0-22- 7770

03-01781
DED Plan for the Proposed River Restoration Project of Busuanga River

REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS

REGIONAL OFFICE NO. IV-B
MINDORO OCCIDENTAL, DISTRICT ENGINEERING OFFICE
MAMBURAO, MINDORO OCCIDENTAL

OCTOBER 2022
DETAILED ENGINEERING DESIGN PLAN

PROPOSED BUSUANGA RIVER DREDGING PLAN

MUNICIPALITY OF SAN JOSE
PROVINCE OF OCCIDENTAL MINDORO
SECTION 1 STA. 1+050 TO STA. 9+000
LENGTH = 7,950 l.m.
SECTION 2 STA. 0+950 TO STA. 3+550
LENGTH = 2,600 l.m.

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

SUBMITTED BY:

DAVID G. DELA CRUZ
PRESIDENT
ROYAL CROWN
GROUNDPORT & PARTNERS
DATE:

RECOMMENDED BY:

EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE:

JOSE[illegible] ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL, DEO
DATE:

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE:

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE:

APRROVED BY:

ON LEAVE
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFOPMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE:

APR 17 2023
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE:

WPD-23-[illegible]-18524

GENERAL NOTES

A. BENCHMARKS

BM	NORTHING	EASTING	ELEVATION
BM - 1	121.336817	12.466577	30m

B. CONDITION

ENVIRONMENTAL MANAGEMENTS

ALL COMMITMENTS, APPROPRIATE MITIGATING/ENHANCEMENT MEASURE AND MONITORING REQUIREMENTS CONTAINED IN THE ENVIRONMENTAL IMPACT STATEMENT (EIS), PARTICULARLY IN THE ENVIRONMENTAL MANAGEMENT PLANS (EMMOP), AS APPROVED BY THE ENVIRONMENTAL MANAGEMENT BUREAU (EMB), SHALL BE INSTITUTED TO MINIMIZE ANY ADVERSE IMPACT ON THE PROJECT TO THE ENVIRONMENT THROUGHOUT ITS IMPLEMENTATION.

1. CONDUCT OF AN EFFECTIVE INFORMATION EDUCATION AND COMMUNICATION (IEC) PROGRAM TO INFORM AND EDUCATE ALL STAKEHOLDERS, ESPECIALLY ITS CONTRACTORS, WORKERS AND LOCAL RESIDENTS ABOUT THE MITIGATING MEASURES EMBODIED IN ITS EIS, THE CONDITIONS STIPULATED IN THE EEC AND THE ENVIRONMENTAL AND HUMAN SAFETY FEATURES OF THE PROJECT FOR THE GREATER AWARENESS, UNDERSTANDING AND SUSTAINED ACCEPTANCE OF THE PROJECT. AN ANNUAL DETAILED IEC PROGRAM SHALL BE IMPLEMENTED AND PROOF OF CONTINUING COMPLIANCE SHALL BE SUBMITTED SEMI-ANNUALLY AS PART OF THE PROJECT'S COMPLIANCE MONITORING REPORT (CMR) TO· THE EMB REGIONAL OFFICE (RO) NO. IV-B IMPLEMENTATION OF A COMPREHENSIVE SOCIAL DEVELOPMENT PROGRAM (SDP) AND SUBMISSION OF A SEPARATE REPORT ON COMPLIANCE, TOGETHER WITH THE CMR, TO THE EMB CO, COPY FURNISHED THE EMB RO NO. IV-B.
2. ESTABLISHMENT OF A REFORESTATION AND A CARBON SINK PROGRAM USING ENDEMIC AND OTHER SUITABLE SPECIES TO MITIGATE GREENHOUSE GAS (GHG) EMISSIONS OF THE PROJECT IN LINE WITH THE DENR'S THRUST GHG EMISSION REDUCTION PROGRAMS. THE PROGRAM SHALL BE SUBMITTED TO EMB CO WITHIN SIXTY (60) DAYS FROM RECEIPT OF THIS ECC.
3. SUBMISSION TO THE EMB CO WITHIN SIXTY (60) DAYS FROM RECEIPT OF THIS ECC OF A SEDIMENT TRANSPORT MODELING SHOWING THE RESIDUAL SEDIMENT TRANSPORT (BEGINNING AT THE MOUTH OF THE RIVER) ATTRIBUTABLE TO THE PROJECT.
4. MAINTENANCE OF AT LEAST 200 METERS BUFFER ZONES (AT MEAN LOW TIDE) FROM BOTH SIDES OF THE UNERODED PART OF THE RIVER BANKS.

C. GENERAL CONDITIONS

1. THE DREDGING OPERATIONS SHALL CONFORM WITH THE PROVISION OF R.A NO. 6969 (TOXIC SUBSTANCE AND HAZARDOUS AND NUCLEAR WASTE CONTROL ACT OF 1990), R.A. NO. 8749 (PHILIPPINE CLEAN AIR ACT OF 1999), R.A. NO. 9003 (ECOLOGICAL SOLID WASTE MANAGEMENT ACT OF 2000), AND R.A. NO.9275 (PHILIPPINE CLEAN WATER ACT OF 2004).
2. THE PROPONENT SHALL CREATE WITHIN SIXTY DAYS (60) FROM RECEIPT OF THIS ECC AN ENVIRONMENTAL UNIT (EU) THAT SHALL COMPETENTLY HANDLE THE ENVIRONMENT-RELATED ASPECTS OF THE PROJECT. IN ADDITION TO THE MONITORING REQUIREMENTS AS SPECIFIED IN THE EMP/EMOP, THE EU SHALL HAVE THE FOLLOWING RESPONSIBILITIES;
   a. MONITOR ACTUAL PROJECT IMPACT VIS-À-VIS THE PREDICTED IMPACTS AND MANAGEMENT MEASURES IN THE EIS.
   b. RECOMMEND REVISION TO THE EMP/EMOP, WHENEVER NECESSARY, SUBJECT TO THE APPROVAL OF EMB CO, AND DPWH, BUREAU OF DESIGN
   c. ENSURE THAT DATA GATHERED DURING MONITORING ACTIVITIES ARE PROPERLY DOCUMENTED, ASSESSED, EVALUATED AND REPORTED TO THE EMB (CO AND RO NO. IV-B) SUBMITTED TO DPWH - BOD FOR PROPER EVALUATION.
3. THE PROPONENT SHALL ENSURE THAT ITS CONTRACTORS AND SUB-CONTRACTORS STRICTLY COMPLY WITH THE RELEVANT CONDITION OF THE ECC.
4. DREDGING AND USE OF MATERIALS SHALL CONFIRM WITH THE (MGB) MINES AND GEOSCIENCES BUREAU REQUIREMENTS.

D. RESTRICTIONS

1. NO SHIPPING/TRANSPORT OF DREDGE MATERIALS SHALL BE UNDERTAKEN WITHOUT THE NECESSARY CLEARANCE/PERMIT FROM THE MGB-DENR FROM ITS COMMERCIAL DISPOSITION;
2. NO OTHER ACTIVITIES SHALL BE UNDERTAKEN OTHER THAN WHAT WERE STIPULATED IN THE EIS DOCUMENT. ANY EXPANSION OR MODIFICATION OF THE PROJECT BEYOND THE PROJECT DESCRIPTION OR ANY CHANGE IN THE ACTIVITY SHALL BE SUBJECT TO A NEW EIA STUDY;
3. ALL DREDGE MATERIALS SHALL BE LOADED STRAIGHT TO A SEA CARGO VESSEL. NO MATERIAL SHALL BE STOCK ON LAND.
4. SOUNDINGS SHALL BE CONDUCTED EVERY 50.0M OF THE DREDGE CHANNEL FOR CALCULATION OF VOLUME OF SPOTS ELEVATION.
5. DREDGING ACTIVITIES SHOULD HAVE NO EFFECT ON THE STRUCTURAL INTEGRITY OF EXISTING BRIDGES. ANY DAMAGE TO EXISTING STRUCTURE AS A RESULT OF OVER-EXCAVATION (DREDGING) SHALL BE REPAIRED AT THE EXPENSE OF THE PROPONENT.

E. PREPARATION OF "AS-STAKED" PLAN

1. "AS- STAKED" PLAN SHALL BE PREPARED BY THE OWNER. THE PREPARATION OF "AS-STAKED" PLAN SHALL BE COMPLY WITH THE PROVISION DPWH D.O. NO. 15, SERIES OF 2016.
2. VERIFICATION OF ELEVATION SHALL BE CONDUCTED DURING THE PRE-CONSTRUCTION SURVEY.
3. CONFIRMATORY SOIL BORING TEST SHALL BE CONDUCTED ALONG THE ALIGNMENT OF THE PROPOSED STRUCTURE PRIOR TO ACTUAL IMPLEMENTATION.

INDEX OF DRAWINGS

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PLAN AND PROFILE (STATION 2+150.00 ~ STATION 3+400.00)	PP-02	06
PLAN AND PROFILE (STATION 3+400.00 ~ STATION 4+700.00)	PP-03	07
PLAN AND PROFILE (STATION 4+700.00 ~ STATION 5+900.00)	PP-04	08
PLAN AND PROFILE (STATION 5+900.00 ~ STATION 7+200.00)	PP-05	09
PLAN AND PROFILE (STATION 7+200.00 ~ STATION 8+400.00)	PP-06	10
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CROSS-SECTION - 2 (STATION 3+200.00 ~ STATION 3+550.00)	CS2-15	28

HYDRAULIC DESIGN DATA:

Section 1 Main Downstream

DRAINAGE AREA, DA = 530.07 KM^2
VELOCITY, V_M = 1.59 M/S
DESIGN DISCHARGE, Q (100 YEARS) = 1205.90 M^3/S

Section 1 Junction

DRAINAGE AREA, DA = 508.60 KM^2
VELOCITY, V_M = 2.85 M/S
DESIGN DISCHARGE, Q (100 YEARS) = 1972.33 M^3/S

Section 2 Branch

DRAINAGE AREA, DA = 508.60 KM^2
VELOCITY, V_M = 1.68 M/S
DESIGN DISCHARGE, Q (100 YEARS) = 936.10 M^3/S

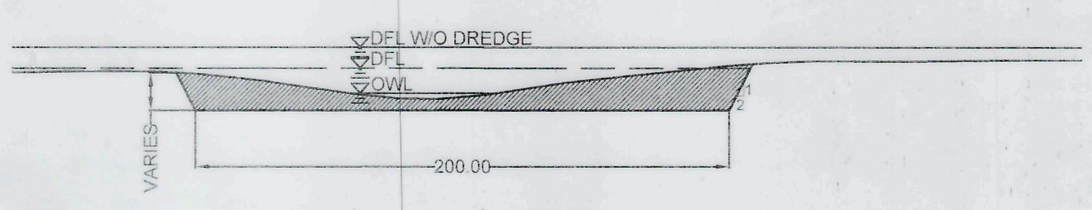
* THE PROPONENT (PERMITTEE) SHALL INSTALL WATER GAGES AT REPRESENTATIVE LOCATIONS TO BE DETERMINED BY BOD, DPWH FOR MONITORING, ASSESSMENT AND EVALUATION OF THE IMPACTS OF DREDGING WORKS.

NOTE:

- ANY DAMAGE TO THE EXISTING PRIVATE AND PUBLIC UTILITIES ADJACENT TO THE DREDGING WORKS, INCLUDING LOSS OF LIFE, IF ANY THAT MAY RESULT SHALL BE THE SOLE RESPONSIBILITY OF THE DREDGING PROPONENT. SUCH DAMAGES TO THE EXISTING PRIVATE AND PUBLIC UTILITIES SHALL BE RECONSTRUCTED/REPAIRED TO ITS ORIGINAL FROM IN ACCORDANCE WITH THE DPWH STANDARDS AND SPECIFICATIONS, AT THE EXPENSE OF THE PROPONENT.
- THE DPWH THRU ITS FIELD OFFICES SHALL BE OFFICIALLY NOTIFIED BY THE OWNER/PROPONENT AS TO THE DATE OF IMPLEMENTATION OF THE PROPOSED DREDGING WORKS.
- THE DPWH OR ITS AUTHORIZED REPRESENTATIVE/S SHALL BE ALLOWED TO INSPECT THE COMPLETION OF THE PROJECT.
- THE OWNER/PROPONENT SHALL SUBMIT "AS-BUILT" PLANS FOR THE COMPLETED DREDGING WORKS AND SECURE CERTIFICATE OF ACCEPTANCE THEREOF.

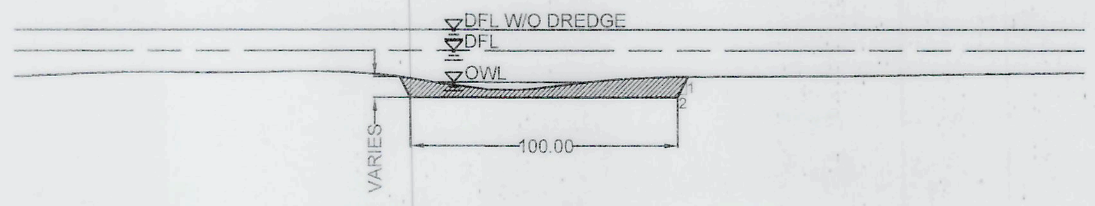
SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITIES	REMARKS
1703	DREDGING	m^3	3,876,537.17	STA. 1+050 TO STA. 9+000
			662,148.85	STA. 0+950 TO STA. 3+550



TYPICAL CROSS-SECTION 1

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:1000m



TYPICAL CROSS-SECTION 2

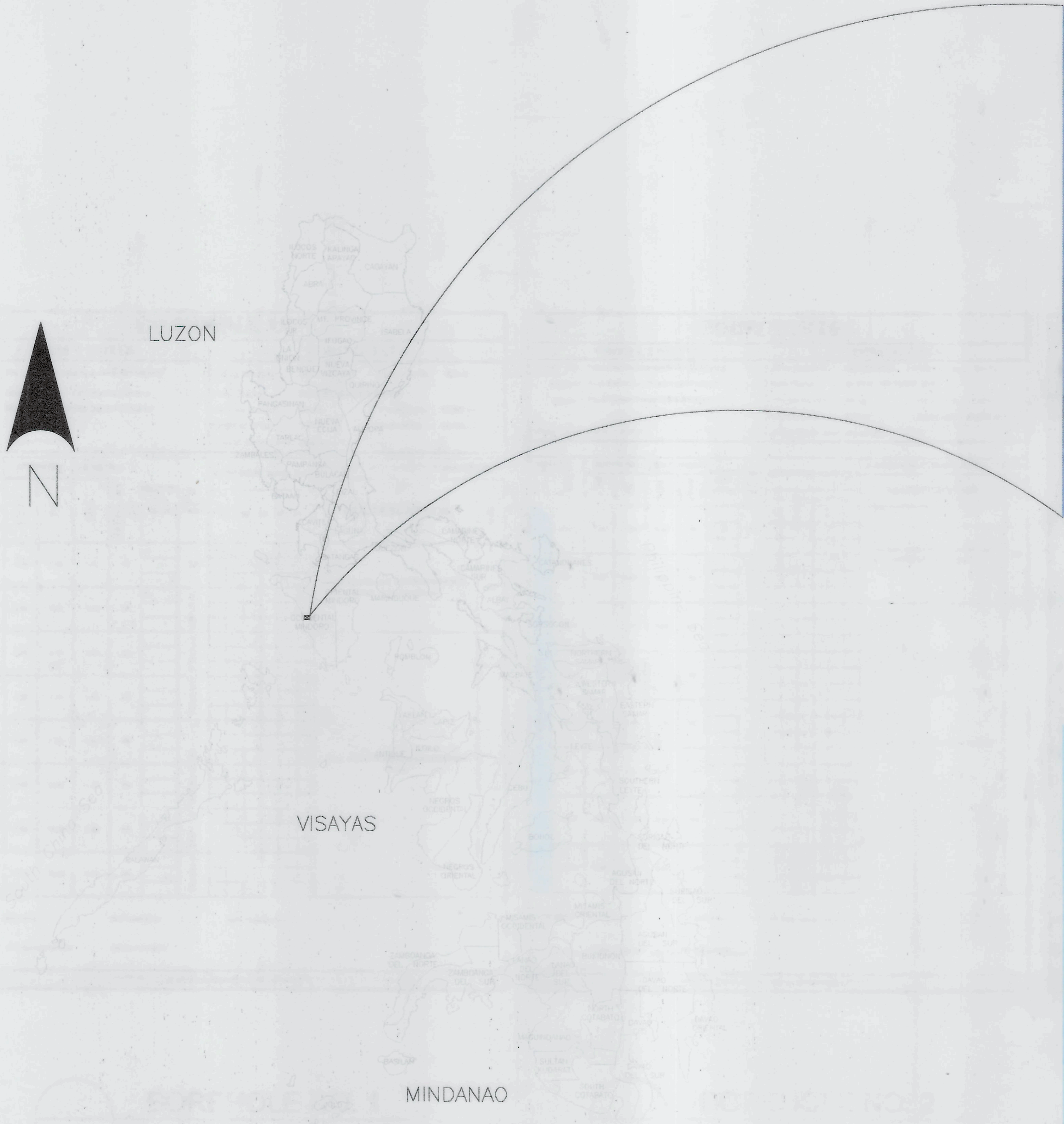
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:1000m

* ALL NECESSARY PERMITS SHALL BE SECURED BY THE PROPONENT FROM THE PROPER AUTHORITIES PRIOR TO THE ISSUANCE OF THE DREDGING PERMIT/CLEARANCE.

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

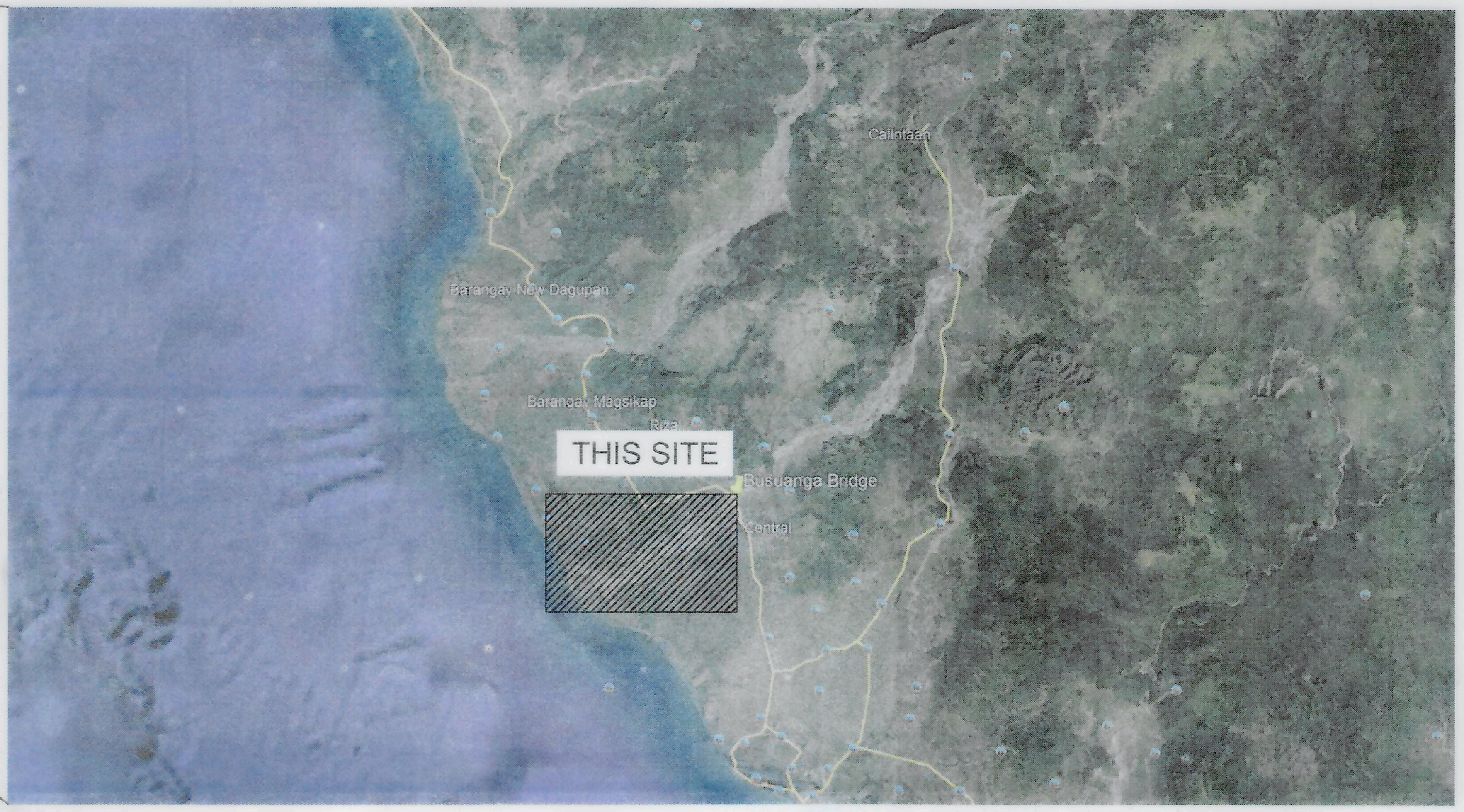
DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m RIZAL & SAN JOSE, OCCIDENTAL MINDORO	GENERAL NOTES, INDEX OF DRAWING TYPICAL SECTION & SUMMARY OF QUANTITIES	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV. DPWH REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSELITO A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	G 02 04	02 28


LUZON
N
VISAYAS
MINDANAO

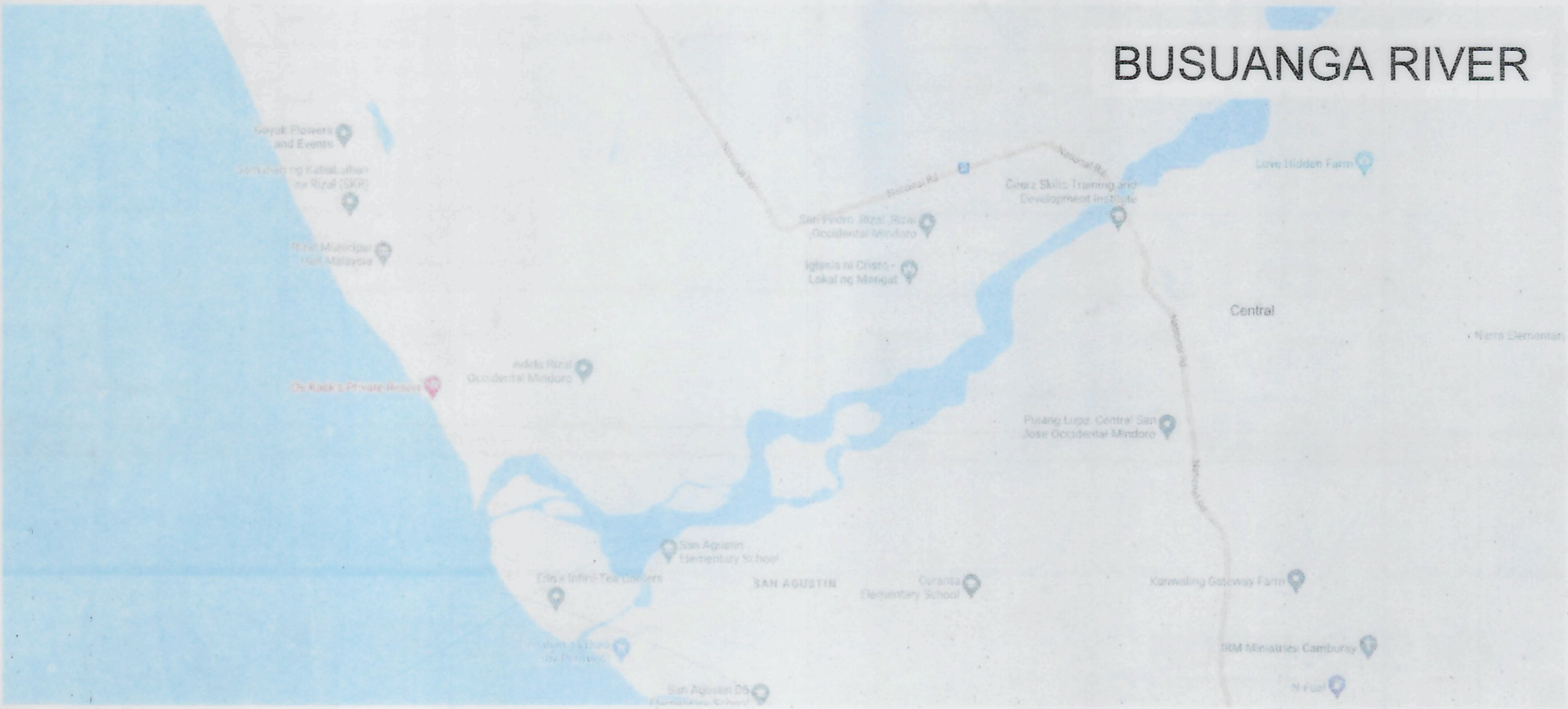
MAP OF THE PHILIPPINES

SCALE: NTS


Calintaan
Barangay New Dagupan
Barangay Magsikap
Rizal
THIS SITE
Busuanga Bridge
Central

LOCATION MAP

SCALE: NTS


BUSUANGA RIVER
Central
SAN AGUSTIN

VICINITY MAP

SCALE: NTS

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE OCCIDENTAL MINDORO

SHEET CONTENTS:
MAP OF THE PHILIPPINES
LOCATION MAP &
VICINITY MAP

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE:

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE:

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B
DATE:

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE:

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE:

(SEE COVER SHEET)
JOSELITO [illegible] ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE:

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE:

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE:

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

SET NO: G 03 04

SHEET NO.: 03 28

BOREHOLE LOG

PROJECT NOTES

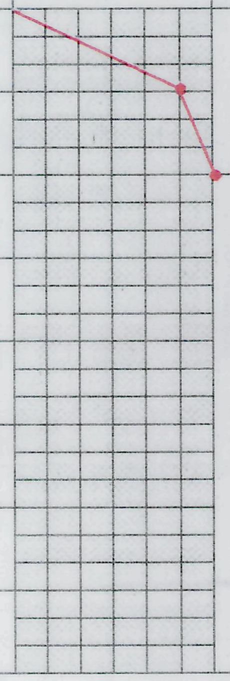
Project Title : Proposed Busuanga River Dredging
Location: Rizal-San Jose, Occidental Mindoro
Client: Royal Cown Tarlac 3G & Partners
Date Drilled: August 01-6,2021

BORING DATA

Drilling Machine: SCREW FED
Borehole No.: BH-2
Water Pump: BUFFEL WATER PUMP
Hammer Weight: 64 kg
Final Depth : 12.00 m
Height of Drop: 0.76m
Inclination : Vertical
Ground Water Level: above NGL

TYPE OF SAMPLING	SAMPLE NO.	DEPTH (M) FROM	DEPTH (M) TO	LENGTH (CM) RUN	LENGTH (CM) RECOVERY (%)	BLOWS PER 15 CM	N-VALUE / RQD	SOIL DESCRIPTION	USCS
WASH BORING / SPT	SS-1	1.05	1.50	0.45	90	20 25 26	51	Gray,Very Dense, **POORLY-GRADED SAND**, Wet, Non-Plastic	SP
	SS-2	2.55	3.00	0.45	94	ref -	REFUSAL		
	CS-1	3.00	4.50	1.50	56	- -	Washed	Gray, Hgihly Weathered **SANDSTONE**, Fines	
	CS-2	4.50	6.00	1.50	55	- -	Washed		
	CS-3	6.00	7.50	1.50	48	- -	Washed		
	CS-4	7.50	9.00	1.50	50	- -	Washed		
	CS-5	9.00	10.50	1.50	50	- -	Washed		
	CS-6	10.50	12.00	1.50	48	- -	Washed		

GRAPHICAL N-VALUES



UNIFIED SOIL CLASSIFICATION SYSTEM

LEGENDS : NIL= zero CL= Lean Clay HW= Hammer Weight
CS= Coring Sample SS= Soil Sample

*********** End of BoreHole @ 12.00 meters**********

BOREHOLE NO. 1

SCALE: NTS

BOREHOLE LOG

PROJECT NOTES

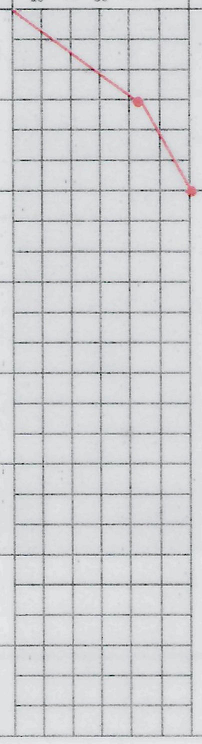
Project Title : Proposed Busuanga River Dredging
Location: Rizal-San Jose, Occidental Mindoro
Client: Royal Cown Tarlac 3G & Partners
Date Drilled: August 01-6,2021

BORING DATA

Drilling Machine: SCREW FED
Borehole No.: BH-15
Water Pump: BUFFEL WATER PUMP
Hammer Weight: 64 kg
Final Depth : 12.00 m
Height of Drop: 0.76m
Inclination : Vertical
Ground Water Level: above NGL

TYPE OF SAMPLING	SAMPLE NO.	DEPTH (M) FROM	DEPTH (M) TO	LENGTH (CM) RUN	LENGTH (CM) RECOVERY (%)	BLOWS PER 15 CM	N-VALUE / RQD	SOIL DESCRIPTION	USCS
WASH BORING / SPT	SS-1	1.05	1.50	0.45	70	11 22 21	43	Gray,Very Dense, **POORLY-GRADED SAND**, Wet, Non-Plastic	SP
	SS-2	2.55	3.00	0.45	80	ref -	REFUSAL		
	CS-1	3.00	4.50	1.50	50	-	Washed	Gray, Hgihly Weathered **SANDSTONE**, Fines	
	CS-2	4.50	6.00	1.50	50	-	Washed		
	CS-3	6.00	7.50	1.50	50	-	Washed		
	CS-4	7.50	9.00	1.50	50	-	Washed		
	CS-5	9.00	10.50	1.50	30	-	Washed		
	CS-6	10.50	12.00	1.50	35	-	Washed		

GRAPHICAL N-VALUES



UNIFIED SOIL CLASSIFICATION SYSTEM

LEGENDS : NIL= zero CL= Lean Clay HW= Hammer Weight
CS= Coring Sample SS= Soil Sample

TOWAO-Structural Consultant, Soil Test & Land Surveyor
ww.totowao.com
o@totowao.com

*********** End of BoreHole @ 12.00 meters**********

BOREHOLE NO. 2

SCALE: NTS

BOREHOLE LOG

PROJECT NOTES

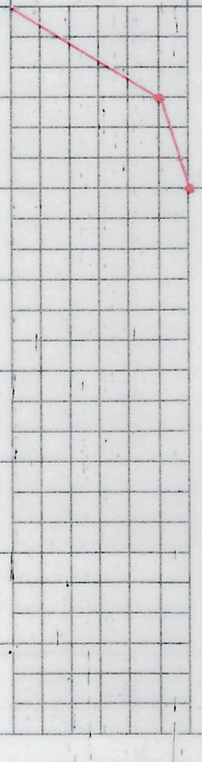
Project Title : Proposed Busuanga River Dredging
Location: Rizal-San Jose, Occidental Mindoro
Client: Royal Cown Tarlac 3G & Partners
Date Drilled: August 01-6,2021

BORING DATA

Drilling Machine: SCREW FED
Borehole No.: BH-20
Water Pump: BUFFEL WATER PUMP
Hammer Weight: 64 kg
Final Depth : 12.00 m
Height of Drop: 0.76m
Inclination : Vertical
Ground Water Level: above NGL

TYPE OF SAMPLING	SAMPLE NO.	DEPTH (M) FROM	DEPTH (M) TO	LENGTH (CM) RUN	LENGTH (CM) RECOVERY (%)	BLOWS PER 15 CM	N-VALUE / RQD	SOIL DESCRIPTION	USCS
WASH BORING / SPT	SS-1	1.05	1.50	0.45	50	22 22 28	50	Gray,Very Dense, **POORLY-GRADED SAND**, Wet, Non-Plastic	SP
	SS-2	2.55	3.00	0.45	50	ref -	REFUSAL		
	CS-1	3.00	4.50	1.50	50	-	Washed	Gray, Hgihly Weathered **SANDSTONE**, Fines	
	CS-2	4.50	6.00	1.50	70	-	Washed		
	CS-3	6.00	7.50	1.50	65	-	Washed		
	CS-4	7.50	9.00	1.50	60	-	Washed		
	CS-5	9.00	10.50	1.50	40	-	Washed		
	CS-6	10.50	12.00	1.50	30	-	Washed		

GRAPHICAL N-VALUES



UNIFIED SOIL CLASSIFICATION SYSTEM

LEGENDS : NIL= zero CL= Lean Clay HW= Hammer Weight
CS= Coring Sample SS= Soil Sample

TOWAO-Structural Consultant, Soil Test & Land Surveyor
ww.totowao.com
o@totowao.com

*********** End of BoreHole @ 12.00 meters**********

BOREHOLE NO. 3

SCALE: NTS

BOREHOLE LOG

PROJECT NOTES

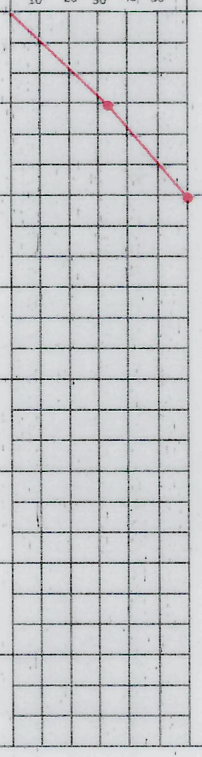
Project Title : Proposed Busuanga River Dredging
Location: Rizal-San Jose, Occidental Mindoro
Client: Royal Cown Tarlac 3G & Partners
Date Drilled: August 01-6,2021

BORING DATA

Drilling Machine: SCREW FED
Borehole No.: BH-25
Water Pump: BUFFEL WATER PUMP
Hammer Weight: 64 kg
Final Depth : 12.00 m
Height of Drop: 0.76m
Inclination : Vertical
Ground Water Level: above NGL

TYPE OF SAMPLING	SAMPLE NO.	DEPTH (M) FROM	DEPTH (M) TO	LENGTH (CM) RUN	LENGTH (CM) RECOVERY (%)	BLOWS PER 15 CM	N-VALUE / RQD	SOIL DESCRIPTION	USCS
WASH BORING / SPT	SS-1	1.05	1.50	0.45	70	7 9 23	32	Gray,Very Dense, **POORLY-GRADED SAND**, Wet, Non-Plastic	SP
	SS-2	2.55	3.00	0.45	80	ref -	REFUSAL		
	CS-1	3.00	4.50	1.50	50	-	Washed	Gray, Hgihly Weathered **SANDSTONE**, Fines	
	CS-2	4.50	6.00	1.50	50	-	Washed		
	CS-3	6.00	7.50	1.50	50	-	Washed		
	CS-4	7.50	9.00	1.50	50	-	Washed		
	CS-5	9.00	10.50	1.50	30	-	Washed		
	CS-6	10.50	12.00	1.50	35	-	Washed		

GRAPHICAL N-VALUES



UNIFIED SOIL CLASSIFICATION SYSTEM

LEGENDS : NIL= zero CL= Lean Clay HW= Hammer Weight
CS= Coring Sample SS= Soil Sample

TOWAO-Structural Consultant, Soil Test & Land Surveyor
ww.totowao.com
o@totowao.com

*********** End of BoreHole @ 12.00 meters**********

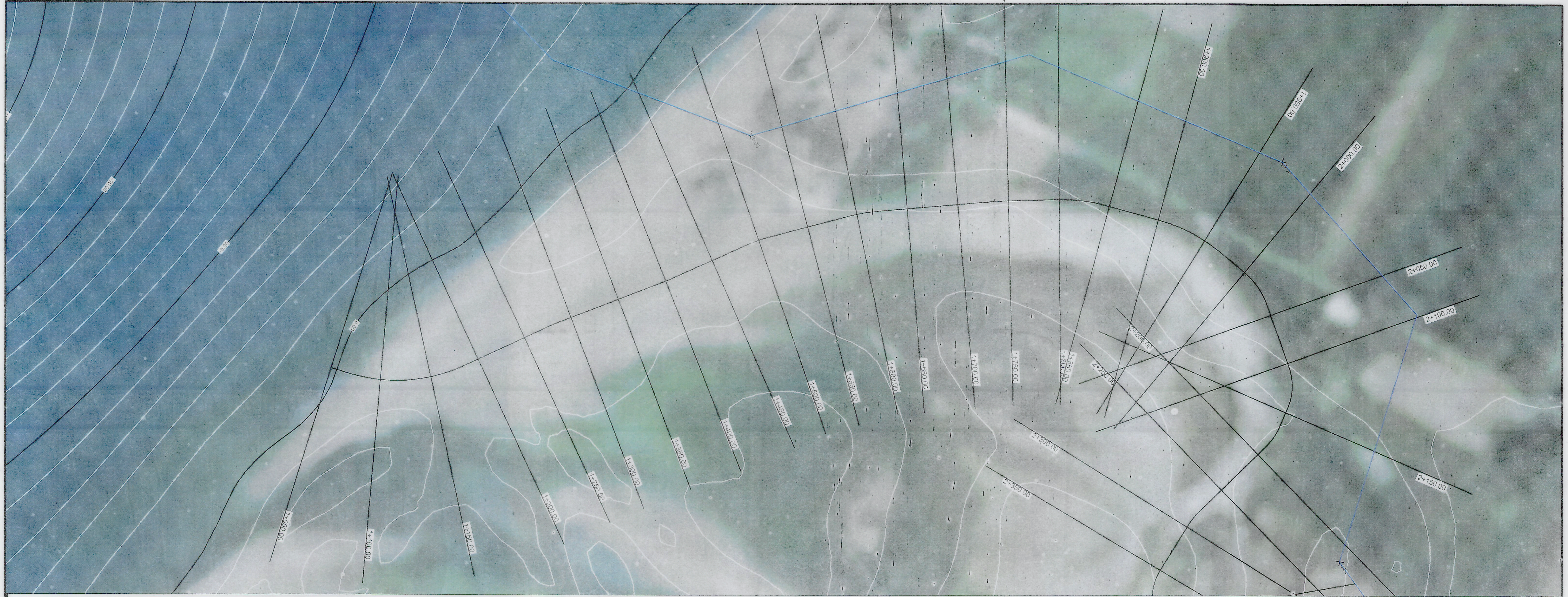
BOREHOLE NO. 4

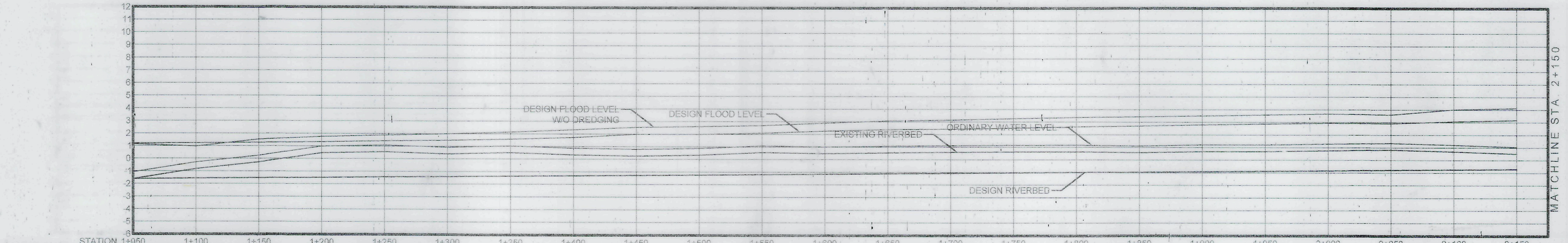
SCALE: NTS

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS	SUBMITTED	REVIEWED AS PRESENTED			RECOMMENDING APPROVAL						APPROVED	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	BORING LOG 1, 2, 3 & 4	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	GENER [illegible] ALTEA CHIEF, PLANNING AND DESIGN DIV DPWH, REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSEL [illegible] ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	GERALD A. PACANAN,CESO III REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE		(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	G 04 04	04 28





STATION	1+050	1+100	1+150	1+200	1+250	1+300	1+350	1+400	1+450	1+500	1+550	1+600
DFL WITHOUT DREDGE	1.16	0.96	1.53	1.75	1.87	2.00	2.14	2.33	2.53	2.60	2.69	2.89
DESIGN FLOOD LEVEL	1.22	1.23	1.27	1.34	1.42	1.48	1.57	1.72	1.93	1.98	2.09	2.26
ORDINARY WATER LEVEL	-1.08	-0.29	0.25	0.99	1.08	0.93	1.04	0.87	0.79	0.87	1.08	1.00
EXISTING RIVERBED	-1.61	-0.82	-0.28	0.46	0.55	0.40	0.51	0.34	0.26	0.34	0.55	0.47
DESIGN RIVERBED	-1.61	-1.57	-1.53	-1.49	-1.44	-1.40	-1.36	-1.32	-1.28	-1.24	-1.20	-1.16

STATION	1+650	1+700	1+750	1+800	1+850	1+900	1+950	2+000	2+050	2+100	2+150
DFL WITHOUT DREDGE	3.07	3.15	3.27	3.36	3.43	3.51	3.59	3.67	3.60	4.02	4.13
DESIGN FLOOD LEVEL	2.39	2.43	2.51	2.62	2.70	2.80	2.87	2.94	2.90	3.07	3.18
ORDINARY WATER LEVEL	1.07	1.12	1.16	1.17	1.12	1.21	1.22	1.29	1.35	1.22	1.05
EXISTING RIVERBED	0.54	0.59	0.63	0.64	0.59	0.68	0.69	0.76	0.82	0.69	0.52
DESIGN RIVERBED	-1.11	-1.07	-1.03	-0.99	-0.95	-0.91	-0.87	-0.73	-0.78	-0.74	-0.70

PLAN & PROFILE STA. 1+050 - STA. 2+150

VERTICAL SCALE 1:200m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
PLAN & PROFILE
STA. 1+050 - STA. 2+150

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSE [illegible] ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

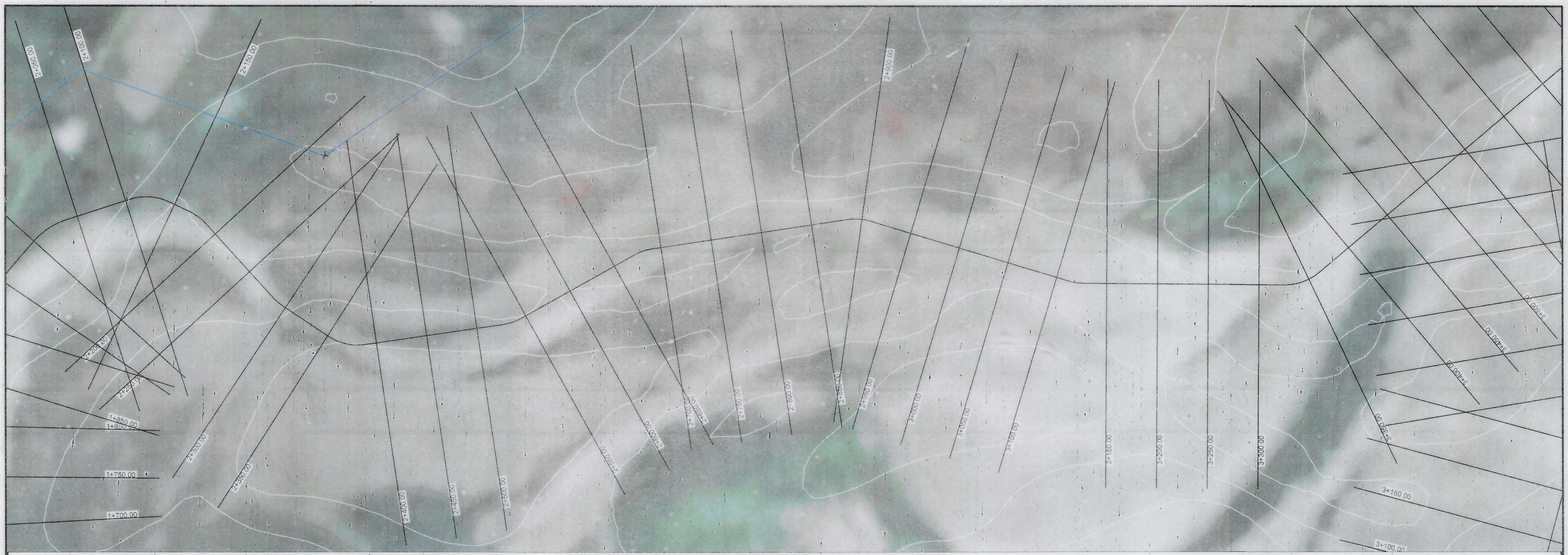
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

SET NO.
PP
01 09

SHEET NO.
05
28


2+050.00
2+100.00
2+150.00
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2+250.00
1+850.00
1+800.00
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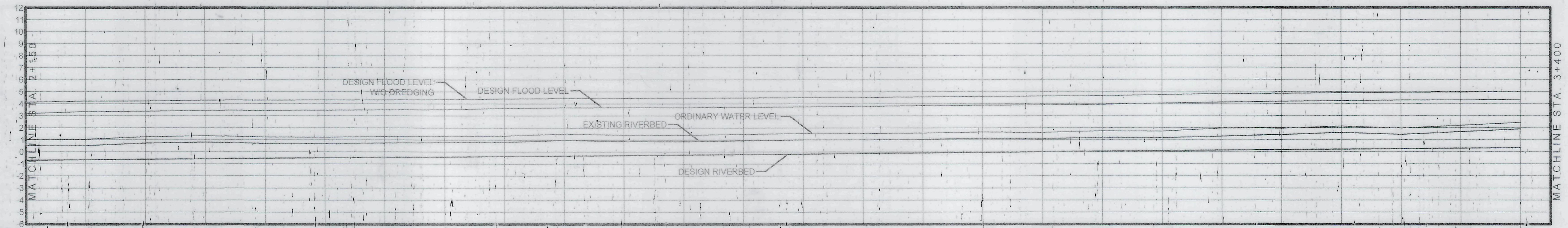


STATION	2+150	2+200	2+250	2+300	2+350	2+400	2+450	2+500	2+550	2+600	2+650	2+700	2+750
DFL WITHOUT DREDGE	4.13	4.22	4.22	4.29	4.29	4.31	4.32	4.35	4.42	4.44	4.46	4.47	4.49
DESIGN FLOOD LEVEL	3.18	3.35	3.37	3.45	3.44	3.46	3.49	3.52	3.63	3.67	3.69	3.69	3.71
ORDINARY WATER LEVEL	1.05	1.05	1.25	1.34	1.23	1.21	1.27	1.32	1.34	1.50	1.41	1.39	1.47
EXISTING RIVERBED	0.52	0.52	0.72	0.81	0.70	0.68	0.74	0.79	0.81	0.97	0.88	0.86	0.94
DESIGN RIVERBED	-0.70	-0.66	-0.62	-0.58	-0.54	-0.50	-0.45	-0.41	-0.37	-0.33	-0.29	-0.25	-0.21

STATION	2+800	2+850	2+900	2+950	3+000	3+050	3+100	3+150	3+200	3+250	3+300	3+350	3+400
DFL WITHOUT DREDGE	4.51	4.54	4.57	4.61	4.62	4.64	4.73	4.81	4.85	4.88	4.93	4.94	4.99
DESIGN FLOOD LEVEL	3.74	3.79	3.84	3.88	3.89	3.92	4.02	4.11	4.19	4.23	4.28	4.29	4.32
ORDINARY WATER LEVEL	1.54	1.54	1.58	1.66	1.60	1.72	1.69	1.80	1.95	2.13	1.96	2.19	2.42
EXISTING RIVERBED	1.01	1.01	1.05	1.13	1.07	1.19	1.16	1.27	1.42	1.60	1.43	1.66	1.89
DESIGN RIVERBED	-0.17	-0.12	-0.08	-0.04	0.00	0.04	0.08	0.12	0.17	0.21	0.25	0.29	0.33

PLAN & PROFILE STA. 2+150 - STA. 3+400

VERTICAL SCALE 1:200m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
PLAN & PROFILE
STA. 2+150 - STA. 3+400

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMEGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSE [illegible] A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

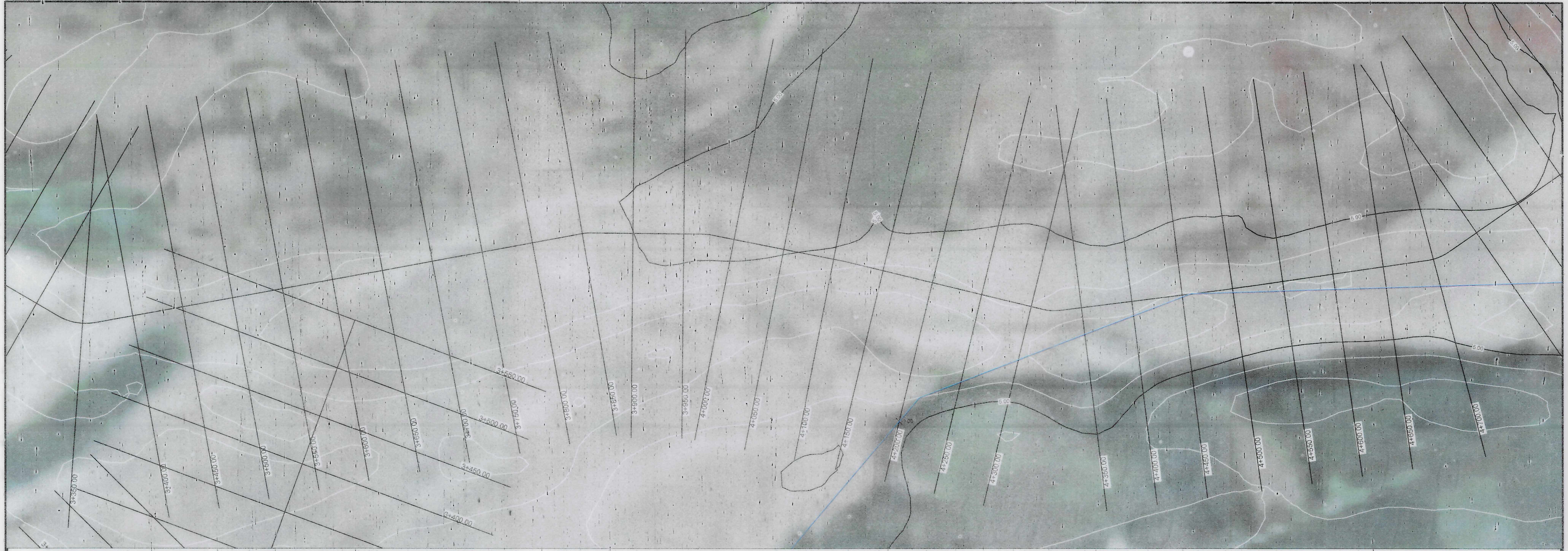
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

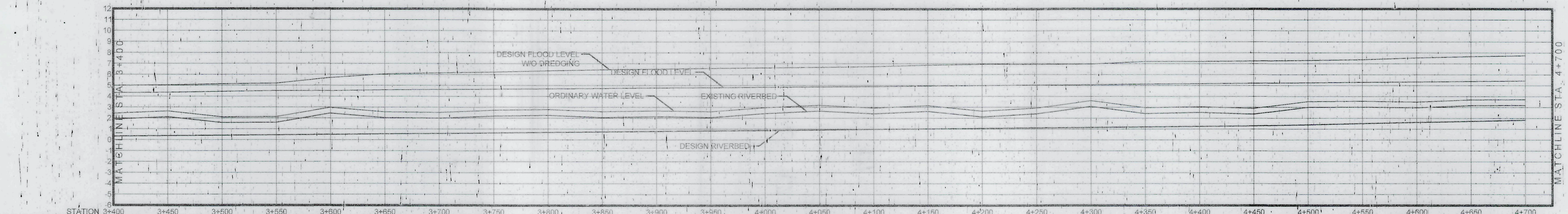
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

SET NO.
PP
02 | 09

SHEET NO.
06
28





STATION	3+400	3+450	3+500	3+550	3+600	3+650	3+700	3+750	3+800	3+850	3+900	3+950	4+000	4+050
DFL WITHOUT DREDGE	4.99	5.04	5.14	5.20	5.71	6.06	6.15	6.23	6.35	6.44	6.50	6.57	6.62	6.67
DESIGN FLOOD LEVEL	4.32	4.35	4.44	4.51	4.51	4.59	4.63	4.66	4.69	4.73	4.77	4.80	4.83	4.87
ORDINARY WATER LEVEL	2.42	2.64	2.10	2.13	2.98	2.57	2.52	2.72	2.79	2.59	2.67	2.59	2.96	3.18
EXISTING RIVERBED	1.89	2.11	1.57	1.60	2.45	2.04	1.99	2.19	2.26	2.06	2.14	2.06	2.43	2.65
DESIGN RIVERBED	0.33	0.37	0.41	0.45	0.50	0.55	0.59	0.64	0.69	0.73	0.78	0.83	0.87	0.92

STATION	4+100	4+150	4+200	4+250	4+300	4+350	4+400	4+450	4+500	4+550	4+600	4+650	4+700
DFL WITHOUT DREDGE	6.73	6.86	6.94	6.93	6.97	7.21	7.21	7.26	7.30	7.38	7.54	7.67	7.75
DESIGN FLOOD LEVEL	4.90	4.95	4.99	5.04	5.08	5.13	5.17	5.22	5.23	5.30	5.34	5.39	5.44
ORDINARY WATER LEVEL	2.93	3.15	2.64	2.92	3.61	2.96	3.06	2.91	3.53	3.56	3.49	3.70	3.72
EXISTING RIVERBED	2.40	2.62	2.11	2.39	3.08	2.43	2.53	2.38	3.00	3.03	2.96	3.17	3.19
DESIGN RIVERBED	0.97	1.01	1.06	1.11	1.15	1.20	1.25	1.30	1.40	1.51	1.62	1.72	1.83

