

# DRAWING LIST (1/4)

## (DRAINAGE WORKS; UPPER PASIG)

SHEET NO.	DRAWING NO.	NAME OF LOCATION	SHEET CONTENTS
1	UP-DR; DL-01		DRAINAGE LAYOUT PLAN (LAMBINGAN~MAKATI- MANDALUYONG BRIDGE)
2	UP-DR; DL-02		DRAINAGE LAYOUT PLAN (BARANGKA, GUADALUPE & BUAYANG BATO AREA)
3	UP-DR DL-03		DRAINAGE LAYOUT PLAN (MAKATI, WEST REMBO & URC AREA)
4	UP-DR SD-01		STANDARD DETAIL OF OUTLET
5	UP-DR MD-01		TYPICAL MANHOLE DETAIL AND BAR SCHEDULE
6	UP-DR JB-01		TYPICAL JUNCTION BOX DETAIL, BAR SCHEDULE & TYPICAL DETAIL OF U-DITCH
7	UP-DR MH-SC1		SCHEDULE OF MANHOLE STA. 11+500 ~ STA. 11+628 LB
8	UP-DR MH-SC2		SCHEDULE OF MANHOLE STA. 13+806 ~ STA. 14+440 LB
9	UP-DR MH-SC3		SCHEDULE OF MANHOLE STA. 13+578 ~ STA. 14+395 RB
10	UP-DR MH-SC4		SCHEDULE OF MANHOLE STA. 14+835 ~ STA. 15+075 RB
11	UP-DR JB-SC1		SCHEDULE OF JUNCTION BOX STA. 10+956 ~ STA. 11+263 RB
12	UP-DR JB-SC2		SCHEDULE OF JUNCTION BOX STA. 13+578 ~ STA. 14+395 RB
13	UP-DL; DO-91.4/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 91.4, LEFT BANK)
14	UP-DL; DO-91.4		DETAIL OF DRAINAGE OUTLET; (DL 91.4 & JL 91.4, LEFT BANK)
15	UP-DL; DO-91.8/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 91.8, LEFT BANK)
16	UP-DL; DO-91.8		DETAIL OF DRAINAGE OUTLET; (DL 91.8 & JL 91.8, LEFT BANK)
17	UP-DL; DO-97.2/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 97.2, LEFT BANK)
18	UP-DL; DO-97.2		DETAIL OF DRAINAGE OUTLET; (DL 97.2 & ML 97.2, LEFT BANK)
19	UP-DL; DO-97.5		DETAIL OF DRAINAGE OUTLET; (DL 97.5 & ML 97.5, LEFT BANK)
20	UP-DL; DO-97.6		DETAIL OF DRAINAGE OUTLET; (DL 97.6 & ML 97.6, LEFT BANK)
21	UP-DL; DO-97.8/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 97.8, LEFT BANK)
22	UP-DL; DO-97.8		DETAIL OF DRAINAGE OUTLET; (DL 97.8 & ML 97.8, LEFT BANK)
23	UP-DL; DO-97.10		DETAIL OF DRAINAGE OUTLET; (DL 97.10 & MANHOLE 97.10, LEFT BANK)
24	UP-DL; DO-97D		DETAIL OF DRAINAGE OUTLET; (DL 97D & MANHOLE 97D, LEFT BANK)
25	UP-DL; DO-97E		DETAIL OF DRAINAGE OUTLET; (DL 97E & MANHOLE 97E, LEFT BANK)
26	UP-DL; DO-97F		DETAIL OF DRAINAGE OUTLET; (DL 97F & MANHOLE 97F, LEFT BANK)
27	UP-DL; DO-113.12/P		PLAN & PROFILE OF COLLECTOR BOX (DL 113.12, LEFT BANK)
28	UP-DL; DO-113.12		DETAIL OF DRAINAGE OUTLET; (DL 113.12 & ML 113.12, LEFT BANK)
29	UP-DL; DO-113.19/P		PLAN & PROFILE OF COLLECTOR BOX (DL 113.19, LEFT BANK)
30	UP-DL; DO-113.19		DETAIL OF DRAINAGE OUTLET; (DL 113.19 & ML 113.19, LEFT BANK)
31	UP-DL; DO-113.26		DETAIL OF DRAINAGE OUTLET; (DL 113.26 & ML 113.26, LEFT BANK)
32	UP-DL; DO-113.27		DETAIL OF DRAINAGE OUTLET; (DL 113.27 & ML 113.27, LEFT BANK)
33	UP-DL; DO-113A		DETAIL OF DRAINAGE OUTLET; (DL 113A & ML 113A, LEFT BANK)
34	UP-DL; DO-113B.4/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 113B.4, LEFT BANK)
35	UP-DL; DO-113B.4		DETAIL OF DRAINAGE OUTLET; (DL 113B.4 & ML 113B.4, LEFT BANK)
36	UP-DL; DO-113B.9		DETAIL OF DRAINAGE OUTLET; (DL 113B.9 & ML 113B.9, LEFT BANK)
37	UP-DL; DO-113B.10		DETAIL OF DRAINAGE OUTLET; (DL 113B.10 & ML 113B.10, LEFT BANK)
38	UP-DL; DO-113B.12/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 113B.12, LEFT BANK)
39	UP-DL; DO-113B.12		DETAIL OF DRAINAGE OUTLET; (DL 113B.12 & ML 113B.12, LEFT BANK)
40	UP-DL; DO-113C		DETAIL OF DRAINAGE OUTLET; (DL 113C & ML 113C, LEFT BANK)
41	UP-DL; DO-113D/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 113D, LEFT BANK)
42	UP-DL; DO-113D		DETAIL OF DRAINAGE OUTLET; (DL 113D & ML 113D, LEFT BANK)

## DRAWING LIST (2/4)

### (DRAINAGE WORKS; UPPER PASIG)

SHEET NO.	DRAWING NO.	NAME OF LOCATION	SHEET CONTENTS
43	UP-DL; DO-113E		DETAIL OF DRAINAGE OUTLET; (DL 113E & ML 113E, LEFT BANK)
44	UP-DL; DO-113F/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 113F, LEFT BANK)
45	UP-DL; DO-113F		DETAIL OF DRAINAGE OUTLET; (DL 113F & ML 113F, LEFT BANK)
46	UP-DL; DO-113F.3/P		PLAN & PROFILE OF COLLECTOR PIPE/BOX (DL 113F.3, LEFT BANK)
47	UP-DL; DO-113F.3		DETAIL OF DRAINAGE OUTLET; (DL 113F.3 & ML 113F.3, LEFT BANK)
48	UP-DL; DO-113F.17/P		PLAN & PROFILE OF COLLECTOR PIPE/BOX (DL 113F.17, LEFT BANK)
49	UP-DL; DO-113F.17		DETAIL OF DRAINAGE OUTLET; (DL 113F.17 & ML 113F.17, LEFT BANK)
50	UP-DL; DO-113F.28/P		PLAN & PROFILE OF COLLECTOR BOX (DL 113F.28, LEFT BANK)
51	UP-DL; DO-113F.28		DETAIL OF DRAINAGE OUTLET; (DL 113F.28 & ML 113F.28, LEFT BANK)
52	UP-DL; DO-113F.38/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 113F.38, LEFT BANK)
53	UP-DL; DO-113F.38		DETAIL OF DRAINAGE OUTLET; (DL 113F.38 & ML 113F.38, LEFT BANK)
54	UP-DL; DO-126/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 126, LEFT BANK)
55	UP-DL; DO-126		DETAIL OF DRAINAGE OUTLET; (DL 126 & ML 126, LEFT BANK)
56	UP-DL; DO-128		DETAIL OF DRAINAGE OUTLET; (DL 128 & ML 128, LEFT BANK)
57	UP-DL; DO-129/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 129, LEFT BANK)
58	UP-DL; DO-129		DETAIL OF DRAINAGE OUTLET; (DL 129 & ML 129, LEFT BANK)
59	UP-DL; DO-130		DETAIL OF DRAINAGE OUTLET; (DL 130 & ML 130, LEFT BANK)
60	UP-DL; DO-131/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 131, LEFT BANK)
61	UP-DL; DO-131		DETAIL OF DRAINAGE OUTLET; (DL 131 & ML 131, LEFT BANK)
62	UP-DL; DO-133A		DETAIL OF DRAINAGE OUTLET; (DL 133A & ML 133A, LEFT BANK)
63	UP-DL; DO-133B		DETAIL OF DRAINAGE OUTLET; (DL 133B & ML 133B, LEFT BANK)
64	UP-DL; DO-133C.4		DETAIL OF DRAINAGE OUTLET; (DL 133C.4 & ML 133C.4, LEFT BANK)
65	UP-DL; DO-133C.5		DETAIL OF DRAINAGE OUTLET; (DL 133C.5 & ML 133C.5, LEFT BANK)
66	UP-DL; DO-134/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 134, LEFT BANK)
67	UP-DL; DO-134		DETAIL OF DRAINAGE OUTLET; (DL 134 & ML 134, LEFT BANK)
68	UP-DL; DO-134.5/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 134.5, LEFT BANK)
69	UP-DL; DO-134.5		DETAIL OF DRAINAGE OUTLET; (DL 134.5 & ML 134.5, LEFT BANK)
70	UP-DL; DO-135.4/P		PLAN & PROFILE OF COLLECTOR PIPE (DL 135.4, LEFT BANK)
71	UP-DL; DO-135.4		DETAIL OF DRAINAGE OUTLET; (DL 135.4 & ML 135.4, LEFT BANK)
72	UP-DL; DO-135.11/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 135.11, LEFT BANK)
73	UP-DL; DO-135.11		DETAIL OF DRAINAGE OUTLET; (DL 135.11 & ML 135.11, LEFT BANK)
74	UP-DL; DO-135.22/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 135.22, LEFT BANK)
75	UP-DL; DO-135.22		DETAIL OF DRAINAGE OUTLET; (DL 135.22 & ML 135.22, LEFT BANK)
76	UP-DL; DO-135.31/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DL 135.31, LEFT BANK)
77	UP-DL; DO-135.31		DETAIL OF DRAINAGE OUTLET; (DL 135.31 & ML 135.31, LEFT BANK)
78	UP-DL; DO-135.33		DETAIL OF DRAINAGE OUTLET; (DL 135.33 & ML 135.33, LEFT BANK)
79	UP-DL; DO-136/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DL 136, LEFT BANK)
80	UP-DL; DO-136		DETAIL OF DRAINAGE OUTLET; (DL 136 & ML 136, LEFT BANK)
81	UP-DL; DO-136.7		DETAIL OF DRAINAGE OUTLET; (DL 136.7 & ML 136.7, LEFT BANK)
82	UP-DL; DO-136.8/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DL 136.8, LEFT BANK)
83	UP-DL; DO-136.8		DETAIL OF DRAINAGE OUTLET; (DL 136.8 & ML 136.8, LEFT BANK)
84	UP-DL; DO-137		DETAIL OF DRAINAGE OUTLET; (DL 137 & ML 137, LEFT BANK)

## DRAWING LIST (3/4)

### (DRAINAGE WORKS; UPPER PASIG)

SHEET NO.	DRAWING NO.	NAME OF LOCATION	SHEET CONTENTS
85	UP-DL; DO-138		DETAIL OF DRAINAGE OUTLET; (DL 138 & ML 138, LEFT BANK)
86	UP-DL; DO-138.1		DETAIL OF DRAINAGE OUTLET; (DL 138.1 & ML 138.1, LEFT BANK)
87	UP-DL; DO-139		DETAIL OF DRAINAGE OUTLET; (DL 139 & ML 139, LEFT BANK)
88	UP-DL; DO-139A		DETAIL OF DRAINAGE OUTLET; (DL 139A & ML 139A, LEFT BANK)
89	UP-MR; MR-106B		U-DITCH PROFILE &DETAIL OF MANHOLE (MR 106B, RIGHT BANK)
90	UP-DR; DO-117.2/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117.2, RIGHT BANK)
91	UP-DR; DO-117.2		DETAIL OF DRAINAGE OUTLET; (DR 117.2 & MR 117.2, RIGHT BANK)
92	UP-DR; DO-117.3/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117.3, RIGHT BANK)
93	UP-DR; DO-117.3		DETAIL OF DRAINAGE OUTLET; (DR 117.3 & MR 117.3, RIGHT BANK)
94	UP-DR; DO-117.5		DETAIL OF DRAINAGE OUTLET; (DR 117.5 & MR 117.5, RIGHT BANK)
95	UP-DR; DO-117.6/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117.6, RIGHT BANK)
96	UP-DR; DO-117.6		DETAIL OF DRAINAGE OUTLET; (DR 117.6 & MR 117.6, RIGHT BANK)
97	UP-DR; DO-117.9/P		DETAIL OF DRAINAGE OUTLET; (DR 117.9, MR 117.9 & COLLECTOR PIPE, RIGHT BANK)
98	UP-DR; DO-117.10		DETAIL OF DRAINAGE OUTLET; (DR 117.10 & MR 117.10, RIGHT BANK)
99	UP-DR; DO-117.12/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117.12, RIGHT BANK)
100	UP-DR; DO-117.12		DETAIL OF DRAINAGE OUTLET; (DR 117.12 & MR 117.12, RIGHT BANK)
101	UP-DR; DO-117B.6/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117B.6, RIGHT BANK)
102	UP-DR; DO-117B.6		DETAIL OF DRAINAGE OUTLET; (DR 117B.6 & MR 117B.6, RIGHT BANK)
103	UP-DR; DO-117B.13/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117B.13, RIGHT BANK)
104	UP-DR; DO-117B.13		DETAIL OF DRAINAGE OUTLET; (DR 117B.13 & MR 117B.13, RIGHT BANK)
105	UP-DR; DO-117C.8/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 117C.8, RIGHT BANK)
106	UP-DR; DO-117C.8		DETAIL OF DRAINAGE OUTLET; (DR 117C.8 & MR 117C.8, RIGHT BANK)
107	UP-DR; DO-170.1/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 170.1, RIGHT BANK)
108	UP-DR; DO-170.1		DETAIL OF DRAINAGE OUTLET; (DR 170.1 & MR 170.1, RIGHT BANK)
109	UP-DR; DO-171/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DR 171, RIGHT BANK)
110	UP-DR; DO-171		DETAIL OF DRAINAGE OUTLET; (DR 171 & MR 171, RIGHT BANK)
111	UP-DR; DO-172/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 172, RIGHT BANK)
112	UP-DR; DO-172		DETAIL OF DRAINAGE OUTLET; (DR 172 & MR 172, RIGHT BANK)
113	UP-DR; DO-172.6/P		PLAN & PROFILE OF U-DITCH COLLECTOR (DR 172.6, RIGHT BANK)
114	UP-DR; DO-172.6		DETAIL OF DRAINAGE OUTLET; (DR 172.6 & MR 172.6, RIGHT BANK)
115	UP-DR; DO-173A/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 173A, RIGHT BANK)
116	UP-DR; DO-173A		DETAIL OF DRAINAGE OUTLET; (DR 173A & MR 173A, RIGHT BANK)
117	UP-DR; DO-173A.2/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DR 173A.2, RIGHT BANK)
118	UP-DR; DO-173A.2		DETAIL OF DRAINAGE OUTLET; (DR 173A.2 & MR 173A.2, RIGHT BANK)
119	UP-DR; DO-173A.25/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 173A.25, RIGHT BANK)
120	UP-DR; DO-173A.25		DETAIL OF DRAINAGE OUTLET; (DR 173A.25 & MR 173A.25, RIGHT BANK)
121	UP-DR; DO-174/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DR 174, RIGHT BANK)
122	UP-DR; DO-174		DETAIL OF DRAINAGE OUTLET; (DR 174 & MR 174, RIGHT BANK)

## DRAWING LIST (4/4)

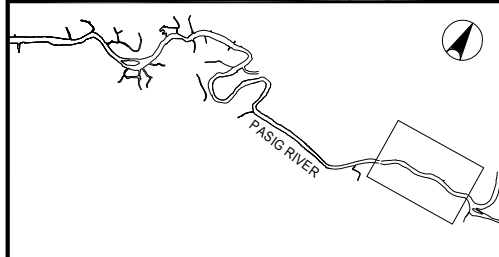
### (DRAINAGE WORKS; UPPER PASIG)

SHEET NO.	DRAWING NO.	NAME OF LOCATION	SHEET CONTENTS
123	UP-DR; DO-174.9/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DR 174.9, RIGHT BANK)
124	UP-DR; DO-174.9		DETAIL OF DRAINAGE OUTLET; (DR 174.9 & MR 174.9, RIGHT BANK)
125	UP-DR; DO-174C.1/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 174C.1, RIGHT BANK)
126	UP-DR; DO-174C.1		DETAIL OF DRAINAGE OUTLET; (DR 174C.1 & MR 174C.1, RIGHT BANK)
127	UP-DR; DO-174C.3		DETAIL OF DRAINAGE OUTLET; (DR 174C.3 & MR 174C.3, RIGHT BANK)
128	UP-DR; DO-174C.7/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 174C.7, RIGHT BANK)
129	UP-DR; DO-174C.7		DETAIL OF DRAINAGE OUTLET; (DR 174C.7 & MR 174C.7, RIGHT BANK)
130	UP-DR; DO-174C.14/P		PLAN & PROFILE OF COLLECTOR BOX (DR 174C.14, RIGHT BANK)
131	UP-DR; DO-174C.14		DETAIL OF DRAINAGE OUTLET; (DR 174C.14 & MR 174C.14, RIGHT BANK)
132	UP-DR; DO-174E/P		PLAN & PROFILE OF COLLECTOR BOX (DR 174E, RIGHT BANK)
133	UP-DR; DO-174E		DETAIL OF DRAINAGE OUTLET; (DR 174E & MR 174E, RIGHT BANK)
134	UP-DR; DO-174E.12/P		PLAN & PROFILE OF COLLECTOR BOX (DR 174E.12, RIGHT BANK)
135	UP-DR; DO-174E.12		DETAIL OF DRAINAGE OUTLET; (DR 174E.12 & MR 174E.12, RIGHT BANK)
136	UP-DR; DO-174E.28		DETAIL OF DRAINAGE OUTLET; (DR 174E.28 & MR 174E.28, RIGHT BANK)
137	UP-DR; DO-175/P		PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH (DR 175, RIGHT BANK)
138	UP-DR; DO-175		DETAIL OF DRAINAGE OUTLET; (DR 175 & MR 175, RIGHT BANK)
139	UP-DR; DO-177/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 177, RIGHT BANK)
140	UP-DR; DO-177		DETAIL OF DRAINAGE OUTLET; (DR 177 & MR 177, RIGHT BANK)
141	UP-DR; DO-177.2/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 177.2, RIGHT BANK)
142	UP-DR; DO-177.2		DETAIL OF DRAINAGE OUTLET; (DR 177.2 & MR 177.2, RIGHT BANK)
143	UP-DR; DO-178/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 178, RIGHT BANK)
144	UP-DR; DO-178		DETAIL OF DRAINAGE OUTLET; (DR 178, RIGHT BANK)
145	UP-DR; DO-185/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 185, RIGHT BANK)
146	UP-DR; DO-185		DETAIL OF DRAINAGE OUTLET; (DR 185 & MR 185, RIGHT BANK)
147	UP-DR; DO-189/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 189, RIGHT BANK)
148	UP-DR; DO-189		DETAIL OF DRAINAGE OUTLET; (DR 189 & MR 189, RIGHT BANK)
149	UP-DR; DO-190		DETAIL OF DRAINAGE OUTLET; (DR 190 & MR 190, RIGHT BANK)
150	UP-DR; DO-191/P		PLAN & PROFILE OF COLLECTOR PIPE (DR 191, RIGHT BANK)
151	UP-DR; DO-191		DETAIL OF DRAINAGE OUTLET; (DR 191 & MR 191, RIGHT BANK)
152	UP-DR; DO-193A		DETAIL OF DRAINAGE OUTLET; (DR 193A & MR 193A, RIGHT BANK)
153	UP-DR; DO-193B		DETAIL OF DRAINAGE OUTLET; (DR 193B & MR 193B, RIGHT BANK)
154	UP-DR; DO-193C		DETAIL OF DRAINAGE OUTLET; (DR 193C & MR 193C, RIGHT BANK)
155	UP-DR; DO-193C.1		DETAIL OF DRAINAGE OUTLET; (DR 193C.1 & MR 193C.1, RIGHT BANK)
156	UP-DR; DO-245.8		DETAIL OF DRAINAGE OUTLET; (DR 245.8 & MR 245.8, RIGHT BANK)
157	UP-DR; DO-245.9		DETAIL OF DRAINAGE OUTLET; (DR 245.9 & MR 245.9, RIGHT BANK)





KEY PLAN



LEGEND:

- 100 \* EXISTING OUTLET
- ← EXISTING DRAINAGE
- DRAINAGE OUTLET
- ↑ COLLECTOR PIPE
- PDR-100 DRAINAGE OUTLET NO.

GENERAL LAYOUT PLAN  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



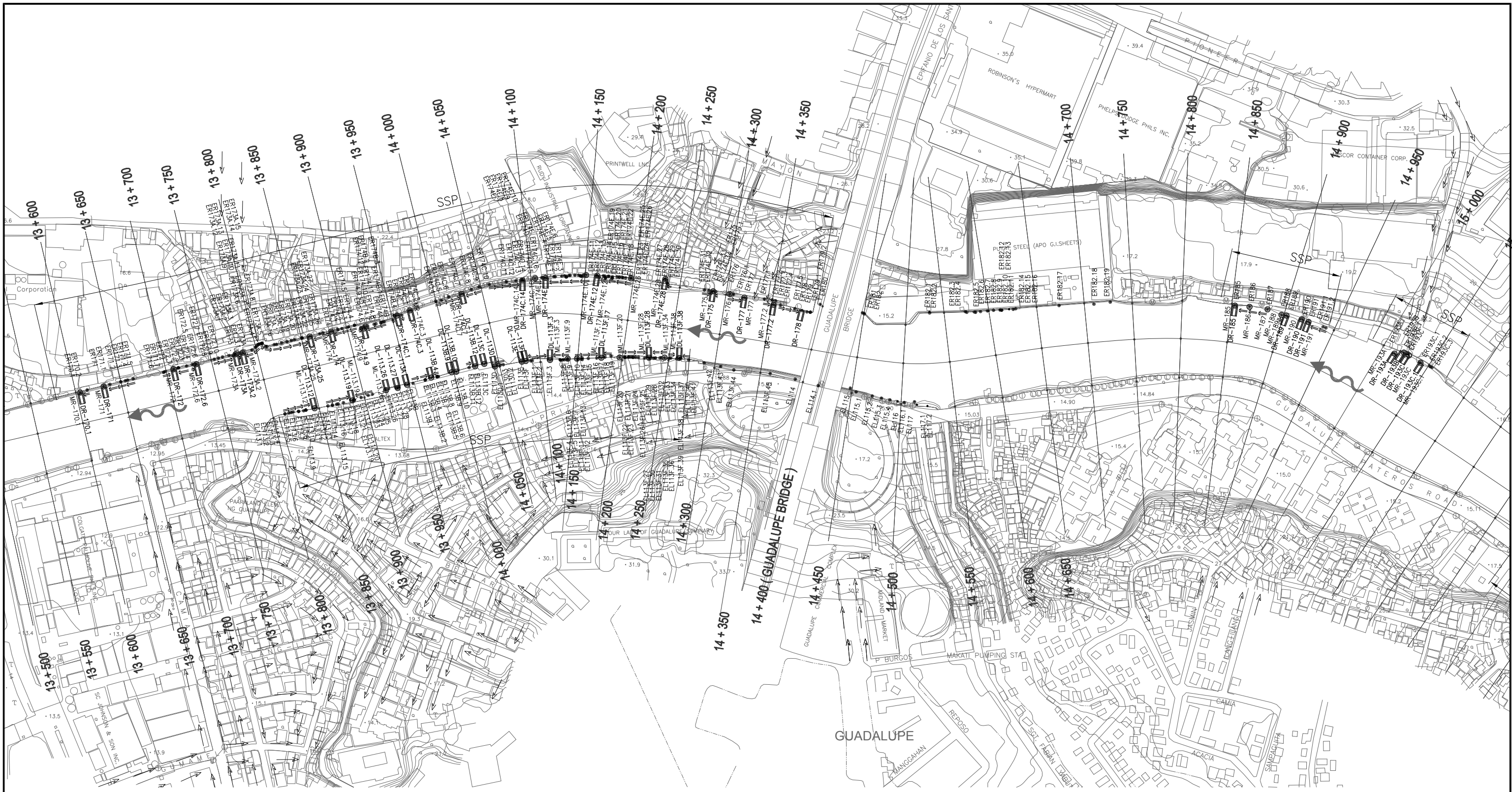
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



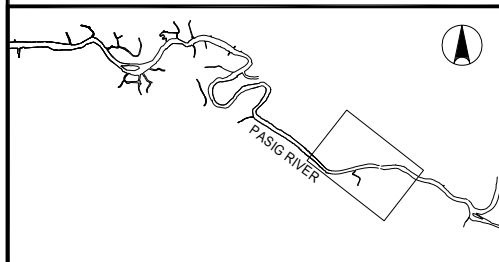
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DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	GENERAL LAYOUT PLAN (LAMBINGAN-MAKATI-MANDALUYONG BRIDGE)	UP-DR DL 01



KEY PLAN



LEGEND:

- 100 • EXISTING OUTLET
- ↑ EXISTING DRAINAGE
- ↓ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- PDR-100 DRAINAGE OUTLET NO.

GENERAL LAYOUT PLAN  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
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SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

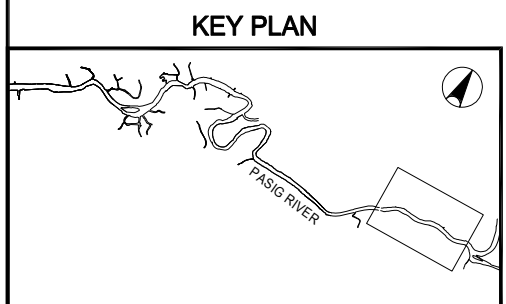
SHEET CONTENTS

GENERAL LAYOUT PLAN (BARANGKA, GUADALUPE & BUAYANG BATO AREA)

SHEET NO.

UP-DR  
DL 02





- LEGEND:**
- 100 • EXISTING OUTLET
  - EXISTING DRAINAGE
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - PDR-100 DRAINAGE OUTLET NO.

**GENERAL LAYOUT PLAN**  
SCALE A



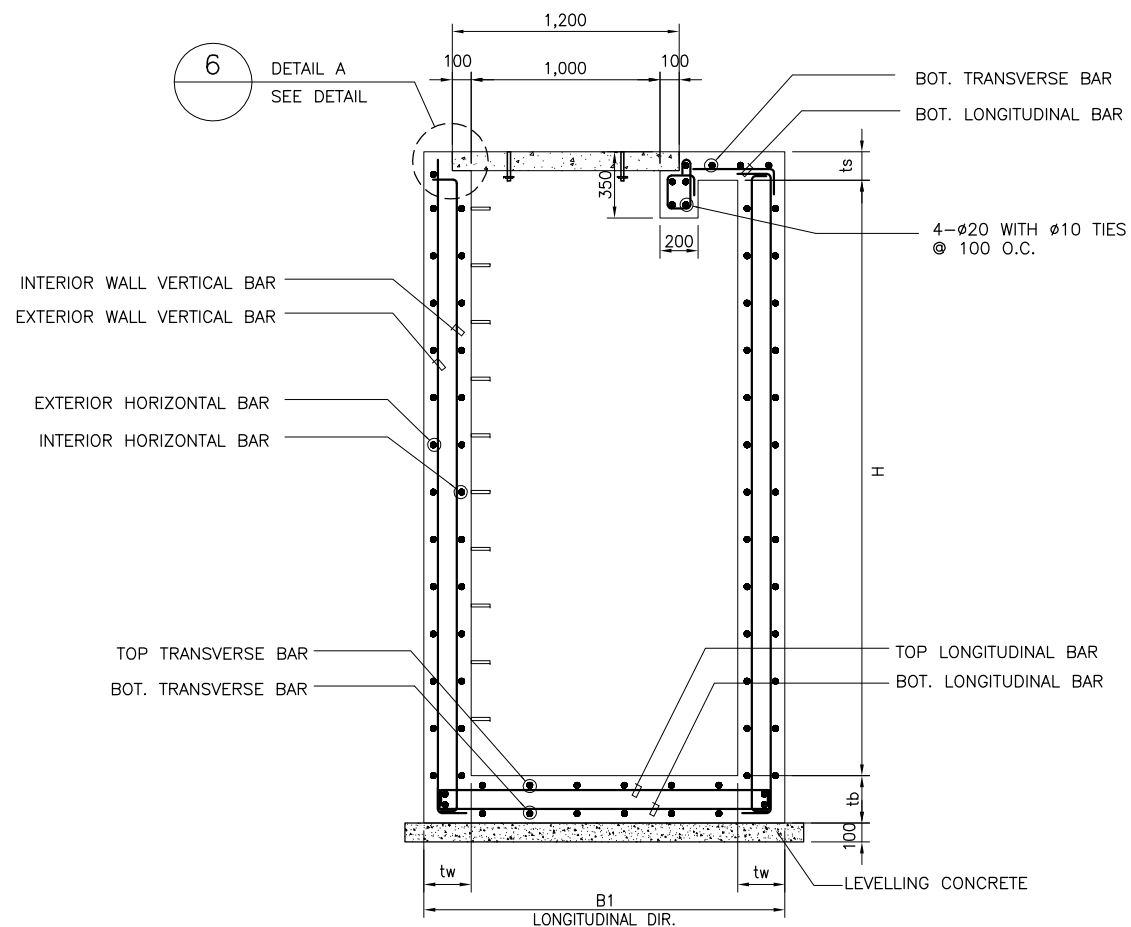
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

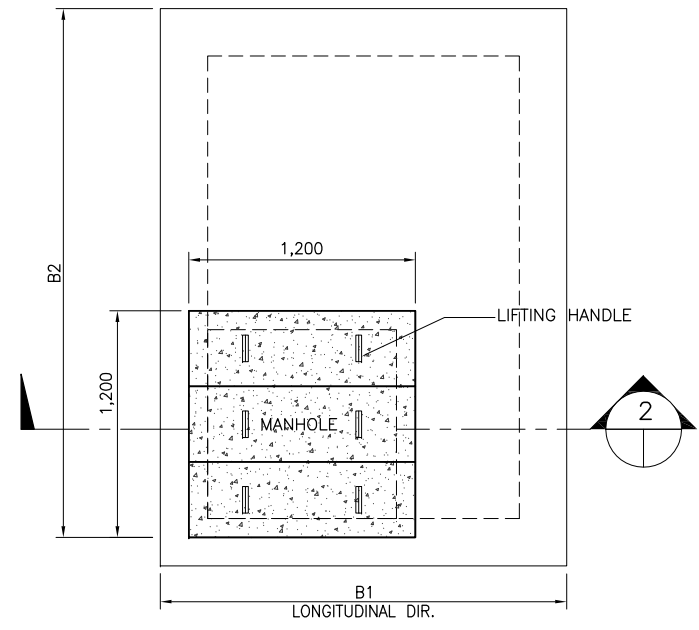
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>	<b>GENERAL LAYOUT PLAN (MAKATI, WEST REMBO &amp; URC AREA)</b>		
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD				RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES

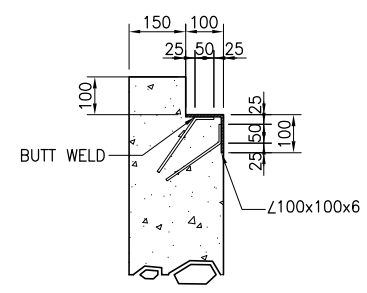




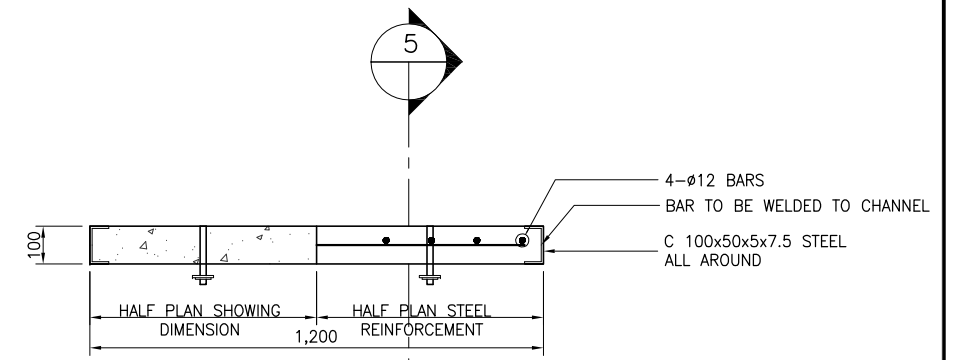
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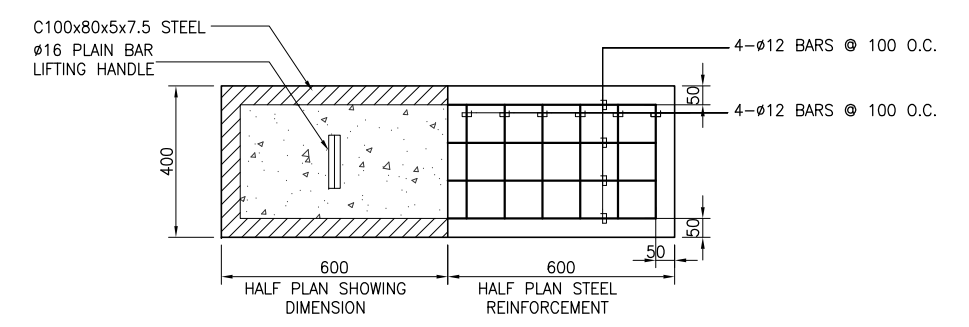
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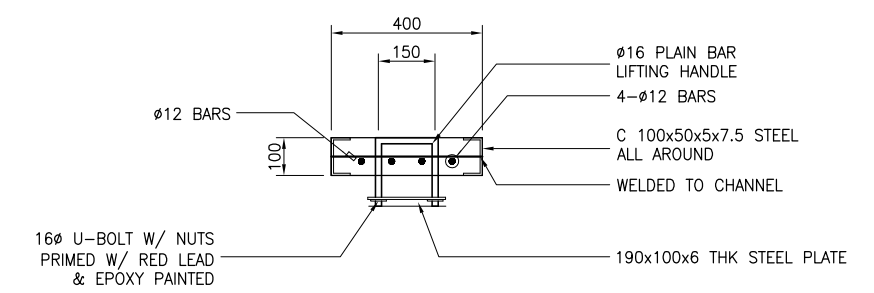
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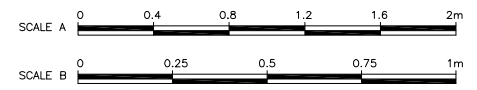
4 ELEVATION  
SCALE B



3 PLAN OF MANHOLE COVER  
SCALE B



5 SECTION  
SCALE B



MANHOLE BAR SCHEDULE

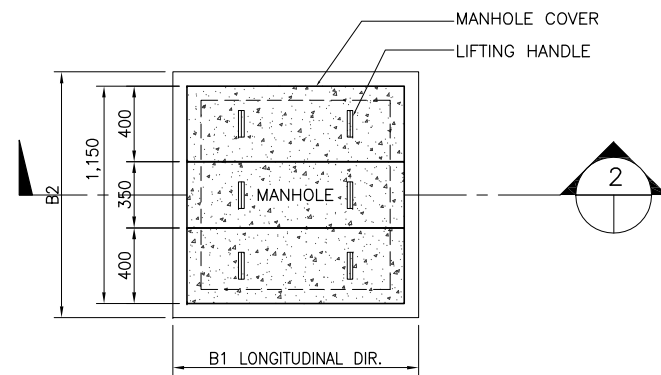
MANHOLE DIMENSION			MANHOLE THICKNESS			TOP SLAB		BOTTOM SLAB BAR				WALL			
B1 mm	B2 mm	H mm	TOP SLAB ts (mm)	BOT. SLAB tb (mm)	WALL tw (mm)	BOTTOM BAR		TOP BAR		BOTTOM BAR		HOR. BAR		VERTICAL BAR	
						LONG. BAR	TRANS. BAR	LONG. BAR	TRANS. BAR	LONG. BAR	TRANS. BAR	EXT. BAR	INT. BAR	EXT. BAR	INT. BAR
2000	1200	2000-4000	150	250	250	D12@125	D12@125	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250
2000	2000	2000-4000	150	250	250	D12@125	D12@125	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250
2000	2800	2000-2500	150	250	250	D12@125	D12@125	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250
2000	2800	3000	150	250	250	D12@125	D12@125	D12@250	D12@250	D16@250	D16@250	D12@250	D12@250	D16@250	D12@250
2100	2800	3500	150	300	250	D12@125	D12@125	D12@250	D12@250	D16@250	D16@250	D16@250	D12@250	D16@250	D12@250
2100	2900	4000	150	300	300	D12@125	D12@125	D12@250	D12@250	D16@250	D16@250	D16@250	D12@250	D16@250	D12@250
2500	1200	2000-2500	150	250	250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250	D12@250
2500	1200	2500-3500	150	250	250	D12@125	D12@125	D12@250	D12@250	D12@250	D12@250	D16@250	D16@250	D12@250	D12@250
2600	1200	4000	150	300	300	D12@125	D12@125	D12@250	D12@250	D12@250	D12@250	D16@250	D16@250	D12@250	D12@250
2100	4100	3000-3500	150	300	300	D12@125	D12@125	D12@250	D12@250	D20@250	D20@250	D16@250	D12@250	D20@250	D12@250
2200	3900	4000-4200	150	350	350	D12@125	D12@125	D12@250	D12@250	D20@250	D20@250	D16@250	D12@250	D20@250	D12@250

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

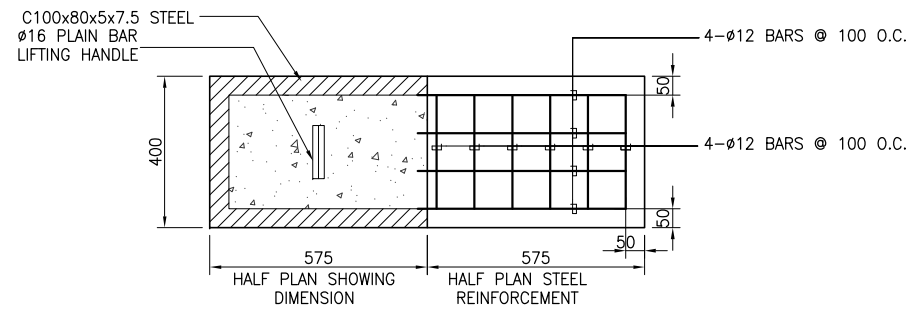
NOTE:  
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SHUJI KAKU  
TEAM LEADER

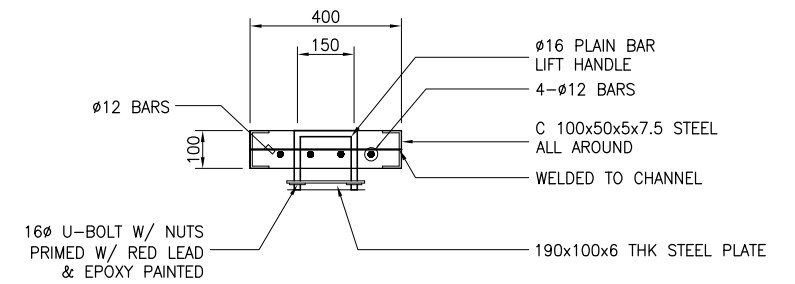
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES			PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.		
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	TYPICAL MANHOLE DETAIL AND BAR SCHEDULE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			



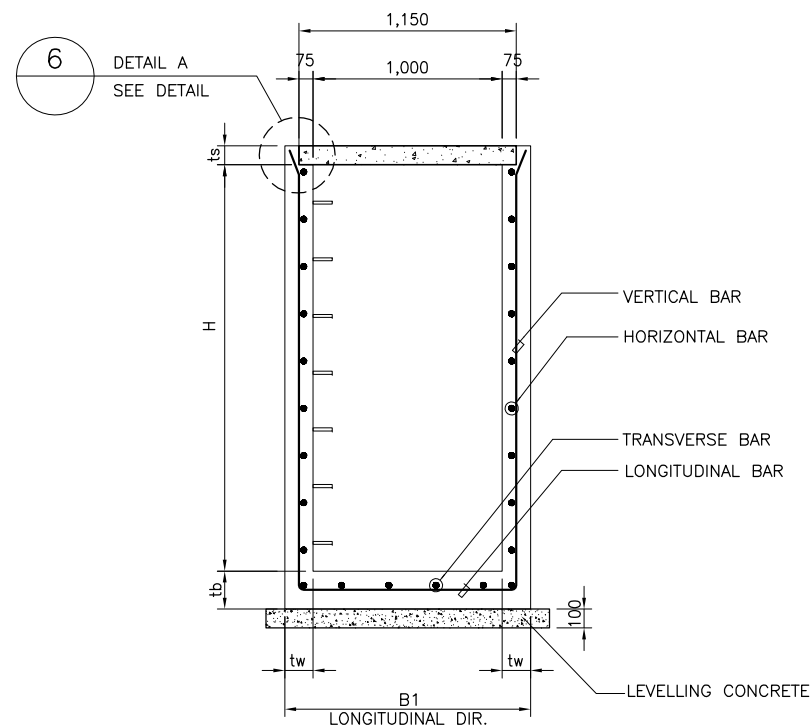
1 PLAN  
SCALE A



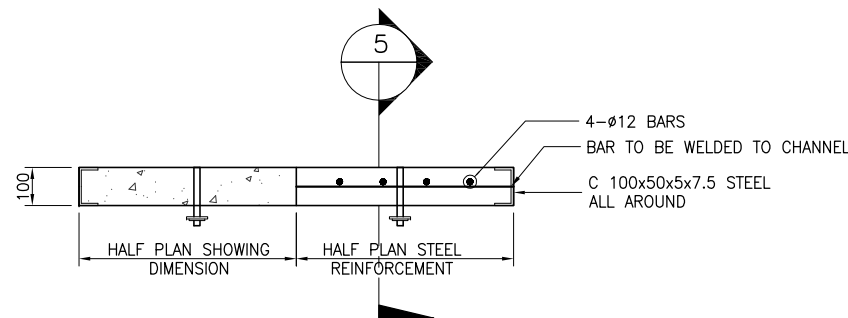
3 PLAN OF JUNCTION BOX COVER  
SCALE B



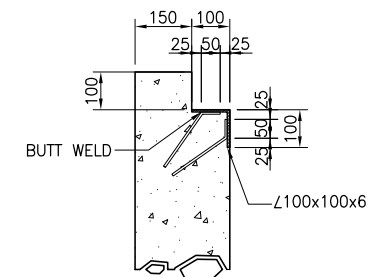
5 SECTION  
SCALE B



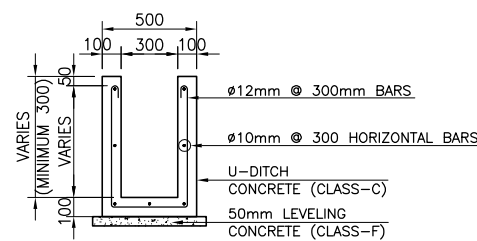
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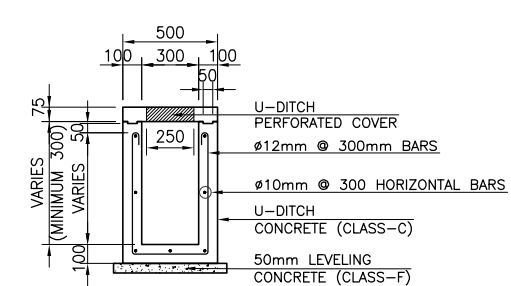
4 ELEVATION  
SCALE B



6 DETAIL A  
SCALE B



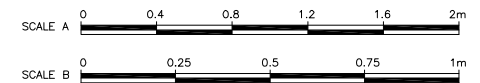
7 DETAIL OF U-DITCH  
SCALE: A



8 DETAIL OF U-DITCH W/ COVER  
SCALE: A

JUNCTION BOX BAR SCHEDULE

JUNCTION BOX DIMENSION			JUNCTION BOX THICKNESS		JUNCTION BOX STEEL REINFORCEMENT			
B1 mm	B2 mm	H mm	WALL tw (mm)	BOT. SLAB tb (mm)	BOTTOM SLAB BAR		WALL	
					LONG. BAR	TRANS. BAR	VERT. BAR	HOR. BAR
1200	1200	0-1500	150	200	D12@250	D12@250	D12@250	D12@250
1200	1200	1501-2000	150	200	D12@250	D12@250	D12@250	D12@250
1200	1200	2001-2500	150	200	D12@250	D12@250	D12@250	D12@250



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

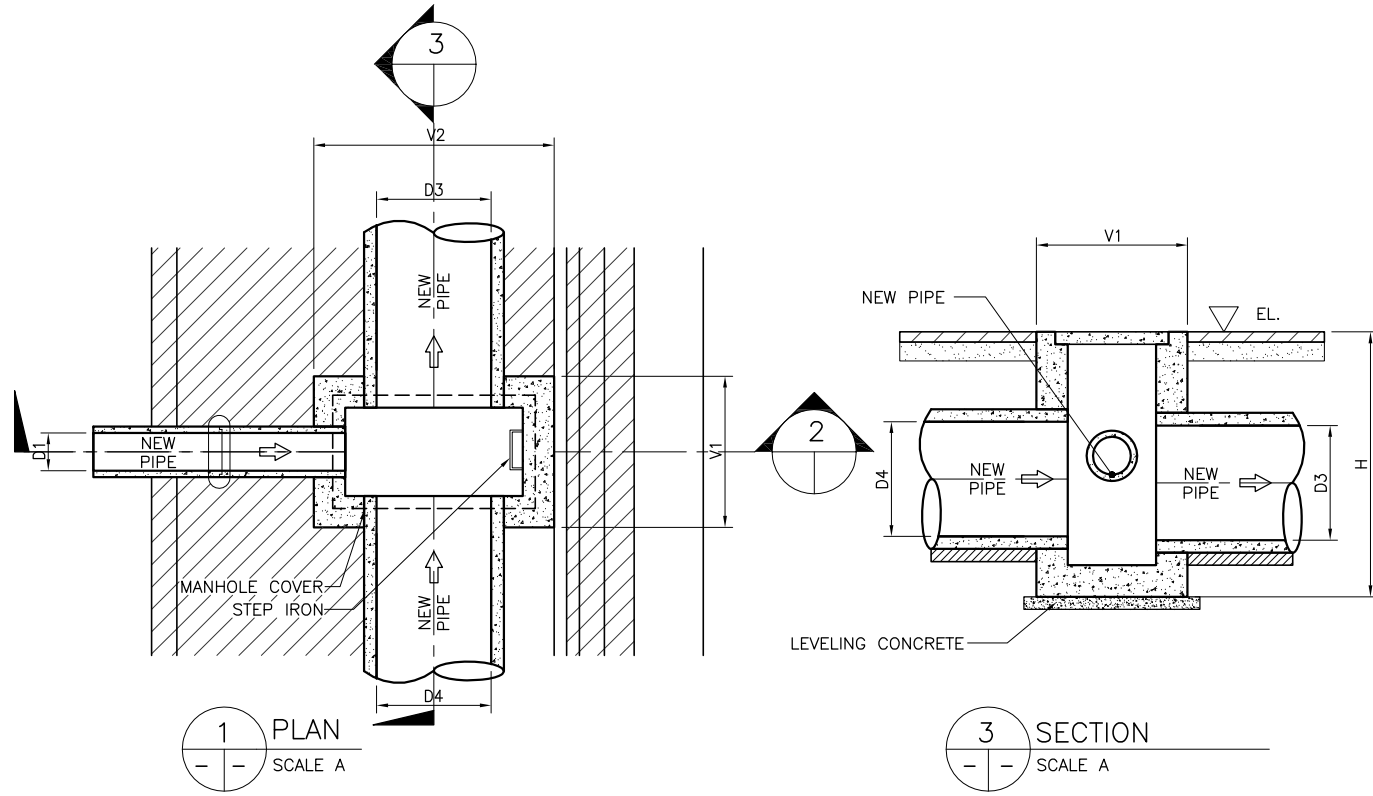
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

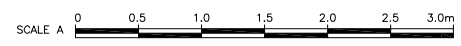
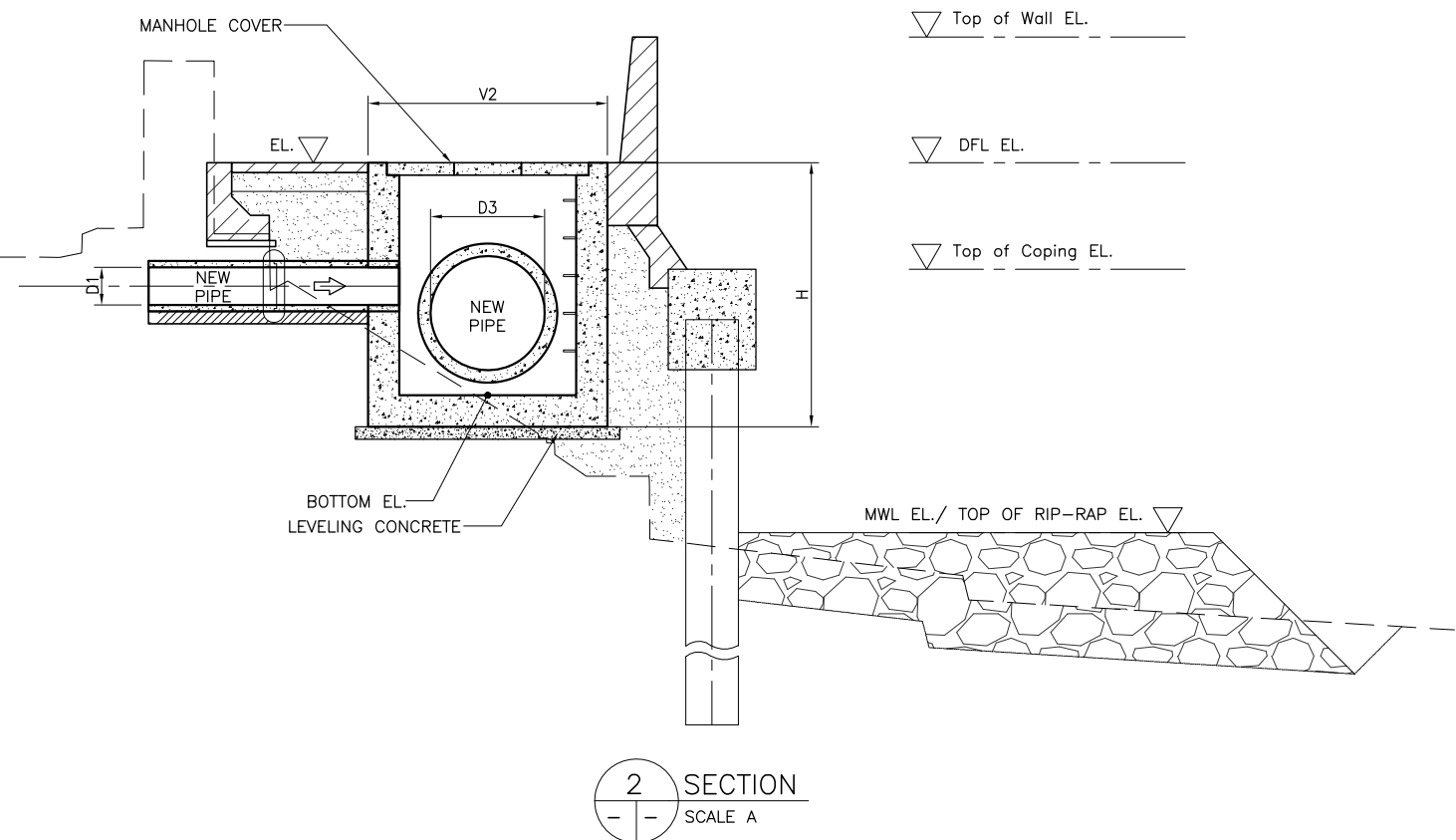
TYPICAL JUNCTION BOX DETAIL, BAR SCHEDULE & TYPICAL DETAIL OF U-DITCH

SHEET NO.





STATION No.	MANHOLE NO.	OUTLET NO.	BOTTOM ELEV.	D1 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
11+500 LB	ML 97.1	DL 97.2	11.548	ø 300		ø 300	1200	1200	1892
11+514 LB	ML 97.3	DL 97.2	11.373	ø 300	ø 300		1200	1200	2067
11+521 LB	ML 97.4	DL 97.2	11.311	ø 150	ø 300	ø 300	1200	1200	2129
11+587 LB	ML 97.9	DL 97.8	11.690	ø 300	ø 300		1200	1200	2328

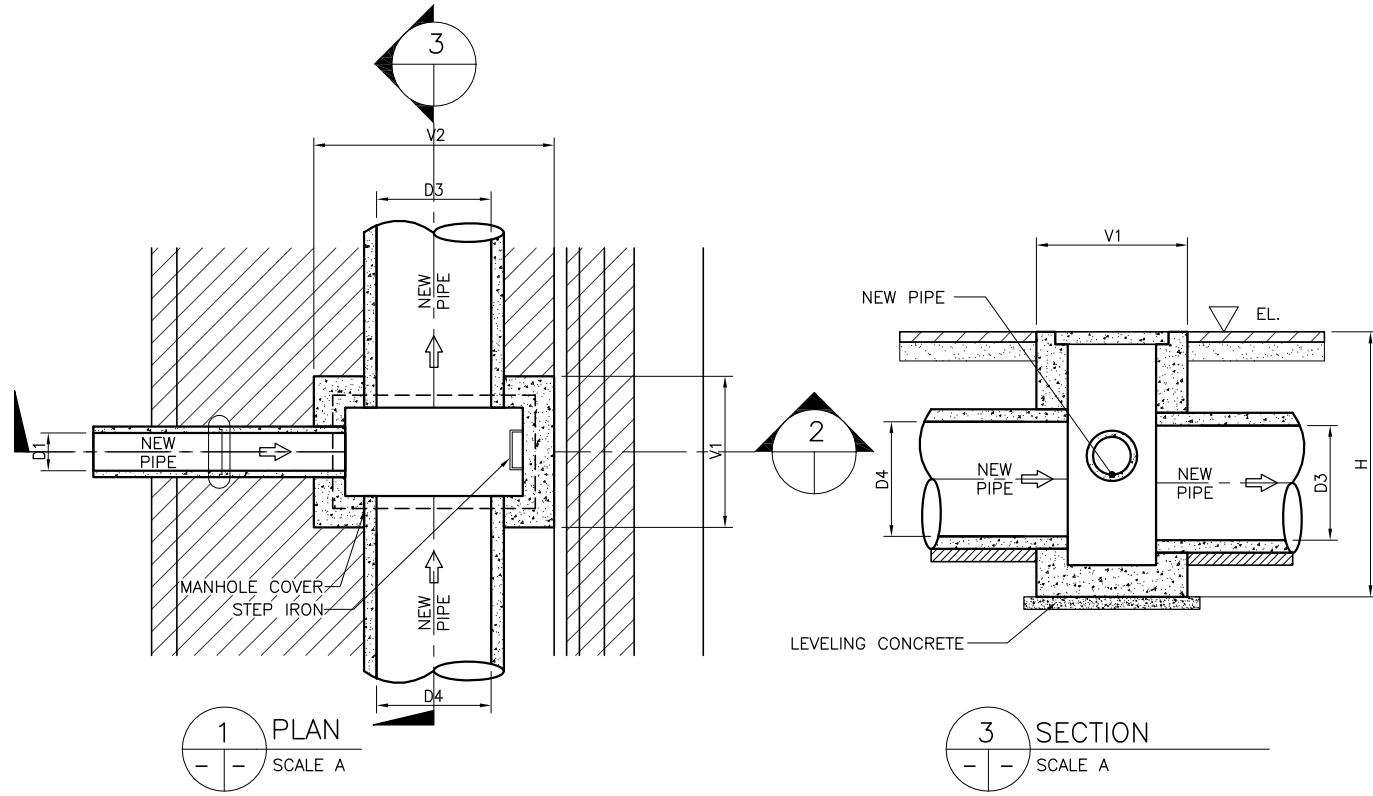


NO.	DESCRIPTION	APPROVED	DATE

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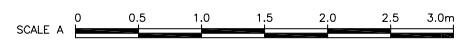
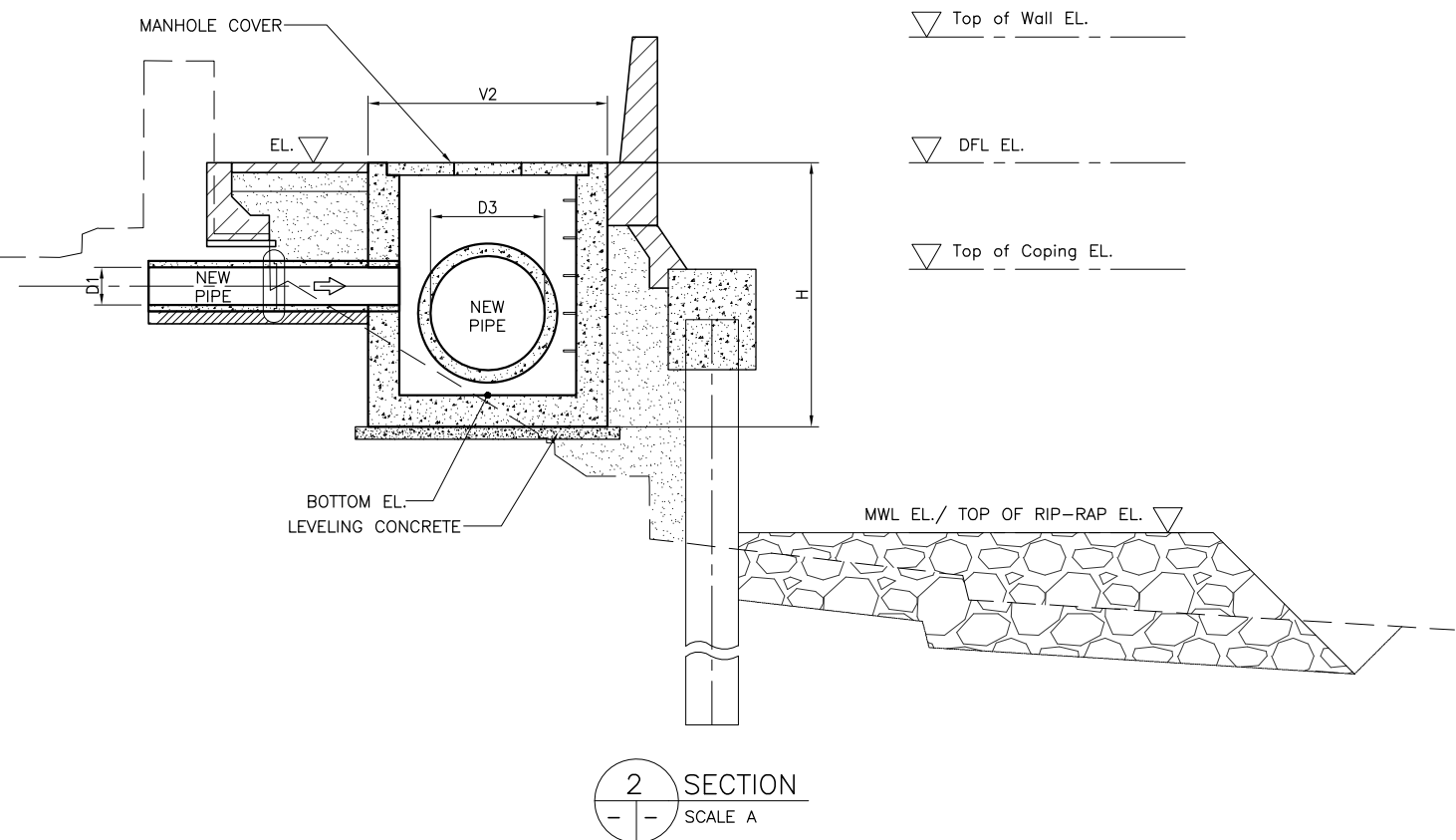
SHUJI KAKU  
 TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b> 				<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> SCHEDULE OF MANHOLE @ STA. 11+500 ~ STA. 11+628 LB	<b>SHEET NO.</b> 
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:				
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



**SCHEDULE OF MANHOLE (STA. 13+806 ~ STA. 14+440 LB)**

STATION No.	MANHOLE NO.	OUTLET NO.	BOTTOM ELEV.	D1 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
13+812 LB	ML 113.1	DL 113.12	11.881	∅ 100		∅ 800	1100	1100	2211
13+859 LB	ML 113.13	DL 113.19	10.972	∅ 100		∅ 800	1100	1900	3123
13+908 LB	ML 113.25	DL 113.19	10.926	∅ 300	∅ 800		1200	1900	3172
14+144 LB	ML 113F.10	DL 113F.17	11.503	∅ 150		∅ 800	1100	1900	3609
14+195 LB	ML 113F.20	DL 113F.28	12.660	∅ 400		∅ 800	1320	1900	2455
14+228 LB	ML 113F.34	DL 113F.28	12.141	∅ 100	∅ 800		1100	1900	2977



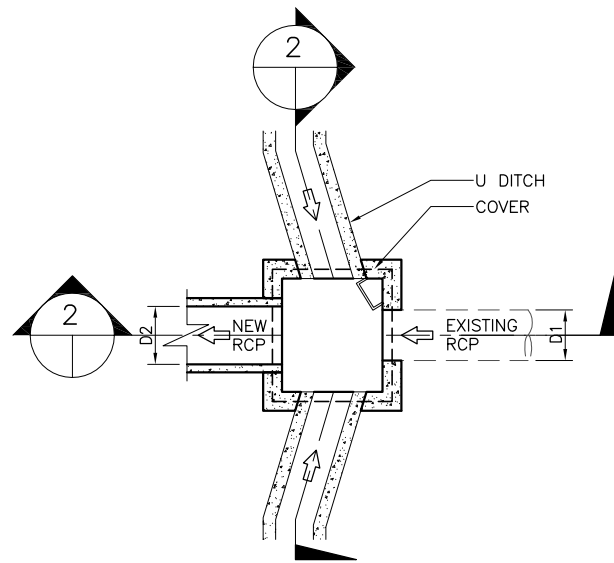
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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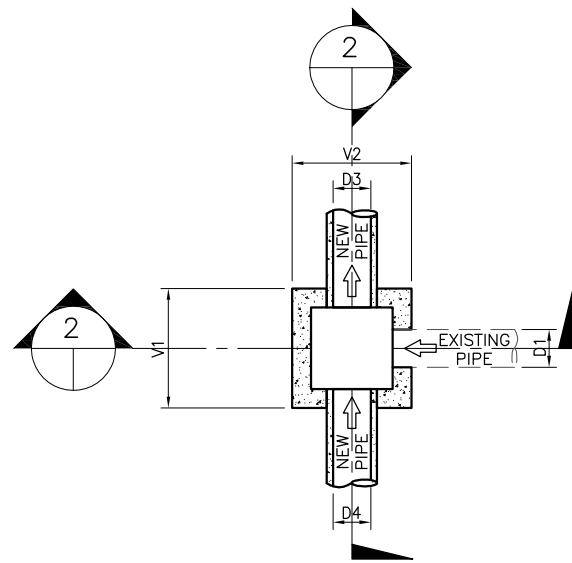
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SCHEDULE OF MANHOLE @ STA. 13+806 ~ STA. 14+440 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			

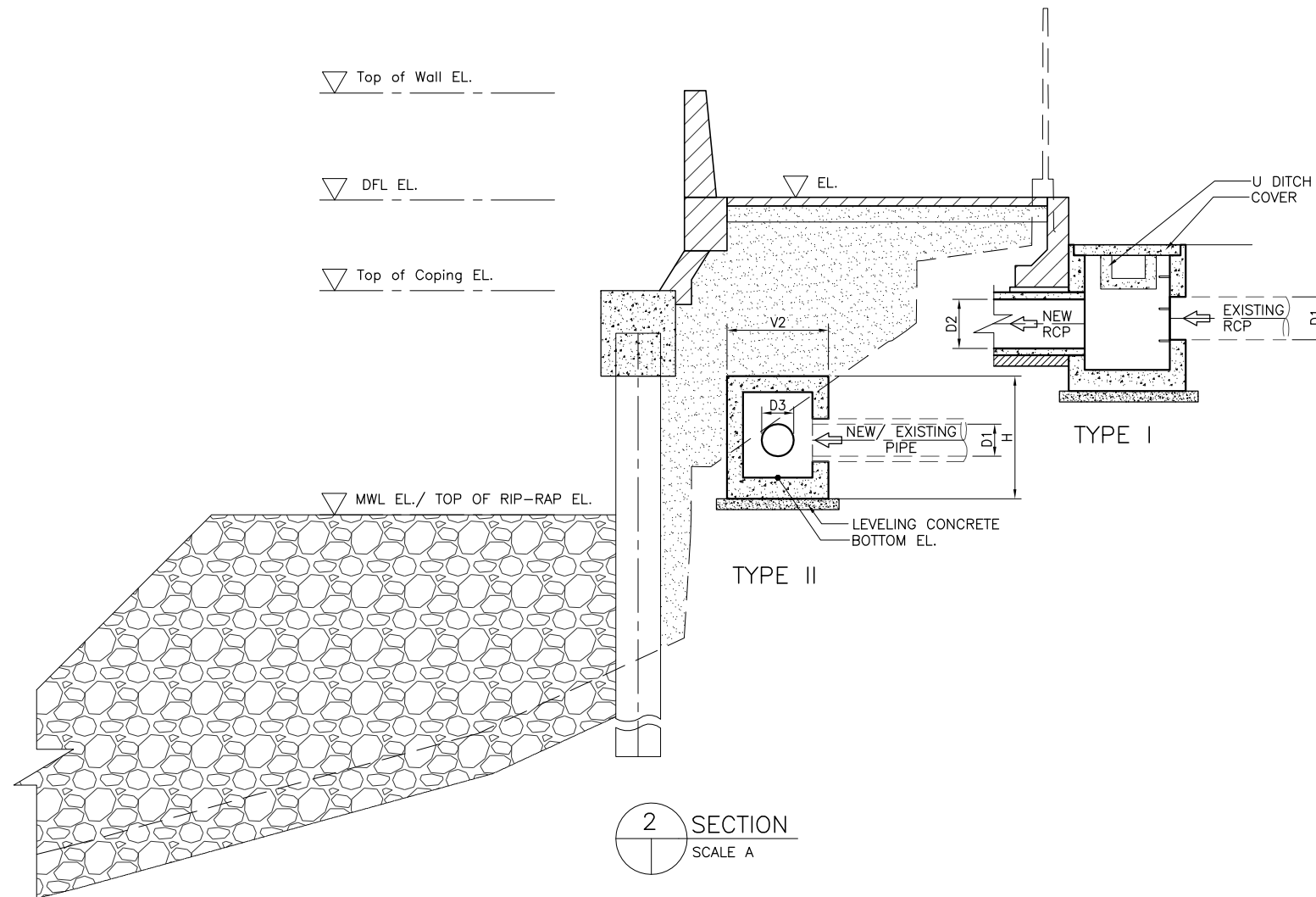




TYPE I  
JUNCTION BOX PLAN  
SCALE A



TYPE II  
JUNCTION BOX PLAN  
SCALE A



SECTION  
SCALE A

SCHEDULE OF JUNCTION BOX (STA. 13+578 ~ STA. 14+395 RB)

STATION No.	JUNCTION BOX NO.	TYPE	OUTLET	BOTTOM ELEV.	D1 (mm)	D2 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
8+789RB	JR 74A.1	I	DR 74A.2	11.830	ø 460			ø 460	1200	1100	1552
8+857 RB	JR 76.1	I	DR 75	11.767	ø 200	ø 460			1200	1100	1472
8+947 RB	JR 77A.3	I	DR 78	11.770	ø 300	ø 460			1200	1100	1389
9+060 RB	JR 81.1	I	DR 81	11.515	230x250	ø 460			1200	1100	1877
9+302 RB	JR 83.24	II	DR 83.27	11.396	ø 320			ø 460	900	1190	1340
9+315 RB	JR 83.28	II	DR 83.23	12.141	ø 250		ø 300		900	950	1150
9+248 RB	JR 83.19	II	DR 83.18	10.949	ø 300		ø 300		950	950	1150

SCALE A 0 0.5 1.0 1.5 2.0 2.5 3.0m

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR PMO - MFCP

GILBERTO S. REYES  
DIRECTOR BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

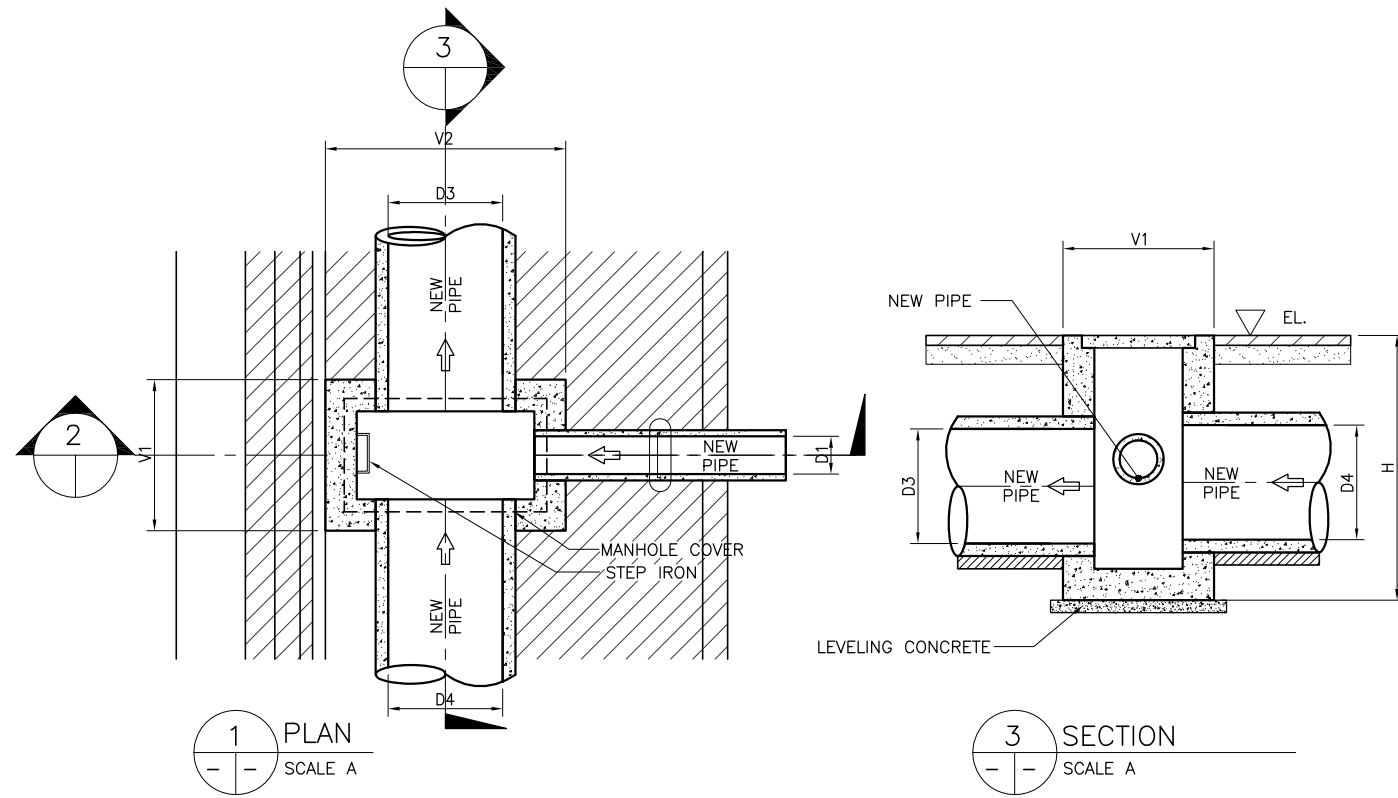
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

SCHEDULE OF JUNCTION BOX @ STA. 13+578 ~ STA. 14+395 RB

SHEET NO.

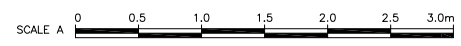
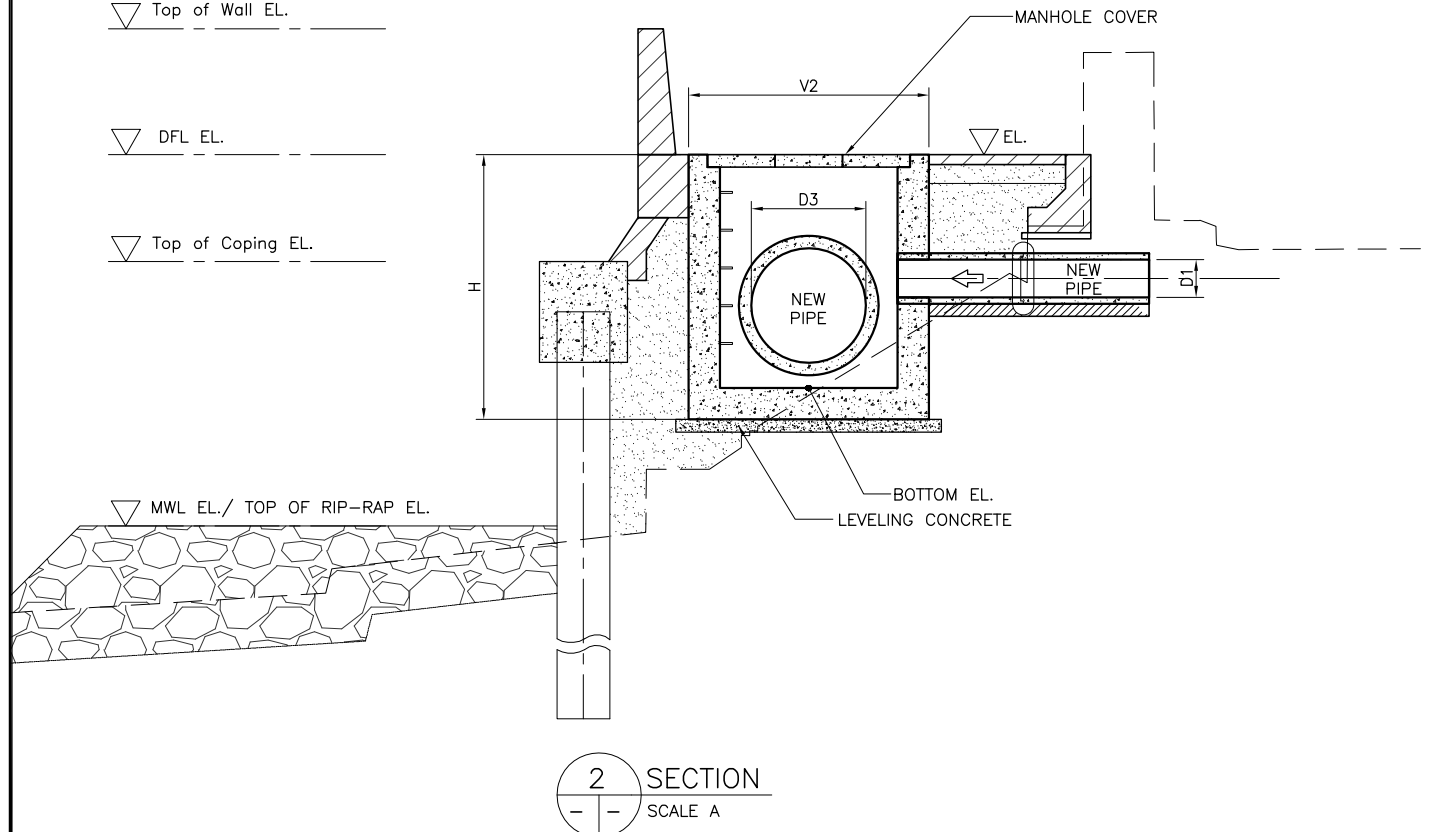
UP-DR  
JB/SC2



**SCHEDULE OF MANHOLE (STA. 14+835 ~ STA. 15+075 RB)**

STATION No.	MANHOLE NO.	OUTLET NO.	BOTTOM ELEV.	D1 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
14+864 RB	MR 186	DR 175	12.006	∅ 450	∅ 910	∅ 910	1380	1910	2877
14+605 RB	MR 187	DR 175	12.095	∅ 450	∅ 910		1380	1910	2760
15+455 RB	MR 188	DR 189	12.096	∅ 250		∅ 910	1150	1910	2060

- ▽ Top of Wall EL. \_\_\_\_\_
- ▽ DFL EL. \_\_\_\_\_
- ▽ Top of Coping EL. \_\_\_\_\_

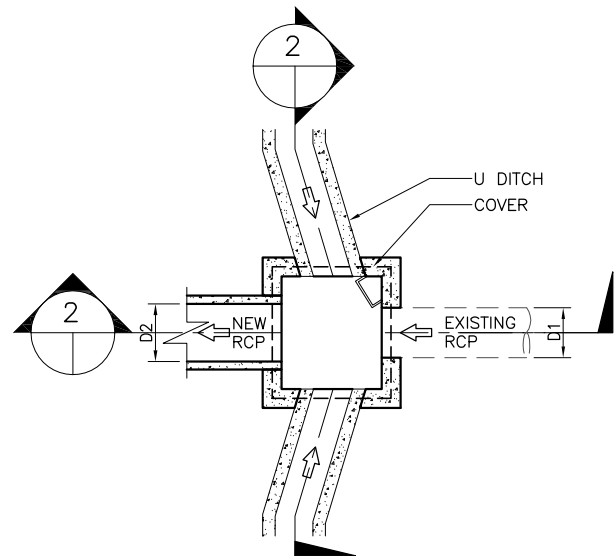


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

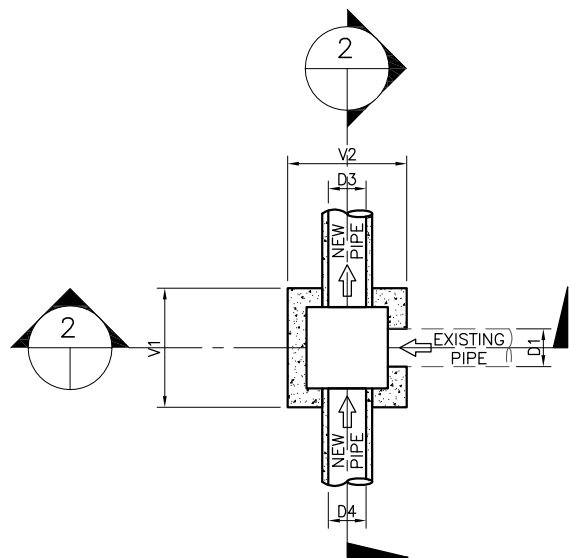
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TEAM LEADER

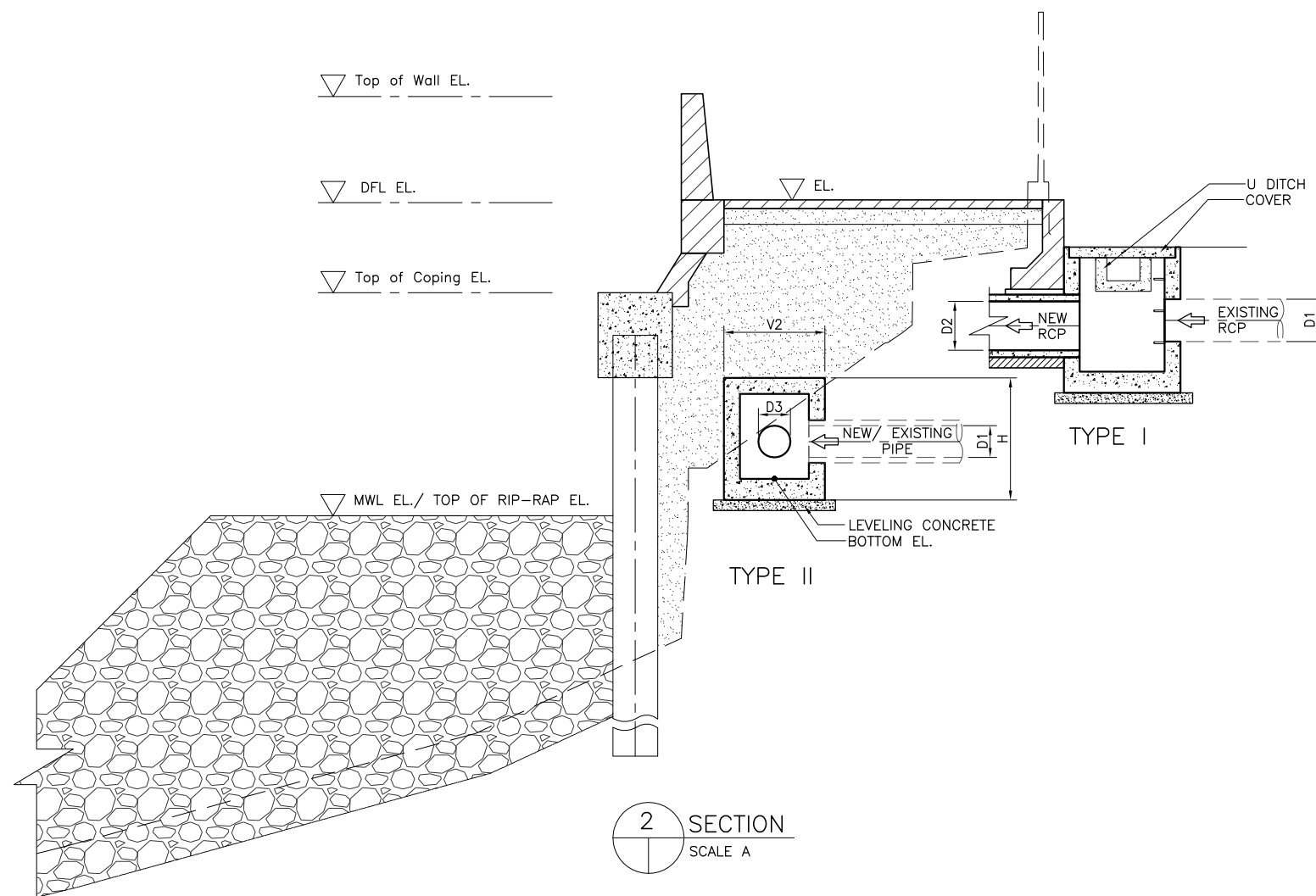
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL :		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SCHEDULE OF MANHOLE @ STA. 14+835 ~ STA. 15+075 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



TYPE I  
JUNCTION BOX PLAN  
SCALE A



TYPE II  
JUNCTION BOX PLAN  
SCALE A



SECTION  
SCALE A

SCHEDULE OF JUNCTION BOX (STA. 10+956 ~ STA. 11+263 RB)

STATION No.	JUNCTION BOX NO.	TYPE	OUTLET	BOTTOM ELEV.	D1 (mm)	D2 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
11+134 RB	JR 117.7	II	DR 117.9	11.148	ø 460		ø 460		900	900	900
11+240 RB	JR 117.13	II	DR 117.12	11.763	ø 150		ø 150		1200	1200	1210



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

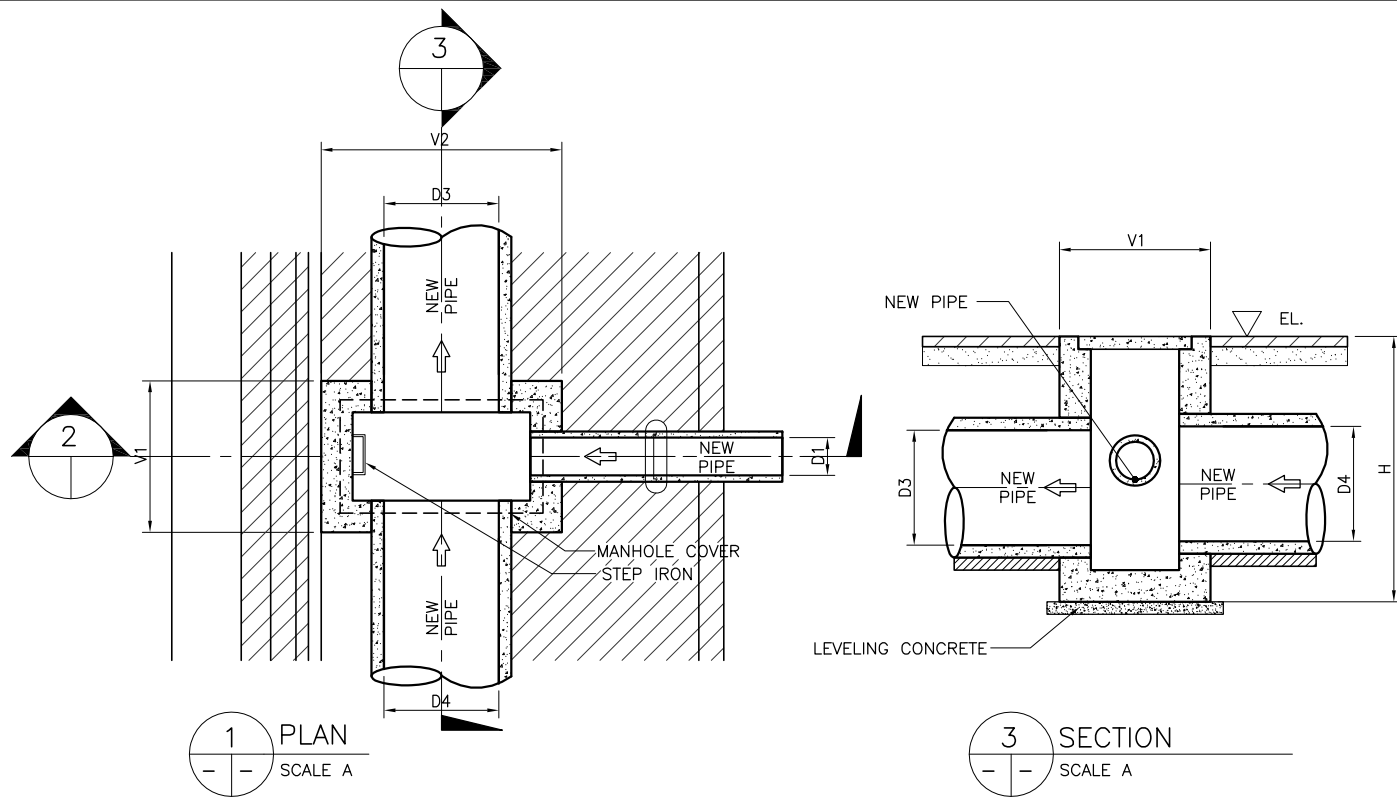
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

SCHEDULE OF  
JUNCTION BOX @  
STA. 10+956 ~  
STA. 11+263 RB

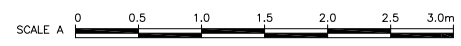
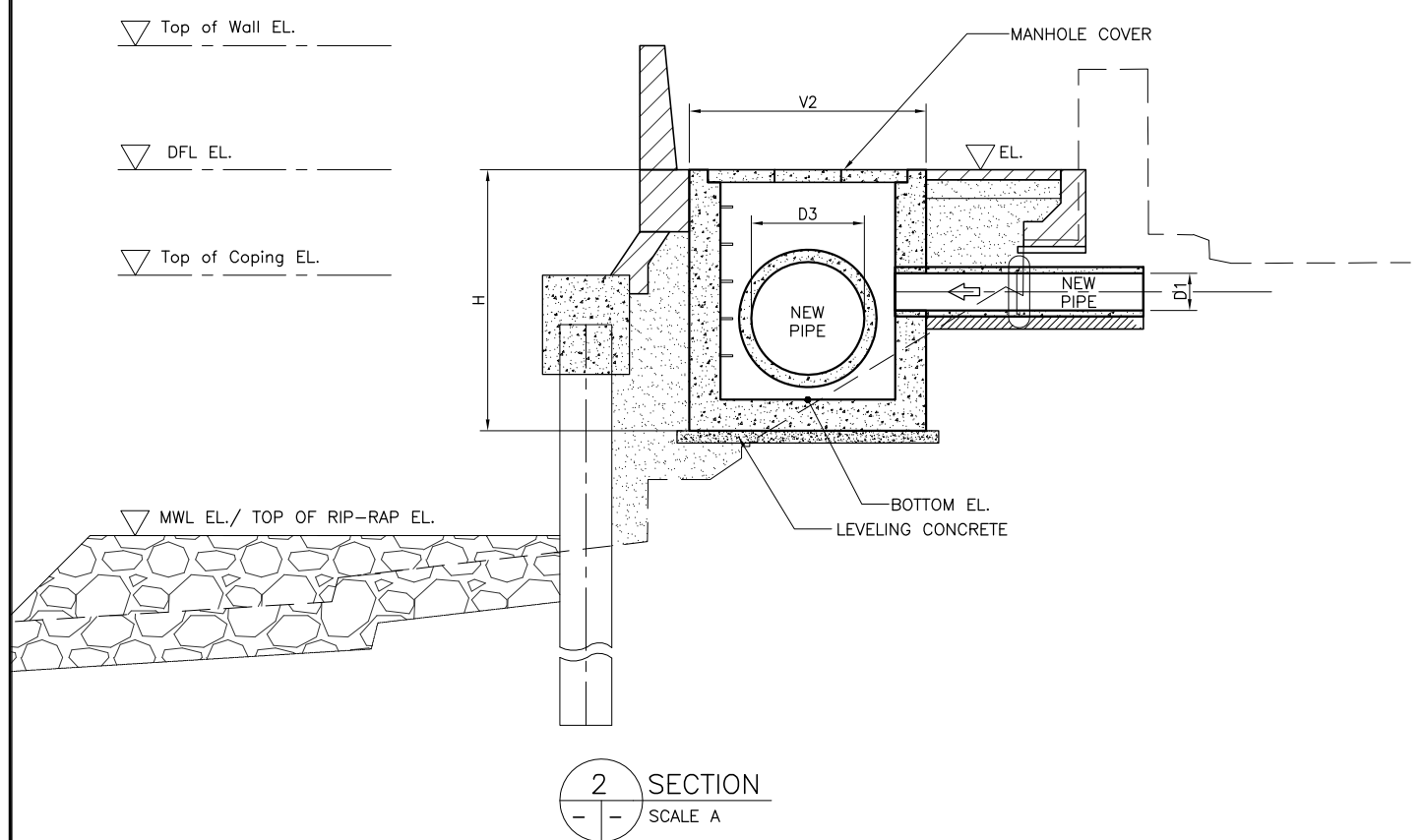
SHEET NO.





**SCHEDULE OF MANHOLE (STA. 13+578 ~ STA. 14+395 RB)**

STATION No.	MANHOLE NO.	OUTLET NO.	BOTTOM ELEV.	D1 (mm)	D3 (mm)	D4 (mm)	V1 (mm)	V2 (mm)	H (mm)
13+919 RB	MR 174.11	DR 174.9	12.039	∅ 500	∅ 910	∅ 300	1440	1910	2060
13+952 RB	MR 174C	DR 174C.1	12.077	∅100, ∅400		∅ 910	1500	1910	2348
14+057 RB	MR 174C.10	DR 174C.14	12.009	∅ 100		∅ 800	1100	1900	1975
14+099 RB	MR 174C.16	DR 174E	12.009	∅ 200		∅ 800	1100	1900	2100
14+149 RB	MR 174E.10	DR 174E	12.012	∅ 200	∅ 800		1100	1900	2299
14+197 RB	MR 174E.26	DR 174E.12	12.134	∅150, ∅150	∅ 800		1100	1900	2098
14+283 RB	MR 174E.34	DR 175	12.077	∅150, ∅150	∅ 500	∅ 910	1100	1910	2043
14+303 RB	MR 176	DR 177	12.061	∅ 300		∅ 910	1200	1910	2333

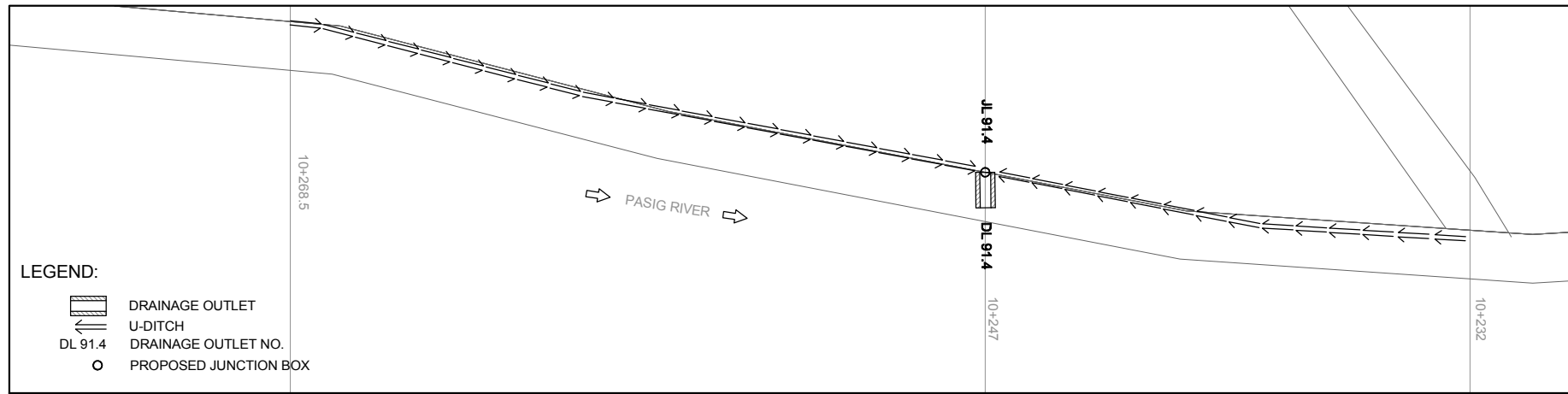


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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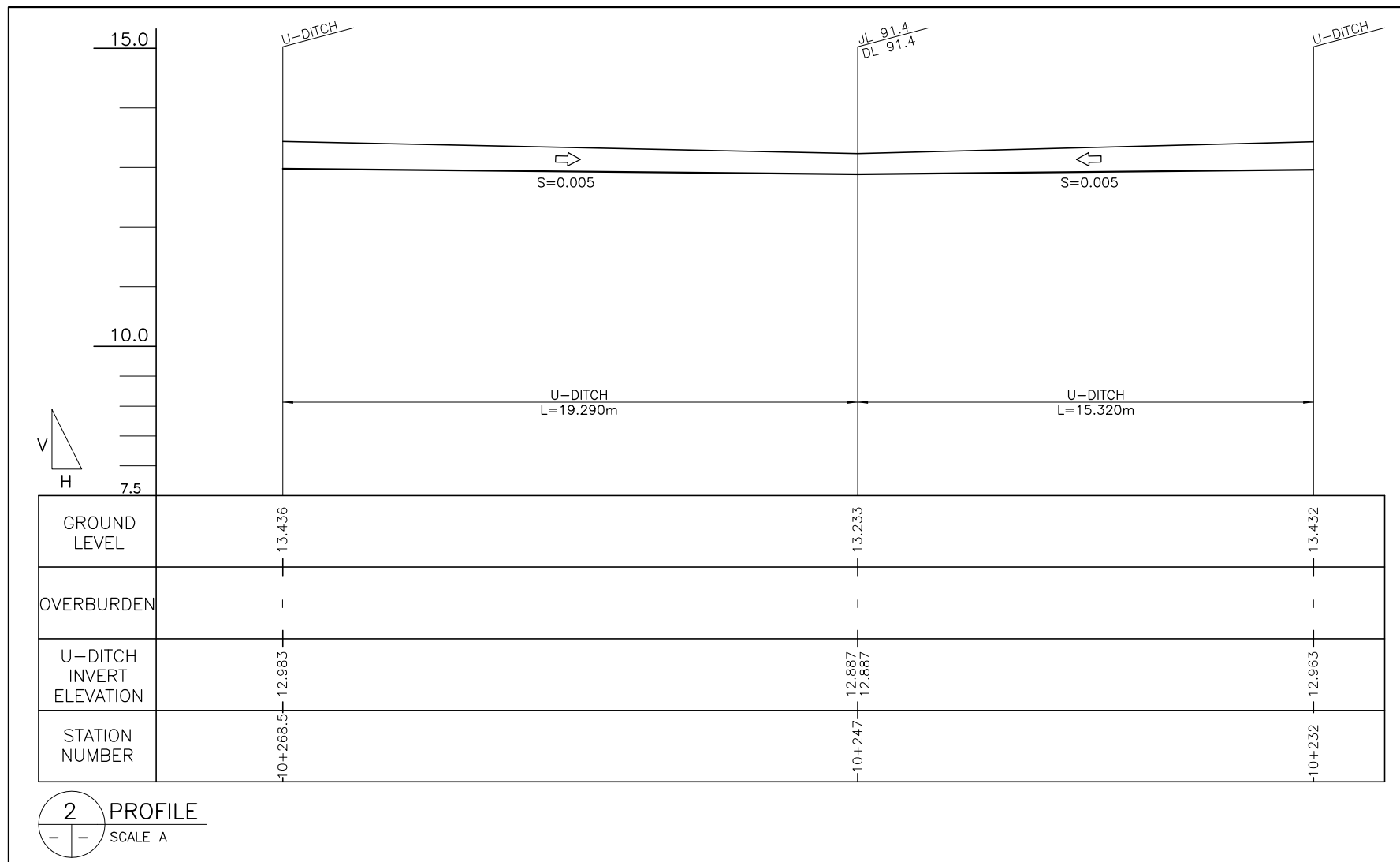
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SCHEDULE OF MANHOLE @ STA. 13+578 ~ STA. 14+395 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			



- LEGEND:**
- DRAINAGE OUTLET
  - U-DITCH
  - DRAINAGE OUTLET NO. DL 91.4
  - PROPOSED JUNCTION BOX

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

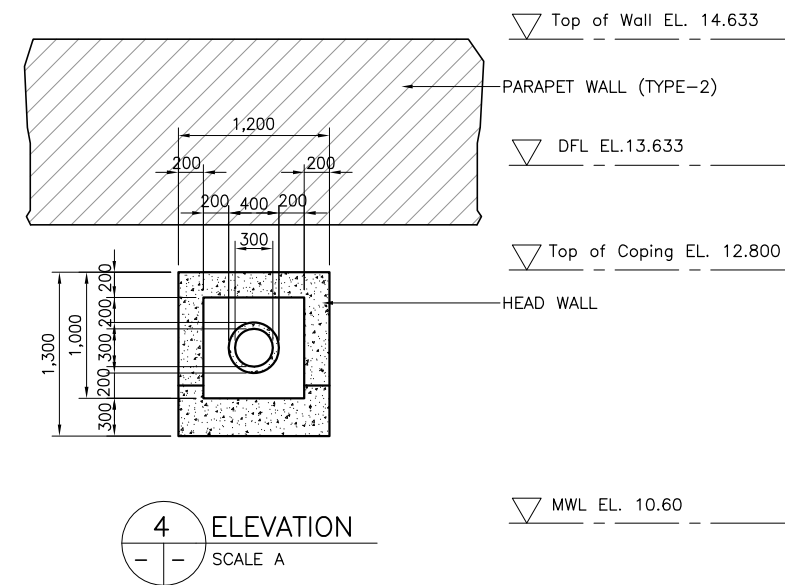
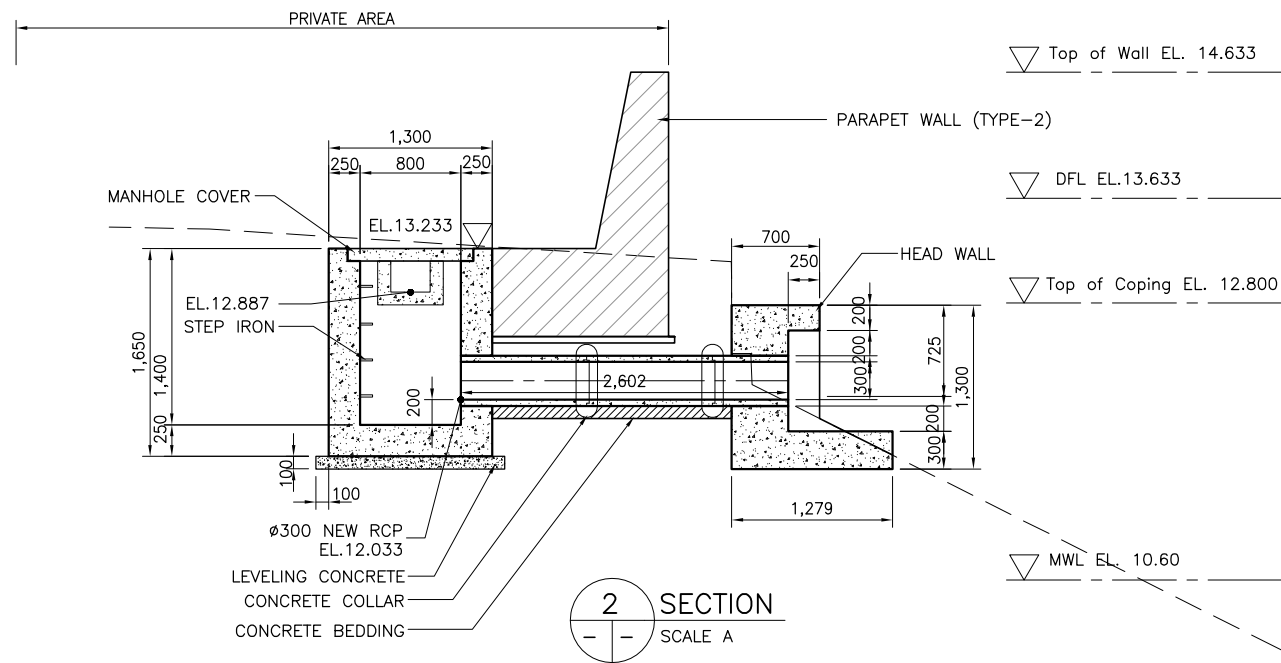
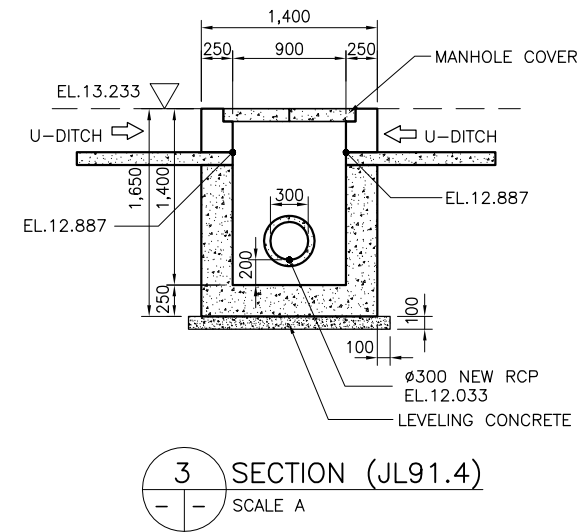
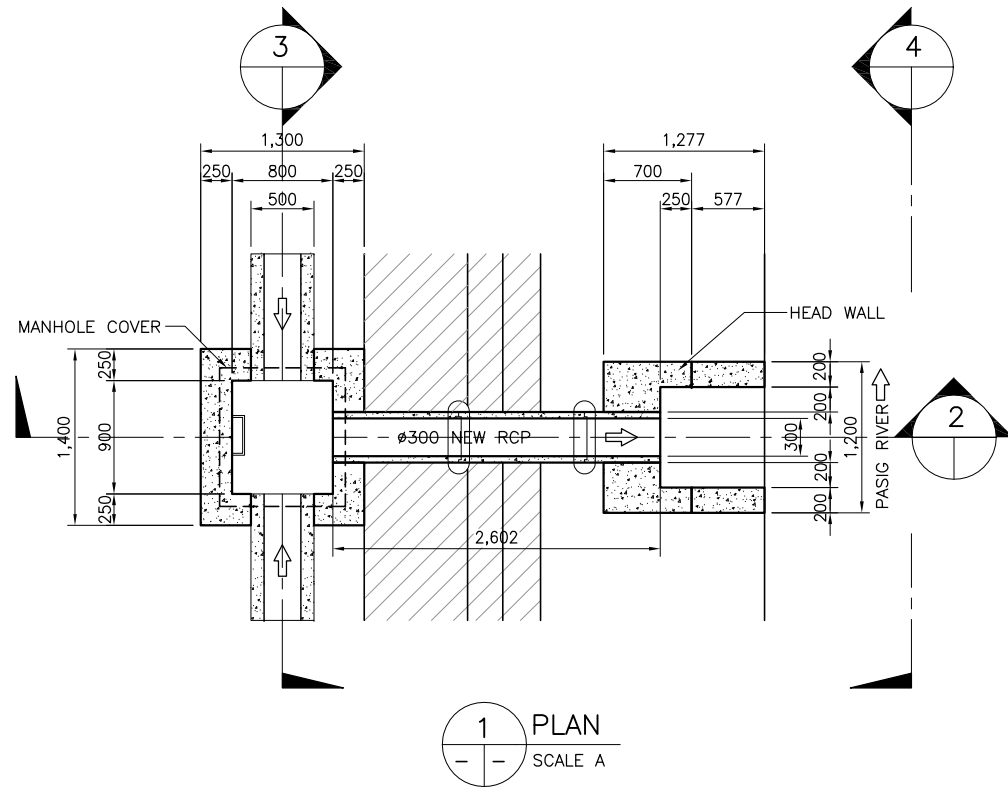
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF  
U-DITCH COLLECTOR

SHEET NO.





NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
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AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMD - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE UNDERSECRETARY

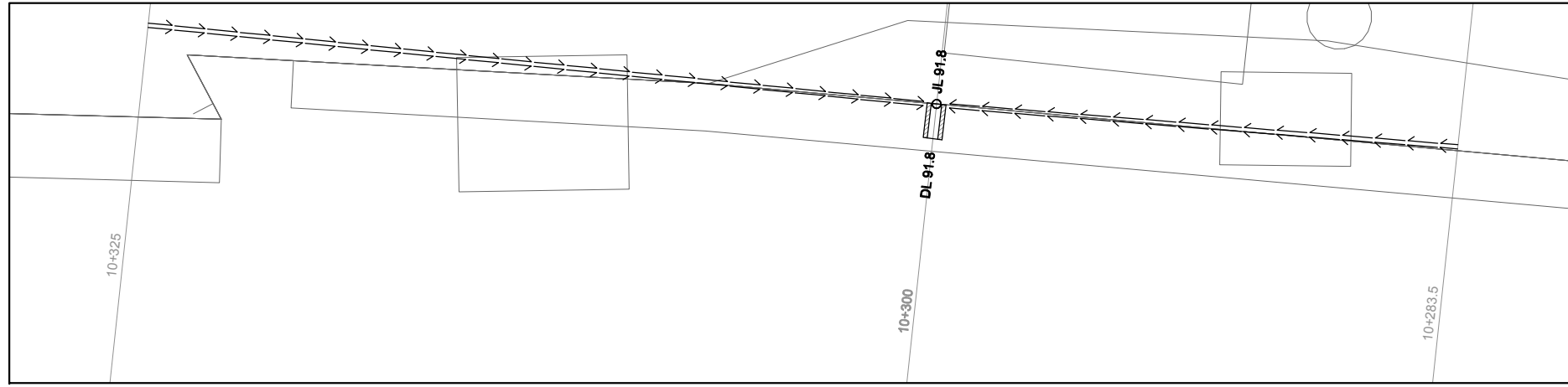
RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS  
DETAIL OF DRAINAGE  
OUTLET- DL91.4 &  
JUNCTION BOX JL91.4  
STA. 10+247 LB

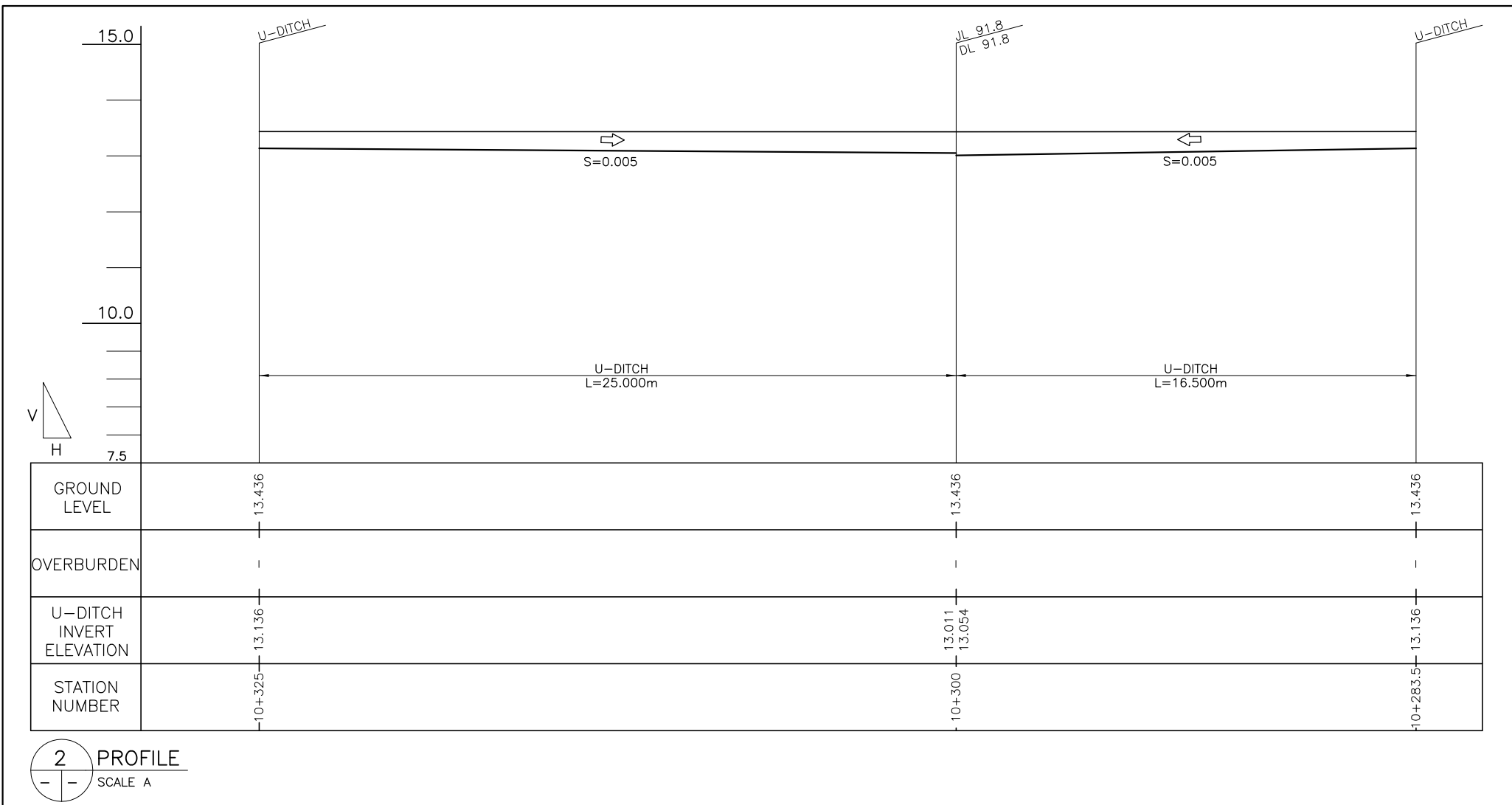
SHEET NO.  
UP-DL  
DO91.4



LEGEND:

- DRAINAGE OUTLET
- U-DITCH
- DRAINAGE OUTLET NO. DL 91.8
- PROPOSED JUNCTION BOX

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

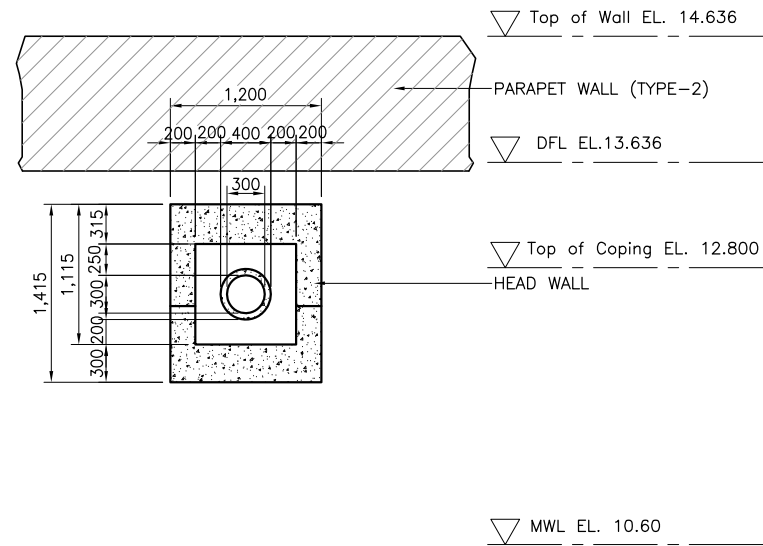
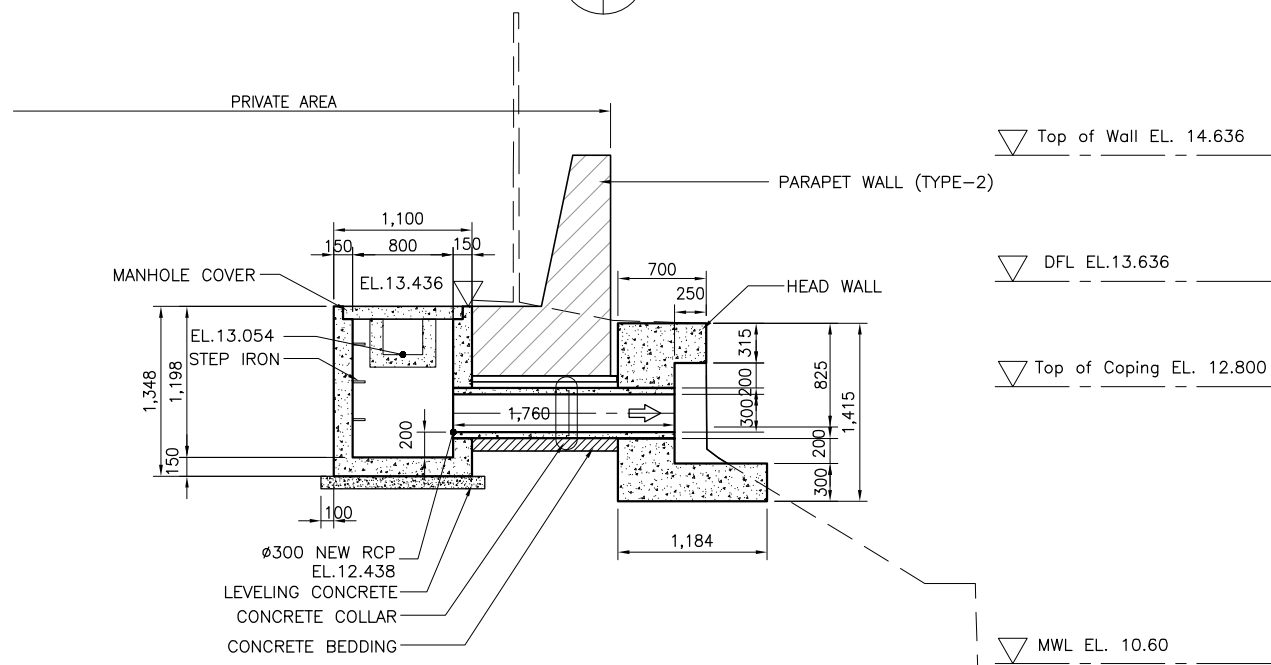
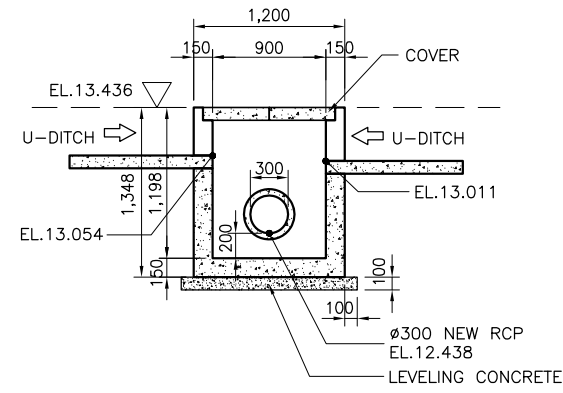
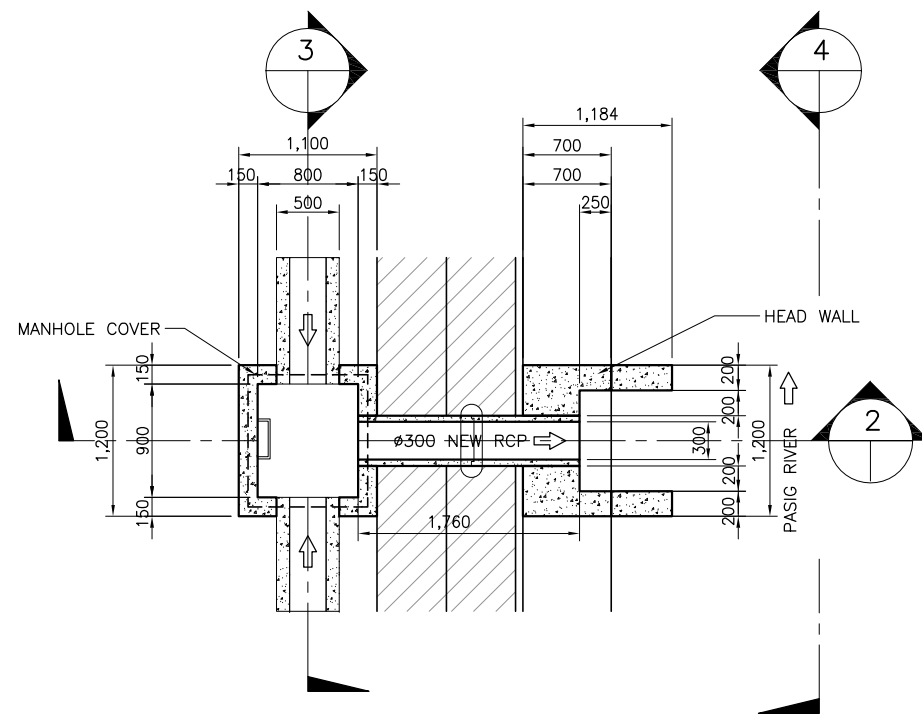


REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF U-DITCH COLLECTOR	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			



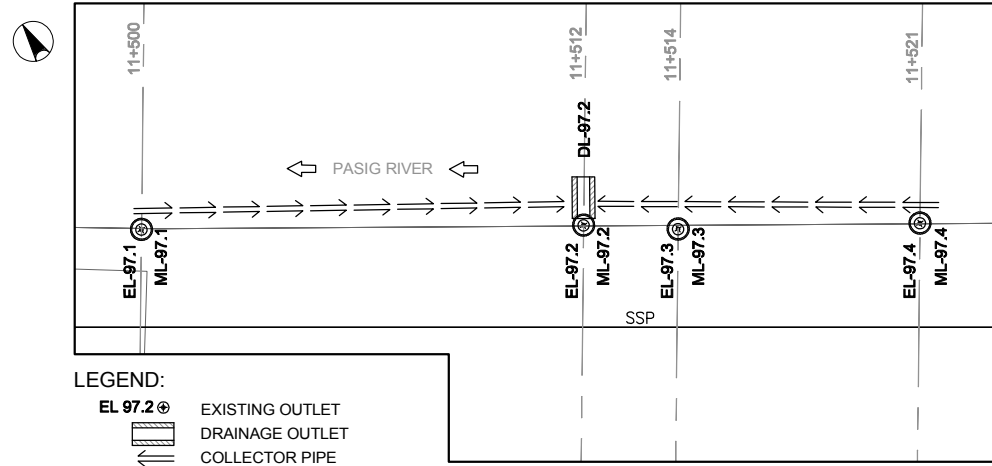
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

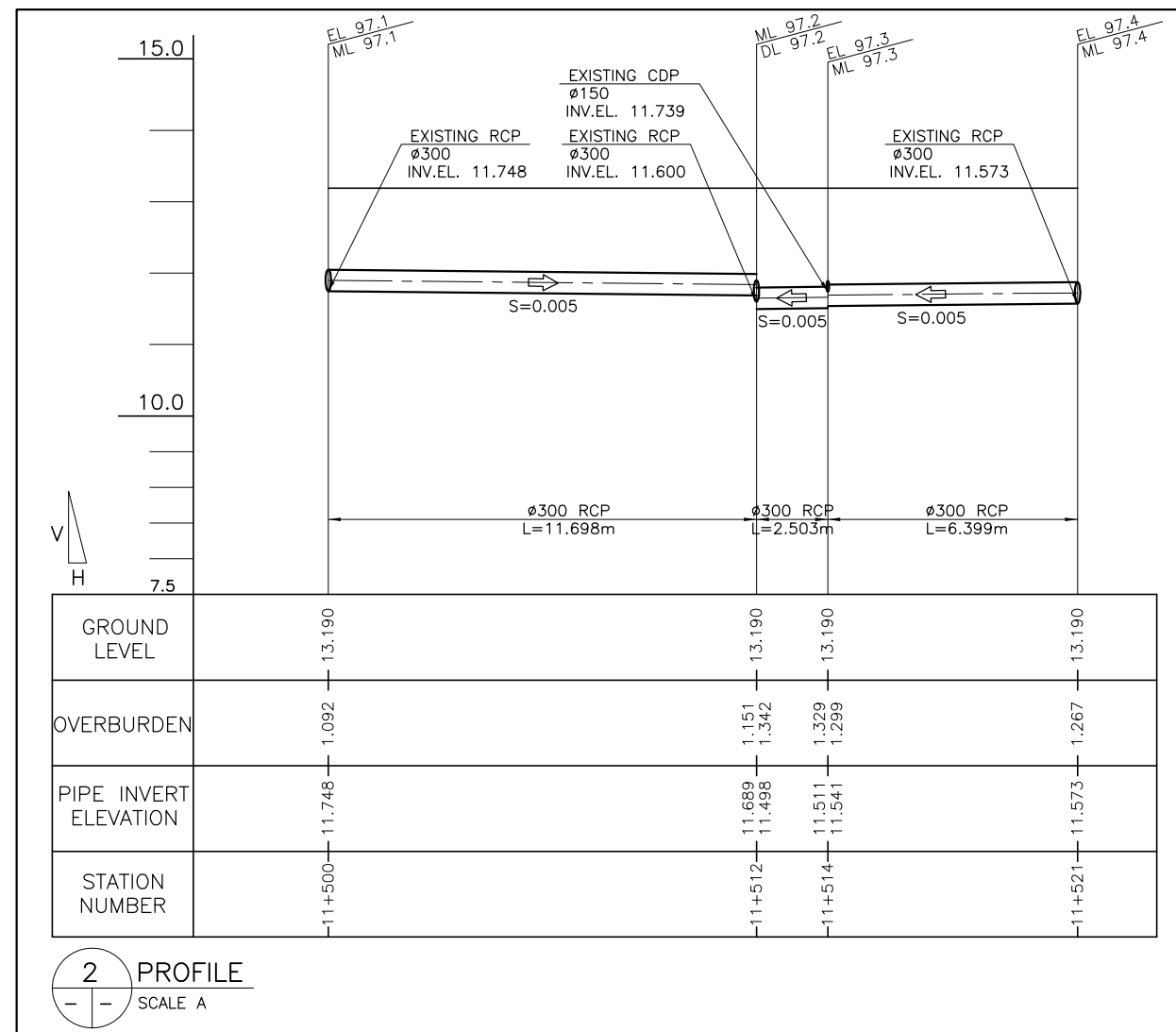
<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> DETAIL OF DRAINAGE OUTLET- DL91.8 & JUNCTION BOX JL91.8 STA. 10+300 LB		<b>SHEET NO.</b> 
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:				
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			





- LEGEND:**
- EL 97.2 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DL 97.2 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



**REPUBLIC OF THE PHILIPPINES**  
**DEPARTMENT OF PUBLIC WORKS**  
**AND HIGHWAYS**

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION

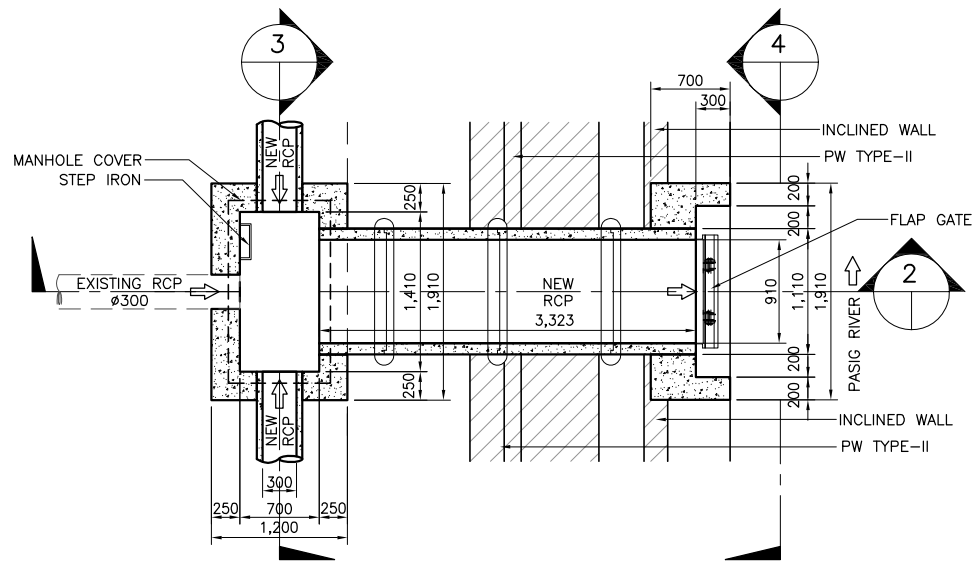
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

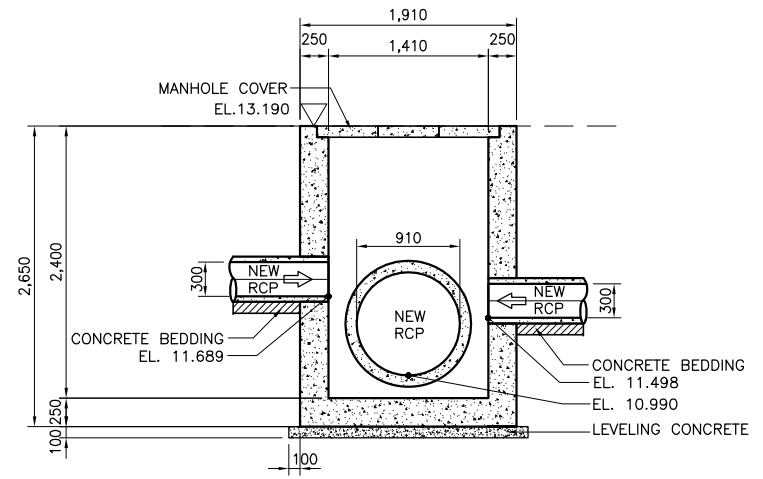
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

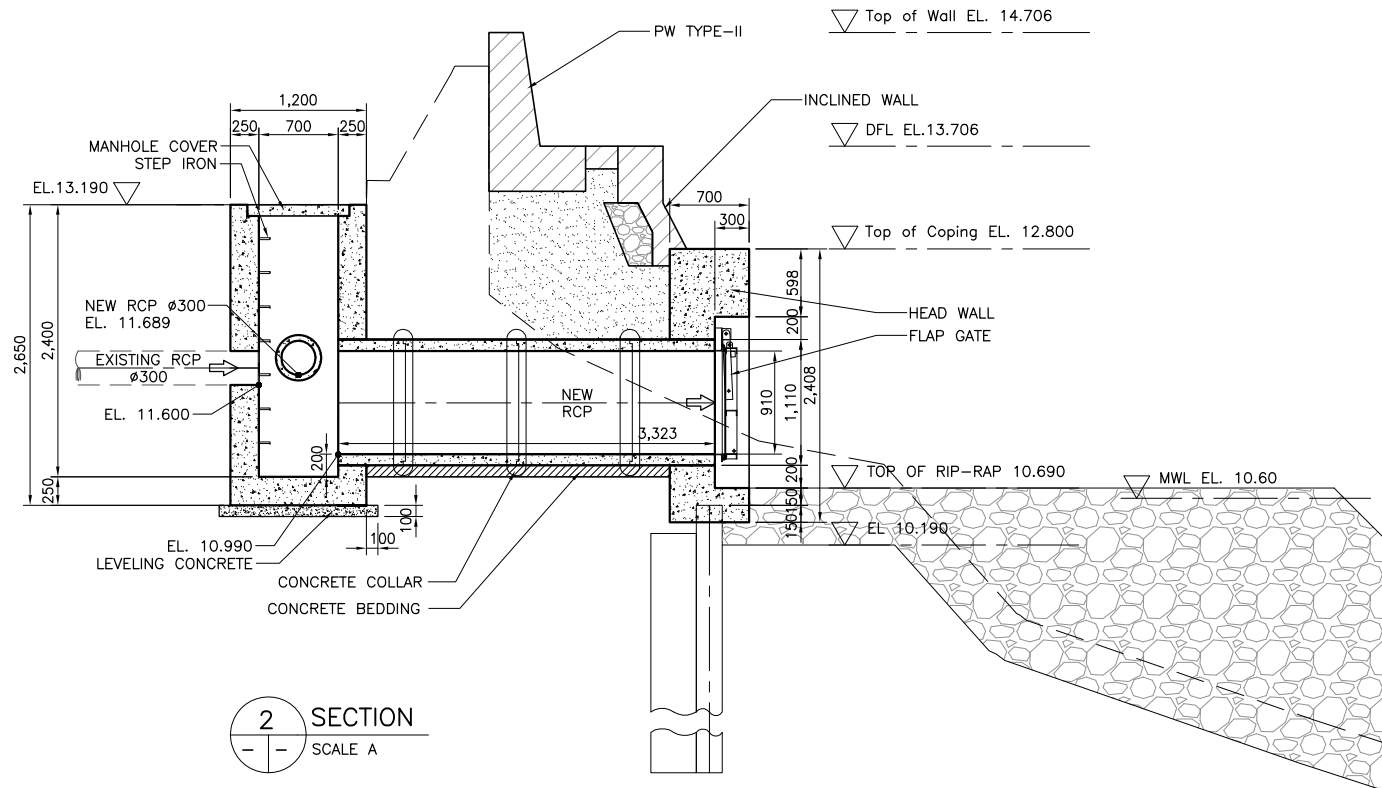
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DO/97.2/P



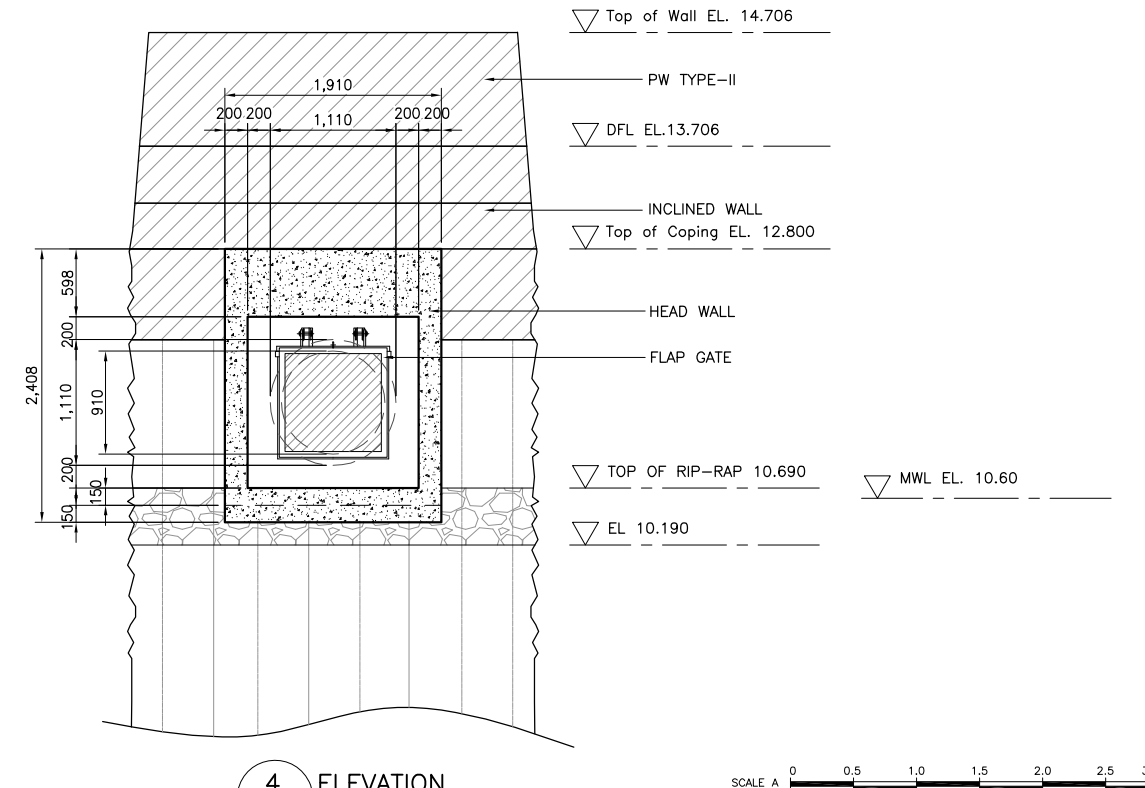
1 PLAN  
SCALE A



3 SECTION (ML97.2)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A

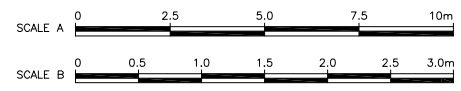
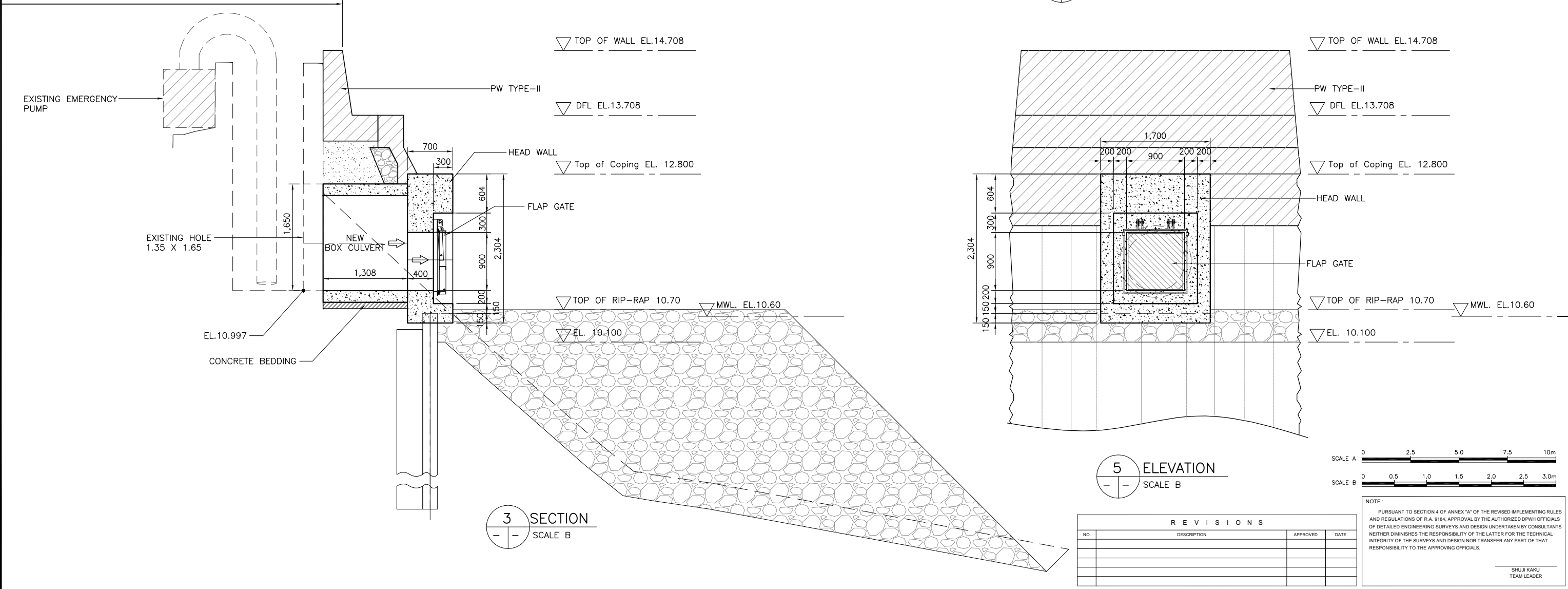
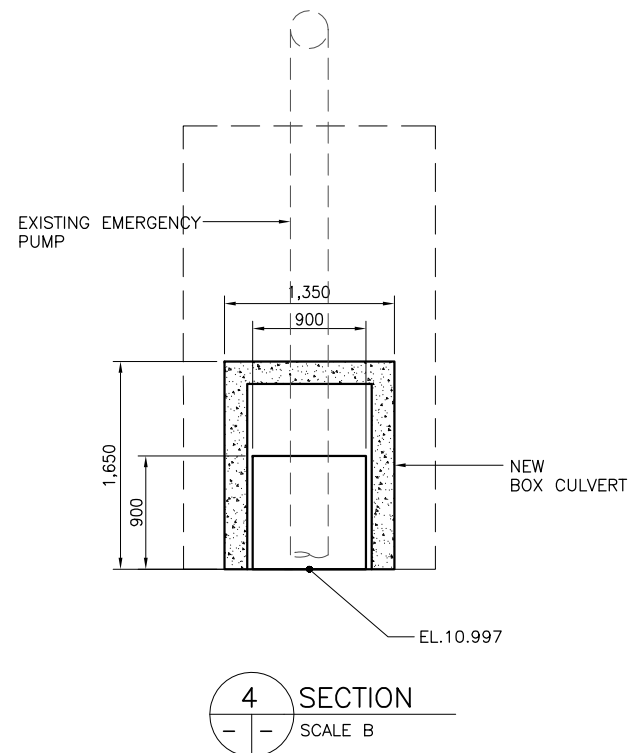
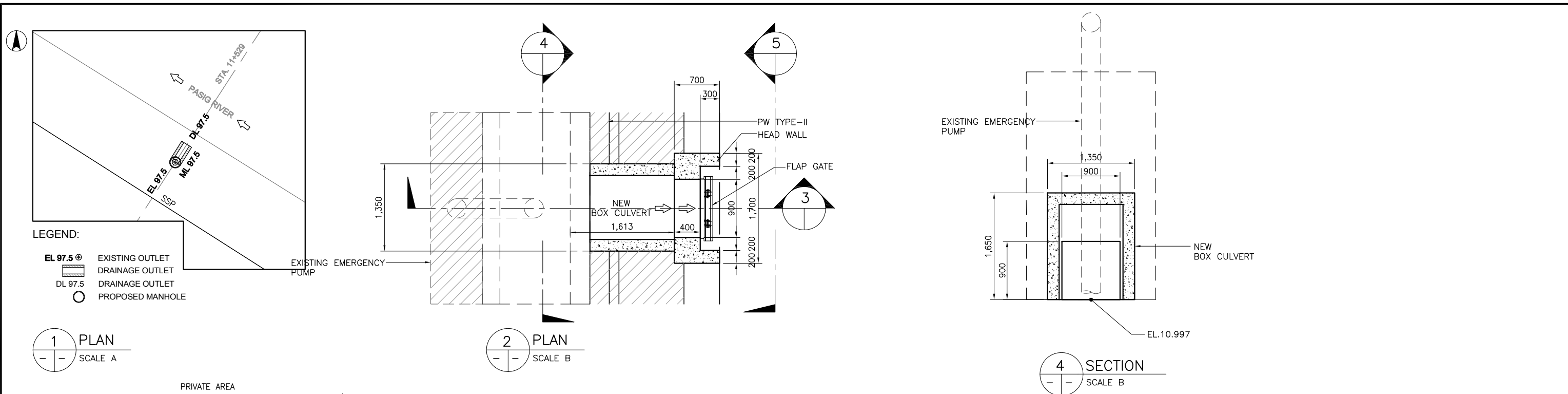


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL 97.2 & MANHOLE ML97.2 STA. 11+512 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			

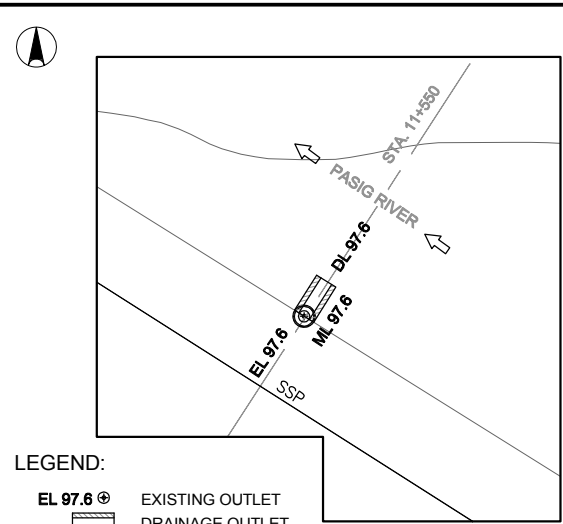


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REVISIONS			
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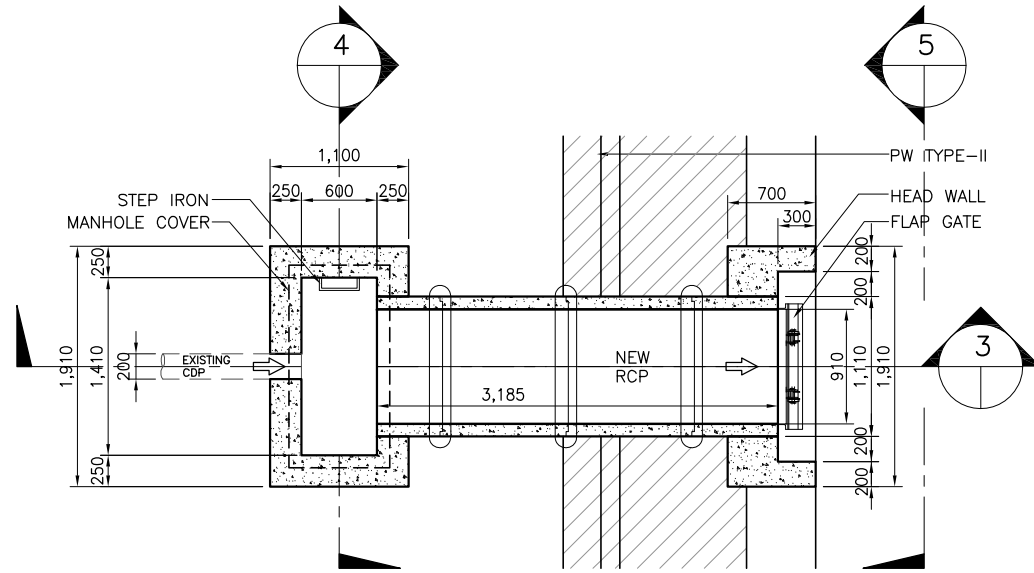
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL 97.5 & MANHOLE ML97.5 STA. 11+529 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			

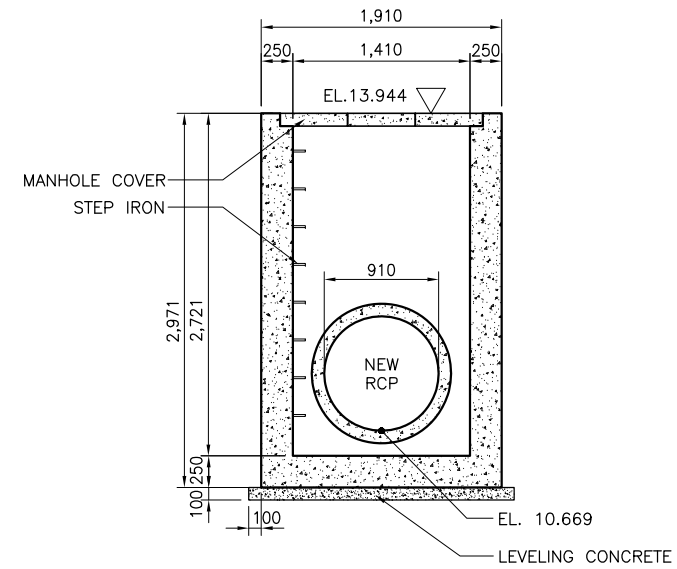


- LEGEND:**
- EL 97.6 ⊙ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DL 97.6 DRAINAGE OUTLET
  - PROPOSED MANHOLE

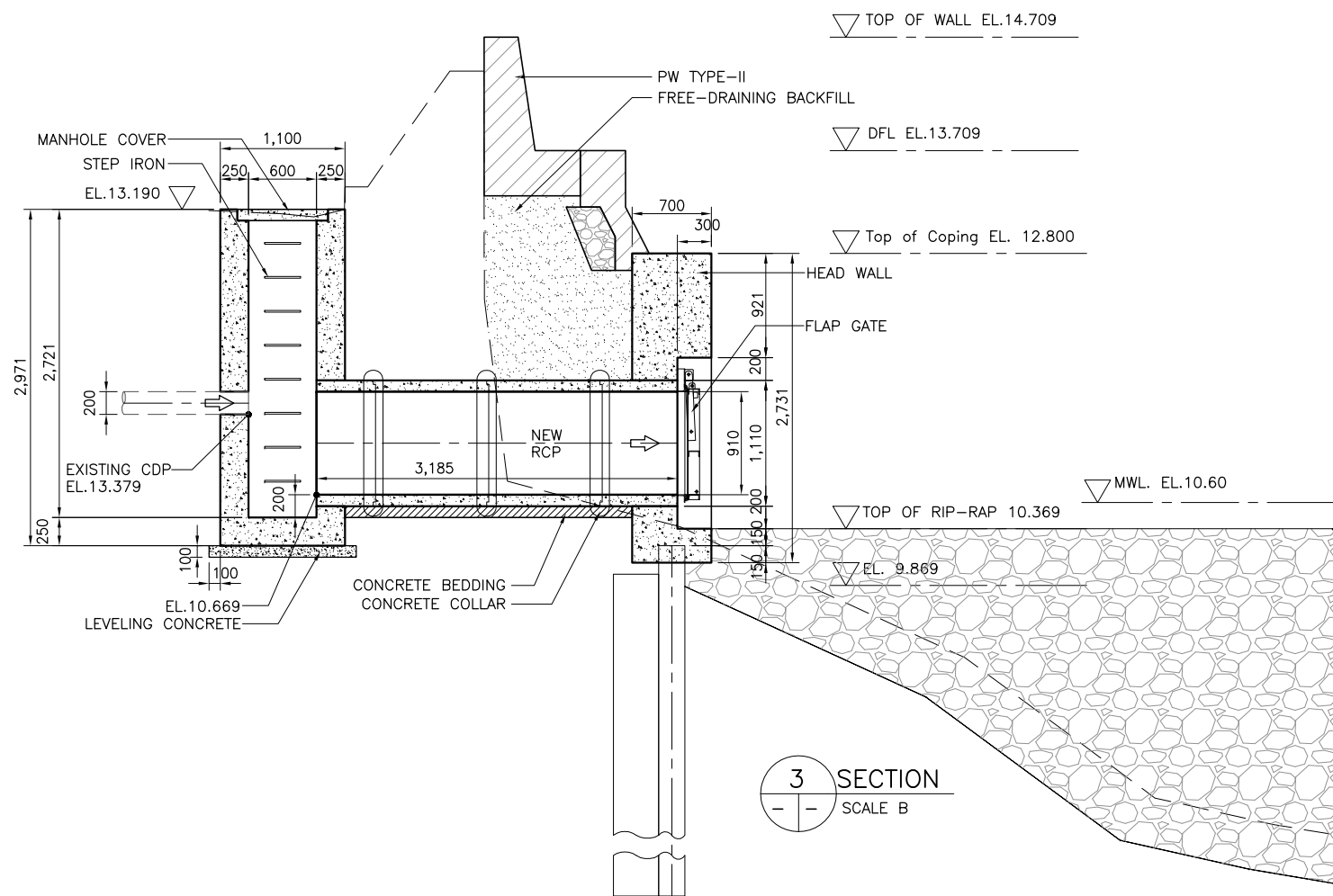
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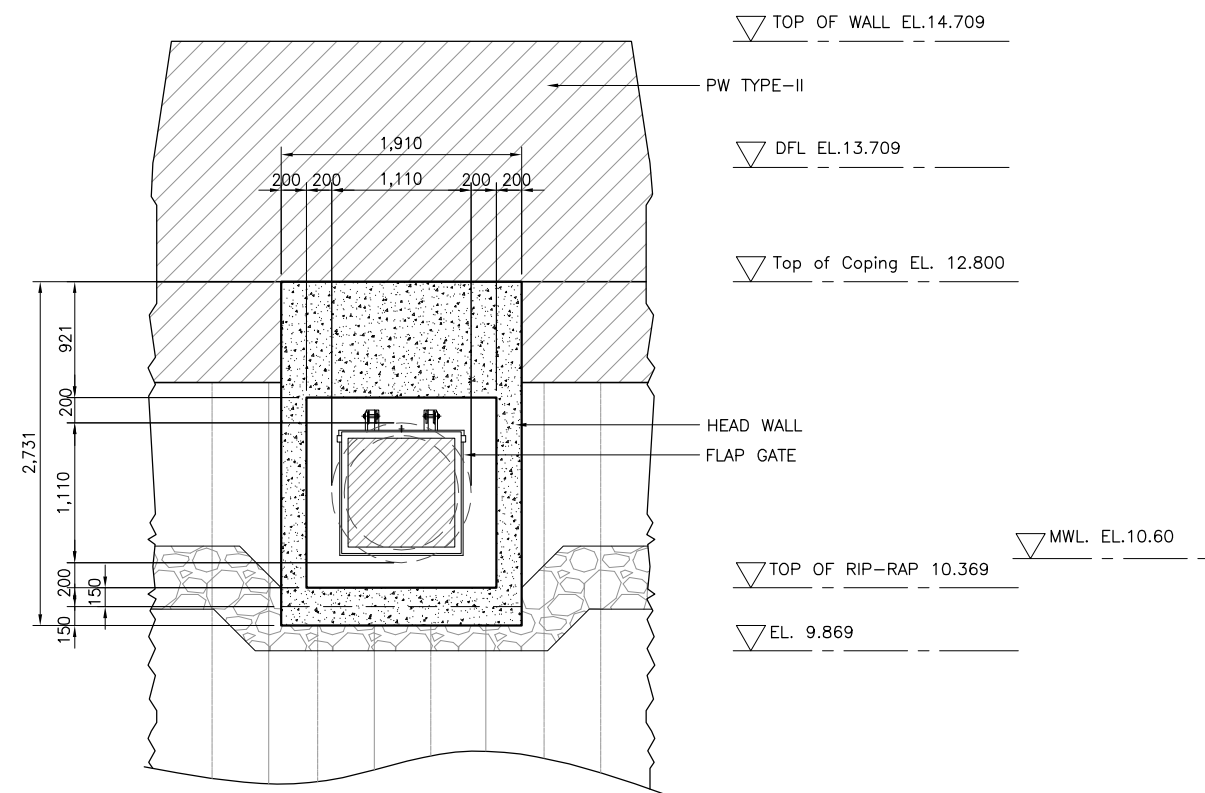
**2 PLAN**  
SCALE B



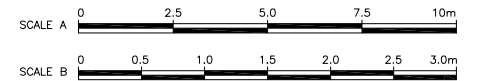
**4 SECTION (ML97.6)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

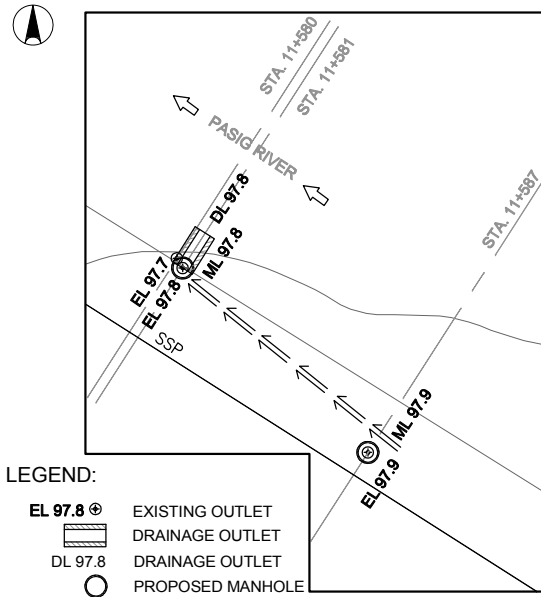
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE  
OUTLET- DL 97.6 &  
MANHOLE ML97.6  
STA. 11+550 LB

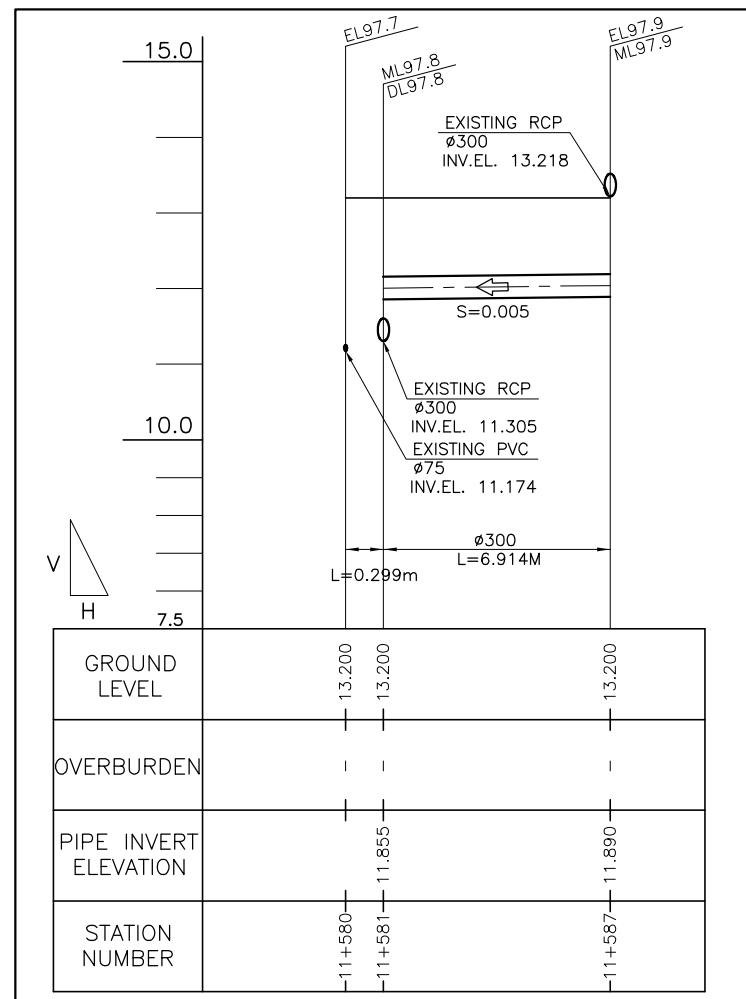
SHEET NO.





- LEGEND:
- EL 97.8 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DL 97.8 DRAINAGE OUTLET
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

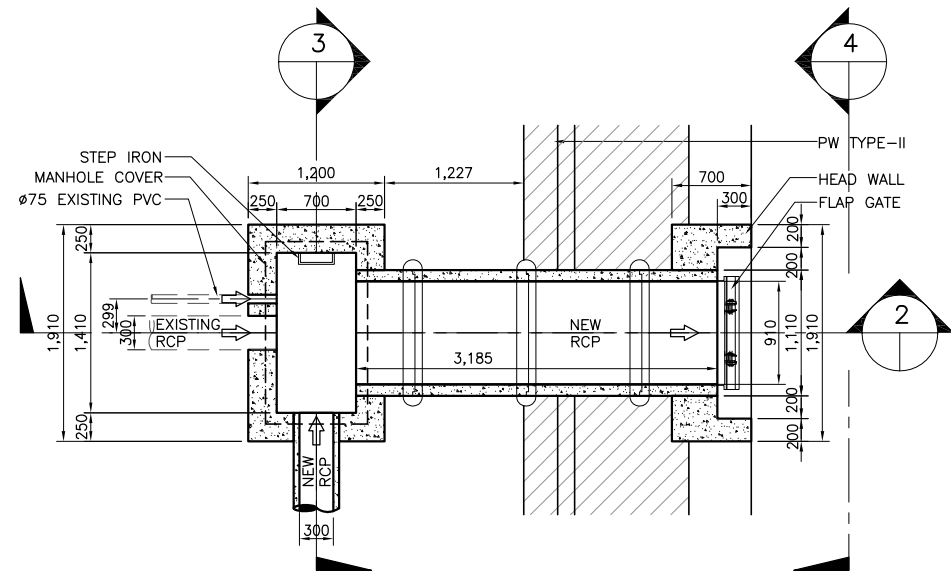


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

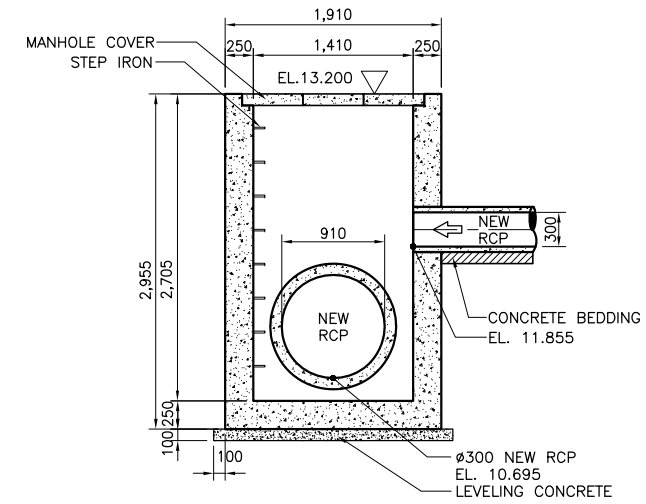
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

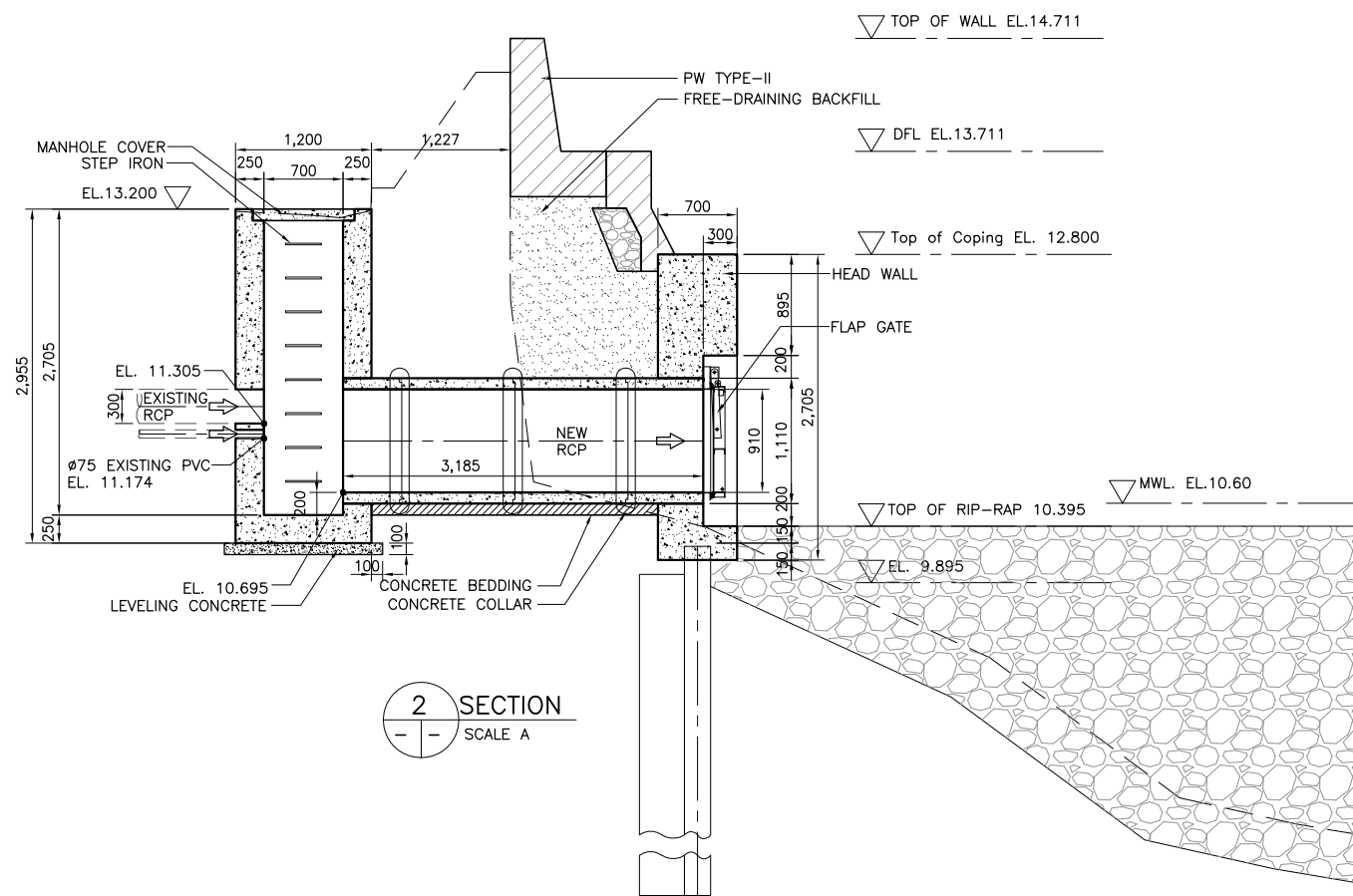
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE		
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP
			APPROVED BY:						
			SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY			SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY			
			RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			ROGELIO L. SINGSON SECRETARY			



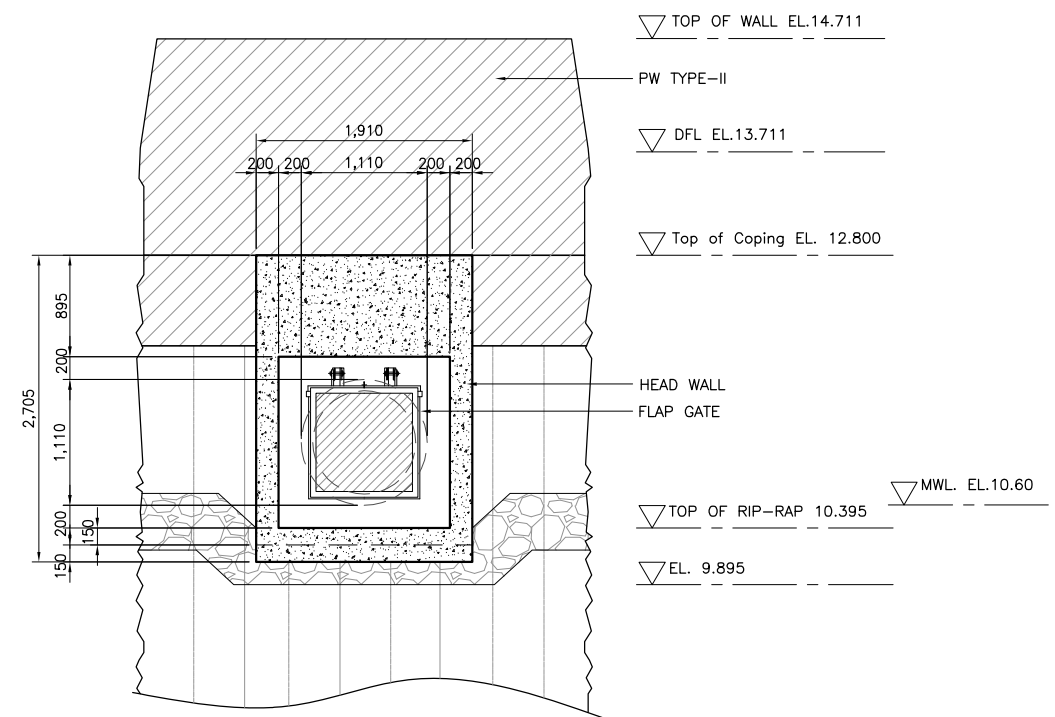
1 PLAN  
SCALE A



3 SECTION (ML97.8)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A

SCALE A 0 0.5 1.0 1.5 2.0 2.5 3.0m

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

PROJECT & LOCATION

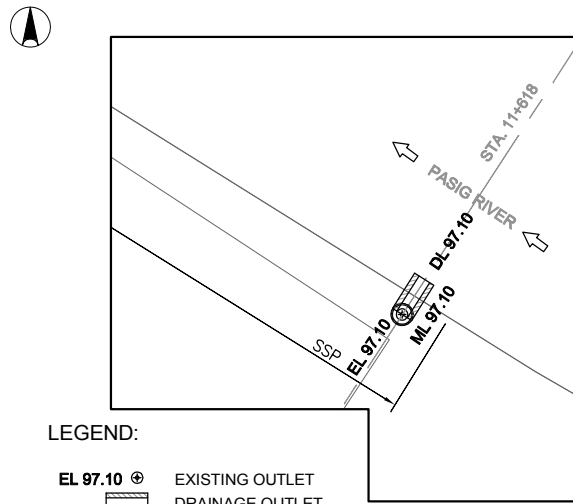
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE OUTLET- DL 97.8 & MANHOLE ML97.8 STA. 11+580 LB

SHEET NO.

