



Republic of the Philippines
Tourism Infrastructure & Enterprise Zone Authority

6th & 7th FLR. TOWER 1 DOUBLE DRAGON PLAZA
DOUBLE DRAGON MERIDIAN PARK, MACAPAGAL AVENUE
CORNER EDSA EXTENSION BAY AREA PASAY CITY 1308

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
NATIONAL CAPITAL REGION
SOUTH MANILA DISTRICT ENGINEERING OFFICE
BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA

DETAILED ENGINEERING DESIGN PLAN FOR
PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING
(PERIMETER DRAINAGE AT FAIRWAY)
CIGC, INTRAMUROS MANILA

SUBMITTED:


ALBERTO B. DURAN
OIC, PLANNING AND DESIGN SECTION
DATE: 8/27/11

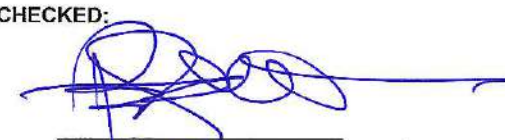
RECOMMENDED:


ERNESTO P. LEONES
OIC, OFFICE OF THE ASSISTANT
DISTRICT ENGINEER
DATE:

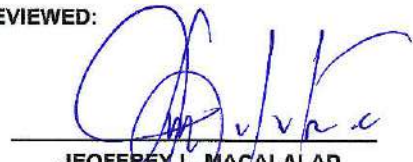
APPROVED:


MIKUNUG D. MACUD
DISTRICT ENGINEER
DATE:

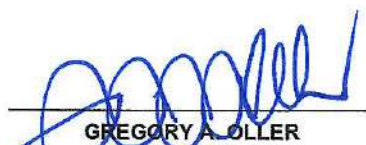
CHECKED:


RABY E. ADAME
MANAGER
PROJECT PLANNING AND DESIGN DIVISION
DATE:

REVIEWED:


JEFFREY L. MACALALAD
OIC - MANAGER
PROJECT EVALUATION AND PLANNING DEPARTMENT
DATE:

RECOMMENDING APPROVAL:


GREGORY A. OLLER
ASSISTANT CHIEF OPERATING OFFICER
ARCHITECTURAL AND ENGINEERING SERVICES SECTOR
DATE:

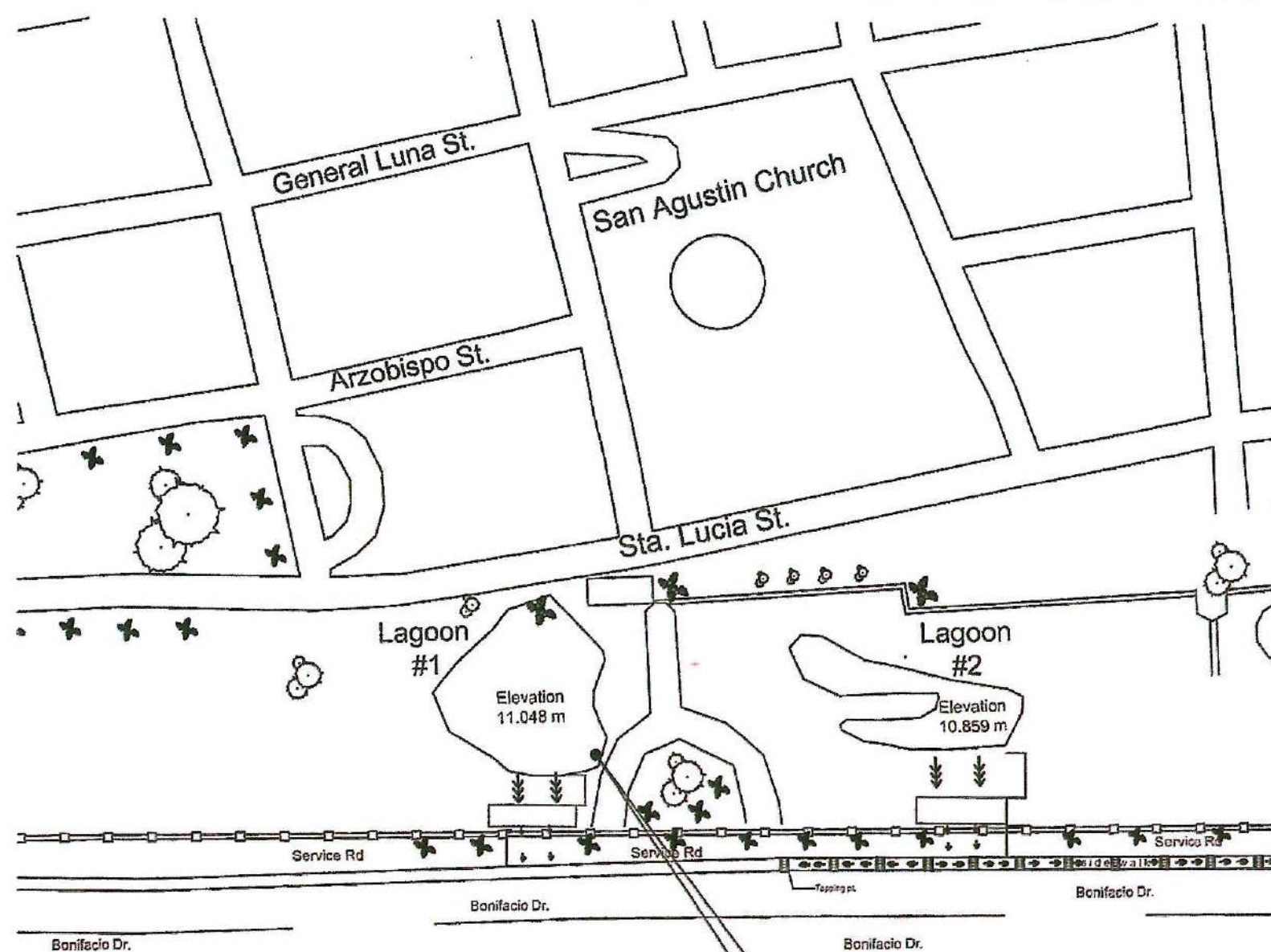
APPROVED:


MARK T. LAPID
CHIEF OPERATING OFFICER
DATE:

NCR-23-02



LOCATION MAP
SCALE N T S



VICINITY MAP
SCALE N T S



BENCHMARK
NORTHING : 14.588047
EASTING : 120.972466
ELEVATION : 11.048 m

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: <i>Nashif Almojera</i> NASHIF ALMOJERA, RYAN ENGINEER PREPARED: <i>Almojera</i> ALMOJERA, RYAN ENGINEER	REVIEWED: <i>William N. Sabatino</i> WILLIAM N. SABATINO ENGINEER II DATE: 8/23/24	SUBMITTED: <i>Alberto B. Duran</i> ALBERTO B. DURAN CIC - PLANNING AND DESIGN SECTION DATE: 8/24/2	RECOMMENDED: <i>Ernesto P. Leganes</i> ERNESTO P. LEGANES CIC - CHIEF OF THE AGED DISTRICT ENGINEER DATE:	APPROVED: <i>Mikonus D. Macud</i> MIKONUS D. MACUD DISTRICT ENGINEER DATE:	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 1000 TIEZA ROAD, 1000 TIEZA ROAD, 1000 TIEZA ROAD, 1000 TIEZA ROAD, 1000 TIEZA ROAD	RECOMMENDING APPROVAL: <i>Gregory A. Oller</i> GREGORY A. OLLER CHIEF OF THE AGED DISTRICT ENGINEER	APPROVED: <i>Mark T. Lapid</i> MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. SHEET NO. G 02 02 22
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PUMPING STATION(GENERAL NOTES)

1. ALL ELEVATION , DIMENSIONS AND DISTANCES ARE IN METERS UNLESS OTHERWISE SPECIFIED.
 2. ALL ELEVATION ARE REFERRED TO MLLW = EL. 10.00M (PASIG RIVER)
 3. CONSTRUCTION OF PUMPING STATION TO THE LINES ,LEVELS GRADES AND IN THE LOCATION AND USING THE MATERIALS AND METHODS SHOWN ON THE DRAWINGS AND IN THE SPECIFICATION.
 4. UNDERTAKE AND COMPLETE ALL WORKS INCLUDING FITTINGS BEFORE CONNECTION IS MADE TO THE EXISTING WATER SYSTEM.
 5. ITEM 404 -REINFORCING STEEL
ALL REINFORCING STEEL SHALL BE DEFORMED CONFORMING TO ASTM A 615 (AASHTO M 31) AND OF INTERMEDIATE GRADE EQUIVALENT PHILIPPINE TRADE STANDARD (PTS) GRADE 40 AND 60 WITH MINIMUM YIELD STRENGTH $f_y = 275 \text{ MPa}$ and 410 MPa , RESPECTIVELY.
a.) BENDING
ALL REINFORCING BARS REQUIRING BENDING SHALL BE COLD BENT TO THE SHAPES SHOWN ON THE PLANS OR REQUIRED BY THE ENGINEER.
b.) DISTANCE FROM THE FORMS SHALL BE MAINTAINED BY MEANS OF PRECAST MORTAR BLOCKS, OR REBARS SUPPORT CHAIRS OF APPROVED SHAPES AND DIMENSIONS.
NOTE:
(THE USE OF PEBBLES,PIECES OR BROKEN STONE OR BRICKS , METAL PIPE AND WOODEN BLOCK SHALL NOT PERMITTED.
c.) SPLICING
SPLICING OF BARS , EXCEPT WHERE SHOWN ON THE PLANS , WILL NOT BE PERMITTED WITHOUT APPROVAL OF THE ENGINEER . SPLICES SHALL BE STAGGERED AS POSSIBLE.
NOTE:
(WELDING OR REINFORCING STEEL SHALL BE DONE ONLY IF DETAILED ON THE PLANS OR IF AUTHORIZED BY THE ENGINEER IN WRITING)
 6. ITEM 405 = STRUCTURAL CONCRETE
ALL SUPERSTRUCTURE SHALL BE CLASS "A" (PLANT MIX) AND SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH AT MAXIMUM 28-DAYS.
 7. ITEMS 407 = CONCRETE STRUCTURES.
a.) PLACING CONCRETE IN WATER
CONCRETE SHALL NOT BE PLACED IN WATER EXCEPT WITH APPROVAL OF THE ENGINEER AND UNDER HIS IMMEDIATE SUPERVISION . IN THIS CASE THE METHOD OF PLACING SHALL BE HEREIN AFTER SPECIFIED.
CONCRETE DEPOSITED IN WATER SHALL BE CLASS "A" CONCRETE WITH A MINIMUM CEMENT CONTENT OF 400 kg./m^3 OF CONCRETE . THE SLUMP OF THE CONCRETE SHALL BE MAINTAINED BETWEEN 10 cm to 20 cm.
b.) CONSTRUCTION JOINTS
CONSTRUCTION JOINTS SHALL BE MADE ONLY WHERE ON THE PLANS OR CALLED FOR IN THE POURING SCHEDULE , UNLESS OTHERWISE APPROVED BY THE ENGINEER . SHEAR KEYS OR REINFORCEMENT SHALL BE USED , OTHERWISE SPECIFIED , TO TRANSMIT SHEAR OR TO BOND THE TWO SECTIONS TOGETHER.
 8. WELDED STRUCTURAL STEEL
WELDING OF STRUCTURAL STEEL SHALL BE DONE ONLY WHEN SHOWN ON THE PLANS OR AUTHORIZED IN WRITING BY THE ENGINEER. ALL ARC-WELDING ELECTRODES SHALL CONFORM TO THE REQUIREMENTS OF AMERICAN WELDING SOCIETY SPECIFICATIONS. SURFACES TO BE WELDED SHALL BE SMOOTH, UNIFORM AND FREE FROM FINIS,TEARS,AND OTHER DEFECTS WHICH WOULD ADVERSELY AFFECT THE QUALITY OF THE WELD .
 9. BOLTS , NUTS & WASHER
SUPPLY ALL BOLTS , NUTS AND WASHER S IN ACCORDANCE WITH THE SPECIFICATIONS ALL EXPOSED BOLT HEADS AND NUTS SHALL BE HEXAGONAL AND THE LENGTH OF ALL BOLTS SHALL BE SUCH THAT TIGHTENED BOLTED CONNECTIONS SHALL HAVE A MINIMUM MOF 2.5 THREADS AND A MAXIMUM OF 5 THREADS PROTRUDING FROM THE NUT ALL BOLTS , NUTS AND WASHER EITHER EMBEDDED IN CONCRETE , INSTALLED WITHIN THE WET WELL AND/OR USED IN THE FABRICATION AND/OR INSTALLATION OF STAINLESS STEEL ITEMS SHALL BE OF GRADE 316 STAINLESS STEEL TO AS 2837.
 10. DRAINAGE & DEWATERING
KEEP ALL EXCAVATIONS FREE OF WATER,PROVIDE ,MAINTAIN AND OPERATE INTERCEPTING WORKS TO PREVENT SURFACE WATER FROM ENTERING THE EXCAVATIONS ; AND ALL EQUIPMENTS NECESSARY FOR DEWATERING,ENSURE THAT ALL DOWNSTREAM WORKS THAT ARE UNDER CONSTRUCTION , COMPLETED OR IN USE ARE PROTECTED AT ALL TIMES AGAINST THE EFFECTS OF ANY DRAINAGE WHICH IS DISCHARGED OR LIKELY TO BE DISCHARGED FROM WORK.
 11. INSTALLATION OF PUMP UNITS
INSTALLATION OF PUMPING UNITS , PUMP BASE PLATES OR PEDESTAL , HOLDING DOWN BOLTS AND ASSOCIATED ITEMS IN ACCORDANCE WITH WRITTEN INSTRUCTIONS AND APPROVED DRAWINGS SUPPLIED BY THE MANUFACTURER.SET THE PUMPING UNITS TRUE AND SQUARE BY MEANS OF STEEL LEVELLING WEDGES .CHECK ALIGNMENT WITH SUCTION AND DISCHARGE PIPEWORK BEFORE FINAL POSITIONING.
THE PUMPING UNITS EQUIPMENT SHALL BE INSTALLED FREE OF ANY UNQUE STRESSES , STRAINS OR VIBRATIONS AND BE ACCESSIBLE FOR MAINTENANCE. SET ALL FOUNDATION BOLTS TO THEIR MAXIMUM DEPTH USING AN EPOXY GROUT TO A MAXIMUM RATIO OF 1:2 BY VOLUME.
 12. PUMP NUMBERS
SUPPLY 100 MM HIGH PUMP -NUMBERS CUT FROM 2.5 MM THICK MARINE GRADE ALUMINUM OR GRADE 316 STAINLESS STEEL.THE NUMBERS SHALL BE THE PUMP AND THE STARTER NUMBER (E. "1", "2", "3". FIX PUMP NUMBERS , USING GRADE 316 STAINLESS STEEL EXPANDING METAL SLEEVE MASONRY ANCHORS , TO THE WALL OF THE PIT ADJACENT TO THE RESPECTIVE PUMPSET AND SUCH THAT THEY ARE CLEARLY VISIBLE FROM THE TOP PIT.THE PUMP WITH THE LOWEST SERIAL NUMBER SHALL BE THE NO. 1 PUMP AND SHALL BE INSTALLED CLOSEST TO THE ELECTRICAL SWITCHBOARD, OR IN THE CASE WHERE PUMPS ARE GUIDISTANT FROM THE SWITCHBOARD, PUMP NO. 1 SHALL BE THE PUMP ON THE RIGHT HAND SIDE OF THE PIT WHEN VIEWED FROM THE SWITCHBOARD LOCATION.
 13. INSTALLATION OF ELECTRICAL CONDUITS
ALL ELECTRICAL CONDUITS EXCEPT WHERE SPECIFICALLY NOTED ON THE DRAWINGS SHALL BE HEAVY DUTY (HDD) ORANGE COLOURED UPVC CONDUITS WHICH COMPLY TO THE SPECIFICATIONS. MARK ALL ELECTRICAL CONDUITS ACCORDING TO THE SPECIFICATIONS EXCEPT THAT EITHER ENBOSSING OR MouldING WILL BE THE ONLY ACCEPTABLE MEANS OF MARKING AND THAT THE DISTANCE BETWEEN MARKINGS SHALL NOT EXCEED ONE METER.
- NOTE:**
1. PRE-CONSTRUCTION SURVEY SHALL BE CONDUCTED JOINTLY BY THE REPRESENTATIVES OF THE CONSULTANT , IMPLEMENTING OFFICE AND THE CONTRACTOR . CORRESPONDING ASSTAKE PLANS SHOWING ANY CHANGES FROM APPROVED DETAILED ENGINEERING DESIGN PLANS SHALL BE PREPARED AND SUBJECTED FOR APPROVAL BY THE HON. SECRETARY.
 2. THE CONSULTANT SHALL VERIFY THE CONDITION AND STABILITY OF THE EXISTING STRUCTURE PRIOR TO THE CONSTRUCTION OF THE PROPOSED PROJECT.

