1A
(3cu.m)

SEWAGE TREATMENT PLANT

2 LST-2A
(5cu.m)

3 LST-3A
(8cu.m)

4 LST-1B
(3cu.m)



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Project Evaluation & Planning Department

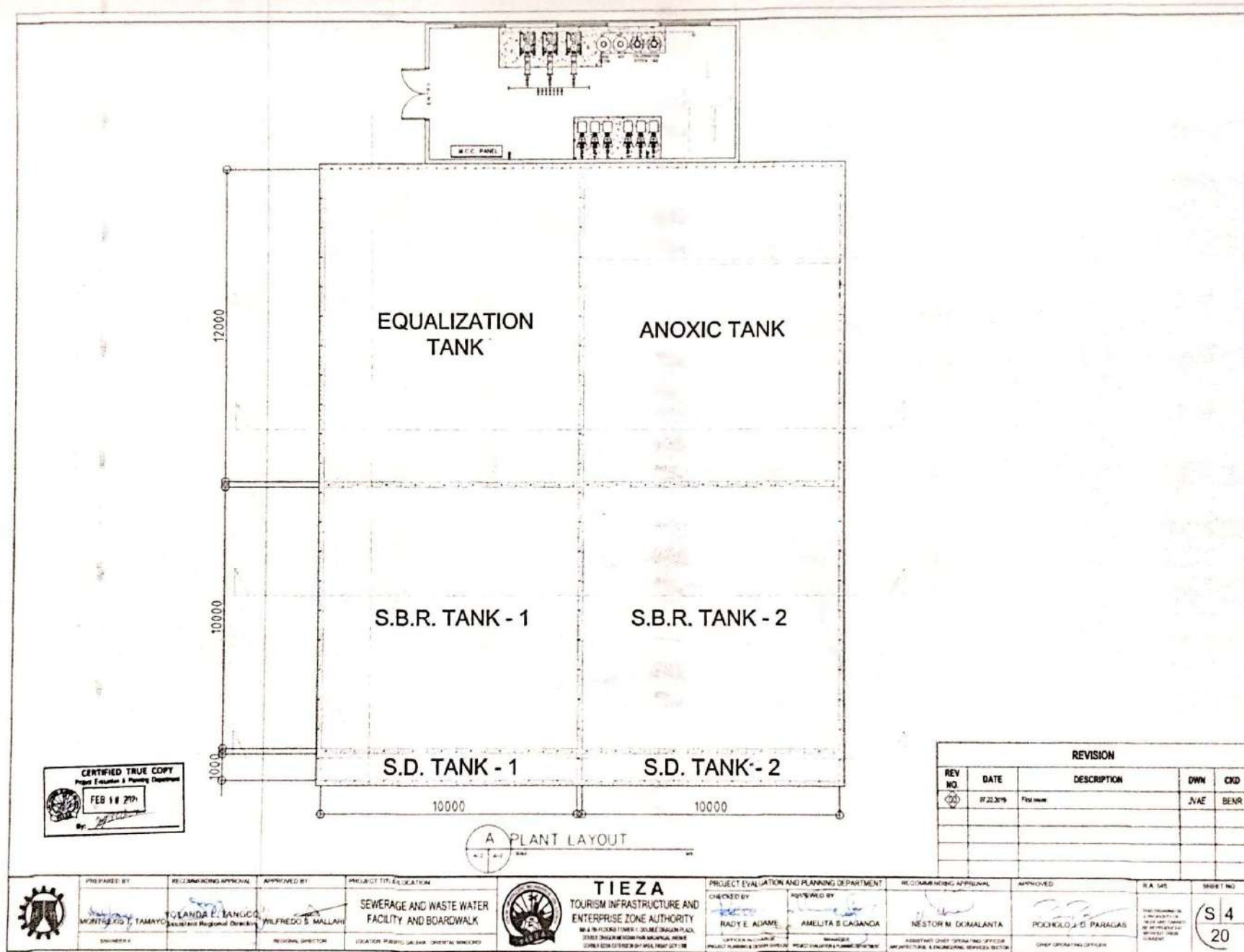
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REVISION

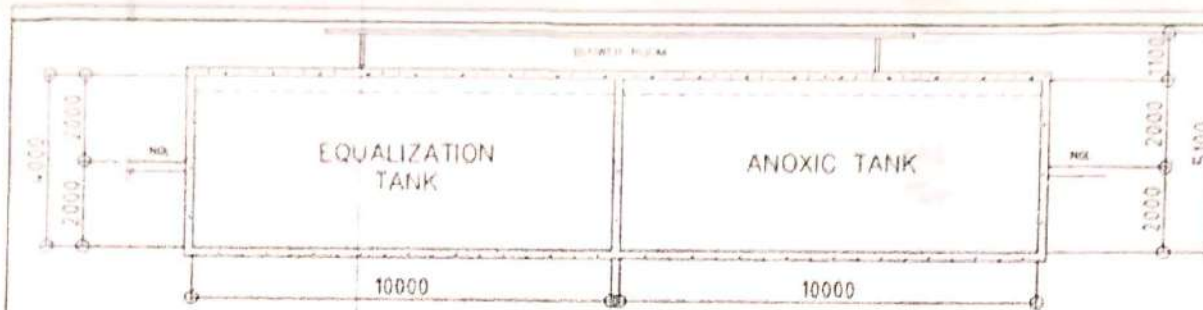
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01	07 19 2019	First Issue	JVAE	BENR

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	ENGINEER	REGIONAL DIRECTOR	LOCATION: PORTO GALERA, ORIENTAL MINDORO	CHECKED BY RADY E. ADAME		REVIEWED BY AMELITA S. CANANGA	MANAGER	ASSISTANT CHIEF OPERATING OFFICER	CHIEF OPERATING OFFICER	CHIEF OPERATING OFFICER	CHIEF OPERATING OFFICER

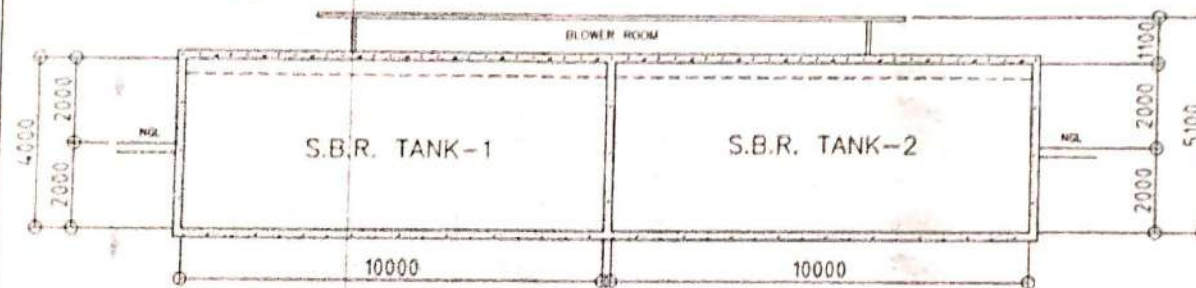
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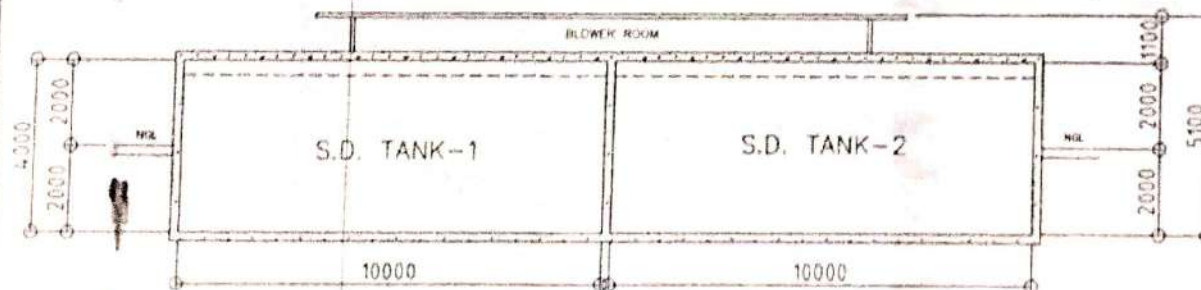
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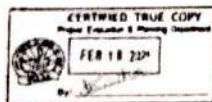
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A-2 A-2 SCALE NTS



2 S.B.R. SECTION
A-2 A-2 SCALE NTS



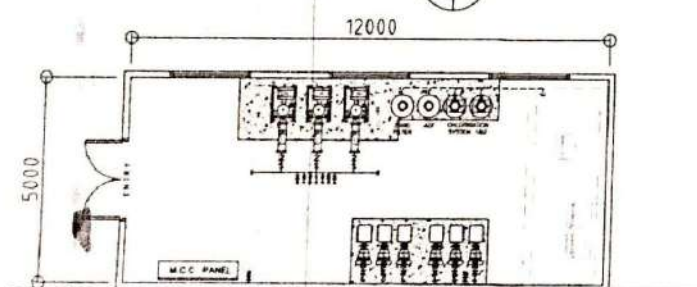
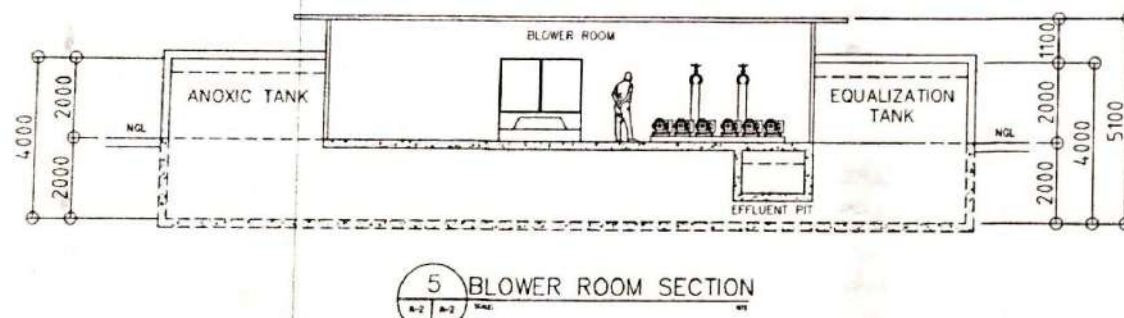
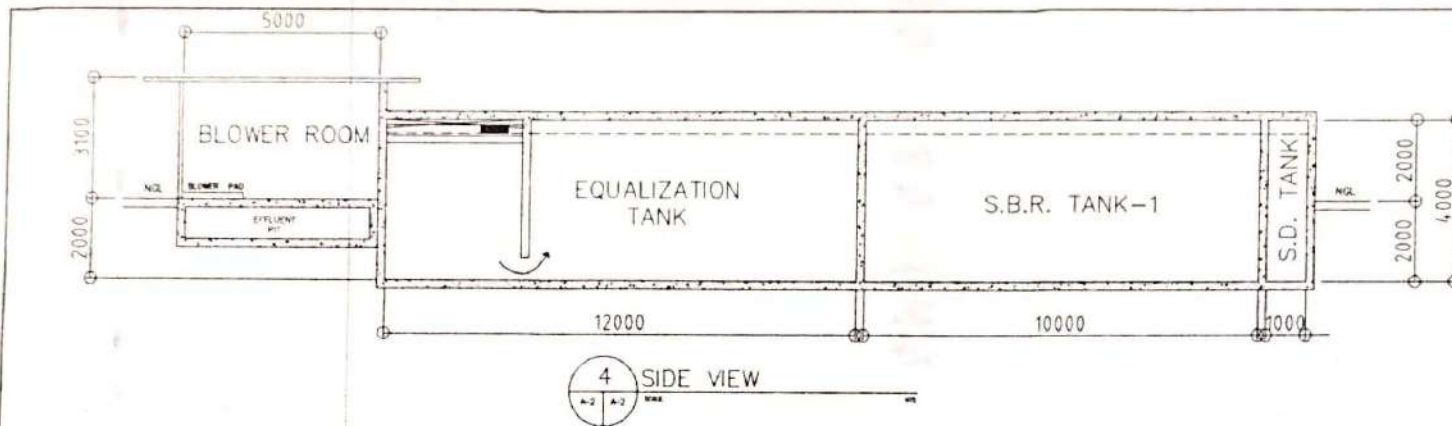
3 S.D. SECTION
A-2 A-2 SCALE NTS