PLAN & PROFILE STA. 3+400 - STA. 4+700

VERTICAL SCALE	1:200m
HORIZONTAL SCALE	1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
PLAN & PROFILE
STA. 3+400 - STA. 4+700

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMIGIO [illegible] MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE [illegible] ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSE [illegible]
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

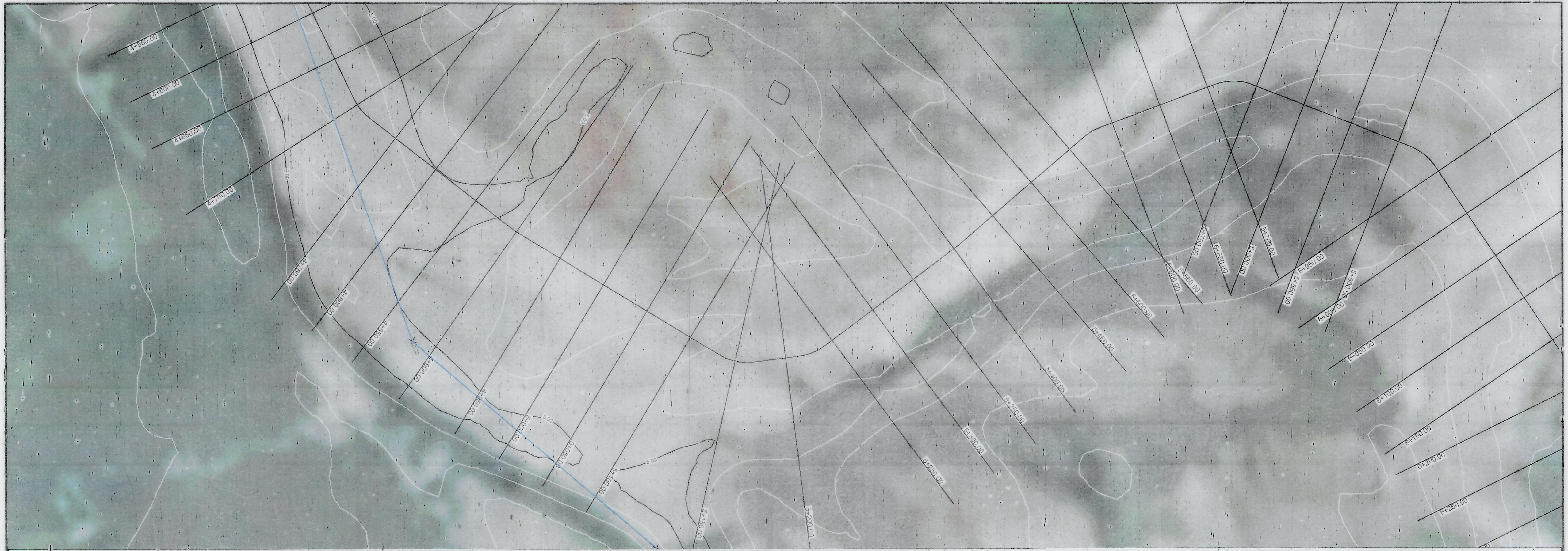
(SEE COVER SHEET)
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAYIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE

SET NO.
PR
03 09

SHEET NO.
07
28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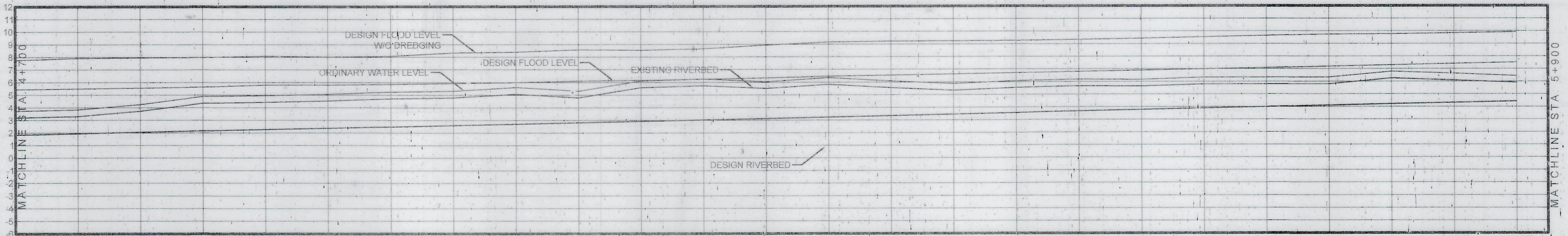


STATION	4+700	4+750	4+800	4+850	4+900	4+950	5+000	5+050	5+100	5+150	5+200	5+250
DFL WITHOUT DREDGE	7.75	7.92	7.95	7.99	8.08	8.02	8.07	8.34	8.40	8.57	8.54	8.65
DESIGN FLOOD LEVEL	5.44	5.49	5.56	5.64	5.79	5.79	5.86	5.93	6.00	6.12	6.17	6.25
ORDINARY WATER LEVEL	3.72	3.83	4.25	4.89	4.96	5.06	5.25	5.32	5.61	5.32	6.12	6.26
EXISTING RIVERBED	3.19	3.30	3.72	4.36	4.43	4.53	4.72	4.79	5.08	4.79	5.59	5.73
DESIGN RIVERBED	1.83	1.94	2.05	2.16	2.27	2.37	2.48	2.59	2.70	2.81	2.92	3.02

STATION	5+300	5+350	5+400	5+450	5+500	5+550	5+600	5+650	5+700	5+750	5+800	5+850	5+900
DFL WITHOUT DREDGE	8.94	9.17	9.24	9.25	9.27	9.34	9.43	9.54	9.64	9.74	9.76	9.83	9.92
DESIGN FLOOD LEVEL	6.34	6.47	6.54	6.62	6.71	6.80	6.90	6.99	7.09	7.20	7.31	7.41	7.52
ORDINARY WATER LEVEL	6.05	6.36	6.10	5.88	6.09	6.19	6.17	6.33	6.33	6.33	6.79	6.63	6.44
EXISTING RIVERBED	5.52	5.83	5.57	5.35	5.56	5.66	5.64	5.80	5.80	5.80	6.26	6.10	5.91
DESIGN RIVERBED	3.13	3.24	3.35	3.46	3.57	3.67	3.78	3.89	4.00	4.11	4.22	4.32	4.43

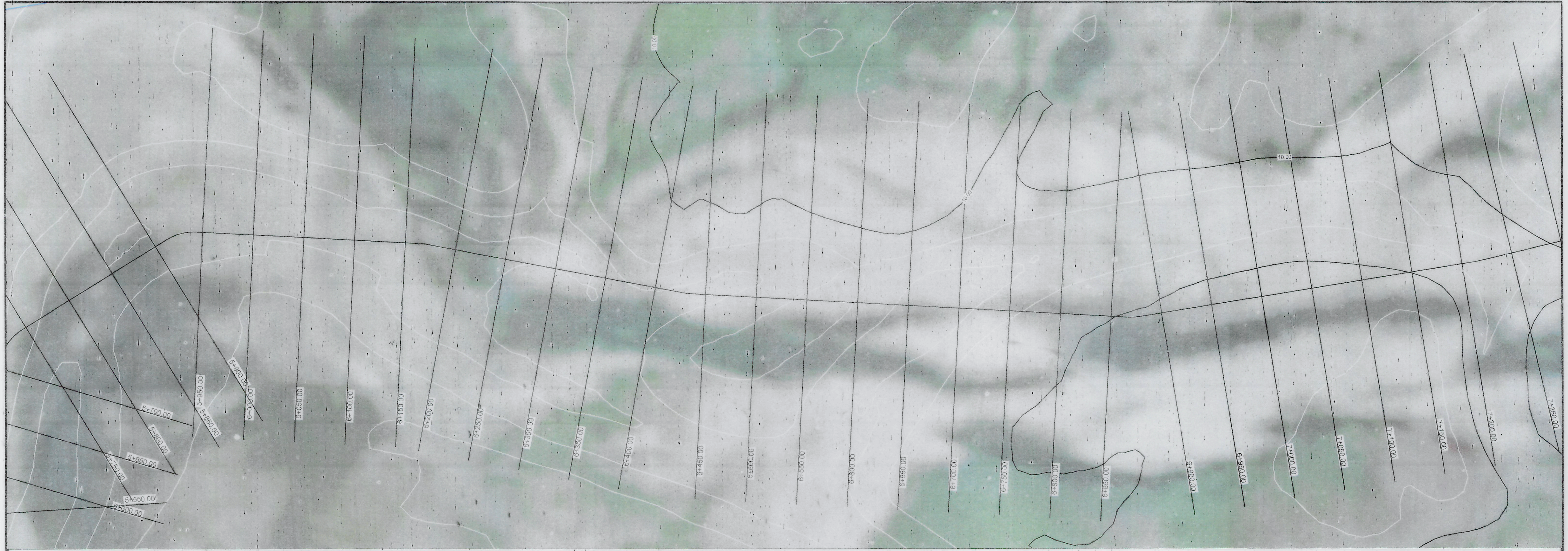
PLAN & PROFILE STA. 4+700 - STA. 5+900

VERTICAL SCALE 1:200m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS	SUBMITTED	REVIEWED AS PRESENTED			RECOMMENDING APPROVAL					APPROVED	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	PLAN & PROFILE STA. 4+700 - STA. 5+900	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO [illegible] MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV DPWH REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSE [illegible] ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	PP 04 09	08 28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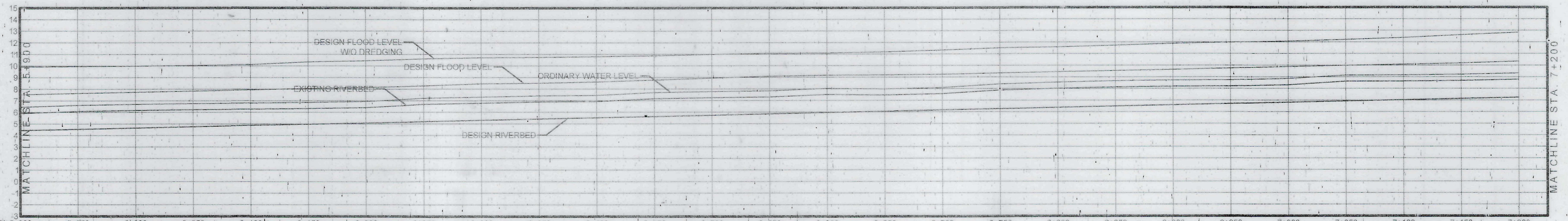


STATION	5+900	5+950	6+000	6+050	6+100	6+150	6+200	6+250	6+300	6+350	6+400	6+450	6+500	6+550	6+600	6+650	6+700	6+750	6+800	6+850	6+900	6+950	7+000	7+050	7+100	7+150	7+200
DFL WITHOUT DREDGE	9.92	9.96	9.99	10.05	10.18	10.35	10.45	10.62	10.71	10.74	10.80	10.87	10.99	11.09	11.10	11.19	11.33	11.51	11.57	11.72	11.87	11.98	12.07	12.21	12.38	1.62	12.83
DESIGN FLOOD LEVEL	7.52	7.64	7.74	7.83	7.94	8.06	8.15	8.28	8.46	8.51	8.61	8.77	8.94	9.09	9.18	9.20	9.24	9.35	9.45	9.55	9.65	9.76	9.89	9.99	10.09	10.20	10.35
ORDINARY WATER LEVEL	6.44	6.61	6.70	6.76	6.81	6.85	6.94	7.21	7.31	7.42	7.45	7.69	7.78	7.84	8.04	7.99	8.10	8.40	8.56	8.67	8.73	8.75	8.85	9.16	9.17	9.22	9.33
EXISTING RIVERBED	5.91	6.08	6.17	6.23	6.28	6.32	6.41	6.68	6.78	6.89	6.92	7.16	7.25	7.31	7.51	7.46	7.57	7.87	8.03	8.14	8.20	8.22	8.32	8.63	8.64	8.69	8.80
DESIGN RIVERBED	4.43	4.54	4.65	4.76	4.87	4.97	5.08	5.19	5.30	5.41	5.52	5.62	5.73	5.84	5.95	6.06	6.17	6.06	6.38	6.49	6.60	6.71	6.82	6.92	7.03	7.14	7.25

PLAN & PROFILE STA. 5+900 - STA. 7+200

VERTICAL SCALE	1:200m
HORIZONTAL SCALE	1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE, OCCIDENTAL MINDORO

SHEET CONTENTS:
PLAN & PROFILE
STA. 5+900 - STA. 7+200

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSEL [illegible] ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

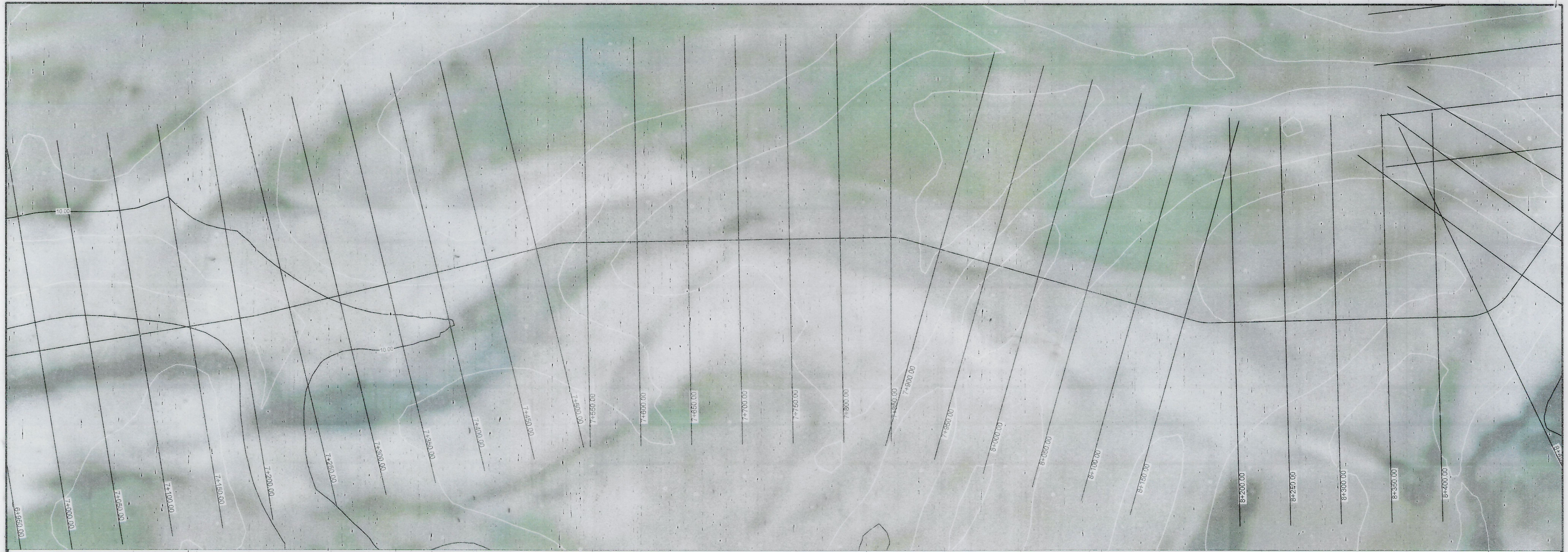
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

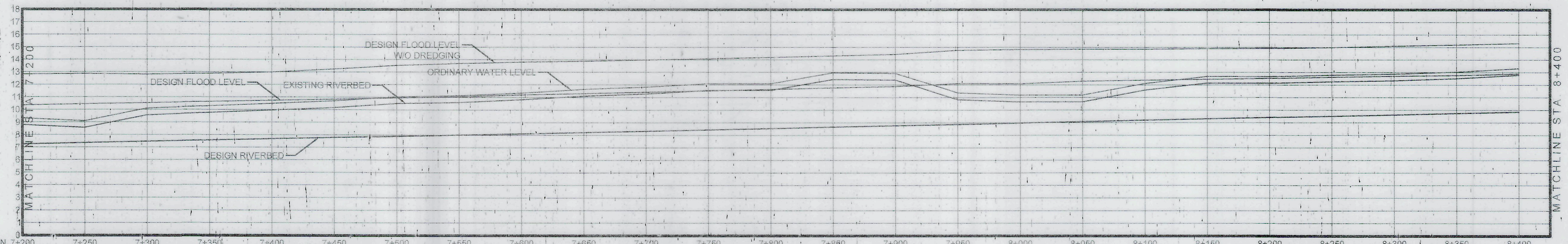
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE

SET NO.
PP
05 | 09

SHEET NO.
09
28





STATION	7+200	7+250	7+300	7+350	7+400	7+450	7+500	7+550	7+600	7+650	7+700	7+750	7+800	7+850	7+900	7+950	8+000	8+050	8+100	8+150	8+200	8+250	8+300	8+350	8+400
DFL WITHOUT DREDGE	12.83	12.86	12.81	12.88	12.99	13.25	13.53	13.69	13.81	13.88	13.99	14.09	14.19	14.31	14.43	14.76	14.82	14.85	14.85	14.90	14.91	14.98	15.10	15.20	15.32
DESIGN FLOOD LEVEL	10.35	10.45	12.81	10.64	10.74	10.84	10.95	11.05	11.21	11.32	11.43	11.53	11.64	11.76	11.87	12.11	12.10	12.30	12.38	12.45	12.52	12.62	12.70	12.77	12.88
ORDINARY WATER LEVEL	9.33	9.10	10.10	10.30	10.49	10.70	11.04	11.13	11.35	11.64	11.82	12.10	12.10	12.96	12.91	11.37	11.19	11.19	12.12	12.68	12.67	12.79	12.87	13.04	13.32
EXISTING RIVERBED	8.80	8.57	9.57	9.77	9.96	10.17	10.51	10.60	10.82	11.11	11.29	11.57	11.57	12.43	12.38	10.84	10.66	10.66	11.59	12.15	12.14	12.26	12.34	12.51	12.79
DESIGN RIVERBED	7.25	7.36	7.47	7.57	7.68	7.79	7.90	8.01	8.12	8.22	8.33	8.44	8.55	8.66	8.77	8.87	8.98	9.09	9.20	9.31	9.42	9.52	9.63	9.74	9.85

PLAN & PROFILE STA. 7+200 - STA. 8+400

VERTICAL SCALE 1:200m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
PLAN & PROFILE
STA. 7+200 - STA. 8+400

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSEL[illegible] A. [illegible]ONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

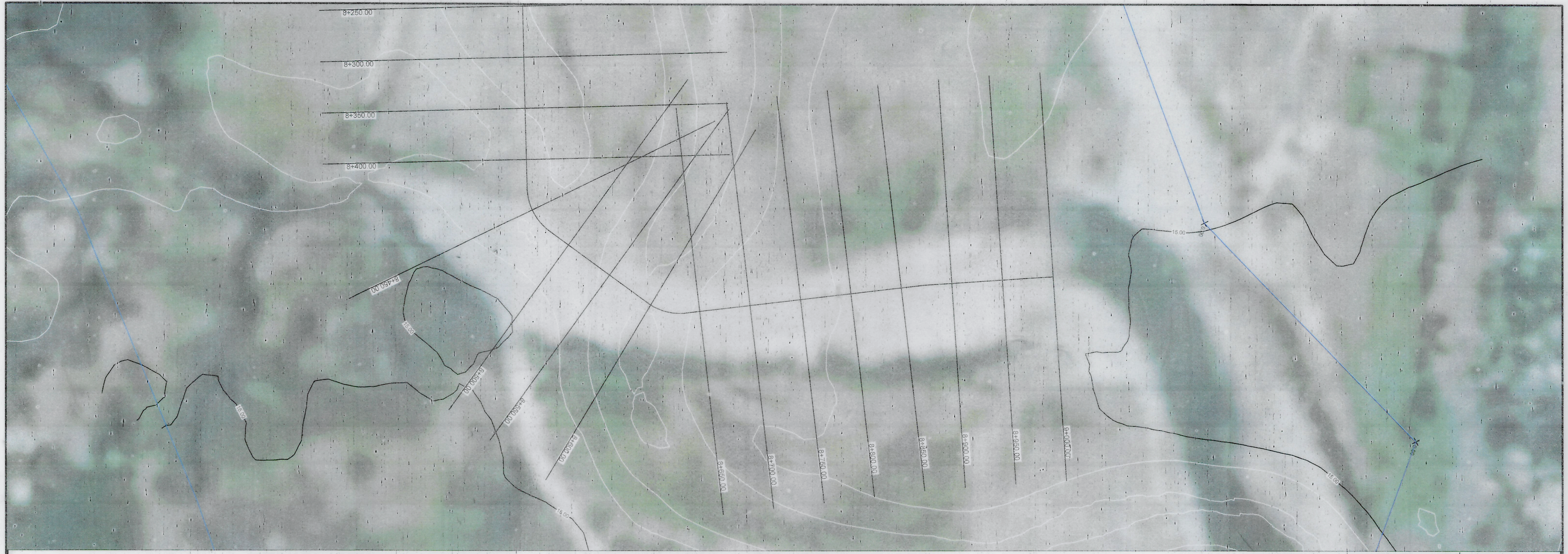
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

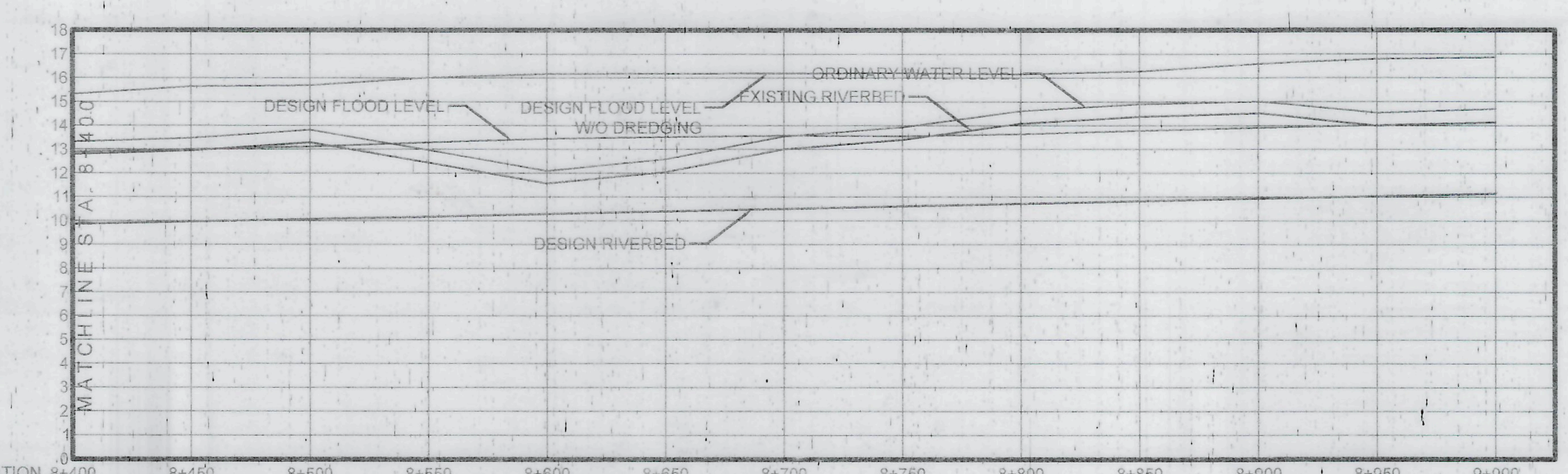
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE

SET NO.
PP
06 | 09

SHEET NO.
10
28





STATION	8+400	8+450	8+500	8+550	8+600	8+650	8+700	8+750	8+800	8+850	8+900	8+950	9+000
DFL WITHOUT DREDGE	15.32	15.64	15.69	16.02	16.17	16.18	16.19	16.20	16.16	16.28	16.59	16.79	16.85
DESIGN FLOOD LEVEL	12.88	13.01	13.11	13.29	13.45	13.52	13.58	13.56	13.64	13.78	13.90	14.02	14.15
ORDINARY WATER LEVEL	13.32	13.47	13.82	12.97	12.10	12.58	13.54	13.93	14.61	14.90	15.04	14.53	14.68
EXISTING RIVERBED	12.79	12.94	13.29	12.44	11.57	12.05	13.01	13.40	14.08	14.37	14.51	14.00	14.15
DESIGN RIVERBED	9.85	9.96	10.07	10.17	10.28	10.39	10.50	10.61	10.72	10.82	10.93	11.04	11.15

PLAN & PROFILE STA. 8+400 - STA. 9+000

VERTICAL SCALE	1:200m
HORIZONTAL SCALE	1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION

DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.

RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS

PLAN & PROFILE
STA. 8+400 - STA. 9+000

SUBMITTED:

DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:

REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:

(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSELITO A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

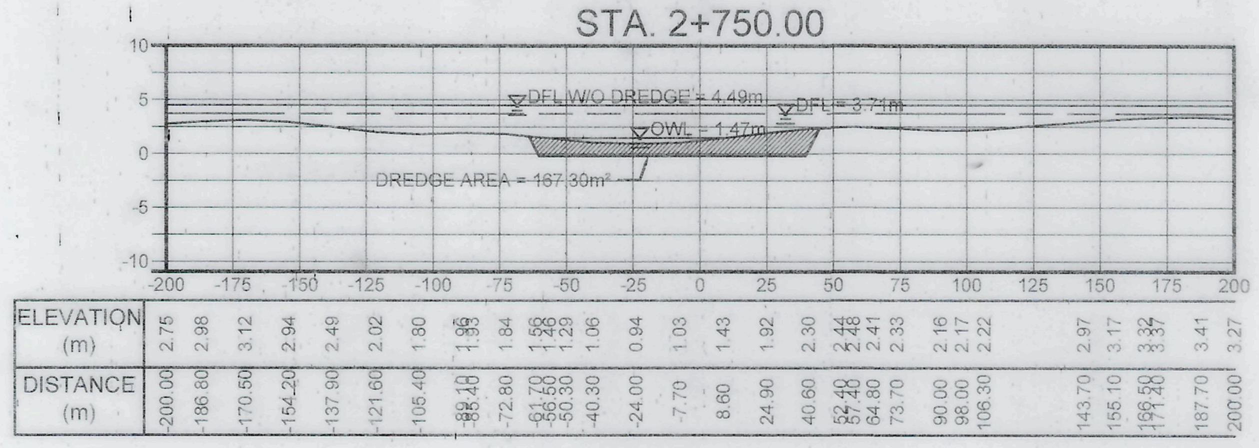
APPROVED:

(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE

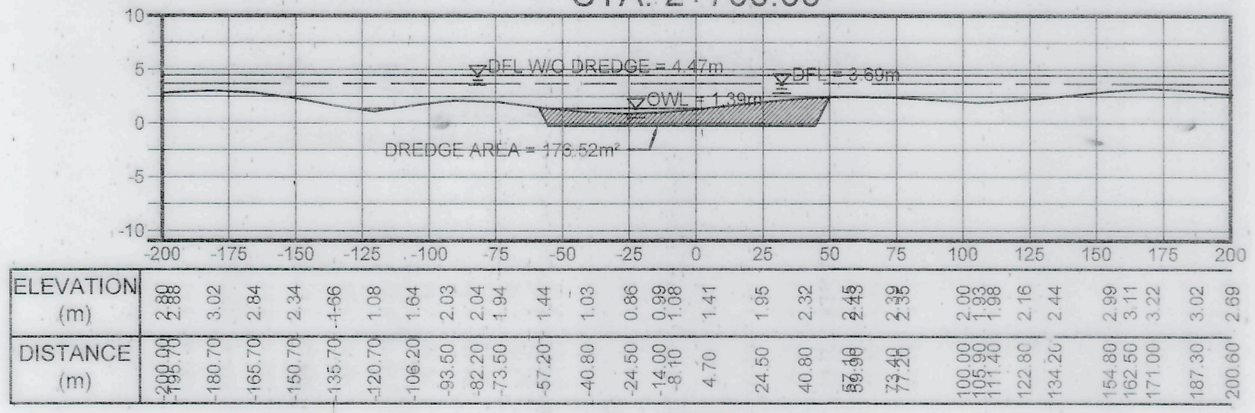
SET NO.
PP
07 09

SHEET NO.
11
28

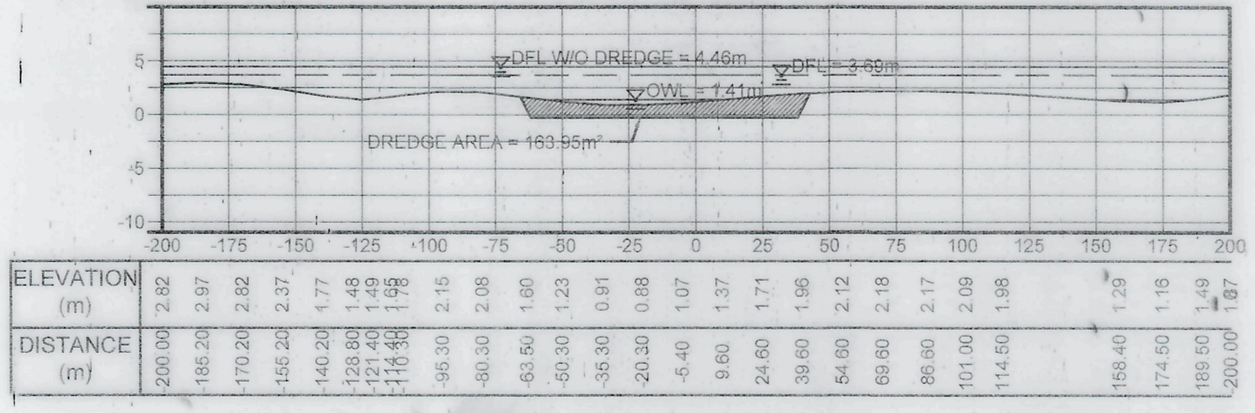
STA. 2+750.00


DFL W/O DREDGE = 4.49m
DFL = 3.71m
OWL = 1.47m
DREDGE AREA = 167.30m²
ELEVATION (m)
DISTANCE (m)

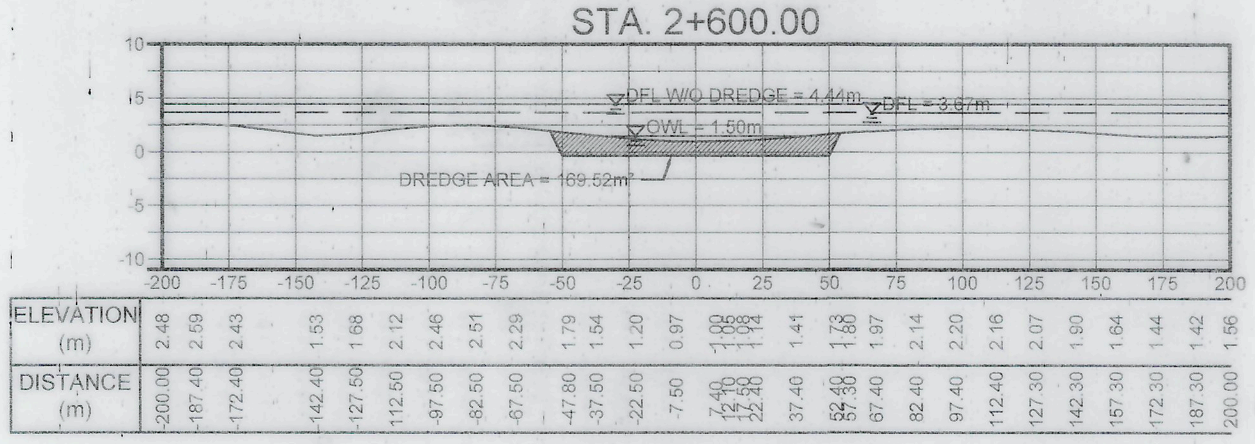
STA. 2+700.00


DFL W/O DREDGE = 4.47m
DFL = 3.69m
OWL = 1.39m
DREDGE AREA = 176.52m²
ELEVATION (m)
DISTANCE (m)

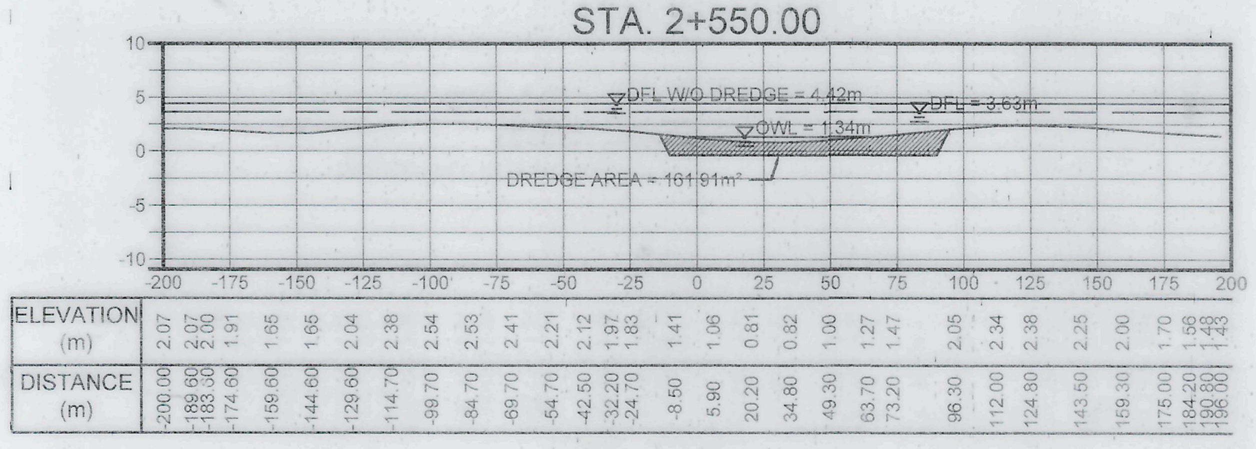
STA. 2+650.00


DFL W/O DREDGE = 4.46m
DFL = 3.69m
OWL = 1.41m
DREDGE AREA = 163.95m²
ELEVATION (m)
DISTANCE (m)

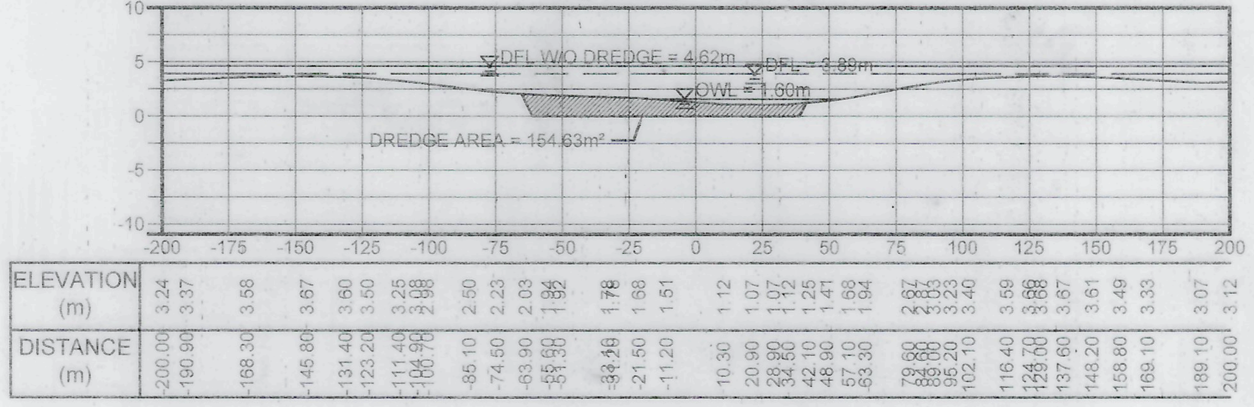
STA. 2+600.00


DFL W/O DREDGE = 4.44m
DFL = 3.67m
OWL = 1.50m
DREDGE AREA = 169.52m²
ELEVATION (m)
DISTANCE (m)

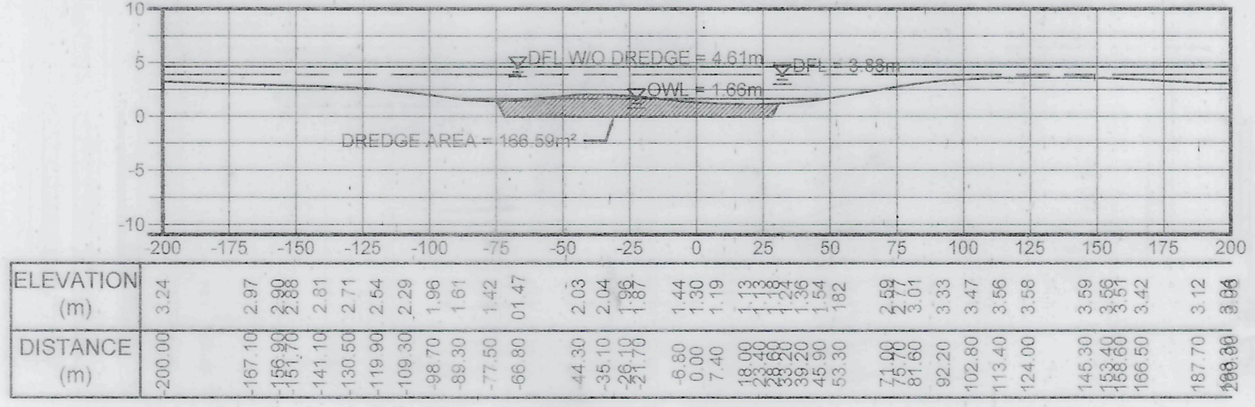
STA. 2+550.00


DFL W/O DREDGE = 4.42m
DFL = 3.63m
OWL = 1.34m
DREDGE AREA = 161.91m²
ELEVATION (m)
DISTANCE (m)

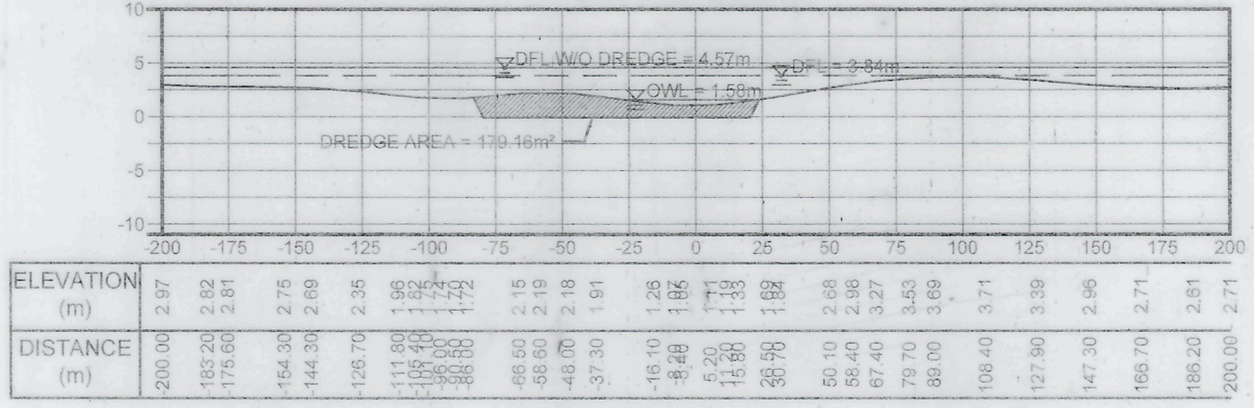
STA. 3+000.00


DFL W/O DREDGE = 4.62m
DFL = 3.89m
OWL = 1.60m
DREDGE AREA = 154.63m²
ELEVATION (m)
DISTANCE (m)

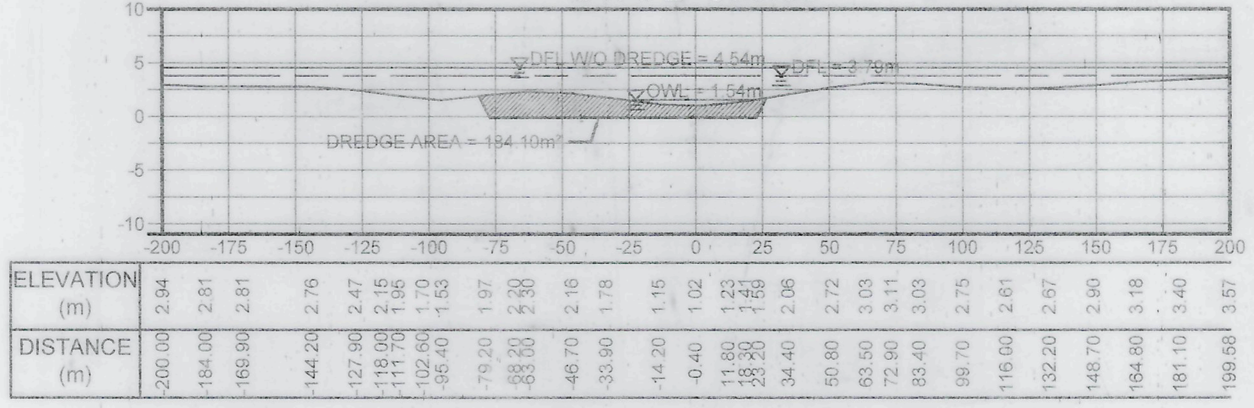
STA. 2+950.00


DFL W/O DREDGE = 4.61m
DFL = 3.88m
OWL = 1.66m
DREDGE AREA = 166.59m²
ELEVATION (m)
DISTANCE (m)

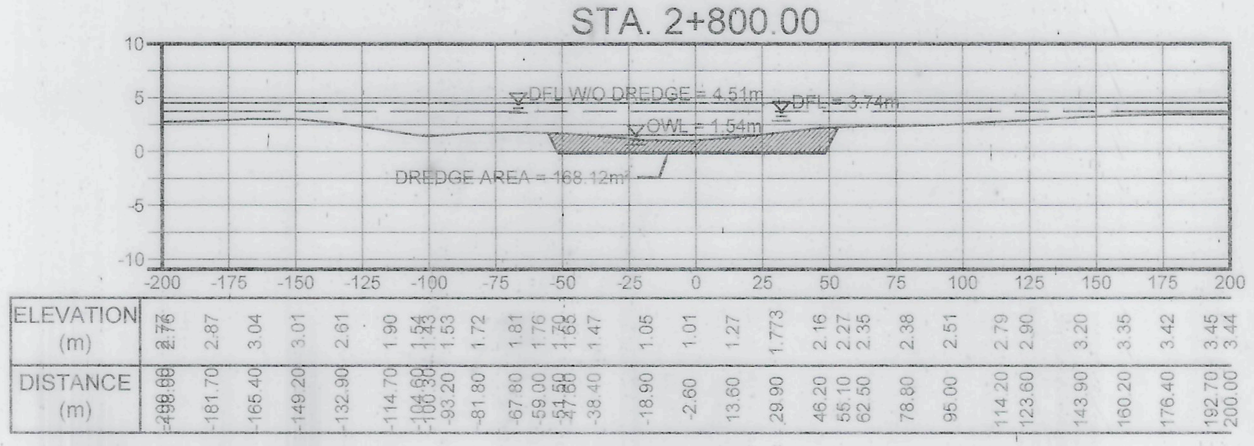
STA. 2+900.00


DFL W/O DREDGE = 4.57m
DFL = 3.84m
OWL = 1.58m
DREDGE AREA = 179.16m²
ELEVATION (m)
DISTANCE (m)

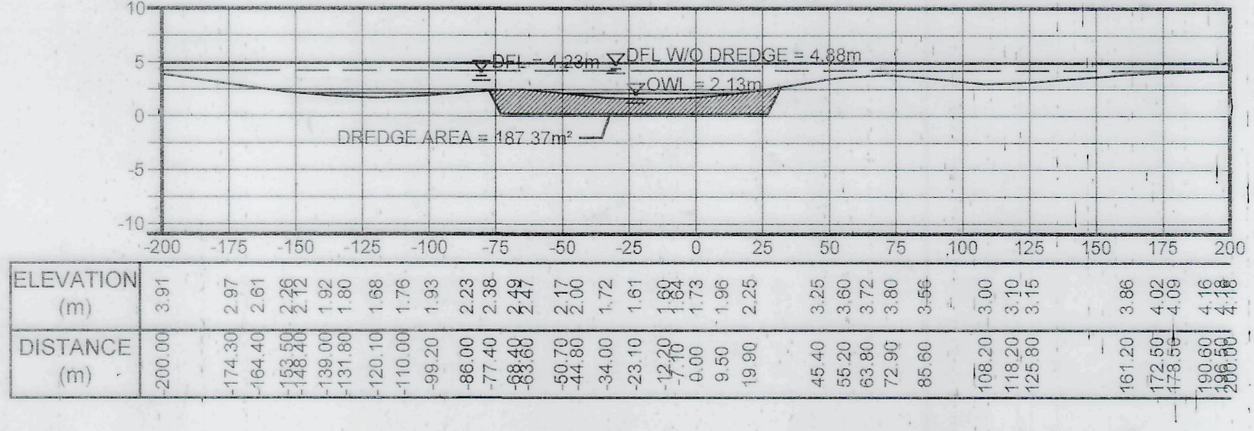
STA. 2+850.00


DFL W/O DREDGE = 4.54m
DFL = 3.79m
OWL = 1.54m
DREDGE AREA = 184.10m²
ELEVATION (m)
DISTANCE (m)

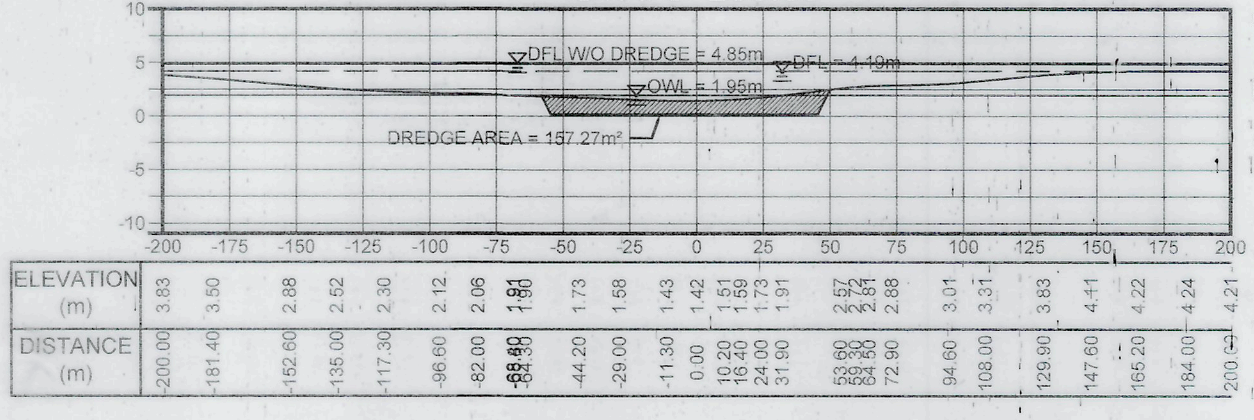
STA. 2+800.00


DFL W/O DREDGE = 4.51m
DFL = 3.74m
OWL = 1.54m
DREDGE AREA = 168.12m²
ELEVATION (m)
DISTANCE (m)

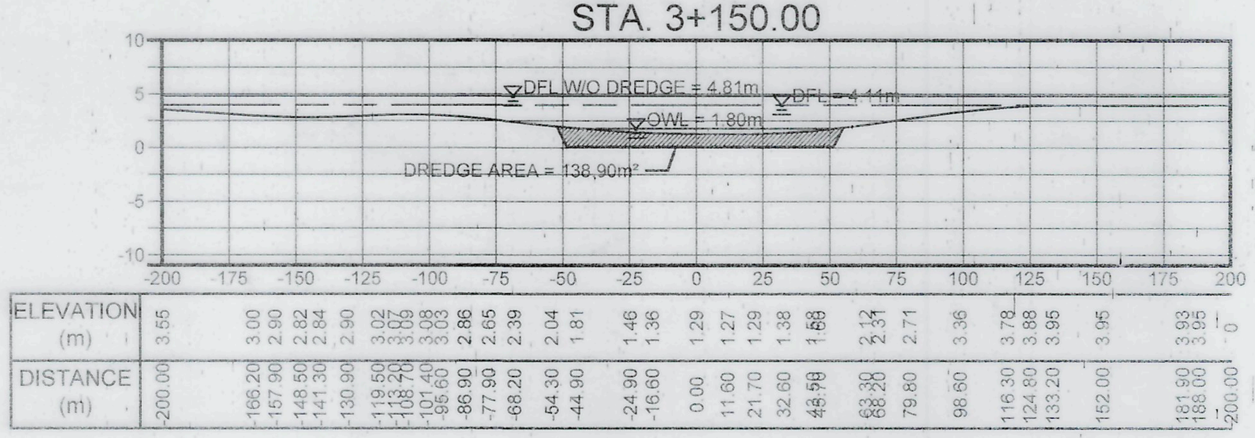
STA. 3+250.00


DFL = 4.23m
DFL W/O DREDGE = 4.88m
OWL = 2.13m
DREDGE AREA = 187.37m²
ELEVATION (m)
DISTANCE (m)

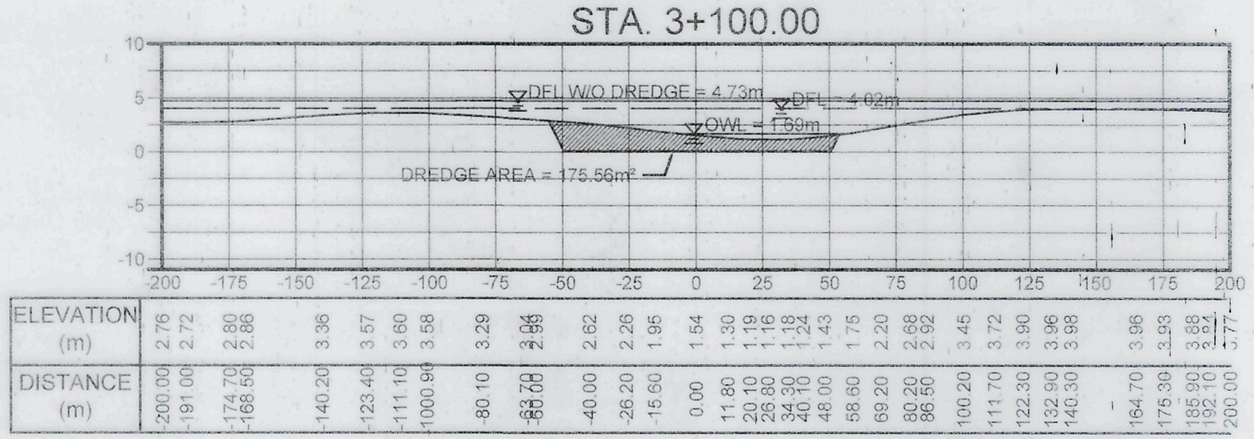
STA. 3+200.00


DFL W/O DREDGE = 4.85m
DFL = 4.10m
OWL = 1.95m
DREDGE AREA = 157.27m²
ELEVATION (m)
DISTANCE (m)

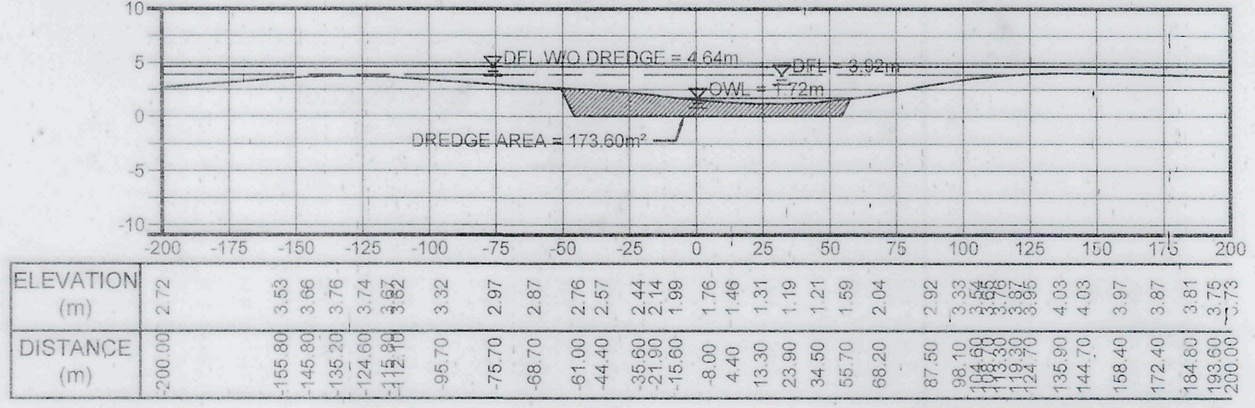
STA. 3+150.00


DFL W/O DREDGE = 4.81m
DFL = 4.11m
OWL = 1.80m
DREDGE AREA = 138.90m²
ELEVATION (m)
DISTANCE (m)

STA. 3+100.00


DFL W/O DREDGE = 4.73m
DFL = 4.02m
OWL = 1.69m
DREDGE AREA = 175.56m²
ELEVATION (m)
DISTANCE (m)

STA. 3+050.00


DFL W/O DREDGE = 4.64m
DFL = 3.92m
OWL = 1.72m
DREDGE AREA = 173.60m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 2+550 ~ STA. 3+250