PUMPING STATION (PARAMETERS)

WIND LOADS :

STEEL SHEET PILE

PACKAGE 1-C

TECHNICAL PROPERTIES :

U-TYPE STEEL SHEET PILE
SECTION MODULUS = $1208 \text{ m}^2/\text{m}$
WIDTH $w = 600 \text{ mm}$
THICKNESS, $t = 9.70 \text{ mm}$
WEIGHT = 63.90 kg/m
 $I = 18723 \text{ cm}^4/\text{m}$

NOTE : ALLOWANCE IS PROVIDED IN THE DESIGN TO COVER CORROSION REQUIREMENT

DESIGN CRITERIA:

TYPE OF WELDING ELECTRODE:
MILD STEEL ELECTRODE LOW HYDROGEN AWS/A5.1E7018

MECHANICAL PROPERTIES
TENSILE STRENGTH = 490 Mpa
YIELD STRENGTH = 420 Mpa
ELONGATION IN 50mm = 30%

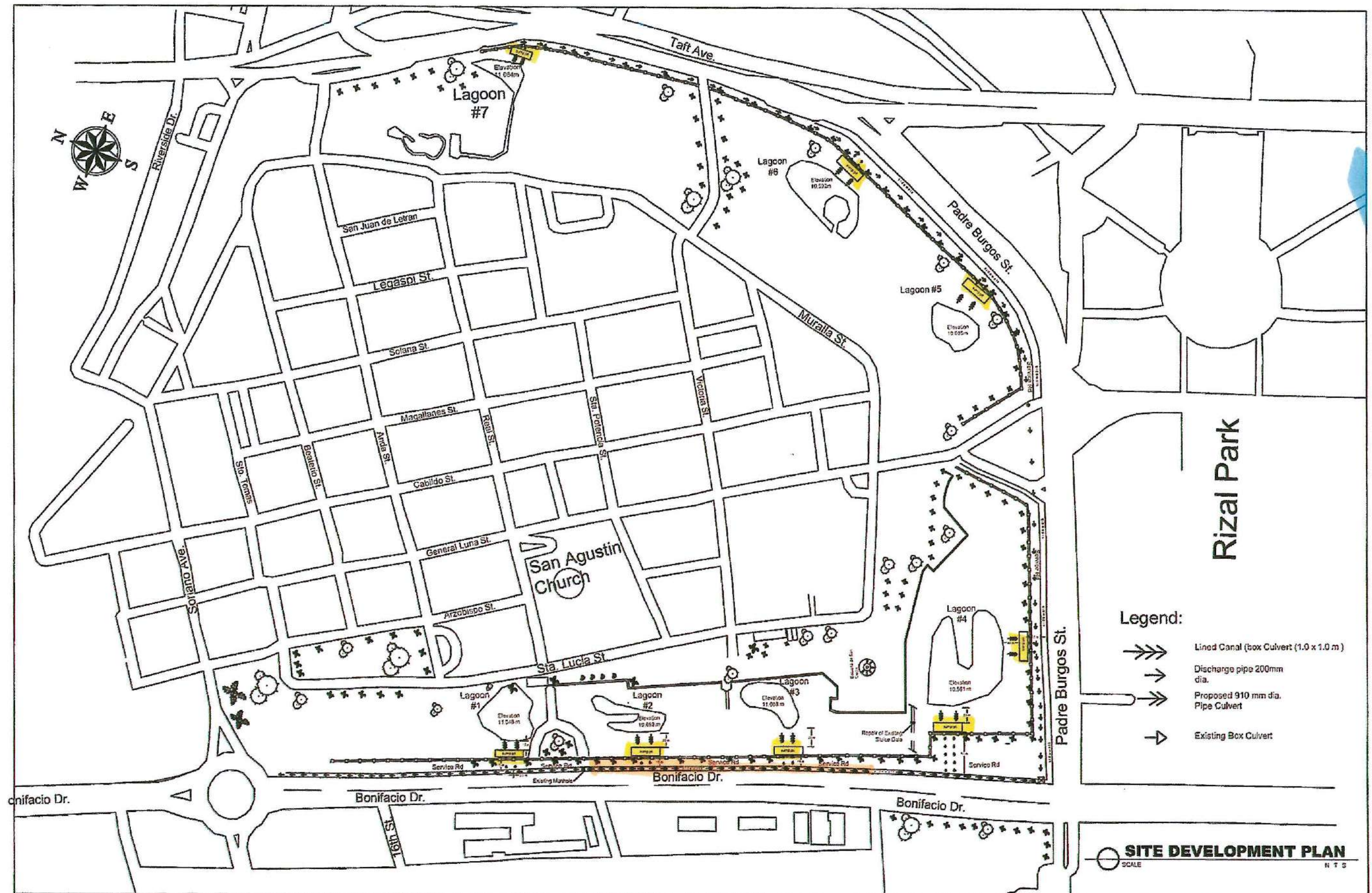
WELDING
SMAW PROCESS
CAPACITY OF WELDING = $0.707t + 0.30F_u$
ALLOWABLE SHEARING STRESS = $0.30F_u$
FOR E70 ELECTRODES : $F_u = 70 \text{ KIPS PER INCH}$.

NOTE:

1. ALL SURFACES TO BE WELDED SHOULD BE FREE OF PAINTS , SLAG, LOSSE SCALE ,RUST AND OTHER FOREIGN MATERIAL.
2. INTERLOCKUNG ALIGNMENT OF THE STEEL SHEET FOREIGN MATERIAL BE MAINTAINED DURING THE WELDING.

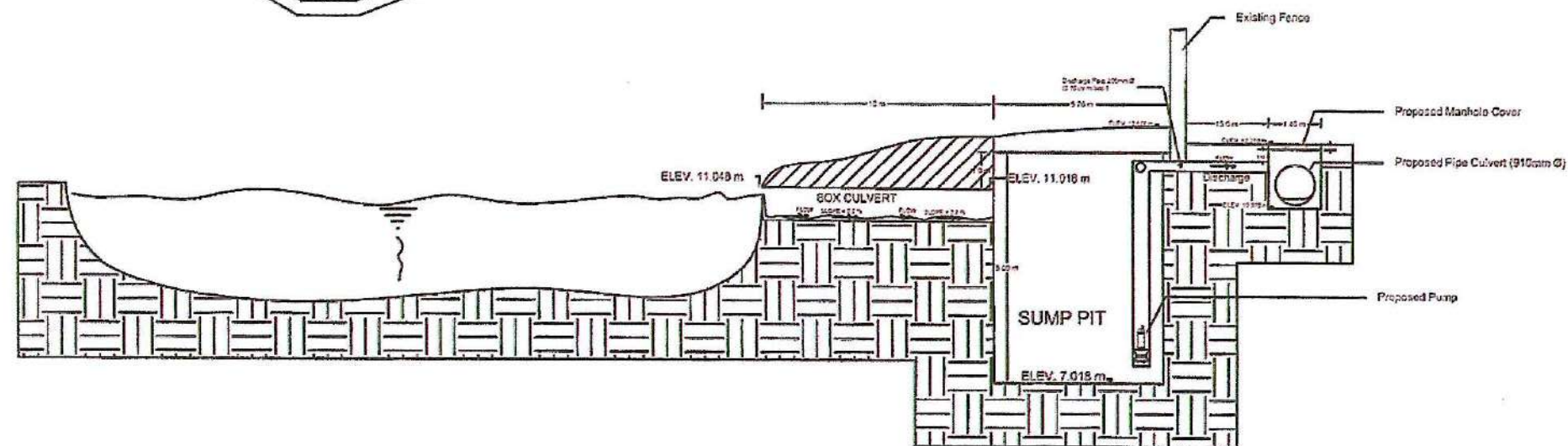
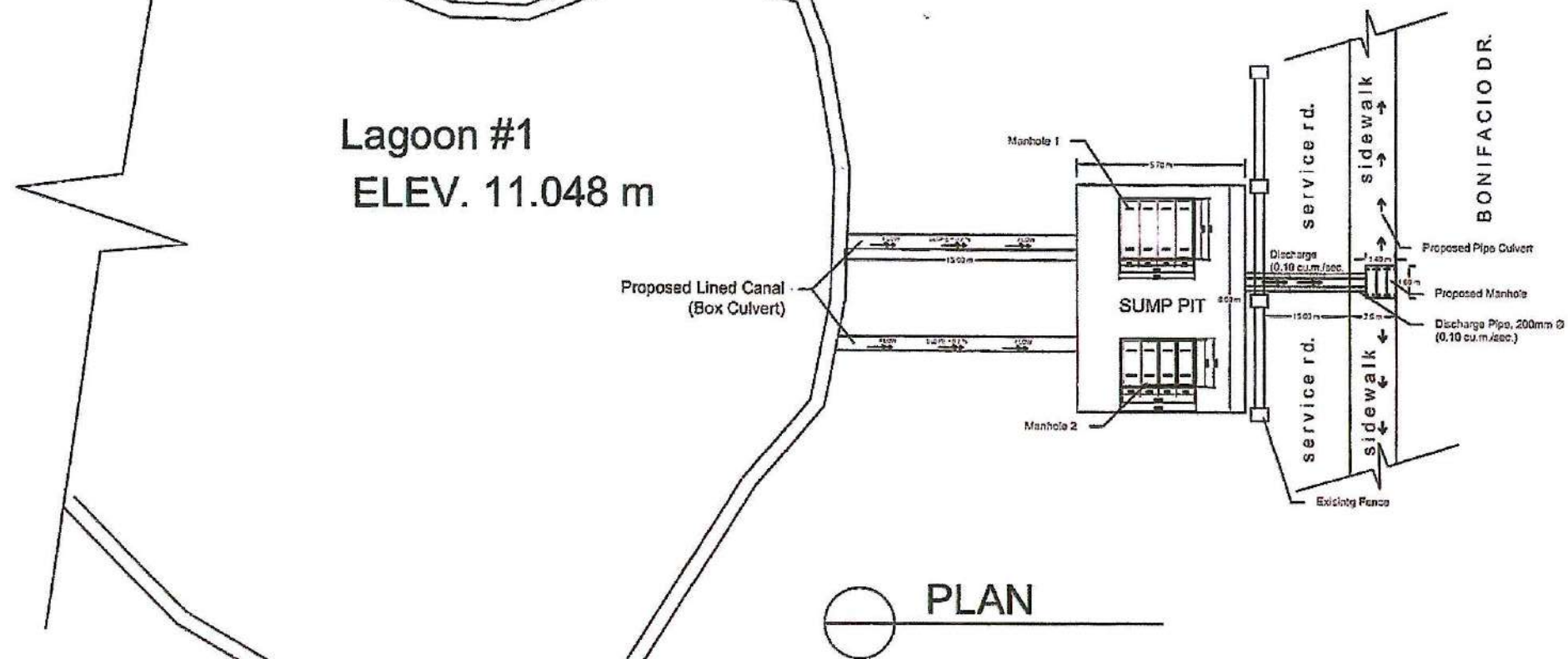
 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 1000 TOLONG ROAD, PASAY CITY, PHILIPPINES TEL: (02) 8888-8888 WWW.TIEZA.GOV.PH	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: <i>[Signature]</i> NASHIF ALMAGAYAN ENGINEER PREPARED: <i>[Signature]</i> LEONARDO P. GUZMAN ENGINEER	REVIEWED: <i>[Signature]</i> WILLIAM M. LABATINO ENGINEER DATE: 8/23/24	SUBMITTED: <i>[Signature]</i> ALBERTO S. DURAN CIC-PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: <i>[Signature]</i> ERNESTO C. LEONES CIC-CHIEF OF THE ASSESMENT DIVISION DATE: 8/24/24	APPROVED: <i>[Signature]</i> MIGUEL D. MACUD DISTRICT ENGINEER DATE: 8/24/24		RECOMMENDING APPROVAL: <i>[Signature]</i> GABRIEL A. SANCHEZ SOUTH MANILA DISTRICT ENGINEERING OFFICE MANILA	APPROVED: <i>[Signature]</i> MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. 03	SHEET NO. 03

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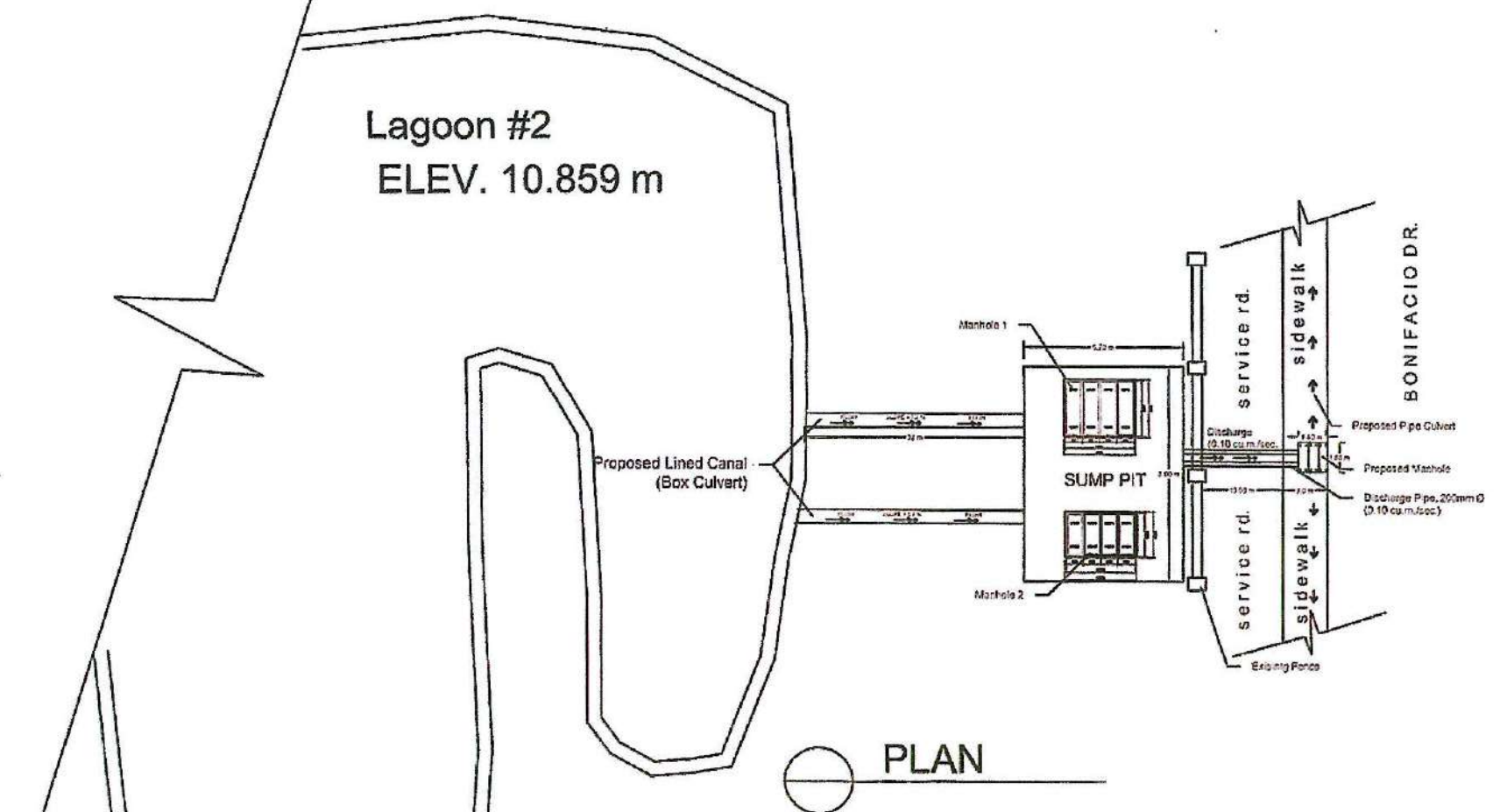
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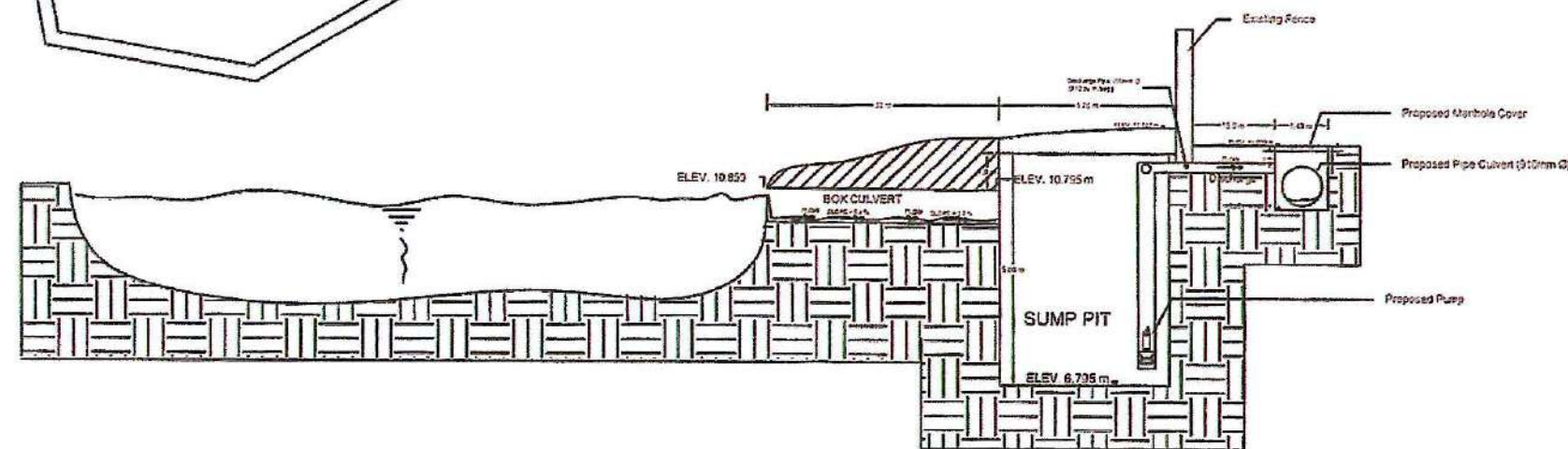


