

REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS  
*Project Management Office- Major Flood Control Projects*

**PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III)  
(JICA LOAN No. PH-P252)**

CONTRACT PACKAGE NO.1  
PASIG RIVER (REMAINING WORKS DELPAN BRIDGE TO NAPINDAN CHANNEL)

**BID DOCUMENTS (DRAFT)**

**PART 2- WORKS REQUIREMENTS**

SECTION IV - WORKS REQUIREMENTS

VOLUME 2- DRAWINGS (PASIG RIVER)

FEBRUARY 2013

# LIST OF DRAWINGS

WORKS
GENERAL
STANDARD RIVER STRUCTURAL DETAILS
RIVER STRUCTURES ; LOWER PASIG
RIVER STRUCTURES ; UPPER PASIG
DRAINAGE WORKS ; LOWER PASIG
DRAINAGE WORKS ; UPPER PASIG

## DRAWING LIST (GENERAL)

SHEET NO.	DRAWING NO.	NAME OF STRUCTURE	SHEET CONTENTS
1	PR-GE, LM-01	GENERAL	LOCATION MAP
2	LP-GE, GL-01		GENERAL LAYOUT PLAN
3	LP-GE, GL-02		GENERAL LAYOUT PLAN
4	LP-GE, GL-03		GENERAL LAYOUT PLAN
5	UP-GE, GL-01		GENERAL LAYOUT PLAN
6	UP-GE, GL-02		GENERAL LAYOUT PLAN
7	UP-GE, GL-03		GENERAL LAYOUT PLAN
8	PR-GE, LP-01		LONGITUDINAL PROFILE
9	LP-GE, TR-01		TYPICAL CROSS-SECTION OF REVETMENT (1/2)
10	LP-GE, TR-02		TYPICAL CROSS-SECTION OF REVETMENT (2/2)
11	UP-GE, TR-01		TYPICAL CROSS-SECTION OF REVETMENT (1/2)
12	UP-GE, TR-02		TYPICAL CROSS-SECTION OF REVETMENT (2/2)
13	LP-GE, TE-01		TYPICAL CROSS-SECTION OF EARTHWORKS (1/2)
14	LP-GE, TE-02		TYPICAL CROSS-SECTION OF EARTHWORKS (2/2)
15	UP-GE, TE-01		TYPICAL CROSS-SECTION OF EARTHWORKS (1/2)
16	UP-GE, TE-02		TYPICAL CROSS-SECTION OF EARTHWORKS (2/2)
17	PR-GE, GN-01		GENERAL NOTE FOR RIVER STRUCTURE & DRAINAGE WORKS (1/2)
18	PR-GE, GN-02		GENERAL NOTE FOR RIVER STRUCTURE & DRAINAGE WORKS (2/2)
19	PR-GE, SQ-01		SUMMARY OF QUANTITIES
20	LP-GE, LO-01		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED
21	LP-GE, LO-02		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED
22	LP-GE, LO-03		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED
23	UP-GE, LO-01		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED
24	UP-GE, LO-02		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED
25	UP-GE, LO-03		EXISTING FACILITIES TO BE REMOVED AND/OR RELOCATED

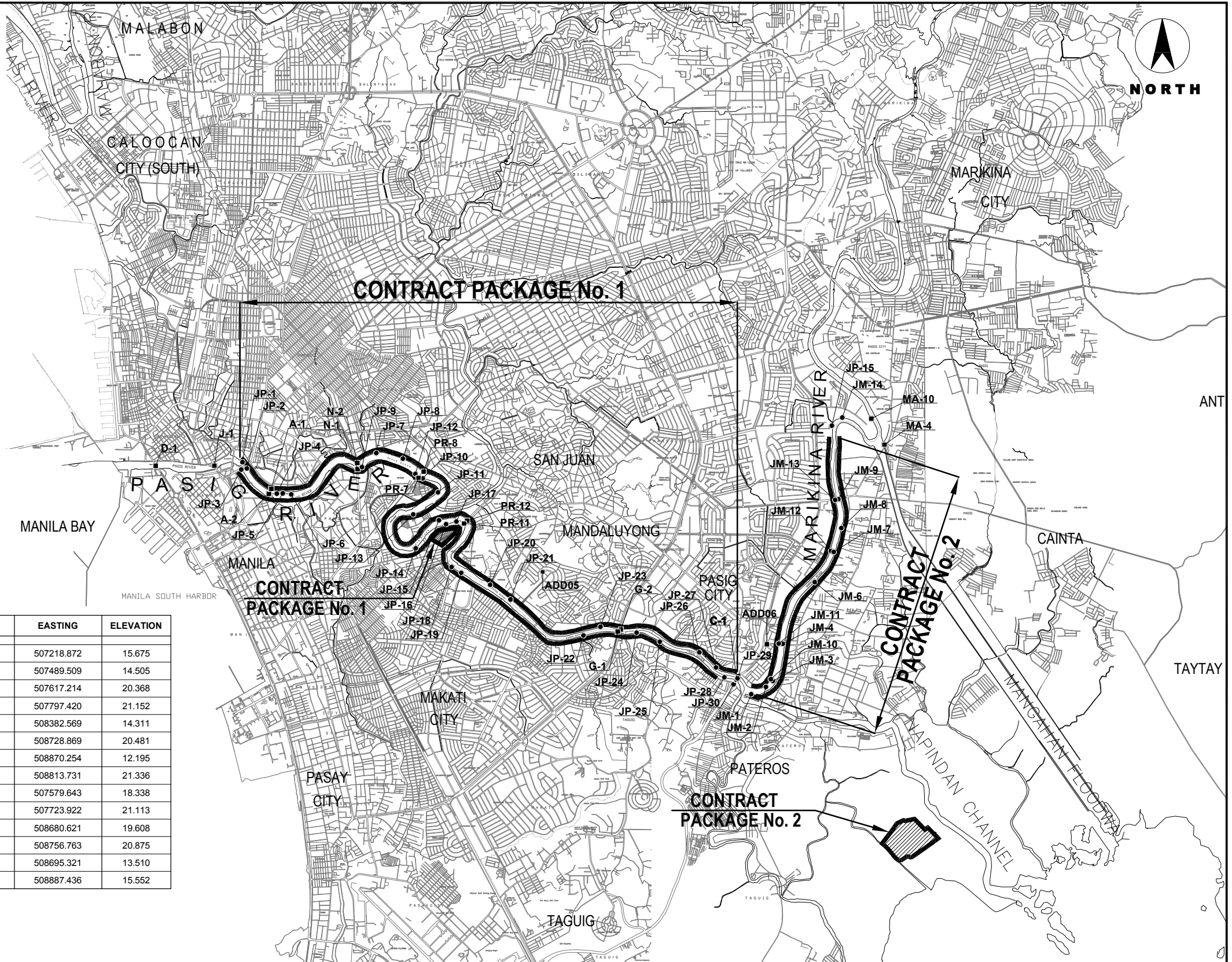
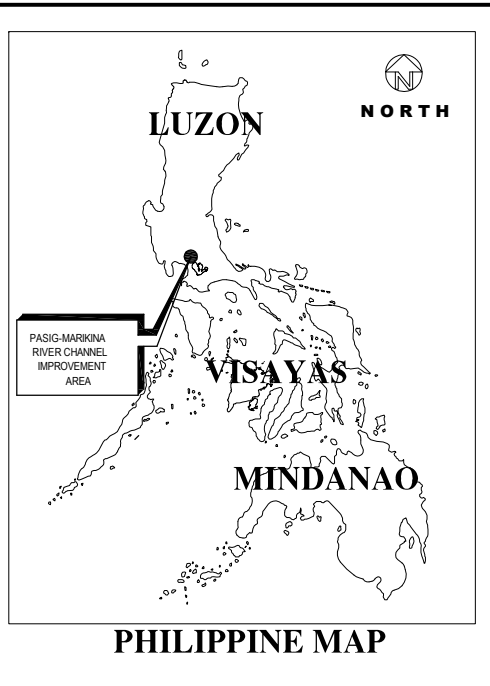


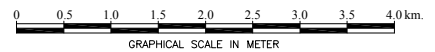
TABLE OF CONTROL POINT ELEVATIONS

POINTS NAME	NORTHING	EASTING	ELEVATION
JP1	1614305.606	497916.363	12.110
JP2	1614190.591	497997.538	12.005
JP3	1614171.352	497895.606	12.251
JP4	1613731.825	498543.882	12.240
JP5	1613735.772	498654.431	12.148
JP6	1613717.089	498808.112	12.013
JP7	1614473.796	500364.466	13.221
JP8	1614370.025	500849.786	13.533
JP9	1614215.972	500102.499	12.808
JP10	1614007.374	501211.862	13.471
JP11	1613754.238	501491.896	13.512
JP12	1614090.190	501078.838	12.708
JP13	1613350.066	501038.761	13.093
JP14	1612730.816	501084.625	13.404
JP15	1613211.662	501509.085	13.333
JP16	1613171.220	501639.771	13.591
JP17	1613220.094	501827.683	14.493
JP18	1612388.682	501740.865	13.590
JP19	1612282.943	501916.032	13.563
JP20	1612064.619	502446.845	12.808
JP21	1611795.544	502817.802	13.741
JP22	1611137.415	504151.516	15.004
JP23	1611294.870	504462.136	14.240
JP24	1611187.025	505122.352	14.432
JP25	1611022.293	505548.620	16.046
JP26	1610828.612	506271.149	14.676
JP27	1610551.535	506575.619	14.329
JP28	1610372.022	506730.235	14.609
JP29	1610351.442	506969.377	24.436
JP30	1610244.004	506896.467	23.070

POINTS NAME	NORTHING	EASTING	ELEVATION
JM1	1610062.758	507218.872	15.675
JM2	1610195.831	507489.509	14.505
JM3	1610303.013	507617.214	20.368
JM4	161.0984.224	507797.420	21.152
JM6	1612110.622	508382.569	14.311
JM7	1612662.678	508728.869	20.481
JM8	1613099.880	508870.254	12.195
JM9	1613627.988	508813.731	21.336
JM10	1610337.646	507579.643	18.338
JM11	1610988.745	507723.922	21.113
JM12	1612682.379	508680.621	19.608
JM13	1613616.700	508756.763	20.875
JM14	1614974.591	508695.321	13.510
JM15	1615121.405	508887.436	15.552

- LEGEND :
- : WATERCOURSE
  - : ROAD
  - : TARGET STRETCH OF RIVER IMPROVEMENT
  - : CONTROL POINT OF PHASE-II
  - : CONTROL POINT OF PHASE-III

LOCATION MAP OF CONTRACT PACKAGE NO. 1 & 2

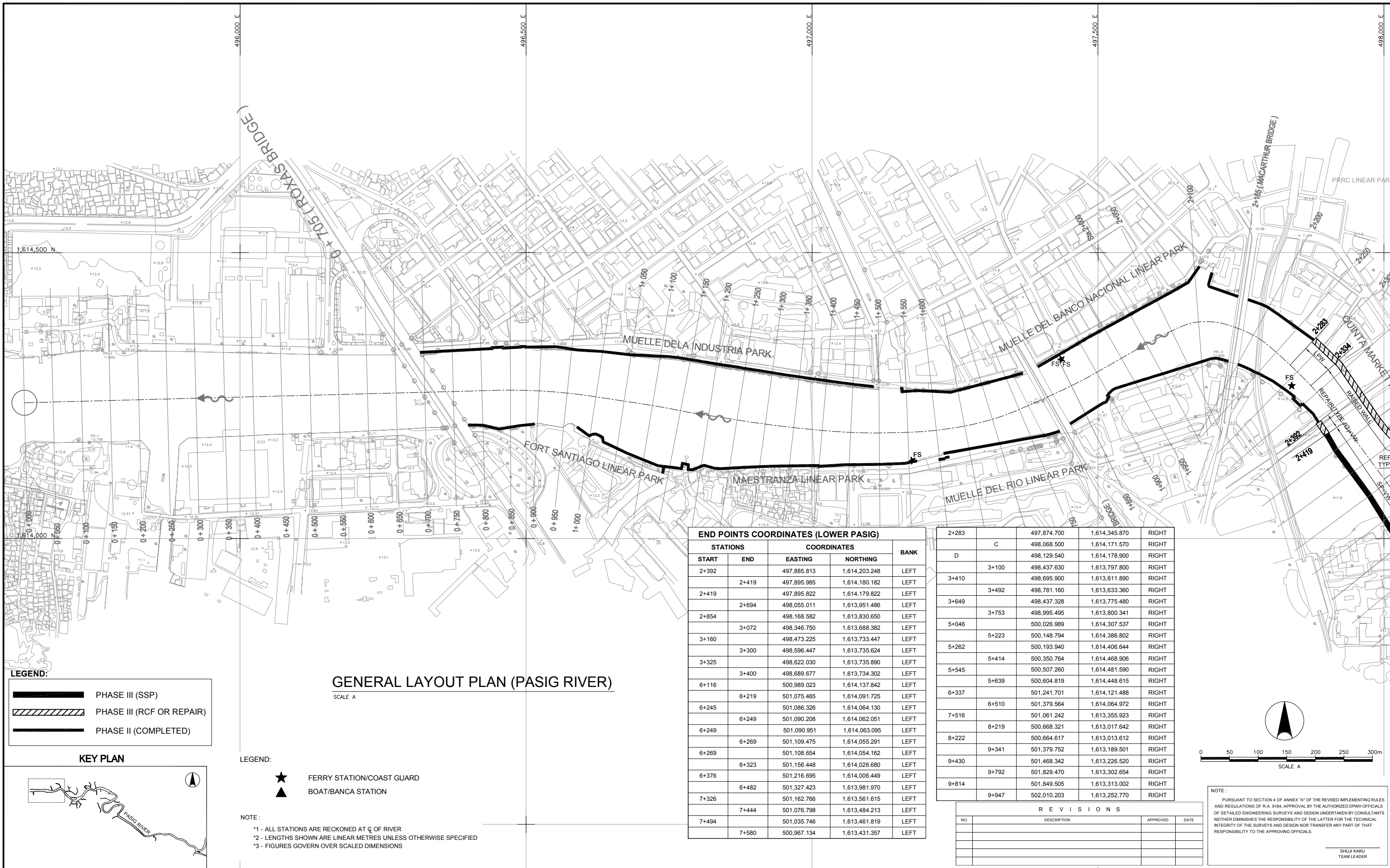


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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	LOCATION MAP		
	EIJI MOKI STRUCTURAL ENGINEER I	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



**GENERAL LAYOUT PLAN (PASIG RIVER)**

SCALE: A

**LEGEND:**

- PHASE III (SSP)
- PHASE III (RCF OR REPAIR)
- PHASE II (COMPLETED)

**KEY PLAN**

**LEGEND:**

- FERRY STATION/COAST GUARD
- BOAT/BANCA STATION

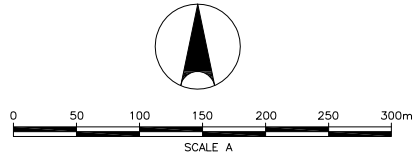
**NOTE:**

- \*1 - ALL STATIONS ARE RECKONED AT Q OF RIVER
- \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
- \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

END POINTS COORDINATES (LOWER PASIG)				
STATIONS		COORDINATES		BANK
START	END	EASTING	NORTHING	
2+392	2+419	497,885.813	1,614,203.248	LEFT
2+419	2+694	497,895.985	1,614,180.182	LEFT
2+694	2+854	498,055.011	1,613,951.486	LEFT
2+854	3+072	498,168.582	1,613,830.650	LEFT
3+072	3+160	498,346.750	1,613,688.382	LEFT
3+160	3+300	498,473.225	1,613,733.447	LEFT
3+300	3+325	498,596.447	1,613,735.624	LEFT
3+325	3+400	498,622.030	1,613,735.890	LEFT
3+400	6+116	498,689.677	1,613,734.302	LEFT
6+116	6+219	500,989.023	1,614,137.842	LEFT
6+219	6+245	501,075.465	1,614,091.725	LEFT
6+245	6+249	501,086.326	1,614,064.130	LEFT
6+249	6+249	501,090.208	1,614,062.051	LEFT
6+249	6+249	501,090.951	1,614,063.095	LEFT
6+249	6+269	501,109.475	1,614,055.291	LEFT
6+269	6+269	501,108.654	1,614,054.162	LEFT
6+269	6+323	501,156.448	1,614,026.680	LEFT
6+323	6+376	501,216.695	1,614,006.449	LEFT
6+376	6+482	501,327.423	1,613,981.970	LEFT
6+482	7+326	501,162.766	1,613,561.615	LEFT
7+326	7+444	501,076.798	1,613,484.213	LEFT
7+444	7+494	501,035.746	1,613,461.819	LEFT
7+494	7+580	500,967.134	1,613,431.357	LEFT

2+283		497,874.700	1,614,345.870	RIGHT
	C	498,068.500	1,614,171.570	RIGHT
	D	498,129.540	1,614,178.900	RIGHT
3+100		498,437.630	1,613,797.800	RIGHT
3+410		498,695.900	1,613,611.890	RIGHT
	3+492	498,781.160	1,613,633.360	RIGHT
3+649		498,437.328	1,613,775.480	RIGHT
	3+753	498,995.495	1,613,800.341	RIGHT
5+046		500,026.989	1,614,307.537	RIGHT
	5+223	500,148.794	1,614,386.602	RIGHT
5+262		500,193.940	1,614,406.644	RIGHT
	5+414	500,350.764	1,614,468.906	RIGHT
5+545		500,507.260	1,614,481.590	RIGHT
	5+639	500,604.819	1,614,448.615	RIGHT
6+337		501,241.701	1,614,121.488	RIGHT
	6+510	501,379.564	1,614,064.972	RIGHT
7+516		501,061.242	1,613,355.923	RIGHT
	8+219	500,668.321	1,613,017.642	RIGHT
8+222		500,664.617	1,613,013.612	RIGHT
	9+341	501,379.752	1,613,189.501	RIGHT
9+430		501,468.342	1,613,226.520	RIGHT
	9+792	501,829.470	1,613,302.654	RIGHT
9+814		501,849.505	1,613,313.002	RIGHT
	9+947	502,010.203	1,613,252.770	RIGHT

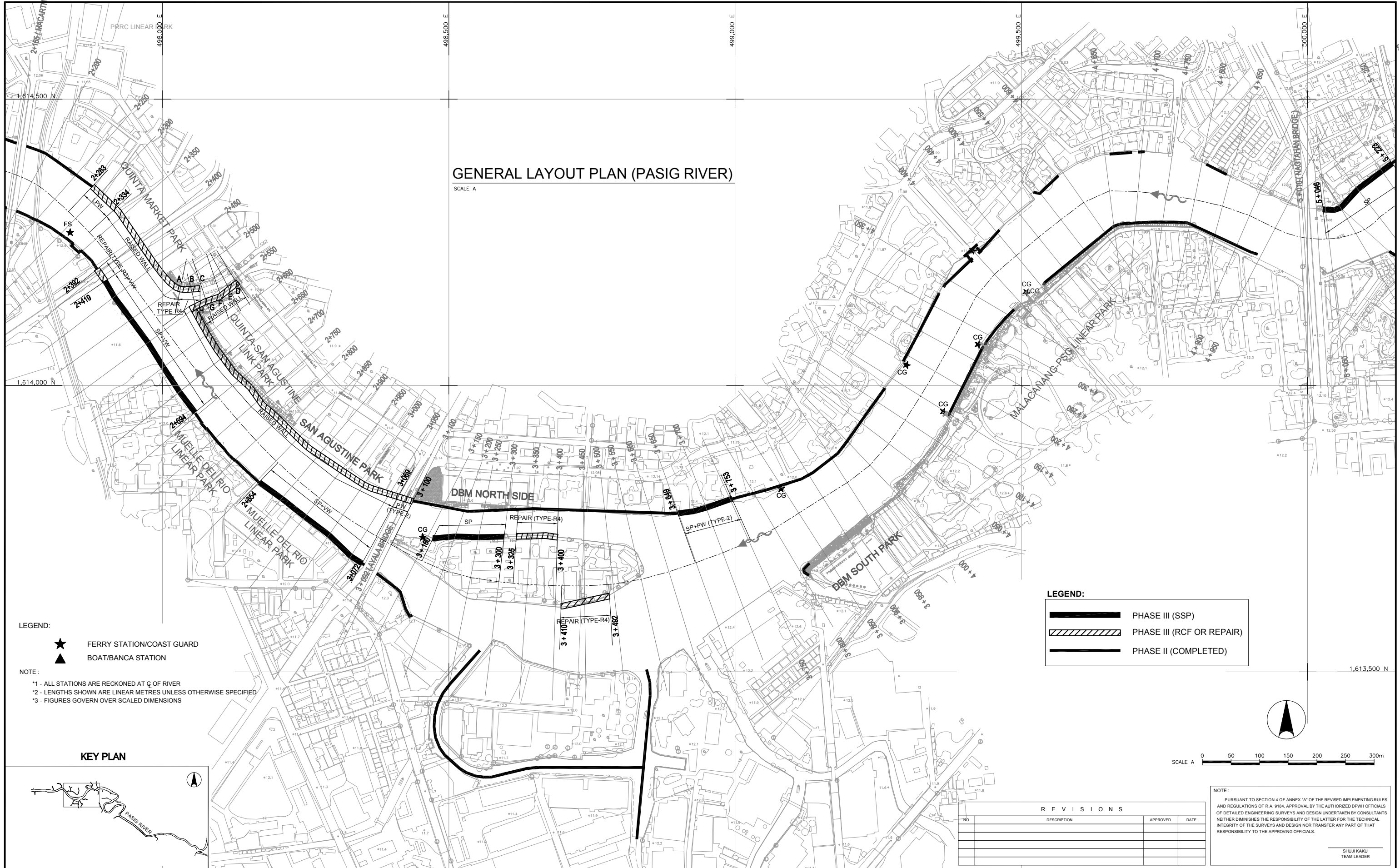
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE



**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

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	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	GENERAL LAYOUT PLAN	LP-GE	GL 01
	EIJI MOKI STRUCTURAL ENGINEER I	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				



**GENERAL LAYOUT PLAN (PASIG RIVER)**

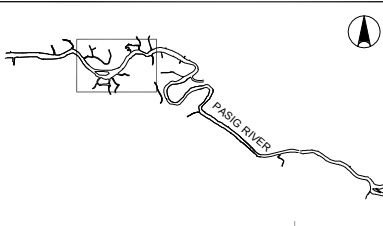
SCALE A

- LEGEND:**
- ★ FERRY STATION/COAST GUARD
  - ▲ BOAT/BANCA STATION

- NOTE:**
- \*1 - ALL STATIONS ARE RECKONED AT Ç OF RIVER
  - \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
  - \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

- LEGEND:**
- PHASE III (SSP)
  - PHASE III (RCF OR REPAIR)
  - PHASE II (COMPLETED)

**KEY PLAN**

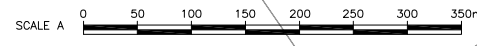
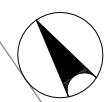
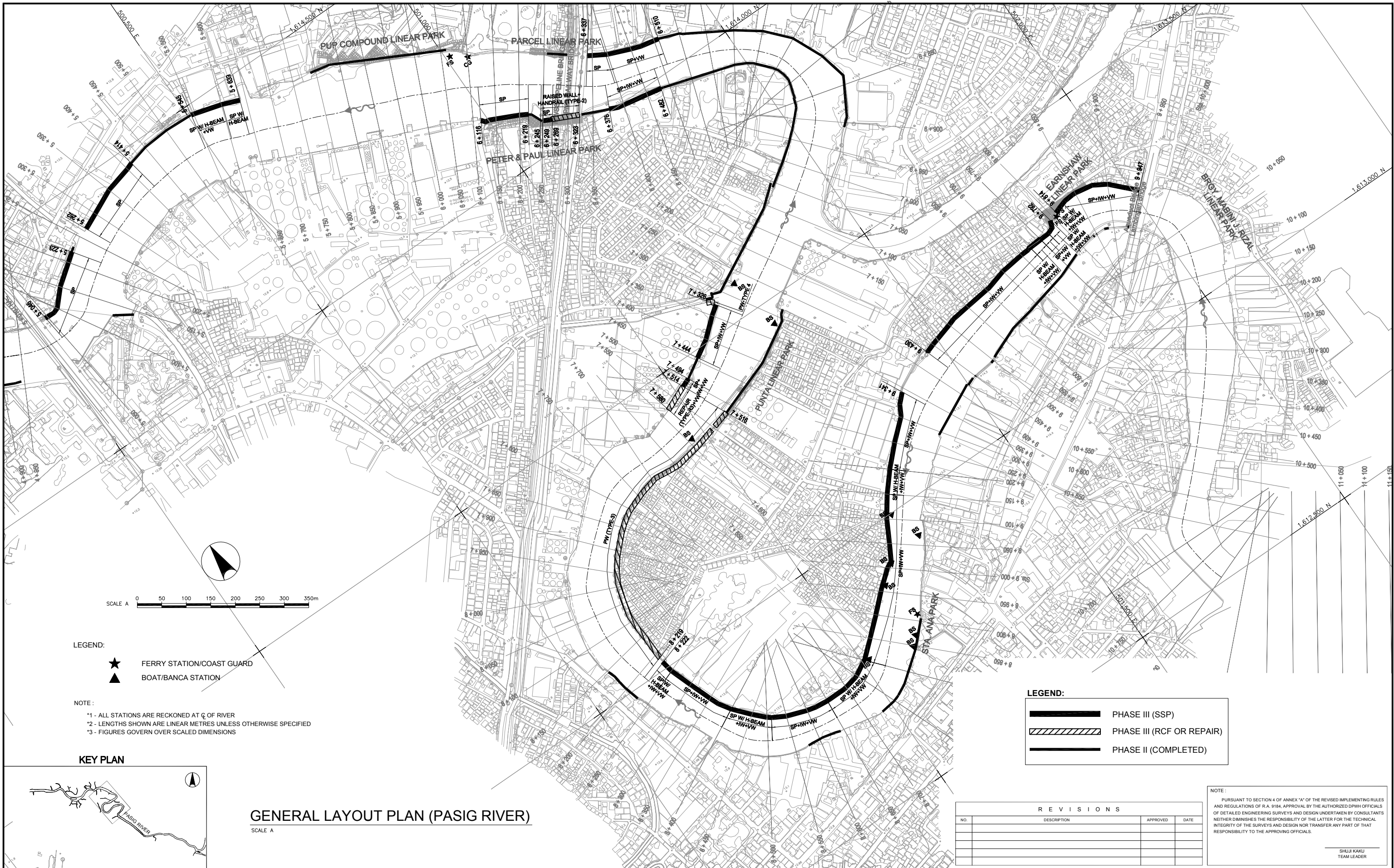


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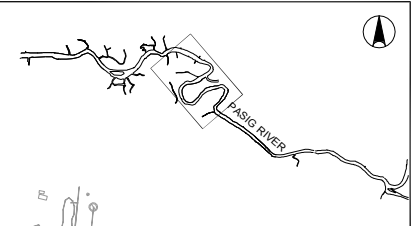
SHUJI KAKU  
TEAM LEADER

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:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	GENERAL LAYOUT PLAN LOWER PASIG		
	EIJI MOKI STRUCTURAL ENGINEER I	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



- LEGEND:**
- ★ FERRY STATION/COAST GUARD
  - ▲ BOAT/BANCA STATION
- NOTE:**
- \*1 - ALL STATIONS ARE RECKONED AT C OF RIVER
  - \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
  - \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

**KEY PLAN**



**GENERAL LAYOUT PLAN (PASIG RIVER)**  
SCALE A

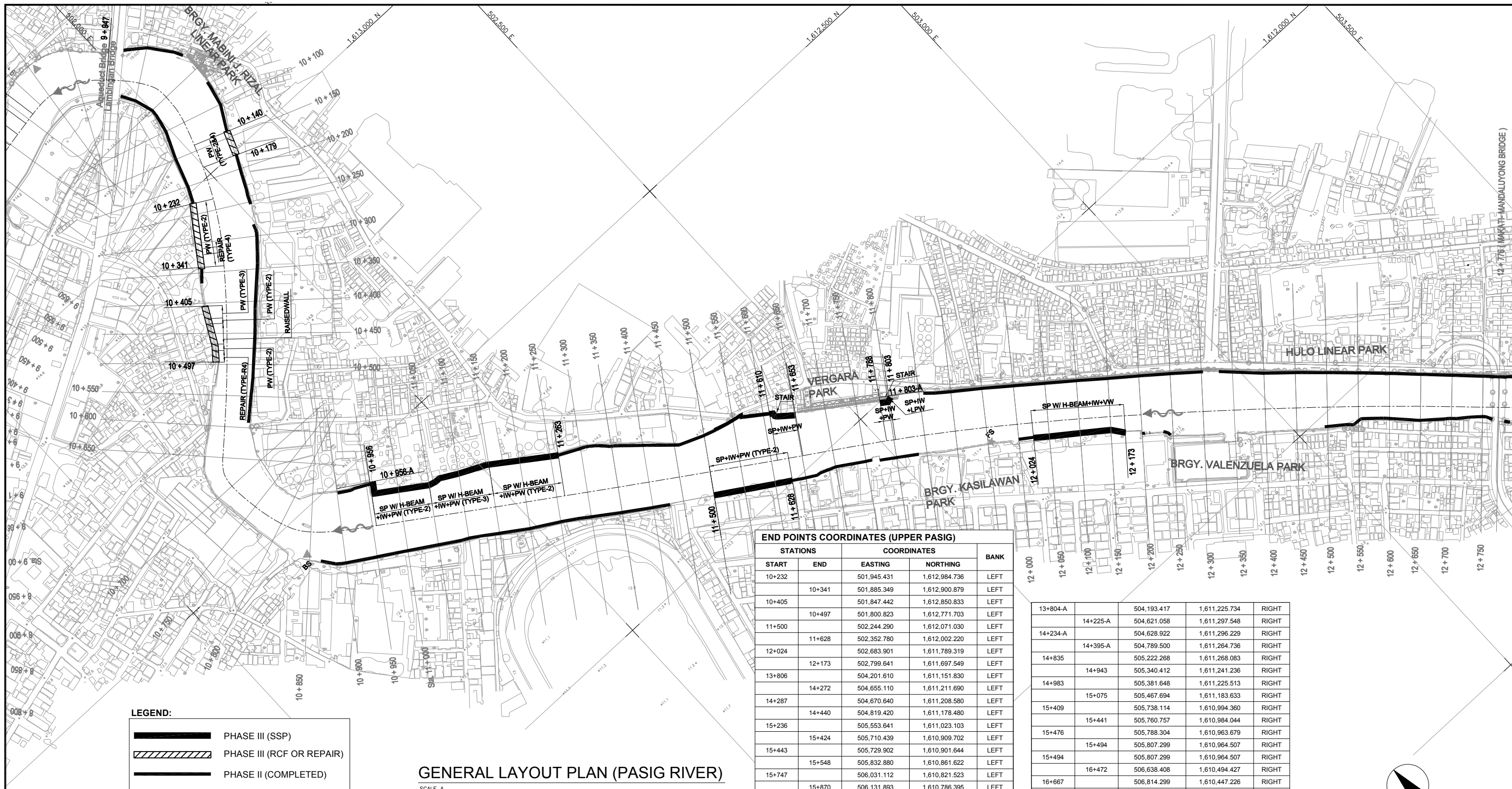
- LEGEND:**
- PHASE III (SSP)
  - PHASE III (RCF OR REPAIR)
  - PHASE II (COMPLETED)

REVISIONS			
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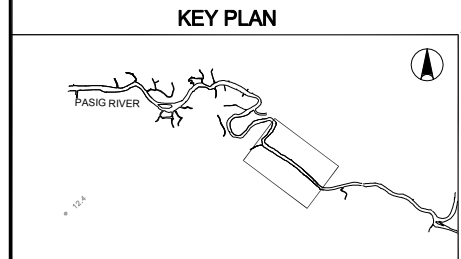
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**LEGEND:**

- PHASE III (SSP)
- PHASE III (RCF OR REPAIR)
- PHASE II (COMPLETED)

**GENERAL LAYOUT PLAN (PASIG RIVER)**  
SCALE A



**LEGEND:**

- FERRY STATION/COAST GUARD
- BOAT/BANCA STATION

**NOTE:**

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- \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

END POINTS COORDINATES (UPPER PASIG)					
STATIONS	COORDINATES	COORDINATES			BANK
		START	END	EASTING	
10+232		501,945.431	1,612,984.736	LEFT	
10+341		501,885.349	1,612,900.879	LEFT	
10+405		501,847.442	1,612,850.833	LEFT	
10+497		501,800.823	1,612,771.703	LEFT	
11+500		502,244.290	1,612,071.030	LEFT	
11+628		502,352.780	1,612,002.220	LEFT	
12+024		502,683.901	1,611,789.319	LEFT	
12+173		502,799.641	1,611,697.549	LEFT	
13+806		504,201.610	1,611,151.830	LEFT	
14+272		504,655.110	1,611,211.690	LEFT	
14+287		504,670.640	1,611,208.580	LEFT	
14+440		504,819.420	1,611,178.480	LEFT	
15+236		505,553.641	1,611,023.103	LEFT	
15+424		505,710.439	1,610,909.702	LEFT	
15+443		505,729.902	1,610,901.644	LEFT	
15+548		505,832.880	1,610,861.622	LEFT	
15+747		506,031.112	1,610,821.523	LEFT	
15+870		506,131.893	1,610,786.395	LEFT	
15+965		506,213.776	1,610,749.279	LEFT	
16+564		506,695.226	1,610,383.596	LEFT	
10+140		502,068.442	1,613,031.162	RIGHT	
10+179		502,052.100	1,612,993.846	RIGHT	
10+956-A		501,848.042	1,612,458.589	RIGHT	
11+263		502,103.379	1,612,287.744	RIGHT	
11+610		502,398.180	1,612,105.651	RIGHT	
11+653		502,429.374	1,612,076.398	RIGHT	
11+788		502,541.586	1,611,999.462	RIGHT	
11+803-A		502,558.825	1,611,996.566	RIGHT	
13+578		503,975.019	1,611,164.999	RIGHT	
13+801-B		504,188.868	1,611,224.601	RIGHT	

13+804-A		504,193.417	1,611,225.734	RIGHT
14+234-A	14+225-A	504,621.058	1,611,297.548	RIGHT
		504,628.922	1,611,296.229	RIGHT
	14+395-A	504,789.500	1,611,264.736	RIGHT
14+835		505,222.268	1,611,268.083	RIGHT
	14+943	505,340.412	1,611,241.236	RIGHT
14+983		505,381.648	1,611,225.513	RIGHT
	15+075	505,467.694	1,611,183.633	RIGHT
15+409		505,738.114	1,610,994.360	RIGHT
15+476	15+441	505,760.757	1,610,984.044	RIGHT
		505,788.304	1,610,963.679	RIGHT
15+494	15+494	505,807.299	1,610,964.507	RIGHT
		505,807.299	1,610,964.507	RIGHT
16+667	16+472	506,638.408	1,610,494.427	RIGHT
		506,814.299	1,610,447.226	RIGHT
16+760	16+724	506,869.588	1,610,436.758	RIGHT
		506,907.212	1,610,429.992	RIGHT
	16+843	507,000.226	1,610,401.554	RIGHT

**REVISIONS**

NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

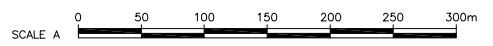
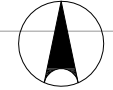
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	GENERAL LAYOUT PLAN UPPER PASIG	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



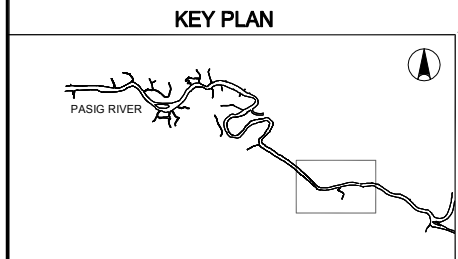


**LEGEND:**

	PHASE III (SSP)
	PHASE III (RCF OR REPAIR)
	PHASE II (COMPLETED)



**GENERAL LAYOUT PLAN (PASIG RIVER)**  
SCALE A



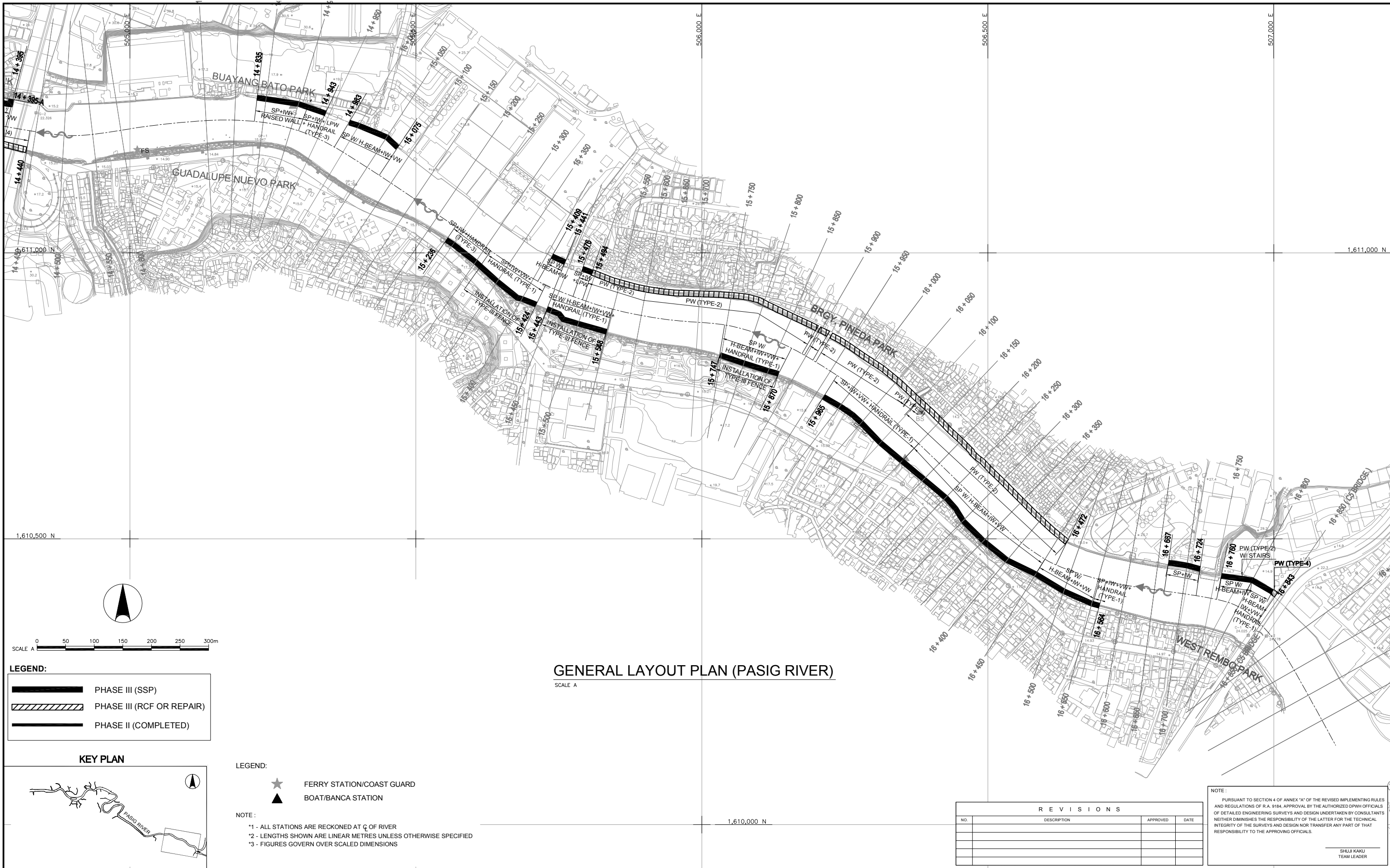
- LEGEND:**
- ★ FERRY STATION/COAST GUARD
  - ▲ BOAT/BANCA STATION
- NOTE:**
- \*1 - ALL STATIONS ARE RECKONED AT C OF RIVER
  - \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
  - \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 1\* 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.

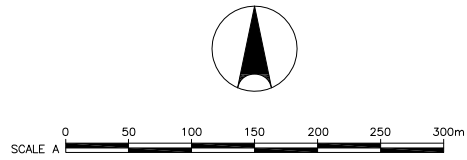
SHUJI KAKU  
TEAM LEADER

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	GENERAL LAYOUT PLAN UPPER PASIG	UP-GE GL 02
	EJI MOKI <small>STRUCTURAL ENGINEER I</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>			



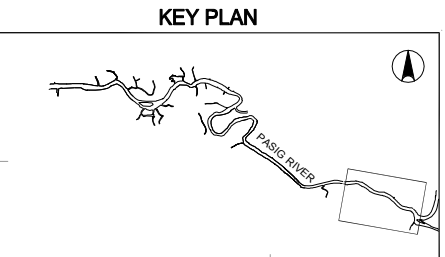
**GENERAL LAYOUT PLAN (PASIG RIVER)**

SCALE A



**LEGEND:**

	PHASE III (SSP)
	PHASE III (RCF OR REPAIR)
	PHASE II (COMPLETED)



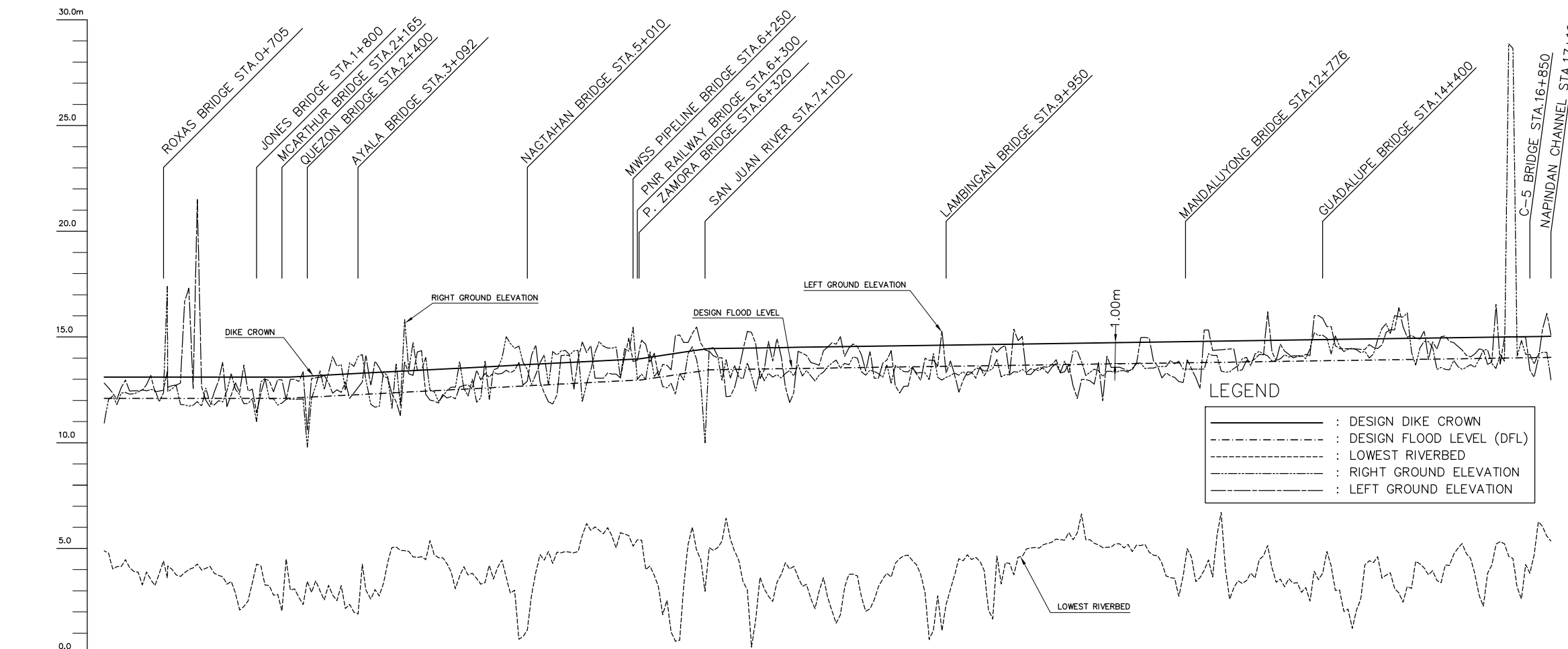
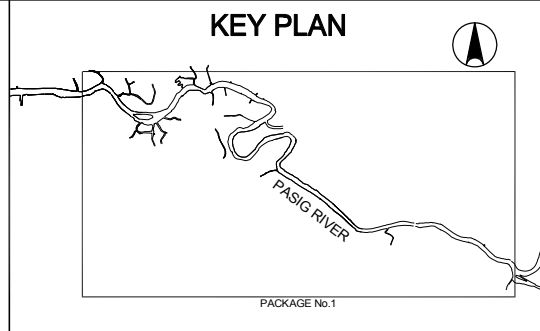
- LEGEND:**
- ★ FERRY STATION/COAST GUARD
  - ▲ BOAT/BANCA STATION
- NOTE:**
- \*1 - ALL STATIONS ARE RECKONED AT C OF RIVER
  - \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
  - \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

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	GENERAL LAYOUT PLAN UPPER PASIG	
	EJI MOKI <small>STRUCTURAL ENGINEER I</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>			



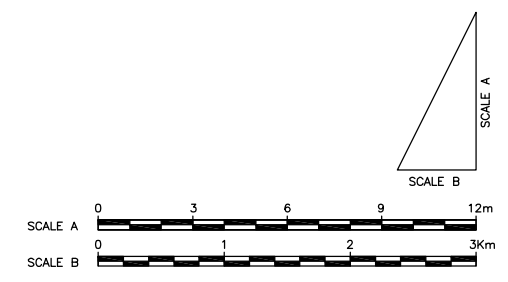
LEGEND

- : DESIGN DIKE CROWN
- - - : DESIGN FLOOD LEVEL (DFL)
- ..... : LOWEST RIVERBED
- ..... : RIGHT GROUND ELEVATION
- ..... : LEFT GROUND ELEVATION

STATION NUMBER (km)	PARTIAL DISTANCE (km)	ACUMULATIVE DIST. (km)	ELEVATION - METERS				DESIGN RIVER BED SLOPE	DESIGN D.F.L. SLOPE
			LOWEST RIVER BED	MEAN RIVER BED	LEFT RIVER BED	RIGHT RIVER BED		
0.000	0.000	0.000	4.891	12.820	10.931	12.100	13.100	LEVEL
0.200	0.200	0.200	4.141	12.611	12.351	12.100	13.100	(12.100)
0.400	0.200	0.400	3.881	12.100	12.401	12.100	13.100	i=1/4800
0.600	0.200	0.600	3.251	12.100	12.491	12.100	13.100	L=2.160km
0.800	0.200	0.800	4.011	12.701	12.541	12.100	13.100	(12.100)
1.000	0.200	1.000	4.011	17.311	11.731	12.100	13.100	(12.100)
1.200	0.200	1.200	4.061	12.011	12.591	12.100	13.100	(12.100)
1.400	0.200	1.400	3.661	13.791	11.931	12.100	13.100	(12.100)
1.600	0.200	1.600	2.091	12.381	12.271	12.100	13.100	(12.100)
1.800	0.200	1.800	4.261	11.411	11.010	12.100	13.100	(12.100)
2.000	0.200	2.000	2.791	12.411	12.081	12.100	13.100	(12.100)
2.200	0.200	2.200	3.031	12.991	12.061	12.100	13.100	(12.100)
2.400	0.200	2.400	3.451	10.561	9.791	12.100	13.100	(12.100)
2.600	0.200	2.600	2.561	13.191	12.521	12.100	13.100	(12.100)
2.800	0.200	2.800	3.241	12.381	13.701	12.100	13.100	(12.100)
3.000	0.200	3.000	1.901	12.611	14.081	12.100	13.100	(12.100)
3.200	0.200	3.200	3.061	13.861	11.681	12.100	13.100	(12.100)
3.400	0.200	3.400	5.051	12.311	11.611	12.100	13.100	(12.100)
3.600	0.200	3.600	4.861	13.261	13.451	12.100	13.100	(12.100)
3.800	0.200	3.800	4.471	12.291	14.031	12.100	13.100	(12.100)
4.000	0.200	4.000	4.564	12.279	12.179	12.100	13.100	(12.100)
4.200	0.200	4.200	3.699	12.637	13.843	12.100	13.100	(12.100)
4.400	0.200	4.400	3.589	13.434	11.918	12.100	13.100	(12.100)
4.600	0.200	4.600	3.552	13.315	13.448	12.100	13.100	(12.100)
4.800	0.200	4.800	2.888	13.303	14.693	12.100	13.100	(12.100)
5.000	0.200	5.000	1.151	12.911	13.451	12.100	13.100	(12.100)
5.200	0.200	5.200	4.450	12.363	14.148	12.100	13.100	(12.100)
5.400	0.200	5.400	4.794	14.116	14.340	12.100	13.100	(12.100)
5.600	0.200	5.600	4.861	13.945	14.361	12.100	13.100	(12.100)
5.800	0.200	5.800	6.022	13.051	14.277	12.100	13.100	(12.100)
6.000	0.200	6.000	5.589	13.251	14.474	12.100	13.100	(12.100)
6.200	0.200	6.200	5.603	14.945	14.330	12.100	13.100	(12.100)
6.400	0.200	6.400	3.997	14.651	12.991	12.100	13.100	(12.100)
6.600	0.200	6.600	1.866	13.700	12.659	12.100	13.100	(12.100)
6.800	0.200	6.800	0.659	15.098	13.284	12.100	13.100	(12.100)
7.000	0.200	7.000	4.919	15.471	13.938	12.100	13.100	(12.100)
7.200	0.200	7.200	4.909	14.114	14.499	12.100	13.100	(12.100)
7.400	0.200	7.400	5.438	12.199	13.061	12.100	13.100	(12.100)
7.600	0.200	7.600	3.051	15.265	13.775	12.100	13.100	(12.100)
7.800	0.200	7.800	3.093	13.452	12.933	12.100	13.100	(12.100)
8.000	0.200	8.000	3.755	14.104	13.065	12.100	13.100	(12.100)
8.200	0.200	8.200	3.651	14.326	13.679	12.100	13.100	(12.100)
8.400	0.200	8.400	2.156	13.731	12.923	12.100	13.100	(12.100)
8.600	0.200	8.600	2.062	14.730	13.771	12.100	13.100	(12.100)
8.800	0.200	8.800	3.777	14.481	13.683	12.100	13.100	(12.100)
9.000	0.200	9.000	2.033	13.391	13.199	12.100	13.100	(12.100)
9.200	0.200	9.200	3.561	13.759	13.093	12.100	13.100	(12.100)
9.400	0.200	9.400	4.524	12.353	13.499	12.100	13.100	(12.100)
9.600	0.200	9.600	4.239	13.252	13.302	12.100	13.100	(12.100)
9.800	0.200	9.800	1.150	13.903	14.212	12.100	13.100	(12.100)
10.000	0.200	10.000	3.062	13.867	13.175	12.100	13.100	(12.100)
10.200	0.200	10.200	4.700	13.351	13.199	12.100	13.100	(12.100)
10.400	0.200	10.400	3.956	13.162	13.401	12.100	13.100	(12.100)
10.600	0.200	10.600	3.321	14.499	13.116	12.100	13.100	(12.100)
10.800	0.200	10.800	4.589	14.829	13.334	12.100	13.100	(12.100)
11.000	0.200	11.000	5.045	13.447	14.436	12.100	13.100	(12.100)
11.200	0.200	11.200	5.302	13.570	13.693	12.100	13.100	(12.100)
11.400	0.200	11.400	5.751	13.696	13.310	12.100	13.100	(12.100)
11.600	0.200	11.600	5.411	12.989	13.180	12.100	13.100	(12.100)
11.800	0.200	11.800	5.040	11.983	13.133	12.100	13.100	(12.100)
12.000	0.200	12.000	5.221	13.570	13.410	12.100	13.100	(12.100)
12.200	0.200	12.200	5.161	13.761	13.766	12.100	13.100	(12.100)
12.400	0.200	12.400	4.681	13.871	13.530	12.100	13.100	(12.100)
12.600	0.200	12.600	3.621	13.161	13.901	12.100	13.100	(12.100)
12.800	0.200	12.800	4.991	13.921	13.480	12.100	13.100	(12.100)
13.000	0.200	13.000	3.971	15.330	13.480	12.100	13.100	(12.100)
13.200	0.200	13.200	6.701	14.400	13.391	12.100	13.100	(12.100)
13.400	0.200	13.400	3.471	13.390	13.644	12.100	13.100	(12.100)
13.600	0.200	13.600	3.601	13.970	14.191	12.100	13.100	(12.100)
13.800	0.200	13.800	4.101	14.290	13.871	12.100	13.100	(12.100)
14.000	0.200	14.000	3.571	14.181	14.051	12.100	13.100	(12.100)
14.200	0.200	14.200	3.151	14.181	13.981	12.100	13.100	(12.100)
14.400	0.200	14.400	3.831	15.890	15.090	12.100	13.100	(12.100)
14.600	0.200	14.600	3.041	14.450	14.561	12.100	13.100	(12.100)
14.800	0.200	14.800	2.101	14.440	14.400	12.100	13.100	(12.100)
15.000	0.200	15.000	4.341	14.511	14.191	12.100	13.100	(12.100)
15.200	0.200	15.200	3.851	15.341	15.171	12.100	13.100	(12.100)
15.400	0.200	15.400	3.201	14.991	16.141	12.100	13.100	(12.100)
15.600	0.200	15.600	4.071	15.301	14.791	12.100	13.100	(12.100)
15.800	0.200	15.800	3.381	15.011	13.561	12.100	13.100	(12.100)
16.000	0.200	16.000	5.011	14.561	13.601	12.100	13.100	(12.100)
16.200	0.200	16.200	3.781	14.201	13.561	12.100	13.100	(12.100)
16.400	0.200	16.400	4.221	13.811	13.761	12.100	13.100	(12.100)
16.600	0.200	16.600	4.627	15.000	28.865	12.100	13.100	(12.100)
16.800	0.200	16.800	4.241	15.000	14.181	12.100	13.100	(12.100)
17.000	0.200	17.000	6.037	15.394	14.272	12.100	13.100	(12.100)
17.100	0.100	17.100	5.354	15.096	12.976	12.100	13.100	(12.100)

LONGITUDINAL PROFILE  
SCALE AB

- NOTES:
- DESIGN DISCHARGE DISTRIBUTION:  
REFER TO SHEET No. PR-GE/GN-02 ON ITEM IV UNDER GENERAL NOTES FOR RIVER STRUCTURE.
  - DESIGN VELOCITY: VARIES PER SECTION,  
Vmin= 0.55m/s  
Vmax= 2.70m/s
  - APPROX. RIVER CATCHMENT AREA AT RIVER MOUTH= 621km<sup>2</sup>

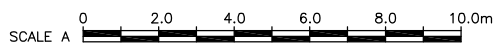
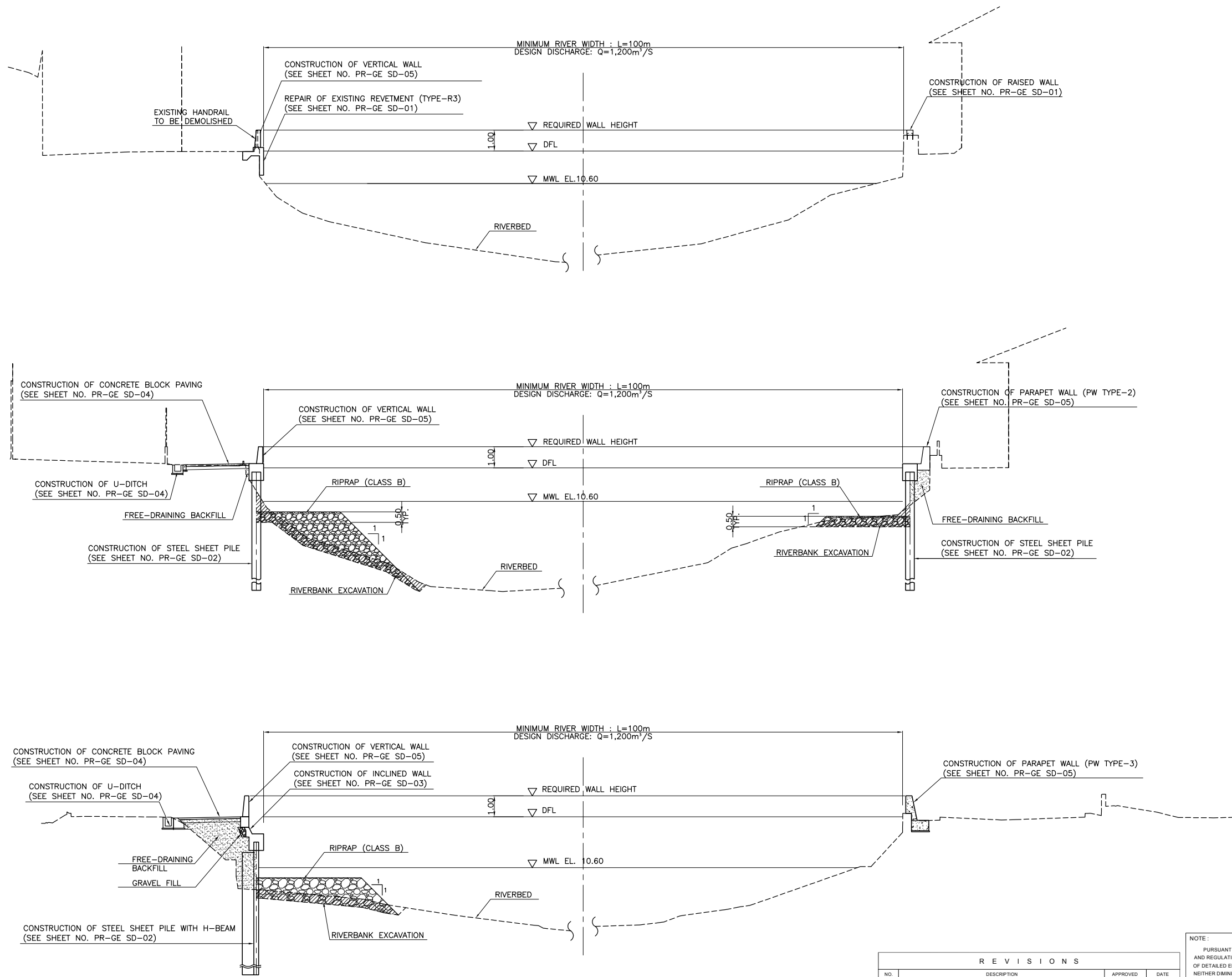


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

NOTE:  
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SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> LONGITUDINAL PROFILE PASIG RIVER		<b>SHEET NO.</b> PR-GE LP 01	
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:						
EIJI MOKI STRUCTURAL ENGINEER I	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						



TYPICAL CROSS SECTION OF REVETMENT

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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

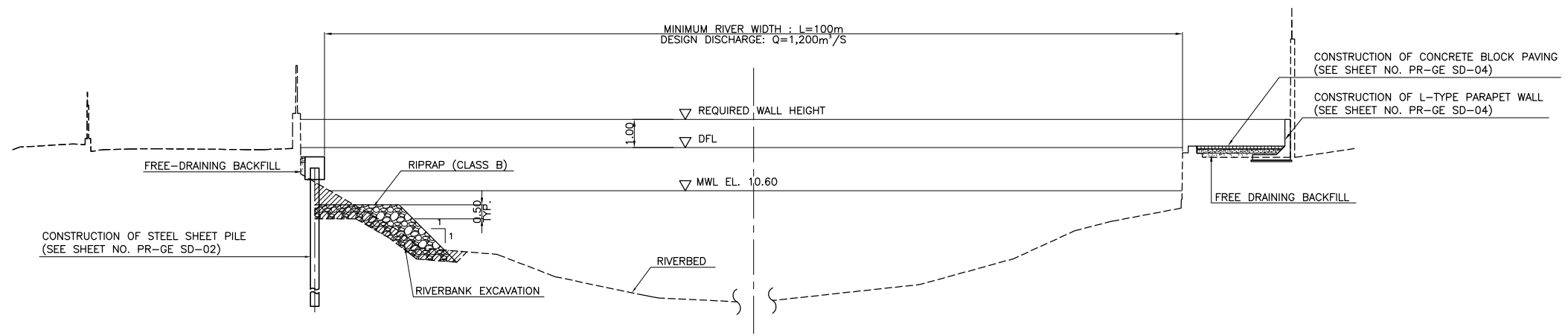
SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY

ROGELIO L. SINGSON  
SECRETARY

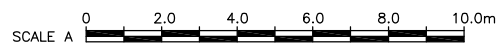
PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
TYPICAL CROSS SECTION OF REVETMENT (1/2)  
LOWER PASIG

SHEET NO.  
LP-GE  
TR 01



TYPICAL CROSS SECTION OF REVETMENT  
SCALE : A

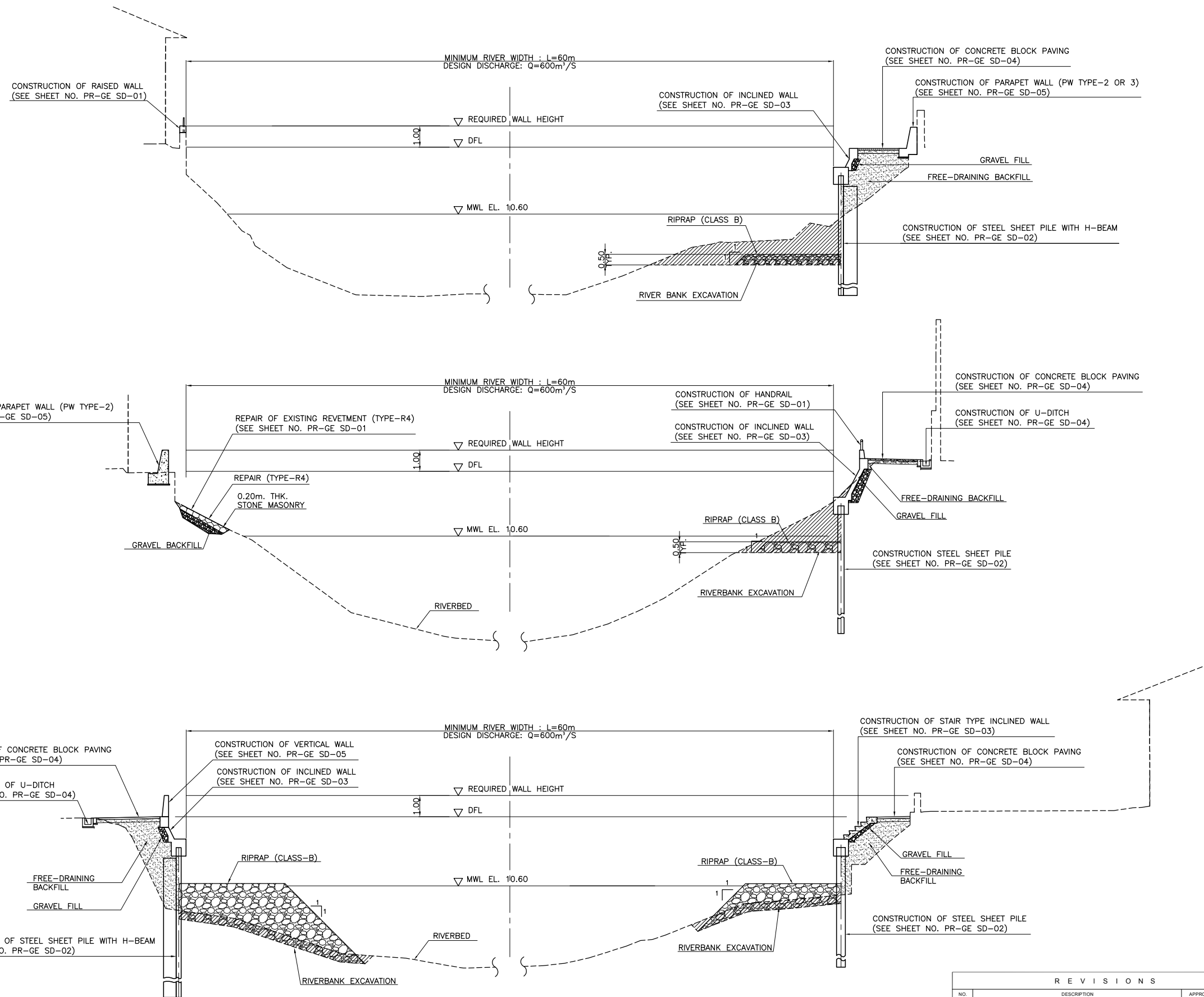


R E V I S I O N S			
NO.	DESCRIPTION	APPROVED	DATE

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.

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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	TYPICAL CROSS SECTION OF REVETMENT (2/2) LOWER PASIG		
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP



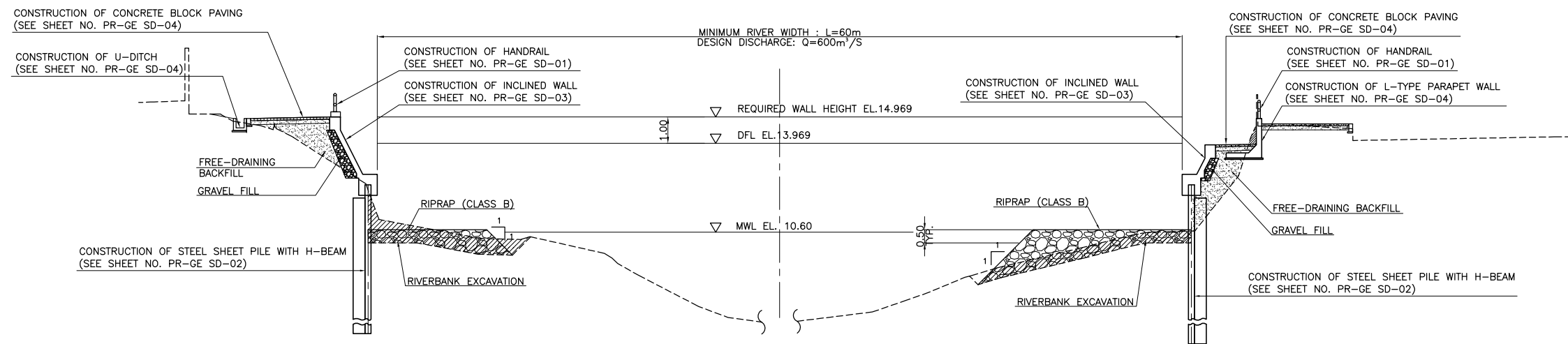
TYPICAL CROSS SECTION OF REVETMENT  
SCALE : A

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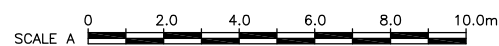
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TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
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	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS		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	UP-GE TR 01	



TYPICAL CROSS SECTION OF REVETMENT

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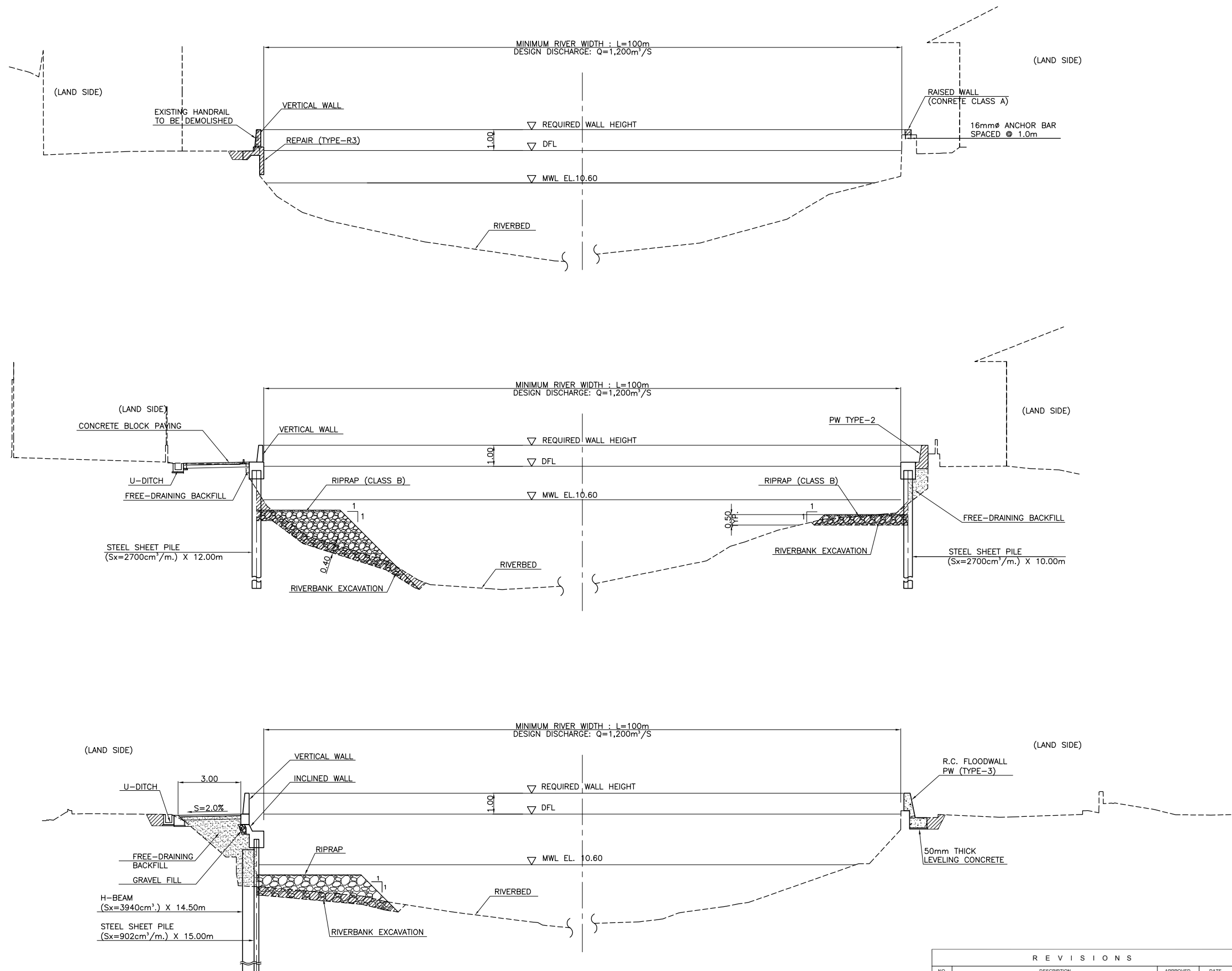
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AND HIGHWAYS

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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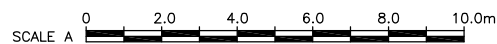
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TYPICAL CROSS SECTION OF EARTH WORKS

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DESIGNED BY: EIJI MOKI  
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CHECKED BY: TOSHIKI KAWAKAMI  
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SUBMITTED BY: SHUJI KAKU  
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RECOMMENDING APPROVAL: PATRICK B. GATAN  
PROJECT DIRECTOR  
PMO - MFCP

GILBERTO S. REYES  
DIRECTOR  
BOD

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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

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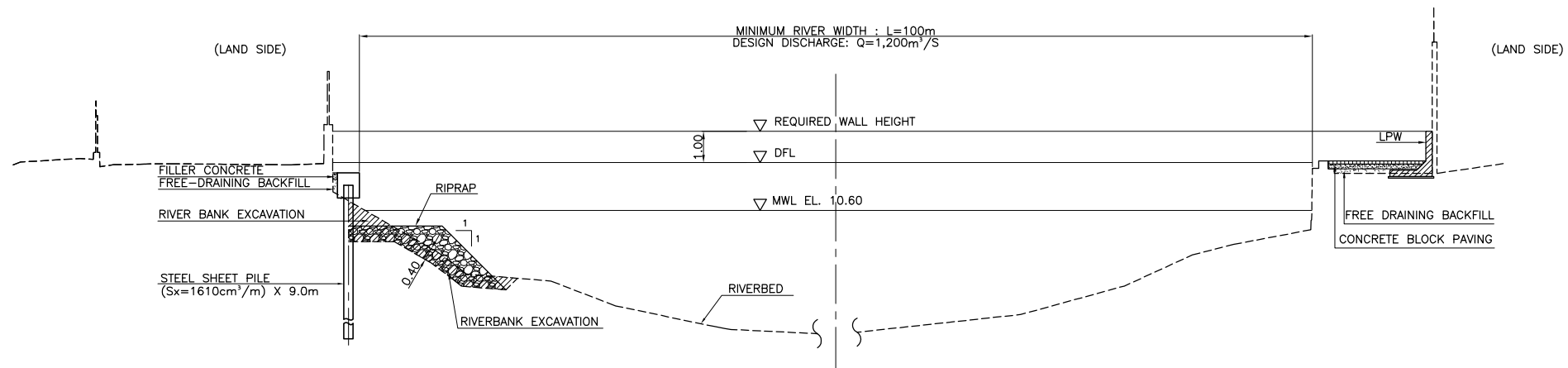
TYPICAL CROSS SECTION OF EARTH WORKS (1/2)

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SHEET NO.

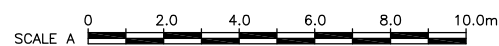
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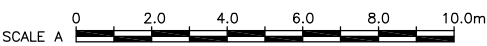
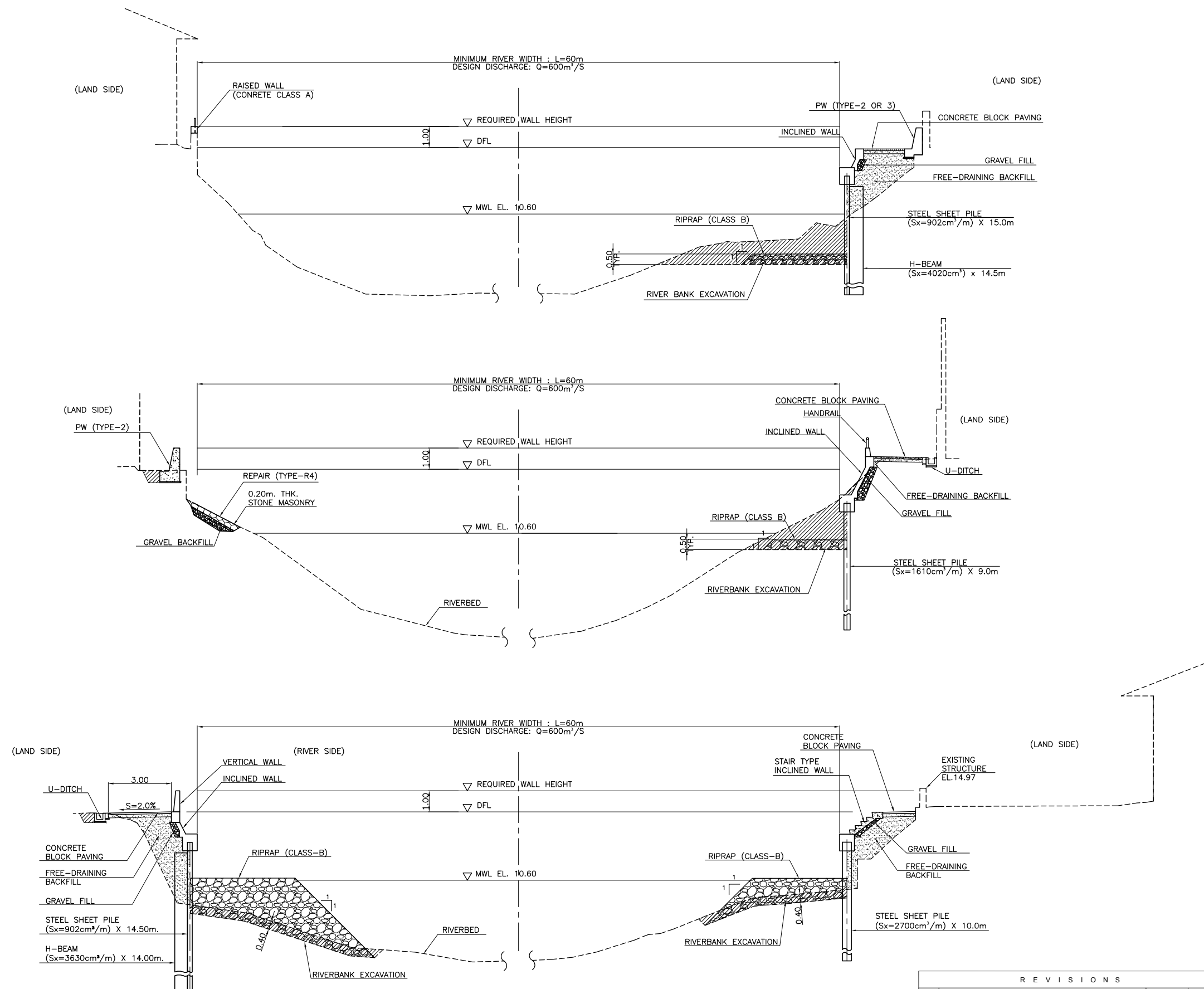
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PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY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

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

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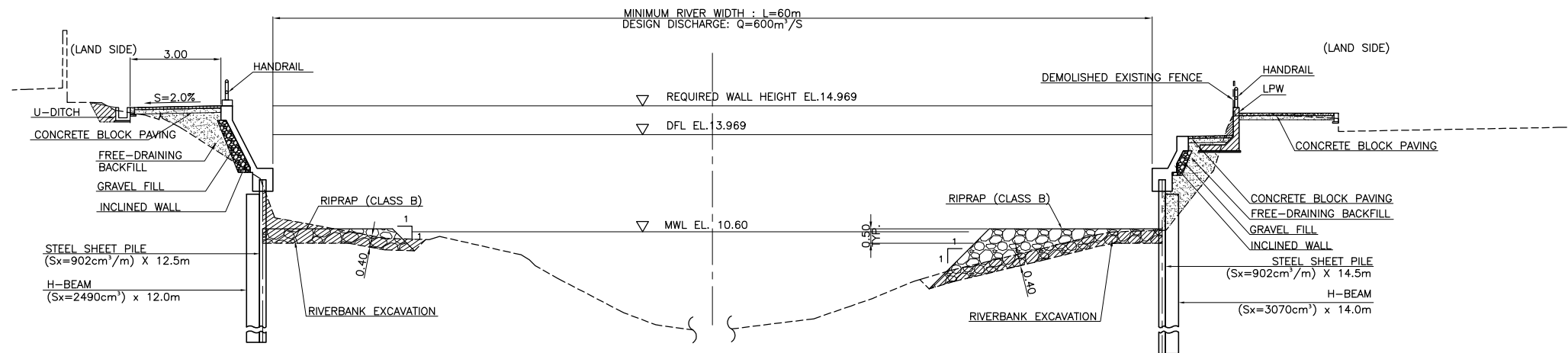
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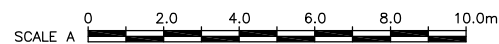
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TYPICAL CROSS SECTION OF EARTH WORKS

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

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TYPICAL CROSS SECTION OF EARTH WORKS (2/2)  
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# GENERAL NOTES FOR RIVER STRUCTURE AND DRAINAGE WORKS (1/2)

## GENERAL

ANY WORK OR MATERIAL NOT DETAILED IN THE SPECIFICATIONS OR ON THE DRAWINGS SHALL COMPLY WITH THE DPWH STANDARD SPECIFICATIONS.