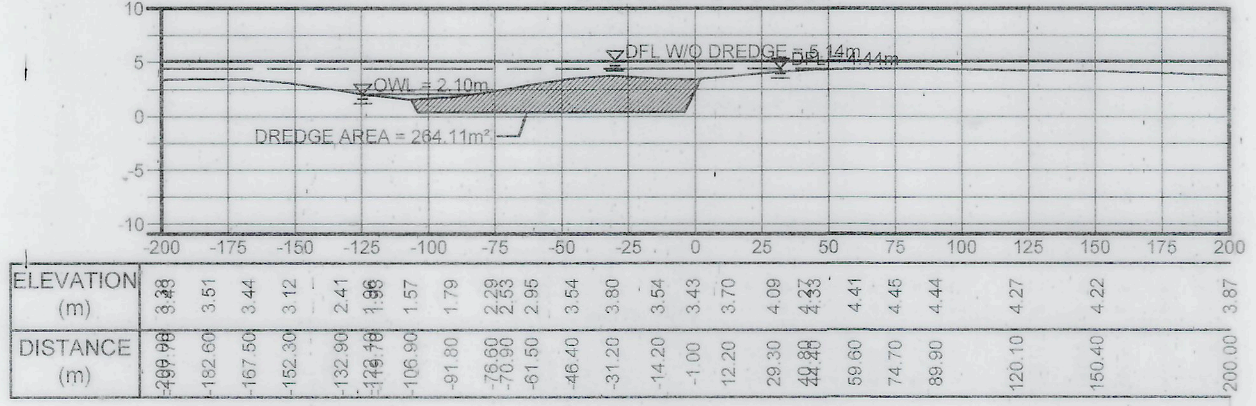
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

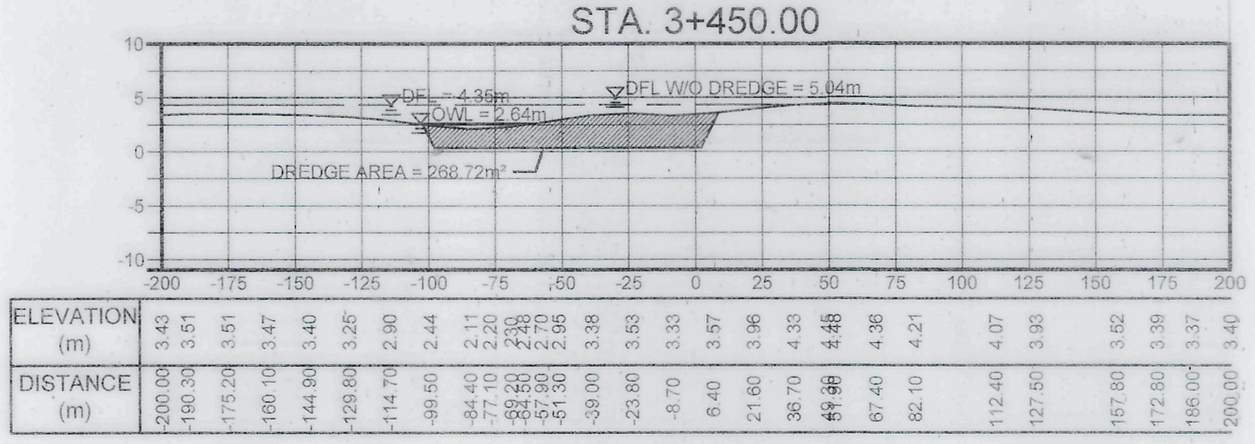
DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 1 STA. 2+550 - STA. 3+250	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV. DPWH, REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSE [illegible] ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN, CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ~~ASSISTANT SECRETARY FOR~~ **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	CS1 03 15	16 28

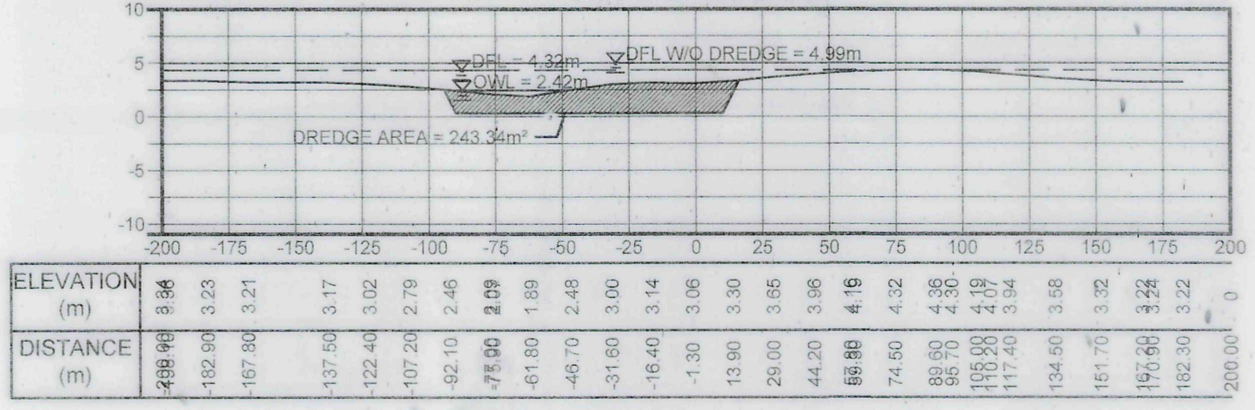
STA. 3+500.00


DFL W/O DREDGE = 5.14m
DFL = 4.44m
OWL = 2.10m
DREDGE AREA = 264.11m²
ELEVATION (m)
DISTANCE (m)

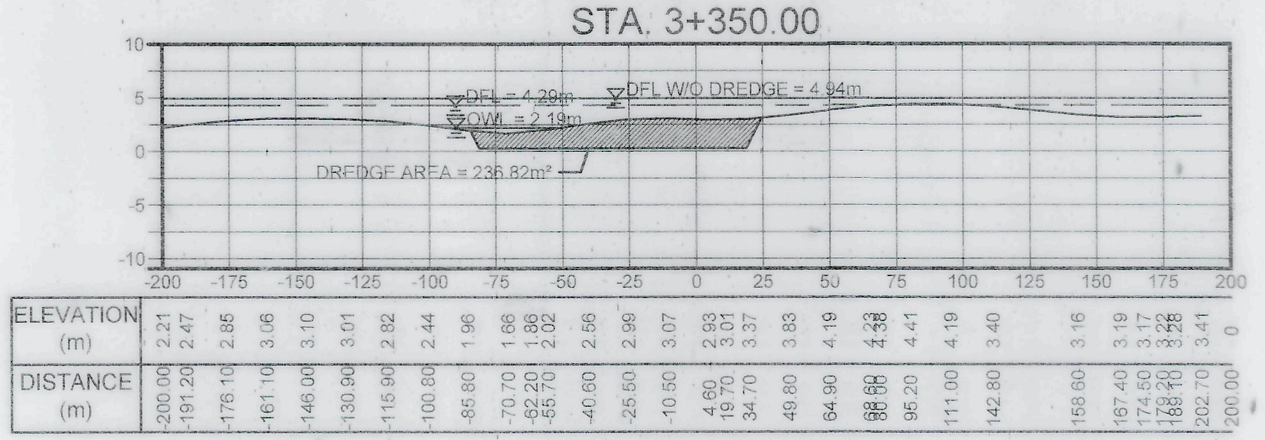
STA. 3+450.00


DFL = 4.35m
OWL = 2.64m
DFL W/O DREDGE = 5.04m
DREDGE AREA = 268.72m²
ELEVATION (m)
DISTANCE (m)

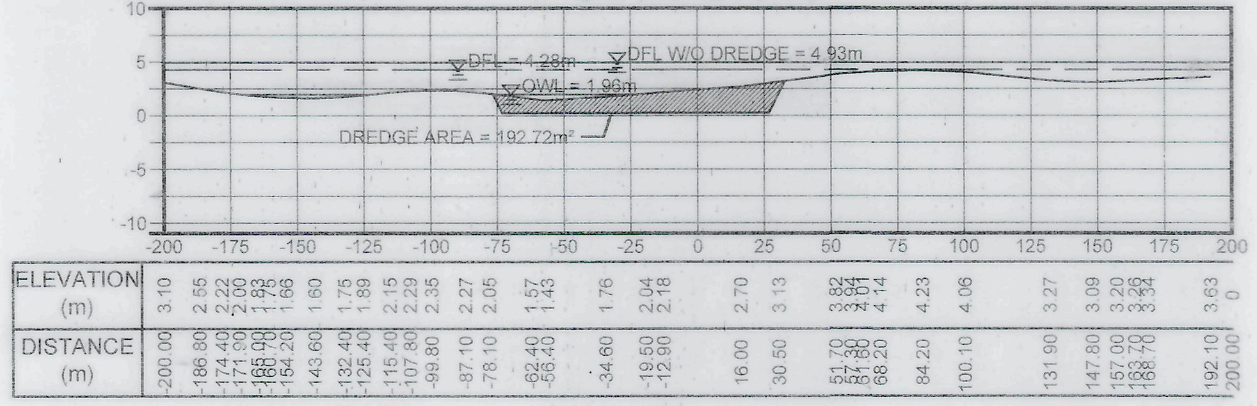
STA. 3+400.00


DFL = 4.32m
OWL = 2.42m
DFL W/O DREDGE = 4.99m
DREDGE AREA = 243.34m²
ELEVATION (m)
DISTANCE (m)

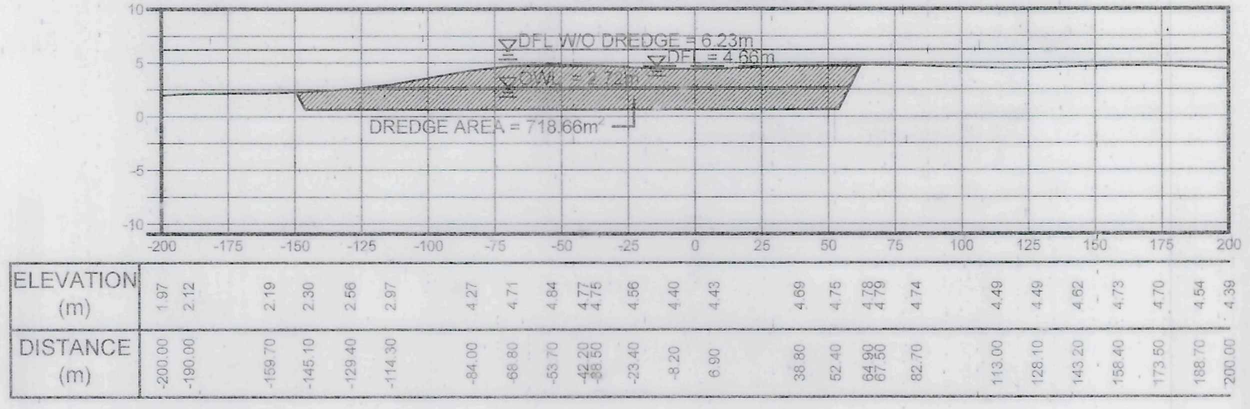
STA. 3+350.00


DFL = 4.29m
OWL = 2.19m
DFL W/O DREDGE = 4.94m
DREDGE AREA = 236.82m²
ELEVATION (m)
DISTANCE (m)

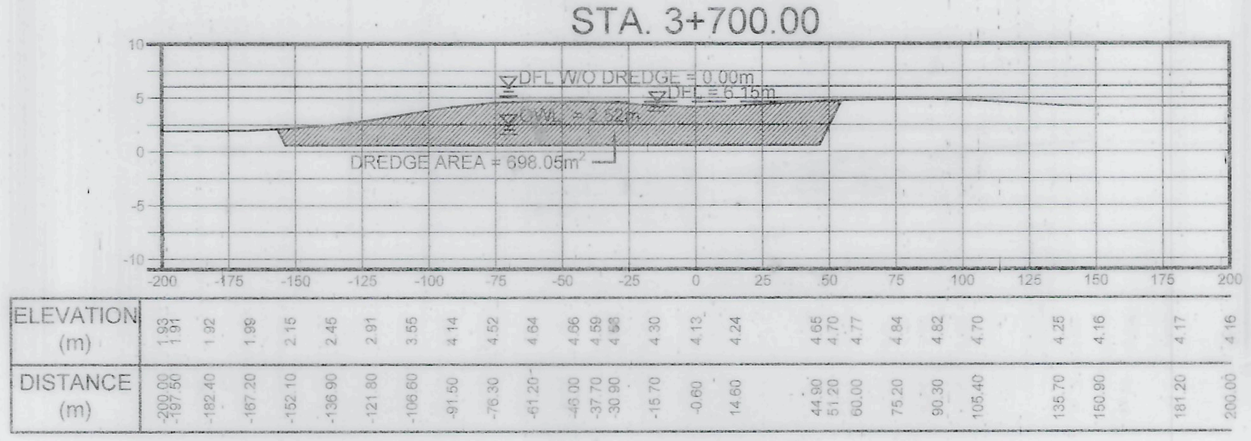
STA. 3+300.00


DFL = 4.28m
OWL = 1.96m
DFL W/O DREDGE = 4.93m
DREDGE AREA = 192.72m²
ELEVATION (m)
DISTANCE (m)

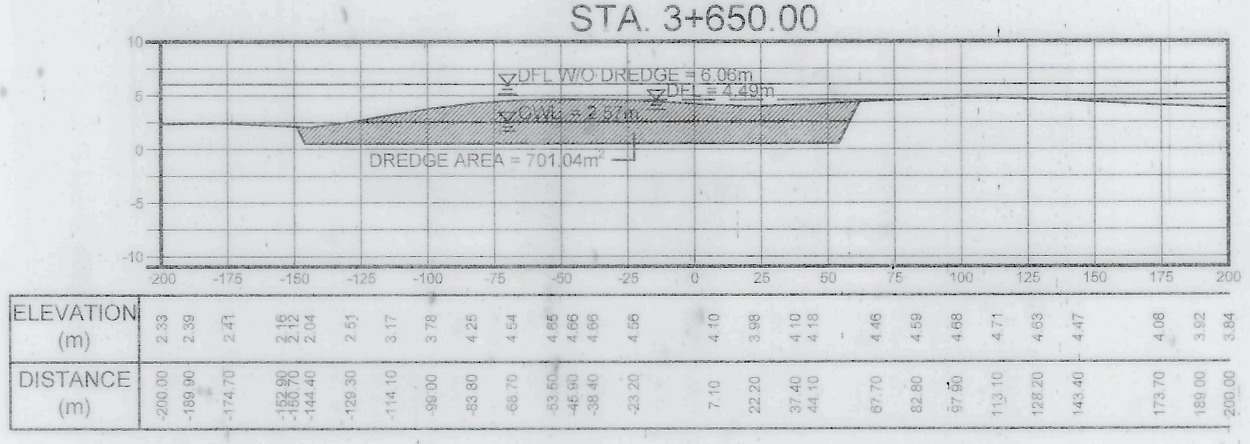
STA. 3+750.00


DFL W/O DREDGE = 6.23m
DFL = 4.66m
OWL = 2.72m
DREDGE AREA = 718.66m²
ELEVATION (m)
DISTANCE (m)

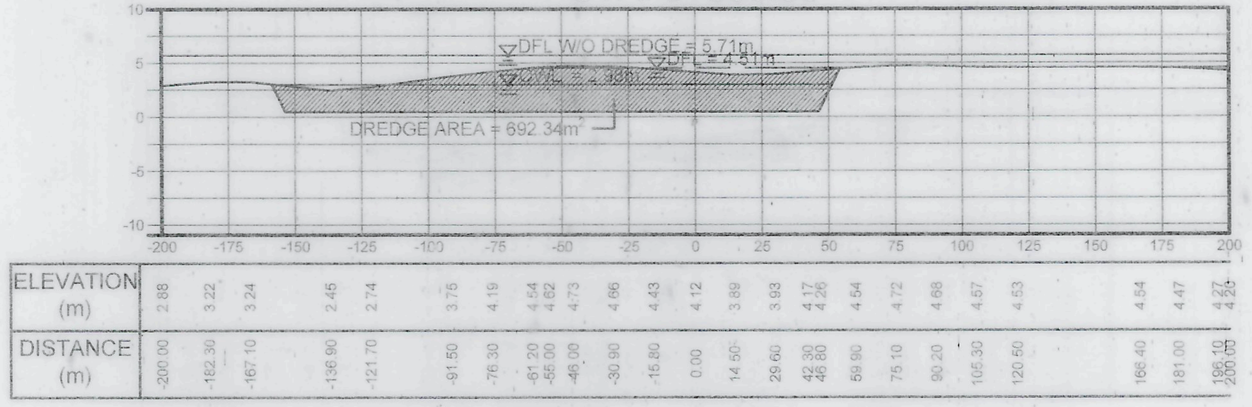
STA. 3+700.00


DFL W/O DREDGE = 0.00m
DFL = 6.15m
OWL = 2.52m
DREDGE AREA = 698.05m²
ELEVATION (m)
DISTANCE (m)

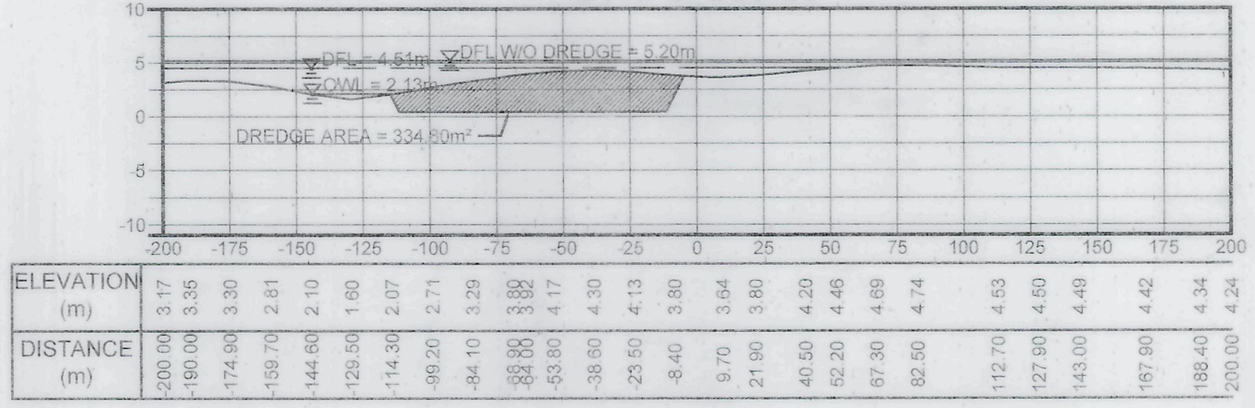
STA. 3+650.00


DFL W/O DREDGE = 6.06m
DFL = 4.49m
OWL = 2.57m
DREDGE AREA = 701.04m²
ELEVATION (m)
DISTANCE (m)

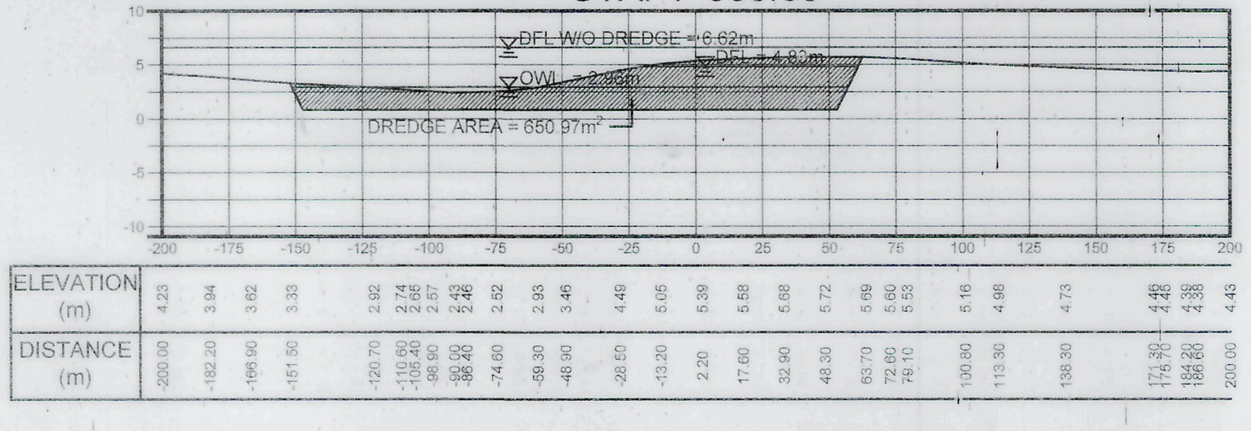
STA. 3+600.00


DFL W/O DREDGE = 5.71m
DFL = 4.51m
OWL = 2.38m
DREDGE AREA = 692.34m²
ELEVATION (m)
DISTANCE (m)

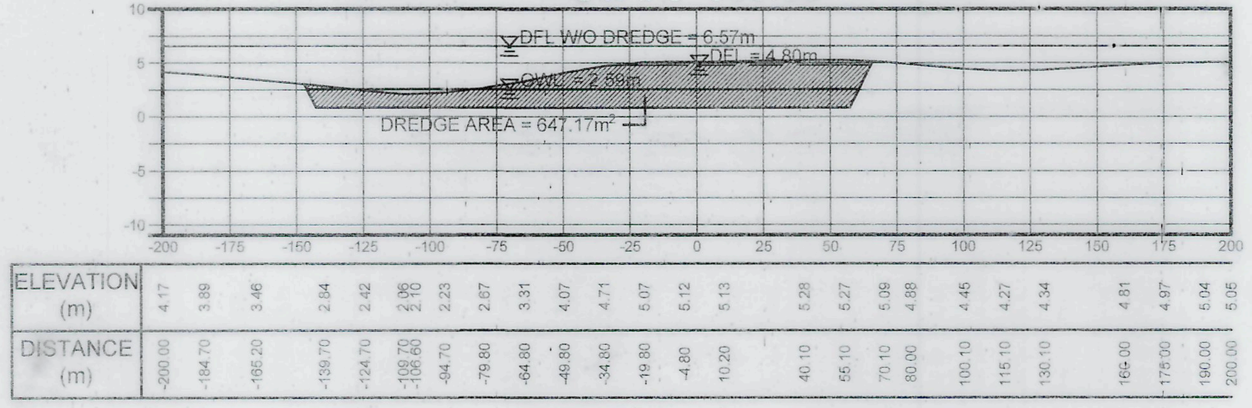
STA. 3+550.00


DFL = 4.51m
DFL W/O DREDGE = 5.20m
OWL = 2.13m
DREDGE AREA = 334.80m²
ELEVATION (m)
DISTANCE (m)

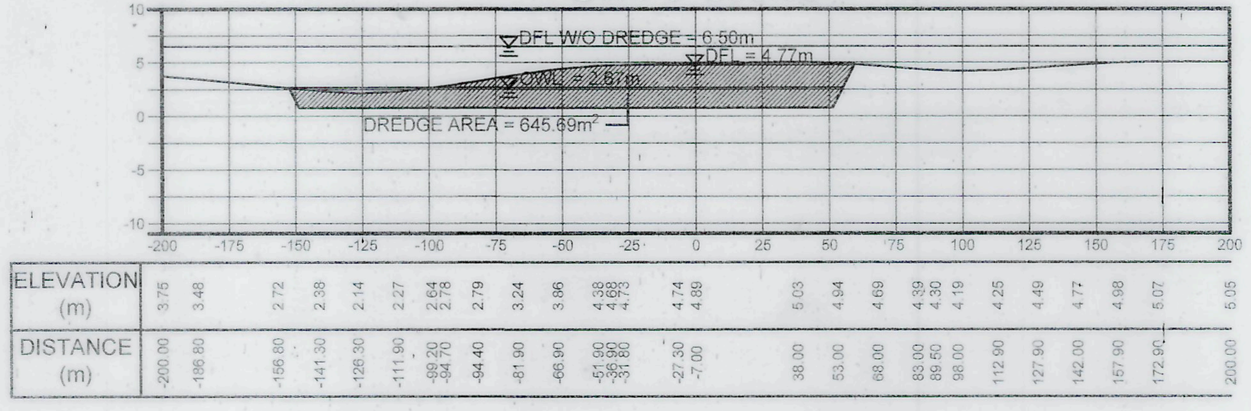
STA. 4+000.00


DFL W/O DREDGE = 6.62m
DFL = 4.83m
OWL = 2.86m
DREDGE AREA = 650.97m²
ELEVATION (m)
DISTANCE (m)

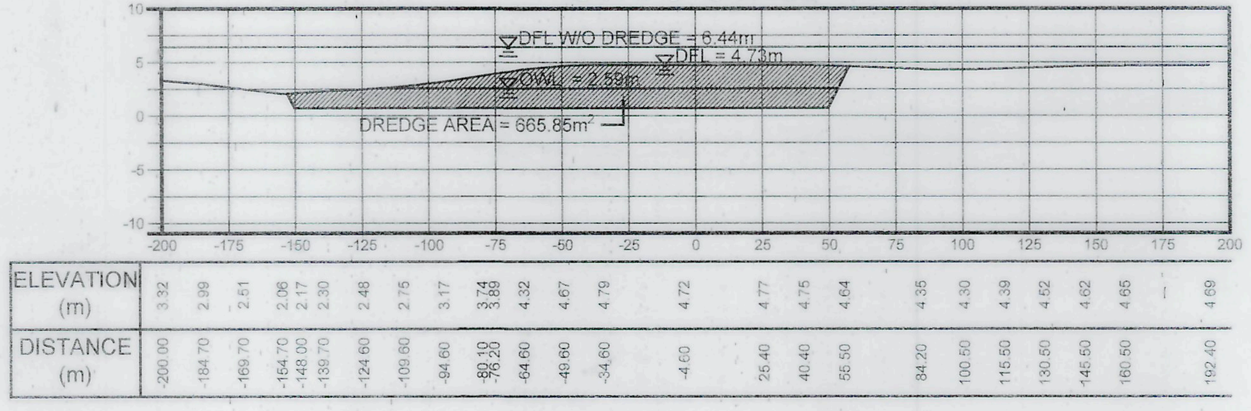
STA. 3+950.00


DFL W/O DREDGE = 6.57m
DFL = 4.80m
OWL = 2.59m
DREDGE AREA = 647.17m²
ELEVATION (m)
DISTANCE (m)

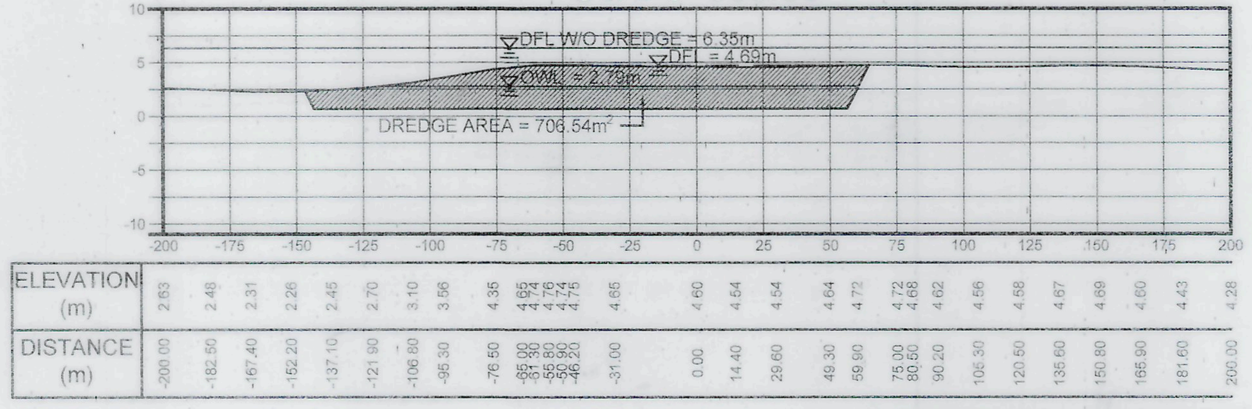
STA. 3+900.00


DFL W/O DREDGE = 6.50m
DFL = 4.77m
OWL = 2.67m
DREDGE AREA = 645.69m²
ELEVATION (m)
DISTANCE (m)

STA. 3+847.00


DFL W/O DREDGE = 6.44m
DFL = 4.73m
OWL = 2.59m
DREDGE AREA = 665.85m²
ELEVATION (m)
DISTANCE (m)

STA. 3+800.00


DFL W/O DREDGE = 6.35m
DFL = 4.69m
OWL = 2.79m
DREDGE AREA = 706.54m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 3+300 ~ STA. 4+000

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 1
STA. 3+300 - STA. 4+000

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER

GENE R. A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR

(SEE COVER SHEET)
JOSE A. ANTONIO
MINDORO
DEO

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B

[redacted]

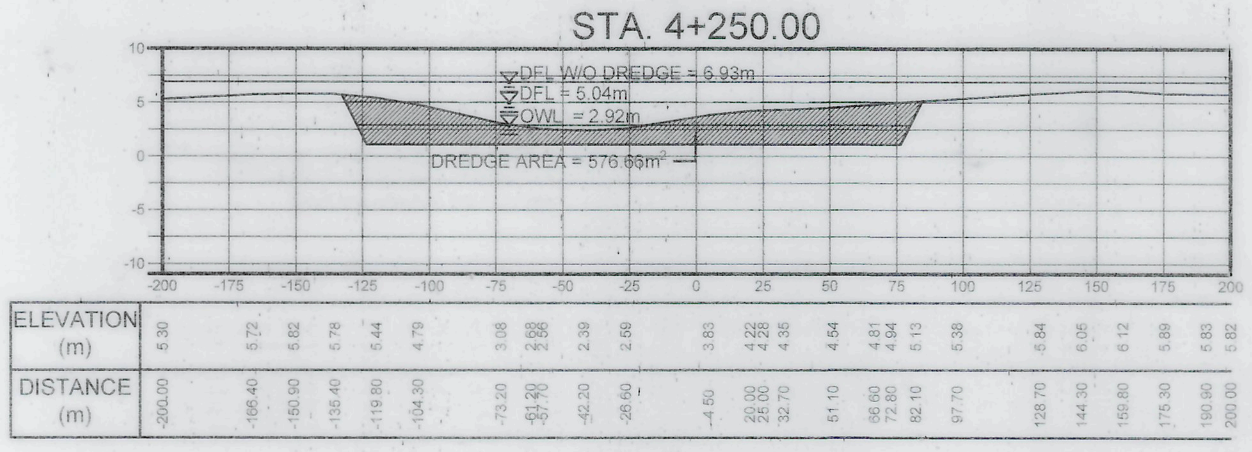
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN

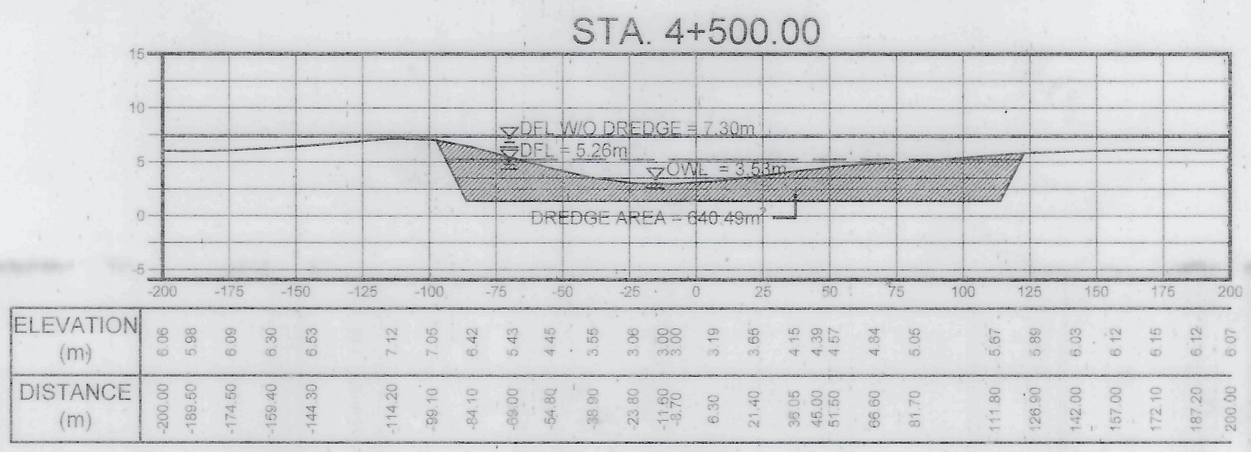
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES

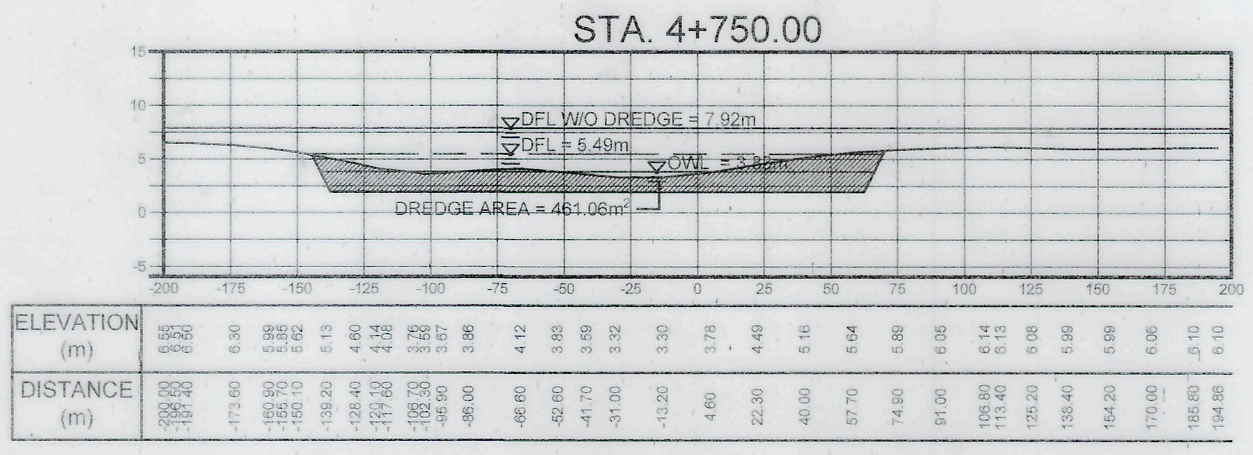
APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES

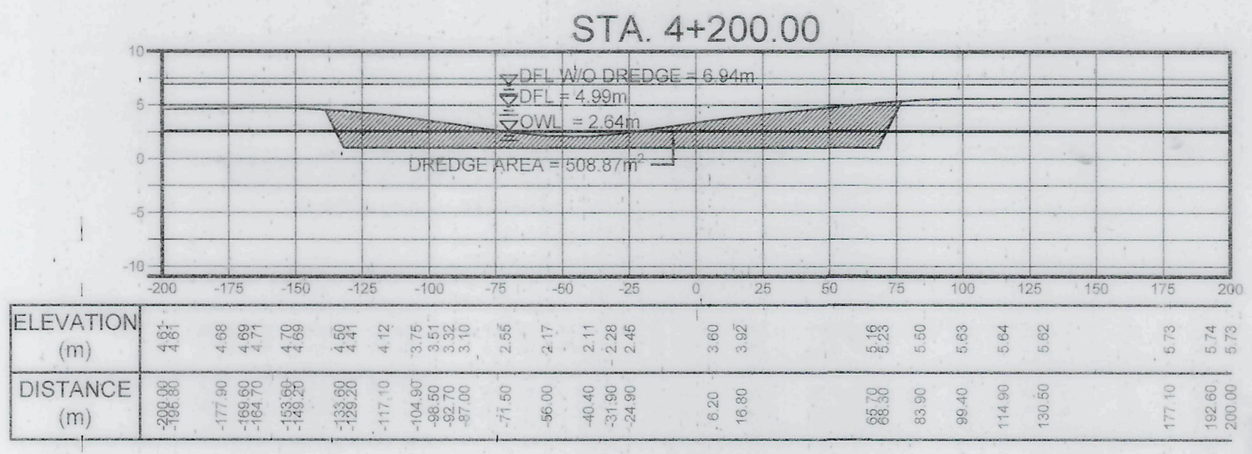
SET NO
CS1
04 15

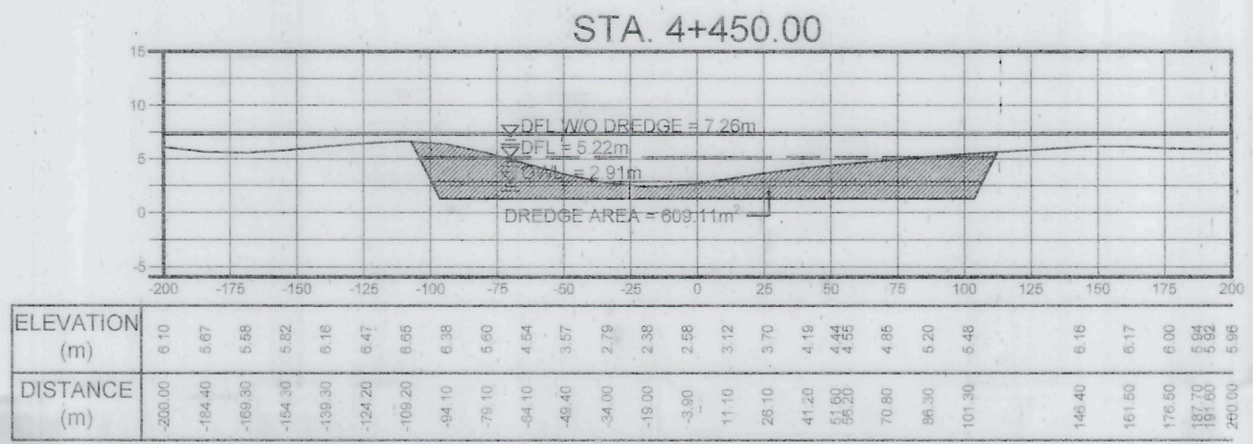
SHEET NO
17
28

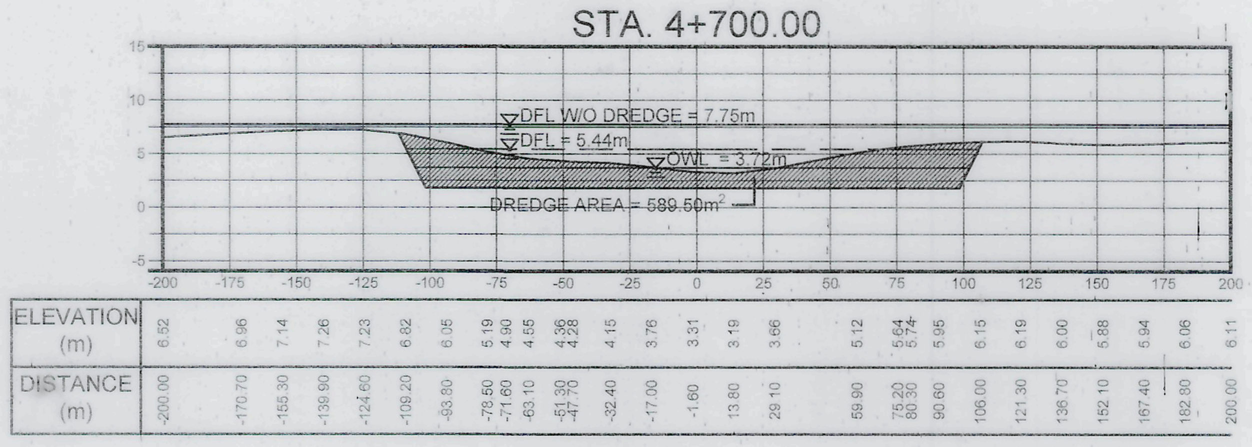

STA. 4+250.00
DFL W/O DREDGE = 6.93m
DFL = 5.04m
OWL = 2.92m
DREDGE AREA = 576.65m²
ELEVATION (m)
DISTANCE (m)

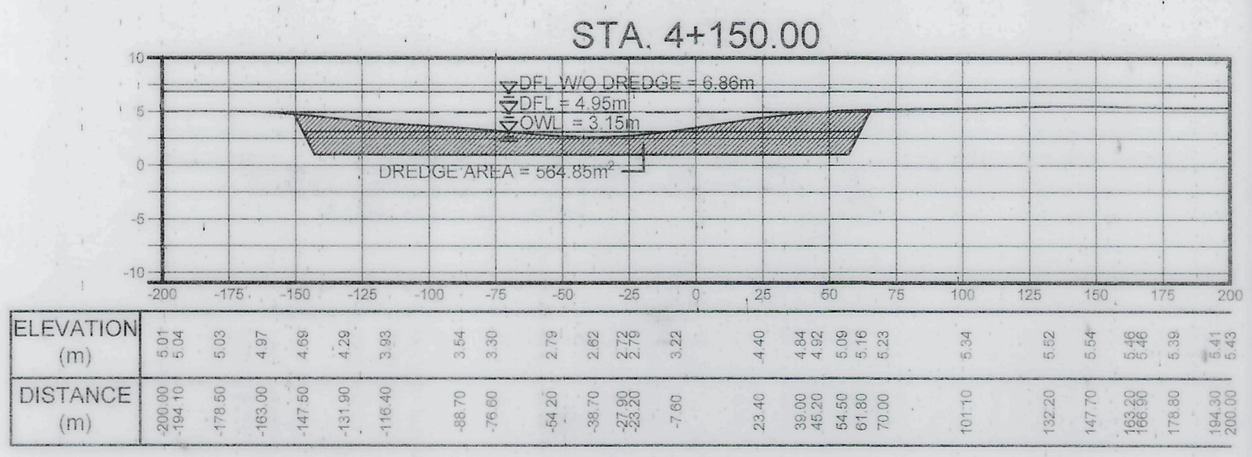

STA. 4+500.00
DFL W/O DREDGE = 7.30m
DFL = 5.26m
OWL = 3.58m
DREDGE AREA = 640.49m²
ELEVATION (m)
DISTANCE (m)

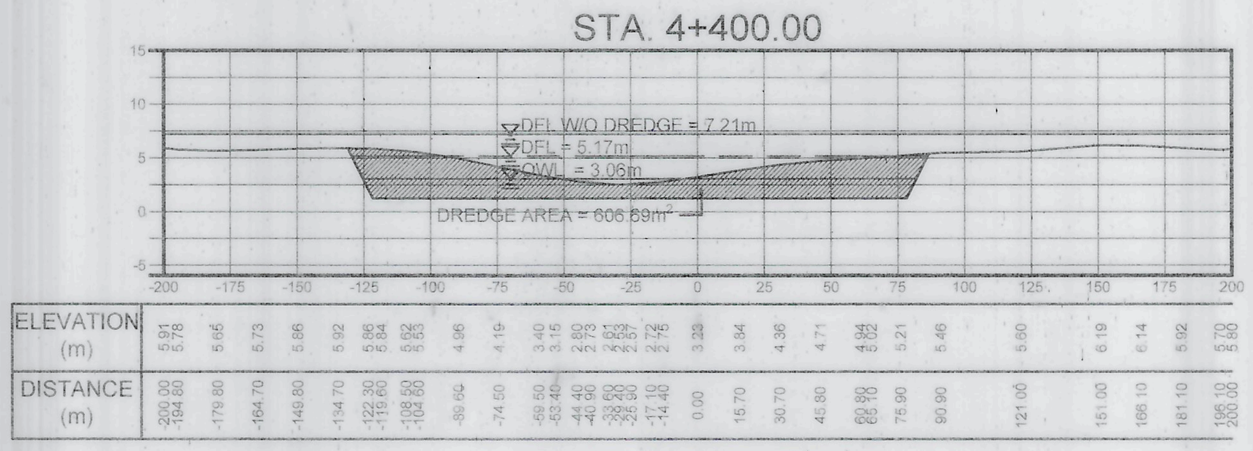

STA. 4+750.00
DFL W/O DREDGE = 7.92m
DFL = 5.49m
OWL = 3.83m
DREDGE AREA = 461.06m²
ELEVATION (m)
DISTANCE (m)

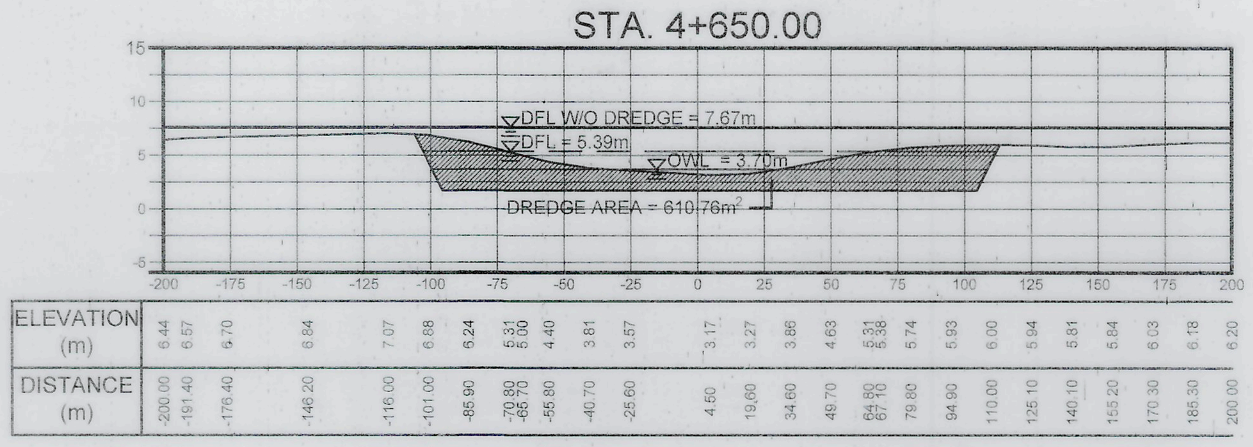

STA. 4+200.00
DFL W/O DREDGE = 6.94m
DFL = 4.96m
OWL = 2.84m
DREDGE AREA = 508.87m²
ELEVATION (m)
DISTANCE (m)

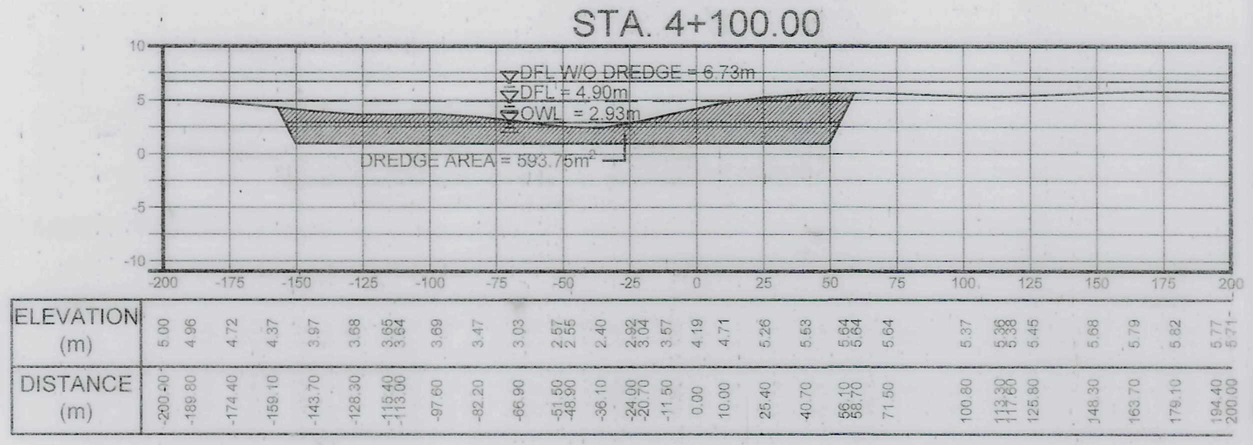

STA. 4+450.00
DFL W/O DREDGE = 7.26m
DFL = 5.22m
OWL = 2.91m
DREDGE AREA = 609.11m²
ELEVATION (m)
DISTANCE (m)

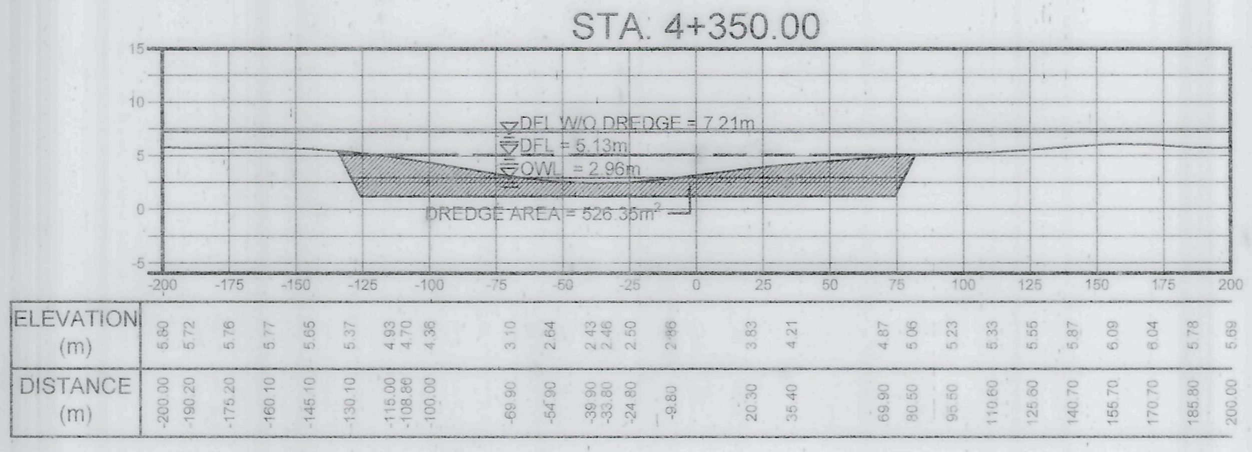

STA. 4+700.00
DFL W/O DREDGE = 7.75m
DFL = 5.44m
OWL = 3.72m
DREDGE AREA = 589.50m²
ELEVATION (m)
DISTANCE (m)

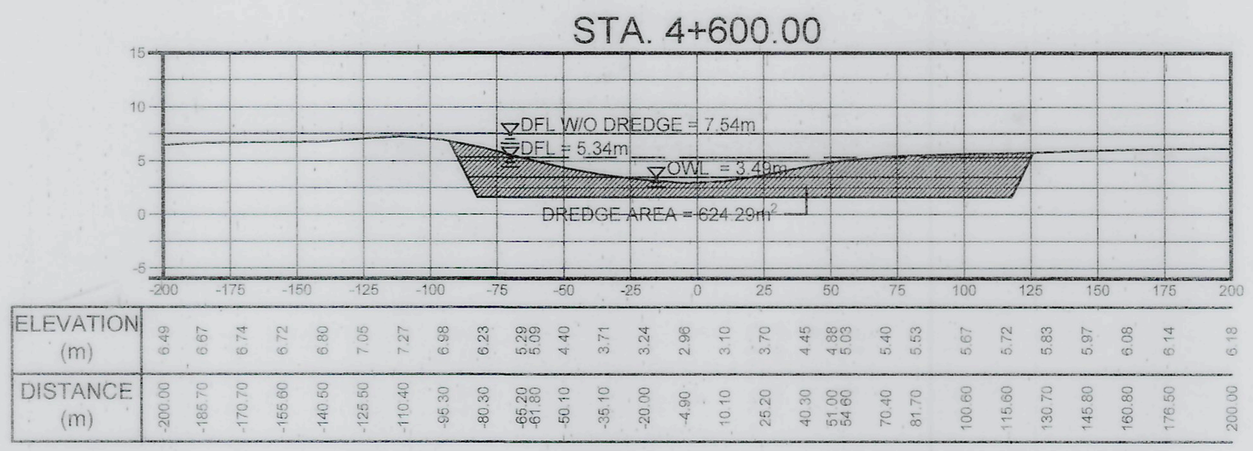

STA. 4+150.00
DFL W/O DREDGE = 6.86m
DFL = 4.95m
OWL = 3.15m
DREDGE AREA = 584.85m²
ELEVATION (m)
DISTANCE (m)

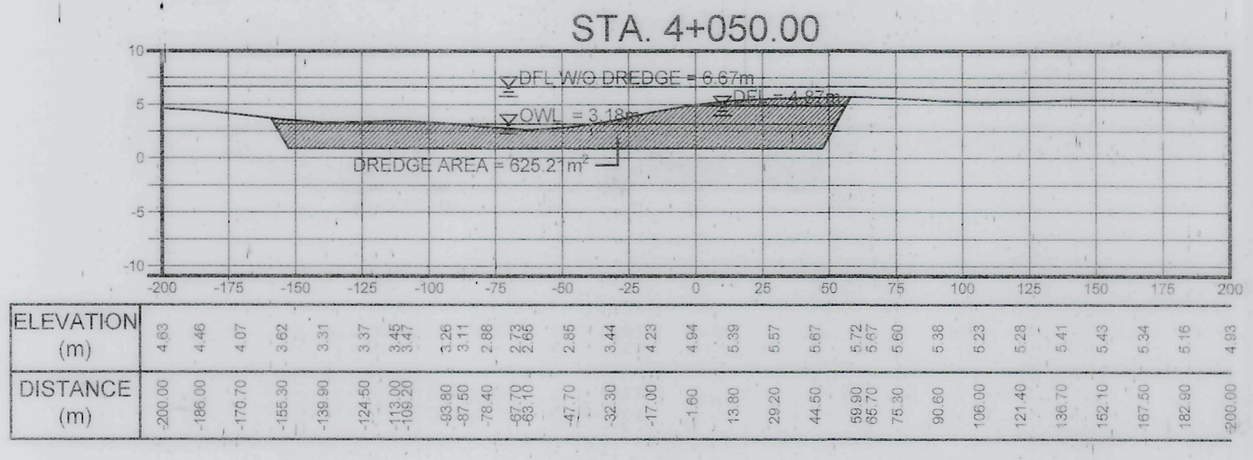

STA. 4+400.00
DFL W/O DREDGE = 7.21m
DFL = 5.17m
OWL = 3.08m
DREDGE AREA = 606.89m²
ELEVATION (m)
DISTANCE (m)