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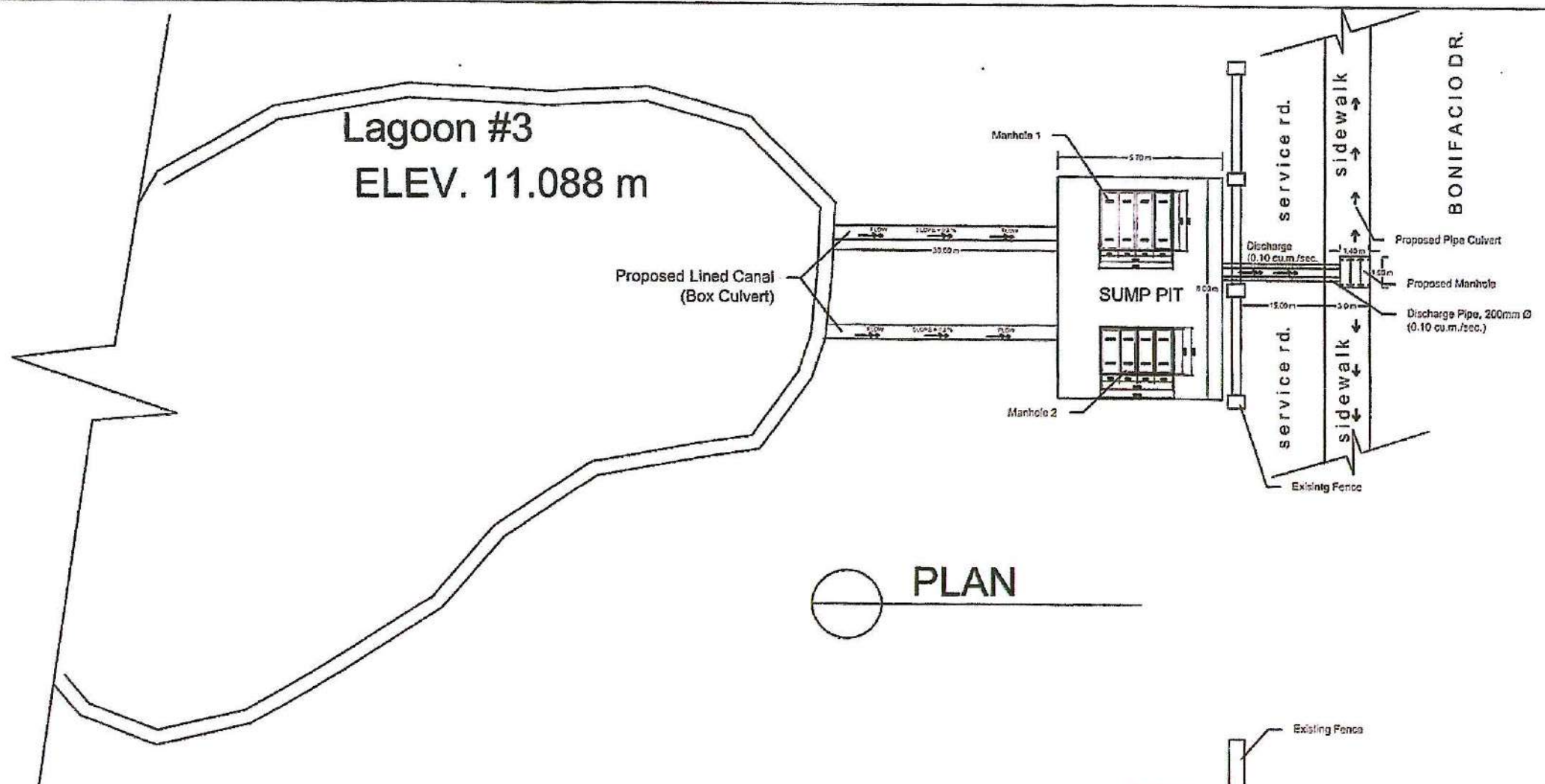
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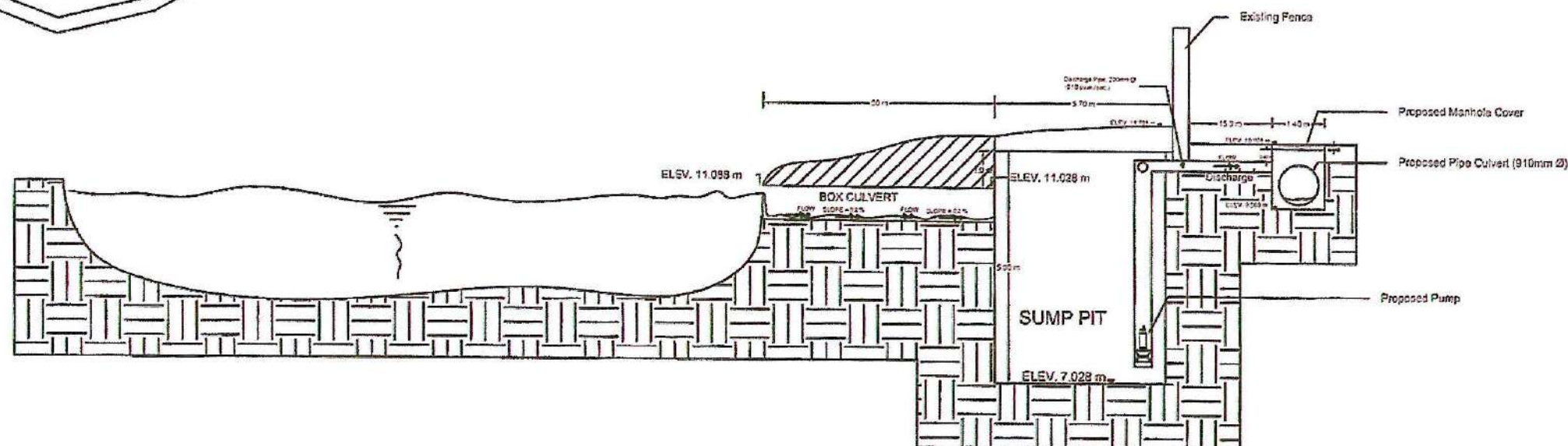
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REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 101 SOUTH TOWER 1, ONE WORLD TRADE CENTER CORRECTIONAL COMPLEX, PASAY CITY, METRO MANILA	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: <i>NASHEF ALMADYAN</i> ENGINEER PREPARED: <i>GENIVAR S. ALMADYAN</i> ENGINEER	REVIEWED: <i>WILLIAM A. SABATINO</i> ENGINEER II DATE: 8/23/24 SUBMITTED: <i>ALBERTO B. DURAN</i> CIC - PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: <i>ERNESTO P. LEONES</i> CIC - CHIEF OF THE ASSISTANT DISTRICT ENGINEER DATE: 8/24/24	APPROVED: <i>MIKHAIL D. MACUD</i> DISTRICT ENGINEER DATE: 8/24/24	RECOMMENDING APPROVAL: <i>GREGORY A. MILLER</i> DISTRICT ENGINEER DATE: 8/24/24		APPROVED: <i>MARK T. LAPID</i> CHIEF OPERATING OFFICER DATE: 8/24/24	SET NO. <i>P</i> 02 08	SHEET NO. <i>05</i> 22	

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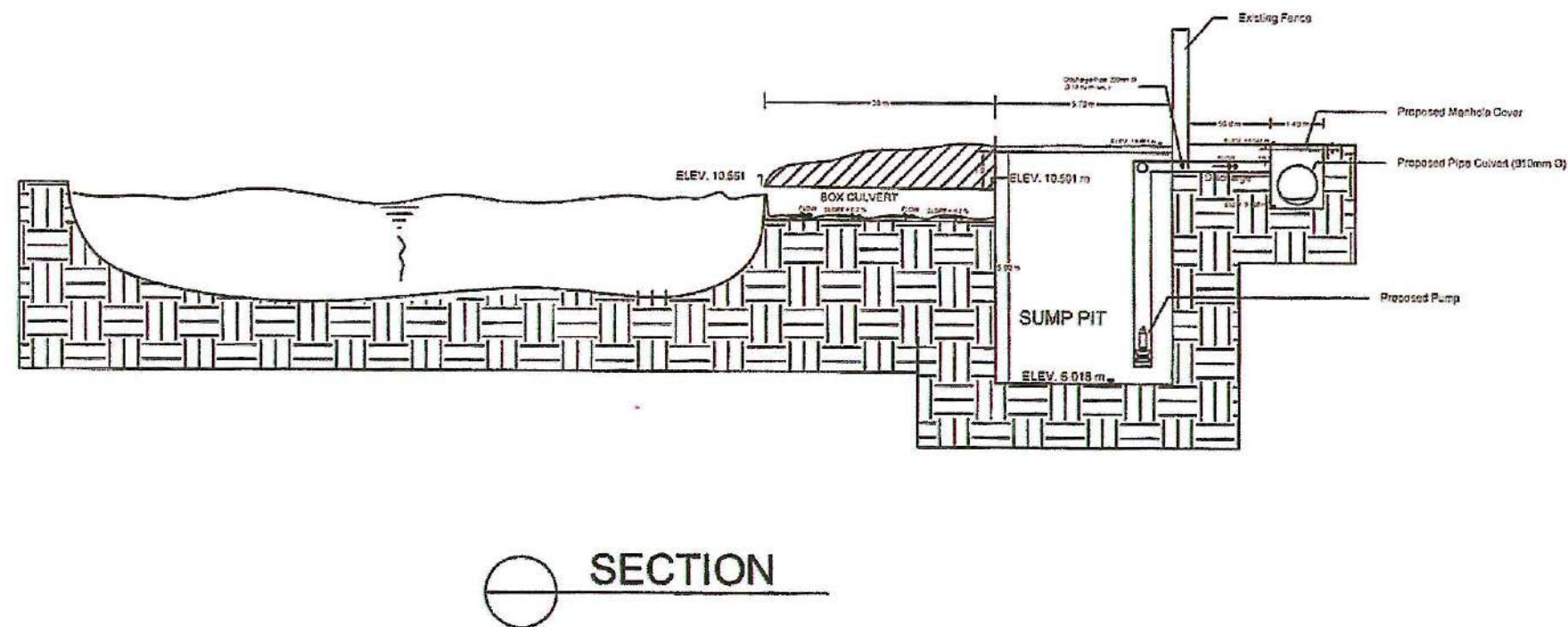
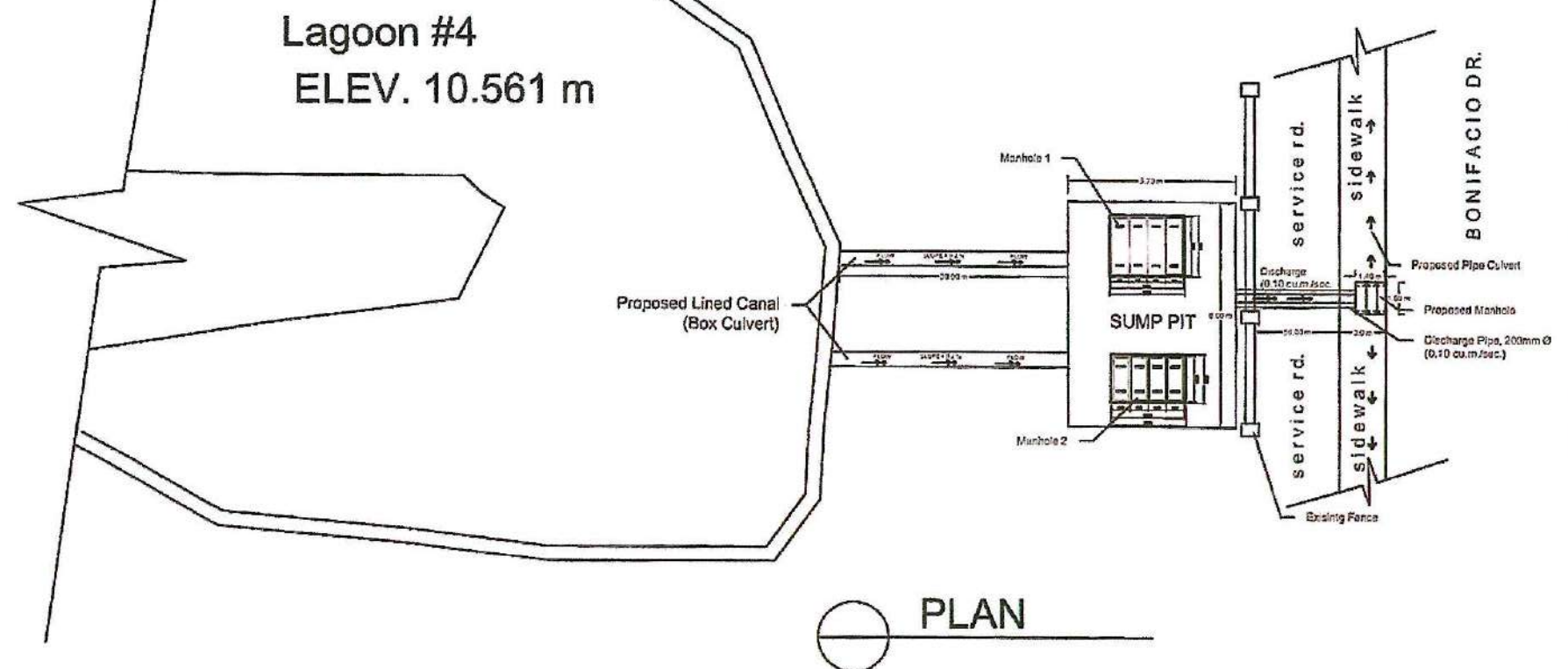
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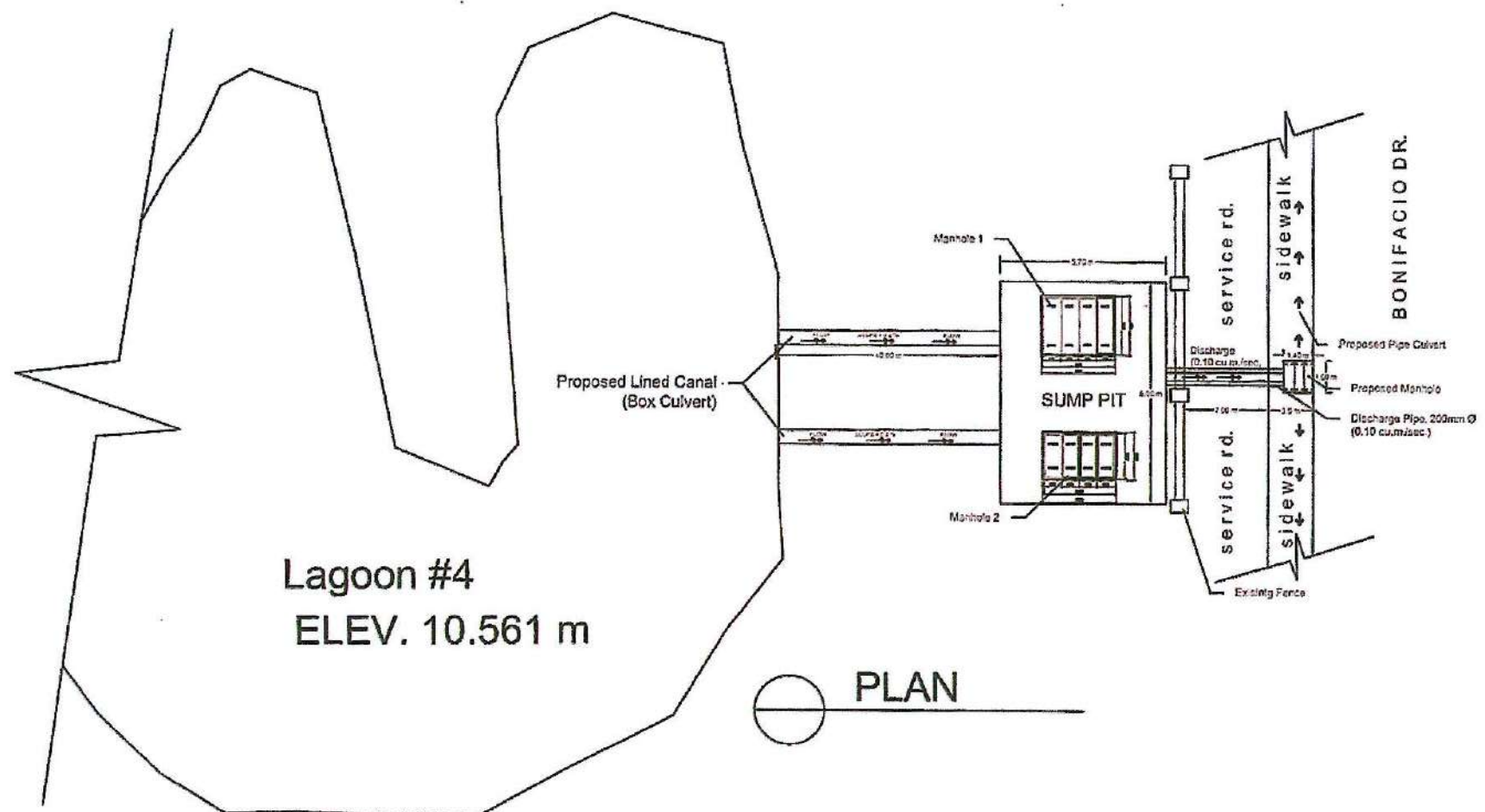
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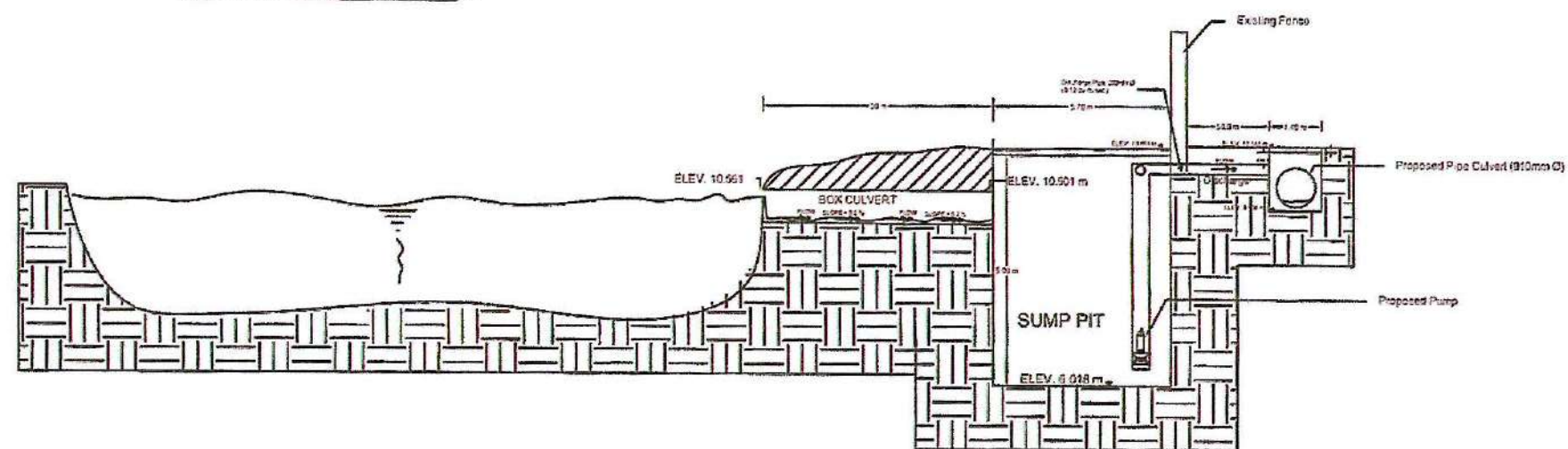