## DESIGN CRITERIA

### I. DESIGN CODES AND STANDARD

- a) ACI-318R-99 AMERICAN CONCRETE INSTITUTE  
 b) NSCP 2001 EDITION NATIONAL STRUCTURAL CODE OF THE PHILIPPINES

### II. MATERIALS

#### 1. CONCRETE

- a) UNLESS OTHERWISE INDICATED OR SPECIFIED ON THE DRAWINGS, THE CONCRETE CLASSES AND STRENGTH SHALL BE AS FOLLOWS:

STRUCTURAL MEMBERS	CLASS	28-DAY CYLINDER STRENGTH (MPa)
GENERAL REINFORCED STRUCTURES; CONCRETE PAVEMENT	A	21
UNREINFORCED CONCRETE; BEDDING AND BACKFILLING	B	17
THIN SECTION PRECAST CONCRETE; SECOND STAGE CONCRETE	C	21
PRECAST PILES AND PIPES	E	28
LEVELING CONCRETE	F	12

- b) UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR APPROVED, THE NOMINAL MAXIMUM SIZE AGGREGATE USED IN CONCRETE SHALL BE AS FOLLOWS:

CLASS	MAXIMUM SIZE AGGREGATE
A	40
B	50
C	12.5
E	25
F	-

#### 2. REINFORCING STEEL

- a) REINFORCING STEEL BARS SHALL CONFORM TO PMS49 OR PMS211.  
 b) UNLESS OTHERWISE INDICATED ON THE PLANS, THE REINFORCING STEEL GRADE SHALL BE GRADE 275.

#### 3. STRUCTURAL STEEL

- a) STRUCTURAL STEEL SHALL CONFORM TO ASTM A-36 OR JIS G-3101 FOR SS400 STEEL WITH MINIMUM YIELD STRENGTH (fy) OF 248MPa AND ALLOWABLE STRESSES AS PROVIDED IN AISC/NSCP/AASHTO OR OTHER STANDARDS.  
 b) THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS FOR ALL STRUCTURAL STEEL WORK. THESE SHOP DRAWINGS SHALL BE APPROVED BY THE ENGINEER BEFORE ANY START OF FABRICATION.  
 c) BOLTS SHALL CONFORM TO JIS B1180 OR JIS B1186 SPECIFICATIONS AND SHALL BE TIGHTENED TO THE FOLLOWING TENSILE STRESS:

BOLT DIAMETER (mm)	TENSION (kN)
12	118
16	186
20	304
22	380
25	500

- d) ALL EXPOSED SURFACES SHALL BE TREATED FOR CORROSION PROTECTION IN ACCORDANCE WITH THE SPECIFICATIONS.

#### 4. RIPRAP

- a) THE CONTRACTOR SHALL SUPPLY AND PLACE RIPRAP IN THE LOCATIONS AND TO THE LINES, GRADES, DIMENSIONS, AND ARRANGEMENTS SHOWN ON THE DRAWINGS OR INSTRUCTED.  
 b) RIPRAP SHALL CONSIST OF THE FOLLOWING CLASSES:  
 CLASS A: STONES RANGING FROM A MIN. OF 15kg, TO A MAX. OF 25kg, WITH AT LEAST 50% OF THE STONES WEIGHING MORE THAN 20kg;  
 CLASS B: STONES RANGING FROM A MIN. OF 30kg, TO A MAX. OF 70kg, WITH AT LEAST 50% OF THE STONES WEIGHING MORE THAN 50kg;  
 CLASS C: STONES RANGING FROM A MIN. OF 60kg, TO A MAX. OF 100kg, WITH AT LEAST 50% OF THE STONES WEIGHING MORE THAN 80kg;  
 CLASS D: STONES RANGING FROM A MIN. OF 100kg, TO A MAX. OF 200kg, WITH AT LEAST 50% OF THE STONES WEIGHING MORE THAN 150kg;

#### 5. FREE-DRAINING BACKFILL

- a) THE CONTRACTOR SHALL SUPPLY, PLACE AND COMPACT FREE-DRAINING BACKFILL TO THE LINES, GRADES AND DIMENSIONS AND LOCATIONS SHOWN ON THE DRAWINGS OR INSTRUCTED.  
 b) FREE-DRAINING BACKFILL SHALL BE OBTAINED FROM APPROVED SOURCES AND SHALL BE WELL GRADED WITH A MAXIMUM DIMENSION OF 150mm, AND NOT MORE THAN 5% SMALLER THAN 0.075mm.  
 c) FREE-DRAINING BACKFILL SHALL BE COMPACTED WITH 2 PASSES OF VIBRATORY PLATE COMPACTOR HAVING A MINIMUM STATIC MASS OF 100kg.

#### 6. RANDOM BACKFILL

- a) THE CONTRACTOR SHALL SUPPLY, PLACE AND COMPACT RANDOM BACKFILL TO THE LINES, GRADES AND DIMENSIONS AND LOCATIONS SHOWN ON THE DRAWINGS OR INSTRUCTED.  
 b) RANDOM BACKFILL SHALL BE OBTAINED FROM APPROVED SOURCES AND SHALL BE FREE OF STUMPS, ROOTS, RUBBISH, TOP SOIL AND OTHER OBJECTIONABLE MATTER.  
 c) THE DENSITY OF COMPACTED RANDOM BACKFILL SHALL NOT BE LESS THAN 90% OF THE MAXIMUM DRY DENSITY OBTAINED BY COMPACTION IN ACCORDANCE WITH AASHTO T180.

#### 7. FILTER CLOTH

THE GEOTEXTILE SHALL BE AN APPROVED WELDED NON-WOVEN MATERIAL AND LAID IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS EXCEPT THAT THE MINIMUM OVERLAP TO THE EDGES AND END OF THE FABRIC SHALL BE AT LEAST ONE METER.

## III. CONSTRUCTION

### 1. DIMENSIONS AND ELEVATIONS

- a) ALL DIMENSIONS SHOWN IN THE DRAWINGS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.  
 b) ALL ELEVATIONS SHOWN IN THE DRAWINGS ARE IN METERS, AND ARE LOCALLY ESTABLISHED BASED ON TEMPORARY BENCH MARK OF THIS PROJECT.

### 2. REINFORCED CONCRETE:

- A) CONCRETE MIX AND PLACING  
 a) DESIGN OF CONCRETE MIX SHALL MEET THE MINIMUM DESIGN CONCRETE STRENGTH REQUIREMENTS AS SPECIFIED IN THE SPECIFICATIONS, AND AS GIVEN UNDER ITEM 1 OF MATERIALS.  
 b) CONCRETE SHALL BE DEPOSITED, VIBRATED AND CURED IN ACCORDANCE WITH THE SPECIFICATIONS.  
 c) UNLESS OTHERWISE SHOWN ON THE DRAWINGS, CONCRETE DEPOSITED AGAINST THE GROUND SHALL BE PROVIDED WITH LEVELING CONCRETE WITH A MINIMUM THICKNESS OF 50mm PRIOR TO THE INSTALLATION OF STEEL REINFORCEMENT. THIS LEVELING CONCRETE SHALL NOT BE CONSIDERED IN MEASURING THE STRUCTURAL DEPTH OF CONCRETE SECTION.  
 d) THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE PLACING SEQUENCES OF STEEL REINFORCEMENT FOR ALL CONCRETING WORKS.  
 B) BAR BENDING, SPLICING AND PLACING  
 a) THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE ENGINEER INDICATING THE BENDING, CUTTING, SPLICING AND INSTALLATION OF ALL REINFORCING BARS.  
 b) BARS SHALL BE BENT COLD, BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS PERMITTED BY THE ENGINEER.

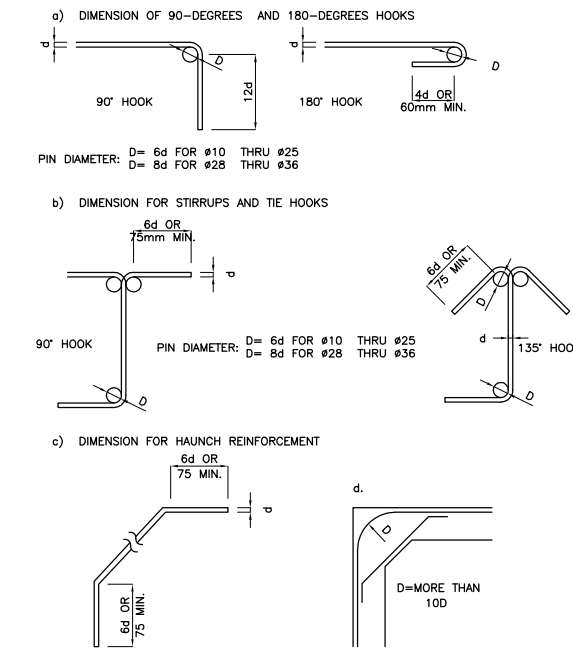
- C) BAR SPLICES  
 UNLESS OTHERWISE SPECIFIED, SPLICE LENGTH OF REBARS SHALL BE AS IN THE FOLLOWING TABLES:

BAR DIAMETER (mm)	SPLICE LENGTH Ld (mm)
12	350
16	465
20	580
25	925
28	1035
32	1185

#### NOTES:

- c.1) FOR TWO(2) BUNDLED BARS, SPLICE LENGTH Ld SHALL BE MULTIPLIED BY 1.10.  
 c.2) FOR THREE (3) - BUNDLED BARS, Ld SHALL BE MULTIPLIED BY 1.20.  
 c.3) FOR FOUR (4) - BUNDLED BARS, Ld SHALL BE MULTIPLIED BY 1.30.  
 c.4) BARS SPLICING NOT INDICATED ON THE DRAWINGS SHALL BE REFERRED TO THE ENGINEER FOR FINAL APPROVAL.  
 c.5) WELDED SPLICES, IF APPROVED BY THE ENGINEER, SHALL DEVELOPED IN TENSION AT LEAST 125% OF THE SPECIFIED YIELD STRENGTH OF THE BARS.  
 c.6) NOT MORE THAN 50% OF THE BARS AT ANY ONE SECTION SHALL BE SPLICED.  
 c.7) UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE CLEAR DISTANCE BETWEEN PARALLEL BARS IN A LAYER SHALL NOT BE LESS THAN 1.5 TIMES THE MAXIMUM SIZE OF COARSE AGGREGATE THE CLEAR DISTANCE BETWEEN LAYERS SHALL NOT BE LESS THAN 25mm NOR ONE BAR DIAMETER. THE BARS IN THE UPPER LAYER SHALL BE PLACED DIRECTLY ABOVE THOSE IN THE BOTTOM LAYER.

#### c.8) HOOK AND BENDS



#### C) CONCRETE COVER TO REINFORCEMENT

- a) THE MINIMUM CONCRETE COVER TO REINFORCEMENT SHALL BE AS FOLLOWS UNLESS OTHERWISE SPECIFIED:

CONDITION	MINIMUM COVER (mm)
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	75
CONCRETE EXPOSED TO EARTH OR WEATHER	PRIMARY REINFORCEMENT 50 STIRRUPS, TIES, AND SPIRALS 40
CONCRETE DECK SLABS IN MILD CLIMATES	TOP REINFORCEMENT 50 BOTTOM REINFORCEMENT 25
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	PRIMARY REINFORCEMENT 40 STIRRUPS, TIES, AND SPIRALS 25
CONCRETE PILES CAST AGAINST AND/OR PERMANENTLY EXPOSED TO EARTH	50

#### D) FALSEWORK, TEMPORARY STRUCTURES

- a) ALL FALSEWORK AND TEMPORARY STRUCTURES SHALL BE DESIGNED BY THE CONTRACTOR AND DETAILS ARE TO BE SUBMITTED TO THE ENGINEER.

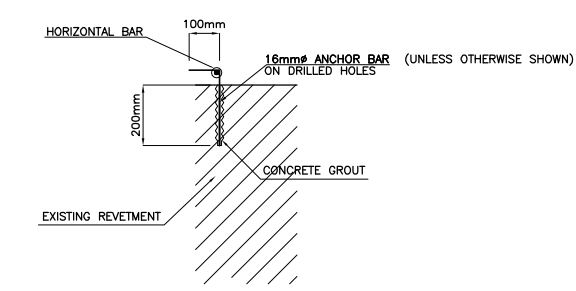
#### E) FORMWORK

- a) UNLESS OTHERWISE SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER, THE FOLLOWING MINIMUM STRIPPING TIMES SHALL BE USED:

	MINIMUM TIME	MINIMUM % OF DESIGN STRENGTH
VERTICAL SIDES OF BEAMS, WALL, PILES, PILE CAPS AND COLUMNS, LIFT NOT EXCEEDING 1.2 m.	24 HOURS	70
VERTICAL SIDES OF BEAMS AND WALLS, LIFT EXCEEDING 1.2 m.	36 HOURS	70
SOFFITS OF MAIN SLABS AND BEAMS	14 DAYS	80
REMOVAL OF PROPS FROM BEAMS AND MAIN SLABS AND OTHER WORK.	14 DAYS	80

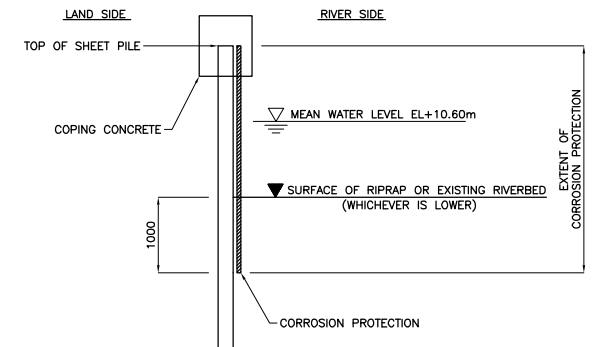
#### F) ANCHOR BAR

- a) TYPICAL DETAIL OF ANCHOR BAR:



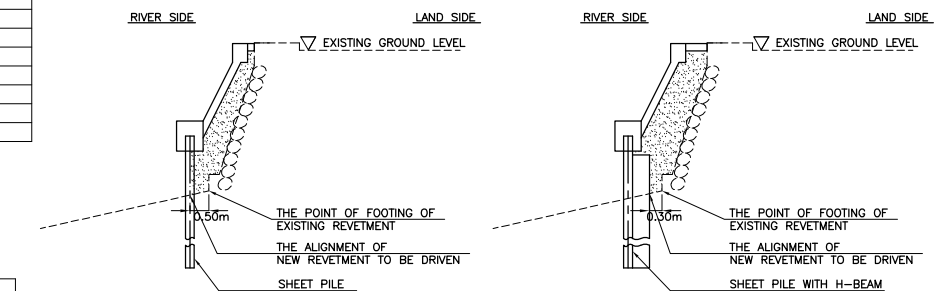
### 3. CORROSION PROTECTION ON STEEL REVETMENT

- a) THE SURFACE OF THE CORRUGATED STEEL SHEET PILE AND STEEL PIPE SHEET PILE REVETMENTS SHALL BE TREATED FOR PROTECTION AGAINST CORROSION IN ACCORDANCE WITH THE SPECIFICATIONS.  
 b) EXCEPT AS OTHERWISE SPECIFIED, SURFACES OF METALWORK THAT WILL BE IN CONTACT WITH OTHER METALWORK OR CONCRETE SHALL RECEIVE THREE COATS OF PRIMER PAINT.  
 c) FIELD WELD PREPARATIONS AND THE ADJACENT BLAST CLEANED SURFACES SHALL BE PROTECTED WITH ONE COAT OF PAINT AS A CORROSION INHIBITOR.  
 d) ITEMS OF METALWORK TO BE SHIPPED FROM OVERSEAS, WELDING MARGINS AND ALL MACHINED SURFACES SHALL BE PAINTED WITH ONE COAT OF A TEMPORARY INHIBITOR ON ALL INTERNAL AND EXTERNAL SURFACES PRIOR TO BEING TRANSPORTED FROM THE PLACE OF MANUFACTURE.  
 e) THE COVERAGE AND EXTENT OF THE CORROSION PROTECTION SHALL BE AS SHOWN BELOW.



### 4. ALIGNMENT OF SHEET PILE REVETMENT

- a) UNLESS OTHERWISE SHOWN IN THE DRAWINGS, THE SHEET PILE REVETMENTS SHALL BE ACCURATELY DRIVEN AT LOCATION AS FOLLOWS:



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SHUJI KAKU  
 TEAM LEADER

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

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 AND HIGHWAYS**

REPUBLIC OF THE PHILIPPINES

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

APPROVED BY:
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

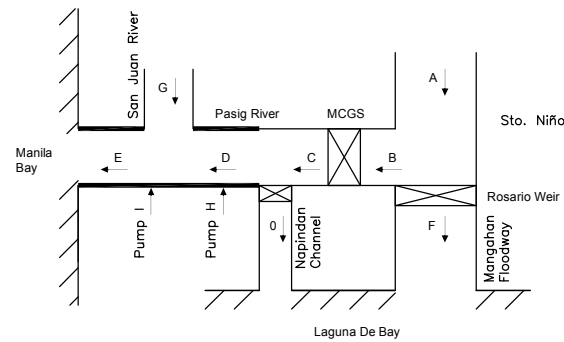
PROJECT & LOCATION  
**PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA**

SHEET CONTENTS  
**GENERAL NOTES FOR RIVER STRUCTURE & DRAINAGE WORKS (1/2)**

SHEET NO.  
**PR-GE  
 GN 01**

# GENERAL NOTES FOR RIVER STRUCTURE AND DRAINAGE WORKS (2/2)

## IV. DESIGN DISCHARGE DISTRIBUTION (30-YEAR RETURN PERIOD)



POINT No.	DESIGN (m <sup>3</sup> /s)	REMARKS
A	2,900	Sto. Niño
B	500	Before MCGS
C	550	Before Napindan
D	600	Before S.J. River
E	1,200	Rivermouth
F	2,400	Floodway
G	700	San Juan River
H	35	P/S (upstream)
I	95	P/S (downstream)

## COMMEMORATIVE PANEL

## SYMBOLS

	NORTH ARROW		REVTMENT
	CENTER		PLAN VIEW AND ELEVATION OF CUT & FILL SLOPES
	JOINT		GABION
	INDICATION OF ELEVATION		ROUND, DIAMETER
	LIMITS OF DIMENSION		CENTERLINE
	EXISTING BOREHOLE		C/C, C to C

## ABBREVIATIONS

●	AT	ELEV	ELEVATION	O.C.	ON CENTERS
ALT	ALTERNATING	EP	END POINT	PEJ	PREMOULDED EXPANSION JOINT
ABT	ABOUT	EQ	EQUAL	PVC	POLYVINYL CHLORIDE
ABUT	ABUTMENT	EW	EACHWAY	PVI	POINT OF VERTICAL INTERSECTION
APPROX	APPROXIMATE	EXP	EXPANSION	PW	PARAPET WALL
BEG	BEGINNING	EXT	EXTERIOR	RC	REINFORCED CONCRETE
BET	BETWEEN	EXIST	EXISTING	RDWY	ROADWAY
BN	BOLT WITH NUT	FF	FAR FACE	REINF	REINFORCEMENT
BOTT	BOTTOM	FTG	FOOTING	RSC	RIGID STEEL CONDUIT
BP	BEGINNING POINT	GEN	GENERAL	RW	RAISED WALK
BR	BRIDGE	GW	GRAVITY WALL	SDWK	SIDEWALK
BRG	BEARING	HOR	HORIZONTAL	SL	SLOPE
BW	BOTHWAYS	INT	INTERIOR	SPCD	SPACED
CIP	CAST-IN-PLACE	INTERM	INTERMEDIATE	SPCS	SPACES
CLR	CLEAR	IP	INTERSECTION POINT	SSP	STEEL SHEET PILE
cm	CENTIMETER	TL	TANGENT LENGTH	SPSP	STEEL PIPE SHEET PILE
COL	COLUMN	JT	JOINT	STD	STANDARD
CONC	CONCRETE	L	LENGTH	STIR	STIRRUP
CONT	CONTINUOUS	LG	LONG	STA	STATION
CTR	CENTER	LPW	L-TYPE PARAPET WALL	Sx	SECTION MODULUS
CTC	CENTER TO CENTER	Kg	KILOGRAM	SYMM	SYMMETRY
CL	CURVE LENGTH	kn	KILONEWTON	THK	THICK
SL	SLOPE LENGTH	kPa	KILOPASCAL	TYP	TYPICAL
IP:	INTERSECTION ANGLE	m	METER	VAR	VARIABLE
R:	RADIUS	mm	MILLIMETER	VERT	VERTICAL
DET	DETAIL	MAX	MAXIMUM	VW	VERTICAL WALL
DFL	DESIGN FLOOD LEVEL	MFWL	MAX. FLOOD WATER LEVEL	w	WIDTH
DIAM	DIAMETER	MIN	MINIMUM	w/	WITH
DIAPH	DIAPHRAGM	MPa	MEGAPASCAL	&	AND
DL	DRAINAGE OUTLET- LEFT BANK	N	NEWTON	MSL	MEAN SEA LEVEL
DR	DRAINAGE OUTLET- RIGHT BANK	NF	NEAR FACE	MHWS	MEAN HIGHER WATER SPRING
DRB	DESIGN RIVERBED	No.	NUMBER		
DWG	DRAWING				
EA	EACH				
EF	EACH FACE				

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	GENERAL NOTES FOR RIVER STRUCTURE & DRAINAGE WORKS (2/2)		
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP

## SUMMARY OF QUANTITIES

### BILL No. 1 – PRELIMINARY AND GENERAL

Item No.	Description	Unit	Quantity
1.10/1	Mobilization and demobilization	LS	1
1.11/1	Survey of ground profiles	LS	1
1.13/1	Foundation investigation	m	960
1.15/1	Traffic Management Plan	LS	1
1.15/2	Implementation and operation of traffic management plan	mo	36
1.16/1	Quality Management Plan	LS	1
1.16/2	Implementation and operation of quality management plan	mo	36
1.16/3	Provisional of laboratory equipment for Employer	LS	1
1.17/1	Programming and reporting	LS	1
1.18/1	Health and Safety Plan	LS	1
1.18/2	Implementation and operation of health and safety plan	mo	36
1.20/1	Progress photographs	mo	36
1.22/1	Provision of office for Employer's Personnel	LS	1
1.22/2	Maintenance of office for Employer's Personnel	mo	36
1.23/4	Maintain Type A transportation item	mo	180
1.23/5	Maintain Type B transportation item	mo	108
1.23/6	Maintain Type C transportation item	mo	36
1.24/1	Commemorative panels	no	8
1.25/1	Site clean up	LS	1

### BILL No. 2 – ENVIRONMENTAL

Item No.	Description	Unit	Quantity
2.1/1	Contractor's environmental management	LS	1

### BILL No. 4 – EXCAVATION AND EARTHWORKS

Item No.	Description	Unit	Quantity
4.5/1-A	Demolition and removal of existing steel handrail	lm	392
4.5/2-A	Removal of existing concrete debris	m3	2,505
4.5/3-A	Removal and restoration of existing lighting post	no	112
4.5/4-A	Removal of existing concrete blocks at Sta. 3+040	LS	1
4.5/5-A	Removal and re-erection of fence support struts between Sta. 2+850 and 3+070	LS	1
4.5/6-A	Demolition and removal of existing concrete stairs at Sta. 5+220	LS	1
4.5/7-A	Demolition and removal of existing collapsed revetment	m3	1,242
4.5/8-A	Temporary removal and reinstallation of steel dolphins	no	2
4.5/9-A	Demolition and removal of existing collapsed wall and abandoned shanty at Sta. 5+550	LS	1
4.5/10-A	Demolition and removal of existing steel fence	lm	820
4.5/11-A	Demolition and removal of existing collapsed wall and abandoned shanty at Sta. 6+200	LS	1
4.5/12-A	Removal of existing concrete blocks at Sta. 7+500	LS	1
4.5/13-A	Demolition and removal of abandoned jetty at Sta. 8+500	LS	1
4.5/14-A	Demolition and removal of existing concrete structure at Sta. 8+660	LS	1
4.5/15-A	Demolition and removal of abandoned boat station	no	2
4.5/16-A	Demolition and removal of existing wooden structure at Sta. 8+860	LS	1
4.5/17-A	Demolition and removal of boat station at Sta. 8+930	LS	1

### BILL No. 4 – EXCAVATION AND EARTHWORKS (continued)

Item No.	Description	Unit	Quantity
4.5/18-A	Demolition and removal of boat station at Sta. 8+970	LS	1
4.5/19-A	Removal of existing steel pipe at Sta. 8+890	LS	1
4.5/20-A	Removal of existing sandbags at Sta. 8+950	LS	1
4.5/21-A	Demolition and removal of existing collapsed wall and abandoned shanty at Sta. 9+060	LS	1
4.5/22-A	Temporary removal and reinstallation of existing fence, bollards and canopy between Sta. 9+150 and 9+350	LS	1
4.5/23-A	Demolition and removal of existing structure at Sta. 9+220	LS	1
4.5/24-A	Removal of wooden dolphins	no	30
4.5/25-A	Demolition and removal of existing concrete handrail	lm	1,507
4.5/26-A	Demolition and removal of existing river wall between Sta. 9+720 and 9+750	LS	1
4.5/27-A	Removal of abandoned boats at Sta. 9+740	LS	1
4.5/28-A	Demolition and removal of existing river wall between Sta. 9+800 and 9+950	LS	1
4.5/29-A	Demolition and removal of existing concrete structure between Sta. 10+140 and 10+179	LS	1
4.5/30-A	Temporary removal and reinstallation of existing fence and lighting posts between Sta. 10+232 and 10+341	LS	1
4.5/31-A	Temporary removal and reinstallation of existing fences	lm	495
4.5/32-A	Temporary removal and reinstallation of existing bollards between Sta. 10+950 and 11+260	LS	1
4.5/33-A	Remove wooden and steel dolphins between Sta. 11+050 and 11+150	LS	1
4.5/34-A	Removal of existing steel sheet pile Sta. 11+150 and Sta.11+263	LS	1
4.5/35-A	Temporary removal and reinstallation of existing fence and handrail between Sta. 11+788 and 11+803	LS	1
4.5/36-A	Demolition and removal of existing platform between Sta. 12+030 and 12+090	LS	1
4.5/37-A	Demolition and removal of existing Brgy. outpost at Sta. 13+800	LS	1
4.5/38-A	Demolition and removal of boat station at Sta. 13+740	LS	1
4.5/39-A	Demolition and removal of existing river wall between Sta. 13+800 and 13+930	LS	1
4.5/40-A	Demolition and removal of existing river wall between Sta. 14+070 and 14+250	LS	1
4.5/41-A	Demolition and removal of boat station at Sta. 14+880	LS	1
4.5/42-A	Removal of existing sandbags at Sta. 15+050	LS	1
4.5/43-A	Demolition and removal of boat station at Sta. 15+290	LS	1
4.5/44-A	Demolition and removal of boat station at Sta. 15+440	LS	1
4.5/45-A	Demolition and removal of boat station at Sta. 16+150	LS	1
4.5/46-A	Temporary removal and reinstallation of wooden dolphins	no	33
4.5/47-A	Demolition and removal of portion of extended wall at Sta. 16+564	LS	1
4.5/48-A	Demolition and removal of existing revetment	m3	6,266
4.5/49-A	Demolition and restoration of existing sidewalks	m2	1,836
4.5/50-A	Demolition and restoration of existing CHB wall	m2	3,842
4.5/51-A	Temporary removal and re-installation of existing steel handrail	lm	195
4.5/52-A	Restoration of existing revetment	m3	690
4.7/1	River bank excavation	m3	33,200
4.8/1	Excavation for manholes and junction manholes	m3	8,400
4.8/2	Excavation for pipe culverts	m3	7,400
4.8/3	Excavation for other structures	m3	6,700
4.15/1	Free-draining backfill	m3	26,400
4.16/1	Random backfill	m3	10,300
4.17/1	Zone B pipe backfill	m3	1,900
4.17/2	Zone C pipe backfill	m3	4,200

### BILL No. 5 – CONCRETE

Item No.	Description	Unit	Quantity
5.11/1	Reinforcement Grade 275	t	795
5.16/1	Precast concrete manhole and junction box covers	m3	41
5.16/2	Precast concrete U-ditch covers	m3	32
5.21/1	Anchor bars for concrete structures	kg	4,351
5.22/1	Concrete in manholes, junction boxes and outlets	m3	1,277
5.22/2	Concrete for pipe bedding	m3	53
5.22/3	Concrete in box culverts	m3	148
5.22/4	Concrete in sheet pile copings	m3	3,960
5.22/5	Concrete in vertical walls VW	m3	936
5.22/7	Concrete in parapet walls PW Type 2	m3	903
5.22/8	Concrete in parapet walls PW Type 3	m3	863
5.22/9	Concrete in parapet walls PW Type 4	m3	15
5.22/10	Concrete in raised walls RW	m3	84
5.22/11	Concrete in inclined walls IW	m3	1,954
5.22/12	Concrete in stair-type inclined walls	m3	108
5.22/13	Concrete in L type parapet walls	m3	673
5.22/14	Concrete in handrail bases	m3	22
5.22/15	Filler concrete (Class B)	m3	141
5.22/16	Concrete in U-ditches	m3	786
5.22/17	Concrete in repair Type R3	m3	63
5.23/1	Levelling concrete	m3	460

### BILL No. 6 – PILING

Item No.	Description	Unit	Quantity
6.4/1	Type IIIw U-shape	m	3,311
6.4/2	Type Iw U-shape	m	23,536
6.4/3	Type VL U-shape	m	14,584
6.4/4	Type VIL U-shape	m	49,766
6.4/7	Type 10H Hat-shape w/H-400x200x9x22	m	12,920
6.4/8	Type 10H Hat-shape w/H-450x200x12x25	m	3,631
6.4/9	Type 10H Hat-shape w/H-450x250x9x22	m	6,179
6.4/10	Type 10H Hat-shape w/H-450x250x12x28	m	1,671
6.4/11	Type 10H Hat-shape w/H-500x200x12x25	m	1,785
6.4/12	Type 10H Hat-shape w/H-500x250x12x28	m	799
6.4/13	Type 10H Hat-shape w/H-550x250x12x28	m	428
6.4/14	Type 10H Hat-shape w/H-600x200x12x28	m	1,656
6.4/15	Type 10H Hat-shape w/H-600x250x12x28	m	933
6.4/16	Type 10H Hat-shape w/H-650x200x12x28	m	1,928
6.4/17	Type 10H Hat-shape w/H-650x250x12x28	m	959
6.4/18	Type 10H Hat-shape w/H-750x250x12x25	m	4,870
6.4/19	Type 25H Hat-shape	m	1,276
6.4/21	Type 25H Hat-shape w/H-850x250x16x28	m	271
6.4/22	End Connection Type 1	no	43
6.4/23	End Connection Type 2	no	14
6.4/24	End Connection Type 3	no	13
6.4/25	Extra-over cost of installing sheet piles beneath bridges and HV cables	m	950

### BILL No. 7 – PROTECTION WORKS

Item No.	Description	Unit	Quantity
7.4/1	Riprap Class B	m3	67,800
7.5/1	Gravel bedding and backfill	m3	1,372
7.6/1	Stone masonry repair Type R4	m2	1,080
7.9/1	Sandbag riprap	m3	448

### BILL No. 8 – DRAINAGE

Item No.	Description	Unit	Quantity
8.4/1	Reinforced concrete pipe – 300 mm dia.	lm	105
8.4/2	Reinforced concrete pipe – 460 mm dia.	lm	105
8.4/3	Reinforced concrete pipe – 525 mm dia.	lm	1
8.4/4	Reinforced concrete pipe – 610 mm dia.	lm	11
8.4/5	Reinforced concrete pipe – 760 mm dia.	lm	21
8.4/6	Reinforced concrete pipe – 910 mm dia.	lm	757
8.4/7	Reinforced concrete pipe – 1070 mm dia.	lm	8
8.4/8	Unreinforced concrete pipe – 200 mm dia.	lm	4
8.4/9	Unreinforced concrete pipe – 250 mm dia.	lm	1
8.6/1	FRP flap gate – 300 mm	no	3
8.6/2	FRP flap gate – 910 mm	no	36
8.9/1	PVC drainage pipes – 50 mm dia.	lm	19
8.9/2	PVC drainage pipes – 100 mm dia.	lm	378
8.9/3	PVC drainage pipes – 150 mm dia.	lm	542
8.9/4	PVC drainage pipes – 200 mm dia.	lm	410
8.9/5	PVC drainage pipes – 250 mm dia.	lm	44
8.9/6	PVC drainage pipes – 300 mm dia.	lm	19
8.10/1	Galvanised iron drainage pipes – 100 mm dia.	lm	6
8.10/2	Galvanised iron drainage pipes – 150 mm dia.	lm	38
8.10/3	Galvanised iron drainage pipes – 300 mm dia.	lm	19

### BILL No. 15 – MISCELLANEOUS WORKS

Item No.	Description	Unit	Quantity
15.2/1	Concrete block paving	m2	15,170
15.3/1	Concrete railing – Type 1	lm	604
15.3/2	Concrete railing – Type 2	lm	87
15.3/3	Concrete railing – Type 3	lm	333
15.4/1	Navigation warning signs	no	20
15.5/1	Concrete curb	lm	5,433
15.6/1	Replacement boat station at Sta. 8+930	LS	1
15.6/2	Replacement boat station at Sta. 8+970	LS	1
15.6/3	Replacement boat station at Sta. 13+740	LS	1
15.6/4	Replacement boat station at Sta. 14+880	LS	1
15.6/5	Replacement boat station at Sta. 15+290	LS	1
15.6/6	Replacement boat station at Sta. 15+440	LS	1
15.6/7	Replacement boat station at Sta. 16+150	LS	1
15.7/1	Type III fencing	lm	341

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:
EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



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

#### REPUBLIC OF THE PHILIPPINES

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#### PROJECT & LOCATION

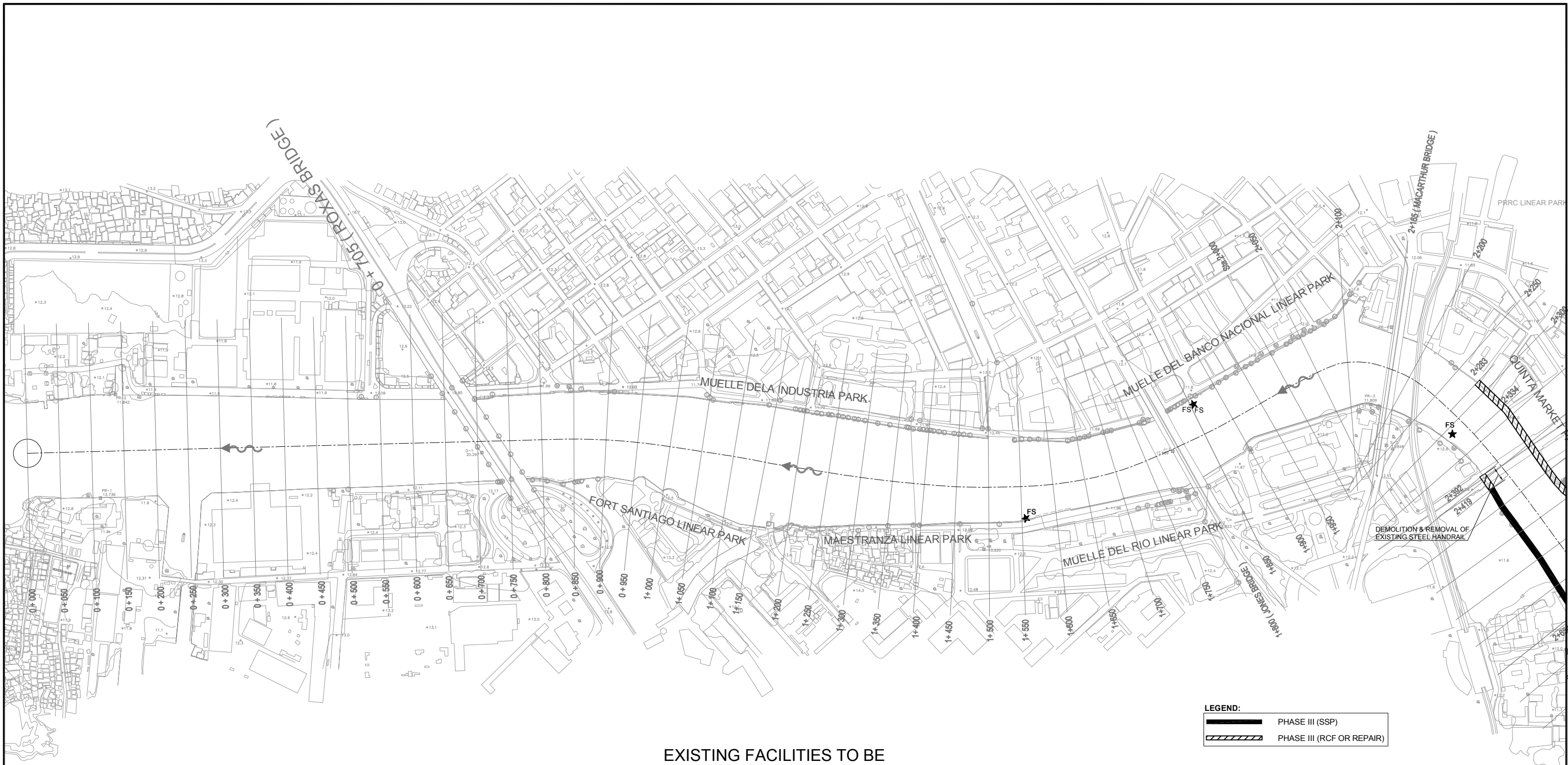
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

#### SHEET CONTENTS

SUMMARY OF QUANTITIES RIVER STRUCTURES & DRAINAGE WORKS

#### SHEET NO.

PR-GE  
SQ 01

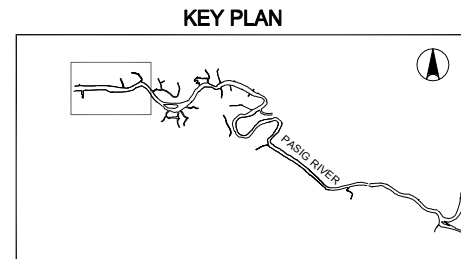
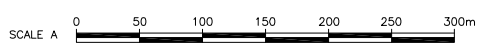


**EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED**

SCALE A

**LEGEND:**

	PHASE III (SSP)
	PHASE III (RCF OR REPAIR)



**LEGEND:**

	FERRY STATION/COAST GUARD
	BOAT/BANCA STATION

**NOTE:**

- \*1 - ALL STATIONS ARE RECKONED AT Q OF RIVER
- \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED
- \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS

**REVISIONS**

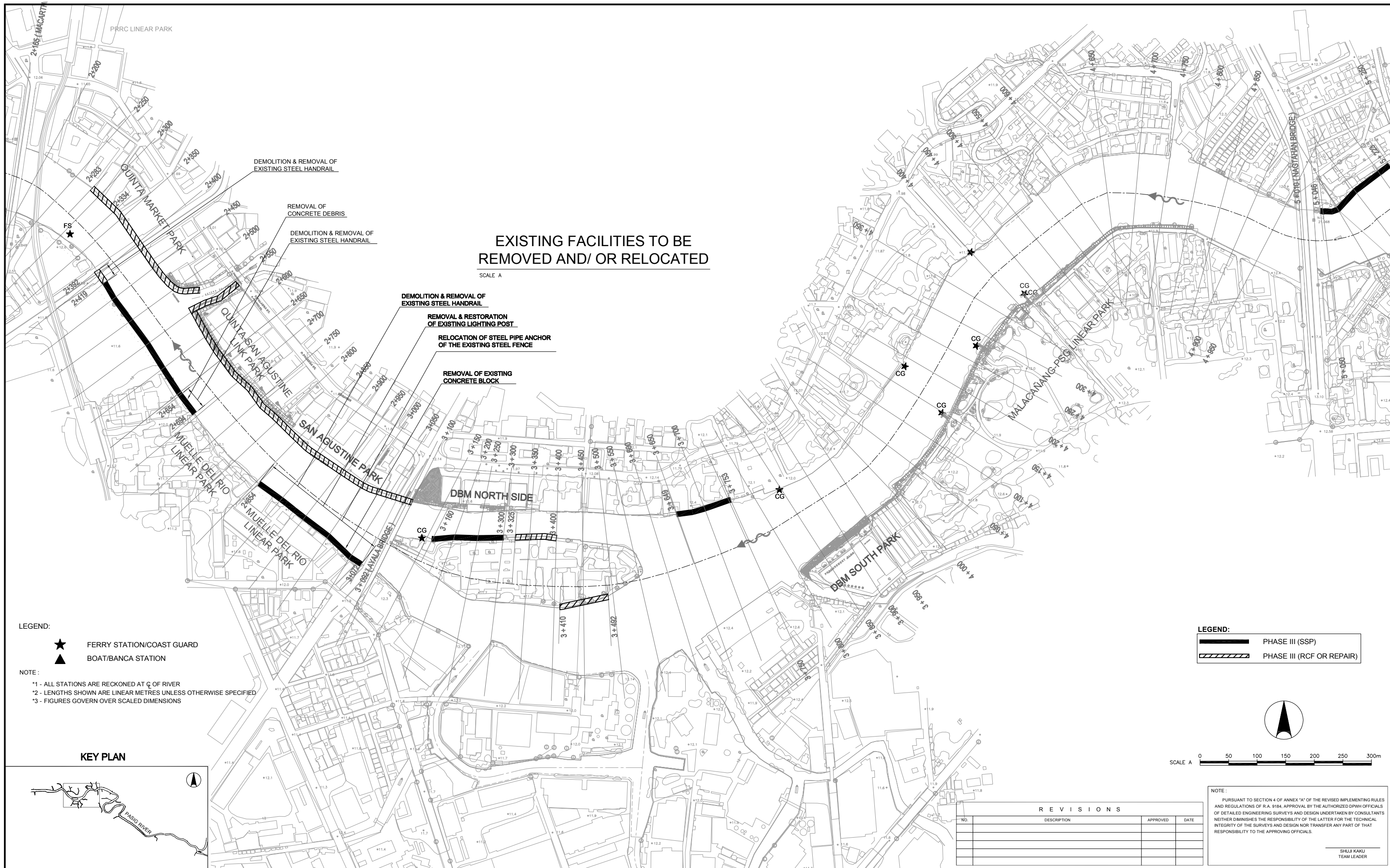
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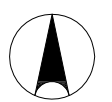
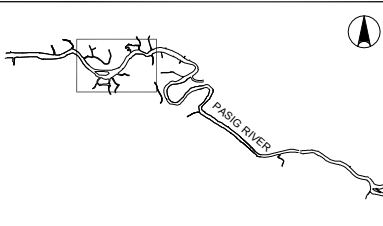
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**LEGEND:**  
 [Solid Line] PHASE III (SSP)  
 [Hatched Line] PHASE III (RCF OR REPAIR)

**KEY PLAN**



SCALE A 0 50 100 150 200 250 300m

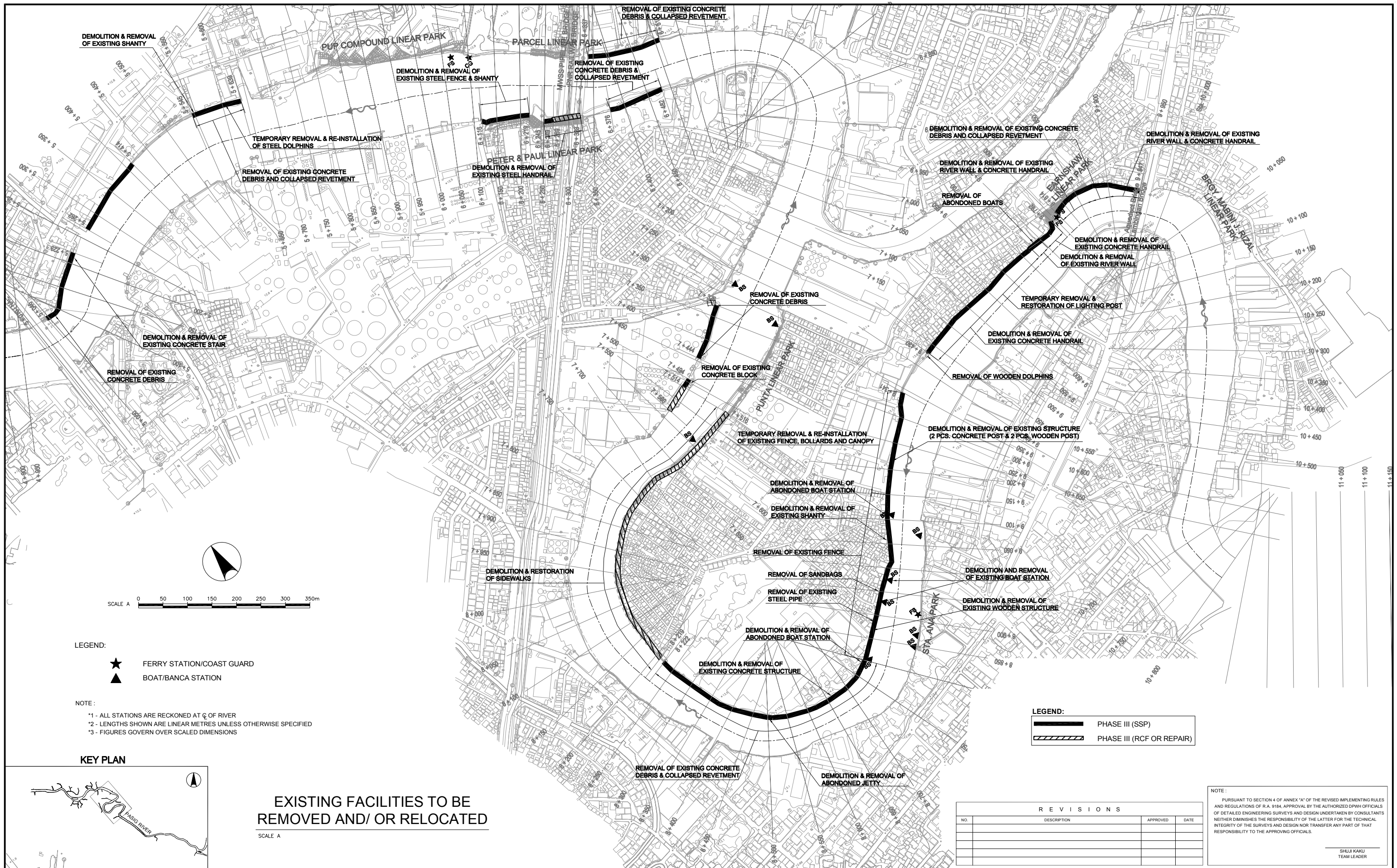
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TEAM LEADER

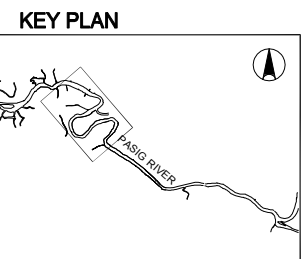
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>	<b>EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED</b>		
	EIJI MOKI STRUCTURAL ENGINEER I	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:  
 ★ FERRY STATION/COAST GUARD  
 ▲ BOAT/BANCA STATION

NOTE:  
 \*1 - ALL STATIONS ARE RECKONED AT C OF RIVER  
 \*2 - LENGTHS SHOWN ARE LINEAR METRES UNLESS OTHERWISE SPECIFIED  
 \*3 - FIGURES GOVERN OVER SCALED DIMENSIONS



**EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED**

SCALE A

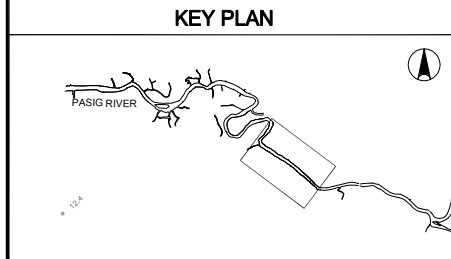
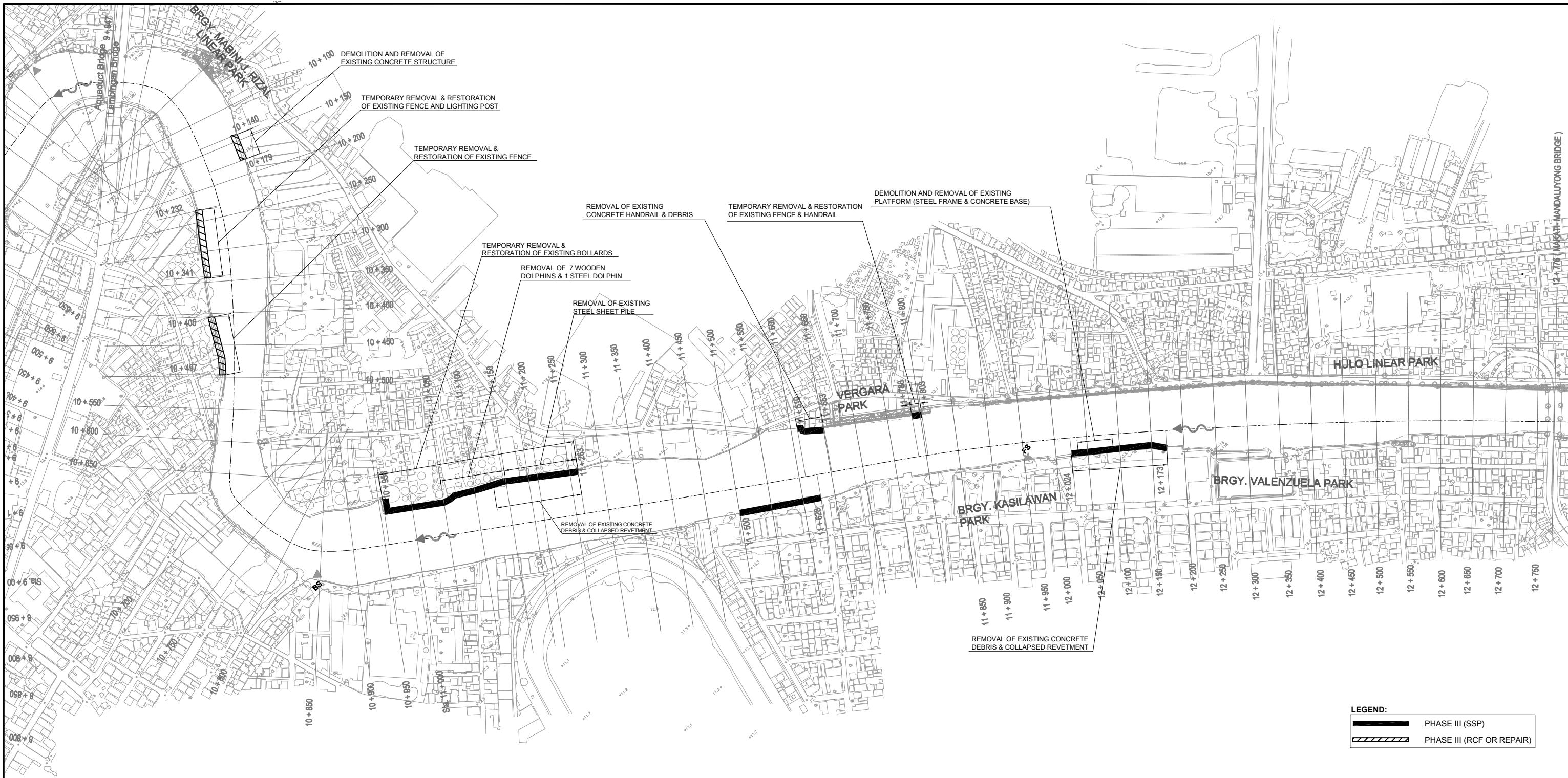
LEGEND:  
 ——— PHASE III (SSP)  
 - - - - PHASE III (RCF OR REPAIR)

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	EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED		
	EIJI MOKI STRUCTURAL ENGINEER I	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:**

- ★ FERRY STATION/COAST GUARD
- ▲ BOAT/BANCA STATION

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**EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED**

SCALE A

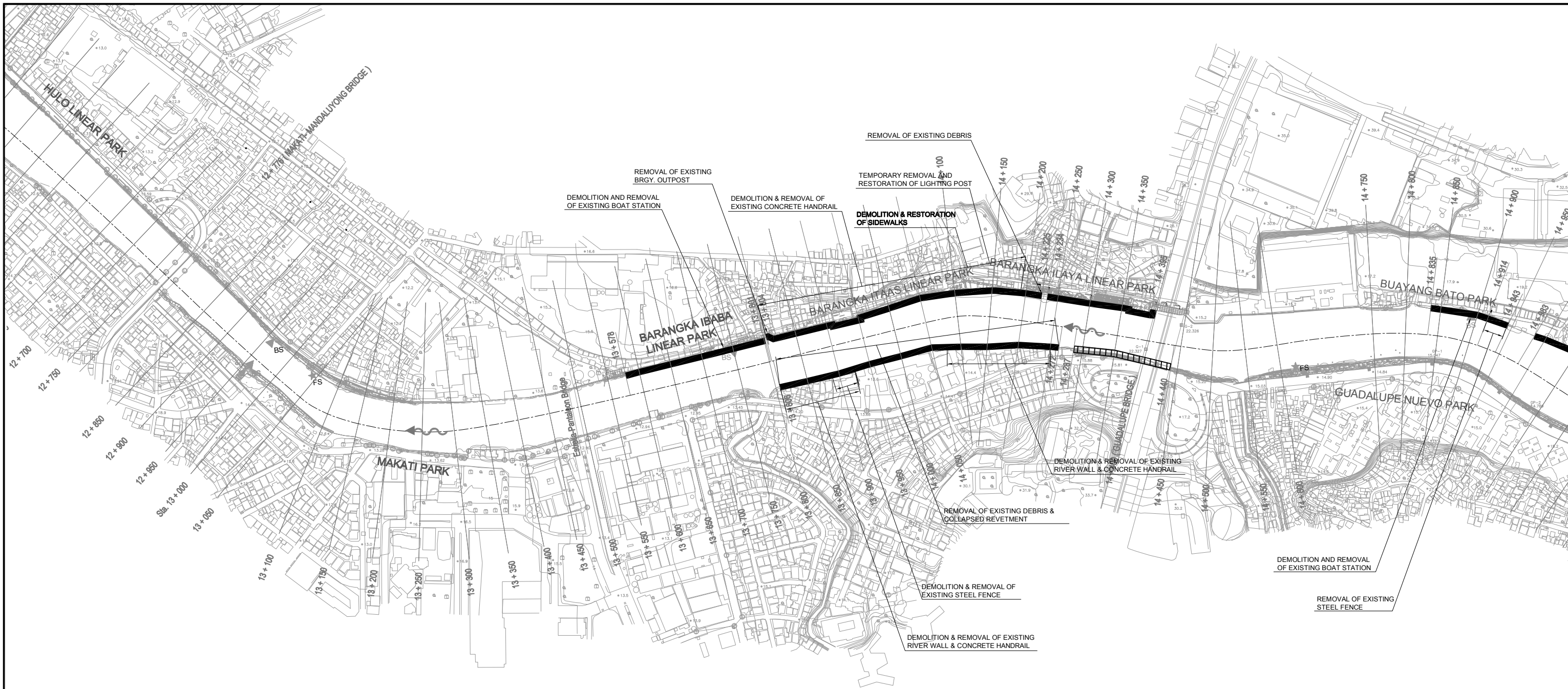
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TEAM LEADER

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	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED	
	EIJI MOKI STRUCTURAL ENGINEER I	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			

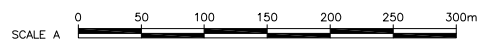


**EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED**

SCALE A

**LEGEND:**

- PHASE III (SSP)
- PHASE III (RCF OR REPAIR)



**LEGEND:**

- FERRY STATION/COAST GUARD
- BOAT/BANCA STATION

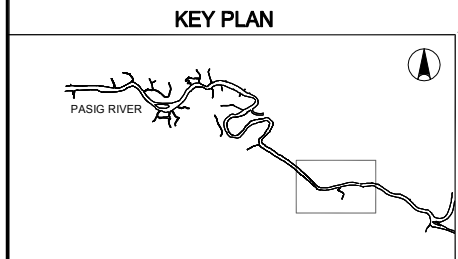
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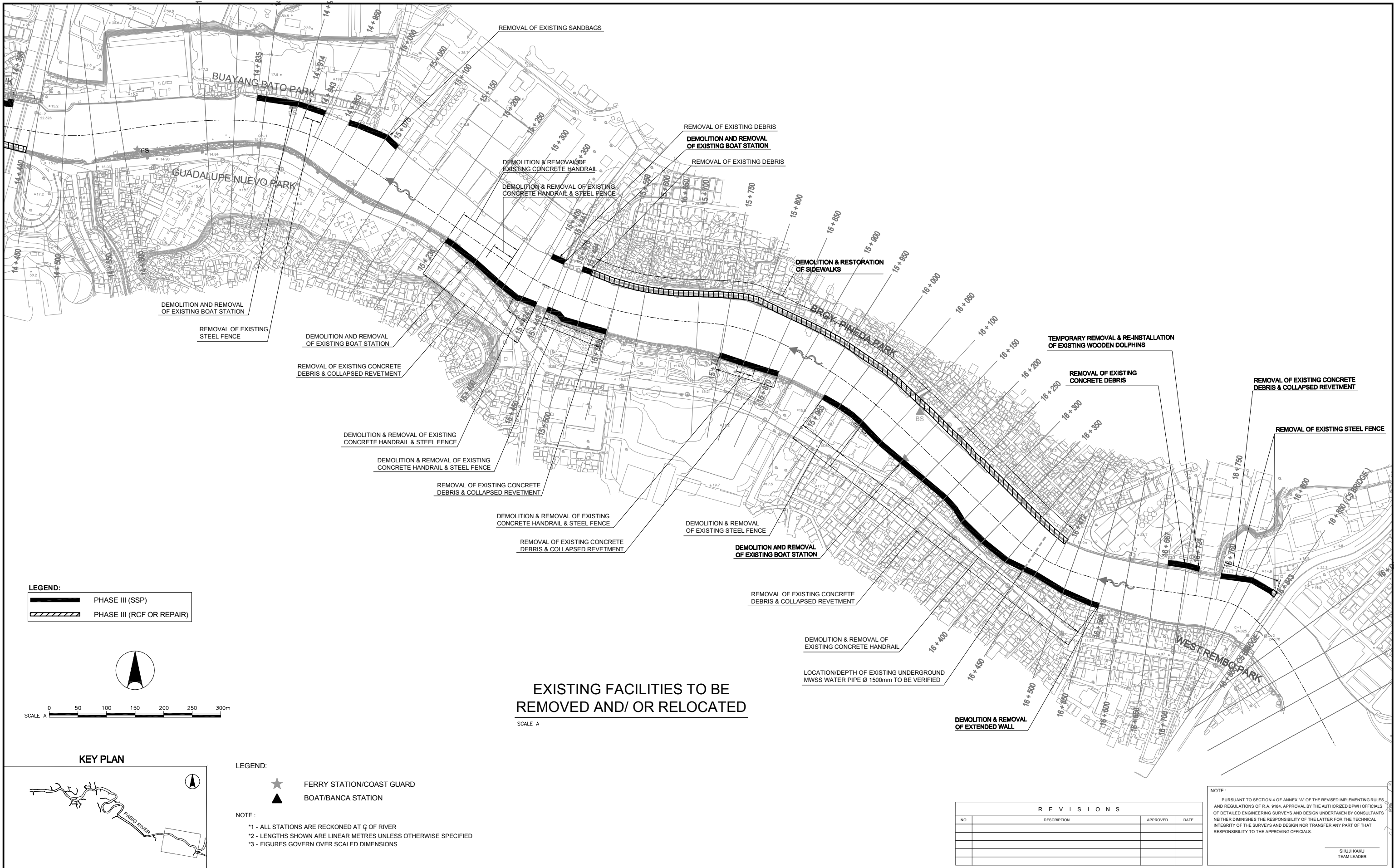
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

**NOTE:**  
PURSUANT TO SECTION 4 OF ANNEX 1\* 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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TEAM LEADER



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<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>EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED</b>	
	EJI MOKI <small>STRUCTURAL ENGINEER I</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>			



**EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED**

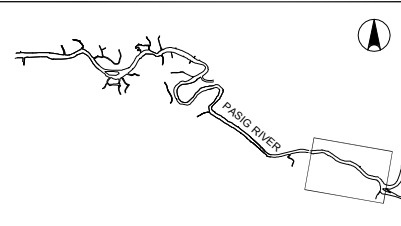
SCALE A

**LEGEND:**  
 ——— PHASE III (SSP)  
 ▨ PHASE III (RCF OR REPAIR)



SCALE A  
 0 50 100 150 200 250 300m

**KEY PLAN**



**LEGEND:**

- ★ FERRY STATION/COAST GUARD
- ▲ BOAT/BANCA STATION

**NOTE:**

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SHUJI KAKU  
 TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



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

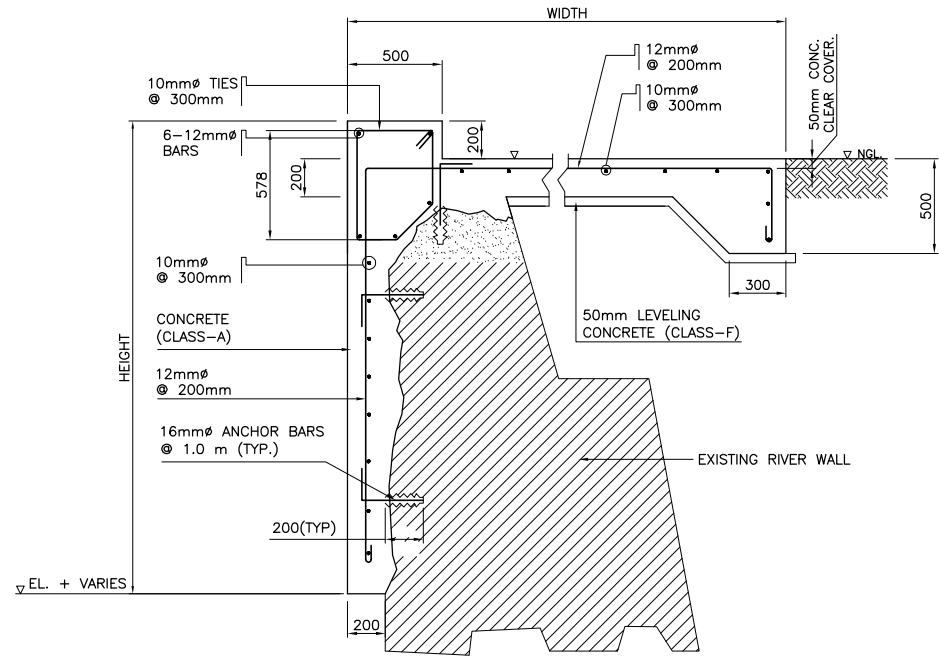
REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY	RAUL 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	EXISTING FACILITIES TO BE REMOVED AND/ OR RELOCATED	UP-GE LO 03

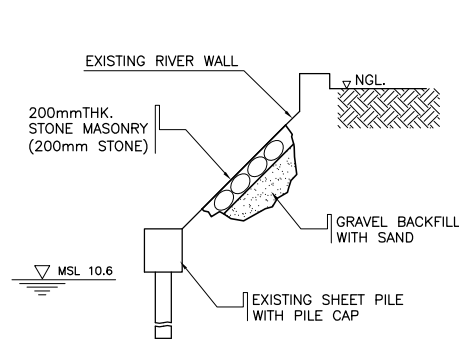
# DRAWING LIST

## (STANDARD RIVER STRUCTURAL DETAILS)

SHEET NO.	DRAWING NO.	NAME OF STRUCTURE	SHEET CONTENTS
1	PR-GE, SD-01	STANDARD DETAILS	TABLES AND DETAILS OF REPAIR (R3 & R4), RW, AND HANDRAILS (TYPE 1, 2, & 3)
2	PR-GE, SD-02		TABLES AND DETAILS OF STEEL PILES FOR REVETMENT
3	PR-GE, SD-03		TABLES AND DETAILS OF INCLINED WALL, WEEPHOLE, PILE CAPS & EXPANSION JOINT
4	PR-GE, SD-04		TABLES AND DETAILS OF LPW, LPW-SE, AND U-DITCH
5	PR-GE, SD-05		TABLES AND DETAILS OF VERTICAL WALL & PARAPET WALL
6	PR-GE, SD-06		TABLES & TYPICAL SHEET PILE END CONNECTION DETAILS



**DETAIL OF REPAIR R3**  
SCALE: A



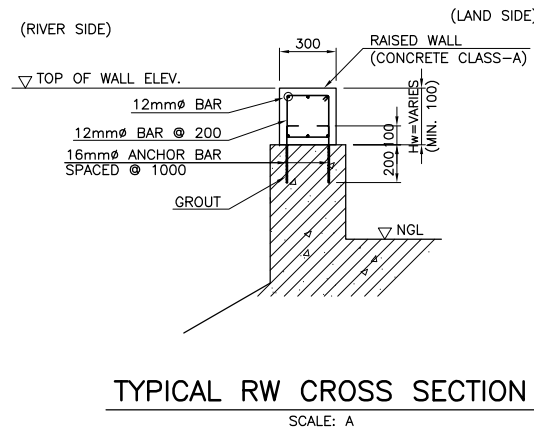
**DETAIL OF REPAIR R4**

**SCHEDULE OF REPAIR R3**

STATIONS		HEIGHT (m)	WIDTH (m)	LENGTH (m)	BANK	REMARKS
START	END					
2+392	2+419	1.33	1.00	26.49	LEFT	
7+514	7+580	1.20	1.00	56.37	LEFT	

**SCHEDULE OF REPAIR R4**

STATIONS		BANK	NO. OF LOCATION	SURFACE AREA	REMARKS
START	END				
3+325	3+400	LEFT	1	254.00	HOSPICIO
10+310	10+323	LEFT	1	27.00	
10+405	10+497	LEFT	3	116.00	
14+287	14+440	LEFT	9	184.00	
3+410	3+492	RIGHT	1	291.00	HOSPICIO
STA. A	STA. C	RIGHT	1	157.00	QUINTA CHANNEL



**TYPICAL RW CROSS SECTION**  
SCALE: A

**SCHEDULE OF RAISED WALL LOCATIONS AND DIMENSIONS**

STATIONS		BANK	Hw (m)	LENGTH (m)	REMARKS
START	END				
6+245	6+323	LEFT	0.20~0.20	82.27	WITH HANDRAIL
10+439	10+467	LEFT	0.11~0.11	30.45	
2+334	STA. A	RIGHT	0.32~0.37	187.94	
STA. D	3+069	RIGHT	0.11~0.42	594.85	
14+835	14+914	RIGHT	0.20~0.21	94.32	

**SCHEDULE OF HANDRAIL LOCATIONS AND DIMENSIONS (TYPE-1)**

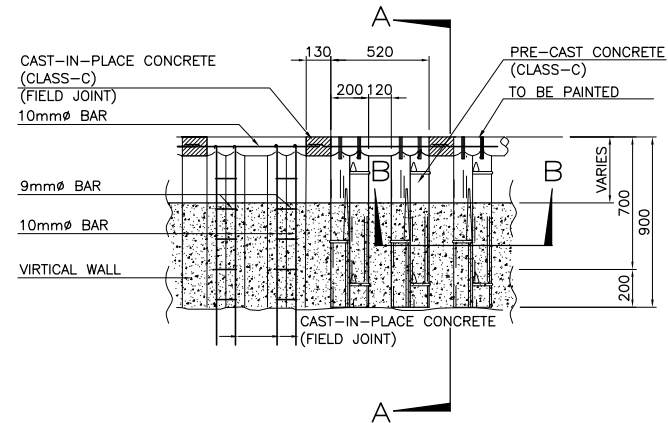
STATIONS		RANGE	BANK	REMARKS
START	END	HEIGHT	LENGTH (m)	
15+310	15+424	0.50	121.68	LEFT
15+443	15+548	0.40	113.06	LEFT
15+747	15+870	0.40	107.52	LEFT
15+965	16+150	0.50	178.98	LEFT
16+556	16+564	0.50	8.00	LEFT
16+801	16+840	0.50	45.69	RIGHT

**SCHEDULE OF HANDRAIL LOCATIONS AND DIMENSIONS (TYPE-2)**

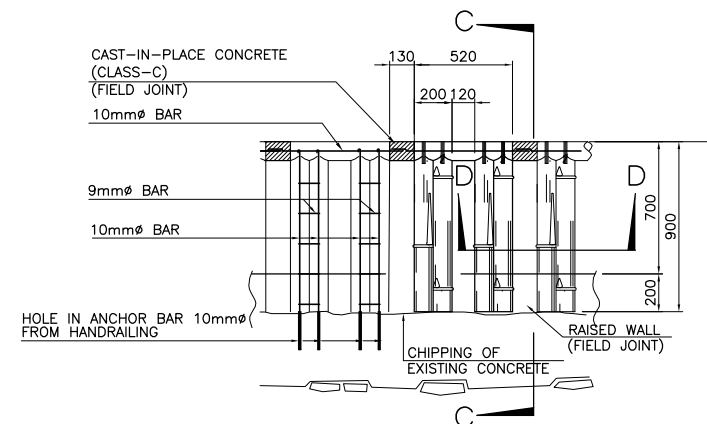
STATION		RANGE	BANK	REMARKS
START	END	HEIGHT	LENGTH (m)	
6+245	6+323	0.70	82.27	LEFT

**SCHEDULE OF HANDRAIL LOCATIONS AND DIMENSIONS (TYPE-3)**

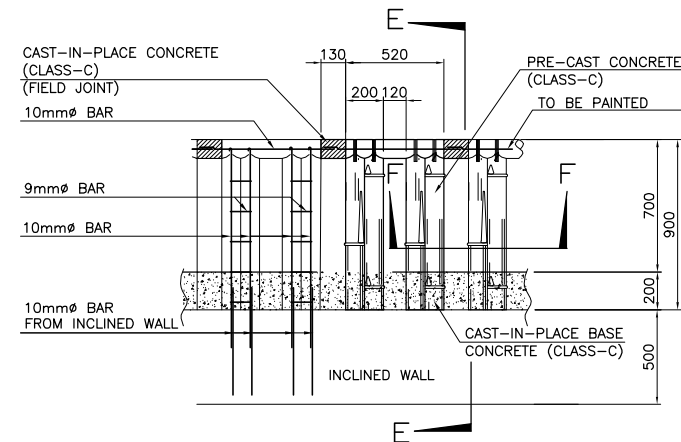
STATION		RANGE	BANK	REMARKS
START	END	HEIGHT	LENGTH (m)	
14+045	14+272	0.70	210.40	LEFT
15+236	15+310	0.70	74.15	LEFT
14+914	14+943	0.70	32.88	RIGHT



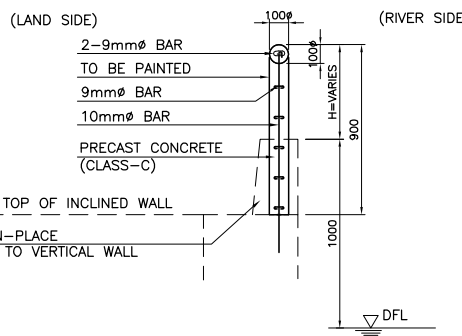
**DETAIL OF PRECAST CONCRETE HANDRAILS TYPE-1**  
SCALE: A



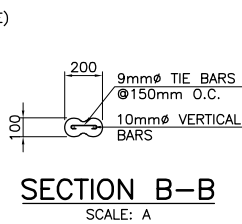
**DETAIL OF PRECAST CONCRETE HANDRAILS TYPE-2 (INSTALLED IN EXISTING REVETMENT)**  
SCALE: A



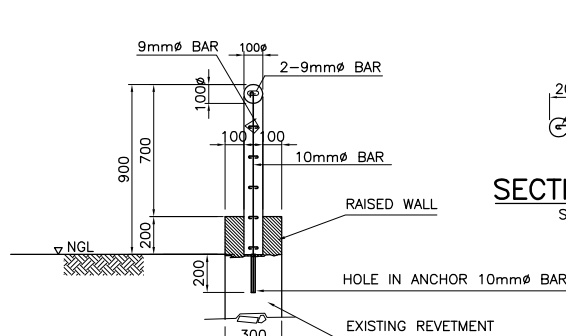
**DETAIL OF PRECAST CONCRETE HANDRAILS TYPE-3 (INSTALLED IN INCLINED WALL)**  
SCALE: A



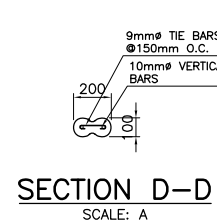
**SECTION A-A**  
SCALE: A



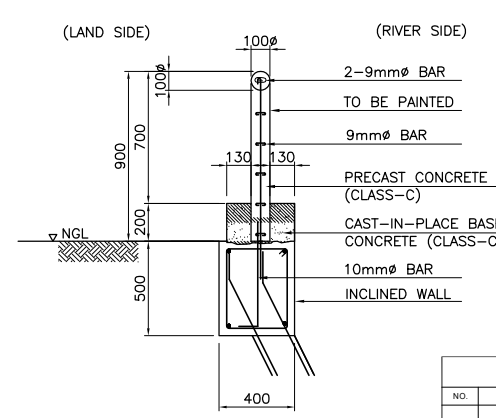
**SECTION B-B**  
SCALE: A



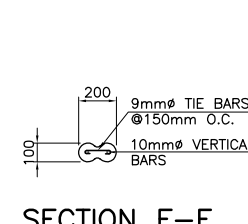
**SECTION C-C**  
SCALE: A



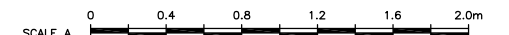
**SECTION D-D**  
SCALE: A



**SECTION E-E**  
SCALE: A



**SECTION F-F**  
SCALE: A



**REVISIONS**

NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

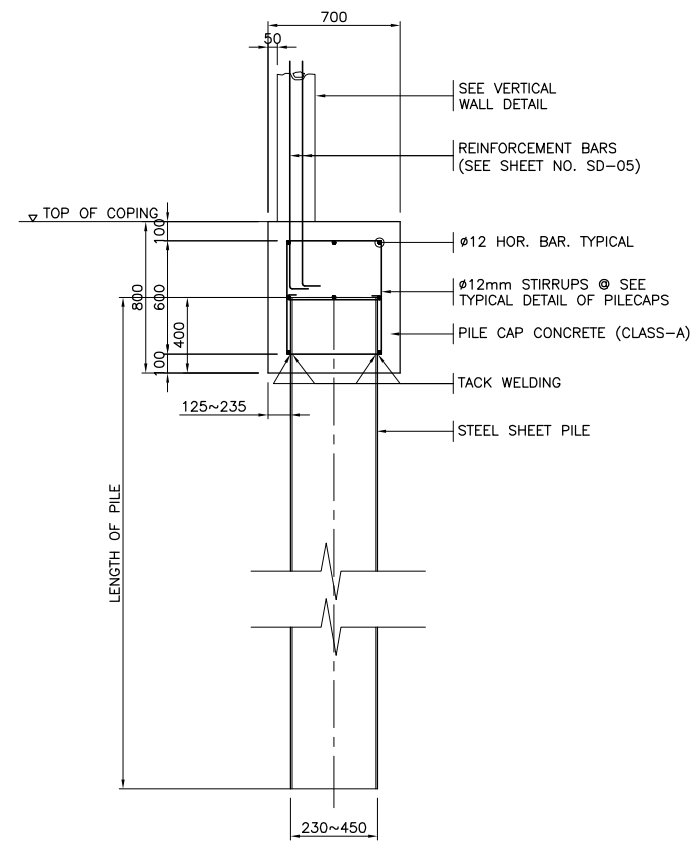
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

TABLES AND DETAILS OF REPAIR OF R3, R4, RW, & HANDRAILS (TYPE 1,2&3)

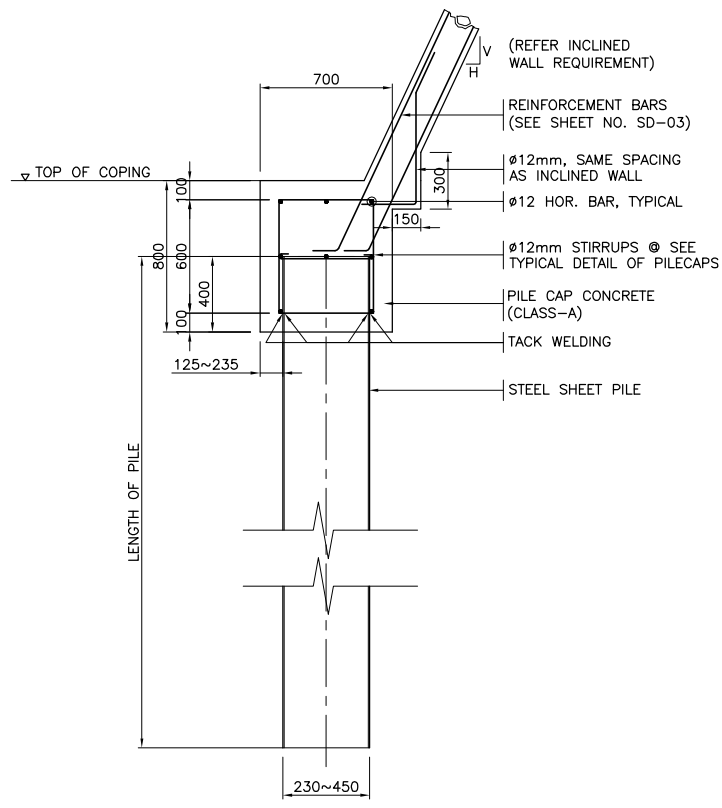
SHEET NO.