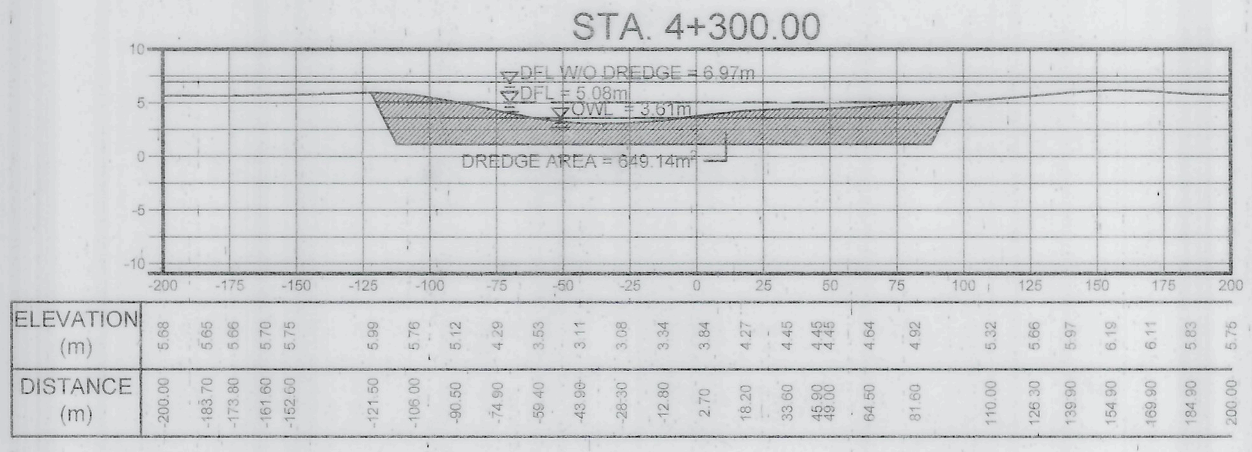

STA. 4+650.00
DFL W/O DREDGE = 7.67m
DFL = 5.39m
OWL = 3.70m
DREDGE AREA = 610.76m²
ELEVATION (m)
DISTANCE (m)

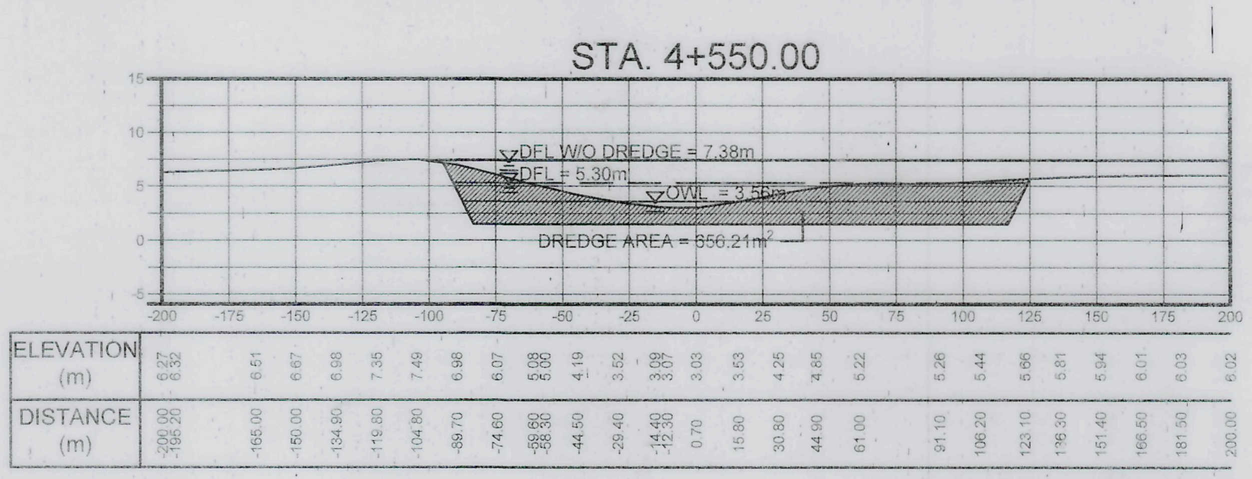

STA. 4+100.00
DFL W/O DREDGE = 6.73m
DFL = 4.90m
OWL = 2.93m
DREDGE AREA = 593.75m²
ELEVATION (m)
DISTANCE (m)


STA. 4+350.00
DFL W/O DREDGE = 7.21m
DFL = 5.13m
OWL = 2.98m
DREDGE AREA = 526.36m²
ELEVATION (m)
DISTANCE (m)


STA. 4+600.00
DFL W/O DREDGE = 7.54m
DFL = 5.34m
OWL = 3.44m
DREDGE AREA = 624.29m²
ELEVATION (m)
DISTANCE (m)


STA. 4+050.00
DFL W/O DREDGE = 6.57m
DFL = 4.87m
OWL = 3.18m
DREDGE AREA = 625.21m²
ELEVATION (m)
DISTANCE (m)


STA. 4+300.00
DFL W/O DREDGE = 6.97m
DFL = 5.08m
OWL = 3.01m
DREDGE AREA = 649.14m²
ELEVATION (m)
DISTANCE (m)


STA. 4+550.00
DFL W/O DREDGE = 7.38m
DFL = 5.30m
OWL = 3.56m
DREDGE AREA = 550.21m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1

STA. 4+050 ~ STA. 4+750

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 1
STA. 4+050 - STA. 4+750

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE

REVIEWED AS PRESENTED:
REMEGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B
DATE

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE

(SEE COVER SHEET)
JOSELITO A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE

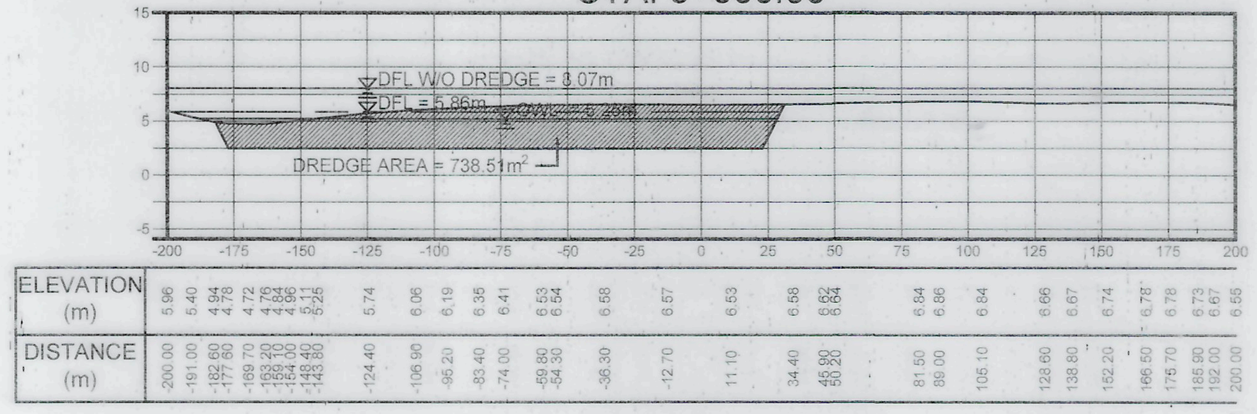
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE

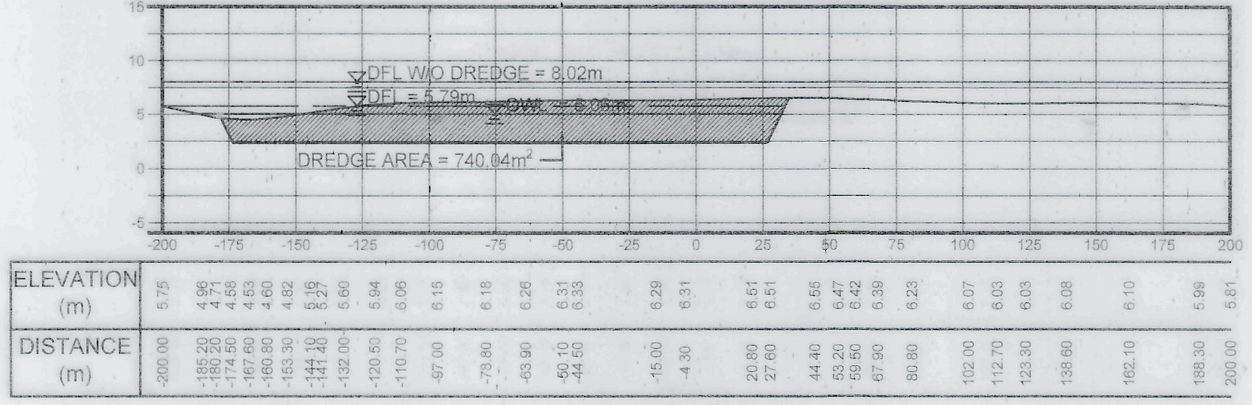
SET NO.
CS1
05 15

SHEET NO.
13
28

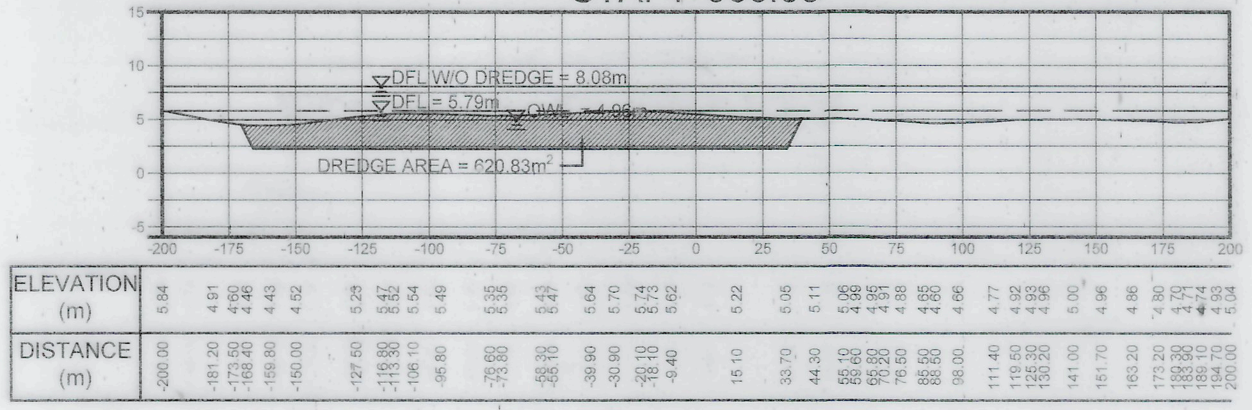
STA. 5+000.00


DFL W/O DREDGE = 8.07m
DFL = 5.86m
OWL
DREDGE AREA = 738.51m²
ELEVATION (m)
DISTANCE (m)

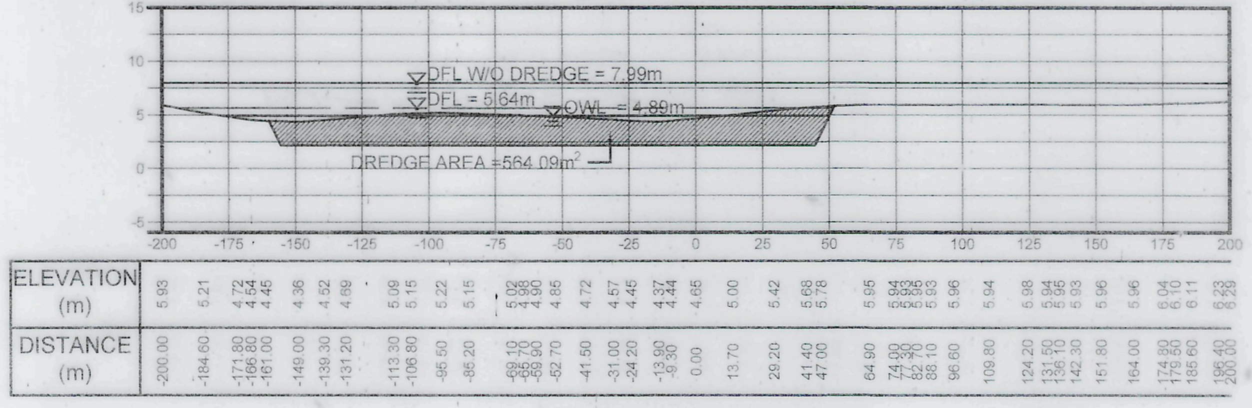
STA. 4+950.00


DFL W/O DREDGE = 8.02m
DFL = 5.79m
OWL
DREDGE AREA = 740.04m²
ELEVATION (m)
DISTANCE (m)

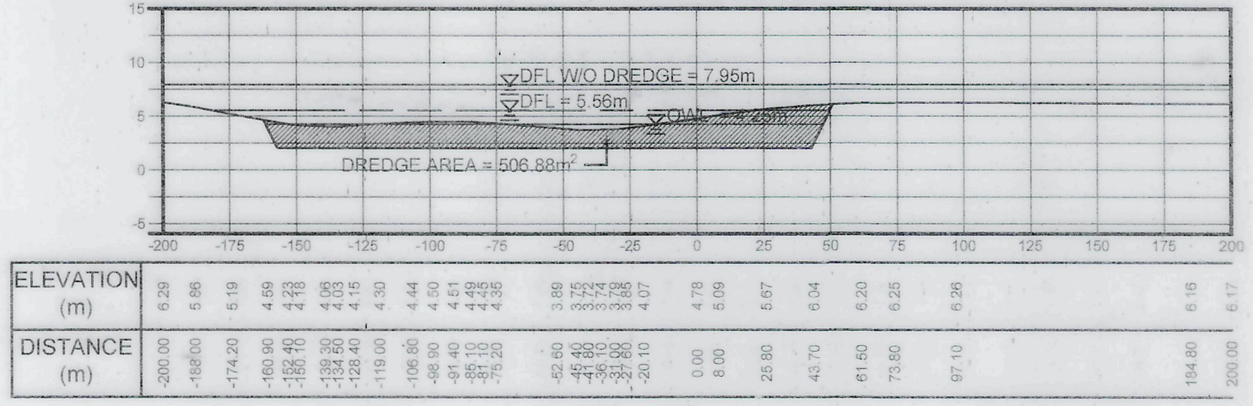
STA. 4+900.00


DFL W/O DREDGE = 8.08m
DFL = 5.79m
OWL
DREDGE AREA = 620.83m²
ELEVATION (m)
DISTANCE (m)

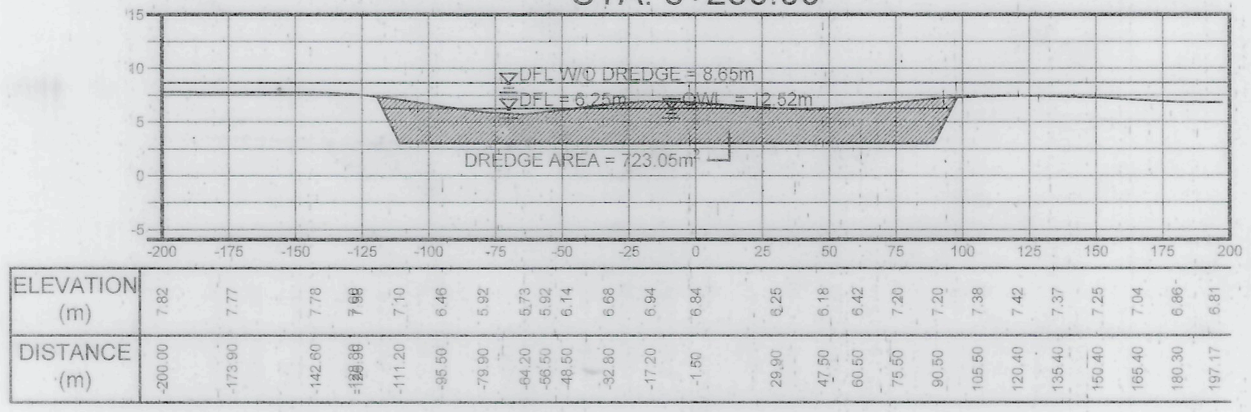
STA. 4+850.00


DFL W/O DREDGE = 7.99m
DFL = 5.64m
OWL = 4.89m
DREDGE AREA = 564.09m²
ELEVATION (m)
DISTANCE (m)

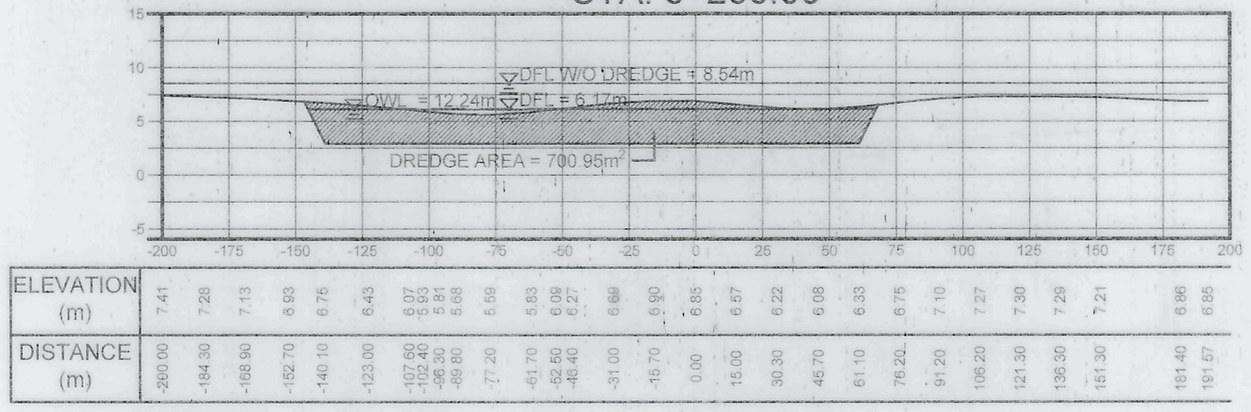
STA. 4+800.00


DFL W/O DREDGE = 7.95m
DFL = 5.56m
OWL
DREDGE AREA = 506.88m²
ELEVATION (m)
DISTANCE (m)

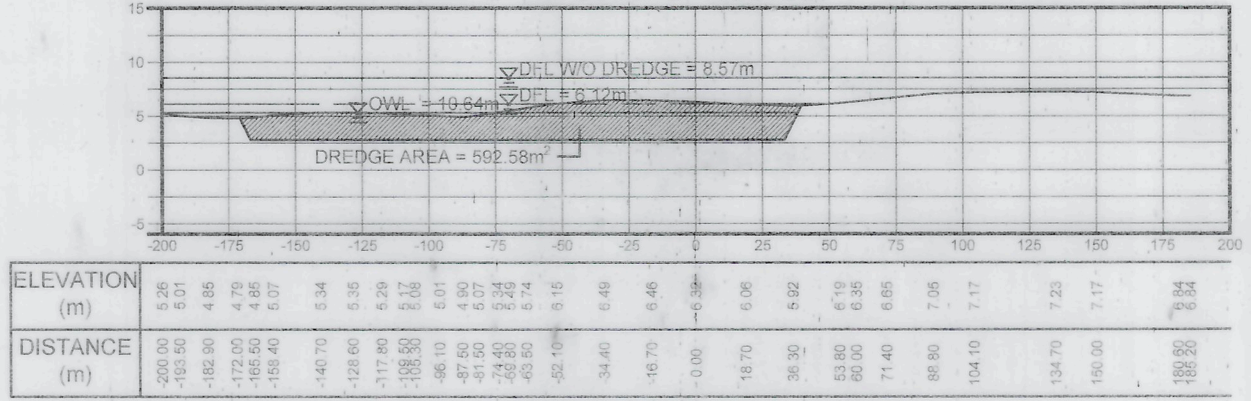
STA. 5+250.00


DFL W/O DREDGE = 8.65m
DFL = 6.25m
OWL = 12.52m
DREDGE AREA = 723.05m²
ELEVATION (m)
DISTANCE (m)

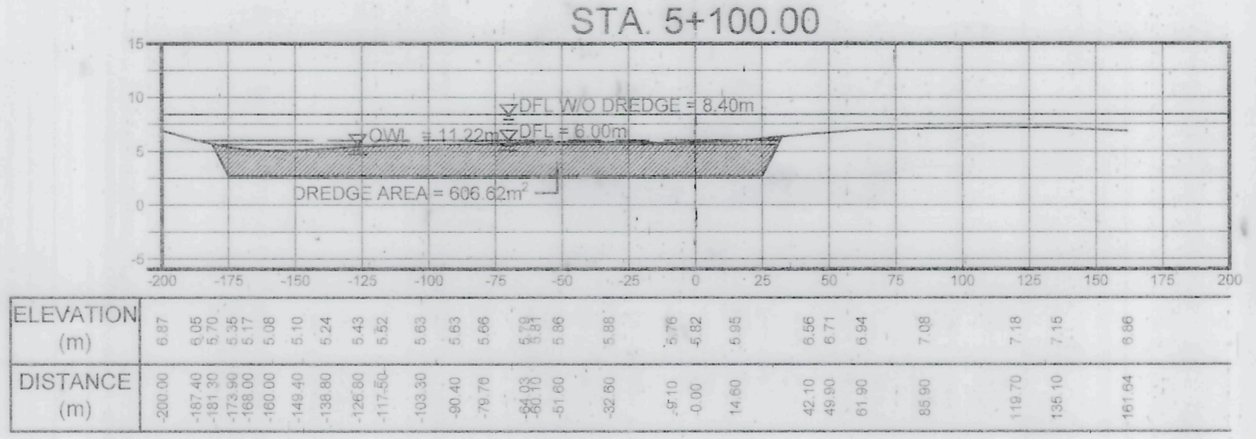
STA. 5+200.00


DFL W/O DREDGE = 8.54m
OWL = 12.24m
DFL = 6.17m
DREDGE AREA = 700.95m²
ELEVATION (m)
DISTANCE (m)

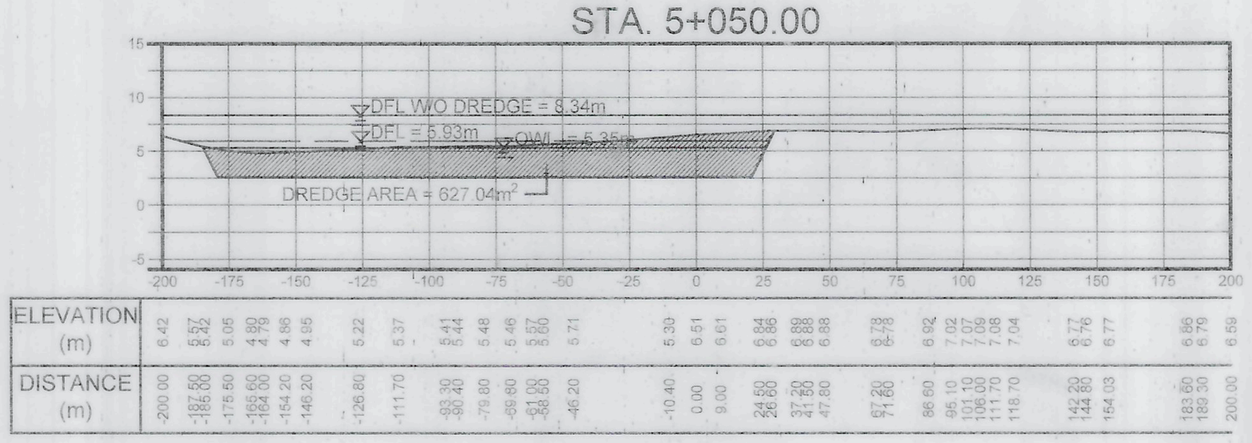
STA. 5+150.00


DFL W/O DREDGE = 8.57m
OWL = 10.64m
DFL = 6.12m
DREDGE AREA = 592.58m²
ELEVATION (m)
DISTANCE (m)

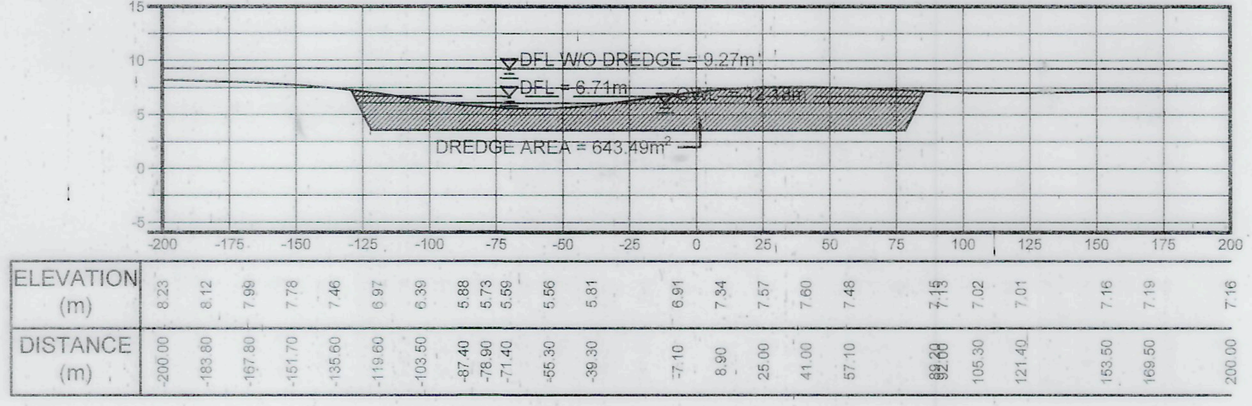
STA. 5+100.00


DFL W/O DREDGE = 8.40m
OWL = 11.22m
DFL = 6.00m
DREDGE AREA = 606.62m²
ELEVATION (m)
DISTANCE (m)

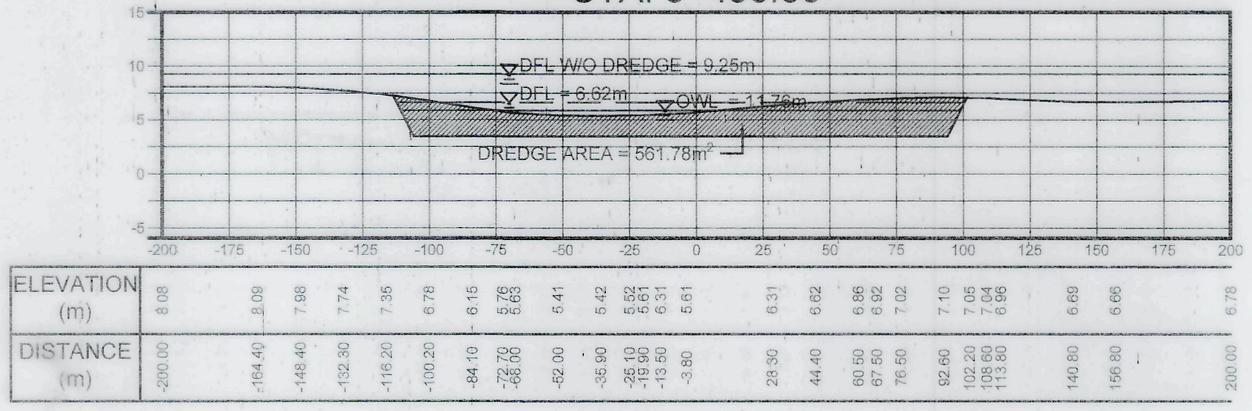
STA. 5+050.00


DFL W/O DREDGE = 8.34m
DFL = 5.93m
OWL = 5.35m
DREDGE AREA = 627.04m²
ELEVATION (m)
DISTANCE (m)

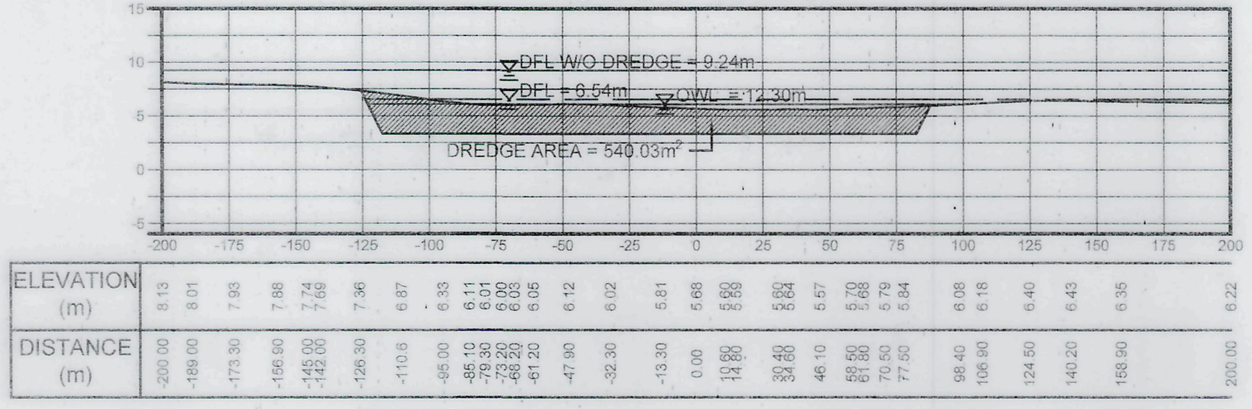
STA. 5+500.00


DFL W/O DREDGE = 9.27m
DFL = 6.71m
OWL = 12.33m
DREDGE AREA = 643.49m²
ELEVATION (m)
DISTANCE (m)

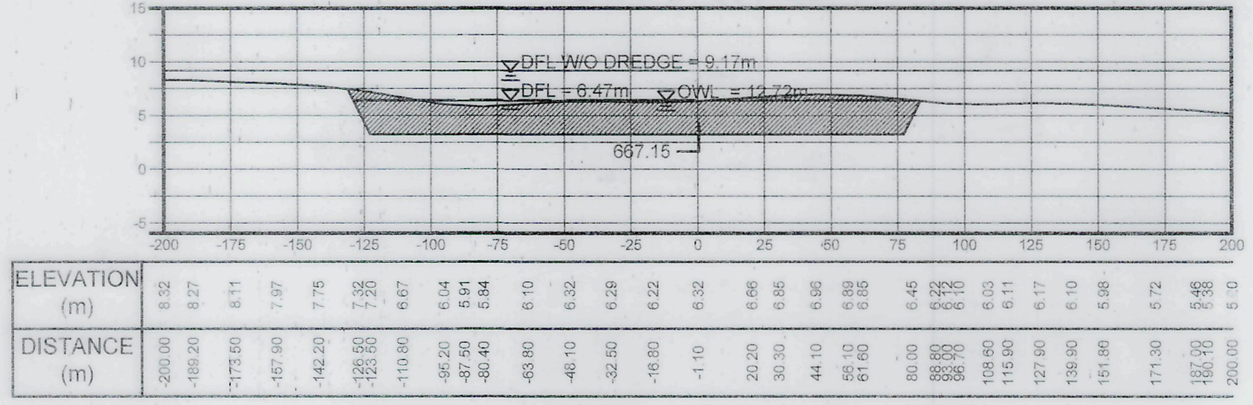
STA. 5+450.00


DFL W/O DREDGE = 9.25m
DFL = 6.62m
OWL = 11.76m
DREDGE AREA = 561.78m²
ELEVATION (m)
DISTANCE (m)

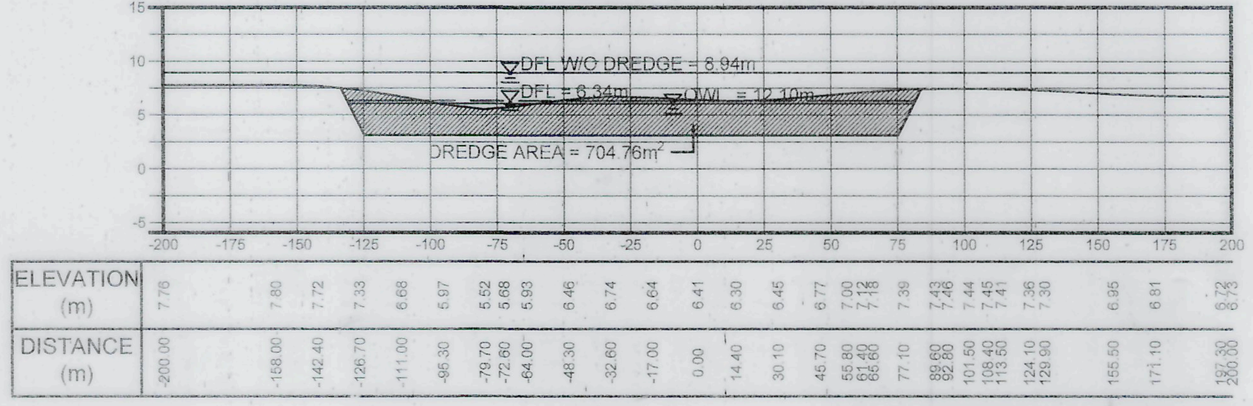
STA. 5+400.00


DFL W/O DREDGE = 9.24m
DFL = 6.54m
OWL = 12.30m
DREDGE AREA = 540.03m²
ELEVATION (m)
DISTANCE (m)

STA. 5+350.00


DFL W/O DREDGE = 9.17m
DFL = 6.47m
OWL = 12.72m
667.15
ELEVATION (m)
DISTANCE (m)

STA. 5+300.00


DFL W/O DREDGE = 8.94m
DFL = 6.34m
OWL = 12.10m
DREDGE AREA = 704.76m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 4+800 ~ STA. 5+500

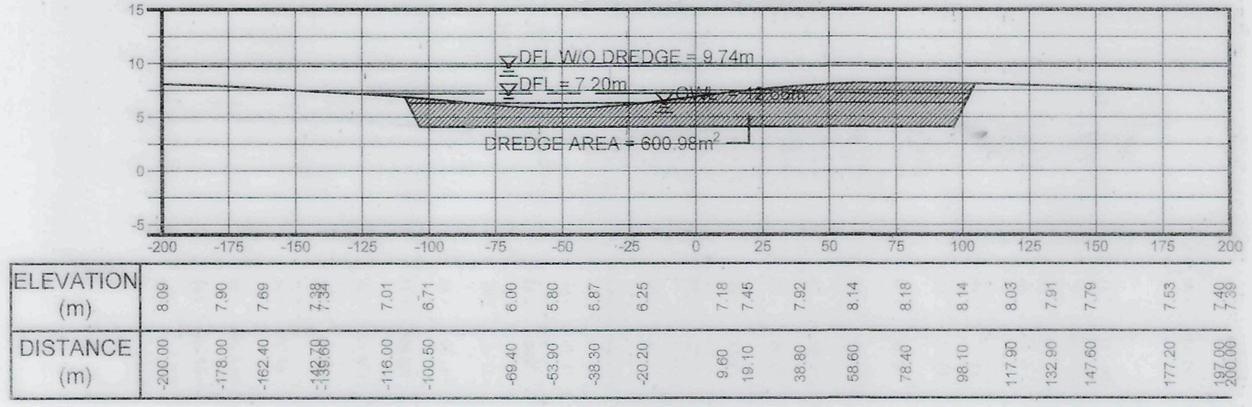
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

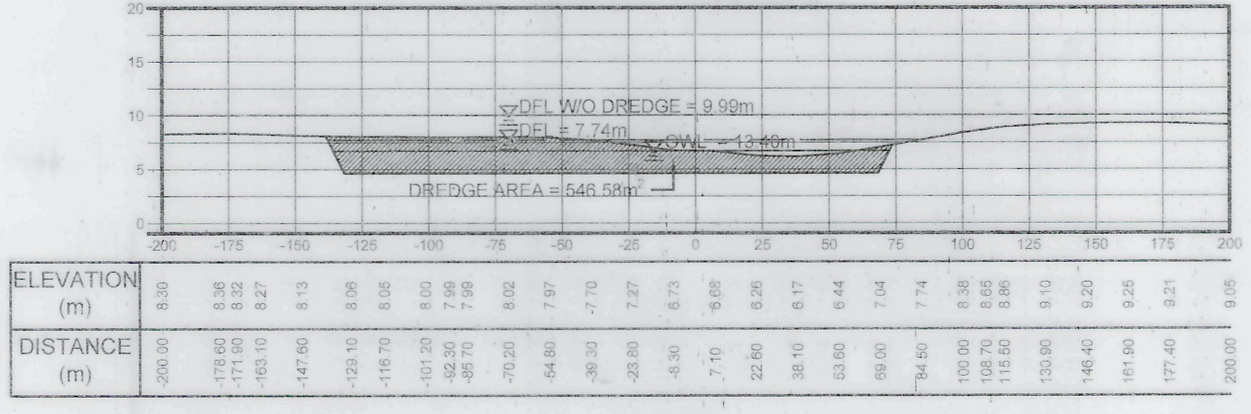
DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE OCCIDENTAL MINDORO	CROSS-SECTION - 1 STA. 4+800 - STA. 5+500	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV. DPWH REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSELITO A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	CS1 06 | 15	19 28

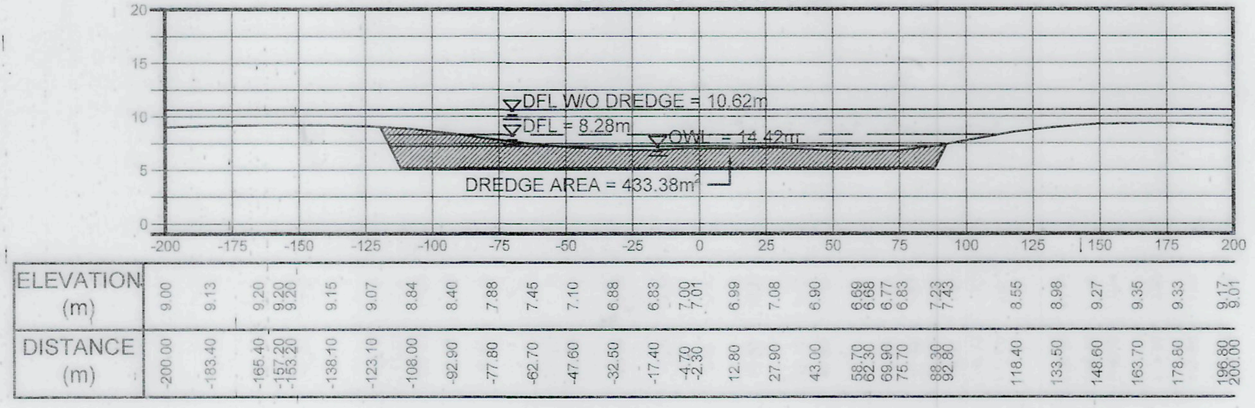
STA. 5+750.00


DFL W/O DREDGE = 9.74m
DFL = 7.20m
OWL
DREDGE AREA = 600.98m²
ELEVATION (m)
DISTANCE (m)

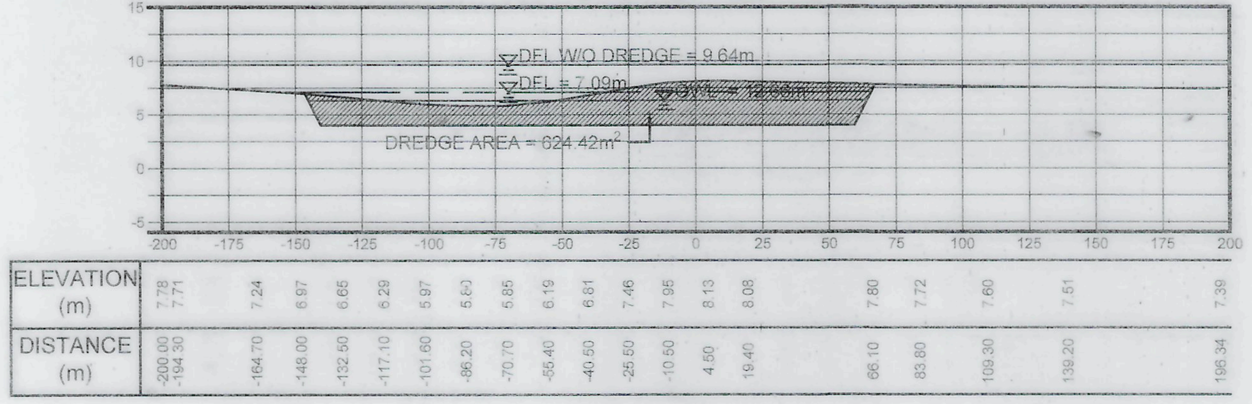
STA. 6+000.00


DFL W/O DREDGE = 9.99m
DFL = 7.74m
OWL = 13.40m
DREDGE AREA = 546.58m²
ELEVATION (m)
DISTANCE (m)

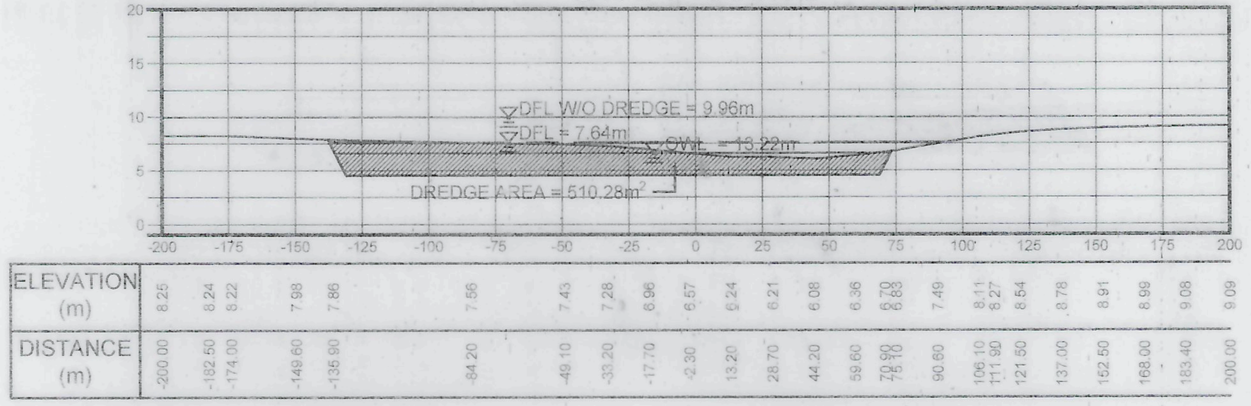
STA. 6+250.00


DFL W/O DREDGE = 10.62m
DFL = 8.28m
OWL = 14.62m
DREDGE AREA = 433.38m²
ELEVATION (m)
DISTANCE (m)

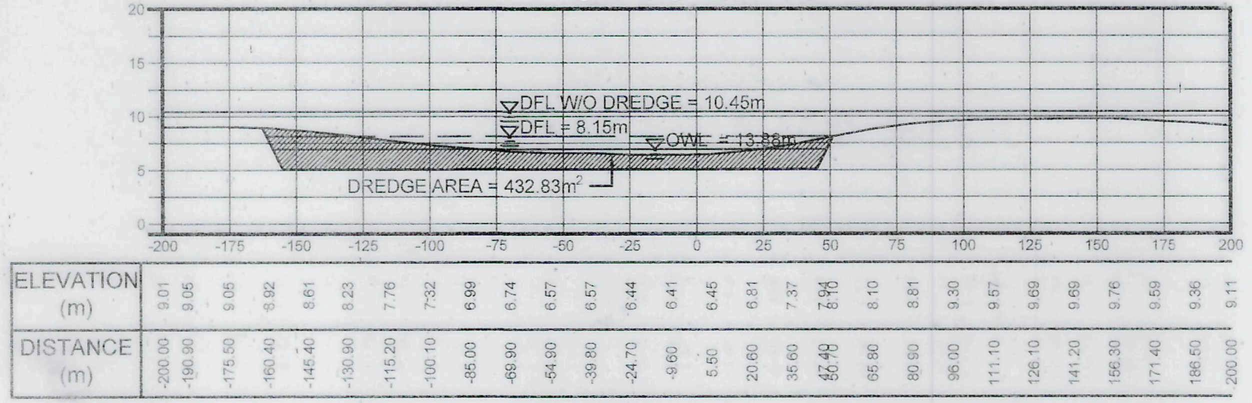
STA. 5+700.00


DFL W/O DREDGE = 9.64m
DFL = 7.09m
OWL
DREDGE AREA = 624.42m²
ELEVATION (m)
DISTANCE (m)

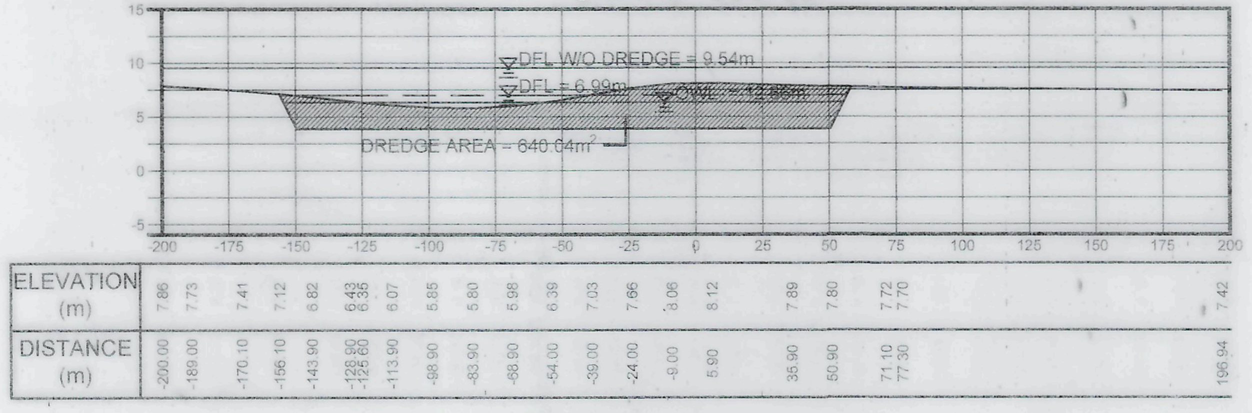
STA. 5+950.00


DFL W/O DREDGE = 9.96m
DFL = 7.64m
OWL
DREDGE AREA = 510.28m²
ELEVATION (m)
DISTANCE (m)

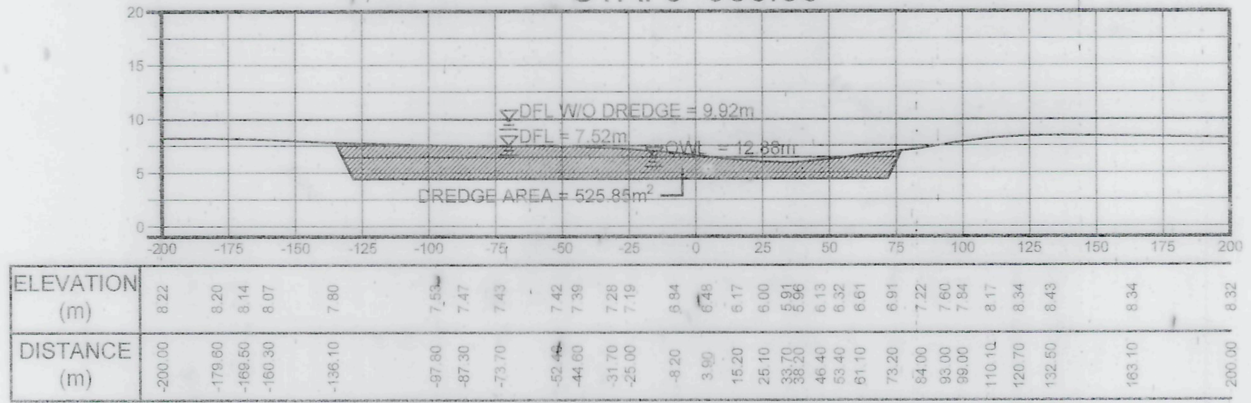
STA. 6+200.00


DFL W/O DREDGE = 10.45m
DFL = 8.15m
OWL = 13.88m
DREDGE AREA = 432.83m²
ELEVATION (m)
DISTANCE (m)

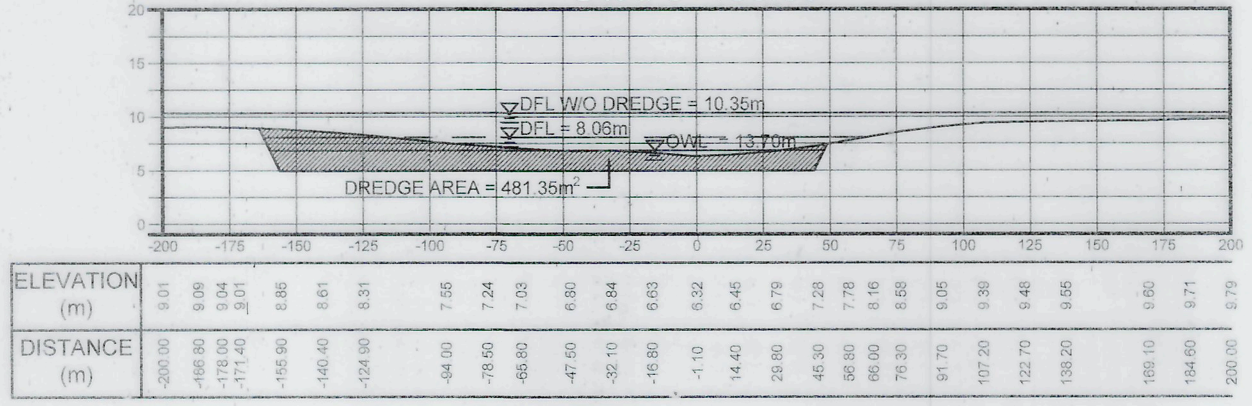
STA. 5+650.00


DFL W/O DREDGE = 9.54m
DFL
OWL
DREDGE AREA = 640.04m²
ELEVATION (m)
DISTANCE (m)

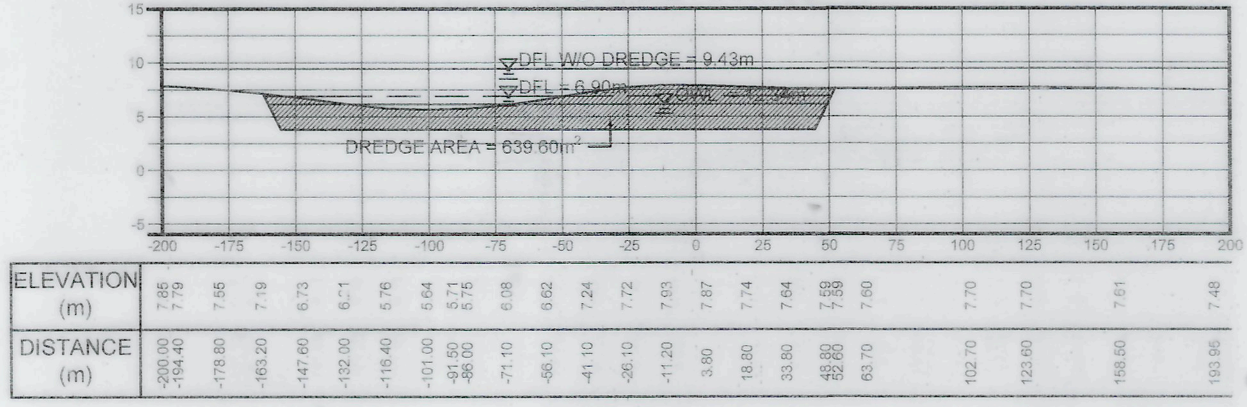
STA. 5+900.00


DFL W/O DREDGE = 9.92m
DFL = 7.52m
OWL = 12.88m
DREDGE AREA = 525.85m²
ELEVATION (m)
DISTANCE (m)

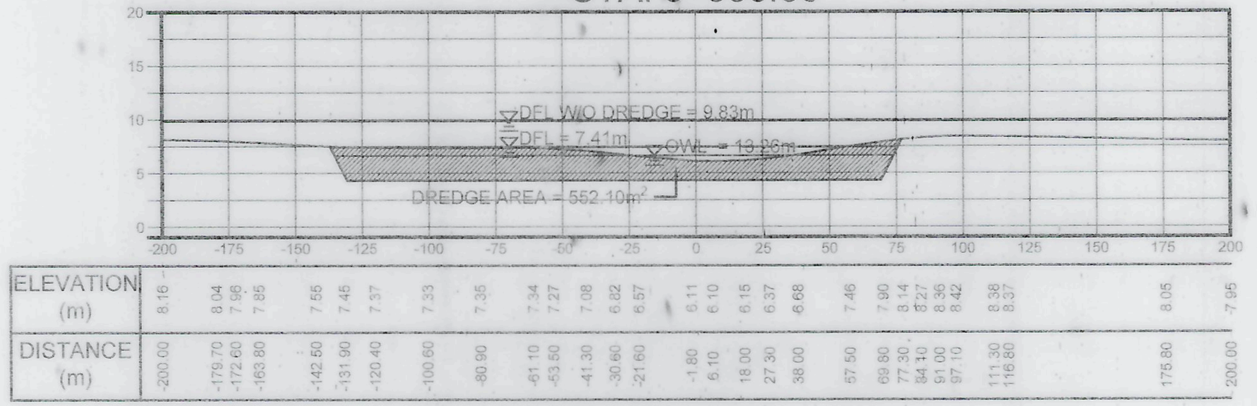
STA. 6+150.00


DFL W/O DREDGE = 10.35m
DFL = 8.06m
OWL
DREDGE AREA = 481.35m²
ELEVATION (m)
DISTANCE (m)

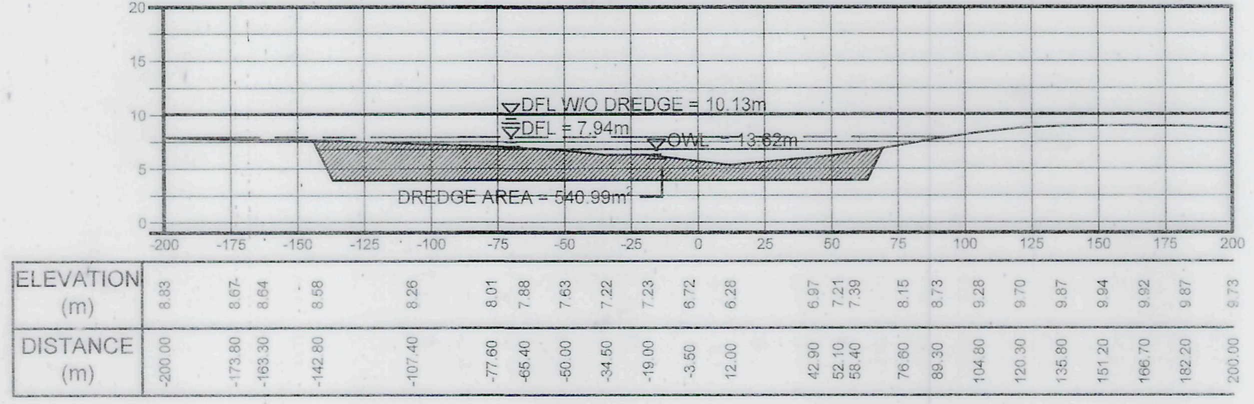
STA. 5+600.00


DFL W/O DREDGE = 9.43m
DFL = 6.90m
OWL
DREDGE AREA = 639.60m²
ELEVATION (m)
DISTANCE (m)