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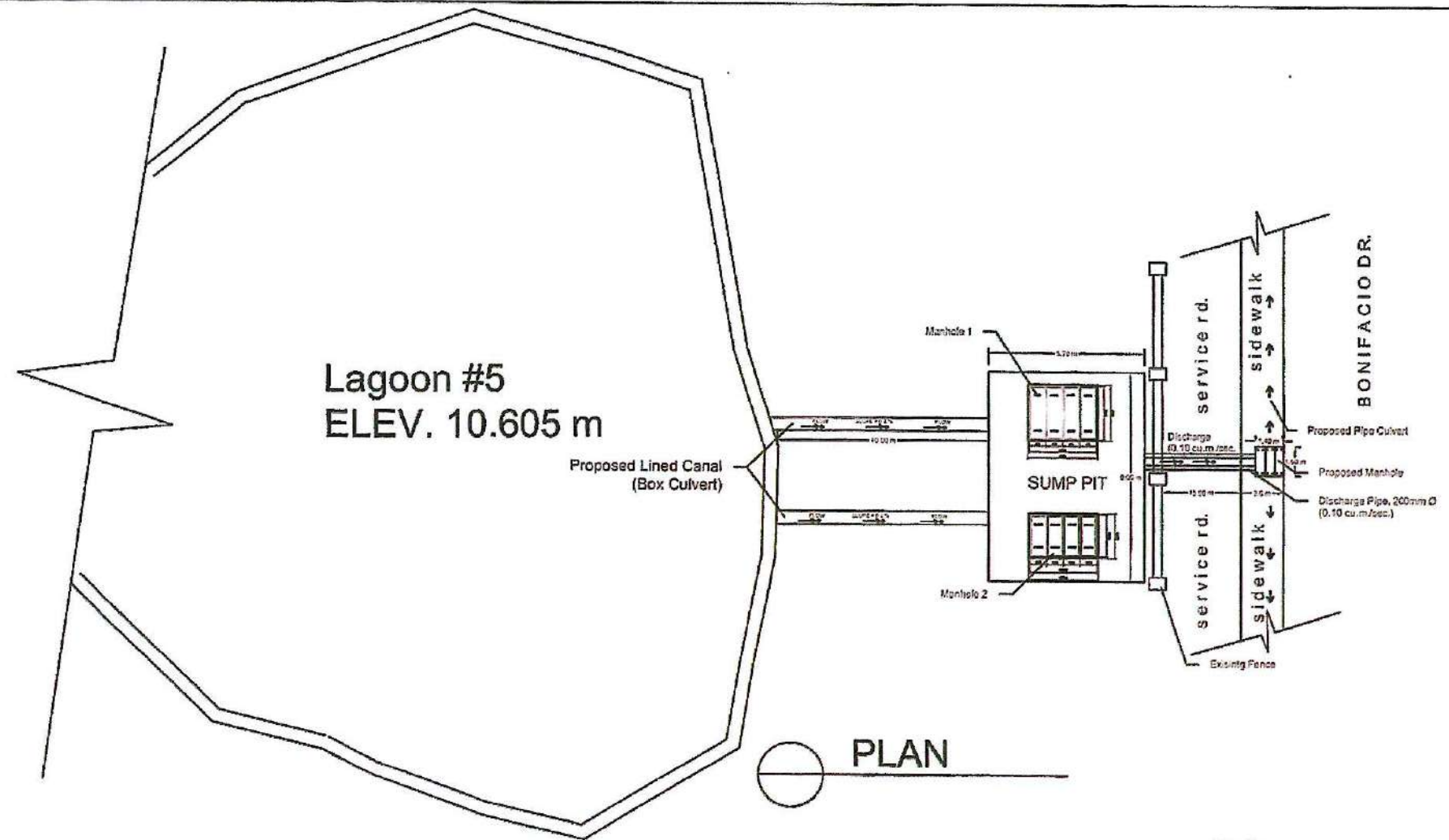
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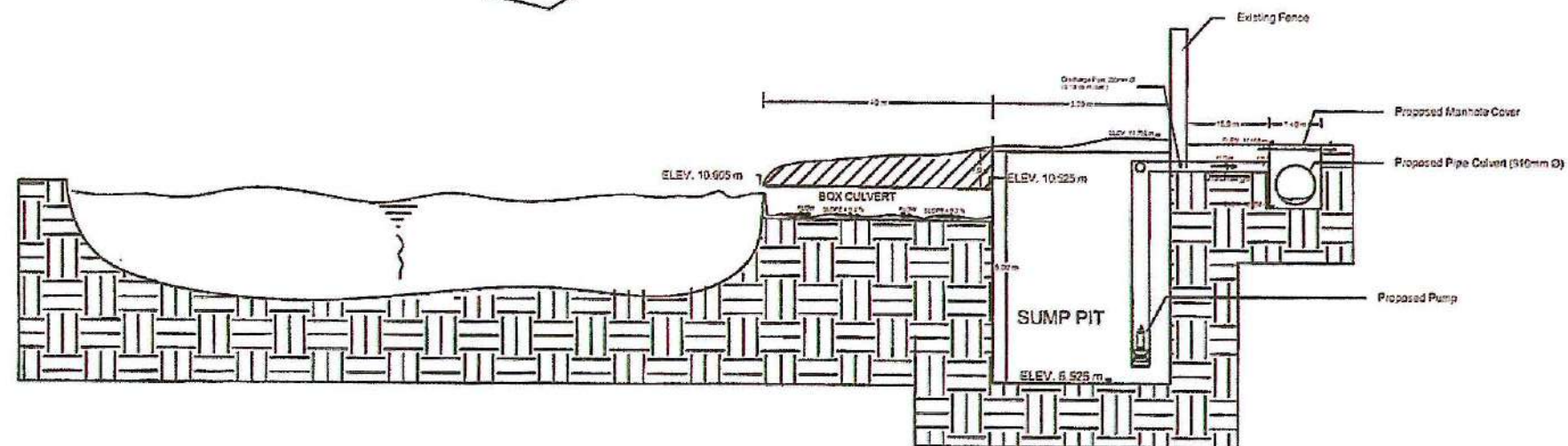
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REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: <i>NASHERA M. ARYAN</i> ENGINEER PREPARED: <i>LEONARDO F. DE GUZMAN</i> ENGINEER	REVIEWED: <i>WILLIAM M. LABATINO</i> ENGINEER DATE: 8/23/24	SUBMITTED: <i>ALBERTO B. DURAN</i> C/O - PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: <i>ERNESTO P. LEONES</i> CHIEF OF THE DISTRICT ENGINEER DATE:	APPROVED: <i>MIKUNUSO MACUD</i> DISTRICT ENGINEER DATE:	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY	RECOMMENDING APPROVAL: <i>MARK T. LAPID</i> CHIEF OPERATING OFFICER	APPROVED: <i>MARK T. LAPID</i> CHIEF OPERATING OFFICER	SET NO. P 05 08	SHEET NO. 09 22
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NCR-23-02



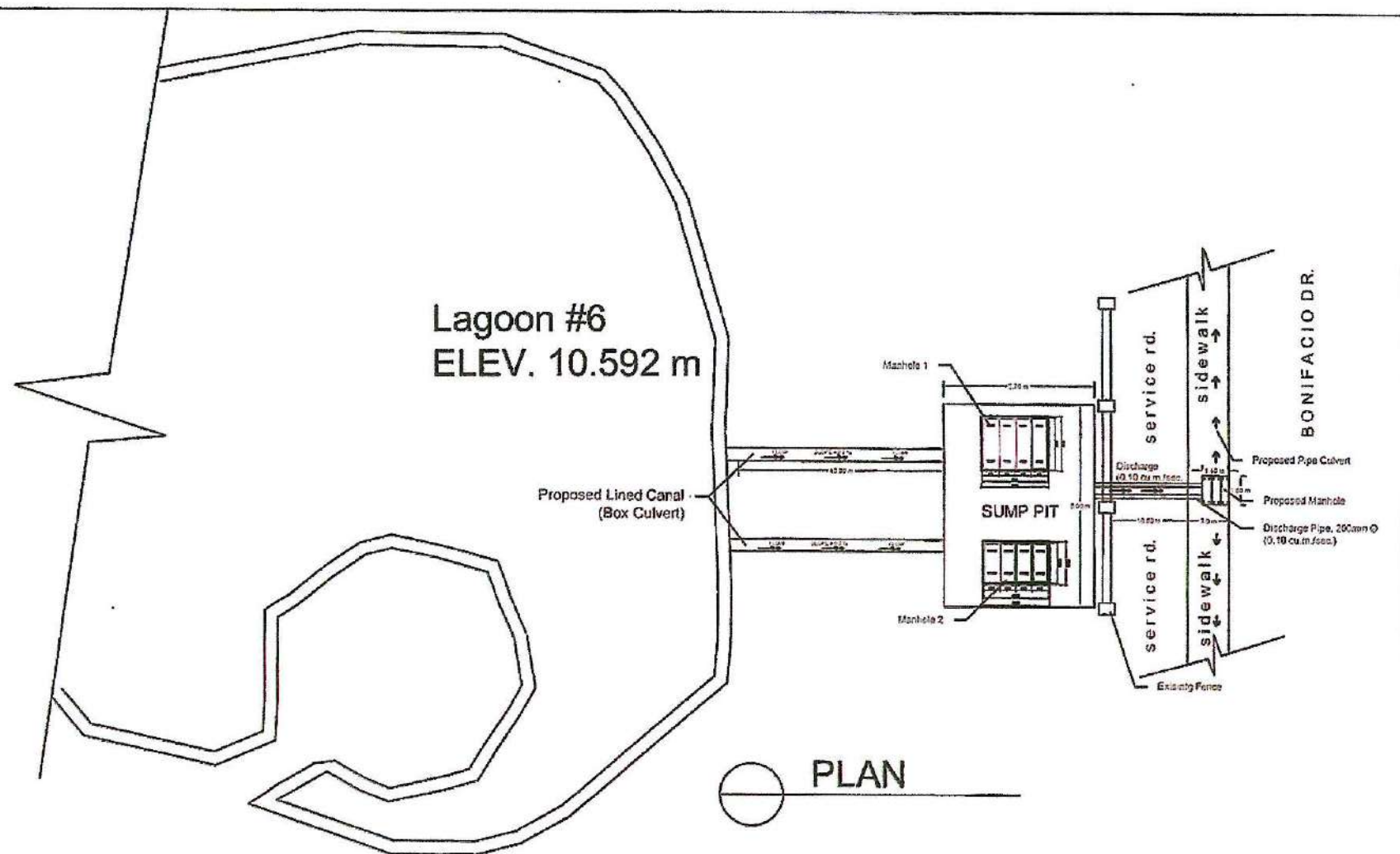
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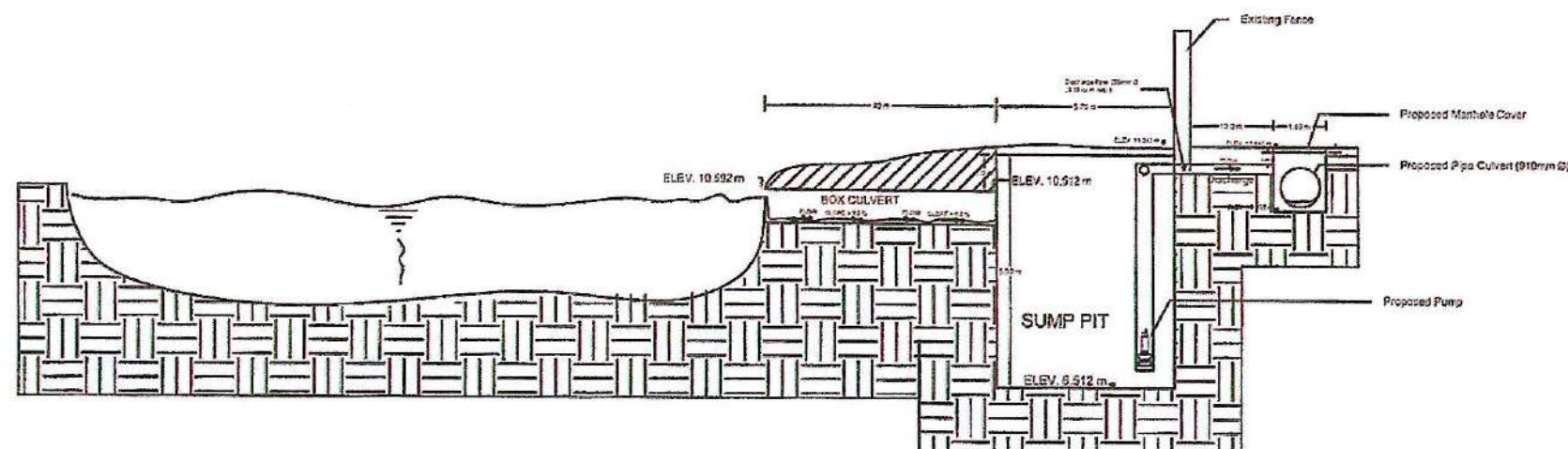
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	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: NASHIF ALMASA-RYAN ENGINEER 3 PREPARED: LEONARDO P. DE GUZMAN ENGINEER 3	REVIEWED: WILLIAM A. SABATINO ENGINEER 1 DATE: 8/23/24	SUBMITTED: ALBERTO B. DURAN OIC - PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: ERNESTO P. LEONES OIC - OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MIKONUBO D. MACUD DISTRICT ENGINEER DATE:		RECOMMENDING APPROVAL: GREGORY A. ALLER ASST. DISTRICT ENGINEER OFFICE DATE:	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER DATE:	SET NO. P 05 08	SHEET NO. 10 22
	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 5th STREET, PORT AREA, MANILA										