PR-GE  
SD 01



DETAIL OF STEEL SHEET PILE WITH VERTICAL WALL

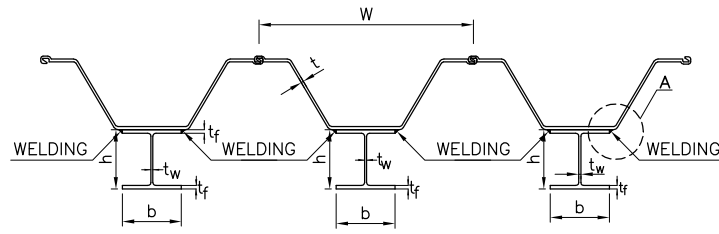
SCALE: A



DETAIL OF STEEL SHEET PILE WITH INCLINED WALL

SCALE: A

\*NOTE:  
EXPANSION JOINTS SHALL BE PROVIDED AT 20M INTERVAL FOR BOTH VERTICAL AND INCLINED WALL

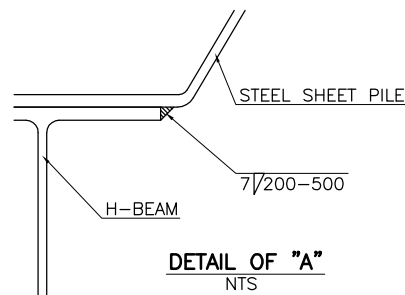


CROSS SECTION OF SP WITH H-BEAM REFER TO [SCHEDULE OF COMBINED PILES (SP with H-BEAM)]

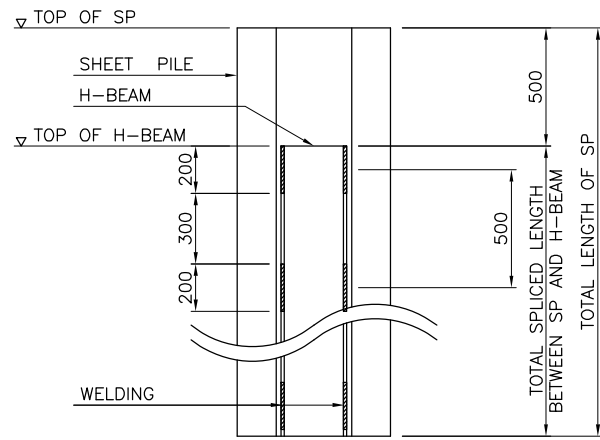
SCALE: A

PROPERTIES OF H-BEAM

SECTION	h mm	b mm	t <sub>w</sub> mm	t <sub>f</sub> mm	S <sub>x</sub> cm <sup>3</sup>
1	400	200	9	22	1760
2	450	200	12	25	2320
3	450	250	9	22	2490
4	450	250	12	28	3070
5	500	200	12	25	2650
6	500	250	12	28	3500
7	550	250	12	28	3940
8	600	200	12	28	3630
9	600	250	12	28	4390
10	650	200	12	28	4020
11	650	250	12	28	4850
12	750	250	12	25	5390
13	850	250	16	28	7240



DETAIL OF "A" NTS

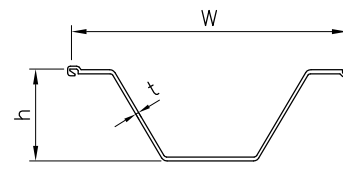


DETAIL OF WELDING BETWEEN SP AND H-BEAM

SCALE: A

SCHEDULE OF STEEL SHEET PILES (SP)

STATIONS		SECTION MODULUS	ESTIMATED LENGTH OF PILE (m)	BANK	LENGTH OF REVETMENT (m)	REMARKS
START	END					
2+419	2+550	SP Sx=2700cm <sup>3</sup> /m	11.00	LEFT	139.80	
2+550	2+694	SP Sx=2700cm <sup>3</sup> /m	11.50	LEFT	139.00	
2+854	2+950	SP Sx=3150cm <sup>3</sup> /m	12.00	LEFT	100.30	
2+950	3+072	SP Sx=3150cm <sup>3</sup> /m	12.00	LEFT	130.40	
3+160	3+300	SP Sx=1610cm <sup>3</sup> /m	9.00	LEFT	124.70	
6+116	6+219	SP Sx=1800cm <sup>3</sup> /m	10.00	LEFT	100.90	
6+249	6+269	SP Sx=3820cm <sup>3</sup> /m	12.50	LEFT	20.30	
6+376	6+482	SP Sx=3150cm <sup>3</sup> /m	11.00	LEFT	114.40	
7+326	7+444	SP Sx=3820cm <sup>3</sup> /m	12.00	LEFT	121.30	
7+494	7+514	SP Sx=3820cm <sup>3</sup> /m	12.00	LEFT	19.40	
11+500	11+628	SP Sx=3150cm <sup>3</sup> /m	11.00	LEFT	128.50	
14+150	14+250	SP Sx=2700cm <sup>3</sup> /m	10.00	LEFT	98.40	
15+236	15+311	SP Sx=3820cm <sup>3</sup> /m	11.00	LEFT	75.80	
15+311	15+424	SP Sx=3820cm <sup>3</sup> /m	11.00	LEFT	120.10	
3+649	3+753	SP Sx=2700cm <sup>3</sup> /m	11.00	RIGHT	98.90	
5+046	5+100	SP Sx=3150cm <sup>3</sup> /m	12.00	RIGHT	33.30	
5+100	5+223	SP Sx=3820cm <sup>3</sup> /m	12.50	RIGHT	120.40	
5+262	5+340	SP Sx=3820cm <sup>3</sup> /m	13.00	RIGHT	87.20	
5+340	5+414	SP Sx=3820cm <sup>3</sup> /m	13.00	RIGHT	83.70	
6+337	6+510	SP Sx=3150cm <sup>3</sup> /m	12.00	RIGHT	151.20	
8+250	8+400	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	144.90	
8+510	8+650	SP Sx=3820cm <sup>3</sup> /m	12.50	RIGHT	121.10	
8+800	8+900	SP Sx=3820cm <sup>3</sup> /m	11.50	RIGHT	95.60	
8+900	9+000	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	99.10	
9+000	9+150	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	153.20	
9+200	9+341	SP Sx=2700cm <sup>3</sup> /m	10.50	RIGHT	159.80	
9+430	9+550	SP Sx=3820cm <sup>3</sup> /m	12.50	RIGHT	124.90	
9+550	9+650	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	103.10	
9+650	9+723	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	73.60	
9+750	9+770	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	20.30	
9+830	9+947	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	166.40	L=9.2m, SPLICED SP INTO 5 SEGMENTS NEAR STA.9+943
11+610	11+653	SP Sx=2700cm <sup>3</sup> /m	11.00	RIGHT	43.70	
11+788	11+803-A	SP Sx=3820cm <sup>3</sup> /m	11.50	RIGHT	19.90	
13+578	13+700	SP Sx=2700cm <sup>3</sup> /m	11.00	RIGHT	121.60	
13+700	13+801-B	SP Sx=2700cm <sup>3</sup> /m	10.00	RIGHT	105.10	L=8.0m, SPLICED SP INTO 4 SEGMENTS NEAR STA.13+772
13+804-A	13+900	SP Sx=3820cm <sup>3</sup> /m	11.50	RIGHT	98.50	
13+900	14+000	SP Sx=3820cm <sup>3</sup> /m	12.00	RIGHT	102.40	
14+000	14+100	SP Sx=2700cm <sup>3</sup> /m	10.00	RIGHT	105.00	
14+100	14+200	SP Sx=1800cm <sup>3</sup> /m	8.50	RIGHT	109.80	
14+200	14+225-A	SP Sx=3150cm <sup>3</sup> /m	10.00	RIGHT	32.90	
14+234-A	14+300	SP Sx=3150cm <sup>3</sup> /m	10.00	RIGHT	71.90	
14+835	14+943	SP Sx=2700cm <sup>3</sup> /m	10.00	RIGHT	125.80	
15+476	15+494	SP Sx=2700cm <sup>3</sup> /m	9.50	RIGHT	20.20	
16+667	16+724	SP Sx=3820cm <sup>3</sup> /m	11.00	RIGHT	56.30	L=8.0m, SPLICED SP INTO 2 SEGMENTS NEAR STA.16+700



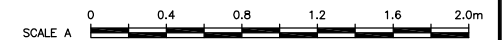
CROSS SECTION OF STEEL SHEET PILE NTS

PROPERTIES OF STEEL SHEET PILES

TYPE	W mm (nominal)	h mm (nominal)	t mm (nominal)	Section Modulus cm <sup>3</sup> /m
SP-III <sub>w</sub>	600	180	13.4	1800
SP-IV <sub>w</sub>	600	210	18.0	2700
SP-V <sub>l</sub>	500	200	24.3	3150
SP-V <sub>l</sub>	500	225	27.6	3820
SP-10H	900	230	10.8	902
SP-25H	900	300	13.2	1610

SCHEDULE OF COMBINED PILES (SP with H-BEAM)

STATIONS		SECTION MODULUS	ESTIMATED LENGTH OF PILE (m)	BANK	LENGTH OF REVETMENT (m)	REMARKS
START	END					
12+024	12+173	SP Sx=902cm <sup>3</sup> /m	16.50	LEFT	148.40	
		H-BEAM Sx=5390cm <sup>3</sup>	16.00			
13+806	13+900	SP Sx=902cm <sup>3</sup> /m	13.00	LEFT	94.70	
		H-BEAM Sx=2490cm <sup>3</sup>	12.50			
13+900	14+000	SP Sx=902cm <sup>3</sup> /m	14.50	LEFT	100.00	
		H-BEAM Sx=3630cm <sup>3</sup>	14.00			
14+000	14+150	SP Sx=902cm <sup>3</sup> /m	12.50	LEFT	139.60	
		H-BEAM Sx=2320cm <sup>3</sup>	12.00			
14+250	14+272	SP Sx=902cm <sup>3</sup> /m	11.50	LEFT	22.00	
		H-BEAM Sx=1760cm <sup>3</sup>	11.00			
15+443	15+548	SP Sx=902cm <sup>3</sup> /m	13.00	LEFT	113.10	
		H-BEAM Sx=3070cm <sup>3</sup>	12.50			
15+747	15+870	SP Sx=902cm <sup>3</sup> /m	13.50	LEFT	107.50	
		H-BEAM Sx=2490cm <sup>3</sup>	13.00			
15+965	16+150	SP Sx=902cm <sup>3</sup> /m	12.00	LEFT	179.00	
		H-BEAM Sx=1760cm <sup>3</sup>	11.50			
16+150	16+200	SP Sx=902cm <sup>3</sup> /m	12.50	LEFT	49.80	
		H-BEAM Sx=1760cm <sup>3</sup>	12.00			
16+200	16+300	SP Sx=902cm <sup>3</sup> /m	12.50	LEFT	101.70	
		H-BEAM Sx=1760cm <sup>3</sup>	12.00			
16+300	16+450	SP Sx=902cm <sup>3</sup> /m	13.00	LEFT	158.90	
		H-BEAM Sx=1760cm <sup>3</sup>	12.50			
16+450	16+552	SP Sx=902cm <sup>3</sup> /m	12.50	LEFT	113.70	
		H-BEAM Sx=1760cm <sup>3</sup>	12.00			
16+552	16+564	SP Sx=1610cm <sup>3</sup> /m	19.00	LEFT	11.80	
		H-BEAM Sx=7240cm <sup>3</sup>	18.50			
5+545	5+639	SP Sx=902cm <sup>3</sup> /m	14.00	RIGHT	103.30	
		H-BEAM Sx=2320cm <sup>3</sup>	13.50			
8+222	8+250	SP Sx=902cm <sup>3</sup> /m	15.00	RIGHT	25.10	
		H-BEAM Sx=3940cm <sup>3</sup>	14.50			
8+400	8+510	SP Sx=902cm <sup>3</sup> /m	13.50	RIGHT	83.20	
		H-BEAM Sx=2490cm <sup>3</sup>	13.00			
8+650	8+800	SP Sx=902cm <sup>3</sup> /m	13.00	RIGHT	115.60	
		H-BEAM Sx=1760cm <sup>3</sup>	12.50			
9+150	9+200	SP Sx=902cm <sup>3</sup> /m	16.50	RIGHT	51.30	
		H-BEAM Sx=4850cm <sup>3</sup>	16.00			
9+723	9+750	SP Sx=902cm <sup>3</sup> /m	12.50	RIGHT	27.30	
		H-BEAM Sx=1760cm <sup>3</sup>	12.00			
9+770	9+792	SP Sx=902cm <sup>3</sup> /m	15.50	RIGHT	30.80	
		H-BEAM Sx=4390cm <sup>3</sup>	15.00			
9+814	9+830	SP Sx=902cm <sup>3</sup> /m	15.50	RIGHT	21.40	
		H-BEAM Sx=4390cm <sup>3</sup>	15.00			
10+956-A	11+050	SP Sx=902cm <sup>3</sup> /m	14.00	RIGHT	112.30	
		H-BEAM Sx=2650cm <sup>3</sup>	13.50			
11+050	11+150	SP Sx=902cm <sup>3</sup> /m	18.00	RIGHT	102.50	
		H-BEAM Sx=5390cm <sup>3</sup>	17.50			
11+150	11+263	SP Sx=902cm <sup>3</sup> /m	15.00	RIGHT	113.10	
		H-BEAM Sx=4020cm <sup>3</sup>	14.50			
14+300	14+350	SP Sx=902cm <sup>3</sup> /m	12.00	RIGHT	50.60	
		H-BEAM Sx=1760cm <sup>3</sup>	11.50			
14+350	14+395-A	SP Sx=902cm <sup>3</sup> /m	13.50	RIGHT	51.50	L=18.5m, SPLICED SP INTO 3 SEGMENTS NEAR STA.14+395
		H-BEAM Sx=3500cm <sup>3</sup>	13.00			
14+983	15+075	SP Sx=902cm <sup>3</sup> /m	11.50	RIGHT	96.60	L=8.0m, SPLICED SP INTO 2 SEGMENTS NEAR STA.15+021
		H-BEAM Sx=1760cm <sup>3</sup>	11.00			
15+409	15+441	SP Sx=902cm <sup>3</sup> /m	11.50	RIGHT	24.90	
		H-BEAM Sx=2490cm <sup>3</sup>	11.00			
16+760	16+840	SP Sx=902cm <sup>3</sup> /m	13.00	RIGHT	101.80	
		H-BEAM Sx=2490cm <sup>3</sup>	12.50			



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:
EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

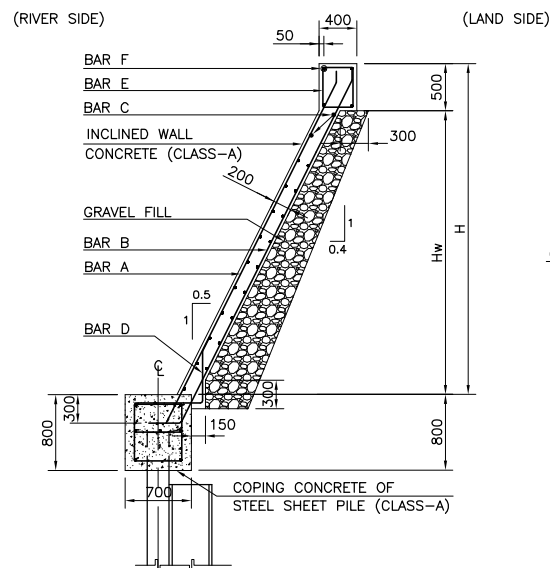
REPUBLIC OF THE PHILIPPINES

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 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

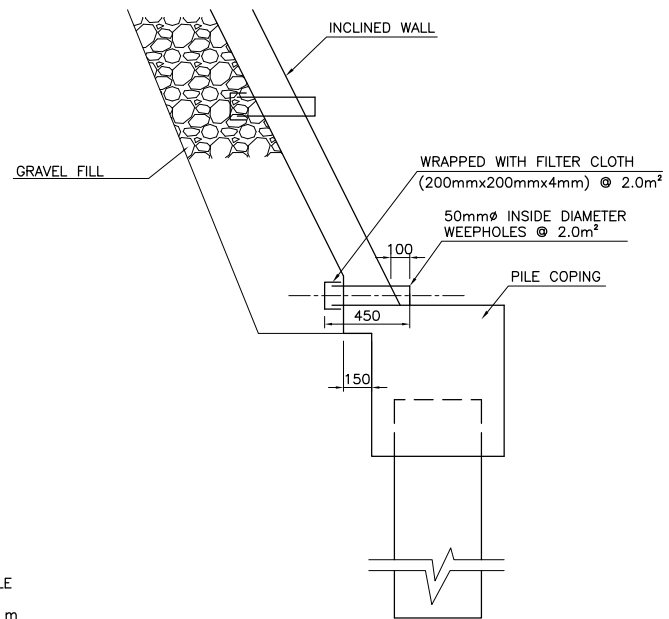
SHEET CONTENTS  
TABLES AND DETAILS OF STEEL PILES FOR REVETMENT

SHEET NO.  
PR-GE  
SD 02

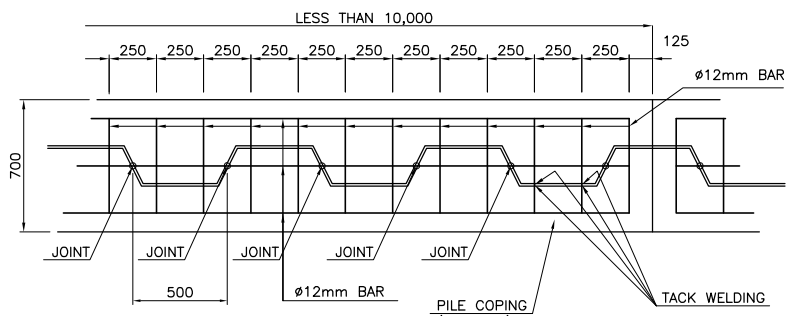


- NOTE:
- HORIZONTAL BARS SHALL BE 2- $\phi$ 12mm @ 300mm SPACING
  - REFER TO INCLINED WALL DESIGN TABLE
  - INTERVAL OF EXPANSION JOINTS: 20.0 m
  - INTERVAL OF CONTRACTION JOINTS: 5.0 m

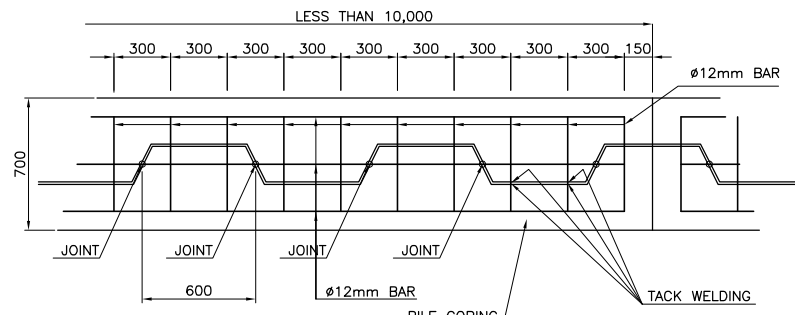
TYPICAL DETAIL OF INCLINED WALL  
SCALE: A



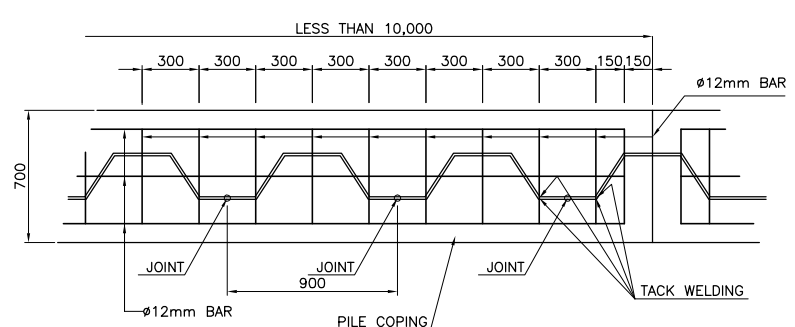
WEEPHOLE DETAIL  
SCALE: A



U-SHAPE STEEL SHEET PILE W/ SSP WIDTH=0.5M

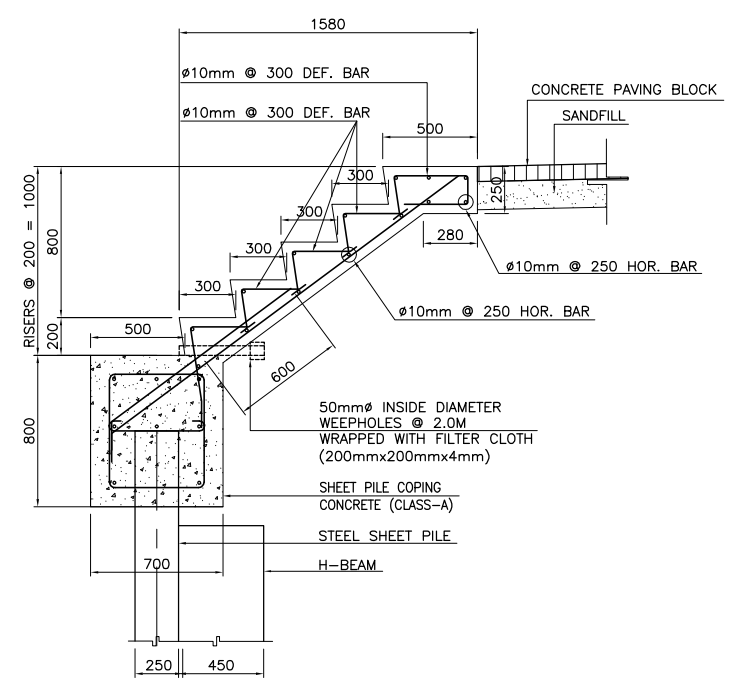


U-SHAPE STEEL SHEET PILE W/ SSP WIDTH=0.6M

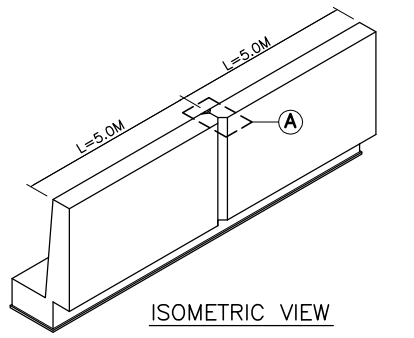


HAT-SHAPE / H-BEAM / SSP WIDTH=0.9M

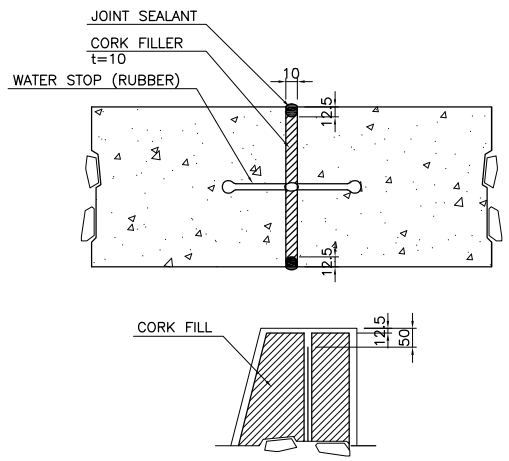
TYPICAL DETAIL OF PILE COPING  
SCALE: B



TYPICAL DETAIL OF INCLINED WALL (STAIR TYPE)  
SCALE: B



TYPICAL CONTRACTION JOINT DETAIL  
SCALE: C



TYPICAL EXPANSION JOINT DETAIL  
SCALE: C

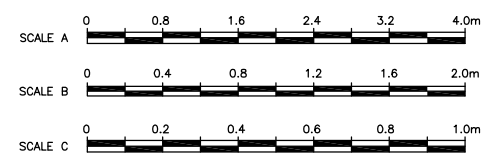
SCHEDULE OF INCLINED WALL LOCATIONS AND DIMENSIONS

STATIONS		RANGE		SLOPE OF BACKWALL H:V	ADJOINING MEMBERS		BANK	REMARKS
FROM	TO	Hw, (m)	L(m)		TOP	BOTTOM		
6+376	6+482	0.32~0.32	114.40	0.5:1	VW,SW	PC	LEFT	
7+326	7+444	0.26~0.27	121.28	0.5:1	VW,SW	PC	LEFT	
7+494	7+514	0.27~0.27	19.42	0.5:1	VW,SW	PC	LEFT	
11+500	11+628	0.41~0.42	128.49	0.5:1	PW,FC	PC	LEFT	
12+024	12+173	0.44~0.45	148.38	0.5:1	VW,SW	PC	LEFT	
13+806	14+043	0.54~0.55	237.55	0.5:1	VW,SW	PC	LEFT	
14+043	14+045	0.55~1.56	6.41	0.5:1	RL,SW	PC	LEFT	
14+045	14+272	1.56~1.56	210.40	0.5:1	RL,SW	PC	LEFT	
15+236	15+310	1.63~1.63	74.15	0.5:1	RL,SW	PC	LEFT	
15+310	15+311	1.23~1.63	1.60	0.5:1	RL,SW	PC	LEFT	
15+311	15+424	1.23~1.23	120.08	0.5:1	VW,SW	PC	LEFT	
15+443	15+548	0.94~0.94	113.06	0.5:1	VW,SW	PC	LEFT	
15+747	15+870	0.95~0.96	107.52	0.5:1	VW,SW	PC	LEFT	
15+965	15+973	1.27~1.67	8.04	0.5:1	VW,SW	PC	LEFT	
15+973	16+142	1.27~1.28	162.94	0.5:1	VW,SW	PC	LEFT	
16+142	16+150	1.28~0.88	8.01	0.5:1	VW,SW	PC	LEFT	
16+150	16+450	0.88~0.90	310.41	0.5:1	VW,SW	PC	LEFT	
16+450	16+454	0.70~0.90	4.00	0.5:1	VW,SW	PC	LEFT	
16+454	16+552	0.70~0.70	109.73	0.5:1	VW,SW	PC	LEFT	
16+552	16+564	0.70~1.30	11.82	0.5:1	VW,SW	PC	LEFT	
8+222	9+341	0.31~0.38	1048.65	0.5:1	VW,SW	PC	RIGHT	
9+430	9+792	0.39~0.40	380.67	0.5:1	VW,SW	PC	RIGHT	
9+814	9+947	0.41~0.41	187.85	0.5:1	VW,SW	PC	RIGHT	
10+956-A	11+263	0.37~0.39	327.85	0.5:1	PW,SW	PC	RIGHT	
11+610	11+653	0.41~0.41	43.65	0.5:1	SW	PC	RIGHT	
11+788	11+803-A	0.42~0.42	20.46	0.5:1	SW	PC	RIGHT	
13+578	13+801-B	1.03~1.04	226.75	1.0:0.7	SW	PC	RIGHT	STAIR TYPE
13+804-A	14+225-A	0.54~0.56	448.58	0.5:1	SW	PC	RIGHT	
14+234-B	14+365	0.56~0.57	138.22	0.5:1	SW	PC	RIGHT	
14+835	14+943	0.60~0.61	125.83	0.5:1	SW	PC	RIGHT	
14+983	15+075	0.61~0.62	96.55	0.5:1	VW,SW	PC	RIGHT	
15+409	15+441	1.64~1.64	25.10	0.5:1	SW	PC	RIGHT	
15+476	15+494	0.64~0.64	20.17	0.5:1	SW	PC	RIGHT	
16+667	16+724	0.71~0.71	56.26	0.5:1	SW	PC	RIGHT	
16+760	16+801	1.32~1.32	56.06	0.5:1	SW	PC	RIGHT	
16+801	16+840	1.32~1.32	45.69	0.5:1	VW,SW	PC	RIGHT	

- \*ADJOINING MEMBERS:
- VW - VERTICAL WALL
  - PW - PARAPET WALL
  - SW - SIDEWALK (CONCRETE BLOCK PAVING)
  - PC - PILE COPING
  - RL - RAILING
  - FC - FILLER CONCRETE
  - EPC - EXISTING PILE CAP

SCHEDULE OF INCLINED WALL REINFORCEMENT

HEIGHT RANGE		REINFORCEMENT											
HW (m)	H (m)	BAR A		BAR B		BAR C		BAR D		BAR E		BAR F	
		DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
0.0~1.5	0.5~2.0	16	250	16	250	12	300	12	250	12	250	12	-
1.5~2.5	2.0~3.0	16	125	16	125	12	300	12	125	12	125	12	-
2.5~2.75	3.0~3.25	16	125	16	125	12	300	12	125	12	125	12	-
2.75~3.0	3.25~3.5	20	125	20	125	12	300	12	125	12	125	12	-



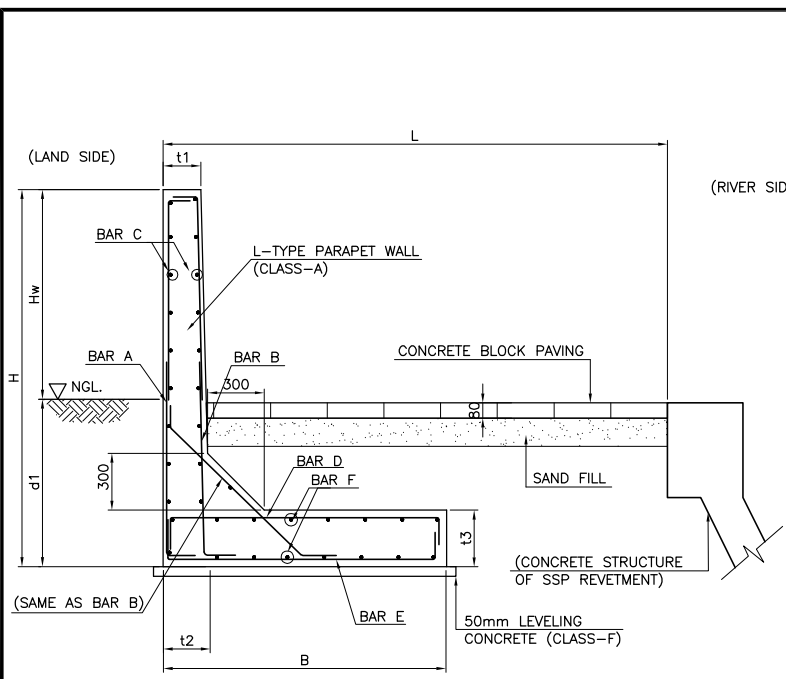
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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

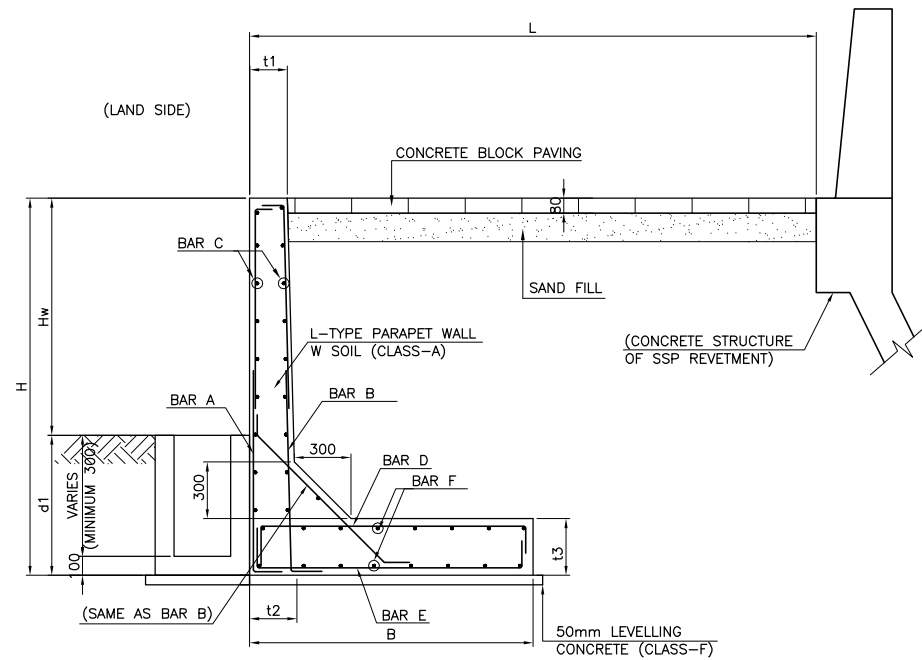
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES			PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	TABLES AND DETAILS OF INCLINED WALL, WEEPHOLE, PILE CAPS, & EXPANSION JOINT	
	EIJI MOKI STRUCTURAL ENGINEER I	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			





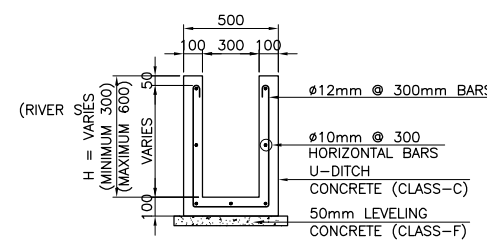
DETAIL OF L TYPE PARAPET WALL (LPW)

SCALE: A



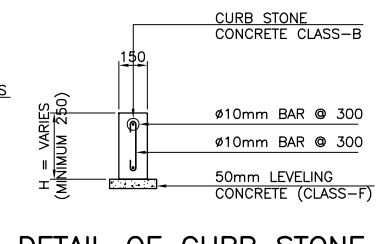
DETAIL OF L TYPE PARAPET WALL W/ SOIL (LPW-SE)

SCALE: A



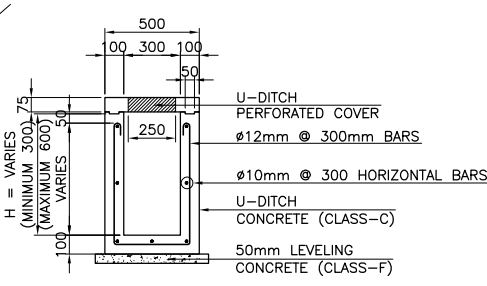
DETAIL OF U-DITCH

SCALE: A



DETAIL OF CURB STONE

SCALE: A



DETAIL OF U-DITCH W/ COVER

SCALE: A

STATION	RANGE	LENGTH (m)	BANK	REMARKS
2+654	2+694	43.17	LEFT	
2+854	3+072	232.57	LEFT	
6+376	6+482	114.74	LEFT	
7+326	7+444	115.72	LEFT	
7+494	7+514	18.86	LEFT	
10+232	10+269	36.14	LEFT	
10+285	10+325	38.97	LEFT	
12+024	12+173	146.74	LEFT	
13+806	14+272	455.67	LEFT	
15+311	15+424	118.12	LEFT	
15+443	15+548	113.70	LEFT	
15+747	15+870	105.04	LEFT	
15+965	16+564	616.41	LEFT	
5+545	5+602	67.34	RIGHT	
6+396	6+510	125.09	RIGHT	
8+222	9+341	1042.16	RIGHT	
9+430	9+792	380.69	RIGHT	
9+814	9+947	195.28	RIGHT	
10+140	10+179	41.96	RIGHT	
14+983	15+024	42.48	RIGHT	W/ COVER
15+024	15+075	54.42	RIGHT	
16+801	16+838	43.30	RIGHT	

SCHEDULE OF LPW SIZE AND REINFORCEMENT (CASE OF L > 2.0m)

HL FROM SOIL TO TOP OF WALL, Hw (m)	B. BASE (m)	EMBEDMENT, d1	t1	t2	t3	REINFORCEMENTS												
						LANDSIDE				RIVERSIDE				TOPSIDE		BOTTOMSIDE		BAR F
						BAR A		BAR B		BAR C		BAR D		BAR E				
						DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	
0.00~0.50	1.00	0.50	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
0.51~1.00	1.35	0.50	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
1.01~1.10	1.50	0.50	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
1.11~1.20	1.65	0.50	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
1.21~1.30	1.80	0.50	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
1.31~1.40	1.90	0.50	0.20	0.20	0.20	12	250	16	250	12	300	16	250	12	250	12	300	
1.41~1.50	2.05	0.50	0.20	0.20	0.20	12	250	16	250	12	300	16	250	12	250	12	300	
1.51~1.60	2.20	0.50	0.20	0.20	0.20	12	250	16	250	12	300	16	250	12	250	12	300	
1.61~1.70	2.35	0.50	0.20	0.20	0.20	12	250	12	125	12	300	12	125	12	250	12	300	
1.71~1.80	2.45	0.50	0.20	0.20	0.20	12	250	20	250	12	300	20	250	12	250	12	300	
1.81~1.90	2.60	0.50	0.20	0.20	0.20	12	250	20	250	12	300	20	250	12	250	12	300	
1.91~2.00	2.75	0.50	0.20	0.20	0.20	12	250	16	125	12	300	16	125	12	250	12	300	

SCHEDULE OF LPW-SE SIZE AND REINFORCEMENTS

HL FROM SOIL TO TOP OF WALL, Hw (m)	B. BASE (m)	EMBEDMENT, d1	t1	t2	t3	REINFORCEMENTS												
						LANDSIDE				RIVERSIDE				TOPSIDE		BOTTOMSIDE		BAR F
						BAR A		BAR B		BAR C		BAR D		BAR E				
						DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	DIA	SPACING	
0.00~0.50	0.50	0.40	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
0.51~0.60	0.50	0.40	0.20	0.20	0.20	12	250	12	250	12	300	12	250	12	250	12	300	
0.61~0.70	0.55	0.40	0.20	0.20	0.20	12	250	16	250	12	300	16	250	12	250	12	300	
0.71~0.80	0.65	0.40	0.20	0.20	0.20	12	250	16	250	12	300	16	250	12	250	12	300	
0.81~0.90	0.75	0.40	0.20	0.20	0.20	12	250	20	250	12	300	20	250	12	250	12	300	
0.91~1.00	0.85	0.40	0.20	0.20	0.20	12	250	16	125	12	300	16	125	12	250	12	300	
1.01~1.10	0.95	0.40	0.20	0.20	0.20	12	250	25	250	12	300	25	250	12	250	12	300	
1.11~1.20	1.00	0.40	0.20	0.30	0.30	12	250	20	250	12	300	20	250	12	250	12	300	
1.21~1.30	1.15	0.40	0.20	0.30	0.30	12	250	16	125	12	300	16	125	12	250	12	300	
1.31~1.40	1.25	0.40	0.20	0.30	0.30	12	250	25	250	12	300	25	250	12	250	12	300	
1.41~1.50	1.35	0.40	0.20	0.30	0.30	12	250	20	125	12	250	20	125	12	250	12	250	
1.51~1.60	1.45	0.40	0.20	0.35	0.35	16	250	20	125	12	250	20	125	16	250	12	250	

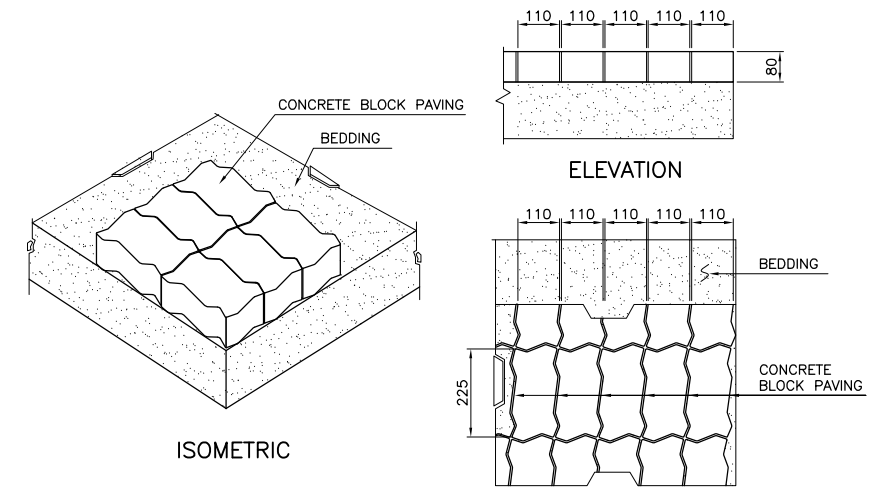
NOTE:  
HORIZONTAL ALIGNMENTS OF L-TYPE PARAPET WALLS WAS BASED ON THE ALIGNMENT OF EXISTING RIVER SHORELINE AND OFFSET DISTANCE SHOWN IN THE DRAWINGS ARE FOR ESTIMATES ONLY. ACTUAL ALIGNMENT SHALL BE CONFIRMED BY THE ENGINEER DURING CONSTRUCTION.

SCHEDULE OF L TYPE PARAPET WALL (LPW) LOCATIONS AND DIMENSIONS

STATION	RANGE	ADJOINING MEMBERS	WIDTH OF SIDEWALK (m)	BANK	REMARKS			
						START	END	HEIGHT, Hw (m)
2+283	2+334	0.94~0.96	62.45	-	SIDEWALK	VARIES	RIGHT	
11+800	11+803	0.96~0.98	3.07	-	SIDEWALK	VARIES	RIGHT	
14+914	14+943	1.30~1.30	32.88	SIDEWALK	SIDEWALK	VARIES	RIGHT	WITH HANDRAIL
15+483	15+494	0.96~0.96	10.35	-	SIDEWALK	VARIES	RIGHT	

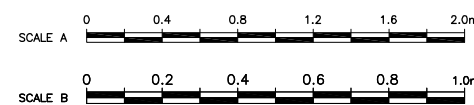
SCHEDULE OF L TYPE PARAPET WALL WITH SOIL EMBANKMENT (LPW-SE) LOCATION AND DIMENSIONS

STATION	RANGE	ADJOINING MEMBERS	WIDTH OF SIDEWALK (m)	BANK	REMARKS			
						START	END	HEIGHT, Hw (m)
3+062	3+072	0.00~0.32	11.27	U-DITCH	SIDEWALK	VARIES	LEFT	
6+376	6+482	0.00~0.50	114.64	U-DITCH	SIDEWALK	VARIES	LEFT	
13+806	13+926	0.00~0.26	121.54	U-DITCH	SIDEWALK	VARIES	LEFT	
14+072	14+272	0.18~0.48	180.39	U-DITCH	SIDEWALK	3.00	LEFT	
16+152	16+203	0.00~0.28	50.76	U-DITCH	SIDEWALK	3.00	LEFT	
16+516	16+564	0.00~0.27	51.38	U-DITCH	SIDEWALK	3.00	LEFT	
5+571	5+602	0.46~0.57	36.61	U-DITCH	SIDEWALK	VARIES	RIGHT	
8+222	9+341	0.00~0.50	1042.57	U-DITCH	SIDEWALK	3.00	RIGHT	
9+430	9+792	0.23~0.82	380.90	U-DITCH	SIDEWALK	3.00	RIGHT	
9+814	9+947	0.58~1.10	195.01	U-DITCH	SIDEWALK	3.00	RIGHT	
10+140	10+179	0.35~0.39	29.31	U-DITCH	SIDEWALK	VARIES	RIGHT	



DETAIL SECTION OF CONCRETE BLOCK PAVING

SCALE: B



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: EJI MOKI STRUCTURAL ENGINEER I	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

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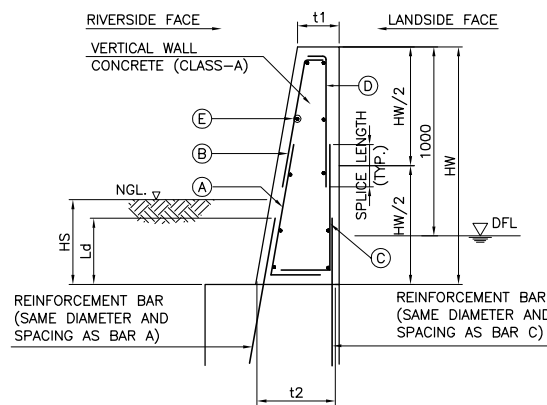
REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
---	--	--------------------------------------

APPROVED BY: RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES	APPROVED BY: ROGELIO L. SINGSON SECRETARY
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PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

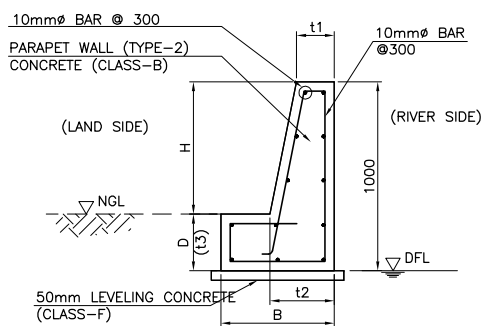
SHEET CONTENTS  
TABLES AND DETAILS OF LPW, LPW-SE AND U-DITCH

SHEET NO.  
PR-GE  
SD 04

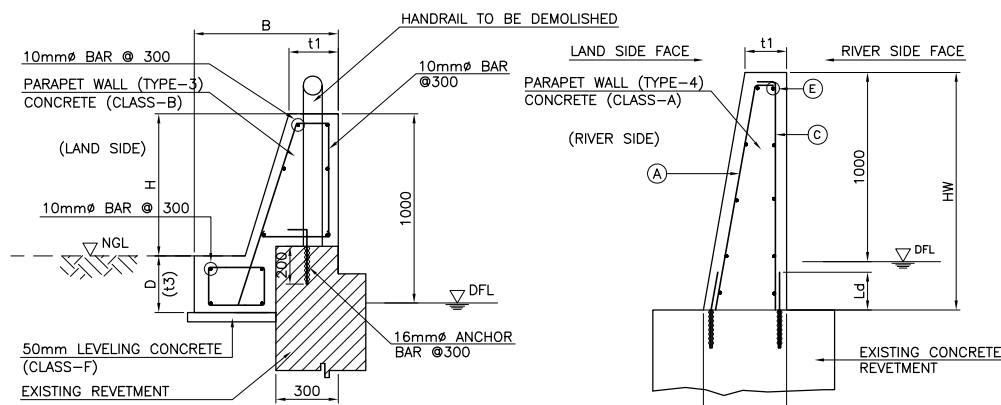


DETAIL OF VERTICAL WALL (VW)

SCALE: A

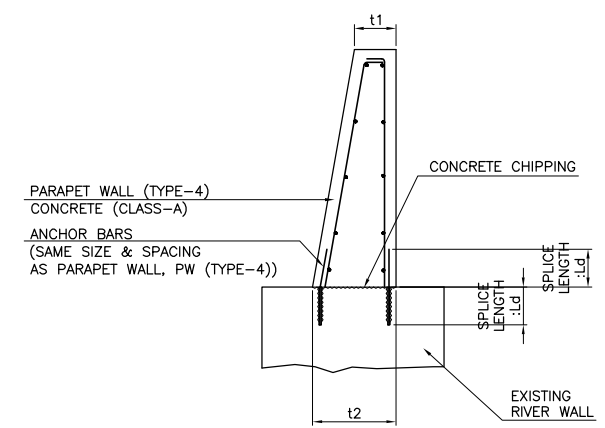


PW TYPE-2



PW TYPE-3

PW TYPE-4



DETAIL OF PARAPET WALL (PW TYPE-4) CONNECTION TO EXISTING STRUCTURE

SCALE: A

SCHEDULE OF VERTICAL WALL AND PARAPET WALLS TYPE 4 THICKNESS AND REINFORCEMENT (REFER DRAWING DETAIL OF VERTICAL WALL AND DETAIL OF PARAPET WALL TYPE-4 PW)

HEIGHT RANGE		THICKNESS		REINFORCEMENT									
WALL HEIGHT (m)	SOIL HEIGHT (m)	t1 (mm)	t2 (mm)	BAR A		BAR B		BAR C		BAR D		BAR E	
				DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)	DIA (mm)	SPACING (mm)
0.5~1.5	0~0.1	0.2	t1+H*0.1	12	250	12	250	12	250	12	250	12	300
0.5~1.5	0.11~1.0	0.2	t1+H*0.1	12	250	12	250	12	250	12	250	12	300
0.5~1.5	1.2~1.5	0.2	t1+H*0.1	12	250	12	250	12	250	12	250	12	300
1.51~1.6	0~0.1	0.2	t1+H*0.1	12	250	12	250	16	250	12	250	12	300
1.51~1.6	1.2~1.6	0.2	t1+H*0.1	16	250	12	250	12	250	12	250	12	300
1.61~2.0	0~0.1	0.2	t1+H*0.1	12	250	12	250	20	250	12	250	12	300
1.61~2.0	0.11~0.5	0.2	t1+H*0.1	12	250	12	250	20	250	12	250	12	300
1.61~2.0	1.01~1.5	0.2	t1+H*0.1	16	250	12	250	12	250	12	250	12	300
1.61~2.0	1.51~2.0	0.2	t1+H*0.1	20	250	12	250	12	250	12	250	12	300
2.11~2.5	0~0.5	0.2	t1+H*0.1	12	250	12	250	20	125	12	250	12	300
2.11~2.5	0.51~1.0	0.2	t1+H*0.1	12	250	12	250	20	125	12	250	12	300
2.11~2.5	1.51~2.0	0.2	t1+H*0.1	20	250	12	250	12	250	12	250	12	300
2.51~2.6	0~0.50	0.2	t1+H*0.1	12	250	12	250	20	125	12	250	12	300
2.51~2.6	0.51~1.0	0.2	t1+H*0.1	12	250	12	250	20	125	12	250	12	300
2.51~2.6	1.01~1.5	0.2	t1+H*0.1	16	250	12	250	20	250	12	250	12	300
2.61~3.0	0~0.50	0.2	t1+H*0.1	16	250	12	250	20	125	12	250	12	300
2.61~3.0	0.51~1.0	0.2	t1+H*0.1	16	250	12	250	20	125	12	250	12	300
2.61~3.0	1.01~1.5	0.2	t1+H*0.1	16	250	12	250	20	125	12	250	12	300

SCHEDULE OF PARAPET WALL LOCATION, HEIGHTS AND LENGTH (TYPE-2)

STATIONS		RANGE		BANK	REMARKS
START	END	WALL HEIGHT Hw	LENGTH (m)		
10+232	10+341	0.60~1.40	110.20	LEFT	
10+425	10+434	1.00~1.20	9.44	LEFT	WITH STEPS
10+467	10+477	1.10~1.10	10.37	LEFT	WITH STEPS
11+500	11+628	1.00~1.00	128.49	LEFT	
12+024		1.00~1.00	4.30	LEFT	CLOSURE WALL
3+069	3+100	0.27~1.48	30.60	RIGHT	
3+649	3+753	0.81~0.83	98.89	RIGHT	
5+602		1.22~1.22	1.91	RIGHT	CLOSURE WALL
6+396		1.30~1.30	1.16	RIGHT	CLOSURE WALL
10+140	10+179	1.34~1.34	15.68	RIGHT	
10+956-A	11+055	1.00~1.00	117.28	RIGHT	
11+150	11+263	0.96~0.99	113.08	RIGHT	
11+610	11+643	0.95~0.99	33.63	RIGHT	
11+643	11+653	0.67~0.67	21.22	RIGHT	
11+788	11+800	0.96~0.99	15.60	RIGHT	
15+411		0.38~0.38	3.10	RIGHT	
15+494	16+086	0.30~0.60	606.87	RIGHT	
16+095	16+472	0.60~0.80	363.82	RIGHT	
16+789		0.40~0.40	5.80	RIGHT	WITH STEPS

SCHEDULE OF VERTICAL WALL LOCATION, HEIGHTS AND LENGTH

STATIONS		RANGE		BANK	REMARKS
START	END	WALL HEIGHT Hw	SOIL HEIGHT Hs		
2+392	2+419	0.82~0.83	0.09~0.27	26.49	LEFT
2+419	2+694	0.76~0.80	0.0~0.27	278.87	LEFT
2+854	3+072	0.86~0.89	0.0~0.28	230.66	LEFT
6+376	6+482	0.47~0.53	0.0	114.40	LEFT
7+326	7+444	1.00~1.00	0.0	121.28	LEFT
7+494	7+514	1.00~1.00	0.0	19.42	LEFT
7+514	7+580	0.47~0.56	0.0	56.35	LEFT
12+024	12+173	1.00~1.00	0.0	148.38	LEFT
13+806	14+043	1.00~1.00	0.0	237.55	LEFT
14+043	14+045	0.00~1.00	0.0	6.41	LEFT
15+310	15+311	0.00~0.40	0.0	1.60	LEFT
15+311	15+424	0.40~0.40	0.0	120.08	LEFT
15+443	15+548	0.50~0.50	0.0	113.06	LEFT
15+747	15+870	0.50~0.50	0.0	107.52	LEFT
15+965	15+973	0.00~0.40	0.0	8.04	LEFT
15+973	16+142	0.40~0.40	0.0	162.94	LEFT
16+142	16+150	0.40~0.80	0.0	8.01	LEFT
16+150	16+450	0.80~0.80	0.0	310.41	LEFT
16+450	16+454	0.80~1.00	0.0	4.00	LEFT
16+454	16+552	1.00~1.00	0.0	109.73	LEFT
16+552	16+564	0.40~1.00	0.0	11.82	LEFT
5+545	5+602	1.21~1.22	0.21~0.22	67.45	RIGHT
6+396	6+510	1.30~1.37	0.30~0.37	113.18	RIGHT
8+222	9+341	1.00~1.00	0.0	1048.65	RIGHT
9+430	9+792	1.00~1.00	0.0	380.67	RIGHT
9+814	9+947	1.00~1.00	0.0	187.85	RIGHT
14+365	14+395-A	1.07~1.08	1.07~1.08	35.76	RIGHT
14+983	15+075	1.00~1.00	0.0	96.55	RIGHT
16+801	16+840	0.40~0.40	0.0	45.69	RIGHT

SCHEDULE OF PARAPET SIZE (TYPE-2 & TYPE-3)

H	B	D	t1	t2	t3
0.30	0.36	0.20	0.30	0.36	0.20
0.40	0.38	0.20	0.30	0.38	0.20
0.50	0.40	0.20	0.30	0.40	0.20
0.60	0.45	0.20	0.30	0.42	0.20
0.70	0.50	0.20	0.30	0.44	0.20
0.80	0.60	0.30	0.30	0.46	0.30
0.90	0.75	0.40	0.30	0.48	0.40
1.00	0.85	0.40	0.30	0.50	0.40
1.10	0.95	0.50	0.30	0.52	0.50
1.20	1.10	0.55	0.30	0.54	0.55
1.30	1.20	0.60	0.30	0.56	0.60
1.40	1.40	0.70	0.30	0.58	0.70
1.50	1.60	0.70	0.30	0.60	0.70

SCHEDULE OF PARAPET WALL LOCATION, HEIGHTS AND LENGTH (TYPE-4)

STATIONS		RANGE		BANK	REMARKS
START	END	WALL HEIGHT Hw	LENGTH (m)		
7+326-A	7+326	0.57~0.57	6.72	LEFT	
10+140	10+179	1.37~1.40	27.80	RIGHT	
11+788		0.55~1.00	4.00	RIGHT	
16+086	16+095	0.56~0.56	8.95	RIGHT	
16+840	16+843	0.89~0.89	2.85	RIGHT	

SCHEDULE OF PARAPET WALL LOCATION, HEIGHTS AND LENGTH (TYPE-3)

STATIONS		RANGE		BANK	REMARKS
START	END	WALL HEIGHT Hw	LENGTH (m)		
10+405	10+425	1.08~1.08	20.74	LEFT	
7+516	8+219	1.08~1.46	612.65	RIGHT	
11+055	11+150	0.96~0.98	97.49	RIGHT	
11+788		0.55~0.55	4.00	RIGHT	WITH STEPS
13+804-A	14+193	0.59~0.81	396.92	RIGHT	

SCALE A 0 0.4 0.8 1.2 1.6 2.0m

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

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER

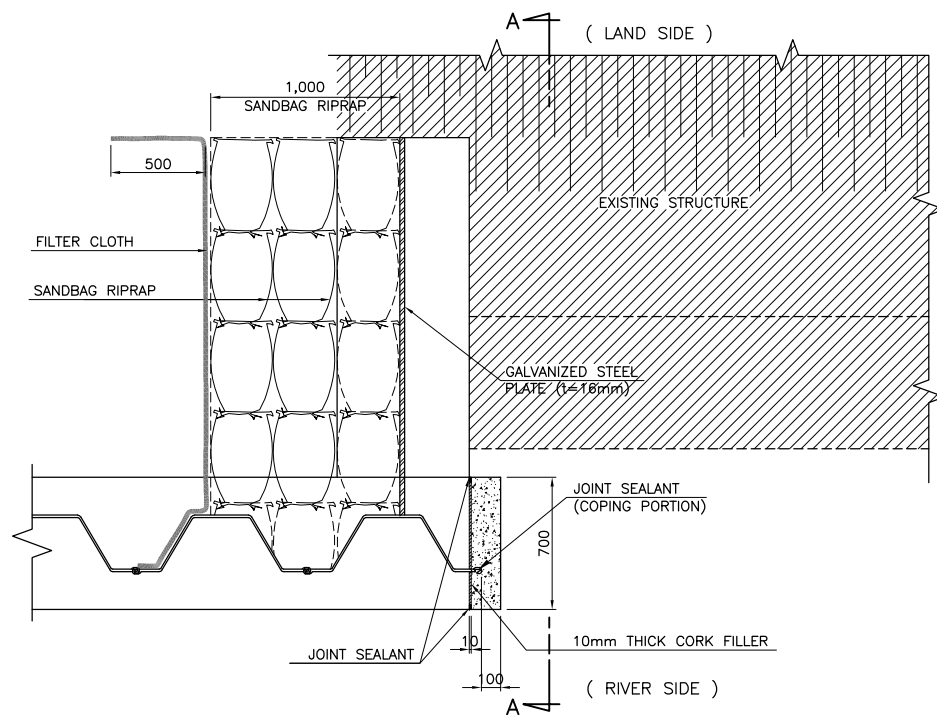


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REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:
PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP	GILBERTO S. REYES DIRECTOR BOD
SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET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

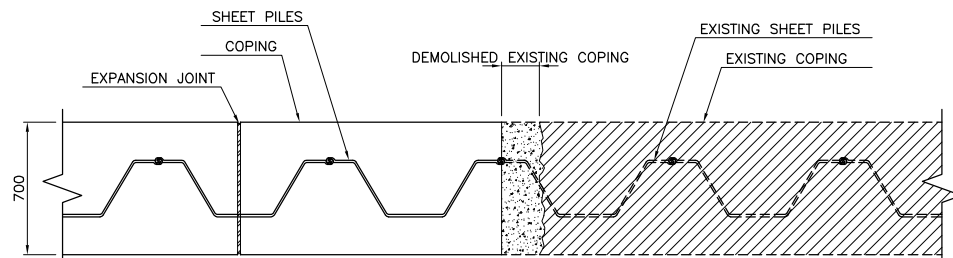
PROJECT & LOCATION SHEET CONTENTS SHEET NO.

PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	TABLES AND DETAILS OF VW AND PW	PR-GE SD 05
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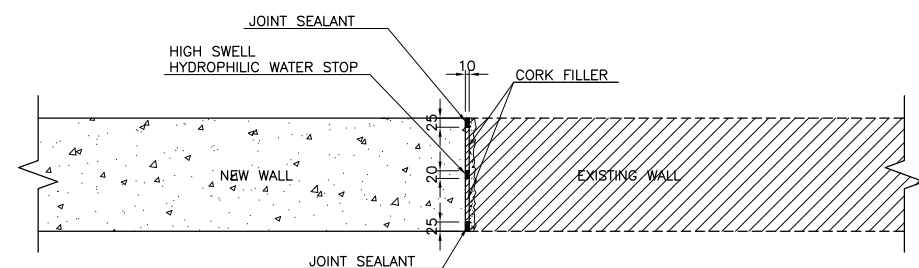
TYPICAL SHEET PILE  
END CONNECTION DETAIL (TYPE-1)

SCALE: A



TYPICAL SHEET PILE  
END CONNECTION DETAIL (TYPE-2)

SCALE: A



TYPICAL DETAIL OF WALL  
END CONNECTION TO EXISTING WALL

SCALE: B

SCHEDULE OF SHEET PILES END CONNECTION (TYPE-1)

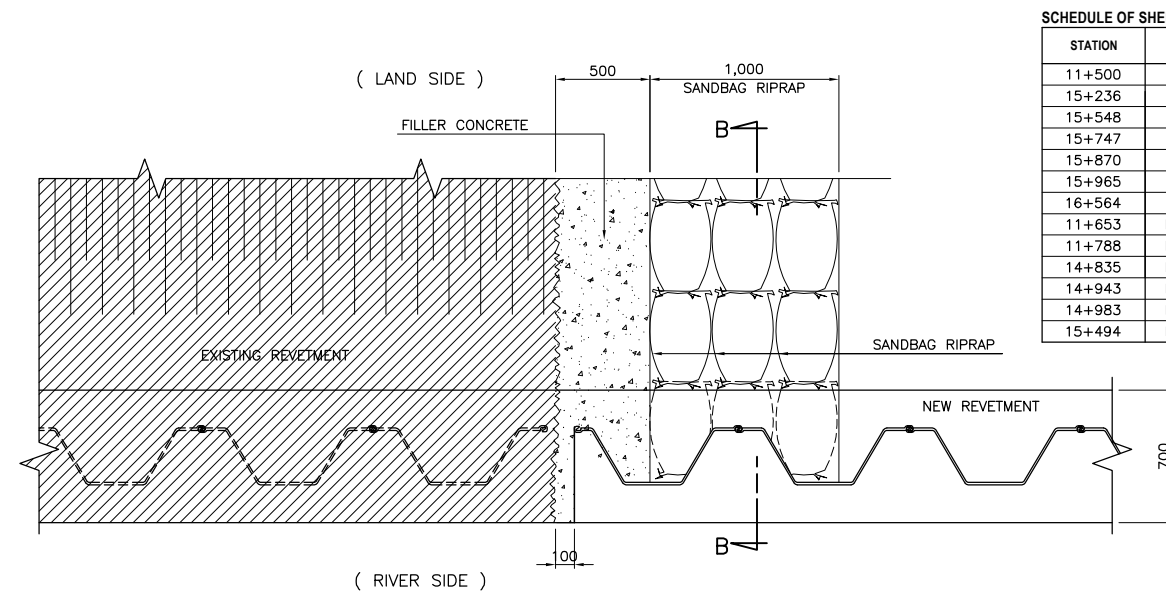
STATION	BANK	REMARKS
2+419	LEFT BANK	
3+072	LEFT BANK	
3+160	LEFT BANK	
3+300	LEFT BANK	
6+116	LEFT BANK	
6+249	LEFT BANK	
6+269	LEFT BANK	
7+326	LEFT BANK	
7+514	LEFT BANK	
12+173	LEFT BANK	
13+806	LEFT BANK	
14+272	LEFT BANK	
15+424	LEFT BANK	
15+443	LEFT BANK	
3+753	RIGHT BANK	
5+046	RIGHT BANK	
5+223	RIGHT BANK	
5+262	RIGHT BANK	
5+414	RIGHT BANK	
5+639	RIGHT BANK	
6+337	RIGHT BANK	
6+510	RIGHT BANK	
8+222	RIGHT BANK	
9+341	RIGHT BANK	
9+430	RIGHT BANK	
9+792	RIGHT BANK	
9+814	RIGHT BANK	
9+947	RIGHT BANK	
10+956-A	RIGHT BANK	
11+803-A	RIGHT BANK	
13+801-B	RIGHT BANK	
13+804-A	RIGHT BANK	
14+225-A	RIGHT BANK	
14+234-A	RIGHT BANK	
14+395-A	RIGHT BANK	
15+075	RIGHT BANK	
15+409	RIGHT BANK	
15+441	RIGHT BANK	
15+476	RIGHT BANK	
16+667	RIGHT BANK	
16+724	RIGHT BANK	
16+760	RIGHT BANK	
16+840	RIGHT BANK	

SCHEDULE OF SHEET PILES END CONNECTION (TYPE-2)

STATION	BANK	REMARKS
2+694	LEFT BANK	
2+854	LEFT BANK	
6+219	LEFT BANK	
6+376	LEFT BANK	
6+482	LEFT BANK	
7+444	LEFT BANK	
7+494	LEFT BANK	
11+628	LEFT BANK	
12+024	LEFT BANK	
3+649	RIGHT BANK	
5+545	RIGHT BANK	
11+263	RIGHT BANK	
11+610	RIGHT BANK	
13+578	RIGHT BANK	

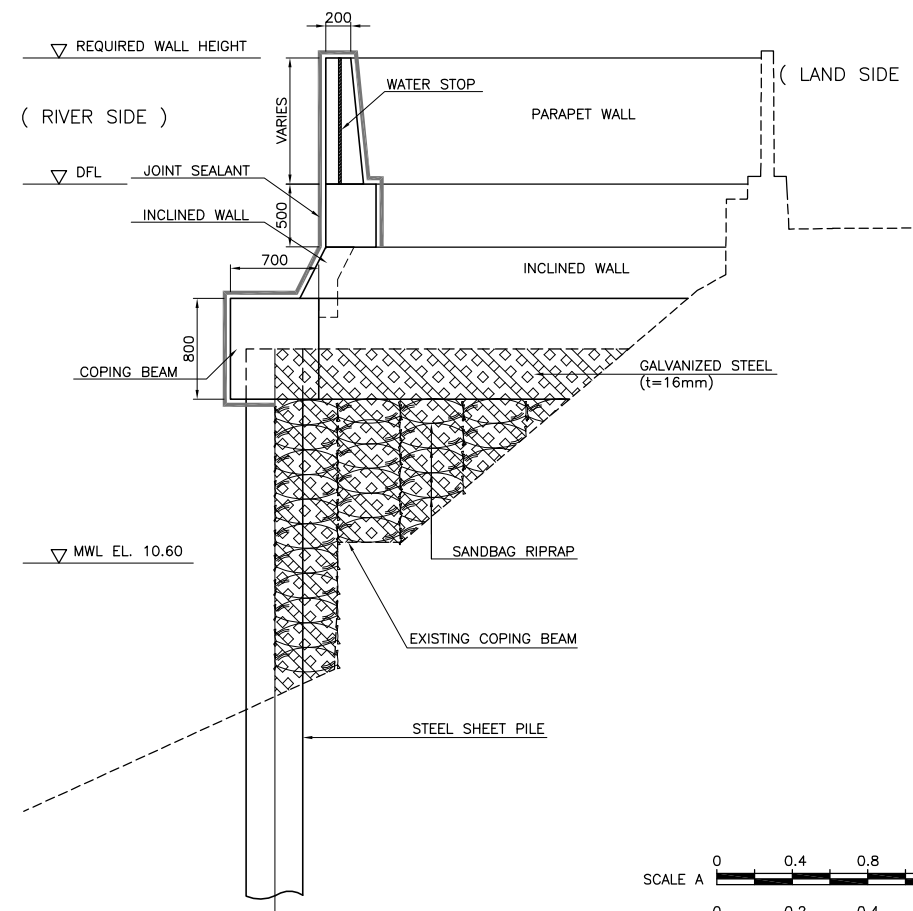
SCHEDULE OF WALL END CONNECTION (RCF)

STATION	BANK	REMARKS
2+392	LEFT BANK	
7+326-A	LEFT BANK	
7+580	LEFT BANK	
10+232	LEFT BANK	
10+341	LEFT BANK	
10+405	LEFT BANK	
10+434	LEFT BANK	
10+467	LEFT BANK	
10+477	LEFT BANK	
2+283	RIGHT BANK	
STA. A	RIGHT BANK	QUINTA CHANNEL
STA. D	RIGHT BANK	QUINTA CHANNEL
3+100	RIGHT BANK	
7+516	RIGHT BANK	
8+219	RIGHT BANK	
10+140	RIGHT BANK	
10+179	RIGHT BANK	
16+472	RIGHT BANK	
16+843	RIGHT BANK	



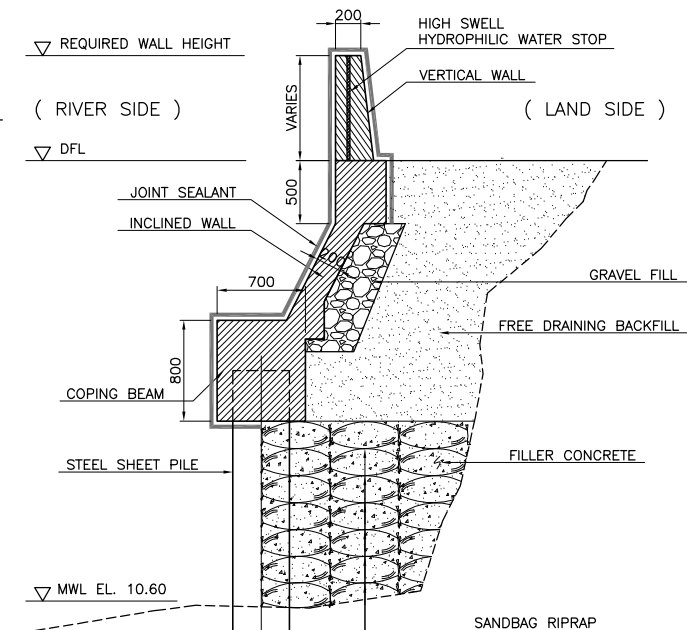
TYPICAL SHEET PILE  
END CONNECTION DETAIL (TYPE-3)

SCALE: A



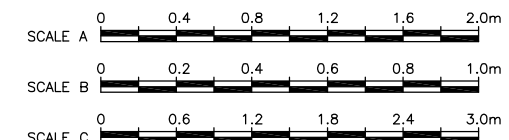
SECTION A-A

SCALE: C



SECTION B-B

SCALE: C



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:
EIJI MOKI STRUCTURAL ENGINEER I	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 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  
TABLES & TYPICAL SHEET PILE END CONNECTION DETAILS  
LOWER & UPPER PASIG

SHEET NO.  
PR-GE  
SD 06

# DRAWING LIST(1/2)

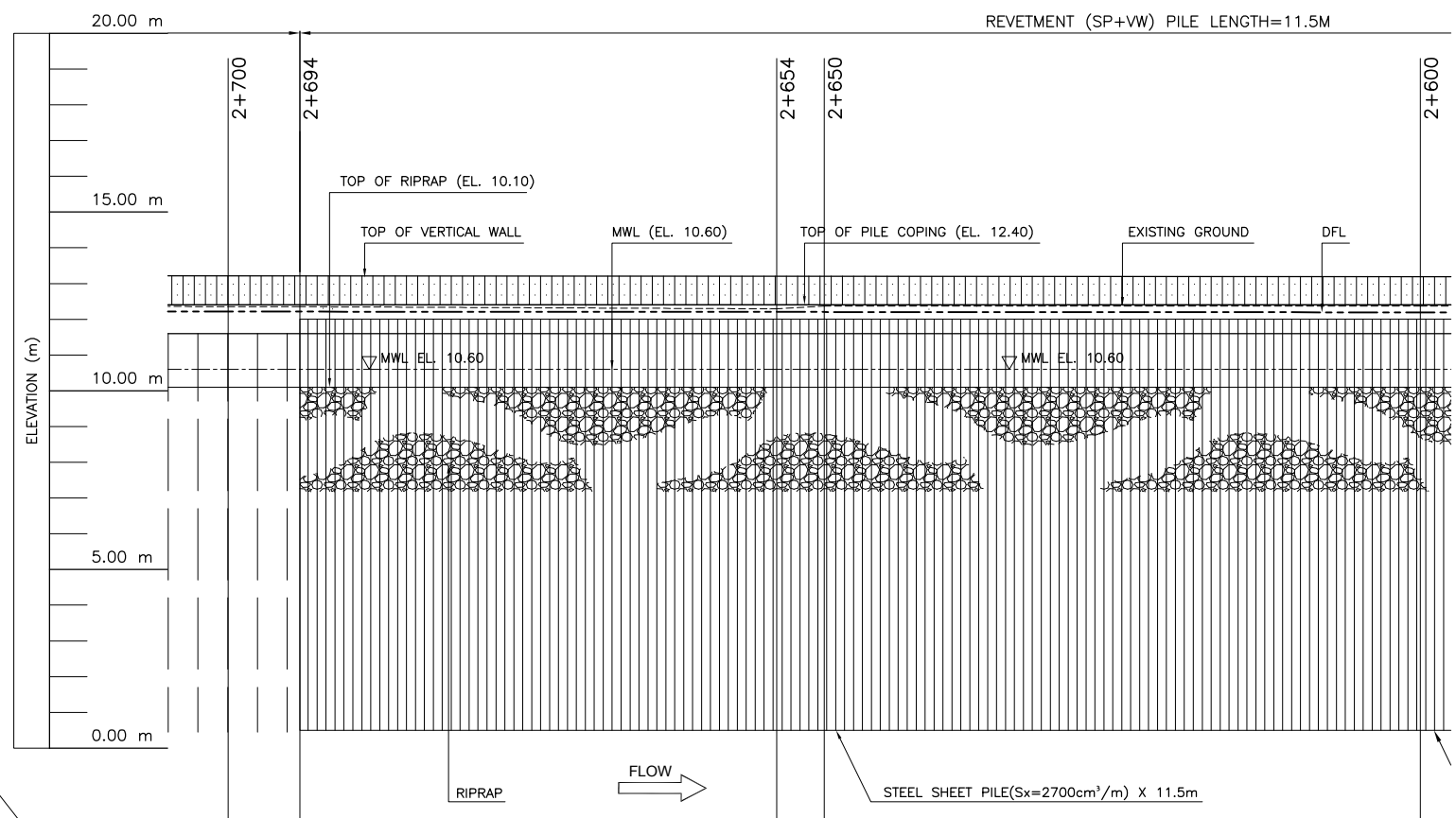
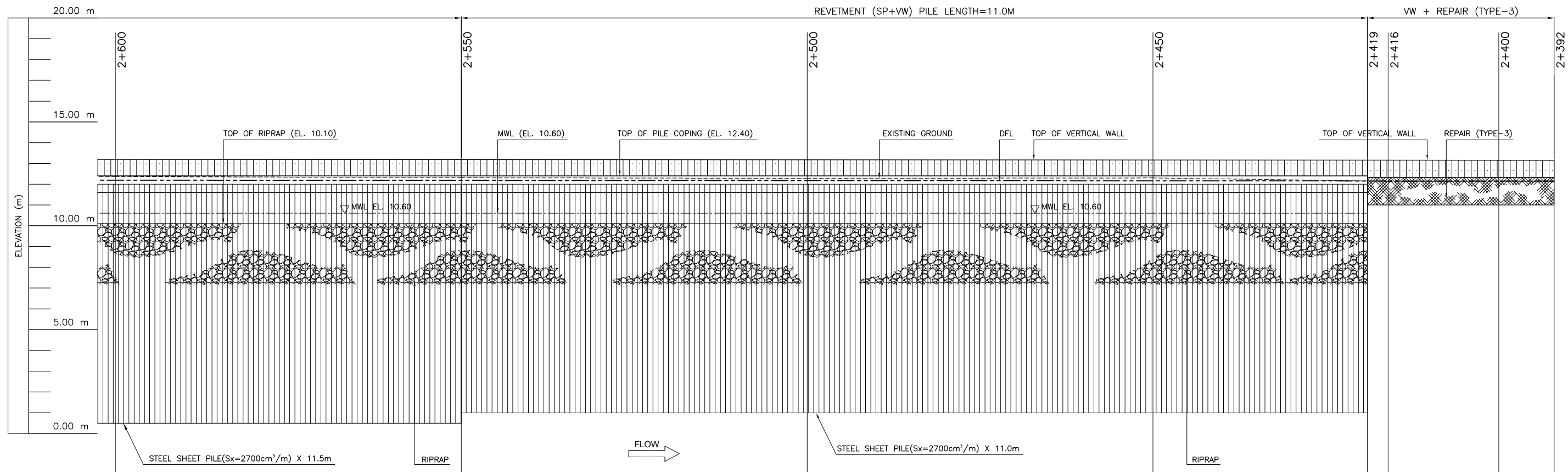
## (RIVER STRUCTURES ; LOWER PASIG)