REVISION				
REV NO	DATE	DESCRIPTION	DWN	CHK
01	01-12-2018	Final Issue	JVNE	BENR

	PREPARED BY MONTE R. TAMAYO ENGINEER	RECOMMENDING APPROVAL ROLANDO E. TANGCO Assistant Regional Director	APPROVED BY WILFREDO S. MALLARE REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUEBLO SALVADOR, CANTALAN, MINDORO		TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY SOUTH COTABATO DIVISION OFFICE SARILAYAN, COTABATO COTABATO DIVISION OFFICE SARILAYAN, COTABATO	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY NADY E. ATAME PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY AMELITA S. CACANGA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	RECOMMENDING APPROVAL NESTOR M. DOKALANTA ASSISTANT CHIEF OFFICER (PLANNING & DESIGN) SARILAYAN DIVISION OFFICE	APPROVED ROCHELITE PARAGAS CHIEF OPERATIONS OFFICER	P.A. SAs THE CHIEF OF THE DIVISION SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE DATA SUBMITTED	SHEET NO. S 5 20
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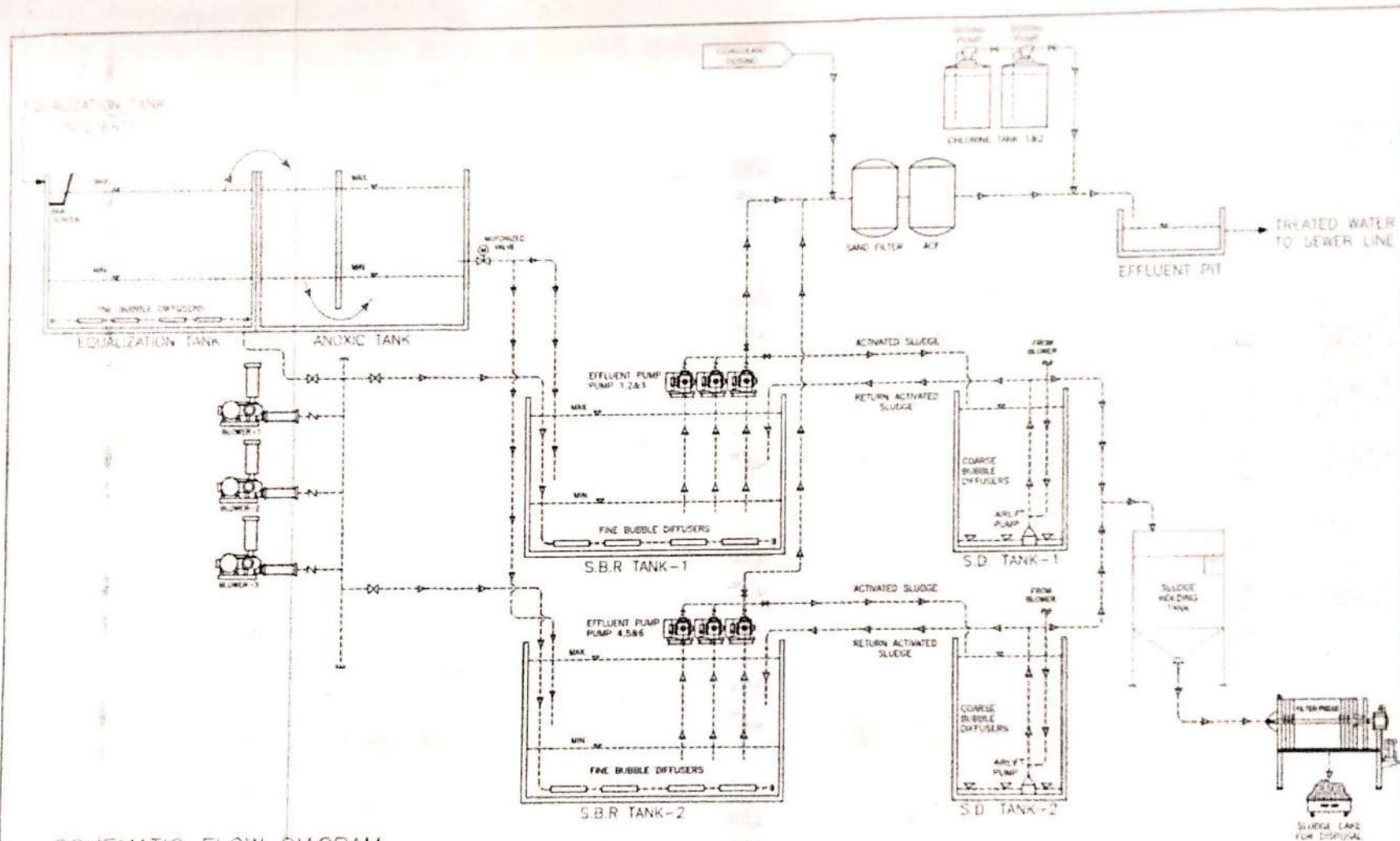


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Evaluation & Planning Department
FEB 14 2019

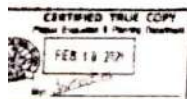
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REV NO.	DATE	DESCRIPTION	DWN	CKD
01	07.22.2019	Final Design	JVAE	BENR

	PREPARED BY MONTHEXIS T. TAMAYO ENGINEER II	RECOMMENDING APPROVAL YOLANDA LUTANGCO Assistant Regional Director	APPROVED BY WILFREDO E. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PRINCE GALERA, ORIENTAL MINDORO	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY NO. 4 TROKOS TOWN 1, DONATE OROZCO PLAZA, STABLE, SINOYAN, PANGLOSS, PANGLOSS, PANGLOSS CORNER 10th STREET & 11th STREET, PANGLOSS, PANGLOSS	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RADY E. ALPINE MANAGER PROJECT EVALUATION AND PLANNING DEPARTMENT	REVIEWED BY: AMELITA S. CAGANDA MANAGER PROJECT EVALUATION AND PLANNING DEPARTMENT	RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL, ENGINEERING SERVICES SECTION	APPROVED POCHOLO J. B. PARAGAS CHIEF OPERATING OFFICER	R.A. SAs S 6 20	SHEET NO.
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RWB-19-13



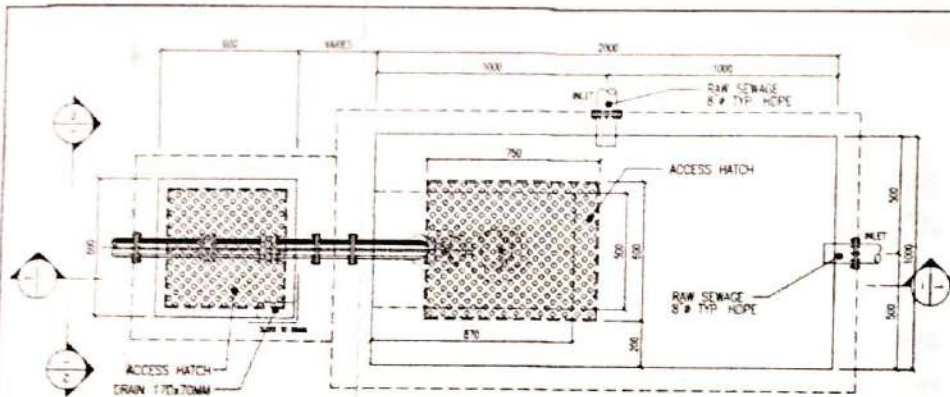
SCHEMATIC FLOW DIAGRAM
S.B.R. SYSTEM



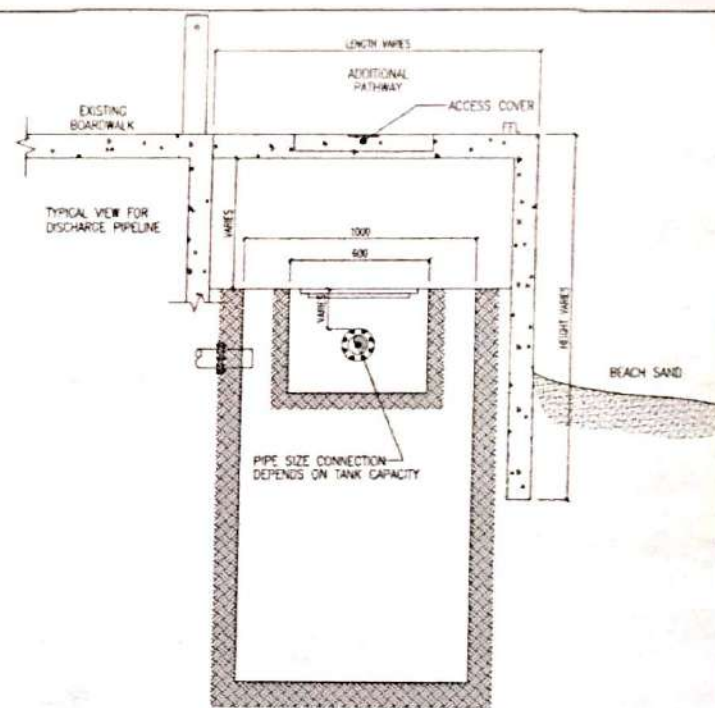
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01	07.23.2014	Final	JVAZ	BENR

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	MONTHEROS E. TAMAYO	ROLANDA L. TANGOS	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK		PREPARED BY	RECOMMENDING APPROVAL	APPROVED	APPROVED		
						RACIL E. ADAME	AMELITA S. CAGANCA	NESTOR M. DOMALANTA	ROCKLOD S. PARAGAS		S 7
											20

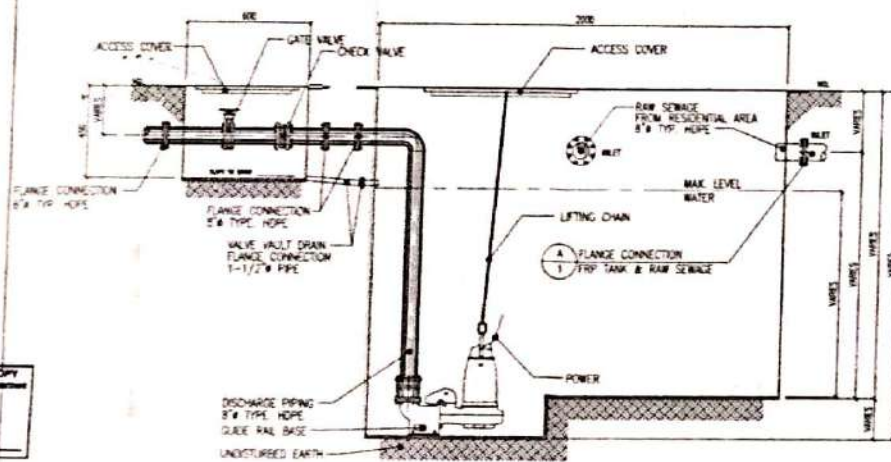
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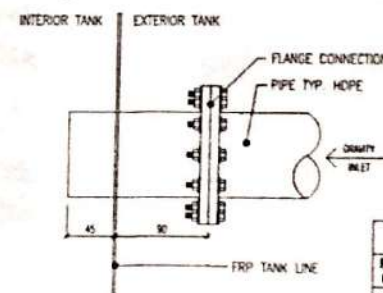
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SCALE NTS



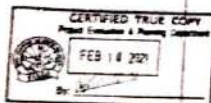
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1 PLAN-LIFT STATION FRP TANK & VALVE VAULT
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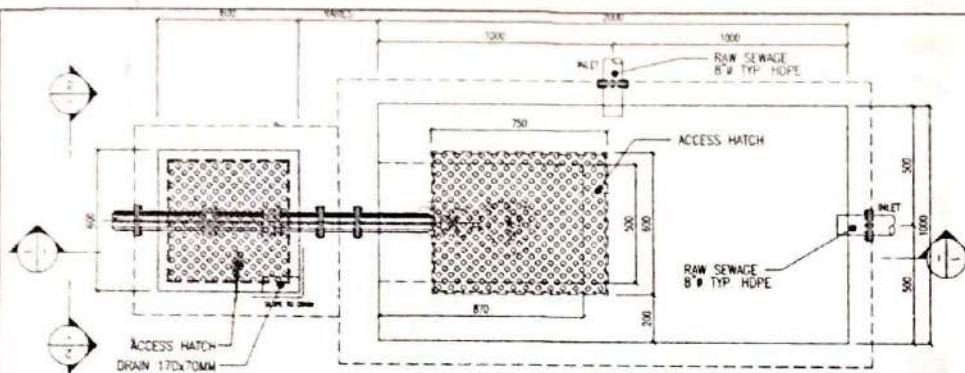


A TYPICAL FRP TANK LINE PIPE
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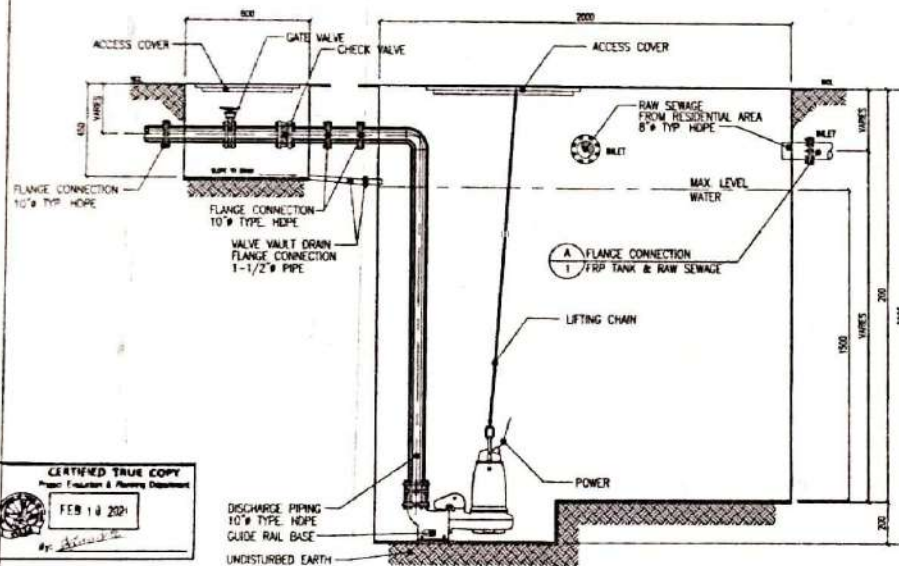


	PREPARED BY MAONTEIX T. AMATO	RECOMMENDING APPROVAL YOLANDA L. YANIGCO	APPROVED BY WILFREDO S. MALLARI	PROJECT TITLE/LOCATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 1000 TOWER 1, DOUBLE DRAGON PLAZA 8888 BAYVIEW DRIVE, SUITE 100, BAYVIEW, CALIFORNIA 94026-3500	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RAY E. ADAME REVIEWED BY: AMELITA S. CASAGNIA	RECOMMENDING APPROVAL NESTOR M. DOMALANTA	APPROVED POCHOLIO D. PARAGAS	SHEET NO. S 8 20
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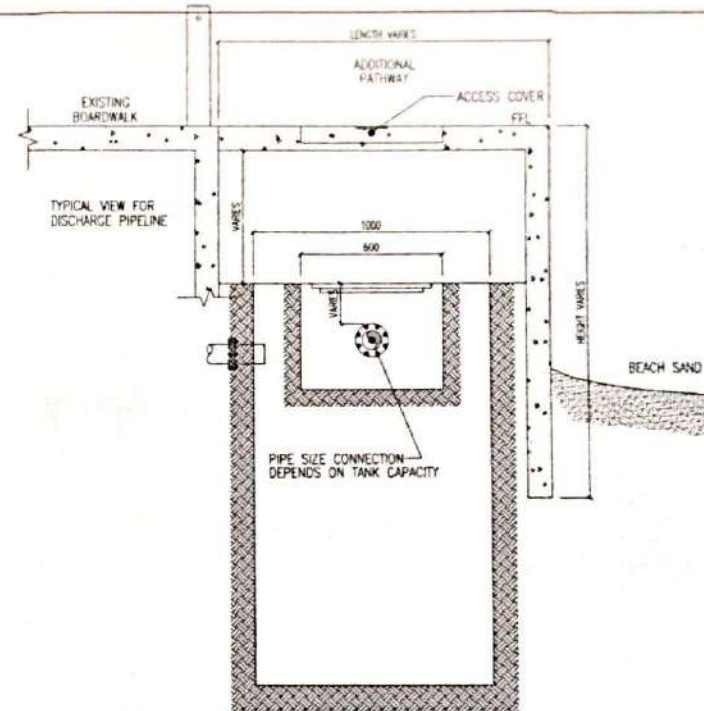
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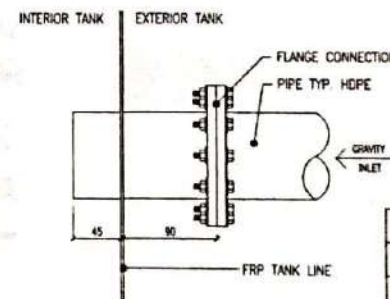
PLAN-LIFT STATION FRP TANK & VALVE VAULT
SCALE NTS