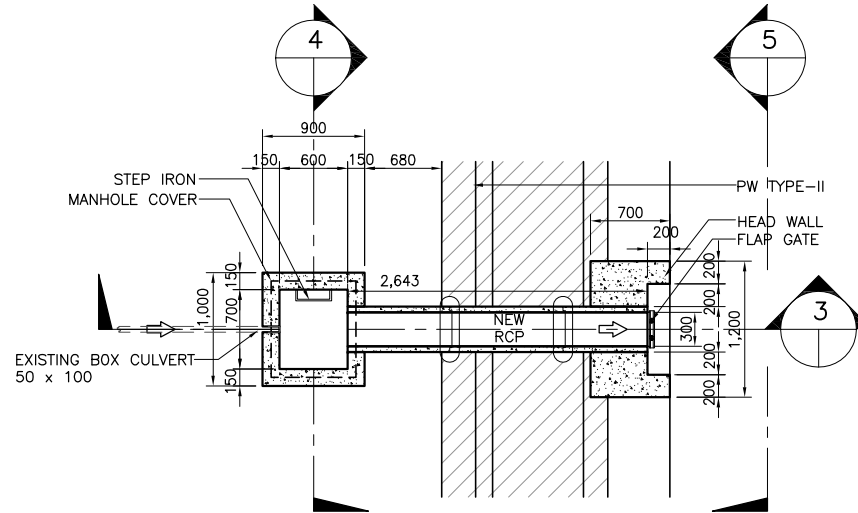




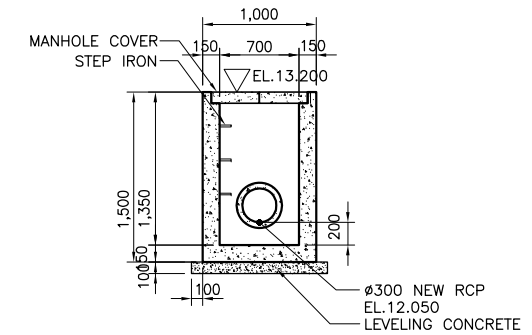
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- EL 97.10 ⊕ EXISTING OUTLET
- ▭ DRAINAGE OUTLET
- DL 97.10 DRAINAGE OUTLET
- PROPOSED MANHOLE

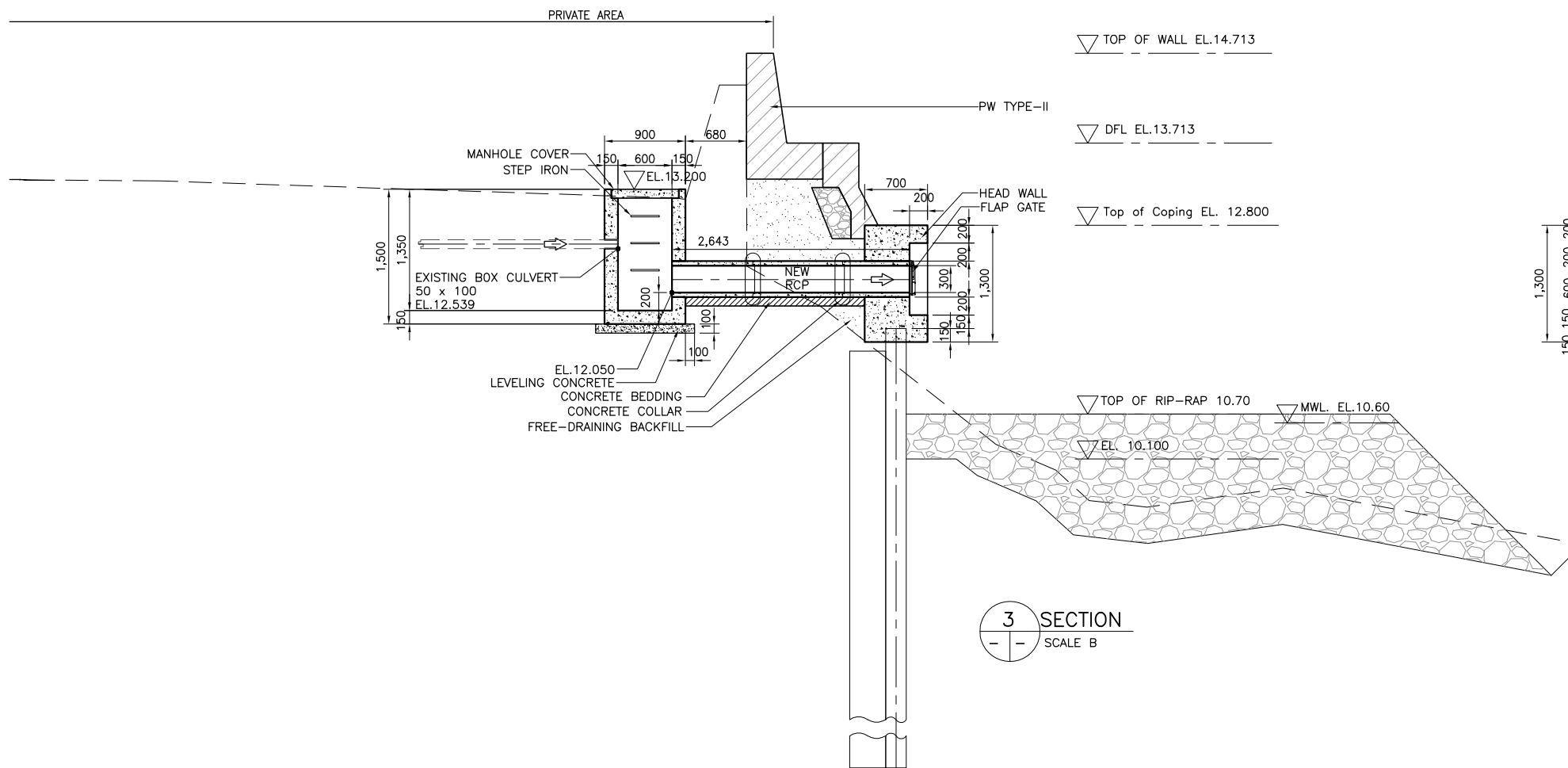
1 PLAN  
SCALE A



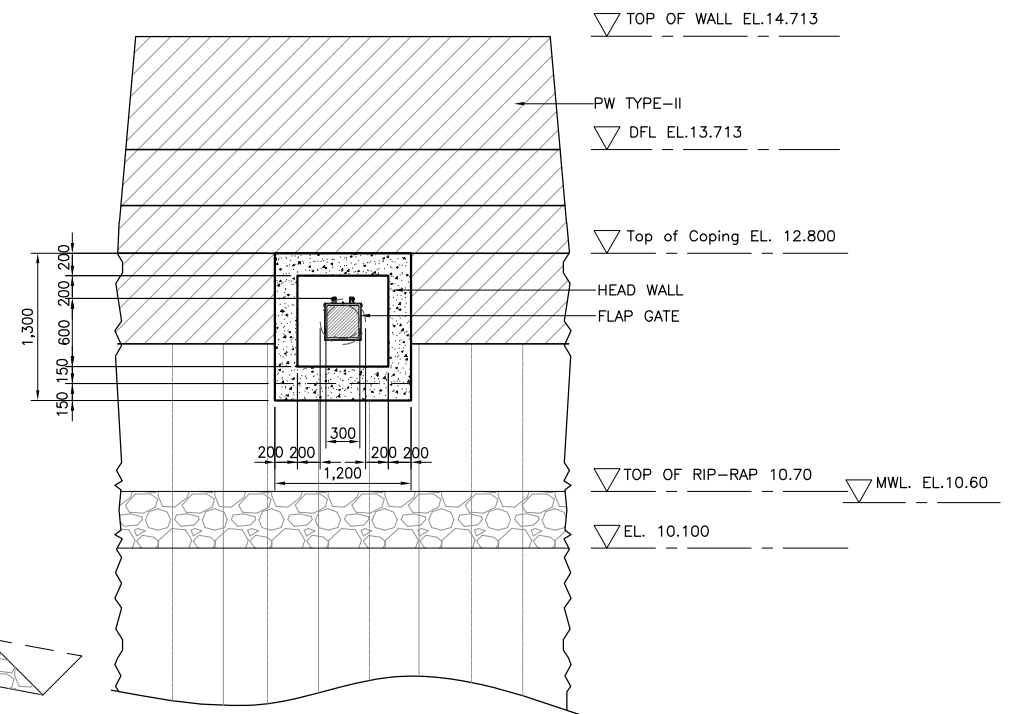
2 PLAN  
SCALE B



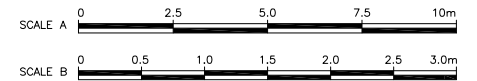
4 SECTION (ML97.10)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

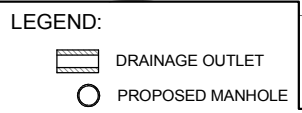
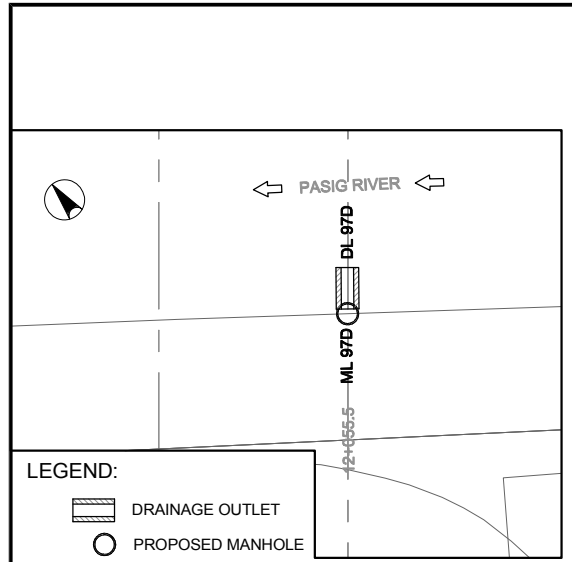
RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

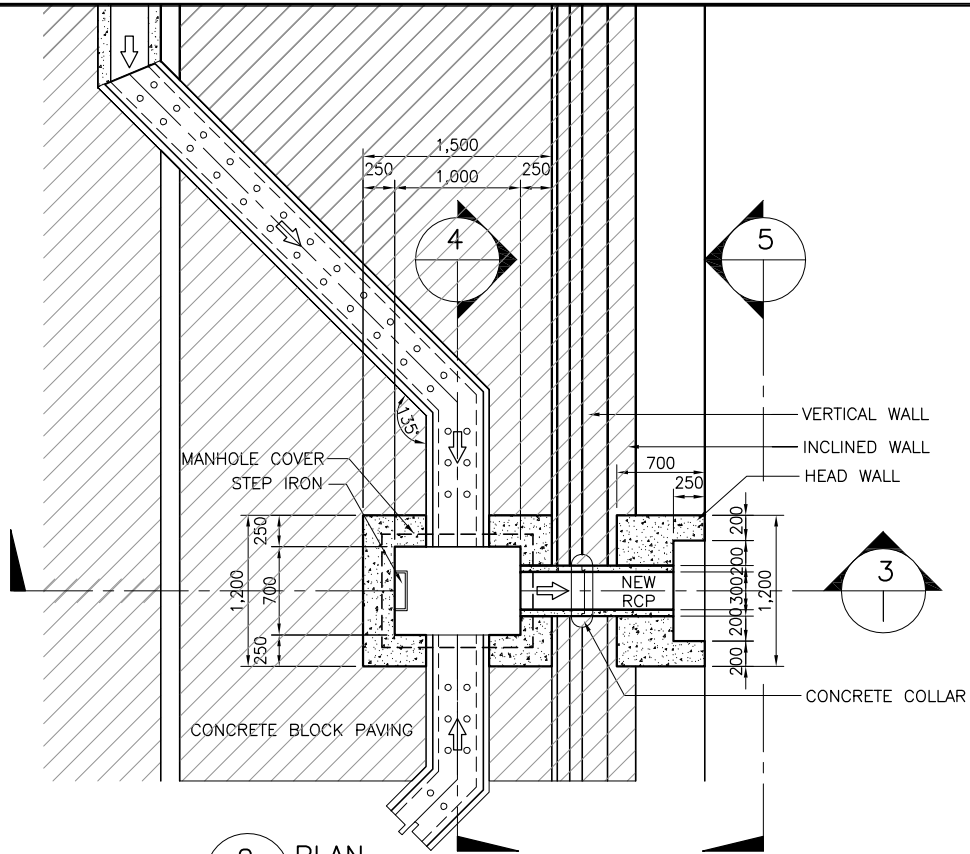
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL 97.10 & MANHOLE ML97.10 STA. 11+618 LB

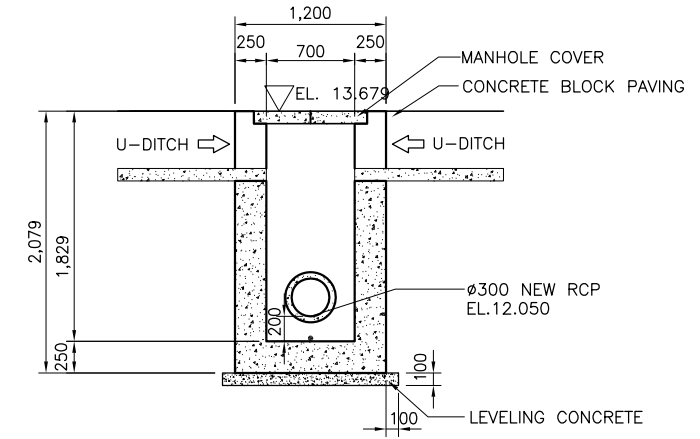
SHEET NO.: UP-DL/DO/97.10



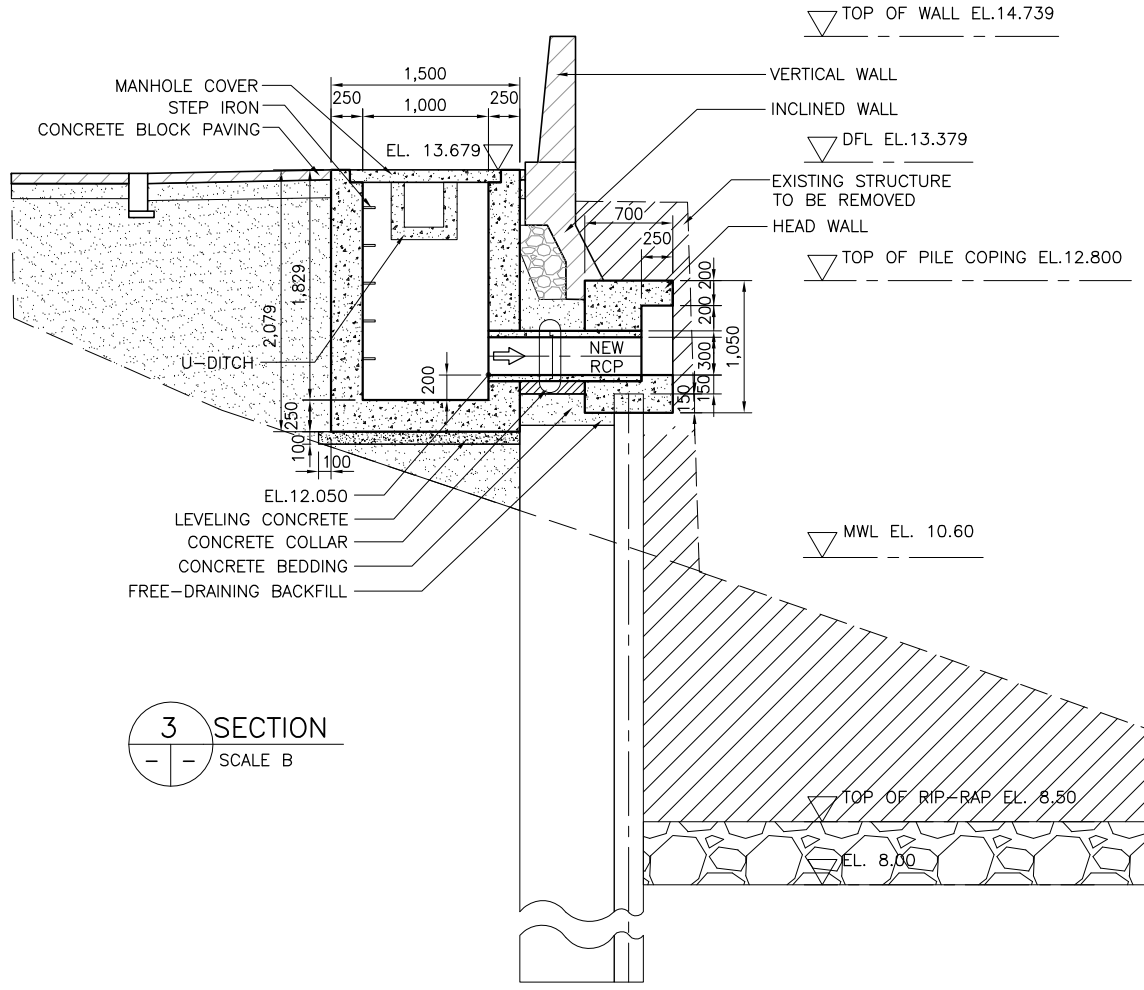
1 DRAINAGE PLAN  
SCALE A



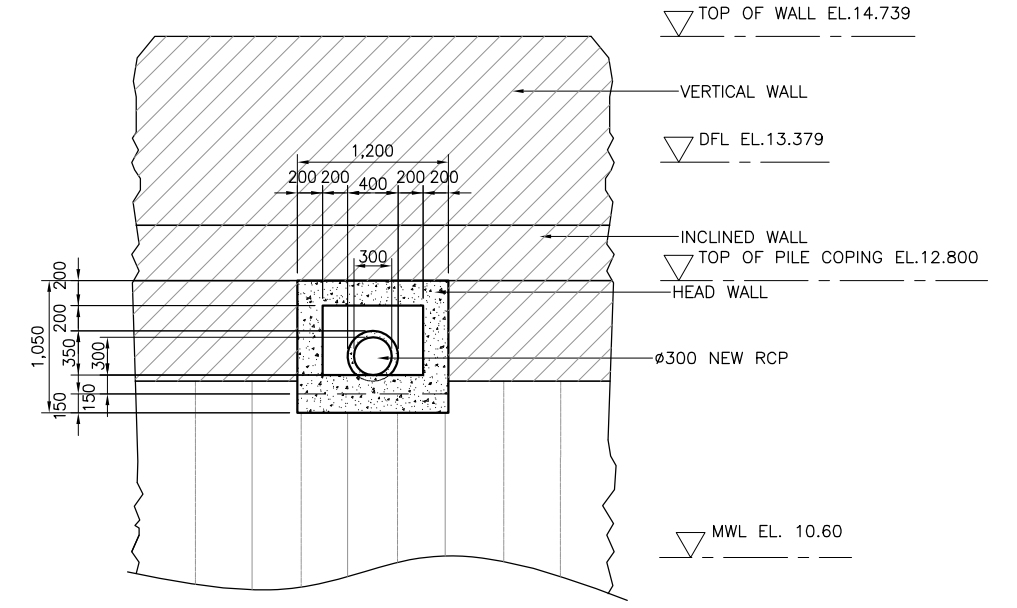
2 PLAN  
SCALE B



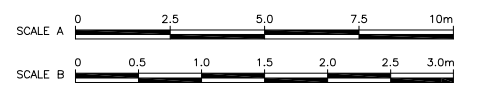
4 SECTION (ML 97D)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



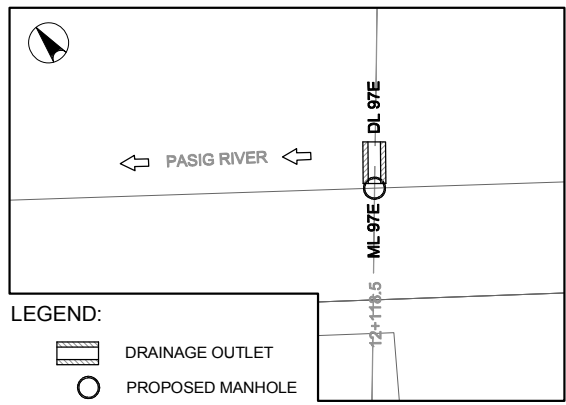
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL 97D & MANHOLE ML 97D STA 12+055.5 LB		
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD				SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY

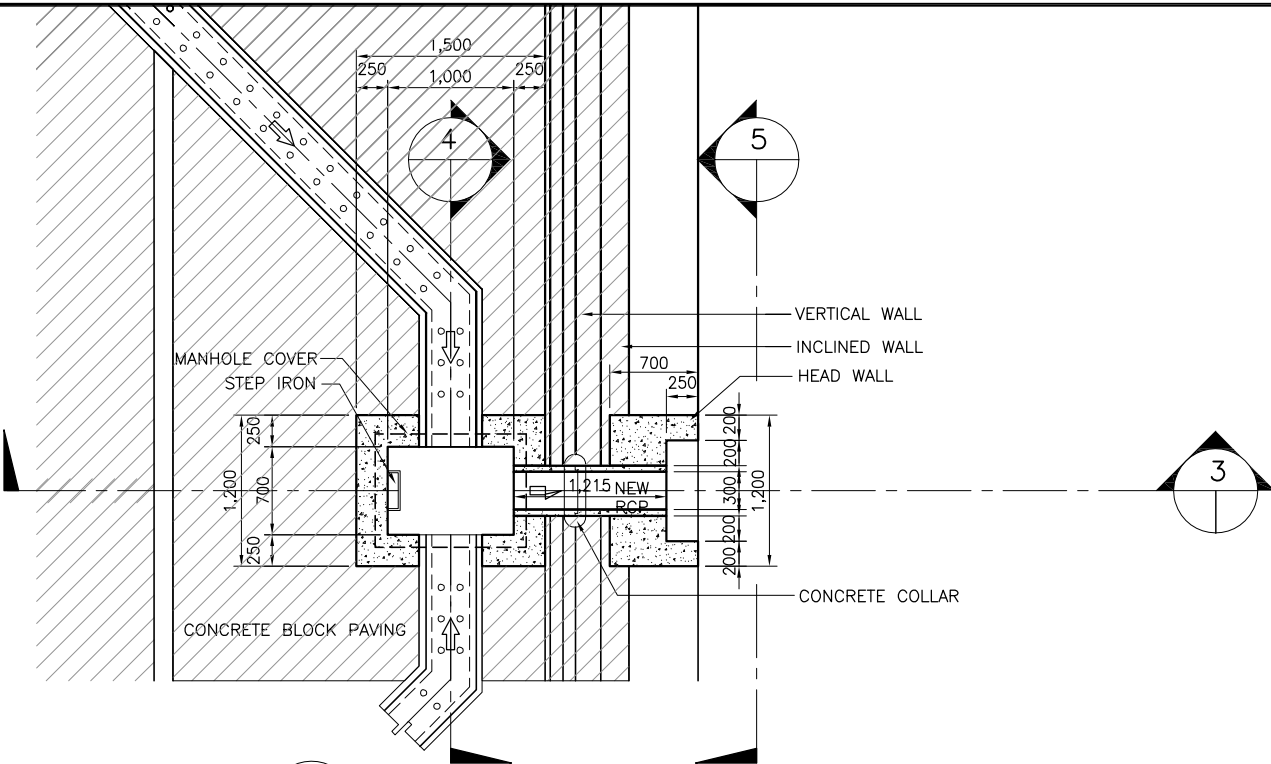




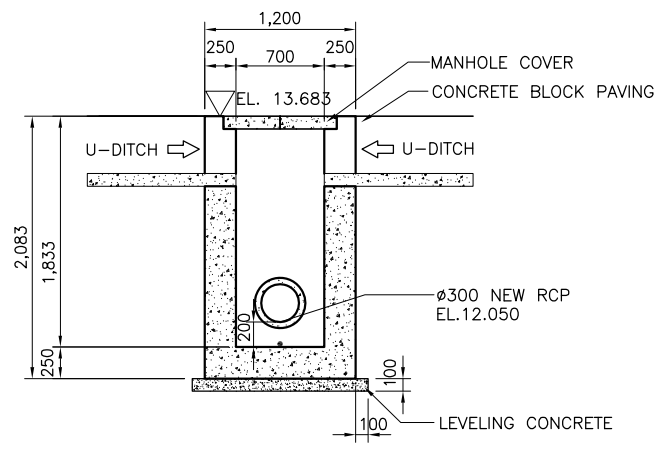
LEGEND:

- DRAINAGE OUTLET
- PROPOSED MANHOLE

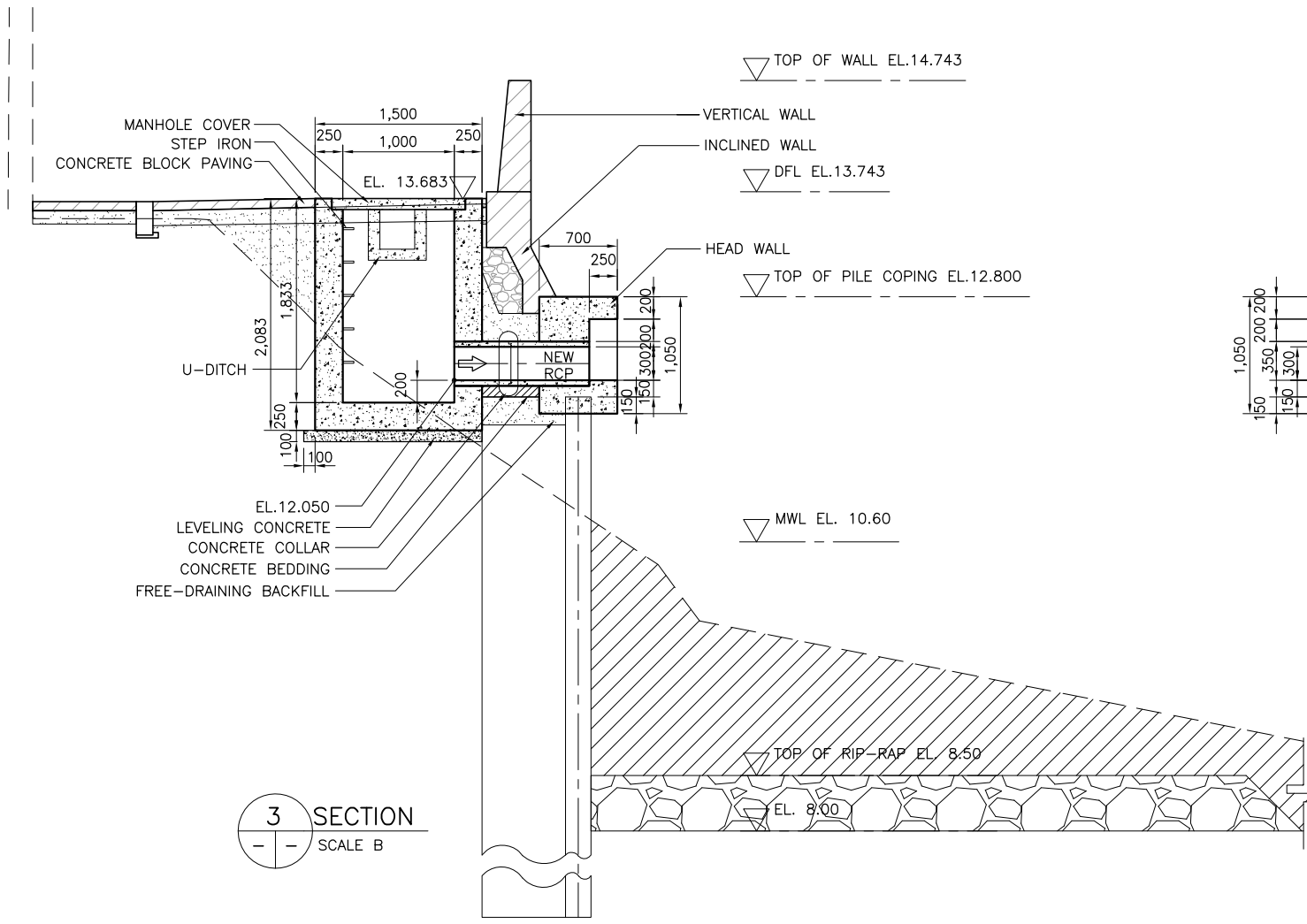
1 DRAINAGE PLAN  
SCALE A



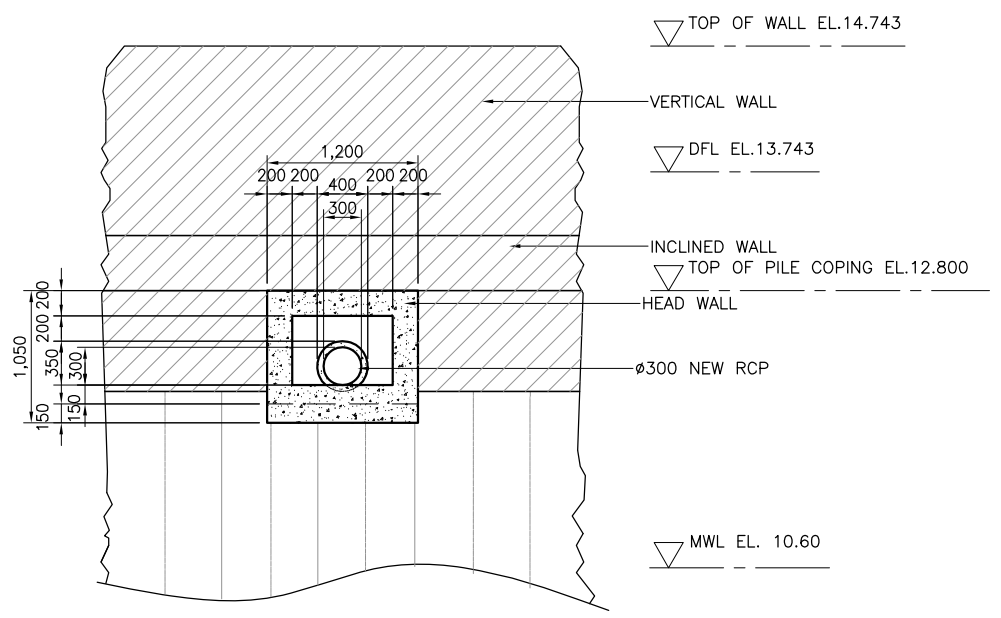
2 PLAN  
SCALE B



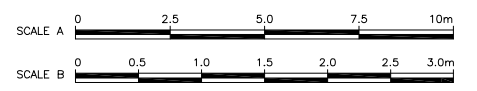
4 SECTION (ML 97E)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B

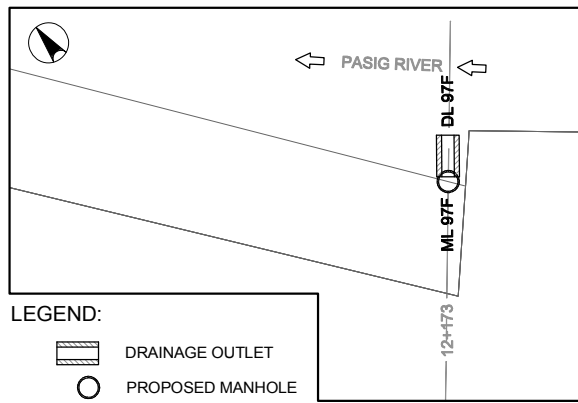


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

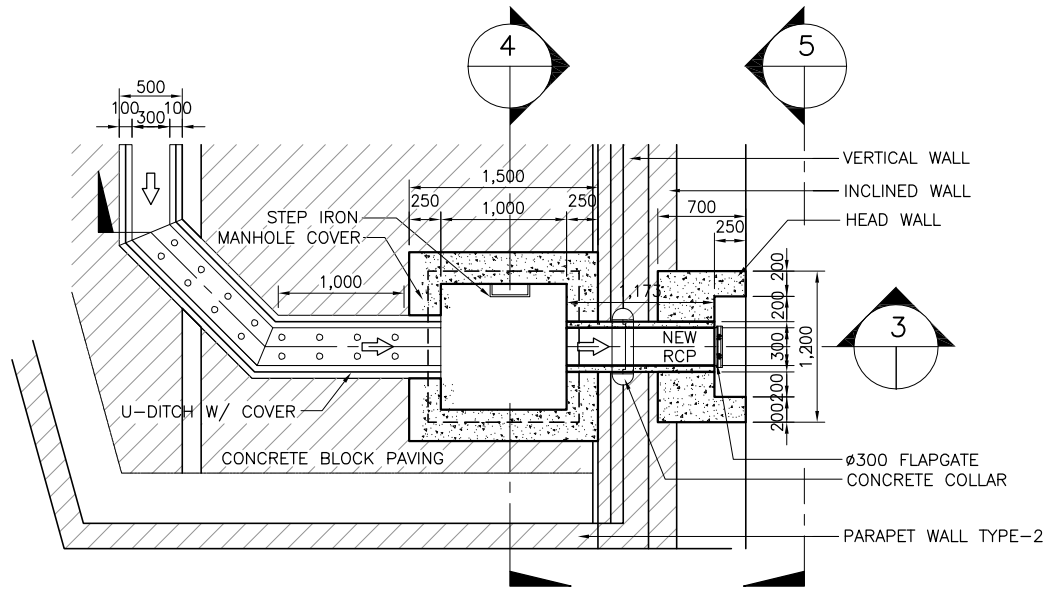
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>	<b>DETAIL OF DRAINAGE OUTLET- DL 97E &amp; MANHOLE ML 97E STA 12+118.5 LB</b>	
	KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SHUJI KAKU <small>TEAM LEADER</small>		PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>			



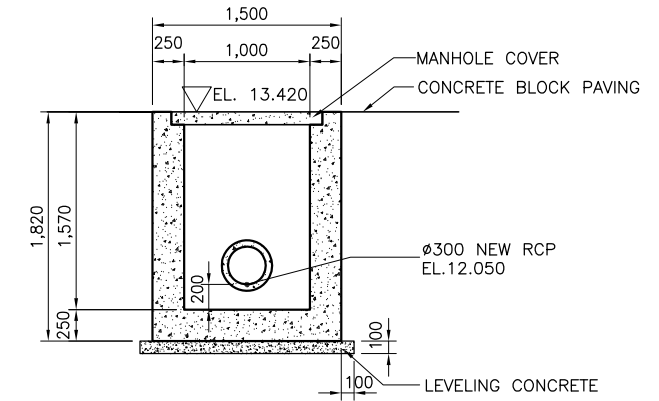
LEGEND:

- DRAINAGE OUTLET
- PROPOSED MANHOLE

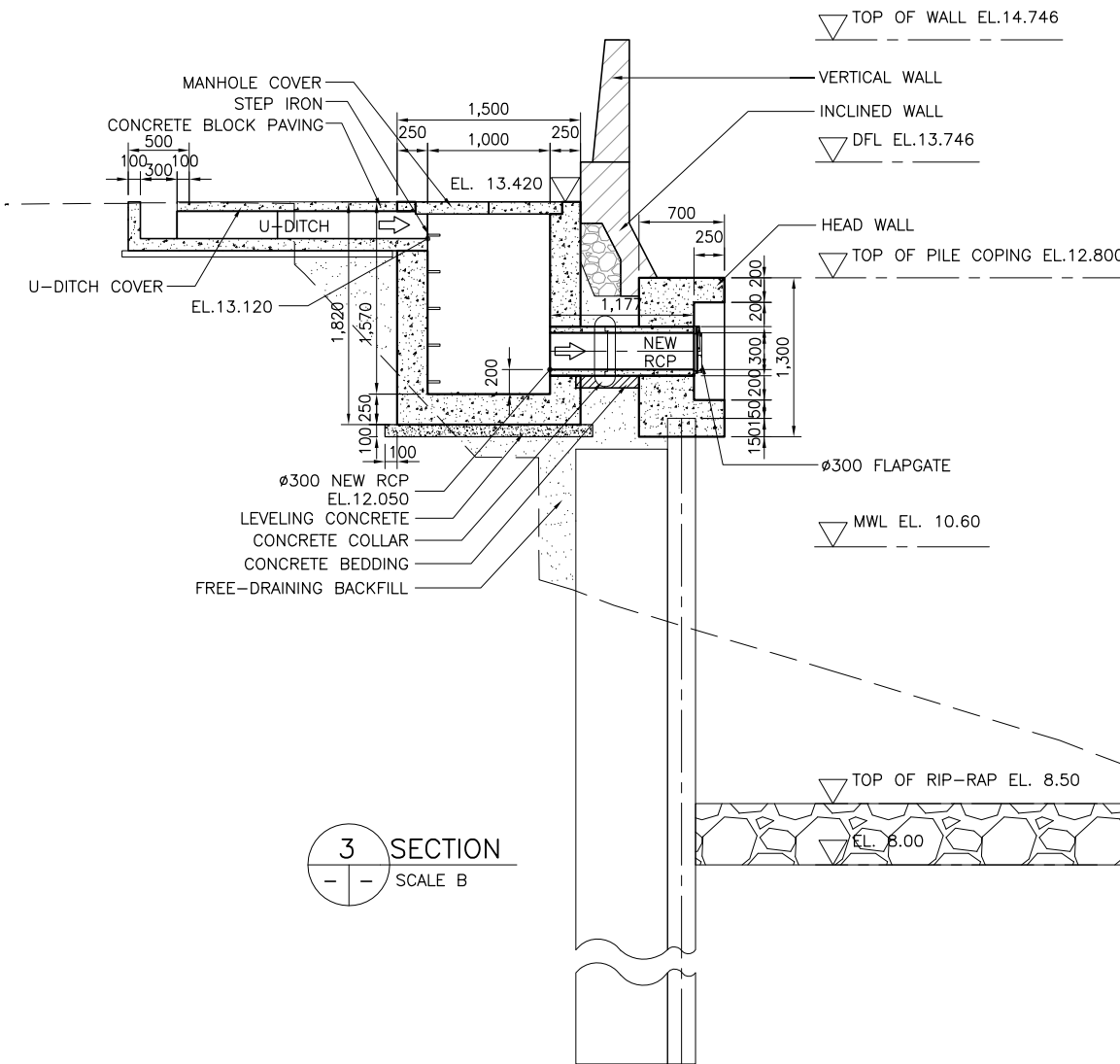
1 DRAINAGE PLAN  
SCALE A



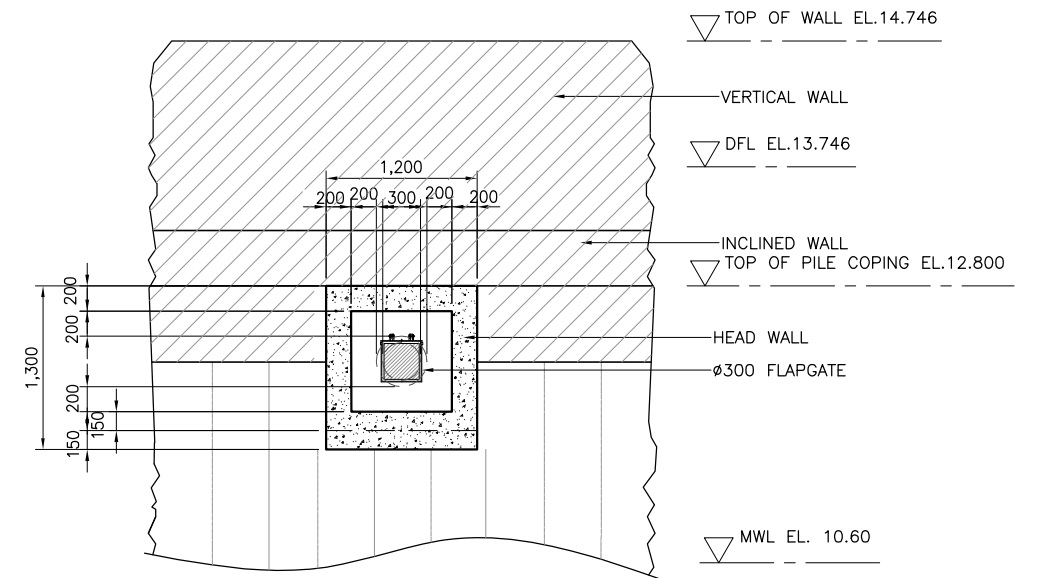
2 PLAN  
SCALE B



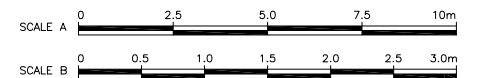
4 SECTION (ML 97F)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

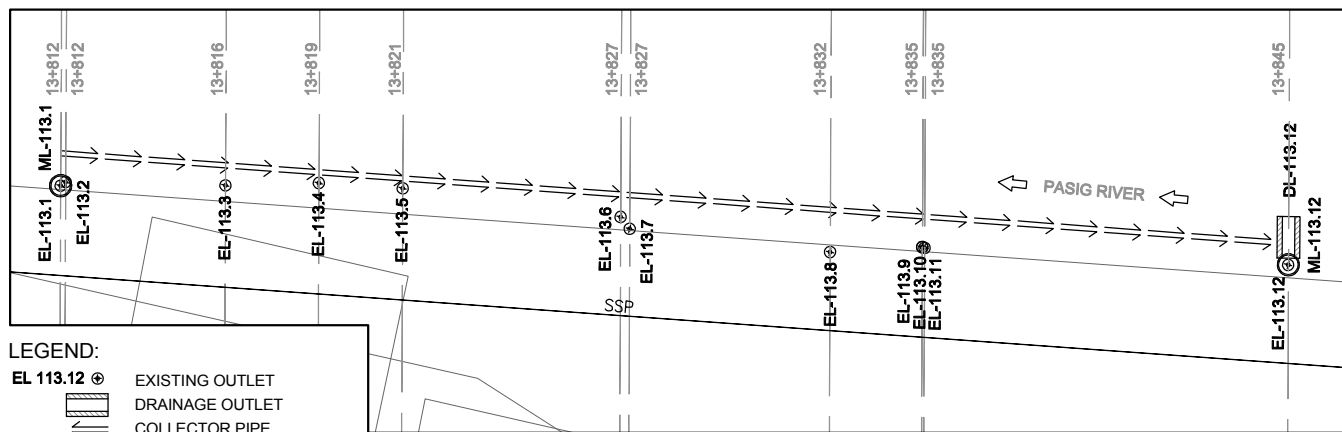
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

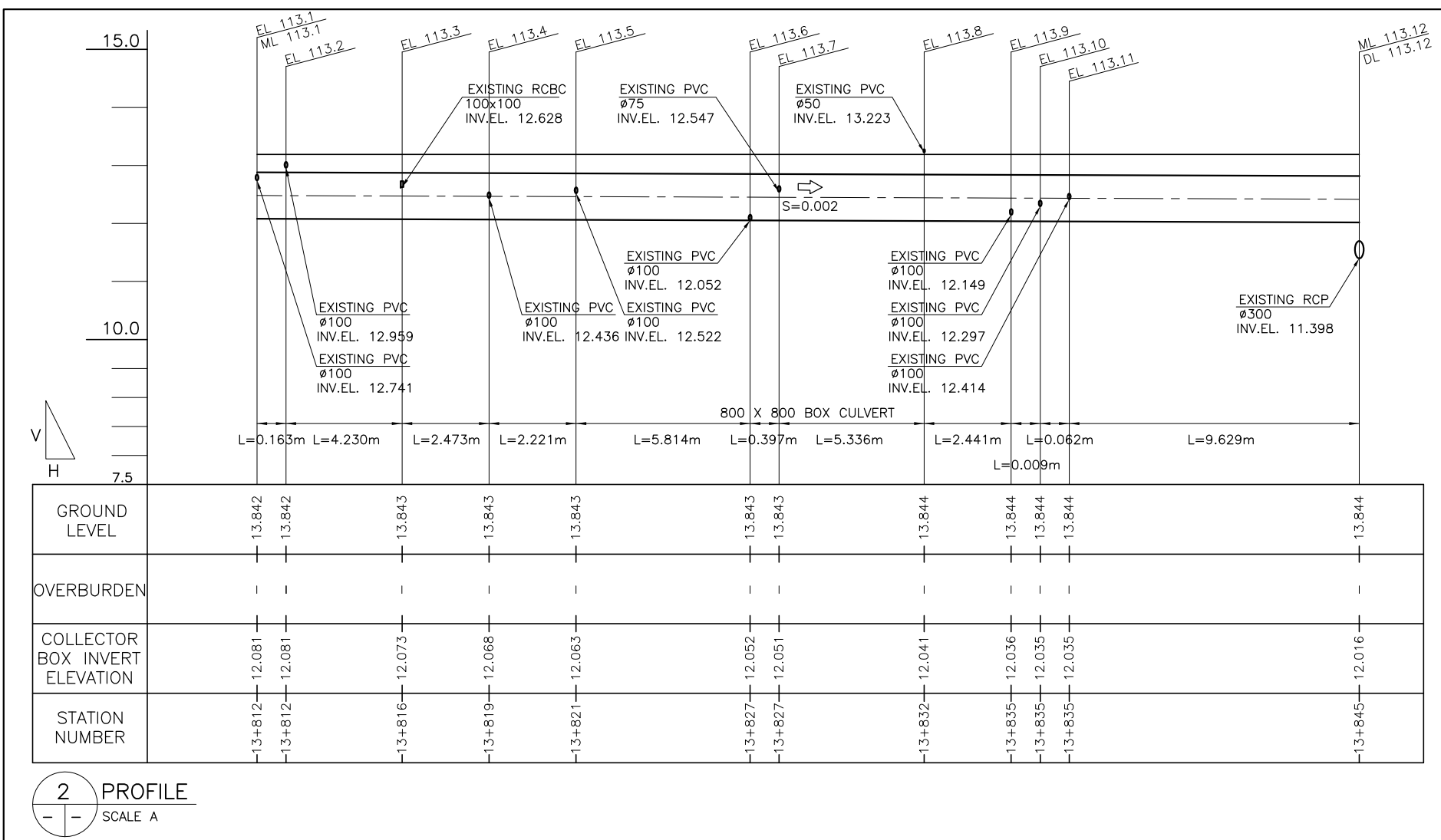
SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET - DL 97F & MANHOLE ML 97F STA 12+173 LB

SHEET NO.: UP-DL/DO/97F



- LEGEND:**
- EL 113.12 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DL 113.12 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



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STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR PMO - MFCP

GILBERTO S. REYES  
DIRECTOR BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

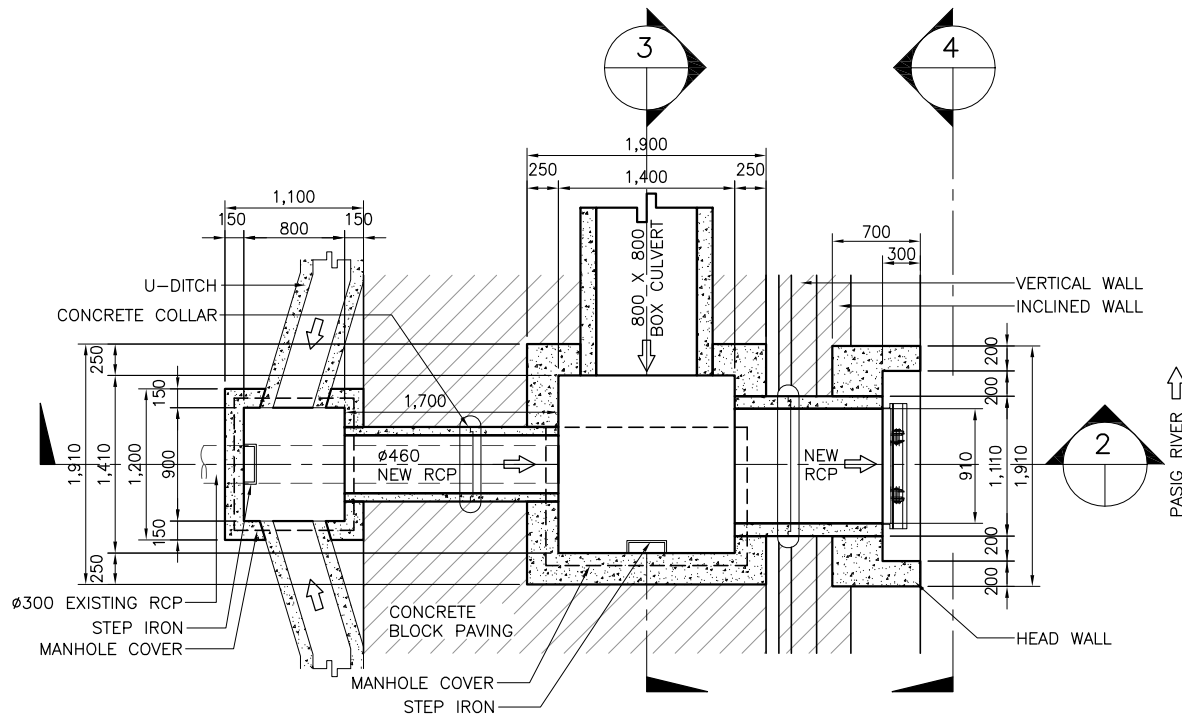
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

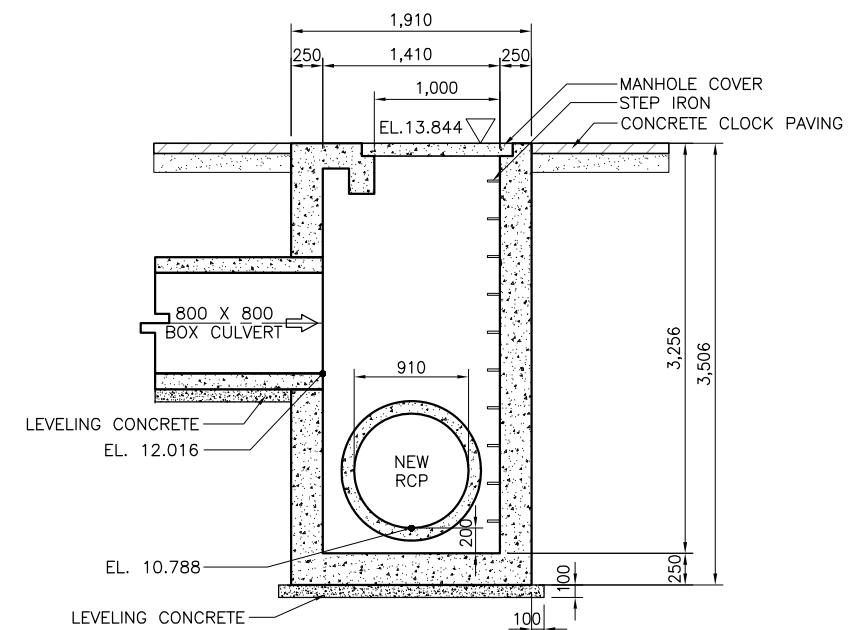
PLAN & PROFILE OF COLLECTOR BOX

SHEET NO.

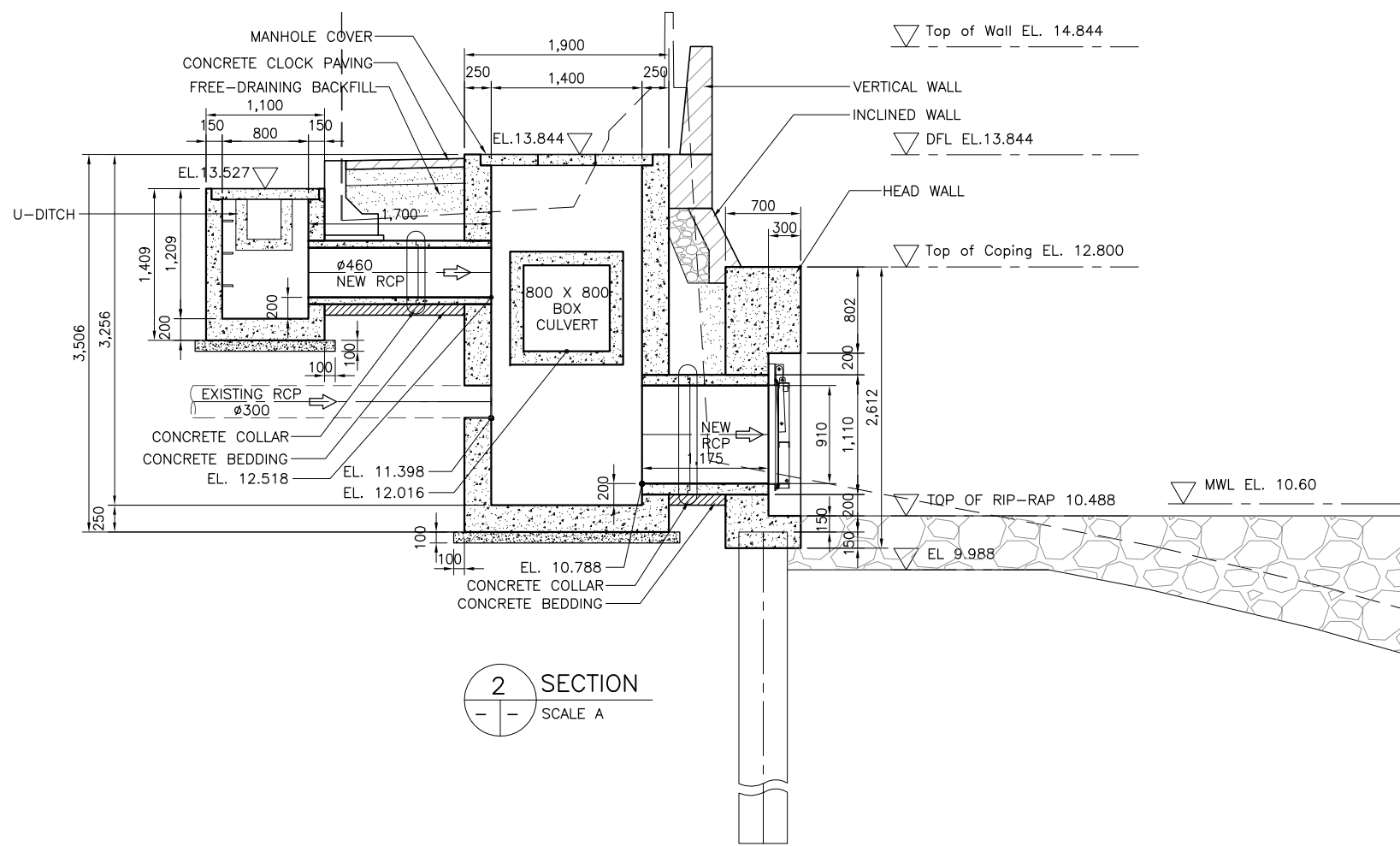




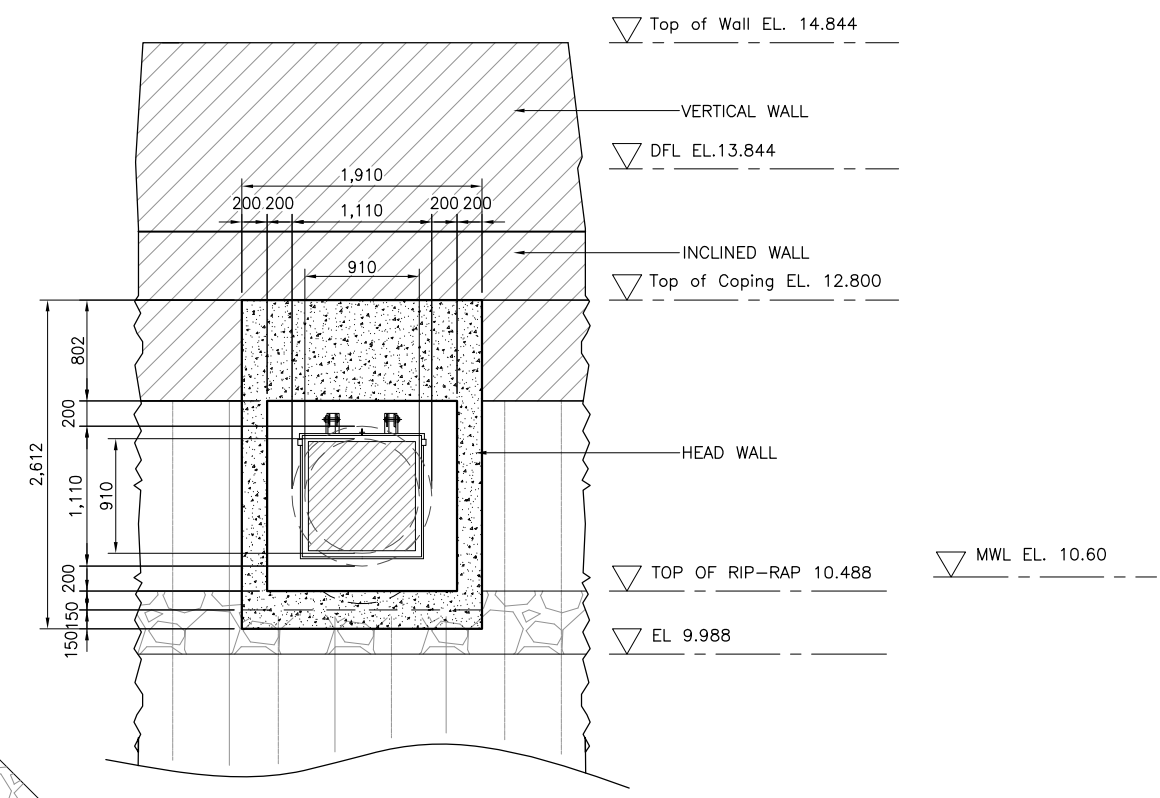
1 PLAN  
SCALE A



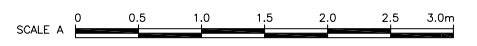
3 SECTION (ML113.12)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
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REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

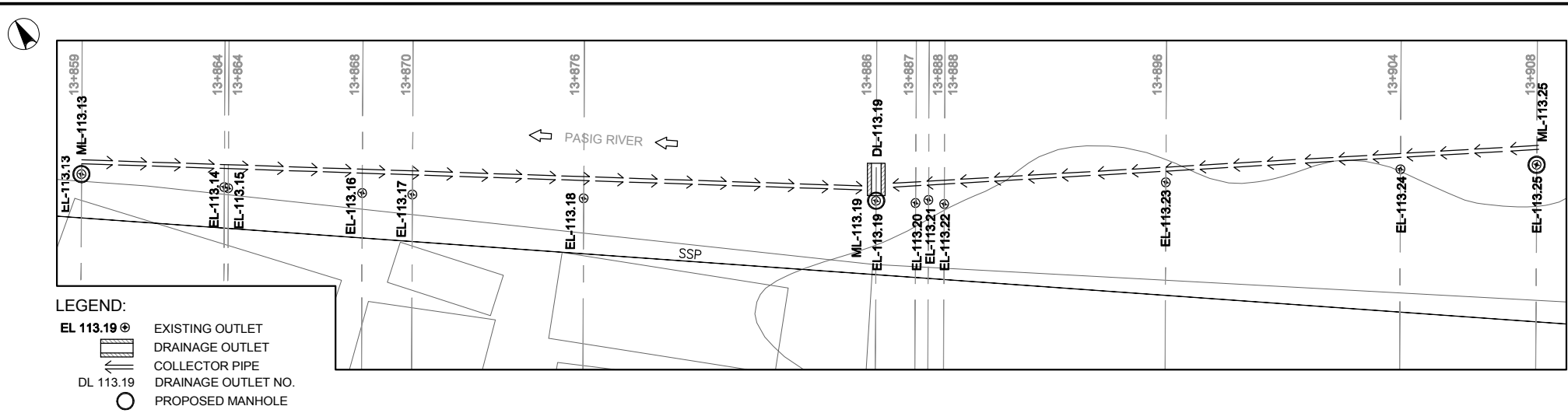
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

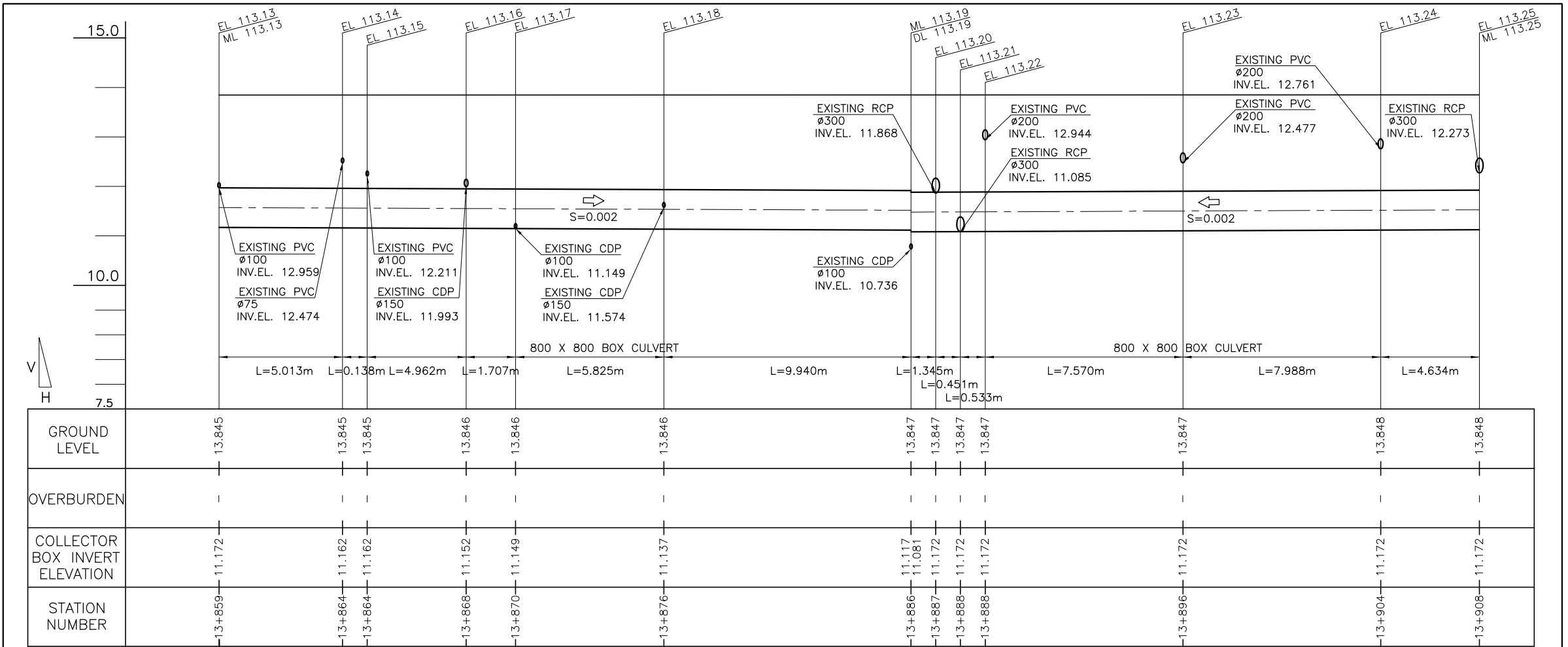
SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL 113.12 & MANHOLE ML113.12 STA. 13+845 LB

SHEET NO.: UP-DL DO113.12



- LEGEND:**
- EL 113.19 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DL 113.19 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

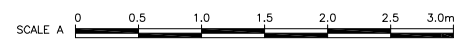
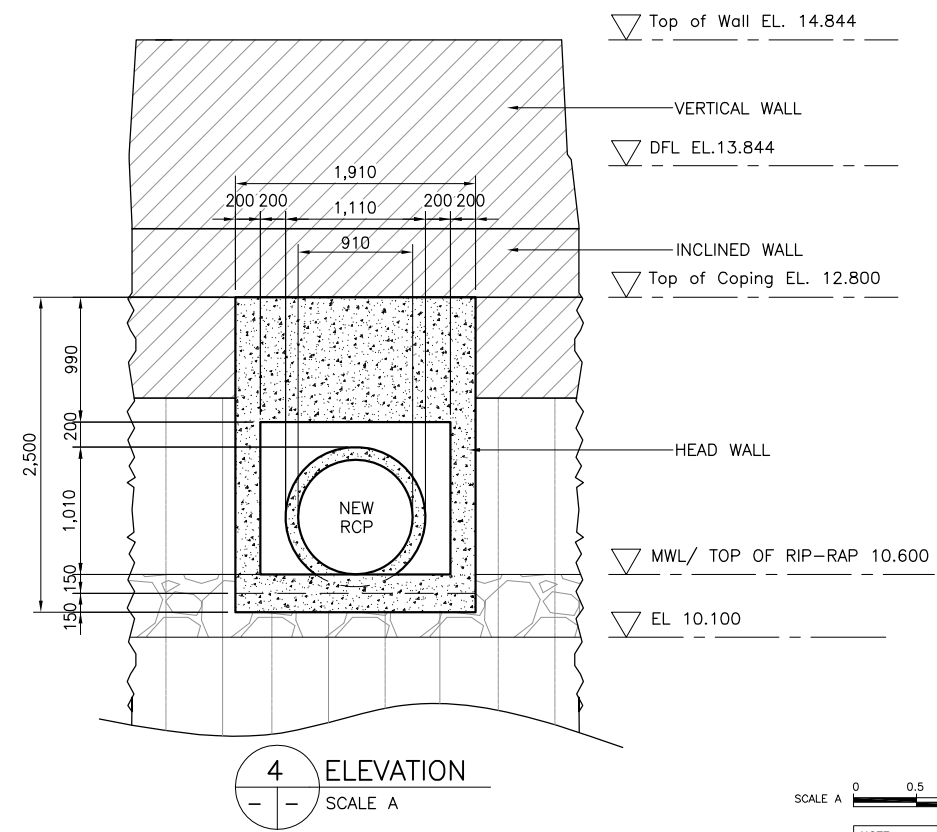
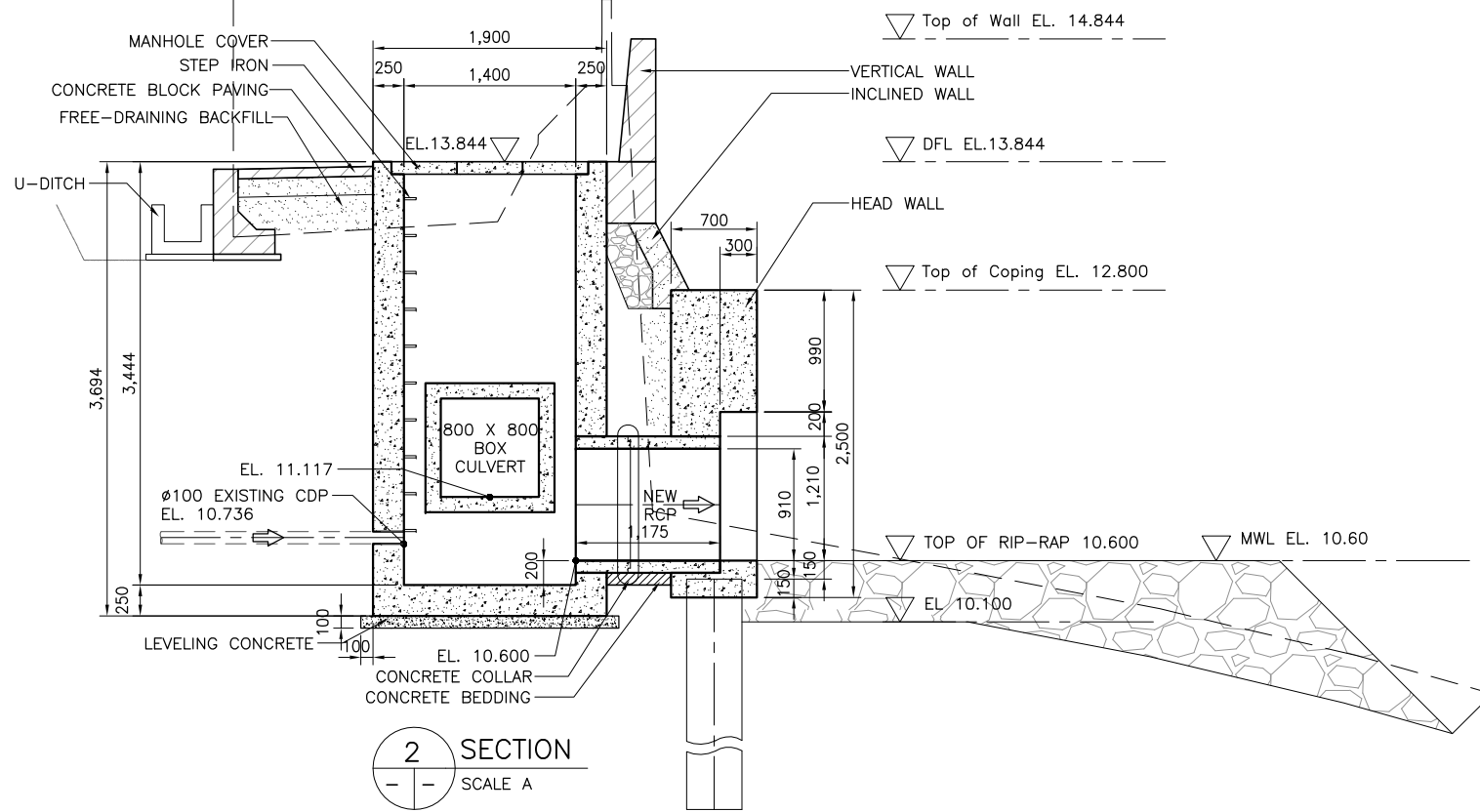
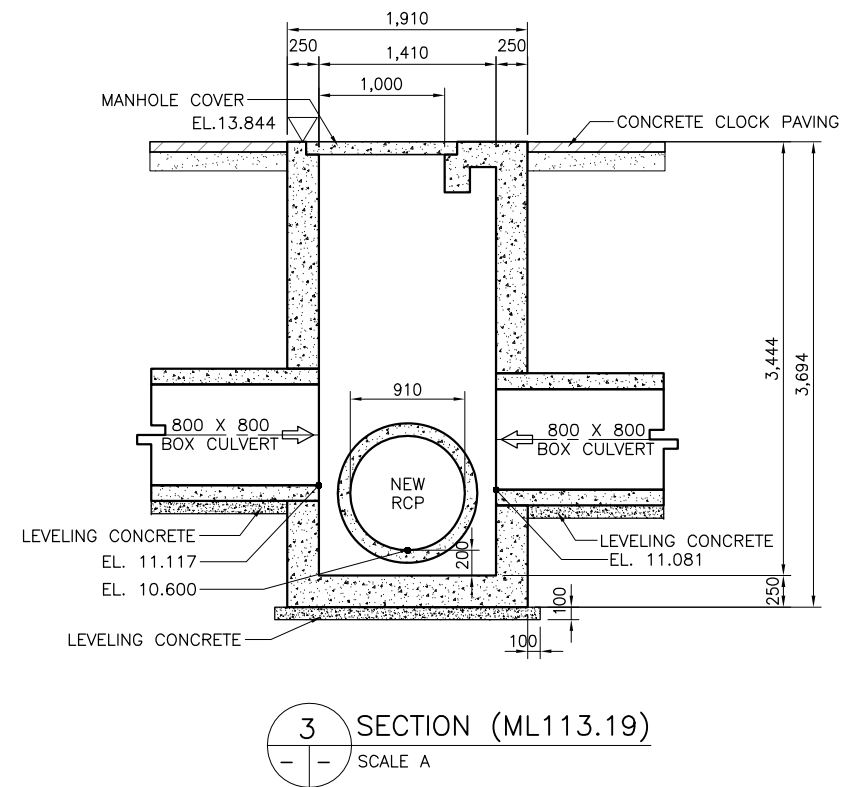
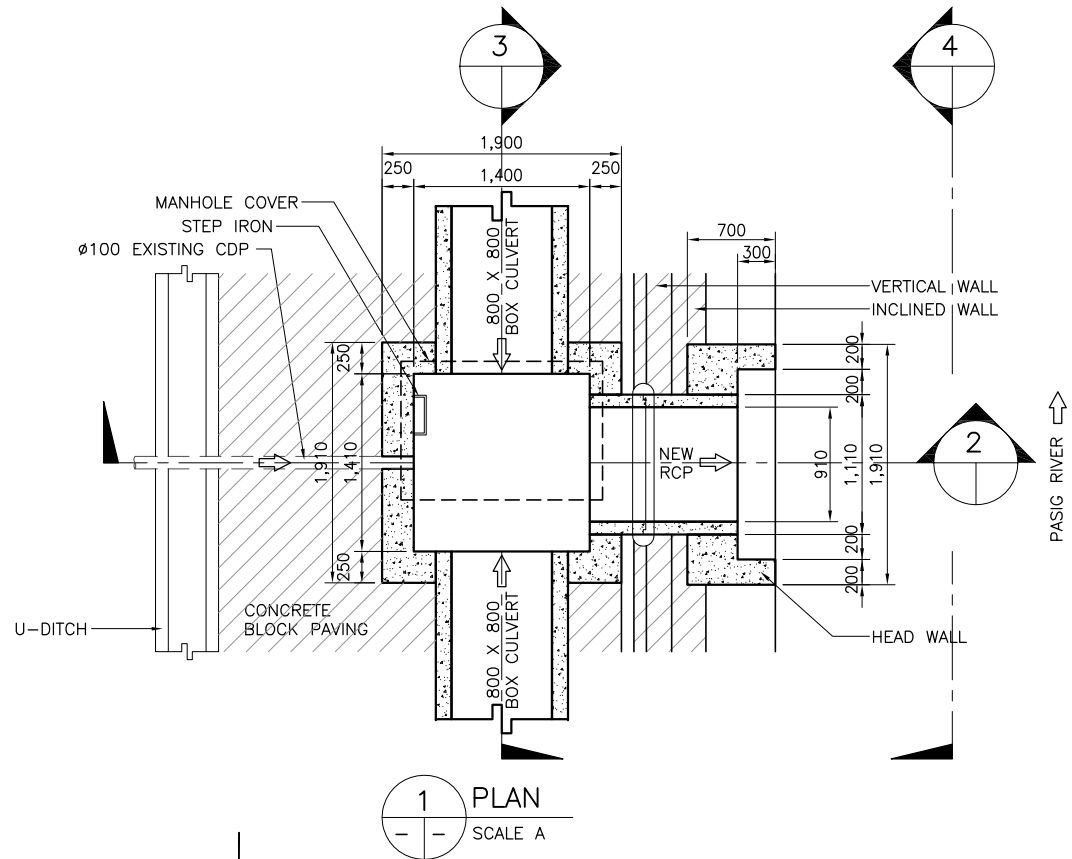


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

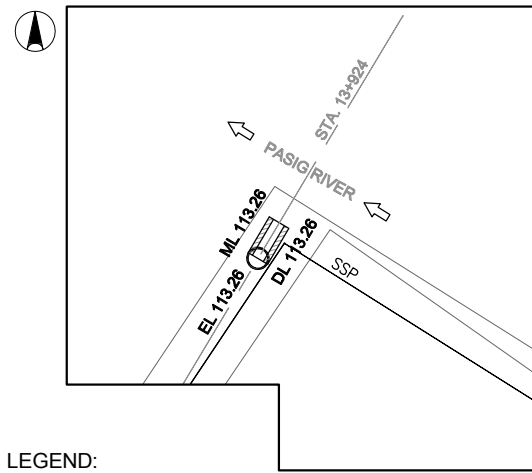
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR BOX		
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES				SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY



NOTE:  
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SHUJI KAKU  
TEAM LEADER

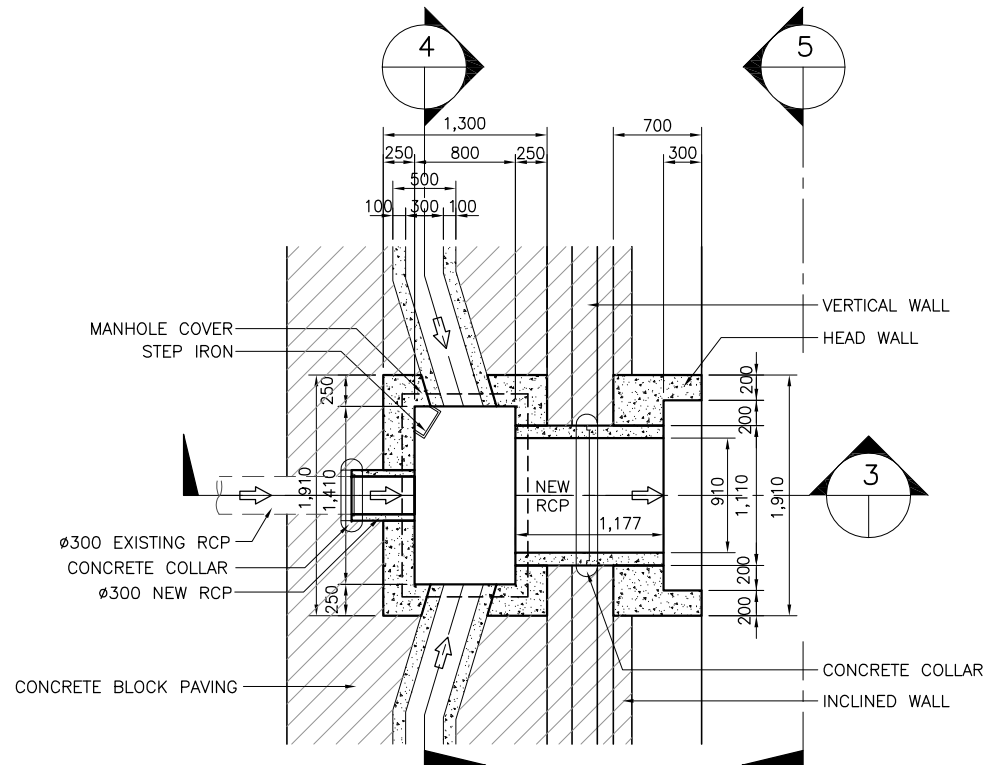
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE



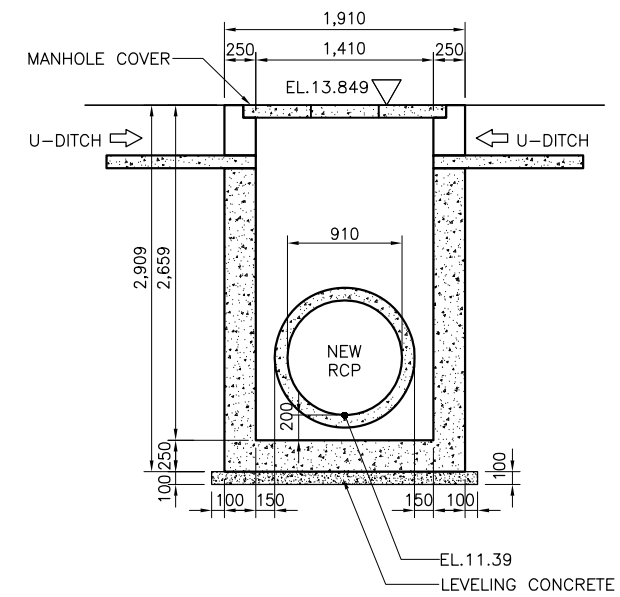
LEGEND:

- EL 113.26 ⊕ EXISTING OUTLET
- ▭ DRAINAGE OUTLET
- DL 113.26 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

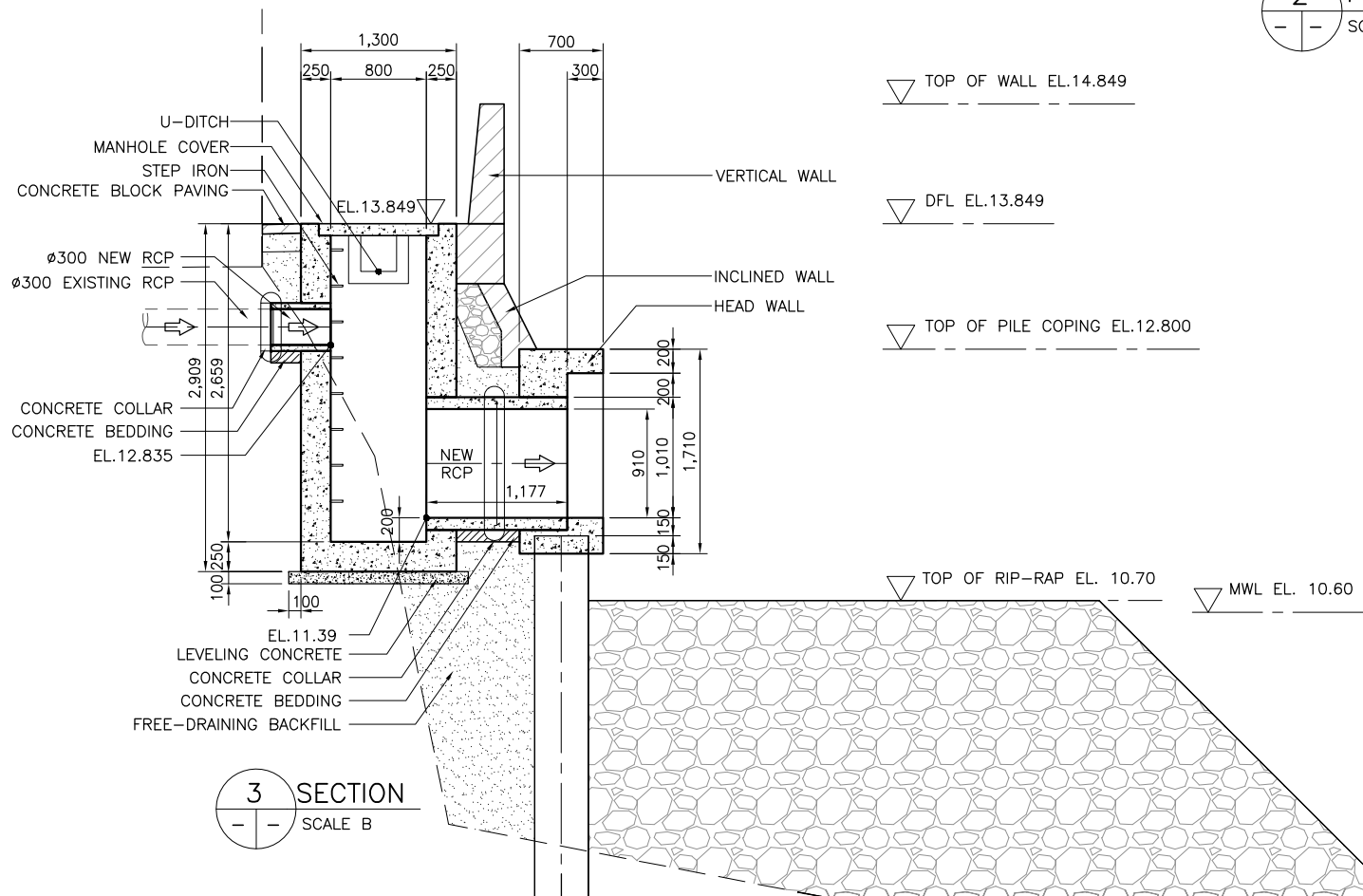
1 DRAINAGE PLAN  
SCALE A



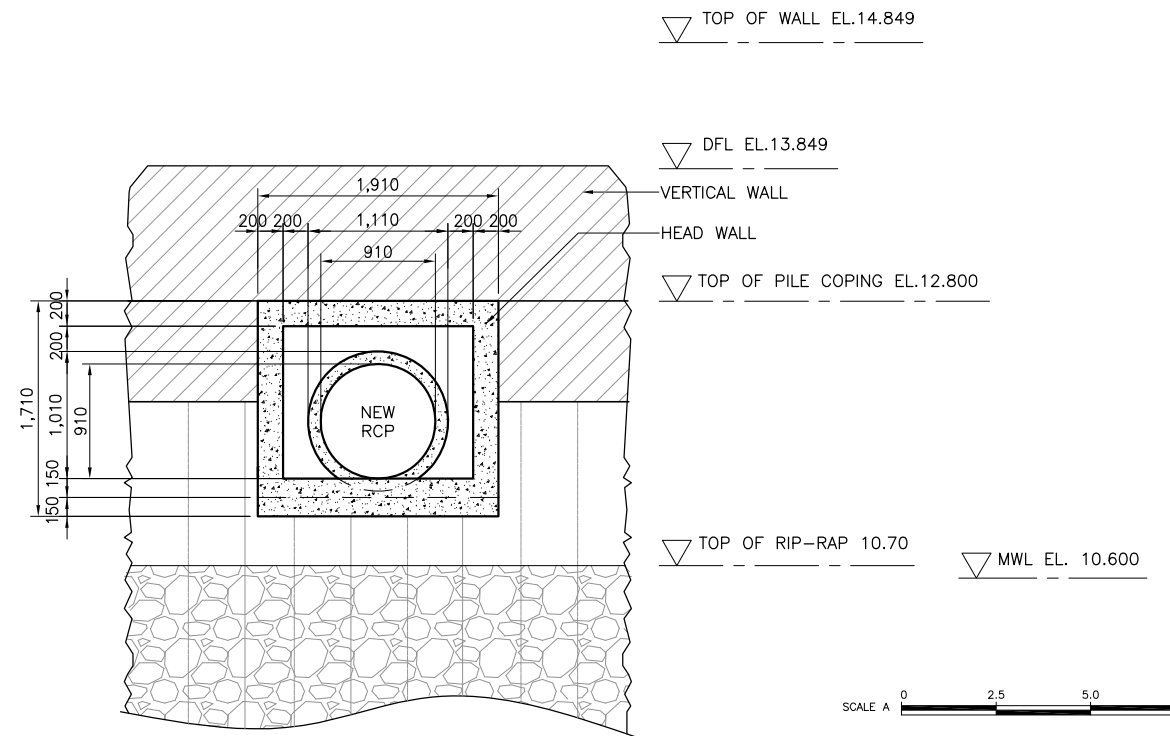
2 PLAN  
SCALE B



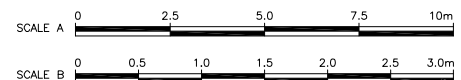
4 SECTION (ML 113.26)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
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REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

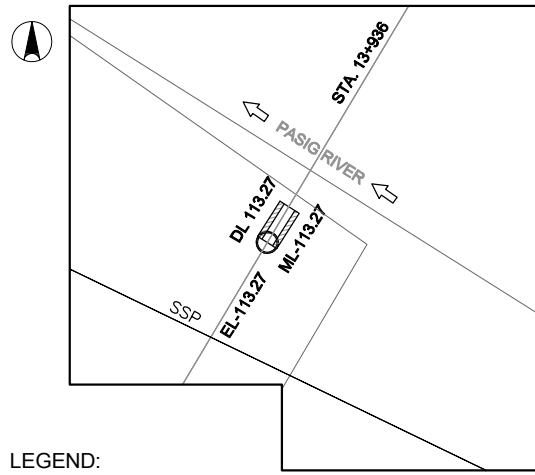
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL 113.26, MANHOLE ML 113.26 STA. 13+924

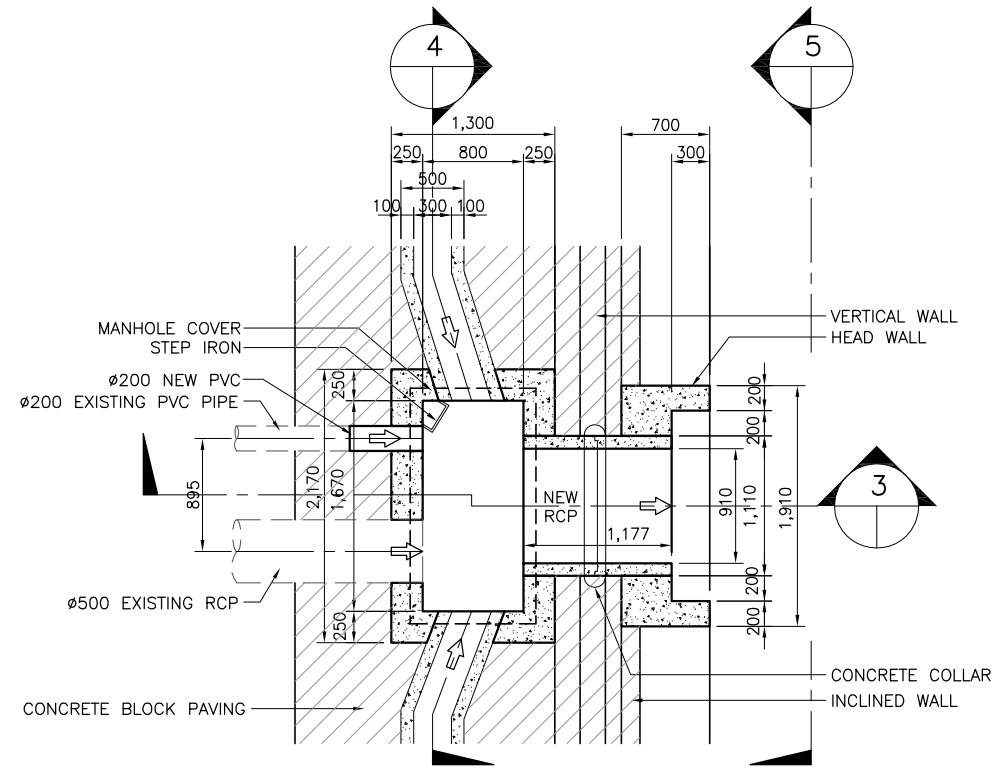
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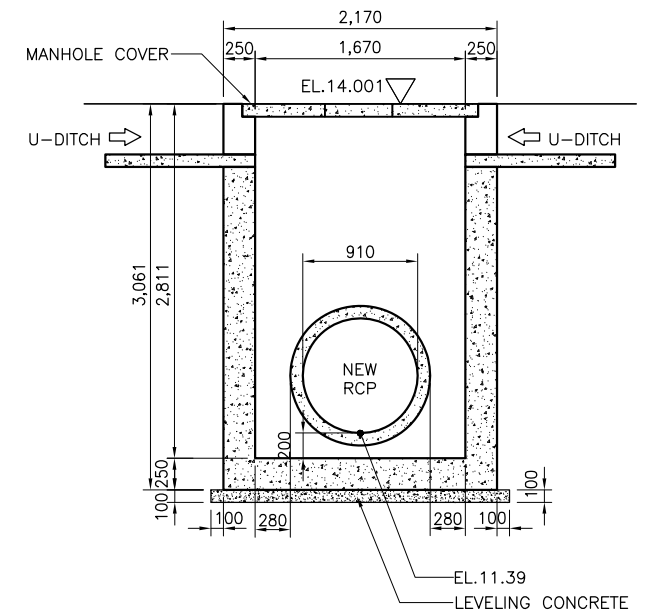
LEGEND:

- EL113.27 ⊕ EXISTING OUTLET
- ▭ DRAINAGE OUTLET
- DL113.27 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

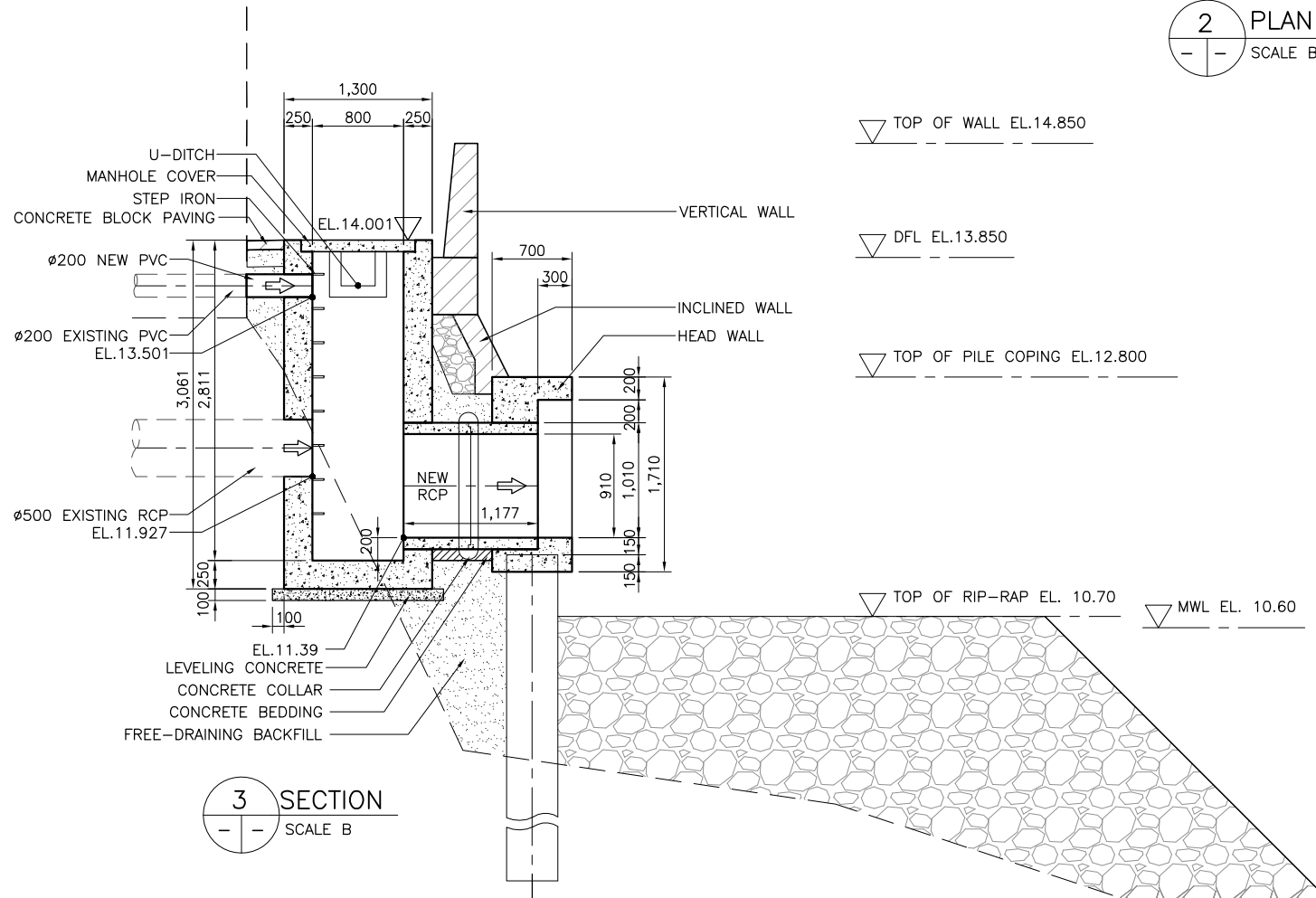
1 DRAINAGE PLAN  
SCALE A



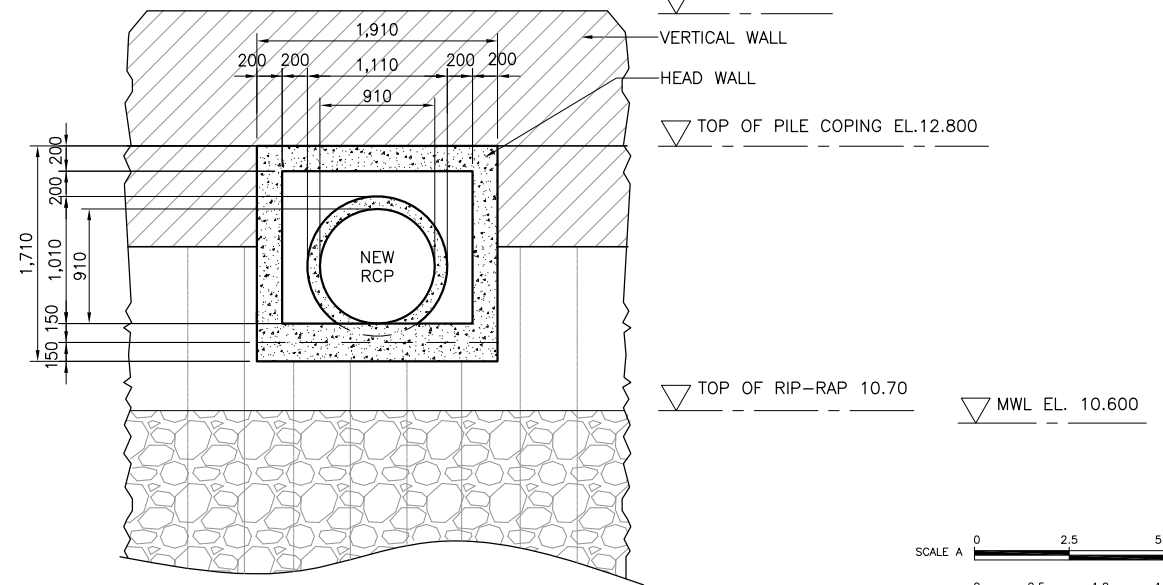
2 PLAN  
SCALE B



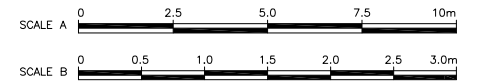
4 SECTION (ML113.27)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER

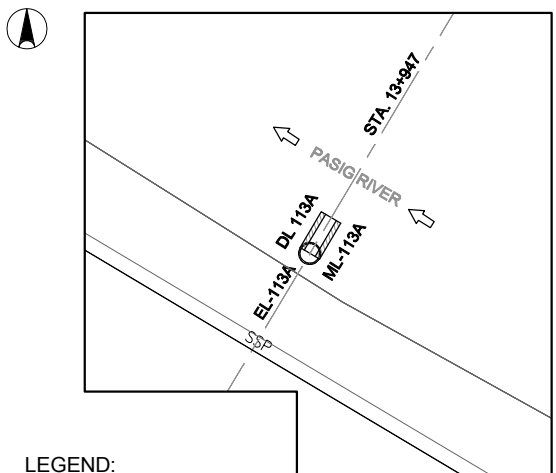


REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY:	RECOMMENDING APPROVAL :	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

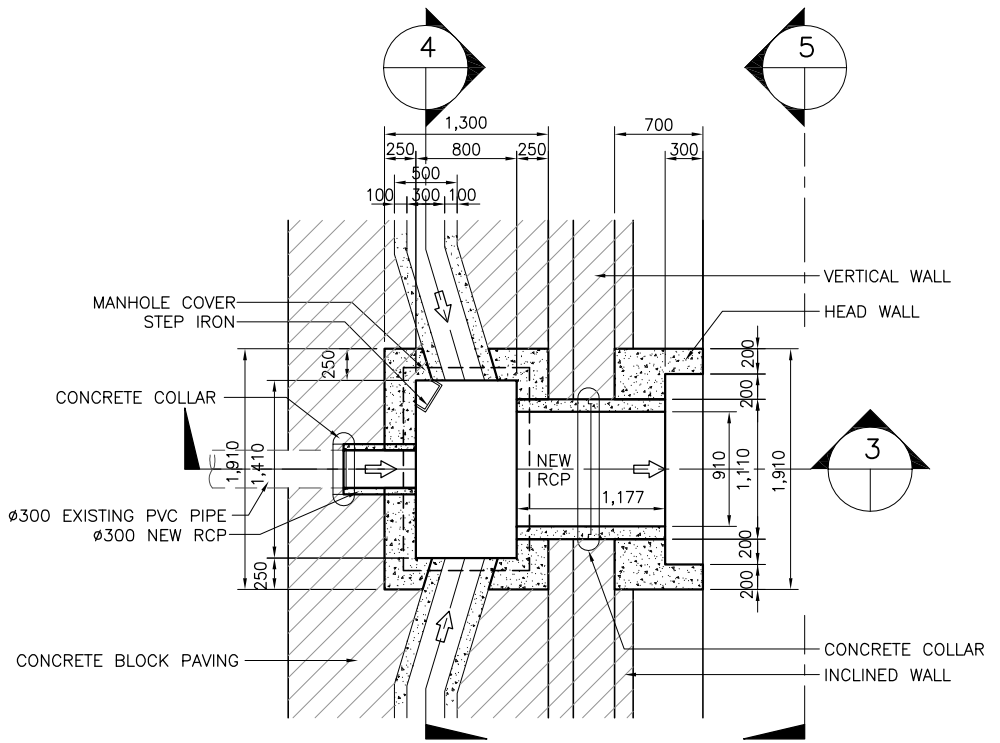
PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL113.27, MANHOLE ML113.27, STA. 13+936.5 LB	UP-DL DO113.27



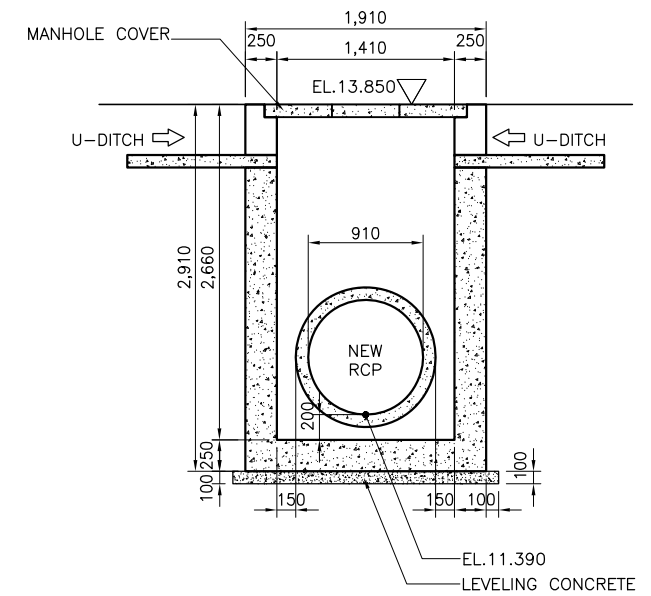


- LEGEND:**
- EL113A ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DL113A DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

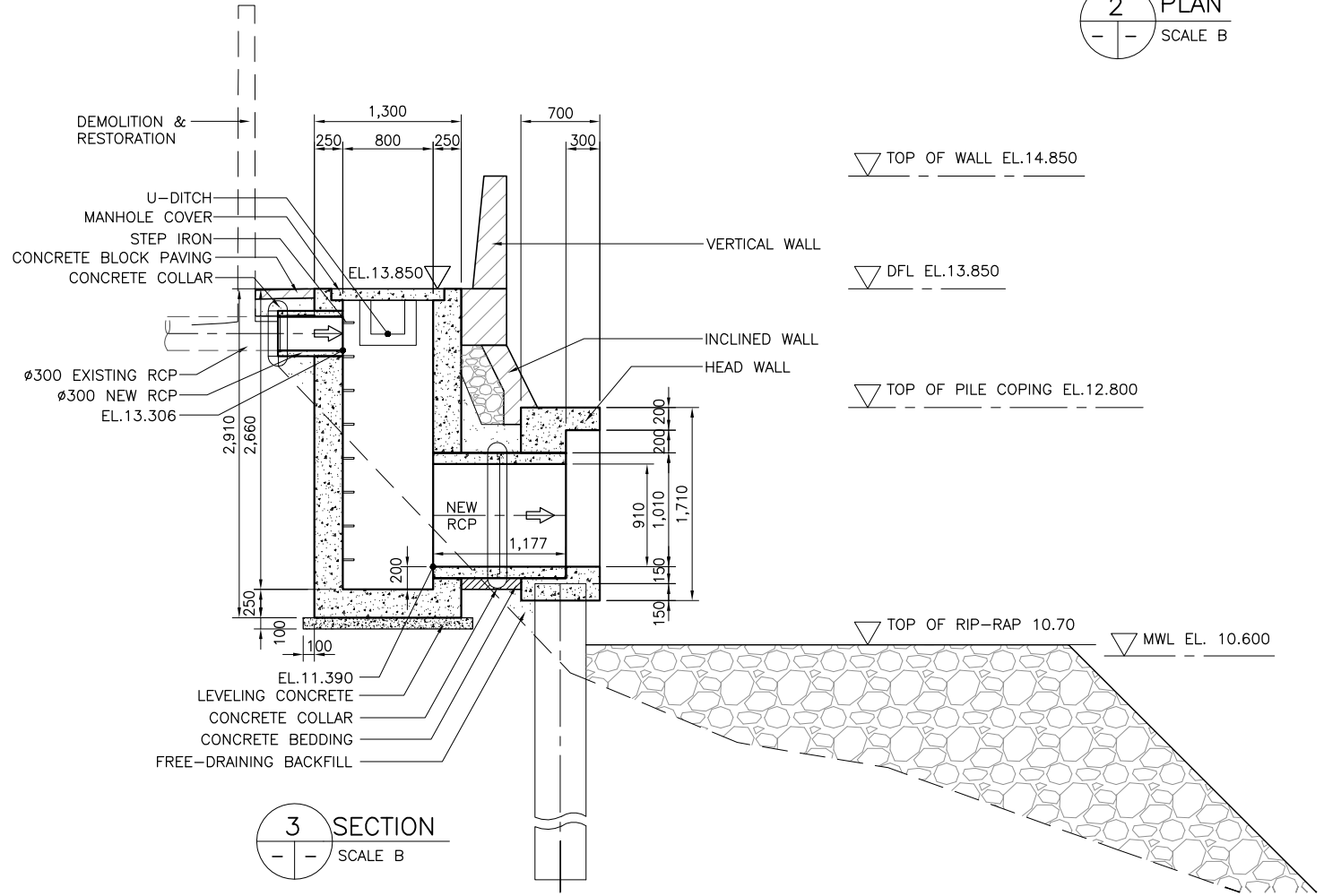
**1 DRAINAGE PLAN**  
SCALE A



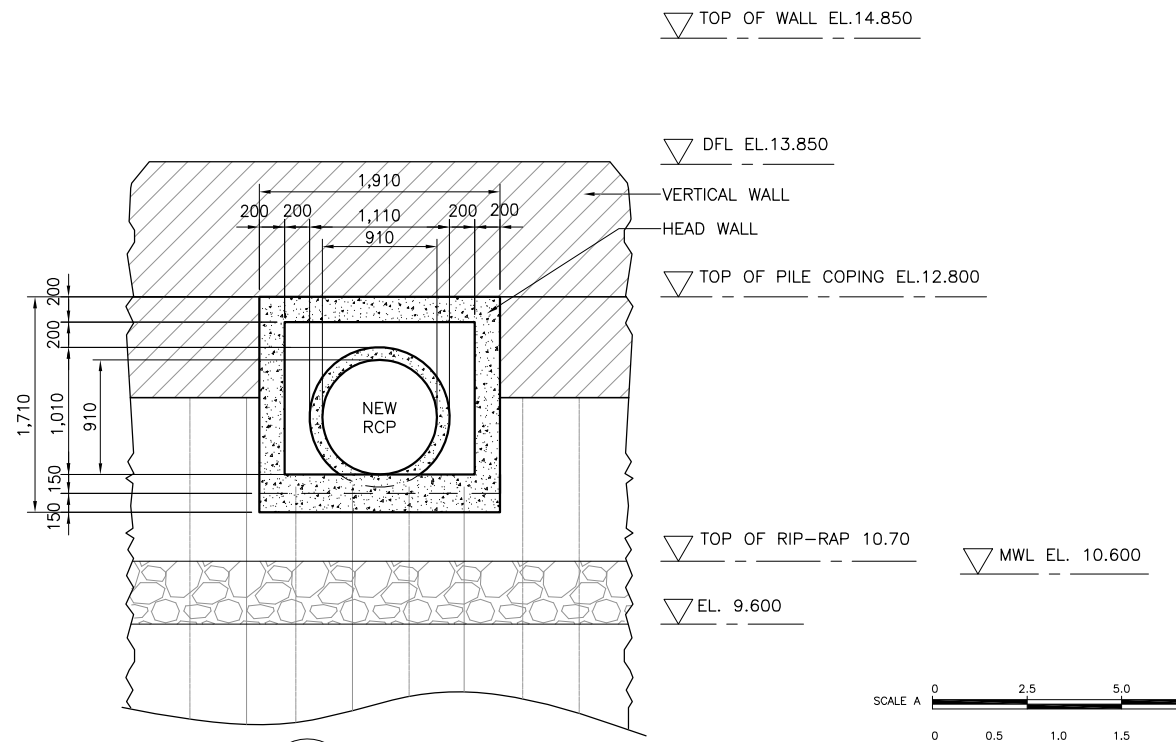
**2 PLAN**  
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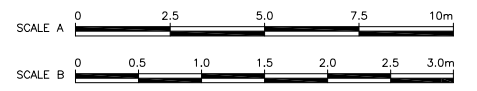
**4 SECTION (ML113A)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

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JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

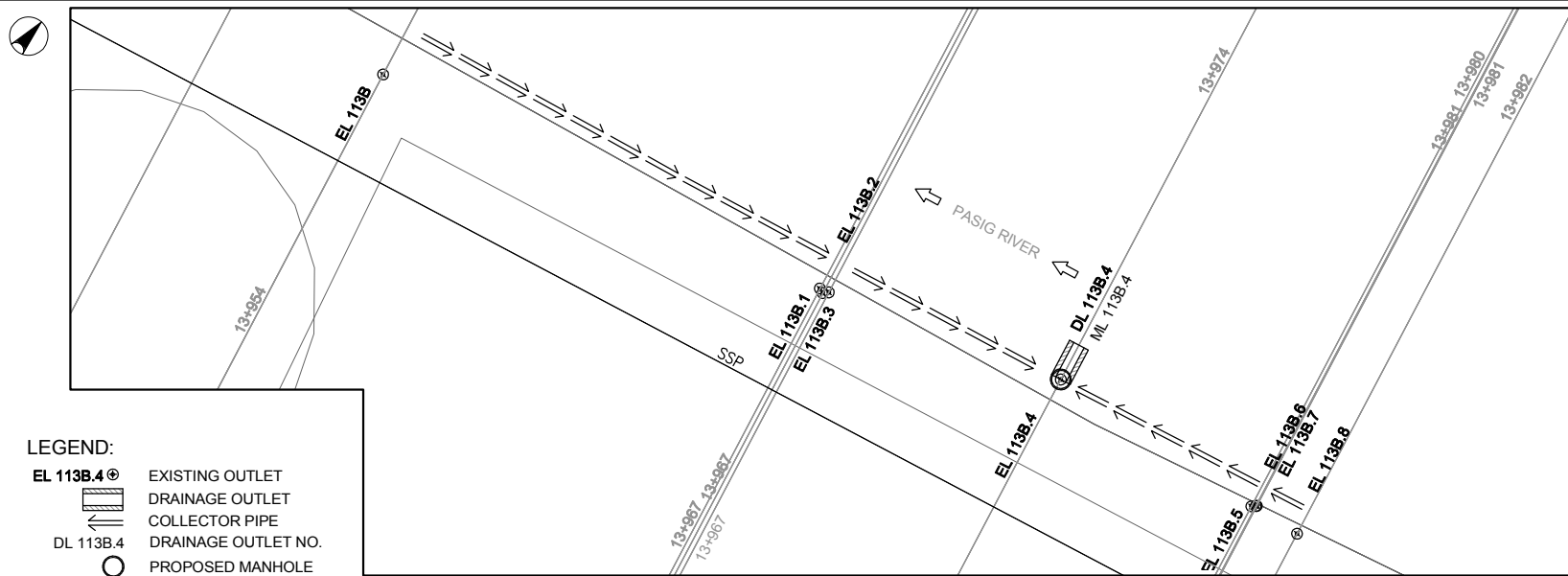


DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



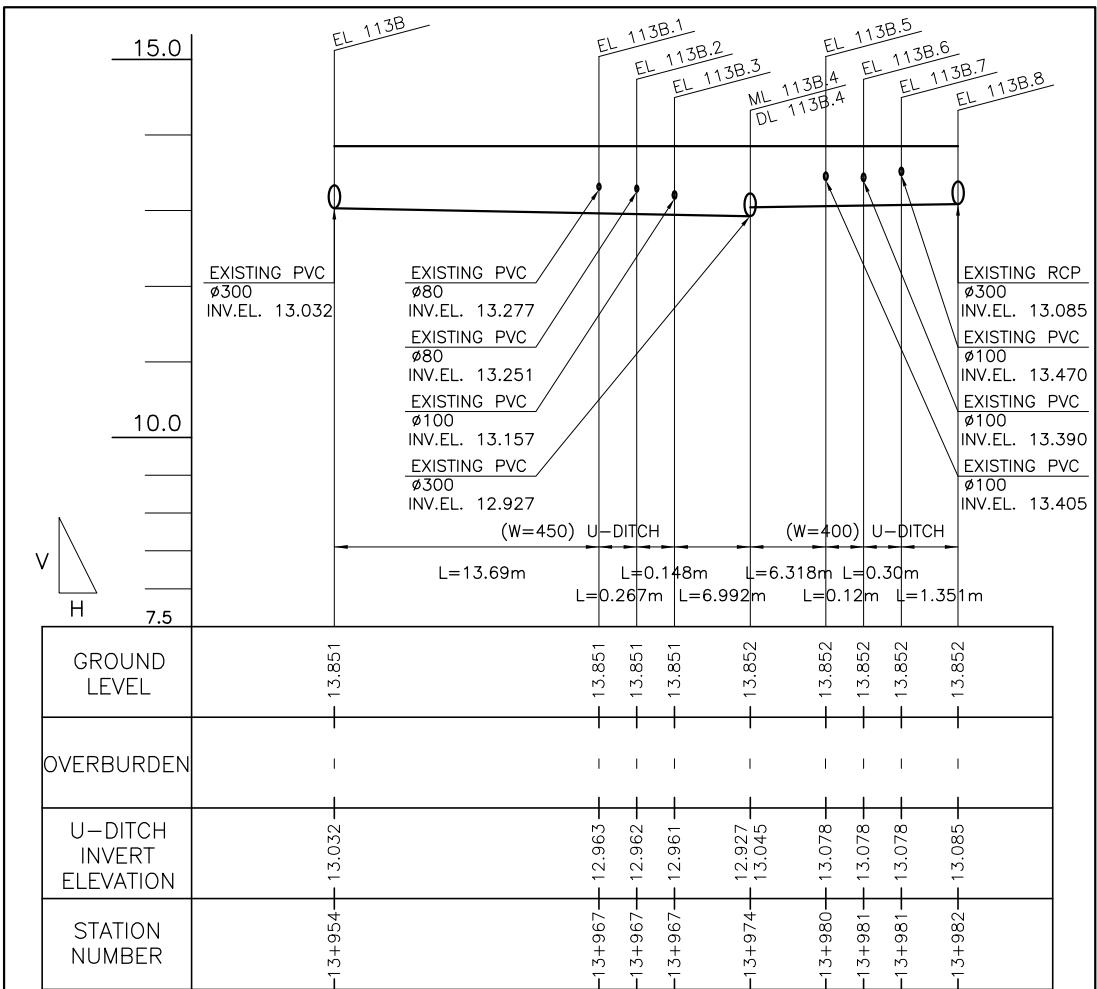
REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL113A, MANHOLE ML113A STA. 13+947	UP-DL/DO/113A



- LEGEND:**
- EL 113B.4 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DL 113B.4 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

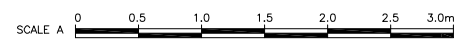
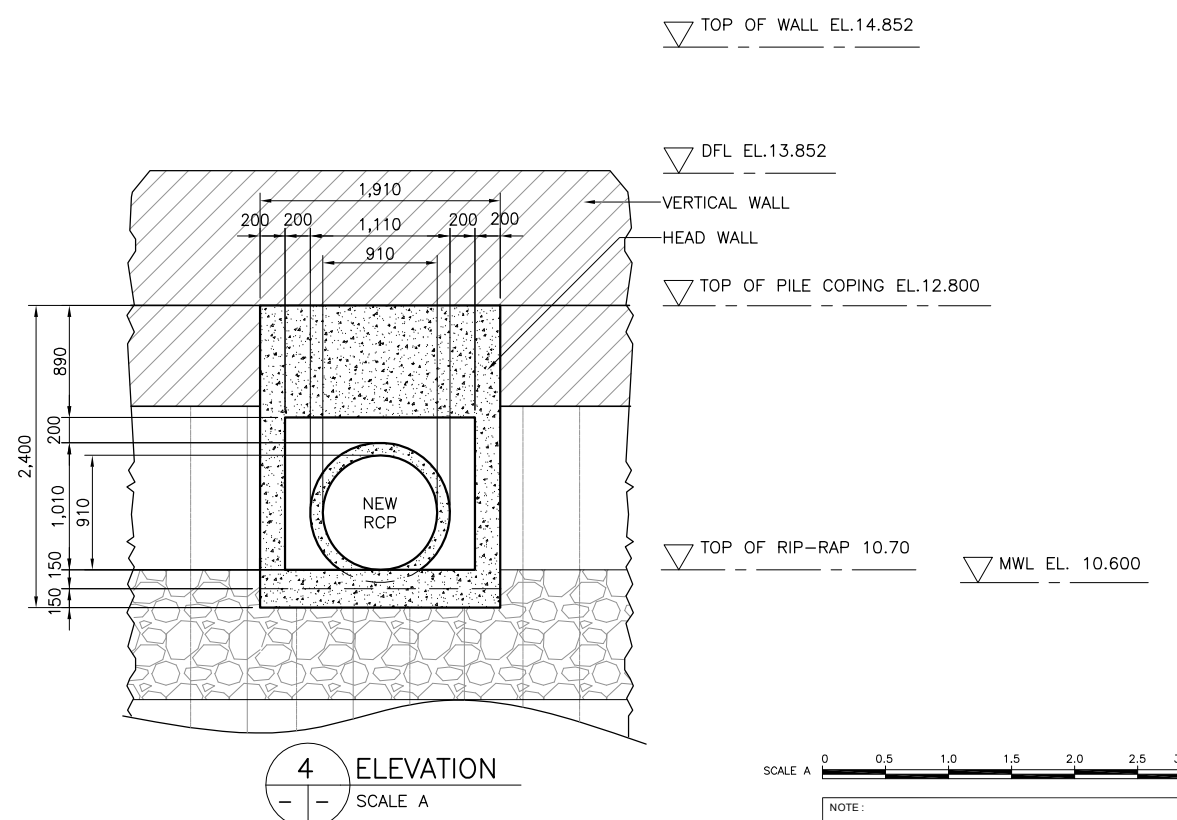
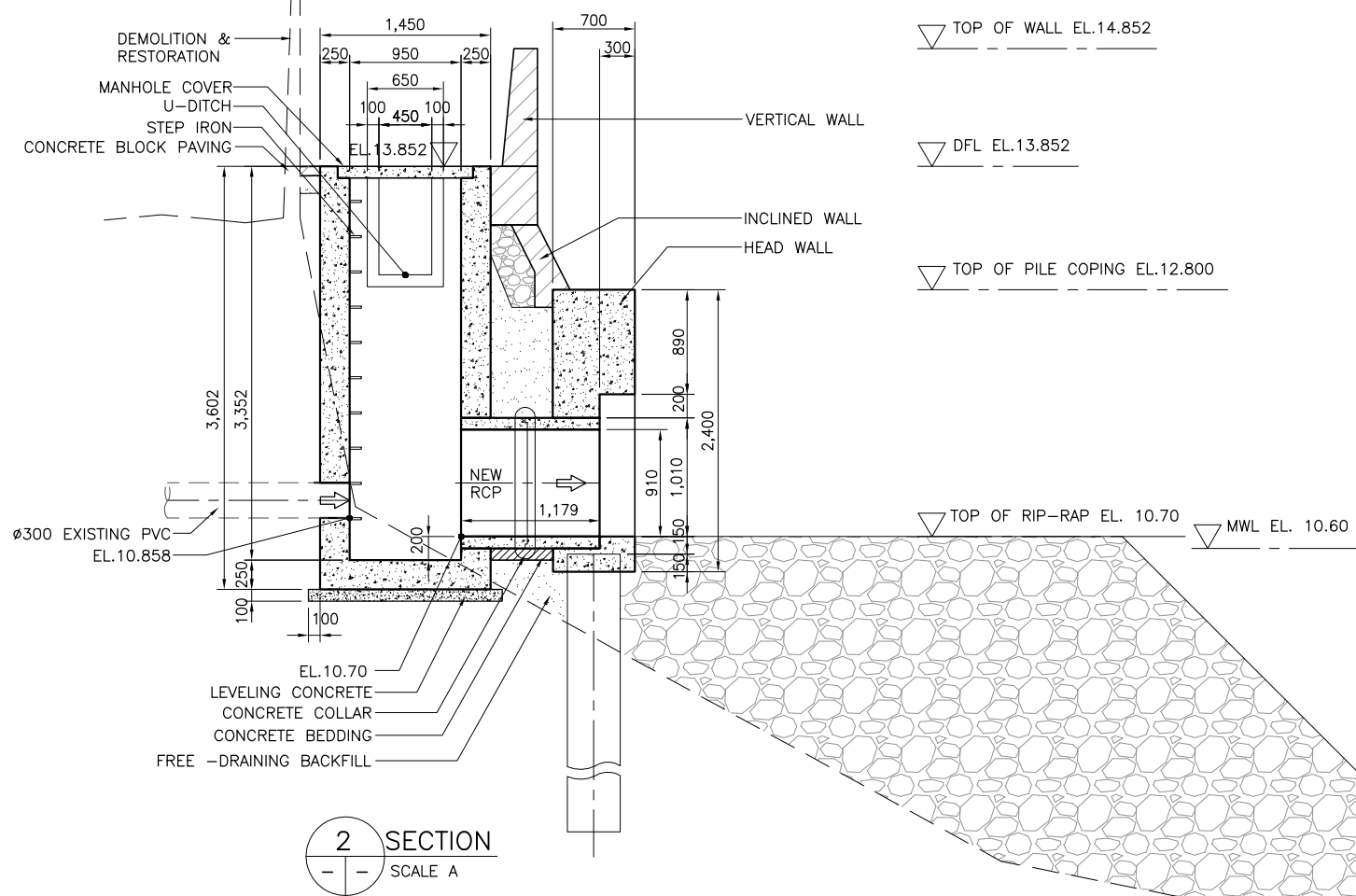
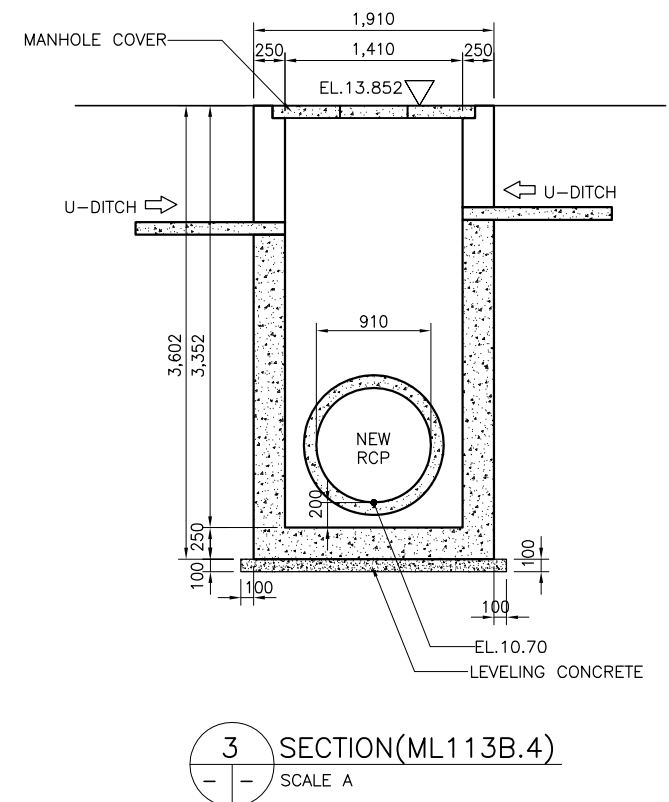
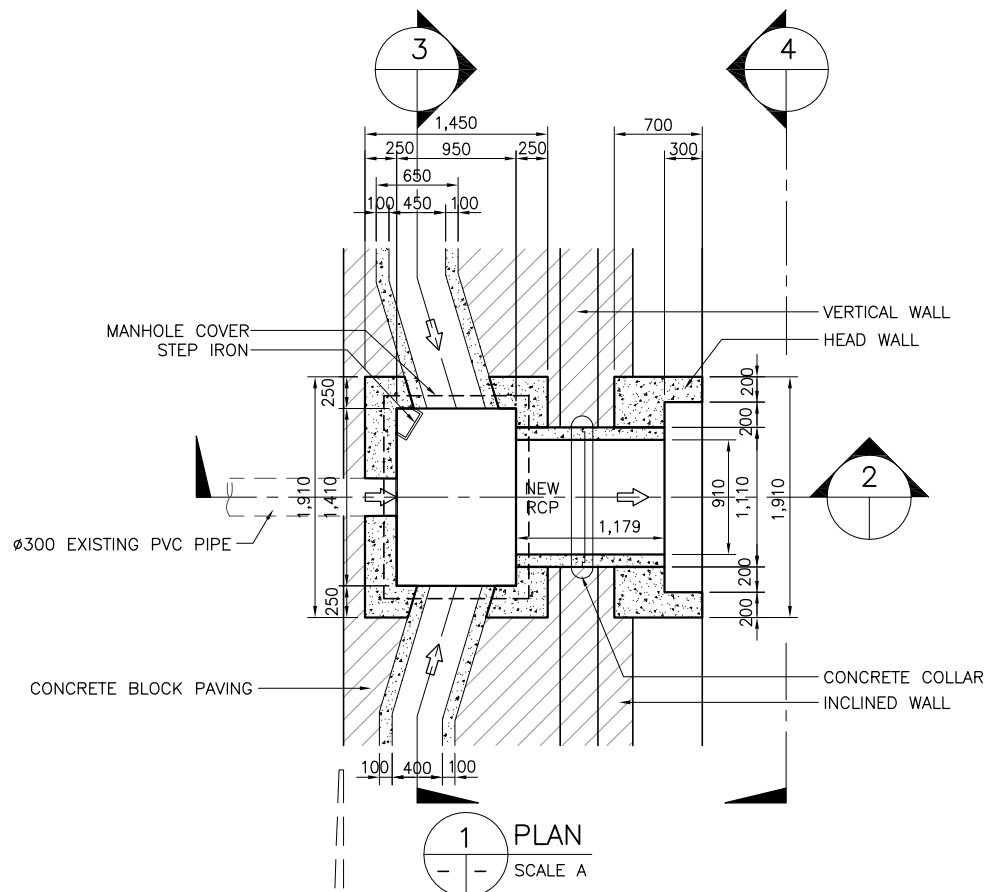


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NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> PLAN & PROFILE OF U-DITCH COLLECTOR	<b>SHEET NO.</b> 
<b>DESIGNED BY:</b> KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	<b>CHECKED BY:</b> TOSHIKI KAWAKAMI <small>THE CHECKER</small>	<b>SUBMITTED BY:</b> SHUJI KAKU <small>TEAM LEADER</small>	<b>REVIEWED BY:</b> PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	<b>RECOMMENDING APPROVAL:</b> PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	<b>APPROVED BY:</b> SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON <small>SECRETARY</small>		



**NOTE:**  
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REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
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REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

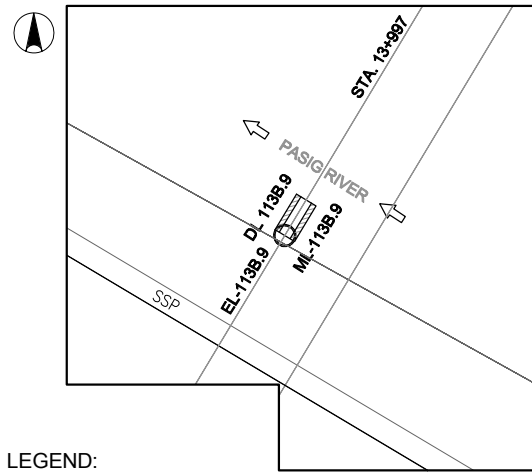
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL 113B.4 & MANHOLE ML 113B.4 STA. 13+974 LB

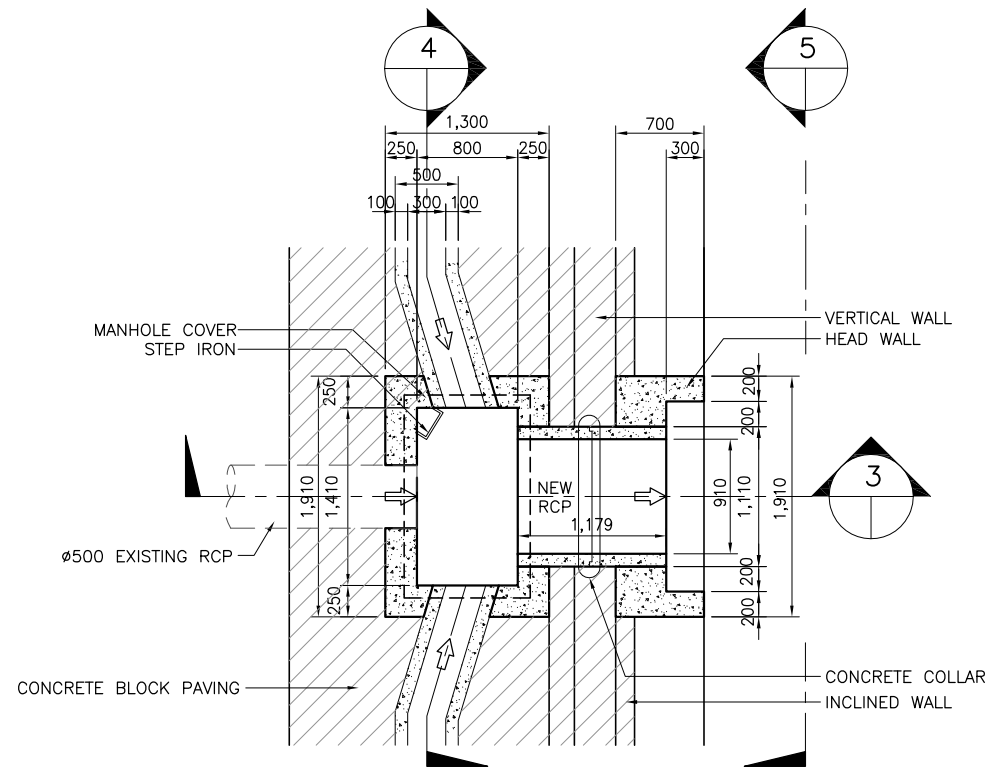
SHEET NO.: UP-DL DO113B.4



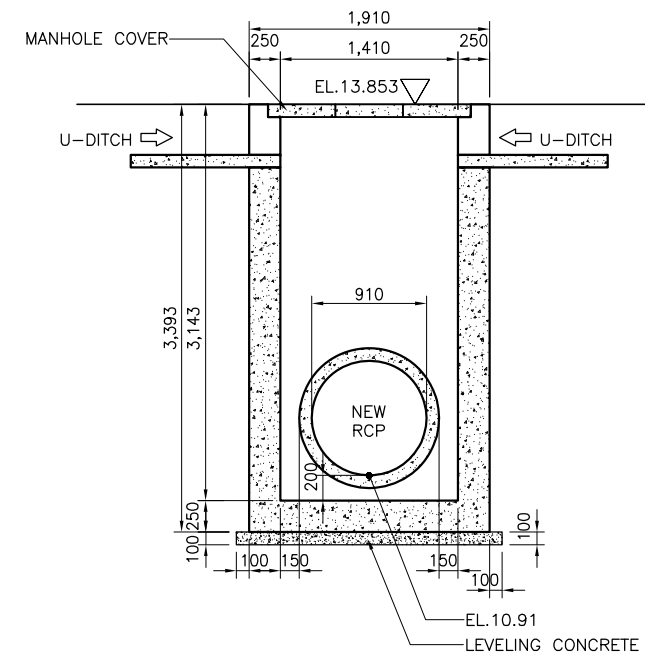
LEGEND:

- EL113B.9 @ EXISTING OUTLET
- DRAINAGE OUTLET
- DL113B.9 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

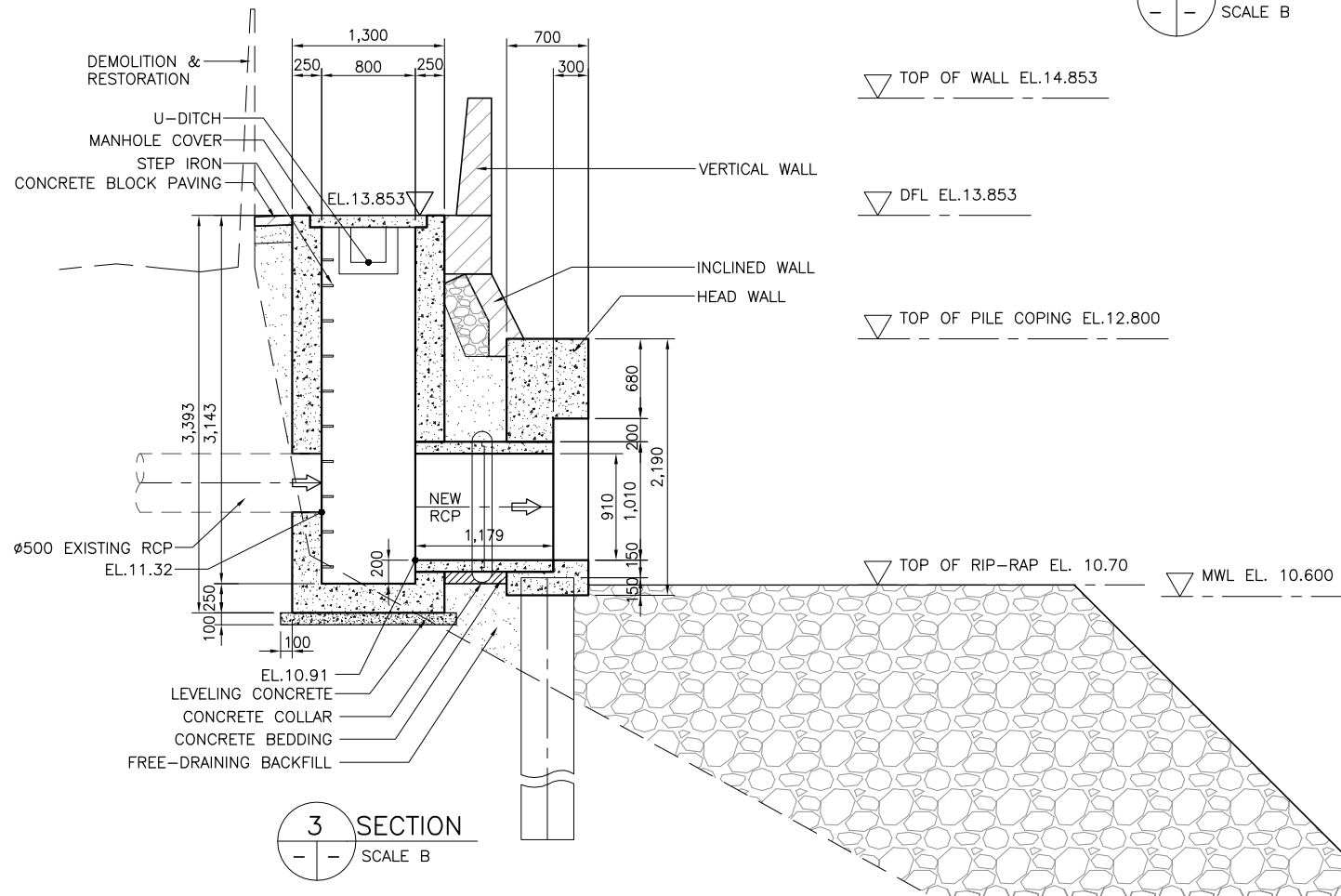
1 DRAINAGE PLAN  
SCALE A



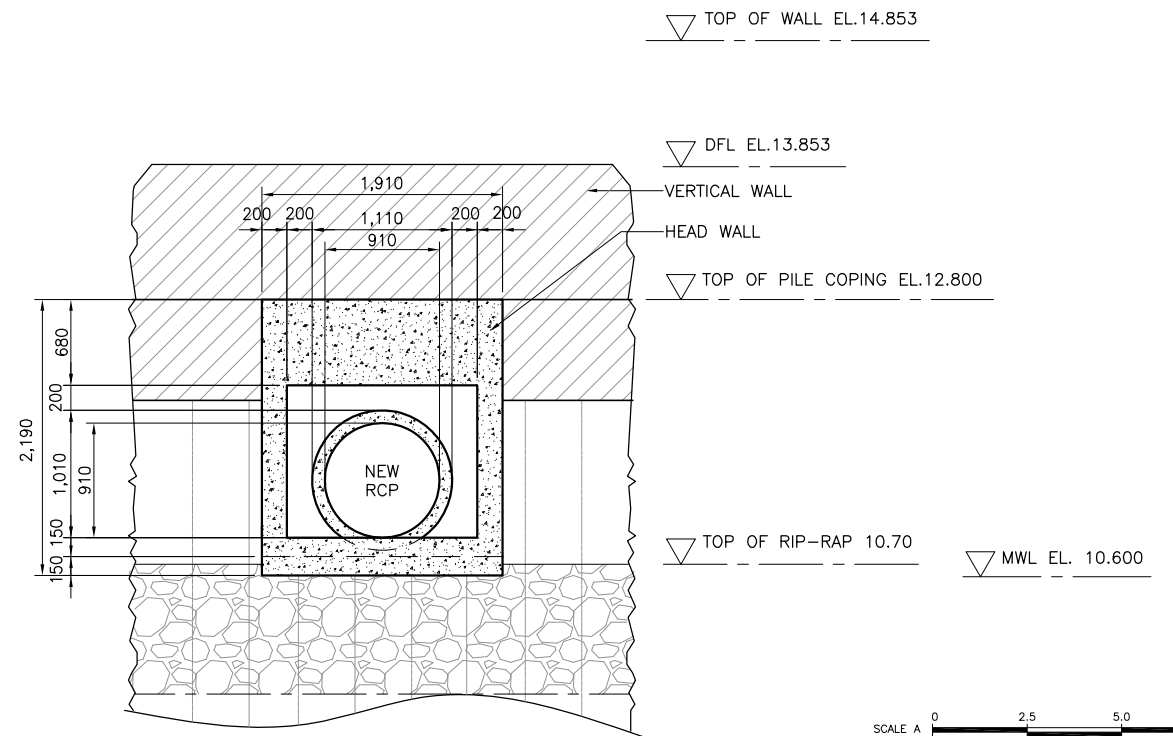
2 PLAN  
SCALE B



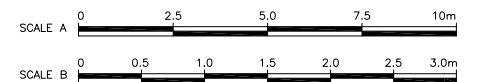
4 SECTION (ML 113B.9)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

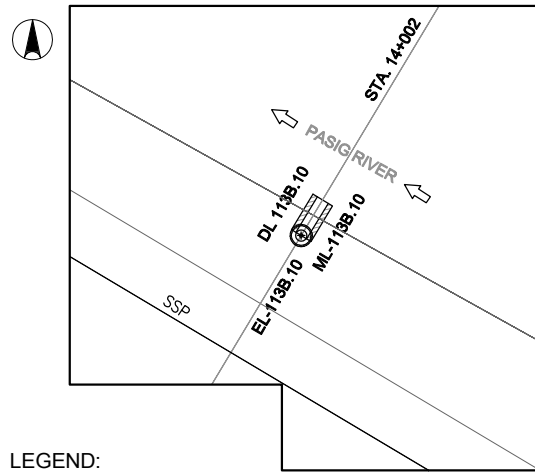
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

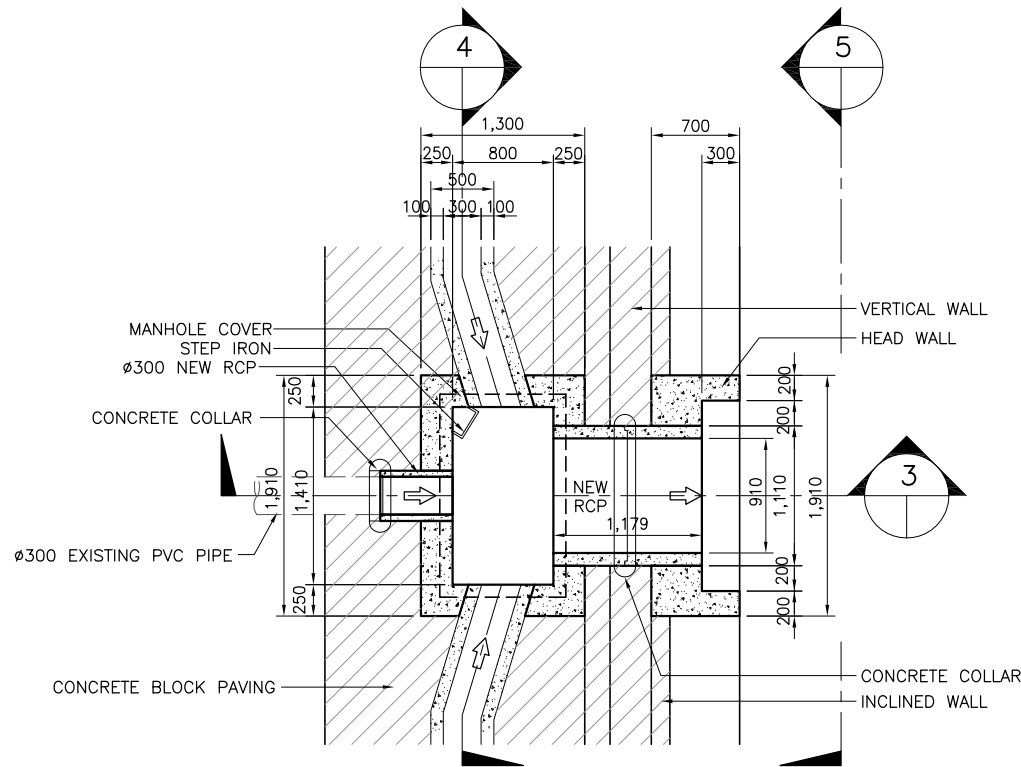
SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL113B.9, MANHOLE ML113B.9 STA. 13+997

SHEET NO.: UP-DL DO113B.9

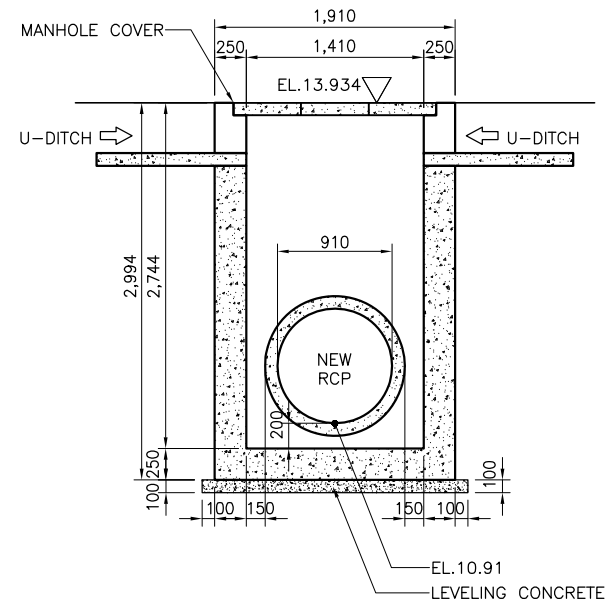


- LEGEND:**
- EL113B.10 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DL113B.10 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

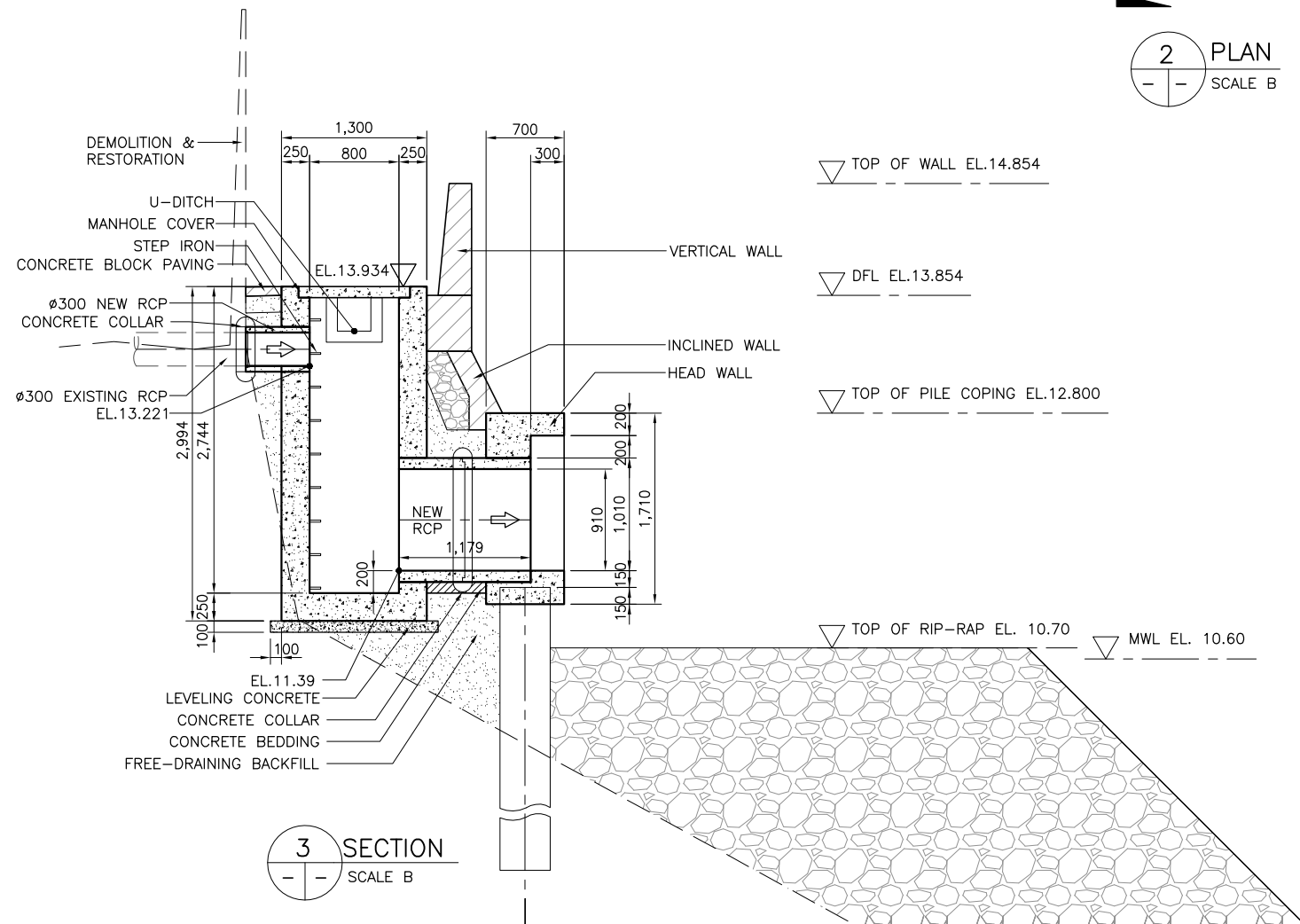
**1 DRAINAGE PLAN**  
SCALE A



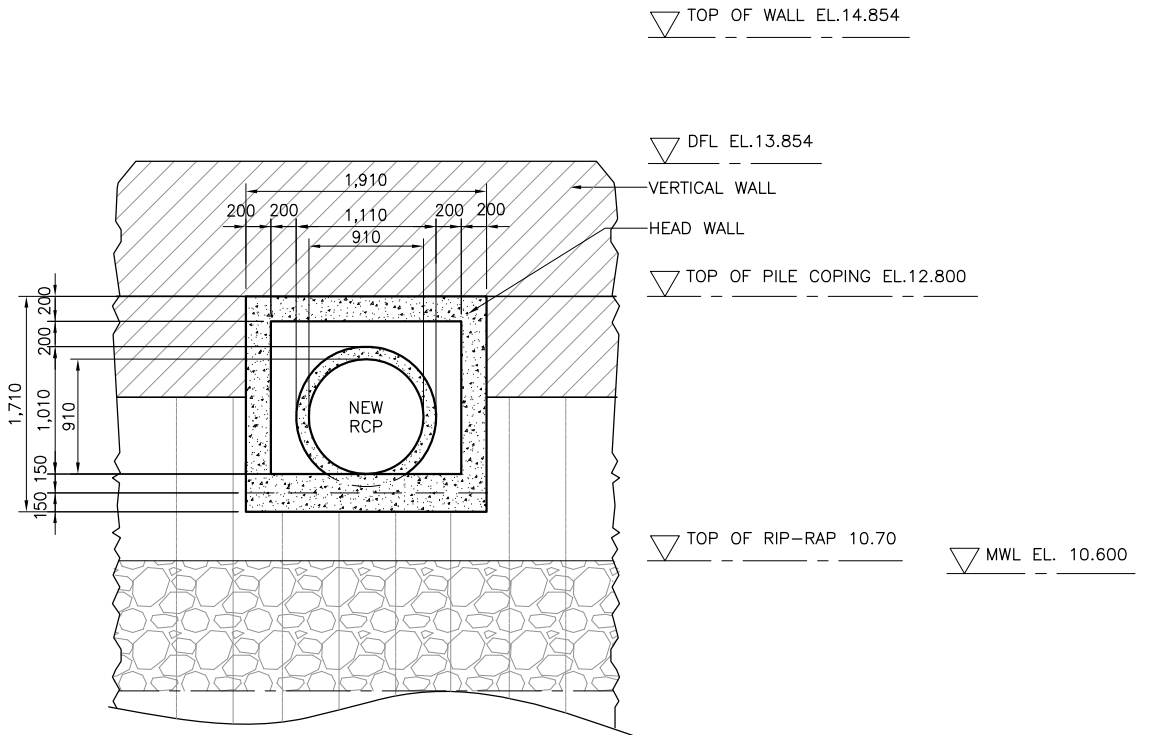
**2 PLAN**  
SCALE B



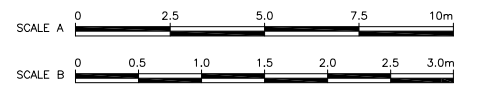
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SCALE B



**3 SECTION**  
SCALE B



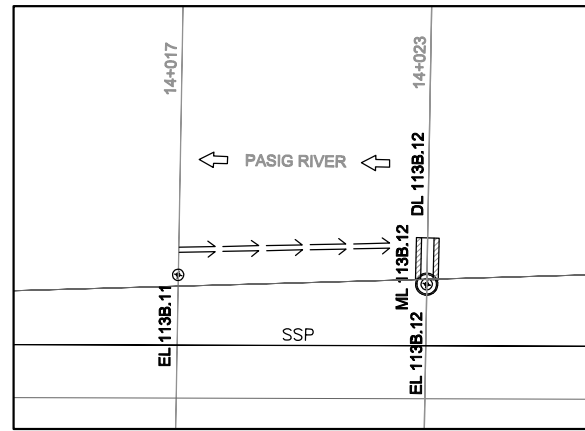
**5 ELEVATION**  
SCALE B






REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

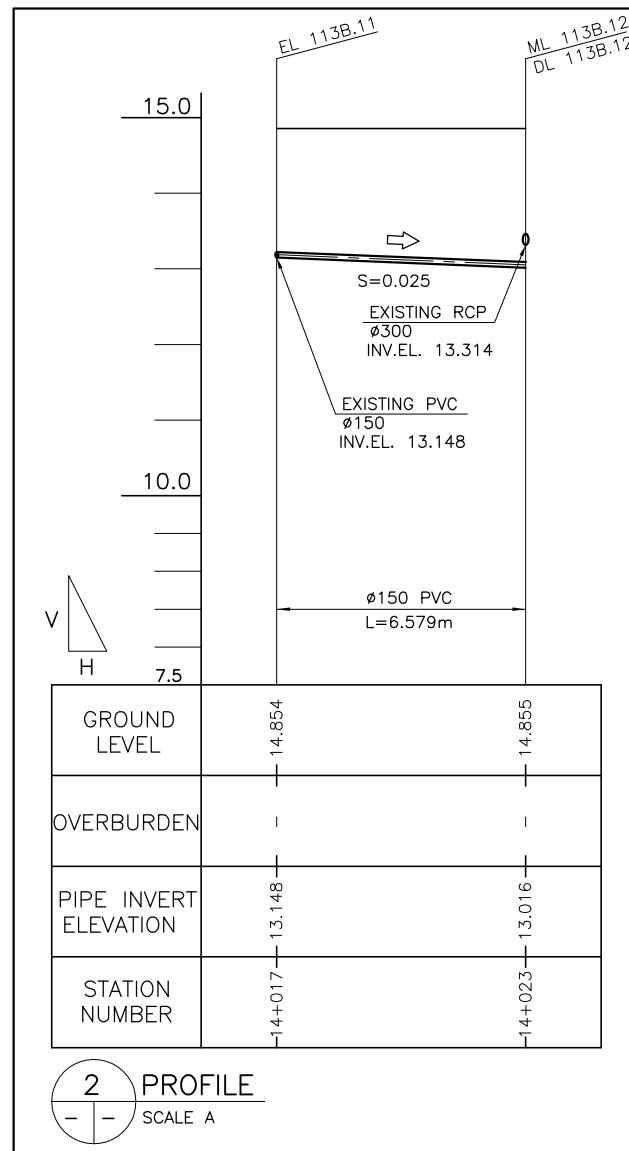
SHUJI KAKU  
TEAM LEADER



LEGEND:

- EL 113B.12 ⊕ EXISTING OUTLET
-  DRAINAGE OUTLET
-  COLLECTOR PIPE
- DL 113B.12 ○ DRAINAGE OUTLET NO.
-  PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



R E V I S I O N S			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL :			APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

PROJECT & LOCATION

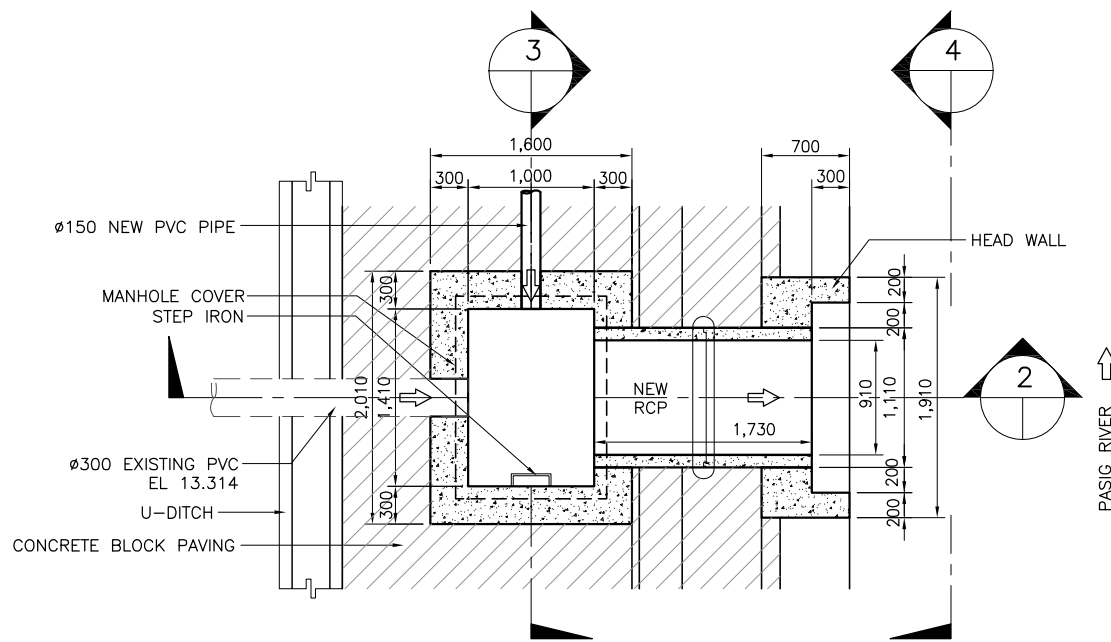
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

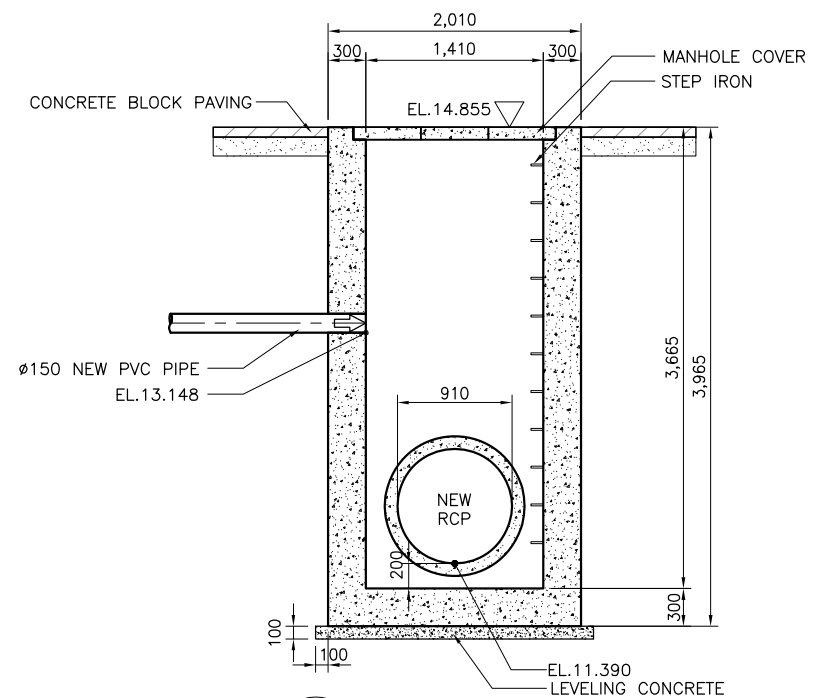
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

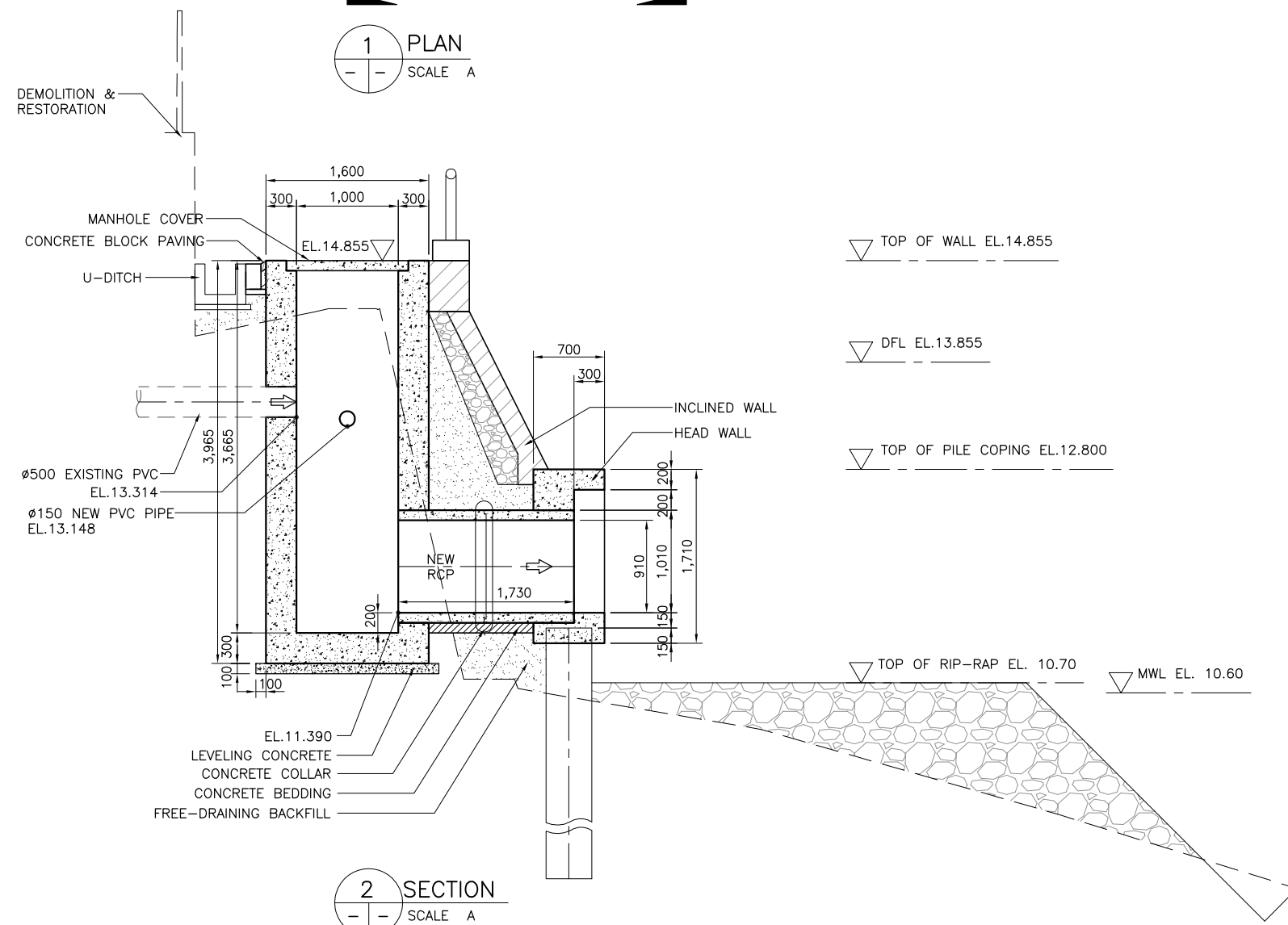
UP-DL  
DO 113B.12/P



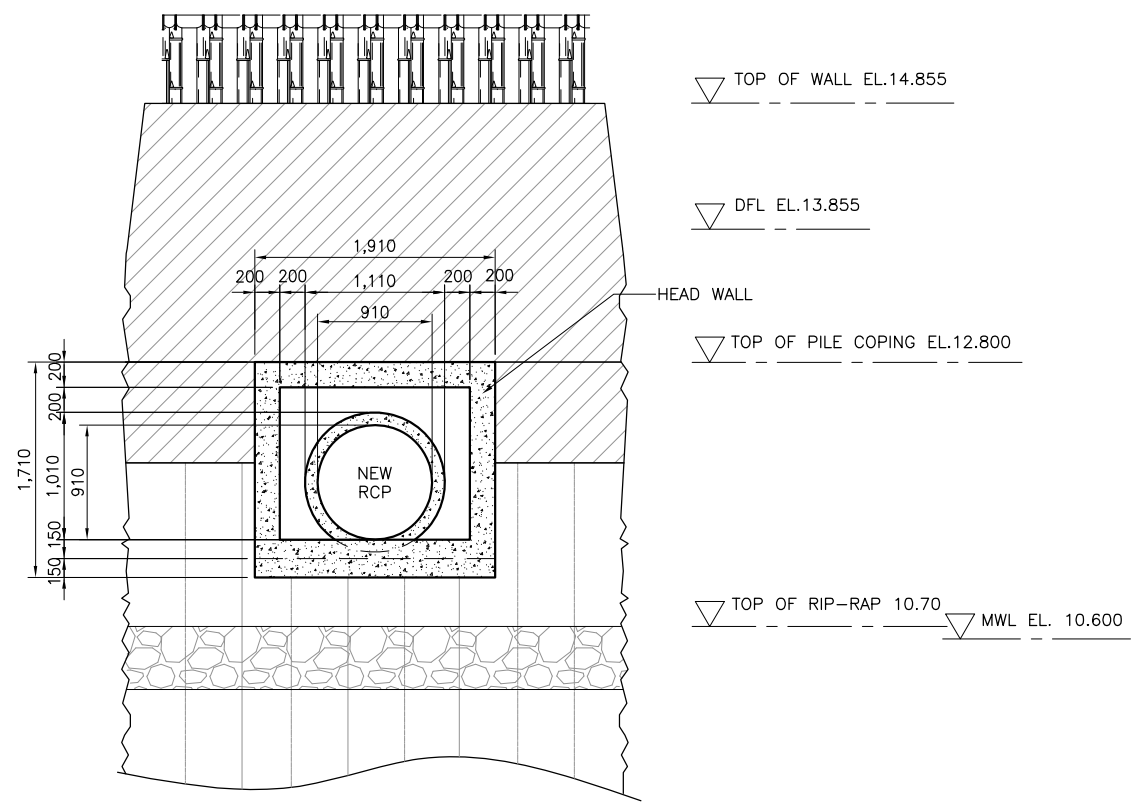
1 PLAN  
SCALE A



3 SECTION (ML113B.12)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



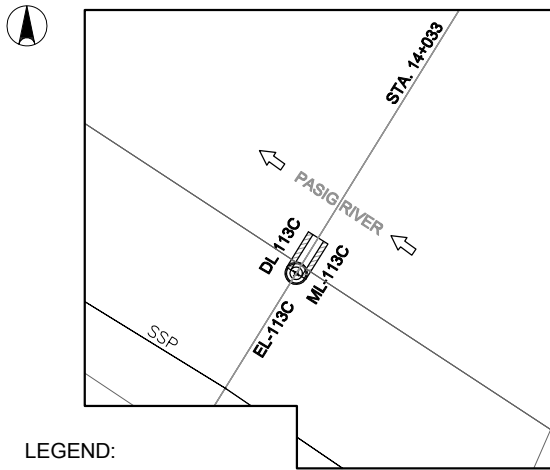
DESIGNED BY: KOHJI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

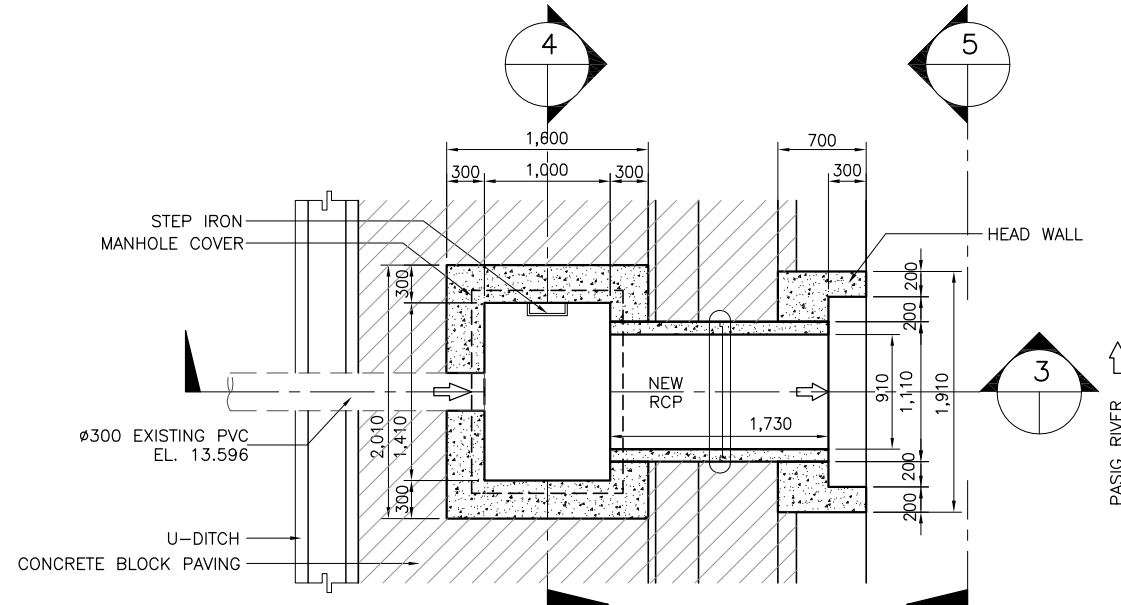
PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL113B.12 & MANHOLE ML113B.12 STA 14+023 LB	SHEET NO. UP-DL 00 113B.12
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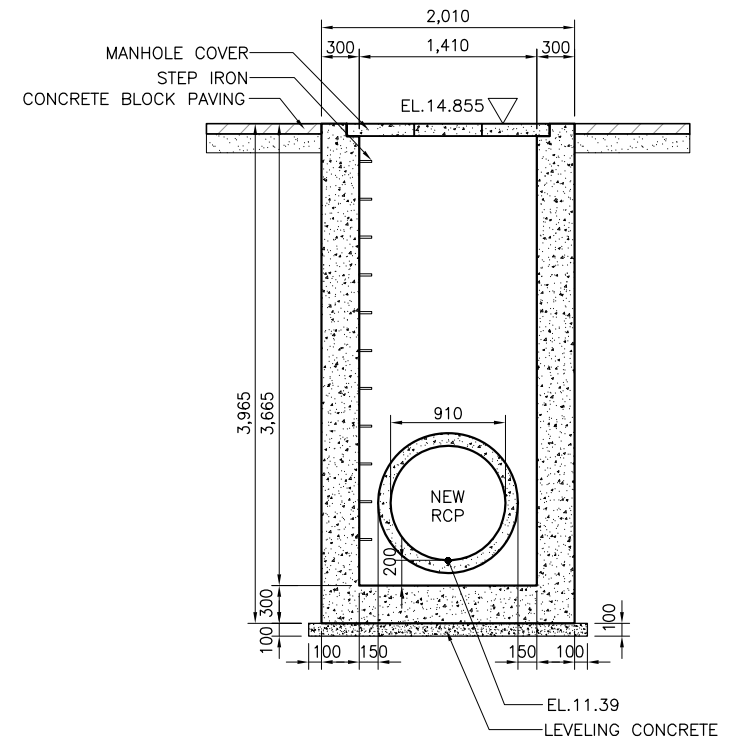
LEGEND:

- EL113C ⊕ EXISTING OUTLET
- ▭ DRAINAGE OUTLET
- DL113C DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

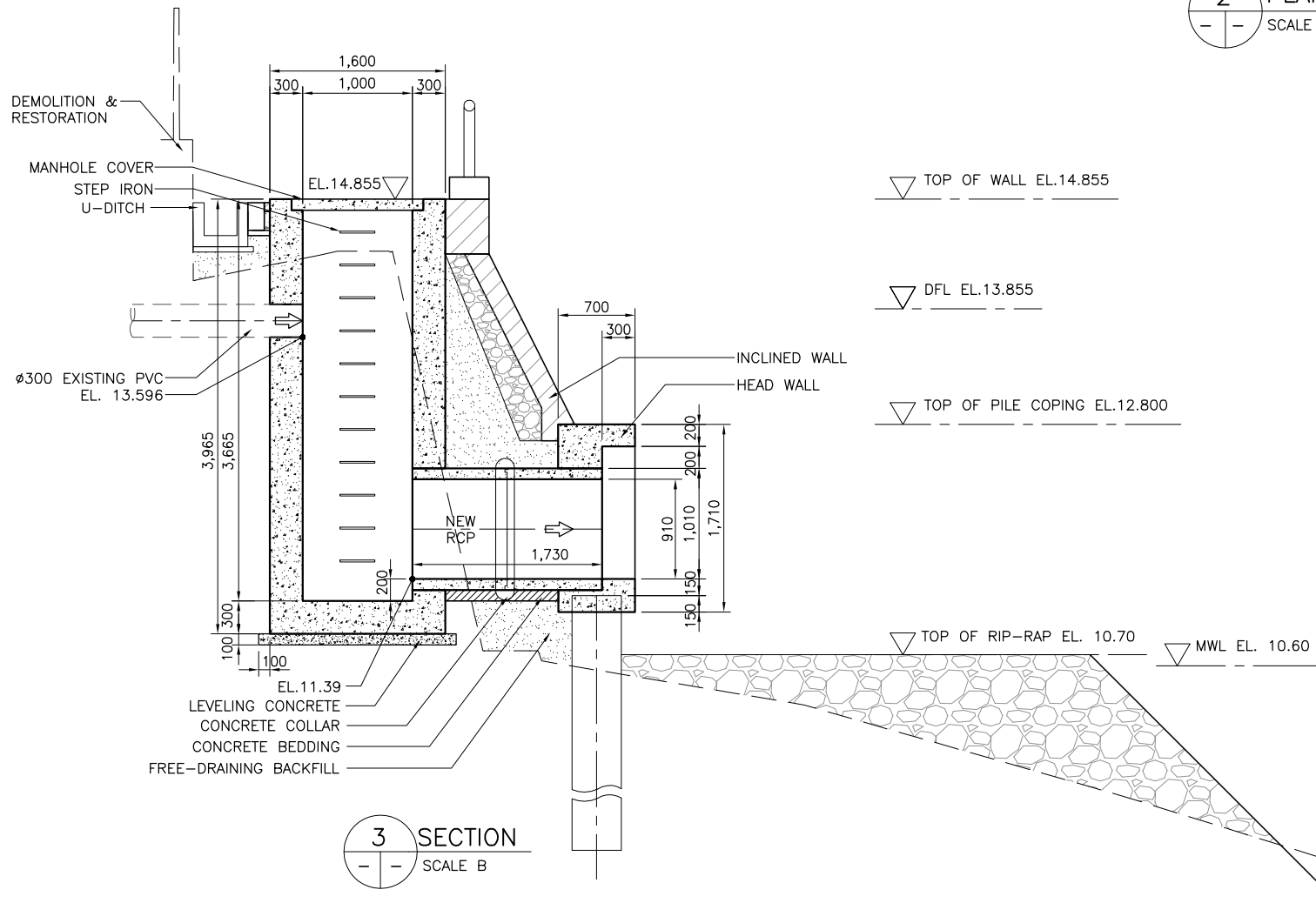
1 DRAINAGE PLAN  
SCALE A



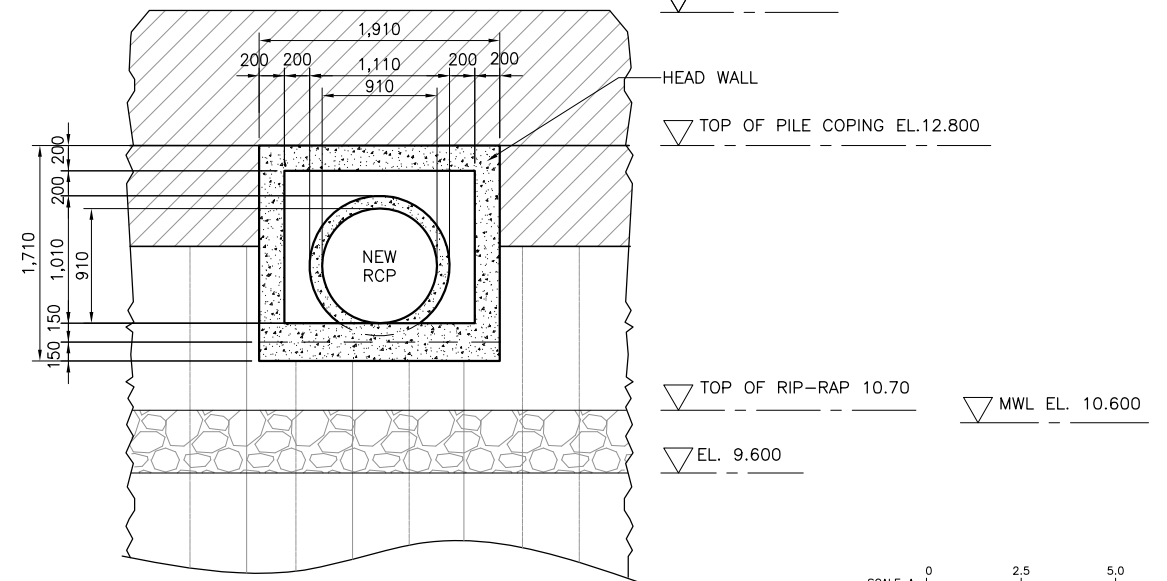
2 PLAN  
SCALE B



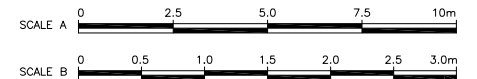
4 SECTION (ML113C)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

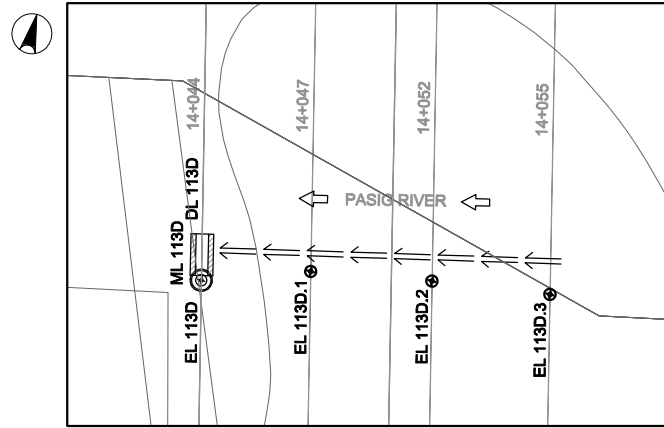
DETAIL OF DRAINAGE OUTLET- DL113C, MANHOLE ML113C STA. 14+033

SHEET NO.