SHEET NO.	DRAWING NO.	NAME OF STRUCTURE	LOCATION	SHEET CONTENTS
1	LP-RS, LE-01	REVETMENT STRUCTURES	LOWER PASIG RIVER	LONGITUDINAL ELEVATION (STA. 2+392 ~ STA. 2+694 LEFT BANK)
2	LP-RS, LE-02			LONGITUDINAL ELEVATION (STA. 2+854 ~ STA. 3+072 LEFT BANK)
3	LP-RS, LE-03			LONGITUDINAL ELEVATION (STA. 3+160 ~ STA. 3+300 & STA. 3+325 ~ STA. 3+400 LEFT BANK)
4	LP-RS, LE-04			LONGITUDINAL ELEVATION (STA. 6+116 ~ STA. 6+219 & STA. 6+245 ~ STA. 6+323 LEFT BANK)
5	LP-RS, LE-05			LONGITUDINAL ELEVATION (STA. 6+376 ~ STA. 6+482 LEFT BANK)
6	LP-RS, LE-06			LONGITUDINAL ELEVATION (STA. 7+326-A ~ STA. 7+444 & STA. 7+494 ~ STA. 7+580 LEFT BANK)
7	LP-RS, LE-07			LONGITUDINAL ELEVATION (STA. 2+283 ~ STA. 2+700 RIGHT BANK)
8	LP-RS, LE-08			LONGITUDINAL ELEVATION (STA. 2+700 ~ STA. 3+100 RIGHT BANK)
9	LP-RS, LE-09			LONGITUDINAL ELEVATION (STA. A ~ STA. C & STA. D ~ STA. H QUINTA CHANNEL)
10	LP-RS, LE-10			LONGITUDINAL ELEVATION (STA. 3+410 ~ STA. 3+492 RIGHT BANK)
11	LP-RS, LE-11			LONGITUDINAL ELEVATION (STA. 3+649 ~ STA. 3+753 RIGHT BANK)
12	LP-RS, LE-12			LONGITUDINAL ELEVATION (STA. 5+046 ~ STA. 5+223 RIGHT BANK)
13	LP-RS, LE-13			LONGITUDINAL ELEVATION (STA. 5+262 ~ STA. 5+414 RIGHT BANK)
14	LP-RS, LE-14			LONGITUDINAL ELEVATION (STA. 5+545 ~ STA. 5+639 RIGHT BANK)
15	LP-RS, LE-15			LONGITUDINAL ELEVATION (STA. 6+337 ~ STA. 6+510 RIGHT BANK)
16	LP-RS, LE-16			LONGITUDINAL ELEVATION (STA. 7+516 ~ STA. 7+950 RIGHT BANK)
17	LP-RS, LE-17			LONGITUDINAL ELEVATION (STA. 7+950 ~ STA. 8+350 RIGHT BANK)
18	LP-RS, LE-18			LONGITUDINAL ELEVATION (STA. 8+350 ~ STA. 8+750 RIGHT BANK)
19	LP-RS, LE-19			LONGITUDINAL ELEVATION (STA. 8+750 ~ STA. 9+150 RIGHT BANK)
20	LP-RS, LE-20			LONGITUDINAL ELEVATION (STA. 9+150 ~ STA. 9+600 RIGHT BANK)
21	LP-RS, LE-21			LONGITUDINAL ELEVATION (STA. 9+600 ~ STA. 9+947 RIGHT BANK)
22	LP-RS, CS-01			CROSS SECTION (STA. 2+392 ~ STA. 2+550 LEFT BANK)
23	LP-RS, CS-02			CROSS SECTION (STA. 2+600 ~ STA. 2+694 LEFT BANK)
24	LP-RS, CS-03			CROSS SECTION (STA. 2+854 ~ STA. 3+000 LEFT BANK)
25	LP-RS, CS-04			CROSS SECTION (STA. 3+050 ~ STA. 3+072 LEFT BANK)
26	LP-RS, CS-05			CROSS SECTION (STA. 3+160 ~ STA. 3+300 LEFT BANK)
27	LP-RS, CS-06			CROSS SECTION (STA. 3+325 ~ STA. 3+400 LEFT BANK)
28	LP-RS, CS-07			CROSS SECTION (STA. 6+116 ~ STA. 6+219 LEFT BANK)
29	LP-RS, CS-08			CROSS SECTION (STA. 6+245 ~ STA. 6+323 LEFT BANK)
30	LP-RS, CS-09			CROSS SECTION (STA. 6+376 ~ STA. 6+482 LEFT BANK)
31	LP-RS, CS-10			CROSS SECTION (STA. 7+326-A ~ STA. 7+444 LEFT BANK)
32	LP-RS, CS-11			CROSS SECTION (STA. 7+494 ~ STA. 7+580 RIGHT BANK)
33	LP-RS, CS-12			CROSS SECTION (STA. 2+283 ~ STA. 2+400 RIGHT BANK)
34	LP-RS, CS-13			CROSS SECTION (STA. 2+450 ~ STA. D QUINTA CHANNEL RIGHT BANK)
35	LP-RS, CS-14			CROSS SECTION (STA. E ~ STA. 2+600 QUINTA CHANNEL RIGHT BANK)
36	LP-RS, CS-15			CROSS SECTION (STA. 2+650 ~ STA. 2+900 RIGHT BANK)
37	LP-RS, CS-16			CROSS SECTION (STA. 2+950 ~ STA. 3+100 RIGHT BANK)
38	LP-RS, CS-17			CROSS SECTION (STA. 3+410 ~ STA. 3+492 RIGHT BANK)
39	LP-RS, CS-18			CROSS SECTION (STA. 3+649 ~ STA. 3+753 RIGHT BANK)
40	LP-RS, CS-19			CROSS SECTION (STA. 5+046 ~ STA. 5+150 RIGHT BANK)
41	LP-RS, CS-20			CROSS SECTION (STA. 5+200 ~ STA. 5+223 RIGHT BANK)
42	LP-RS, CS-21			CROSS SECTION (STA. 5+262 ~ STA. 5+414 RIGHT BANK)
43	LP-RS, CS-22			CROSS SECTION (STA. 5+545 ~ STA. 5+630 RIGHT BANK)

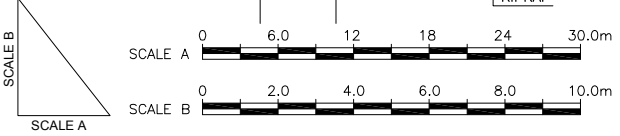
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### (RIVER STRUCTURES ; LOWER PASIG)

SHEET NO.	DRAWING NO.	NAME OF STRUCTURE	LOCATION	SHEET CONTENTS
44	LP-RS, CS-23	REVTMENT STRUCTURES	LOWER PASIG RIVER	CROSS SECTION (STA. 5+639 RIGHT BANK)
45	LP-RS, CS-24			CROSS SECTION (STA. 6+337 ~ STA. 6+450 RIGHT BANK)
46	LP-RS, CS-25			CROSS SECTION (STA. 6+471 ~ STA. 6+510 RIGHT BANK)
47	LP-RS, CS-26			CROSS SECTION (STA. 7+516 ~ STA. 7+750 RIGHT BANK)
48	LP-RS, CS-27			CROSS SECTION (STA. 7+800 ~ STA. 8+050 RIGHT BANK)
49	LP-RS, CS-28			CROSS SECTION (STA. 8+100 ~ STA. 8+300 RIGHT BANK)
50	LP-RS, CS-29			CROSS SECTION (STA. 8+350 ~ STA. 8+550 RIGHT BANK)
51	LP-RS, CS-30			CROSS SECTION (STA. 8+600 ~ STA. 8+750 RIGHT BANK)
52	LP-RS, CS-31			CROSS SECTION (STA. 8+800 ~ STA. 9+050 RIGHT BANK)
53	LP-RS, CS-32			CROSS SECTION (STA. 9+100 ~ STA. 9+341 RIGHT BANK)
54	LP-RS, CS-33			CROSS SECTION (STA. 9+350 ~ STA. 9+550 RIGHT BANK)
55	LP-RS, CS-34			CROSS SECTION (STA. 9+600 ~ STA. 9+745 RIGHT BANK)
56	LP-RS, CS-35			CROSS SECTION (STA. 9+750 ~ STA. 9+830 RIGHT BANK)
57	LP-RS, CS-36			CROSS SECTION (STA. 9+850 ~ STA. 9+947 RIGHT BANK)



LONGITUDINAL ELEVATION (STA 2+392 ~ 2+694 L-BANK)  
SCALE : AB

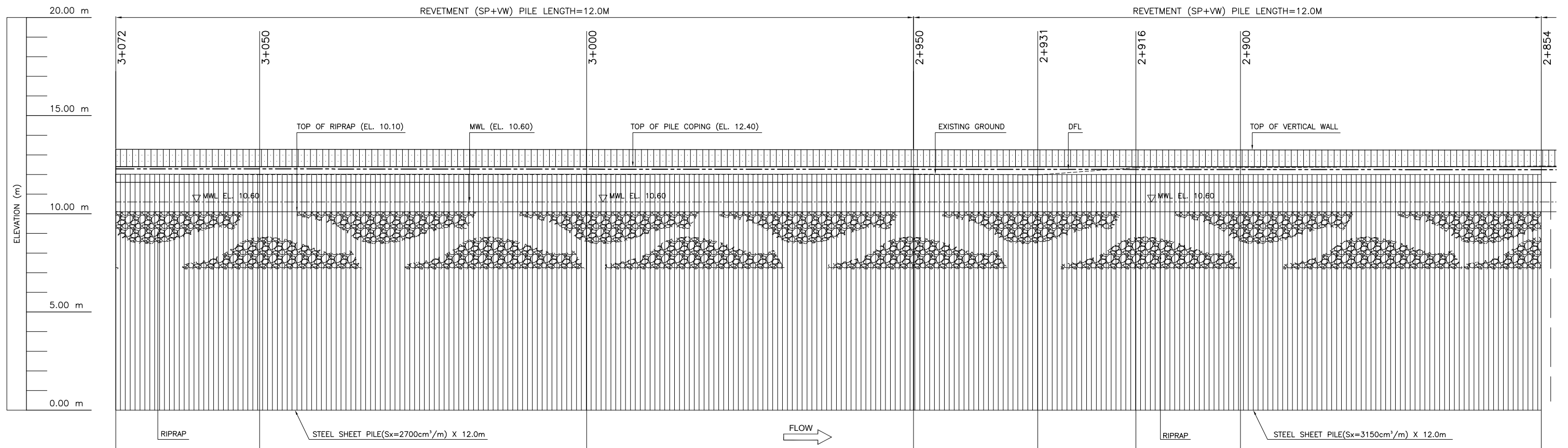


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NO.	DESCRIPTION	APPROVED	DATE

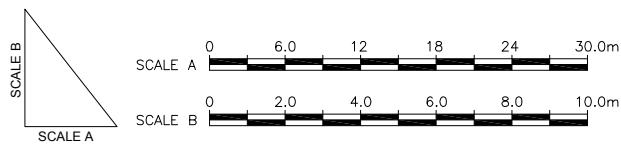
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SHUJI KAKU  
TEAM LEADER

<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> LONGITUDINAL ELEVATION STA 2+392 ~ STA 2+694 LEFTBANK		<b>SHEET NO.</b> LP-RS LE 01	
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:						
EIJI MOKI STRUCTURAL ENGINEER I	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				



LONGITUDINAL ELEVATION (STA 2+854 ~ 3+072 L-BANK)  
SCALE : AB

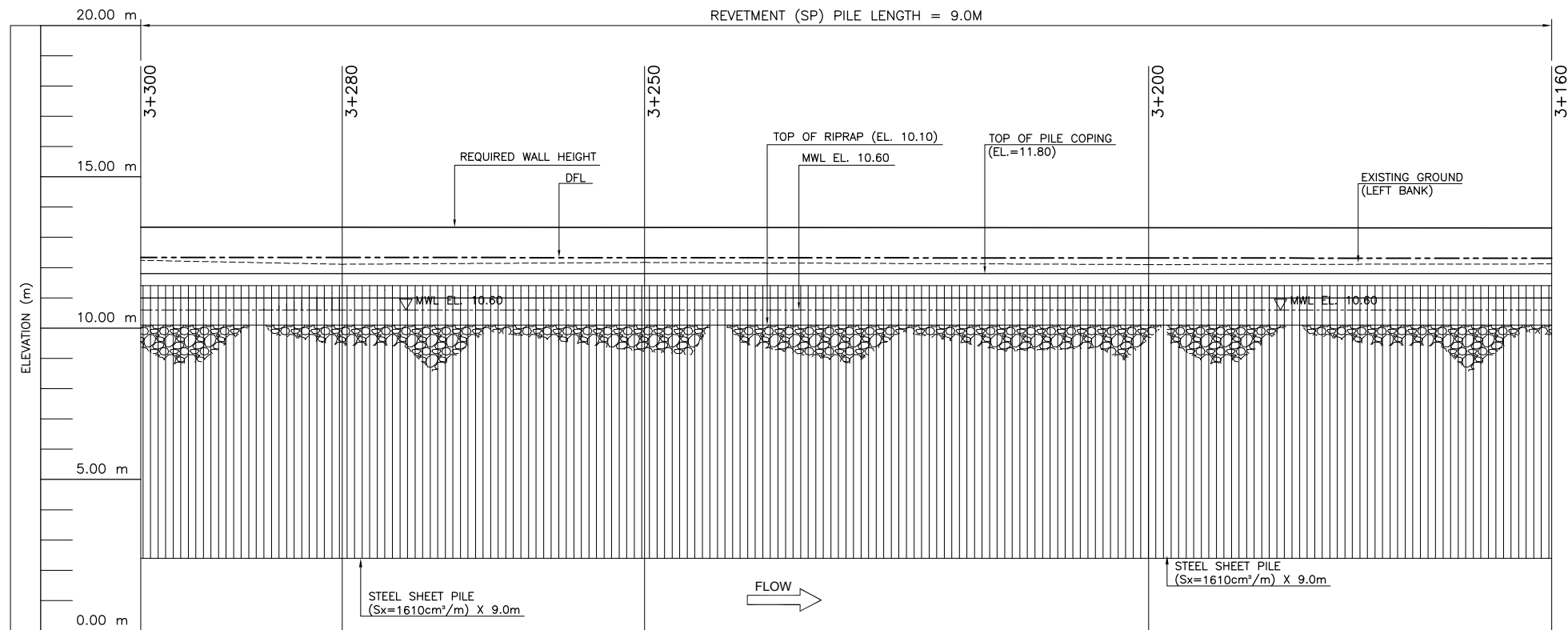


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NO.	DESCRIPTION	APPROVED	DATE

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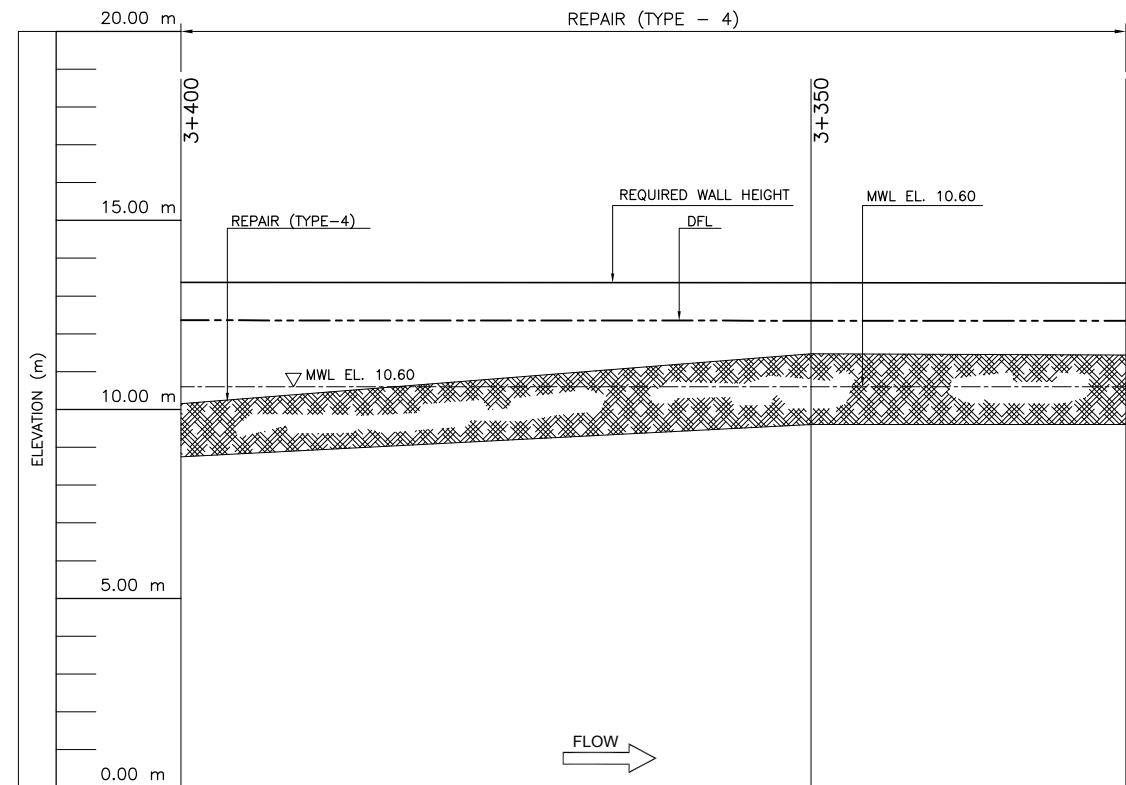
SHUJI KAKU  
TEAM LEADER

						PROJECT & LOCATION PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		SHEET CONTENTS LONGITUDINAL ELEVATION STA 2+854 ~ STA 3+072 LEFTBANK		SHEET NO. LP-RS LE 02	
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES			REVIEWED BY: PERFECTO L. ZAPLAN, JR. <small>CHIEF, HYDRAULIC DIVISION, BOD</small>		RECOMMENDING APPROVAL : PATRICK B. GATAN <small>PROJECT DIRECTOR PMO - MFCP</small>		APPROVED BY: GILBERTO S. REYES <small>DIRECTOR BOD</small>	
DESIGNED BY: EIJI MOKI <small>STRUCTURAL ENGINEER I</small>	CHECKED BY: TOSHIKI KAWAKAMI <small>THE CHECKER</small>	SUBMITTED BY: SHUJI KAKU <small>TEAM LEADER</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>	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	LONGITUDINAL ELEVATION STA 2+854 ~ STA 3+072 LEFTBANK	SHEET NO. LP-RS LE 02				



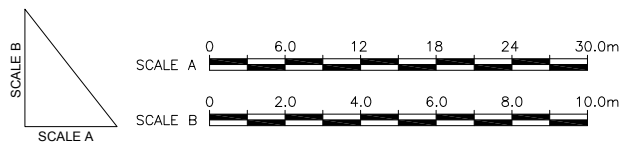
LONGITUDINAL ELEVATION (STA 3+160 ~ 3+300 L-BANK)

SCALE : AB



LONGITUDINAL ELEVATION (STA 3+325 ~ 3+400 L-BANK)

SCALE : AB



REVISIONS			
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NOTE:  
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

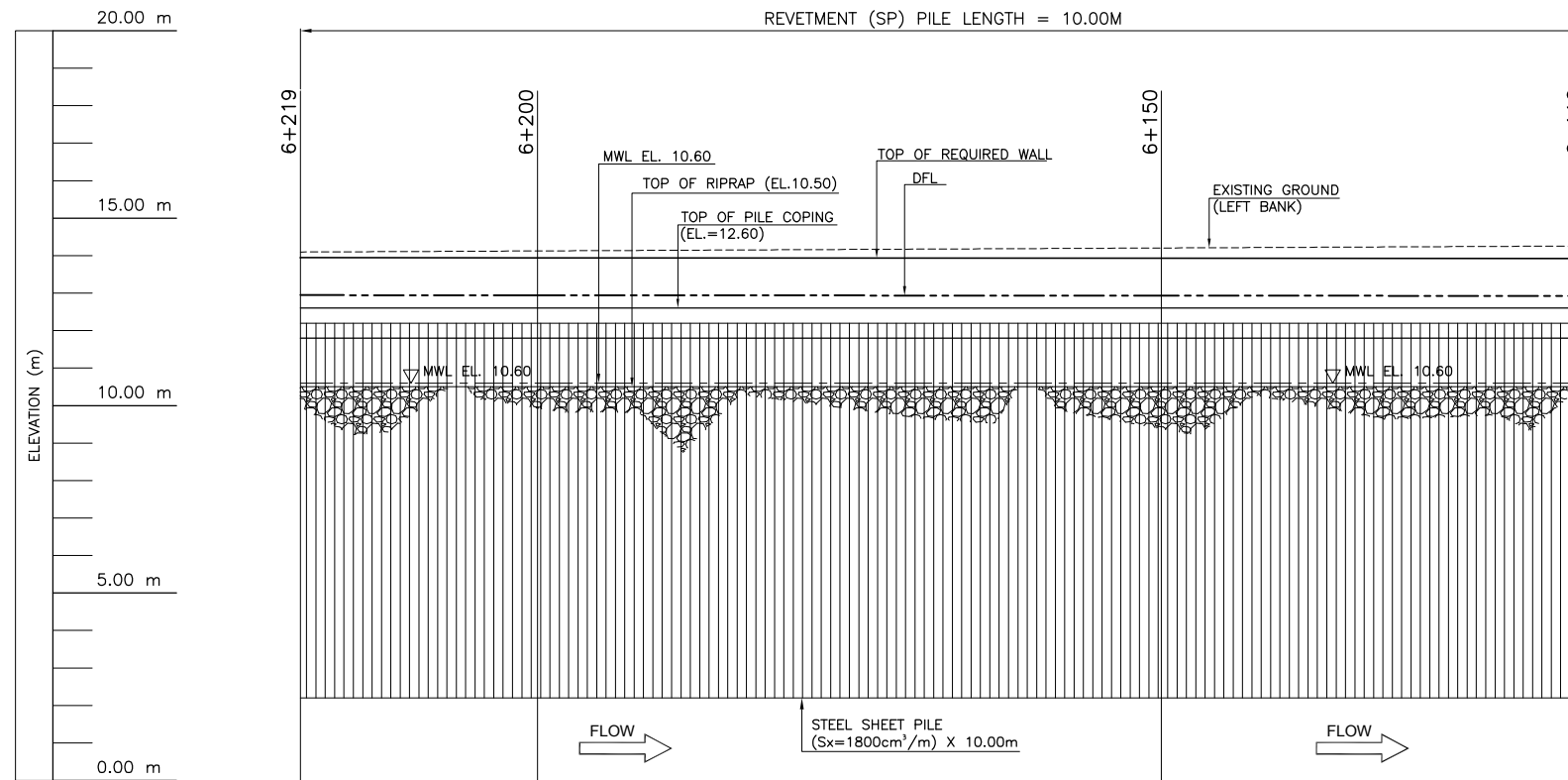
SHEET CONTENTS

LONGITUDINAL ELEVATION (STA 3+160 ~ 3+300) (STA 3+325 ~ 3+400)  
LEFT BANK

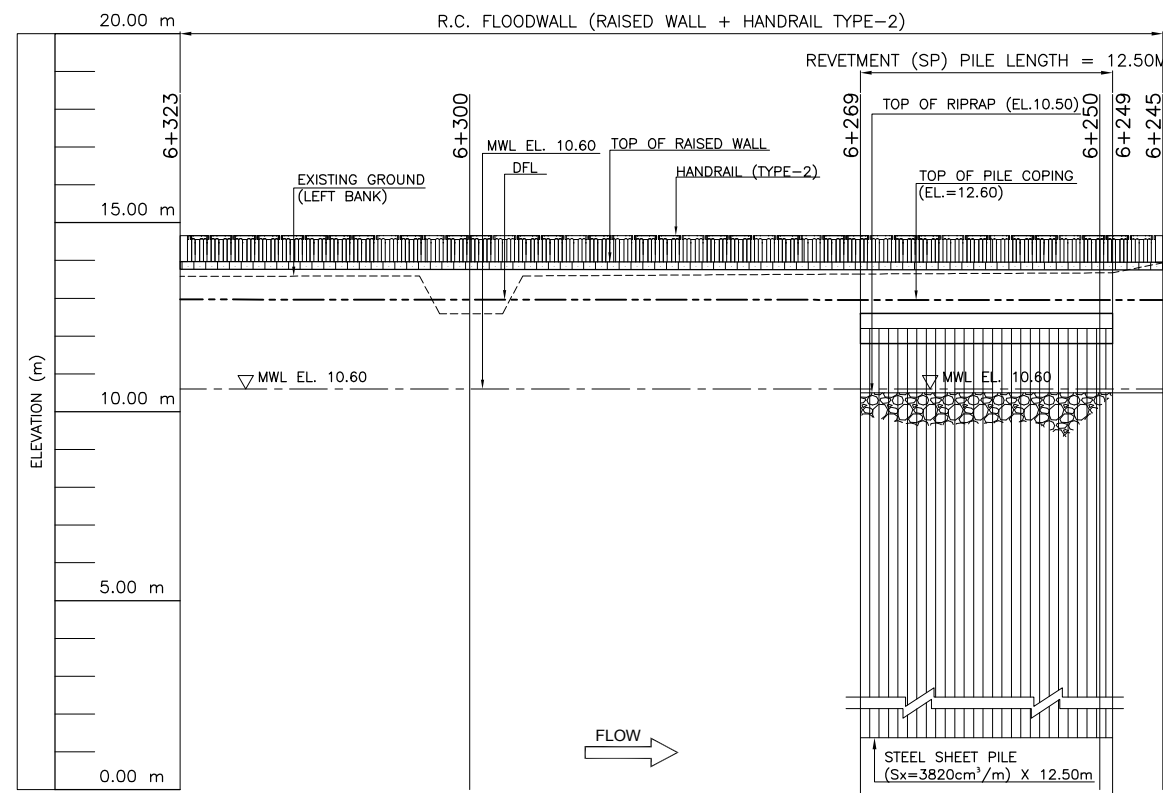
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LP-RS  
LE 03

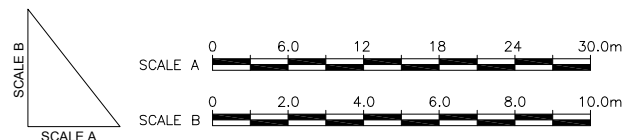




LONGITUDINAL ELEVATION (STA 6+116 ~ 6+219 L-BANK)  
SCALE : AB



LONGITUDINAL ELEVATION (STA 6+245 ~ 6+323 L-BANK)  
SCALE : AB

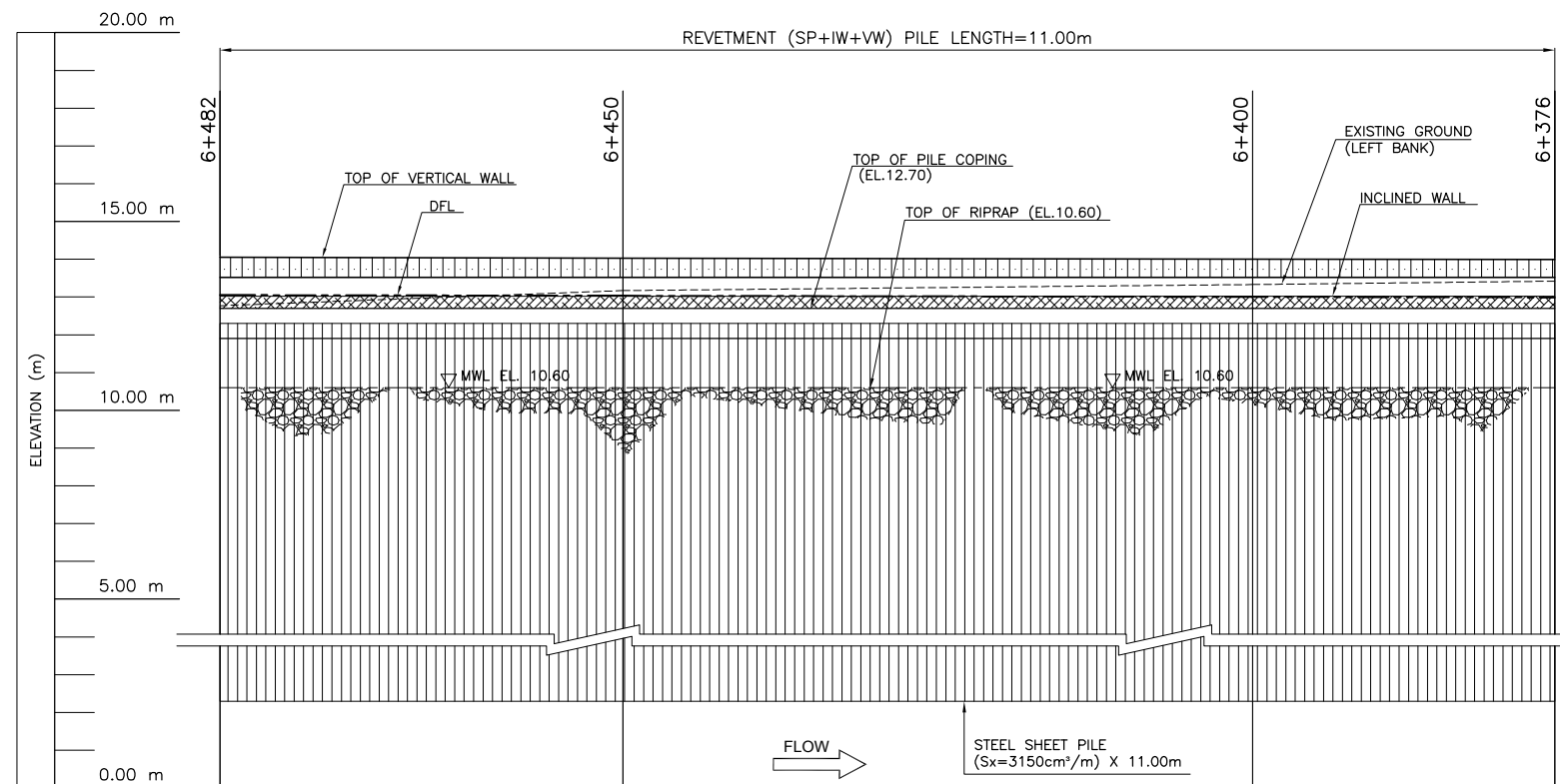


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NO.	DESCRIPTION	APPROVED	DATE

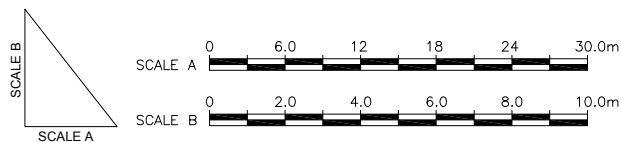
NOTE:  
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SHUJI KAKU  
TEAM LEADER

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	LONGITUDINAL ELEVATION STA. 6+116 ~ STA6+219 STA 6+245 ~ STA 6+323 LEFT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



LONGITUDINAL ELEVATION (STA 6+376 ~ 6+482 L-BANK)  
SCALE : AB

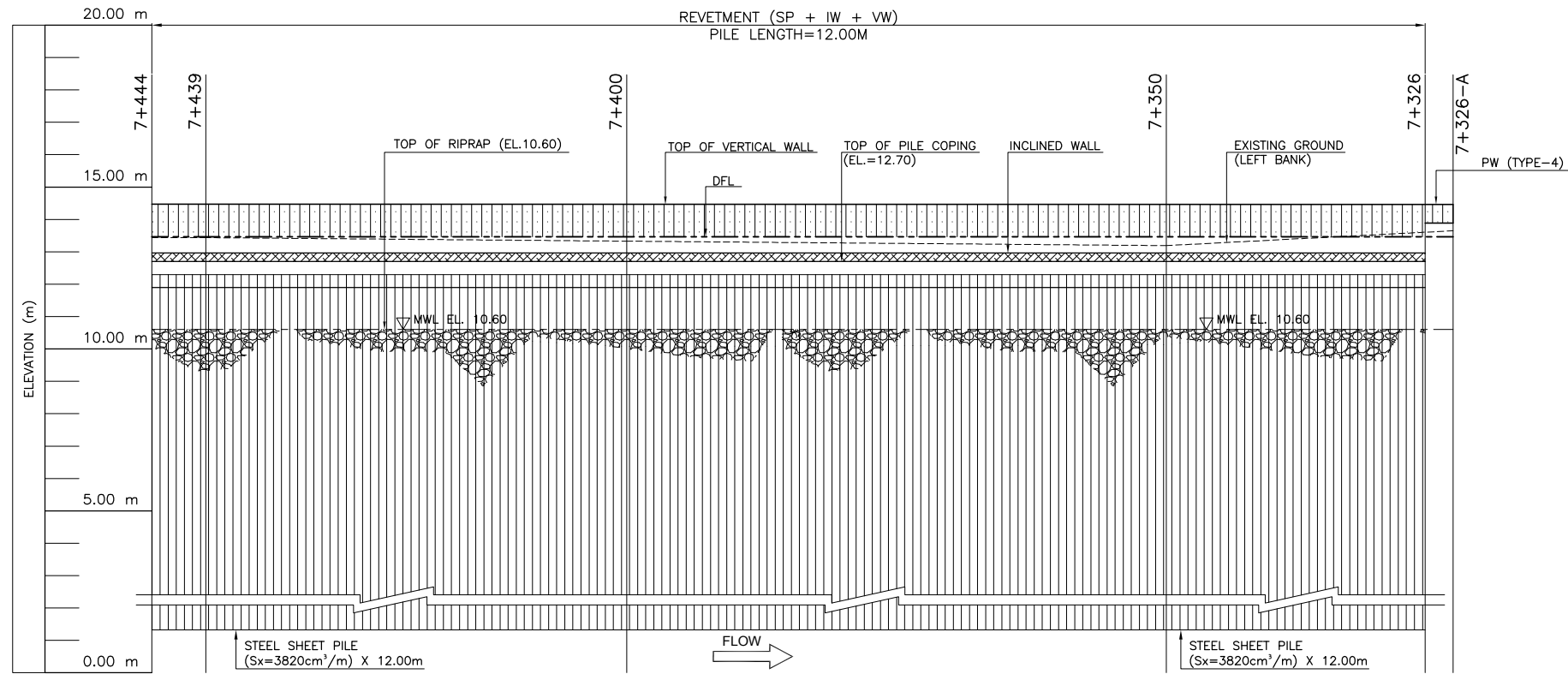


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

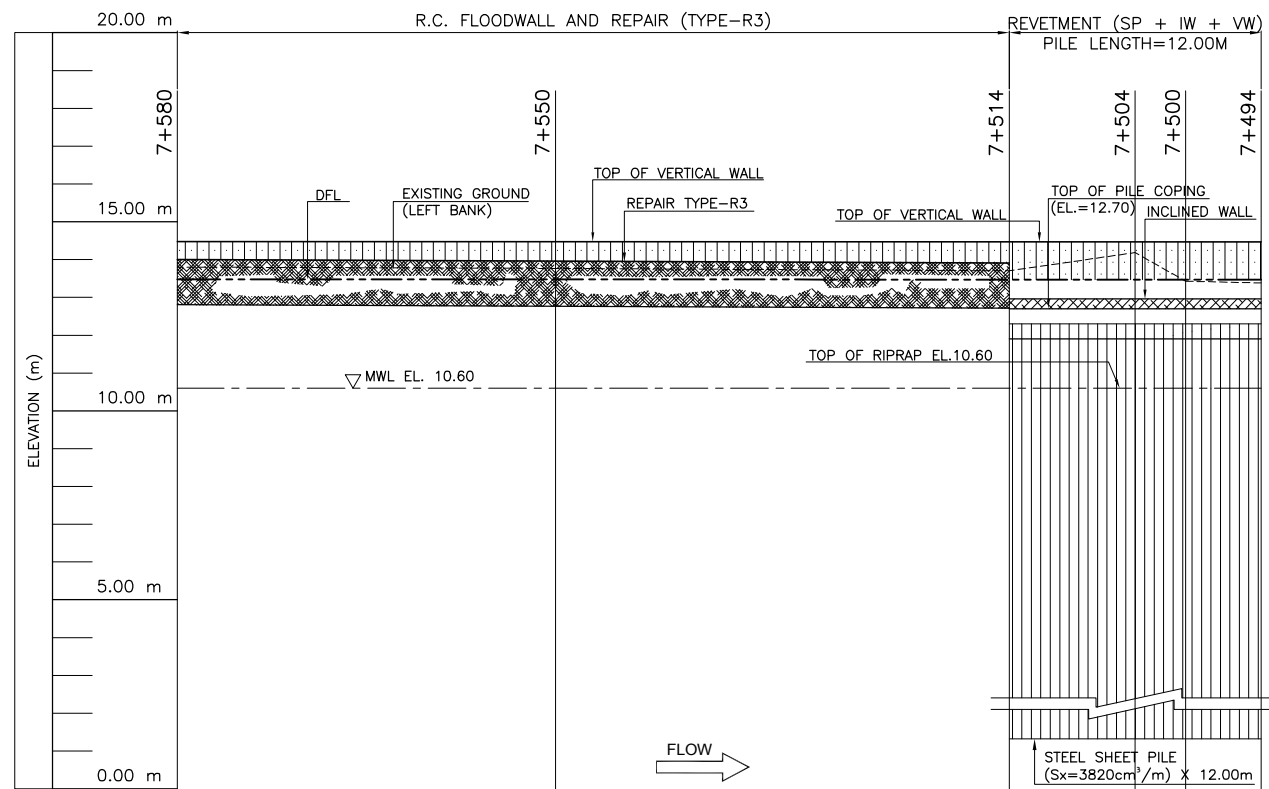
NOTE:  
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SHUJI KAKU  
TEAM LEADER

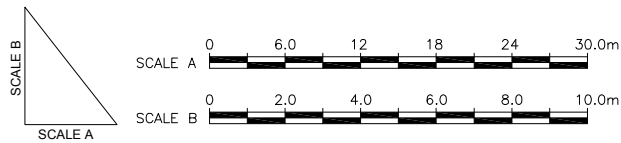
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL :	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	LONGITUDINAL ELEVATION STA 6+376 ~ STA 6+482 LEFT BANK	LP-RS LE 05	
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP



LONGITUDINAL ELEVATION (STA 7+326-A ~ 7+444 L-BANK)  
SCALE : AB



LONGITUDINAL ELEVATION (STA 7+494 ~ 7+580 L-BANK)  
SCALE : AB



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

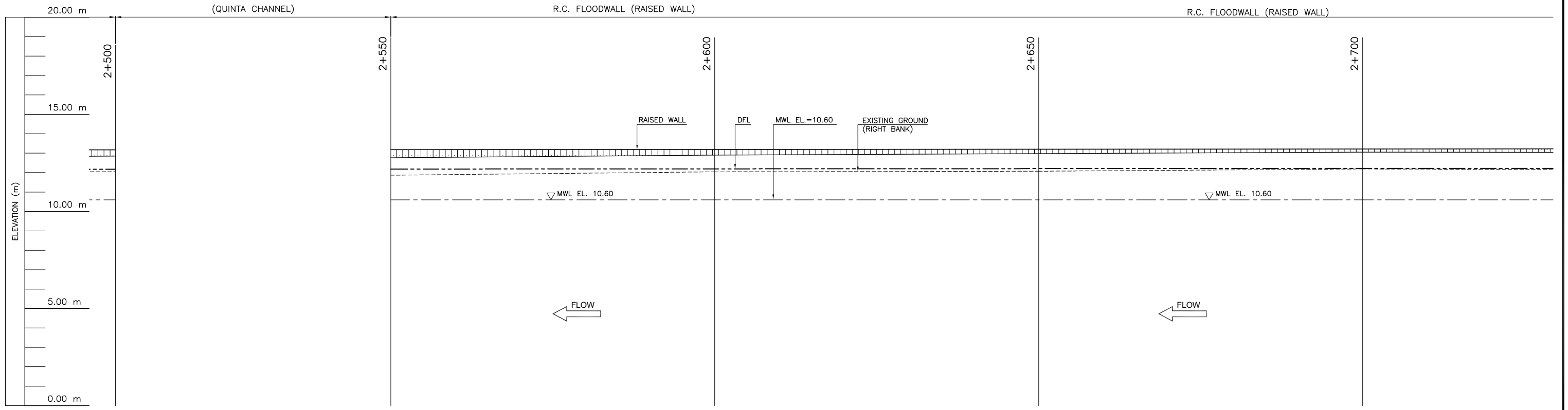
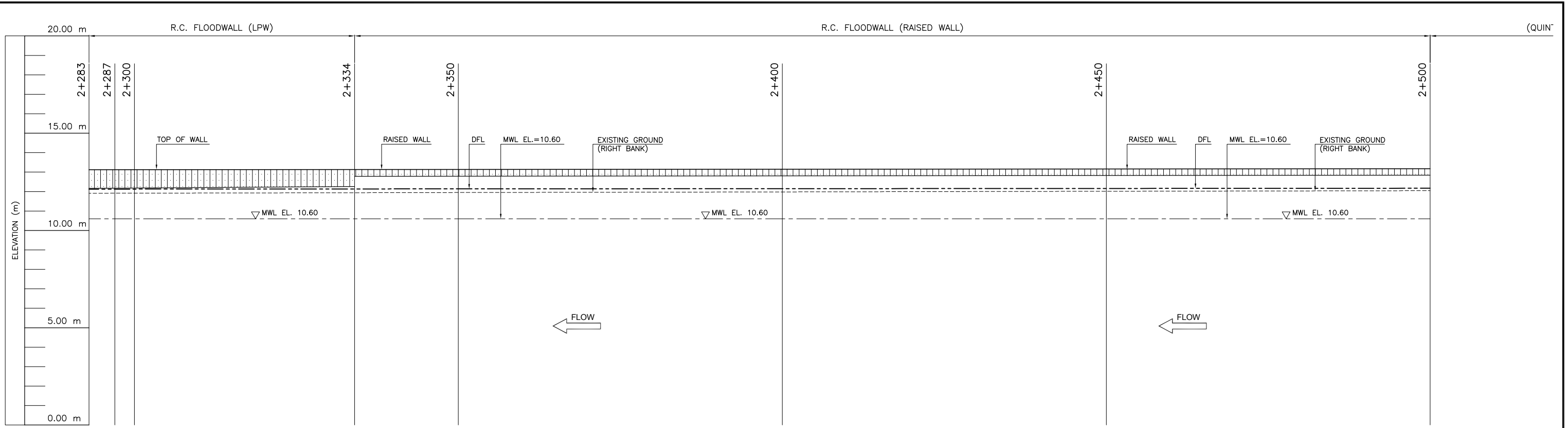
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

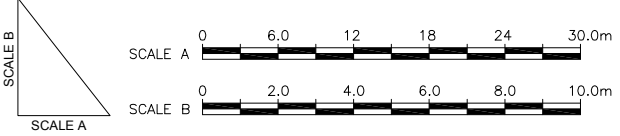
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: LONGITUDINAL ELEVATION STA 7+326-A ~ STA 7+444 STA 7+494 ~ STA 7+580 LEFT BANK

SHEET NO.: LP-RS LE 06



LONGITUDINAL ELEVATION (STA 2+283 ~ 2+700 R-BANK)  
SCALE : AB

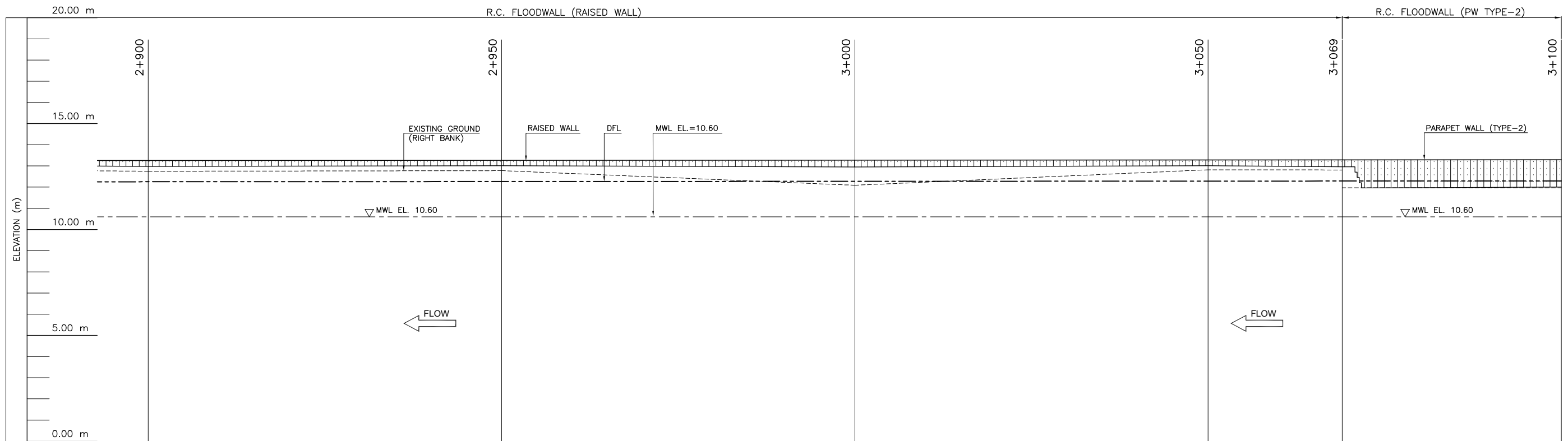
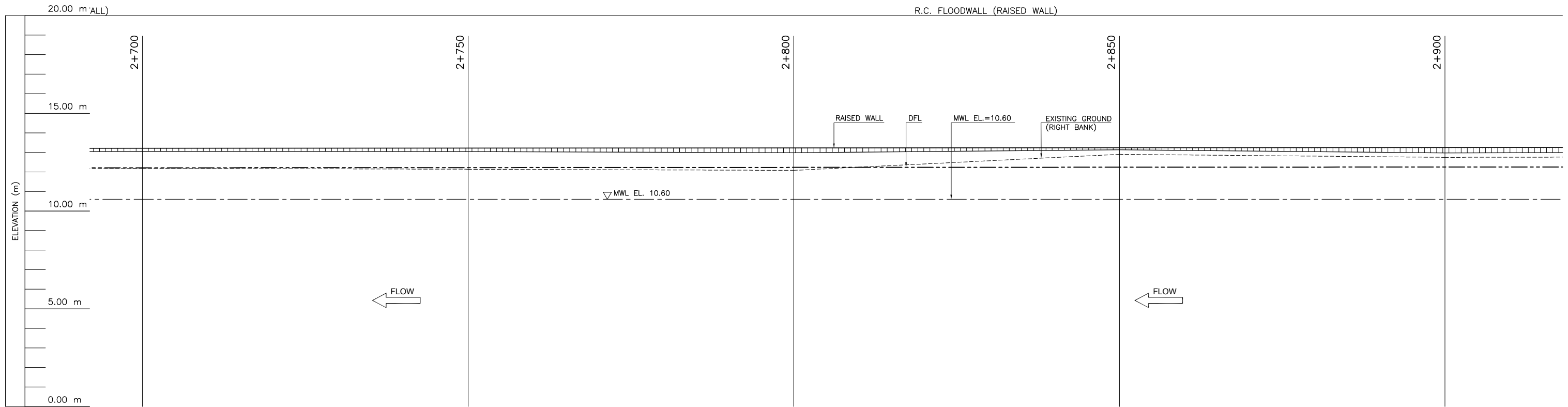


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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.

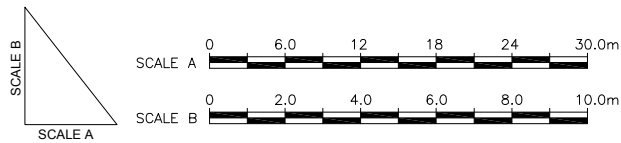
SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES 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> LONGITUDINAL ELEVATION STA 2+283 ~ STA 2+700 RIGHT BANK	<b>SHEET NO.</b> LP-RS LE 07
<b>DESIGNED BY:</b> EIJI MOKI <small>STRUCTURAL ENGINEER I</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> <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>			



LONGITUDINAL ELEVATION (STA 2+700 ~ 3+100 R-BANK)

SCALE : AB



REVISIONS			
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SHUJI KAKU  
 TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
 STRUCTURAL ENGINEER I

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

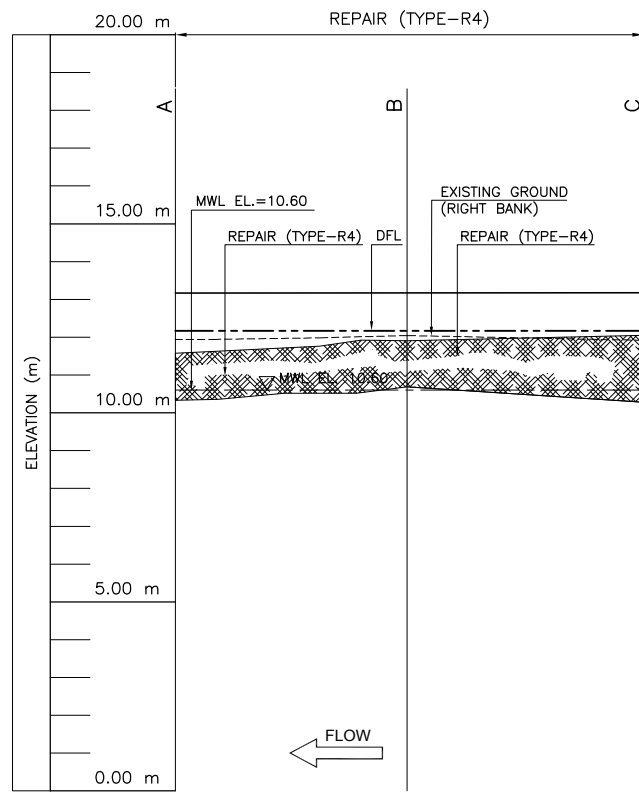
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

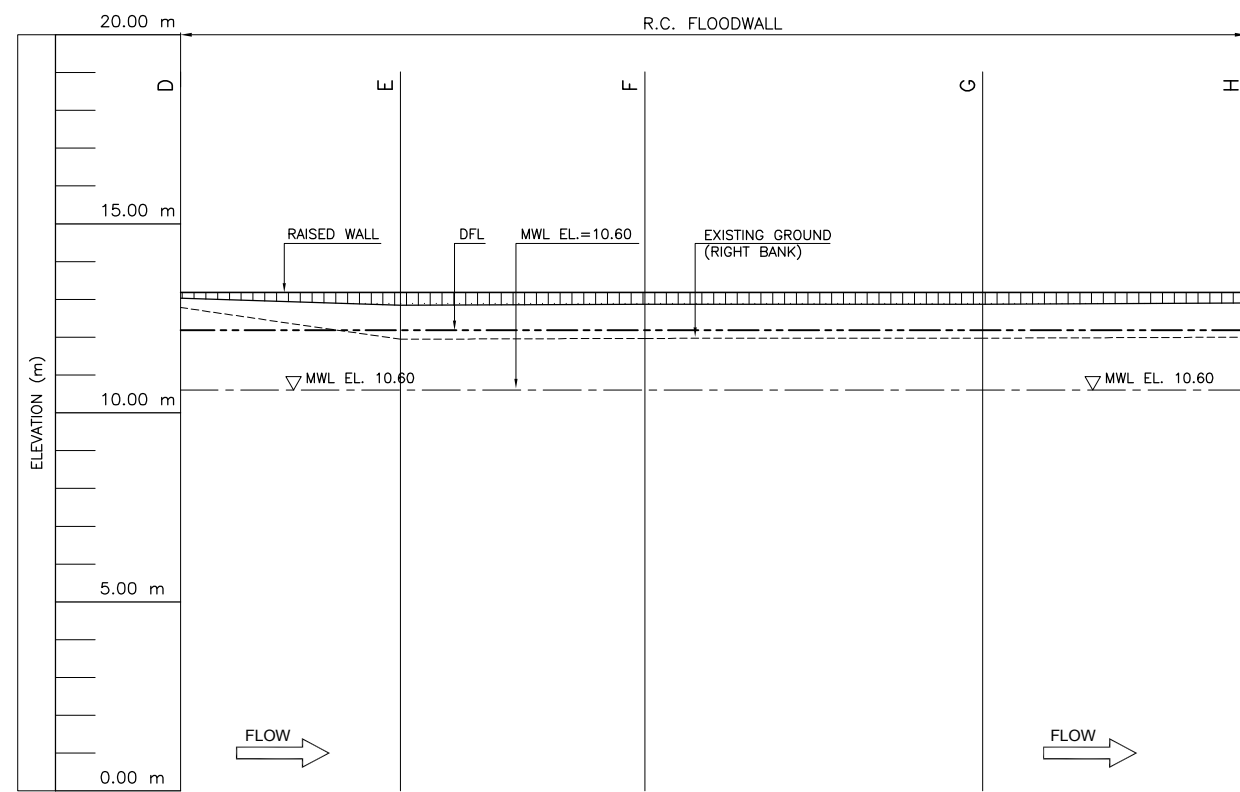
LONGITUDINAL ELEVATION STA 2+700 ~ STA 3+100  
 RIGHT BANK

SHEET NO.

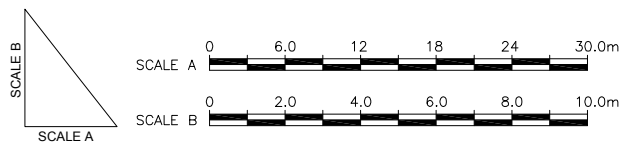
LP-RS  
 LE 08



LONGITUDINAL ELEVATION (STA A ~ C) QUINTA CHANNEL  
SCALE : AB



LONGITUDINAL ELEVATION (STA D ~ H) QUINTA CHANNEL  
SCALE : AB



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

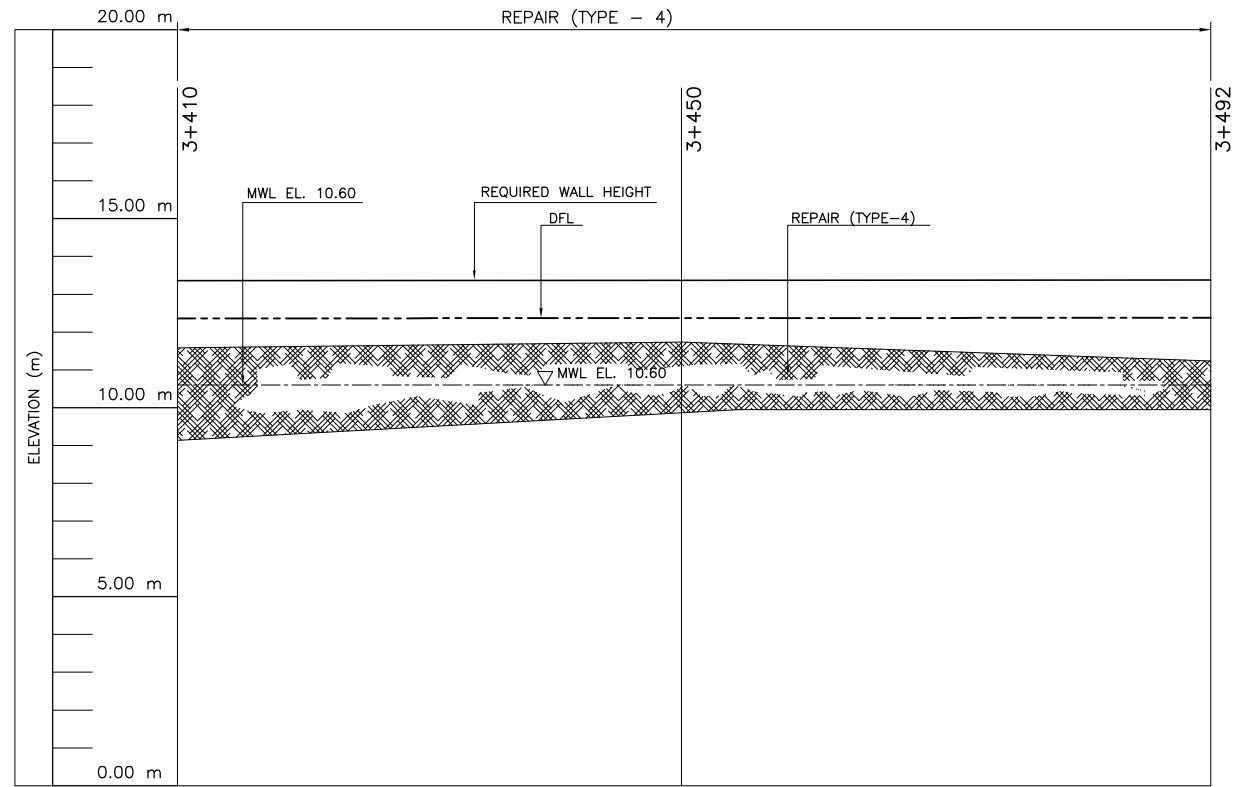
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

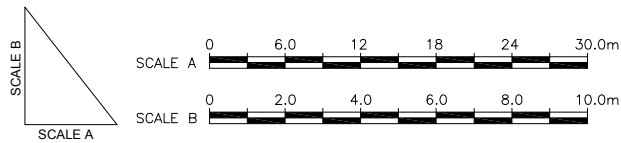
LONGITUDINAL ELEVATION (STA. A~C & D ~ H)  
RIGHT BANK

SHEET NO.





LONGITUDINAL ELEVATION (STA 3+410 ~ 3+492 R-BANK)  
SCALE : AB

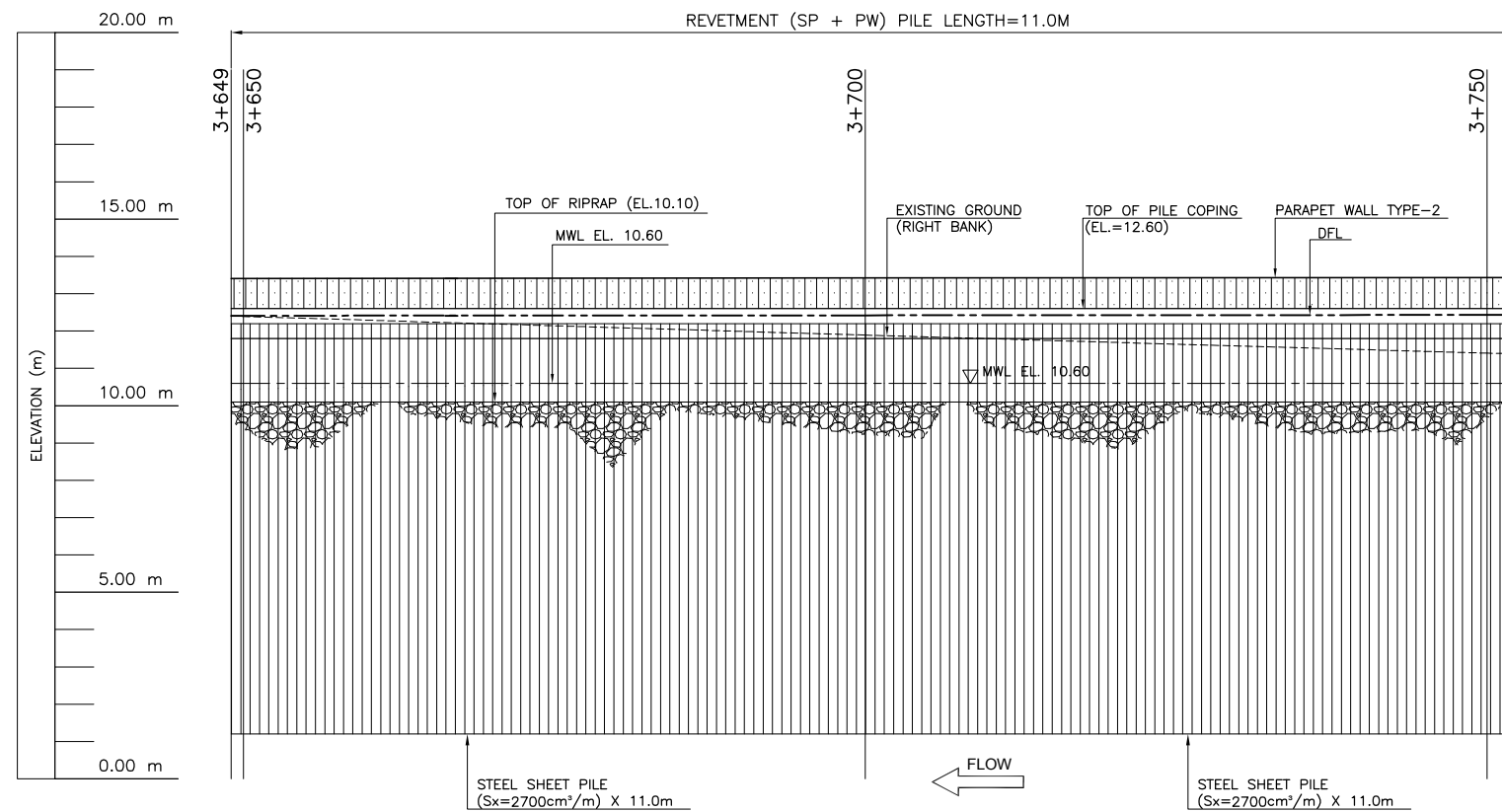


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NO.	DESCRIPTION	APPROVED	DATE

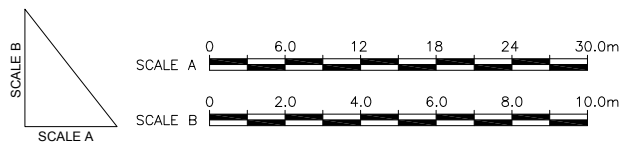
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SHUJI KAKU  
TEAM LEADER

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	LONGITUDINAL ELEVATION (STA 3+410 ~ 3+492) RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



LONGITUDINAL ELEVATION (STA 3+649 ~ 3+753 R-BANK)  
SCALE : AB



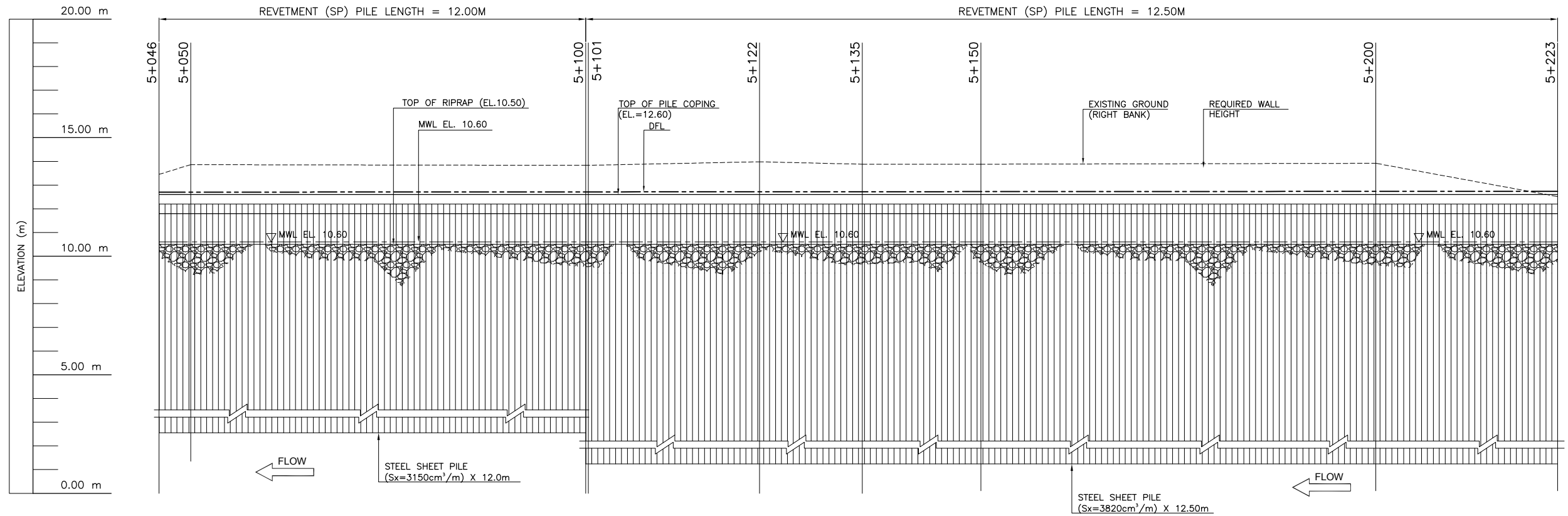
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

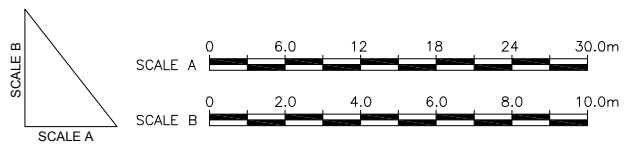
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.	
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	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP				GILBERTO S. REYES DIRECTOR BOD





LONGITUDINAL ELEVATION (STA 5+046 ~ 5+223 R-BANK)

SCALE : AB



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

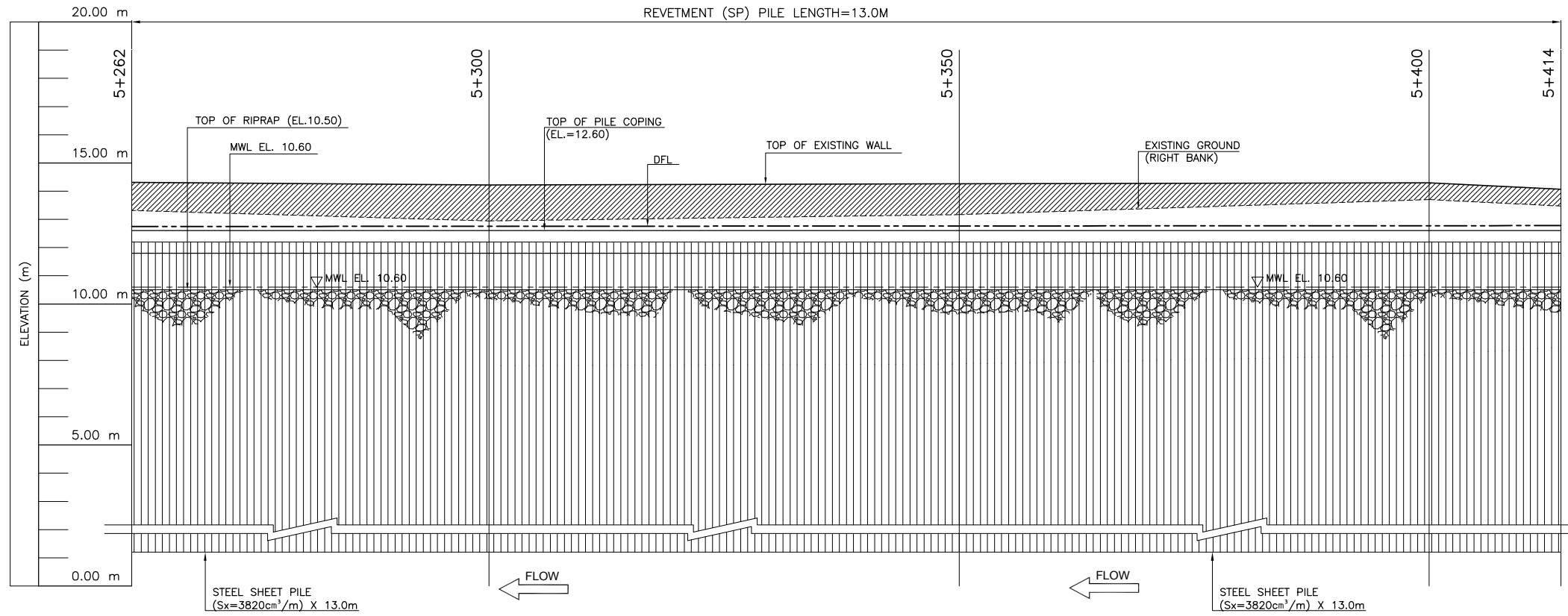
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

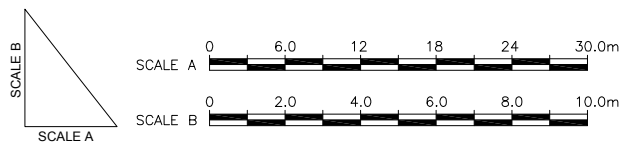
LONGITUDINAL ELEVATION  
STA 5+046 ~ STA 5+223  
RIGHT BANK

SHEET NO.

