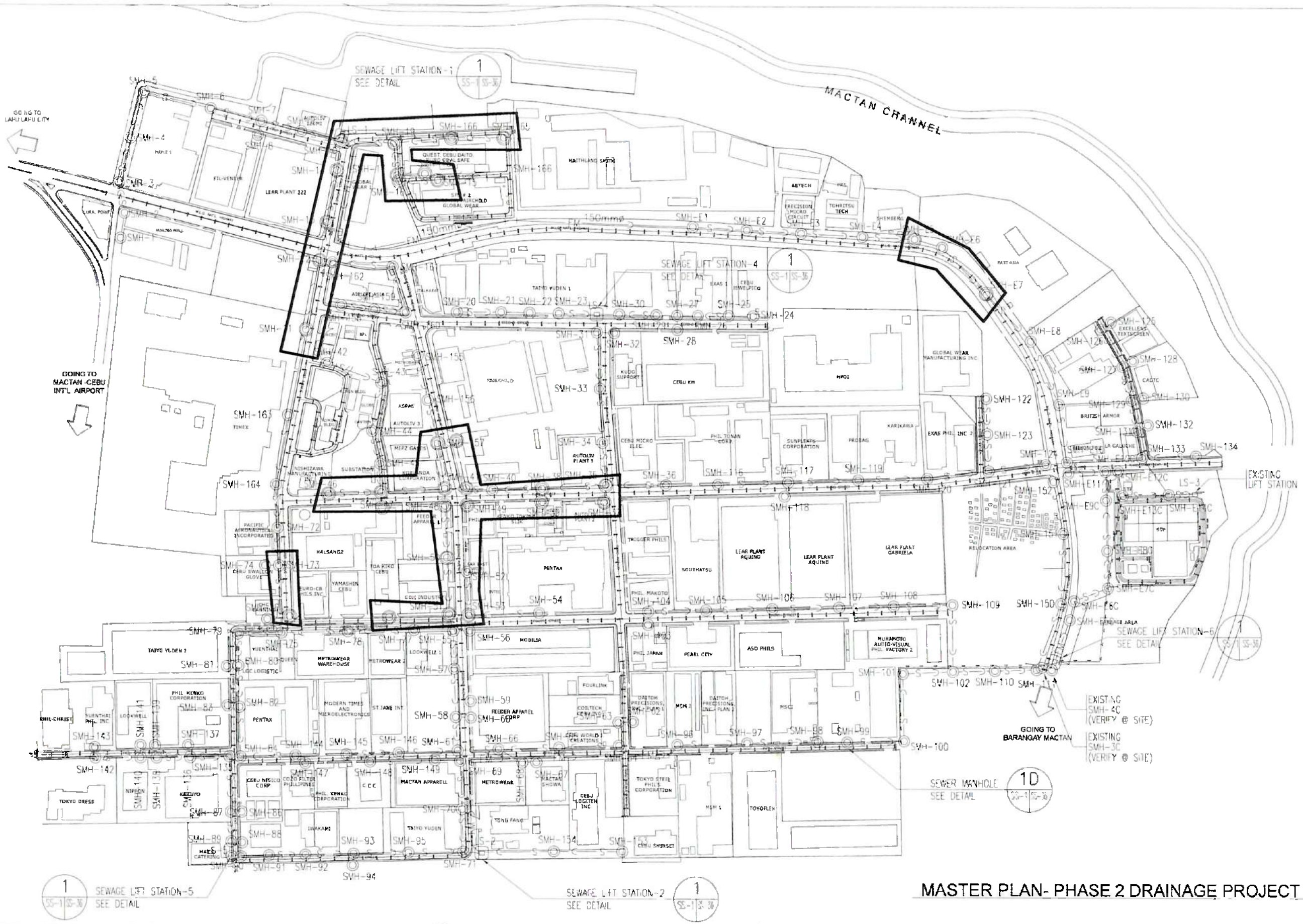


MASTER PLAN- PHASE 2 DRAINAGE PROJECT

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 9th Floor, Feliza Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Telefax: (632) 811 16	KARLO M. JUMALON ENGINEER III ARIANNE Z. DE MAQUINAD PROJECT DEVELOPMENT OFFICIAL	LOUIE EVANS E. ESOTO DIVISION CHIEF II, EWD	ARNEL M. SUYU ZM/DEPUTY DIRECTOR	EMMANUEL D. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		1

SEWER MANHOLE		SMH-14	SMH-13	SMH-12	SMH-11	SMH-163	SMH-164	SMH-72	SMH-73
STATION	0+000	0+032.72	0+107.85	0+163.30	0+263.30	0+387.493	0+486.87	0+546.45	0+600.00
TOP ELEVATION		14.23	15.79	16.75	23.39	23.99	23.20	20.86	17.76
INLET INV. ELEV.		12.830	14.390	15.350(SMH-11) 14.706(SMH-162)	-	-	21.800	19.460	16.360(SMH-72) 16.211(SMH-74)
OUTLET INV. ELEV.		12.800	14.360	14.676	21.990	22.500	21.770	19.430	16.181