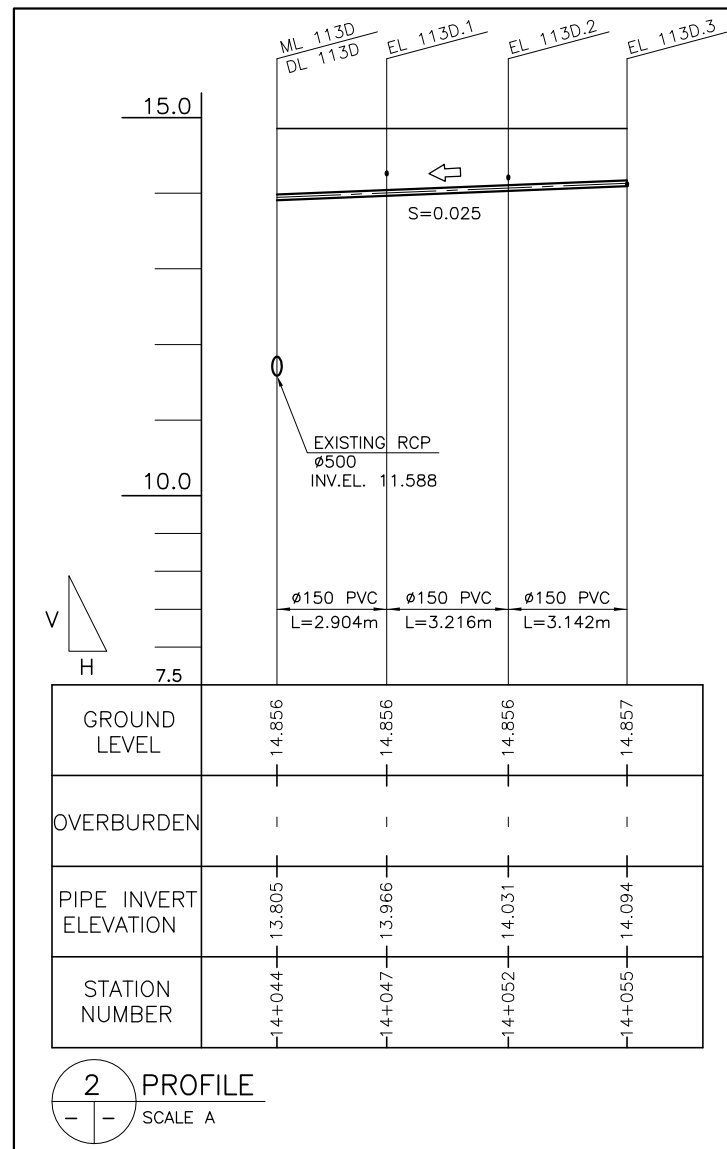
UP-DL DO113C



- LEGEND:
- ER 113D ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR 113D DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE



1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

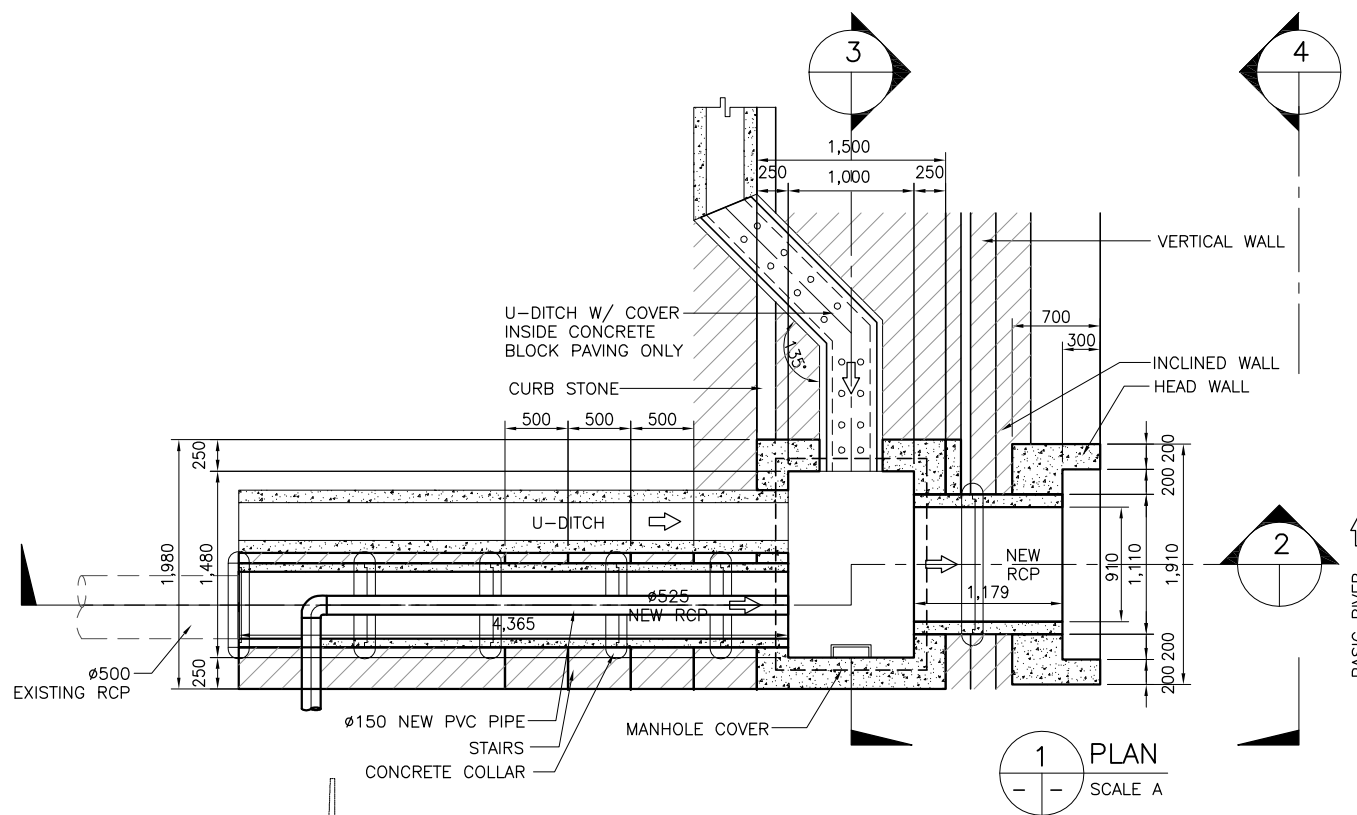
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

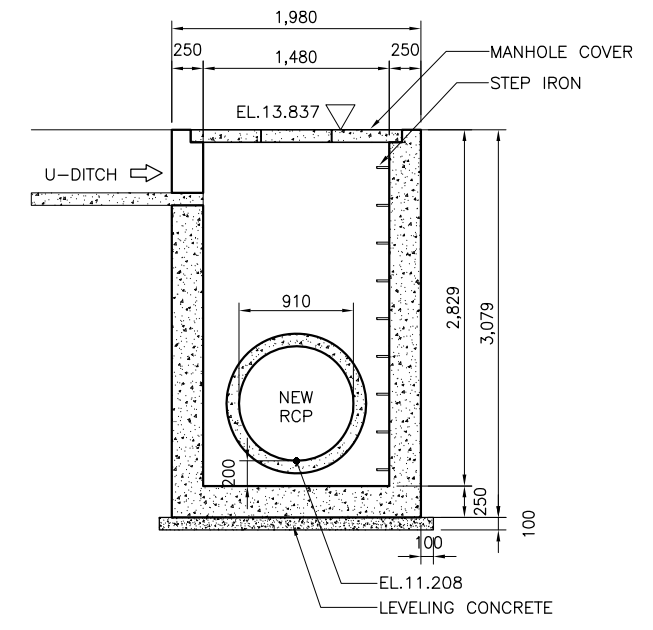
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DO113D/P



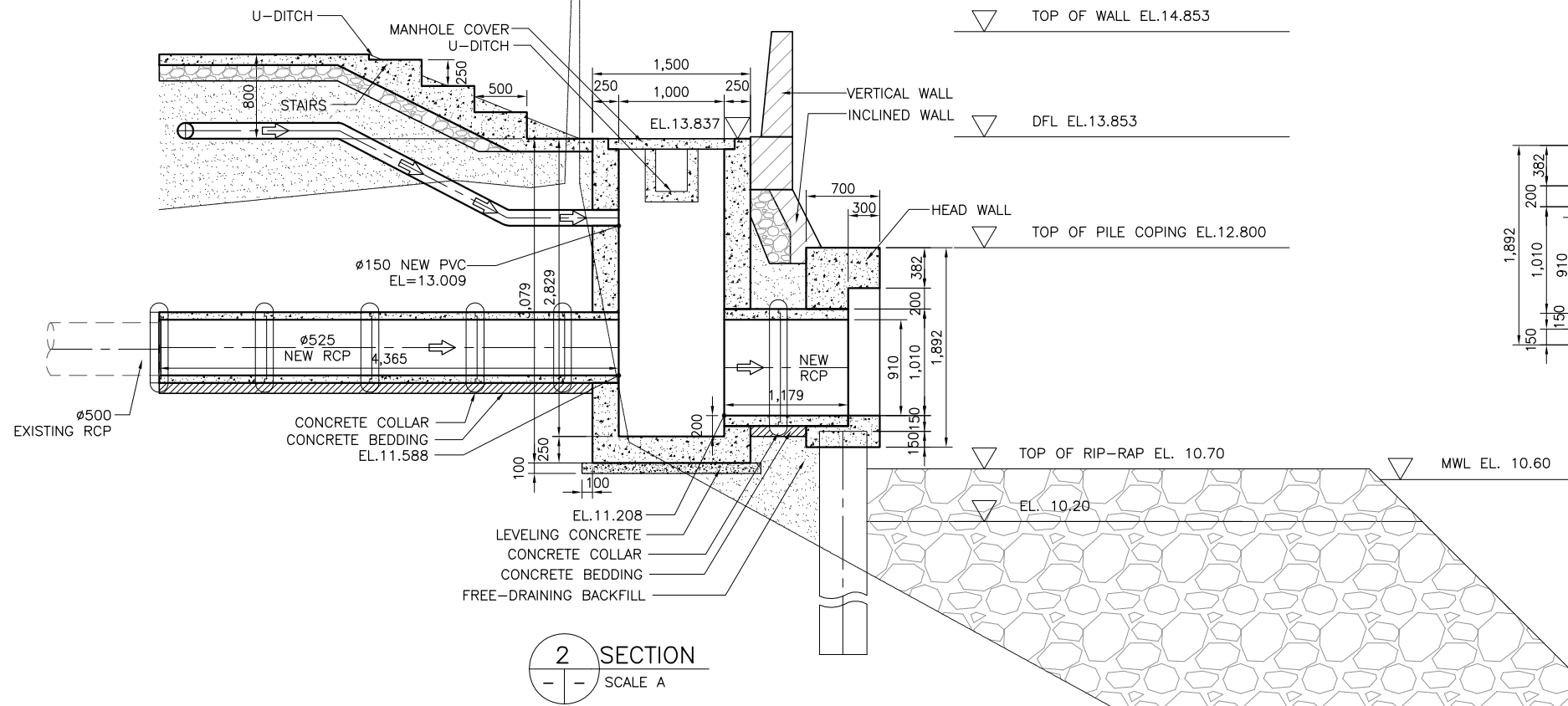
CTI ENGINEERING INTERNATIONAL CO., LTD.



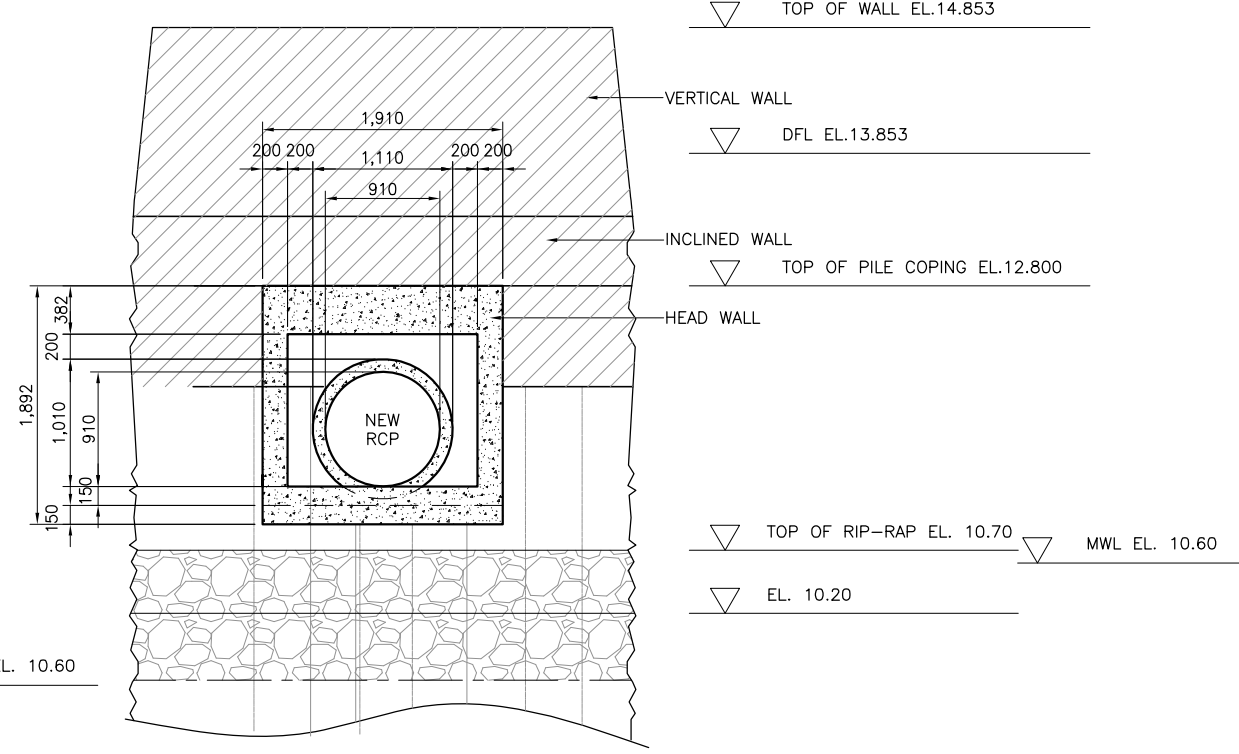
1 PLAN  
SCALE A



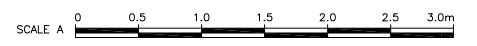
3 SECTION (ML113D)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



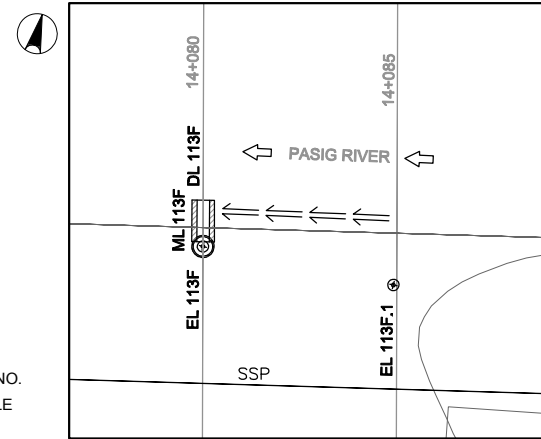
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

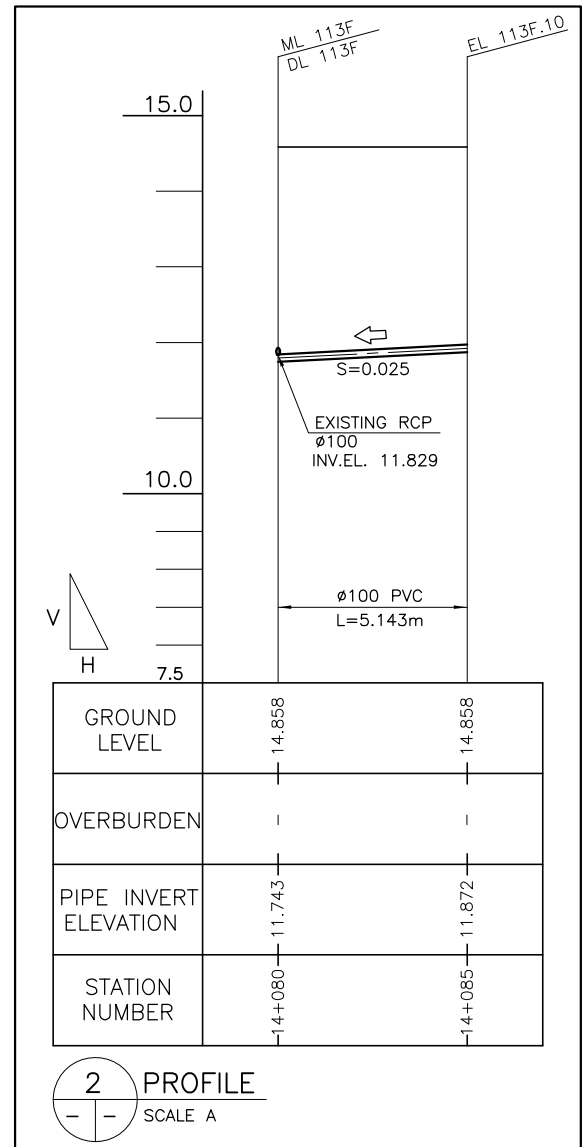
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>			REPUBLIC OF THE PHILIPPINES <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>			PROJECT & LOCATION <b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>		SHEET CONTENTS <b>DETAIL OF DRAINAGE OUTLET- DL113D &amp; MANHOLE ML113D STA 14+044 LB</b>		SHEET NO. <b>UP-DL/DO/113D</b>	
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:						
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY				





- LEGEND:**
- ER 113F ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR 113F DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

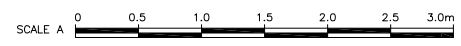
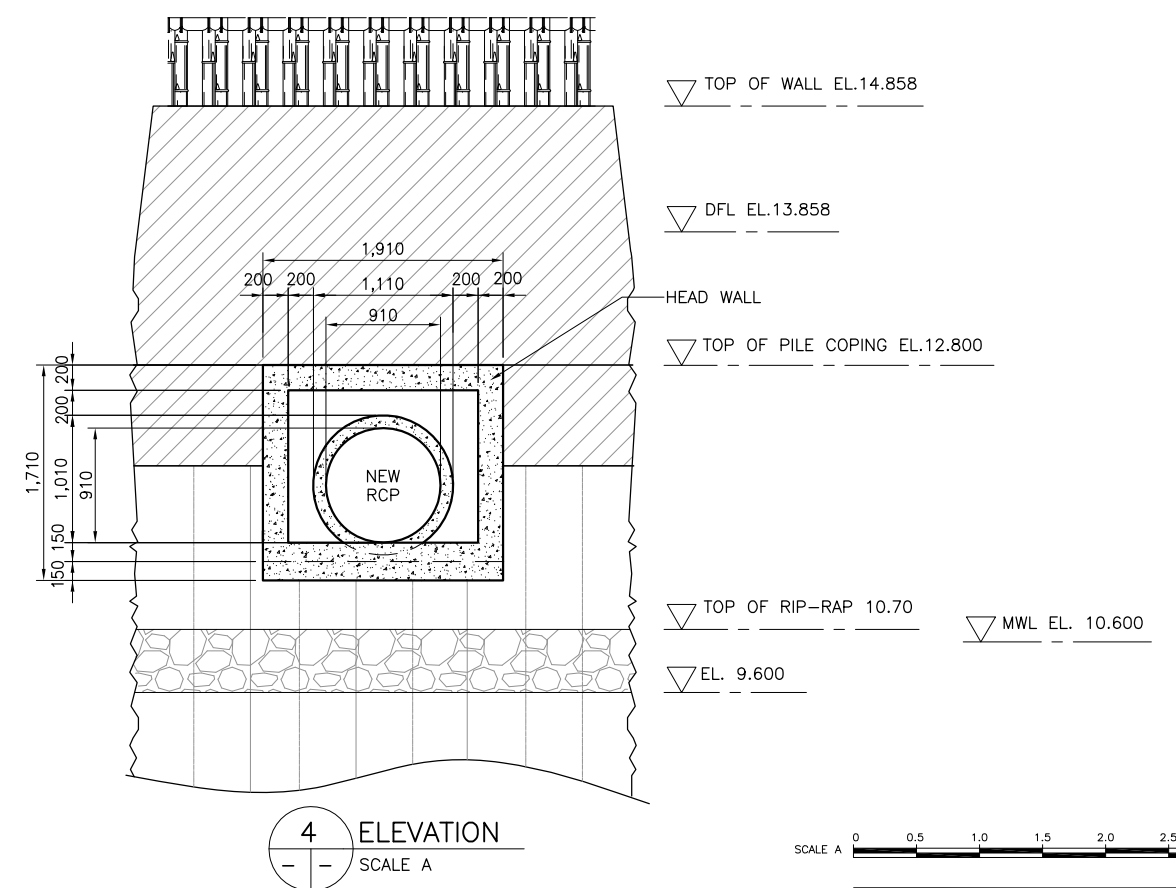
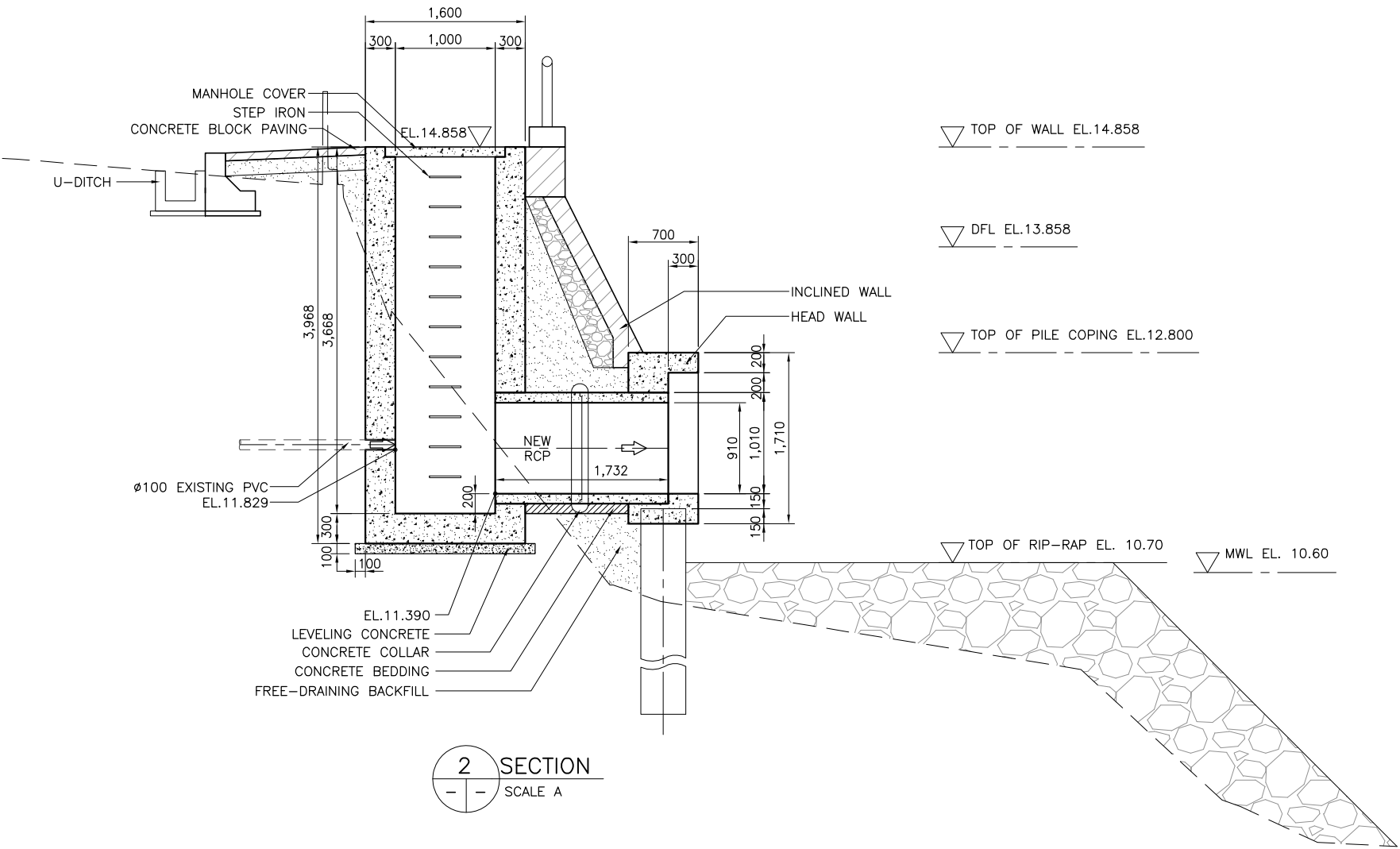
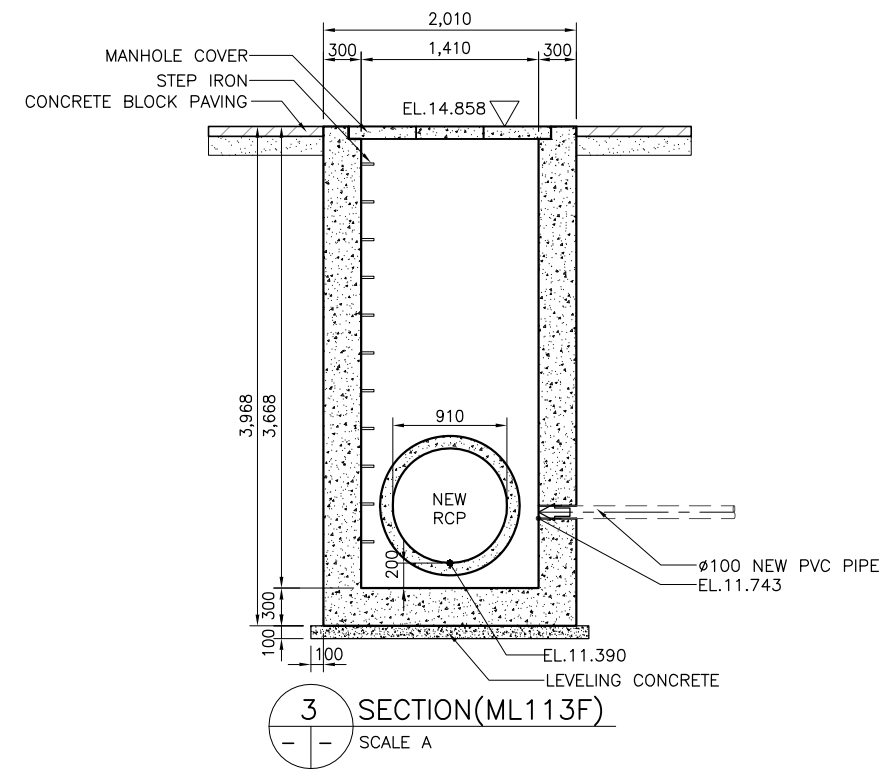
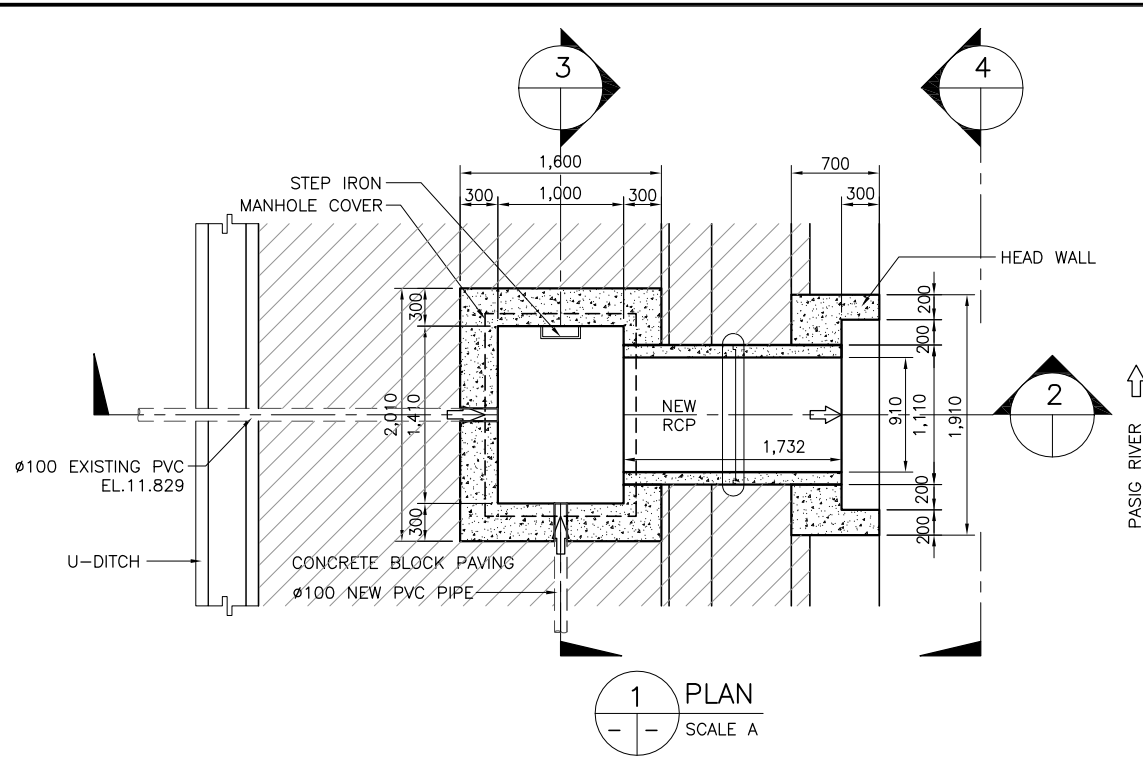


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS	SHEET NO.	
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PEDERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			

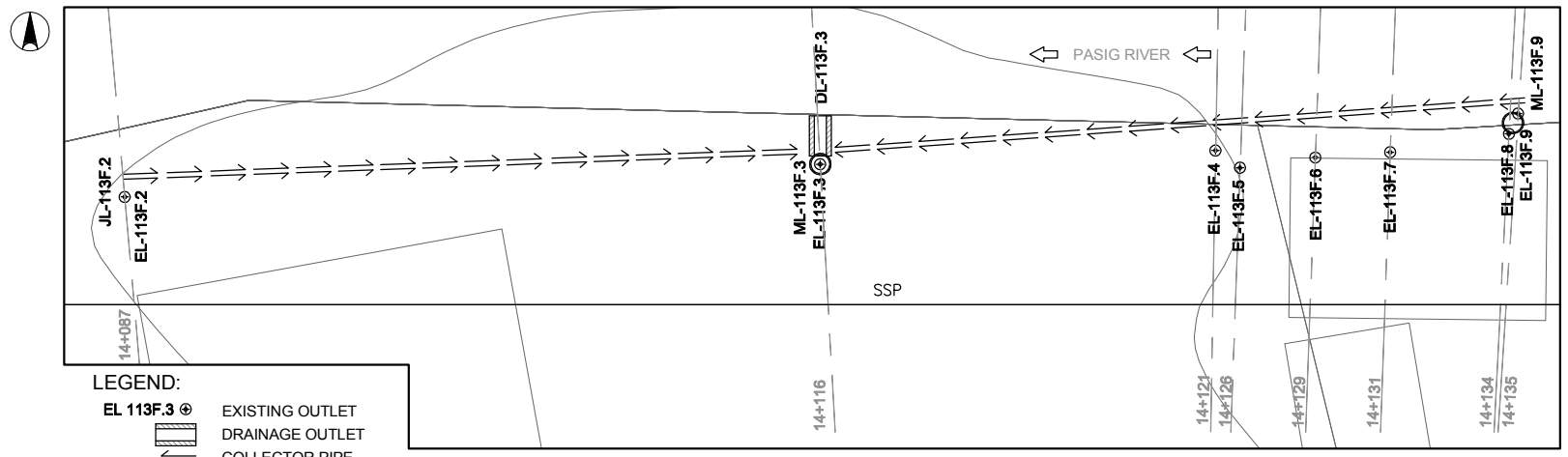


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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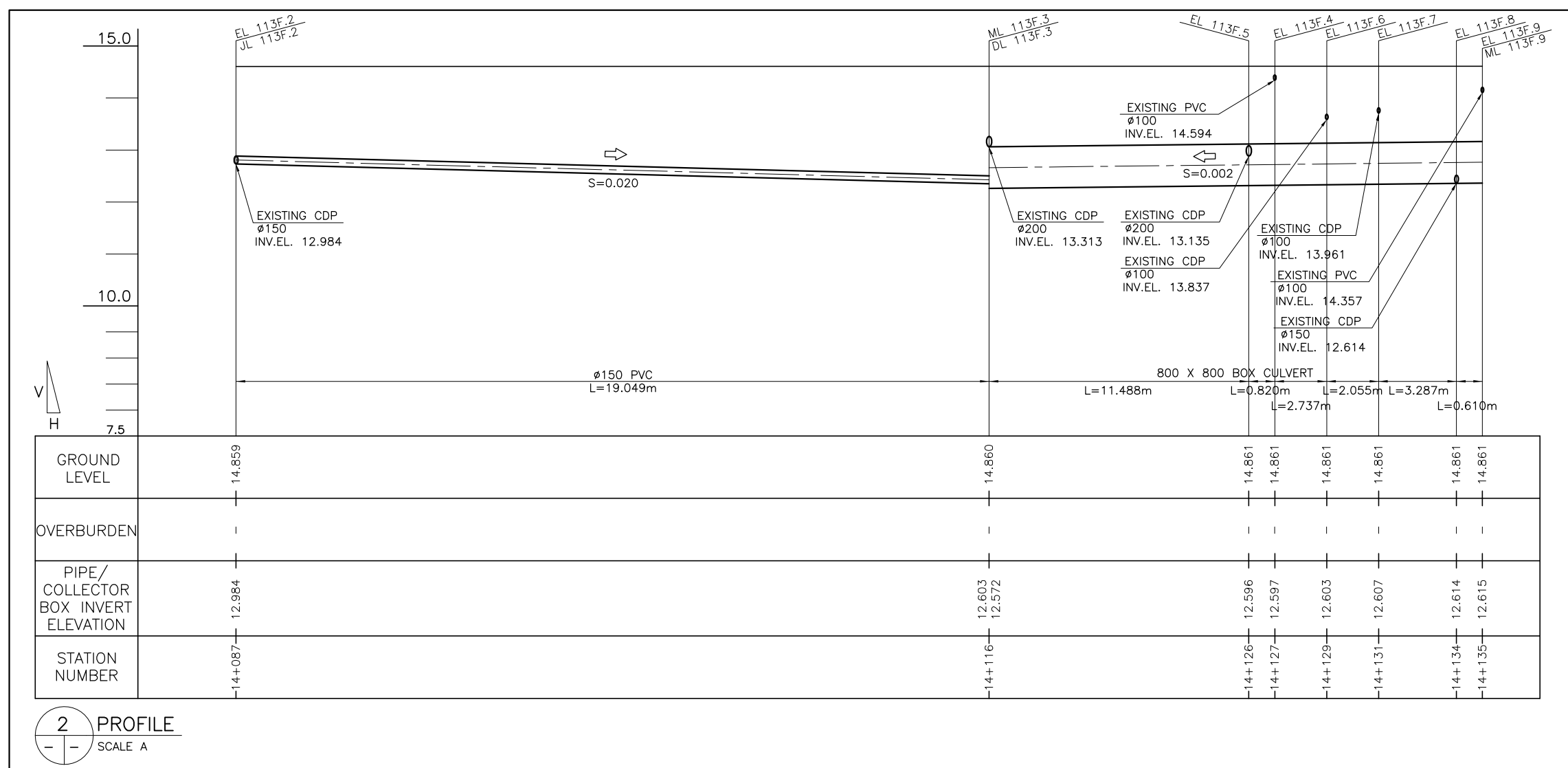
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL113F & MANHOLE ML113F STA 14+080 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERPECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



- LEGEND:**
- EL 113F.3 ⊕ EXISTING OUTLET
  - ⊕ DRAINAGE OUTLET
  - ⇐ COLLECTOR PIPE
  - DL 113F.3 ○ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

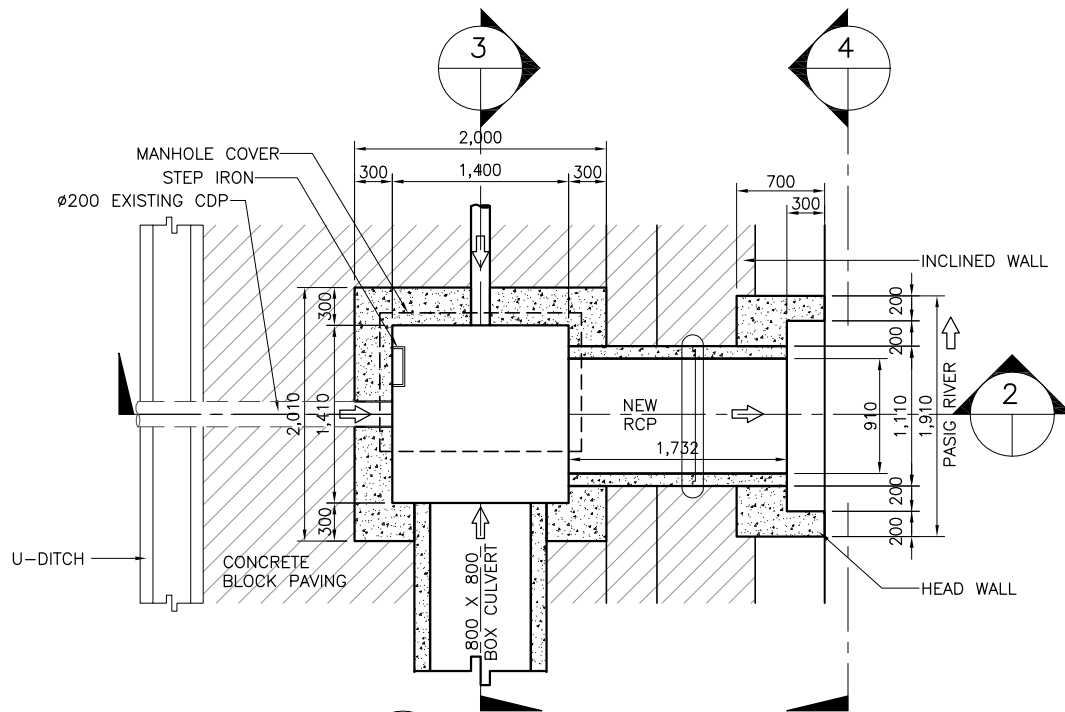


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

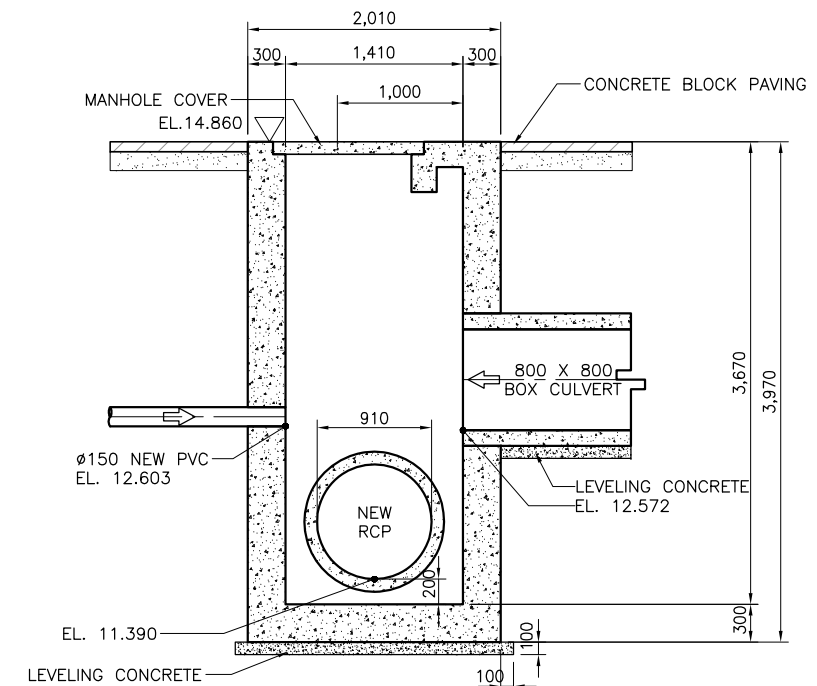
**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

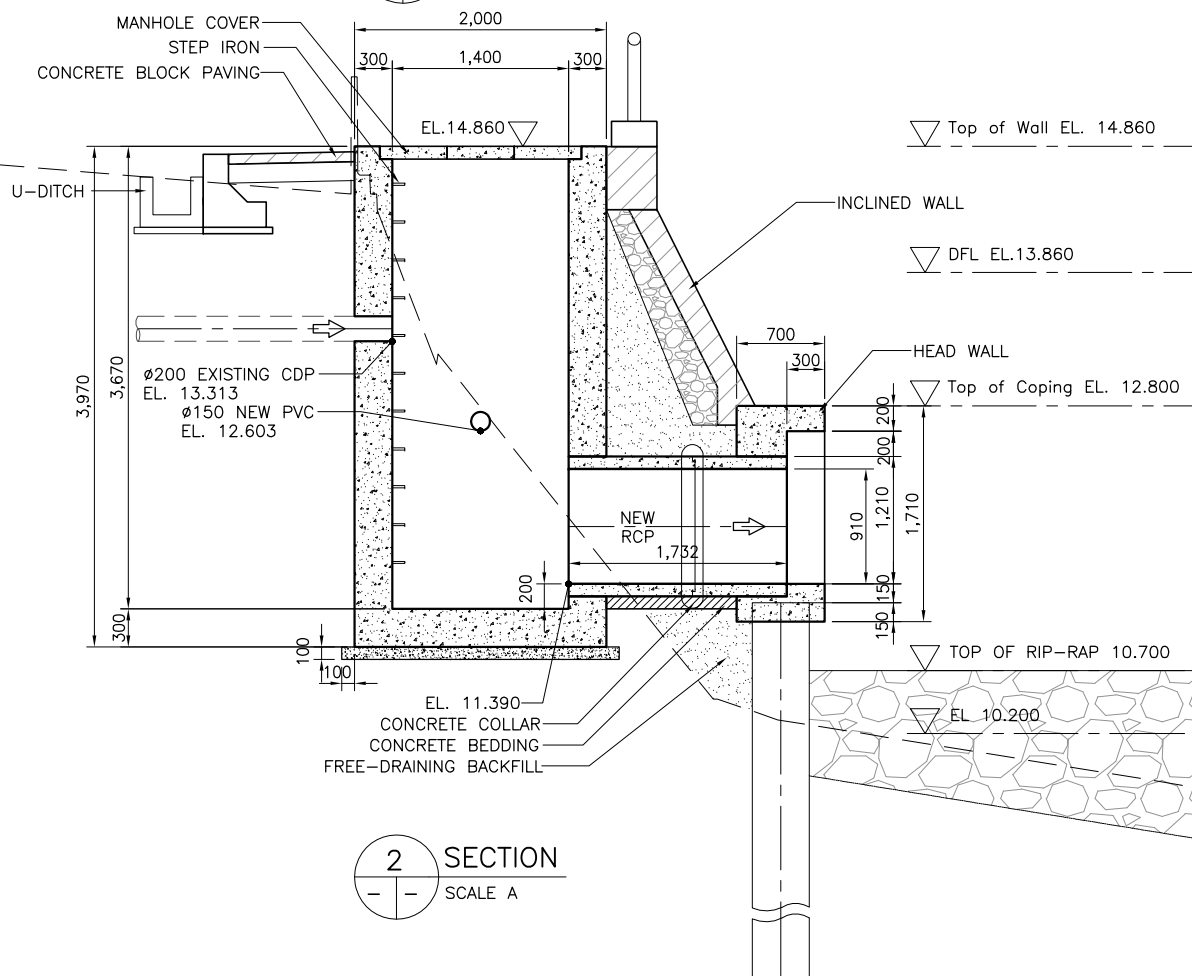
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE/BOX	UP-DL DO 113F.3/P
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			



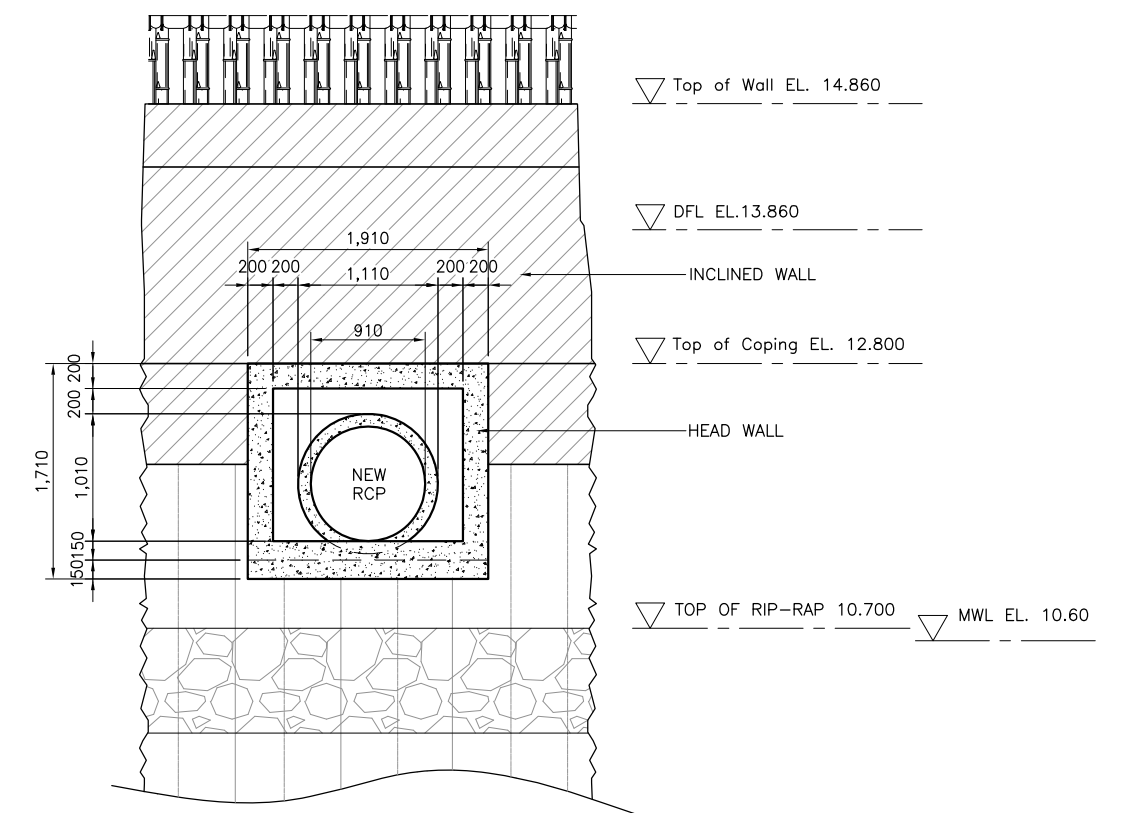
1 PLAN  
SCALE A



3 SECTION (ML113F.3)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
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SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



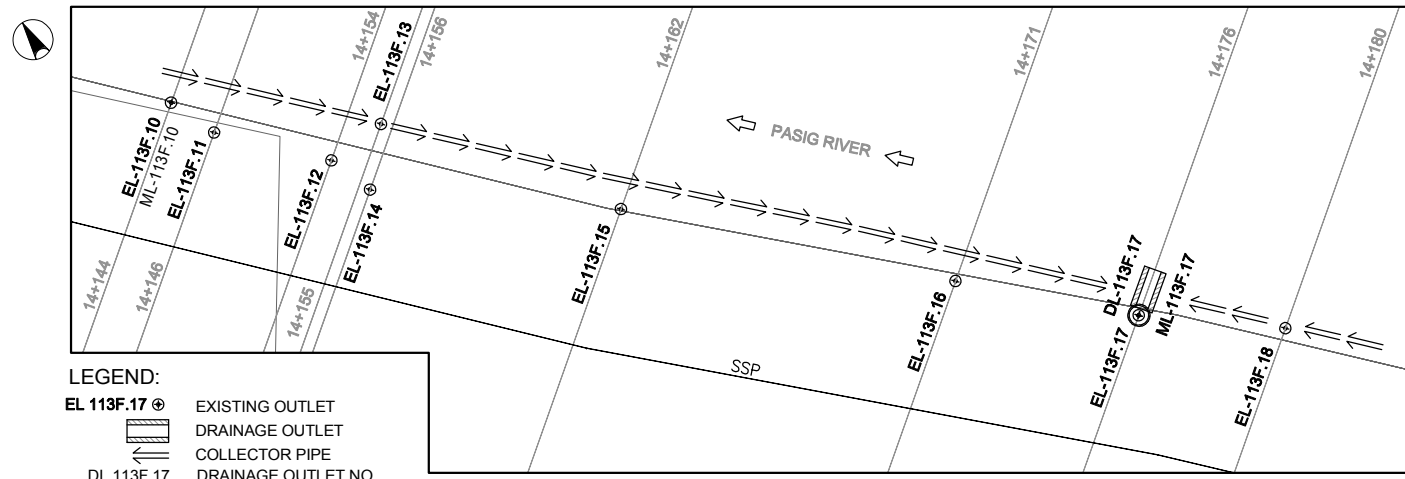
REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

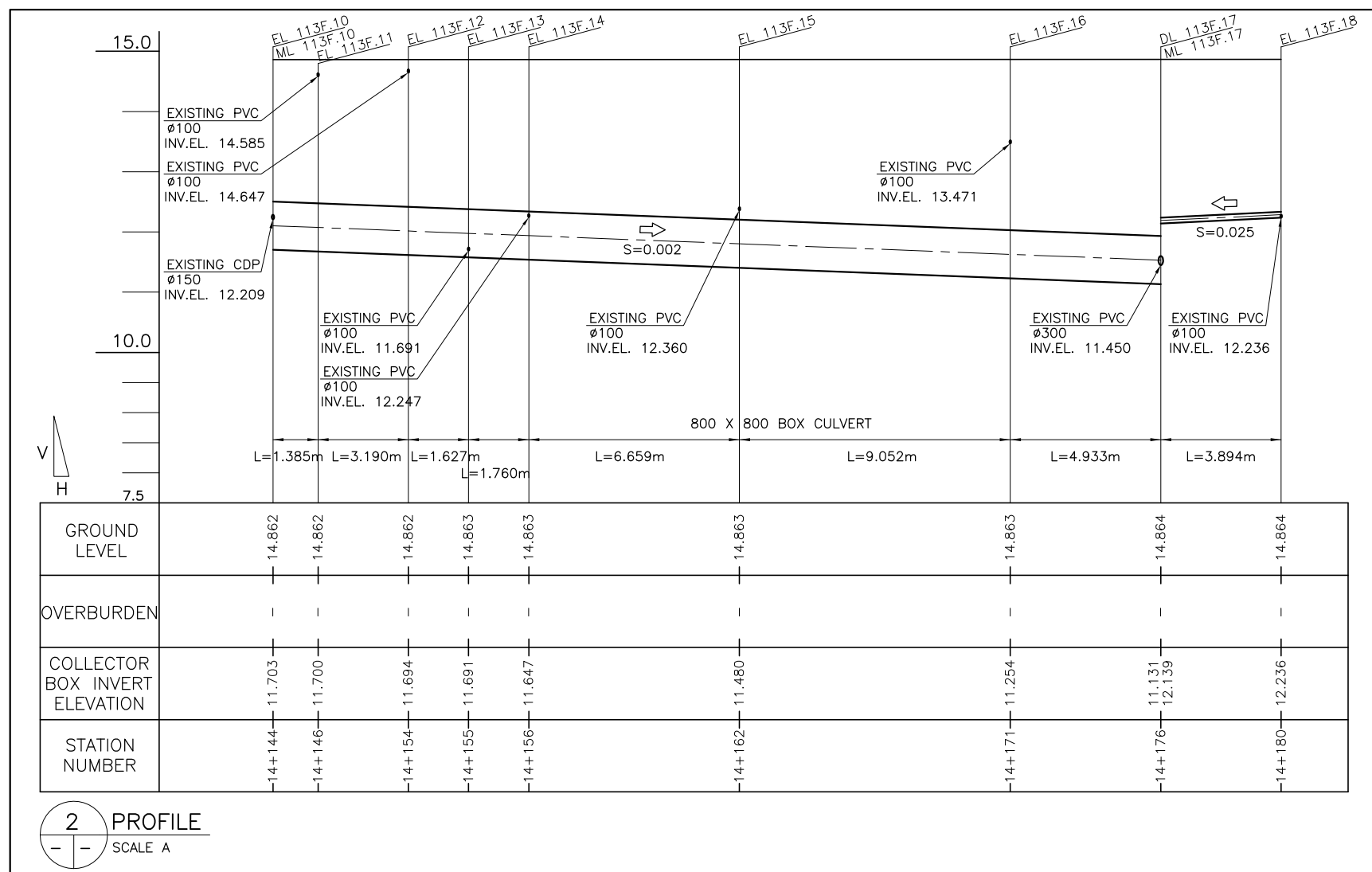
SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DL 113F.3 & MANHOLE ML113F.3 STA. 14+116 LB

SHEET NO.  
UP-DL  
DO113F.3



- LEGEND:**
- EL 113F.17 EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DL 113F.17 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

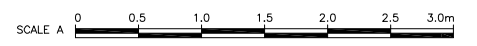
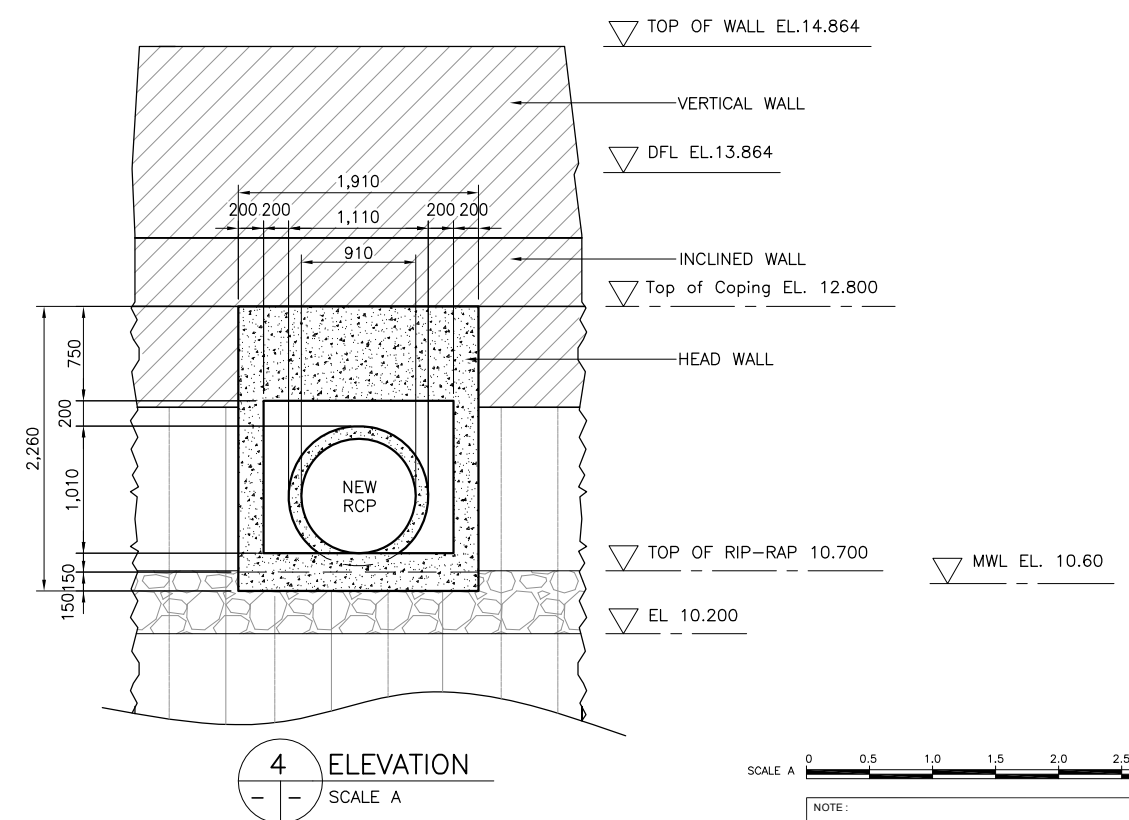
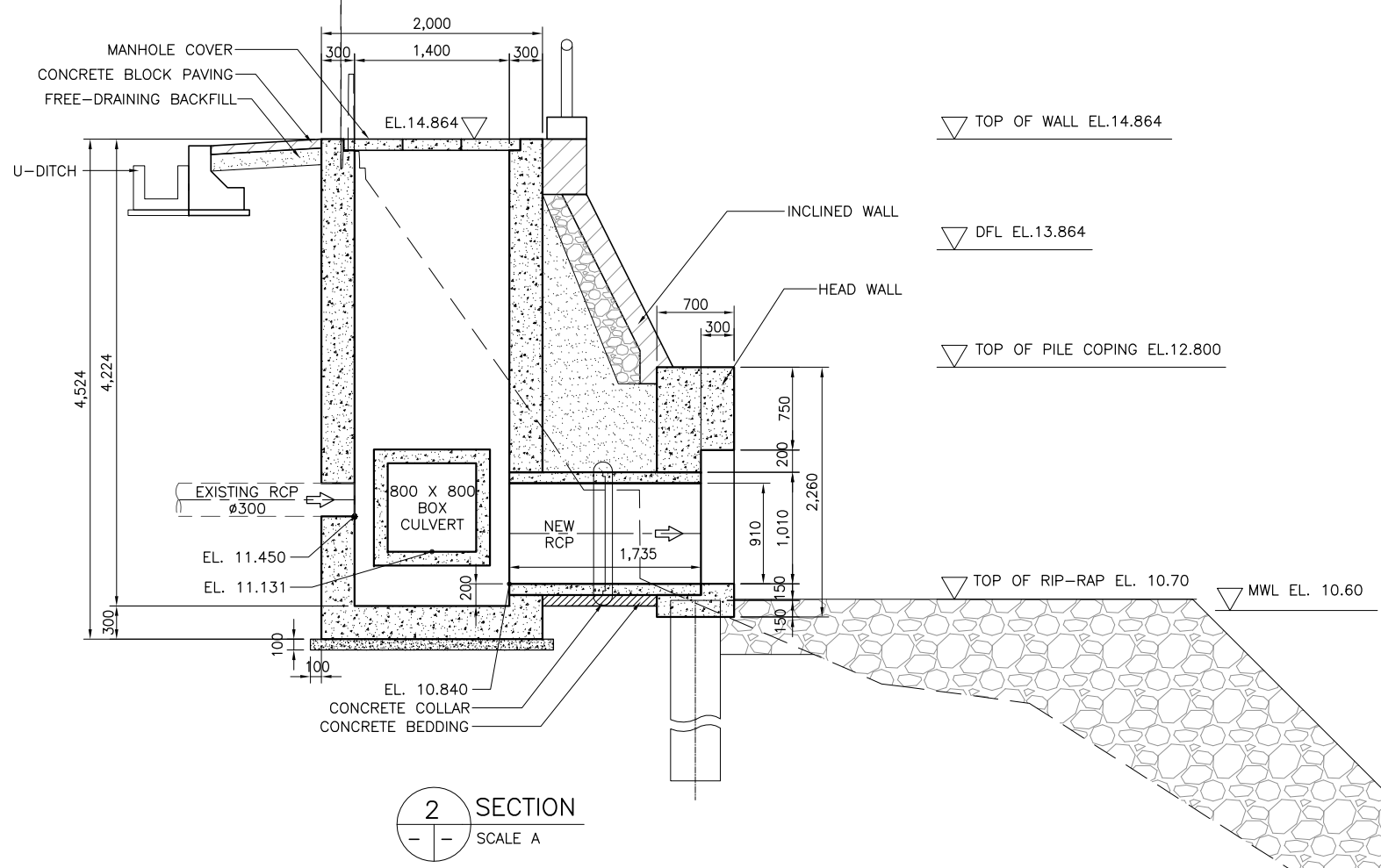
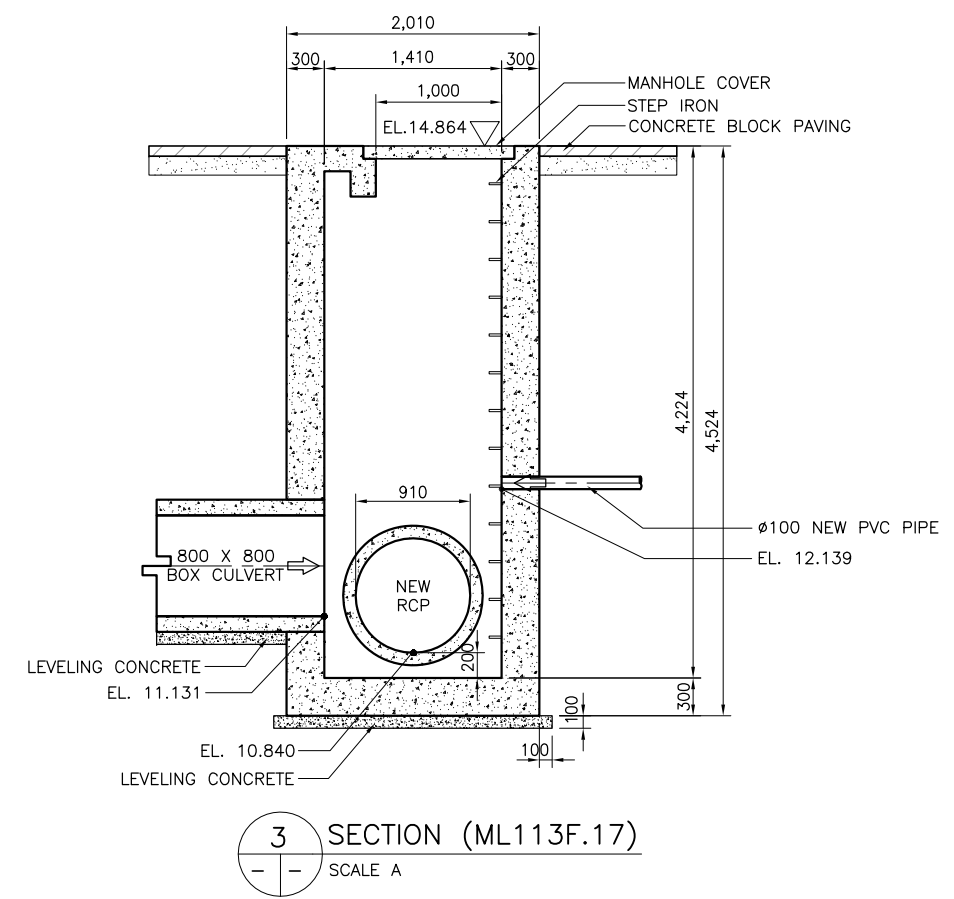
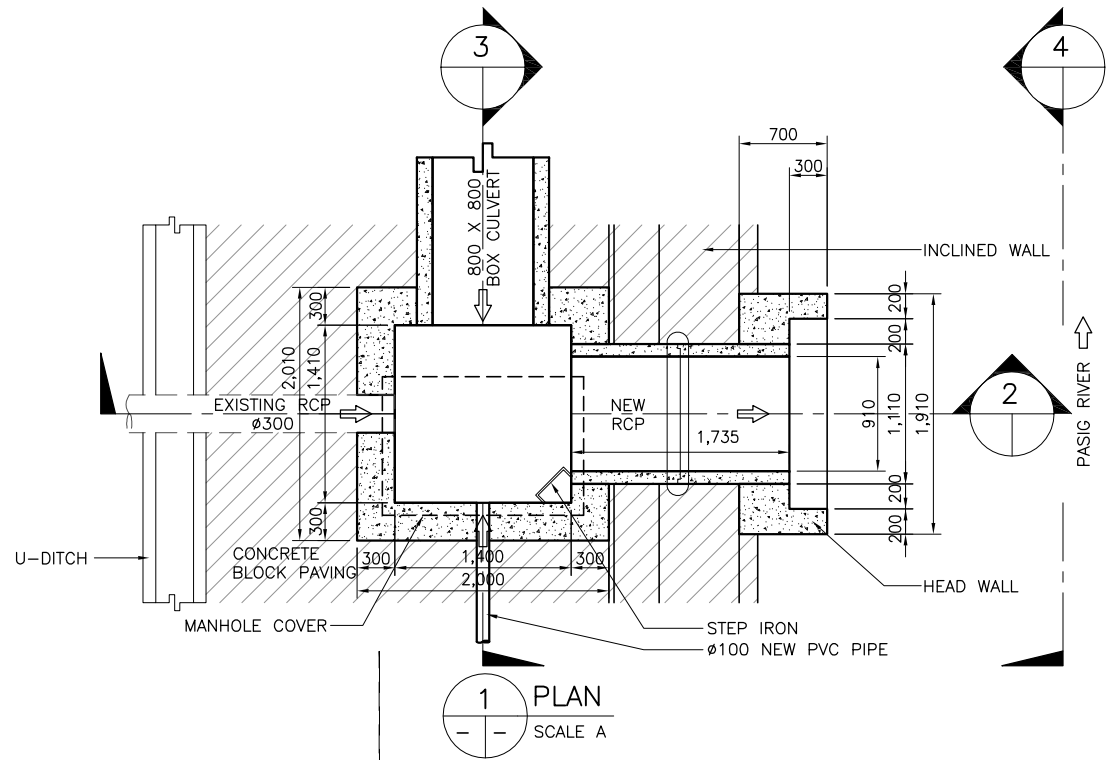
SHEET CONTENTS

PLAN & PROFILE OF  
COLLECTOR  
PIPE/BOX

SHEET NO.

UP-DL  
DO 113F.17/P



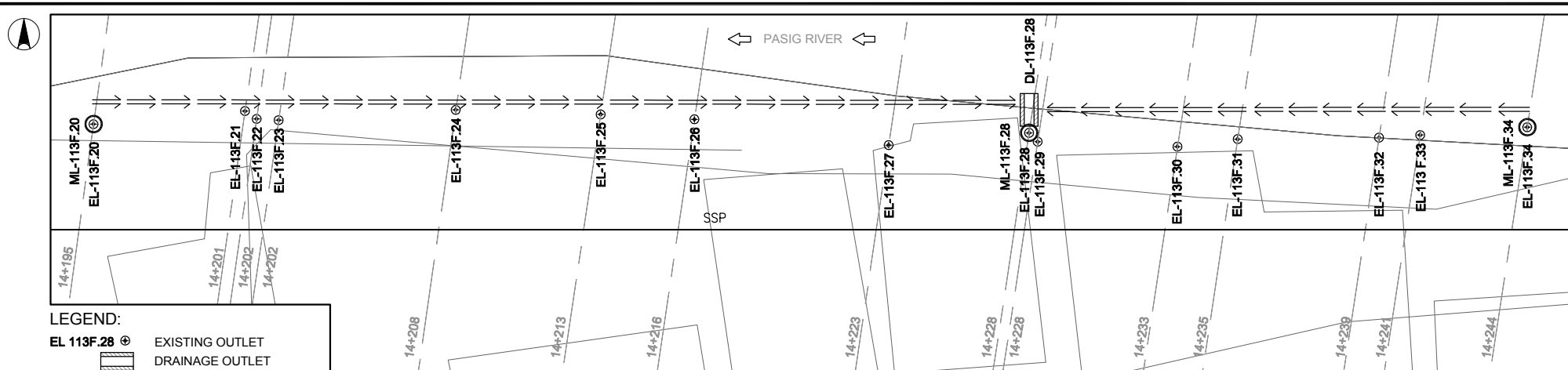


NOTE:  
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REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

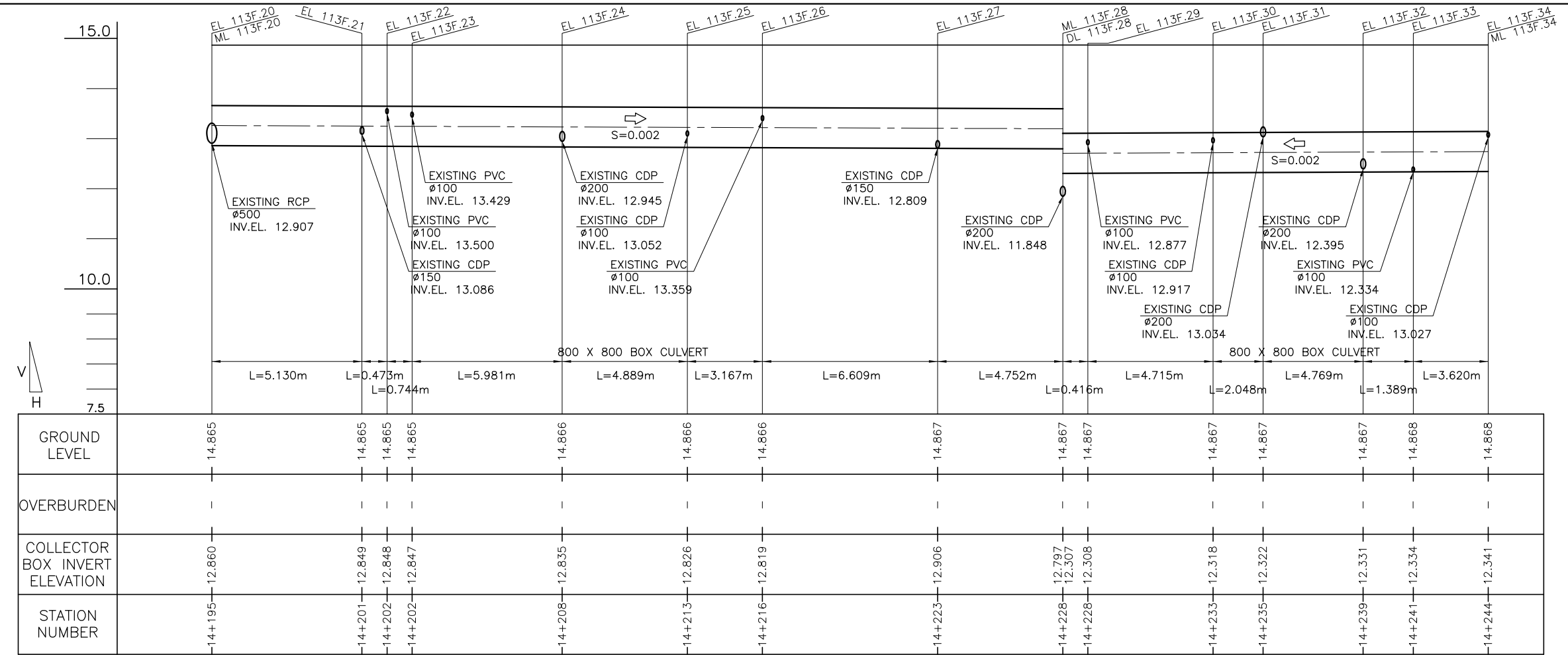
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL 113F.17 & MANHOLE ML113F.17 STA. 14+176 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



- LEGEND:**
- EL 113F.28 ⊕ EXISTING OUTLET
  - ⊕ DRAINAGE OUTLET
  - ⊕ COLLECTOR PIPE
  - DL 113F.28 ⊕ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

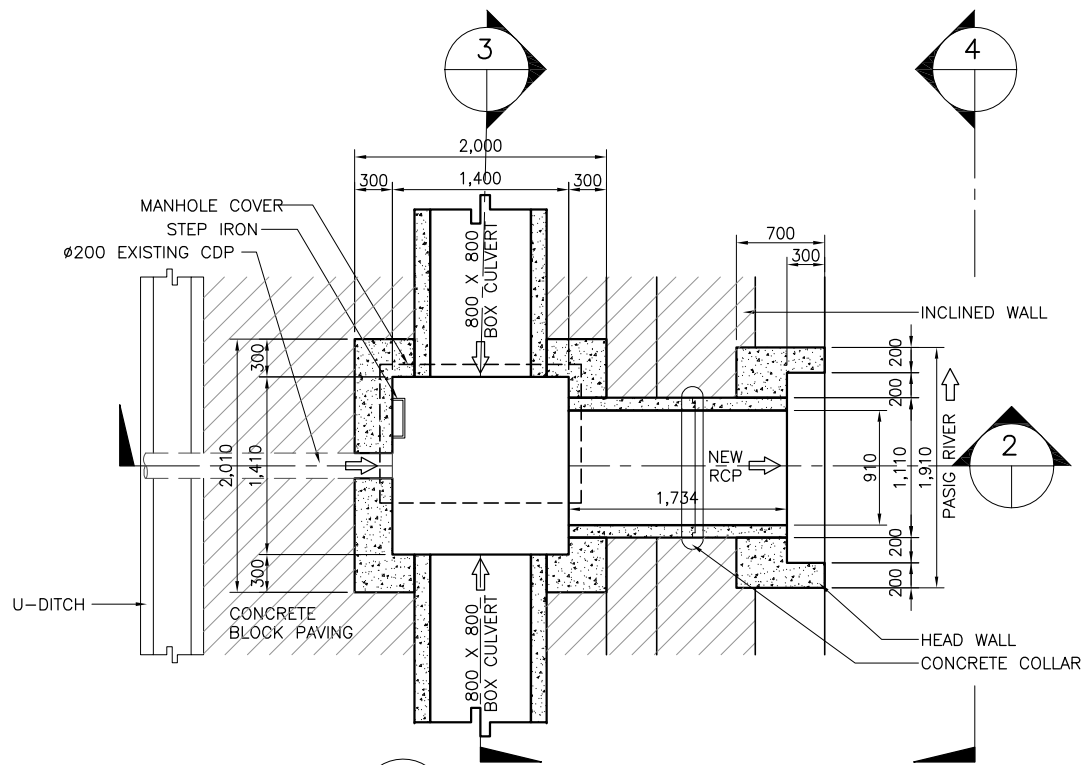


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

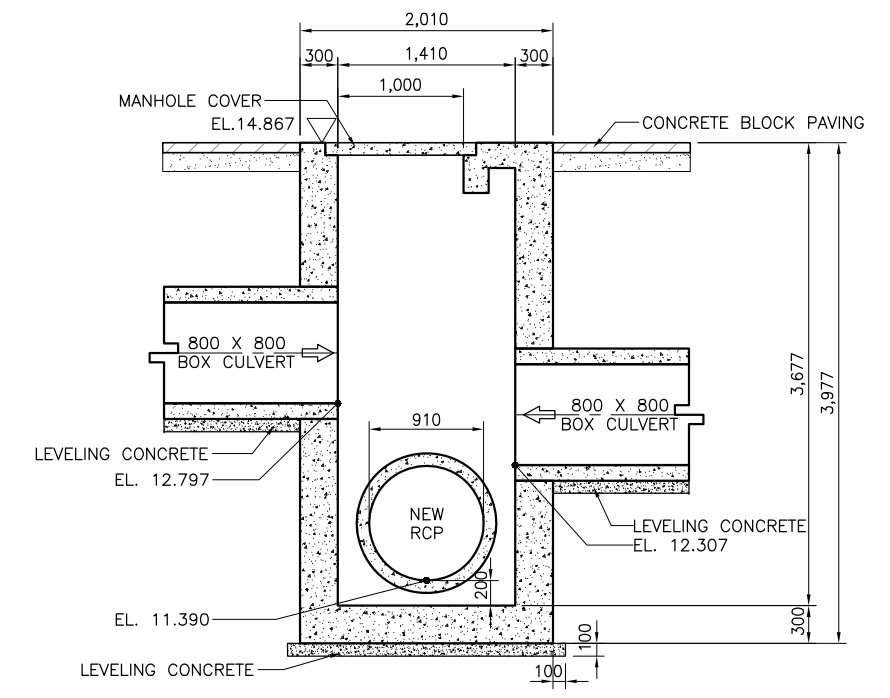
**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

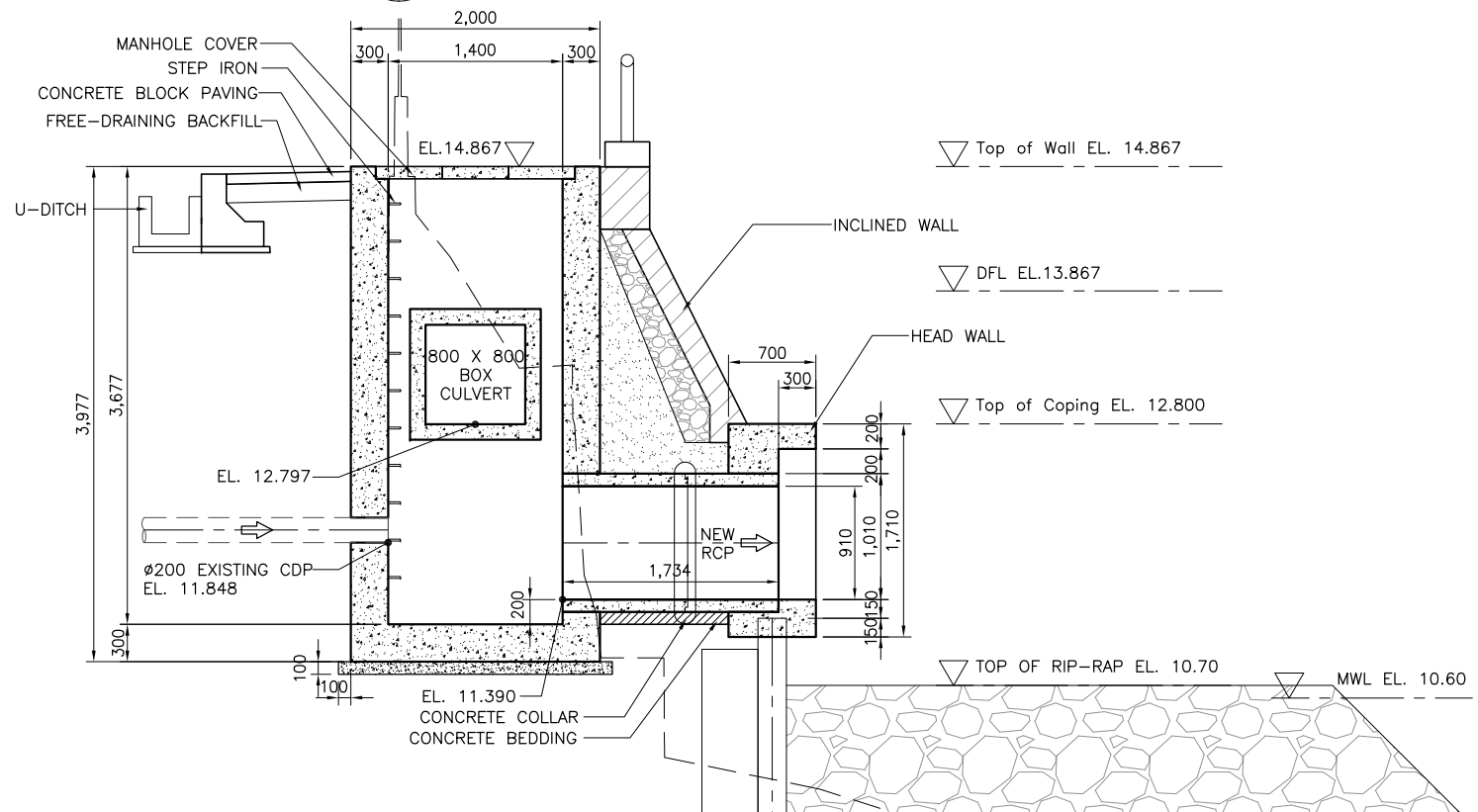
<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b> 				<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> PLAN & PROFILE OF COLLECTOR BOX	<b>SHEET NO.</b> UP-DL DO 113F.28/P
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:					
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY			
			RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY						



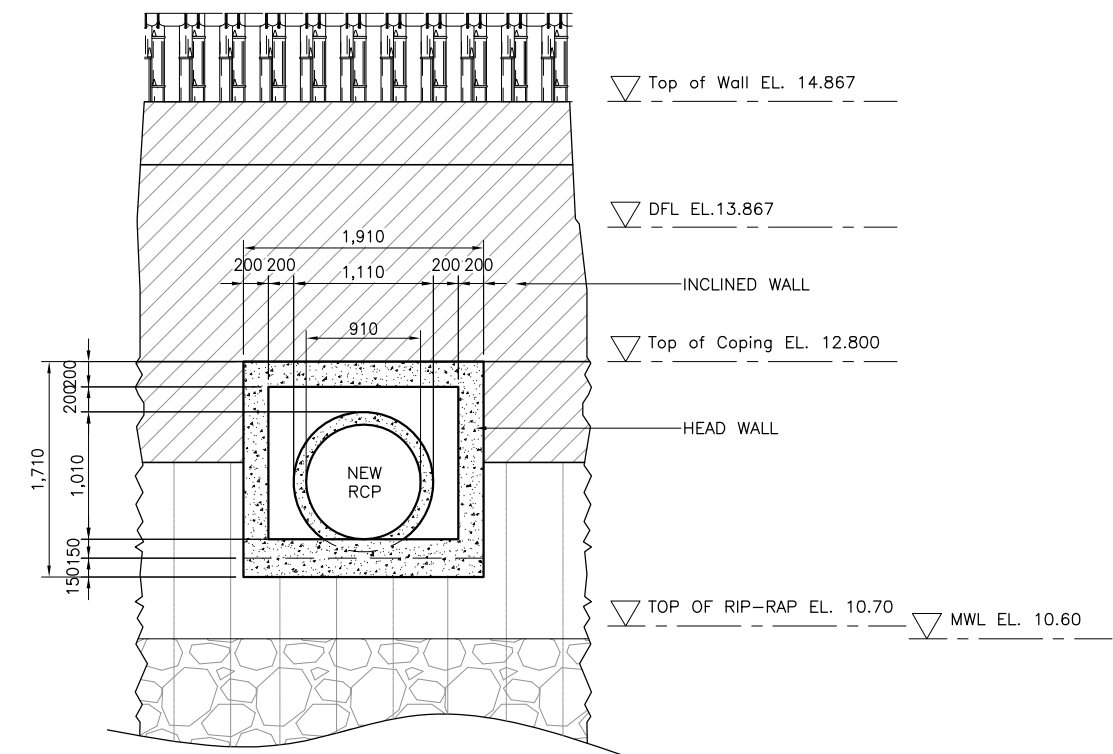
1 PLAN  
SCALE A



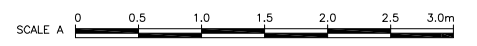
3 SECTION (ML113F.28)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

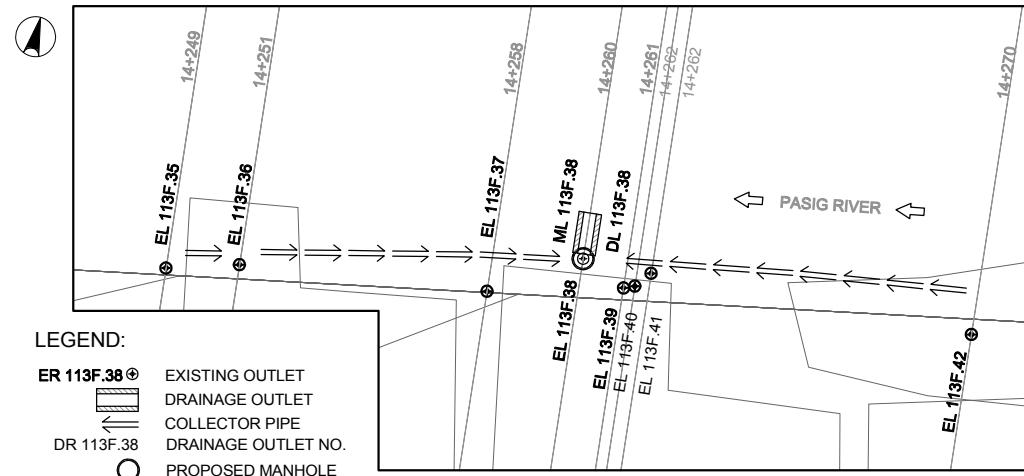


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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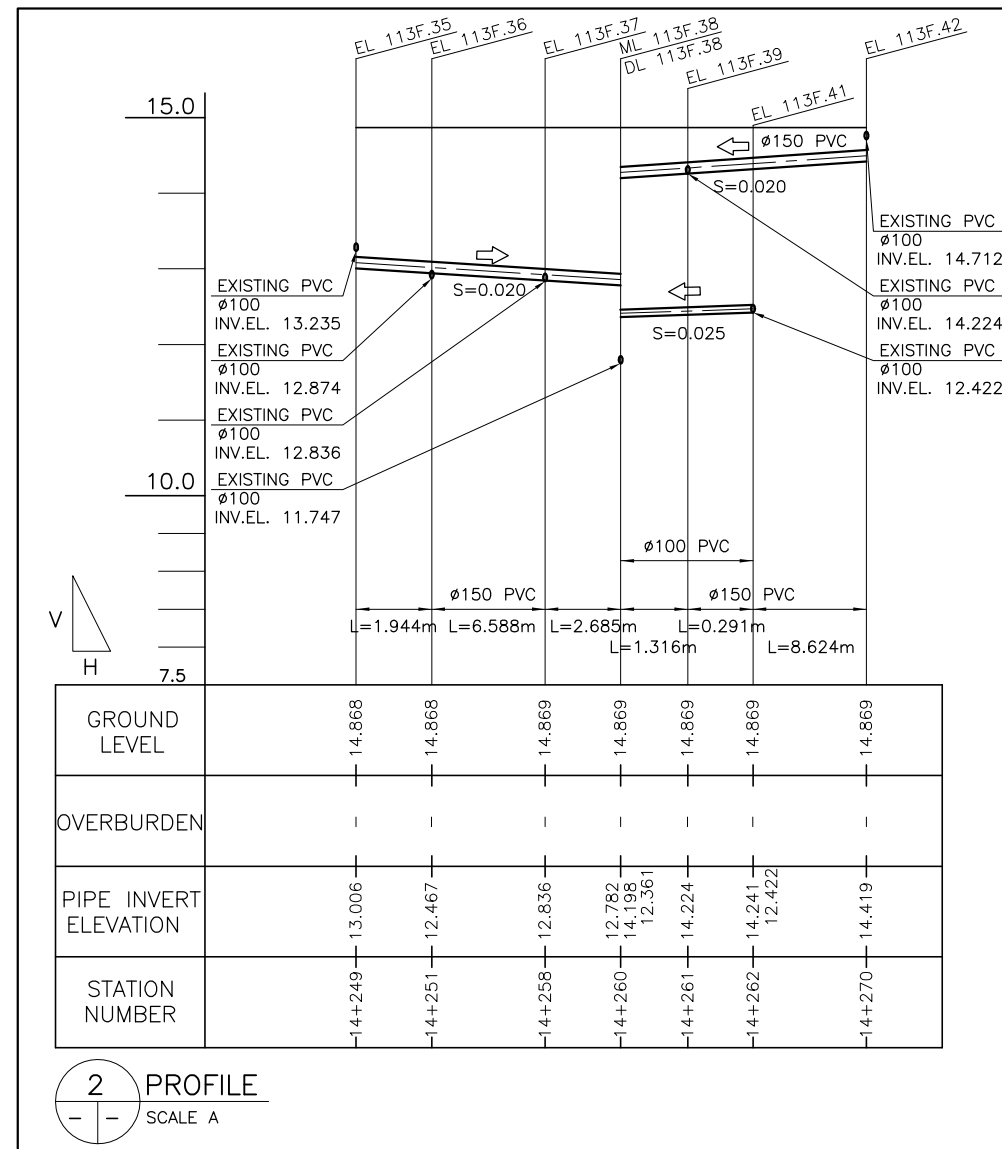
REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL 113F.28 & MANHOLE ML113F.28 STA. 14+228 LB	SHEET NO. UP-DL DO 113F.28
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- LEGEND:
- ER 113F.38 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ⇨ COLLECTOR PIPE
  - DR 113F.38 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PEDERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION

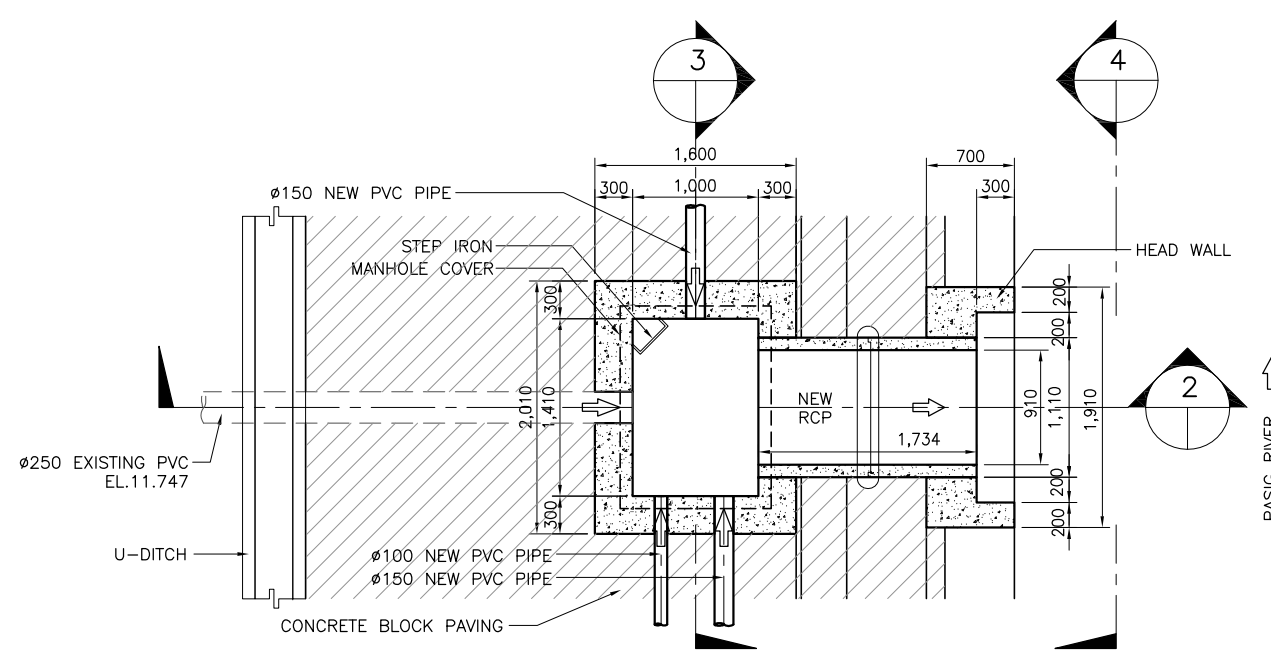
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

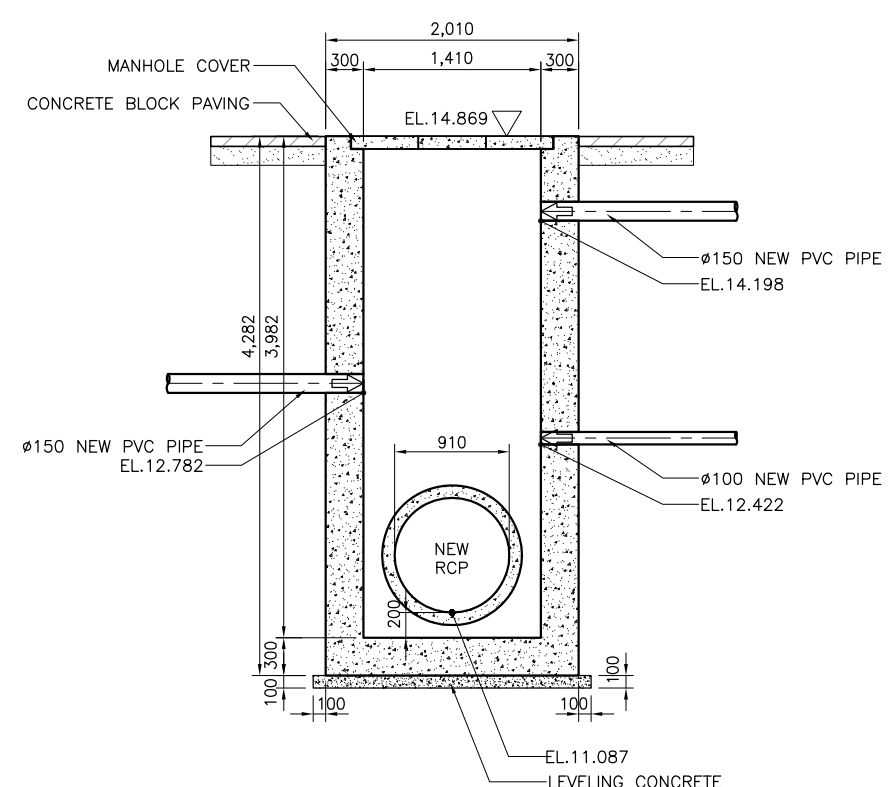
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

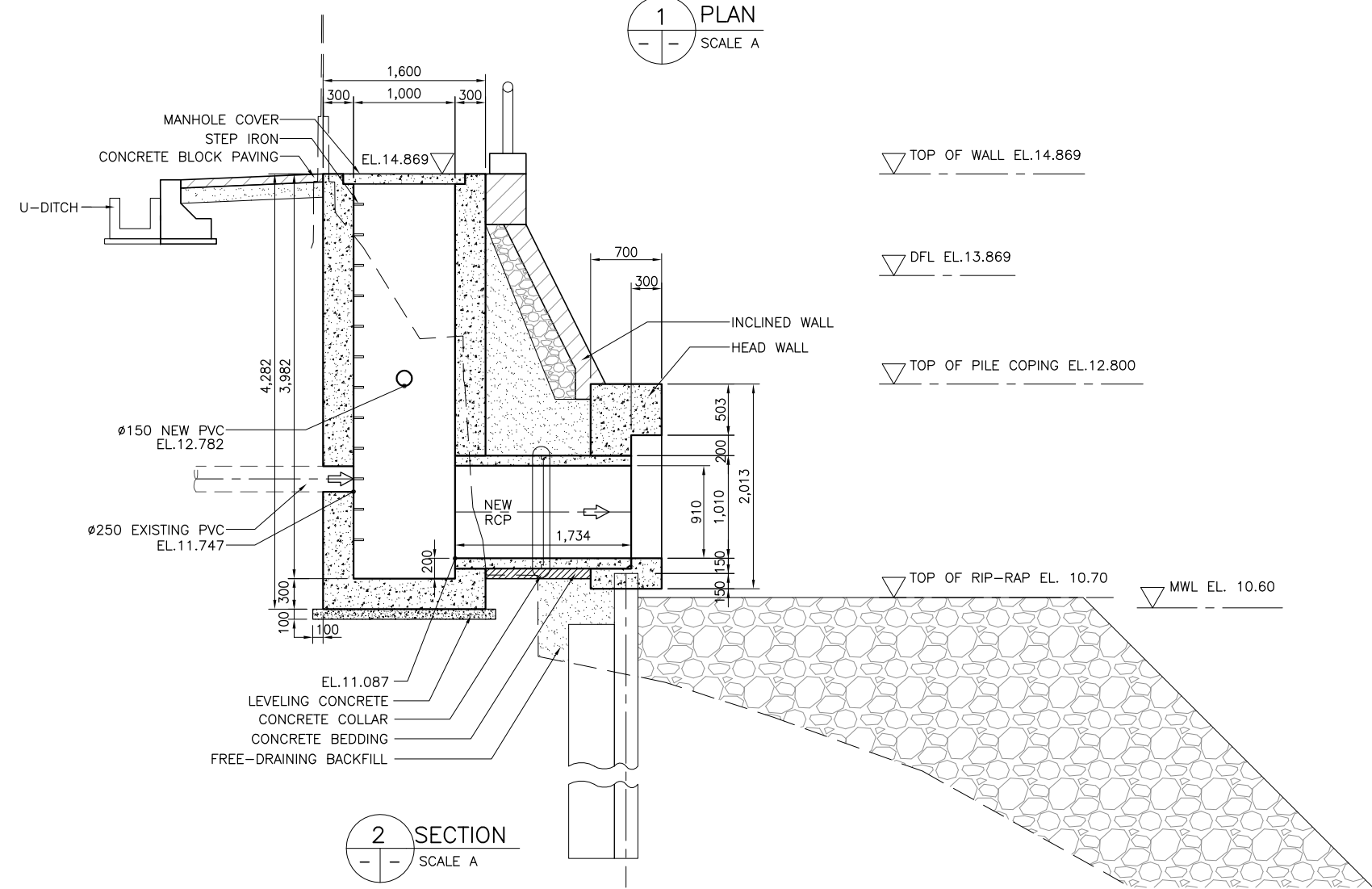
UP-DL  
DO 113F.38/P



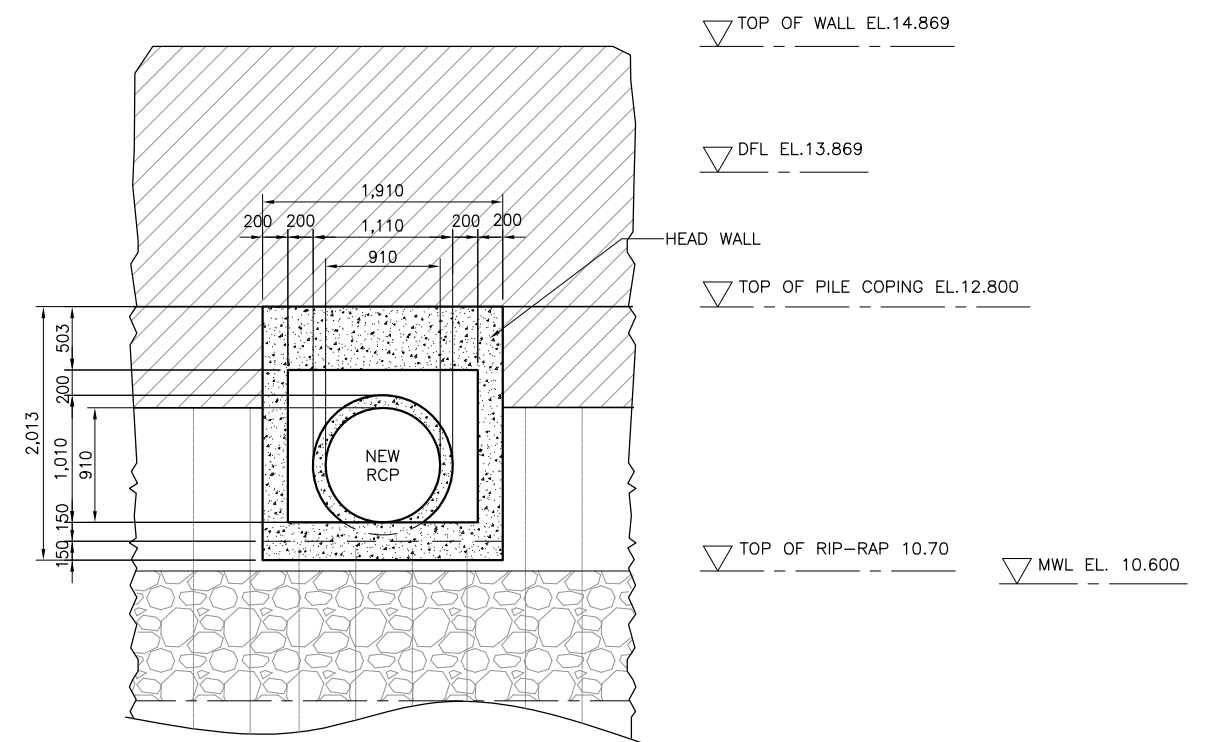
1 PLAN  
SCALE A



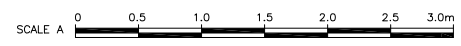
3 SECTION (ML113F.38)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

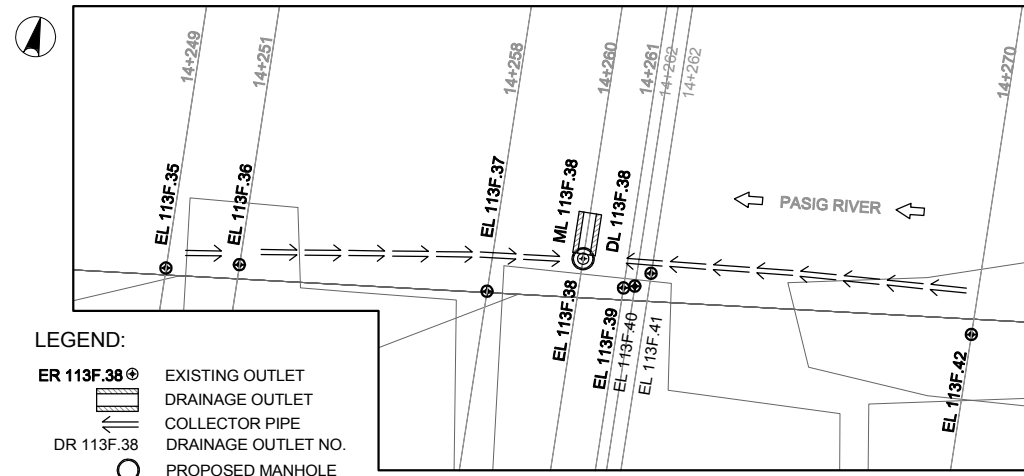


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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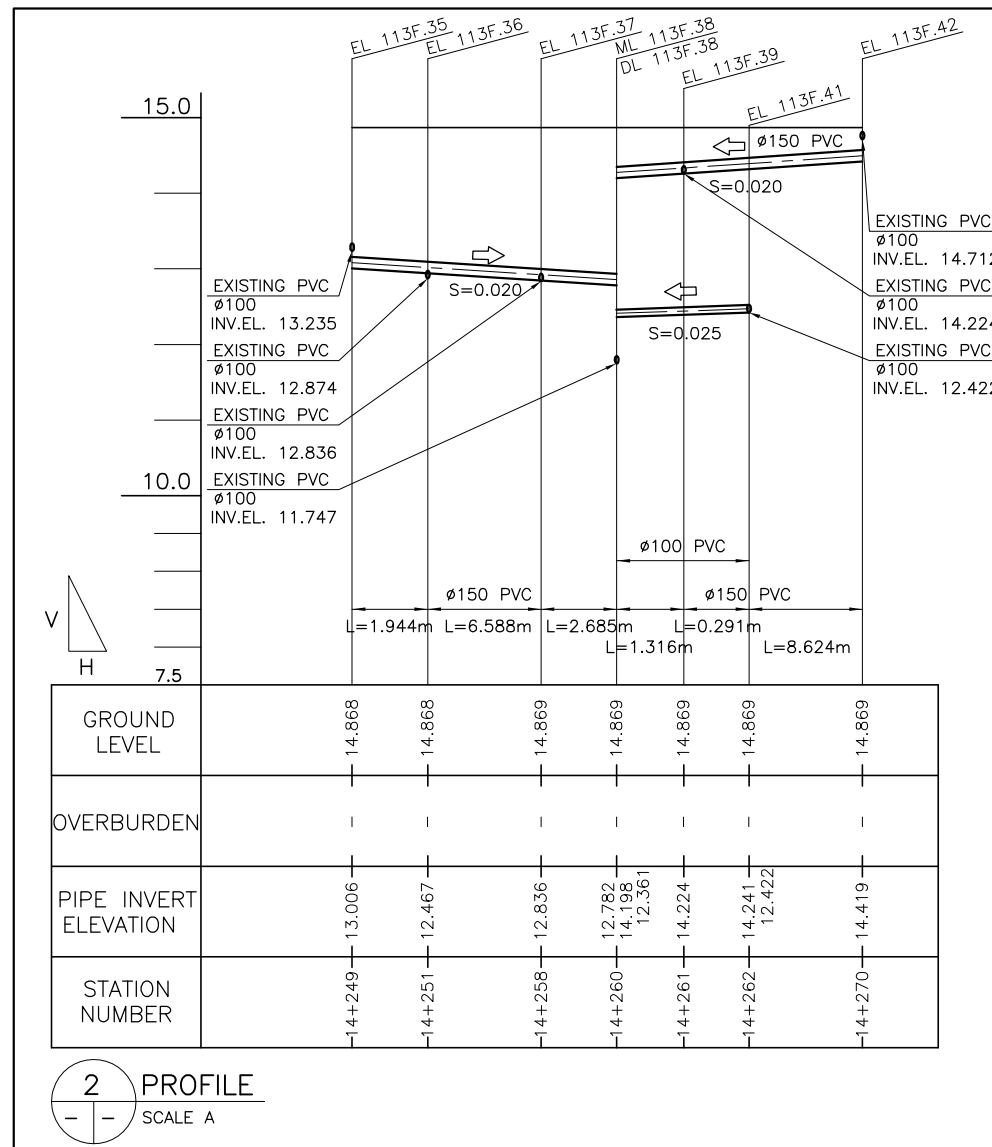
REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL113F.38 & MANHOLE ML113F.38 STA 14+260 LB	SHEET NO. UP-DL DO 113F.38
--	--	-------------------------------



- LEGEND:
- ER 113F.38 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DR 113F.38 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



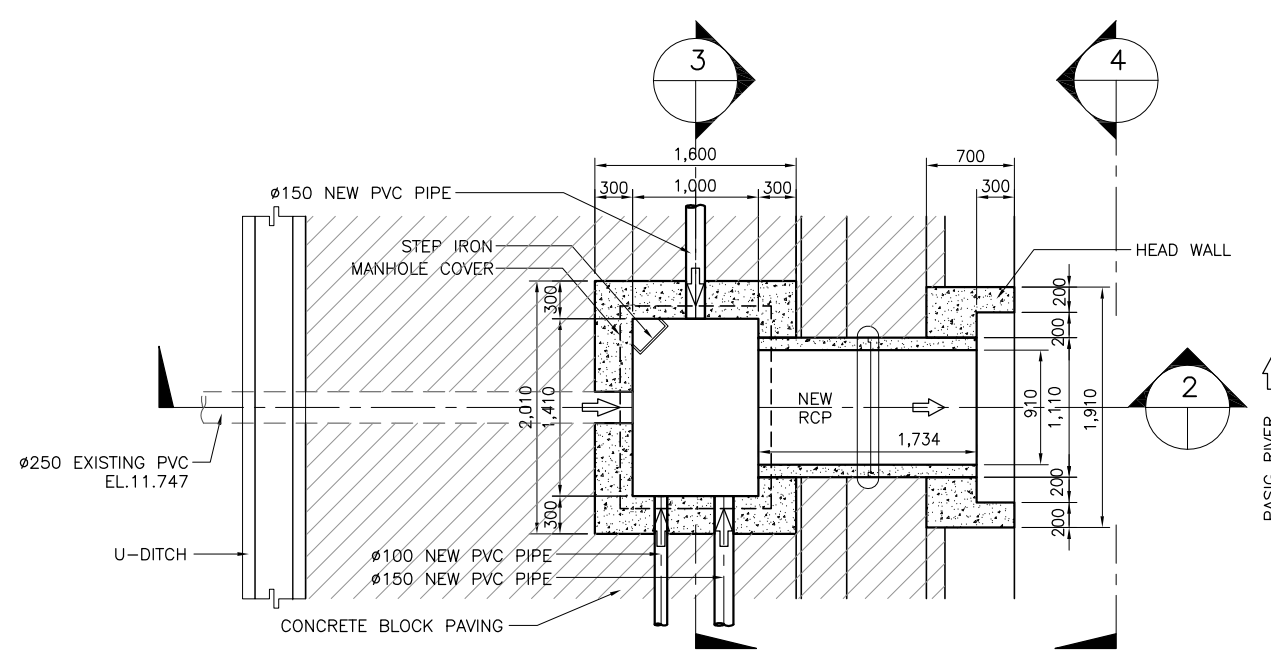
DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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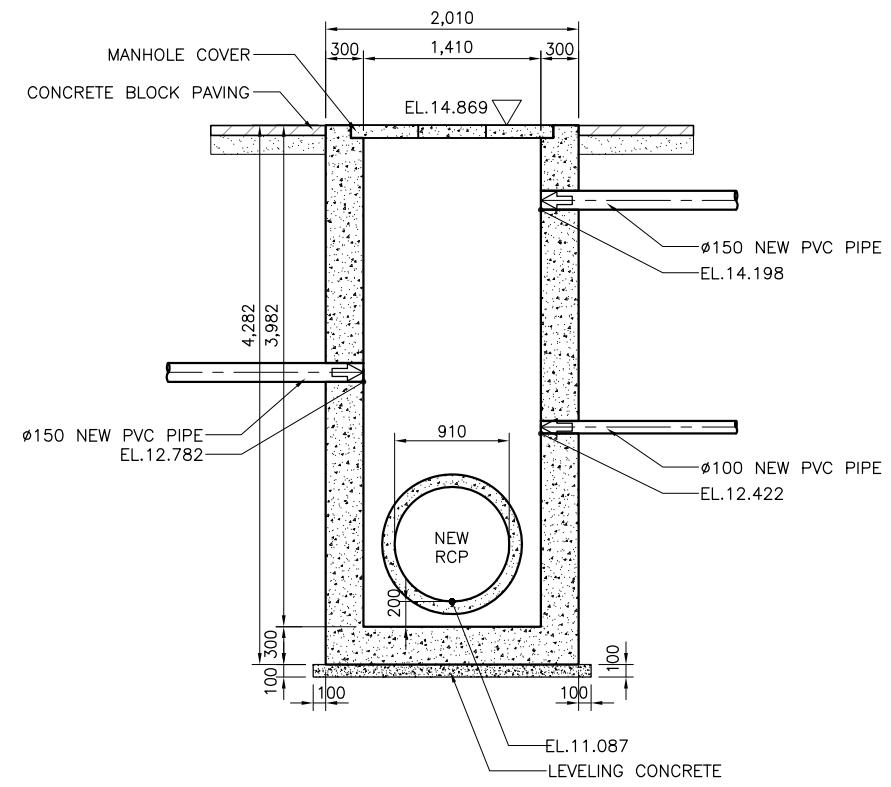
REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
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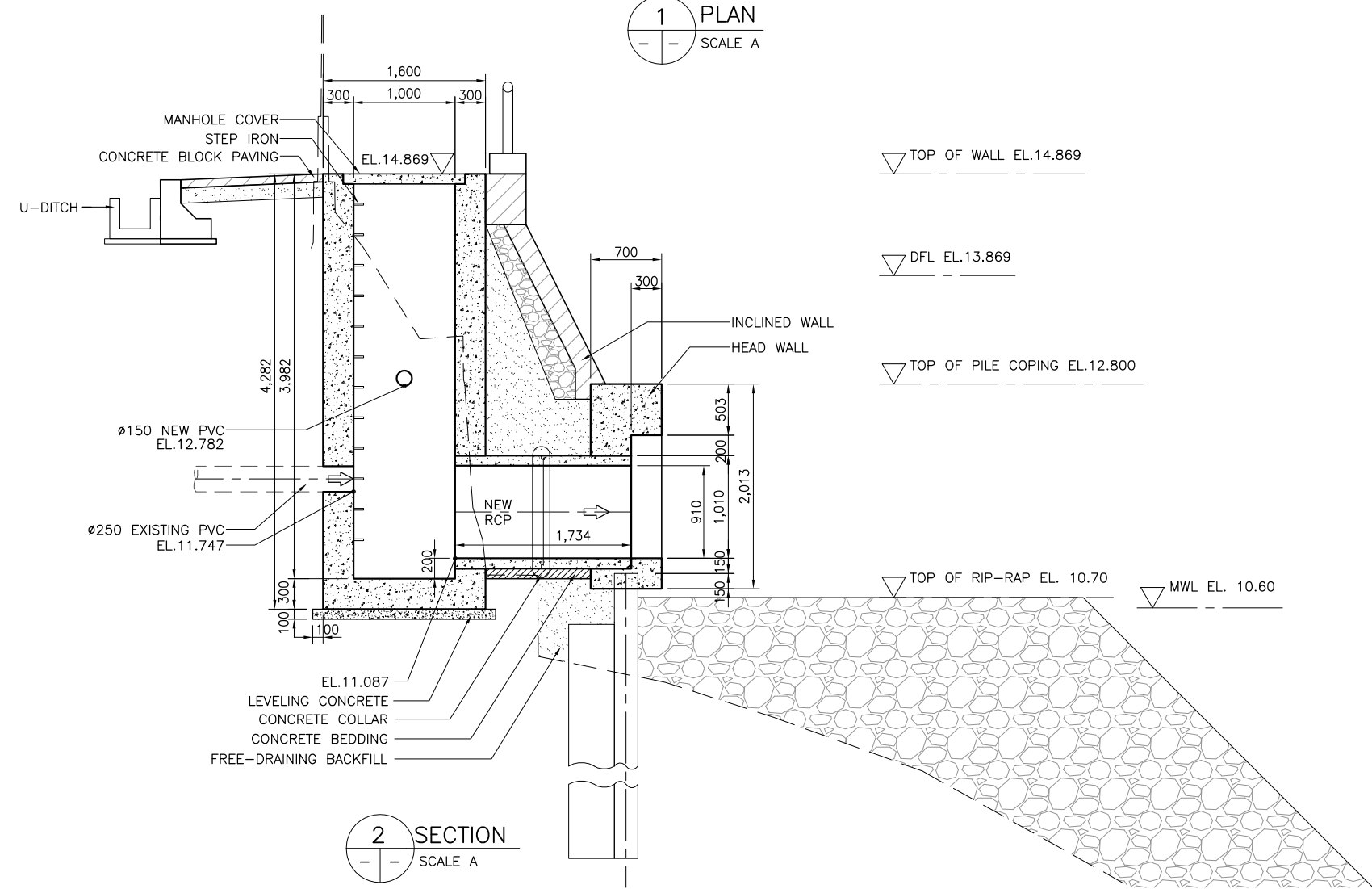
PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS PLAN & PROFILE OF COLLECTOR PIPE	SHEET NO. UP-DL DO 113F.38/P
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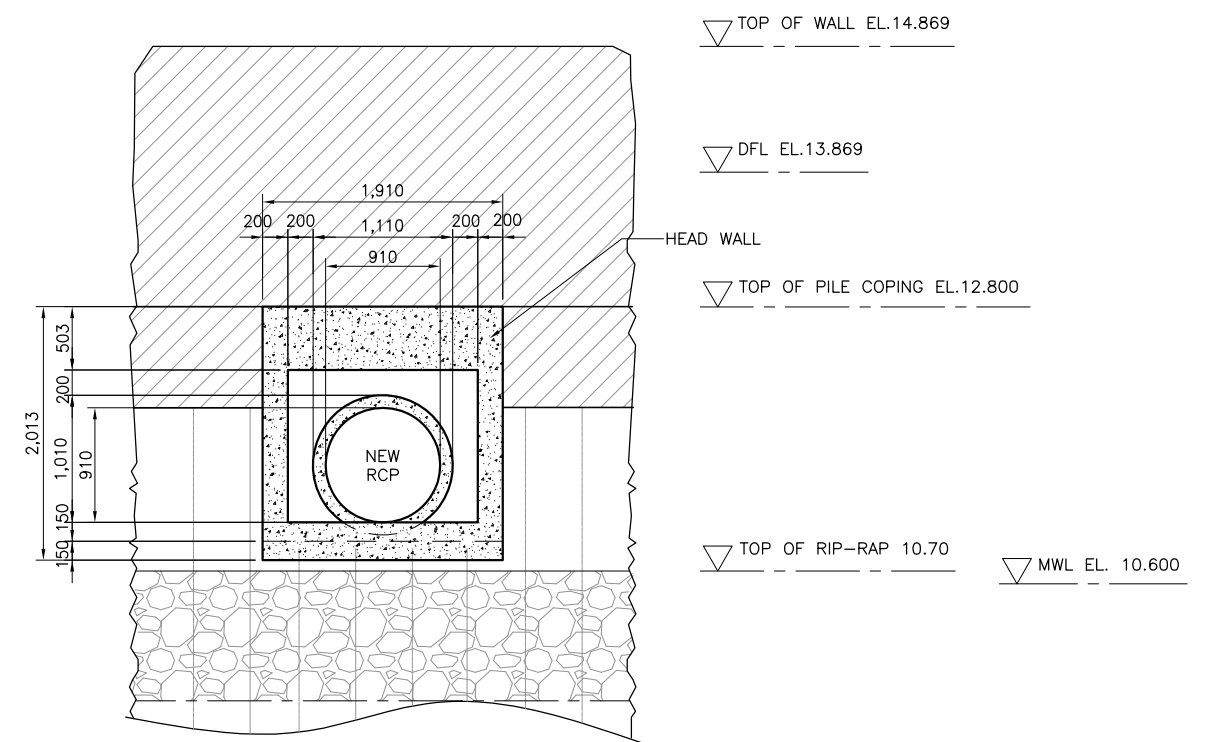
1 PLAN  
SCALE A



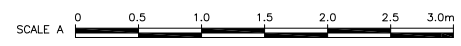
3 SECTION (ML113F.38)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

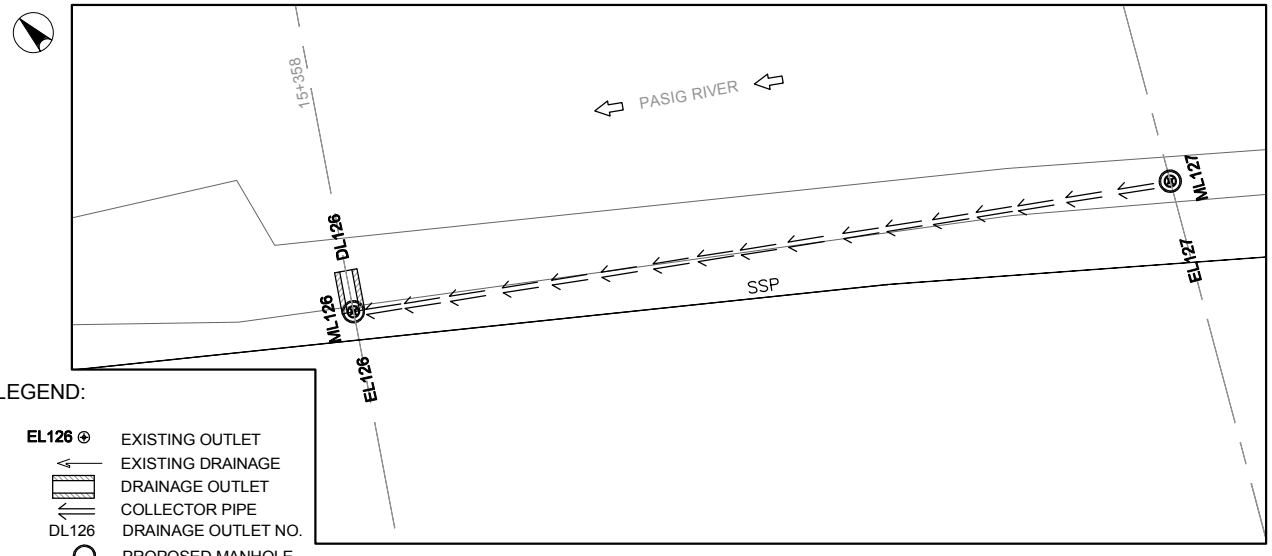


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



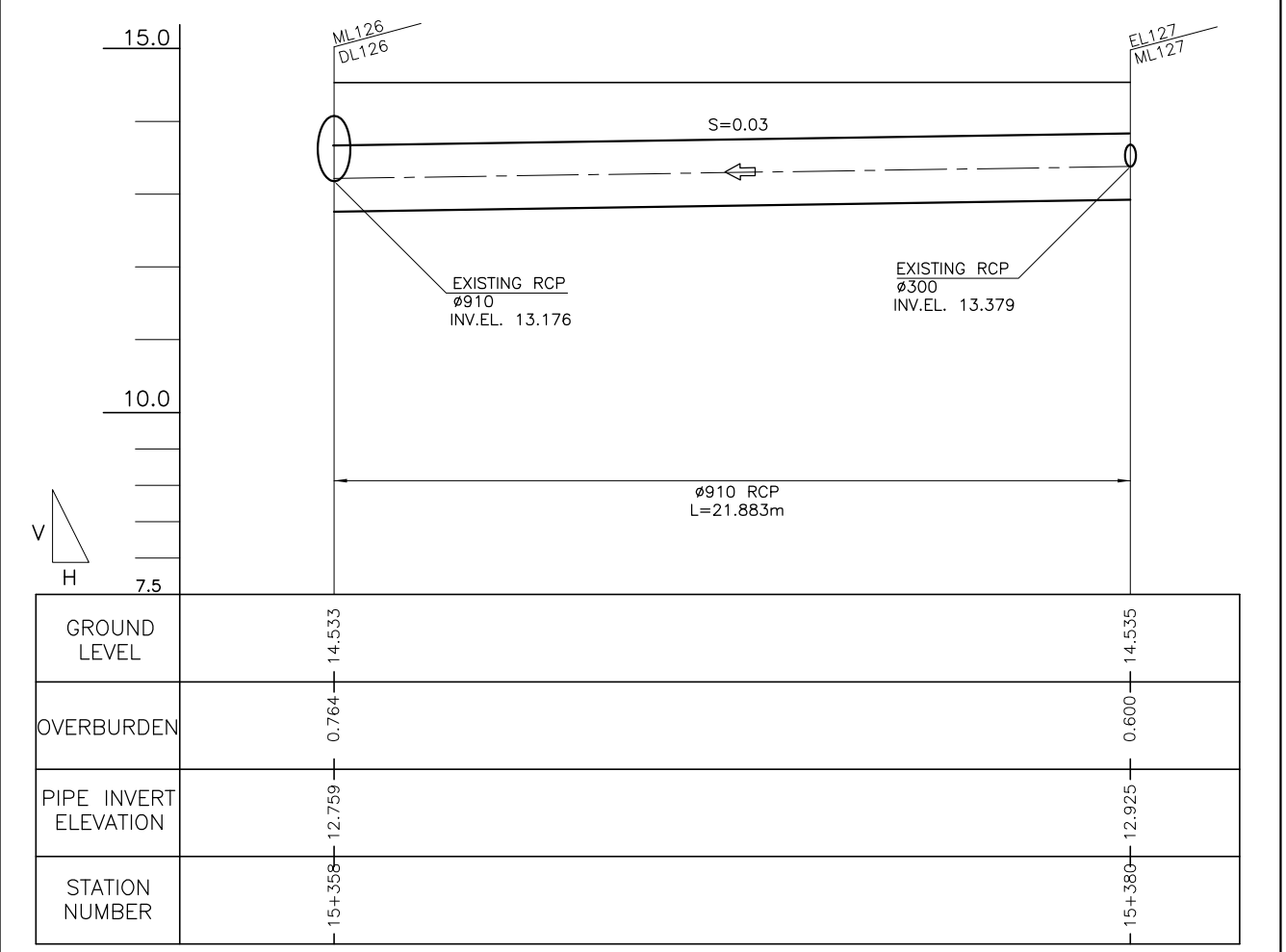
REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL113F.38 & MANHOLE ML113F.38 STA 14+260 LB	SHEET NO. UP-DL DO 113F.38
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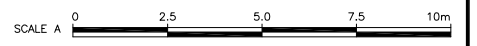


- LEGEND:**
- EL126 ⊕ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▭ DRAINAGE OUTLET
  - ▭ COLLECTOR PIPE
  - DL126 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



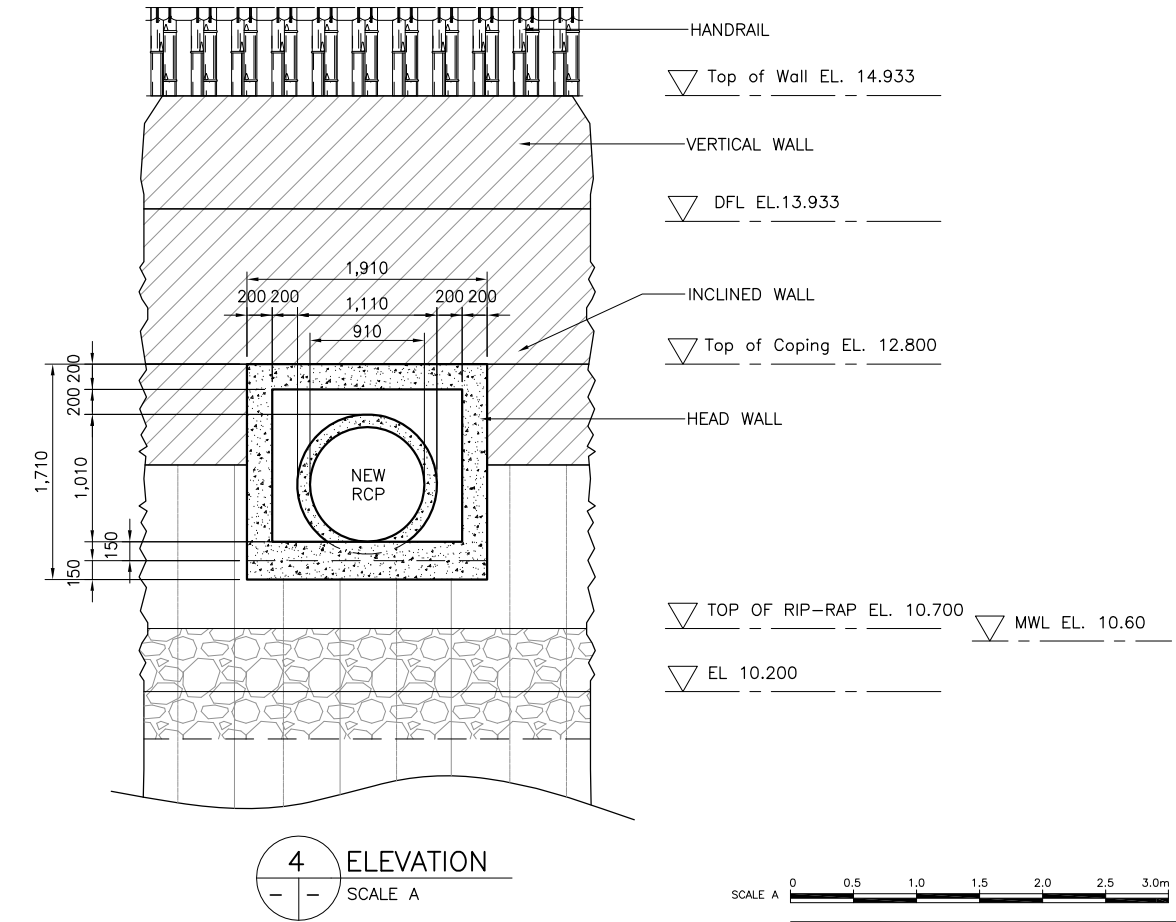
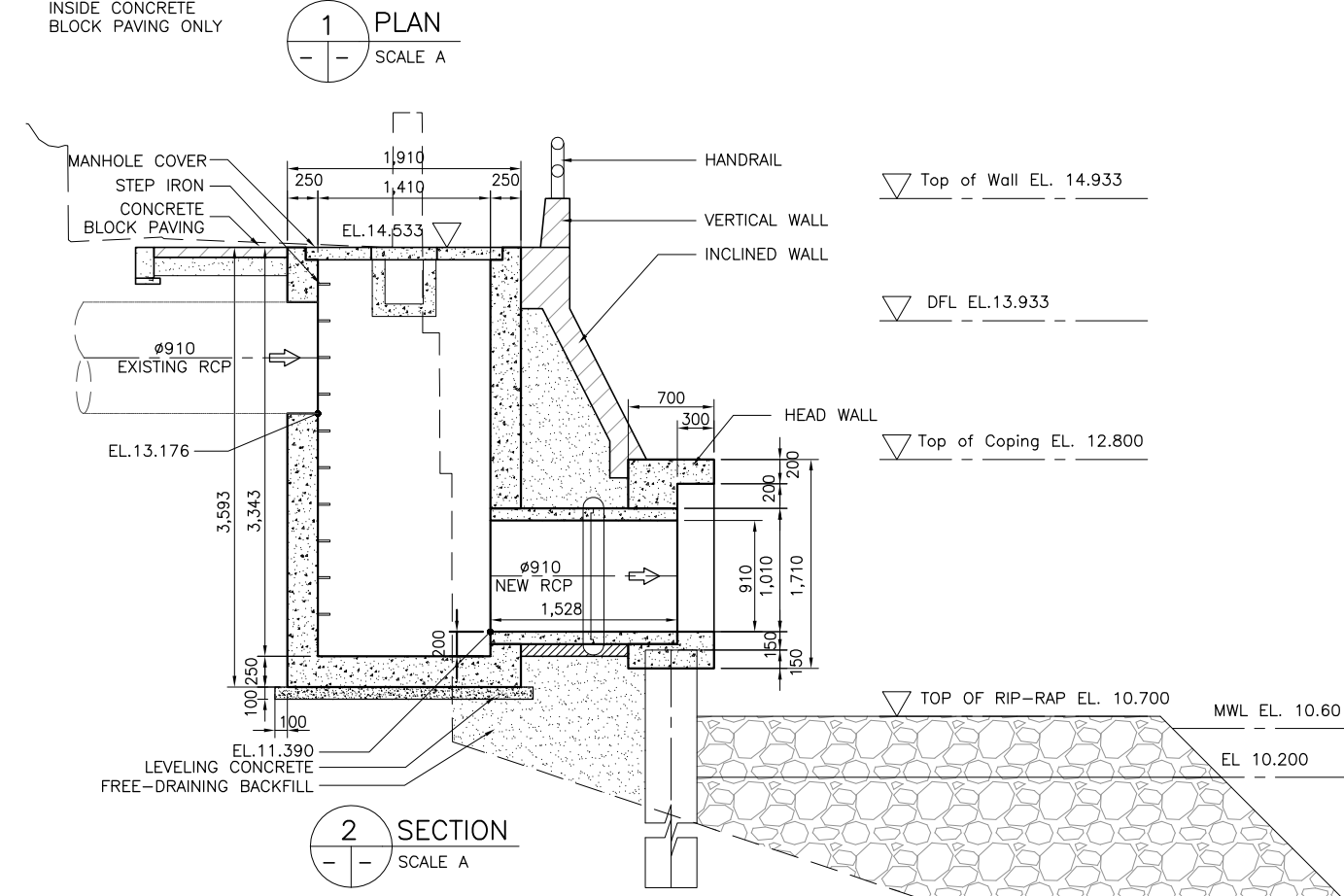
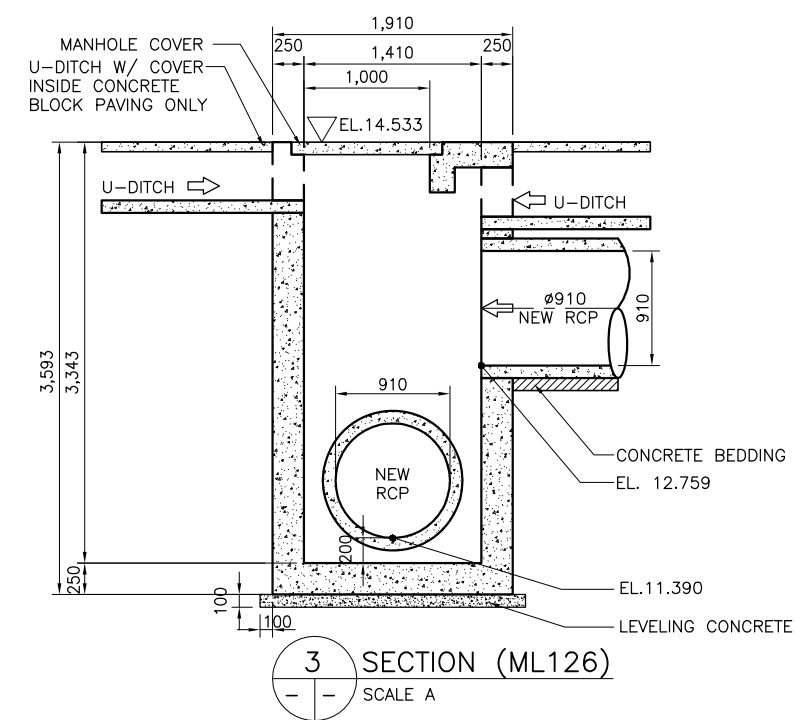
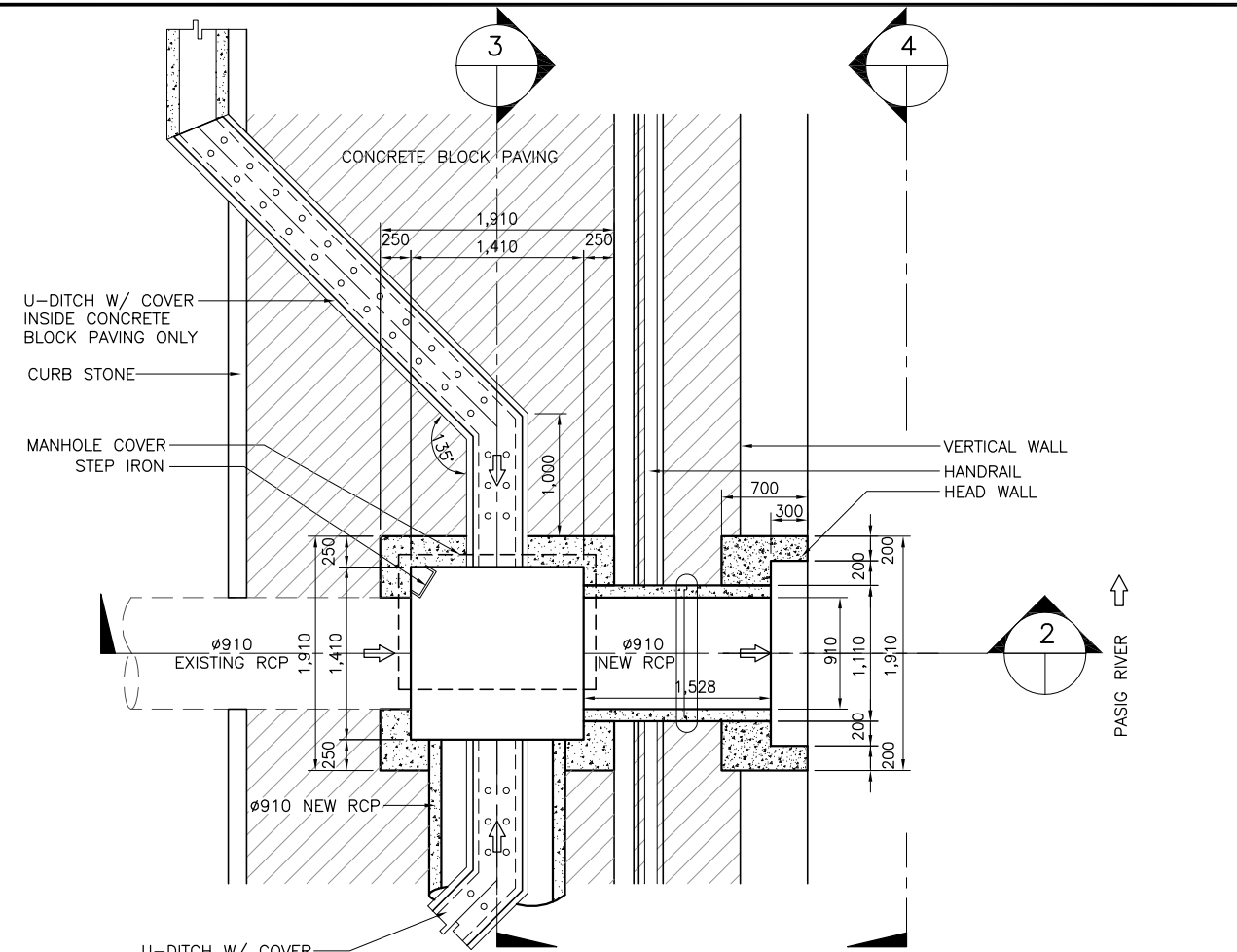
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			

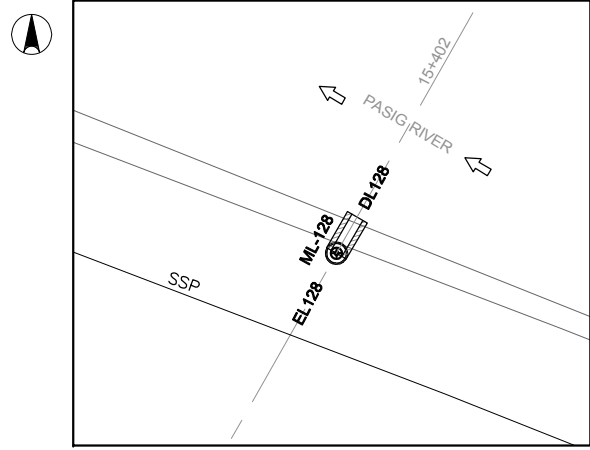




REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

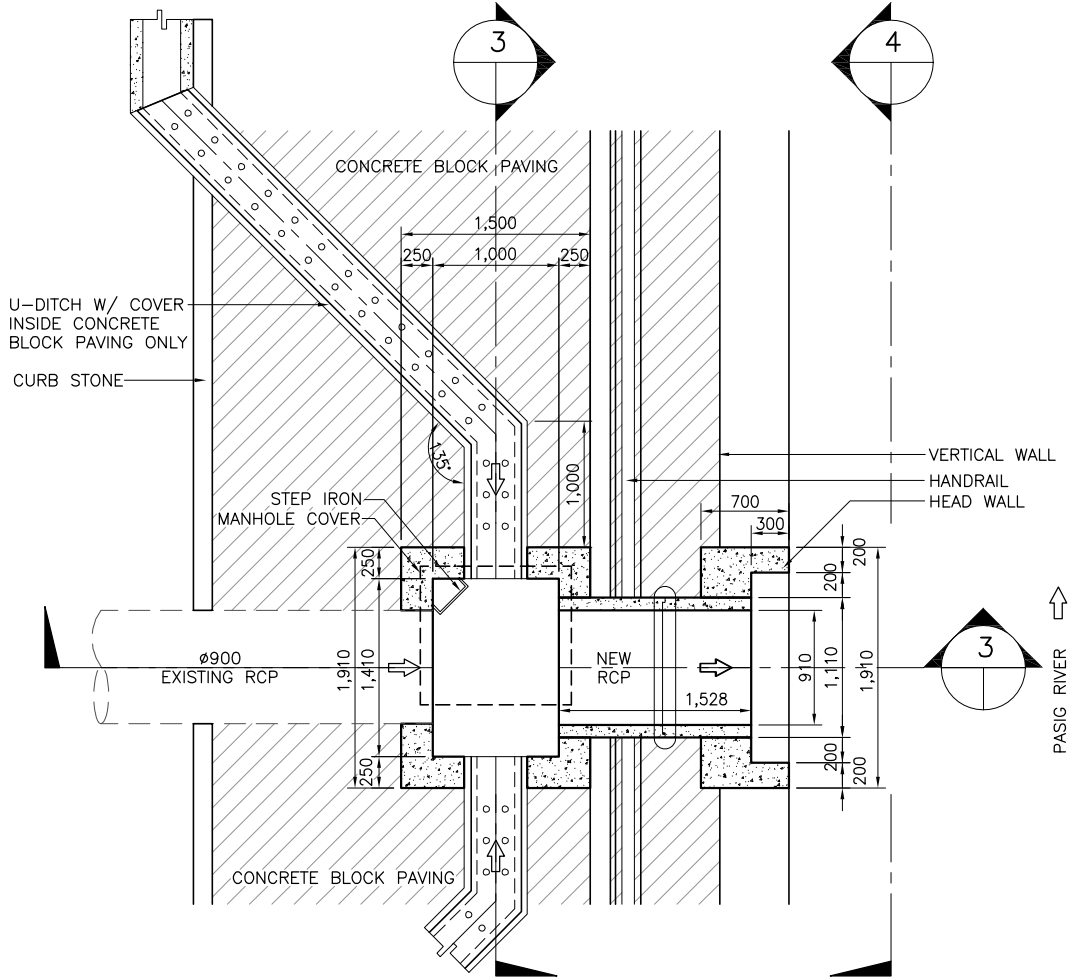
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

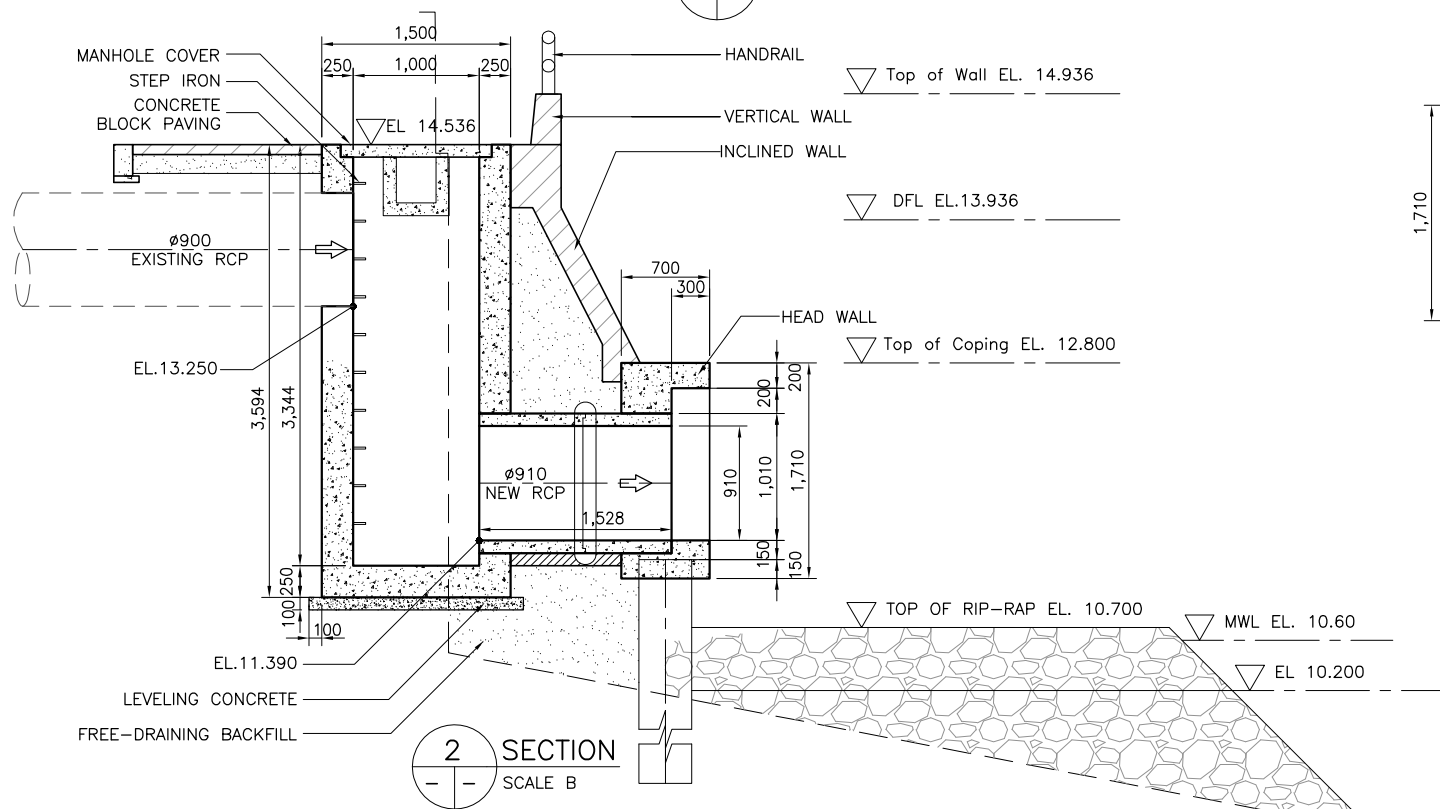


- LEGEND:**
- EL128 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DL128 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

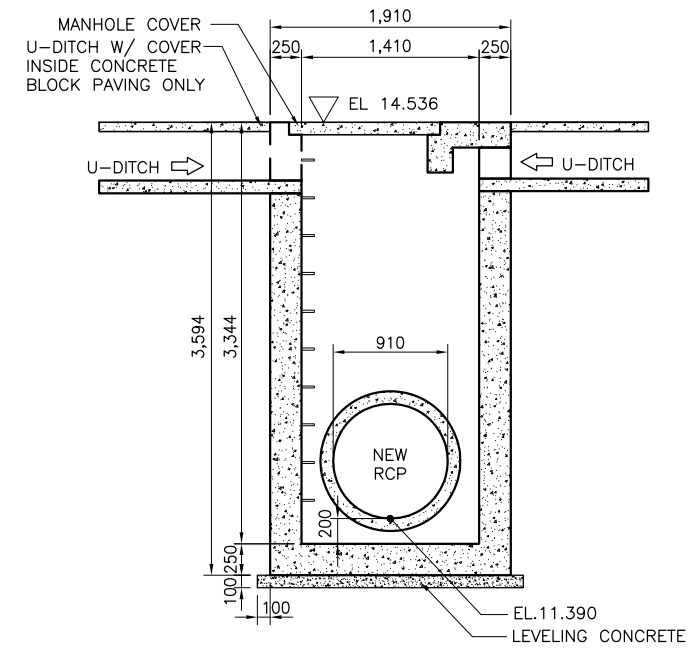
**1 DRAINAGE PLAN**  
SCALE A



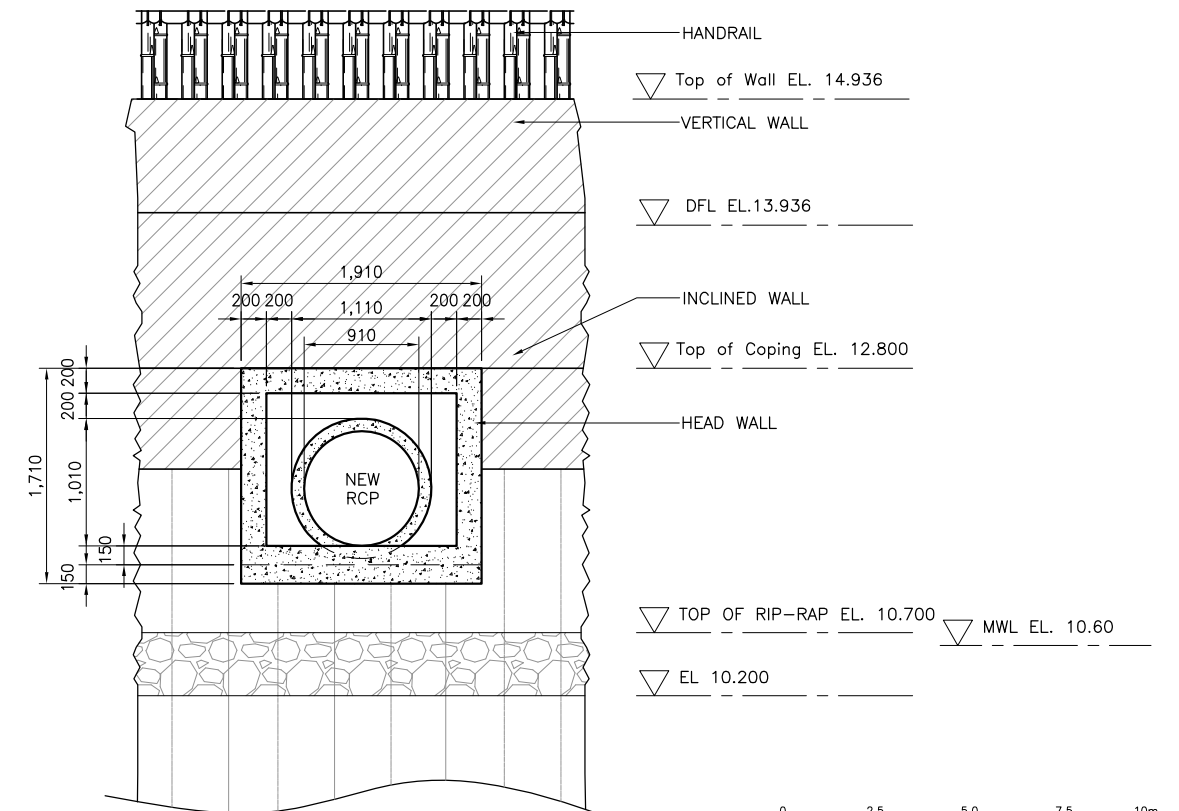
**1 PLAN**  
SCALE B



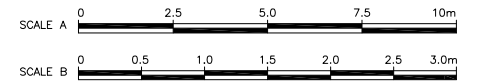
**2 SECTION**  
SCALE B



**3 SECTION (ML128)**  
SCALE B



**4 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

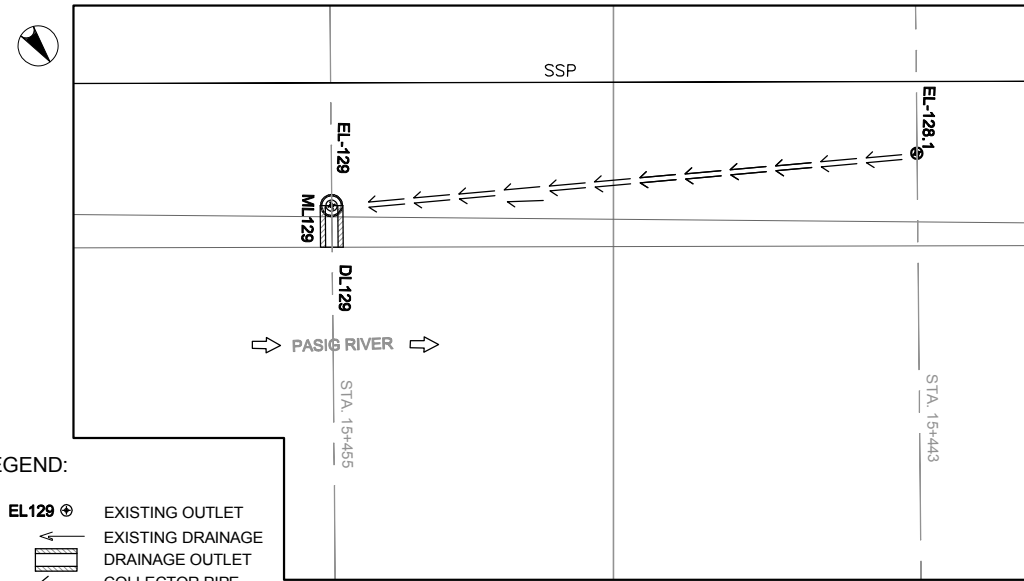
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DL128, MANHOLE ML128 STA. 15+402 LB

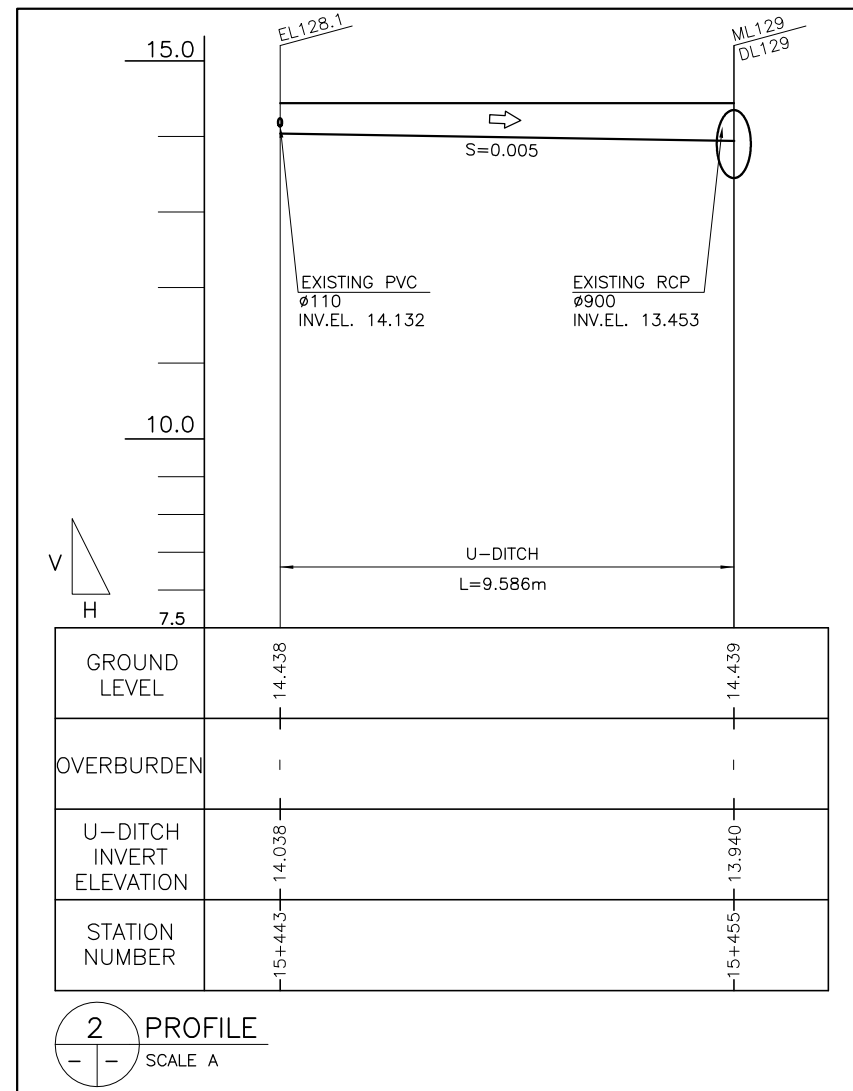
SHEET NO.  
UP-DL  
DO128



LEGEND:

- EL128 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DL129 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



R E V I S I O N S			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



**REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS**

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	APPROVED BY: GILBERTO S. REYES DIRECTOR BOD	APPROVED BY: RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY		SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	
ROGELIO L. SINGSON SECRETARY		ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION

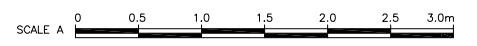
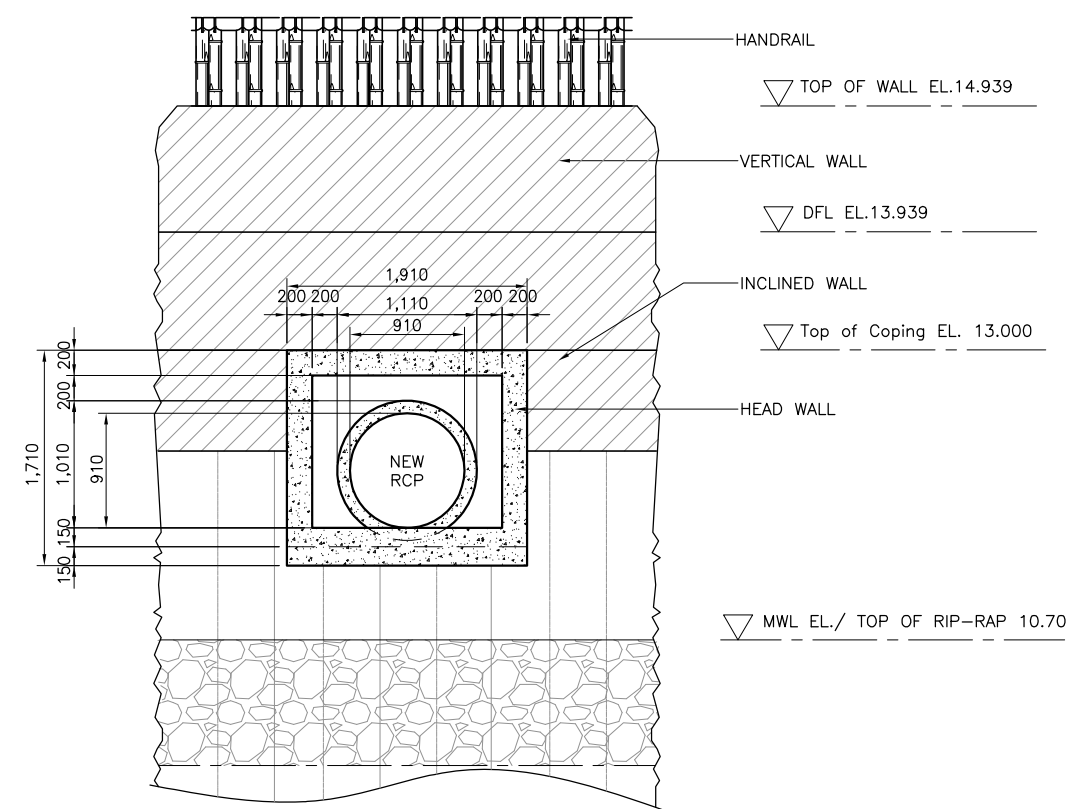
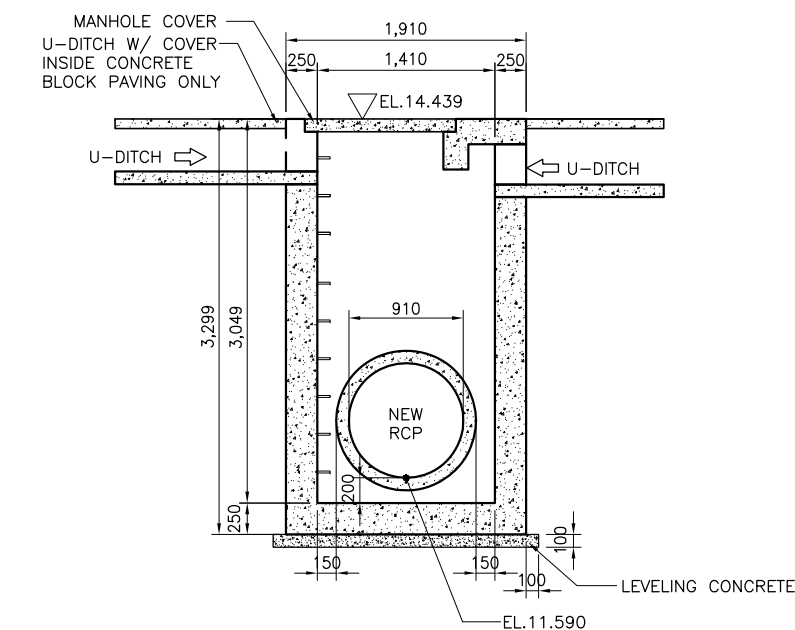
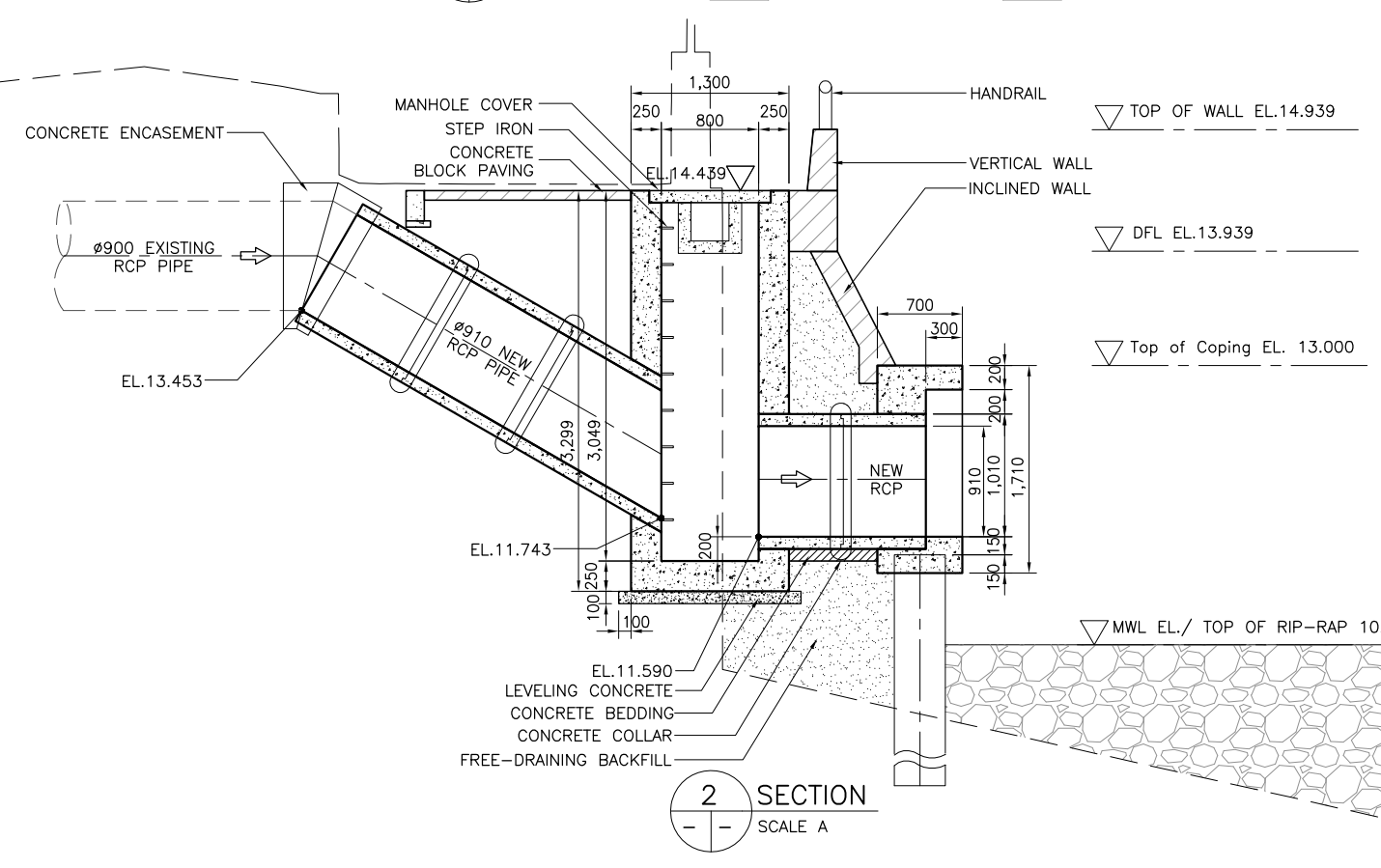
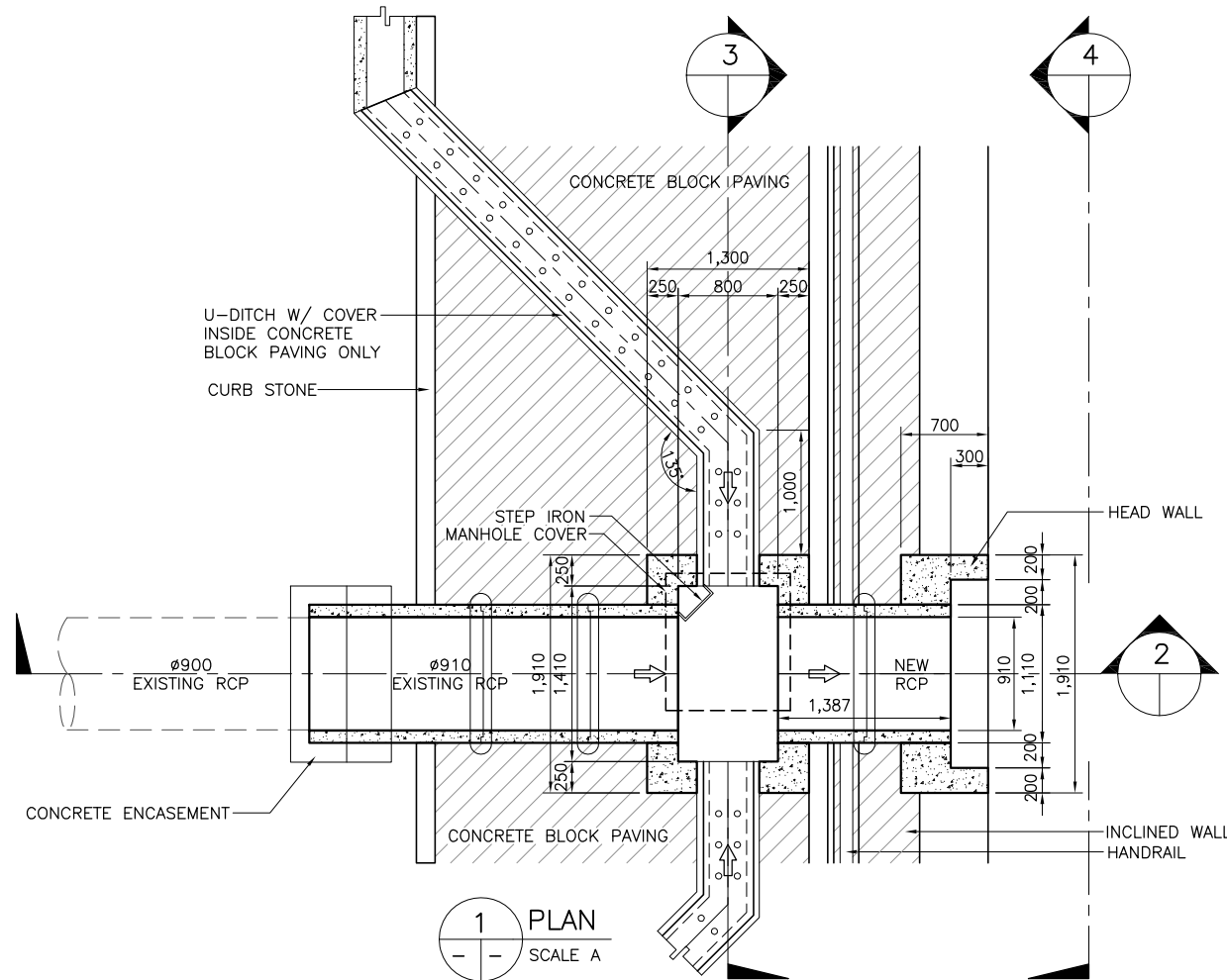
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF U-DITCH COLLECTOR

SHEET NO.