PLAN-LIFT STATION FRP TANK & VALVE VAULT
SCALE NTS



SECTION-TYPICAL
SCALE NTS



TYPICAL FRP TANK LINE PIPE
SCALE NTS

REVISION				
REV NO.	DATE	DESCRIPTION	DWN	CHK
1	07 19 2019	First Issue	JYAE	BENR

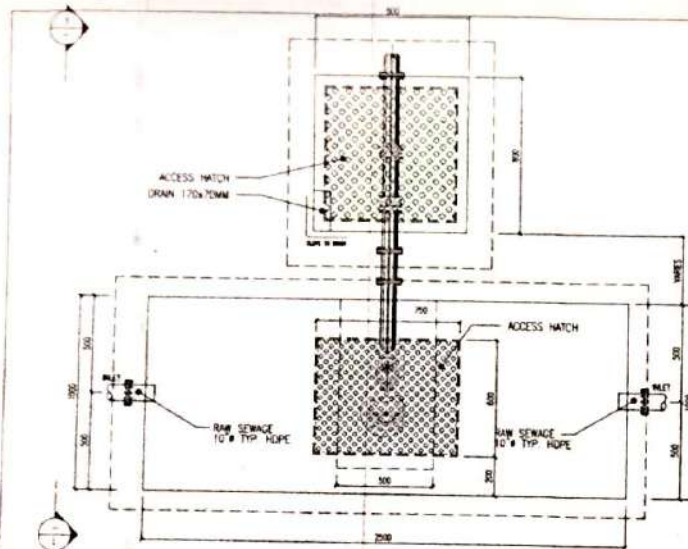
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Project Evaluation & Planning Department
FEB 14 2021
By: [Signature]

 PREPARED BY: MONTERIS T. TAMAYO ENGINEER	RECOMMENDING APPROVAL: YOLANDA W. TANGCO OFFICE OF THE ASSISTANT DIRECTOR	APPROVED BY: WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION: SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO
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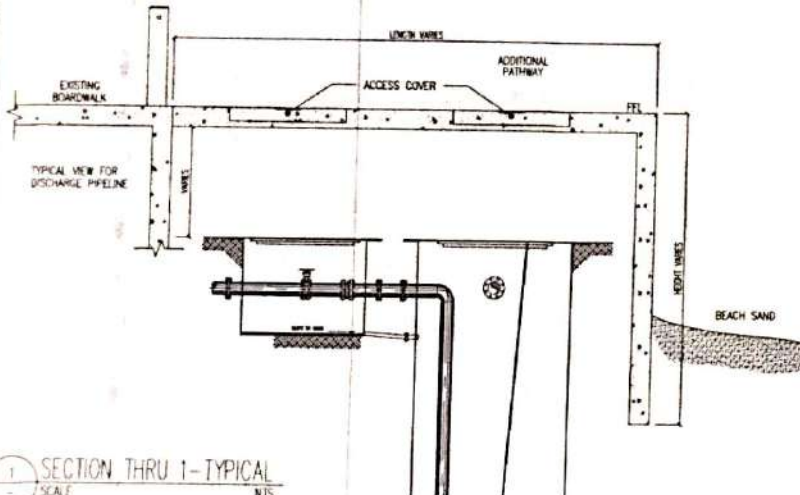
TIEZA
TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY
BY 8 19 TOURISM TOWER 1, DOUBLE DRAGON PLAZA
3RD FLOOR, JACOR RECREATION PARK, BANGALUA, CUBAO, MANILA
CORPORATE IDENTITY BY AREA, REG. 011 138

PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RADY E. ADAME PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY: AMELITA S. CAGANDA BRANCH: PROJECT EVALUATION & PLANNING DEPARTMENT	RECOMMENDING APPROVAL: NESTOR M. DOMALANTA ASSISTANT CHIEF, OPERATING DIVISION ARCHITECTURAL & ENVIRONMENTAL SERVICES SECTION	APPROVED: POCHOLO J. D. PARAGAS CHIEF, OPERATING DIVISION	R.A. 545 SHEET NO. S 9 20
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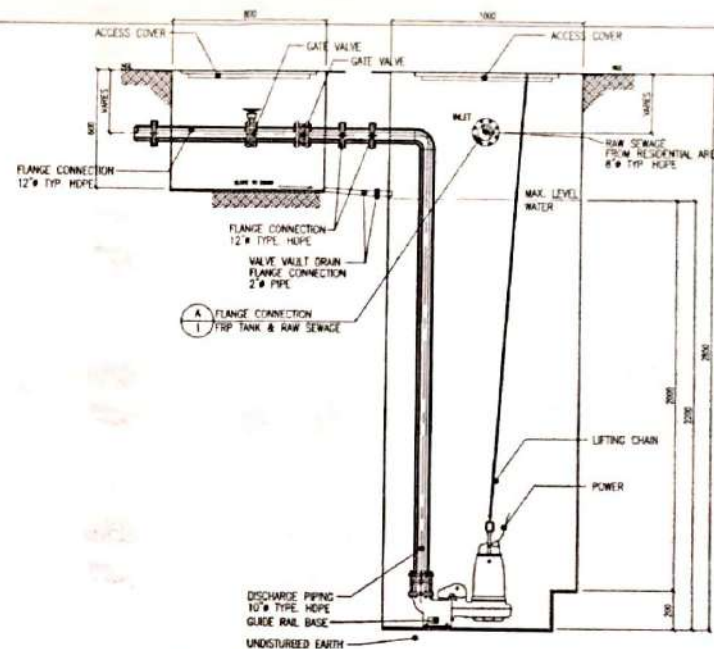
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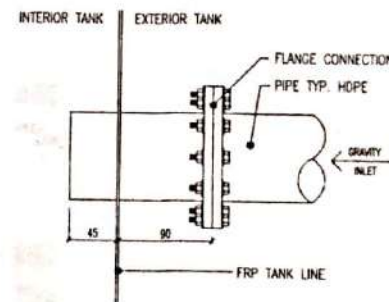
PLAN-LIFT STATION FRP TANK & VALVE VAULT
SCALE NTS



SECTION THRU 1-TYPICAL
SCALE NTS



SECTION-TYPICAL
SCALE NTS



TYPICAL FRP TANK LINE PIPE
SCALE NTS

REVISION				
REV NO.	DATE	DESCRIPTION	DWN	CKD
00	07.19.2019	First Issue	JVAE	BENR

	PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION
	YOLANDA D. PANGCO MONTECRISTO 1, TAMAYO ENGINEER	WILFREDO S. MALLARI REGIONAL DIRECTOR		SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO



TIEZA
TOURISM INFRASTRUCTURE AND
ENTERPRISE ZONE AUTHORITY
101 A, 101 B, 101 C, 101 D, 101 E, 101 F, 101 G, 101 H, 101 I, 101 J, 101 K, 101 L, 101 M, 101 N, 101 O, 101 P, 101 Q, 101 R, 101 S, 101 T, 101 U, 101 V, 101 W, 101 X, 101 Y, 101 Z, 101 AA, 101 AB, 101 AC, 101 AD, 101 AE, 101 AF, 101 AG, 101 AH, 101 AI, 101 AJ, 101 AK, 101 AL, 101 AM, 101 AN, 101 AO, 101 AP, 101 AQ, 101 AR, 101 AS, 101 AT, 101 AU, 101 AV, 101 AW, 101 AX, 101 AY, 101 AZ, 101 BA, 101 BB, 101 BC, 101 BD, 101 BE, 101 BF, 101 BG, 101 BH, 101 BI, 101 BJ, 101 BK, 101 BL, 101 BM, 101 BN, 101 BO, 101 BP, 101 BQ, 101 BR, 101 BS, 101 BT, 101 BU, 101 BV, 101 BW, 101 BX, 101 BY, 101 BZ, 101 CA, 101 CB, 101 CC, 101 CD, 101 CE, 101 CF, 101 CG, 101 CH, 101 CI, 101 CJ, 101 CK, 101 CL, 101 CM, 101 CN, 101 CO, 101 CP, 101 CQ, 101 CR, 101 CS, 101 CT, 101 CU, 101 CV, 101 CW, 101 CX, 101 CY, 101 CZ, 101 DA, 101 DB, 101 DC, 101 DD, 101 DE, 101 DF, 101 DG, 101 DH, 101 DI, 101 DJ, 101 DK, 101 DL, 101 DM, 101 DN, 101 DO, 101 DP, 101 DQ, 101 DR, 101 DS, 101 DT, 101 DU, 101 DV, 101 DW, 101 DX, 101 DY, 101 DZ, 101 EA, 101 EB, 101 EC, 101 ED, 101 EE, 101 EF, 101 EG, 101 EH, 101 EI, 101 EJ, 101 EK, 101 EL, 101 EM, 101 EN, 101 EO, 101 EP, 101 EQ, 101 ER, 101 ES, 101 ET, 101 EU, 101 EV, 101 EW, 101 EX, 101 EY, 101 EZ, 101 FA, 101 FB, 101 FC, 101 FD, 101 FE, 101 FF, 101 FG, 101 FH, 101 FI, 101 FJ, 101 FK, 101 FL, 101 FM, 101 FN, 101 FO, 101 FP, 101 FQ, 101 FR, 101 FS, 101 FT, 101 FU, 101 FV, 101 FW, 101 FX, 101 FY, 101 FZ, 101 GA, 101 GB, 101 GC, 101 GD, 101 GE, 101 GF, 101 GG, 101 GH, 101 GI, 101 GJ, 101 GK, 101 GL, 101 GM, 101 GN, 101 GO, 101 GP, 101 GQ, 101 GR, 101 GS, 101 GT, 101 GU, 101 GV, 101 GW, 101 GX, 101 GY, 101 GZ, 101 HA, 101 HB, 101 HC, 101 HD, 101 HE, 101 HF, 101 HG, 101 HH, 101 HI, 101 HJ, 101 HK, 101 HL, 101 HM, 101 HN, 101 HO, 101 HP, 101 HQ, 101 HR, 101 HS, 101 HT, 101 HU, 101 HV, 101 HW, 101 HX, 101 HY, 101 HZ, 101 IA, 101 IB, 101 IC, 101 ID, 101 IE, 101 IF, 101 IG, 101 IH, 101 II, 101 IJ, 101 IK, 101 IL, 101 IM, 101 IN, 101 IO, 101 IP, 101 IQ, 101 IR, 101 IS, 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101 SK, 101 SL, 101 SM, 101 SN, 101 SO, 101 SP, 101 SQ, 101 SR, 101 SS, 101 ST, 101 SU, 101 SV, 101 SW, 101 SX, 101 SY, 101 SZ, 101 TA, 101 TB, 101 TC, 101 TD, 101 TE, 101 TF, 101 TG, 101 TH, 101 TI, 101 TJ, 101 TK, 101 TL, 101 TM, 101 TN, 101 TO, 101 TP, 101 TQ, 101 TR, 101 TS, 101 TT, 101 TU, 101 TV, 101 TW, 101 TX, 101 TY, 101 TZ, 101 UA, 101 UB, 101 UC, 101 UD, 101 UE, 101 UF, 101 UG, 101 UH, 101 UI, 101 UJ, 101 UK, 101 UL, 101 UM, 101 UN, 101 UO, 101 UP, 101 UQ, 101 UR, 101 US, 101 UT, 101 UY, 101 UZ, 101 VA, 101 VB, 101 VC, 101 VD, 101 VE, 101 VF, 101 VG, 101 VH, 101 VI, 101 VJ, 101 VK, 101 VL, 101 VM, 101 VN, 101 VO, 101 VP, 101 VQ, 101 VR, 101 VS, 101 VT, 101 VU, 101 VV, 101 VW, 101 VX, 101 VY, 101 VZ, 101 WA, 101 WB, 101 WC, 101 WD, 101 WE, 101 WF, 101 WG, 101 WH, 101 WI, 101 WJ, 101 WK, 101 WL, 101 WM, 101 WN, 101 WO, 101 WP, 101 WQ, 101 WR, 101 WS, 101 WT, 101 WU, 101 WV, 101 WW, 101 WX, 101 WY, 101 WZ, 101 XA, 101 XB, 101 XC, 101 XD, 101 XE, 101 XF, 101 XG, 101 XH, 101 XI, 101 XJ, 101 XK, 101 XL, 101 XM, 101 XN, 101 XO, 101 XP, 101 XQ, 101 XR, 101 XS, 101 XT, 101 XU, 101 XV, 101 XW, 101 XX, 101 XY, 101 XZ, 101 YA, 101 YB, 101 YC, 101 YD, 101 YE, 101 YF, 101 YG, 101 YH, 101 YI, 101 YJ, 101 YK, 101 YL, 101 YM, 101 YN, 101 YO, 101 YP, 101 YQ, 101 YR, 101 YS, 101 YT, 101 YU, 101 YV, 101 YW, 101 YX, 101 YY, 101 YZ, 101 ZA, 101 ZB, 101 ZC, 101 ZD, 101 ZE, 101 ZF, 101 ZG, 101 ZH, 101 ZI, 101 ZJ, 101 ZK, 101 ZL, 101 ZM, 101 ZN, 101 ZO, 101 ZP, 101 ZQ, 101 ZR, 101 ZS, 101 ZT, 101 ZU, 101 ZV, 101 ZW, 101 ZX, 101 ZY, 101 ZZ