1 SS-4 SS-6

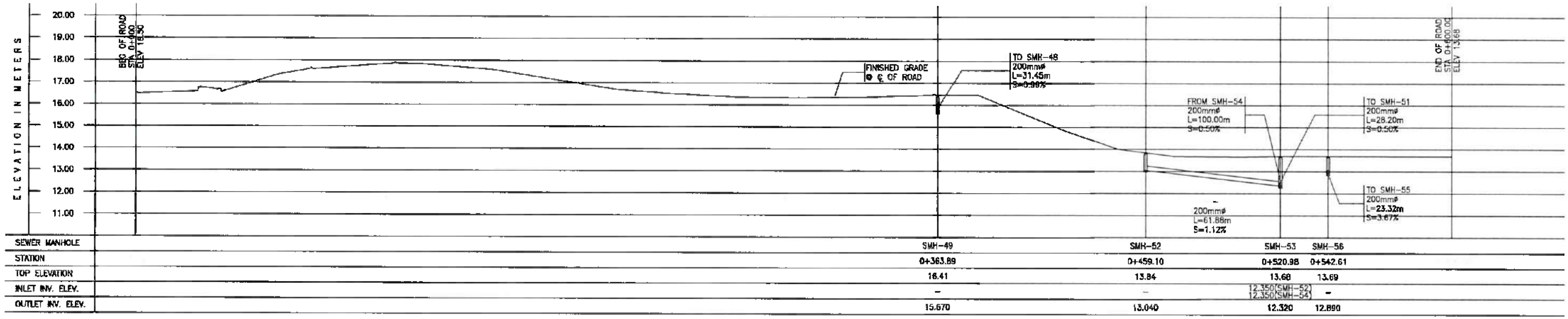
SEWER LAYOUT – 1ST AVENUE

SCALE HOR. 1:1000 VERT. 1:100

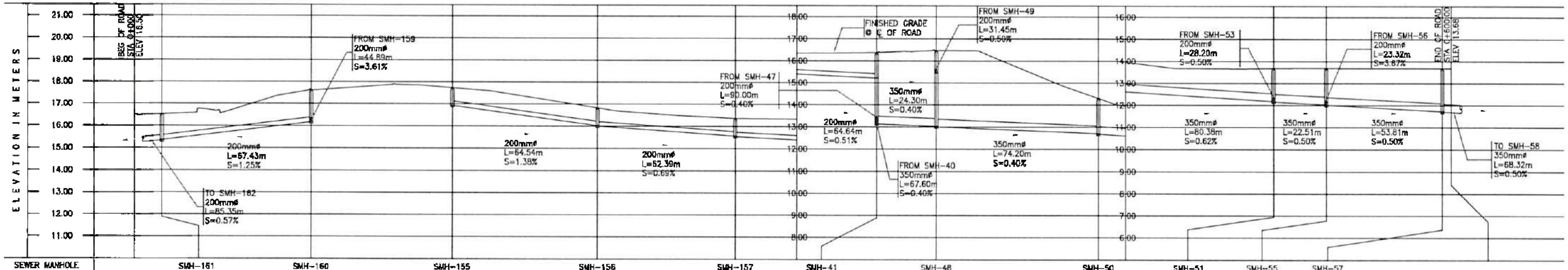
GRAPHIC SCALES :

10000 20000 60000
1000 0 2000 6000
SCALE 1:100 1:1000

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED BY	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO.
PHILIPINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 6th Floor, Farla Building, 106 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Tel No.s 8178574 to 77	KARLO M. JUMALON ENGINEER II ARIANNE F. DOMINQUINAD ENGINEER III / OIC	LOUIE EVANS E. ESOTO DIVISION CHIEF II, EMD	ARNEL D. SUYU ZONE OPERATIONS	EMMANUEL D. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ WASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY CEBU		2



SEWER MANHOLE					SMH-49	SMH-52	SMH-53	SMH-56
STATION					0+363.89	0+459.10	0+520.98	0+542.61
TOP ELEVATION					16.41	13.84	13.68	13.69
INLET INV. ELEV.					–	–	12.350(SMH-52) 12.350(SMH-54)	–
OUTLET INV. ELEV.					15.670	13.040	12.320	12.890



SEWER MANHOLE	SMH-161	SMH-160	SMH-155	SMH-156	SMH-157	SMH-41	SMH-48	SMH-50	SMH-51	SMH-55	SMH-57
STATION	0+12.532	0+80.07	0+143.76	0+209.390	0+80.06	0+336.26	0+363.51	0+437.72	0+518.10	0+542.00	0+585.81
TOP ELEVATION	16.52	17.62	17.73	16.83	17.62	16.38	16.34	14.30	13.50	13.69	13.68
INLET INV. ELEV.	15.350	16.220	–	16.031	15.568	13.235(SMH-40) 15.209(SMH-157)	13.164(SMH-47)	12.709	12.178(SMH-50) 12.178(SMH-53)	12.035(SMH-51) 12.035(SMH-56)	11.735
OUTLET INV. ELEV.	15.320	16.190	16.922	16.001	15.538	13.134	13.008	12.679	12.148	12.005	11.705

GRAPHIC SCALES :

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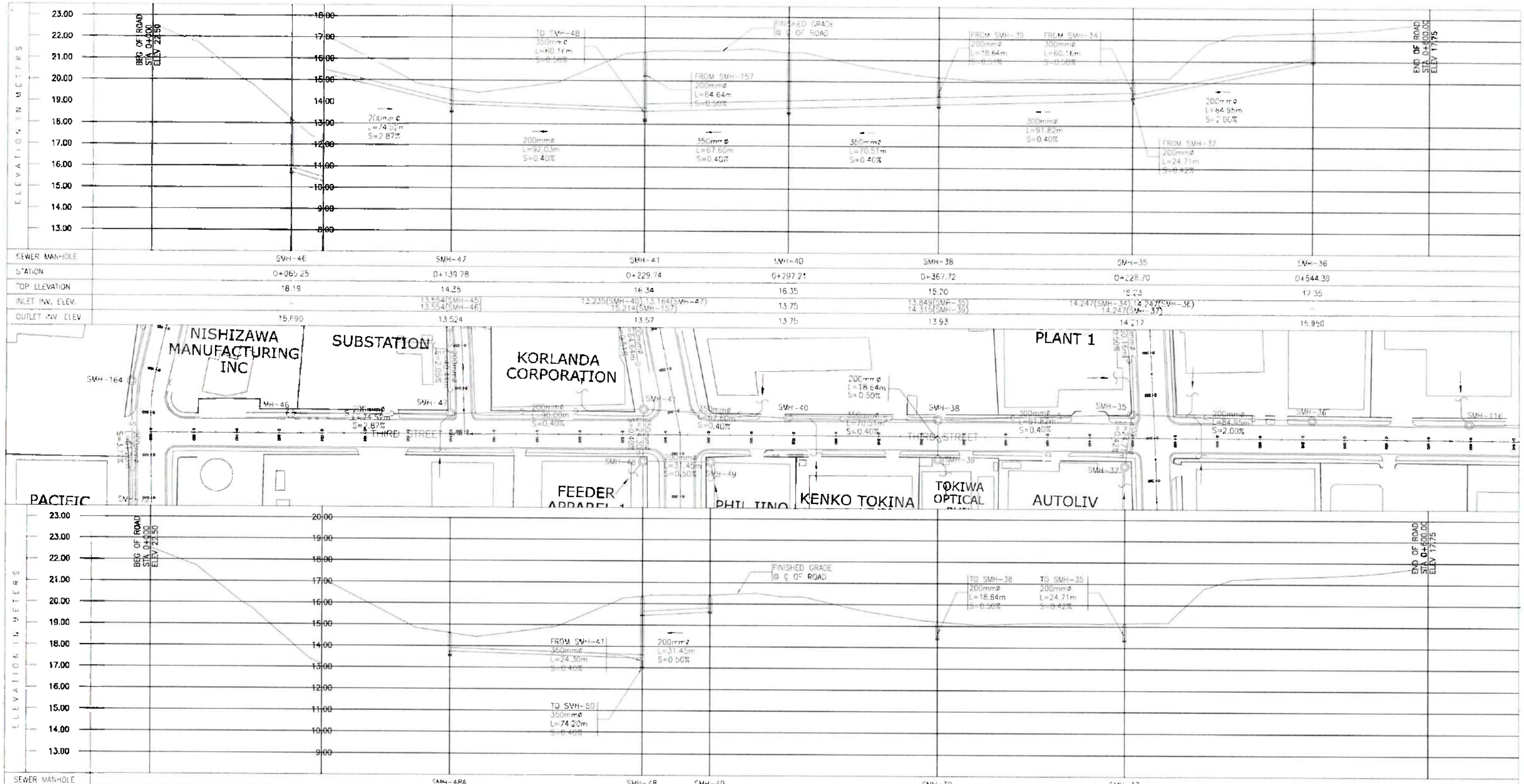
SCALE 1:100 1:1000