LP-RS  
LE 12



LONGITUDINAL ELEVATION (STA 5+262 ~ 5+414 R-BANK)  
SCALE : AB

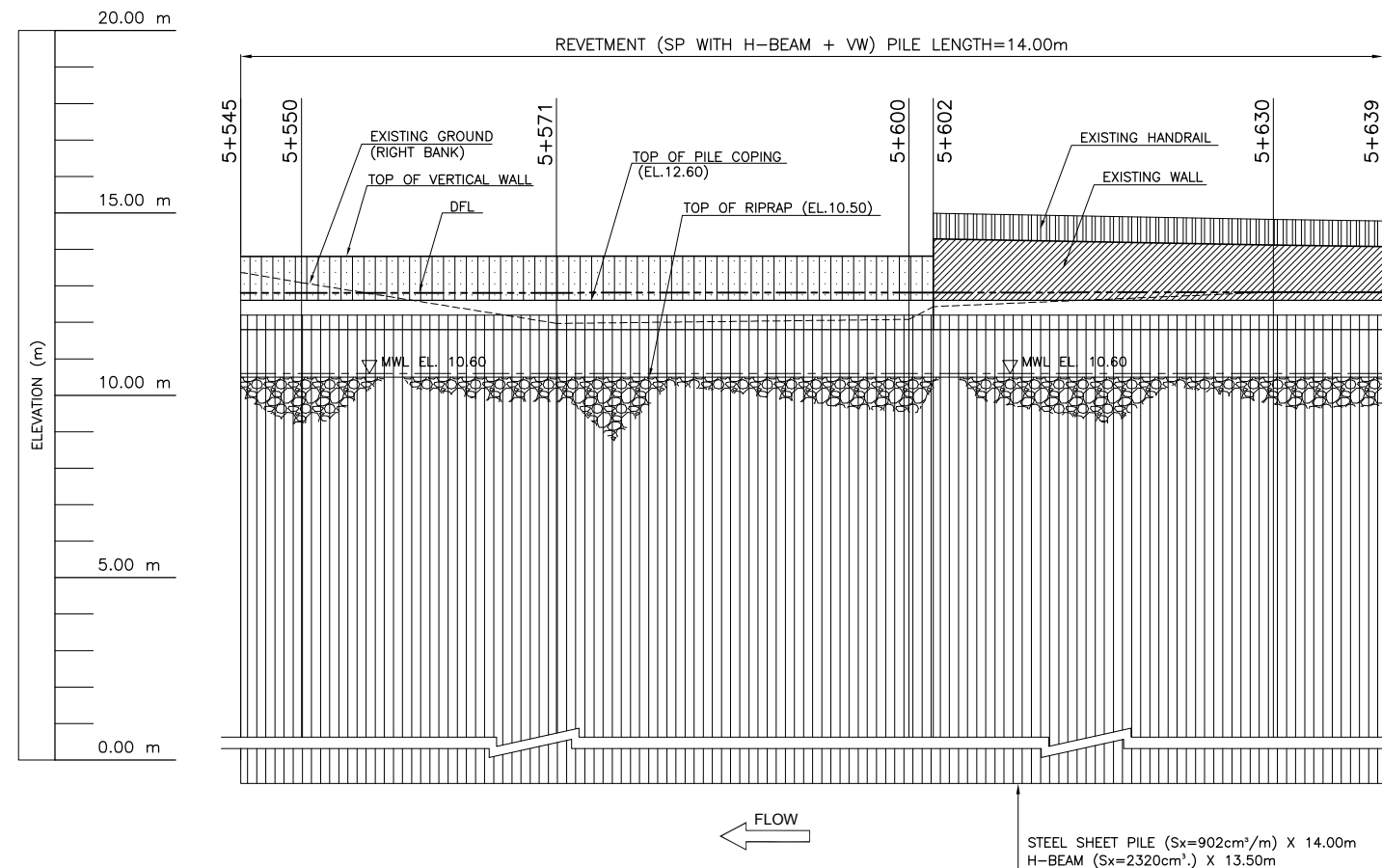


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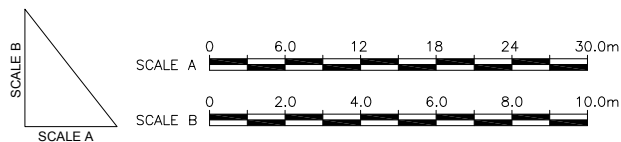
SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL :	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	LONGITUDINAL ELEVATION STA 5+262 ~ STA 5+414 RIGHT BANK	LP-RS LE 13	
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP



LONGITUDINAL ELEVATION (STA 5+545 ~ 5+639 R-BANK)

SCALE : AB



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

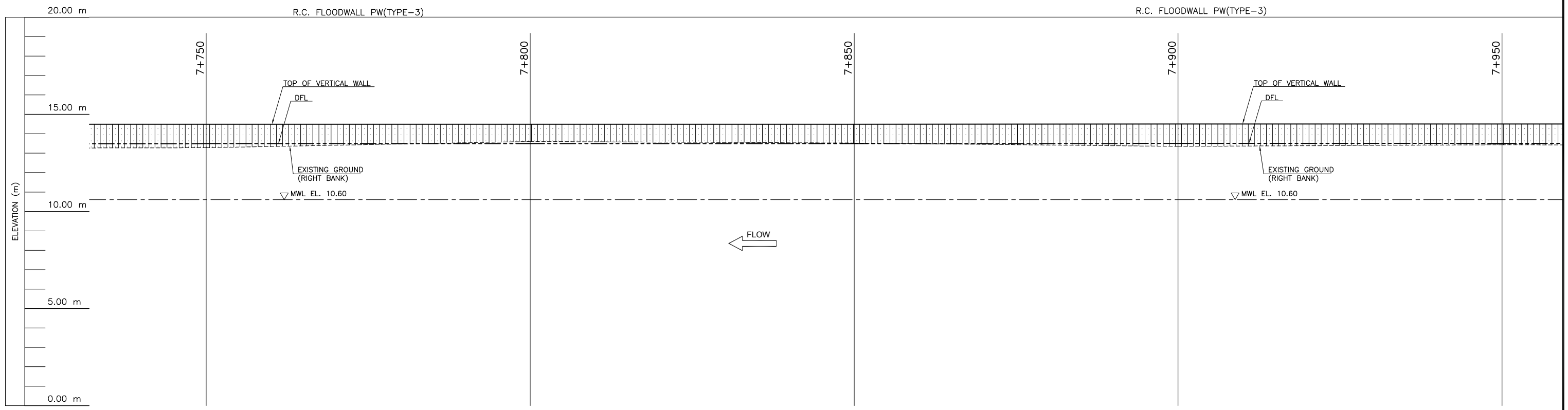
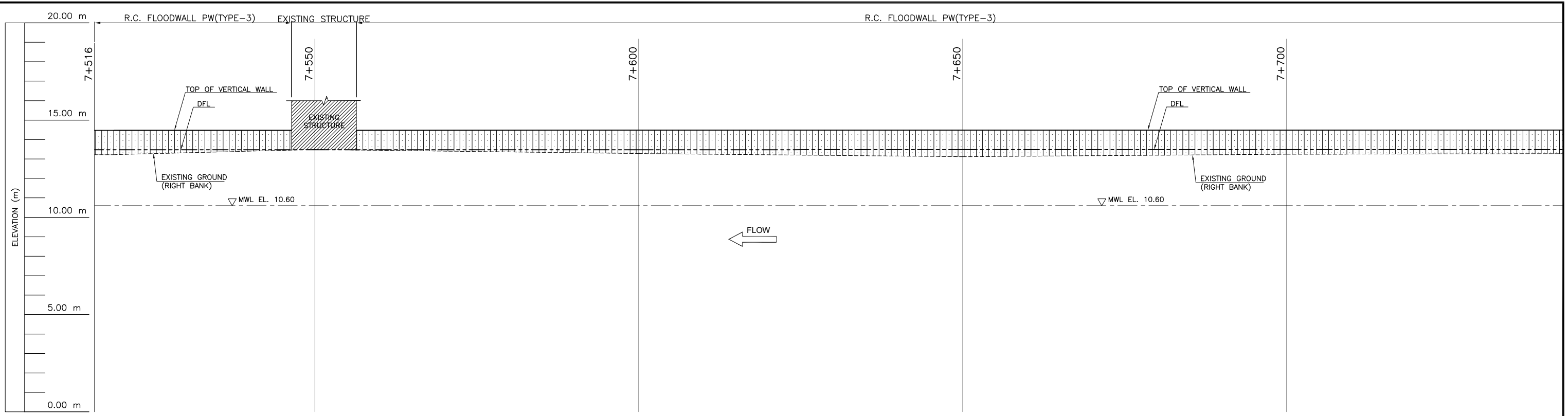
ROGELIO L. SINGSON  
SECRETARY

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

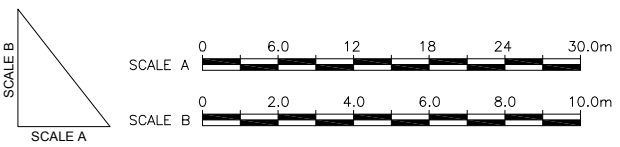
SHEET CONTENTS  
LONGITUDINAL ELEVATION STA 5+545 ~ STA 5+639  
RIGHT BANK

SHEET NO.  
LP-RS  
LE 14





LONGITUDINAL ELEVATION (STA 7+516 ~ 7+950 R-BANK)



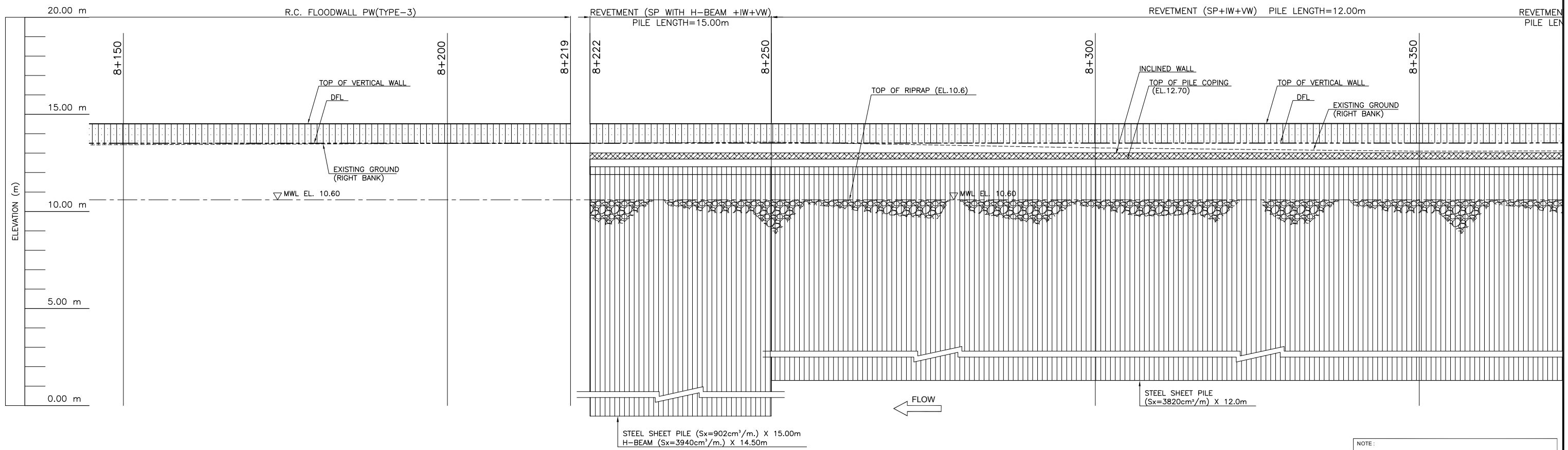
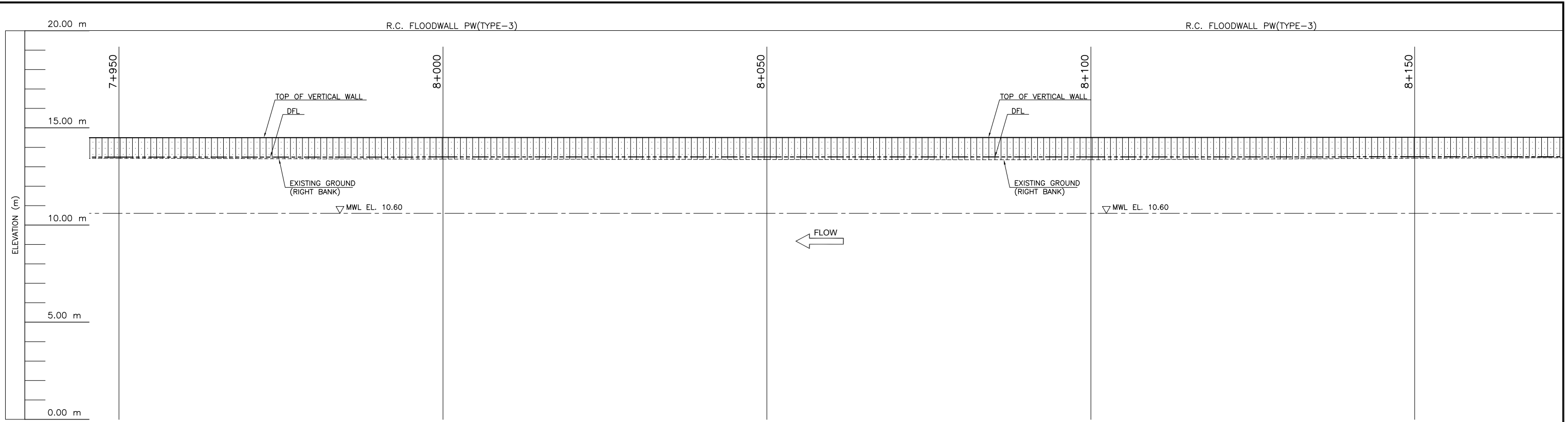
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REVISIONS			
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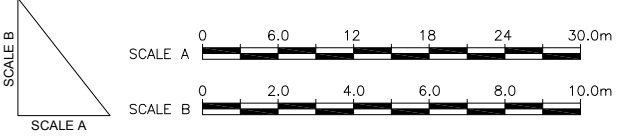
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SHUJI KAKU  
TEAM LEADER

<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> LONGITUDINAL ELEVATION STA 7+516 ~ STA 7+950 RIGHT BANK	<b>SHEET NO.</b> 
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:				
EIJI MOKI STRUCTURAL ENGINEER I	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			



LONGITUDINAL ELEVATION (STA 7+950 ~ 8+350 R-BANK)

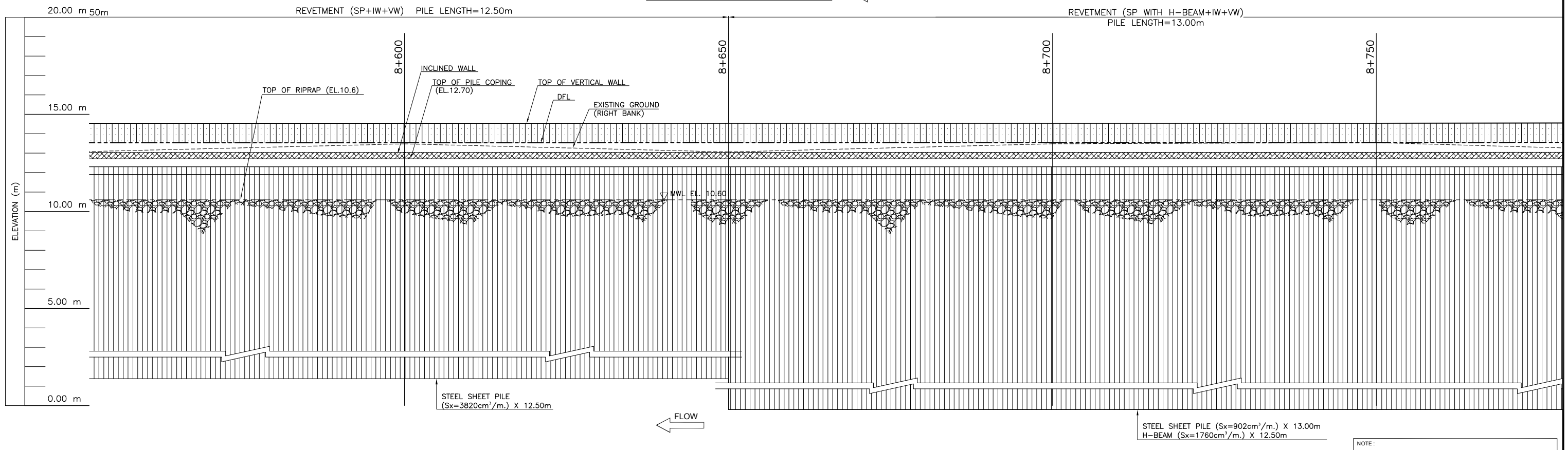
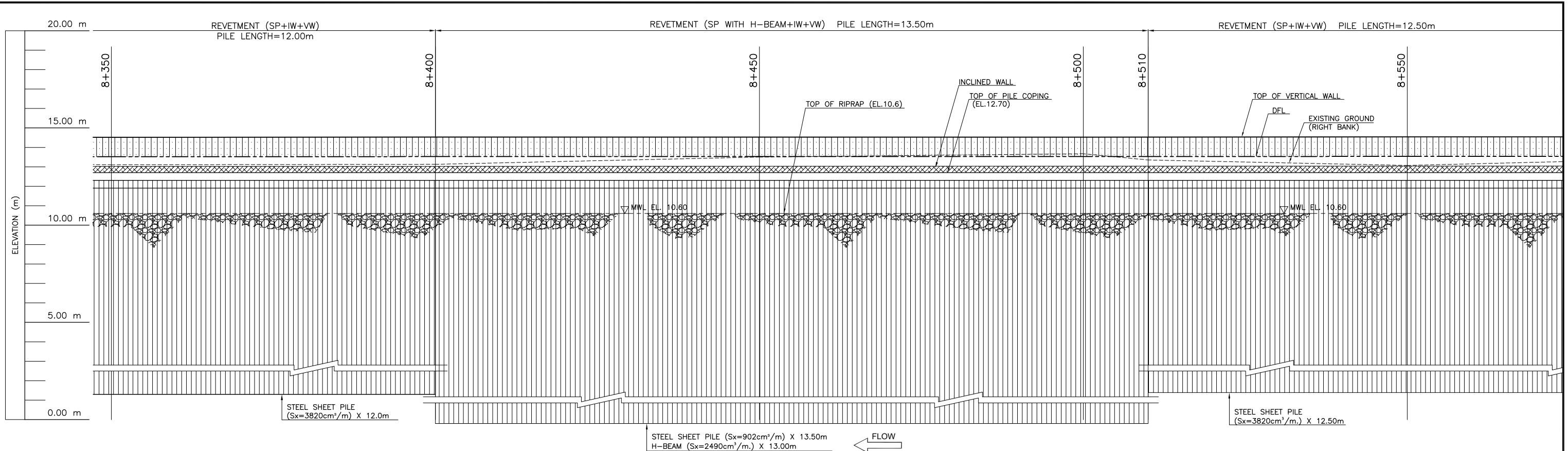


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

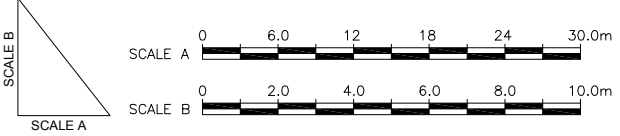
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DESIGNED BY: EIJI MOKI STRUCTURAL ENGINEER I	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER	REVIEWED BY: PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	RECOMMENDING APPROVAL: PATRICK B. GATAN PROJECT DIRECTOR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



LONGITUDINAL ELEVATION (STA 8+350 ~ 8+750 R-BANK)

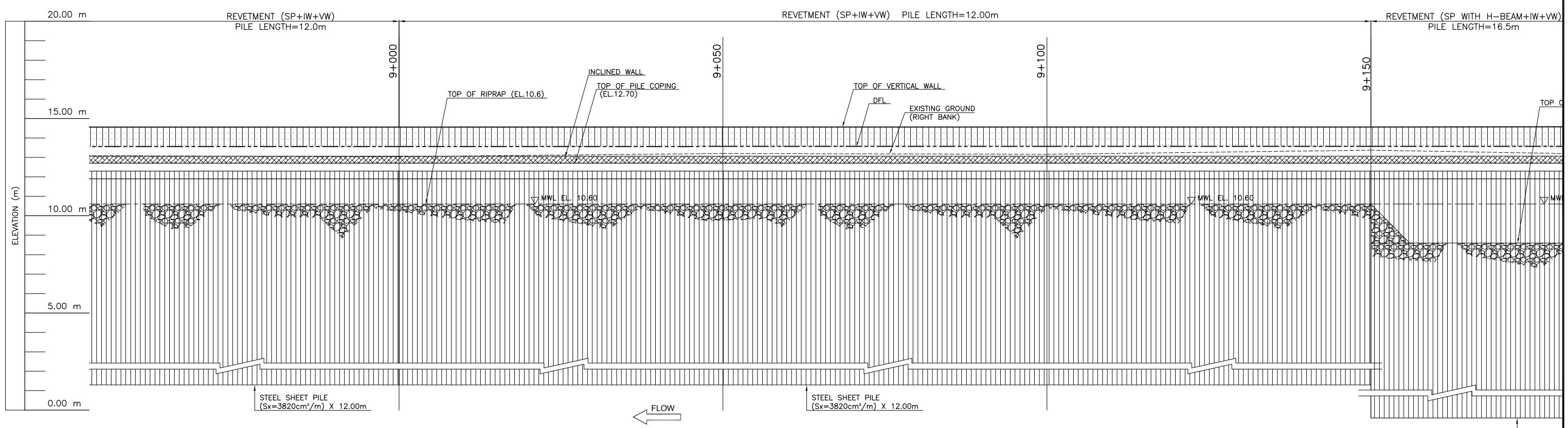
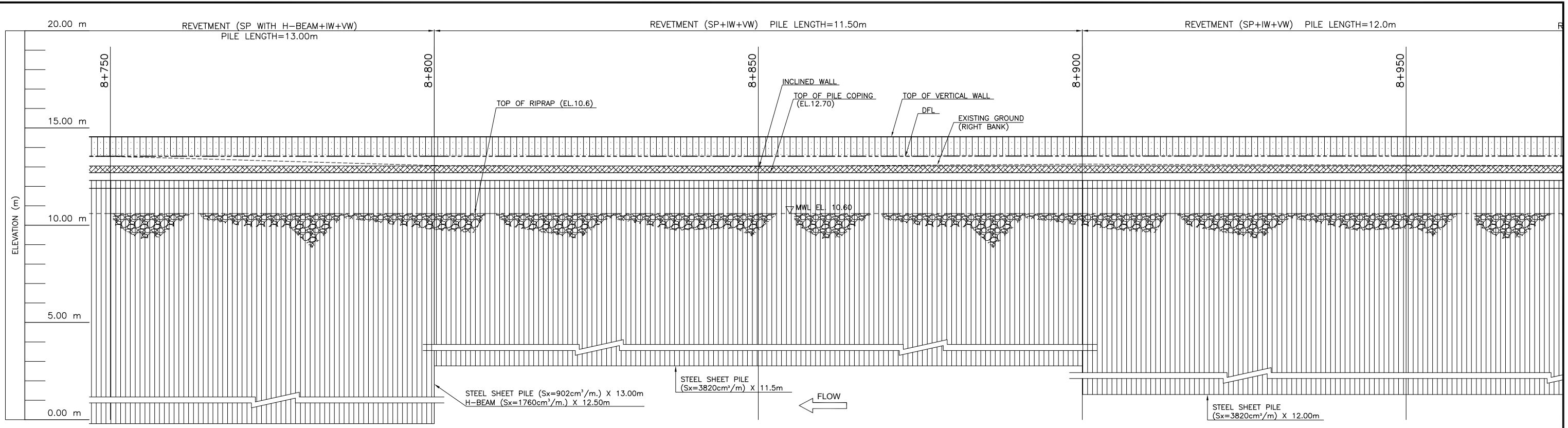


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NO.	DESCRIPTION	APPROVED	DATE

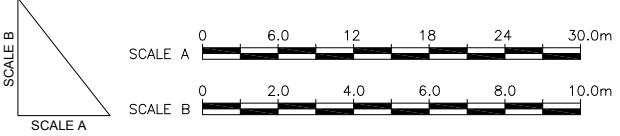
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF 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> LONGITUDINAL ELEVATION STA 8+350 ~ STA 8+750 RIGHT BANK		<b>SHEET NO.</b> LP-RS LE 18
<b>DESIGNED BY:</b> EIJI MOKI <small>STRUCTURAL ENGINEER I</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>	<b>DESIGNED BY:</b> EIJI MOKI <small>STRUCTURAL ENGINEER I</small>		<b>CHECKED BY:</b> TOSHIKI KAWAKAMI <small>THE CHECKER</small>



LONGITUDINAL ELEVATION (STA 8+750 ~ 9+150 R-BANK)



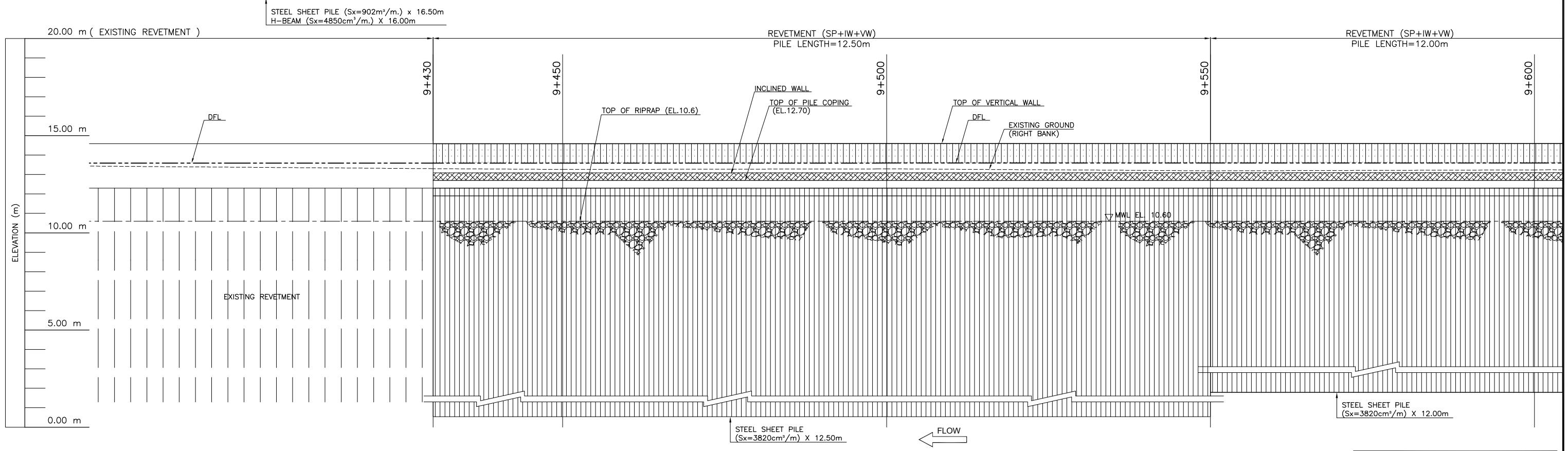
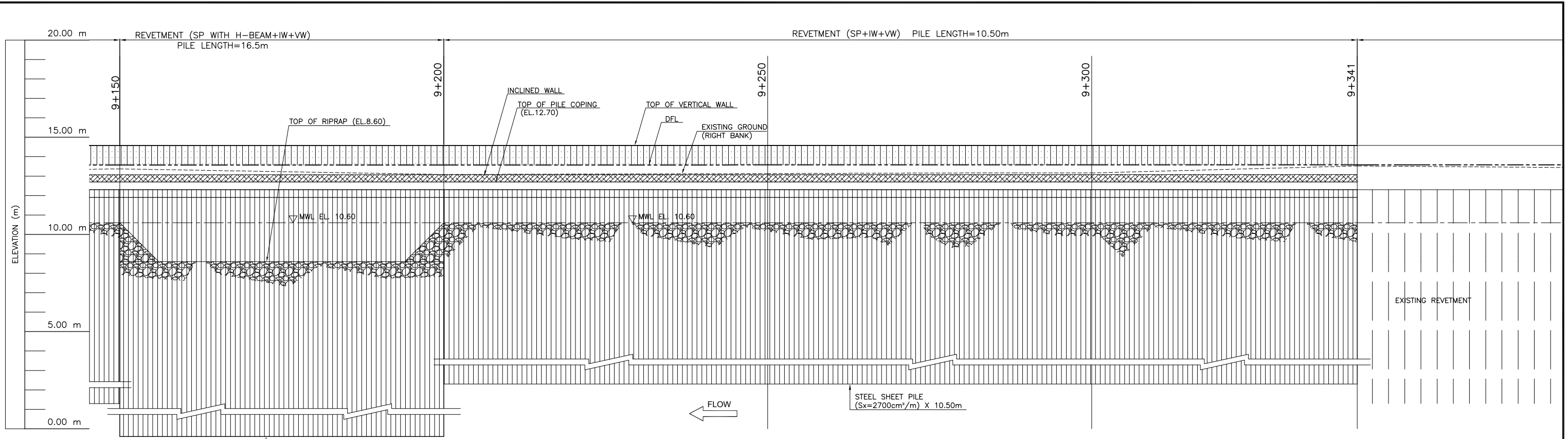
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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.

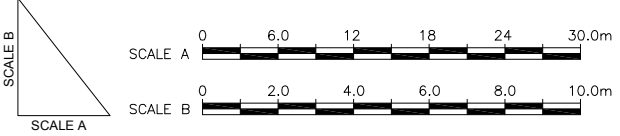
SHUJI KAKU  
 TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>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> LONGITUDINAL ELEVATION STA 8+750 ~ STA 9+150 RIGHT BANK	<b>SHEET NO.</b> LP-RS LE 19
<b>DESIGNED BY:</b> EIJI MOKI <small>STRUCTURAL ENGINEER I</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 AND APPROVAL 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>		





LONGITUDINAL ELEVATION (STA 9+150 ~ 9+600 R-BANK)



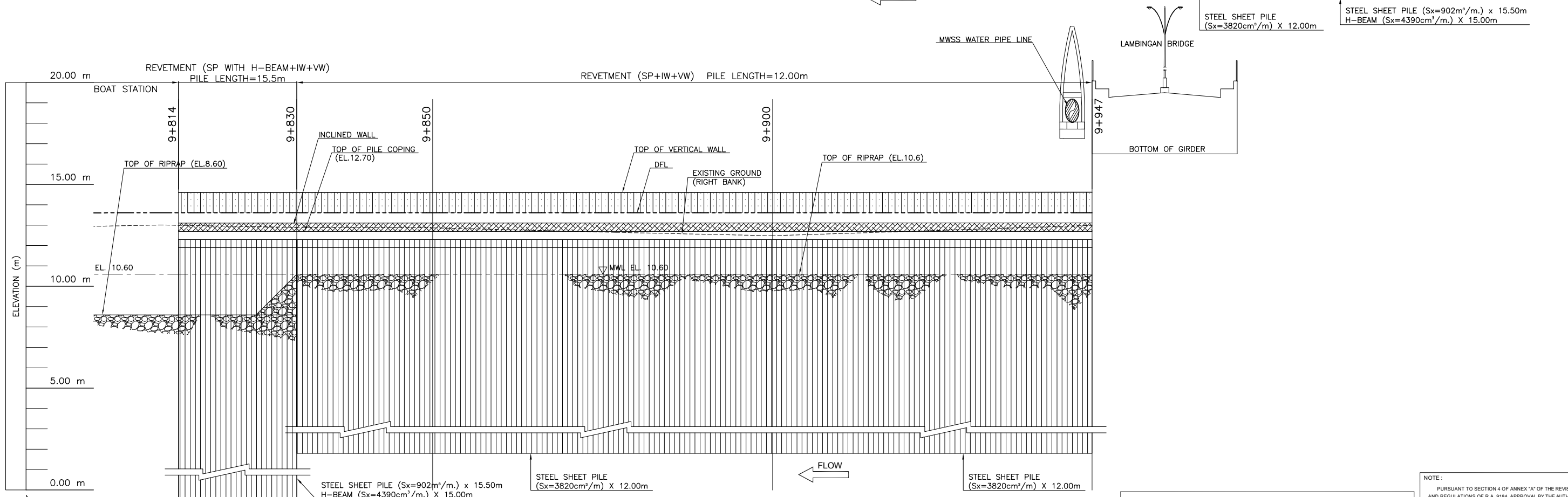
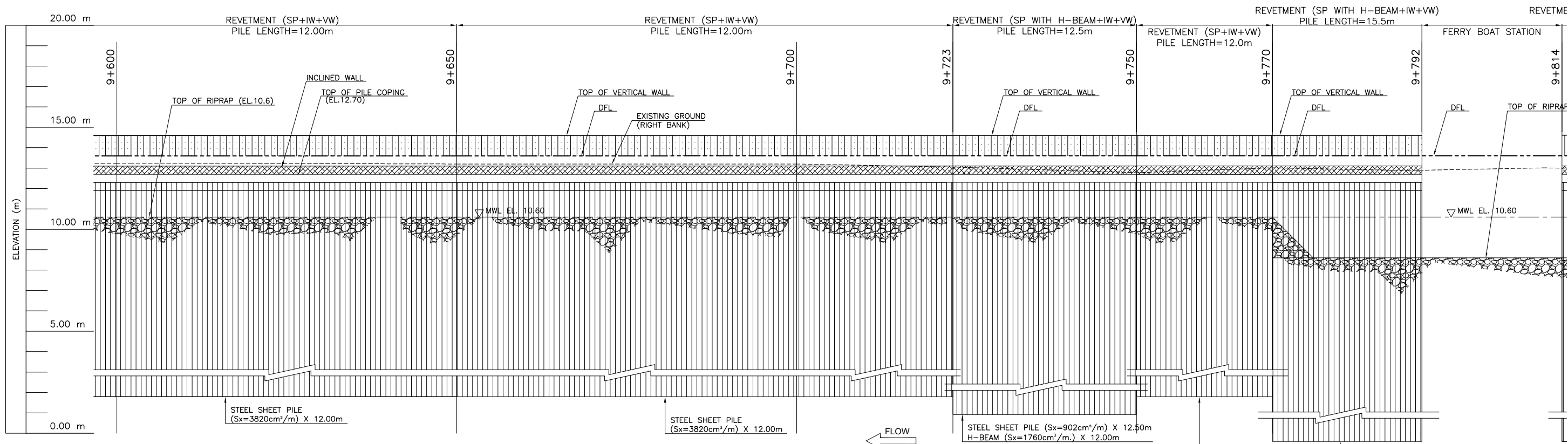
SCALE : AB

REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

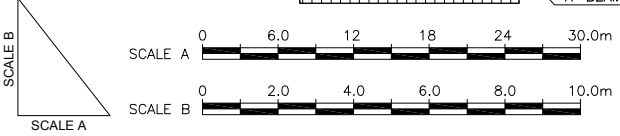
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SHUJI KAKU  
TEAM LEADER

<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>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> LONGITUDINAL ELEVATION STA 9+150 ~ STA 9+600 RIGHT BANK	<b>SHEET NO.</b> LP-RS LE 20
<b>DESIGNED BY:</b> EIJI MOKI <small>STRUCTURAL ENGINEER I</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>			



LONGITUDINAL ELEVATION (STA 9+600 ~ 9+947 R-BANK)  
SCALE : AB

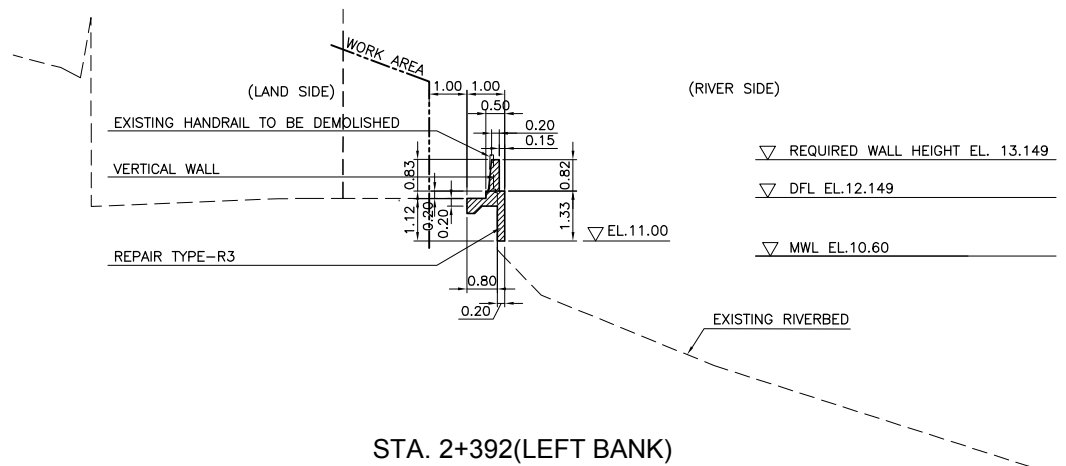


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

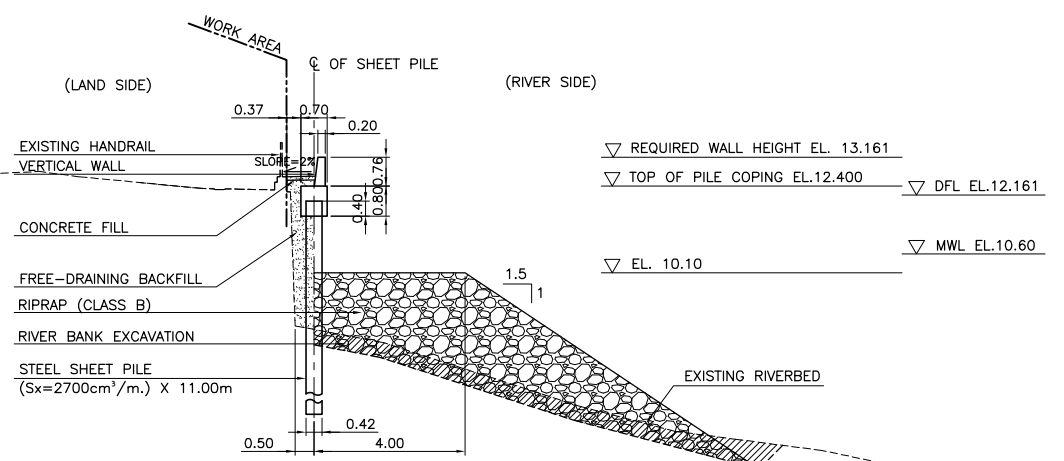
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SHUJI KAKU  
TEAM LEADER

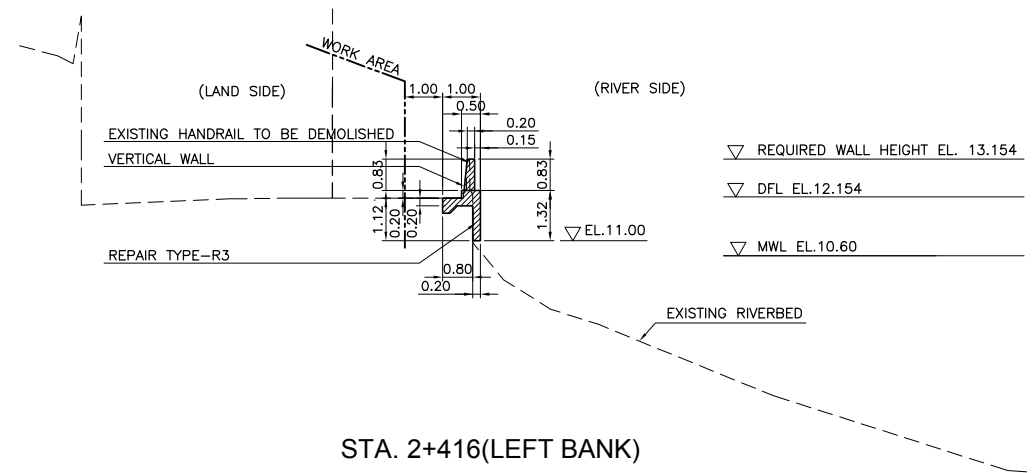
<b>JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN</b> 			<b>REPUBLIC OF THE PHILIPPINES</b> <b>DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b> 			<b>PROJECT &amp; LOCATION</b> PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA		<b>SHEET CONTENTS</b> LONGITUDINALELEVATION STA 9+600 ~ STA 9+947 RIGHT BANK		<b>SHEET NO.</b> LP-RS LE 21
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:					
EIJI MOKI STRUCTURAL ENGINEER I	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						



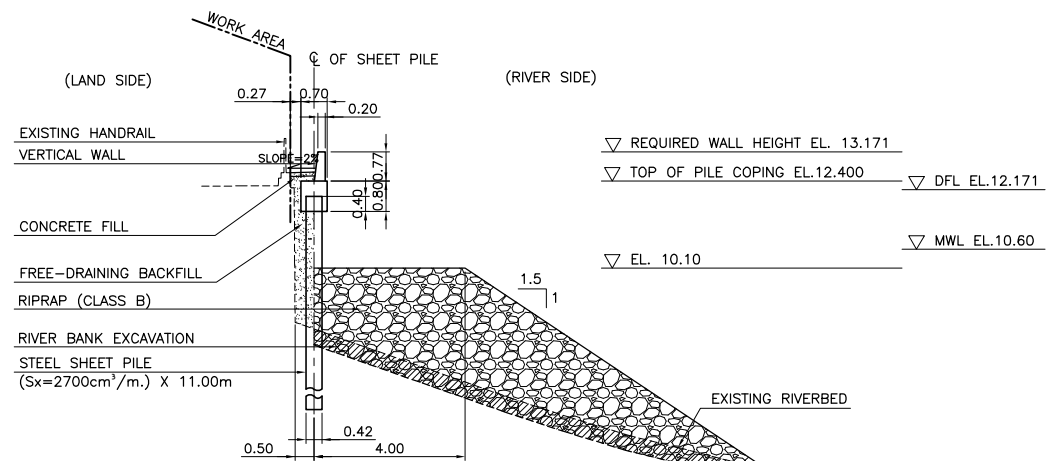
STA. 2+392(LEFT BANK)



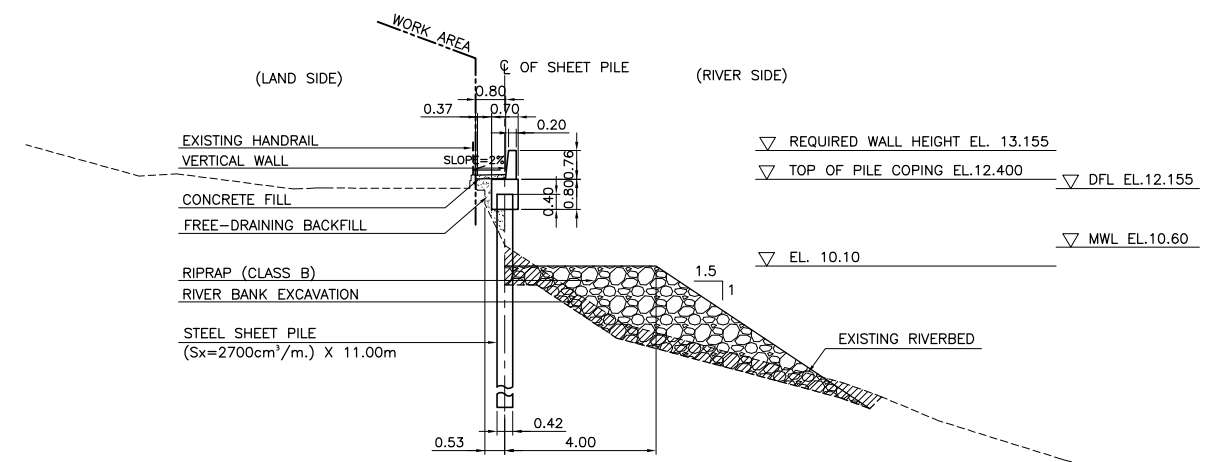
STA. 2+450 (LEFT BANK)



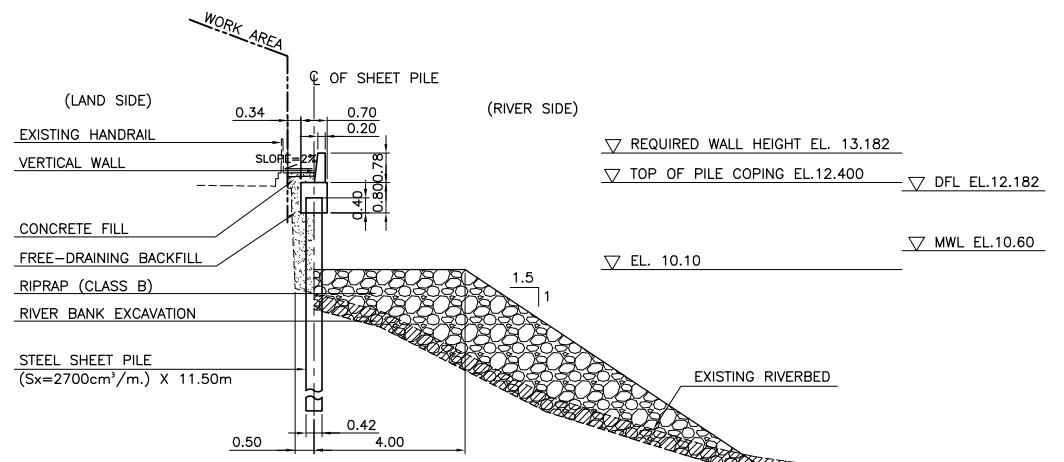
STA. 2+416(LEFT BANK)



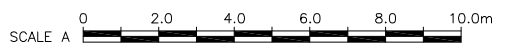
STA. 2+500 (LEFT BANK)



STA. 2+419 (LEFT BANK)



STA. 2+550 (LEFT BANK)

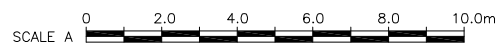
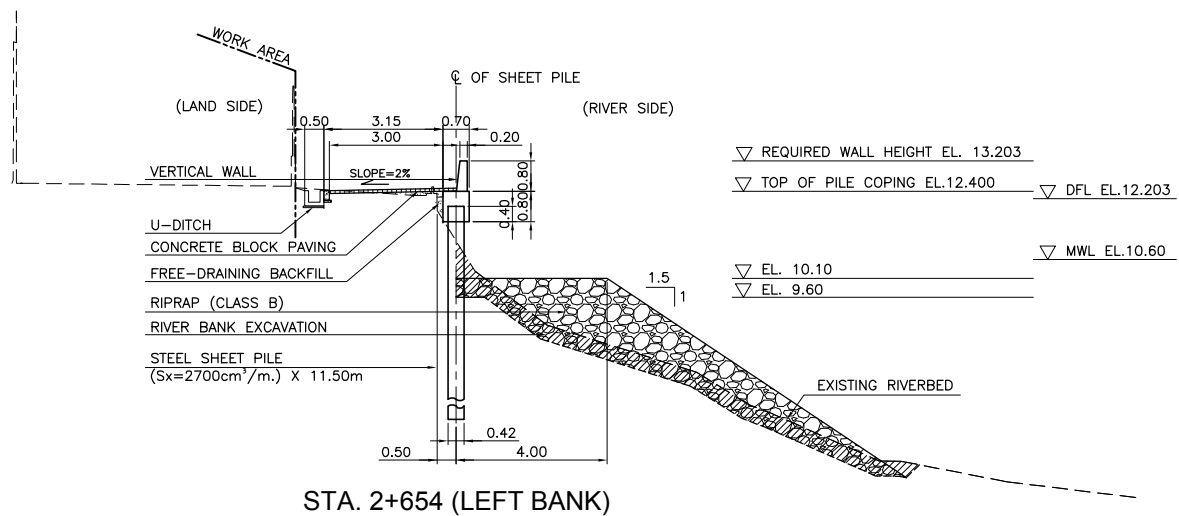
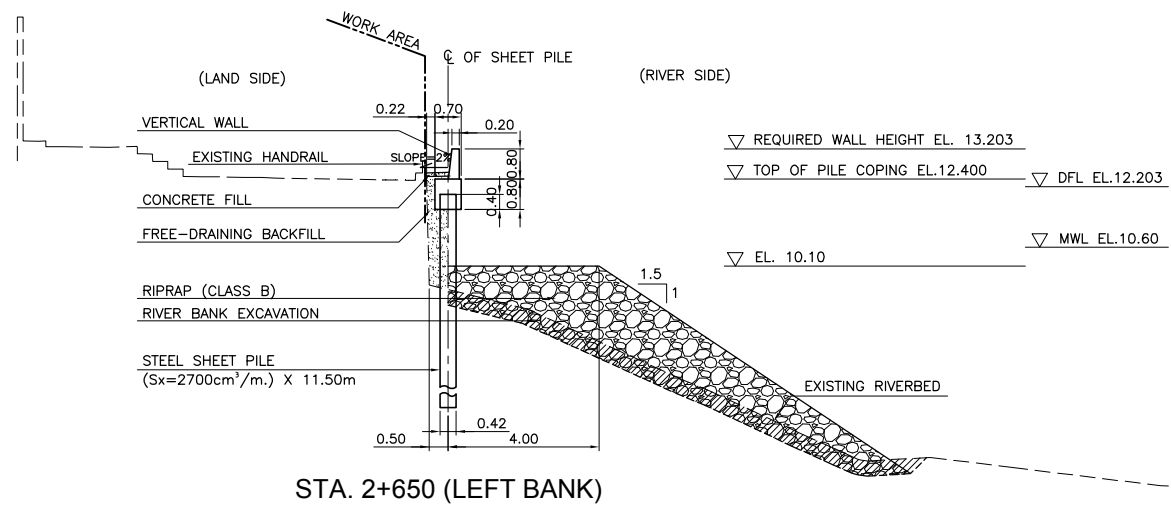
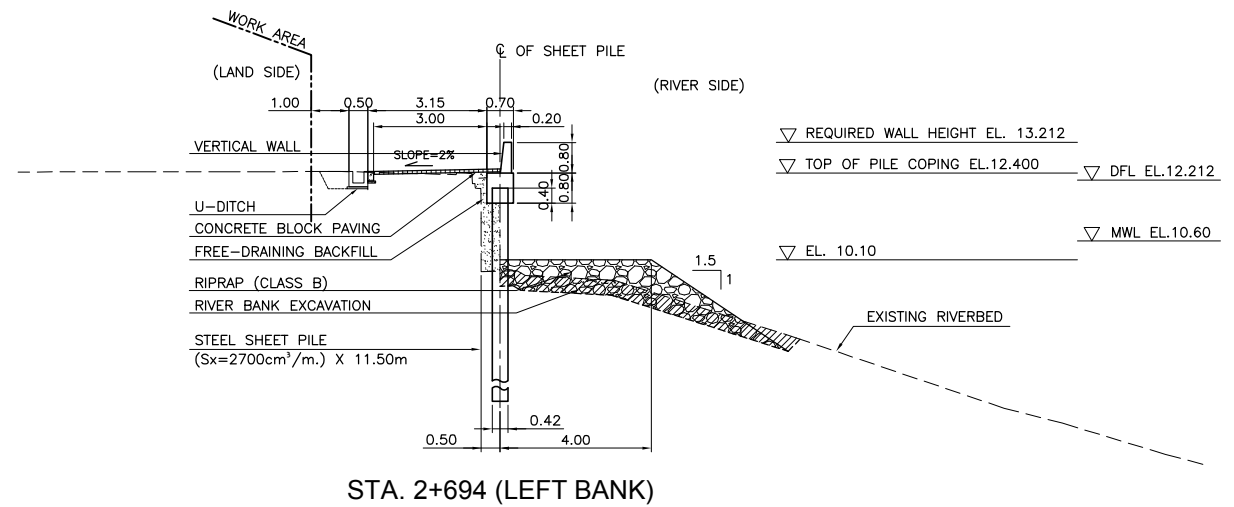
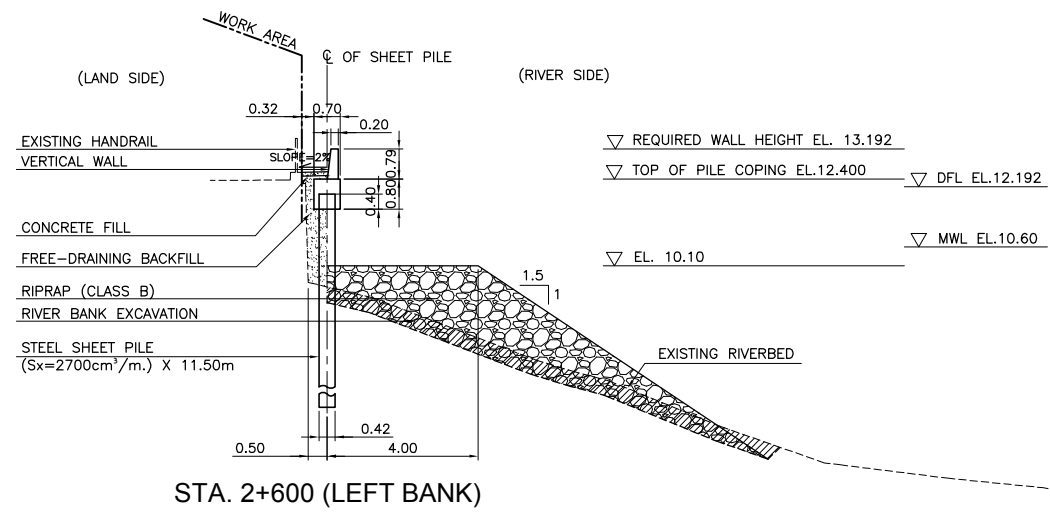


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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	CROSS SECTION STA 2+392 ~ STA 2+550 LEFT BANK		
	EIJI MOKI STRUCTURAL ENGINEER I	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 AND APPROVAL OF THE UNDERSECRETARY RAUL C. ASIS UNDERSECRETARY FOR TECHNICAL SERVICES

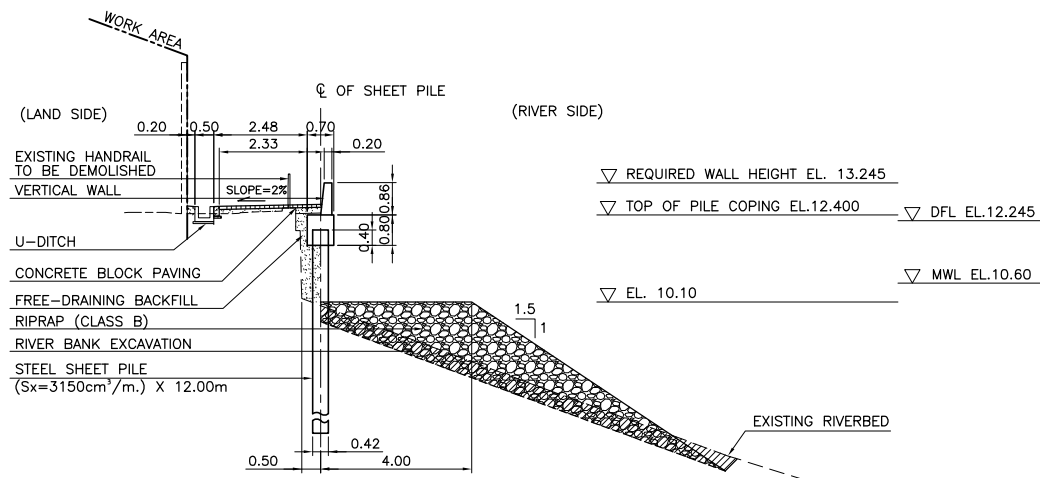


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NO.	DESCRIPTION	APPROVED	DATE

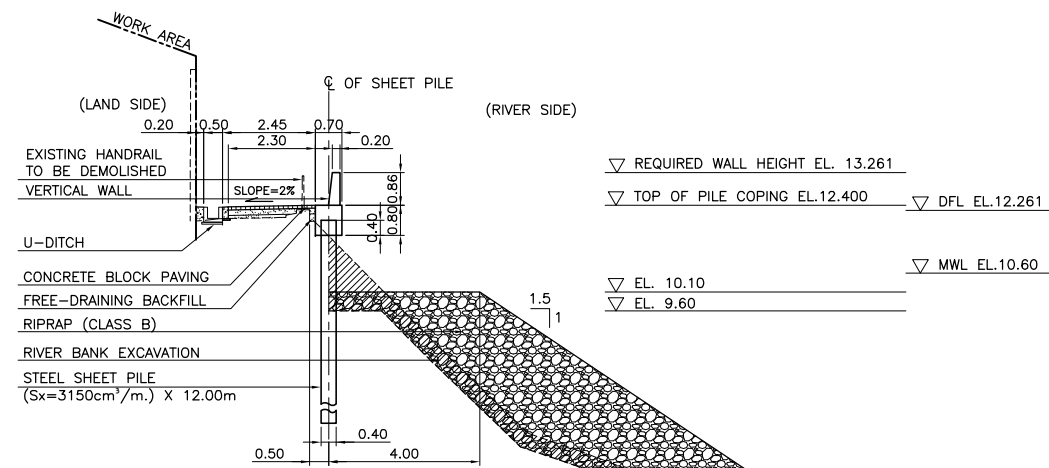
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PURSUANT TO SECTION 4 OF ANNEX "A" OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY 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

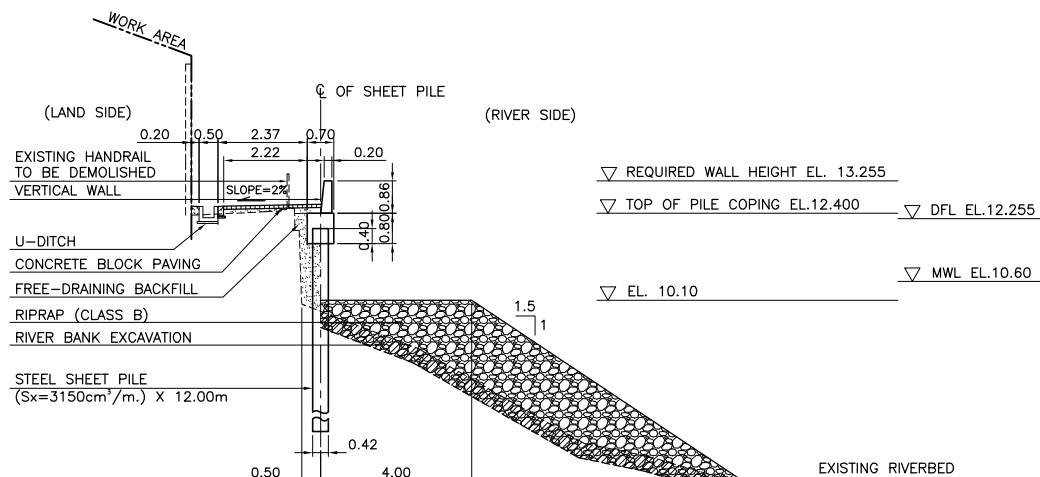
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
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	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC 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			



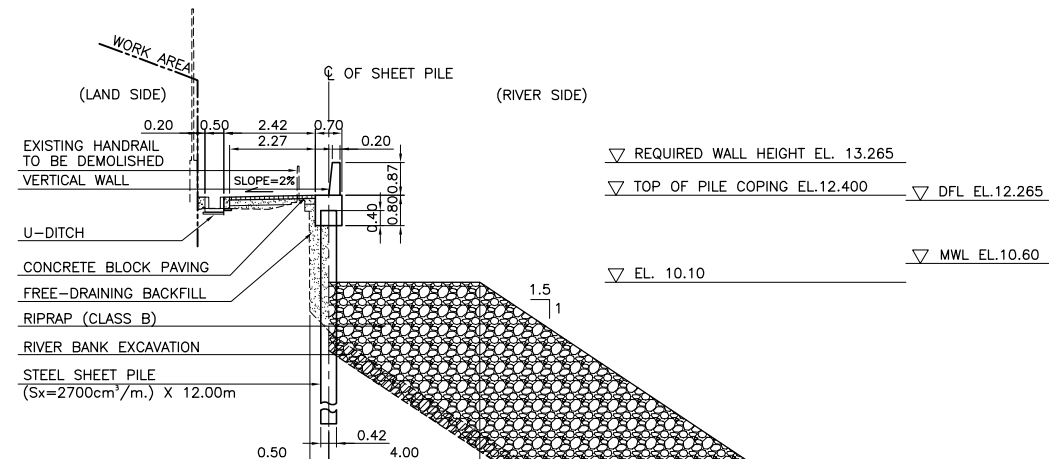
STA. 2+854 (LEFT BANK)



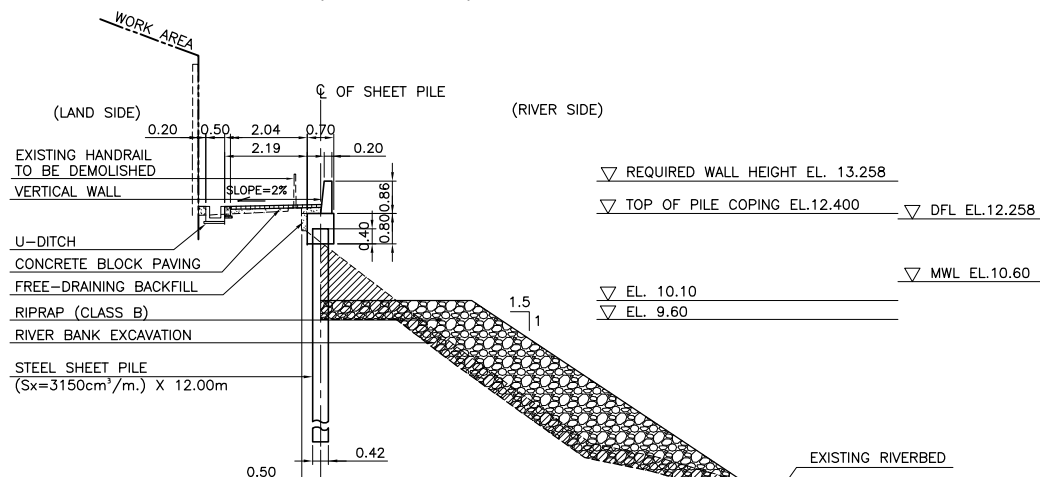
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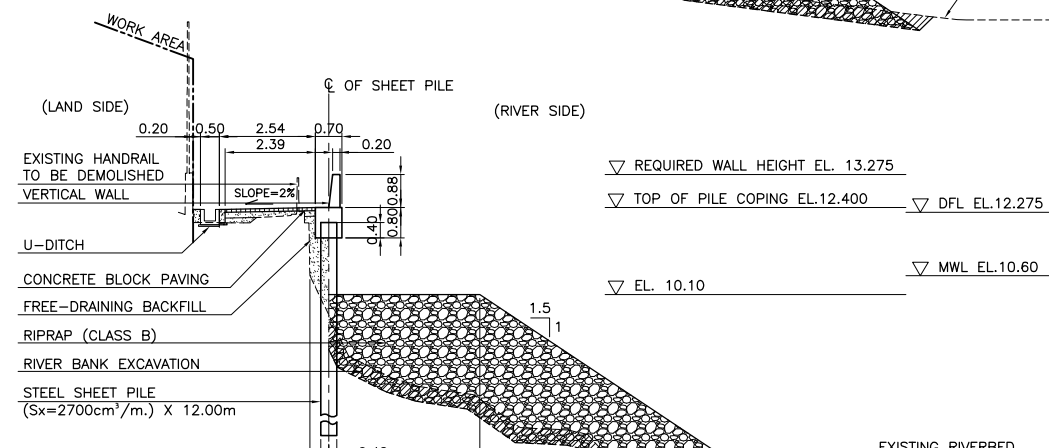
STA. 2+900 (LEFT BANK)



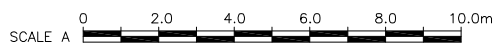
STA. 2+950 (LEFT BANK)



STA. 2+916 (LEFT BANK)



STA. 3+000 (LEFT BANK)

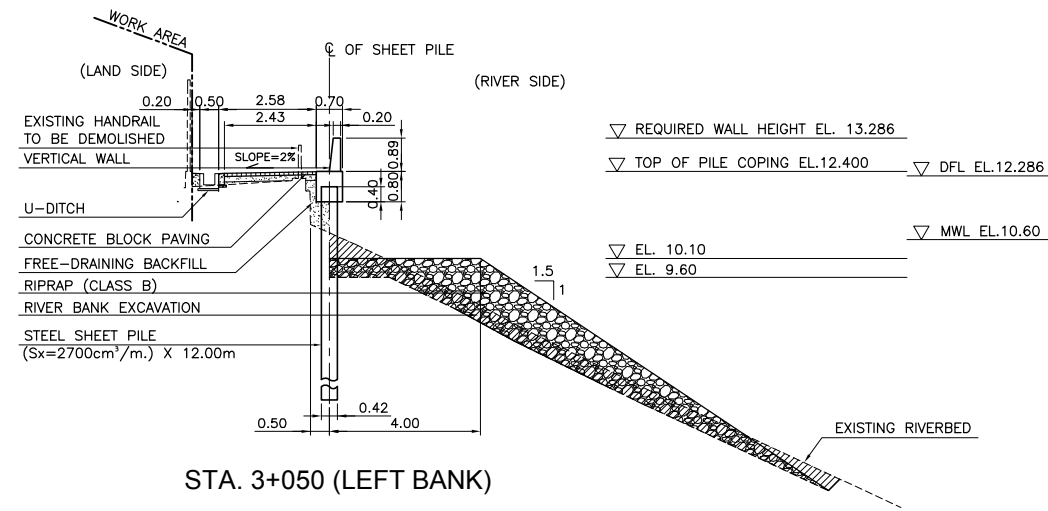


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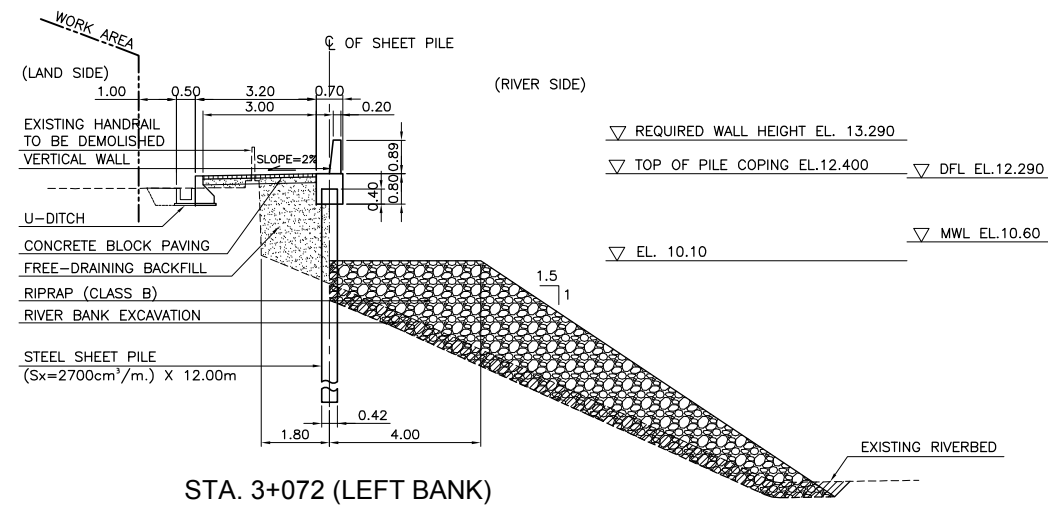
NOTE:  
PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF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

SHUJI KAKU  
TEAM LEADER

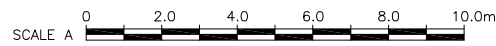
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 2+854 ~ STA 3+000 LEFT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



STA. 3+050 (LEFT BANK)



STA. 3+072 (LEFT BANK)



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
EIJI MOKI STRUCTURAL ENGINEER I	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

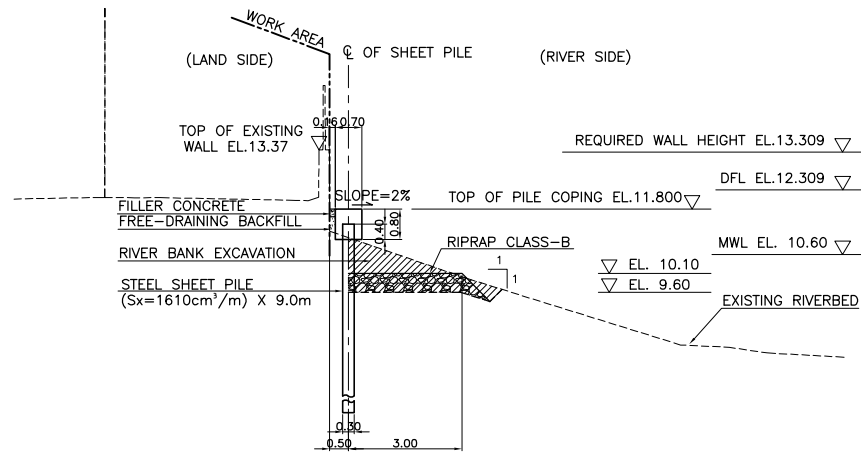
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

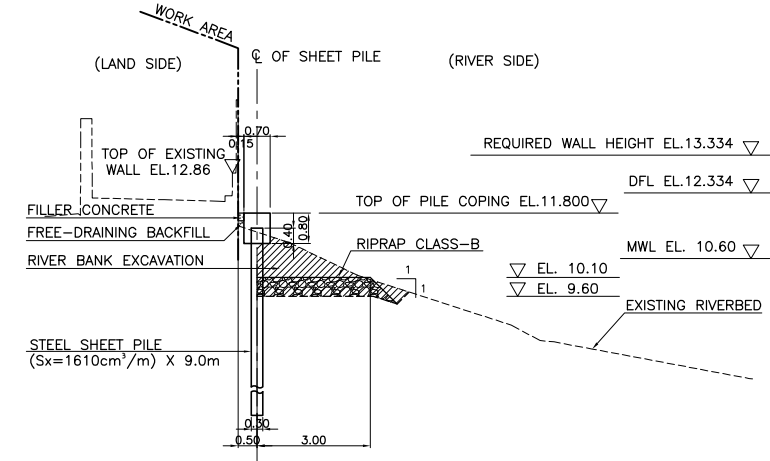
CROSS SECTION STA 3+050 ~ STA 3+072  
LEFT BANK

SHEET NO.

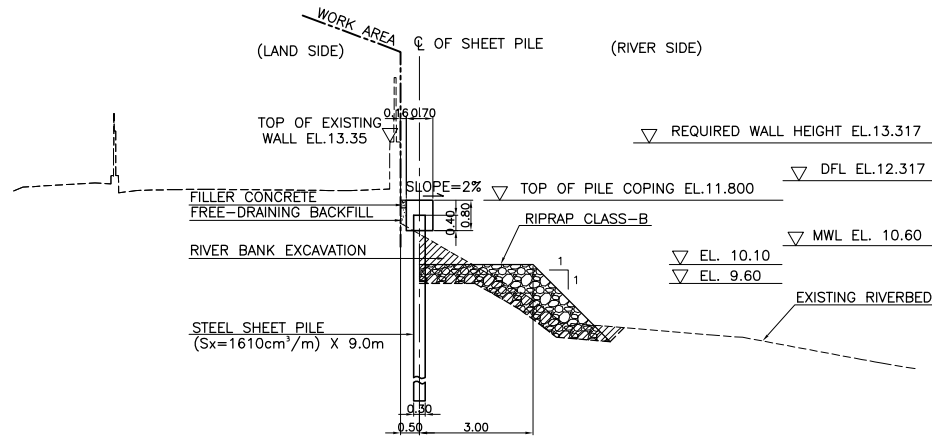
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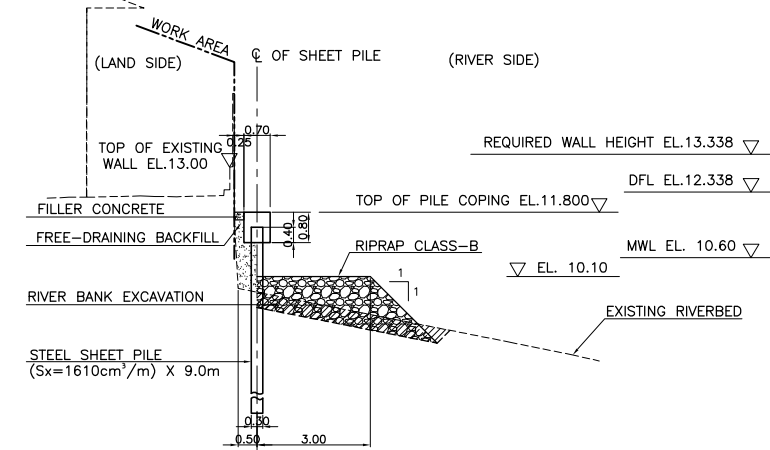
STA. 3+160 (LEFT BANK)



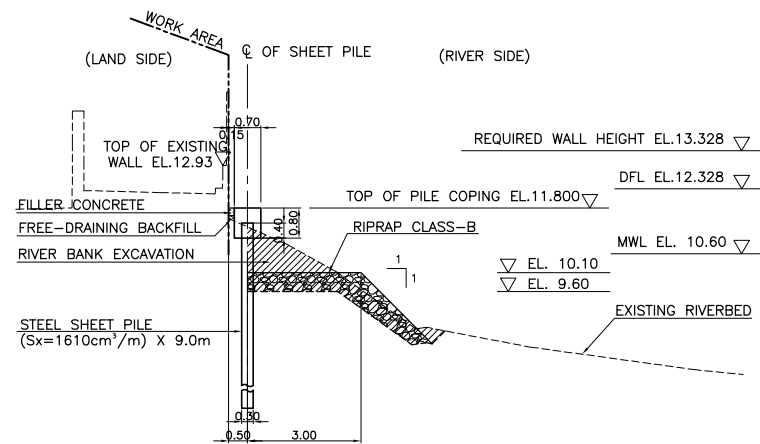
STA. 3+280 (LEFT BANK)



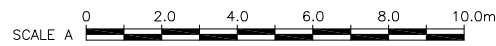
STA. 3+200 (LEFT BANK)



STA. 3+300 (LEFT BANK)



STA. 3+250 (LEFT BANK)



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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

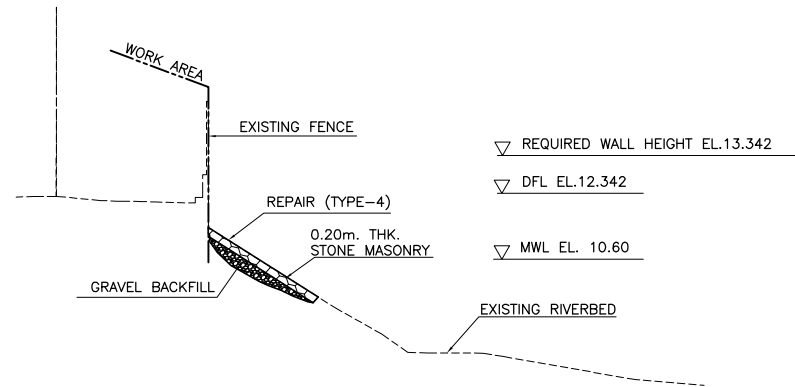
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

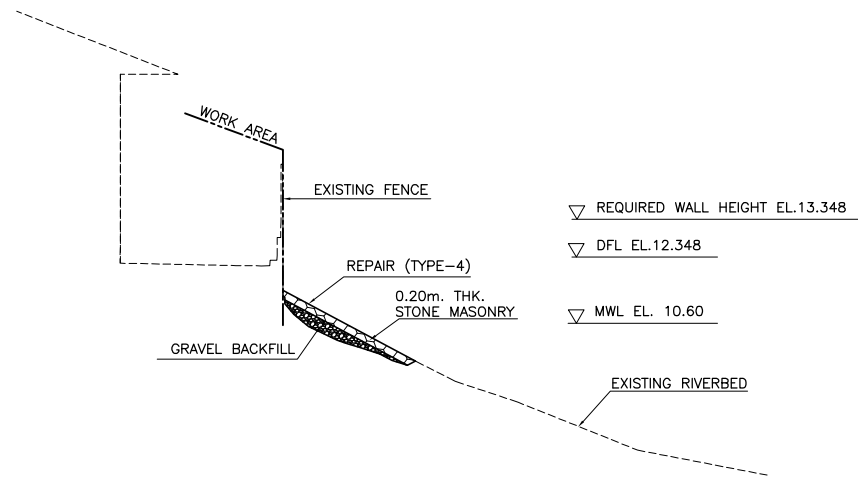
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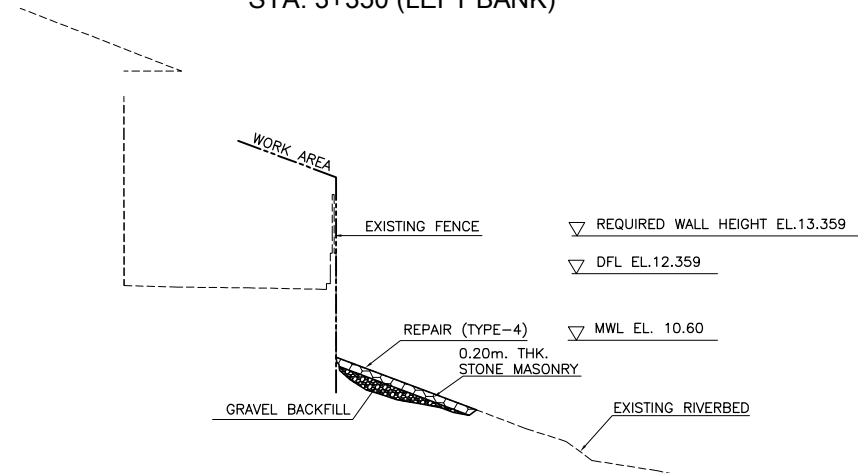
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CS/05



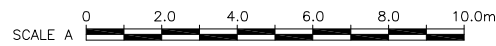
STA. 3+325 (LEFT BANK)



STA. 3+350 (LEFT BANK)



STA. 3+400 (LEFT BANK)



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

SUBMITTED BY: SHUJI KAKU  
TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
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AND HIGHWAYS

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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

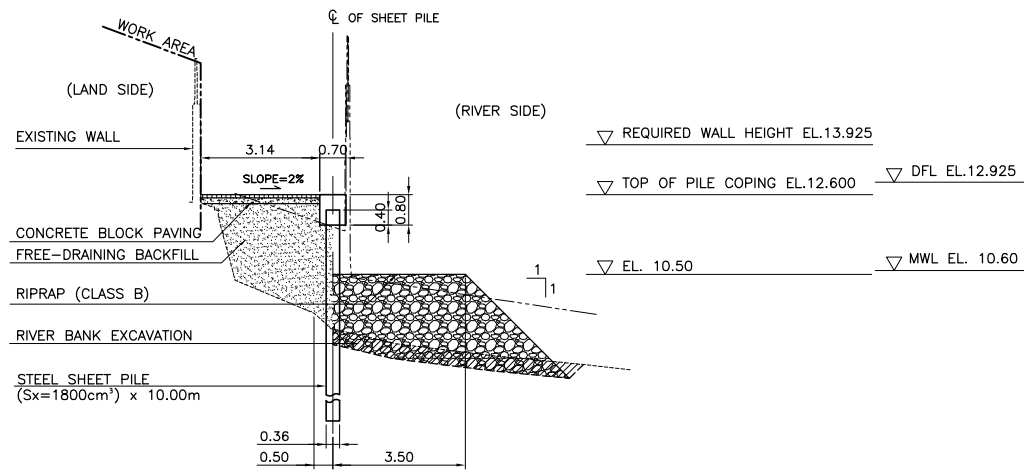
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(HOSPICIO)

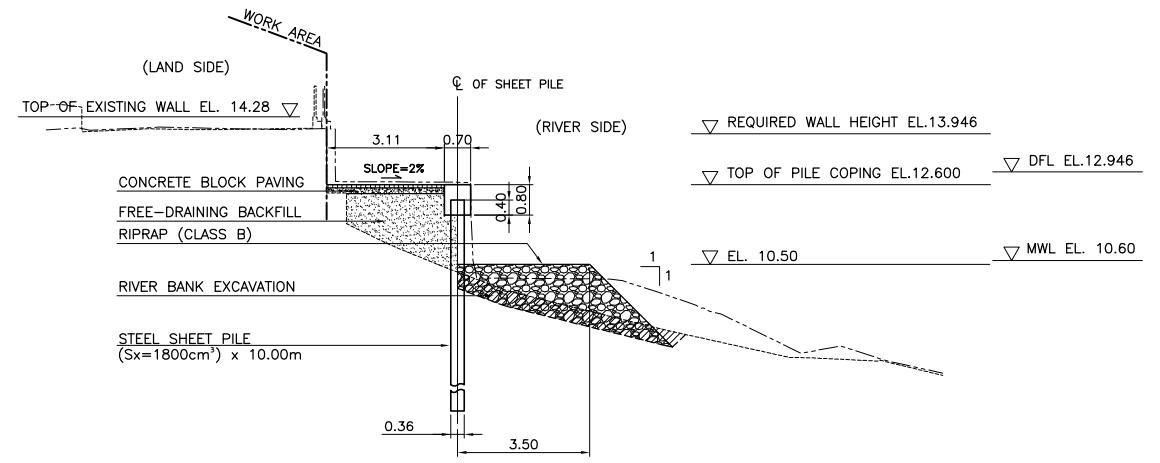
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LP-RS  
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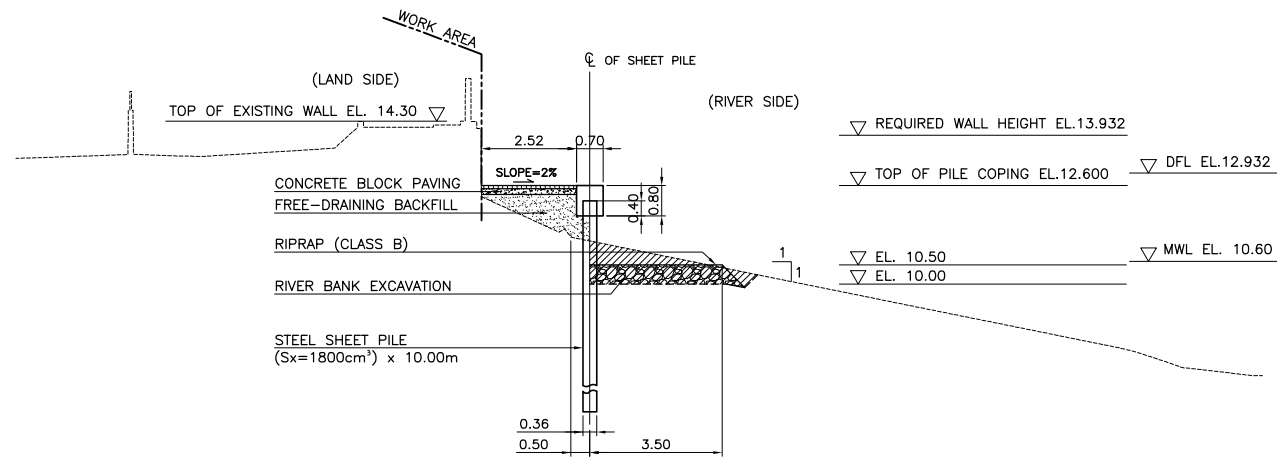




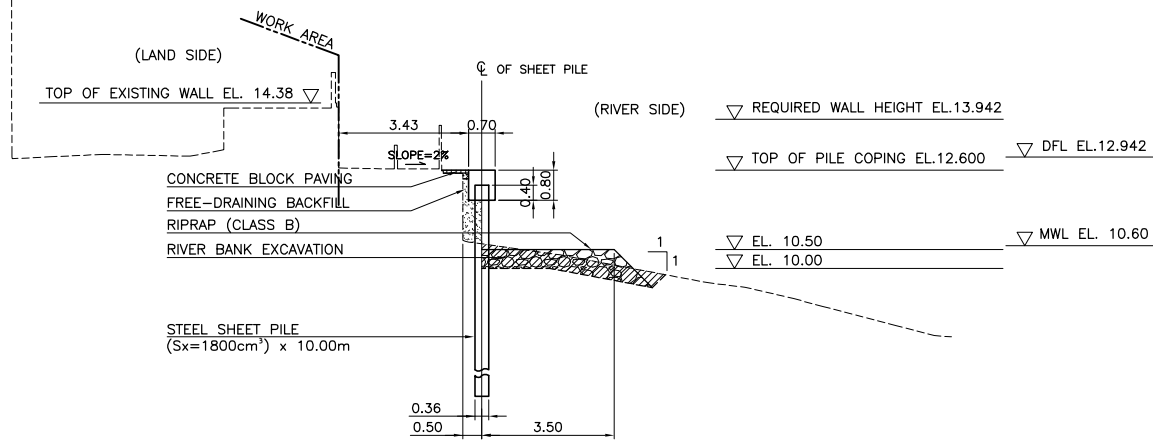
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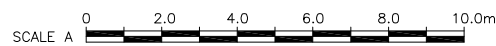
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STA. 6+150 (LEFT BANK)



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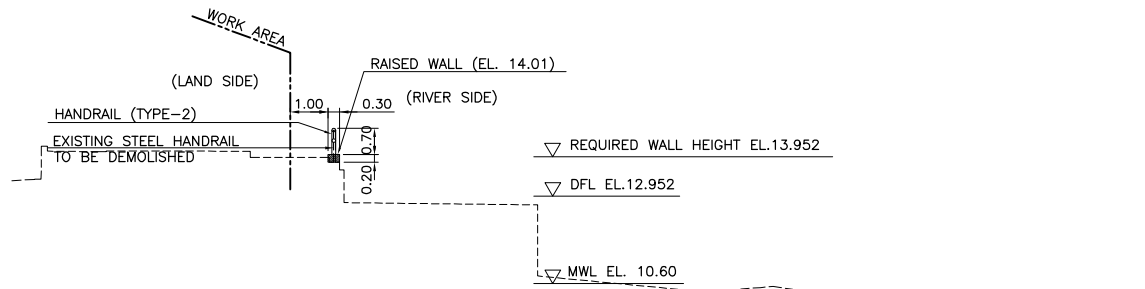


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

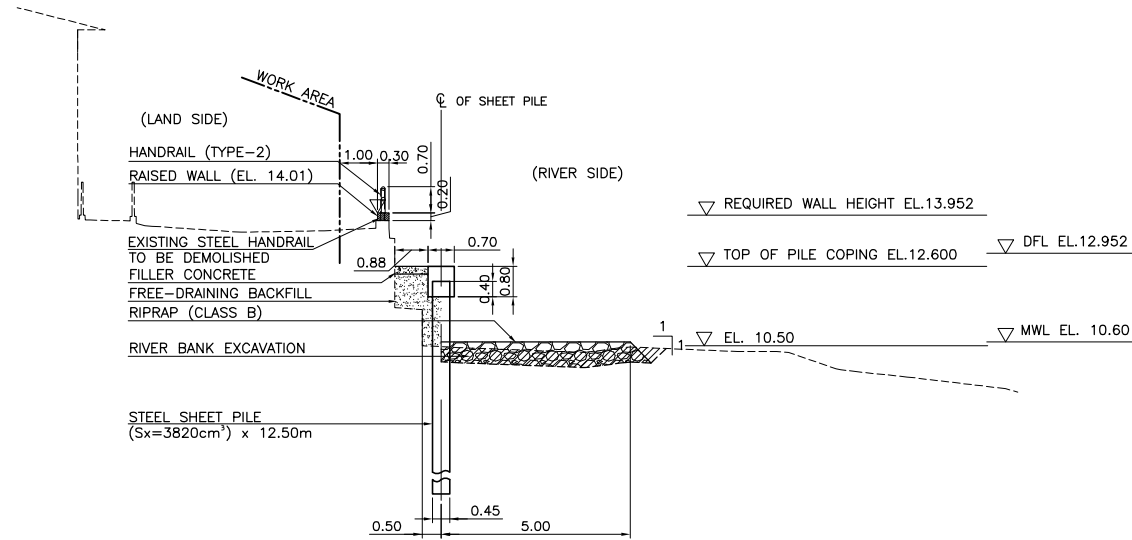
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SHUJI KAKU  
TEAM LEADER

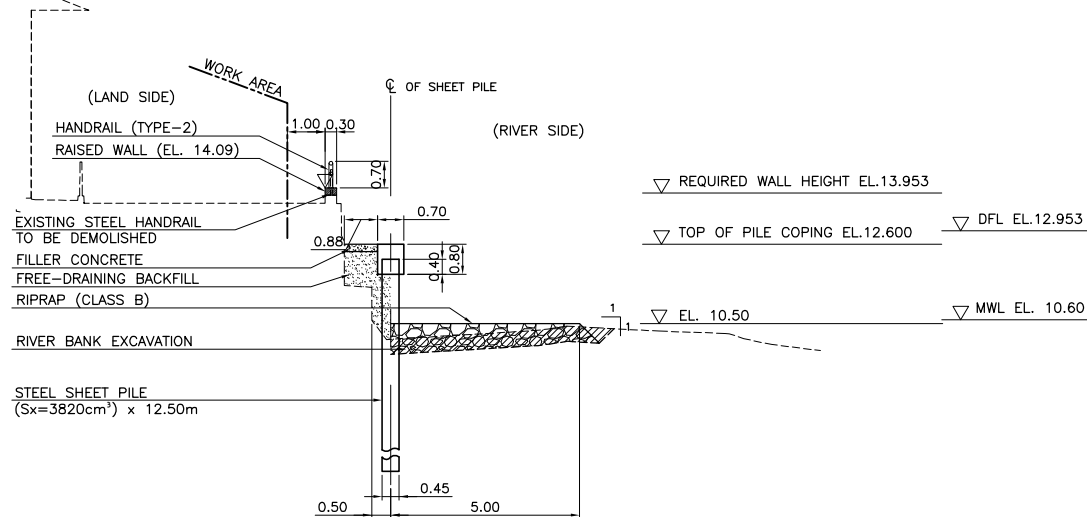
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 6+116 ~ STA 6+219 LEFT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