NCR-23-02



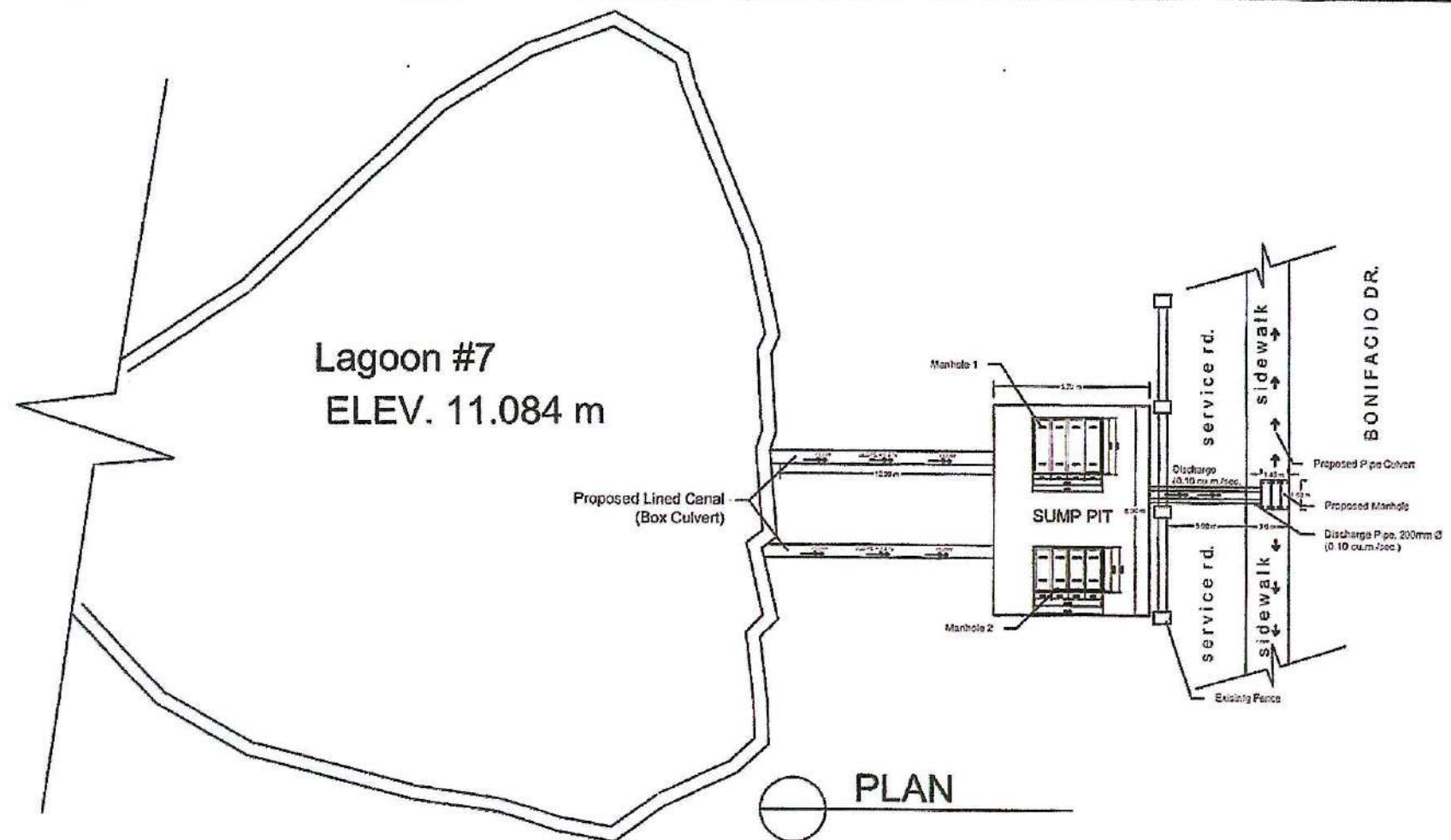
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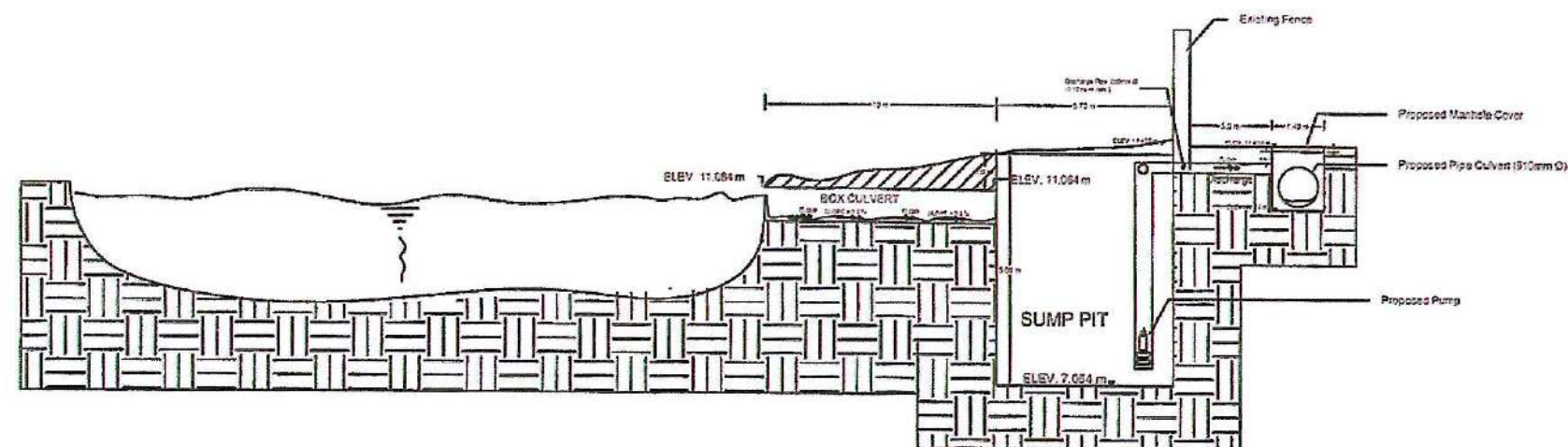
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REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: <i>Nashif Almazan</i> NASHIF ALMAZAN ENGINEER 3 PREPARED: <i>Leonard F. de Guzman</i> LEONARD F. DE GUZMAN ENGINEER 3	REVIEWED: <i>William A. Sabatino</i> WILLIAM A. SABATINO ENGINEER 1 DATE: 8/23/24	SUBMITTED: <i>Alberto B. Duran</i> ALBERTO B. DURAN CIVIL PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: <i>Ernesto P. Leones</i> ERNESTO P. LEONES CIVIL ENGINEER DATE: 8/24/24	APPROVED: <i>Mikund D. Macud</i> MIKUND D. MACUD DISTRICT ENGINEER DATE: 8/24/24	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 1515 TROPEZ, TROPEZ DRIVE, PORT AREA, MANILA CORRELATION OF TROPEZ DRIVE AND TROPEZ DRIVE	RECOMMENDING APPROVAL: <i>Mark T. Lapid</i> MARK T. LAPID CHIEF OPERATING OFFICER	APPROVED: <i>Mark T. Lapid</i> MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. 07 OF 08 SHEET NO. 11 OF 22
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NCR-23-02



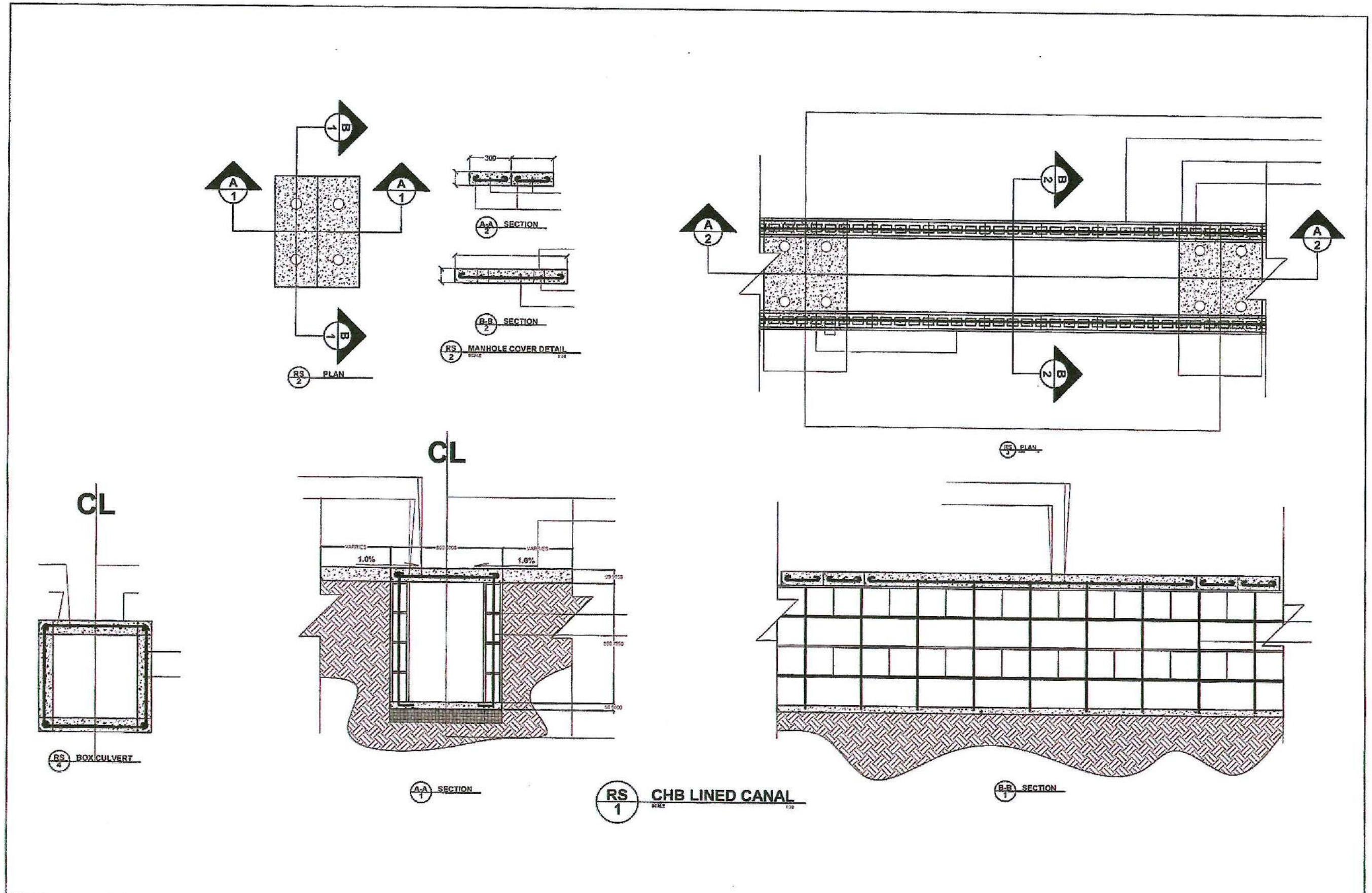
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SECTION

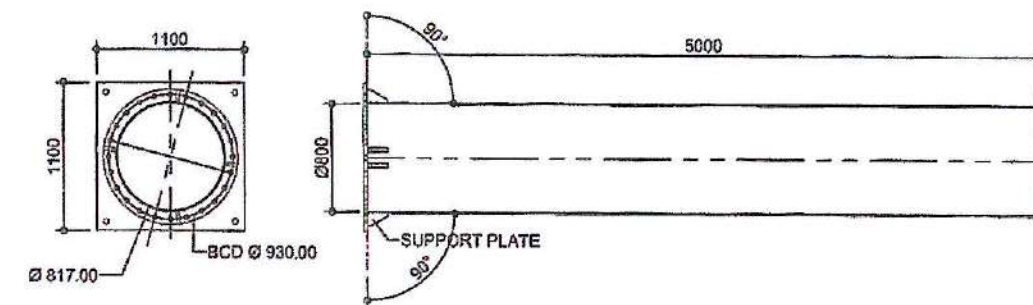
REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 821 STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGG, INTRAMUROS MANILA	DRAFTED: NASHIF ALFARAYAN ENGINEER PREPARED: LEONARDO P. DE GUZMAN ENGINEER	REVIEWED: WILLIAM L. SABATINO ENGINEER DATE: 8/23/24	SUBMITTED: ALBERTO B. DURAN CIC - PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: BRISTO P. LEONES CIC - OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE: 8/24/24	APPROVED: MIGUEL D. MACUD DISTRICT ENGINEER DATE: 8/24/24	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY IN A JOINT VENTURE WITH THE PHILIPPINE AIRCRAFT MANUFACTURING AND ASSEMBLY CORPORATION (PHILAMAC) AND THE PHILIPPINE AIRCRAFT MANUFACTURING AND ASSEMBLY CORPORATION (PHILAMAC)	RECOMMENDING APPROVAL: FREDERICK OLLER ASSISTANT CHIEF OPERATING OFFICER NATIONAL CAPITAL REGION APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. P 08 08	SHEET NO. 12 22
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NCR-23-02



REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: NASHIF ALMAGAS RYAN ENGINEER 3 PREPARED: LEONARDO P. DE GUZMAN ENGINEER 4	REVIEWED: WILLIAM R. SABATINO ENGINEER 2 DATE: 8/23/24	SUBMITTED: ALBERTO B. DURAN O/C - PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: ERNESTO P. LEONES O/C - OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE: 8/24/24	APPROVED: MIKUNIL D. MACUD DISTRICT ENGINEER DATE: 8/24/24	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 45 CENTRAL STREET, UNIT 1000, SOUTH BAY, PASAY CITY, METRO MANILA CORRELATION: TIEZA/DAVAO AREA PROJECTS	RECOMMENDING APPROVAL: GREGORY J. OLIVER TIEZA CHIEF OPERATING OFFICER ARCHITECTURAL AND ENGINEERING SERVICES DIVISION	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. 01 OF 06 SHEET NO. 13 OF 22
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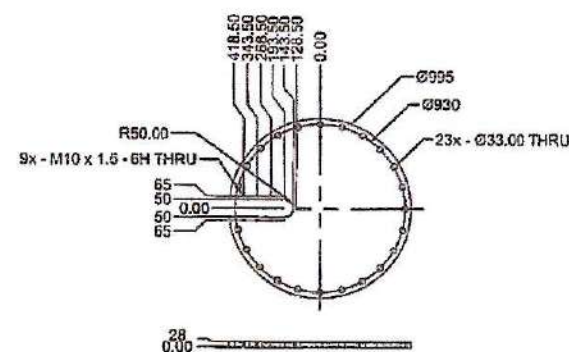
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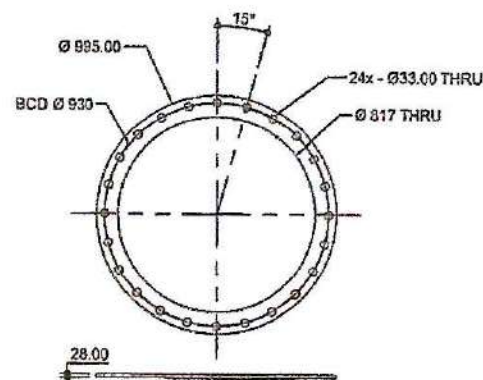
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 REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:  HATCHER P. REYES, RAN DESIGNER	REVIEWED:  WILLIAM N. SARATINO ENGINEER II DATE 8/23/24	SUBMITTED:  ALBERTO M. DURAN Project-in-Charge PLANNING AND DESIGN SECTION DATE 8/24/24	RECOMMENDED:  ERNESTOP L. LEONES Office-in-Charge OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE	APPROVED:  MIGUEL D. MACUD DISTRICT ENGINEER DATE	 TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY BY ORDER OF THE TOURISM SECRETARY COLLEGE CONVENT ROAD, WOODWARD PARK CORRAL COMPLETION CENTER, SUITE 201 MANILA, PHILIPPINE ISLANDS	RECOMMENDING APPROVAL:  RESOR A. MILLER ASSISTANT TO THE CHIEF OPERATING OFFICER INTEGRATION AND ENGINEERING DIVISION	APPROVED:  MARK T. LAPID CHIEF OPERATING OFFICER	SET NO. 5 02/05	SHEET NO. 14 22
	PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MNLA	PREPARED:  LEONARD F. DE GUZMAN ENGINEER									

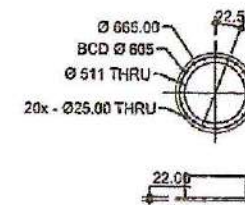
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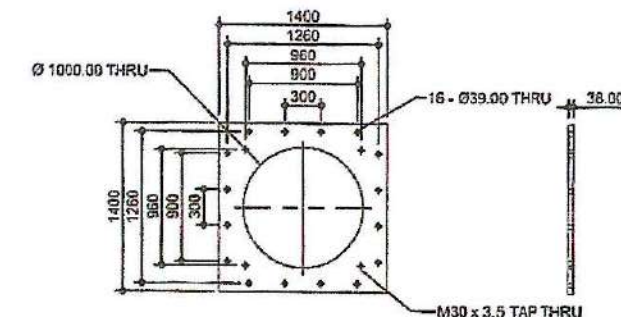
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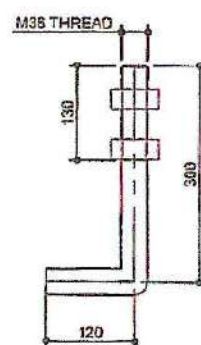
2 DETAIL OF FLANGE
SCALE: 1:10 mls.



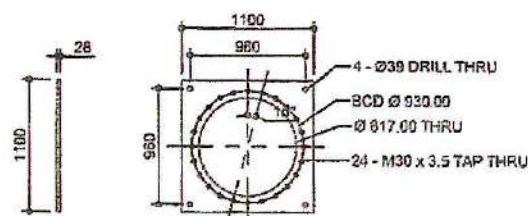
3 DETAIL OF DISCHARGE FLANGE
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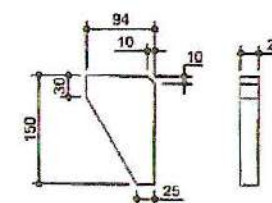
4 DETAIL OF SOLE PLATE
SCALE: 1:10 mls.