1 SEWER LAYOUT – 2ND AVENUE

SCALE HOR. 1:1000 VERT. 1:100

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO.
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 9th Floor, Felisa Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Tel.Nos. 8176311 to 15	KARLO M. ZULUETA ENGINEER III ARIANNE FLOR MAQUINAD ENGINEER II/BUILDING OFFICIAL	LOUIE EVANS E. ESOTO DIVISION CHIEF II, EMD	ARNEL M. SUYU ZONE OPERATIONS	EMMANUEL V. CORTERO ZONE ADMINISTRATOR MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		3



SEWER MANHOLE	SMH-46	SMH-47	SMH-41	SMH-40	SMH-38	SMH-35	SMH-36
STATION	0+065.25	0+139.78	0+229.74	0+297.21	0+367.72	0+428.70	0+644.39
TOP ELEVATION	18.19	14.35	16.34	16.35	15.20	15.23	17.35
INLET INV. ELEV.	-	13.554(SMH-45) 13.554(SMH-46)	13.235(SMH-40) 13.164(SMH-47) 15.214(SMH-157)	13.75	13.849(SMH-35) 14.315(SMH-39)	14.247(SMH-34) 14.247(SMH-37) 14.247(SMH-38)	-
OUTLET INV. ELEV.	15.690	13.524	13.57	13.75	13.93	14.217	15.950

SEWER MANHOLE	SMH-48A	SMH-48	SMH-49	SMH-39	SMH-37
STATION	0+139.78	0+299.35	0+260.80	0+367.61	0+456.28
TOP ELEVATION	14.38	16.34	16.41	15.21	15.15
INLET INV. ELEV.	13.554(SMH-45) 13.554(SMH-46)	13.036(SMH-41) 15.452(SMH-49)	-	-	-
OUTLET INV. ELEV.	13.524	13.006	15.610	14.410	14.350

1 / SS-13 SS-13 — SEWER LAYOUT – 3RD STREET

SCALE HOR. 1:1000 VERT. 1:100

GRAPHIC SCALES :

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1000 0 2000 6000

SCALE 1:100 1:1000

OWNER/CLIENT:
PHILIPIINE ECONOMIC ZONE AUTHORITY
MACTAN ECONOMIC ZONE
LAPU-LAPU CITY, CEBU

PROJECT CONSULTANT:
TCGI ENGINEERS
(the Ridge, Fe za Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines * Tel Nos.: 8178311 to 19