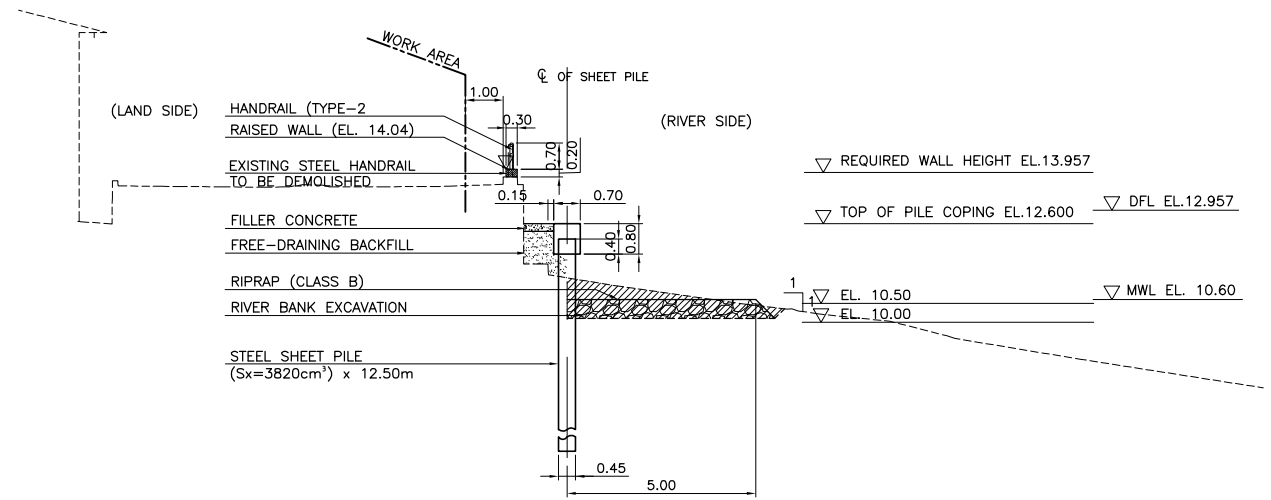
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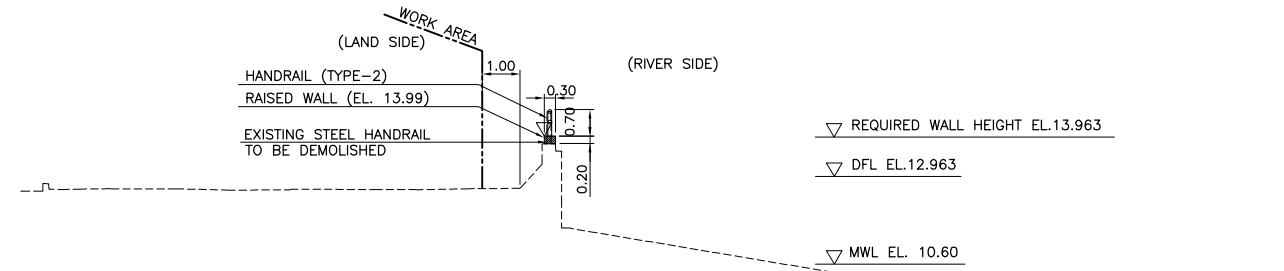
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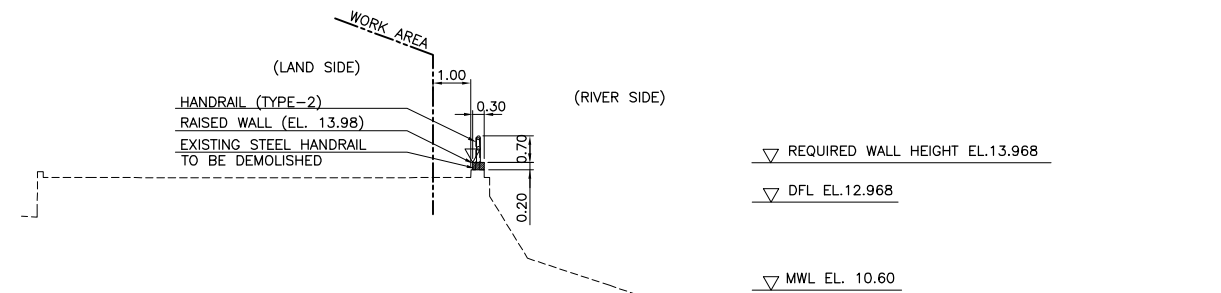
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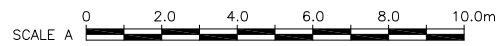
STA. 6+269 (LEFT BANK)



STA. 6+300(LEFT BANK)



STA. 6+323 (LEFT BANK)



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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  
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

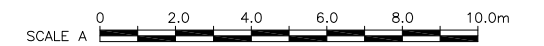
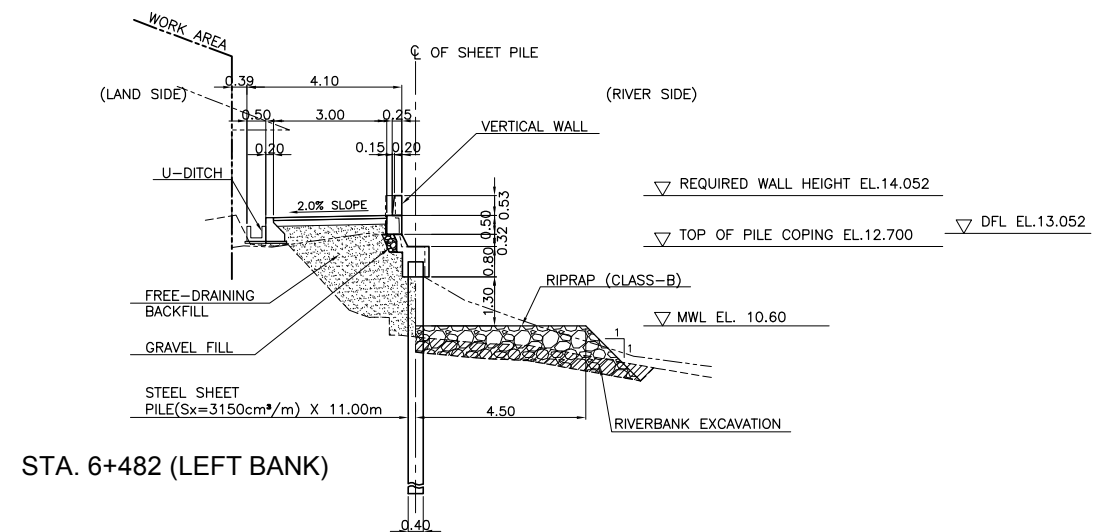
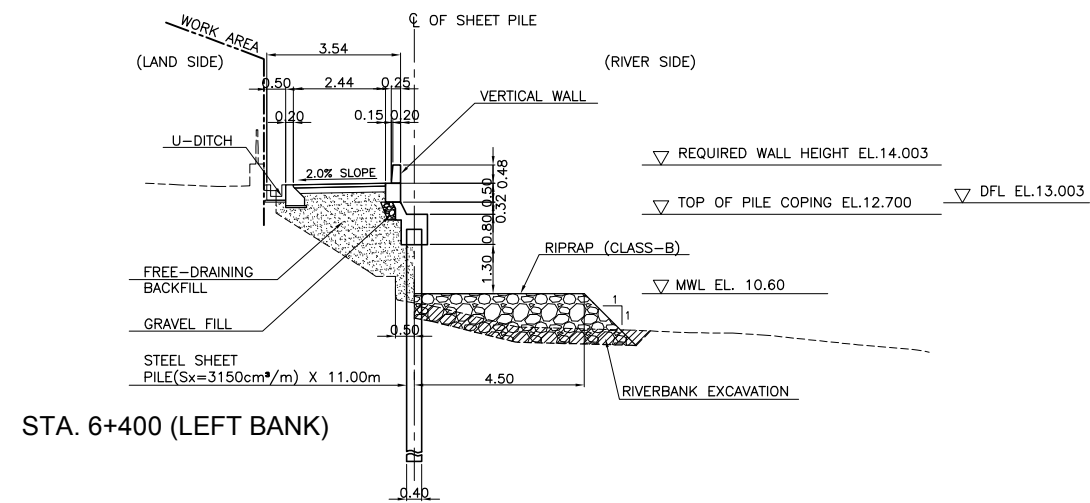
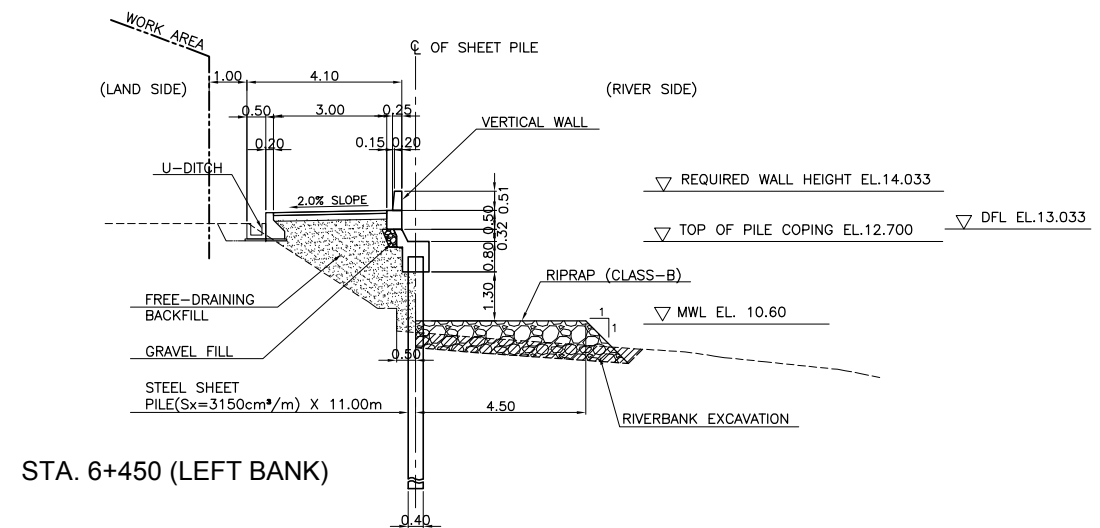
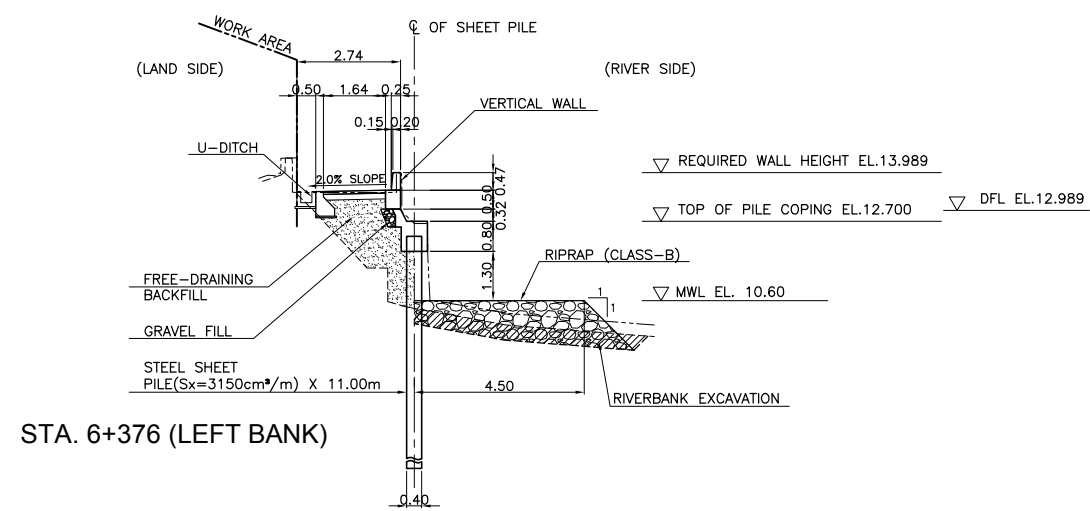
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

CROSS SECTION  
STA 6+245 ~ STA 6+323  
LEFT BANK

SHEET NO.





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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

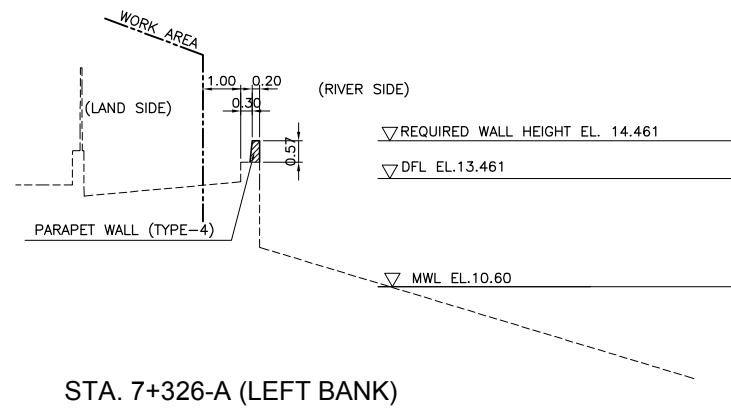
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

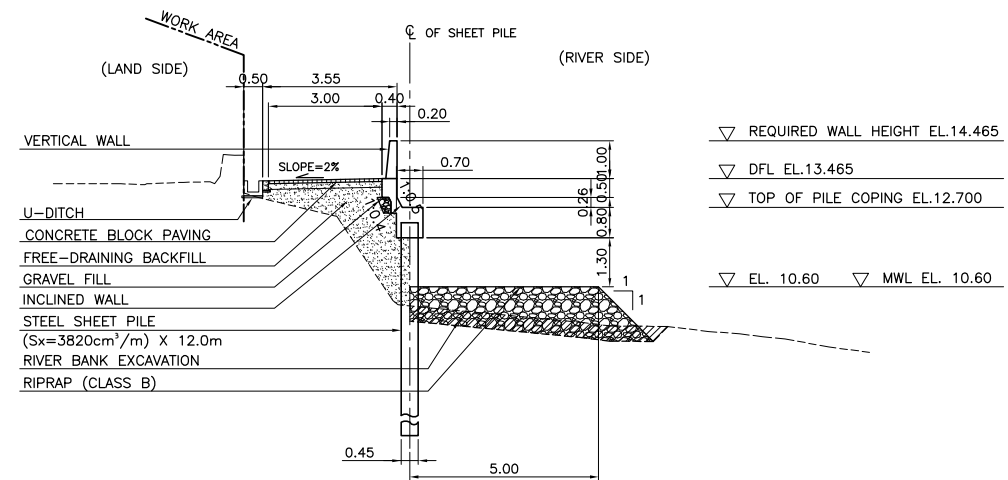
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: CROSS SECTION STA 6+376 ~ STA 6+482  
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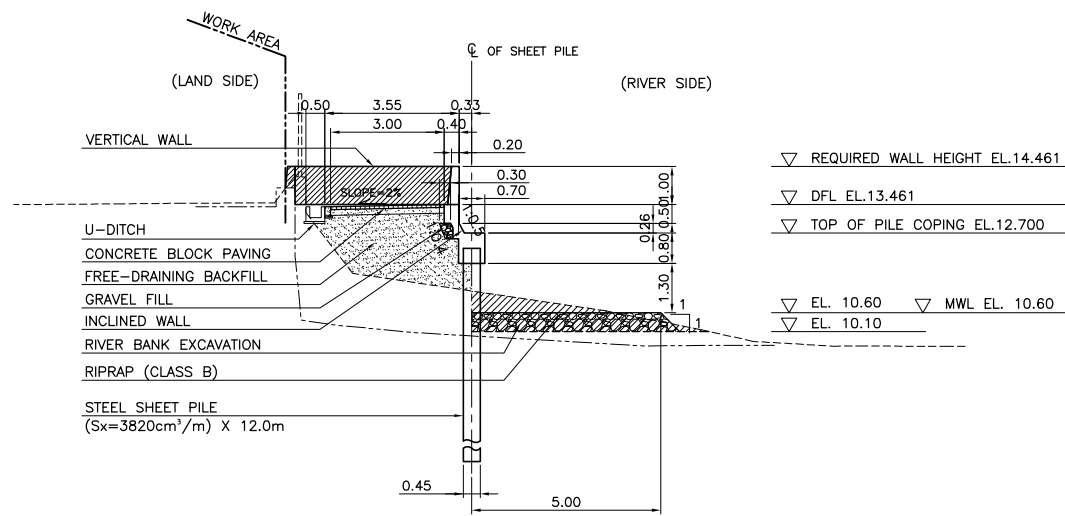
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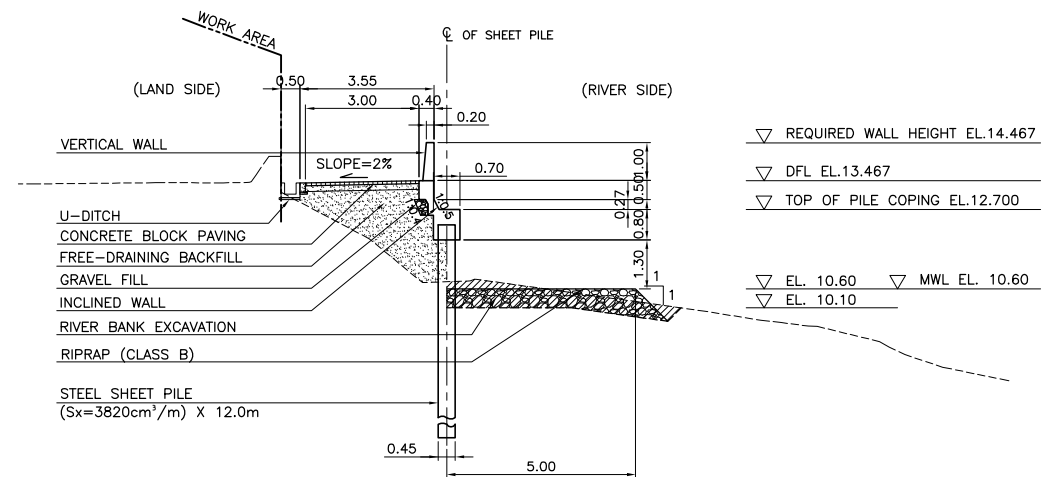
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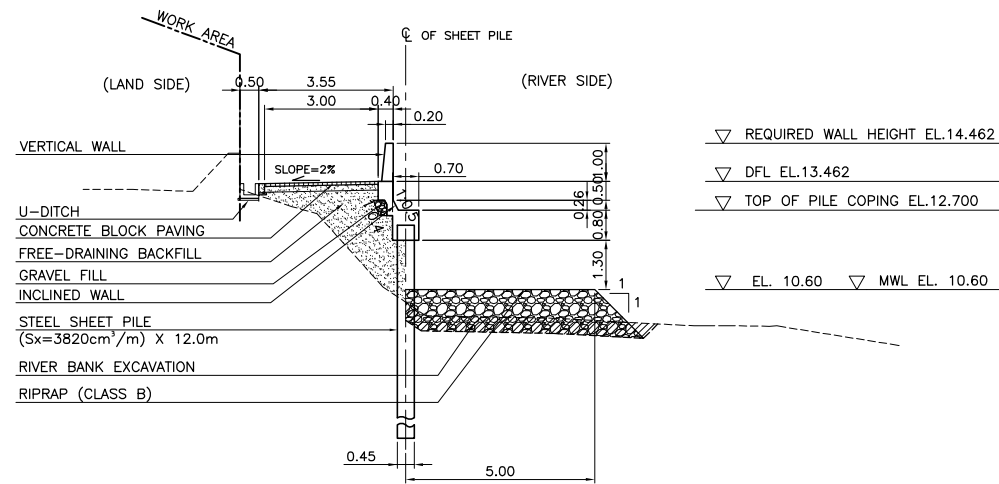
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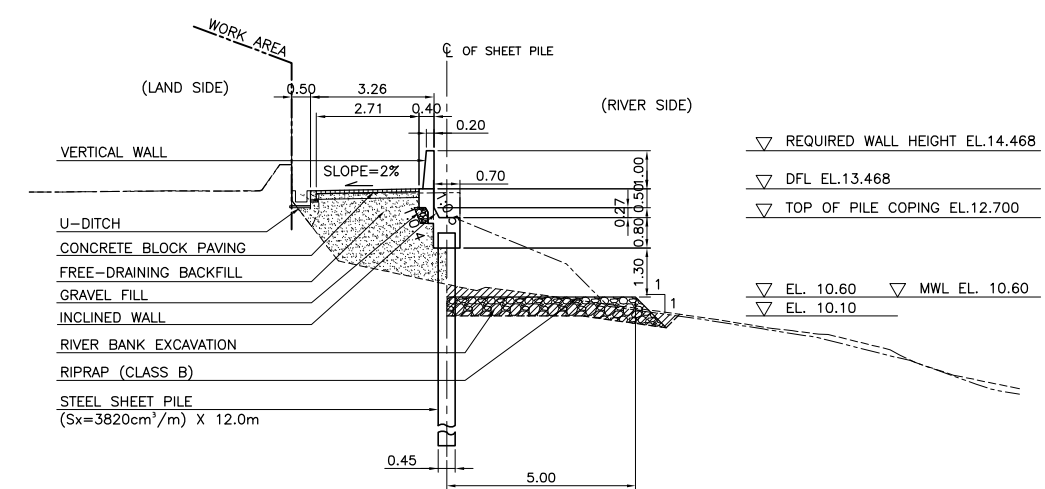
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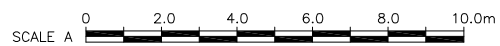
STA. 7+439 (LEFT BANK)



STA. 7+350 (LEFT BANK)



STA. 7+444 (LEFT BANK)



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

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TEAM LEADER



REPUBLIC OF THE PHILIPPINES  
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RECOMMENDING APPROVAL: PATRICK B. GATAN  
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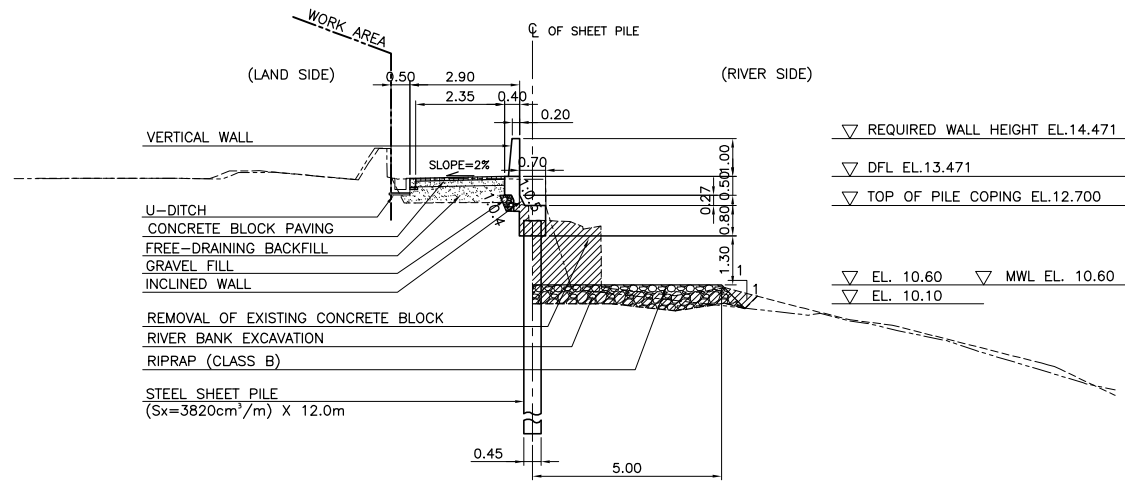
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

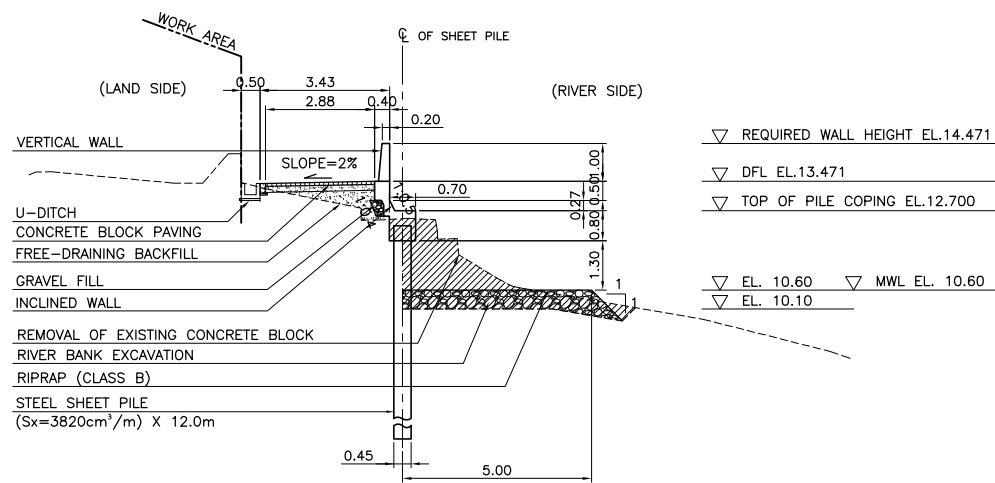
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SHEET CONTENTS: CROSS SECTION STA 7+326-A ~ STA 7+444  
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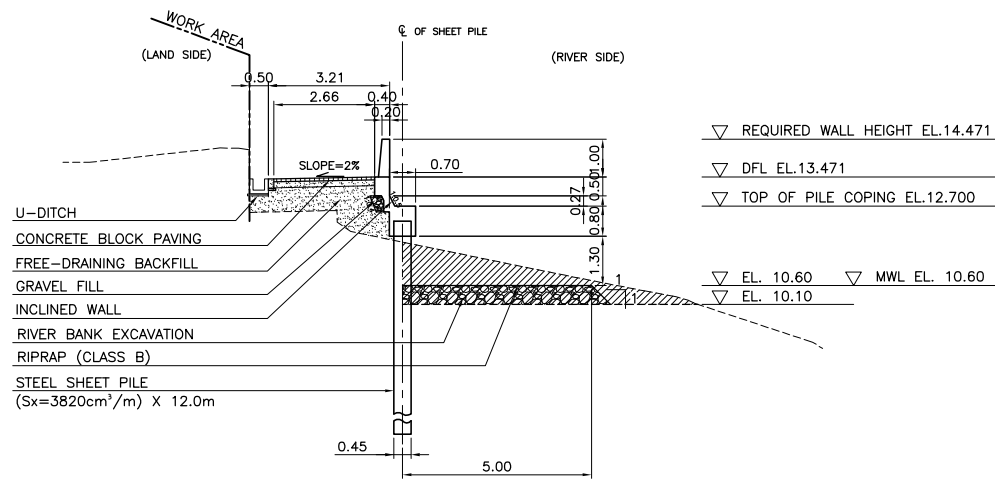
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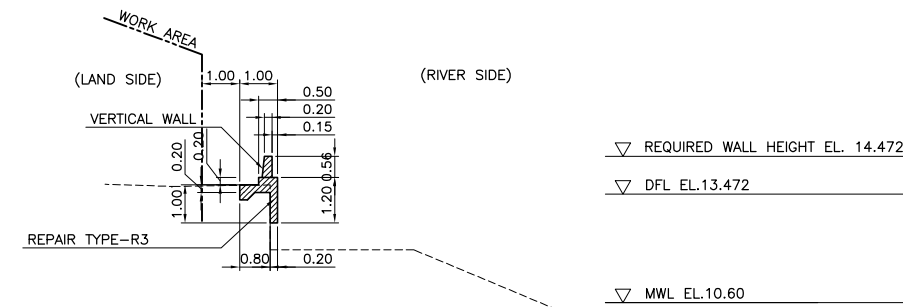
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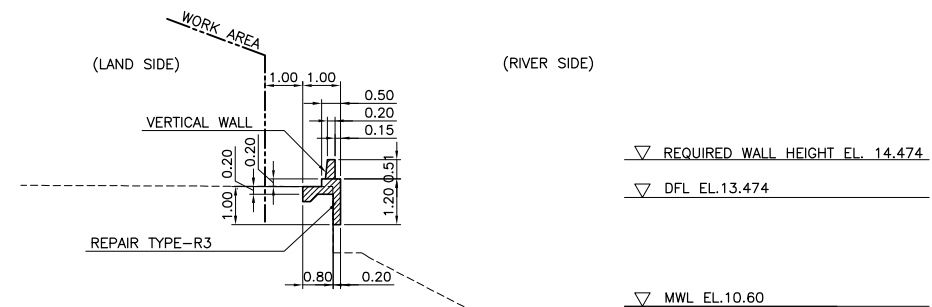
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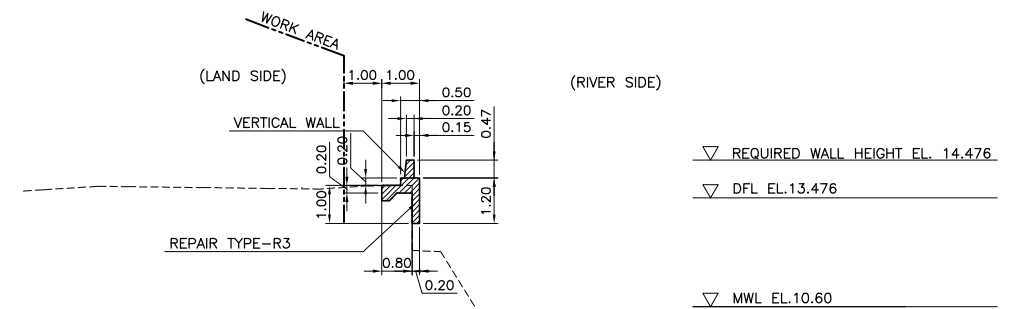
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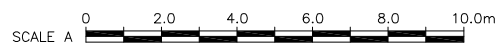
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STA. 7+550 (LEFT BANK)



STA. 7+580 (LEFT BANK)



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



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STRUCTURAL ENGINEER I

CHECKED BY: TOSHIKI KAWAKAMI  
THE CHECKER

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ROGELIO L. SINGSON  
SECRETARY

PROJECT & LOCATION

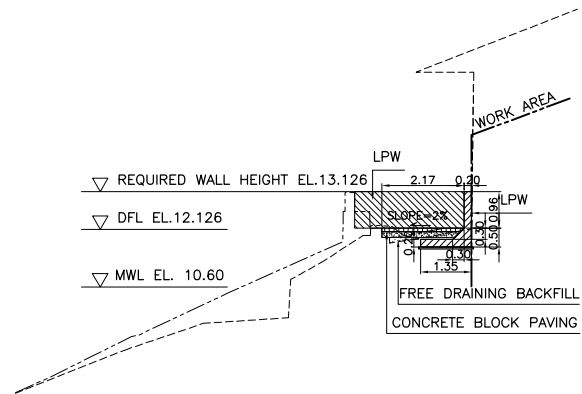
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RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

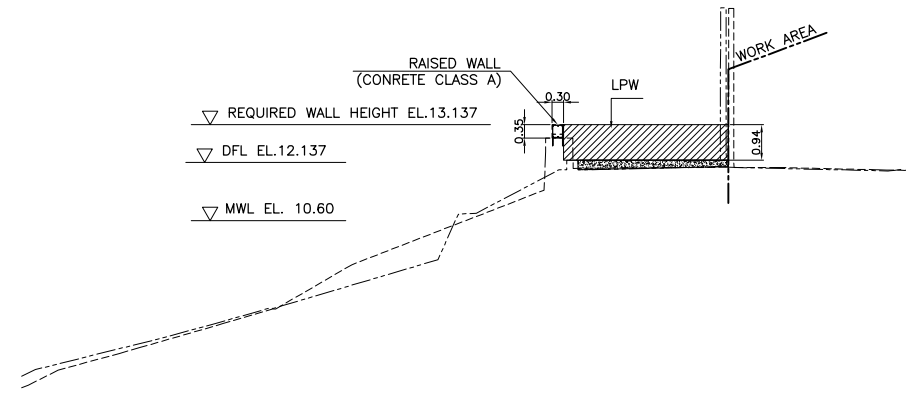
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STA 7+494 ~ STA 7+580  
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SHEET NO.

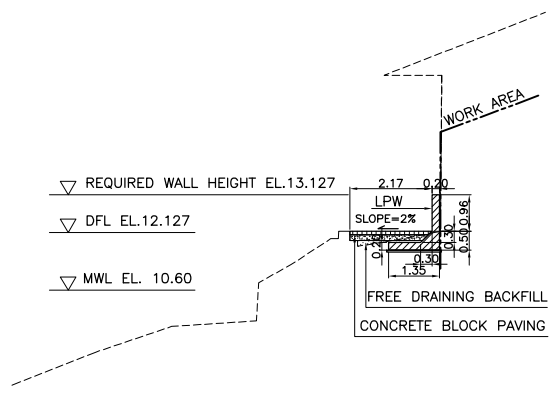




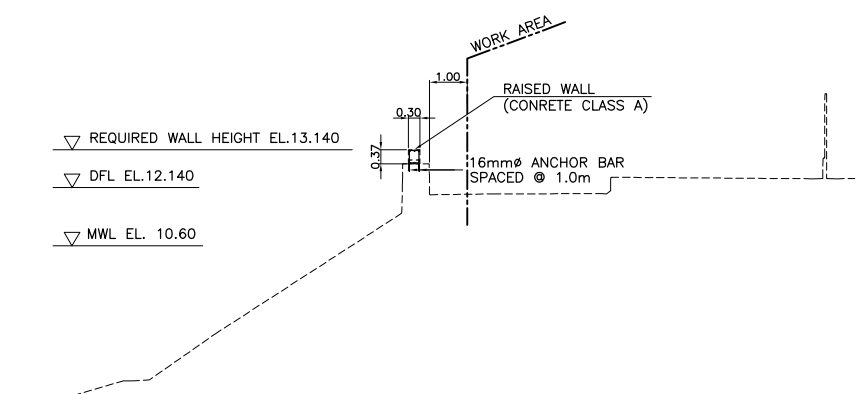
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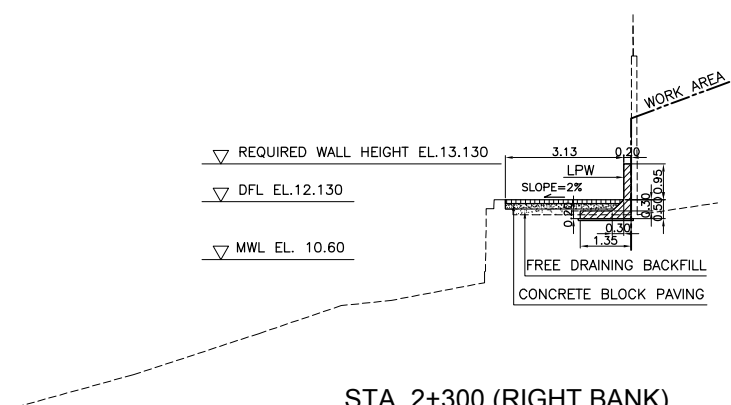
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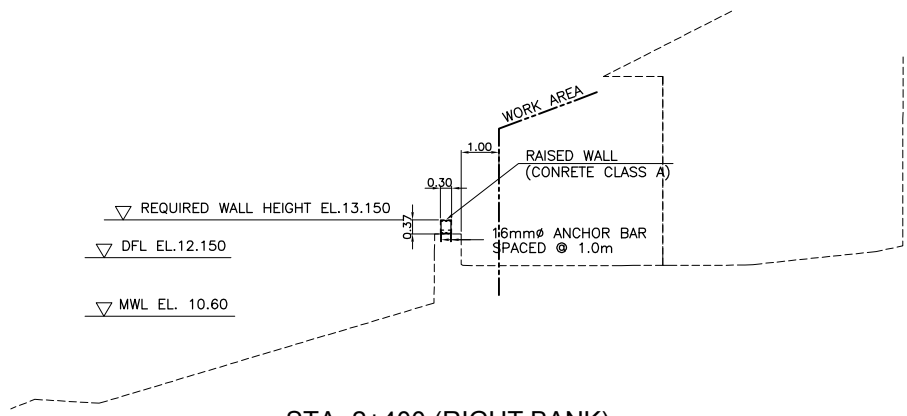
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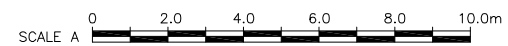
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STA. 2+300 (RIGHT BANK)



STA. 2+400 (RIGHT BANK)

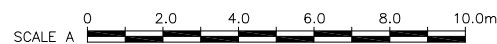
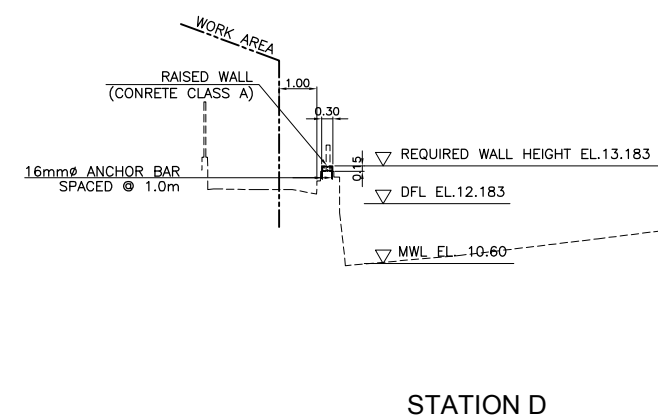
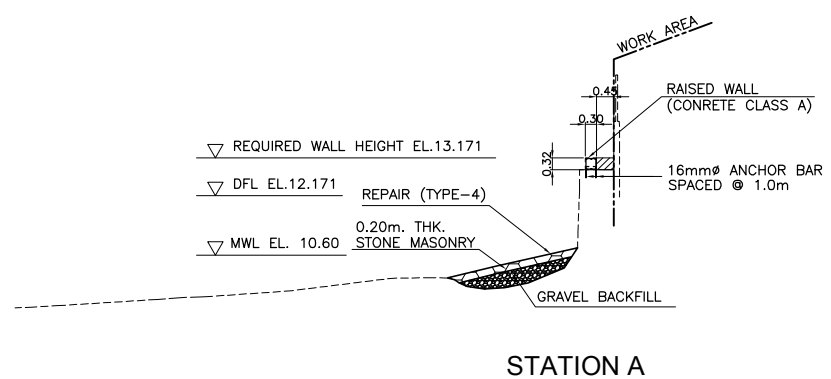
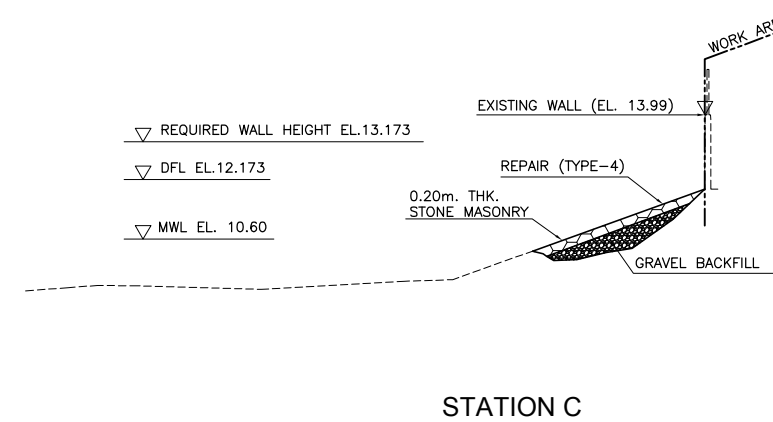
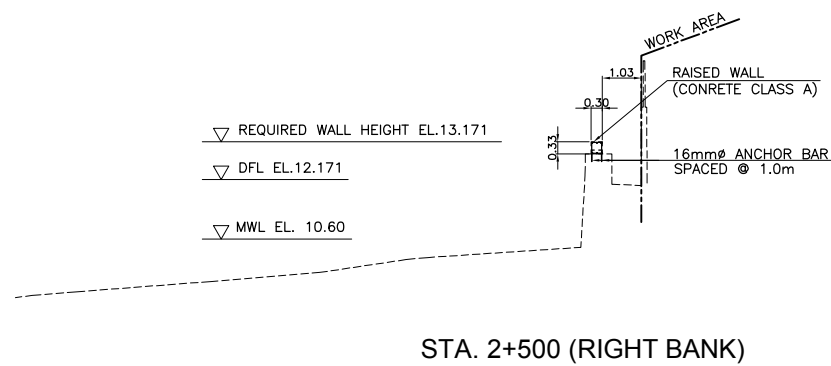
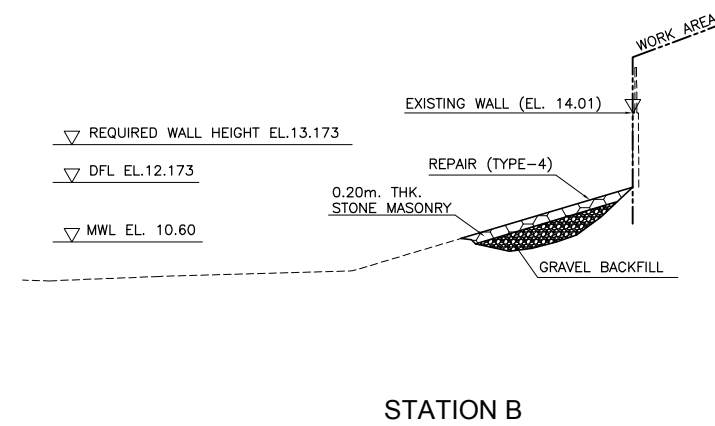
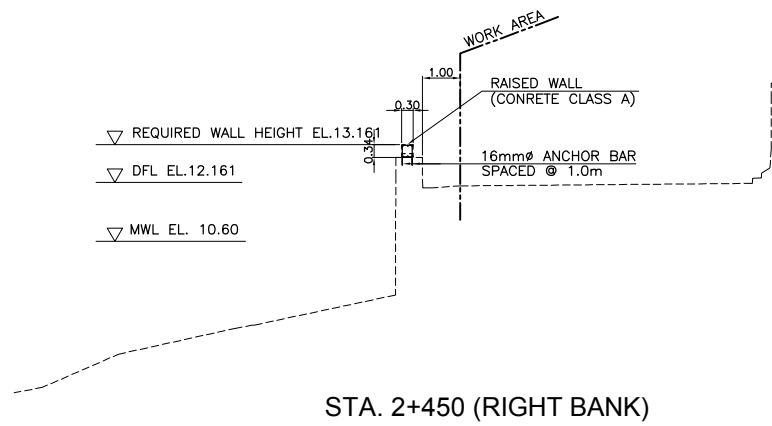


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 2+283 ~ STA 2+400 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EJI MOKI STRUCTURAL ENGINEER I	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

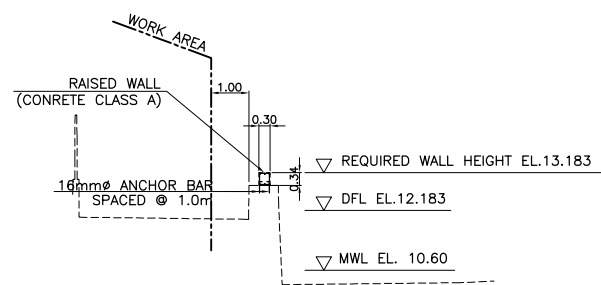
REPUBLIC OF THE PHILIPPINES

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	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY ROGELIO L. SINGSON SECRETARY
---	--	--------------------------------------	--	--

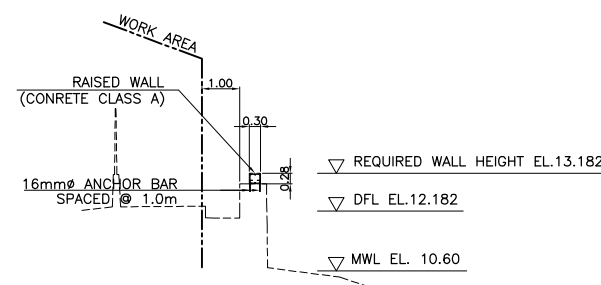
PROJECT & LOCATION  
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS  
CROSS SECTION STA 2+450 ~ STA D (QUINTA CHANNEL) RIGHT BANK

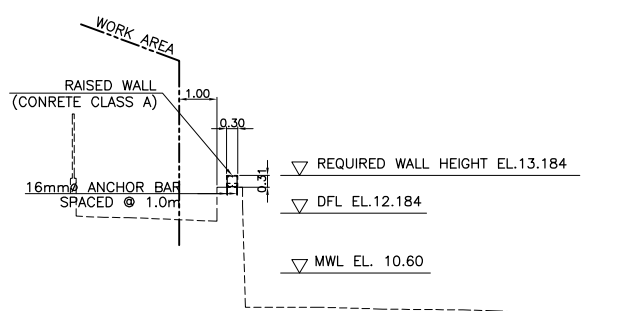
SHEET NO.  
LP-RS  
CS 13



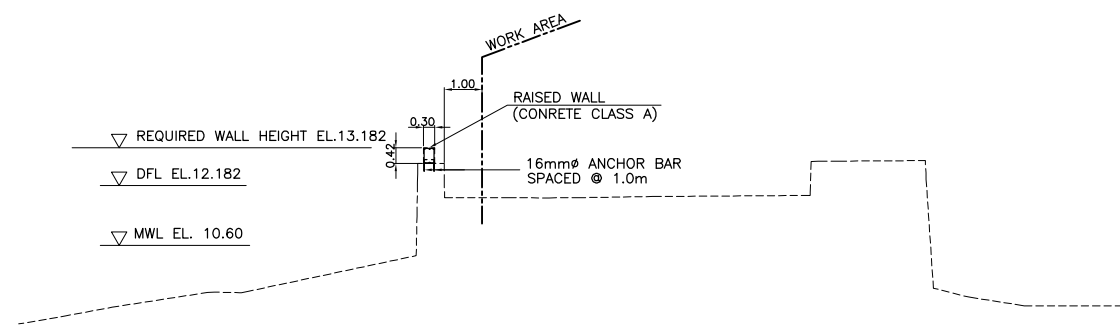
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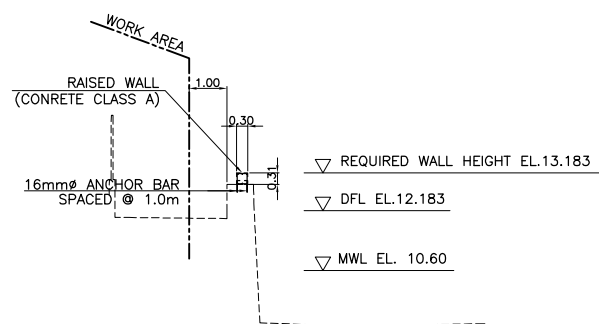
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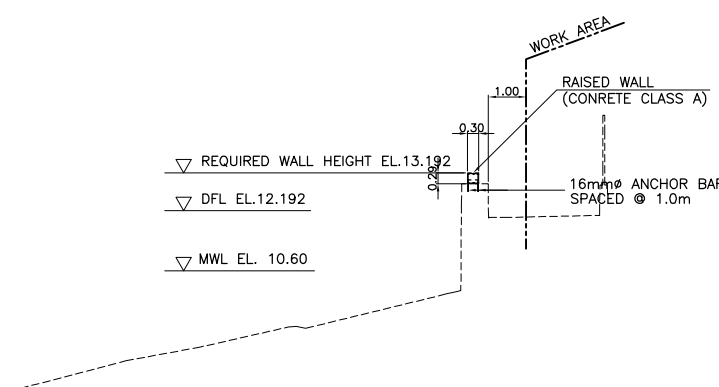
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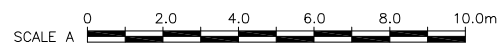
STA. 2+550 (RIGHT BANK)



STATION G



STA. 2+600 (RIGHT BANK)



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

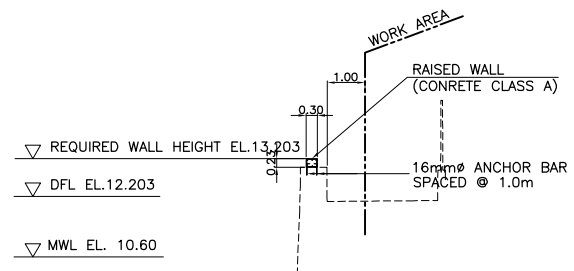
ROGELIO L. SINGSON  
SECRETARY

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

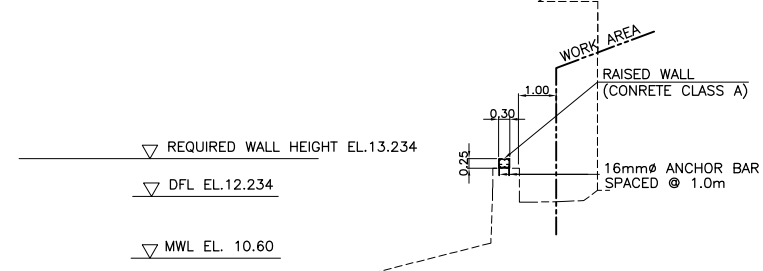
SHEET CONTENTS  
CROSS SECTION  
STA E ~ STA 2+600  
(QUINTA CHANNEL)  
RIGHT BANK

SHEET NO.  
LP-RS  
CS 14

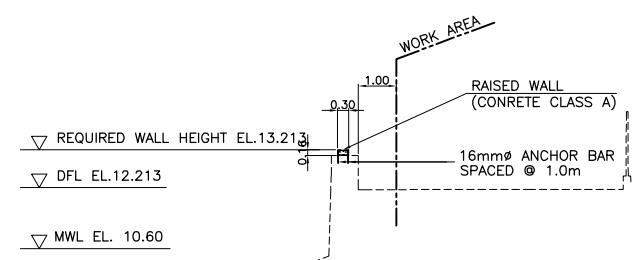




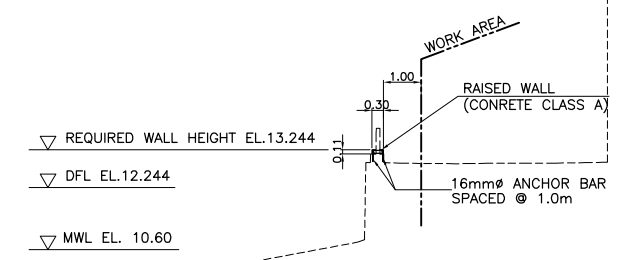
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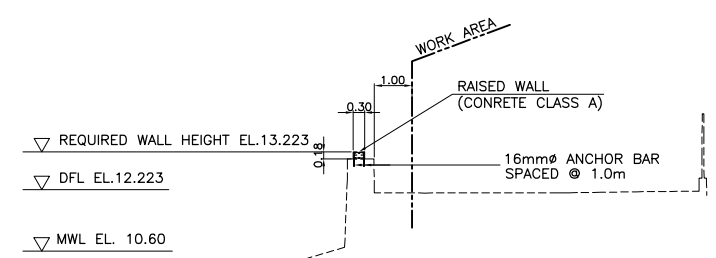
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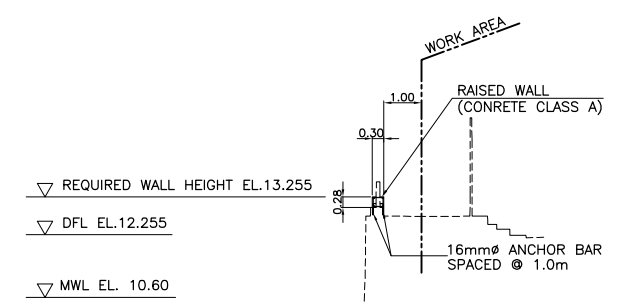
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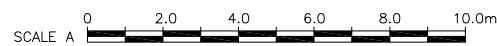
STA. 2+850 (RIGHT BANK)



STA. 2+750 (RIGHT BANK)



STA. 2+900 (RIGHT BANK)

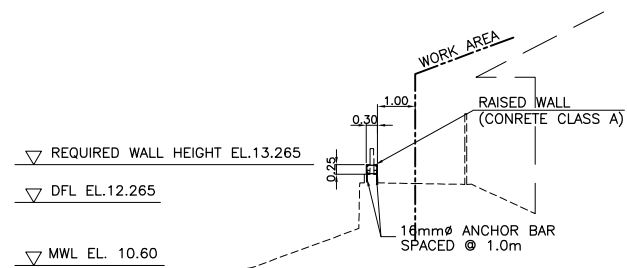


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

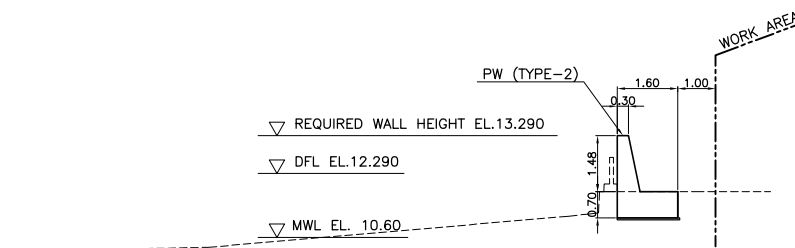
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SHUJI KAKU  
TEAM LEADER

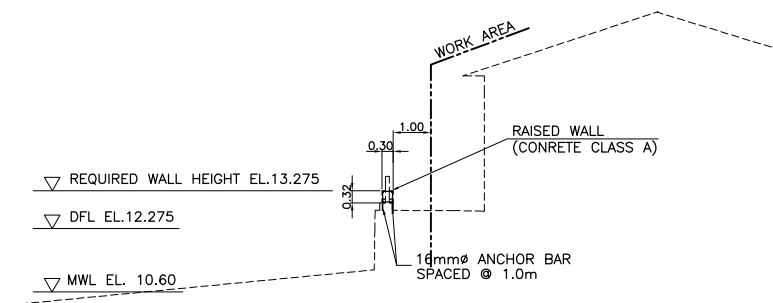
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL :		APPROVED BY:		<b>PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA</b>	<b>CROSS SECTION STA 2+650 ~ STA 2+900</b>  <b>RIGHT BANK</b>	
	EJI MOKI <small>STRUCTURAL ENGINEER I</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>	SEE COVER SHEET FOR THE SIGNATURE OF THE UNDERSECRETARY	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY			



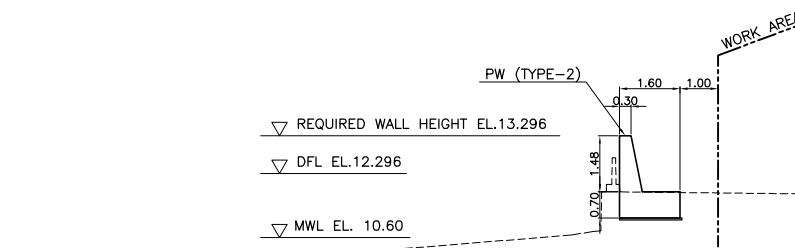
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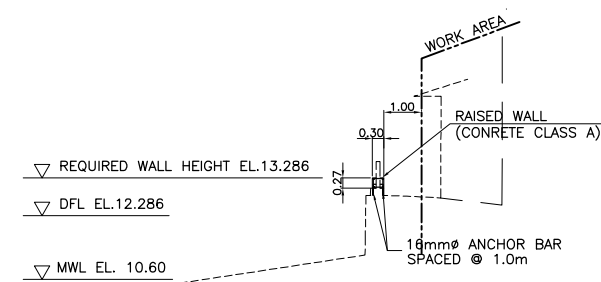
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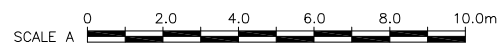
STA. 3+000 (RIGHT BANK)



STA. 3+100 (RIGHT BANK)



STA. 3+050 (RIGHT BANK)



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: EJI MOKI STRUCTURAL ENGINEER I	CHECKED BY: TOSHIKI KAWAKAMI THE CHECKER	SUBMITTED BY: SHUJI KAKU TEAM LEADER
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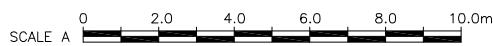
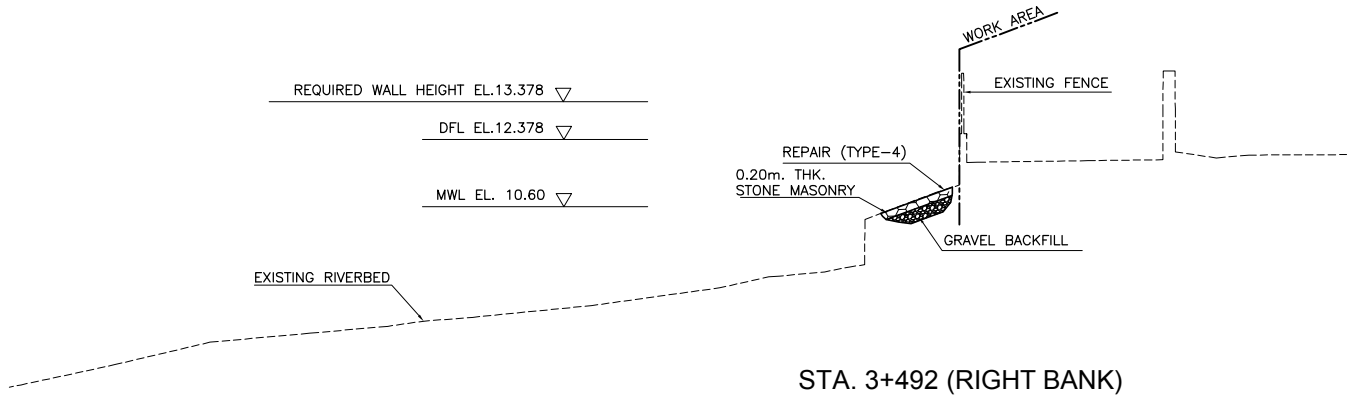
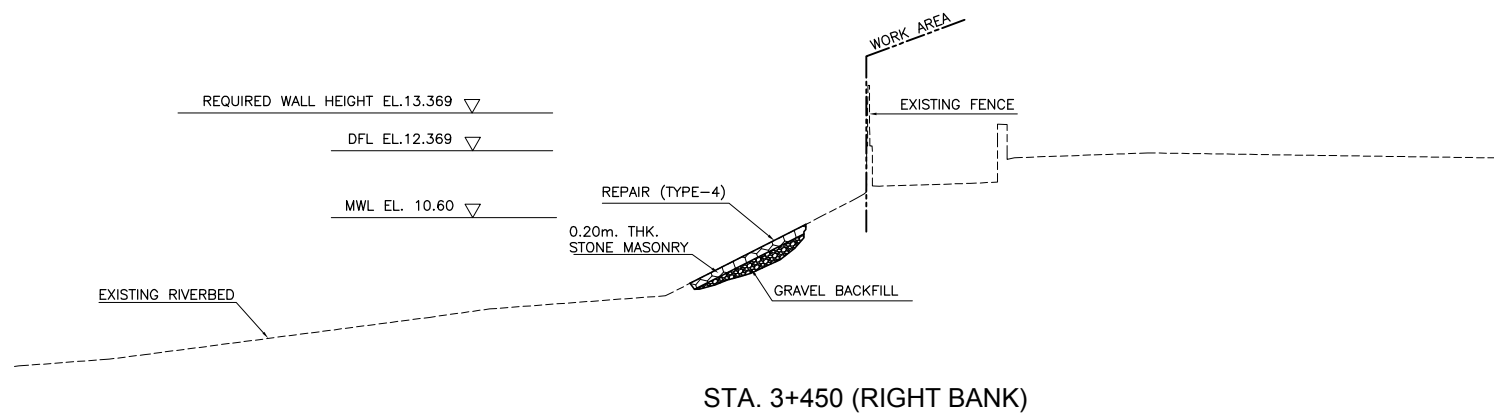
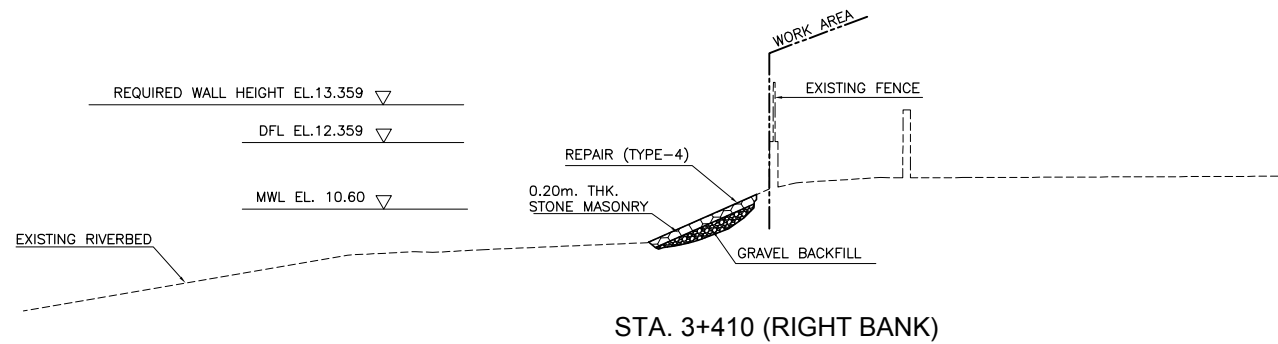
REPUBLIC OF THE PHILIPPINES  
DEPARTMENT OF PUBLIC WORKS  
AND HIGHWAYS

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 AND APPROVAL 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  
CROSS SECTION STA 2+950 ~ STA 3+100  
RIGHT BANK

SHEET NO.  
LP-RS  
CS 16

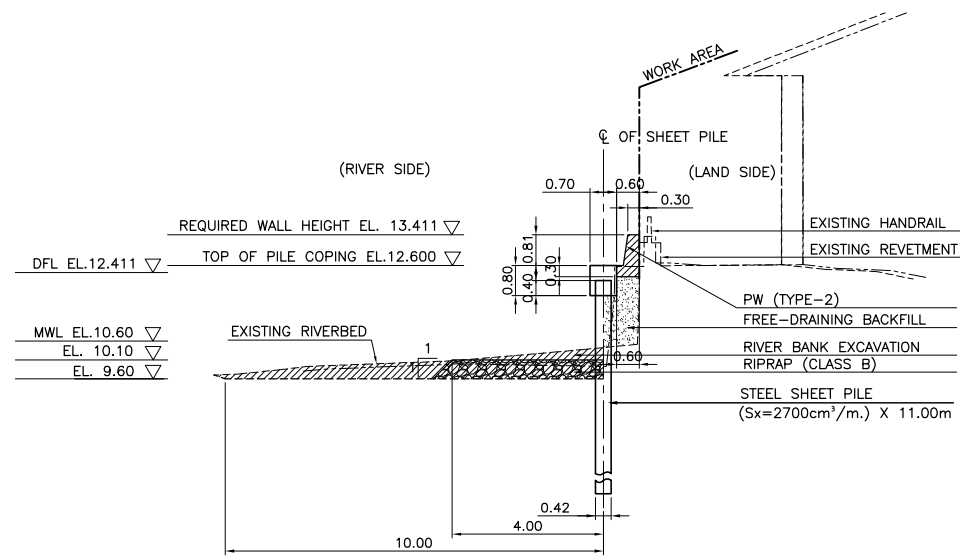


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

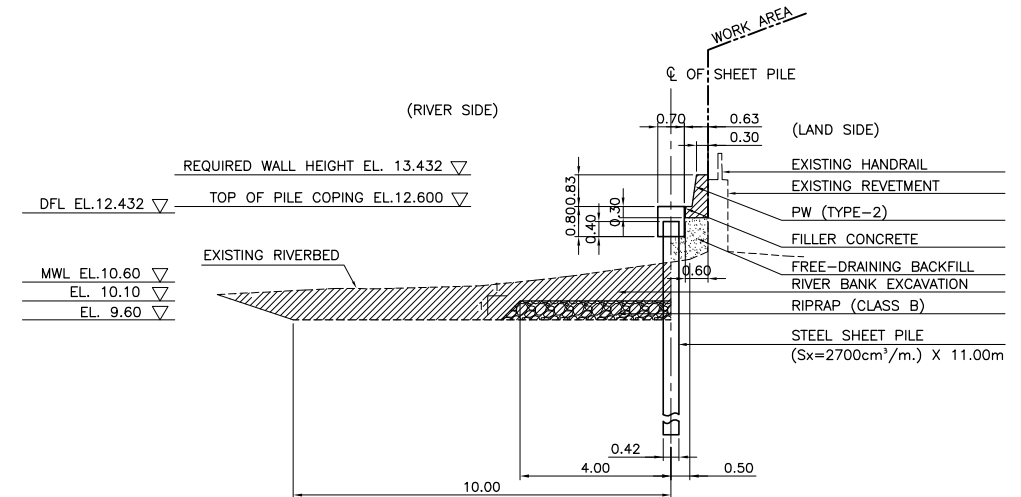
**NOTE:**  
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SHUJI KAKU  
TEAM LEADER

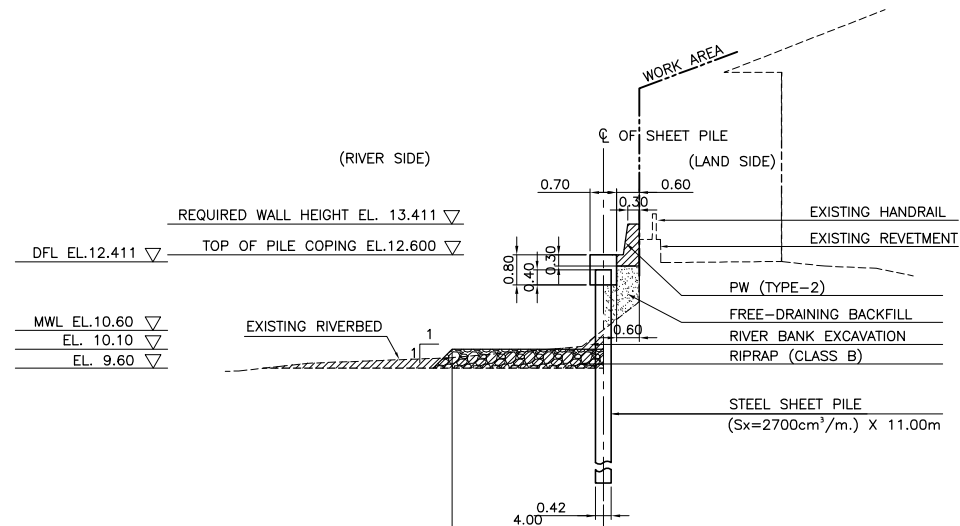
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES					PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.		
<b>CTI ENGINEERING INTERNATIONAL CO., LTD.</b>	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	<b>REPUBLIC OF THE PHILIPPINES DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS</b>	REVIEWED BY:	RECOMMENDING APPROVAL :		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 3+410 ~ STA 3+492 RIGHT BANK (HOSPICIO)	
	EJI MOKI <small>STRUCTURAL ENGINEER I</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>	<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>			



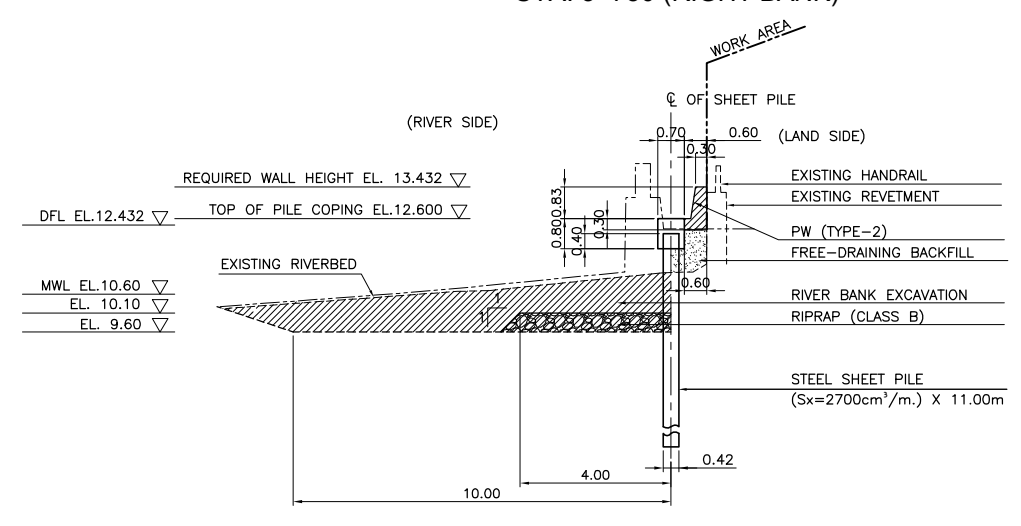
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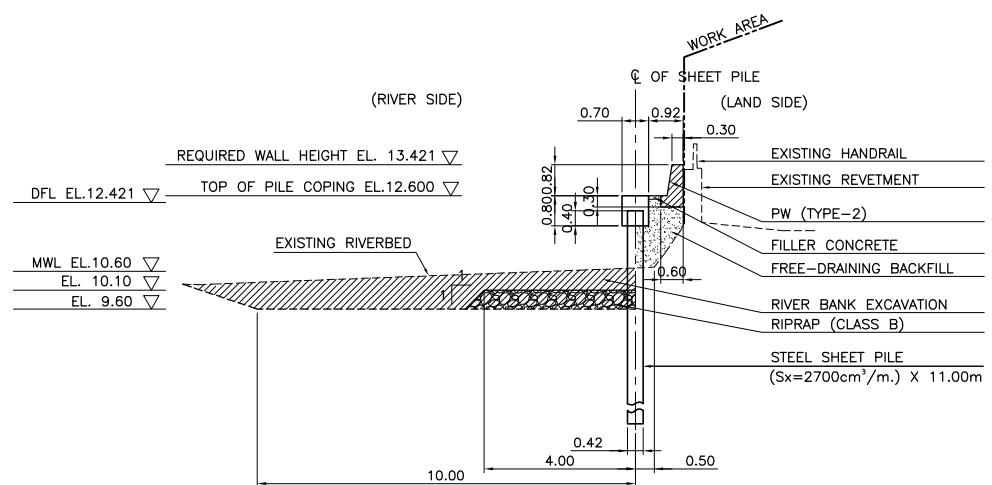
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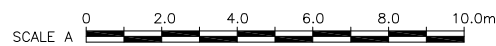
STA. 3+650 (RIGHT BANK)



STA. 3+753 (RIGHT BANK)



STA. 3+700 (RIGHT BANK)



REVISIONS			
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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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 AND APPROVAL OF THE UNDERSECRETARY

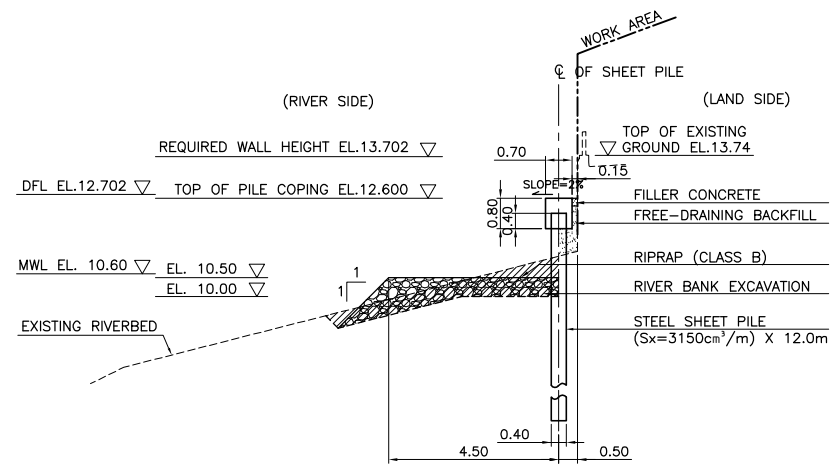
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

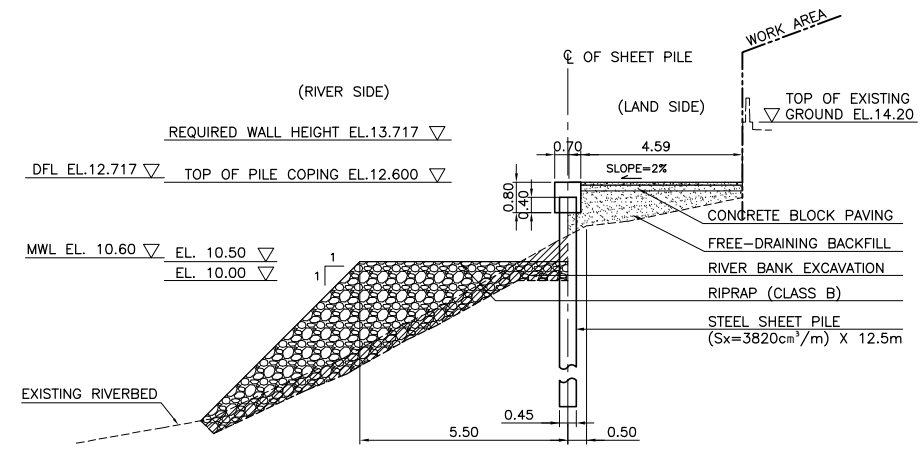
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: CROSS SECTION STA 3+649 ~ STA 3+753  
RIGHT BANK

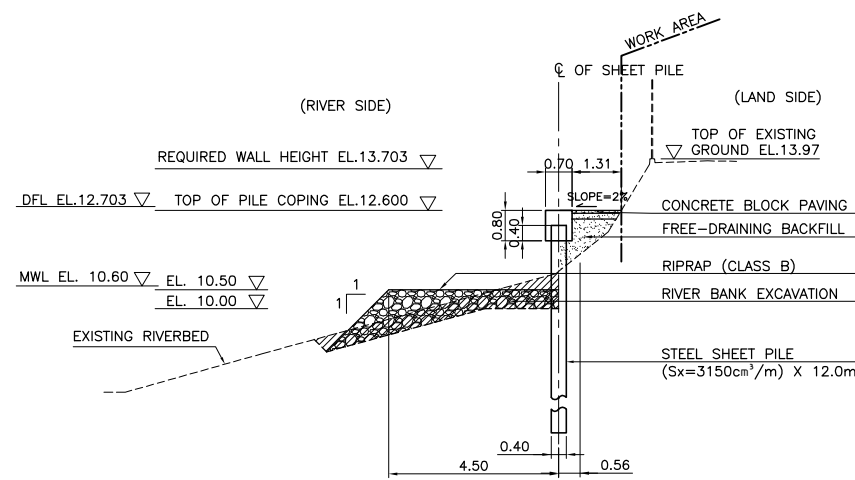
SHEET NO.: LP-RS  
CS 18



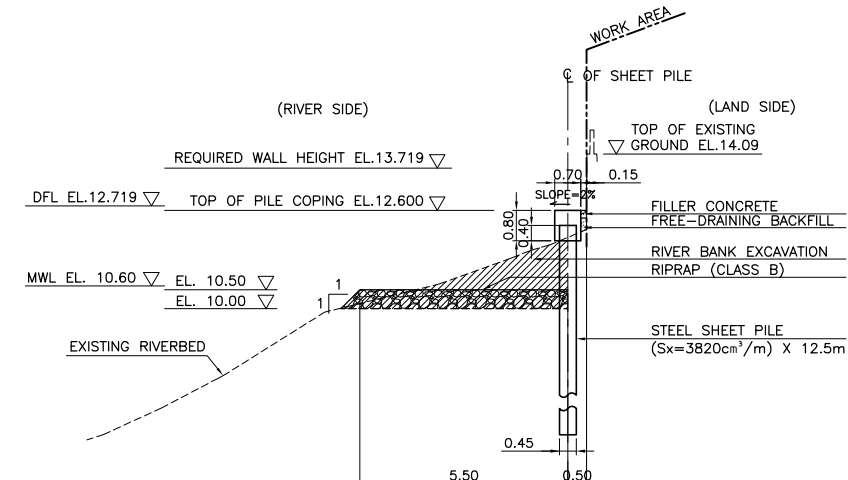
STA. 5+046 (RIGHT BANK)



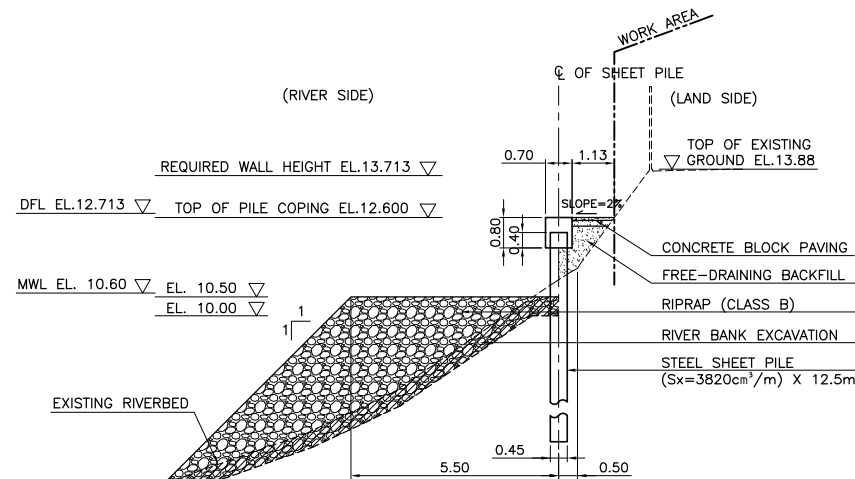
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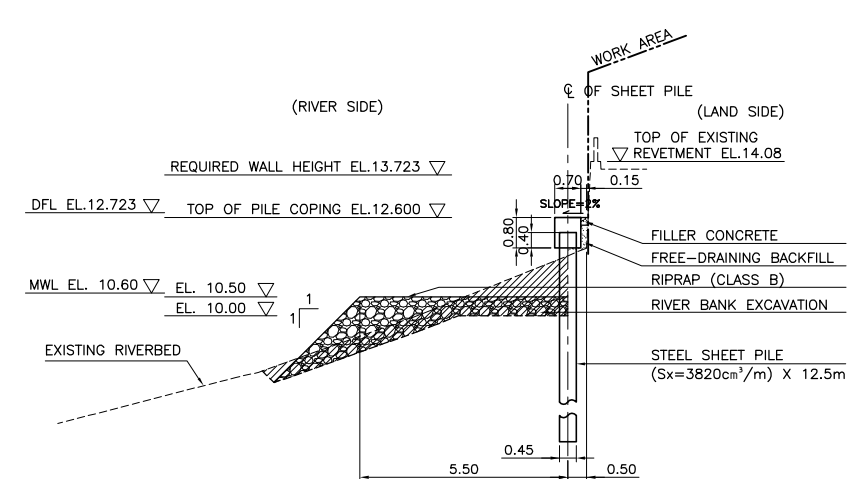
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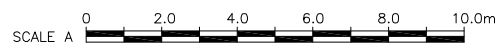
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STA. 5+100 (RIGHT BANK)