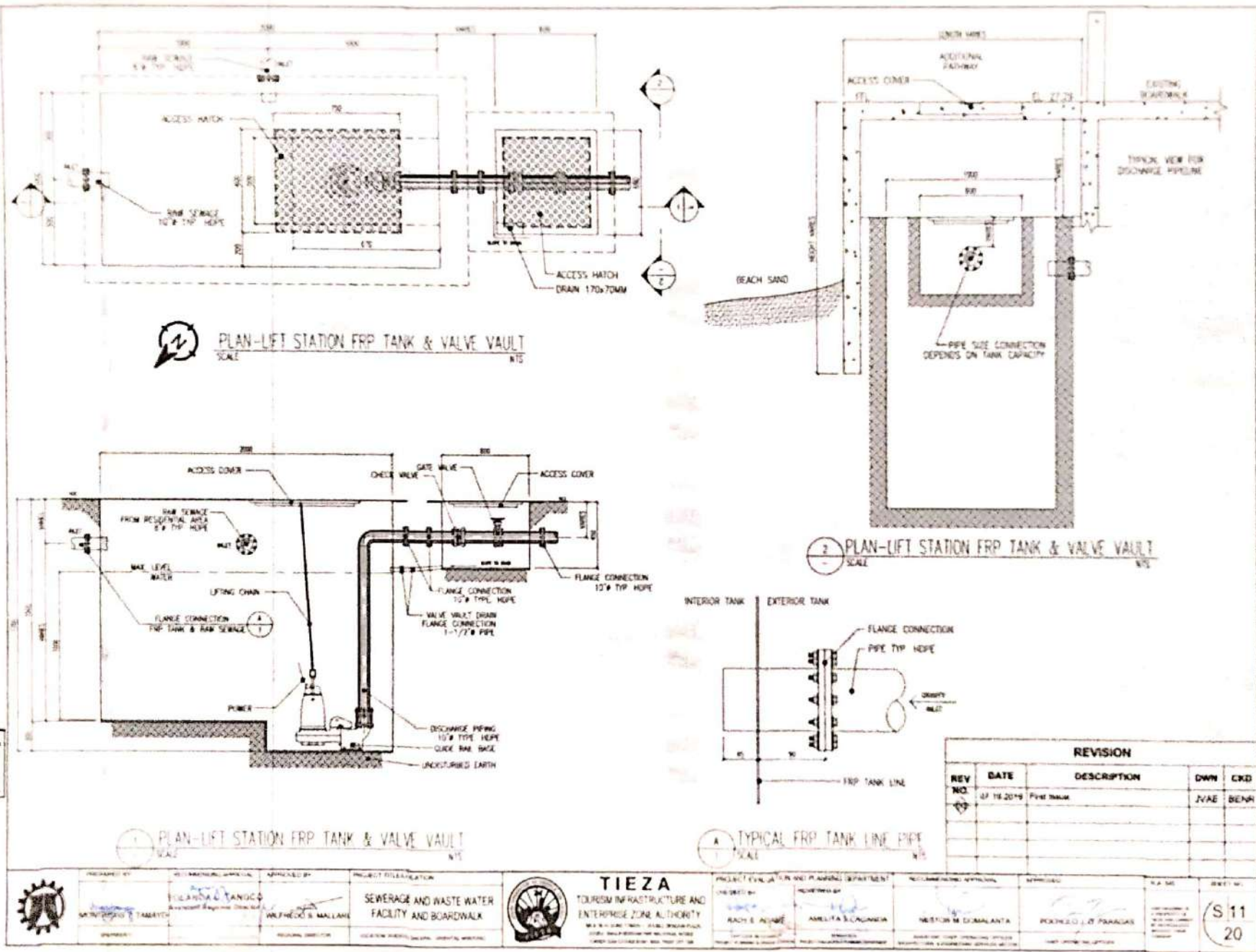
PROJECT EVALUATION AND PLANNING DEPARTMENT	
CHECKED BY RADY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN SECTION	REVIEWED BY AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT

RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED POCHOLO J. O. PARAGAS CHIEF OPERATING OFFICER
---	--

P.A. 145	SHEET NO.
	S10 20

NOTED: THIS DRAWING IS A PRELIMINARY DESIGN AND SUBJECT TO REVISIONS AND CANCELLATION OF THE DESIGN.
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RWB-14-13



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Project Evaluation & Planning Department
FEB 18 2021

REVISION				
REV NO.	DATE	DESCRIPTION	DWN	CRD
1	17 10 2019	PIPE TANK	JVAE	BEHR

	PREPARED BY SATVINDRA S. TAMBAYAN	REVIEWED BY FULANDA S. TANDOG	APPROVED BY WILFREDO S. MALLANA	PROJECT EVALUATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK		PROJECT EVALUATION AND PLANNING DEPARTMENT PREPARED BY RACH S. AGUIBE	REVIEWED BY AMELITA S. CAGANAN	APPROVED BY NESTOR M. SUMALANTA	PROJECT EVALUATION POORHOLD LIT PARAGAS	PROJECT NO. S.11 20
	PROJECT NO. S.11 20	PROJECT NO. S.11 20	PROJECT NO. S.11 20	PROJECT NO. S.11 20		PROJECT NO. S.11 20	PROJECT NO. S.11 20	PROJECT NO. S.11 20	PROJECT NO. S.11 20	PROJECT NO. S.11 20

Plan-17-13

CONSTRUCTION NOTES

A. GENERAL

1. CONSTRUCTION NOTES AND TYPICAL DETAILS APPLY TO ALL STRUCTURES UNLESS OTHERWISE NOTED IN PLANS.
2. SHALL COMPLY WITH THE LATEST EDITIONS OF ALL STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, AND PLUMBING CODES AND STANDARDS.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE ALL WORK IS TO BE DONE. VERIFY WITH MEASUREMENT AND ELECTRICAL CONTINUITY FOR CONCRETE, PIPE, TUBES, ETC. TO BE INDICATED IN CONCRETE.
4. IF SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ADEQUATE DRAINAGE AND SEWERAGE OF THE STRUCTURE FOR ALL LOCATIONS THAT MAY BE DAMAGED DURING CONSTRUCTION.

B. CONCRETE & REINFORCEMENT

1. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE LATEST BUILDING CODES OF AMERICAN CONCRETE INSTITUTE (ACI-318).
 2. ALL CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH AT THE TIME OF POURING (EIGHT (8) DAYS WITH CORRESPONDING MODULUS OF ELASTICITY AND TENSILE STRENGTH AS FOLLOWS:
- | LOCATION | 28 DAYS STRENGTH | MAX. SIZE AGGREGATE | MAX. SLUMP |
|-----------------------------|------------------|---------------------|--------------|
| CHAMBER & SLAB ON GROUND | 3000 PSI | 1 IN (25mm) | 4 IN (100mm) |
| FOUNDATION & RETAINING WALL | 3000 PSI | 3/4 IN (19mm) | 4 IN (100mm) |
| CULVERT | 3000 PSI | 3/4 IN (19mm) | 4 IN (100mm) |
| DRAINS & SLABS | 3000 PSI | 3/4 IN (19mm) | 4 IN (100mm) |

3. ALL REINFORCEMENT SHALL COMPLY TO ASTM A635 GRADE 60 FOR STEEL AND ASTM A635 GRADE 60 FOR STEEL AND ASTM A635 GRADE 60 FOR STEEL.
4. IN GENERAL, THE LATEST EDITIONS OF ALL STRUCTURAL, CIVIL, MECHANICAL, ELECTRICAL, AND PLUMBING CODES AND STANDARDS SHALL BE REFERRED TO UNLESS OTHERWISE NOTED IN PLANS.
5. WHATEVER MINIMUM CONCRETE COVER FOR REINFORCING STEEL AS FOLLOWS:

SPREPCAST SLABS	3/4 IN (19mm)
SLAB ON GROUND	1 1/2 IN (38mm)
WALLS ABOVE GROUND	1 IN (25mm)
BEAM, STAIRWAYS, AND COLUMN TIES	1 1/2 IN (38mm)
WHERE CONCRETE IS EXPOSED TO EARTH BUT FORMED AGAINST FORMS	2 IN (51mm)
WHERE CONCRETE IS EXPOSED TO WEATHER	3 IN (76mm)
DIRECTLY AGAINST EARTH	3 IN (76mm)

6. SPICES SHALL BE SECURELY TIED TOGETHER AND SHALL LAP OR EXTEND IN ACCORDANCE WITH TABLE 1. TIES OF LAP SPICES SHALL BE SECURED BY THE CONTRACTOR (TIES IN CHAIRS) SPICES SHALL BE STAGGERED WHENEVER POSSIBLE.
7. ALL ANCHOR BOLTS, BOWLS, AND OTHER BOLTS SHALL BE PROPERLY POSITIONED AND SECURED IN PLACE PRIOR TO PLACING OF CONCRETE.
8. CONTRACTOR SHALL NOTE AND PROVIDE ALL UNDESIRABLE CORNERS, SLABS, STAIRS, CHAIRS, AND MECHANICAL BOLTS THAT ARE REQUIRED BY THE ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS.
9. ALL CONCRETE SHALL BE KEPT MOIST FOR A MINIMUM OF SEVEN (7) DAYS AFTER PLACING AND SHALL BE PROTECTED BY THE USE OF A WET BURLAP FOR CURING. CURING COMPOUND OR OTHER APPROVED MATERIALS.

C. FORMWORK

1. FORMWORK SHALL BE REMOVED IN THE MANNER OF SLAB REMOVAL WITH A MINIMUM OF 24 HOURS.
2. FORMWORK SHALL BE REMOVED IN THE MANNER OF SLAB REMOVAL WITH A MINIMUM OF 24 HOURS.
3. FORMWORK SHALL BE REMOVED IN THE MANNER OF SLAB REMOVAL WITH A MINIMUM OF 24 HOURS.

D. CAMBER REQUIREMENTS

1. UNLESS OTHERWISE NOTED ON THE PLANS OR SPECIFICATIONS, CAMBER SHALL BE REMOVED AT LEAST 10% FOR EVERY 1000MM OF CLEAR SPAN EXCEPT COMPLETION WHICH SHALL BE 10% FOR EVERY 1000MM OF CLEAR SPAN.
2. UNLESS OTHERWISE NOTED IN PLANS OR SPECIFICATIONS, CAMBER ALL SLABS SHALL BE 10% FOR EVERY 1000MM OF CLEAR SPAN AND 10% FOR EVERY 1000MM OF CLEAR SPAN.

E. FOUNDATION

1. FOUNDATION IS DETACHED BASES ON THE ASSUMED VALUE IN THE MANNER OF SLAB REMOVAL WITH A MINIMUM OF 24 HOURS.
2. FOUNDATION SHALL BE REMOVED IN THE MANNER OF SLAB REMOVAL WITH A MINIMUM OF 24 HOURS.
3. THE CONTRACTOR SHALL VERIFY THE ENGINEER AFTER FINISHING EXCAVATION HAVE BEEN COMPLETED AND PRIOR TO CONCRETING TO CONFIRM THE DESIGN SOIL BEARING CAPACITY.

NOTES ON MASONRY AND CONCRETE BLOCKS

1. ALL CONCRETE BLOCKS MUST DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4.50 MPa UNLESS OTHERWISE NOTED IN PLANS.
2. PROVIDE 1 #10 (19mm) VERTICAL BARS AT CORNERS, INTERSECTIONS, END OF WALLS, AND EACH SIDE OF CORNERS AS SHOWN.
3. LAPPED BARS OF LATER BLOCKS SHALL BEAR AT LEAST 8 INCHES (200mm) ON EACH SIDE OF MASONRY WALL (SHOWN).

A. WALL REINFORCEMENTS SHALL BE AS FOLLOWS:

WALL THICKNESS	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT
8 IN (200mm)	#10 @ 480mm	#10 @ 800mm
8 IN (150mm)	#10 @ 480mm	#10 @ 800mm
8 IN (100mm)	#10 @ 480mm	#10 @ 800mm

5. BLOCK WALL REINFORCING BARS SHALL BE LAPPED A MINIMUM OF 30 BAR DIAMETERS (30d) WHERE SPACED HORIZONTAL/VERTICAL CORNERS FROM HORIZONTAL COLUMNS/WALLS OR SLABS SHALL EXCEED THE 30d MINIMUM OF 30 BAR DIAMETERS (30d) OR A MINIMUM OF 480mm. HOWEVER IS LONGER AND BOWLS TO MATCH VERTICAL REINFORCEMENTS OF WALL.

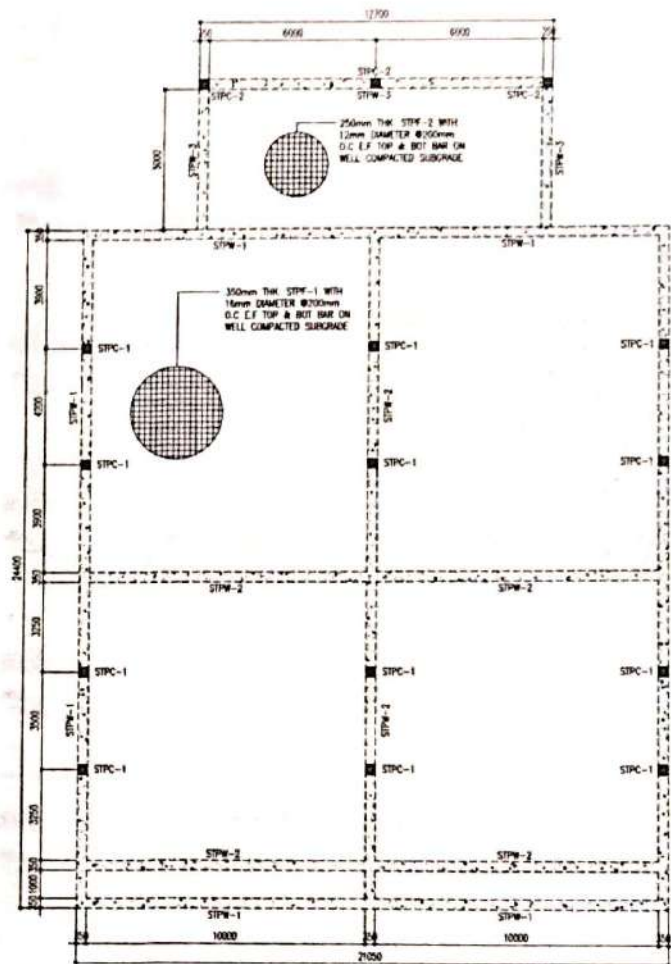
6. ALL CELLS CONTAINING REINFORCING BARS OF BOWLS SHALL BE TIGHTLY FILLED WITH CONCRETE (SHOWN TO SPECIFICATIONS).