UP-DL DO129/P

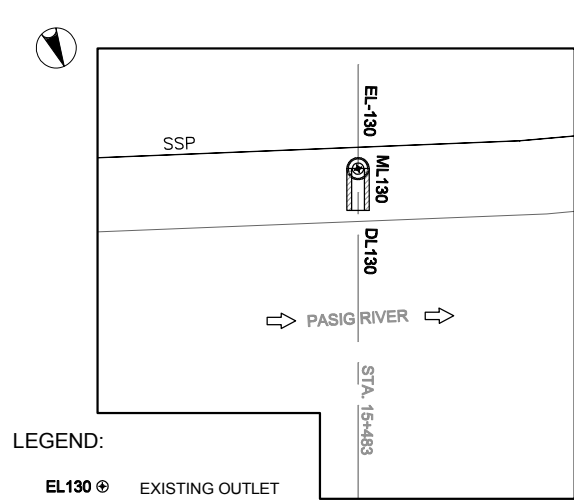


NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

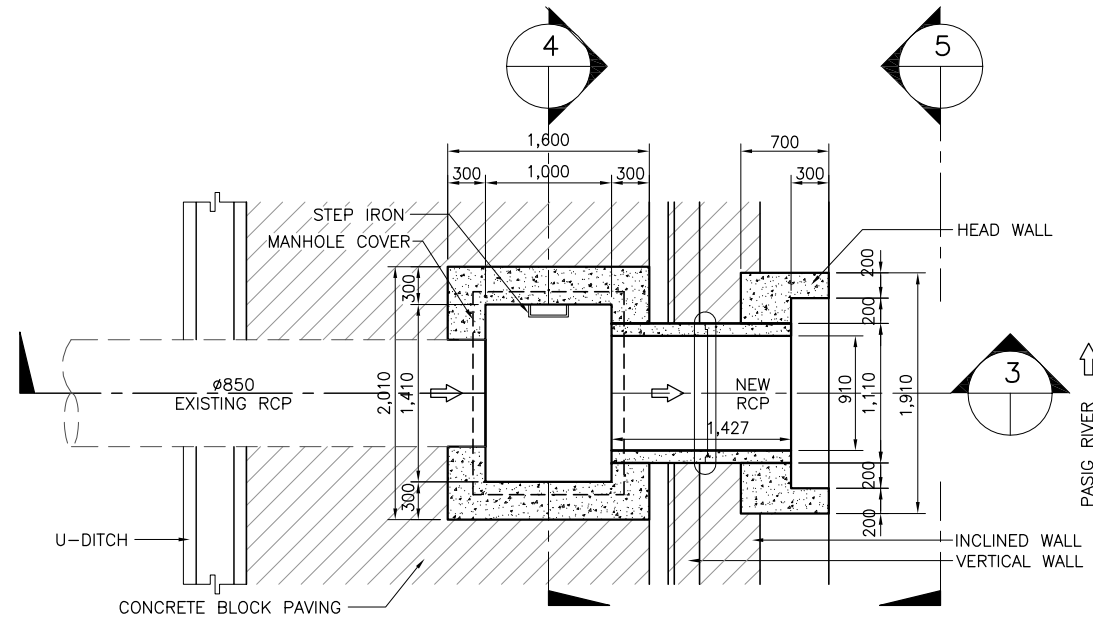
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL129 & MANHOLE ML129 STA. 15+455 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



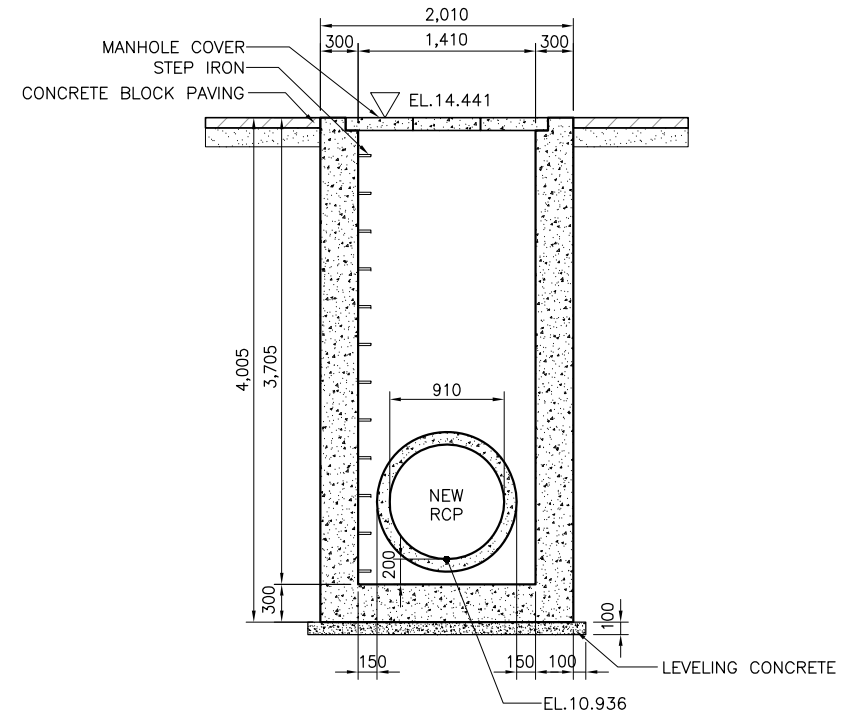
LEGEND:

- EL130 ⊕ EXISTING OUTLET
- DRAINAGE OUTLET
- DL130 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

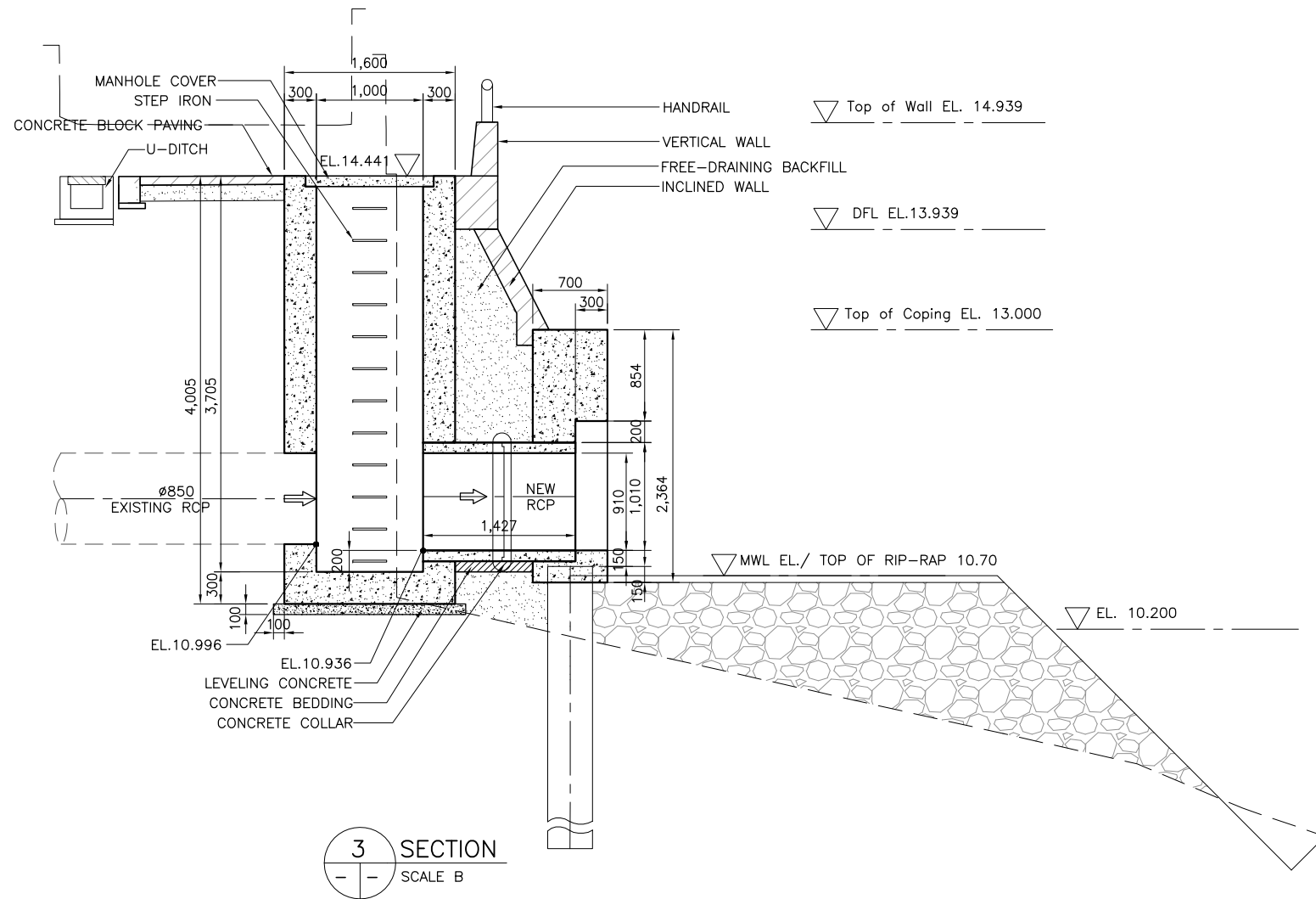
1 DRAINAGE PLAN  
SCALE A



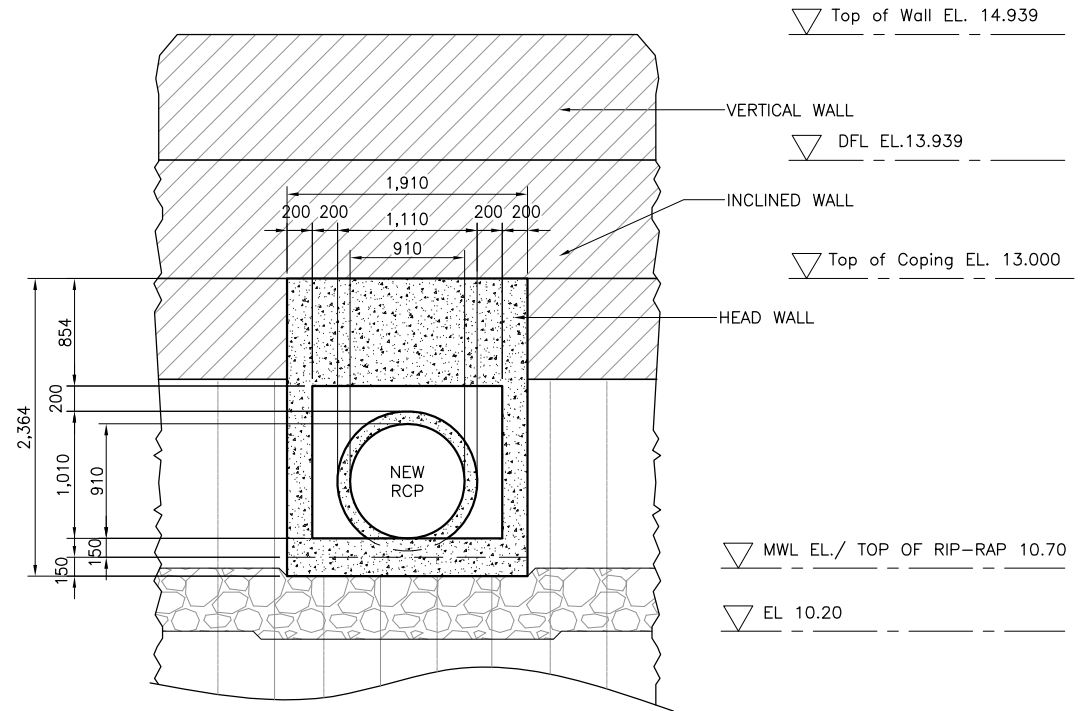
2 PLAN  
SCALE B



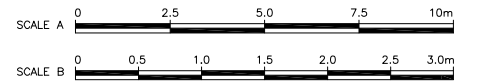
4 SECTION (ML130)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

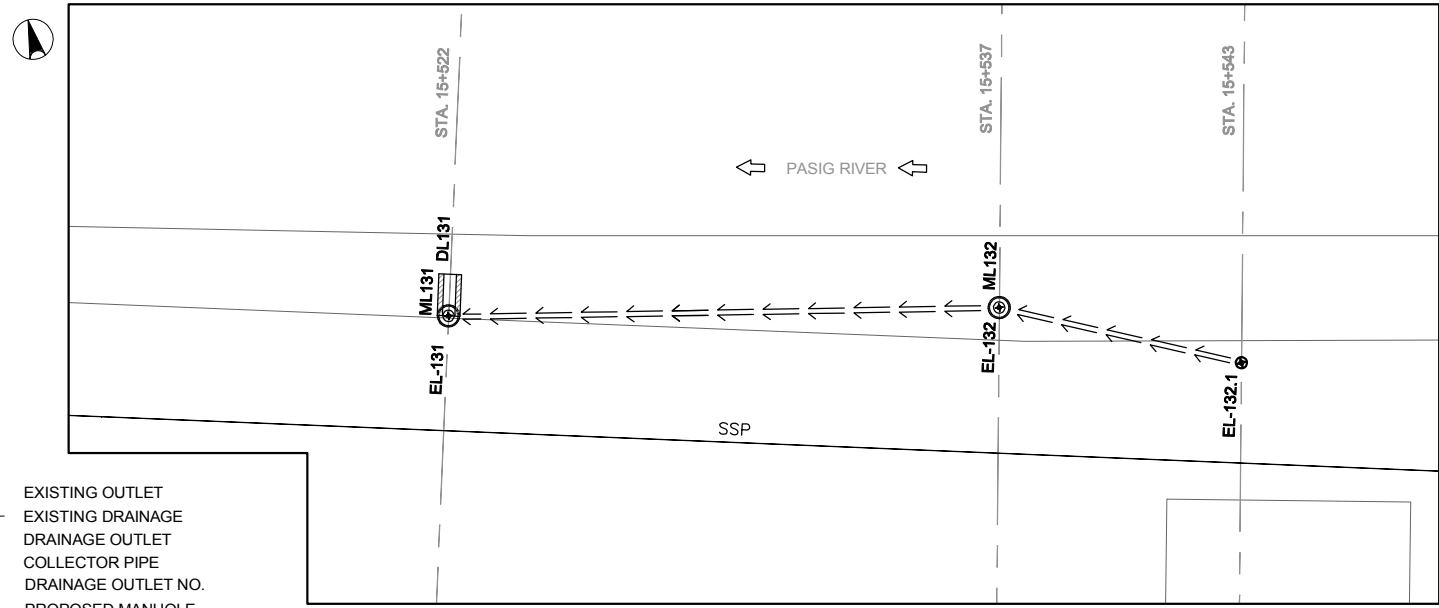
RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DL130 & MANHOLE ML130 STA. 15+483 LB

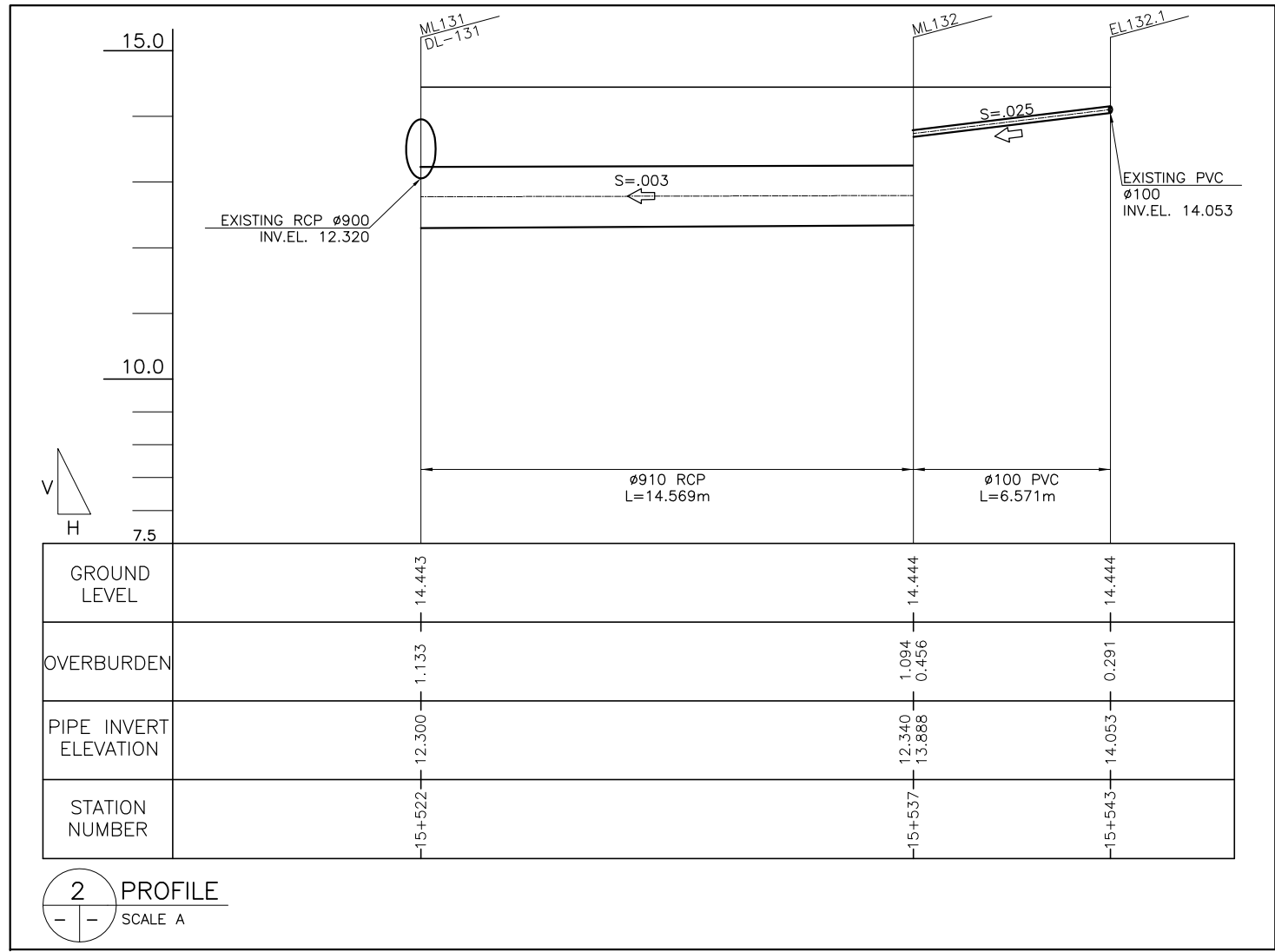
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UP-DL  
DO130



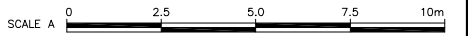
LEGEND:

- ER131 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DL 131 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

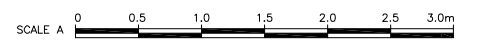
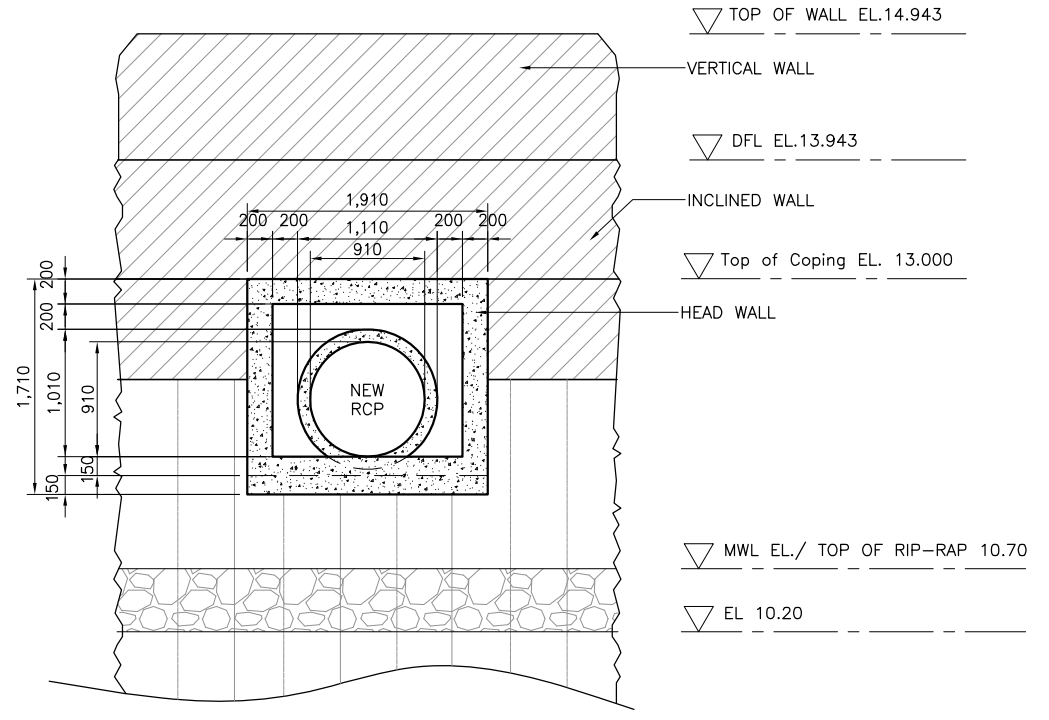
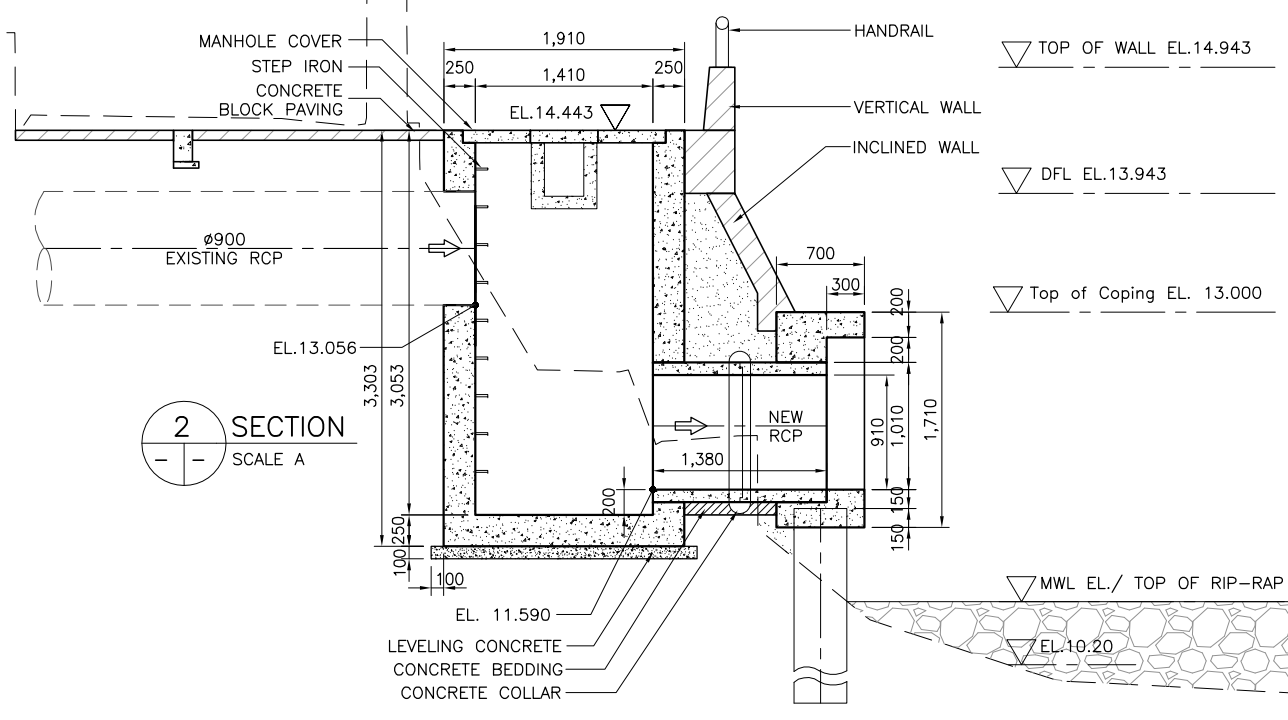
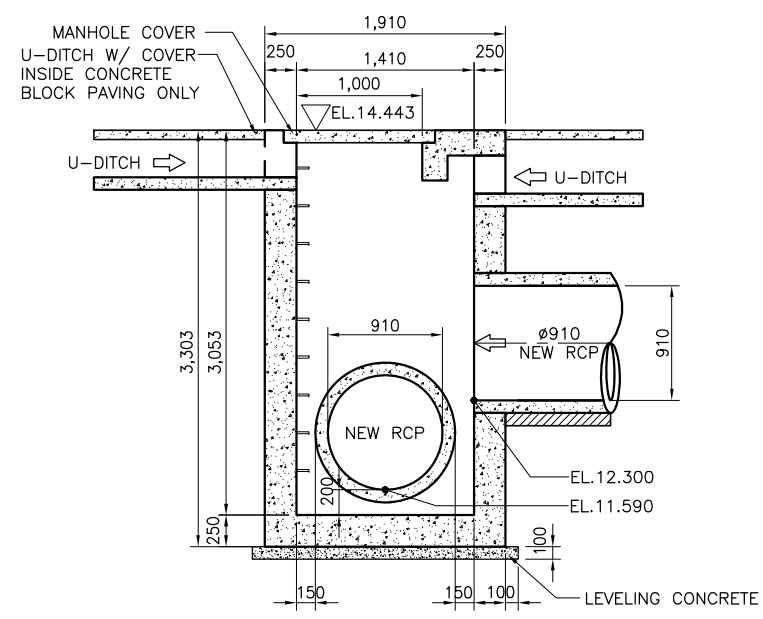
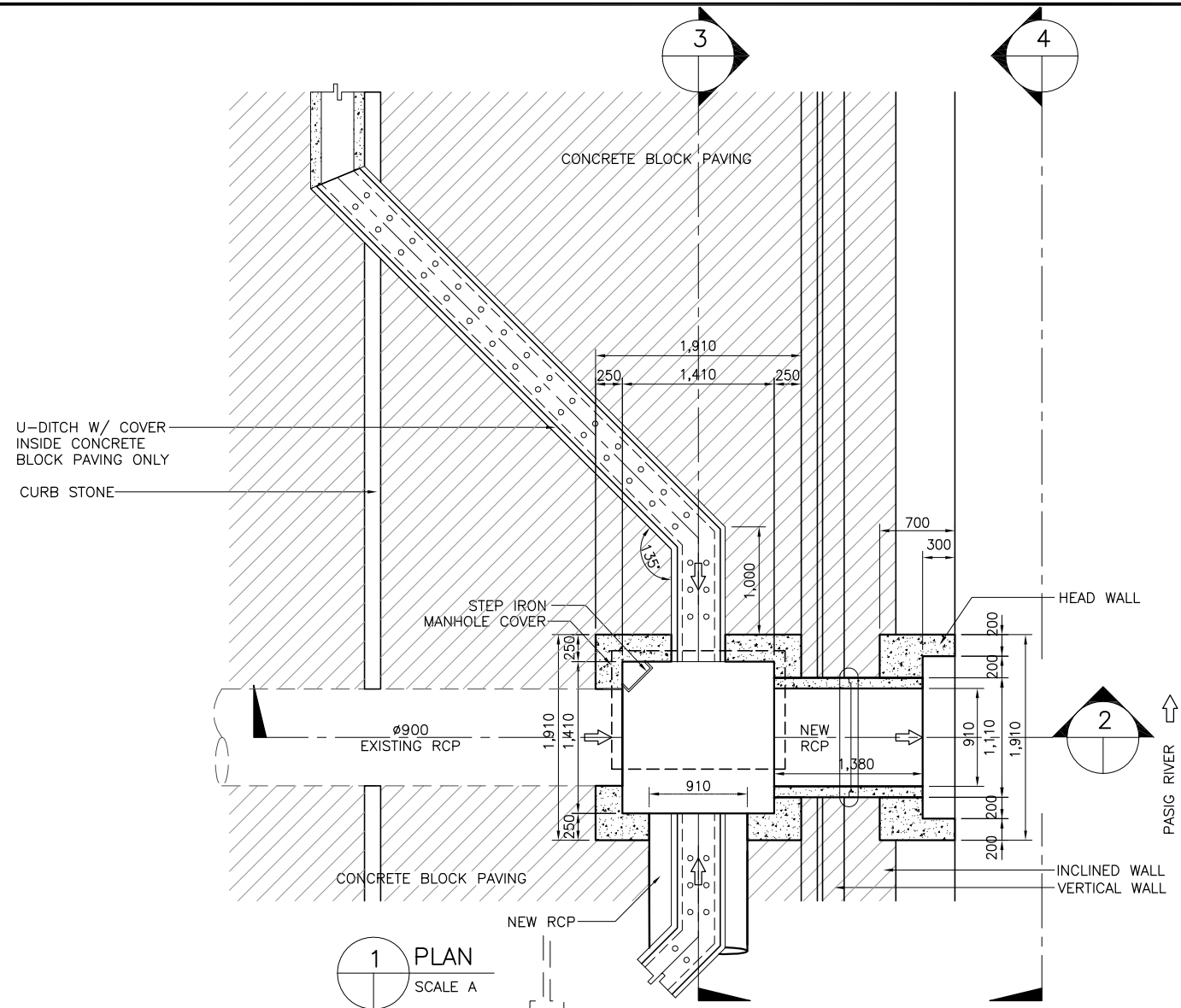


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES						PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:	<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>	<b>PLAN &amp; PROFILE OF COLLECTOR PIPE</b>	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			

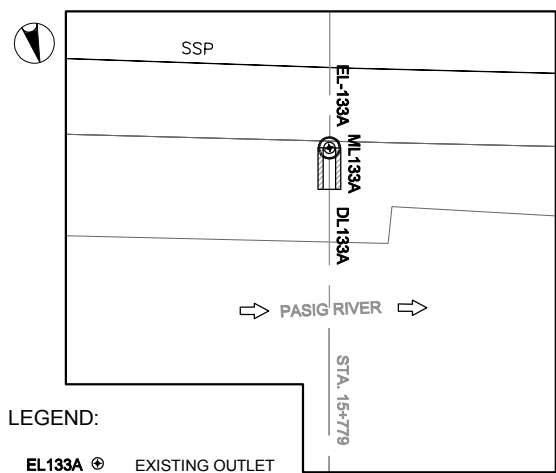


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

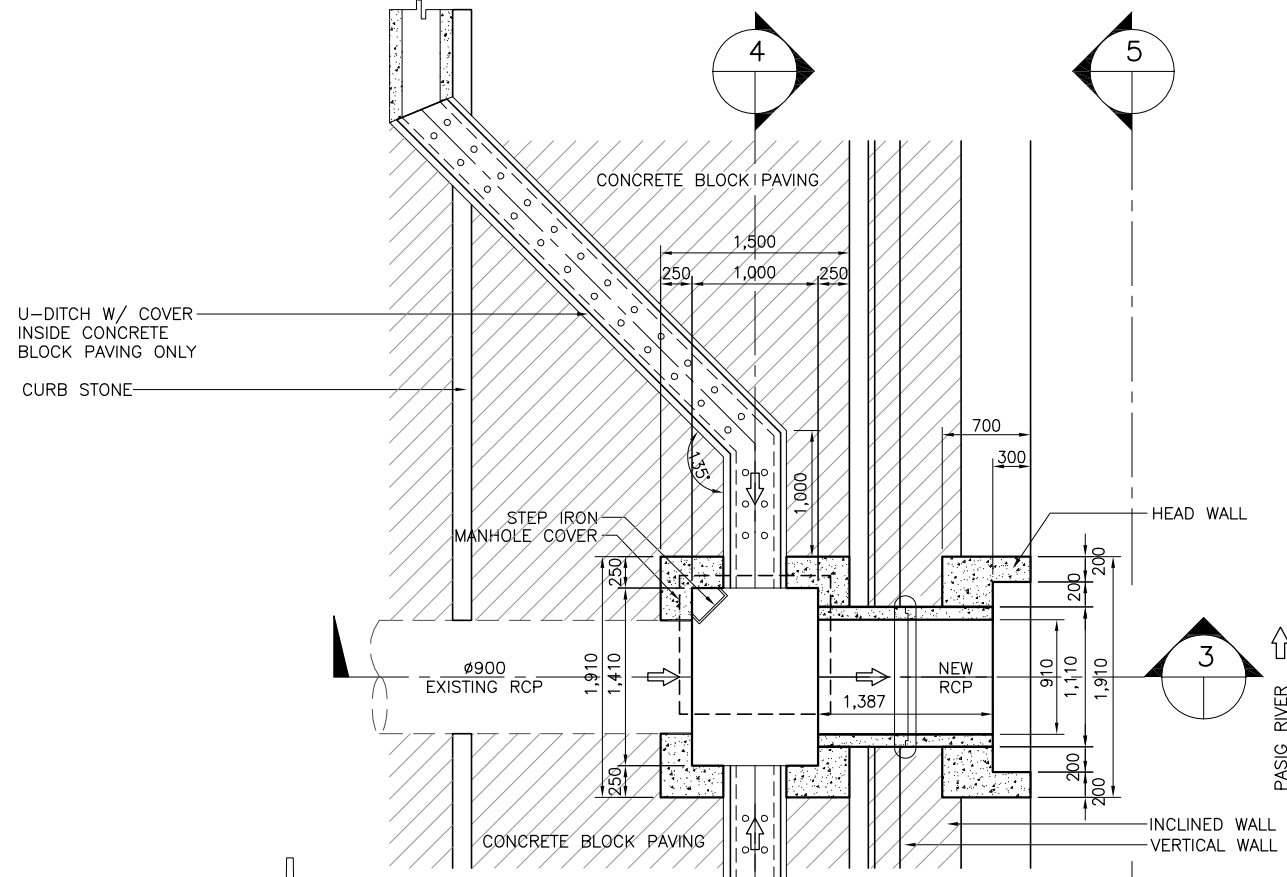
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL131, MANHOLE ML131 STA. 15+522	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			

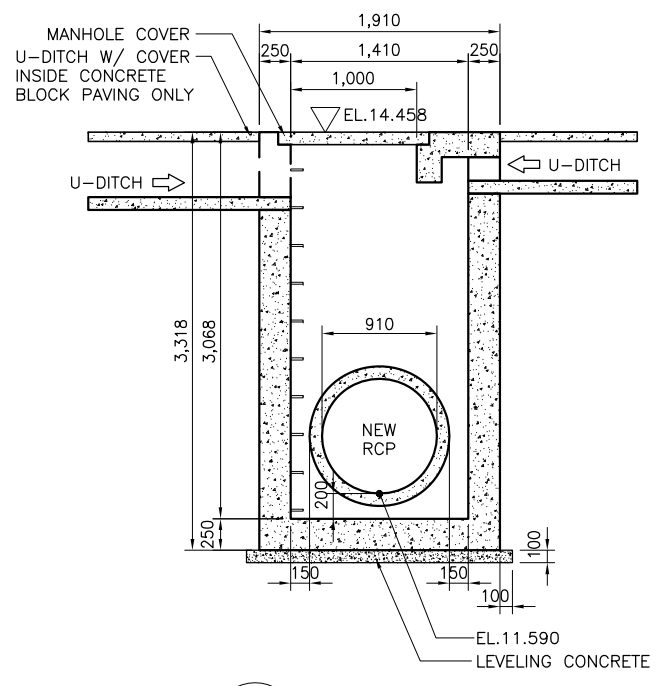


- LEGEND:**
- EL133A ⊕ EXISTING OUTLET
  - ↑ EXISTING DRAINAGE
  - ▭ DRAINAGE OUTLET
  - ▭ COLLECTOR PIPE
  - DL133A DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

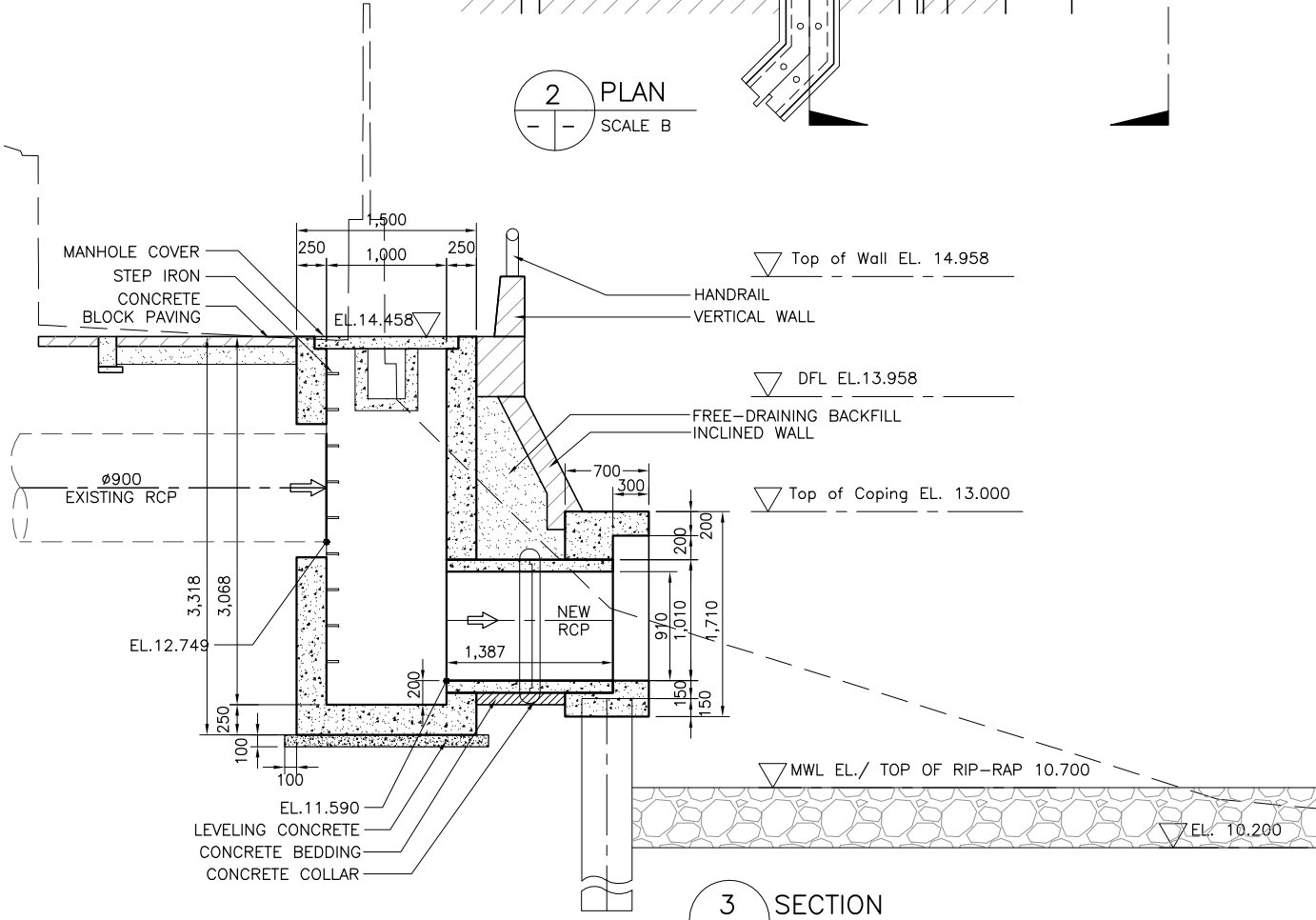
**1 DRAINAGE PLAN**  
SCALE A



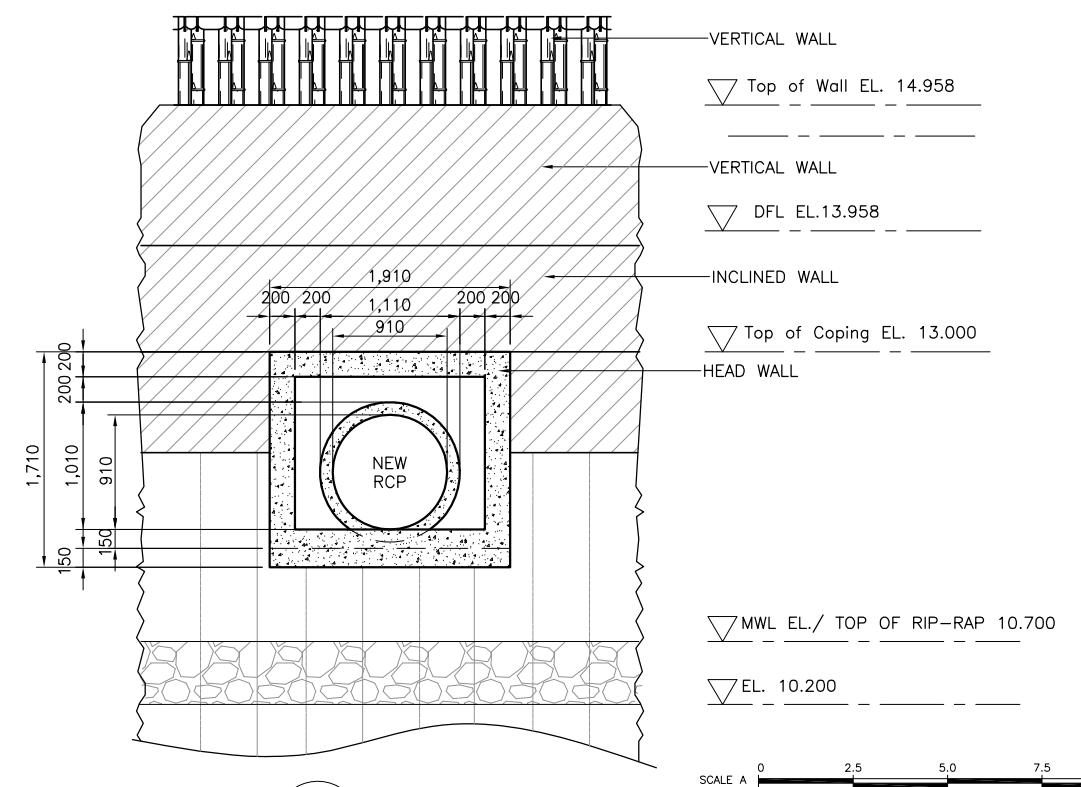
**2 PLAN**  
SCALE B



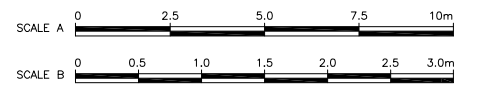
**4 SECTION (ML133A)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER

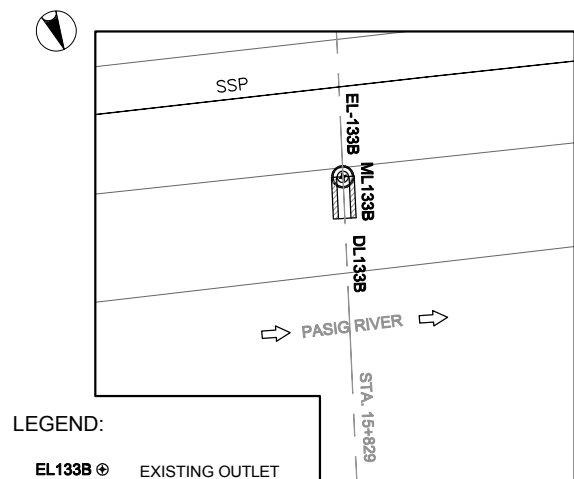


REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL133A, MANHOLE ML133A, & JL33A STA. 15+779 LB	UP-DL DO 133A

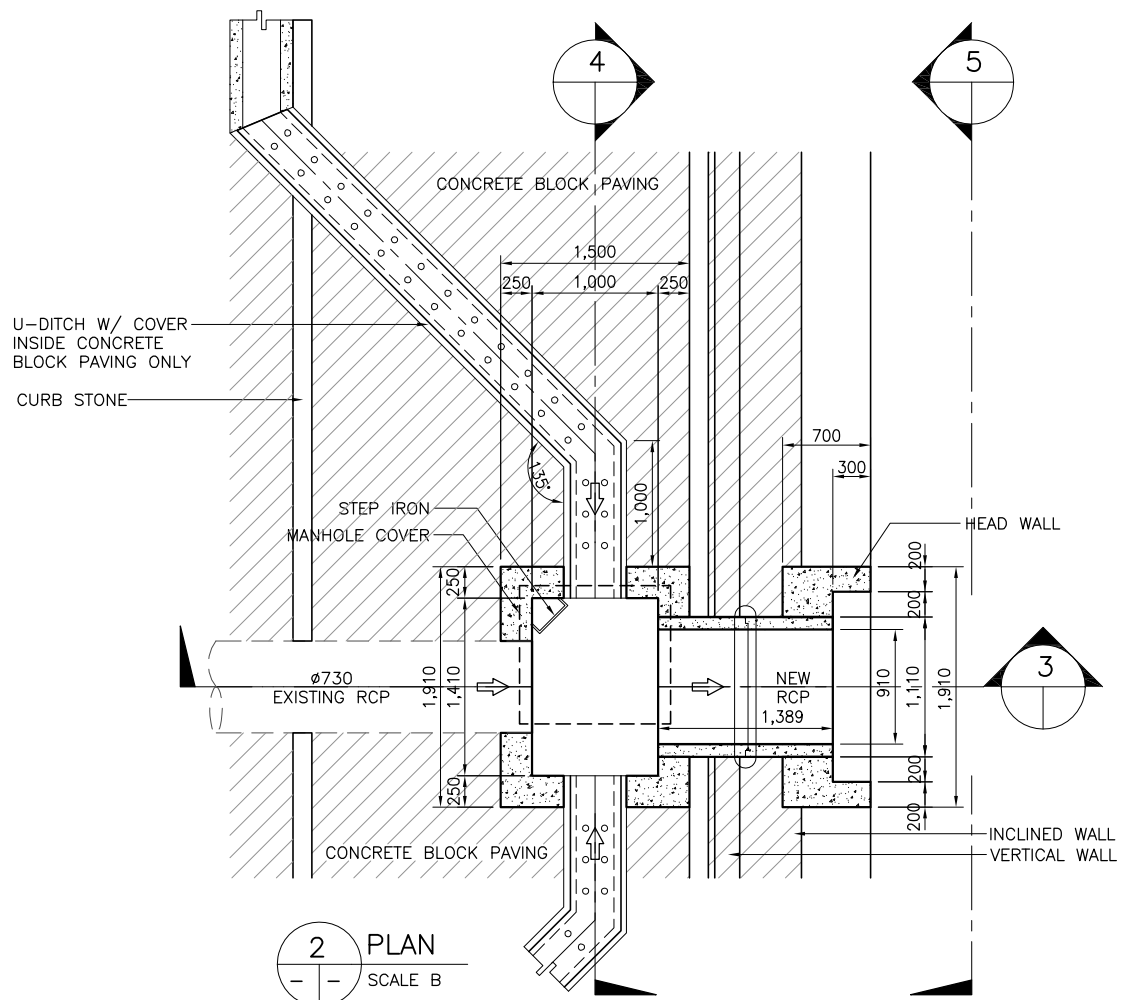




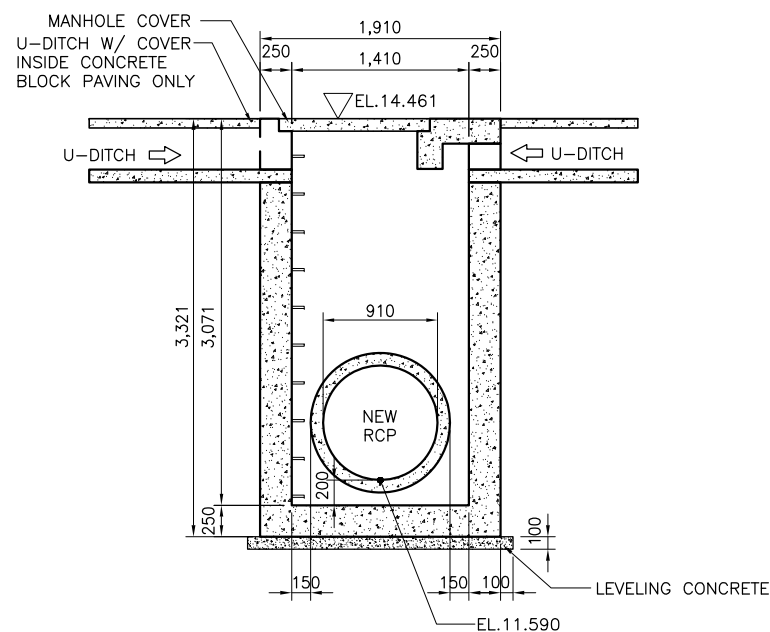
LEGEND:

- EL133B ⊕ EXISTING OUTLET
- ↑ EXISTING DRAINAGE
- ▬ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DL133B DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

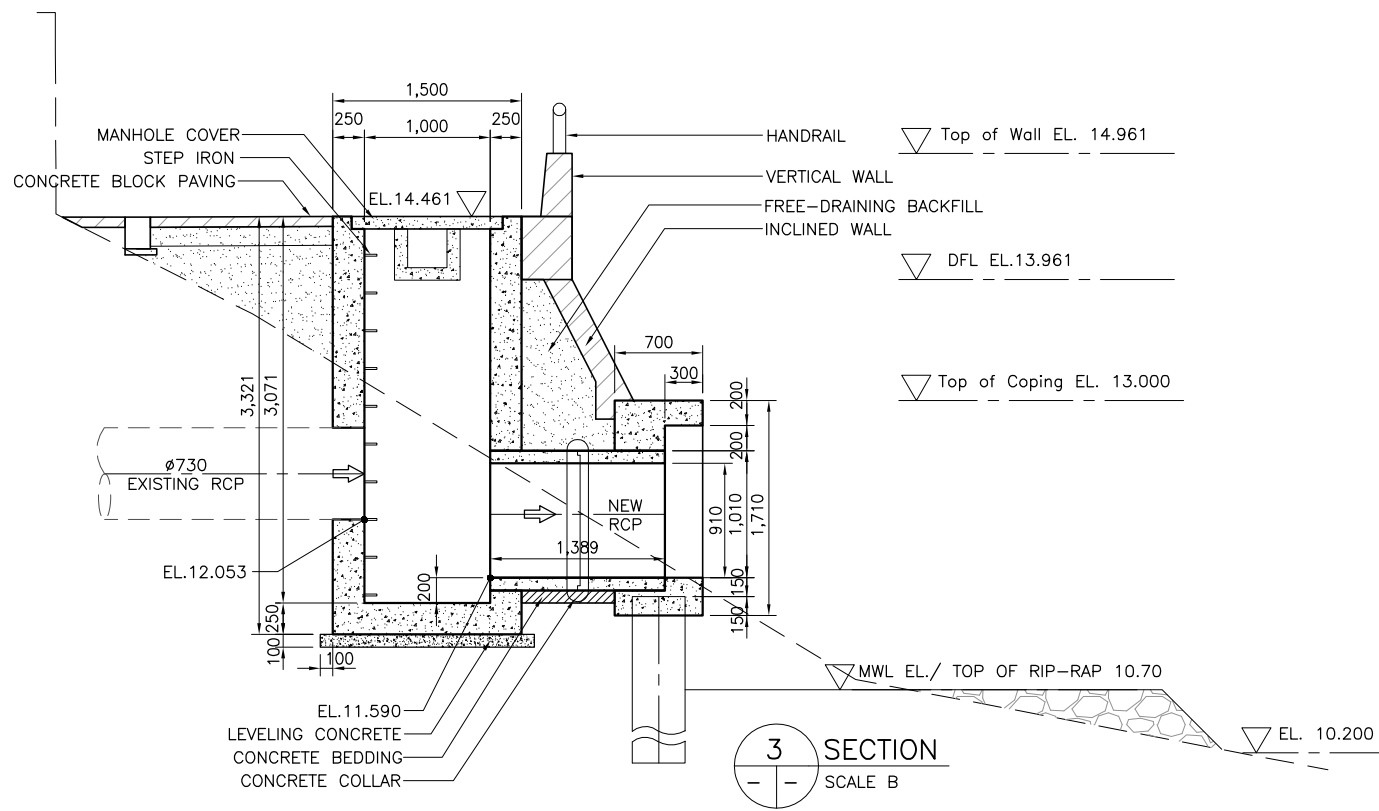
1 DRAINAGE PLAN  
SCALE A



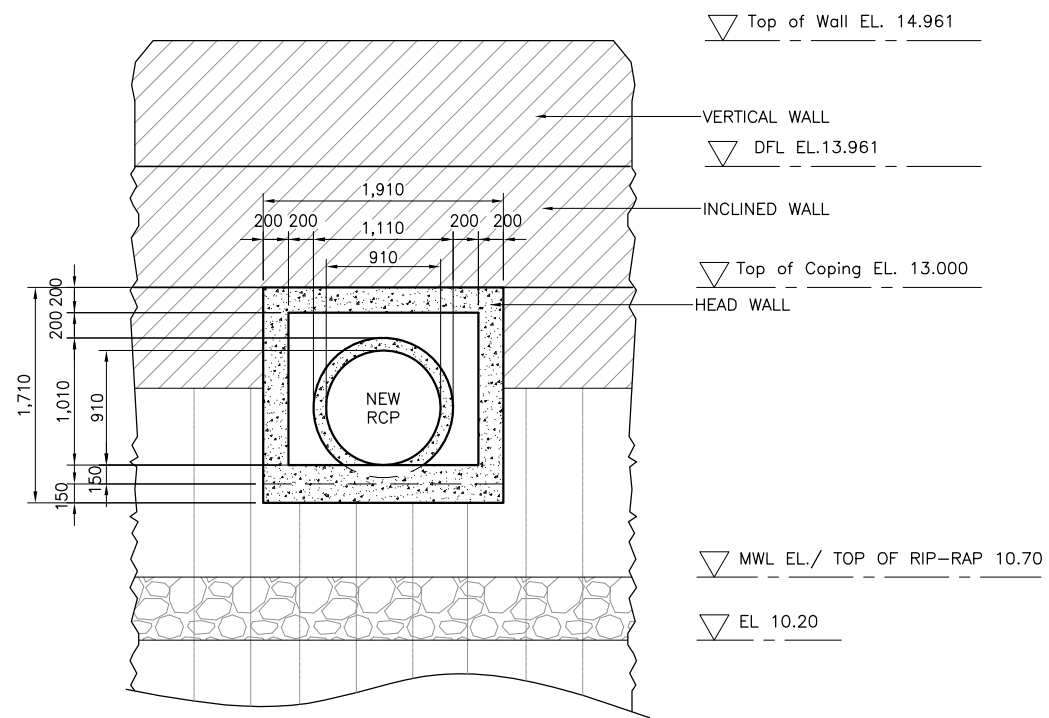
2 PLAN  
SCALE B



4 SECTION (ML133B)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B

▽ Top of Wall EL. 14.961

VERTICAL WALL

▽ DFL EL.13.961

INCLINED WALL

▽ Top of Coping EL. 13.000

HEAD WALL

▽ MWL EL./ TOP OF RIP-RAP 10.70

▽ EL 10.20

SCALE A 0 2.5 5.0 7.5 10m

SCALE B 0 0.5 1.0 1.5 2.0 2.5 3.0m

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

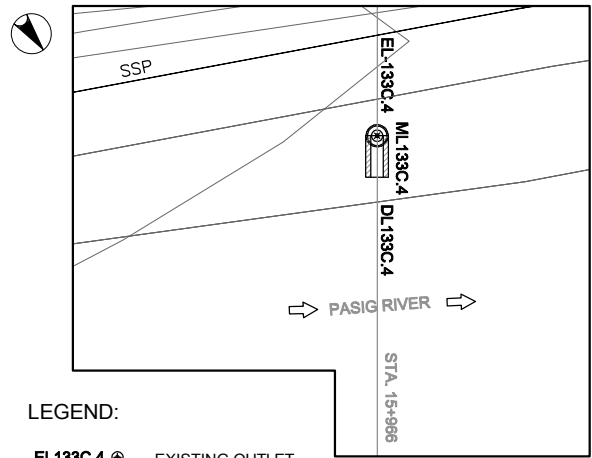
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL133B & MANHOLE ML133B, STA. 15+829 RB

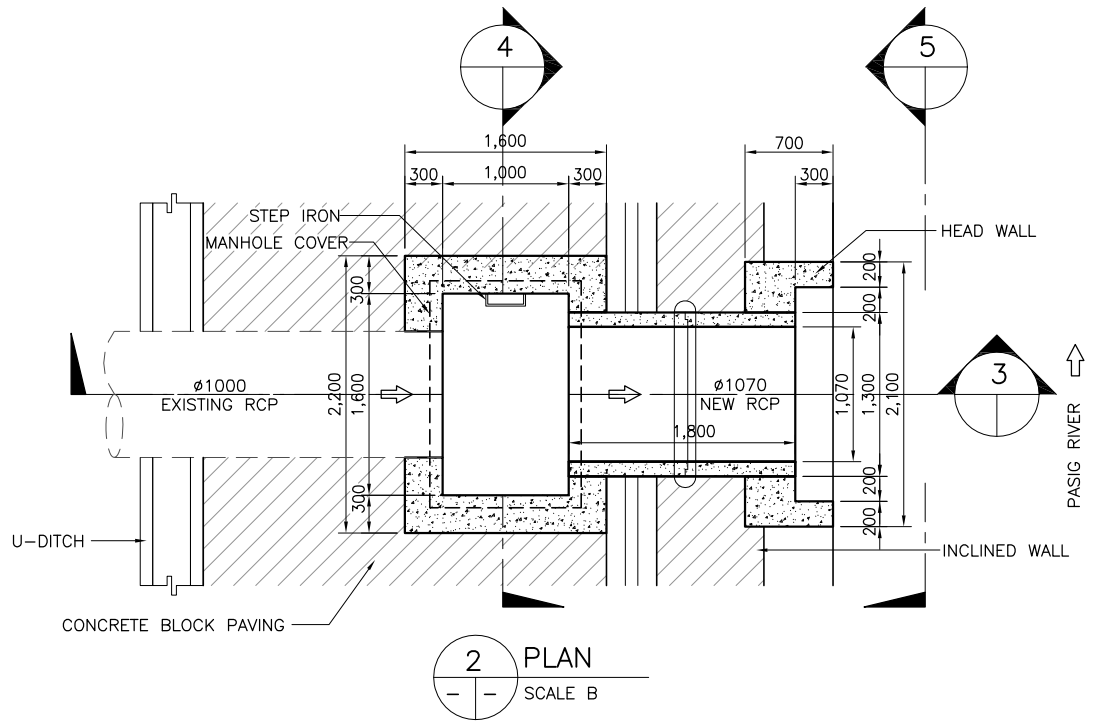
SHEET NO.: UP-DL DO 133B



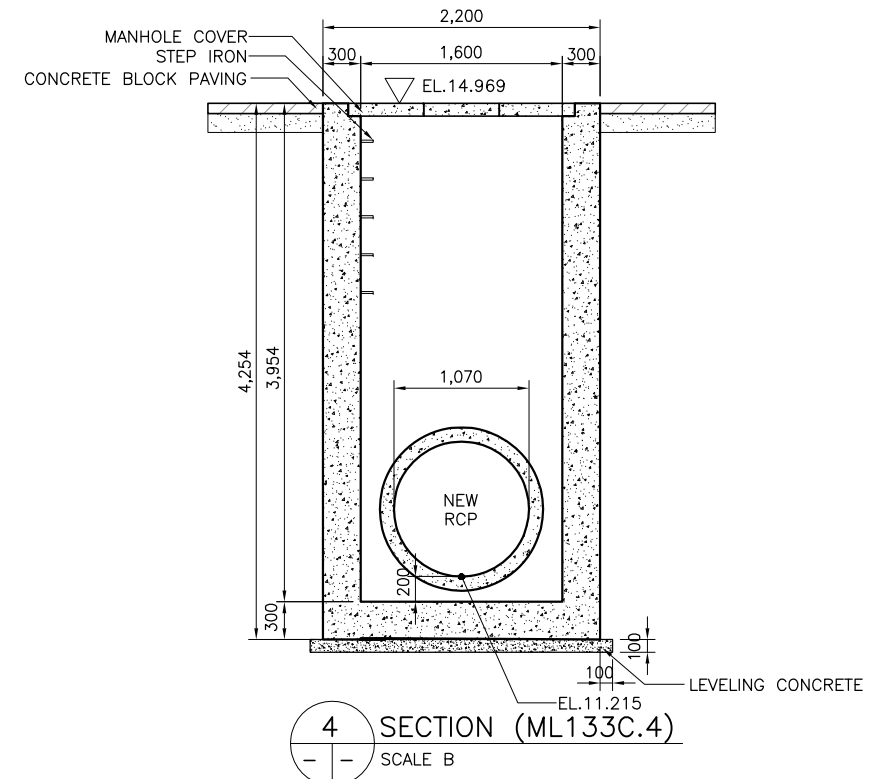
LEGEND:

- EL133C.4 @ EXISTING OUTLET
- DRAINAGE OUTLET
- DL133C.4 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

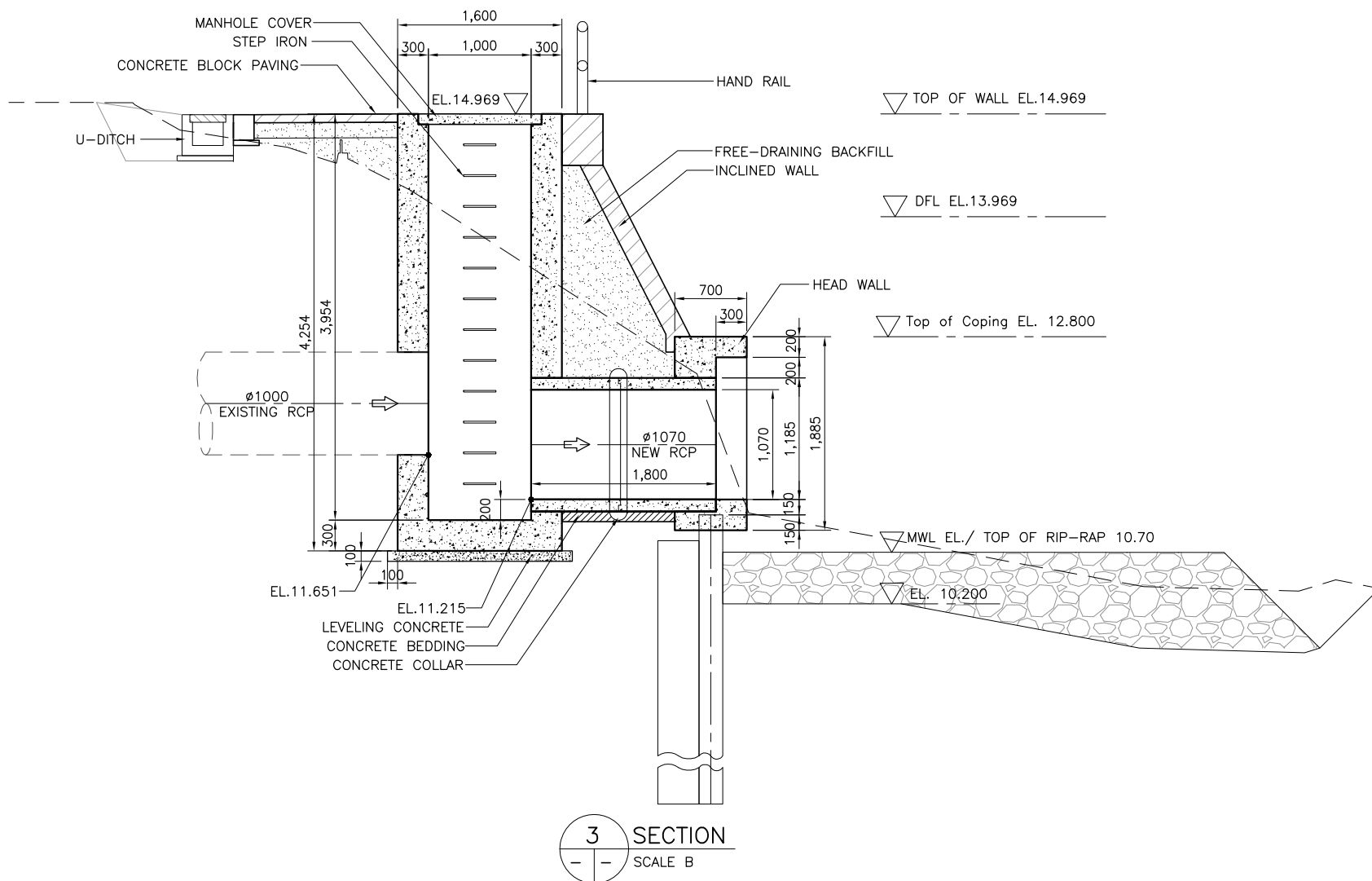
1 DRAINAGE PLAN  
SCALE A



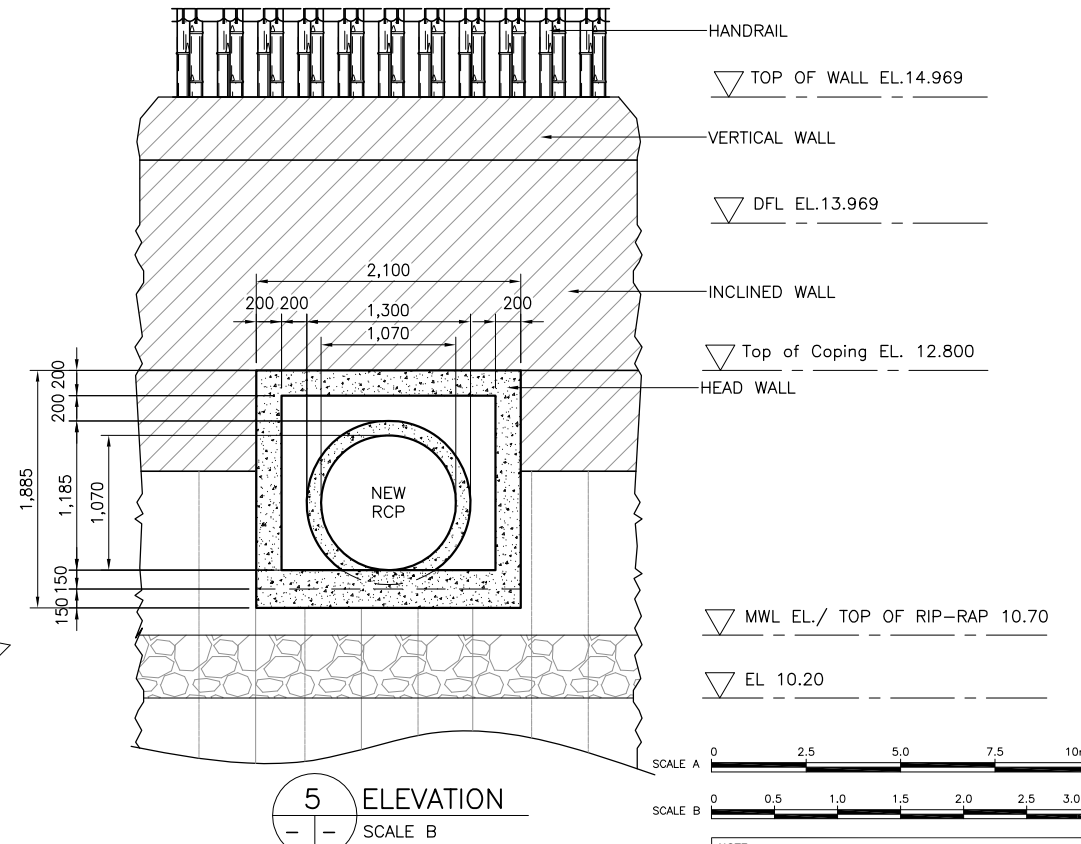
2 PLAN  
SCALE B



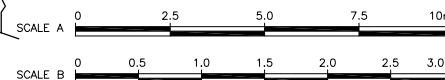
4 SECTION (ML133C.4)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

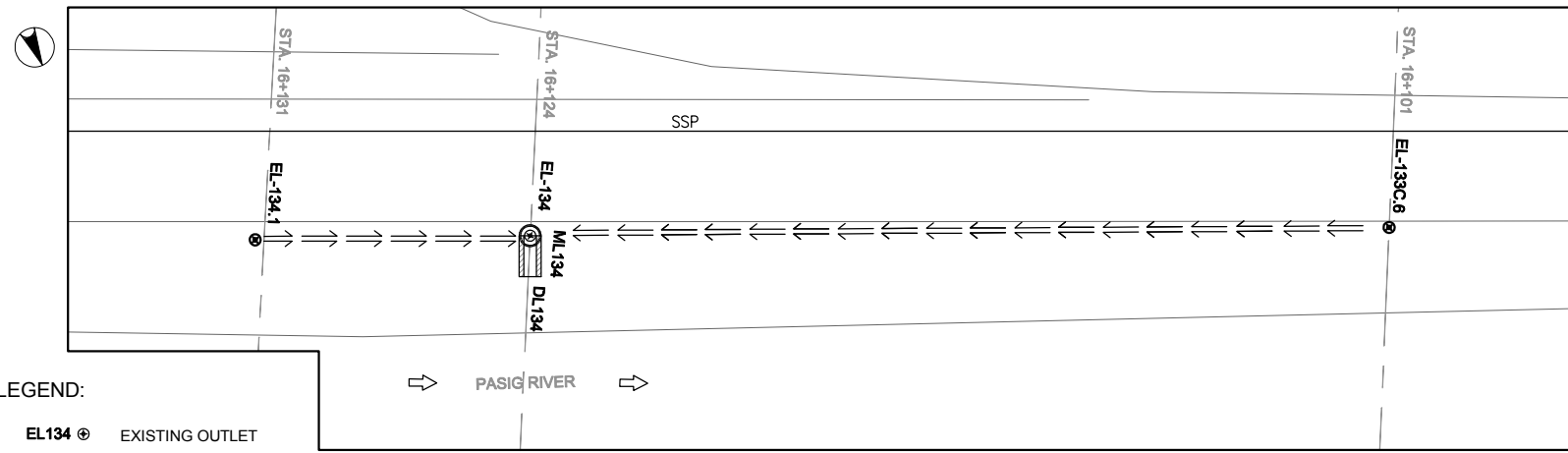
ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL133C.4 & MANHOLE ML133C.4, STA. 15+966 LB

SHEET NO.: UP-DL DO 133C.4

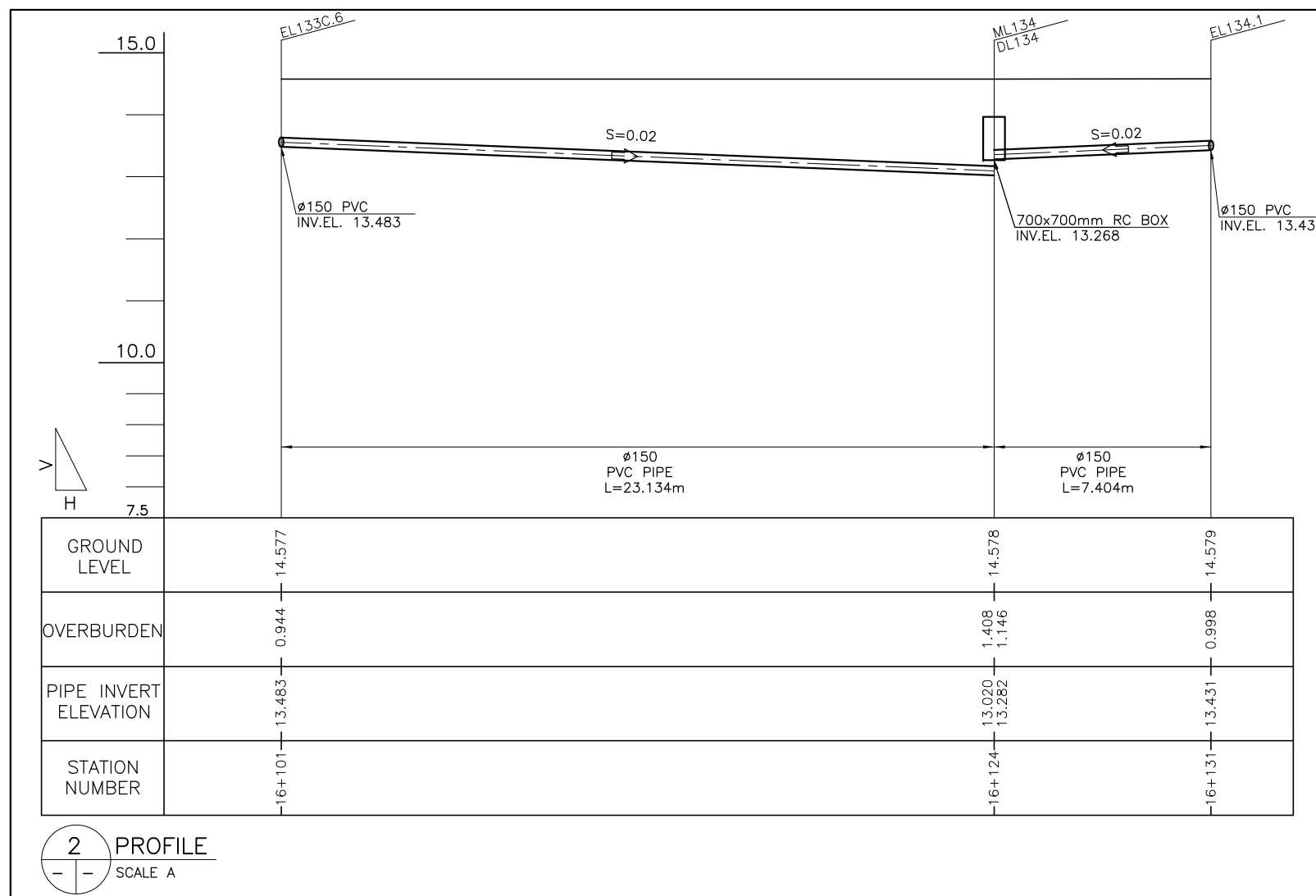




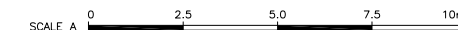
LEGEND:

- EL134 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ⊕ DRAINAGE OUTLET
- ← COLLECTOR PIPE
- DL134 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PREFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

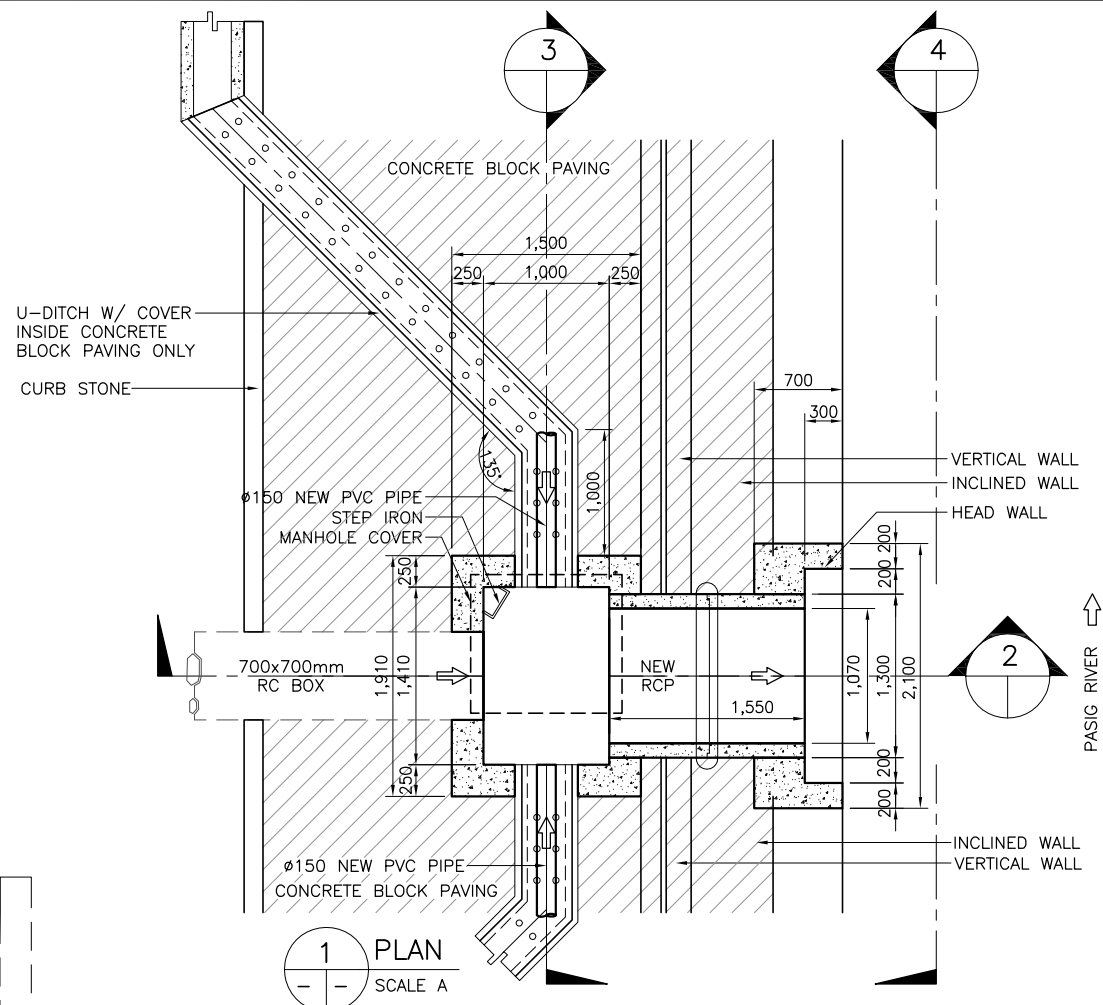
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

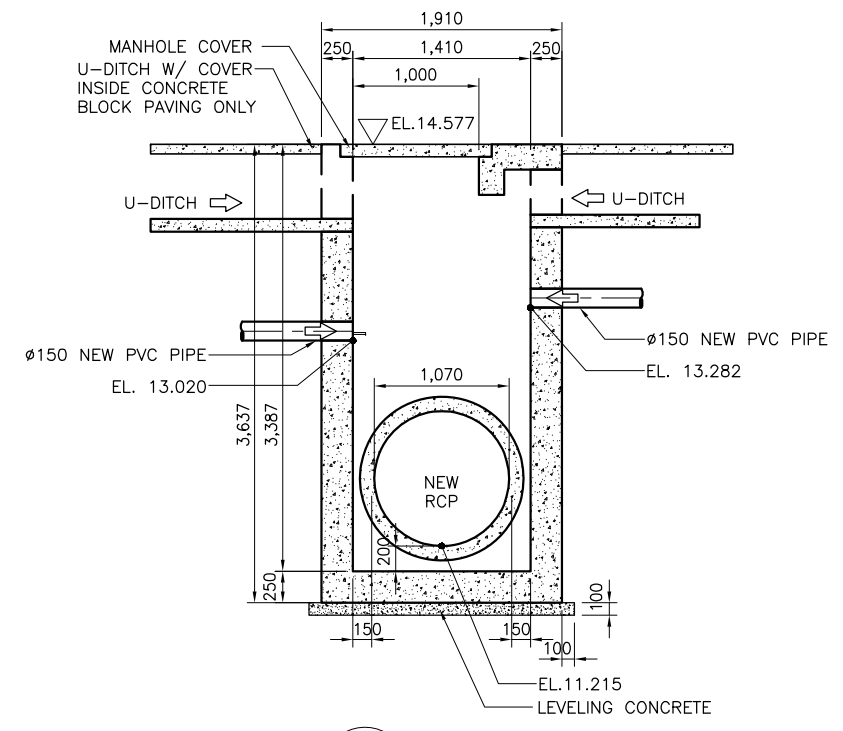
UP-DL  
DO/134/P



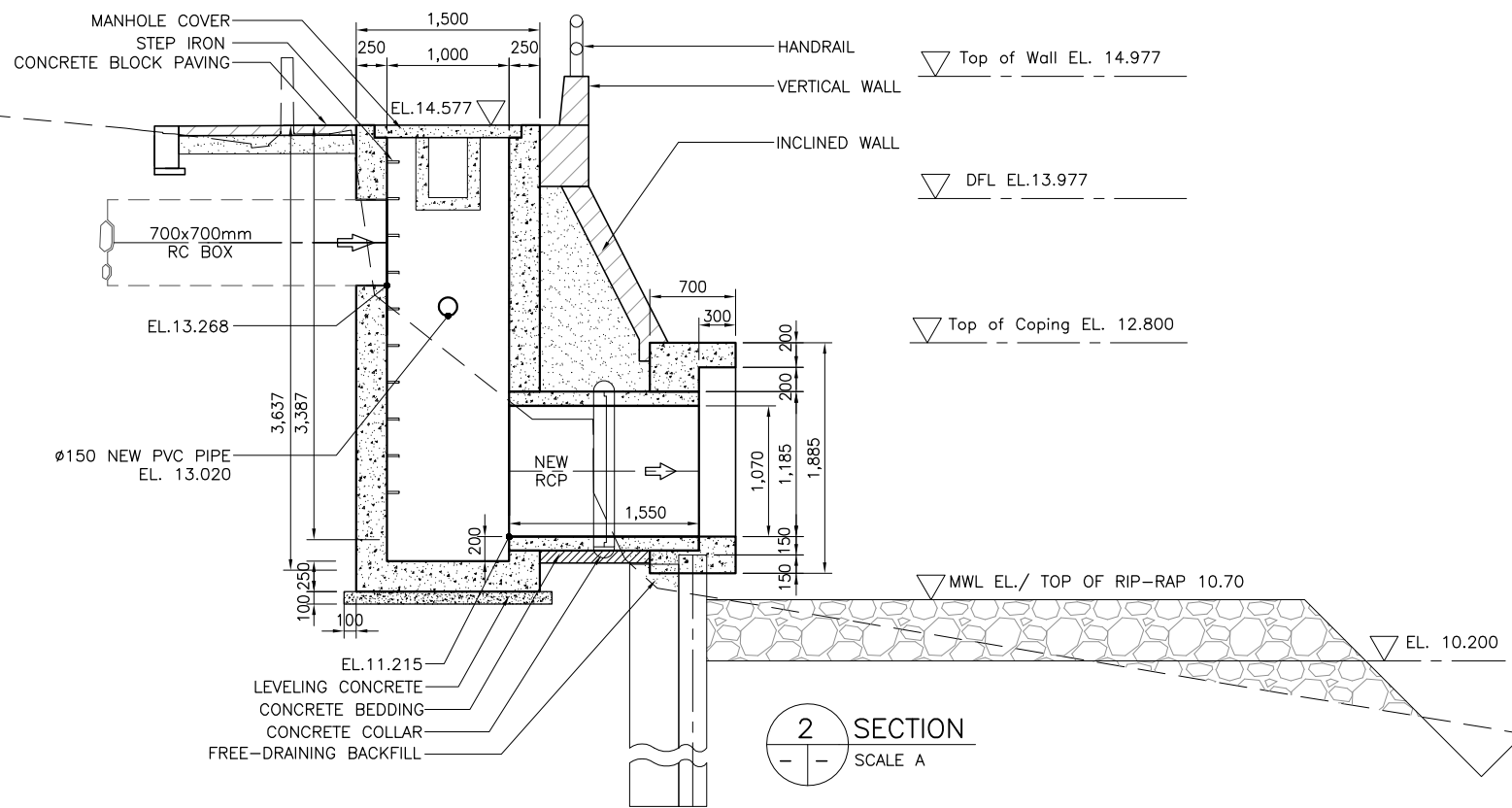
CTI ENGINEERING INTERNATIONAL CO., LTD.



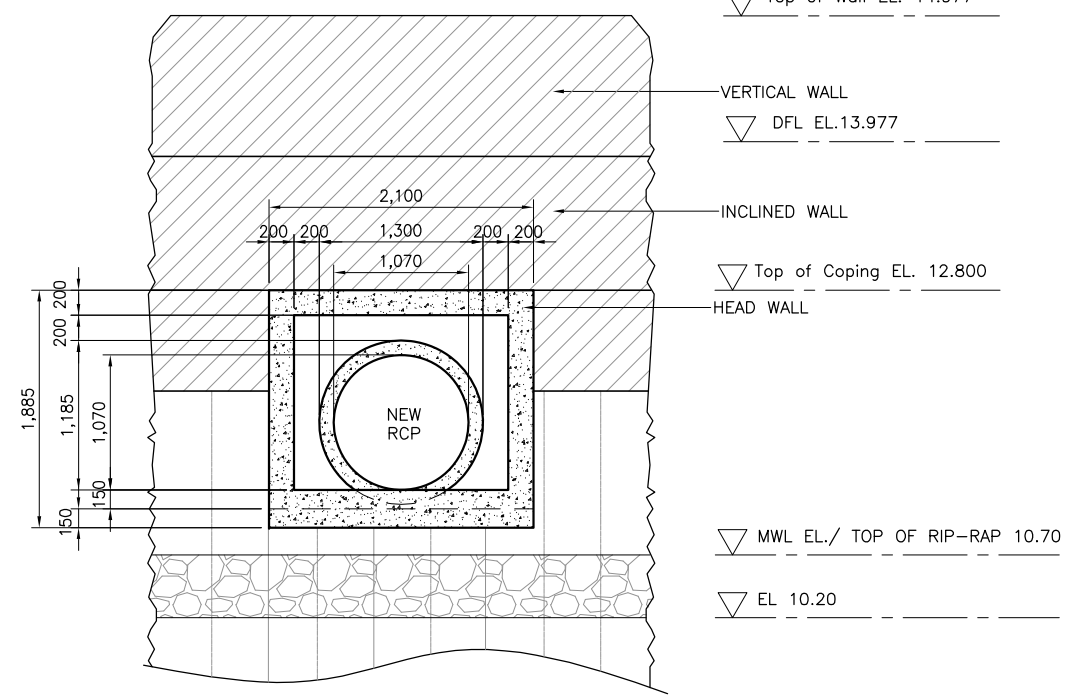
1 PLAN  
SCALE A



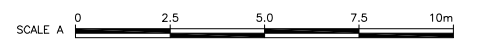
3 SECTION (ML134)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A

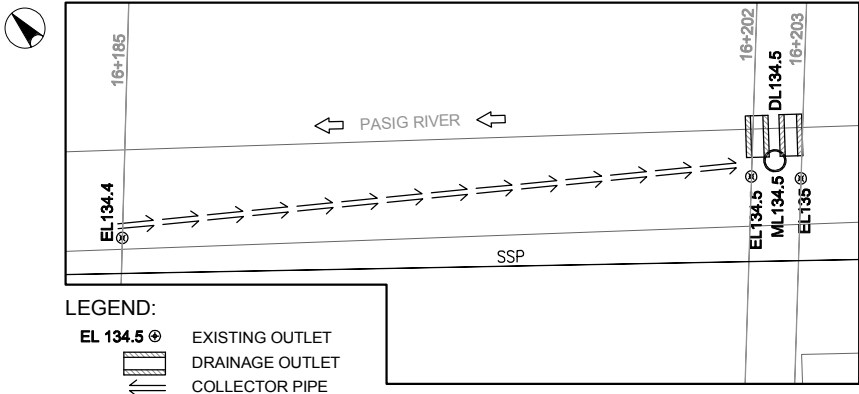


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

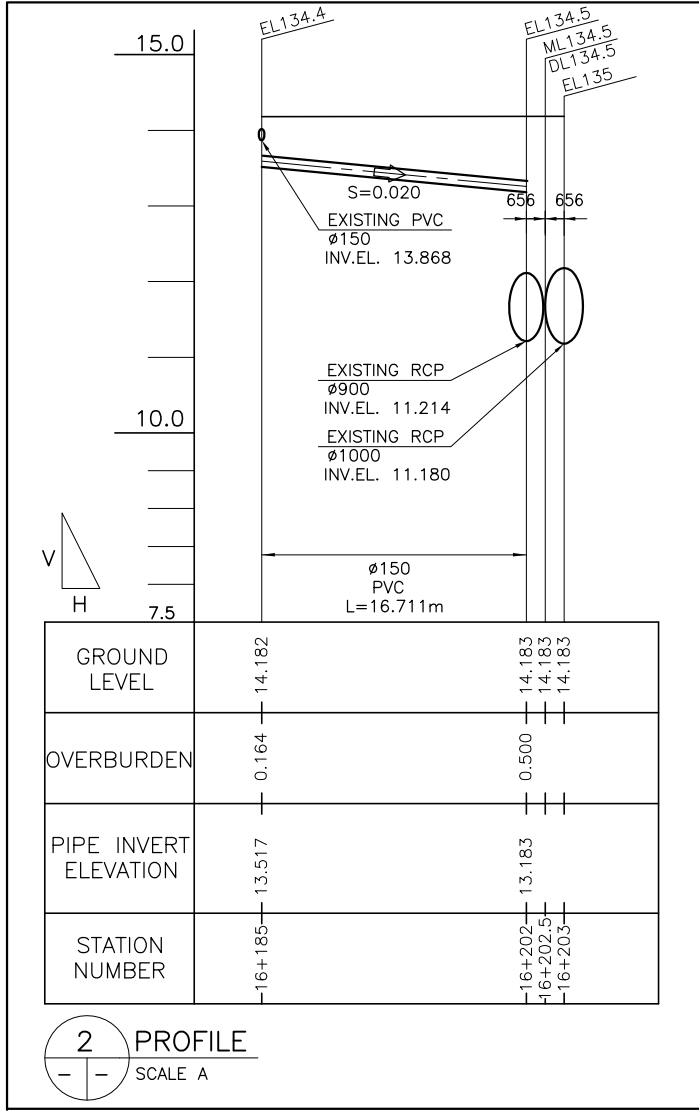
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL134, MANHOLE ML134, STA. 16+124 LB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			



- LEGEND:**
- EL 134.5 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DL 134.5 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

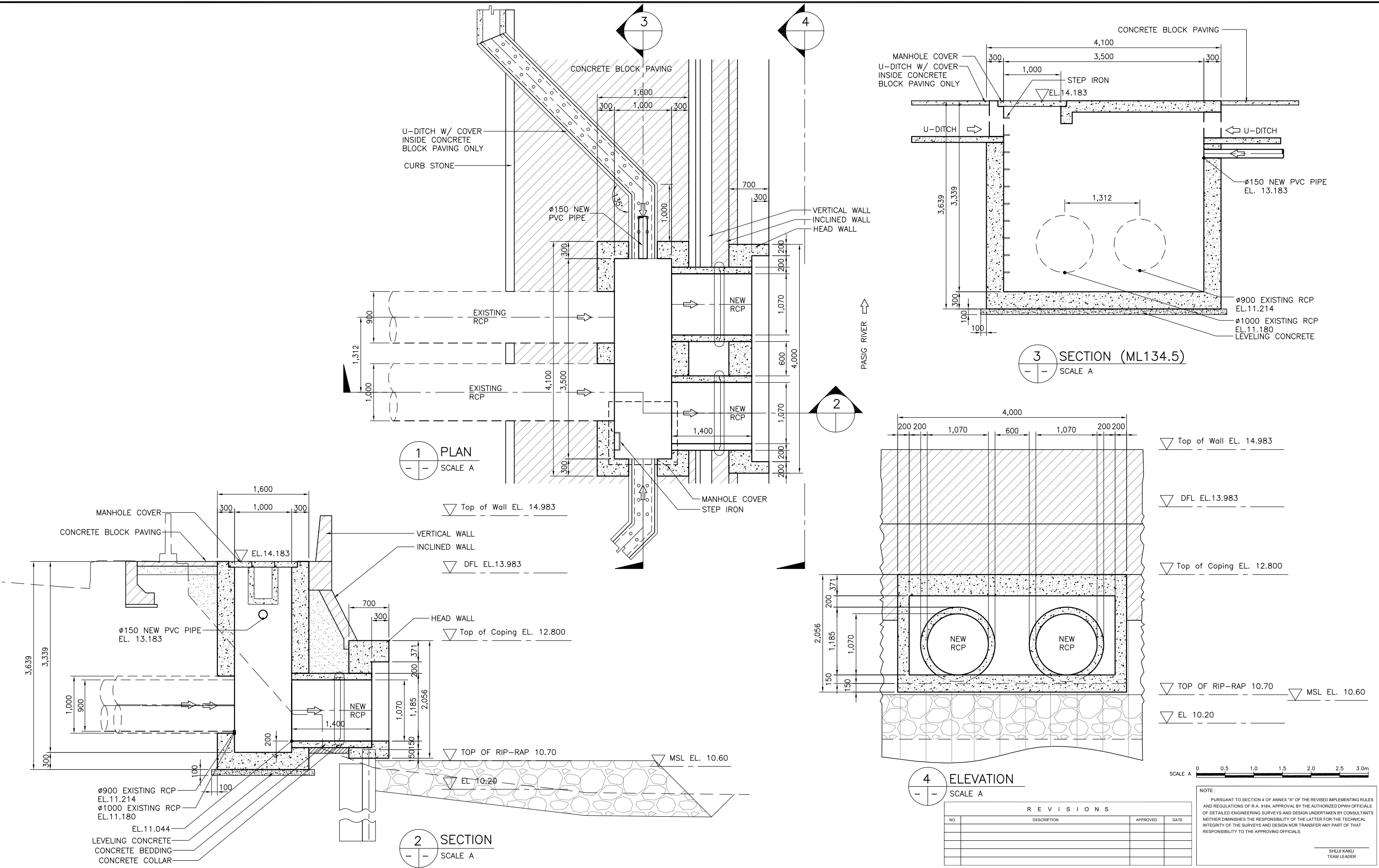


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			



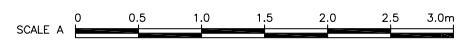
1 PLAN  
SCALE A

2 SECTION  
SCALE A

3 SECTION (ML134.5)  
SCALE A

4 ELEVATION  
SCALE A

- ▽ Top of Wall EL. 14.983
- ▽ DFL EL.13.983
- ▽ Top of Coping EL. 12.800
- ▽ TOP OF RIP-RAP 10.70
- ▽ MSL EL. 10.60
- ▽ EL 10.20

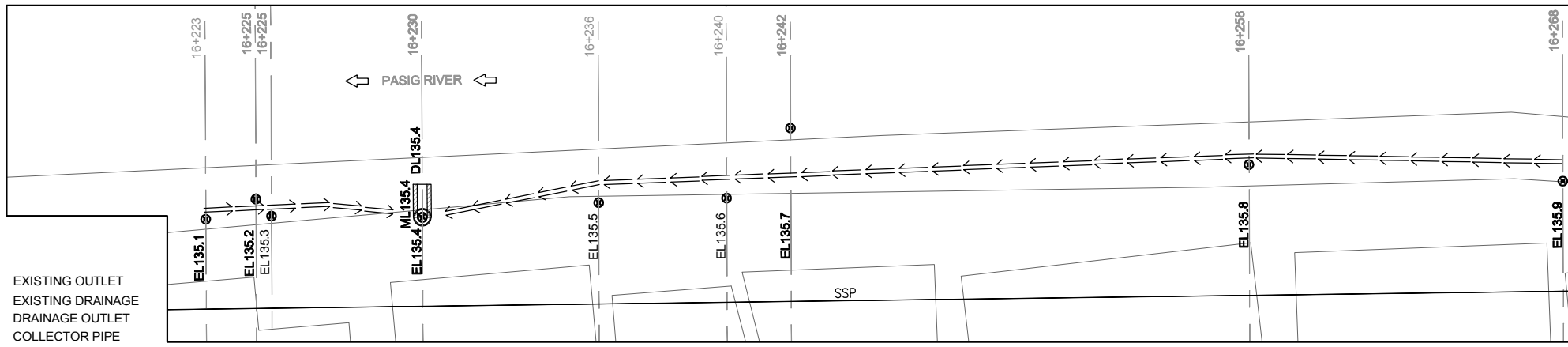


NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

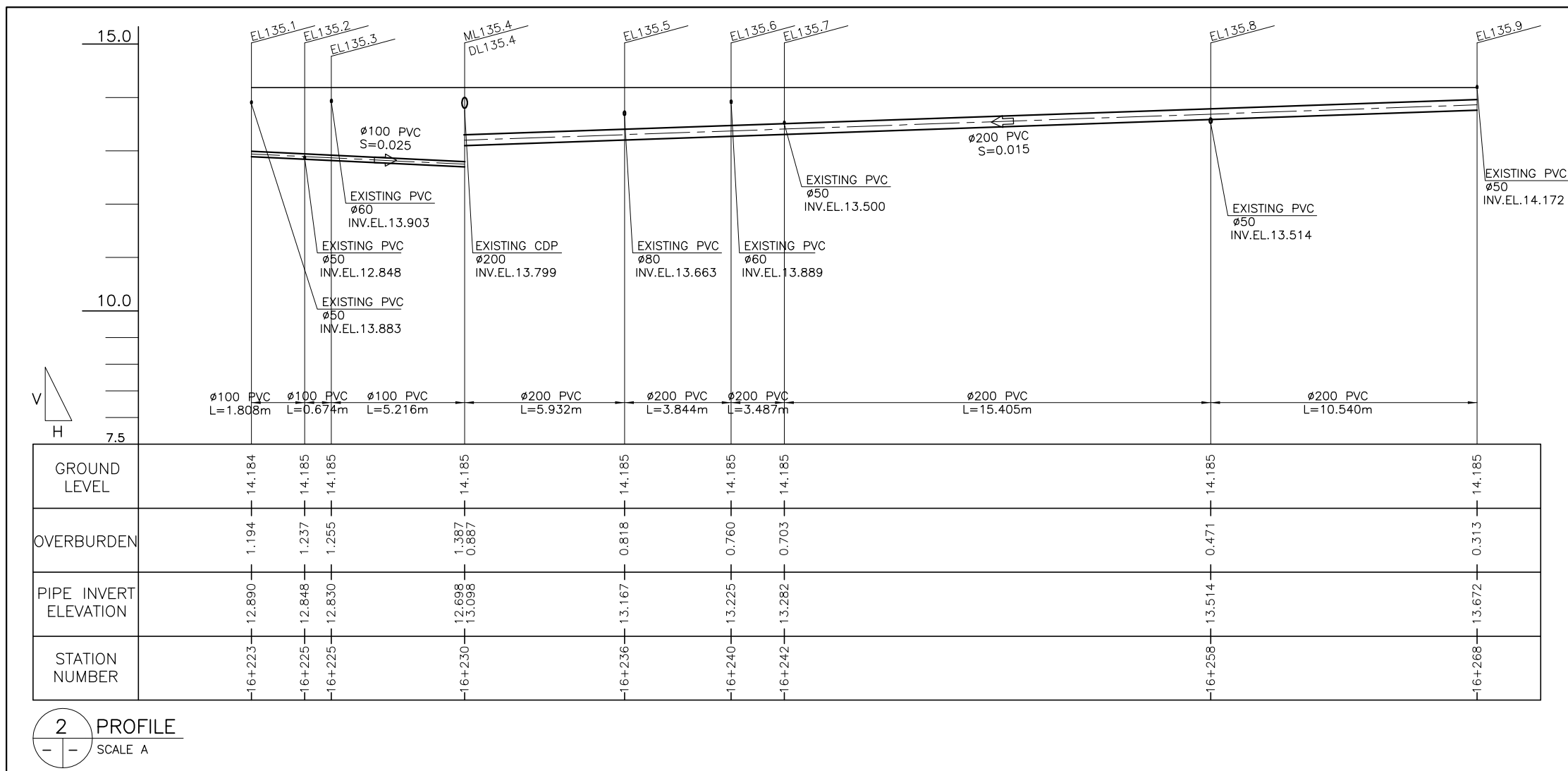
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL 134.5 & MANHOLE ML134.5 STA. 16+203 LB	
	KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SHUJI KAKU <small>TEAM LEADER</small>		PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>			



**LEGEND:**

- EL135.4 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ⇄ COLLECTOR PIPE
- DL135.4 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SHUJI KAKU <small>TEAM LEADER</small>



**REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS**

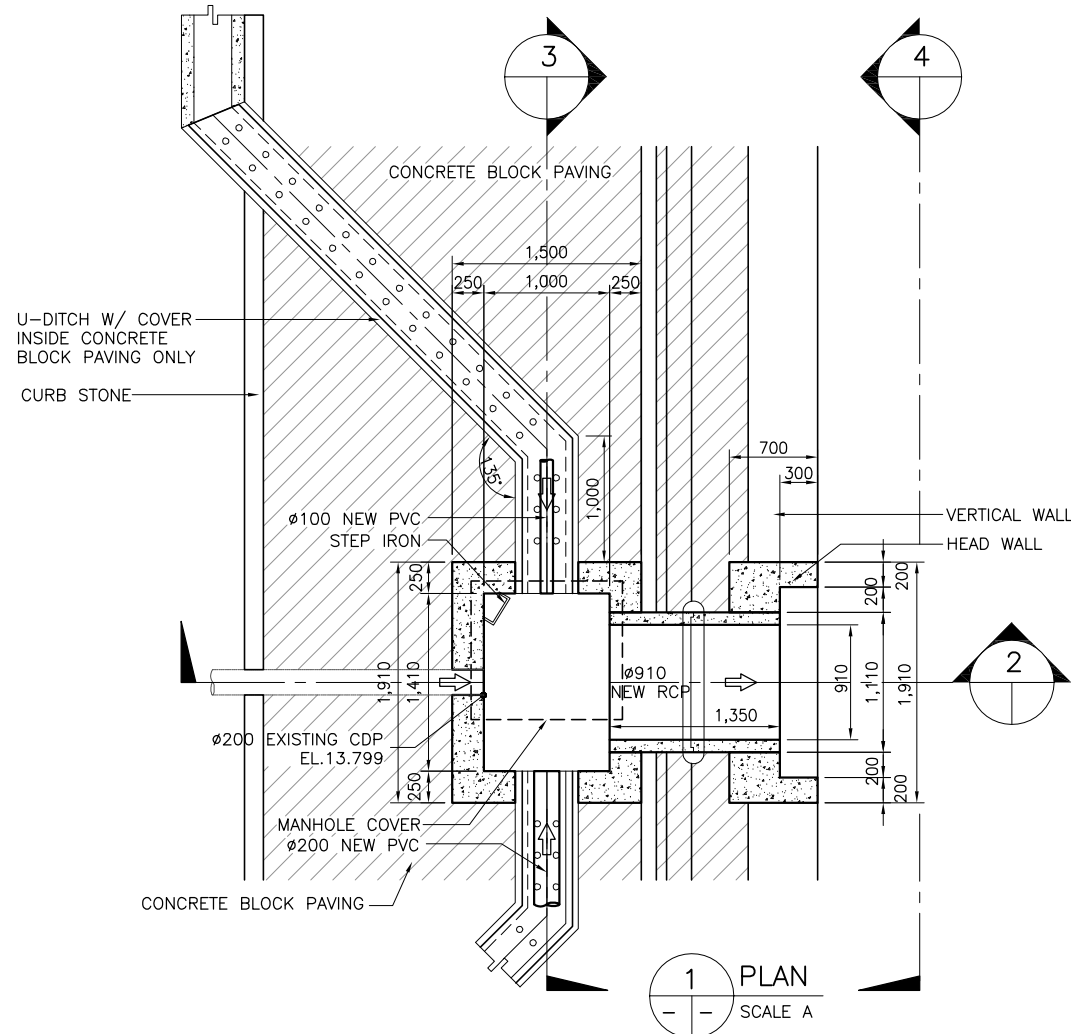
REVIEWED BY:	RECOMMENDING APPROVAL :			APPROVED BY:
PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>

PROJECT & LOCATION  
**PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA**

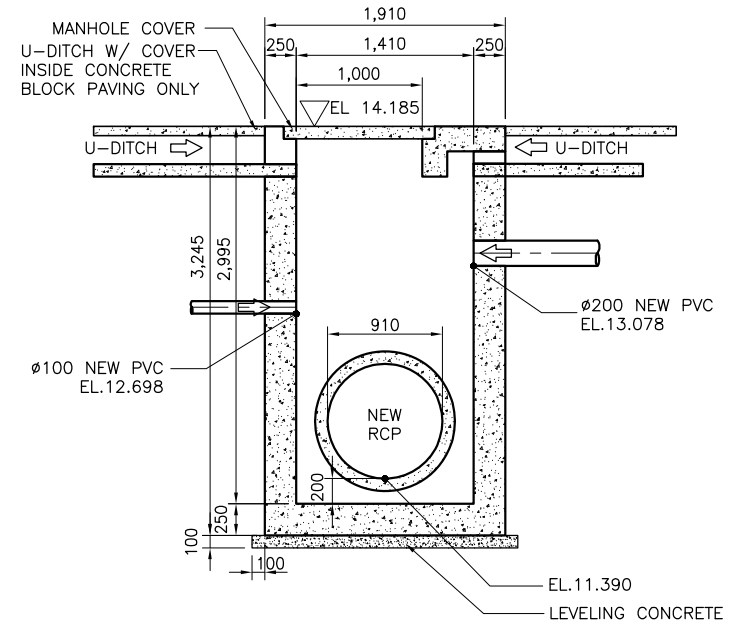
SHEET CONTENTS  
**PLAN & PROFILE OF COLLECTOR PIPE**

SHEET NO.  
**UP-DL DO135.4/P**

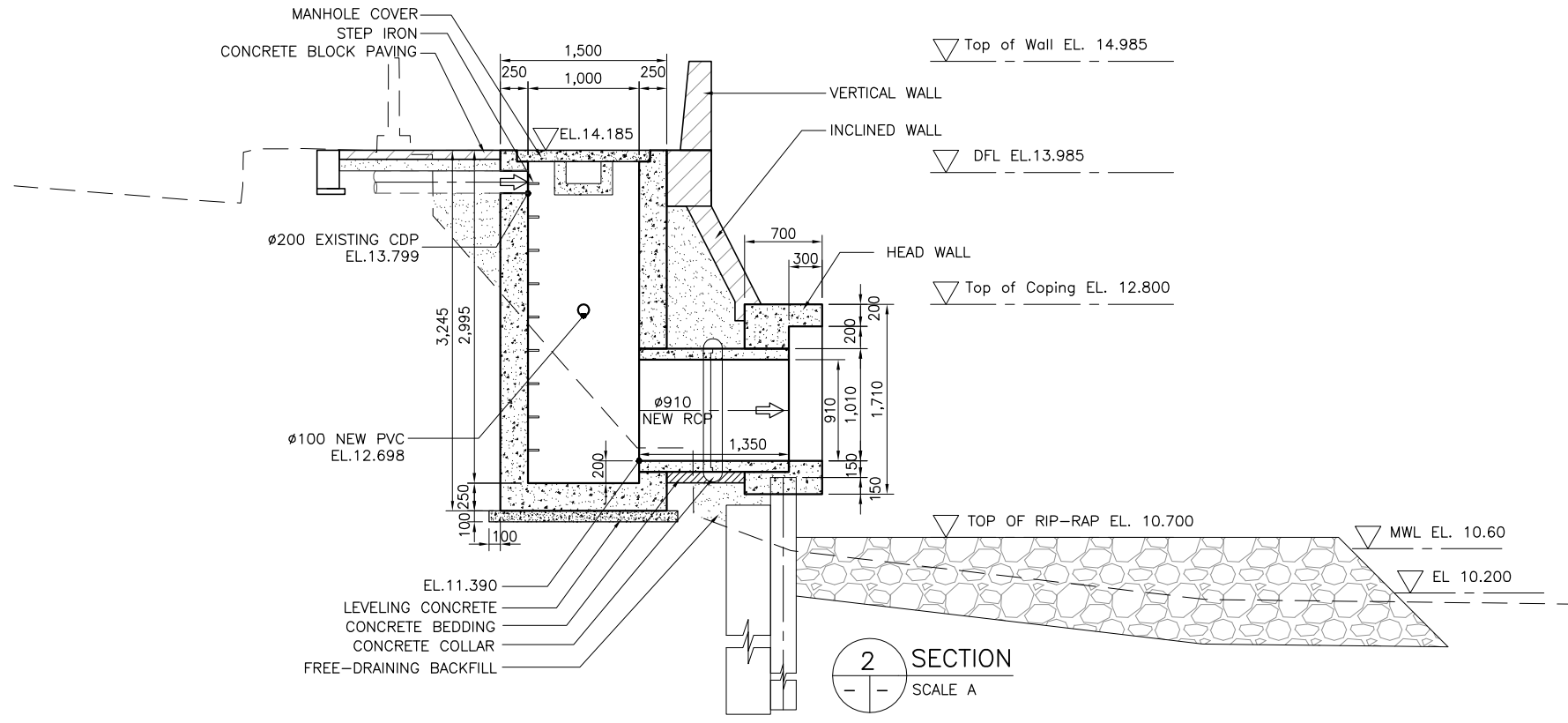




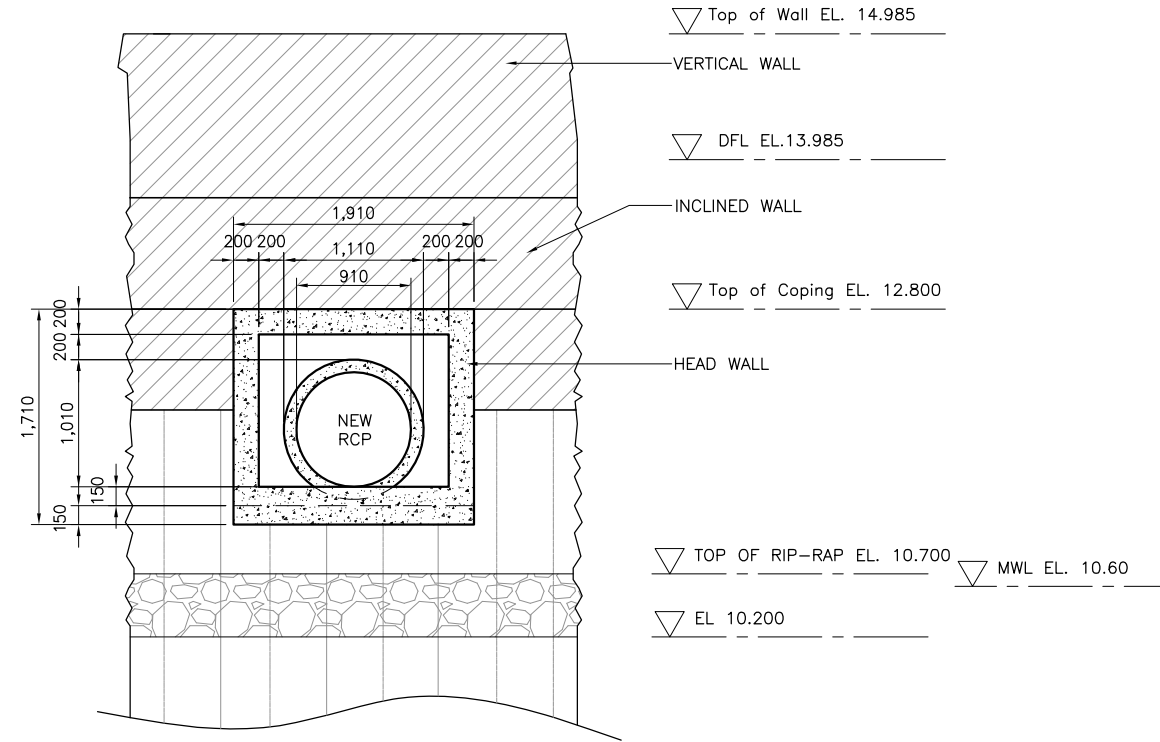
1 PLAN  
SCALE A



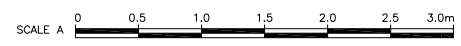
3 SECTION (ML135.4)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER

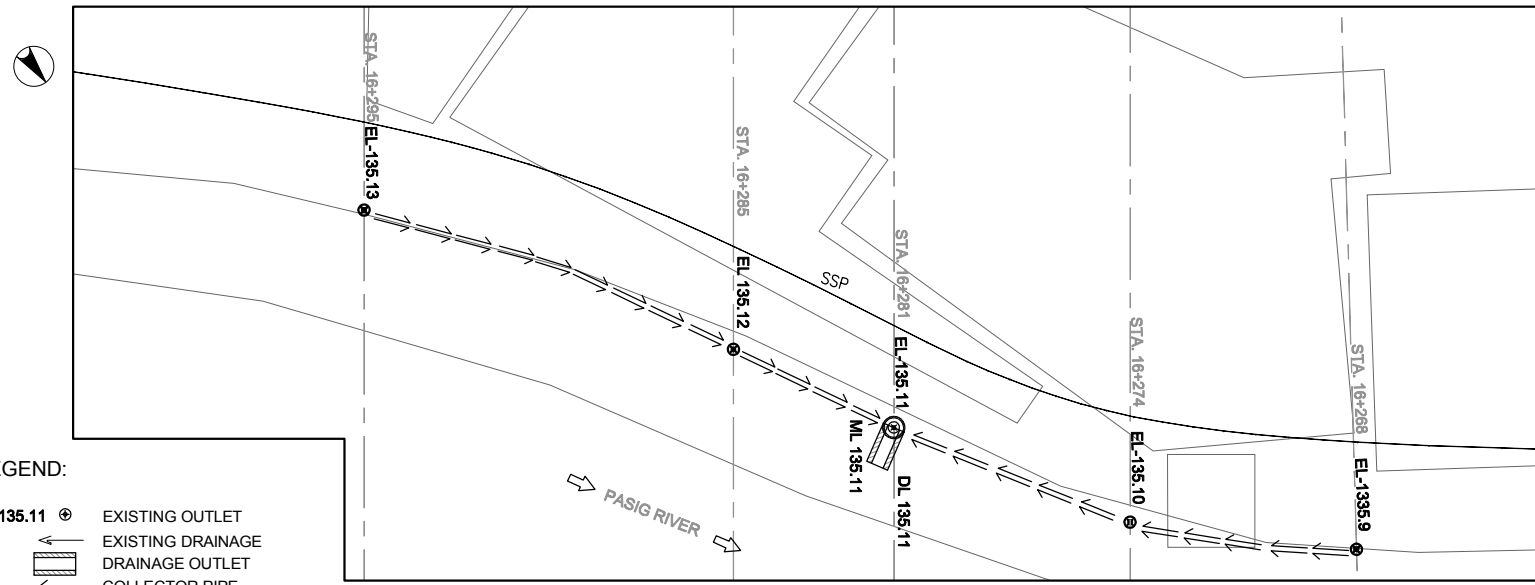


REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL135.4, MANHOLE ML135.4 STA. 16+230 LB	UP-DL/DO/135.4

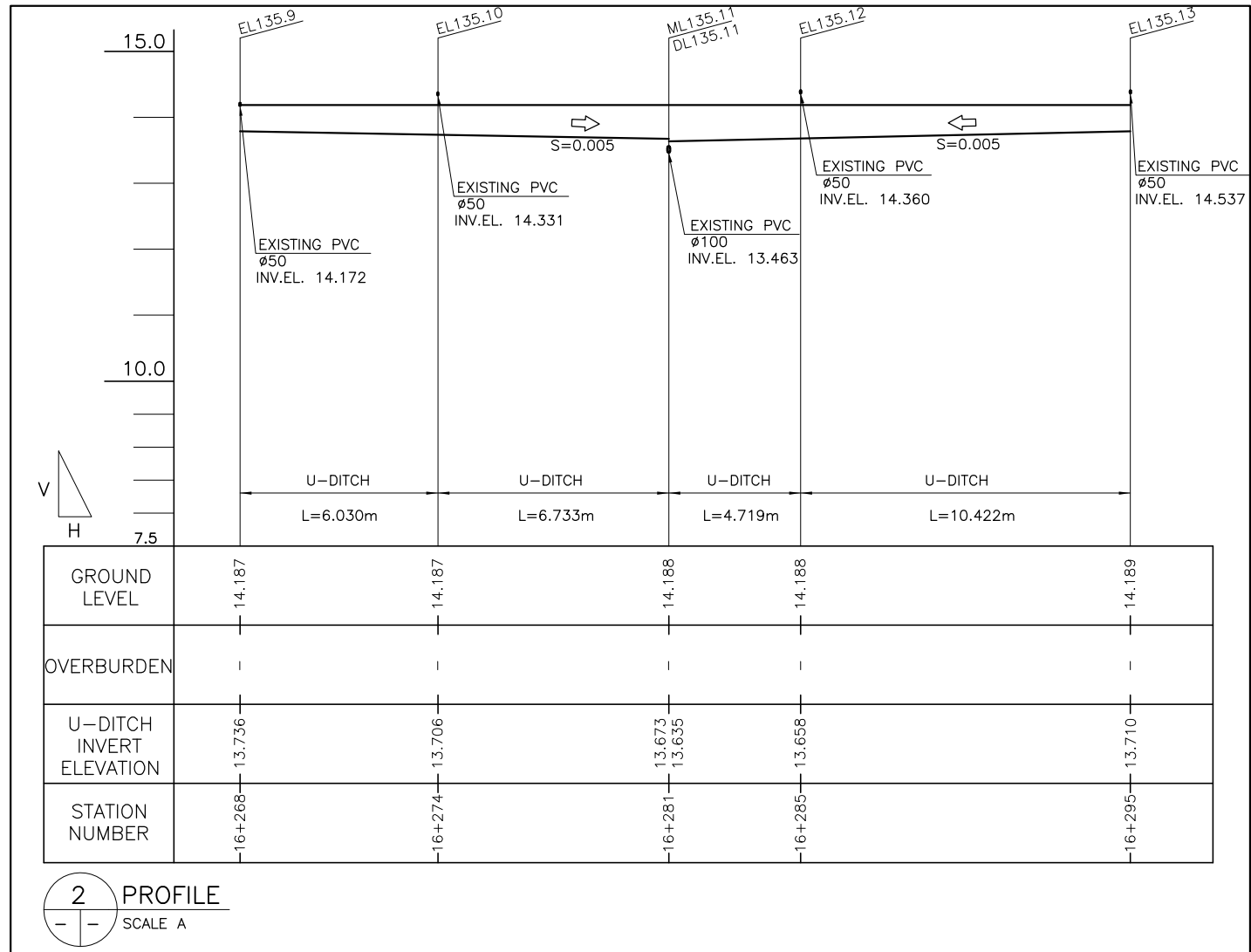




LEGEND:

- EL135.11 ⊕ EXISTING OUTLET
- EXISTING DRAINAGE
- DRAINAGE OUTLET
- COLLECTOR PIPE
- DL135.11 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

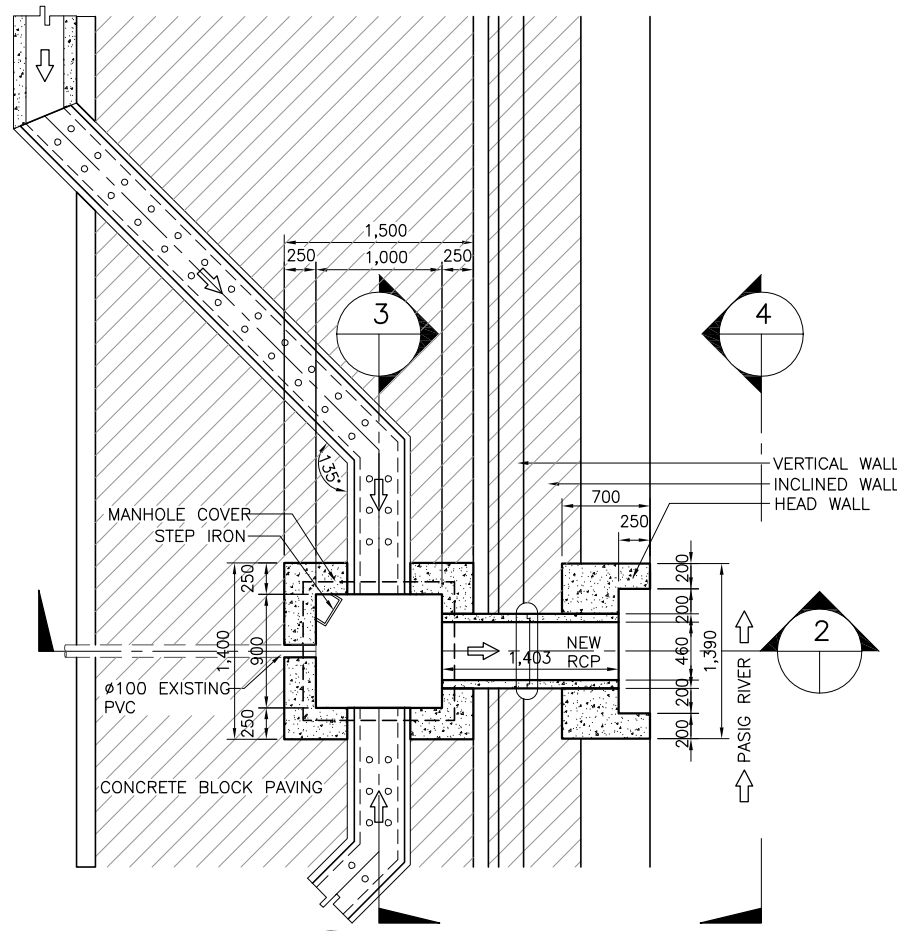
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

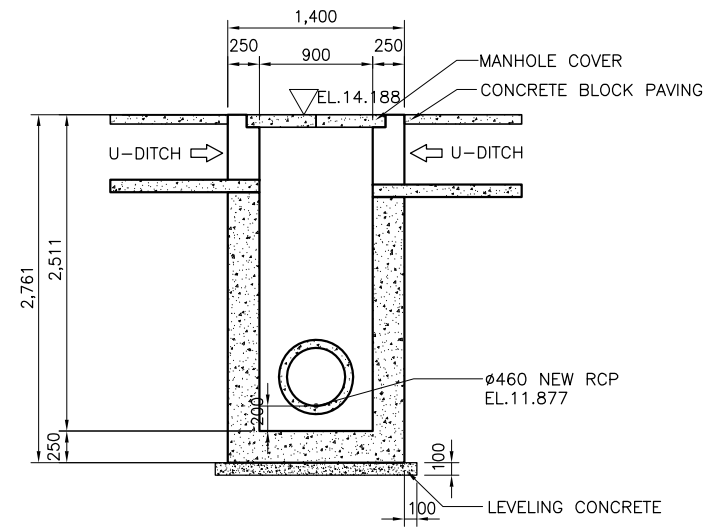
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: PLAN & PROFILE OF U-DITCH COLLECTOR

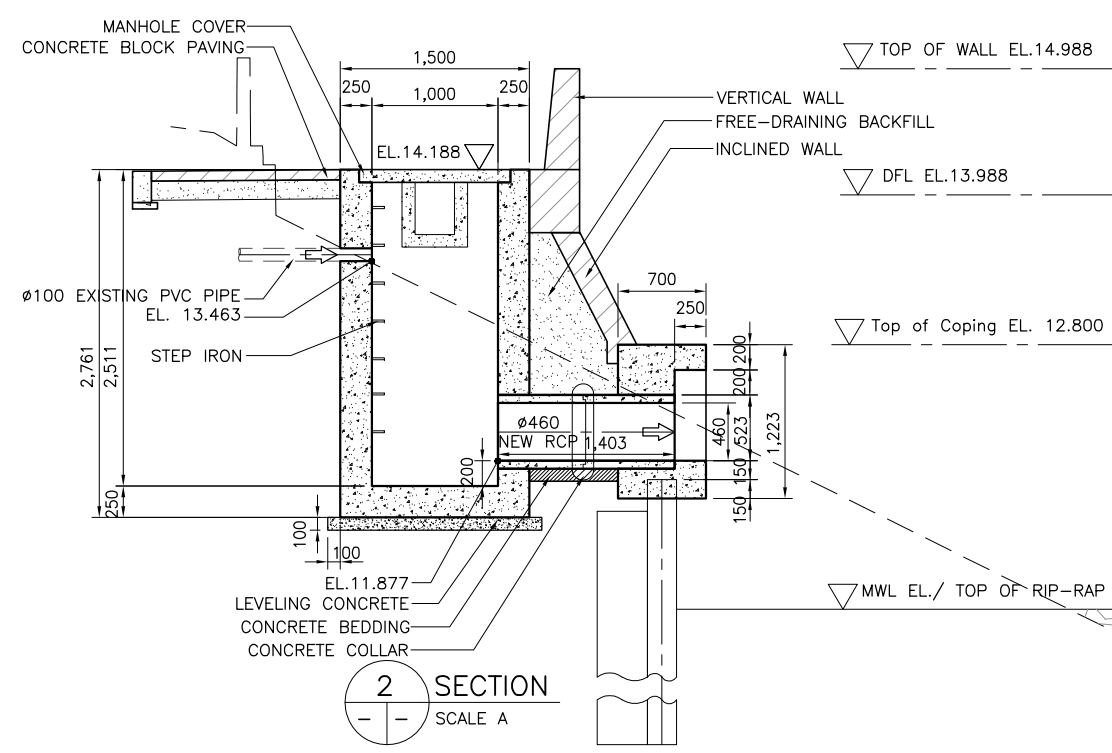
SHEET NO.: UP-DL DO 135.11/P



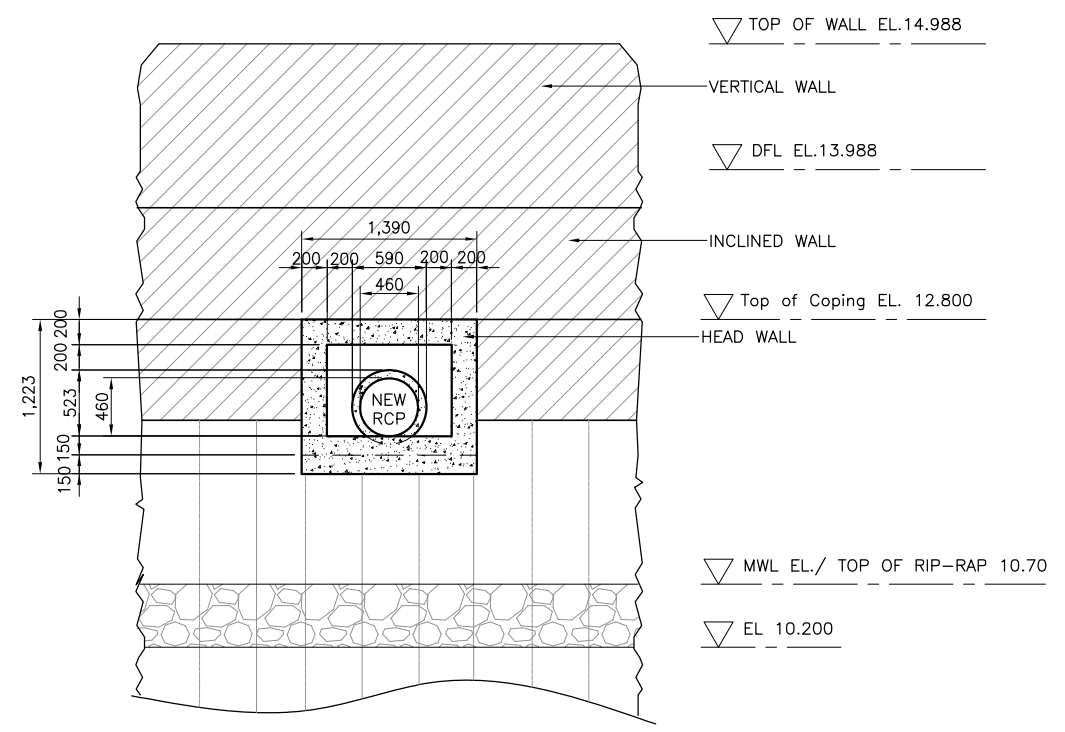
1 PLAN  
SCALE A



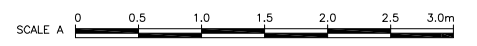
3 SECTION (ML135.22)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

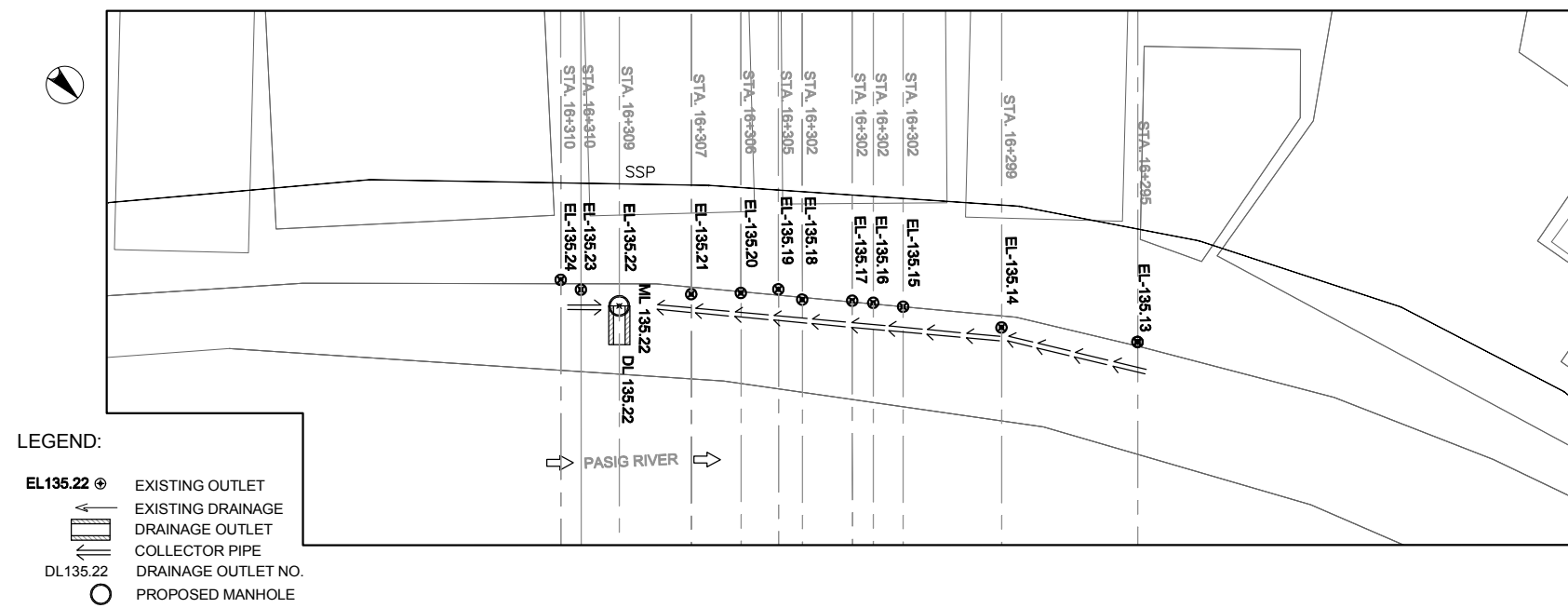


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--

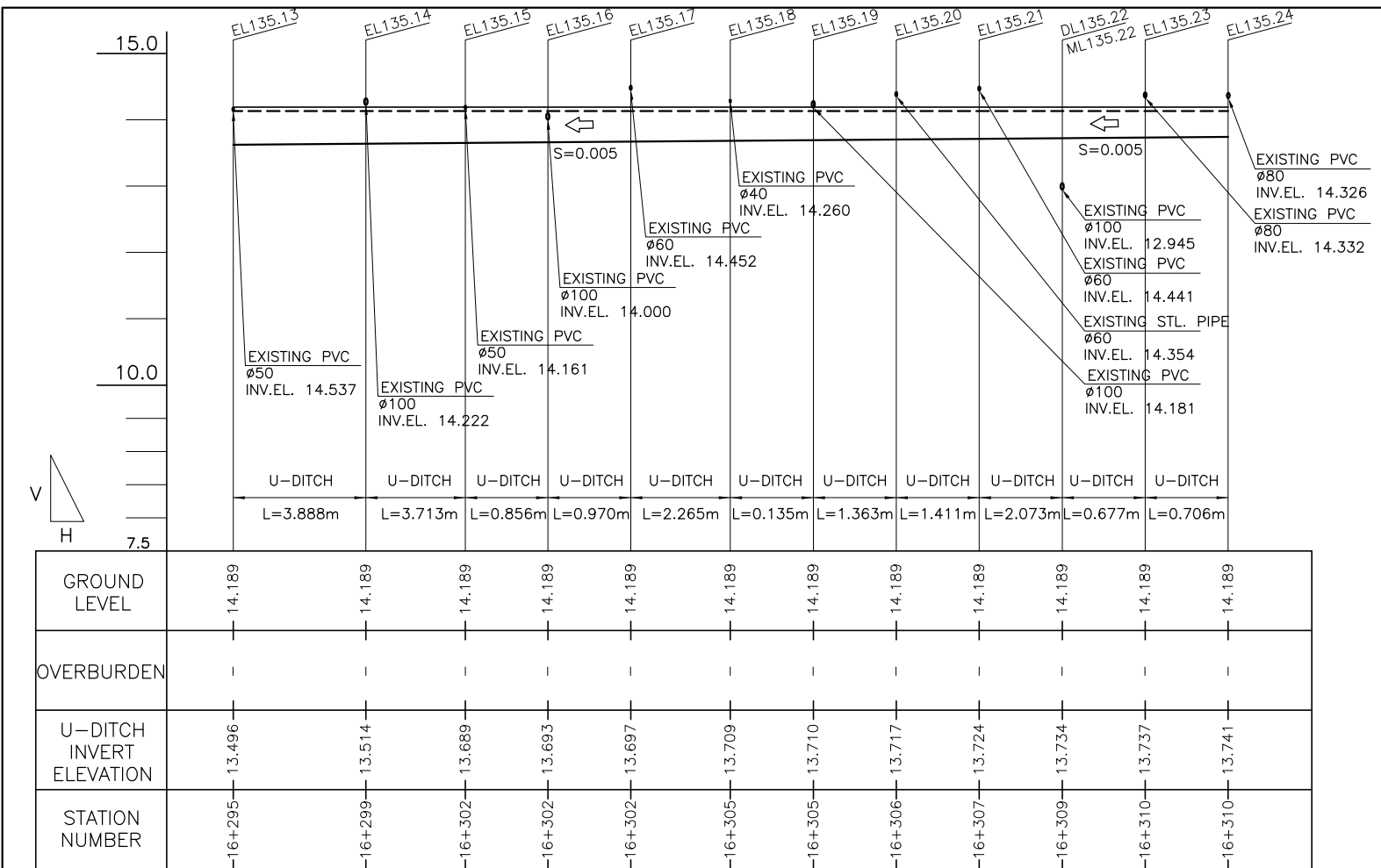


REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL135.11 & MANHOLE ML135.11 STA. 16+281 LB	SHEET NO. UP-DL/DO/135.11
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**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

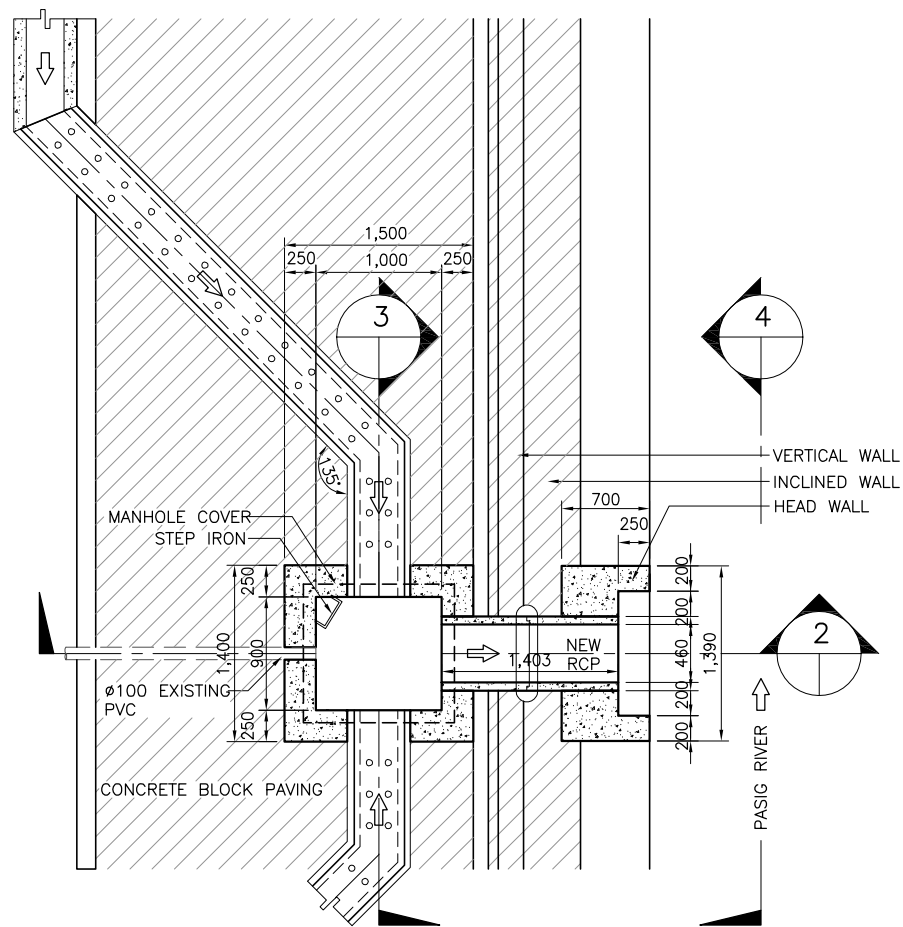


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

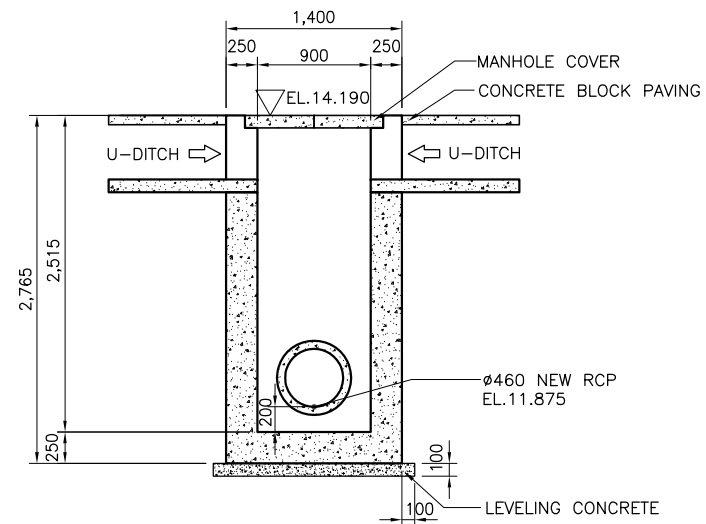
**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

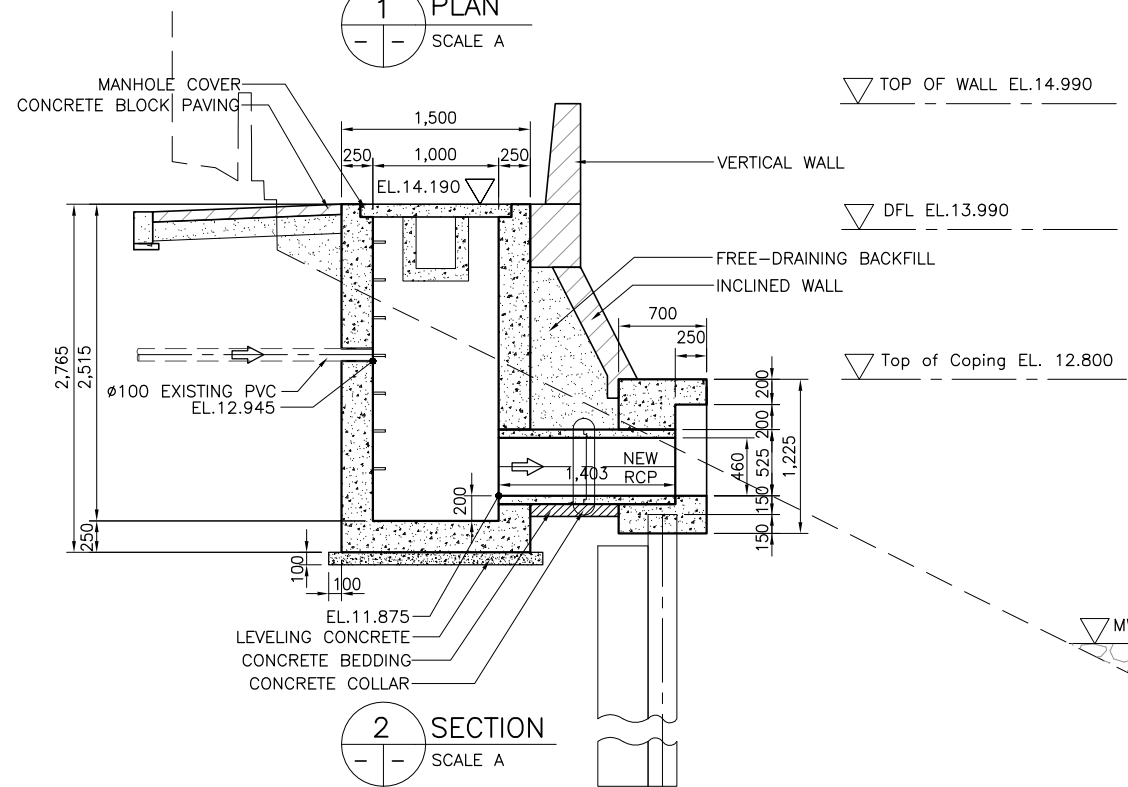
<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> PLAN & PROFILE OF U-DITCH COLLECTOR	<b>SHEET NO.</b> 
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:				
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY		



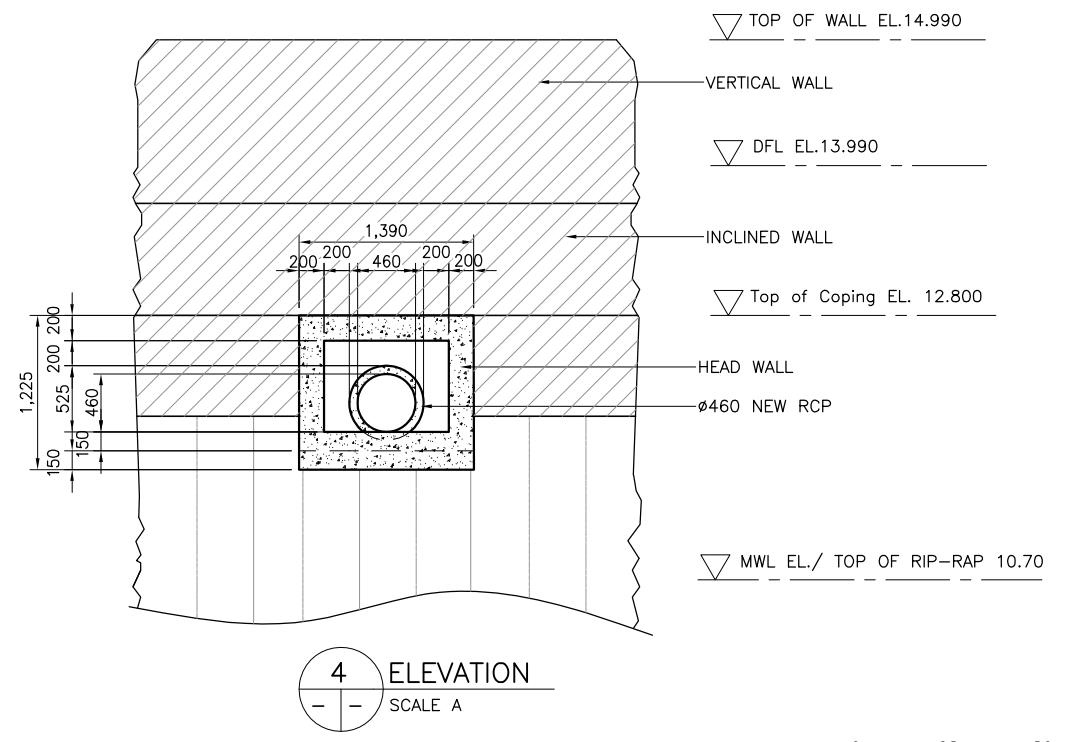
1 PLAN  
SCALE A



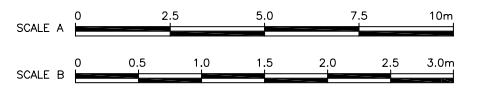
3 SECTION (ML135.22)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

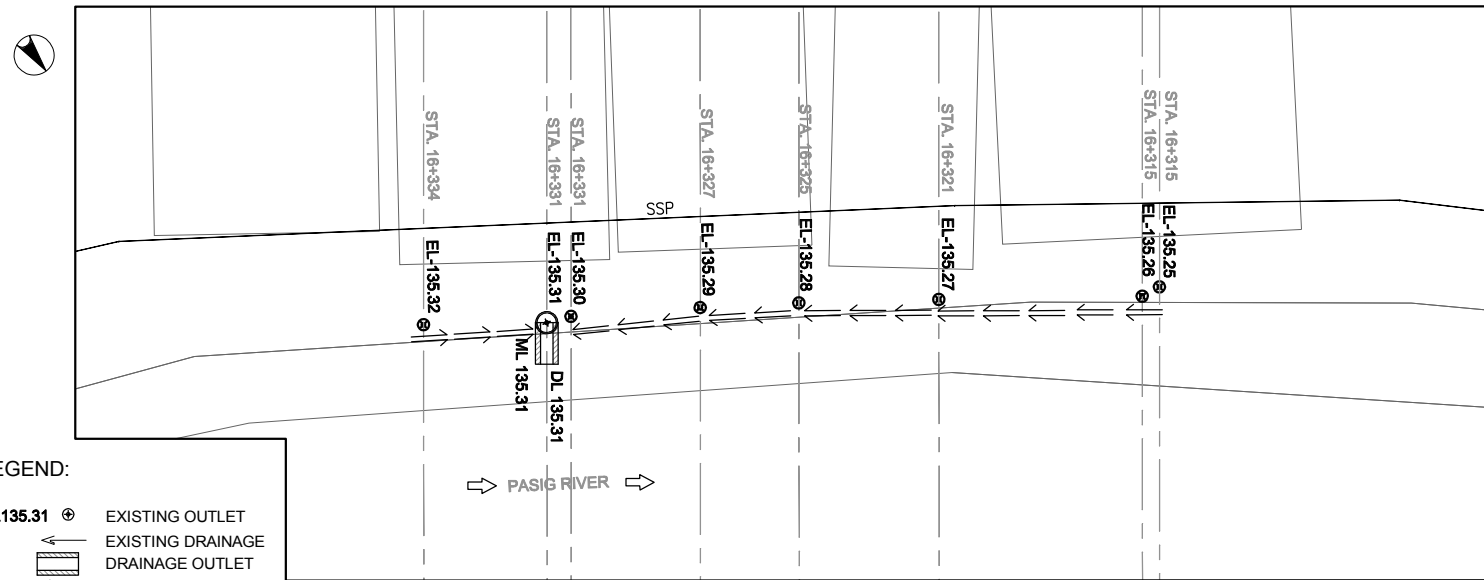


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

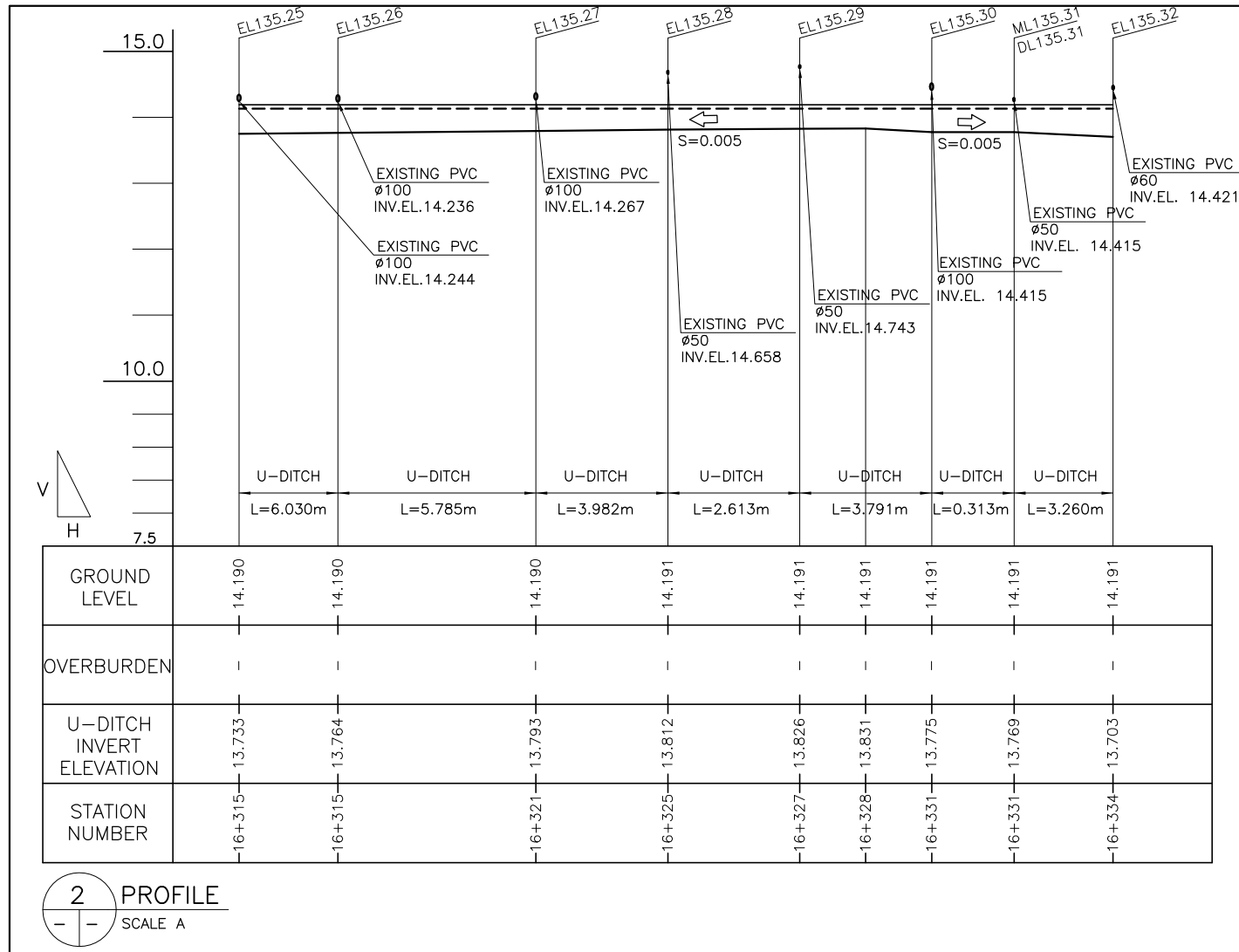
PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DL135.22 & MANHOLE ML135.22 STA. 16+309 LB	SHEET NO. UP-DL DO135.22
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LEGEND:

- EL135.31 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▬ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DL135.31 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

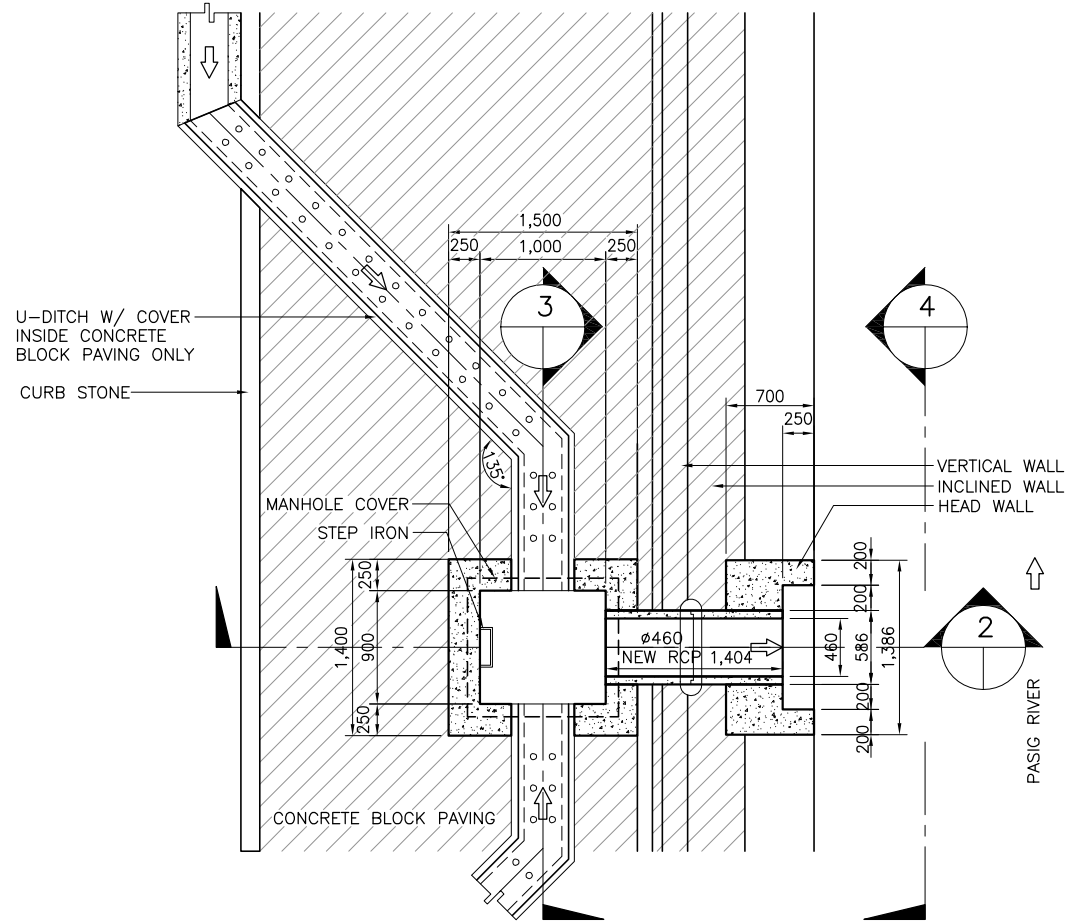
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

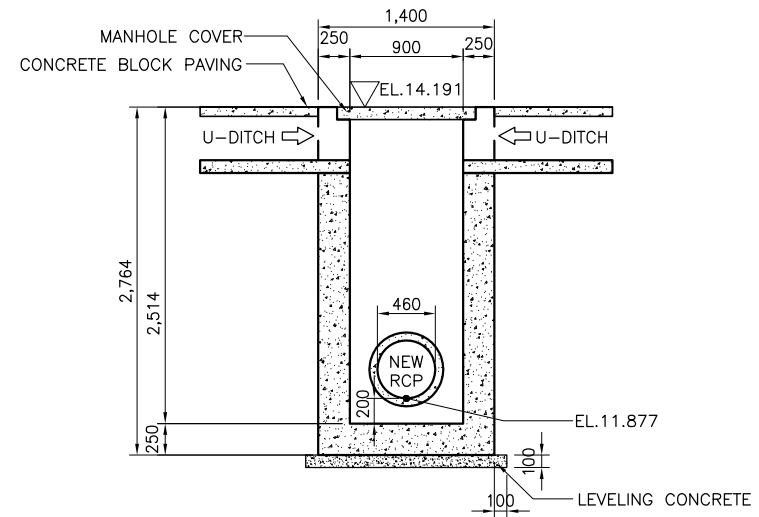
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: PLAN & PROFILE OF U-DITCH COLLECTOR

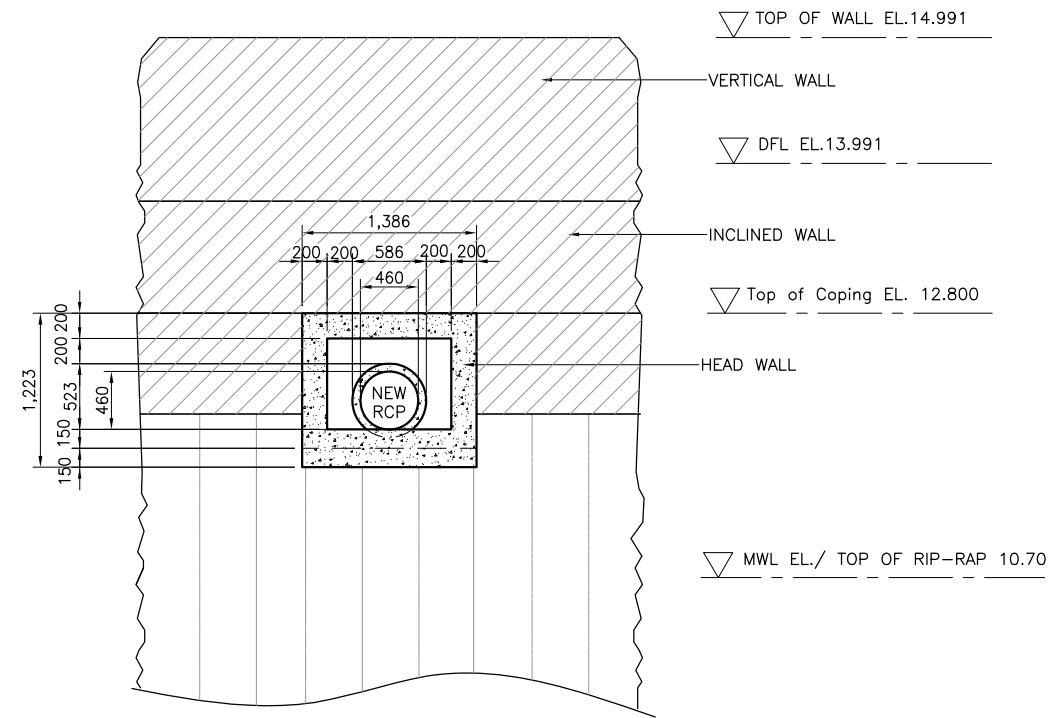
SHEET NO.: UP-DL/DO 135.31/P



1 PLAN  
SCALE A



3 SECTION (ML135.31)  
SCALE A



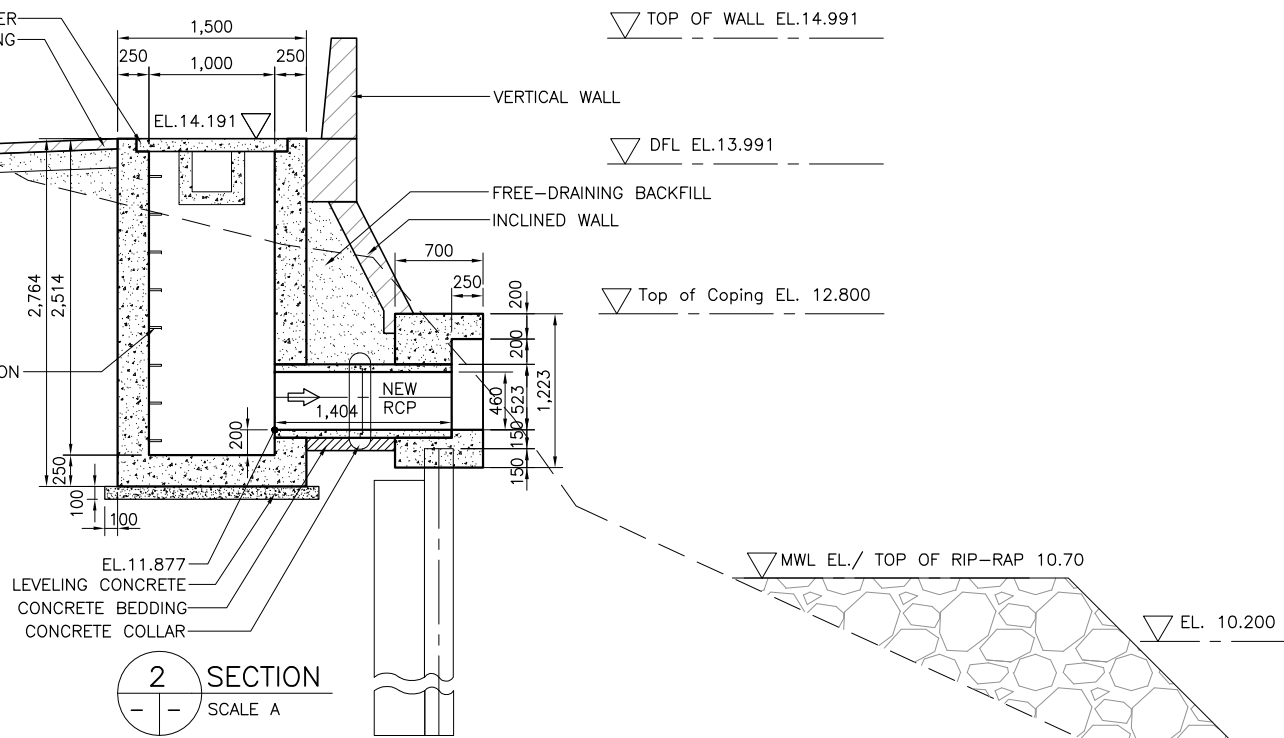
4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE



2 SECTION  
SCALE A

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

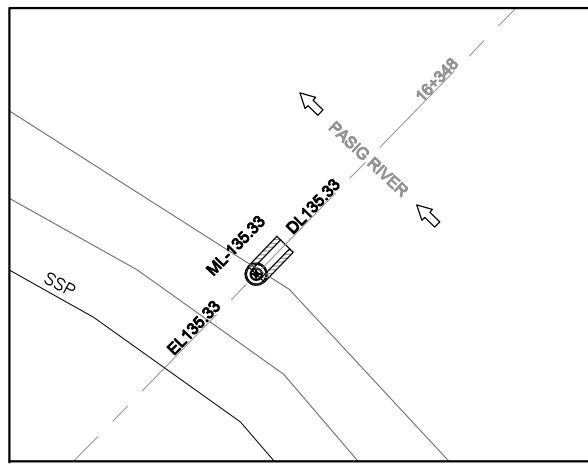
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE  
OUTLET- DL135.31 &  
MANHOLE ML135.31  
STA. 16+331 LB

SHEET NO.