PREPARED:
KAEDO M. JOKYALON
ENGINEER
ARIANNE FLORA AQUINAD
ENGINEER / DRAFTING OFFICIAL

REVIEWED BY:
LOUIE EVANS E. ESOTO
DIVISION CHIEF II, EMD

RECOMMENDING APPROVAL:
ARNEL M. SUYU
ZMD/OIC-DM, OPERATIONS

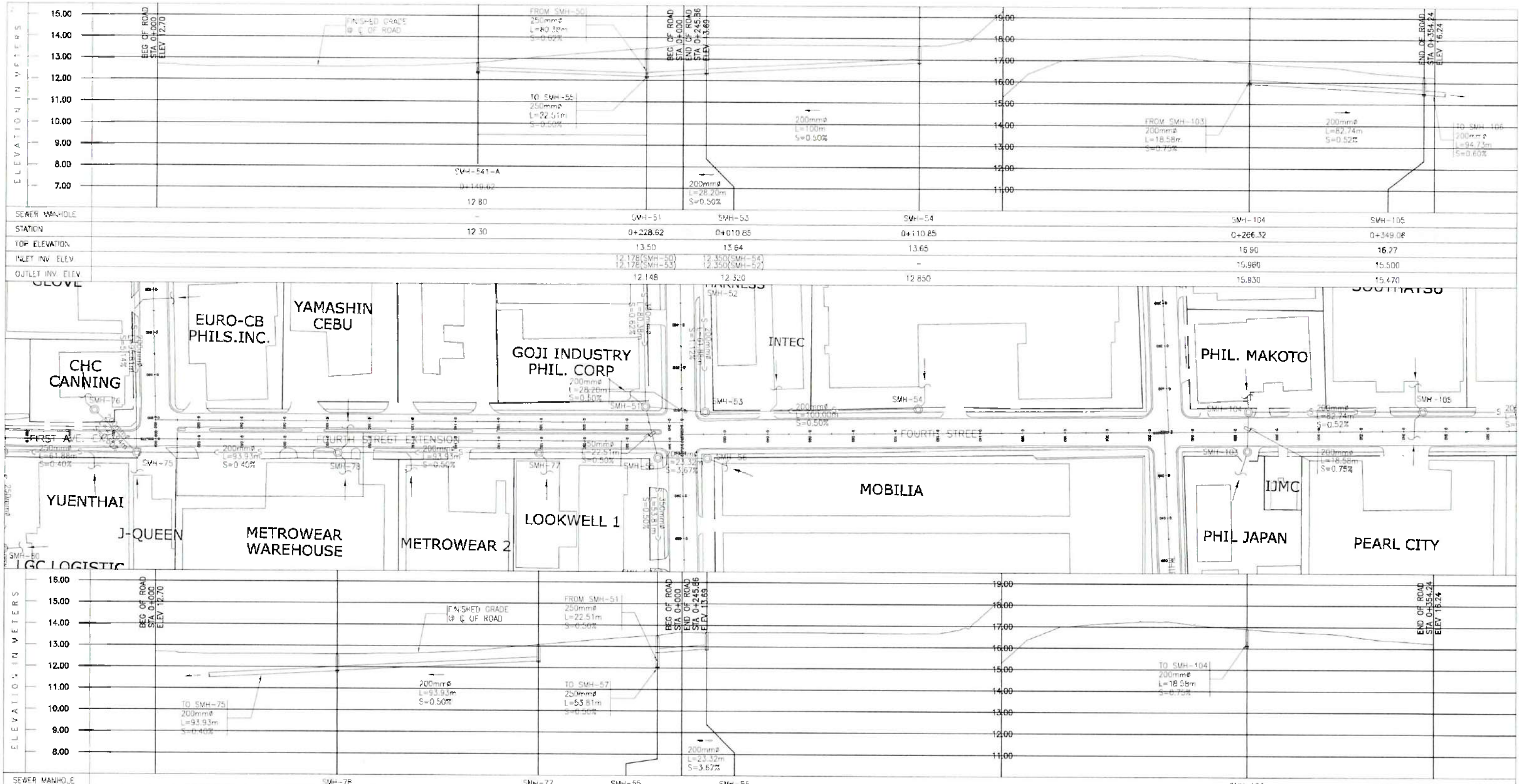
APPROVED BY:
EMMANUEL O. CORTERO
ZONE ADMINISTRATOR MEZ

PROJECT TITLE:
REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM
PHASE II
SEWER LINE

LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU

SHEET CONTENTS:

SHEET NO: 4



1 SEWER LAYOUT – 4TH STREET
55-175S-17 SCALE HOR. 1:1000 VERT. 1:100

GRAPHIC SCALES :
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SCALE 1:100 1:1000

OWNER/CLIENT:
PHILIPINE ECONOMIC ZONE AUTHORITY
MACTAN ECONOMIC ZONE
LAPU-LAPU CITY, CEBU

PROJECT CONSULTANT:
TCGI ENGINEERS
5th Floor, Feliza Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Tel Nos. 8184571 to 76

PREPARED:
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ENGINEER III
ARIANNE FLOR MAQUINAD
ENGINEER V/ HEADING OFFICIAL

REVIEWED BY:
LOUIE EVANS E. ESOTO
DIVISION CHIEF II EMD

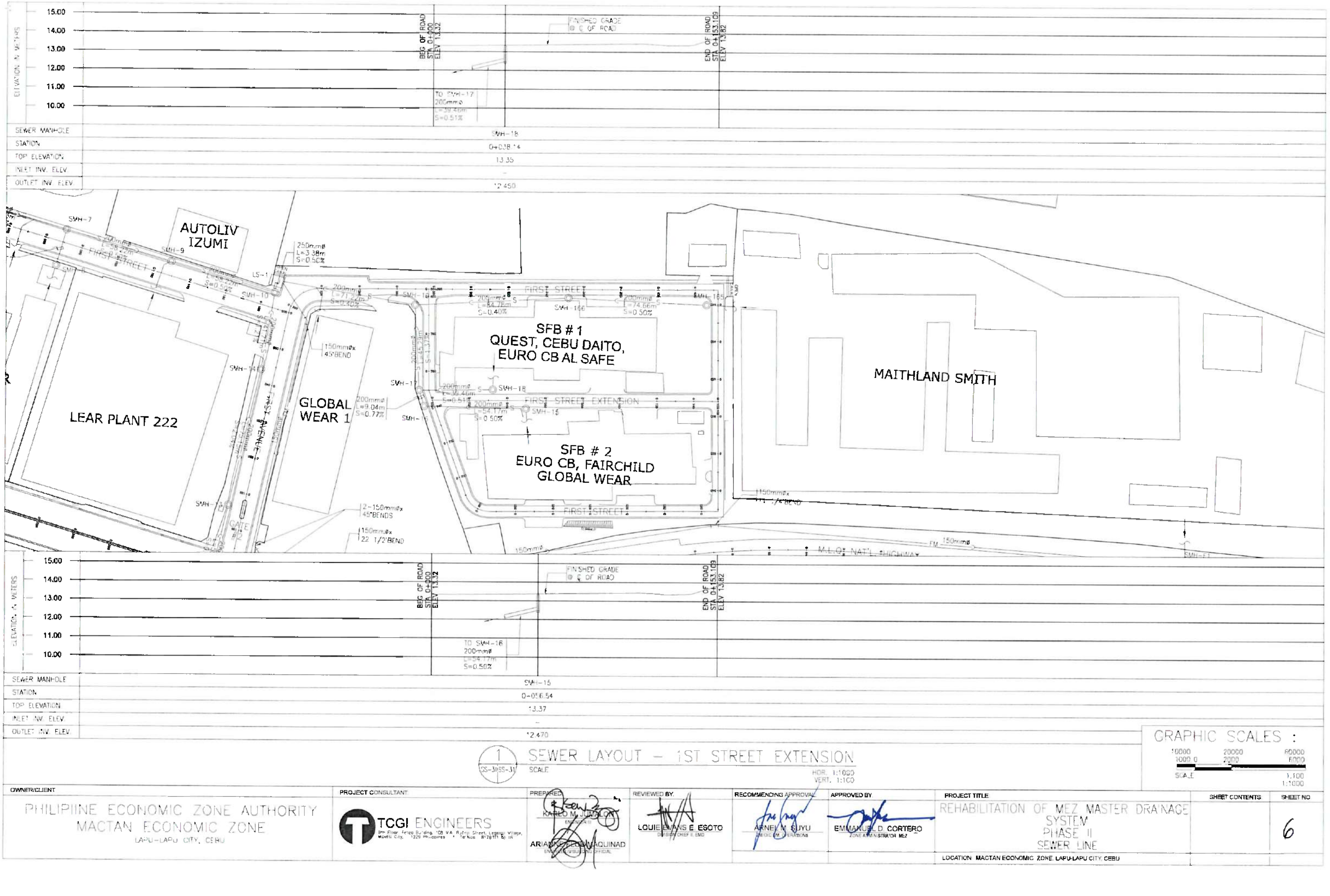
RECOMMENDING APPROVAL:
ARVEL M. SUTU
ZM/OIC DIV. OPERATIONS

APPROVED BY:
EMMANUEL D. CORTERO
ZONE ADMINISTRATOR, MEZ

PROJECT TITLE:
REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM
PHASE II
SEWER LINE
LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU

SHEET CONTENTS:

SHEET NO: 5



1 SEWER LAYOUT – 1ST STREET EXTENSION
CS-3HSS-31 SCALE HOR. 1:1000 VERT. 1:100

GRAPHIC SCALES :
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OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 8th Floor, Feliza Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Tel Nos. 8178111 to 18	KARLO M. JUMALON ENGINEER III ARIADNE P. CUBINAQUINAD ENGINEER/BUILDING OFFICIAL	LOUIE EVANS E. ESOTO DEVELOPMENT CHIEF II, EMD	ARNEL M. SUYU CHIEF, EM - OPERATIONS	EMMANUEL D. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		6