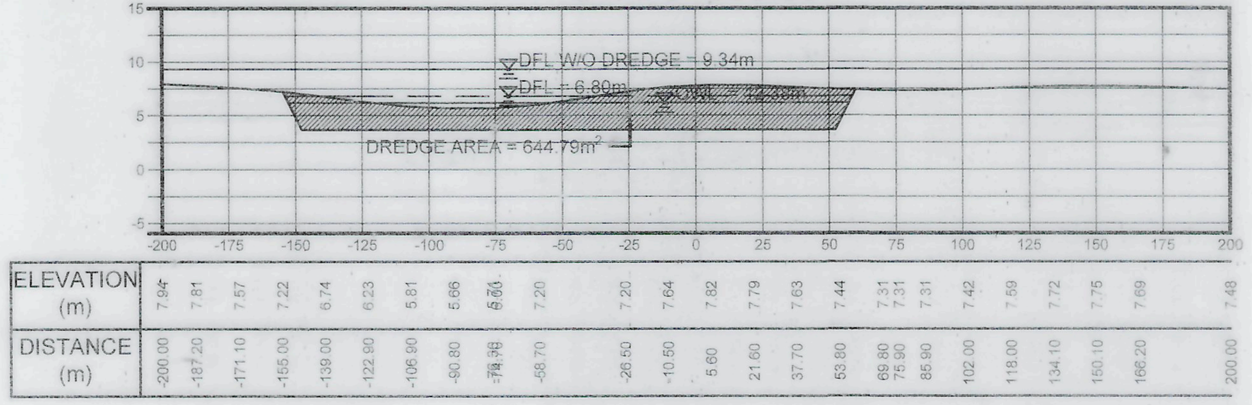
STA. 5+850.00


DFL W/O DREDGE = 9.83m
DFL = 7.41m
OWL
DREDGE AREA = 562.10m²
ELEVATION (m)
DISTANCE (m)

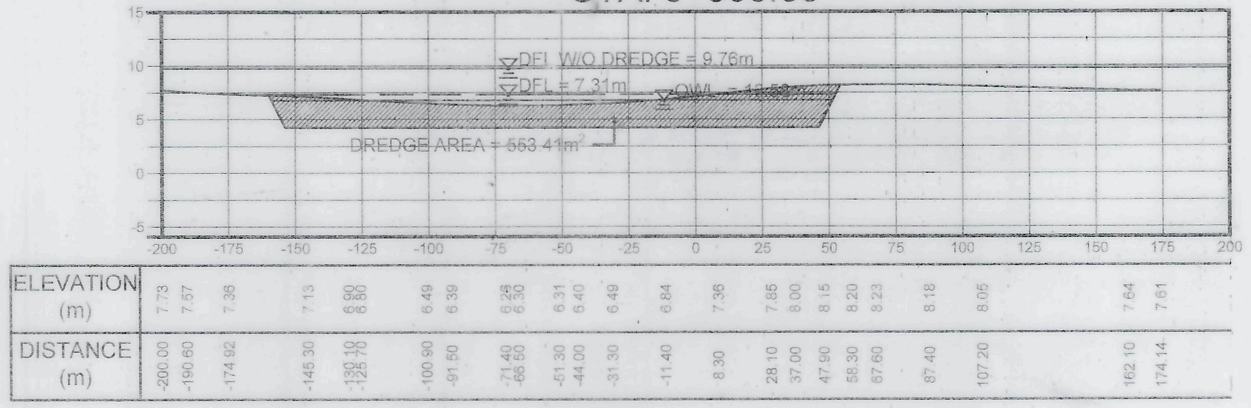
STA. 6+100.00


DFL W/O DREDGE = 10.13m
DFL = 7.94m
OWL = 13.62m
DREDGE AREA = 540.99m²
ELEVATION (m)
DISTANCE (m)

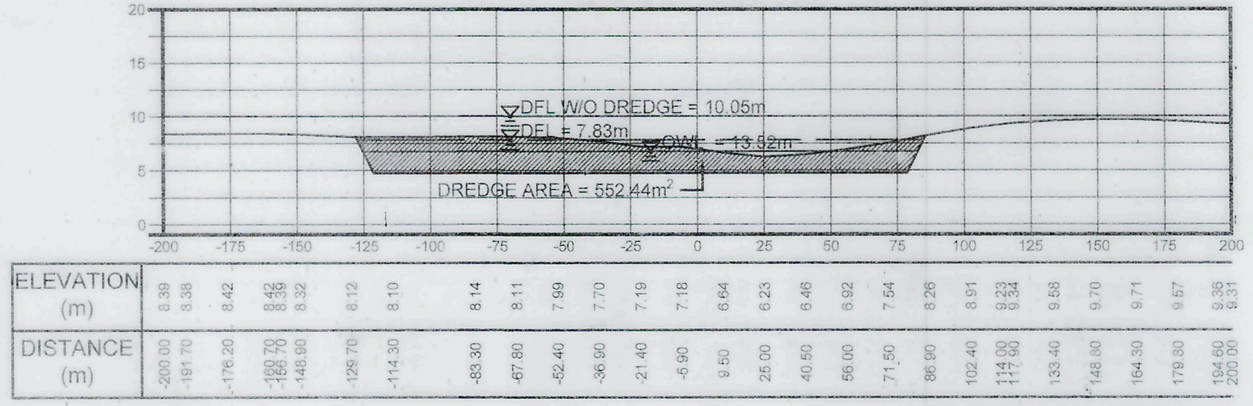
STA. 5+550.00


DFL W/O DREDGE = 9.34m
DFL = 6.80m
OWL
DREDGE AREA = 644.79m²
ELEVATION (m)
DISTANCE (m)

STA. 5+800.00


DFL W/O DREDGE = 9.76m
DFL = 7.31m
OWL
DREDGE AREA = 553.41m²
ELEVATION (m)
DISTANCE (m)

STA. 6+050.00


DFL W/O DREDGE = 10.06m
DFL = 7.83m
OWL = 13.52m
DREDGE AREA = 552.44m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 5+550 ~ STA. 6+250

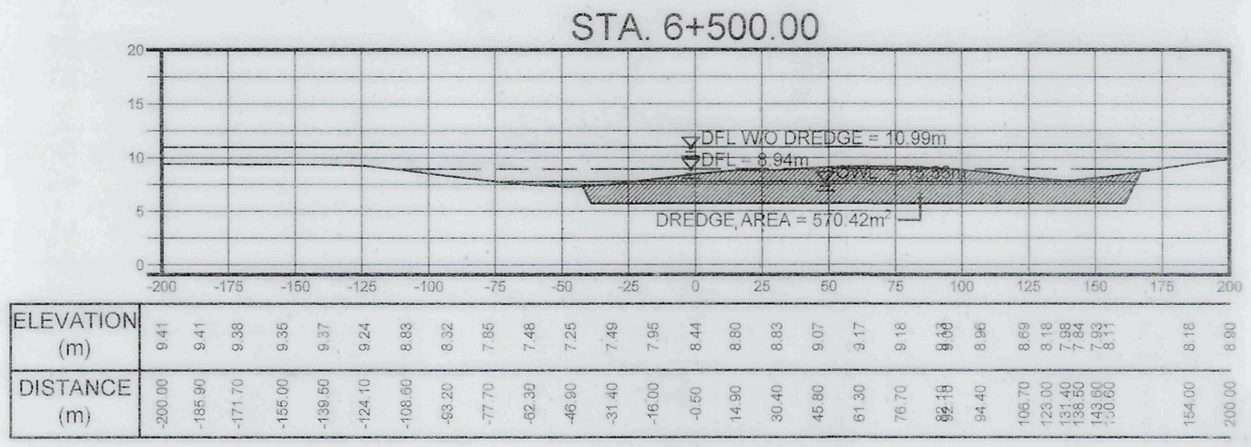
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

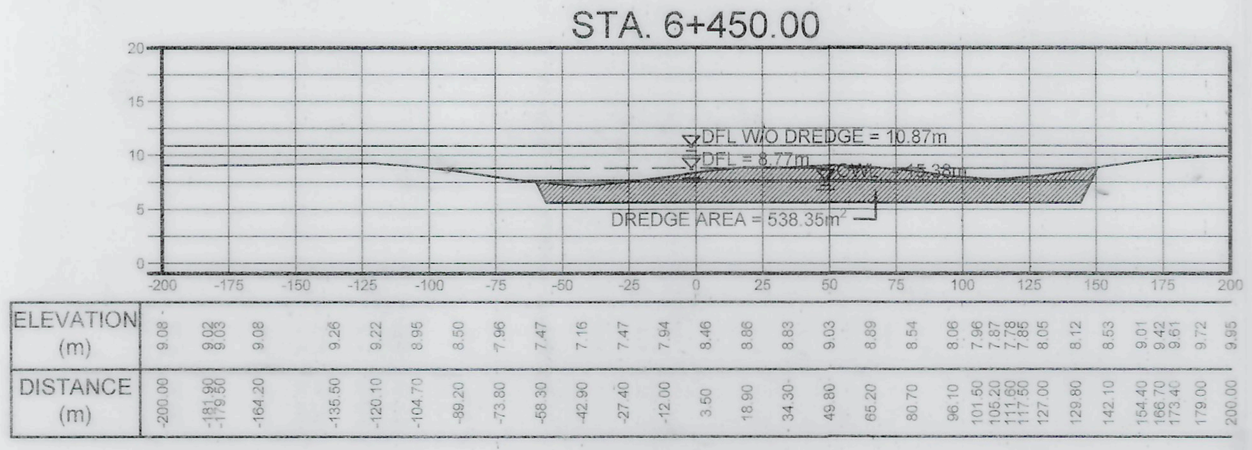
DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 1 STA. 5+550 - STA. 6+250	DAVID G. DELA CRUZ **PRESIDENT** DATE:	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE:	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV. DPWH, REGION IV-B DATE:	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE:	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE:	(SEE COVER SHEET) JOSELITO A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE:	**GERALD A. PACANAN, CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE:	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE:	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE:	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE:	CS1 07 15	20 28

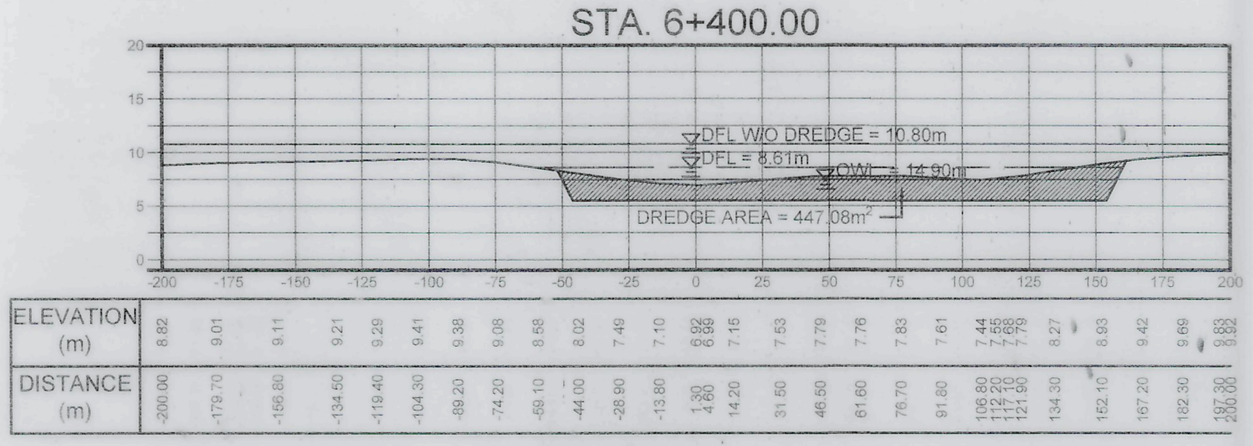
STA. 6+500.00


DFL W/O DREDGE = 10.99m
DFL = 8.94m
DREDGE AREA = 570.42m²
ELEVATION (m)
DISTANCE (m)

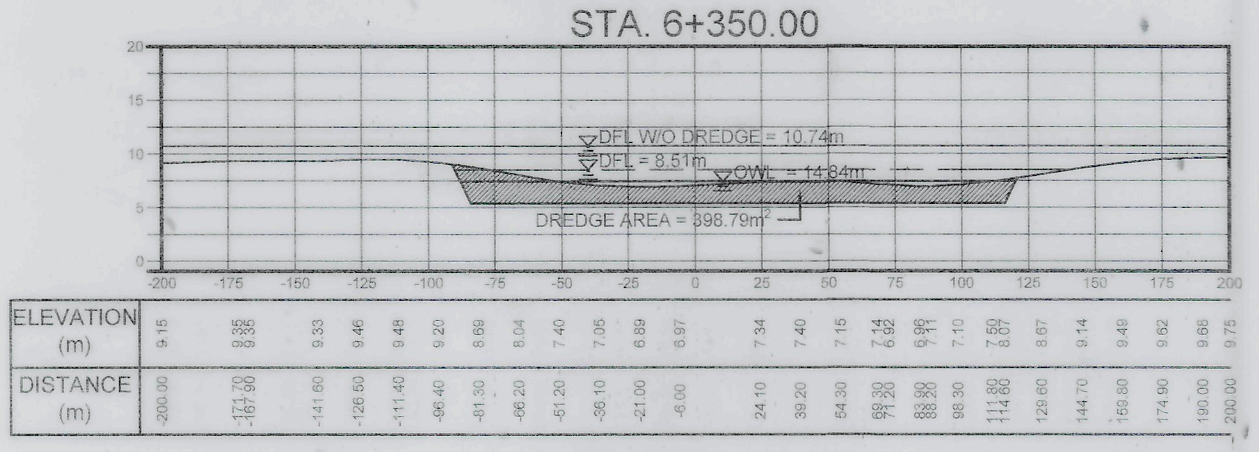
STA. 6+450.00


DFL W/O DREDGE = 10.87m
DFL = 8.77m
DREDGE AREA = 538.35m²
ELEVATION (m)
DISTANCE (m)

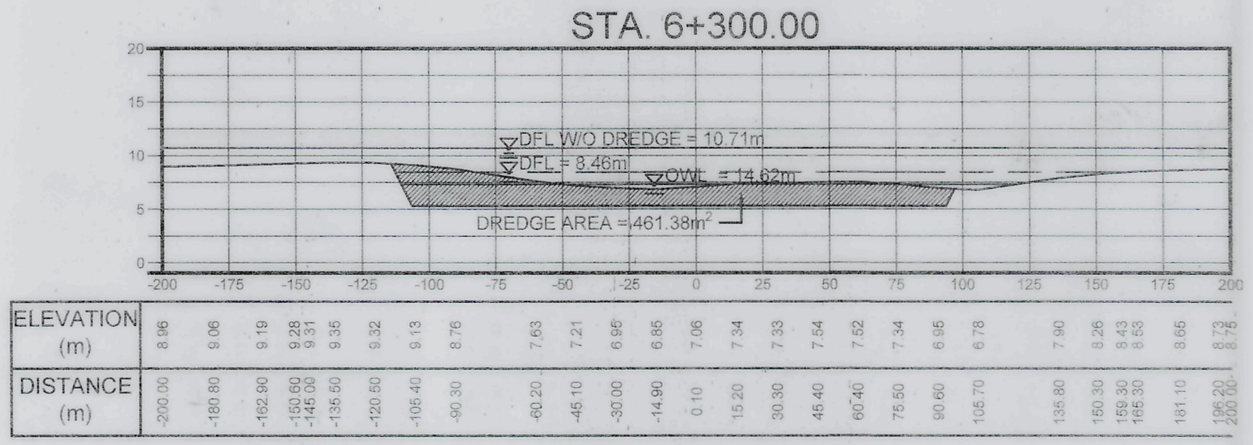
STA. 6+400.00


DFL W/O DREDGE = 10.80m
DFL = 8.61m
OWL = 14.90m
DREDGE AREA = 447.08m²
ELEVATION (m)
DISTANCE (m)

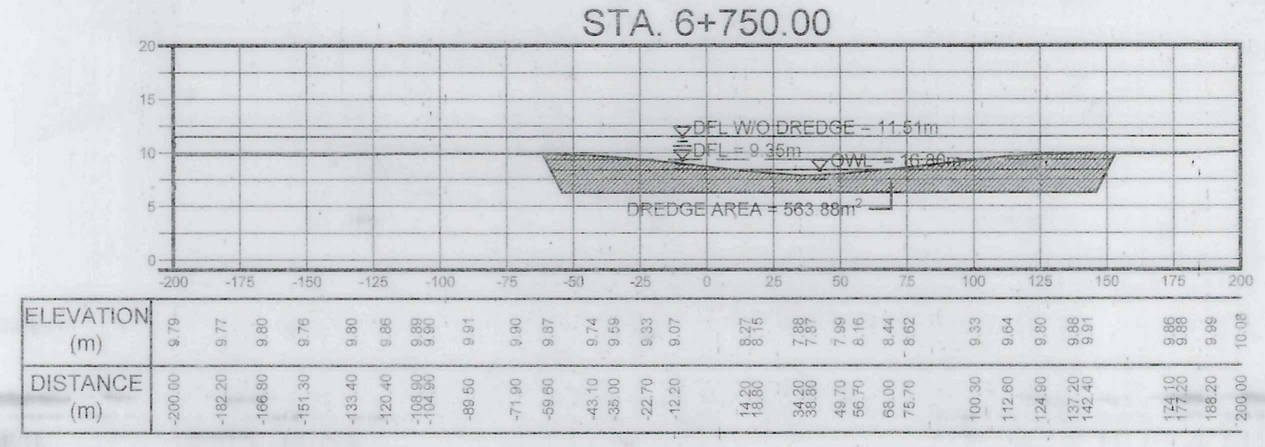
STA. 6+350.00


DFL W/O DREDGE = 10.74m
DFL = 8.51m
OWL = 14.84m
DREDGE AREA = 398.79m²
ELEVATION (m)
DISTANCE (m)

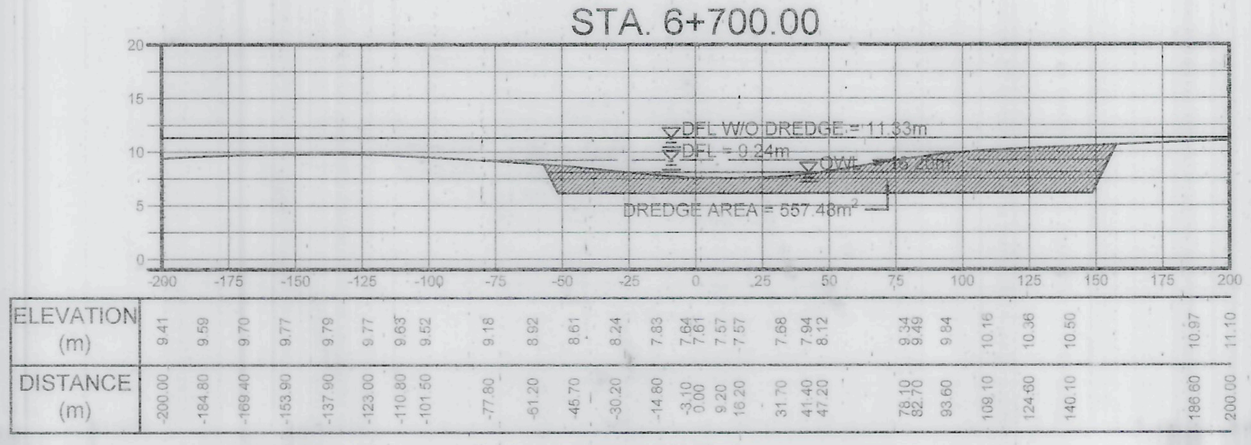
STA. 6+300.00


DFL W/O DREDGE = 10.71m
DFL = 8.46m
OWL = 14.62m
DREDGE AREA = 461.38m²
ELEVATION (m)
DISTANCE (m)

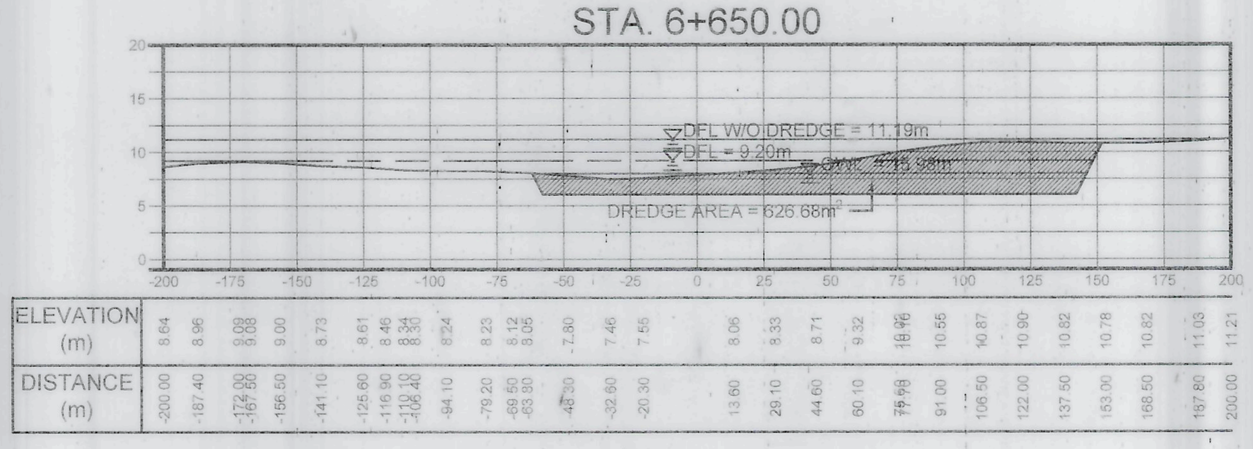
STA. 6+750.00


DFL W/O DREDGE = 11.51m
DFL = 9.35m
OWL = 16.80m
DREDGE AREA = 563.88m²
ELEVATION (m)
DISTANCE (m)

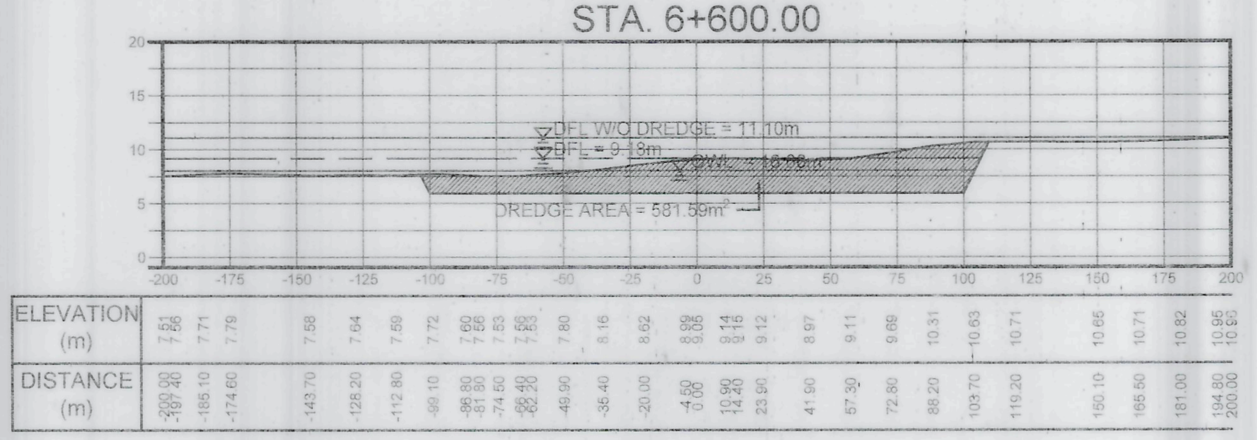
STA. 6+700.00


DFL W/O DREDGE = 11.33m
DFL = 9.24m
DREDGE AREA = 557.48m²
ELEVATION (m)
DISTANCE (m)

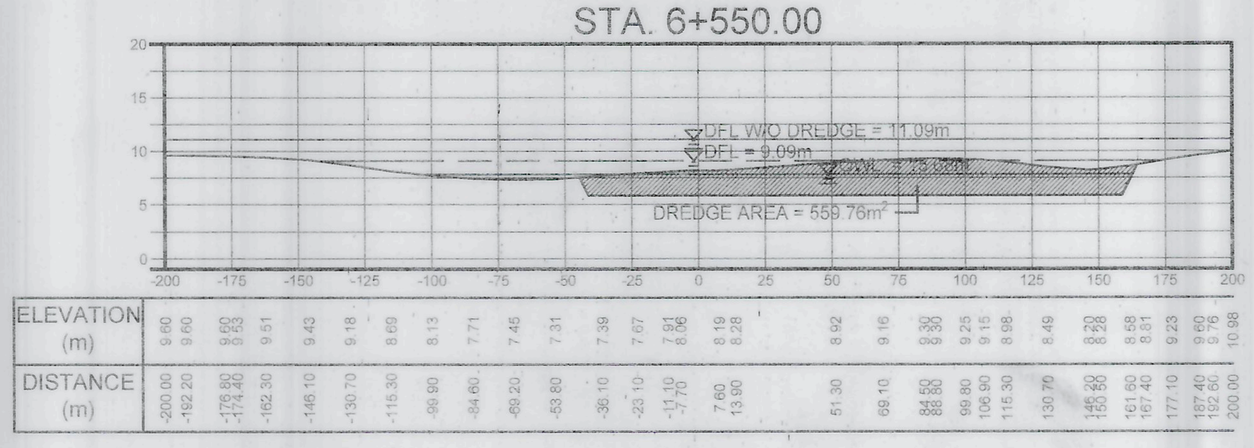
STA. 6+650.00


DFL W/O DREDGE = 11.19m
DFL = 9.20m
DREDGE AREA = 626.68m²
ELEVATION (m)
DISTANCE (m)

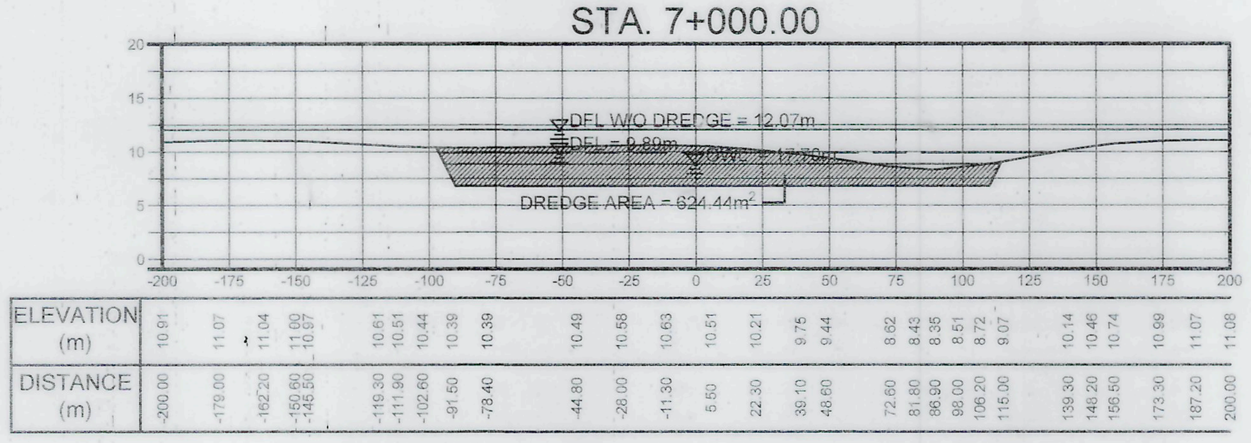
STA. 6+600.00


DFL W/O DREDGE = 11.10m
DFL = 9.13m
DREDGE AREA = 581.59m²
ELEVATION (m)
DISTANCE (m)

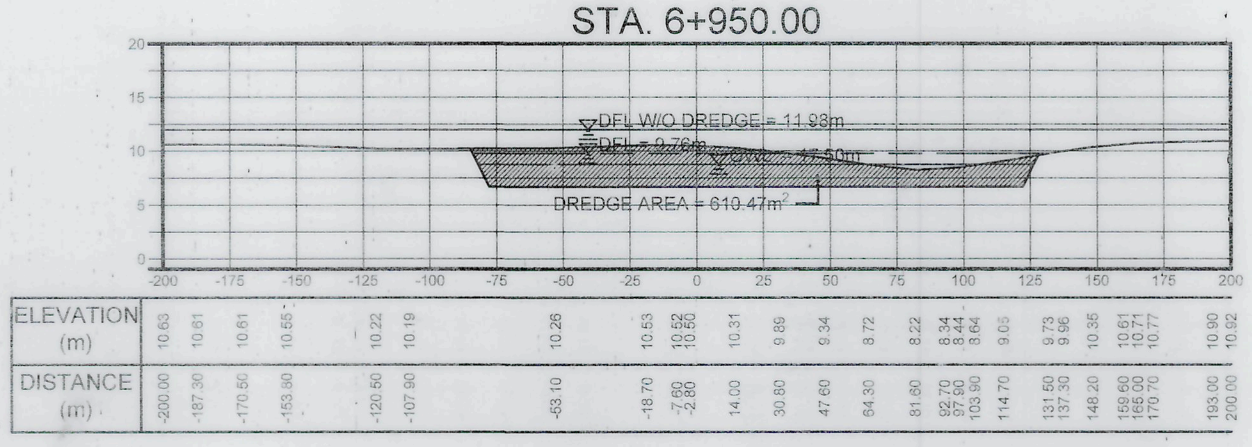
STA. 6+550.00


DFL W/O DREDGE = 11.09m
DFL = 9.09m
DREDGE AREA = 559.76m²
ELEVATION (m)
DISTANCE (m)

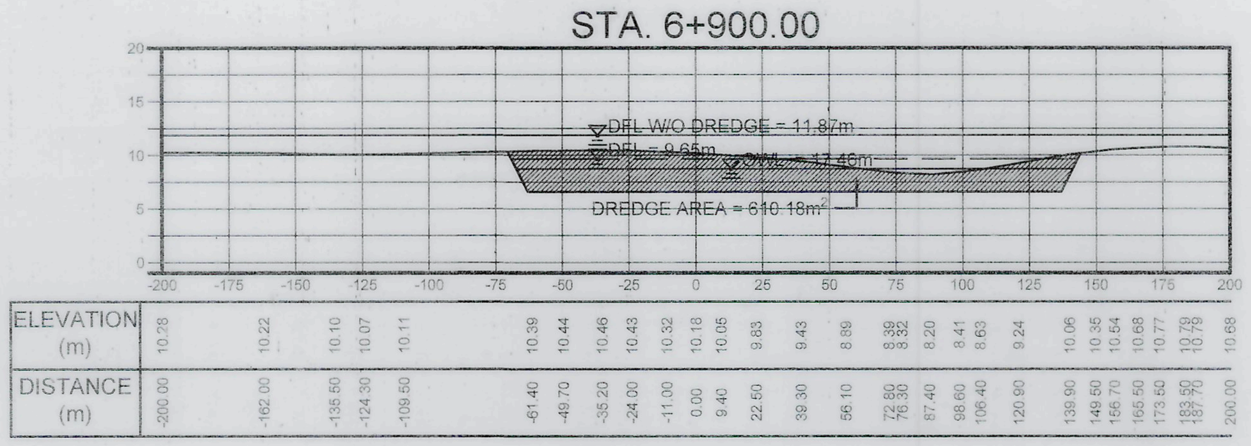
STA. 7+000.00


DFL W/O DREDGE = 12.07m
DFL = 9.89m
DREDGE AREA = 624.44m²
ELEVATION (m)
DISTANCE (m)

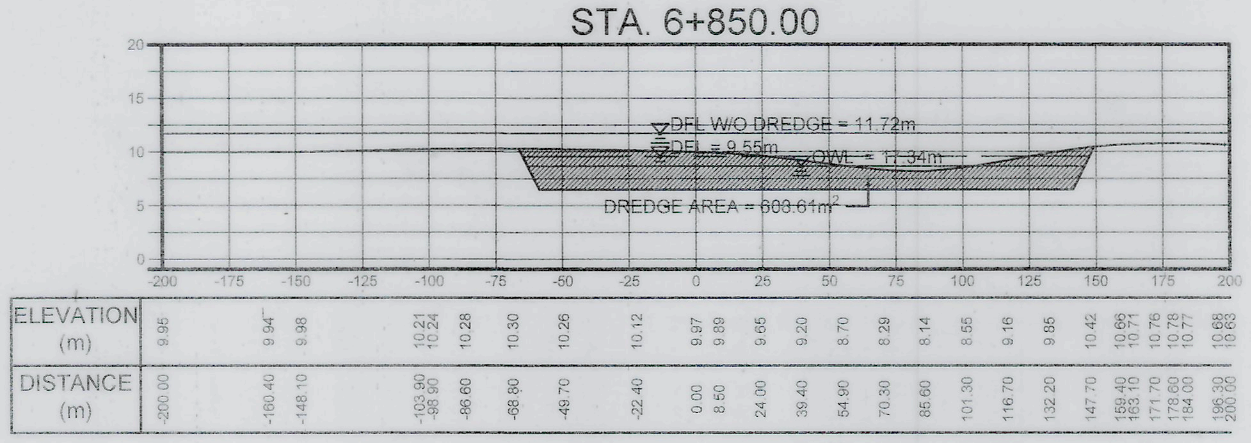
STA. 6+950.00


DFL W/O DREDGE = 11.93m
DFL = 9.76m
OWL = 17.50m
DREDGE AREA = 610.47m²
ELEVATION (m)
DISTANCE (m)

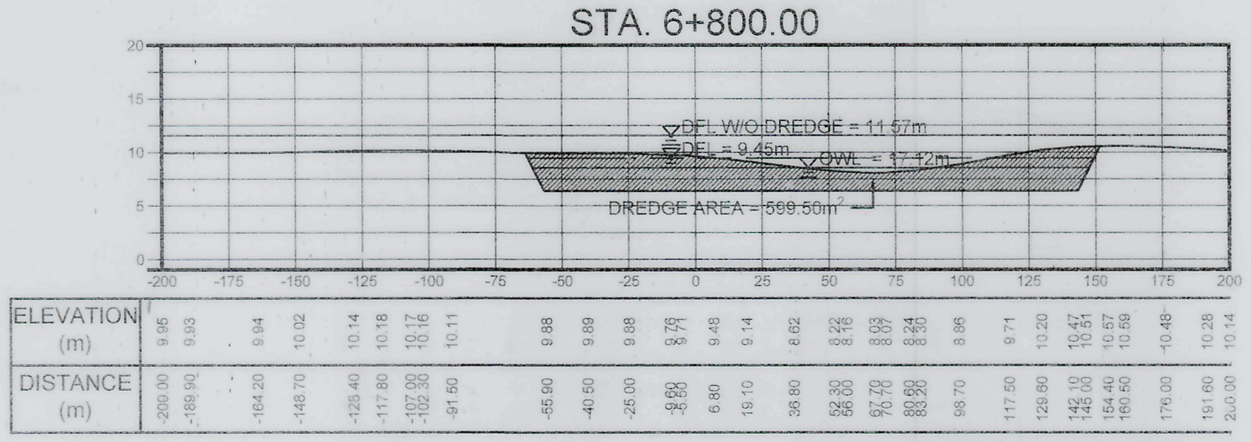
STA. 6+900.00


DFL W/O DREDGE = 11.87m
DFL = 9.65m
OWL = 17.46m
DREDGE AREA = 610.18m²
ELEVATION (m)
DISTANCE (m)

STA. 6+850.00


DFL W/O DREDGE = 11.72m
DFL = 9.55m
OWL = 17.35m
DREDGE AREA = 603.61m²
ELEVATION (m)
DISTANCE (m)

STA. 6+800.00


DFL W/O DREDGE = 11.67m
DFL = 9.45m
OWL = 17.12m
DREDGE AREA = 599.50m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 6+300 ~ STA. 7+000

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE, OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 1
STA. 6+300 - STA. 7+000

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT

REVIEWED AS PRESENTED:
REMIGIO V. MA NGKAY
PROVINCIAL ENGINEER

GENE ALTEZ
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR

(SEE COVER SHEET)
JOSE
MINDORO

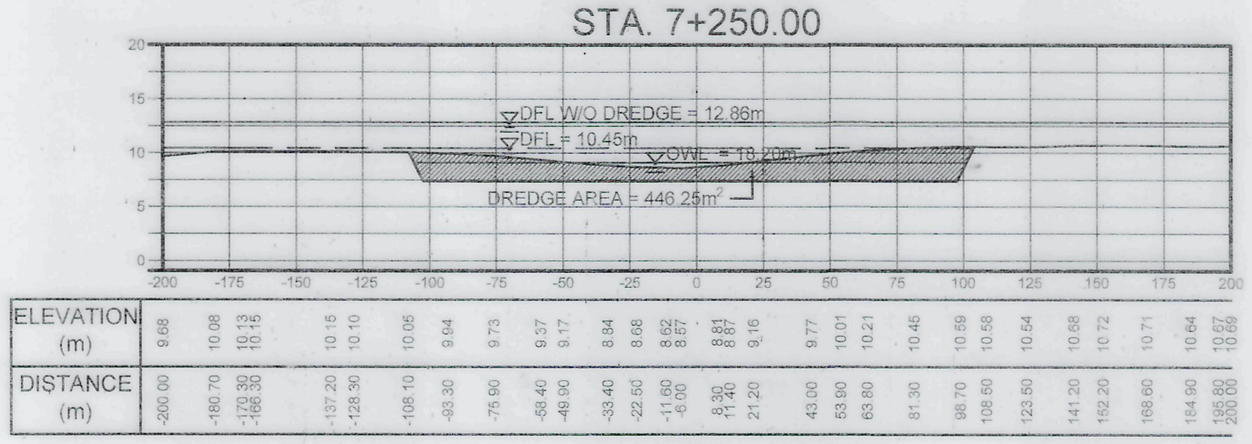
GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B

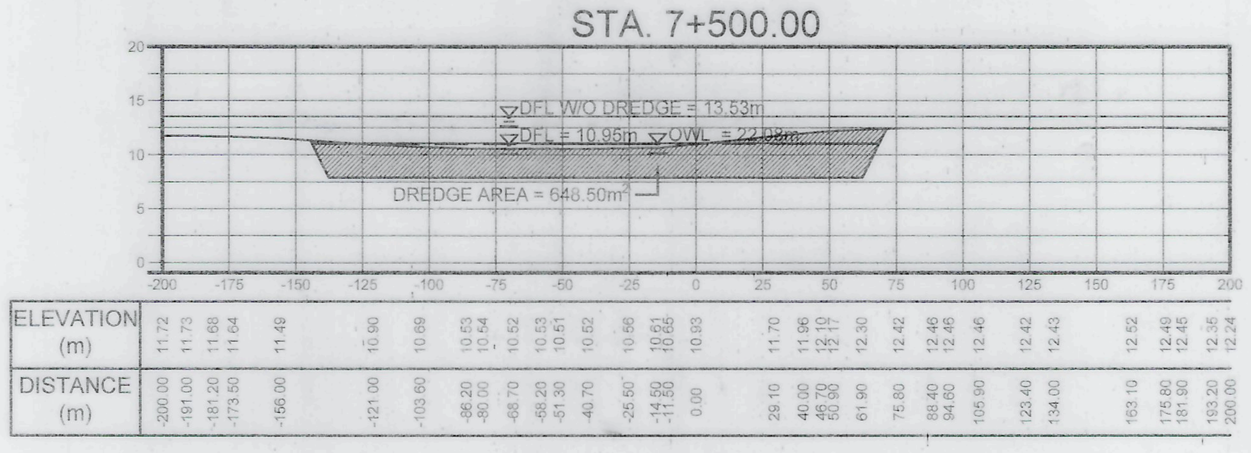
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN

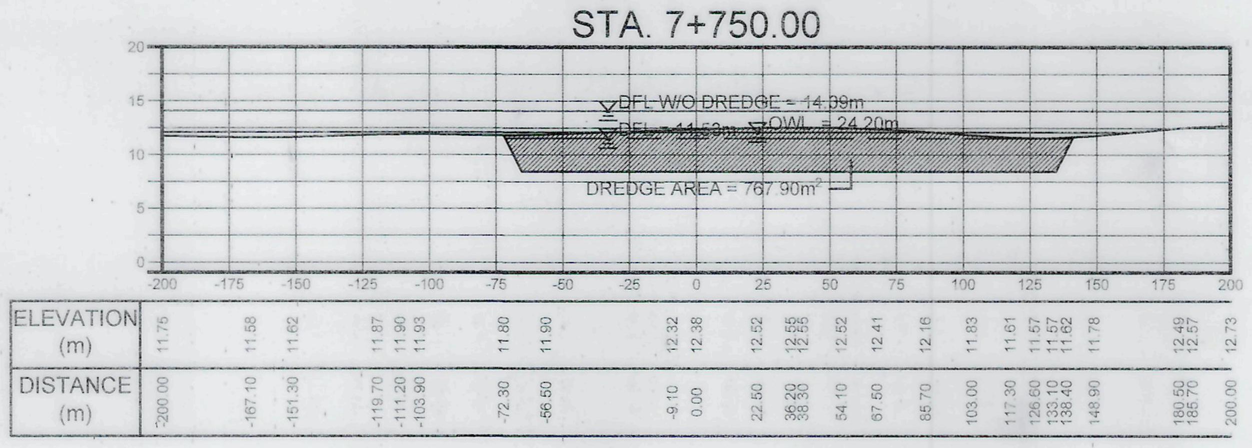
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES

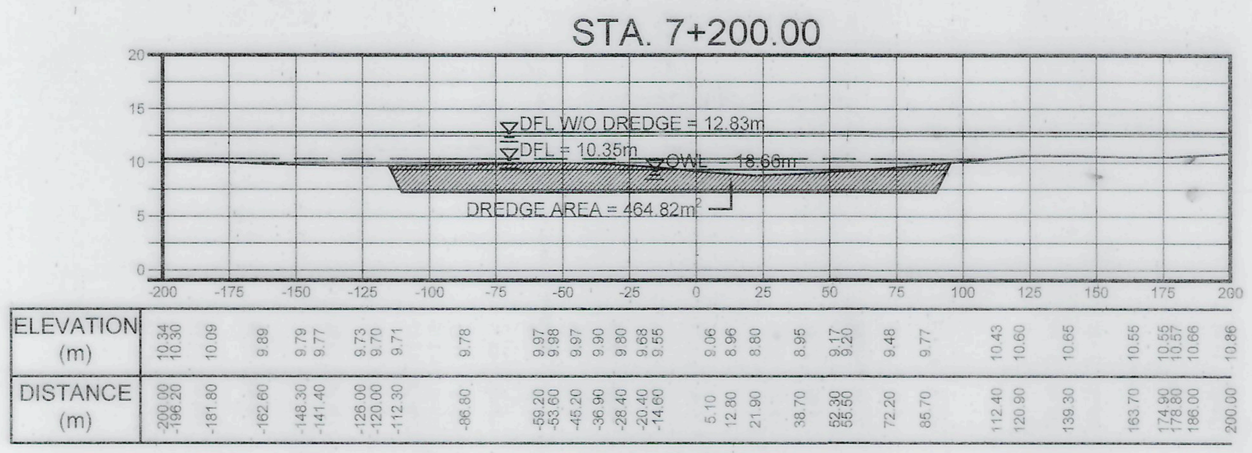
APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES

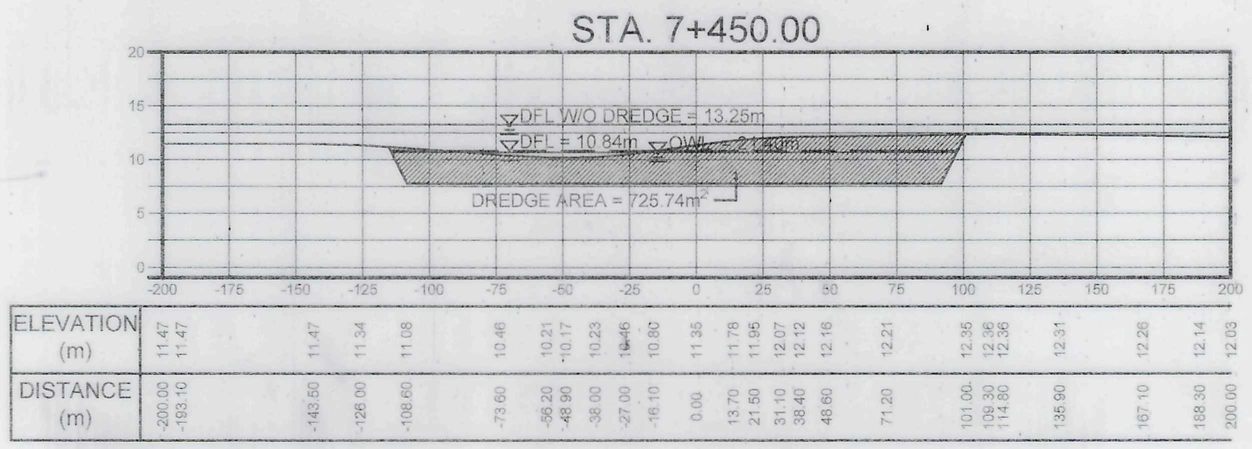
SET NO: CS1 08 | 15
SHEET NO: 21 | 28

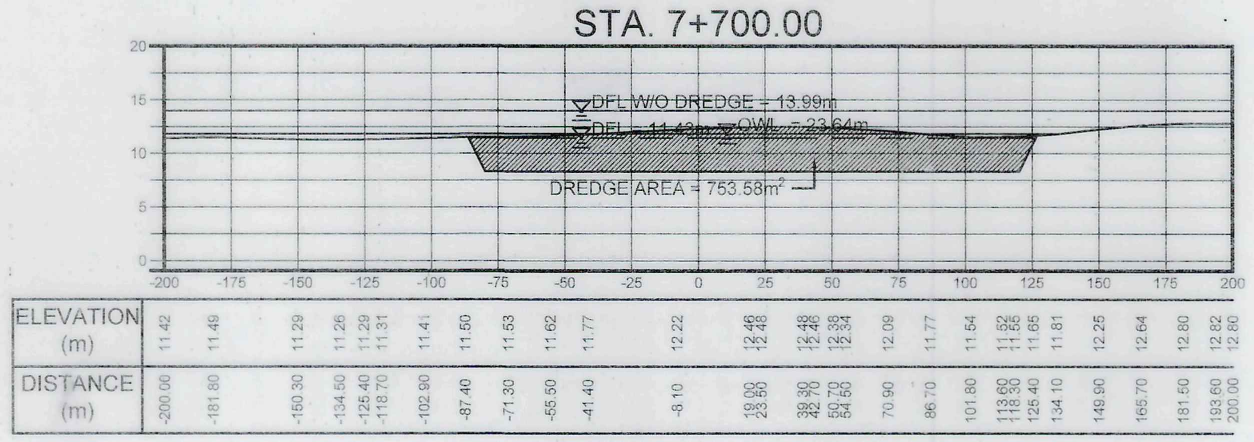

STA. 7+250.00
DFL W/O DREDGE = 12.86m
DFL = 10.45m
OWL = 18.20m
DREDGE AREA = 446.25m²
ELEVATION (m)
DISTANCE (m)

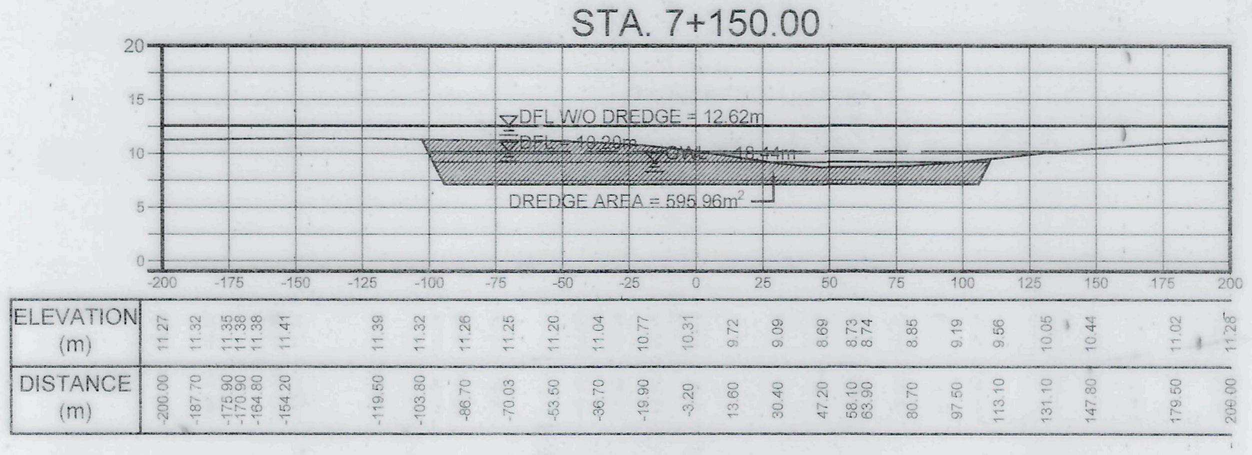

STA. 7+500.00
DFL W/O DREDGE = 13.53m
DFL = 10.95m
OWL = 22.08m
DREDGE AREA = 648.50m²
ELEVATION (m)
DISTANCE (m)

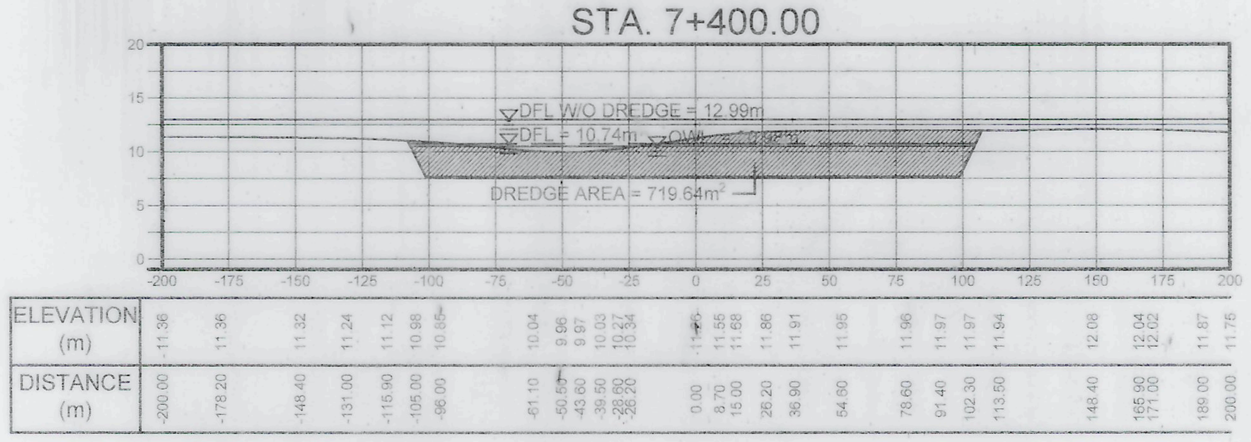

STA. 7+750.00
DFL W/O DREDGE = 14.39m
OWL = 24.20m
DREDGE AREA = 767.90m²
ELEVATION (m)
DISTANCE (m)

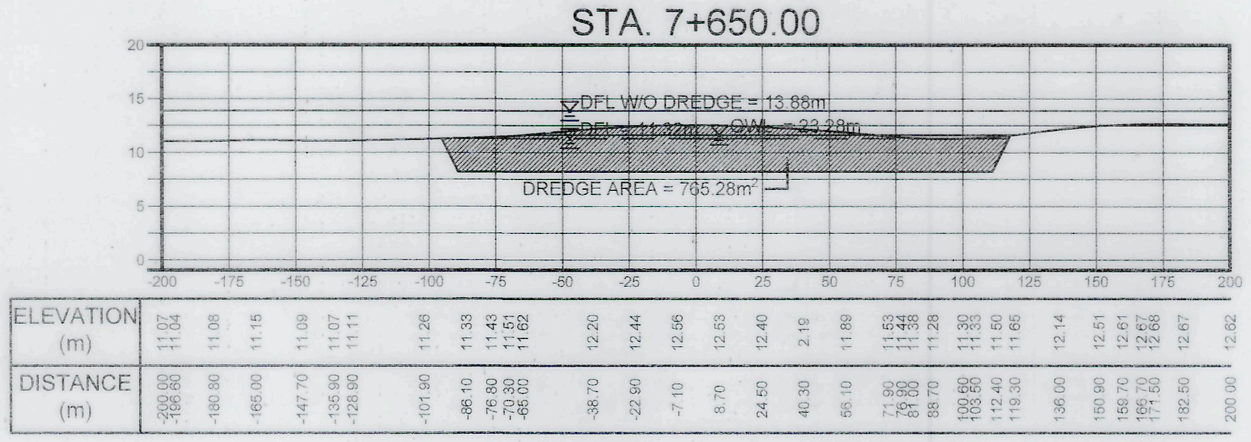

STA. 7+200.00
DFL W/O DREDGE = 12.83m
DFL = 10.35m
OWL = 18.68m
DREDGE AREA = 464.82m²
ELEVATION (m)
DISTANCE (m)