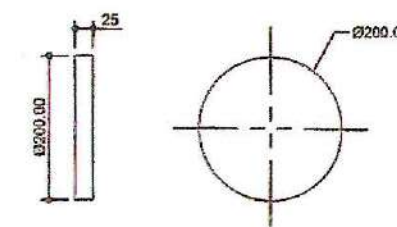
5 DETAIL OF ANCHOR BOLTS W/ DOUBLE NUTS
SCALE: 1:10 mls.



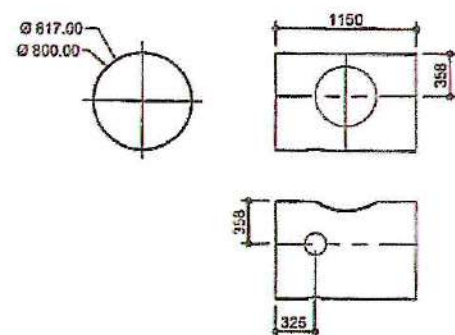
6 DETAIL OF BASE PLATE
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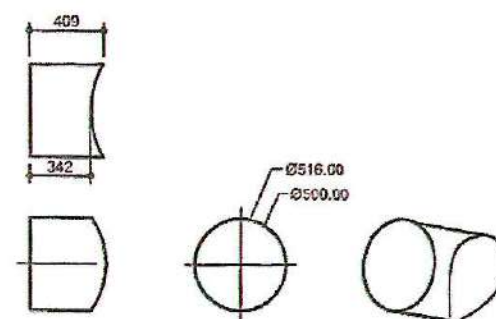
7 DETAIL OF SUPPORT PLATE
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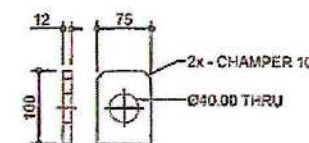
8 DETAIL OF PIPE COVER
SCALE: 1:10 mls.



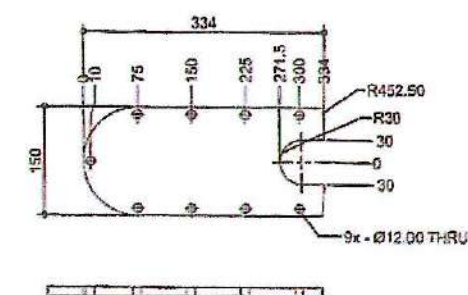
9 DETAIL OF TEE COLUMN PIPE
SCALE: 1:10 mls.



10 DETAIL OF TEE DISCHARGE PIPE
SCALE: 1:10 mls.

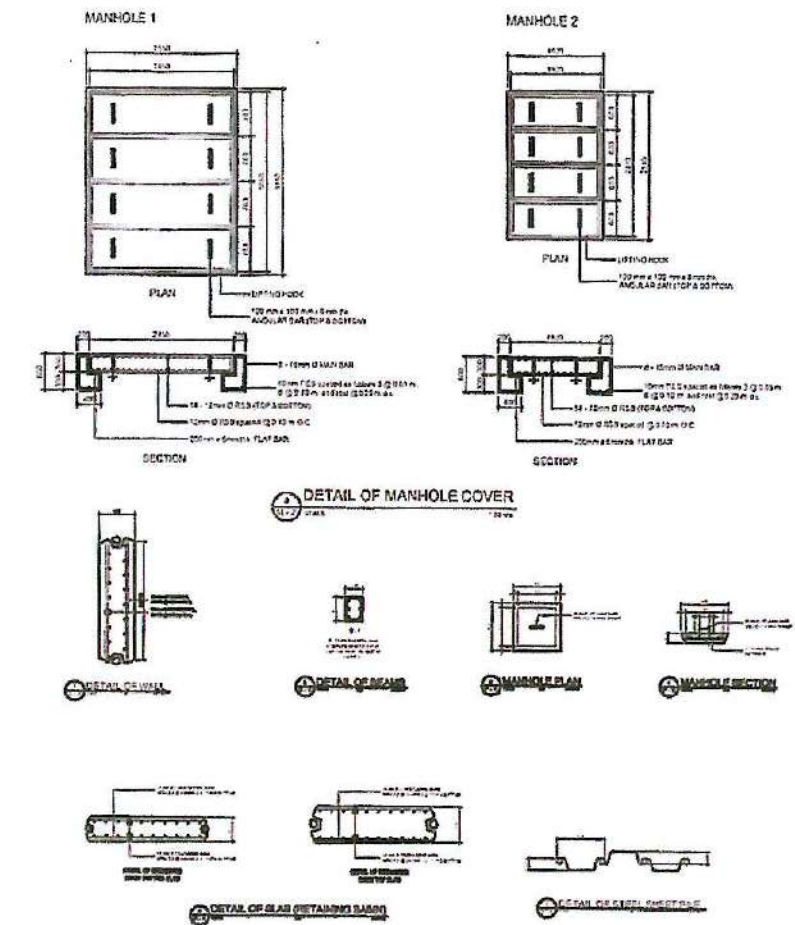
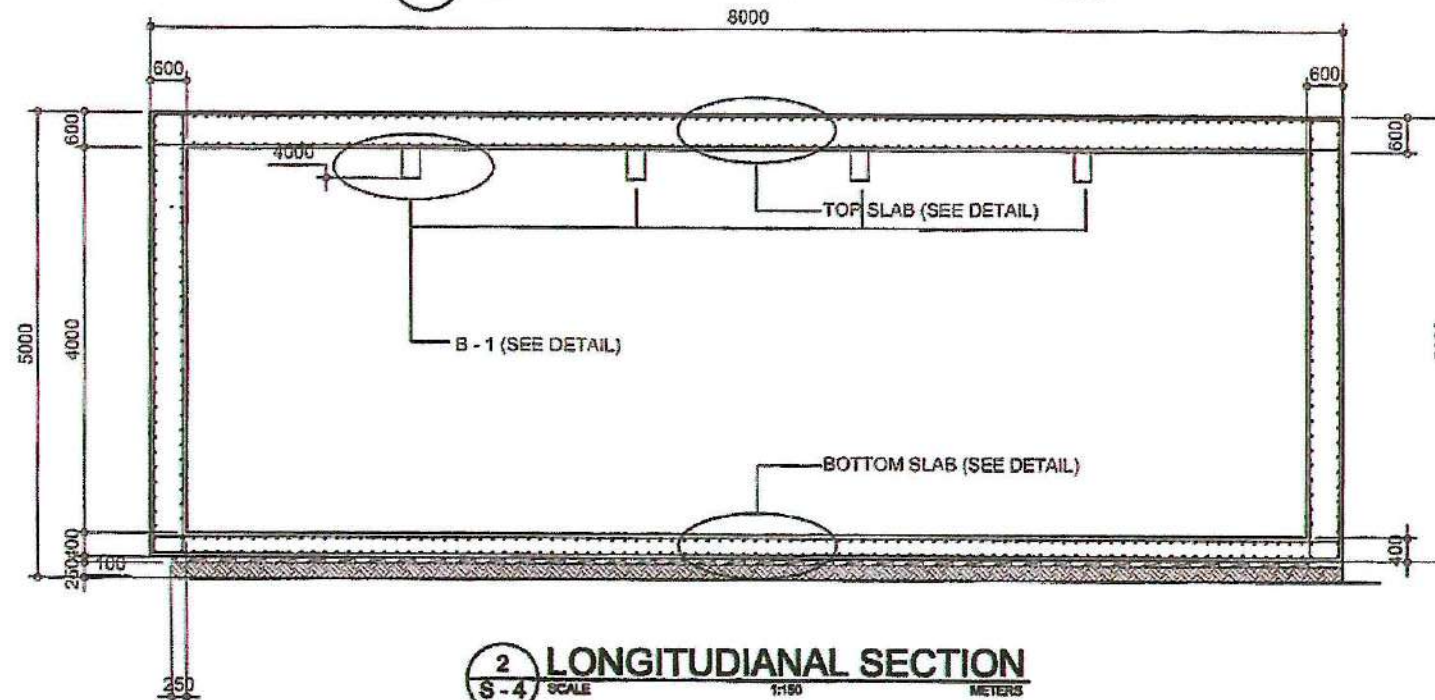
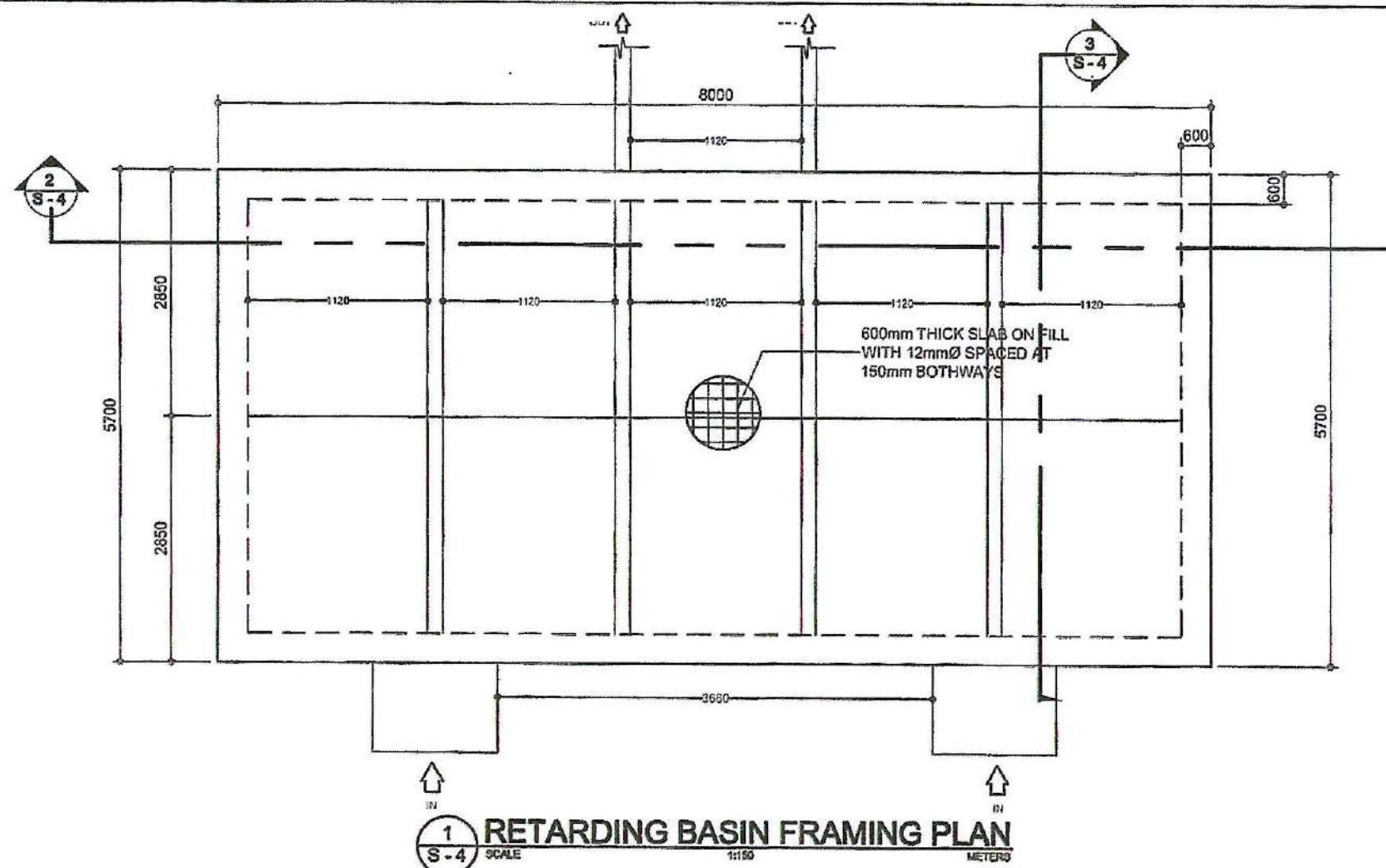


11 DETAIL OF LIFTING EYE
SCALE: 1:10 mls.



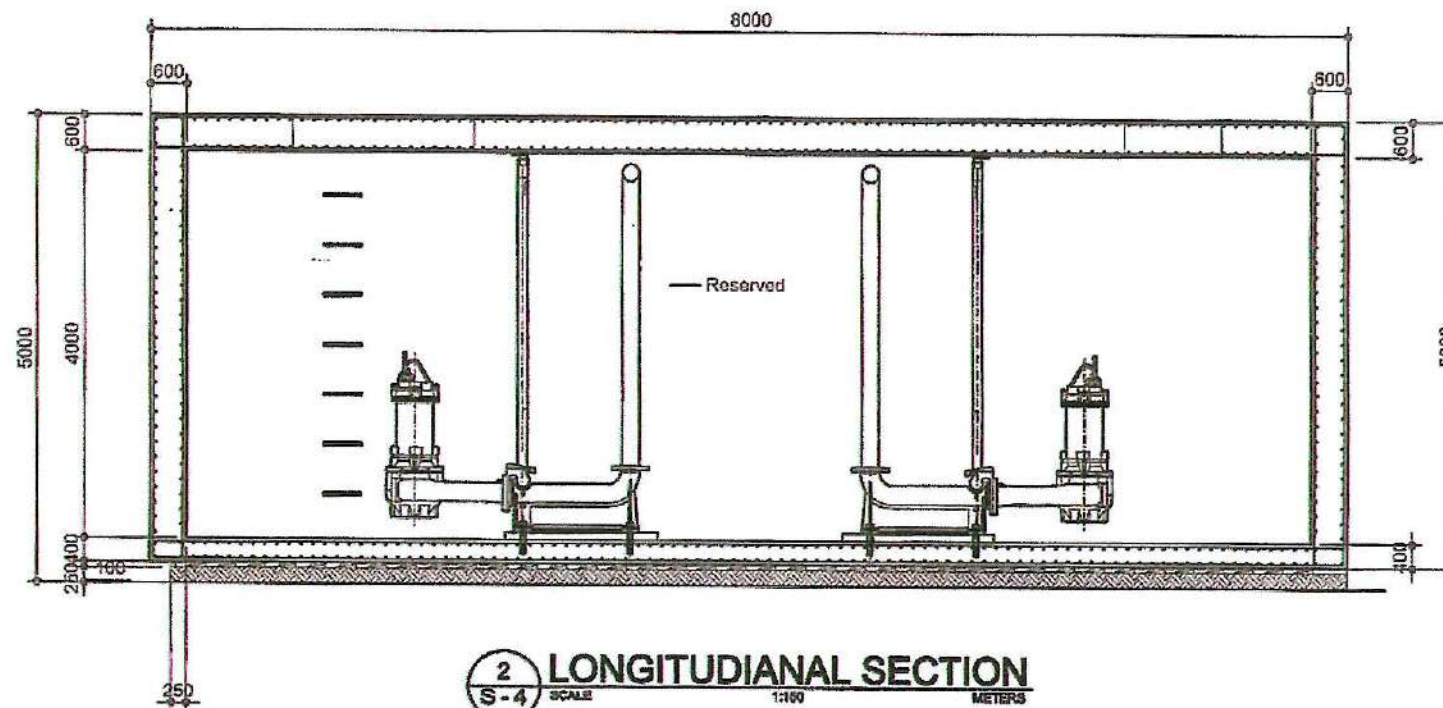
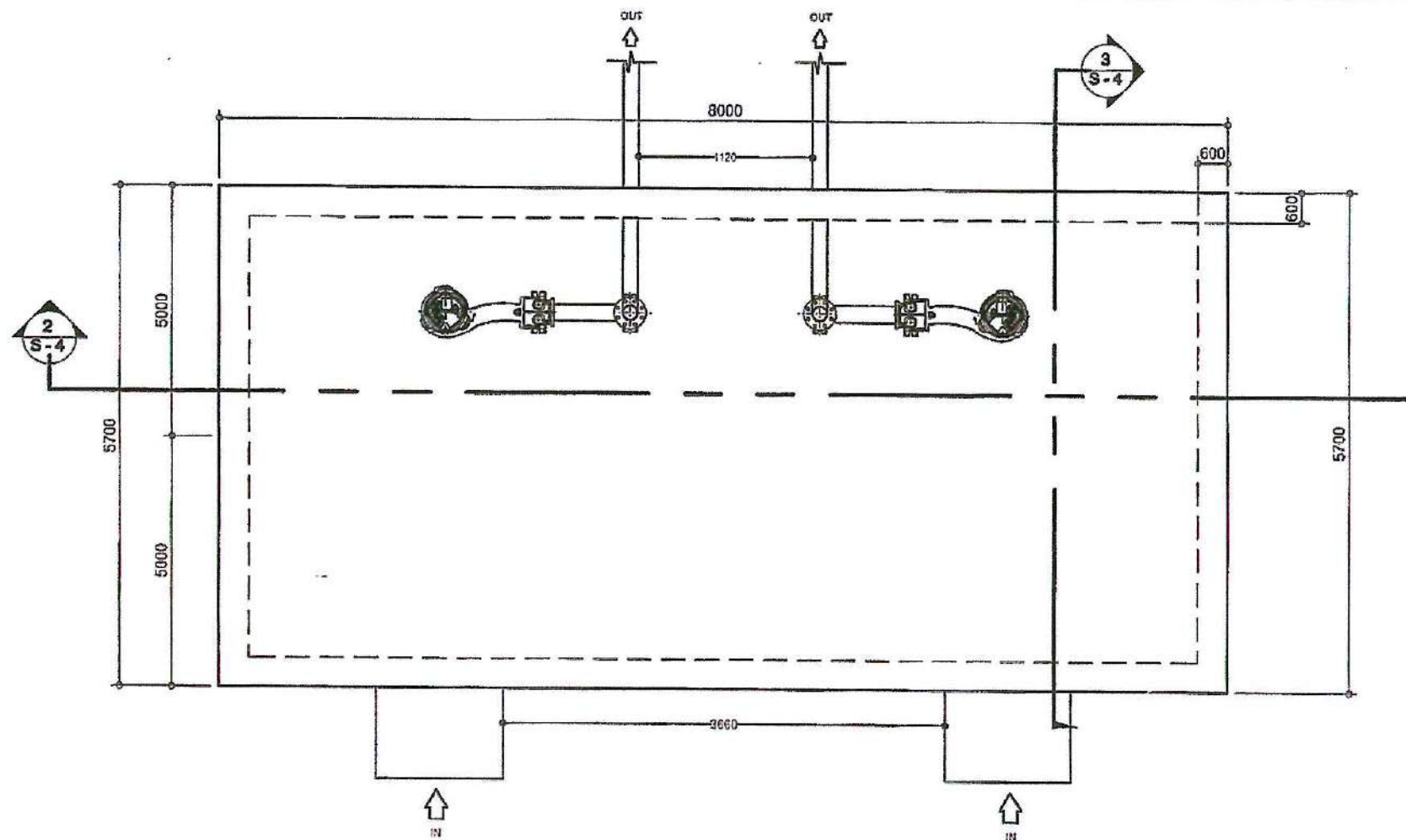
12 DETAIL OF CABLE COVER
SCALE: 1:10 mls.