SEWER MANHOLE	SMH-16	SMH-17	SMH-19
STATION	0+742.67	0+749.50	0+795.60
TOP ELEVATION	13.33	13.20	12.42
INLET INV. ELEV.	12.200	12.100(SMH-16) 12.250(SMH-18)	11.450(SMH-17) 11.380(SMH-166)
OUTLET INV. ELEV.	12.170	12.070	11.350

1 / SS-30 SS-30 — SEWER LAYOUT – 1ST STREET (CONTINUATION)

SCALE HOR. 1:1000
VERT. 1:100

GRAPHIC SCALES :

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1000 0 2000 6000

SCALE 1:100
1:1000

OWNER/CLIENT
PHILIPINE ECONOMIC ZONE AUTHORITY
MACTAN ECONOMIC ZONE
LAPU-LAPU CITY, CEBU

PROJECT CONSULTANT:
TCGI ENGINEERS
9th Floor, Filipizo Building, 508 V.A. Rufino Street, Legaspi Village, Makati City. 1229 Philippines • Tel Nos.: 8728311 to 15

PREPARED:
KARL DAVE JUMALON
ENGINEER II
ARIANNE FLORA AQUINAD
ENGINEER V/BUILDING OFFICIAL

REVIEWED BY
LOUIE EVANS E. ESOTO
DIVISION CHIEF II, EMD

RECOMMENDING APPROVAL:
ARNEL M. SUYU
ZONE OPERATIONS

APPROVED BY
EMMANUEL D. CORTERO
ZONE ADMINISTRATOR, MEZ

PROJECT TITLE
REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM
PHASE II
SEWER LINE

LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU

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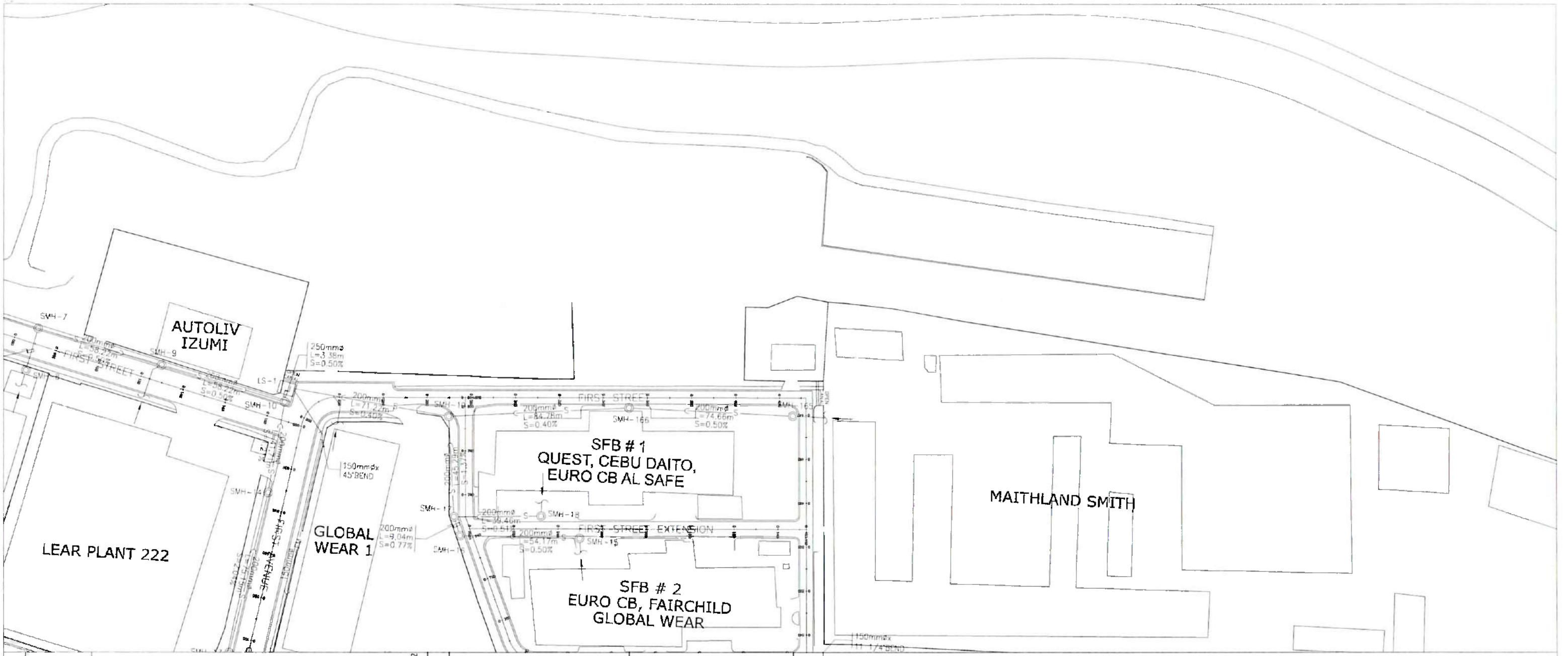

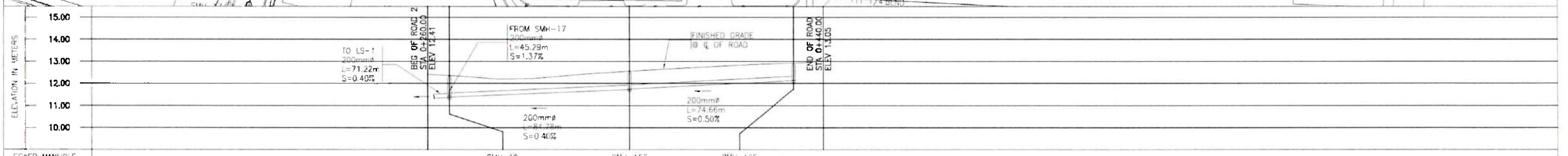

SEWER MANHOLE	SMH-19	SMH-166	SMH-165
STATION	0+269.80	0+351.48	0+426.05
TOP ELEVATION	12.35	12.55	12.92
INLET INV. ELEV.	11.450(SMH-17) 11.380(SMH-166)	11.750	-
OUTLET INV. ELEV.	11.350	11.720	12.120