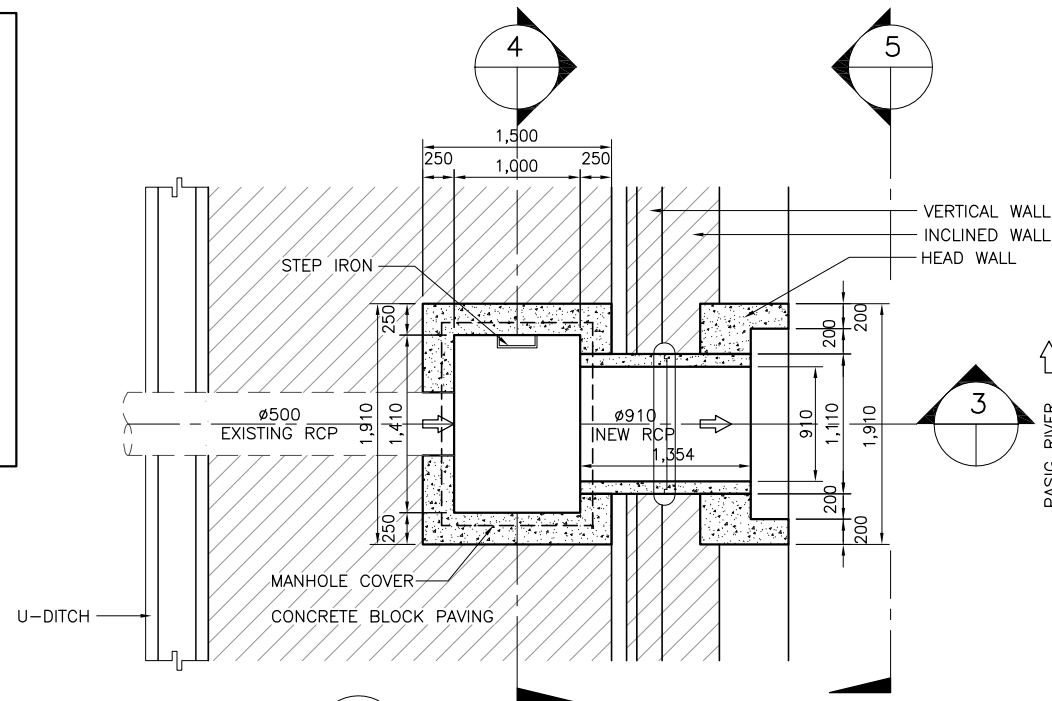




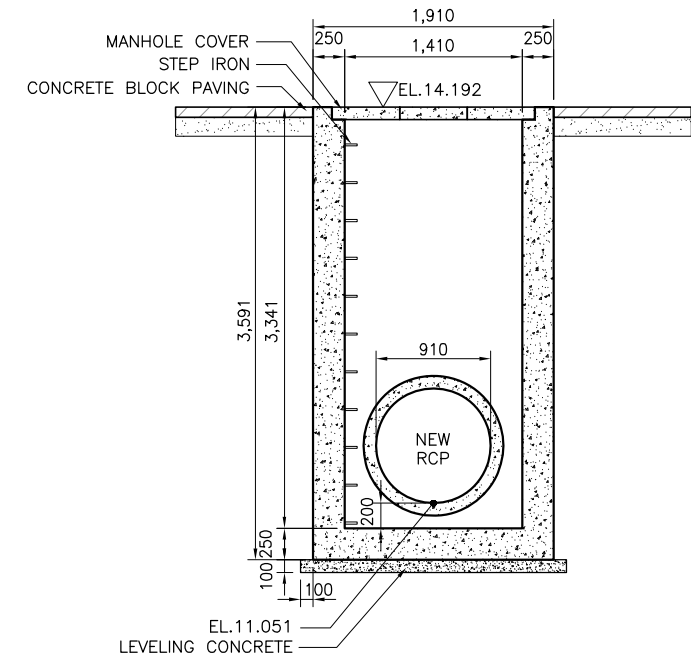
LEGEND:

- EL.135.33 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ⇄ COLLECTOR PIPE
- DL135.33 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

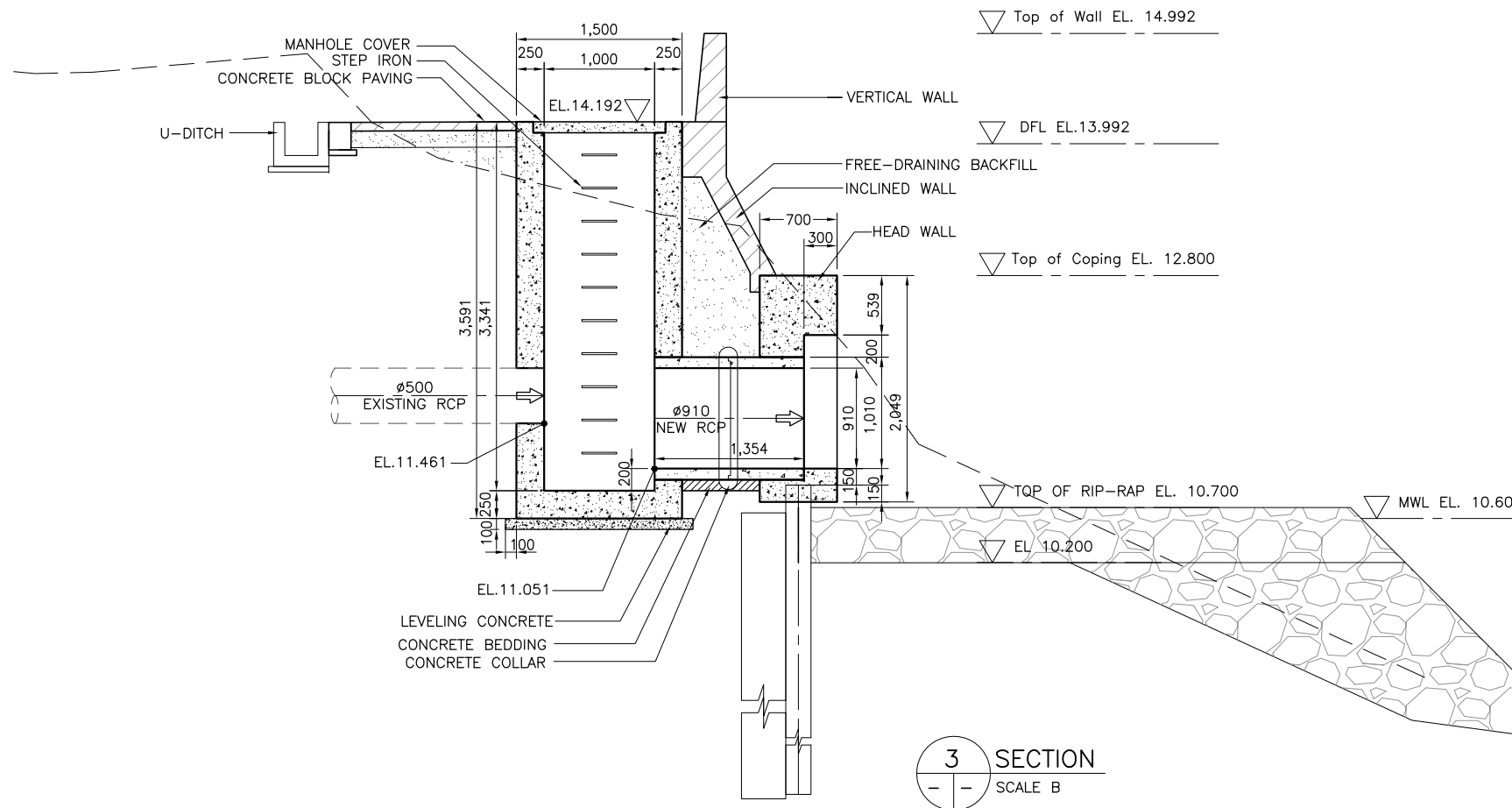
1 DRAINAGE PLAN  
SCALE A



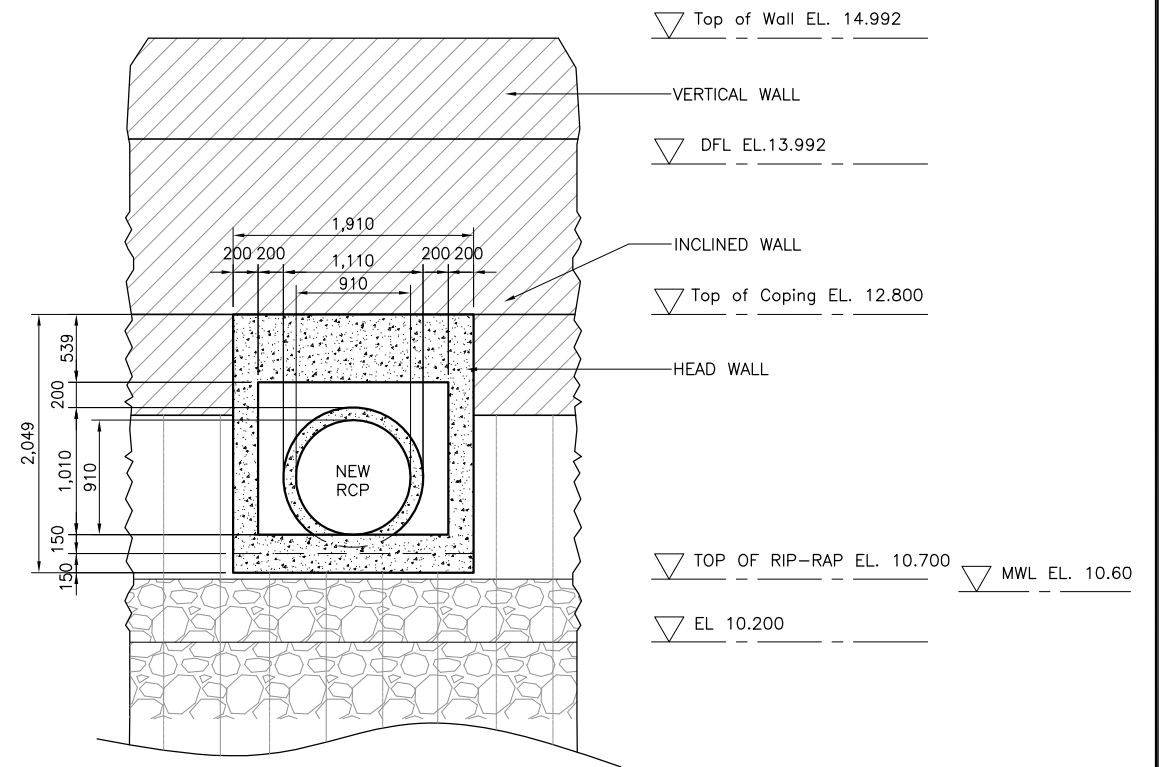
2 PLAN  
SCALE B



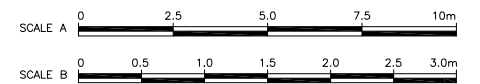
4 SECTION (ML135.33)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

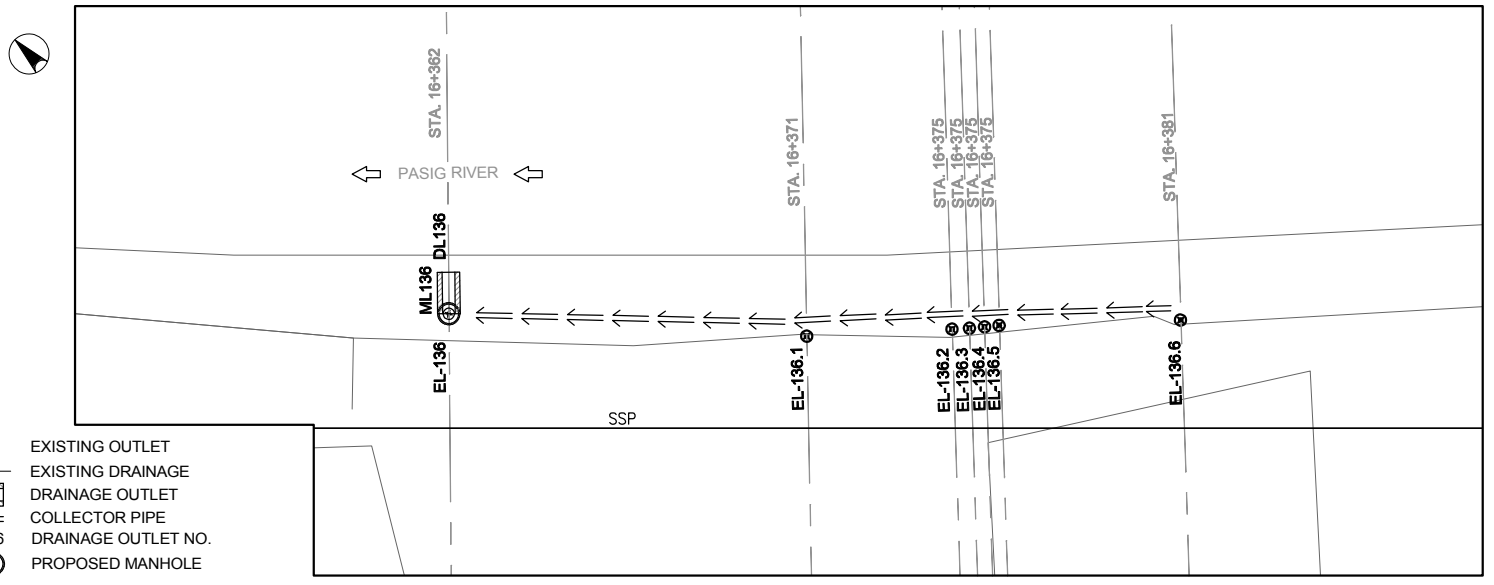
APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL135.33 & MANHOLE ML135.33 STA. 16+030 LB

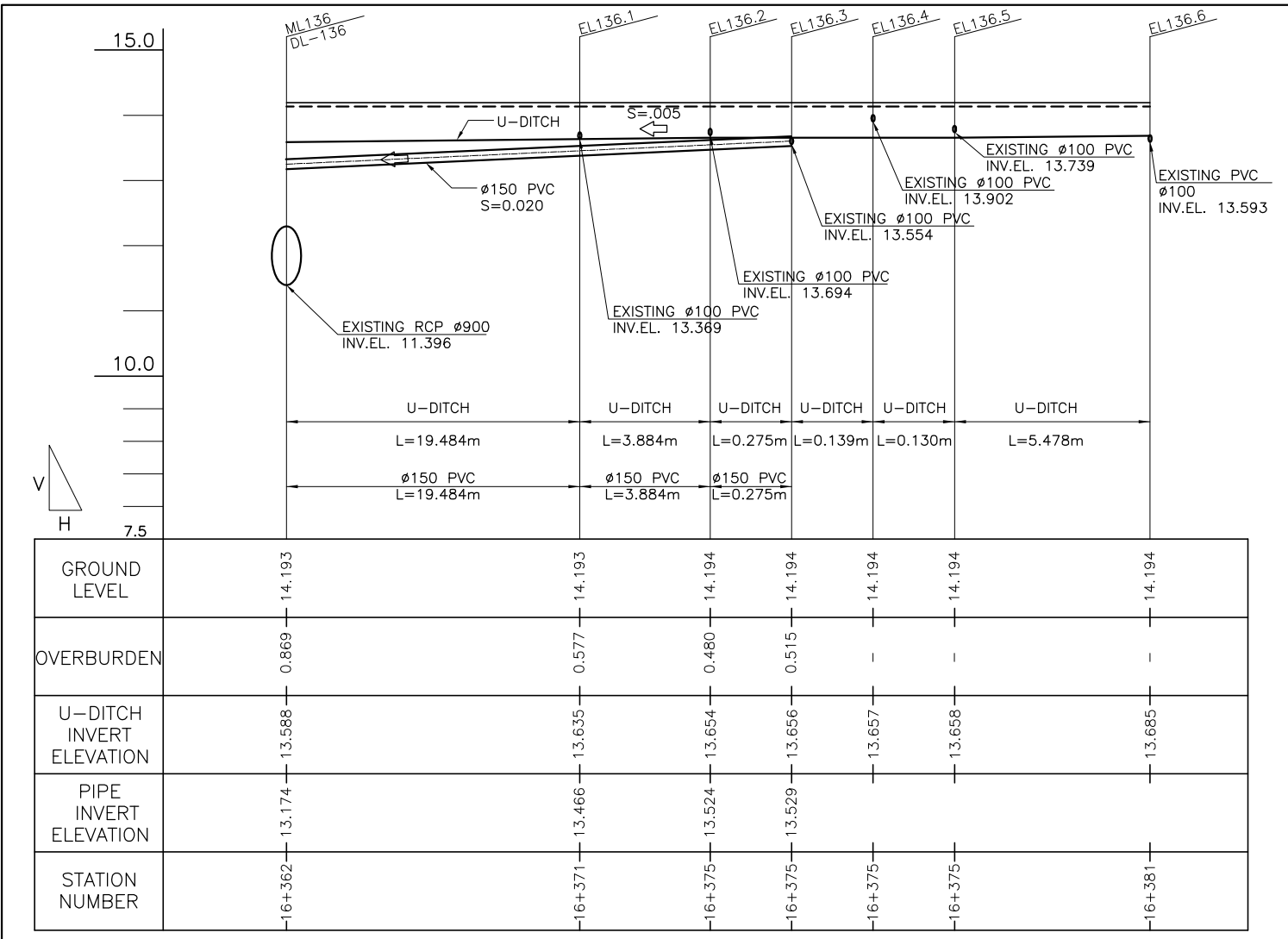
SHEET NO.: UP-DL DO/135.33





- LEGEND:**
- EL136 ⊕ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DL 136 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



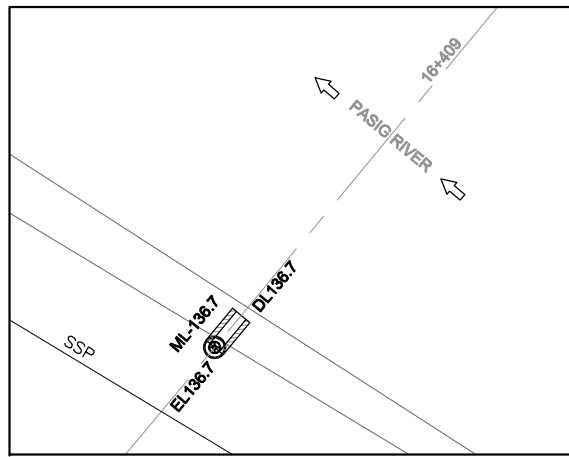
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH	<b>SHEET NO.</b> 
<b>DESIGNED BY:</b> KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	<b>CHECKED BY:</b> TOSHIKI KAWAKAMI <small>THE CHECKER</small>	<b>SUBMITTED BY:</b> SHUJI KAKU <small>TEAM LEADER</small>	<b>REVIEWED BY:</b> PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	<b>RECOMMENDING APPROVAL:</b> PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	<b>APPROVED BY:</b> RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>		

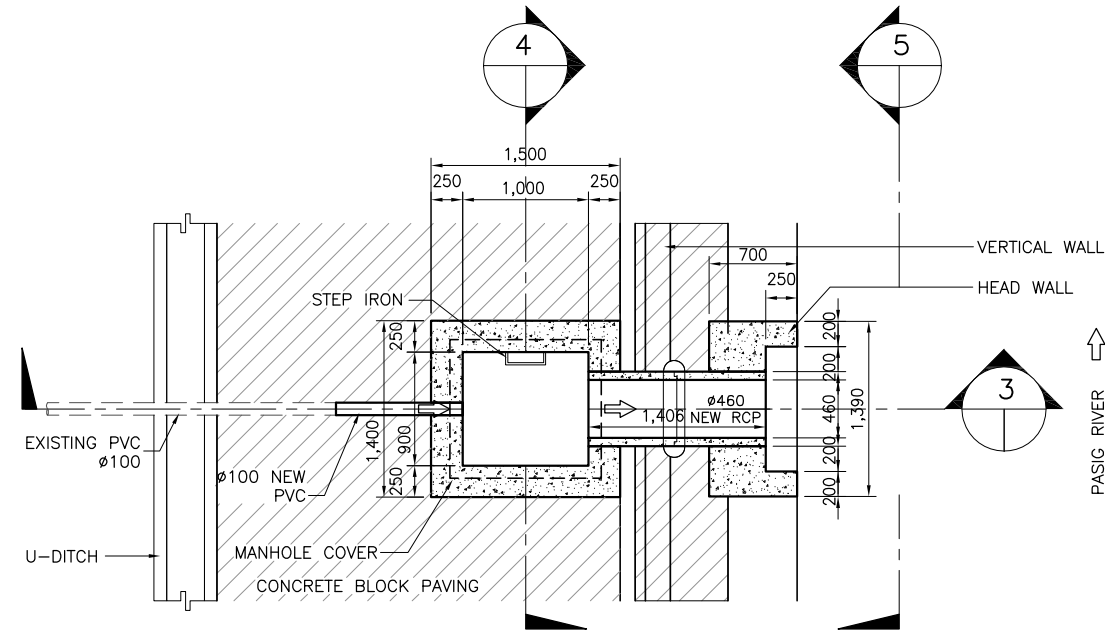




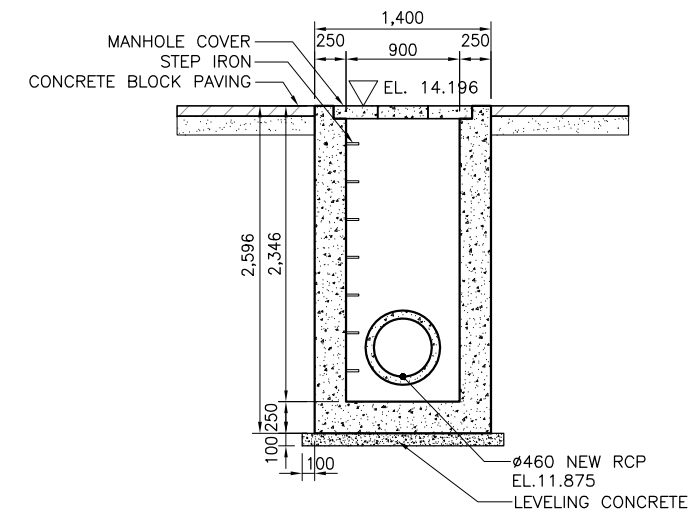
LEGEND:

- EL136.7 @ EXISTING OUTLET
- EXISTING DRAINAGE
- DRAINAGE OUTLET
- COLLECTOR PIPE
- DL136.7 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

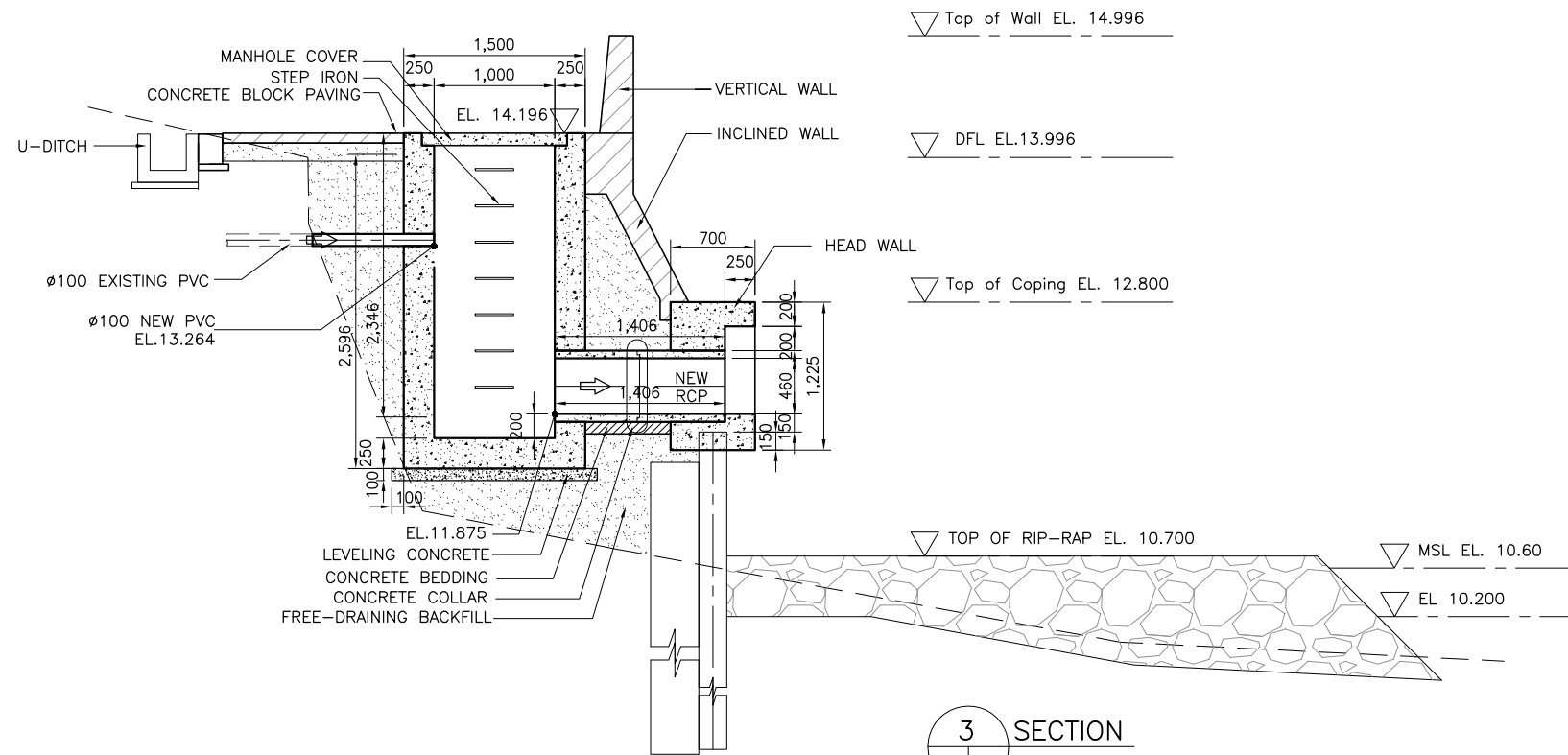
1 DRAINAGE PLAN  
SCALE A



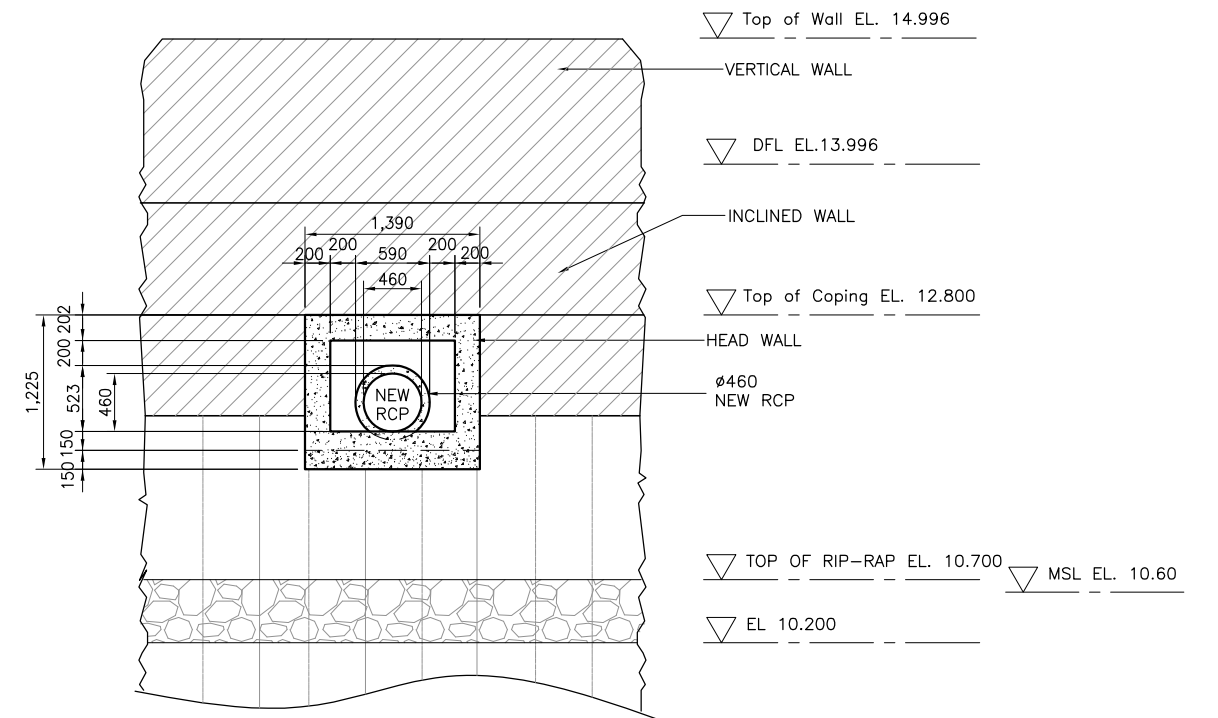
2 PLAN  
SCALE B



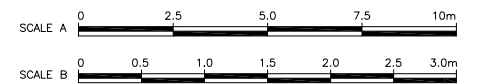
4 SECTION (DL136.7)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

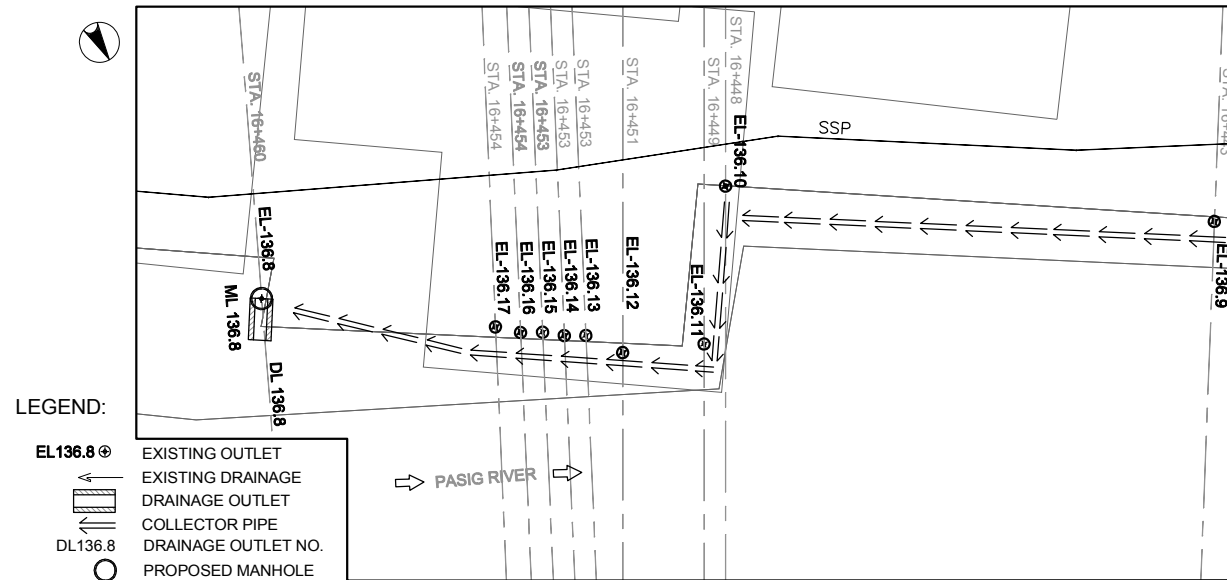
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL136.7 & MANHOLE ML136.7 STA. 16+409 LB

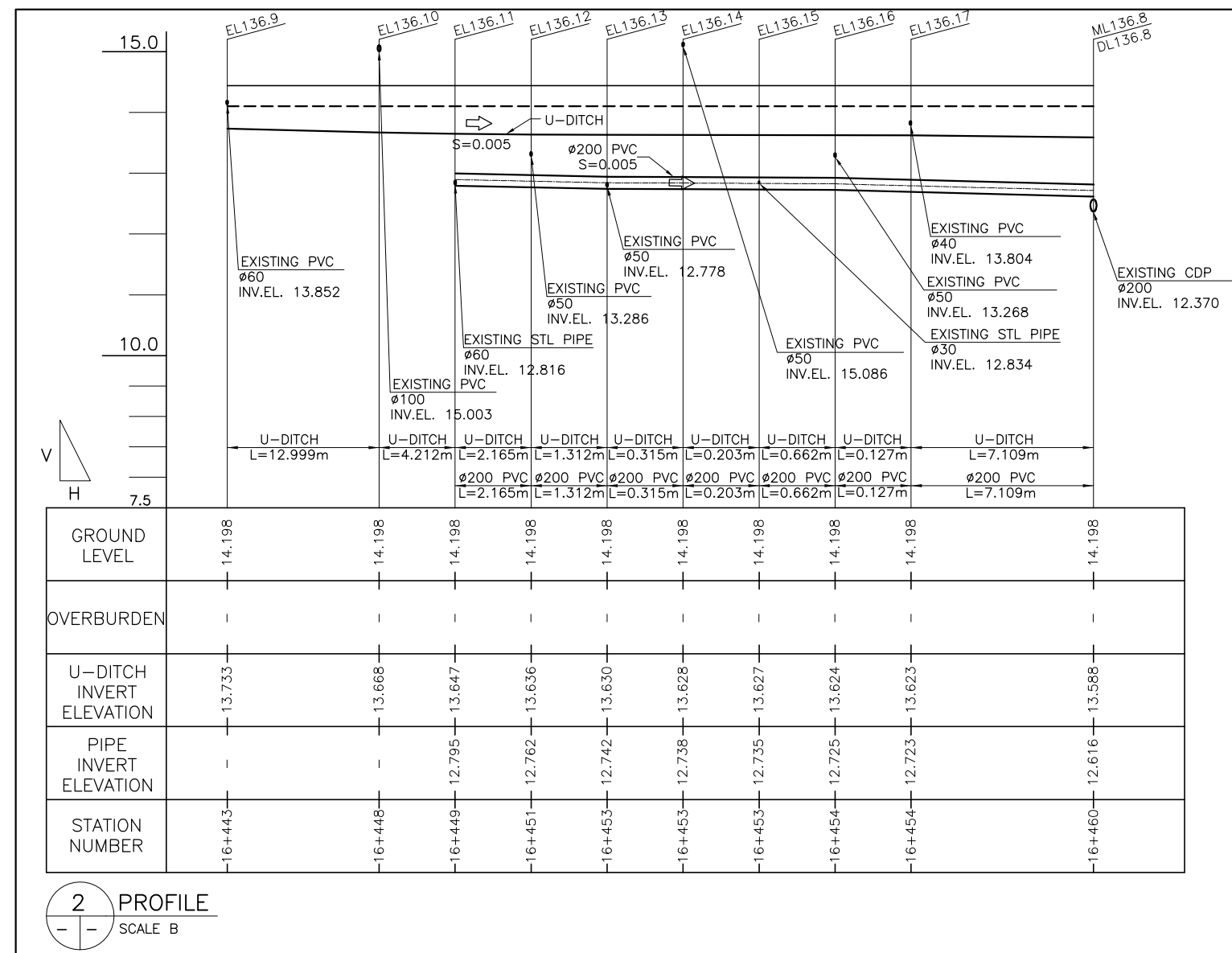
SHEET NO.: UP-DL/DO/136.7



LEGEND:

- EL 136.8 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ⇄ COLLECTOR PIPE
- DL 136.8 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY:	RECOMMENDING APPROVAL :	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

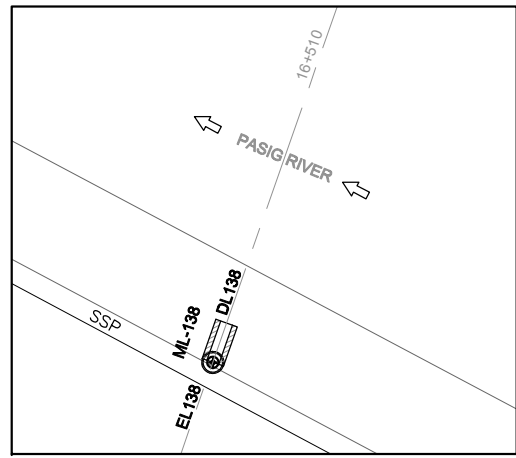
PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH

SHEET NO.  
UP-DL  
DO/136.8/P

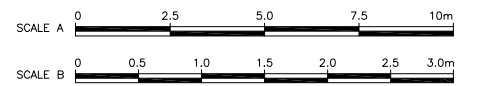
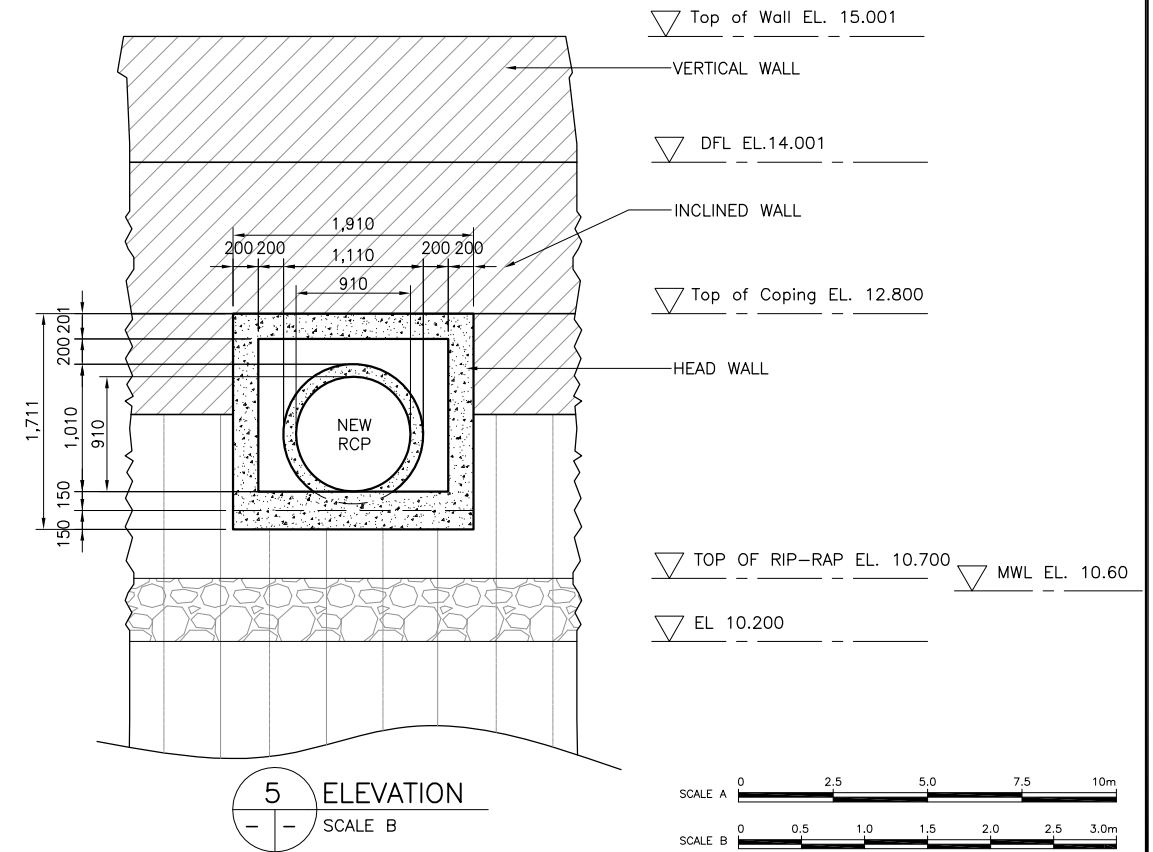
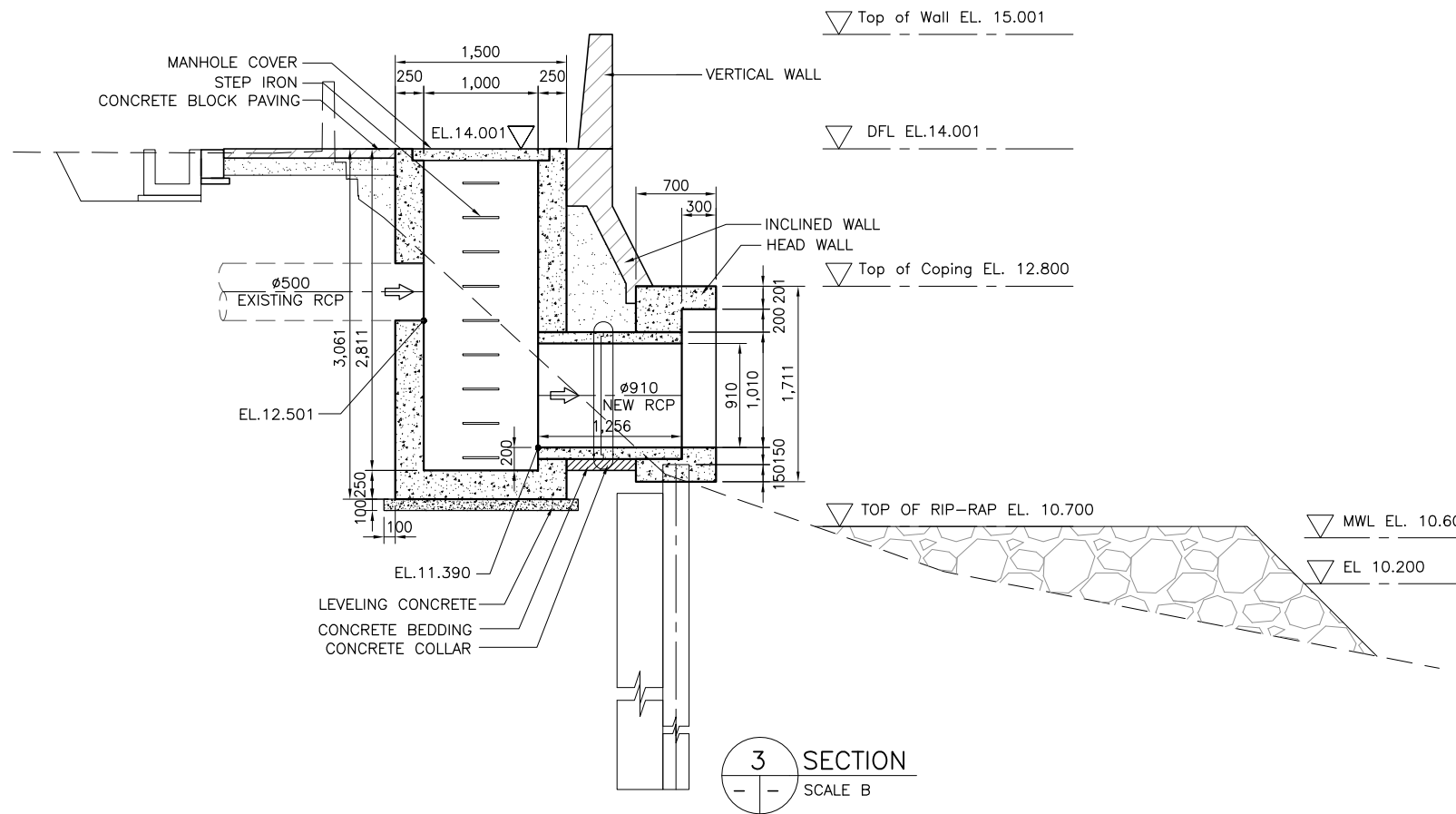
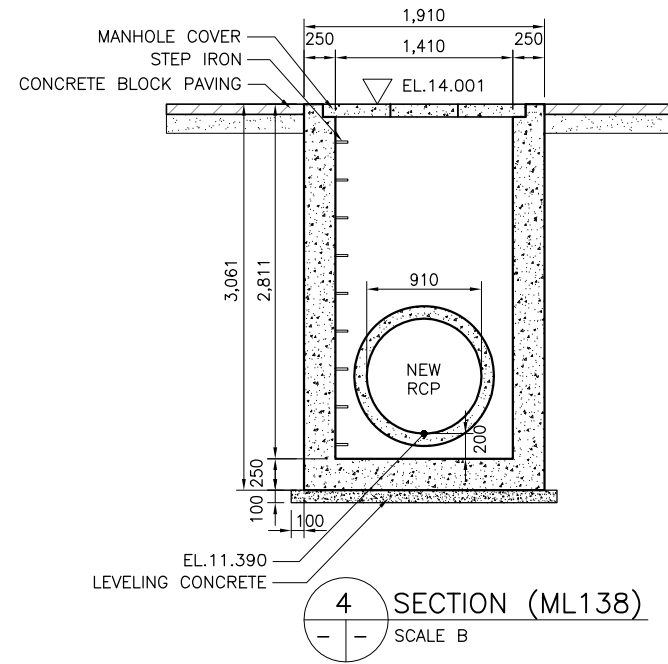
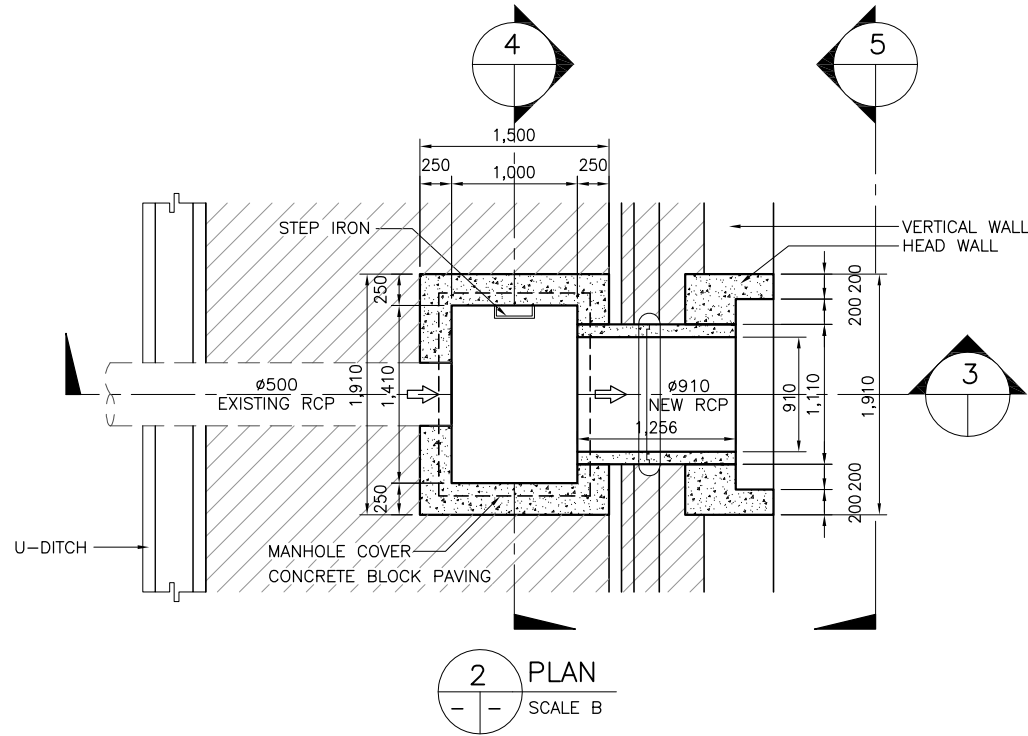






- LEGEND:**
- EL 138 @ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▨ DRAINAGE OUTLET
  - ▭ COLLECTOR PIPE
  - DL138 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

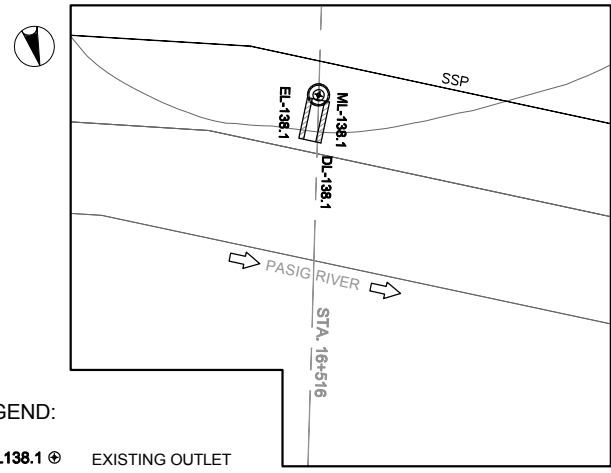
RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

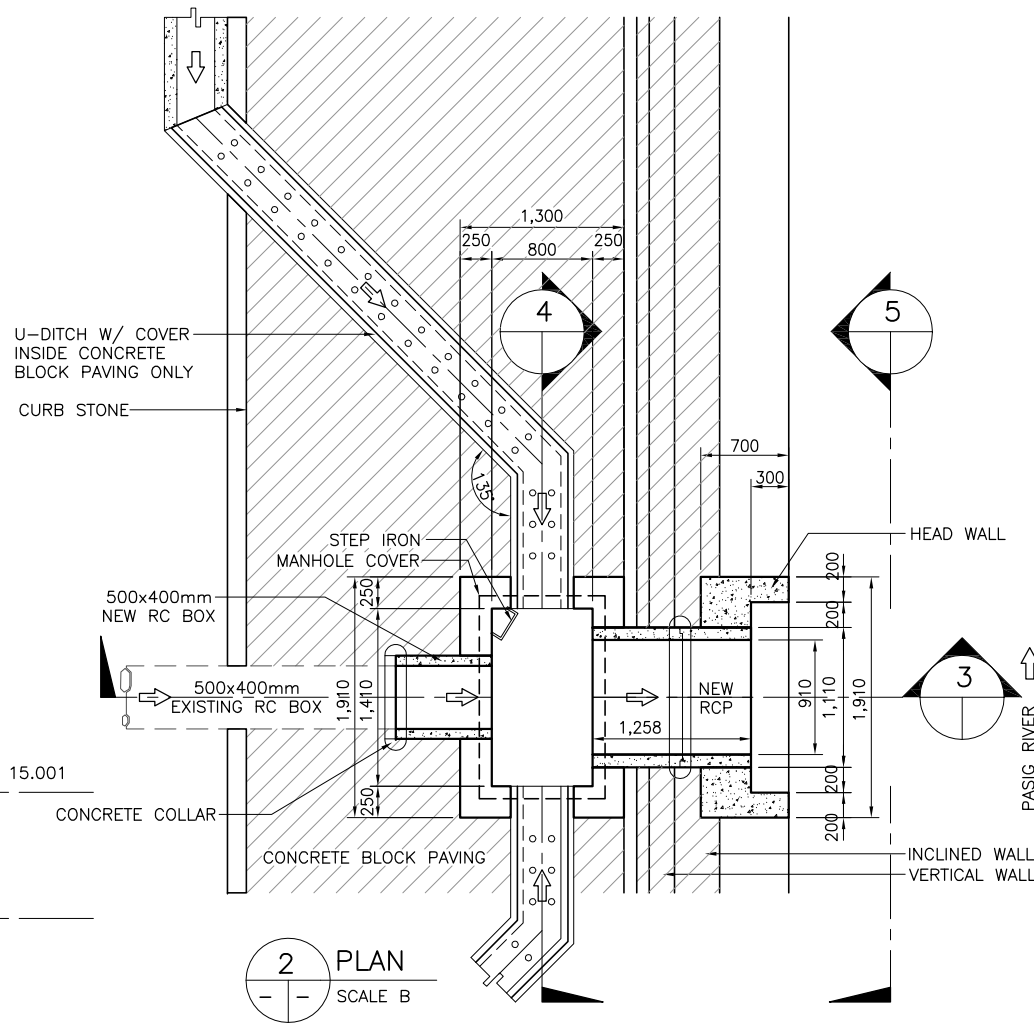
SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DL138 & MANHOLE ML138 STA. 16+510 LB

SHEET NO.: UP-DL DO138

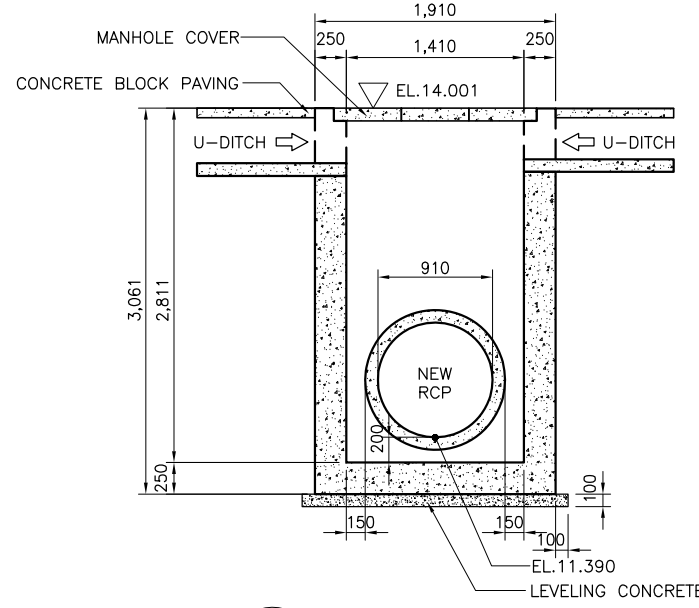


- LEGEND:**
- EL138.1 ⊕ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▬ DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DL138.1 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

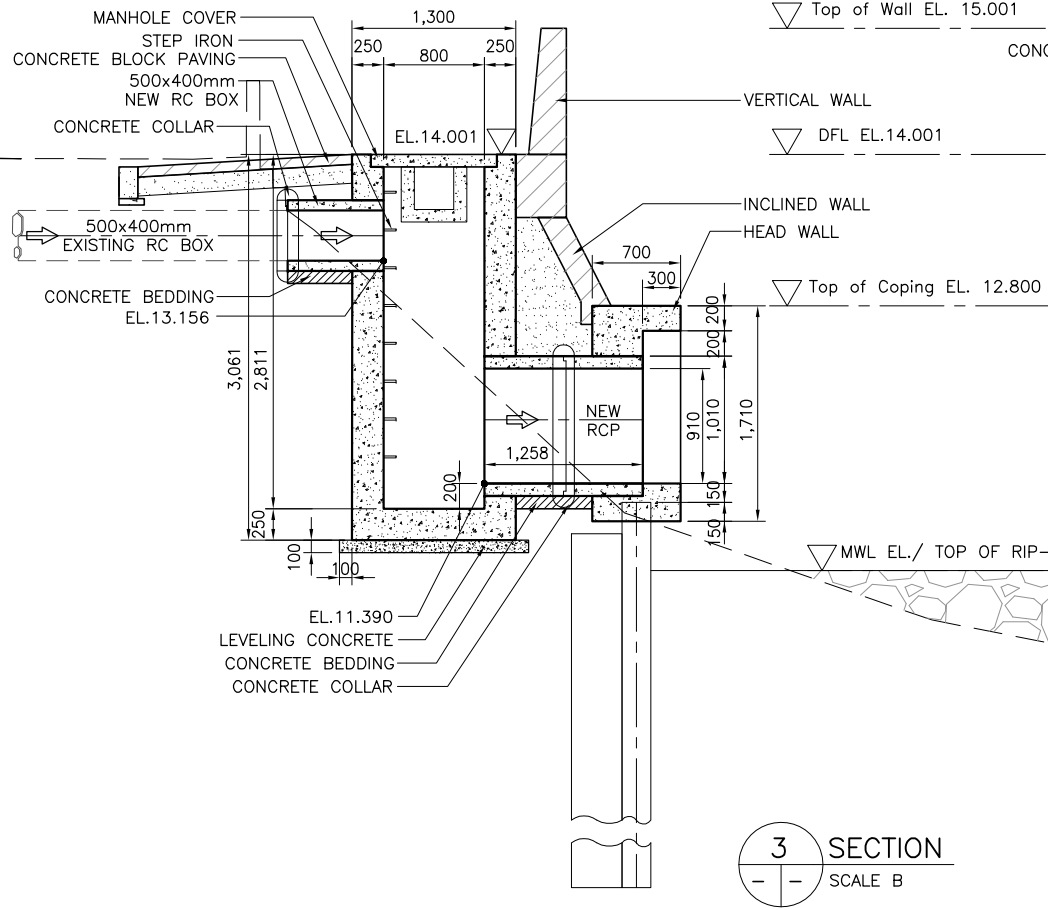
**1 DRAINAGE PLAN**  
SCALE A



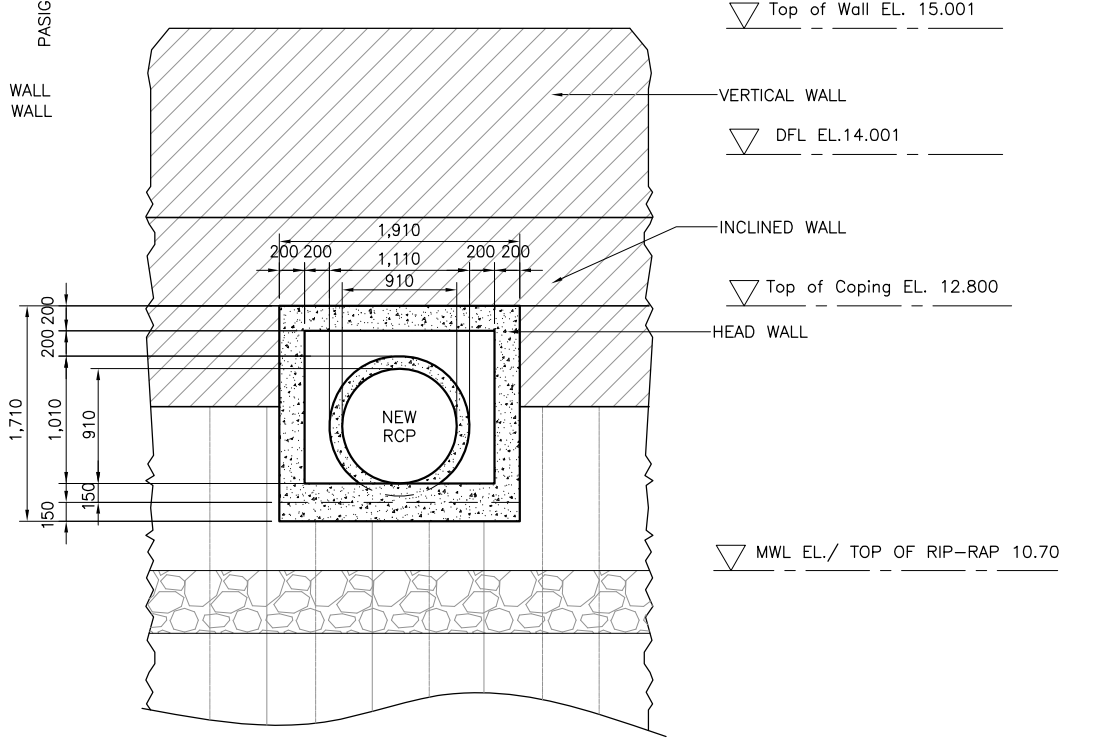
**2 PLAN**  
SCALE B



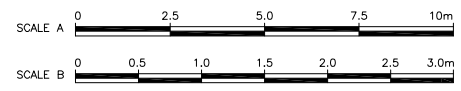
**4 SECTION (ML138.1)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER

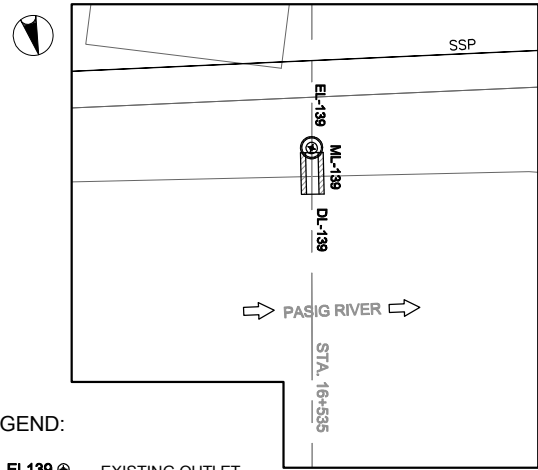


REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY	

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DL138.1 & MANHOLE ML138.1 STA. 16+516 LB	UP-DL/DO/138.1

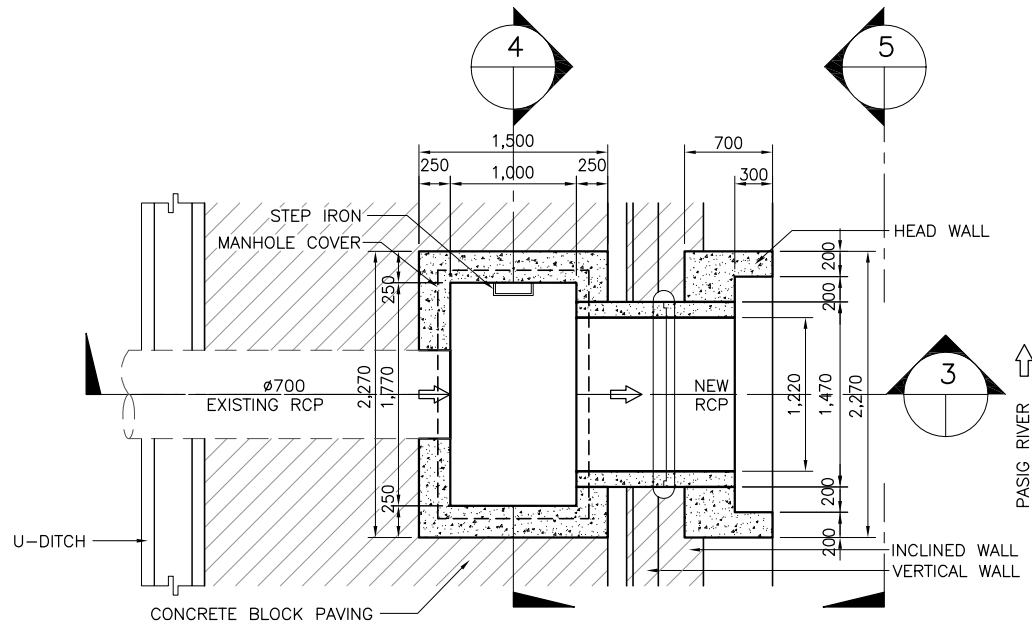




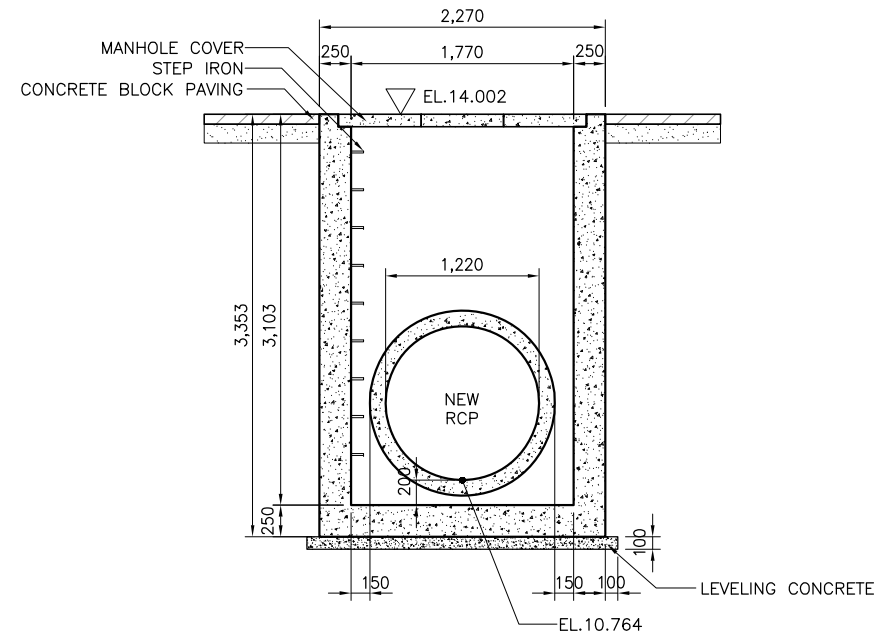
LEGEND:

- EL139 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- DRAINAGE OUTLET
- COLLECTOR PIPE
- DL139 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

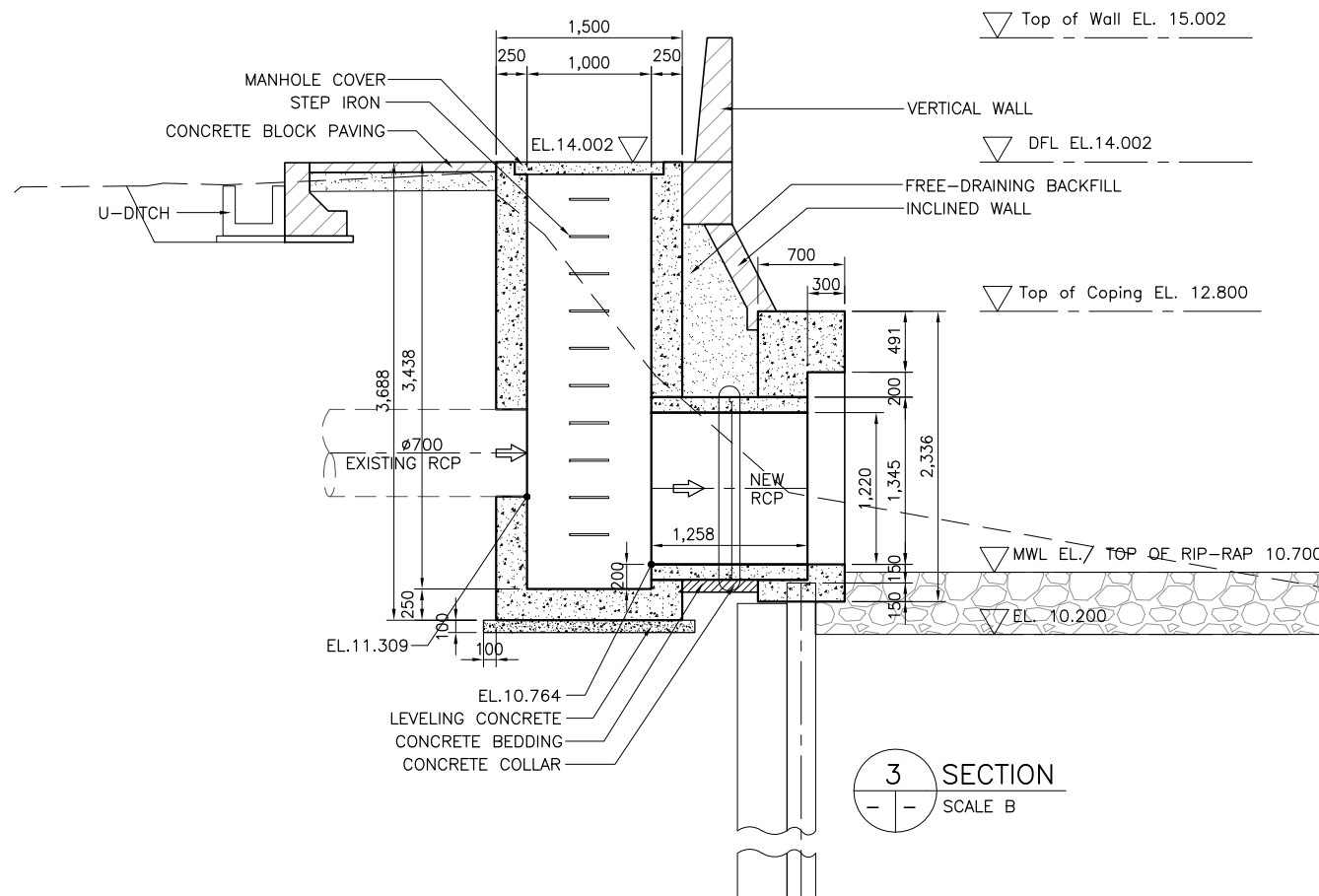
1 DRAINAGE PLAN  
SCALE A



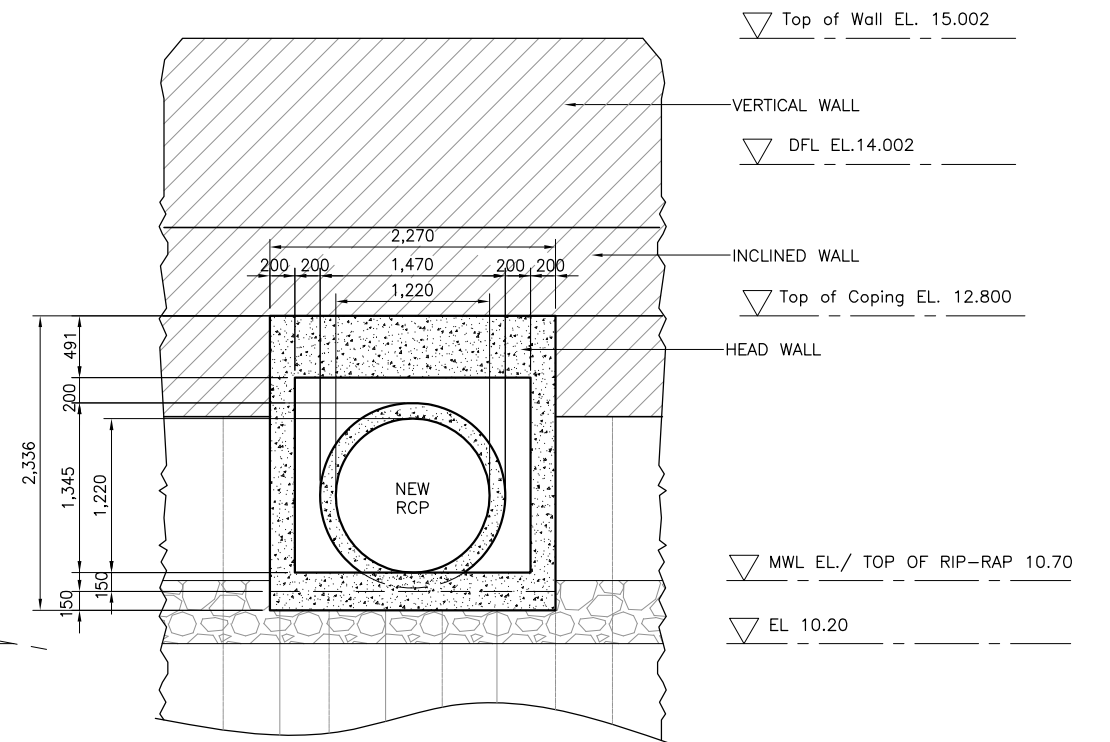
2 PLAN  
SCALE B



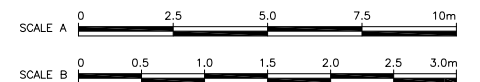
4 SECTION (ML139)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

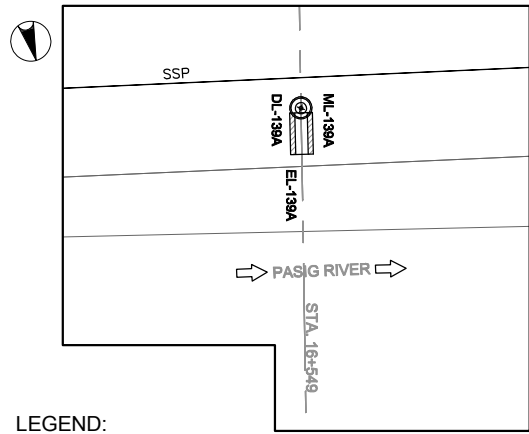
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE  
OUTLET- DL139 &  
MANHOLE ML139  
STA. 16+535 LB

SHEET NO.

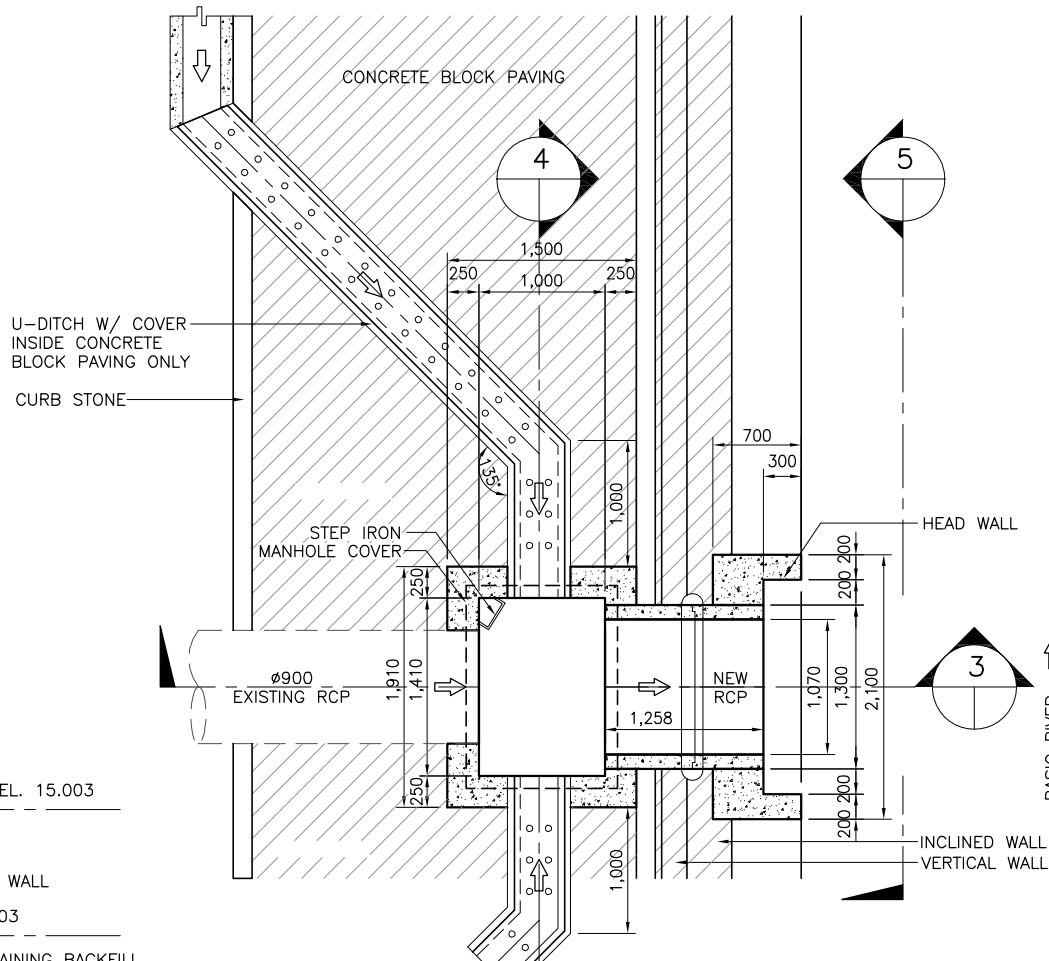
UP-DL  
DO139



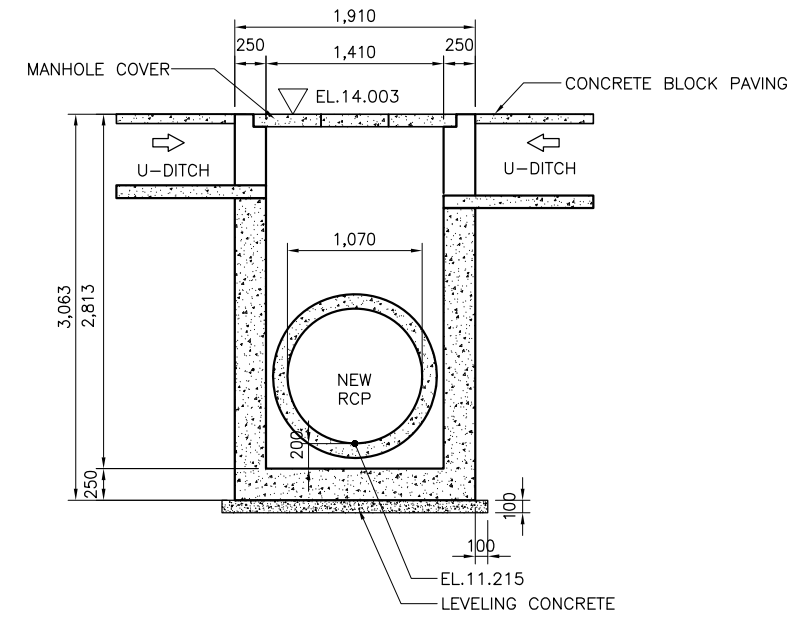
LEGEND:

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- ← EXISTING DRAINAGE
- ▬ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DL139A DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

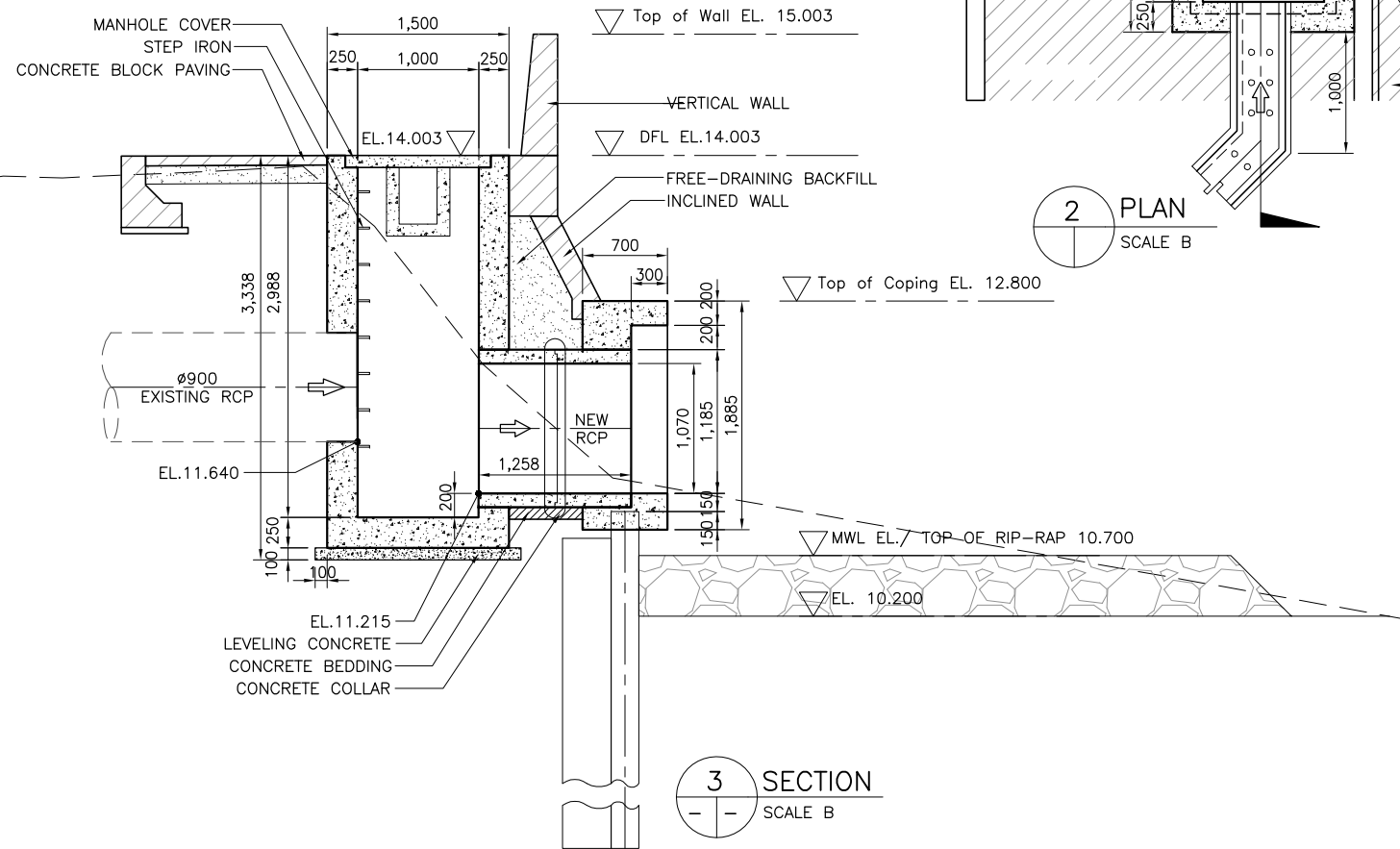
1 DRAINAGE PLAN  
SCALE A



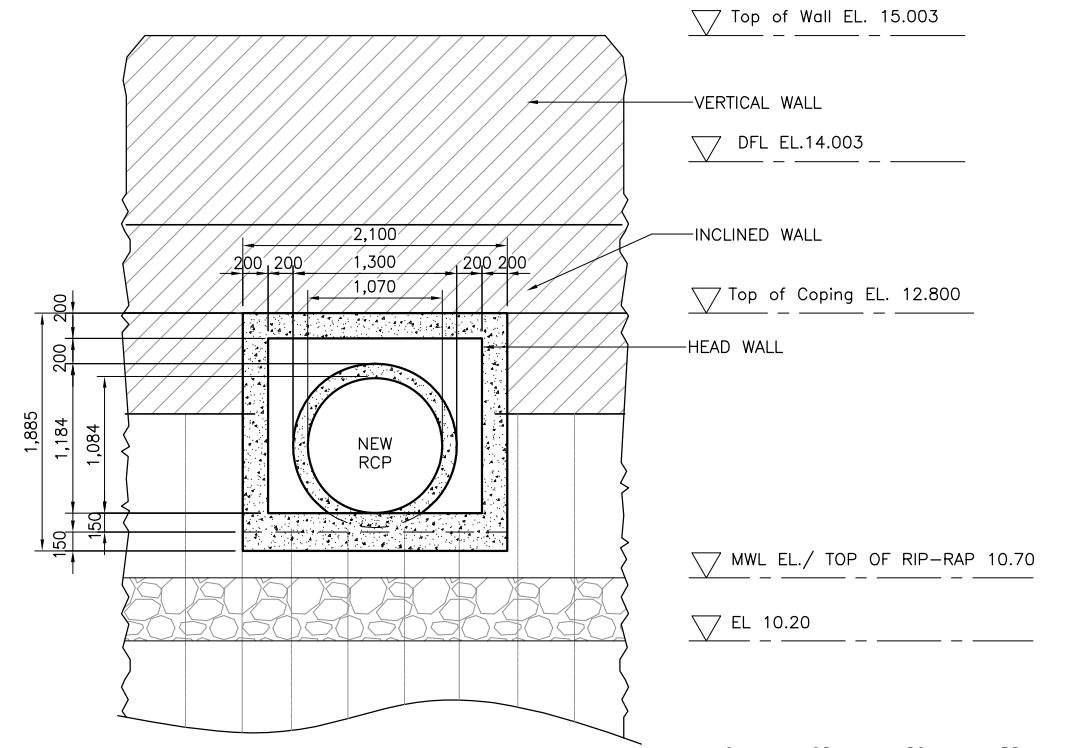
2 PLAN  
SCALE B



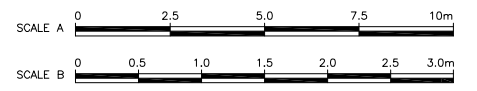
4 SECTION (ML139A)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B

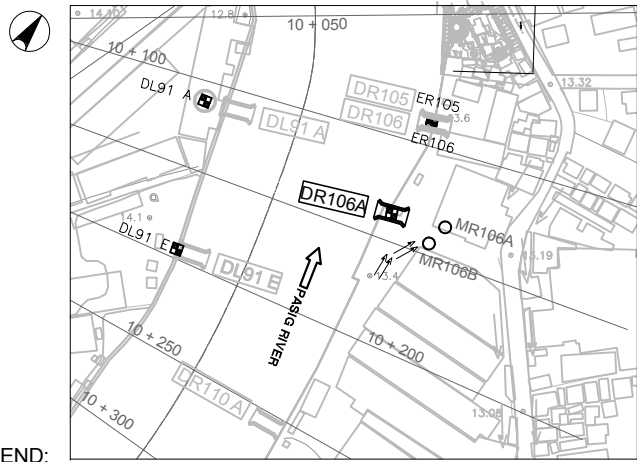


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

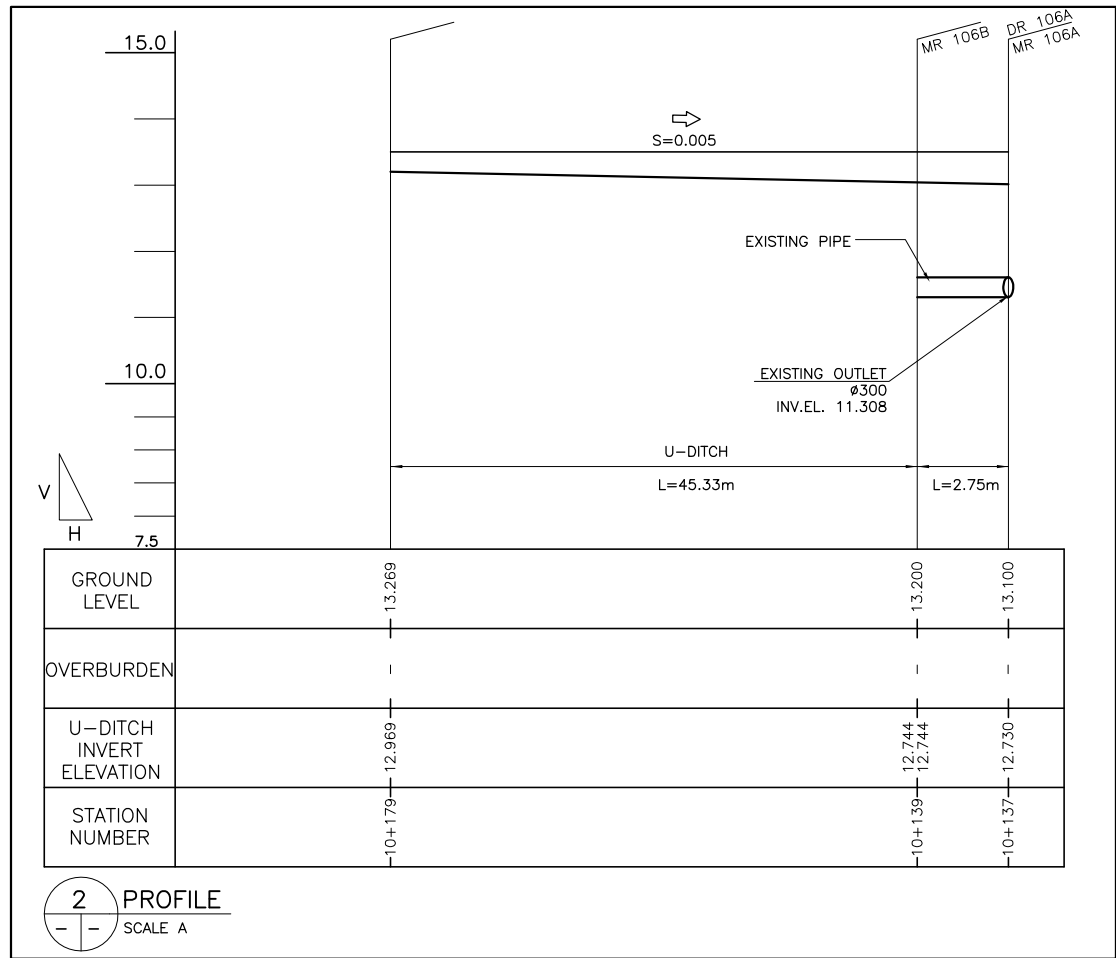
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>			REPUBLIC OF THE PHILIPPINES <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>			PROJECT & LOCATION <b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>		SHEET CONTENTS <b>DETAIL OF DRAINAGE OUTLET- DL139A &amp; MANHOLE ML139A STA. 16+549 LB</b>		SHEET NO. <b>UP-DL/DO/139A</b>
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:					
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



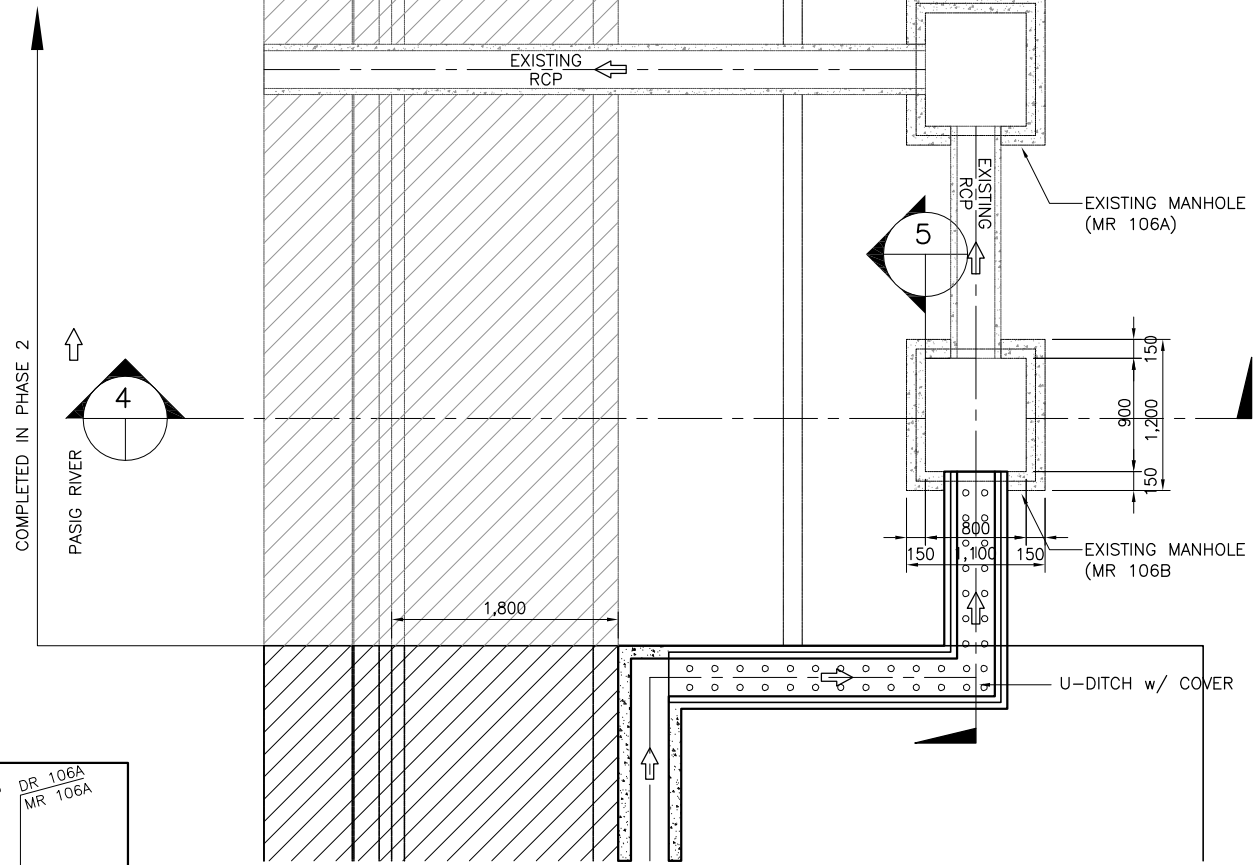
LEGEND:

- ER 106B ⊙ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ▭ COLLECTOR PIPE
- DR 106A DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

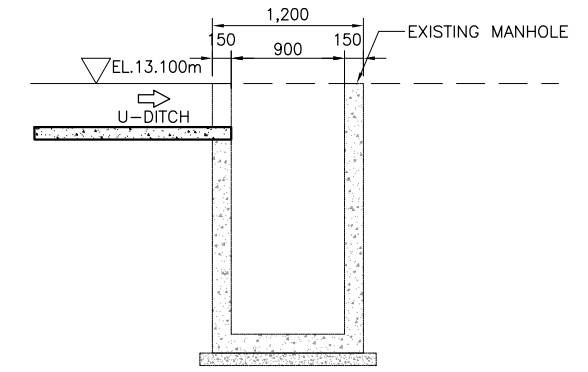
1 DRAINAGE PLAN  
SCALE A



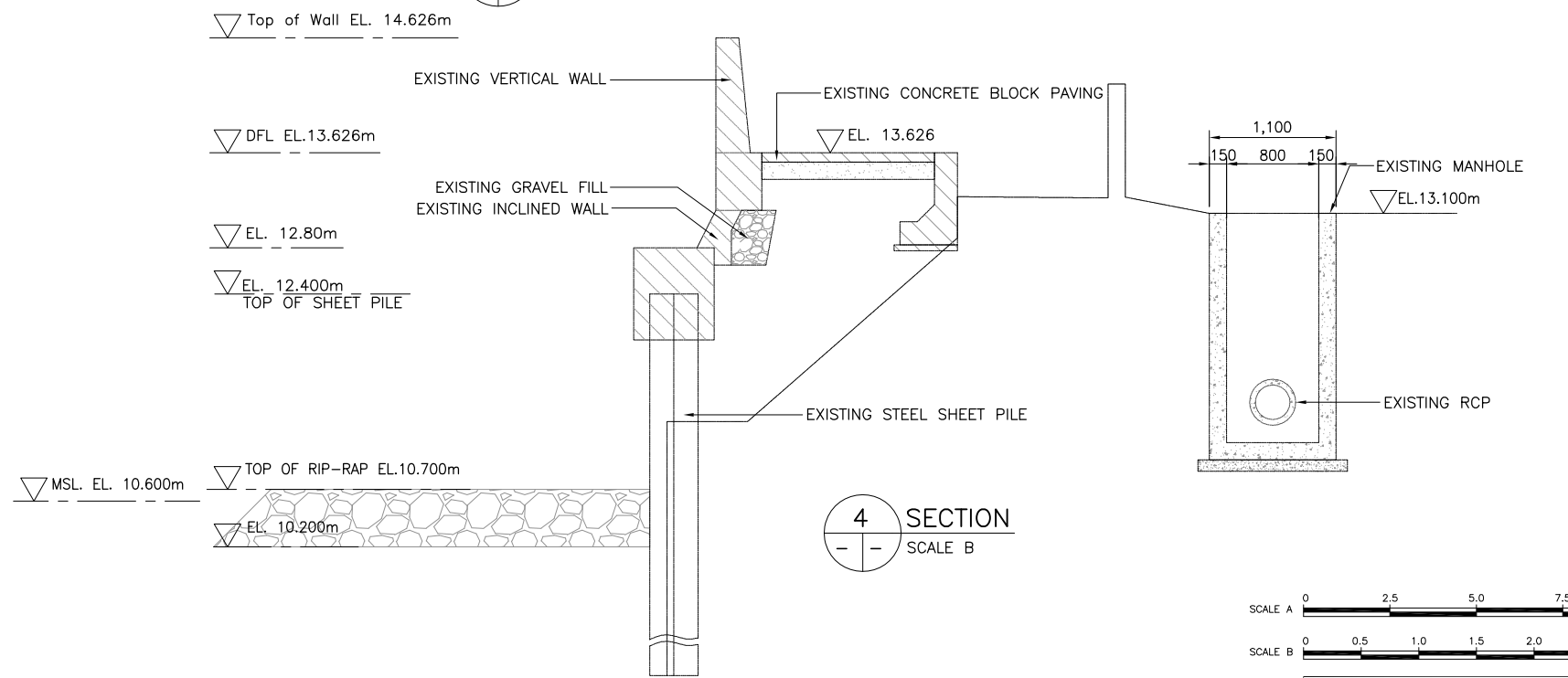
2 PROFILE  
SCALE A



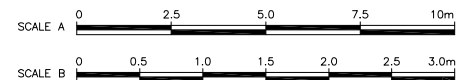
3 PLAN  
SCALE B



5 SECTION  
SCALE B



4 SECTION  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

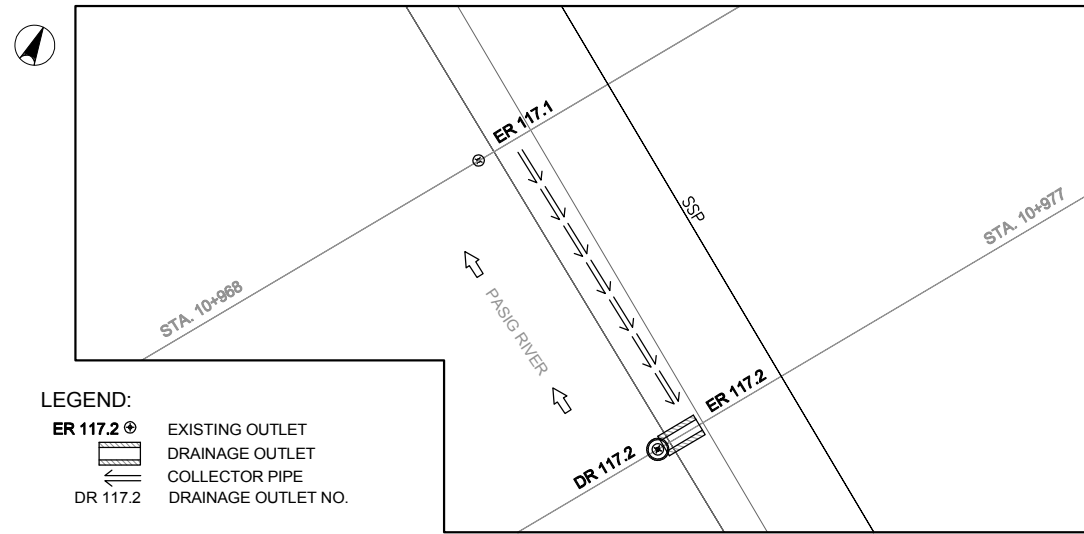
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

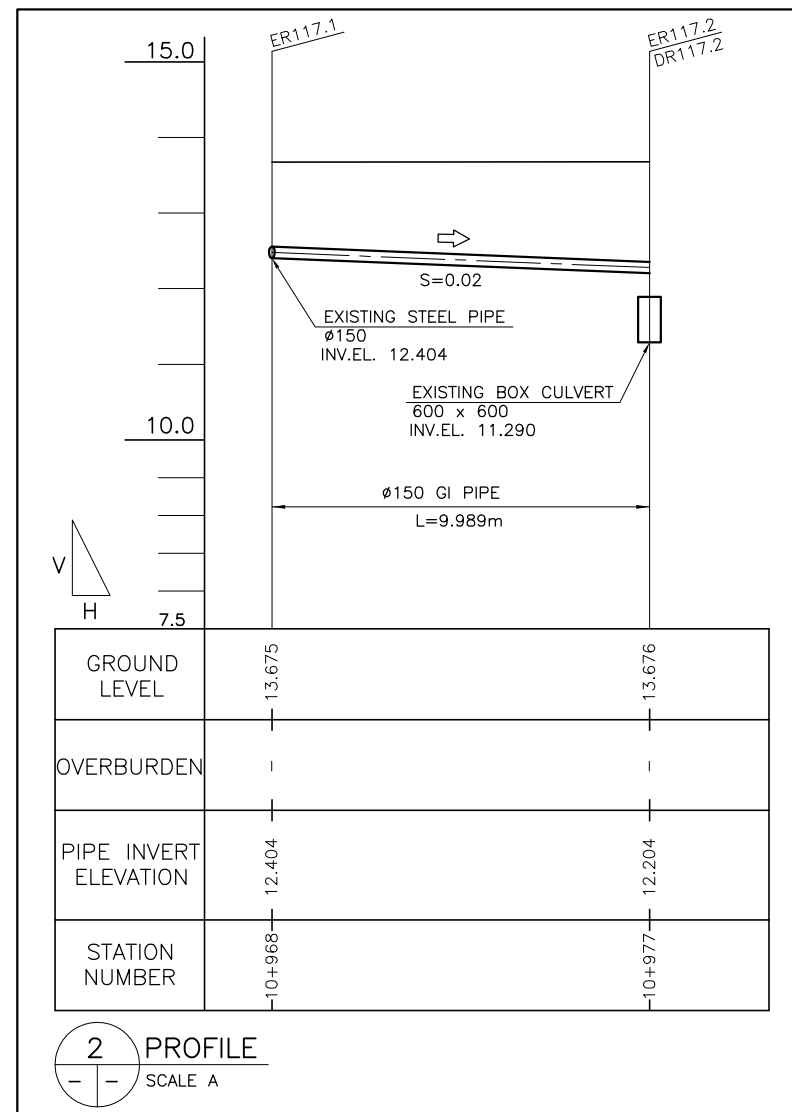
SHEET CONTENTS: COLLECTOR PIPE PROFILE & DETAILS OF MANHOLE MR106B STA. 10+139 RB

SHEET NO.: UP-DR MR 106B



LEGEND:  
 ER 117.2 ⊕ EXISTING OUTLET  
 □ DRAINAGE OUTLET  
 ← COLLECTOR PIPE  
 DR 117.2 DRAINAGE OUTLET NO.

1 DRAINAGE PLAN  
 SCALE A



2 PROFILE  
 SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
 TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



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 DEPARTMENT OF PUBLIC WORKS  
 AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
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PROJECT & LOCATION

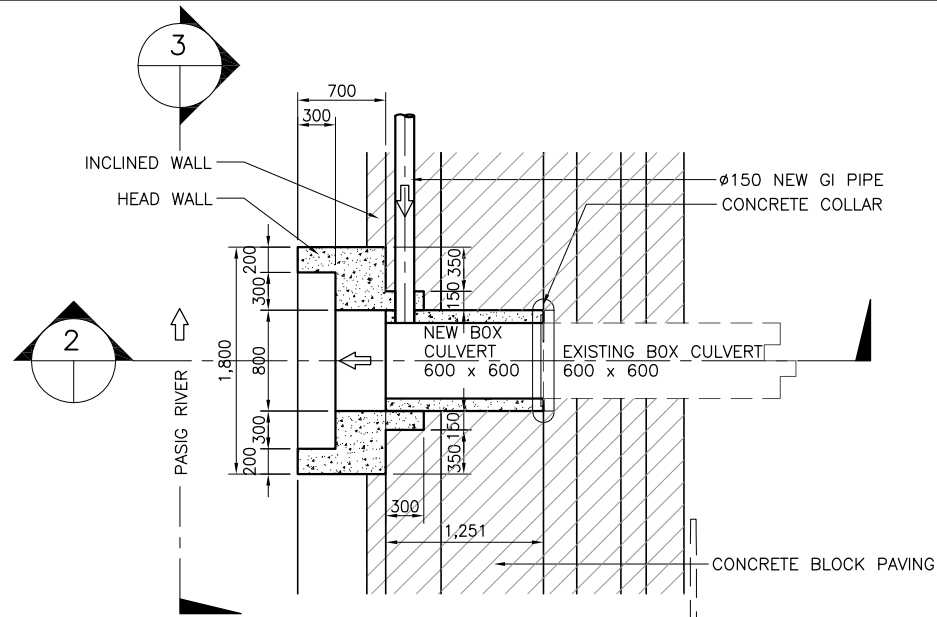
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

UP-DR-DO117.2/P



1 PLAN  
SCALE A

▽ TOP OF WALL EL.14.676

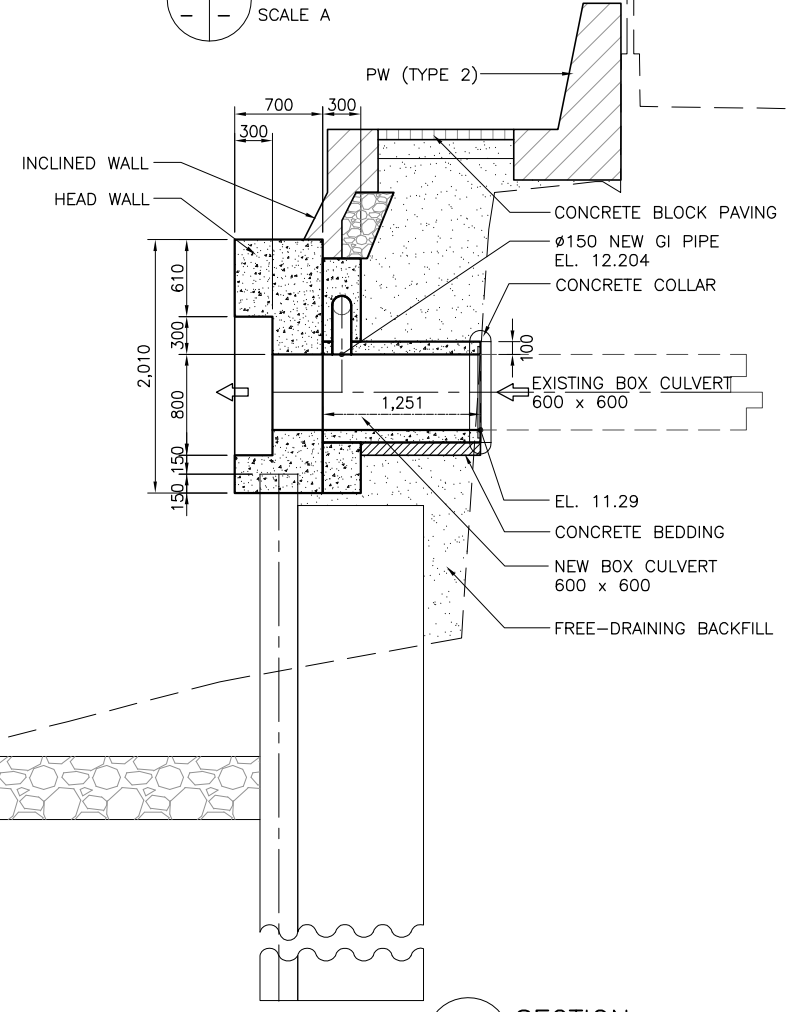
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▽ TOP OF PILE COPING EL.12.800

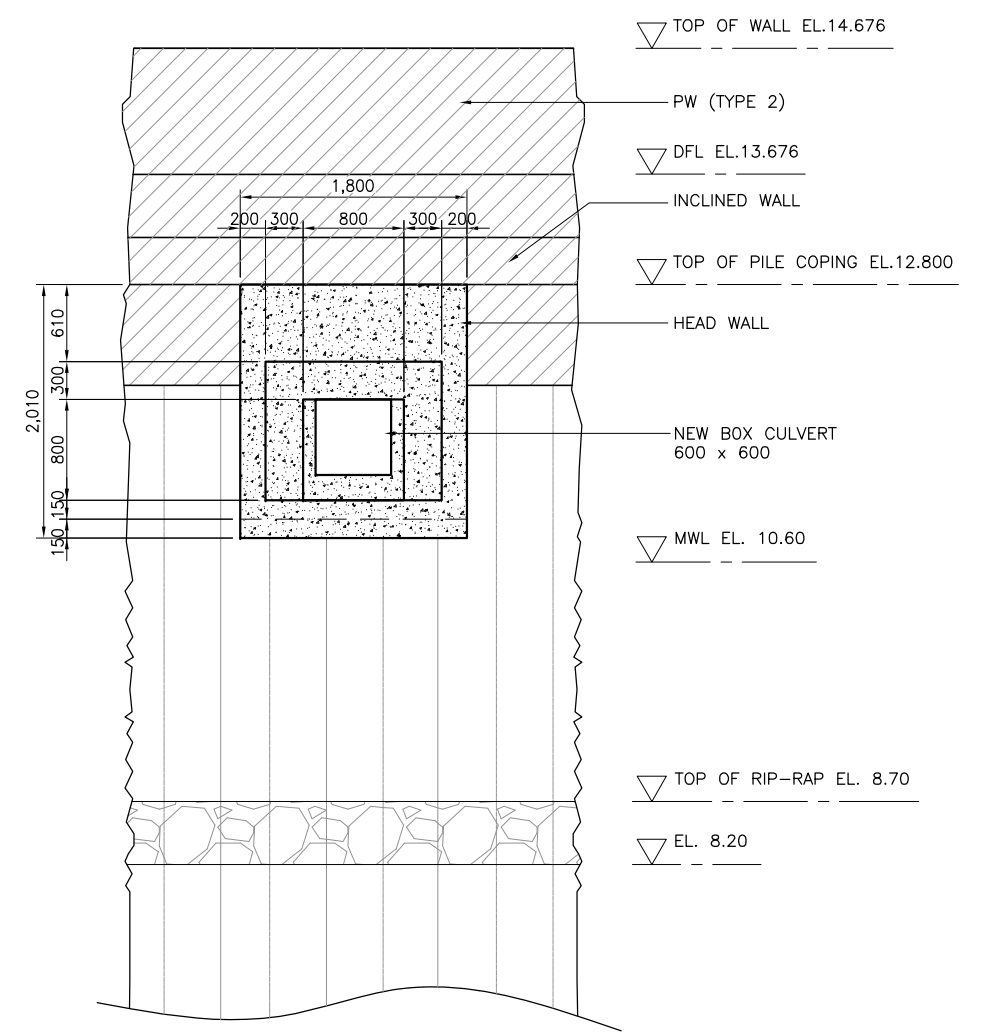
▽ MWL EL. 10.60

▽ TOP OF RIP-RAP EL. 8.70

▽ EL. 8.20



2 SECTION  
SCALE A



3 ELEVATION  
SCALE A

▽ TOP OF WALL EL.14.676

▽ DFL EL.13.676

▽ TOP OF PILE COPING EL.12.800

▽ MWL EL. 10.60

▽ TOP OF RIP-RAP EL. 8.70

▽ EL. 8.20

SCALE A 0 0.5 1.0 1.5 2.0 2.5 3.0m

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



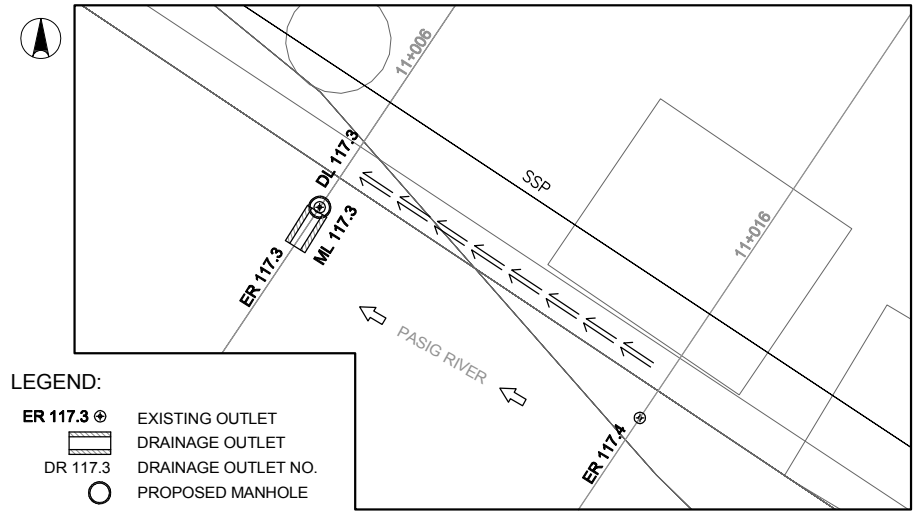
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

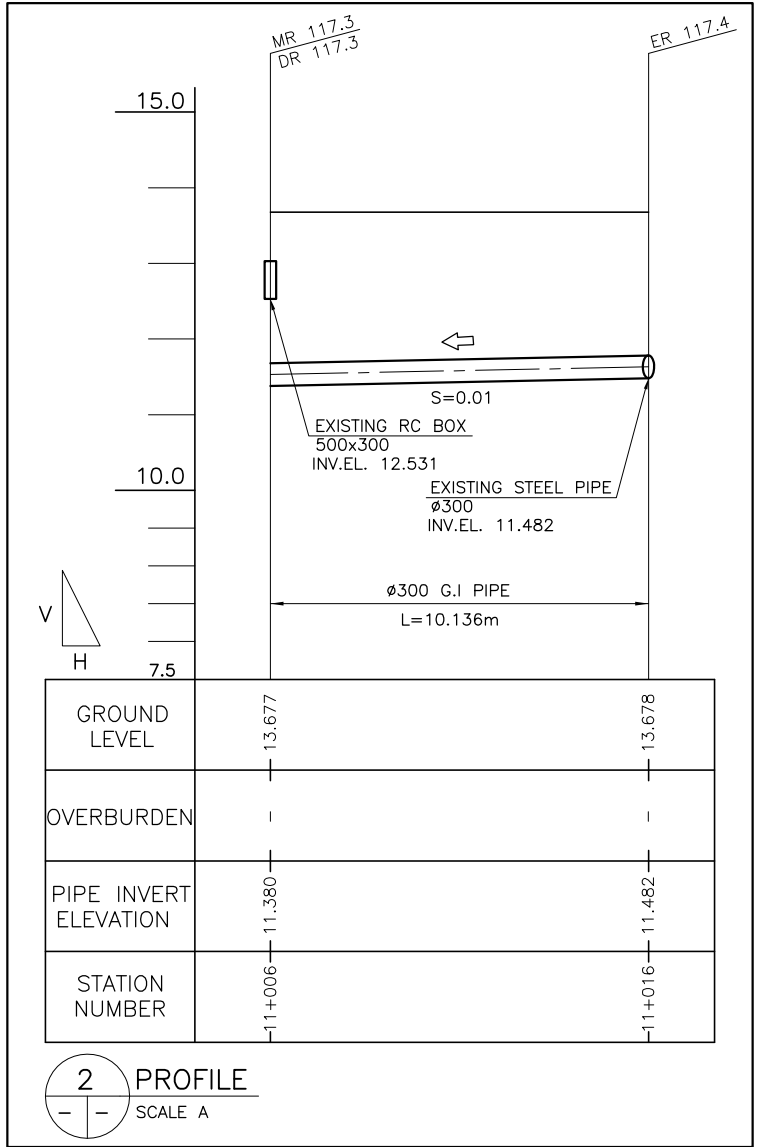
REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR117.2 STA. 10+977 RB	UP-DR-DO117.2

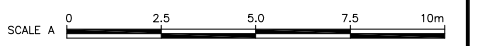


- LEGEND:
- ER 117.3 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DR 117.3 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

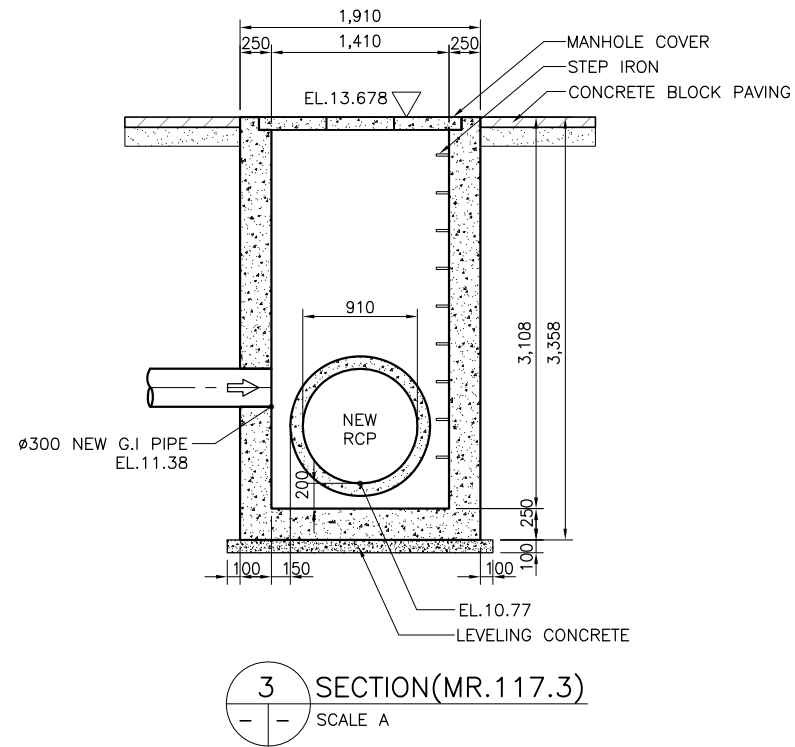
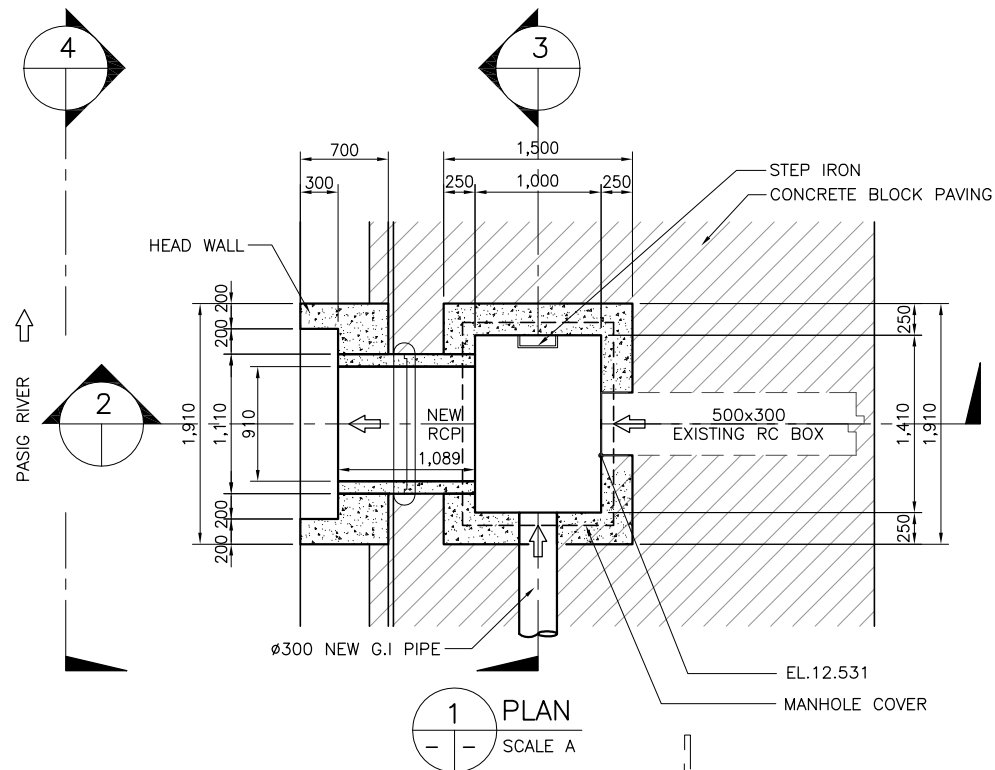


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	UP-DR-DO117.3/P	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP

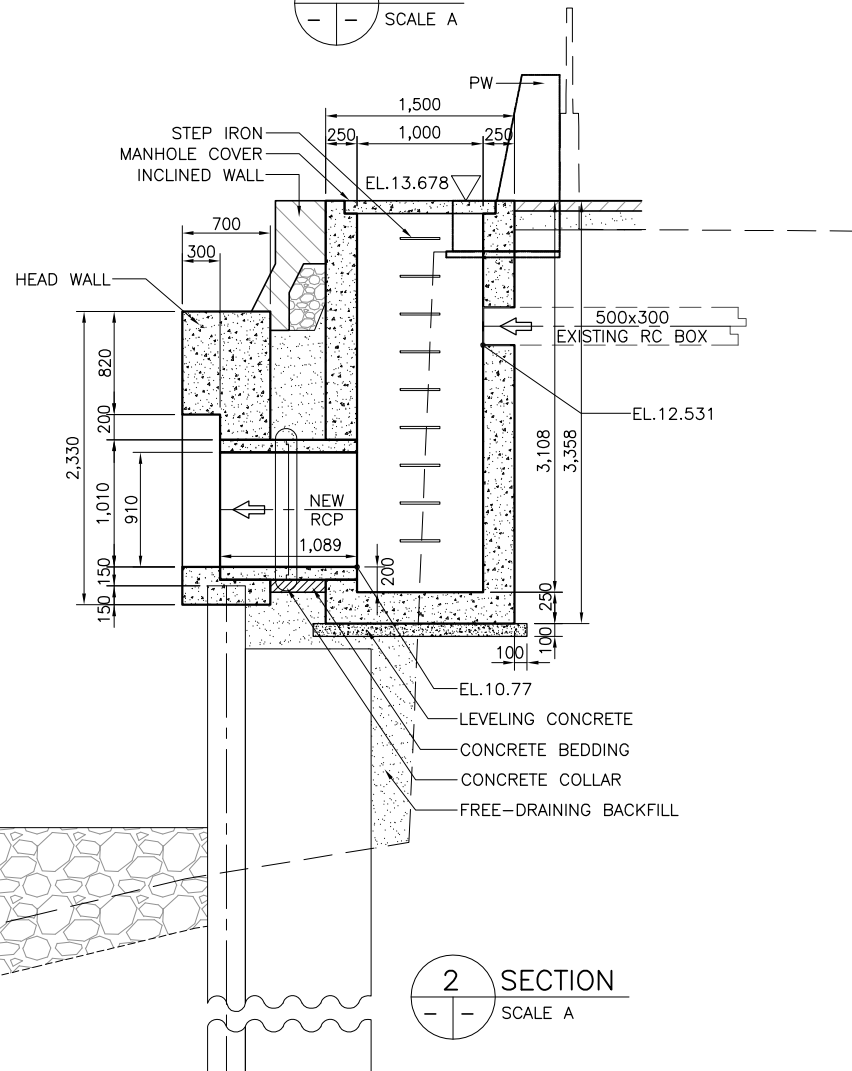


▽ TOP OF WALL EL.14.678

▽ DFL EL.13.678

▽ TOP OF PILE COPING EL.12.800

▽ MWL EL. 10.60

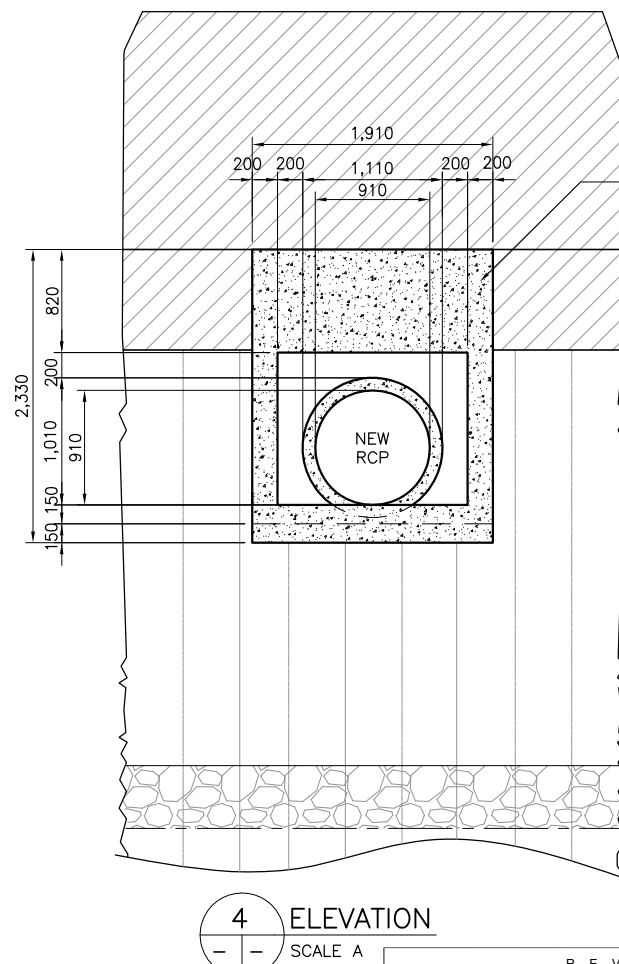


▽ TOP OF WALL EL.14.678

▽ DFL EL.13.678

▽ TOP OF PILE COPING EL.12.800

▽ MWL EL. 10.60



▽ TOP OF RIP-RAP EL. 8.70

▽ EL. 8.20

SCALE A 0 0.5 1.0 1.5 2.0 2.5 3.0m

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

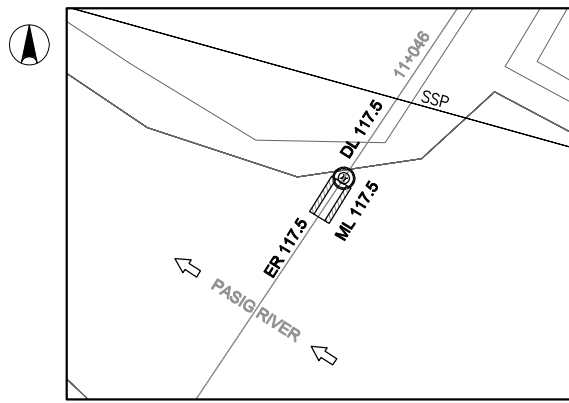
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

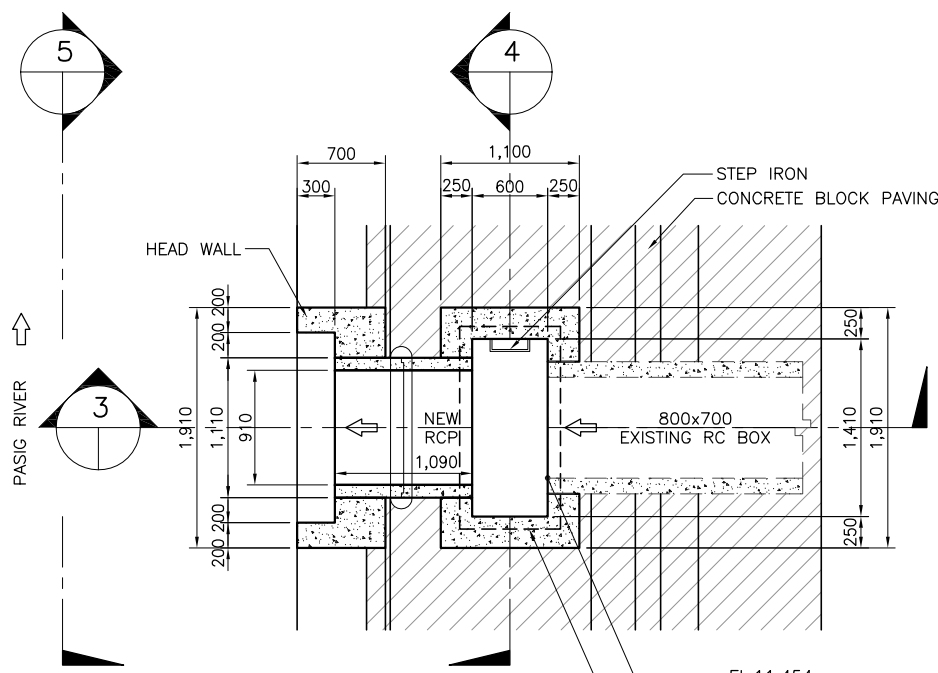
SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DR117.3 & MANHOLE MR117.3 STA 11+006 RB

SHEET NO.: UP-DR DO/117.3

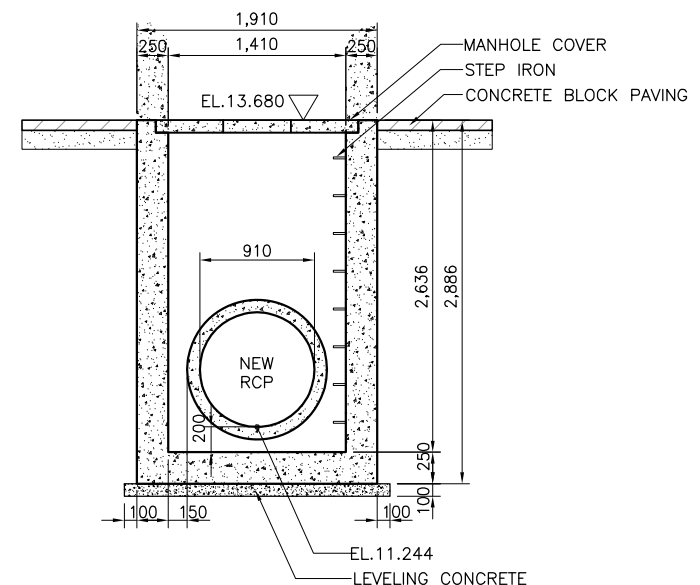


- LEGEND:**
- ER 117.5 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DR 117.5 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A

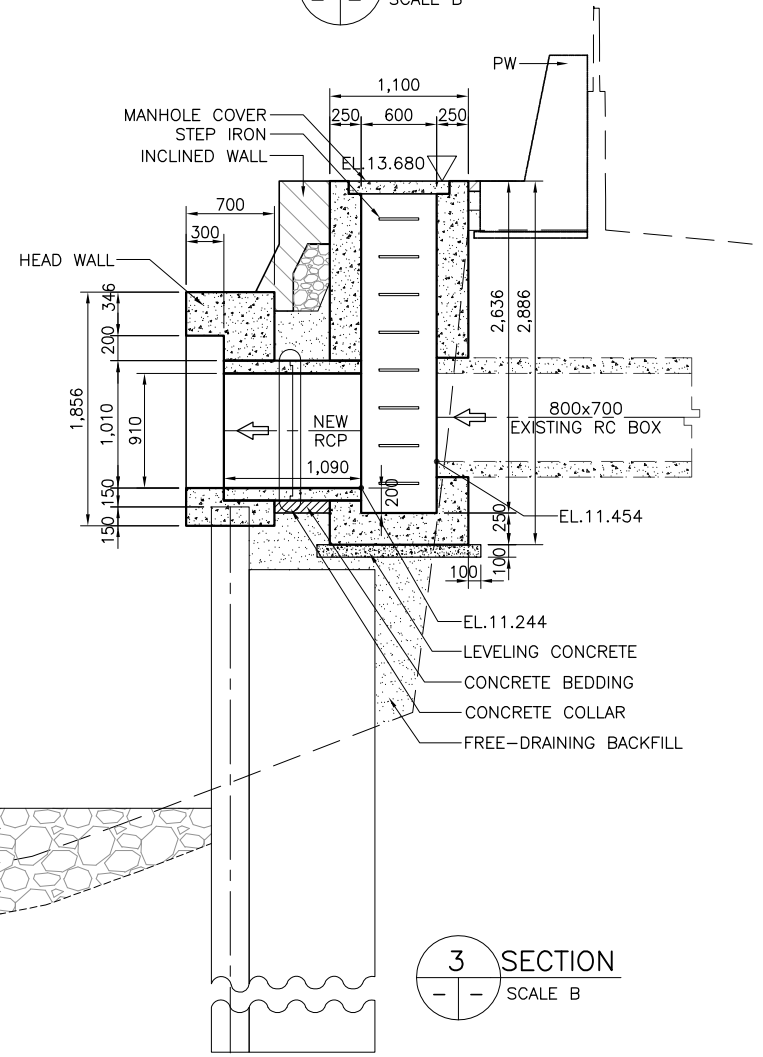


**2 PLAN**  
SCALE B

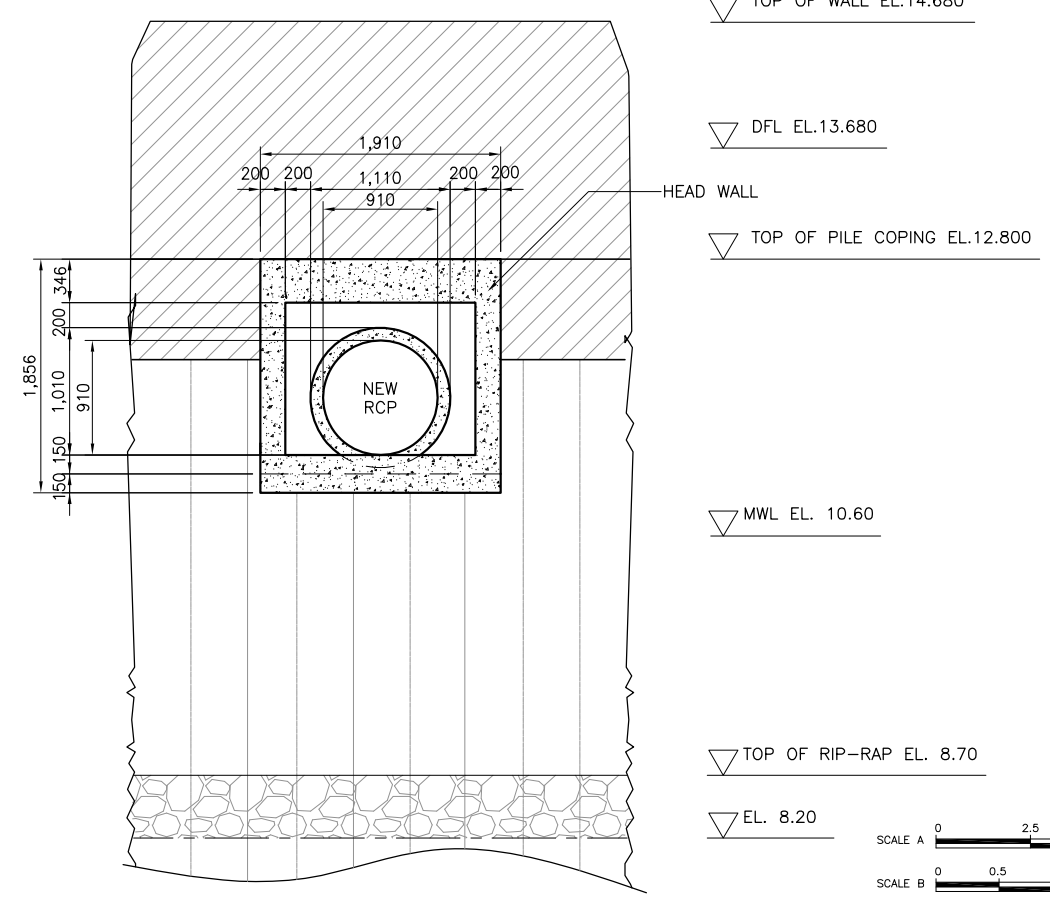


**4 SECTION (MR.117.5)**  
SCALE B

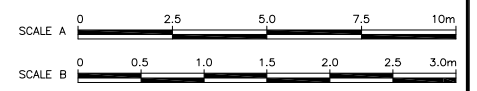
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- ▽ DFL EL.13.680
- ▽ TOP OF PILE COPING EL.12.800
- ▽ MWL EL. 10.60



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



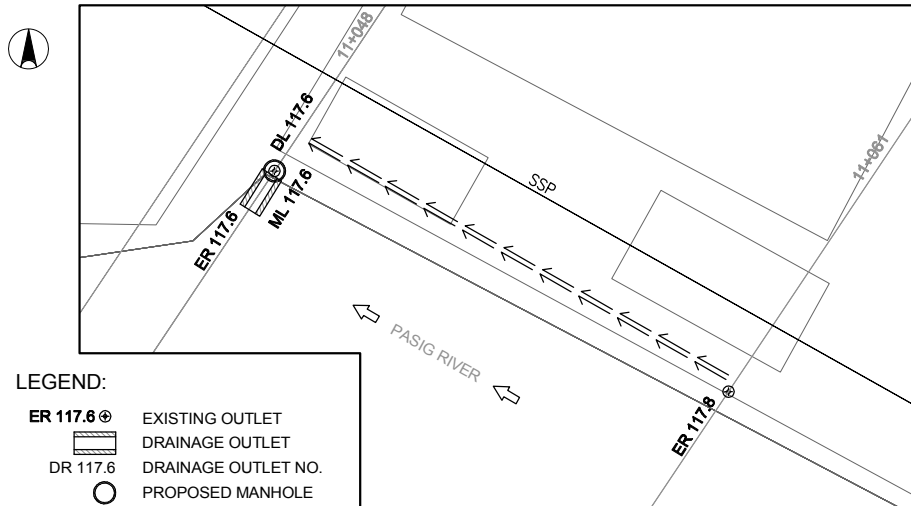
REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION SHEET CONTENTS SHEET NO.