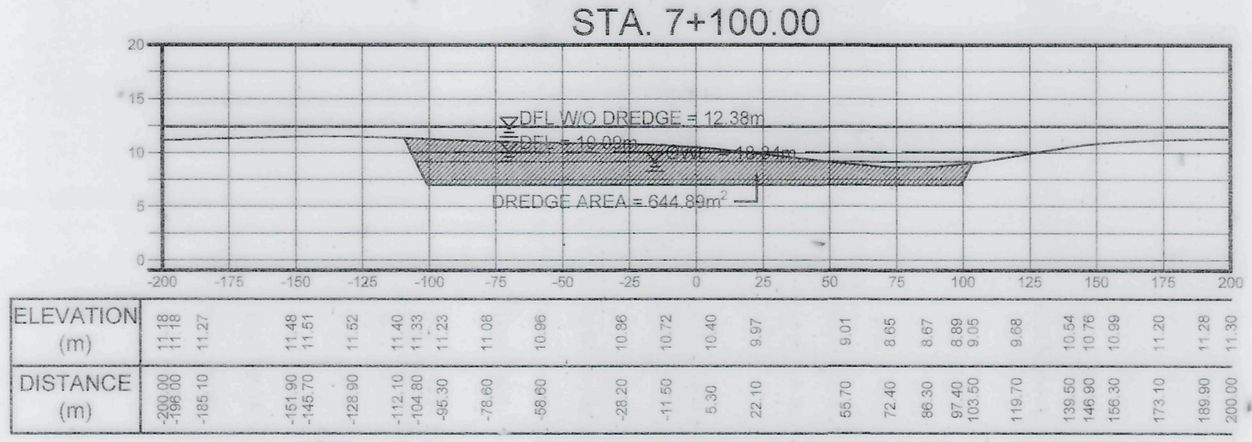

STA. 7+450.00
DFL W/O DREDGE = 13.25m
DFL = 10.84m
OWL = 21.40m
DREDGE AREA = 725.74m²
ELEVATION (m)
DISTANCE (m)

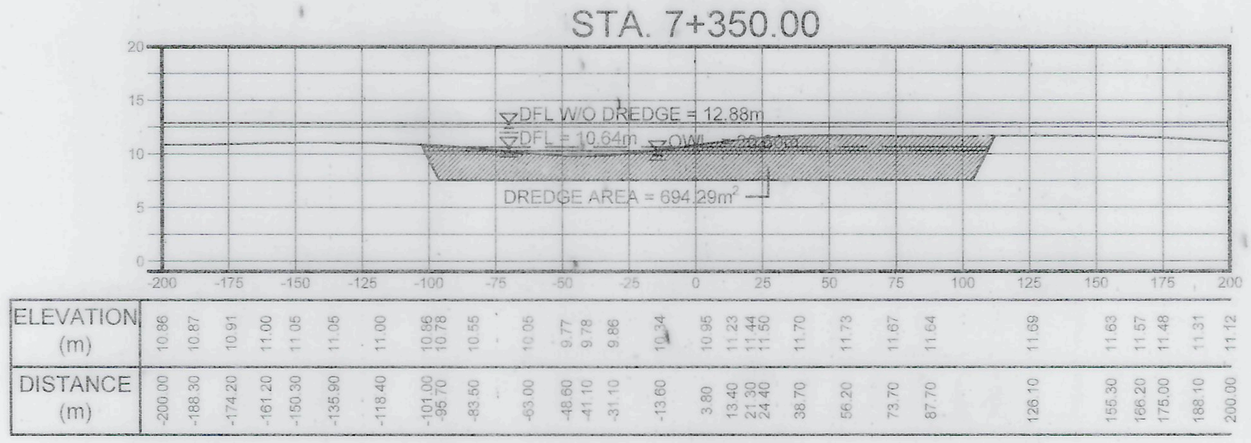

STA. 7+700.00
DFL W/O DREDGE = 13.99m
DFL = 11.43m
OWL = 23.64m
DREDGE AREA = 753.58m²
ELEVATION (m)
DISTANCE (m)

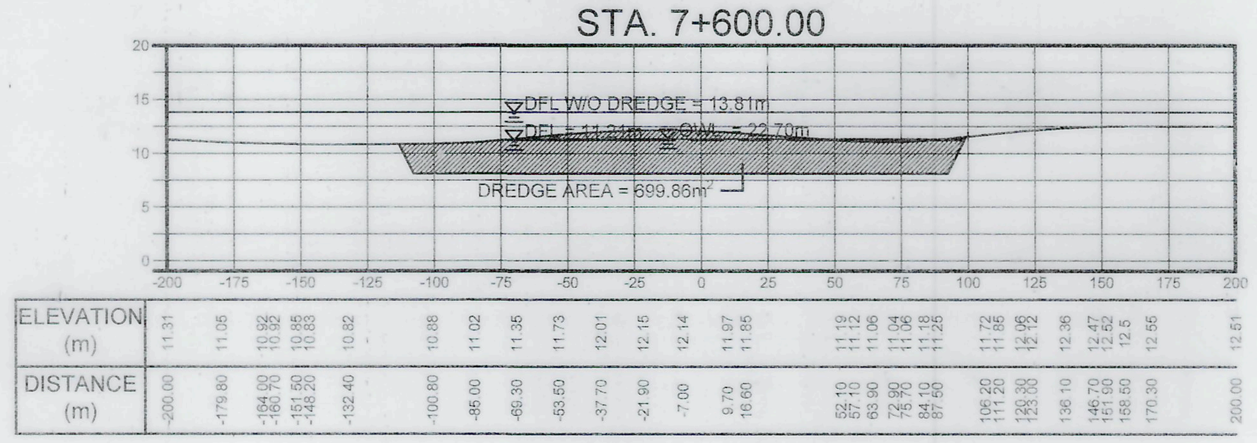

STA. 7+150.00
DFL W/O DREDGE = 12.62m
OWL = 18.34m
DREDGE AREA = 595.96m²
ELEVATION (m)
DISTANCE (m)

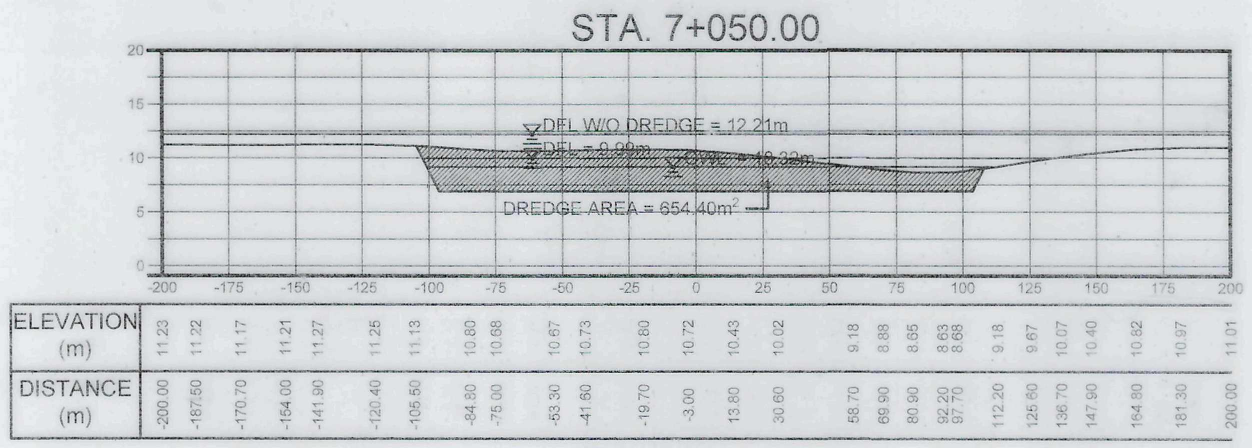

STA. 7+400.00
DFL W/O DREDGE = 12.99m
DFL = 10.74m
DREDGE AREA = 719.64m²
ELEVATION (m)
DISTANCE (m)

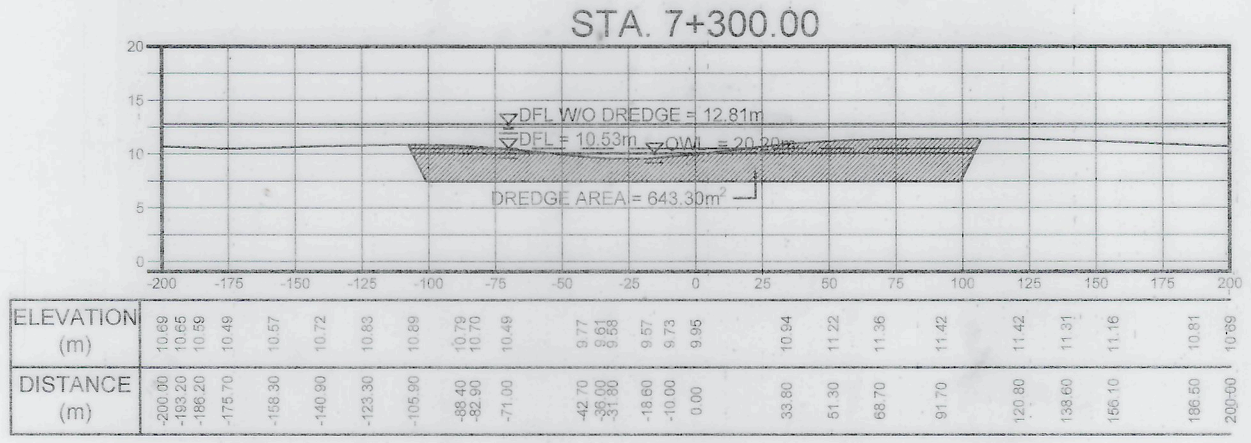

STA. 7+650.00
DFL W/O DREDGE = 13.88m
DFL = 11.12m
OWL = 23.18m
DREDGE AREA = 765.28m²
ELEVATION (m)
DISTANCE (m)

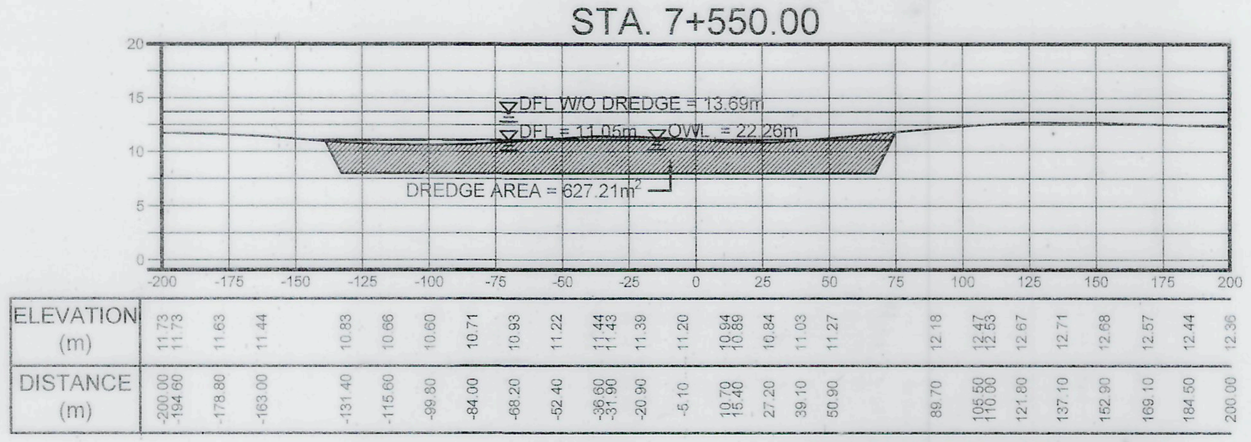

STA. 7+100.00
DFL W/O DREDGE = 12.38m
DFL = 10.00m
OWL = 18.04m
DREDGE AREA = 644.89m²
ELEVATION (m)
DISTANCE (m)


STA. 7+350.00
DFL W/O DREDGE = 12.88m
DFL = 10.64m
DREDGE AREA = 694.29m²
ELEVATION (m)
DISTANCE (m)


STA. 7+600.00
DFL W/O DREDGE = 13.81m
DFL = 11.21m
OWL = 22.70m
DREDGE AREA = 699.86m²
ELEVATION (m)
DISTANCE (m)


STA. 7+050.00
DFL W/O DREDGE = 12.21m
DFL = 9.99m
OWL = 18.32m
DREDGE AREA = 654.40m²
ELEVATION (m)
DISTANCE (m)


STA. 7+300.00
DFL W/O DREDGE = 12.81m
DFL = 10.53m
OWL = 20.20m
DREDGE AREA = 643.30m²
ELEVATION (m)
DISTANCE (m)


STA. 7+550.00
DFL W/O DREDGE = 13.69m
DFL = 11.05m
OWL = 22.26m
DREDGE AREA = 627.21m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1

STA. 7+050 ~ STA. 7+750

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 1
STA. 7+050 - STA. 7+750

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE:

REVIEWED AS PRESENTED:
REMIGIO P. MASANGKAY
PROVINCIAL ENGINEER
DATE:

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV.
DPWH, REGION IV-B
DATE:

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV.
BUREAU OF DESIGN
DATE:

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE:

(SEE COVER SHEET)
JOSE ... A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE:

GERALD A. PACANAN,CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE:

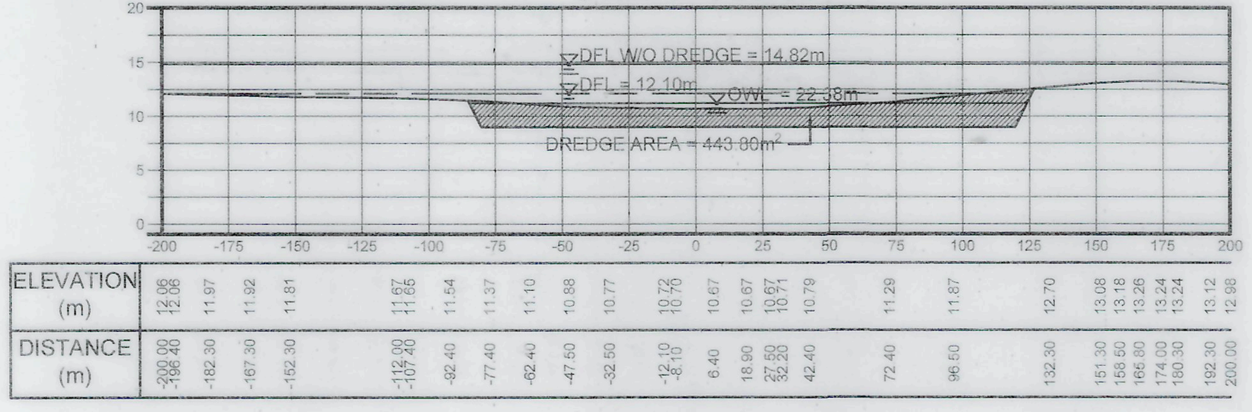
EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE:

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

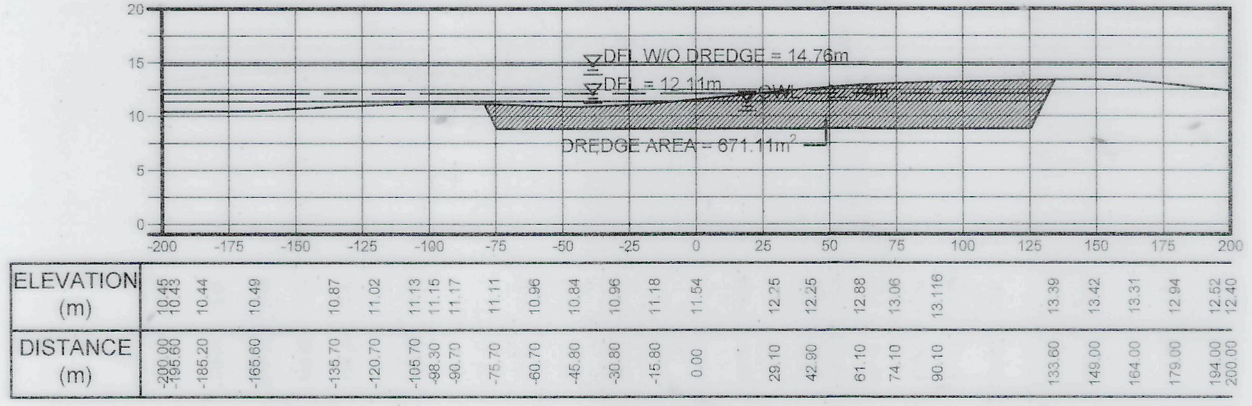
APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE:

SET NO. CS1 09 15
SHEET NO. 22 28

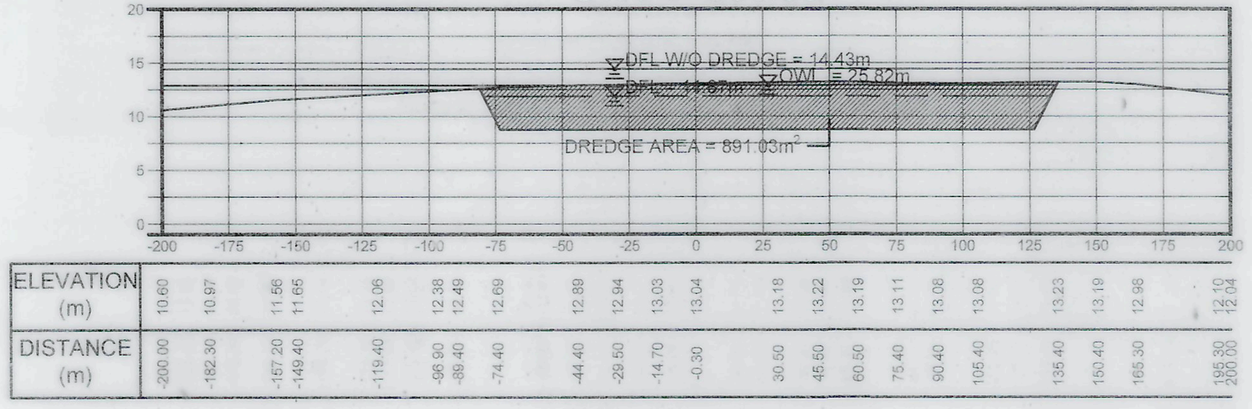
STA. 8+000.00


DFL W/O DREDGE = 14.82m
DFL = 12.10m
OWL = 22.38m
DREDGE AREA = 443.80m²
ELEVATION (m)
DISTANCE (m)

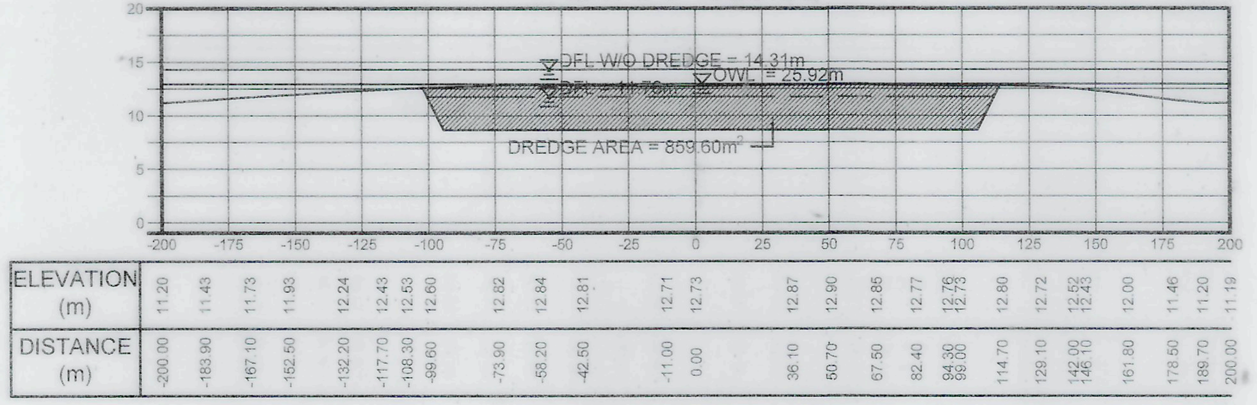
STA. 7+950.00


DFL W/O DREDGE = 14.76m
DFL = 12.11m
OWL
DREDGE AREA = 671.11m²
ELEVATION (m)
DISTANCE (m)

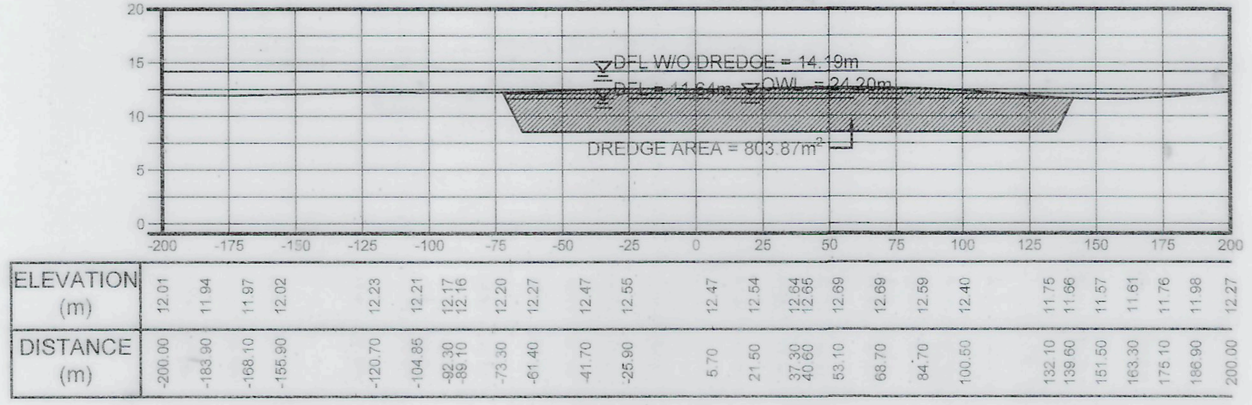
STA. 7+900.00


DFL W/O DREDGE = 14.43m
OWL = 25.82m
DREDGE AREA = 891.03m²
ELEVATION (m)
DISTANCE (m)

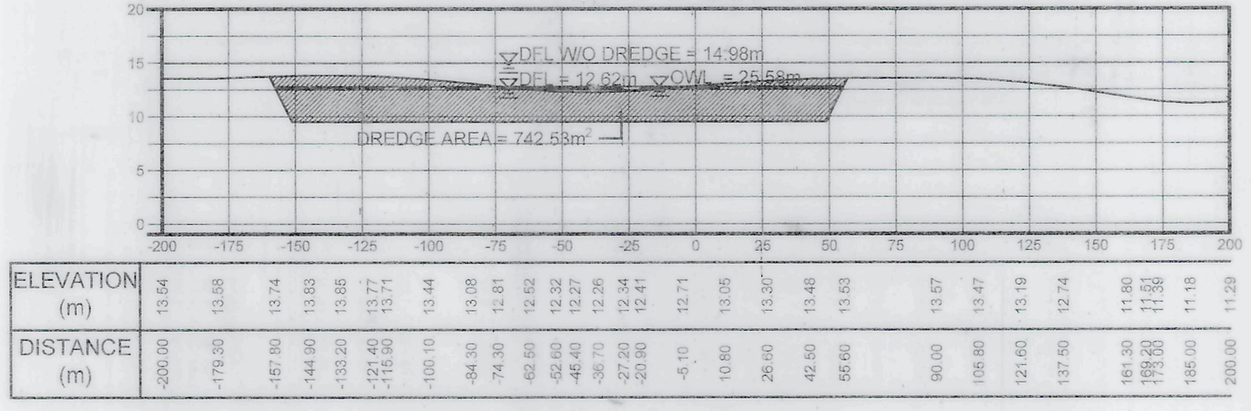
STA. 7+850.00


DFL W/O DREDGE = 14.31m
OWL = 25.92m
DREDGE AREA = 859.60m²
ELEVATION (m)
DISTANCE (m)

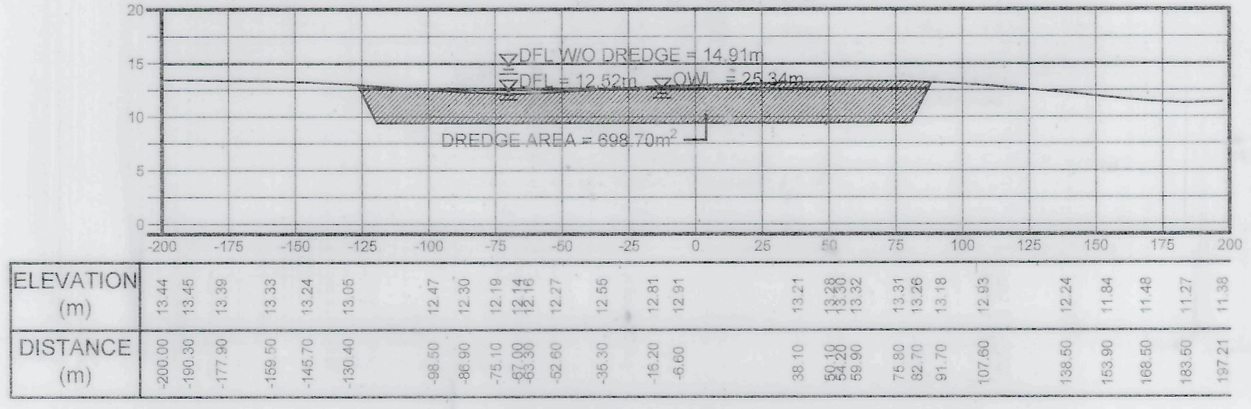
STA. 7+800.00


DFL W/O DREDGE = 14.19m
DFL = 11.64m
OWL = 24.20m
DREDGE AREA = 803.87m²
ELEVATION (m)
DISTANCE (m)

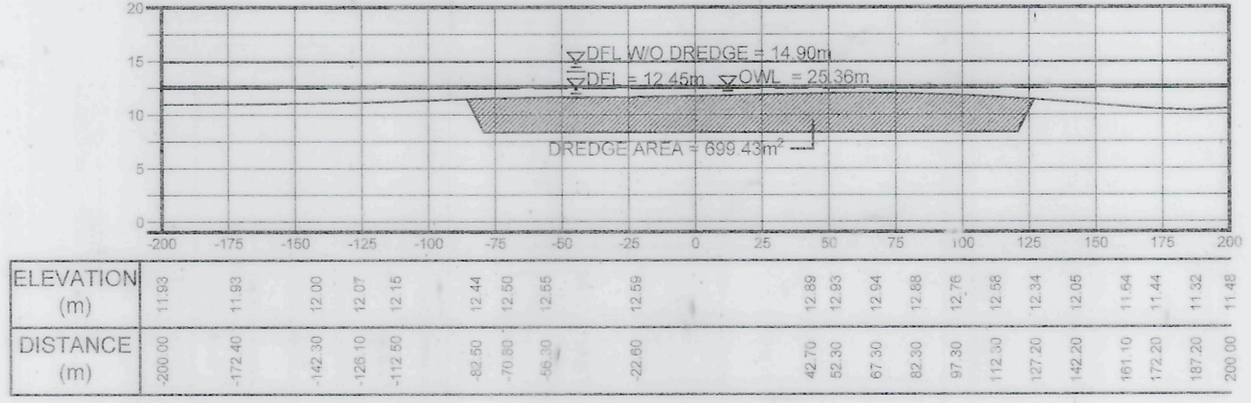
STA. 8+250.00


DFL W/O DREDGE = 14.98m
DFL = 12.62m
OWL = 25.58m
DREDGE AREA = 742.53m²
ELEVATION (m)
DISTANCE (m)

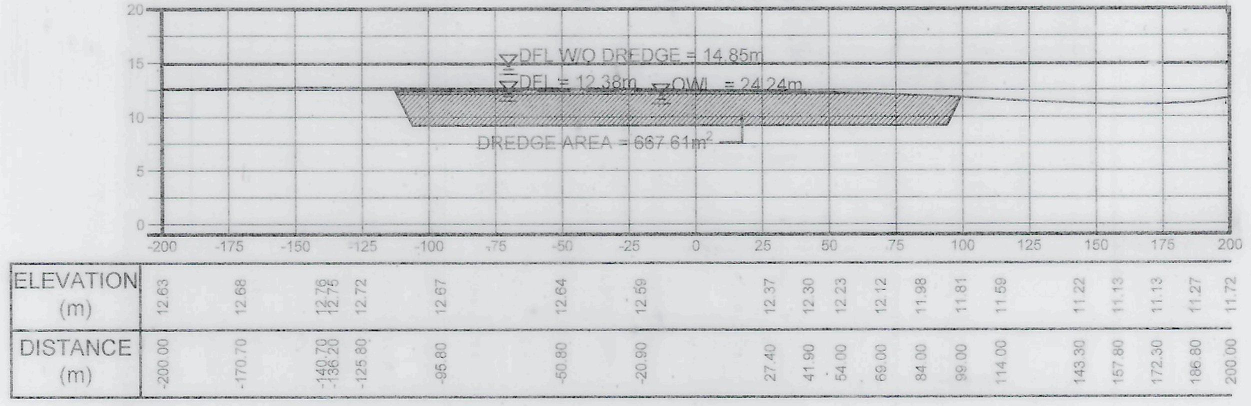
STA. 8+200.00


DFL W/O DREDGE = 14.91m
DFL = 12.52m
OWL = 25.34m
DREDGE AREA = 698.70m²
ELEVATION (m)
DISTANCE (m)

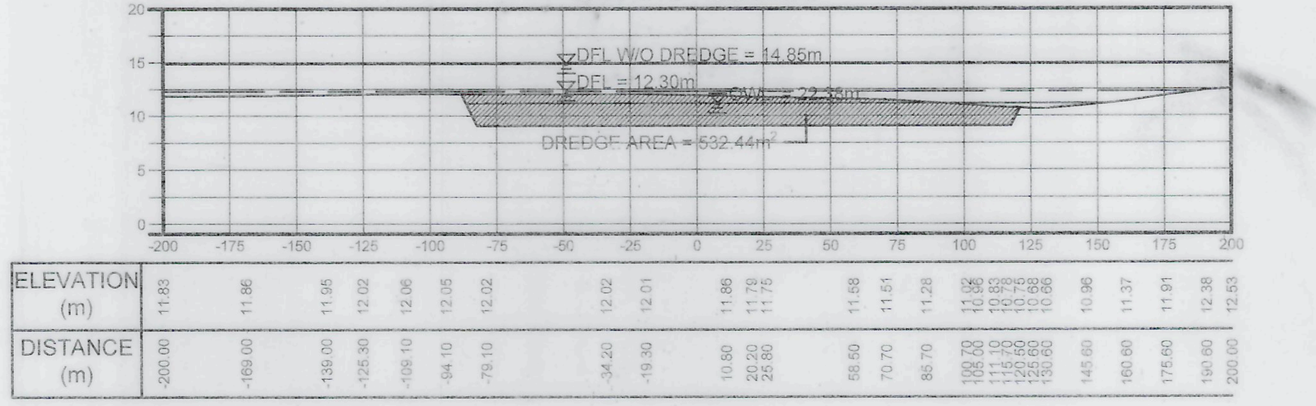
STA. 8+150.00


DFL W/O DREDGE = 14.90m
DFL = 12.45m
OWL = 25.36m
DREDGE AREA = 699.43m²
ELEVATION (m)
DISTANCE (m)

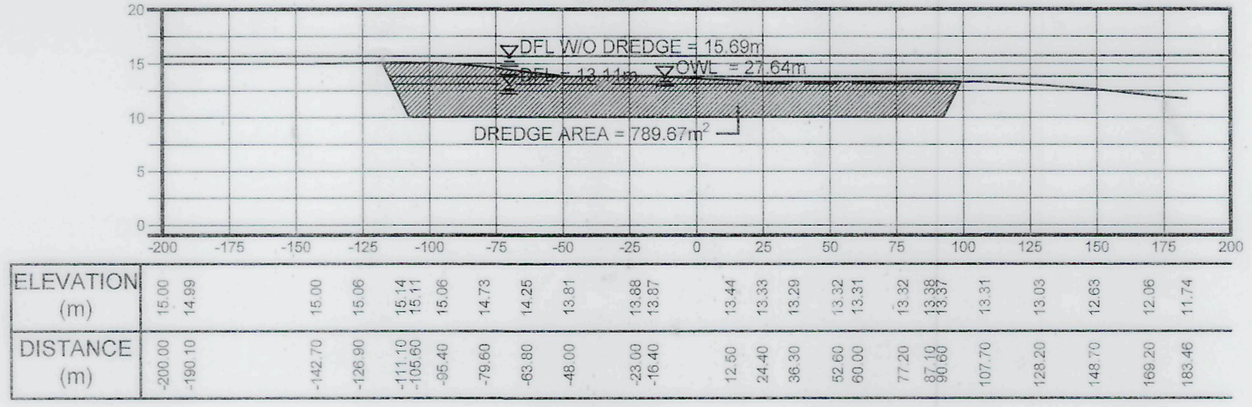
STA. 8+100.00


DFL W/O DREDGE = 14.85m
DFL = 12.38m
OWL = 24.24m
DREDGE AREA = 667.61m²
ELEVATION (m)
DISTANCE (m)

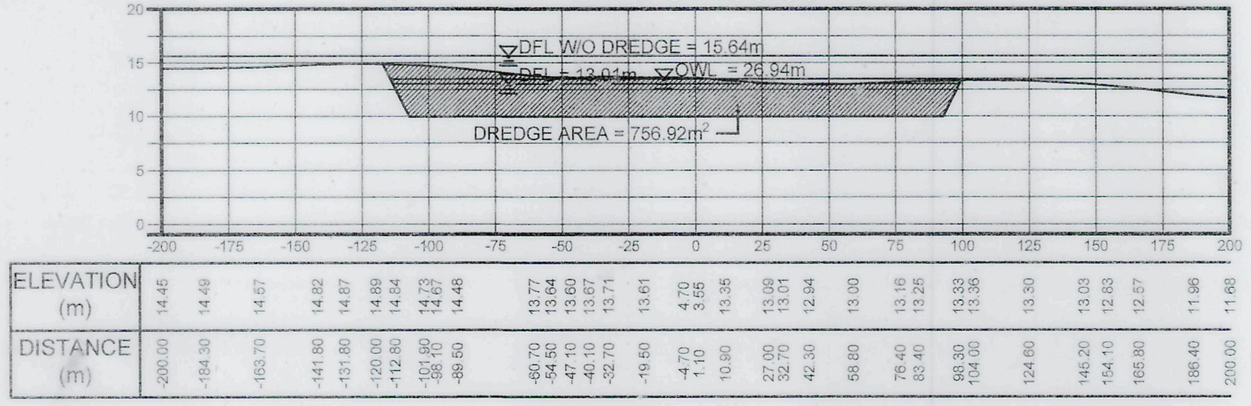
STA. 8+050.00


DFL W/O DREDGE = 14.85m
DFL = 12.30m
OWL = 22.38m
DREDGE AREA = 532.44m²
ELEVATION (m)
DISTANCE (m)

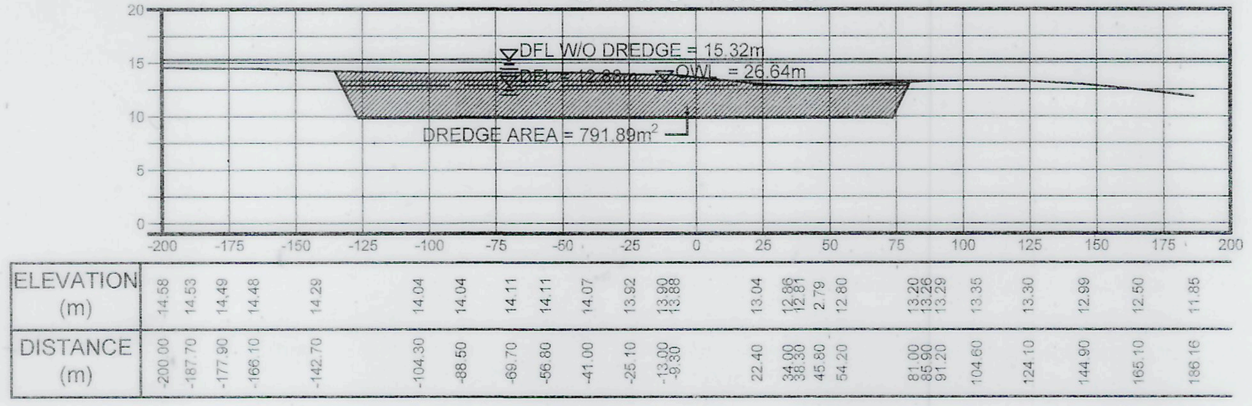
STA. 8+500.00


DFL W/O DREDGE = 15.69m
DFL = 13.11m
OWL = 27.64m
DREDGE AREA = 789.67m²
ELEVATION (m)
DISTANCE (m)

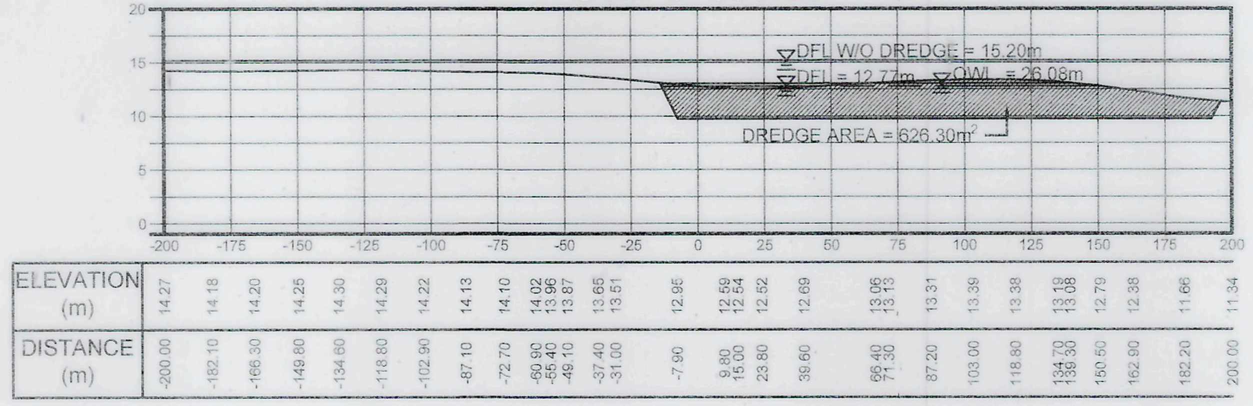
STA. 8+450.00


DFL W/O DREDGE = 15.64m
DFL = 13.01m
OWL = 26.94m
DREDGE AREA = 756.92m²
ELEVATION (m)
DISTANCE (m)

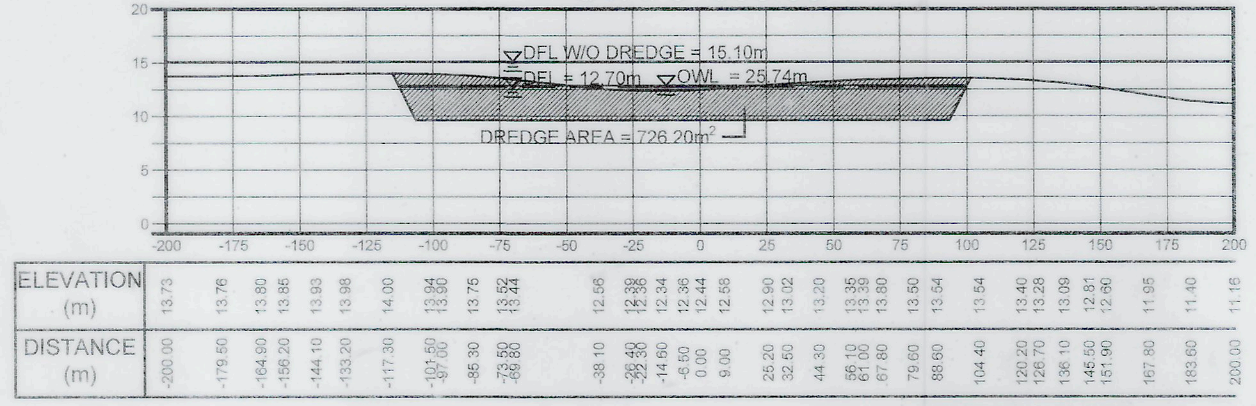
STA. 8+400.00


DFL W/O DREDGE = 15.32m
OWL = 26.64m
DREDGE AREA = 791.89m²
ELEVATION (m)
DISTANCE (m)

STA. 8+350.00


DFL W/O DREDGE = 15.20m
DFL = 12.77m
OWL = 26.08m
DREDGE AREA = 626.30m²
ELEVATION (m)
DISTANCE (m)

STA. 8+300.00


DFL W/O DREDGE = 15.10m
DFL = 12.70m
OWL = 25.74m
DREDGE AREA = 726.20m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 1
STA. 7+800 ~ STA. 8+500

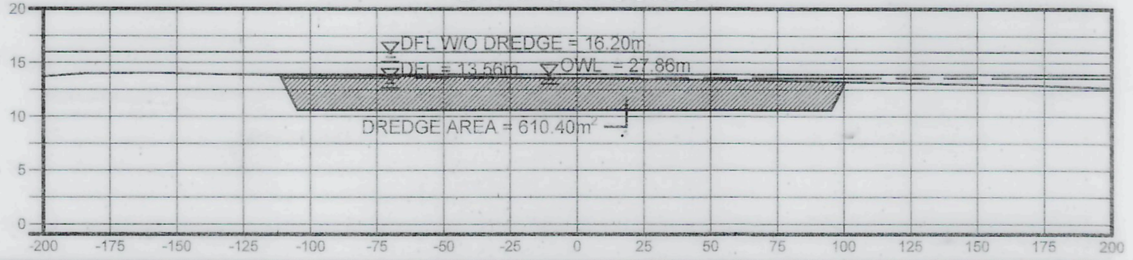
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY

DAVID G. DELA CRUZ
PRESIDENT

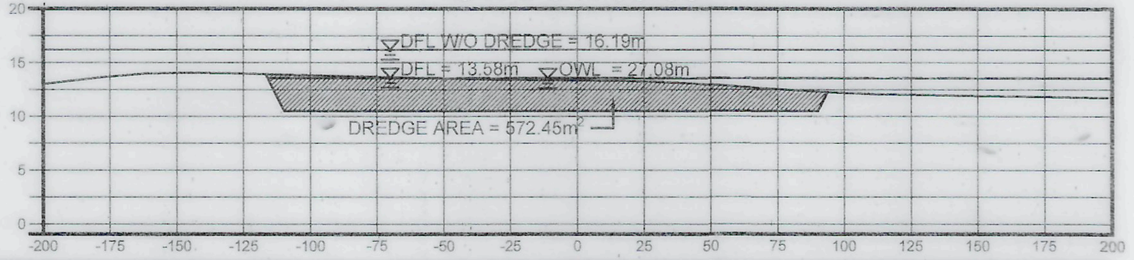
PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 1 STA. 7+800 - STA. 8+500	DAVID G. DELA CRUZ **PRESIDENT** DATE:	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE:	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV DPWH, REGION IV-B DATE:	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE:	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE:	(SEE COVER SHEET) JOSELITO A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE:	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE:	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE:	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE:	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE:	CS1 10 15	23 28

STA. 8+750.00



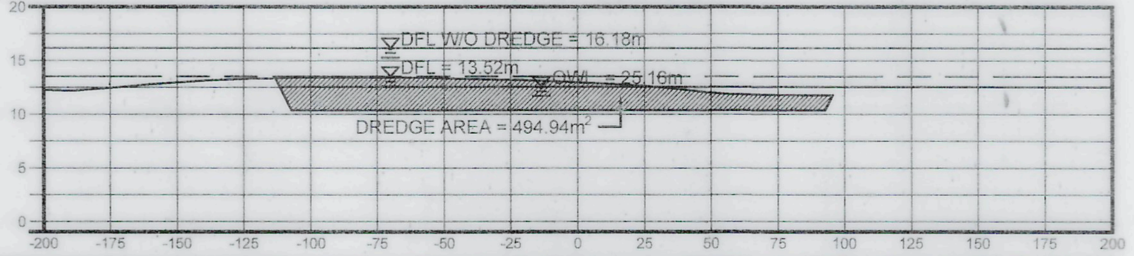
ELEVATION (m)	13.72	13.98	14.06	14.04	13.94	13.88	13.84	13.77	13.73	13.69	13.60	13.40	13.36	13.24	12.95	12.91	12.71
DISTANCE (m)	-200.00	-184.70	-166.60	-155.30	-135.40	-119.00	-87.30	-67.00	-53.50	-36.90	-20.50	57.40	71.20	94.40	165.70	173.20	200.00

STA. 8+700.00



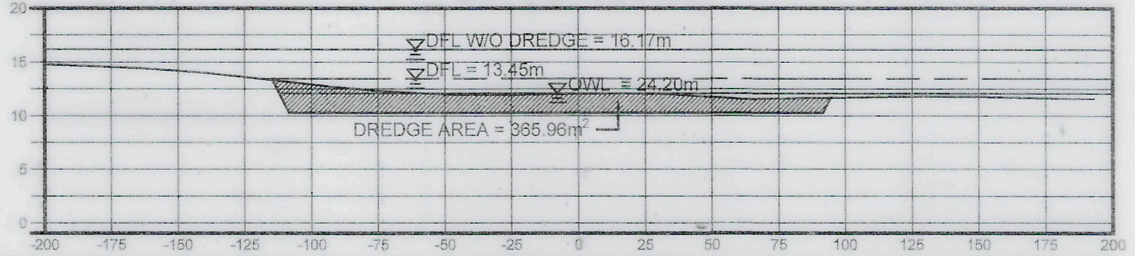
ELEVATION (m)	12.99	13.63	13.93	13.98	14.08	14.01	13.85	13.72	13.62	13.50	13.42	13.29	13.19	13.07	13.01	12.91	12.64	12.39	12.23	12.07	11.92	11.84	11.73
DISTANCE (m)	-200.00	-178.60	-164.70	-162.20	-145.80	-129.30	-106.30	-80.10	-64.90	-47.30	-30.80	18.20	29.50	40.80	45.20	53.40	67.90	84.40	97.20	112.50	148.60	177.50	198.27

STA. 8+650.00



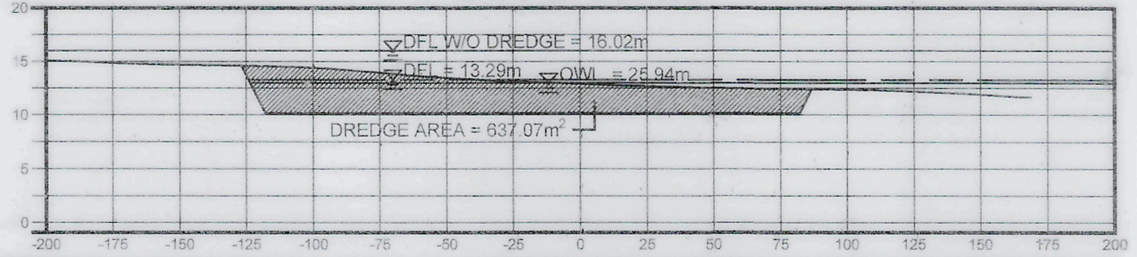
ELEVATION (m)	12.26	12.22	12.18	12.34	12.52	12.81	13.14	13.32	13.36	13.41	13.41	13.45	13.42	13.41	13.33	13.17	13.07	12.78	12.65	12.26	12.05	11.89	11.78	11.78	11.76	11.82	11.82	11.83	11.76
DISTANCE (m)	-200.00	-193.30	-189.00	-182.00	-172.50	-159.30	-139.70	-123.30	-114.00	-106.90	-102.70	-90.50	-62.10	-56.80	-46.00	-20.30	-8.40	16.30	24.50	40.90	47.70	56.50	74.10	83.60	86.50	112.40	120.72	131.50	178.20

STA. 8+600.00



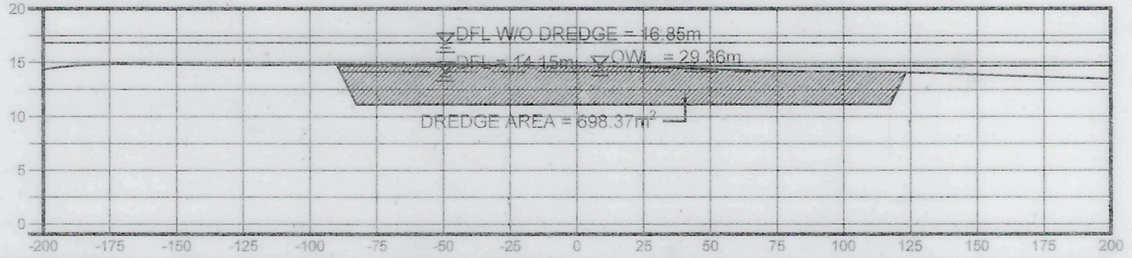
ELEVATION (m)	14.78	14.64	14.47	14.41	14.22	13.96	13.65	12.69	12.34	12.13	11.95	11.94	11.94	12.01	12.08	12.04	12.01	11.57	11.60	11.61	11.66	11.67	11.79	11.79	11.77	11.62	11.60
DISTANCE (m)	-200.00	-183.90	-168.50	-163.50	-151.10	-138.70	-126.20	-91.50	-77.60	-60.70	-45.30	-39.40	-27.00	-14.20	16.40	31.80	34.90	60.90	71.90	78.10	85.50	93.30	123.30	138.20	153.20	183.20	192.97

STA. 8+550.00



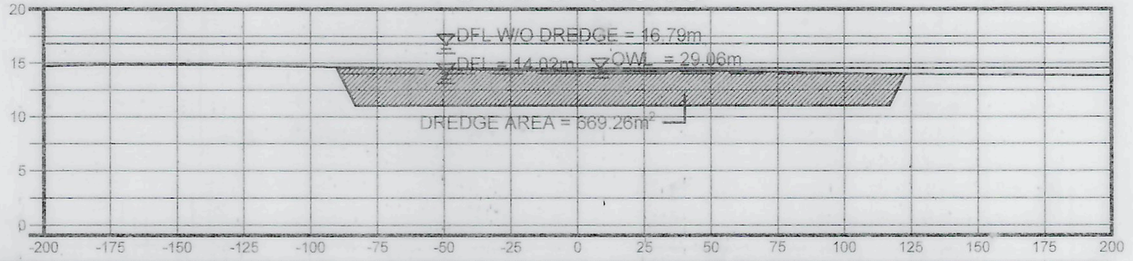
ELEVATION (m)	15.08	15.01	14.84	14.71	14.61	14.49	14.44	14.34	14.03	13.61	13.39	13.18	13.05	12.73	12.61	12.52	12.44	12.43	12.40	12.39	12.31	11.98	11.69	11.66
DISTANCE (m)	-200.00	-190.00	-173.40	-157.60	-126.00	-107.20	-103.20	-94.50	-78.70	-59.80	-47.10	-31.30	-15.50	16.10	31.90	47.70	67.60	70.10	81.90	95.30	111.70	144.40	164.30	168.68

STA. 9+000.00



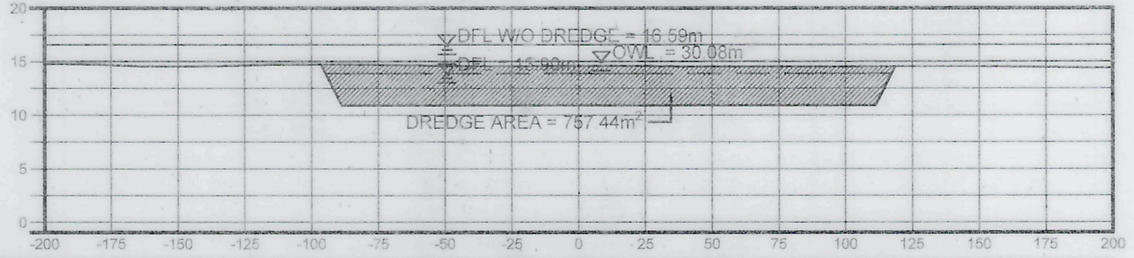
ELEVATION (m)	14.36	14.55	14.70	14.78	14.87	14.76	14.74	14.76	14.82	14.82	14.84	14.81	14.71	14.70	14.70	14.61	14.49	14.34	14.23	14.18	14.16	14.12	14.02	13.85	13.72	13.46
DISTANCE (m)	-200.00	-193.90	-188.00	-182.30	-171.90	-139.80	-123.70	-107.60	-78.30	-74.40	-59.40	-43.40	-27.30	-20.40	4.90	20.90	37.00	53.10	69.10	85.20	106.80	118.30	133.40	153.00	165.60	200.00

STA. 8+950.00



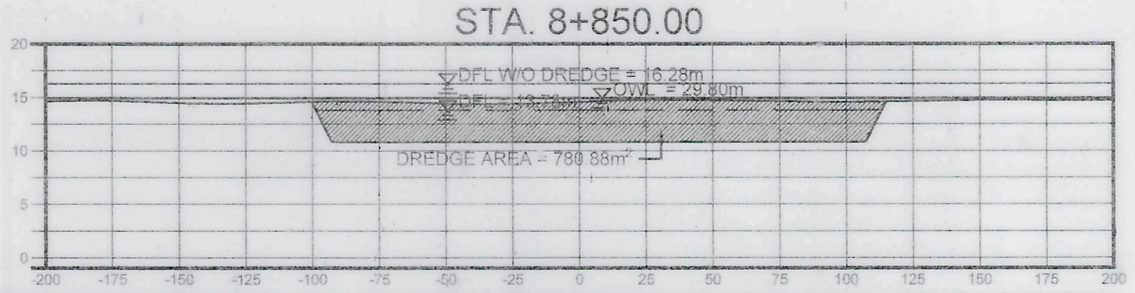
ELEVATION (m)	14.69	14.76	14.83	14.84	14.82	14.76	14.61	14.58	14.53	14.33	14.27	14.24	14.13	14.00	13.98	13.87	13.82
DISTANCE (m)	-200.00	-192.70	-181.10	-169.60	-136.40	-120.30	-88.60	-79.00	-65.50	-23.90	-7.80	56.50	84.80	112.70	116.20	185.10	200.00