1 SEWER LAYOUT – 1ST STREET (CONTINUATION)
SS 28/SS-29 SCALE HOR. 1:1000 VERT. 1:100

GRAPHIC SCALES :
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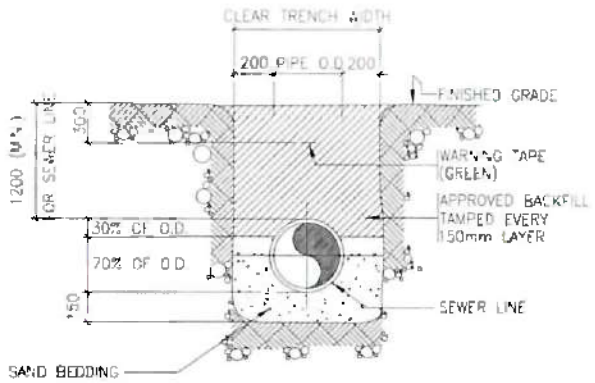
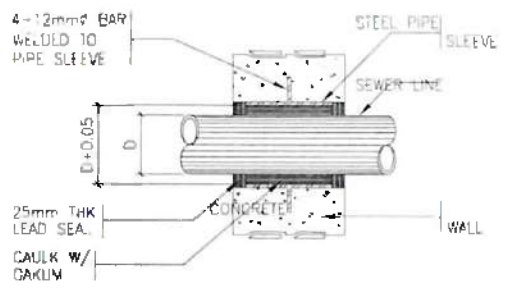
SCALE 1:100 1:1000

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 2/F Rayo Tower Building, 108 V.A. Rufino Street, Legaspi Village, Makati City 1229 Ph. Phones • Telefax 8178511 to 16	KARLO C. NILDALON DESIGNER III ARIANNE FLOR M. QUINAD ENGINEER IV/ SIGNING OFFICIAL	LOUIE EVANS E. ESOTO DIVISION CHIEF II, EMD	ARNEL M. SUYU AVP/OIC-OM-OPERATIONS	EMMANUEL O. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		8



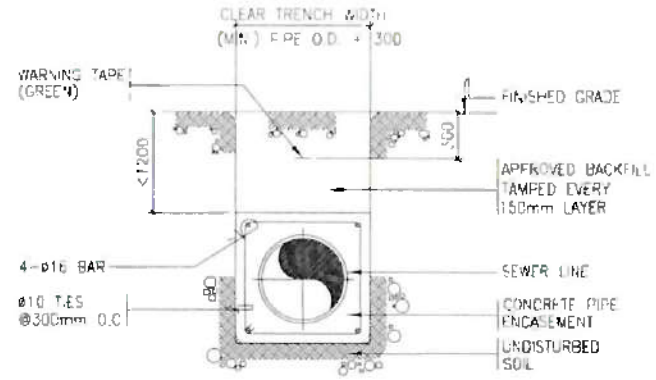
1A PIPE TRENCH BEDDING

SS-37 SS-37 NOT TO SCALE



1B PIPE SLEEVE

SS-37 SS-37 NOT TO SCALE

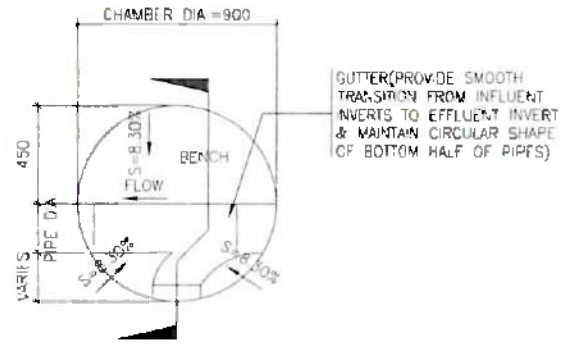


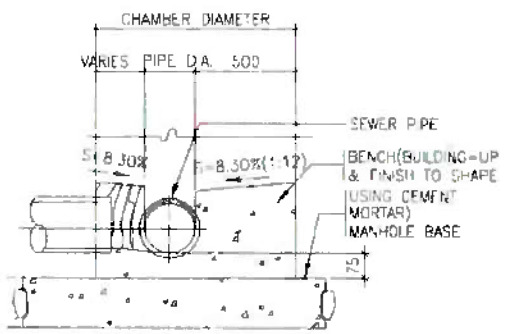
1C CONCRETE PIPE ENCASEMENT

SS-37 SS-37 NOT TO SCALE

NOTES:

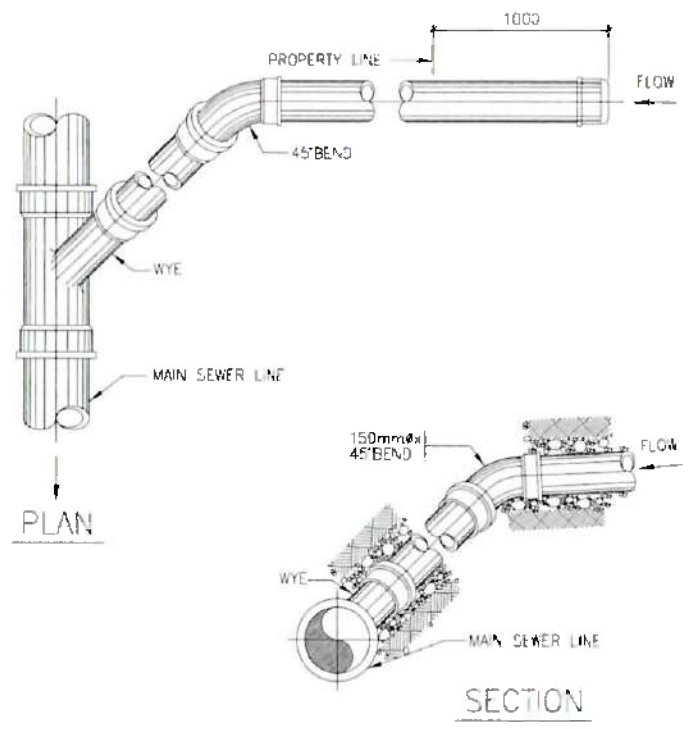
1. MANHOLE DETAILS ARE TYPICAL ONLY. ACTUAL LAYOUTS WILL VARY ACCORDING TO LOCATION, ELEVATION, AND NUMBER OF INLETS.
2. WHERE THE INCOMING PIPES CANNOT BE CONNECTED AT THE BENCHING AND THE DROP IS GREATER THAN 600mm, AN EXTERNAL DROP SHAFT (DROP MANHOLE) SHALL BE USED.
3. HEIGHT OF CHAMBER RINGS SHALL BE 500mm OR 1000mm
4. MANHOLE FRAME AND COVER SHALL BE OR APPROVED EQUAL TOP OF MANHOLE SHALL BE FLUSHED WITH THE FINISHED GRADE OF PAVED AREA TOP ELEVATIONS INDICATED IN THE PLANS ARE BASED ON ROAD CENTER LINE ELEVATION AND SHALL BE ADJUSTED ACCORDINGLY.
5. COUNTER SUNK PLUG SHALL BE METMA MODEL M-335-D OR APPROVED EQUAL FOR GROUND CLEAN-OUT.
6. FOR OUTLET PIPE OF 300mmø AND SMALLER, USE CHAMBER DIAMETER EQUAL TO 900 mm. FOR OUTLET PIPE OF 350mmø AND LARGER, USE CHAMBER DIAMETER EQUAL TO 1200mm.