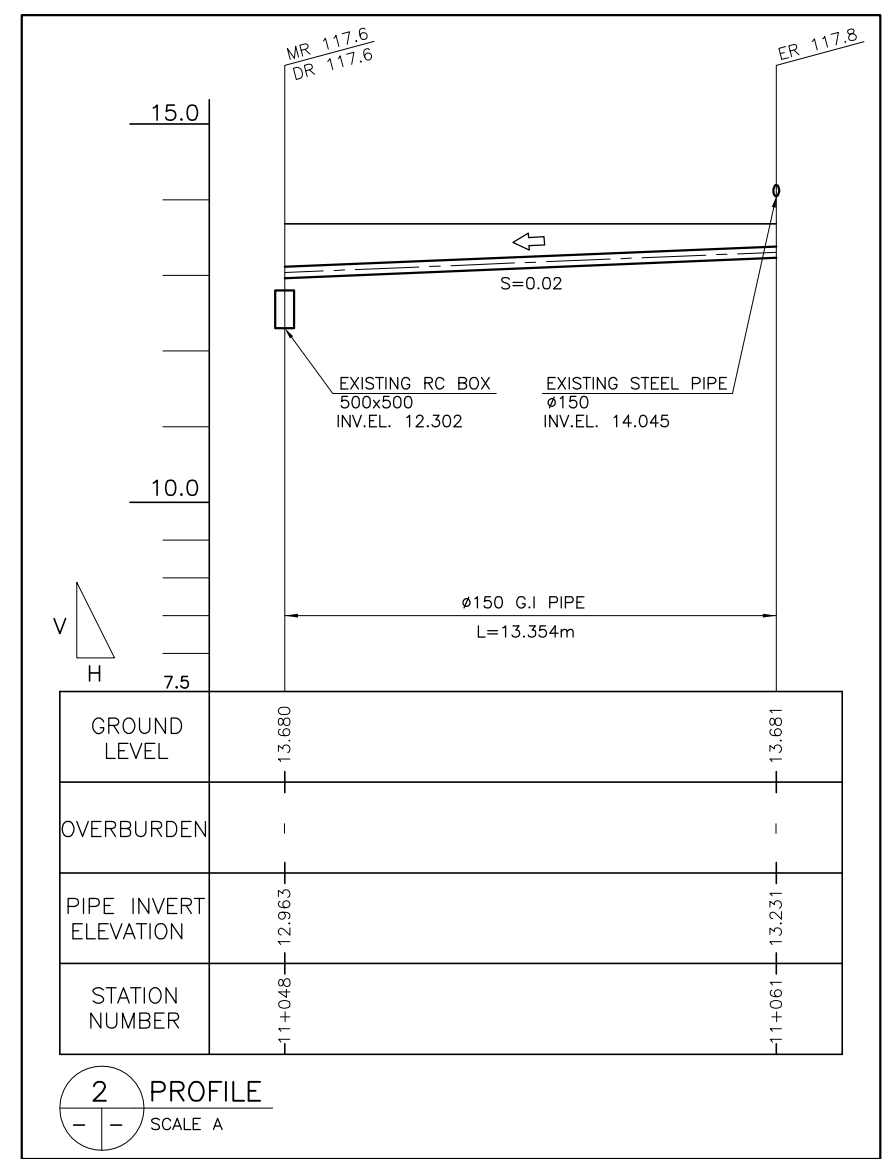
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR117.5 & MANHOLE MR117.5 STA 11+046 RB	UP-DR DO117.5
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- LEGEND:
- ER 117.6 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - DR 117.6 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

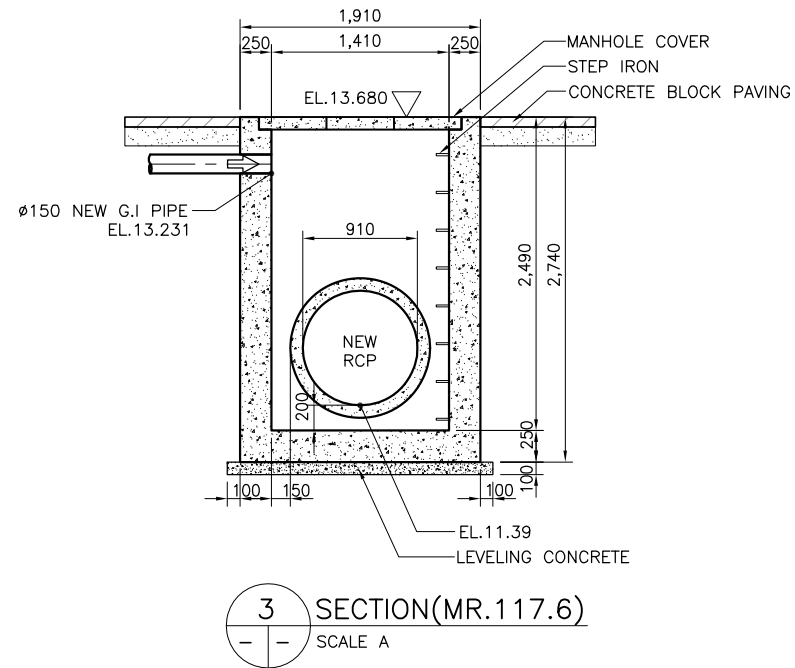
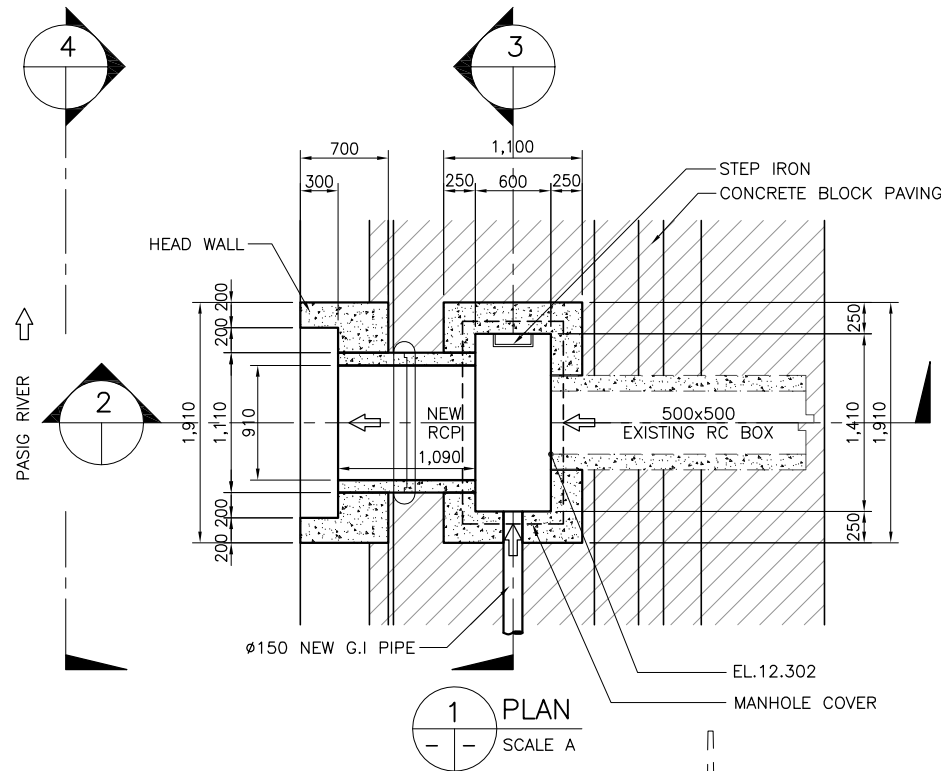


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

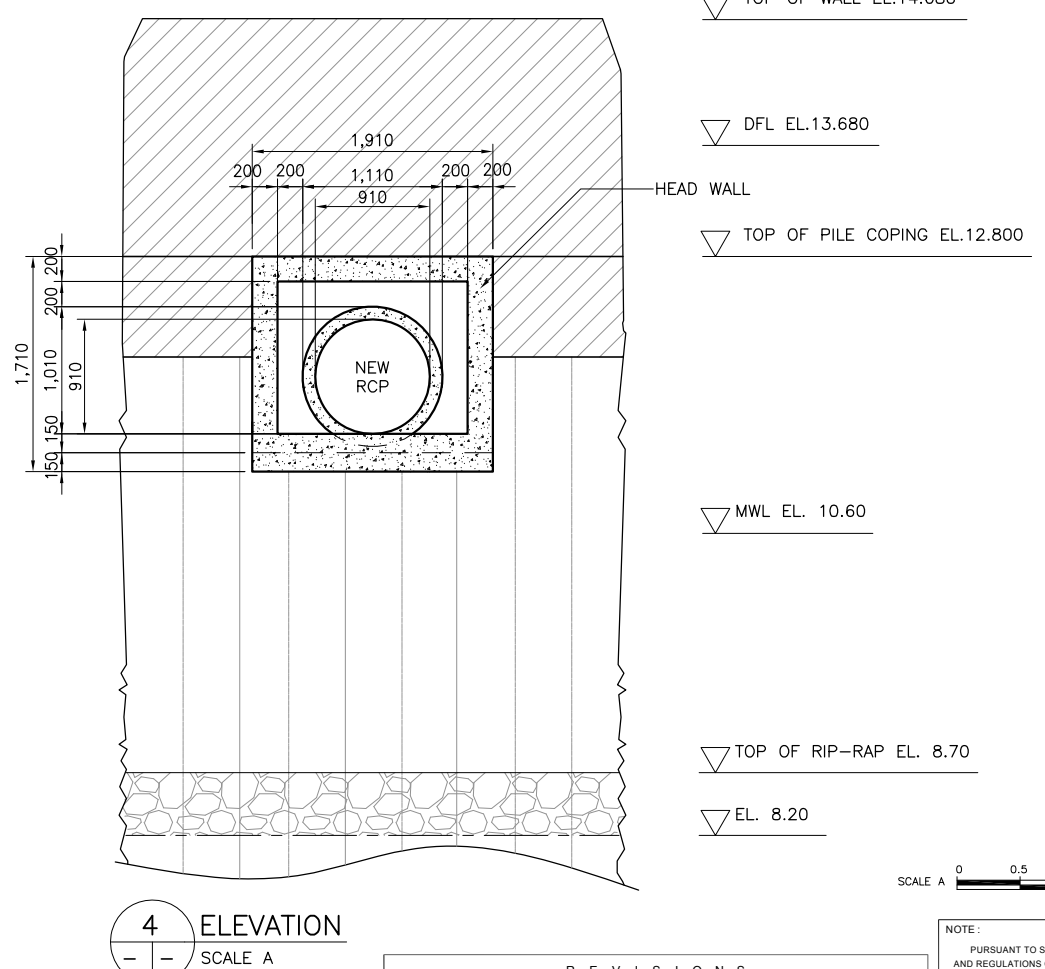
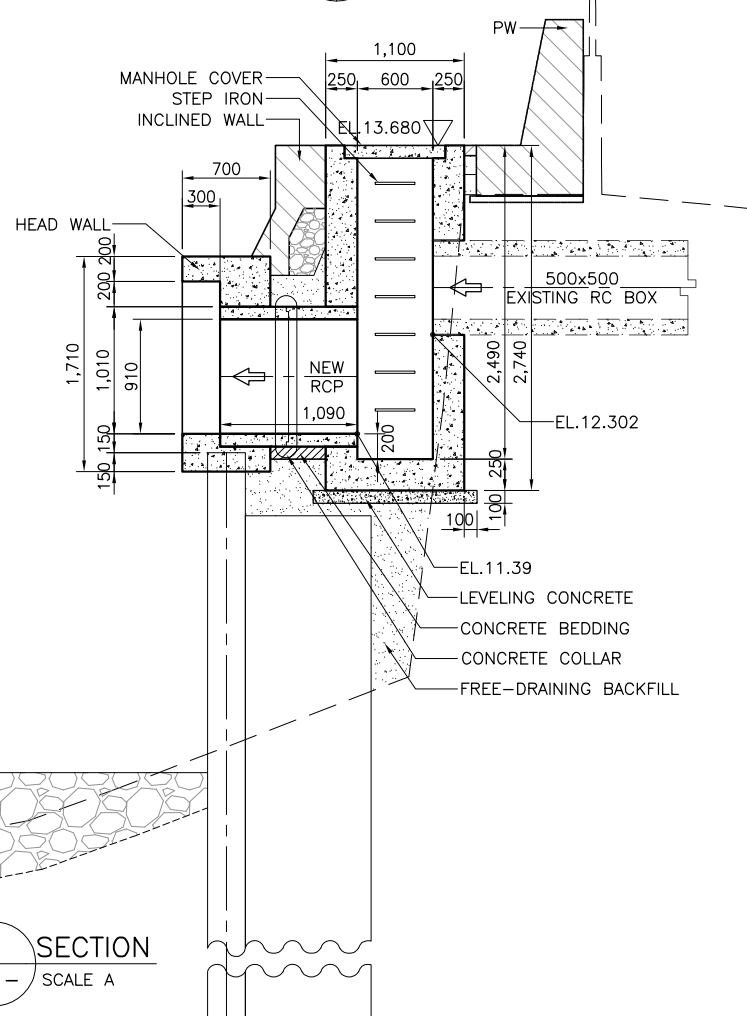
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			



- ▽ TOP OF WALL EL. 14.680
- ▽ DFL EL. 13.680
- ▽ TOP OF PILE COPING EL. 12.800
- ▽ MWL EL. 10.60



- ▽ TOP OF WALL EL. 14.680
- ▽ DFL EL. 13.680
- ▽ TOP OF PILE COPING EL. 12.800
- ▽ MWL EL. 10.60
- ▽ TOP OF RIP-RAP EL. 8.70
- ▽ EL. 8.20



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

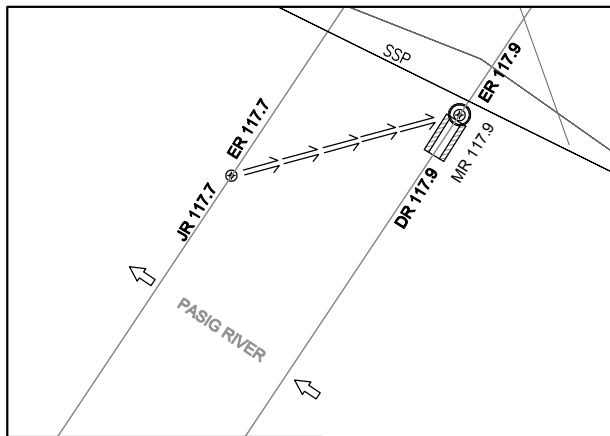
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE OUTLET- DR117.6 & MANHOLE MR117.6 STA 11+048 RB

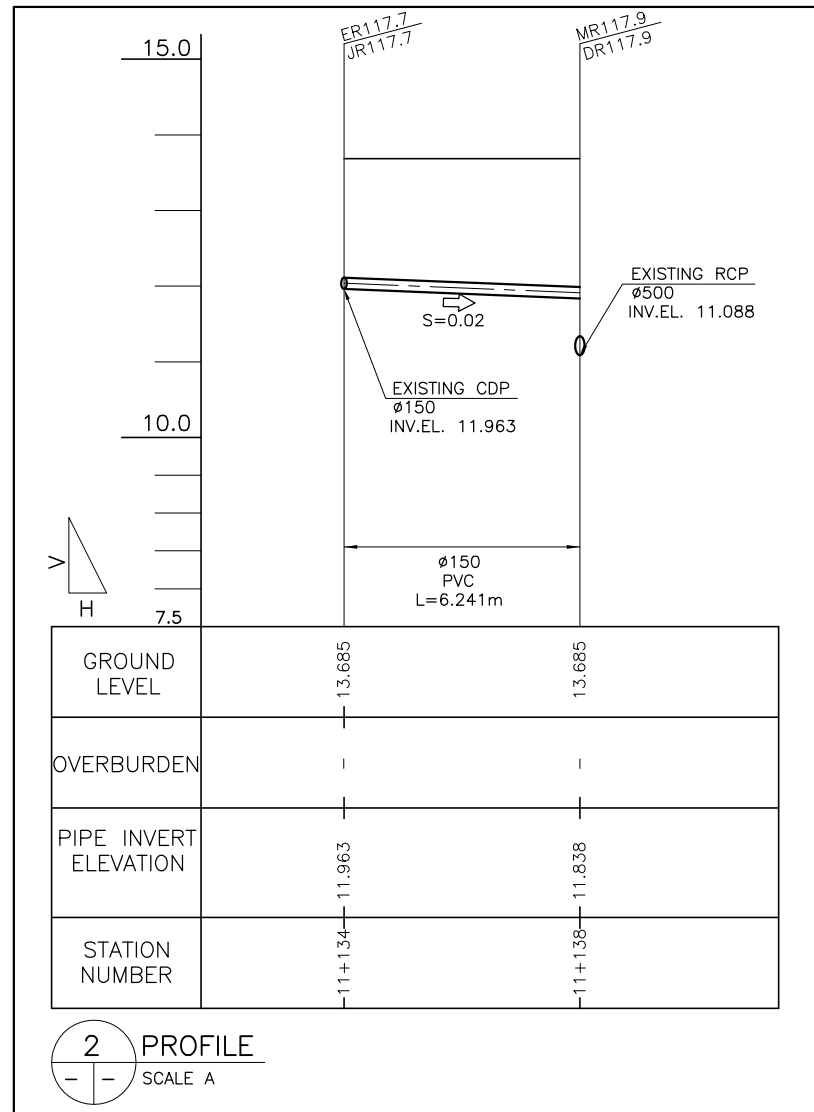
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UP-DR  
DO/117.6

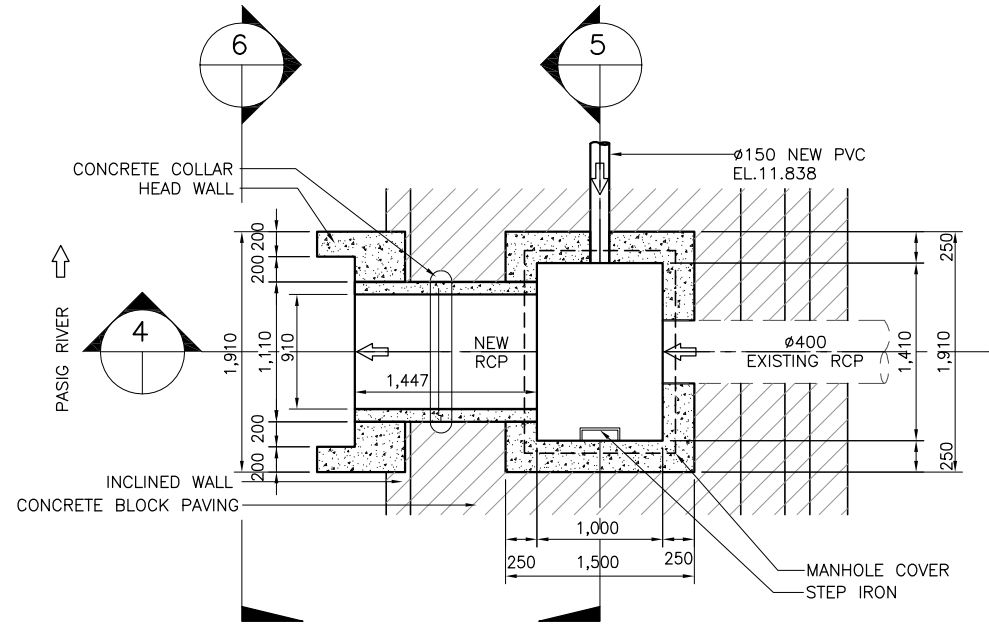


- LEGEND:**
- ER117.9 @ EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DR 117.9 DRAINAGE OUTLET NO.
  - JR 117.7 PROPOSED JUNCTION BOX
  - PROPOSED MANHOLE

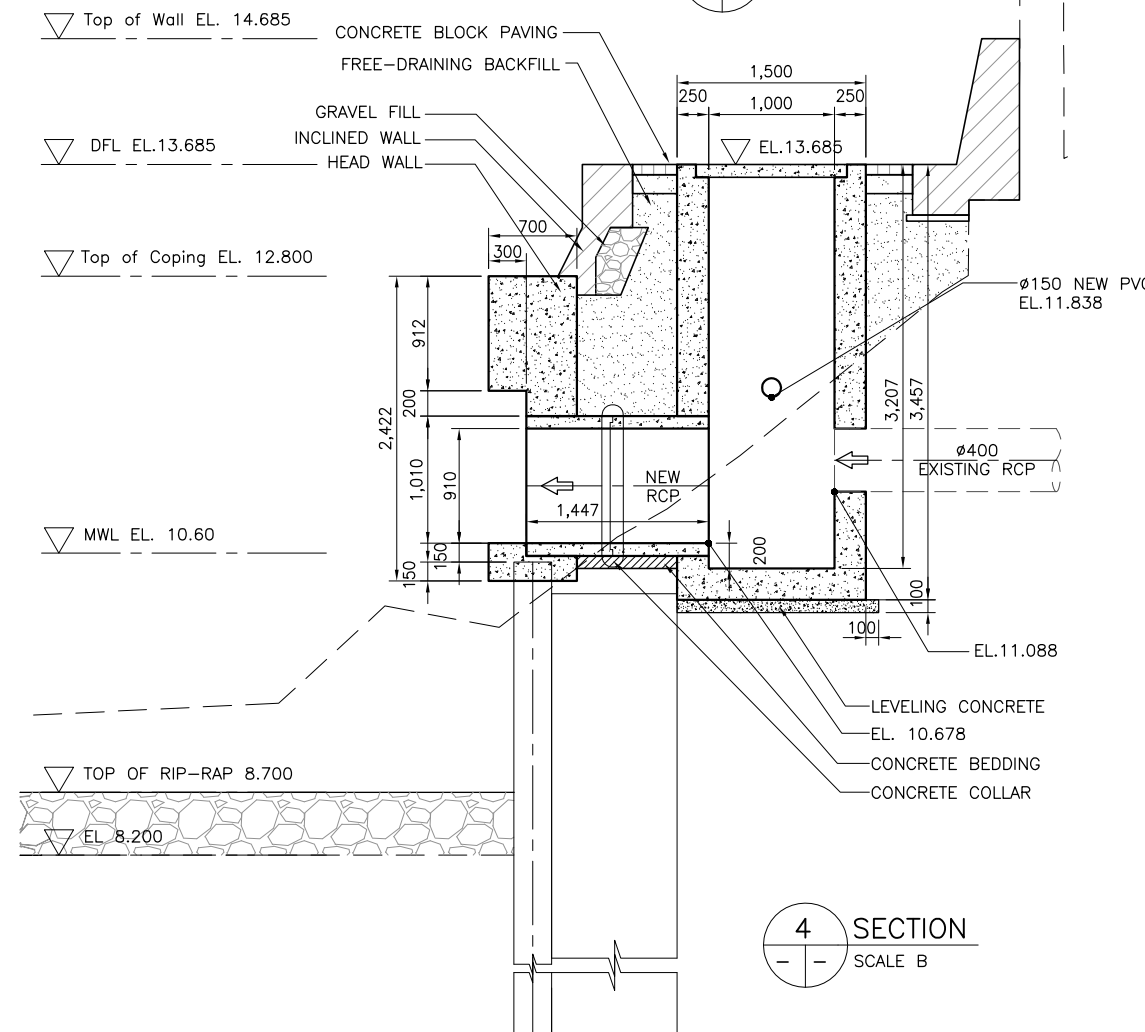
**1 DRAINAGE PLAN**  
SCALE A



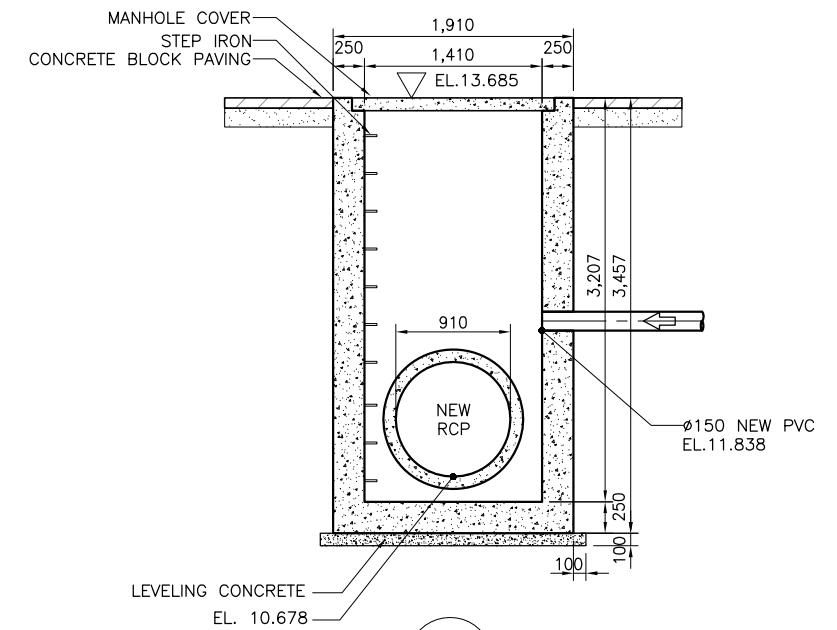
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SCALE A



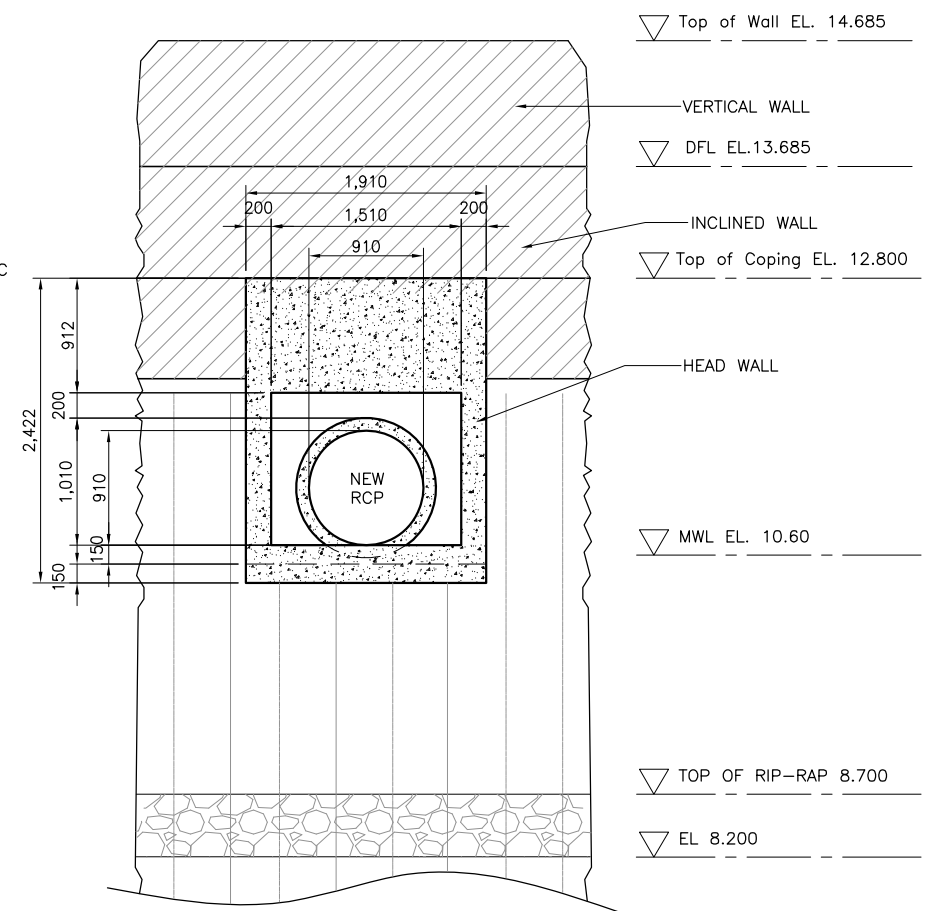
**3 PLAN**  
SCALE B



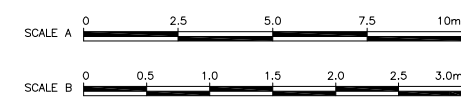
**4 SECTION**  
SCALE B



**5 SECTION**  
SCALE B



**6 ELEVATION**  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

PROJECT & LOCATION

SHEET CONTENTS

SHEET NO.



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



**REPUBLIC OF THE PHILIPPINES**  
**DEPARTMENT OF PUBLIC WORKS**  
**AND HIGHWAYS**

REVIEWED BY:

RECOMMENDING APPROVAL:

APPROVED BY:

PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

PATRICK B. GATAN  
PROJECT DIRECTOR PMO - MFCP

GILBERTO S. REYES  
DIRECTOR BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

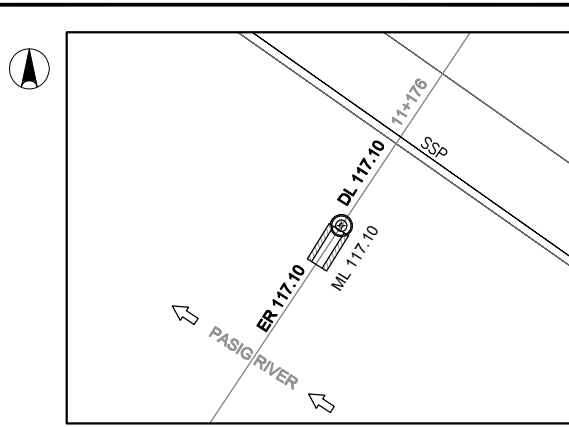
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

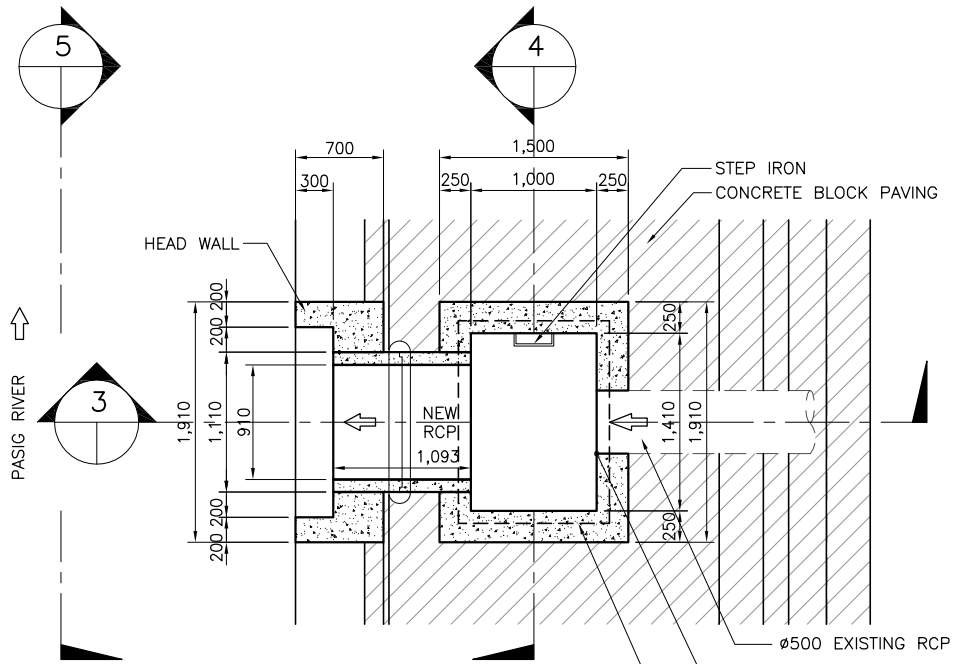
PLAN & PROFILE OF COLLECTOR PIPE; DETAIL OF DRAINAGE OUTLET DR 117.9 & MANHOLE MR 117.9 STA. 11+138 RB

UP-DR  
DO117.9/P

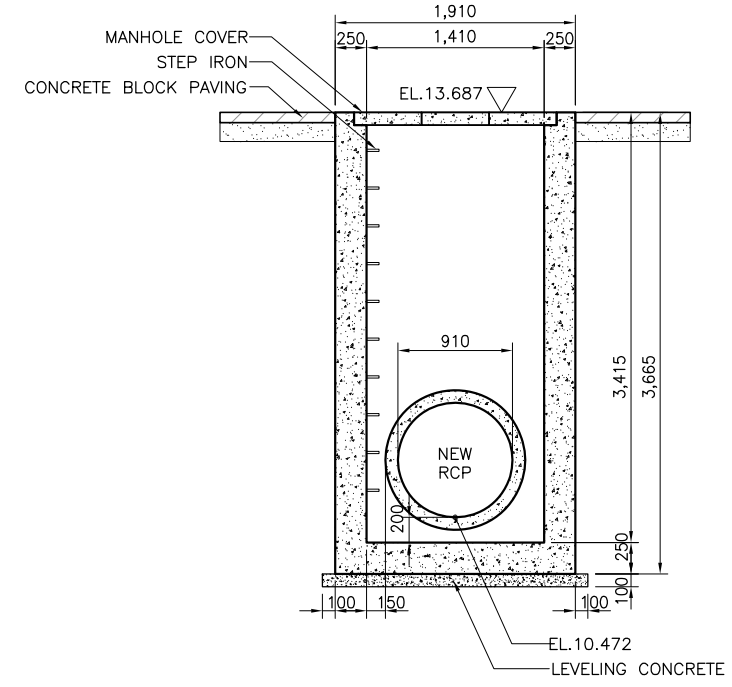


- LEGEND:**
- ER 117.10 ⊕ EXISTING OUTLET
  - DR 117.10 □ DRAINAGE OUTLET
  - DR 117.10 ○ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

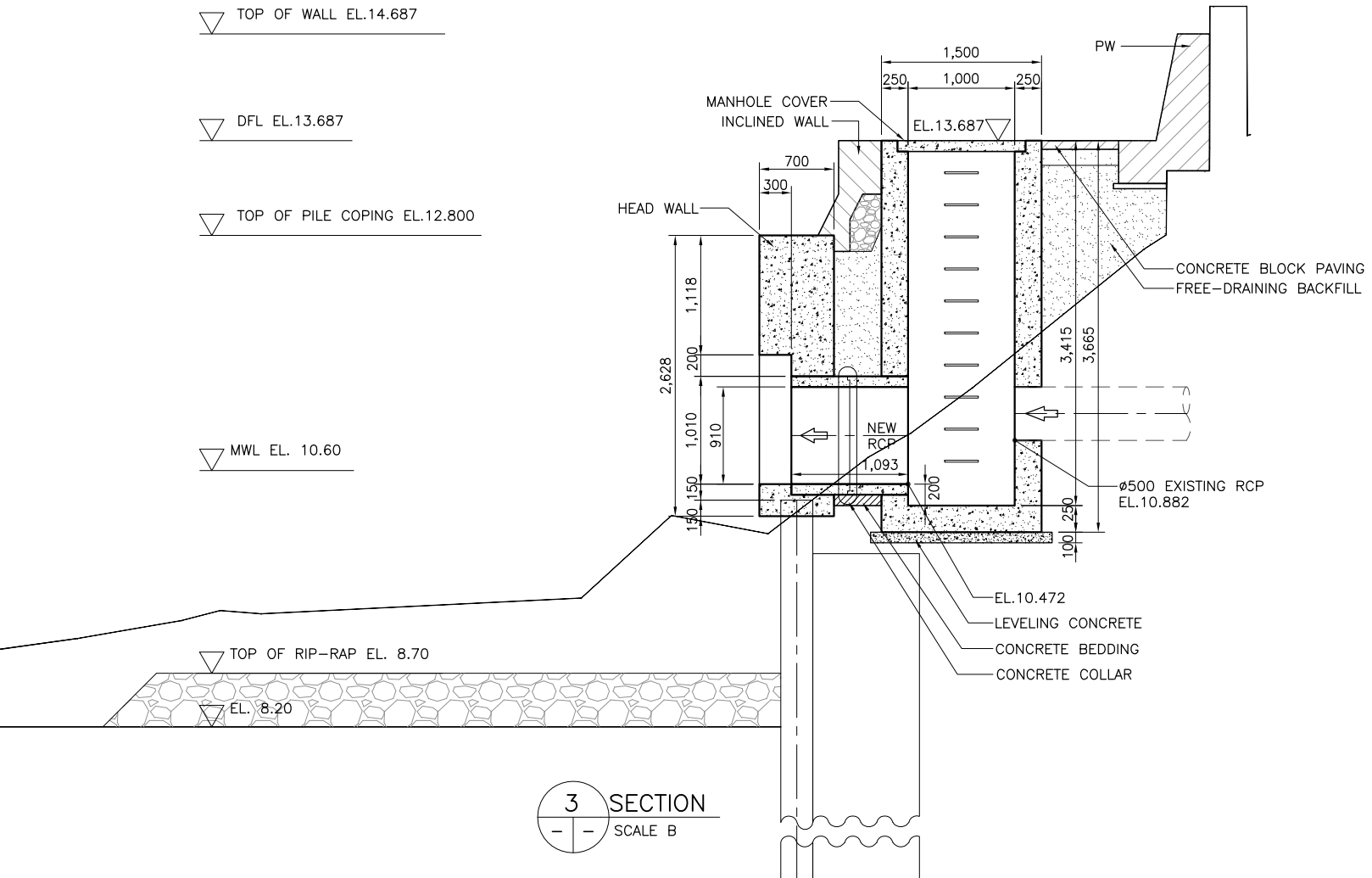
**1 DRAINAGE PLAN**  
SCALE A



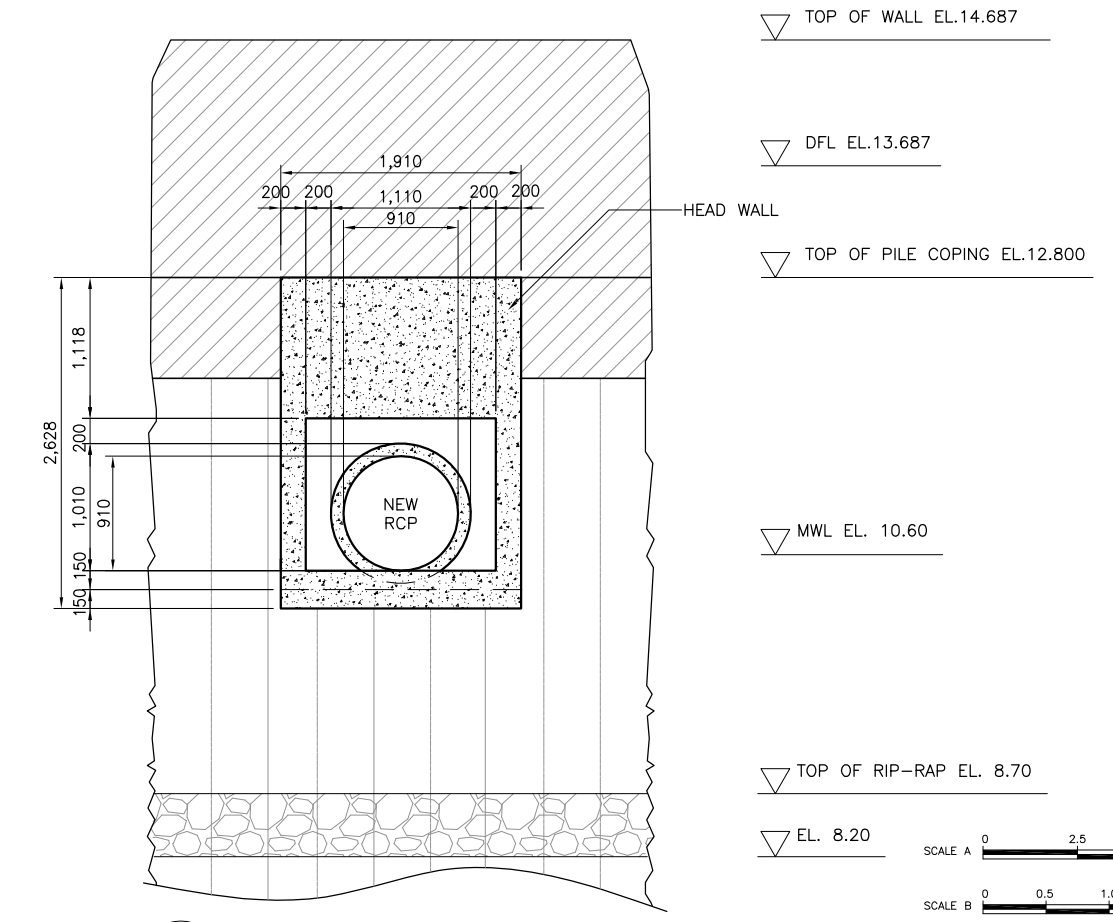
**2 PLAN**  
SCALE B



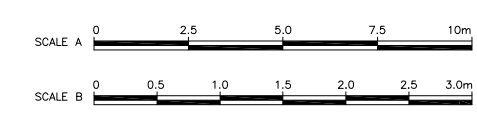
**4 SECTION (MR. 117.10)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B

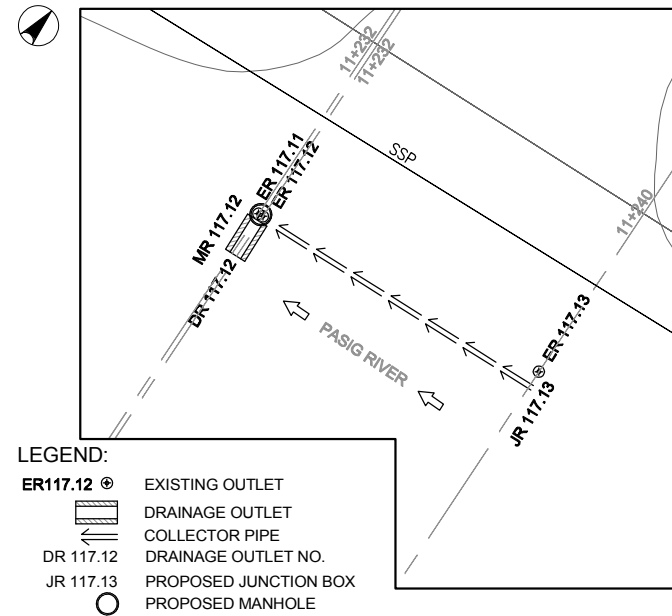


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

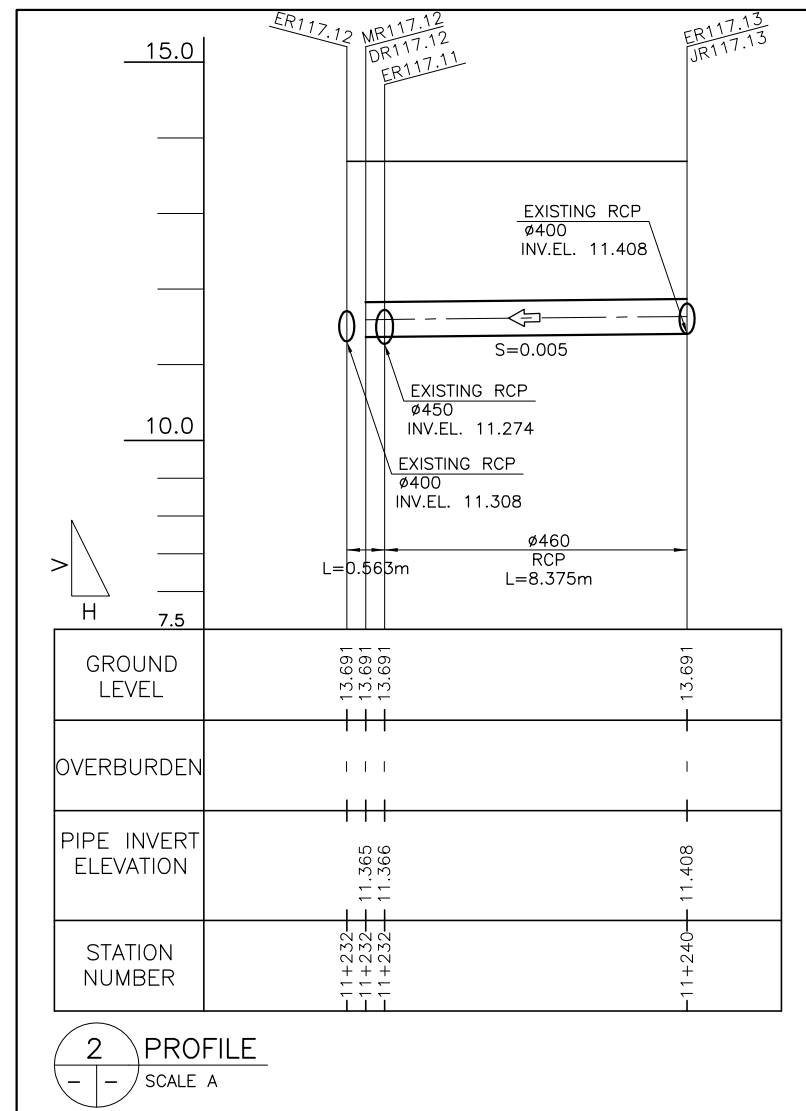
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR117.10 & MANHOLE MR117.10 STA 11+176 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



- LEGEND:**
- ER117.12 ⊕ EXISTING OUTLET
  - DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR 117.12 DRAINAGE OUTLET NO.
  - JR 117.13 PROPOSED JUNCTION BOX
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION

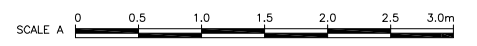
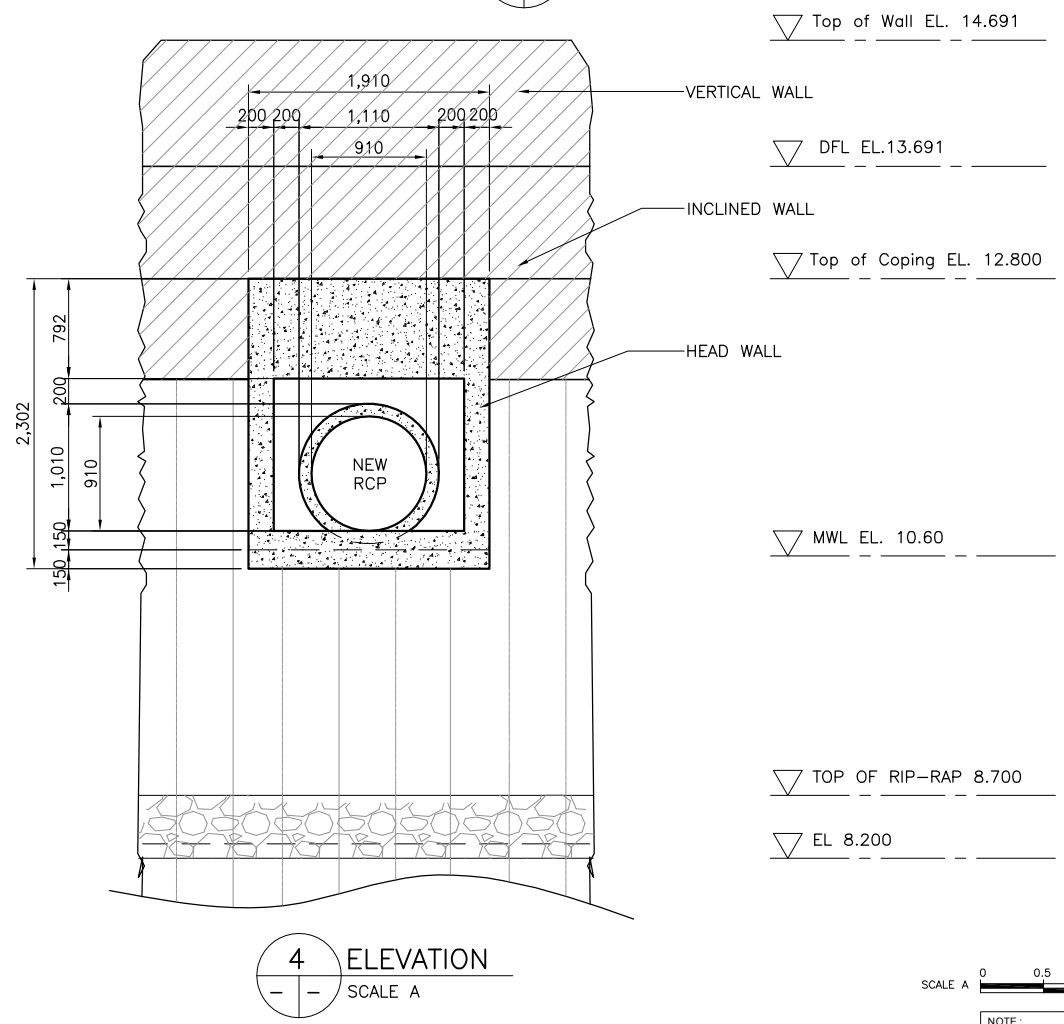
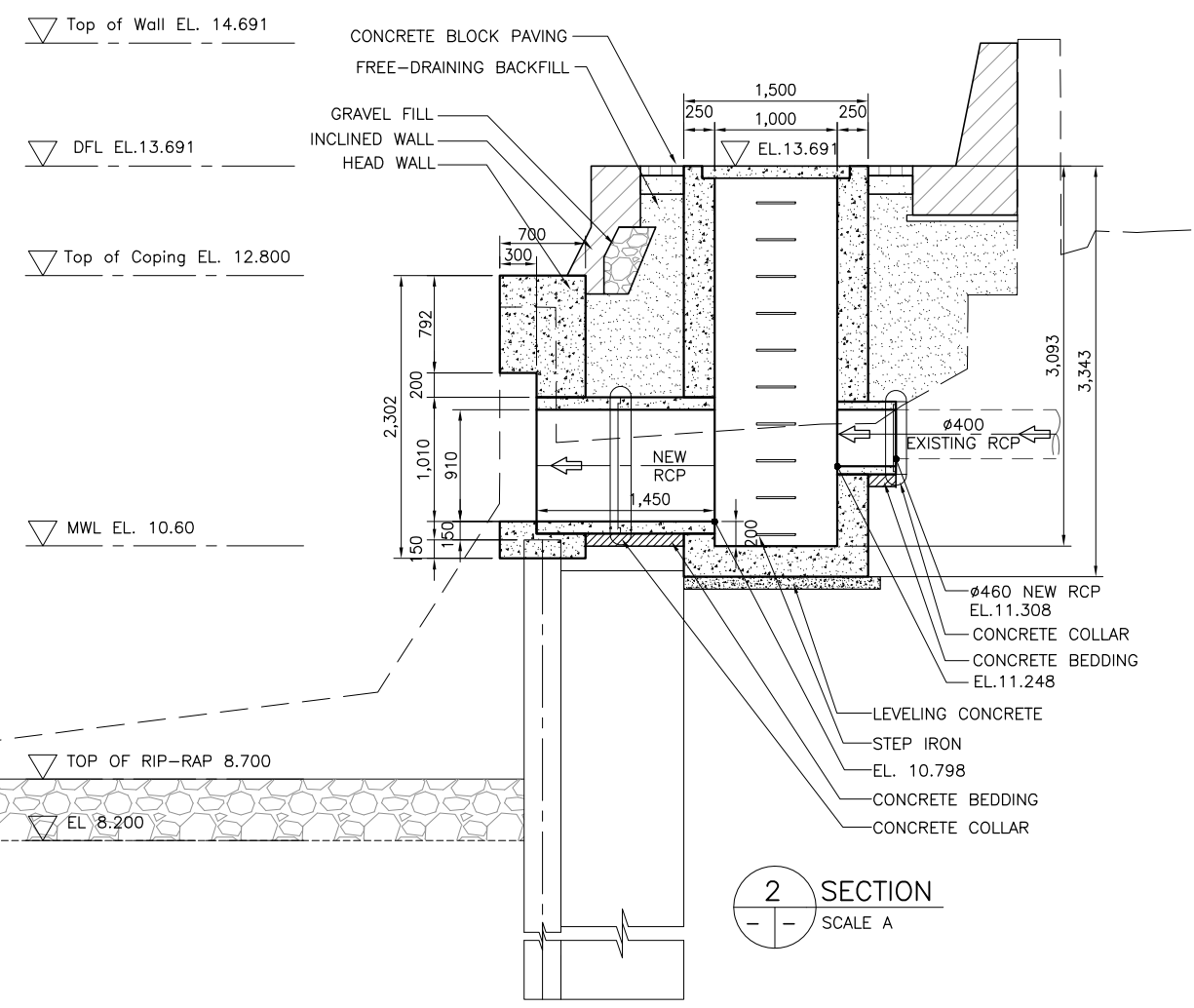
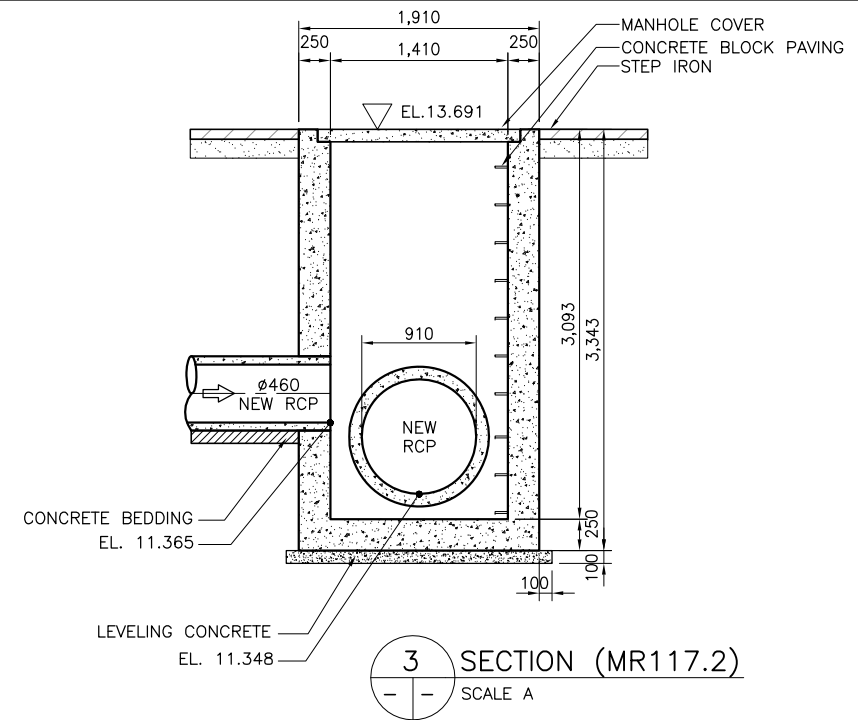
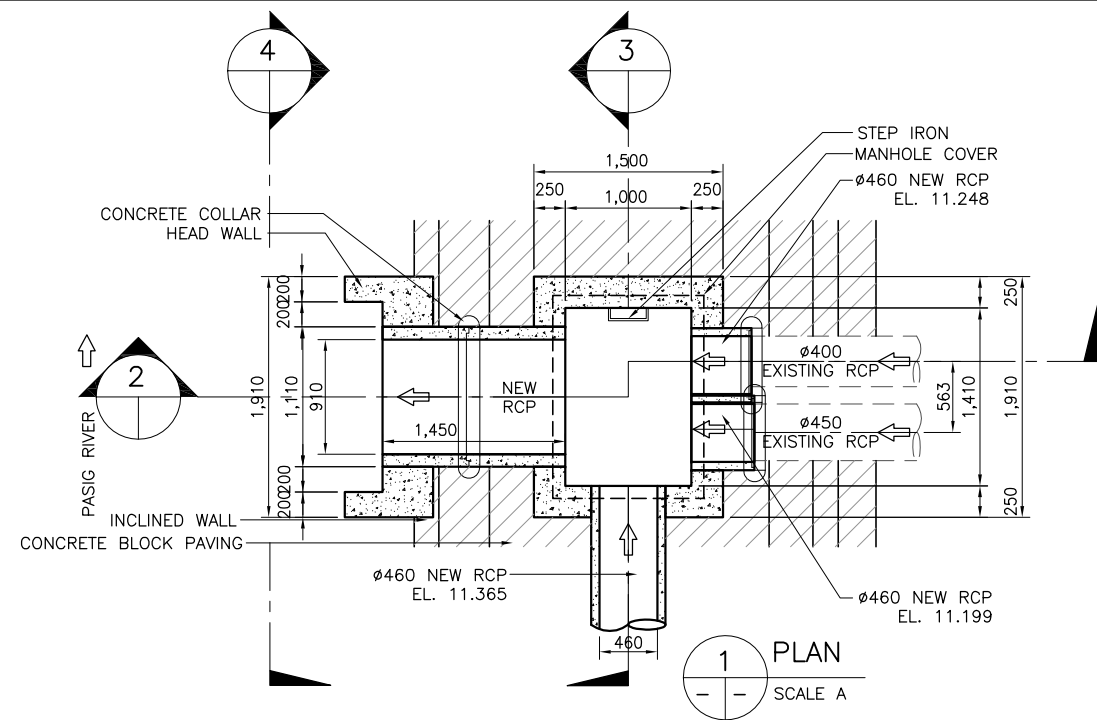
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.

UP-DR  
DO 117.12/P

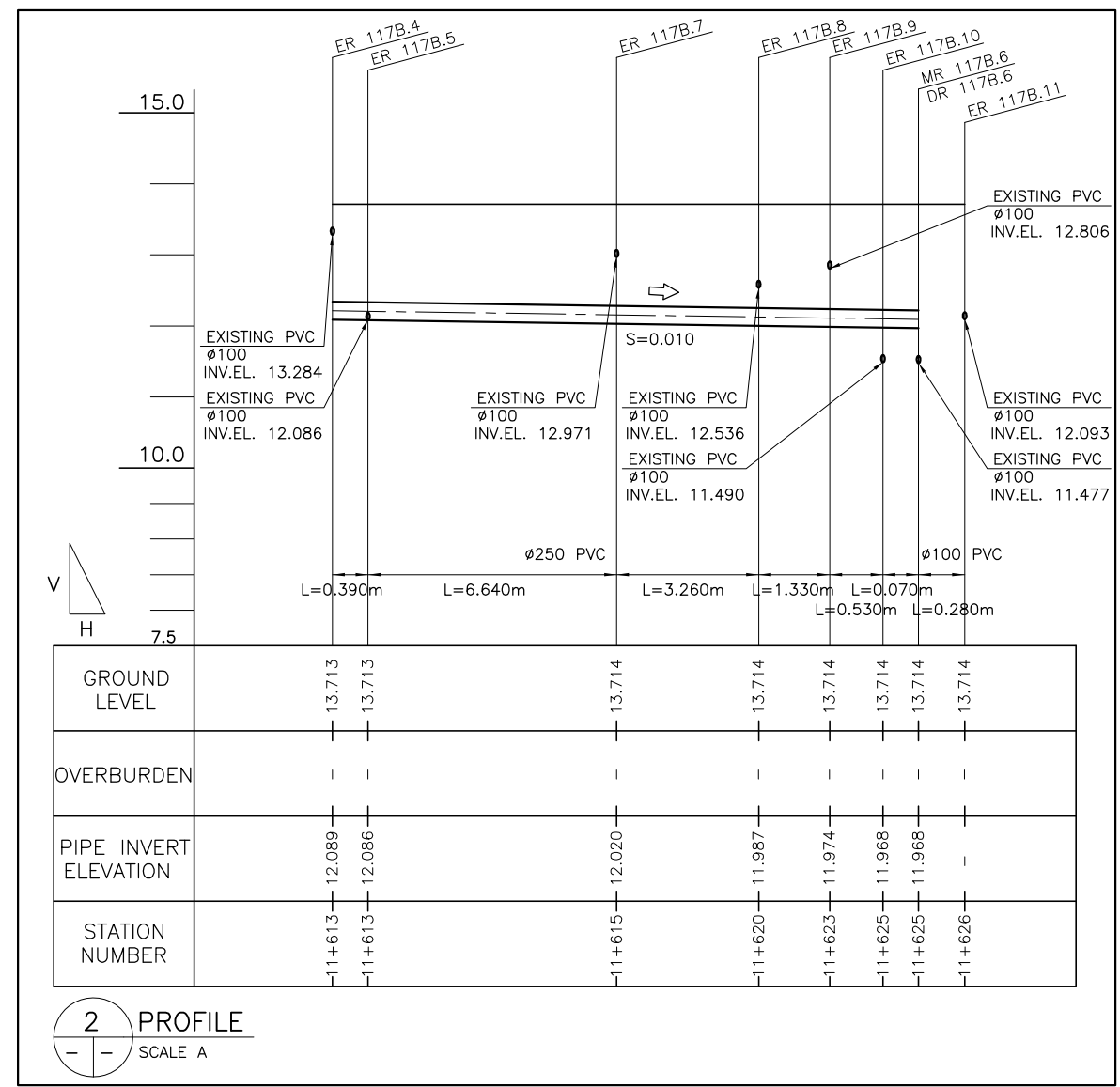
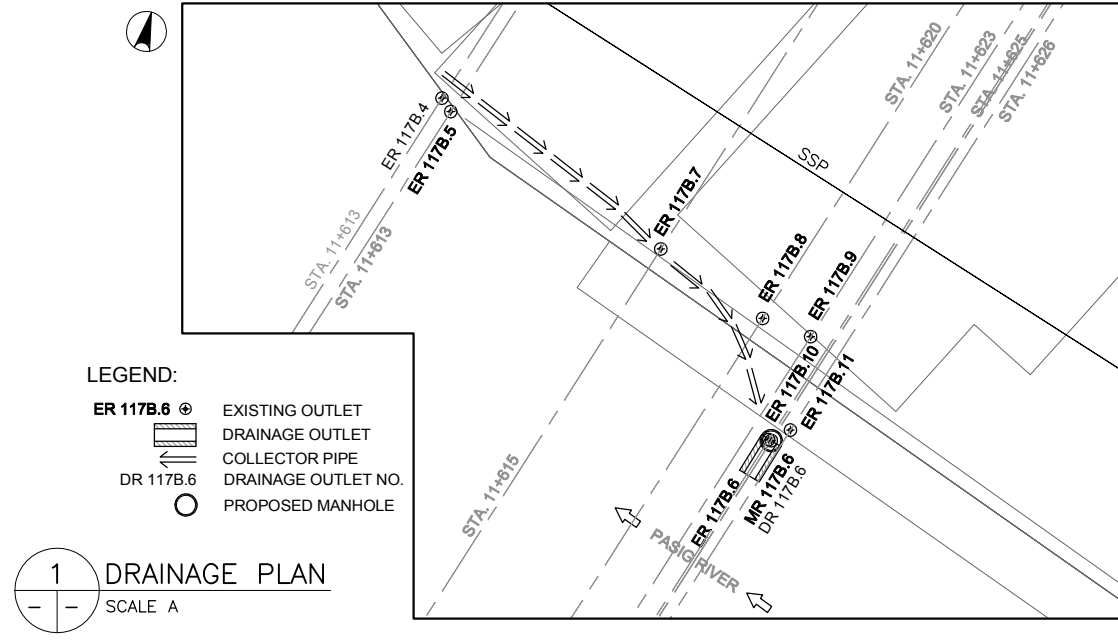


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 				<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> DETAIL OF DRAINAGE OUTLET DR117.12 & MANHOLE MR117.12 STA. 11+232 RB		<b>SHEET NO.</b> 
<b>DESIGNED BY:</b> KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	<b>CHECKED BY:</b> TOSHIKI KAWAKAMI <small>THE CHECKER</small>	<b>SUBMITTED BY:</b> SHUJI KAKU <small>TEAM LEADER</small>	<b>REVIEWED BY:</b> PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	<b>RECOMMENDING APPROVAL:</b> PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	<b>APPROVED BY:</b> GILBERTO S. REYES <small>DIRECTOR BOD</small>	<small>SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY</small> RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	<small>SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY</small> ROGELIO L. SINGSON <small>SECRETARY</small>	<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>		<b>UP-DR-DO117.12</b>	

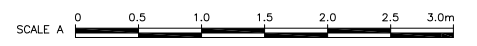
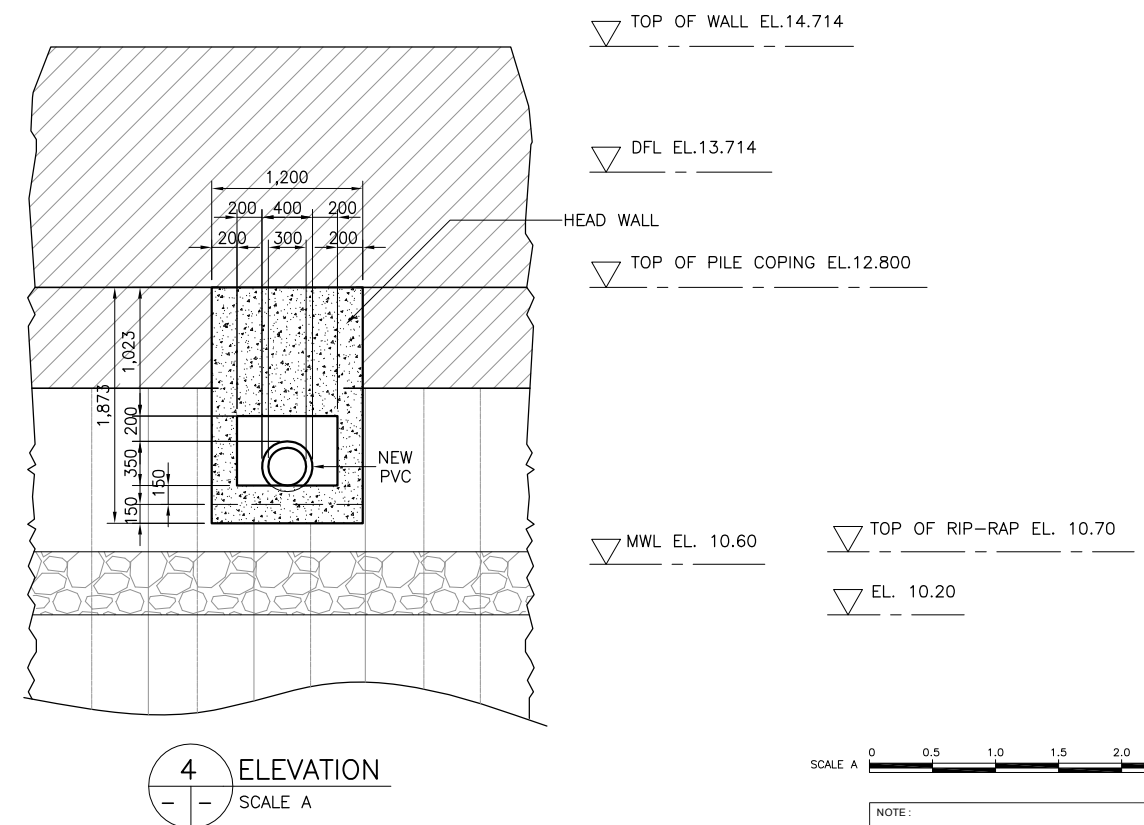
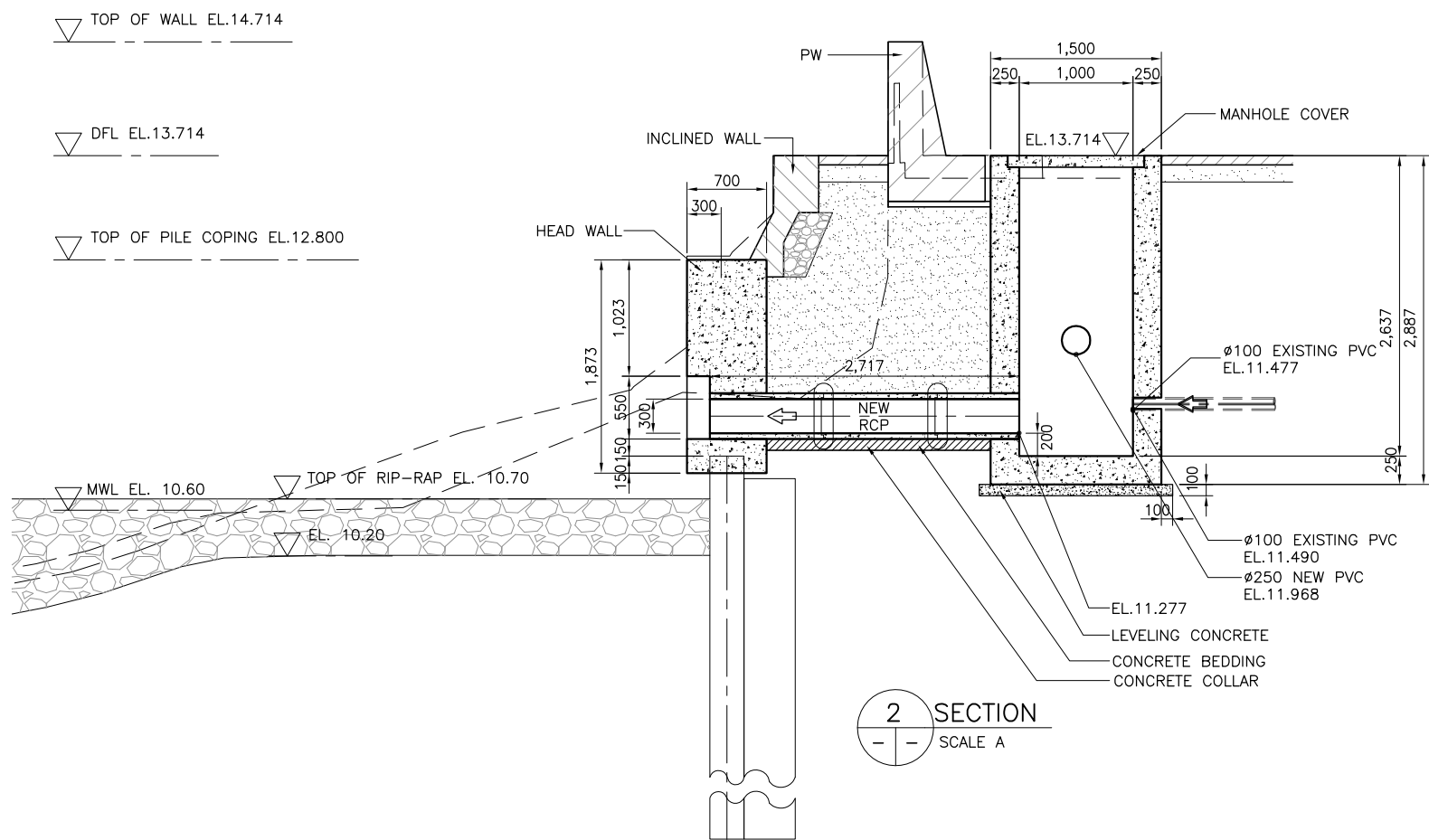
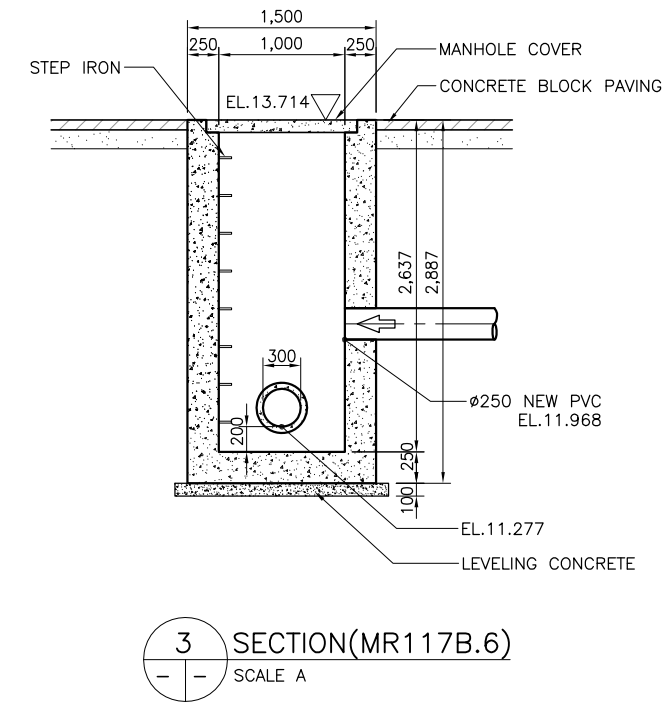
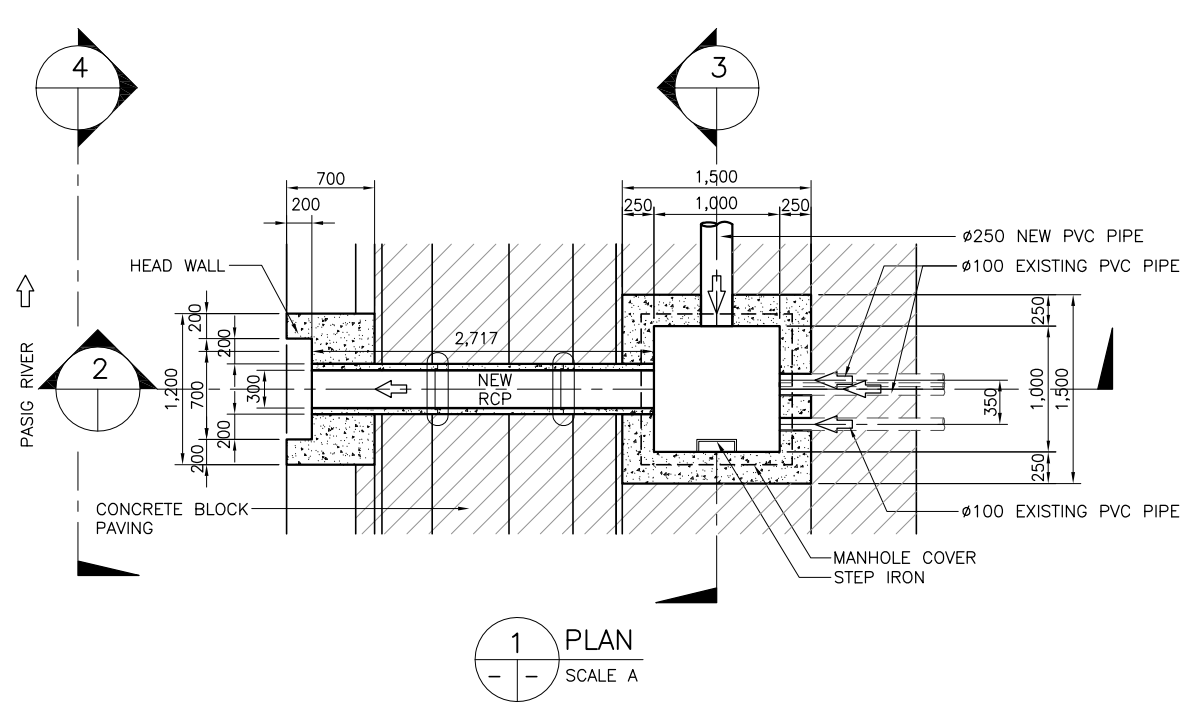


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	UP-DR DO 117B.6/P
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			
					RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



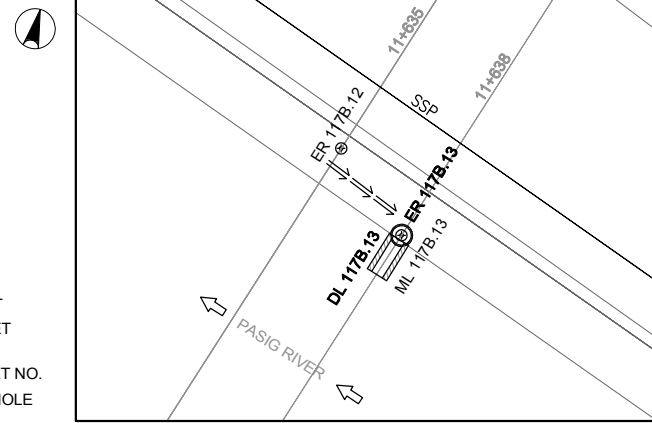
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

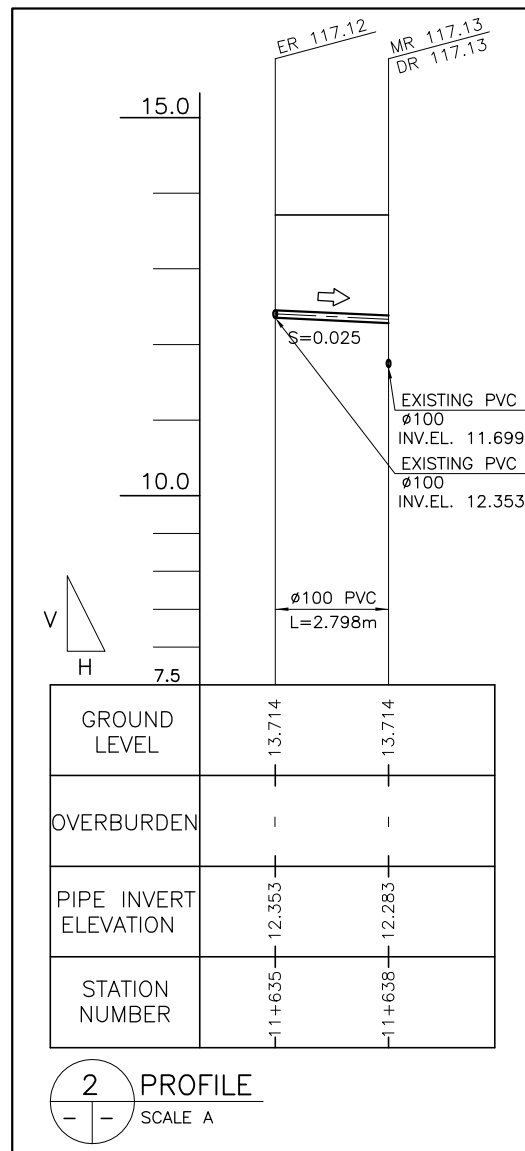
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR117B.6 & MANHOLE MR117B.6 STA 11+615 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			





- LEGEND:
- ER 117B.13 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR 117B.13 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

SCALE A 0 2.5 5.0 7.5 10m

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION

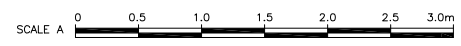
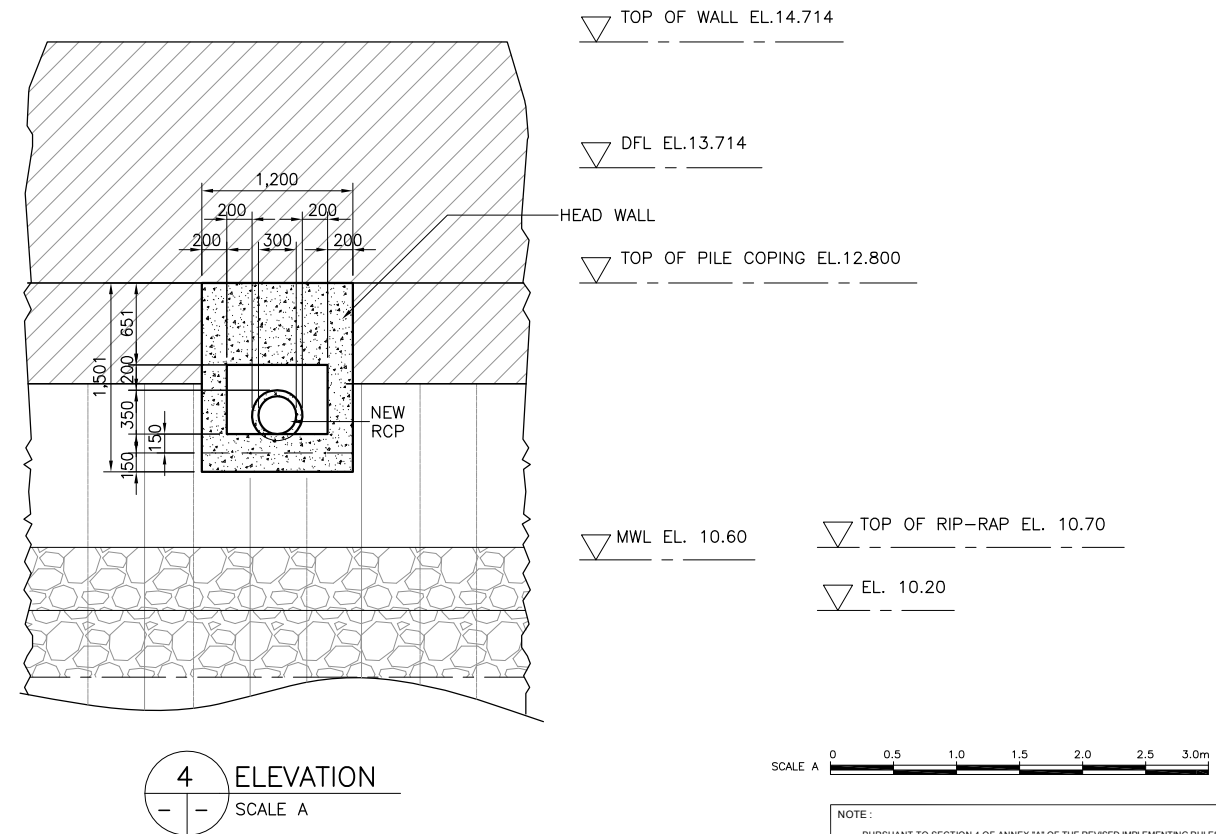
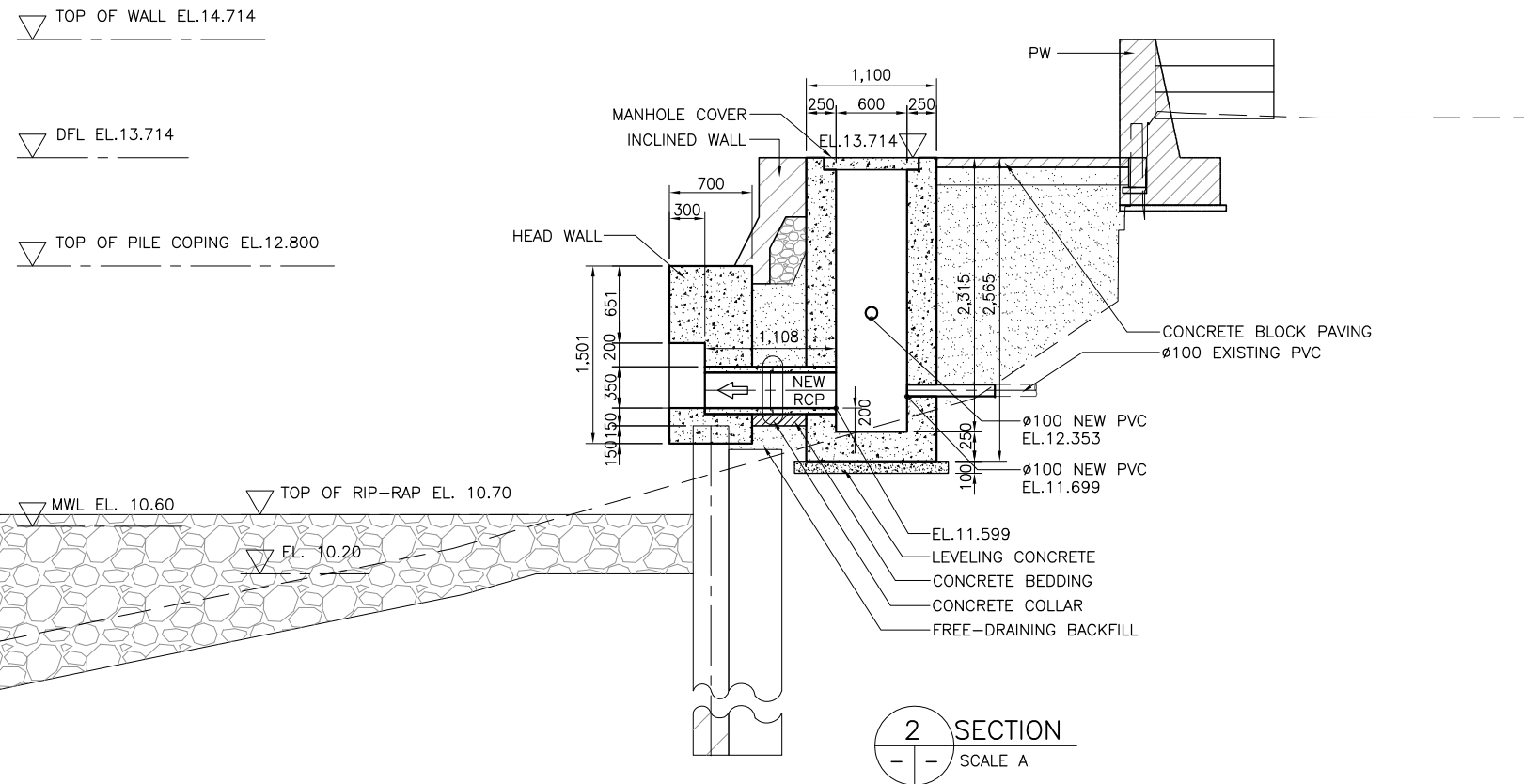
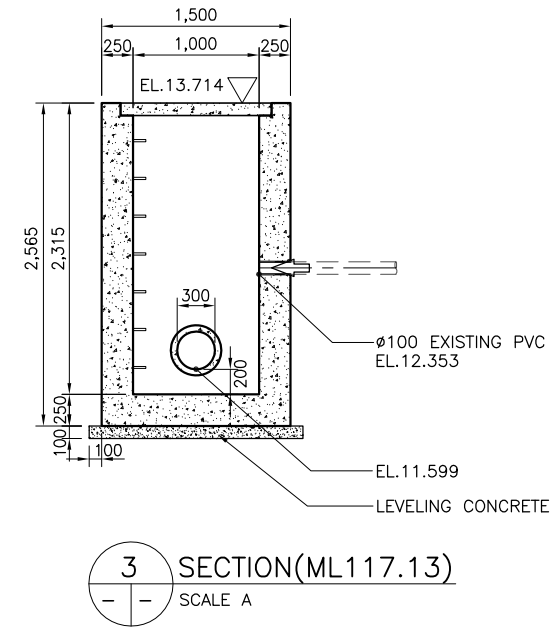
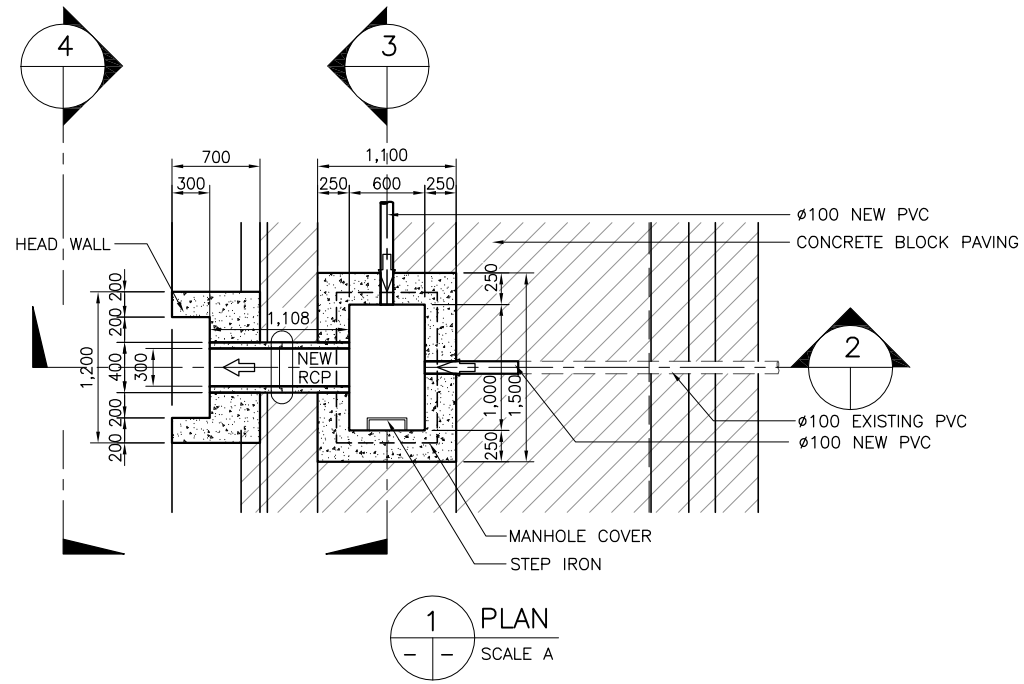
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF  
COLLECTOR PIPE

SHEET NO.

UP-DR-  
DO 117B.13/P

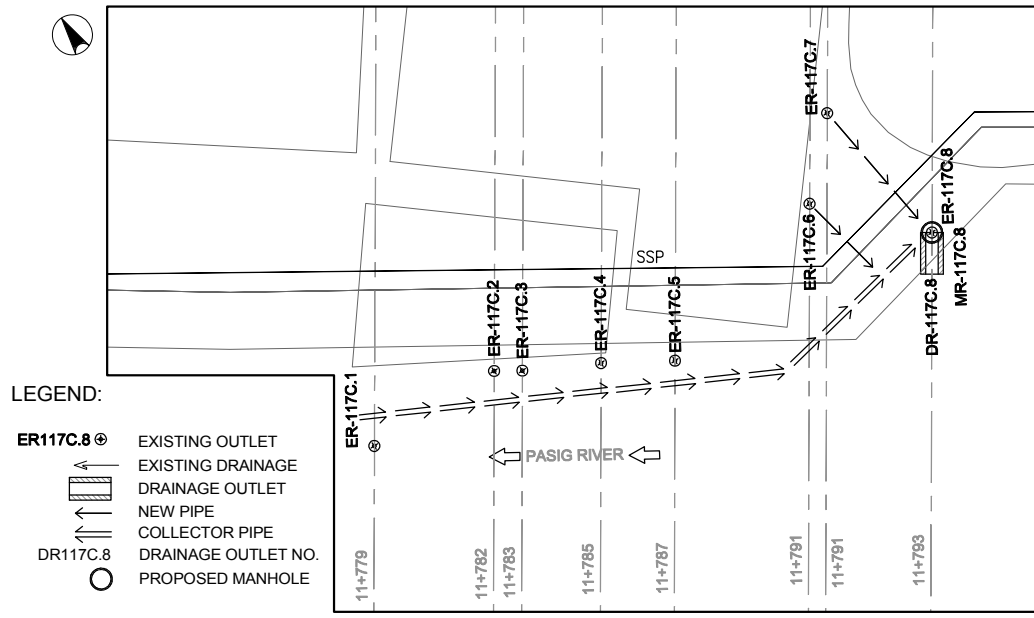


**NOTE:**  
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REVISIONS			
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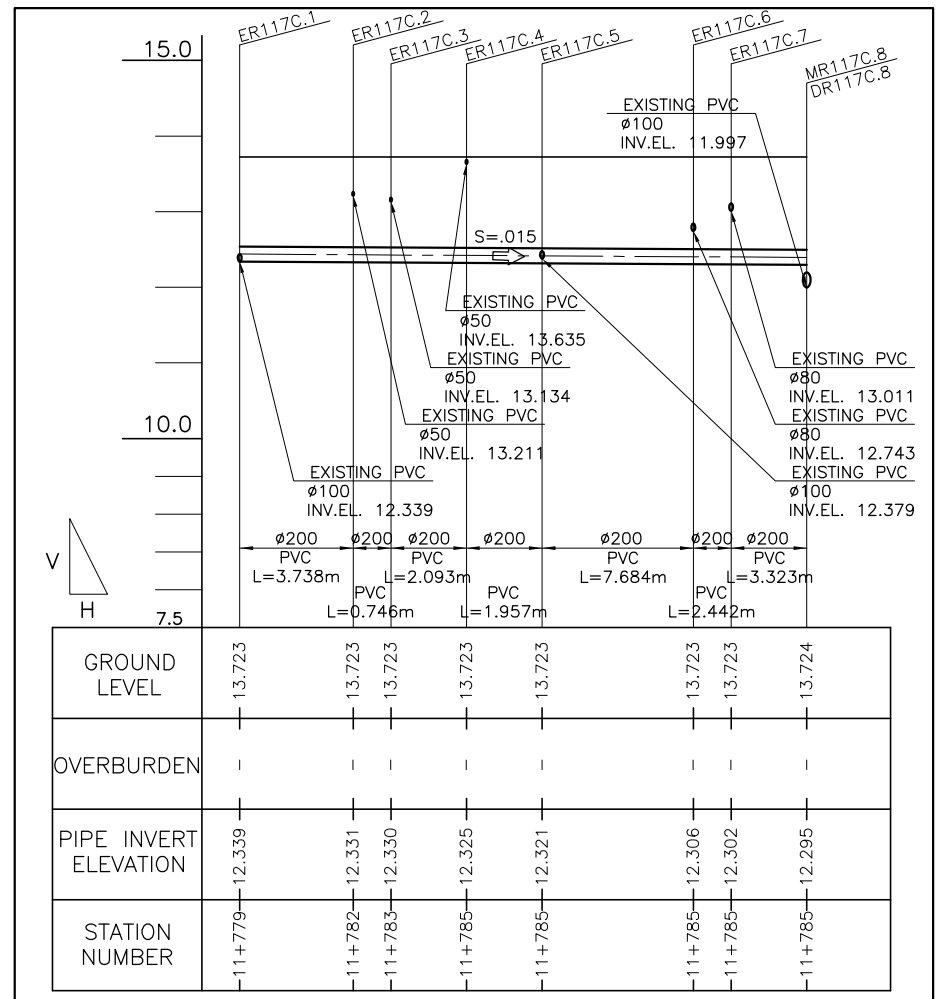
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR117B.13 & MANHOLE MR117B.13 STA 11+638 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



- LEGEND:**
- ER117C.8 ⊕ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▭ DRAINAGE OUTLET
  - ▭ NEW PIPE
  - ▭ COLLECTOR PIPE
  - DR117C.8 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

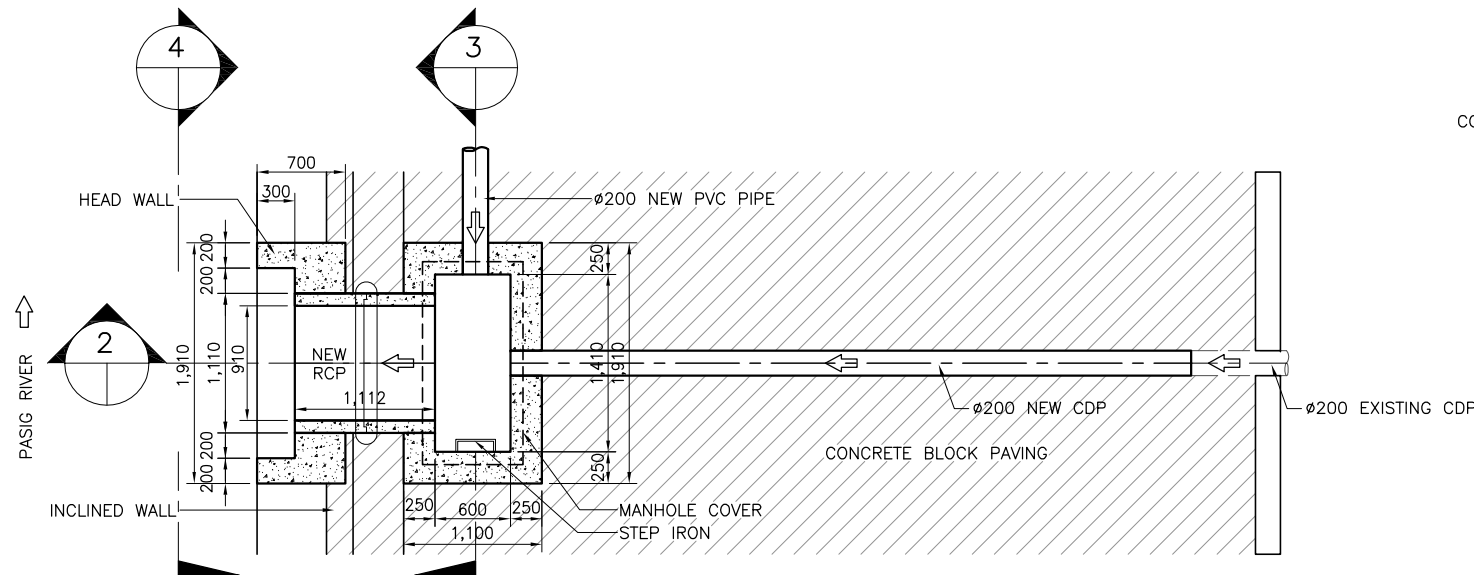


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

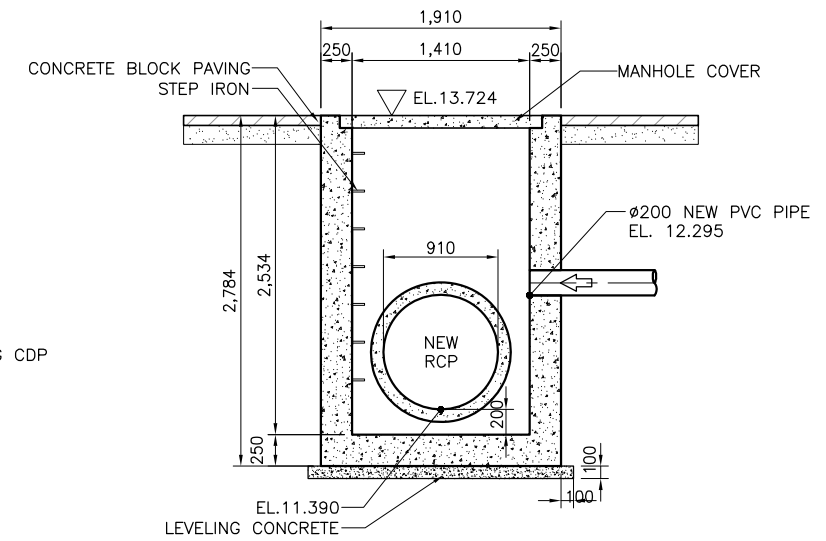
**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

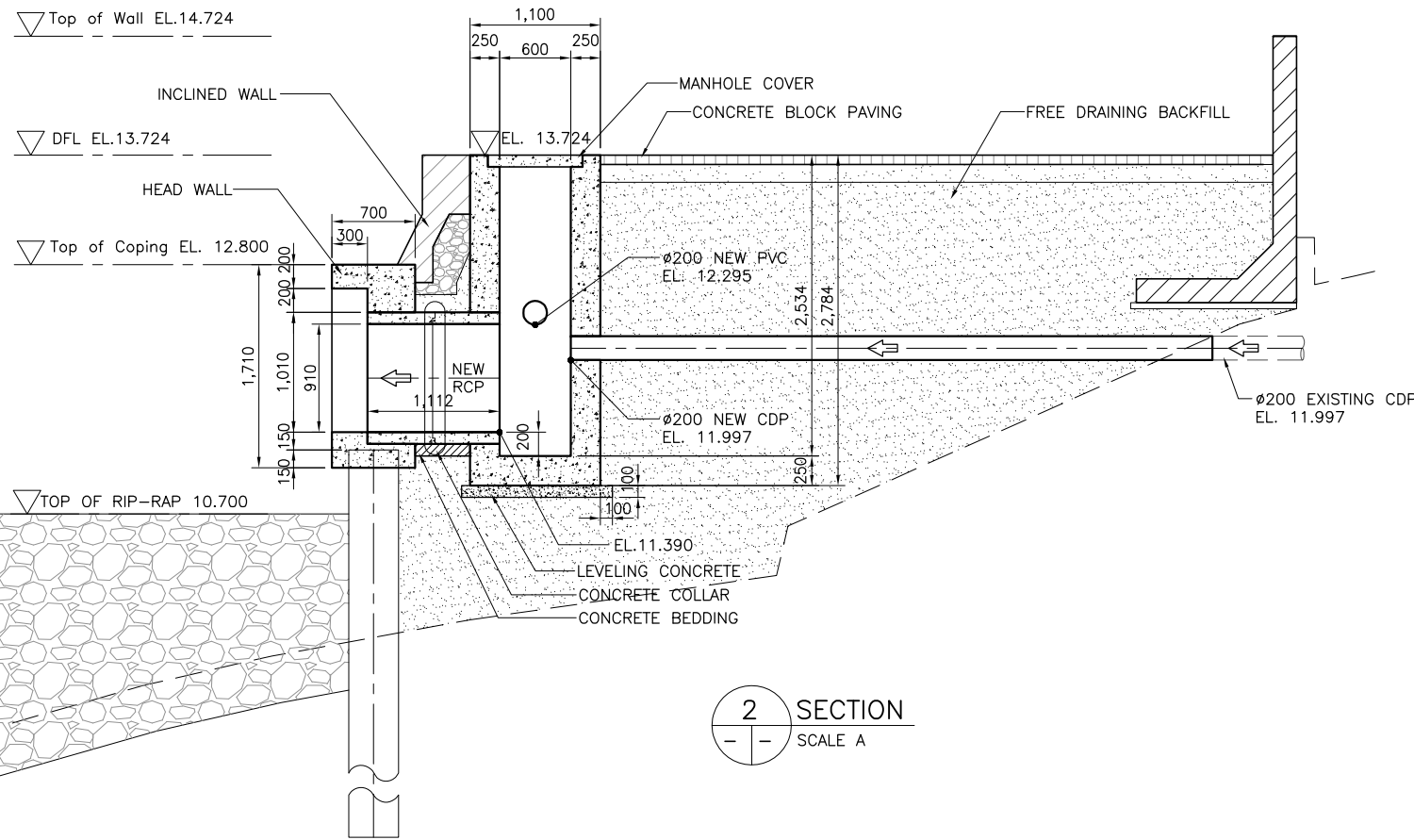
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY			



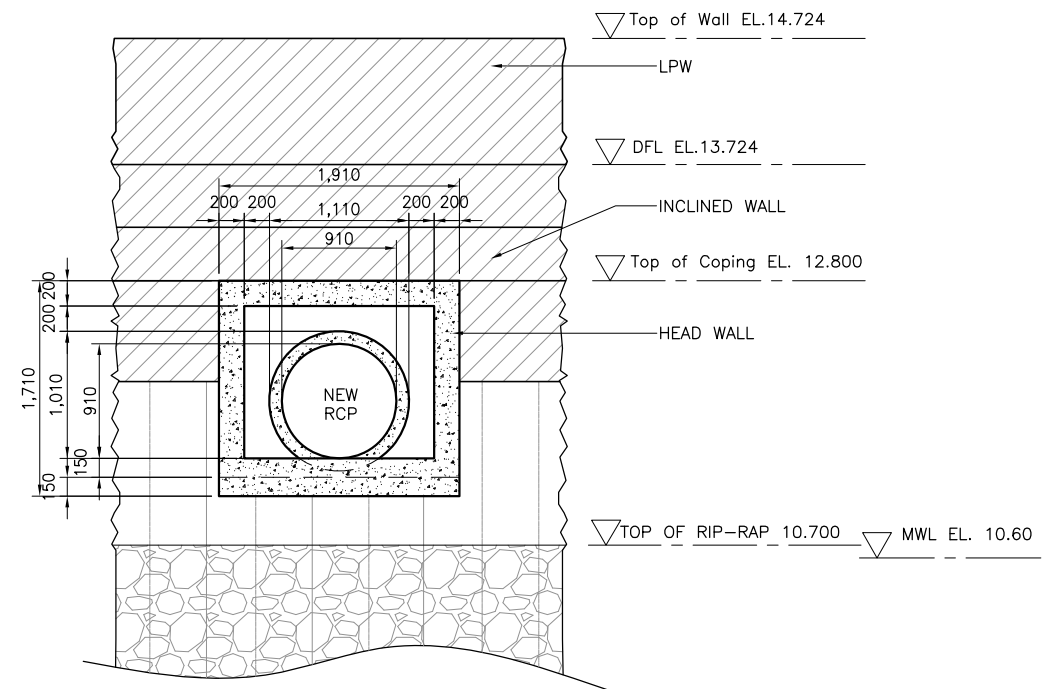
1 PLAN  
SCALE A



3 SECTION (MR117C.8)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



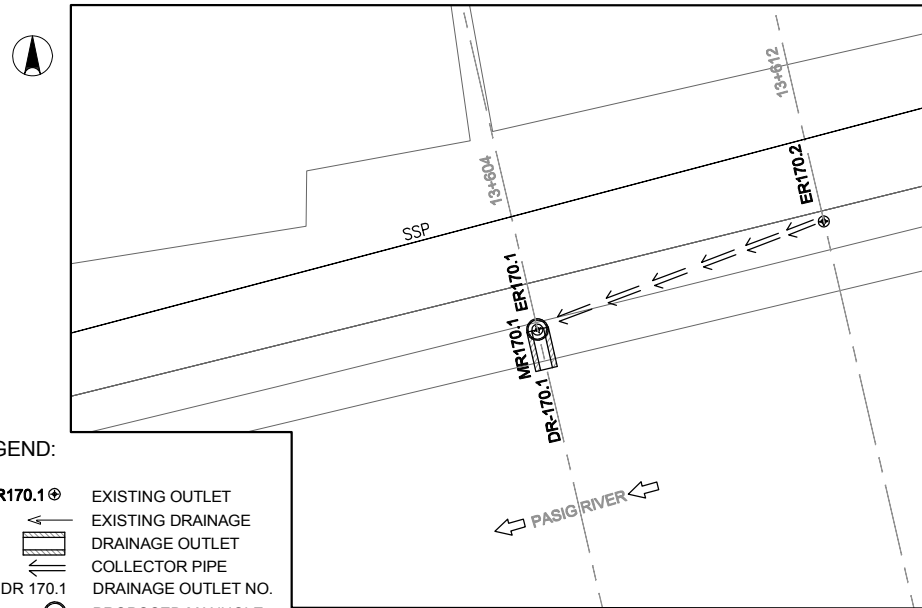
DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
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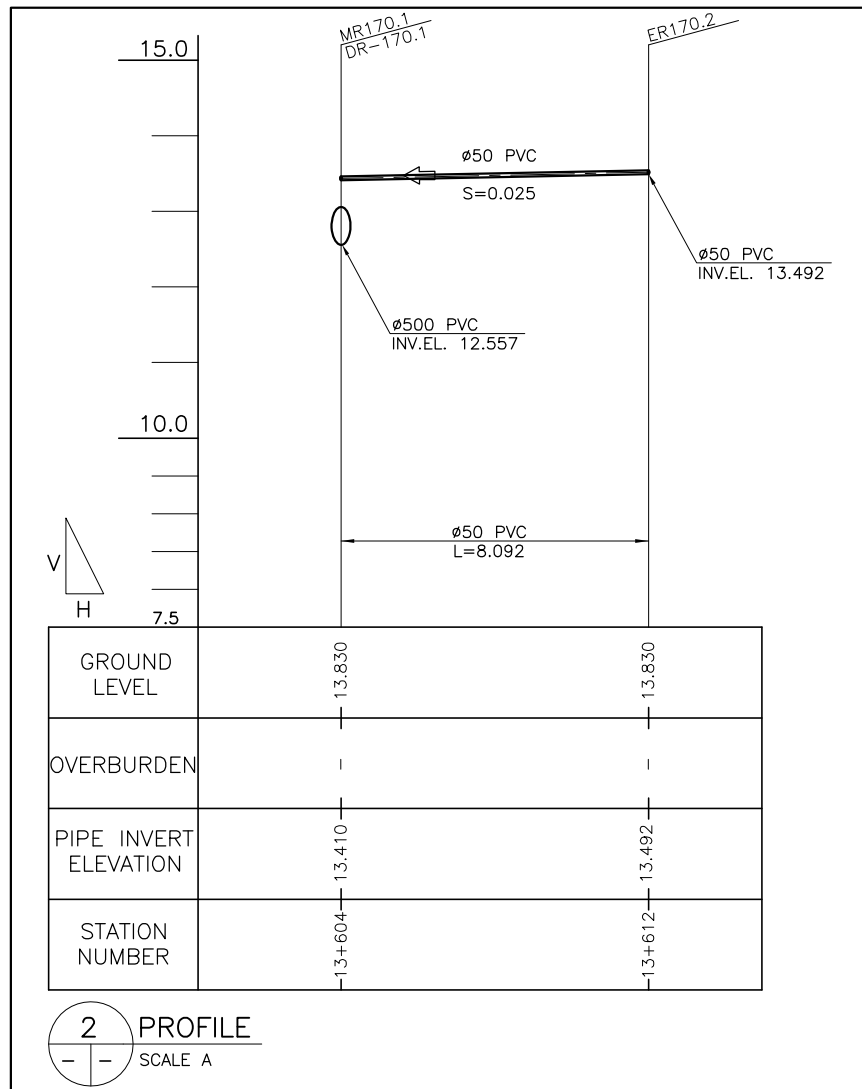
PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DR 117C.8 & MANHOLE MR117C.8 STA. 11+793 RB	SHEET NO. UP-DR DO117C.8
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LEGEND:

- ER170.1 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ▬ COLLECTOR PIPE
- DR 170.1 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	APPROVED BY: RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY
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PROJECT & LOCATION

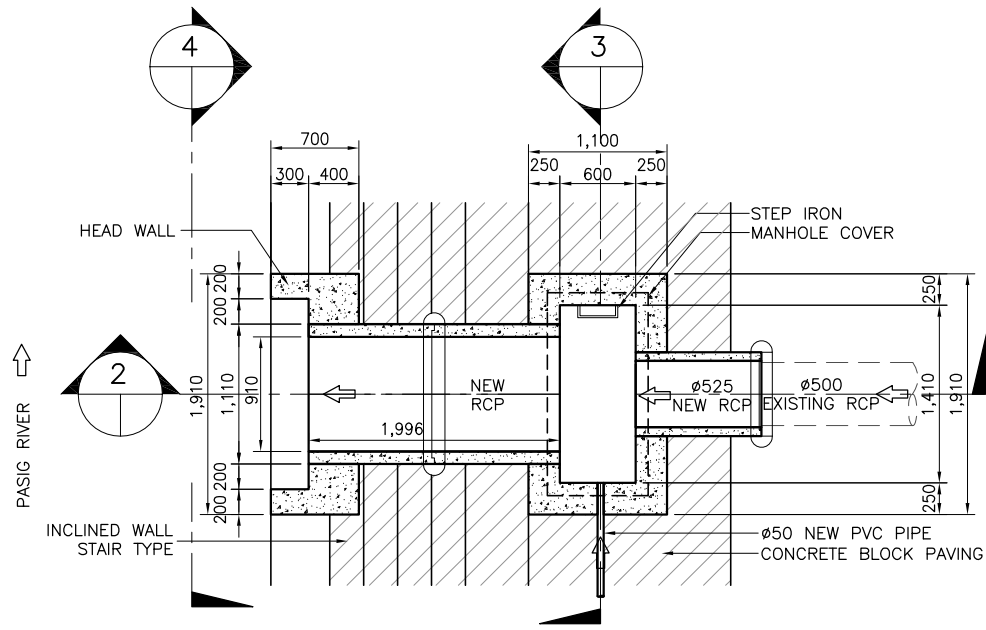
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RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

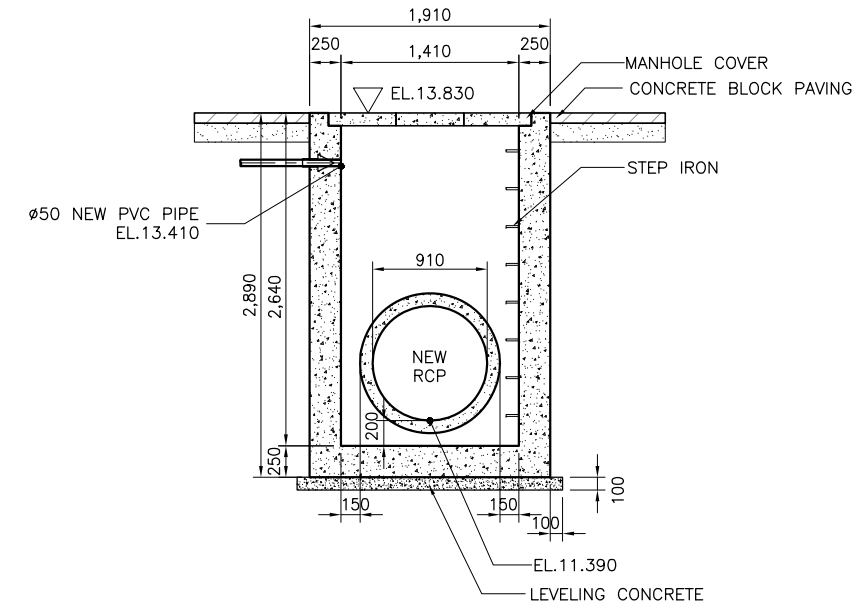
PLAN & PROFILE OF  
COLLECTOR PIPE

SHEET NO.

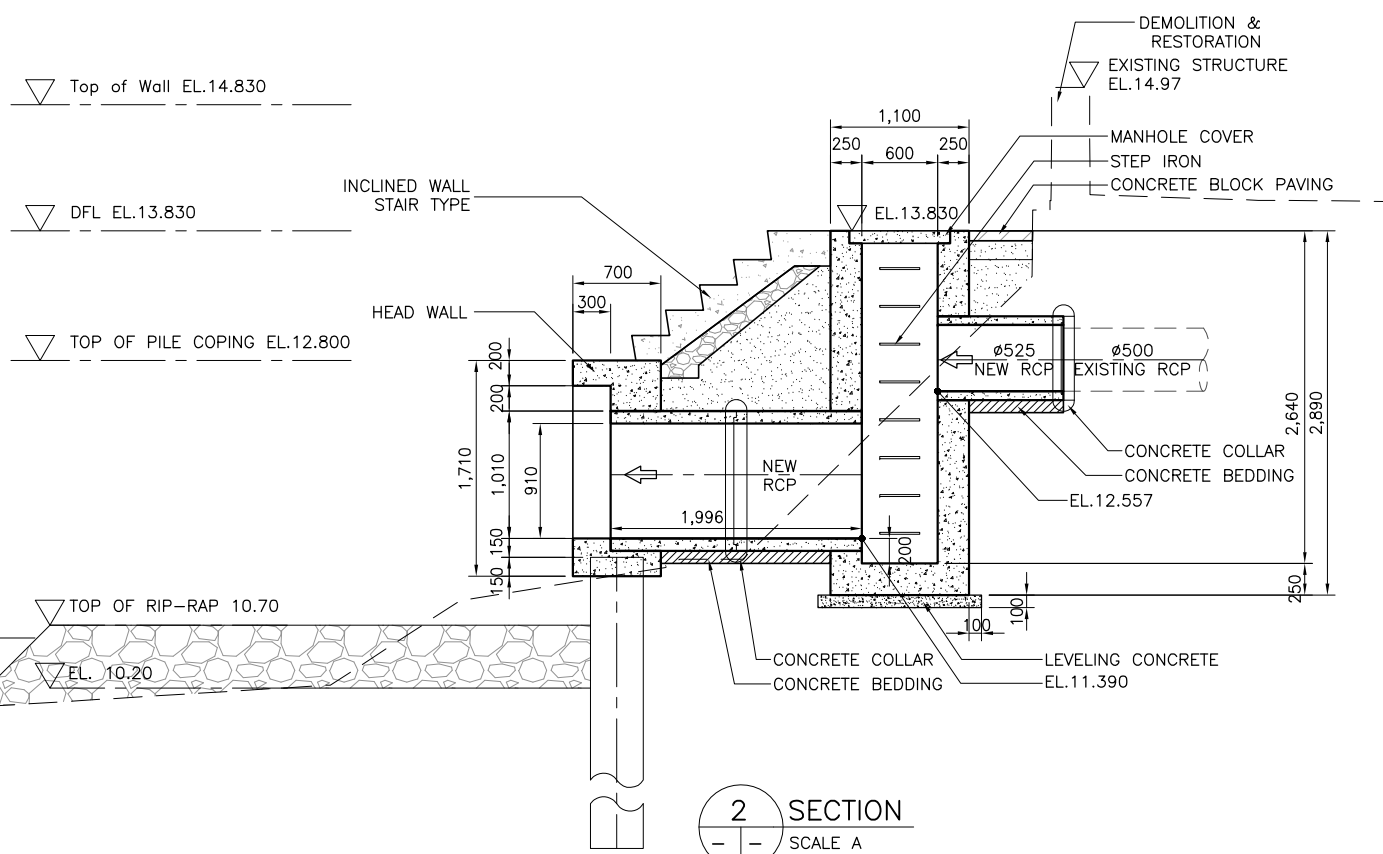
UP-DR-  
DO/170.1/P



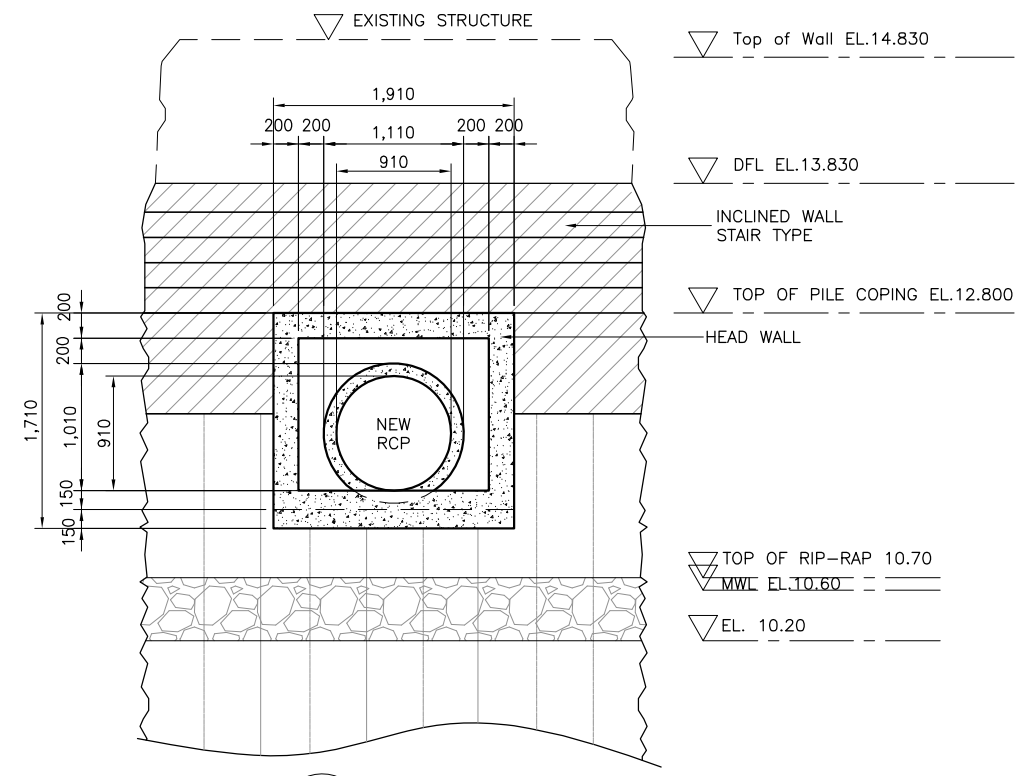
1 PLAN  
SCALE A



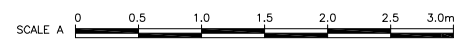
3 SECTION  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES

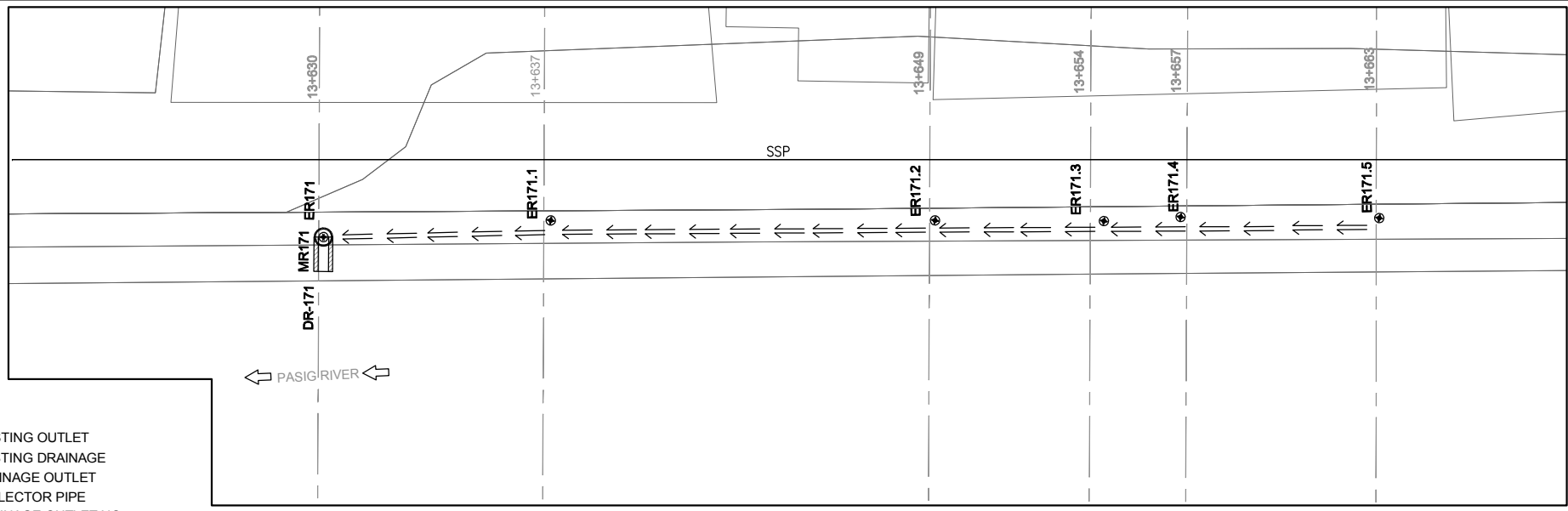


DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

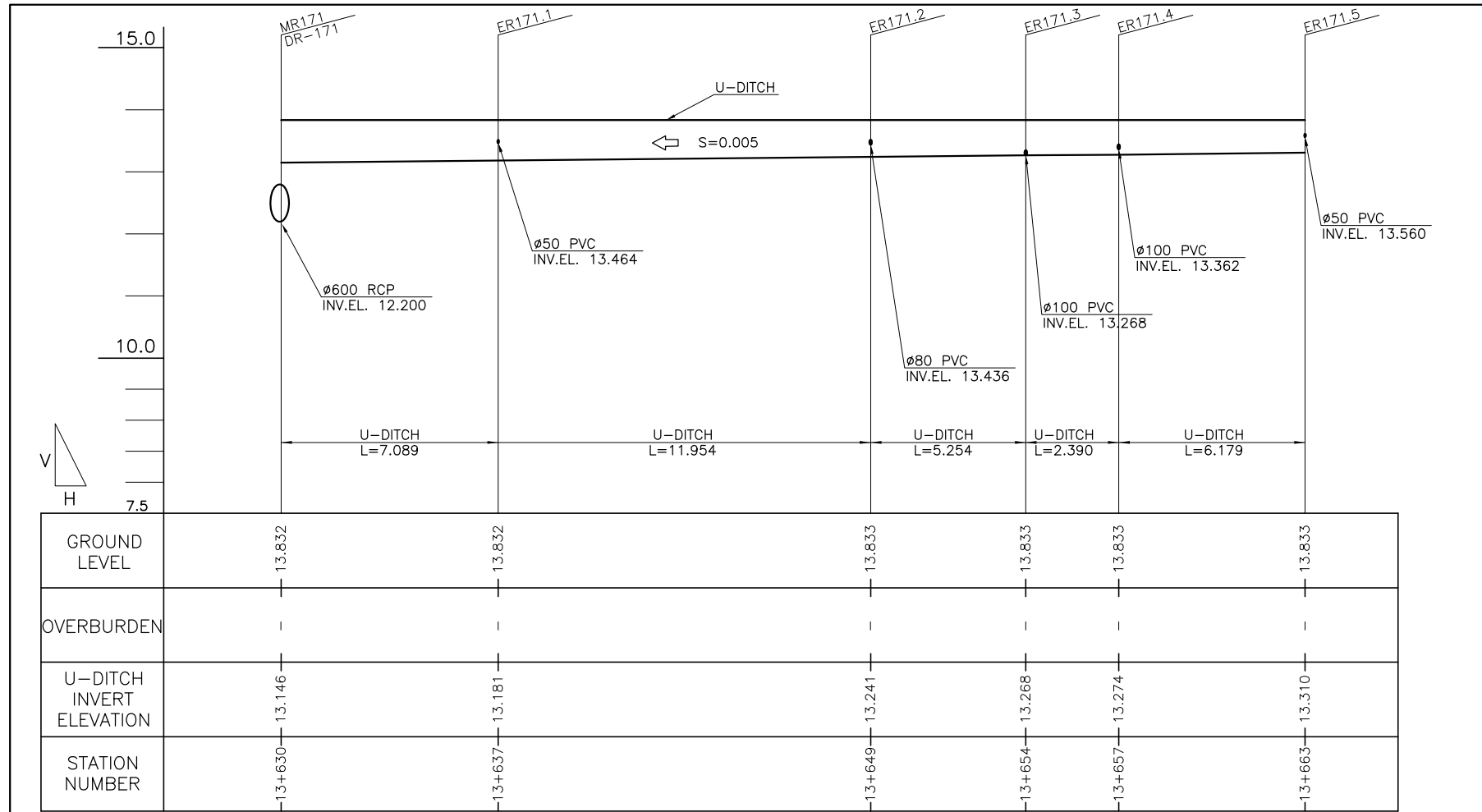
PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DR170.1 & MANHOLE MR170.1 STA. 13+604 RB	SHEET NO. UP-DR-DO170.1
--	---	----------------------------



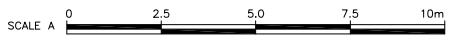
LEGEND:

- ER171 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ⊕ DRAINAGE OUTLET
- ← COLLECTOR PIPE
- DR 171 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
--	--	--



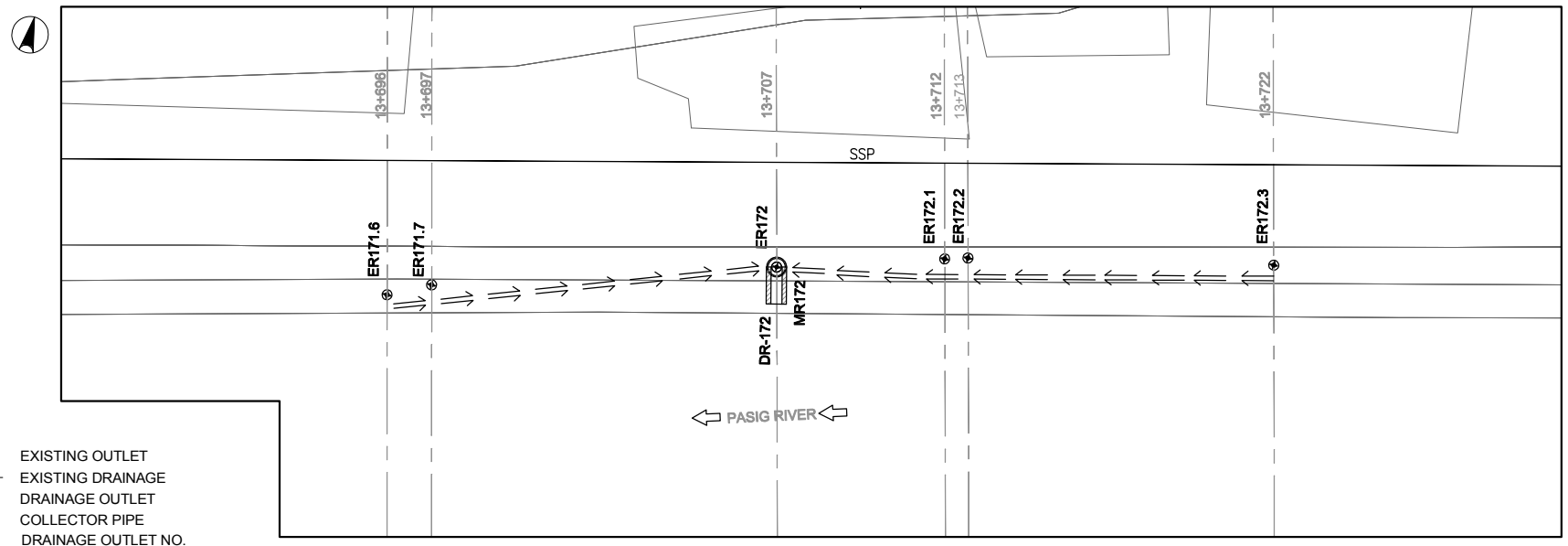
REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS PLAN & PROFILE OF U-DITCH COLLECTOR	SHEET NO. UP-DR-DO/171/P
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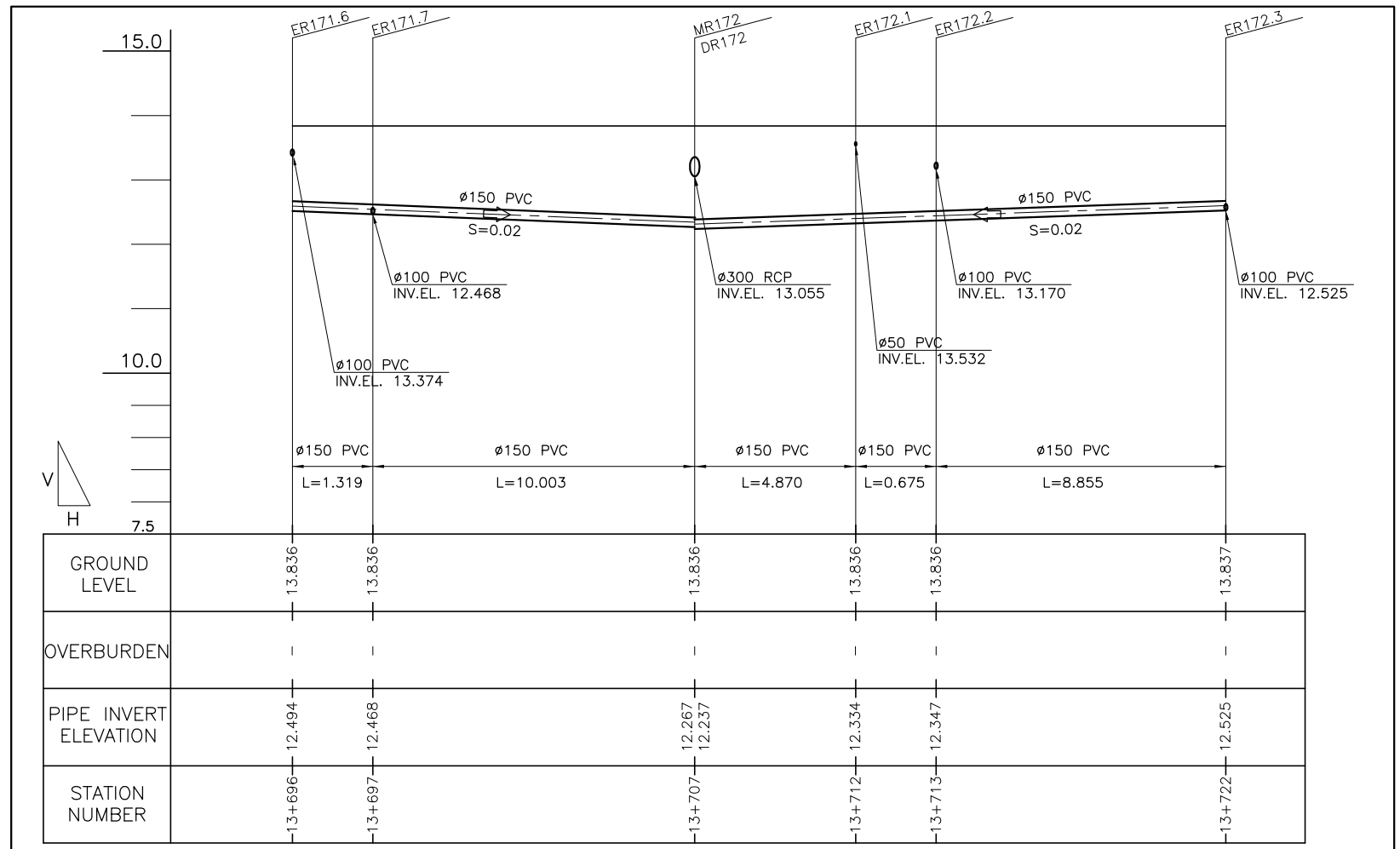




LEGEND:

- ER172 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ⇄ COLLECTOR PIPE
- DR 172 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



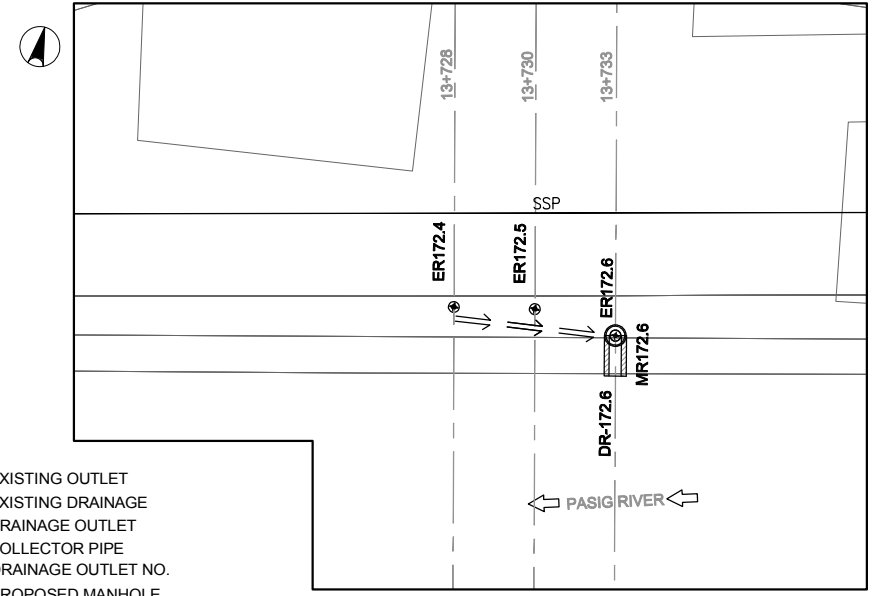
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

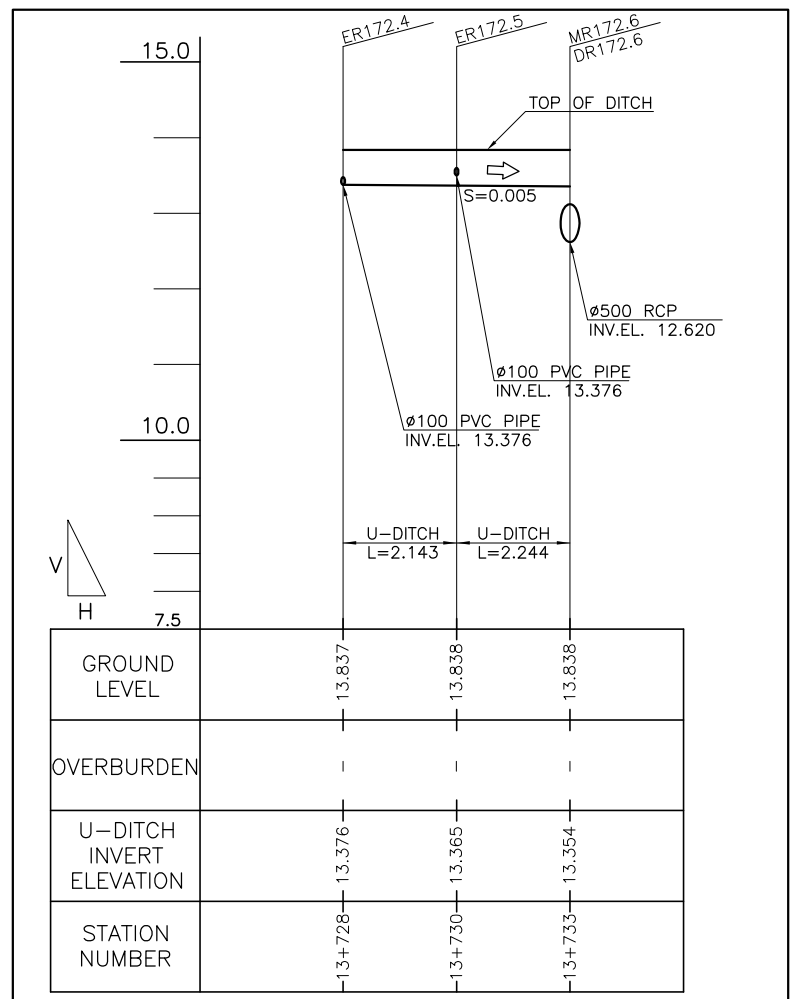
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	UP-DR DO/172/P
	KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SHUJI KAKU <small>TEAM LEADER</small>		PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>			



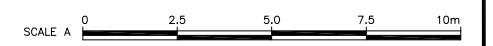


- LEGEND:
- ER172.6 ⊕ EXISTING OUTLET
  - ← EXISTING DRAINAGE
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR 172.6 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION

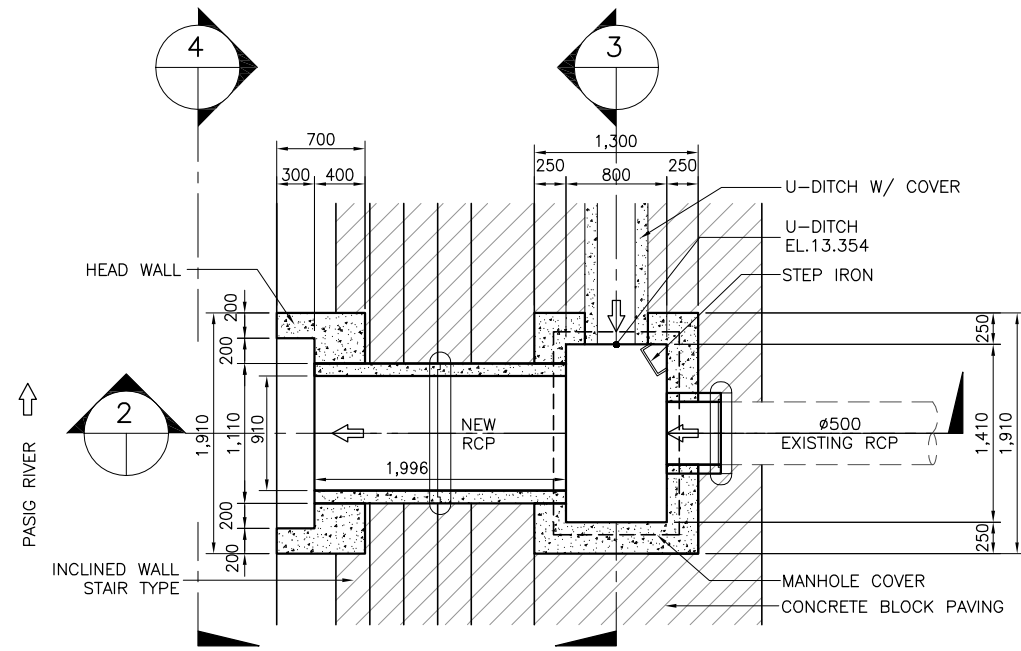
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

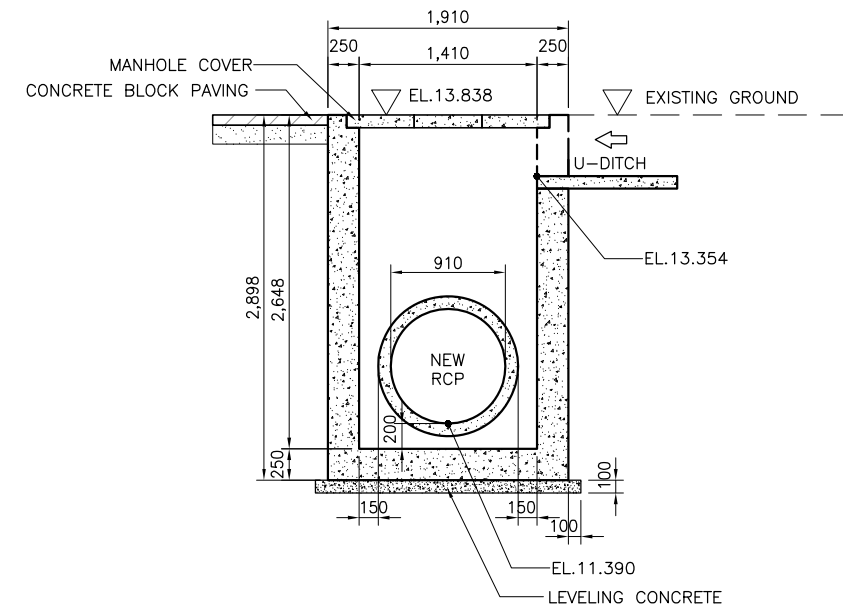
PLAN & PROFILE OF U-DITCH COLLECTOR

SHEET NO.

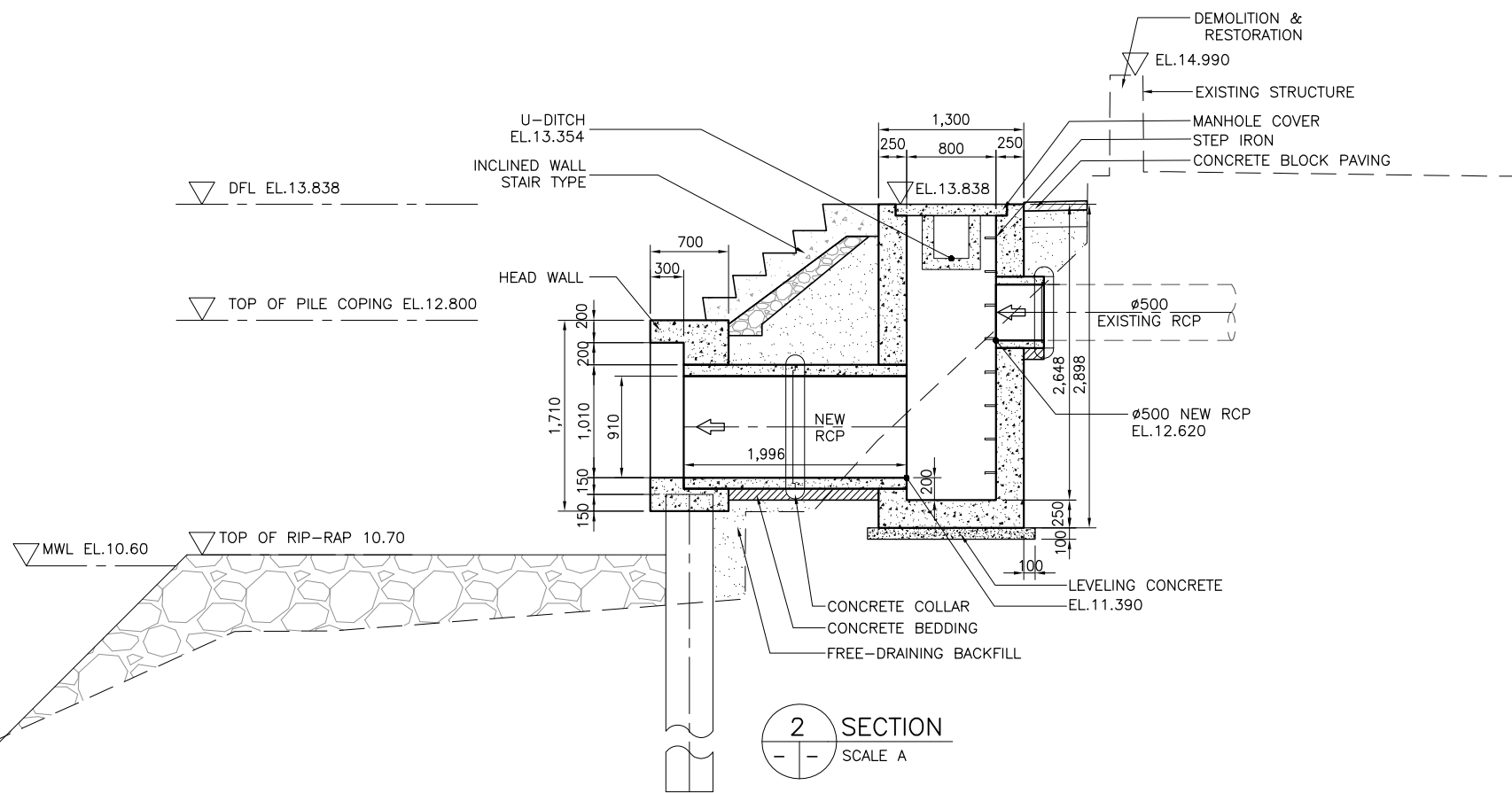
UP-DR  
DO 172.6/P



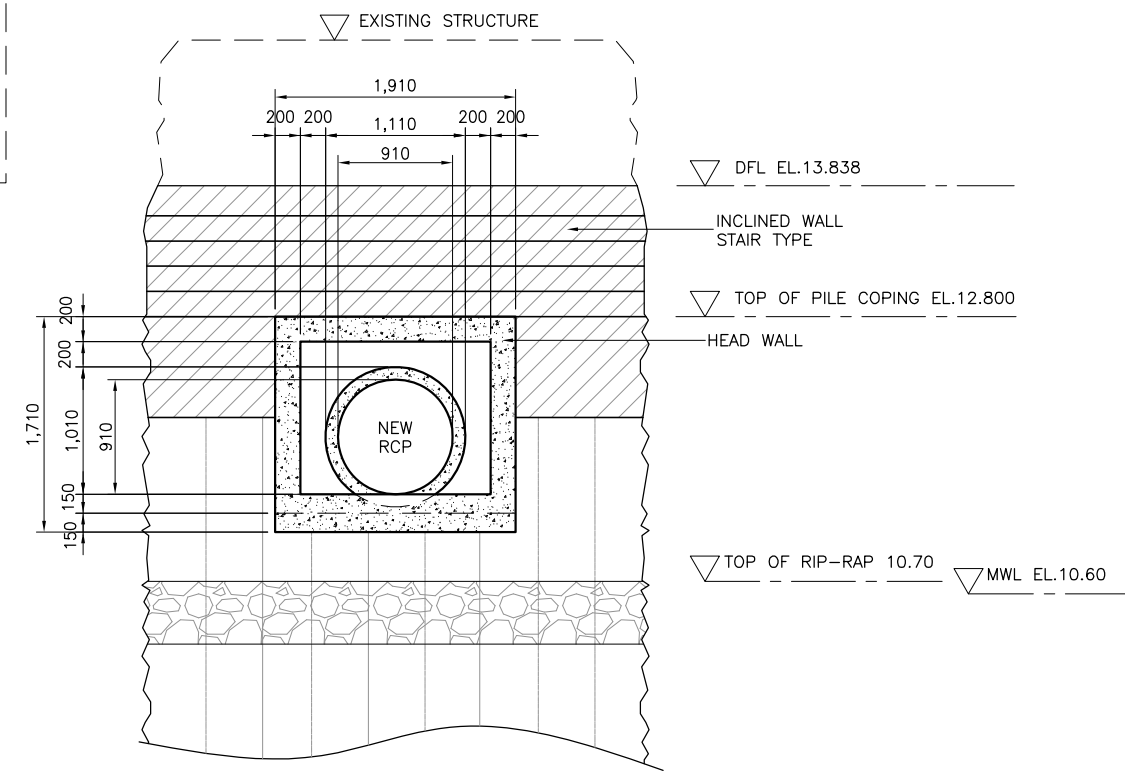
1 PLAN  
SCALE A



3 SECTION(MR172.6)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

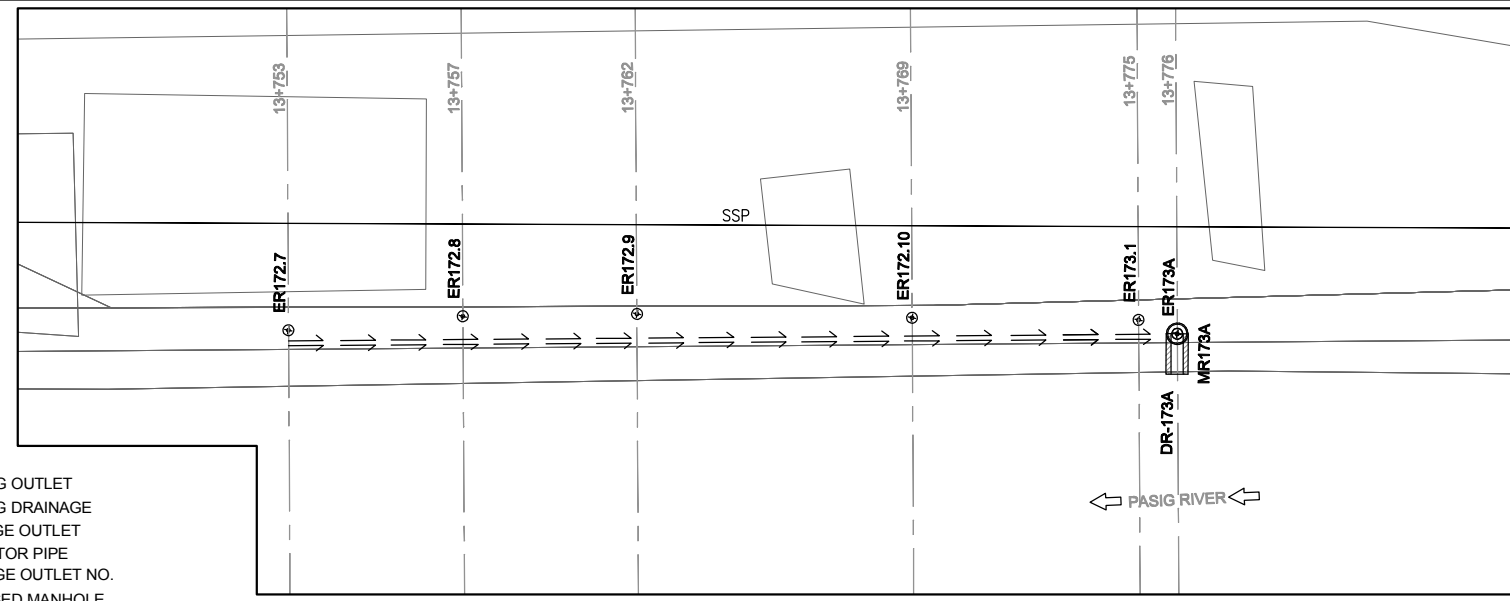
PROJECT & LOCATION  
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS  
DETAIL OF DRAINAGE  
OUTLET- DR-172.6,  
MANHOLE MR172.6  
STA. 13+733 RB

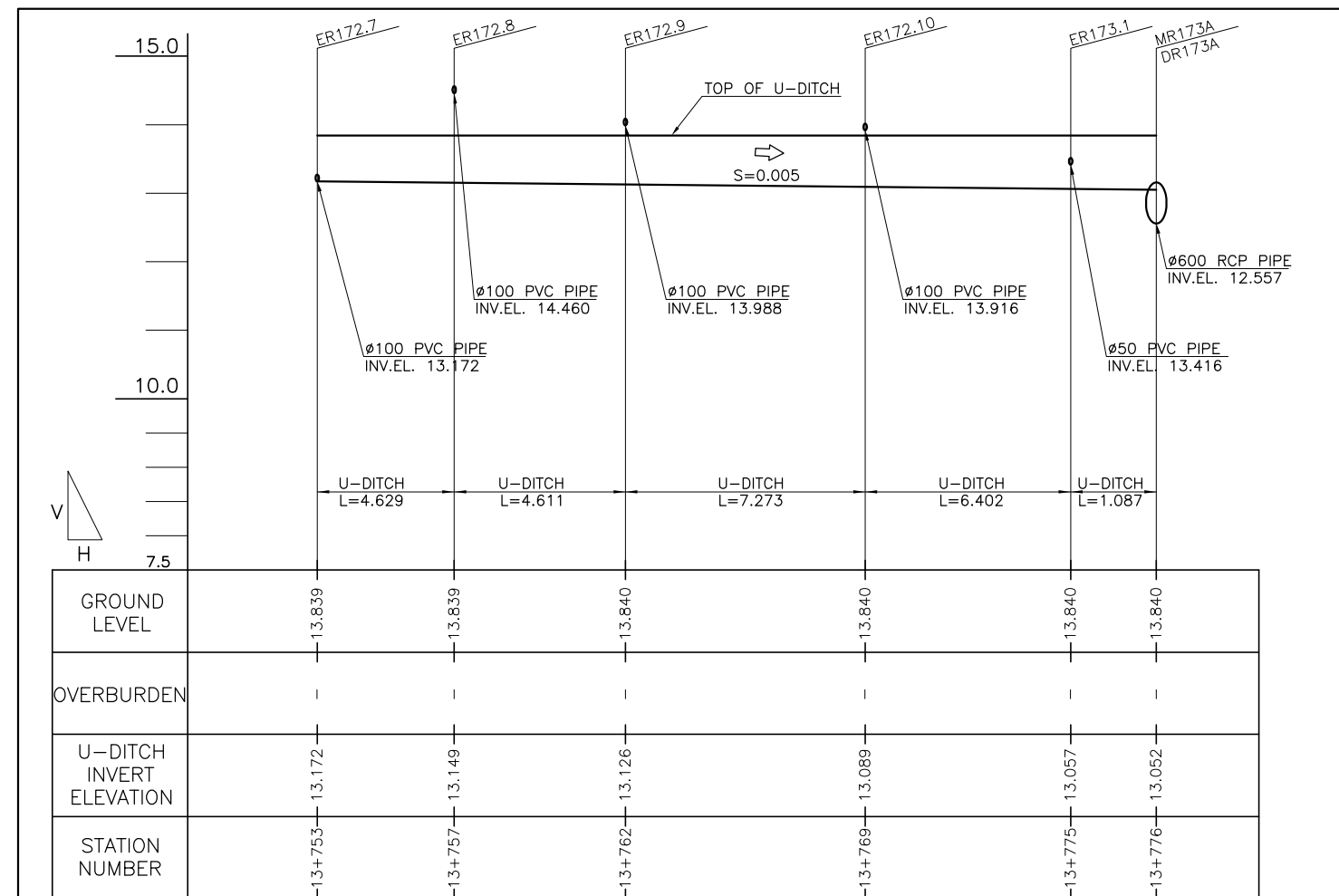
SHEET NO.  
UP-DR  
DO/172.6

LEGEND:

- ER173A ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ← COLLECTOR PIPE
- DR 173A DRAINAGE OUTLET NO.
- PROPOSED MANHOLE



1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

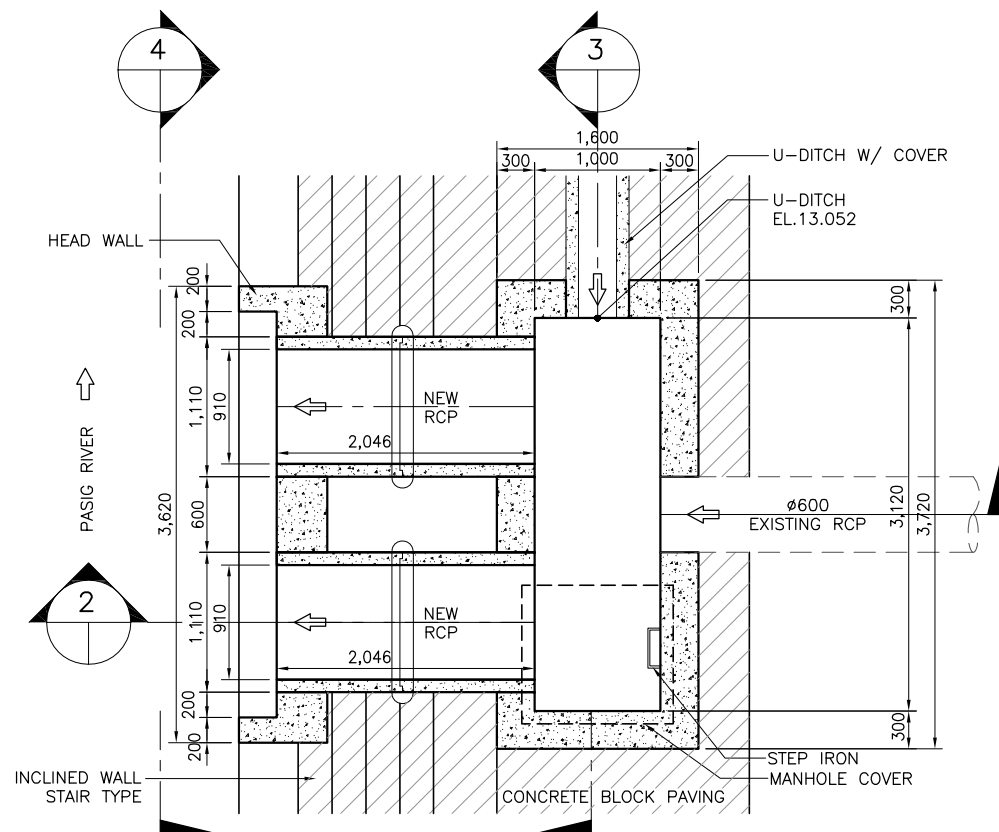


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

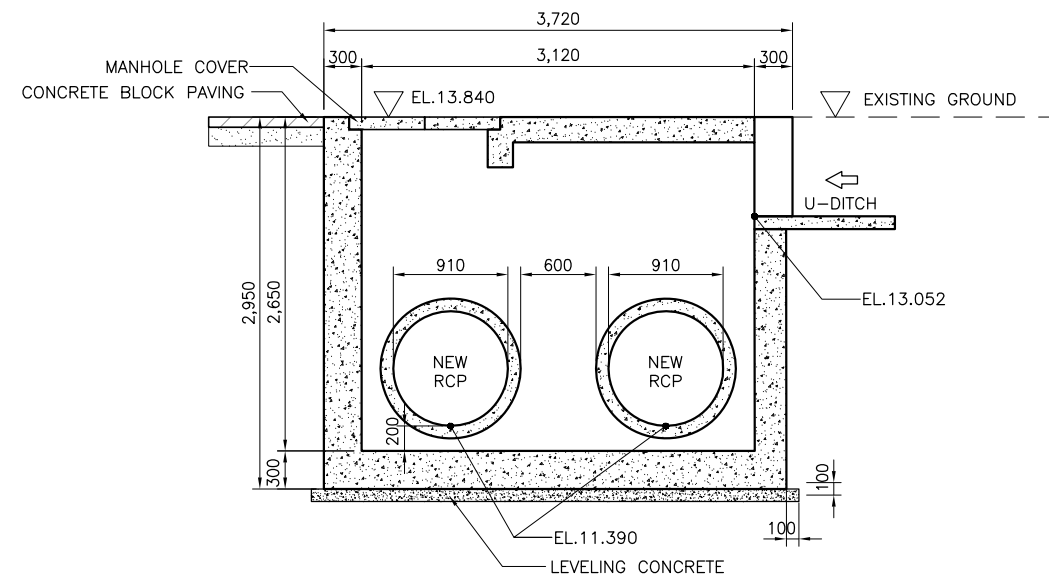
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

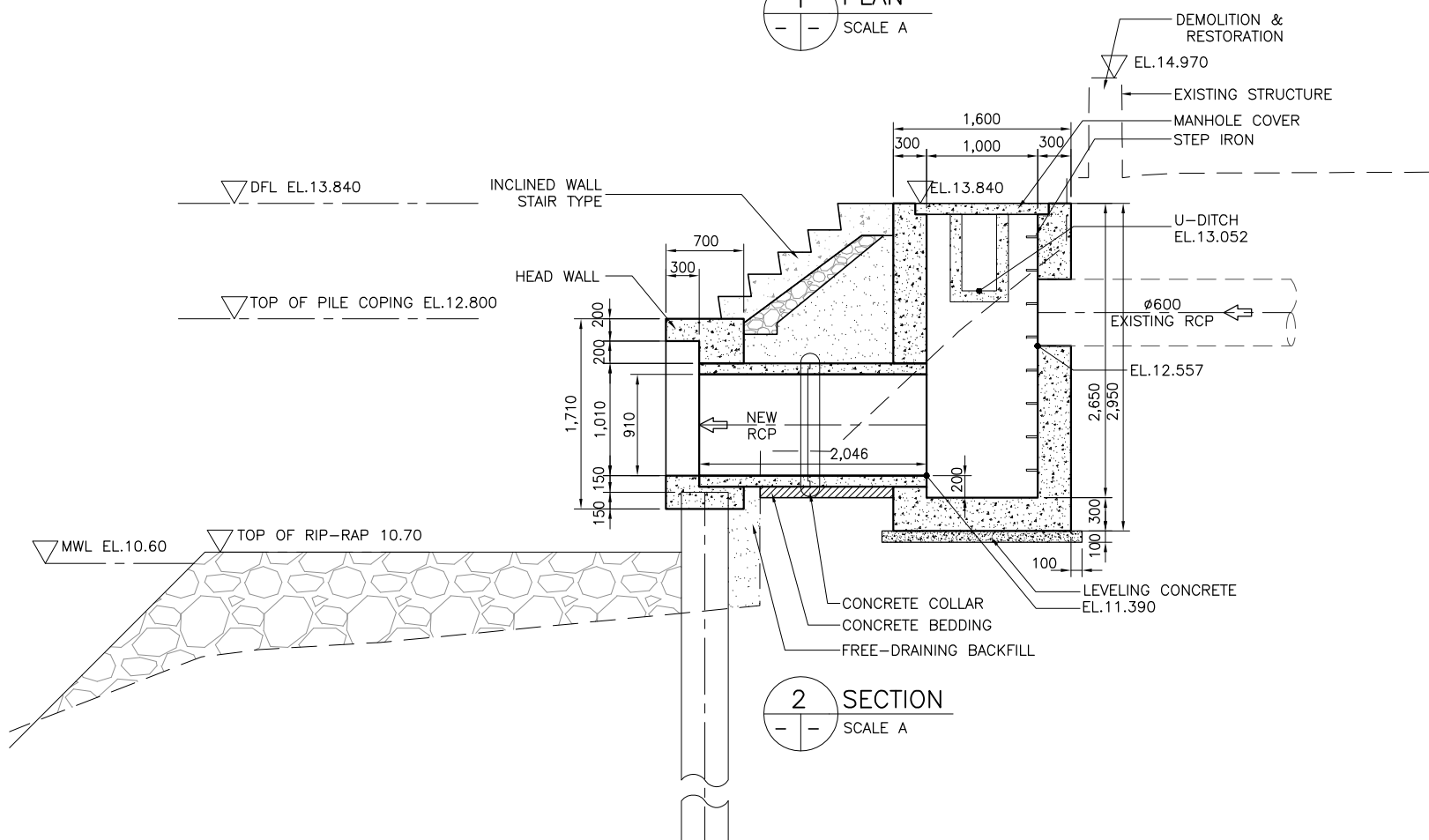
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF U-DITCH COLLECTOR	UP-DR DO173A/P
	KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SHUJI KAKU <small>TEAM LEADER</small>		PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	ROGELIO L. SINGSON <small>SECRETARY</small>			



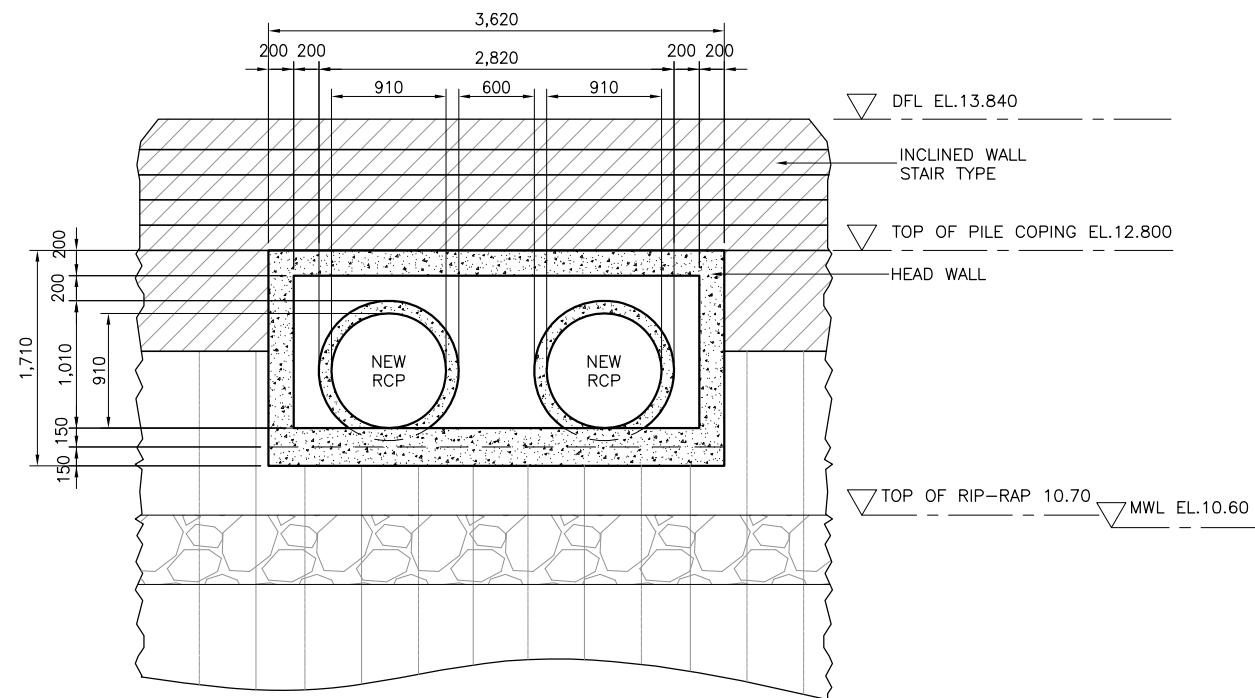
1 PLAN  
SCALE A



3 SECTION (MR173A)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

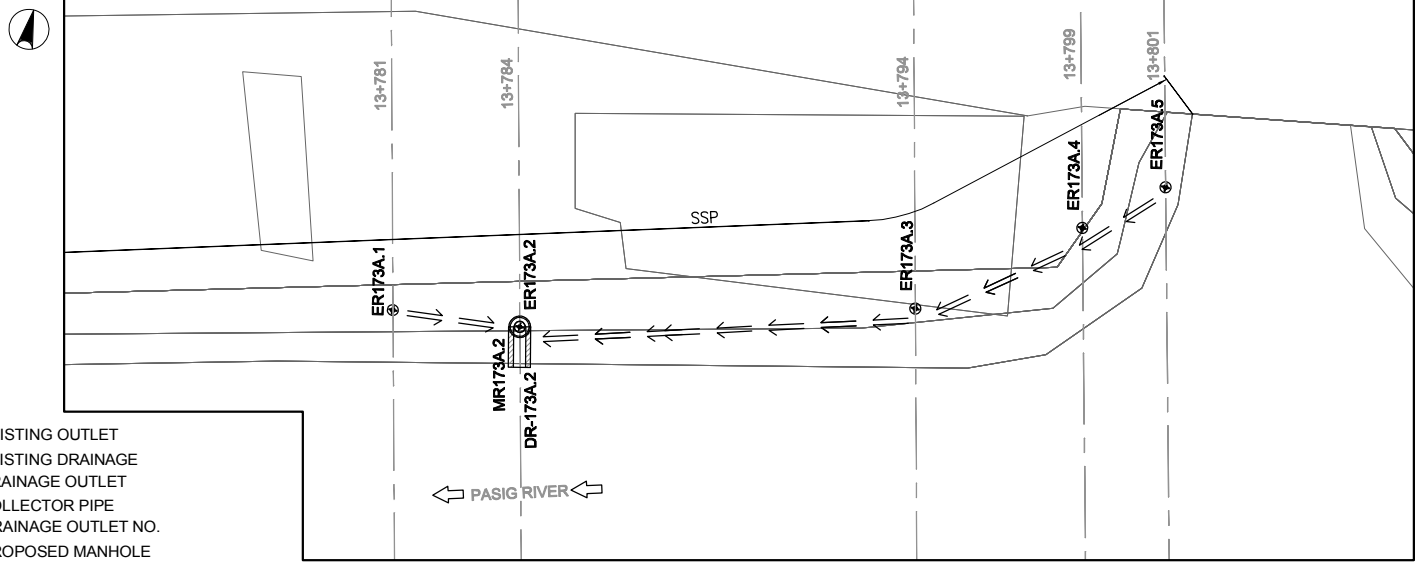
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS  
DETAIL OF DRAINAGE  
OUTLET- DR-173A,  
MANHOLE MR173A  
STA. 13+776 RB