	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: NASHIF ALMABAYAN ENGINEER II	REVIEWED: WILLIAM A. SARATINO ENGINEER II DATE: 8/23/24	SUBMITTED: ALBERTO S. DURAN PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: GREGORY A. COLLIER OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MIKONUS D. MACUD DISTRICT ENGINEER DATE:		RECOMMENDING APPROVAL: GREGORY A. COLLIER ASST. DISTRICT ENGINEER DATE:	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER DATE:	SET NO. S 03/08	SHEET NO. 15 22
	NCR-23-02										

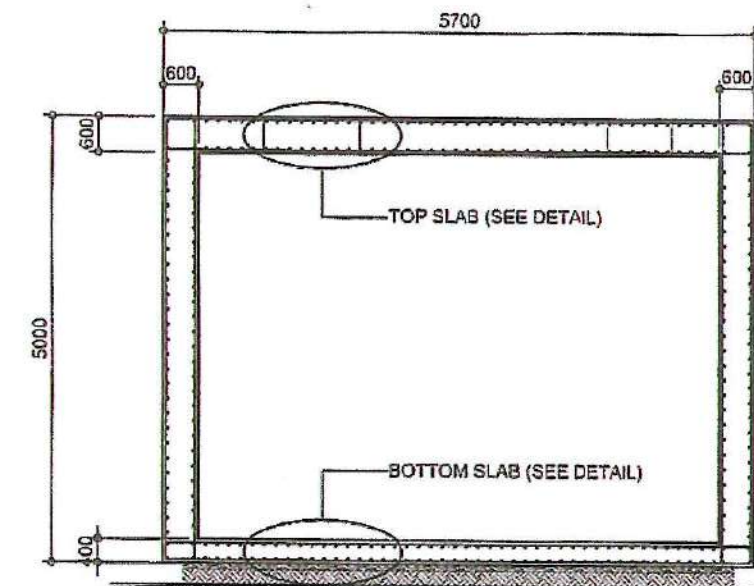


REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:	TIEZA TOULISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY PMA 115-116, TROYER BUILDING CORRELACION MARIKINA FOR BUSINESS, FINANCE CONSTRUCTION AND ENGINEERING SERVICES	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGG, INTRAMUROS MANILA	DRAFTED: <i>NASHIF ALMADRYAN</i> ENGINEER PREPARED: <i>LEONARD P. DE GUZMAN</i> ENGINEER	REVIEWED: <i>WILLIAM M. SABATINO</i> ENGINEER II DATE: 8/23/24	SUBMITTED: <i>ALBERTO E. DURAN</i> PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: <i>GERNISTO P. LEONES</i> OFFICE IN CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: <i>MILANUS D. MACUD</i> DISTRICT ENGINEER DATE:		RECOMMENDING APPROVAL: <i>OREGONIA OLLER</i> ASSISTANT CHIEF OPERATING OFFICER INFRASTRUCTURE AND ENGINEERING SERVICES SECTION	APPROVED: <i>MARK T. LAPID</i> CHIEF OPERATING OFFICER	SET NO. S 04/08	SHEET NO. 16 22

NCR-23-02



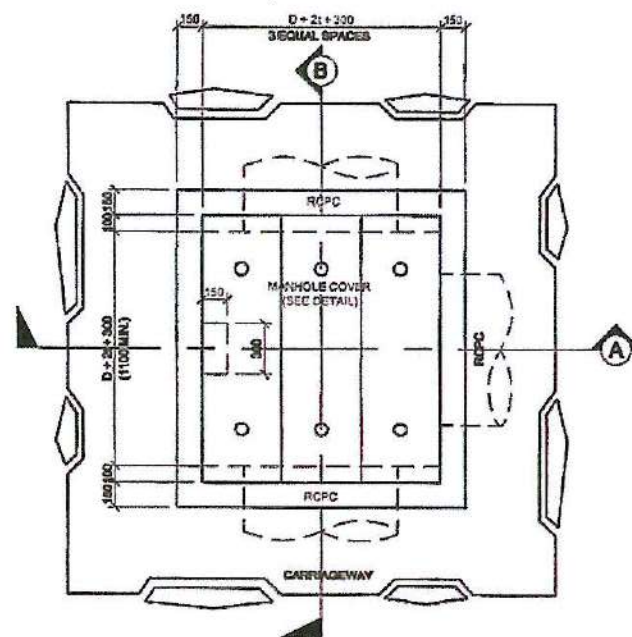
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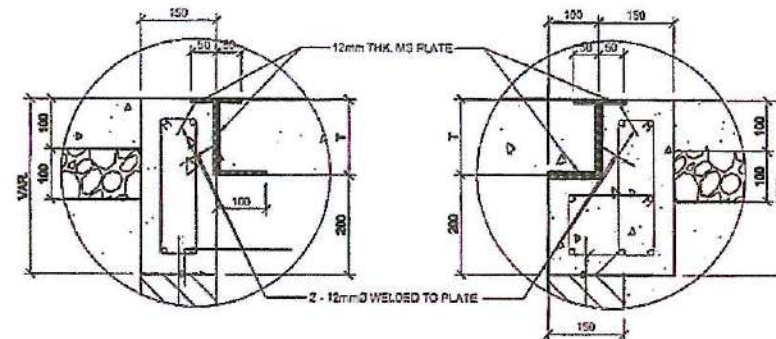
3 CROSS SECTION
SCALE 1:100 METERS

REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE DON FACIO DRIVE CORNER 2ND STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY OFFICE OF THE ASSISTANT DISTRICT ENGINEER	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.
	PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIG, INTRAMUROS MANILA	DRAFTED: NASHIF ALMORA-RYAN ENGINEER 2 PREPARED: LEONARDO P. DE GUZMAN ENGINEER 1	REVIEWED: WILLIAM A. SABATINO ENGINEER 1 DATE: 8/23/24	SUBMITTED: ALBERTO S. DURAN PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: ERNESTO P. PEONES OFFICE OF THE ASSISTANT DISTRICT ENGINEER	APPROVED: MIRON D. MACUD DISTRICT ENGINEER		RECOMMENDING APPROVAL: GREGORY A. OLLER DISTRICT ENGINEER	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER	S 05 05	17 22

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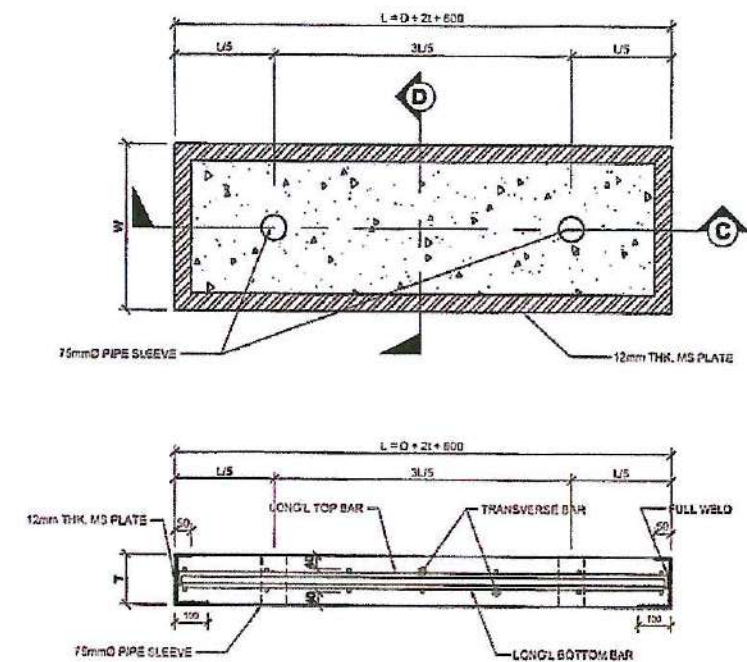


PLAN



DETAIL "A"

DETAIL "B"

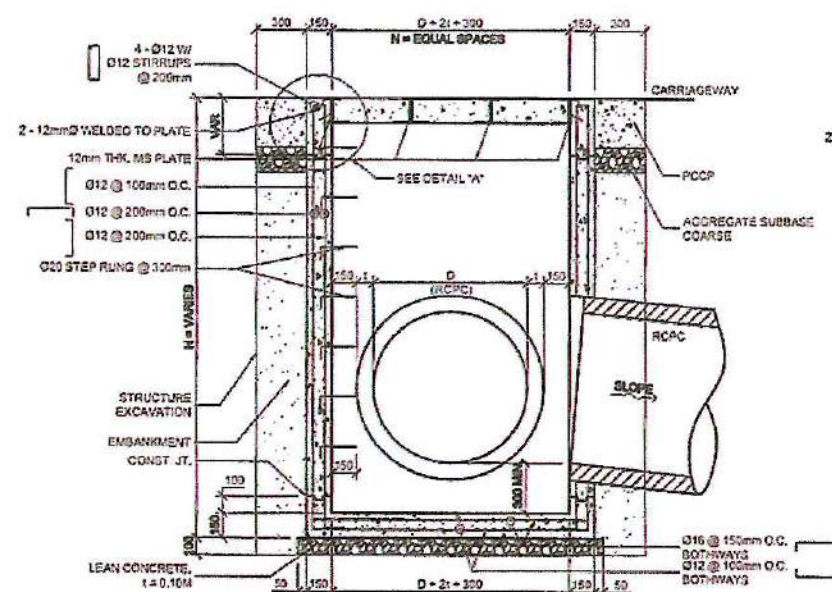


SECTION THRU C

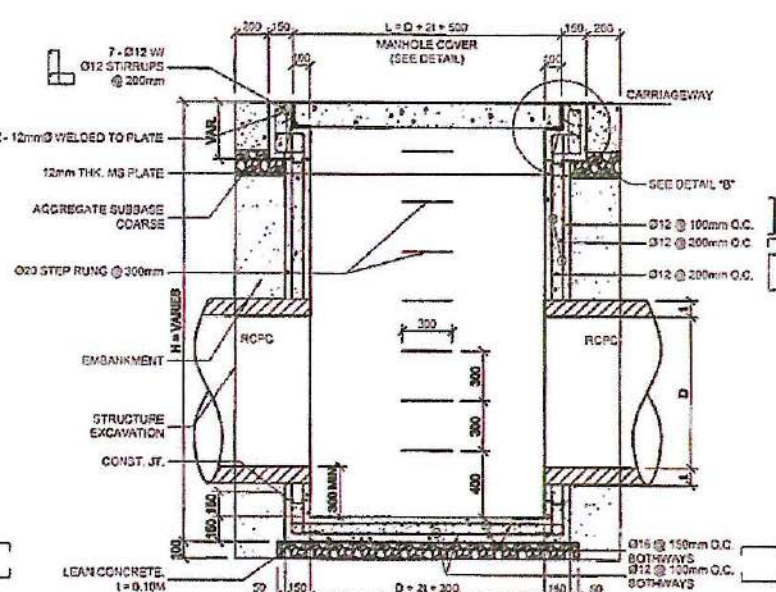
SECTION THRU D

REINF. MANHOLE COVER DETAIL

SCALE 1:10 mls



SECTION THRU A



SECTION THRU B

NOTES:

1. CONCRETE $f_c' = 21.00 \text{ MPa}$
2. REINFORCING BARS
USE STRUCTURAL GRADE DEFORMED BARS, $F_y = 278.00 \text{ MPa}$
3. STRUCTURAL STEEL - USE A36 STEEL, $F_y = 248.00 \text{ MPa}$
4. STRUCTURAL WELD - USE E-60XX ELECTRODE

DIMENSIONS IN MILLIMETERS OTHERWISE INDICATED

REINF. CONC. MANHOLE DETAIL



1:20 mls

MANHOLE COVER REINFORCEMENT SCHEDULE												
RCPC			No. of Manhole Cover, N	Dimension, mm			Bar Reinforcement					
Diameter, Ø		Wall Thickness, t _{min} mm		L	W	T	No. of Bar, pcs			Spacing, mm		
in	mm						4. mm	Long Bottom Bar	4. mm	Long Top Bar	4. mm	Transverse Bar
24	610	75	2	1260	530	320	16	4	12	5	12	75
30	760	88	3	1440	412	250	16	4	12	4	12	75
36	910	109	3	1810	472	250	16	5	12	5	12	75
42	1070	113	3	1900	523	330	16	4	16	4	12	109
48	1223	125	3	1970	520	300	16	4	16	4	12	100
60	1520	159	4	2320	530	360	20	4	16	4	12	100