STA. 5+150 (RIGHT BANK)

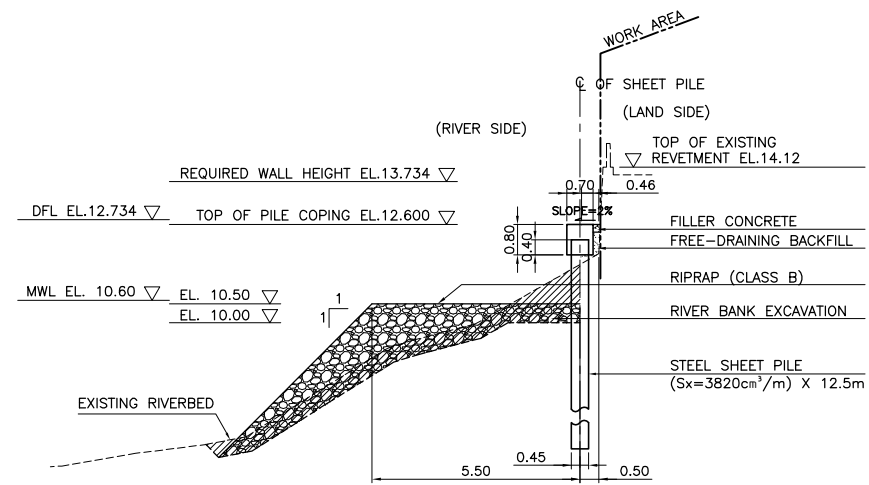


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

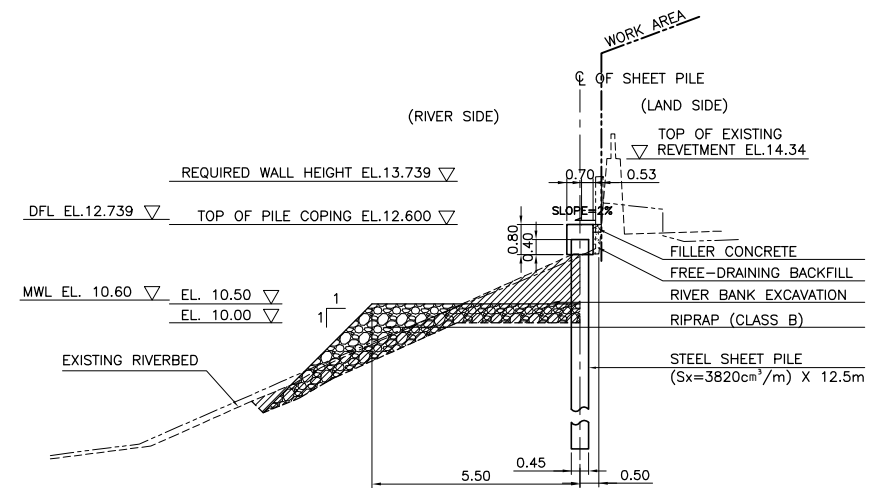
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SHUJI KAKU  
TEAM LEADER

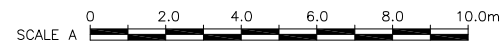
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.	
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:		APPROVED BY:		PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 5+046 ~ STA 5+150 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



STA. 5+200 (RIGHT BANK)



STA. 5+223 (RIGHT BANK)



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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

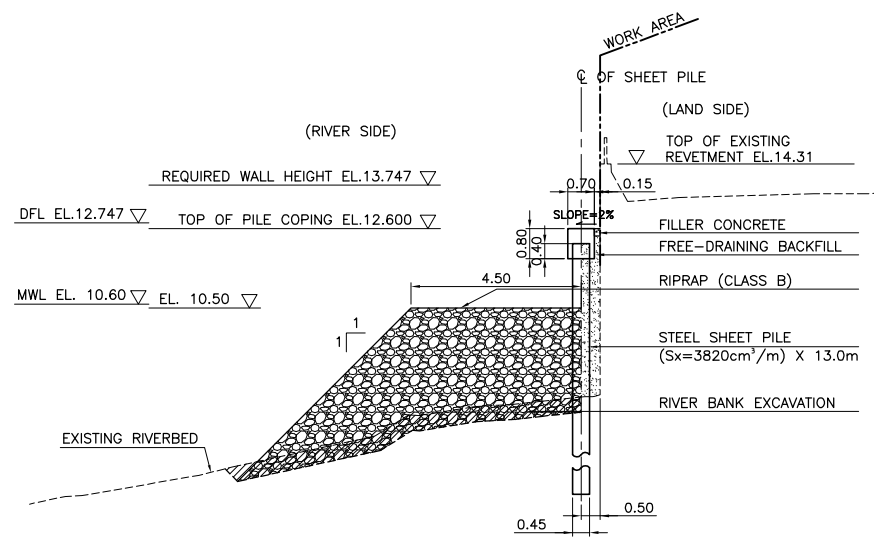
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

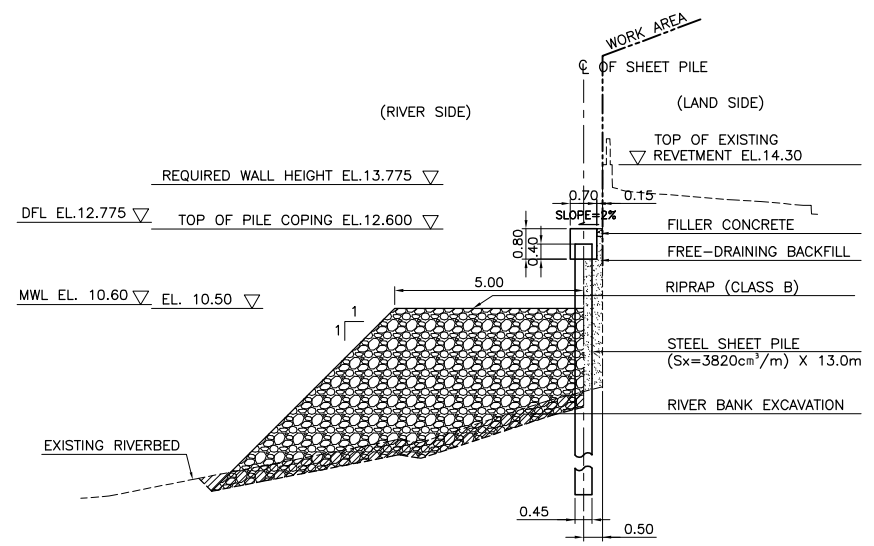
PROJECT & LOCATION: PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS: CROSS SECTION STA 5+200 ~ STA 5+223  
RIGHT BANK

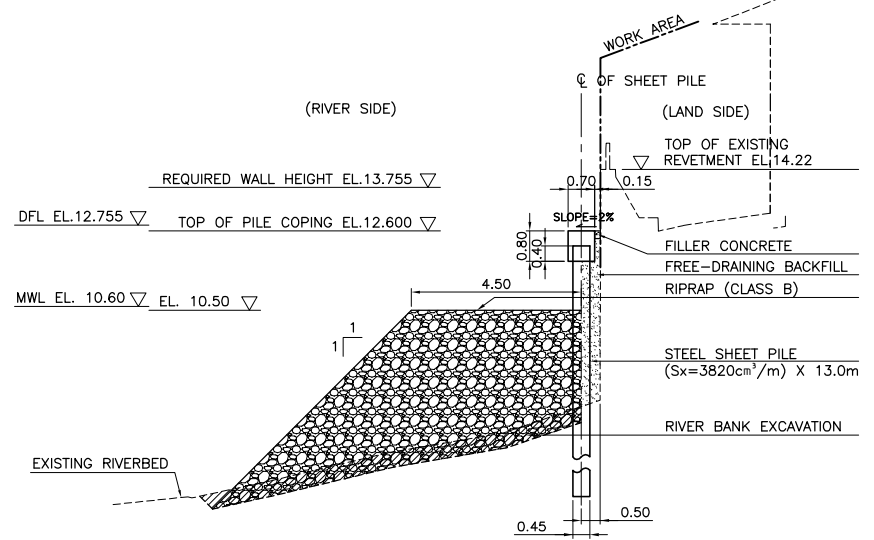
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CS 20



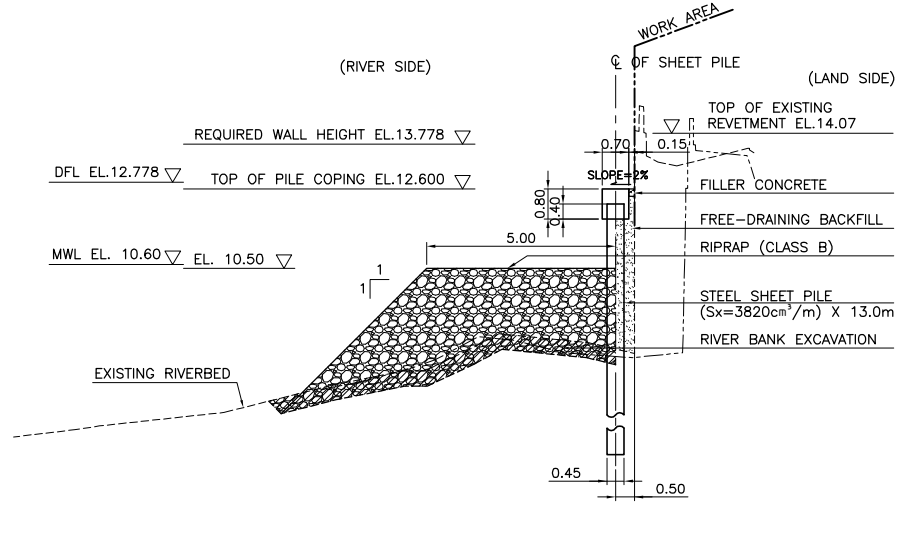
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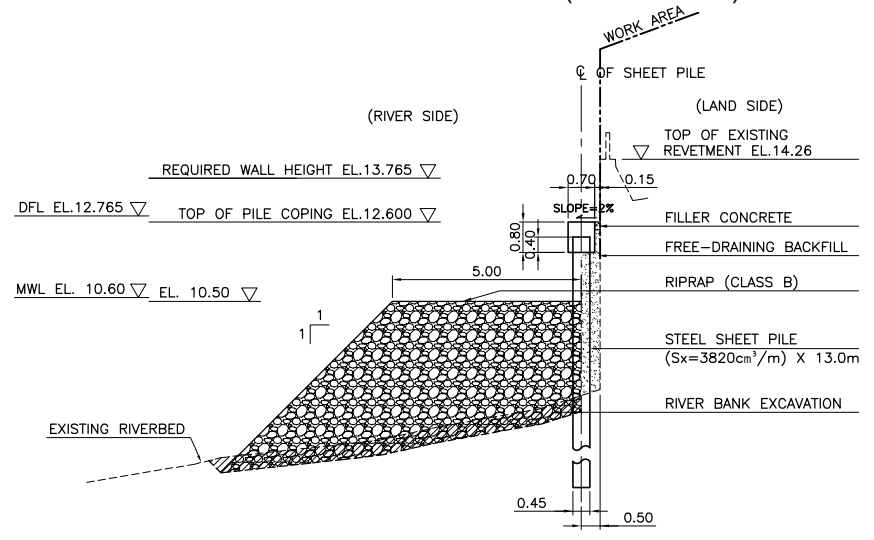
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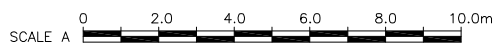
STA. 5+300 (RIGHT BANK)



STA. 5+414 (RIGHT BANK)



STA. 5+350 (RIGHT BANK)

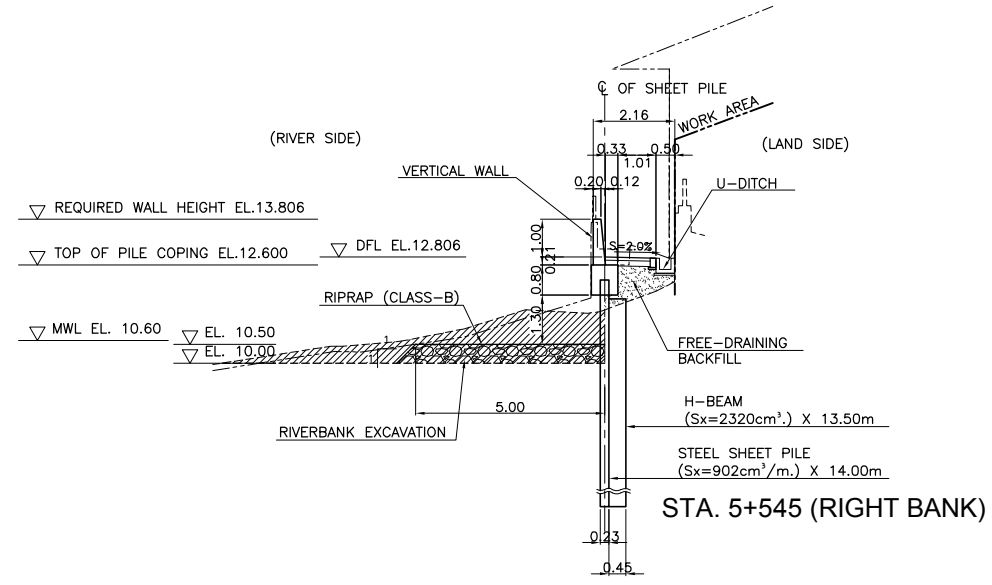


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

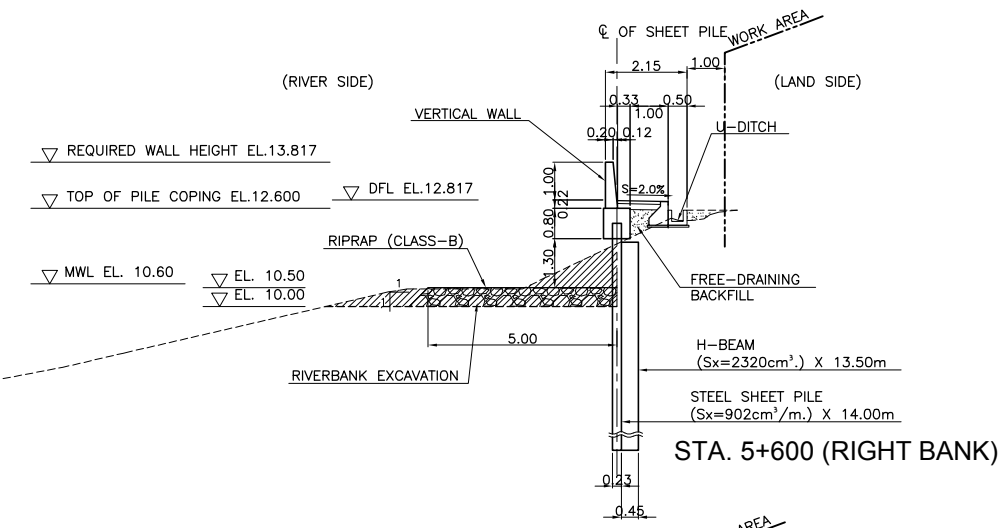
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SHUJI KAKU  
TEAM LEADER

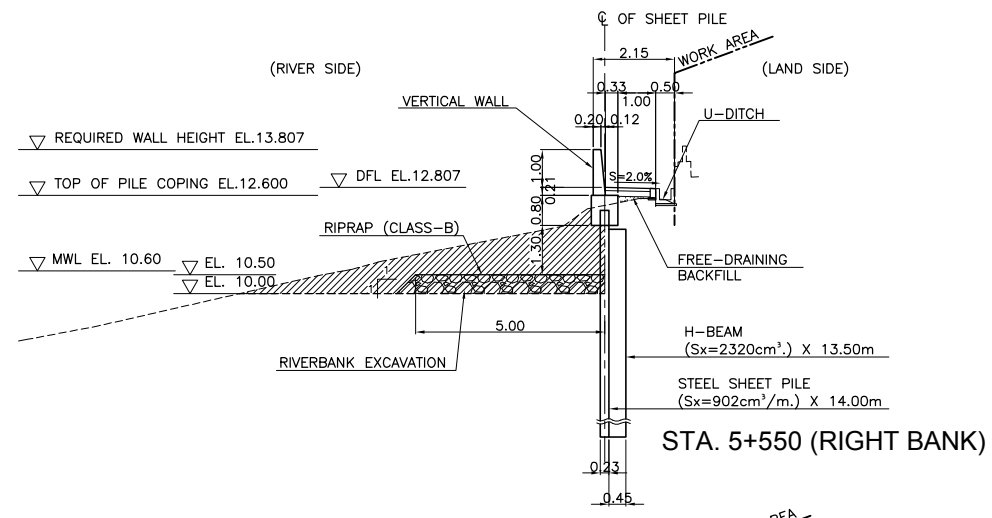
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 5+262 ~ STA 5+414 RIGHT BANK	LP-RS CS 21	
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP



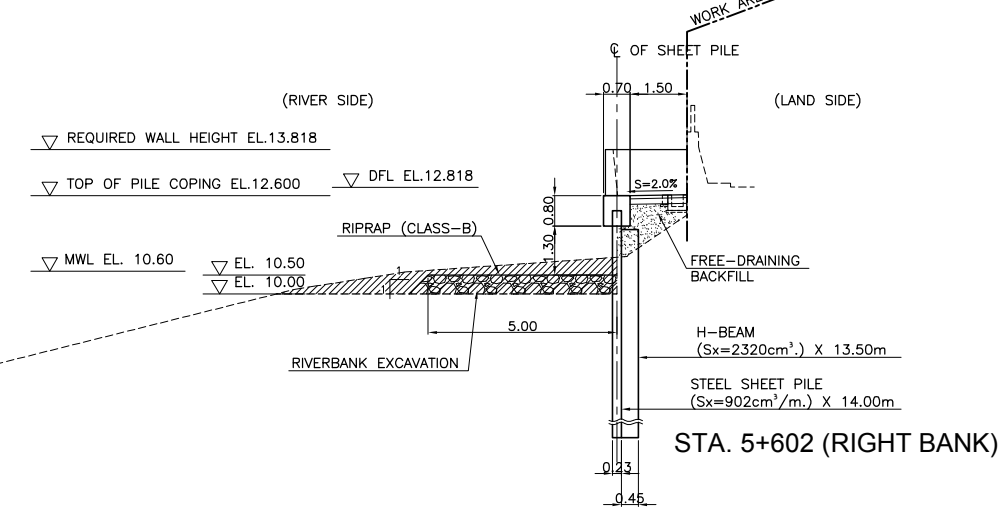
STA. 5+545 (RIGHT BANK)



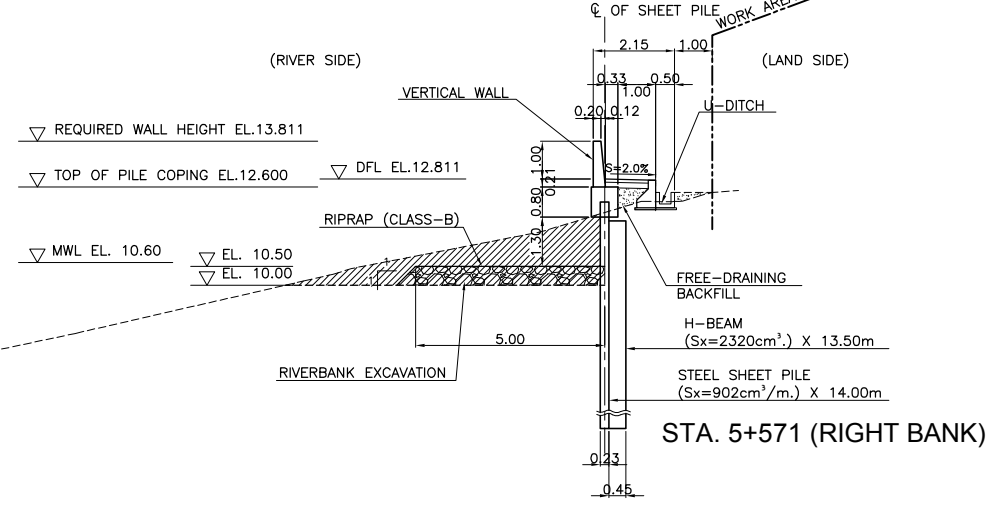
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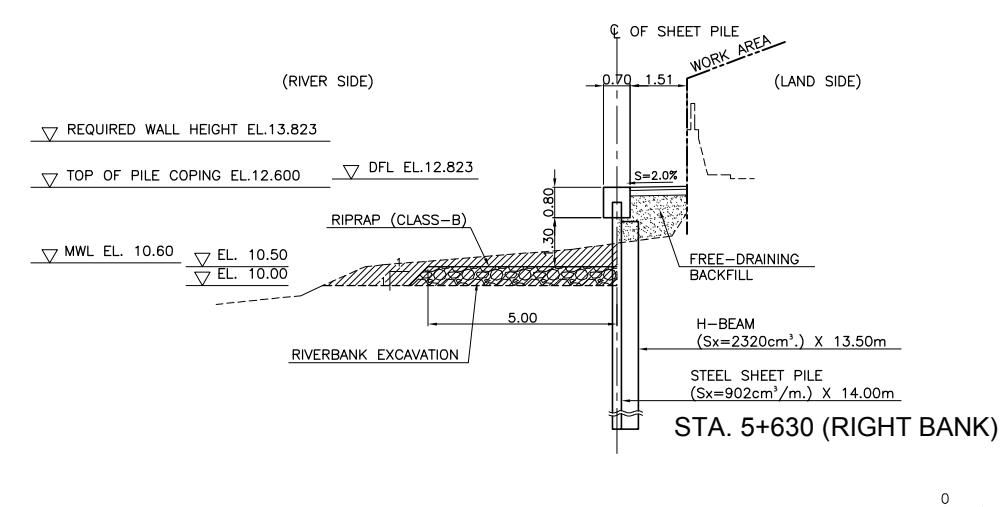
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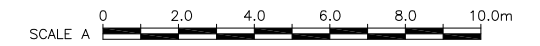
STA. 5+602 (RIGHT BANK)



STA. 5+571 (RIGHT BANK)



STA. 5+630 (RIGHT BANK)



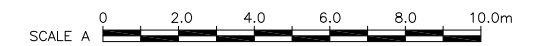
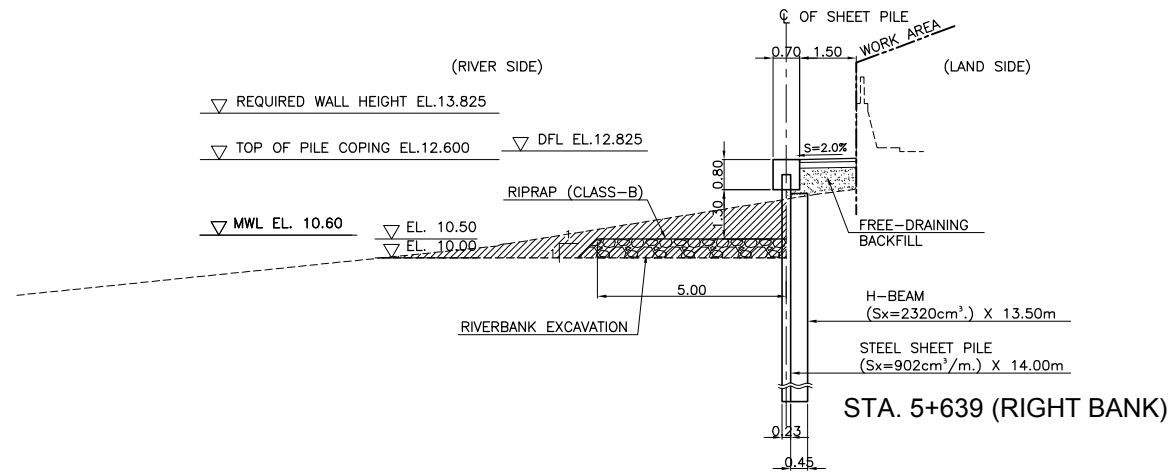
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SHUJI KAKU  
TEAM LEADER

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	CROSS SECTION STA 5+545 ~ STA 5+630 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



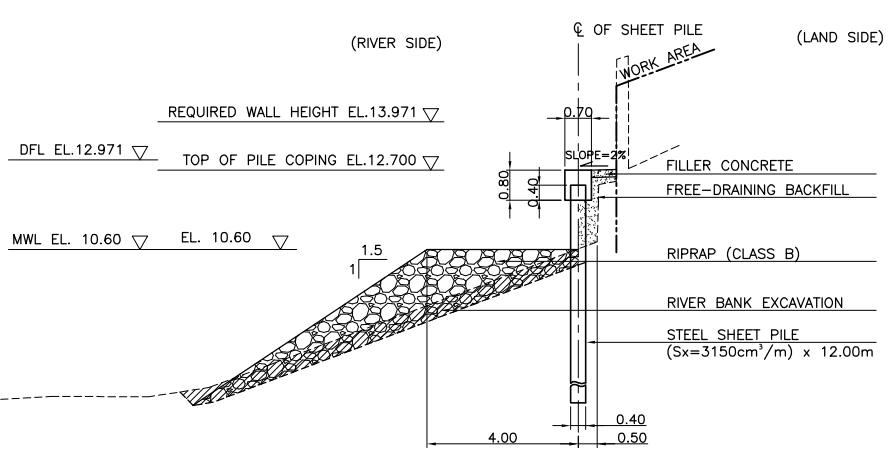


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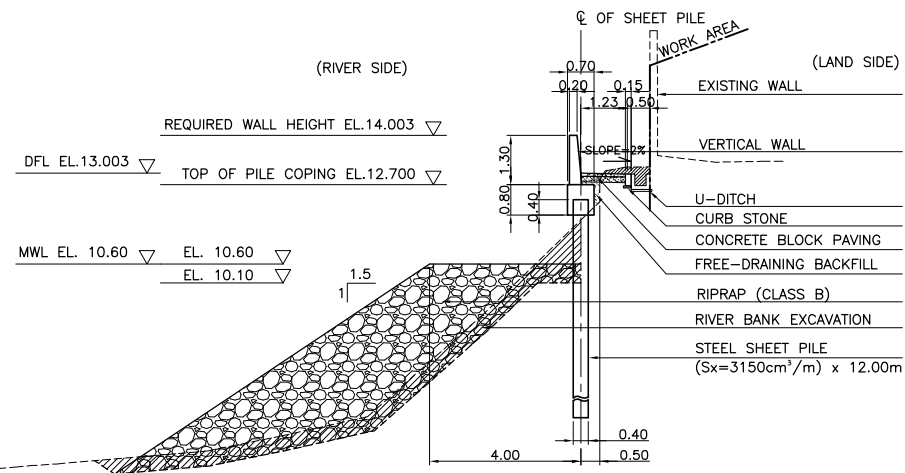
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SHUJI KAKU  
 TEAM LEADER

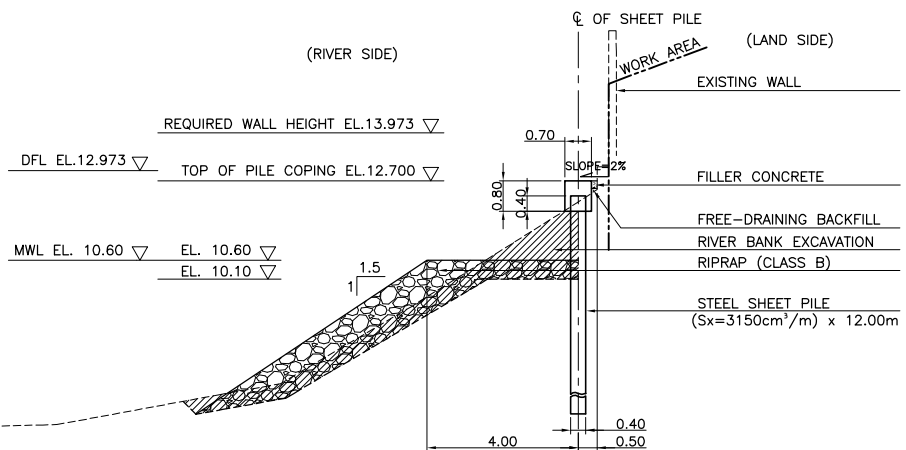
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 5+639 RIGHT BANK		
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER		SHUJI KAKU TEAM LEADER	PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD				PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP



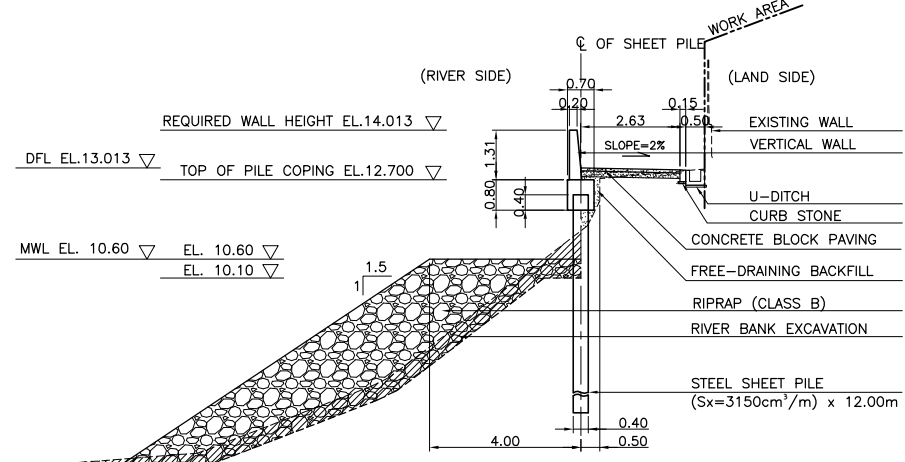
STA. 6+337 (RIGHT BANK)



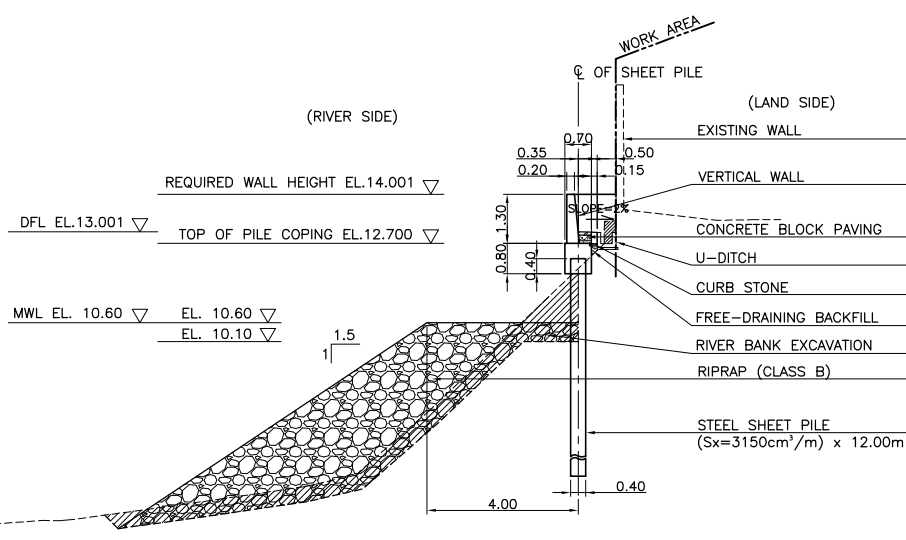
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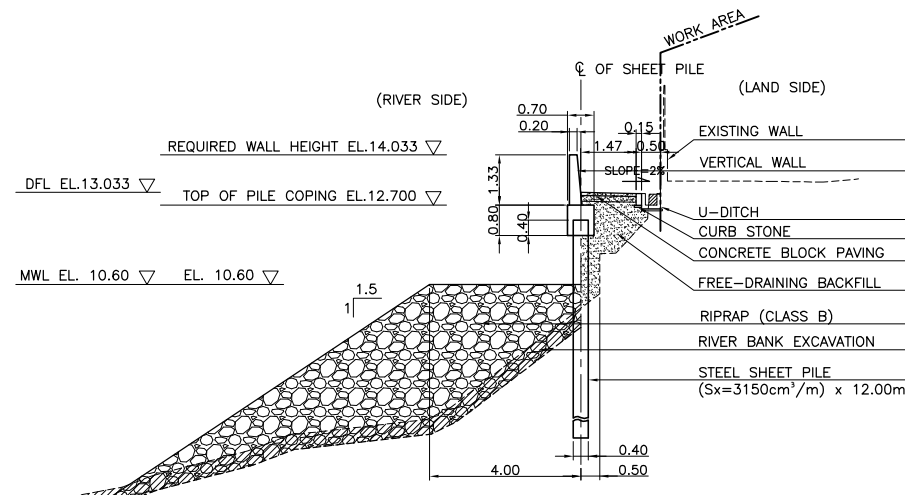
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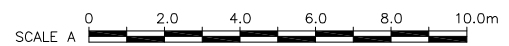
STA. 6+415 (RIGHT BANK)



STA. 6+396 (RIGHT BANK)



STA. 6+450 (RIGHT BANK)

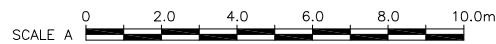
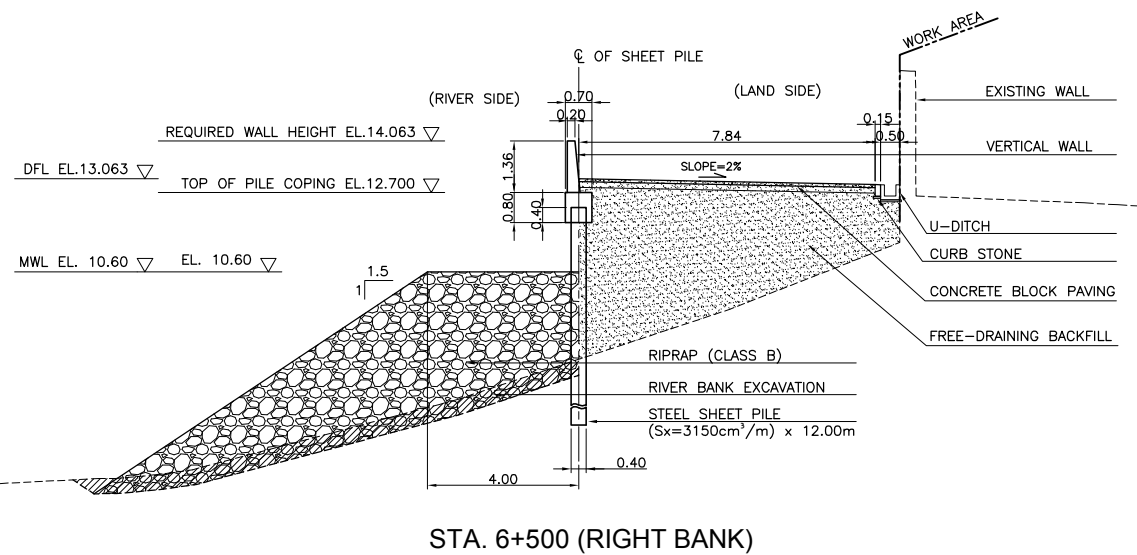
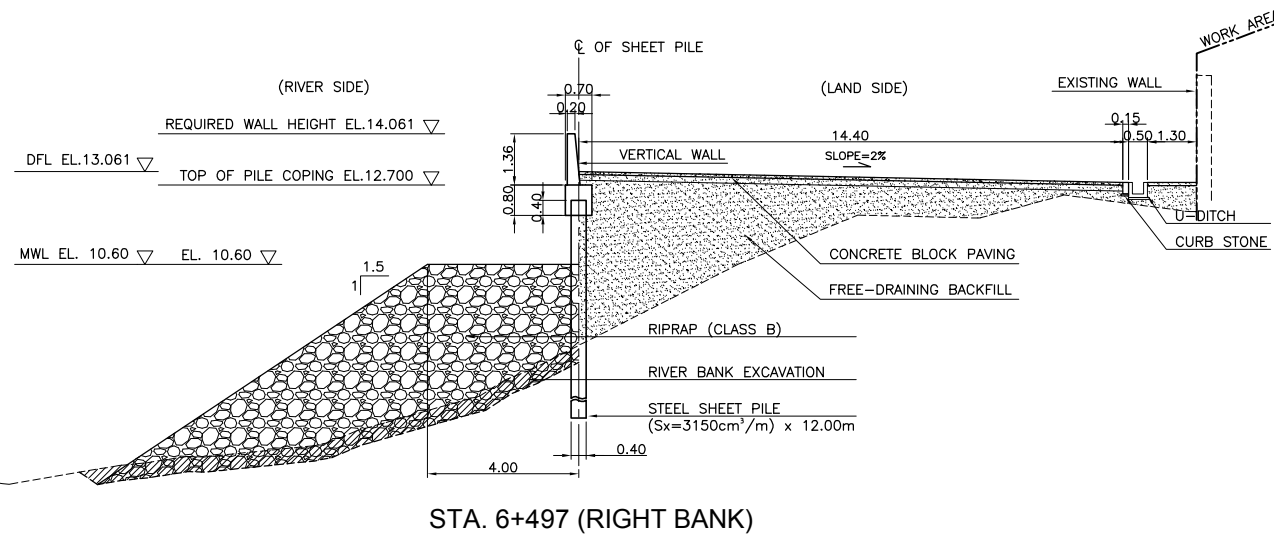
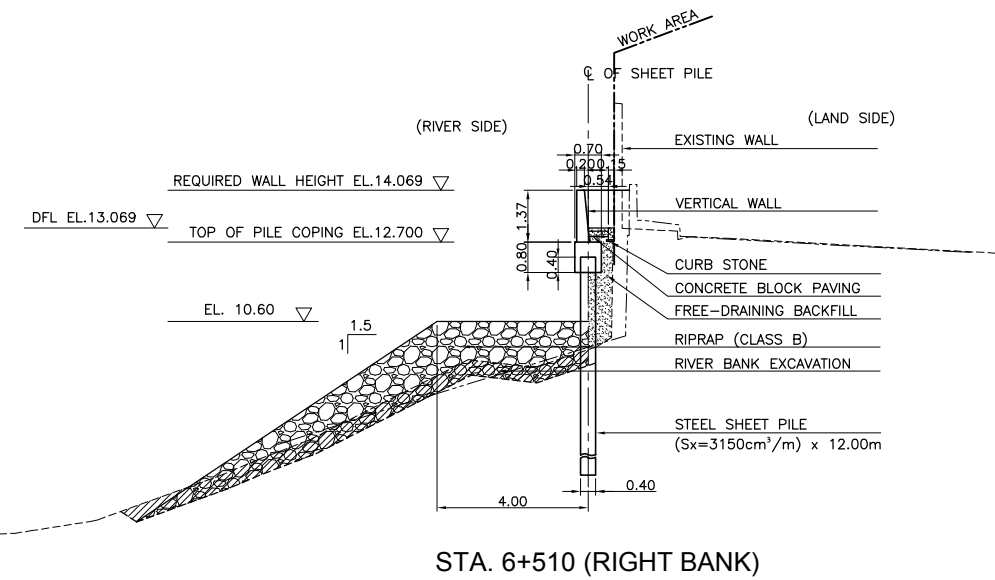
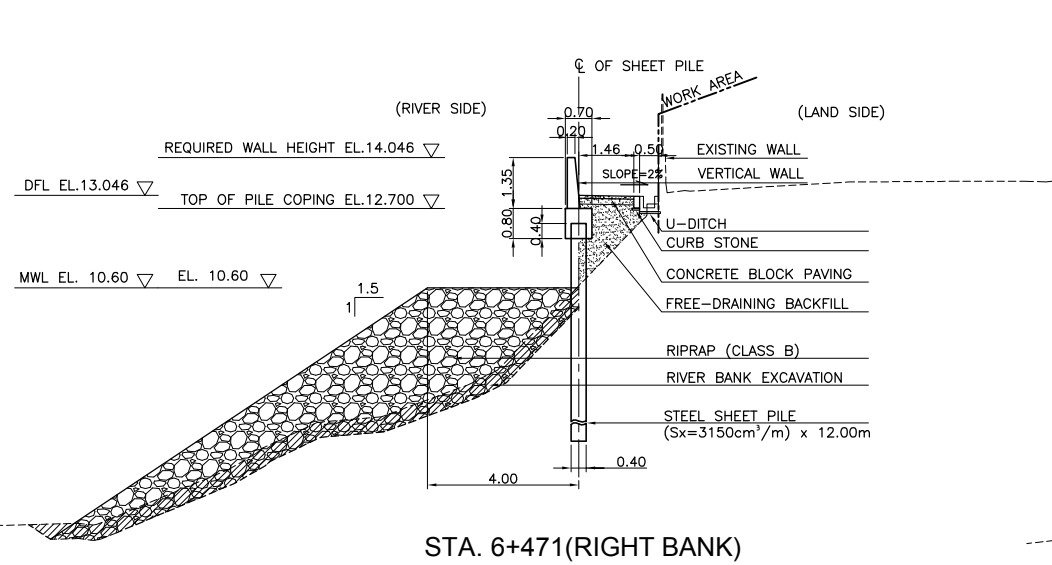


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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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	CROSS SECTION STA 6+337 ~STA 6+450 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

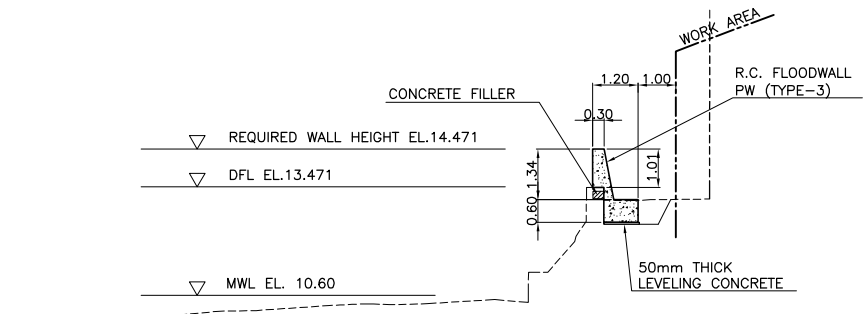
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

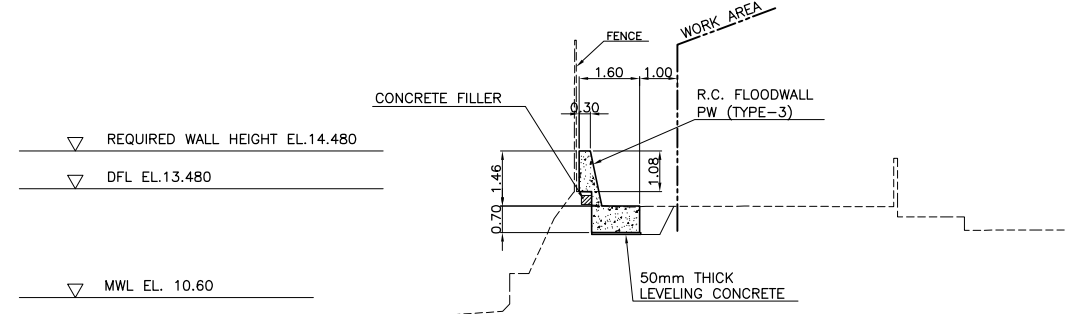
CROSS SECTION STA 6+471 ~ STA 6+510  
RIGHT BANK

SHEET NO.

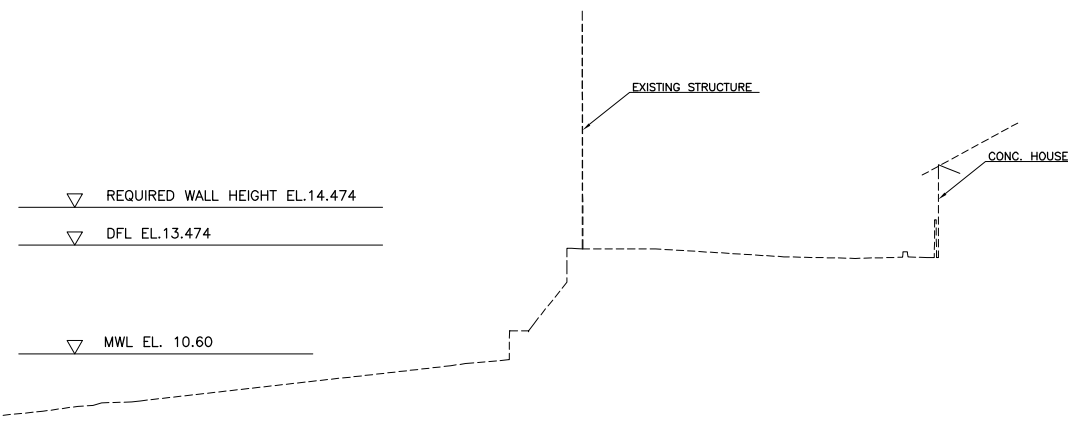
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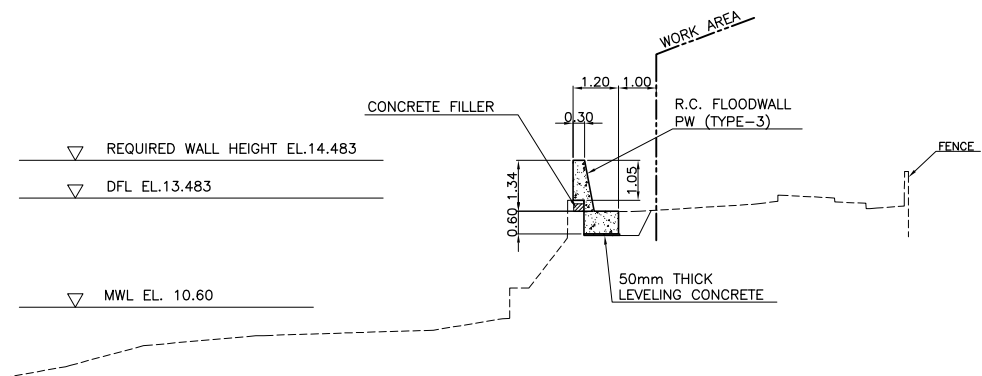
STA. 7+516 (RIGHT BANK)



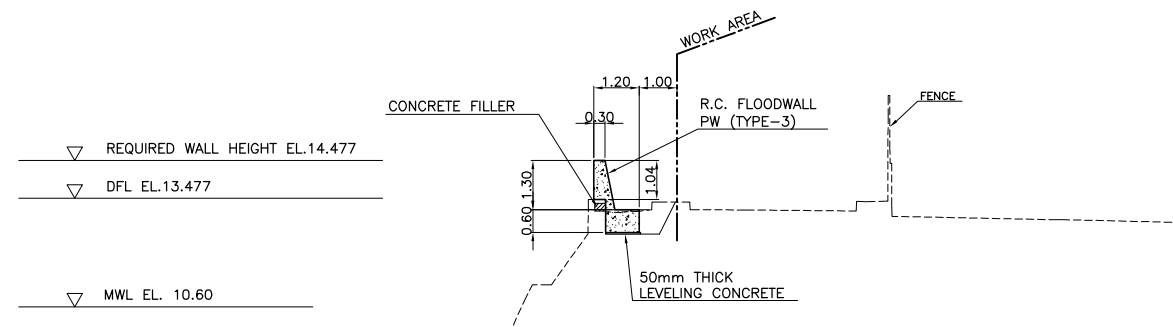
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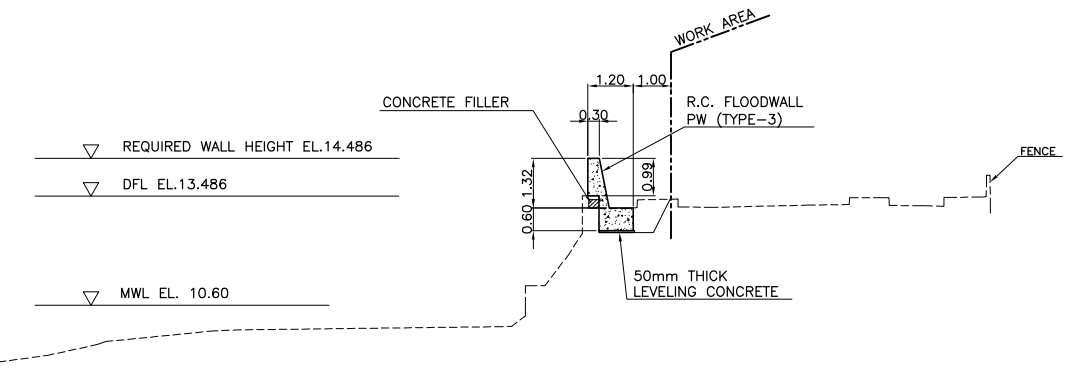
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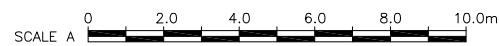
STA. 7+700 (RIGHT BANK)



STA. 7+600 (RIGHT BANK)



STA. 7+750 (RIGHT BANK)



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

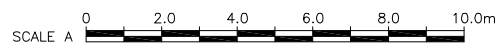
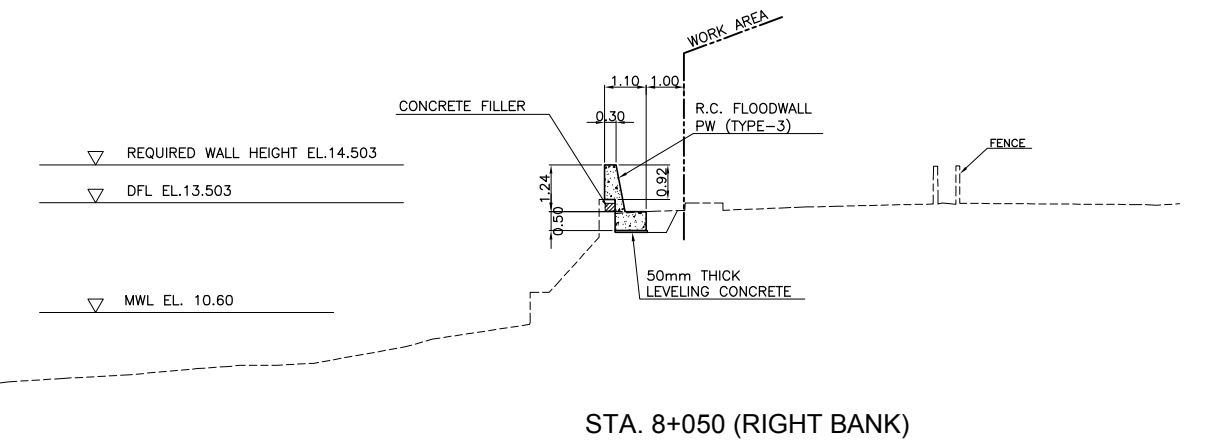
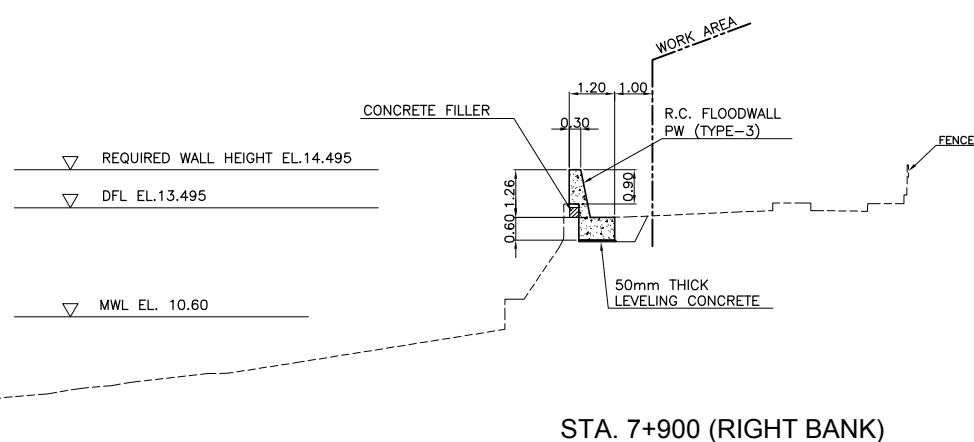
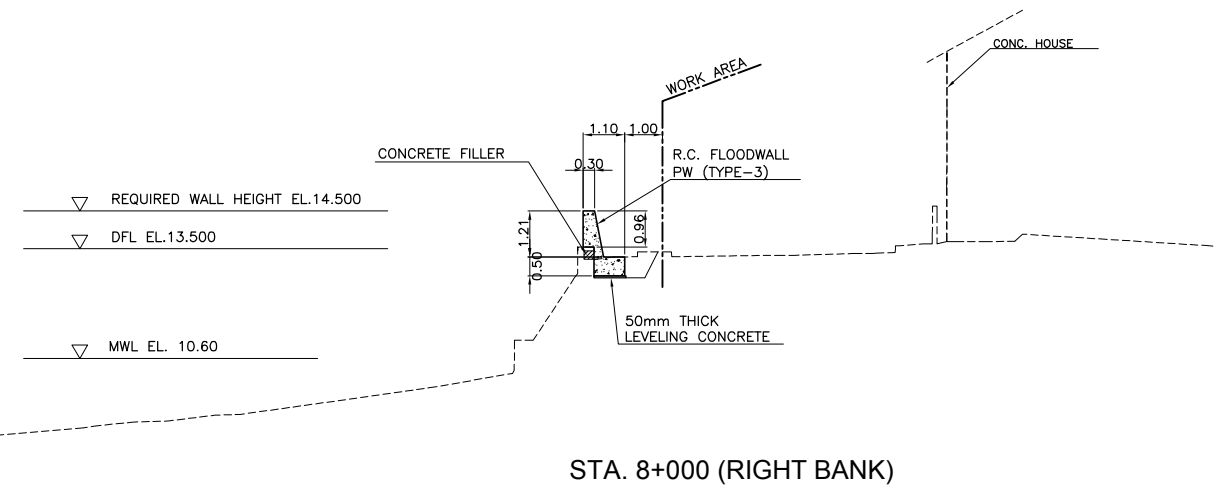
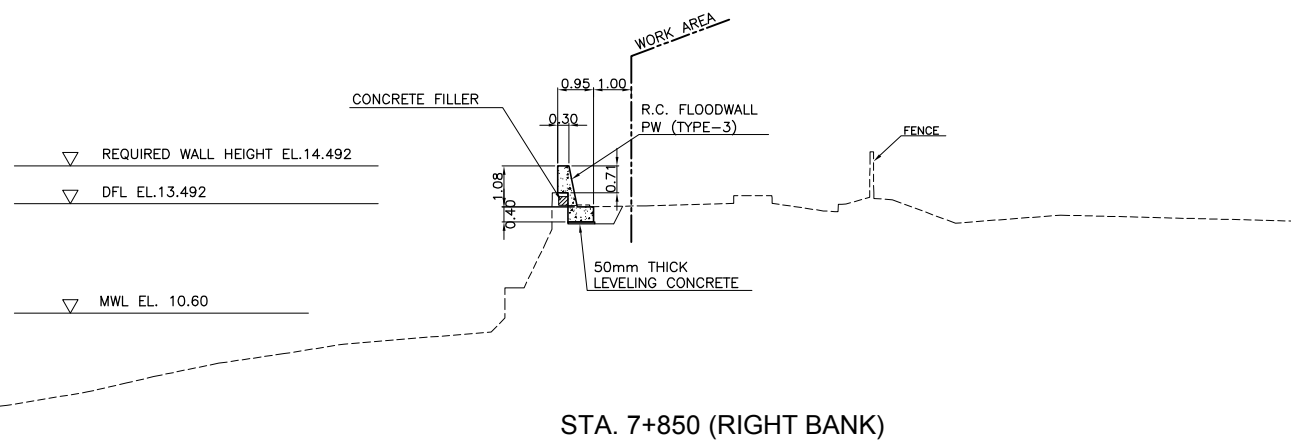
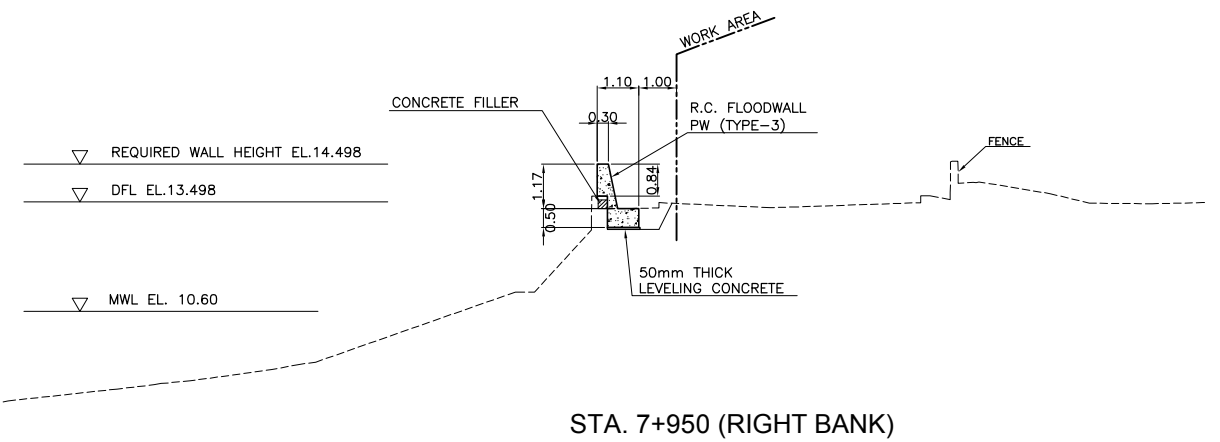
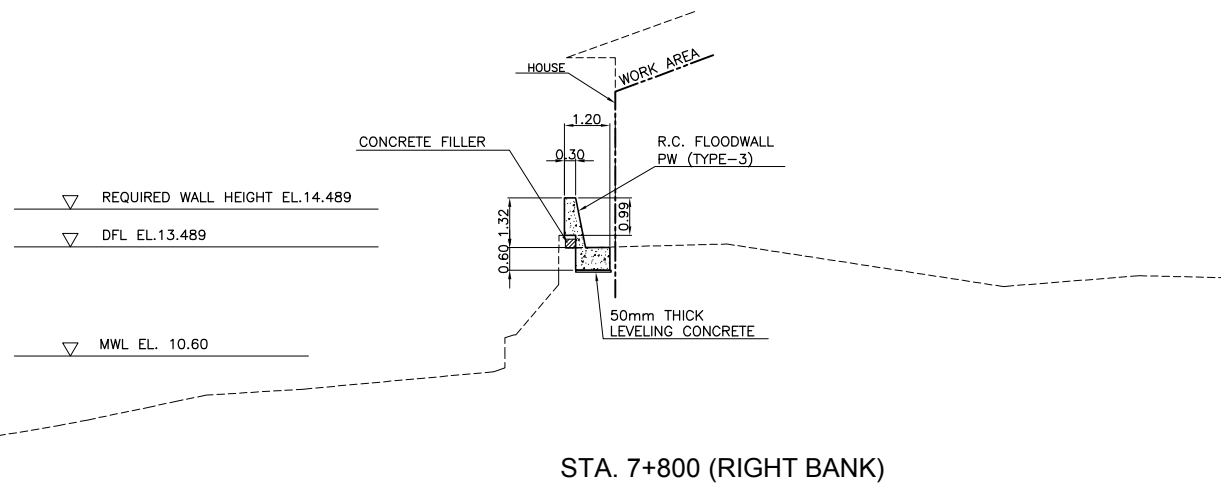
PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA

SHEET CONTENTS

CROSS SECTION STA 7+516 ~ STA 7+750  
RIGHT BANK

SHEET NO.

LP-RS  
CS 26

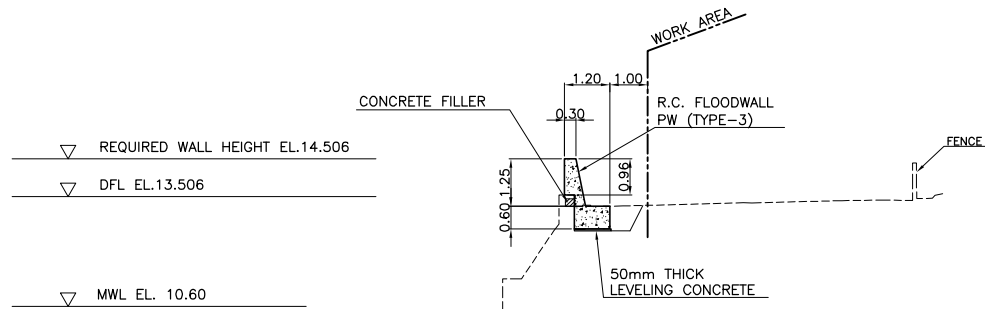


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

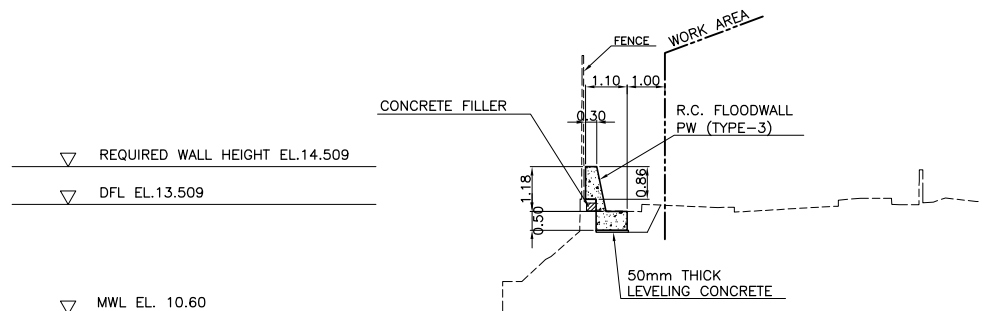
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SHUJI KAKU  
 TEAM LEADER

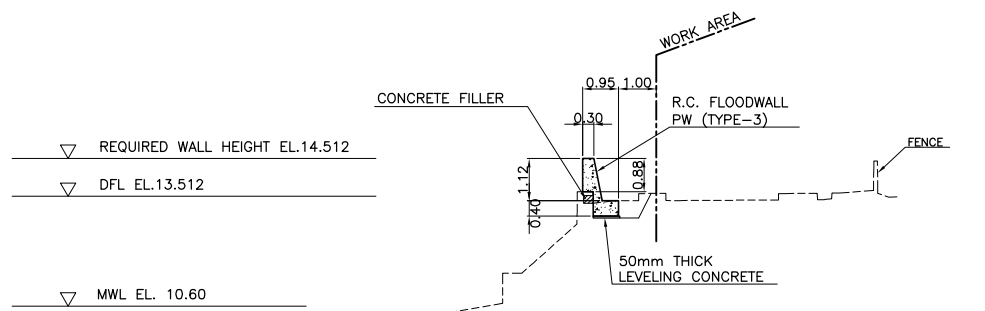
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 7+800 ~ STA 8+050 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



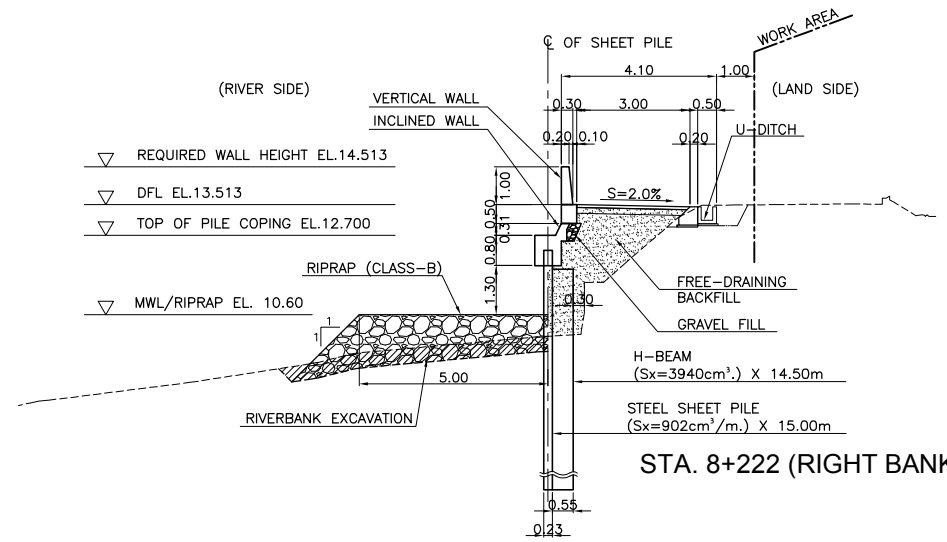
STA. 8+100 (RIGHT BANK)



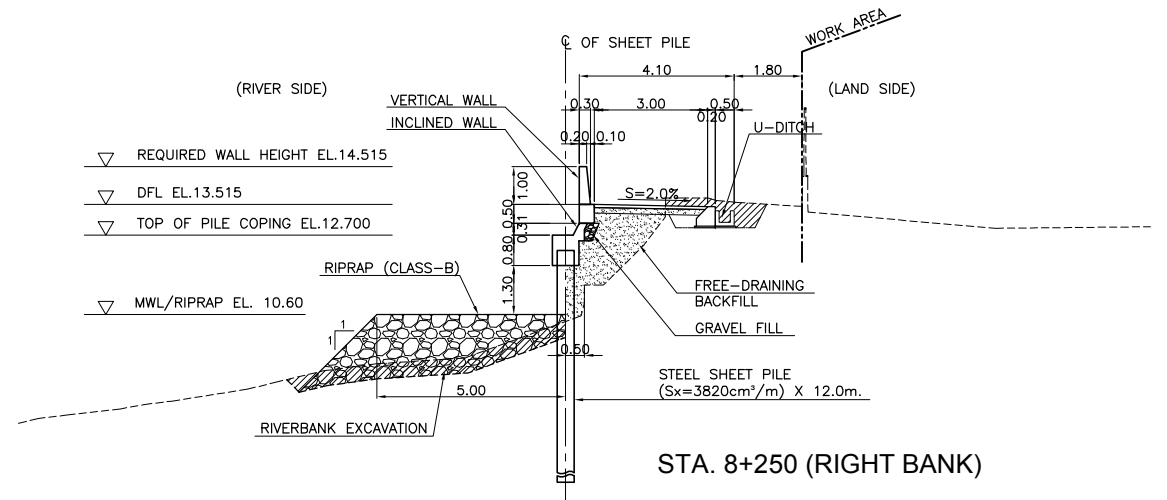
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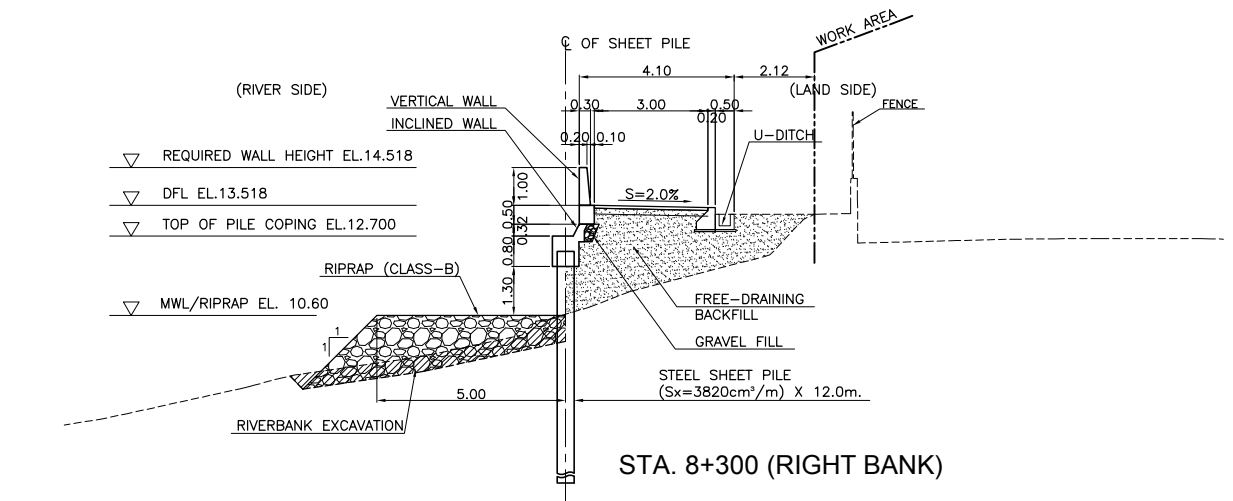
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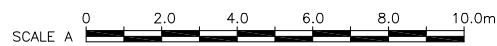
STA. 8+222 (RIGHT BANK)



STA. 8+250 (RIGHT BANK)



STA. 8+300 (RIGHT BANK)



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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

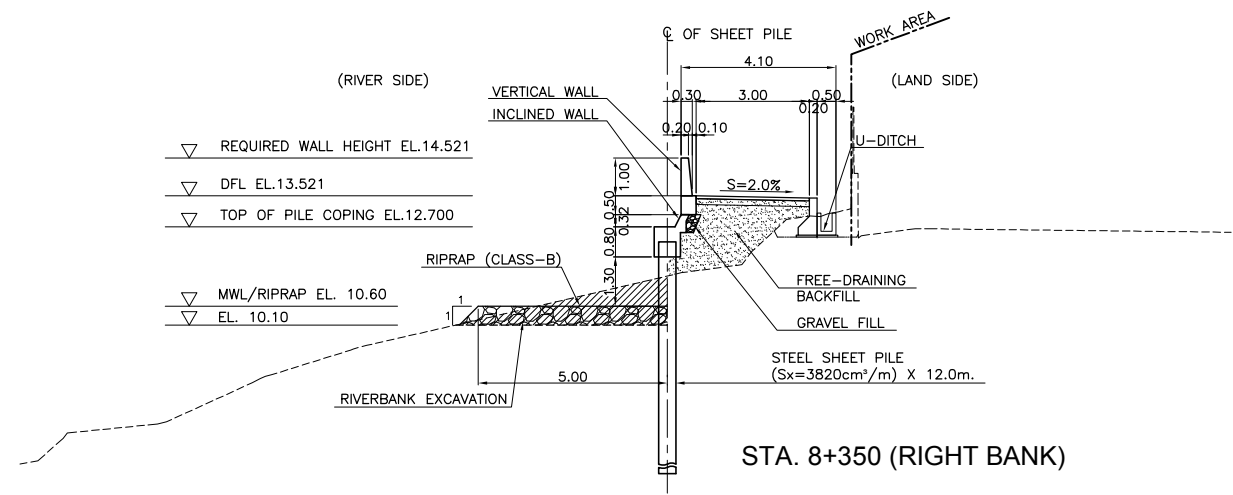
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

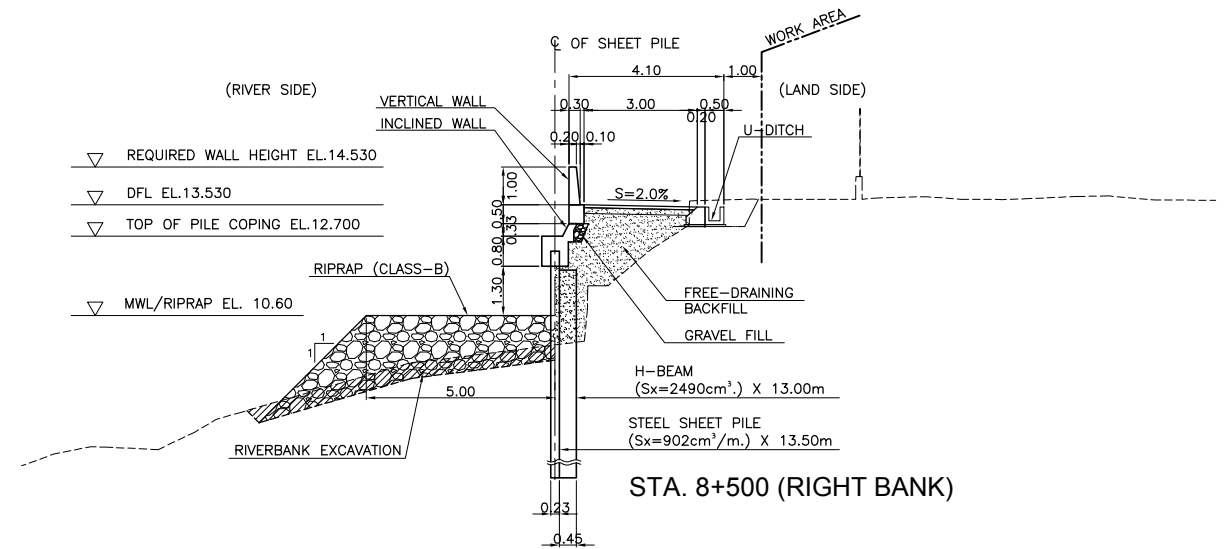
CROSS SECTION  
STA 8+100 ~ STA 8+300  
RIGHT BANK

SHEET NO.