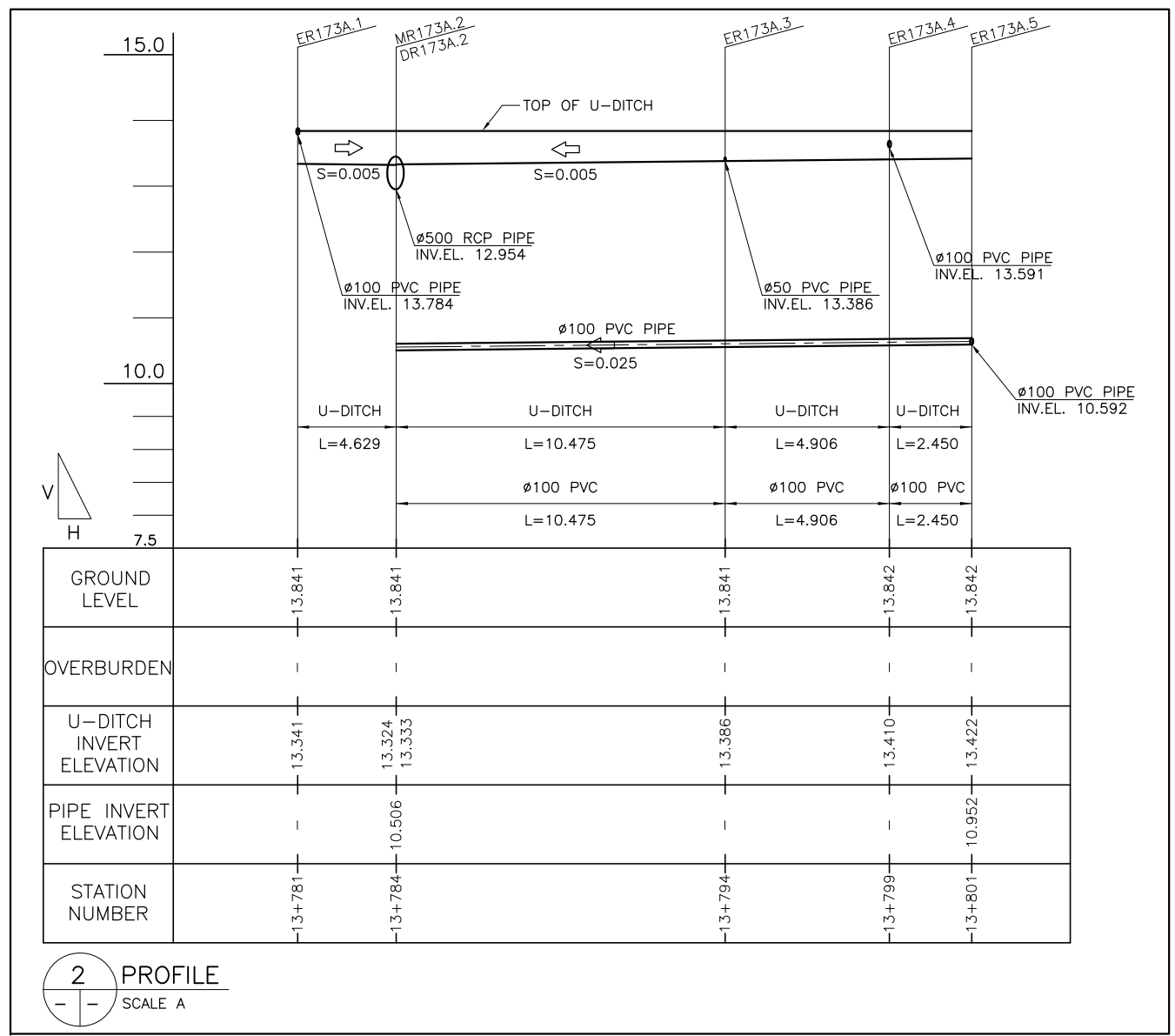
SHEET NO.  
UP-DR  
DO173A



LEGEND:

- ER173A.2 @ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ▭ DRAINAGE OUTLET
- ⇄ COLLECTOR PIPE
- DR 173A.2 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

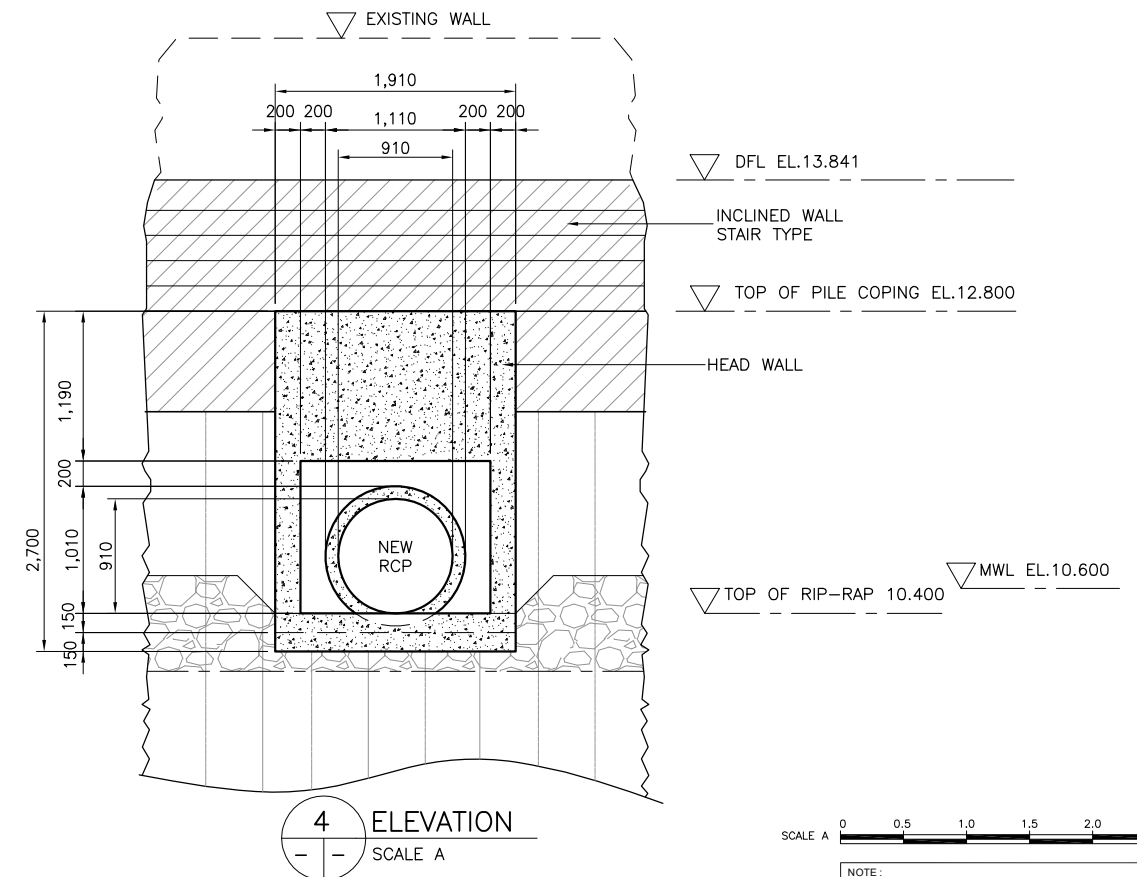
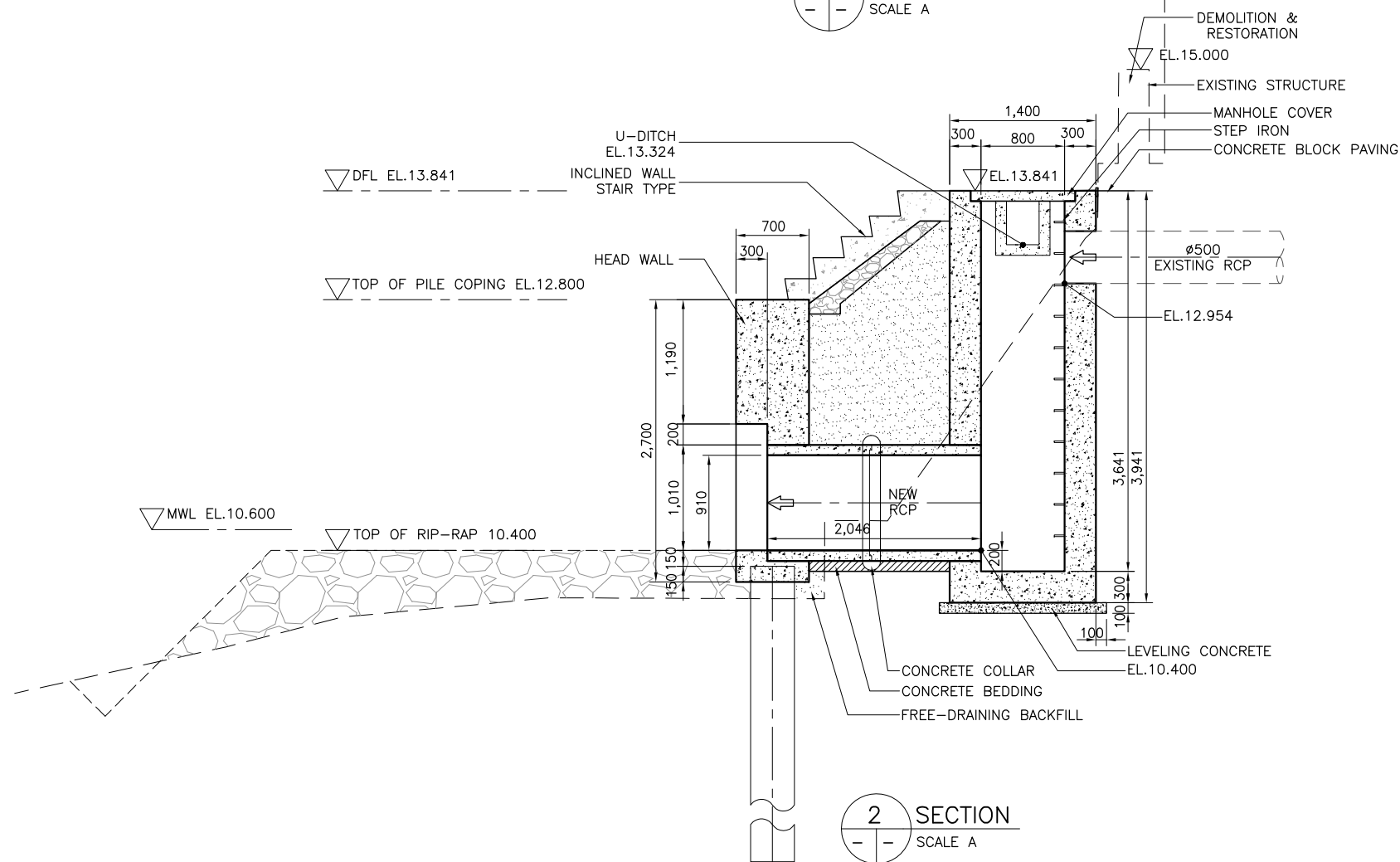
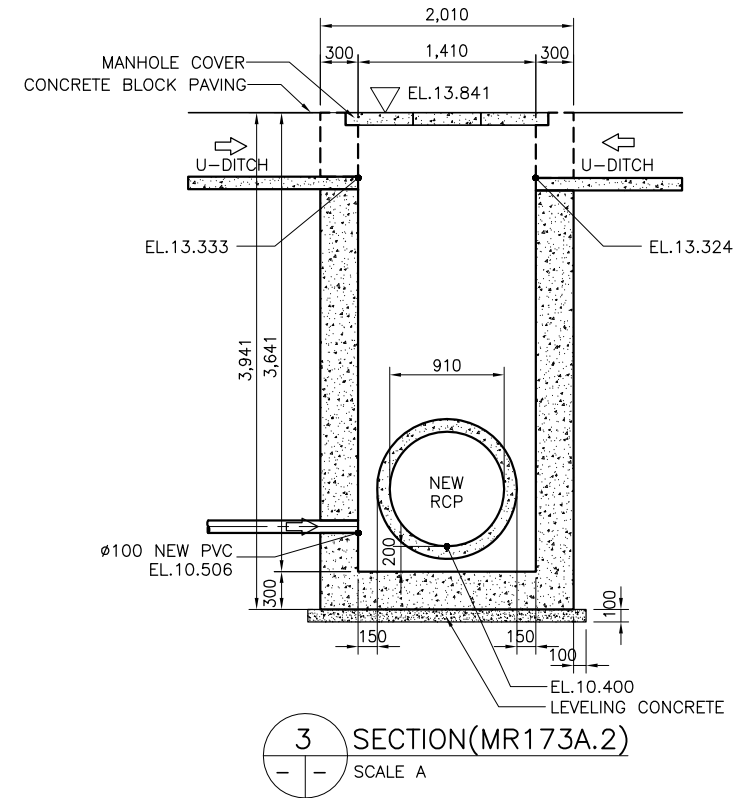
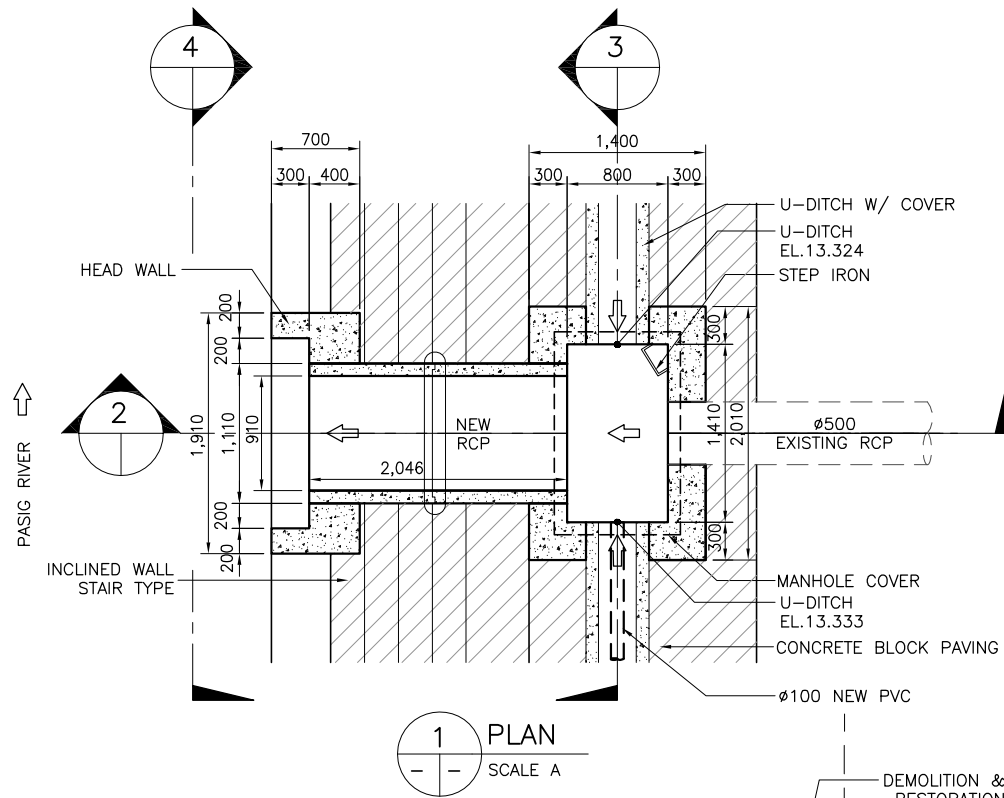


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>			DESIGNED BY: KOHEI TAKAYAMA (STRUCTURAL ENGINEER IV) CHECKED BY: TOSHIKI KAWAKAMI (THE CHECKER) SUBMITTED BY: SHUJI KAKU (TEAM LEADER)			REPUBLIC OF THE PHILIPPINES <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>			REVIEWED BY: PERFECTO L. ZAPLAN, JR. (CHIEF, HYDRAULIC DIVISION, BOD) RECOMMENDING APPROVAL: PATRICK B. GATAN (PROJECT DIRECTOR, PMO - MFCP), GILBERTO S. REYES (DIRECTOR, BOD)			APPROVED BY: RAUL C. ASIS (UNDERSECRETARY FOR TECHNICAL SERVICES), ROGELIO L. SINGSON (SECRETARY)			PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		SHEET CONTENTS: PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH		SHEET NO.: UP-DR-DO 173A.2/P
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NOTE:  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

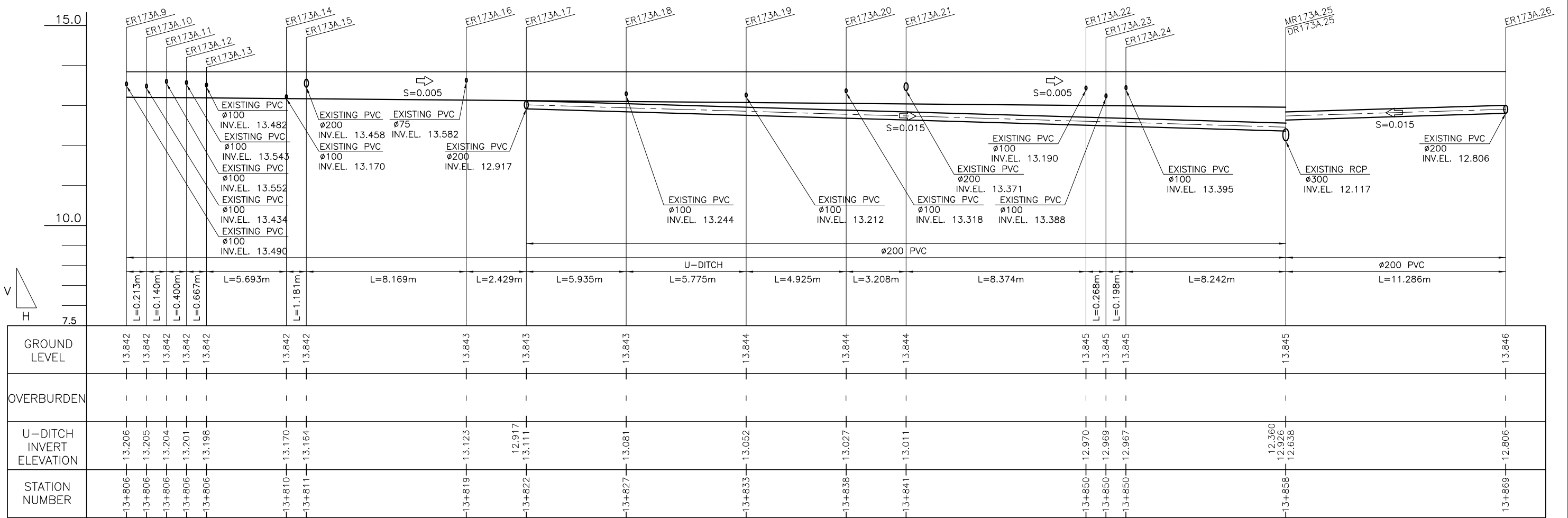
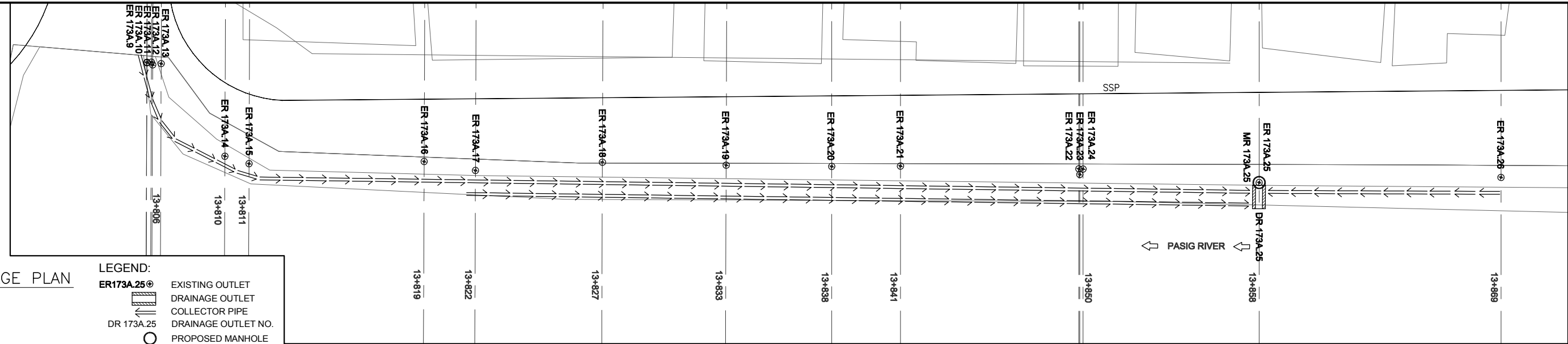
SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DR-173A.2, MANHOLE MR173A.2 STA. 13+784 RB

SHEET NO.  
UP-DR-DO173A.2



1 DRAINAGE PLAN  
SCALE A

- LEGEND:
- ER173A.25 ⊕ EXISTING OUTLET
  - ⊕ DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DR 173A.25 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE



2 PROFILE  
SCALE A

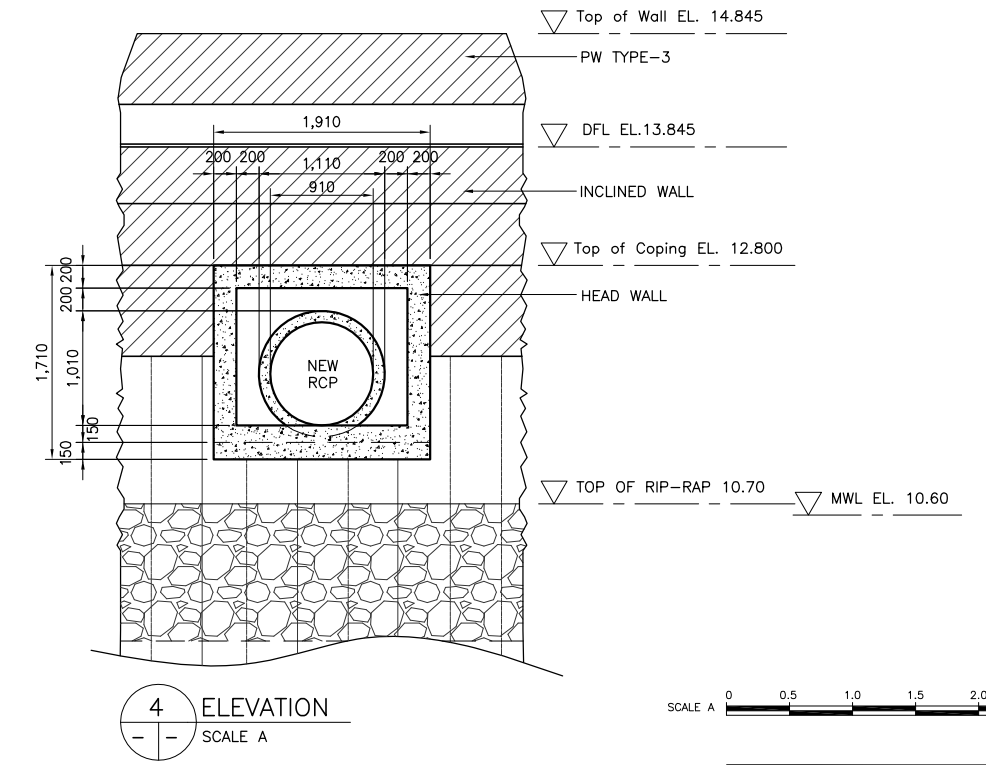
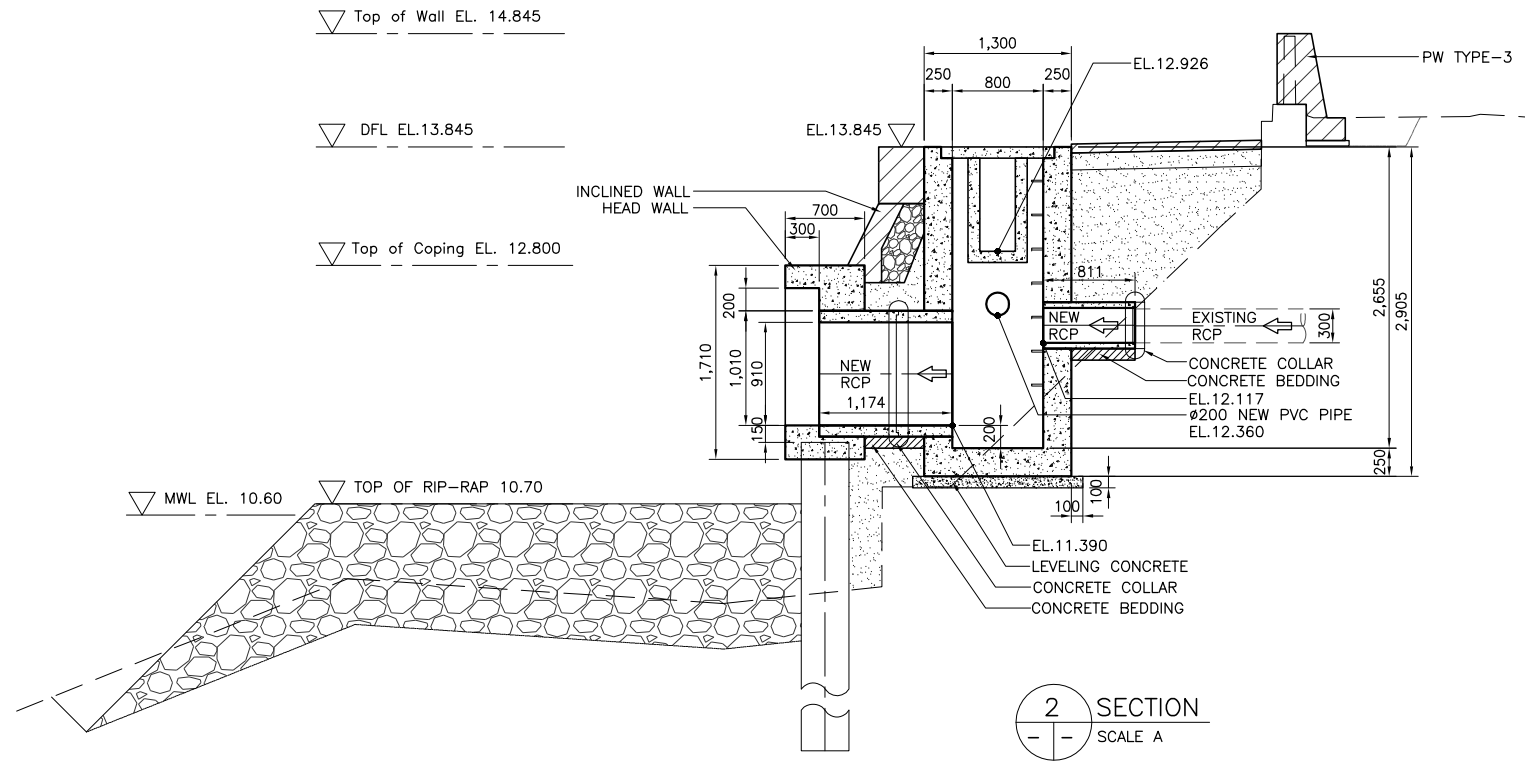
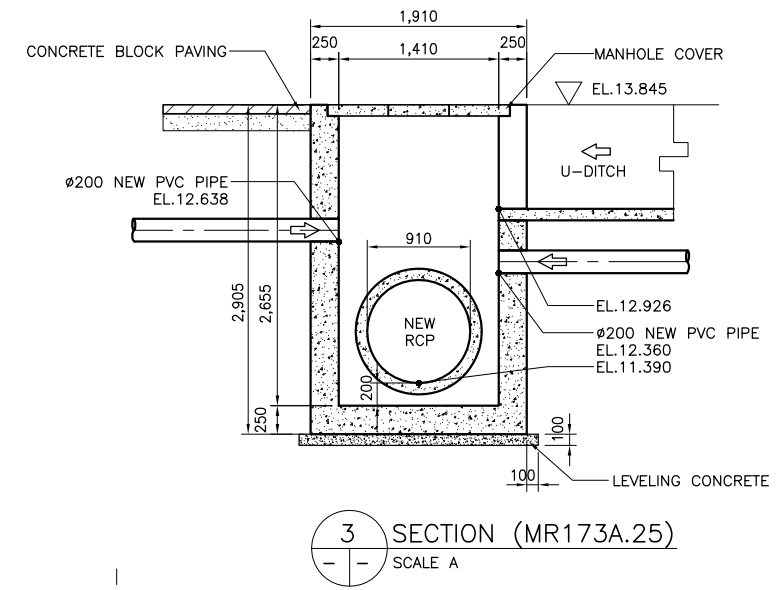
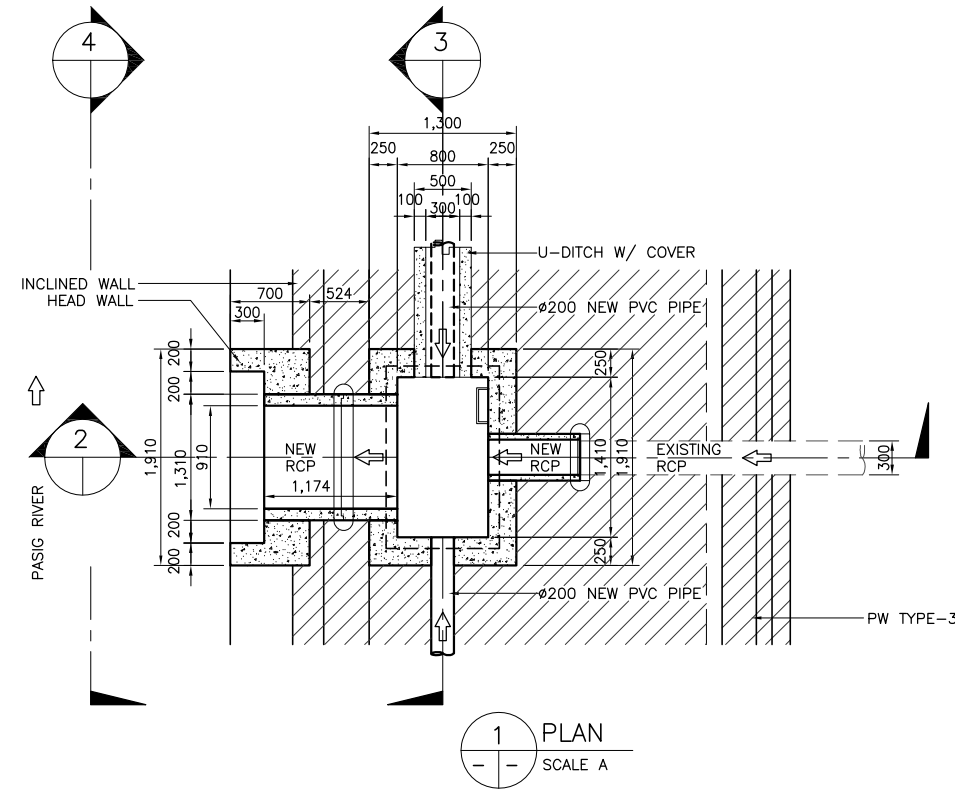
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER



JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF U-DITCH COLLECTOR		
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES				ROGELIO L. SINGSON SECRETARY

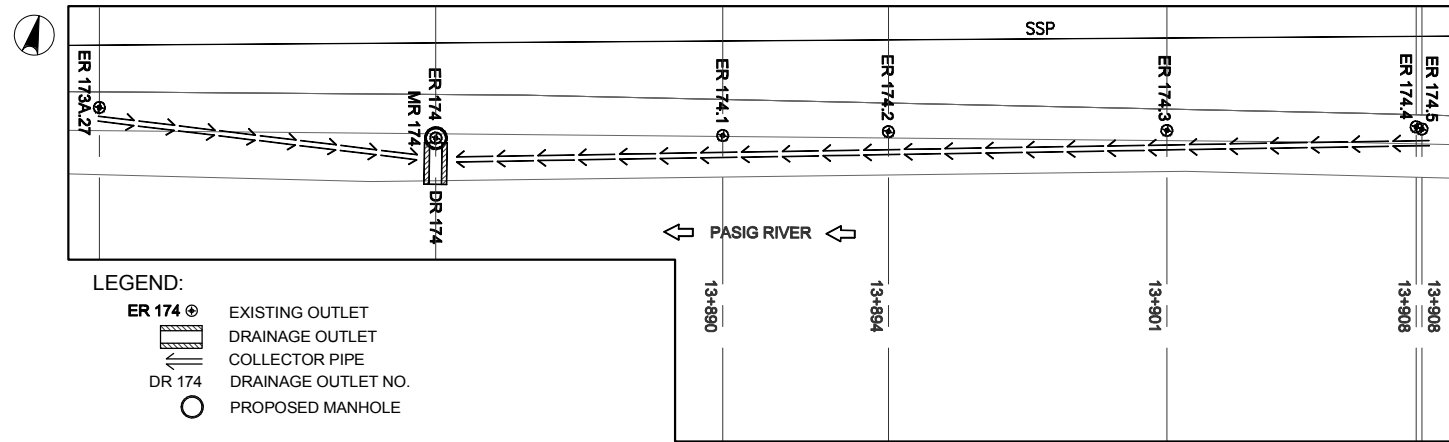


NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

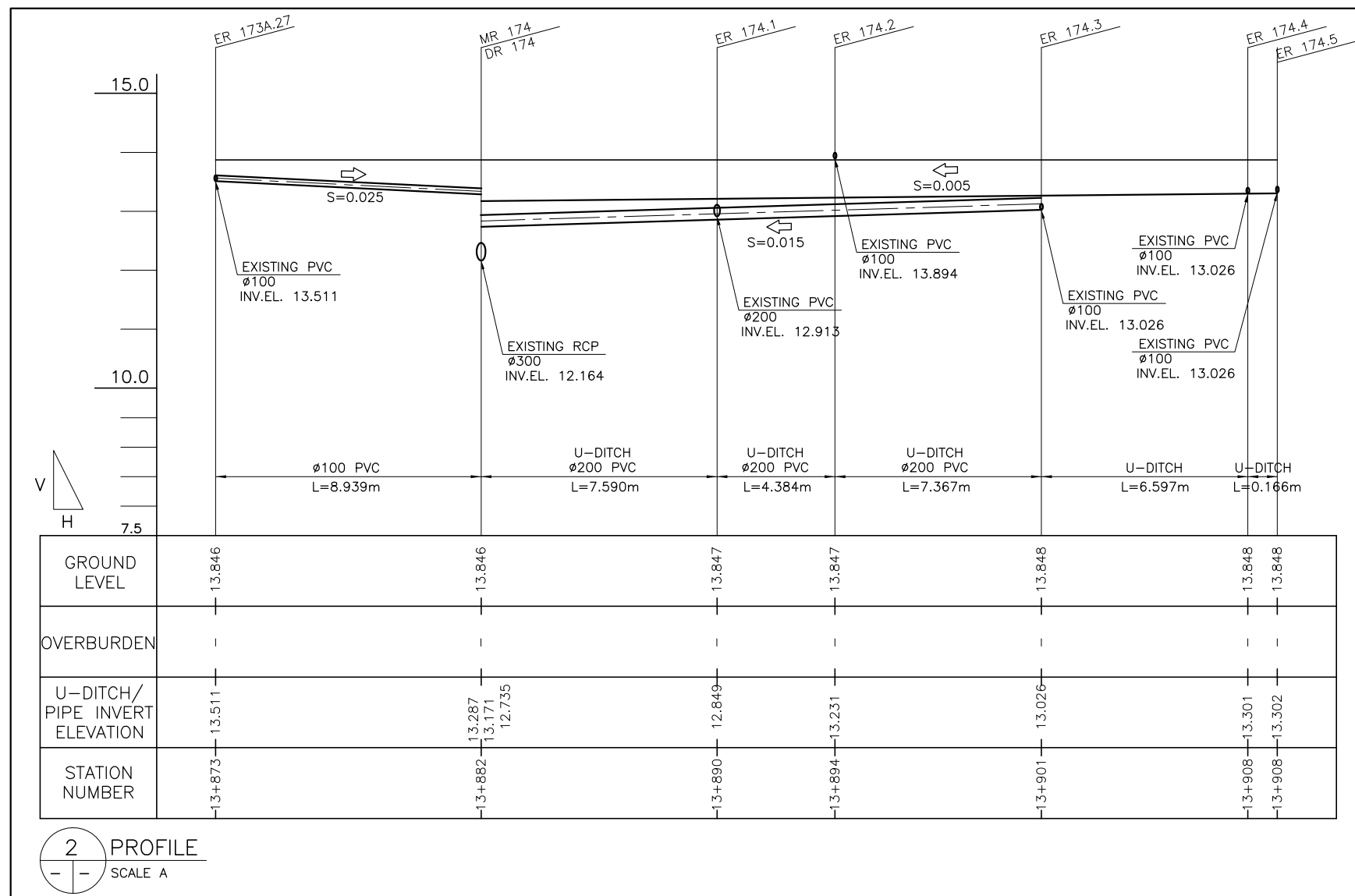
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR173A.25 & MANHOLE MR173A.25 STA13+858 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



- LEGEND:**
- ER 174 ⊕ EXISTING OUTLET
  - DR 174 ▭ DRAINAGE OUTLET
  - DR 174 ⇐ COLLECTOR PIPE
  - DR 174 ○ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

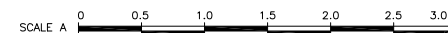
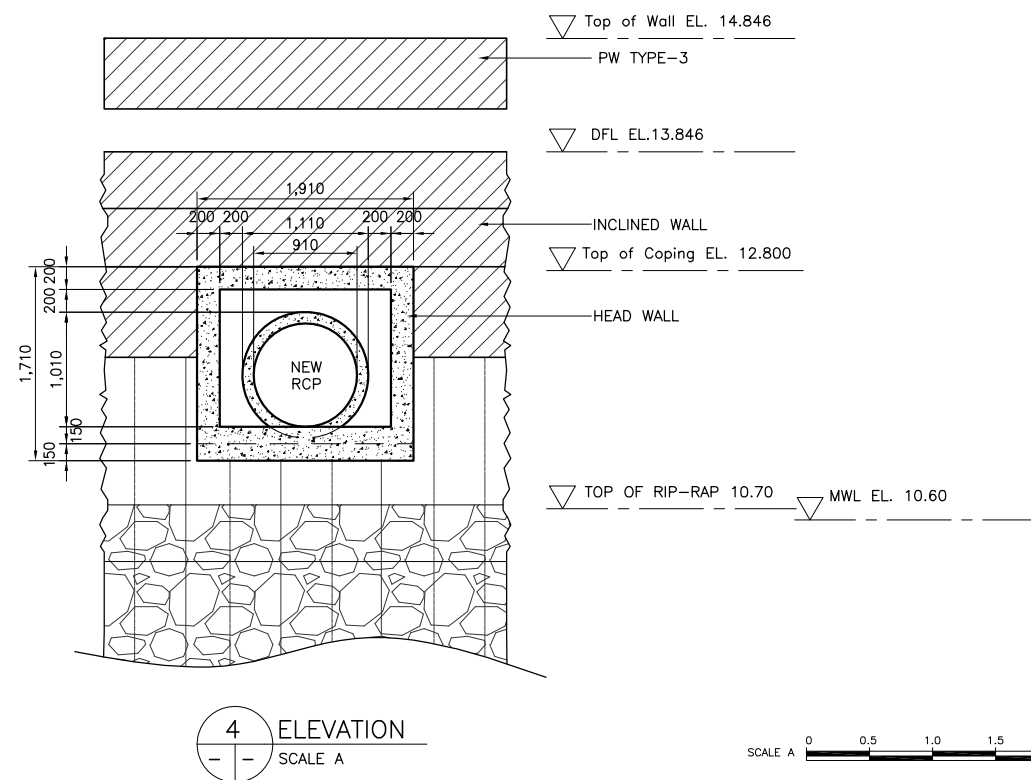
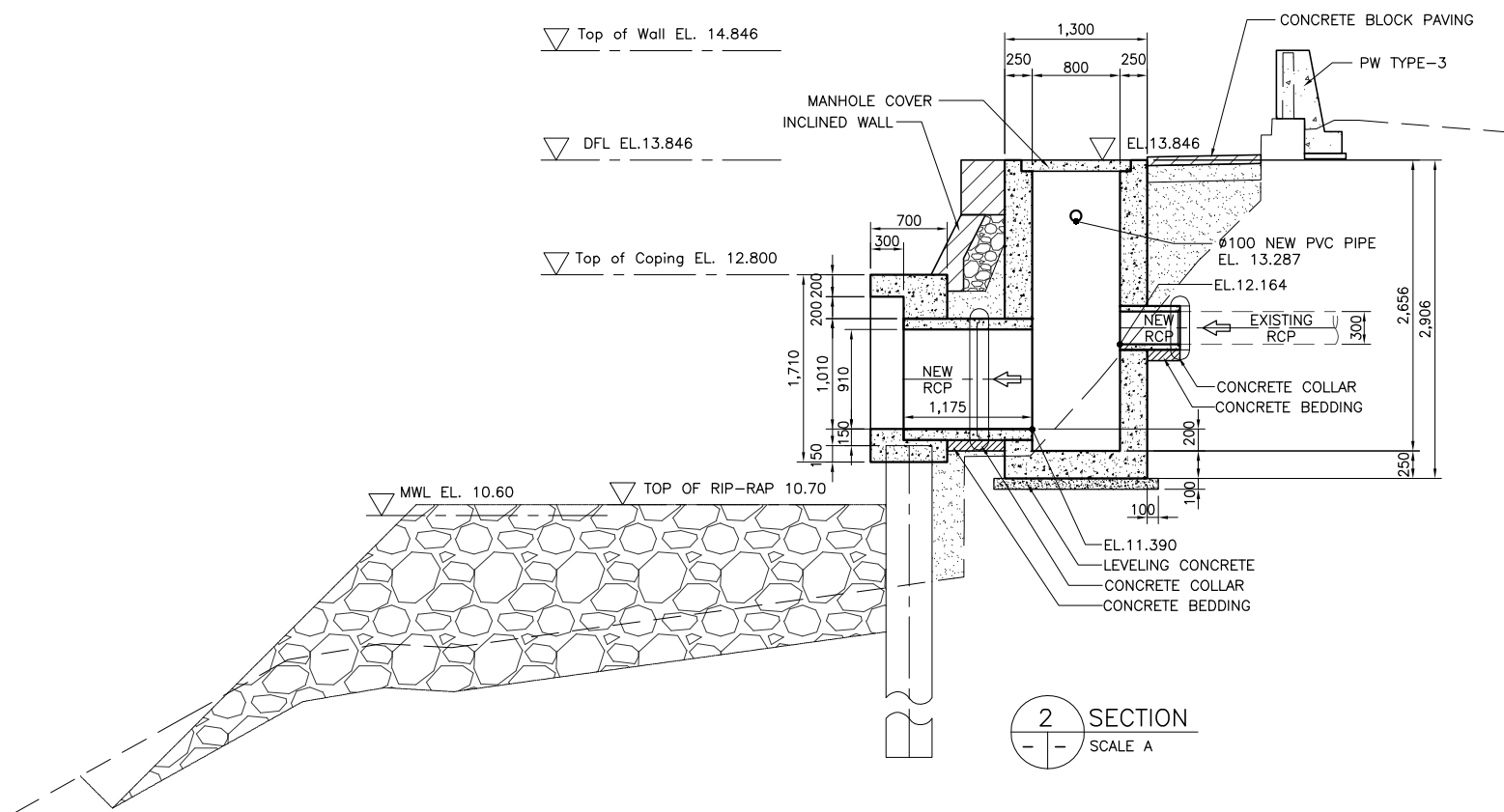
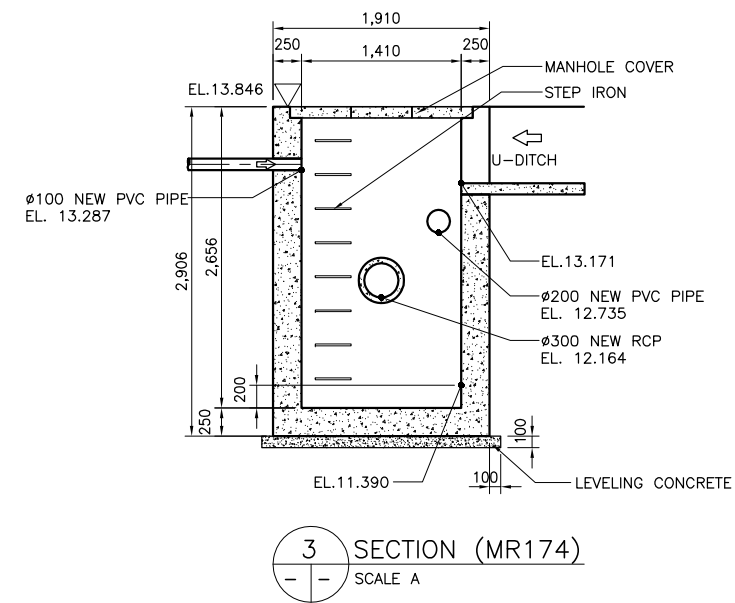
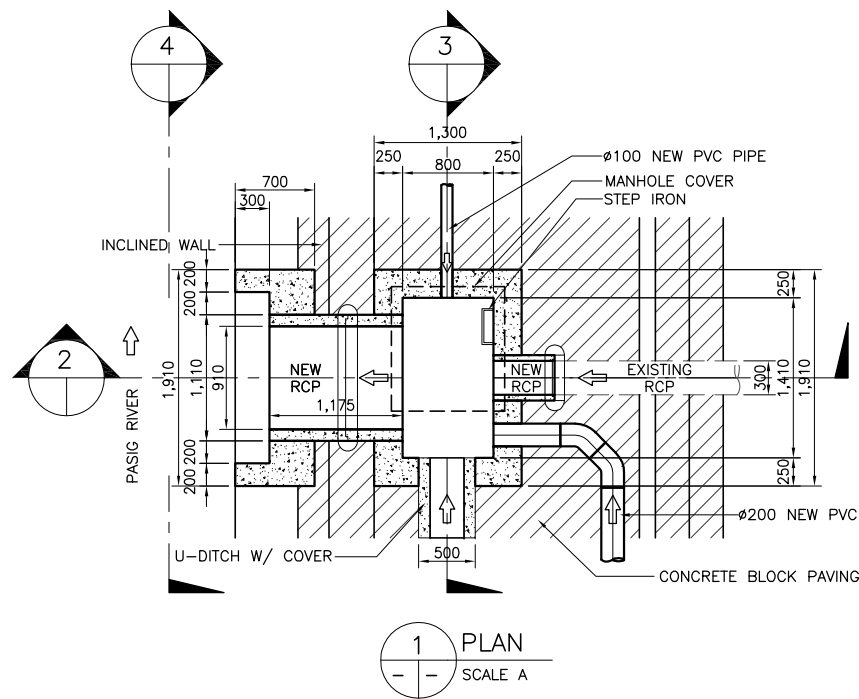
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH

SHEET NO.





**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



**REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS**

REPUBLIC OF THE PHILIPPINES

REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	ROGELIO L. SINGSON SECRETARY
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	

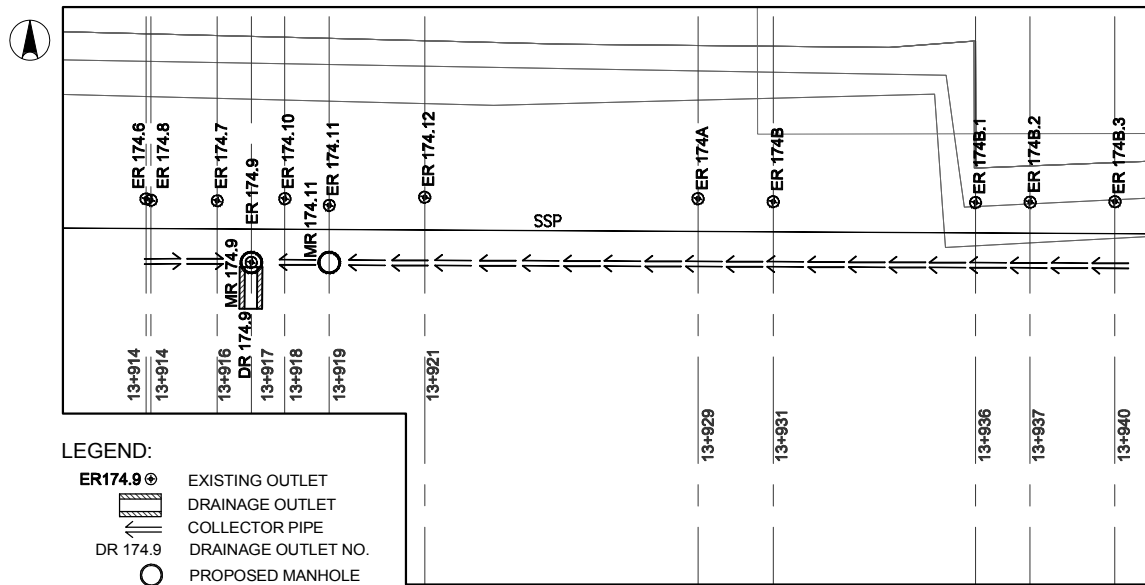
PROJECT & LOCATION  
**PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA**

SHEET CONTENTS  
**DETAIL OF DRAINAGE OUTLET- DR174 & MANHOLE MR174 STA 13+882 RB**

SHEET NO.  
**UP-DR  
DO174**

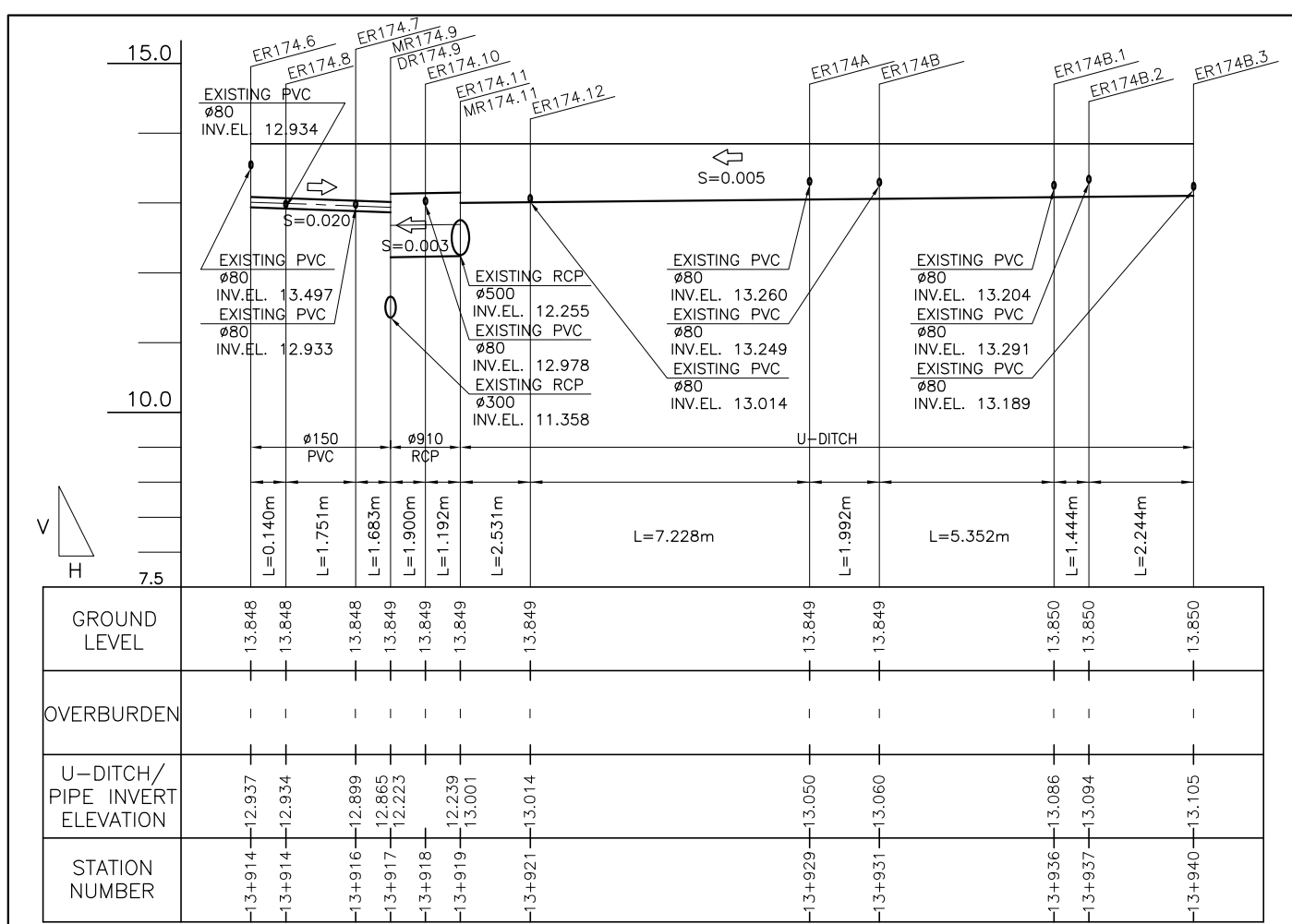


**CTI ENGINEERING INTERNATIONAL CO., LTD.**



**LEGEND:**  
 ER174.9 ⊕ EXISTING OUTLET  
 □ DRAINAGE OUTLET  
 — COLLECTOR PIPE  
 DR 174.9 DRAINAGE OUTLET NO.  
 ○ PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
 SCALE A



**2 PROFILE**  
 SCALE A



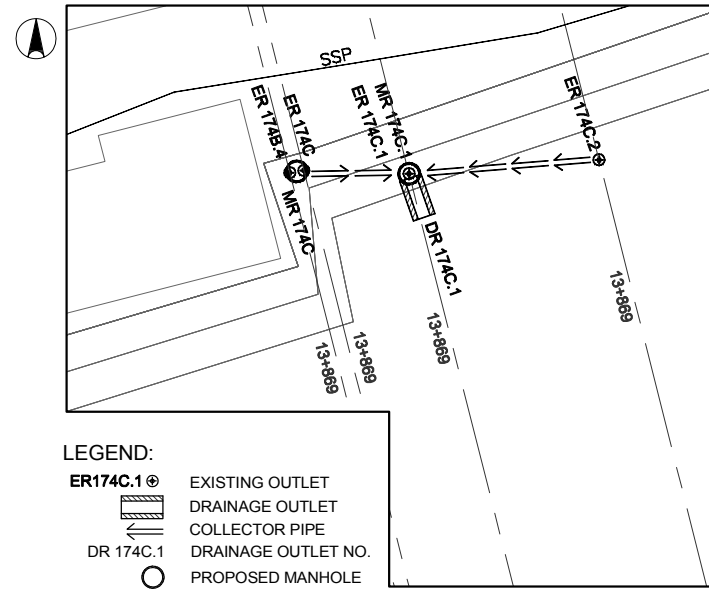
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
 TEAM LEADER

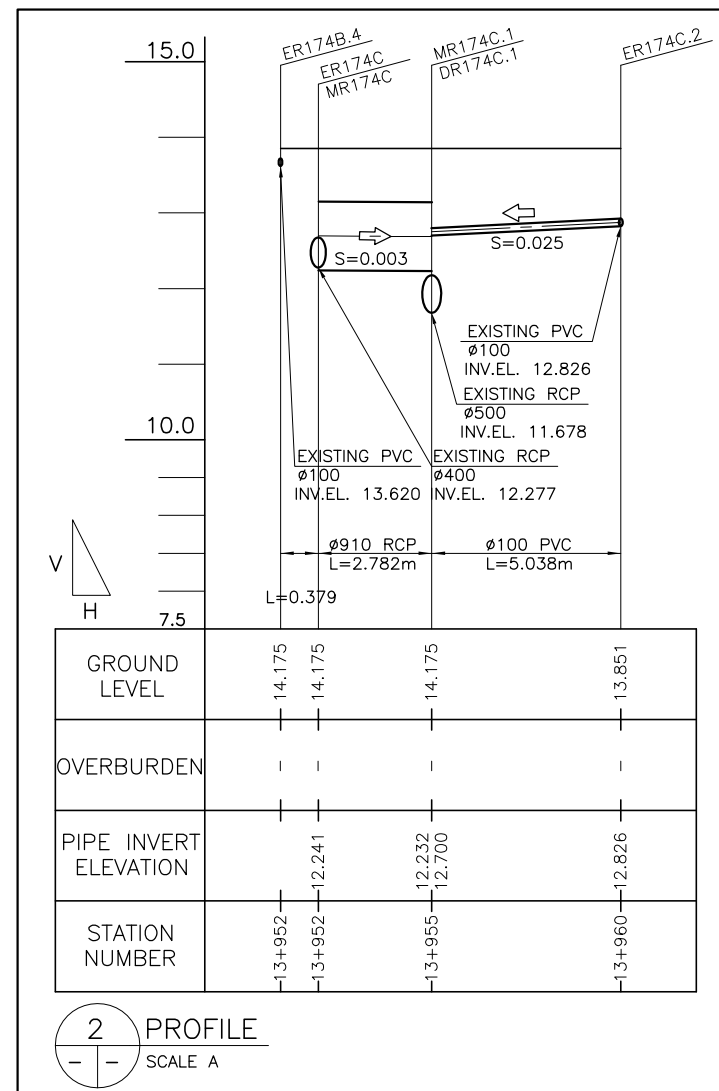
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>			DESIGNED BY: KOHEI TAKAYAMA (STRUCTURAL ENGINEER IV) CHECKED BY: TOSHIKI KAWAKAMI (THE CHECKER) SUBMITTED BY: SHUJI KAKU (TEAM LEADER)			REPUBLIC OF THE PHILIPPINES <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>			REVIEWED BY: PERFECTO L. ZAPLAN, JR. (CHIEF, HYDRAULIC DIVISION, BOD) RECOMMENDING APPROVAL: PATRICK B. GATAN (PROJECT DIRECTOR, PMO - MFCP), GILBERTO S. REYES (DIRECTOR, BOD)			APPROVED BY: RAUL C. ASIS (CHIEF, HYDRAULIC DIVISION, BOD), ROGELIO L. SINGSON (SECRETARY)			PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		SHEET CONTENTS: PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH		SHEET NO.: UP-DR DO/174.9/P
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- LEGEND:**
- ER174C.1 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DR 174C.1 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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**REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS**

REPUBLIC OF THE PHILIPPINES

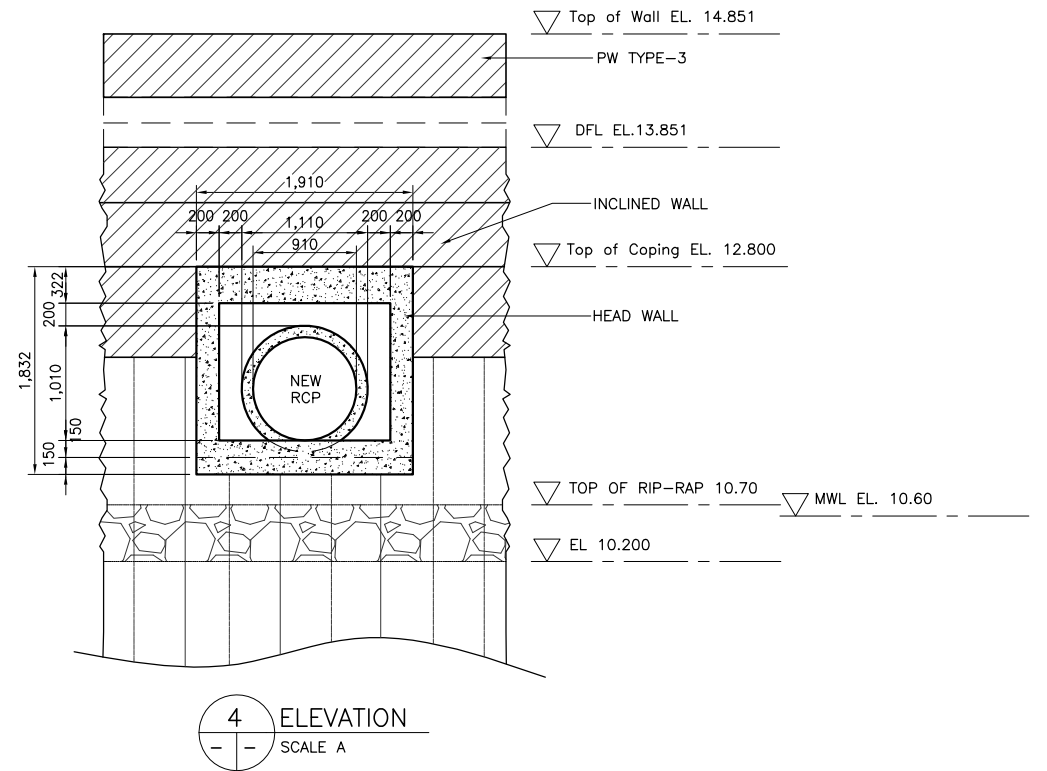
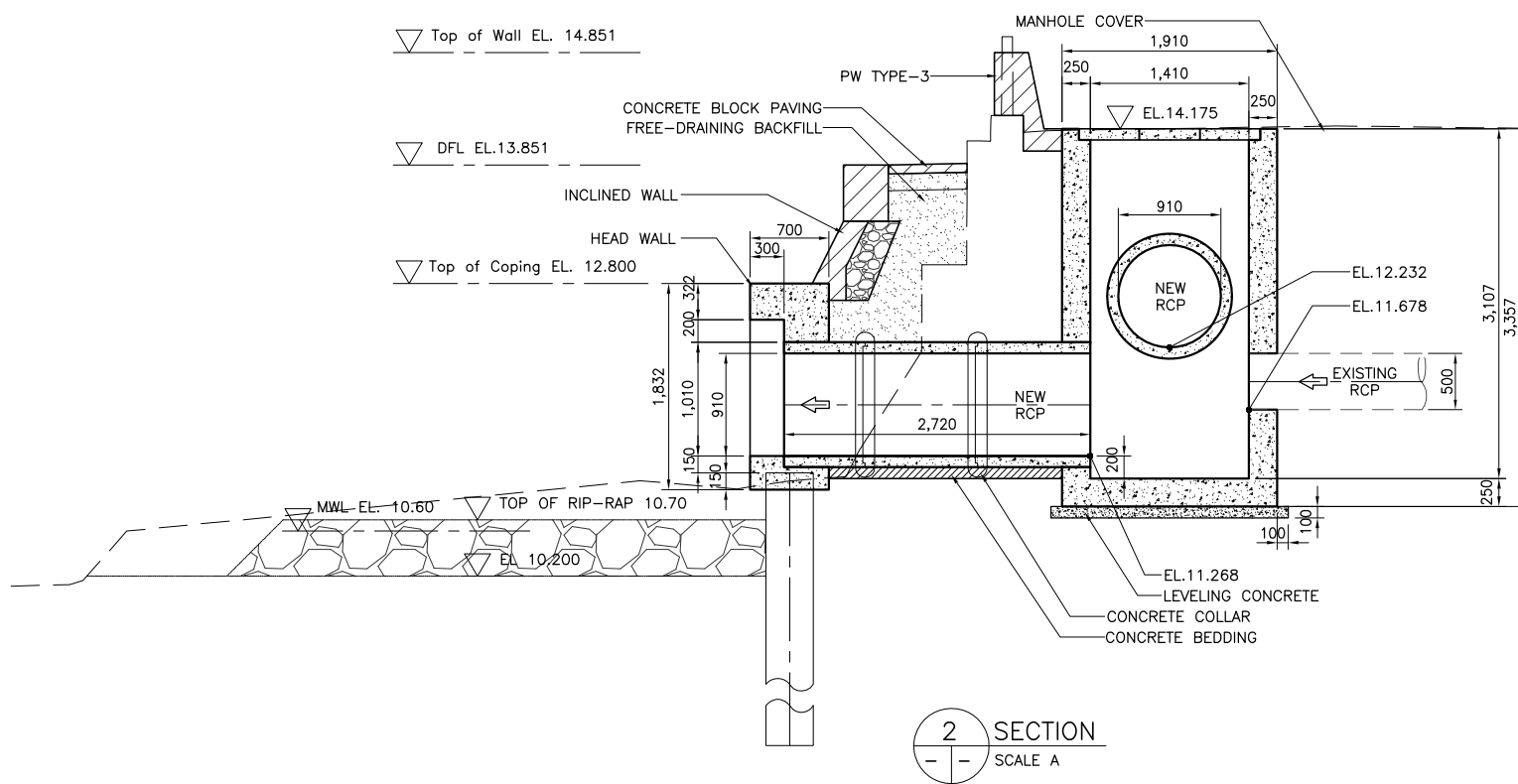
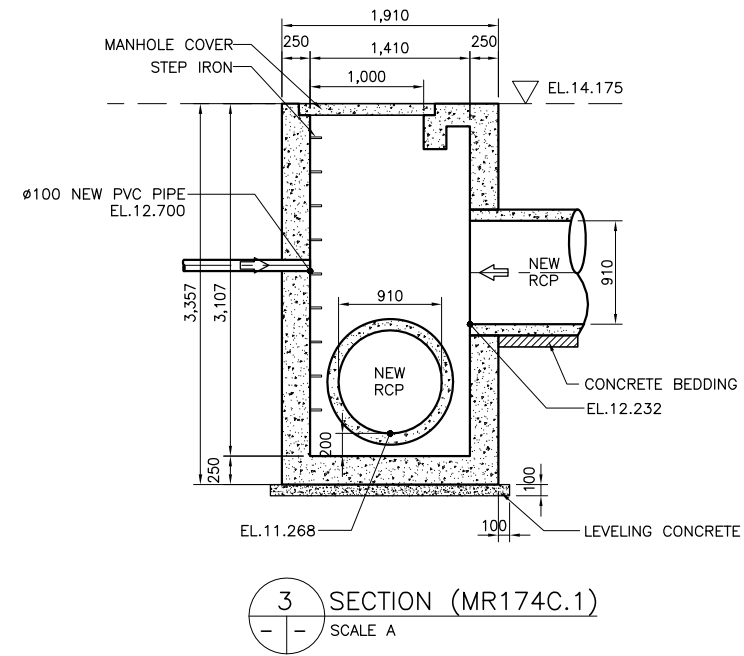
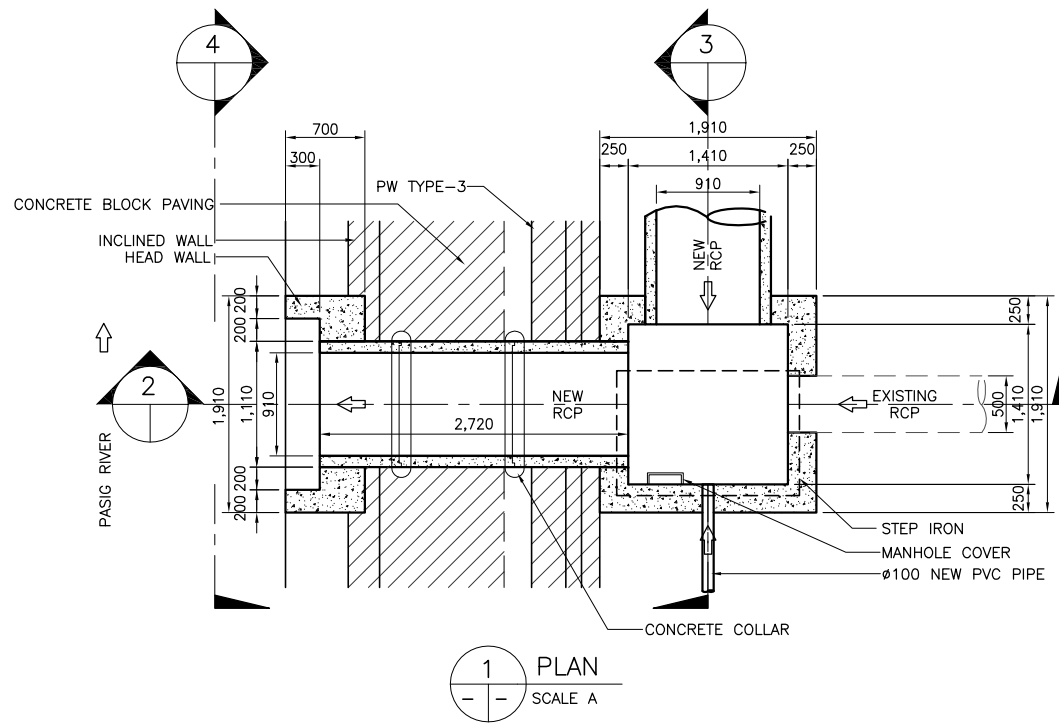
REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
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PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.  
UP-DR-DO 174C.1/P





REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

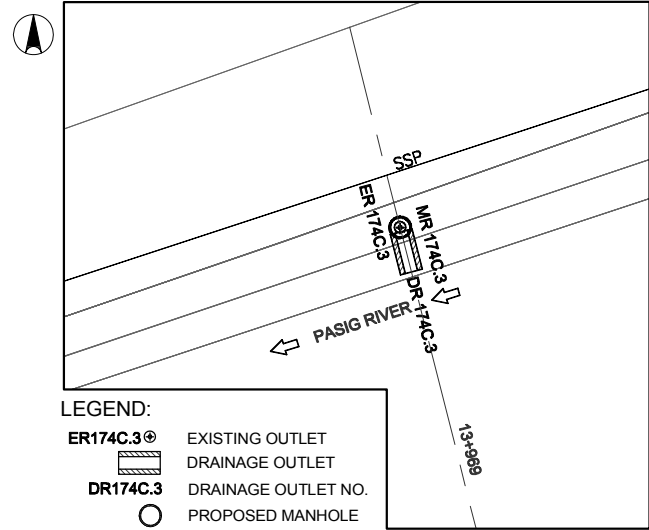
ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DR174C.1 & MANHOLE MR174C.1 STA 13+955 RB

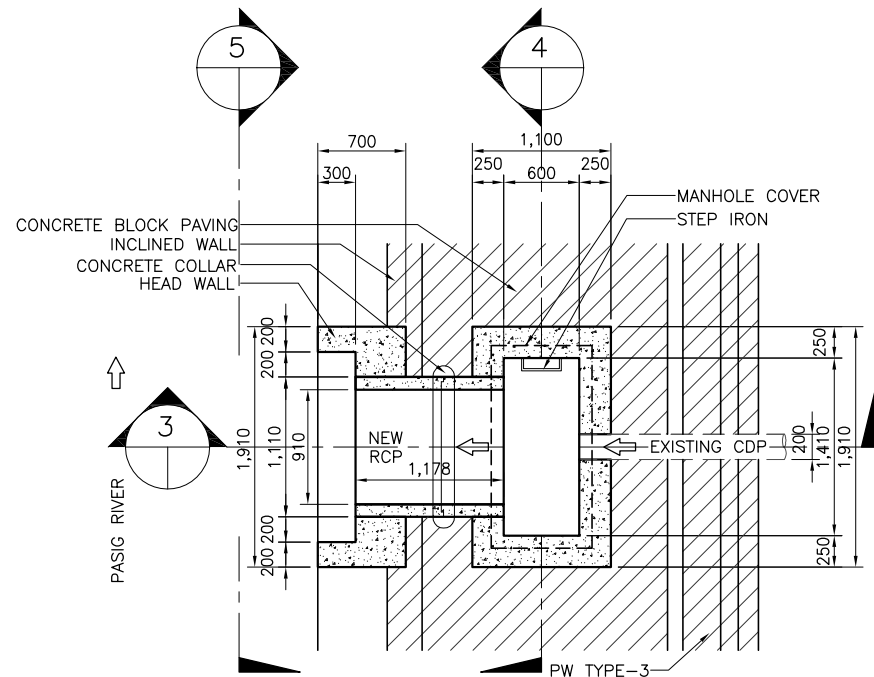
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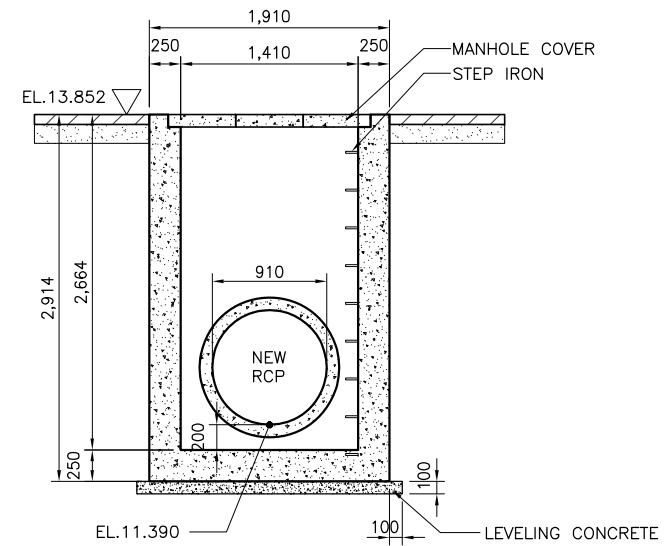


- LEGEND:**
- ER174C.3Ⓞ EXISTING OUTLET
  - DR174C.3 ▭ DRAINAGE OUTLET
  - MR174C.3 ○ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

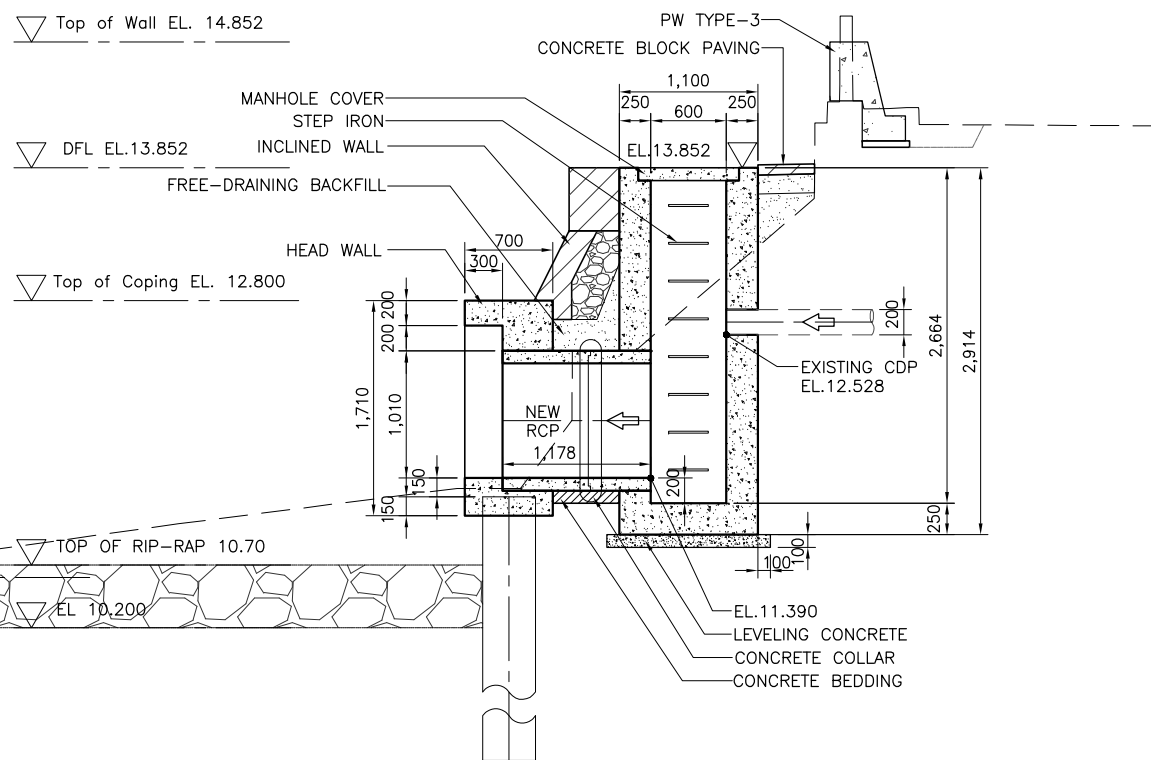
1 DRAINAGE PLAN  
SCALE A



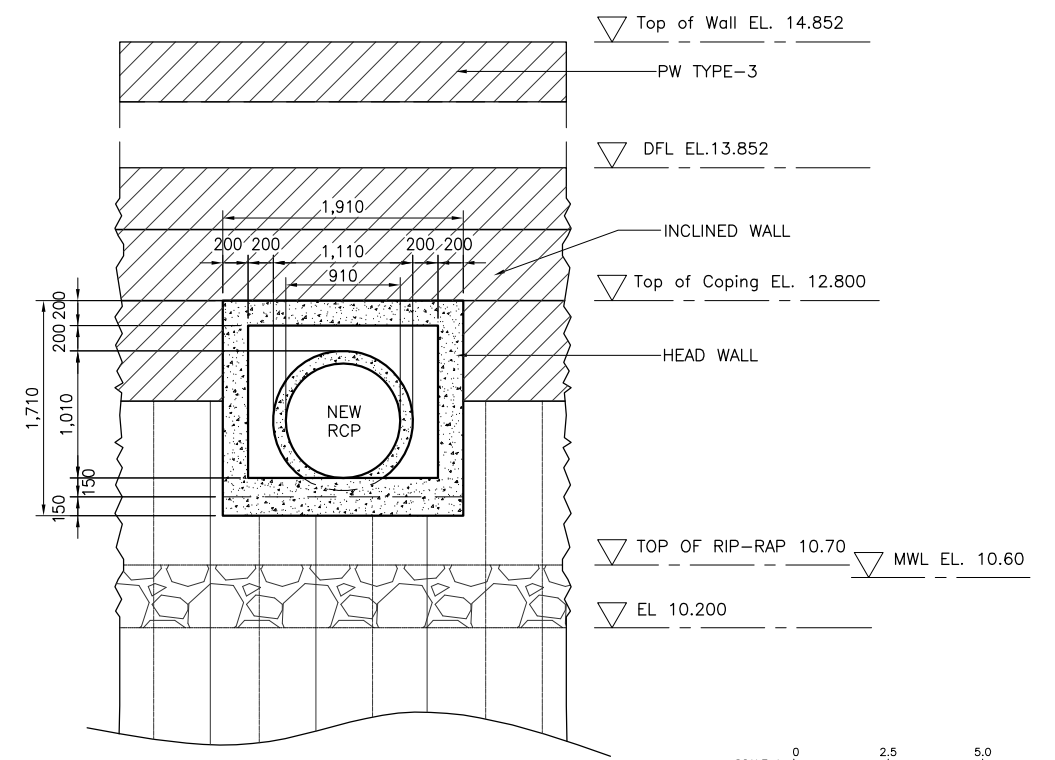
2 PLAN  
SCALE B



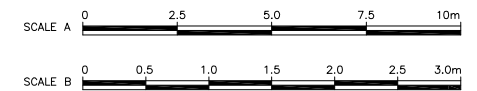
4 SECTION (MR174C.3)  
SCALE B



3 SECTION  
SCALE B



5 ELEVATION  
SCALE B



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

APPROVED BY: ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

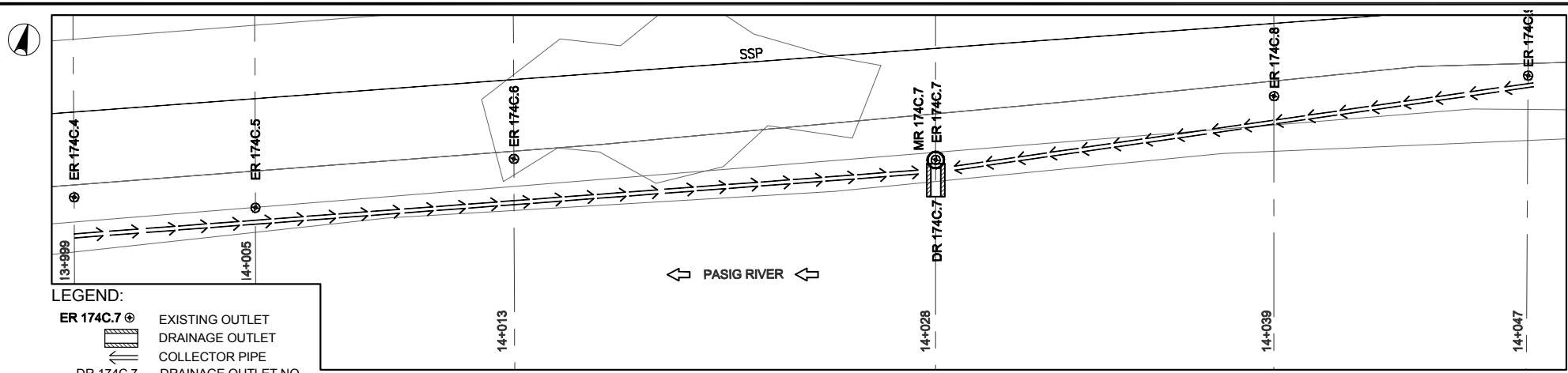
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE OUTLET- DR174C.3 & MANHOLE MR174C.3 STA 13+969 RB

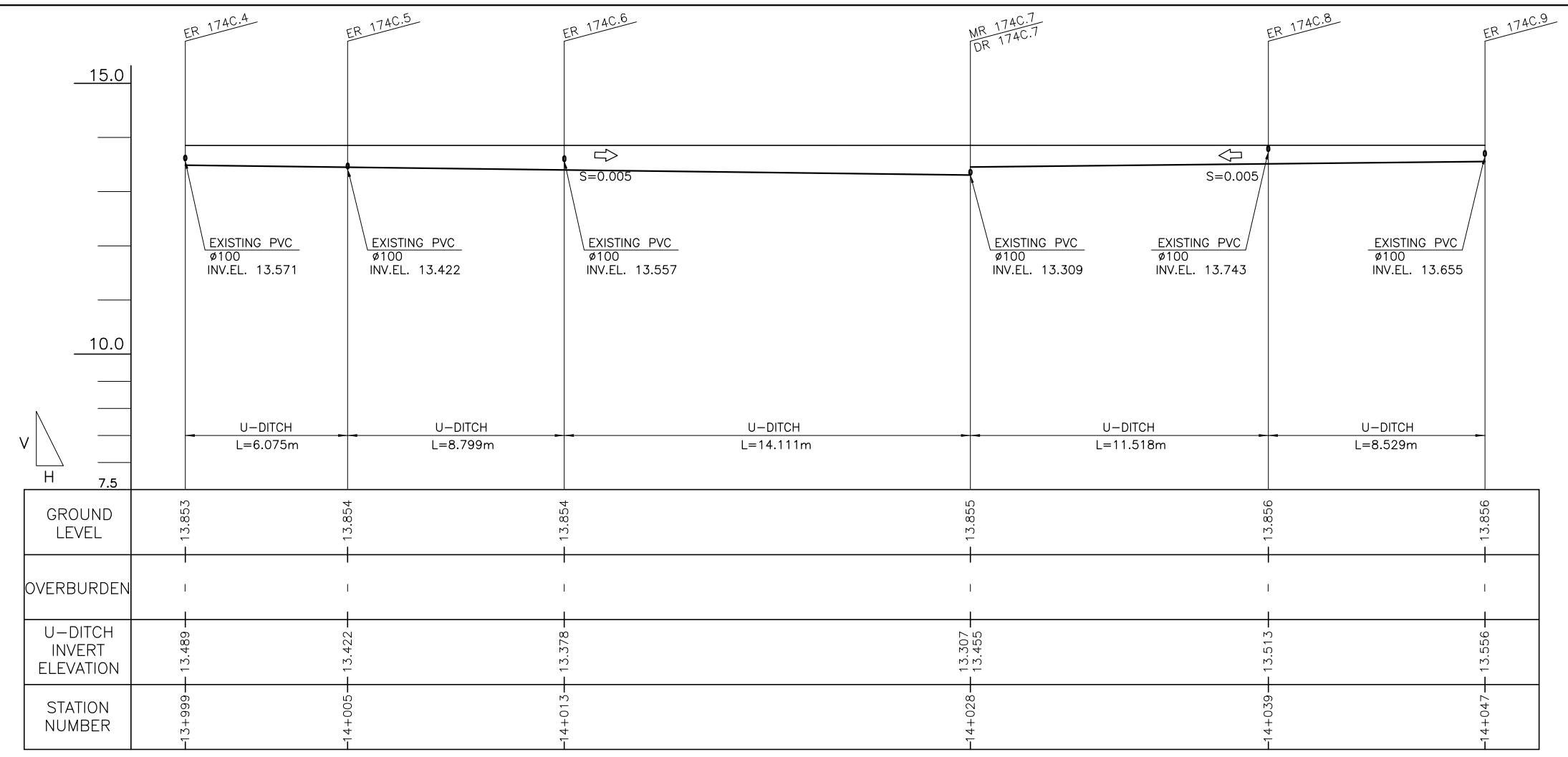
SHEET NO.





- LEGEND:**
- ER 174C.7 ⊕ EXISTING OUTLET
  - ⊕ DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DR 174C.7 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

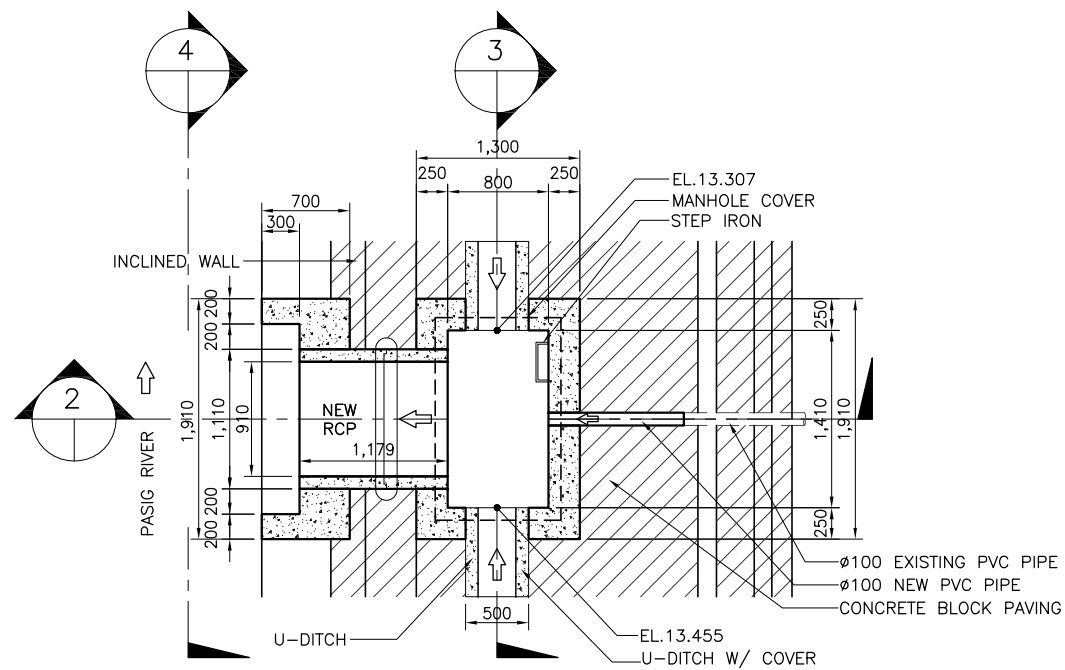


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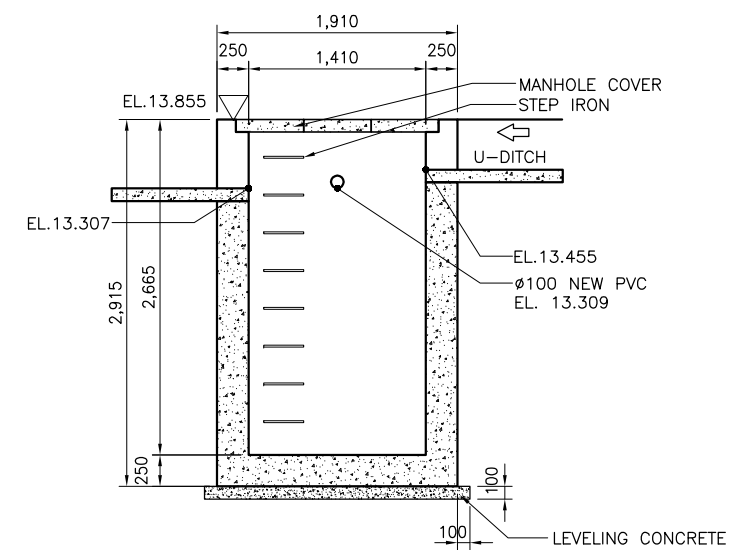
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SHUJI KAKU  
TEAM LEADER

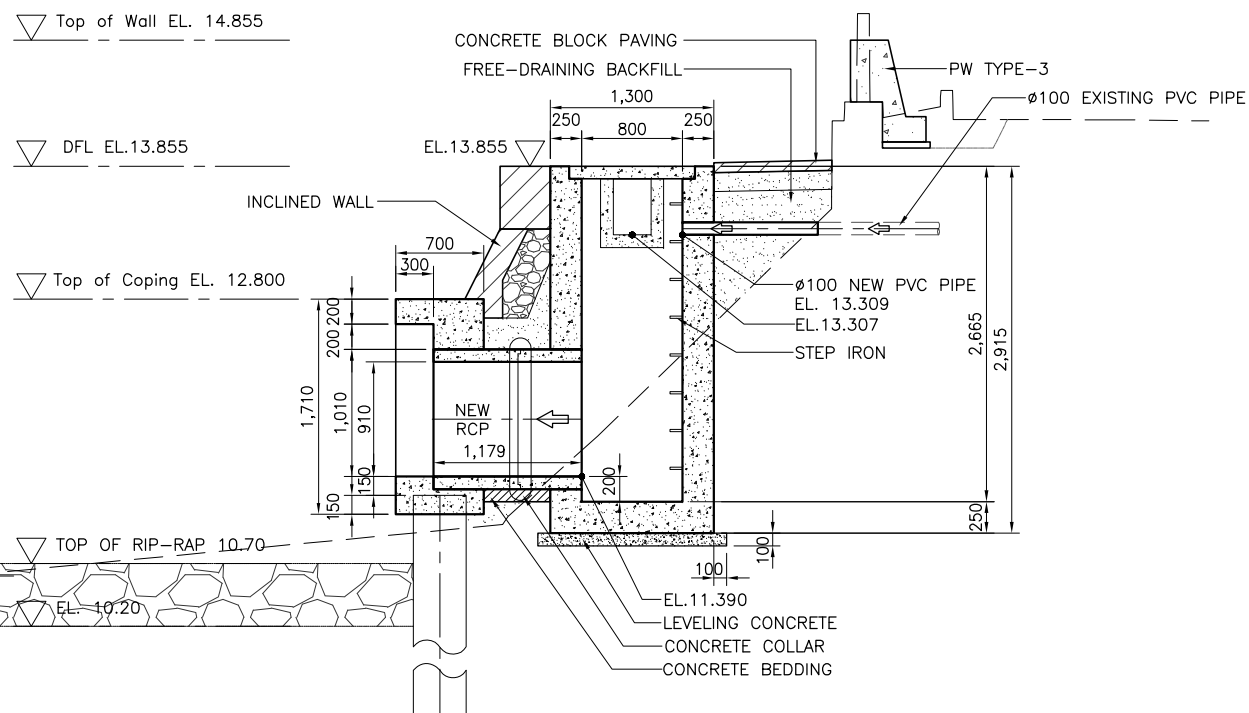
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF U-DITCH COLLECTOR	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY			



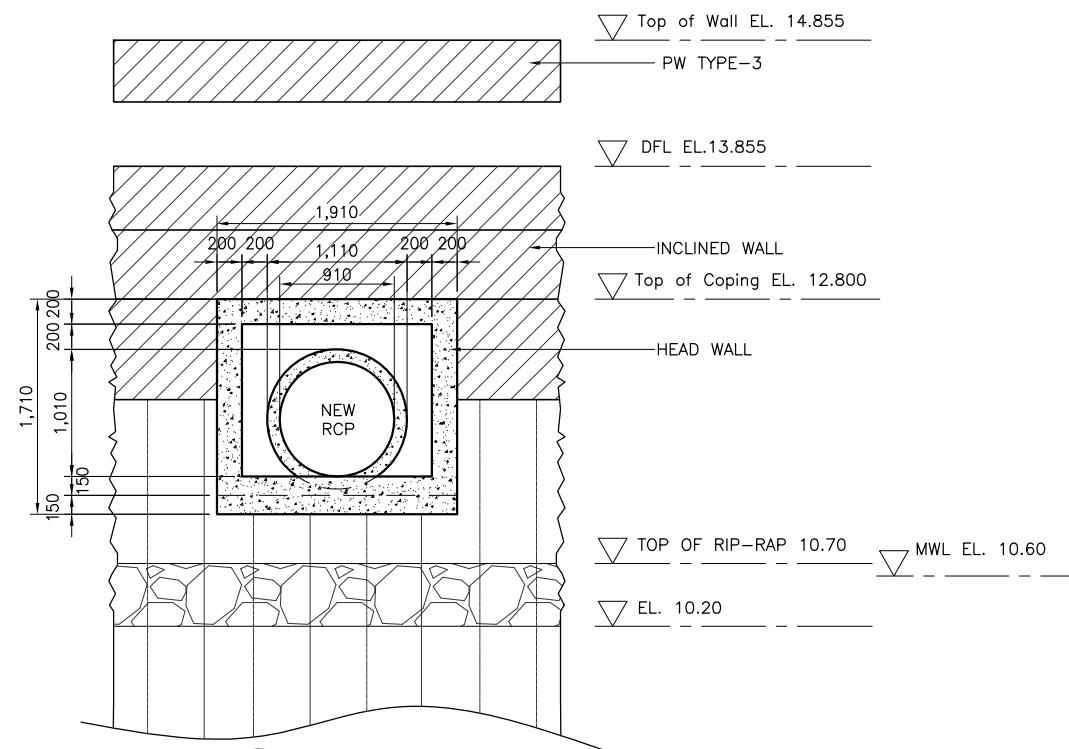
1 PLAN  
SCALE A



3 SECTION (MR174C.7)  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

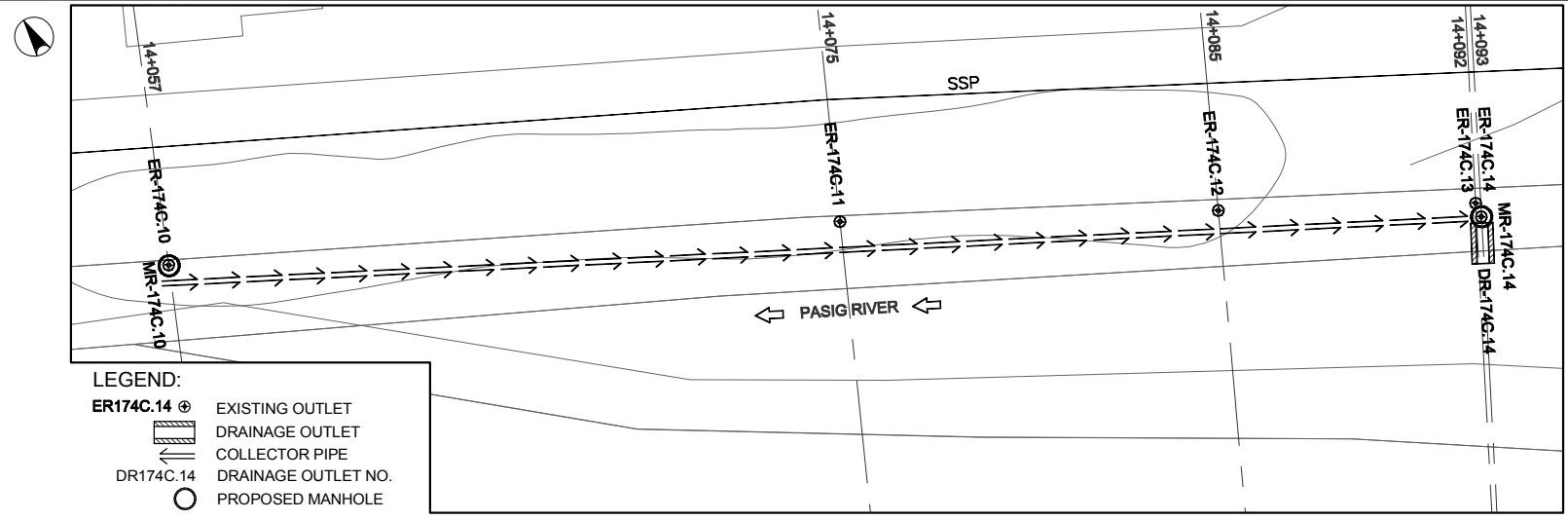
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES




ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

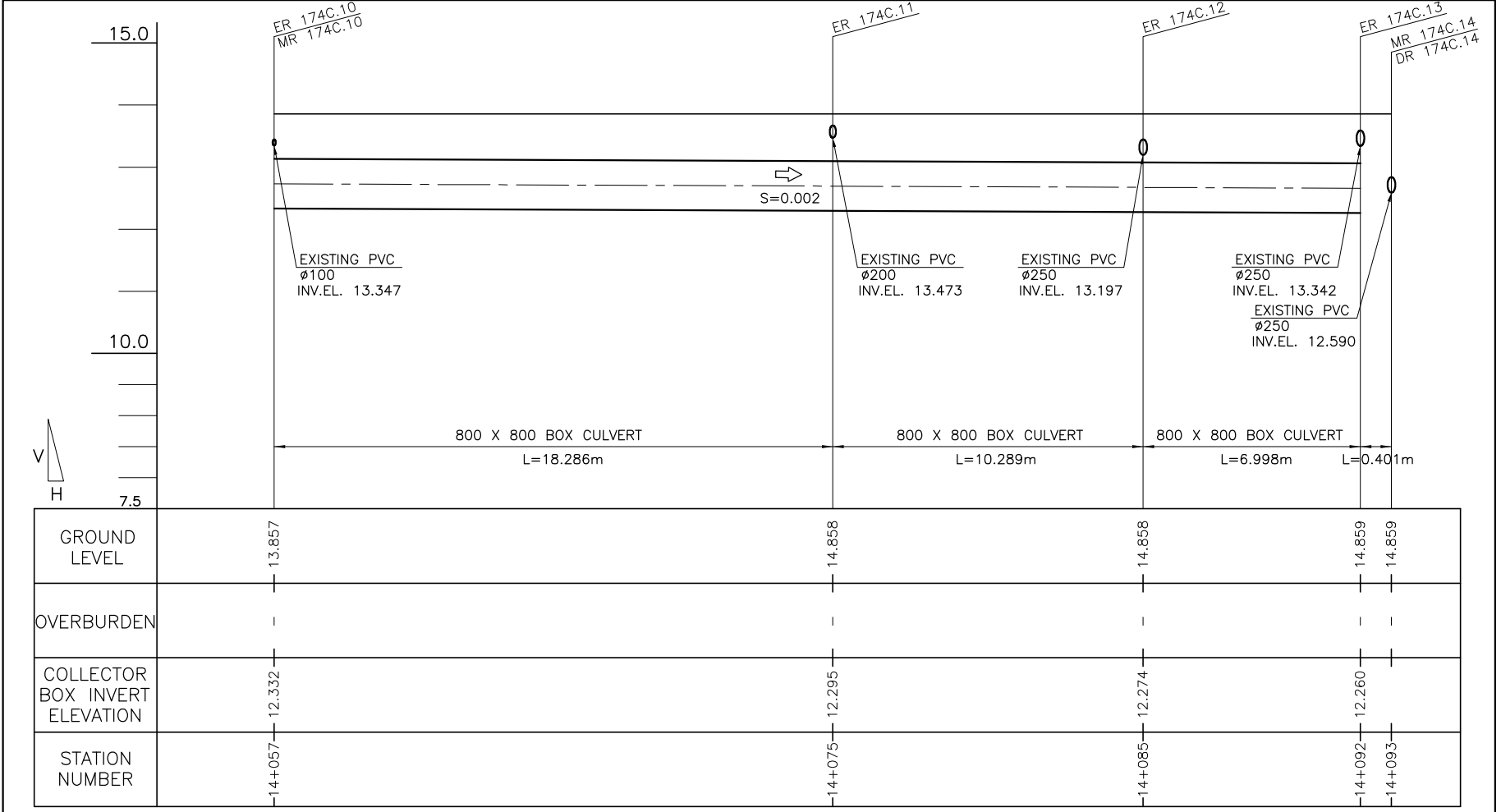
SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DR174C.7 & MANHOLE MR174C.7 STA 14+028 RB

SHEET NO.  
UP-DR-DO174C.7

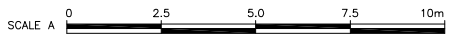


**LEGEND:**  
 ER174C.14 ⊕ EXISTING OUTLET  
 DRAINAGE OUTLET  
 COLLECTOR PIPE  
 DR174C.14 DRAINAGE OUTLET NO.  
 PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
 SCALE A






**2 PROFILE**  
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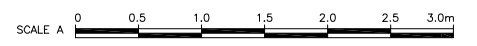
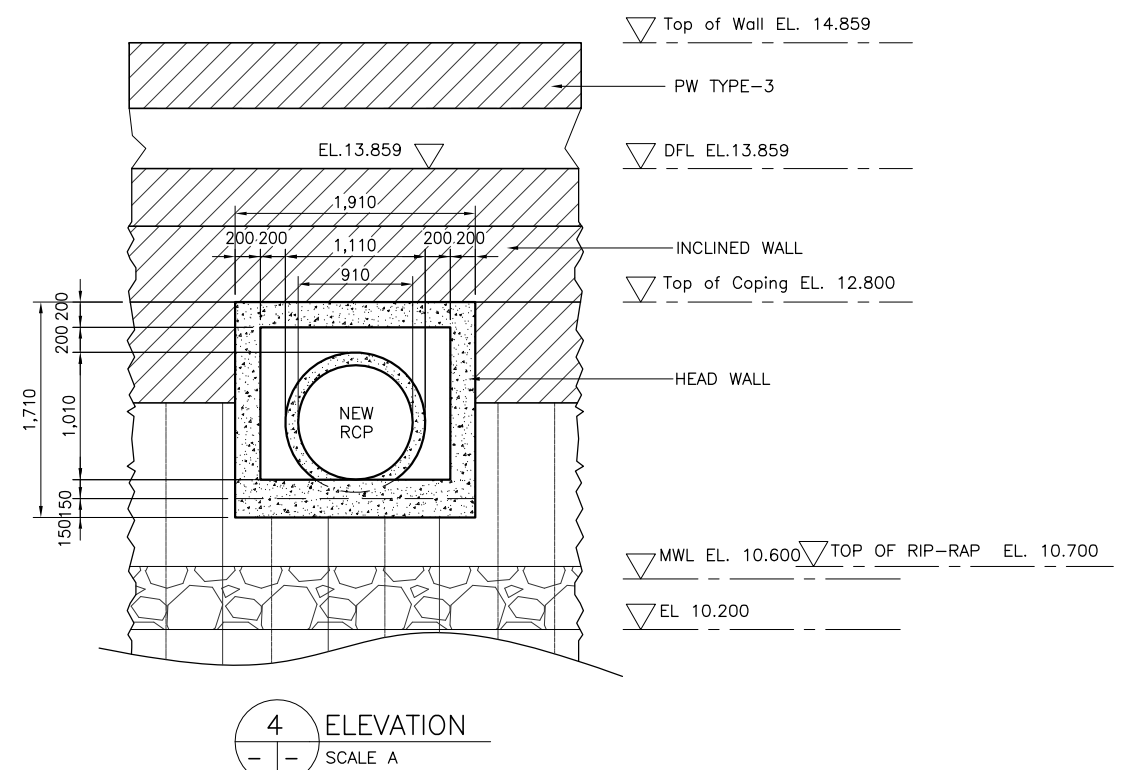
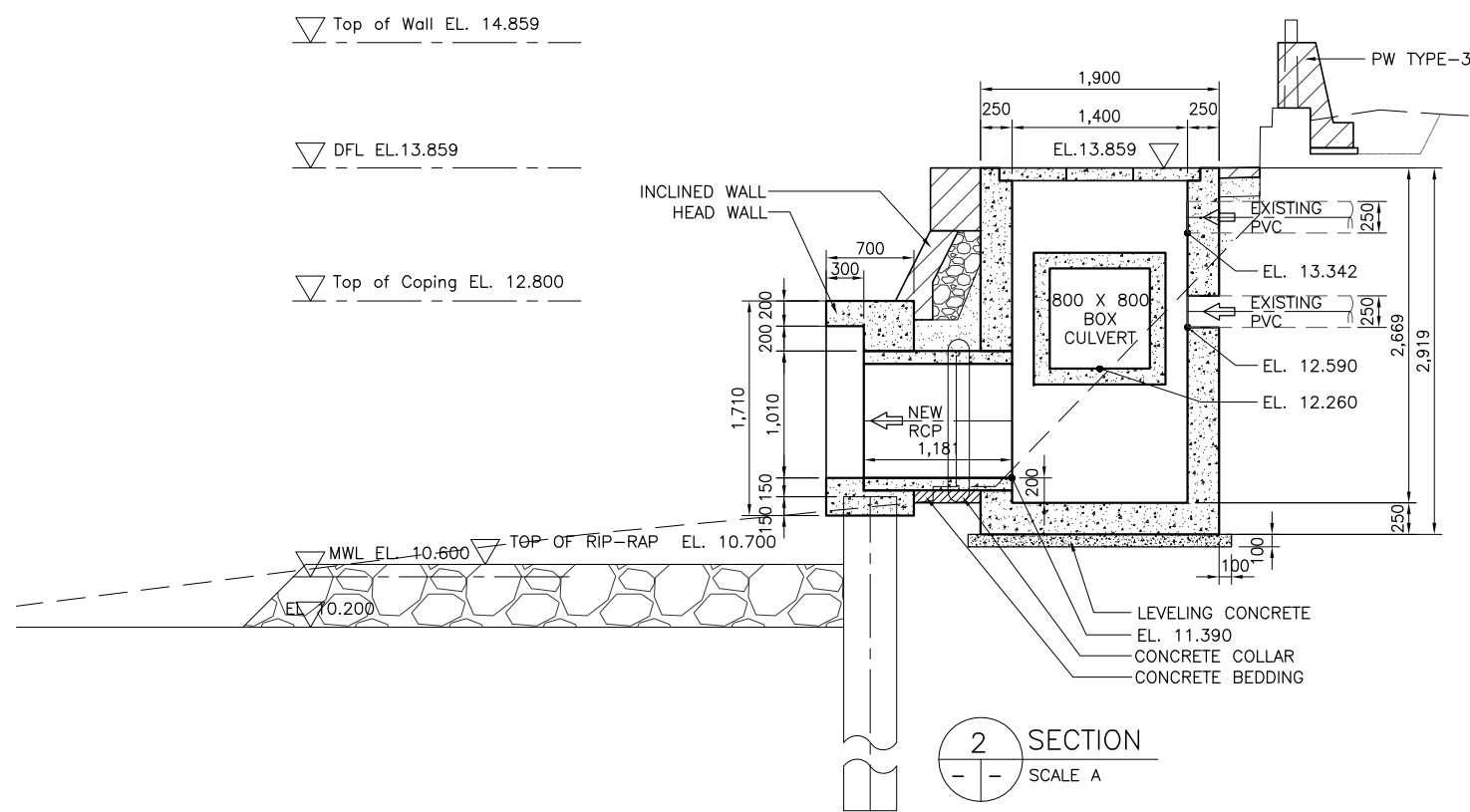
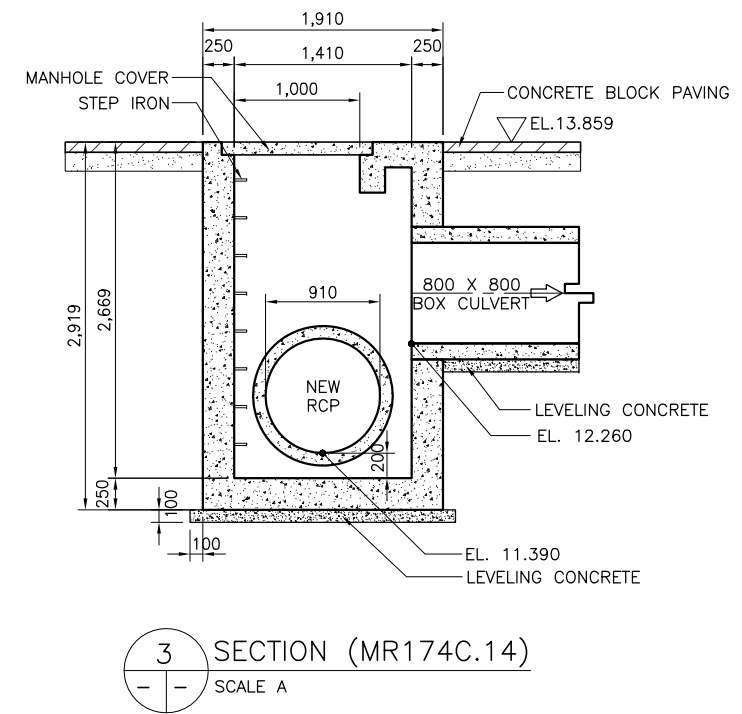
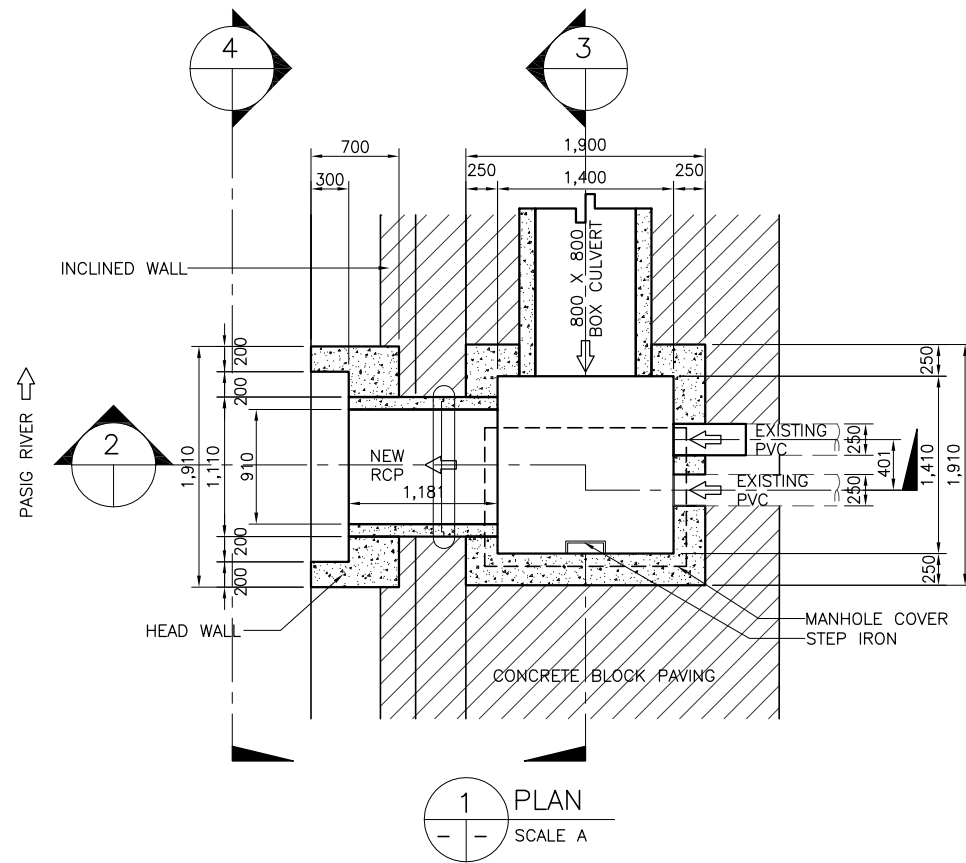


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
 PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
 <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	 <b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR BOX	 UP-DR DO 174C.14/P
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			

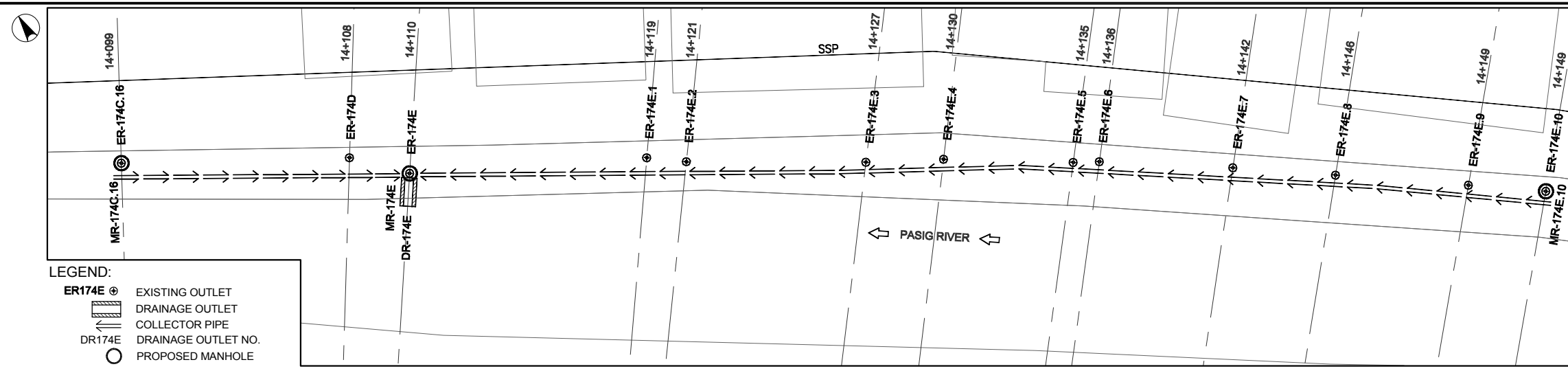


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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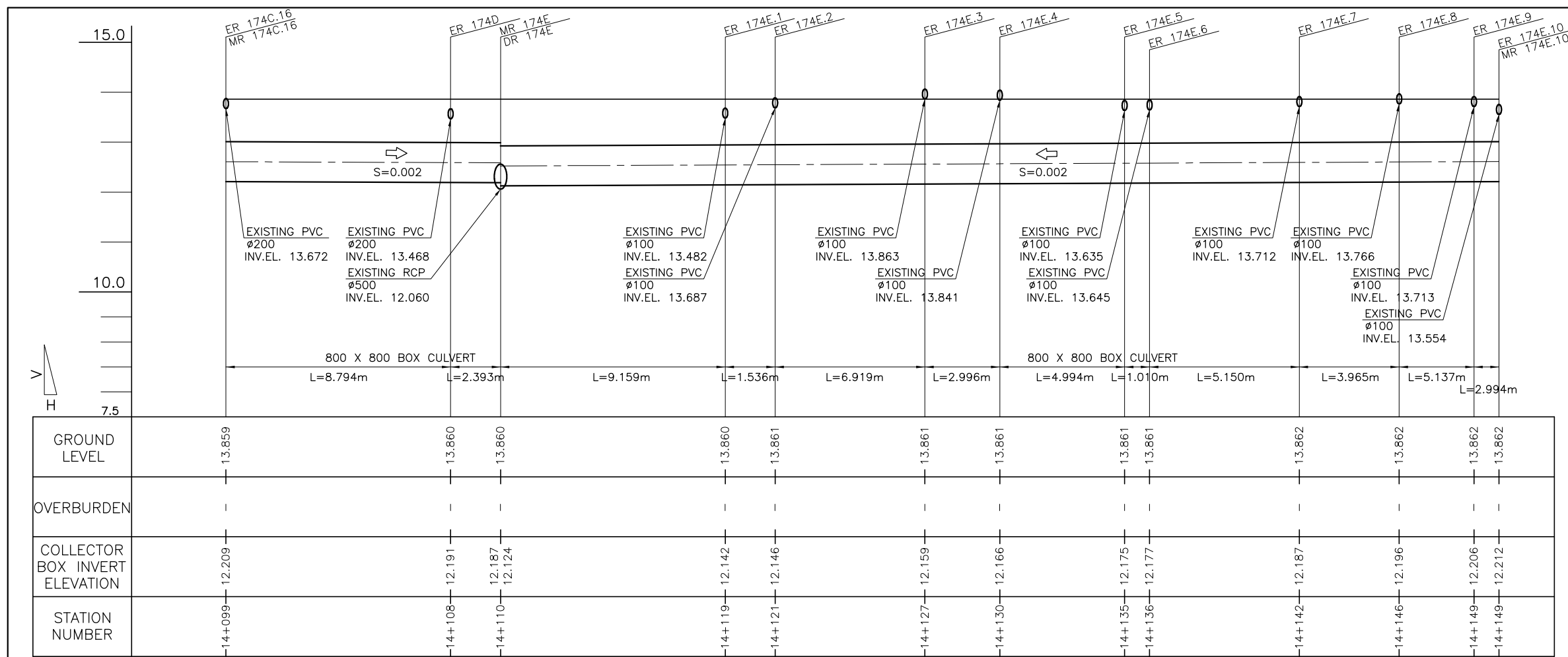
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR 174C.14 & MANHOLE ML174C.14 STA. 14+093 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



- LEGEND:**
- ER174E ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ← COLLECTOR PIPE
  - DR174E DRAINAGE PIPE
  - DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A



**2 PROFILE**  
SCALE A

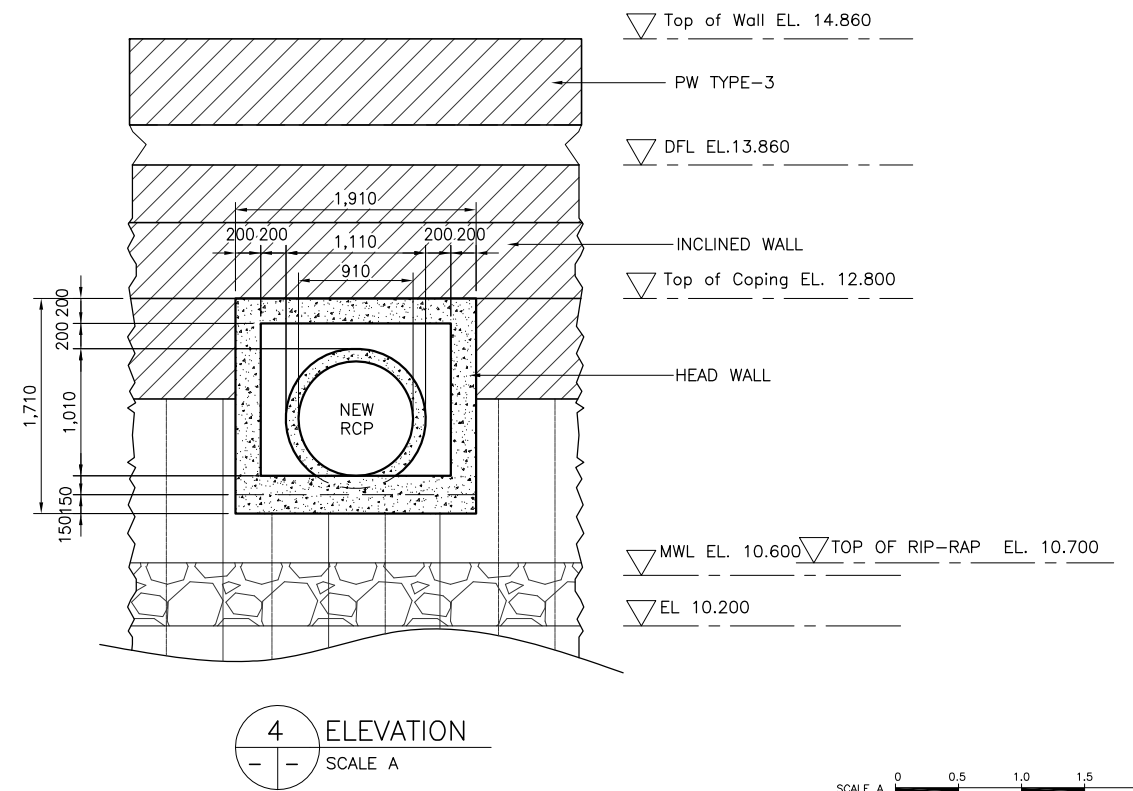
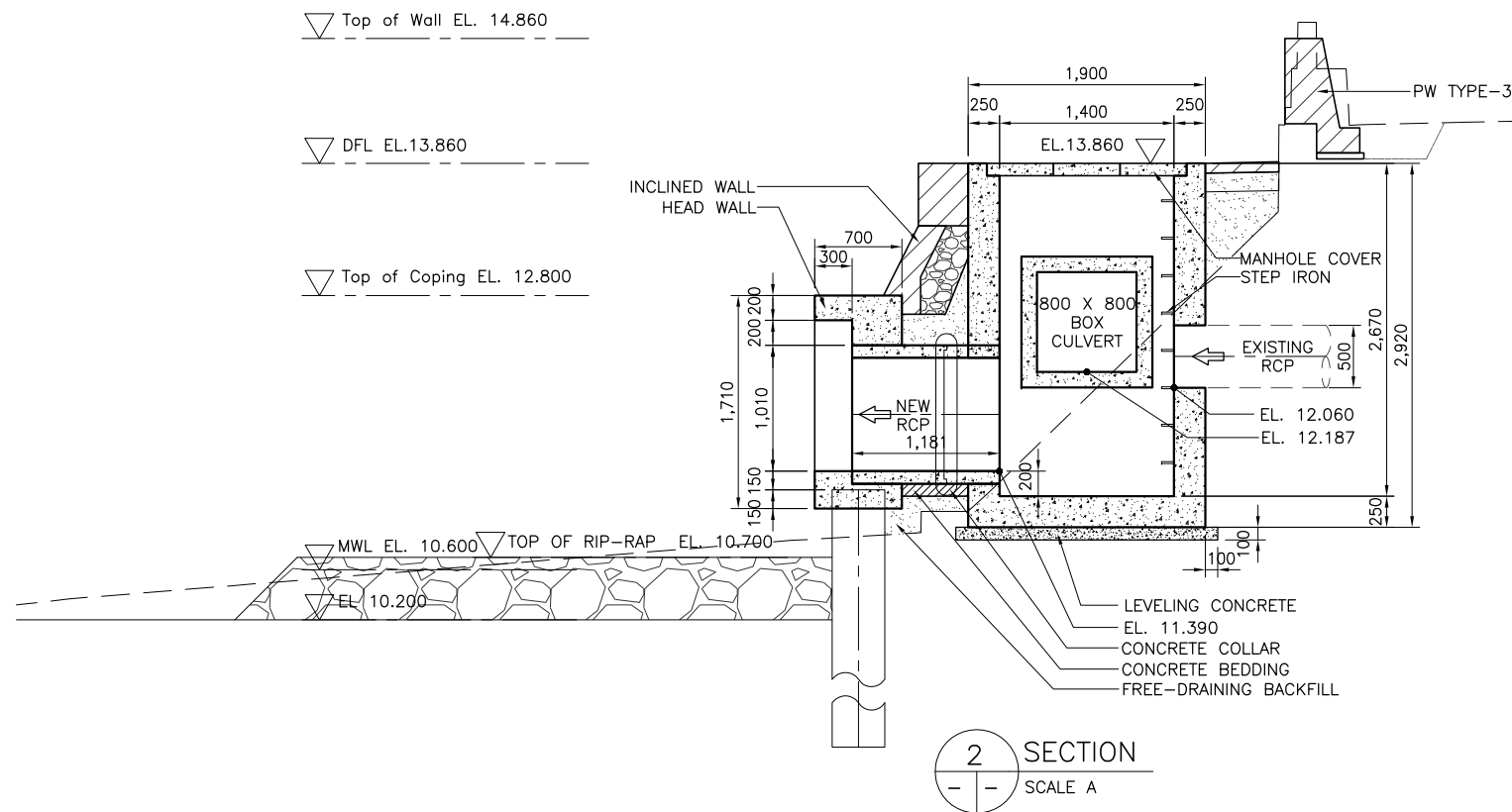
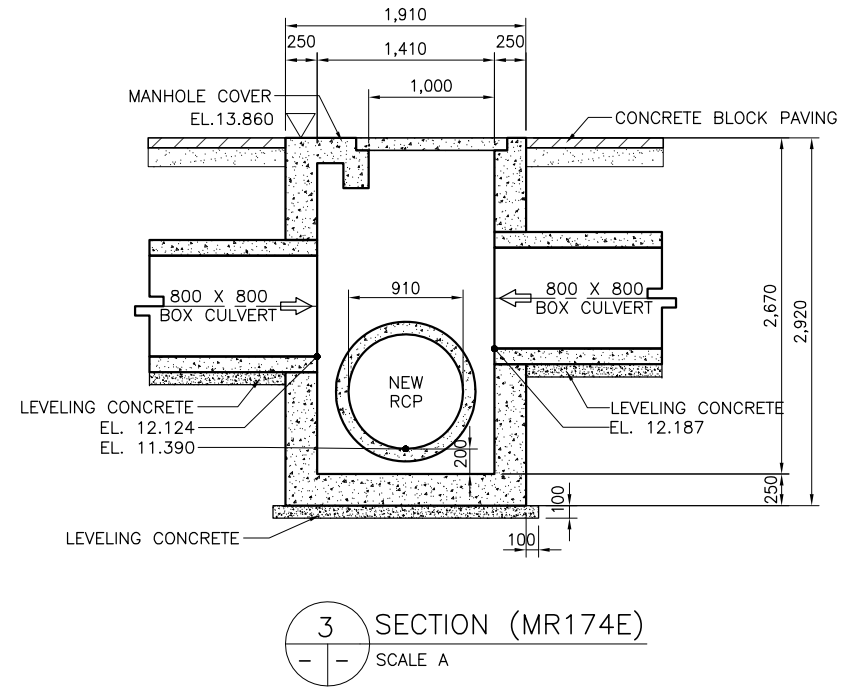
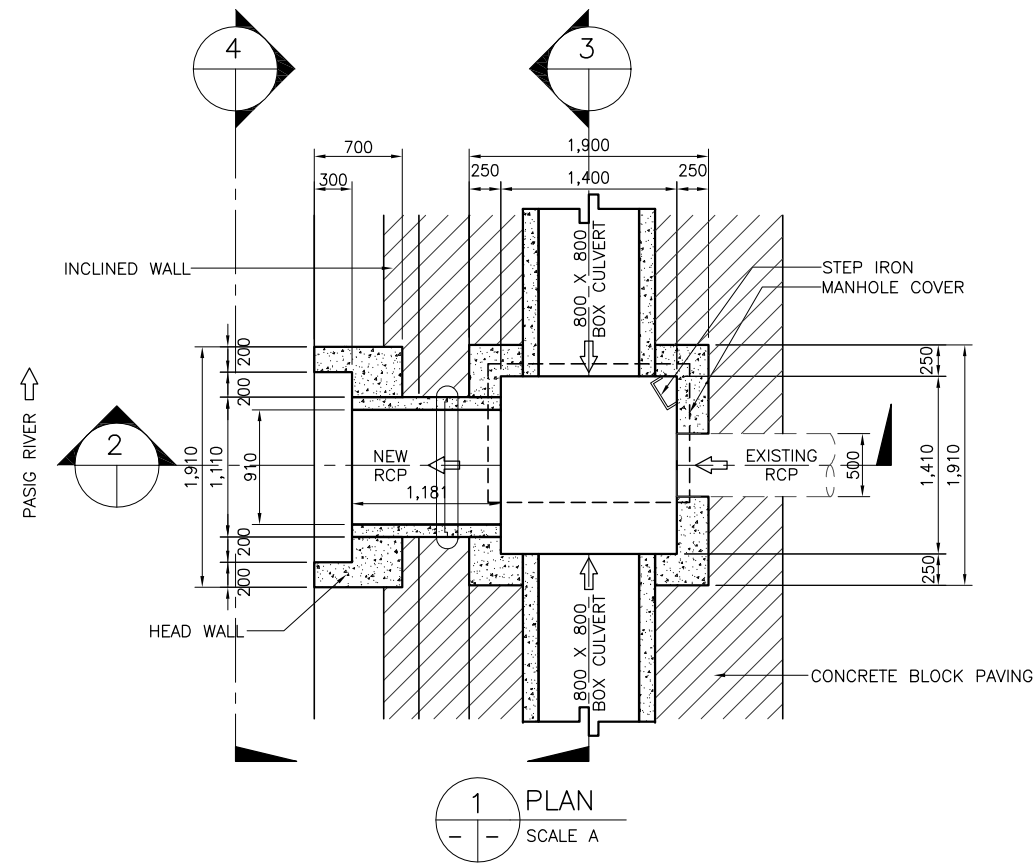


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES			PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR BOX	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

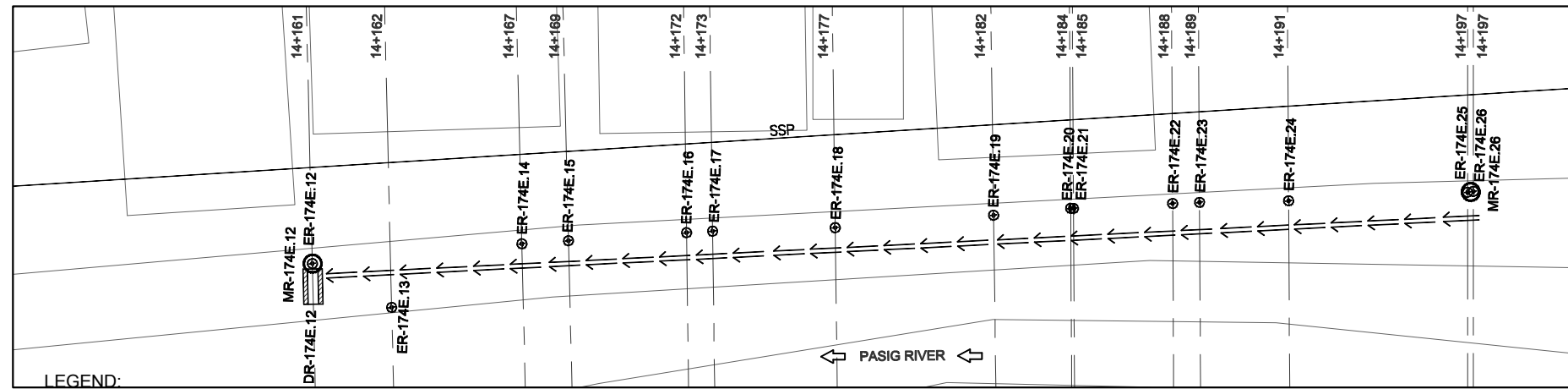
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

DETAIL OF DRAINAGE OUTLET- DR 174E & MANHOLE ML174E STA. 14+110 RB

SHEET NO.

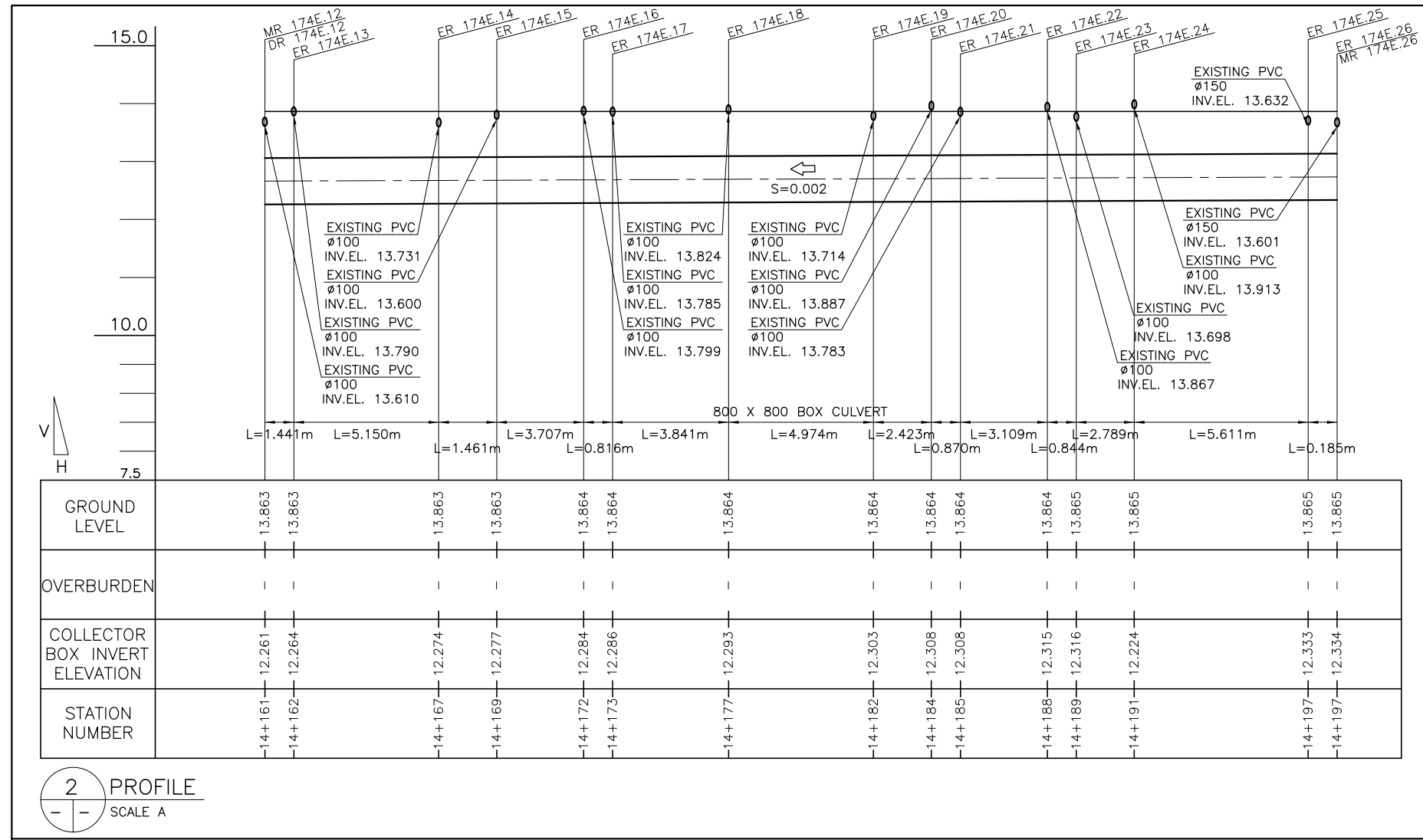




LEGEND:

- ER174E.12 ⊕ EXISTING OUTLET
- DRAINAGE OUTLET
- COLLECTOR PIPE
- DR174E.12 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

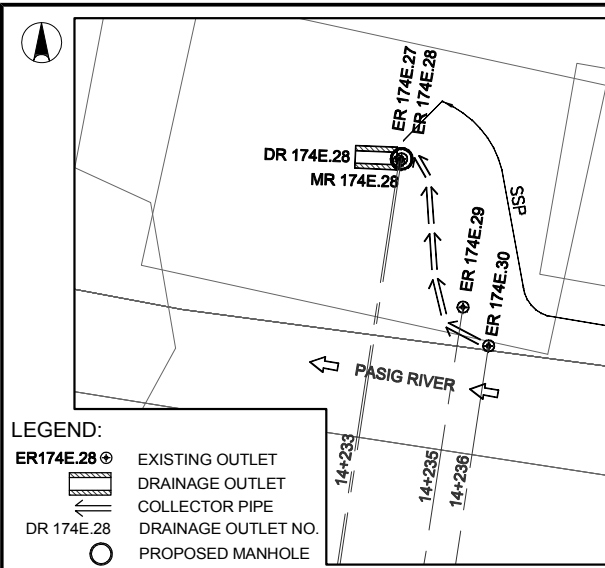
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN <b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>			DESIGNED BY: KOHEI TAKAYAMA (STRUCTURAL ENGINEER IV) CHECKED BY: TOSHIKI KAWAKAMI (THE CHECKER) SUBMITTED BY: SHUJI KAKU (TEAM LEADER)			REPUBLIC OF THE PHILIPPINES <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>			REVIEWED BY: PERFECTO L. ZAPLAN, JR. (CHIEF, HYDRAULIC DIVISION, BOD) RECOMMENDING APPROVAL: PATRICK B. GATAN (PROJECT DIRECTOR, PMO - MFCP), GILBERTO S. REYES (DIRECTOR, BOD)			APPROVED BY: RAUL C. ASIS (UNDERSECRETARY FOR TECHNICAL SERVICES), ROGELIO L. SINGSON (SECRETARY)			PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		SHEET CONTENTS: PLAN & PROFILE OF COLLECTOR BOX		SHEET NO.: UP-DR-DO 174E.12/P	
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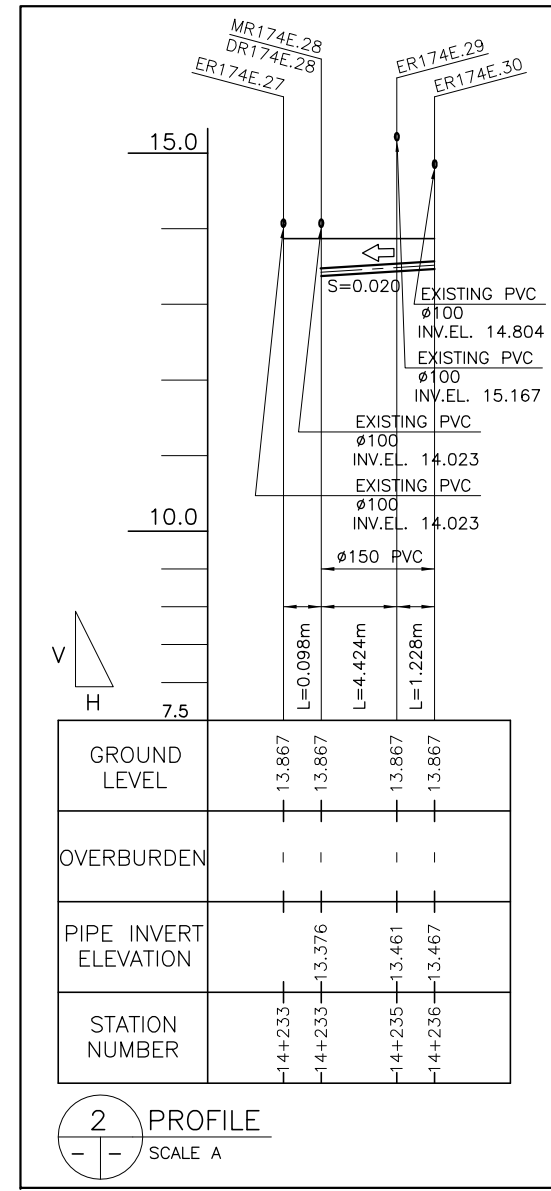




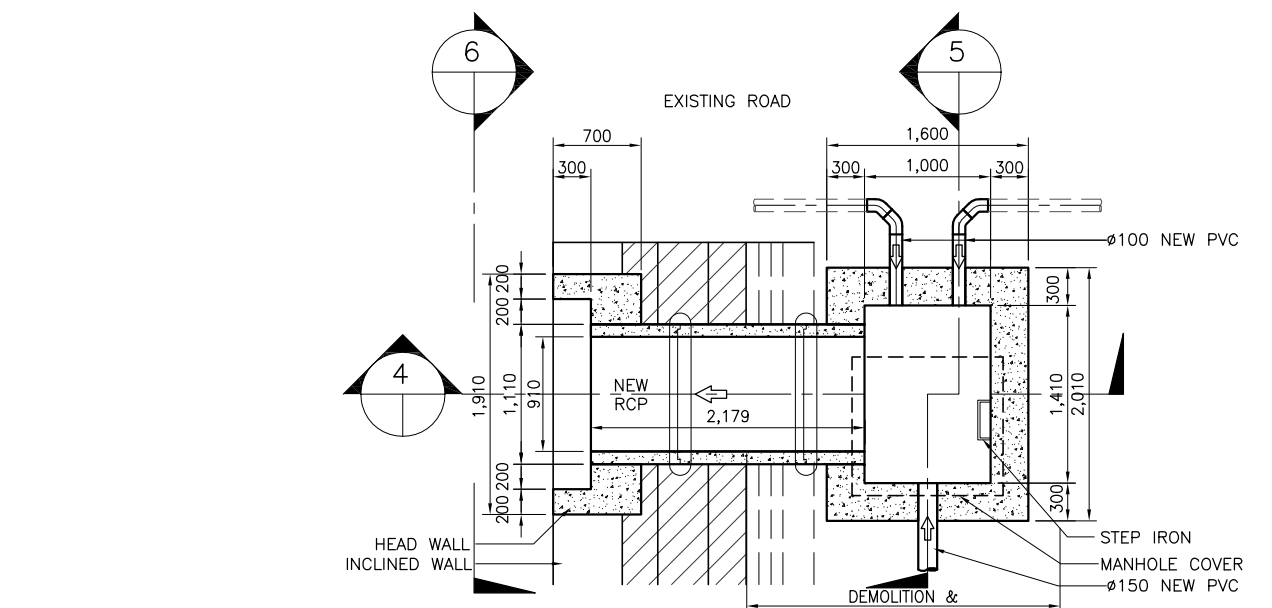


- LEGEND:**
- ER174E.28  $\oplus$  EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DR 174E.28 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

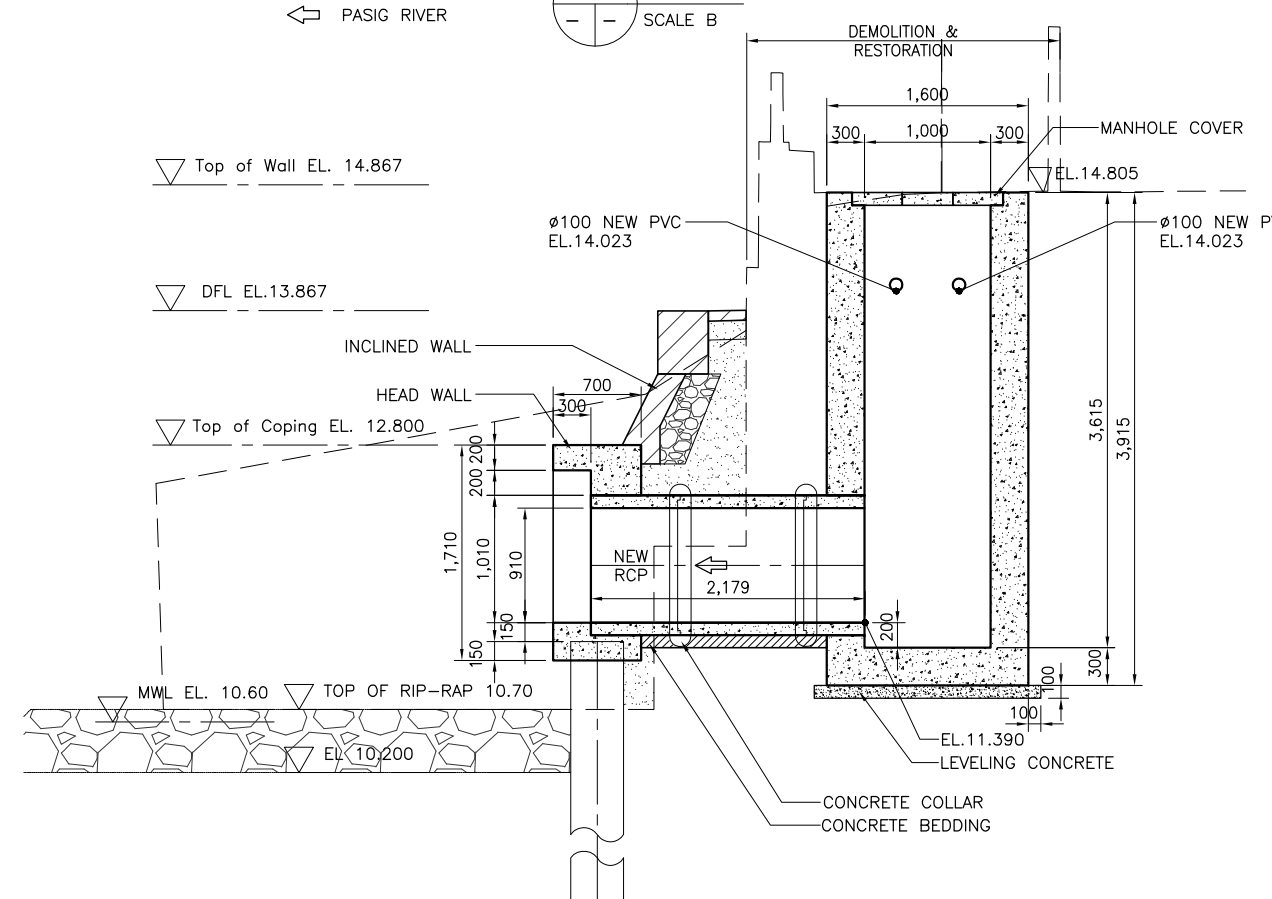
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SCALE A



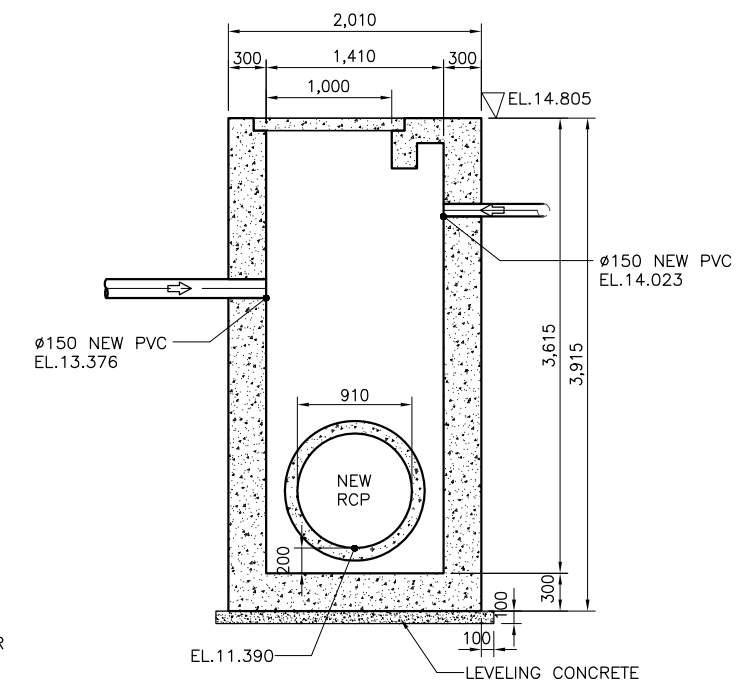
**2 PROFILE**  
SCALE A



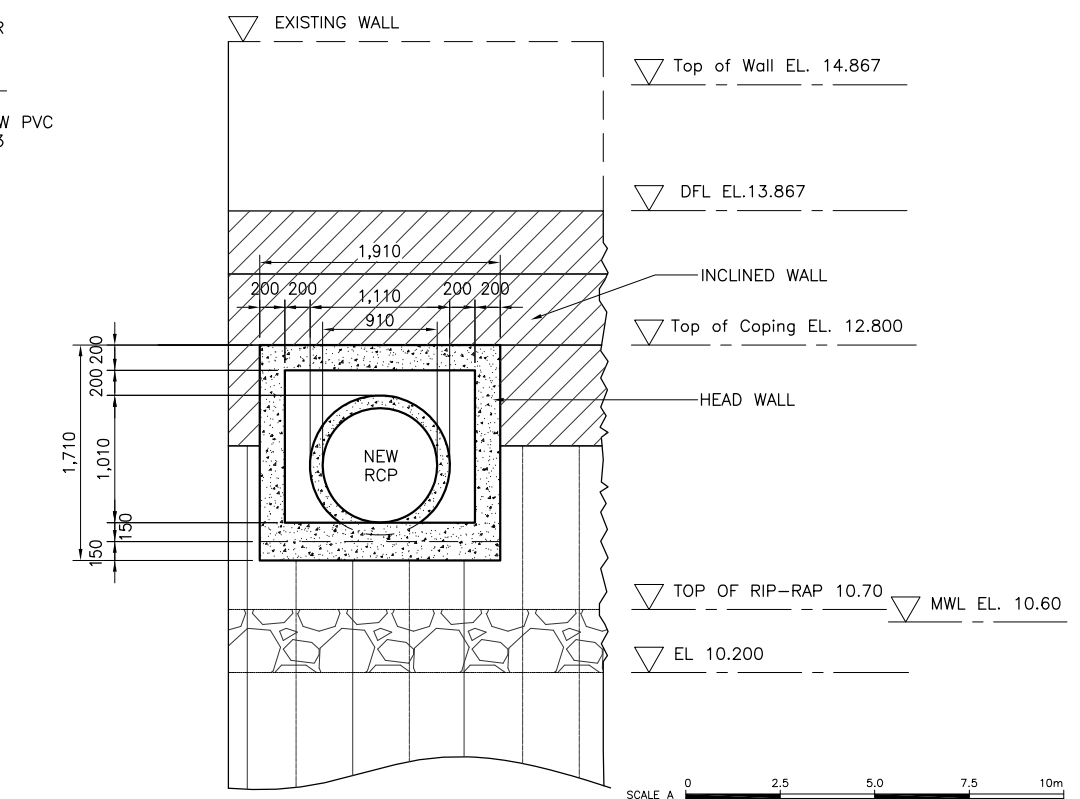
**3 PLAN**  
SCALE B



**4 SECTION**  
SCALE B



**5 SECTION (MR174E.28)**  
SCALE B



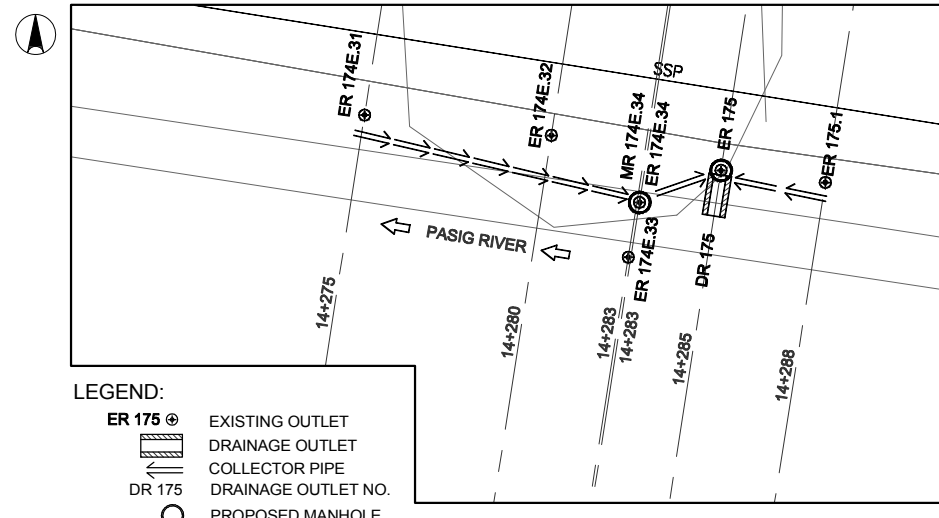
**6 ELEVATION**  
SCALE B

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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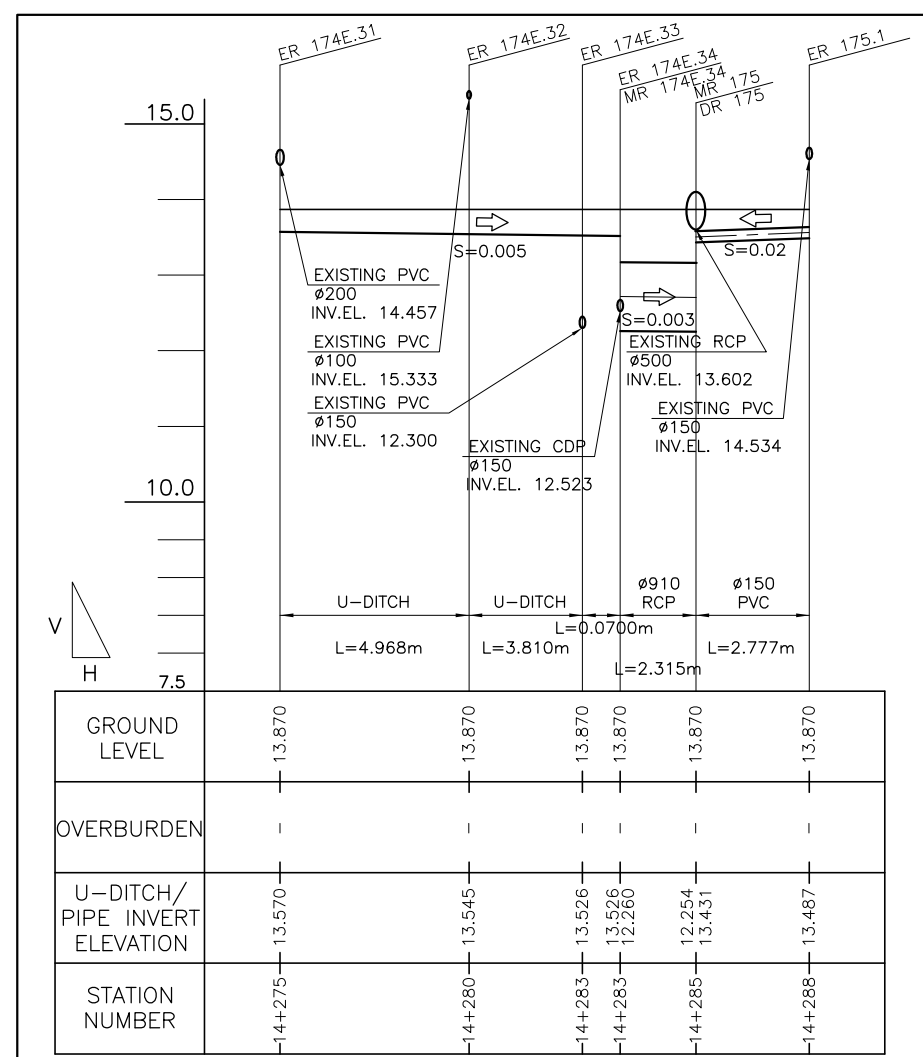
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE; DRAINAGE OUTLET- DR174E.28 & MANHOLE MR174E.28 STA 14+233 RB			
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD				SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY



- LEGEND:
- ER 175 ⊕ EXISTING OUTLET
  - ▭ DRAINAGE OUTLET
  - ▬ COLLECTOR PIPE
  - DR 175 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

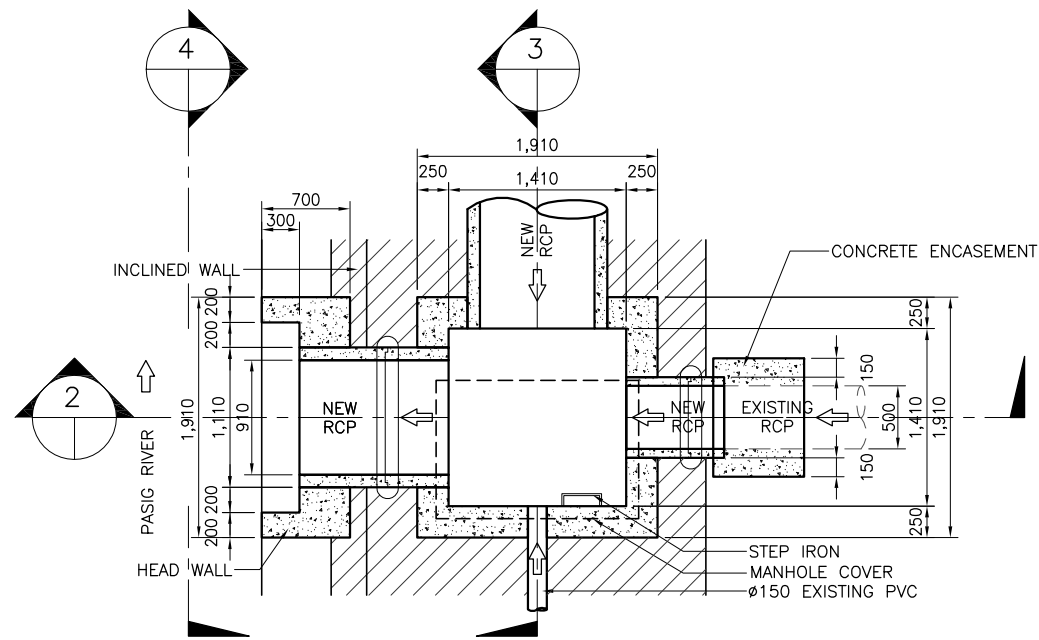


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NO.	DESCRIPTION	APPROVED	DATE

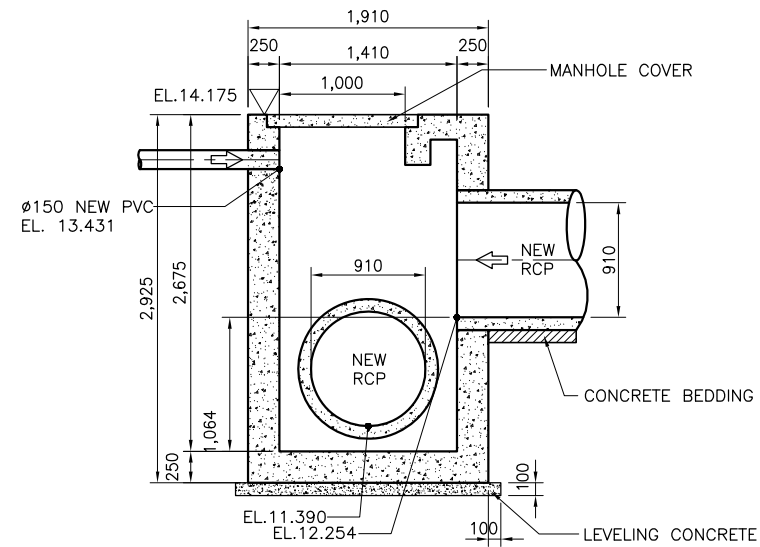
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SHUJI KAKU  
TEAM LEADER

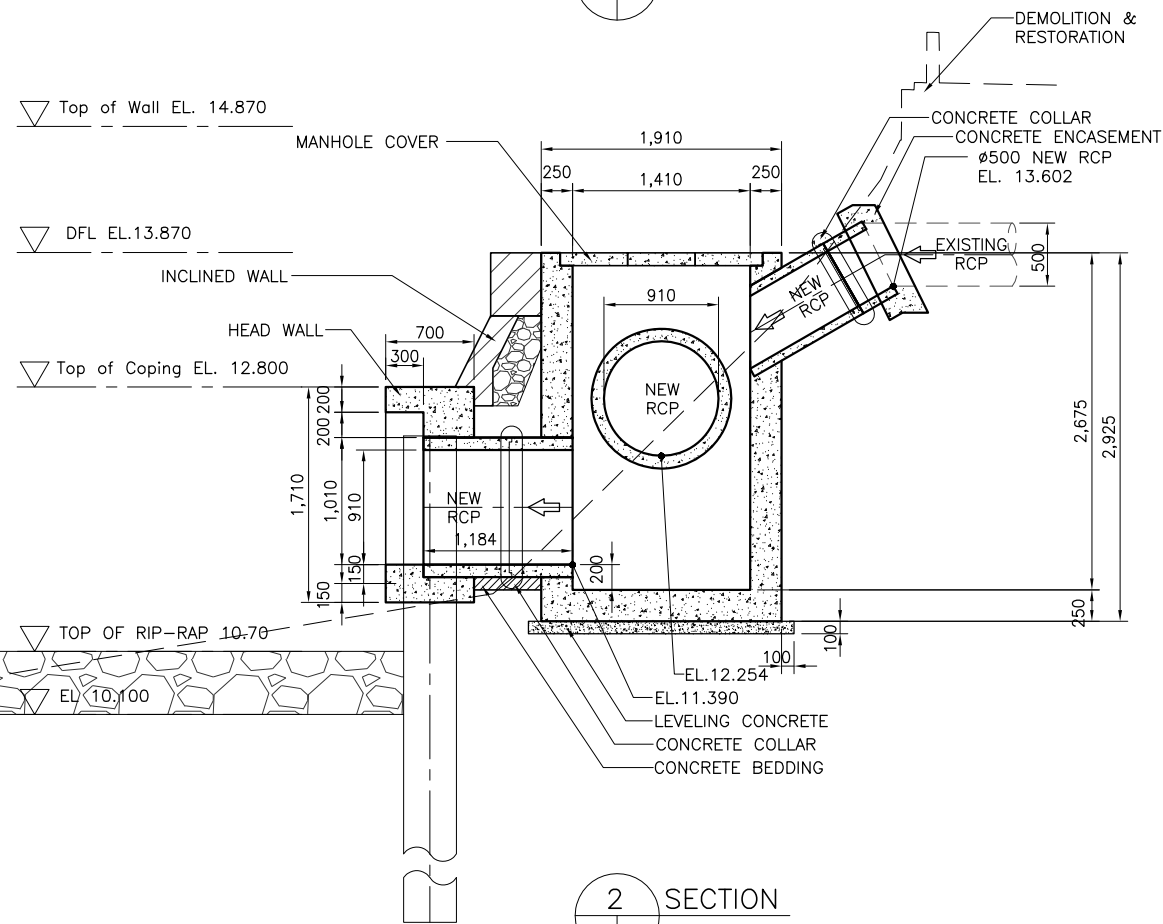
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE/U-DITCH	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES			