2. R.C. WALL REINFORCEMENTS SHALL BE AS FOLLOWS:

WALL THICKNESS	VERTICAL REINFORCEMENT	HORIZONTAL REINFORCEMENT	LOCATION
200mm	#10 @ 300mm	#10 @ 300mm	CENTER LINE
150mm	#10 @ 250mm	#10 @ 300mm	CENTER LINE
120mm	#10 @ 300mm	#10 @ 400mm	CENTER LINE
100mm	#10 @ 400mm	#10 @ 400mm	CENTER LINE

8. VERTICAL REINFORCEMENT SHALL BE CONTINUOUS FROM STRUCTURAL LEVEL TO STRUCTURAL LEVEL UNLESS OTHERWISE NOTED.
9. HORIZONTAL SPACING SHALL START AND END FROM NOT MORE THAN 1/3 THE SCHEDULE SPACING.
10. SPICES IN HORIZONTAL REINFORCEMENT SHALL BE STAGGERED SPICES IN TWO DIRECTIONS SHALL NOT OCCUR IN THE SAME LOCATION.
11. THIS TABLE APPLIES TO WALLS WHICH ARE ARCHITECTURALLY EXPOSED TO VIEW.
12. TENSION SPICES SHALL BE AS FOR SETTING TENSION SPICES.

PARAMETERS									
WALL THICKNESS (mm)	WALL THICKNESS (in)	WALL THICKNESS (mm)	WALL THICKNESS (in)	WALL THICKNESS (mm)	WALL THICKNESS (in)	WALL THICKNESS (mm)	WALL THICKNESS (in)	WALL THICKNESS (mm)	WALL THICKNESS (in)
100	4	150	6	200	8	250	10	300	12
350	14	400	16	450	18	500	20	550	22
600	24	650	26	700	28	750	30	800	32
850	34	900	36	950	38	1000	40	1050	42
1100	44	1150	46	1200	48	1250	50	1300	52
1350	54	1400	56	1450	58	1500	60	1550	62
1600	64	1650	66	1700	68	1750	70	1800	72
1900	76	1950	78	2000	80	2050	82	2100	84
2150	86	2200	88	2250	90	2300	92	2350	94
2600	104	2650	106	2700	108	2750	110	2800	112
2900	116	2950	118	3000	120	3050	122	3100	124
3200	128	3250	130	3300	132	3350	134	3400	136
3500	140	3550	142	3600	144	3650	146	3700	148
3800	152	3850	154	3900	156	3950	158	4000	160
4100	164	4150	166	4200	168	4250	170	4300	172
4400	176	4450	178	4500	180	4550	182	4600	184
4700	188	4750	190	4800	192	4850	194	4900	196
5000	200	5050	202	5100	204	5150	206	5200	208
5300	212	5350	214	5400	216	5450	218	5500	220
5600	224	5650	226	5700	228	5750	230	5800	232
5900	236	5950	238	6000	240	6050	242	6100	244
6200	248	6250	250	6300	252	6350	254	6400	256
6500	260	6550	262	6600	264	6650	266	6700	268
6800	272	6850	274	6900	276	6950	278	7000	280
7100	284	7150	286	7200	288	7250	290	7300	292
7400	296	7450	298	7500	300	7550	302	7600	304
7700	308	7750	310	7800	312	7850	314	7900	316
8000	320	8050	322	8100	324	8150	326	8200	328
8300	332	8350	334	8400	336	8450	338	8500	340
8600	344	8650	346	8700	348	8750	350	8800	352
8900	356	8950	358	9000	360	9050	362	9100	364
9200	376	9250	378	9300	380	9350	382	9400	384
9500	396	9550	398	9600	400	9650	402	9700	404
9800	416	9850	418	9900	420	9950	422	10000	424



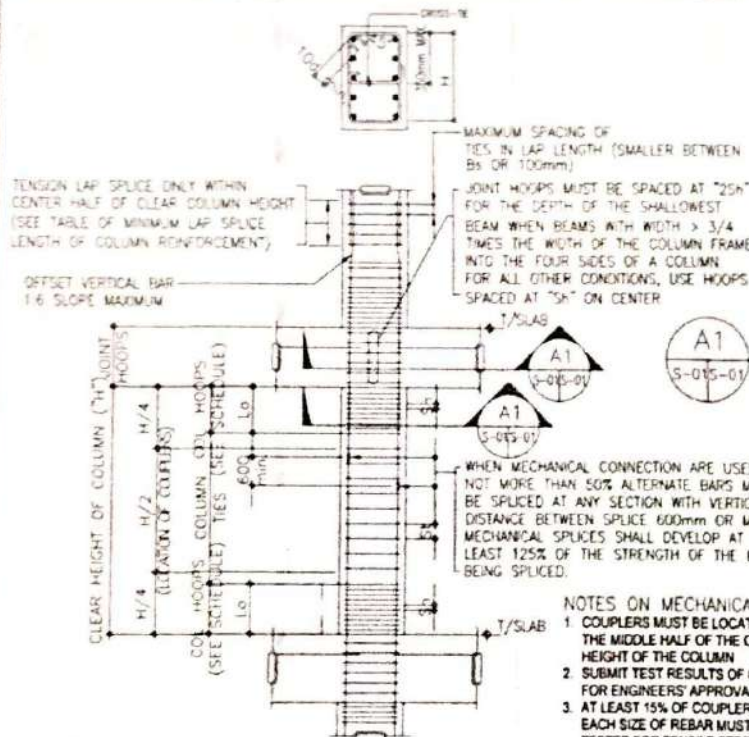
STP FOUNDATION PLAN
SCALE: 1:100 M

CERTIFIED TRUE COPY
From: **STP Foundation & Planning Department**
Date: **FEB 10 2017**
By: **[Signature]**

STP FOUNDATION PLAN & CONSTRUCTION NOTES

DESIGNED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT	RECOMMENDING APPROVAL	APPROVED	R.A. 545	SHEET NO.
MONTREY S. TAMAYO	YOLANDA S. TANGCO	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK	CHECKED BY: RADY E. ADAME REVIEWED BY: AMELITA S. GAGANDA	NESTOR M. DOMALANTA	POCHOLO J. D. PARAGAS	THE DRAWING IS A PROPERTY OF TIEZA AND CANNOT BE REPRODUCED WITHOUT THEIR CONSENT	S12 20
ENGINEER	REGIONAL DIRECTOR	REGIONAL DIRECTOR	LOCATION: PUNTO GALERA, ORIENTAL MINDORO	OFFICER IN CHARGE: [Signature] PROJECT MANAGER: [Signature]	ASSISTANT CHIEF OPERATING OFFICER: [Signature] ARCHITECTURAL & ENGINEERING SERVICES SECTION	CHIEF OPERATING OFFICER: [Signature]		

RWB-19-13



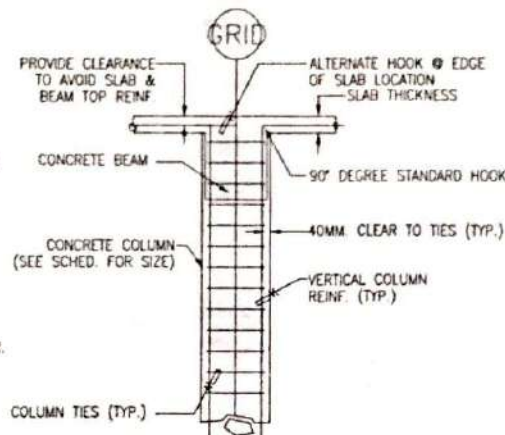
A1 DETAIL OF COMBINATION TIES
S-01S-01

- NOTES ON MECHANICAL COUPLERS:
1. COUPLERS MUST BE LOCATED WITHIN THE MIDDLE HALF OF THE CLEAR HEIGHT OF THE COLUMN
 2. SUBMIT TEST RESULTS OF COUPLERS FOR ENGINEERS' APPROVAL
 3. AT LEAST 15% OF COUPLERS FOR EACH SIZE OF REBAR MUST BE TESTED FOR TENSILE STRENGTH TEST

NOTES:

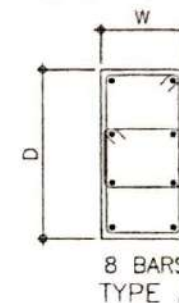
Sh = HOOP AND SUPPLEMENTARY CROSSTIE SPACING NOT TO EXCEED $B_s/4$ OR 100mm.
 Sl = COLUMN TIE SPACING, NOT TO EXCEED 16db OF VERTICALS, 48db OF TIES, B_s OR 150mm, WHICHEVER IS LESSER.
 Bs = SMALLER DIMENSION OF COLUMN CROSS SECTION
 Lo = LARGEST DIMENSION, 1/2 OF CLEAR HEIGHT OR 450mm, WHICHEVER IS GREATER.
 H = CLEAR HEIGHT OF COLUMN

A TYPICAL MOMENT FRAME CONCRETE COLUMN SPICE DETAIL
S-01S-01 SCALE: NTS



B TYPICAL GRAVITY TOP OF CONCRETE COLUMN DETAIL
S-01S-01

SCHEDULE OF REINFORCED CONCRETE COLUMNS			
FLOOR LEVEL	MARK	STPC-1	STPC-2
FON-DECK LEVEL	SIZE (WxD)	350X600	250X500
	VERTICAL BARS	8-#25	8-#16
	TIES/SPIRAL	2-#10@150	2-#10@200
	CONF REINF.	2-#10@100	2-#10@100
	JOINT REINF.	2-#10@100	2-#10@100
	TYPE	A	A

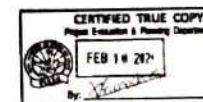


C COLUMN TYPES
S-01S-01 SCALE: NTS

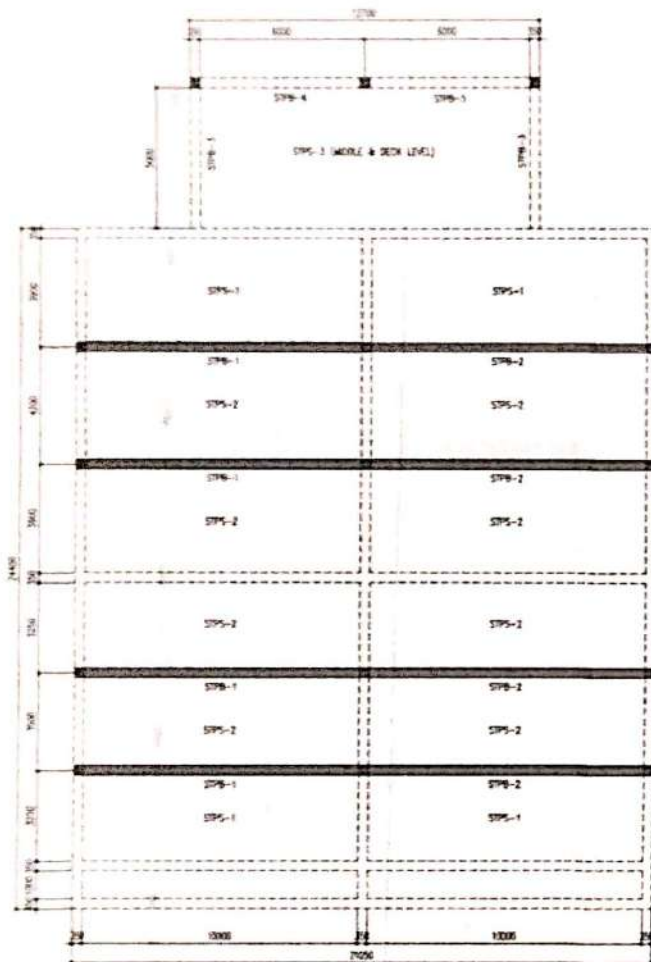
NOTE:

THE CONTRACTOR SHALL NOTIFY THE ENGINEER AFTER FOOTING EXCAVATION HAS BEEN COMPLETED, TO CONFIRM THE DESIGN SOIL BEARING CAPACITY. FOOTING AND COLUMN TO BE ADJUSTED UPON CONFIRMATION OF THE ACTUAL SOIL BEARING CAPACITY.