1D BENCH GUTTER

SS-37 SS-37 NOT TO SCALE



1E SEWER SERVICE CONNECTION

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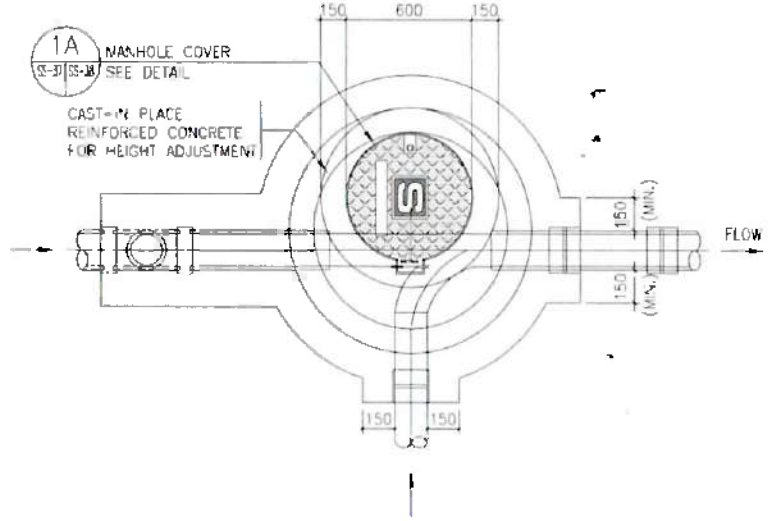


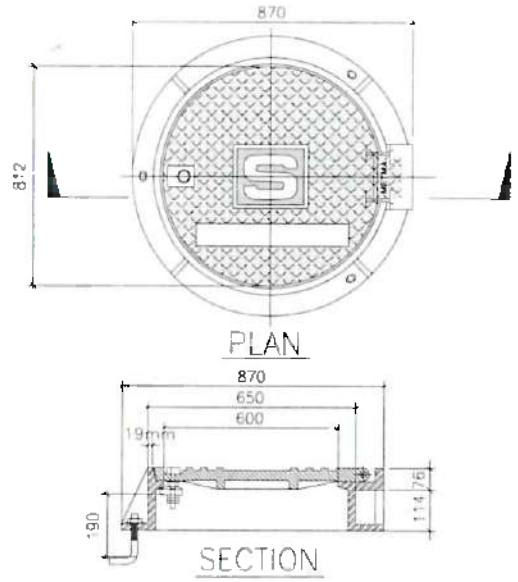
1F TYPICAL PLAN AT MANHOLE COVER

SS-37 SS-37 NOT TO SCALE

1 MISCELLANEOUS STANDARD DETAIL – I

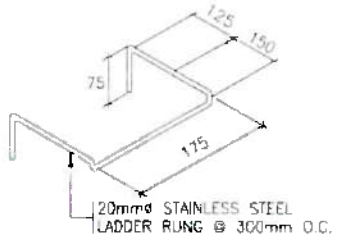
SS-37 SS-37 NOT TO SCALE

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO.
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 9th Floor, Felina Building, 108 V.A. Rufino Street, Legaspi Village, Makati City 1229 Philippines • Tel Nos 8176311 to 16	KARLO M. JUMALON ENGINEER III ARIANNE FLOR MAQUINAD ENGINEER V/BUILDING OFFICIAL	LOUIE EVANS E. ESOTO DIVISION CHIEF II, EMD	ARNEL M. GUYU DIVISION OPERATIONS	EMMANUEL O. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE II SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		9