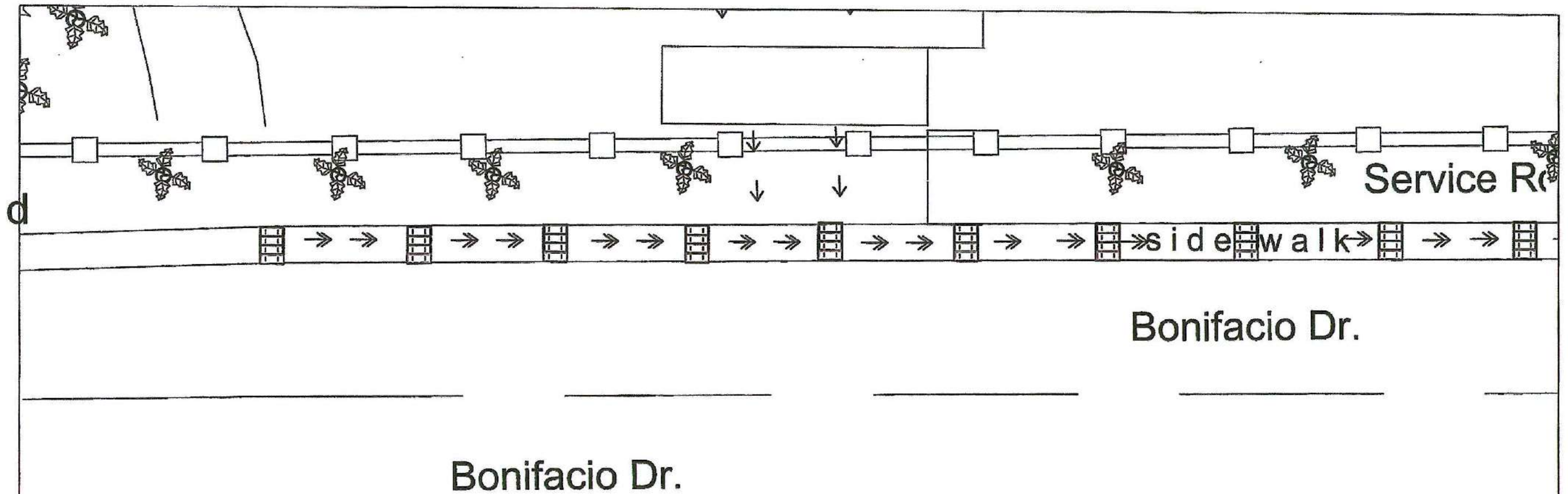
RCMH COVER REINF. SCHEDULE

SCALE

NTS

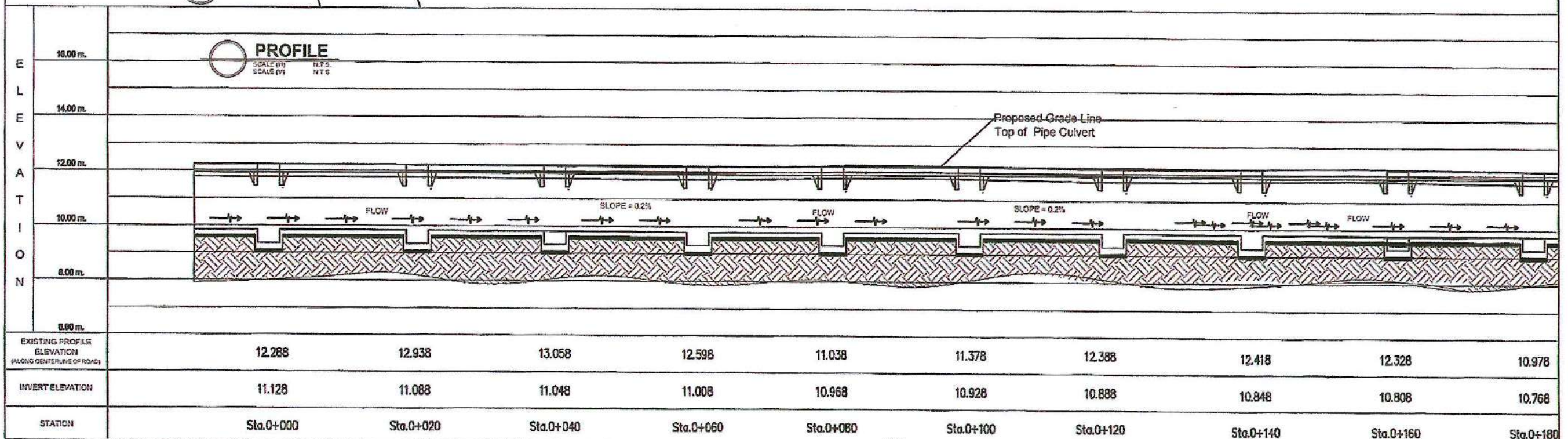
	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIG, INTRAMUROS MANILA	DRAFTED: NASHIF ALMUSA RYAN ENGINEER II	REVIEWED: WILLIAM M. SABATINO ENGINEER II DATE: 8/23/24	SUBMITTED: ALBERTO S. DURAN PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: ERNESTO P. LEONES OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MIGNON D. MACUD DISTRICT ENGINEER DATE:		RECOMMENDING APPROVAL: GREGORY A. SILER ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER DATE:	SET NO. S 08/08	SHEET NO. 18 22
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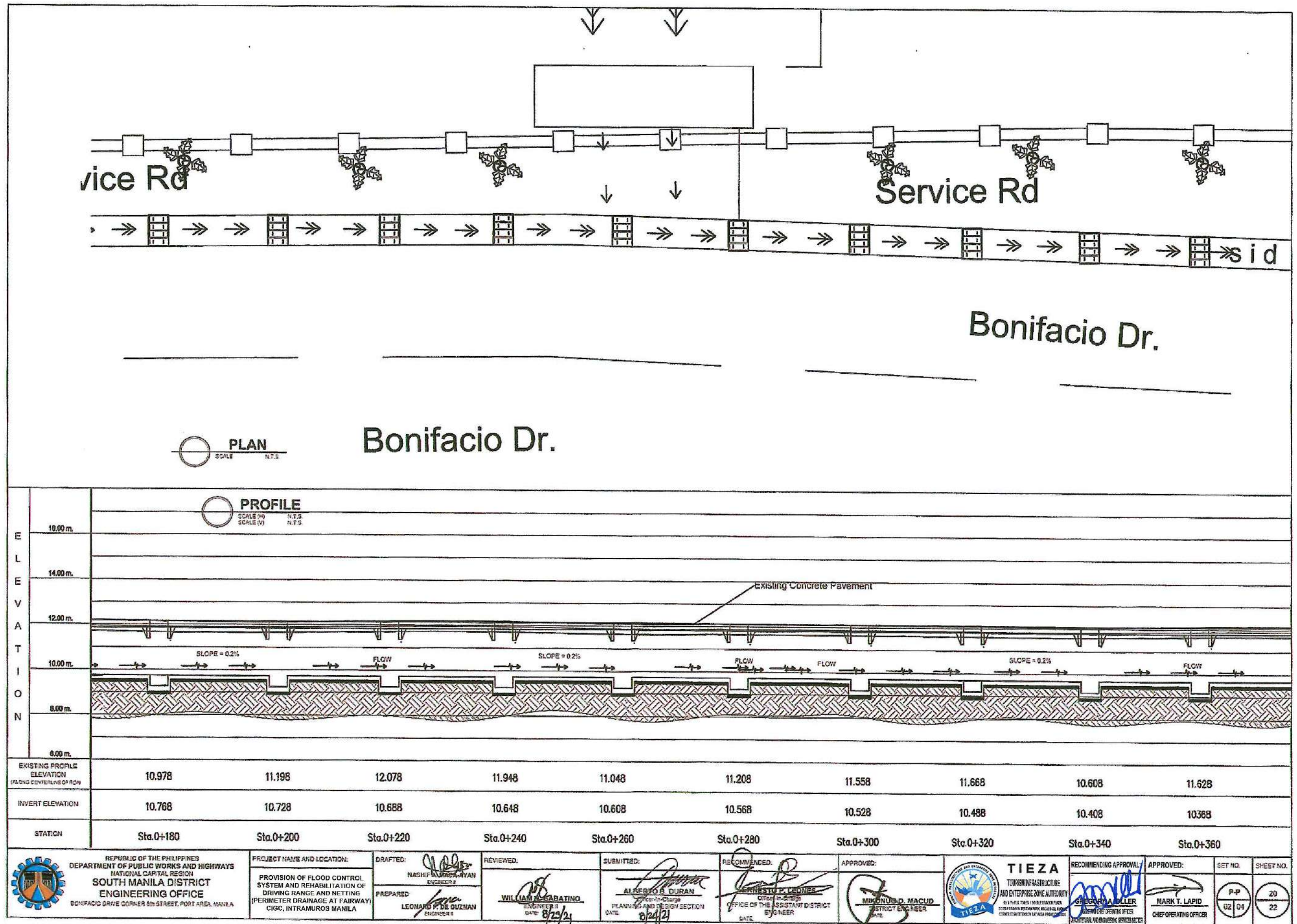
PLAN
SCALE N.T.S.

PROFILE
SCALE (H) N.T.S.
SCALE (V) N.T.S.

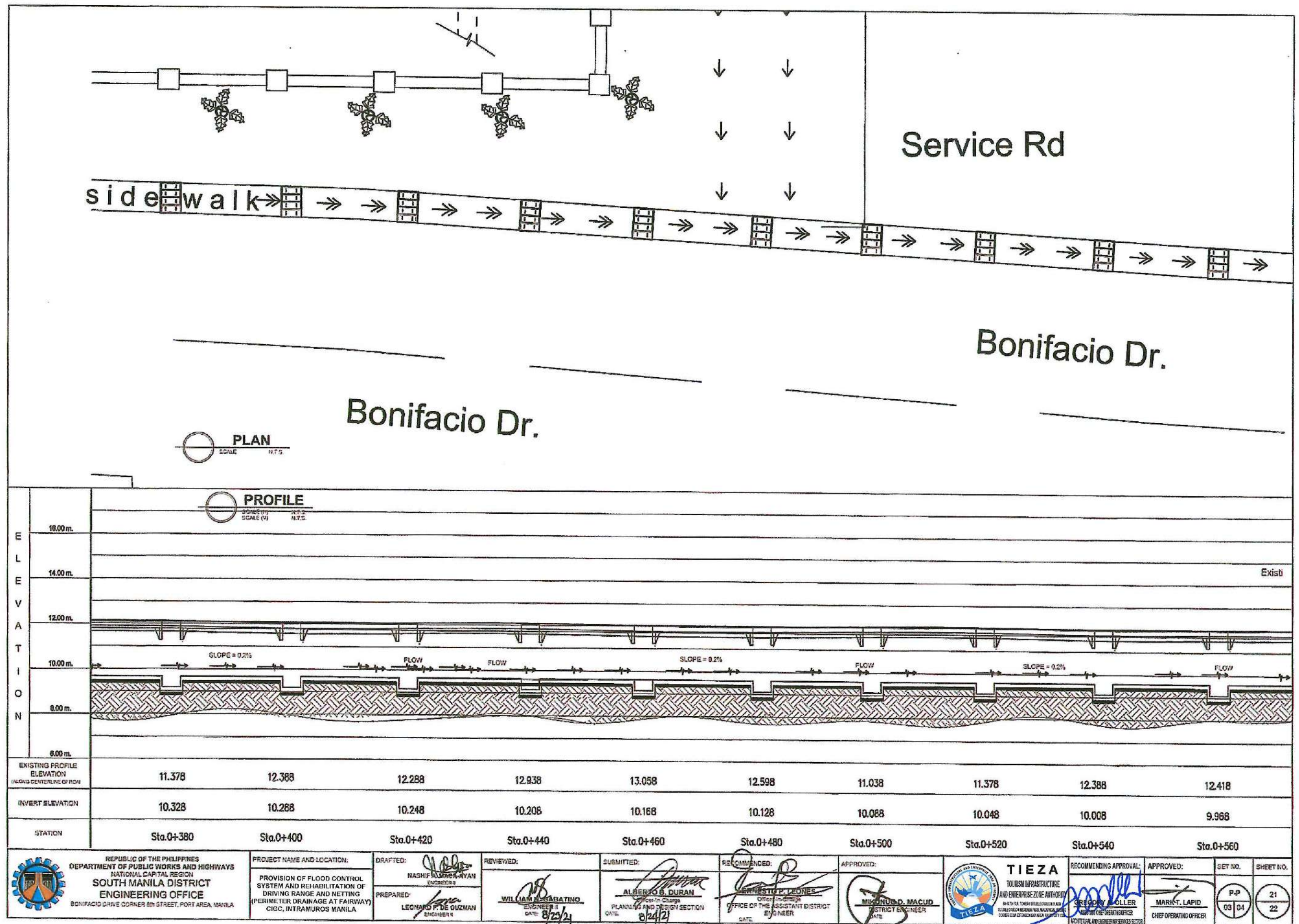


	REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 5th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION:	DRAFTED:	REVIEWED:	SUBMITTED:	RECOMMENDED:	APPROVED:		TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY 16-20 THE TORRE DEL SOL BUILDING COLLEGE ST. WALKER BLDG. 2ND FLOOR CORPORATE CENTER, MANILA 1000 TEL: (02) 8866-1000 FAX: (02) 8866-1001	RECOMMENDING APPROVAL:	APPROVED:	SET NO.	SHEET NO.	
		PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	NASHIF ALMAGUIRAN ENGINEER II	WILLIAM ALABATINO ENGINEER II DATE: 8/23/24	ALBERTO S. DURAN Office in Charge PLANNING AND DESIGN SECTION DATE: 8/24/24	ERNESTO P. LEONES Office in Charge OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	MICHON D. MACUD DISTRICT ENGINEER DATE:			GREGORY A. VALER DISTRICT ENGINEER DATE:	MARK T. LAPID CHIEF OPERATING OFFICER DATE:	P-P 01/04	19 22	
			PREPARED:											
			LEONARD P. DE GUZMAN ENGINEER II											

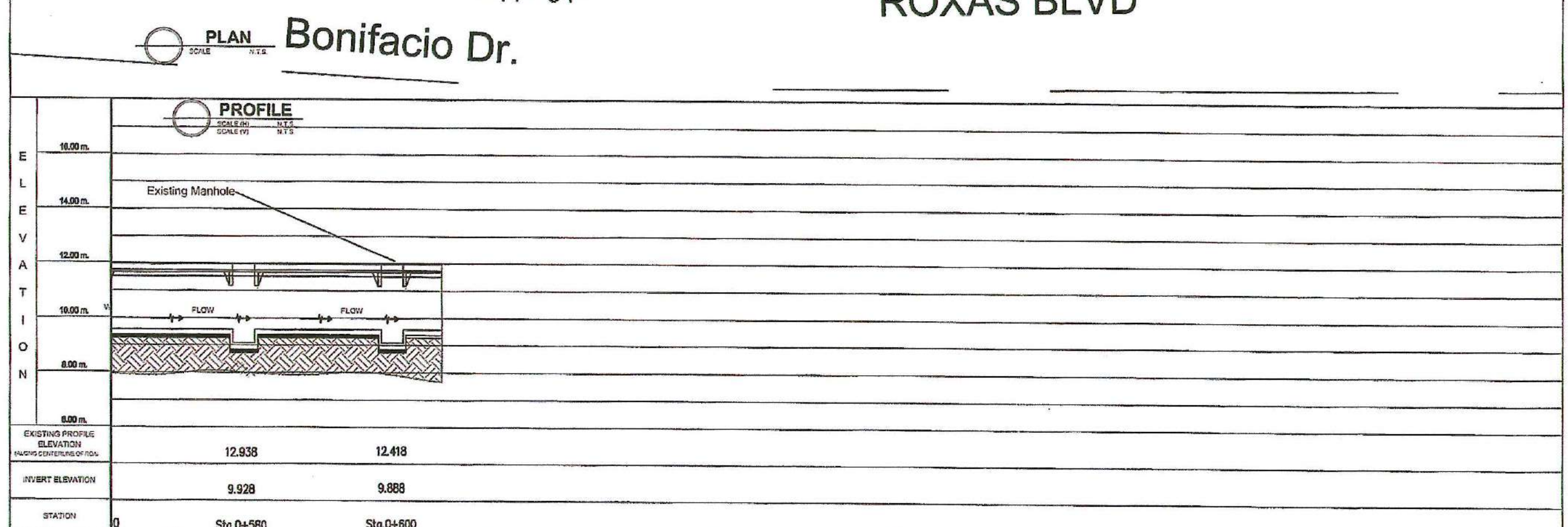
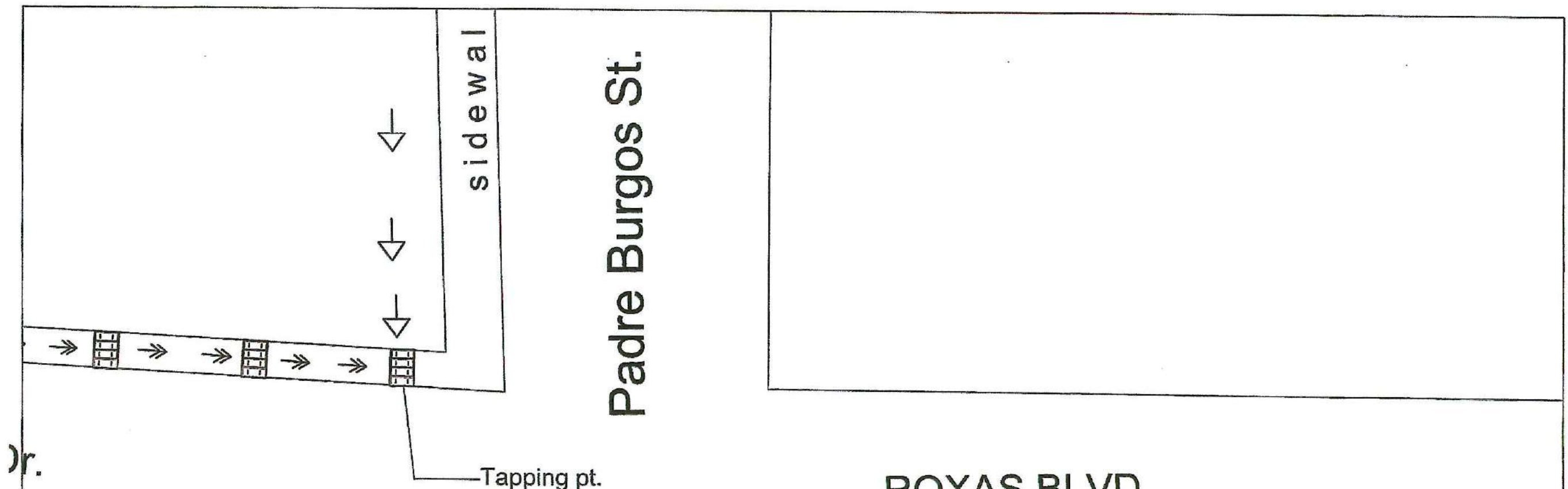
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REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS NATIONAL CAPITAL REGION SOUTH MANILA DISTRICT ENGINEERING OFFICE BONIFACIO DRIVE CORNER 8th STREET, PORT AREA, MANILA	PROJECT NAME AND LOCATION: PROVISION OF FLOOD CONTROL SYSTEM AND REHABILITATION OF DRIVING RANGE AND NETTING (PERIMETER DRAINAGE AT FAIRWAY) CIGC, INTRAMUROS MANILA	DRAFTED: NASHIF ALMABAYAN ENGINEER 2	REVIEWED: WILLIAM N. SABATINO ENGINEER 1 DATE: 8/23/24	SUBMITTED: ALBERTO S. DURAN PLANNING AND DESIGN SECTION DATE: 8/24/24	RECOMMENDED: ERNESTO P. LEONES OFFICE IN CHARGE OFFICE OF THE ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MIKONIL D. MACUD DISTRICT ENGINEER DATE:	TIEZA TOURISM INFRASTRUCTURE AND ENTERPRISE ZONE AUTHORITY AS A PUBLIC TRUSTEY UNDER PROVISIONS OF THE TOURISM ACT (RA 9593) AND OTHER LAWS GOVERNING THE TOURISM INDUSTRY	RECOMMENDING APPROVAL: GREGORY A. MILLER ASSISTANT DISTRICT ENGINEER DATE:	APPROVED: MARK T. LAPID CHIEF OPERATING OFFICER DATE:	SET NO. P-P 04/04	SHEET NO. 22 22
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