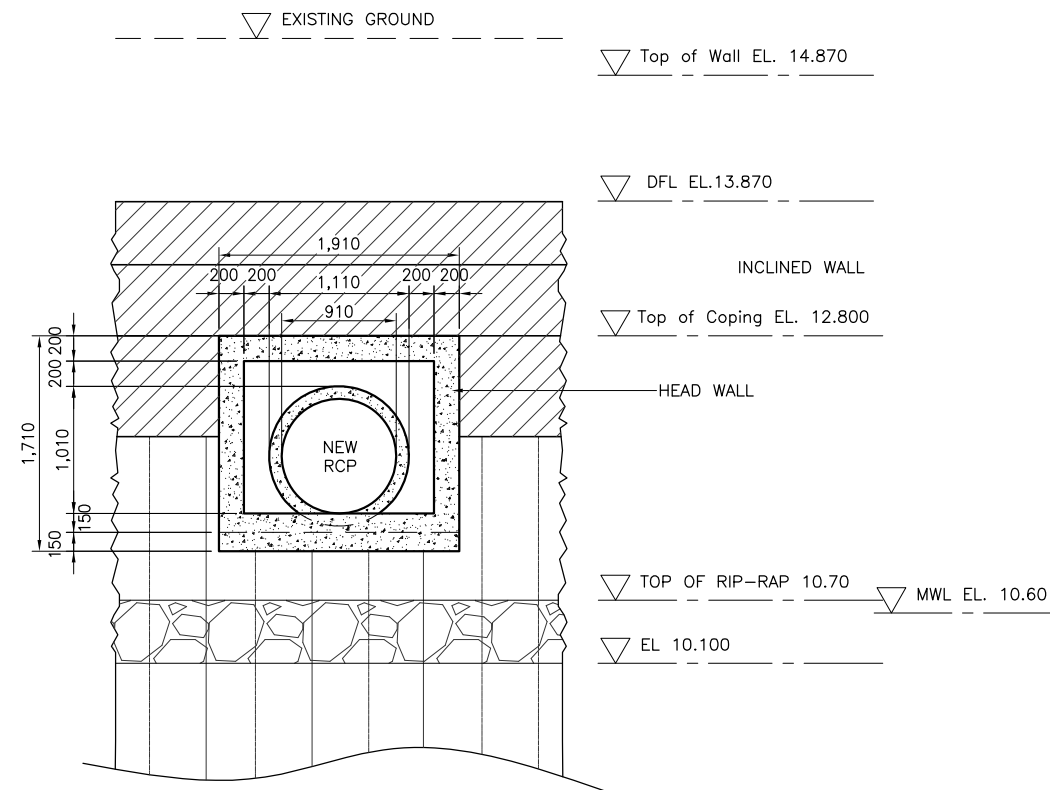
1 PLAN  
SCALE A



3 SECTION (MR175)  
SCALE A



2 SECTION  
SCALE A



5 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



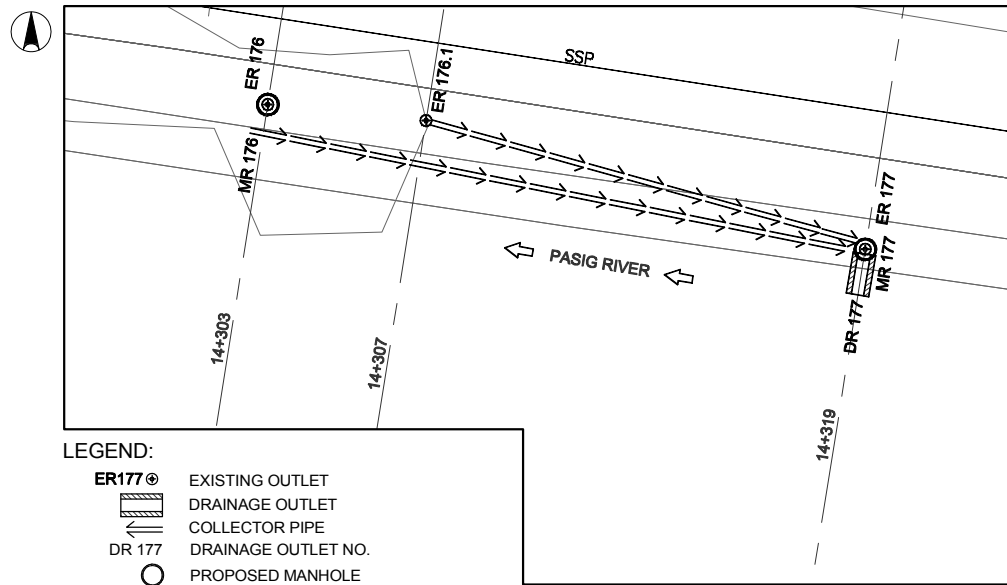
DESIGNED BY: KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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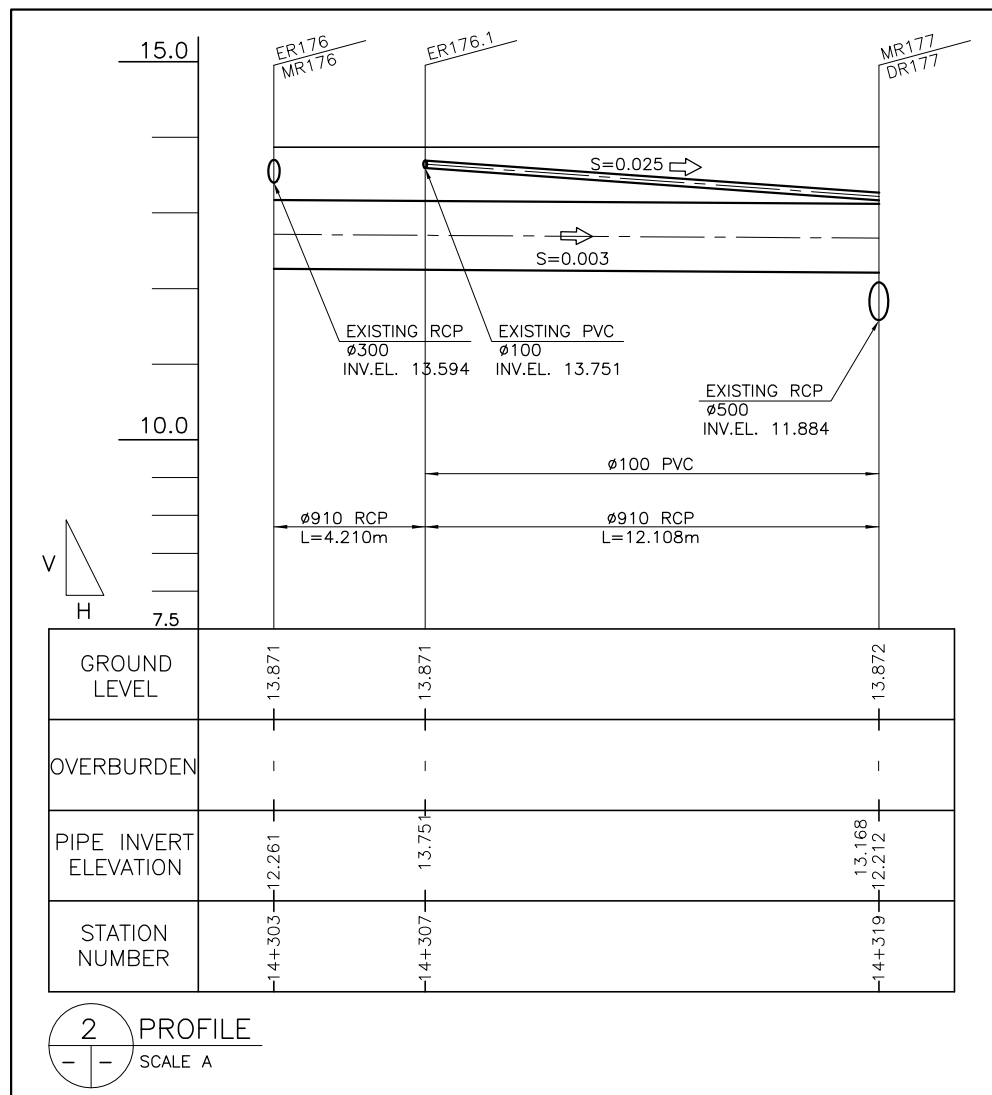
REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	SHEET CONTENTS DETAIL OF DRAINAGE OUTLET- DR175 & MANHOLE MR175 STA14+285 RB	SHEET NO. UP-DR/DO/175
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1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

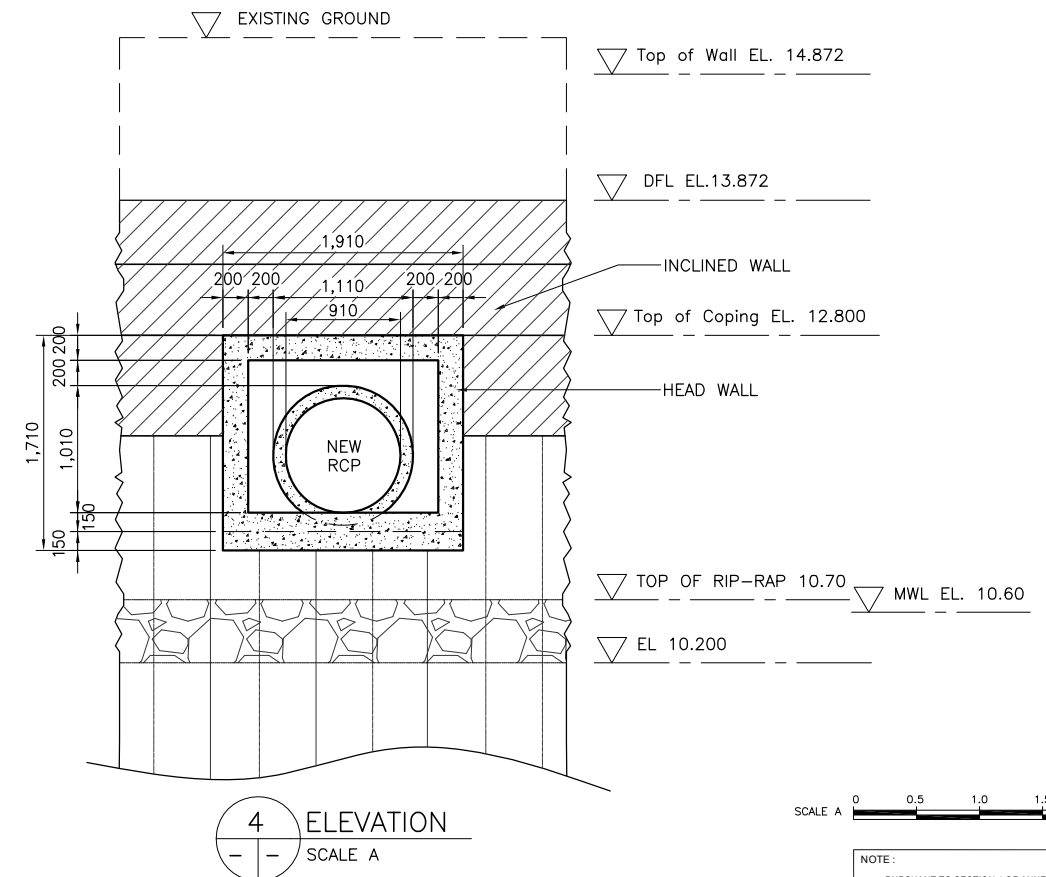
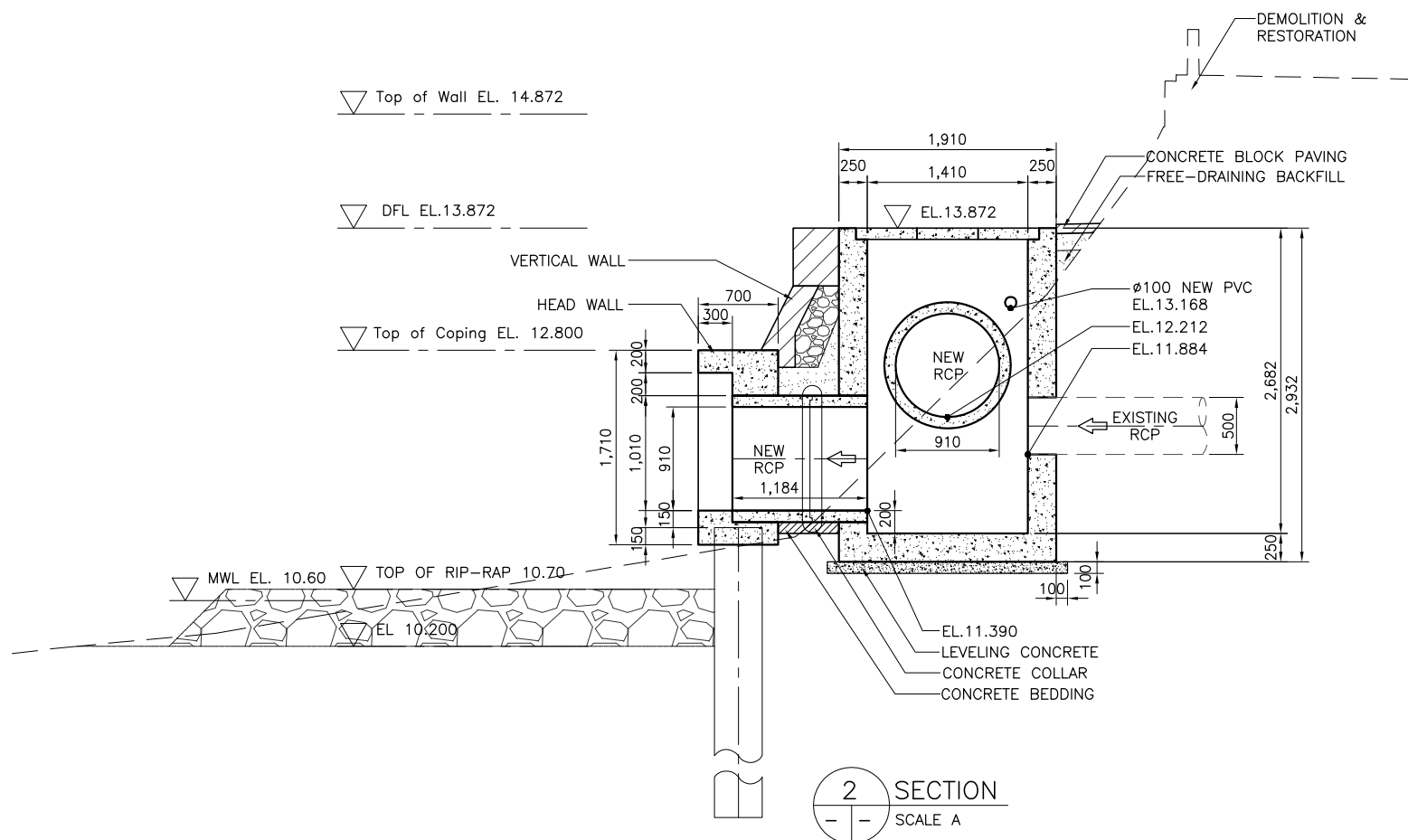
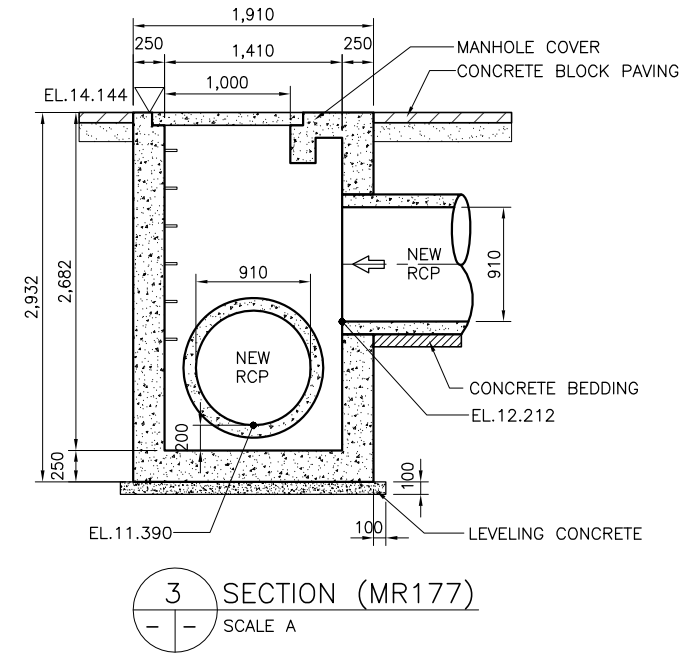
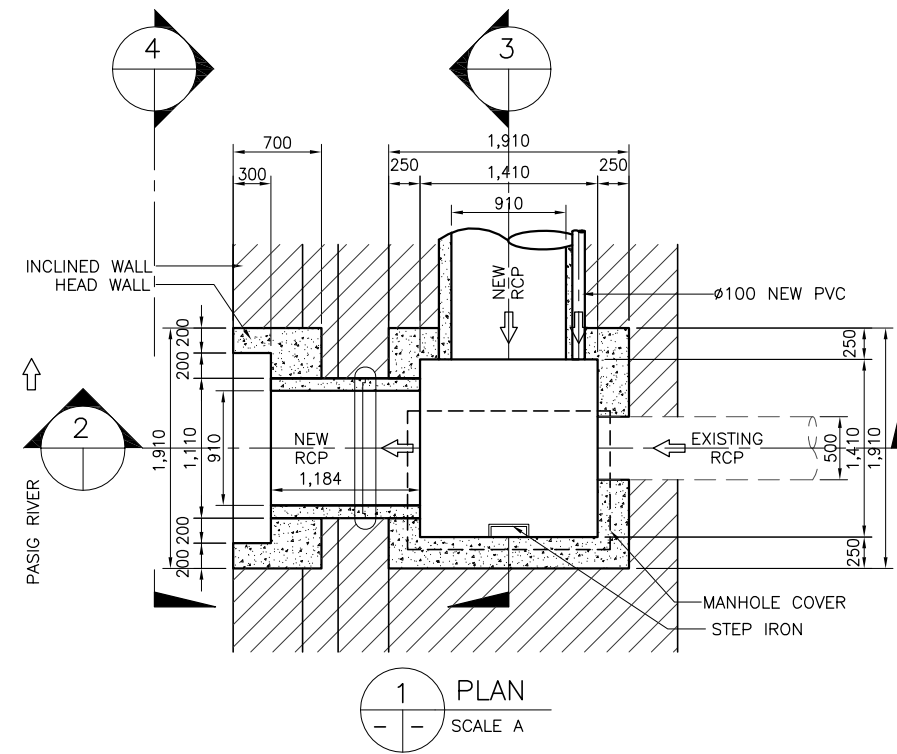


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY			
							RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			



**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

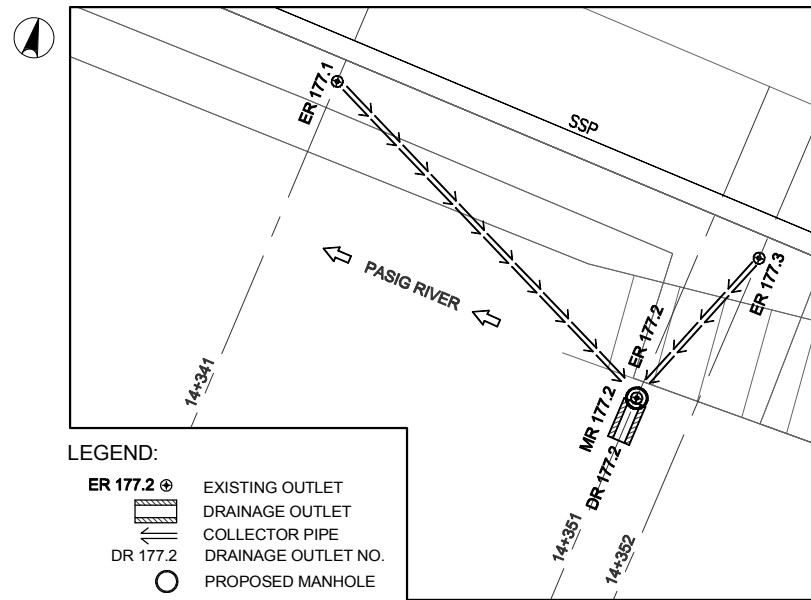
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

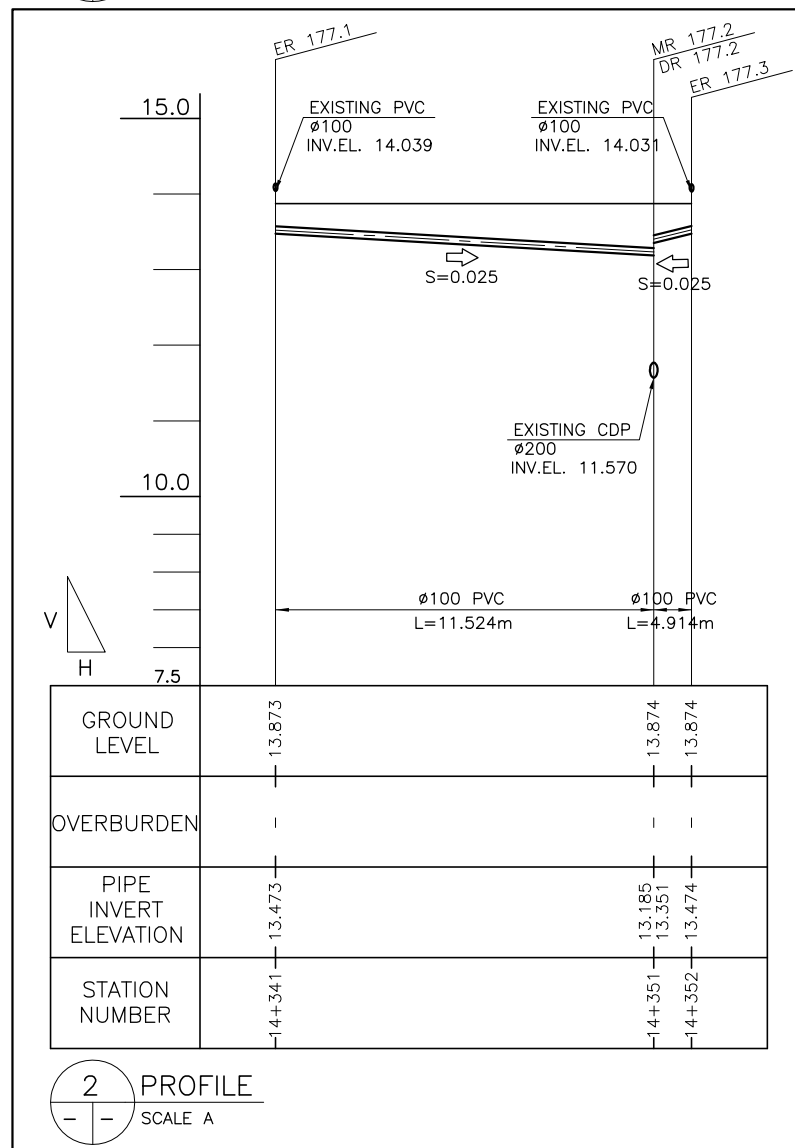
SHEET CONTENTS  
DETAIL OF DRAINAGE OUTLET- DR177 & MANHOLE MR177 STA 14+319 RB

SHEET NO.  
UP-DR  
DO177



- LEGEND:
- ER 177.2 EXISTING OUTLET
  - DRAINAGE OUTLET
  - COLLECTOR PIPE
  - DR 177.2 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A

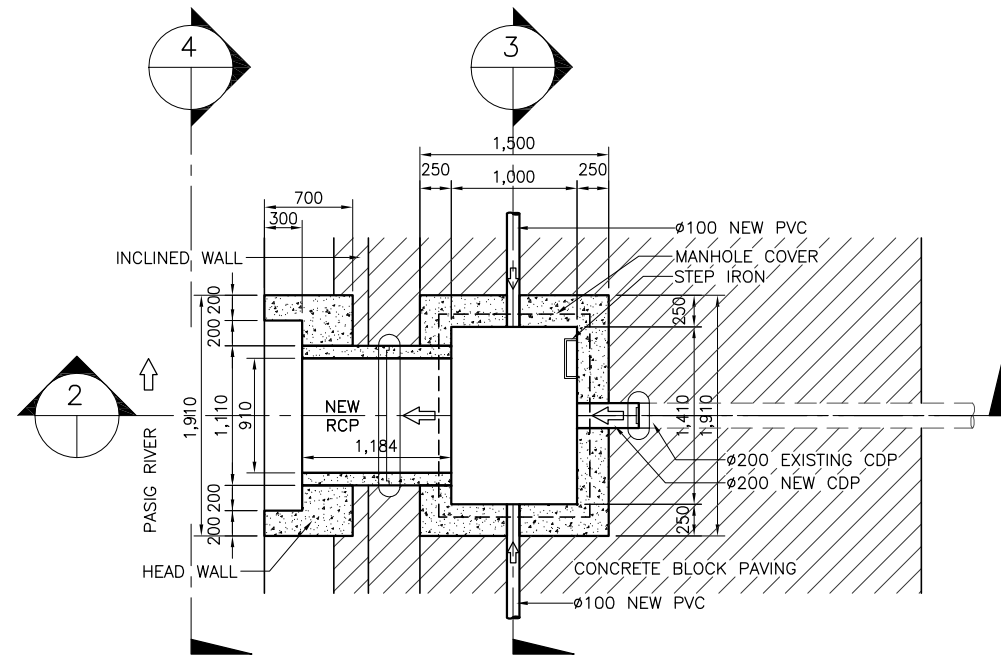


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

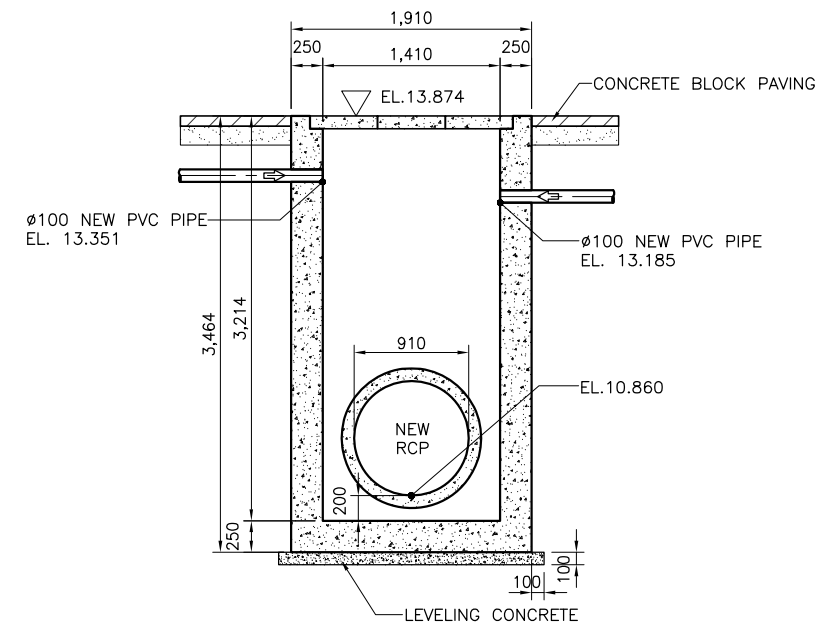
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

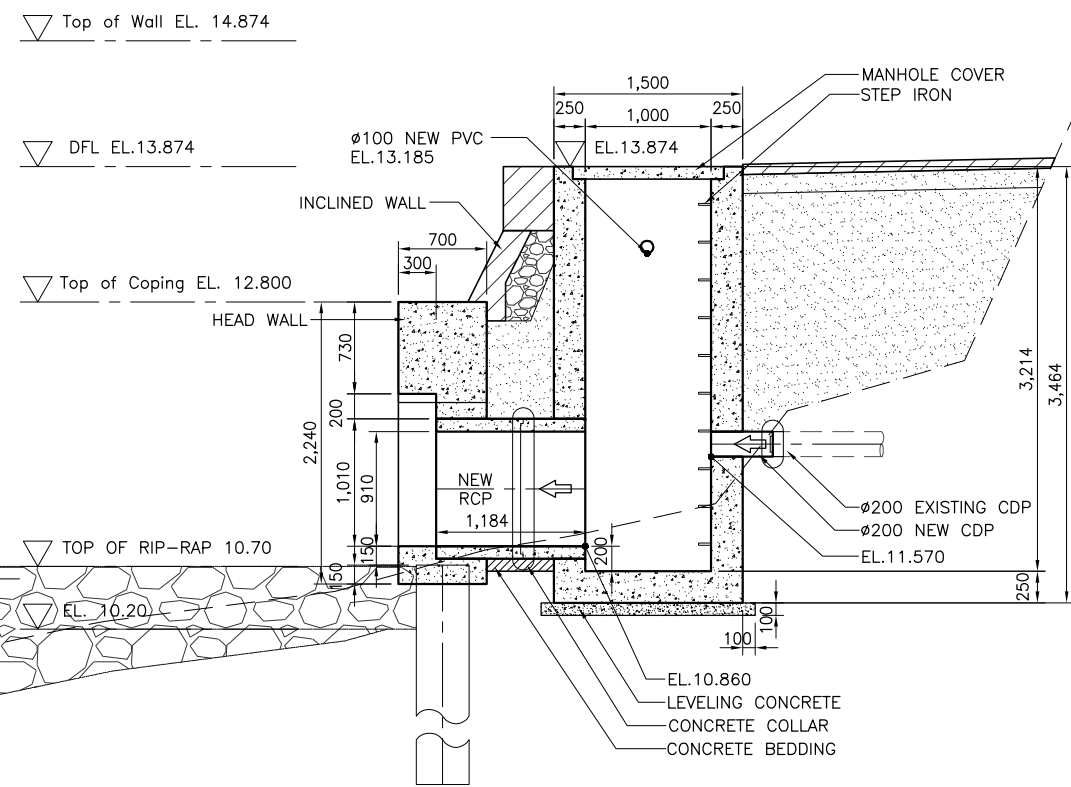
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



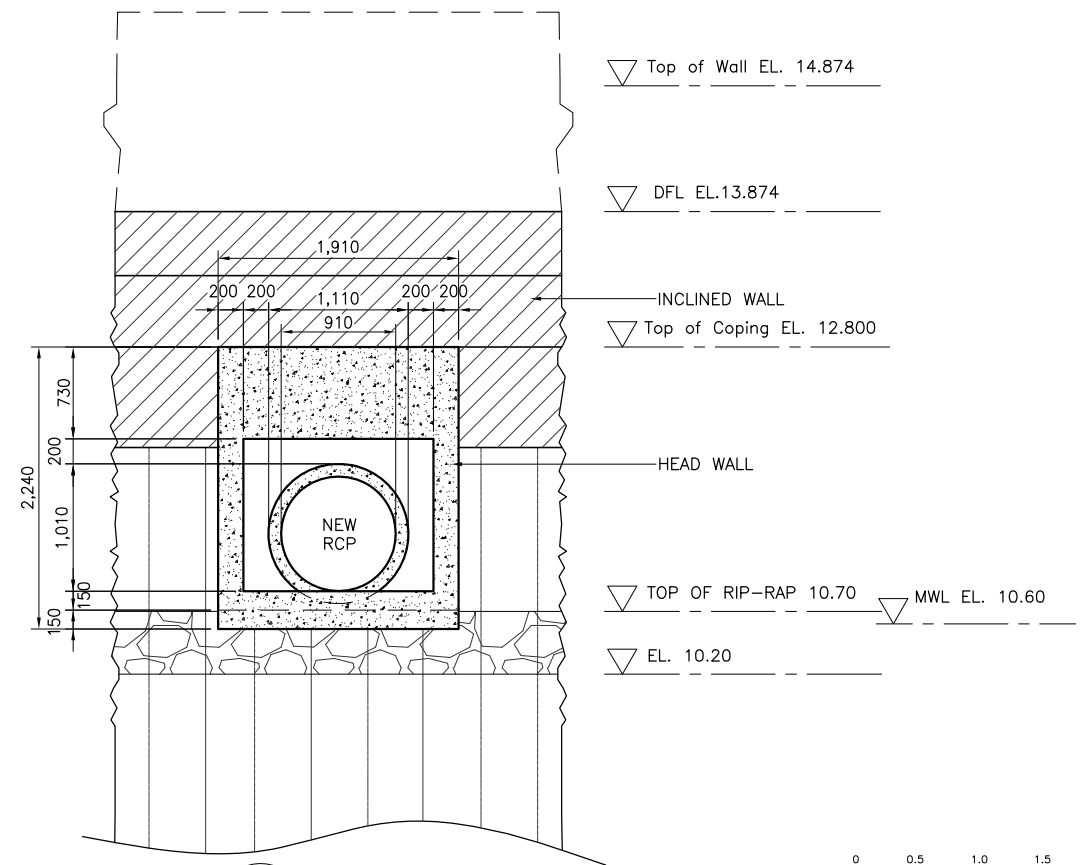
1 PLAN  
SCALE A



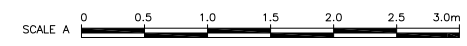
3 SECTION  
SCALE A



2 SECTION  
SCALE A



4 ELEVATION  
SCALE A



NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

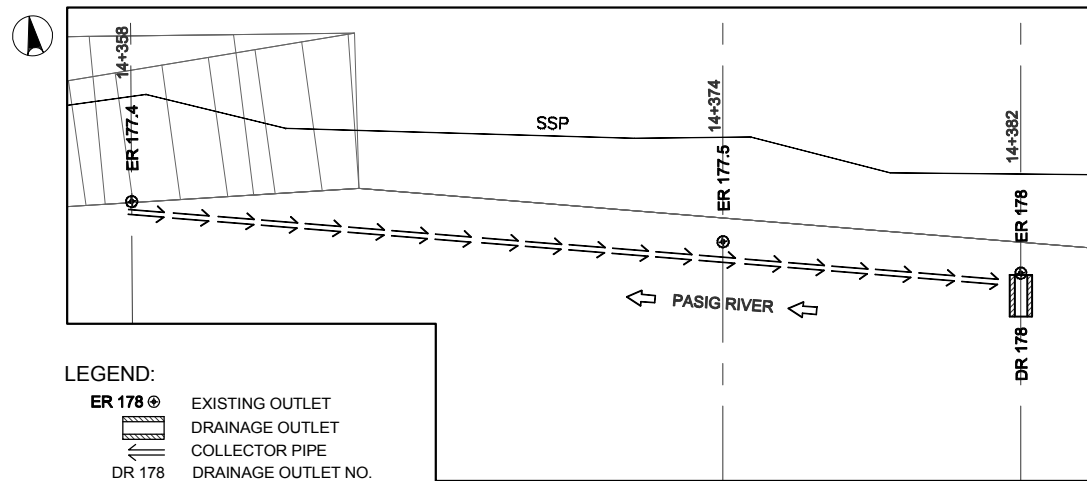
ROGELIO L. SINGSON  
SECRETARY



PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: DETAIL OF DRAINAGE OUTLET- DR177.2 & MANHOLE MR177.2 STA 14+351 RB

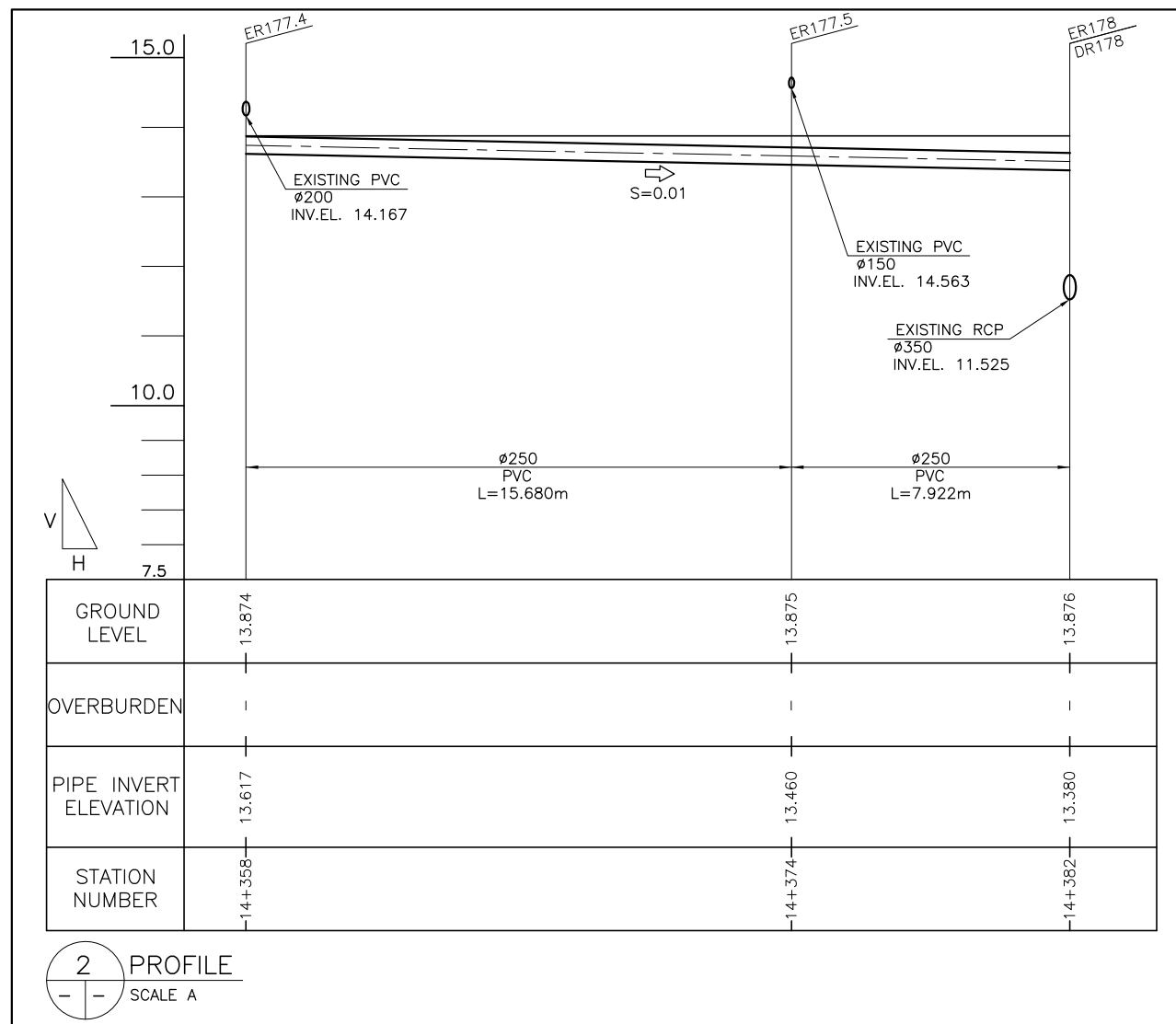
SHEET NO.: UP-DR-DO177.2





LEGEND:  
 ER 178 ⊕ EXISTING OUTLET  
 DRAINAGE OUTLET  
 COLLECTOR PIPE  
 DR 178 DRAINAGE OUTLET NO.

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



NOTE:  
 PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: KOHEI TAKAYAMA  
STRUCTURAL ENGINEER IV

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REVIEWED BY: PERFECTO L. ZAPLAN, JR.  
CHIEF, HYDRAULIC DIVISION, BOD

RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY

APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

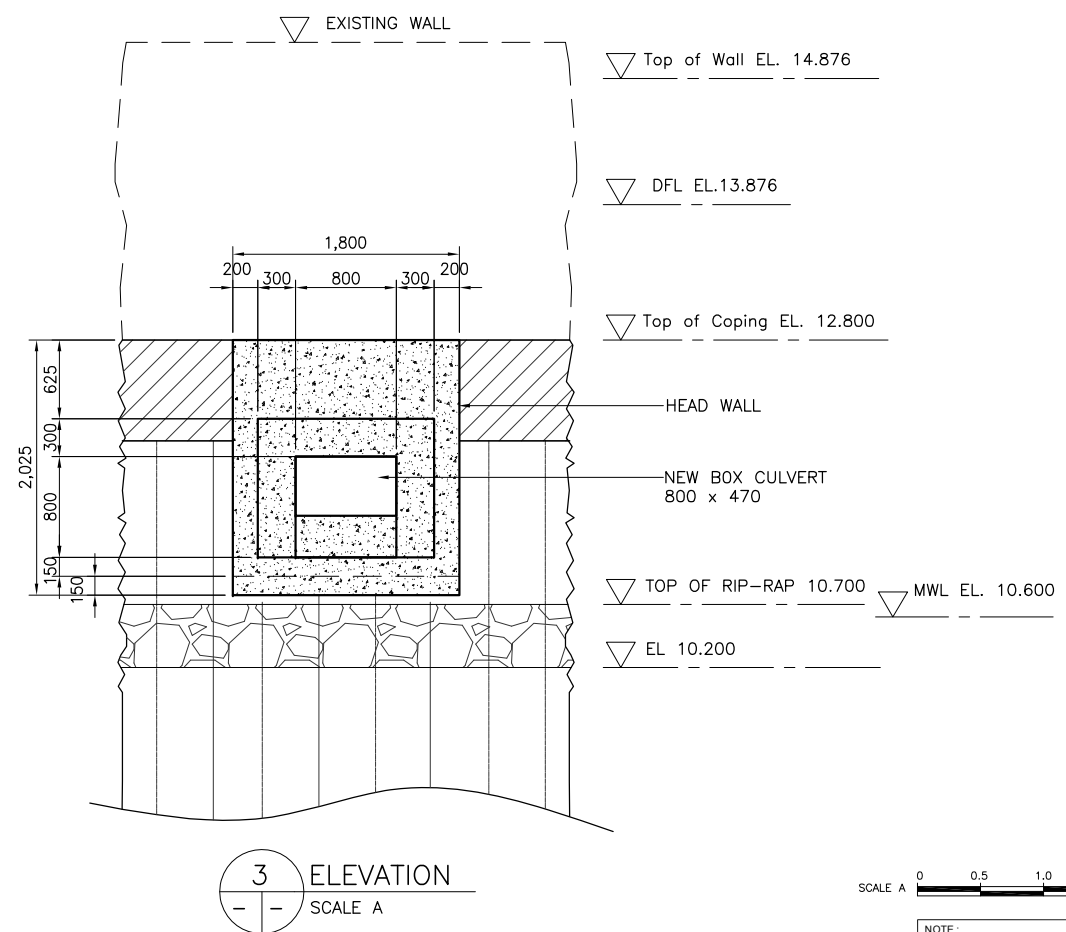
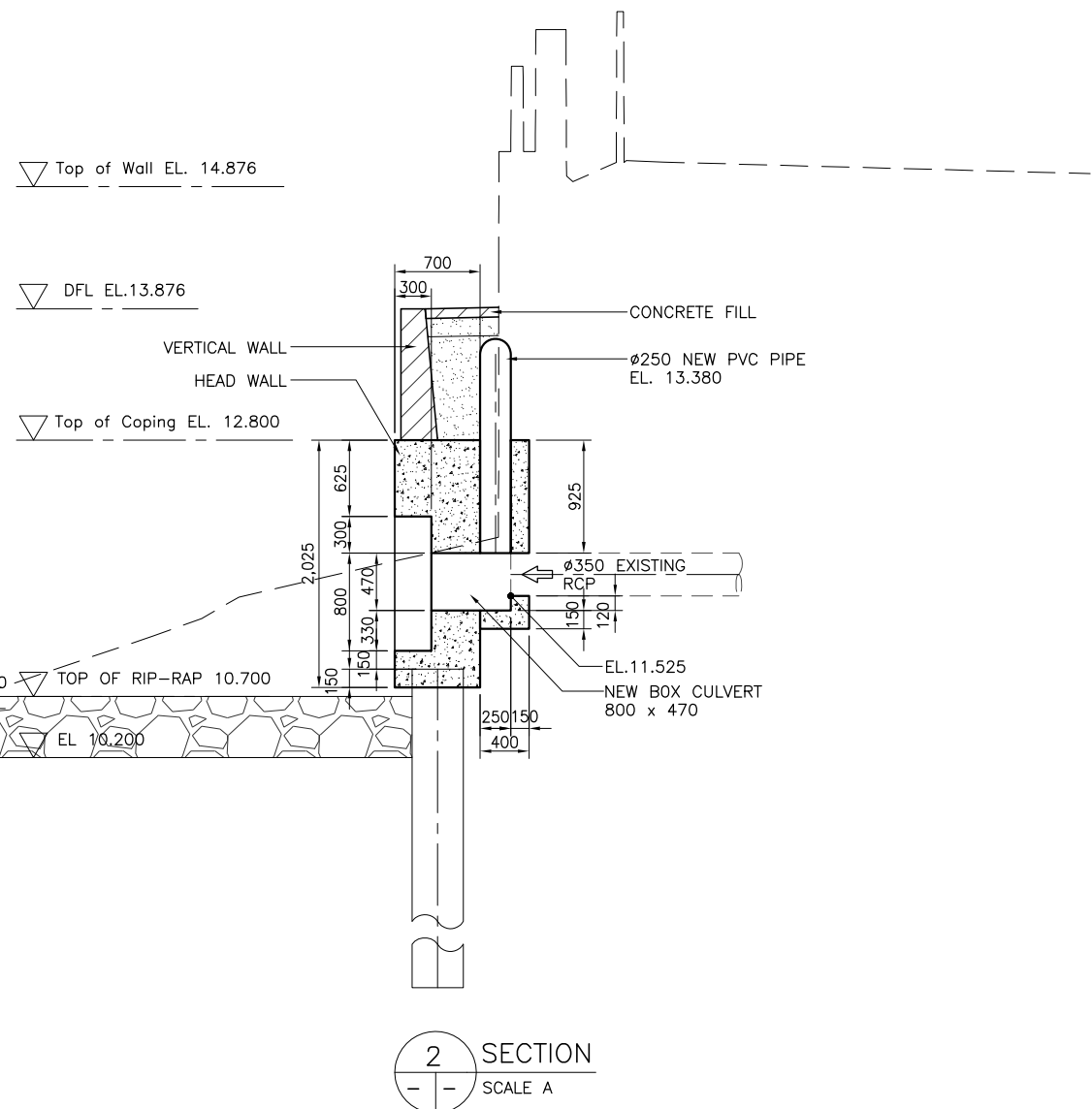
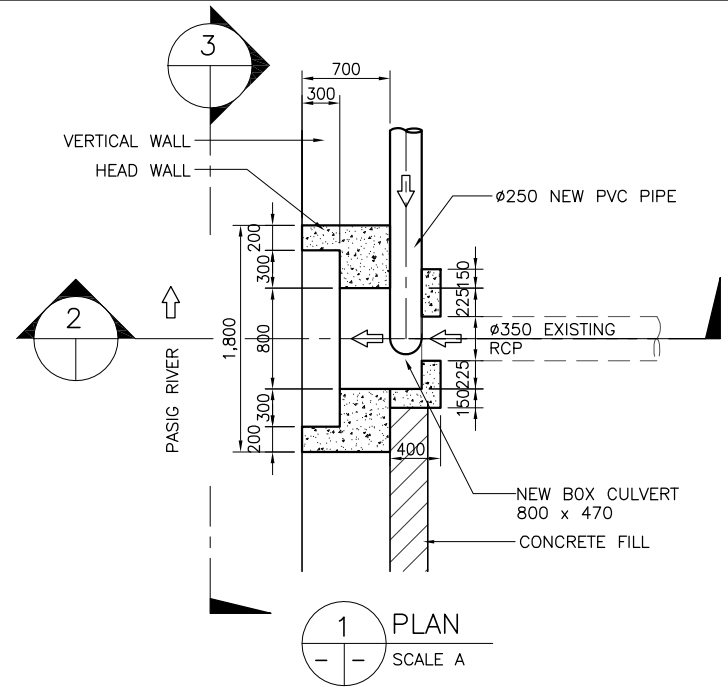
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.: UP-DR/DO/178/P

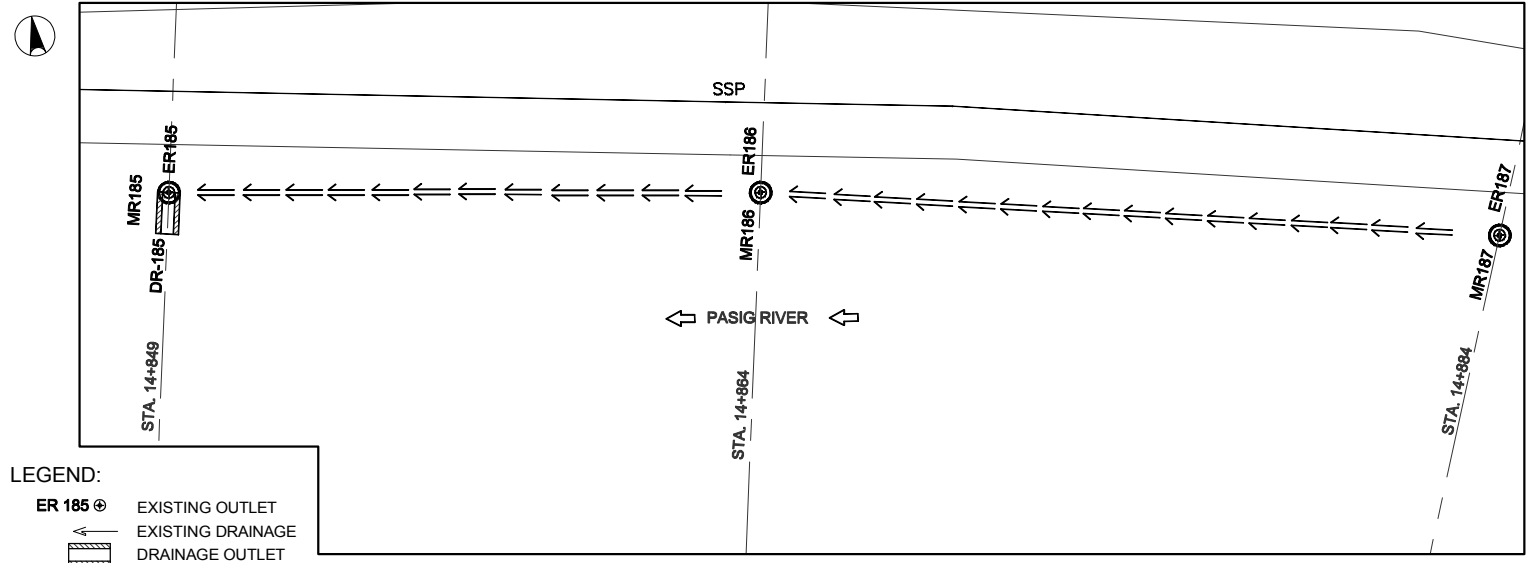


NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

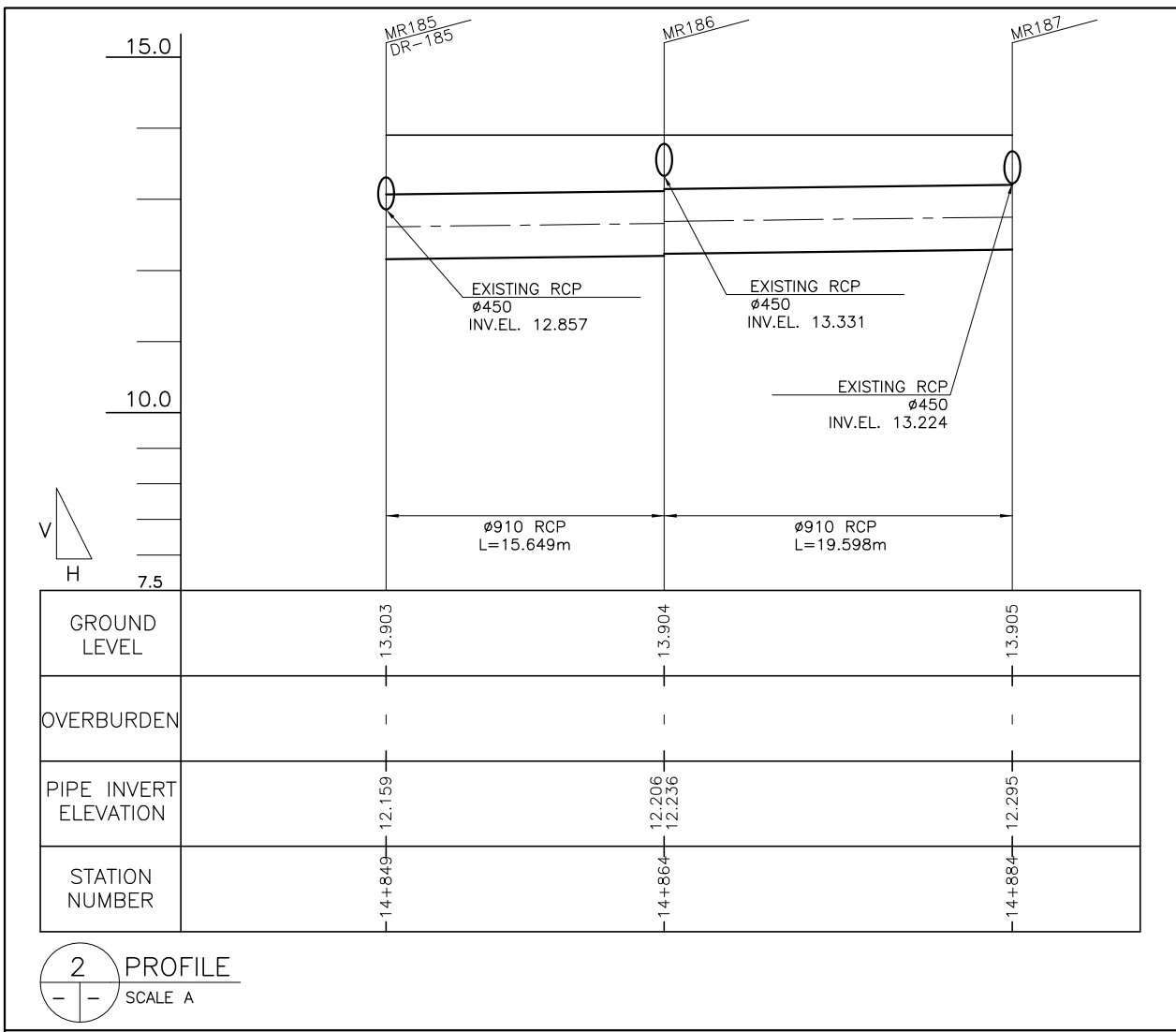
						PROJECT & LOCATION <b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>		SHEET CONTENTS <b>DETAIL OF DRAINAGE OUTLET- DR178 STA. 14+382 RB</b>	SHEET NO. 
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REVIEWED BY:			RECOMMENDING APPROVAL:		APPROVED BY:	
DESIGNED BY: KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	CHECKED BY: TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SUBMITTED BY: SHUJI KAKU <small>TEAM LEADER</small>	PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON <small>SECRETARY</small>		



**LEGEND:**

- ER 185 ⊕ EXISTING OUTLET
- ← EXISTING DRAINAGE
- ⊕ DRAINAGE OUTLET
- ← COLLECTOR PIPE
- DR 185 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

**1 DRAINAGE PLAN**  
SCALE A

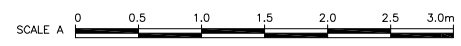
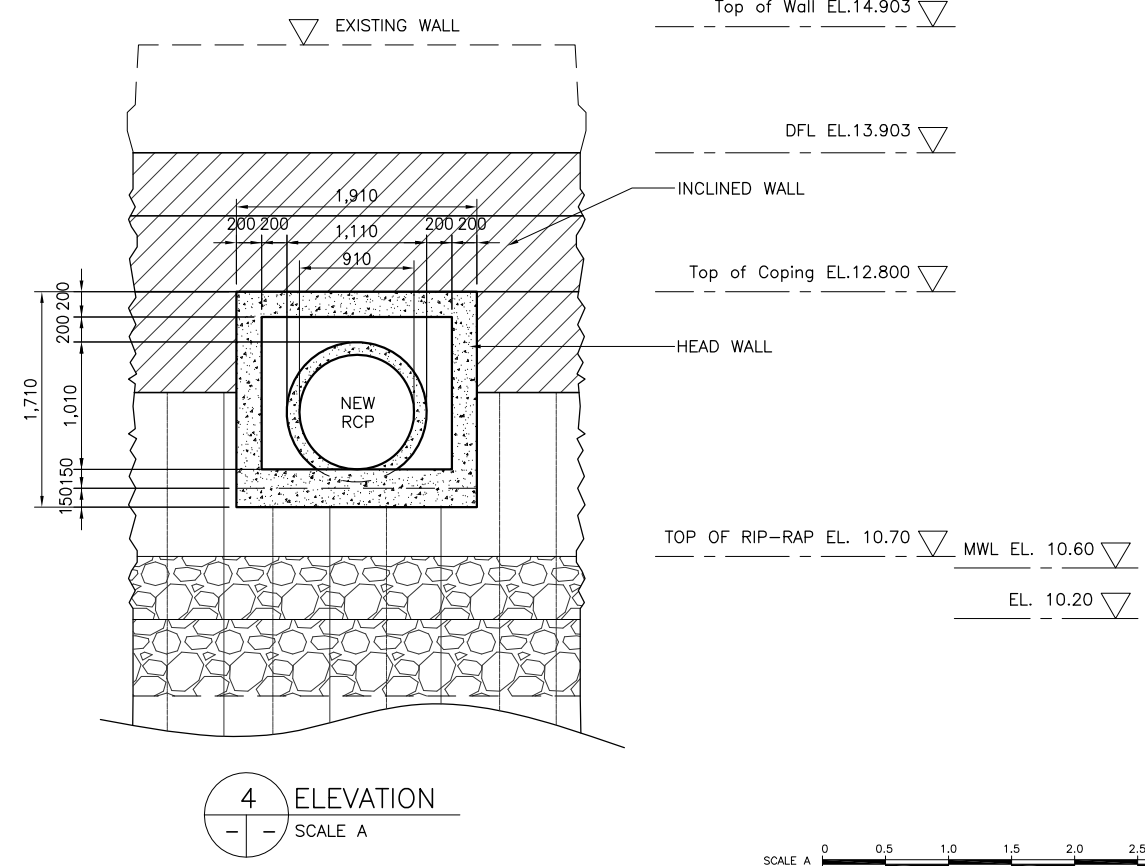
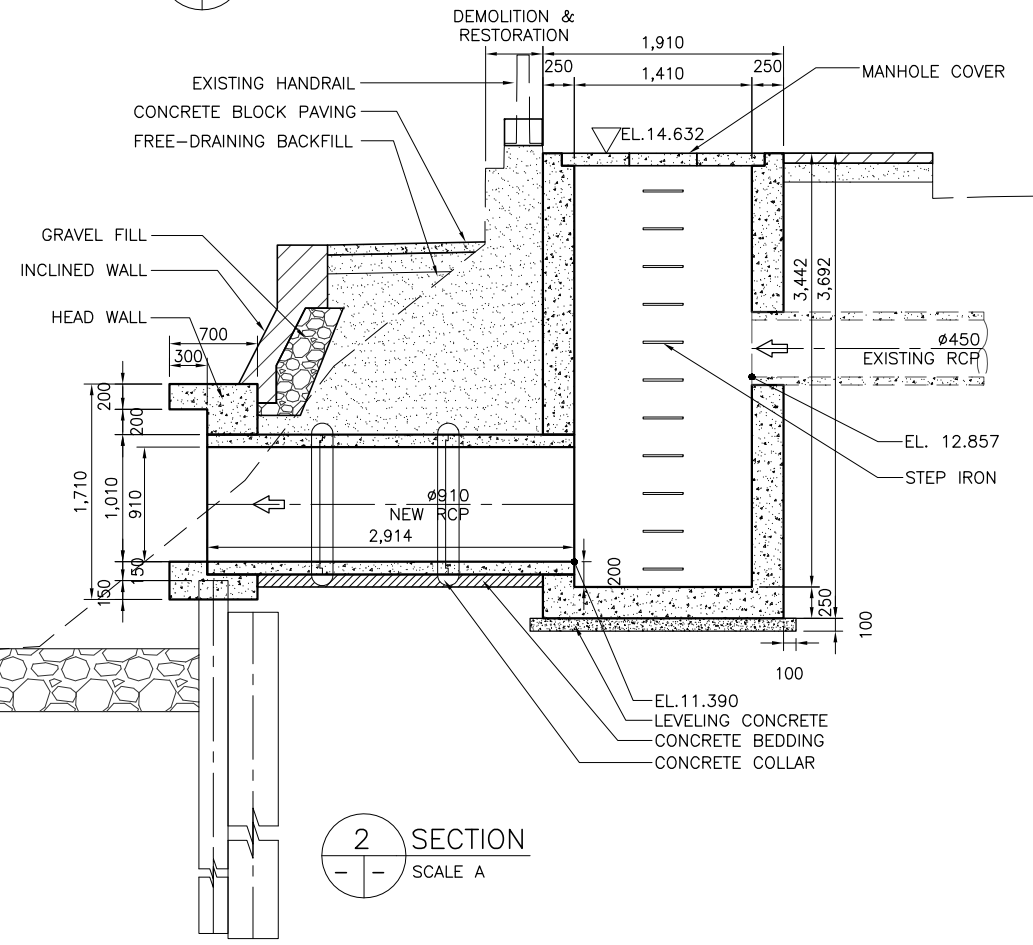
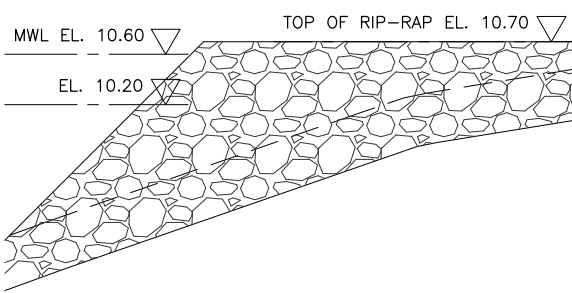
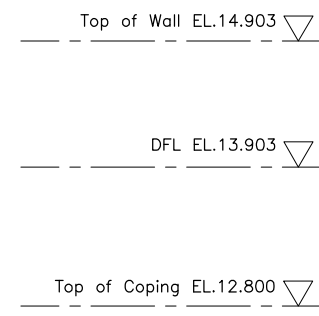
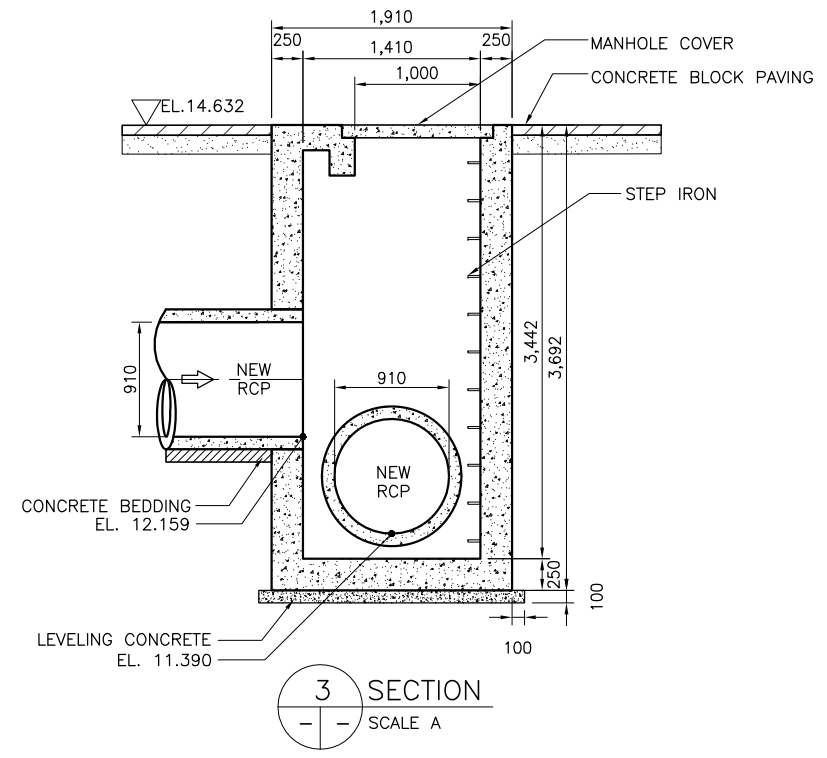
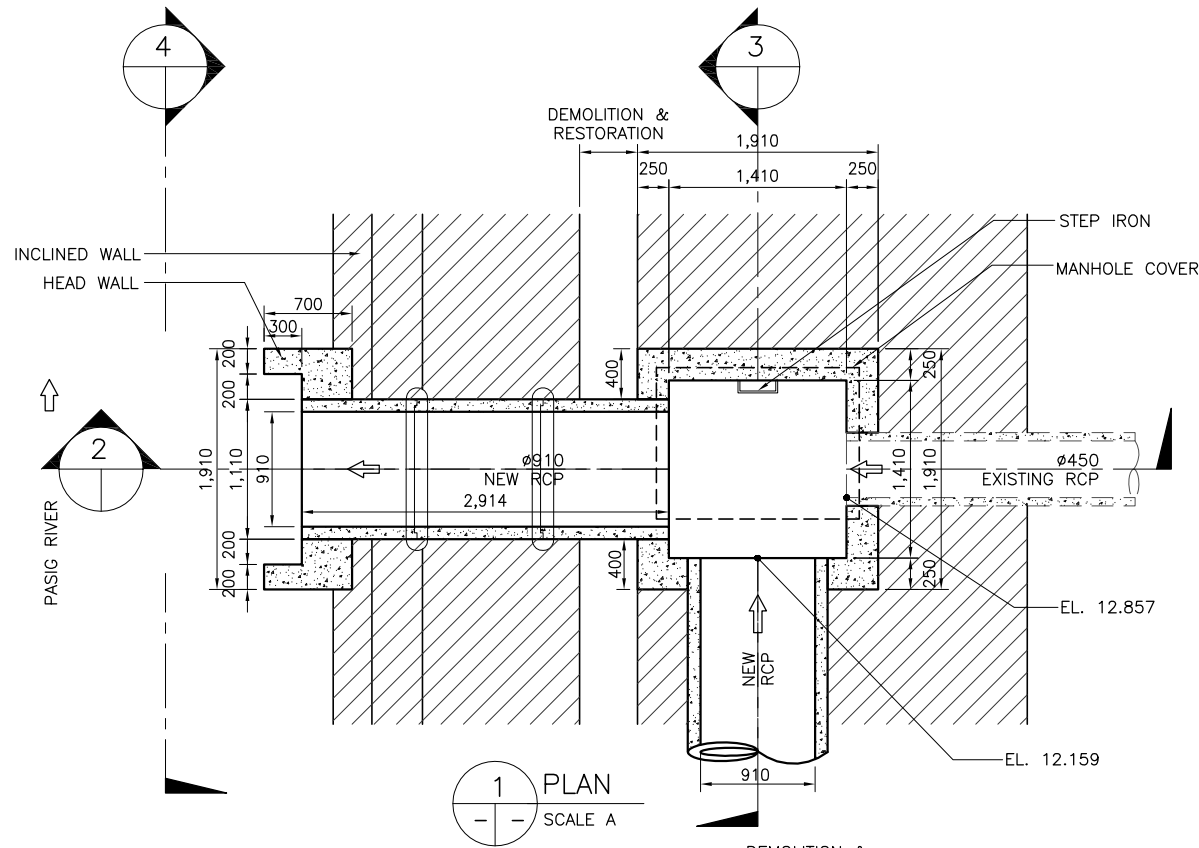


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PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	UP-DR/DO/185/P
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			
					RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			

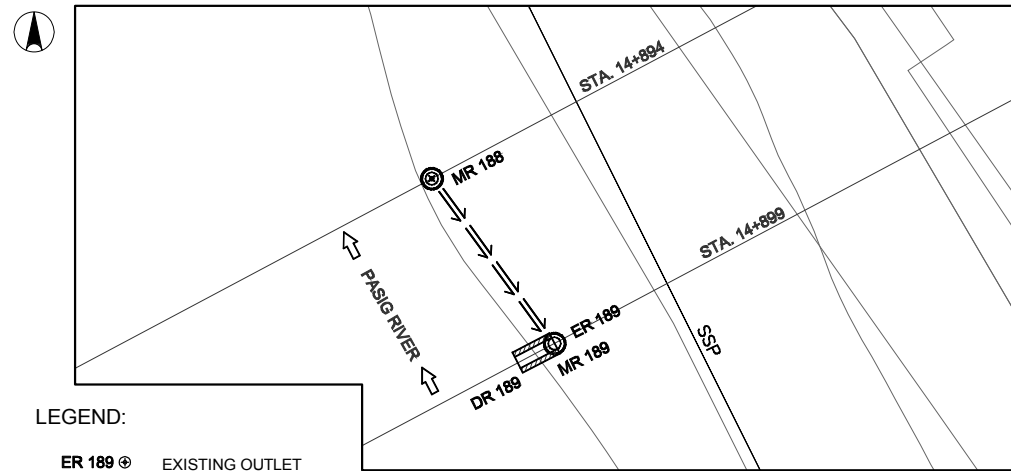


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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 PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
 TEAM LEADER

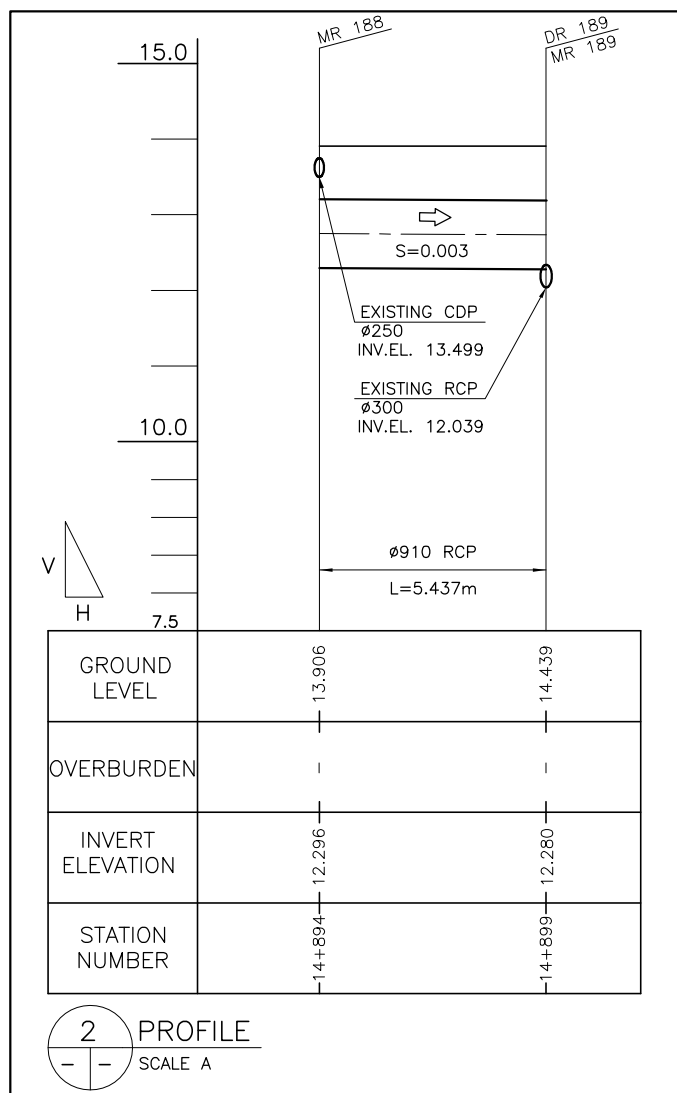
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR-185 & MANHOLE- MR185 @ STA. 14+849 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



LEGEND:

- ER 189 ⊕ EXISTING OUTLET
- ▭ DRAINAGE OUTLET
- DR 189 DRAINAGE OUTLET NO.
- PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

REPUBLIC OF THE PHILIPPINES

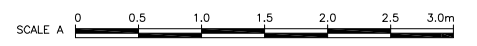
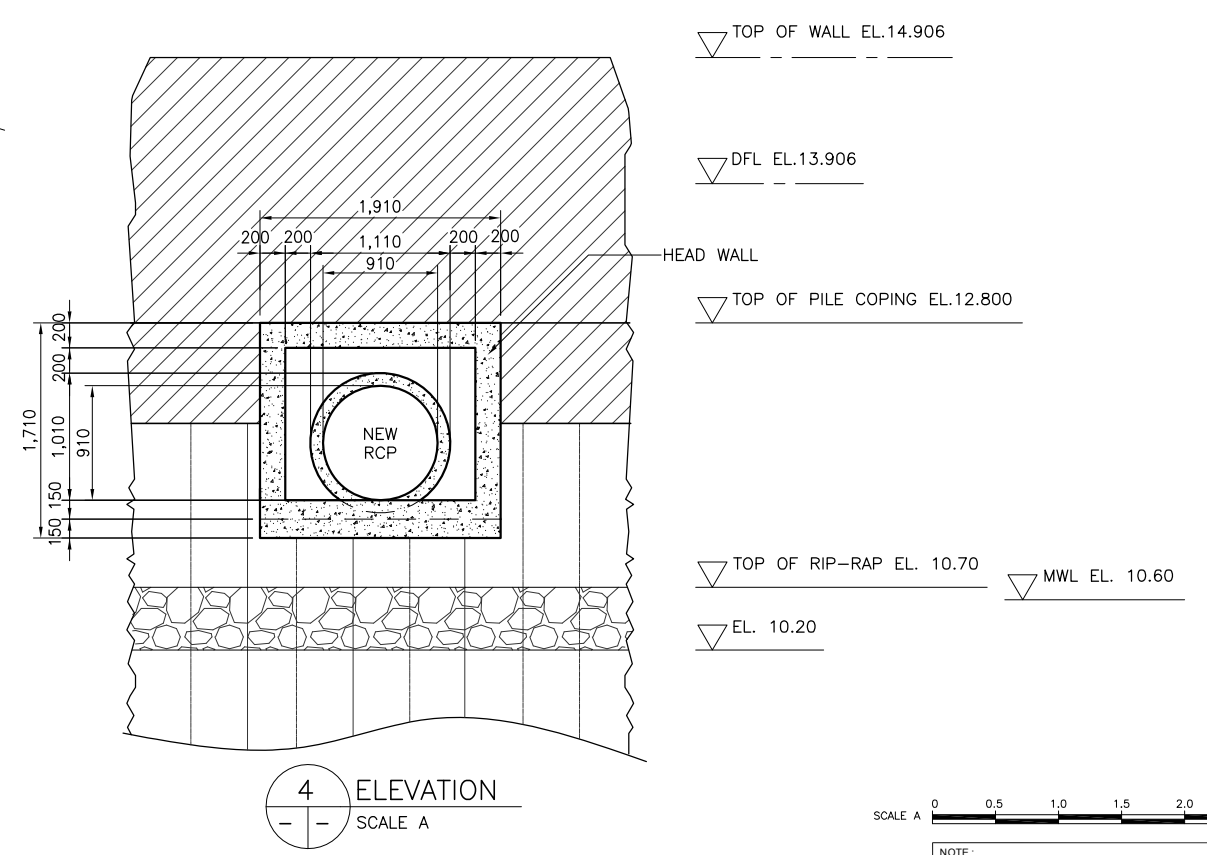
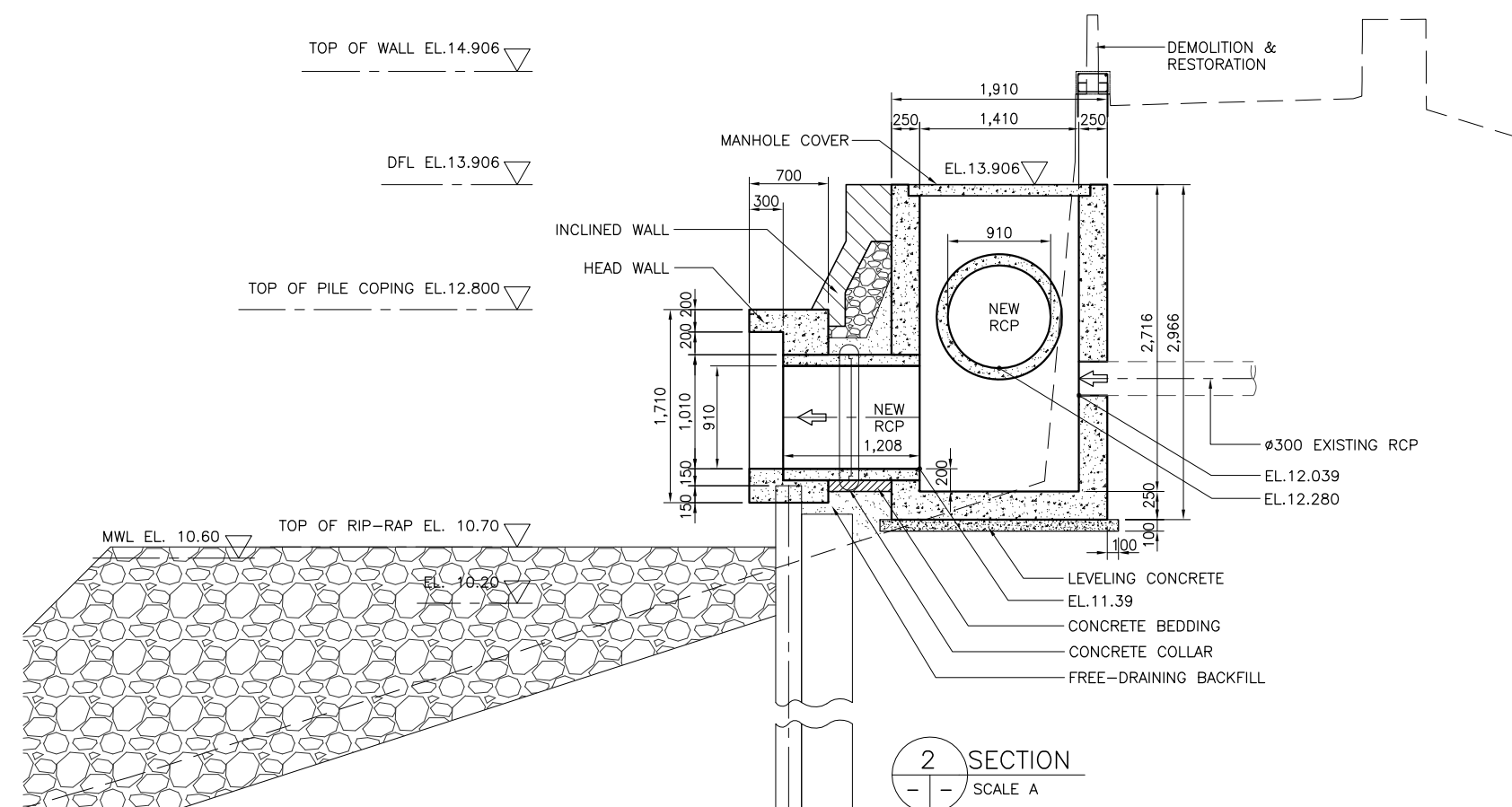
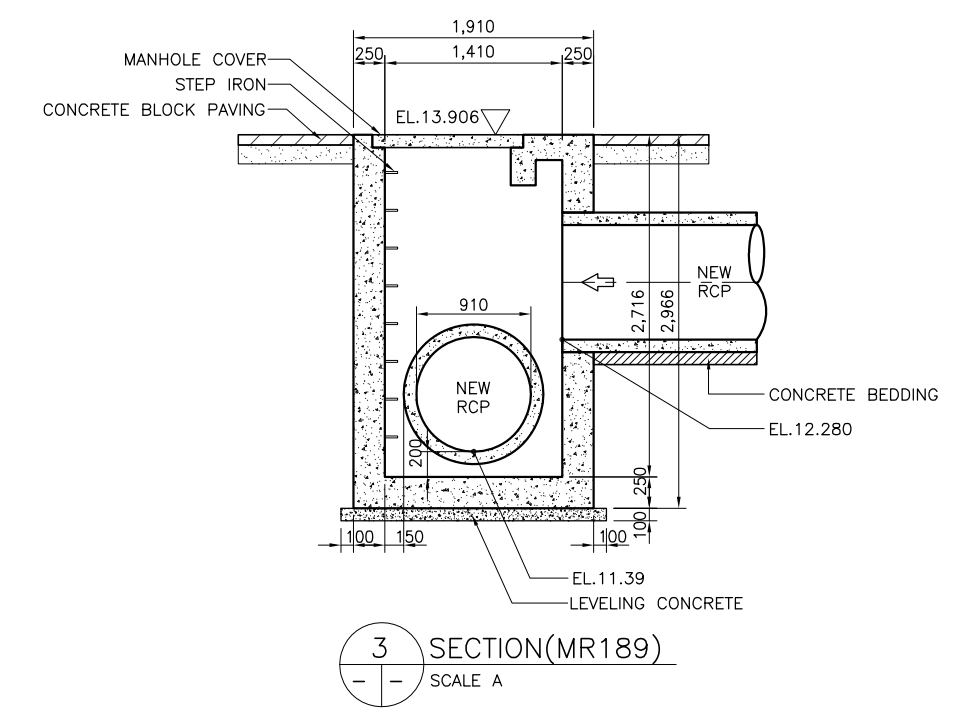
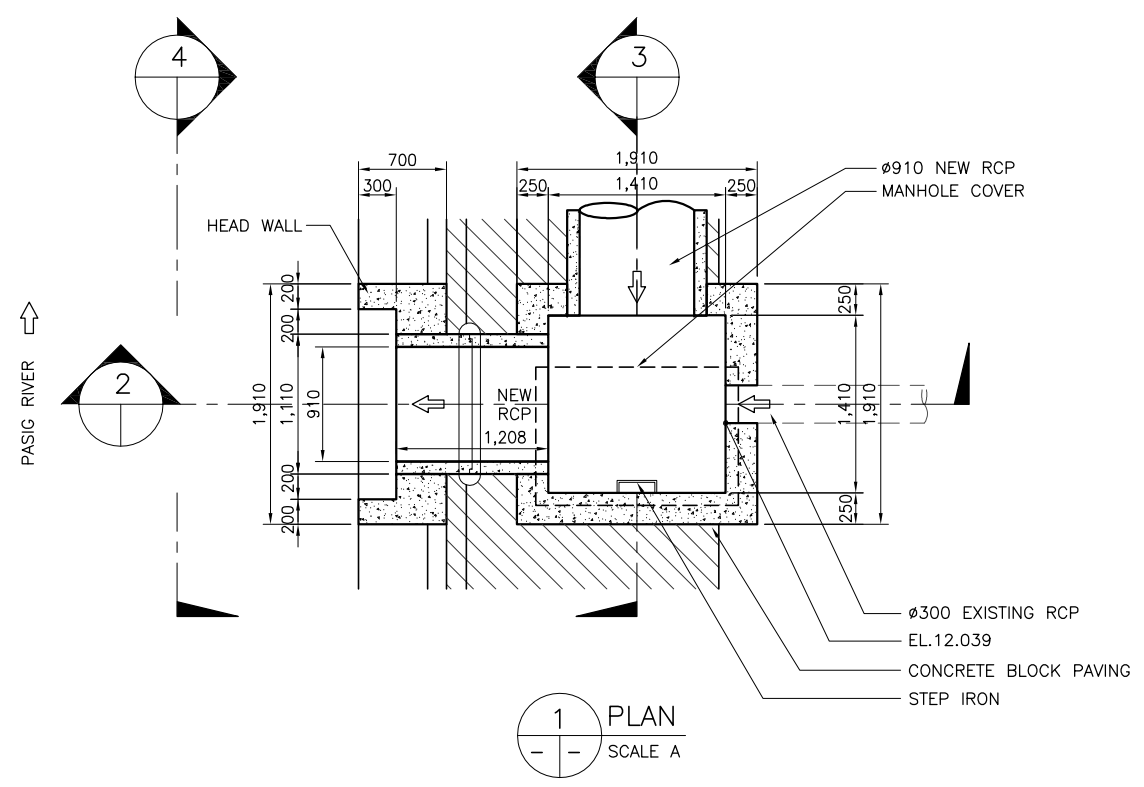
REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES
		ROGELIO L. SINGSON SECRETARY

PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
PLAN & PROFILE OF COLLECTOR PIPE

SHEET NO.



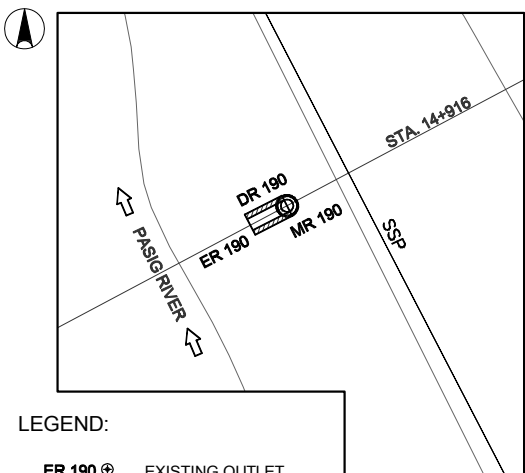


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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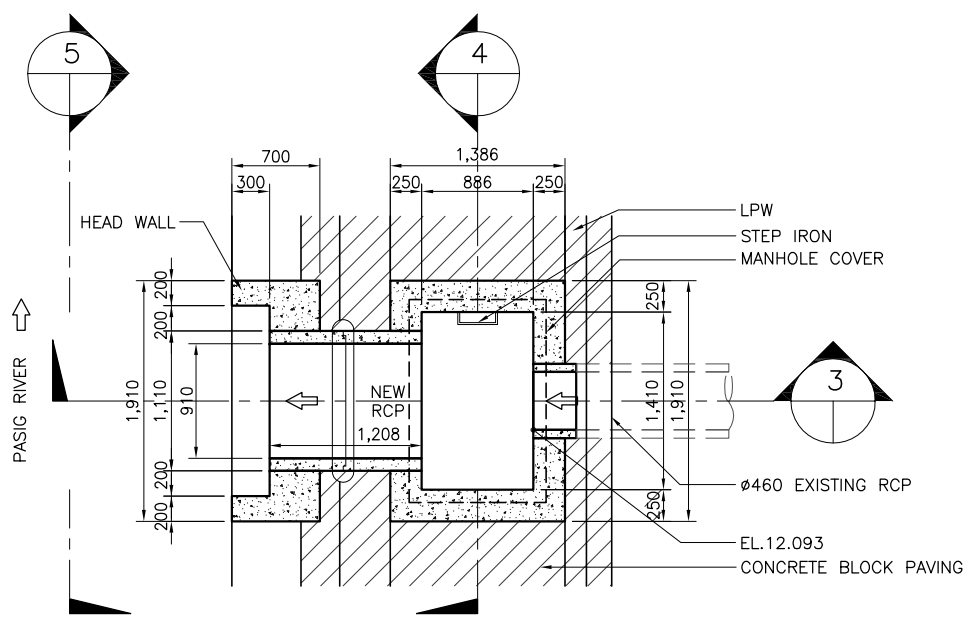
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR 189, MANHOLE MR 189 STA. 14+899 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			

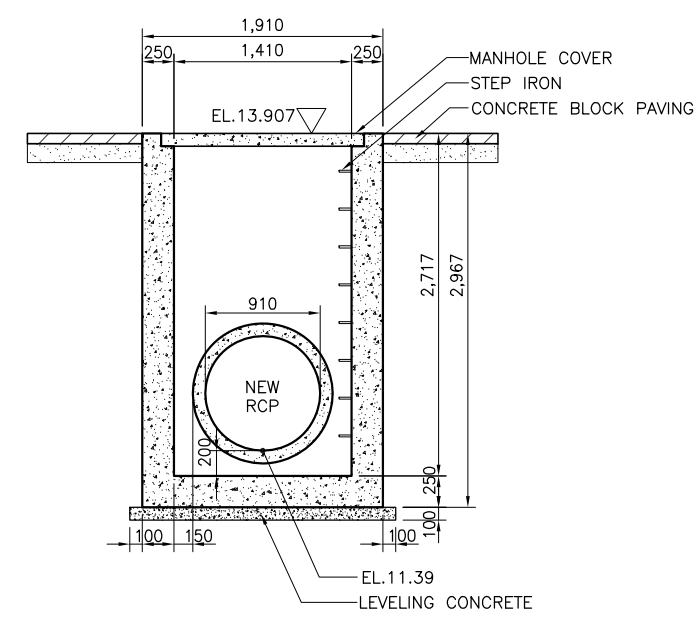


- LEGEND:**
- ER 190 ⊕ EXISTING OUTLET
  - DR 190 □ DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

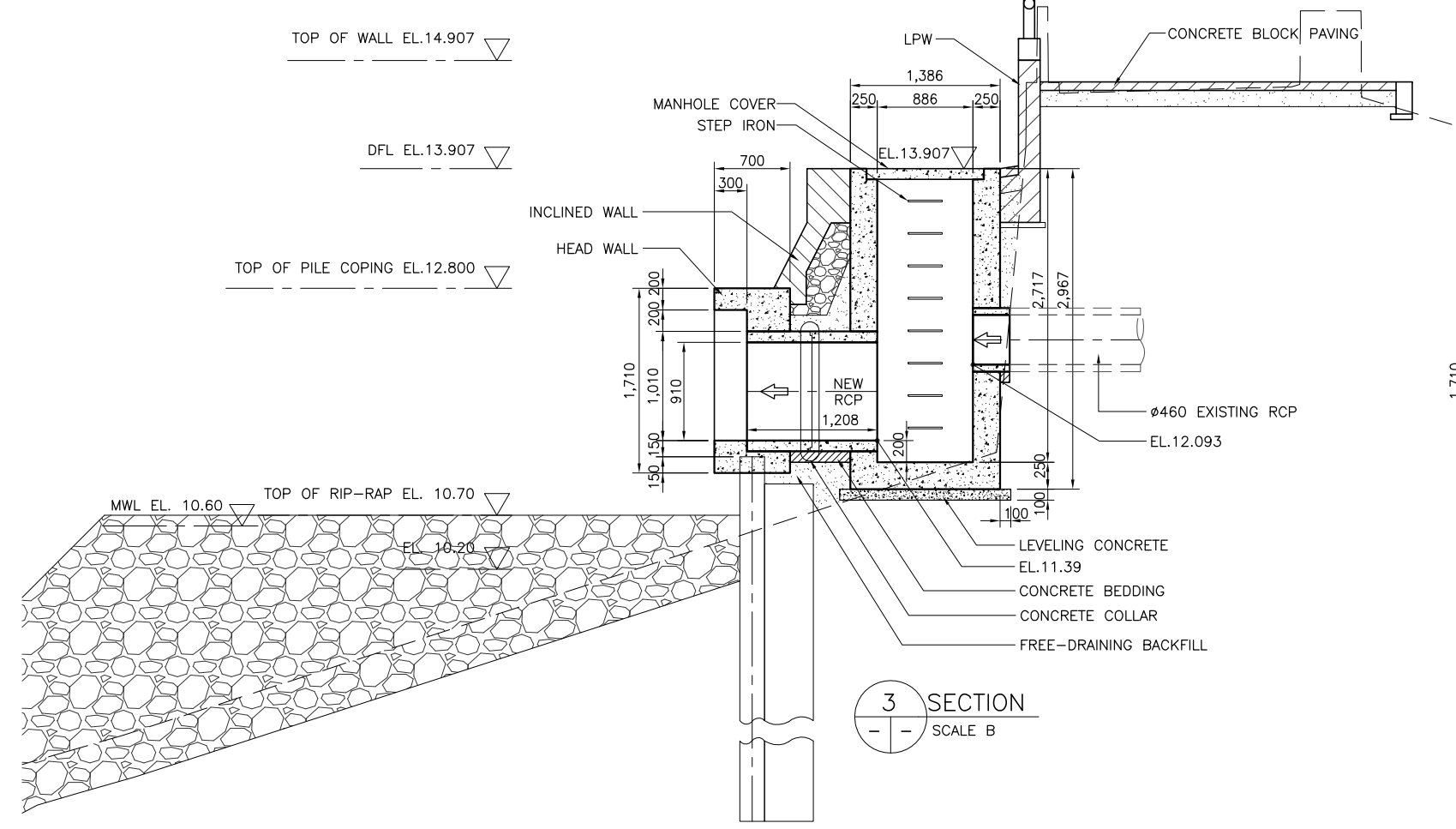
**1 DRAINAGE PLAN**  
SCALE A



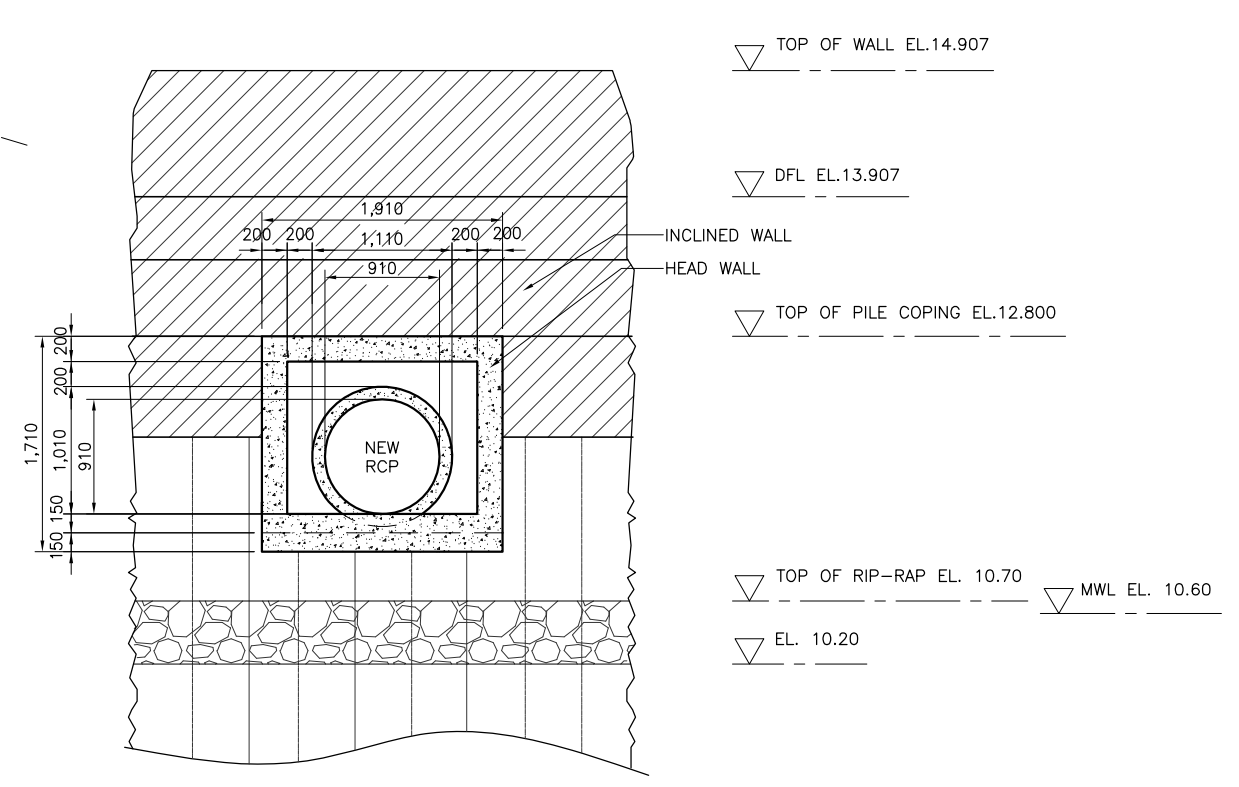
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SCALE B



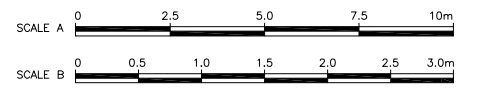
**4 SECTION (MR190)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B

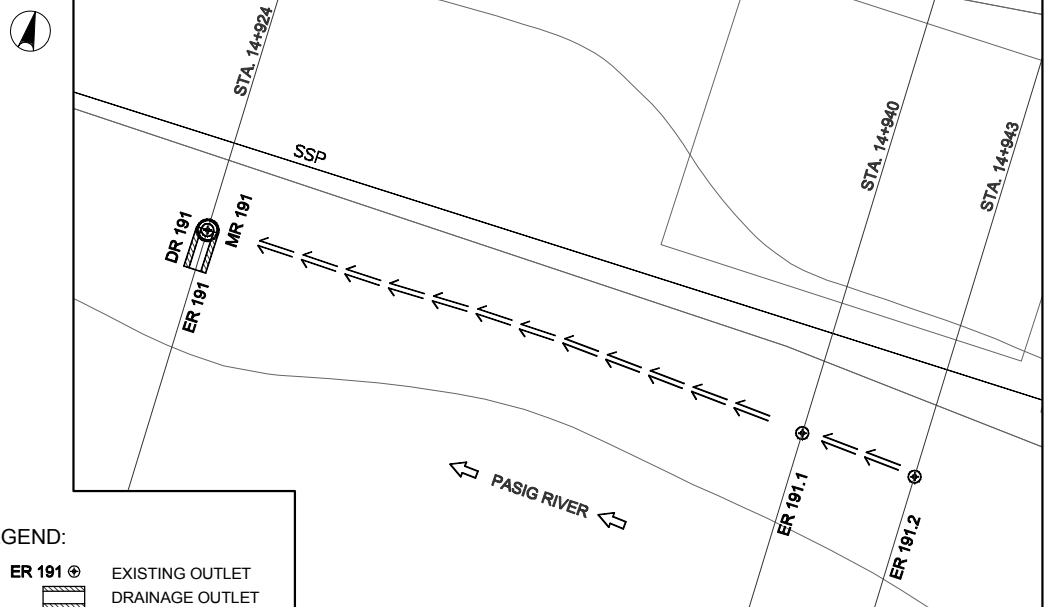


**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

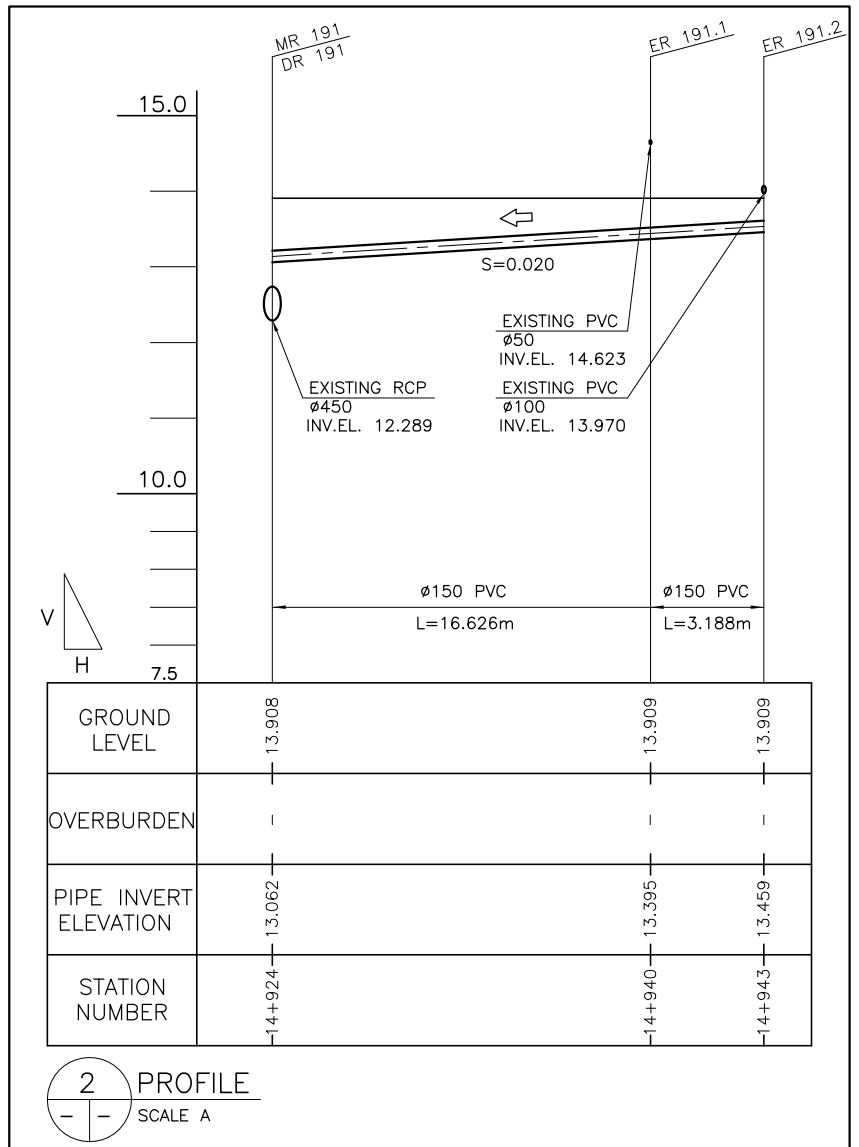
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>				<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> DETAIL OF DRAINAGE OUTLET- DR190, MANHOLE MR190 STA. 14+916 RB	<b>SHEET NO.</b> 
<b>DESIGNED BY:</b> KOHEI TAKAYAMA <small>STRUCTURAL ENGINEER IV</small>	<b>CHECKED BY:</b> TOSHIKI KAWAKAMI <small>THE CHECKER</small>	<b>SUBMITTED BY:</b> SHUJI KAKU <small>TEAM LEADER</small>	<b>REVIEWED BY:</b> PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>	<b>RECOMMENDING APPROVAL:</b> PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>	GILBERTO S. REYES <small>DIRECTOR BOD</small>	<b>SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY</b> RAUL C. ASIS <small>UNDERSECRETARY FOR TECHNICAL SERVICES</small>	<b>SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY</b> ROGELIO L. SINGSON <small>SECRETARY</small>	<b>NOTE:</b> PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.		

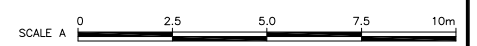


- LEGEND:**
- ER 191 ⊕ EXISTING OUTLET
  - ▨ DRAINAGE OUTLET
  - ⇐ COLLECTOR PIPE
  - DR 191 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

1 DRAINAGE PLAN  
SCALE A



2 PROFILE  
SCALE A



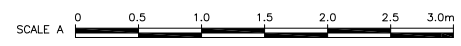
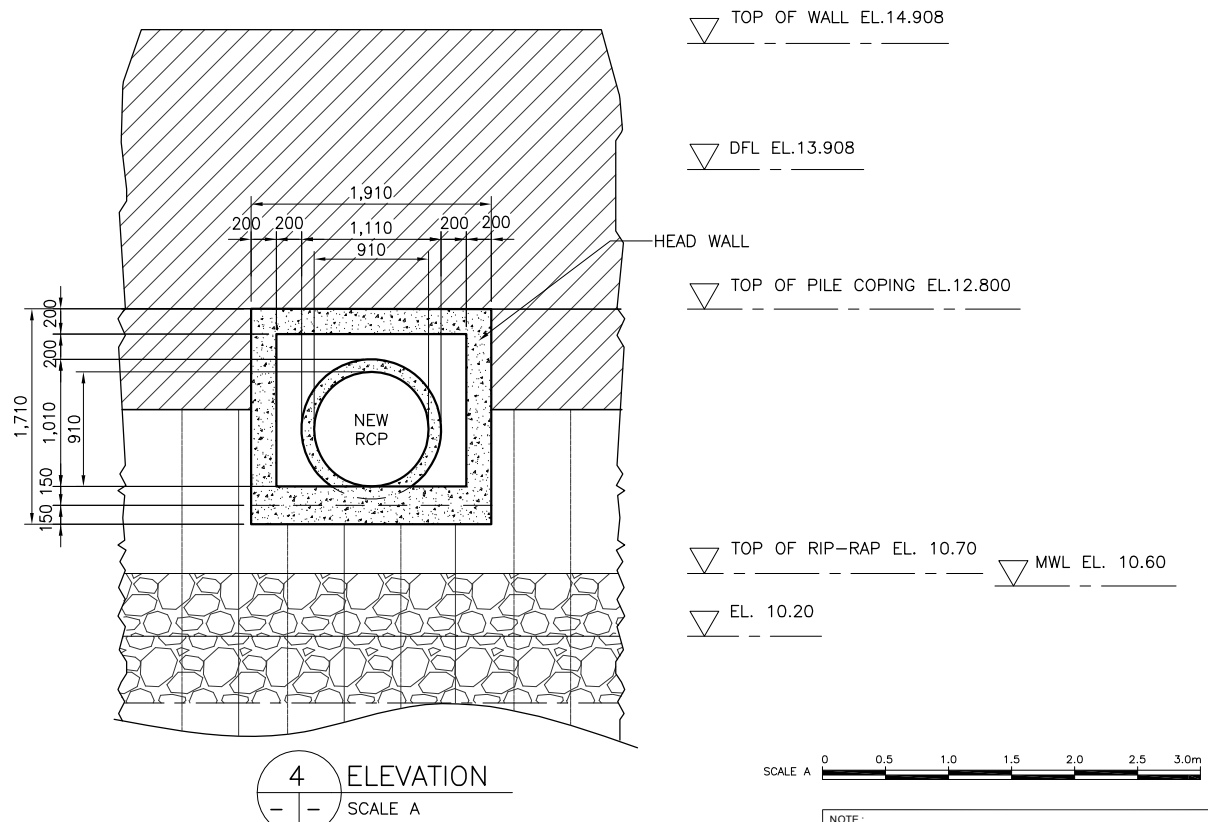
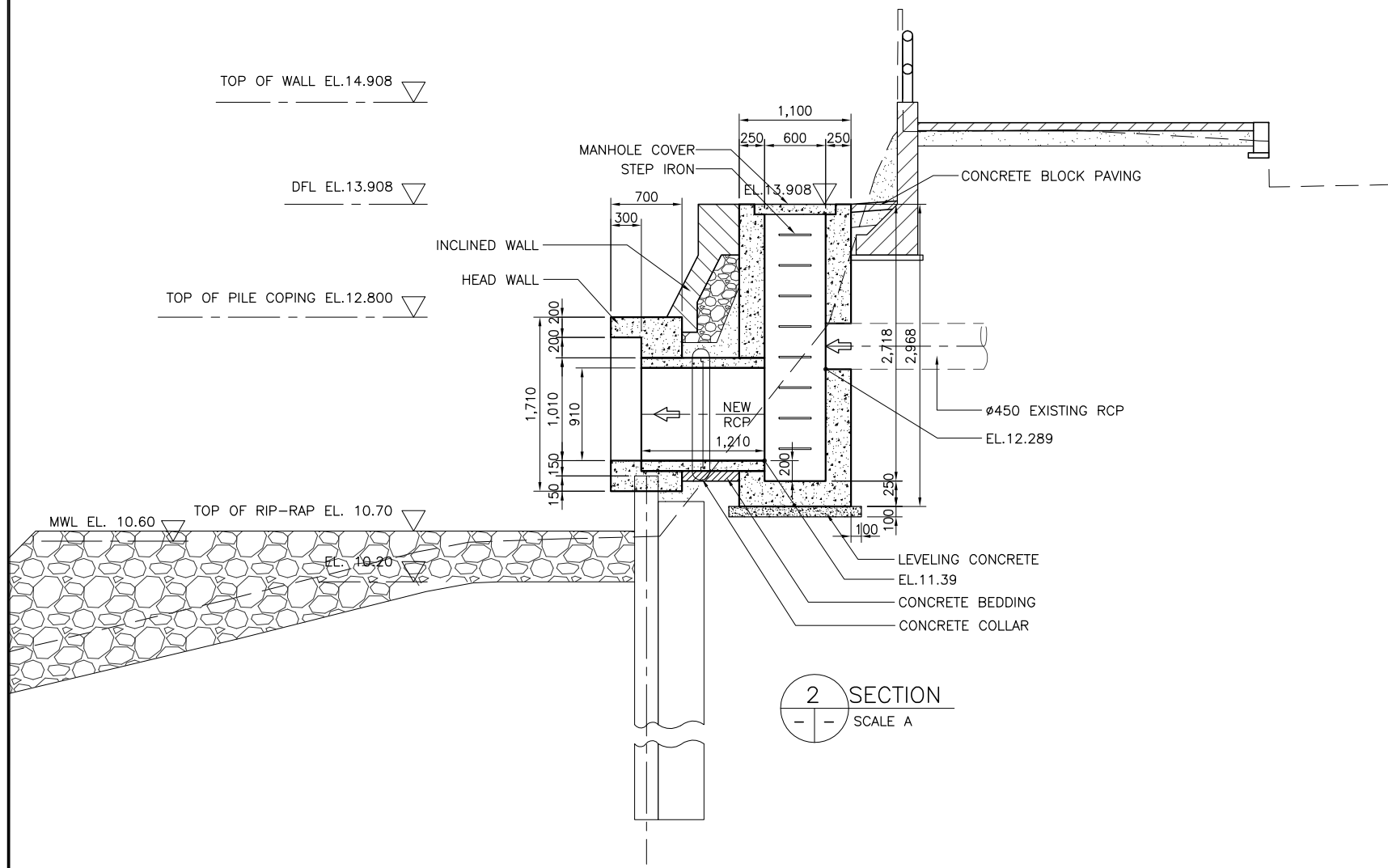
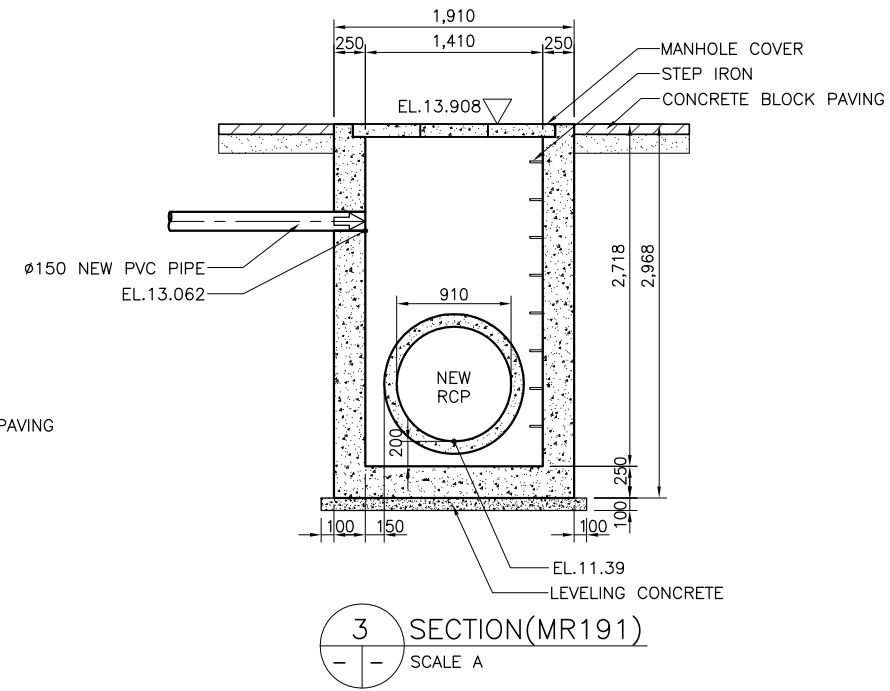
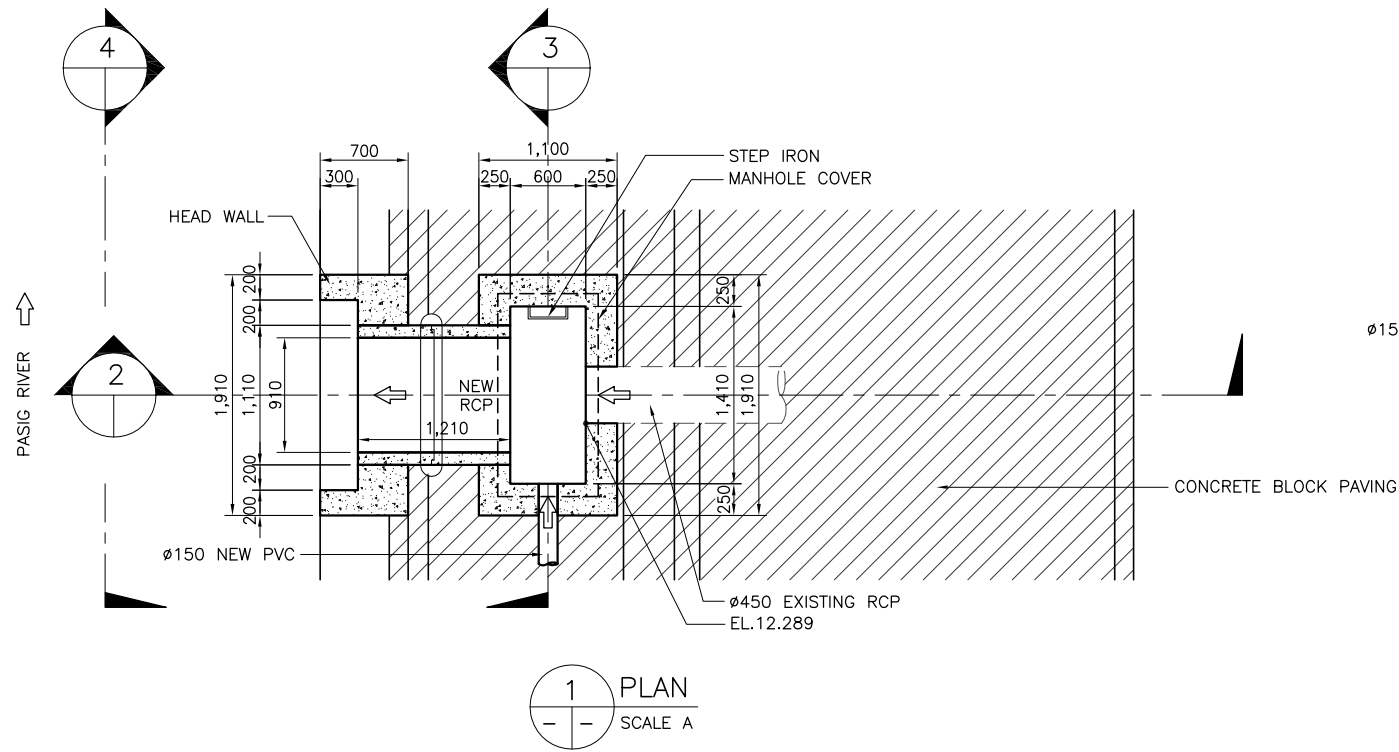
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	PLAN & PROFILE OF COLLECTOR PIPE	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY			





**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

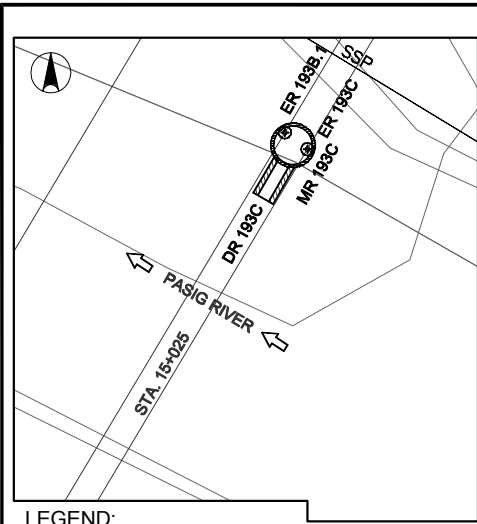
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR191 & MANHOLE MR191 STA 14+924 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			

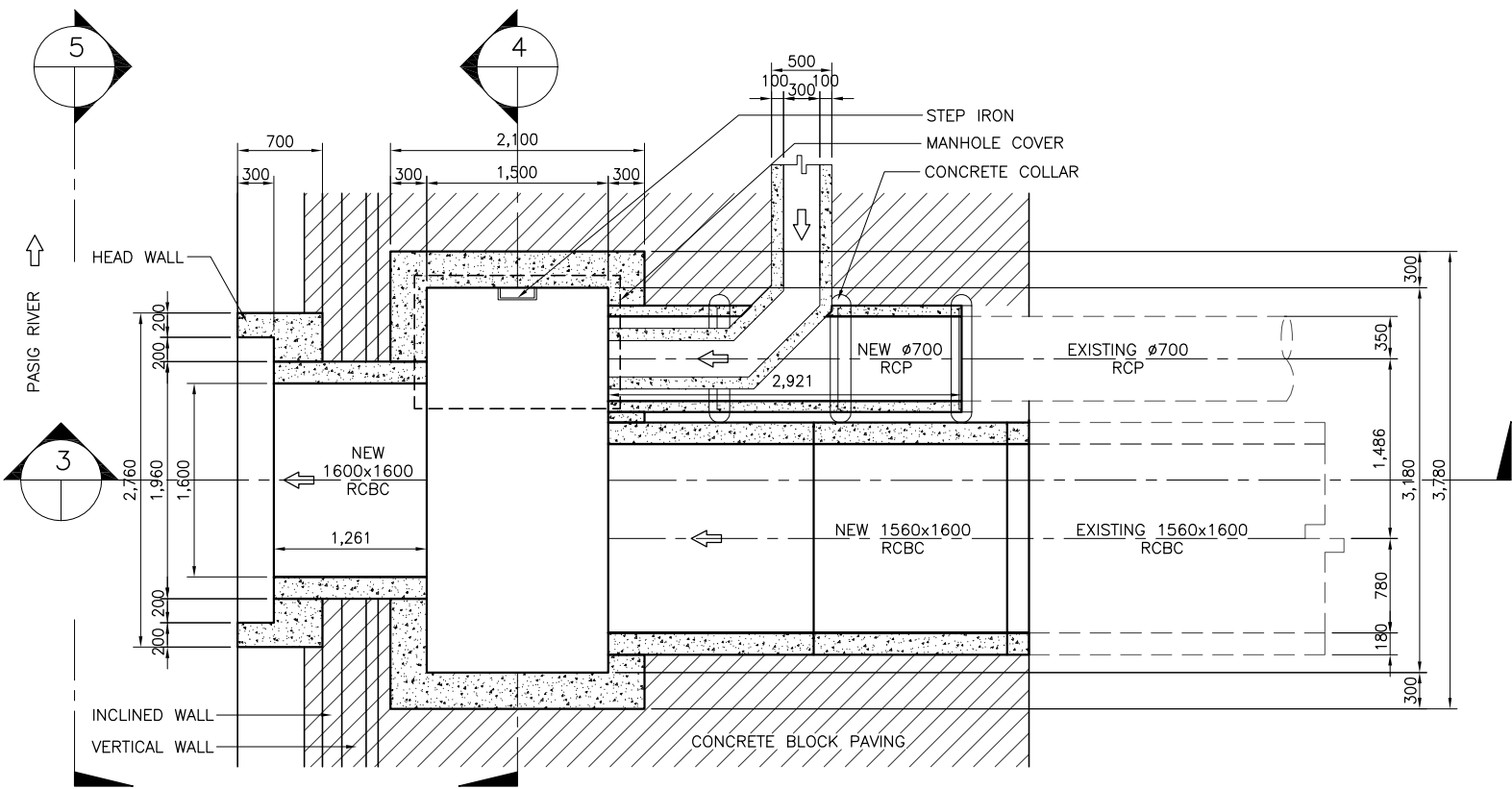




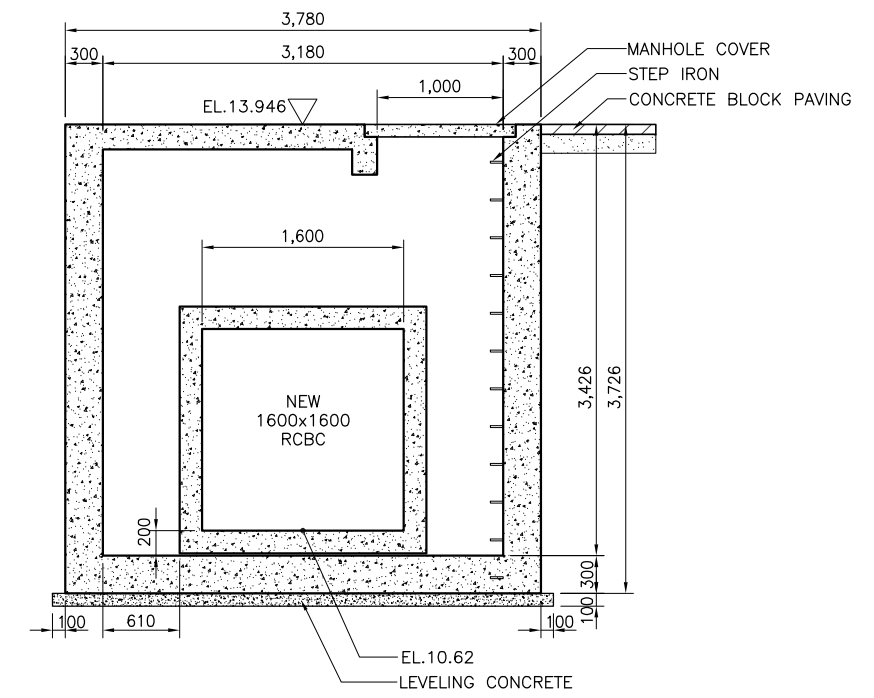


- LEGEND:**
- ER 193C @ EXISTING OUTLET
  - DR 193C DRAINAGE OUTLET
  - DR 193C DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

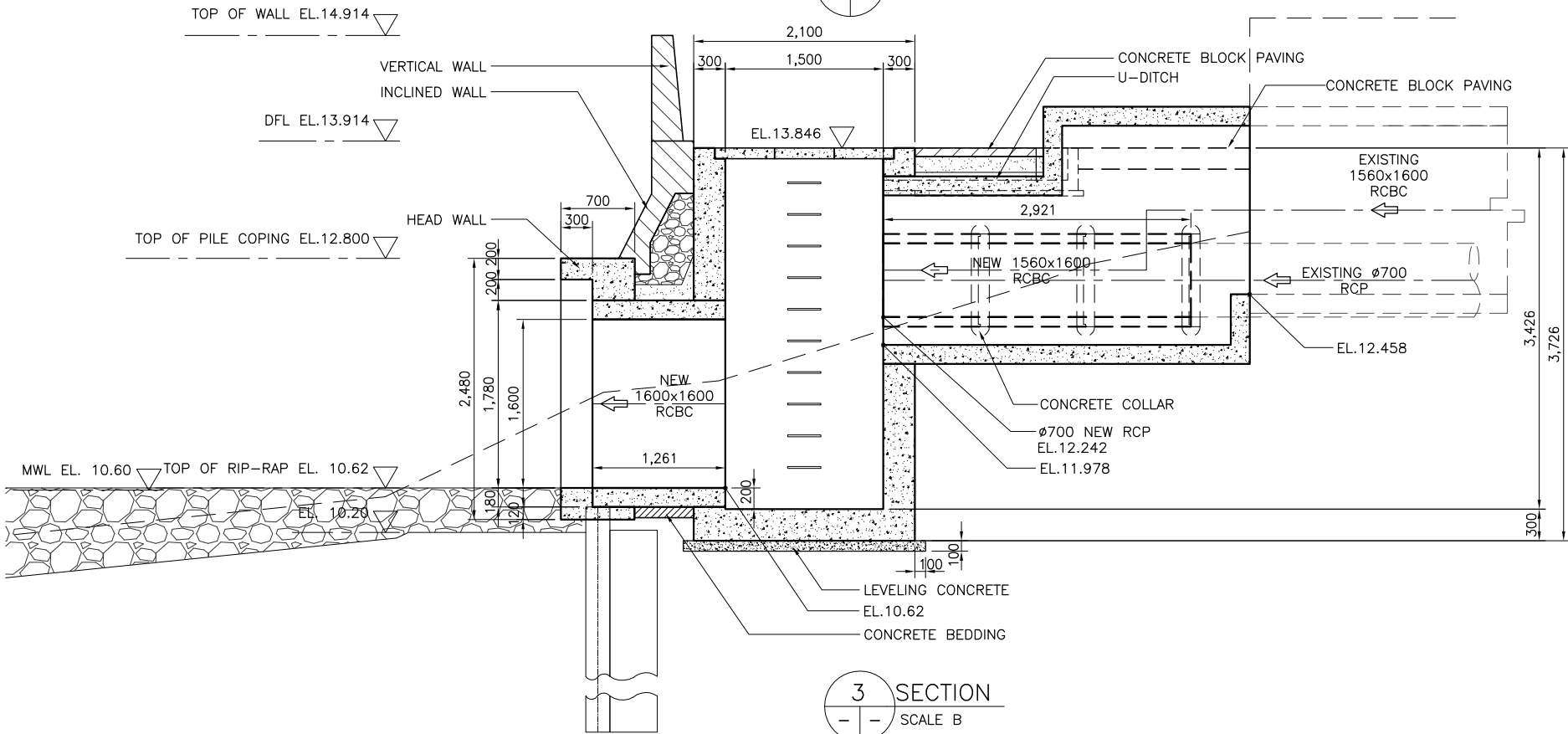
**1 DRAINAGE PLAN**  
SCALE A



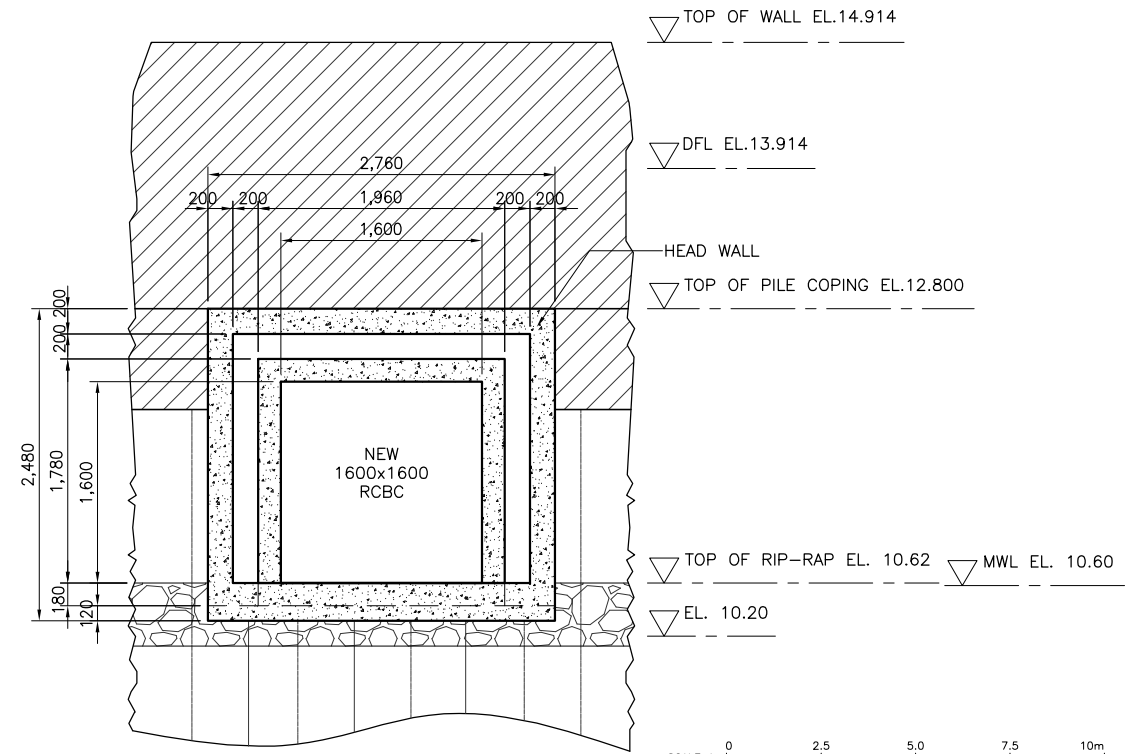
**2 PLAN**  
SCALE B



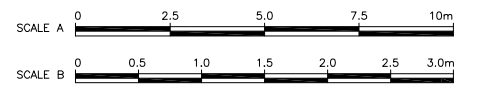
**4 SECTION (MR193C)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B

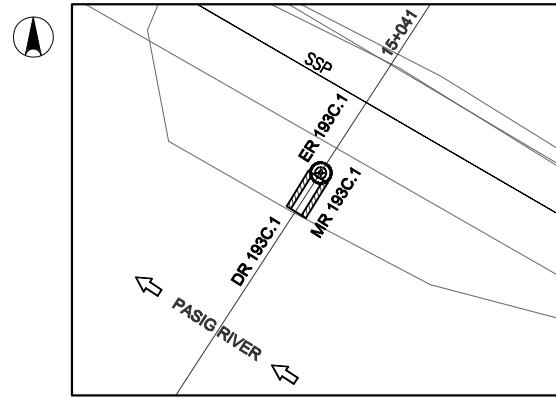


**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

SHUJI KAKU  
TEAM LEADER

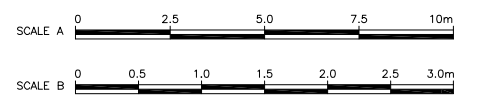
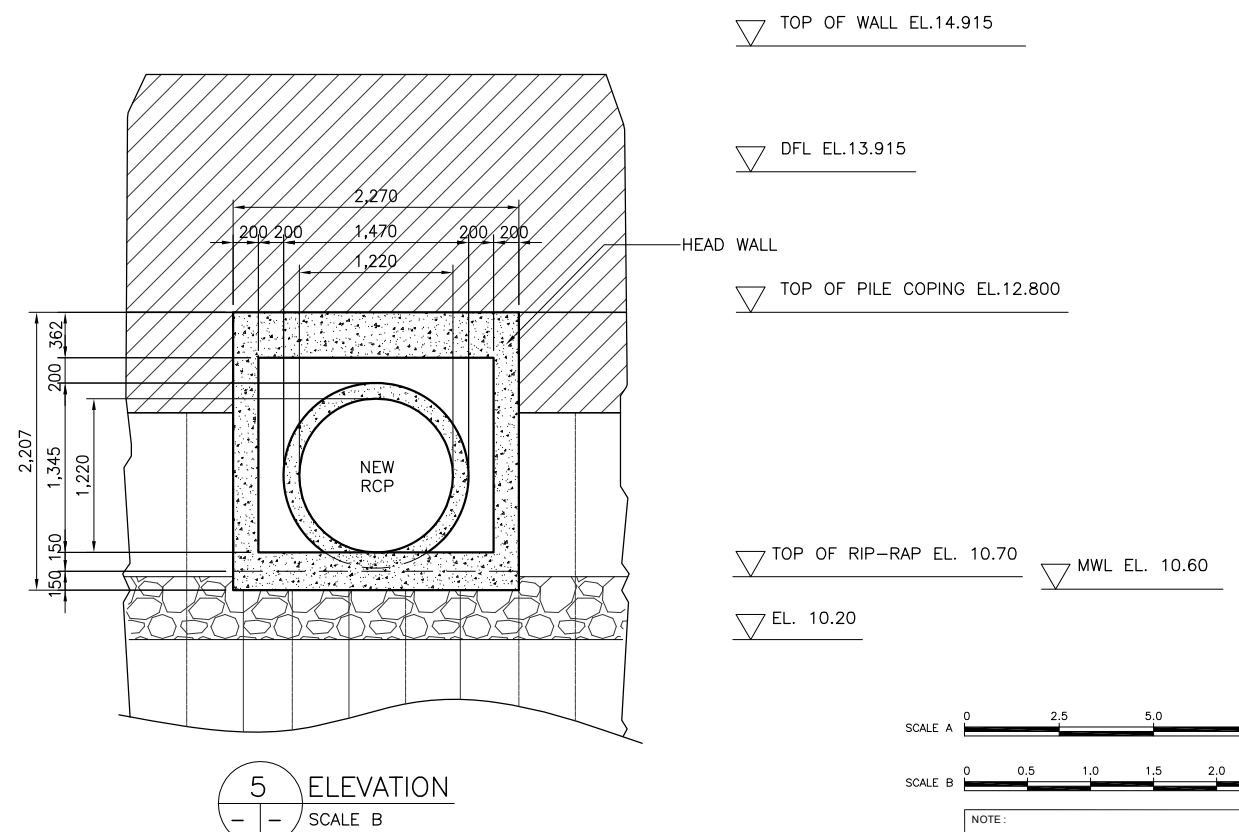
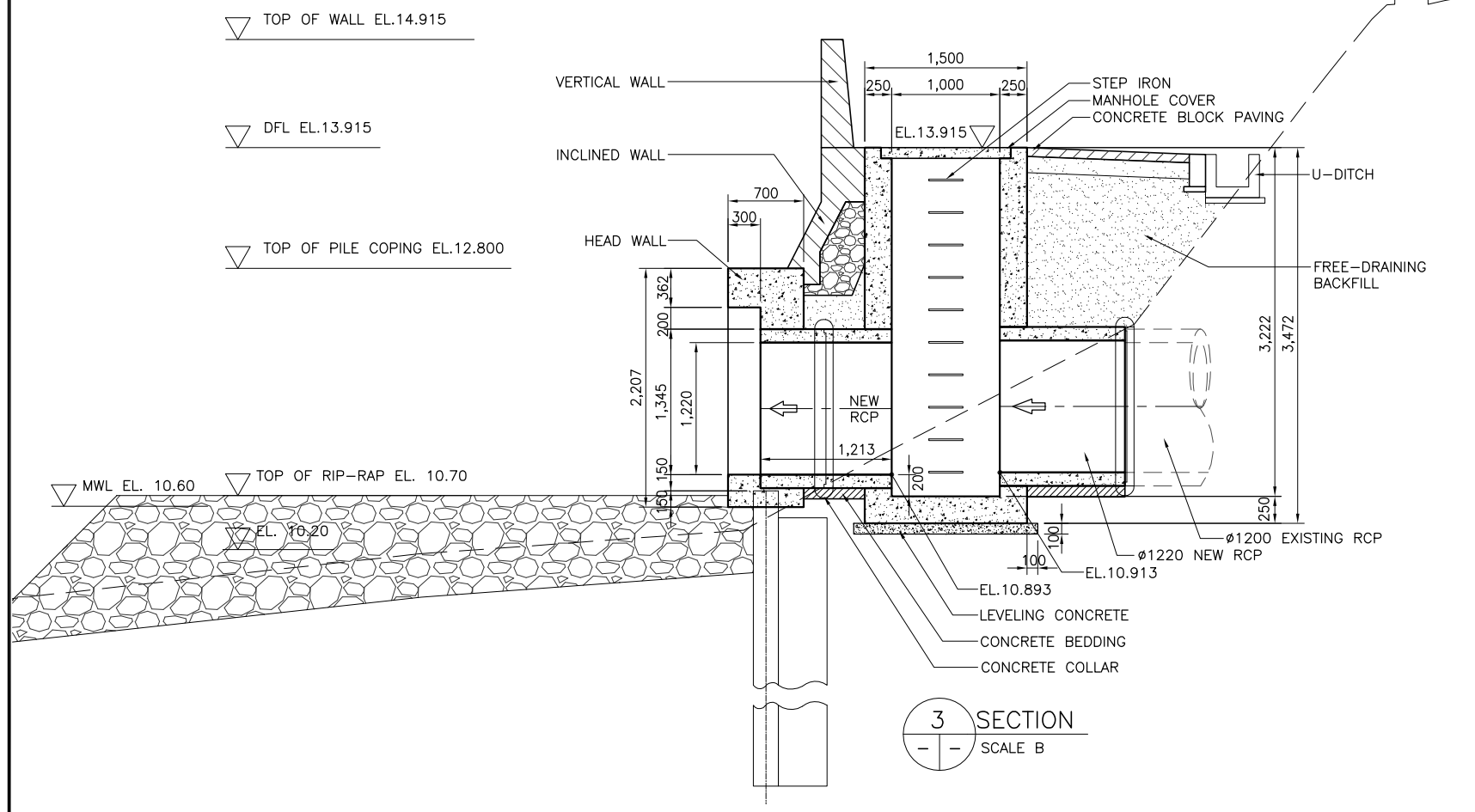
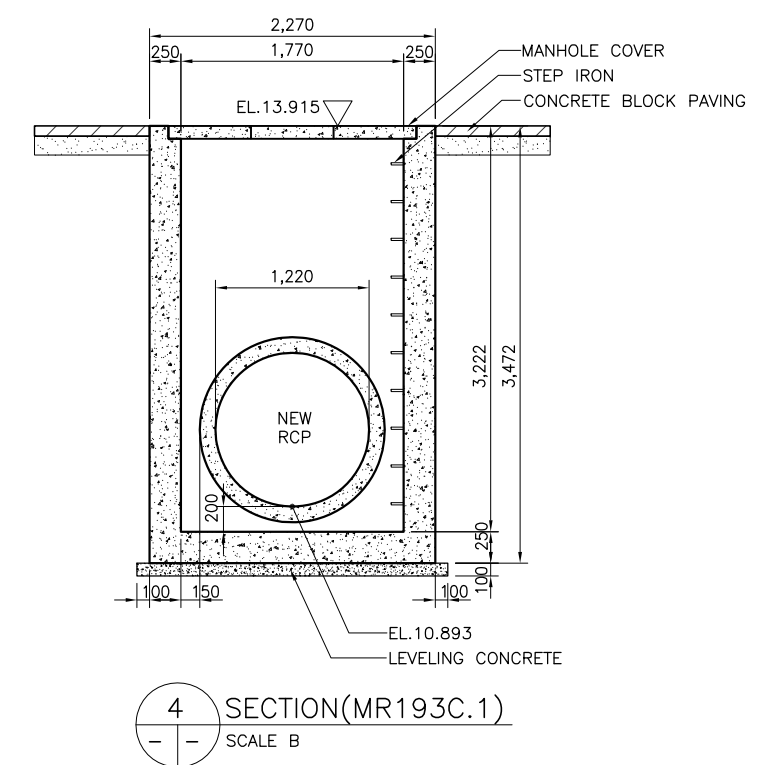
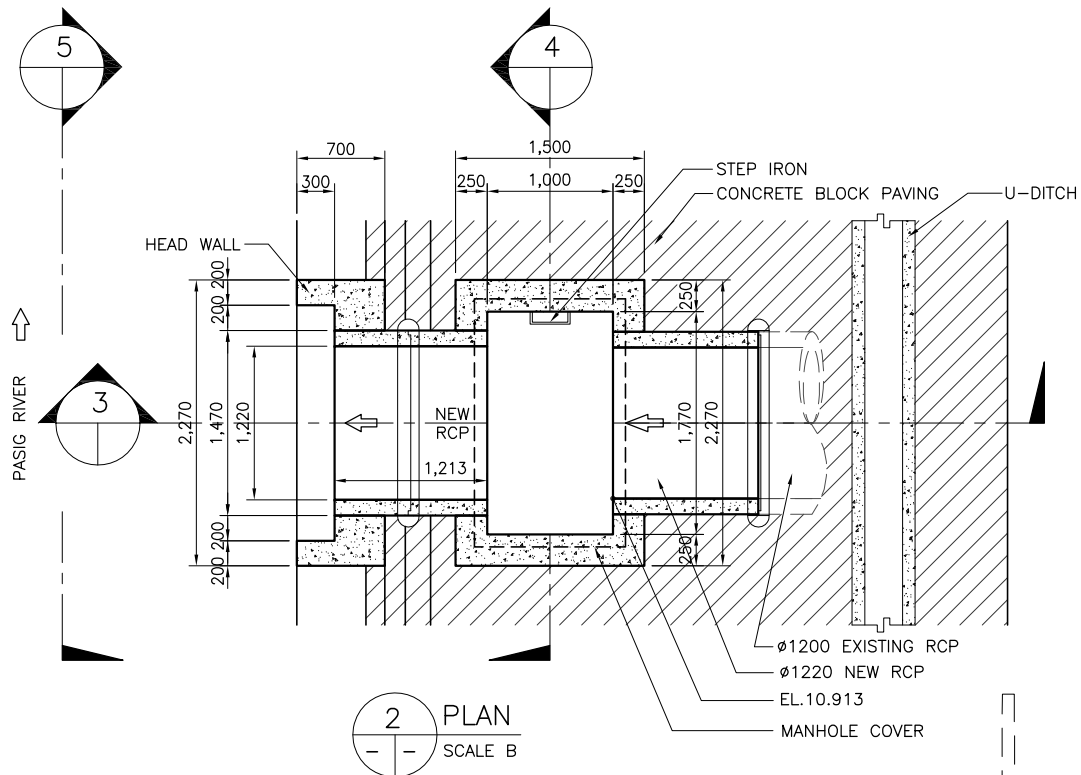
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		DETAIL OF DRAINAGE OUTLET- DR193C, MANHOLE MR193C STA. 15+025 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD				



**LEGEND:**

ER 193C.1 ⊕ EXISTING OUTLET  
 DR 193C.1 ▨ DRAINAGE OUTLET  
 DR 193C.1 ○ DRAINAGE OUTLET NO.  
 ○ PROPOSED MANHOLE

1 DRAINAGE PLAN  
 SCALE A

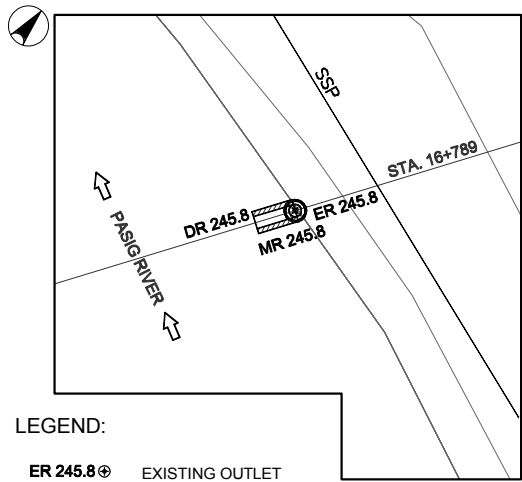


**NOTE:**  
 PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF THE SURVEYS AND DESIGN NOR TRANSFER ANY PART OF THAT RESPONSIBILITY TO THE APPROVING OFFICIALS.

SHUJI KAKU  
 TEAM LEADER

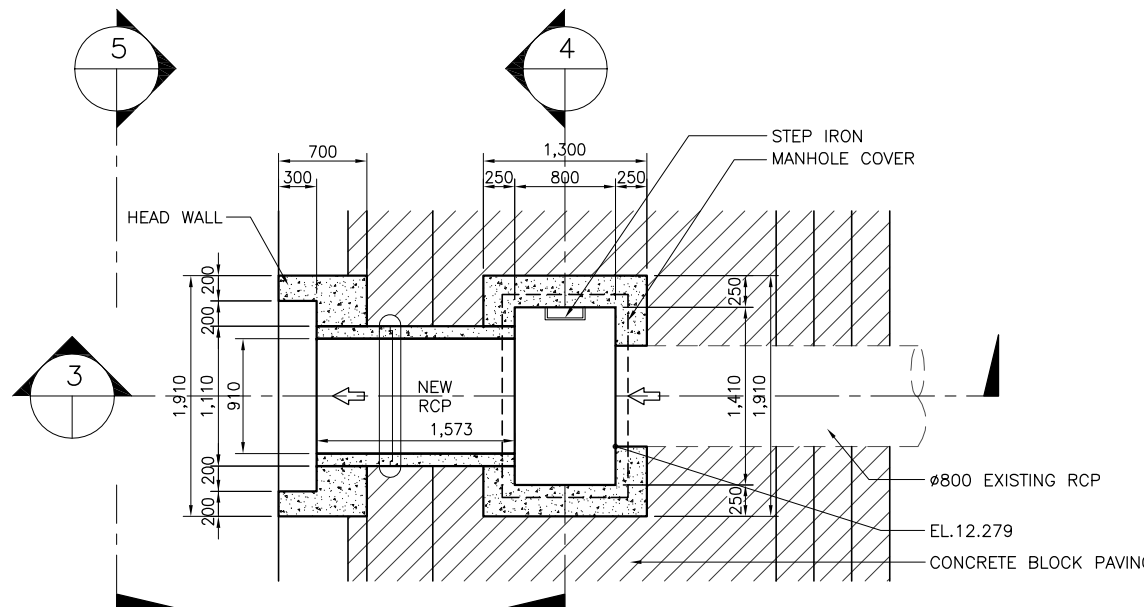
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR193C.1 & MANHOLE MR193C.1 STA 15+041 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			

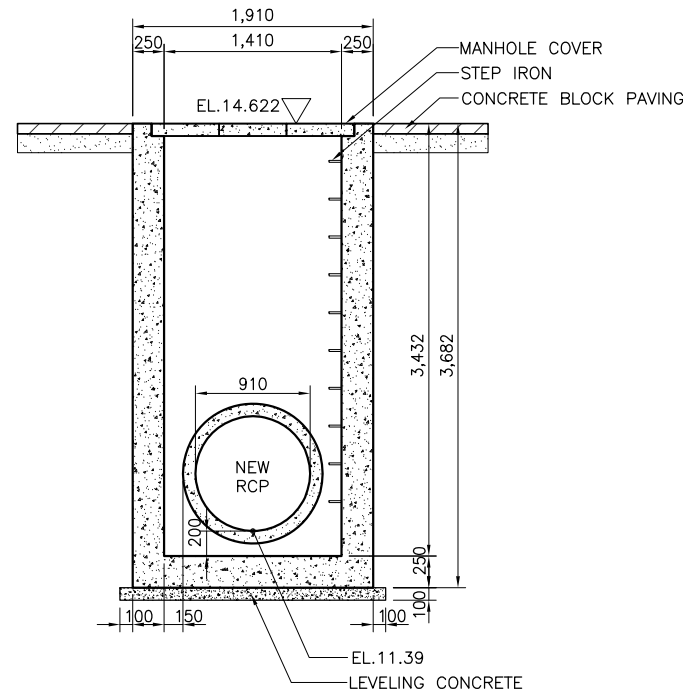


- LEGEND:**
- ER 245.8  $\oplus$  EXISTING OUTLET
  - DRAINAGE OUTLET
  - DR 245.8 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

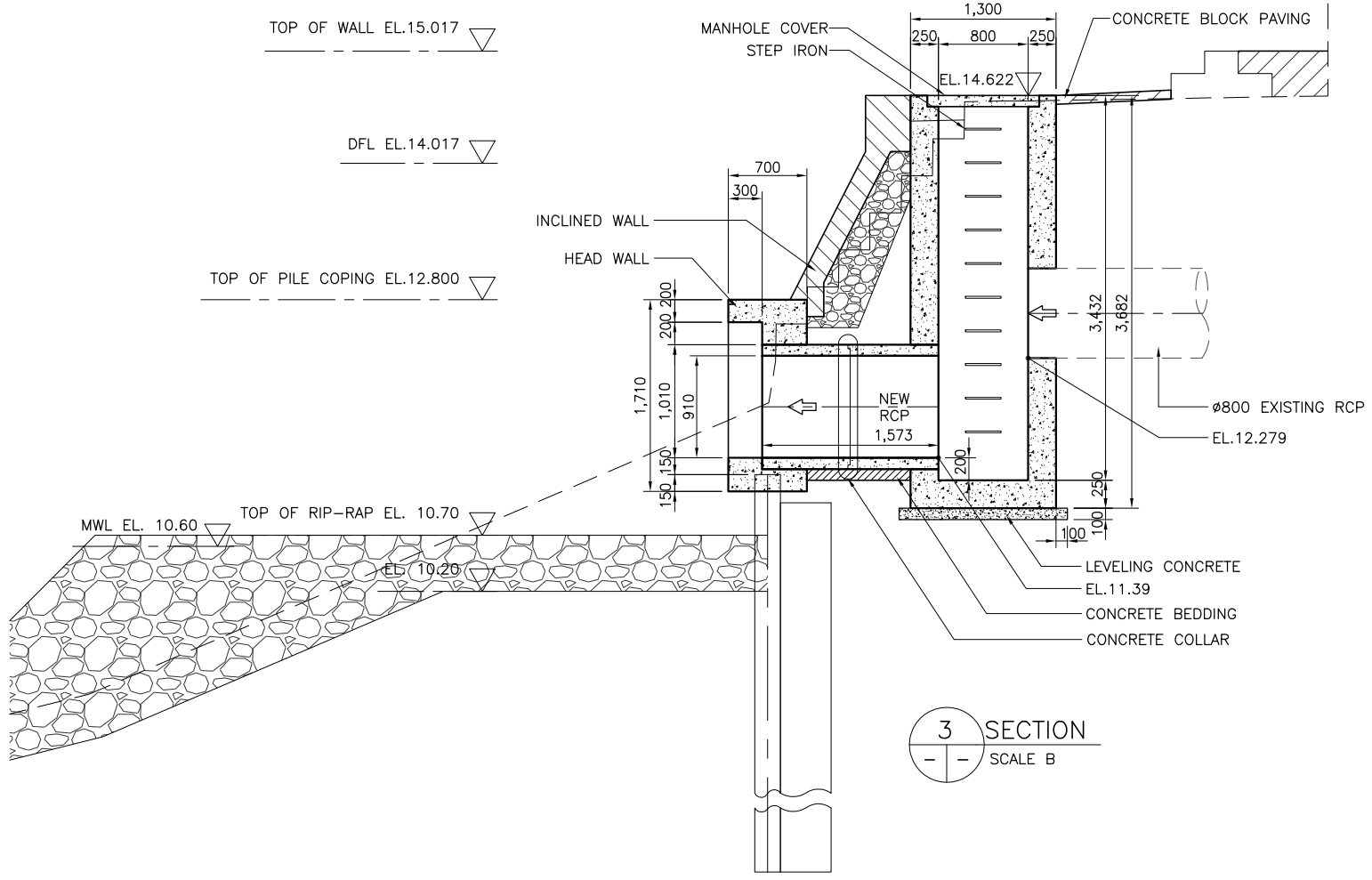
**1 DRAINAGE PLAN**  
SCALE A



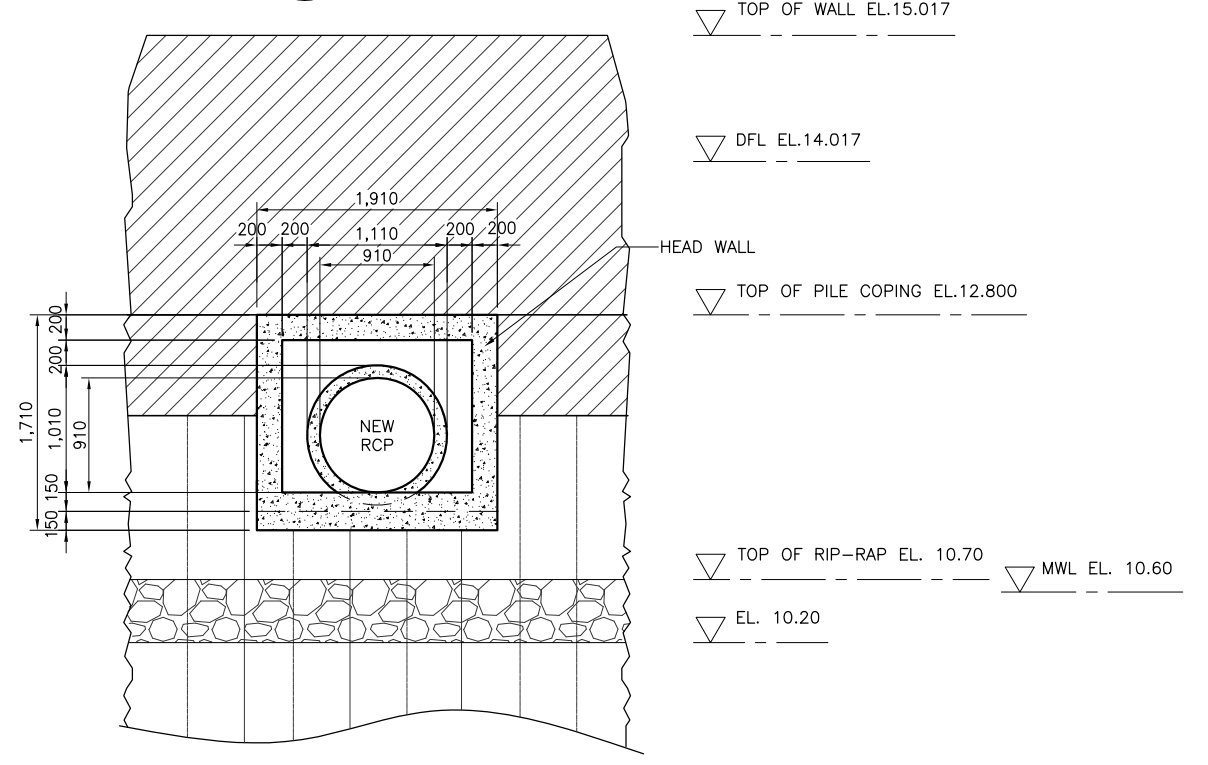
**2 PLAN**  
SCALE B



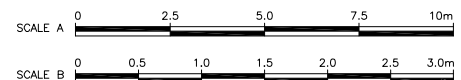
**4 SECTION (MR245.8)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B

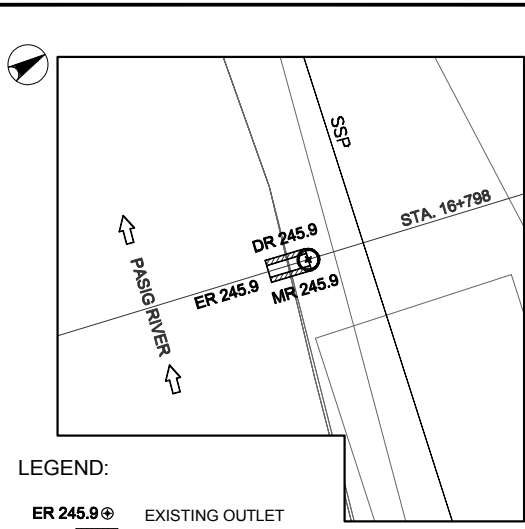


**NOTE:**  
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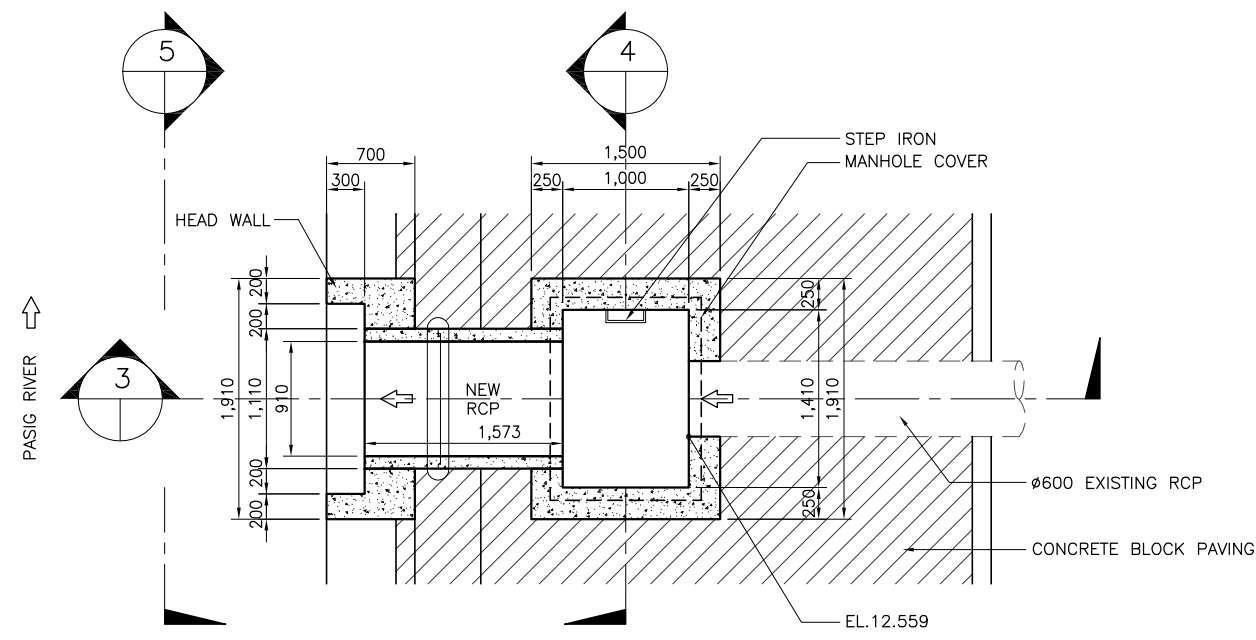
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR245.8, MANHOLE MR245.8 STA. 16+789 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD			

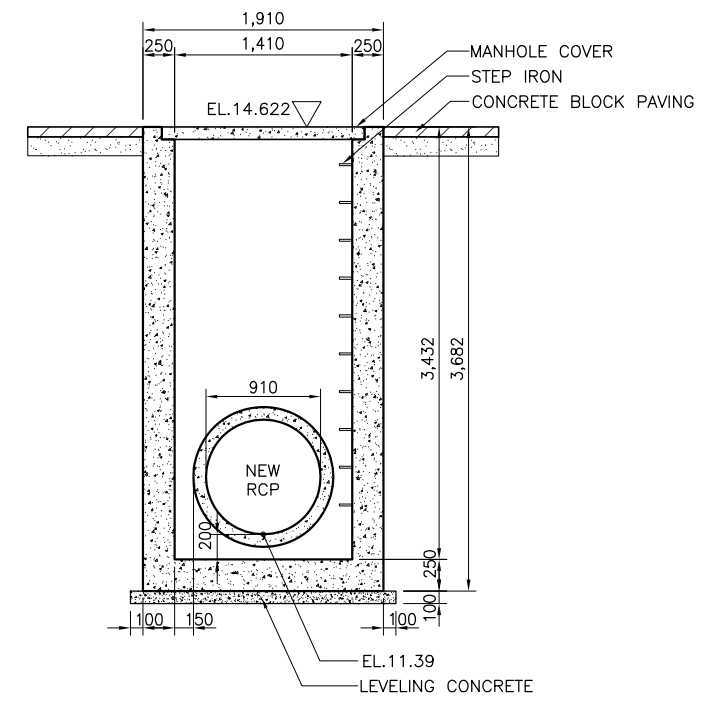


- LEGEND:**
- ER 245.9 ⊕ EXISTING OUTLET
  - DR 245.9 DRAINAGE OUTLET
  - DR 245.9 DRAINAGE OUTLET NO.
  - PROPOSED MANHOLE

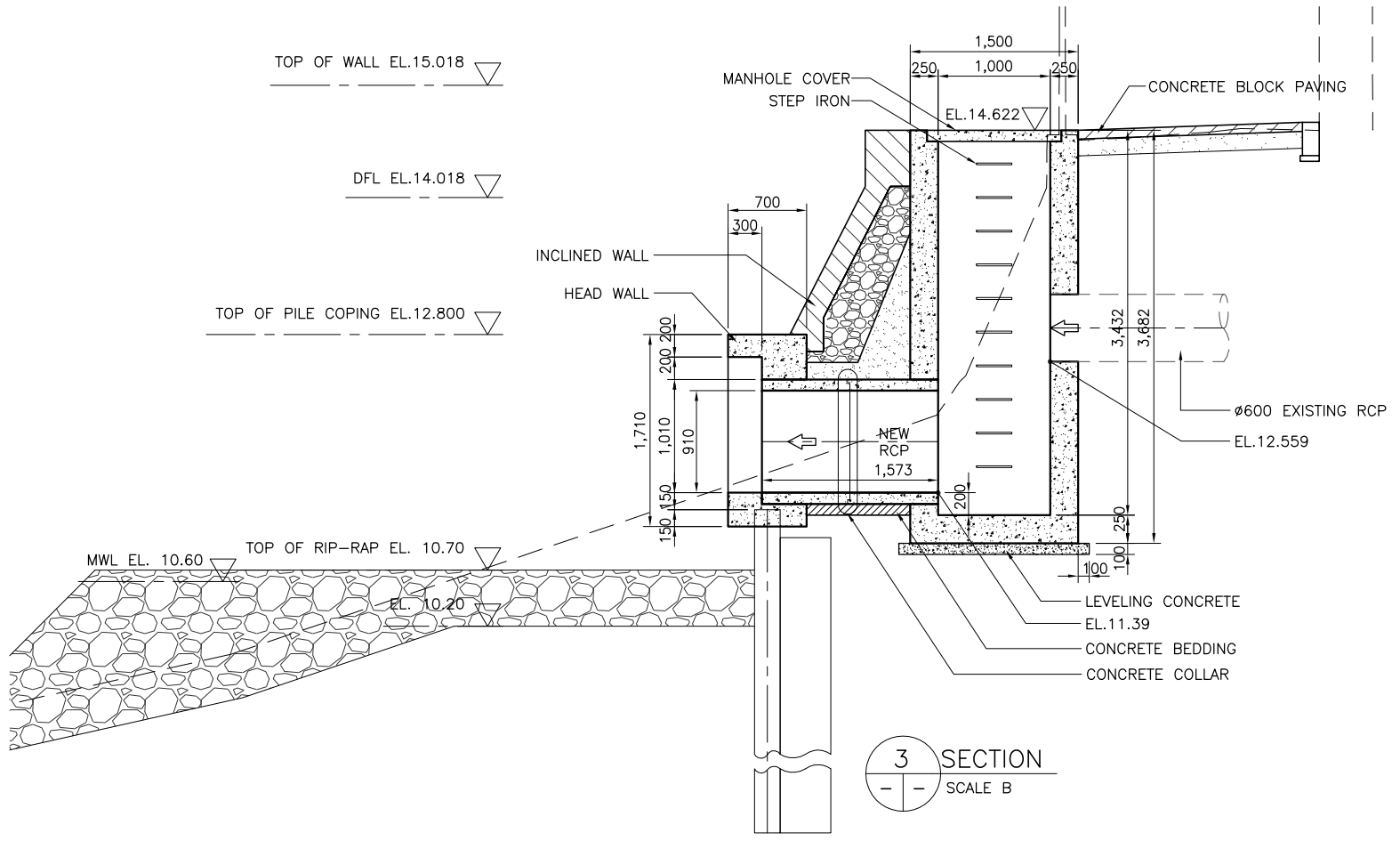
**1 DRAINAGE PLAN**  
SCALE A



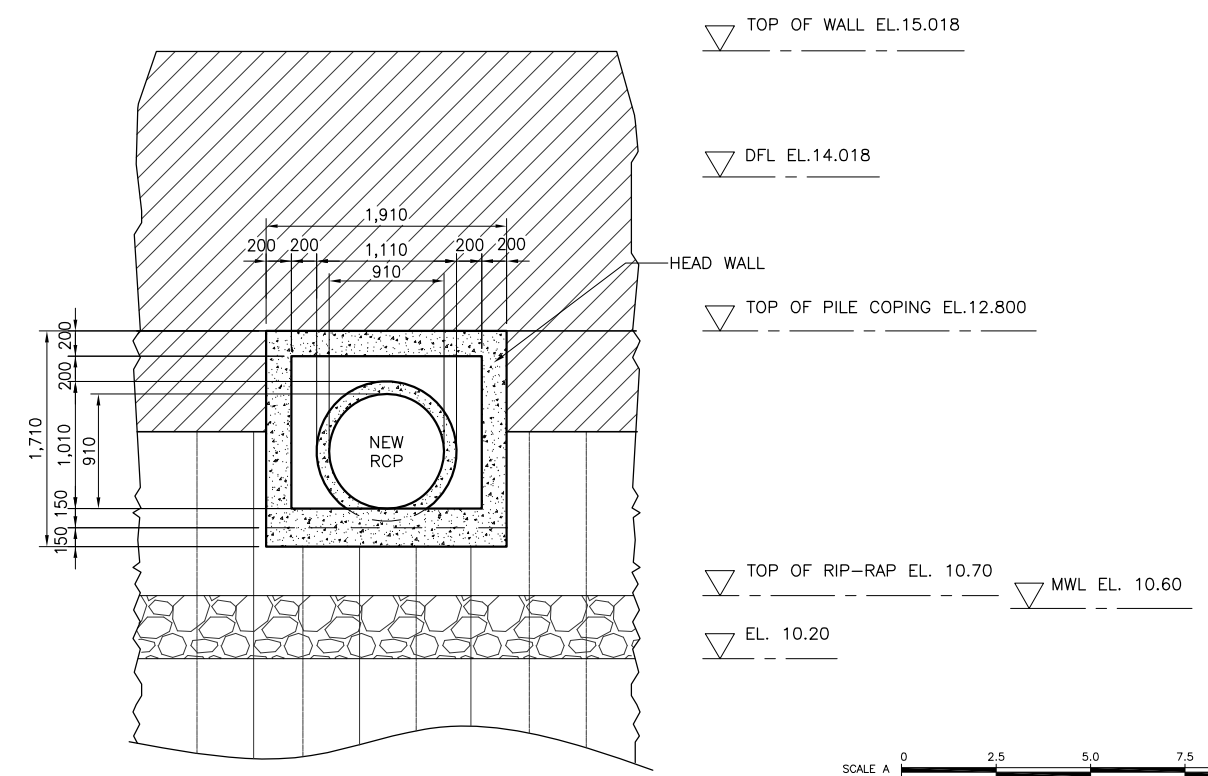
**2 PLAN**  
SCALE B



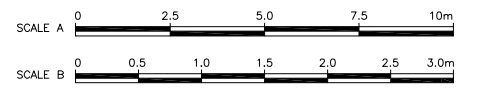
**4 SECTION (MR 245.9)**  
SCALE B



**3 SECTION**  
SCALE B



**5 ELEVATION**  
SCALE B



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	DETAIL OF DRAINAGE OUTLET- DR245.9, MANHOLE MR245.9 STA. 16+798 RB	
	KOHEI TAKAYAMA STRUCTURAL ENGINEER IV	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	ROGELIO L. SINGSON SECRETARY			