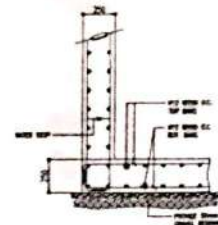
CONCRETE COLUMN PROFILE/W=WIDTH,D=DEPTH	SIZE (W X D)	SIZE OF COLUMNS
NUMBER & SIZE OF VERTICAL BARS REQUIRED	VERTICAL BARS	
NOTE: ALL BARS TO BE UNIFORMLY DISTRIBUTED AT PERIMETER	TYPE	TYPE OF REINFORCING LAYOUT
TYPE IS THE VERTICAL LAYOUT W/ NUMBER OF TIES & CONFIGURATION	SPIRAL/TIES	VERTICAL SPACING OF TIE HOOP REINF.
CONFINEMENT REINFORCING BAR FOR (SMRF) ABOVE & BELOW COLUMN JOINTS	COLUMN HOOPS	SIZE OF HOOPS REQUIRED
JOINT HOOPS REINFORCING FOR (SMRF) ABOVE & BELOW COLUMN JOINTS	JOINT HOOPS	



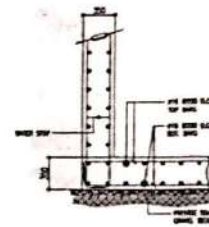
PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT		RECOMMENDING APPROVAL	APPROVED	R.A. SAs	SHEET NO
MONTREXIS T. JAMAYO ENGINEER II	YOLANDA S. FANGCO Assistant Planning & Director	WILFREDO S. MALLARI REGIONAL DIRECTOR	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA - ORIENTAL MINDORO	CHECKED BY RADY E. ADAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIV.	REVIEWED BY AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DEPARTMENT	NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	POCHOLO J. D. PARAGAS CHIEF OPERATING OFFICER	R.A. SAs	S 13 20



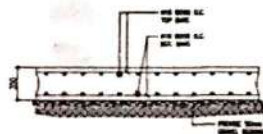
A STP DECK FRAMING PLAN
S-025-02 SCALE: 1:100 M



STPF-2

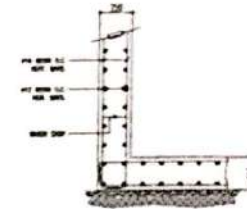


STPF-1

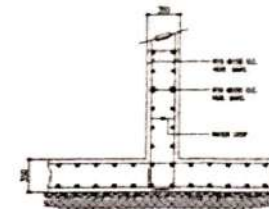


STPF-1

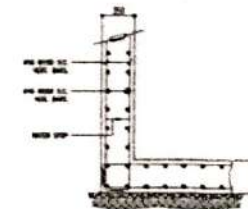
B STP FOOTING DETAILS
S-025-02 SCALE: 1:30 M



STPW-3

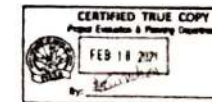


STPW-2

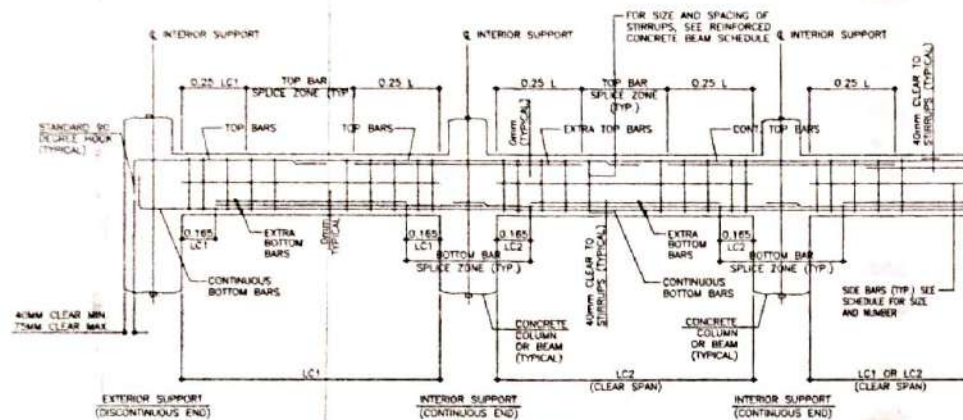


STPW-1

C STP R.C WALL DETAILS
S-025-02 SCALE: 1:30 M

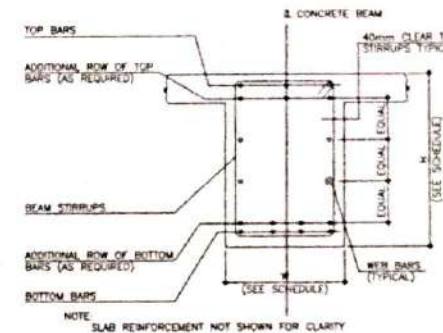


	DESIGNED BY: MONTECRISTO T. TAMAYO ENGINEER	RECOMMENDING APPROVAL: YOLANDA T. NIEGO ASSISTANT CHIEF OPERATING OFFICER	APPROVED BY: WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION: SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALINA, ORIENTAL MINDORO	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RADY E. ALJAME OFFICER IN CHARGE PROJECT PLANNING & DESIGN DIVISION	REVIEWED BY: AMELITA S. CAGANDA MANAGER PROJECT EVALUATION & PLANNING DIVISION	RECOMMENDING APPROVAL: NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED: POCHOLDO J. PARAGAS CHIEF OPERATING OFFICER	R. A. S. 405 SHEET NO.: S 14 20
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ELEVATION
A TYPICAL GRAVITY REINFORCED CONCRETE BEAM DETAIL
 5-035-03 NOT TO SCALE

- NOTES:**
1. LC1, LC2 = LENGTH OF CLEAR SPANS 1, 2 (FACE OF SUPPORT TO FACE OF SUPPORT)
 2. L = THE GREATER LENGTH OF CLEARSPAN LC1 OR LC2
 3. AT INTERIOR SUPPORT (CONTINUOUS END) PROVIDE LARGER SIZE AND NUMBER OF TOP BARS FROM ADJACENT SPANS
 4. EXTERIOR AND INTERIOR SUPPORT REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION



SCHEDULE OF REINFORCED CONCRETE BEAMS

FLOOR LEVEL LOCATION	BEAM MARK	BEAM CROSS		BAR #	LONGITUDINAL REINFORCEMENTS					STIRRUPS NO./SET	STIRRUPS #	STIRRUP SPACING	REMARKS
		WIDTH	DEPTH		DISCONT. A	CONT. A	MIDSPAN	CONT. B	DISCONT. B				
STP TOP SLAB	STPB-1	500	700	25	TR 6		6	11		1	12	1050, 140100, REST@200 TO CL	
					BR 6		6	6					
					TR		11	6	6				
					BR		6	6	6				
	STPB-2	500	700	25						1	12	1050, 140100, REST@200 TO CL	
					TR		2	2	2				
					BR		2	2	2				
	STPB-3	250	500	25						1	10	1050, 100100, REST@200 TO CL	
					TR		2	2	4				
					BR		2	2	2				
	STPB-4	250	500	25						1	10	1050, 100100, REST@200 TO CL	
					TR		4	2	2				
					BR		2	2	2				
	STPB-5	250	500	25						1	10	1050, 100100, REST@200 TO CL	
					TR								
					BR								

SCHEDULE OF REINFORCED CONCRETE BEAMS

FLOOR LEVEL LOCATION	BEAM MARK	BEAM CROSS		BAR #	LONGITUDINAL REINFORCEMENTS					STIRRUPS NO./SET	STIRRUPS #	STIRRUP SPACING	REMARKS
		WIDTH	DEPTH		DISCONT. A	CONT. A	MIDSPAN	CONT. B	DISCONT. B				
				TR									
				BR									
				TR									
				BR									
				TR									
				BR									
				TR									
				BR									
				TR									
				BR									



PREPARED BY: **MONTECRISTO J. JAMAYO**
 RECOMMENDING APPROVAL: **YOELANDA E. JANGCO**
 APPROVED BY: **WILFREDO S. MALLARI**
 PROJECT TITLE/LOCATION: **SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK**
 LOCATION: **PUERTO GALERA, ORIENTAL MINDORO**

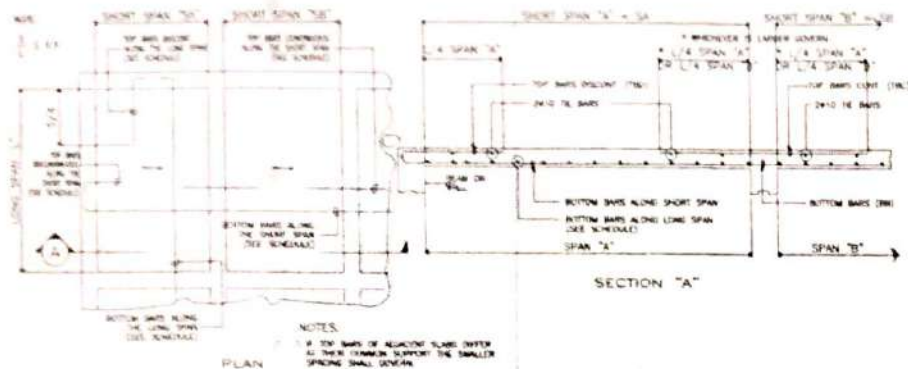


TIEZA
 TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY
 8F & 9F FLOORS TOWER 1, DOUBLE ORANGE PLAZA,
 DOUBLE ORANGE MEGAMARKET, ANAVAL, ALABAL
 CORNER LUNA STREET AND MIA ROAD, CITY OF BAC

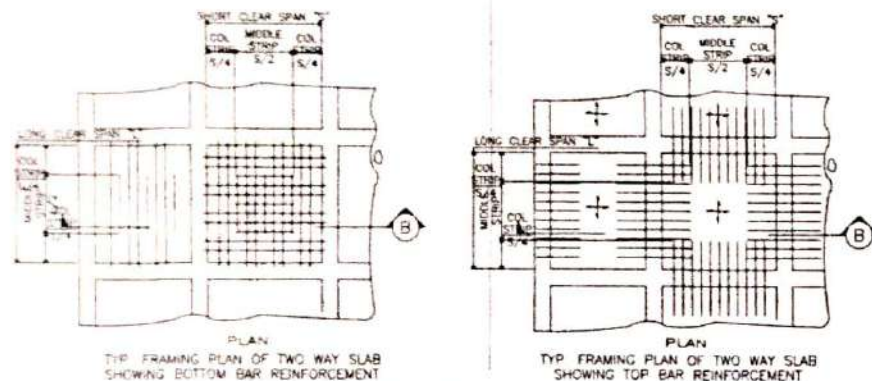
PROJECT EVALUATION AND PLANNING DEPARTMENT
 CHECKED BY: **RADY E. ADAME**
 REVIEWED BY: **AMELITA S. CAGANDA**
 RECOMMENDING APPROVAL: **NESTOR M. DOMALANTA**
 APPROVED: **POCHOLO J. D. PARAGAS**
 OFFICIAL INCHARGE: **PROJECT EVALUATION & PLANNING DEPARTMENT**
 ASSISTANT CHIEF OPERATING OFFICER: **ARCHITECTURAL & ENGINEERING SERVICES SECTION**
 CHIEF OPERATING OFFICER: **ARCHITECTURAL & ENGINEERING SERVICES SECTION**

S 15
20

27-04-2011



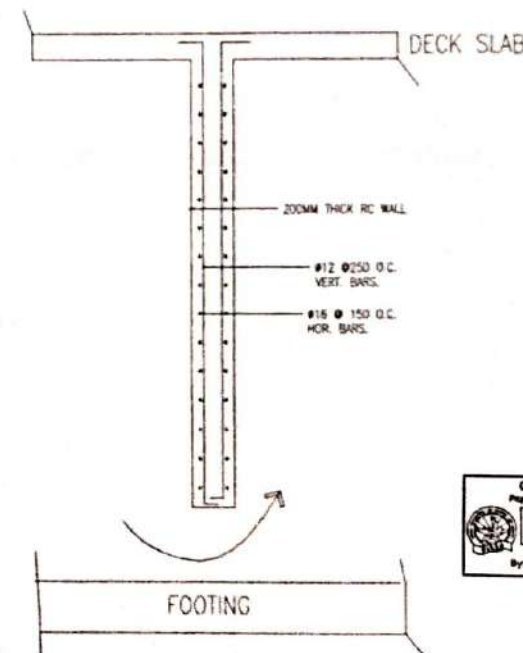
A TYPICAL ONE WAY R.C. SLAB DETAIL
SCALE: 1/4" = 1'-0"



B TYPICAL TWO WAY R.C. SLAB DETAIL
SCALE: 1/4" = 1'-0"

SCHEDULE OF SLAB REINFORCEMENT

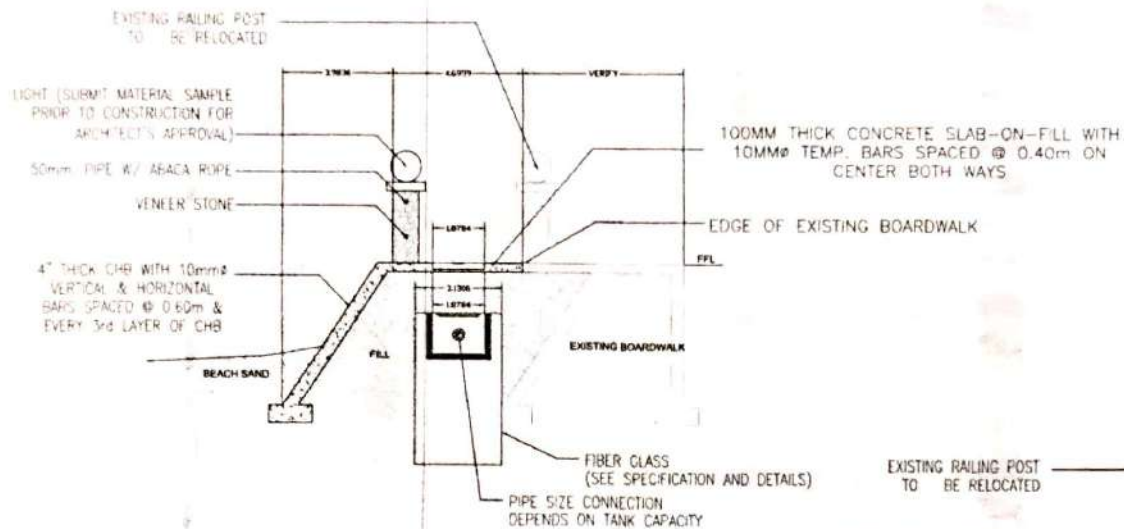
FLOOR LEVEL	SLAB MARK	THICKNESS (mm)	BAR # (mm)	SHORT SPAN (mm)			LONG SPAN (mm)			REMARKS
				TOP BARS (mm)	BOTTOM BARS (mm)	TOP BARS (mm)	TOP BARS (mm)	BOTTOM BARS (mm)	TOP BARS (mm)	
STPS-1	150	12	200	150	200	250	250	250	250	A
STPS-2	150	12	200	150	200	250	250	250	250	A
STPS-3	225	12	150	100	150	250	200	200	250	A (0 MID LEVEL)
STPS-3	200	12	150	125	150	200	200	200	200	A (0 DECK LEVEL)