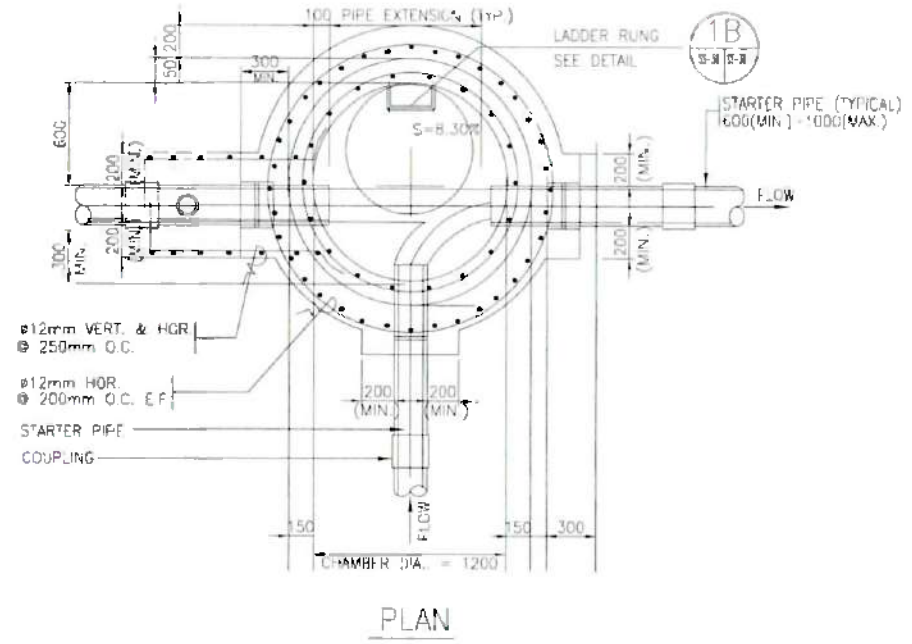
1A MANHOLE FRAME & COVER

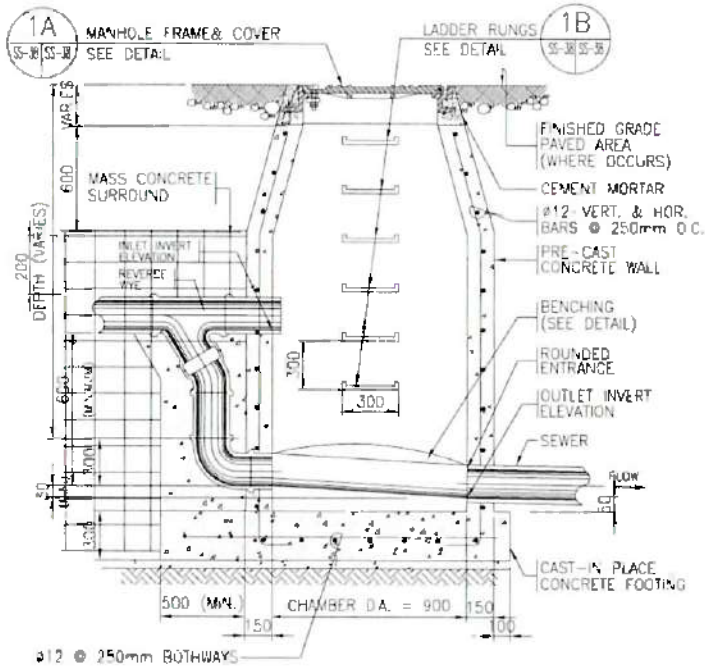
SS-3B | SS-3B NOT TO SCALE



1B LADDER RUNG

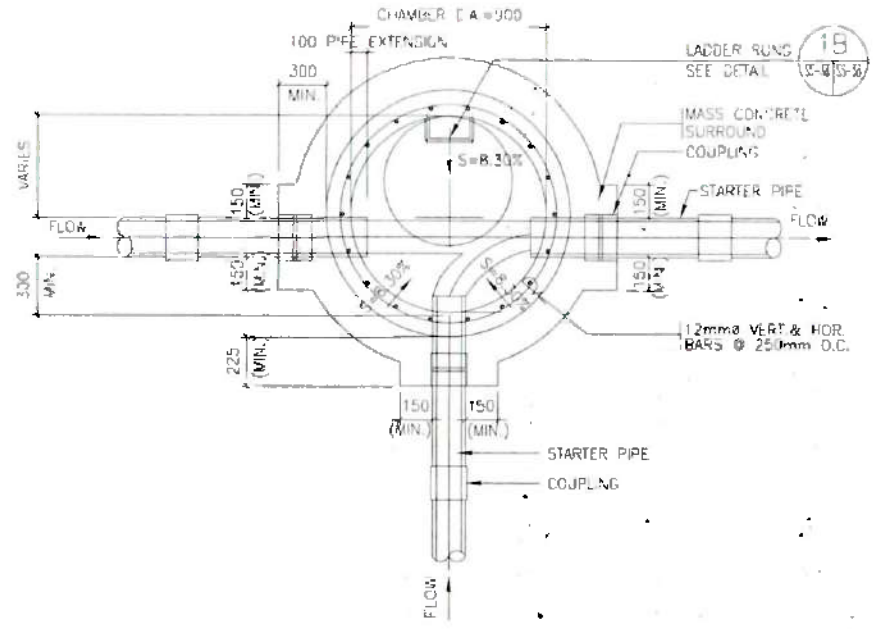
SS-3B | SS-3B NOT TO SCALE

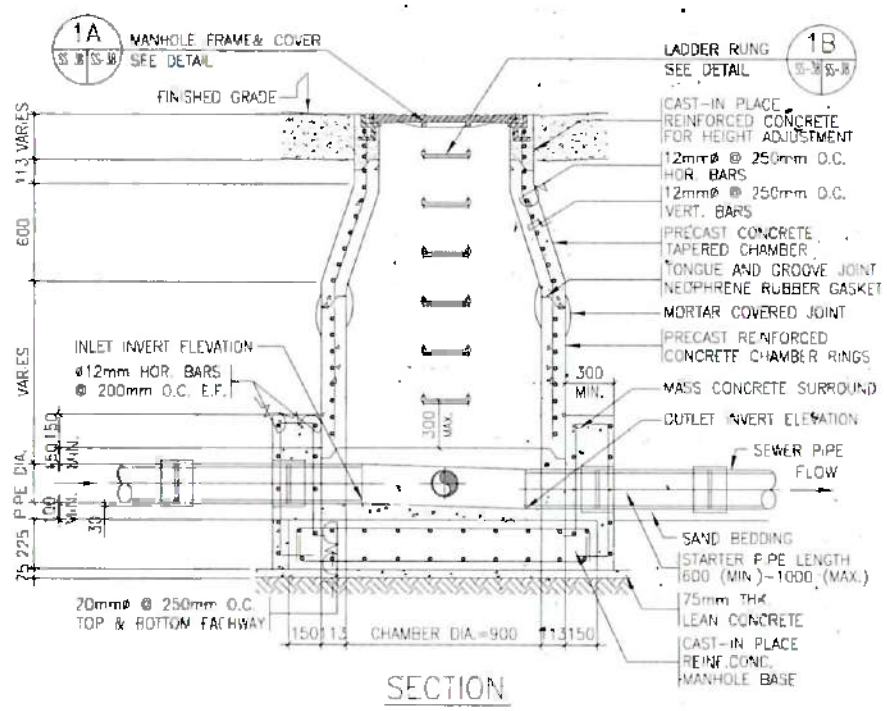




1C SEWER DROP MANHOLE

SS-3B | SS-3B NOT TO SCALE





1D SEWER MANHOLE

SS-3B | SS-3B NOT TO SCALE

1 MISCELLANEOUS STANDARD DETAIL - II

SS-3B | SS-3B NOT TO SCALE

OWNER/CLIENT	PROJECT CONSULTANT	PREPARED	REVIEWED BY	RECOMMENDING APPROVAL	APPROVED BY	PROJECT TITLE	SHEET CONTENTS	SHEET NO
PHILIPIINE ECONOMIC ZONE AUTHORITY MACTAN ECONOMIC ZONE LAPU-LAPU CITY, CEBU	TCGI ENGINEERS 9th Floor, Feliza Building, 108 V.A. Rufino Street, Legaspi Village, Makati City, 1229 Philippines • Tel Nos. 812 2837 to 16	KARLO M. DUMALON ENGINEER III ARIANNE FLORA AQUINAD ENGINEER IV/BIDDING OFFICIAL	LOUIE EVANS E. ESOTO DIVISION CHIEF/ EMD	ARNEL M. SOYU ZMDIC DIV. OPERATIONS	EMMANUEL D. CORTERO ZONE ADMINISTRATOR, MEZ	REHABILITATION OF MEZ MASTER DRAINAGE SYSTEM PHASE I: SEWER LINE LOCATION: MACTAN ECONOMIC ZONE, LAPU-LAPU CITY, CEBU		10