STA. 8+900.00



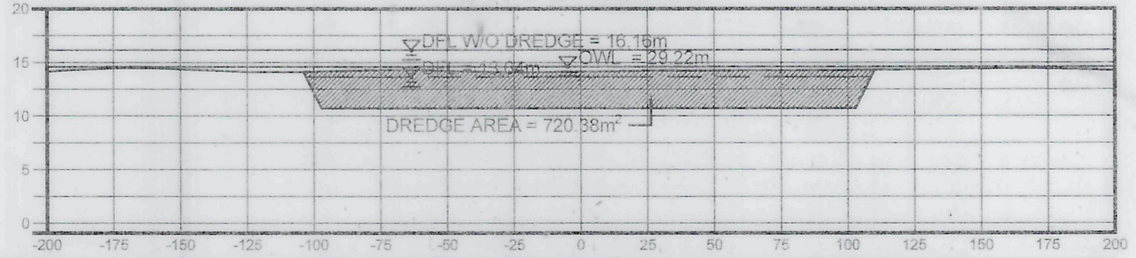
ELEVATION (m)	14.77	14.80	14.78	14.72	14.59	14.55	14.60	14.69	14.74	14.72	14.59	14.58	14.60	14.57	14.51	14.54	14.54	14.54	14.44	14.39
DISTANCE (m)	-200.00	-197.20	-191.50	-180.00	-165.10	-149.00	-132.90	-116.90	-100.80	-84.70	-41.20	-18.10	11.70	27.80	43.80	106.20	111.60	152.90	188.50	200.00

STA. 8+850.00



ELEVATION (m)	14.60	14.65	14.71	14.61	14.45	14.38	14.47	14.59	14.64	14.55	14.40	14.37	14.43	14.73	14.76	14.72	14.55	14.54	14.73	14.73	14.68
DISTANCE (m)	-200.00	-196.80	-180.30	-163.90	-147.50	-131.10	-114.70	-98.30	82.60	-65.40	-49.00	-32.60	-16.20	16.70	33.10	49.50	97.30	98.70	148.00	169.00	200.00

STA. 8+800.00



ELEVATION (m)	14.15	14.31	14.38	14.44	14.46	14.46	14.13	14.08	14.21	14.28	14.27	14.16	14.08	14.10	14.20	14.24	14.25	14.26	14.32	14.37	14.42	14.44	14.35	14.25
DISTANCE (m)	-200.00	-190.70	-181.60	-174.30	-161.40	-157.90	-125.00	-108.60	-88.30	-75.80	-59.40	-43.00	-26.50	-10.10	22.70	57.80	80.30	101.50	121.20	130.80	154.00	167.40	186.90	200.00

CROSS-SECTION - 1
STA. 8+550 ~ STA. 9+000

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 1
STA. 8+100 - STA. 8+800

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE:

REVIEWED AS PRESENTED:
REMIGIO M. MASANGKAY
PROVINCIAL ENGINEER
DATE:

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH, REGION IV-B
DATE:

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV
BUREAU OF DESIGN
DATE:

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE:

(SEE COVER SHEET)
JOSELITO A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE:

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE:

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE:

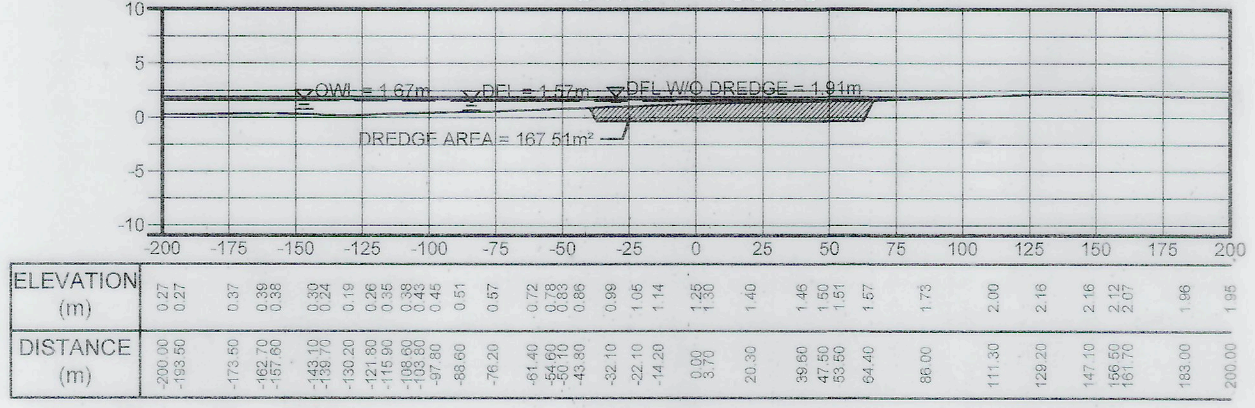
(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

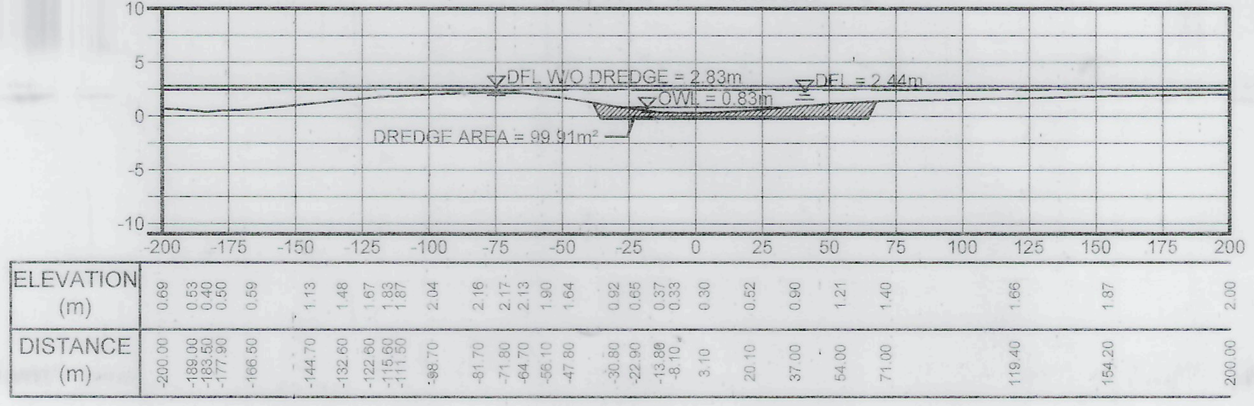
SET NO. CS1 11 15

SHEET NO. 24 28

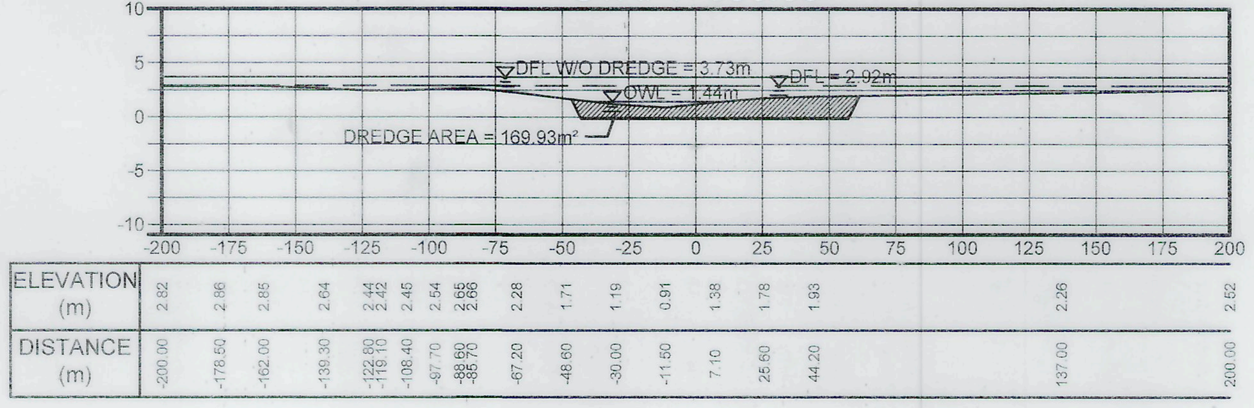
STA. 1+150.00


OWL = 1.67m
DFL = 1.57m
DFL W/O DREDGE = 1.81m
DREDGE AREA = 167.51m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

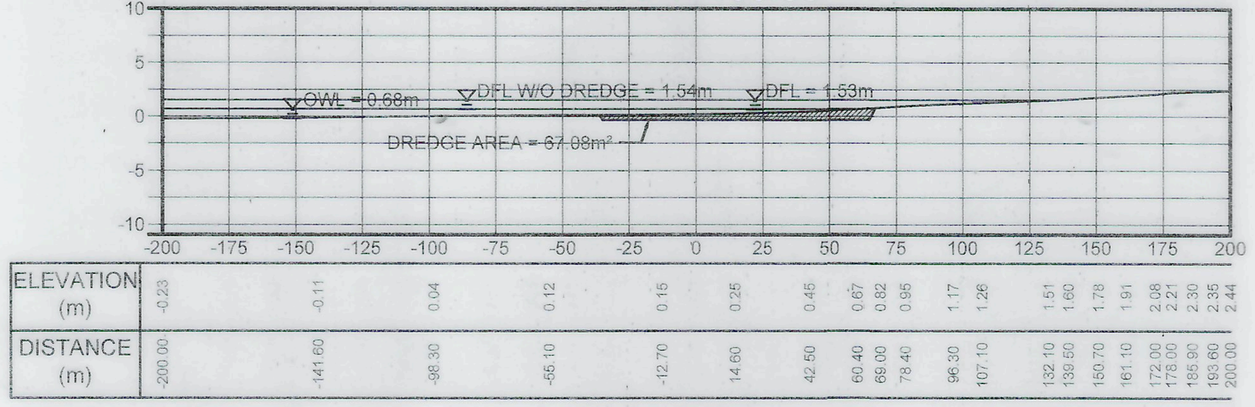
STA. 1+400.00


DFL W/O DREDGE = 2.83m
DFL = 2.44m
OWL = 0.83m
DREDGE AREA = 99.91m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

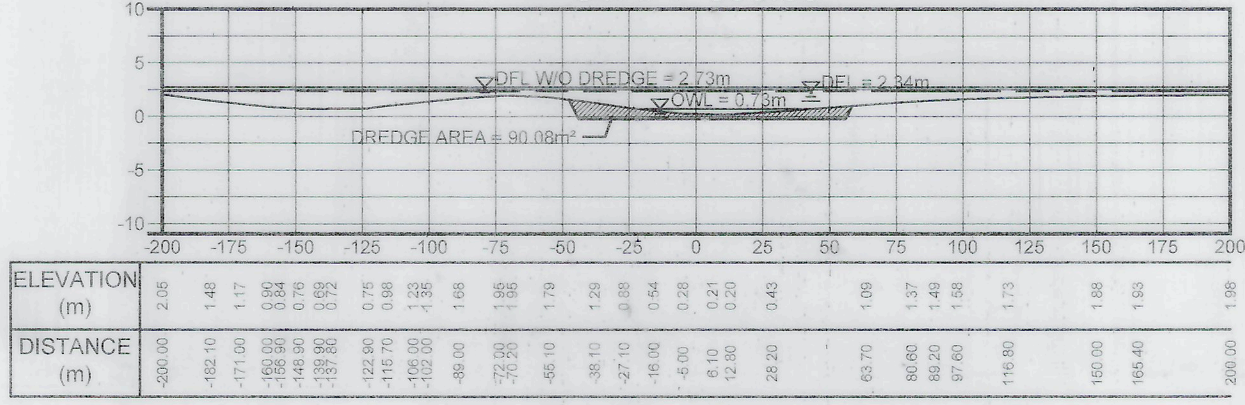
STA. 1+650.00


DFL W/O DREDGE = 3.73m
OWL = 1.44m
DFL = 2.92m
DREDGE AREA = 169.93m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

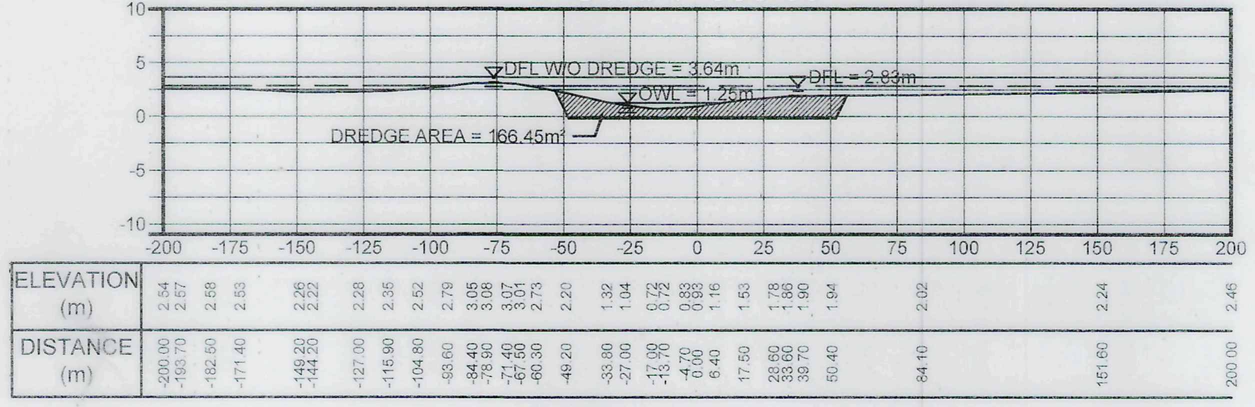
STA. 1+100.00


OWL = 0.68m
DFL W/O DREDGE = 1.54m
DFL = 1.53m
DREDGE AREA = 67.08m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

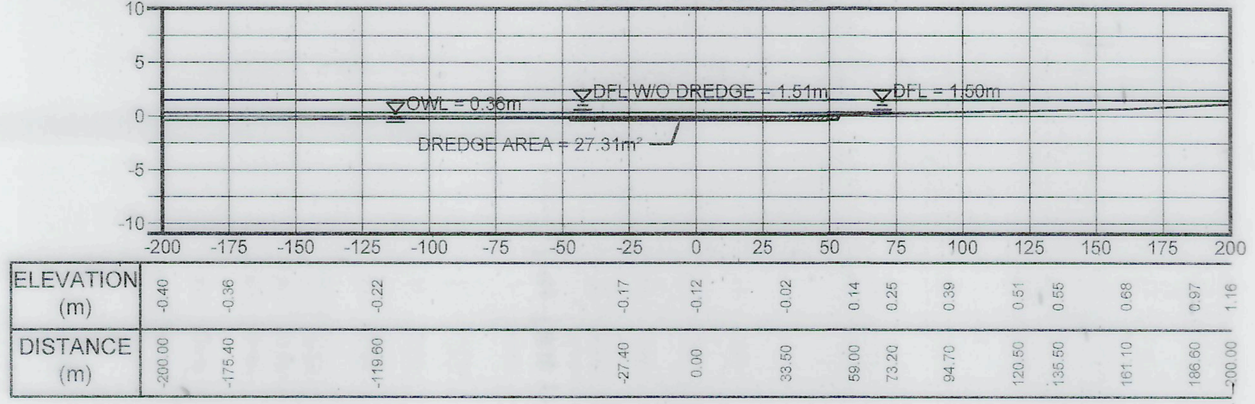
STA. 1+350.00


DFL W/O DREDGE = 2.73m
OWL = 0.73m
DFL = 2.34m
DREDGE AREA = 90.08m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

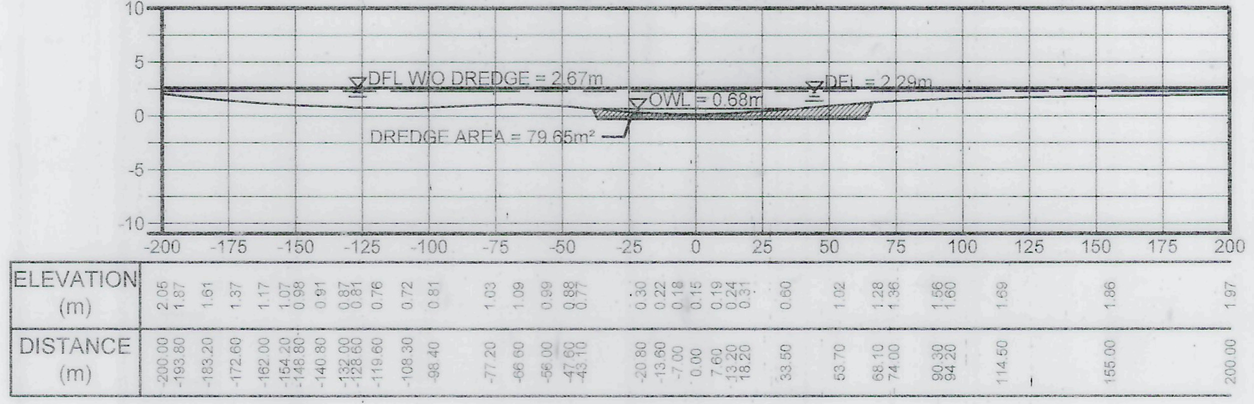
STA. 1+600.00


DFL W/O DREDGE = 3.64m
OWL = 1.25m
DFL = 2.83m
DREDGE AREA = 166.45m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

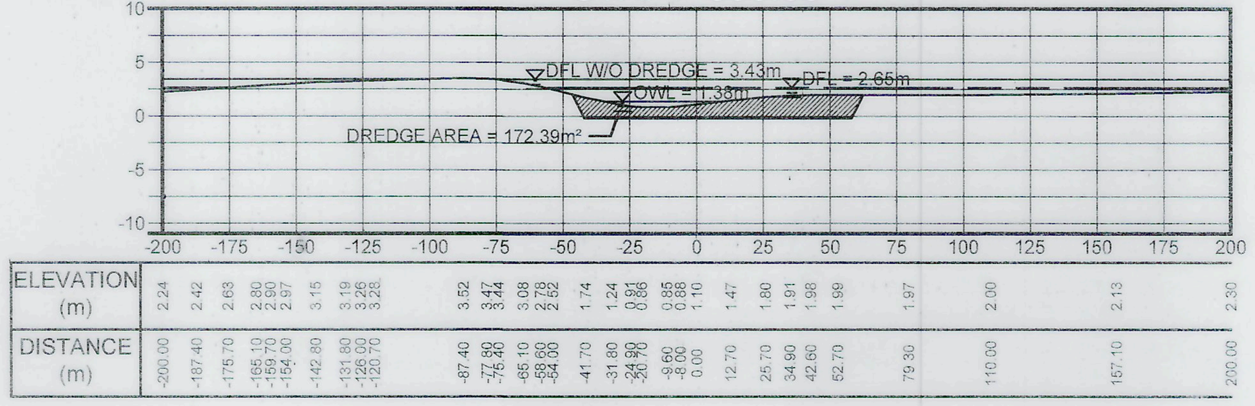
STA. 1+050.00


OWL = 0.36m
DFL W/O DREDGE = 1.51m
DFL = 1.50m
DREDGE AREA = 27.31m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

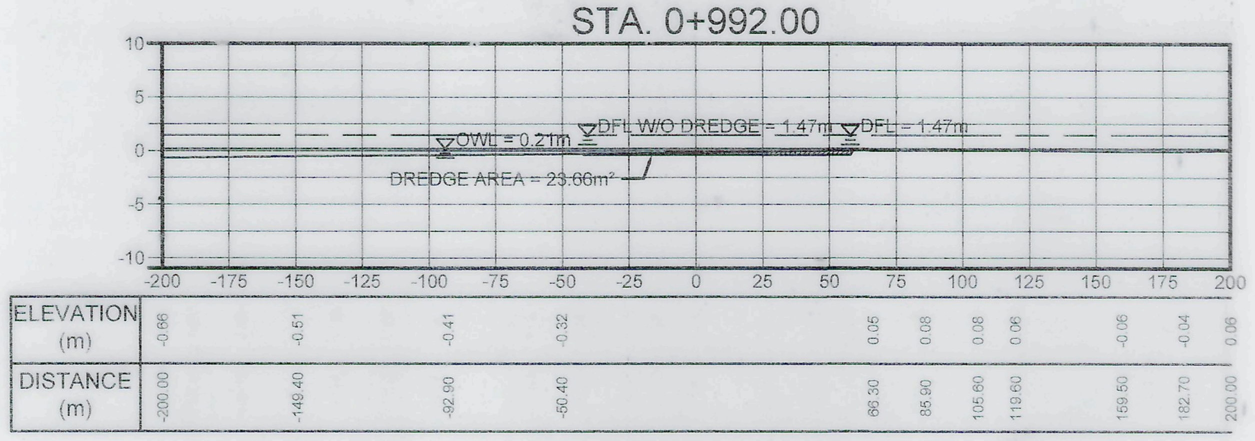
STA. 1+300.00


DFL W/O DREDGE = 2.67m
OWL = 0.68m
DFL = 2.29m
DREDGE AREA = 79.65m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

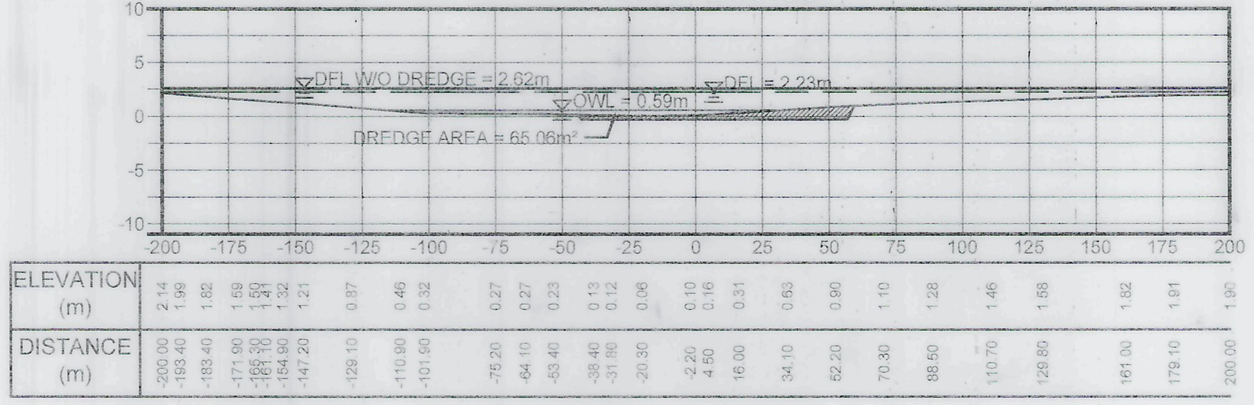
STA. 1+550.00


DFL W/O DREDGE = 3.43m
OWL = 1.38m
DFL = 2.66m
DREDGE AREA = 172.39m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

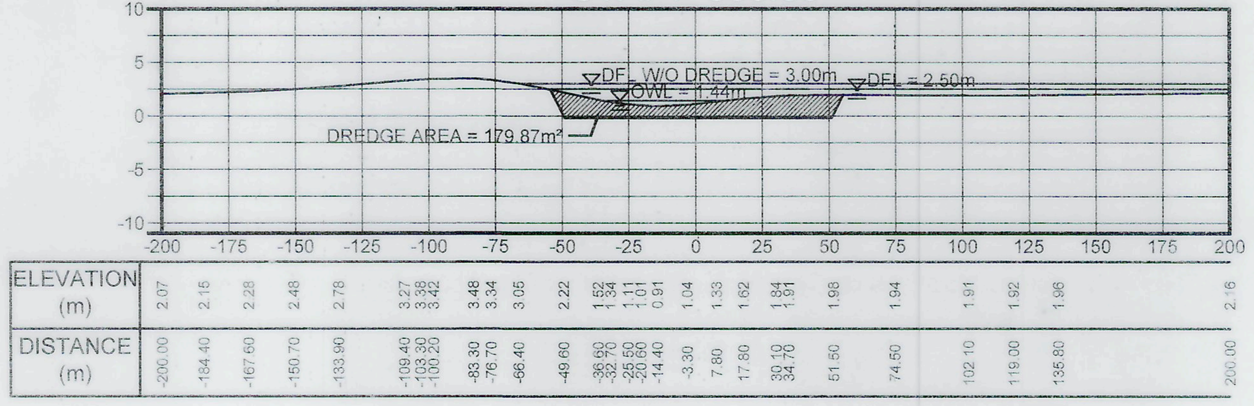
STA. 0+992.00


OWL = 0.21m
DFL W/O DREDGE = 1.47m
DFL = 1.47m
DREDGE AREA = 23.66m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

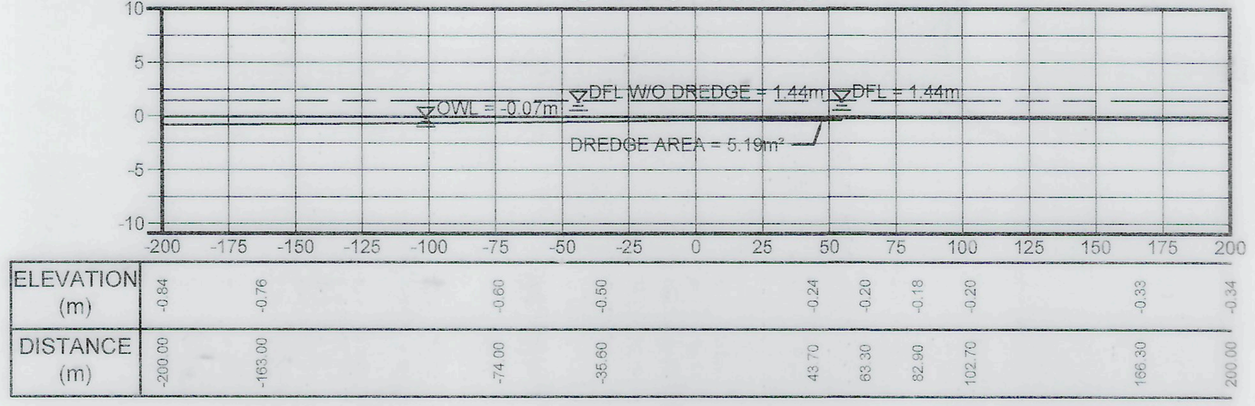
STA. 1+250.00


DFL W/O DREDGE = 2.62m
OWL = 0.59m
DFL = 2.23m
DREDGE AREA = 65.06m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

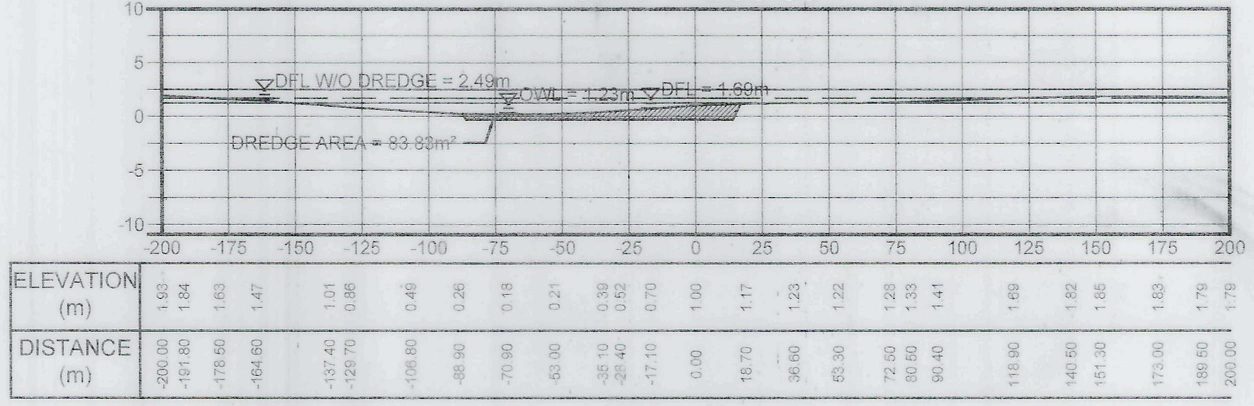
STA. 1+500.00


DFL W/O DREDGE = 3.00m
OWL = 1.44m
DFL = 2.50m
DREDGE AREA = 179.87m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

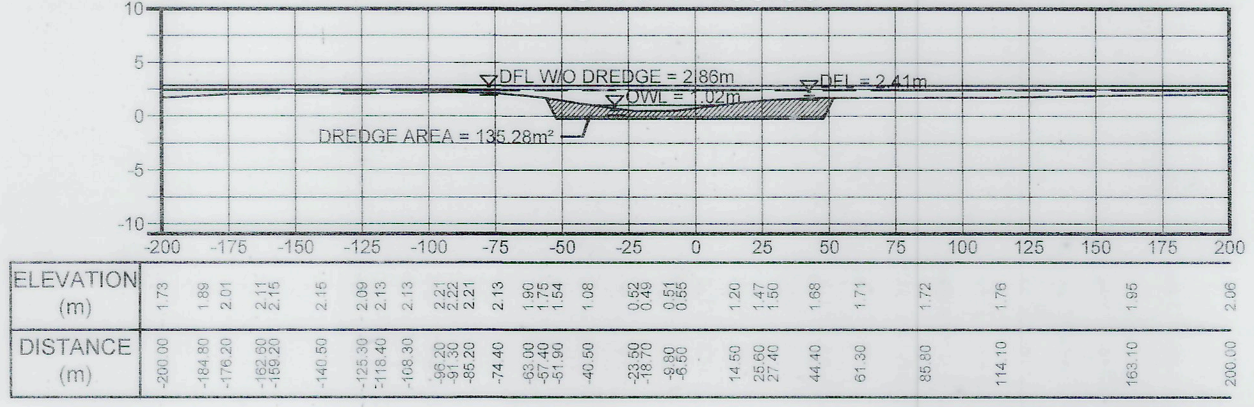
STA. 0+950.00


OWL = -0.07m
DFL W/O DREDGE = 1.44m
DFL = 1.44m
DREDGE AREA = 5.19m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

STA. 1+200.00


DFL W/O DREDGE = 2.49m
OWL = 1.23m
DFL = 1.60m
DREDGE AREA = 83.83m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

STA. 1+450.00


DFL W/O DREDGE = 2.86m
OWL = 1.02m
DFL = 2.41m
DREDGE AREA = 135.28m²
10
5
0
-5
-10
-200 -175 -150 -125 -100 -75 -50 -25 0 25 50 75 100 125 150 175 200
ELEVATION (m)
DISTANCE (m)

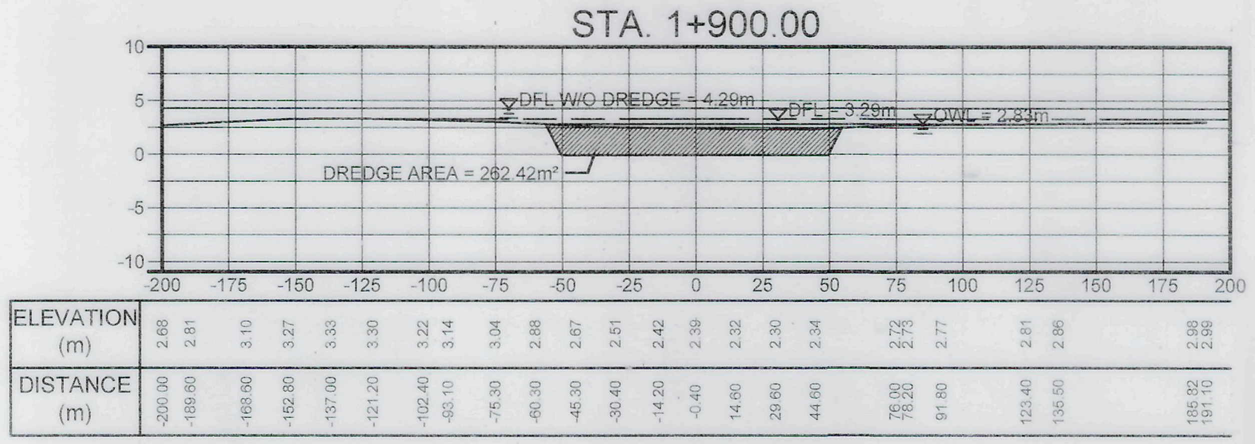
CROSS-SECTION - 2
STA. 0+950 ~ STA. 1+650

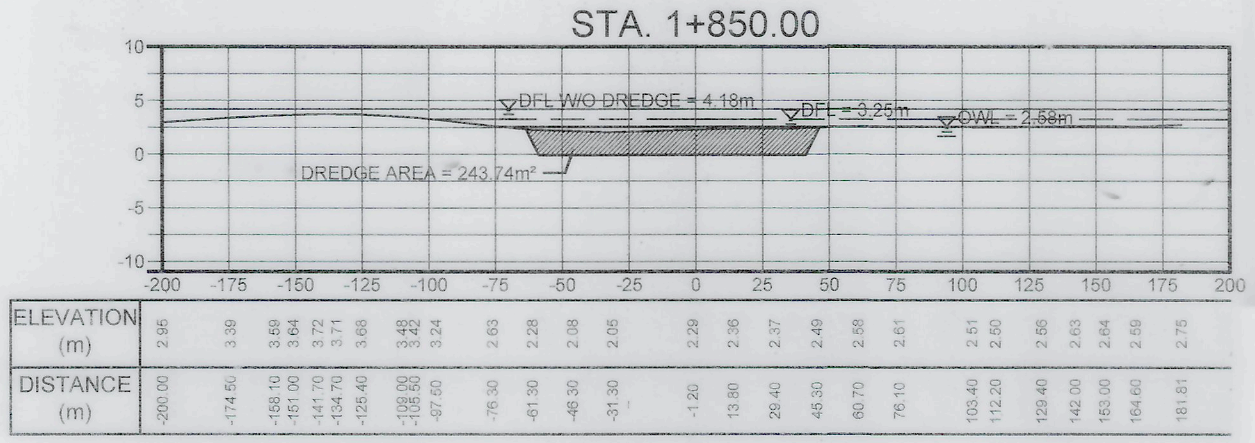
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

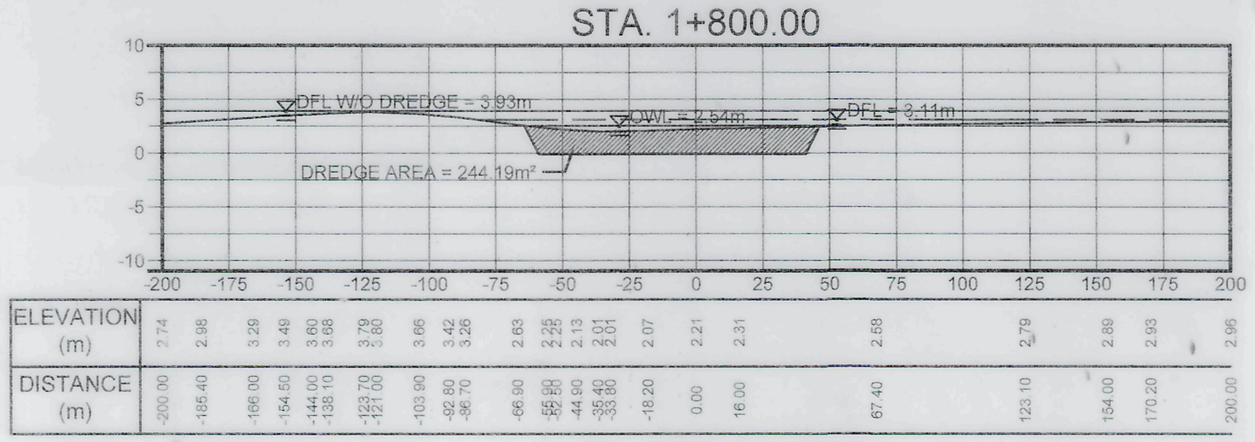
THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

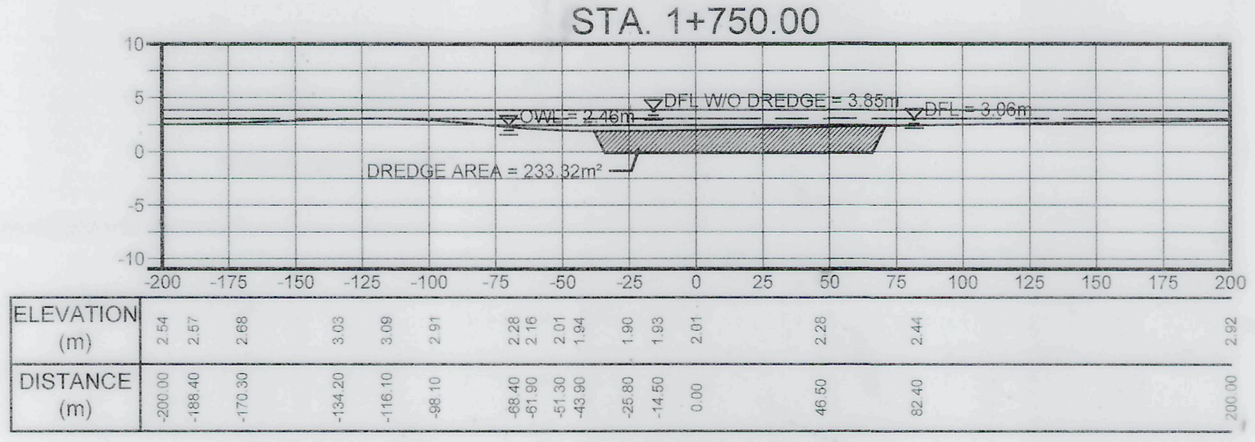
DAVID G. DELA CRUZ
PRESIDENT

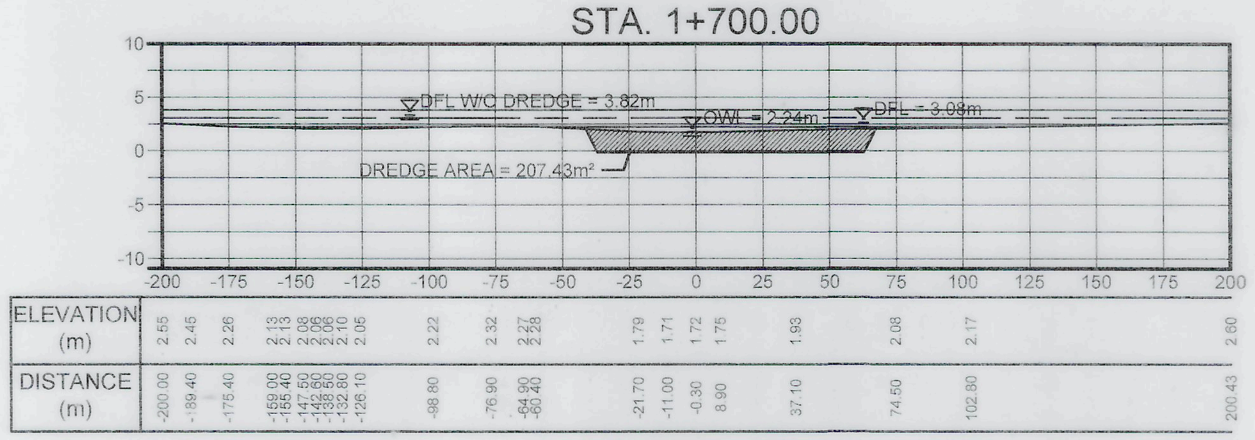
PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 2 STA. 0+950 - STA. 1+650	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	[illegible] A. ALVEA CHIEF, PLANNING AND DESIGN DIV DPWH, REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSE [illegible] DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	CS2 12 15	25 28

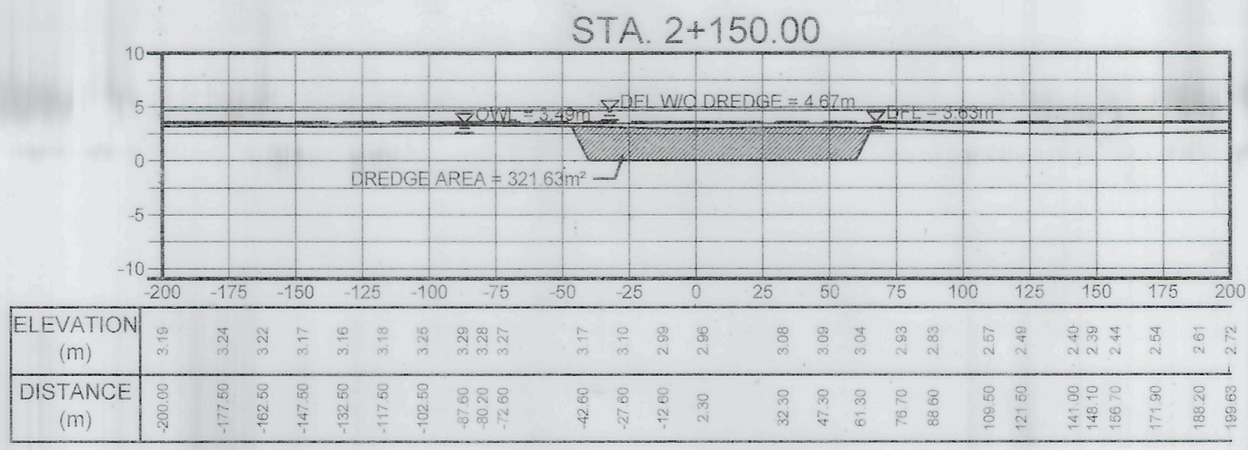

STA. 1+900.00
DFL W/O DREDGE = 4.29m
DFL = 3.29m
OWL = 2.83m
DREDGE AREA = 262.42m²
ELEVATION (m)
DISTANCE (m)

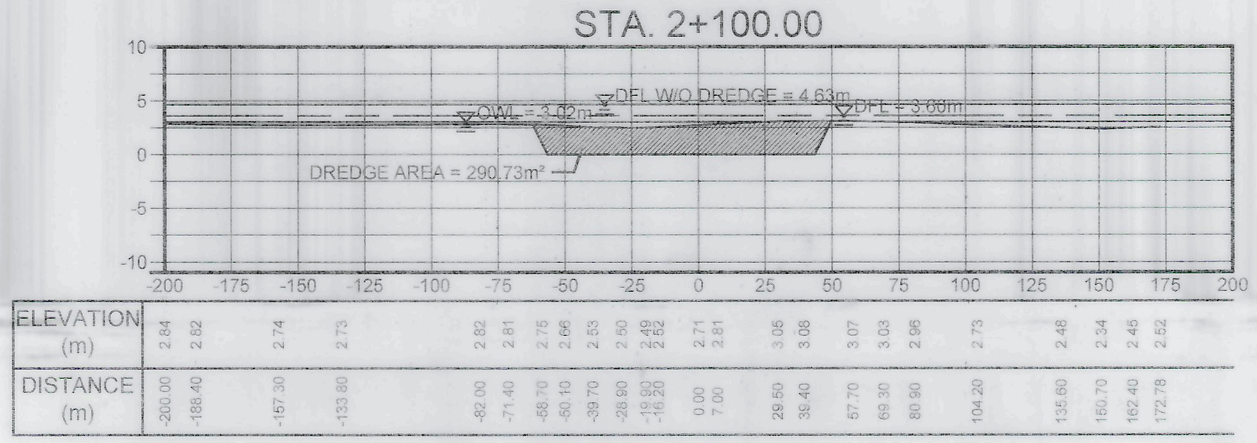

STA. 1+850.00
DFL W/O DREDGE = 4.18m
DFL = 3.25m
OWL = 2.68m
DREDGE AREA = 243.74m²
ELEVATION (m)
DISTANCE (m)

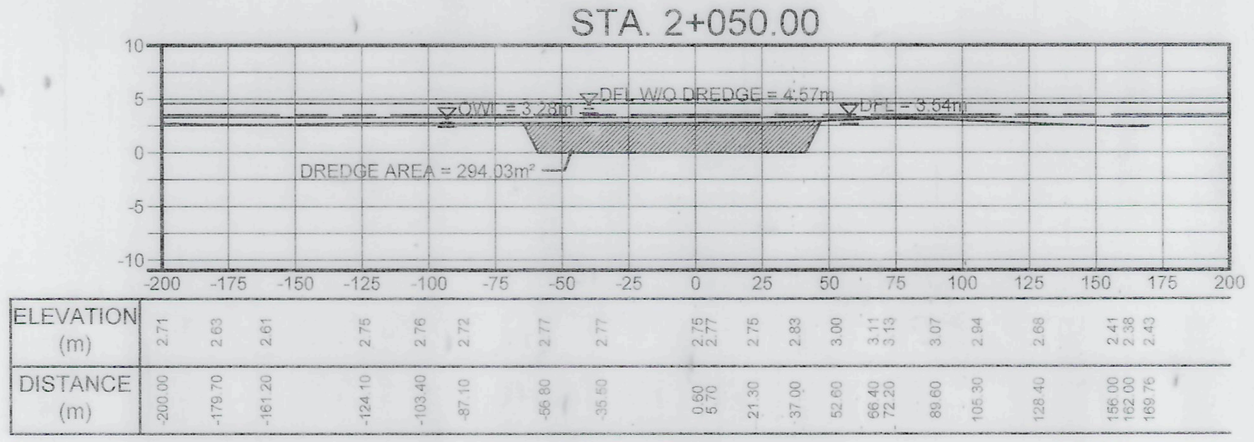

STA. 1+800.00
DFL W/O DREDGE = 3.93m
OWL = 2.54m
DFL = 3.11m
DREDGE AREA = 244.19m²
ELEVATION (m)
DISTANCE (m)

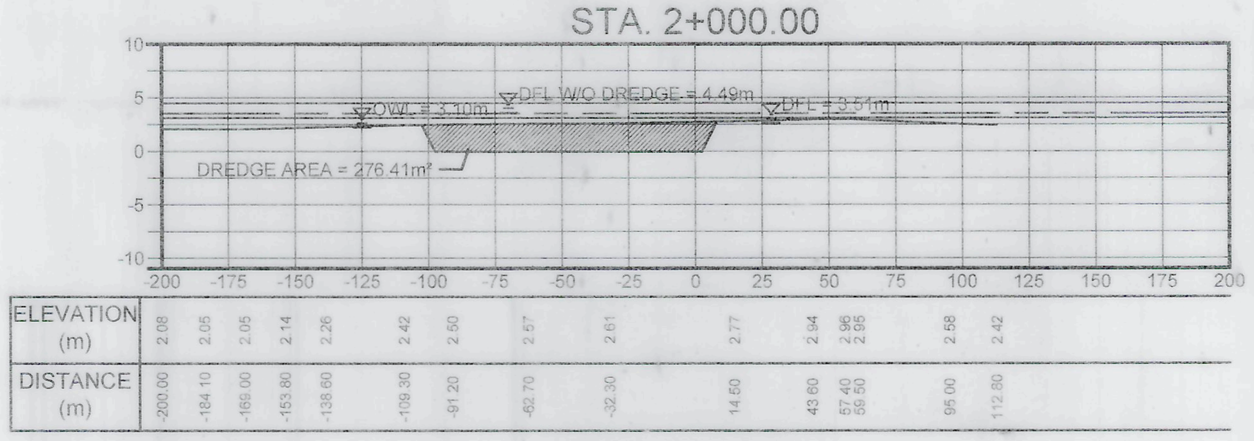

STA. 1+750.00
OWL = 2.46m
DFL W/O DREDGE = 3.95m
DFL = 3.06m
DREDGE AREA = 233.32m²
ELEVATION (m)
DISTANCE (m)

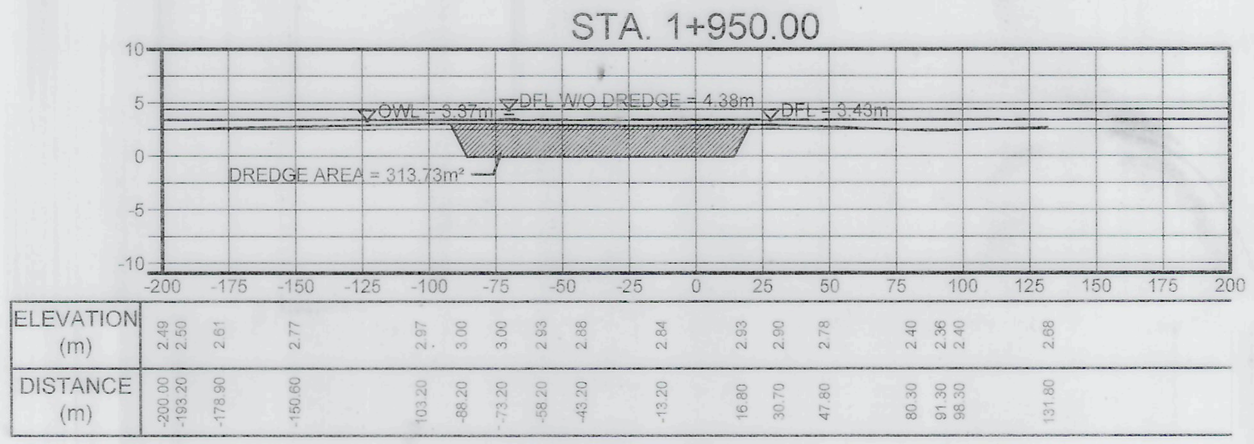

STA. 1+700.00
DFL W/O DREDGE = 3.82m
OWL = 2.24m
DFL = 3.08m
DREDGE AREA = 207.43m²
ELEVATION (m)
DISTANCE (m)

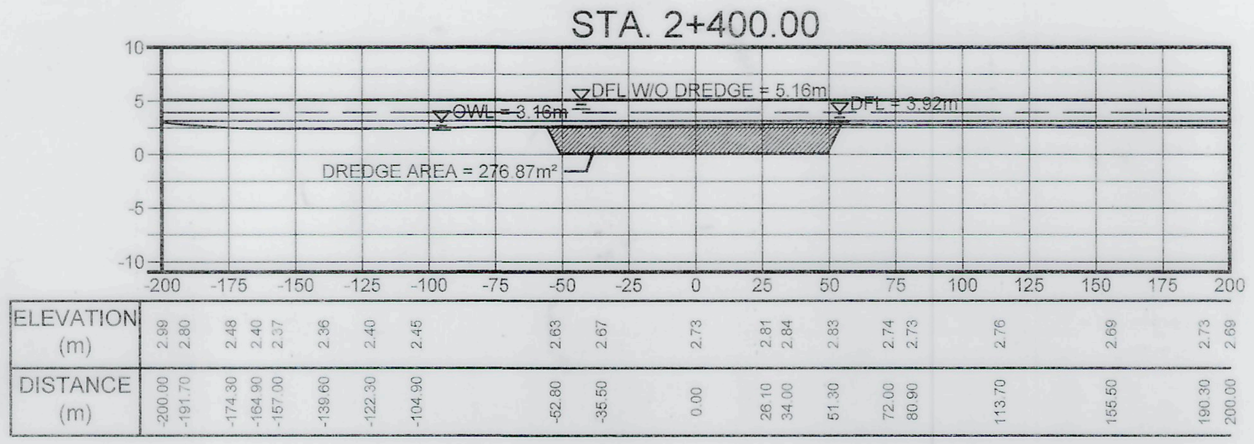

STA. 2+150.00
OWL = 3.43m
DFL W/O DREDGE = 4.67m
DFL = 3.63m
DREDGE AREA = 321.63m²
ELEVATION (m)
DISTANCE (m)

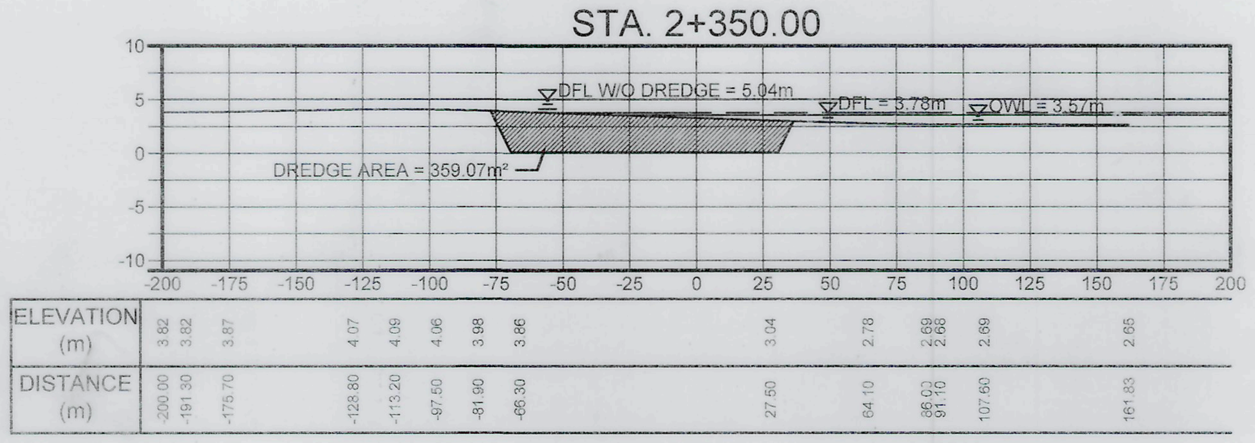

STA. 2+100.00
OWL = 3.42m
DFL W/O DREDGE = 4.63m
DFL = 3.60m
DREDGE AREA = 290.73m²
ELEVATION (m)
DISTANCE (m)

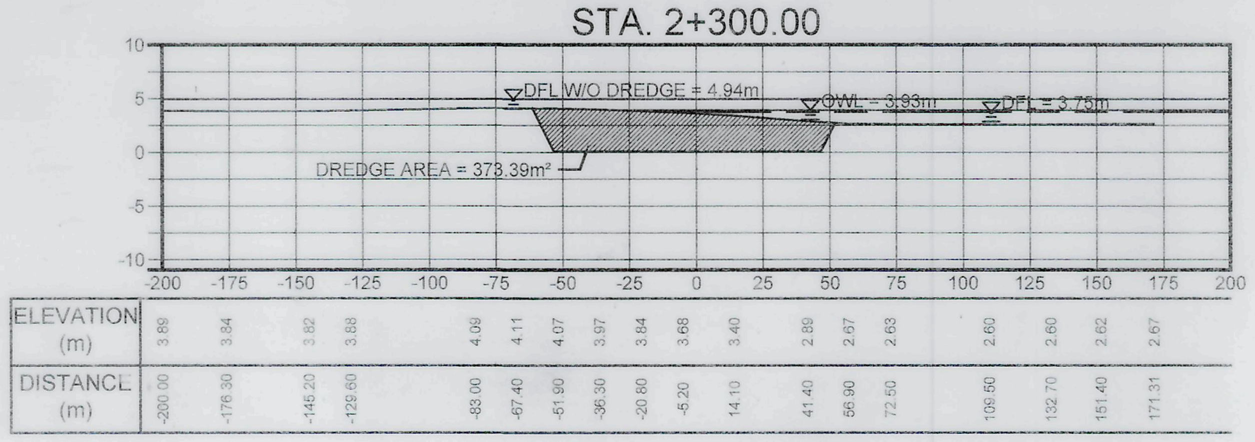

STA. 2+050.00
OWL = 3.28m
DFL W/O DREDGE = 4.57m
DFL = 3.54m
DREDGE AREA = 294.03m²
ELEVATION (m)
DISTANCE (m)