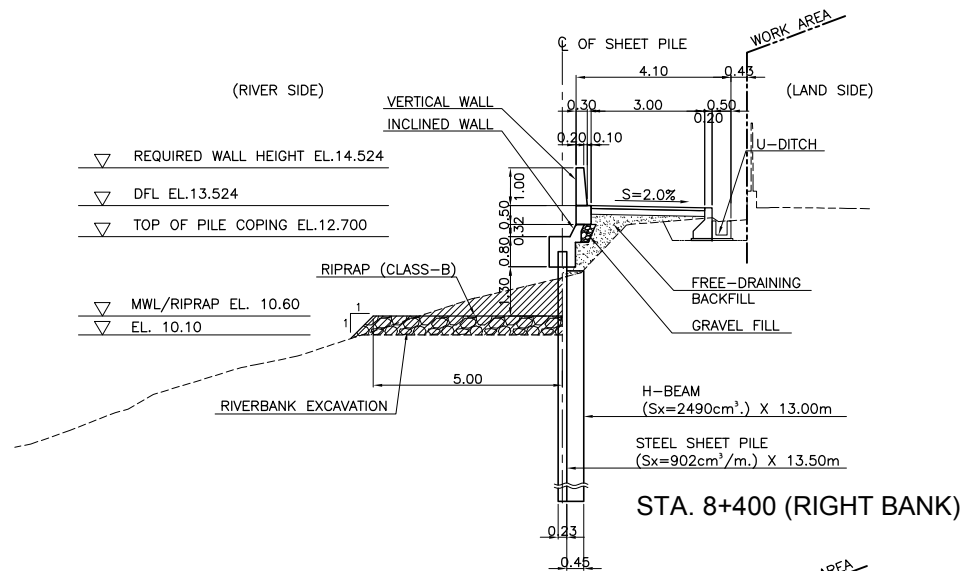
LP-RS  
CS 28



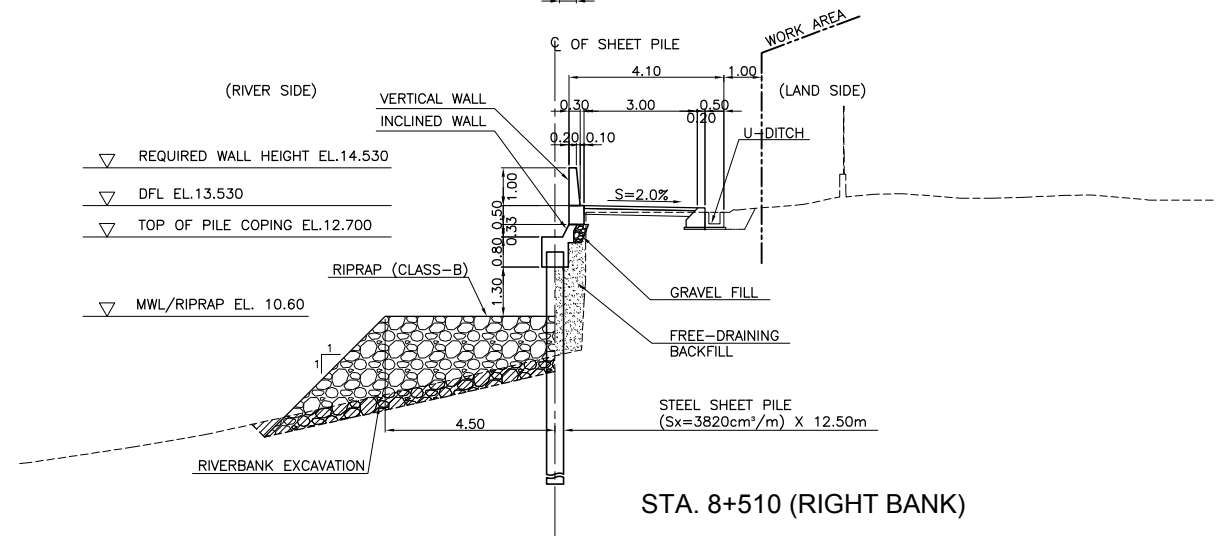
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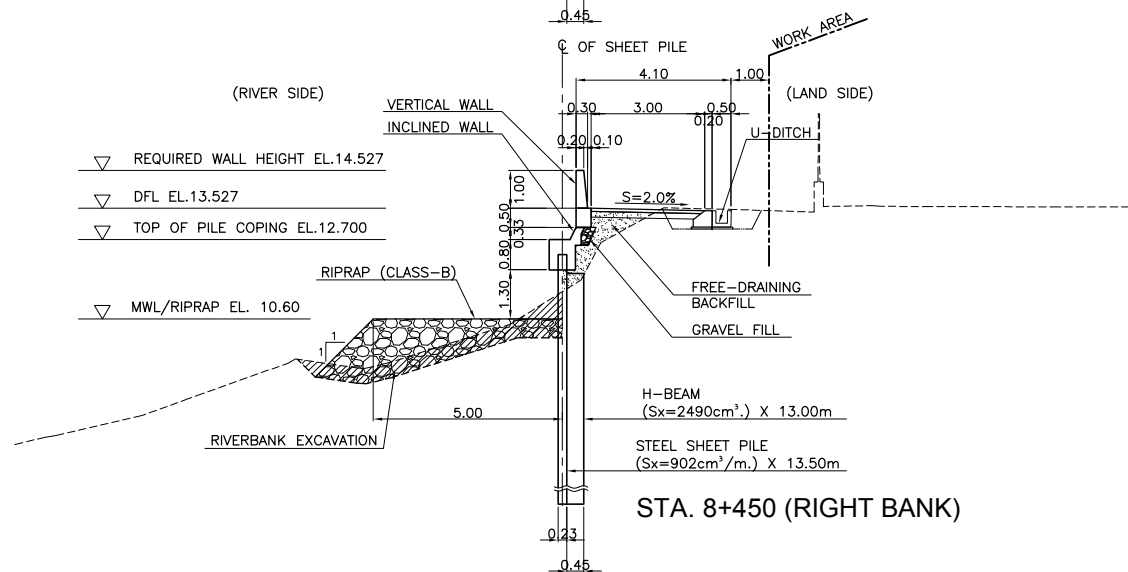
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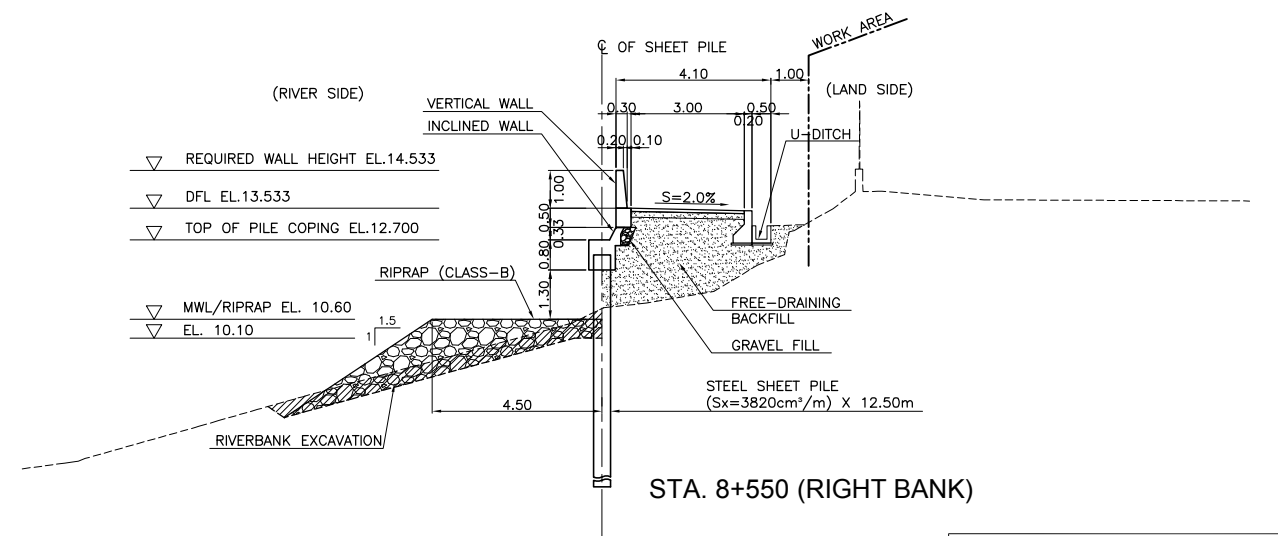
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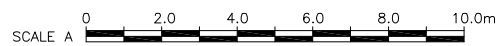
STA. 8+510 (RIGHT BANK)



STA. 8+450 (RIGHT BANK)



STA. 8+550 (RIGHT BANK)



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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

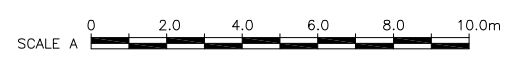
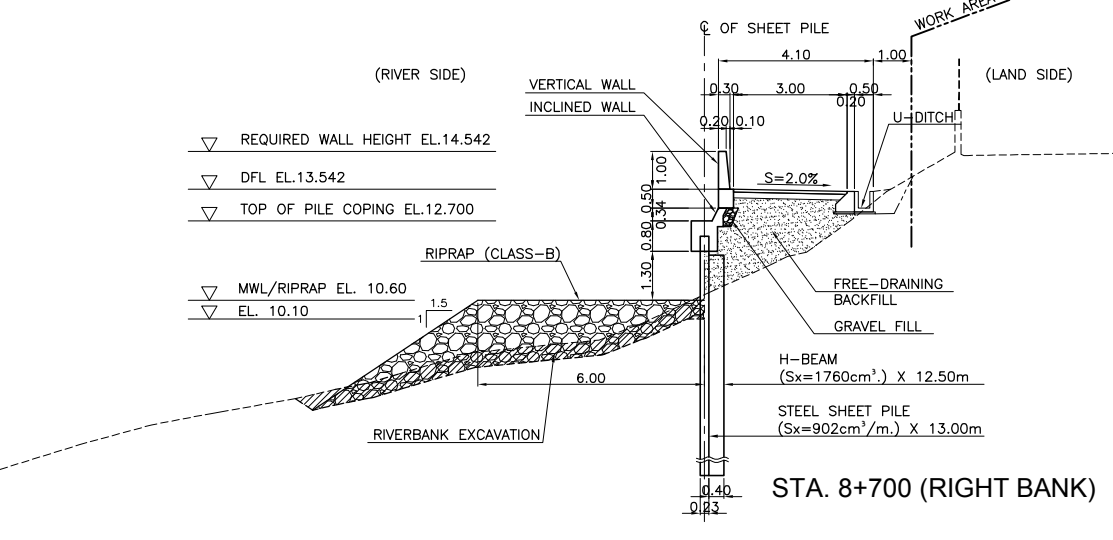
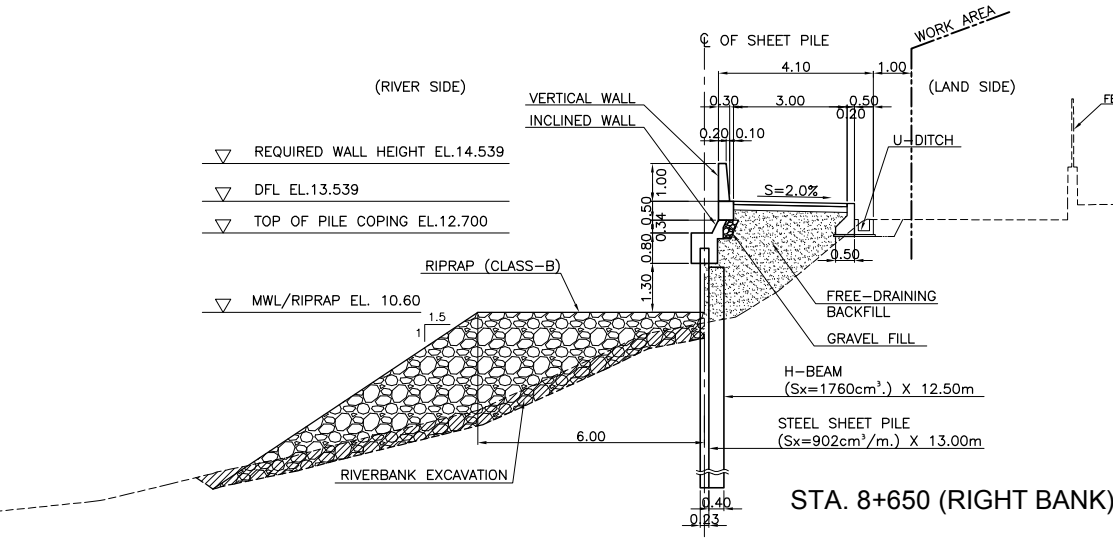
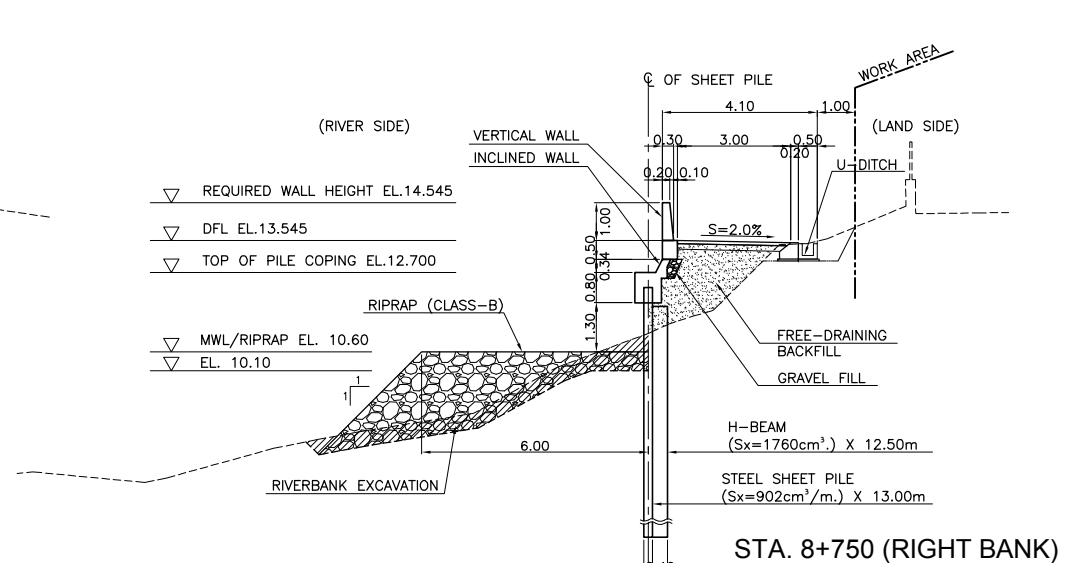
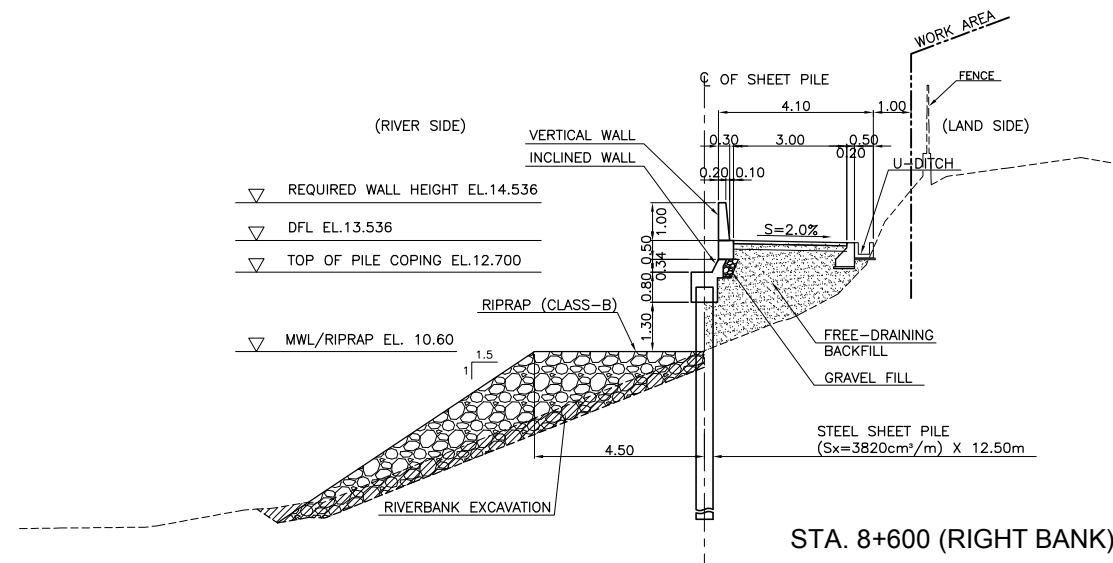
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

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

SHEET CONTENTS: CROSS SECTION STA 8+350 ~ STA 8+550  
RIGHT BANK

SHEET NO.: LP-RS  
CS 29



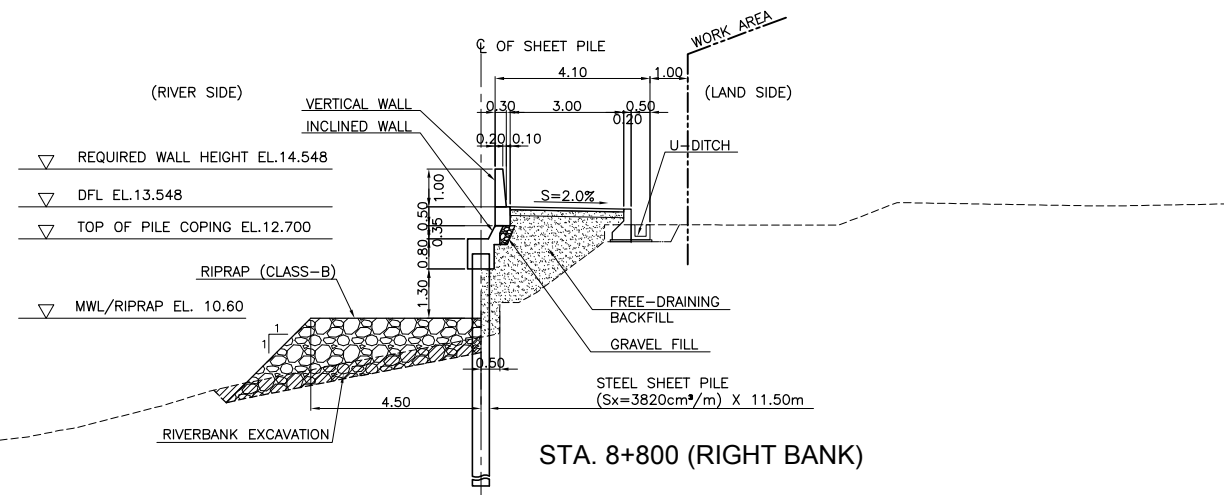
REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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.

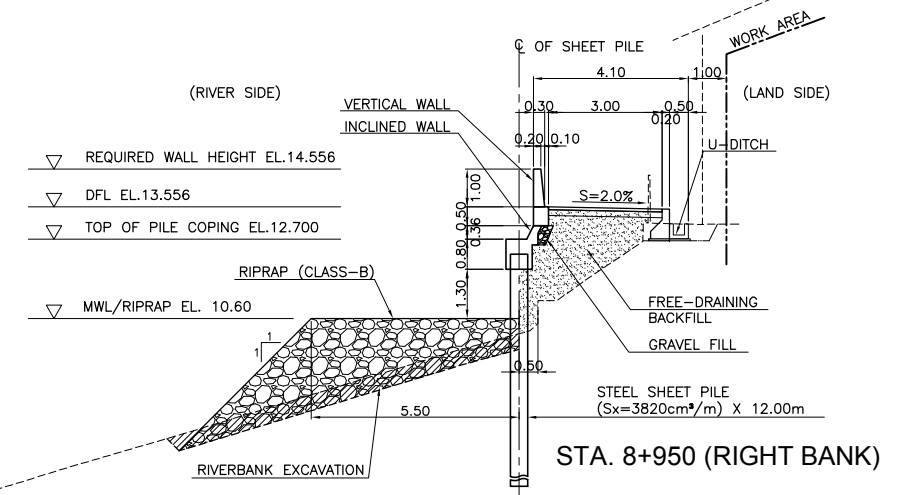
SHUJI KAKU  
 TEAM LEADER

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	CROSS SECTION STA 8+600 ~ STA 8+750 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			

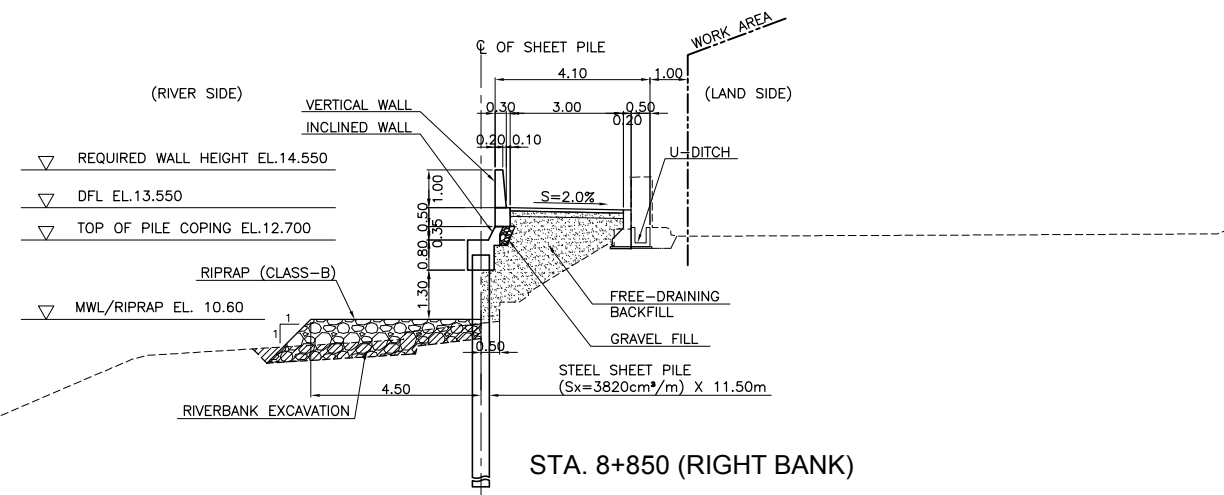




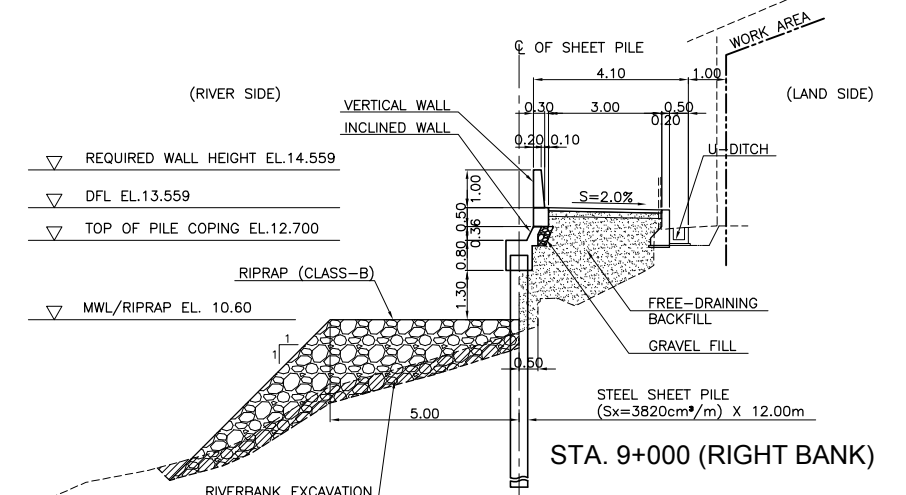
STA. 8+800 (RIGHT BANK)



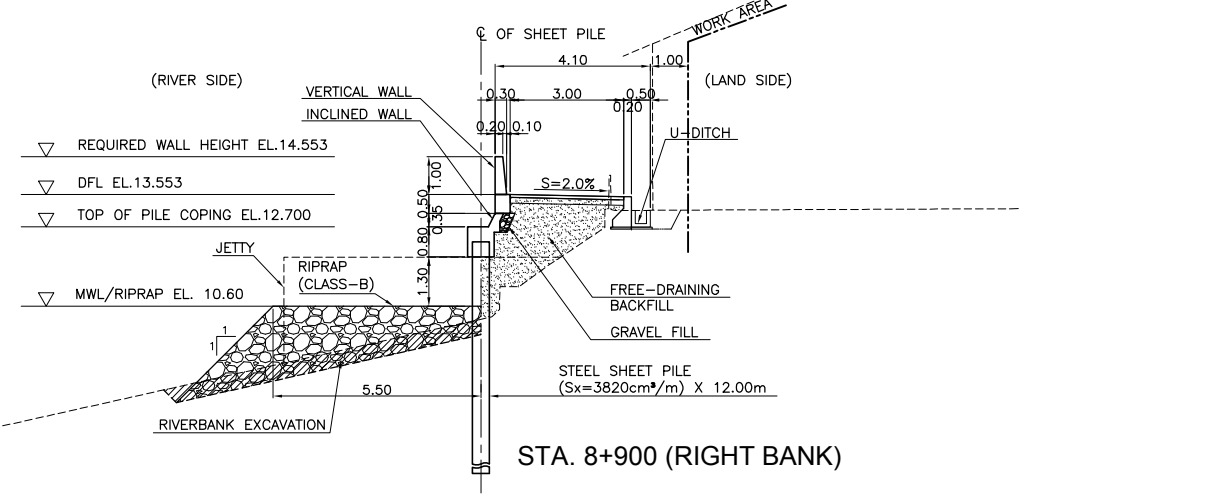
STA. 8+950 (RIGHT BANK)



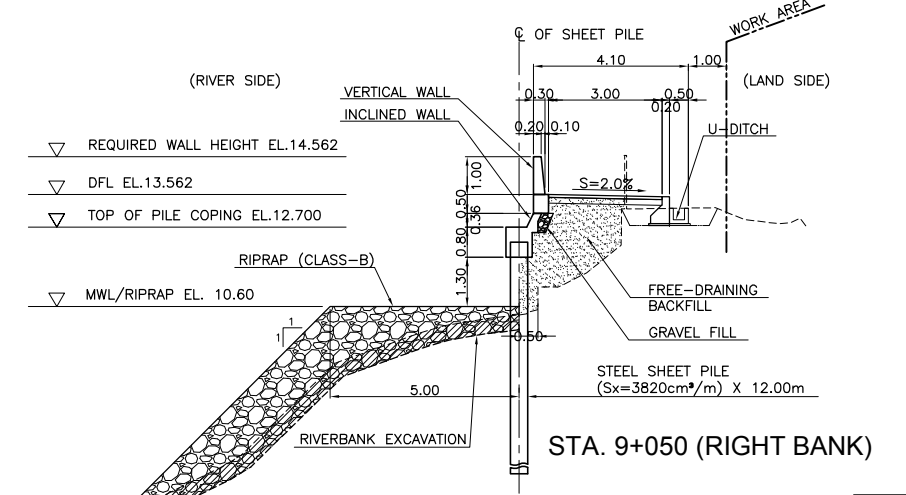
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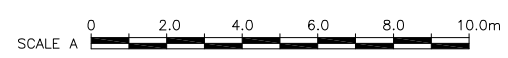
STA. 9+000 (RIGHT BANK)



STA. 8+900 (RIGHT BANK)



STA. 9+050 (RIGHT BANK)

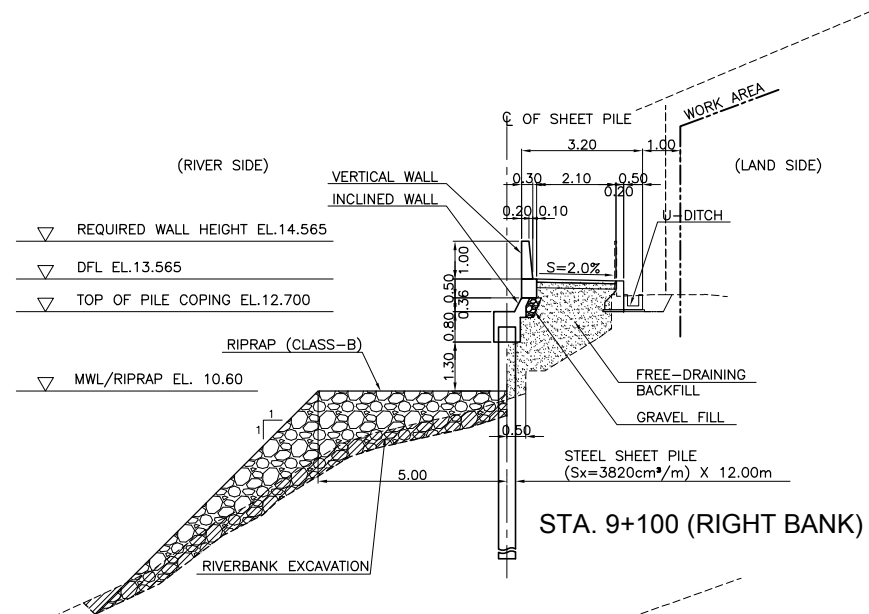


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

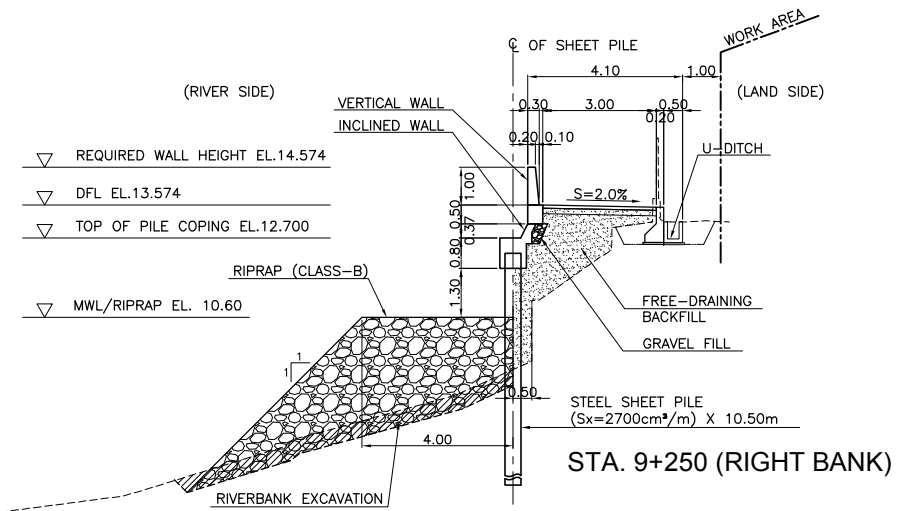
NOTE:  
 PURSUANT TO SECTION 4 OF ANNEX 'A' OF THE REVISED IMPLEMENTING RULES AND REGULATIONS OF R.A. 9184, APPROVAL BY THE AUTHORIZED DPWH OFFICIALS OF DETAILED ENGINEERING SURVEYS AND DESIGN UNDERTAKEN BY CONSULTANTS NEITHER DIMINISHES THE RESPONSIBILITY OF THE LATTER FOR THE TECHNICAL INTEGRITY OF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

SHUJI KAKU  
 TEAM LEADER

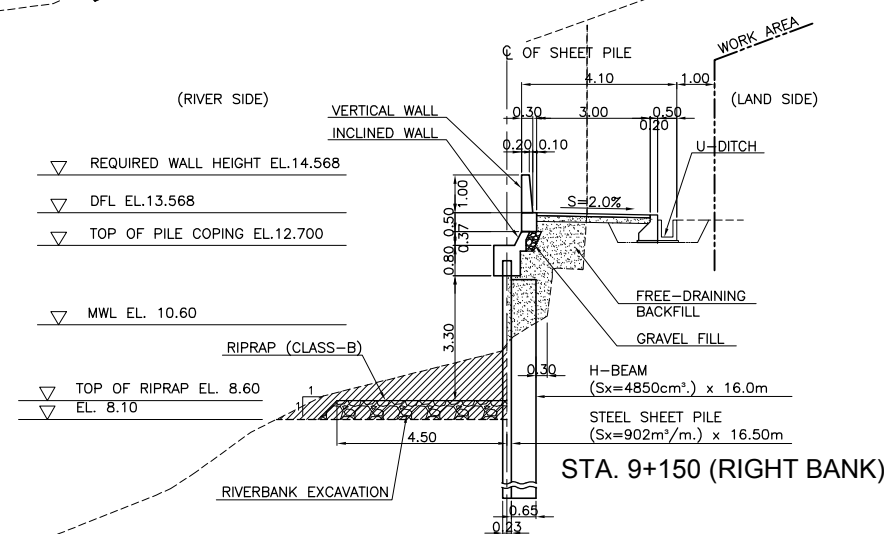
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES				PROJECT & LOCATION	SHEET CONTENTS	SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 8+800 ~ STA 9+050 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	TOSHIKI KAWAKAMI THE CHECKER	SHUJI KAKU TEAM LEADER		PERFECTO L. ZAPLAN, JR. CHIEF, HYDRAULIC DIVISION, BOD	PATRICK B. GATAN PROJECT DIRECTOR PMO - MFCP			



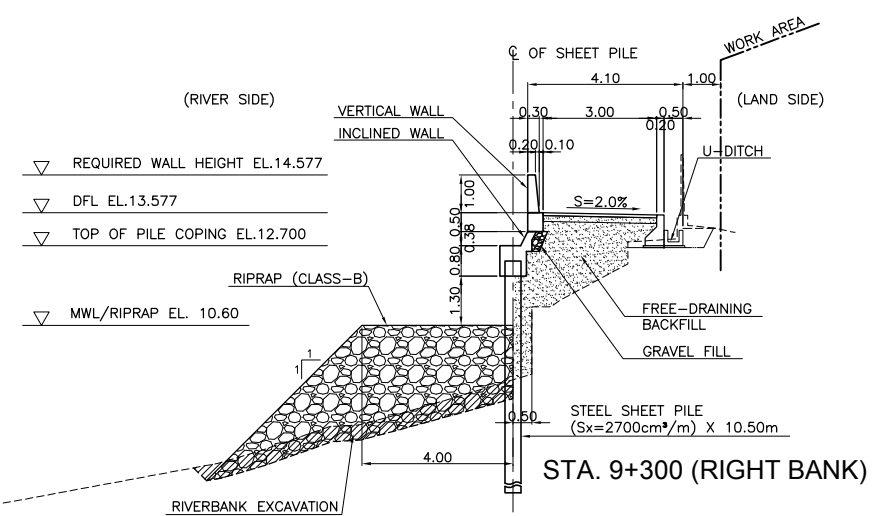
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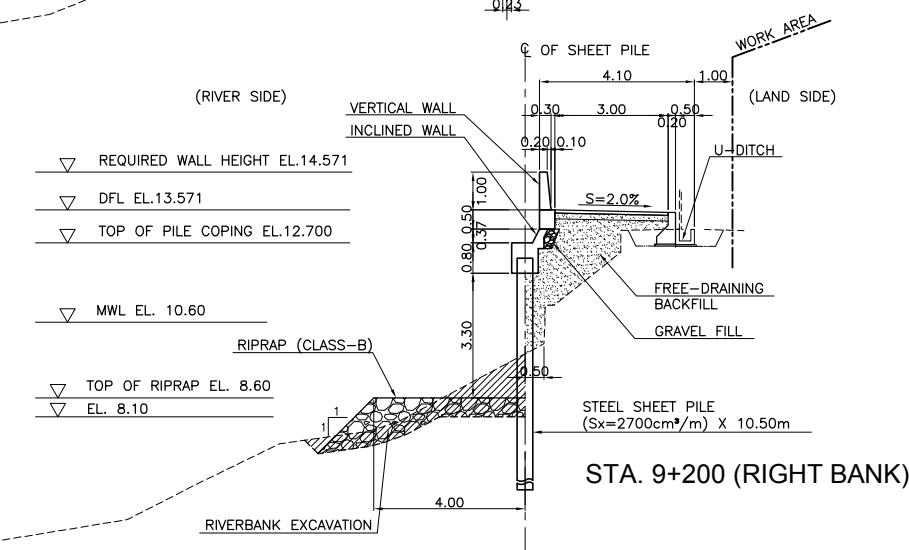
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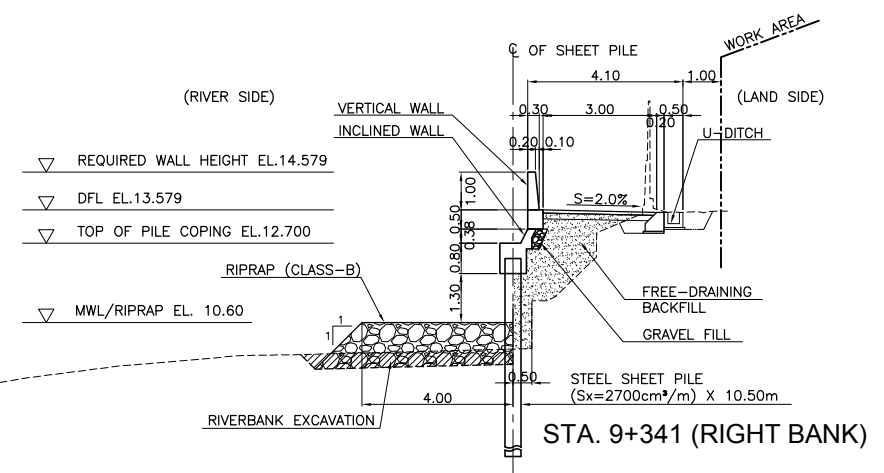
STA. 9+150 (RIGHT BANK)



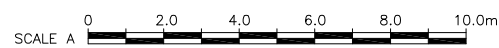
STA. 9+300 (RIGHT BANK)



STA. 9+200 (RIGHT BANK)



STA. 9+341 (RIGHT BANK)



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: EIJI MOKI  
STRUCTURAL ENGINEER I

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

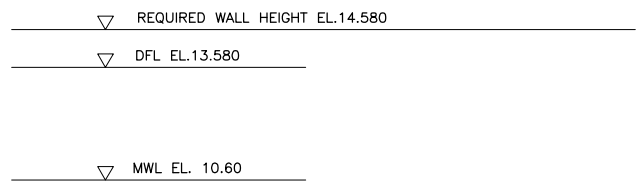
APPROVED BY: RAUL C. ASIS  
UNDERSECRETARY  
FOR TECHNICAL SERVICES

ROGELIO L. SINGSON  
SECRETARY

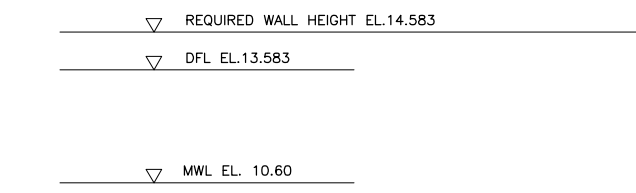
PROJECT & LOCATION  
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS  
CROSS SECTION  
STA 9+100 ~ STA 9+341  
RIGHT BANK

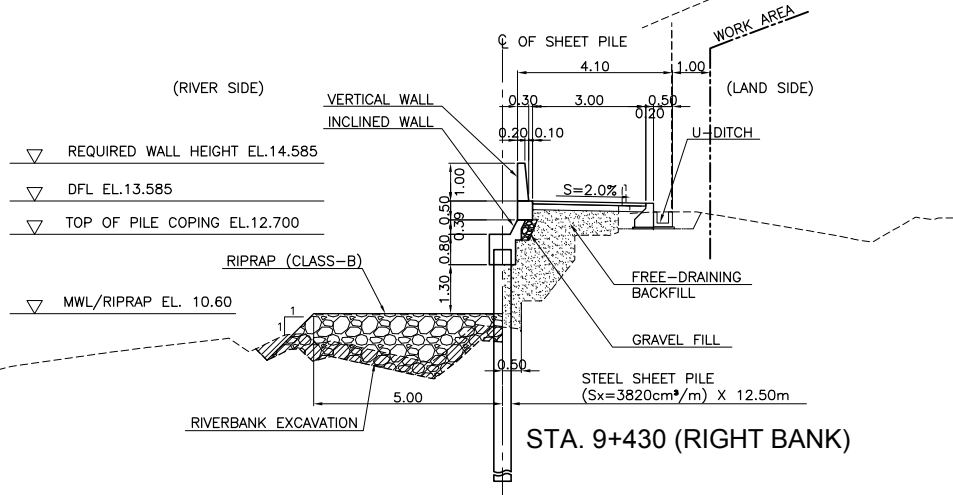
SHEET NO.  
LP-RS  
CS 32



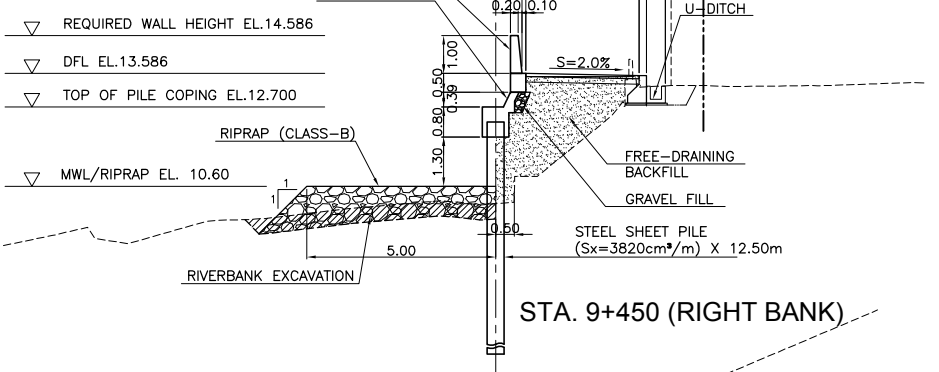
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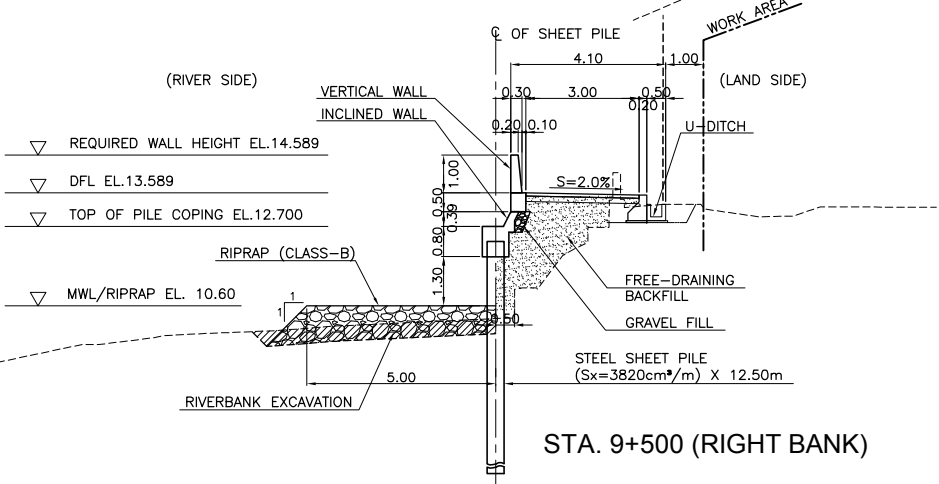
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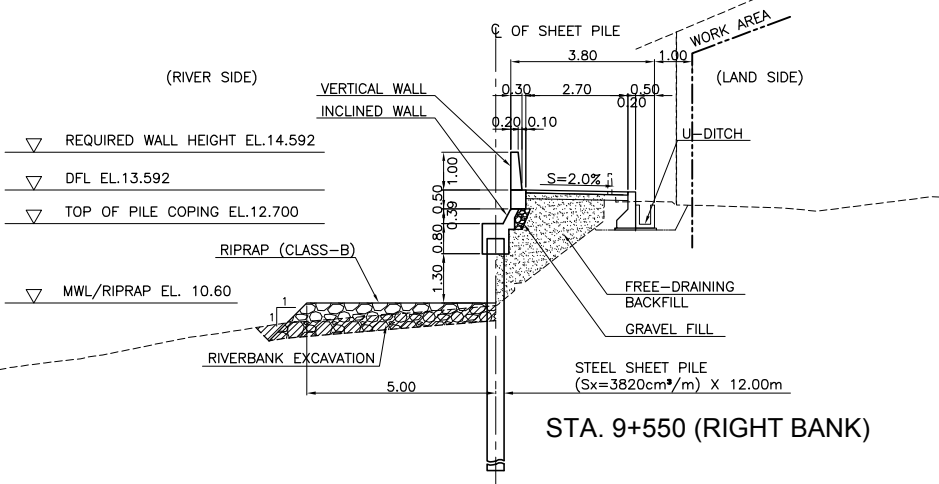
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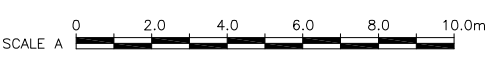
STA. 9+450 (RIGHT BANK)



STA. 9+500 (RIGHT BANK)



STA. 9+550 (RIGHT BANK)

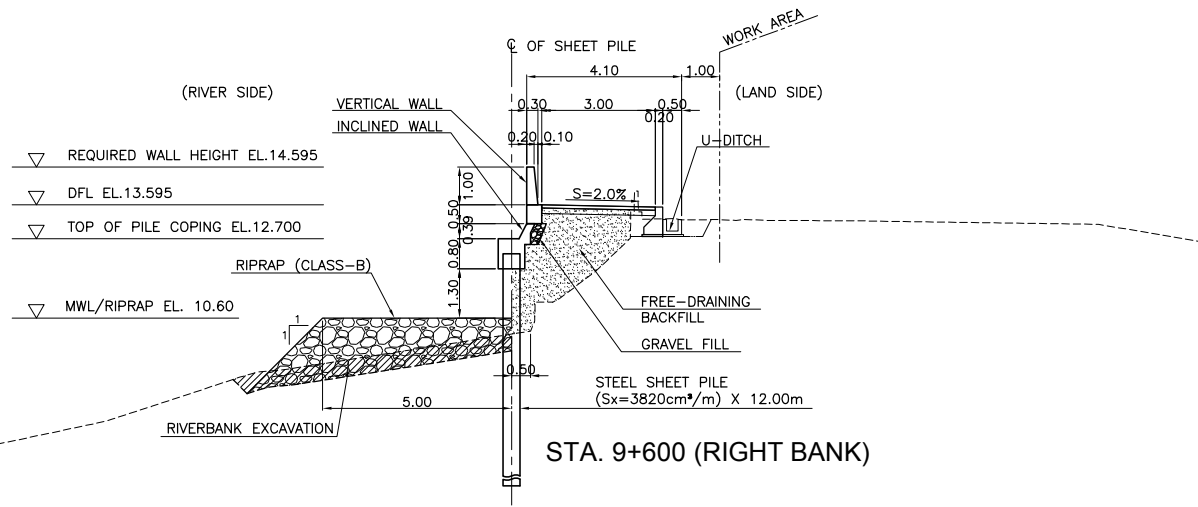


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

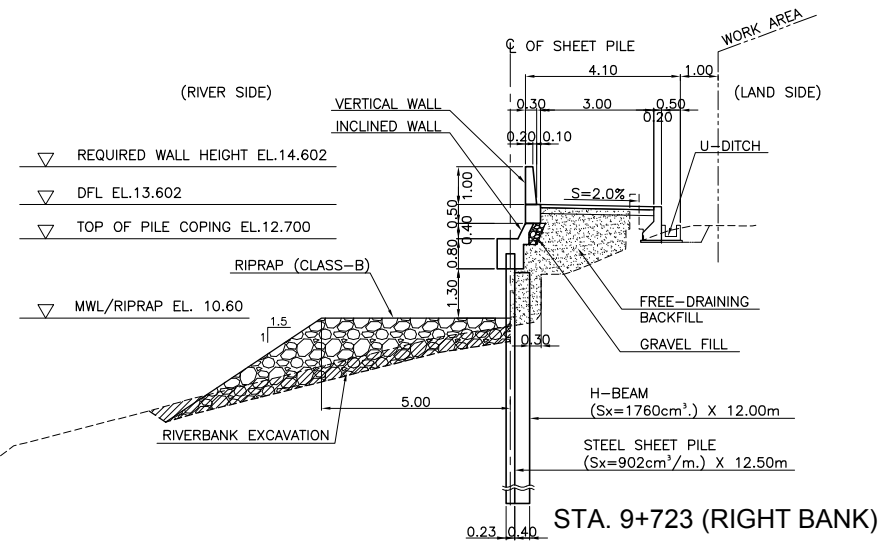
NOTE:  
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SHUJI KAKU  
 TEAM LEADER

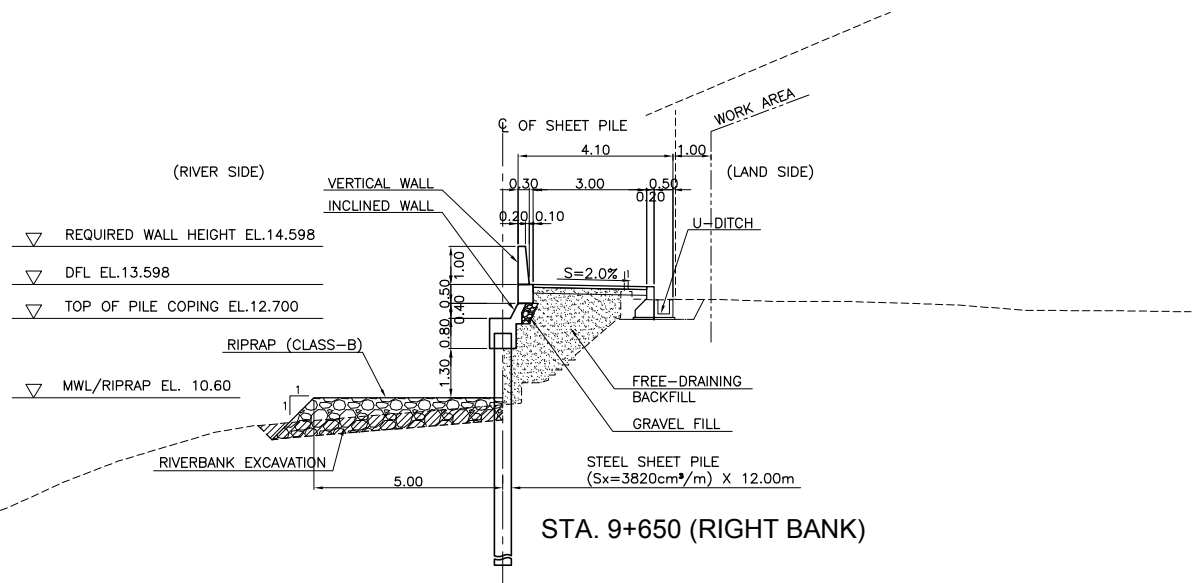
JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN			REPUBLIC OF THE PHILIPPINES			PROJECT & LOCATION		SHEET CONTENTS		SHEET NO.
	DESIGNED BY:	CHECKED BY:	SUBMITTED BY:		REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE III), METRO MANILA	CROSS SECTION STA 9+350 ~ STA 9+550 RIGHT BANK	
	EIJI MOKI STRUCTURAL ENGINEER I	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			



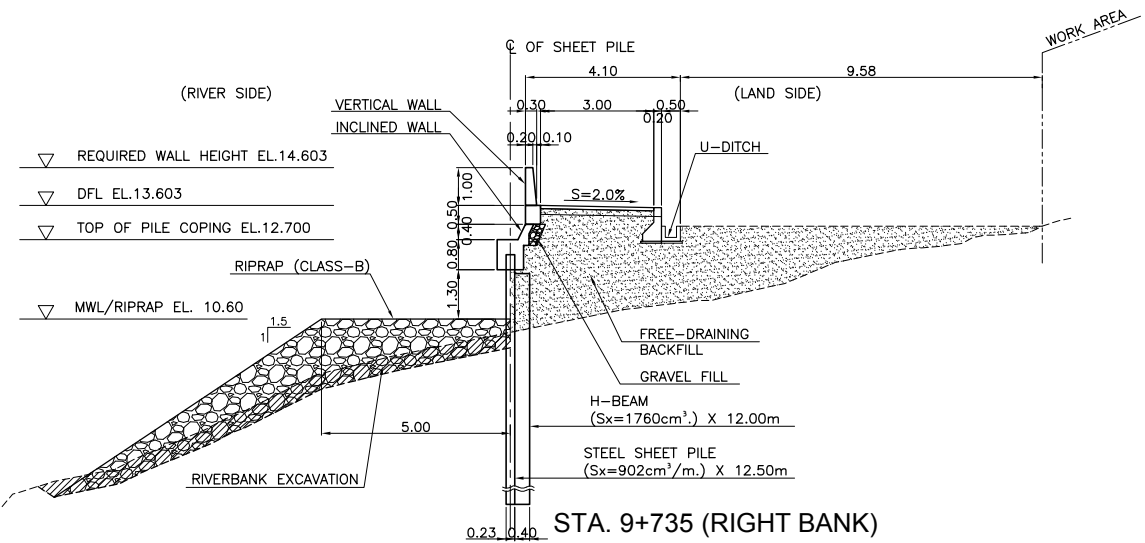
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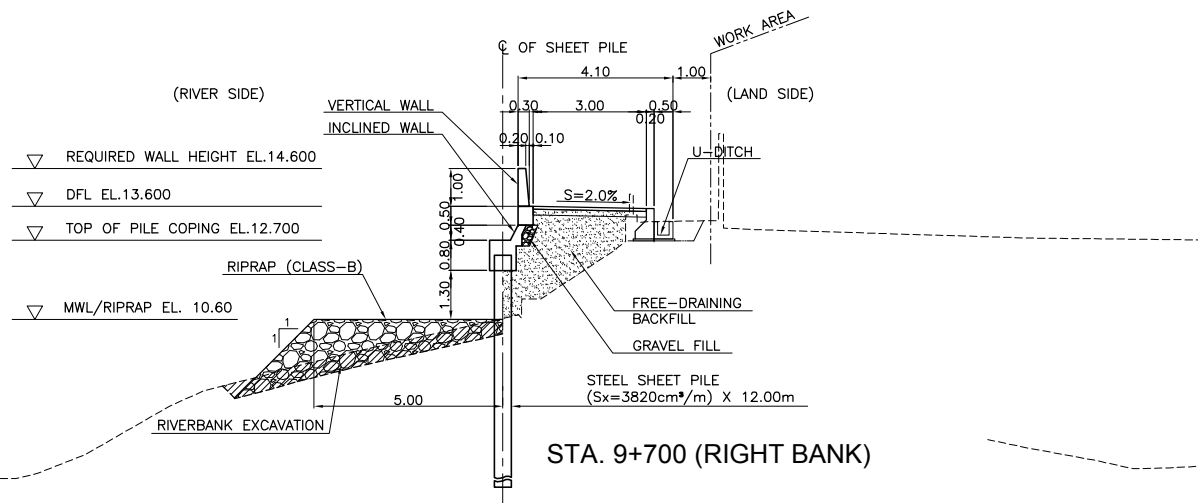
STA. 9+723 (RIGHT BANK)



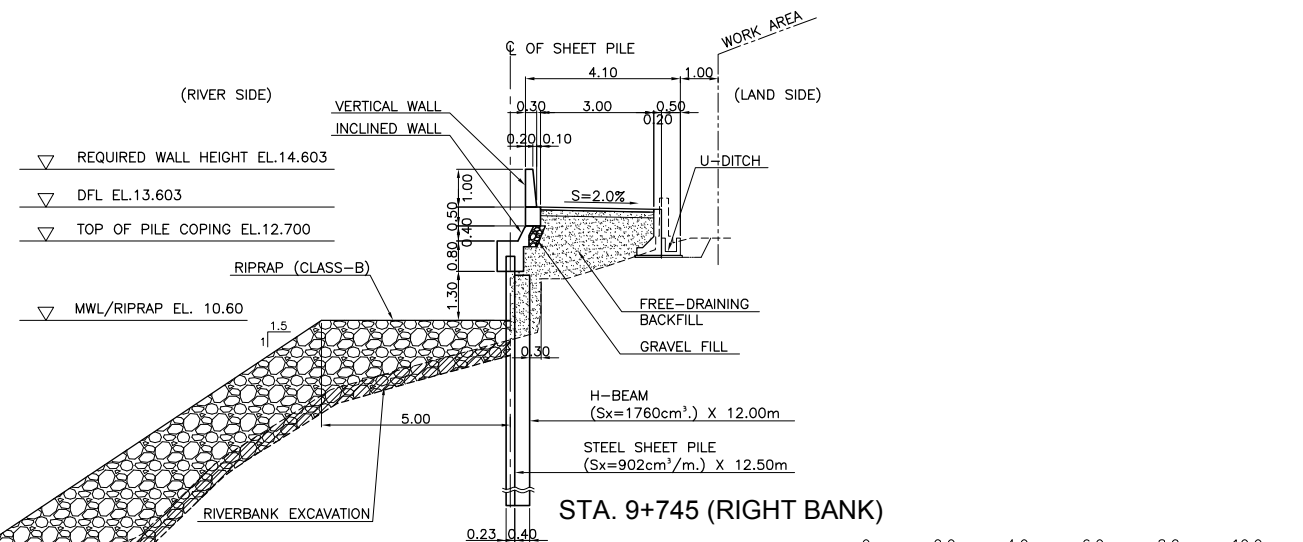
STA. 9+650 (RIGHT BANK)



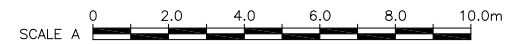
STA. 9+735 (RIGHT BANK)



STA. 9+700 (RIGHT BANK)



STA. 9+745 (RIGHT BANK)



REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN



DESIGNED BY: EIJI MOKI  
STRUCTURAL ENGINEER I

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

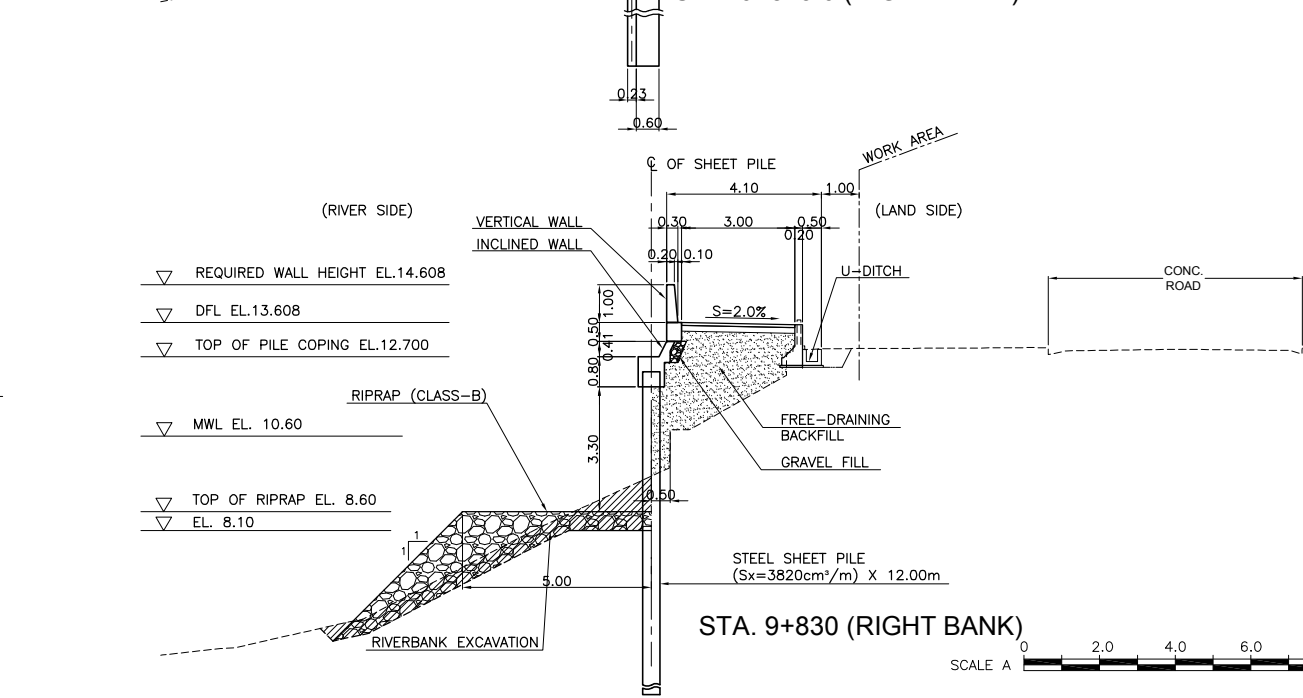
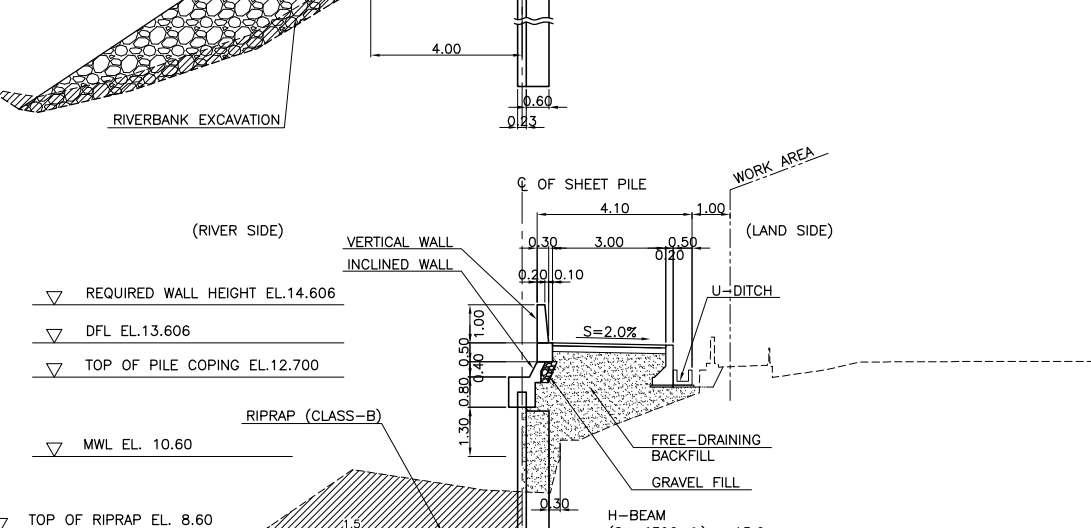
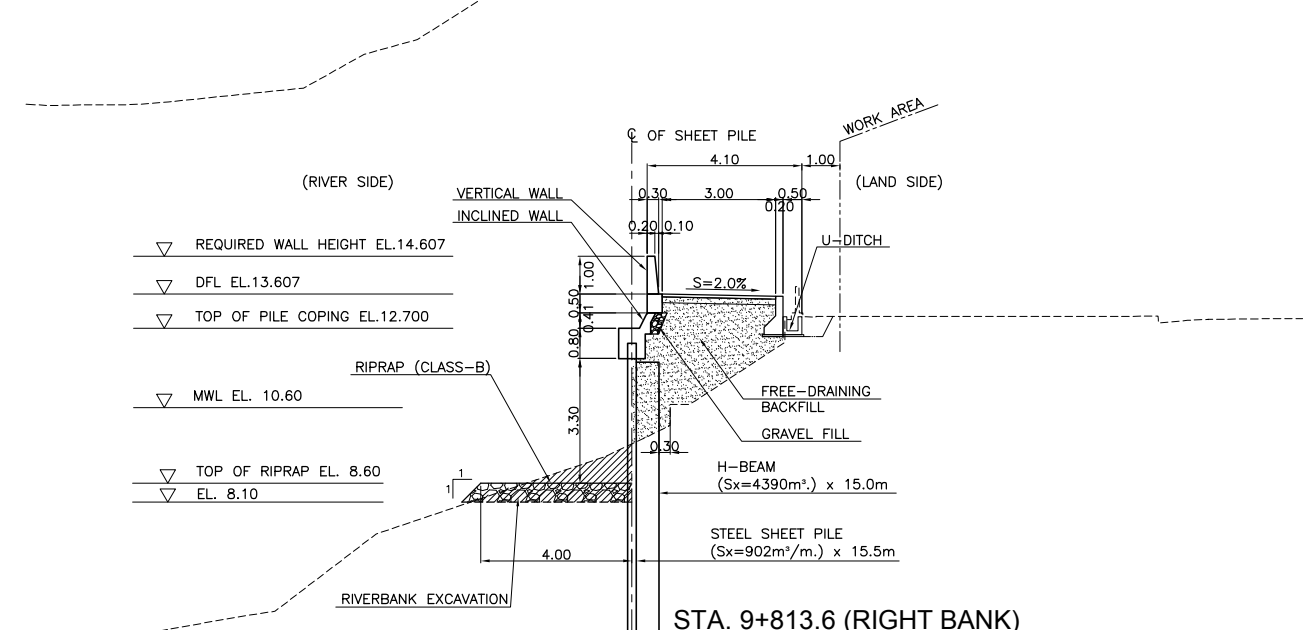
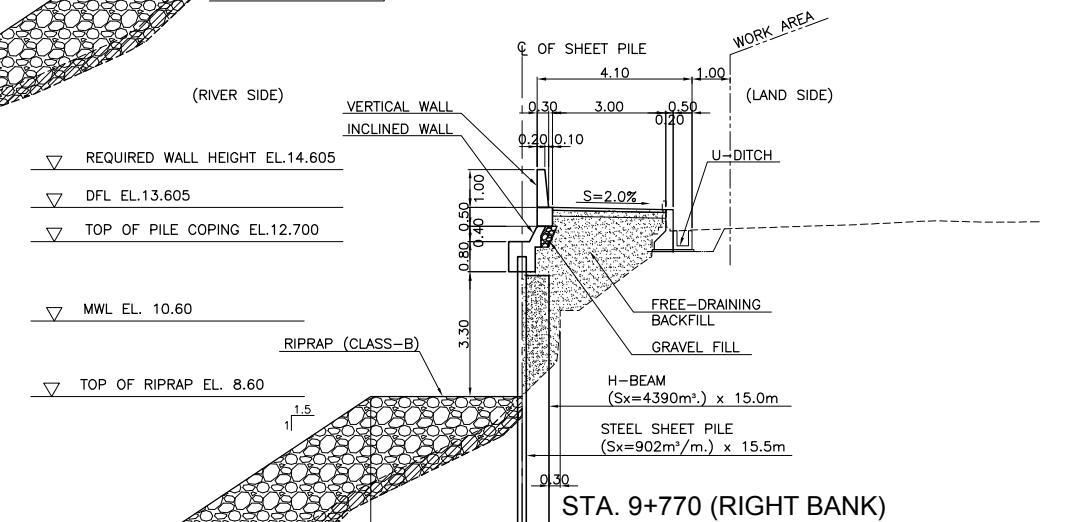
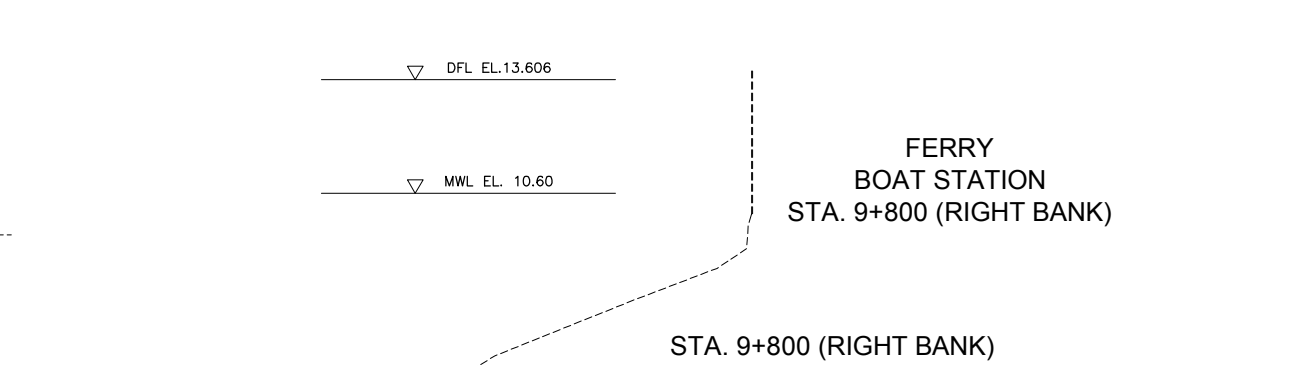
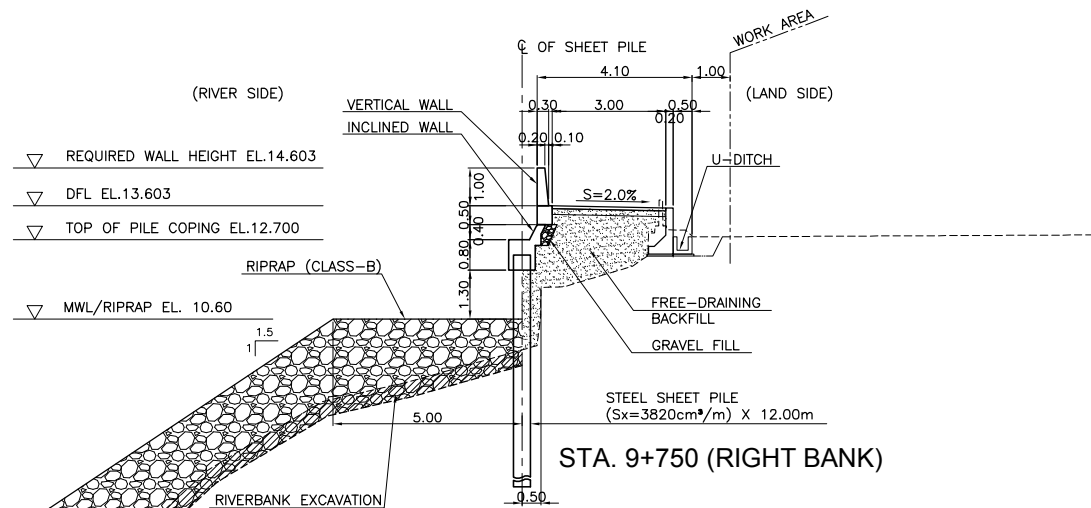
PASIG-MARIKINA  
RIVER CHANNEL  
IMPROVEMENT  
PROJECT (PHASE III),  
METRO MANILA

SHEET CONTENTS

CROSS SECTION  
STA 9+600 ~ STA 9+745  
RIGHT BANK

SHEET NO.



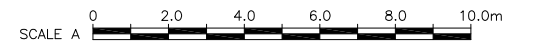
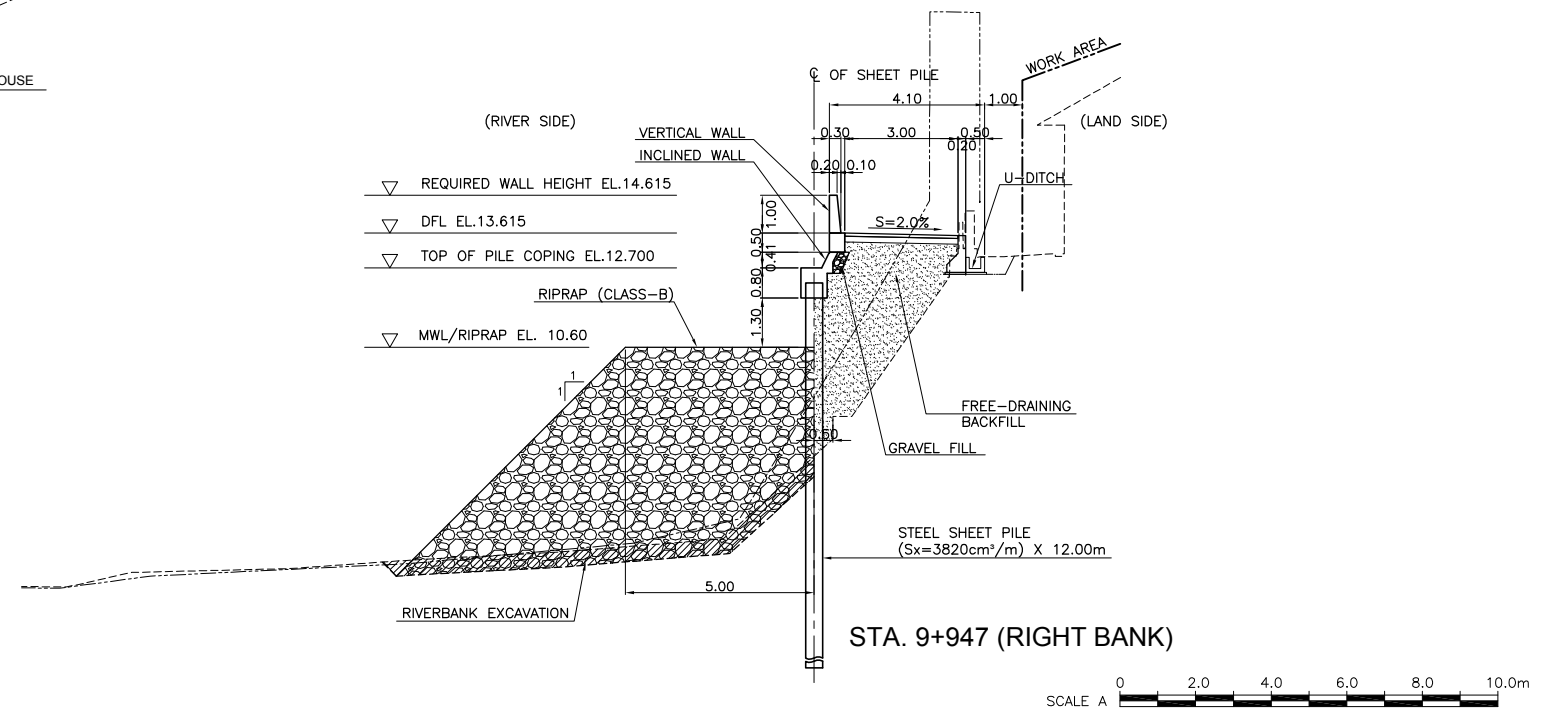
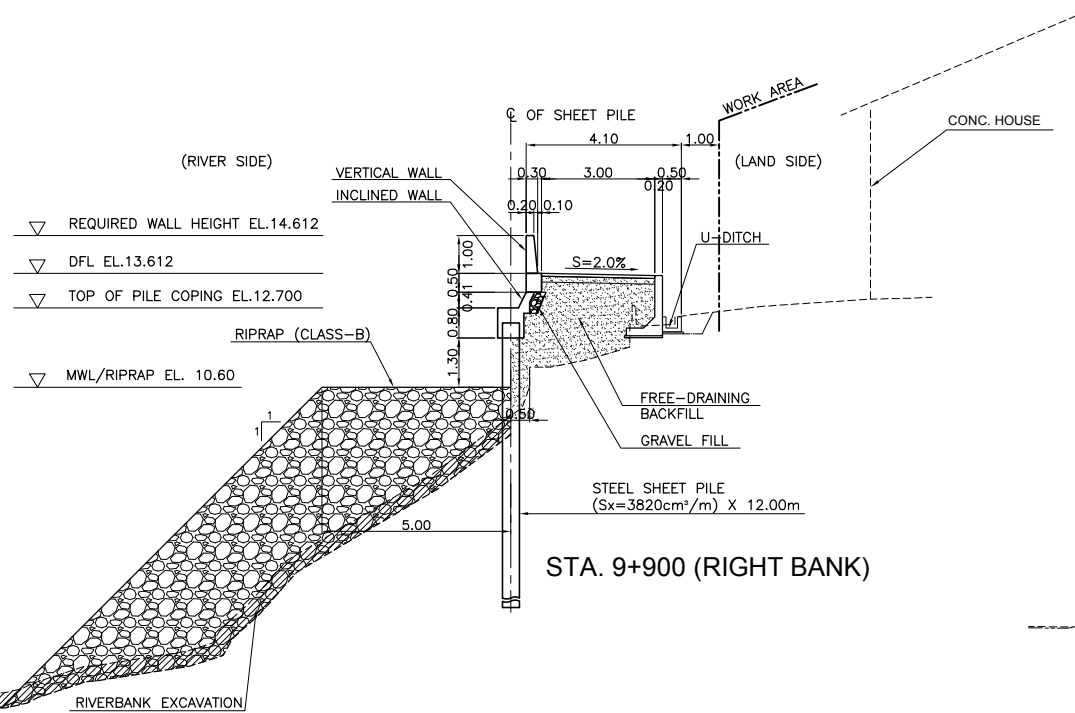
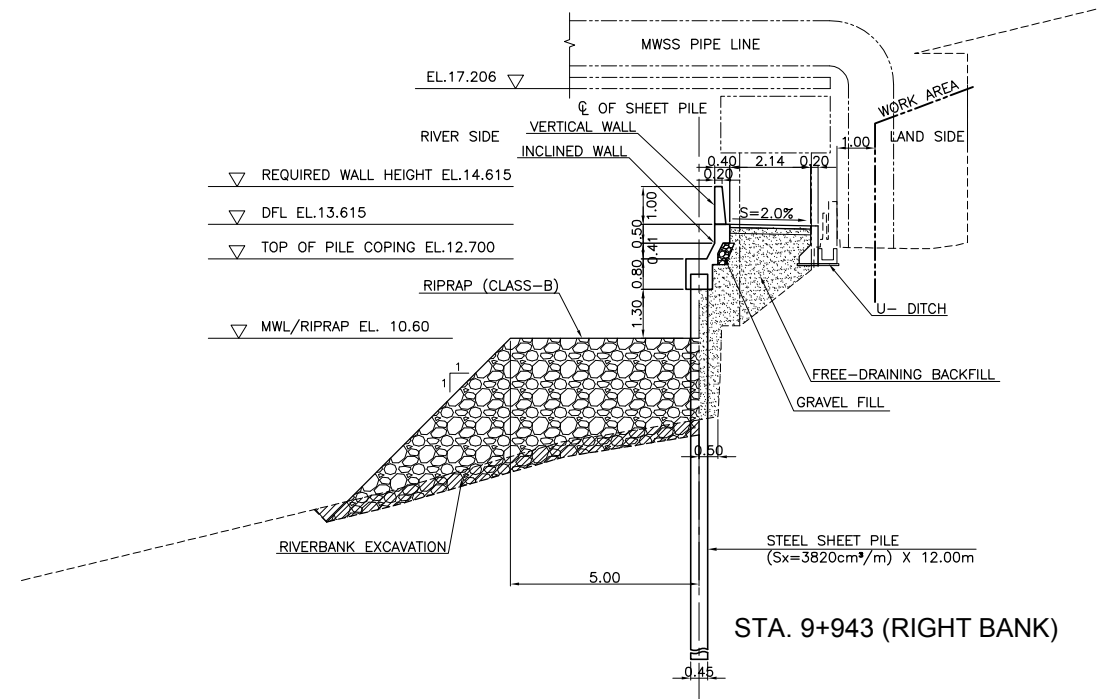
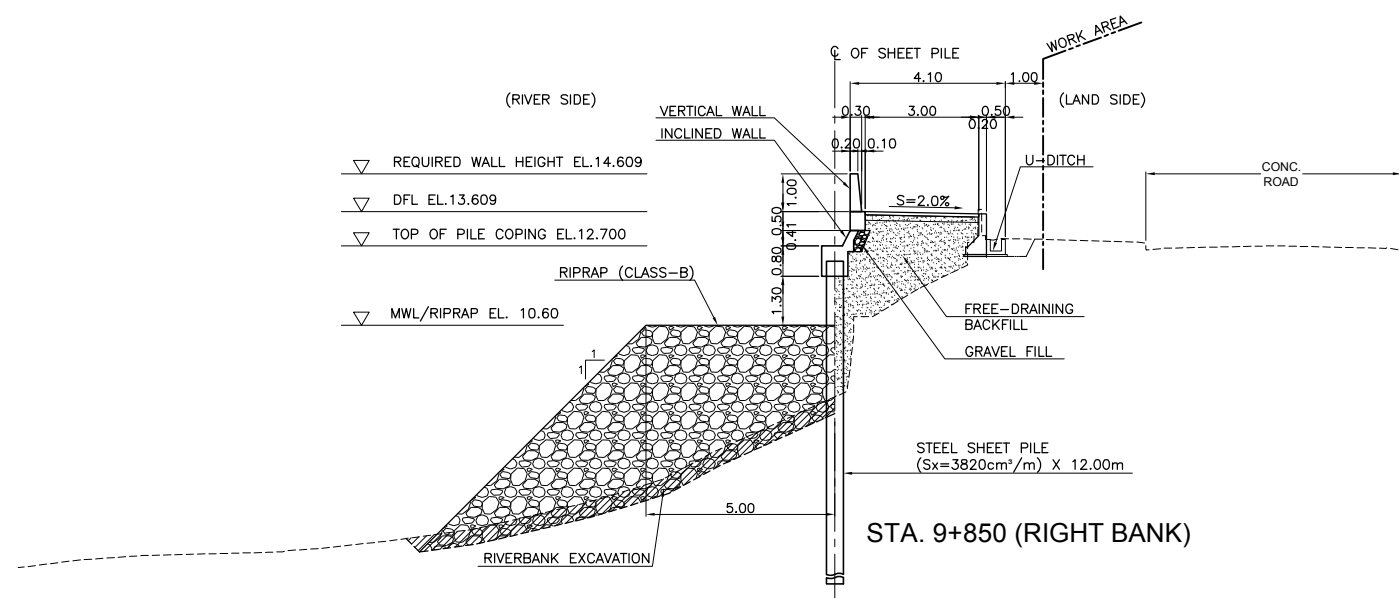


REVISIONS			
NO.	DESCRIPTION	APPROVED	DATE

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>CROSS SECTION STA 9+750 ~ STA 9+830 RIGHT BANK</b>		SHEET NO. <b>LP-RS CS 35</b>
DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	REVIEWED BY:	RECOMMENDING APPROVAL:	APPROVED BY:	SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE UNDERSECRETARY		SEE COVER SHEET FOR THE SIGNATURE AND APPROVAL OF THE SECRETARY		
EIJI MOKI STRUCTURAL ENGINEER I	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		



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SHUJI KAKU  
TEAM LEADER

JICA CONSULTANT FOR DETAILED ENGINEERING DESIGN

REPUBLIC OF THE PHILIPPINES



DESIGNED BY:	CHECKED BY:	SUBMITTED BY:
EIJI MOKI STRUCTURAL ENGINEER I	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	CROSS SECTION STA 9+850 ~ STA 9+947 RIGHT BANK	LP-RS CS 36