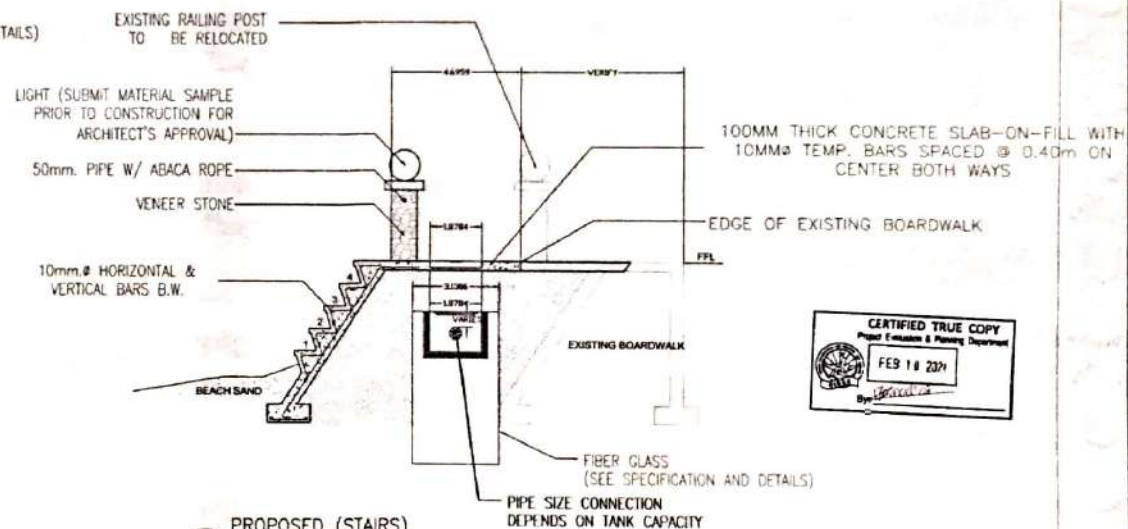
C HANGING SEPARATOR WALL DETAIL



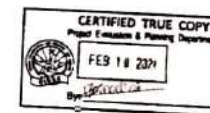
PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT	RECOMMENDING APPROVAL	APPROVED	R.A. SAs	SHEET NO.
MONTREXIS T. TAMAYO	JUANITA L. YANCO	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK	CHECKED BY: RADY E. ADAME	REVIEWED BY: AMELITA S. CAGANDA	NESTOR M. DOMALANTA	POCHOLO J. D. PARAGAS	S 16
ENGINEER	PROJECT ENGINEER	REGIONAL DIRECTOR	LOCATION: PUERTO SALERA, ORIENTAL MINDORO	OFFICER IN CHARGE: PROJECT PLANNING & DESIGN DIVISION	MANAGER: PROJECT PLANNING & DESIGN DIVISION	ASSISTANT CHIEF OPERATING OFFICER: ARCHITECTURAL & ENGINEERING SERVICES SECTION	CHIEF OPERATING OFFICER	20



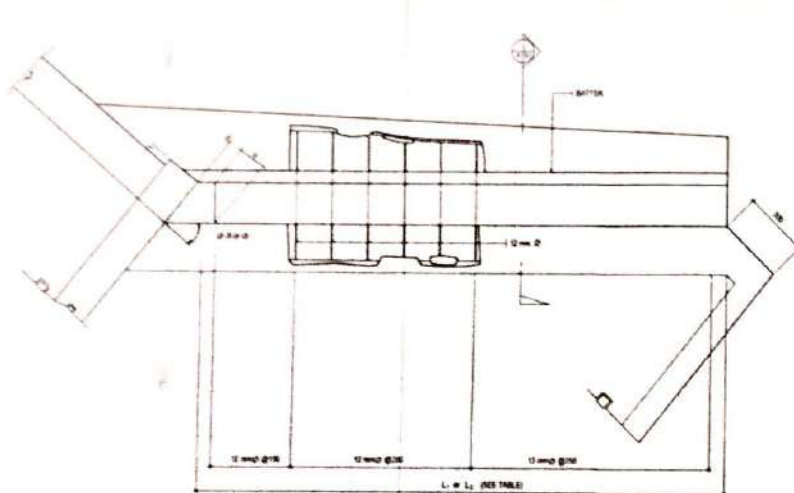
PROPOSED BOARDWALK SECTION 1
1:50 MTS
4-0.00 SCALE



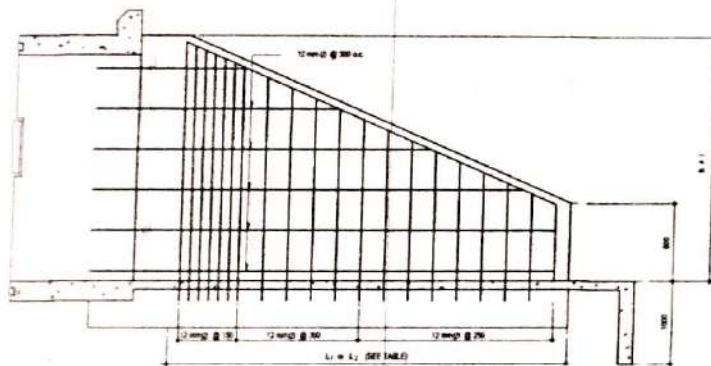
PROPOSED (STAIRS) BOARDWALK SECTION 2
1:50 MTS
4-0.00 SCALE



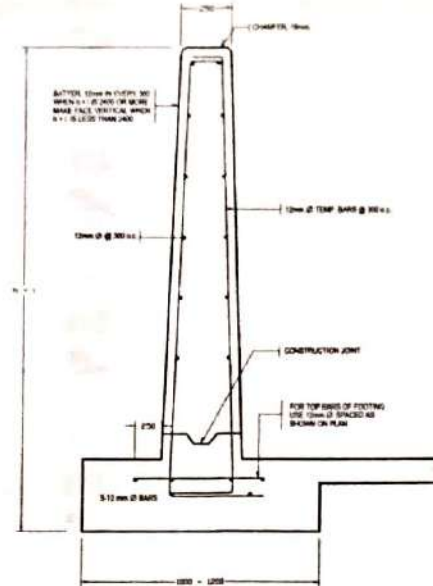
	PREPARED BY MONTREXIS T. TAMAYO ENGINEER I	RECOMMENDING APPROVAL YOLANDA L. TANGCO ASSISTANT REGIONAL DIRECTOR	APPROVED BY WILFREDO S. MALLARI REGIONAL DIRECTOR	PROJECT TITLE/LOCATION SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK LOCATION: PUERTO GALERA, ORIENTAL MINDORO	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 8th & 9th FLOORS TOWER 1, DOUBLE DRAGON PLAZA, CORNER EDSA EXTENSION AND ALABANG AVENUE, ALABANG, MARIKINA CITY 1888	PROJECT EVALUATION AND PLANNING DEPARTMENT CHECKED BY: RAGY E. ADAME OFFICER IN CHARGE / PROJECT PLANNING & DESIGN DIVISION REVIEWED BY: AMELITA S. CACANDA MANAGER / PROJECT EVALUATION & PLANNING DEPARTMENT	RECOMMENDING APPROVAL NESTOR M. DOMALANTA ASSISTANT CHIEF OPERATING OFFICER / ARCHITECTURAL & ENGINEERING SERVICES SECTION	APPROVED: POCHOLO J. B. PARAGAS CHIEF OPERATING OFFICER	R.A. 545	SHEET NO. S17 20
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1 WINGWALL PLAN
NOT TO SCALE



2 SECTIONAL ELEVATION
NOT TO SCALE



3 SECTION
NOT TO SCALE

GENERAL NOTES

SPECIFICATIONS

DESIGN NOT AMBIT SPECIFICATION FOR HIGHWAYS AND BRIDGES

CONCRETE

ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF 28 MPa.
ALL EXPOSED CONCRETE TO BE CONSTRUCTED WITH A NO CONSTRUCTION JUMP AREA TO BE
MADE EXCEPT WHERE SHOWN OTHERWISE. IT IS SUBJECT TO ADDITIONAL AND OTHER
TO BOTTOM SLAB TO INCREASE COVERAGE ON STEEL.

STEEL REINFORCEMENT

ALL REINFORCING STEEL TO BE INTERMEDIATE GRADE (GRADE 60) WITH A YIELD STRENGTH
CONFORMING TO ASTM A 601, AS BY 40000 PSI.

GENERAL

IN STATING CURVE RADIUS, GIVE WIDTH BY HEIGHT, WITH FIRST PLACE, 12 mm EXTENSION JOINTS
WITH THE REINFORCING STEEL AND TOP SLAB OF BOX CULVERT AT 1000mm INTERVALS.
REINFORCEMENT OF FILL, THE TOP OF SURFACE OF THE UPPER SLAB SHALL FOLLOW THE GRAD
OF FINISHED ROADWAY. THE BOX CULVERT SHALL BE CONSTRUCTED ON A 150mm LAYER OF LIME
CONCRETE, 150mm MINIMUM THICKNESS.

LIVE LOAD DISTRIBUTION REINFORCEMENT

WHEN THERE IS LESS THAN 100 mm OF FILL ABOVE TOP SLAB OF CULVERT, ADDITIONAL
REINFORCEMENT TRANSDUCING TO THE REINFORCEMENT IS ADDED TO THE BOTTOM OF
THE TOP SLAB IN ACCORDANCE WITH AMBITO 1.3.2.2.

HEIGHT OF FILL

MINIMUM HEIGHT OF FILL IS 300 mm ABOVE TOP SLAB FOR HEIGHT OF FILL GREATER THAN
300 mm. SPECIAL DESIGN OF BOX CULVERT SHALL BE DONE.

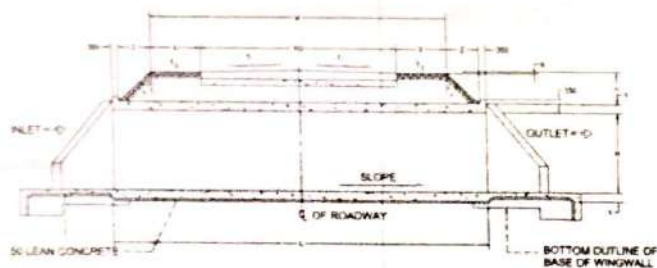
QUANTITIES FOR STANDARD BOX CULVERTS & WINGWALLS

CLEAR SPAN (M)	TOTAL HEIGHT (M)	QTY PER METER OF BOXPILE (CONCRETE)		QTY PER METER OF BOXPILE (REINFORCING)		QTY PER METER OF BOXPILE (TOTAL)	
		CONC. (CU M)	REINF. (KG)	CONC. (CU M)	REINF. (KG)	CONC. (CU M)	REINF. (KG)
1200	1.00	0.54	18.20	1.87	187.40	2.33	205.60
1500	1.12	1.13	35.40	1.99	201.10	2.59	203.10
1800	1.23	1.72	52.80	2.27	216.30	2.91	218.50
2100	1.35	2.31	70.20	2.54	231.50	3.20	234.70
2400	1.47	2.90	87.60	2.82	246.70	3.49	250.10
2700	1.59	3.49	105.00	3.10	261.90	3.79	265.60
3000	1.71	4.08	122.40	3.38	277.10	4.08	281.10
3300	1.83	4.67	139.80	3.66	292.30	4.36	296.60
3600	1.95	5.26	157.20	3.94	307.50	4.65	312.10
3900	2.07	5.85	174.60	4.22	322.70	4.94	327.60
4200	2.19	6.44	192.00	4.50	337.90	5.23	342.90
4500	2.31	7.03	209.40	4.78	353.10	5.52	358.60
4800	2.43	7.62	226.80	5.06	368.30	5.81	373.90
5100	2.55	8.21	244.20	5.34	383.50	6.10	389.60
5400	2.67	8.80	261.60	5.62	398.70	6.39	404.90
5700	2.79	9.39	279.00	5.90	413.90	6.68	420.20
6000	2.91	9.98	296.40	6.18	429.10	6.97	435.50
6300	3.03	10.57	313.80	6.46	444.30	7.26	450.80
6600	3.15	11.16	331.20	6.74	459.50	7.55	456.10
6900	3.27	11.75	348.60	7.02	474.70	7.84	461.40
7200	3.39	12.34	366.00	7.30	489.90	8.13	466.70
7500	3.51	12.93	383.40	7.58	505.10	8.42	472.00
7800	3.63	13.52	400.80	7.86	520.30	8.71	477.30
8100	3.75	14.11	418.20	8.14	535.50	9.00	482.60
8400	3.87	14.70	435.60	8.42	550.70	9.29	487.90
8700	3.99	15.29	453.00	8.70	565.90	9.58	493.20
9000	4.11	15.88	470.40	8.98	581.10	9.87	498.50
9300	4.23	16.47	487.80	9.26	596.30	10.16	503.80
9600	4.35	17.06	505.20	9.54	611.50	10.45	509.10
9900	4.47	17.65	522.60	9.82	626.70	10.74	514.40
10200	4.59	18.24	540.00	10.10	641.90	11.03	519.70
10500	4.71	18.83	557.40	10.38	657.10	11.32	525.00
10800	4.83	19.42	574.80	10.66	672.30	11.61	530.30
11100	4.95	20.01	592.20	10.94	687.50	11.90	535.60
11400	5.07	20.60	609.60	11.22	702.70	12.19	540.90
11700	5.19	21.19	627.00	11.50	717.90	12.48	546.20
12000	5.31	21.78	644.40	11.78	733.10	12.77	551.50