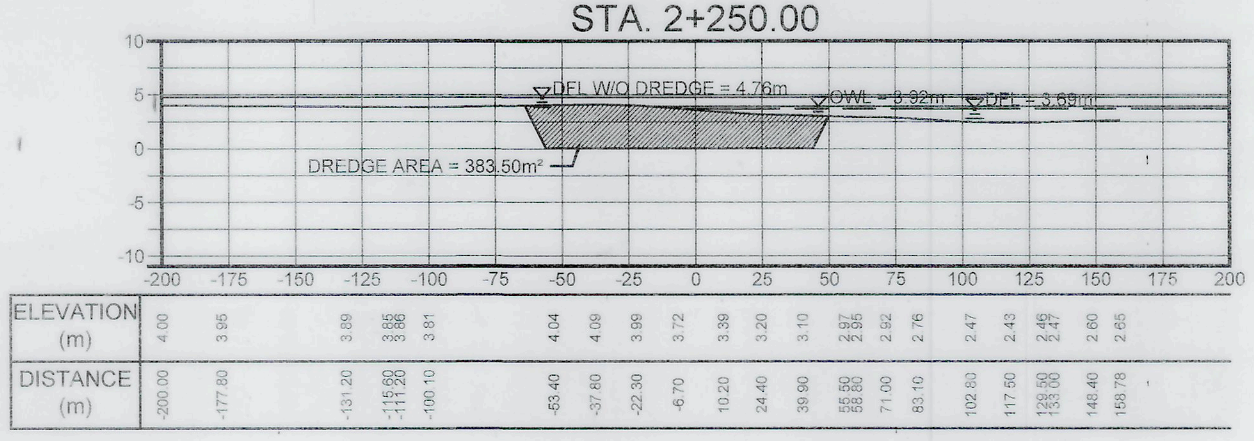

STA. 2+000.00
OWL = 3.10m
DFL W/O DREDGE = 4.49m
DFL = 3.51m
DREDGE AREA = 276.41m²
ELEVATION (m)
DISTANCE (m)

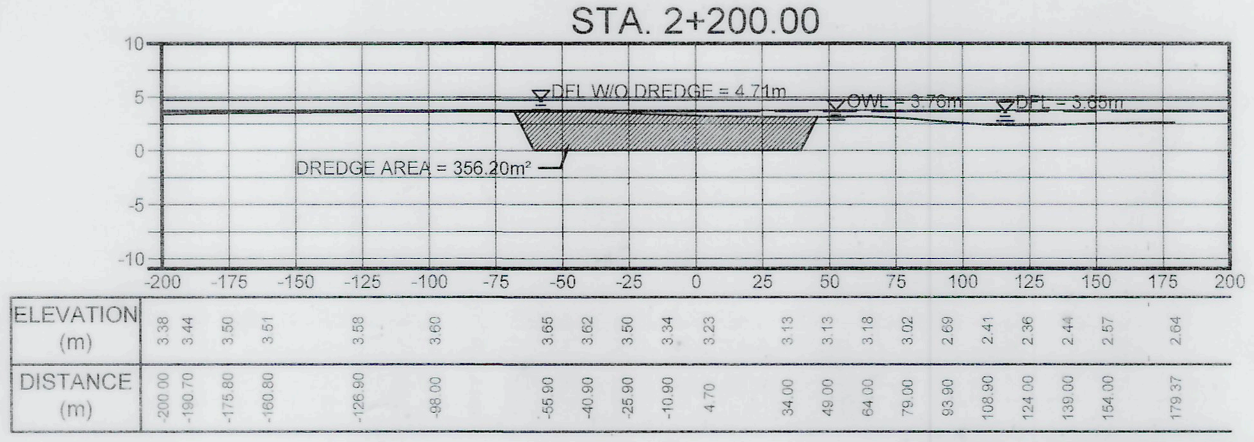

STA. 1+950.00
OWL = 3.57m
DFL W/O DREDGE = 4.38m
DFL = 3.49m
DREDGE AREA = 313.73m²
ELEVATION (m)
DISTANCE (m)


STA. 2+400.00
DFL W/O DREDGE = 5.18m
OWL = 3.18m
DFL = 3.92m
DREDGE AREA = 276.87m²
ELEVATION (m)
DISTANCE (m)


STA. 2+350.00
DFL W/O DREDGE = 5.04m
DFL = 3.78m
OWL = 3.57m
DREDGE AREA = 359.07m²
ELEVATION (m)
DISTANCE (m)


STA. 2+300.00
DFL W/O DREDGE = 4.94m
OWL = 3.93m
DFL = 3.75m
DREDGE AREA = 373.39m²
ELEVATION (m)
DISTANCE (m)


STA. 2+250.00
DFL W/O DREDGE = 4.76m
OWL = 3.92m
DFL = 3.69m
DREDGE AREA = 383.50m²
ELEVATION (m)
DISTANCE (m)


STA. 2+200.00
DFL W/O DREDGE = 4.71m
OWL = 3.76m
DFL = 3.65m
DREDGE AREA = 356.20m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 2
STA. 1+700 ~ STA. 2+400

VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

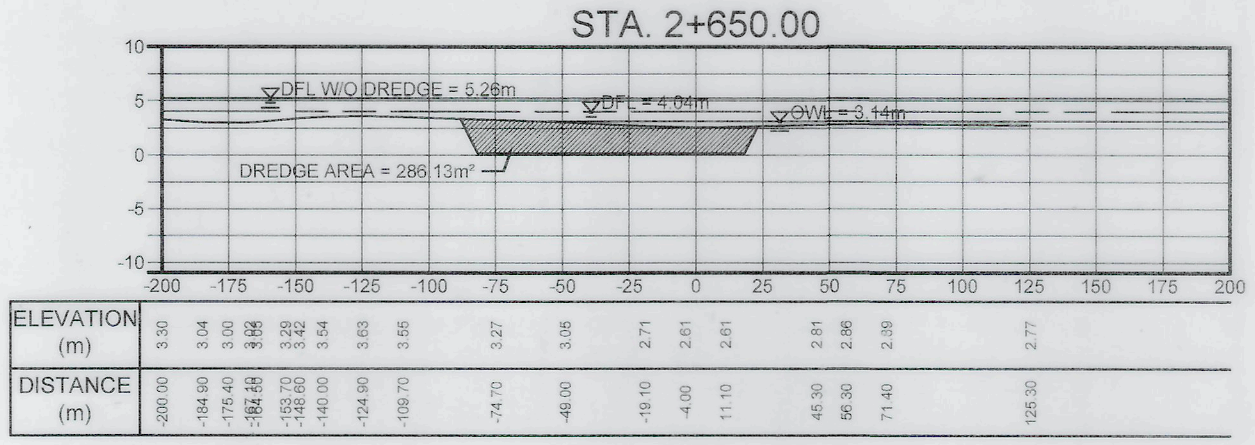
DAVID G. DELA CRUZ
PRESIDENT

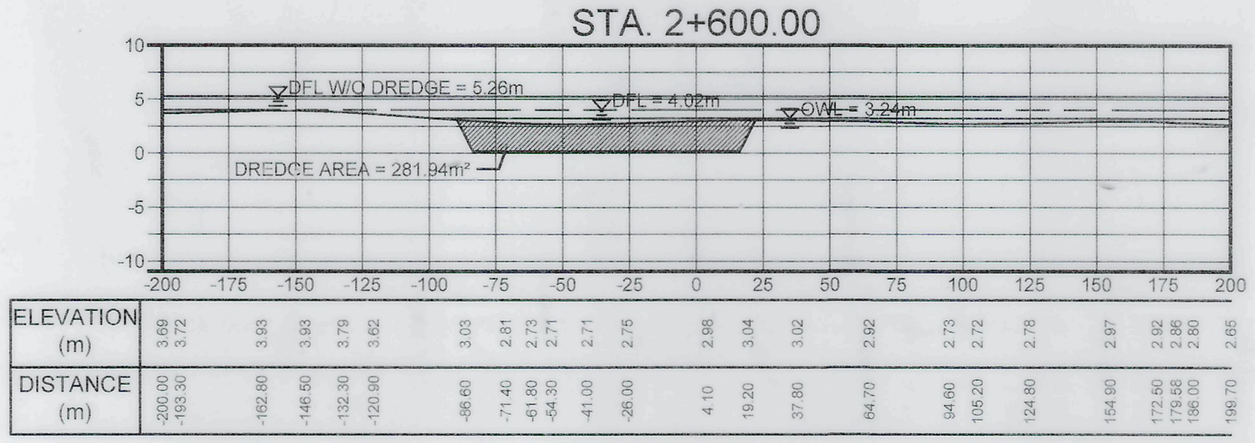
PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 2 STA. 1+700 - STA. 2+400	DAVID G. DELA CRUZ **PRESIDENT** DATE

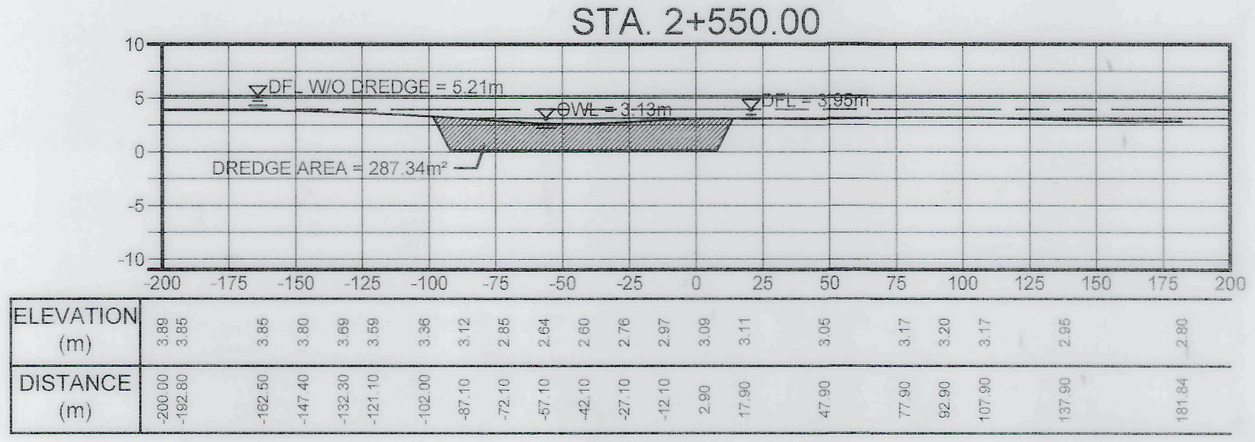
REVIEWED AS PRESENTED:		
REMIGIO P. MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV. DPWH, REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV. BUREAU OF DESIGN DATE

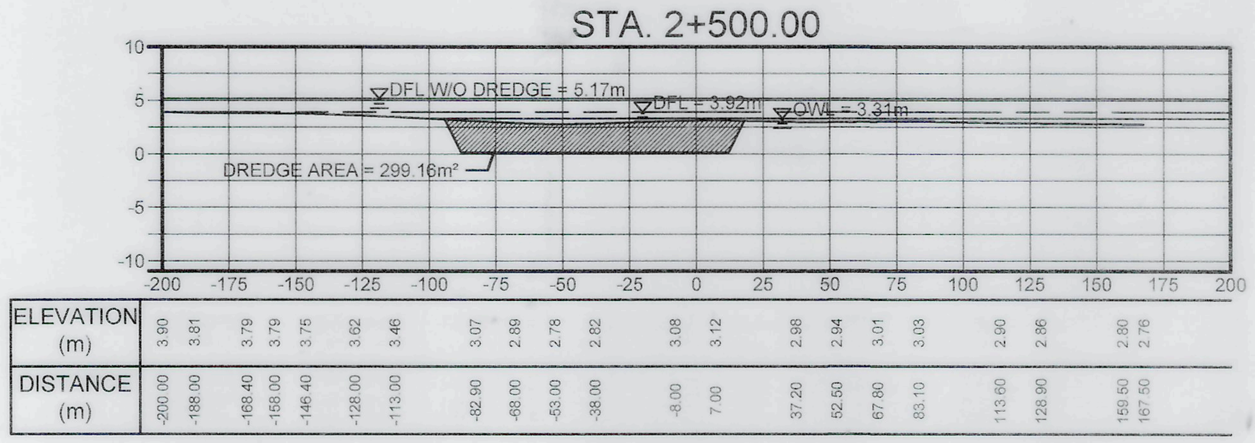
RECOMMENDING APPROVAL:				
(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSELITO A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE

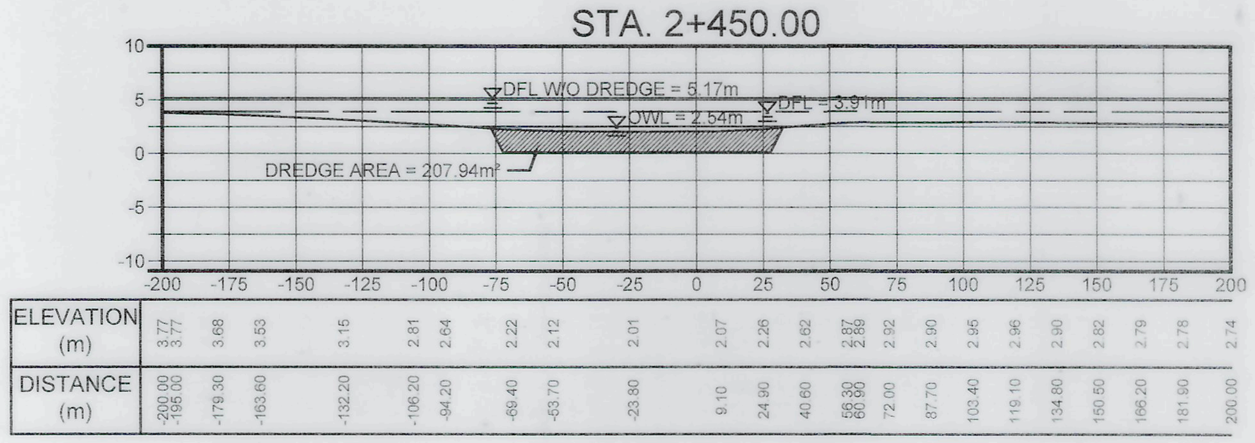
APPROVED:	SET NO.	SHEET NO.
(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	CS2 13 | 15	26 28

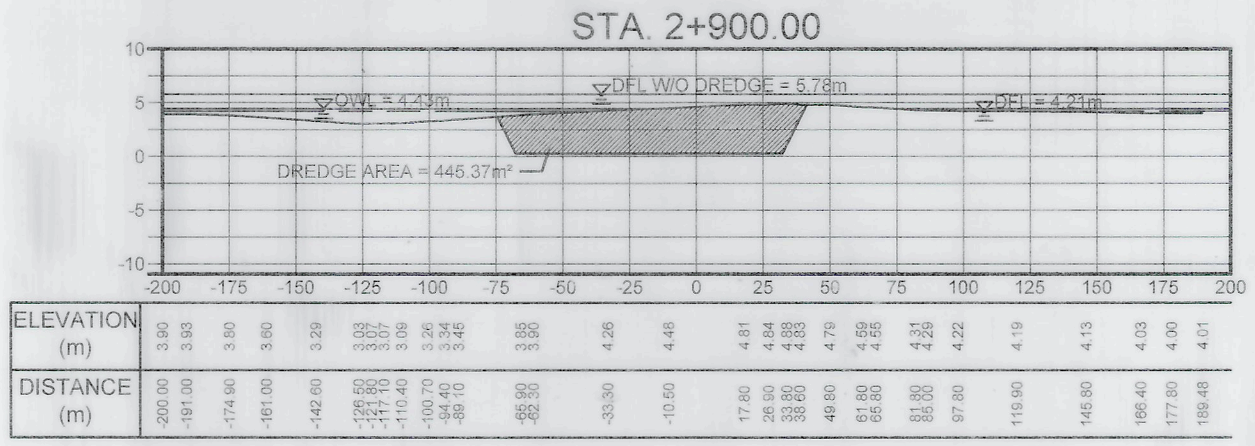

STA. 2+650.00
DFL W/O DREDGE = 5.26m
DFL = 4.04m
OWL = 3.14m
DREDGE AREA = 286.13m²
ELEVATION (m)
DISTANCE (m)

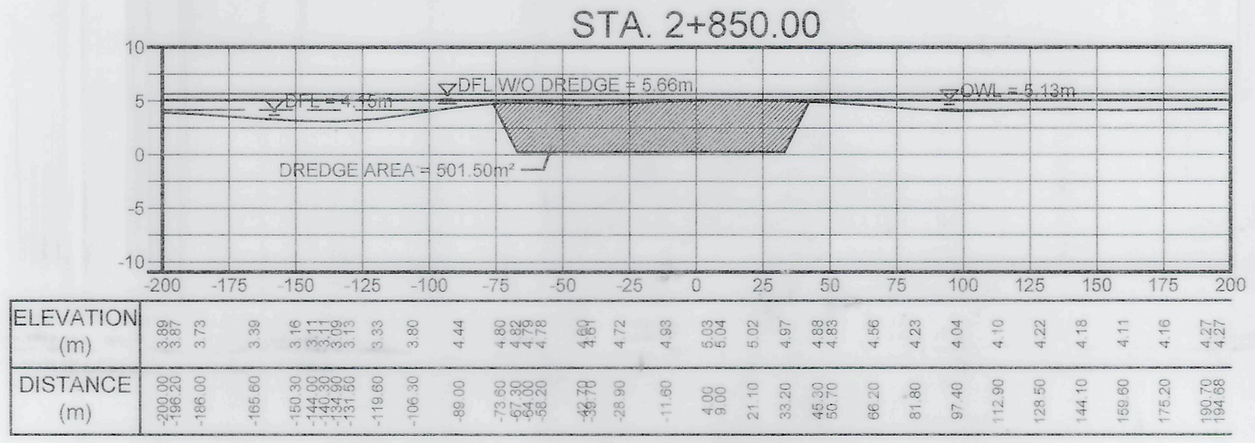

STA. 2+600.00
DFL W/O DREDGE = 5.26m
DFL = 4.02m
OWL = 3.24m
DREDGE AREA = 281.94m²
ELEVATION (m)
DISTANCE (m)

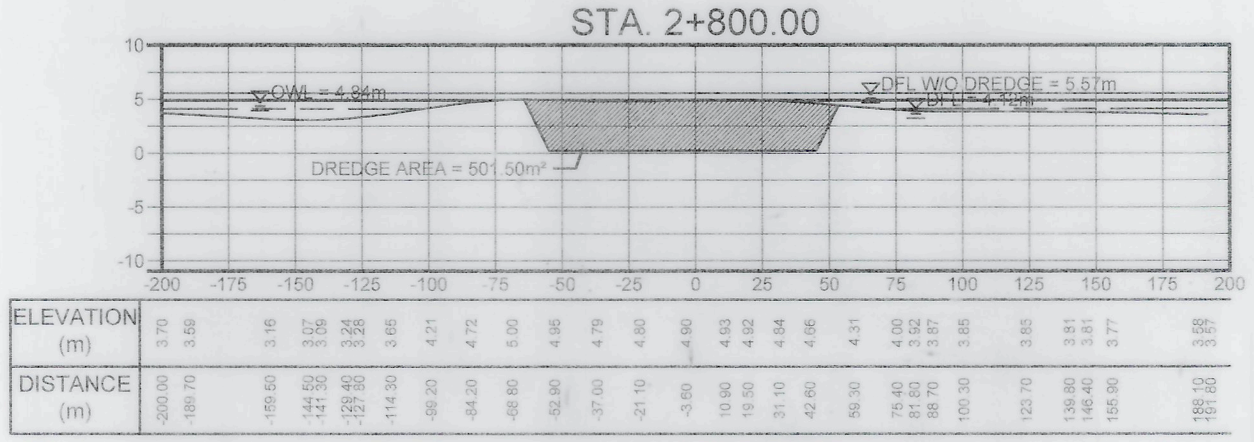

STA. 2+550.00
DFL W/O DREDGE = 5.21m
OWL = 3.13m
DFL = 3.95m
DREDGE AREA = 287.34m²
ELEVATION (m)
DISTANCE (m)

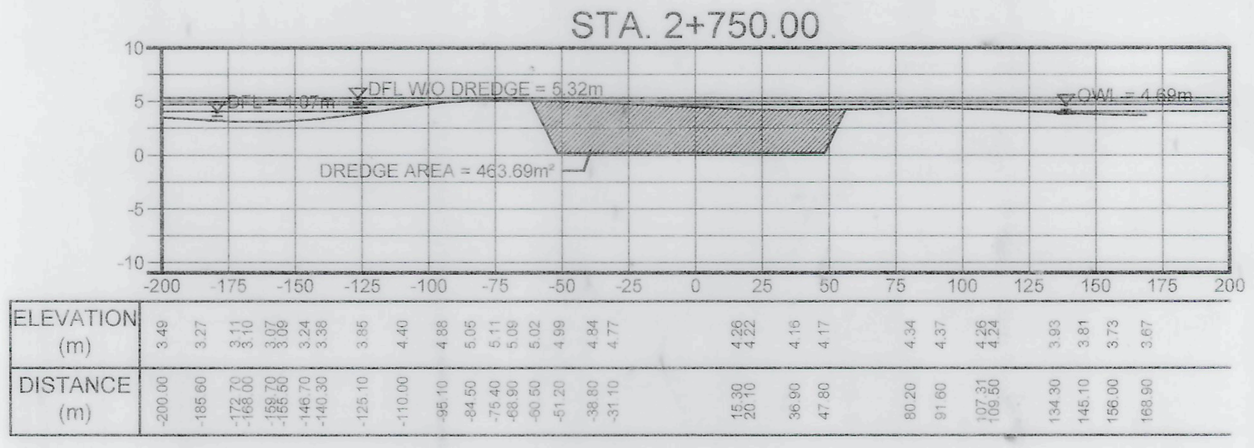

STA. 2+500.00
DFL W/O DREDGE = 5.17m
DFL = 3.92m
OWL = 3.31m
DREDGE AREA = 299.16m²
ELEVATION (m)
DISTANCE (m)

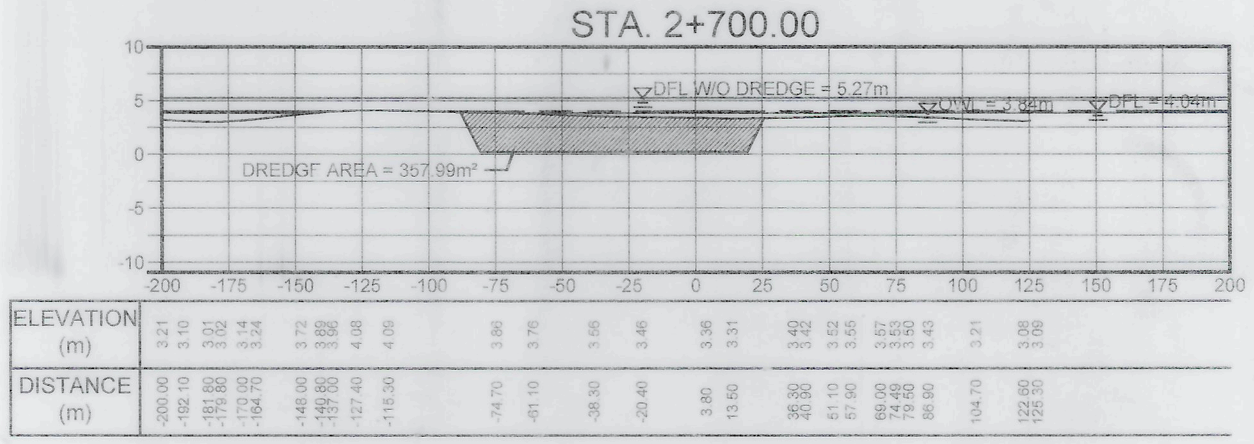

STA. 2+450.00
DFL W/O DREDGE = 5.17m
OWL = 2.54m
DFL = 3.91m
DREDGE AREA = 207.94m²
ELEVATION (m)
DISTANCE (m)

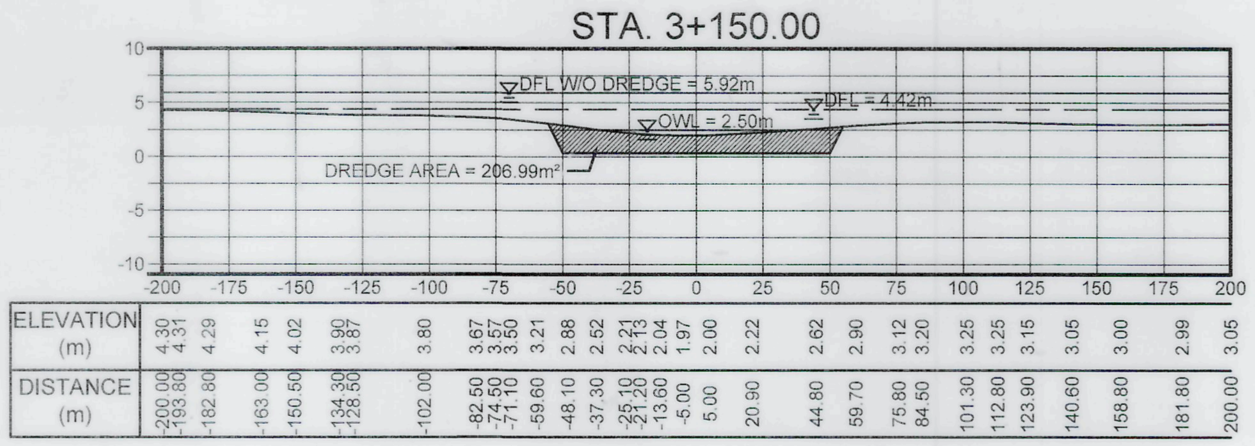

STA. 2+900.00
OWL = 4.43m
DFL W/O DREDGE = 5.78m
DFL = 4.21m
DREDGE AREA = 445.37m²
ELEVATION (m)
DISTANCE (m)

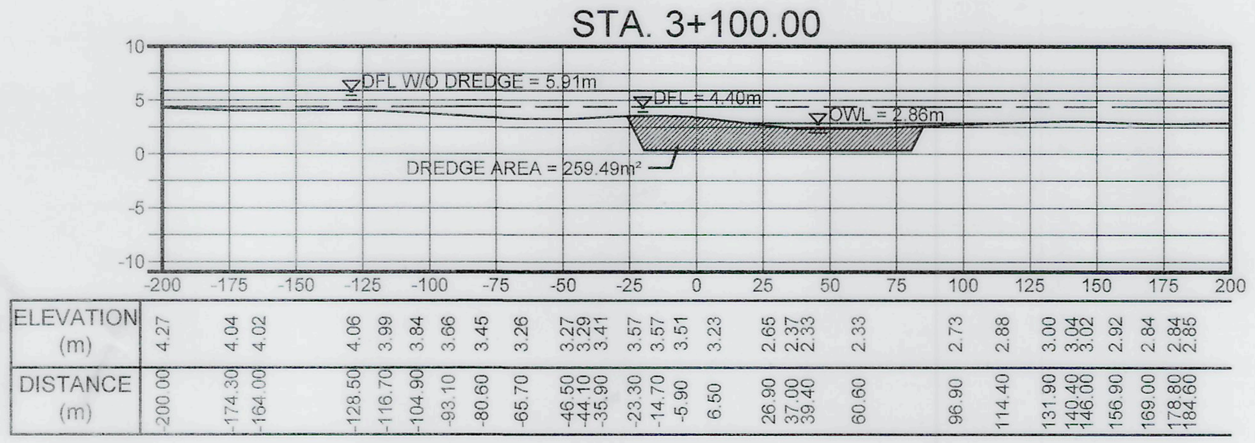

STA. 2+850.00
DFL = 4.15m
DFL W/O DREDGE = 5.66m
OWL = 5.13m
DREDGE AREA = 501.50m²
ELEVATION (m)
DISTANCE (m)

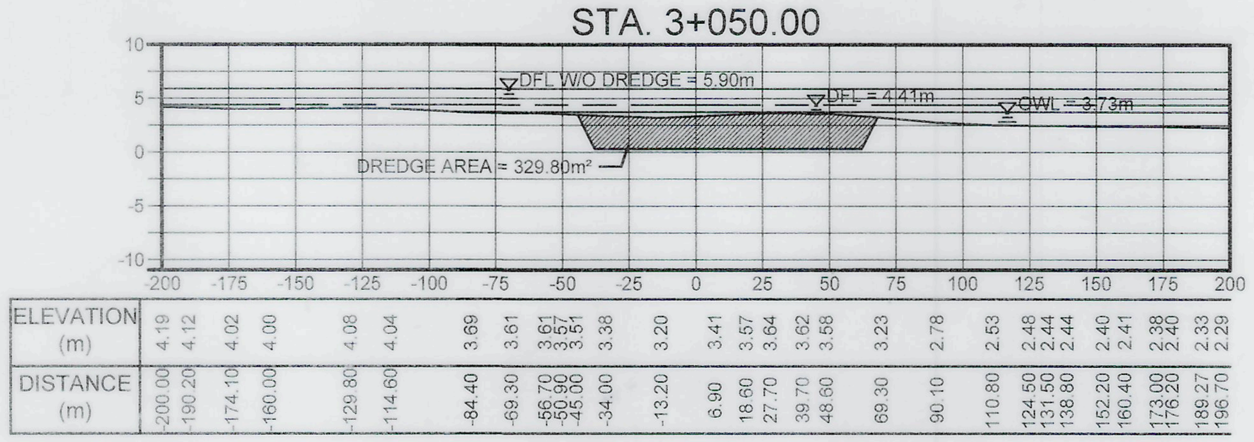

STA. 2+800.00
OWL = 4.84m
DFL W/O DREDGE = 5.57m
DFL = 4.12m
DREDGE AREA = 501.50m²
ELEVATION (m)
DISTANCE (m)

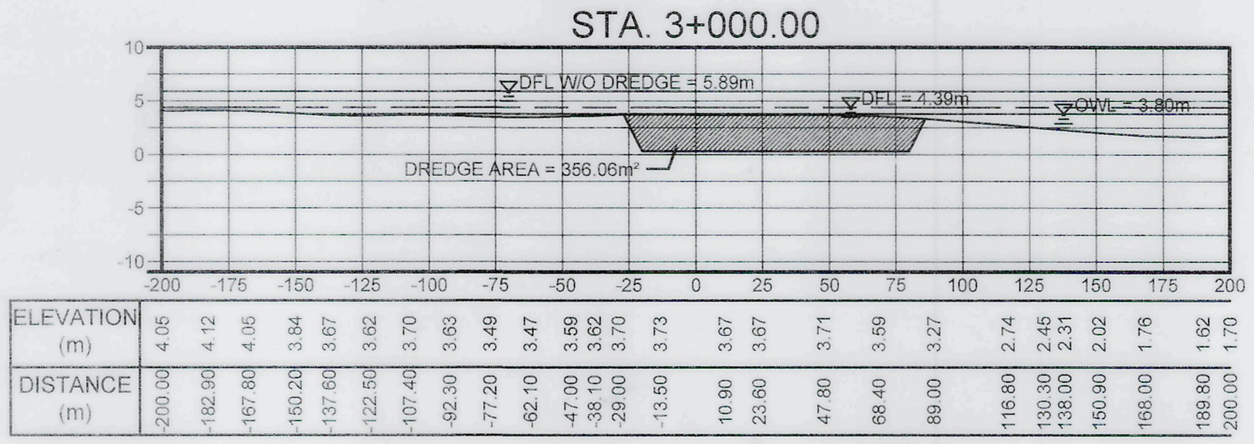

STA. 2+750.00
DFL = 4.07m
DFL W/O DREDGE = 5.32m
OWL = 4.69m
DREDGE AREA = 463.69m²
ELEVATION (m)
DISTANCE (m)

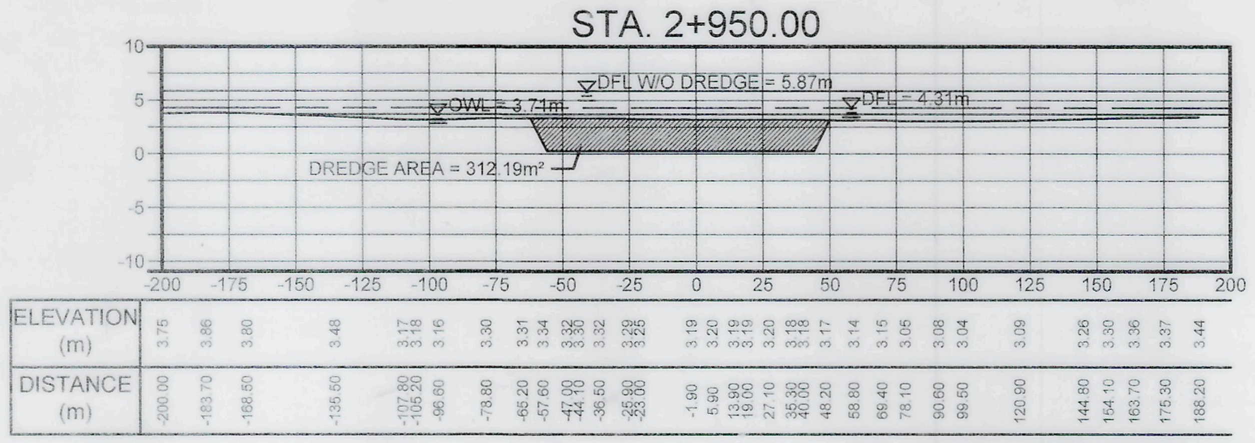

STA. 2+700.00
DFL W/O DREDGE = 5.27m
OWL = 3.84m
DFL = 4.04m
DREDGF AREA = 357.99m²
ELEVATION (m)
DISTANCE (m)


STA. 3+150.00
DFL W/O DREDGE = 5.92m
OWL = 2.50m
DFL = 4.42m
DREDGE AREA = 206.99m²
ELEVATION (m)
DISTANCE (m)


STA. 3+100.00
DFL W/O DREDGE = 5.91m
DFL = 4.40m
OWL = 2.86m
DREDGE AREA = 259.49m²
ELEVATION (m)
DISTANCE (m)


STA. 3+050.00
DFL W/O DREDGE = 5.90m
DFL = 4.41m
OWL = 3.73m
DREDGE AREA = 329.80m²
ELEVATION (m)
DISTANCE (m)


STA. 3+000.00
DFL W/O DREDGE = 5.89m
DFL = 4.39m
OWL = 3.80m
DREDGE AREA = 356.06m²
ELEVATION (m)
DISTANCE (m)


STA. 2+950.00
OWL = 3.71m
DFL W/O DREDGE = 5.87m
DFL = 4.31m
DREDGE AREA = 312.19m²
ELEVATION (m)
DISTANCE (m)

CROSS-SECTION - 2
STA. 2+450 ~ STA. 3+150

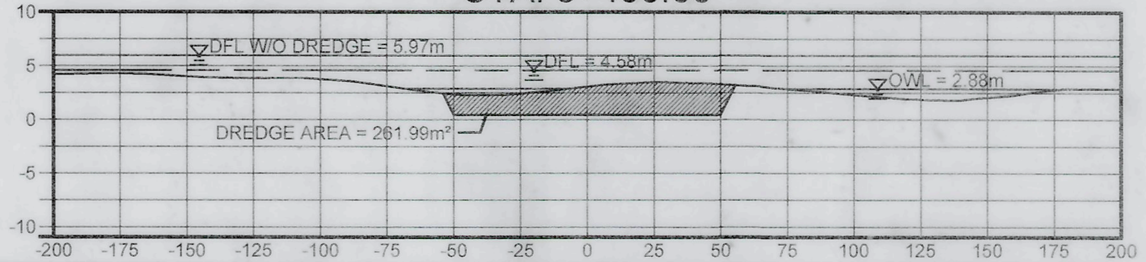
VERTICAL SCALE 1:500m
HORIZONTAL SCALE 1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

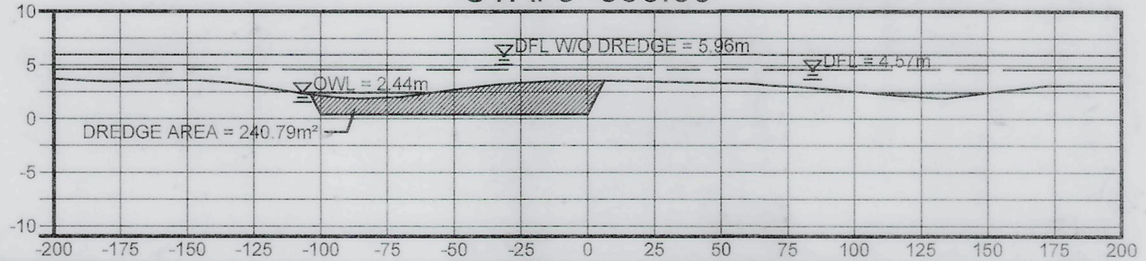
PROJECT NAME AND LOCATION	SHEET CONTENTS:	SUBMITTED:	REVIEWED AS PRESENTED:			RECOMMENDING APPROVAL:					APPROVED:	SET NO.	SHEET NO.
DETAILED ENGINEERING DESIGN FOR BUSUANGA RIVER DREDGING PROJECT SECTION = STA. 0+000.00 TO STA. 12+400.00 LENGTH= 12,400.00 l.m. RIZAL & SAN JOSE , OCCIDENTAL MINDORO	CROSS-SECTION - 2 STA. 2+450 - STA. 3+150	DAVID G. DELA CRUZ **PRESIDENT** DATE	REMIGIO V. MASANGKAY PROVINCIAL ENGINEER DATE	GENE RYAN A. ALTEA CHIEF, PLANNING AND DESIGN DIV DPWH, REGION IV-B DATE	LEONARDO L. LINGAN CHIEF, WATER PROJECTS DIV BUREAU OF DESIGN DATE	(SEE COVER SHEET) EDUARDO B. GADIANO PROVINCIAL GOVERNOR DATE	(SEE COVER SHEET) JOSE ... A. ANTONIO DISTRICT ENGINEER MINDORO OCCIDENTAL DEO DATE	**GERALD A. PACANAN,CESO III** REGIONAL DIRECTOR DPWH, REGION IV-B DATE	EDWIN C. MATANGUIHAN OIC-DIRECTOR BUREAU OF DESIGN DATE	(SEE COVER SHEET) ERIC A. AYAPANA ASSISTANT SECRETARY FOR **INFORMATION MANAGEMENT AND TECHNICAL SERVICES** DATE	(SEE COVER SHEET) MAXIMO L. CARVAJAL UNDERSECRETARY FOR INFORMATION MANAGEMENT AND TECHNICAL SERVICES DATE	CS2 14 15	27 28

STA. 3+400.00



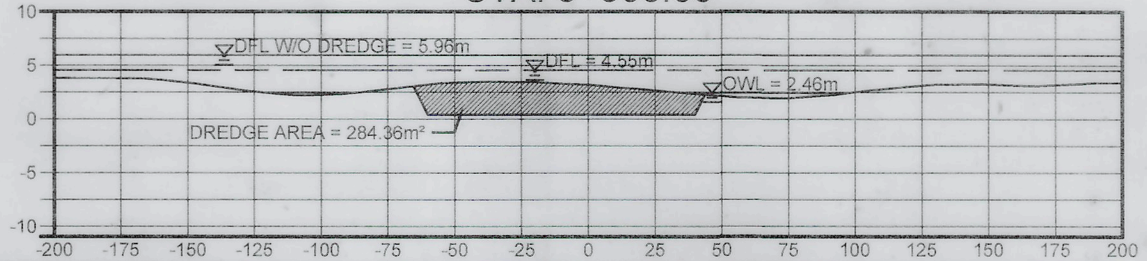
ELEVATION (m)	4.21	4.23	4.28	4.28	4.22	3.94	3.87	3.85	3.87	3.86	3.79	3.60	3.53	2.87	2.55	2.34	2.29	2.32	2.41	2.65	3.27	3.40	3.50	3.43	3.40	3.32	3.15	3.11	2.95	2.70	2.27	2.08	1.93	1.87	1.81	1.98	2.22	2.54	2.92	2.92
DISTANCE (m)	-200.00	-192.23	-181.61	-175.54	-164.86	-143.87	-132.82	-124.99	-118.44	-106.12	-100.79	-90.11	-87.24	-68.37	-58.07	-49.50	-36.71	-30.62	-26.03	-15.35	7.13	16.69	26.00	38.05	44.88	48.73	59.40	63.75	70.08	82.62	101.50	112.80	120.37	127.53	139.25	144.85	157.78	166.30	178.81	200.00

STA. 3+350.00



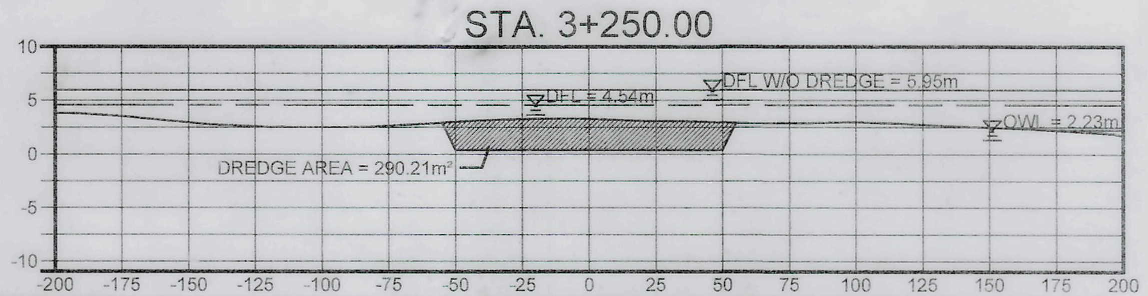
ELEVATION (m)	3.72	3.54	3.47	3.46	3.47	3.56	3.57	3.36	3.12	2.36	2.21	2.04	1.89	1.93	2.04	2.76	3.09	3.24	3.33	3.52	3.55	3.45	3.37	3.25	3.13	3.01	2.49	2.18	2.09	1.92	1.91	2.56	2.92	3.08	3.11	3.11
DISTANCE (m)	-200.00	-187.89	-181.73	-177.19	-171.10	-155.79	-144.39	-134.39	-125.72	-107.29	-102.29	-95.89	-88.38	-80.89	-69.71	-48.78	-38.08	-32.38	-27.38	-13.71	4.72	27.19	39.90	60.62	69.02	79.09	103.00	116.04	122.64	131.77	134.52	152.99	165.54	171.47	178.81	200.00

STA. 3+300.00



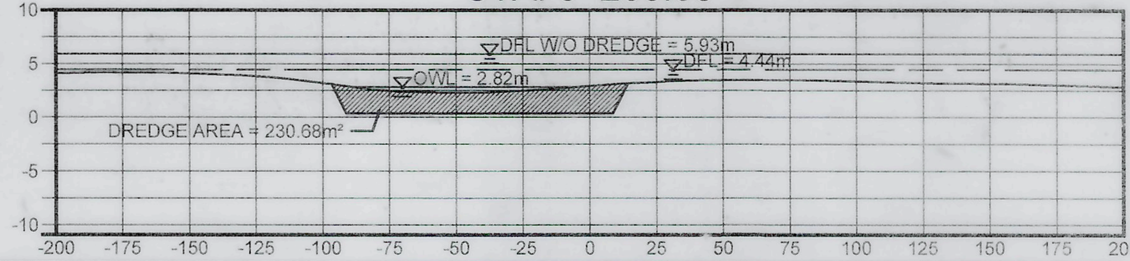
ELEVATION (m)	3.83	3.81	3.81	3.76	3.64	3.33	2.62	2.35	2.23	2.22	2.29	2.34	2.51	2.83	3.34	3.41	3.51	3.47	3.43	3.30	3.20	2.94	2.82	2.48	2.28	2.04	1.93	1.98	2.19	2.28	2.46	2.67	3.02	3.24	3.28	3.20	3.11	3.32	3.41	3.41
DISTANCE (m)	-200.00	-192.06	-176.96	-166.03	-159.89	-147.56	-127.72	-116.99	-110.61	-106.27	-95.55	-92.13	-84.82	-73.66	-55.18	-49.14	-36.71	-31.20	-18.23	-9.75	0.00	11.70	18.72	33.15	43.87	55.66	74.14	76.04	86.77	92.35	97.49	104.24	118.94	129.56	148.04	155.37	166.51	184.99	189.80	200.00

STA. 3+250.00



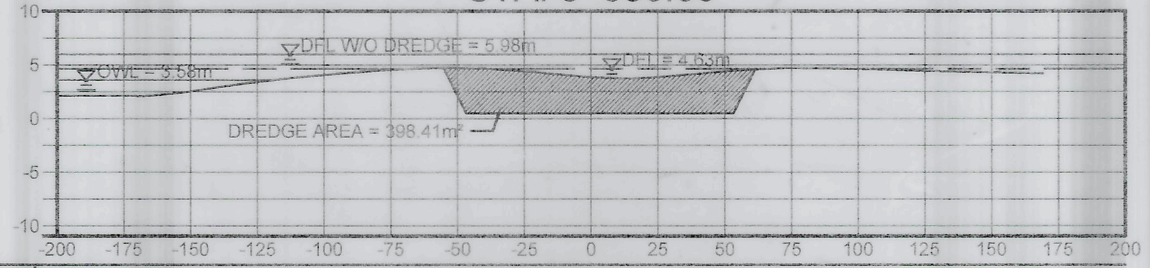
ELEVATION (m)	3.80	3.79	3.76	3.65	3.52	2.78	2.70	2.56	2.54	2.54	2.58	2.62	2.83	3.14	3.23	3.29	3.31	3.30	3.11	3.06	2.97	2.90	2.88	2.92	3.01	2.95	2.85	2.67	2.36	1.90	1.70
DISTANCE (m)	-200.00	-193.70	-190.60	-182.20	-174.50	-142.10	-136.20	-121.70	-113.20	-90.30	-81.90	-77.50	-61.50	-42.50	-33.00	-21.50	-10.00	-2.60	19.40	37.20	47.50	59.10	70.60	84.10	100.30	105.10	116.90	132.70	165.10	196.50	200.00

STA. 3+200.00



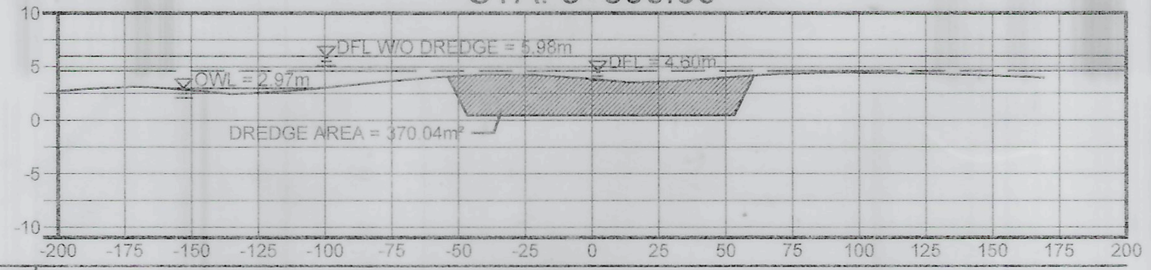
ELEVATION (m)	4.08	4.13	4.17	4.18	4.15	4.14	4.07	3.90	3.85	3.70	3.60	3.13	2.57	2.37	2.31	2.29	2.32	2.50	2.69	2.95	3.19	3.29	3.39	3.46	3.50	3.48	3.20	3.12	2.87
DISTANCE (m)	-200.00	-194.80	-184.10	-178.60	-162.50	-157.70	-146.30	-130.10	-126.60	-118.00	-114.00	-97.80	-80.70	-69.20	-57.70	-46.20	-38.40	-23.20	-11.70	1.30	15.30	25.00	31.40	40.70	63.80	80.00	128.60	160.20	200.00

STA. 3+550.00



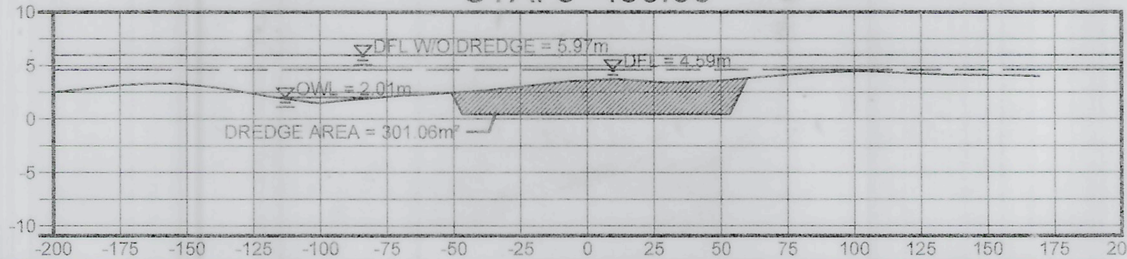
ELEVATION (m)	2.09	2.12	2.11	2.13	2.11	2.06	2.22	2.48	2.93	3.30	3.77	4.20	4.54	4.72	4.70	4.64	4.38	3.87	3.82	3.75	3.75	3.81	4.00	4.46	4.69	4.69	4.68	4.57	4.42	4.34	4.23	4.19
DISTANCE (m)	-200.00	-193.28	-186.74	-182.55	-171.83	-168.26	-161.10	-151.20	-139.48	-128.93	-112.84	-94.36	-75.89	-57.41	-48.94	-38.94	-23.38	-1.99	2.18	10.49	16.49	21.21	31.93	53.43	71.91	78.88	90.38	107.00	124.55	142.70	164.28	169.15

STA. 3+500.00



ELEVATION (m)	2.71	2.94	3.14	3.08	2.94	2.57	2.44	2.69	2.93	3.58	3.91	3.98	4.24	4.26	3.95	3.54	3.57	3.64	4.11	4.31	4.37	4.41	4.42	4.40	4.33	4.21	4.13	4.03	3.96
DISTANCE (m)	-200.00	-189.47	-170.99	-165.59	-158.00	-139.48	-134.04	-115.57	-104.38	-78.62	-63.34	-60.14	-41.67	-23.19	-4.72	13.76	24.31	32.23	56.48	69.18	77.93	88.66	99.38	110.11	124.55	142.70	153.00	163.73	169.15

STA. 3+450.00



ELEVATION (m)	2.54	3.18	3.27	3.33	3.09	2.85	2.08	1.88	1.56	1.48	1.75	2.19	2.26	2.55	2.72	2.98	3.52	3.73	3.48	3.40	3.46	3.56	4.16	4.34	4.47	4.24	4.16	4.13	4.09	4.09	4.03	4.00
DISTANCE (m)	-200.00	-173.72	-165.62	-155.24	-144.18	-136.77	-118.30	-112.00	-103.30	-99.82	-90.55	-69.11	-62.87	-44.40	-36.93	-26.61	-7.47	11.03	24.52	29.50	38.14	47.98	75.65	84.93	103.40	124.55	134.66	142.70	152.34	158.83	166.83	169.15

CROSS-SECTION - 2
STA. 3+200 ~ STA. 3+550

VERTICAL SCALE	1:500m
HORIZONTAL SCALE	1:2000m

THE DESIGNER/PROPONENT SHALL BE HELD FULLY RESPONSIBLE FOR THE FAILURE OF THE FACILITY DUE TO FAULTY DESIGN EXCEPT FOR THE CHANGES MADE WITHOUT HIS/THEIR CONFIRMITY.

DAVID G. DELA CRUZ
PRESIDENT

PROJECT NAME AND LOCATION:
DETAILED ENGINEERING DESIGN
FOR BUSUANGA RIVER
DREDGING PROJECT
SECTION = STA. 0+000.00 TO STA. 12+400.00
LENGTH= 12,400.00 l.m.
RIZAL & SAN JOSE , OCCIDENTAL MINDORO

SHEET CONTENTS:
CROSS-SECTION - 2
STA. 3+200 - STA. 3+550

SUBMITTED:
DAVID G. DELA CRUZ
PRESIDENT
DATE:

REVIEWED AS PRESENTED:
REMIGIO V. MASANGKAY
PROVINCIAL ENGINEER
DATE:

GENE RYAN A. ALTEA
CHIEF, PLANNING AND DESIGN DIV
DPWH, REGION IV-B
DATE:

LEONARDO L. LINGAN
CHIEF, WATER PROJECTS DIV
BUREAU OF DESIGN
DATE:

RECOMMENDING APPROVAL:
(SEE COVER SHEET)
EDUARDO B. GADIANO
PROVINCIAL GOVERNOR
DATE:

(SEE COVER SHEET)
JOSELITO A. ANTONIO
DISTRICT ENGINEER
MINDORO OCCIDENTAL DEO
DATE:

GERALD A. PACANAN, CESO III
REGIONAL DIRECTOR
DPWH, REGION IV-B
DATE:

EDWIN C. MATANGUIHAN
OIC-DIRECTOR
BUREAU OF DESIGN
DATE:

(SEE COVER SHEET)
ERIC A. AYAPANA
ASSISTANT SECRETARY FOR
INFORMATION MANAGEMENT AND TECHNICAL SERVICES
DATE:

APPROVED:
(SEE COVER SHEET)
MAXIMO L. CARVAJAL
UNDERSECRETARY FOR
INFORMATION MANAGEMENT
AND TECHNICAL SERVICES
DATE:

SET NO.
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