QUANTITIES FOR STANDARD BOX CULVERTS & WINGWALLS

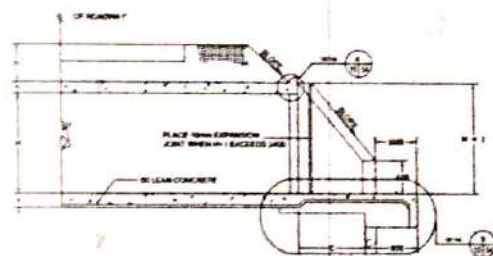
CLEAR SPAN (M)	TOTAL HEIGHT (M)	QTY PER METER OF BOXPILE (CONCRETE)		QTY PER METER OF BOXPILE (REINFORCING)		QTY PER METER OF BOXPILE (TOTAL)	
		CONC. (CU M)	REINF. (KG)	CONC. (CU M)	REINF. (KG)	CONC. (CU M)	REINF. (KG)
1200	1.00	0.54	18.20	1.87	187.40	2.33	205.60
1500	1.12	1.13	35.40	1.99	201.10	2.59	203.10
1800	1.23	1.72	52.80	2.27	216.30	2.91	218.50
2100	1.35	2.31	70.20	2.54	231.50	3.20	234.70
2400	1.47	2.90	87.60	2.82	246.70	3.49	250.10
2700	1.59	3.49	105.00	3.10	261.90	3.79	265.60
3000	1.71	4.08	122.40	3.38	277.10	4.08	281.10
3300	1.83	4.67	139.80	3.66	292.30	4.36	296.60
3600	1.95	5.26	157.20	3.94	307.50	4.65	312.10
3900	2.07	5.85	174.60	4.22	322.70	4.94	327.60
4200	2.19	6.44	192.00	4.50	337.90	5.23	342.90
4500	2.31	7.03	209.40	4.78	353.10	5.52	358.60
4800	2.43	7.62	226.80	5.06	368.30	5.81	373.90
5100	2.55	8.21	244.20	5.34	383.50	6.10	389.60
5400	2.67	8.80	261.60	5.62	398.70	6.39	404.90
5700	2.79	9.39	279.00	5.90	413.90	6.68	420.20
6000	2.91	9.98	296.40	6.18	429.10	6.97	435.50
6300	3.03	10.57	313.80	6.46	444.30	7.26	450.80
6600	3.15	11.16	331.20	6.74	459.50	7.55	456.10
6900	3.27	11.75	348.60	7.02	474.70	7.84	461.40
7200	3.39	12.34	366.00	7.30	489.90	8.13	466.70
7500	3.51	12.93	383.40	7.58	505.10	8.42	472.00
7800	3.63	13.52	400.80	7.86	520.30	8.71	477.30
8100	3.75	14.11	418.20	8.14	535.50	9.00	482.60
8400	3.87	14.70	435.60	8.42	550.70	9.29	487.90
8700	3.99	15.29	453.00	8.70	565.90	9.58	493.20
9000	4.11	15.88	470.40	8.98	581.10	9.87	498.50
9300	4.23	16.47	487.80	9.26	596.30	10.16	503.80
9600	4.35	17.06	505.20	9.54	611.50	10.45	509.10
9900	4.47	17.65	522.60	9.82	626.70	10.74	514.40
10200	4.59	18.24	540.00	10.10	641.90	11.03	519.70
10500	4.71	18.83	557.40	10.38	657.10	11.32	525.00
10800	4.83	19.42	574.80	10.66	672.30	11.61	530.30
11100	4.95	20.01	592.20	10.94	687.50	11.90	535.60
11400	5.07	20.60	609.60	11.22	702.70	12.19	540.90
11700	5.19	21.19	627.00	11.50	717.90	12.48	546.20
12000	5.31	21.78	644.40	11.78	733.10	12.77	551.50

Span (m)	Height (m)	Concrete (cu m)	Reinforcing (kg)
1200	1.00	0.54	18.20
1500	1.12	1.13	35.40
1800	1.23	1.72	52.80
2100	1.35	2.31	70.20
2400	1.47	2.90	87.60
2700	1.59	3.49	105.00
3000	1.71	4.08	122.40
3300	1.83	4.67	139.80
3600	1.95	5.26	157.20
3900	2.07	5.85	174.60
4200	2.19	6.44	192.00
4500	2.31	7.03	209.40
4800	2.43	7.62	226.80
5100	2.55	8.21	244.20
5400	2.67	8.80	261.60
5700	2.79	9.39	279.00
6000	2.91	9.98	296.40
6300	3.03	10.57	313.80
6600	3.15	11.16	331.20
6900	3.27	11.75	348.60
7200	3.39	12.34	366.00
7500	3.51	12.93	383.40
7800	3.63	13.52	400.80
8100	3.75	14.11	418.20
8400	3.87	14.70	435.60
8700	3.99	15.29	453.00
9000	4.11	15.88	470.40
9300	4.23	16.47	487.80
9600	4.35	17.06	505.20
9900	4.47	17.65	522.60
10200	4.59	18.24	540.00
10500	4.71	18.83	557.40
10800	4.83	19.42	574.80
11100	4.95	20.01	592.20
11400	5.07	20.60	609.60
11700	5.19	21.19	627.00



1
15/54
TYPICAL ROAD CROSS SECTION
NTS.

SKEW ANGLE °	L _w (m)	W + 2 (Z + 0.300) 1.1547 [W + 2(Z + 0.300)] 1.4142 [W + 2(Z + 0.300)]
0	0	
15	15	
30	30	
45	45	
60	60	
75	75	
90	90	

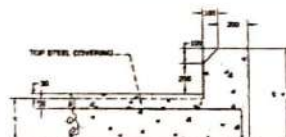


2
15/54
PART SECTION ALONG Q OF CULVERT
NTS.



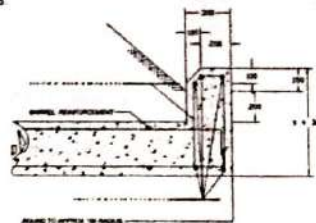
3
15/54
DETAIL OF APRON
NTS.

- S = WIDTH OF CULVERT OPENING
 α = SKEW ANGLE
 W = WIDTH OF ROADWAY FORMATION
 W₀ = WIDTH OF CARRIAGE WAY
 n = SLOPE OF CARRIAGE WAY
 L = TOTAL LENGTH OF BARREL
 s = SLOPE OF CARRIAGE WAY
 v = SLOPE OF SHOULDER
 Z = (A - 0.150) W₀V
 D = 6.2 + 0.5 L W₀
 H = HEIGHT OF CULVERT OPENING
 t = THICKNESS OF CULVERT WALL OR SLAB
 β = ANGLE OF EMBANKMENT SLOPE
 L_w = LENGTH OF WINGWALL
 L_p = PARALLEL PROJECTION OF WINGWALL LENGTH
 θ = ANGLE BETWEEN Q CULVERT AND Q WINGWALL
 C = PERPENDICULAR PROJECTION OF WING WALL LENGTH FROM FACE OF HEADWALL
 C₁ = PERPENDICULAR PROJECTION OF WINGWALL END FACE



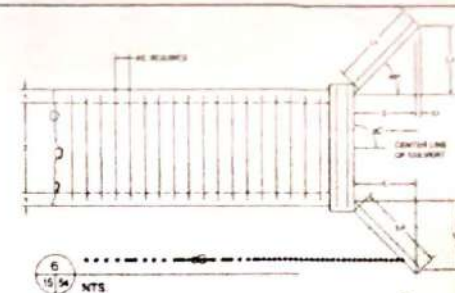
NOTE:
WHEN HEIGHT OF FILL (R + D)
THE CONCRETE COVER OVER THE
SLAB SHALL BE INCREASED BY
30 mm MINIMUM CONCRETE COVER
SHALL BE 50 CLEAR

4
15/54
DETAIL
NTS.

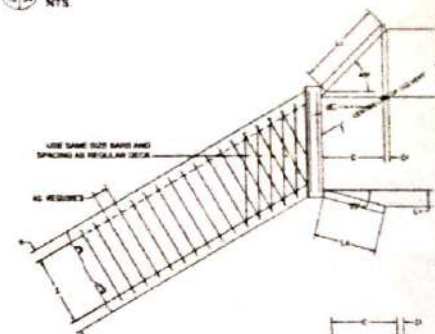


5
15/54
DETAIL OF BARREL EDGE
NTS.

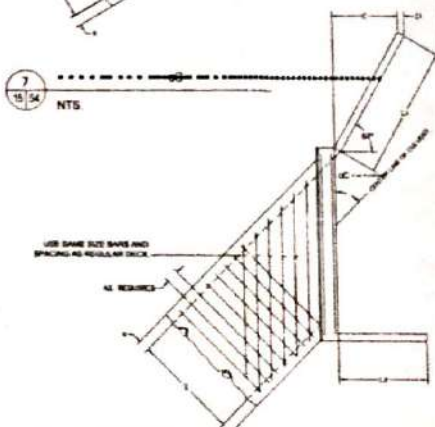
A
15/54
TYPICAL BOX CULVERT DETAILS
NTS.



6
15/54
NTS



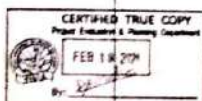
7
15/54
NTS



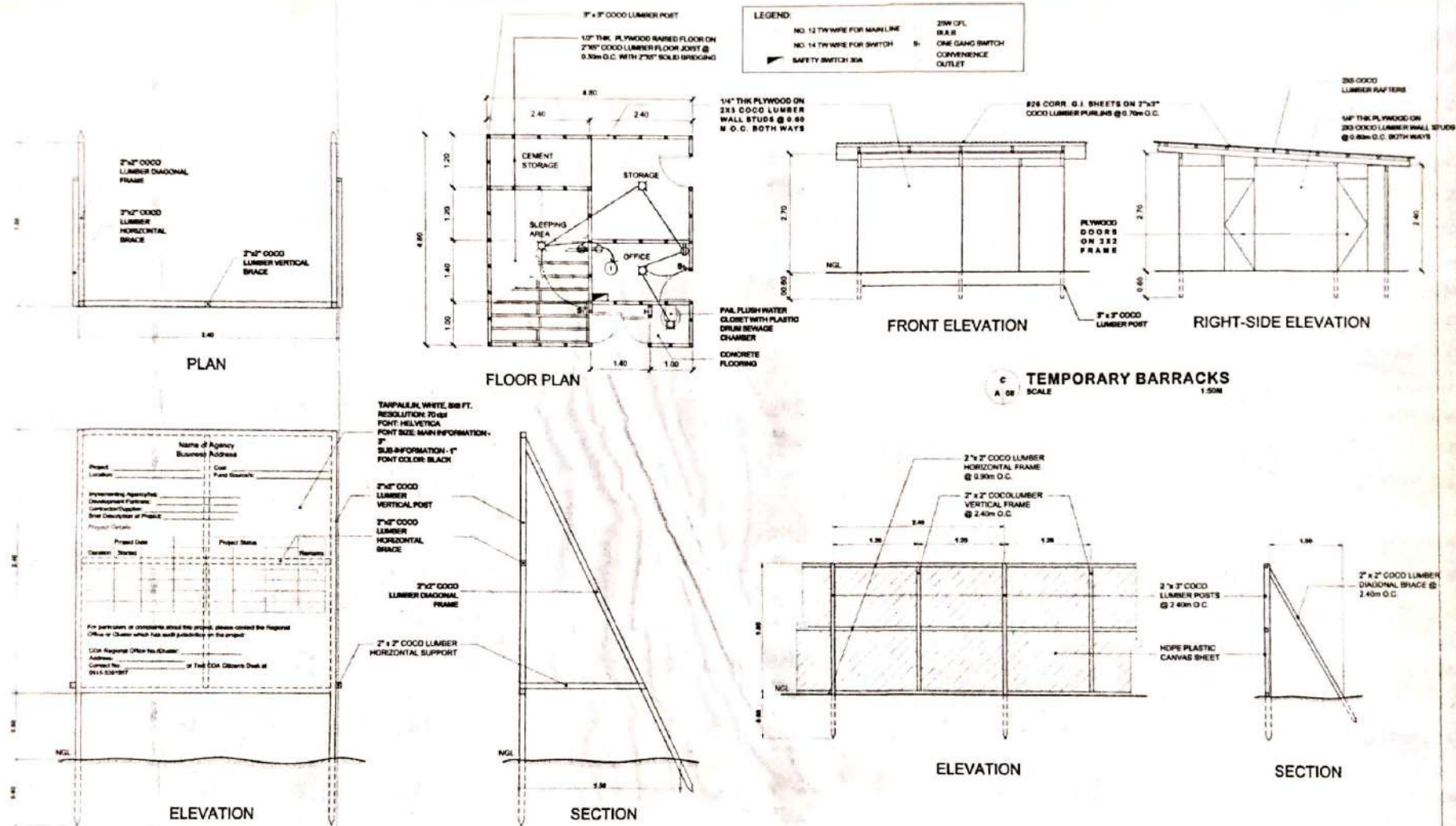
8
15/54
NTS

B
15/54
RCBC REINFORCEMENT ARRANGEMENTS
NTS.

NOTE: ALL DIMENSIONS ARE ALL IN MILLIMETERS UNLESS OTHERWISE NOTED.



PREPARED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT	RECOMMENDING APPROVAL	APPROVED	R.A. SAs	SHEET NO.
MONTREXIS T. RAMAYO	YOLANDA S. TAYAG	WILFREDO S. MALLARI	SEWERAGE AND WASTE WATER FACILITY AND BOARDWALK	CHECKED BY: RAZZY E. ADAME	REVIEWED BY: AMELITA S. CAGANDA	NESTOR M. DOMALANTA	POCHOLO D. PARAGAS	S 20
ENGINEER	ASSISTANT PROJECT ENGINEER	NATIONAL DIRECTOR	LOCATION: PUERTO GALERA, ORIENTAL MINDORO	IN CHARGE OF DESIGN DIVISION	MANAGER, PROJECT EVALUATION PLANNING DEPARTMENT	ASSISTANT CHIEF OPERATING OFFICER, INFRASTRUCTURE & ENGINEERING SERVICES DIVISION	CHIEF OPERATING OFFICER	20



CERTIFIED TRUE COPY
 Project Evaluation & Planning Department
 FEB 18 2021



TIEZA
 TOURISM INFRASTRUCTURE
 AND ENTERPRISE ZONE AUTHORITY
 8th & 7th FLR. TOWER 1 DOUBLE DRAGON PLAZA
 DOUBLE DRAGON MERIDIAN PARK, MACAPALAL AVENUE
 CORNER EDGA EXTENSION BAY AREA - PASAY CITY 1306

PROJECT TITLE/LOCATION	PROJECT EVALUATION AND PLANNING DEPARTMENT			RECOMMENDING APPROVAL	APPROVED BY	SHEET CONTENTS	R.A. 545	SHEET NO.
SEWERAGE AND WASTEWATER FACILITY AND BOARDWALK	PREPARED BY TRUBBY D. EVASCO	CHECKED BY RADY E. ADAME	REVIEWED BY AMELITA S. CAGANDA	NESTOR M. DOMALANTA	POCHOLQ J.D. PARAGAS	SEWERAGE TEMPORARY BARRACKS, TEMPORARY FENCE	THIS DRAWING IS A PROPERTY OF TIEZA AND CANNOT BE REPRODUCED WITHOUT TIEZA'S PERMISSION	TF 01
LOCATION: PUERTO GALERA - ORIENTAL MINDORO	DESIGNED BY [Signature]	SPECIFIED IN CHARGE PROJECT PLANNING & DESIGN DIVISION	APPROVED BY [Signature] PROJECT EVALUATION & PLANNING DEPARTMENT	ASSISTANT CHIEF OPERATING OFFICER ARCHITECTURAL & ENGINEERING SERVICES SECTION	CHIEF OPERATING OFFICER	REVISIONS		1

PEPO QP 02a

RWB-19-13